SOLICITATION INFORMATION

February 4, 2011

RFQ #7448230

TITLE: ARRA-CHAFEE HALL FIRE PROTECTION UPGRADES - URI

CLOSING DATE AND TIME: 3/1/11 AT 1:45 PM

PRE-BID/ PROPOSAL CONFERENCE: YES DATE: 2/17/11 TIME: 10:00 AM

MANDATORY: NO

LOCATION: URI – GALLANTI LOUNGE
UNIVERSITY LIBRARY
15 LIPPETT ROAD
KINGSTON, RI

SURETY REQUIRED: YES

BOND REQUIRED: YES

JOHN O'HARA II
CHIEF BUYER

JOH:da

Vendors register on-line at the State Purchasing Website at www.purchasing.ri.gov to be able to download a Bidder Certification Cover Form.

THIS PAGE IS NOT A BIDDER CERTIFICATION FORM

Solicit.doc
Revised 10/8/10

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ADMINISTRATION, DIVISON OF PURCHASES
STATE OF RHODE ISLAND BOARD OF GOVERNORS
FOR HIGHER EDUCATION

INVITATION TO BID
NOTICE TO CONTRACTORS – BID NO. 7448230

The State of Rhode Island Board of Governors for Higher Education is soliciting bids for the fire code upgrades at Chafee Social Science Center on the Kingston Campus of the University of Rhode Island, in accordance with the plans and specifications dated December 7, 2010.

SEALED PROPOSALS ADDRESSED TO THE **DIVISION OF PURCHASES,** 1 CAPITOL HILL, PROVIDENCE, R.I. 02908-5855, SHALL BE RECEIVED ON OR BEFORE:

Time: 1:45 PM Date: 3/1/11
At that time they will be opened and read in public.

NOTE: Plans and specifications are available in download on the RI Division of Purchases website at www.purchasing.ri.gov (labeled with the issue date of this Solicitation Information document) Plans and Specifications may be examined at the offices of Hughes Associates, Inc, 117 Metro Center Blvd, Suite 1002, Warwick, RI, every day except Saturdays, Sundays and Holidays between the hours of 8:30 AM and 4:00 PM

A CERTIFIED CHECK OR **BID BOND** PAYABLE TO THE STATE OF RHODE ISLAND IN AN AMOUNT EQUAL TO FIVE PERCENT (5%) OF THE PROPOSAL SHALL BE SUBMITTED WITH THE BID.

A **Performance** and **Payment Bond** equal to one hundred percent (100%) of the contract price with a surety company registered and licensed in the State of Rhode Island shall be required of the successful bidder

This project is subject to terms, conditions and provisions of the Rhode Island General Laws Chapter 37-14.1 et. Seq, and regulations promulgated there under, which require that ten percent (10%) of the dollar value of work performed on the project be performed by minority business enterprises, and prevailing wage rates to be paid under the Contract for this project must be in accordance with those prevailing wages on file in the Rhode Island Department of Labor, Office of the Director.

A REPRESENTATIVE OF THE UNIVERSITY OF RHODE ISLAND WILL BE PRESENT FOR A PRE-BID CONFERENCE AT THE FOLLOWING PLACE AND TIME:

2/17/11 at 10:00 AM at: URI–Gallanti Lounge, University Library, 15 Lippett Road, Kingston, RI

UNIVERSITY OF RHODE ISLAND
JOHN H. CHAFEE
SOCIAL SCIENCE CENTER

KINGSTON, RHODE ISLAND

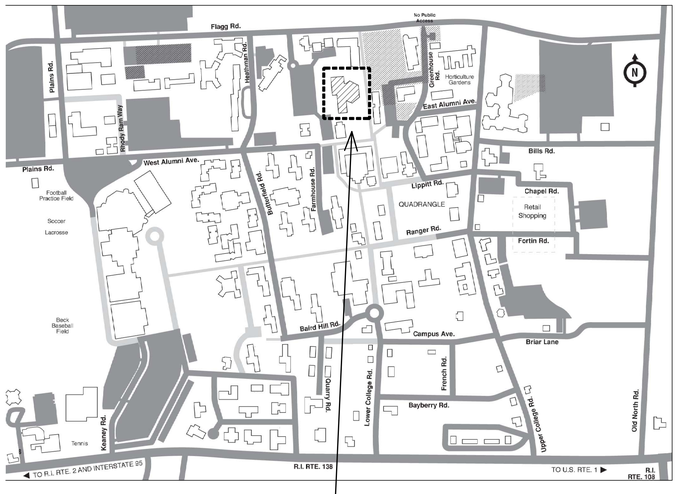
HUGHES ASSOCIATES, INC.
117 METRO CENTER BLVD.
SUITE 1002
WARWICK, RI 02886

BREWSTER THORNTON GROUP ARCHITECTS LLP
150 CHESTNUT STREET
PROVIDENCE, RI 02903

ENGINEERING DESIGN SERVICES, INC.
141 INDUSTRIAL HIGHWAY
SLATERSVILLE, RI 02876

LIST OF DRAWINGS

DWG. NO.	DRAWING TITLE	CODE REVIEW SET 05/03/10	LECTURE HALL FINISH SET 08/13/10	BID SET 10/25/10	FINAL BID SET 12/07/10
	TITLE SHEET	X		X	X
D1.0	BASEMENT & FIRST FLOOR DEMOLITION PLANS	X		X	X
D1.1	SECOND FLOOR DEMOLITION PLAN	X		X	X
D1.2	HIGH-RISE DEMOLITION PLANS	X		X	X
D1.3	ENLARGED FIRST FLOOR DEMOLITION PLAN		X	X	X
D1.3A	ENLARGED FIRST FLOOR DEMOLITION PLAN (ALTERNATES)			X	X
D1.4	ENLARGED SECOND FLOOR DEMOLITION PLAN		X	X	X
D1.4A	ENLARGED SECOND FLOOR DEMOLITION PLAN (ALTERNATES)			X	X
D1.5	ENLARGED SECOND FLOOR REFLECTED CEILING DEMOLITION PLAN			X	X
D1.5A	ENLARGED SECOND FLOOR REFLECTED CEILING DEMOLITION PLAN (ALTERNATES)			X	X
A1.0	BASEMENT & FIRST FLOOR PLANS, DOOR SCHEDULE, TYPES & DETAILS, GEN. NOTES, TYP. ABBV., & LEGEND	X		X	X
A1.1	SECOND FLOOR PLAN, ENLARGED PLANS & DETAILS, WALL TYPES	X	X	X	X
A1.2	HIGH-RISE FLOOR PLANS (THIRD TO EIGHTH FLS.)	X	X	X	X
A1.3	ENLARGED FIRST FLOOR PLAN OF LECTURE HALLS		X	X	X
A1.3A	ENLARGED FIRST FLOOR PLAN OF LECTURE HALLS, DOOR SCHEDULE (ALTERNATES)			X	X
A1.4	ENLARGED SECOND FLOOR PLAN OF LECTURE HALLS, FINISH SCHEDULES		X	X	X
A1.4A	ENLARGED SECOND FLOOR PLAN OF LECTURE HALLS, SCHEDULES (ALTERNATES)			X	X
A2.0	FIRST FLOOR REFLECTED CEILING PLAN	X		X	X
A2.1	SECOND FLOOR & HIGH-RISE REFLECTED CEILING PLAN	X		X	X
A2.2	ENLARGED SECOND FLOOR REFLECTED CEILING PLAN		X	X	X
A2.2A	ENLARGED SECOND FLOOR REFLECTED CEILING PLAN (ALTERNATES)			X	X
A3.0	TYPICAL STAIR DETAILS	X		X	X
A3.1	TYPICAL DETAILS		X	X	X
A3.1A	TYPICAL DETAILS (ALTERNATES)			X	X
A3.2A	TYPICAL DETAILS (ALTERNATES)		X	X	X
A5.1	INTERIOR ELEVATIONS		X	X	X
A5.1A	INTERIOR ELEVATIONS (ALTERNATES)			X	X
A5.2	INTERIOR ELEVATIONS		X	X	X
A5.2A	INTERIOR ELEVATIONS (ALTERNATES)			X	X
A5.3	INTERIOR ELEVATIONS		X	X	X
A5.3A	INTERIOR ELEVATIONS (ALTERNATES)			X	X
A5.4	INTERIOR ELEVATIONS		X	X	X
A5.4A	INTERIOR ELEVATIONS (ALTERNATES)			X	X
FA-1.0	RISER DIAGRAM & NOTES SHEET	X		X	X
FA-1.01	BASEMENT FIRE ALARM PLAN	X		X	X
FA-1.11	FIRST FLOOR MAIN BUILDING FIRE ALARM PLAN	X		X	X
FA-1.12	FIRST FLOOR AUDITORIUM FIRE ALARM PLAN	X		X	X
FA-1.13	FIRST FLOOR TOWER FIRE ALARM PLAN	X		X	X
FA-1.21	SECOND FLOOR MAIN BUILDING FIRE ALARM PLAN	X		X	X
FA-1.22	SECOND FLOOR AUDITORIUM FIRE ALARM PLAN	X		X	X
FA-1.22A	SECOND FLOOR ALTERNATE FIRE ALARM PLAN				X
FA-1.23	SECOND FLOOR TOWER FIRE ALARM PLAN	X		X	X
FA-1.31	THIRD FLOOR & FOURTH FLOOR TOWER FIRE ALARM PLAN	X		X	X
FA-1.32	FIFTH FLOOR & SIXTH FLOOR TOWER FIRE ALARM PLAN	X		X	X
FA-1.33	SEVENTH FLOOR & EIGHTH FLOOR TOWER FIRE ALARM PLAN		X	X	X
FD-1.01	BASEMENT FIRE ALARM DEMOLITION PLAN		X	X	X
FD-1.11	FIRST FLOOR MAIN BUILDING FIRE ALARM DEMOLITION PLAN		X	X	X
FD-1.12	FIRST FLOOR AUDITORIUM FIRE ALARM DEMOLITION PLAN		X	X	X
FD-1.13	FIRST FLOOR TOWER FIRE ALARM DEMOLITION PLAN		X	X	X
FD-1.21	SECOND FLOOR MAIN BUILDING FIRE ALARM DEMOLITION PLAN		X	X	X
FD-1.22	SECOND FLOOR AUDITORIUM FIRE ALARM DEMOLITION PLAN		X	X	X
FD-1.23	SECOND FLOOR TOWER FIRE ALARM DEMOLITION PLAN		X	X	X
FD-1.31	THIRD & FOURTH FLOOR TOWER FIRE ALARM DEMOLITION PLAN		X	X	X
FD-1.32	FIFTH & SIXTH FLOOR TOWER FIRE ALARM DEMOLITION PLAN		X	X	X
FD-1.33	SEVENTH & EIGHTH FLOOR TOWER FIRE ALARM DEMOLITION PLAN		X	X	X
FP-1.0	NOTES & DETAILS	X		X	X
FP-1.01	BASEMENT MAIN BUILDING FIRE SPRINKLER PLAN	X		X	X
FP-1.11	FIRST FLOOR MAIN BUILDING FIRE SPRINKLER PLAN	X		X	X
FP-1.12	FIRST FLOOR AUDITORIUM FIRE SPRINKLER PLAN	X		X	X
FP-1.13	FIRST FLOOR TOWER FIRE SPRINKLER PLAN	X		X	X
FP-1.21	SECOND FLOOR MAIN BUILDING FIRE SPRINKLER PLAN	X		X	X
FP-1.22	SECOND FLOOR AUDITORIUM FIRE SPRINKLER PLAN	X		X	X
FP-1.22A	SECOND FLOOR ALTERNATE AUDITORIUM FIRE SPRINKLER PLAN				X
FP-1.23	SECOND FLOOR TOWER FIRE SPRINKLER PLAN	X		X	X
FP-1.31	THIRD & FOURTH FLOOR TOWER FIRE SPRINKLER PLAN	X		X	X
FP-1.32	FIFTH & SIXTH FLOOR TOWER FIRE SPRINKLER PLAN	X		X	X
FP-1.33	SEVENTH & EIGHTH FLOOR TOWER FIRE SPRINKLER PLAN	X		X	X
ED3.0	LECTURE HALLS SECOND FLOOR LIGHTING DEMOLITION PLAN & NOTES	X		X	X
ED3.0A	LECTURE HALLS SECOND FLOOR LIGHTING DEMOLITION PLAN & NOTES (ALTERNATE)				X
E1.0	LEGEND ABBREVIATIONS, NOTES & BASEMENT PLAN	X		X	X
E1.1	FIRST FLOOR LIGHTING PLANS, LIGHTING FIXTURE SCHEDULE NOTES & DETAILS	X		X	X
E1.2	SECOND FLOOR LIGHTING PLANS, NOTES & DETAILS	X		X	X
E2.1	THIRD THRU EIGHT FLOOR LIGHTING PLANS, NOTES & DETAILS	X		X	X
E3.0	LEGEND, ABBREVIATIONS, LIGHTING FIXTURE SCHEDULE DETAILS & NOTES		X	X	X
E3.0A	LEGEND, ABBREVIATIONS, LIGHTING FIXTURE SCHEDULE DETAILS & NOTES (ALTERNATE)				X
E3.1	LECTURE HALLS FIRST FLOOR POWER & SIGNAL PLAN & NOTES		X	X	X
E3.1A	LECTURE HALLS FIRST FLOOR POWER & SIGNAL PLAN & NOTES (ALTERNATE)				X
	LECTURE HALLS SECOND FLOOR POWER & SIGNAL PLAN & NOTES		X	X	
MD1.0	LECTURE HALLS SECOND FLOOR DEMOLITION PLAN		X	X	X
M1.1	LECTURE HALLS SECOND FLOOR		X	X	X
M1.1A	LECTURE HALLS SECOND FLOOR (ALTERNATE)				X
M1.2	THIRD THRU EIGHT FLOOR LIGHTING PLANS, NOTES & DETAILS		X	X	X
M2.0	DETAILS AND NOTES			X	X
M3.0	SPECIFICATIONS			X	X

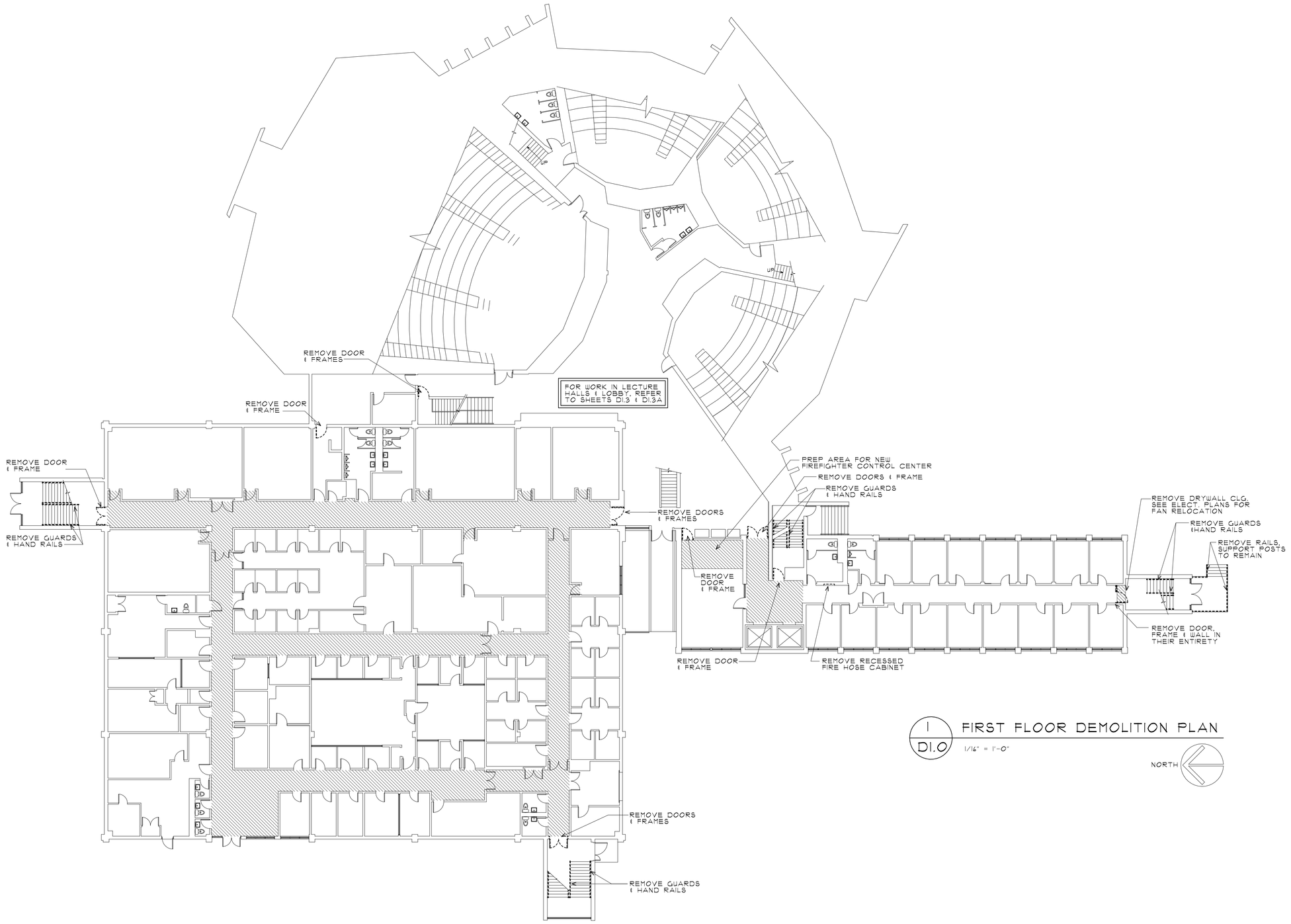


SITE MAP (NO SCALE)
KINGSTON, RI

UNIVERSITY OF Rhode Island

FIRE PROTECTION UPGRADE: CHAFEE HALL

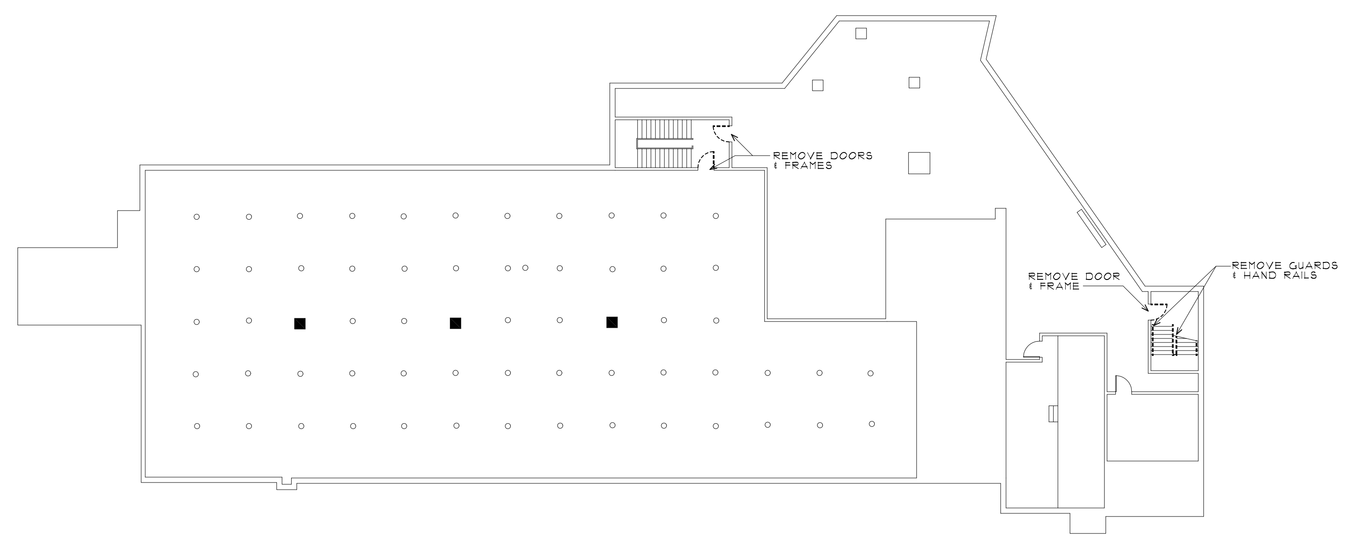
FINAL BID SET: 12/7/10



1 D1.0 FIRST FLOOR DEMOLITION PLAN

1/4" = 1'-0"

NORTH



2 D1.0 BASEMENT DEMOLITION PLAN

1/4" = 1'-0"

NORTH

LEGEND

- INDICATES ITEM OR AREA TO REMAIN.
- INDICATES ITEM OR AREA TO BE REMOVED.
- PARTITION WALL TO BE REMOVED IN ITS ENTIRETY.
- EXISTING DOOR TO BE REMOVED.
- INDICATES EXISTING CEILING AND LIGHTING TO BE REMOVED.

DEMOLITION NOTES

GENERAL:

1. - - - - - INDICATES ITEM OR AREA TO BE REMOVED.
2. PROTECT ALL AREAS ADJACENT TO OR AFFECTED BY WORK DURING CONSTRUCTION. PROVIDE DUST CONTAINMENT FOR ALL WORK AREAS.
3. CLEAN WORK AREA AND AREAS AFFECTED BY CUTTING AND PATCHING OPERATIONS.
4. SEE DEMOLITION DRAWINGS FOR SPECIFIC NOTES.
5. CAP ALL ABANDONED PLUMBING LINES AND ELECTRICAL OUTLETS. SEE PLUMBING, MECHANICAL, FIRE PROTECTION & ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION WORK.
6. ALL PORTIONS OF THE BUILDING TO BE REMOVED SHALL BE LEGALLY DISPOSED OF OFF-SITE UNLESS DIRECTED OTHERWISE.
7. PRECAUTIONS AND TEMPORARY SHORING SHALL BE PLACED TO MAINTAIN THE INTEGRITY OF THE EXISTING STRUCTURE THROUGHOUT DEMOLITION AND MASONRY WORK.
8. CONTRACTOR IS RESPONSIBLE FOR CONTACTING DIG SAFE AND ANY OTHER AUTHORITIES HAVING JURISDICTION PRIOR TO THE START OF DEMOLITION. COMPLY WITH GOVERNING CODES AND REGULATIONS. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED TO COMPLETE THE WORK.
9. PROVIDE WEATHER-TIGHT TEMPORARY PROTECTION FOR ALL OPENINGS IN EXTERIOR WALLS, ROOF, AND AT WINDOWS AND DOORS.
10. SHOULD UNANTICIPATED SUSPECTED HAZARDOUS MATERIALS BE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER & ARCHITECT IMMEDIATELY FOR DIRECTION.
11. PROVIDE CUTTING AND PATCHING WORK TO PROPERLY COMPLETE THE WORK OF THE PROJECT, COMPLYING WITH PROJECT REQUIREMENTS FOR: a) STRUCTURAL WORK; b) MECHANICAL/ ELECTRICAL SYSTEMS; c) VISUAL REQUIREMENTS, INCLUDING DETAILING AND TOLERANCES; d) OPERATIONAL AND SAFETY LIMITATIONS; e) FIRE RESISTANCE RATINGS; f) INSPECTION, PREPARATION AND PERFORMANCE; g) CLEANING.
12. DO NOT CUT AND PATCH IN A MANNER THAT WOULD RESULT IN A FAILURE OF THE WORK TO PERFORM AS INTENDED, DECREASE ENERGY PERFORMANCE, INCREASE MAINTENANCE, DECREASE OPERATION LIFE, OR DECREASE SAFETY PERFORMANCE.
13. MATCH EXISTING MATERIALS FOR CUTTING AND PATCHING WORK WITH NEW MATERIALS CONFORMING TO PROJECT REQUIREMENTS.
14. INSPECT CONDITIONS PRIOR TO WORK TO IDENTIFY SCOPE AND TYPE OF WORK REQUIRED. NOTIFY OWNER OF WORK REQUIRING INTERRUPTION TO BUILDING SERVICES OR OWNER'S OPERATIONS.
15. CUTTING, USE CUTTING TOOLS, NOT CHOPPING TOOLS. MAKE NEAT HOLES. MINIMIZE DAMAGE TO ADJACENT WORK. INSPECT FOR CONCEALED UTILITIES AND STRUCTURE BEFORE CUTTING.
16. PATCHING, MAKE PATCHES, SEAMS, AND JOINTS DURABLE AND INCONSPICUOUS.
17. REFER TO NEW WORK SHEETS FOR RELEVANT DIMENSIONS AND ADDITIONAL NOTES WHERE APPLICABLE.
18. REVIEW UNIQUE EXISTING CONDITIONS FOUND IN THE FIELD DURING DEMOLITION W/ ARCHITECT OR ENGINEER.
19. CONTRACTOR TO ARRANGE FOR DISCONNECT AND CAPPING OF UTILITIES AS REQUIRED. PROTECT UTILITIES TO REMAIN. VERIFY LOCATION AND STATUS OF UTILITIES BEFORE BEGINNING DEMOLITION WORK.
20. VERIFY WITH OWNER BEFORE STARTING WORK WHICH ITEMS ARE TO BE SALVAGED FOR THEIR USE OR REINSTALLATION. CAREFULLY REMOVE AND STORE SUCH ITEMS AS DIRECTED BY OWNER.
21. FOUNDATIONS INDICATED FOR DEMO MUST BE REMOVED COMPLETELY AT AREAS OF FOUNDATION DEMOLITION. THE CONTRACTOR SHALL MAKE ACCOMMODATION FOR TEMPORARY STRUCTURAL SUPPORT TO MAINTAIN THE INTEGRITY OF THE EXCAVATION DURING THE WORK AS NECESSARY. PROVIDE ADEQUATE SECURITY AGAINST ACCIDENTAL TRESPASS. PROTECT EDGE OF EXCAVATION TO PREVENT FALLS.
22. PROTECT ADJACENT AREAS AND STRUCTURES TO REMAIN. CONTRACTOR IS RESPONSIBLE FOR RESTORING ANY AREAS OR SURFACES WHICH ARE DAMAGED BY THE CONTRACTOR OR ANY OF HIS SUBCONTRACTORS DURING DEMOLITION.
23. ALL EXISTING HVAC GRILLES & DIFFUSERS ARE TO BE STOCKPILED FOR RE-INSTALLATION.

HAI PROJECT NO. 1TJL06918.036

Hughes Associates, Inc.
Fire Protection Engineers
Code Consultants
New England Offices

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Fax: (508) 624-7718

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Submission History

No.	Description	Date
1	DESIGN ISSUES SET	03/25/10
2	CODE REVIEW SET	05/03/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

BREWSTER THORNTON GROUP LLP
ARCHITECTS
150 Chestnut Street
Providence, RI
02903
Tel 401.861.1600
Fax 401.861.5588

JOHN H. CHAFEE
SOCIAL SCIENCE CENTER
UNIVERSITY OF RHODE
ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

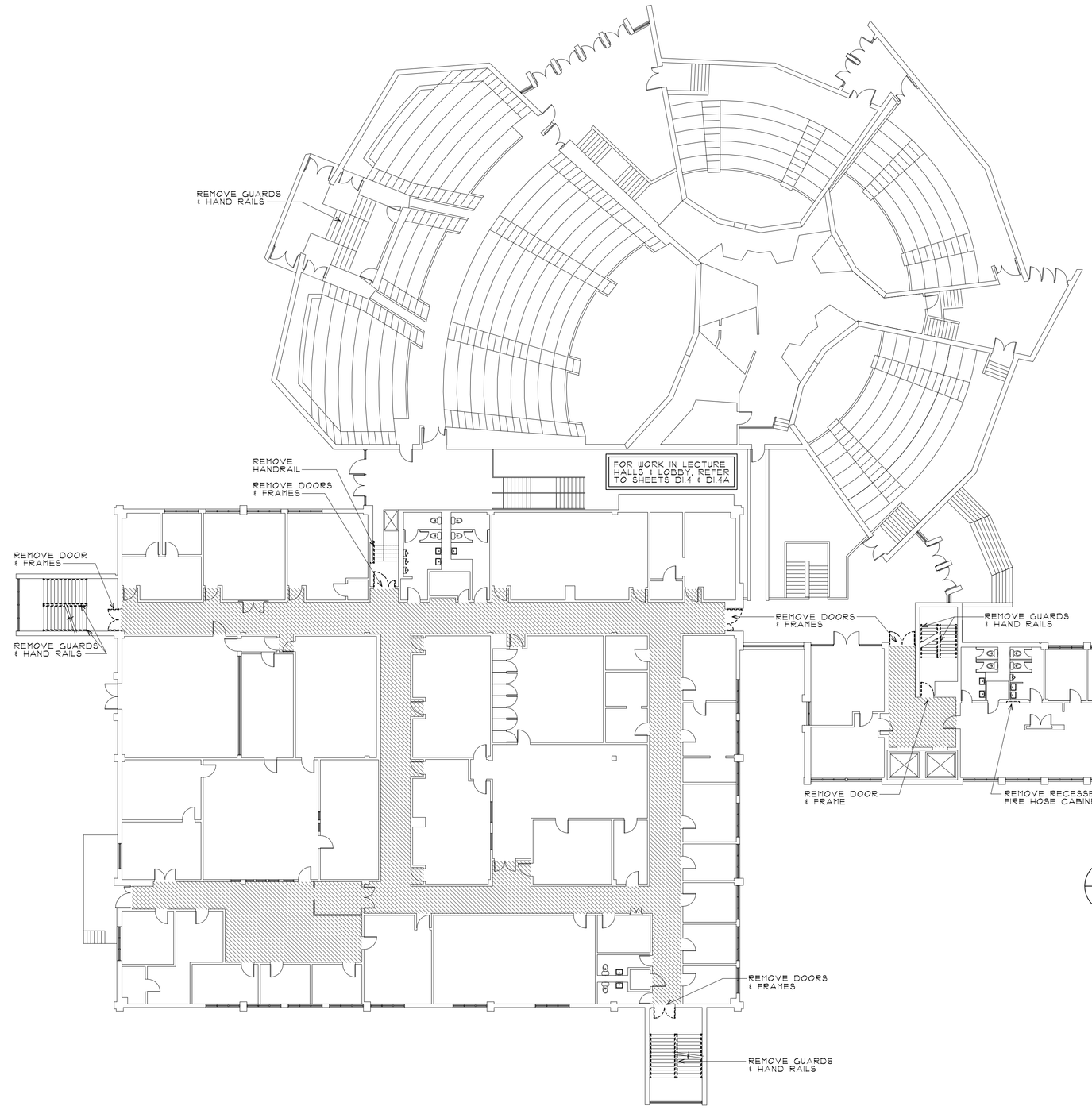
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

BASEMENT &
FIRST FLOOR
DEMOLITION PLANS

Drawing No.

D1.0



1 / D1.1 SECOND FLOOR DEMOLITION PLAN

1/16" = 1'-0"

NORTH

LEGEND

- INDICATES ITEM OR AREA TO REMAIN.
- INDICATES ITEM OR AREA TO BE REMOVED.
- PARTITION WALL TO BE REMOVED IN ITS ENTIRETY.
- EXISTING DOOR TO BE REMOVED.
- INDICATES EXISTING CEILING AND LIGHTING TO BE REMOVED.

DEMOLITION NOTES

GENERAL:

1. - - - - - INDICATES ITEM OR AREA TO BE REMOVED.
2. PROTECT ALL AREAS ADJACENT TO OR AFFECTED BY WORK DURING CONSTRUCTION. PROVIDE DUST CONTAINMENT FOR ALL WORK AREAS.
3. CLEAN WORK AREA AND AREAS AFFECTED BY CUTTING AND PATCHING OPERATIONS.
4. SEE DEMOLITION DRAWINGS FOR SPECIFIC NOTES.
5. CAP ALL ABANDONED PLUMBING LINES AND ELECTRICAL OUTLETS. SEE PLUMBING, MECHANICAL, FIRE PROTECTION & ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION WORK.
6. ALL PORTIONS OF THE BUILDING TO BE REMOVED SHALL BE LEGALLY DISPOSED OF OFF-SITE UNLESS DIRECTED OTHERWISE.
7. PRECAUTIONS AND TEMPORARY SHORING SHALL BE PLACED TO MAINTAIN THE INTEGRITY OF THE EXISTING STRUCTURE THROUGHOUT DEMOLITION AND MASONRY WORK.
8. CONTRACTOR IS RESPONSIBLE FOR CONTACTING DIG SAFE AND ANY OTHER AUTHORITIES HAVING JURISDICTION PRIOR TO THE START OF DEMOLITION. COMPLY WITH GOVERNING CODES AND REGULATIONS. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED TO COMPLETE THE WORK.
9. PROVIDE WEATHER-TIGHT TEMPORARY PROTECTION FOR ALL OPENINGS IN EXTERIOR WALLS, ROOF, AND AT WINDOWS AND DOORS.
10. SHOULD UNANTICIPATED SUSPECTED HAZARDOUS MATERIALS BE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER & ARCHITECT IMMEDIATELY FOR DIRECTION.
11. PROVIDE CUTTING AND PATCHING WORK TO PROPERLY COMPLETE THE WORK OF THE PROJECT, COMPLYING WITH PROJECT REQUIREMENTS FOR: a) STRUCTURAL WORK; b) MECHANICAL/ ELECTRICAL SYSTEMS; c) VISUAL REQUIREMENTS, INCLUDING DETAILING AND TOLERANCES; d) OPERATIONAL AND SAFETY LIMITATIONS; e) FIRE RESISTANCE RATINGS; f) INSPECTION, PREPARATION AND PERFORMANCE; g) CLEANING.
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13. MATCH EXISTING MATERIALS FOR CUTTING AND PATCHING WORK WITH NEW MATERIALS CONFORMING TO PROJECT REQUIREMENTS.
14. INSPECT CONDITIONS PRIOR TO WORK TO IDENTIFY SCOPE AND TYPE OF WORK REQUIRED. NOTIFY OWNER OF WORK REQUIRING INTERRUPTION TO BUILDING SERVICES OR OWNER'S OPERATIONS.
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22. PROTECT ADJACENT AREAS AND STRUCTURES TO REMAIN. CONTRACTOR IS RESPONSIBLE FOR RESTORING ANY AREAS OR SURFACES WHICH ARE DAMAGED BY THE CONTRACTOR OR ANY OF HIS SUBCONTRACTORS DURING DEMOLITION.
23. ALL EXISTING HVAC GRILLES & DIFFUSERS ARE TO BE STOCKPILED FOR RE-INSTALLATION.

HAI PROJECT NO. 1TJL06918.036

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JOHN H. CHAFEE
SOCIAL SCIENCE CENTER
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

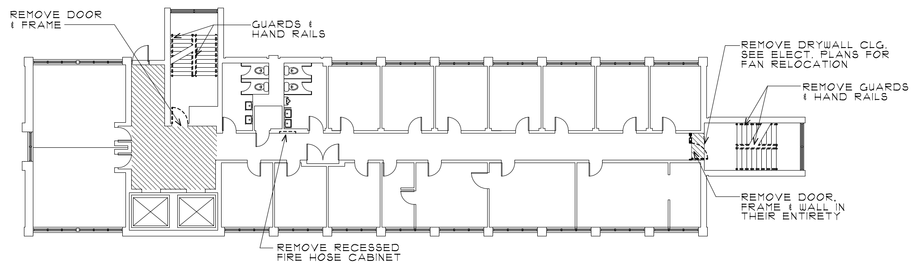
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

SECOND FLOOR DEMOLITION PLAN

Drawing No.

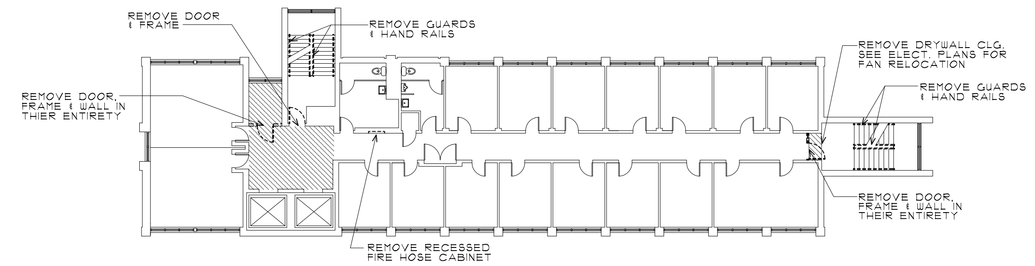
D1.1



1 / D1.2 THIRD FLOOR DEMOLITION PLAN

1/16" = 1'-0"

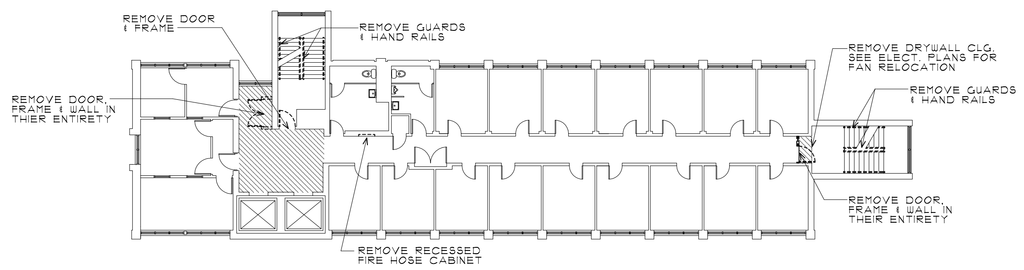
NORTH



4 / D1.2 SIXTH FLOOR DEMOLITION PLAN

1/16" = 1'-0"

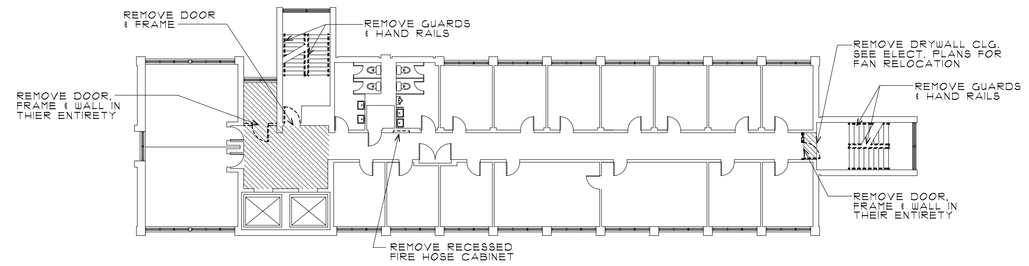
NORTH



2 / D1.2 FOURTH FLOOR DEMOLITION PLAN

1/16" = 1'-0"

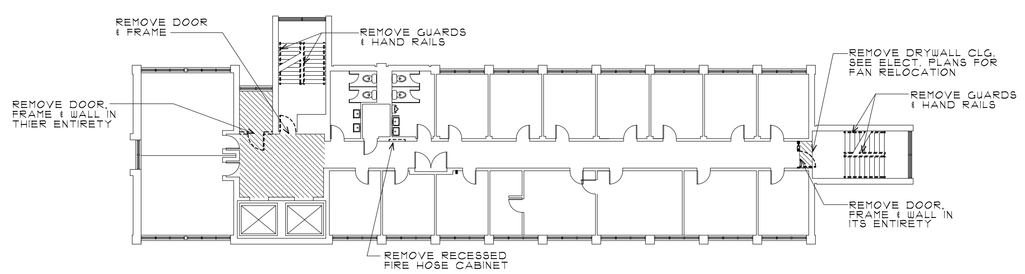
NORTH



5 / D1.2 SEVENTH FLOOR DEMOLITION PLAN

1/16" = 1'-0"

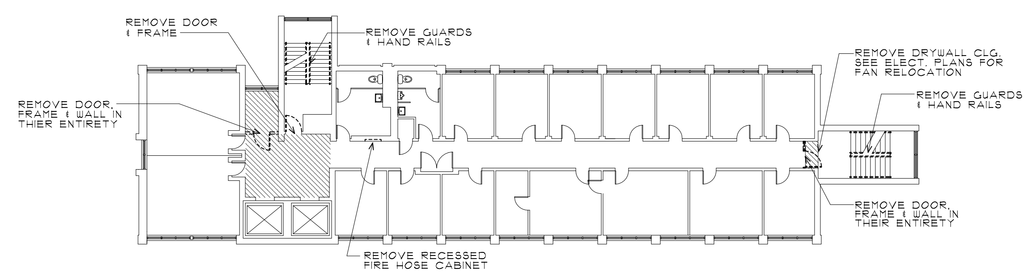
NORTH



3 / D1.2 FIFTH FLOOR DEMOLITION PLAN

1/16" = 1'-0"

NORTH



6 / D1.2 EIGHTH FLOOR DEMOLITION PLAN

1/16" = 1'-0"

NORTH

LEGEND

- INDICATES ITEM OR AREA TO REMAIN.
- INDICATES ITEM OR AREA TO BE REMOVED.
- PARTITION WALL TO BE REMOVED IN ITS ENTIRETY.
- EXISTING DOOR TO BE REMOVED.
- INDICATES EXISTING CEILING AND LIGHTING TO BE REMOVED.

DEMOLITION NOTES

GENERAL:

1. - - - - - INDICATES ITEM OR AREA TO BE REMOVED.
2. PROTECT ALL AREAS ADJACENT TO OR AFFECTED BY WORK DURING CONSTRUCTION. PROVIDE DUST CONTAINMENT FOR ALL WORK AREAS.
3. CLEAN WORK AREA AND AREAS AFFECTED BY CUTTING AND PATCHING OPERATIONS.
4. SEE DEMOLITION DRAWINGS FOR SPECIFIC NOTES.
5. CAP ALL ABANDONED PLUMBING LINES AND ELECTRICAL OUTLETS. SEE PLUMBING, MECHANICAL, FIRE PROTECTION & ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION WORK.
6. ALL PORTIONS OF THE BUILDING TO BE REMOVED SHALL BE LEGALLY DISPOSED OF OFF-SITE UNLESS DIRECTED OTHERWISE.
7. PRECAUTIONS AND TEMPORARY SHORING SHALL BE PLACED TO MAINTAIN THE INTEGRITY OF THE EXISTING STRUCTURE THROUGHOUT DEMOLITION AND MASONRY WORK.
8. CONTRACTOR IS RESPONSIBLE FOR CONTACTING DIG SAFE AND ANY OTHER AUTHORITIES HAVING JURISDICTION PRIOR TO THE START OF DEMOLITION. COMPLY WITH GOVERNING CODES AND REGULATIONS. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED TO COMPLETE THE WORK.
9. PROVIDE WEATHER-TIGHT, TEMPORARY PROTECTION FOR ALL OPENINGS IN EXTERIOR WALLS, ROOF, AND AT WINDOWS AND DOORS.
10. SHOULD UNANTICIPATED SUSPECTED HAZARDOUS MATERIALS BE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER & ARCHITECT IMMEDIATELY FOR DIRECTION.
11. PROVIDE CUTTING AND PATCHING WORK TO PROPERLY COMPLETE THE WORK OF THE PROJECT, COMPLYING WITH PROJECT REQUIREMENTS FOR: a) STRUCTURAL WORK; b) MECHANICAL/ ELECTRICAL SYSTEMS; c) VISUAL REQUIREMENTS, INCLUDING DETAILING AND TOLERANCES; d) OPERATIONAL AND SAFETY LIMITATIONS; e) FIRE RESISTANCE RATINGS; f) INSPECTION, PREPARATION AND PERFORMANCE; g) CLEANING.
12. DO NOT CUT AND PATCH IN A MANNER THAT WOULD RESULT IN A FAILURE OF THE WORK TO PERFORM AS INTENDED, DECREASE ENERGY PERFORMANCE, INCREASE MAINTENANCE, DECREASE OPERATION LIFE, OR DECREASE SAFETY PERFORMANCE.
13. MATCH EXISTING MATERIALS FOR CUTTING AND PATCHING WORK WITH NEW MATERIALS CONFORMING TO PROJECT REQUIREMENTS.
14. INSPECT CONDITIONS PRIOR TO WORK TO IDENTIFY SCOPE AND TYPE OF WORK REQUIRED. NOTIFY OWNER OF WORK REQUIRING INTERRUPTION TO BUILDING SERVICES OR OWNER'S OPERATIONS.
15. CUTTING: USE CUTTING TOOLS, NOT CHOPPING TOOLS. MAKE NEAT HOLES. MINIMIZE DAMAGE TO ADJACENT WORK. INSPECT FOR CONCEALED UTILITIES AND STRUCTURE BEFORE CUTTING.
16. PATCHING: MAKE PATCHES, SEAMS, AND JOINTS DURABLE AND INCONSPICUOUS.
17. REFER TO NEW WORK SHEETS FOR RELEVANT DIMENSIONS AND ADDITIONAL NOTES WHERE APPLICABLE.
18. REVIEW UNIQUE EXISTING CONDITIONS FOUND IN THE FIELD DURING DEMOLITION W/ ARCHITECT OR ENGINEER.
19. CONTRACTOR TO ARRANGE FOR DISCONNECT AND CAPPING OF UTILITIES AS REQUIRED. PROTECT UTILITIES TO REMAIN. VERIFY LOCATION AND STATUS OF UTILITIES BEFORE BEGINNING DEMOLITION WORK.
20. VERIFY WITH OWNER BEFORE STARTING WORK WHICH ITEMS ARE TO BE SALVAGED FOR THEIR USE ON REINSTALLATION. CAREFULLY REMOVE AND STORE SUCH ITEMS AS DIRECTED BY OWNER.
21. FOUNDATIONS INDICATED FOR DEMO MUST BE REMOVED COMPLETELY. - AREAS OF FOUNDATION DEMOLITION: THE CONTRACTOR SHALL MAKE ACCOMMODATION FOR TEMPORARY STRUCTURAL SUPPORT TO MAINTAIN THE INTEGRITY OF THE EXCAVATION DURING THE WORK AS NECESSARY. PROVIDE ADEQUATE SECURITY AGAINST ACCIDENTAL TRESPASS. PROTECT EDGE OF EXCAVATION TO PREVENT FALLS.
22. PROTECT ADJACENT AREAS AND STRUCTURES TO REMAIN. CONTRACTOR IS RESPONSIBLE FOR RESTORING ANY AREAS OR SURFACES WHICH ARE DAMAGED BY THE CONTRACTOR OR ANY OF HIS SUBCONTRACTORS DURING DEMOLITION.
23. ALL EXISTING HVAC GRILLES & DIFFUSERS ARE TO BE STOCKPILED FOR RE-INSTALLATION.

HAI PROJECT NO. 1TJL06918.036

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Fire Protection Engineers
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Submission History

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3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

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JOHN H. CHAFEE
SOCIAL SCIENCE CENTER
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

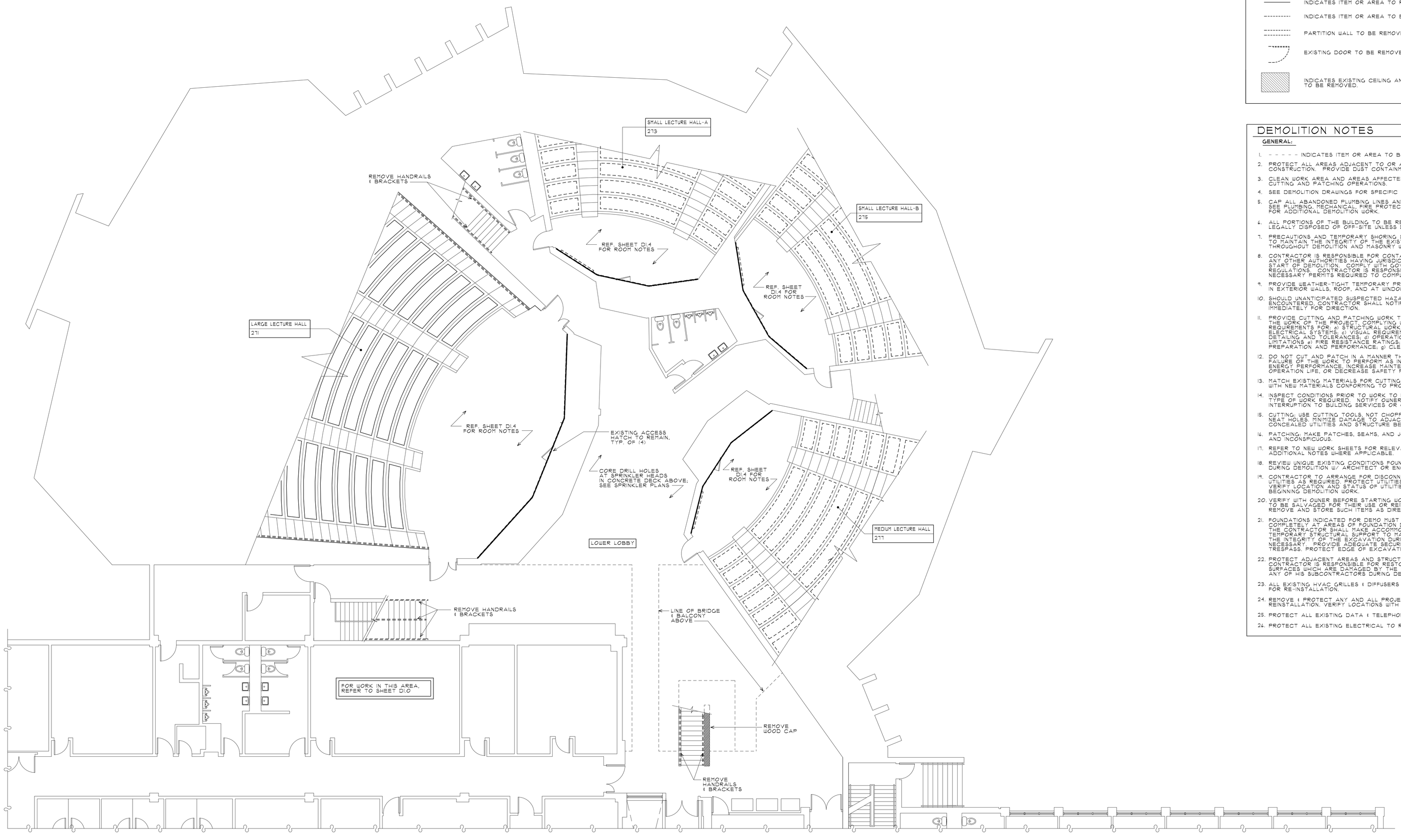
Scale:	AS NOTED
Drawn:	RGT
Design:	NJG
Review:	NJG

Drawing Title

HIGH-RISE
DEMOLITION PLANS

Drawing No.

D1.2



1 / D1.3 ENLARGED FIRST FLOOR DEMOLITION PLAN

1/8" = 1'-0"

NORTH

LEGEND

- INDICATES ITEM OR AREA TO REMAIN.
- INDICATES ITEM OR AREA TO BE REMOVED.
- PARTITION WALL TO BE REMOVED IN ITS ENTIRETY.
- EXISTING DOOR TO BE REMOVED.
- INDICATES EXISTING CEILING AND LIGHTING TO BE REMOVED.

DEMOLITION NOTES

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4. SEE DEMOLITION DRAWINGS FOR SPECIFIC NOTES.
5. CAP ALL ABANDONED PLUMBING LINES AND ELECTRICAL OUTLETS. SEE PLUMBING, MECHANICAL, FIRE PROTECTION & ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION WORK.
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9. PROVIDE WEATHER-TIGHT TEMPORARY PROTECTION FOR ALL OPENINGS IN EXTERIOR WALLS, ROOF, AND AT WINDOWS AND DOORS.
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23. ALL EXISTING HVAC GRILLES & DIFFUSERS ARE TO BE STOCKPILED FOR RE-INSTALLATION.
24. REMOVE & PROTECT ANY AND ALL PROJECTION EQUIPMENT FOR REINSTALLATION. VERIFY LOCATIONS WITH CLIENT & ARCHITECT.
25. PROTECT ALL EXISTING DATA & TELEPHONE CONNECTIONS TO REMAIN.
26. PROTECT ALL EXISTING ELECTRICAL TO REMAIN.

HAI PROJECT NO. 1TJL06918.036

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JOHN H. CHAFEE SOCIAL SCIENCE CENTER
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

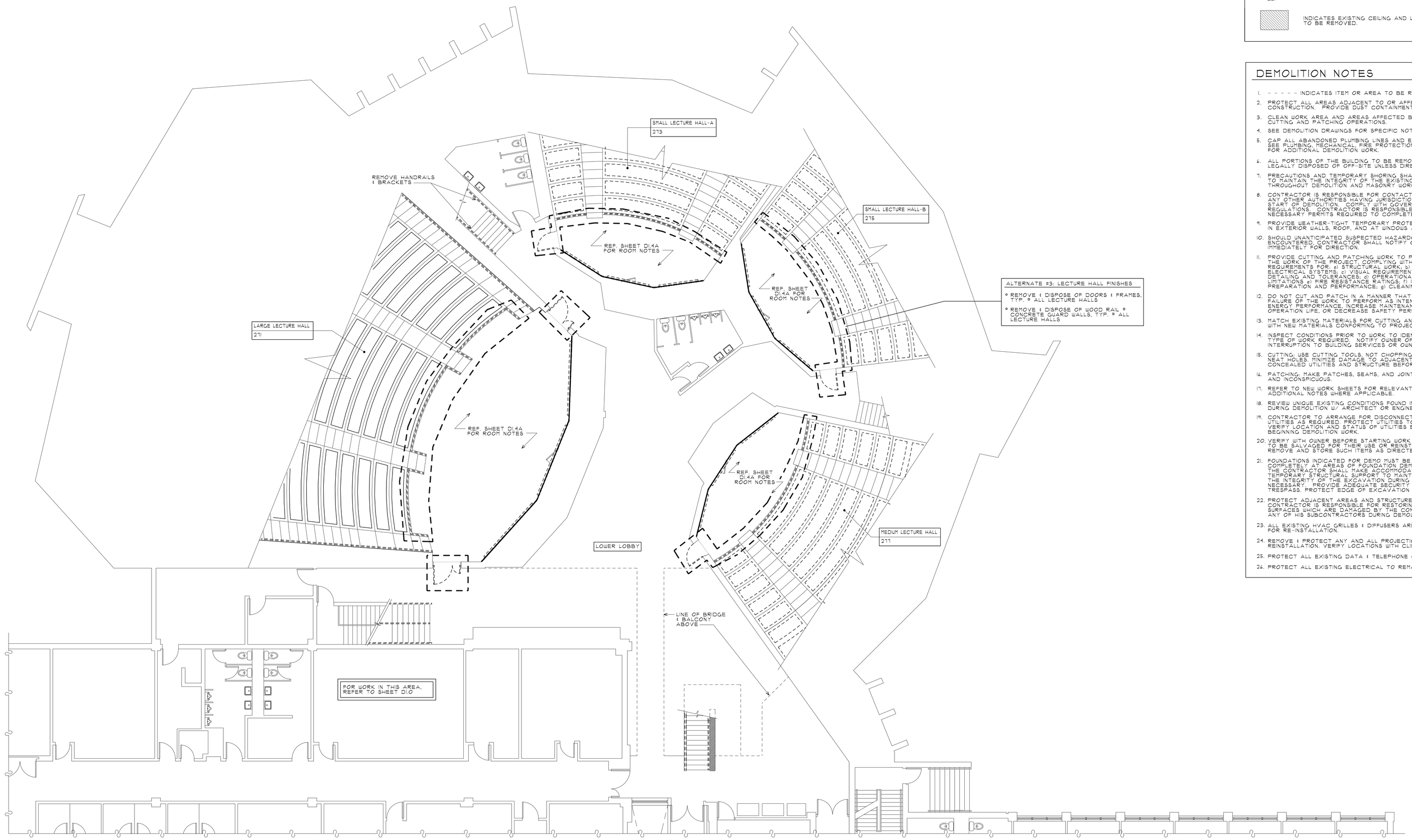
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

ENLARGED FIRST FLOOR DEMOLITION PLAN

Drawing No.

D1.3



1 / D1.3A ENLARGED FIRST FLOOR DEMOLITION PLAN

1/8" = 1'-0"

NORTH

LEGEND

- INDICATES ITEM OR AREA TO REMAIN.
- INDICATES ITEM OR AREA TO BE REMOVED.
- PARTITION WALL TO BE REMOVED IN ITS ENTIRETY.
- EXISTING DOOR TO BE REMOVED.
- INDICATES EXISTING CEILING AND LIGHTING TO BE REMOVED.

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25. PROTECT ALL EXISTING DATA & TELEPHONE CONNECTIONS TO REMAIN.
26. PROTECT ALL EXISTING ELECTRICAL TO REMAIN.

HAI PROJECT NO. 1TJL06918.036

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JOHN H. CHAFEE
SOCIAL SCIENCE CENTER
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

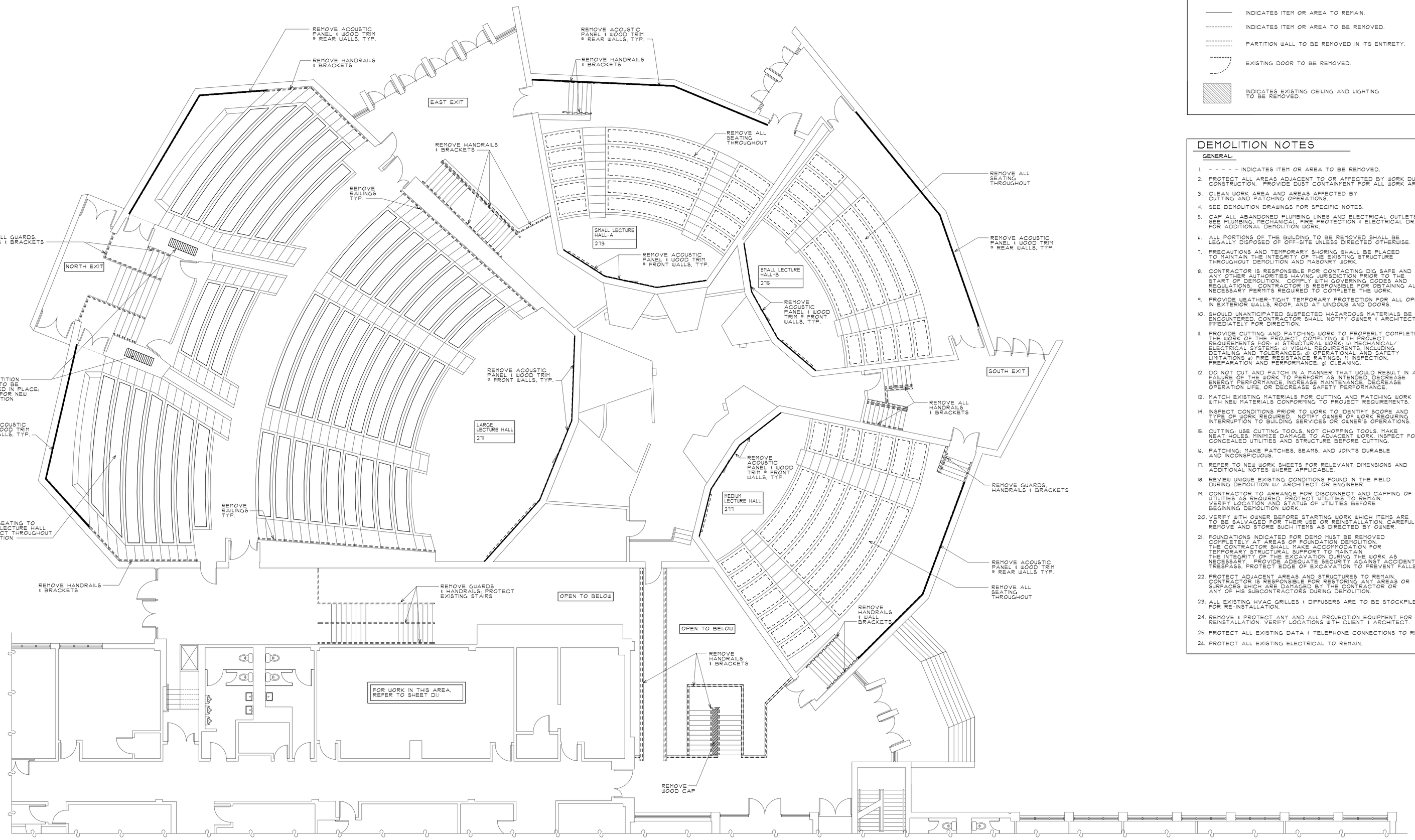
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

ENLARGED
FIRST FLOOR
DEMOLITION PLAN
(ALTERNATES)

Drawing No.

D1.3A



1 / D1.4 ENLARGED SECOND FLOOR DEMOLITION PLAN

1/8" = 1'-0"

NORTH

LEGEND

- INDICATES ITEM OR AREA TO REMAIN.
- INDICATES ITEM OR AREA TO BE REMOVED.
- PARTITION WALL TO BE REMOVED IN ITS ENTIRETY.
- EXISTING DOOR TO BE REMOVED.
- INDICATES EXISTING CEILING AND LIGHTING TO BE REMOVED.

DEMOLITION NOTES

GENERAL:

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26. PROTECT ALL EXISTING ELECTRICAL TO REMAIN.

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
1	DESIGN ISSUE SET	03/25/10
2	CODE REVIEW SET	05/03/10
2A	LECTURE HALL FINISH SET	08/13/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

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JOHN H. CHAFEE
SOCIAL SCIENCE CENTER
UNIVERSITY OF RHODE
ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

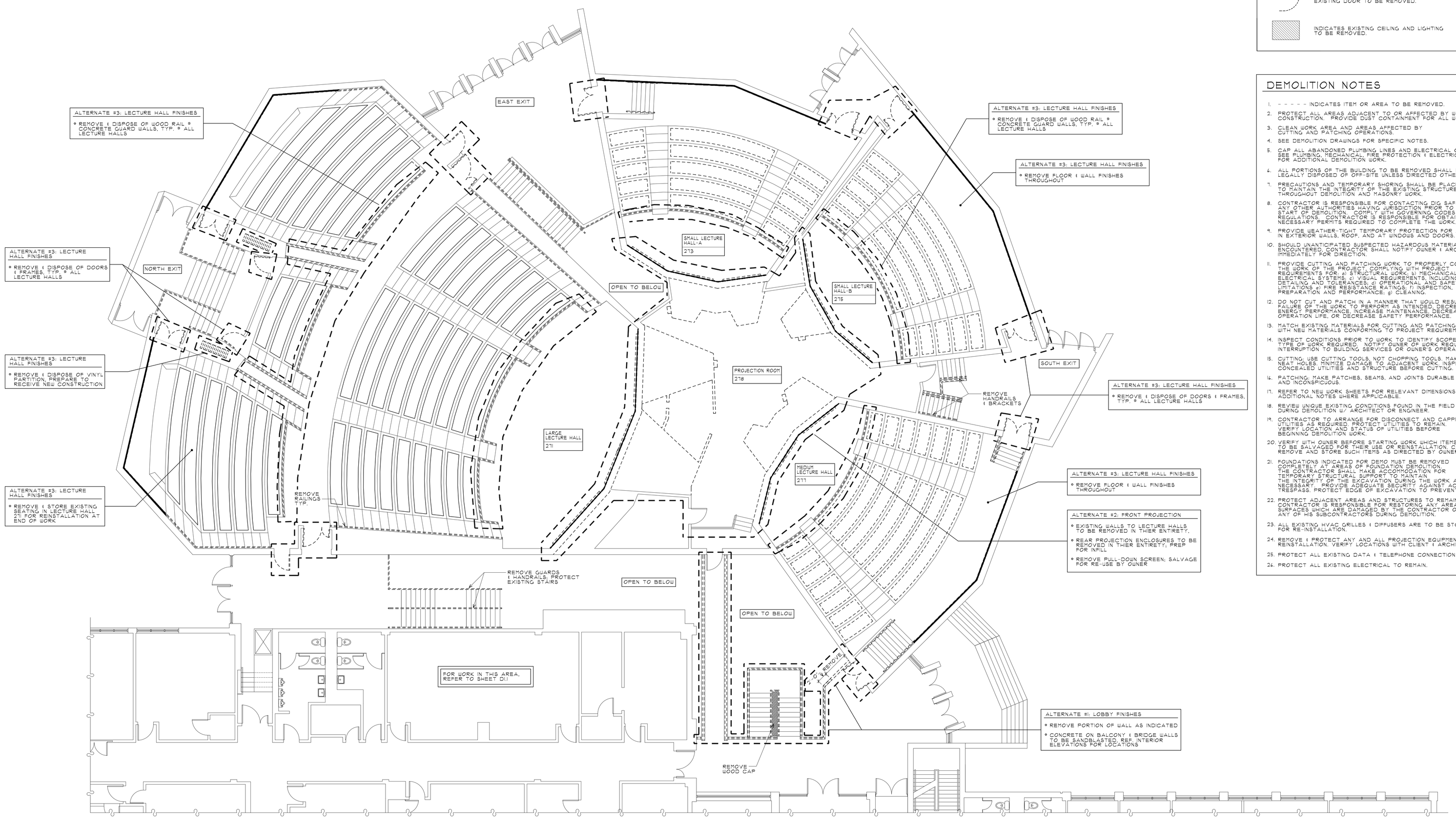
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

ENLARGED
SECOND FLOOR
DEMOLITION PLAN

Drawing No.

D1.4



1 / D1.4A ENLARGED SECOND FLOOR DEMOLITION PLAN

1/8" = 1'-0"

NORTH

LEGEND

- INDICATES ITEM OR AREA TO REMAIN.
- INDICATES ITEM OR AREA TO BE REMOVED.
- PARTITION WALL TO BE REMOVED IN ITS ENTIRETY.
- EXISTING DOOR TO BE REMOVED.
- INDICATES EXISTING CEILING AND LIGHTING TO BE REMOVED.

DEMOLITION NOTES

1. - - - - - INDICATES ITEM OR AREA TO BE REMOVED.
2. PROTECT ALL AREAS ADJACENT TO OR AFFECTED BY WORK DURING CONSTRUCTION. PROVIDE DUST CONTAINMENT FOR ALL WORK AREAS.
3. CLEAN WORK AREA AND AREAS AFFECTED BY CUTTING AND PATCHING OPERATIONS.
4. SEE DEMOLITION DRAWINGS FOR SPECIFIC NOTES.
5. CAP ALL ABANDONED PLUMBING LINES AND ELECTRICAL OUTLETS. SEE PLUMBING, TECHANICAL, FIRE PROTECTION & ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION WORK.
6. ALL PORTIONS OF THE BUILDING TO BE REMOVED SHALL BE LEGALLY DISPOSED OF OFF-SITE UNLESS DIRECTED OTHERWISE.
7. PRECAUTIONS AND TEMPORARY SHORING SHALL BE PLACED TO MAINTAIN THE INTEGRITY OF THE EXISTING STRUCTURE THROUGHOUT DEMOLITION AND MASONRY WORK.
8. CONTRACTOR IS RESPONSIBLE FOR CONTACTING DIG SAFE AND ANY OTHER AUTHORITIES HAVING JURISDICTION PRIOR TO THE START OF DEMOLITION. COMPLY WITH GOVERNING CODES AND REGULATIONS. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED TO COMPLETE THE WORK.
9. PROVIDE WEATHER-TIGHT TEMPORARY PROTECTION FOR ALL OPENINGS IN EXTERIOR WALLS, ROOF, AND AT WINDOWS AND DOORS.
10. SHOULD UNANTICIPATED SUSPECTED HAZARDOUS MATERIALS BE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER & ARCHITECT IMMEDIATELY FOR DIRECTION.
11. PROVIDE CUTTING AND PATCHING WORK TO PROPERLY COMPLETE THE WORK OF THE PROJECT COMPLYING WITH PROJECT REQUIREMENTS FOR: a) STRUCTURAL WORK; b) MECHANICAL/ ELECTRICAL SYSTEMS; c) VISUAL REQUIREMENTS, INCLUDING DETAILING AND TOLERANCES; d) OPERATIONAL AND SAFETY LIMITATIONS; e) FIRE RESISTANCE RATING; f) INSPECTION, PREPARATION AND PERFORMANCE; g) CLEANING.
12. DO NOT CUT AND PATCH IN A MANNER THAT WOULD RESULT IN A FAILURE OF THE WORK TO PERFORM AS INTENDED, DECREASE ENERGY PERFORMANCE, INCREASE MAINTENANCE, DECREASE OPERATION LIFE, OR DECREASE SAFETY PERFORMANCE.
13. MATCH EXISTING MATERIALS FOR CUTTING AND PATCHING WORK WITH NEW MATERIALS CONFORMING TO PROJECT REQUIREMENTS.
14. INSPECT CONDITIONS PRIOR TO WORK TO IDENTIFY SCOPE AND TYPE OF WORK REQUIRED. NOTIFY OWNER OF WORK REQUIRING INTERRUPTION TO BUILDING SERVICES OR OWNER'S OPERATIONS.
15. CUTTING, USE CUTTING TOOLS, NOT CHOPPING TOOLS. MAKE NEAT HOLES. MINIMIZE DAMAGE TO ADJACENT WORK. INSPECT FOR CONCEALED UTILITIES AND STRUCTURE BEFORE CUTTING.
16. PATCHING, MAKE PATCHES, SEAMS, AND JOINTS DURABLE AND INCONSPICUOUS.
17. REFER TO NEW WORK SHEETS FOR RELEVANT DIMENSIONS AND ADDITIONAL NOTES WHERE APPLICABLE.
18. REVIEW UNIQUE EXISTING CONDITIONS FOUND IN THE FIELD DURING DEMOLITION W/ ARCHITECT OR ENGINEER.
19. CONTRACTOR TO ARRANGE FOR DISCONNECT AND CAPPING OF UTILITIES AS REQUIRED. PROTECT UTILITIES TO REMAIN. VERIFY LOCATION AND STATUS OF UTILITIES BEFORE BEGINNING DEMOLITION WORK.
20. VERIFY WITH OWNER BEFORE STARTING WORK WHICH ITEMS ARE TO BE SALVAGED FOR THEIR USE OR REINSTALLATION. CAREFULLY REMOVE AND STORE SUCH ITEMS AS DIRECTED BY OWNER.
21. FOUNDATIONS INDICATED FOR DEMO MUST BE REMOVED COMPLETELY AT AREAS OF FOUNDATION DEMOLITION. THE CONTRACTOR SHALL MAKE ACCOMMODATION FOR TEMPORARY STRUCTURAL SUPPORTS TO MAINTAIN THE INTEGRITY OF THE EXCAVATION DURING THE WORK AS NECESSARY. PROVIDE ADEQUATE SECURITY AGAINST ACCIDENTAL TRESPASS. PROTECT EDGE OF EXCAVATION TO PREVENT FALLS.
22. PROTECT ADJACENT AREAS AND STRUCTURES TO REMAIN. CONTRACTOR IS RESPONSIBLE FOR RESTORING ANY AREAS OR SURFACES WHICH ARE DAMAGED BY THE CONTRACTOR OR ANY OF HIS SUBCONTRACTORS DURING DEMOLITION.
23. ALL EXISTING HVAC GRILLES & DIFFUSERS ARE TO BE STOCKPILED FOR RE-INSTALLATION.
24. REMOVE & PROTECT ANY AND ALL PROJECTION EQUIPMENT FOR REINSTALLATION. VERIFY LOCATIONS WITH CLIENT & ARCHITECT.
25. PROTECT ALL EXISTING DATA & TELEPHONE CONNECTIONS TO REMAIN.
26. PROTECT ALL EXISTING ELECTRICAL TO REMAIN.

HAI PROJECT NO. 1TJL06918.036

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Code Consultants
New England Offices

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JOHN H. CHAFEE
SOCIAL SCIENCE CENTER
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

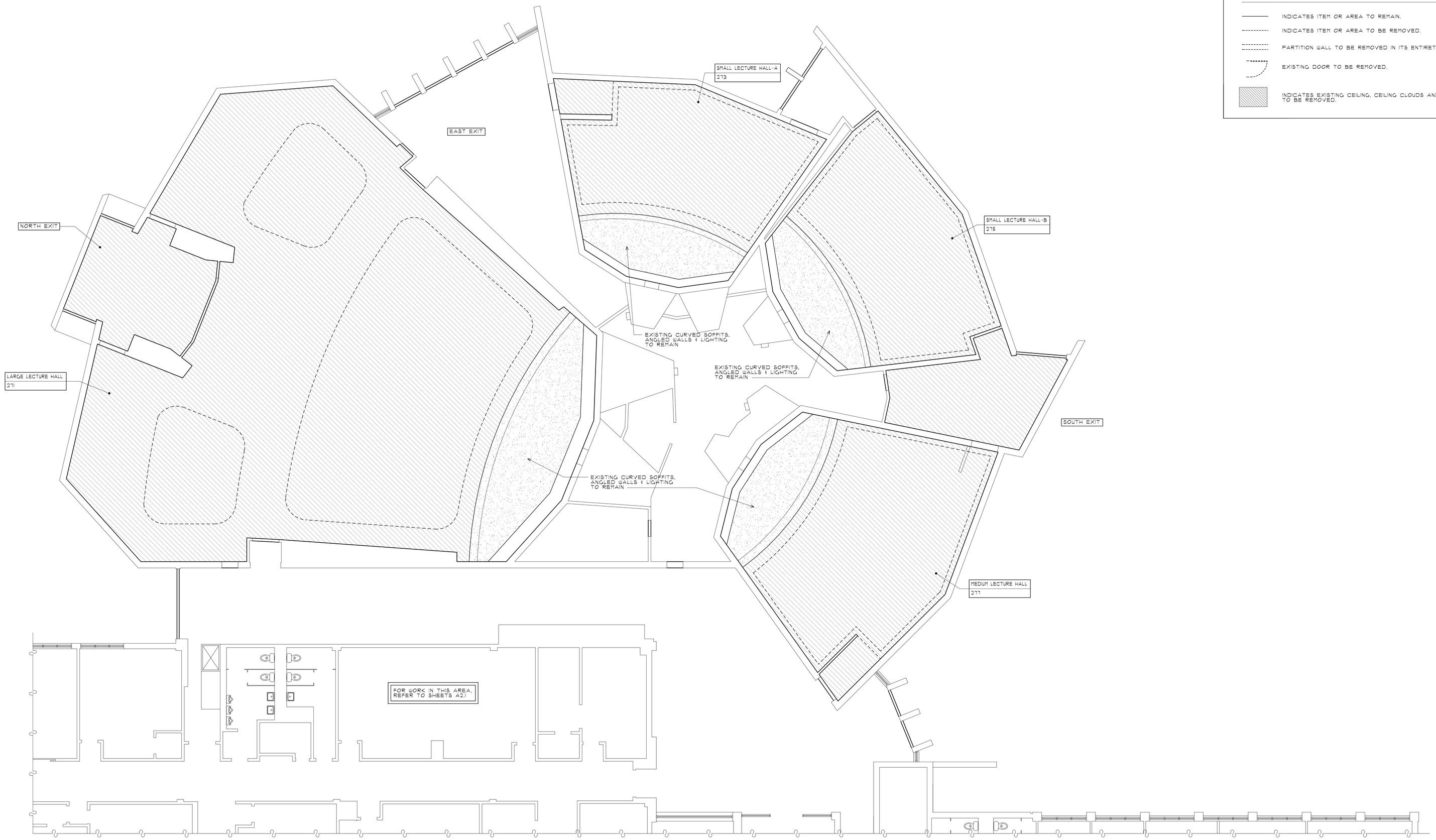
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

ENLARGED SECOND FLOOR DEMOLITION PLAN (ALTERNATES)

Drawing No.

D1.4A



1 / D1.5 ENLARGED SECOND FLOOR REFLECTED CEILING DEMOLITION PLAN

1/8" = 1'-0"

LEGEND

- INDICATES ITEM OR AREA TO REMAIN.
- INDICATES ITEM OR AREA TO BE REMOVED.
- PARTITION WALL TO BE REMOVED IN ITS ENTIRETY.
- EXISTING DOOR TO BE REMOVED.
- INDICATES EXISTING CEILING, CEILING CLOUDS AND LIGHTING TO BE REMOVED.

HAI PROJECT NO. 1TJL06918.036

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UNIVERSITY OF RHODE
ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

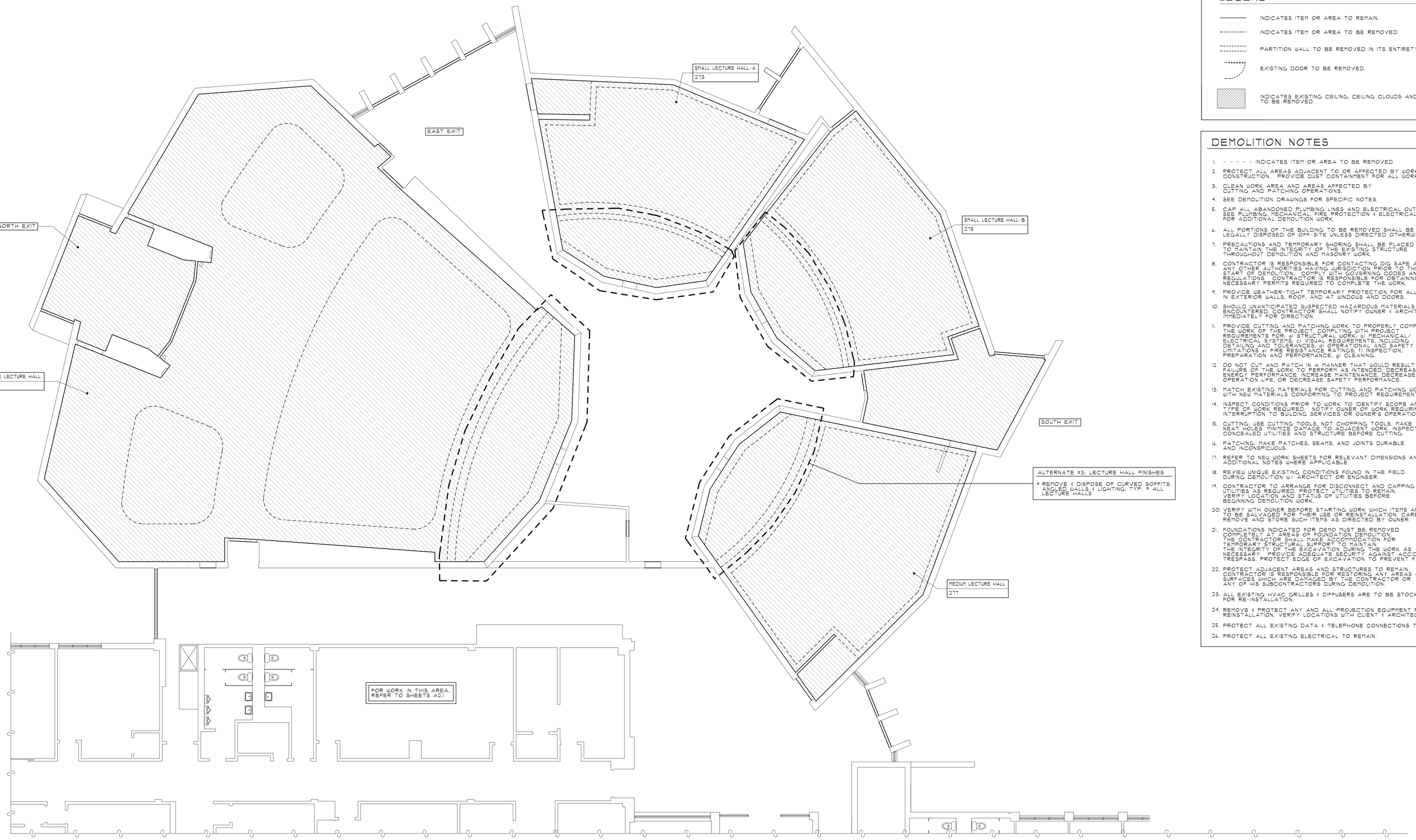
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

ENLARGED SECOND FLOOR REFLECTED CEILING DEMO PLAN

Drawing No.

D1.5



1 / D1.5A ENLARGED SECOND FLOOR REFLECTED CEILING DEMOLITION PLAN

1/8" = 1'-0"

LEGEND

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JOHN H. CHAFEE
SOCIAL SCIENCE CENTER
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description
CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title
ENLARGED SECOND FLOOR REFLECTED CEILING DEMO PLAN (ALTERNATES)

Drawing No.
D1.5A

JOHN H. CHAFEE SOCIAL SCIENCE CENTER UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

HAI PROJECT NO. 1TJL06918.036

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Project Description: CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

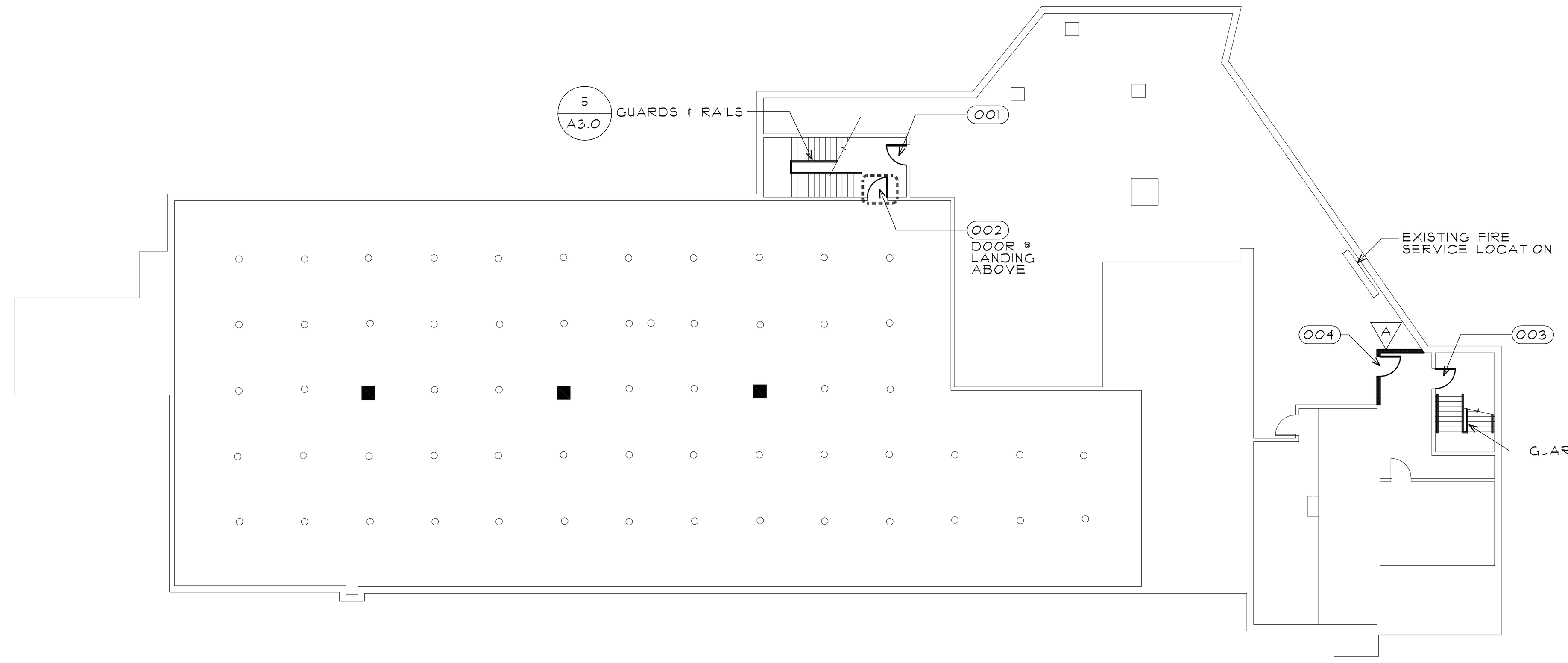
Design:
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title: BASEMENT & FIRST FLOOR PLANS, DOOR SCHEDULE, TYPES. & DETAILS, GEN. NOTES, TYP. ABBV., & LEGEND

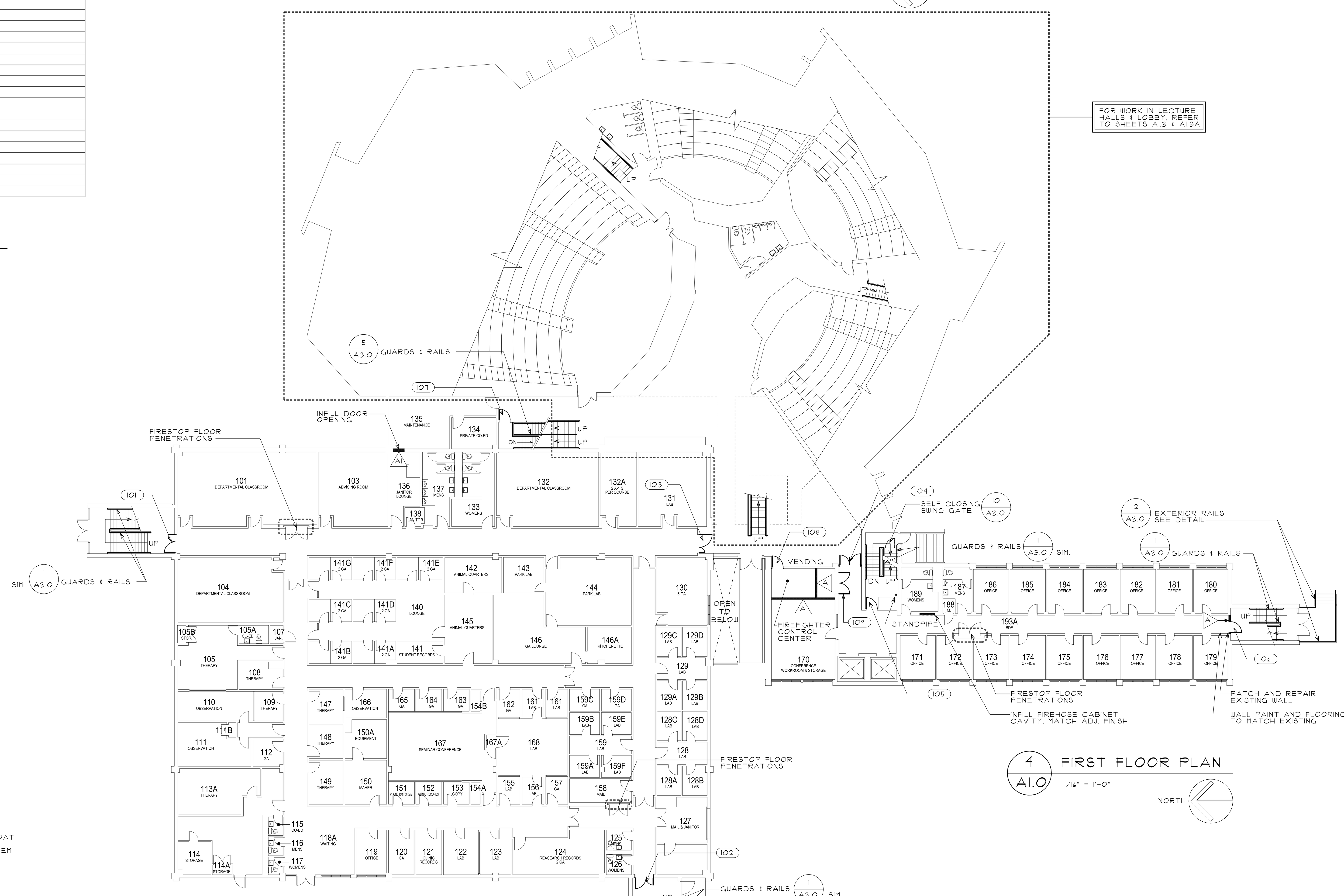
Drawing No. A1.0

LEGEND

CONCRETE	WALL TYPE
CONCRETE MASONRY UNITS	REVISION #1
FACE BRICK	ELEVATION DATUM
RAISED ACCESS FLOOR	ELEVATION KEY
EXISTING PARTITION	SECTION KEY
PARTITION TO BE REMOVED	DETAIL KEY
NEW FRAME PARTITION	ROOM NAME - #
WINDOW SYMBOL	CEILING HEIGHT
DOOR SYMBOL	



1 A1.0 BASEMENT PLAN
1/16" = 1'-0"
NORTH



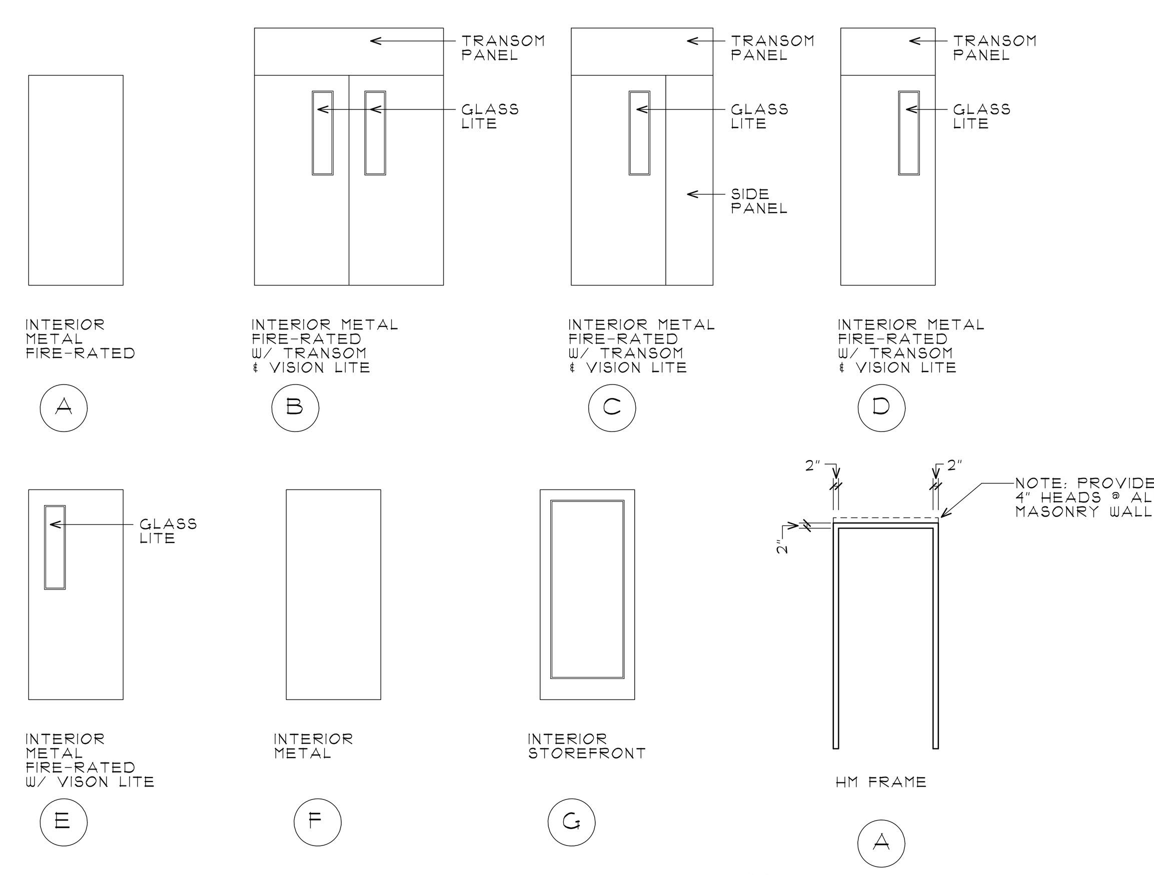
4 A1.0 FIRST FLOOR PLAN
1/16" = 1'-0"
NORTH

DOOR SCHEDULE

NO.	DOOR SIZE	FIRE-RATING	THK	TYPE	MAT	FRAME TYPE	FRAME MAT	HEAD	JAMB	SILL	HDWE GROUP	REMARKS
	BASEMENT											
001	3'-0" X 7'-0"	1 HOUR	1-3/4"	A	MTL	A	MTL	H1/A1.0	J1/A1.0	-	04	
002	3'-0" X 3'-0"	1 HOUR	1-3/4"	A	MTL	A	MTL	H1/A1.0	J1/A1.0	-	02	
003	3'-0" X 7'-0"	1 HOUR	1-3/4"	A	MTL	A	MTL	H1/A1.0	J1/A1.0	-	04	
	FIRST FLOOR											
101	3'-0" & 2'0" X 7'-0"	90 MIN	1-3/4"	C	MTL	A	MTL	H3/A1.0	J3/A1.0	-	07	
102	3'-0" & 2'0" X 7'-0"	90 MIN	1-3/4"	C	MTL	A	MTL	H1/A1.0	J1/A1.0	-	08	
103	3'-6" & 1'-6" X 7'-0"	90 MIN	1-3/4"	C	MTL	A	MTL	H3/A1.0	J3/A1.0	-	06	
104	3'-0" & 2'8" X 7'-0"	90 MIN	1-3/4"	B	MTL	A	MTL	H1/A1.0	J1/A1.0	-	08	
105	3'-0" X 7'-0"	1 HOUR	1-3/4"	D	MTL	A	MTL	H3/A1.0	J1&J3/A1.0	-	03	
106	3'-0" X 7'-0"	1 HOUR	1-3/4"	D	MTL	A	MTL	H2/A1.0	J2/A1.0	-	03	-
107	3'-0" X 7'-0"	1 HOUR	1-3/4"	A	MTL	A	MTL	H3/A1.0	J3/A1.0	-	04	
108	3'-0" X 7'-0"	1 HOUR	1-3/4"	A	MTL	A	MTL	H3/A1.0	J3/A1.0	-	02	
109	(2) 3'-0" X 7'-0"	1 HOUR	1-3/4"	A	MTL	A	MTL	H1/A1.0	J1/A1.0	-	02	
	SECOND FLOOR											
201	3'-0" & 2'0" X 7'-0"	90 MIN	1-3/4"	C	MTL	A	MTL	H1/A1.0	J1/A1.0	-	07	
202	3'-0" & 2'0" X 7'-0"	90 MIN	1-3/4"	C	MTL	A	MTL	H1/A1.0	J1/A1.0	-	07	
203	3'-6" & 1'-6" X 7'-0"	90 MIN	1-3/4"	C	MTL	A	MTL	H3/A1.0	J3/A1.0	-	06	
204	6'-0" X 7'-0"	1 HOUR	1-3/4"	B	MTL	A	MTL	H1/A1.0	J1/A1.0	-	08	
205	3'-0" X 7'-0"	1 HOUR	1-3/4"	D	MTL	A	MTL	H3/A1.0	J1&J3/A1.0	-	03	
206	3'-0" X 7'-0"	1 HOUR	1-3/4"	D	MTL	A	MTL	H2/A1.0	J2/A1.0	-	03	
207	3'-6" & 1'-6" X 7'-0"	NR	1-3/4"	C	MTL	A	MTL	H3/A1.0	J3/A1.0	-	06	
208	NOT USED											
209	NOT USED											
210	NOT USED											
	THIRD FLOOR											
301	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H3/A1.0	J1&J3/A1.0	-	03	
302	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H2/A1.0	J2/A1.0	-	03	-
	FOURTH FLOOR											
401	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H3/A1.0	J1&J3/A1.0	-	03	
402	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H2/A1.0	J2/A1.0	-	03	-
403	(2) 2'-6" X 7'-0"	NR	1-3/4"	F	MTL	A	MTL	H2/A1.0	J2/A1.0	-	05	-
	FIFTH FLOOR											
501	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H3/A1.0	J1&J3/A1.0	-	03	
502	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H2/A1.0	J2/A1.0	-	03	-
503	(2) 2'-6" X 7'-0"	NR	1-3/4"	F	MTL	A	MTL	H2/A1.0	J2/A1.0	-	05	-
	SIXTH FLOOR											
601	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H3/A1.0	J1&J3/A1.0	-	03	
602	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H2/A1.0	J2/A1.0	-	03	-
603	(2) 2'-6" X 7'-0"	NR	1-3/4"	F	MTL	A	MTL	H2/A1.0	J2/A1.0	-	05	-
	SEVENTH FLOOR											
701	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H3/A1.0	J1&J3/A1.0	-	03	
702	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H2/A1.0	J2/A1.0	-	03	-
703	(2) 2'-6" X 7'-0"	NR	1-3/4"	F	MTL	A	MTL	H2/A1.0	J2/A1.0	-	05	-
	EIGHTH FLOOR											
801	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H3/A1.1	J1&J3/A1.1	-	03	
802	3'-0" X 7'-0"	90 MIN	1-3/4"	E	MTL	A	MTL	H2/A1.1	J2/A1.1	-	03	-
803	(2) 2'-6" X 7'-0"	NR	1-3/4"	F	MTL	A	MTL	H2/A1.1	J2/A1.1	-	05	-

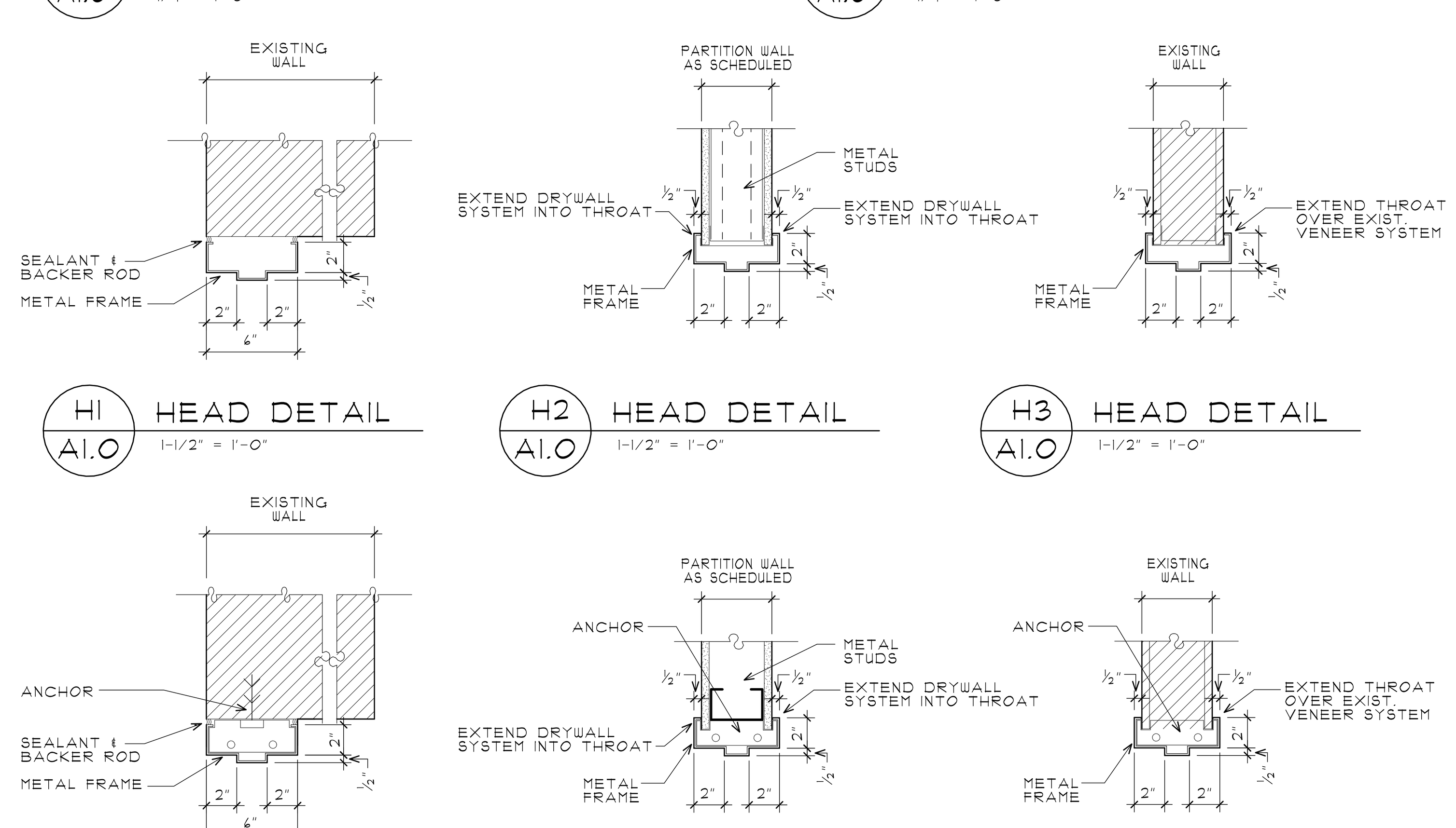
n/a - Not Applicable, GL - Glass, MTL - Metal, NR - No Rating, EX - Existing, ALUM or AL - Aluminum, WD - Wood, INS - Insulated, SC - Solid Core, HC - Hollow Core, HM - Hollow Metal (Galvanized)

NOTES: #1 - SEE SHEETS A1.3 & A1.4 FOR DOORS IN LECTURE HALL AREA



2 A1.0 DOOR TYPES
1/4" = 1'-0"

3 A1.0 FRAME TYPES
1/4" = 1'-0"



H1 A1.0 HEAD DETAIL 1-1/2" = 1'-0"

H2 A1.0 HEAD DETAIL 1-1/2" = 1'-0"

H3 A1.0 HEAD DETAIL 1-1/2" = 1'-0"

J1 A1.0 JAMB DETAIL 1-1/2" = 1'-0"

J2 A1.0 JAMB DETAIL 1-1/2" = 1'-0"

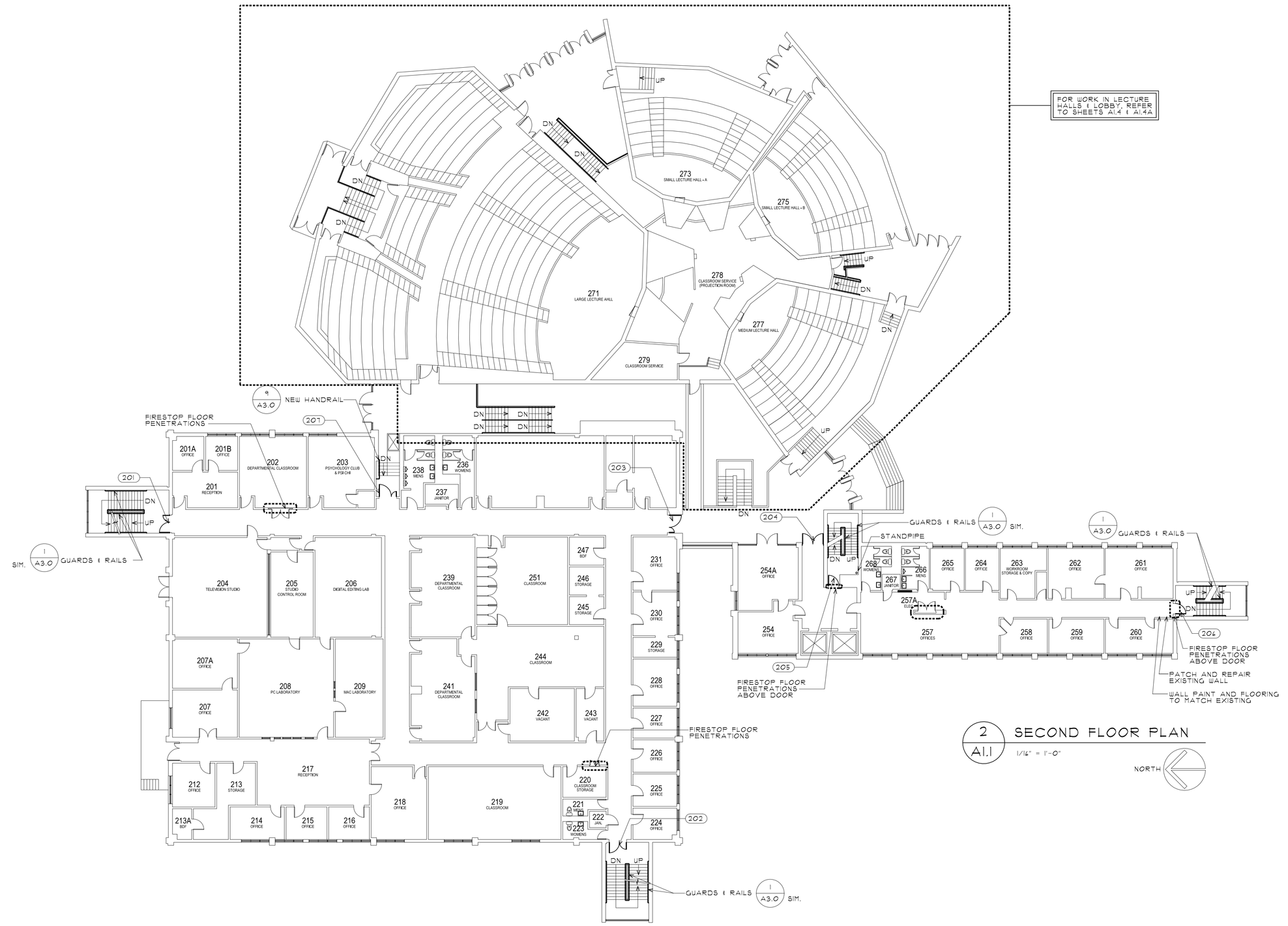
J3 A1.0 JAMB DETAIL 1-1/2" = 1'-0"

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO ALL APPLICABLE CODES AND REGULATIONS IN EFFECT AT THE PROJECT SITE.
2. DO NOT SCALE DRAWINGS.
3. THE CONTRACTOR SHALL REPORT ANY AND ALL DISCREPANCIES TO THE ARCHITECT FOR CLARIFICATION BEFORE PROCEEDING.
4. ALL DIMENSIONS ARE TO THE FACE OF CONCRETE & MASONRY; CENTER OF FRAME PARTITITONS AND FRAME OPENINGS UNLESS NOTED OTHERWISE.
5. DIMENSIONS NOTED TO EXISTING PLANES SHALL REFER TO THE FINISHED SURFACE OF THE WALL, FLOOR OR CEILING PLANE.
6. ALL ITEMS OF WORK ARE TO BE NEW, UNLESS NOTED AS EXISTING.
7. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD BEFORE PURCHASING MATERIALS.
8. TYPICAL CONSTRUCTION IS NOTED THROUGHOUT THE PROJECT. REPEATED SIMILAR GRAPHIC REPRESENTATION IS SUFFICIENT. NOTES AT EACH OCCURRENCE ARE NOT REQUIRED.
9. ALL ITEMS DETAILED IN SECTION ARE CONTINUOUS UNLESS NOTED OTHERWISE.
10. FASTENERS, ADHESIVES AND OTHER SYSTEM COMPONENTS TYPICALLY REQUIRED ARE NOT CONSISTENTLY NOTED OR DETAILED. ONLY UNIQUE CONDITIONS ARE ILLUSTRATED. PROVIDE ALL ITEMS REQUIRED TO SAFELY SECURE, ATTACH OR STABILIZE ALL WORK AS RECOMMENDED OR REQUIRED BY CODE, OR NECESSARY FOR THE ASSEMBLY'S PROPER PERFORMANCE WHETHER OR NOT DETAILED.
11. REFER TO PROJECT SPECIFICATIONS & ASBESTOS ABATEMENT PLAN FOR ADDITIONAL INFORMATION.

TYP. ABBREVIATIONS - USE OF PUNCTUATION IS OPTIONAL

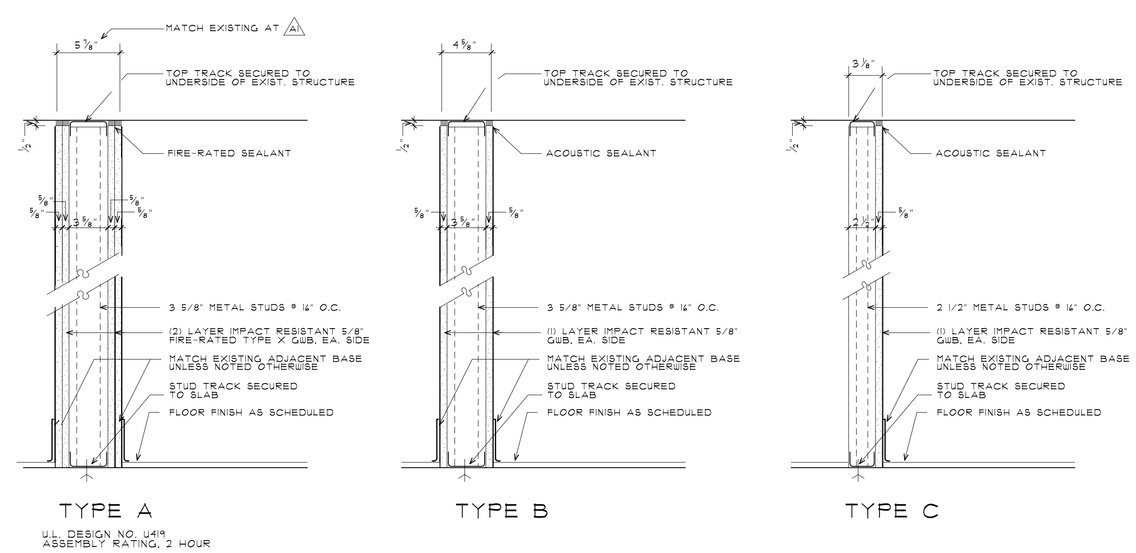
ADA	AMERICANS WITH DISABILITIES ACT	DEMO	DEMOLITION	HIWB	HIGH IMPACT WALL BOARD	RWB	RUBBER WALL BASE
ADD'L	ADDITIONAL	DF.	DRINKING FOUNTAIN	HT.	HEIGHT	SD	SIDE
ADJ.	ADJACENT	DIA.	DIAMETER	INT.	INTERIOR	SF	SQUARE FOOT
A.F.	ABOVE SUBFLOOR	DISP.	DISPOSE	INSUL.	INSULATION	SGL	SAFETY GLASS
A.F.F.	ABOVE FINISHED FLOOR	DN	DOWN	K.B.	KNOX BOX	SIM.	SIMILAR
AL.	ALUMINUM	D.S.	DOWNSPOUT	LAV	LAVATORY	SQ.	SQUARE
ALUM.	ALUMINUM	DTL.	DETAIL	L.C.C.	LEAD COATED COPPER	SQ. FT.	SQUARE FOOT
ALT.	ALTERNATE/ALTERNATIVE	DWG	DRAWING	LIN.	LINOLEUM	S.S.	STAINLESS STEEL
ARCH.	ARCHITECT	DWGS	DRAWINGS	MACH.	MACHINE	STL.	STEEL
ALTERN.	ALTERNATE	EL.	ELEVATION OR ELEVATOR	MAX.	MAXIMUM	STRUCT.	STRUCTURAL
&	AND	E.M.S.	ENTRY MAT SYSTEM	MFGR.	MANUFACTURER	T	TREAD
@	AT	EXIST.	EXISTING	MIL	MILLIMETER	TGL	TEMPERED GLASS
BOTT	BOTTOM	EXT.	EXTERIOR	MIN.	MINUTE FIRERATING OR MINIMUM	THRESH	THRESHOLD
B.O.F.	BASE OF FOOTING	EQ	EQUAL	MTL.	METAL	T.O.	TOP OF
BLKG.	BLOCKING	E.V.	EXHAUST VENT	M.O.	MASONRY OPENING	T.O.F.	TOP OF FOOTING
BIT.	BITUMEN OR BITUMENOUS	F.A.	FIRE ALARM	N/A	NOT APPLICABLE	T.O.S.	TOP OF SHELF
BSMT.	BASEMENT	F.E.	FIRE EXTINGUISHER	N.I.C.	NOT IN CONTRACT	T.O.W.	TOP OF WALL
BLUEBD.	BLUEBOARD (VENEER PLASTER BASE)	F.D.	FLOOR DRAIN	NR	NOT RATED	T.S.	TUBE STEEL
CG.	COLUMN GRID	FIN. FLR.	FINISH FLOOR	N.T.S.	NOT TO SCALE	TYP.	TYPICAL
CL.	CENTERLINE	FIN. SCH.	FINISH SCHEDULE	O.C.	ON CENTER	U.N.O.	UNLESS NOTED OTHERWISE
CLG.	CEILING	FLR.	FLOOR	O.H.	OVERHEAD	V.A.T.	VINYL ASBESTOS TILE
CLR.	CLEAR	F.P.	FIRE PROTECTION	OPP.	OPPOSITE HAND	VCT	VINYL COMPOSITION TILE
C.L.L.	CONTRACT LIMIT LINE	FND.	FOUNDATION	PREP	PREPARATION	V.I.F.	VERIFY IN FIELD
C.U.H.	CABINET UNIT HEATER	F.O.	FACE OF	P.C.C.	PRE-CAST CONCRETE	VPS	VENEER PLASTER SYSTEM
C.O.	CASED OPENING	F/R, FR	FIRE RETARDANT	PL.	PLATE	W/	WITH
COL.	COLUMN	FRP	FIRE RESISTANT FIBERGLASS PANELS	PNL.	PANEL	WDW	WINDOW
CONC.	CONCRETE	GA.	GAUGE	P.T.	PRESSURE TREATED	WD.	WOOD
CONT.	CONTINUOUS	GALV.	GALVANIZED	PTD.	PAINTED	WWF	WELDED WIRE FABRIC
COORD.	COORDINATE	GL.	GLASS	P.V.	PLUMBING VENT		
DEG	DEGREES	GWB	GYPSUM WALLBOARD	PWD.	PLYWOOD		
		HC	HANDICAPPED	REQ'D	REQUIRED		
		HM	HOLLOW METAL	R	RISER		
				R#	RADIUS		
				RCP	REFLECTED CEILING PLAN		
				RM.	ROOM		
				R.O.	ROUGH OPENING		



2 A1.1 SECOND FLOOR PLAN

1/16" = 1'-0"

NORTH



8 A1.1 INTERIOR PARTITION TYPES (SHOWN IN SECTION, U.N.O.)

1= 1/2" = 1'-0"

NOTES:

1. ALL NOTES APPLY EQUALLY TO BOTH SIDES OF WALL WHEN GRAPHICALLY REPRESENTED AS SIMILAR. REPEAT OF NOTE IS NOT NECESSARY
2. ITEMS SHOWN IN SECTION ARE CONTINUOUS UNLESS NOTED OTHERWISE
3. REFER TO DETAILS FOR TYPICAL DUCT & PIPE PENETRATIONS.

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
1	DESIGN ISSUE SET	03/25/10
2	CODE REVIEW SET	05/03/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

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Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

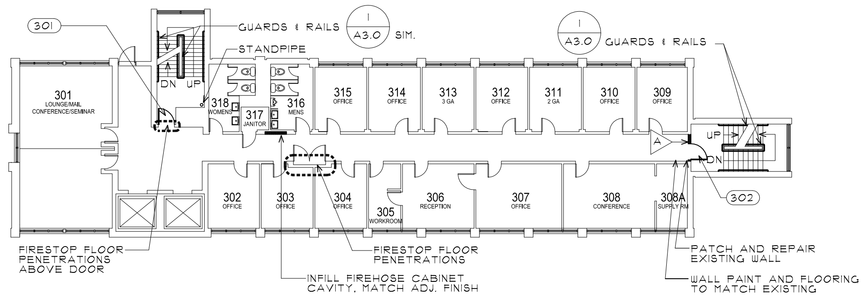
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

SECOND FLOOR

Drawing No.

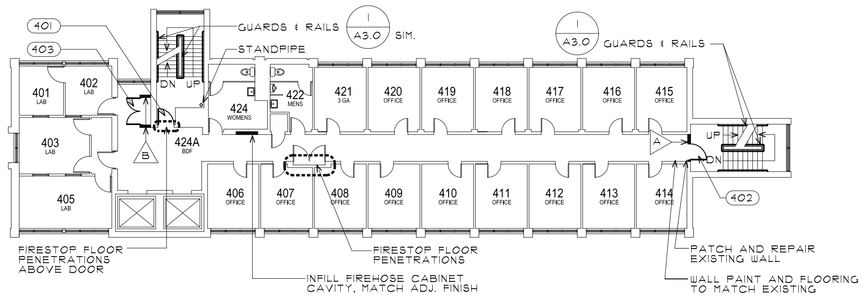
A1.1



1 / A1.2 THIRD FLOOR PLAN

1/16" = 1'-0"

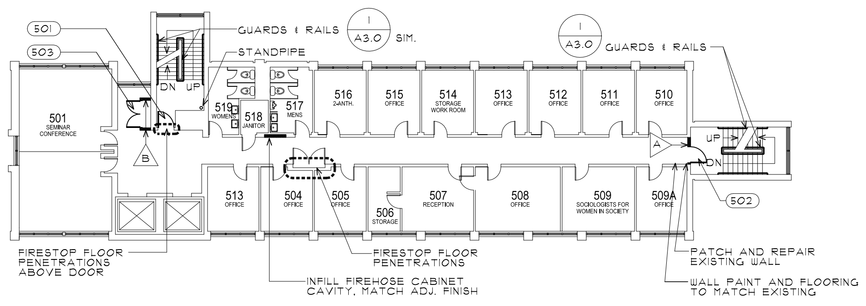
NORTH



2 / A1.2 FOURTH FLOOR PLAN

1/16" = 1'-0"

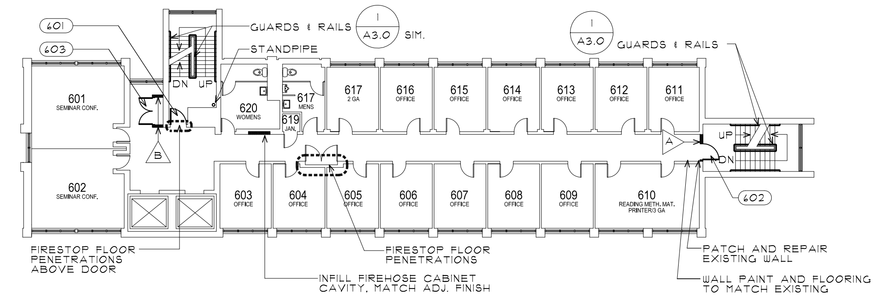
NORTH



3 / A1.2 FIFTH FLOOR PLAN

1/16" = 1'-0"

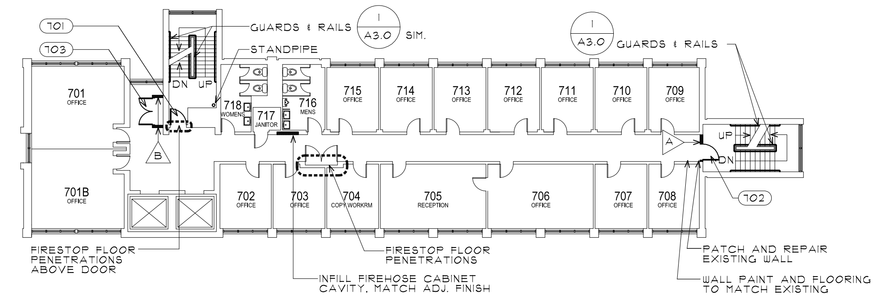
NORTH



4 / A1.2 SIXTH FLOOR PLAN

1/16" = 1'-0"

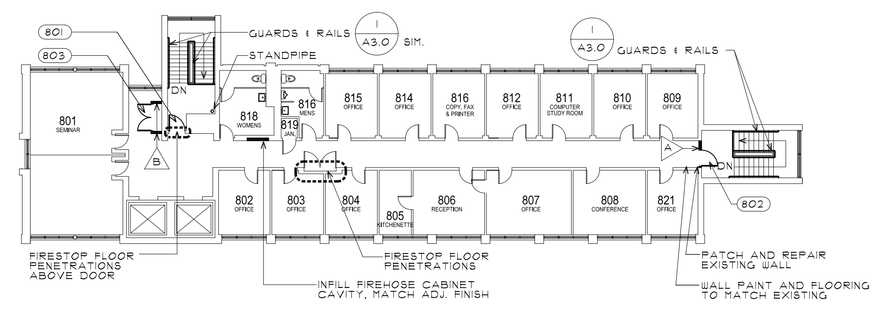
NORTH



5 / A1.2 SEVENTH FLOOR PLAN

1/16" = 1'-0"

NORTH



6 / A1.2 EIGHTH FLOOR PLAN

1/16" = 1'-0"

NORTH

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
1	DESIGN ISSUE SET	03/25/10
2	CODE REVIEW SET	05/03/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

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UNIVERSITY OF RHODE
ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

HIGH-RISE FLOOR PLANS
(THIRD TO EIGHTH FLS.)

Drawing No.

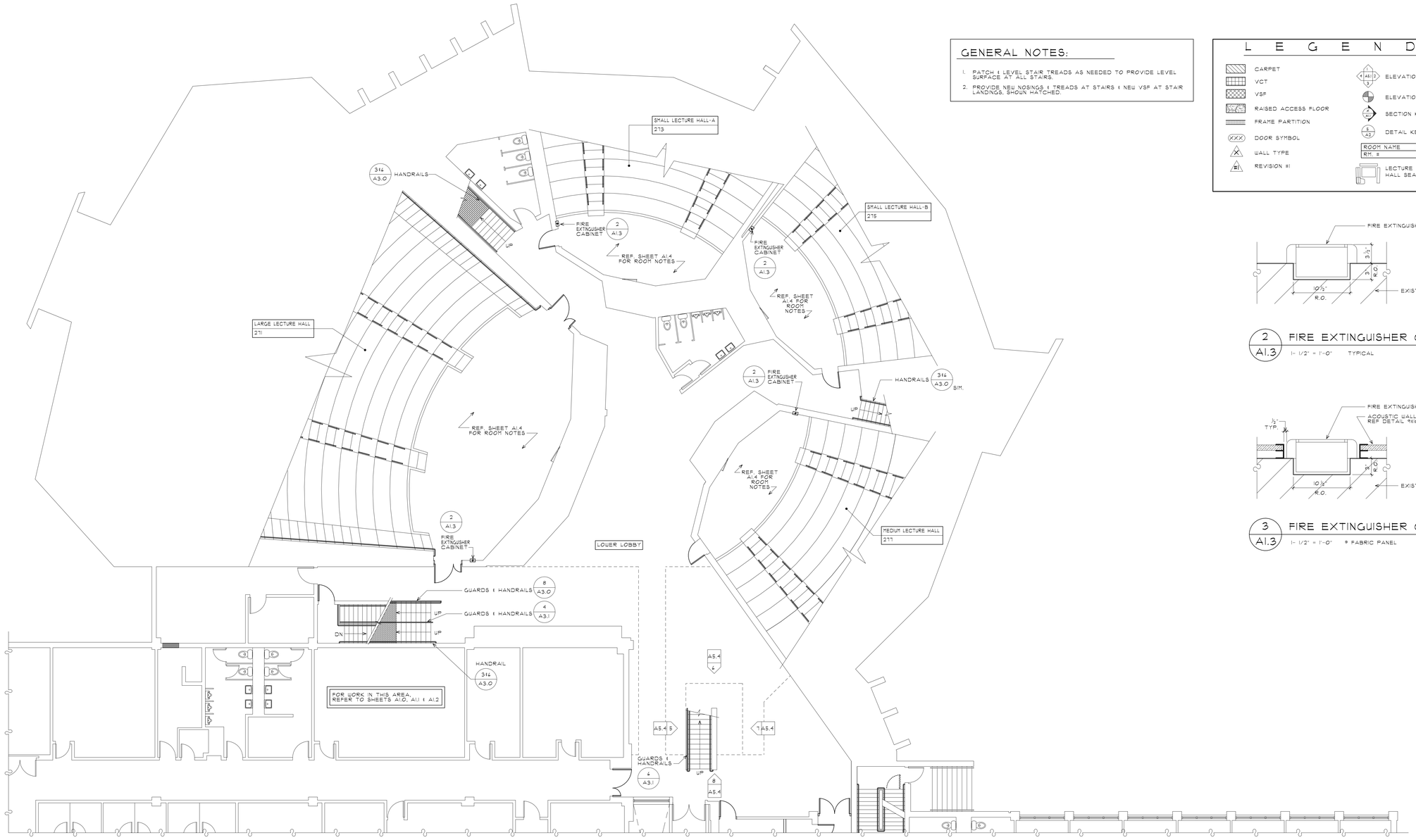
A1.2

GENERAL NOTES:

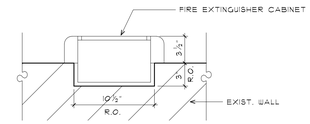
1. PATCH & LEVEL STAIR TREADS AS NEEDED TO PROVIDE LEVEL SURFACE AT ALL STAIRS.
2. PROVIDE NEW NOSINGS & TREADS AT STAIRS & NEW VSF AT STAIR LANDINGS, SHOWN HATCHED.

L E G E N D

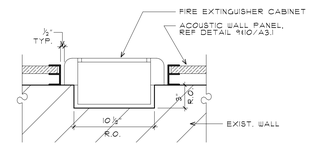
- CARPET
- VCT
- VSF
- RAISED ACCESS FLOOR
- FRAME PARTITION
- DOOR SYMBOL
- WALL TYPE
- REVISION #1
- ELEVATION KEY
- ELEVATION DATUM
- SECTION KEY
- DETAIL KEY
- ROOM NAME / RM. #
- LECTURE HALL SEAT



1 A1.3 ENLARGED FIRST FLOOR PLAN
1/8" = 1'-0"



2 A1.3 FIRE EXTINGUISHER CAB.
1- 1/2" = 1'-0" TYPICAL



3 A1.3 FIRE EXTINGUISHER CAB.
1- 1/2" = 1'-0" @ FABRIC PANEL

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
2	CODE REVIEW SET	2/15/10
2A	LECTURE HALL FINISH SET	08/13/10
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4	FINAL BID SET	12/07/10

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Kingston, Rhode Island

Seal

Project Description
CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title
ENLARGED FIRST FLOOR PLAN OF LECTURE HALLS

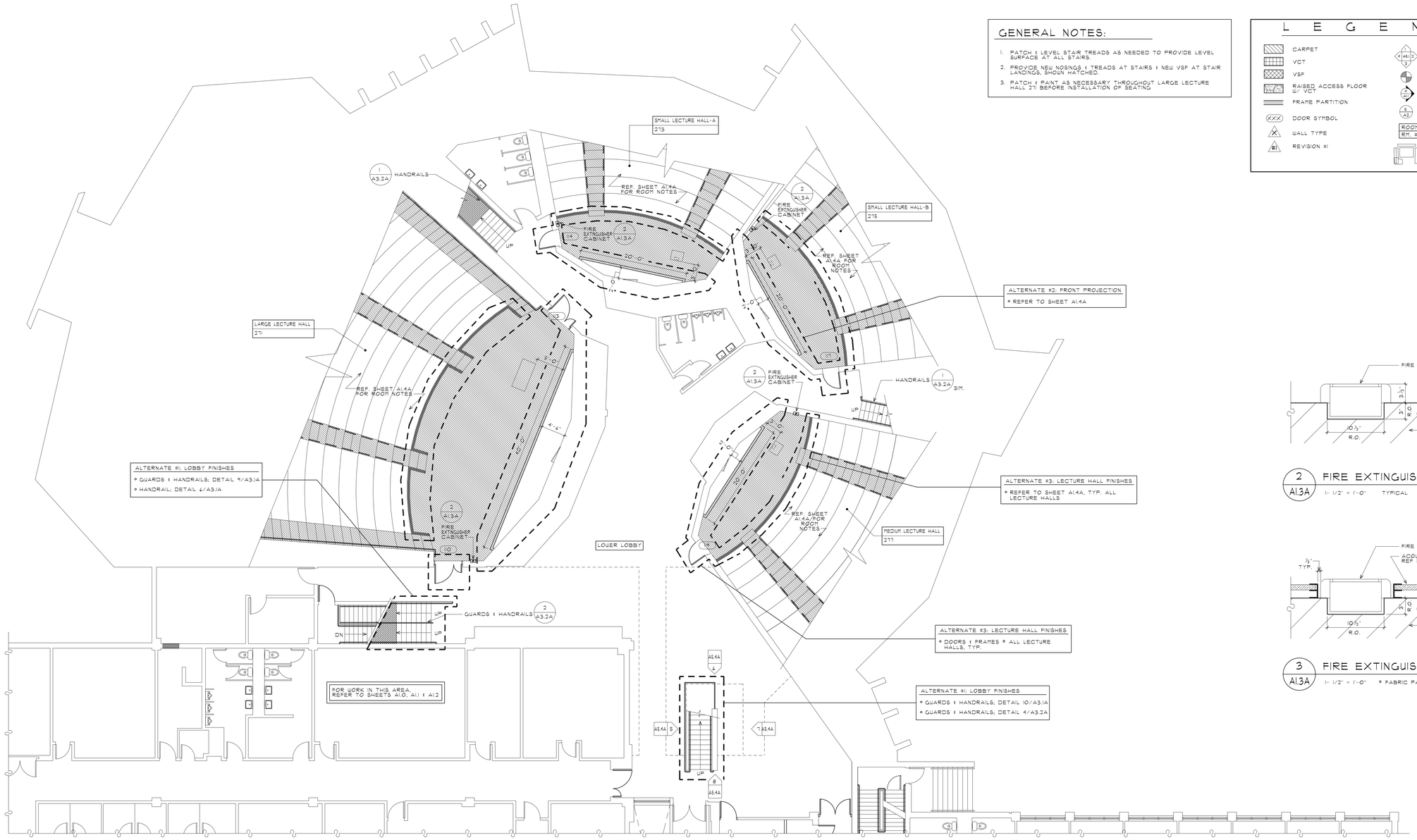
Drawing No.
A1.3

GENERAL NOTES:

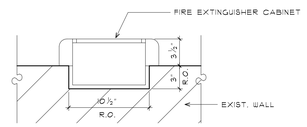
1. PATCH & LEVEL STAIR TREADS AS NEEDED TO PROVIDE LEVEL SURFACE AT ALL STAIRS.
2. PROVIDE NEW NOSINGS & TREADS AT STAIRS & NEW VSF AT STAIR LANDINGS, SHOWN HATCHED.
3. PATCH & PAINT AS NECESSARY THROUGHOUT LARGE LECTURE HALL 211 BEFORE INSTALLATION OF SEATING

L E G E N D

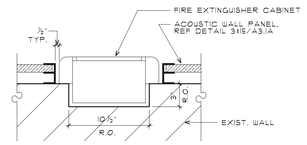
- CARPET
- VCT
- VSF
- RAISED ACCESS FLOOR W/ VCT
- FRAME PARTITION
- DOOR SYMBOL
- WALL TYPE
- REVISION #1
- ELEVATION KEY
- ELEVATION DATUM
- SECTION KEY
- DETAIL KEY
- ROOM NAME (RM. #)
- LECTURE HALL SEAT



1 / A1.3A ENLARGED FIRST FLOOR PLAN
1/8" = 1'-0"



2 / A1.3A FIRE EXTINGUISHER CAB.
1- 1/2" = 1'-0" TYPICAL



3 / A1.3A FIRE EXTINGUISHER CAB.
1- 1/2" = 1'-0" @ FABRIC PANEL

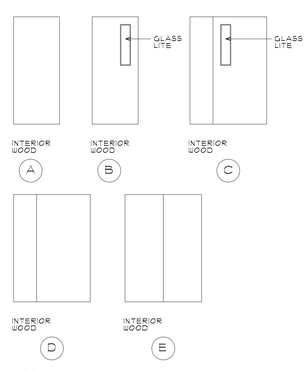
ALTERNATE #3: LECTURE HALL FINISHES
* LECTURE HALL DOOR & FRAMES AS NOTED BELOW

LECTURE HALLS - FIRST FLOOR DOOR SCHEDULE

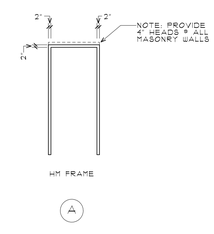
	DOOR					FRAME					HDWE	
NO.	SIZE	FIRE-RATING	THK	TYPE	MAT	TYPE	MAT	HEAD	JAMB	SILL	GROUP	REMARKS
110	3'-4" & 1'-4" X 7'-0"	NR	1-3/4"	C	WD	A	MTL	H1/A1.3A	J1/A1.3A	-	03	
111	NOT USED	-	-	-	-	-	-	-	-	-	-	
112	NOT USED	-	-	-	-	-	-	-	-	-	-	
113	3'-4" & 1'-4" X 7'-0"	NR	1-3/4"	C	WD	A	MTL	H1/A1.3A	J1/A1.3A	-	03	
114	3'-0" X 7'-0"	NR	1-3/4"	B	WD	A	MTL	H1/A1.3A	J1/A1.3A	-	02	
115	NOT USED	-	-	-	-	-	-	-	-	-	-	
116	NOT USED	-	-	-	-	-	-	-	-	-	-	
117	3'-0" X 7'-0"	NR	1-3/4"	B	WD	A	MTL	H1/A1.3A	J1/A1.3A	-	02	
118	NOT USED	-	-	-	-	-	-	-	-	-	-	
119	3'-0" X 7'-0"	NR	1-3/4"	B	WD	A	MTL	H1/A1.3A	J1/A1.3A	-	02	

N/A - Not Applicable
GL - Glass
MTL - Metal
NR - No Rating
EX - Existing
ALUM or AL - Aluminum
WD - Wood
INS - Insulated
SC - Solid Core
HC - Hollow Core
HM - Hollow Metal (Galvanized)

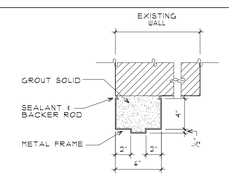
NOTES: #1 - XXXX
#2 - XXXX



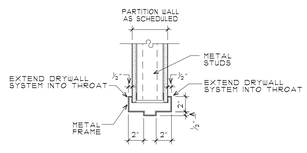
4 / A1.3A DOOR TYPE
1/4" = 1'-0"



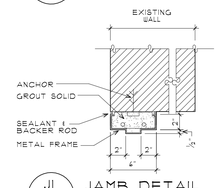
5 / A1.3A FRAME TYPE
1/4" = 1'-0"



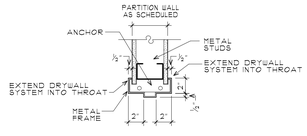
H1 / A1.3A HEAD DETAIL
1-1/2" = 1'-0"



H2 / A1.3A HEAD DETAIL
1-1/2" = 1'-0"



J1 / A1.3A JAMB DETAIL
1-1/2" = 1'-0"



J2 / A1.3A JAMB DETAIL
1-1/2" = 1'-0"

HAI PROJECT NO. 1TJL06918.036

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2	CODE REVIEW SET	2/15/10
2A	LECTURE HALL FINISH SET	08/13/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

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JOHN H. CHAFEE SOCIAL SCIENCE CENTER UNIVERSITY OF RHODE ISLAND Kingston, Rhode Island

Seal

Project Description: CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title: ENLARGED FIRST FLOOR PLAN OF LECTURE HALLS, DOOR SCHEDULE (ALTERNATES)

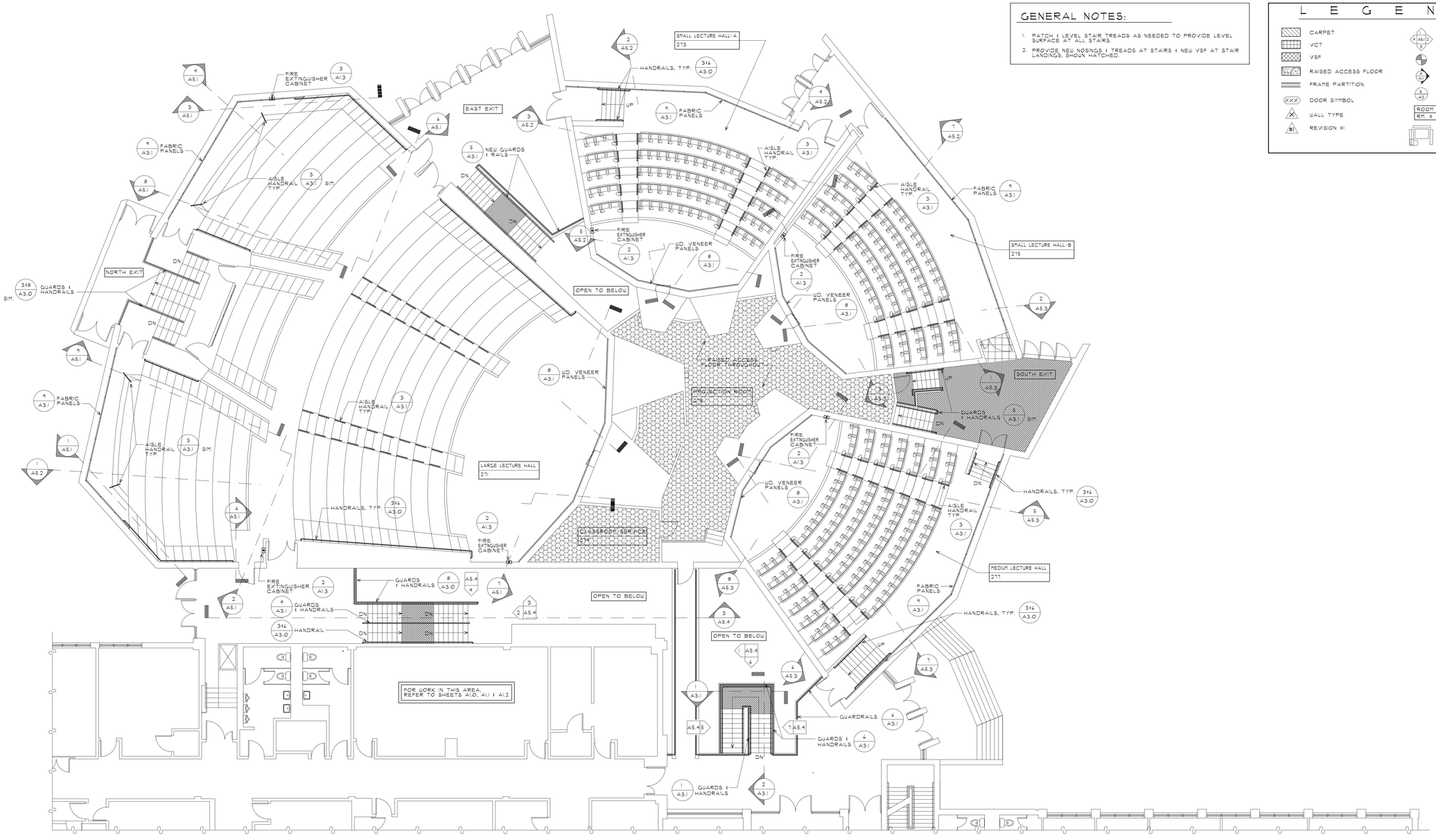
Drawing No. A1.3A

GENERAL NOTES:

1. PATCH & LEVEL STAIR TREADS AS NEEDED TO PROVIDE LEVEL SURFACE AT ALL STAIRS.
2. PROVIDE NEW NOSINGS & TREADS AT STAIRS & NEW VSF AT STAIR LANDINGS, SHOWN HATCHED.

L E G E N D

- CARPET
- VCT
- VSF
- RAISED ACCESS FLOOR
- FRAME PARTITION
- DOOR SYMBOL
- WALL TYPE
- REVISION #1
- ELEVATION KEY
- ELEVATION DATUM
- SECTION KEY
- DETAIL KEY
- ROOM NAME / RM. #
- LECTURE HALL SEAT



1 / A1.4 ENLARGED SECOND FLOOR PLAN

1/8" = 1'-0"

NORTH

FINISH SCHEDULE

ROOM #	ROOM NAME	FLOOR	BASE	WALLS					CEILING	NOTES
		FINISH	FINISH	NORTH	EAST	SOUTH	WEST	TRIM	FINISH	
271	LARGE LECTURE HALL	–	–	AWP-1/P-1	P-1	AWP-4/P-1	P-1	P-2	ACT/GWB	LOW WALLS: P-10
273	SM. LECTURE HALL A	–	–	P-5	AWP-3/P-5	P-5	AWP-4/P-5	P-6	ACT/GWB	LOW WALLS: P-6
275	SM. LECTURE HALL B	–	–	P-7	AWP-1/P-7	P-7	AWP-4/P-7	P-8	ACT/GWB	LOW WALLS: P-12
277	MED. LECTURE HALL	–	–	AWP-4/P-3	P-3	AWP-2/P-3	P-3	P-4	ACT/GWB	LOW WALLS: P-11
278	PROJECTION ROOM	VCT-2	–	EXIST.	EXIST.	EXIST.	EXIST.	–	–	RAISED ACCESS FLOOR
279	CLASSROOM SERVICE	VCT-2	–	EXIST.	EXIST.	EXIST.	EXIST.	–	–	RAISED ACCESS FLOOR
	NORTH EXIT	–	–	EXIST.	EXIST.	EXIST.	EXIST.	–	ACT	STAIR TREADS & RISERS
	SOUTH EXIT	VSF-2	–	EXIST.	EXIST.	EXIST.	EXIST.	–	–	STAIR TREADS & RISERS
	EAST EXIT	VSF-1	–	EXIST.	EXIST.	EXIST.	EXIST.	–	–	STAIR TREADS & RISERS
	LOBBY	VSF-1	–	EXIST.	EXIST.	EXIST.	EXIST.	–	–	STAIR TREADS & RISERS

ABBREVIATIONS:

ACT - ACOUSTIC CEILING TILE
AWP - ACOUSTIC WALL PANEL
CONC - CONCRETE
CPT - CARPET
CT - CERAMIC TILE
CT-W - CERAMIC WALL TILE
CLR - COLOR
GWB - GYPSUM WALL BOARD
LIN - LINOLEUM
MDF - MEDIUM DENSITY FIBERBOARD
MTL - METAL
N/A - NOT APPLICABLE
PLAM - PLASTIC LAMINATE
PTD - PAINTED
P - PAINT
RT- RUBBER TILE
SLD - SOLID SURFACE
VCT - VINYL COMPOSITION TILE
VB - VINYL WALL BASE
VSF - VINYL SHEET FLOORING
WD - WOOD

NOTES:

1. REFER TO INTERIOR ELEVATIONS (A5 SHEETS) FOR ACCENTS, PATTERN LOCATIONS & ADDITIONAL DETAILS.

ACOUSTIC WALL PANEL SCHEDULE

AWP-#	LOCATION	MATERIAL	STYLE	ORIENTATION	ATTACHMENT
AWP-1	LECTURE HALLS @ BACK WALLS	FABRIC	CLR: 'WHEAT'	VERTICAL	9/A3.1
AWP-2	LECTURE HALLS @ BACK WALLS	FABRIC	CLR: 'LEAF'	VERTICAL	9/A3.1
AWP-3	LECTURE HALLS @ BACK WALLS	FABRIC	CLR: 'BONE'	VERTICAL	9/A3.1
AWP-4	NOT USED				
AWP-5	NOT USED				
AWP-6	LECTURE HALLS @ FRONT & SIDE WALLS	WOOD	SOLID	HORIZONTAL	8/A3.1
AWP-7	NOT USED				
AWP-8	NOT USED				
AWP-9	NOT USED				

HAI PROJECT NO. 1TJL06918.036

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JOHN H. CHAFEE SOCIAL SCIENCE CENTER
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Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

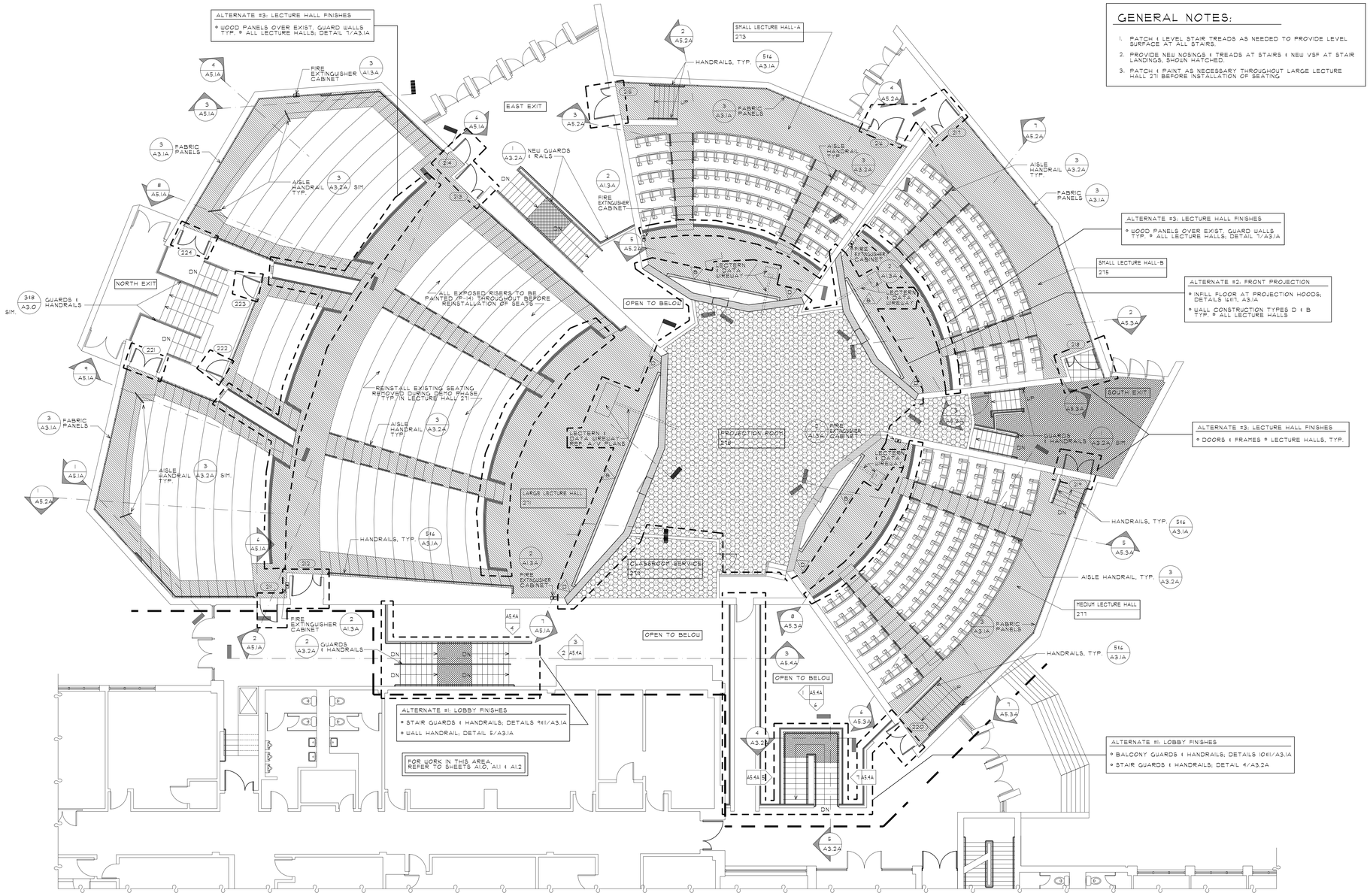
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

ENLARGED SECOND FLOOR PLAN OF LECTURE HALLS, FINISH SCHEDULES

Drawing No.

A1.4



1 A1.4A ENLARGED SECOND FLOOR PLAN
1/8" = 1'-0"

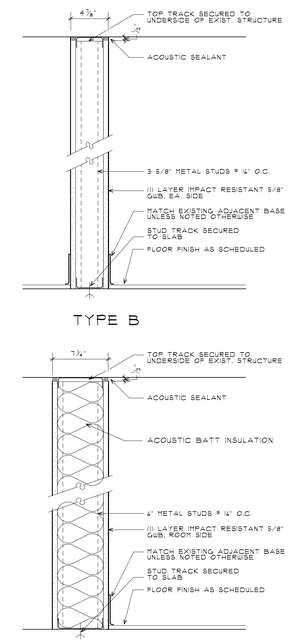
NORTH

GENERAL NOTES:

1. PATCH & LEVEL STAIR TREADS AS NEEDED TO PROVIDE LEVEL SURFACE AT ALL STAIRS.
2. PROVIDE NEW NOSINGS & TREADS AT STAIRS & NEW VSF AT STAIR LANDINGS, SHOWN HATCHED.
3. PATCH & PAINT AS NECESSARY THROUGHOUT LARGE LECTURE HALL 211 BEFORE INSTALLATION OF SEATING

L E G E N D

- CARPET
- VCT
- VSF
- RAISED ACCESS FLOOR W/ VCT
- FRAME PARTITION
- DOOR SYMBOL
- WALL TYPE
- REVISION #1
- ELEVATION KEY
- ELEVATION DATUM
- SECTION KEY
- DETAIL KEY
- ROOM NAME / RM. #
- LECTURE HALL SEAT



4 A1.4A INTERIOR PARTITION TYPES (SHOWN IN SECTION, U.N.O.)
1- 1/2" = 1'-0"

NOTES:

1. ALL NOTES APPLY EQUALLY TO BOTH SIDES OF WALL WHEN GRAPHICALLY REPRESENTED AS SIMILAR. REPEAT OF NOTE IS NOT NECESSARY.
2. ITEMS SHOWN IN SECTION ARE CONTINUOUS UNLESS NOTED OTHERWISE.

ALTERNATE #3: LECTURE HALL FINISHES
* LECTURE HALL DOOR & FRAMES AS NOTED BELOW

LECTURE HALLS - SECOND FLOOR DOOR SCHEDULE

	DOOR					FRAME					HDWE	
NO.	SIZE	FIRE-RATING	THK	TYPE	MAT	TYPE	MAT	HEAD	JAMB	SILL	GROUP	REMARKS
211	3'-0" X 7'-0"	NR	1-3/4"	A	WD	A	MTL	HI/A1.3	JI/A1.3	-	02	
212	3'-6" & 1'-6" X 7'-0"	NR	1-3/4"	D	WD	A	MTL	HI/A1.3	JI/A1.3	-	03	
213	3'-6" & 1'-6" X 7'-0"	NR	1-3/4"	D	WD	A	MTL	HI/A1.3	JI/A1.3	-	03	
214	3'-0" X 7'-0"	NR	1-3/4"	A	WD	A	MTL	HI/A1.3	JI/A1.3	-	02	
215	3'-6" & 1'-6" X 7'-0"	NR	1-3/4"	D	WD	A	MTL	HI/A1.3	JI/A1.3	-	03	
216	3'-6" & 1'-6" X 7'-0"	NR	1-3/4"	D	WD	A	MTL	HI/A1.3	JI/A1.3	-	03	
217	3'-6" & 1'-6" X 7'-0"	NR	1-3/4"	D	WD	A	MTL	HI/A1.3	JI/A1.3	-	03	
218	3'-6" & 1'-6" X 7'-0"	NR	1-3/4"	D	WD	A	MTL	HI/A1.3	JI/A1.3	-	03	
219	(2) 2'-6" X 7'-0"	NR	1-3/4"	E	WD	A	MTL	HI/A1.3	JI/A1.3	-	04	
220	(2) 2'-6" X 7'-0"	NR	1-3/4"	E	WD	A	MTL	HI/A1.3	JI/A1.3	-	04	
221	(2) 2'-6" X 7'-0"	NR	1-3/4"	E	WD	A	MTL	HI/A1.3	JI/A1.3	-	04	
222	3'-0" X 7'-0"	NR	1-3/4"	A	WD	A	MTL	HI/A1.3	JI/A1.3	-	02	
223	3'-0" X 7'-0"	NR	1-3/4"	A	WD	A	MTL	HI/A1.3	JI/A1.3	-	02	
224	(2) 2'-6" X 7'-0"	NR	1-3/4"	E	WD	A	MTL	HI/A1.3	JI/A1.3	-	04	

N/A - Not Applicable
GL - Glass
MTL - Metal
NR - No Rating
EX - Existing
ALUM or AL - Aluminum
WD - Wood
INS - Insulated
SC - Solid Core
HC - Hollow Core
HM - Hollow Metal (Galvanized)

NOTES: #1 - XXXX
#2 - XXXX

ALTERNATE #3: LECTURE HALL FINISHES
* LECTURE HALL FINISH NOTES NOT INDICATED ON BASE BID

FINISH SCHEDULE

ROOM #	ROOM NAME	FLOOR	BASE	WALLS					CEILING	NOTES
		FINISH	FINISH	NORTH	EAST	SOUTH	WEST	TRIM	FINISH	
211	LARGE LECTURE HALL	CPT-1 / P-14	VB-1	AWP-1/P-1	AWP-6/P-1	AWP-6&7/P-1	AWP-6/P-1	P-2	ACT/GWB	LOW WALLS: P-10
213	SM. LECTURE HALL A	CPT-3	VB-1	AWP-6/P-5	AWP-3/P-5	AWP-6/P-5	AWP-6&7/P-5	P-4	ACT/GWB	LOW WALLS: P-4
215	SM. LECTURE HALL B	CPT-1	VB-1	AWP-6/P-7	AWP-1/P-7	AWP-6/P-7	AWP-6&7/P-7	P-8	ACT/GWB	LOW WALLS: P-12
217	MED. LECTURE HALL	CPT-2	VB-1	AWP-6&7/P-3	AWP-6/P-3	AWP-2/P-3	AWP-6/P-3	P-4	ACT/GWB	LOW WALLS: P-11
218	PROJECTION ROOM	VCT-2	VB-1	EXIST.	EXIST.	EXIST.	EXIST.	-	-	RAISED ACCESS FLOOR
219	CLASSROOM SERVICE	VCT-2	VB-1	EXIST.	EXIST.	EXIST.	EXIST.	-	-	RAISED ACCESS FLOOR
	NORTH EXIT	-	-	EXIST.	EXIST.	EXIST.	EXIST.	-	ACT	STAIR TREADS & RISERS
	SOUTH EXIT	VSF-2	-	EXIST.	EXIST.	EXIST.	EXIST.	-	-	STAIR TREADS & RISERS
	EAST EXIT	VSF-1	-	EXIST.	EXIST.	EXIST.	EXIST.	-	-	STAIR TREADS & RISERS
	LOBBY	VSF-1	-	EXIST.	EXIST.	EXIST.	EXIST.	-	-	STAIR TREADS & RISERS

ABBREVIATIONS:

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NOTES:
1. REFER TO INTERIOR ELEVATIONS (A5 SHEETS) FOR ACCENTS, PATTERN LOCATIONS & ADDITIONAL DETAILS.

ACOUSTIC WALL PANEL SCHEDULE

AWP-#	LOCATION	MATERIAL	STYLE	ORIENTATION	ATTACHMENT
AWP-1	LECTURE HALLS @ BACK WALLS	FABRIC	CLR: 'WHEAT'	VERTICAL	3/A3.1A
AWP-2	LECTURE HALLS @ BACK WALLS	FABRIC	CLR: 'LEAF'	VERTICAL	3/A3.1A
AWP-3	LECTURE HALLS @ BACK WALLS	FABRIC	CLR: 'BONE'	VERTICAL	3/A3.1A
AWP-4	NOT USED				
AWP-5	LECTURE HALLS @ LOW WALLS	WOOD	PERFORATED	VERTICAL	7/A3.1A
AWP-6	LECTURE HALLS @ FRONT & SIDE WALLS	WOOD	SOLID	HORIZONTAL	1/A3.1A
AWP-7	LECTURE HALLS @ NEW WALLS	WOOD	SOLID	HORIZONTAL	2/A3.1A
AWP-8	LOBBY STAIRS	WOOD	SOLID	HORIZONTAL	9/A3.1A
AWP-9	LOBBY STAIRS	WOOD	SOLID	HORIZONTAL	10/A3.1A

HAI PROJECT NO. 1TJL06918.036

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SOCIAL SCIENCE CENTER
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Kingston, Rhode Island

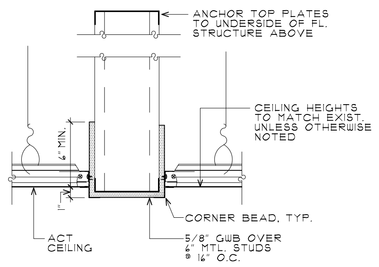
Seal

Project Description
CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

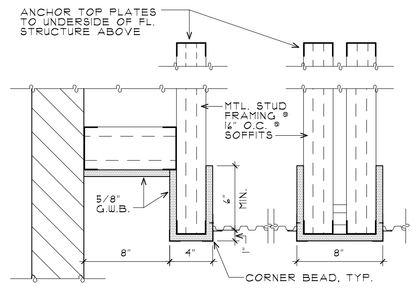
Design
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title
ENLARGED SECOND FLOOR PLAN OF LECTURE HALLS, SCHEDULES (ALTERNATES)

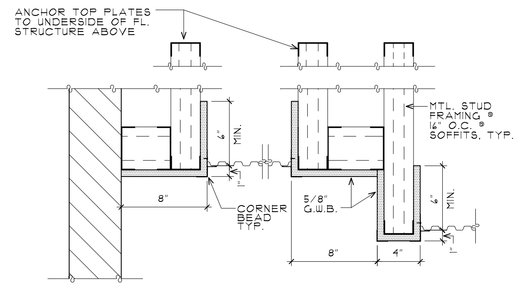
Drawing No.
A1.4A



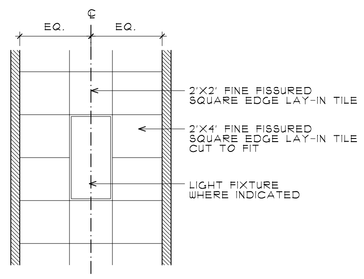
2 A2.0 CEILING DETAIL
1" = 1/2" = 1'-0"



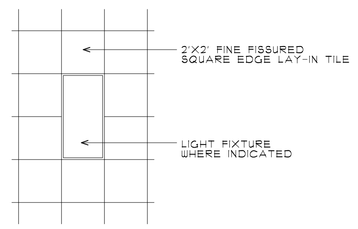
3 A2.0 CEILING DETAIL
1" = 1/2" = 1'-0"



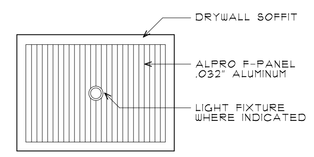
4 A2.0 CEILING DETAIL
1" = 1/2" = 1'-0"



5 A2.0 CEILING TYPE A
1/4" = 1'-0"



6 A2.0 CEILING TYPE B
1/4" = 1'-0"



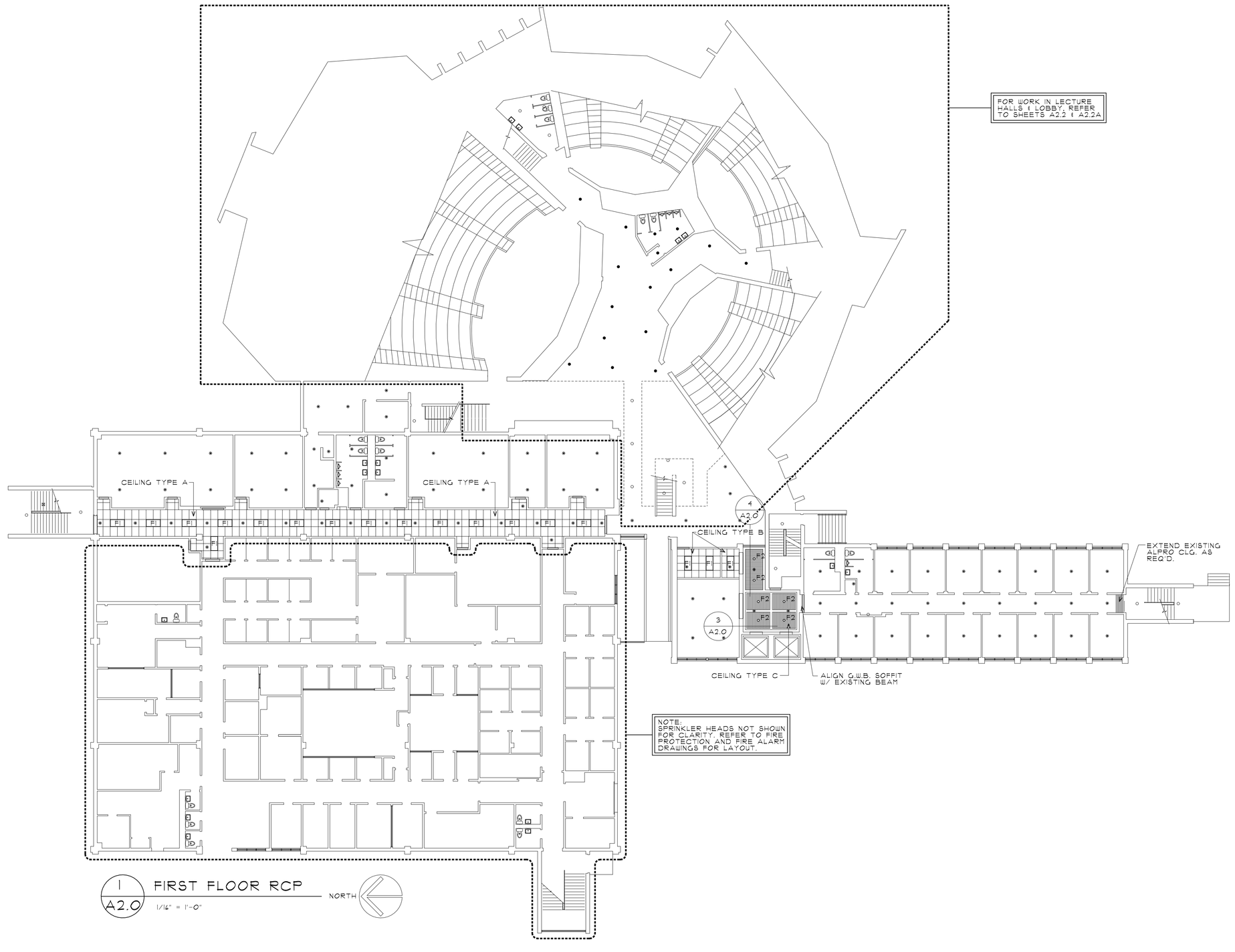
7 A2.0 CEILING TYPE C
1/4" = 1'-0"

RCP LEGEND

- RECESSED CAN LIGHT
- SPECIALITY CAN LIGHT
- WALL MOUNTED FIXTURE
- WALL WASHER
- TRACK LIGHT FIXTURE
- "F-" FIXTURE KEY
- LIGHT FIXTURE
- 2'x2' ACOUSTIC CEILING TILE
- CEILING HVAC SUPPLY DIFFUSER
- CEILING HVAC RETURN GRILLE
- SPRINKLER HEAD
- EXIT — EXIT LIGHT
- SMOKE DETECTOR
- HEAT DETECTOR - 135°
- EMERGENCY LIGHT
- "X" EXISTING TO REMAIN

RCP NOTES

1. ALL CEILING HEIGHTS TO MATCH EXISTING CEILING HEIGHTS.
2. ALL SPINKLER PIPING IS TO BE CONCEALED ABOVE FINISHED CEILINGS. SPRINKLER PIPE IS TO BE EXPOSED IN SPACES OPEN TO STRUCTURE ABOVE.
3. REPLACE ALL CEILING TILES REMOVED FOR SPRINKLER INSTALLATION. REPLACE ALL TILES DAMAGED.
4. REINSTALL ALL HVAC DIFFUSERS & GRILLES IN AREAS OF NEW CEILINGS.
5. REFER TO A2.12 FOR LIGHT FIXTURE SCHEDULE.
6. ALL LIGHTING IS TO BE WIRED TO EXISTING CIRCUITS AND SWITCHES OR LIGHTING CONTROLS OF LIGHTS BEING REPLACED.
7. FIRE ALARM DEVICES AND SPRINKLER HEADS SHOWN FOR LOCATION & COORDINATION PURPOSES ONLY. REFER TO FA & FP DRAWINGS FOR COMPLETE SYSTEMS.



1 A2.0 FIRST FLOOR RCP
1/16" = 1'-0"

NORTH

HAI PROJECT NO. 1TJL06918.036

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Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

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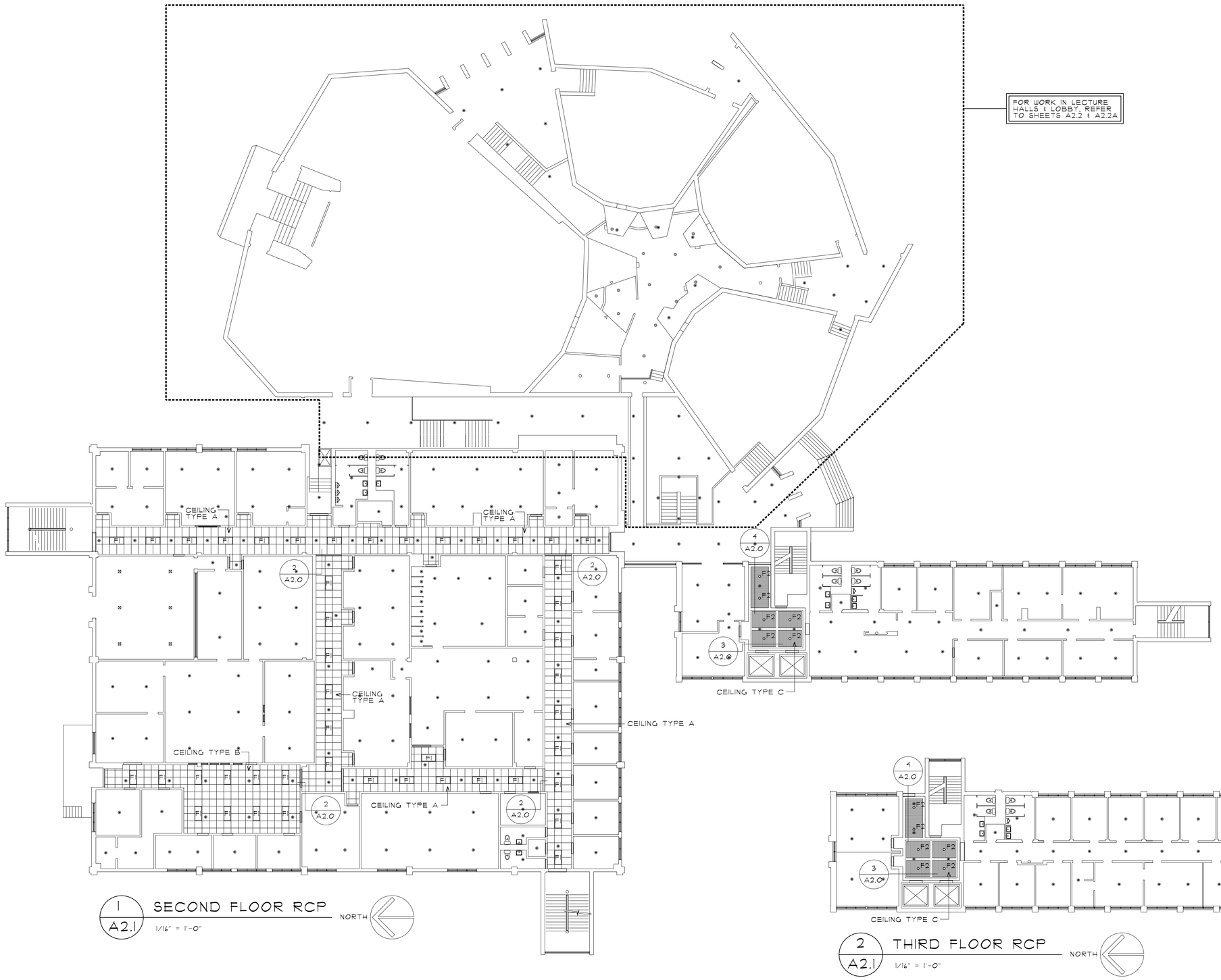
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

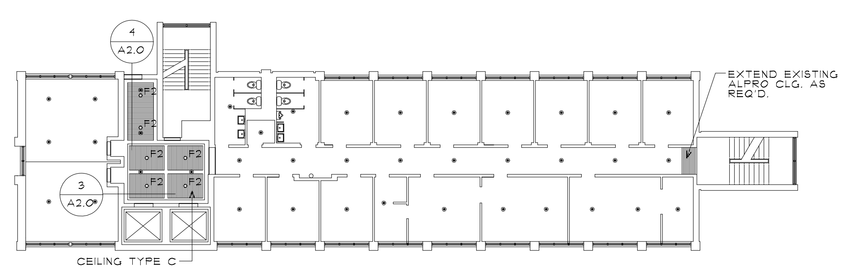
FIRST FLOOR REFLECTED CEILING PLAN

Drawing No.

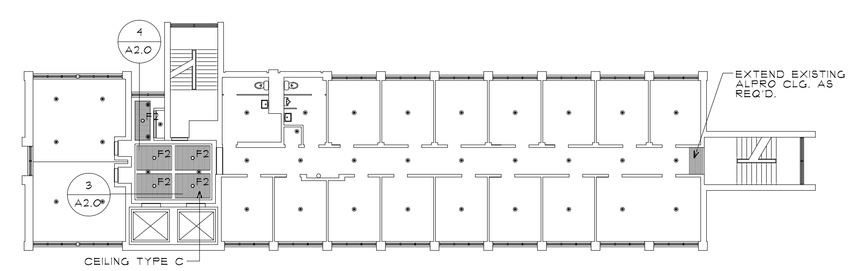
A2.0



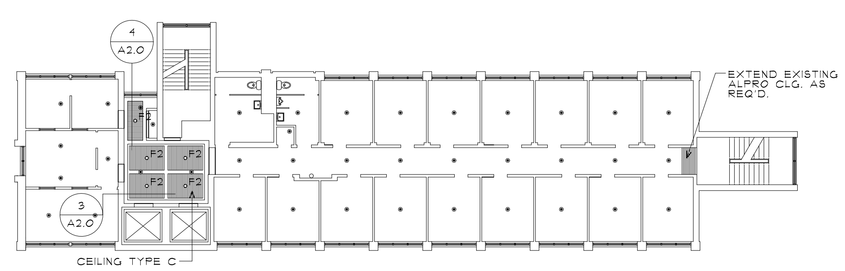
1 A2.1 SECOND FLOOR RCP
1/16" = 1'-0"
NORTH



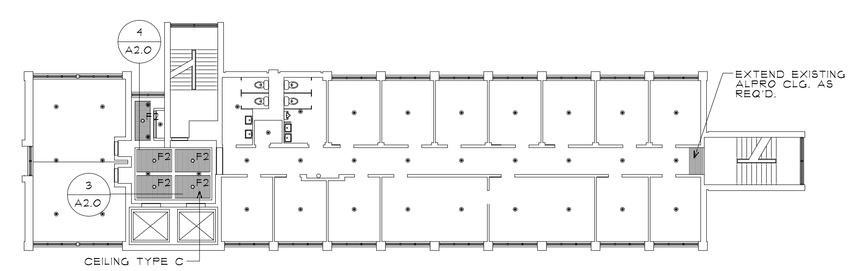
2 A2.1 THIRD FLOOR RCP
1/16" = 1'-0"
NORTH



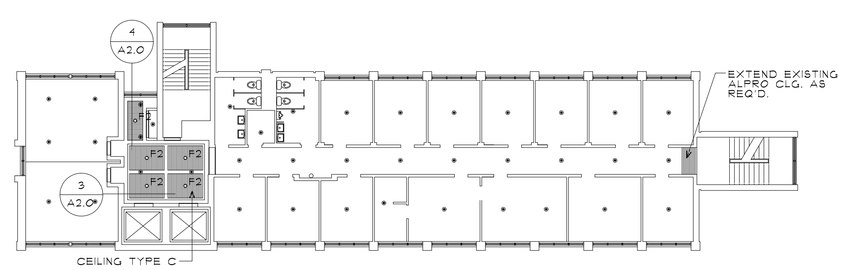
3 A2.1 SIXTH FLOOR RCP
1/16" = 1'-0"
NORTH



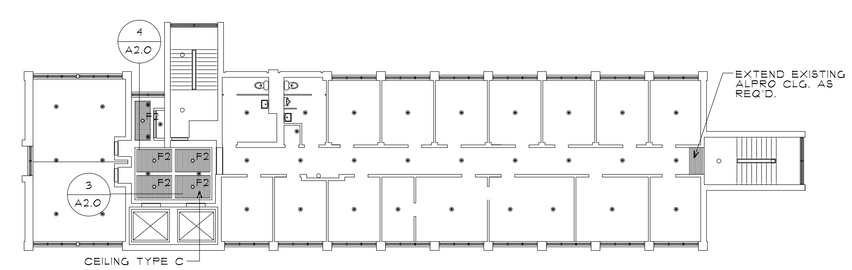
4 A2.1 FOURTH FLOOR RCP
1/16" = 1'-0"
NORTH



5 A2.1 SEVENTH FLOOR RCP
1/16" = 1'-0"
NORTH



6 A2.1 FIFTH FLOOR RCP
1/16" = 1'-0"
NORTH



7 A2.1 EIGTH FLOOR RCP
1/16" = 1'-0"
NORTH

HAI PROJECT NO. 1TJL06918.036

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JOHN H. CHAFEE SOCIAL SCIENCE CENTER UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

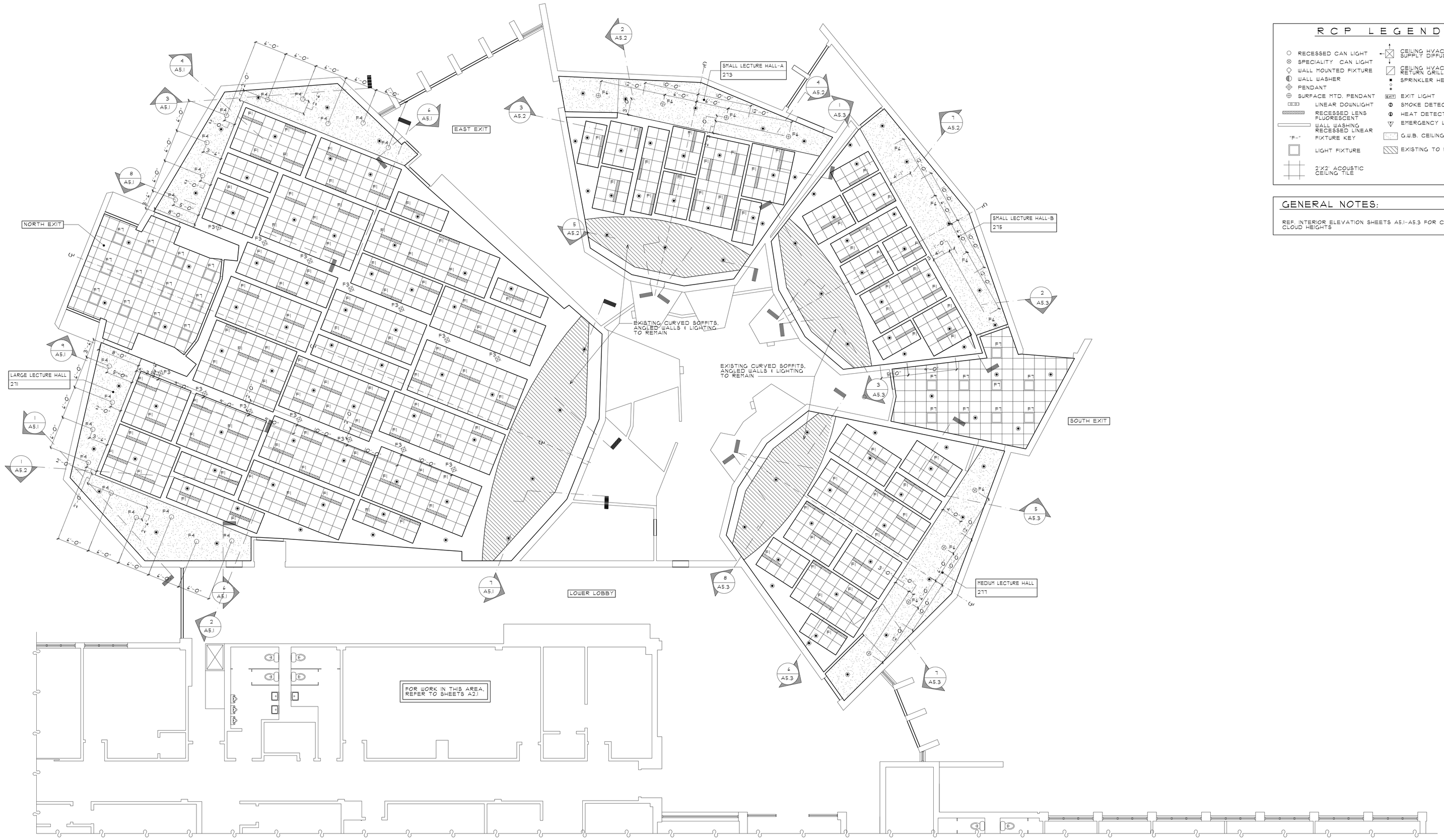
Seal

Project Description
CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title
SECOND FLOOR & HIGH-RISE REFLECTED CEILING PLANS

Drawing No.
A2.1



1 / A2.2 ENLARGED SECOND FLOOR REFLECTED CEILING PLAN

1/8" = 1'-0"

RCP LEGEND

- RECESSED CAN LIGHT
- SPECIALITY CAN LIGHT
- WALL MOUNTED FIXTURE
- WALL WASHER
- PENDANT
- SURFACE MTD. PENDANT
- LINEAR DOWNLIGHT
- RECESSED LENS FLUORESCENT
- WALL WASHING RECESSED LINEAR
- "F-" FIXTURE KEY
- LIGHT FIXTURE
- 2'X2' ACOUSTIC CEILING TILE
- CEILING HVAC SUPPLY DIFFUSER
- CEILING HVAC RETURN GRILLE
- SPRINKLER HEAD
- EXIT LIGHT
- SMOKE DETECTOR
- HEAT DETECTOR - 135°
- EMERGENCY LIGHT
- G.W.B. CEILING
- EXISTING TO REMAIN

GENERAL NOTES:

REF. INTERIOR ELEVATION SHEETS A5.1-A5.3 FOR CEILING & CLOUD HEIGHTS

HAI PROJECT NO. 1TJL06918.036

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Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

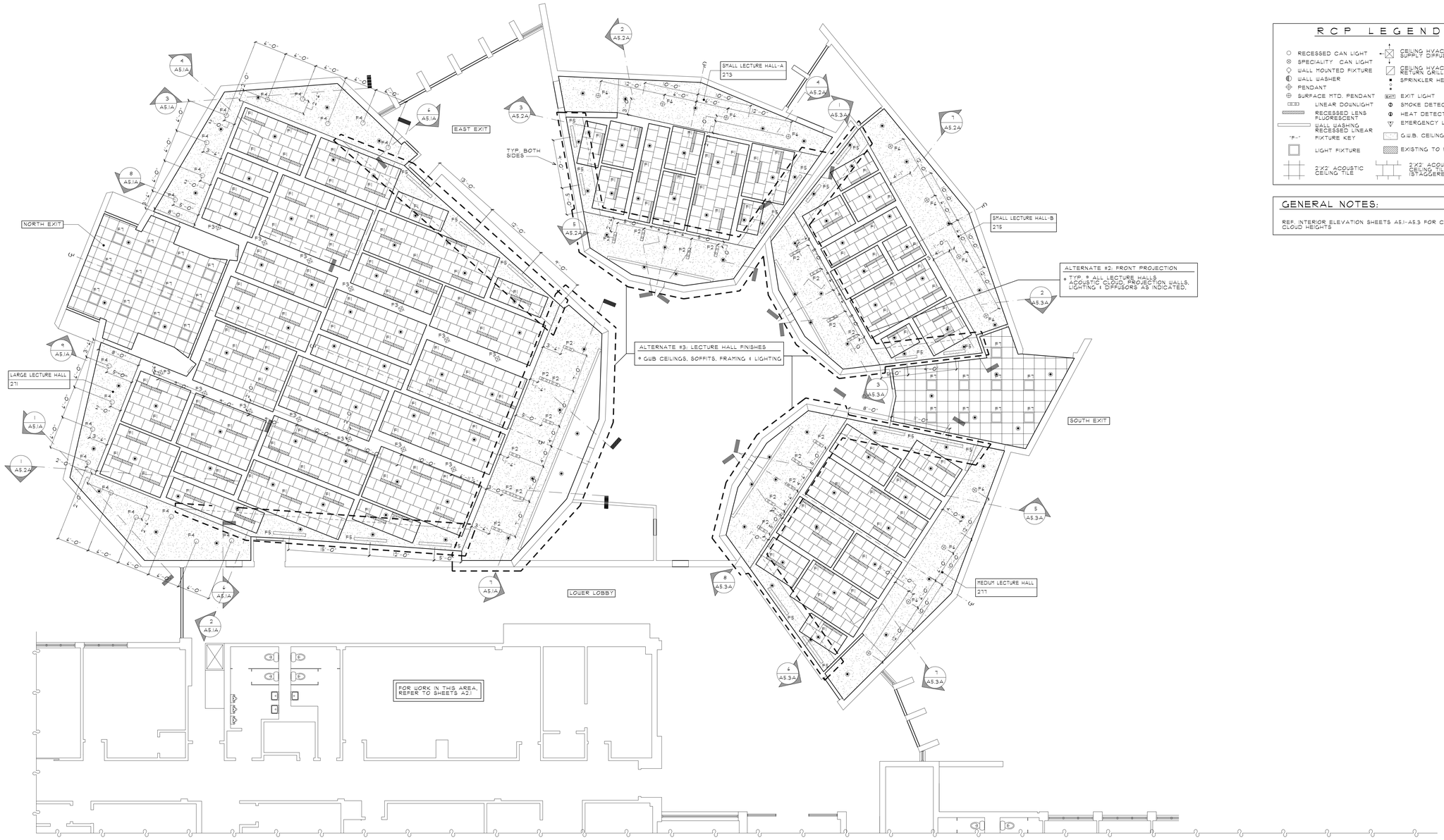
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

ENLARGED SECOND FLOOR REFLECTED CEILING PLAN

Drawing No.

A2.2



1 A2.2A ENLARGED SECOND FLOOR REFLECTED CEILING PLAN

1/8" = 1'-0"

RCP LEGEND

- RECESSED CAN LIGHT
- SPECIALTY CAN LIGHT
- WALL MOUNTED FIXTURE
- WALL WASHER
- PENDANT
- SURFACE MTD. PENDANT
- LINEAR DOWNLIGHT
- RECESSED LENS FLUORESCENT
- WALL WASHING RECESSED LINEAR
- "F-" FIXTURE KEY
- LIGHT FIXTURE
- 2'X2' ACOUSTIC CEILING TILE
- CEILING HVAC SUPPLY DIFFUSER
- CEILING HVAC RETURN GRILLE
- SPRINKLER HEAD
- EXIT LIGHT
- SMOKE DETECTOR
- HEAT DETECTOR - 135°
- EMERGENCY LIGHT
- G.W.B. CEILING
- EXISTING TO REMAIN
- 2'X2' ACOUSTIC CEILING TILE (STAGGERED)

GENERAL NOTES:

REF. INTERIOR ELEVATION SHEETS A5.1-A5.3 FOR CEILING & CLOUD HEIGHTS

HAI PROJECT NO. 1TJL06918.036

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Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

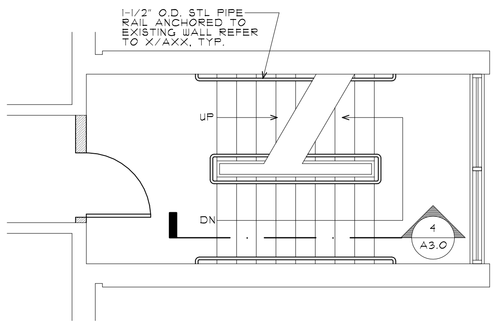
Scale:	AS NOTED
Drawn:	RGT
Design:	NJG
Review:	NJG

Drawing Title

ENLARGED SECOND FLOOR REFLECTED CEILING PLAN (ALTERNATES)

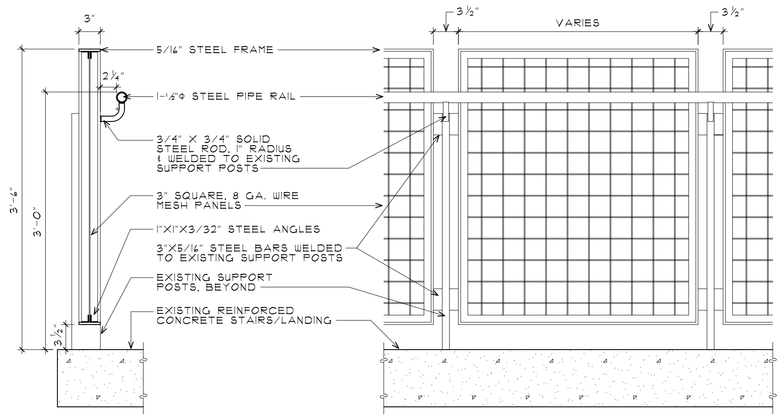
Drawing No.

A2.2A



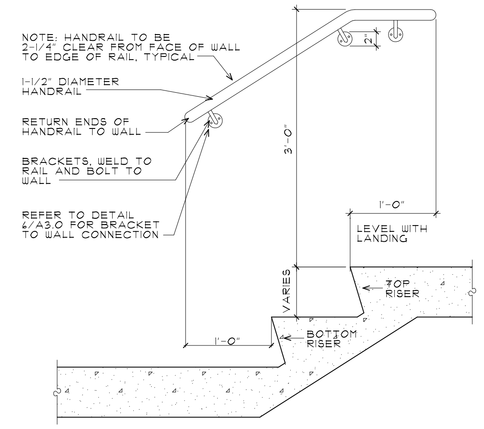
1 A3.0 TYPICAL STAIR PLAN

1/4" = 1'-0"



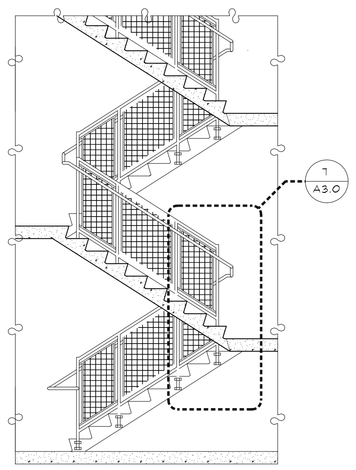
2 A3.0 GUARD DETAILS

1" = 1'-0" @ EXTERIOR STAIR



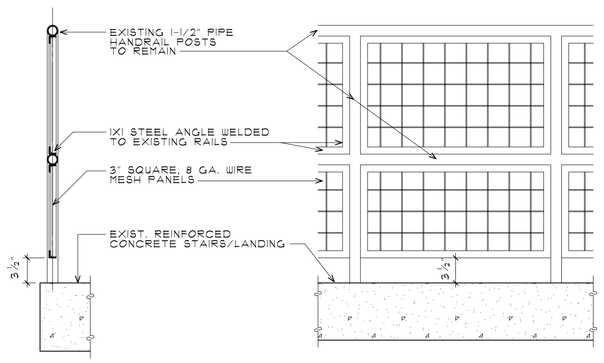
3 A3.0 TYPICAL RAIL AT WALLS

1" = 1'-0"



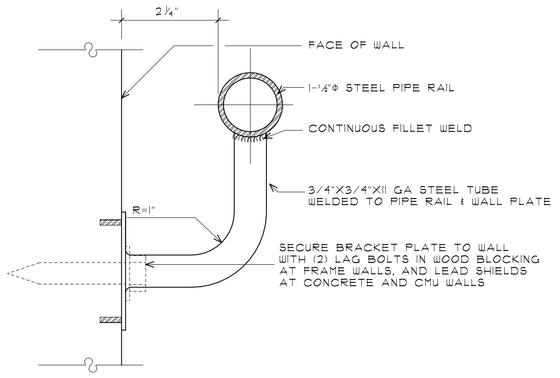
4 A3.0 TYPICAL STAIR SECTION

1/4" = 1'-0"



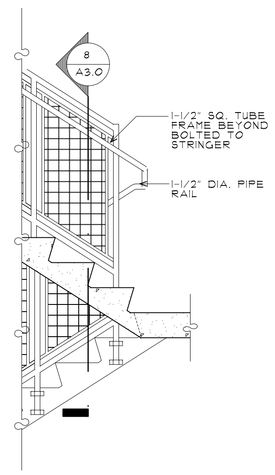
5 A3.0 GUARD DETAILS

1" = 1'-0" @ MAINTENANCE STAIR



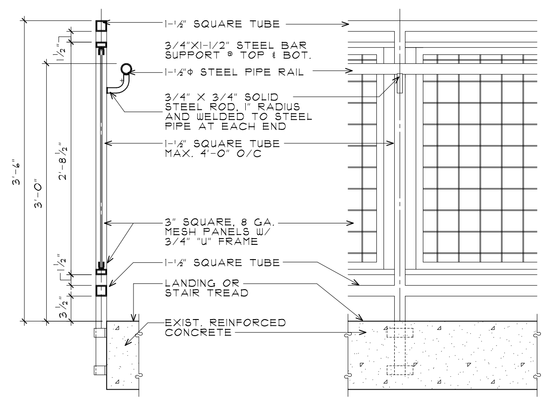
6 A3.0 HANDRAIL BRACKET @ WALL (TYP.)

6" = 1'-0



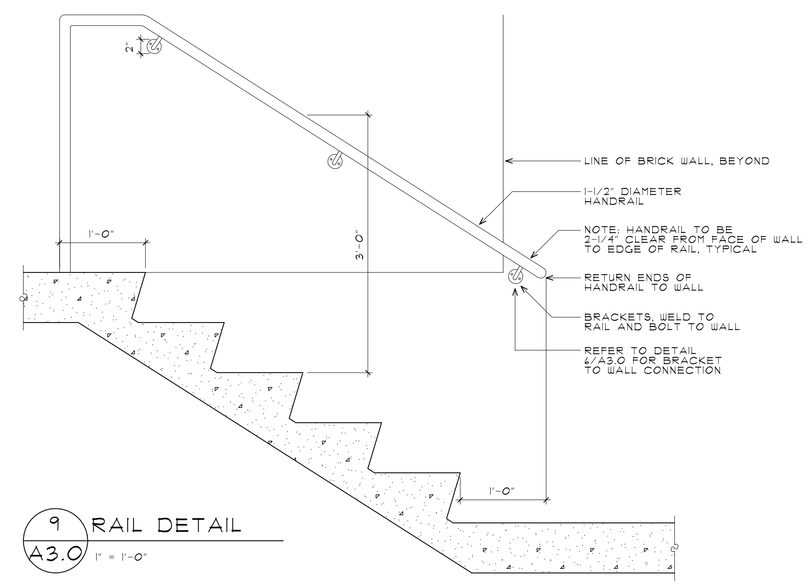
7 A3.0 GUARD RAIL DETAIL

1/2" = 1'-0"



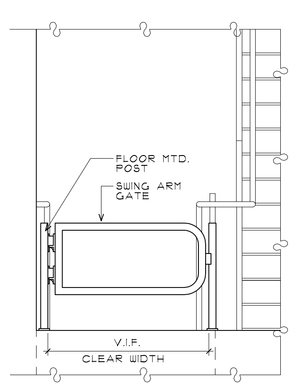
8 A3.0 GUARD DETAIL

1" = 1'-0"



9 A3.0 RAIL DETAIL

1" = 1'-0"



10 A3.0 SWING ARM GATE DETAIL

1/2" = 1'-0"

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CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

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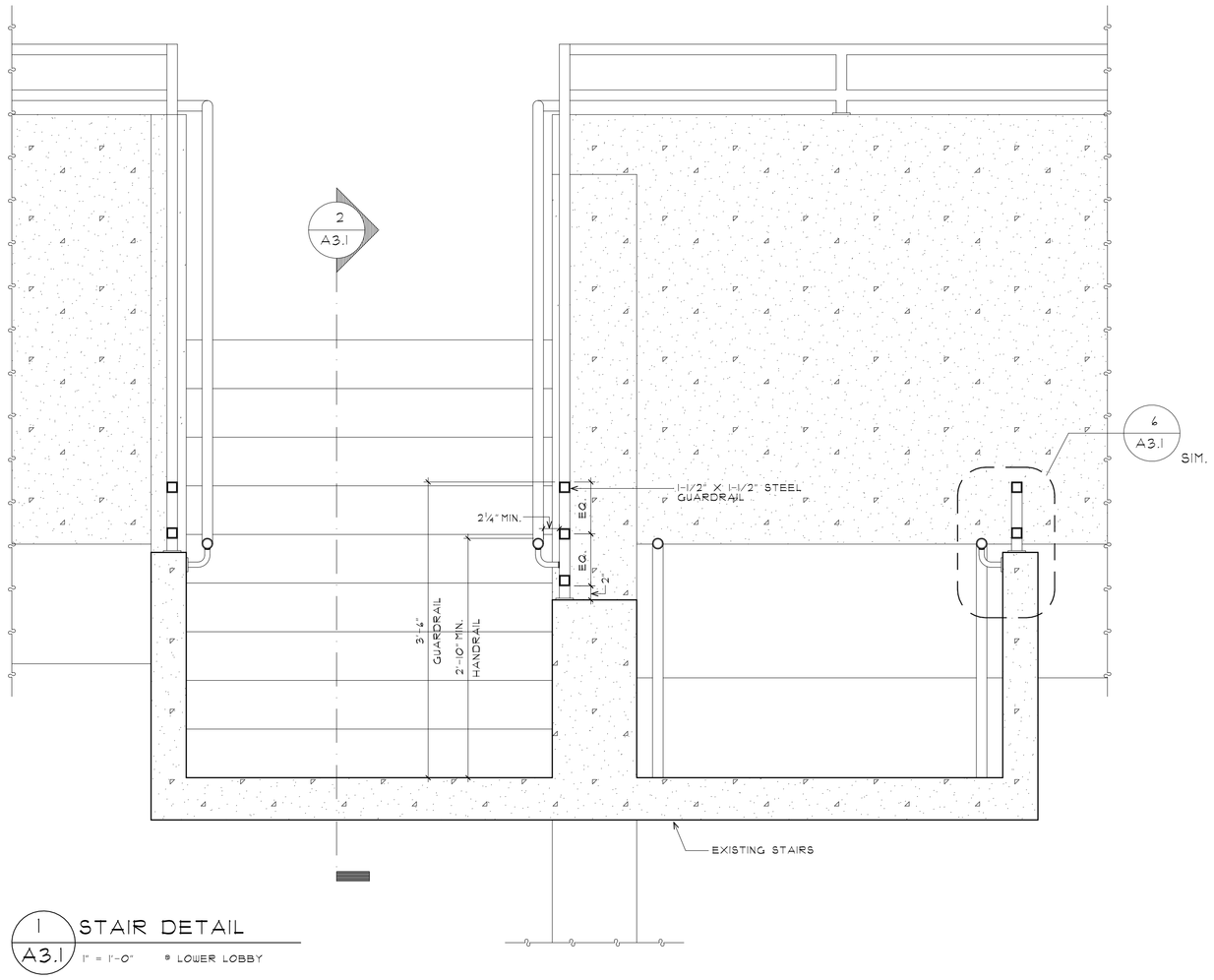
Design: NJG
Review: NJG

Drawing Title

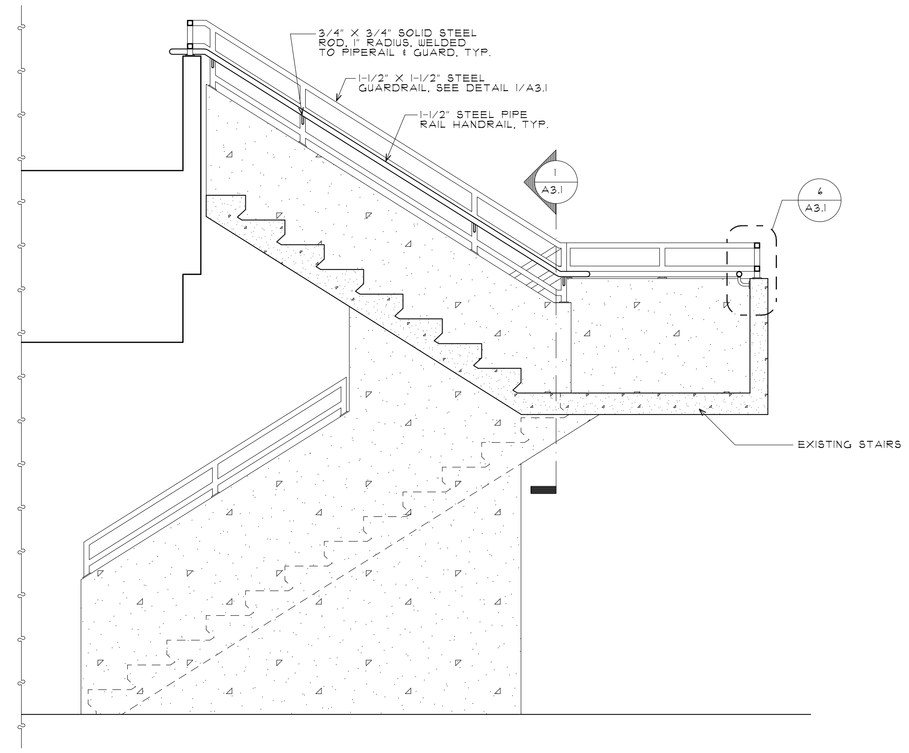
TYPICAL STAIR DETAILS

Drawing No.

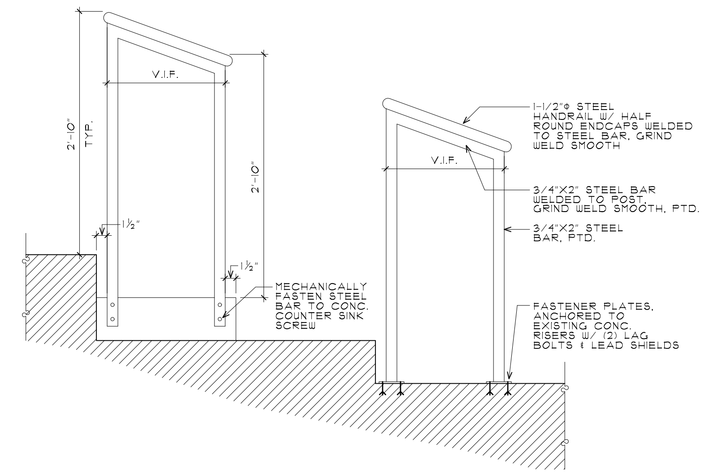
A3.0



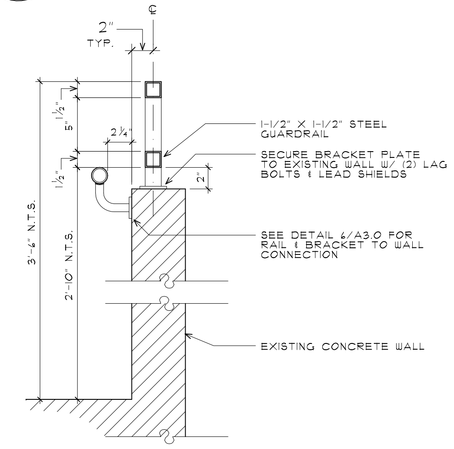
1 A3.1 STAIR DETAIL
1" = 1'-0" @ LOWER LOBBY



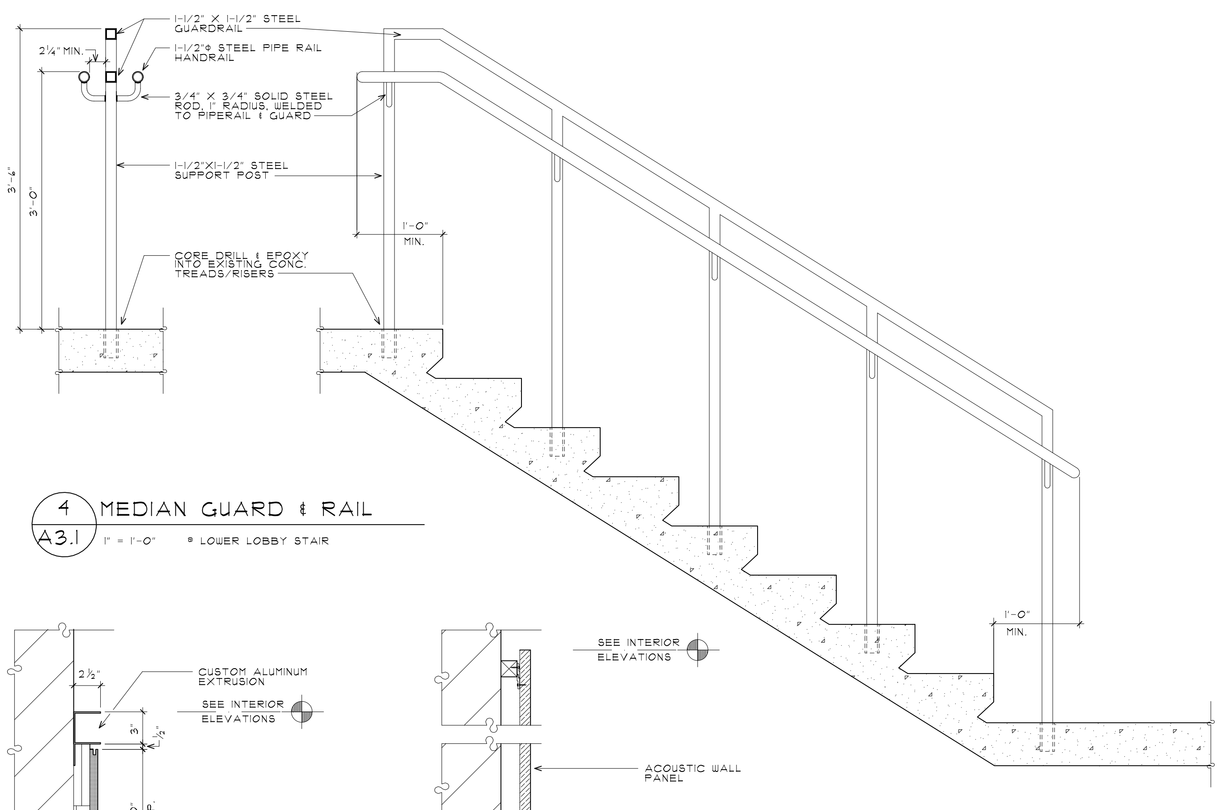
2 A3.1 STAIR SECTION/ELEVATION
1/2" = 1'-0"



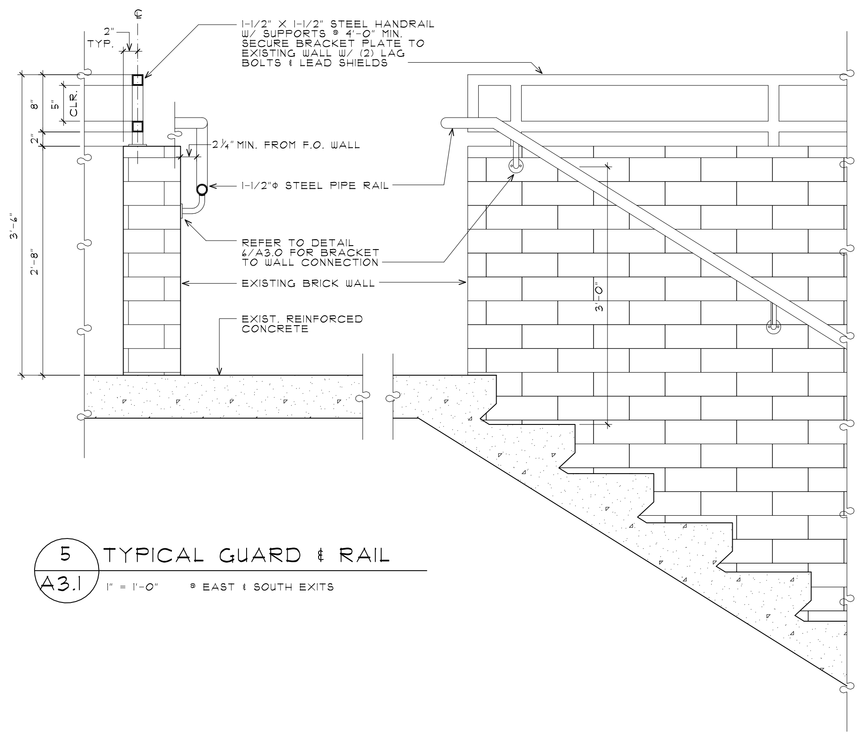
3 A3.1 TYPICAL RAIL @ RISERS
1" = 1'-0" @ LECTURE HALLS



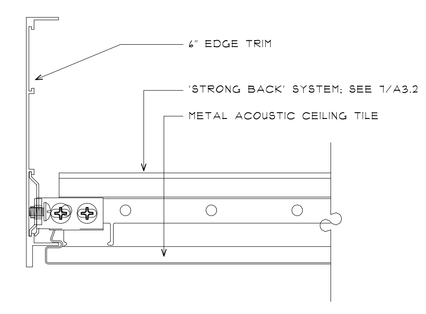
6 A3.1 GUARD DETAIL
1- 1/2" = 1'-0" @ LOBBY STAIR & BRIDGE



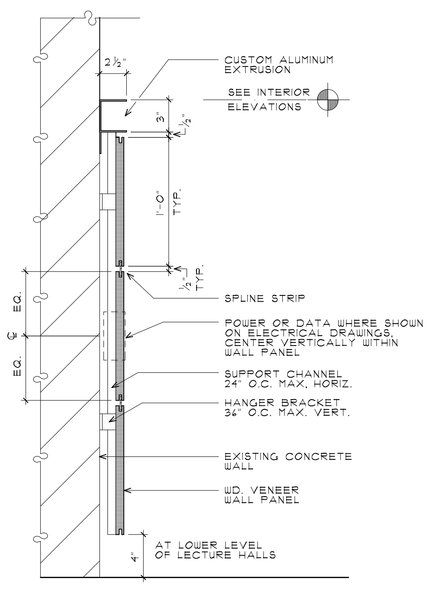
4 A3.1 MEDIAN GUARD & RAIL
1" = 1'-0" @ LOWER LOBBY STAIR



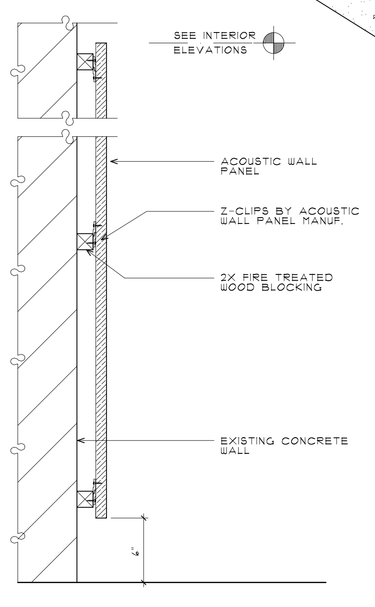
5 A3.1 TYPICAL GUARD & RAIL
1" = 1'-0" @ EAST & SOUTH EXITS



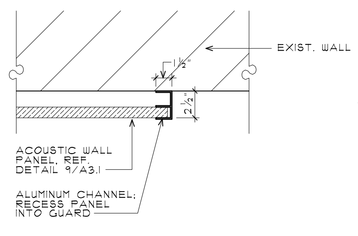
7 A3.1 TYPICAL CEILING PERIMETER DETAIL
4" = 1'-0 @ LECTURE HALLS



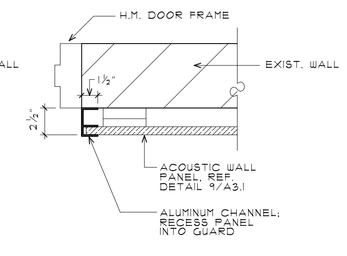
8 A3.1 WALL PANEL
1- 1/2" = 1'-0" @ EXISTING WALLS



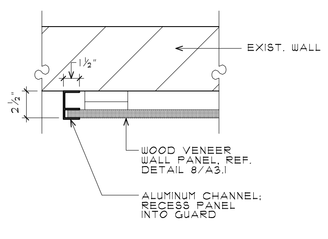
9 A3.1 ACOUSTIC WALL PANEL
1- 1/2" = 1'-0" @ EXISTING WALLS



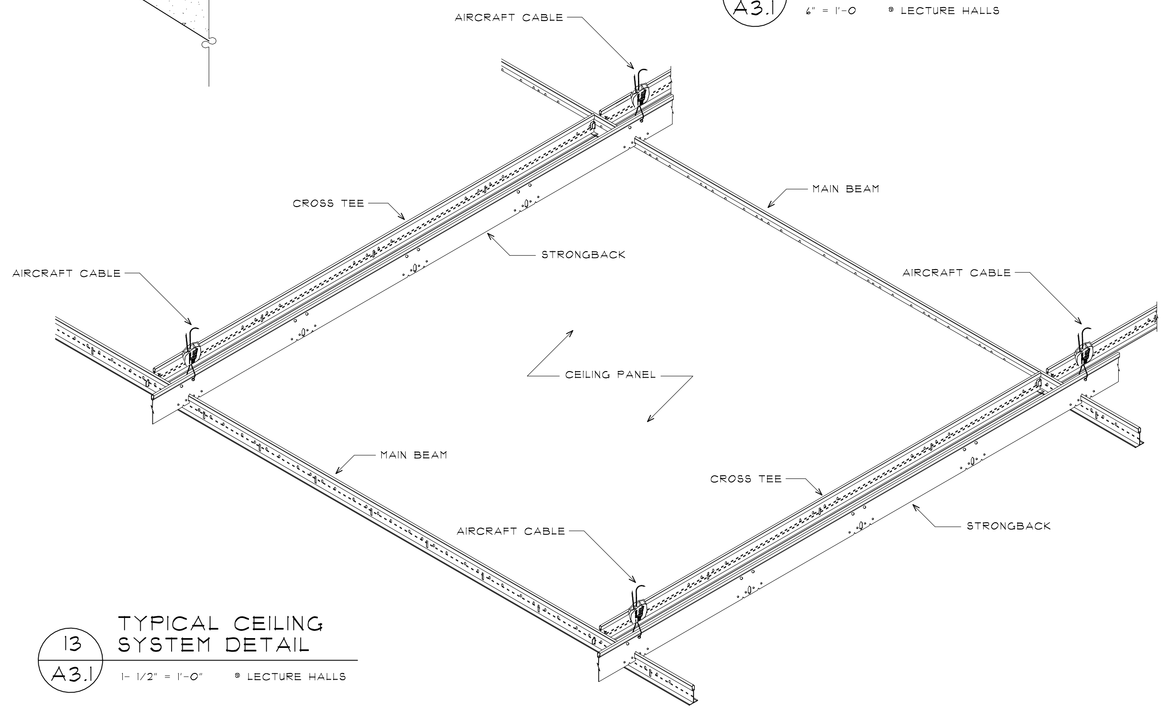
10 A3.1 AWP DETAIL
1- 1/2" = 1'-0" @ FABRIC PANEL EDGE



11 A3.1 AWP DETAIL
1- 1/2" = 1'-0" @ DOOR FRAMES



12 A3.1 AWP DETAIL (WOOD)
1- 1/2" = 1'-0" @ VERTICAL EDGE



13 A3.1 TYPICAL CEILING SYSTEM DETAIL
1- 1/2" = 1'-0" @ LECTURE HALLS

HAI PROJECT NO. 17JL06918.036

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UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

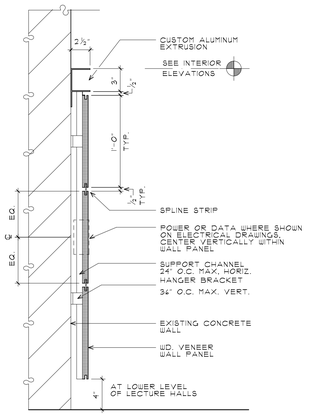
Seal

Project Description
CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title
TYPICAL DETAILS

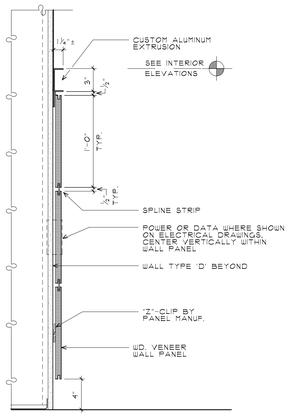
Drawing No.
A3.1



1 A3.1A WALL PANEL

1" = 1'-0" • EXISTING WALLS

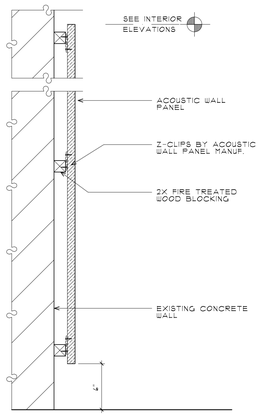
ALTERNATE #3



2 A3.1A WALL PANEL

1" = 1'-0" • NEW STUD WALLS

ALTERNATE #3

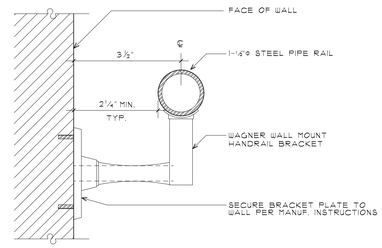


3 A3.1A ACOUSTIC WALL PANEL

1" = 1'-0" • EXISTING WALLS

4 A3.1A NOT USED

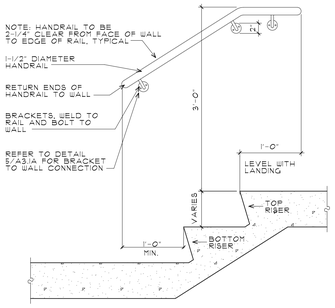
1" = 1'-0"



5 A3.1A HANDRAIL BRACKET @ WALL

4" = 1'-0" (IN LECTURE HALL LOBBIES & EXIT AREAS)

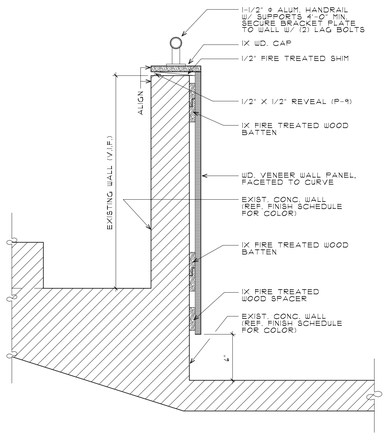
ALTERNATE #1



6 A3.1A TYPICAL RAIL AT WALLS

1" = 1'-0"

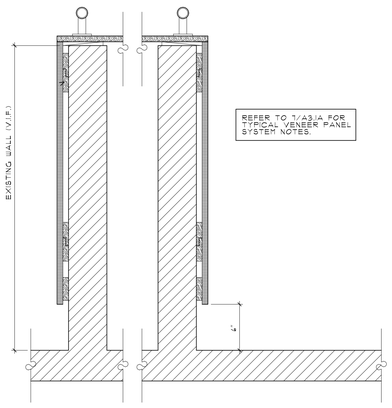
ALTERNATE #1



7 A3.1A GUARD DETAIL

1" = 1'-0" • LECTURE HALLS

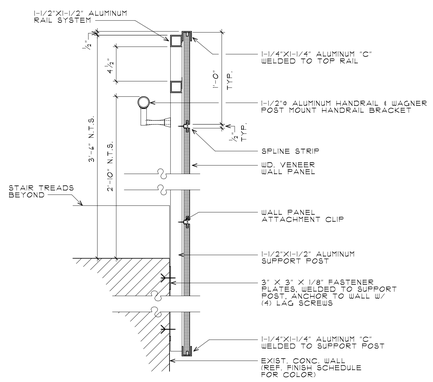
ALTERNATE #3



8 A3.1A CAP DETAIL

1" = 1'-0" • LARGE LECTURE HALL

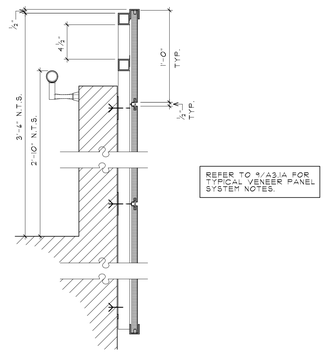
ALTERNATE #3



9 A3.1A TYPICAL GUARD DETAIL

1" = 1'-0" • LOBBY STAIRS

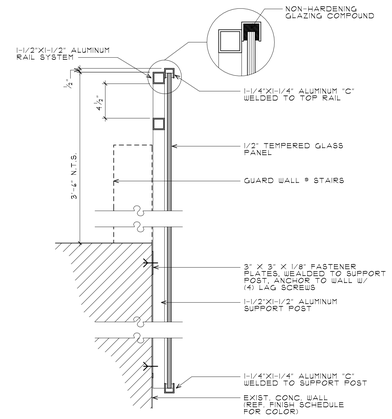
ALTERNATE #1



10 A3.1A GUARD DETAIL

1" = 1'-0" • 2ND FLOOR LOBBY

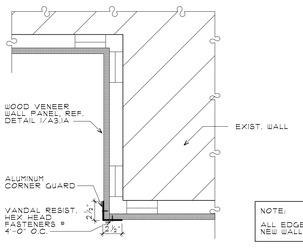
ALTERNATE #1



11 A3.1A GUARD DETAIL

1" = 1'-0" • 2ND FLOOR LOBBY

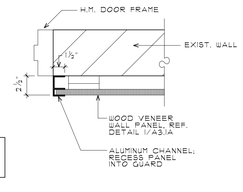
ALTERNATE #1



12 A3.1A AWP DETAIL (WOOD)

1" = 1'-0" • CORNER

ALTERNATE #3

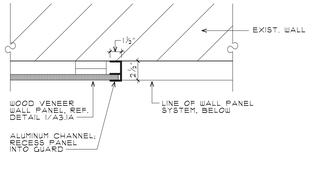


NOTE:
ALL EDGE DETAILS SIM. @ NEW WALL CONSTRUCTION.

13 A3.1A AWP DETAIL (WOOD)

1" = 1'-0" • DOOR FRAMES

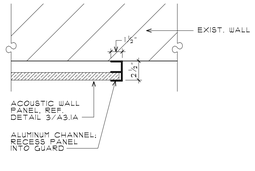
ALTERNATE #3



14 A3.1A AWP DETAIL (WOOD)

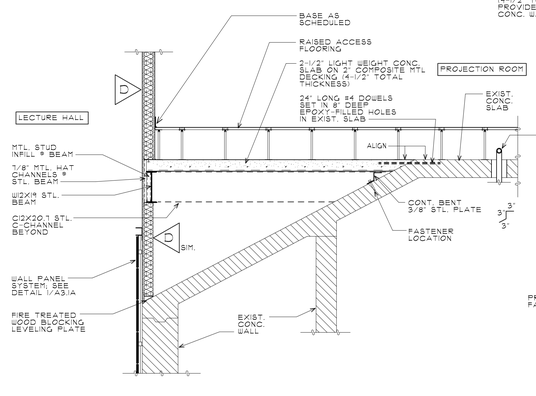
1" = 1'-0" • PANEL TRANSITIONS

ALTERNATE #3



15 A3.1A AWP DETAIL

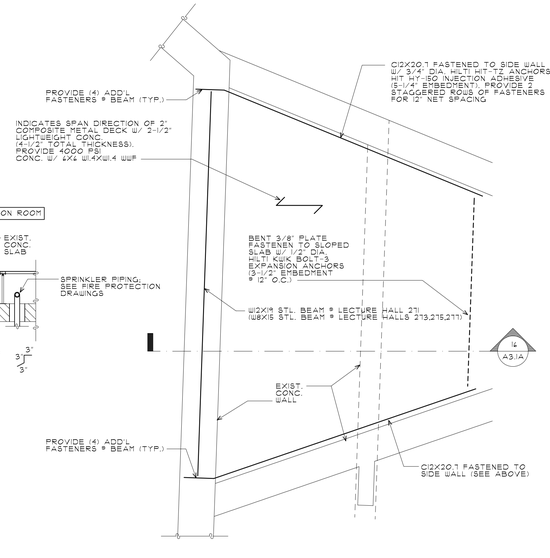
1" = 1'-0" • FABRIC PANEL EDGE



16 A3.1A SECTION AT CONCRETE FLOOR INFILL

1/2" = 1'-0" TYP. @ PROJECTION ROOM

ALTERNATE #2



17 A3.1A PARTIAL PLAN @ CONCRETE FLOOR INFILL

1/2" = 1'-0" TYP. @ PROJECTION ROOM

ALTERNATE #2

HAI PROJECT NO. 17JL06918.036

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4	FINAL BID SET	12/07/10

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UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

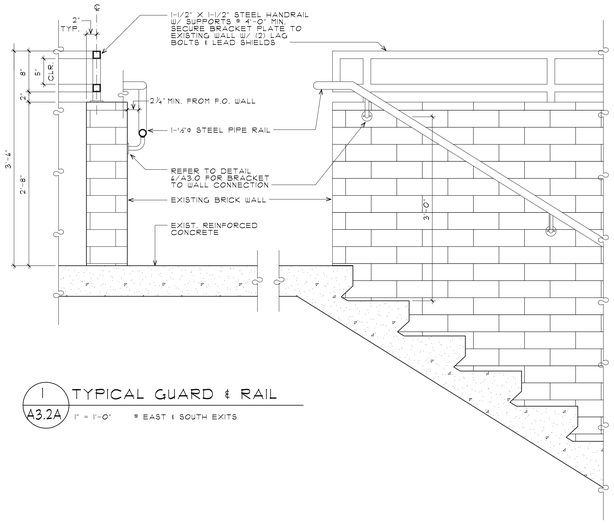
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

TYPICAL DETAILS (ALTERNATES)

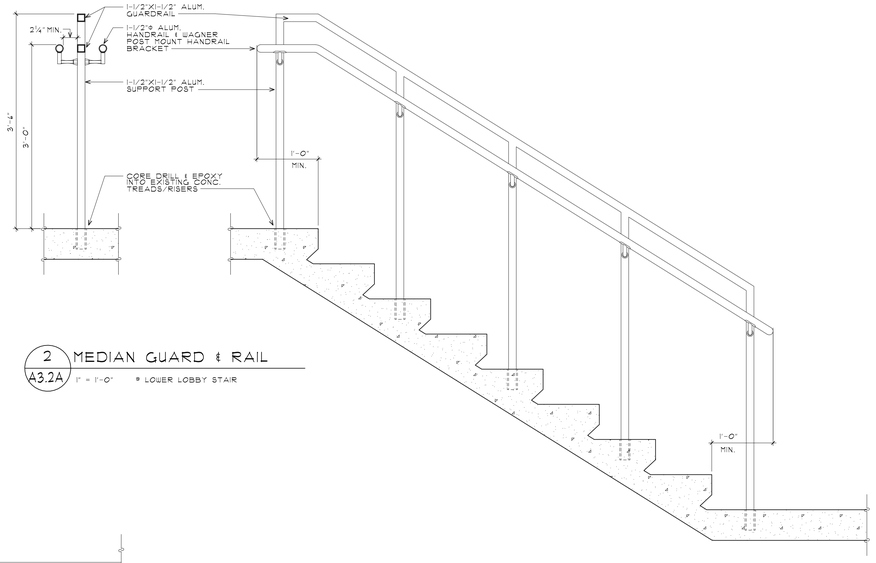
Drawing No.

A3.1A



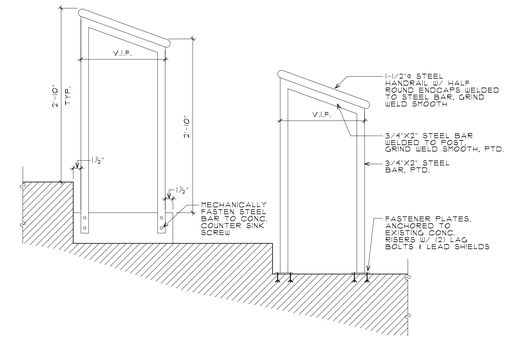
1 A3.2A TYPICAL GUARD & RAIL

1" = 1'-0" @ EAST & SOUTH EXITS



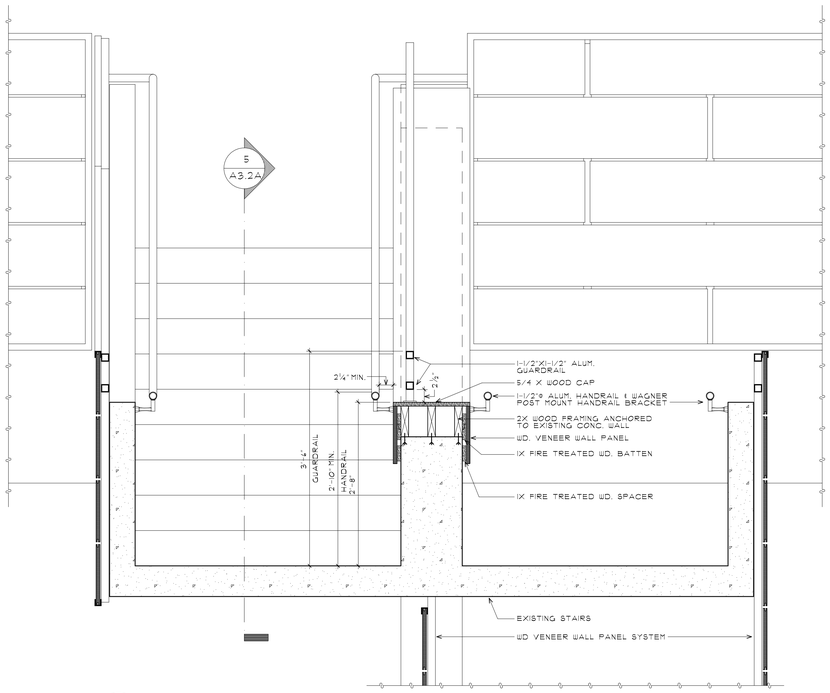
2 A3.2A MEDIAN GUARD & RAIL

1" = 1'-0" @ LOWER LOBBY STAIR



3 A3.2A TYPICAL RAIL @ RISERS

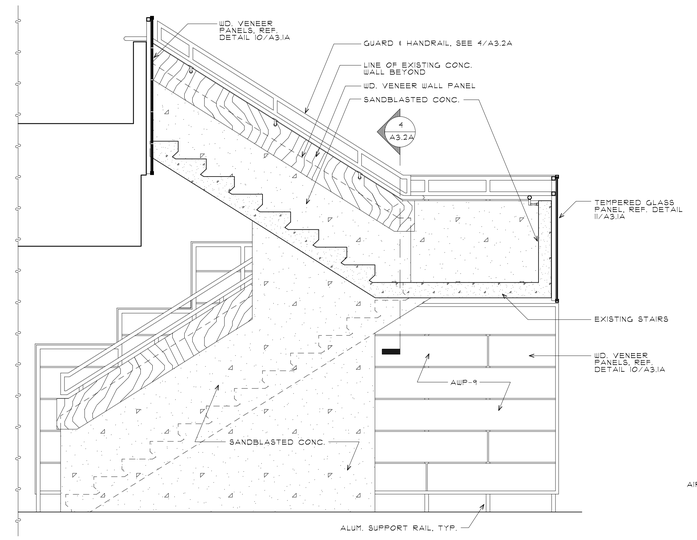
1" = 1'-0" @ LECTURE HALLS



4 A3.2A STAIR DETAIL

1" = 1'-0" @ LOWER LOBBY

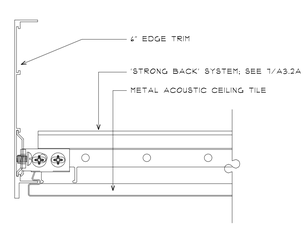
ALTERNATE #1



5 A3.2A STAIR SECTION/ELEVATION

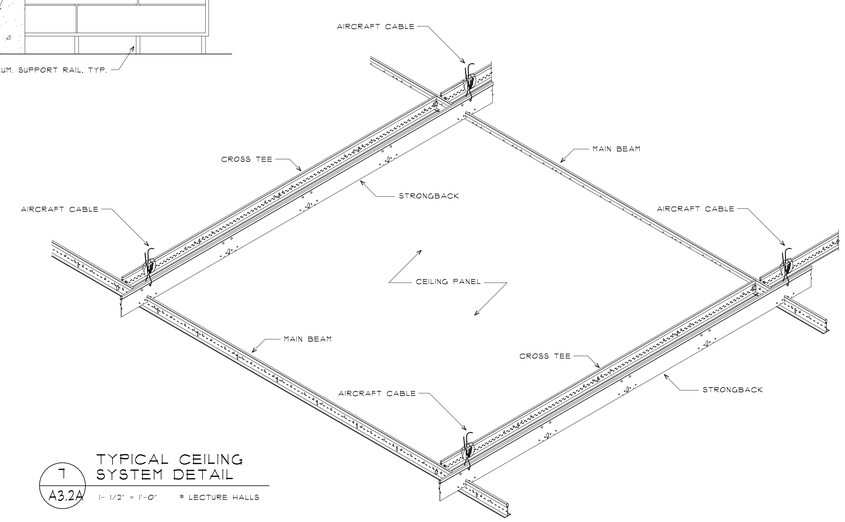
1/2" = 1'-0"

ALTERNATE #1



6 A3.2A TYPICAL CEILING PERIMETER DETAIL

4" = 1'-0 @ LECTURE HALLS



7 A3.2A TYPICAL CEILING SYSTEM DETAIL

1- 1/2" = 1'-0" @ LECTURE HALLS

HAI PROJECT NO. 1TJL06918.036

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Kingston, Rhode Island

Seal

Project Description

CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

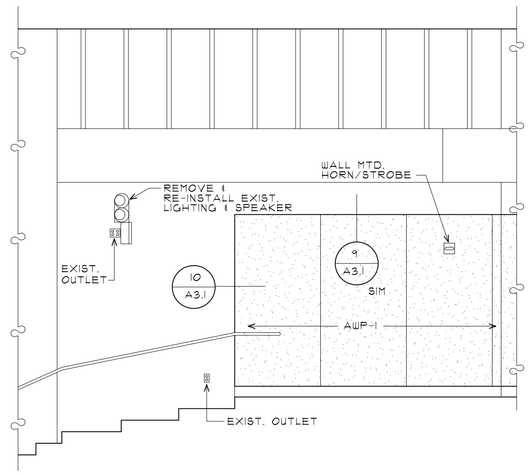
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title

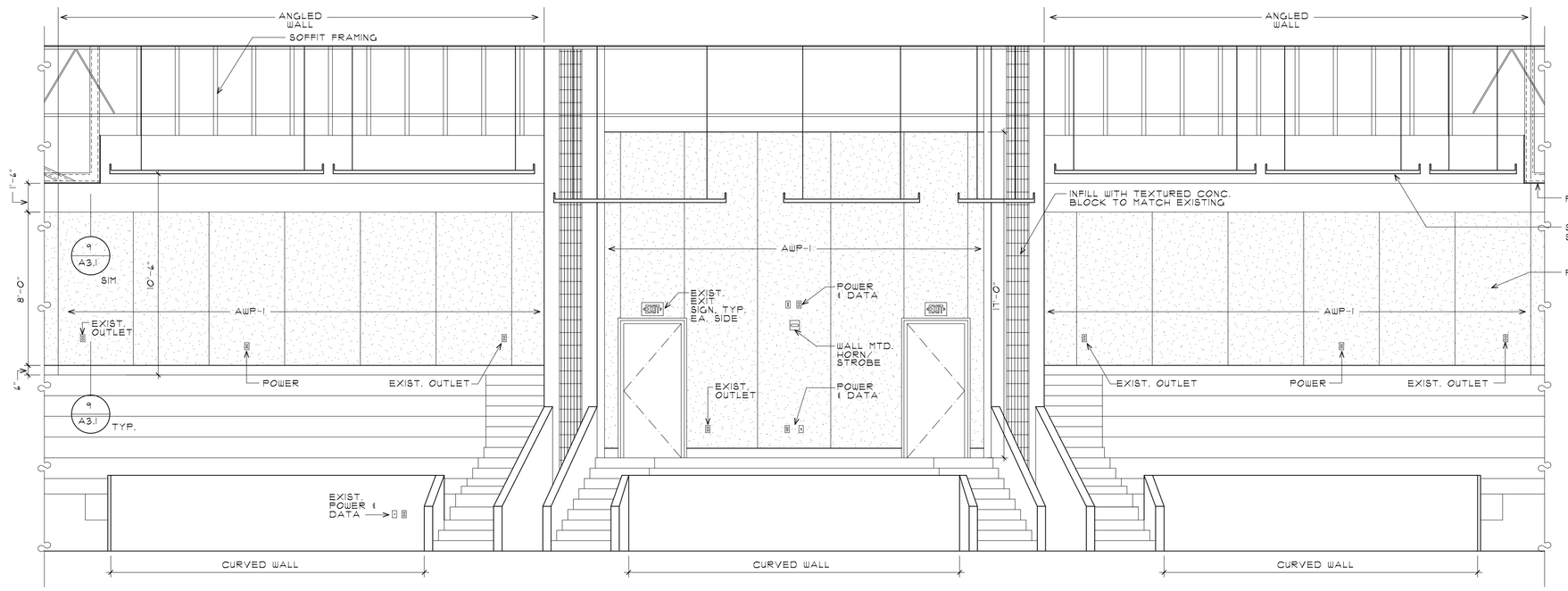
TYPICAL DETAILS (ALTERNATES)

Drawing No.

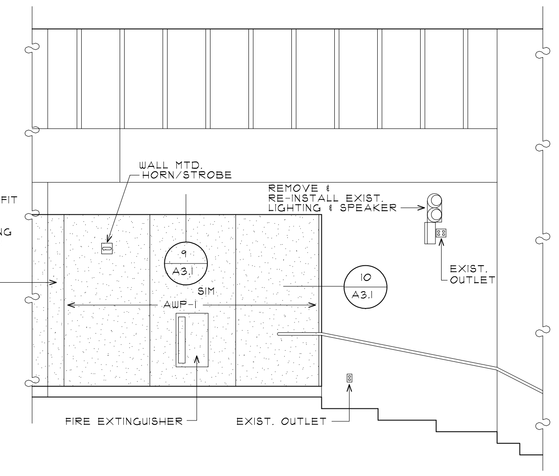
A3.2A



1 A5.1 NORTH PARTIAL ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL



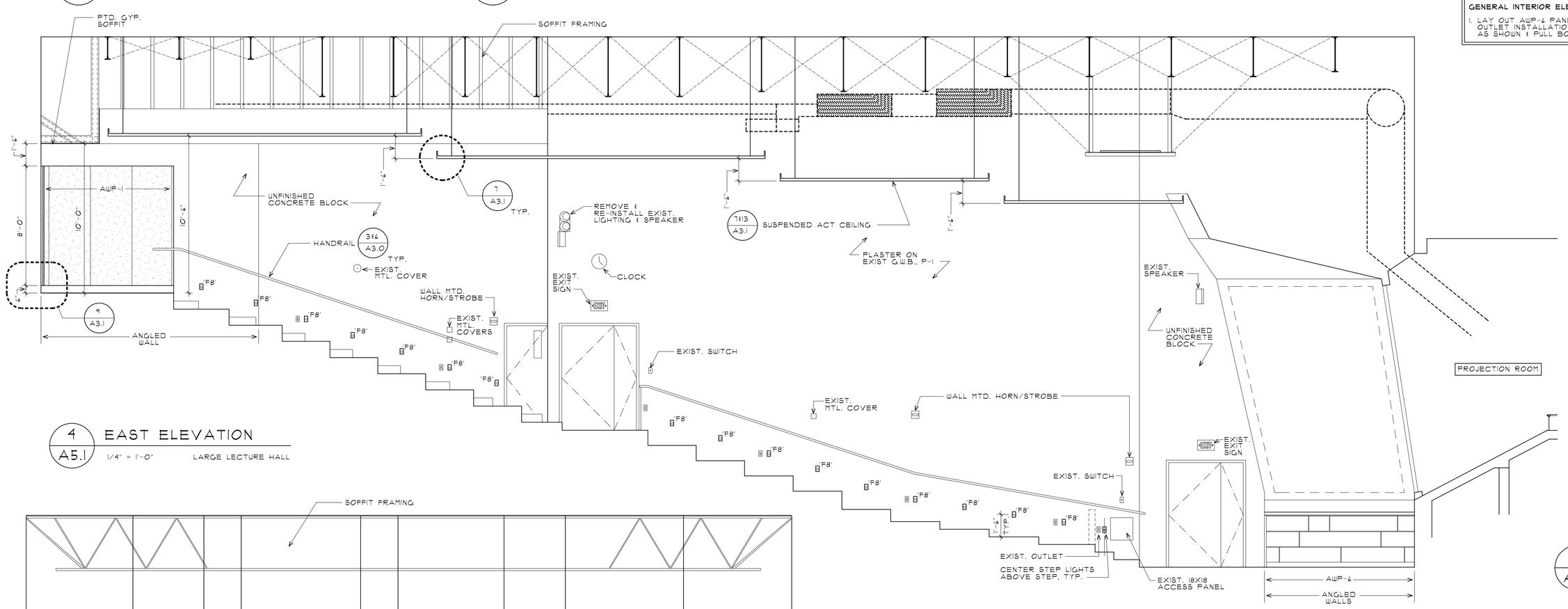
2 A5.1 NORTH ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL



3 A5.1 NORTH PARTIAL ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL

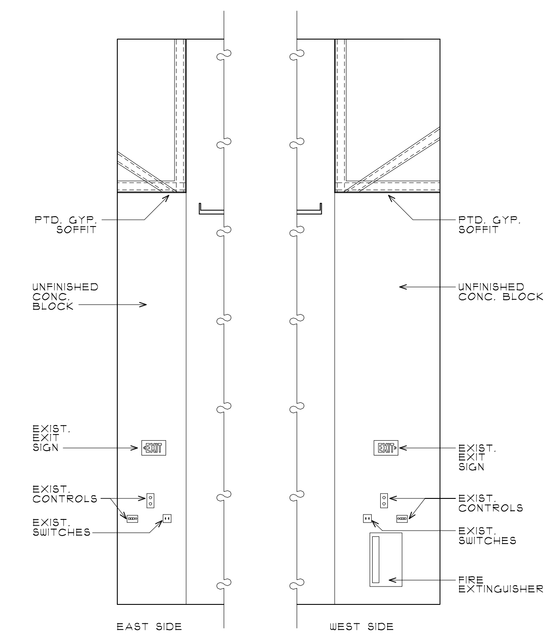
GENERAL INTERIOR ELEVATION NOTES:

1. LAY OUT AWP-1 & PANEL LINES BEFORE ELECTRICAL OUTLET INSTALLATION. CENTER BOXES IN PANELS AS SHOWN & PULL BOXES OUT FLUSH W/ PANELS, TYP.

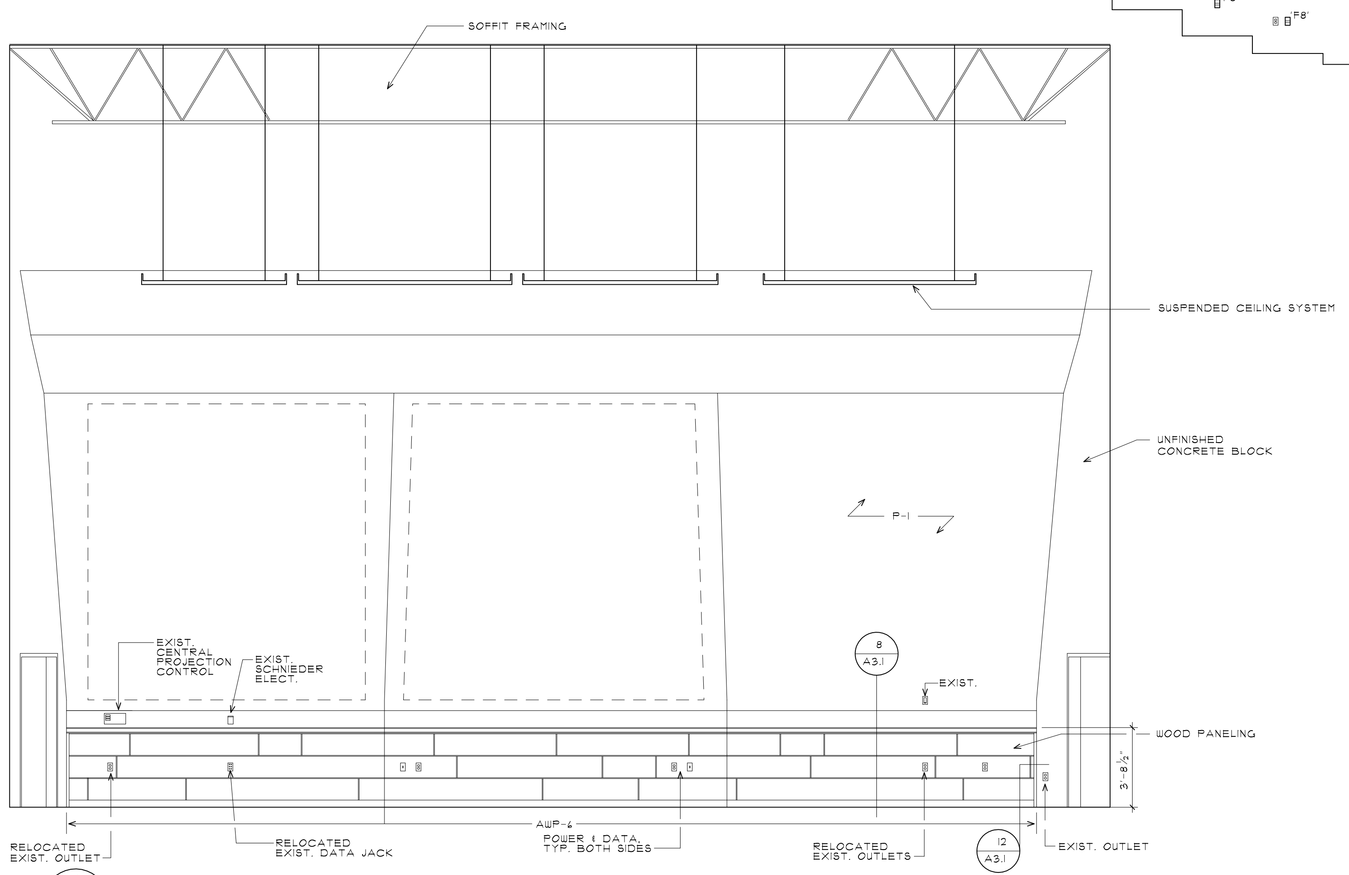


4 A5.1 EAST ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL

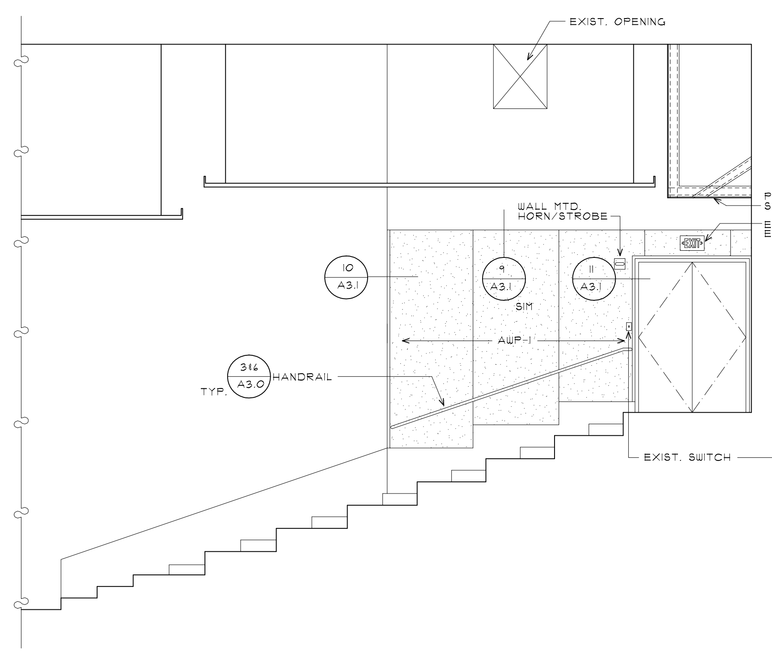
5 A5.1 NOT USED
1/4" = 1'-0" LARGE LECTURE HALL



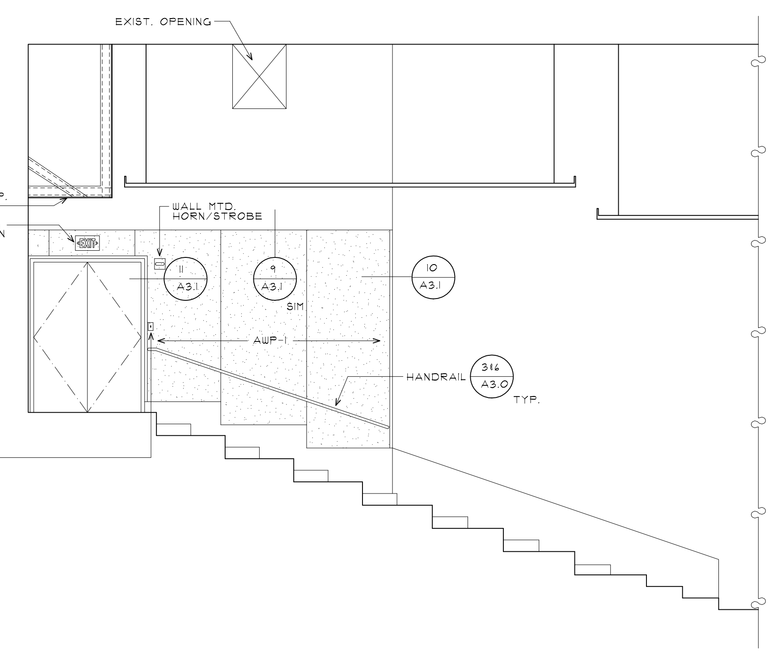
6 A5.1 PARTIAL SOUTH ELEVATIONS
1/4" = 1'-0" LARGE LECTURE HALL



7 A5.1 SOUTH ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL



8 A5.1 WEST PARTIAL ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL



9 A5.1 EAST PARTIAL ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL

HAI PROJECT NO. 1TJL06918.036

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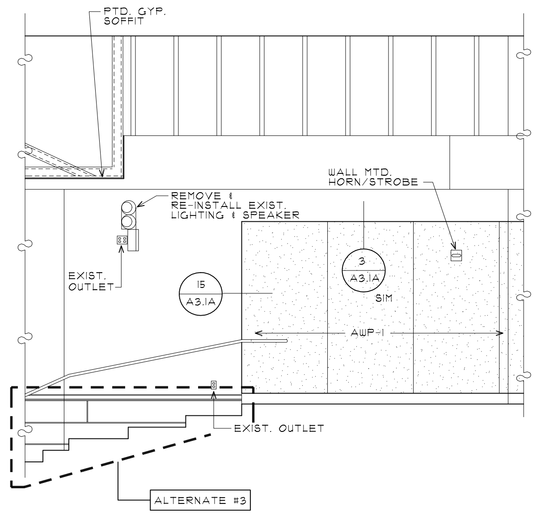
Seal

Project Description
CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

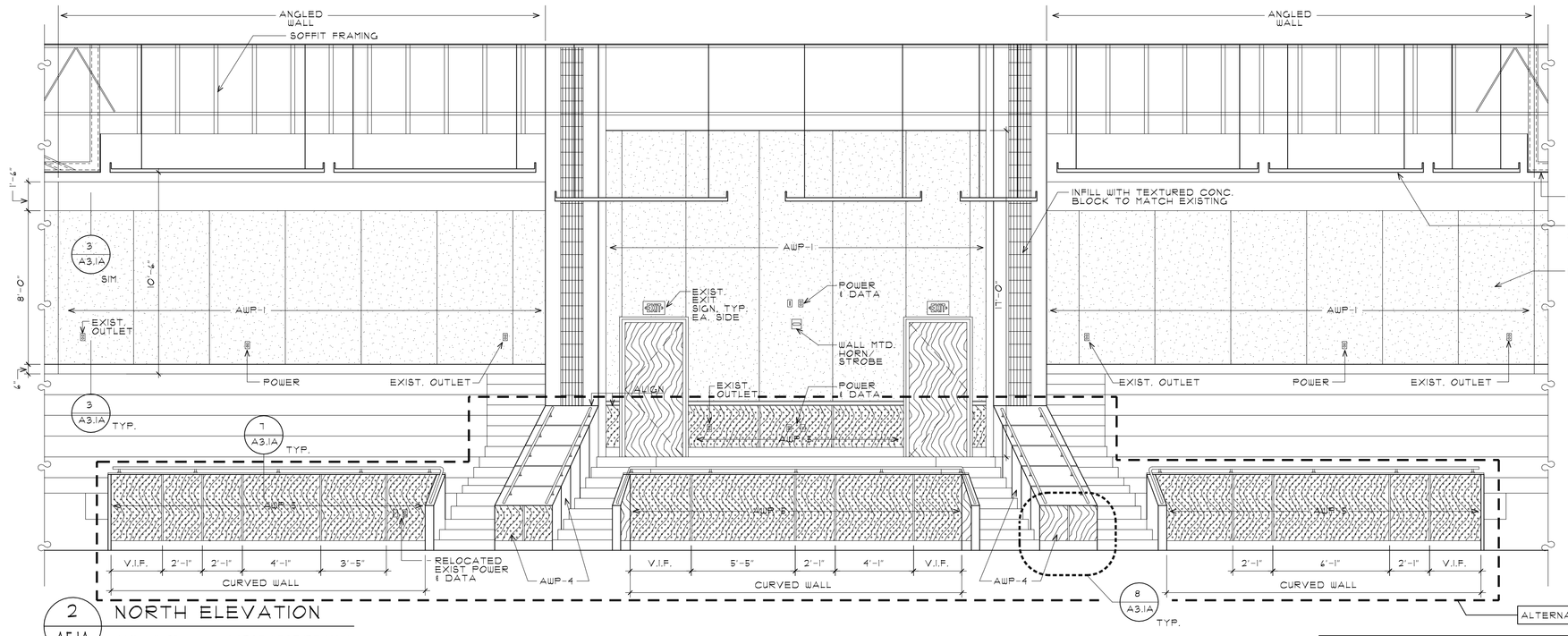
Design
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title
INTERIOR ELEVATIONS

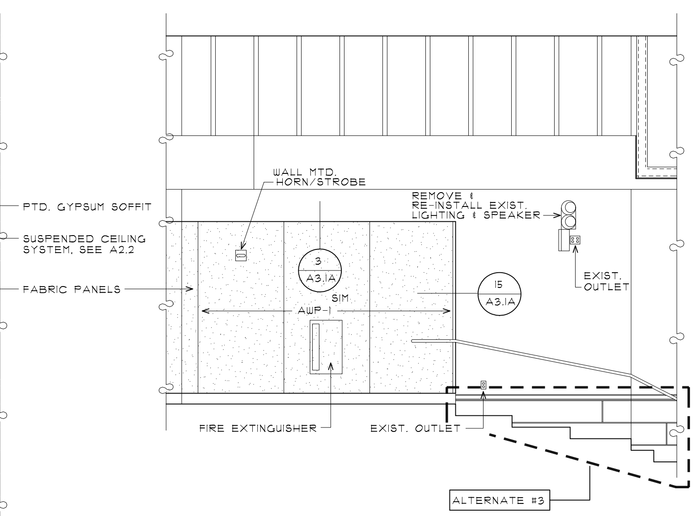
Drawing No.
A5.1



1 A5.1A NORTH PARTIAL ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL



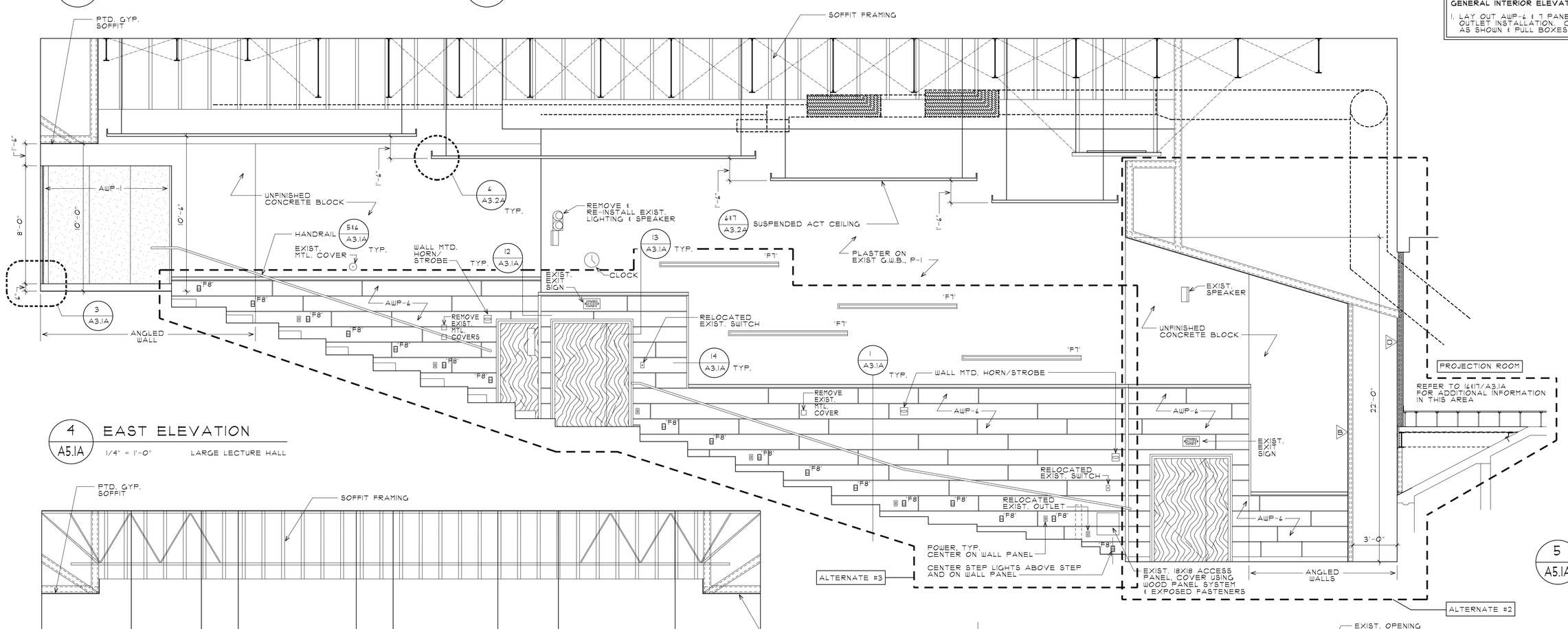
2 A5.1A NORTH ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL



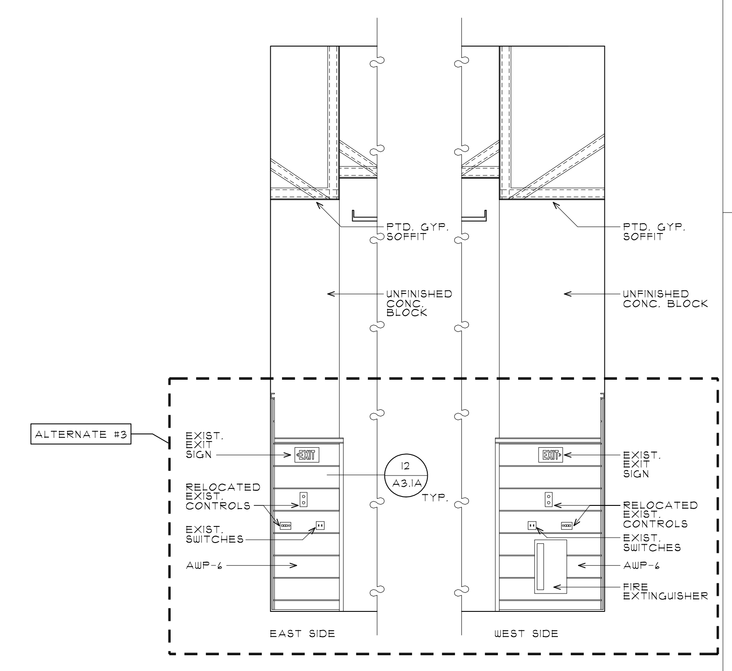
3 A5.1A NORTH PARTIAL ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL

GENERAL INTERIOR ELEVATION NOTES:

1. LAY OUT AWP-6 & T PANEL LINES BEFORE ELECTRICAL OUTLET INSTALLATION. CENTER BOXES IN PANELS AS SHOWN & PULL BOXES OUT FLUSH W/ PANELS, TYP.

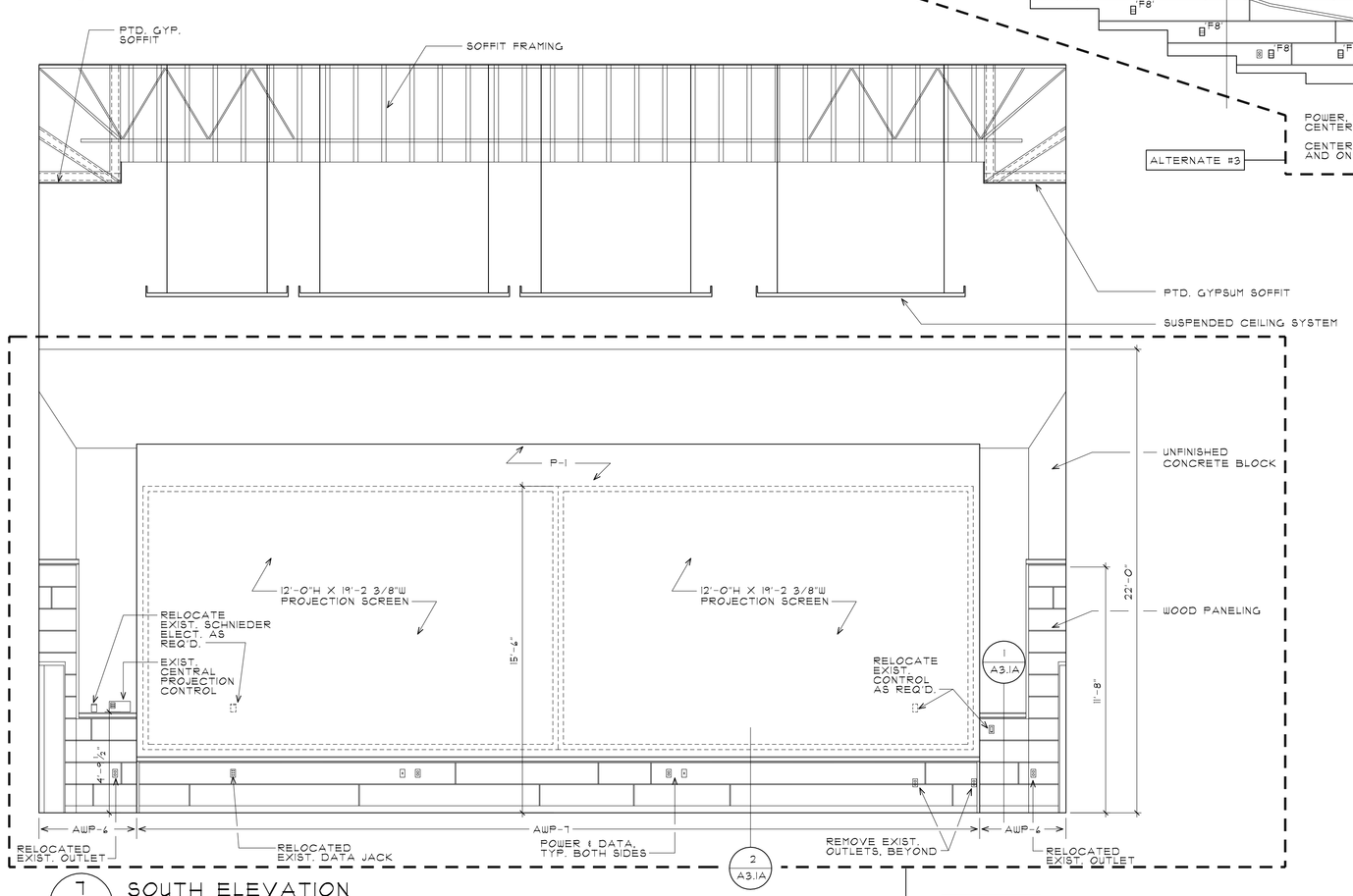


4 A5.1A EAST ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL

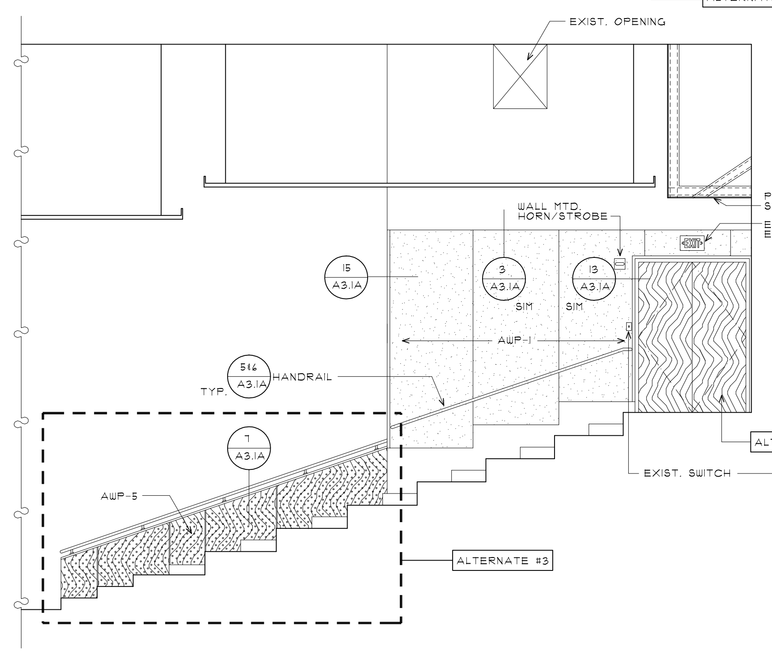


5 A5.1A NOT USED
1/4" = 1'-0" LARGE LECTURE HALL

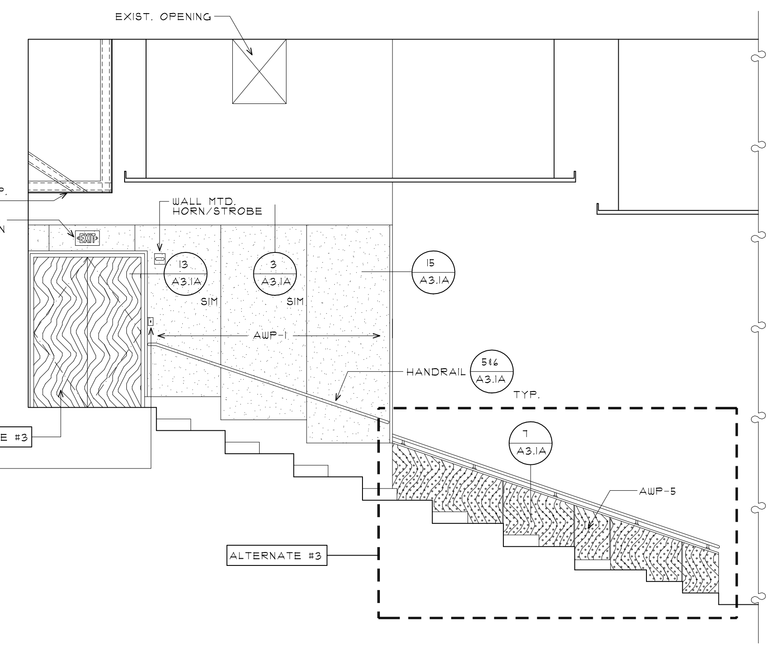
6 A5.1A PARTIAL SOUTH ELEVATIONS
1/4" = 1'-0" LARGE LECTURE HALL



7 A5.1A SOUTH ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL



8 A5.1A WEST PARTIAL ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL



9 A5.1A EAST PARTIAL ELEVATION
1/4" = 1'-0" LARGE LECTURE HALL

HAI PROJECT NO. 1TJL06918.036

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JOHN H. CHAFEE SOCIAL SCIENCE CENTER UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

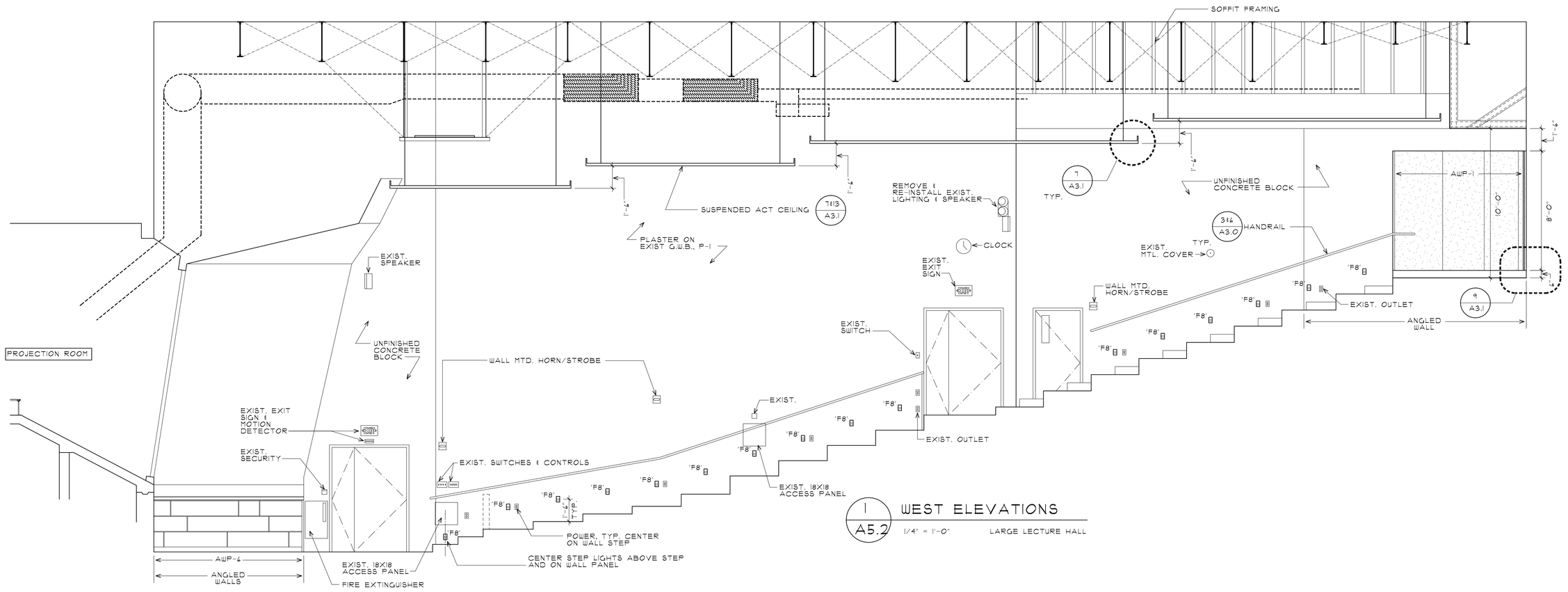
Seal

Project Description: CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

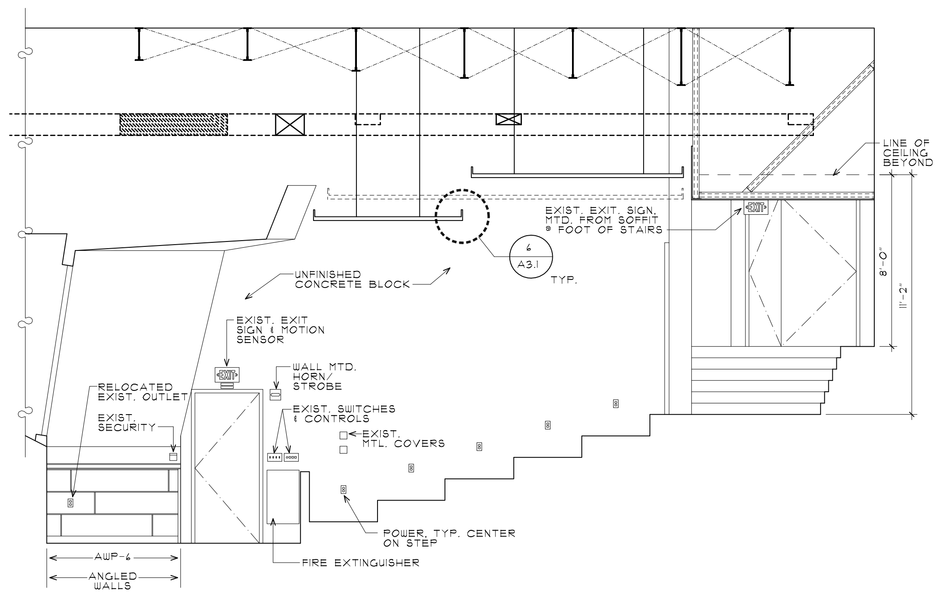
Design:
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title: INTERIOR ELEVATIONS (ALTERNATES)

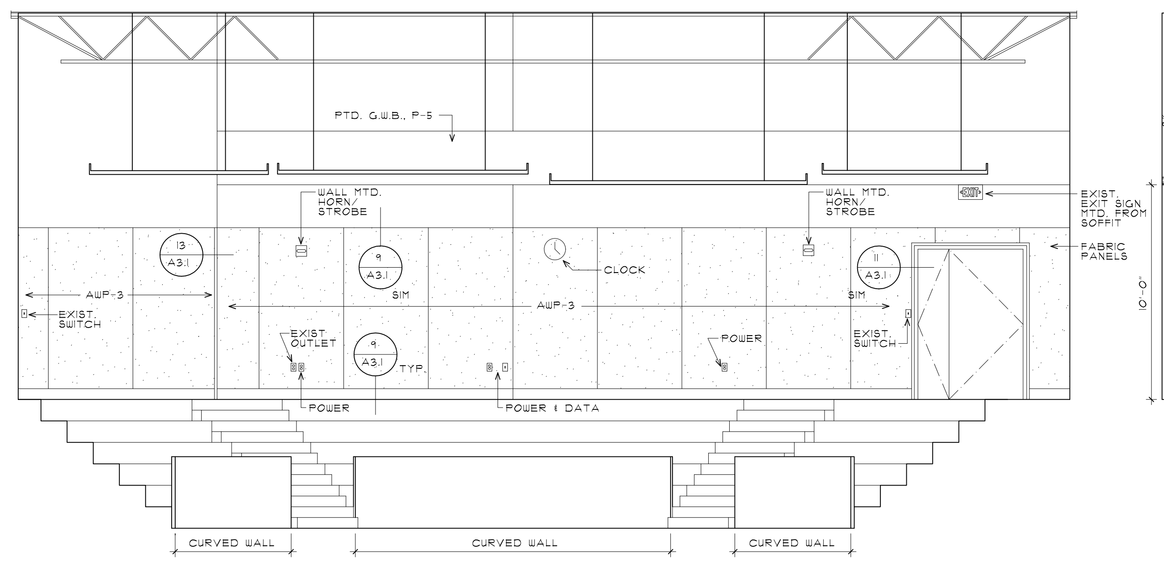
Drawing No.: A5.1A



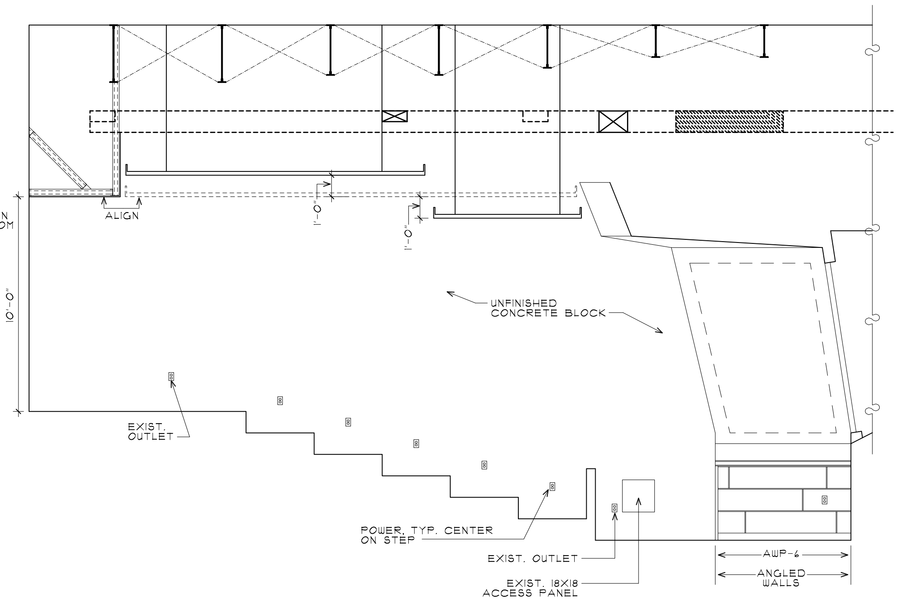
1 A5.2 WEST ELEVATIONS
1/4" = 1'-0" LARGE LECTURE HALL



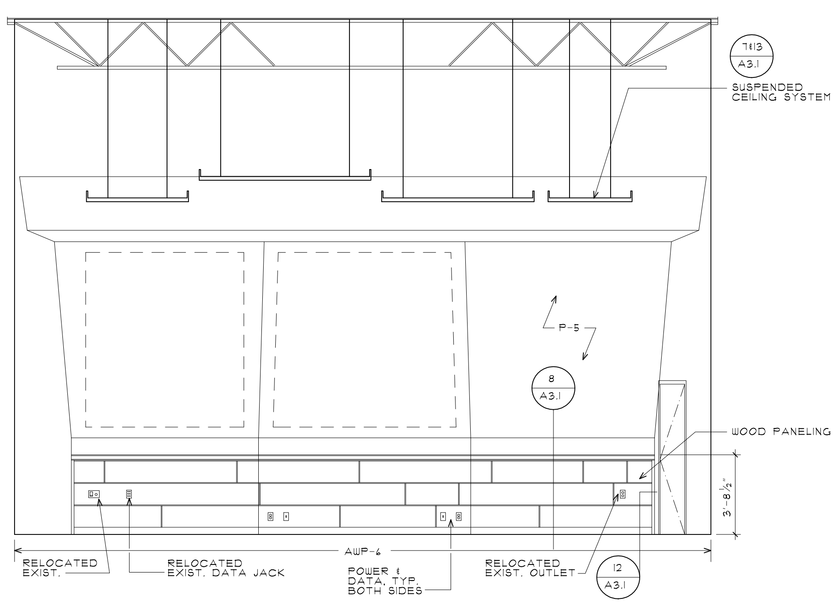
2 A5.2 NORTH ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL A



3 A5.2 EAST ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL A

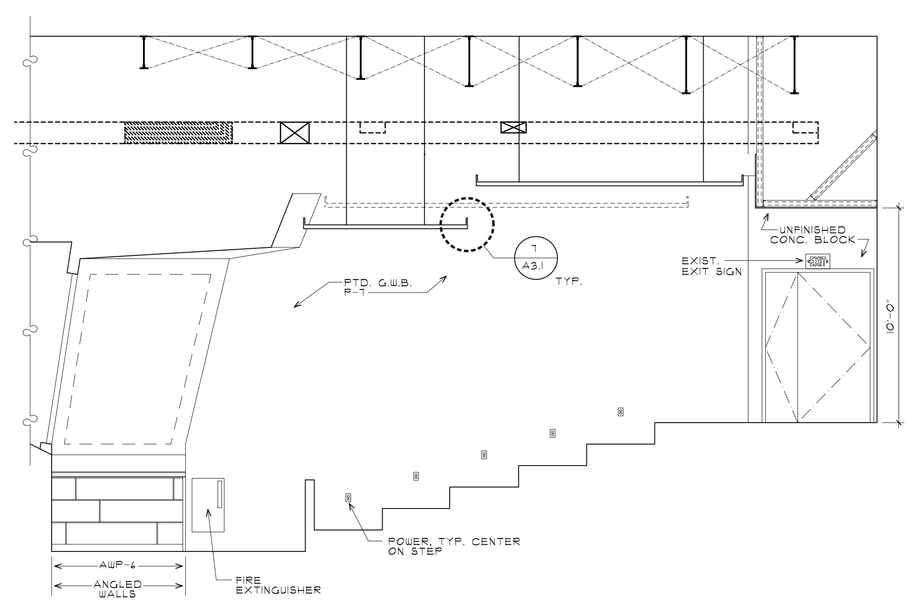


4 A5.2 SOUTH ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL A



5 A5.2 WEST ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL A

6 A5.2 NOT USED
1/4" = 1'-0" SMALL LECTURE HALL A



7 A5.2 EAST ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL B

HAI PROJECT NO. 1TJL06918.036

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SOCIAL SCIENCE CENTER
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

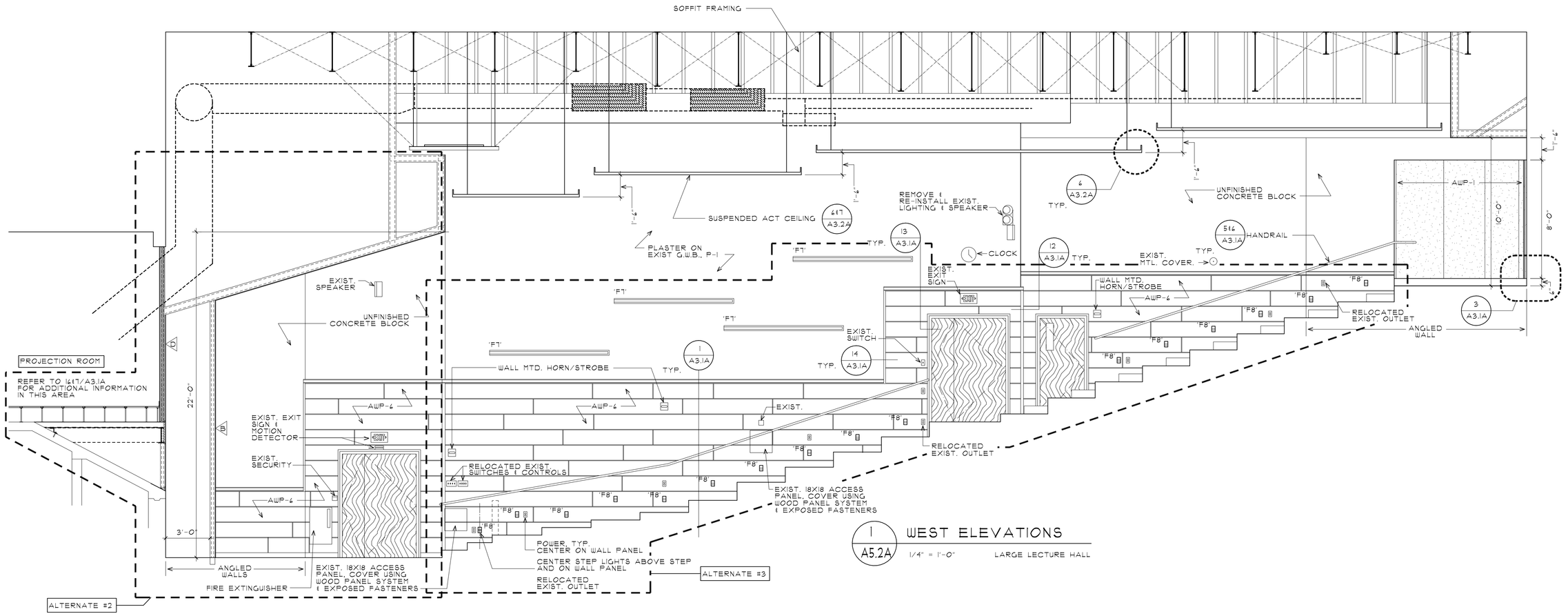
Seal

Project Description
CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

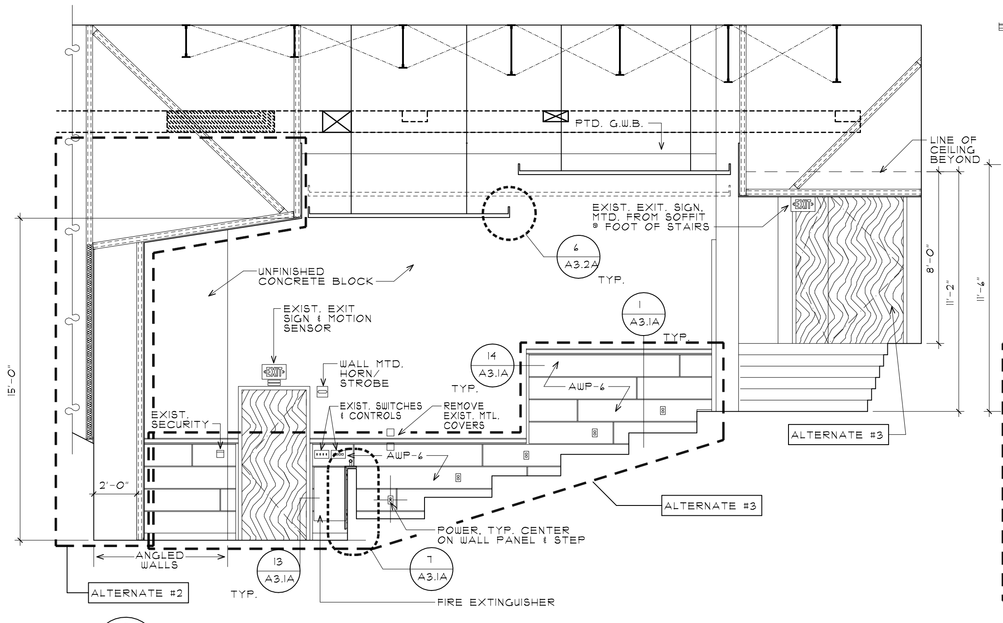
Design
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title
INTERIOR ELEVATIONS

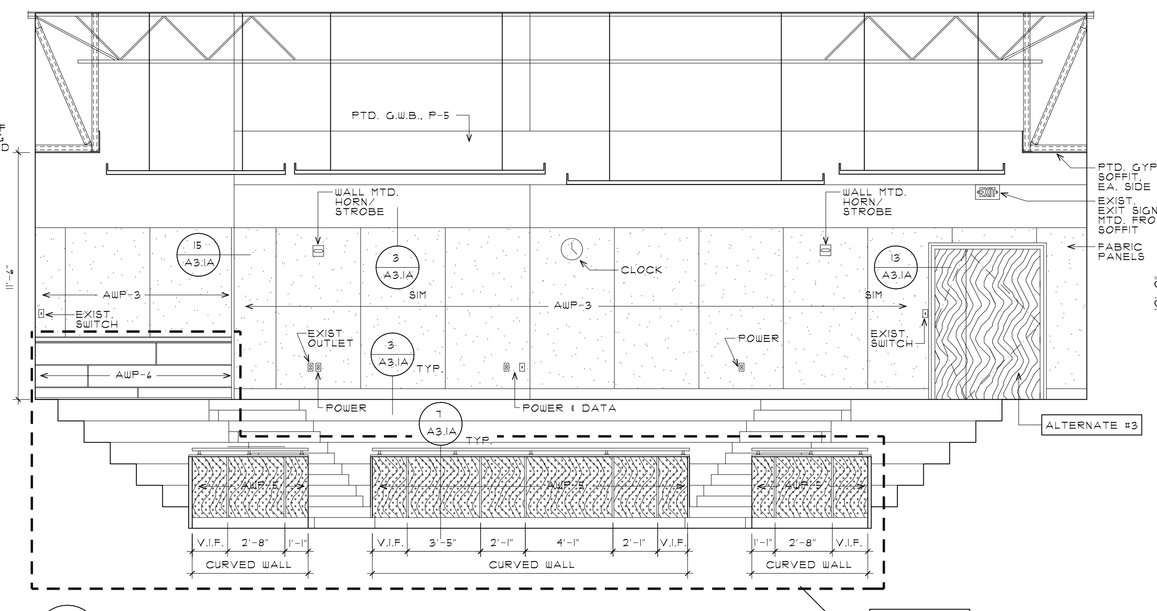
Drawing No.
A5.2



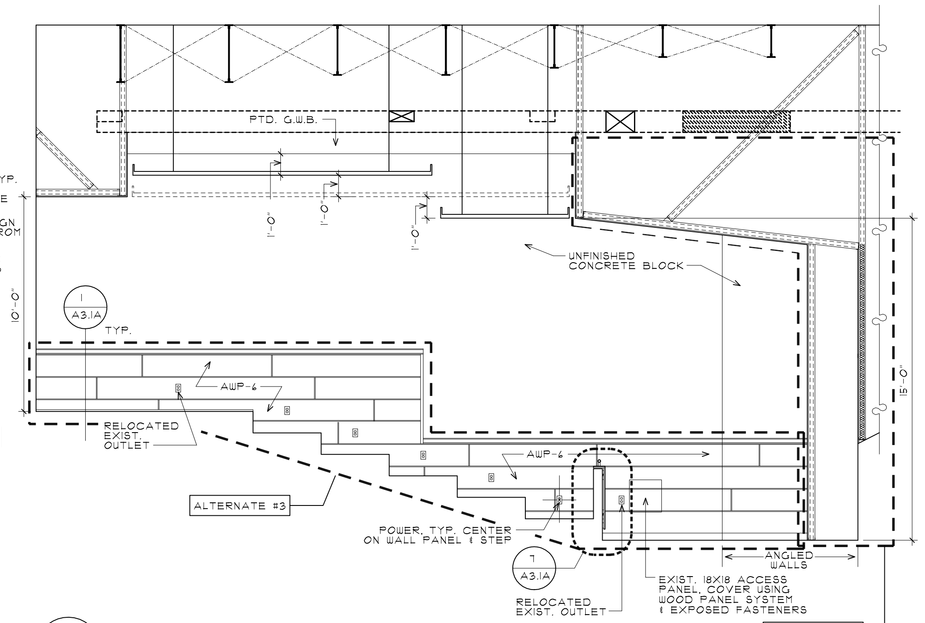
1 A5.2A WEST ELEVATIONS
1/4" = 1'-0" LARGE LECTURE HALL



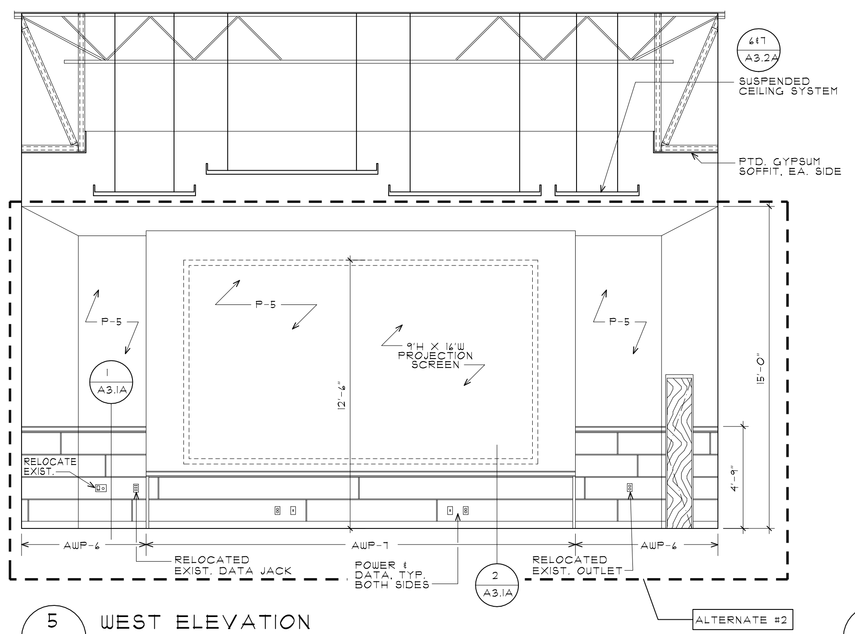
2 A5.2A NORTH ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL A



3 A5.2A EAST ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL A

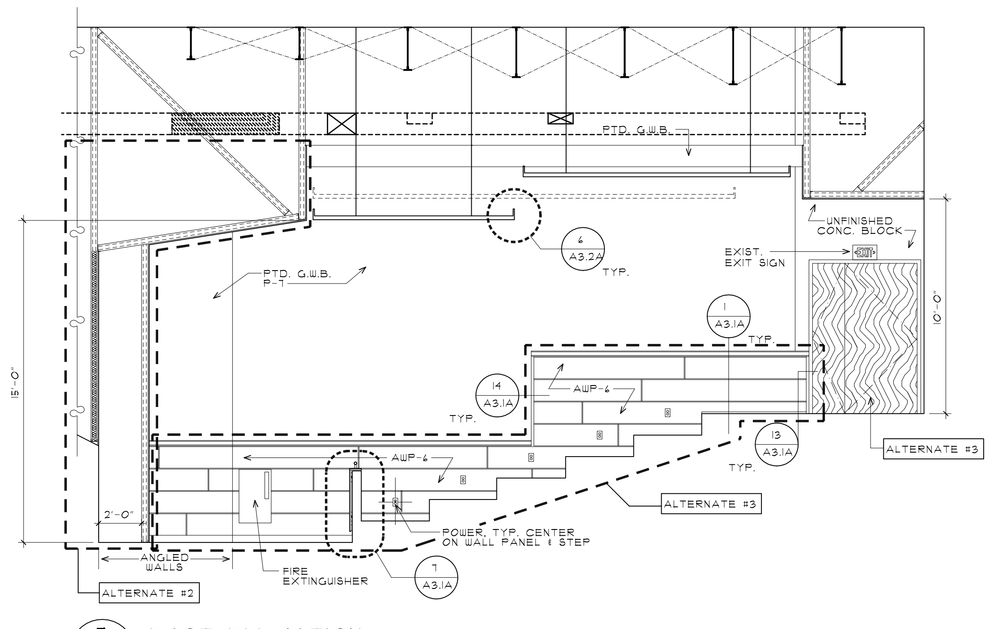


4 A5.2A SOUTH ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL A



5 A5.2A WEST ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL A

6 A5.2A NOT USED
1/4" = 1'-0" SMALL LECTURE HALL A



7 A5.2A EAST ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL B

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JOHN H. CHAFEE SOCIAL SCIENCE CENTER UNIVERSITY OF RHODE ISLAND Kingston, Rhode Island

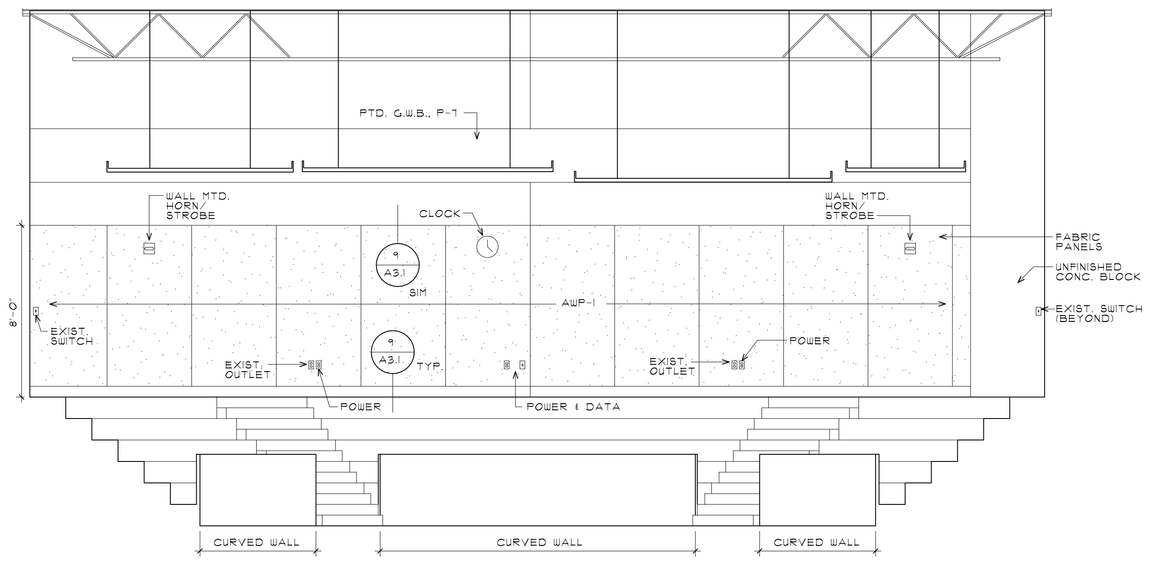
Seal

Project Description: CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

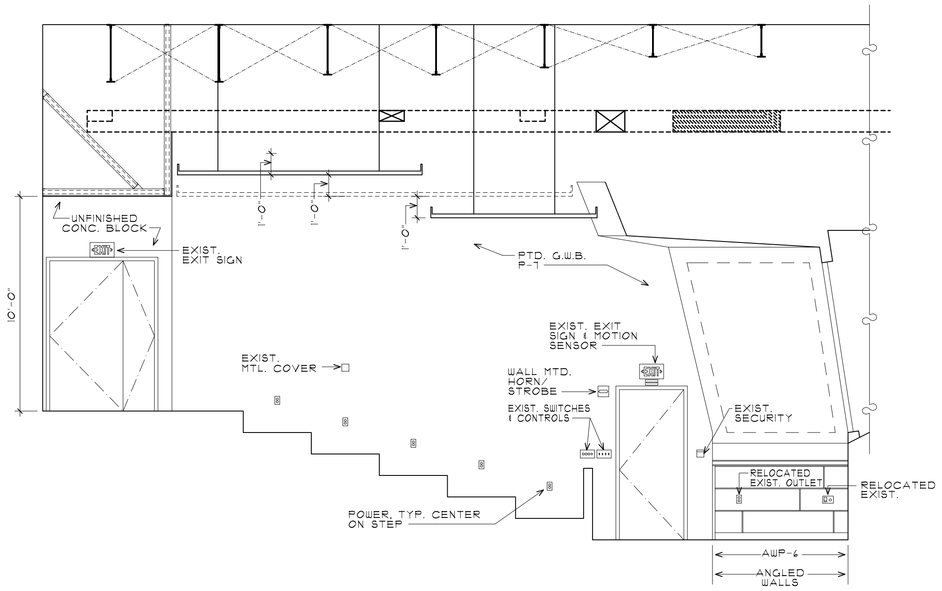
Design:
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title: INTERIOR ELEVATIONS (ALTERNATES)

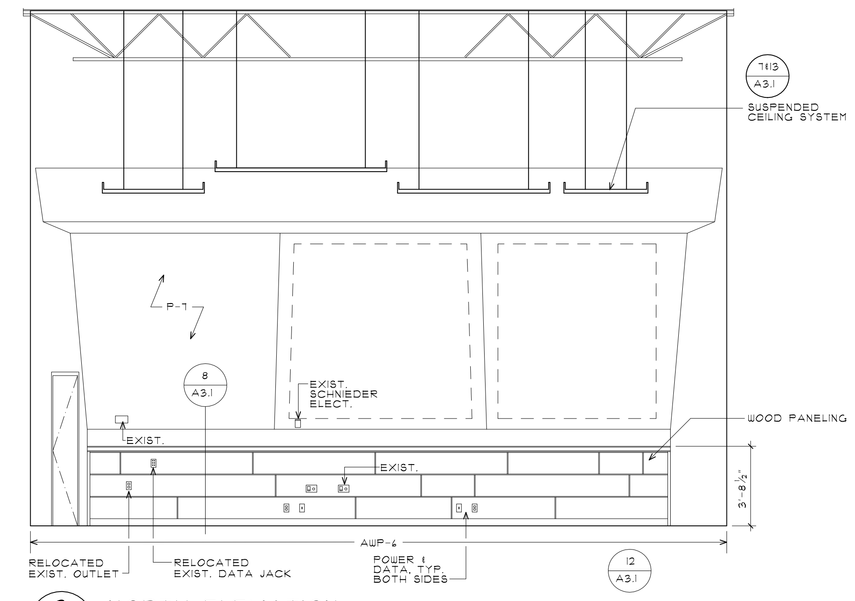
Drawing No.: A5.2A



1 A5.3 SOUTH ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL B

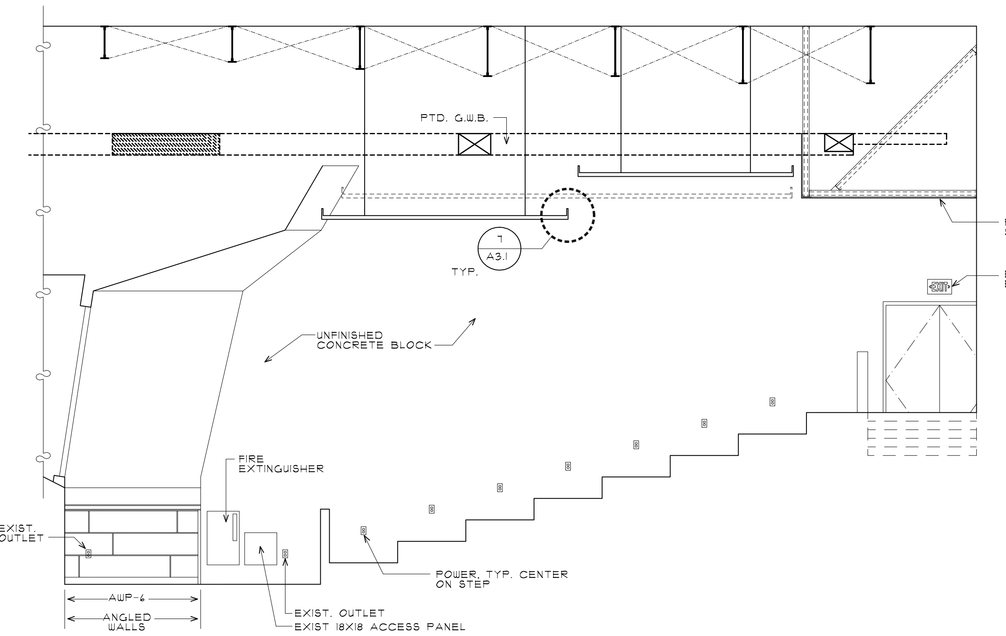


2 A5.3 WEST ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL B

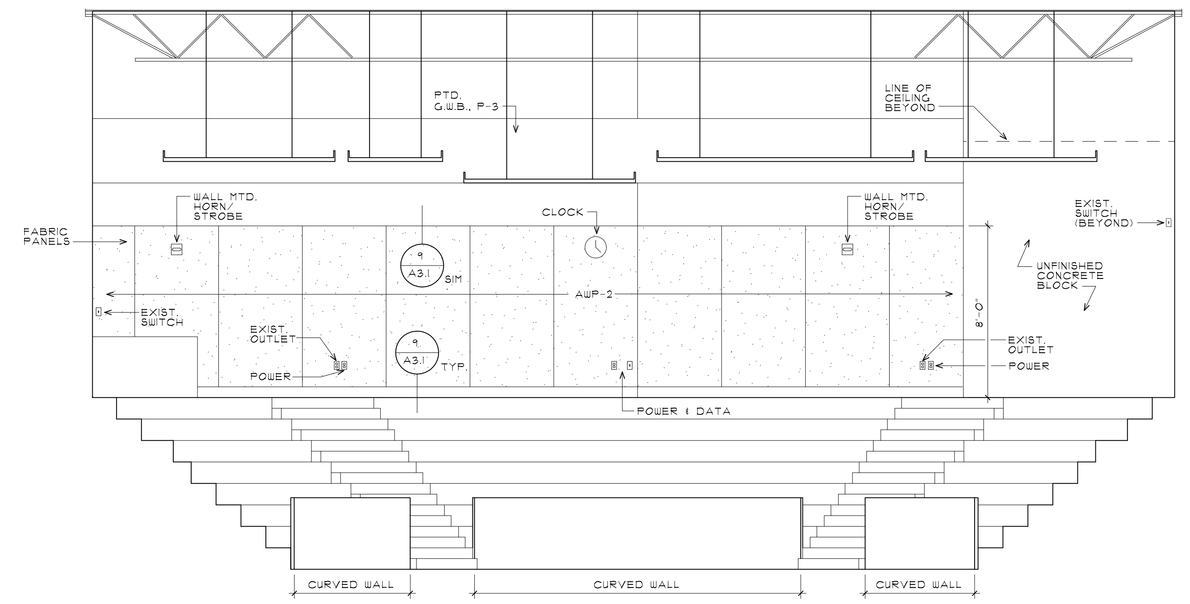


3 A5.3 NORTH ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL B

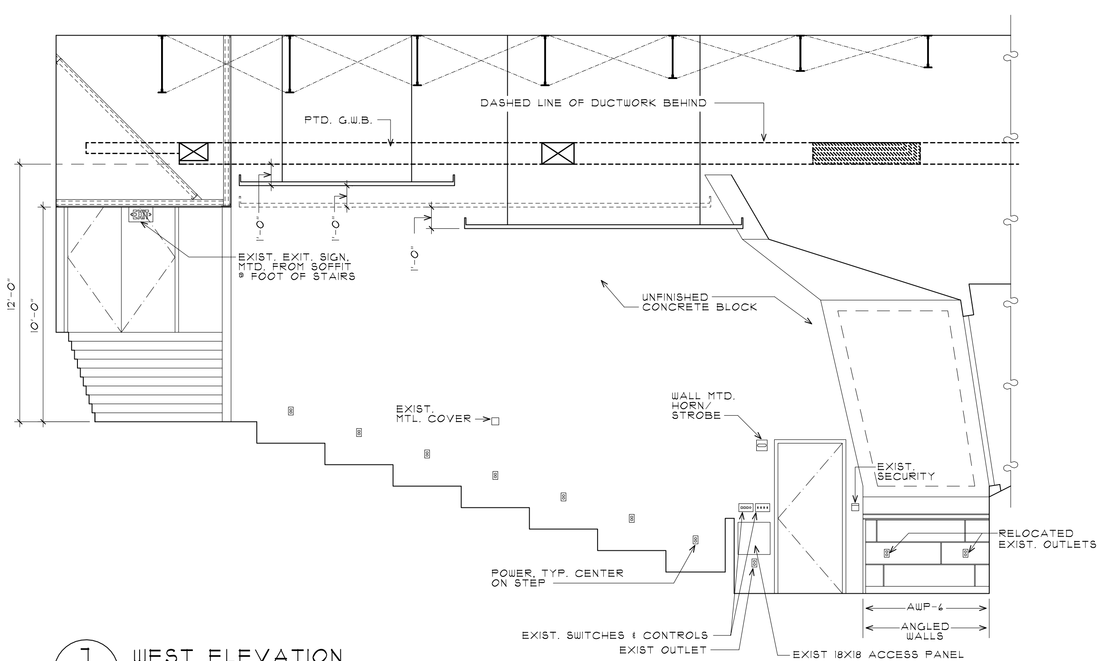
4 A5.3 NOT USED
1/4" = 1'-0" SMALL LECTURE HALL B



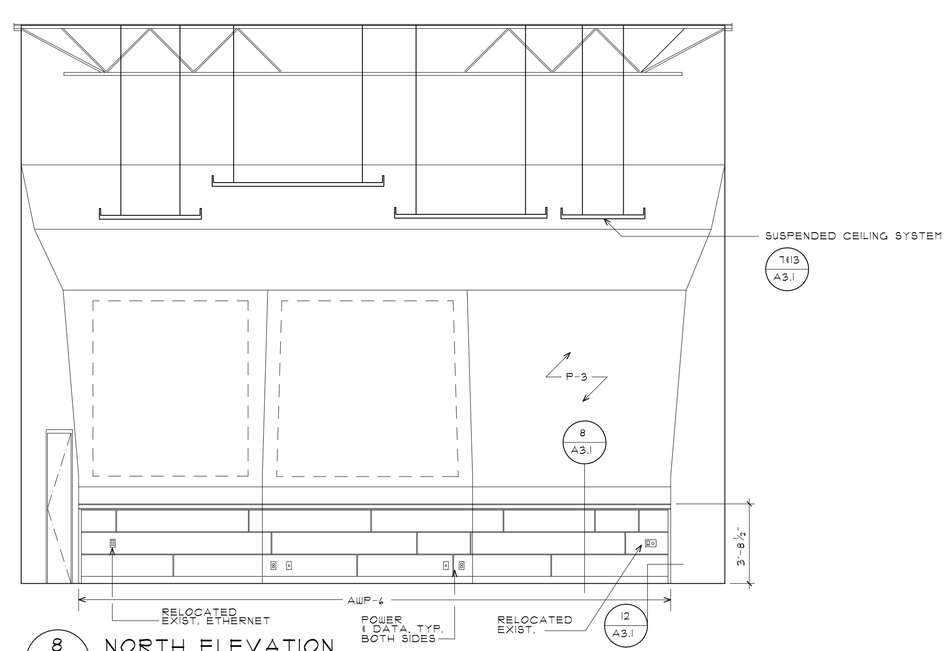
5 A5.3 EAST ELEVATION
1/4" = 1'-0" MEDIUM LECTURE HALL



6 A5.3 SOUTH ELEVATION
1/4" = 1'-0" MEDIUM LECTURE HALL



7 A5.3 WEST ELEVATION
1/4" = 1'-0" MEDIUM LECTURE HALL



8 A5.3 NORTH ELEVATION
1/4" = 1'-0" MEDIUM LECTURE HALL

9 A5.3 NOT USED
1/4" = 1'-0" MEDIUM LECTURE HALL

HAI PROJECT NO. 1TJL06918.036

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UNIVERSITY OF RHODE ISLAND
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Seal

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Kingston, Rhode Island

Design
Scale: AS NOTED
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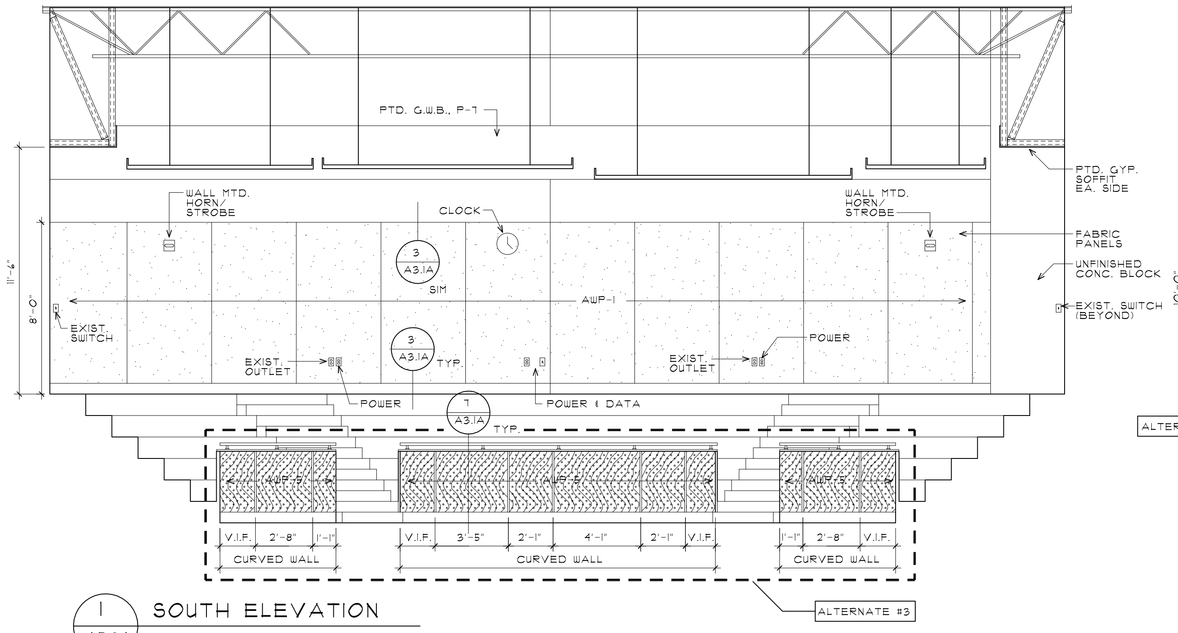
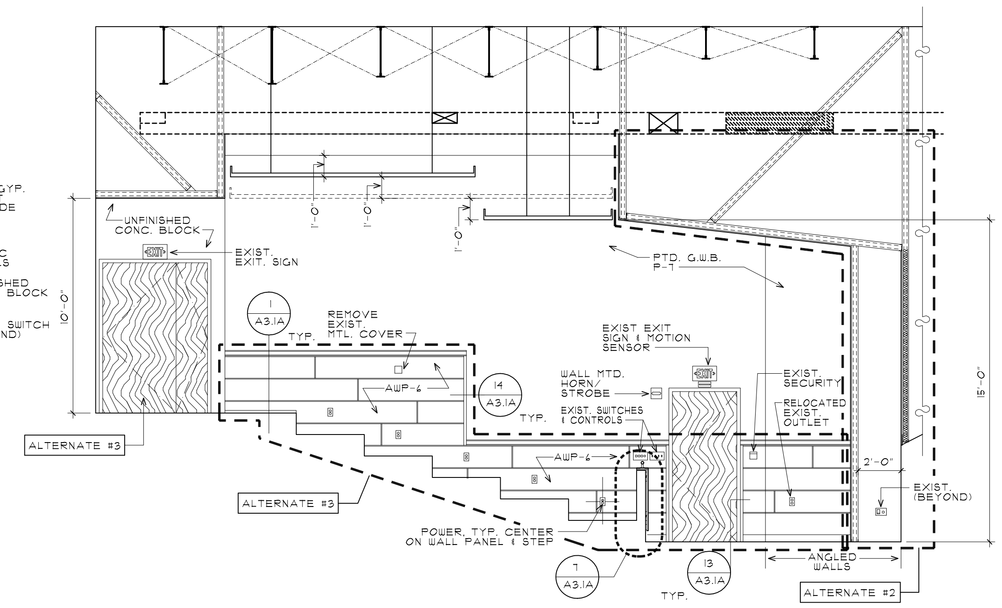
Design: NJG
Review: NJG

Drawing Title
INTERIOR ELEVATIONS

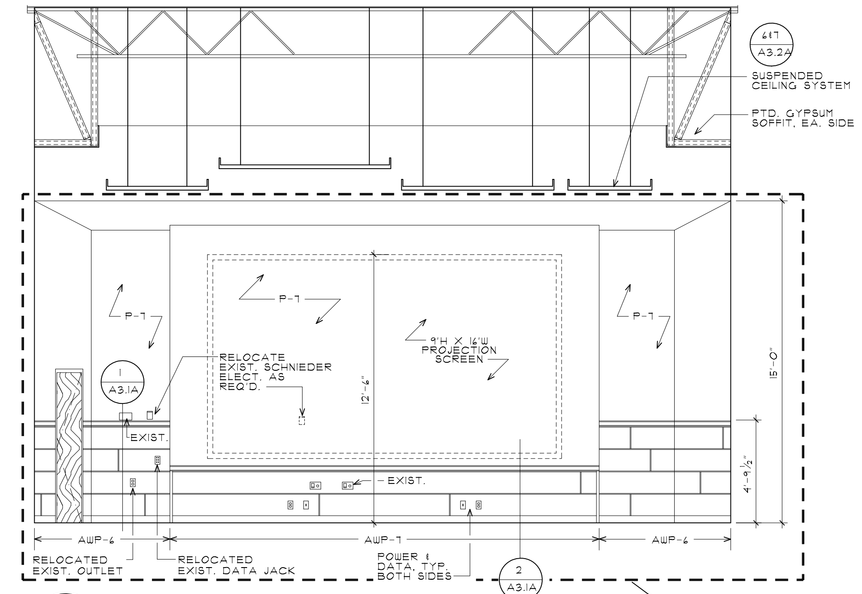
Drawing No.
A5.3



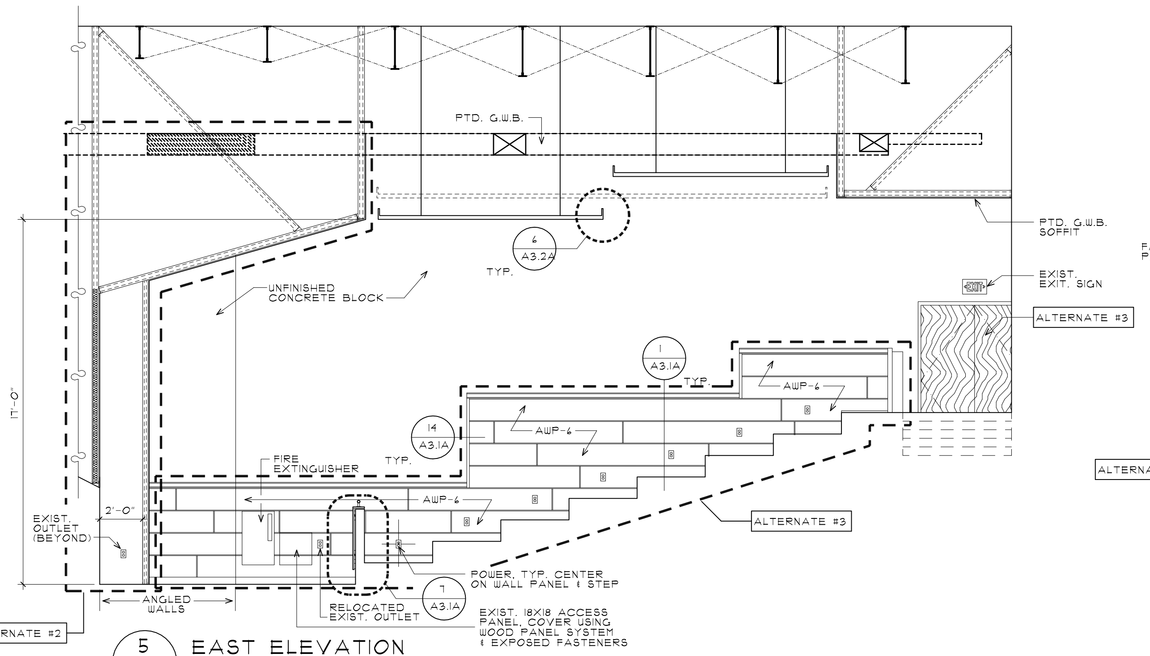
1 A5.3A SOUTH ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL B



2 A5.3A WEST ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL B

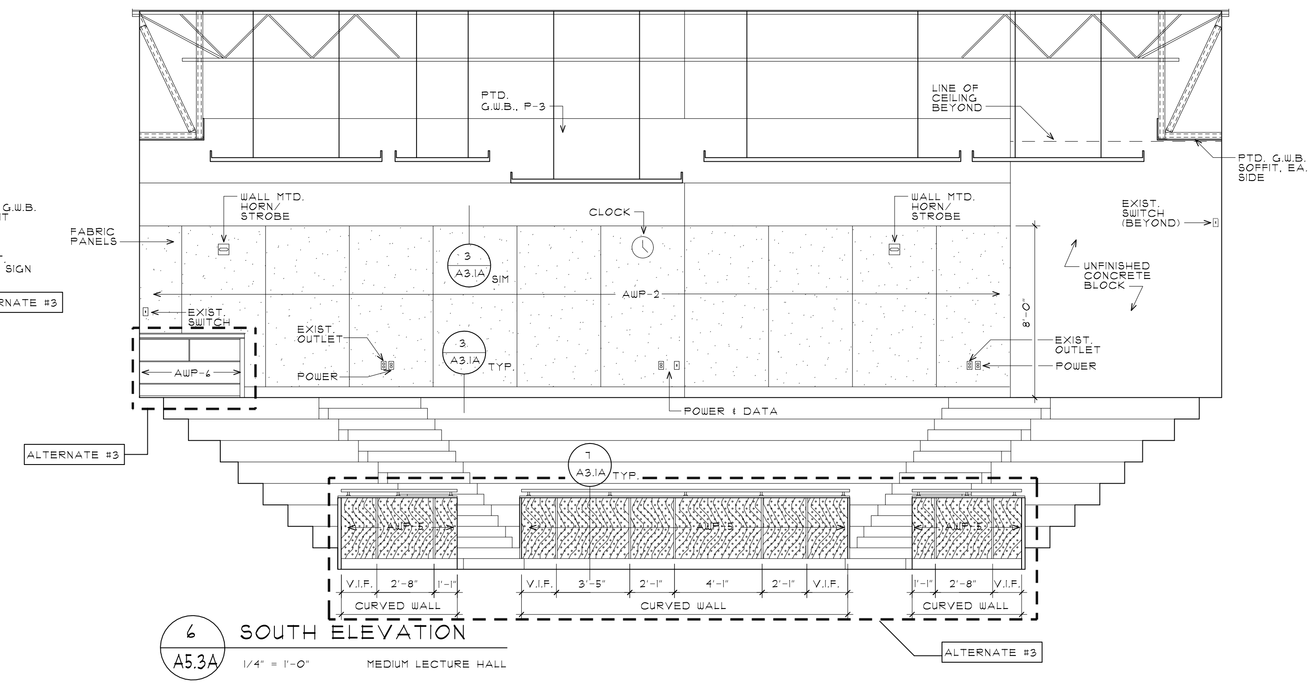


3 A5.3A NORTH ELEVATION
1/4" = 1'-0" SMALL LECTURE HALL B

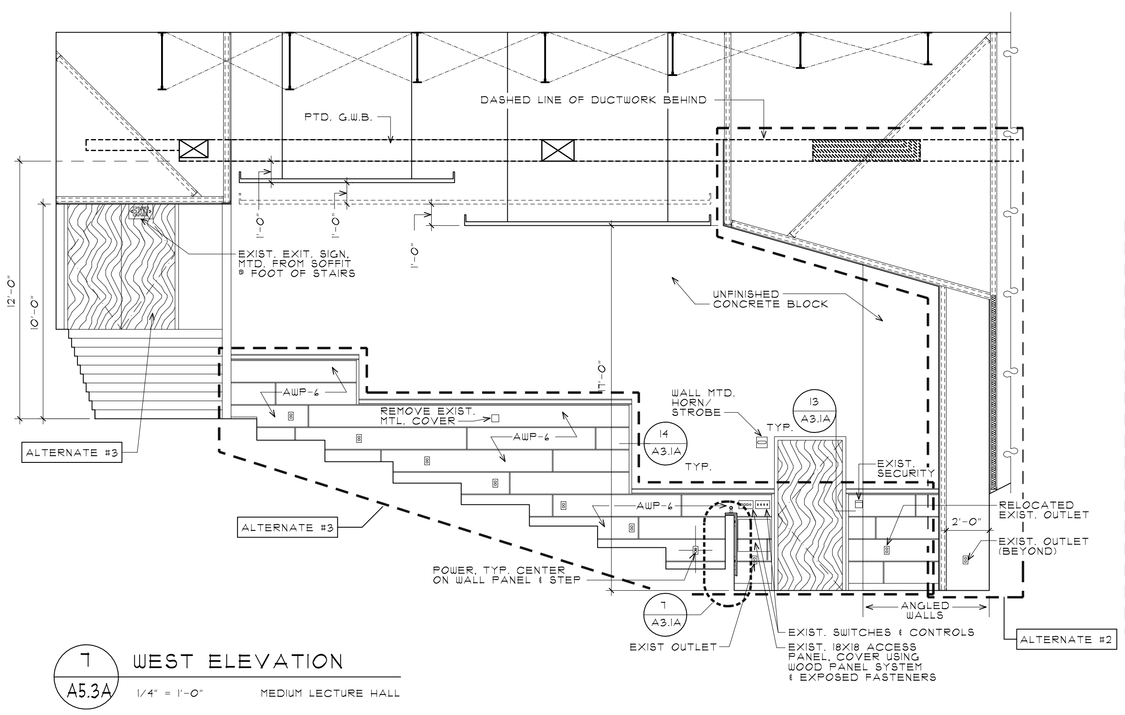


4 A5.3A NOT USED
1/4" = 1'-0" SMALL LECTURE HALL B

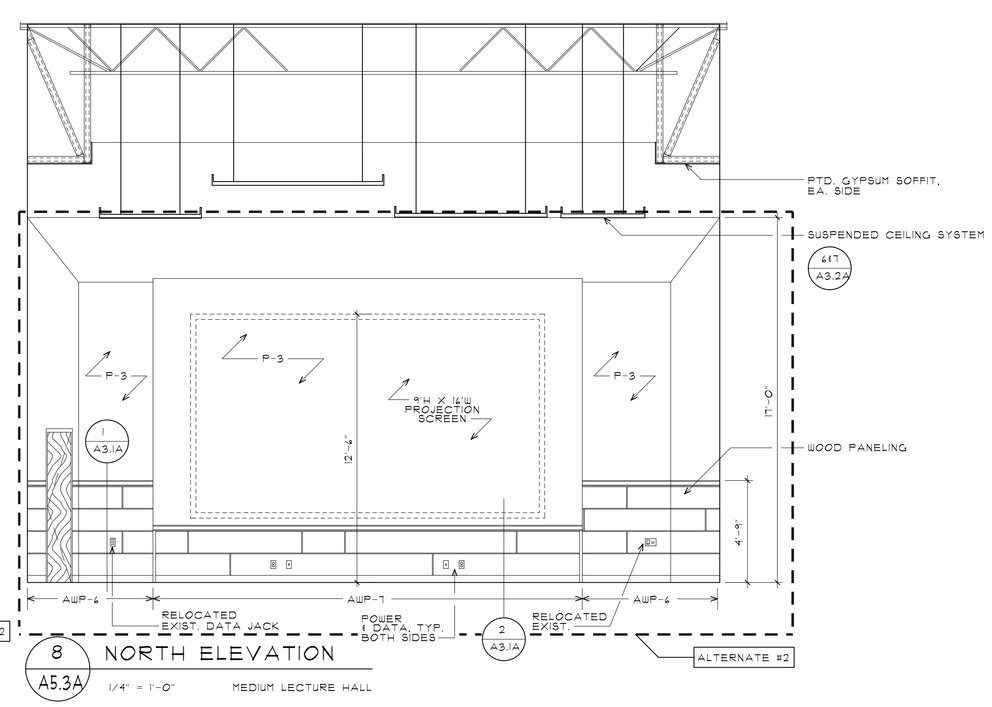
5 A5.3A EAST ELEVATION
1/4" = 1'-0" MEDIUM LECTURE HALL



6 A5.3A SOUTH ELEVATION
1/4" = 1'-0" MEDIUM LECTURE HALL



7 A5.3A WEST ELEVATION
1/4" = 1'-0" MEDIUM LECTURE HALL



8 A5.3A NORTH ELEVATION
1/4" = 1'-0" MEDIUM LECTURE HALL

9 A5.3A NOT USED
1/4" = 1'-0" MEDIUM LECTURE HALL

HAI PROJECT NO. 1TJL06918.036

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UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

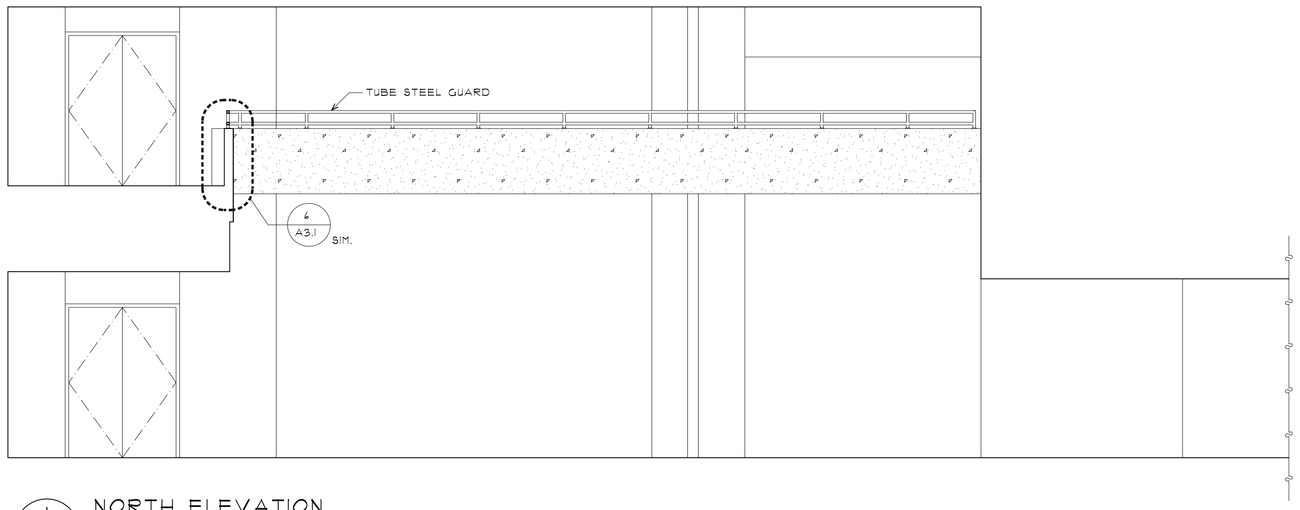
Seal

Project Description
CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

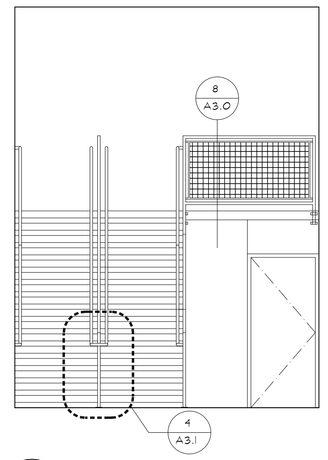
Design
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title
INTERIOR ELEVATIONS (ALTERNATES)

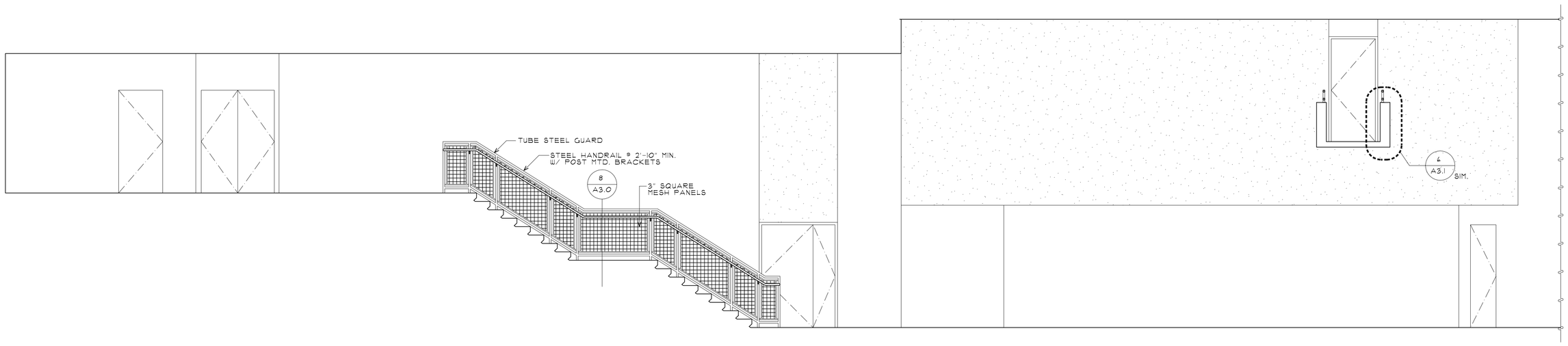
Drawing No.
A5.3A



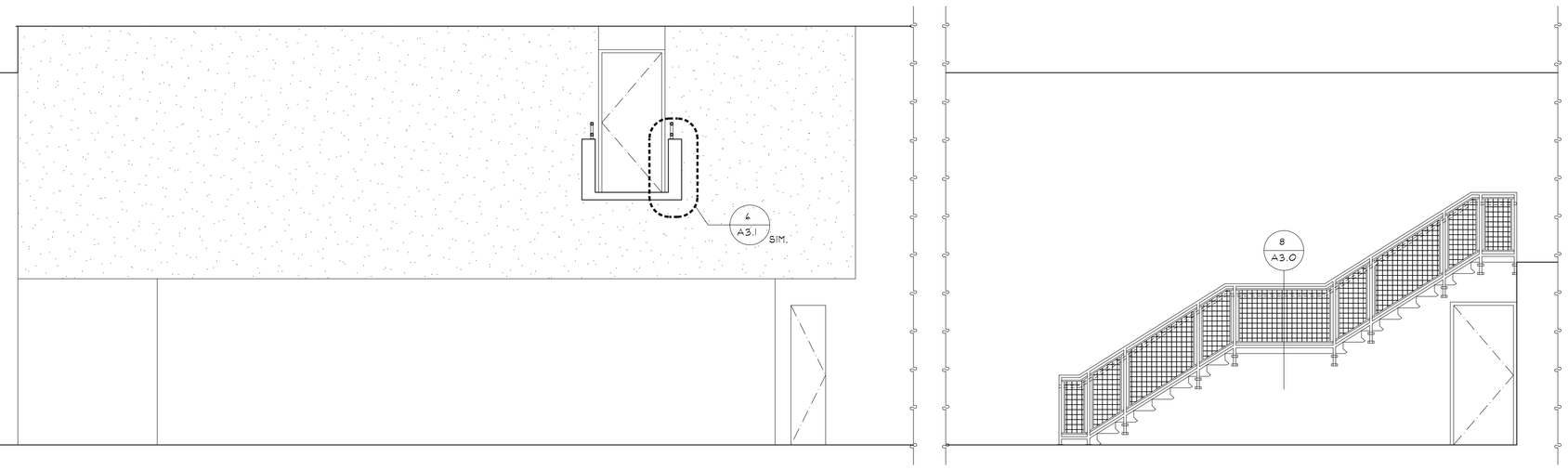
1 A5.4 NORTH ELEVATION
1/4" = 1'-0" LOBBY



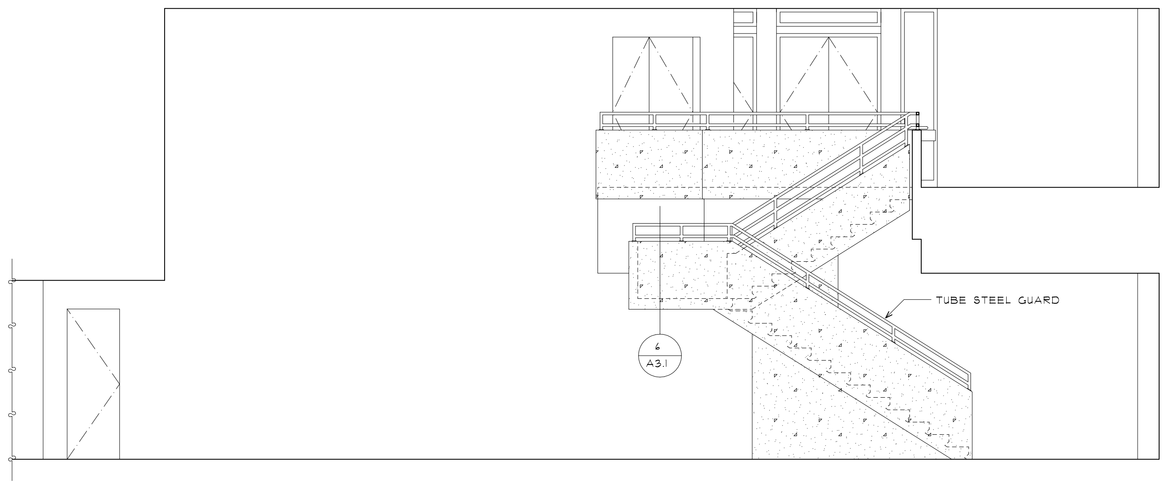
2 A5.4 PARTIAL NORTH ELEVATION
1/4" = 1'-0" LOBBY



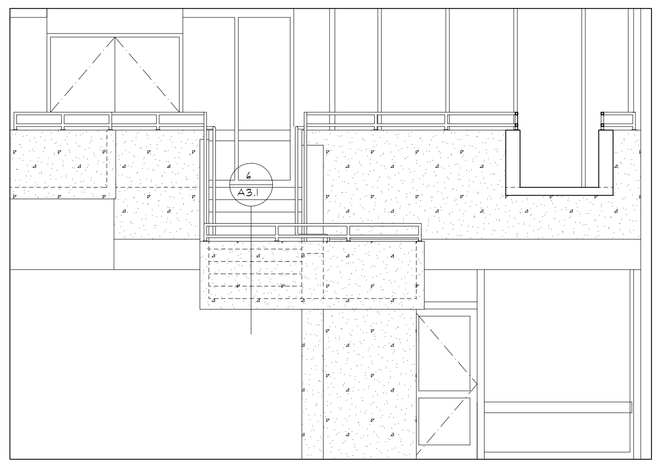
3 A5.4 EAST ELEVATION
1/4" = 1'-0" LOBBY



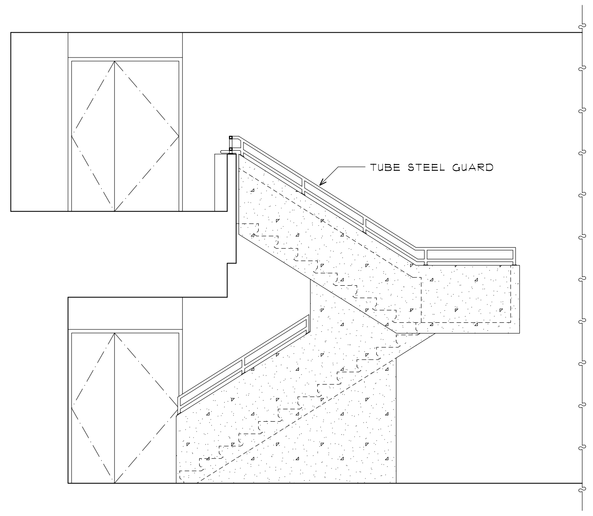
4 A5.4 PARTIAL WEST ELEVATION
1/4" = 1'-0" LOBBY



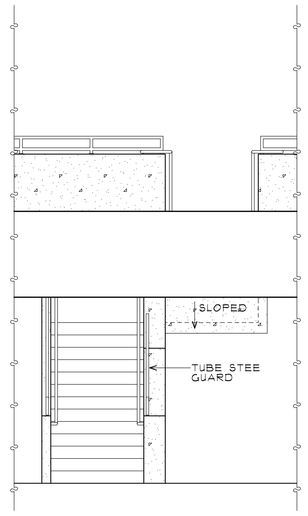
5 A5.4 SOUTH ELEVATION
1/4" = 1'-0" LOBBY



6 A5.4 WEST ELEVATION
1/4" = 1'-0" LOBBY



7 A5.4 PARTIAL NORTH ELEVATION
1/4" = 1'-0" LOBBY



8 A5.4 PARTIAL EAST ELEVATION
1/4" = 1'-0" LOBBY

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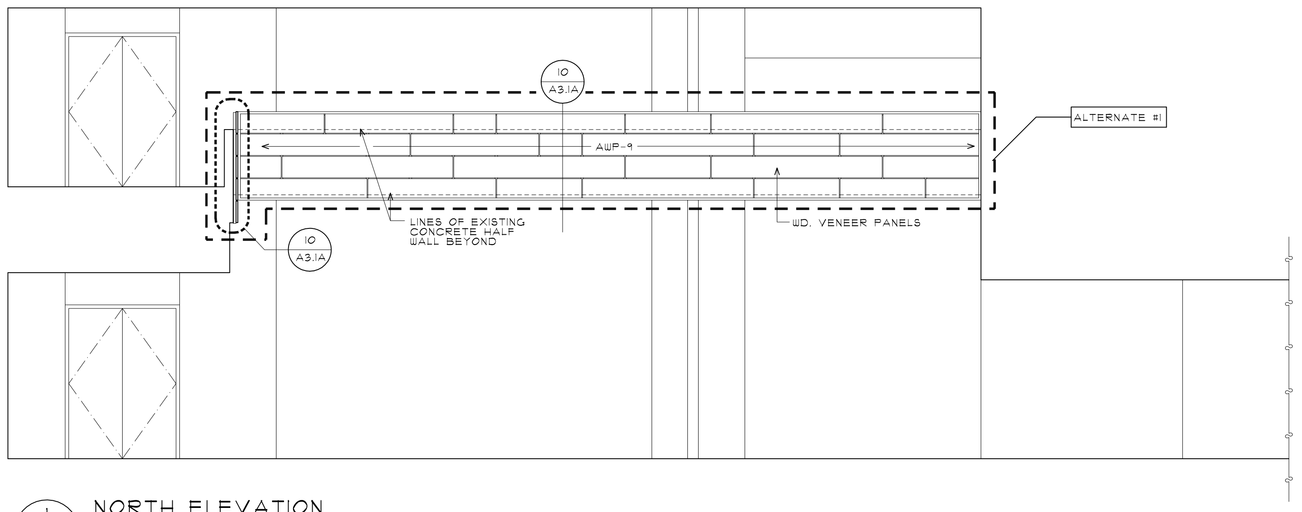
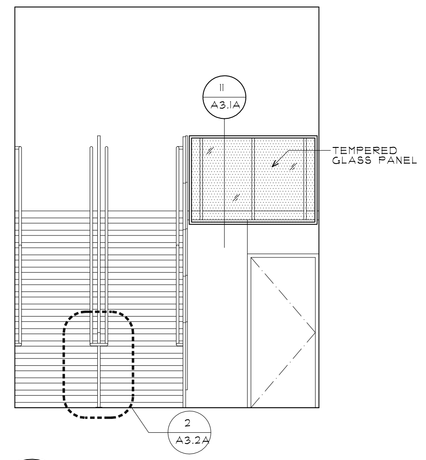
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title
INTERIOR ELEVATIONS

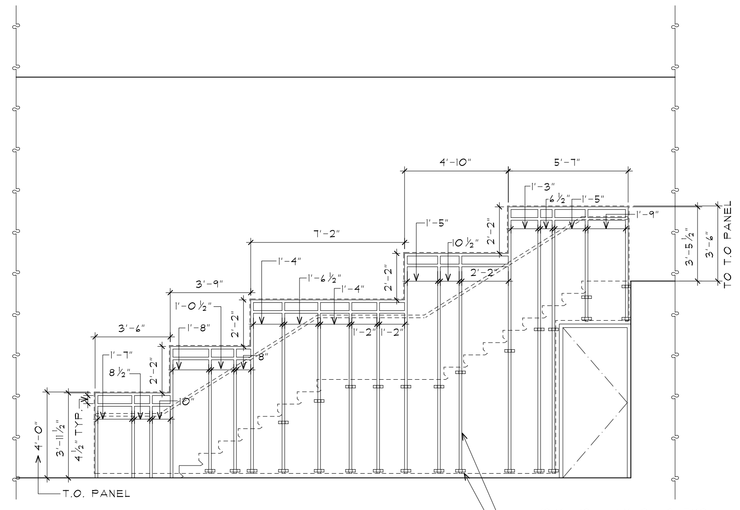
Drawing No.
A5.4



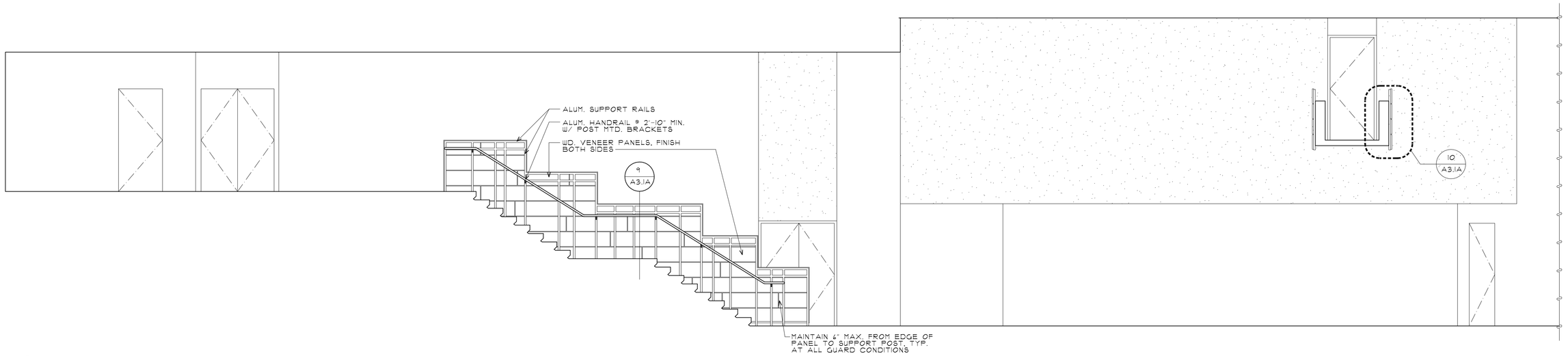
1 A5.4A NORTH ELEVATION
1/4" = 1'-0" LOBBY



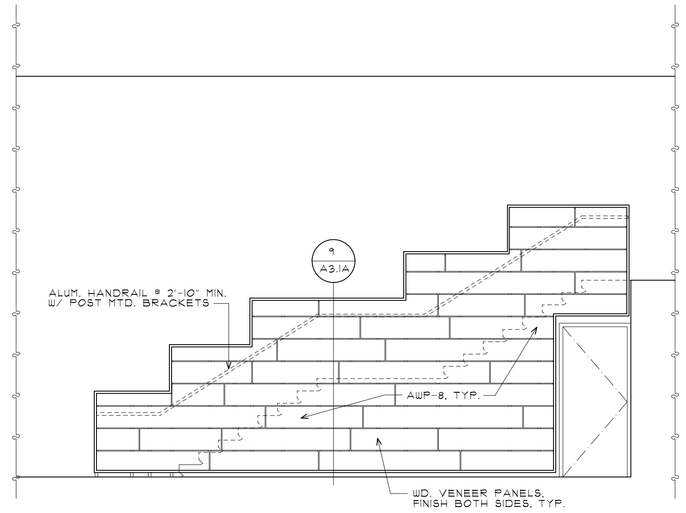
2 A5.4A PARTIAL NORTH ELEVATION
1/4" = 1'-0" LOBBY
ALTERNATE #1



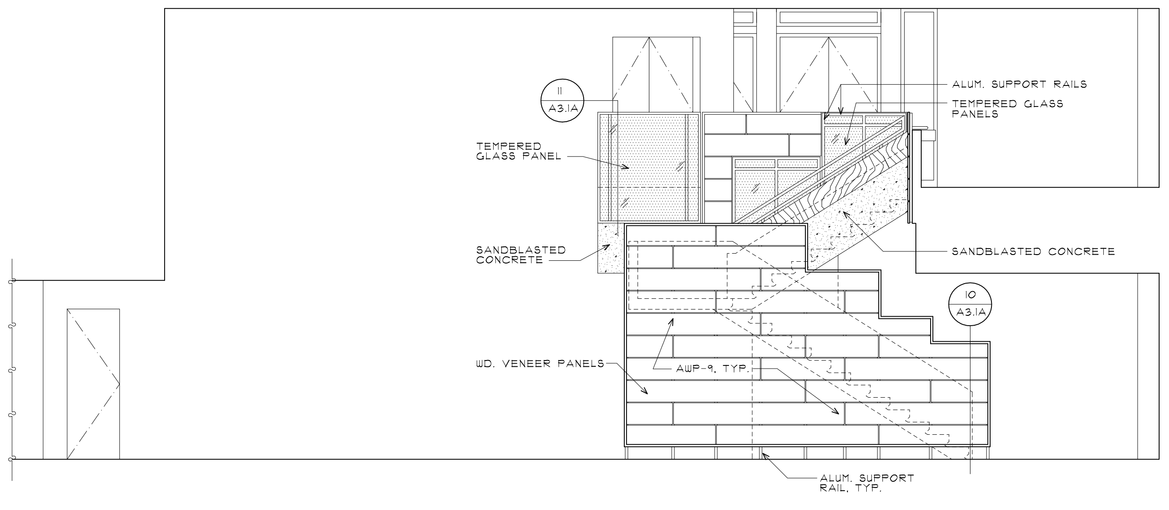
4A A5.4A PARTIAL WEST ELEVATION FRAMING DIAGRAM
1/4" = 1'-0" LOBBY
ALTERNATE #1



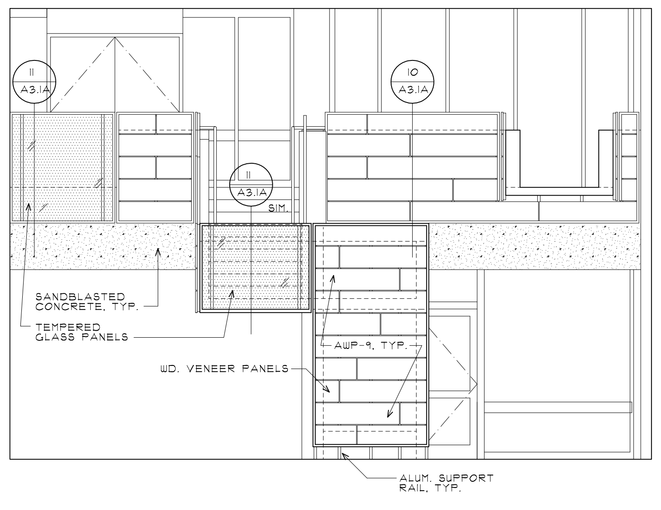
3 A5.4A EAST ELEVATION
1/4" = 1'-0" LOBBY
ALTERNATE #1



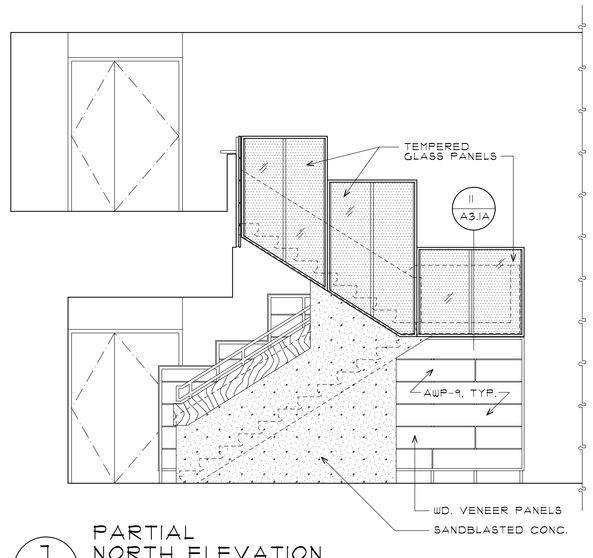
4 A5.4A PARTIAL WEST ELEVATION
1/4" = 1'-0" LOBBY
ALTERNATE #1



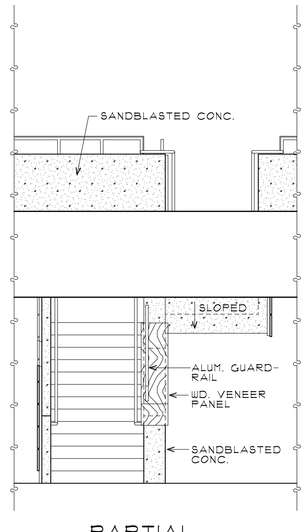
5 A5.4A SOUTH ELEVATION
1/4" = 1'-0" LOBBY
ALTERNATE #1



6 A5.4A WEST ELEVATION
1/4" = 1'-0" LOBBY
ALTERNATE #1



7 A5.4A PARTIAL NORTH ELEVATION
1/4" = 1'-0" LOBBY
ALTERNATE #1



8 A5.4A PARTIAL EAST ELEVATION
1/4" = 1'-0" LOBBY
ALTERNATE #1

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
1	DESIGN ISSUE SET	03/25/10
2A	LECTURE HALL FINISH SET	08/13/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

BREWSTER THORNTON GROUP LLP
ARCHITECTS
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Providence, RI
02903
Tel 401.861.1600
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JOHN H. CHAFEE CENTER
SOCIAL SCIENCE CENTER
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

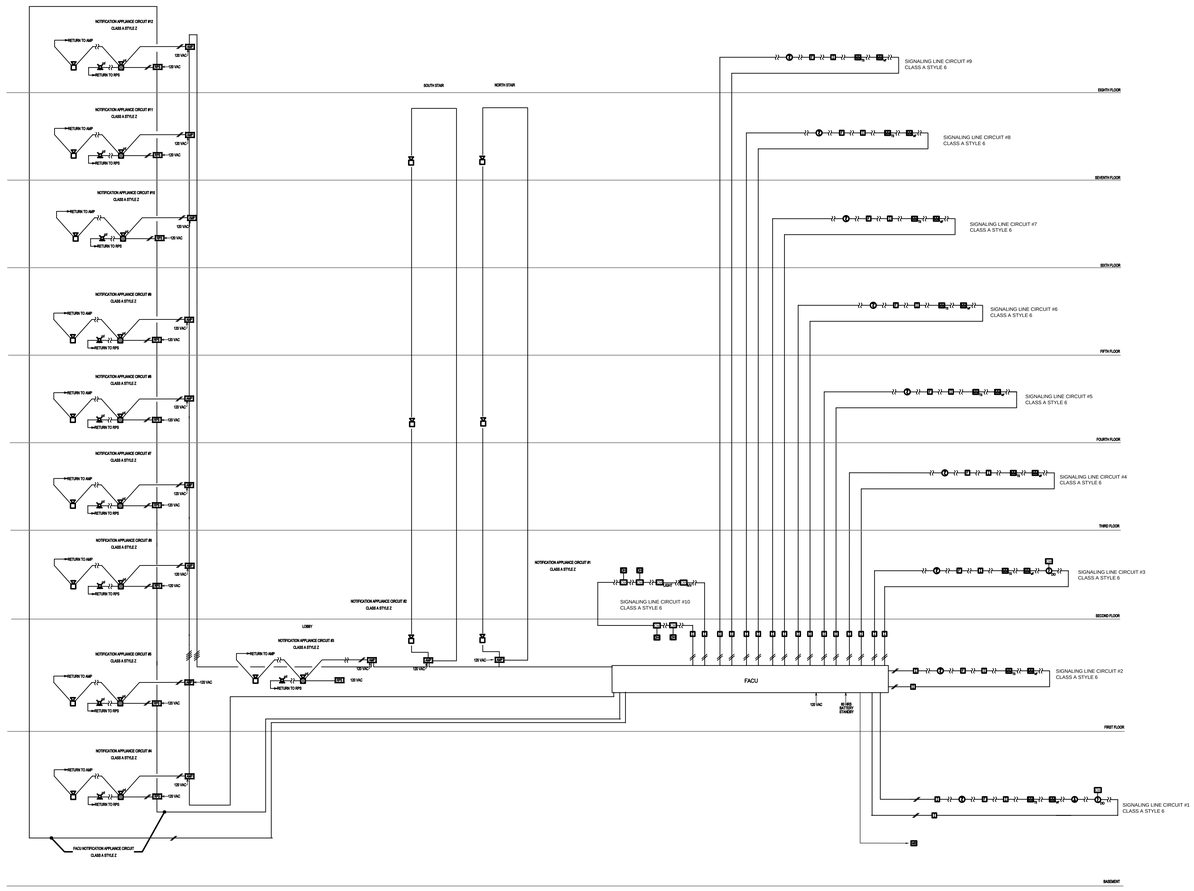
Seal

Project Description
CHAFEE CENTER
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED
Drawn: RGT
Design: NJG
Review: NJG

Drawing Title
INTERIOR ELEVATIONS (ALTERNATES)

Drawing No.
A5.4A



CONCEPTUAL RISER DIAGRAM

SCALE: NOT TO SCALE

SYMBOLS LEGEND

	HEAT DETECTOR
	PHOTOELECTRIC SMOKE DETECTOR
F	MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
	WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
	WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
S	CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
S	CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
CD	CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
CD	WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
MM	MONITOR MODULE
CM	CONTROL MODULE
FACU	FIRE ALARM CONTROL UNIT
MB	MASTER BOX
K	FIRE DEPARTMENT KEY BOX
AMP	AMPLIFIER
BATT	BATTERIES
RT	REMOTE TEST
DH	MAGNETIC DOOR HOLD OPEN DEVICE
FT	FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT

GENERAL NOTES

1. THE FIRE ALARM SYSTEM EQUIPMENT AND CIRCUITS AS PART OF THIS UPGRADE SHALL BE INSTALLED IN ACCORDANCE WITH THE UNIVERSITY OF RHODE ISLAND PROJECT SPECIFICATIONS, THE RHODE ISLAND UNIFORM FIRE CODE (NFPA 1-2003 EDITION, AS AMENDED), NFPA 72-2002 EDITION, AND NFPA 70-2005 EDITION.
2. A NEW ADDRESSABLE FIRE ALARM CONTROL UNIT (FACU) SHALL BE INSTALLED AND LOCATED AS SHOWN ON THE DRAWINGS.
3. THE EXISTING LOCAL ENERGY *GAMEWELL* TELEGRAPH MASTER BOX # 424 SHALL REMAIN IN ITS CURRENT LOCATION AND SHALL BE INTERFACED WITH THE NEW FACU AS OUTLINED IN THE SPECIFICATIONS.
4. NEW SIGNALING LINE CIRCUITS [SLC] SHALL BE INSTALLED CLASS A / STYLE 6 AND NEW NOTIFICATION APPLIANCE CIRCUITS [NAC] SHALL BE INSTALLED CLASS A / STYLE Z IN ACCORDANCE WITH NFPA 72. EACH SLC AND NAC SHALL NOT BE LOADED TO MORE THAN 75% OF ITS RATED CAPACITY. ALL WIRING SHALL BE INSTALLED IN METAL RACEWAY.
5. ALL CIRCUITS SHALL BE INSTALLED IN A PROFESSIONAL, NEAT AND WORKMAN-LIKE MANNER. ALL CIRCUITS SHALL TEST FREE FROM GROUNDS AND SHORT CIRCUIT FAULTS.
6. ALL SPOT-TYPE SMOKE DETECTORS SHALL BE OF THE LOW-PROFILE TYPE.
7. THE CONTRACTOR SHALL PROVIDE ALL WIRING FOR THE MAGNETIC DOOR HOLD OPEN DEVICES, INCLUDING A 120VAC DEDICATED CIRCUIT AND CONNECTION TO THE FACU.
8. FEED AND RETURN LOOPS FOR ALL CLASS A CIRCUITS SHALL BE INSTALLED IN SEPARATE RACEWAYS IN ACCORDANCE WITH **72:**6.4.2.2.2 AND **1:**13.8.10.6.2.2.
9. ALL FIRE ALARM SYSTEM WIRING SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE®, THE NATIONAL FIRE ALARM CODE®, AND THE RHODE ISLAND STATE FIRE SAFETY CODE.
10. WIRING COLOR CODE SHALL BE IN ACCORDANCE WITH RHODE ISLAND UNIFORM FIRE CODE SECTION **1:**13.8.10.6.3.
11. CAUTION: DO NOT CONNECT POWER (BATTERY OR 120 VAC) TO THE CONTROL UNIT UNTIL ALL FIELD WIRING HAS BEEN CONNECTED AND TESTED.
12. DO NOT INSTALL THE FACU OR ANY ADDRESSABLE INITIATING DEVICE IN ANY UNHEATED AREAS.
13. DO NOT INSTALL ANY AC CURRENT-CARRYING CONDUCTORS IN THE SAME RACEWAY AS LOW VOLTAGE FIRE ALARM CONDUCTORS.
14. WIRING SHALL BE CONTINUOUS BETWEEN DEVICES AND SHALL BE A MINIMUM #16 GAUGE SOLID COPPER.
15. THE MUNICIPAL MASTER BOX TRIPPING CIRCUIT SHALL BE IN A SEPARATE RACEWAY.
16. ALL WIRE MUST BE INSTALLED IN EMT IN ACCORDANCE WITH URI FIRE ALARM STANDARDS. MC CABLE IS NOT PERMITTED.
17. MANUAL FIRE ALARM BOXES SHALL BE LOCATED WITHIN FIVE FEET OF THE ENTRANCE TO THE EXIT ON EACH FLOOR AND SHALL BE INSTALLED SUCH THAT THE OPERATING MECHANISM (HANDLE) IS 48 INCHES ABOVE THE FLOOR.
18. WALL-MOUNTED COMBINATION AUDIBLE / VISIBLE NOTIFICATION APPLIANCES AND STAND-ALONE VISIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED SUCH THAT THE ENTIRE LENS IS LOCATED BETWEEN 80 AND 96 INCHES ABOVE THE FINISHED FLOOR.
19. WALL-MOUNTED STAND-ALONE AUDIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED SUCH THAT THE TOP OF THE APPLIANCE IS LOCATED NOT LESS THAN 80 INCHES ABOVE THE FINISHED FLOOR AND NOT LESS THAN 6 INCHES BELOW THE CEILING.
20. THE CONTRACTOR SHALL FURNISH AND INSTALL REMOTE NOTIFICATION APPLIANCE CIRCUIT POWER SUPPLIES AS NECESSARY. A SMOKE DETECTOR SHALL BE INSTALLED IN THE VICINITY OF EACH REMOTE POWER SUPPLY

CONCEPTUAL RISER DIAGRAM NOTES

1. THE RISER DIAGRAM IS CONCEPTUAL IN NATURE. IT DOES NOT INTEND TO REPRESENT ACTUAL WIRING AND RACEWAY INSTALLATION. THE CONTRACTOR SHOULD NOT INFER EXACT EQUIPMENT QUANTITIES FROM THE RISER DIAGRAM ONLY.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL REMOTE NOTIFICATION APPLIANCE CIRCUIT POWER SUPPLIES AS NECESSARY. THE CONTRACTOR SHALL FIELD LOCATE, WITH APPROVAL FROM URI AND HAI, EACH REMOTE POWER SUPPLY. A SMOKE DETECTOR SHALL BE INSTALLED IN THE VICINITY OF EACH REMOTE POWER SUPPLY. THE EXISTING STAIR ENCLOSURES ARE NOT ACCEPTABLE LOCATIONS FOR REMOTE POWER SUPPLIES.
3. FAULT ISOLATOR MODULES ARE SHOWN ON THE RISER DIAGRAM. THE INSTALLING CONTRACTOR SHALL FIELD LOCATE THE FAULT ISOLATOR MODULES. A MINIMUM OF THREE FAULT ISOLATORS SHALL BE INSTALLED ON EACH SLC. IN NO CIRCUMSTANCES SHALL MORE THAN 25 DEVICES BE LOCATED BETWEEN ISOLATOR MODULES.
4. THE FIRE ALARM CONTRACTOR SHALL INSTALL LIGHTNING PROTECTION WHERE EACH CIRCUIT LEAVES AND ENTERS EACH BUILDING.
5. 24VDC SHALL BE FURNISHED AND INSTALLED FOR ALL CONTROL OR RELAY MODULES NECESSARY FOR SHUT DOWN OF THE AHU'S.
6. REDUNDENT AMPLIFIERS SHALL BE FURNISHED AND INSTALLED PER RIUFC 13.8.10.4.3.4.

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: Riser Diagram and Notes Sheet

Drawing No.: FA-1.0

SYMBOLS LEGEND

	HEAT DETECTOR
	PHOTOELECTRIC SMOKE DETECTOR
F	MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
	WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
	WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
	CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
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CD	CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
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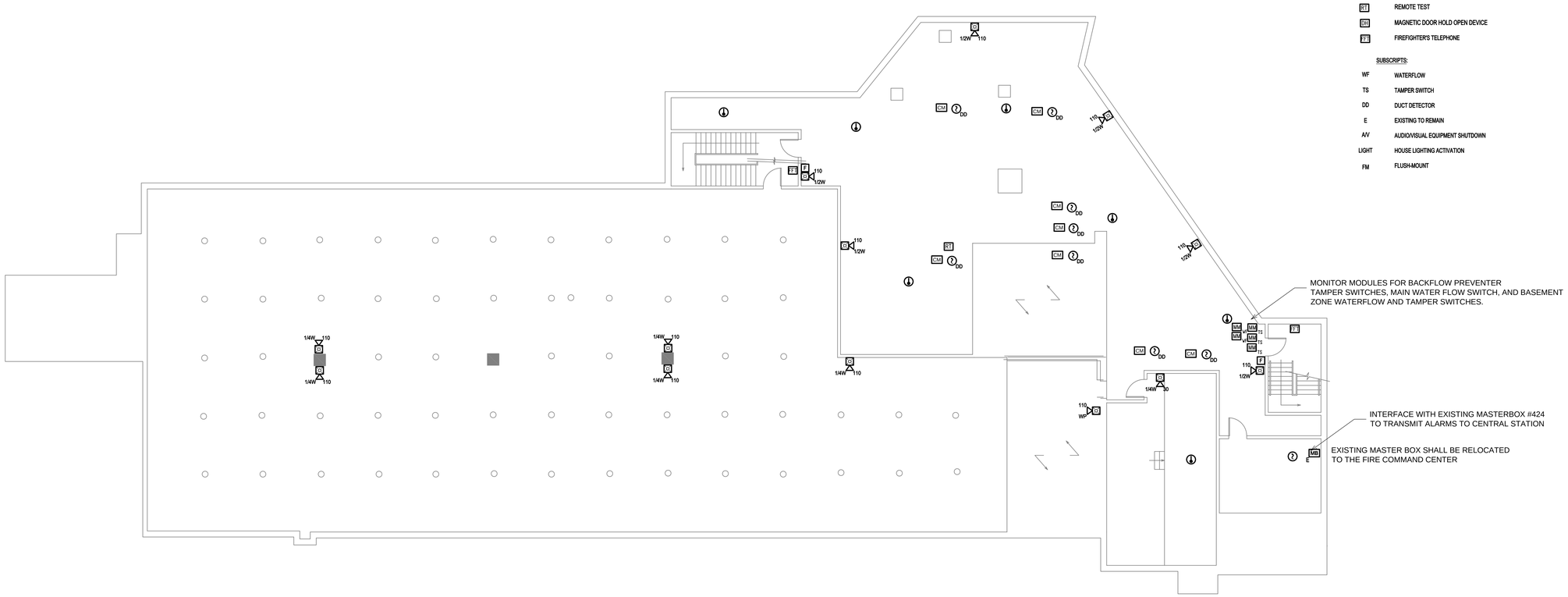
CM	CONTROL MODULE
FACU	FIRE ALARM CONTROL UNIT
MB	MASTER BOX
K	FIRE DEPARTMENT KEY BOX
AMP	AMPLIFIER
BATT	BATTERIES
RT	REMOTE TEST
DH	MAGNETIC DOOR HOLD OPEN DEVICE
FT	FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT



BASEMENT MAIN BUILDING FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
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3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

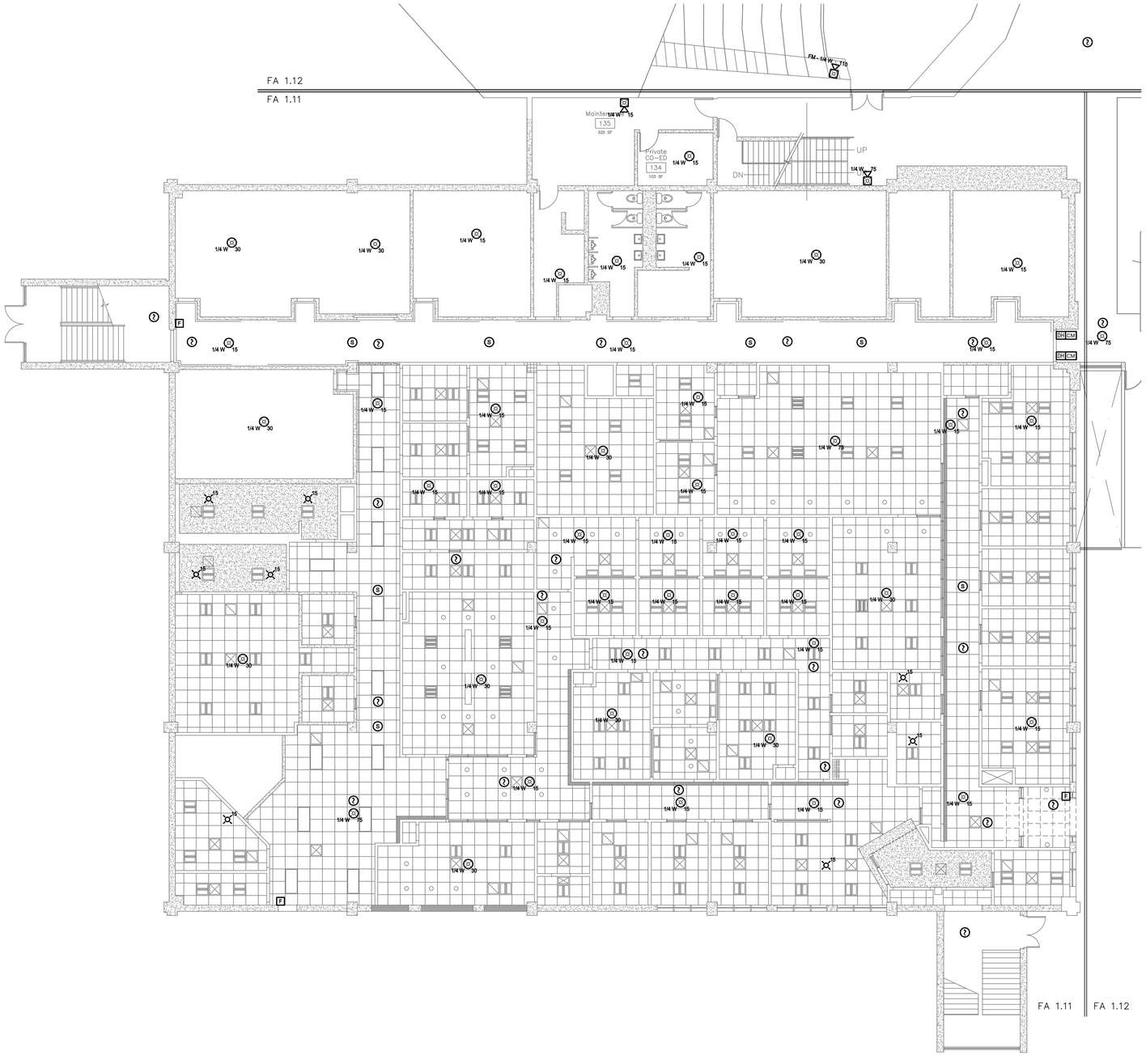
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: Basement
Fire Alarm Plan

Drawing No.: FA-1.01



SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
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- FACU — FIRE ALARM CONTROL UNIT
- MB — MASTER BOX
- K — FIRE DEPARTMENT KEY BOX
- AMP — AMPLIFIER
- BATT — BATTERIES
- RT — REMOTE TEST
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- FT — FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

- WF — WATERFLOW
- TS — TAMPER SWITCH
- DD — DUCT DETECTOR
- E — EXISTING TO REMAIN
- A/V — AUDIO/VISUAL EQUIPMENT SHUTDOWN
- LIGHT — HOUSE LIGHTING ACTIVATION
- FM — FLUSH-MOUNT

FIRST FLOOR MAIN BUILDING FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: First Floor
Main Building
Fire Alarm Plan

Drawing No.: FA-1.11

SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- F — MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
- WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
- S — WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
- S — CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
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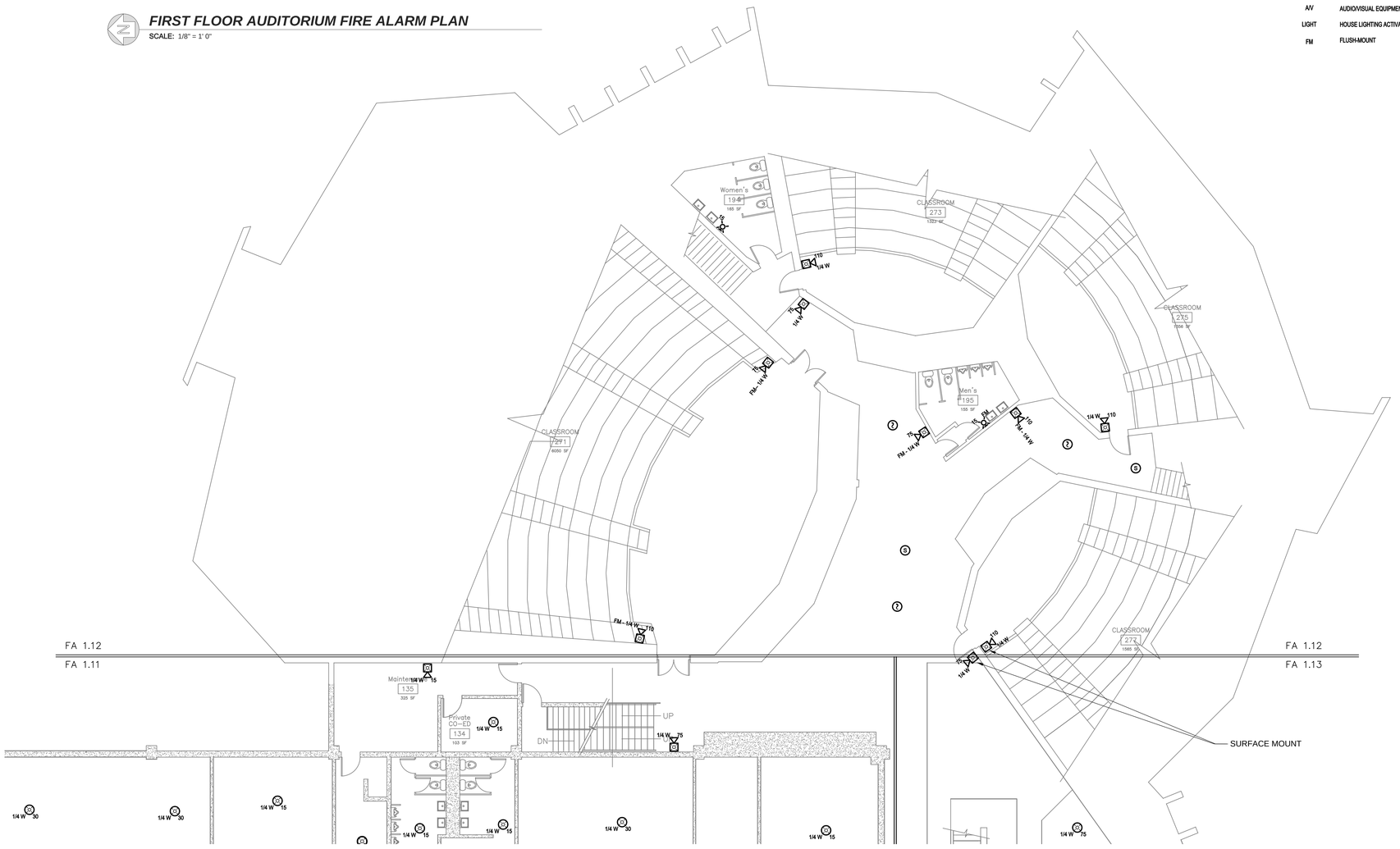
- RT — REMOTE TEST
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- FT — FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

- WF — WATERFLOW
- TS — TAMPER SWITCH
- DD — DUCT DETECTOR
- E — EXISTING TO REMAIN
- A/V — AUDIO/VISUAL EQUIPMENT SHUTDOWN
- LIGHT — HOUSE LIGHTING ACTIVATION
- FM — FLUSH-MOUNT

FIRST FLOOR AUDITORIUM FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"



HAI PROJECT NO. 1TJL06918.036

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Code Consultants

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

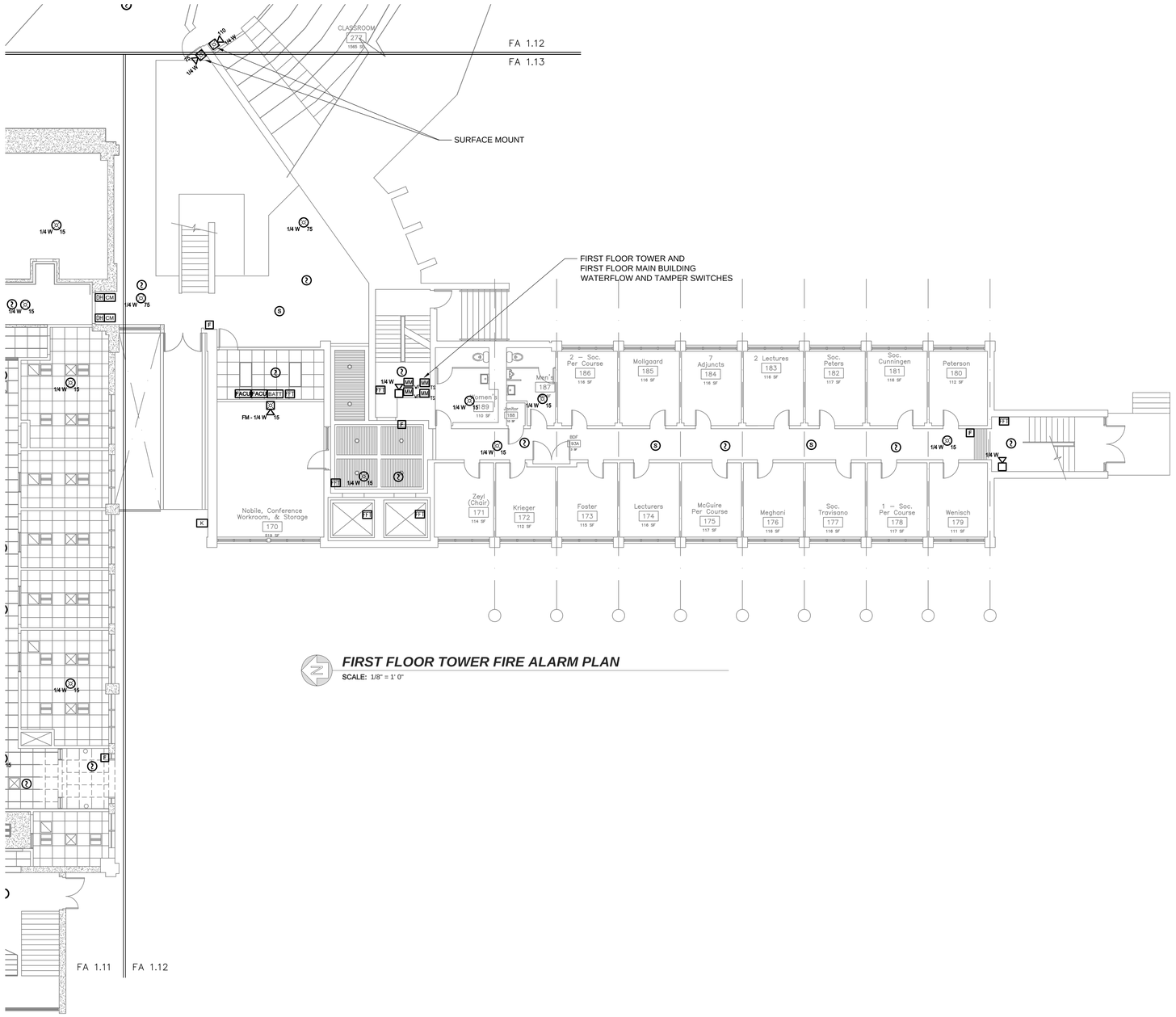
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: First Floor Auditorium Fire Alarm Plan

Drawing No. FA-1.12



FIRST FLOOR TOWER FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
- WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
- WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
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- BATT — BATTERIES
- RT — REMOTE TEST
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- FT — FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

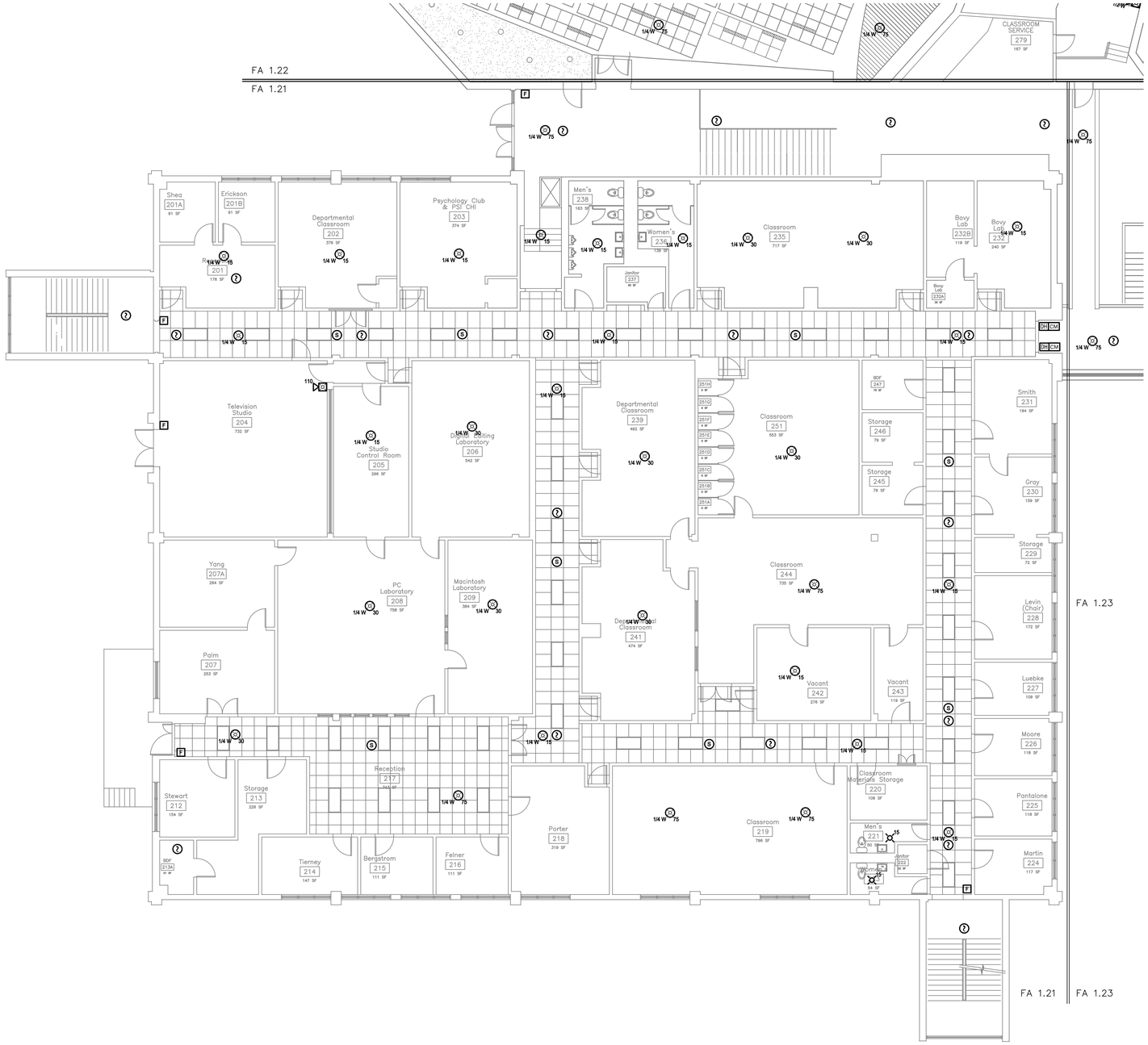
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: First Floor Tower Fire Alarm Plan

Drawing No.: FA-1.13



SYMBOLS LEGEND

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- PHOTOELECTRIC SMOKE DETECTOR
- MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
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- BATT BATTERIES
- RT REMOTE TEST
- DH MAGNETIC DOOR HOLD OPEN DEVICE
- FT FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

- WF WATERFLOW
- TS TAMPER SWITCH
- DD DUCT DETECTOR
- E EXISTING TO REMAIN
- A/V AUDIO/VISUAL EQUIPMENT SHUTDOWN
- LIGHT HOUSE LIGHTING ACTIVATION
- FM FLUSH-MOUNT

SECOND FLOOR MAIN BUILDING FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

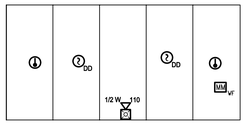
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title

Second Floor
Main Building
Fire Alarm Plan

Drawing No.

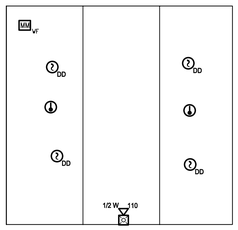
FA-1.21



SOUTH PENTHOUSE FIRE ALARM PLAN

SCALE: 1/8" = 1' 0" EL:212.50'

HEAT DETECTORS ARE CONVENTIONAL DEVICES. PROVIDE ONE (1) MONITOR MODULE FOR EACH MECHANICAL ROOM INITIATING DEVICE CIRCUIT IN A CONDITIONED SPACE. PROVIDE REMOTE TEST SWITCHES FOR DUCT SMOKE DETECTORS IN CONDITIONED SPACE IN AN ACCESSIBLE LOCATION.



NORTH PENTHOUSE FIRE ALARM PLAN

SCALE: 1/8" = 1' 0" EL: 224.17'

SYMBOLS LEGEND

	HEAT DETECTOR
	PHOTOELECTRIC SMOKE DETECTOR
F	MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
	WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
CD	WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
CD	CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
S	CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
CD	CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
CD	WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
MM	MONITOR MODULE
CM	CONTROL MODULE
FACU	FIRE ALARM CONTROL UNIT
MB	MASTER BOX
K	FIRE DEPARTMENT KEY BOX
AMP	AMPLIFIER
BATT	BATTERIES
RT	REMOTE TEST
DH	MAGNETIC DOOR HOLD OPEN DEVICE
FT	FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT

SECOND FLOOR AUDITORIUM FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"

HAI PROJECT NO. 1TJL06918.036

Hughes Associates Inc.
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Code Consultants
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Fax: (508) 624-7718

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title

Second Floor
Auditorium
Fire Alarm Plan

Drawing No.

FA-1.22

SECOND FLOOR ALT. AUDITORIUM FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- F — MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
- WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
- S — WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- S — CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
- CD — CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- CD — WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- MM — MONITOR MODULE
- CM — CONTROL MODULE
- FACU — FIRE ALARM CONTROL UNIT
- MB — MASTER BOX
- K — FIRE DEPARTMENT KEY BOX
- AMP — AMPLIFIER
- BATT — BATTERIES
- RT — REMOTE TEST
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- FT — FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

- WF — WATERFLOW
- TS — TAMPER SWITCH
- DD — DUCT DETECTOR
- E — EXISTING TO REMAIN
- A/V — AUDIO/VISUAL EQUIPMENT SHUTDOWN
- LIGHT — HOUSE LIGHTING ACTIVATION
- FM — FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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Submission History

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1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

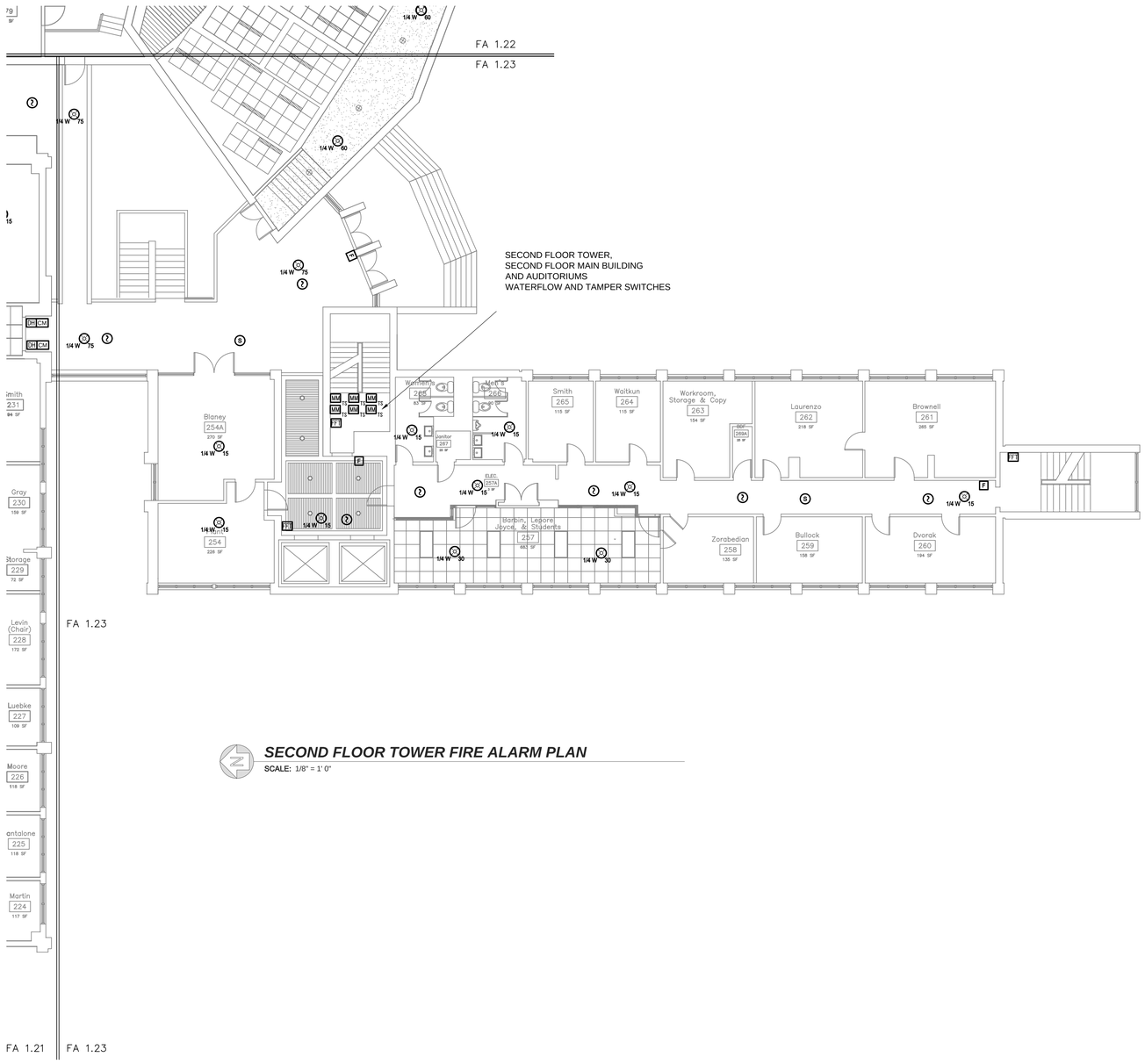
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title

Second Floor
Alternate Auditorium
Fire Alarm Plan

Drawing No.

FA-1.22A



SECOND FLOOR TOWER FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
- WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
- WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
- CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- MM MONITOR MODULE
- CM CONTROL MODULE
- FACU FIRE ALARM CONTROL UNIT
- MB MASTER BOX
- K FIRE DEPARTMENT KEY BOX
- AMP AMPLIFIER
- BATT BATTERIES
- RT REMOTE TEST
- DH MAGNETIC DOOR HOLD OPEN DEVICE
- FT FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

- WF WATERFLOW
- TS TAMPER SWITCH
- DD DUCT DETECTOR
- E EXISTING TO REMAIN
- A/V AUDIO/VISUAL EQUIPMENT SHUTDOWN
- LIGHT HOUSE LIGHTING ACTIVATION
- FM FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

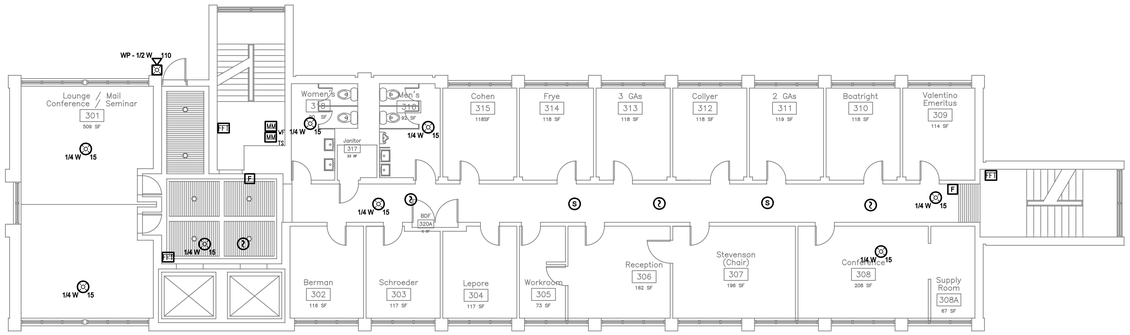
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

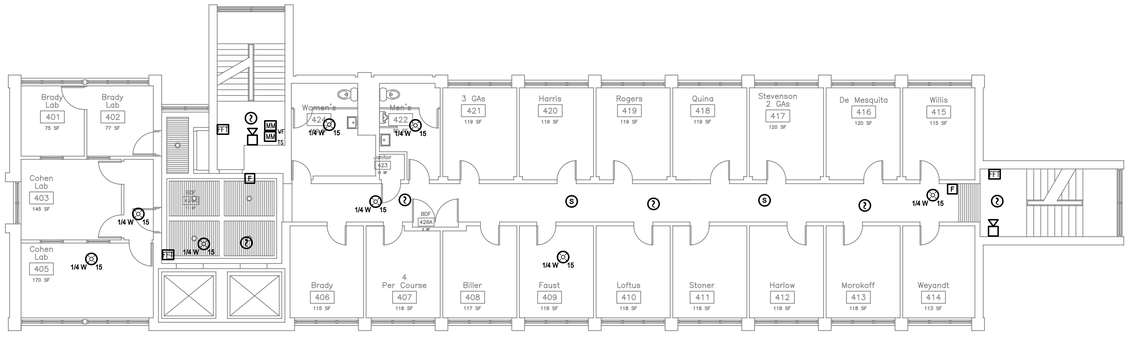
Drawing Title: Second Floor Tower Fire Alarm Plan

Drawing No. FA-1.23



THIRD FLOOR TOWER FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"



FOURTH FLOOR TOWER FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
- WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
- WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
- CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- MM — MONITOR MODULE
- CM — CONTROL MODULE
- FACU — FIRE ALARM CONTROL UNIT
- MB — MASTER BOX
- K — FIRE DEPARTMENT KEY BOX
- AMP — AMPLIFIER
- BATT — BATTERIES
- RT — REMOTE TEST
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- FT — FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

- WF — WATERFLOW
- TS — TAMPER SWITCH
- DD — DUCT DETECTOR
- E — EXISTING TO REMAIN
- A/V — AUDIO/VISUAL EQUIPMENT SHUTDOWN
- LIGHT — HOUSE LIGHTING ACTIVATION
- FM — FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

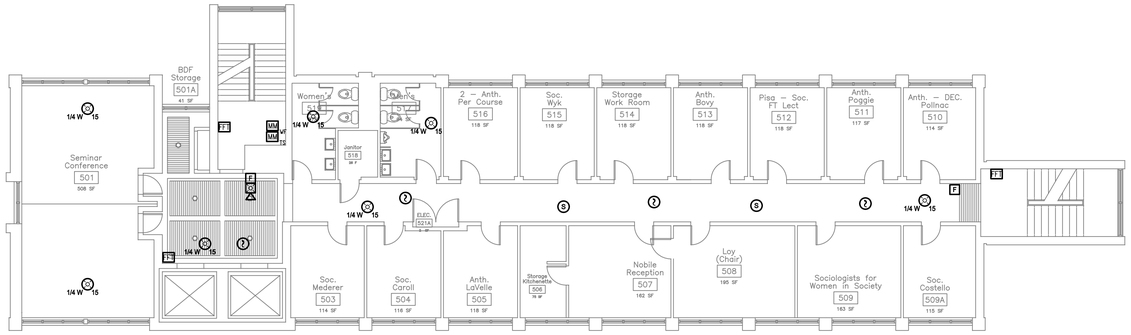
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

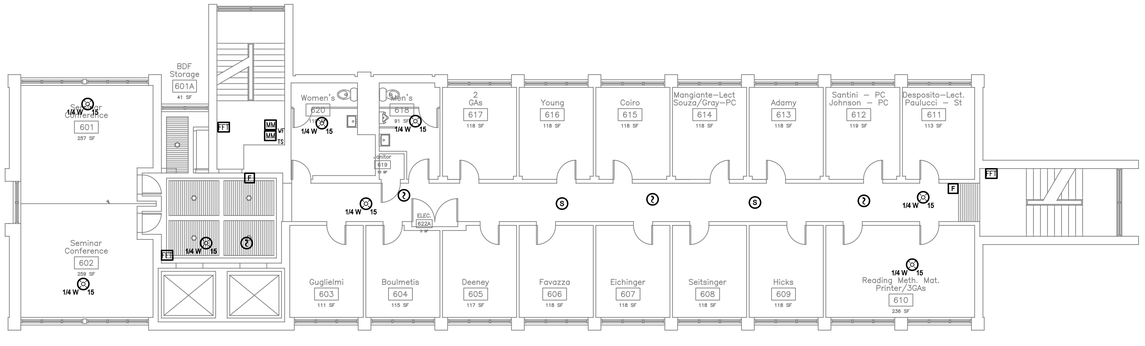
Drawing Title: Third Floor and Fourth Floor Fire Alarm Plan

Drawing No. FA-1.31



FIFTH FLOOR TOWER FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"



SIXTH FLOOR TOWER FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
- WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
- WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
- CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- MONITOR MODULE
- CONTROL MODULE
- FACU — FIRE ALARM CONTROL UNIT
- MB — MASTER BOX
- K — FIRE DEPARTMENT KEY BOX
- AMP — AMPLIFIER
- BATT — BATTERIES
- RT — REMOTE TEST
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- FT — FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

- WF — WATERFLOW
- TS — TAMPER SWITCH
- DD — DUCT DETECTOR
- E — EXISTING TO REMAIN
- A/V — AUDIO/VISUAL EQUIPMENT SHUTDOWN
- LIGHT — HOUSE LIGHTING ACTIVATION
- FM — FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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Submission History

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3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

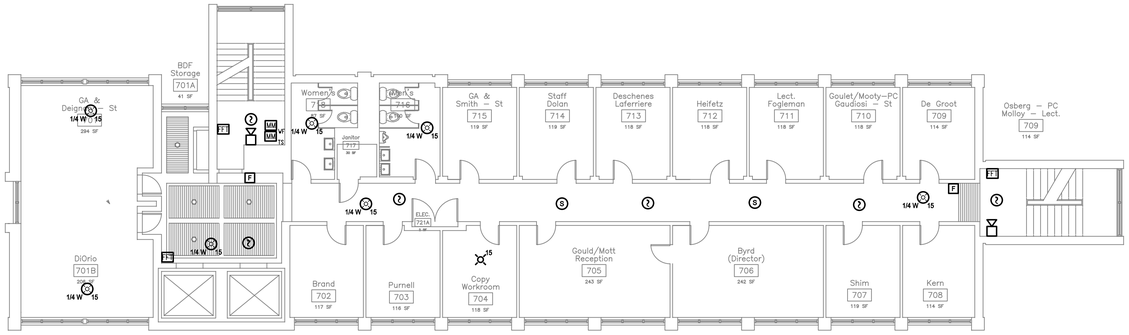
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: Fifth Floor and Sixth Floor Fire Alarm Plan

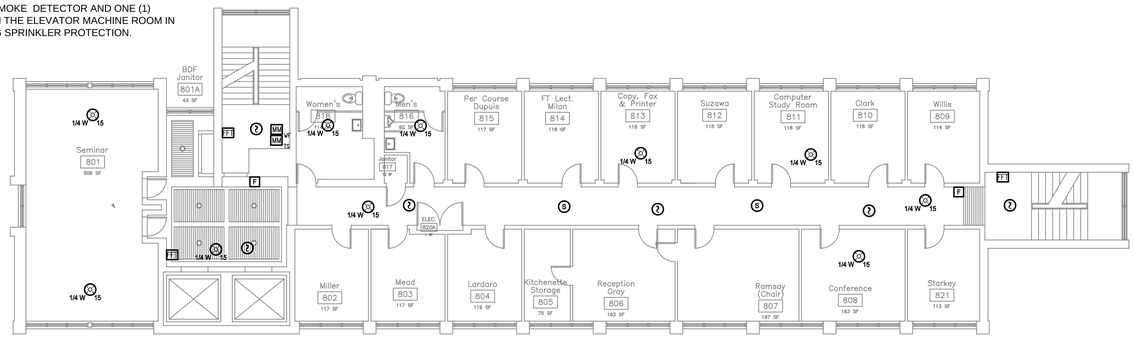
Drawing No. FA-1.32



SEVENTH FLOOR TOWER FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"

PROVIDE ONE (1) SMOKE DETECTOR AND ONE (1) HEAT DETECTOR IN THE ELEVATOR MACHINE ROOM IN LIEU OF PROVIDING SPRINKLER PROTECTION.



EIGHTH FLOOR TOWER FIRE ALARM PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
- WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
- WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
- CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- MM — MONITOR MODULE
- CM — CONTROL MODULE
- FACU — FIRE ALARM CONTROL UNIT
- MB — MASTER BOX
- K — FIRE DEPARTMENT KEY BOX
- AMP — AMPLIFIER
- BATT — BATTERIES
- RT — REMOTE TEST
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- FT — FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

- WF — WATERFLOW
- TS — TAMPER SWITCH
- DD — DUCT DETECTOR
- E — EXISTING TO REMAIN
- A/V — AUDIO/VISUAL EQUIPMENT SHUTDOWN
- LIGHT — HOUSE LIGHTING ACTIVATION
- FM — FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

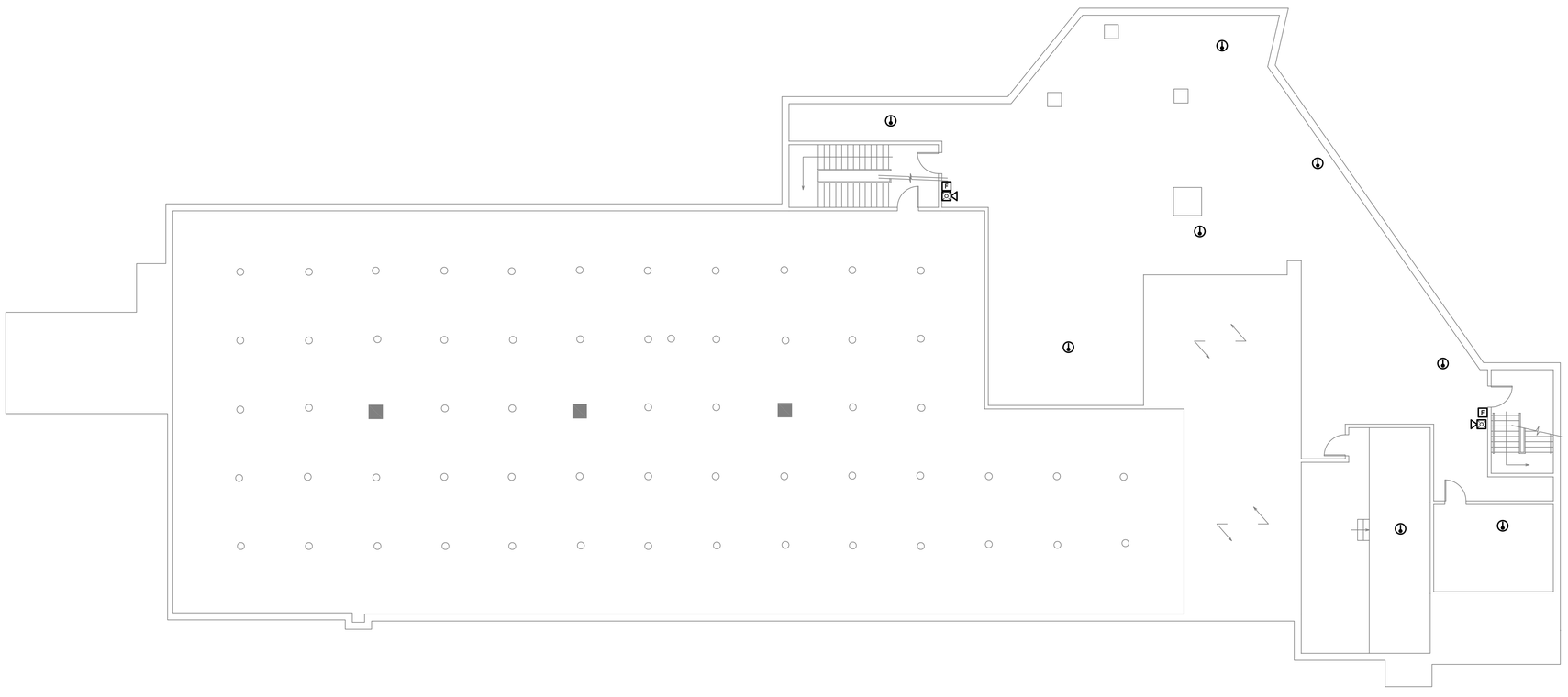
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: Seventh Floor and Eighth Floor Fire Alarm Plan

Drawing No. FA-1.33



THE CONTRACTOR MUST REMOVE ALL EXISTING FIRE ALARM WIRING, CONDUIT, AND RACEWAY. THE CONTRACTOR SHALL ALSO INSTALL BLANK COVERS LABELED "OLD FIRE ALARM SYSTEM" OVER ALL ABANDONED DEVICE LOCATIONS OR PATCH AND PAINT THE AREA.

BASEMENT MAIN BUILDING FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
- WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
- WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
- CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- MM — MONITOR MODULE
- CM — CONTROL MODULE
- FACU — FIRE ALARM CONTROL UNIT
- MB — MASTER BOX
- K — FIRE DEPARTMENT KEY BOX
- AMP — AMPLIFIER
- BATT — BATTERIES
- RT — REMOTE TEST
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- FT — FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

- WF — WATERFLOW
- TS — TAMPER SWITCH
- DD — DUCT DETECTOR
- E — EXISTING TO REMAIN
- A/V — AUDIO/VISUAL EQUIPMENT SHUTDOWN
- LIGHT — HOUSE LIGHTING ACTIVATION
- FM — FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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Submission History

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3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

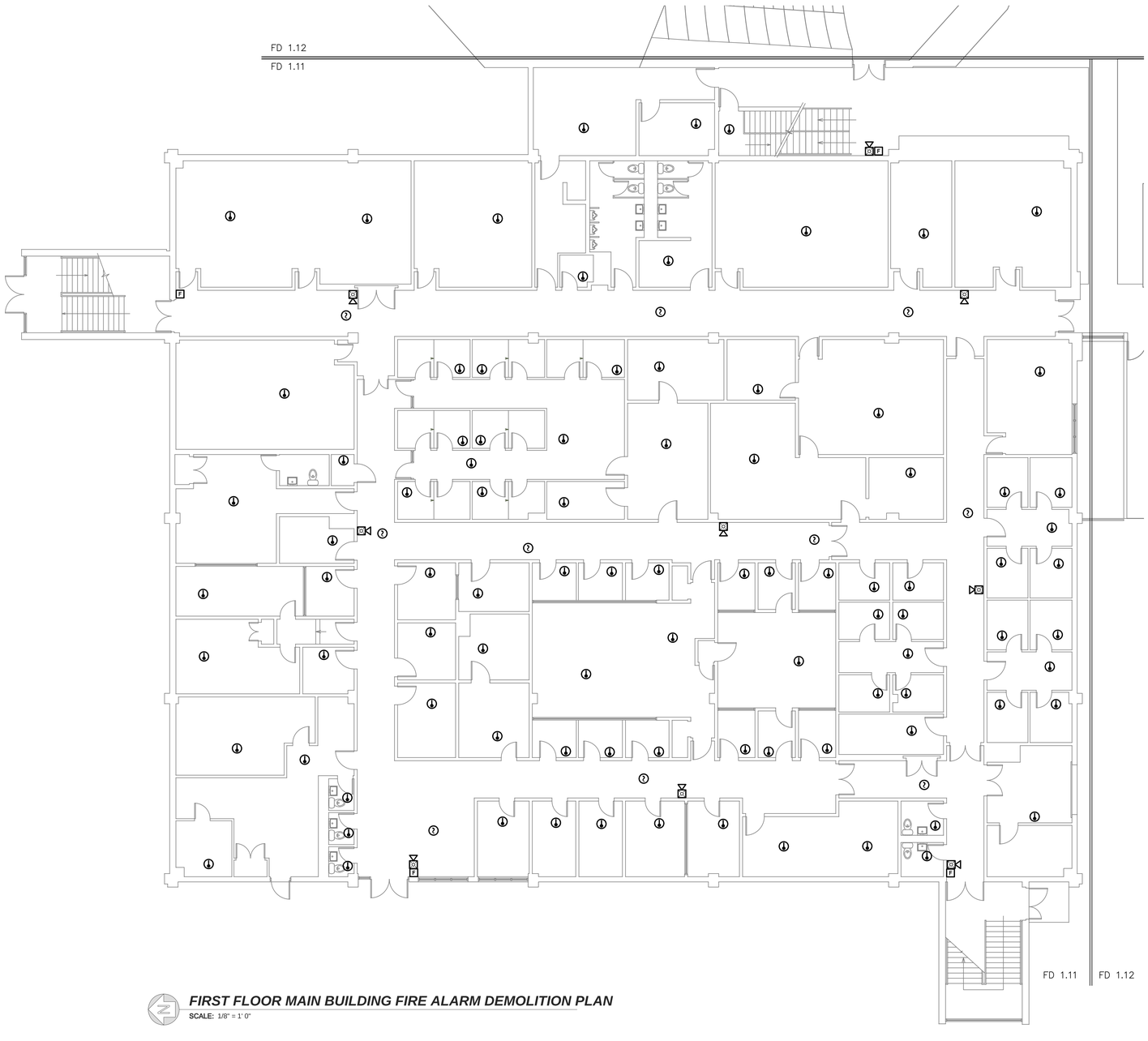
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: Basement Demolition Plan

Drawing No. FD-1.01



FIRST FLOOR MAIN BUILDING FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
- WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
- WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
- CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- MM — MONITOR MODULE
- CM — CONTROL MODULE
- FACU — FIRE ALARM CONTROL UNIT
- MB — MASTER BOX
- K — FIRE DEPARTMENT KEY BOX
- AMP — AMPLIFIER
- BATT — BATTERIES
- RT — REMOTE TEST
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- FT — FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

Hughes Associates Inc.
Fire Protection Engineers
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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

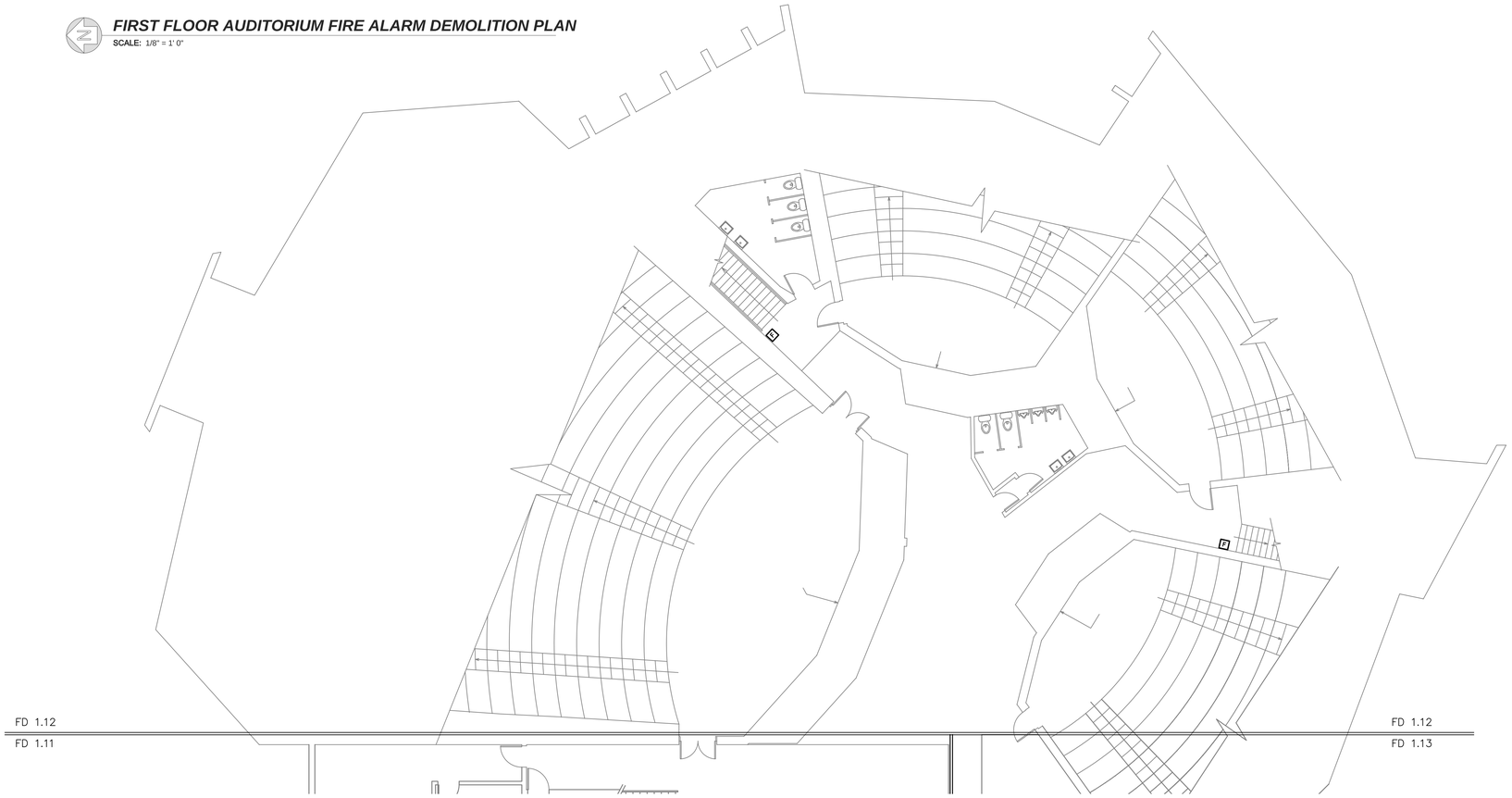
Design
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: First Floor
Main Building
Demolition Plan

Drawing No.: FD-1.11

FIRST FLOOR AUDITORIUM FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"



SYMBOLS LEGEND

	HEAT DETECTOR
	PHOTOELECTRIC SMOKE DETECTOR
F	MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
	WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
S	WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
S	CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
S	CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
CD	CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
CD	WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
UM	MONITOR MODULE
CM	CONTROL MODULE
FACU	FIRE ALARM CONTROL UNIT
MB	MASTER BOX
K	FIRE DEPARTMENT KEY BOX
AMP	AMPLIFIER
BATT	BATTERIES
RT	REMOTE TEST
DH	MAGNETIC DOOR HOLD OPEN DEVICE
FT	FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

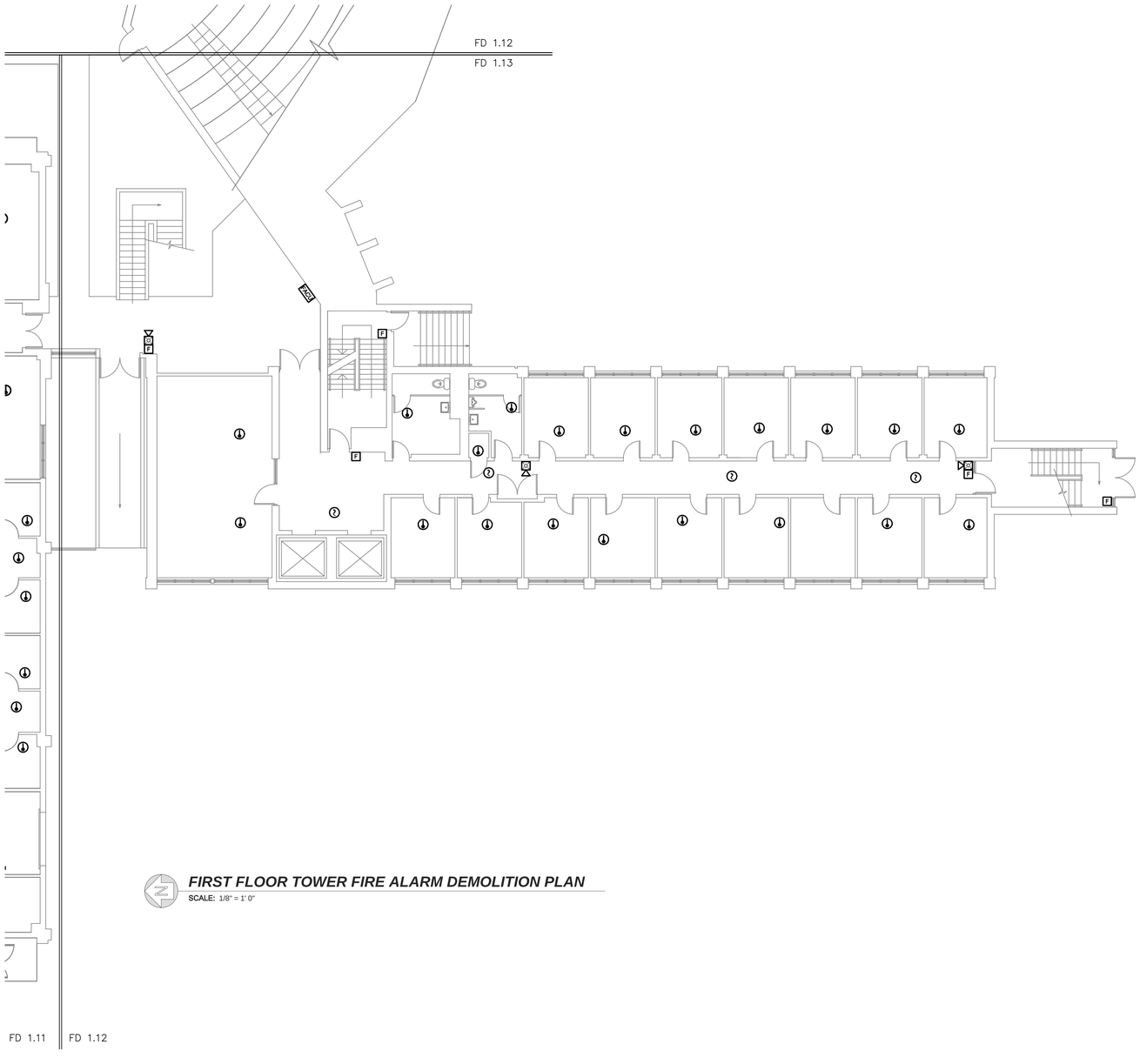
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title

First Floor
Auditorium
Demolition Plan

Drawing No.

FD-1.12



FIRST FLOOR TOWER FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

	HEAT DETECTOR
	PHOTOELECTRIC SMOKE DETECTOR
F	MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
	WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
	WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
	CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
S	CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
CD	CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
CD	WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
MM	MONITOR MODULE
CM	CONTROL MODULE
FACU	FIRE ALARM CONTROL UNIT
MB	MASTER BOX
K	FIRE DEPARTMENT KEY BOX
AMP	AMPLIFIER
BATT	BATTERIES
RT	REMOTE TEST
DH	MAGNETIC DOOR HOLD OPEN DEVICE
FT	FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

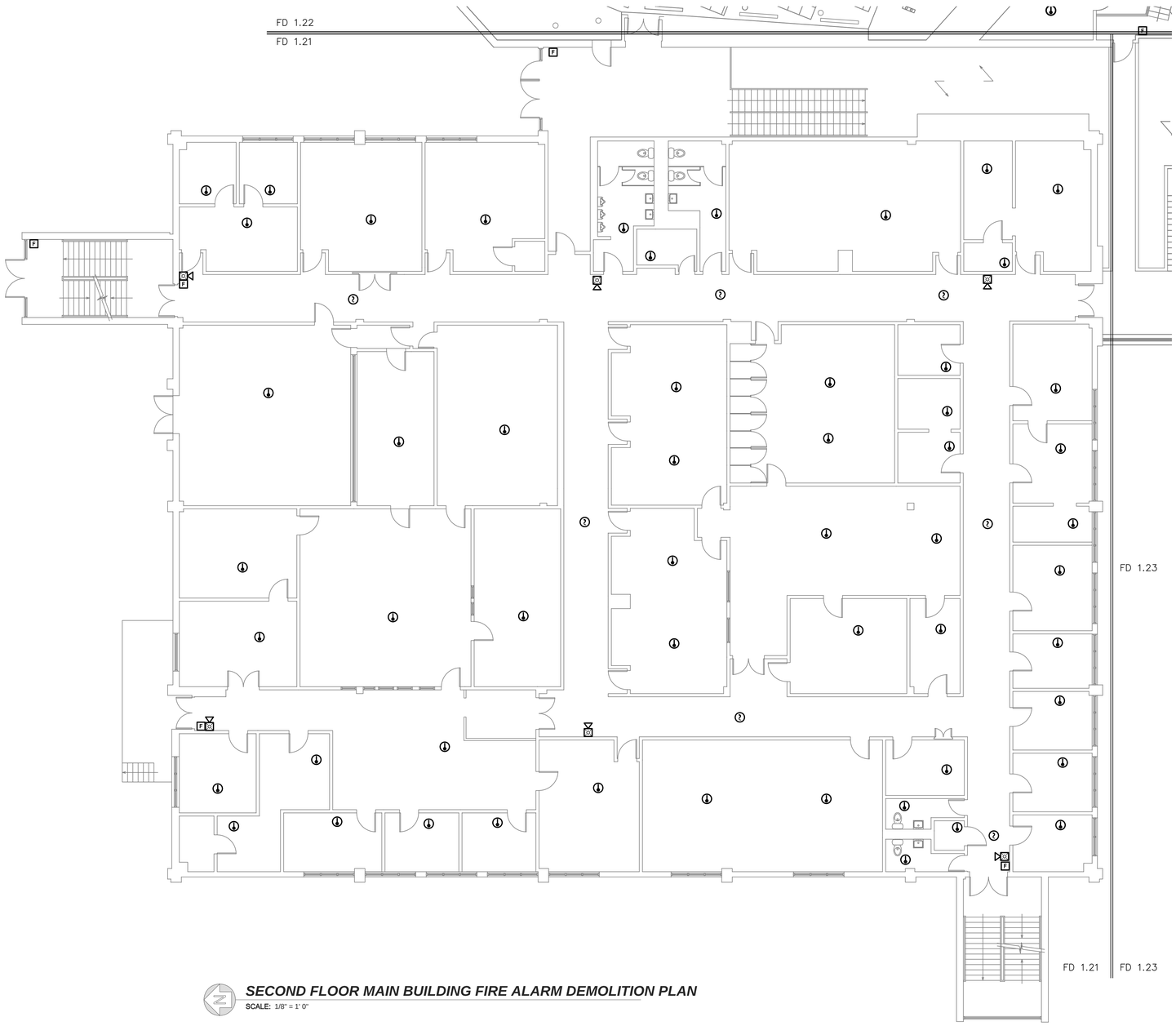
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: First Floor Tower Demolition Plan

Drawing No. FD-1.13



SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
- WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
- WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
- CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- MM — MONITOR MODULE
- CM — CONTROL MODULE
- FACU — FIRE ALARM CONTROL UNIT
- MB — MASTER BOX
- K — FIRE DEPARTMENT KEY BOX
- AMP — AMPLIFIER
- BATT — BATTERIES
- RT — REMOTE TEST
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- FT — FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

- WF — WATERFLOW
- TS — TAMPER SWITCH
- DD — DUCT DETECTOR
- E — EXISTING TO REMAIN
- A/V — AUDIO/VISUAL EQUIPMENT SHUTDOWN
- LIGHT — HOUSE LIGHTING ACTIVATION
- FM — FLUSH-MOUNT

SECOND FLOOR MAIN BUILDING FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"

HAI PROJECT NO. 1TJL06918.036

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4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: Second Floor Main Building Demolition Plan

Drawing No.: FD-1.21

SECOND FLOOR AUDITORIUM FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

	HEAT DETECTOR
	PHOTOELECTRIC SMOKE DETECTOR
F	MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
	WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
S	WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
CS	CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
S	CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
CD	CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
CD	WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
UM	MONITOR MODULE
CM	CONTROL MODULE
FACU	FIRE ALARM CONTROL UNIT
MB	MASTER BOX
K	FIRE DEPARTMENT KEY BOX
AMP	AMPLIFIER
BATT	BATTERIES
RT	REMOTE TEST
DH	MAGNETIC DOOR HOLD OPEN DEVICE
FT	FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

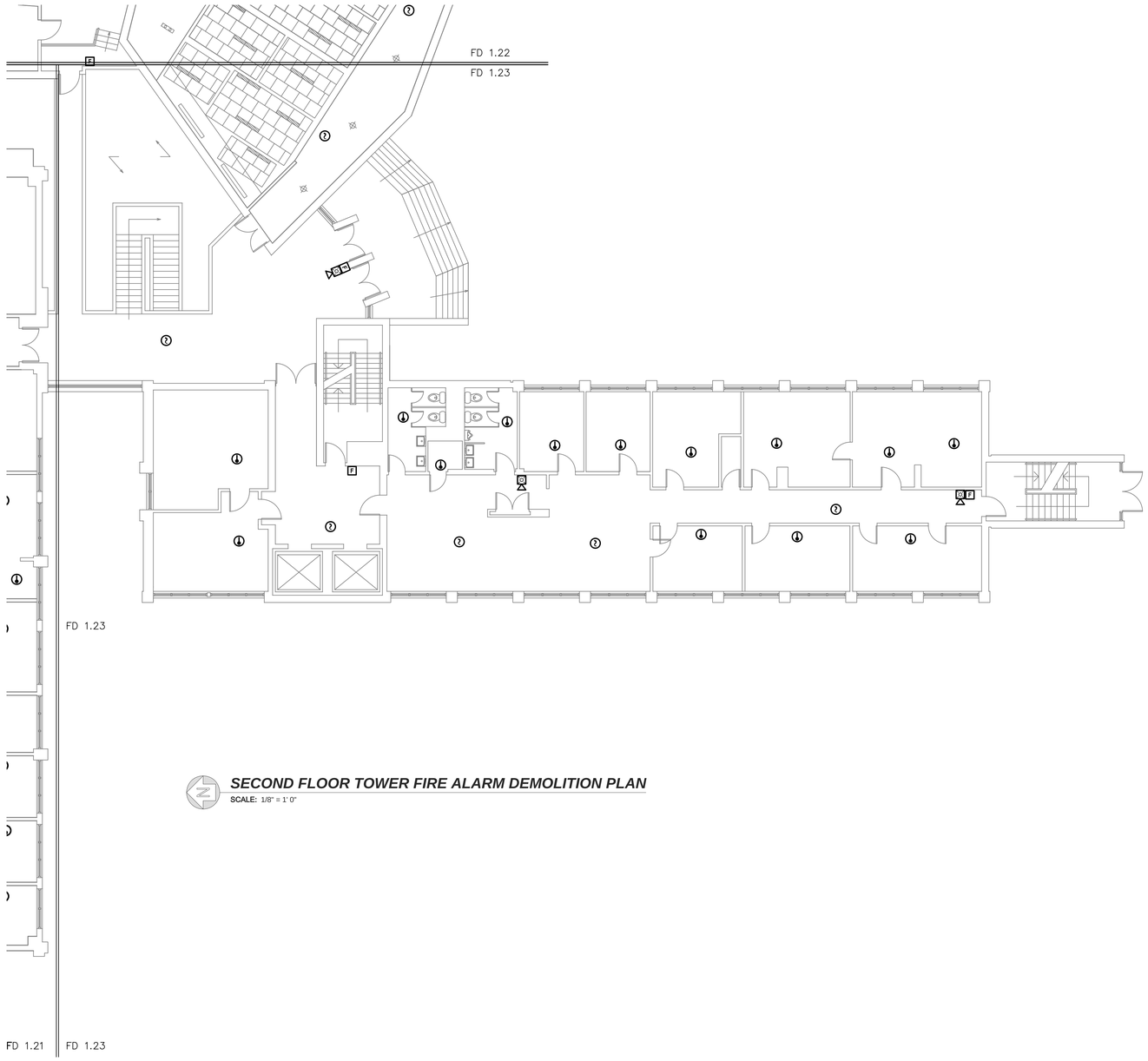
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: Second Floor Auditorium Demolition Plan

Drawing No.: FD-1.22



SECOND FLOOR TOWER FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

- HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
- WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
- WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
- CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
- MM — MONITOR MODULE
- CM — CONTROL MODULE
- FACU — FIRE ALARM CONTROL UNIT
- MB — MASTER BOX
- K — FIRE DEPARTMENT KEY BOX
- AMP — AMPLIFIER
- BATT — BATTERIES
- RT — REMOTE TEST
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- FT — FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

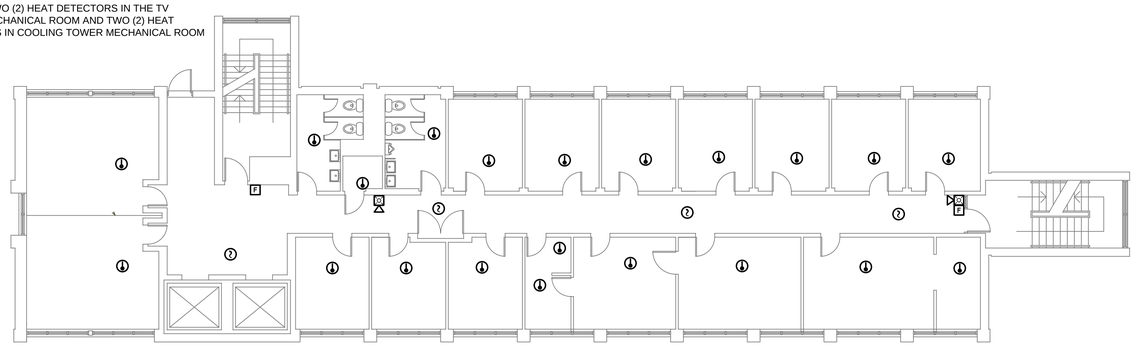
Project Description
CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title
Second Floor
Tower
Demolition Plan

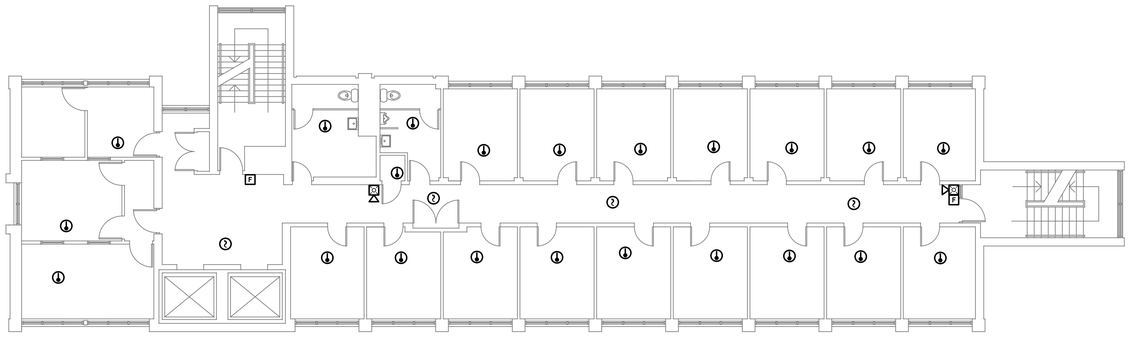
Drawing No.
FD-1.23

REMOVE TWO (2) HEAT DETECTORS IN THE TV STUDIO MECHANICAL ROOM AND TWO (2) HEAT DETECTORS IN COOLING TOWER MECHANICAL ROOM ON ROOF



THIRD FLOOR TOWER FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"



FOURTH FLOOR TOWER FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

	HEAT DETECTOR
	PHOTOELECTRIC SMOKE DETECTOR
F	MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
	WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
	WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
	CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
	CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
CD	CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
CD	WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
MM	MONITOR MODULE
CM	CONTROL MODULE
FACU	FIRE ALARM CONTROL UNIT
MB	MASTER BOX
K	FIRE DEPARTMENT KEY BOX
AMP	AMPLIFIER
BATT	BATTERIES
RT	REMOTE TEST
DH	MAGNETIC DOOR HOLD OPEN DEVICE
FT	FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

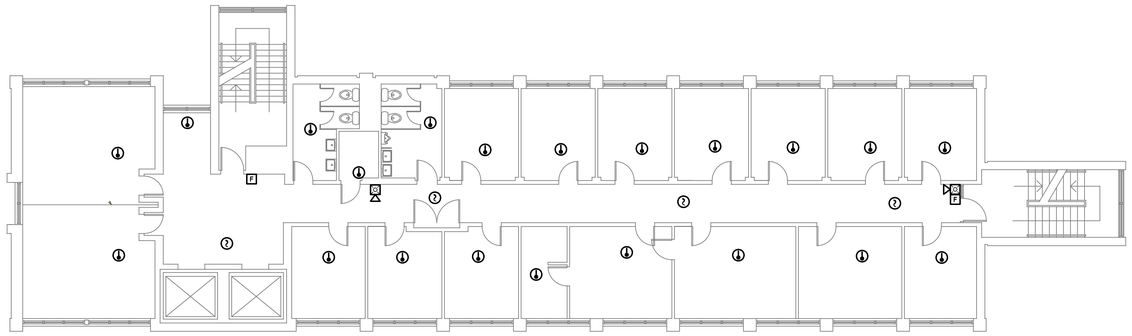
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

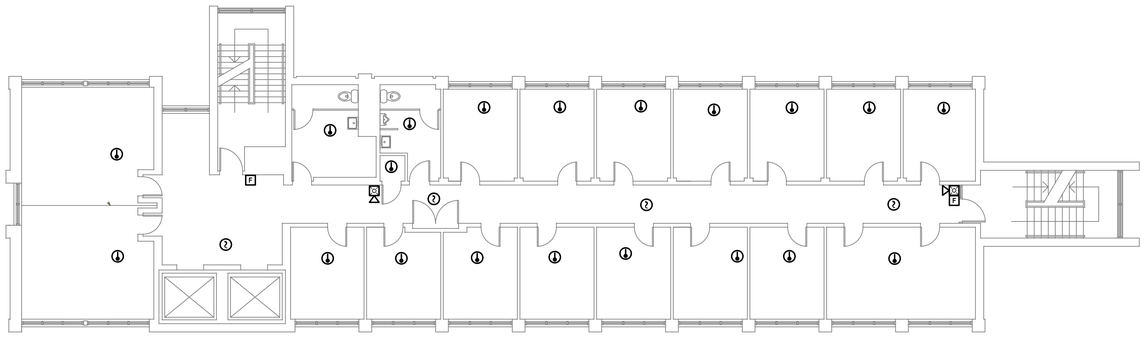
Drawing Title: Third Floor and Fourth Floor Demolition Plan

Drawing No. FD-1.31



FIFTH FLOOR TOWER FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"



SIXTH FLOOR TOWER FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

	HEAT DETECTOR
	PHOTOELECTRIC SMOKE DETECTOR
F	MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
	WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
	WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
	CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
	CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
CD	CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
CD	WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
MM	MONITOR MODULE
CM	CONTROL MODULE
FACU	FIRE ALARM CONTROL UNIT
MB	MASTER BOX
K	FIRE DEPARTMENT KEY BOX
AMP	AMPLIFIER
BATT	BATTERIES
RT	REMOTE TEST
DH	MAGNETIC DOOR HOLD OPEN DEVICE
FT	FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

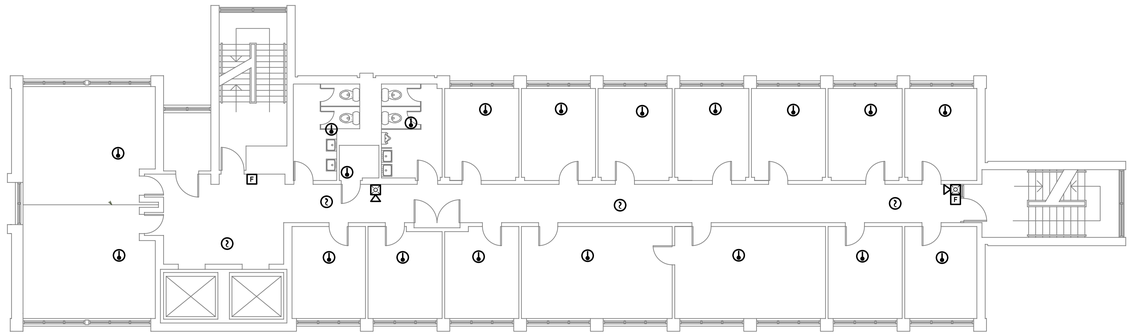
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: Fifth Floor and Sixth Floor Demolition Plan

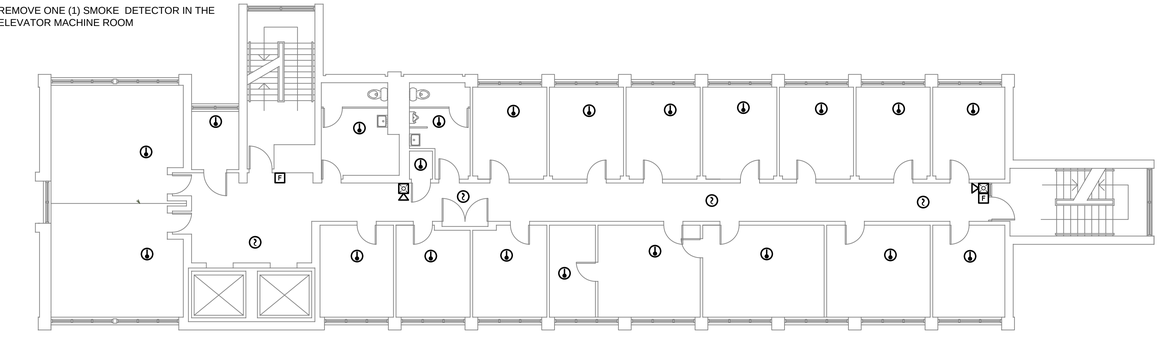
Drawing No. FD-1.32



SEVENTH FLOOR TOWER FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"

REMOVE ONE (1) SMOKE DETECTOR IN THE ELEVATOR MACHINE ROOM



EIGHTH FLOOR TOWER FIRE ALARM DEMOLITION PLAN

SCALE: 1/8" = 1' 0"

SYMBOLS LEGEND

	HEAT DETECTOR
	PHOTOELECTRIC SMOKE DETECTOR
F	MANUAL FIRE ALARM BOX (DOUBLE-ACTION)
	WALL-MOUNT SPEAKER NOTIFICATION APPLIANCE (POWER RATING AS NOTED)
	WALL-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCES (CANDELA RATING AS NOTED)
	CEILING-MOUNT SPEAKER/STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
	CEILING-MOUNT SPEAKER NOTIFICATION APPLIANCE (1/4 W TAP UNLESS NOTED)
CD	CEILING-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
CD	WALL-MOUNT STROBE NOTIFICATION APPLIANCE (CANDELA RATING AS NOTED)
MM	MONITOR MODULE
CM	CONTROL MODULE
FACU	FIRE ALARM CONTROL UNIT
MB	MASTER BOX
K	FIRE DEPARTMENT KEY BOX
AMP	AMPLIFIER
BATT	BATTERIES
RT	REMOTE TEST
DH	MAGNETIC DOOR HOLD OPEN DEVICE
FT	FIREFIGHTER'S TELEPHONE

SUBSCRIPTS:

WF	WATERFLOW
TS	TAMPER SWITCH
DD	DUCT DETECTOR
E	EXISTING TO REMAIN
A/V	AUDIO/VISUAL EQUIPMENT SHUTDOWN
LIGHT	HOUSE LIGHTING ACTIVATION
FM	FLUSH-MOUNT

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: SWD
Design: SWD
Review: TJL

Drawing Title: Seventh Floor and Eighth Floor Demolition Plan

Drawing No. FD-1.33

GENERAL NOTES

1. THIS DRAWING IS PROVIDED TO DEMONSTRATE THE CONFIGURATION OF MAJOR SYSTEM COMPONENTS INCLUDING SPRINKLER AND PIPING LOCATIONS. THE SPRINKLER CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL SPRINKLERS AND SYSTEM PIPING.
2. REFER TO ATTACHED HYDRAULIC CALCULATIONS FOR DESIGN PIPE SIZES. PIPE SIZES SHALL BE NO SMALLER THAN AS INDICATED BY THE DESIGN HYDRAULIC CALCULATIONS OR DESIGN DRAWINGS UNLESS VERIFIED THROUGH APPROVED CALCULATION SUBMITTAL. THE DESIGN SPECIFICATION AND HYDRAULIC CALCULATIONS ARE PART OF THESE DESIGN DOCUMENTS.
3. ACCURACY OF WALL LOCATIONS AND DIMENSIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR WITH REGARDS TO PIPE ROUTING AND PROXIMITY TO OBSTRUCTIONS.
4. THE CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL SHOP DRAWINGS, SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF RHODE ISLAND. THE REQUIREMENTS FOR THE SUBMITTAL PACKAGE AND SHOP DRAWINGS ARE PROVIDED IN THE DESIGN SPECIFICATION. CHANGES IN THE LOCATIONS OF SPRINKLERS FROM THOSE SHOWN ON THE APPROVED SHOP DRAWINGS SHALL BE IDENTIFIED IN WRITING TO THE STATE FIRE MARSHALS OFFICE AND HAI PRIOR TO INSTALLATION. ALL CHANGES SHALL BE APPROVED IN WRITING PRIOR TO INSTALLATION OR ANY RELOCATIONS OR ADDITIONAL SPRINKLERS REQUIRED FOR COMPLIANCE AS A RESULT OF THE CHANGES SHALL BE FURNISHED AND INSTALLED AT THE EXPENSE OF THE CONTRACTOR.
5. THE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ANY NEW SITE SPECIFIC MODIFICATIONS THAT MAY BE MADE TO THE BUILDING DURING CONSTRUCTION SUCH AS NEW LIGHTS, DROP CEILINGS, ETC.
6. ALL SPRINKLER PIPING SHALL BE SECURED USING U.L./F.M. PIPE HANGERS, ANCHORS AND OTHER APPROVED MEANS TO PROPERLY SECURE THE PIPE.
7. ALL PIPING 1-INCH THROUGH 2-INCH SHALL BE ASTM A53 SCHEDULE 40 WITH THREADED ENDS.
8. ALL PIPING 2½-INCH AND LARGER SHALL BE ASTM A53 SCHEDULE 10 OR SCHEDULE 10 WITH ROLLED-GROOVED ENDS .
9. THE CONTRACTOR SHALL GUARANTEE IN WRITING ALL WORK AND EQUIPMENT ASSOCIATED WITH THIS PROJECT FOR ONE (1) YEAR AFTER INSTALLATION. REFER TO THE SPECIFICATION FOR ADDITIONAL WARRANTY REQUIREMENTS.

SCOPE OF WORK

1. THE SCOPE OF WORK INCLUDES THE INSTALLATION OF A NEW AUTOMATIC SPRINKLER SYSTEM THROUGHOUT CHAFFEE BUILDING AT THE UNIVERSITY OF RHODE ISLAND, AS INDICATED ON THE DRAWINGS AND IN THE TECHNICAL SPECIFICATIONS.
2. THE WORK INCLUDES FURNISHING AND INSTALLING SPRINKLERS INCLUDING PIPING, HANGERS AND OTHER ASSOCIATED COMPONENTS IN AREAS OF THE BUILDING DISCOVERED DURING SURVEY OR INSTALLATION THAT ARE NOT NECESSARILY REPRESENTED ON THE DESIGN DRAWINGS THAT ARE REQUIRED TO BE PROVIDED WITH SPRINKLER PROTECTION AT NO ADDITIONAL COST TO THE OWNER.
3. THE WORK INCLUDES THE CONNECTION OF THE NEW WATER FLOW AND VALVE SUPERVISORY SWITCHES TO THE FIRE ALARM SYSTEM IN THE BUILDING. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THESE WIRING CONNECTIONS WITH A LICENSED FIRE ALARM TECHNICIAN/ELECTRICIAN.
4. THE WORK INCLUDED INSTALLATION OF A NEW DOUBLE-CHECK VALVE BACKFLOW PREVENTION DEVICE AND A NEW RISER CHECK VALVE ASSEMBLY AS SHOWN ON THE DRAWINGS.
5. THE WORK INCLUDES THE INSTALLATION OF ONE NEW 5" STORZ FIRE DEPARTMENT CONNECTION AS INDICATED ON THE DRAWINGS. THE WORK INCLUDES A NEW CHECK VALVE WITH A BALL DRIP PIPED TO A DRAIN LOCATION.
6. THE WORK INCLUDES RELOCATION OF ALL OBSTRUCTIONS TO NEW SPRINKLER PIPING. OBSTRUCTION INCLUDE BUT ARE NOT LIMITED TO EMERGENCY LIGHTING, BATTERY BOXES, TELCOM EQUIPMENT AND WIRING.
7. THE WORK INCLUDES INSTALLATION OF A NEW 2-INCH DRAIN RISER IN THE STAIR ADJACENT TO THE EXISTING 6" STANDPIPE. THE DRAIN SHALL BE PIPED DIRECTLY TO THE OUTSIDE TO AN APPROVED LOCATION BY THE ARCHITECT.
8. THE WORK INCLUDES INSTALLATION OF A ZONE CONTROL VALVE ASSEMBLY FOR EACH PORTION OF THE BUILDING. EACH ZONE ASSEMBLY SHALL CONTAIN AT A MINIMUM A SUPERVISED CONTROL VALVE, CHECK VALVE, INSPECTOR'S TEST CONNECTION, DRAIN VALVE, VANE-TYPE WATERFLOW SWITCH. SEE PLAN SPECIFIC LOCATIONS.
9. THE WORK INCLUDES ALL CUTTING, DRILLING, CORE DRILLING, ETC. TO INSTALL THE FIRE SPRINKLER SYSTEM THROUGH THE EXISTING WALLS.
10. THE WORK INCLUDES PAINTING OF ALL SPRINKLER PIPING TO MATCH EXISTING CONDITIONS. PIPE PAINTING SHALL BE COMPLETED BY A QUALIFIED PAINTING CONTRACTOR.
11. THE WORK INCLUDES FIRESTOPPING, PATCHING AND PAINTING OF ALL PENETRATIONS THAT WERE MADE FOR INSTALLATION OF NEW SPRINKLER PIPING THROUGH EXISTING INTERIOR AND EXTERIOR BUILDING WALLS. THE FIRESTOPPING SHALL BE CONDUCTED BY A MANUFACTURER'S TRAINED PERSONNEL ACCEPTABLE TO THE OWNER.
12. THE WORK INCLUDES POSITIONING SPRINKLERS IN THE CENTER OF CEILING TILES.
13. THE WORK INCLUDES ALL FEES AND ACTIVITIES REQUIRED TO SECURE APPROVALS FOR NECESSARY STATE AND LOCAL PERMITS.
14. THE WORK INCLUDES SUBMITTING DETAILED WORKING PLANS, HYDRAULIC CALCULATIONS AND PRODUCT DATA TO THE ENGINEER FOR REVIEW PRIOR TO SUBMITTING SAME TO LOCAL OFFICIALS FOR PERMIT. CONTRACTOR SHALL NOT FABRICATE PIPING, ASSEMBLE COMPONENTS OR BEGIN INSTALLATION UNTIL HAI HAS APPROVED THE SUBMITTAL DOCUMENTS.
15. THE WORK INCLUDES DEVELOPING AS-BUILT SPRINKLER PLANS OF THE AREAS OF THE BUILDING WHERE SPRINKLER PROTECTION IS CURRENTLY PROVIDED. THE PLANS SHALL SHOW A MINIMUM OF PIPE ROUTING; PIPE DIAMETER; SPRINKLER LOCATION; SPRINKLER ORIENTATION; AND SPRINKLER MAKE, MODEL, K-FACTOR, TEMPERATURE RATING AND RESPONSE TYPE.
16. THE WORK INCLUDES IDENTIFYING TO THE OWNER AND THE ENGINEER ANY OBSERVED DEFICIENCIES IN THE EXISTING SPRINKLER SYSTEM THAT MAY CREATE A IMMEDIATE THREAT TO THE OPERABILITY OF THE SPRINKLER SYSTEM IN THAT AREA OR IN THE ENTIRE BUILDING. ALSO IDENTIFY TO THE ENGINEER ANY DEFICIENCIES THAT ARE OBSERVED THAT MAY BE CORRECTED DURING THE CONSTRUCTION PROCESS WHERE THESE DEFICIENCIES MAY NOT SATISFY ALL REQUIREMENTS OF NFPA 13-2002 OR THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE ENGINEER WILL THEN DETERMINE HOW TO PROCEED WITH CORRECTING EACH DEFICIENCY.
17. THE WORK INCLUDES PERFORMING FIELD QUALITY CONTROL AND COMMISSIONING ACTIVITIES.
18. THE WORK INCLUDES DOCUMENTING AND SUBMITTING THE RESULTS OF INTEGRITY AND FUNCTIONAL TESTING.
19. THE WORK INCLUDES SUBMITTING AS-BUILT PLANS AND CLOSEOUT DOCUMENTATION TO HAI FOR REVIEW PRIOR TO SCHEDULING OWNER DEMONSTRATION TRAINING.
20. THE WORK INCLUDES TRAINING OWNER'S PERSONNEL ON THE OPERATION OF THE SYSTEM, REQUIRED MAINTENANCE TASKS AND FREQUENCIES, AND THE LOCATIONS OF ALL SPARE TOOLS AND EQUIPMENT, VALVES, FLOW SWITCHES, RISERS AND EQUIPMENT NECESSARY TO MAINTAIN AND OPERATE THE SPRINKLER SYSTEM.

DESIGN CRITERIA

1. DESIGN AND INSTALL THE SPRINKLER SYSTEMS TO MEET THE REQUIREMENTS OF:
   A. THE RHODE ISLAND FIRE LAWS AND RULES-2009, WHICH INCLUDES:
      i. TITLE 23-CHAPTER 28, FIRE SAFETY CODE-2009, AND AS AMENDED UNDER THE TITLE 23-CHAPTER 28, COMPREHENSIVE FIRE SAFETY ACT OF 2003, WHICH INCLUDES:
      a. THE RHODE ISLAND FIRE PREVENTION CODE (NFPA 1-2003), AND
      b. THE RHODE ISLAND LIFE SAFETY CODE (NFPA 101-2003);
   B. NFPA 13-2002, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS.
2. REFER TO TECHNICAL SPECIFICATIONS FOR MORE DETAILED INFORMATION AND ADDITIONAL REQUIREMENTS.
3. THE SPRINKLER SYSTEM SHALL BE DESIGNED AS LIGHT HAZARD OR ORDINARY HAZARD DEPENDING ON THE USE OF THE SPACE BEING PROTECTED.
4. THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY CALCULATED BY THE CONTRACTOR USING THE DENSITY/AREA DESIGN METHOD AS DESCRIBED IN NFPA 13-2002.
5. THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY CALCULATED AND SIZED IN ACCORDANCE WITH THE FOLLOWING CRITERIA:
   A. ALL LIGHT HAZARD OCCUPANCY AREAS SHALL MEET THE REQUIREMENTS OF NFPA 13-2002 AS FOLLOWS:
      i. AREA OF DEMAND: 1500 S.F. (AREA REDUCTION FOR Q.R. SPRINKLERS PER NFPA 13-2002, SEC. 11.2.3.2.3.1 IS ONLY ALLOWED IN THE HIGH RISE PORTION OF THE BUILDING),
      ii. DENSITY: 0.10 GPM/S.F.,
      iii. HOSE STREAM: 100 GPM,
      iv. SAFETY MARGIN: 10 % SAFETY FACTOR,
   B. ALL ORDINARY HAZARD GROUP 1 OCCUPANCY AREAS SHALL MEET THE REQUIREMENTS OF NFPA 13-2002 AS FOLLOWS:
      i. AREA OF DEMAND: 1500 S.F.,
      ii. DENSITY: 0.15 GPM/S.F.,
      iii. HOSE STREAM: 250 GPM,
      iv. SAFETY MARGIN: 10 % SAFETY FACTOR,
   C. ALL ORDINARY HAZARD GROUP 2 OCCUPANCY AREAS SHALL MEET THE REQUIREMENTS OF NFPA 13-2002 AS FOLLOWS:
      i. AREA OF DEMAND: 1500 S.F.,
      ii. DENSITY: 0.20 GPM/S.F.,
      iii. HOSE STREAM: 250 GPM,
      iv. SAFETY MARGIN: 10 % SAFETY FACTOR,
   D. AREA OF OPERATION INCREASES FOR SHALL BE INCLUDED FOR DRY-PIPE SYSTEMS, SLOPE CEILING, ETC.
6. ALL STANDARD SPRAY SPRINKLERS IN LIGHT HAZARD AREAS SHALL HAVE A MAXIMUM COVERAGE AREA OF 225 S.F.
7. ALL STANDARD SPRAY SPRINKLERS IN ORDINARY HAZARD GROUP 1 AND 2 AREAS SHALL HAVE A MAXIMUM COVERAGE AREA OF 130 S.F.

INSTALLATION NOTES

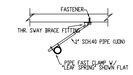
1. ALL CONDUITS DISTURBED OR DAMAGED DURING THE INSTALLATION BY CORE DRILLING OR CUTTING SHALL BE RESTORED TO ORIGINAL CONDITION PRIOR TO INSTALLATION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL DAMAGE INSIDE THE BUILDING UNLESS THE DAMAGE IS PREVIOUSLY DOCMENTED TO THE OWNER PRIOR TO THE START OF THE WORK.
3. WET CORE DRILLING SHALL BE USED WITH PROPER PROTECTION IN PLACE TO PREVENT DAMAGE TO THE BUILDING.
4. ALL FLOORS SHALL BE COVERED WITH PLASTIC FLOOR COVERING DURING CONSTRUCTION IN THE BUILDING.

SYMBOLS LEGEND

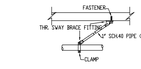
- ABOVE GROUND SPRINKLER PIPING
- SPRINKLER DRAIN PIPING
- UNDERGROUND PIPING
- PRESSURE GUAGE
- WATERFLOW SWITCH
- FIRE DEPARTMENT CONNECTION
- CONNECT TO EXISTING
- TEST AND DRAIN VALVE
- DOUBLE CHECK VALVE BACKFLOW PREVENTER WITH TAMPER SWITCHES
- RISER CHECK VALVE WITH DRAIN
- SUPERVISED BUTTERFLY VALVE
- CHECK VALVE
- SPRINKLER RISER
- HYDRAULIC REFERENCE
- EXISTING HOSE VALVE
- CONTROL VALVE WITH TAMPER SWITCH

SPRINKLER LEGEND

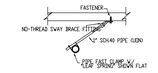
SYMBOL	MANUFACTURER	MODEL	TYPE	RESPONSE	ORIFICE	K-FACTOR	FINISH	ESCUTCHEON
○	TYCO	TY3131	UPRIGHT	QUICK	1/2"	5.6	BRASS	NONE
◉	TYCO	TY3231	RECESSED PENDENT	QUICK	1/2"	5.6	CHROME	CHROME
◉ AC	TYCO	TY3231	R.P. ABOVE CLOUD	QUICK	1/2"	5.6	CHROME	CHROME
●	TYCO	TY3231	PENDENT	QUICK	1/2"	5.6	BRASS	NONE
◎ ◎ K8	TYCO		UPRIGHT ON SPRIG	QUICK			BRASS	NONE
◁	TYCO	TY3331	HOR. SIDEWALL	QUICK	1/2"	5.6	CHROME	CHROME
○ K8	TYCO	TY4131	UPRIGHT	QUICK	17/32"	8.0	BRASS	NONE
✕	TYCO	G1&G4	SPRINKLER GUARD	----	----	----	CHROME	----
CONTRACTOR SHALL USE THE ABOVE SPECIFIED SPRINKLERS OR EQUAL								
REFER TO TECHNICAL SPECIFICATION FOR ADDITIONAL ACCEPTABLE MANUFACTURERS								



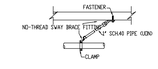
LATERAL SWAY BRACE WITH THREADED FITTINGS



LONGITUDINAL SWAY BRACE WITH THREADED FITTINGS



LATERAL SWAY BRACE WITH NON-THREADED FITTINGS



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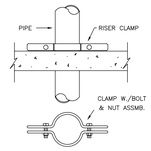
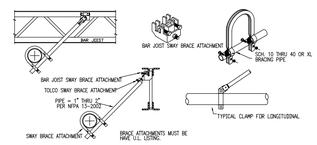
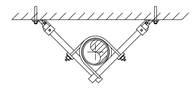


RISER CLAMP

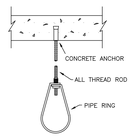


BAR JOIST SWAY BRACE ATTACHMENT DETAILS

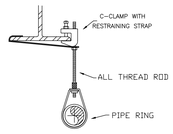
END OF BRANCHLINE SURGE SUPPRESSION



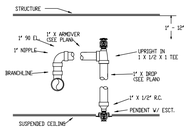
FOUR WAY RISER SWAY BRACE



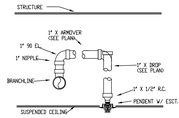
DRILLED CONCRETE ANCHOR HANGER



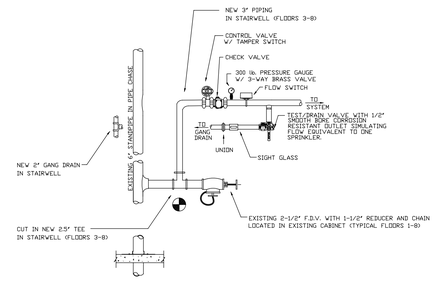
C-CLAMP HANGER



RETURN BEND ASSEMBLY W / UPRIGHT FOR CONCEALED SPACE PROTECTION



TYPICAL PENDENT SPRINKLER RETURN BEND. ALL PENDENT SPRINKLERS TO BE LOCATED IN CENTER OF ACOUSTIC CEILING TILES.



EXISTING STANDPIPE WITH NEW FLOOR CONTROL VALVE ASSEMBLY
Not to Scale

FLOW TEST RESULTS

TEST DATE:	DECEMBER 28, 2009	"TEST GAUGE" LOCATION:	FIRST FLOOR STANDPIPE VALVE (EL:193.50')
PERFORMED BY:	HAI	"FLOW" LOCATION:	SECOND FLOOR STANDPIPE VALVE
STATIC:	67 PSI		
RESIDUAL:	50 PSI		
FLOW:	1233 GPM		

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

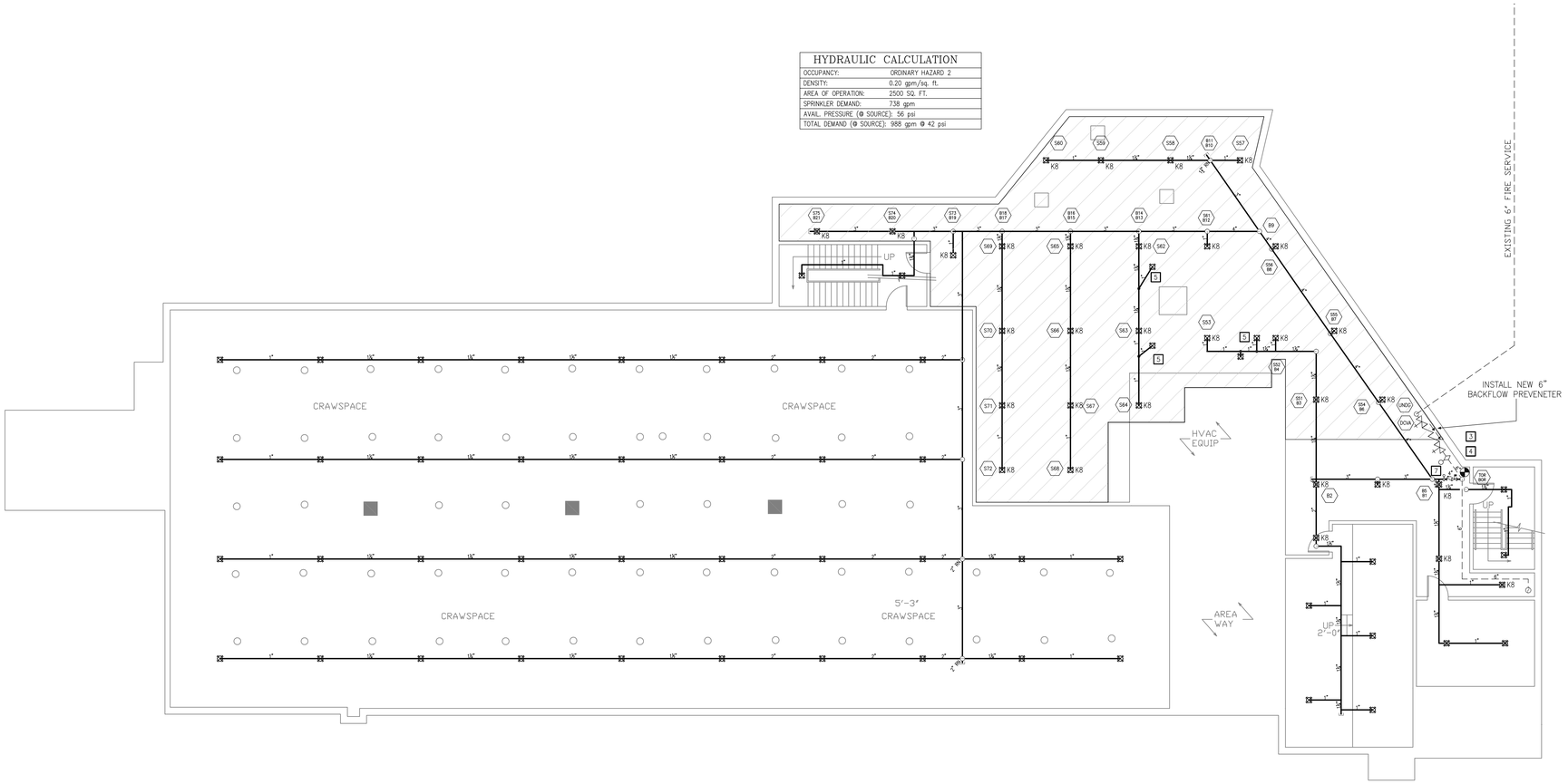
Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

Drawing Title: NOTES AND DETAILS

Drawing No.: FP-1.0

HYDRAULIC CALCULATION	
OCCUPANCY:	ORDINARY HAZARD 2
DENSITY:	0.20 gpm/sq. ft.
AREA OF OPERATION:	2500 SQ. FT.
SPRINKLER DEMAND:	738 gpm
AVAIL. PRESSURE (@ SOURCE):	56 psi
TOTAL DEMAND (@ SOURCE):	988 gpm @ 42 psi



BASEMENT MAIN BUILDING FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL: 173.50' CRAWL SPACE EL: 183.00'

KEY NOTES

1. PROVIDE SPRINKLERS ABOVE ACCESSIBLE CEILINGS WHERE 24" OF VERTICAL SPACE EXISTS BETWEEN CEILING AND STRUCTURE.
2. PROVIDE SPRINKLERS AT TOP OF STAIRWELL.
3. REMOVE EXISTING 6" CHECK VALVE. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" DOUBLE CHECK VALVE ASSEMBLY.
4. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" RISER CHECK VALVE WITH TRIM. RELOCATE EXISTING MAIN WATERFLOW SWITCH TO DOWNSTREAM OF NEW RISER CHECK VALVE.
5. PROVIDE SPRINKLERS UNDER OBSTRUCTIONS PER NFPA 13. (INCLUDE TEN ADDITIONAL SPRINKLERS IN BID)
6. PROVIDE WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
7. PROVIDE CONTROL VALVE, CHECK VALVE, WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
8. PROVIDE NEW 5" STORZ CONNECTION AND 4" CHECK VALVE W/BALL DRIP. PIPE BALL DRIP TO DRAIN LOCATION.
9. 3" UP TO NORTH PENTHOUSE. A 3" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE NORTH PENTHOUSE.
10. 2.5" UP TO SOUTH PENTHOUSE. A 2.5" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE SOUTH PENTHOUSE.
11. 1.25" UP.
12. 4" UP.
13. RELOCATE EXISTING 2.5" FDV TO NEW 4" RISER AND CAP EXISTING 2.5" NIPPLE. REMOVE EXISTING FDV CABINET.
14. INSTALL PIPING BELOW NEW RAISED FLOOR. CORE EXISTING FLOOR FOR 1" SPRINKLER DROPS TO FIRST FLOOR LEVEL.
15. PROVIDE LOW POINT DRAIN VALVE AT END OF BRANCH LINE BELOW RAISED FLOOR.

HAI PROJECT NO. 1TJL06918.036

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Fire Protection Upgrade
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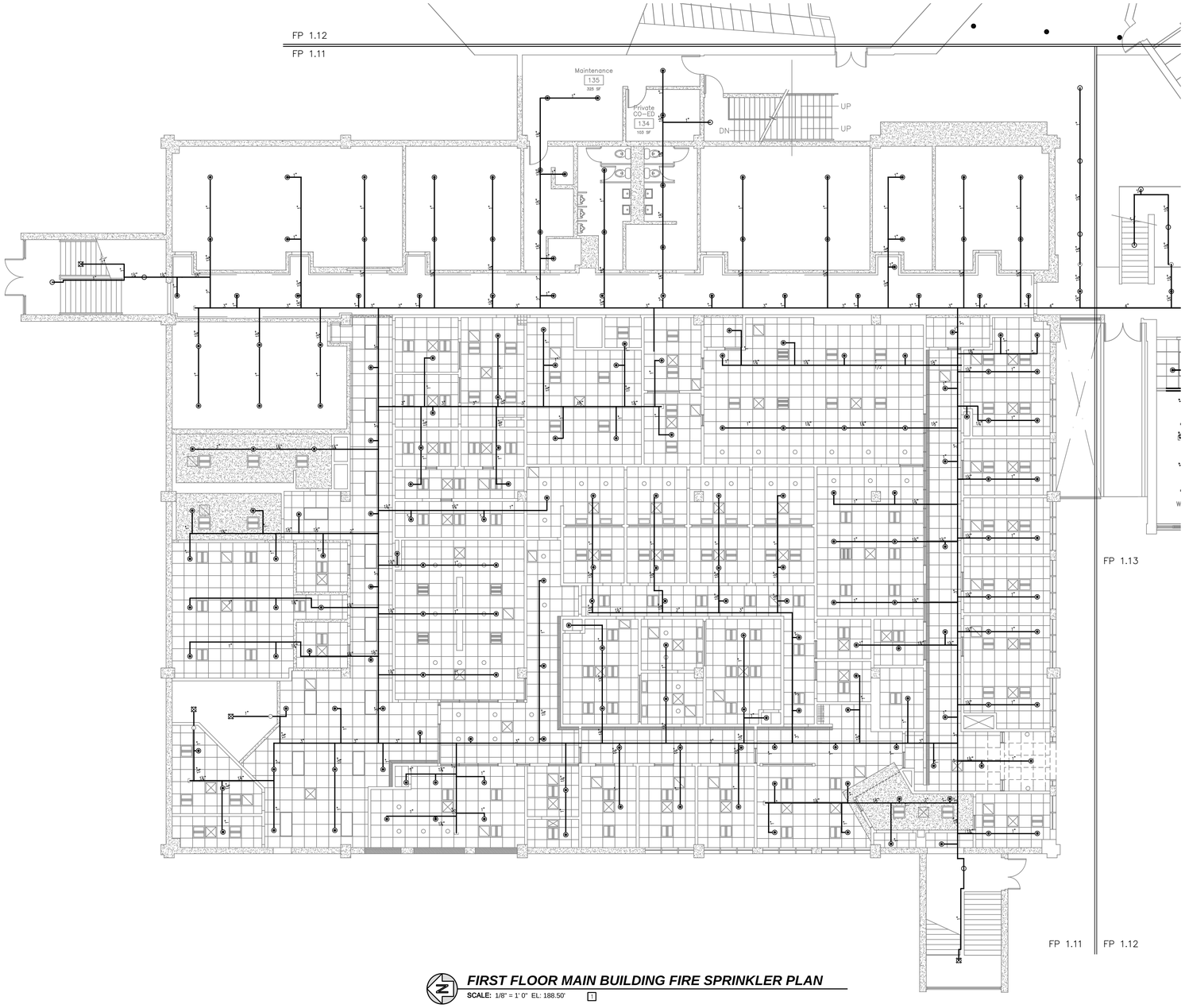
Design
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

Drawing Title: BASEMENT MAIN BUILDING FIRE SPRINKLER PLAN

Drawing No.: FP-1.01



FIRST FLOOR MAIN BUILDING FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL: 188.50' 1

KEY NOTES

1. PROVIDE SPRINKLERS ABOVE ACCESSIBLE CEILINGS WHERE 24" OF VERTICAL SPACE EXISTS BETWEEN CEILING AND STRUCTURE.
2. PROVIDE SPRINKLERS AT TOP OF STAIRWELL.
3. REMOVE EXISTING 6" CHECK VALVE. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" DOUBLE CHECK VALVE ASSEMBLY.
4. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" RISER CHECK VALVE WITH TRIM. RELOCATE EXISTING MAIN WATERFLOW SWITCH TO DOWNSTREAM OF NEW RISER CHECK VALVE.
5. PROVIDE SPRINKLERS UNDER OBSTRUCTIONS PER NFPA 13. (INCLUDE TEN ADDITIONAL SPRINKLERS IN BID)
6. PROVIDE WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
7. PROVIDE CONTROL VALVE, CHECK VALVE, WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
8. PROVIDE NEW 5" STORZ CONNECTION AND 4" CHECK VALVE W/BALL DRIP. PIPE BALL DRIP TO DRAIN LOCATION.
9. 3" UP TO NORTH PENTHOUSE. A 3" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE NORTH PENTHOUSE.
10. 2.5" UP TO SOUTH PENTHOUSE. A 2.5" SECTIONAL CONTROL VALV SHALL BE LOCATED ON THE RISER TO THE SOUTH PENTHOUSE.
11. 1.25" UP.
12. 4" UP.
13. RELOCATE EXISTING 2.5" FDV TO NEW 4" RISER AND CAP EXISTING 2.5" NIPPLE. REMOVE EXISTING FDV CABINET.
14. INSTALL PIPING BELOW NEW RAISED FLOOR. CORE EXISTING FLOOR FOR 1" SPRINKLER DROPS TO FIRST FLOOR LEVEL.
15. PROVIDE LOW POINT DRAIN VALVE AT END OF BRANCH LINE BELOW RAISED FLOOR.

HAI PROJECT NO. 1TJL06918.036

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Code Consultants
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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

Drawing Title: FIRST FLOOR MAIN BUILDING FIRE SPRINKLER PLAN

Drawing No. FP-1.11

FIRST FLOOR AUDITORIUM FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL: 188.50' 1

KEY NOTES

1. PROVIDE SPRINKLERS ABOVE ACCESSIBLE CEILINGS WHERE 24" OF VERTICAL SPACE EXISTS BETWEEN CEILING AND STRUCTURE.
2. PROVIDE SPRINKLERS AT TOP OF STAIRWELL.
3. REMOVE EXISTING 6" CHECK VALVE. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" DOUBLE CHECK VALVE ASSEMBLY.
4. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" RISER CHECK VALVE WITH TRIM. RELOCATE EXISTING MAIN WATERFLOW SWITCH TO DOWNSTREAM OF NEW RISER CHECK VALVE.
5. PROVIDE SPRINKLERS UNDER OBSTRUCTIONS PER NFPA 13. (INCLUDE TEN ADDITIONAL SPRINKLERS IN BID)
6. PROVIDE WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
7. PROVIDE CONTROL VALVE, CHECK VALVE, WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
8. PROVIDE NEW 5" STORZ CONNECTION AND 4" CHECK VALVE W/BALL DRIP. PIPE BALL DRIP TO DRAIN LOCATION.
9. 3" UP TO NORTH PENTHOUSE. A 3" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE NORTH PENTHOUSE.
10. 2.5" UP TO SOUTH PENTHOUSE. A 2.5" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE SOUTH PENTHOUSE.
11. 1.25" UP.
12. 4" UP.
13. RELOCATE EXISTING 2.5" FDV TO NEW 4" RISER AND CAP EXISTING 2.5" NIPPLE. REMOVE EXISTING FDV CABINET.
14. INSTALL PIPING BELOW NEW RAISED FLOOR. CORE EXISTING FLOOR FOR 1" SPRINKLER DROPS TO FIRST FLOOR LEVEL.
15. PROVIDE LOW POINT DRAIN VALVE AT END OF BRANCH LINE BELOW RAISED FLOOR.

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

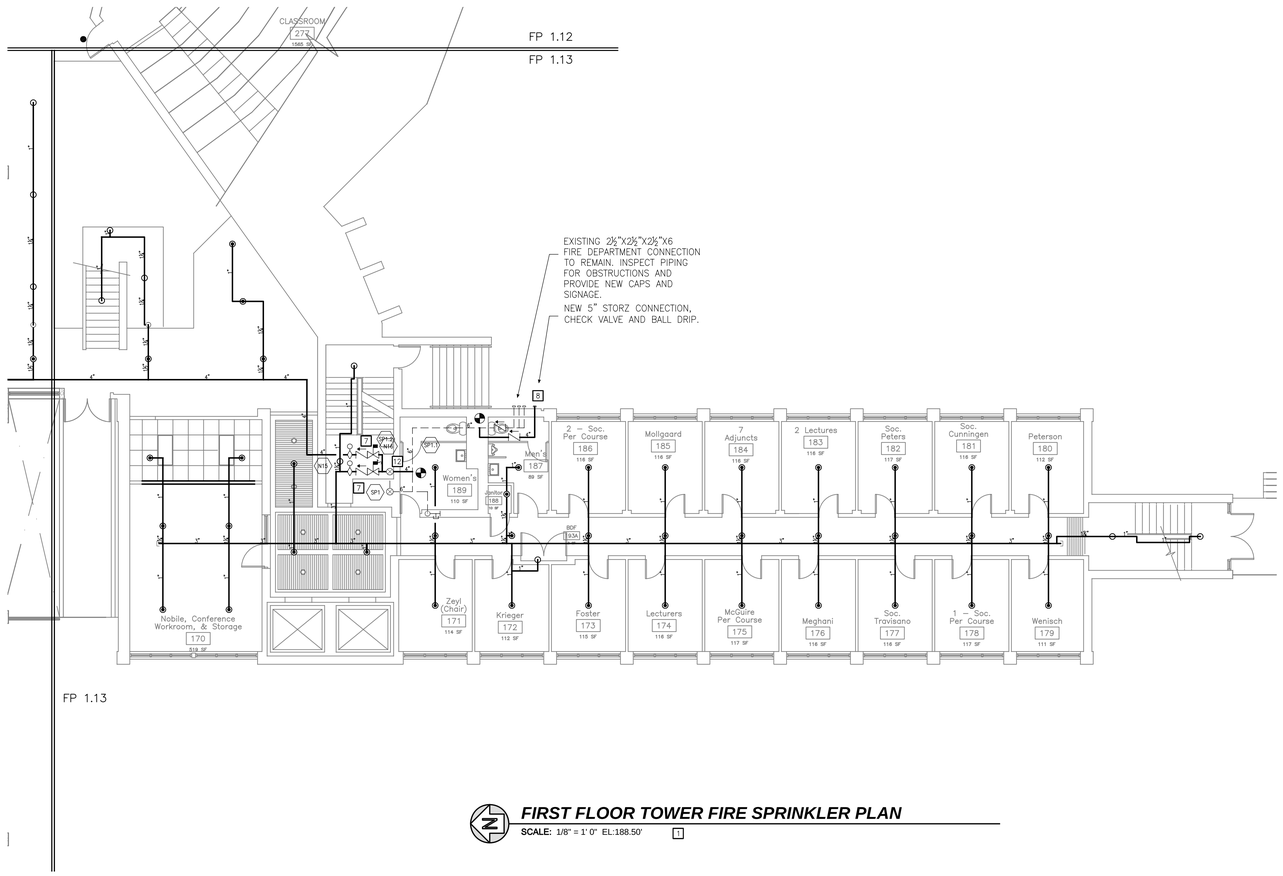
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

Drawing Title: FIRST FLOOR AUDITORIUM FIRE SPRINKLER PLAN

Drawing No. FP-1.12



FIRST FLOOR TOWER FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL:188.50' 1

KEY NOTES

1. PROVIDE SPRINKLERS ABOVE ACCESSIBLE CEILINGS WHERE 24" OF VERTICAL SPACE EXISTS BETWEEN CEILING AND STRUCTURE.
2. PROVIDE SPRINKLERS AT TOP OF STAIRWELL.
3. REMOVE EXISTING 6" CHECK VALVE. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" DOUBLE CHECK VALVE ASSEMBLY.
4. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" RISER CHECK VALVE WITH TRIM. RELOCATE EXISTING MAIN WATERFLOW SWITCH TO DOWNSTREAM OF NEW RISER CHECK VALVE.
5. PROVIDE SPRINKLERS UNDER OBSTRUCTIONS PER NFPA 13. (INCLUDE TEN ADDITIONAL SPRINKLERS IN BID)
6. PROVIDE WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
7. PROVIDE CONTROL VALVE, CHECK VALVE, WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
8. PROVIDE NEW 5" STORZ CONNECTION AND 4" CHECK VALVE W/BALL DRIP. PIPE BALL DRIP TO DRAIN LOCATION.
9. 3" UP TO NORTH PENTHOUSE. A 3" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE NORTH PENTHOUSE.
10. 2.5" UP TO SOUTH PENTHOUSE. A 2.5" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE SOUTH PENTHOUSE.
11. 1.25" UP.
12. 4" UP.
13. RELOCATE EXISTING 2.5" FDV TO NEW 4" RISER AND CAP EXISTING 2.5" NIPPLE. REMOVE EXISTING FDV CABINET.
14. INSTALL PIPING BELOW NEW RAISED FLOOR. CORE EXISTING FLOOR FOR 1" SPRINKLER DROPS TO FIRST FLOOR LEVEL.
15. PROVIDE LOW POINT DRAIN VALVE AT END OF BRANCH LINE BELOW RAISED FLOOR.

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

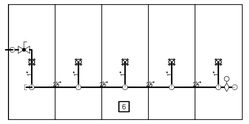
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

Drawing Title: FIRST FLOOR TOWER FIRE SPRINKLER PLAN

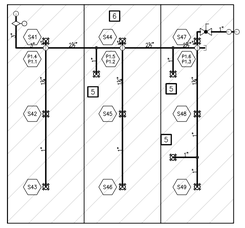
Drawing No.: FP-1.13



SOUTH PENTHOUSE FIRE SPRINKLER PLAN

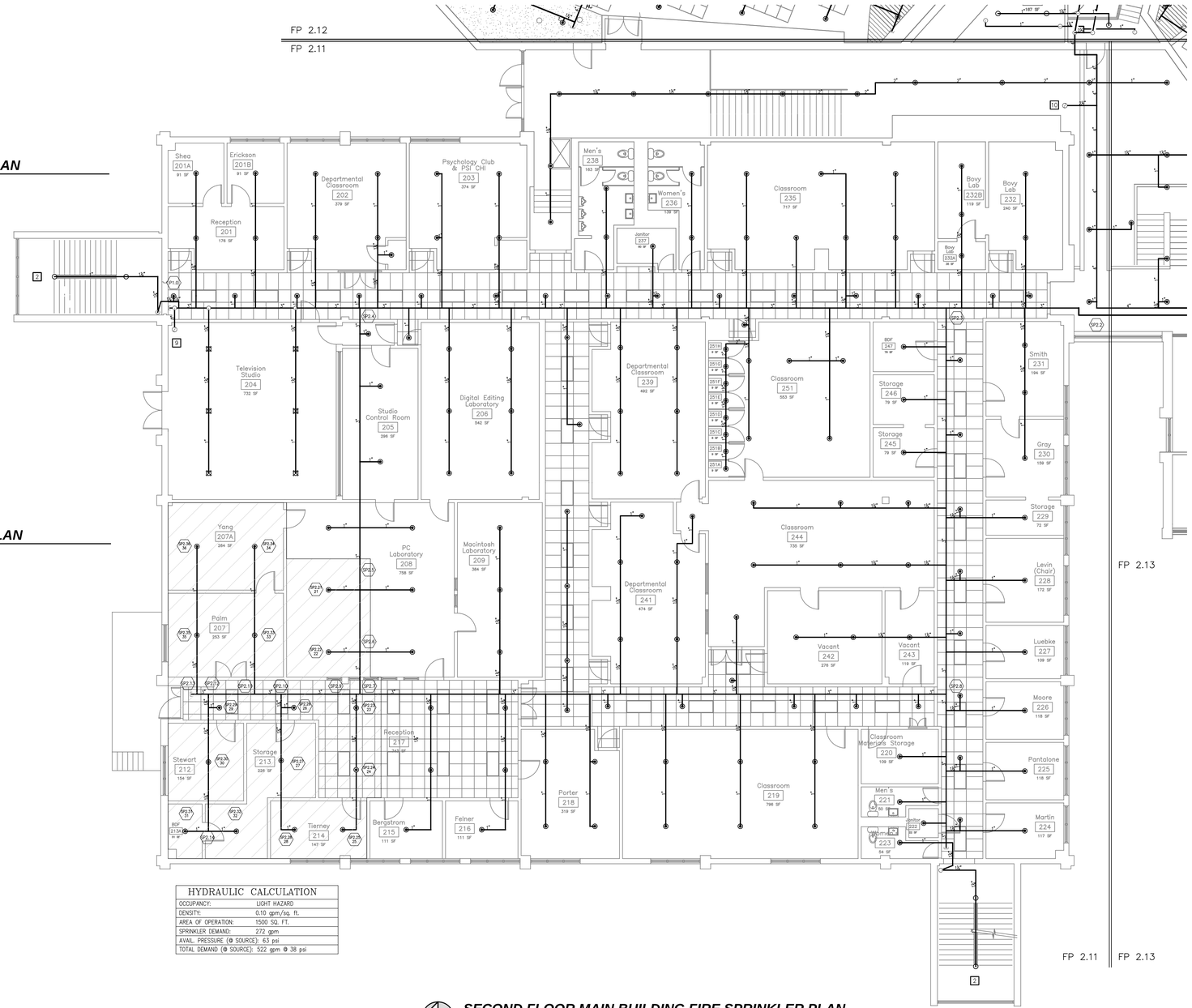
SCALE: 1/8" = 1' 0" EL:212.50'

HYDRAULIC CALCULATION	
OCCUPANCY:	ORDINARY HAZARD 2
DENSITY:	0.20 gpm/sq. ft.
AREA OF OPERATION:	840 SQ. FT.
SPRINKLER DEMAND:	180 gpm
AVAIL. PRESSURE (@ SOURCE):	65 psi
TOTAL DEMAND (@ SOURCE):	430 gpm @ 48 psi



NORTH PENTHOUSE FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL: 224.17'



HYDRAULIC CALCULATION	
OCCUPANCY:	LIGHT HAZARD
DENSITY:	0.10 gpm/sq. ft.
AREA OF OPERATION:	1500 SQ. FT.
SPRINKLER DEMAND:	272 gpm
AVAIL. PRESSURE (@ SOURCE):	63 psi
TOTAL DEMAND (@ SOURCE):	522 gpm @ 38 psi

SECOND FLOOR MAIN BUILDING FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL: 201.17' 1

KEY NOTES

1. PROVIDE SPRINKLERS ABOVE ACCESSIBLE CEILINGS WHERE 24" OF VERTICAL SPACE EXISTS BETWEEN CEILING AND STRUCTURE.
2. PROVIDE SPRINKLERS AT TOP OF STAIRWELL.
3. REMOVE EXISTING 6" CHECK VALVE. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" DOUBLE CHECK VALVE ASSEMBLY.
4. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" RISER CHECK VALVE WITH TRIM. RELOCATE EXISTING MAIN WATERFLOW SWITCH TO DOWNSTREAM OF NEW RISER CHECK VALVE.
5. PROVIDE SPRINKLERS UNDER OBSTRUCTIONS PER NFPA 13. (INCLUDE TEN ADDITIONAL SPRINKLERS IN BID)
6. PROVIDE WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
7. PROVIDE CONTROL VALVE, CHECK VALVE, WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
8. PROVIDE NEW 5" STORZ CONNECTION AND 4" CHECK VALVE W/BALL DRIP. PIPE BALL DRIP TO DRAIN LOCATION.
9. 3" UP TO NORTH PENTHOUSE. A 3" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE NORTH PENTHOUSE.
10. 2.5" UP TO SOUTH PENTHOUSE. A 2.5" SECTIONAL CONTROL VALV SHALL BE LOCATED ON THE RISER TO THE SOUTH PENTHOUSE.
11. 1.25" UP.
12. 4" UP.
13. RELOCATE EXISTING 2.5" FDV TO NEW 4" RISER AND CAP EXISTING 2.5" NIPPLE. REMOVE EXISTING FDV CABINET.
14. INSTALL PIPING BELOW NEW RAISED FLOOR. CORE EXISTING FLOOR FOR 1" SPRINKLER DROPS TO FIRST FLOOR LEVEL.
15. PROVIDE LOW POINT DRAIN VALVE AT END OF BRANCH LINE BELOW RAISED FLOOR.

HAI PROJECT NO. 1TJL06918.036

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4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

Drawing Title: SECOND FLOOR MAIN BUILDING FIRE SPRINKLER PLAN

Drawing No.: FP-1.21

SECOND FLOOR AUDITORIUM FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL: 197.67' 1

KEY NOTES

1. PROVIDE SPRINKLERS ABOVE ACCESSIBLE CEILINGS WHERE 24" OF VERTICAL SPACE EXISTS BETWEEN CEILING AND STRUCTURE.
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3. REMOVE EXISTING 6" CHECK VALVE. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" DOUBLE CHECK VALVE ASSEMBLY.
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12. 4" UP.
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14. INSTALL PIPING BELOW NEW RAISED FLOOR. CORE EXISTING FLOOR FOR 1" SPRINKLER DROPS TO FIRST FLOOR LEVEL.
15. PROVIDE LOW POINT DRAIN VALVE AT END OF BRANCH LINE BELOW RAISED FLOOR.

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

Drawing Title: SECOND FLOOR AUDITORIUM FIRE SPRINKLER PLAN

Drawing No. FP-1.22

SECOND FLOOR ALT. AUDITORIUM FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL: 197.67' 1

KEY NOTES

1. PROVIDE SPRINKLERS ABOVE ACCESSIBLE CEILINGS WHERE 24" OF VERTICAL SPACE EXISTS BETWEEN CEILING AND STRUCTURE.
2. PROVIDE SPRINKLERS AT TOP OF STAIRWELL.
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12. 4" UP.
13. RELOCATE EXISTING 2.5" FDV TO NEW 4" RISER AND CAP EXISTING 2.5" NIPPLE. REMOVE EXISTING FDV CABINET.
14. INSTALL PIPING BELOW NEW RAISED FLOOR. CORE EXISTING FLOOR FOR 1" SPRINKLER DROPS TO FIRST FLOOR LEVEL.
15. PROVIDE LOW POINT DRAIN VALVE AT END OF BRANCH LINE BELOW RAISED FLOOR.

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

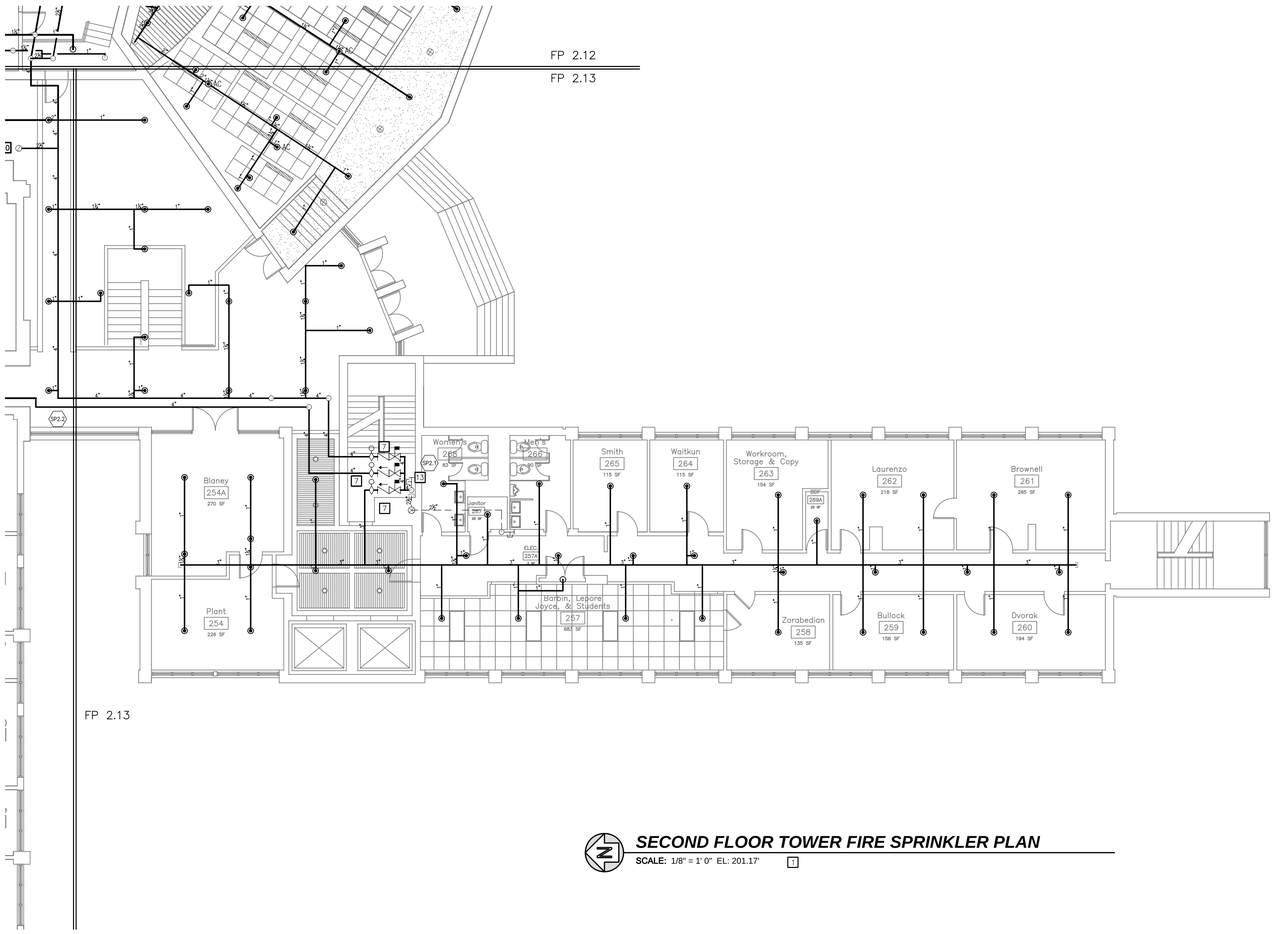
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

Drawing Title: SECOND FLOOR ALTERNATE AUDITORIUM FIRE SPRINKLER PLAN

Drawing No. FP-1.22A



SECOND FLOOR TOWER FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL: 201.17' 1

KEY NOTES

1. PROVIDE SPRINKLERS ABOVE ACCESSIBLE CEILINGS WHERE 24" OF VERTICAL SPACE EXISTS BETWEEN CEILING AND STRUCTURE.
2. PROVIDE SPRINKLERS AT TOP OF STAIRWELL.
3. REMOVE EXISTING 6" CHECK VALVE. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" DOUBLE CHECK VALVE ASSEMBLY.
4. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" RISER CHECK VALVE WITH TRIM. RELOCATE EXISTING MAIN WATERFLOW SWITCH TO DOWNSTREAM OF NEW RISER CHECK VALVE.
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9. 3" UP TO NORTH PENTHOUSE. A 3" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE NORTH PENTHOUSE.
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12. 4" UP.
13. RELOCATE EXISTING 2.5" FDV TO NEW 4" RISER AND CAP EXISTING 2.5" NIPPLE. REMOVE EXISTING FDV CABINET.
14. INSTALL PIPING BELOW NEW RAISED FLOOR. CORE EXISTING FLOOR FOR 1" SPRINKLER DROPS TO FIRST FLOOR LEVEL.
15. PROVIDE LOW POINT DRAIN VALVE AT END OF BRANCH LINE BELOW RAISED FLOOR.

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

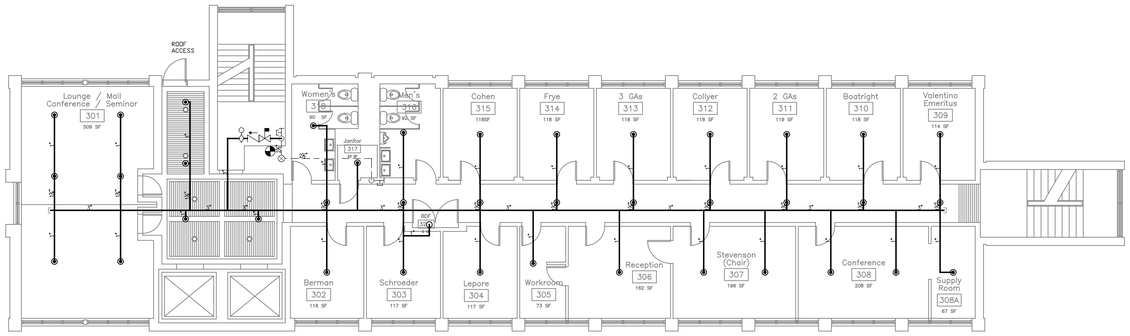
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

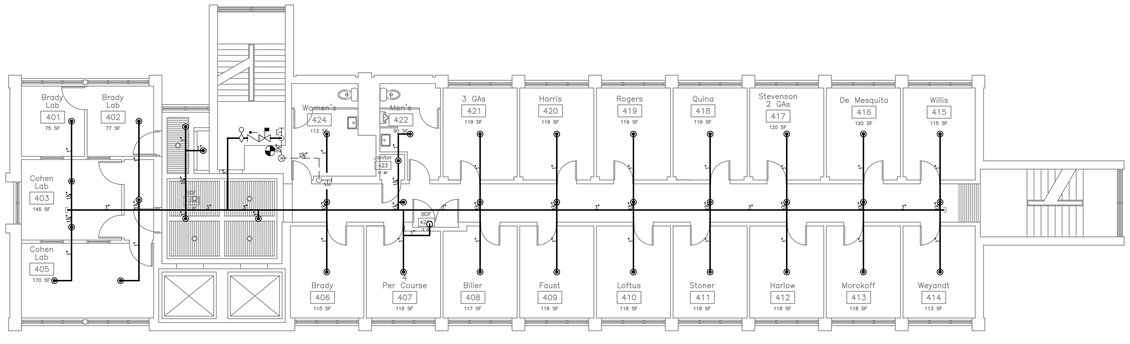
Drawing Title: SECOND FLOOR TOWER FIRE SPRINKLER PLAN

Drawing No. FP-1.23



THIRD FLOOR TOWER FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL:213.83'



FOURTH FLOOR TOWER FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL: 223.83'

KEY NOTES

1. PROVIDE SPRINKLERS ABOVE ACCESSIBLE CEILINGS WHERE 24" OF VERTICAL SPACE EXISTS BETWEEN CEILING AND STRUCTURE.
2. PROVIDE SPRINKLERS AT TOP OF STAIRWELL.
3. REMOVE EXISTING 6" CHECK VALVE. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" DOUBLE CHECK VALVE ASSEMBLY.
4. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" RISER CHECK VALVE WITH TRIM. RELOCATE EXISTING MAIN WATERFLOW SWITCH TO DOWNSTREAM OF NEW RISER CHECK VALVE.
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8. PROVIDE NEW 5" STORZ CONNECTION AND 4" CHECK VALVE W/BALL DRIP. PIPE BALL DRIP TO DRAIN LOCATION.
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13. RELOCATE EXISTING 2.5" FDV TO NEW 4" RISER AND CAP EXISTING 2.5" NIPPLE. REMOVE EXISTING FDV CABINET.
14. INSTALL PIPING BELOW NEW RAISED FLOOR. CORE EXISTING FLOOR FOR 1" SPRINKLER DROPS TO FIRST FLOOR LEVEL.
15. PROVIDE LOW POINT DRAIN VALVE AT END OF BRANCH LINE BELOW RAISED FLOOR.

HAI PROJECT NO. 1TJL06918.036

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3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

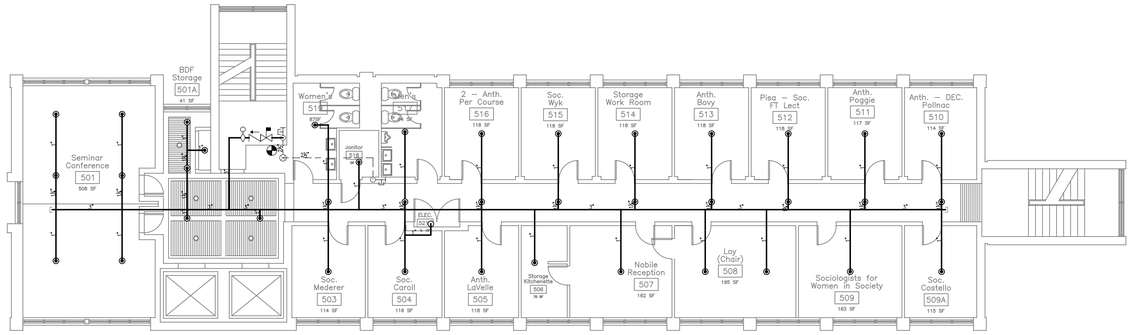
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

Drawing Title: THIRD AND FOURTH FLOOR TOWER FIRE SPRINKLER PLAN

Drawing No. FP-1.31

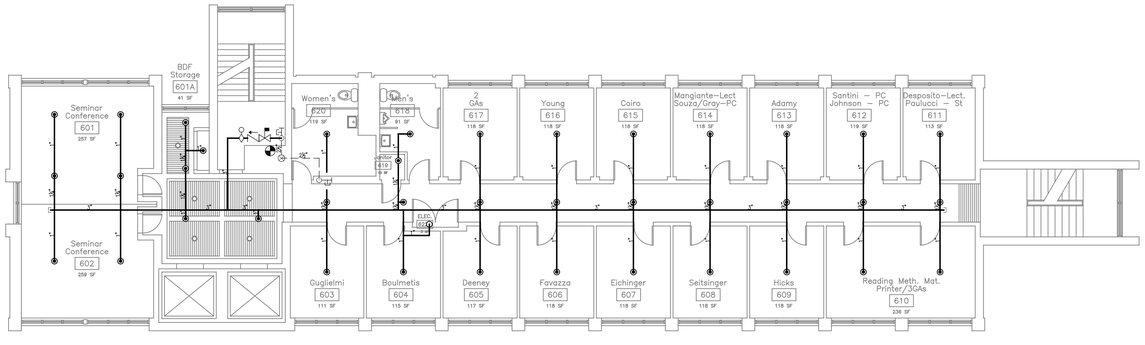


FIFTH FLOOR TOWER FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL:233.83'

KEY NOTES

1. PROVIDE SPRINKLERS ABOVE ACCESSIBLE CEILINGS WHERE 24" OF VERTICAL SPACE EXISTS BETWEEN CEILING AND STRUCTURE.
2. PROVIDE SPRINKLERS AT TOP OF STAIRWELL.
3. REMOVE EXISTING 6" CHECK VALVE. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" DOUBLE CHECK VALVE ASSEMBLY.
4. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" RISER CHECK VALVE WITH TRIM. RELOCATE EXISTING MAIN WATERFLOW SWITCH TO DOWNSTREAM OF NEW RISER CHECK VALVE.
5. PROVIDE SPRINKLERS UNDER OBSTRUCTIONS PER NFPA 13. (INCLUDE TEN ADDITIONAL SPRINKLERS IN BID)
6. PROVIDE WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
7. PROVIDE CONTROL VALVE, CHECK VALVE, WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
8. PROVIDE NEW 5" STORZ CONNECTION AND 4" CHECK VALVE W/BALL DRIP. PIPE BALL DRIP TO DRAIN LOCATION.
9. 3" UP TO NORTH PENTHOUSE. A 3" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE NORTH PENTHOUSE.
10. 2.5" UP TO SOUTH PENTHOUSE. A 2.5" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE SOUTH PENTHOUSE.
11. 1.25" UP.
12. 4" UP.
13. RELOCATE EXISTING 2.5" FDV TO NEW 4" RISER AND CAP EXISTING 2.5" NIPPLE. REMOVE EXISTING FDV CABINET.
14. INSTALL PIPING BELOW NEW RAISED FLOOR. CORE EXISTING FLOOR FOR 1" SPRINKLER DROPS TO FIRST FLOOR LEVEL.
15. PROVIDE LOW POINT DRAIN VALVE AT END OF BRANCH LINE BELOW RAISED FLOOR.



SIXTH FLOOR TOWER FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL:243.83'

HAI PROJECT NO. 1TJL06918.036

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISIONS PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/07/10

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

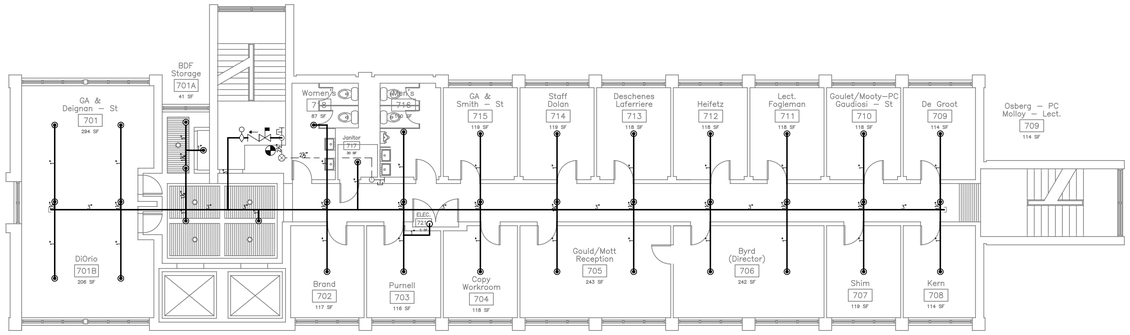
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

Drawing Title: FIFTH AND SIXTH FLOOR TOWER FIRE SPRINKLER PLAN

Drawing No. FP-1.32



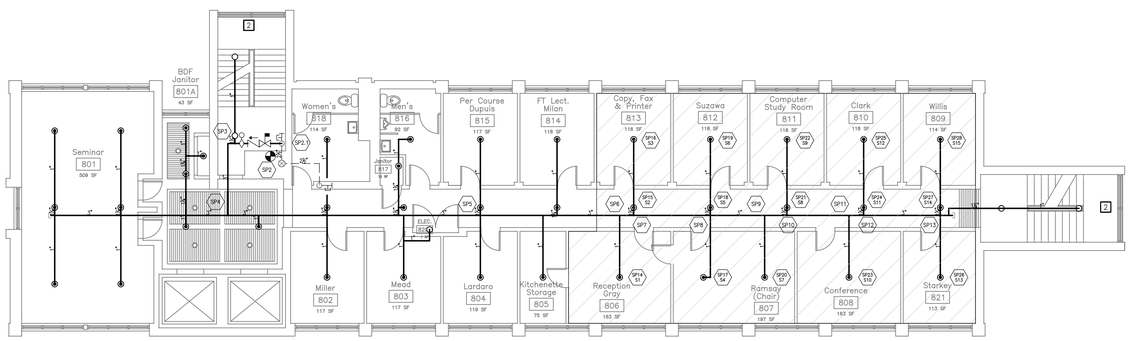
14

SEVENTH FLOOR TOWER FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL:253.83

HYDRAULIC CALCULATION	
OCCUPANCY:	LIGHT HAZARD
DENSITY:	0.10 gpm/sq. ft.
AREA OF OPERATION:	1500 SQ. FT.
SPRINKLER DEMAND:	246 gpm (HOSE @ STREET)
AVAIL. PRESSURE (@ SOURCE):	65 psi
TOTAL DEMAND (@ SOURCE):	346 gpm @ 63 psi

HYDRAULIC CALCULATION	
OCCUPANCY:	LIGHT HAZARD
DENSITY:	0.10 gpm/sq. ft.
AREA OF OPERATION:	900 SQ. FT.
SPRINKLER DEMAND:	146 gpm (HOSE @ 8TH)
AVAIL. PRESSURE (@ SOURCE):	66 psi
TOTAL DEMAND (@ SOURCE):	246 gpm @ 55 psi



EIGHTH FLOOR TOWER FIRE SPRINKLER PLAN

SCALE: 1/8" = 1' 0" EL:263.83

KEY NOTES

1. PROVIDE SPRINKLERS ABOVE ACCESSIBLE CEILINGS WHERE 24" OF VERTICAL SPACE EXISTS BETWEEN CEILING AND STRUCTURE.
2. PROVIDE SPRINKLERS AT TOP OF STAIRWELL.
3. REMOVE EXISTING 6" CHECK VALVE. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" DOUBLE CHECK VALVE ASSEMBLY.
4. MODIFY EXISTING 6" HEADER AND PROVIDE NEW 6" RISER CHECK VALVE WITH TRIM. RELOCATE EXISTING MAIN WATERFLOW SWITCH TO DOWNSTREAM OF NEW RISER CHECK VALVE.
5. PROVIDE SPRINKLERS UNDER OBSTRUCTIONS PER NFPA 13. (INCLUDE TEN ADDITIONAL SPRINKLERS IN BID)
6. PROVIDE WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
7. PROVIDE CONTROL VALVE, CHECK VALVE, WATERFLOW SWITCH AND INSPECTORS TEST VALVE.
8. PROVIDE NEW 5" STORZ CONNECTION AND 4" CHECK VALVE W/BALL DRIP. PIPE BALL DRIP TO DRAIN LOCATION.
9. 3" UP TO NORTH PENTHOUSE. A 3" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE NORTH PENTHOUSE.
10. 2.5" UP TO SOUTH PENTHOUSE. A 2.5" SECTIONAL CONTROL VALVE SHALL BE LOCATED ON THE RISER TO THE SOUTH PENTHOUSE.
11. 1.25" UP.
12. 4" UP.
13. RELOCATE EXISTING 2.5" FDV TO NEW 4" RISER AND CAP EXISTING 2.5" NIPPLE. REMOVE EXISTING FDV CABINET.
14. INSTALL PIPING BELOW NEW RAISED FLOOR. CORE EXISTING FLOOR FOR 1" SPRINKLER DROPS TO FIRST FLOOR LEVEL.
15. PROVIDE LOW POINT DRAIN VALVE AT END OF BRANCH LINE BELOW RAISED FLOOR.

HAI PROJECT NO. 1TJL06918.036

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Submission History

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

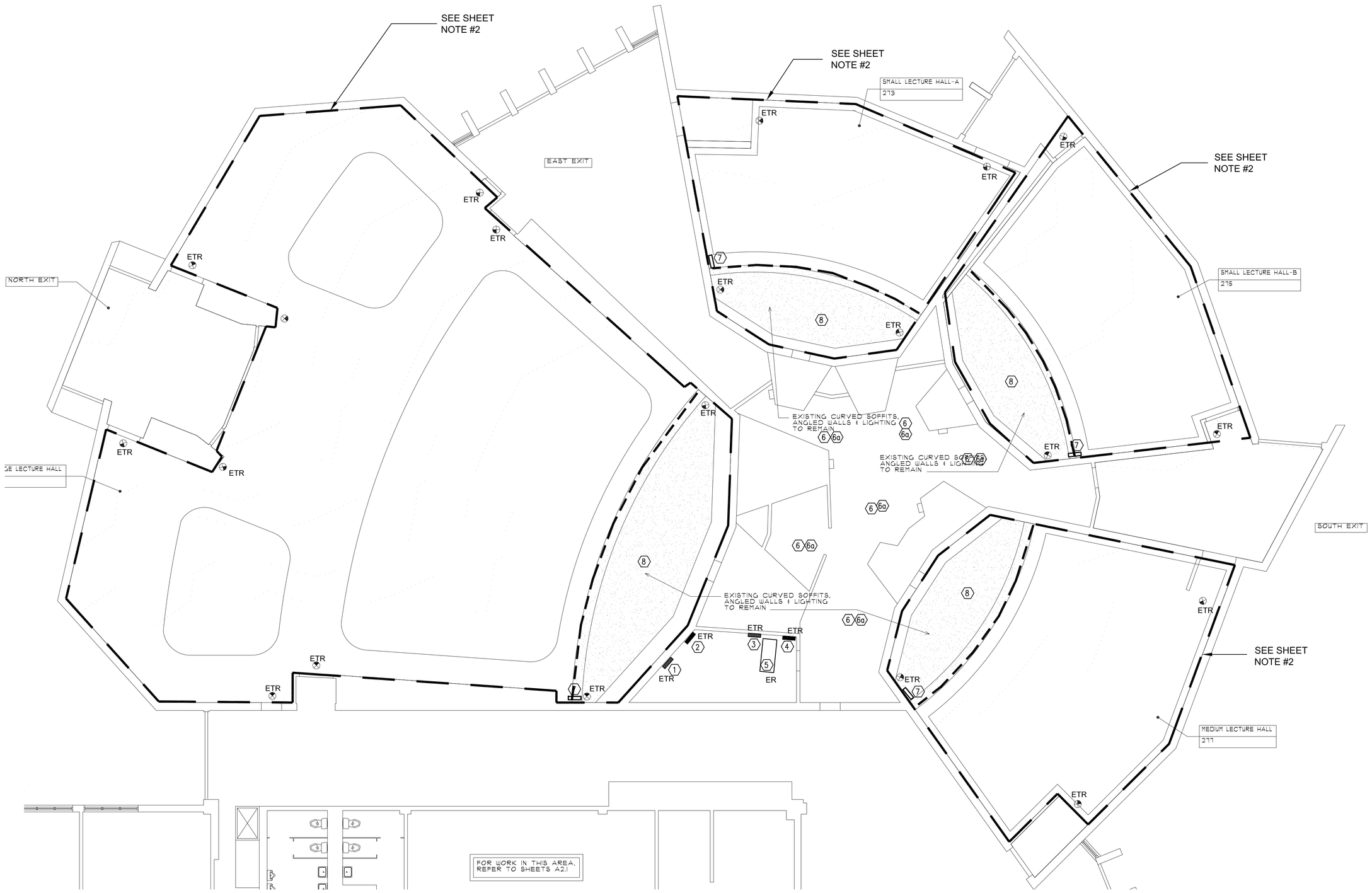
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: 1/8" = 1'-0"
Drawn: CDC/SWD
Design: CDC/SWD
Review: TJL

Drawing Title: SEVENTH AND EIGHTH FLOOR TOWER FIRE SPRINKLER PLAN

Drawing No. FP-1.33



1 SECOND FLOOR LECTURE HALL - DEMOLITION PLAN
ED3.0 1/8" = 1'-0"

SHEET NOTES:

#1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRACING AND IDENTIFYING BOTH NORMAL AND EMERGENCY LIGHTING CIRCUITS FOR RE-USE.

#2 REMOVE ALL EXISTING POWER & LIGHTING FIXTURES AND THEIR ASSOCIATED CONDUIT, CONDUCTORS, JUNCTION BOXES, LIGHTING CONTROLS, etc. IN LECTURE HALL BACK TO PANELBOARDS LOCATED IN SECOND FLOOR ELECTRIC ROOM AS SHOWN ON THIS DRAWING.

#3. ALL AUDIO/VIDEO EQUIPMENT AND DEVICES SHALL BE THE RESPONSIBILITY OF THE OWNER.

#4. REFER TO ARCHITECTURAL DRAWING "A5" SERIES & ALTERNATES FOR ADDITIONAL DEVICE & LIGHTING DEMOLITION, REMOVAL & RE-INSTALLATION INFORMATION.

KEYED NOTES

1. PANEL "EA": #HCN1436-2, 225A, 480Y/277V, 3Ø,4W, 18CKT. (TO REMAIN)
2. PANEL "LA": 400A, 208Y/120V, 3Ø,4W, 30CKT. (TO REMAIN)
3. PANEL "PA": #HCN3254-2, 225A, 480Y/277V, 3Ø,4W, 24CKT. (TO REMAIN)
4. PANEL "LA-1": 100A, 208Y/120V, 3Ø,4W, 42CKT. (TO REMAIN)
5. LIGHTING CONTROL PANEL AND ASSOCITATED EQUIPMENT TO BE COMPLETELY REMOVED.
6. ALL EQUIPMENT IN THE PROJECTION BOOTH SHALL BE COMPLETELY REMOVED AND RE-INSTALLED TO ACCOMMODATE FOR THE INSTALLTION OF A NEW FLOOR. E.C. SHALL RE-INSTALL (7) DUPLEX RECEPTACLES, (11) QUADRAPLEX RECEPTACLES & (1) 240V RECEPTACLE AT 18"A.F.F.

6a ADD/ALTERNATE #2 ALLOWANCE: ALL ELECTRICAL CONDUCTORS, CONDUITS, SWITCHES, RECEPTACLES, JUCNTION BOXES AND ASSOCIATED EQUIPMENT IN THE PROJECTION BOOTH MADE OBSOLETE BY THIS PROJECT SHALL BE REMOVED BACK TO SOURCE AND MADE SAFE. COORDINATE WITH OWNER.

7. EXISTING LIGHTING CONTROLS & SWITCHING TO BE REMOVED.
8. LIGHTING IN EXISTING CURVED SOFFITS & ANGLED WALL AREAS SHALL REMAIN AND BE RECONNECTED TO EXISTING CIRCUITRY.

TYPICAL DEMOLITION NOTES:

1. PRIOR TO SUBMITTING BID, VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. RENOVATION WORK WILL REQUIRE CAREFUL SITE EXAMINATION PRIOR TO BIDDING. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY AN EXPERIENCED OBSERVER. FIELD VERIFY MEASUREMENTS AND CIRCUITING ARRANGEMENTS THAT ARE AS SHOWN ON DRAWINGS. THE ELECTRICAL CONTRACTOR SHALL REVIEW ALL OF THE ARCHITECTS AND OTHER TRADES DRAWINGS TO VERIFY ALL AREAS OF RENOVATION AND TO GET A COMPLETE UNDERSTANDING OF THE DEMOLITION WORK REQUIRED BY THIS PROJECT.

2. FIELD VERIFY THAT ABANDONED WIRING AND EQUIPMENT SERVE ONLY ABANDONED FACILITIES.

3. DEMOLITION DRAWINGS ARE BASED ON CASUAL FIELD OBSERVATION AND EXISTING RECORD DOCUMENTS. REPORT DISCREPANCIES TO ARCHITECT/ENGINEER BEFORE DISTURBING EXISTING INSTALLATIONS. THESE DRAWINGS HAVE BEEN COMPILED FROM THE BEST AVAILABLE INFORMATION AND ARE NOT INTENDED TO LIMIT THE SCOPE OF THE WORK. THE ELECTRICAL CONTRACTOR MAY ENCOUNTER HIDDEN OR COVERED CONDITIONS, NOT INDICATED IN THESE DOCUMENTS, REQUIRING THE ELECTRICAL CONTRACTOR TO PROVIDE ADDITIONAL WORK FOR THE COMPLETION OF HIS OR HER CONTRACT. IT WILL BE ASSUMED THAT THE CONTRACTOR HAS INSPECTED THE SITE PRIOR TO BIDDING AND VERIFIED THE INFORMATION SUPPLIED HEREIN AND ADDITIONAL WORK REQUIRED. BEGINNING OF DEMOLITION MEANS THE CONTRACTOR ACCEPTS EXISTING CONDITIONS. REFER TO ALL CONSTRUCTION DOCUMENTS TO GAIN A COMPLETE UNDERSTANDING OF THE DEMOLITION WORK REQUIRED.

4. CUT, REMOVE AND LEGALLY DISPOSE OF SELECTED ELECTRICAL EQUIPMENT, COMPONENTS AND MATERIALS AS INDICATED, INCLUDING, BUT NOT LIMITED TO, REMOVAL OF ELECTRICAL ITEMS INDICATED TO BE REMOVED AND ITEMS MADE OBSOLETE BY THE WORK. DISCONNECT AND REMOVE ALL FIXTURES, WIRING DEVICES, CONDUIT AND FITTINGS, WIRING & CABLE, FIRE ALARM DEVICES/COMPONENTS, HANGERS, SUPPORTS, WIREWAYS, AND ALL OTHER ELECTRICAL COMPONENTS MADE OBSOLETE BY THIS PROJECT. THE OWNER RESERVES THE OPTION OF SALVAGE RIGHTS TO DEMOLISHED MATERIAL AND REMOVED EQUIPMENT. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE TO OBTAIN A LIST OF MATERIALS AND REMOVED EQUIPMENT TO BE TURNED OVER TO THE OWNER. ALL OTHER MATERIAL AND REMOVED EQUIPMENT NOT BEING SALVAGED BY THE OWNER SHALL BE DISPOSED OF BY THE CONTRACTOR. PLACE ALL DEMOLISHED ELECTRICAL MATERIALS EXCEPT HAZARDOUS MATERIALS (PCB LIGHTING BALLASTS, FLUORESCENT LAMPS, ETC.) AS DETERMINED BY THE AUTHORITY HAVING JURISDICTION IN GENERAL CONTRACTOR'S DUMPSTER. ALL HAZARDOUS ELECTRICAL MATERIALS SHALL BE LEGALLY DISPOSED OF BY THE ELECTRICAL SUBCONTRACTOR.

5. DISCONNECT ELECTRICAL SYSTEMS IN WALLS, FLOORS, AND CEILINGS SCHEDULED FOR REMOVAL.

6. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANELS AS APPROPRIATE. TEMPORARY WALL OPENINGS AND/OR MODIFICATIONS REQUIRED FOR REMOVAL/INSTALLATION OF EQUIPMENT SHALL BE PROVIDED AS NEEDED AND COORDINATED WITH THE GENERAL CONTRACTOR. ALL HVAC UNITS SCHEDULED TO BE REMOVED OR RE-LOCATED SHALL BE DONE SO BY THE HVAC CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL DISCONNECT AND MAKE-SAFE FOR REMOVAL.

7. PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS.

8. EXISTING ELECTRICAL SERVICE: MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR SERVICE. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER AND ARCHITECT/ENGINEER AT LEAST 72 HOURS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA AS REQUIRED.

9. EXISTING FIRE ALARM SYSTEM: MAINTAIN THE EXISTING SYSTEM IN SERVICE UNTIL THE MODIFIED/EXPANDED SYSTEM IS TESTED AND ACCEPTED BY THE FIRE DEPARTMENT. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. NOTIFY OWNER, ARCHITECT/ENGINEER AND LOCAL FIRE DEPARTMENT AT LEAST TEN DAYS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA AS REQUIRED OR PROVIDE A "FIRE-WATCH" SYSTEM COORDINATED WITH THE LOCAL FIRE DEPARTMENT.

10. EXISTING TELEPHONE SYSTEM: MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR SERVICE. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. NOTIFY OWNER, ARCHITECT/ENGINEER AND TELEPHONE UTILITY COMPANY AT LEAST 72 HOURS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA.

11. EXTEND EXISTING ELECTRICAL INSTALLATIONS AS CALLED FOR ON THE DRAWINGS.

12. REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION.

13. REMOVE ABANDONED WIRING TO SOURCE OF SUPPLY.

14. REMOVE EXPOSED ABANDONED CONDUIT, INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILING FINISHES. CUT CONDUIT FLUSH WITH WALLS AND FLOORS, AND PATCH SURFACES.

15. DISCONNECT ABANDONED OUTLETS AND REMOVE DEVICES. REMOVE ABANDONED OUTLETS IF CONDUIT SERVICING THEM IS ABANDONED AND REMOVED. PROVIDE BLANK COVER FOR ABANDONED OUTLETS WHICH ARE NOT REMOVED.

16. DISCONNECT AND REMOVE ABANDONED PANELBOARDS AND DISTRIBUTION EQUIPMENT.

17. DISCONNECT AND REMOVE ELECTRICAL DEVICES AND EQUIPMENT SERVING UTILIZATION EQUIPMENT THAT HAS BEEN REMOVED.

18. DISCONNECT AND REMOVE ABANDONED LUMINAIRES. REMOVE BRACKETS, STEMS, HANGERS, AND OTHER ACCESSORIES.

19. DISCONNECT AND REMOVE OTHER SYSTEMS AND EQUIPMENT WITHIN THE WORK AREA MADE OBSOLETE BY THIS WORK.

20. PROTECT ALL EXISTING WALLS, FLOORS, CEILINGS, LIGHT FIXTURES, ETC. WHICH ARE TO REMAIN & TO PREVENT DAMAGE DURING ALL CONSTRUCTION PHASES. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK. PROVIDE AND MAINTAIN TEMPORARY PARTITIONS OR DUST BARRIERS ADEQUATE TO PREVENT THE SPREAD OF DUST AND DIRT TO ADJACENT AREAS. PROTECT THE STRUCTURE, FURNISHINGS, FINISHES, AND ADJACENT MATERIALS NOT INDICATED OR SCHEDULED TO BE REMOVED. PROTECT THE ELECTRICAL WORK AND THE WORK OF OTHERS IN A MANNER BEST SUITED TO THE PARTICULAR CASE. CORRECT ANY DAMAGE DONE TO ANY WORK AT NO ADDITIONAL COST.

21. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANEL AS APPROPRIATE.

22. EXTEND EXISTING INSTALLATIONS USING MATERIALS AND METHODS COMPATIBLE WITH EXISTING ELECTRICAL INSTALLATIONS, OR AS SPECIFIED.

23. CLEAN AND REPAIR EXISTING MATERIALS AND EQUIPMENT WHICH REMAIN OR ARE TO BE REUSED.

24. PANELBOARDS: CLEAN EXPOSED SURFACES AND CHECK TIGHTNESS OF ELECTRICAL CONNECTIONS. REPLACE DAMAGED CIRCUIT BREAKERS AND PROVIDE CLOSURE PLATES FOR VACANT POSITIONS. PROVIDE TYPED CIRCUIT DIRECTORY SHOWING REVISED CIRCUITING

25. LUMINAIRES: REMOVE EXISTING LUMINAIRES AS INDICATED.

HAI PROJECT NO. 17JL06918.036

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1	CODE REVIEW SET	05/03/10
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3	BID SET	10/25/10
4	FINAL BID SET	12/06/10

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

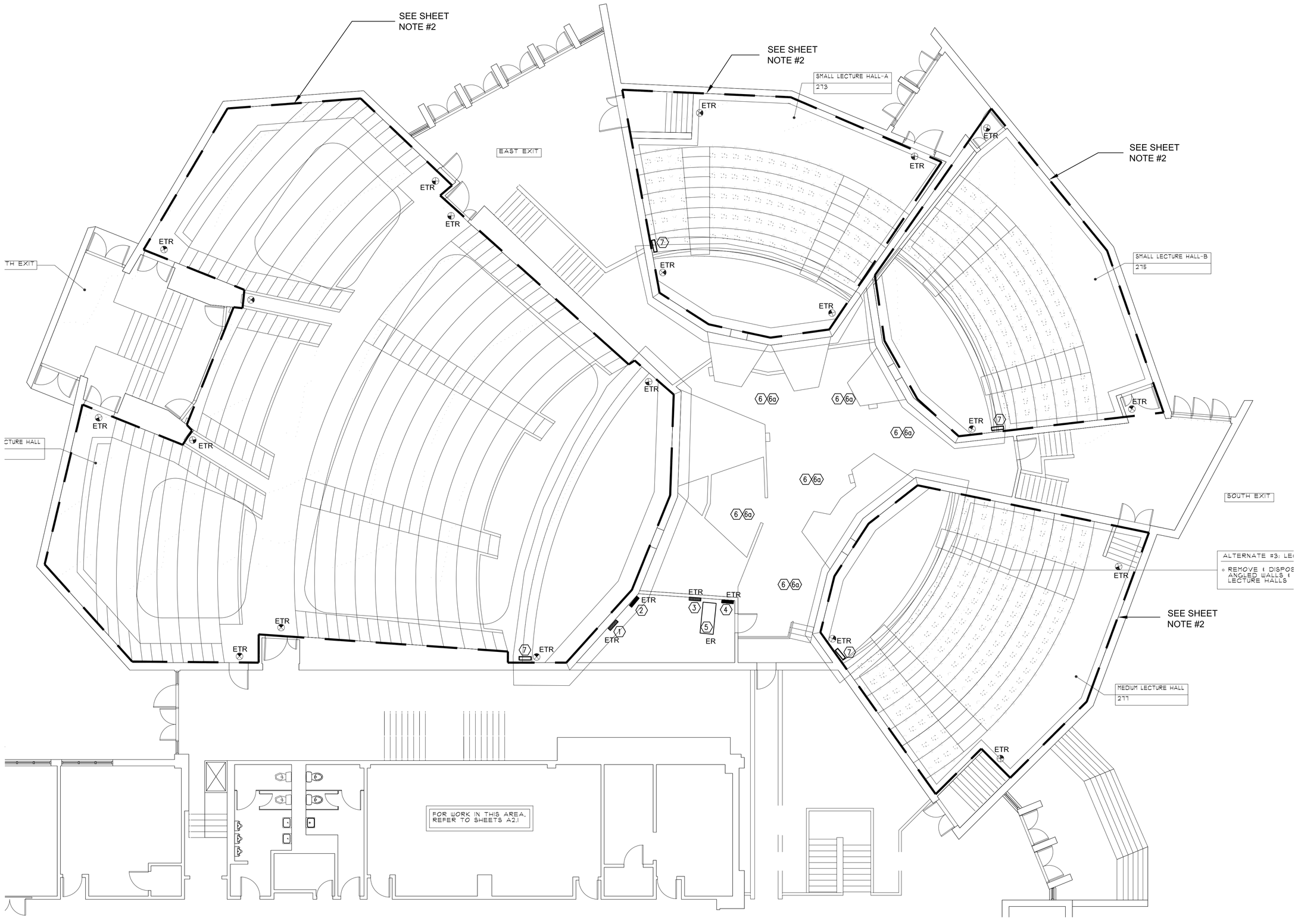
Seal

Project Description
CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED
Drawn: RWD
Design: RWD
Review: RWD

Drawing Title
ELECTRICAL:
LECTURE HALLS SECOND FLOOR LIGHTING DEMOLITION PLAN & NOTES

Drawing No.
ED3.0



ED3.0A SECOND FLOOR LECTURE HALL - DEMOLITION PLAN (ALTERNA

1/8" = 1'-0"

SHEET NOTES:

#1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRACING AND IDENTIFYING BOTH NORMAL AND EMERGENCY LIGHTING CIRCUITS FOR RE-USE.

#2 REMOVE ALL EXISTING POWER & LIGHTING FIXTURES AND THEIR ASSOCIATED CONDUIT, CONDUCTORS, JUNCTION BOXES, LIGHTING CONTROLS, etc. IN LECTURE HALL BACK TO PANELBOARDS LOCATED IN SECOND FLOOR ELECTRIC ROOM AS SHOWN ON THIS DRAWING.

#3. ALL AUDIO/VIDEO EQUIPMENT AND DEVICES SHALL BE THE RESPONSIBILITY OF THE OWNER.

#4. REFER TO ARCHITECTURAL DRAWING "A5" SERIES & ALTERNATES FOR ADDITIONAL DEVICE & LIGHTING DEMOLITION, REMOVAL & RE-INSTALLATION INFORMATION.

KEYED NOTES

1. PANEL "EA": #HCN1436-2, 225A, 480Y/277V, 3Ø,4W, 18CKT. (TO REMAIN)
2. PANEL "LA": 400A, 208Y/120V, 3Ø,4W, 30CKT. (TO REMAIN)
3. PANEL "PA": #HCN3254-2, 225A, 480Y/277V, 3Ø,4W, 24CKT. (TO REMAIN)
4. PANEL "LA-1": 100A, 208Y/120V, 3Ø,4W, 42CKT. (TO REMAIN)
5. LIGHTING CONTROL PANEL AND ASSOCITATED EQUIPMENT TO BE COMPLETELY REMOVED.
6. ALL EQUIPMENT IN THE PROJECTION BOOTH SHALL BE COMPLETELY REMOVED AND RE-INSTALLED TO ACCOMMODATE FOR THE INSTALLTION OF A NEW FLOOR. E.C. SHALL RE-INSTALL (7) DUPLEX RECEPTACLES, (11) QUADRAPLEX RECEPTACLES & (1) 240V RECEPTACLE AT 18"A.F.F.

6a. ADD/ALTERNATE #2 ALLOWANCE: ALL ELECTRICAL CONDUCTORS, CONDUITS, SWITCHES, RECEPTACLES, JUCNTION BOXES AND ASSOCIATED EQUIPMENT IN THE PROJECTION BOOTH MADE OBSOLETE BY THIS PROJECT SHALL BE REMOVED BACK TO SOURCE AND MADE SAFE. COORDINATE WITH OWNER.

7. EXISTING LIGHTING CONTROLS & SWITCHING TO BE REMOVED.

TYPICAL DEMOLITION NOTES:

1. PRIOR TO SUBMITTING BID, VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. RENOVATION WORK WILL REQUIRE CAREFUL SITE EXAMINATION PRIOR TO BIDDING. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY AN EXPERIENCED OBSERVER. FIELD VERIFY MEASUREMENTS AND CIRCUITING ARRANGEMENTS THAT ARE AS SHOWN ON DRAWINGS. THE ELECTRICAL CONTRACTOR SHALL REVIEW ALL OF THE ARCHITECTS AND OTHER TRADES DRAWINGS TO VERIFY ALL AREAS OF RENOVATION AND TO GET A COMPLETE UNDERSTANDING OF THE DEMOLITION WORK REQUIRED BY THIS PROJECT.

2. FIELD VERIFY THAT ABANDONED WIRING AND EQUIPMENT SERVE ONLY ABANDONED FACILITIES.

3. DEMOLITION DRAWINGS ARE BASED ON CASUAL FIELD OBSERVATION AND EXISTING RECORD DOCUMENTS. REPORT DISCREPANCIES TO ARCHITECT/ENGINEER BEFORE DISTURBING EXISTING INSTALLATIONS. THESE DRAWINGS HAVE BEEN COMPILED FROM THE BEST AVAILABLE INFORMATION AND ARE NOT INTENDED TO LIMIT THE SCOPE OF THE WORK. THE ELECTRICAL CONTRACTOR MAY ENCOUNTER HIDDEN OR COVERED CONDITIONS, NOT INDICATED IN THESE DOCUMENTS, REQUIRING THE ELECTRICAL CONTRACTOR TO PROVIDE ADDITIONAL WORK FOR THE COMPLETION OF HIS OR HER CONTRACT. IT WILL BE ASSUMED THAT THE CONTRACTOR HAS INSPECTED THE SITE PRIOR TO BIDDING AND VERIFIED THE INFORMATION SUPPLIED HEREIN AND ADDITIONAL WORK REQUIRED. BEGINNING OF DEMOLITION MEANS THE CONTRACTOR ACCEPTS EXISTING CONDITIONS. REFER TO ALL CONSTRUCTION DOCUMENTS TO GAIN A COMPLETE UNDERSTANDING OF THE DEMOLITION WORK REQUIRED.

4. CUT, REMOVE AND LEGALLY DISPOSE OF SELECTED ELECTRICAL EQUIPMENT, COMPONENTS AND MATERIALS AS INDICATED, INCLUDING, BUT NOT LIMITED TO, REMOVAL OF ELECTRICAL ITEMS INDICATED TO BE REMOVED AND ITEMS MADE OBSOLETE BY THE WORK. DISCONNECT AND REMOVE ALL FIXTURES, WIRING DEVICES, CONDUIT AND FITTINGS, WIRING & CABLE, FIRE ALARM DEVICES/COMPONENTS, HANGERS, SUPPORTS, WIREWAYS, AND ALL OTHER ELECTRICAL COMPONENTS MADE OBSOLETE BY THIS PROJECT. THE OWNER RESERVES THE OPTION OF SALVAGE RIGHTS TO DEMOLISHED MATERIAL AND REMOVED EQUIPMENT. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE TO OBTAIN A LIST OF MATERIALS AND REMOVED EQUIPMENT TO BE TURNED OVER TO THE OWNER. ALL OTHER MATERIAL AND REMOVED EQUIPMENT NOT BEING SALVAGED BY THE OWNER SHALL BE DISPOSED OF BY THE CONTRACTOR. PLACE ALL DEMOLISHED ELECTRICAL MATERIALS EXCEPT HAZARDOUS MATERIALS (PCB LIGHTING BALLASTS, FLUORESCENT LAMPS, ETC.) AS DETERMINED BY THE AUTHORITY HAVING JURISDICTION IN GENERAL CONTRACTOR'S DUMPSTER. ALL HAZARDOUS ELECTRICAL MATERIALS SHALL BE LEGALLY DISPOSED OF BY THE ELECTRICAL SUBCONTRACTOR.

5. DISCONNECT ELECTRICAL SYSTEMS IN WALLS, FLOORS, AND CEILINGS SCHEDULED FOR REMOVAL.

6. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANELS AS APPROPRIATE. TEMPORARY WALL OPENINGS AND/OR MODIFICATIONS REQUIRED FOR REMOVAL/INSTALLATION OF EQUIPMENT SHALL BE PROVIDED AS NEEDED AND COORDINATED WITH THE GENERAL CONTRACTOR. ALL HVAC UNITS SCHEDULED TO BE REMOVED OR RE-LOCATED SHALL BE DONE SO BY THE HVAC CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL DISCONNECT AND MAKE-SAFE FOR REMOVAL.

7. PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS.

8. EXISTING ELECTRICAL SERVICE: MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR SERVICE. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER AND ARCHITECT/ENGINEER AT LEAST 72 HOURS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA AS REQUIRED.

9. EXISTING FIRE ALARM SYSTEM: MAINTAIN THE EXISTING SYSTEM IN SERVICE UNTIL THE MODIFIED/EXPANDED SYSTEM IS TESTED AND ACCEPTED BY THE FIRE DEPARTMENT. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. NOTIFY OWNER, ARCHITECT/ENGINEER AND LOCAL FIRE DEPARTMENT AT LEAST TEN DAYS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA AS REQUIRED OR PROVIDE A "FIRE-WATCH" SYSTEM COORDINATED WITH THE LOCAL FIRE DEPARTMENT.

10. EXISTING TELEPHONE SYSTEM: MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR SERVICE. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. NOTIFY OWNER, ARCHITECT/ENGINEER AND TELEPHONE UTILITY COMPANY AT LEAST 72 HOURS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA.

11. EXTEND EXISTING ELECTRICAL INSTALLATIONS AS CALLED FOR ON THE DRAWINGS.

12. REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION.

13. REMOVE ABANDONED WIRING TO SOURCE OF SUPPLY.

14. REMOVE EXPOSED ABANDONED CONDUIT, INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILING FINISHES. CUT CONDUIT FLUSH WITH WALLS AND FLOORS, AND PATCH SURFACES.

15. DISCONNECT ABANDONED OUTLETS AND REMOVE DEVICES. REMOVE ABANDONED OUTLETS IF CONDUIT SERVICING THEM IS ABANDONED AND REMOVED. PROVIDE BLANK COVER FOR ABANDONED OUTLETS WHICH ARE NOT REMOVED.

16. DISCONNECT AND REMOVE ABANDONED PANELBOARDS AND DISTRIBUTION EQUIPMENT.

17. DISCONNECT AND REMOVE ELECTRICAL DEVICES AND EQUIPMENT SERVING UTILIZATION EQUIPMENT THAT HAS BEEN REMOVED.

18. DISCONNECT AND REMOVE ABANDONED LUMINAIRES. REMOVE BRACKETS, STEMS, HANGERS, AND OTHER ACCESSORIES.

19. DISCONNECT AND REMOVE OTHER SYSTEMS AND EQUIPMENT WITHIN THE WORK AREA MADE OBSOLETE BY THIS WORK.

20. PROTECT ALL EXISTING WALLS, FLOORS, CEILINGS, LIGHT FIXTURES, ETC. WHICH ARE TO REMAIN & TO PREVENT DAMAGE DURING ALL CONSTRUCTION PHASES. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK. PROVIDE AND MAINTAIN TEMPORARY PARTITIONS OR DUST BARRIERS ADEQUATE TO PREVENT THE SPREAD OF DUST AND DIRT TO ADJACENT AREAS. PROTECT THE STRUCTURE, FURNISHINGS, FINISHES, AND ADJACENT MATERIALS NOT INDICATED OR SCHEDULED TO BE REMOVED. PROTECT THE ELECTRICAL WORK AND THE WORK OF OTHERS IN A MANNER BEST SUITED TO THE PARTICULAR CASE. CORRECT ANY DAMAGE DONE TO ANY WORK AT NO ADDITIONAL COST.

21. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANEL AS APPROPRIATE.

22. EXTEND EXISTING INSTALLATIONS USING MATERIALS AND METHODS COMPATIBLE WITH EXISTING ELECTRICAL INSTALLATIONS, OR AS SPECIFIED.

23. CLEAN AND REPAIR EXISTING MATERIALS AND EQUIPMENT WHICH REMAIN OR ARE TO BE REUSED.

24. PANELBOARDS: CLEAN EXPOSED SURFACES AND CHECK TIGHTNESS OF ELECTRICAL CONNECTIONS. REPLACE DAMAGED CIRCUIT BREAKERS AND PROVIDE CLOSURE PLATES FOR VACANT POSITIONS. PROVIDE TYPED CIRCUIT DIRECTORY SHOWING REVISED CIRCUITING

25. LUMINAIRES: REMOVE EXISTING LUMINAIRES AS INDICATED.

HAI PROJECT NO. 17JL06918.036

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISION PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/06/10

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: AS NOTED
Drawn: RWD
Design: RWD
Review: RWD

Drawing Title: ELECTRICAL: LECTURE HALLS SECOND FLOOR LIGHTING DEMOLITION PLAN & NOTES (ALTERNATE)

Drawing No. ED3.0A

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION	MOUNTING
A 4d	2'x4' RECESSED FLUORESCENT LIGHTING FIXTURE; (SUBSCIPTS: UPPER CASE LETTER "A" INDICATES FIXTURE TYPE, NUMBER "3" INDICATES CIRCUIT NUMBER, AND LOWER CASE LETTER "c" INDICATES SWITCH CONTROLLED BY).	REFER TO LIGHTING FIXTURE SCHEDULE.
B 5d	RECESSED FLUORESCENT DOWNLIGHT LIGHTING FIXTURE; (SUBSCRIPTS INDICATE THE SAME AS ABOVE).	REFER TO LIGHTING FIXTURE SCHEDULE.
2 AC	DUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE, (SUBSCRIPT "2" INDICATES CIRCUIT NUMBER, "AC" INDICATES ABOVE CANOPY OR CEILING)	18" A.F.F.
	DUPLEX CONVENIENCE OUTLET, MOUNTED ABOVE COUNTER; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE. (SUBSCRIPT "2" INDICATES CIRCUIT NUMBER)	30" A.F.F. (OR) 6" ABOVE COUNTER
	QUAD-RUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE. (SUBSCRIPT "2" INDICATES CIRCUIT NUMBER)	18" A.F.F. (U.O.N.)
	QUAD-RUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE. (SUBSCRIPT "2" INDICATES CIRCUIT NUMBER)	42" A.F.F. (OR) 6" ABOVE COUNTER
WP 2	DUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE WITH GROUND FAULT PROTECTION, (SUBSCRIPT "2" INDICATES CIRCUIT NUMBER, "WP" INDICATES WEATHER PROOF WITH "WHILE-IN-USE COVER")	18" A.F.F.
WP 2	DUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE WITH GROUND FAULT PROTECTION, (SUBSCRIPT "2" INDICATES CIRCUIT NUMBER, "WP" INDICATES WEATHER PROOF WITH "WHILE-IN-USE" COVER)	46" A.F.F.
W	TELEPHONE OUTLET CONNECTED TO OUTSIDE TELEPHONE SERVICE (PROVIDE 3/4"C. W/ PULL STRING FROM OUTLET TO ABOVE DROP CEILING; "W" INDICATES WALL PHONE.)	18" A.F.F. 54"A.F.F. (WALL PHONE)
	DATA OUTLET (PROVIDE 3/4"C. W/ PULL STRING FROM OUTLET TO ABOVE DROP CEILING.)	18" A.F.F.
J	JUNCTION BOX; SIZE AS REQUIRED PER CODE.	
J WP	JUNCTION BOX; SIZE AS REQUIRED PER CODE. "WP" INDICATES WEATHER-PROOF.	
	MOTOR	MOUNT 6'-6" AFF TO TOP BREAKER.
	PANELBOARD FLUSH MOUNTED; 208Y/120V, 3-PHASE, 4-WIRE, REFER TO "BRANCH CIRCUIT PANELBOARD SCHEDULES" ON PLANS FOR APPLICABLE INFORMATION.	
	PANELBOARD SURFACE MOUNTED; 208Y/120V, 3-PHASE, 4-WIRE, REFER TO "BRANCH CIRCUIT PANELBOARD SCHEDULES" ON PLANS FOR APPLICABLE INFORMATION.	MOUNT 6'-6" AFF TO TOP BREAKER.
1,3 A OR A 1,3	HOMERUN TO PANELBOARD (LOADCENTER); "A" INDICATES PANEL, "1,3" INDICATES CIRCUIT NUMBERS. REFER TO "TYPICAL CIRCUITING DETAIL" ON PLANS.	
MS	PROVIDE AN INTERIOR DUAL TECHNOLOGY (360°) CEILING MOUNTED MOTION SENSOR MANUFACTURED BY "WATT STOPPER", CAT, #DT-200-120V, OR (APPROVED EQUAL)	CEILING
WS	PROVIDE A WALL MOUNTED MOTION SENSOR MANUFACTURED BY "WATT STOPPER", CAT. #W500A, OR (APPROVED EQUAL). PROVIDE WITH REQ'D. POWER PACK LISTED BELOW. INSTALL ONE WALL SENSOR / POWER PACK ON EACH FLOOR / LANDING IN EACH STAIRWELL. FIELD VERIFY EXACT WIRING REQ'TS.	48" AFF
PP	PROVIDE A REMOTE POWER PACK FOR WALL MOUNTED MOTION SENSOR MANUFACTURED BY "WATT STOPPER", CAT. #B120E-P, OR (APPROVED EQUAL). PROVIDE POWER PACK FOR EACH WALL SENSOR EACH FLOOR / LANDING IN EACH STAIRWELL. FIELD VERIFY EXACT WIRING REQ'TS.	
C	LIGHTING CONTACTOR; REFER TO PLANS FOR DETAILS.	
S3a	THREE-WAY SWITCH; "a" INDICATES LIGHTING FIXTURES CONTROLLED.	48" AFF
Sa	SINGLE POLE SWITCH; "a" INDICATES LIGHTING FIXTURES CONTROLLED.	48" AFF
SD	DOUBLE THROW SWITCH WITH CENTER "OFF" POSITION TO CONTROL "OPEN/CLOSED" LIGHTS AT THE DRIVE-THRU.	48" AFF
DM	SINGLE POLE DIMMER SWITCH	48" AFF
J 60/50	FUSED DISCONNECT SWITCH. 60/50 INDICATES FRAME SIZE/FUSE SIZE IN THAT ORDER. STARTERS FOR HVAC EQUIPMENT BY MECHANICAL CONTRACTOR.	
	GROUND.	

EMERGENCY LIGHTING SYMBOL LEGEND

SYMBOL	DESCRIPTION	MOUNTING
	SINGLE FACE LED LIGHTED EXIT SIGN WITH EMERGENCY BATTERY BACK-UP. SHADED QUADRANT DENOTES LIGHTED FACE(S). EQUAL TO LSI INDUSTRIES #EX-G-U-WB-WH-SD2. PROVIDE DIRECTIONAL ARROWS WHERE INDICATED ON PLANS. CONNECT UN-SWITCHED TO A 120 OR 277VOLT LIGHTING CIRCUIT.	CEILING
	DOUBLE FACE LED LIGHTED EXIT SIGN WITH EMERGENCY BATTERY BACK-UP. SHADED QUADRANT DENOTES LIGHTED FACE(S). EQUAL TO LSI INDUSTRIES #EX-G-U-WB-WH-SD2. PROVIDE DIRECTIONAL ARROWS WHERE INDICATED ON PLANS. CONNECT UN-SWITCHED TO A 120 OR 277VOLT LIGHTING CIRCUIT.	CEILING

SEISMIC RESTRAINT NOTE

A. GENERAL: IT IS THE INTENT OF THIS SEISMIC SPECIFICATION TO KEEP ALL ELECTRIAL BUILDING SYSTEM COMPONENTS IN PLACE DURING A SEISMIC EVENT. ALL ELECTRICAL SYSTEMS MUST BE INSTALLED IN STRICT ACCORDANCE WITH SEISMIC CODES, COMPONENT MANUFACTURER'S AND BUILDING CONSTRUCTION STANDARDS. WHENEVER A CONFLICT OCCURS BETWEEN THE MANUFACTURER'S OR CONSTRUCTION STANDARDS, THE MOST STRINGENT SHALL APPLY.

B. THIS CONTRACTOR SHALL ENGAGE A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE JURISDICTION OF THIS PROJECT TO REVIEW THE ENTIRE INSTALLATION TO DETERMINE ALL SEISMIC RESTRAINT REQUIREMENTS AND METHODS. CONTRACTOR SHALL SUBMIT A REPORT OUTLINING THE STRUCTURAL ENGINEER'S REVIEW AS WELL AS SEISMIC RESTRAINT SHOP DRAWINGS AND SUPPORTING CALCULATIONS PREPARED BY THE PROFESSIONAL STRUCTURAL ENGINEER FOR REVIEW BY THE ARCHITECT.
C. SEISMIC RESTRAINTS SHALL BE DESIGNED IN ACCORDANCE WITH SEISMIC FORCE LEVELS AS DETAILED IN THE APPLICABLE BUILDING CODE.

1. ALL EQUIPMENT, CONDUIT AND PULL BOXES SHALL BE ADEQUATELY RESTRAINED TO RESIST SEISMIC FORCES. RESTRAINT DEVICES SHALL BE DESIGNED AND SELECTED TO MEET SEISMIC REQUIREMENTS AS DEFINED IN THE LATEST ISSUE OF THE BOCA NATIONAL BUILDING CODE IN ACCORDANCE WITH THE APPLICABLE SEISMIC ZONE.
2. ANCHOR BOLT CALCULATORS, SIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER, SHALL BE SUBMITTED SHOWING ADEQUACY OF THE BOLT SIZING AND TYPE. STAMPED CALCULATIONS SHALL ALSO BE FURNISHED FOR ANCHORS ON RESTRAINT DEVICES, CABLES, ISOLATORS AND RIGIDLY MOUNTED EQUIPMENT.

ABBREVIATIONS

A	AMPERES	HVAC	HEATING, VENTILATING, & & AIR CONDITIONING
ADA	AMERICANS WITH DISABILITIES ACT	JB	JUNCTION BOX
AMPS	AMPERES	KVA	KILOVOLT AMPERES
AFF	ABOVE FINISHED FLOOR	KW	KILOWATT
A/C	AIR CONDITIONING	LTG	LIGHTING
AWG	AMERICAN WIRE GAGE	MAX	MAXIMUM
BLDG.	BUILDING	M.C.	MECHANICAL CONTRACTOR
C	CONDUIT	MECH	MECHANICAL
CLG	CEILING	MIN	MINIMUM
DN	DOWN	MTD	MOUNTED
DWG	DRAWING	NAC	F.A. NOTIFICATION APPLIANCE CIRCUIT EXPANDER PANEL
E.C.	ELECTRICAL CONTRACTOR	NTS	NOT TO SCALE
EPO	EMERGENCY POWER OFF	P	POLE
EQ	EQUAL	PNL	PANEL
ER	EXISTING TO BE REMOVED	RE	RE-LOCATED EXISTING DEVICE OR EQUIPMENT SHOWN IN NEW LOCATION
ETR	EXISTING TO REMAIN	TYP	TYPICAL
ERL	EXISTING TO BE RE-LOCATED	UL	UNDERWRITERS LABATORY
F.A.	FIRE ALARM	UON	UNLESS OTHERWISE NOTED
FACP	FIRE ALARM CONTROL PANEL	V	VOLTS
FLR	FLOOR	W	WATTS
G.C.	GENERAL CONTRACTOR	WH	WATER HEATER
GFCI	GROUND FAULT CIRCUIT INTERUPTER.	WP	WEATHER-PROOF
G	GROUND	℄	CENTERLINE
GND	GROUND		

KEYED NOTES

1. EXISTING MAIN ELECTRIC ROOM.
2. EMERGENCY GENERATOR:
   100kW KOHOLER, NATURAL GAS FIRED GENERATOR
   #115R78-52329A
   480Y/277V, PF-0.8

SHEET NOTES:

#1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEYING ALL EMERGENCY & NORMAL POWER PANELBOARDS AFFECTED BY THESE RENOVATIONS.

#2 ELECTRICAL CONTRACTOR SHALL IDENTIFY & LABEL ALL CIRCUITS SURVEYED AS REQUIRED BY NEC-2008, ART.408.4.

#3 ADDITIONAL LIGHTING CIRCUITS AND ASSOCIATED CONDUIT, CONDUCTORS & DEVICES SHALL BE ADDED AS REQUIRED AND IDENTIFIED IN THE PANEL DIRECTORIES.

#4 *ANY/ALL* EXPOSED SURFACE MOUNTED CONDUITS LOCATED IN THE AREAS OF WORK SHALL BE RELOCATED TO ABOVE THE NEW SUSPENDED CEILING.

#5 *ANY/ALL* DEFICIENCIES OBSERVED DURING THIS WORK SHALL BE PRESENTED TO THE PRIME FOR DISPOSITION.

#6 ELECTRICAL CONTRACTOR SHALL VERIFY THAT EXISTING EXIT SIGN CIRCUITS ARE SUFFICIENT TO ACCOMMODATE NEW DEVICES.

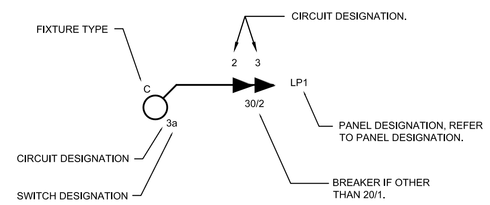
#7 *ANY/ALL* EXIT SIGNS REPLACED IN EXISTING LOCATIONS SHALL BE RECONNECTED TO EXISTING CIRCUITRY.

TYPICAL FIRE STOPPING NOTES

A. GENERAL: FIRE STOPPING SHALL BE PROVIDED BY THIS CONTRACTOR FOR ALL FLOOR, CEILING AND FIRE RATED WALL PENETRATIONS FOR CONDUIT, SLEEVES AND/OR CABLING AS REQUIRED BY JOB CONDITIONS.

B. THE CONTRACTOR SHALL PROVIDE A FIRE STOP SYSTEM IN ACCORDANCE WITH THE FOLLOWING:

1. THE SYSTEM SHALL CONSIST OF A WATERBASED SEALANT AND SUITABLE DAMMING MATERIALS (WHERE REQUIRED) AND BE INSTALLED PER MANUFACTURER'S REQUIREMENTS.
2. THE SEALANT SUPPLIED SHALL BE A TWO STAGED INTUMESCENT AND CAPABLE OF EXPANDING UP TO 8 TIMES ITS ORIGINAL VOLUME.
3. THE SEALANT SUPPLIED SHALL CONTAIN NO ASBESTOS, NO FIBERGLASS, AND NO SOLVENTS NOT CORROSIVE MINERAL SALTS OF ANY KIND.
4. THE SEALANT SHALL FORM A SURFACE CAPABLE OF BEING SANDED AND PAINTED TO MATCH SURROUNDING SURFACES AND SHALL BE IMPERVIOUS TO WATER WHEN DRY.
5. THE FIRE STOP SYSTEM SHALL BE TESTED TO THE TIME/TEMPERATURE REQUIREMENTS OF ASTM E119 AND SHALL BE UL1479 (ASTM E814) AND CLASSIFIED FOR UP TO 3 HOURS.
6. THE FIRE STOP SEALANT SHALL BE SPECSEAL SEALANT AS MANUFACTURED BY SPECIFIED TECHNOLOGIES, INC. OR APPROVED EQUAL.
7. SPECIAL CARE SHALL BE TAKEN WITH ELECTRICAL SYSTEMS NOT TO COMPROMISE ANY OF THE BUILDING FIRE PARTITIONS, FLOORS, WALLS OR MEMBRANES. PROVIDE ALL FIRESTOPPING REQUIRED TO COMPLY WITH THE BUILDING CODE, THE ELECTRICAL CODE AND THE UL LISTING OF EACH ASSEMBLY. COORDINATE LOCATIONS AND TYPES OF MEMBRANES WITH ARCHITECT.



NOTES:

1. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN CONTRACT, INFORMATION AND COMPONENTS SHOWN ON RISER DIAGRAMS BUT NOT ON PLANS, AND VICE VERSA, SHALL APPLY OR SHALL BE PROVIDED AS THOUGH EXPRESSLY REQUIRED ON BOTH. IT IS NOT INTENDED THAT EVERY JUNCTION BOX, OFFSET, FITTING OR COMPONENT BE SPECIFIED OR SHOWN ON DRAWINGS; HOWEVER, CONTRACT DOCUMENTS REQUIRE PROVISION OF ALL COMPONENTS AND MATERIALS NECESSARY FOR COMPLETE AND OPERATIONAL ELECTRICAL INSTALLATION, WHETHER OR NOT INDICATED OR SPECIFIED.

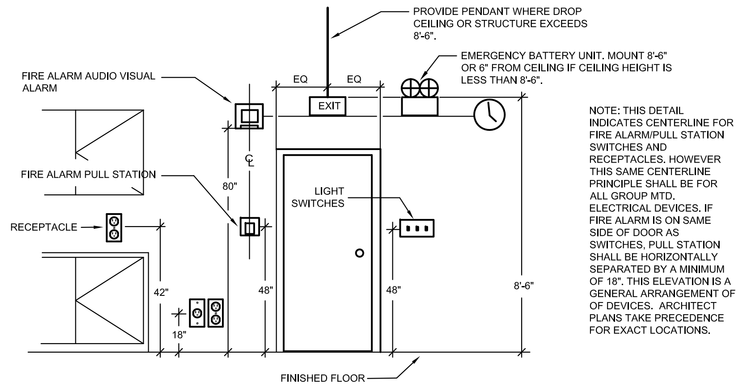
2. BRANCH CIRCUIT WIRING MAY NOT BE GRAPHICALLY SHOWN ON DRAWINGS AND MAY BE SHOWN BY CIRCUIT NUMBERS BESIDE FIXTURES, DEVICES AND EQUIPMENT. PROVIDE COMPLETE WIRING SYSTEM WHETHER OR NOT SHOWN GRAPHICALLY. WIRING IS SHOWN BY CONDUIT RUNS ON DRAWINGS WHERE SPECIFIC ROUTING IS REQUIRED OR FOR OTHER SPECIAL REASONS. ONLY ROOMS WITH MULTIPLE SWITCHING HAVE "SWITCH CONTROL LETTERS" ASSIGNED. PROVIDE THHN CONDUCTORS IN AREAS WITH HIGH AMBIENT TEMPERATURES SUCH AS BOILER ROOMS, INCINERATOR ROOMS, MECHANICAL EQUIPMENT ROOMS ETC., FOR SIZES LARGER THAN NO. 10 AWG.

TYPICAL CIRCUITING DETAIL

NOT TO SCALE

TYPICAL ELECTRICAL NOTES

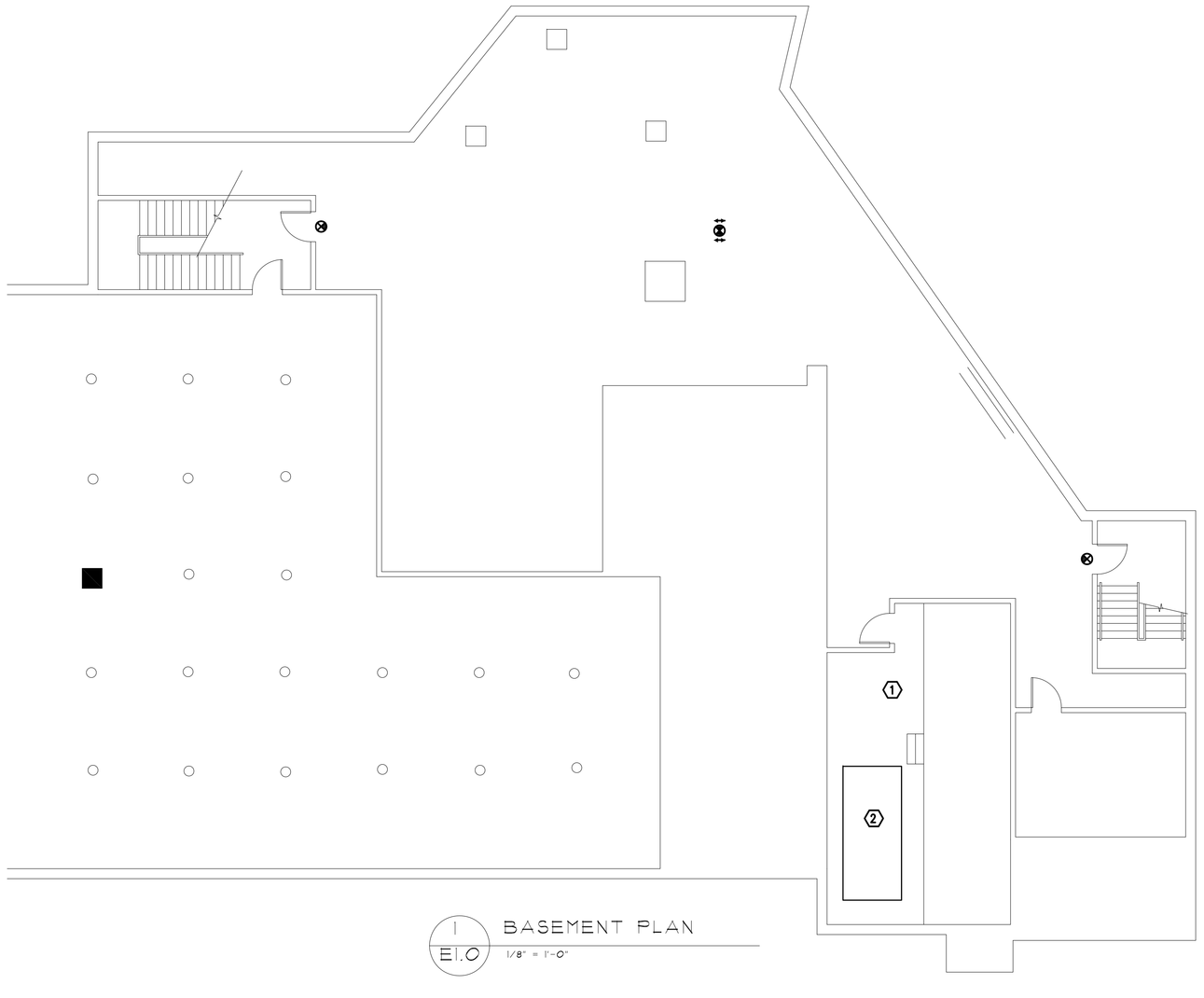
1. FURNISH LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE PROPER AND COMPLETE INSTALLATION OF ALL ELECTRIC WORK SHOWN ON THE DRAWINGS AND HEREIN SPECIFIED.
2. ALL ITEMS NOT SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH ARE NECESSARY TO MAKE A COMPLETE ELECTRICAL INSTALLATION, SHALL BE FURNISHED AND INSTALLED AS PART OF THIS PROJECT.
3. ALL ELECTRICAL INSTALLATIONS AND GROUNDING SHALL BE IN STRICT ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE LOCAL, STATE AND NATIONAL CODES.
4. OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND INSPECTIONS.
5. MATERIALS AND WORKMANSHIP SHALL BE THE BEST OF THEIR RESPECTIVE KIND AND IN FULL ACCORDANCE WITH THE MOST MODERN ELECTRICAL CONSTRUCTION STANDARDS. ALL MATERIAL SHALL BE NEW, UNLESS OTHERWISE NOTED AND FREE OF ANY DEFECTS.
6. THE ELECTRICAL CONTRACTOR SHALL CLEAN AT THE END OF EACH DAY ALL AREAS WORKED IN. EMPTY BOXES, RUBBISH, AND OTHER CONSTRUCTION MATERIALS OF NO USE SHALL BE REMOVED FROM THE BUILDING.
7. ALL WORK SEQUENCES SHALL BE COORDINATED WITH THE ARCHITECT AND SHALL BE COORDINATION WITH OTHER BUILDING TRADES AND ARCHITECTS BUILDING SCHEDULES.
8. ALL BRANCH CIRCUITS RATED AT 120 VOLTS, 20 AMPERES EXCEEDING 75 FEET SHALL BE MINIMUM #10 AWG.
9. LOCATIONS OF HVAC EQUIPMENT INDICATED ON THE ELECTRICAL DRAWINGS ARE APPROXIMATE. COORDINATE EXACT LOCATIONS OF ALL HVAC EQUIPMENT WITH MECHANCICAL CONTRACTOR PRIOR TO INSTALING ANY MATERIAL.
10. THE ELECTRICAL CONTRACTOR (E.C.) SHALL COORDINATE WITH THE LOCAL UTILITY POWER COMPANY AND PROVIDE ALL MATERIAL & LABOR REQUIRED TO COMPLY WITH THE UTILITY POWER COMPANY'S REQUIREMENTS AND STANDARDS, PRIOR TO ODERING ANY ELECTRICAL EQUIPMENT, SUCH AS, SWITCHGEAR, PANELS, TRANSFORMERS, DISCONNECT SWITCHES, TVSS, ETC.. E.C. SHALL CONFIRM METERING SEQUENCE (HOT OR COLD) AND MAKE THE APPROPRIATE PROVISIONS FOR THE APPROVED METERING SEQUENCE ARRANGEMENT. A.I.C. RATINGS, GROUNDING, BONDING, CONCRETE PADS & CURBS, PROTECTIVE BOLLARDS, RACEWAYS, DUCTBANK, MANHOLES, ETC... SHALL BE IN ACCORDANCE WITH THE UTILITY COMPANY'S STANDARDS.
11. THE ELECTRICAL CONTRACTOR (E.C.) SHALL COORDINATE WITH THE LOCAL TELEPHONE COMPANY AND PROVIDE ALL MATERIAL & LABOR REQUIRED TO COMPLY WITH THE TELEPHONE COMPANY'S REQUIREMENTS AND STANDARDS, PRIOR TO ODERING ANY ELECTRICAL EQUIPMENT, SUCH AS, TERMINAL BOARDS, GROUNDING, RACEWAYS, DUCTBANKS, MANHOLES, ETC..
12. ALL RECEPTACLE WITH "WP" DESIGNATION SHALL BE PROVIDED WITH A WEATHER-PROOF WHILE IN-USE ENCLOSURE. (TYPICAL)
13. ALL LIGHTING FIXTURES SHALL BE PROVIDED WITH LAMPS INSTALLED AND READY FOR OPERATION.
14. ELECTRICAL CONTRACTOR TO ALLOW TIME FOR DIRECTIONAL ADJUSTMENT OF ALL LIGHT FIXTURES AS DIRECTED BY OWNER.



NOTE: THIS DETAIL INDICATES CENTERLINE FOR FIRE ALARM/PULL STATION SWITCHES AND RECEPTACLES. HOWEVER THIS SAME CENTERLINE PRINCIPLE SHALL BE FOR ALL GROUP MTD. ELECTRICAL DEVICES. IF FIRE ALARM IS ON SAME SIDE OF DOOR AS SWITCHES, PULL STATION SHALL BE HORIZONTALLY SEPARATED BY A MINIMUM OF 18". THIS ELEVATION IS A GENERAL ARRANGEMENT OF OF DEVICES. ARCHITECT PLANS TAKE PRECEDENCE FOR EXACT LOCATIONS.

MOUNTING HEIGHT DETAIL

NOT TO SCALE



1 / E1.0 BASEMENT PLAN
1/8" = 1'-0"

HAI PROJECT NO. 17JL06918.036

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISION PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/06/10

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

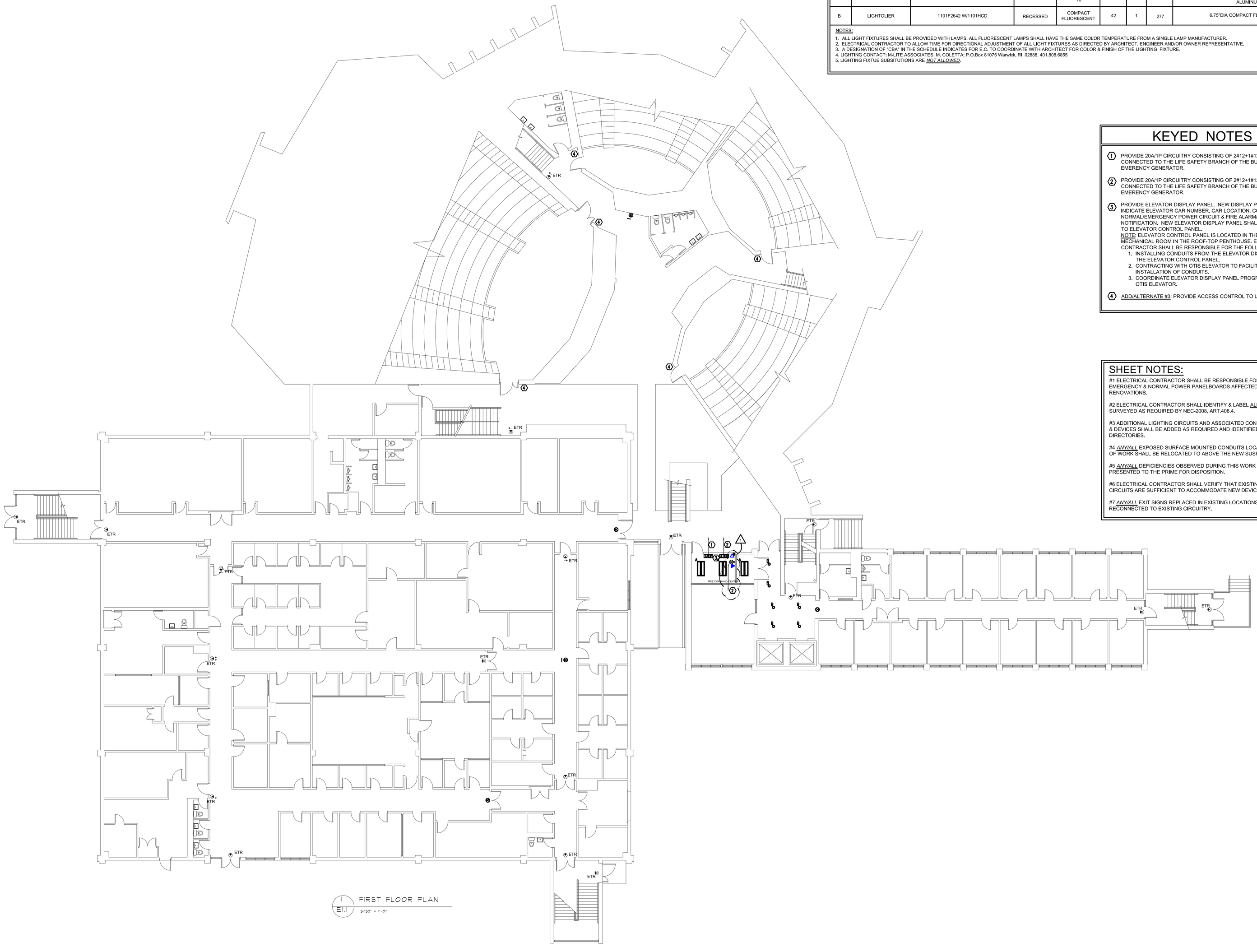
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design: Scale: AS NOTED

Drawing Title: ELECTRICAL: LEGEND, ABBREVIATIONS, NOTES & BASEMENT PLAN

Drawing No.: E1.0



1 FIRST FLOOR PLAN
E1.1 3/32" = 1'-0"

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG No.	MOUNTING	LAMPING				DESCRIPTION / REMARKS
				TYPE	WATTAGE	QTY.	VOLTAGE	
A	LIGHTOLIER	H9S2GLR232UNVH1	RECESSED	FLUORESCENT T8	32	2	277	2'x4' RECESSED DIRECT/INDIRECT FLUORESCENT LIGHT FIXTURE W/(1) 2-LAMP HIGH EFFICIENCY ELECTRONIC BALLAST & SPECULAR ALUMINUM REFLECTOR.
B	LIGHTOLIER	1101F2642 W/1101HCD	RECESSED	COMPACT FLUORESCENT	42	1	277	6.75"DIA COMPACT FLUORESCENT DOWNLIGHT.

NOTES:
1. ALL LIGHT FIXTURES SHALL BE PROVIDED WITH LAMPS. ALL FLUORESCENT LAMPS SHALL HAVE THE SAME COLOR TEMPERATURE FROM A SINGLE LAMP MANUFACTURER.
2. ELECTRICAL CONTRACTOR TO ALLOW TIME FOR DIRECTIONAL ADJUSTMENT OF ALL LIGHT FIXTURES AS DIRECTED BY ARCHITECT, ENGINEER AND/OR OWNER REPRESENTATIVE.
3. A DESIGNATION OF "CBA" IN THE SCHEDULE INDICATES FOR E.C. TO COORDINATE WITH ARCHITECT FOR COLOR & FINISH OF THE LIGHTING FIXTURE.
4. LIGHTING CONTACT: M-LITE ASSOCIATES, M. COLETTA; P.O.Box 81075 Warwick, RI 02888. 401.808.6855
5. LIGHTING FIXTUE SUBSITUTIONS ARE *NOT ALLOWED*.

KEYED NOTES

1. PROVIDE 20A/1P CIRCUITRY CONSISTING OF 2#12+1#12G IN 3/4"C CONNECTED TO THE LIFE SAFETY BRANCH OF THE BUIDLING'S EMERENCY GENERATOR.
2. PROVIDE 20A/1P CIRCUITRY CONSISTING OF 2#12+1#12G IN 3/4"C CONNECTED TO THE LIFE SAFETY BRANCH OF THE BUIDLING'S EMERENCY GENERATOR.
3. PROVIDE ELEVATOR DISPLAY PANEL. NEW DISPLAY PANEL SHALL INDICATE ELEVATOR CAR NUMBER, CAR LOCATION. CONNECT TO NORMAL/EMERGENCY POWER CIRCUIT & FIRE ALARM/DEPARTMENT NOTIFICATION. NEW ELEVATOR DISPLAY PANEL SHALL BE CONNECTED TO ELEVATOR CONTROL PANEL.
   NOTE: ELEVATOR CONTROL PANEL IS LOCATED IN THE ELEVATOR MECHANICAL ROOM IN THE ROOF-TOP PENTHOUSE. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOLLOWING:
   1. INSTALLING CONDUITS FROM THE ELEVATOR DISPLAY PANEL TO THE ELEVATOR CONTROL PANEL.
   2. CONTRACTING WITH OTIS ELEVATOR TO FACILITATE THE INSTALLATION OF CONDUITS.
   3. COORDINATE ELEVATOR DISPLAY PANEL PROGRAMMING WITH OTIS ELEVATOR.
4. ADD/ALTERNATE #3: PROVIDE ACCESS CONTROL TO LECTURE HALLS.

SHEET NOTES:

#1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEYING ALL EMERGENCY & NORMAL POWER PANELBOARDS AFFECTED BY THESE RENOVATIONS.

#2 ELECTRICAL CONTRACTOR SHALL IDENTIFY & LABEL ALL CIRCUITS SURVEYED AS REQUIRED BY NEC-2008, ART.408.4.

#3 ADDITIONAL LIGHTING CIRCUITS AND ASSOCIATED CONDUIT, CONDUCTORS & DEVICES SHALL BE ADDED AS REQUIRED AND IDENTIFIED IN THE PANEL DIRECTORIES.

#4 *ANY/ALL* EXPOSED SURFACE MOUNTED CONDUITS LOCATED IN THE AREAS OF WORK SHALL BE RELOCATED TO ABOVE THE NEW SUSPENDED CEILING.

#5 *ANY/ALL* DEFICIENCIES OBSERVED DURING THIS WORK SHALL BE PRESENTED TO THE PRIME FOR DISPOSITION.

#6 ELECTRICAL CONTRACTOR SHALL VERIFY THAT EXISTING EXIT SIGN CIRCUITS ARE SUFFICIENT TO ACCOMMODATE NEW DEVICES.

#7 *ANY/ALL* EXIT SIGNS REPLACED IN EXISTING LOCATIONS SHALL BE RECONNECTED TO EXISTING CIRCUITRY.

HAI PROJECT NO. 17JL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description
CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED

Drawing Title
ELECTRICAL:
FIRST FLOOR LIGHTING PLANS, LIGHTING FIXTURE SCHEDULE, NOTES & DETAILS

Drawing No.
E1.1

GENERAL ELECTRICAL SPECIFICATIONS

1. FURNISH LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE PROPER AND COMPLETE INSTALLATION OF ALL ELECTRIC WORK SHOWN ON THE DRAWINGS AND HEREIN SPECIFIED.

2. ALL ITEMS NOT SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH ARE NECESSARY TO MAKE A COMPLETE ELECTRICAL INSTALLATION, SHALL BE FURNISHED AND INSTALLED AS PART OF THIS PROJECT.

3. ALL ELECTRICAL INSTALLATIONS AND GROUNDING SHALL BE IN STRICT ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE LOCAL, STATE AND NATIONAL CODES.

4. OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND INSPECTIONS.

5. MATERIALS AND WORKMANSHIP SHALL BE THE BEST OF THEIR RESPECTIVE KIND AND IN FULL ACCORDANCE WITH THE MOST MODERN ELECTRICAL CONSTRUCTION STANDARDS. ALL MATERIAL SHALL BE NEW, UNLESS OTHERWISE NOTED AND FREE OF ANY DEFECTS.

6. THE ELECTRICAL CONTRACTOR SHALL CLEAN AT THE END OF EACH DAY ALL AREAS WORKED IN. EMPTY BOXES, RUBBISH, AND OTHER CONSTRUCTION MATERIALS OF NO USE SHALL BE REMOVED FROM THE BUILDING.

7. ALL WORK SEQUENCES SHALL BE COORDINATED WITH THE ARCHITECT AND SHALL BE COORDINATION WITH OTHER BUILDING TRADES AND ARCHITECTS BUILDING SCHEDULES.

8. ALL BRANCH CIRCUITS RATED AT 120 VOLTS, 20 AMPERES EXCEEDING 75 FEET SHALL BE MINIMUM #10 AWG.

9. ALL EQUIPMENT AND INSTALLATION OF ELECTRICAL EQUIPMENT SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.

10. FURNISH AND INSTALL TEMPORARY POWER AS REQUIRED TO OPERATE TOOLS AND LIGHTING. PROVIDE PANELS AND LIGHTING FIXTURES FOR CONSTRUCTION AS NEEDED.

11. THE ELECTRICAL CONTRACTOR (E.C.) SHALL INSPECT THE SITE, PRIOR TO SUBMITTING HIS BID, AND SHALL INVESTIGATE ALL CONDITIONS UNDER WHICH THIS WORK SHALL BE PREFORMED. FAILURE TO INSPECT EXISTING CONDITIONS OR TO FULLY UNDERSTAND THE WORK WHICH REQUIRED SHALL NOT EXCUSE THE E.C. FROM HIS OBLIGATIONS TO SUPPLY AND INSTALL THE WORK IN ACCORDANCE WITH THE SPECIFICATIONS AND THE DRAWINGS AND UNDER ALL SITE CONDITIONS AS THEY EXIST.

12. THE PLANS DEPICT THE LOCATION OF ALL FIXTURE AND EQUIPMENT AND ARE INTENDED TO INDICATE THE GENERAL SCOPE OF WORK, LAYOUT AND QUALITY OF WORKMANSHIP. THEY ARE NOT INTENDED FOR THE PURPOSE OF EXECUTION OF THE WORK, BUT THE CONTRACTOR SHALL UNDERSTAND THAT SUCH DETAILS ARE PART OF THE WORK.

13. THE ELECTRICAL CONTRACTOR SHALL CAREFULLY VERIFY ALL MEASUREMENTS AT THE SITE AND DETERMINE THE EXACT LOCATION OF ALL CHASES AND OPENINGS REQUIRED BY THIS WORK AND SHALL PROVIDE ALL SLEEVES, INSERTS, AND HANGERS REQUIRED.

14. BRANCH CIRCUITS ADDED TO ANY EXISTING PANELBOARDS SHALL ALSO INCLUDE THE CIRCUIT BREAKER DIRECTORY TO BE UPDATED. IF NO DIRECTORY EXISTS THAN ONE SHALL BE PROVIDED INDICATING THE NEW CIRCUITS ADDED.

15. WIRE AND CABLE FOR BRANCH CIRCUITS SHALL BE TYPE THWN/THHN, INSULATED FOR 600VOLTS, RATED AT 75°C MINIMUM AND UL LISTED FOR BUILDING WIRE USE. WIRE SIZE SHALL BE A MINUMUM OF #12 AWG SOLID. ALL CONDUCTORS SHALL BE COPPER. ALL WIRING SHALL BE CONCEALED AND INSTALLED IN RACEWAY. RACEWAYS SHALL BE E.M.T. WITH STEEL SET SCREW FITTINGS. METAL-CLAD CABLE TYPE MC CABLE MAY BE USED IN AREAS WHERE APPROVED BY THE LOCAL WIRING INSPECTOR.

16. LIGHTING FIXTURES SHALL BE SUPPORTED INDEPENDENTLY FROM THE STRUCTURE OF THE BUILDING. THE CEILING SHALL NOT BE THE SOLE SUPPORT FOR THE LIGHTING FIXTURES. ALL LIGHTING FIXTURES SHALL BE PROVIDED WITH LAMPS INSTALLED. ALL BALLASTS SHALL BE HIGH POWER FACTOR, CLASS "A" SOUND RATED WITH FUSING OR THERMAL PROTECTION. NEW LAMPS SHALL HAVE THE SAME COLOR TEMPERATURE AS EXISTING LAMPS WITHIN THE SAME AREA.

17. OUTLET BOXES SHALL BE GALVANIZED STEEL, OF THE TYPE REQUIRED FOR THE PARTICULAR APPLICATION, AND SIZED TO ACCOMODATE THE NUMBER OF CONDUCTORS TO BE INSTALLED PER CODE.

18. SWITCHES SHALL BE EQUAL TO HUBBELL #1221 FOR 20-AMP / 1-POLE AND #1223 FOR 20-AMP / 3-POLE. RECEPTACLES SHALL BE EQUAL TO HUBBELL #5352 AND #GF5352 FOR GFCI TYPE. ALL DEVICES SHALL BE PROVIDED WITH MATCHING FACE PLATES. COLORS OF DEVICES AND PLATES SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO ORDERING ANY MATERIAL.

19. ADDITIONAL JUNCTION BOXES BEYOND THOSE SHOWN ON THE DRAWINGS SHALL BE PROVIDED AS NECESSARY FOR ALL ELECTRICAL INSTALLATIONS.

20. ALL CUTTING, PATCHING AND FIRESTOPPING FOR ELECTRICAL INSTALLATIONS SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

23. PROVIDE CONDUIT SLEEVES FILLED WITH AN APPROVED FIRE RESISTANT MATERIAL WHERE FIRE RATED WALLS, FLOORS OR CEILINGS ARE PENETRATED. APPROVED WATERTIGHT CONDUIT SLEEVES SHALL BE PROVIDED WHERE WALLS ARE PENETRATED EITHER ENTERING OR LEAVING THE BUILDING.

21. RECEPTACLES, LIGHT FIXTURES, AND POWER ITEMS BRANCH CIRCUIT WIRING MAY NOT BE SHOWN BUT SHALL BE PROVIDED AS REQUIRED. MINIMUM WIRING SHALL BE 2#12 PLUS 1#12GROUND IN 3/4"C. NO MORE THAN THREE PHASES MAY BE COMBINED IN A SINGLE HOMERUN AND EACH PHASE SHALL BE PROVIDED WITH AN INDIVIDUAL NEUTRAL.

22. ALL CONDUITS SHALL CONTAIN A GREEN SAFETY GROUND WIRE. BOND ALL PANELS, CABINETS, ENCLOSURES, CONDUITS, ETC., AS REQUIRED PER CODE.

23. ALL SUPPORTS AND ANCHORS SHALL BE DESIGNED AND INSTALLED PER REQUIREMENTS FOR THE SEISMIC CLASSIFICATIONS AS OUTLINED IN THE APPLICABLE BUILDING CODE. SITE LOCATION AND PREVAILING ORIENTATION SHALL BE TAKEN INTO ACCOUNT IN THE DESIGN.

24. SUBMIT SIX (6) COPIES FOR REVIEW AND APPROVAL OF THE FOLLOWING SHOP DRAWINGS: LIGHTING FIXTURES, PANELBOARDS, WIRING DEVICES, RACEWAY, FIRE ALARM DEVICES AND BUILDING WIRE & CABLE.

SHEET NOTES:

#1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEYING ALL EMERGENCY & NORMAL POWER PANELBOARDS AFFECTED BY THESE RENOVATIONS.

#2 ELECTRICAL CONTRACTOR SHALL IDENTIFY & LABEL ALL CIRCUITS SURVEYED AS REQUIRED BY NEC-2008, ART.408.4.

#3 ADDITIONAL LIGHTING CIRCUITS AND ASSOCIATED CONDUIT, CONDUCTORS & DEVICES SHALL BE ADDED AS REQUIRED AND IDENTIFIED IN THE PANEL DIRECTORIES.

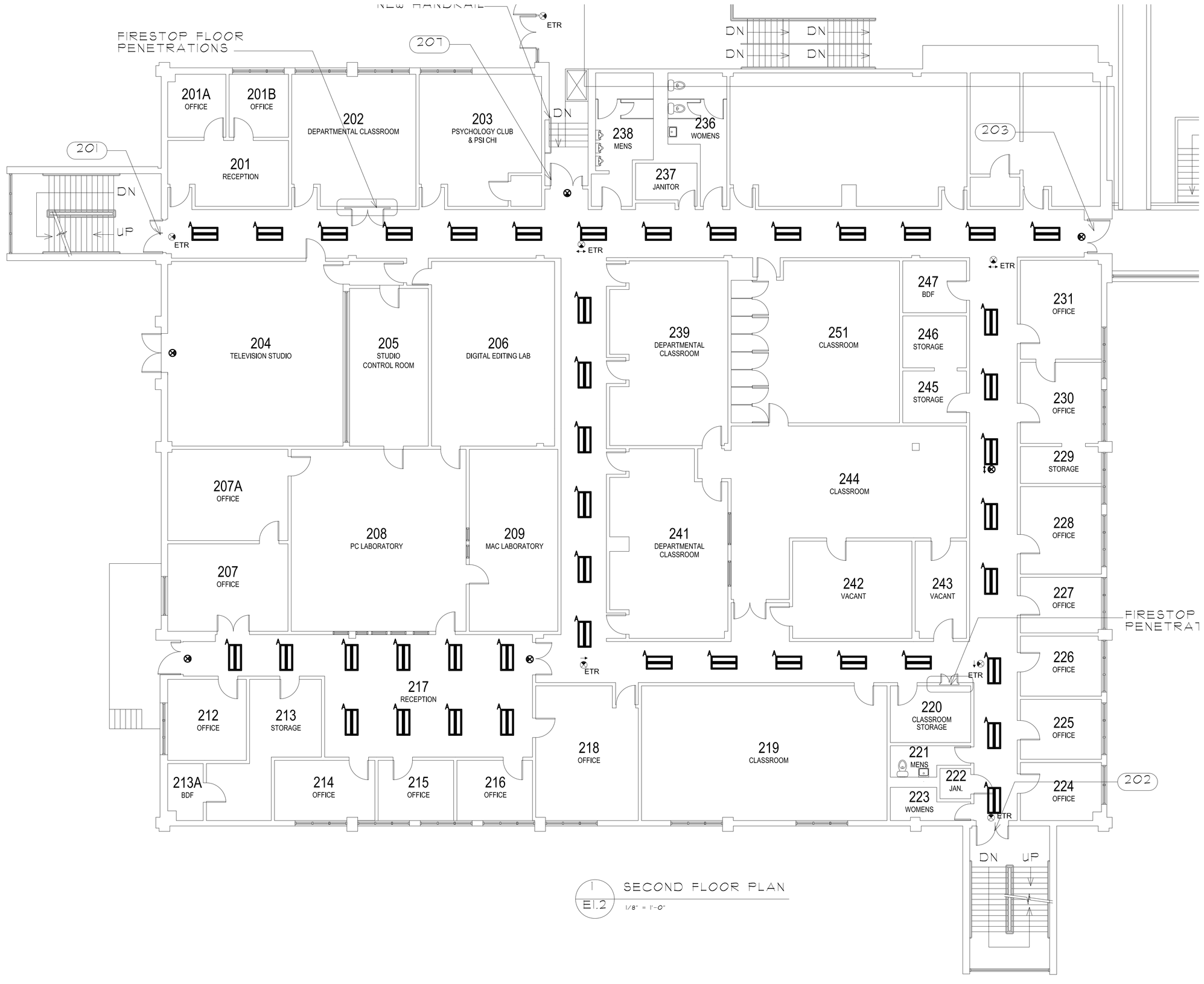
#4 ANY/ALL EXPOSED SURFACE MOUNTED CONDUITS LOCATED IN THE AREAS OF WORK SHALL BE RELOCATED TO ABOVE THE NEW SUSPENDED CEILING.

#5 ANY/ALL DEFICIENCIES OBSERVED DURING THIS WORK SHALL BE PRESENTED TO THE PRIME FOR DISPOSITION.

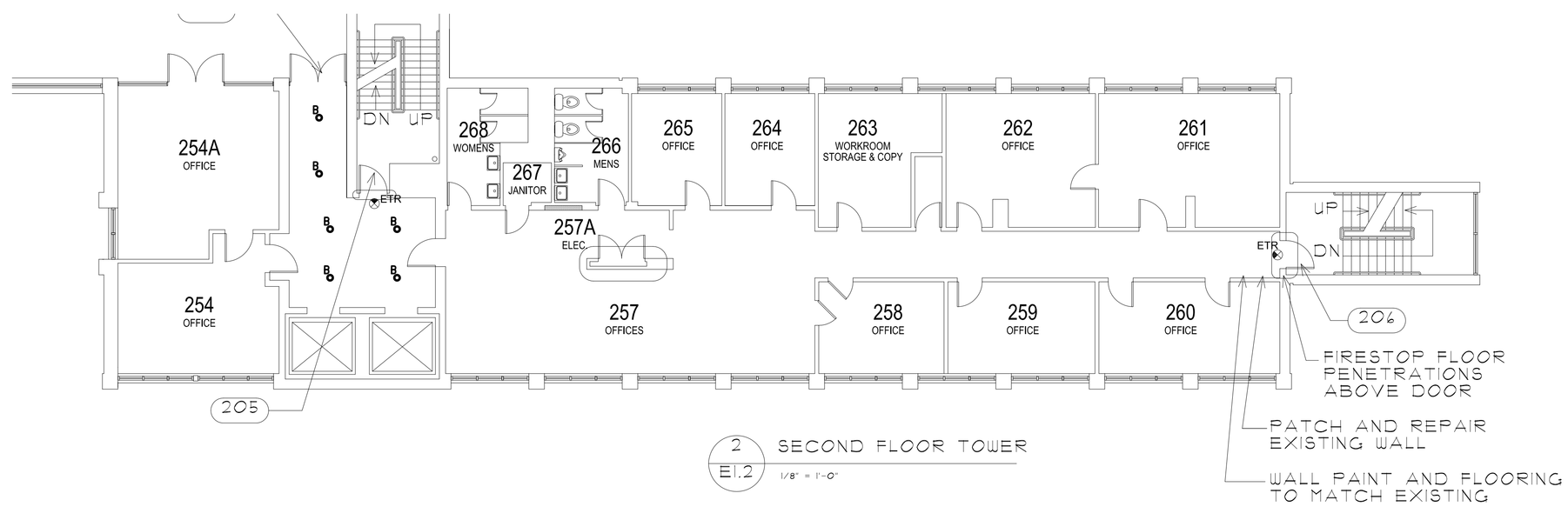
#6 ELECTRICAL CONTRACTOR SHALL VERIFY THAT EXISTING EXIT SIGN CIRCUITS ARE SUFFICIENT TO ACCOMMODATE NEW DEVICES.

#7 ANY/ALL EXIT SIGNS REPLACED IN EXISTING LOCATIONS SHALL BE RECONNECTED TO EXISTING CIRCUITRY.

#8. ALL CIRCUITS TO NEW LOBBY LIGHTS SHALL HAVE SEPARATE NEUTRALS. ANY/ALL COMMON NEUTRAL CIRCUITS SHALL BE REMOVED RE-WIRED WITH SEPARATE NEUTRALS AS REQUIRED.



1 / E1.2 SECOND FLOOR PLAN
1/8" = 1'-0"



2 / E1.2 SECOND FLOOR TOWER
1/8" = 1'-0"

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

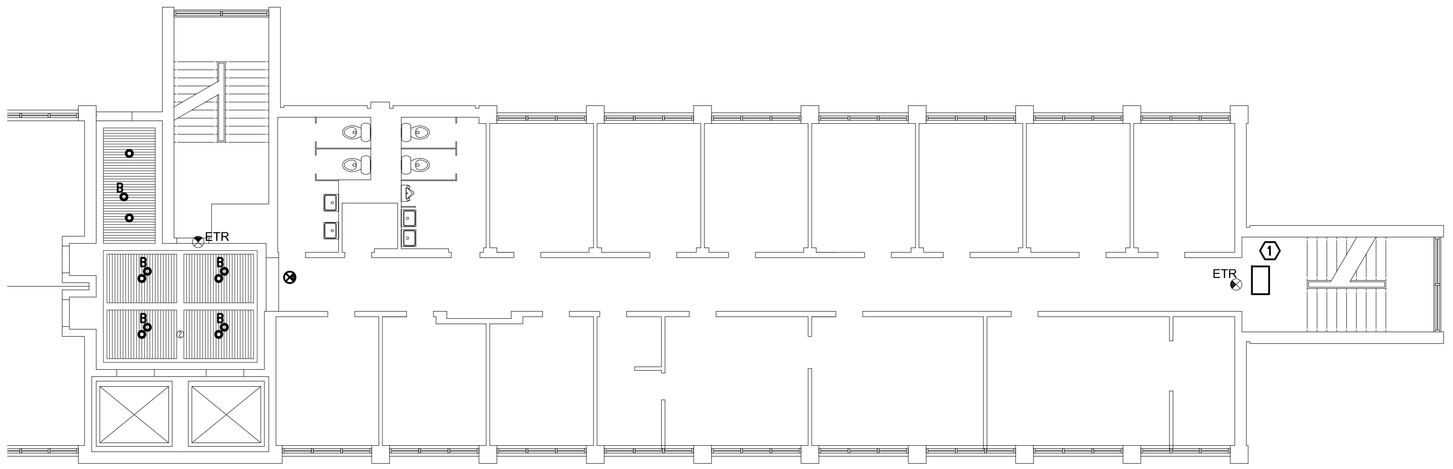
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

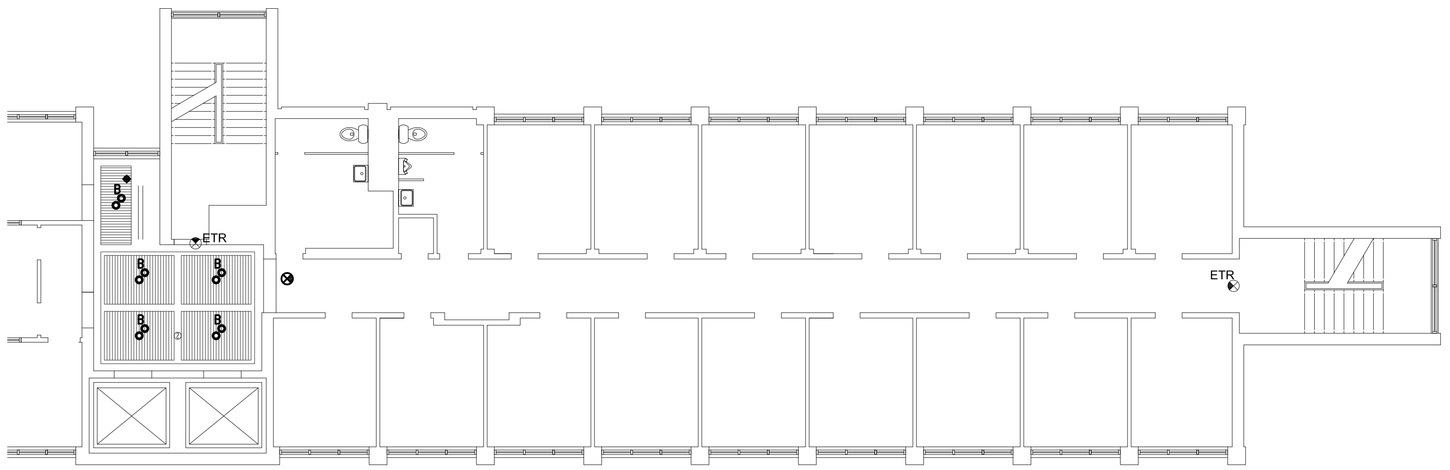
Design: Scale: AS NOTED

Drawing Title: ELECTRICAL:
SECOND FLOOR
LIGHTING PLANS, NOTES & DETAILS

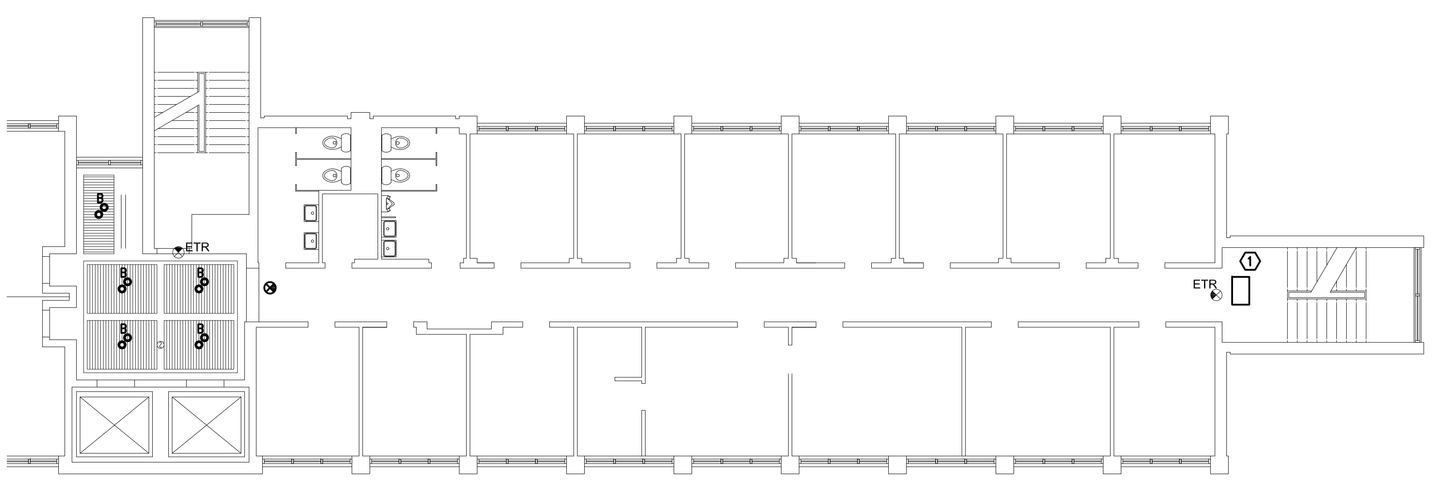
Drawing No.: E1.2



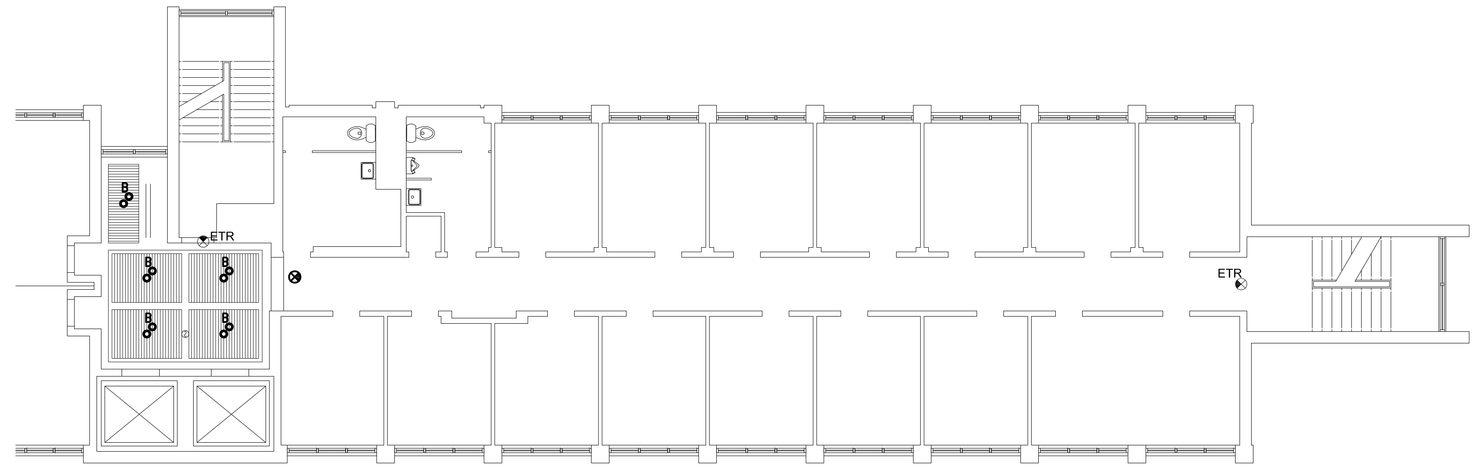
1 E2.1 THIRD FLOOR PLAN
1/8" = 1'-0"



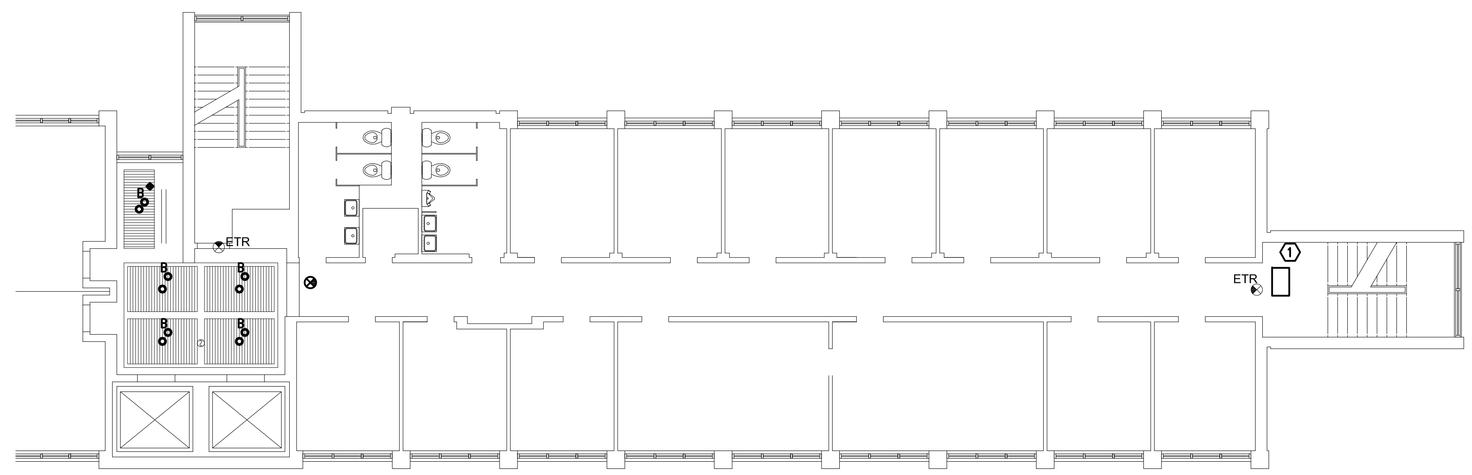
2 E2.1 FOURTH FLOOR PLAN
1/8" = 1'-0"



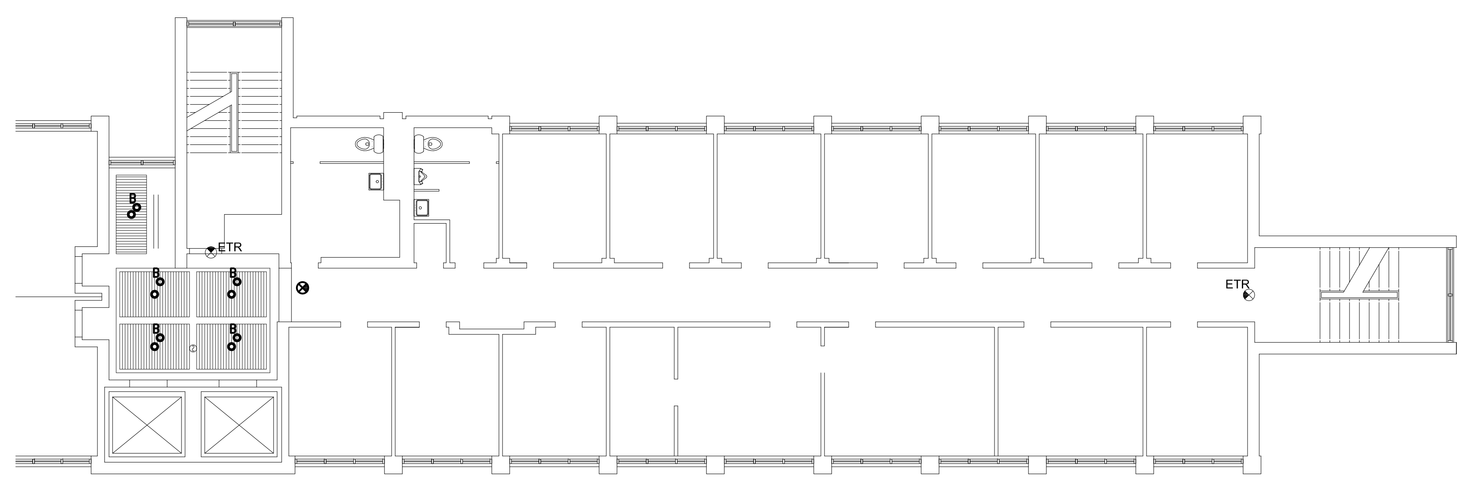
3 E2.1 FIFTH FLOOR PLAN
1/8" = 1'-0"



4 E2.1 SIXTH FLOOR PLAN
1/8" = 1'-0"



5 E2.1 SEVENTH FLOOR PLAN
1/8" = 1'-0"



6 E2.1 EIGTH FLOOR PLAN
1/8" = 1'-0"

KEYED NOTES

1. RELOCATE AC UNIT. EXTEND CONDCUTORS & CONDUIT TO NEW LOCATION TO ACCOMMODATE NEW FIRE DOOR ARRANGEMENT.

SHEET NOTES:

#1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEYING ALL EMERGENCY & NORMAL POWER PANELBOARDS AFFECTED BY THESE RENOVATIONS.

#2 ELECTRICAL CONTRACTOR SHALL IDENTIFY & LABEL ALL CIRCUITS SURVEYED AS REQUIRED BY NEC-2008, ART.408.4.

#3 ADDITIONAL LIGHTING CIRCUITS AND ASSOCIATED CONDUIT, CONDUCTORS & DEVICES SHALL BE ADDED AS REQUIRED AND IDENTIFIED IN THE PANEL DIRECTORIES.

#4 *ANY/ALL* EXPOSED SURFACE MOUNTED CONDUITS LOCATED IN THE AREAS OF WORK SHALL BE RELOCATED TO ABOVE THE NEW SUSPENDED CEILING.

#5 *ANY/ALL* DEFICIENCIES OBSERVED DURING THIS WORK SHALL BE PRESENTED TO THE PRIME FOR DISPOSITION.

#6 ELECTRICAL CONTRACTOR SHALL VERIFY THAT EXISTING EXIT SIGN CIRCUITS ARE SUFFICIENT TO ACCOMMODATE NEW DEVICES.

#7 *ANY/ALL* EXIT SIGNS REPLACED IN EXISTING LOCATIONS SHALL BE RECONNECTED TO EXISTING CIRCUITRY.

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description
CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED

Drawing Title
ELECTRICAL:
THIRD THRU EIGHT
FLOOR LIGHTING PLANS,
NOTES & DETAILS

Drawing No.
E2.1

SHEET NOTES:

#1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRACING AND IDENTIFYING BOTH NORMAL AND EMERGENCY LIGHTING CIRCUITS.

#2 CIRCUIT NUMBERS ARE FOR REFERENCE ONLY. E.C. SHALL FIELD VERIFY CIRCUIT NUMBERS AND UPDATE PANEL DIRECTORIES PER NEC-2008, ART. 408.4.

#3 ALL CONDUIT SHALL BE RUN UNEXPOSED.

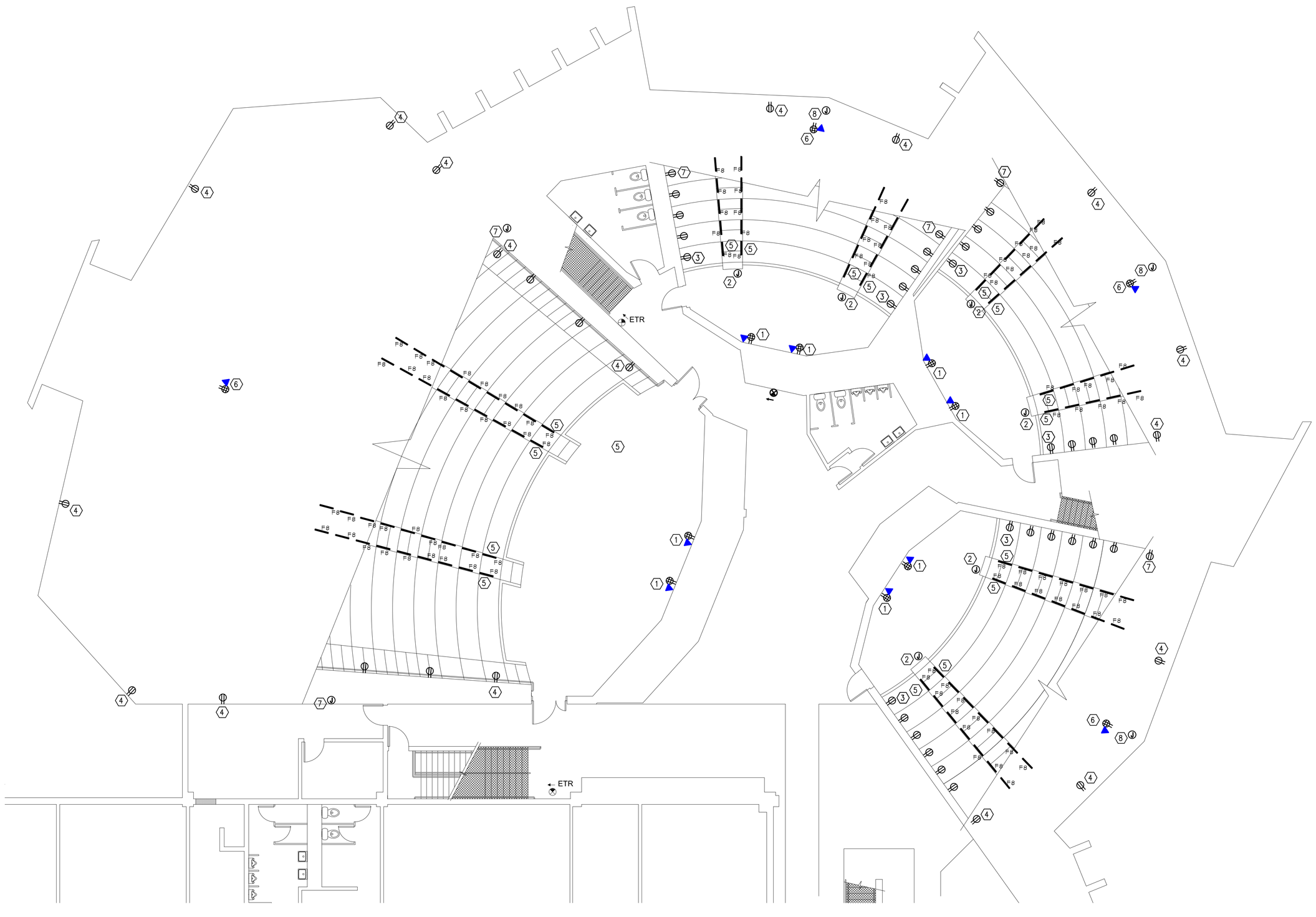
#4 ALL AUDIO/VIDEO EQUIPMENT AND DEVICES SHALL BE THE RESPONSIBILITY OF THE OWNER.

#5 REFER TO ARCHITECTURAL DRAWING "A5" SERIES & ALTERNATES FOR ADDITIONAL DEVICE & LIGHTING DEMOLITION, REMOVAL & RE-INSTALLATION INFORMATION.

#6 COORDINATE ALL POWER, SIGNAL & LIGHTING MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS.

KEYED NOTES

1. PROVIDE RECEPTACLES & 20A/1P CIRCUITRY CONSISTING OF 2#12 + #12G IN 3/4"C CONNECTED TO PANEL "LA". PROVIDE DATA RECEPTACLE.
2. PROVIDE JUCTION BOX WITH 20A/1P CIRCUITRY CONSISTING OF 2#12 + #12G IN 3/4"C CONNECTED TO PANEL "LA" FOR POWERED SEATS.
3. PROVIDE RECEPTACLES AT EACH ROW OF SEATS. RECEPTACLES SHALL BE CONNECTED TO 20A/1P CIRCUITRY CONSISTING OF 2#12 + #12G IN 3/4"C CONNECTED TO PANEL "LA" (TYPICAL).
4. PROVIDE CONVENIENCE RECEPTACLES ALONG WALLS. RECEPTACLES SHALL BE CONNECTED TO 20A/1P CIRCUITRY CONSISTING OF 2#12 + #12G IN 3/4"C CONNECTED TO PANEL "LA" (TYPICAL).
5. STEP LIGHTING "F8" SHALL BE CONNECTED TO EMERGENCY PANEL "EA" CKT#1.(TYPICAL)
6. POWER & DATA FOR PROJECTORS: PROVIDE REPTACLE & 20A/1P CIRCUITRY CONSISTING OF 2#12+1#12G IN 3/4"C CONNECTED TO PANEL "LA". PROVIDE DATA RECEPTACLE. VERIFY MOUNTING HEIGHT WITH ARCHITECT/OWNER.
7. PROVIDE CIRCUIT FOR ELECTRIC CLOCK, CONNECT TO PANEL "LA-1", CKT #2.
8. EXISTING CLOCK OUTLET TO REMAIN



1 / E3.0 FIRST FLOOR LECTURE HALL PLAN
1/8" = 1'-0"

HAI PROJECT NO. 1TJL06918.036

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Seal

Project Description
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Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED
Drawn: RWD
Design: RWD
Review: RWD

Drawing Title
ELECTRICAL:
LECTURE HALLS FIRST FLOOR POWER & SIGNAL PLAN & NOTES

Drawing No.
E3.0

SHEET NOTES:

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#2 CIRCUIT NUMBERS ARE FOR REFERENCE ONLY. E.C. SHALL FIELD VERIFY CIRCUIT NUMBERS AND UPDATE PANEL DIRECTORIES PER NEC-2008, ART. 408.4.

#3 ALL CONDUIT SHALL BE RUN UNEXPOSED.

#4 ALL AUDIO/VIDEO EQUIPMENT AND DEVICES SHALL BE THE RESPONSIBILITY OF THE OWNER.

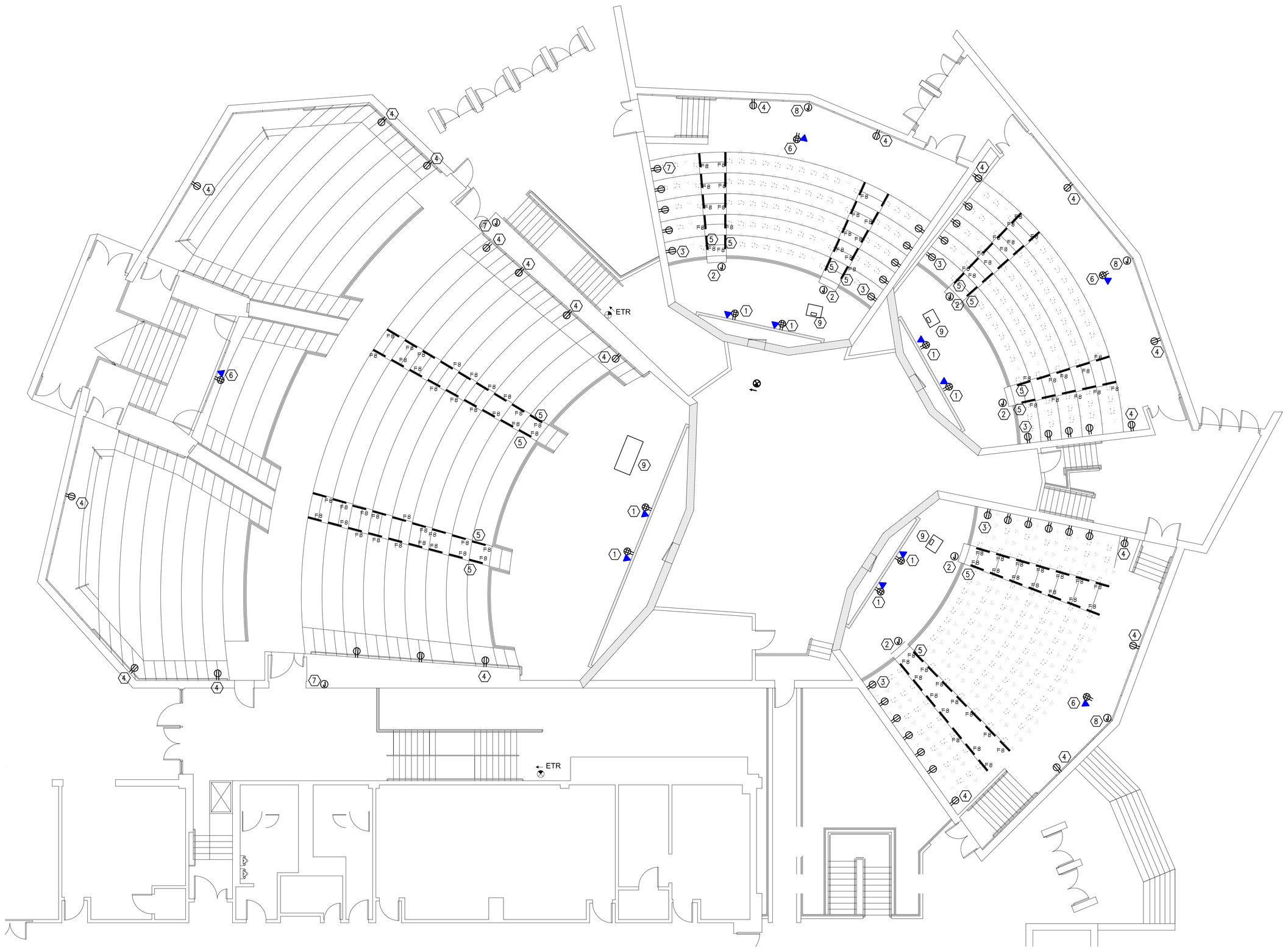
#5 REFER TO ARCHITECTURAL DRAWING "A5" SERIES & ALTERNATES FOR ADDITIONAL DEVICE & LIGHTING DEMOLITION, REMOVAL & RE-INSTALLATION INFORMATION.

#6 COORDINATE ALL POWER, SIGNAL & LIGHTING MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS.

KEYED NOTES

1. PROVIDE RECEPTACLES & 20A/1P CIRCUITRY CONSISTING OF 2#12 + #12G IN 3/4"C CONNECTED TO PANEL "LA". PROVIDE DATA RECEPTACLE.
2. PROVIDE JUCTION BOX WITH 20A/1P CIRCUITRY CONSISTING OF 2#12 + #12G IN 3/4"C CONNECTED TO PANEL "LA" FOR POWERED SEATS.
3. PROVIDE RECEPTACLES AT EACH ROW OF SEATS. RECEPTACLES SHALL BE CONNECTED TO 20A/1P CIRCUITRY CONSISTING OF 2#12 + #12G IN 3/4"C CONNECTED TO PANEL "LA" (TYPICAL).
4. PROVIDE CONVENIENCE RECEPTACLES ALONG WALLS. RECEPTACLES SHALL BE CONNECTED TO 20A/1P CIRCUITRY CONSISTING OF 2#12 + #12G IN 3/4"C CONNECTED TO PANEL "LA" (TYPICAL).
5. STEP LIGHTING "F8" SHALL BE CONNECTED TO EMERGENCY PANEL "EA" CKT#1.(TYPICAL)
6. POWER & DATA FOR PROJECTORS: PROVIDE REPTACLE & 20A/1P CIRCUITRY CONSISTING OF 2#12+1#12G IN 3/4"C CONNECTED TO PANEL "LA". PROVIDE DATA RECEPTACLE. VERIFY MOUNTING HEIGHT WITH ARCHITECT/OWNER.
7. PROVIDE CIRCUIT FOR ELECTRIC CLOCK, CONNECT TO PANEL "LA-1", CKT #2.
8. EXISTING CLOCK OUTLET TO REMAIN

PROVIDE 2" CONDUIT FROM RELOCATED LECTURN TO PROJECTION ROOM. REFERT TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LECTURN PRIOR TO INSTALLATION.



1 / E3.0A FIRST FLOOR LECTURE HALL PLAN - ALTERNATE

1/8" = 1'-0"

HAI PROJECT NO. 17JL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

Scale: AS NOTED
Drawn: RWD
Design: RWD
Review: RWD

Drawing Title

ELECTRICAL:
LECTURE HALLS FIRST FLOOR POWER & SIGNAL PLAN & NOTES (ALTERNATE)

Drawing No.

E3.0A

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG No.	MOUNTING	LAMPING				DESCRIPTION / REMARKS
				TYPE	WATTAGE	QTY.	VOLTAGE	
F1	LIGHTOLIER	LIA6GPNXR232UNVHI	RECESSED	FLUORESCENT T8	32	2	UNV	LYTECELL 6 WITH LENS & (2) 1-LAMP BALLASTS
F2	LIGHTOLIER	PA2M1675	RECESSED	MR-16	50	2	120	PROSPEC LINEAR DOWNLIGHT.
F3	SOLERA	SRBC8277SG PLT 42 DIMMING	SURFACE	COMPACT FLUORESCENT	42	1	277	CYLINDER CABLE MOUNT 96" CABLE, SILVER GRAY 8" W/ DIMMING BALLAST.
F4	LIGHTOLIER	1101FD2642M7U/1146CD	RECESSED	COMPACT FLUORESCENT	32	1	UNV	UNIFRAME RECESSED 32 WATT CFL CLEAR DIFFUSER LENS. PROVIDE WITH DIMMING BALLAST.
F5	LIGHTOLIER	WMRL244120SB	RECESSED	FLUORESCENT T5	40	1	UNV	WALMASTER RECESSED WALL WASHER. PROVIDE WITH DIMMING BALLAST.
F6	SOLERA	SRBC8277SG PLT 42 DIMMING	SURFACE	COMPACT FLUORESCENT	42	1	277	CYLINDER SURFACE MOUNT DIMMABLE.
F7	VERSULUX	SR2-1T28H-961X2	RECESSED	FLUORESCENT T5	28	1	277	LINEAR RECESSED WITH FLUSH SNAP LENS SERIES SRW.
F8	LIGHTOLIER	DSL01SA	RECESSED	LED	4	1	277	LED STEP LIGHTS.

NOTES:

1. ALL LIGHT FIXTURES SHALL BE PROVIDED WITH LAMPS. ALL FLUORESCENT LAMPS SHALL HAVE THE SAME COLOR TEMPERATURE FROM A SINGLE LAMP MANUFACTURER.
2. ELECTRICAL CONTRACTOR TO ALLOW TIME FOR DIRECTIONAL ADJUSTMENT OF ALL LIGHT FIXTURES AS DIRECTED BY ARCHITECT, ENGINEER AND/OR OWNER REPRESENTATIVE.
3. A DESIGNATION OF "CBA" IN THE SCHEDULE INDICATES FOR E.C. TO COORDINATE WITH ARCHITECT FOR COLOR & FINISH OF THE LIGHTING FIXTURE.
4. LIGHTING CONTACT: M-LITE ASSOCIATES, M. COLETTA: P.O.Box 81075 Warwick, RI 02888, 401.808.6855
5. LIGHTING FIXTUE SUBSITUTIONS ARE *NOT ALLOWED*.

LIGHTING CIRCUITRY NOTES:

#1 LARGE LECTURE HALL:
TYPE "F1" FIXTURES SHALL BE CONNECT TO PANEL "PA", CKT #1 & 2.
NOTE: THESE ARE (2) BALLAST FIXTURES. CONNECT (1) BALLAST TO CKT #1; CONNECT (1) BALLAST TO CKT #2.

TYPE "F4" & "F7" FIXTURE SHALL BE CONNECT TO PANEL "PA", CKT #3.

#2 SMALL LECTURE HALLS:
TYPE "F3" FIXTURE SHALL BE CONNECT TO PANEL "PA", CKT #4 & 5.
NOTE: THESE ARE (2) BALLAST FIXTURES. CONNECT (1) BALLAST TO CKT #4; CONNECT (1) BALLAST TO CKT #5.

TYPE "F6" SHALL BE CONNECTED TO PANEL "PA" CK#6

#3 ALL OTHER TYPE "F7" FIXTURE SHALL BE CONNECT TO PANEL "PA", CKT #7.

#4 EMERGENCY POWER LIGHTING CIRCUITS SHALL BE CONNECTED TO PANEL "EA".

#5 LIGHTING SHALL BE SWITCHED AS INDICATED.

SHEET NOTES:

#1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRACING AND IDENTIFYING BOTH NORMAL AND EMERGENCY LIGHTING CIRCUITS.

#2 CIRCUIT NUMBERS ARE FOR REFERENCE ONLY. E.C. SHALL FIELD VERIFY CIRCUIT NUMBERS AND UPDATE PANEL DIRECTORIES PER NEC-2008, ART. 408.4.

#3 NORMAL POWER LIGHTING CIRCUITS SHALL BE CONNECTED TO PANEL "PA".

#4 EMERGENCY POWER LIGHTING CIRCUITS SHALL BE CONNECTED TO PANEL "EA".

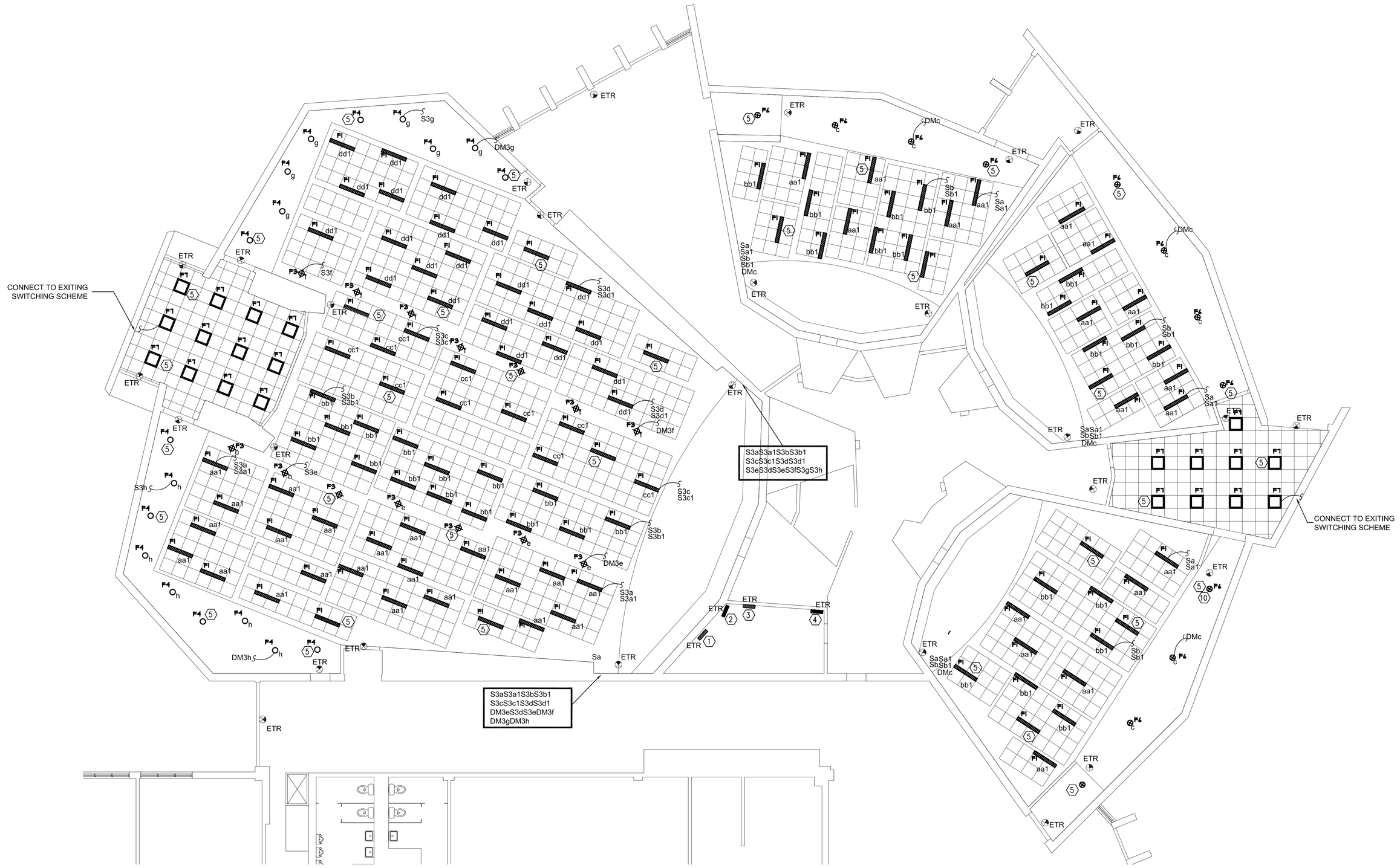
#5 ALL CONDUIT SHALL BE RUN UNEXPOSED.

#6. ALL AUDIO/VIDEO EQUIPMENT AND DEVICES SHALL BE THE RESPONSIBILITY OF THE OWNER.

#7 COORDINATE ALL POWER, SIGNAL & LIGHTING MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS.

KEYED NOTES

1. PANEL "EA": #HCN1436-2, 225A, 480Y/277V, 3Ø,4W, 18CKT. (TO REMAIN)
2. PANEL "LA": 400A, 208Y/120V, 3Ø,4W, 30CKT. (TO REMAIN)
3. PANEL "PA": #HCN3254-2, 225A, 480Y/277V, 3Ø,4W, 24CKT. (TO REMAIN)
4. PANEL "LA-1": 100A, 208Y/120V, 3Ø,4W, 42CKT. (TO REMAIN)
5. CONNECT TO EMERGENCY CIRCUIT.



SECOND FLOOR LECTURE HALL LIGHTING PLAN

E3.1 1/8" = 1'-0"

HAI PROJECT NO. 17JL06918.036

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Kingston, Rhode Island

Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED
Drawn: RWD
Design: RWD
Review: RWD

Drawing Title: ELECTRICAL: LECTURE HALLS SECOND FLOOR LIGHTINGPLAN & NOTES

Drawing No. E3.1

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG No.	MOUNTING	LAMPING				DESCRIPTION / REMARKS
				TYPE	WATTAGE	QTY.	VOLTAGE	
F1	LIGHTOLIER	LIA6GPNXR232UNVHI	RECESSED	FLUORESCENT T8	32	2	UNV	LYTECELL 6 WITH LENS & (2) 1-LAMP BALLASTS
F2	LIGHTOLIER	PA2M1675	RECESSED	MR-16	50	2	120	PROSPEC LINEAR DOWNLIGHT.
F3	SOLERA	SRBC8277SG PLT 42 DIMMING	SURFACE	COMPACT FLUORESCENT	42	1	277	CYLINDER CABLE MOUNT 96" CABLE, SILVER GRAY 8" W/ DIMMING BALLAST.
F4	LIGHTOLIER	1101FD2642M7U/1146CD	RECESSED	COMPACT FLUORESCENT	32	1	UNV	UNIFRAME RECESSED 32 WATT CFL CLEAR DIFFUSER LENS. PROVIDE WITH DIMMING BALLAST.
F5	LIGHTOLIER	WMRL244120SB	RECESSED	FLUORESCENT T5	40	1	UNV	WALMASTER RECESSED WALL WASHER. PROVIDE WITH DIMMING BALLAST.
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F7	VERSULUX	SR2-1T28H-961X2	RECESSED	FLUORESCENT T5	28	1	277	LINEAR RECESSED WITH FLUSH SNAP LENS SERIES SRW.
F8	LIGHTOLIER	DSL01SA	RECESSED	LED	4	1	277	LED STEP LIGHTS.

NOTES:
1. ALL LIGHT FIXTURES SHALL BE PROVIDED WITH LAMPS. ALL FLUORESCENT LAMPS SHALL HAVE THE SAME COLOR TEMPERATURE FROM A SINGLE LAMP MANUFACTURER.
2. ELECTRICAL CONTRACTOR TO ALLOW TIME FOR DIRECTIONAL ADJUSTMENT OF ALL LIGHT FIXTURES AS DIRECTED BY ARCHITECT, ENGINEER AND/OR OWNER REPRESENTATIVE.
3. A DESIGNATION OF "CBA" IN THE SCHEDULE INDICATES FOR E.C. TO COORDINATE WITH ARCHITECT FOR COLOR & FINISH OF THE LIGHTING FIXTURE.
4. LIGHTING CONTACT: M-LITE ASSOCIATES, M. COLETTA; P.O.Box 81075 Warwick, RI 02888, 401.808.6855
5. LIGHTING FIXTUE SUBSTITUTIONS ARE *NOT ALLOWED*.

LIGHTING CIRCUITRY NOTES:

#1 LARGE LECTURE HALL:
TYPE "F1" FIXTURES SHALL BE CONNECT TO PANEL "PA", CKT #1 & 2.
NOTE: THESE ARE (2) BALLAST FIXTURES. CONNECT (1) BALLAST TO CKT #1; CONNECT (1) BALLAST TO CKT #2.

TYPE "F4" & "F7" FIXTURE SHALL BE CONNECT TO PANEL "PA", CKT #3.

TYPE "F5" FIXTURE SHALL BE CONNECTED TO PANEL "PA", CKT #7

TYPE "F2" FIXTURES SHALL BE CONNECTED TO PANEL "LA". CKT #1.

#2 SMALL LECTURE HALLS:
TYPE "F3" FIXTURE SHALL BE CONNECT TO PANEL "PA", CKT #4 & 5.
NOTE: THESE ARE (2) BALLAST FIXTURES. CONNECT (1) BALLAST TO CKT #4; CONNECT (1) BALLAST TO CKT #5.

TYPE "F5" & "F6" SHALL BE CONNECTED TO PANEL "PA" CK#6

TYPE "F2" FIXTURES SHALL BE CONNECTED TO PANEL "LA". CKT #1.

#3 ALL OTHER TYPE "F7" FIXTURE SHALL BE CONNECT TO PANEL "PA", CKT #7.

#4 EMERGENCY POWER LIGHTING CIRCUITS SHALL BE CONNECTED TO PANEL "EA".

#5 ALL CONDUIT SHALL BE RUN UNEXPOSED.

#6 ALL AUDIO/VIDEO EQUIPMENT AND DEVICES SHALL BE THE RESPONSIBILITY OF THE OWNER.

#7 REFER TO ARCHITECTURAL DRAWING "A5" SERIES & ALTERNATES FOR ADDITIONAL DEVICE & LIGHTING DEMOLITION, REMOVAL & RE-INSTALLATION INFORMATION.

SHEET NOTES:

#1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRACING AND IDENTIFYING BOTH NORMAL AND EMERGENCY LIGHTING CIRCUITS.

#2 CIRCUIT NUMBERS ARE FOR REFERENCE ONLY. E.C. SHALL FIELD VERIFY CIRCUIT NUMBERS AND UPDATE PANEL DIRECTORIES PER NEC-2008, ART. 408.4.

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KEYED NOTES

1. PANEL "EA": #HCN1436-2, 225A, 480Y/277V, 3Ø,4W, 18CKT. (TO REMAIN)
2. PANEL "LA": 400A, 208Y/120V, 3Ø,4W, 30CKT. (TO REMAIN)
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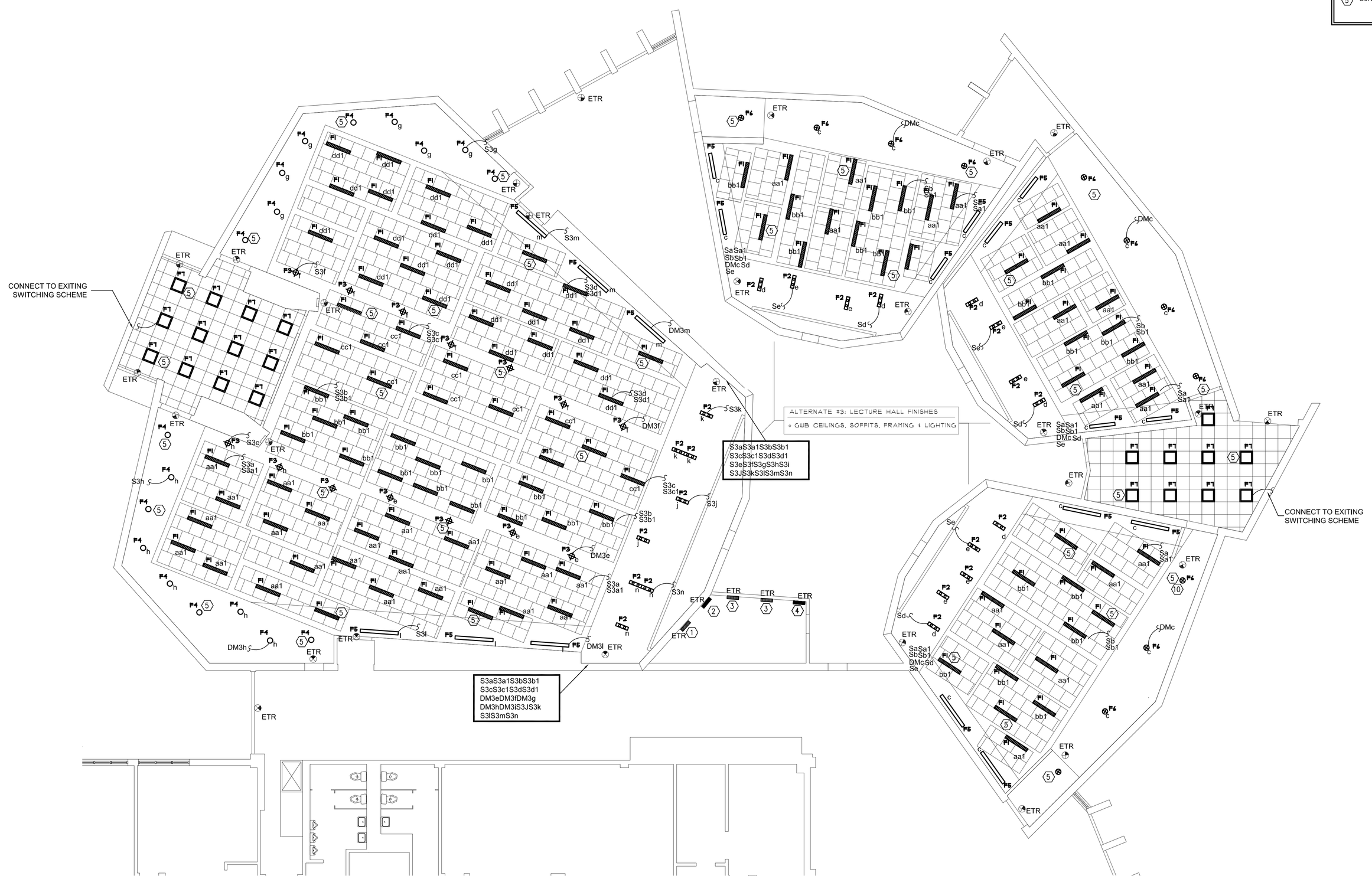

1 E3.1A SECOND FLOOR LECTURE HALL LIGHTING PLAN - ALTERNATE
1/8" = 1'-0"

HAI PROJECT NO. 17JL06918.036

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Kingston, Rhode Island

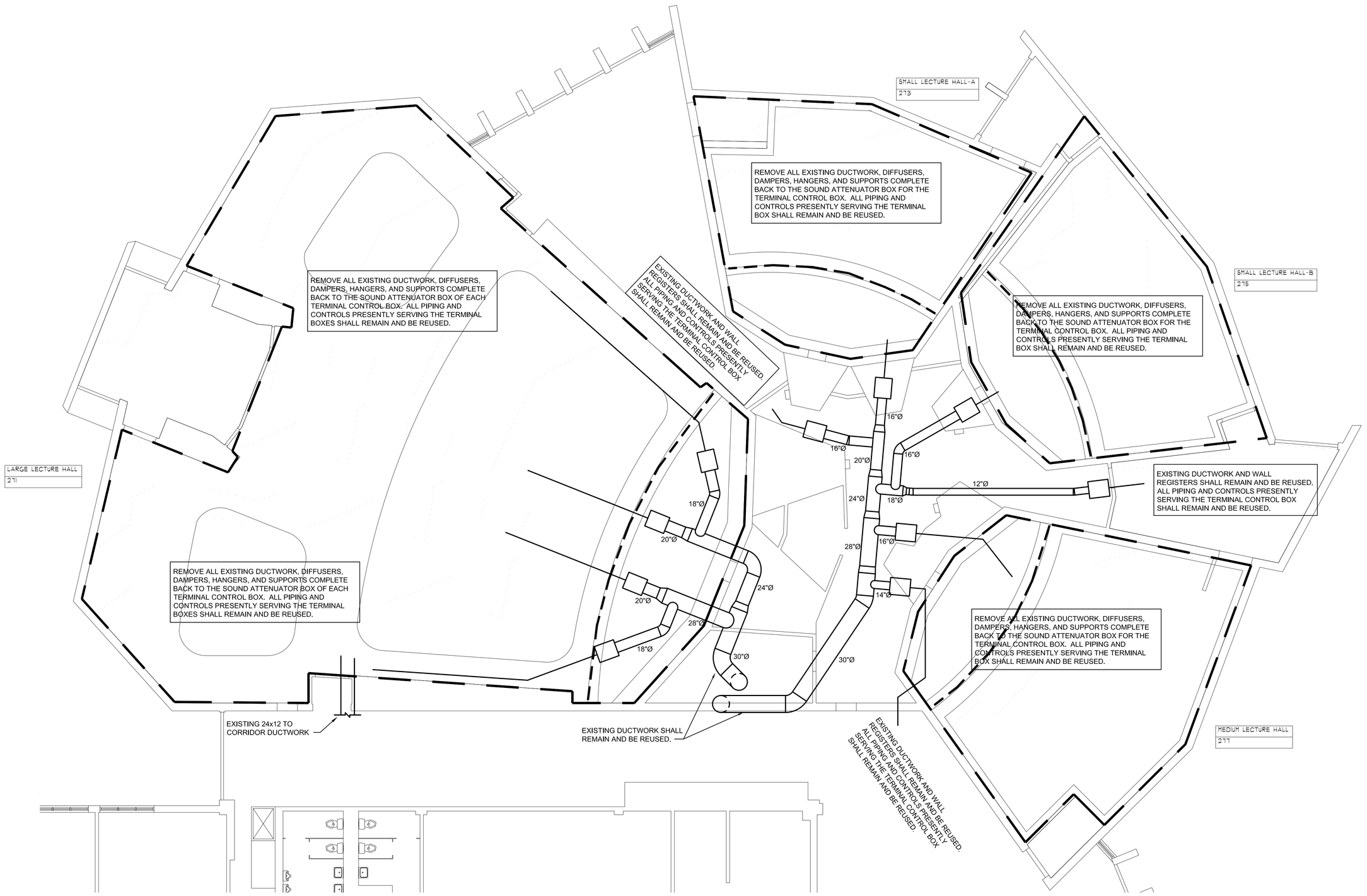
Seal

Project Description: CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design:
Scale: AS NOTED
Drawn: RWD
Design: RWD
Review: RWD

Drawing Title: ELECTRICAL:
LECTURE HALLS SECOND FLOOR LIGHTINGPLAN & NOTES
(ALTERNATE)

Drawing No. E3.1A



1 ED3.0 SECOND FLOOR LECTURE HALL - DEMOLITION PLAN
1/8" = 1'-0"

CONSTRUCTION NOTES:

THE SCOPE OF WORK CONSISTS OF THE REMOVAL OF THE EXISTING CEILING DIFUSERS, THERMOSTATS, AND ASSOCIATED DUCTWORK, HANGERS, AND SUPPORTS SERVING THE LECTURE HALLS. THE EXISTING MAIN DUCTWORK SHALL BE REMOVED BACK TO THE SOUND ATTENUATOR FOR EACH TERMINAL CONTROL UNIT.

ALL EXISTING MAIN DUCTWORK, BRANCH RUNS, CLG DIFFUSERS, HANGERS AND SUPPORTS SHALL BE REMOVED AS PART OF THE DEMO PHASE OF THE PROJECT. ALL DUCTWORK SHALL BE REMOVED BACK TO THE SOUND ATTENUATOR OF EACH OF THE TERMINAL CONTROL UNITS. ALL DEMO MATERIAL SHALL BE REMOVED FROM THE SITE AND BE DISCARDED.

THIS CONTRACTOR SHALL INSPECT, CLEAN, AND PROPERLY ADJUST THE TERMINAL CONTROL UNITS PRIOR TO PLACING THEM BACK IN SERVICE.

DUCT ROUTINGS INDICATED ON THE PLAN ARE EXISTING AND WERE OBTAINED FROM AS-BUILT DWGS PROVIDED BY THE OWNER. CONTRACTOR SHALL VERIFY ALL DUCT SIZES, ROUTINGS, AND ORIENTATIONS PRIOR TO CONTINUING WITH THE NEW DUCT AND AIR DISTRIBUTION LAYOUTS.

THE EXISTING THERMOSTATS SERVING THE TERMINAL CONTROL UNITS SHALL BE REMOVED AND REINSTALLED AS REQUIRED IN NEW LOCATIONS AS REFLECTED ON THE NEW CONSTRUCTION PLANS. EACH THERMOSTAT SHALL BE CLEANED AND CHECKED FOR PROPER OPERATION PRIOR TO BEING REINSTALLED. CONTRACTOR SHALL REROUTE EXISTING CONTROL CONDUCTORS OR INSTALL NEW CONDUCTORS AS REQUIRED.

TYPICAL DEMOLITION NOTES:

1. PRIOR TO SUBMITTING BID, VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. RENOVATION WORK WILL REQUIRE CAREFUL SITE EXAMINATION PRIOR TO BIDDING. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY AN EXPERIENCED OBSERVER. FIELD VERIFY MEASUREMENTS AND CIRCUITING ARRANGEMENTS THAT ARE AS SHOWN ON DRAWINGS. THE MECHANICAL CONTRACTOR SHALL REVIEW ALL OF THE ARCHITECT AND OTHER TRADES DRAWINGS TO VERIFY ALL AREAS OF RENOVATION AND TO GET A COMPLETE UNDERSTANDING OF THE DEMOLITION WORK REQUIRED BY THIS PROJECT.

2. FIELD VERIFY THAT ABANDONED DUCTWORK AND EQUIPMENT SERVE ONLY ABANDONED FACILITIES.

3. DEMOLITION DRAWINGS ARE BASED ON CASUAL FIELD OBSERVATION AND EXISTING RECORD DOCUMENTS. REPORT DISCREPANCIES TO ARCHITECT/ENGINEER BEFORE DISTURBING EXISTING INSTALLATIONS. THESE DRAWINGS HAVE BEEN COMPILED FROM THE BEST AVAILABLE INFORMATION AND ARE NOT INTENDED TO LIMIT THE SCOPE OF THE WORK. THE MECHANICAL CONTRACTOR MAY ENCOUNTER HIDDEN OR COVERED CONDITIONS, NOT INDICATED IN THESE DOCUMENTS, REQUIRING THE MECHANICAL CONTRACTOR TO PROVIDE ADDITIONAL WORK FOR THE COMPLETION OF THIS CONTRACT. IT SHALL BE ASSUMED THAT THE CONTRACTOR HAS INSPECTED THE SITE PRIOR TO BIDDING AND VERIFIED THE INFORMATION SUPPLIED HEREIN AND ADDITIONAL WORK REQUIRED. BEGINNING OF CONTRACTOR DEMOLITION ACTIVITIES SIGNIFIES THAT THE CONTRACTOR ACCEPTS EXISTING CONDITIONS. REFER TO ALL CONSTRUCTION DOCUMENTS TO GAIN A COMPLETE UNDERSTANDING OF THE DEMOLITION WORK REQUIRED.

4. CUT, REMOVE AND LEGALLY DISPOSE OF SELECTED DUCTWORK AND MECHANICAL EQUIPMENT, COMPONENTS AND MATERIALS AS INDICATED, INCLUDING, BUT NOT LIMITED TO, REMOVAL OF MECHANICAL ITEMS INDICATED TO BE REMOVED AND ITEMS MADE OBSOLETE BY THE WORK. DISCONNECT AND REMOVE ALL DEVICES, HANGERS, SUPPORTS, AND ALL OTHER MECHANICAL COMPONENTS MADE OBSOLETE BY THIS PROJECT. THE OWNER RESERVES THE OPTION OF SALVAGE RIGHTS TO DEMOLISHED MATERIAL AND REMOVED EQUIPMENT. THIS CONTRACTOR SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE TO OBTAIN A LIST OF MATERIALS AND REMOVED EQUIPMENT TO BE TURNED OVER TO THE OWNER. ALL OTHER MATERIAL AND REMOVED EQUIPMENT NOT BEING SALVAGED BY THE OWNER SHALL BE DISPOSED OF BY THE CONTRACTOR. PLACE ALL DEMOLISHED MECHANICAL MATERIALS IN GENERAL CONTRACTOR'S PROJECT DUMPSTER.

5. DISCONNECT MECHANICAL SYSTEMS IN WALLS, FLOORS, AND CEILINGS SCHEDULED FOR REMOVAL.

6. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANELS AS APPROPRIATE. TEMPORARY WALL OPENINGS AND/OR MODIFICATIONS REQUIRED FOR REMOVAL/INSTALLATION OF EQUIPMENT SHALL BE PROVIDED AS NEEDED AND COORDINATED WITH THE GENERAL CONTRACTOR. ALL HVAC UNITS SCHEDULED TO BE REMOVED OR RE-LOCATED SHALL BE DONE SO BY THIS CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL DISCONNECT AND MAKE-SAFE FOR REMOVAL.

7. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION.

8. EXISTING MECHANICAL SYSTEMS: MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR OPERATION. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM GC AT LEAST 72 HOURS BEFORE PARTIALLY OR COMPLETELY DISABLING ANY SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA AS REQUIRED.

9. EXTEND EXISTING MECHANICAL INSTALLATIONS AS CALLED FOR ON THE DRAWINGS.

10. REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION.

11. REMOVE ABANDONED DUCTWORK TO SOURCE OF SUPPLY AIR. CAP AND SEAL DUCT AS REQUIRED.

12. REMOVE EXPOSED ABANDONED DUCTWORK AND DEVICES ABOVE ACCESSIBLE CEILING FINISHES.

14. DISCONNECT AND REMOVE ABANDONED EQUIPMENT AND DISTRIBUTION DEVICES.

15. EXISTING DUCTWORK TO BE REUSED SHALL BE INSPECTED AND CLEANED AS REQUIRED PRIOR TO BEING PLACED BACK IN SERVICE.

HAI PROJECT NO. 1TJL06918.036

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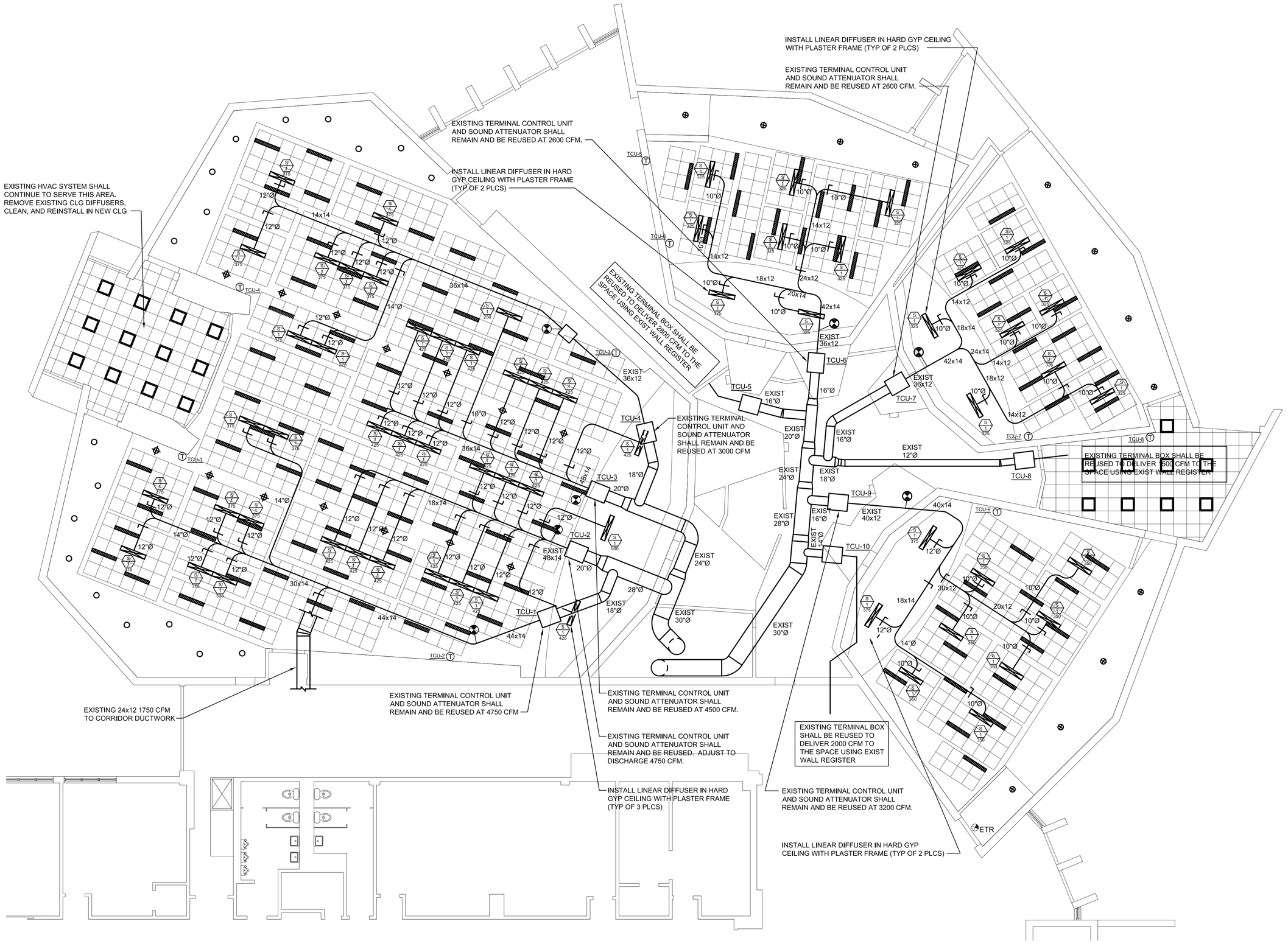
Seal

Project Description
CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED
Drawn: TEP
Design: TEP
Review: WTM

Drawing Title
MECHANICAL:
LECTURE HALLS SECOND FLOOR DEMOLITION PLAN

Drawing No.
MD1.0



SECOND FLOOR LECTURE HALL HVAC PLAN

SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES:

THE SCOPE OF WORK CONSISTS OF THE REMOVAL OF THE EXISTING CEILING DIFFUSERS, THERMOSTATS, AND ASSOCIATED DUCTWORK, HANGERS, AND SUPPORTS SERVING THE LECTURE HALLS. THE EXISTING MAIN DUCTWORK SHALL BE REMOVED BACK TO THE SOUND ATTENUATE FOR EACH TERMINAL CONTROL UNIT.

THE PRIMARY PROJECT ACTIVITIES SHALL INCLUDE THE CONSTRUCTION OF NEW CEILINGS IN THE LECTURE HALLS BY OTHERS. THESE CEILINGS SHALL BE SEPARATE, INDEPENDENT, FREE-FLOATING, CLOUDS, WITH CEILING GRID AND ACOUSTICAL TILES INSTALLED WITHIN THE CLOUD STRUCTURE.

ALL EXISTING MAIN DUCTWORK, BRANCH RUNS, CLG DIFFUSERS, HANGERS AND SUPPORTS SHALL BE REMOVED AS PART OF THE DEMO PHASE OF THE PROJECT. ALL DUCTWORK SHALL BE REMOVED BACK TO THE SOUND ATTENUATOR OF EACH OF THE TERMINAL CONTROL UNITS.

THIS CONTRACTOR SHALL INSPECT, CLEAN, AND PROPERLY ADJUST THE TERMINAL CONTROL UNITS PRIOR TO PLACING THEM BACK IN SERVICE.

EXISTING DUCT ROUTINGS INDICATED ON THE PLAN WERE OBTAINED FROM AS-BUILT DWGS PROVIDED BY THE OWNER. CONTRACTOR SHALL VERIFY ALL DUCT SIZES, ROUTINGS, AND ORIENTATIONS PRIOR TO CONTINUING WITH THE NEW DUCT AND AIR DISTRIBUTION LAYOUTS.

NEW DISTRIBUTION DUCTWORK SHALL BE INSTALLED FROM THE EXISTING CONTROL UNIT SOUND-ATTENUATORS AS INDICATED ON THE PLANS. DUCT ROUTINGS ARE PROPOSED. CONTRACTOR SHALL CHANGE OR ADJUST THE ROUTINGS AS REQUIRED TO ACCOMMODATE EXISTING SITE CONDITIONS.

THIS CONTRACTOR SHALL INSTALL LINEAR SLOT DIFFUSERS IN THE NEW ACOUSTICAL TILE CEILING GRID. THE NEW LINEAR DIFFUSERS SHALL BE AS MFG BY TITUS, MODULINEAR, TZ SERIES, ML-38, 4" LONG, 6-SLOT, 3/4" SPACING, FOR LAY-IN CEILING GRID APPLICATIONS. EACH LINEAR DIFFUSER SHALL BE FURNISHED WITH ADJUSTABLE DEFLECTOR BLADES SET TO SPREAD THE AIR DISCHARGE PATTERN ACROSS A WIDE PATTERN AREA. THE LECTURE HALLS ARE NOISE SENSITIVE AREAS AND THESE DEVICES SHALL HAVE AN "NC" VALUE BELOW 25.

EACH LINEAR DIFFUSER SHALL BE FURNISHED WITH AN INSULATED PLENUM BOX FOR DUCT CONNECTION. CONTRACTOR SHALL FURNISH AND INSTALL THE PROPER TRANSITION FITTING TO ACCOMMODATE THE SIZE OF THE PLENUM BOX CONNECTION.

NEW RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED METAL. ROUND DUCTWORK SHALL BE CONSTRUCTED OF RIGID GALVANIZED METAL. SUPPLY AIR DUCTWORK SHALL BE INSTALLED WITH 1-1/2" EXTERNAL DUCTWRAP INSULATION. ALL JOINTS AND SEAMS SHALL BE TAPED AND SEALED COMPLETE. BRANCH DUCT TAKEOFF FITTINGS SHALL BE EXTERNALLY INSULATED COMPLETE TO PREVENT CONDENSATION.

RETURN DUCTS AND GRILLES ARE EXISTING TO REMAIN AND SHALL BE REUSED.

FLEXIBLE DUCTWORK SHALL ONLY BE USED FOR THE FINAL ALIGNMENT AND CONNECTION OF THE LINEAR DIFFUSERS. THE FLEXIBLE DUCTWORK SHALL ALSO BE USED TO COMPENSATE FOR ANY MOVEMENT PRODUCED BY THE SUSPENDED CEILING STRUCTURE. FLEXIBLE DUCTWORK SHALL BE LIMITED TO A MAXIMUM OF 3' LENGTH AND SHALL NOT BE USED FOR THE ENTIRE BRANCH DUCT RUN FROM THE MAIN DUCT TO THE LINEAR DIFFUSER.

THE EXISTING THERMOSTATS SERVING THE TERMINAL CONTROL UNITS SHALL BE REMOVED AND REINSTALLED IN NEW LOCATIONS AS REFLECTED ON THE PLANS. EACH THERMOSTAT SHALL BE CLEANED AND CHECKED FOR PROPER OPERATION PRIOR TO BEING REINSTALLED. CONTRACTOR SHALL REROUTE EXISTING CONTROL CONDUCTORS OR INSTALL NEW CONDUCTORS AS REQUIRED.

HAI PROJECT NO. 1TJL06918.036

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

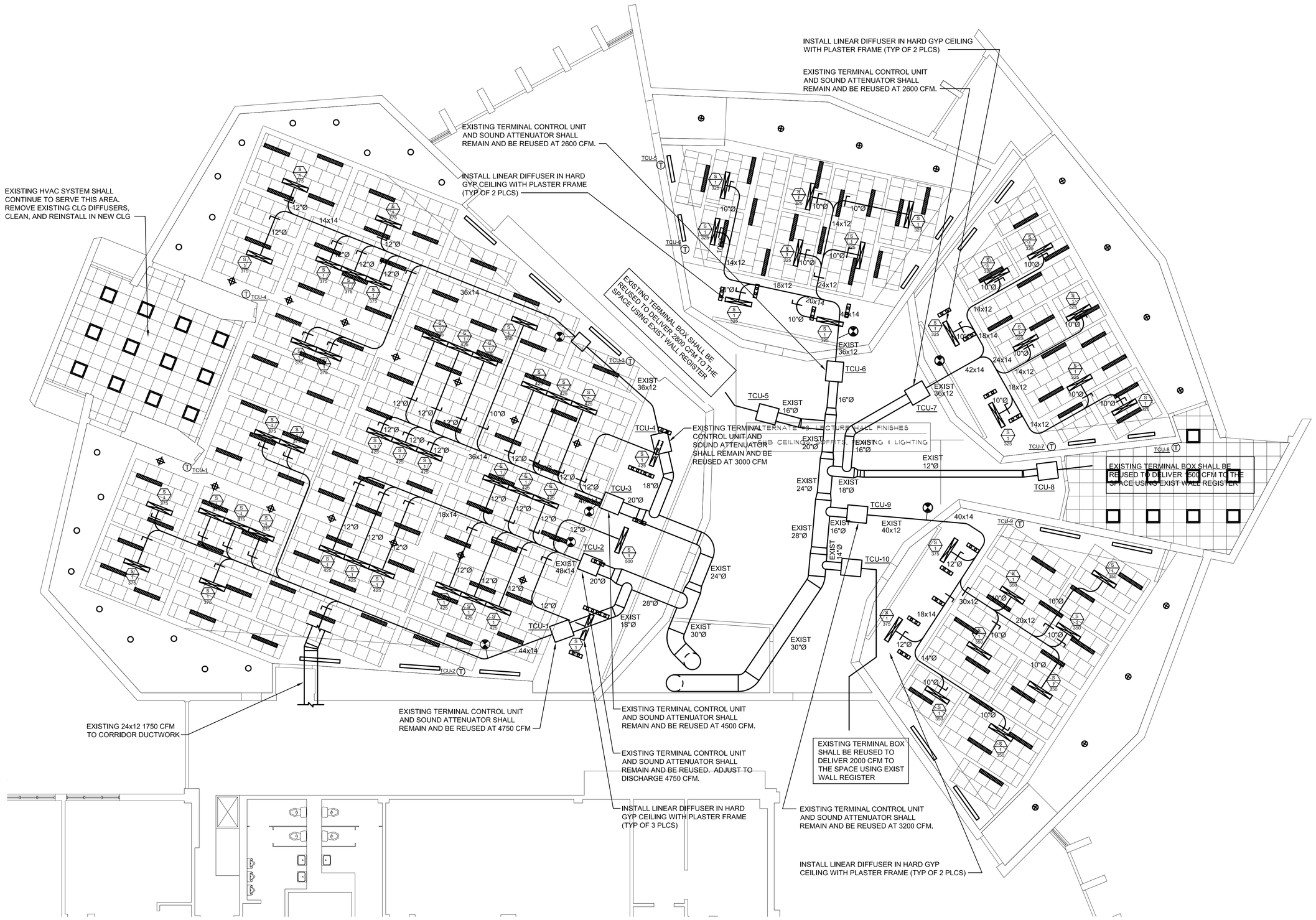
Seal

Project Description
CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED
Drawn: TEP
Design: TEP
Review: WTM

Drawing Title
MECHANICAL:
LECTURE HALLS
SECOND FLOOR

Drawing No.
M1.1



SECOND FLOOR LECTURE HALL HVAC PLAN - ALTERNATE

SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES:

THE SCOPE OF WORK CONSISTS OF THE REMOVAL OF THE EXISTING CEILING DIFFUSERS, THERMOSTATS, AND ASSOCIATED DUCTWORK, HANGERS, AND SUPPORTS SERVING THE LECTURE HALLS. THE EXISTING MAIN DUCTWORK SHALL BE REMOVED BACK TO THE SOUND ATTENUATE FOR EACH TERMINAL CONTROL UNIT.

THE PRIMARY PROJECT ACTIVITIES SHALL INCLUDE THE CONSTRUCTION OF NEW CEILINGS IN THE LECTURE HALLS BY OTHERS. THESE CEILINGS SHALL BE SEPARATE, INDEPENDENT, FREE-FLOATING, CLOUDS, WITH CEILING GRID AND ACOUSTICAL TILES INSTALLED WITHIN THE CLOUD STRUCTURE.

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CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description

CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

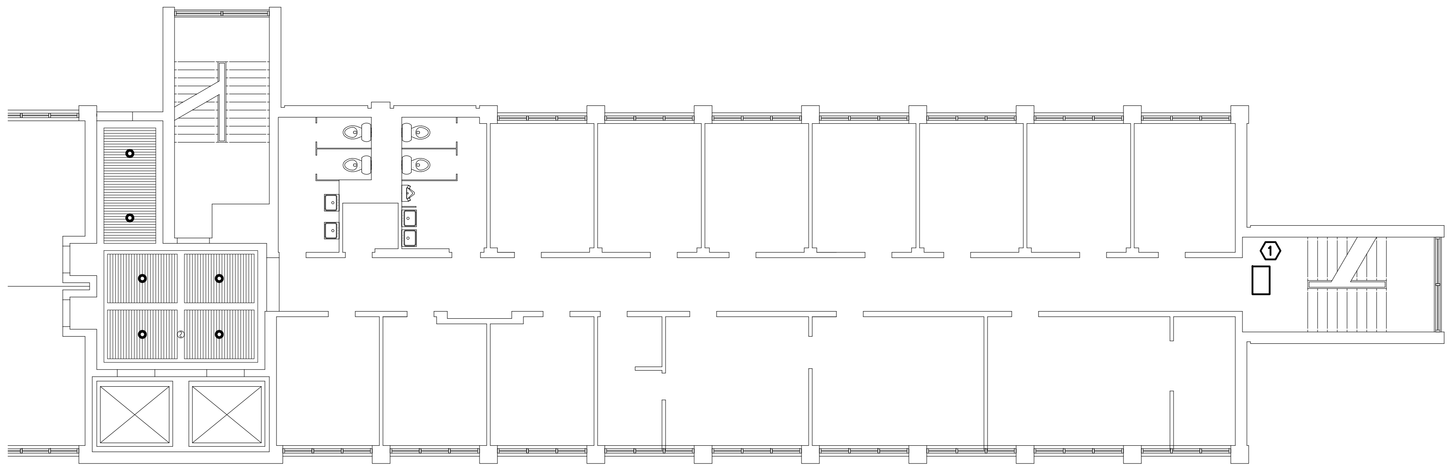
Scale: AS NOTED
Drawn: TEP
Design: TEP
Review: WTM

Drawing Title

MECHANICAL:
LECTURE HALLS
SECOND FLOOR
(ALTERNATE)

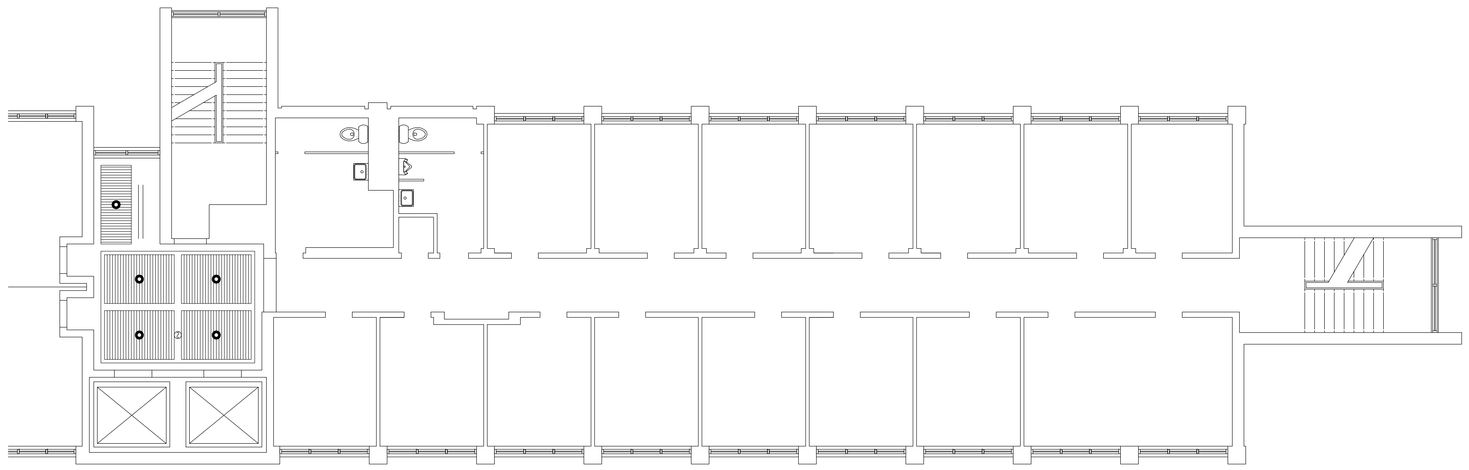
Drawing No.

M1.1A



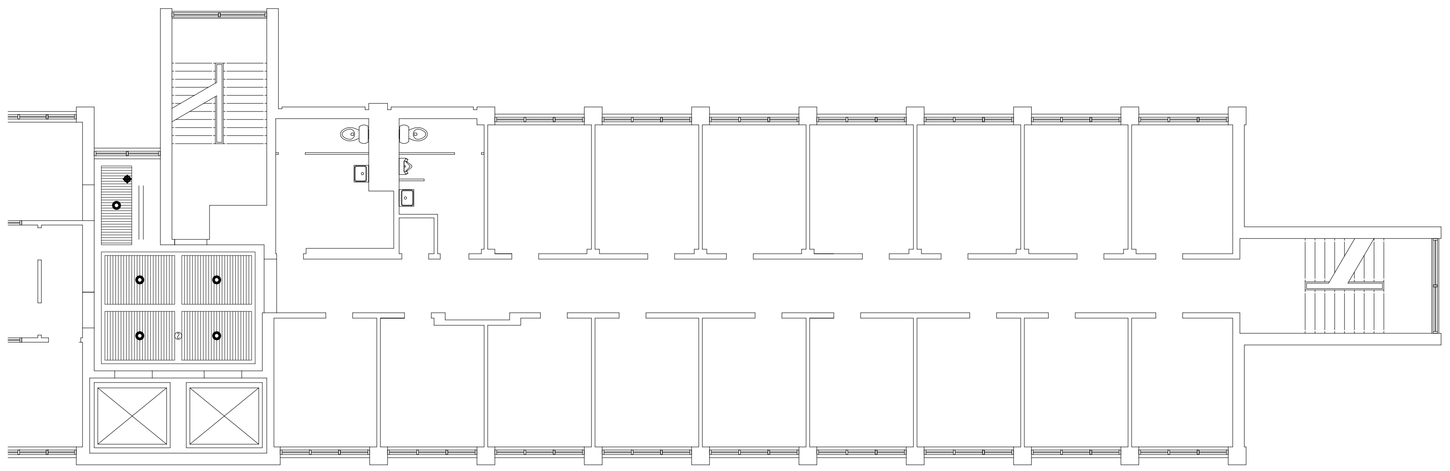
THIRD FLOOR PLAN

SCALE: 1/8" = 1'-0"



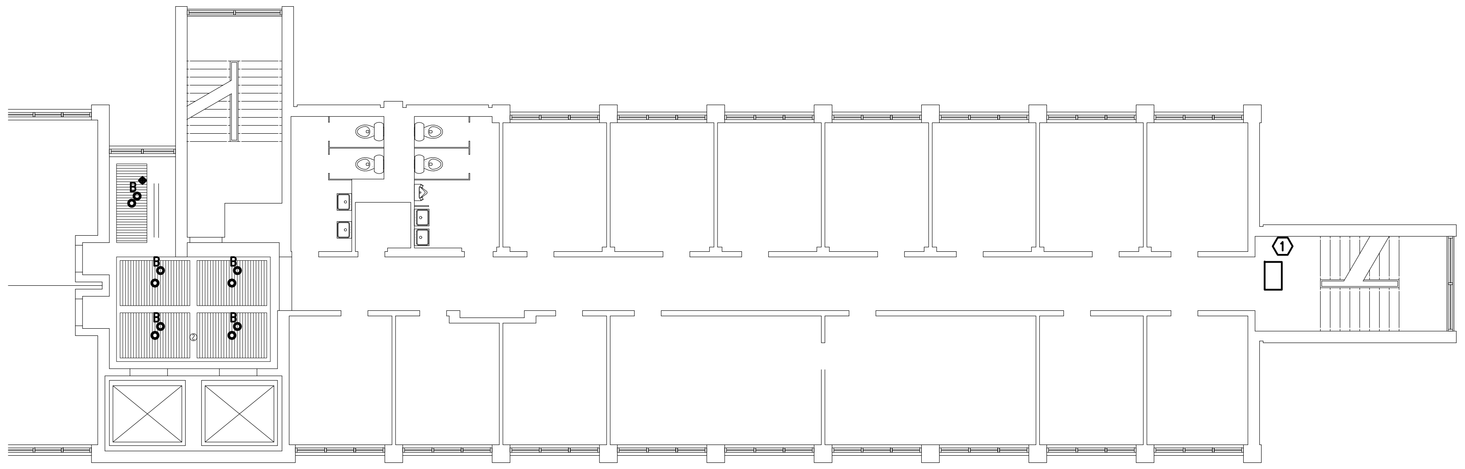
SIXTH FLOOR PLAN

SCALE: 1/8" = 1'-0"



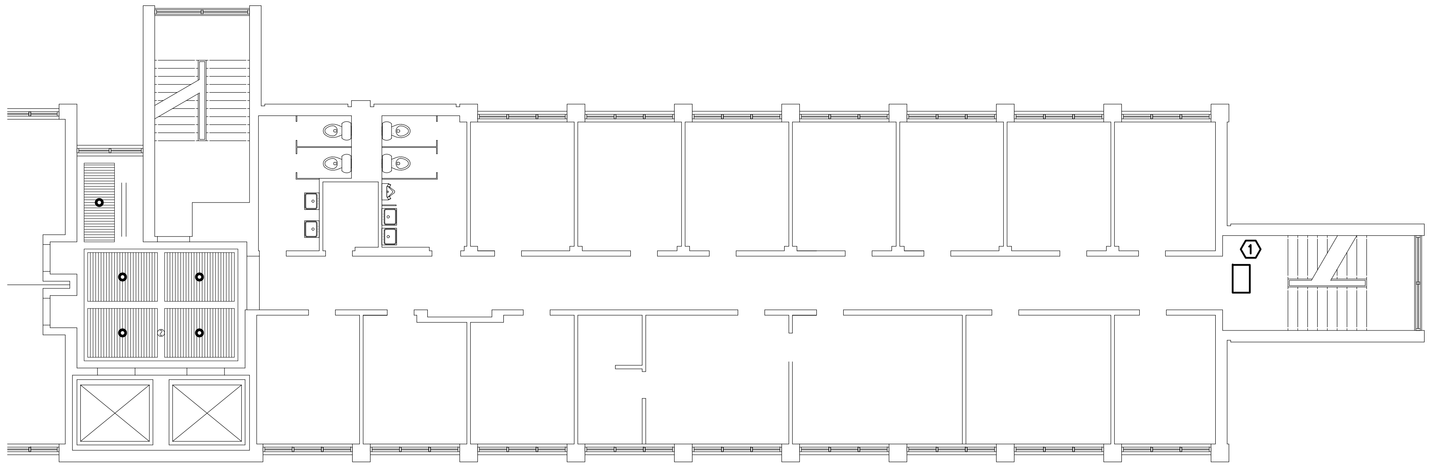
FOURTH FLOOR PLAN

SCALE: 1/8" = 1'-0"



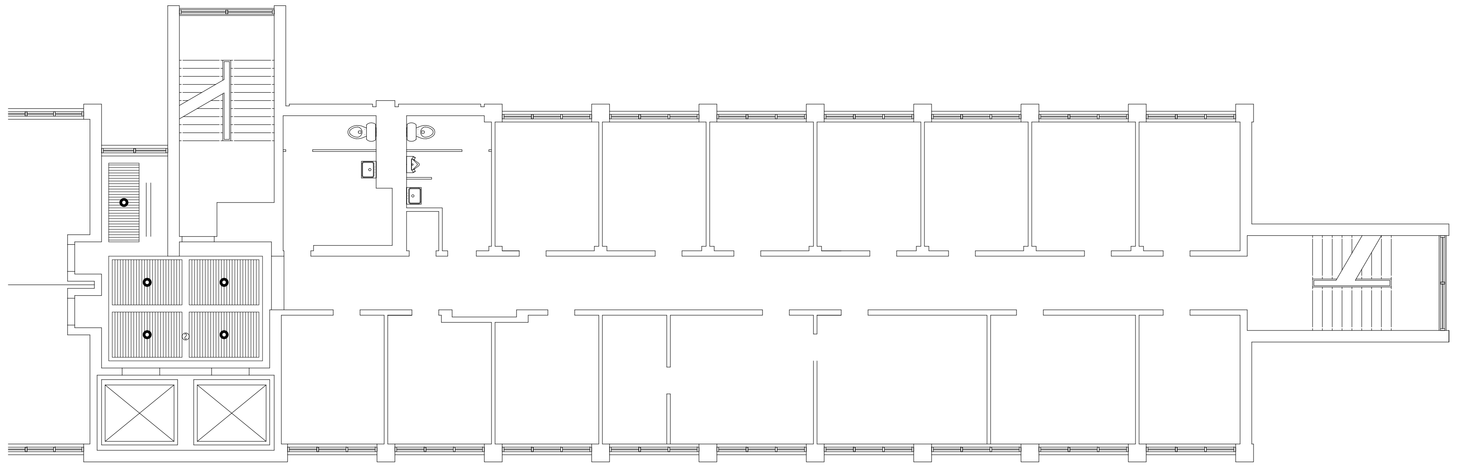
SEVENTH FLOOR PLAN

SCALE: 1/8" = 1'-0"



FIFTH FLOOR PLAN

SCALE: 1/8" = 1'-0"



EIGHTH FLOOR PLAN

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. RELOCATE AC UNIT. EXTEND PIPING TO NEW LOCATION TO ACCOMMODATE NEW FIRE DOOR ARRANGEMENT.

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UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

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Project Description

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Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design

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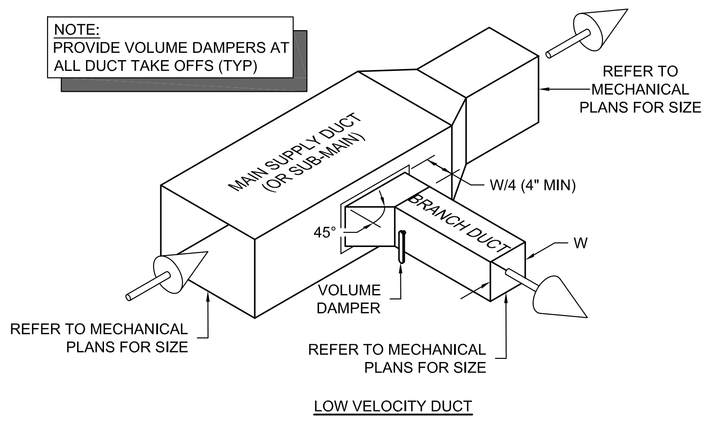
Drawn: TEP
Design: TEP
Review: WTM

Drawing Title

MECHANICAL:
THIRD THRU EIGHT
FLOOR LIGHTING PLANS,
NOTES & DETAILS

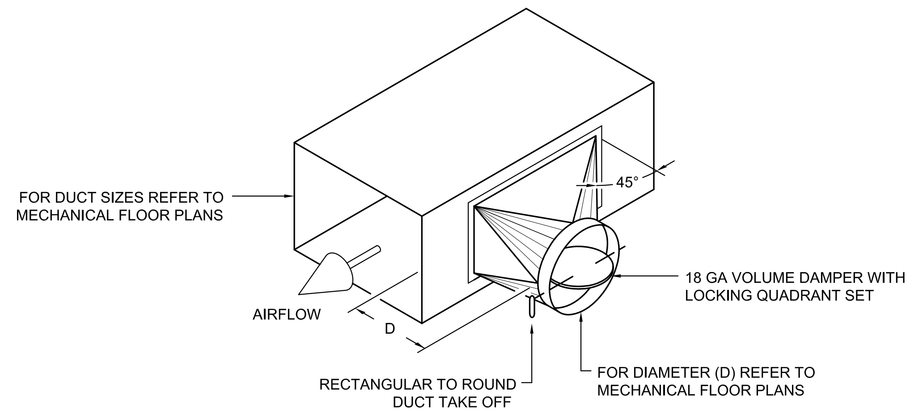
Drawing No.

M1.2



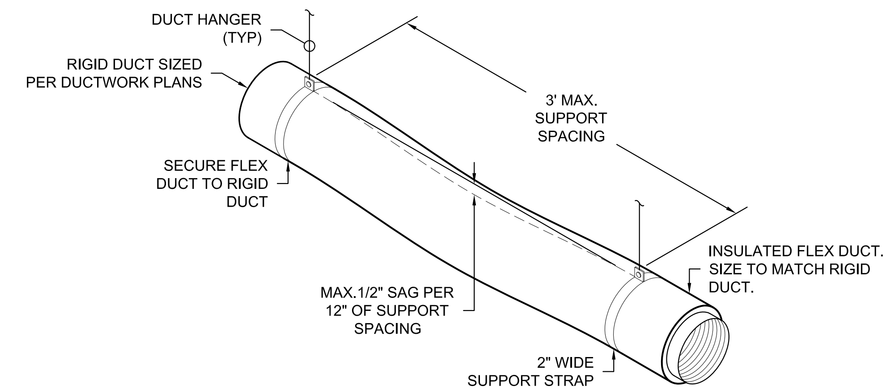
BRANCH DUCT CONNECTIONS

NTS



RECTANGULAR-TO-ROUND DUCT TAKE OFF DETAIL

NTS



FLEX DUCT SUPPORT DETAIL

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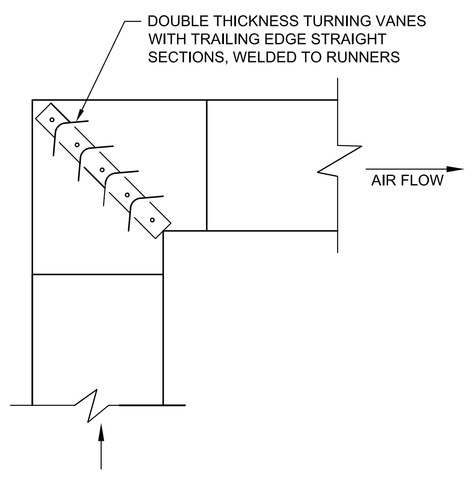
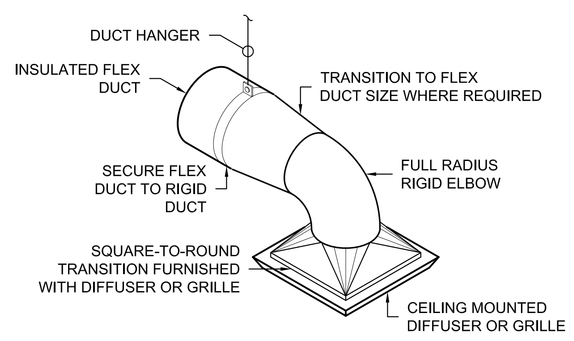


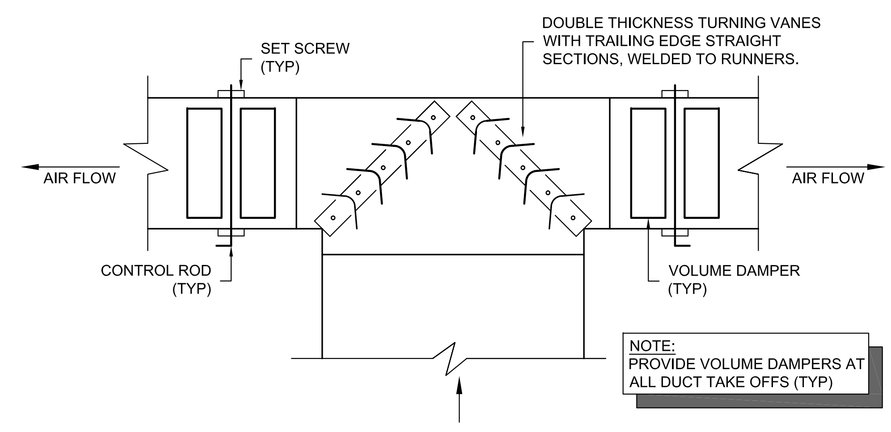
TYPICAL SQUARE ELBOW

NTS



DIFFUSER CONNECTION DETAIL

NTS



TYPICAL TEE CONNECTION

NO SCALE

HAI PROJECT NO. 17JL06918.036

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University of Rhode Island
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Design
Scale: AS NOTED
Drawn: TEP
Design: TEP
Review: WTM

Drawing Title
MECHANICAL:
DETAILS & NOTES

Drawing No.
M2.0

GENERAL NOTES:

1. ALL DUCTWORK SIZES AND LOCATIONS INDICATED ON THE DRAWINGS ARE THOSE WHICH ARE PREFERRED. IN THAT INTERFERENCES MAY OCCUR DUE TO UNFORESEEN CIRCUMSTANCES AND SYSTEMS, THE CONTRACTOR SHALL VARY SIZES AND LOCATIONS OF DUCTWORK AND DUCT SYSTEMS TO ACCOMMODATE INSTALLATION. IN ANY CASE, THE CROSS SECTIONAL AREA OF THE DUCTWORK IS IMPERATIVE AND ANY CHANGE IN CONFIGURATION SHALL MAINTAIN THE CROSS SECTIONAL AREA OF DUCT AS SIZED ON THE DRAWINGS. DIMENSIONS SHOWN ON THE DRAWINGS ARE INSIDE DIMENSIONS.

2. THE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT COMPLETE MECHANICAL SYSTEMS ARE PROVIDED WITH ALL NECESSARY EQUIPMENT, APPURTENANCES, AND CONTROLS COMPLETELY COORDINATED WITH ALL DISCIPLINES. ALL PARAMETERS GIVEN IN THESE DOCUMENTS SHALL BE STRICTLY CONFORMED WITH. ANY ITEMS AND LABOR REQUIRED FOR COMPLETE MECHANICAL SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS, AND THESE CONTRACT DOCUMENTS SHALL BE PROVIDED WITHOUT ANY ADDITIONAL COST TO THE CONTRACT. THE CONTRACTOR SHALL REVIEW ALL CONTRACT DOCUMENTS AND SHALL COORDINATE WITH OTHER TRADES WHILE PREPARING THE MECHANICAL SHOP DRAWINGS.

3. THE CONTRACTOR SHALL COORDINATE ALL DUCTWORK, PIPING, AND EQUIPMENT WITH THE GENERAL CONTRACTOR, ALL OTHER TRADES, AND STRUCTURAL BUILDING FEATURES INCLUDING FLOOR, WALL, OR ROOF PENETRATIONS. CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY OFFSETS OR FITTINGS REQUIRED TO AVOID CONFLICTS AND TO MAINTAIN EQUIPMENT ACCESS AND SERVICEABILITY.

4. PIPING, DUCTWORK, AND EQUIPMENT AS SHOWN IS DIAGRAMMATIC ONLY. CONTRACTOR SHALL DETERMINE EXACT LOCATIONS OF PIPING AND DUCTWORK RUNS, EQUIPMENT LOCATIONS, AND CONNECTIONS TO SUIT FIELD CONDITIONS.

5. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL FIRE RATED AND/OR SMOKE RATED WALLS AND ASSEMBLIES. PROVIDE U.L. APPROVED FIRE AND/OR SMOKE DAMPERS IN ALL REQUIRED PENETRATIONS FOR DUCTWORK, GRILLES, REGISTERS, AND DIFFUSERS. PROVIDE AND INSTALL DUCT MOUNTED HINGED ACCESS DOORS FOR ALL FIRE OR COMBINATION FIRE/SMOKE DAMPERS NOT OTHERWISE ACCESSIBLE. ALL PIPE AND DUCTWORK PENETRATIONS OF FIRE, SMOKE, AND FULL HEIGHT WALLS SHALL BE CAULKED AIRTIGHT TO THE ADJACENT STRUCTURE BY MEANS OF U.L. APPROVED FIRE PROOF CAULKING MATERIAL.

6. AFTER COMPLETION OF CONTRACT WORK, ALL MECHANICAL AREAS SHALL BE THOROUGHLY CLEANED OF ALL DIRT AND DEBRIS.

7. DUCT SIZES AS SHOWN ON DRAWINGS REPRESENT CLEAR INSIDE DIMENSIONS.

8. PROVIDE VOLUME DAMPERS WITH LOCKED QUADRANTS ON ALL SUPPLY, RETURN, AND EXHAUST BRANCH TAKEOFFS.

9. PROVIDE VOLUME EXTRACTORS OR BELLMOUTH CONNECTIONS WITH VOLUME DAMPERS ON ALL TAKEOFFS FROM SUPPLY AIR DUCTS.

10. PROVIDE DOUBLE THICKNESS TURNING VANES ON ALL SQUARE ELBOWS DOWNSTREAM OF SYSTEM FANS.

11. PROVIDE COLLARS, OPPOSED BLADE DAMPERS WITH LOCKING QUADRANTS AND EXPANDED METAL GRILLES ON ALL RETURN OPENINGS ABOVE CEILINGS.

12. FINAL LOCATION OF ALL REGISTERS, GRILLES, AND DIFFUSERS SHALL BE COORDINATED WITH THE REFLECTED CEILING AND LIGHTING PLANS PRIOR TO INSTALLATION. COORDINATE THE TYPE AND LOCATION OF ALL REGISTERS, GRILLES, DIFFUSERS, ACCESS DOORS, ETC. WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.

13. PORTIONS OF DUCTWORK VISIBLE THRU REGISTERS, GRILLES, AND DIFFUSERS IN FINISHED AREAS SHALL BE PAINTED FLAT BLACK.

14. ALL THERMOSTAT AND SENSOR LOCATIONS SHALL BE APPROVED BY THE ARCHITECT PRIOR TO INSTALLATION. DEVICES SHALL BE MOUNTED 60" A.F.F. UNLESS LOCATED IN A.D.A. RATED AREAS, WHERE THEIR INSTALLATION SHALL MEET A.D.A REQUIREMENTS.

15. CONTRACTOR SHALL COORDINATE VOLTAGE AND PHASE OF EACH PIECE OF EQUIPMENT WITH THE ELECTRICAL CONTRACTOR PRIOR TO ORDERING.

16. ALL WIRING AND CONTROL TUBING IN CEILING PLENUMS SHALL BE PLENUM RATED CABLE OR TUBING CONTAINED IN CONDUIT.

17. THOROUGHLY CLEAN DUCTS AND EQUIPMENT OF ALL FOREIGN SUBSTANCES INSIDE AND OUT BEFORE PLACING IN OPERATION.

18. CONTRACTOR SHALL FIELD VERIFY ALL EQUIPMENT, DUCT, PIPE, VALVE, ETC., SIZES AND ARRANGEMENTS PRIOR TO PURCHASING MATERIALS.

19. CONTRACTOR SHALL VISIT THE PROJECT AREA PRIOR TO SUBMITTAL OF PROPOSAL AND THOROUGHLY FAMILIARIZE SELF WITH THE EXISTING CONDITIONS AND ANY OTHER CONDITIONS THAT WILL AFFECT THE PERFORMANCE OF THEIR WORK. FAILURE TO DO SO SHALL NOT ENTITLE THE CONTRACTOR TO ANY ADDITIONAL COMPENSATION FOR PROVIDING A COMPLETE AND APPROVED SYSTEM.

20. WHERE EXISTING EQUIPMENT, PIPING, ETC., ARE TO BE REMOVED, ALL ASSOCIATED PIPING SHALL BE REMOVED AND CAPPED TO WITHIN WALLS, FLOORS, OR CEILING AND THE AREA SHALL BE LEFT CLEAR OF ALL DEBRIS.

21. EXACT LOCATION OF ALL NEW FLOOR AND WALL OPENINGS SHALL BE DETERMINED IN THE FIELD WITH EXISTING CONDITIONS.

22. EXISTING ROOF CUTTING, FLASHING, SEALING, ETC., SHALL BE ACCOMPLISHED BY THE ROOFING CONTRACTOR APPROVED BY THE OWNER AND SHALL BE INSTALLED IN ACCORDANCE WITH THE ROOF MANUFACTURER'S RECOMMENDATIONS SO AS TO NOT VOID THE ROOF WARRANTY.

23. DISCONNECT AND REMOVE ANY PIPING, VALVES, ETC., WHICH ARE NO LONGER REQUIRED FOR THE NEW CONSTRUCTION.

24. RECONNECT AND MAKE OPERABLE ANY AND ALL SYSTEMS WHICH SERVICE THE AREA ADJACENT TO THE AREA OF CONSTRUCTION.

MECHANICAL SPECIFICATIONS:

A. THIS CONTRACTOR SHALL ACKNOWLEDGE IN WRITING WITH HIS BID, HIS RESPONSIBILITY TO PROVIDE A COMPLETE CONTRACT IN ACCORDANCE WITH THESE PERFORMANCE SPECIFICATIONS.

B. TO CARRY OUT THE INTENT AND PURPOSE OF THIS CONTRACT, ALL NECESSARY PARTS TO MAKE COMPLETE AND APPROVED WORKING SYSTEMS READY FOR USE SHALL BE FURNISHED WITHOUT EXTRA CHARGE. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A PROPOSAL TO DETERMINE THE FULL EXTENT OF THE EXISTING AND NEW EQUIPMENT REQUIRING HVAC SERVICES.

C. SHOP DRAWINGS OF ALL SPECIFIED EQUIPMENT AND APPARATUS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

D. CODES: ALL EQUIPMENT, MATERIALS AND LABOR FURNISHED UNDER THE MECHANICAL SUBCONTRACT SHALL BE IN COMPLETE ACCORDANCE WITH THE STATE & LOCAL CODES, NFPA, INSURANCE REGULATIONS AND REQUIREMENTS OF THE BUILDING OWNER.

E. CONTRACT DRAWINGS: THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INDICATE ONLY THE GENERAL ARRANGEMENTS OF THE WORK TO BE PERFORMED. IT IS NOT THE INTENT OF THESE DRAWINGS TO SHOW EVERY PIPE, RISE, DROP, ELBOW, ETC. ANY ADDITIONAL WORK NOT SHOWN AND REQUIRED TO INSTALL THE MECHANICAL SYSTEMS SHALL BE INCLUDED AS A PART OF THE BID PRICE AND THIS CONTRACT.

F. WHERE DUCTWORK PENETRATES ANY SMOKE AND/OR FIRE RATED PARTITIONS PROVIDE UL LISTED FIRE AND/OR SMOKE DAMPERS PER NFPA GUIDELINES.

G. PROVIDE VIBRATION ISOLATION ON MOTOR DRIVEN EQUIPMENT 0.5 HP (0.35 KW) TO 10 HP (7.5 KW), PLUS CONNECTED PIPING AND DUCTWORK, COMPLY WITH MINIMUM STATIC DEFLECTIONS AS RECOMMEND BY ASHRAE FOR SELECTION AND APPLICATION OF VIBRATION ISOLATION MATERIALS AND UNITS.

H. PERMITS: ANY AND ALL PERMITS REQUIRED FOR THE INSTALLATION SHALL BE OBTAINED AS PART OF THE WORK OF THE SPECIFICATION, INCLUDING ALL FEES OR EXPENSES INCURRED.

I. INSTRUCTIONS: DURING THE ASSEMBLY AND INSTALLATION OF ALL MECHANICAL SYSTEMS, THE OWNER'S PERSONNEL SHALL BE INSTRUCTED REGARDING ITS OPERATION AND MAINTENANCE. OPERATION AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE OWNER PRIOR TO COMMENCING INSTRUCTION.

J. GUARANTEE: EXCEPT AS OTHERWISE SPECIFIED, ALL WORK, MATERIALS AND EQUIPMENT SHALL BE GUARANTEED AGAINST DEFECTS RESULTING FROM THE USE OF INFERIOR MATERIALS, EQUIPMENT, OR WORKMANSHIP FOR ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF BLDG.

K. RECORD DRAWINGS: THE MECHANICAL SUBCONTRACTOR SHALL MAINTAIN AT THE SITE, AT ALL TIMES, A COMPLETE AND SEPARATE SET OF BLACKLINE PRINTS OF THE MECHANICAL DRAWINGS OF HIS TRADE ON WHICH HE SHALL MARK CLEARLY, NEATLY AND ACCURATELY AS THE WORK PROGRESSES. AS BUILTS IN THE FORM OF FULL SIZE PLANS AND ELECTRONIC MEDIA SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR UPON COMPLETION OF CONTRACT.

L. INSPECTION: ALL SUCH WORK SHALL BE SUBJECT TO THE INSPECTION OF THE OWNER, THE ENGINEER AND SUCH OTHER INSPECTORS HAVING JURISDICTION. A PROPERLY EXECUTED CERTIFICATE OF INSPECTION SHALL BE PROVIDED.

M. EXAMINATION OF THE SITE AND DRAWINGS: THE MECHANICAL CONTRACTOR SHALL, BEFORE SUBMITTING PRICES OR BEGINNING WORK, SHALL THOROUGHLY EXAMINE THE SITE AND CONTRACT DOCUMENTS. NO CLAIM FOR EXTRA COMPENSATION WILL BE RECOGNIZED IF DIFFICULTIES WHICH AN EXAMINATION OF SITE CONDITIONS AND CONTRACT DOCUMENTS PRIOR TO EXECUTION THE CONTRACT WOULD HAVE REVEALED.

N. COORDINATION: COORDINATE ALL WORK INSTALLED UNDER THIS CONTRACT WITH THAT OF OTHER TRADES. PROVIDE 1/4" SCALE DRAWING WITH HORIZONTAL & VERTICAL DIMENSIONS AND SUBMIT TO THE ENGINEER FOR APPROVAL.

O. PROTECTION OF PROPERTY: PROTECT ALL WORK BEFORE, DURING AND AFTER INSTALLATION.

P. TESTS: THE MECHANICAL CONTRACTOR SHALL PERFORM ALL TESTS AT THE COMPLETION OF THE WORK AND THE RESULTS SHALL BE FURNISHED TO THE OWNER AND ENGINEER IN WRITING. UPON COMPLETION THIS CONTRACTOR SHALL FURNISH FROM THE MANUFACTURERS NOTARIZED LETTERS STATING THAT AUTHORIZED FACTORY ENGINEERS HAVE INSPECTED AND TESTED THE INSTALLATION AND FOUND SAME TO BE IN COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS AND IN PERFECT OPERATING CONDITION.

Q. BALANCING: ALL HVAC SYSTEMS WITHIN SCOPE OF WORK SHALL BE TESTED AND BALANCED BY A BALANCE CONTRACTOR CERTIFIED UNDER NEBB, A WRITTEN REPORT MUST BE SUBMITTED TO THE ENGINEER UPON COMPLETION OF AIR BALANCING.

R. PROVIDE ALL CUTTING AND PATCHING NECESSARY TO INSTALL THE WORK SPECIFIED IN THIS DIVISION. PATCHING SHALL MATCH ADJACENT SURFACES.

S. UPON COMPLETION OF THE PROJECT SUBMIT TO THE ENGINEER TWO SETS OF CLEAN, MARKED UP BLUE OR BLACK LINE "AS BUILT" PRINTS INDICATING ALL VARIATIONS AND DEVIATIONS OF HIS WORK FROM CONTRACT DOCUMENTS.

T. PROVIDE ALL NECESSARY SUPPORTS, HANGERS, BRACES, ANCHORS, CURBS, ANGLES, CHANNELS, RODS, UNISTRUT, ETC. AND ALL ELSE NECESSARY FOR THE ENTIRE INSTALLATION TO MEET THE REQUIREMENTS OF THE SYSTEMS FOR PROPER OPERATION AND IN A MANNER APPROVED BY THE ARCHITECT THAT WILL NOT OVERLOAD THE BUILDING STRUCTURE SYSTEM. PIPE, DUCT AND EQUIPMENT SUSPENSION SHALL BE SUCH AS TO PREVENT EXCESSIVE STRESS, EXCESSIVE VARIATION IN SUPPORTING FORCE, POSSIBLE RESONANCE WITH IMPOSED VIBRATION WHILE THE SYSTEM IS IN OPERATION CREEPING, SAGGING, BUCKLING OR MISALIGNMENT.

U. SEISMIC RESTRAINTS: IT IS THE INTENT OF THIS SEISMIC SPECIFICATION TO KEEP ALL MECHANICAL BUILDING SYSTEM COMPONENTS IN PLACE DURING A SEISMIC EVENT.

a. ALL MECHANICAL SYSTEMS MUST BE INSTALLED IN STRICT ACCORDANCE WITH SEISMIC CODES, COMPONENT MANUFACTURER'S AND BUILDING CONSTRUCTION STANDARDS. WHENEVER A CONFLICT OCCURS BETWEEN THE MANUFACTURER'S OR CONSTRUCTION STANDARDS, THE MOST STRINGENT SHALL APPLY.
b. THIS CONTRACTOR SHALL ENGAGE A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE JURISDICTION OF THIS PROJECT TO REVIEW THE ENTIRE INSTALLATION TO DETERMINE ALL SEISMIC RESTRAINT REQUIREMENTS AND METHODS. CONTRACTOR SHALL SUBMIT A REPORT OUTLINING THE STRUCTURAL ENGINEER'S REVIEW AS WELL AS SEISMIC RESTRAINT SHOP DRAWINGS AND SUPPORTING CALCULATIONS PREPARED BY THE PROFESSIONAL STRUCTURAL ENGINEER FOR REVIEW BY THE ARCHITECT.
c. SEISMIC RESTRAINTS SHALL BE DESIGNED IN ACCORDANCE WITH SEISMIC FORCE LEVELS AS DETAILED IN THE APPLICABLE BUILDING CODE.

I. DUCTWORK

A. SUPPLY, RETURN, FRESH AIR INTAKE DUCTWORK SHALL BE DESIGNED IN ACCORDANCE WITH 'SMACNA' PUBLICATION TITLED "HVAC SYSTEMS DUCT DESIGN". DUCTWORK CONSTRUCTION SHALL BE OF FABRICATED SHEET METAL (NO DUCT BOARD ALLOWED) AND BE BUILT IN ACCORDANCE WITH 'SMACNA' STANDARDS AND PUBLICATION TITLED "HVAC DUCT CONSTRUCTION STANDARDS" AND CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF THE AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM) STANDARD E-84, NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARD 255 AND STANDARD 90A UNDERWRITTERS' LABORATORIES, INC. (UL) STANDARD 723. DUCTWORK DIMENSIONS INDICATED ON DRAWINGS ARE NET INSIDE DIMENSIONS REQUIRED FOR AIRFLOW. INCREASE DUCTWORK TO ALLOW FOR INSULATION THICKNESS.

III. INSULATION:

A. CONCEALED SUPPLY & RETURN DUCTS FOR HEATING, COOLING AND AIR INTAKES:
1. INSULATION: ASTM C553; FLEXIBLE, NON-COMBUSTIBLE BLANKET.
   a. TYPE I, CLASS B-2, 0.75 LB/FT3.
   b. INTERIOR CONCEALED/TEMPERED: 1.5" BLANKET, R-VALUE OF 4.2 INSTALLED.
   c. INTERIOR VENTILATED/UNTEMPERED: 2.5" BLANKET, R-VALUE OF 6.9 INSTALLED
2. VAPOR BARRIER JACKET:
   a. KRAFT PAPER WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM.
   b. MOISTURE VAPOR TRANSMISSION: ASTM E96; 0.02 PERMS.
   c. SECURE WITH PRESSURE SENSITIVE TAPE.
3. VAPOR BARRIER TAPE:
   a. KRAFT PAPER REINFORCED WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM, WITH PRESSURE SENSITIVE RUBBER BASED ADHESIVE.
4. ALL SUPPLY AIR DUCTWORK SHALL BE INSULATED FULL LENGTH INCLUDING BRANCH DUCT TAKEOFF FITTINGS. ALL JOINTS AND SEAMS SHALL BE TAPED AND SEALED.

B. INTERIOR DUCT LINING:
1. ALL DUCTWORK, FOR A MINIMUM DISTANCE OF 10 FEET UPSTREAM AND DOWNSTREAM OF AIR HANDLING UNITS AND WHERE INDICATED, SHALL BE LINED WITH "HOSPITAL GRADE LINER" POLYMER FOAM INSULATION (EPFI) EQUAL TO IMCOA "IMCOSHEET" ENGINEERED POLYMER FOAM INSULATION, 1 INCH THICK, R = 4.0, CLOSED CELL. INSULATION SHALL BE INSTALLED AS REQUIRED BY THE INSULATION MANUFACTURER. INSULATION SHALL BE IN COMPLIANCE WITH NFPA 90 AND 90B. FLAME SPREAD SHALL BE LESS THAN 25 AND SMOKE DENSITY LESS THAN 50 PER ASTM E-84, NFPA 255, UL 723 CLASS I AND UL 181. AREAS PROVIDED WITH INTERIOR DUCT LINING SHALL ALSO BE PROVIDED WITH EXTERIOR DUCT INSULATION AS INDICATED BY THESE SPECIFICATIONS.

TEMPERATURE CONTROLS AND SEQUENCE OF OPERATION

A. SEQUENCE OF OPERATIONS: THIS IS A PERFORMANCE-BASED SPECIFICATION INTENDED TO CONVEY THE CONTROL INTENT OF THE VARIOUS SYSTEMS. THE CONTRACTOR SHALL PROVIDE DETAILED SHOP DRAWINGS INCLUDING P&ID DIAGRAMS, EQUIPMENT LISTS AND FINALIZED SEQUENCES FOR REVIEW BY THE ENGINEER PRIOR TO INSTALLATION. ANY QUESTIONS CONCERNING SPECIFIC DETAILS SHALL BE REFERRED TO THE ENGINEER FOR CLARIFICATION.
B. SYSTEM: IT IS THE INTENT OF THIS SPECIFICATION THAT PROGRAMMABLE ELECTRONIC CONTROLS BE PROVIDED TO CONTROL OCCUPIED/UNOCCUPIED MODES OF ALL HVAC SYSTEMS WITHIN THE FACILITY. SYSTEMS SHALL BE PROVIDED WITH ALL ADDITIONAL REQUIRED CONTROLS INCLUDING, BUT NOT LIMITED TO, SPACE MOUNTED MONITORING AND USER INTERFACE DEVICES, TO PROVIDE THE SPECIFIED SEQUENCE.
C. EQUIPMENT AND WIRING: THIS CONTRACTOR SHALL PROVIDE ALL CONTROL EQUIPMENT, AND WIRING (REGARDLESS OF VOLTAGE) TO ACCOMPLISH THE SEQUENCE OF OPERATIONS AS DETAILED BELOW. (ALL CONDUIT RUN IN CEILING SPACE SHALL BE RATED FOR PLENUM).
D. CONTROL AND MONITORING: SENSORS SHALL BE PROVIDED THROUGHOUT THE HVAC SYSTEMS (HYDRONIC AND AIR) AS REQUIRED TO CONTROL AND MONITOR THEIR OPERATION AND VERIFY PERFORMANCE AT BMS.
E. SAFETY CONTROLS: THIS CONTRACTOR SHALL PROVIDE ALL SAFETY CONTROLS REQUIRED TO PROTECT THE BUILDING AND ALL CONTROLLED EQUIPMENT FROM DAMAGE AS WELL AS THOSE CONTROLS NECESSARY TO SIGNAL ABNORMAL OPERATION OR MALFUNCTION OF EQUIPMENT. THESE SHALL INCLUDE BUT NOT BE LIMITED TO HIGH LIMITS, LOW LIMITS, FREEZESTATS, FLOW SWITCHES, INTERLOCKS AND RELAYS.
F. ENERGY EFFICIENCY: ALL CONTROLS AND SEQUENCES SHALL BE CONFIGURED TO PROVIDE MAXIMUM ENERGY EFFICIENCY WHILE MAINTAINING OCCUPANT COMFORT.
G. FUNCTIONAL PERFORMANCE TESTING: THE CONTRACTOR SHALL PERFORM COMPLETE AND THOROUGH CONTROL FUNCTIONAL PERFORMANCE TEST (FPT) AND COMMISSIONING OF THE CONTROL SYSTEMS. UPON COMPLETION OF THE FPT, A REPORT SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND COMMENT. THE FPT SHALL INCLUDE TESTING OF:
   1. SAFETIES IN EVERY MODE, I.E., IN MANUAL RUN MODE AS WELL AS AUTO MODE.
   2. SIGNALS TO AND FROM THE FIRE ALARM, SECURITY AND ENTRY SYSTEMS.
   3. SEQUENCES OF OPERATION STEP BY STEP IN EVERY MODE AND POSSIBLE SITUATION.
   4. THE OPERATION OF ALL CONTROL LOOPS UNDER ACTUAL OPERATING CONDITIONS.
   5. THE INTERLOCKED OPERATION OF ALL EQUIPMENT (I.E., THE OPERATION OF STARTERS IN MANUAL AND OFF MODES AS WELL AS AUTO MODE, DAMPER END SWITCH INTERLOCK, ETC.)
   6. COMMISSIONING SHOULD TEST EVERY CONCEIVABLE LIFE SAFETY SCENARIO AND EVERY CONCEIVABLE OPERATIONAL SCENARIO THAT THE SYSTEM WILL ENCOUNTER AND DOCUMENT THIS TESTING WITH PRINTED GRAPHS OF TREND LOGS.
H. TERMINAL CONTROL UNITS:
   1. THESE UNITS ARE EXISTING TO REMAIN AND BE REUSED.
   2. THESE UNITS OPERATE FROM THE BASE BLDG MULTI-ZONE AIR HANDLING UNIT SYSTEM.
   3. THE TERMINAL CONTROL UNITS ARE CONTROLLED BY SPACE THERMOSTATS.
   4. THE TERMINAL CONTROL UNITS RESPOND TO LOCAL ZONE CONTROL DEMANDS AND AUTOMATICALLY ADJUST THE AIRFLOW DISTRIBUTION ACCORDINGLY.
   5. TEMPERATURE DEMAND SCHEDULE IS DETERMINED AND PROGRAMMED BY THE OWNER.

HAI PROJECT NO. 17JL06918.036

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Submission History

No.	Description	Date
1	CODE REVIEW SET	05/03/10
2	REVISION PER FM	07/27/10
3	BID SET	10/25/10
4	FINAL BID SET	12/06/10

ENGINEERING
DESIGN
SERVICES
141 Industrial Highway
Slatersville, RI 02876
Tel (401) 765-7659
Fax (401) 765-2984

CHAFFEE BUILDING
UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island

Seal

Project Description
CHAFFEE BUILDING
Fire Protection Upgrade
University of Rhode Island
Kingston, Rhode Island

Design
Scale: AS NOTED
Drawn: TEP
Design: TEP
Review: WTM

Drawing Title
MECHANICAL:
SPECIFICATIONS

Drawing No.
M3.0

PROJECT MANUAL

Chafee Hall Fire Code Upgrades

University of Rhode Island
Kingston Campus

December 7, 2010

BTGA-0927

Owner: State of Rhode Island Board of Governors for Higher Education
301 Promenade Street, Providence, RI 02908

For the:
Office of Capital Projects
University of Rhode Island
Sherman Building, 523 Plains Rd.
Kingston, RI 02881
Attn: Mr. Paul DePace
401.874.2725

Prime: Fire Protection Engineer
Hughes Associates, Inc.
117 Metro Center Blvd, Suite 1002
Warwick, Rhode Island 02886
Attn: Timothy J. LaRose, P.E.
401-736-8992x13 phone
401-736-8929 fax

Consultant: Architect
Brewster Thornton Group Architects LLP
150 Chestnut Street
Providence, RI 02903
Attn: Mr. Nathaniel J. Ginsburg, AIA
401.861.1600 phone
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Consultant: MEP Engineer
Engineering Design Services, Inc.
141 Industrial Highway
Slatersville, RI 02876
401-765-7659 phone
401-765-2984 fax

PROJECT MANUAL

Chafee Hall Fire Code Upgrades

University of Rhode Island
Kingston Campus

December 7, 2010

BTGA-0927

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END OF DOCUMENT

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ADMINISTRATION, DIVISON OF PURCHASES
STATE OF RHODE ISLAND BOARD OF GOVERNORS
FOR HIGHER EDUCATION

INVITATION TO BID
NOTICE TO CONTRACTORS – BID NO._____

The State of Rhode Island Board of Governors for Higher Education is soliciting bids for the fire code upgrades at Chafee Social Science Center on the Kingston Campus of the University of Rhode Island, in accordance with the plans and specifications dated December 7, 2010.

SEALED PROPOSALS ADDRESSED TO THE **DIVISION OF PURCHASES,** 1 CAPITOL HILL, PROVIDENCE, R.I. 02908-5855, SHALL BE RECEIVED ON OR BEFORE THE DATE AND TIME SPECIFIED ON THE COVER OF THIS SOLICITATION. At that time they will be opened and read in public.

NOTE: Plans and specifications are available in download on the RI Division of Purchases website at www.purchasing.ri.gov (labeled with the issue date of this Solicitation Information document) Plans and Specifications may be examined at the offices of Hughes Associates, Inc, 117 Metro Center Blvd, Suite 1002, Warwick, RI, every day except Saturdays, Sundays and Holidays between the hours of 8:30 AM and 4:00 PM.

A CERTIFIED CHECK OR **BID BOND** PAYABLE TO THE STATE OF RHODE ISLAND IN AN AMOUNT EQUAL TO FIVE PERCENT (5%) OF THE PROPOSAL SHALL BE SUBMITTED WITH THE BID.

A **Performance** and **Payment Bond** equal to one hundred percent (100%) of the contract price with a surety company registered and licensed in the State of Rhode Island shall be required of the successful bidder.

This project is subject to terms, conditions and provisions of the Rhode Island General Laws Chapter 37-14.1 et. Seq, and regulations promulgated there under, which require that ten percent (10%) of the dollar value of work performed on the project be performed by minority business enterprises, and prevailing wage rates to be paid under the Contract for this project must be in accordance with those prevailing wages on file in the Rhode Island Department of Labor, Office of the Director.

A REPRESENTATIVE OF THE UNIVERSITY OF RHODE ISLAND WILL BE PRESENT FOR A PRE-BID CONFERENCE AT THE FOLLOWING PLACE AND TIME:

_____
_____
_____
_____
_____

DOCUMENT 00200 – INSTRUCTIONS TO BIDDERS

TABLE OF ARTICLES

1. DEFINITIONS
2. BIDDER'S REPRESENTATIONS
3. BIDDING DOCUMENTS
4. BIDDING PROCEDURES
5. CONSIDERATION OF BIDS
6. POST-BID INFORMATION
7. PERFORMANCE BOND AND PAYMENT BOND
8. FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

ARTICLE 1 – DEFINITIONS

1.1 Bidding Documents include the Bidding and Contract Requirements and the proposed Contract Documents. The
Bidding and Contract Requirements consist of the Invitation to Bid, Instructions to Bidders, the Bid Form, and other sample bidding and contract forms. The proposed Contract Documents consist of the Agreement Form between the Owner and the Contractor, the General Conditions, Supplementary General Conditions, Drawings, Specifications, and Addenda issued prior to execution of the Contract.

1.2 Definitions set forth in Document 00700 – General Conditions, or in other Contract Documents are applicable to the Bidding Documents.

1.3 Addenda are written or graphic instruments issued by the Prime prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications, or corrections.

1.4 A bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform Work described in the Bidding Documents as the base, to which Work may be added, or from which Work may be deleted for sums stated in Alternate Bids.

1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment or services, or a portion of the Work as described in the Bidding Documents.

1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

ARTICLE 2 – BIDDER'S REPRESENTATION

2.1 The Bidder by making a Bid represents that:

2.1.1 The Bidder has read and understands the Bidding Documents, or Contract Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, and for other portions of the Project, if any, being bid concurrently or presently under construction.

2.1.2 The Bid is made in compliance with the Bidding Documents.

2.1.3 The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed,

and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents. Claims for additional costs will not be accepted due to the Bidder's lack of knowledge of verifiable existing conditions.

2.1.4 The Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception.

ARTICLE 3 – BIDDING DOCUMENTS

3.1 COPIES

3.1.1 Bidders may obtain the bidding Documents in the form of an electronic CD in person from the office of the Rhode Island Building Code Commission, One Capitol Hill, Providence, RI. No deposit is required.

3.1.2 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the Invitation to Bid.

3.1.3 Bidders shall use complete sets of Bidding Documents in preparing Bids; neither the Owner nor the Prime assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of the Bidding Documents.

3.1.4 Copies of the Bidding Documents are made available on the above terms, only through the office of the State Building Code Commission, for the purpose of obtaining Bids on the Work. No license or grant of use is conferred by issuance of copies of the Bidding Documents.

3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

3.2.1 The Bidder shall carefully study and compare parts of the Bidding Documents with each other, and with other work being bid concurrently, or presently under construction, to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall at once report to the assigned Buyer at the RI Div. of Purchases all errors, inconsistencies or ambiguities discovered. Buyer contact information is available through the RI Purchasing website (www.purchasing.ri.gov).

3.2.2 Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the assigned Buyer at the RI Div. of Purchases at least ten days prior to the date for receipt of Bids.

3.2.3 Interpretations, corrections, and changes of the Bidding Documents will be made by Addendum. Interpretations, corrections, and changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon them.

3.3 SUBSTITUTIONS

3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

3.3.2 No substitutions will be considered prior to receipt of Bids unless a written request for approval has been received by the Prime at least ten (10) workdays prior to the date for receipt of Bids. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth such changes in other materials, equipment, or other portions of the Work including changes in the Work of other contracts that incorporation of the proposed substitution would require, shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Prime's decision of approval or disapproval of a proposed substitution shall be final.

3.3.3 If the Prime approves a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

3.3.4 No substitutions will be considered after the Contract Award unless specifically provided for in the Contract Documents.

3.4 ADDENDA

3.4.1 Addenda instructions will be posted on the RI Purchasing website. Addenda which include new documents on CD will be available at the office of the Rhode Island Building Code Commission. Smaller addenda will be available for download directly from the RI Purchasing website. Bidders are responsible for checking for addenda.

3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that Purpose.

3.4.3 Addenda will be issued no later than five (5) workdays prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids, or one which includes postponement of the date of receipt of Bids.

3.4.4 Each Bidder shall ascertain prior to submitting a Bid that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 – BIDDING PROCEDURES

4.1 PREPARATION OF BIDS

4.1.1 Bids shall be submitted on the forms included with the Bidding Documents, covered by a properly completed Div. of Purchases RIVIP Bidder Certification Cover Form. This 3-page form is generated by the registered vendor section of the RI Purchasing website. All bidders must pre-register online to generate this form. There is no fee for registration.

4.1.2 All blanks on the Bid Form shall be legibly executed in a non-erasable medium.

4.1.3 Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.

4.1.4 The signer of the Bid must initial interlineations, alterations, and erasures.

4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter “No Change”.

4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder’s refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall make no additional stipulations on the Bid Form, nor qualify the Bid in any other manner.

4.1.7 Each copy of the Bid shall state the legal name of the Bidder and the nature of legal form of the Bidder. The Bidder shall provide evidence of legal authority to perform within the jurisdiction of the Work. The person, or persons legally authorized to bind the Bidder to a Contract, shall sign each copy. A Bid by a corporation shall further indicate the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent’s authority to bind the Bidder.

4.2 BID SECURITY

4.2.1 Each Bid shall be accompanied by a Bid Security in the form and amount required if so stipulated in the Instructions to Bidders. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and will, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such a Contract or fail to furnish such bonds, if required, the amount of the Bid Security shall be forfeited to the Owner as liquidated damages, not as a penalty. The amount of the bid security shall not be forfeited to the Owner in the event the Owner fails to comply with Paragraph 6.2.3.

4.2.2 If a surety bond is required, it shall be written on AIA Document A310, Bid Bond, bound herein as part of Document 00430 – Bid Security Form, unless otherwise provided in the Bidding Documents, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.

4.2.3 The Owner will have the right to retain the bid surety of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn, or (c) all Bids have been rejected.

4.3 SUBMISSION OF BIDS

4.3.1 All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

4.3.2 All original copies of the Bid must be accompanied by an additional "public copy" that is to be available for public inspection upon the opening of the Bid. Any bid or proposal in excess of one million ($1,000,000) dollars which does not include a copy for public inspection shall be deemed to be non-responsive and will not be considered. For further information, please see R.I. Gen. Laws Section § 37-2-18 (P.L. 221) http://www.rilin.state.ri.us/PublicLaws/law10/law10221.htm and Purchasing Rules & Regulations amendment at http://www.purchasing.ri.gov/Notices2.aspx.

4.3.3 Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date for receipt of Bids will be returned unopened.

4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

4.3.5 Oral, telephonic, facsimile, or other electronically transmitted Bids will not be considered.

4.4 MODIFICATION OR WITHDRAWAL OF BID

4.4.1 A Bid may not be modified, withdrawn, or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting a Bid.

4.4.2 Prior to the time and date designated for the receipt of Bids, a submitted Bid may be modified or withdrawn by notice to the party receiving the Bids at the place designated for the receipt of Bids. Such notice shall be in writing over the signature of the Bidder. Written confirmation over the signature of the Bidder shall be received, and date- and time-stamped by the receiving party on or before the time and date set for receipt of Bids. A change shall be so worded as to not reveal the amount of the original Bid.

4.4.3 Withdrawn Bids may be resubmitted up to the time and date designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

4.4.4 Bid Security, if required, shall be in an amount sufficient for the Bid as resubmitted.

ARTICLE 5 – CONSIDERATION OF BIDS

5.1 OPENING OF BIDS

5.1.1 At the discretion of the Owner, if stipulated in the Advertisement, or the Invitation to Bid, the properly identified Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids may be made available to Bidders.

5.2 REJECTION OF BIDS

5.2.1 The Owner shall have the right to reject any or all Bids. A Bid not accompanied by a required Bid Security, or other data required by the Bid Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

5.3 ACCEPTANCE OF BID (AWARD)

5.3.1 It is the intent of the Owner to award a Contract to the lowest Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgement, is in the Owner's own best interests.

5.3.1.1 Minority Business Enterprises: Pursuant to the provisions of Title 37 Chapter 14.1 of the General Laws, the State reserves the right to apply additional consideration to offers, and to direct awards to Bidders other than the responsive Bid representing the lowest price, where:

.1 the offer is fully responsive to the terms and conditions of the request;

.2 the offer is determined to be within a competitive range (not to exceed 5 percent higher than the lowest responsive price offer) for the product or service;

.3 the firm making the offer has been certified by the State of Rhode Island Department of Economic Development to be a small business concern meeting criteria established to be a Minority Business Enterprise.

5.3.2 The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 – POST BID INFORMATION

6.1 CONTRACTOR'S QUALIFICATION STATEMENT

6.1.1 Bidders to whom award of Contract is under consideration shall submit to the Prime, upon request, a properly executed Qualification Statement, a copy of which is bound herein in Document 00450 - Bidder's Qualification Form, unless such a statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

6.2 SUBMITTALS

6.2.1 The Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, after notification of selection for the award of a Contract, furnish to the Owner through the Prime in writing:

.1 a designation of the Work to be performed with the Bidder's own forces;

.2 names of manufacturers, products, and the suppliers of principal items or systems of materials and equipment proposed for the Work

.3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work; and

.4 names of persons and dollar value of sub-contract Work to be performed by Minority Business Enterprises in accordance with the State's requirement that 10 percent of the dollar value of the Work performed against

contracts for construction exceeding $5,000.00 shall be performed by Minority Business Enterprises where it has been determined that sub-contract opportunities exist and where certified Minority Business Enterprises are available. A Bidder may count towards its MBE, DBE, or WBE goals 60 percent of its expenditures for materials and supplies required and obtained from MBE, DBE, or WBE regular manufacturers. Awards of this type shall be subject to approval by the Director of Administration of a Sub-Contracting Plan submitted by the Bidder receiving the Award.

6.2.2 The Bidder will be required to establish to the satisfaction of the Owner and the Prime the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

6.2.3 Prior to the execution of the Contract, the Prime will notify the Bidder in writing if either the Owner or the Prime, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or the Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, (1) withdraw the Bid, or (2) submit an acceptable substitute person or entity with an adjustment in the Base Bid, or Alternate Bid, to cover the difference in cost occasioned by such substitution. The Owner may accept the adjusted Bid price, or disqualify the Bidder. In the event of either withdrawal or disqualification, Bid Security will not be forfeited.

6.2.4 Persons and entities proposed by the Bidder and to whom the Owner and Prime have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and the Prime.

ARTICLE 7 – PERFORMANCE BOND AND PAYMENT BOND

7.1 BOND REQUIREMENTS

7.1.1 The Bidder shall furnish bonds covering the faithful performance of the Contract and Payment of all obligations arising thereunder. Bonds may be secured through a federally listed surety company licensed to do business in the State of Rhode Island. Their costs shall be included in the Bid.

7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of Bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

7.1.3 If the Owner requires that bonds be secured from other than the Bidder's usual sources, changes in cost will be adjusted as provided in the Contract Documents.

7.2 TIME OF DELIVERY AND FORM OF BONDS

7.2.1 The Bidder shall deliver the required bonds to the Owner prior to the date of execution of the Contract.

7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond, a copy of which is bound herein in Document 00610 – Performance Bond; Payment Bond. Both bonds shall be written in the amount of the Contract Sum.

7.2.3 The bonds shall be dated before the date of the Contract.

7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

ARTICLE 8 – FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

8.1 Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum. A copy of the required Agreement form is bound herein in Document 00520 – Agreement Form.

END OF DOCUMENT

DOCUMENT 00410 - BID FORM

Date: _____

To: Department of Administration
Division of Purchases
One Capitol Hill, Providence, RI 02908

Project: Chaffee Hall Fire Code Upgrades
University of Rhode Island, Kingston Campus

Submitted by: _____
(include address, tel. & FAX nos., _____
and license no. if applicable) _____

1. BID
Having examined the Place of The Work and all matters referred to in the Instructions to Bidders, and in the Contract Documents prepared by Hughes Associates, Inc. (Prime) with Brewster Thornton Group Architects LLP for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

_____($ _____.)
(written, and numerically)

- We have included the specified cash and contingency allowances from Section 01200 in Division 1 of the Specifications in the above Bid sum as follows:

Contingency Allowance,	$250,000
Signage Allowance	10,000
Equipment Relocation/Storage	20,000
Total Allowances	$280,000

- We have included the required Bid security as required by the Invitation to Bid in the above Bid Sum. We have included 100% Payment and Performance Bonds in the above Bid Sum.
- We have included the original Bid and an additional **"public copy"** as required by Document 00200 – Instructions to Bidders.
- We understand that this project contains funding through the American Recovery and Reinvestments Act of 2009 and agree to comply with all applicable terms and conditions as outlined in Document 00710 – Supplemental General Conditions – ARRA. We agree to provide the documentation in accordance with URI's requests.

2. ALTERNATES
Our proposals to modify the above Bid as identified by numbered Alternatives specified in Section 01200 in Division 1 of the Specifications are as follows:

Alternate #1 – Lobby Finishes
Add _____($_____)

Alternate #2 – Front Projection (including $5,000 allowance)

Add _____($_____)

Alternate #3 – Lecture Hall Finishes

Add _____($_____)

3. BREAK OUT PRICES

For the purposes of proper capitalization of building costs, please provide a break-out of the bid cost for the following work items:

Sprinkler System in low-rise first floor area - _____($_____)

Fire Alarm System in low-rise first floor area - _____($_____)

4. UNIT PRICES

Per Section 01200, provide unit prices/SF or each as noted for the following items:

Suspended Ceiling grid system Type A installed - _____($_____/SF)

Suspended Ceiling grid system Type B installed - _____($_____/SF)

Light Fixture Type F1 installed- _____($_____/each)

4. ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for sixty days from the bid closing date. If this bid is accepted by the Owner within the time period stated above, we will:

- Execute the Agreement subject to compliance with required State regulatory agency approvals as described in the Invitation to Bid.
- Furnish the required bonds in compliance with amended provisions of the Instructions to Bidders.
- Commence work within seven days after receipt of a Purchase Order from URI Purchasing.

If this bid is accepted within the time stated, and we fail to commence the Work, or we fail to provide the required Bonds, the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

5. CONTRACT TIME

If this Bid is accepted, we will achieve Substantial Completion of the Work by September 2, 2011. We have included all premium time or additional staffing required to accommodate this schedule.

<u>Liquidated Damages, Time is of the Essence:</u>

If we fail to achieve certification of Substantial Completion at the expiration of the agreed upon Contract Time indicated above, we acknowledge that we will be assessed Liquidated Damages for each calendar day the project continues to be in default of Substantial Completion, as follows:

$ 1,000.00 per calendar day.

6. REQUIREMENT FOR LICENSE NUMBER

In compliance with the requirements of Rhode Island General Law, Section 5-65-23, my Rhode Island license number for the work to be performed by this firm as prime contractor is:

LICENSE NUMBER: _____ .

7. ADDENDA

The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.

Addendum No. 1, dated _____.

Addendum No. 2, dated _____.

Addendum No. 3, dated _____. , etc.

8. BID FORM SIGNATURE(S)

_____
(Bidder's name)

By: _____

Title: _____

Corporate Seal:

END OF DOCUMENT

DOCUMENT 00430 - BID SECURITY FORM

Know all men by these presents, that we _____
(insert name and address or legal title of Contractor)
as Principal, hereinafter called the Principal, and
_____
_____
(insert name and address or legal title of surety)
a corporation duly organized under the laws of the State of _____ as Surety, hereinafter called the Surety, are held and firmly bound unto the State of Rhode Island Board of Governors of Higher Education, 80 Washington Street, Providence, RI 02903 as Obligee, hereinafter called the Obligee, in the sum of _____($_____) for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the Principal has submitted a bid for
_____
_____
_____
(insert full name, address and description of project)

Now, therefore, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this _____ day of _____,

_____	_____
Principal	Title
_____	_____
Witness	Title
_____	_____
Witness	Surety

END OF DOCUMENT

DOCUMENT 00450 - BIDDER'S QUALIFICATION FORM

This Bidder's Qualification Form is included as an integral part of the Bid documents, for use in evaluating the qualifications of Contractors.

Failure of the announced low numerical bidder to respond with relevant information to the stated requirements of this Document 00450 may disqualify that bidder from further consideration as a bidder on this Project.

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.

SUBMITTED TO: State of Rhode Island, Department of Administration, Division of Purchases

ADDRESS: One Capitol Hill, Providence, RI 02908

SUBMITTED BY:

NAME:

ADDRESS:

PRINCIPAL OFFICE:

___ Corporation

___ Partnership

___ Individual

___ Joint Venture

___ Other

NAME OF PROJECT:

TYPE OF WORK (file separate form for each classification of work)

___General Construction

___ HVAC

___ Plumbing

___ Electrical

___ Other(please specify)

1. ORGANIZATION

How many years has your organization been in business as a Contractor?
How many years has your organization been in business under its present name?

Under what other or former names has your organization operated?

If your organization is a corporation, answer the following:

Date of incorporation:
State of incorporation:
President's name:
Vice-president's name(s):

Secretary's name:
Treasurer's name:

If your organization is a partnership, answer the following:

Date of organization:
Type of partnership(if applicable):
Name(s) of general partners:

If your organization is individually owned, answer the following:

Date of organization:
Name of owner:

If the form of your organization is other than those listed above, describe it and name the principals:

2. LICENSING

List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable:

List jurisdictions in which your organization's partnership or trade name is filed.

3. EXPERIENCE

List the categories of work that your organization normally performs with its own forces.

Claims and suits. (If the answer to any of the questions below is YES, please attach details)

Has your organization ever failed to complete any work awarded to it?

Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last 5 years?

Within the last 5 years, has any officer or principal or your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is YES, please attach details).

On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.

State total worth of work in progress and under contract.

On a separate sheet, list the major projects your organization has completed in the past 5 years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.

State average annual amount of construction work performed during the past 5 years.

On a separate sheet, list the construction experience and present commitments of the key individuals of your organization.

4. REFERENCES

Trade References:

Bank References:

Surety:

Name of bonding company:

Name and address of agent:

5. FINANCING

Financial Statement

Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

Current assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory, and prepaid expenses);

Net fixed assets;

Other assets;

Current liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries, and accrued payroll taxes);

Other liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

Name and address of firm preparing attached financial statement, and date thereof:

Is the attached financial statement for the identical organization named on Page 1?

If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidiary).

Will the organization whose financial statement is attached act as guarantor of the contract for construction?

6. SIGNATURE

6.1 Dated at this day of

Name of Organization:

By:

Title:

6.2 Mr. or Mrs.

being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

Subscribed and sworn before me this day of

Notary Public:

My Commission Expires:

END OF DOCUMENT

DOCUMENT 00520 - AGREEMENT FORM

Agreement made as of the day of in the year of
(In words, indicate day, month and year)

Between the Owner:
(Name, address and other information)

And the Contractor:
(Name, address and other information)

The Project is:
(Name and location)

The Prime is:
(Name, address and other information)

The Owner and Contractor agree as follows.

ARTICLE 1 THE CONTRACT DOCMENTS

1.1 The Contract Documents consist of this Agreement, the General Conditions, Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement; these form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract, together with the Performance Bond, and Payment Bond, represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 8.

ARTICLE 2 THE WORK OF THIS CONTRACT

2.1 The Contractor shall fully execute the Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

Date will be fixed by a Notice to Proceed.

If, prior to the commencement of the Work, the Owner requires time to file mortgages, mechanic's liens and other security interests, the Owner's time requirement shall be as follows:

3.2 The Contract Time shall be measured from the date of commencement.

3.3 The Contractor shall achieve Substantial Completion of the entire Work as follows:

By Sept. 2, 2011,

subject to adjustments of this Contract Time as provided in the Contract Documents.

Liquidated Damages: $ 1,000.00 per calendar day.

ARTICLE 4 CONTRACT SUM

4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be ($), subject to additions and deductions as provided in the Contract Documents.

4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If decisions on other alternates are to be made by the Owner subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

4.3 Unit prices, if any, are as follows:
(Include list on unit prices here).

ARTICLE 5 PAYMENTS

5.1 PROGRESS PAYMENTS

5.1.1 Based upon Applications for Payment submitted to the Prime by the Contractor and Certificates for Payment issued by the Prime, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

5.1.3 Following receipt, and final signed approval by the Owner through the Prime, of an Application for Payment that has been previously reviewed by both parties for accuracy, the Owner shall make payment within the next 30 day working period.

5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor, and approved in writing by the Prime and Owner, in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Architect and the Owner may require. This schedule, unless objected to by the Prime, or the Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment.

5.1.5 Applications for Payment shall set forth the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

5.1.6 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

5.1.6.1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the approved schedule of values, less retainage of 10%. Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Paragraph 7.3.8 of SECTION 00700-GENERAL CONDITIONS;

5.1.6.2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance in writing by the Owner, suitably stored off site at a location agreed upon in writing), less retainage of 10%;

5.1.6.3 Subtract the aggregate of previous payments made by the Owner;

5.1.6.4 Subtract amounts, if any, for which the Prime has withheld or nullified a Certificate for Payment as provided in Paragraph 9.5 of SECTION 00700-GENERAL CONDITIONS; and

5.1.6.5 Subtract amounts, if any, being held by the Owner as provided for in the Contract Documents.

5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

5.1.7.1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Prime shall determine for incomplete or defective work, or both, for unsettled claims; and for Warranty Inspection Retainage, as provided for in the Contract Documents.

5.1.7.2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Paragraph 9.10.3 of SECTION 00700-GENERAL CONDITIONS.

5.1.8 Reduction or limitation of retainage, if any, shall be as follows:

See SECTION 00700-GENERAL CONDITIONS, Subparagraph 9.3.1.3 and SECTION 01200-PRICE AND PAYMENT PROCEDURES.

5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

5.2 FINAL PAYMENT

5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when:

5.2.1.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 12.2.2 of SECTION 00700-GENERAL CONDITIONS, and to satisfy other requirements, if any, which extend beyond final payment; and

5.2.1.2 a final Certificate of Payment has been issued by the Prime.

5.2.2 The Owner's final payment to the Contractor shall be made no later than (1) when the Contractor has fully performed the Work of the Contract as provided in Subparagraph 5.2.1 above, and (2) 30 days after the issuance of the Prime's final Certificate of Payment.

ARTICLE 6 TERMINATION OR SUSPENSION

6.1 The Contract may be terminated by the Owner of the Contractor as provided in Article 14 of SECTION 00700-GENERAL CONDITIONS.

6.2 The Work may be suspended by the Owner as provided in Article 14 of SECTION 00700-GENERAL CONDITIONS.

ARTICLE 7 MISCELLANEOUS PROVISIONS

7.1 Where reference is made in this Agreement to a provision of SECTION 00700-GENERAL CONDITIONS another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

7.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due as proscribed by the State of Rhode Island Prompt Payment Act.

7.3 The Owner's representative is:

7.4 The Contractor's representative is:

7.5 In the absence of an emergency, neither the Owner's nor the Contractor's representative shall be changed without 10 days written notice to the other party.

7.6 If the Contractor fails to achieve Final Completion of the Project by the date established in SECTION 00410-BID FORM, in the Article entitled 'CONTRACT TIME', due to inaction or negligence on the part of the Contractor or their agents, then the Owner reserves the right to complete the Work in accordance with SECTION 00700-GENERAL CONDITIONS, Paragraph 4.2-Owner's Right to Carry Out the Work.

ARTICLE 8 ENUMERATION OF CONTRACT DOCUMENTS

8.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated as follows:

8.1.1 The Agreement is this executed SECTION 00520-AGREEMENT FORM.

8.1.2 The General Conditions are SECTION 00700-GENERAL CONDITIONS.

8.1.3 The other Conditions of the Contract are those contained in the Project Manual, and are as listed in SECTION 00010-TABLE OF CONTENTS.

8.1.4 The Specifications are those contained in the Project Manual, and are as listed in SECTION 00010-TABLE OF CONTENTS.

8.1.5 The Drawings are as listed in SECTION 00015-LIST OF DRAWINGS.

8.1.6 The Addenda, if any, are as follows:

See SECTION 00900-ADDENDA AND MODIFICATIONS

Portions of Addenda relating to Bidding Requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this ARTICLE 8.

8.1.7 Other documents, if any, forming part of the Contract Documents are as follows:

8.1.7.a: Sexual Harassment Policy
8.1.7.b: Manual for Construction Project Safety Procedures
8.1.7.c: Hot Work Procedure
8.1.7.d: Managing Fire Protection System Impairment
8.1.7.e: URI Water System Regulations/Policies

This Agreement is entered into as of the day and year first written above and is executed in at least three original copies, of which one is to be delivered to the Contractor, one to the Prime for use in the administration of the Contract, and the remainder to the Owner.

_____	_____
OWNER (signature)	CONTRACTOR (signature)
_____	_____
(Printed name and title)	(Printed name and title)

END OF DOCUMENT

DOCUMENT 00610 - PERFORMANCE BOND; PAYMENT BOND

PERFORMANCE BOND

CONTRACTOR (Name and Address):

SURETY(Name and Address):

OWNER: State of Rhode Island Board of Governors for Higher Education, 310 Promenade Street, Providence, RI 02908

CONSTRUCTION CONTRACT:
Date:
Amount:
Description(Name and Location):

BOND
Date(Not earlier than Construction Contract Date):
Amount:
Modifications to this Bond('None' or 'See Last Page'):

CONTRACTOR AS PRINCIPAL		SURETY	
Company:	(corporate seal)	Company:	(corporate seal)
Signature_____		Signature_____	
Name and title:		Name and title:	

(Any additional signatures appear on last page)

(FOR INFORMATION ONLY – Name, address and telephone)

AGENT OR BROKER:

OWNER'S REPRESENTATIVE:

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.

3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:

The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and

The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and

The Owner has agreed to pay the balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.

4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or

Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or

Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or

Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefore to the Owner; or

Deny liability in whole or in part and notify the Owner citing reasons therefore.

5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment

tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:

The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4;

Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

7. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. Not right of action shall accrue on this Bond to any person or entity other than the Owner its heirs, executors, administrators or successors.

8. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor eased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here form and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. DEFINITIONS

Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		SURETY	
Company:	(corporate seal)	Company:	(corporate seal)
Signature_____		Signature_____	
Name and title:		Name and title:	

PAYMENT BOND

CONTRACTOR (Name and Address):

SURETY(Name and Address):

OWNER: State of Rhode Island Board of Governors for Higher Education, 310 Promenade Street, Providence, RI 02908

CONSTRUCTION CONTRACT:
Date:
Amount:
Description(Name and Location):

BOND
Date(Not earlier than Construction Contract Date):
Amount:
Modifications to this Bond('None' or 'See Last Page'):

CONTRACTOR AS PRINCIPAL
Company: (corporate seal)

SURETY
Company: (corporate seal)

Signature_____
Name and title:

Signature_____
Name and title:

(Any additional signatures appear on last page)

(FOR INFORMATION ONLY – Name, address and telephone)

AGENT OR BROKER:

OWNER'S REPRESENTATIVE:

1. The Contractor and the Surety, jointly and severally bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.

2. With respect to the Owner, this obligation shall be null and void if the Contractor:

Promptly makes payment, directly or indirectly, for all sums due Claimants, and

Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suites by any person or entity whose claim, demand, lien or suit is for the payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

4. The Surety shall have no obligation to Claimants under this Bond until:

Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

Claimants who do not have a direct contract with the Contractor:

Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and

Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and

Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.

6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

Pay or arrange for payment of any undisputed amounts.

7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the contractor furnishing and the Owner accepting this bond, they agree that all funds earned by the contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. The Surety hereby waives notice of any change, including changes of time, to the construction Contract or to related subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Contraction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		SURETY	
Company:	(corporate seal)	Company:	(corporate seal)
Signature_____		Signature_____	
Name and title:		Name and title:	

END OF DOCUMENT

DOCUMENT 00614 - WAIVER OF LIEN FORM

U. R. I. Document Waiver of Lien Form is included, following this page, as an integral part of the Contract documents. A copy with completed information must be submitted with the second, and each succeeding Application for Payment.

WAIVER OF LIEN FORM - Material or Labor

UNIVERSITY OF RHODE ISLAND

Construction Project Title: **Chafee Fire Code Upgrades**

General Contractor: _____

Subcontractor/Supplier: _____

DUNS No.: _____

Application and Certificate for Payment No: _____
(prior to Application accompanying this form)

Schedule of Values Line Item No.: _____

DESCRIPTION OF WORK Heading: _____

Total payment Received, Including Current Payment: $ _____

The undersigned Representative of the above Subcontractor/Supplier has been contracted by the above General Contractor to furnish materials, or labor, or both, as included in the approved Schedule of Values under the Line Item No.___, and DESCRIPTION OF WORK heading indicated above, for the Construction Project listed above.

The undersigned acknowledges receipt of payment, under this Line Item No., and DESCRIPTION OF WORK heading, and hereby waives and releases any and all lien, or claim or right to lien, on the Construction Project listed above, and premises, under the statutes of the State of Rhode Island, relating to Mechanics Liens, on account of materials, or labor, or both, furnished, or which may be furnished, by the undersigned to, or on account of, the above numbered Application and Certificate for Payment.

Signed on this _____ day of _____, 20__.

_____ _____
(signature) (firm name)

END OF DOCUMENT

DOCUMENT 00700 - GENERAL CONDITIONS

TABLE OF ARTICLES

I. GENERAL PROVISIONS
2. OWNER
3. CONTRACTOR
4. ADMINISTRATION OF THE CONTRACT
5. SUBCONTRACTORS
6. CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7. CHANGES IN THE WORK
8. TIME
9. PAYMENTS AND COMPLETION
10. PROTECTION OF PERSONS AND PROPERTY
11. INSURANCE AND BONDS
12. UNCOVERING AND CORRECTION OF WORK
13. MISCELLANEOUS PROVISIONS
14. TERMINATION OR SUSPENSION OF THE CONTRACT

ARTICLE 1 - GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Prime. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of Addenda relating to bidding requirements) .

1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. Nothing in the Contract Documents shall be construed to create a contractual relationship of any kind (1) between the Prime and Contractor, (2) between the Owner and a Subcontractor or Sub-subcontractor, (3) between the Owner and Prime or (4) between any persons or entities other than the Owner and Contractor. The Prime shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Prime's duties.

1.1.3 THE WORK

The term "Work" means the construction services required by the Contract Documents, including all labor necessary to produce such construction, and all materials and equipment incorporated, or to be incorporated, therein. The Work may constitute the whole or a part of the Project.

1.1.4 THE PROJECT

The Project is the total construction described in the Agreement of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

1.1.7 THE PROJECT MANUAL
The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

1.2.1.1 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

1. The Agreement

2. Addenda, with those of a later date having precedence over those of an earlier date.

3. The General Conditions of the Contract for Construction

.4 Drawings and Specifications.

1.2.1.2 All Work mentioned in contract Documents shall be performed by the Contractor as part of this Contract unless it is specifically indicated in the Contract Documents that such Work is to be done by others.

1.2.1.3 In the event of a conflict or inconsistency in or among the Contract documents, or between the Contract Documents and applicable codes in effect at the time the Contract Sum is bid or negotiated, the Contractor shall unless directed otherwise in writing by the Owner provide the greatest quantity, highest quality, highest degree of safety, and most stringent material, equipment or Work.

1.2.1.4 The Contractor shall refer, and shall direct all Subcontractors to refer, to all of the Drawings, including those showing primarily the Work of the Mechanical, Electrical, and other specialized trades, and to all Sections of the Specifications. with particular attention to the Sections of Division 1 - General Requirements, and shall perform all Work reasonably inferable therefrom as being necessary to produce the indicated results.

1.2.1.5 Sections of Division 1 - General Requirements govern the execution of all Sections of the Specifications..

1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

1.2.3 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.3 CAPITALIZATION

1.3.1 Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document or (3) the titles of other documents published by the American Institute of Architects.

1.4 INTERPRETATION

1.4.1 In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.5 EXECUTION OF CONTRACT DOCUMENTS

1.5.1 The Contract Documents shall be signed by the Owner and Contractor.

1.5.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

1.6 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

1.6.1 The Drawings, Specifications and other documents, including those in electronic form, prepared by the Prime and the Prime's consultants, describe the Work to be executed by the Contractor. Unless the Owner fails to pay the Prime, the Owner shall be deemed the owner of the Drawings, Specifications and other documents and shall have and retain all rights therein. In the event the Owner is adjudged to have failed to pay the Prime, ownership of such Drawings, Specifications and other documents, and all rights therein, shall revert to the Prime and its consultants. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Prime or the Prime's consultants. All copies of such Drawings, Specifications and other documents, except the Contractor's record set, shall be returned or suitably accounted for to the Prime, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Prime and the Prime's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Prime and the Prime's consultants appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Prime and the Prime's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Prime's or Prime's consultants' copyrights or other reserved rights.

ARTICLE 2 - OWNER

2.1 GENERAL

2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have authority to represent the Owner with respect to all matters requiring the Owner's representation. Except as otherwise provided in Subparagraph 4.2.1, the Prime does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 The Owner shall furnish surveys describing physical characteristics, and utility locations for the site of the Project. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

2.2.2 Information or services required of the Owner by the Contract Documents shall be furnished by the Owner with reasonable promptness.

2.2.3 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, an electronic copy of Drawings and Project Manuals necessary for execution of the Work.

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents or fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Constructive Change Directive shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Prime's additional services and expenses made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Prime.

ARTICLE 3 - CONTRACTOR

3.1 GENERAL

3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.

3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Prime in the Prime's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 Since the Contract Documents are complementary, before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Subparagraph 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. Any errors, inconsistencies or omissions in the Contract Documents discovered by the Contractor shall be reported promptly to the Prime and the Owner as a request for information in such form as the Prime or Owner may require.

3.2.2 Any design errors or omissions noted by the Contractor during this review shall be reported promptly to the Architect and the Owner in writing. While the Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations, but any nonconformity discovered by or made known to the Contractor shall be reported promptly to the Prime and the Owner in writing.

3.2.3 If the Contractor believes that additional cost or time is involved because of clarifications or instructions issued by the Prime in response to the Contractor's notices or requests for information pursuant to Subparagraphs 3.2.1 and 3.2.2, the Contractor shall make Claims as provided in Subparagraphs 4.3.6 and 4.3.7. If the Contractor fails to perform the obligations of Subparagraphs 3.2.1 and 3.2.2, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. The Contractor shall not be liable to the Owner or Prime for damages resulting from errors, inconsistencies or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents unless the Contractor recognized, or in the

exercise of ordinary care, reasonably should have recognized, such error, inconsistency, omission or difference and failed to report it in writing to the Prime and the Owner.

3.2.4 The Contractor shall give the Prime timely notice of any additional Drawings, Specifications, or instructions required to define the Work in Greater detail, or to permit the proper progress of the Work.

3.2.5 The Contractor shall not proceed with any Work not clearly and consistently defined in detail in the Contract Documents, but shall request additional Drawings, Specifications. or instructions from the Architect as provided in Subparagraph 3.2.4. if the Contractor proceeds with such Work without obtaining further Drawings. Specifications, or instructions, the Contractor shall correct the Work incorrectly performed at the Contractor's own expense.

3.2.6 Lack of indication on the Drawings, and in the Specifications, of items obviously needed to properly perform the Work of the Project, such as attachments, bolts, hangers, and other fastening devices, shall not relieve the Contractor from furnishing and installing these items.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract

3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor, the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing or supplying the Work, or portions thereof, for or on behalf of the Contractor or any of its Subcontractors.

3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

3.4 LABOR AND MATERIALS

3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. The word "provide" shall mean furnish and install complete, including connection, unless otherwise specified.

3.4.2 The Contractor may make substitutions only with the consent of the Owner, after evaluation by the Prime and in accordance with a Change Order.

3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall also enforce strict adherence by the Contractor’s employees and Subcontractors on site with the URI Sexual Harassment Policies.

3.4.4 The Contractor shall not permit unlicensed persons to perform Work for which licensing is required, or to operate equipment for which licensing to operate is required by the State of Rhode Island. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

3.5 WARRANTY

3.5.1 The Contractor warrants to the Owner and Prime that materials and equipment furnished under the Contract will be new and of recent manufacture, unless otherwise specified. and that all Work will be of good quality, non-hazardous to physical health and to the environment, asbestos free. free from faults and defects, and in conformance with the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear

and tear and normal usage. If required by the Prime, or the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.6 TAXES

3.6.1 The Owner is exempt from payment of sales taxes for materials directly incorporated into the Work of this Project. Refer to requirements set forth in the General Requirements (Division 1 of the Specifications).

3.7 PERMITS, FEES AND NOTICES

3.7.1 The Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received or, negotiations concluded, and for necessary approvals, easements. assessments, and charges required for construction, use, or occupancy of permanent structures or of permanent changes in existing facilities.

3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the Work.

3.7.3 While it is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Prime and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

3.7.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Prime and Owner, the Contractor shall assume responsibility for correction of such Work and shall bear the costs attributable to correction.

3.8 ALLOWANCES

3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents:

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances;

.3 the Contractor shall carry in the Contract Sum, but not in the Allowances, all Bond costs, permit and other fees, etc. contemplated for the amount of the Allowances;

.4 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Clause 3.8.2.1 and (2) changes in Contractor's costs and other expenses under Clause 3.8.2.2.

3.8.3 Materials and equipment under an allowance shall be selected by the Owner in sufficient time to avoid delay in the Work.

3.9 SUPERINTENDENT (*see 00700-41, for alternate: 3.9 PROJECT MANAGER AND SUPERINTENDENT)*

3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall be satisfactory to the Owner. So long as the superintendent remains employed by the Contractor or any related entity, the superintendent shall not be replaced without the Owner's prior written consent. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

3.9.2 The superintendent shall not work with tools, or perform actual trades Work, but shall be dedicated to the on site management of the Project. The Contractor shall provide additional staff as required for Project Management, or as may be specified in the Specifications.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.10.1 The Contractor, within 20 working days of being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at least monthly as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

3.10.2 The Contractor shall prepare and keep current, for the Prime's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals.

3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Prime.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

3.11.1 The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Prime and shall be delivered to the Prime for submittal to the Owner upon completion of the Work.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

3.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Prime is subject to the limitations of Subparagraph 4.2.6. Informational submittals upon which the Prime is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Prime without action.

3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Prime Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Prime without action.

3.12.6 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Prime.

3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Prime's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Prime in writing of such deviation at the time of submittal and (l) the Prime has, with prior approval of the Owner, given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Prime's approval thereof.

3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Prime on previous submittals. In the absence of such written notice the Prime's approval of a resubmission shall not apply to such revisions.

3.12.10 The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Prime will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others; shall bear such professional's written approval when submitted to the Prime. The Owner and the Prime shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Owner and Prime have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Subparagraph 3.12.10, the Prime will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

3.13 USE OF SITE

3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.14 CUTTING AND PATCHING

3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.15 CLEANING UP

3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16 ACCESS TO WORK

3.16.1 The Contractor shall provide the Owner and Prime and Prime’s consultants access to the Work in preparation and progress wherever located.

3.17 ROYALTIES, PATENTS AND COPYRIGHTS

3.17.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner and Prime harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Prime. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such belief is promptly furnished in writing to the Prime and the Owner.

3.18 INDEMNIFICATION

3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Prime, Prime's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph 3. 18.

3.18.2 In claims against any person or entity indemnified under this Paragraph 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Subparagraph 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

4.1 PRIME

4.1.1 The Prime is the person lawfully licensed to practice architecture or engineering or an entity lawfully practicing architecture or engineering identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Prime" means the Prime or the Prime's authorized representative.

4.1.2 Duties, responsibilities and limitations of authority of the Prime as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Prime. Consent shall not be unreasonably withheld.

4.1.3 If the employment of the Prime is terminated, the Owner shall employ a new Prime against whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the former Prime.

4.2 PRIME'S ADMINISTRATION OF THE CONTRACT

4.2.1 The Prime will provide administration of the Contract as described in the Contract Documents, and will be an Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the one-year period for correction of Work described in Paragraph 12.2. The Prime will advise and consult with the Owner. The Prime will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

4.2.2 The Prime, as a representative of the Owner, will visit the site at intervals appropriate to the stage of the Contractor's operations or as otherwise agreed by the Owner and the Prime (1) to become familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine if the Work is being performed in accordance with the Contract Documents.

4.2.3 Communications Facilitating Contract Administration: Except as otherwise provided in the Contract Documents, the Owner and Contractor shall initially endeavor to communicate with each other through the Prime about matters arising out of or relating to the Contract. Communications by and with the Prime's consultants shall be through the Prime. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

4.2.4 Based on the Prime's evaluations of the Work as provided in Subparagraph 4.2.2 and the data comprising the Contractor's Applications for Payment, the Prime will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

4.2.5 The Prime will reject Work that does not conform to the Contract Documents. Whenever the Prime considers it necessary or advisable, the Prime will have authority to require inspection or testing of the Work in accordance with Subparagraphs 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Prime nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Prime or the Owner to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

4.2.6 The Prime will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Prime's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Prime's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Prime's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Paragraphs 3.3, 3.5 and 3.12. The Prime's

review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Prime, of any construction means, methods, techniques, sequences or procedures. The Prime's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

4.2.7 The Prime will prepare Change Orders and Construction Change Directives, and may, with prior approval of the Owner, authorize minor changes in the Work as provided in Paragraph 7.4.

4.2.8 The Prime will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a Final Certificate for Payment upon compliance with the requirements of the Contract Documents.

4.2.9 If the Owner and Prime agree, the Prime will provide one or more project representatives to assist in carrying out the Prime's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

4.2.10 The Prime will initially interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Prime's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required of the Prime shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the Prime to furnish such interpretations until 15 days after written request is made for them.

4.2.11 Initial interpretations and decisions of the Prime will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such initial interpretations and decisions, the Prime will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of initial interpretations or decisions so rendered in good faith.

4.2.12 The Prime's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

4.3 CLAIMS AND DISPUTES

4.3.1 Definition: A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims shall be initiated by written notice and shall be expressly stated to be a claim under this Paragraph 4.3. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.3.2 Time Limits on Claims: Claims by either party shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims shall be initiated by written notice to the Prime and the other party.

4.3.3 Continuing Contract Performance: Pending final resolution of a Claim except as otherwise agreed in writing or as provided in Subparagraph 9.7.1 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.3.4 Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Prime will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the

conditions at the site are not materially different from those indicated in the Contract Documents and do not justify changes in the terms of the Contract, the Prime shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such findings must be made within 21 days after the Prime has given notice of the finding. If the conditions encountered are materially different, the Contract Sum and Contract Time shall be equitably adjusted, but if the Owner and Contractor cannot agree that the conditions are materially different or cannot agree on an adjustment in the Contract Sum or Contract Time, the matter shall subject to further proceedings pursuant to Paragraph 4.4.

4.3.5 Claims for Additional Cost: If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Such notice shall include, to the extent then known by Contractor, full details and substantiating data to permit evaluation by the Owner and Prime. If further, or other, information subsequently becomes known to the Contractor, it shall be promptly furnished to the Owner and the Prime in writing. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.6.

4.3.6 If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Prime, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Prime, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with this Paragraph 4.3. Failure to file any such Claim in accordance with this Paragraph 4.3 shall constitute a waiver thereof.

4.3.7 Claims for Additional Time. If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

4.3.7.1 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions at the Project site were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

4.3.8 Injury or Damage to Person or Property: If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 2 l days after discovery. The notice shall provide sufficient time to enable the other party to investigate the matter.

4.3.9 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

4.3.10 Waiver of Claims: The Contractor waives Claims against the Owner for principal office expenses including the compensation of personnel stationed there, except those directly assigned to the Project to the extent of such assignment.

4.3.11 In no event shall a Contractor have a claim for damages against the Owner, the Prime, or the Owner’s Project Manager, on account of a delay in the commencement of the Work, and/or a hindrance, delay, or suspension of a portion thereof, whether such delay is caused by the Owner, the Prime, or the Owner’s Project Manager, or otherwise, except as provided for under State of Rhode Island General Laws. The Contractor’s sole remedy shall be extension of time to complete the project.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

4.4.1 Decision of the Prime: Claims, including those alleging an error or omission by the Prime but excluding those arising under Paragraphs 10.3 through 10.5, may, upon request of both the Owner and the Contractor, be referred initially to the Prime for a recommendation.

4.4.2 The Prime will review all Claims referred and within ten days of the receipt of the Claim take one or more of the following actions: (l) request additional supporting data from the claimant or a response with supporting data from the other party, (2) recommend rejecting the Claim in whole or in part, (3) recommend approval of the Claim, (4) recommend a compromise, or (5) advise the parties that the Prime is unable to make a recommendation if the Prime lacks sufficient information to evaluate the merits of the Claim or if the Prime concludes that, in the Prime's sole discretion, it would be inappropriate for the Prime to make a recommendation.

4.4.3 In evaluating Claims, the Prime may, but shall not be obligated to, consult with or seek information from either party.

4.4.4 If the Prime requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either provide a response on the requested supporting data, advise the Prime when the response or supporting data will be furnished or advise the Prime that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Prime will take one of the last four (4) numbered actions contemplated in Subparagraph 4.4.2, in writing, stating the reasons therefor.

4.4.5 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to final resolution of the Claim.

4.5 MEDIATION

4.5.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.10, 9.10.3 and 9.10.4 shall be subject to mediation as a condition precedent to arbitration or the institution of legal or equitable proceedings by either party.

4.5.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect. Request for mediation shall be filed in writing with the other party to the Contract and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

4.5.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

4.6 ARBITRATION

4.6.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.10, 9.10.3 and 9.10.4, shall, after decision by the Prime or 30 days after submission of the Claim to the Prime, be subject to arbitration. Prior to arbitration, the parties shall endeavor to resolve disputes by mediation in accordance with the provisions of Paragraph 4.5.

4.6.2 Claims not resolved by mediation shall be decided by arbitration which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect. The demand for arbitration shall be filed in writing with the other party to the Contract and with the American Arbitration Association, and a copy shall be filed with the Prime.

4.6.3 A demand for arbitration shall be made within the time limits specified in Subparagraphs 4.5.2 and 4.6.1 as applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Paragraph 13.7.

4.6.4 Limitation on Consolidation or Joinder: No arbitration arising out of or relating to the Contract shall include, by consolidation or joinder or in any other manner, the Prime, the Prime's employees or consultants, except by written consent containing specific reference to the Agreement and signed by the Prime, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Contractor, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Contractor or a separate contractor as described in Article 6 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a Claim not described therein or with a person or entity not named or described therein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

4.6.5 Claims and Timely Assertion of Claims: The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

4.6.6 Judgment on Final Award: The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE 5 - SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable, but not less than 60 calendar days, after award of the Contract, or 30 calendar days prior to the start of that section of Work, which ever is sooner, shall furnish in writing to the Owner through the Prime the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Prime will promptly reply to the Contractor in writing stating whether or not the Owner or the Prime, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Prime to reply promptly shall constitute notice of no reasonable objection.

5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Prime has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

5.2.3 If the Owner or Prime has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Prime has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner or Prime makes reasonable objection to such substitute.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Prime. Each subcontract agreement shall preserve and protect the rights of the Owner and Prime under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.3.2 In the event that the General Contractor or a sub-contractor to the General Contractor, employees independent contractors. as well as payroll labor, to discharge its responsibilities and obligations, the General Contractor acknowledges and understands that is does so, or allows it's subcontractors to do so, at it's own risk and that federal, state, and / or local agencies may dispute the independent contractor status and assess penalties, fines and costs should there be a determination to reclassify such workers. In that event, the General Contractor agrees that it will defend, indemnify, and hold harmless the Owner from any fines, costs, damages, claims, penalties, attorney's fees, and causes of action, including without limitation, personal injury or property damage, arising out of or relating in any way to such a determination.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor and Contractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost, if any, resulting from the suspension.

ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation.

6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules and performance requirements when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, l l and 12.

6.2 MUTUAL RESPONSIBILITY

6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor. The Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly timed activities, damage to the Work or defective construction of a separate contractor.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Subparagraph 10.2.5.

6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Subparagraph 3.14.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Prime will allocate the cost among those responsible.

ARTICLE 7 - CHANGES IN THE WORK

7.1 GENERAL

7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Prime; a Construction Change Directive requires agreement by the Owner and Prime and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Prime alone.

7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and

the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

7.2 CHANGE ORDERS

7.2.1 A Change Order is a written instrument prepared by the Prime and signed by the Owner, Contractor and Prime, stating their agreement upon all of the following:

.1 change in the Work;

.2 the amount of the adjustment, if any, in the Contract Sum; and

.3 the extent of the adjustment, if any, in the Contract Time.

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Subparagraph 7.3.3.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.1 A Construction Change Directive is a written order prepared by the Prime and signed by the Owner and Prime, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.l mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 unit prices stated in the Contract Documents or subsequently agreed upon;

.3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 as provided in Subparagraph 7.3.6.

7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Prime in writing of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including any adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Prime on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, in accordance with Clauses 7.3.9.1 through 7.3.9.6 below. In such case, and also under Clause 7.3.3.3, the Contractor shall keep and present, in such form as the Prime or the Owner may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Subparagraph 7.3.6 shall be limited to the following:

.1 costs of labor, including social security, old age and unemployment insurance, and fringe benefits required by agreement or custom;

.2 costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;

.3 rental value of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others; and

.4 costs of permit fees, and sales, use or similar taxes related to the Work.

7.3.7 Pending final determination of the total cost of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied by a Change Order indicating the parties' agreement with part or all of such costs. For any portion of such cost that remains in dispute, the Prime will make an interim determination for purposes of monthly certification for payment for those costs. That determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a claim in accordance with Article 4.

7.3.8 When the Owner and Contractor agree concerning the adjustments in the Contract Sum and Contract Time, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

7.3.9 In Subparagraph 7.3.6, the allowance for the combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:

.1 For the Contractor, for Work performed by the Contractor's own forces, 10 percent of the cost.

.2 For the Contractor, for Work performed by the Contractor's Subcontractor, 6 percent of the amount due the Subcontractor.

.3 For each Subcontractor or Sub-subcontractor involved, for Work performed by that Subcontractor's, or Sub-subcontractor's, own forces, 10 percent of the cost.

.4 For each Subcontractor. for Work performed by the Subcontractor's Sub-subcontractors. 6 percent of the amount due the Sub-subcontractor.

.5 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.6.

.6 In order to facilitate checking of quotations for extras and credits, all proposals, except those so minor their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials, and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over $50.00 be approved without such itemization.

7.3.10 Cost as referred to throughout this Article 7, shall be limited to the following: Cost of materials, including cost of delivery; cost of labor, including Social Security, old age and unemployment insurance; fringe benefits required by agreement or custom; and rental value of tools, equipment, and machinery.

7.3.11 Overhead, as referred to in this Article 7. shall include the following: Bond premiums for cost amounts over and above the Contract Sum; non-OCIP insurance premiums; supervision; superintendence; wages of time keepers, watch people, and clerks; small tools; incidentals; general office expense; and other expenses not included in "Costs".

7.3.12 The amount of credit to be allowed by the Contractor to the Owner for any deletion or change that results in a net decrease in the Contract sum will be in the amount of the net cost as confirmed by the Prime. When both additions

and credits covering related Work, or substitutions, are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase, if any, with respect to that change.

7.3.13 Subsequent to the approval of a Change Order, whether involving a change in Contract sum, Contract time, or both, no additional claim related to that matter will be considered by the Owner. A change incorporated into a Change Order is, therefore, all inclusive, and includes such factors as Project impact, schedule "ripple" effect, or other items which may pertain to such change.

7.4 MINOR CHANGES IN THE WORK

7.4.1 The Prime will have authority, upon prior approval of the Owner, to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly

ARTICLE 8 - TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

8.1.2 The date of commencement of the Work is the date established in the Agreement.

8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Paragraph 9.8.

8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.2 PROGRESS AND COMPLETION

8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.2.2 The Contractor shall not, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by the Contract Documents or a notice to proceed given by the Owner, the Contractor shall notify the Owner in writing not less than five days or other agreed period before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is materially delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by fire, unavoidable casualties or other causes beyond the Contractor's control, then the Contract Time shall be extended by Change Order for a reasonable time.
8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.3.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, and if necessitated by Change Orders, from time to time thereafter, the Contractor shall submit to the Prime and the Owner a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Prime and the Owner may require. This schedule, when, and only when approved in writing by the Architect and the Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At ten days, or less, before the end of the current pay period the Contractor shall, with the Prime, review for accuracy an itemized draft copy of the current Application for Payment, accompanied by a current schedule of values. A formal Application for Payment cannot be approved without an accompanying schedule of values that has been approved by both the Owner and the Prime. The Contractor shall promptly proceed to prepare a formal Application for Payment, incorporating modifications made to the draft copy as needed. The Contractor shall then submit to the Prime an Application for Payment for operations completed in accordance with the most recently approved schedule of values. Such application shall be notarized, and supported by such data substantiating the Contractor's right to payment as the Owner or Prime may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for in the Contract Documents. The form of Application for Payment shall be AIA Document G702 - Application and Certification for Payment, supported by AIA Document G703 – Continuation Sheet, the Schedule of Values.

9.3.1.1 As provided in Subparagraph 7.3.8, such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives, or by interim determinations of the Prime, but not yet included in Change Orders.

9.3.1.2 Such applications shall not include requests for payment for portions of the Work for which the Contractor does not promptly intend to pay to a Subcontractor or material supplier, unless such Work has been performed by the Contractor or by others whom the Contractor intends to pay promptly.

9.3.1.3 Until the Work is 50 percent complete, the Owner will pay 90 percent of the amount due the Contractor on account of progress payments. At the time the Work is 50 percent complete and thereafter, the Prime may authorize an increase to 95 percent of the amount due the Contractor.

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in writing in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

9.3.4 Immediately satisfy any lien or encumbrance which because of any act or default of the Contractor is filed against the premises, and indemnify and save the Owner harmless against all resulting loss and expenses, including

attorney's fees, in addition, monies due under this Contract, as may be considered necessary by the Owner, may be retained by the Owner until all such suits, claims for damages, or expenses as aforesaid shall have been settled and paid.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The Prime will, within seven days after receipt of the Contractor's Application for Payment, either review, approve, sign, and date the original Application for Payment, and copies, and deliver them to the Owner, for such amount as the Prime determines is properly due, or notify the Contractor and Owner in writing of the Prime's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1.

9.4.2 The Owner will within 7 days, after receipt of the approved Certificate for Payment from the Prime, either review, approve, sign, and date the document, with copies sent to the Prime and the Contractor, or notify Contractor and Prime in writing of the Owner's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1.

9.4.3 The issuance of a Certificate for Payment will constitute a representation by the Prime to the Owner, based on the Prime's evaluation of the Work and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Prime's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Prime. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Prime has 1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum

9.5 DECISIONS TO WITHHOLD CERTIFICATION

9.5.1 The Prime will withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Prime's opinion the representations to the Owner required by Subparagraph 9.4.2 cannot be made. If the Prime is unable to certify payment in the amount of the Application, the Prime will notify the Contractor and Owner as provided in Subparagraph 9.4.1. If the Contractor and Prime cannot agree on a revised amount, the Prime will promptly issue a Certificate for Payment for the amount, if any, for which the Prime is able to make such representations to the Owner. The Prime may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Prime's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Subparagraph 3.3.2, because of:

.1 defective Work not remedied;

.2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or another contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;

.7 failure to carry out the Work in accordance with the Contract Documents;

.8 failure to maintain as current, "Record Drawings";

.9 failure to provide filings required by Document 00200 in timely fashion; or

.10 failure to provide submittals in a timely fashion as may be specified in the Specifications.

.11 failure to submit requested ARRA documentation.

9.5.2 The Owner can decide to withhold a Certificate of Payment in whole or in part, to the extent necessary for self-protection, for the same reasons described in 9.5.1 above

9.5.3 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

9.6 PROGRESS PAYMENTS

9.6.1 After the Prime and the Owner have signed and dated a Certificate for Payment, the Owner shall make payment in the manner and within the thirty working days time period provided in the Contract Documents, and shall so notify the Prime. The specified time period provided shall start with the date of the Owner's signing of the Certificate of Payment.

9.6.1.1 The Owner reserves the right to withhold payment to the Contractor, in whole or in part, for any and all of the reasons cited in Clauses 9.5.1.1 through 9.5.1.10.

9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

9.6.3 The Prime will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Prime and Owner on account of portions of the Work done by such Subcontractor.

9.6.4 Neither the Owner nor Prime shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.6.5 Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.6.2, 9.6.3 and 9.6.4.

9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner.

9.7 FAILURE OF PAYMENT

9.7.1 If, through no fault of the Contractor, the Prime does not issue a Certificate for Payment, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within the specified time period after approving the Certification for Payment, the amount certified by the Prime or awarded by arbitration, then the Contractor may make claim for additional payment as provided under terms of the State of Rhode Island Prompt Payment Act.

9.8 SUBSTANTIAL COMPLETION

9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Prime a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

9.8.3 Upon receipt of the Contractor's list, the Prime will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Prime's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Prime. In such case, the Contractor shall then submit a request for another inspection by the Prime to determine Substantial Completion.

9.8.4 When the Work or designated portion thereof is substantially complete, the Prime will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall reduce the retainage withheld, if and as provided elsewhere in the Contract Documents.

9.8.5.1 The payment shall be sufficient to maintain, or increase, the total payments to 95 percent of the Contract sum, less such amounts as the Prime shall determine for incomplete Work and unsettled claims.

9.9 PARTIAL OCCUPANCY OR USE

9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Clause l 1.3.1.3 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Prime as provided under Subparagraph 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Prime.

9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Prime shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Prime will promptly make such inspection and, when the Prime finds the Work acceptable under the Contract Documents and the Contract fully performed, the Prime will promptly issue a final Certificate for Payment stating that to the best of the Prime's knowledge, information and belief, and on the basis of the Prime's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance, less the amount of Warranty Inspection Retainage, found to be due the Contractor and noted in the final Certificate is due and payable. The Prime's final Certificate for Payment will constitute a further representation that conditions listed in Subparagraph 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Prime in a form and substance satisfactory to the Owner (l) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall promptly pay to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.10.3 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

.1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;

.2 failure of the Work to comply with the requirements of the Contract Documents; or

.3 terms of special warranties required by the Contract Documents.

9.10.4 Acceptance of final payment by the Contractor, a Subcontractor, a Sub-subcontractor, and equipment or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

.1 employees on the Work and other persons who may be affected thereby;
.2 the materials and equipment to be incorporated therein, whether in storage on or off the site, under care,

custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.2 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Prime or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.18.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Prime.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

10.3 HAZARDOUS MATERIALS

10.3.1 If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB),or other state or federally regulated hazardous substance encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop any ongoing Work in the affected area and report the condition to the Owner and Prime in writing.

10.3.2 The Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify that it has been rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Prime the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Prime will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner, and, in the event of an objection, the specific reasons therefor. If either the Contractor or Prime has a reasonable objection to a person or entity proposed by the Owner and fully complies with the next preceding sentence, the Owner shall propose another to whom the Contractor and the Prime have no reasonable objection. If the absence of the material or substance is verified, Work shall immediately resume without adjustment to the Contract Time or Contract Sum. If the presence of material or substance is verified, when the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. The Contract Time shall be extended if and as appropriate and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional and incurred costs of shut-down, delay and start-up, which adjustments shall be accomplished as provided in Article 7.

10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Prime, Prime's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Subparagraph 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) and provided that such damage, loss or expense is not due to the sole negligence of a party seeking indemnity.

10.3.4 Provisions of Subparagraph 10.3.1 and 10.3.2 cannot be employed to govern the Contractor's operations that involve the documenting and removal of indicated asbestos, polychlorinated biphenyl (PCB), or other state or federally regulated hazardous substance, as may be clearly and specifically specified under terms of this Contract.

10.4 The Owner shall not be responsible under Paragraph 10.3 for materials and substances brought to the site by the Contractor unless such materials or substances were expressly required by the Contract Documents.

10.5 If, without negligence on the part of the Contractor or a breach of relevant provisions of the Contract Documents, the Contractor is held liable for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

10.6 EMERGENCIES

10.6.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Paragraph 4.3 and Article 7.

ARTICLE 11 - INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

.2 claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 claims for damages insured by usual personal injury liability coverage;

.5 claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;

.7 claims for bodily injury or property damage arising out of completed operations; and

.8 claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18

.9 liability Insurance shall include all major divisions of coverage and be on a comprehensive basis including:

1. Premises Operation (including X, C. and U coverages as applicable).

2. Independent Contractor's Protective.

3. Products and completed Operations.

4. Personal Injury Liability with Employment Exclusion deleted.

5. Contractual, including specified provision for Contractor's obligation under Paragraph 3.18.

6. Owner, non-owned and hired motor vehicles.

7. Broad Form Property Damage, including Completed Operations.

.10 If the general liability coverages are provided by a General Liability Policy on a claims-made basis, the policy date or retroactive date shall predate the Contract; the termination date of the policy, or applicable extended reporting period shall be no earlier than the termination date of coverages required to be maintained after final payment in accordance with Subparagraph 9.10.2.

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

11.1.2.1 The insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits, or greater, if required by law:

1. Workers' Compensation:
- **a.** State - Statutory;
- **b.** Employer's Liability - $500,000.

2. Comprehensive General Liability (including Premises/Operations; Independent Contractor's Protective; Products and Completed Operations; Broad Form Property Damage):
- **a.** Bodily Injury: $1,000,000 - Each Occurrence; $1,000,000 - Annual Aggregate.
- **b.** Property Damage: $1,000,000 - Each Occurrence; $1,000,000 - Annual Aggregate.
- **c.** Products and Completed Operations to be Maintained for 2 Years After Final Payment.
- **d.** Property Damage Liability Insurance to Provide X, C. or U Coverage as Applicable.

3. Contractual Liability:
- **a.** Bodily in jury: $1,000,000 - Each Occurrence; $1,000,000 - Annual Aggregate.

4. Personal Injury. with Employment Exclusion Deleted:
- **a.** $1,000,000 - Annual Aggregate.

5. Comprehensive Automobile Liability:

a. Bodily Injury: $500,000 - Each person;
$1,000,000 - Each Occurrence.

b. Property Damage: $500,000 - Each Occurrence.

11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These certificates and the insurance policies required by this Paragraph l 1.1 shall contain a provision that coverage's afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

11.1.3.1 The Contractor shall furnish one copy of each Certificate of Insurance herein required for each copy of the Agreement which shall specifically set forth evidence of coverage required by Subparagraphs 11.1.1, 11.1.2, and 11.1.3. If this insurance is written on a Comprehensive General Liability policy form, ACCORD Form 25S will be acceptable. The Contractor shall furnish copies of endorsement to the Owner that are subsequently issued amending coverage or limits.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Contractor shall furnish the Owner, through the Prime, an insurance certificate providing Owner's Protective Liability extended to include the interests of the Prime, and to protect the Owner and Prime from any liability which might be incurred against them as a result of any operation of the Contractor or Contractor's Subcontractors or their employees. Such insurance shall be written for the same limits as the Contractor's liability insurance and shall include the same coverage

11.3 PROPERTY INSURANCE

11.3.1 The Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.l0 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project. The form of policy for this coverage shall be Completed Value. If the Owner is damaged by failure of the Contractor to maintain such insurance. then the Contractor shall bear all reasonable costs properly attributed thereto.

11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Prime's and Contractor's services and expenses required as a result of such insured loss.

11.3.1.2 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

11.3.1.3 Partial occupancy or use in accordance with Paragraph 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without

mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Subparagraph 11.3.4 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.3.3 Before an exposure to loss may occur, the Contractor shall file with the Owner two certified copies of the policy or policies providing this Property Insurance coverage, each containing these endorsements specifically related to the Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the contractor.

11.3.4 Waivers of Subrogation: The Owner and Contractor waive all rights against (l) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Prime, Prime's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Paragraph 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Contractor as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

11.3.5 A loss insured under this property insurance shall be adjusted by the Contractor as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Subparagraph l 1.3.7. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

11.3.6 If required in writing by a party in interest, the Contractor as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Contractor's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Contractor shall deposit in a separate account proceeds so received, which the Contractor shall distribute in accordance with such agreement as the parties in interest may reach, or in accordance with an arbitration award in which case the procedure shall be as provided in Paragraph 4.6. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

11.3.7 The Contractor as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Contractor's exercise of this power; if such objection is made, the dispute shall be resolved as provided in Paragraphs 4.5 and 4.6. The Contractor as fiduciary shall, in the case of arbitration, make settlement with insurers in accordance with directions of the arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract sum. The amount of each bond shall be equal to 100 percent of the Contract sum.

11.4.1.1 The Contractor shall deliver the required bonds to the Owner on or before the date the Agreement is entered into.

11.4.1.2 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 If a portion of the Work is covered contrary to the Prime's request or to requirements specifically expressed in the Contract Documents, it shall, if required in writing by the Prime, be uncovered for the Prime's examination and be replaced at the Contractor's expense without change in the Contract Time or Contract Sum.

12.1.2 If a portion of the Work has been covered which is not contrary to requirements specifically expressed in the Contract Documents and which the Prime has not specifically requested to examine prior to its being covered, the Prime and the Owner may in writing request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK

12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

12.2.1.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such Work, including additional testing and inspections and compensation for the Prime's services and expenses made necessary thereby, shall be at the Contractor's expense.

12.2.2 AFTER SUBSTANTIAL COMPLETION

12.2.2.1 In addition to the Contractor's obligations under Paragraph 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Subparagraph 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor at Contractor's expense shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written express acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. If any of the Work is found to be not in accordance with the requirements of the Contract Documents during the one-year period for correction of Work, and the Owner fails to promptly thereafter notify the Contractor and give the Contractor an opportunity to make correction, the Owner waives the right to require correction by the Contractor. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Prime, the Owner may correct it in accordance with Paragraph 2.4.

12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of performance of the Work.

12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Paragraph 12.2.

12.2.2.4 The Contractor and the major Sub-Contractors shall meet with the Owner, if so notified by the Owner, and re-inspect the Work ten months after Substantial Completion as a follow-up procedure. Upon correction of warranty Work within a reasonable time, the Contractor shall be paid the full amount of the Warranty Inspection Retainer, withheld by the Owner.

12.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.5 Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the one-year period for correction of Work as described in Subparagraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

13.1.1 The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Subparagraph 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.2.2 The Owner may, without consent of the Contractor, assign the Contract to an institutional lender providing construction financing for the Project. In such event, the lender shall assume the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

13.3 WRITTEN NOTICE

13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

13.4.2 No action or failure to act by the Owner, Prime or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Prime timely notice of when and where tests and inspections are to be made so that the Prime may be present for such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded unless such test, inspections or approvals replace or modify pre-existing requirements in which event the Owner shall bear any additional costs thereof.

13.5.2 If the Prime, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Prime of when and where tests and inspections are to be made so that the Prime may be present for such procedures. Such costs, except as provided in Subparagraph 13.5.3, shall be at the Owner's expense.

13.5.3 If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Prime's services and expenses shall be at the Contractor's expense.

13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents' be secured by the Contractor and promptly delivered to the Prime.

13.5.5 If the Prime is to observe tests, inspections or approvals required by the Contract Documents, the Prime will do so promptly and, where practicable, at the normal place of testing.

13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 INTEREST

13.6.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as prescribed by provisions of the State of Rhode Island Prompt Payment Act..

13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.7.1 As between the Owner and Contractor:

.1 Before Substantial Completion. As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;

.2 Between Substantial Completion and Final Certificate for Payment. As to acts or failures to act occurring

subsequent to the relevant date of Substantial Completion and prior to issuance of the Final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and

.3 After Final Certificate for Payment. As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any Warranty provided under Paragraph 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Paragraph 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

13.8 EQUAL OPPORTUNITY

13.8.1. The Contractor shall maintain policies of employment as follows:

13.8.1.1 The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, sexual persuasion, or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, sexual persuasion, or national ordain. Such action shall include, but not be limited to the following: employment upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

13.8.1.2 The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, sexual persuasion, or national origin.

13.8.1.3 The Contractor shall be a signatory to the requirements of the State of Rhode Island Equal Employment office.

13.9 PREVAILING WAGE SCALES ON PUBLIC WORKS PROJECTS

13.9.1 In accordance with Chapter 290 of the General Laws of the State of Rhode Island, 1938 as amended. the Department of Labor determined the customary and prevailing rate of wages paid to craftspersons, teamsters, and laborers in the constructing of public works by the State. and by cities and towns, and by persons contracting therewith for such construction. Violators are subject to a fine of not more than One Hundred Dollars ($100.00) for each offense

13.9.2 The wage rates as ascertained by the Department of Labor are uniform for the State of Rhode Island and, as of the date of advertisement of Contract. apply to the life of this Contract. Current wage rates prevailing in the construction industry in the State of Rhode Island are included in this Project Manual. Additional information concerning prevailing wage rates may be obtained from the Division of Professional Regulation, Department of Labor, 1511 Pontiac Avenue, Cranston, RI 02910. Under no conditions shall the wages paid be less than those designated in the general classification. This Clause does not relieve the Contractor or his or her Subcontractors from respecting any other union regulations to which the Contractor ordinarily subscribes.

13.9.3 Bulletin No. 3. State Labor Laws, issued by the State of Rhode Island Department of Labor, pertaining to Public Works Projects (General laws of Rhode Island, Revision of 1956, Chapter 37-12 as amended. and Chapter 77, Public Laws of 1965) are hereby made a part of this Project. These Laws include, but are not limited to:

.1 weekly payment of employees;

.2 provisions applicable to public works contracts:

.3 payment of prevailing wages;

.4 posting of prevailing wage rates: and

.5 overtime compensation.

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 issuance of an order of a court or other public authority having jurisdiction which requires all Work to be stopped;

.2 an act of government, such as a declaration of national emergency which requires all Work to be stopped;

14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Paragraph 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

14.1.3 If one of the reasons described in Subparagraph 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Prime, terminate the Contract and recover from the Owner payment for Work properly executed and for payment of costs directly related to Work thereafter performed by the Contractor in terminating the Contract, including reasonable demobilization and cancellation charges, proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead and profit therefrom.

14.1.4 If all of the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Prime, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.3.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 The Owner may terminate the Contract if the Contractor:

.1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

14.2.2 When any of the above reasons exist, the Owner, upon certification by the Prime that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 accept assignment of subcontracts pursuant to Paragraph 5.4; and

.3 finish the Work by whatever reasonable method the Owner may deem expedient. Upon request of the Contractor, the Owner shall furnish to the Contractor an accounting of the costs incurred by the Owner in finishing the Work.

14.2.3 When the Owner terminates the Contract for one of the reasons stated in Subparagraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Prime, upon application, and this obligation for payment shall survive termination of the Contract.

14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

14.3.2 The Contract Sum and Contract Time shall be adjusted for any increases in the cost and time caused by suspension, delay or interruption as described in Subparagraph 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed in accordance with the Contract Documents, and costs incurred by reason of such termination, along with reasonable overhead and profit thereon.

14.4.4 Upon a determination by a court of competent jurisdiction that termination of the Contractor pursuant to Paragraph 14.2 was wrongful or otherwise improper, such termination shall be deemed a termination for convenience pursuant to Paragraph 14.4, and the provisions of Subparagraph 14.4.3 shall apply.

END OF DOCUMENT

[Alternate Provision:

3.9 PROJECT MANAGER AND SUPERINTENDENT

3.9.1 The Contractor shall employ a competent Project Manager, superintendent, and necessary assistants, all of whom shall be in full-time attendance at the Project site during performance of the Work. The Project Manager shall be assigned full-time by the Contractor to Project management responsibilities, and shall not be assigned by the Contractor to assume managerial, or other responsibilities for any other project of the Contractor. The Project Manager and the superintendent shall be satisfactory to the Owner, and shall remain on-site full time, and shall be present on-site whenever the Work is in progress. So long as the Project Manager and the superintendent remain employed by the Contractor or any related entity, the Project Manager and the superintendent shall not be replaced without the Owner's prior written consent. The Project Manager and the superintendent shall represent the Contractor, and such communications as may be given to either of them shall be as binding as if given to the Contractor. Important communications shall be subsequently confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

3.9.3 The Project Manager and the superintendent shall not work with tools, or perform actual trades Work, but shall be dedicated to the on site management of the Project. The Contractor shall provide additional staff as required for Project Management, or as may be specified in the Specifications.**]**

DOCUMENT 00710 – SUPPLEMENTAL GENERAL CONDITIONS – ARRA, Rev. 2.0

PART 1 – GENERAL

1.1 The 7-page document following this page titled, "State of Rhode Island and Providence Plantations Supplemental Terms and Conditions for Contracts and Subawards Funded in Whole or in Part by the American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5" applies to the Contract for Construction and is a part of the Contract Documents.

1.2 In addition to the specific document terms mentioned above, the Contractor shall follow processes and submit documentation as requested by URI in order to allow URI to meet its obligations under the ARRA. For ARRA purposes, the Contractor is considered a "vendor". The Contractor is not a "Sub-Recipient vendor".

1.3 ARRA reporting information described in section 12 of the document mentioned above for URI contracts shall be submitted weekly via email spreadsheet directly to URI. Failure to submit weekly reporting is justification for with-holding payments under this contract.

1.4 Please note that compliance with ARRA regulations is mandatory, including as they may be revised over the course of this project. At a minimum, they require that the Contractor:

1. have a DUNS number
2. buy US-made "iron, steel and manufactured goods"
3. pay prevailing wages
4. report jobs created, jobs retained, total number of ARRA funded hours, number of total hours, and be current with such reporting within 2 business days of the end of each quarter
5. update the narrative written description of funded work each quarter
6. segregate ARRA funds for use on this project only
7. report any abuse of funds
8. post ARRA notices required
9. provide full 5+4 zipcode for itself and all subcontractors

1.5 The Contractor shall be responsible for collecting ARRA information for all subcontractors and material suppliers. All entities on ARRA funded projects must adhere to the prevailing wage and "Buy USA" provisions. Upon request, Contractor shall provide documentation of origin of materials.

1.6 Prior to site mobilization, Contractor's applicable staff shall make themselves familiar with ARRA requirements and University reporting procedures, including meeting with URI project management staff as necessary.

END OF DOCUMENT

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

SUPPLEMENTAL TERMS AND CONDITIONS FOR CONTRACTS AND SUBAWARDS FUNDED IN WHOLE OR IN PART BY THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009, PUB. L. NO. 111-5

1. Definitions

a. "ARRA" or "Recovery Act" means the American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat.115.

b. "ARRA Funds" means any funds that are expended or obligated from appropriations made under ARRA.

c. "ARRA Requirements" means these Supplemental Terms and Conditions, as well as any terms and conditions required by: ARRA; federal law, regulation, policy or guidance; the federal Office of Management and Budget (OMB); the awarding federal agency; or, the Rhode Island Office of Economic Recovery and Reinvestment (OERR).

d. "Contract" means the contract to which these Supplemental Terms and Conditions are attached, and includes an agreement made pursuant to a grant or loan subaward to a Sub-Recipient.

e. "Contractor" means the party or parties to the Contract other than the Prime Recipient and includes a subgrantee or a borrower. For the purposes of ARRA reporting, Contractor is either a Sub-Recipient or a Recipient Vendor under this Contract.

f. "Prime Recipient" means a non-Federal entity that expends Federal awards received directly from a Federal awarding agency to carry out a Federal program.

g. "Recipient Vendor" means a Vendor that receives ARRA Funds from a Prime Recipient.

h. "Subcontractor" means any entity engaged by Contractor to provide goods or perform services in connection with this contract.

i. "Sub-Recipient Vendor" means a Vendor that receives ARRA Funds from a Sub-Recipient.

j. "Sub-Recipient" means a non-Federal entity receiving ARRA Funds through a Prime Recipient to carry out an ARRA funded program or project, but does not include an individual that is a beneficiary of such a program. The term " Sub-Recipient" is intended to be consistent with the definition in OMB Circular A-133

and section 2.2 of the June 22, 2009 OMB Reporting Guidance.[1] A Sub-Recipient is sometimes referred to as a subgrantee.

k. "Supplemental Terms and Conditions" means these Supplemental Terms And Conditions For Contracts And Subawards Funded In Whole Or In Part By The American Reinvestment Recovery Act Of 2009, Pub. L. No. 111-5, as may be subsequently revised pursuant to ongoing guidance from the relevant federal or State authorities.

l. "Vendor" means a dealer, distributor, merchant, or other seller providing goods or services that are required for the project or program funded by ARRA. The term "Vendor" is intended to be consistent with the definition in OMB Circular A-133 and section 2.2 of the June 22, 2009 OMB Reporting Guidance.

2. General

a. To the extent this Contract involves the use of ARRA Funds, Contractor shall comply with both the ARRA Requirements and these Supplemental Terms and Conditions, except where such compliance is exempted or prohibited by law.

b. The Contractor acknowledges these Supplemental Terms and Conditions may require changes due to future revisions of or additions to the ARRA Requirements, and agrees that any revisions of or additions to the ARRA Requirements shall automatically become a part of the Supplemental Terms and Conditions without the necessity of either party executing or issuing any further instrument and shall become a part of Contractor's obligations under the Contract.. The State of Rhode Island may provide written notification to Contractor of such revisions, but such notice shall not be a condition precedent to the effectiveness of such revisions.

3. Conflicting Terms

Contractor agrees that, to the extent that any term or condition herein conflicts with one or more ARRA Requirements, the ARRA Requirements shall control.

4. Enforceability

Contractor agrees that if it or one of its subcontractors or sub-recipients fails to comply with all applicable federal and State requirements governing the use of ARRA funds, including any one of the terms and conditions specified herein, the State may withhold or suspend, in whole or in part, funds awarded under the program, recover misspent funds, or both. This provision is in addition to all other civil and criminal remedies available to the State under applicable state and federal laws and regulations.

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[1] Implementing Guidance for the Reports on Use of Funds Pursuant to the American Recovery and Reinvestment Act of 2009, M-09-21 (June 22, 2009), available at http://www.whitehouse.gov/omb/assets/memoranda_fy2009/m09-21.pdf.

5. **Applicability to Subcontracts and Subawards**

Contractor agrees that it shall include the Supplemental Terms and Conditions set forth herein, including this provision, in all subcontracts or subawards made in connection with projects funded in whole or in part by ARRA, and also agrees that it will not include provisions in any such subcontracts or subawards that conflict with either ARRA or the terms and conditions herein.

6. **Availability of Funding**

Contractor understands that federal funds made available by ARRA are temporary in nature and agrees that the State is under no obligation to provide additional State-financed appropriations once the temporary federal funds are expended.

7. **Inspection and Audit of Records**

Contractor agrees that it shall permit the State and its representatives, the United States Comptroller General or his representative or the appropriate inspector general appointed under section 3 or 8G of the Inspector General Act of 1978 or his representative to:

i. Examine, inspect, copy, review or audit any records relevant to, and/or involve transactions relating to, this agreement, including documents and electronically stored information in its or any of its subcontractors' or sub-recipients' possession, custody or control unless subject to a valid claim of privilege or otherwise legally protected from disclosure; and

ii. Interview any officer or employee of the Contractor regarding the activities and programs funded by ARRA.

8. **Registration Requirements**

a. **DUNS Number Registration**. Contractor agrees: (i) if it does not have a Dun and Bradstreet Data Universal Numbering System (DUNS) Number, to register for a DUNS Number within 10 business days of receiving this Contract; (ii) to provide the State with its DUNS number prior to accepting funds under this agreement; and (iii) to inform the State of any material changes concerning its DUNS number.

b. **Central Contractor Registration**. To the extent that Contractor is a Sub-Recipient, it agrees: (i) to maintain a current registration in the Central Contractor Registration (CCR) at all times this agreement is in force, (ii) to provide the State with documentation sufficient to demonstrate that it has a current CCR registration, and (iii) to inform the State of any material changes concerning this registration.

c. **FederalReporting.gov Registration**. To the extent that Contractor is a Sub-Recipient, it agrees: (i) to register on FederalReporting.gov within 10 business days of receiving this subaward; (ii) to maintain a current registration on

FederalReporting.gov at all times this agreement is in force; (iii) to provide the State with documentation sufficient to demonstrate that it has a current registration on FederalReporting.gov, and (iv) to inform the State of any material changes concerning this registration.

9. Reporting Requirements under § 1512 of ARRA

a. Contractor agrees to provide the State with data sufficient to fulfill the State's ARRA reporting requirements within the timeframes established by State or federal law, regulation or policy, including but not limited to section 1512 reporting requirements.

b. To the extent that Contractor is a Sub-Recipient with a Subaward having a total value of greater than $25,000, it agrees to report directly to the Federal government the information described in section 1512(c) of ARRA using the reporting instructions and data elements available online at FederalReporting.gov, and ensure that any information that is prefilled is corrected or updated as needed. Information from these reports will be made available to the public.

c. To the extent that Contractor is a Sub-Recipient with a Subaward having a total value of greater than $25,000, it accepts delegation of reporting responsibility of FFATA data elements required under section 1512 of ARRA for payments from the State. Sub-Recipient shall utilize the federal government's online reporting solution at www.FederalReporting.gov. Reports are due no later than ten calendar days after each calendar quarter in which the recipient receives the assistance award funded in whole or in part by ARRA.

d. To the extent that Contractor is a Sub-Recipient with a Subaward having an initial total value of less than $25,000, but is subsequently modified to exceed $25,000, Contractor agrees that subsections (b) and (c) above apply after the modification.

10. Buy American Requirements under § 1605 of ARRA

a. Contractor agrees that, in accordance with section 1605 of ARRA, it will not use ARRA funds for a project for the construction, alternation, maintenance, or repair of a public building or public work unless all of the iron, steel and manufactured goods used in the project are produced in the United States in a manner consistent with United States obligations under international agreements. In addition to the foregoing Contractor agrees to abide by all regulations issued pursuant to section 1605 of ARRA.

b. Contractor understands that this requirement may only be waived by the applicable federal agency in limited situations as set out in section 1605 of ARRA and federal regulations issued pursuant thereto.

11. Wage Rate Requirements under § 1606 of ARRA

a. Contractor agrees that it will comply with the wage rate requirements contained in section 1606 of ARRA, which requires that, notwithstanding any other provision of law, all laborers and mechanics employed by contractors and subcontractors on projects funded directly by or assisted in whole or in part by and through the Federal Government pursuant to ARRA shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code. The Secretary of Labor's determination regarding the prevailing wages applicable in Rhode Island is available at http://www.gpo.gov/davisbacon/ri.html.

b. Contractor agrees that it will comply with all federal regulations issued pursuant to section 1606 of ARRA, and that it will require any subcontractors or sub-recipients to comply with the above provision.

12. Required Jobs Data Reporting under § 1512(c)(3)(D) of ARRA

a. Contractor agrees, in accordance with section 1512(c)(3)(D) of ARRA and section 5 of the June 22, 2009 OMB Reporting Guidance (entitled "Reporting on Jobs Creation Estimates and by Recipients"), to provide an estimate of the number of jobs created and the number of jobs retained by ARRA-funded projects and activities. In order to perform the calculation, the Contractor will provide the data elements listed in sub-section (b) below.

b. Contractor agrees that, no later than two business days after the end of each calendar quarter, it will provide to the State the following data elements using a form specified by the State:

   i. The total number of ARRA-funded hours worked on this award.

   ii. The number of hours in a full-time schedule for a quarter.

   iii. A narrative description of the employment impact of the ARRA funded work. This narrative is cumulative for each calendar quarter and at a minimum, shall address the impact on the Contractor's workforce and the impact on the workforces of its subcontractors or sub-recipients.

c. Contractor agrees that, in the event that the federal government permits direct reporting of section 1512(c)(3)(D) jobs data by sub-recipients or vendors, it will directly report jobs data to the federal government, consistent with any applicable federal law, regulations and guidance.

13. Segregation of Funds

a. Contractor agrees that it shall segregate obligations and expenditures of ARRA funds from other funding it receives from the State and other sources, including other Federal awards or grants.

b. Contractor agrees that no part of funds made available under ARRA may be commingled with any other funds or used for a purpose other than that of making payments in support of projects and activities expressly authorized by ARRA.

14. Disclosure pursuant to the False Claims Act

Contractor agrees that it shall promptly refer to an appropriate Federal Inspector General any credible evidence that a principal, employee, agent, subcontractor or other person has committed a false claim under the False Claims Act or has committed a criminal or civil violation of laws pertaining to fraud, conflict of interest, bribery, gratuity, or similar misconduct involving ARRA funds.

15. Disclosure of Fraud, Waste and Mismanagement to State Authorities

Contractor shall also refer promptly to the Rhode Island Department of Administration, Department of Purchases, any credible evidence that a principal, employee, agent, contractor, subgrantee, subcontractor, or other person has committed a criminal or civil violation of State or Federal laws and regulations in connection with funds appropriated under ARRA.

16. Prohibited Uses of ARRA Funds

a. Contractor agrees that neither it nor any subcontractors or sub-recipients will use the funds made available under this agreement for any casinos or other gambling establishments, aquariums, zoos, golf courses, swimming pools, or similar projects.

b. Contractor agrees that neither it nor any subcontractors or sub-recipients will use the funds made available under this agreement in a manner inconsistent with any certification made by the Governor or any other State official pursuant to the certification requirements of ARRA, which are published online at http://www.recovery.ri.gov/certification/.

17. Whistleblower Protection under §1553 of ARRA

a. Contractor agrees that it shall not discharge, demote, or otherwise discriminate against an employee as a reprisal for disclosures by the employee of information that he or she reasonably believes is evidence of (1) gross mismanagement of an agency contract or grant relating to covered funds; (2) a gross waste of covered funds; (3) a substantial and specific danger to public health or safety related to the implementation or use of covered funds; (4) an abuse of authority related to the implementation or use of covered funds; or (5) a violation of law, rule, or

regulation related to an agency contract (including the competition for or negotiation of a contract) or grant, awarded or issued relating to covered funds.

b. Contractor agrees to post notice of the rights and remedies available to employees under section 1553 of ARRA.

Please note that the State will strictly enforce compliance with all ARRA Requirements and these Supplemental Terms and Conditions. Accordingly, all Contractors should familiarize themselves with these Supplemental Terms and Conditions as well as all ARRA Requirements as they relate to this Contract.

DOCUMENT 00720 – URI SEXUAL HARASSMENT POLICY

PART 1 – GENERAL

1.1 The policy following applies to the Contract for Construction and is a part of the Contract Documents:

3.01 Sexual Harassment Policy

The University of Rhode Island prohibits all forms of sexual harassment. Sexual harassment is sex discrimination and is unlawful according to Title VII Civil Rights Act of 1964, Title IX of the 1972 Education Amendments, Executive Order 11246, Rhode Island General Laws and University of Rhode Island Policy. This prohibition applies equal to male and female staff, faculty, students, to all other persons on the premises subject to University control and to those engaged to further the interests of the University. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature, constitute sexual harassment when:

1. Submission to such conduct is made either explicitly or implicitly a term or condition of instruction, employment, or otherwise full participation in University life;

2. Submission to or rejection of such conduct by an individual is used as a basis for decisions related to employment or academic performance or progress; or

3. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance, or creating an intimidating, hostile, or offensive work, residential or academic environment.

Sexual harassment includes verbal and physical behaviors that range from sexual gestures or teasing to sexual assault. Verbal sexual harassment may include, but is not limited to, sexual remarks, comments, jokes and innuendoes, whistles and cat calls, crude and offensive language, comments on physical attributes, use of demeaning or inappropriate terms, discussion of sexual activities, the posing of personal questions, the spreading of stories about someone's social or sexual life, and propositions or pressure for social or sexual contact. Physical sexual harassment may include, but is not limited to, unwanted touching, patting, grabbing, pinching or hugging, stares, leers or sexual gestures, following someone or blocking their path, the display of sexually explicit or suggestive pictures, sexual assault and rape.

Members of the campus community who believe they have been the victim of sexual harassment and wish further information, advice or assistance in the filing of a complaint, should contact:

Affirmative Action, Equal Opportunity and Diversity Office
University of Rhode Island
201 Carlotti Administrative Building
Kingston, Rhode Island 02881
PHONE: (401) 874-2442
FAX: (401) 874-2995
TDD:(401) 874-2120

The University will investigate complaints of sexual harassment pursuant to the Non-Discrimination Complaint Procedures. Those who are found to have engaged in sexual harassment will be subject to disciplinary action which may range from remedial education to suspension and termination. Retaliatory action of any kind by any member of the University community against individuals who bring complaints of sexual harassment or individuals who are cooperating in the investigation of a complaint is prohibited and shall be regarded as a separate and distinct violation of community standards and the University's Nondiscrimination Policy.

The University recognizes that some persons may, for a variety of reasons, be reluctant to file a complaint without the advice or counsel of a sympathetic party. The following resources are available to provide assistance and information to anyone concerned about incident(s) of sexual harassment:

Please note: the links below open in new windows

Campus Police
(874-2121)

Health Services
(874-2246)

Counseling Center
(874-2288)

Office of Student Life
(874-2101)

CCE Department of Student Services
(277-5000)

Women's Center
(874-2097)

Office of the President
(874-2444)

Members of the University community who believe they are the victim of sexual harassment may also choose to seek redress through any of the following outside agencies:

Office of Civil Rights, Region I
US Department of Education
33 Arch Street, Suite 900
Boston, Massachusetts 02110-1491
(617) 289-0111

United States Department of Labor
Employment Standards Administration
Office of Federal Contract Compliance Programs
J.F.K. Federal Building, Room E-235
15 New Sudbury Strreet
Boston, Massachusetts 02203
(617) 624-6780

Rhode Island Commission for Human Rights
180 Westminster Street, 3rd Floor
Providence, Rhode Island 02903
(401) 222-2662
TDD (401) 222-2664

Equal Employment Opportunity Commission
Boston Area Office
J.F.K. Federal Building
475 Government Center
Boston, Massachusetts 02203
Toll Free 1-866-408-8075
(617) 565-3200

URL: http://www.uri.edu/affirmative_action/univ_policies.html

END OF DOCUMENT

DOCUMENT 00730 – MANUAL FOR CONSTRUCTION PROJECT SAFETY PROCEDURES

PART 1 – GENERAL

1.1 The 96-page document following this page titled, "Manual for Construction Project Safety Procedures 2010", updated to 10/29/10, applies to the Contract for Construction and is a part of the Contract Documents.

END OF DOCUMENT

MANUAL

for

CONSTRUCTION PROJECT SAFETY PROCEDURES

Office of Capital Projects
Paul M. DePace, P. E. – Director

University of Rhode Island

2010

Updated 10/29/10- Hot Work Section

01. INTRODUCTION

A. Management Commitment

The University of Rhode Island is committed to providing a jobsite that is free of all recognizable hazards. Safety and health issues will be addressed on site by continuous evaluation of contractor/subcontractor work methods, equipment and work areas.

The information in this manual constitutes written policies and descriptions explaining systematic methods/procedures and assigning responsibilities for reducing the risk of personal injury, death or property damage. While the University of Rhode Island cannot anticipate every jobsite hazard, this manual is expected to guide the conduct of all employees in order to promote uninterrupted production and employment, and to protect life, health, and property.

The provisions of this safety program are well within requirements set forth by local, state and federal regulations, as well as standard industrial practices. The elements of the program are intended to increase the level of employees' awareness concerning potential workplace hazards and encourage safe work practices. These elements will be implemented uniformly and no safety violations will be tolerated. **Compliance with the provisions of this manual does not relieve any contractor of their contractual or other regulatory obligations**.

This program will be updated periodically to ensure compliance with all applicable regulations and continuous protection of all personnel on site.

B. Contractor Employee Involvement

All contractor employees are expected to perform their duties safely and comply with all applicable laws and regulations (local, state and federal).

Employees are encouraged to freely discuss their safety concerns with their immediate supervisors or the University of Rhode Island's Safety Representative.

All employees are charged with personal responsibility for safe behavior. Unsafe acts will not be tolerated.

C. Training

Safety training is an integral part of this safety program. Contractors are expected to educate their employees on the basic elements of this manual as well as other applicable regulatory requirements.

D. Injury Management/Early Return-to-Work

All contractors/subcontractors are expected to return any injured employee to a productive environment as soon as possible after an injury. Contractors must evaluate each lost-time injury and review the restrictions placed on each injured employee by his/her medical provider. If modified work can be found within the assigned restrictions on site, contractors/subcontractors must provide employment within those restrictions. The University of Rhode Island's Claims Representatives will work closely with each injured employee's treating physician and rehabilitation specialist, which in return will enable a program of this nature to be successful.

02. SAFETY ORIENTATION

A. General Requirements

All contractors shall ensure that their employees receive safety orientation prior to starting work on this project.

Each contractor shall maintain, and make available for inspection, records of such safety orientation and training.

The orientation shall consist of the written format specified on the attachment on the next page in addition to any job specific information.

All contractors shall ensure that each employee receives a copy of this orientation and signs the acknowledgement page at the end.

B. Safety Orientation

It is our intention to provide and maintain a totally safe site. **Your commitment to safety is a condition for continuous employment on this project**.

After you have reviewed these guidelines, sign the last page where indicated and return that page to your superintendent or foreman.

1. **Evacuation:** In the event of a fire or any time project evacuation is required, all personnel onsite will be informed via a radio signal, or other method as designated by the Owner or the owner's designated representative.

YOU SHALL IMMEDIATELY:

- Cease all work and shut off all electrical equipment, including welding machines, air compressors, etc.
- Close valves on gas cylinders.
- Walk! (*DO NOT RUN OR JUMP FROM ELEVATED POSITIONS*) to the designated assembly points. Remain at the assembly point until the all-clear signal is sounded. Be prepared to follow the directions from your supervisor.

2. **First Aid:** All injuries are to be reported to the general contractor's representative immediately.

DO NOT LEAVE THE SITE WITHOUT REPORTING AN INJURY, REGARDLESS HOW MINOR YOU MAY THINK IT IS.

- Injuries requiring a doctor's care will require a drug screen and a medical authorization form from your supervisor.
- If we have an employee injured on our job we want the best medical care possible. However, if we have an injury that we suspect is fraudulent we will spare no expense investigating and prosecuting.

3. Protective Equipment:

Head Protection: Hardhat must be worn at all times (with the bill to the front) once entering the work area. Areas of exception are offices, equipment with fully enclosed cabs, lunch and break periods provided no work is going on in the immediate area.

Eye And Face Protection: Appropriate eye protection (ANSI Z87) with side shields is required to be worn by all personnel on the construction site at all times. Prescription glasses must be approved safety glasses, approved glasses and frames, or approved eye protection.

- When grinding or buffing, a face shield with approved safety glasses will be required.
- When cutting or burning, goggles will be required.
- When welding, a welding hood and lens with an appropriate number filter.
- Chemical goggles are required to be worn when working with corrosive or toxic material.

Respiratory And Hearing Protection: Respiratory and/or hearing protection is required in designated areas and or when performing specific tasks.

- Employees must be clean-shaven prior to using a respirator.

4. Barricades:

- Barricade tape is not to be used in lieu of physical barricades for floor, hole, wall openings or when permanent handrails have been removed.
- Yellow barricade tape indicates to use caution when approaching or entering the area.
- Red barricade tape requires authorization to enter area. Anyone entering area without authorization is subject to disciplinary action.

5. Fall Protection/Tie-Off:

- A 100% tie-off policy is in effect anytime you are exposed to a potential of fall in more than 6 feet to a lower level.

An approved fall arrest system will be worn when working from unprotected elevations greater then 6 feet and when working in powered man-lifts.

- Approved fall arrest system consists of a full body harness, two shock absorbing lanyards, each with double action or positive locking snap hooks**.**
- Any lifeline, safety harness, or lanyard actually subjected to fall loading shall be removed from service.

6. Lockout/Tagout: Lockout/Tagout the power source prior to making adjustments or repairs to any equipment. *DO NOT DEPEND* on the control switch on drills, grinders etc. ***UNPLUG THEM.***

7. Electrical Tools, Cords:

- Tools are to be visually inspected by the employee prior to use. Take out of service any tool or cord found to be defective immediately.
- Use approved ground fault circuit interrupters, for all temporary wiring, that are not part of the permanent wiring of the building or structure.
- When using existing building power that is not protected by ground fault circuit interrupters, the Contractor shall supply and utilize in-line (pigtail) ground fault circuit interrupters.
- Use an Assured Grounding Conductor Program in tandem with all ground fault circuit interrupters.
- Check the RPM rating of grinding wheels or discs. The RPM rating must be greater than that of the driver.
- Do not alter tools and guards.
- maintain electrical cords and welding leads at a 7-foot level, avoiding pinch points and creating trip hazards.
- Do not tie electric cords to metal rods or nails.

8. <u>Ladders</u>:

- Ladders must be free from defects.
- Place the ladder so that its base is out 1/4 the distance of the height.
- Tie ladders at the top or secure at the base.
- Do not extend extension ladder its full length; overlap at least 3 rungs.
- Do not use stepladders as extension ladders.
- Fully extend stepladders and lock in position.
- Only one employee, at a time, shall work off a stepladder.
- Do not stand or sit on the top or top two rungs of a stepladder.

9. <u>Scaffolds</u>:

- Completely deck all scaffolds, platforms, and staging, with decking secured, and built with standard handrails and toe boards on open sides and ends.
- The footing for scaffolds shall be sound and capable of carrying the maximum intended load.
- Do not erect, move, dismantle or alter any scaffold except under the supervision of a competent person.

10. <u>Explosive Actuated Tools</u>: Employees must be trained/certified before they may use these tools.

11. <u>Clothing</u>:

- Employees will work fully clothed.
- Sleeve-less shirts, tank tops, half shirts <u>are not</u> permitted.

- All employees shall wear sturdy work-boots while on the project. Some tasks may require additional foot protection.

12. **Jewelry:** Use good judgment as to what type of jewelry will not constitute hazard. For instance, earrings or chains that could get caught in machinery are not allowed.

13. **Compressed Gas Cylinders:**

- Cap, tie-off, or otherwise properly store compressed gas cylinders when not in use.
- Cylinders must remain in the upright position at all times.
- Keep protective caps in place.
- Do not use oil or grease on valves or gauges.
- Separate oxygen cylinders in storage from fuel-gas cylinders by at least 20 feet, or by a 5-foot wall with a 30-minute fire rating.

14. **Lift Carefully:** Like everything else, the right way to lift is easier and safer. If the load is too heavy, ***GET HELP.*** Do not lift with your back, bend your knees.

15. **Lifting And/Or Swinging Loads:**

- Do not walk under a suspended load or permit others to do so.
- Barricade the lift area to control access into the area.
- Never pick up a load in excess of the capacity of the equipment
- Only one person at a time will give hand signals to operator.
- Use tag lines to control loads.
- Never leave a suspended load unattended.
- Never ride on a load, crane hook, headache ball, or forks of a lift truck.

16. **Rigging:**

- Never use hands or feet to guide cable or line onto a drum or hoist. Use a bar as a guide.
- When it is necessary to stretch cables or lines across roads or walks, block the road or walk if the cable or line is lower then 14 feet above roads or less than 7 feet above walks.
- Seat chain links into a hook by hand pressure only. Never hammer a chain link onto a hook.
- Use approved method to fasten hoisting equipment together.
- Follow the manufacturer's recommendations in determining the safe working loads of hooks. Test all hooks for which no applicable manufacturer's recommendations are available to twice the intended safe working load before they are initially put into use.

17. **Chain Blocks:**

- When using chain blocks, inspect and check for proper operation using a test load before making a critical lift.

- Know how much you are lifting and the chain block limitations.
- No more then one person at a time shall pull on the chain of a block.
- Never use a load chain as a sling for lifting.
- Do not use chains for rigging purposes, with the exception of chain falls with the capacity plate intact.
- Straighten chains and make every link seat before lifting. Never jerk or put any strain on a kinked chain.
- Use appropriate or rated material to suspend or anchor chain blocks.

18. Equipment Operations:

- Operators must be trained for the type of equipment being operated. The Contractor shall provide proof of competency for all individuals operating heavy equipment.
- Passengers are not allowed to ride on equipment with operators.

19. Access: Climbing, sliding down columns or diagonal bracing is not permitted. Walking elevated beams and pipe without being tied off is not permitted.

20. Permits: There are various permits required on the project. The general contractor will issue appropriate permits and maintain records. Commonly used permits include:

- Hot Work: Any work, tool, or equipment (welding, burning, grinding, vehicles, portable welders, etc.) which might provide a source of ignition in areas where combustibles are present.
- Confined Space: The authorization required to enter any vessel, pipe, confined space, excavation etc., for any reason.
- Lock And Tag: Prevents operation of a valve, switch or piece of equipment when injury or property damage could result from the operation.
- Excavation: Authorization to excavate anywhere on campus. An excavation permit shall not be issued until a Dig-Safe number is issued and active.
- Scaffold: Permission to use a scaffold that has been erected. A scaffold permit shall be secured by each new Contractor or Subcontractor that seeks to use a scaffold, following a review of their proposed operation.
- **Failure to follow instructions on a tag or permit will constitute grounds for removing the employee from the site. If you see a tag that you do not understand, ask your supervisor**.

21. Hazard Communication: Handling and storage are the two most common causes of accidents with chemicals. There are several ways that the information is relayed to the employee, these being:

- Container labeling - labels give you information about immediate hazards associated with the chemical.
- Material Safety Data Sheets (MSDS) give you detailed information about the chemical - physical and health hazards, First Aid, fire fighting, protective equipment, etc.

- Know what you are handling, read the label, and if there is any doubt, consult the Material Safety Data Sheet.

22. <u>Parking And Motor Vehicles</u>:

- Employees shall park personal vehicles in designated areas only.
- Posted regulations governing the use of the parking lot shall be followed.
- All vehicles on the University of Rhode Island's premises will be at the risk of the vehicle owner and the University accepts no responsibility for damage to or theft of or from such vehicles.

23. <u>General</u>:

- Drink water only from approved drinking water containers or dispensers.
- Proper housekeeping is essential and will be part of every job.
- Clean up all spills or leaks promptly. The Contractor is responsible for containing and cleaning up all spills caused by its workforce.
- Obey all posted speed limit signs.
- Pedestrians will have the right-of-way.
- Yield right-of-way to emergency vehicles.
- Smoking is permitted in designated areas only.
- No firearms or weapons are allowed on the job site.
- Riding on any equipment that is not designed for personnel transport is prohibited.
- Ride in vehicles with seats firmly attached.
- Employees must obey all danger and caution signs.
- Correct all unsafe conditions when possible. Report all unsafe conditions to your immediate supervisor or safety personnel.
- No running is permitted on the job site.
- All material raised and lowered from any height must be done by rope (No dropping or throwing).
- No horseplay will be tolerated.
- No fighting. All involved will be subject to being removed from the site.

24. <u>Drug Screening/Substance Abuse Policy</u>:

- Drugs, alcohol, and any form of non-prescription medications shall be prohibited, as well as reporting to work under their influence. Those involved in distributing or accepting any form of illegal drugs or alcohol on the job site will be terminated.
- An employee on any type of prescription medication must notify his/her supervisor before starting work for the day.
- All employees on the jobsite are subject to drug testing for reasonable suspicion, as determined by the Contractor or the University of Rhode Island. The Contractor is responsible for administering drug tests. Employees testing positive in a drug test will be dismissed from the site.

· Refusal by any employee to submit for reasonable suspicion testing will be interpreted as a positive test result. The employee will be dismissed from this site.

25. <u>Acknowledgement</u>:

- This is to acknowledge that I have received and read the University of Rhode Island's General Requirements and Safety Orientation Guidelines. The requirements and guidelines in this section of the Manual are not intended to cover all possible situations.
- I understand that I shall not engage in any activity that could create a safety hazard.
- I agree to abide by the general Requirements and Safety Orientation Guidelines including the drug screening procedures.
- I further understand that any violation of the general Requirements and Safety Orientation Guidelines may be grounds for dismissal from the project.

Print full name:_____

Signed:_____

Date:_____

Craft :_____

Company :_____

Please return this page to your supervisor.

03. CONTRACTOR RESPONSIBILITIES

All Contractors working on the University of Rhode Island's property shall have in effect a safety plan and shall designate a person responsible for safety, whether as a full-time position, or in addition to other duties.

A. General

1. **Authorization to Start Work:** Contractors shall not start work until all necessary insurance coverage paperwork has been submitted and approved by the University of Rhode Island. All contractor employees must receive a safety orientation prior to starting work.

2. **Job Hazard Analysis:** Prior to the start of work activities, each Trade Contractor shall submit to the University of Rhode Island's Safety Representative, in writing, a detailed Job Hazard Analysis of every task to be performed for each construction work activity. This analysis shall be ongoing and shall be submitted for new tasks prior to the start of work activity.

3. **Safety Coordinator:** Each Contractor or Subcontractor shall designate an on-site Site Safety Coordinator, who shall be responsible for supervising safety activities on the site. This individual may be the superintendent or other party located full-time on the site. Site Safety Coordinators are required to attend or to provide proof of completion of an OSHA 10 Hour Hazard Recognition Course, or approved equivalent.

4. **HAZCOM Library:** Each Contractor and Subcontractor shall submit Hazard Communication Plans and Material Safety Data Sheets to the General Contractor, who shall maintain a library of Hazard Communications for all employees at the site.

5. **Contractor's Equipment:** All equipment (owned, leased or rented) brought onto The University of Rhode Island's property by Contractors must be in safe operating condition. The University of Rhode Island's personnel shall have the right but not an obligation at any time to inspect contractors' equipment. Such inspections or failure to inspect shall not relieve contractors of their responsibilities for the safe condition of their equipment.

6. **Emergency:** Contractor shall instruct employees to report emergencies to their immediate supervisors and to the general contractor's superintendent, or, if not **available, by calling 911. Contractor employees are not to go to the scene of the** emergency. Contractor employees are to report to the designated assembly area, do manpower accounting, and remain on standby.

7. **Smoking:** Smoking is prohibited, except at locations approved by the University.

8. **Hot Work:**

. "Hot Work" is defined as any work requiring the use of burning or welding equipment, brazing equipment, explosives, open fires, portable grinders, explosion-activated tools, or any other flame or spark producing equipment.

. Contractors shall not use open fires or spark-producing equipment or do any "Hot Work" when there are combustibles in the area without the knowledge and consent of the

General Contractor.

9. **Connecting into Existing Pipelines, Sewers, or Equipment: C**ontractor shall not open or tie its work into the University of Rhode Island's existing pipelines or equipment without a written permit from the University. After a tie-in has been made to the University's existing lines or equipment, the whole piping or equipment system involved shall be considered the same as the University's existing lines and equipment; a written approval must be obtained from the University before additional work can be done on any of these lines or equipment, unless a blind, approved by the University, has been installed separating the lines and equipment being worked on from the remainder of the system. This permit to open or blind does not constitute a permit to do "Hot Work" on the lines or equipment. Permission must be obtained from the University prior to the use of site utilities; such as, but not limited to, water, steam, and air systems, and fire hydrants. Connections to fire hydrants must have the University's approval before connections are made.

10. **Work on, Adjacent to, or Connecting into Existing Electrical Power Circuits and Work on Electrically Operated Equipment:** Under no circumstances shall contractors work on or connect into The University of Rhode Island's electrical system or work on the University's electrically operated equipment without securing prior written permission from the University. Contractors must have in place approved "Electrical Tag/Lockout Procedure". The procedure shall be administered and supervised by the General Contractor.

11. **Entering Pits, Excavations, and Tanks:**

. Contractors shall not enter any closed container, as defined below, without a confined space entry permit. The general contractor shall issue the permit, and it is valid for only the times and dates specified on the application.

. The spaces referred to above include excavations, open top containers and sewers where the head of a person working therein is below the top of the vessel, excavation or sewer.

12. **Working in the Vicinity of Electric Lines:** When it is necessary for a Contractor to operate cranes or derricks, or perform other work within 20 feet of electric lines (vertically or horizontally), Contractor shall consult The University of Rhode Island to determine whether the electric lines can be de-energized.

13. **Excavations:** All excavations made by the Contractor shall meet OSHA Standards. No excavation work shall be performed without a permit listing an active Dig-Safe number. The Dig-Safe number shall be requested by the contractor and reported in writing to the University's Assistant Director of Facilities Services for Lands & Grounds.

14. **Moving Suspended Loads:** Contractor shall not move loads suspended from mobile equipment without load being secured to prevent swinging. All chains, cables, ropes, etc., suspended from mobile equipment shall be properly fastened. Use tag lines for all loads handled by lifting equipment.

15. **Damage to The University of Rhode Island's Property:** If Contractor damages any of the University of Rhode Island's property, or property of any other Contractor or Subcontractor, the damage shall immediately be reported to the University of Rhode Island and accident report is to be completed.

16. **Warning and Caution Signs:** Contractors shall obey all safety warning signs posted by the University and shall require and monitor that safety equipment required by signs is used.

17. **Fire Extinguishers:** Welding machines, burning rigs and tar pots shall have either a 10BC rated CO_2 or a 20 BC rated dry chemical fire extinguisher in proper working condition located adjacent to the equipment. An extinguisher supplied by the Contractor shall be located at each point where "Hot Work" is being performed.

18. **Compressed Gas Cylinders: Transportation, Storage and Use:**

- Compressed gas cylinders, empty or full, shall be adequately secured in an upright, vertical position when in transportation, storage, or use. Do not store cylinders under pipe or power lines.
- Protective caps must be kept in place.
- Use holders, chains, or keepers to prevent overturning.
- Secure cylinders in a vertical position with a suitable keeper while connected to equipment.
- Do not allow oxygen to come in contact with hydrocarbon in any form.
- Avoid any rough-type handling.
- Contractor shall not use oxygen or acetylene for testing purposes.
- Contractor shall not take any cylinders inside a vessel.
- Contractor must label its gas cylinders with the company name so that they can be identified.

19. **Guarding:**

- Contractor shall guard or place appropriate barricades around temporary openings in floors, handrails, etc., to prevent accidents. Contractor shall replace permanent handrails and guardrails immediately after need for opening has ended. Guards on moving machinery shall be in place or other protection provided before such machinery is operated.
- Contractor shall guard or protect any area into which materials or tools are to be stored.

20. **Electrical Tools and Equipment:**

- Contractor shall ground portable electrical tools, metal buildings and equipment.
- Use explosion-proof, approved portable lights (Underwriters Laboratory or Bureau of Mines Approved) "Hot Work" is not authorized.
- Inspect all lighting equipment before use, especially mercury vapor lights, to insure covers are not broken or missing.
- Only 12-volt or less electrical systems can be used during entry situations.

- Contractor must conform to established Control of Hazardous Energy requirements.

21. <u>Welding and Burning</u>:

- Contractor shall not leave welding and/or burning torches unattended at any time on the University of Rhode Island's premises.
- Whenever there are combustible materials present, sparks from welding must be contained to welding area and there must be a standby person, properly trained and equipped.
- Contractor shall not weld from a personnel cage without an insulated link between the bail and hook.
- Contractor must use flash back prevention in the gas-supplied torches on both oxygen and fuel lines.
- Contractor shall not weld on oil or gas lines or equipment in service unless there is an internal cooling agent to remove heat, such as flowing liquid or gas, and/or unless there is sufficient metal, as approved by a qualified party, to prevent a burn-through.

22. <u>Compressed Air</u>: Contractor shall not use compressed air for cleaning purposes unless the airflow is regulated to 30 psi or less. Compressed air may not be used on personnel for cleaning purposes.

23. <u>Refueling Vehicles and Equipment</u>: Whenever possible, gasoline and fuel shall be dispensed through a pump and hose from an approved fueling tank. If not possible, approved Underwriter or Factor Mutual safety cans with flexible spout may be used. Transfer of fuel in non-approved cans, open containers and glass containers is prohibited. Vehicles and equipment engines must be turned off during refueling. Do not transport gas cans in truck beds with bed liners.

24. <u>Clothing and Grooming Rules</u>:

- Long pants or coveralls are required.
- A well-constructed boot/shoe that provides ankle protection, with a substantial flexible sole, must be worn. Exposure to hazard dictates whether a protective toe guard will be required. Sandals, tennis shoes, or any other street type shoes will not be permitted.
- Wear clothing that covers and protects the body when working or visiting in areas where the probability of exposure to hot liquids, flash fires, or skin irritants exists. This includes some type of arm covering.
- Do not wear loose clothing, such as loose sleeves, neckties, or gloves where there is a probability of it getting caught in moving machinery.
- Hard hats meeting specifications contained in the most current edition of ANSI Z89.1 and/or Z89.2 are required for all personnel requiring access to the job site. "Bump caps" are prohibited.
- Facial hair is not allowed for employees whose work requires the use of respiratory protection devices.
- Wear ear plugs and/or earmuffs while working in areas posted with noise warning signs,

or while working with or near tools or equipment which generate sufficient noise to make normal conversation difficult.

- All employees must meet the requirements of the "Material Safety Data Sheets" for use and wearing of additional protective equipment when working on or with chemicals.

25. **Reporting Requirements:** Contractor must report to The University of Rhode Island:

- All safety-related actions by local, state, or federal government. These include but are not limited to OSHA, EPA, etc. (Contractor shall advise the University of Rhode Island of any planned inspections by any of these agencies. Contractor shall provide copy of all correspondence with any government agencies to the University.).
- Any safety-related complaints to government agencies by employees, union or third parties.
- Any injury or near-miss injury, or any equipment damage or near miss equipment damage in the workplace. Submit reports within 24 hours.

26. **OSHA Records:** Each Contractor or subcontractor must have available OSHA Forms 200 at the site or have this information readily available for inspection by The University of Rhode Island.

27. **Safety Rule Violations:** Safety rule violations by contractor employees noted by the University of Rhode Island's supervisors or employees shall be addressed immediately. Unsafe operations that represent an immediate safety hazard or endanger the safety of site employees shall be stopped immediately and brought to the attention of the University. At the discretion of either the University or the Contractor, employees violating safety rules may be dismissed from the site.

28. **Safety Inspections:** Safety inspections shall be conducted by the General Contractor's Safety Coordinator to ensure Contractors and subcontractors are performing assigned activities in a safe manner. Any problems found shall be brought to the attention of the University of Rhode Island.

29. **Housekeeping:** At all times, keep the job site clean and free from debris, trash, and rubbish. Contractor shall store all materials in a neat and orderly fashion. Dismantled or surplus materials, trash, and debris (including earth, clay, lumber, concrete, metal, insulation, paper, etc.) that falls from Contractor's vehicles shall be promptly cleaned up by Contractor.

30. **Breathing Air:** All air used for breathing purposes must be bottled, compressed breathing air meeting the Grade D breathing air as described in the Compressed Gas Association Commodity Specification G-7.1966.

31. **Ladders:** Ladders that are defective in any way shall be taken out of service. The following requirements pertain to serviceable ladders:

- Straight or extension ladders require non-skid safety feet.
- Secure all ladders at the top whenever they are in use.
- Employees working around energized lines shall use wooden ladders.

- Metal ladders are not allowed.

32. **Scaffolds:** Construct scaffolds to meet OSHA Standards. All scaffolds must meet the following requirements:

- Ladders must be provided for safe access.
- All scaffold planking shall be free of knots and cracks (Class A Scaffold Lumber) and shall completely cover the work platform. Only planking that has been inspected and has had its ends color-coded "green" is permissible for use as scaffold plank. Un-inspected or damaged planking shall be color-coded "red" and cannot be used for scaffold work platforms.
- Scaffolds over 4 feet in height, having a minimum horizontal direction of less than 45 inches, shall have standard guardrails installed on all open sides and ends of the platform. If standard guardrails are not feasible, then personal fall arrest systems (harness/lanyard/anchor) shall be provided by the Contractor and used for fall protection.
- The use of "stilts" is prohibited on this project.
- Maintain an approved scaffold inspection and tagging system.

33. **Safety Harness:**

- A safety harness is required for anyone working in areas exposed to a potential fall of more than 6 feet.
- Secure lanyards whenever handrails or a complete deck does not protect the employee.
- Provide a lifeline, if the employee has nothing with which to secure him/her.
  - The lifeline shall be in compliance with the minimum requirements of OSHA regulations.
  - Check lifelines periodically.
  - Remove from service any lifeline, safety harness, or lanyard actually subjected to fall loading.

34. **Supervisory Responsibility:**

- ***Set a Good Example:*** Contractor supervisory personnel shall at all times set a good example for Contractor employees in order to encourage compliance with these safety rules and regulations.
- ***Provide Adequate Instruction:*** Contractor Supervisory personnel shall provide adequate instruction in and require compliance with:
  - Accident prevention aspects of each job;
  - Use or application of appropriate protective equipment and devices;
  - Use or application of tools and equipment

35. **Cooperate with The University of Rhode Island's Designated Representative:** Contractor Supervisory personnel shall cooperate with The University's designated representatives where the safety aspects of a job require coordination.

36. <u>Site Protection Regulations</u>:

- **Parking Locations:** The University of Rhode Island will designate parking locations for Contractor. All vehicles on the University's premises will be at the risk of the vehicle owner; the University accepts no responsibility for damage to or theft of or from such vehicles.
- **Entrance Gate:** The University may designate a gate for the use of the Contractor and for the delivery of its material and supplies. The Contractor and vehicles serving the Contractor shall use only the designated gate for entrance and exit to and from the job site. The Contractor will make arrangements so that vehicle drivers will know which gate to enter and the appropriate job site location.
- **Use of Subcontractors:** The Contractor shall give the names of subcontractors in writing to the University prior to starting work.
- **Gambling:** All forms of gambling are prohibited on the University's property.
- **Ambulance Service:** Contractor, when working on site, shall coordinate with the General Contractor to make any necessary arrangements for ambulance service. See Section 04. of this Manual.
- **Liquor, Drugs, Firearms:**
  - Any person possessing intoxicating liquors or drugs, or who is under the influence of such, will not be permitted to enter the site or loiter on the site premises.
  - Firearms, alcoholic beverages, or narcotics will not be permitted on the University's property or on the job.
- **Visiting and Loitering:** Visiting and loitering by the Contractors' employees at or around entrance gates or other places on the University's property will not be permitted. Contractor must stay in assigned work areas.

37. <u>Traffic Regulations</u>:

- **Motor Vehicles:** All motor vehicles on site must be in safe operating condition. When entering the site, all motor vehicles must display a valid state inspection sticker on the windshield.
- **Driver's License:** Motor vehicle drivers shall be qualified in accordance with driver's license regulations of any state in the US.
- **Warning Flags:** Use red flags on any load that extends beyond the front, side, or rear of any vehicle.
- **Traffic Signs:** Obey all traffic signs and signals, whether fixed or portable, and cooperate with representatives appointed to direct traffic.
- **Speed Limit:** Operate all vehicles within the site's posted speed limits.

04. EMERGENCY MANAGEMENT

A. Reporting an Emergency During Normal Working Hours

Immediately report any emergency condition the University of Rhode Island Project Manager, or if he cannot be reached, the Office of Capital Projects at (401) 874-2725.

B. Reporting an Emergency During Off Hours

Dial 911 for immediate assistance or emergency response. Attempt to contact Owner's representatives, and inform them as soon as possible of the incident.

C. Off-Hours Emergency Phone List

To be developed when work commences on site.

D. Emergency Access to the Site

To be developed when work commences on site.

05. FIRE PREVENTION/PROTECTION

Contractors and subcontractor shall ensure that their employees comply with all Fire Safety rules and regulations established on this project. Review the applicable OSHA standards under Subpart F—Fire Protection and Prevention; 1926.150, 151, 152, 153, 154, 155.

This section of the Manual pertains to those fire prevention and protection regulations that all construction organizations, contractors, subcontractors, vendors, and others shall observe while working on the project. All contractors'/subcontractors' supervisors and their employees must practice the highest level of fire prevention and protection at all times, but in no case less than required by the OSHA Standards and the specific guidelines that follow.

A. General Requirements

1. The employer is responsible for the development of a fire protection program to be followed throughout all phases of the construction and demolition work, and shall provide for the fire fighting equipment as specified in this subpart. As fire hazards occur, there shall be no delay in providing the necessary equipment.

2. Conspicuously locate all fire fighting equipment and make clearly accessible.

3. Inspect all fire fighting equipment periodically and maintain in operating condition.

4. Make available a temporary or permanent water supply as soon as combustible materials accumulate.

5. Conspicuously mark tanks and containers with the name of the product they contain, and "**FLAMMABLE - KEEP FIRE AWAY**."

B. Fire Extinguishers

1. Travel distance to any fire extinguisher will not exceed 100 feet.

2. Provide a fire extinguisher rated not less than 2A for each 3,000 square feet of building area.

3. Locate one or more fire extinguishers rated not less than 2A on each floor of a multi-story building.

4. Locate at least one fire extinguisher rated not less than 2A adjacent to each stairway in a multi-story building.

5. Extinguishers must be clearly accessible, conspicuously located and be periodically inspected and maintained in operating condition.

6. Provide fire extinguishers rated not less than 10B no less than 50 feet from any area in which more than 5 gallons of flammable or combustible liquids or 5 pounds of a flammable gas are being used or stored.

7. Substitutions for 2A Fire Extinguishers - The following may be substituted for each required 2A extinguisher:

- One water hose of not less than ½" diameter, of not more than 100 feet in length and with a discharge capacity of at least 5 gallons per minute. Hose must have sufficient length and stream range to reach all areas of coverage.

C. <u>Ignition Hazards</u>:

1. Install electrical wiring and components in compliance with OSHA subpart K, to prevent fire hazards.

2. Keep exhaust from engines away from combustible materials.

3. Smoking will be prohibited in the vicinity of operations that are likely fire hazards; post "No Smoking" signs.

4. Use only "approved for use in" lighting equipment in flammable or hazardous locations.

D. Temporary Buildings

1. Do not block any exits with a temporary building.

2. Temporary buildings, when located inside of another structure must be made of either noncombustible material or have a minimum one-hour flame resistance.

3. Keep 10 feet of access around sides of temporary building.

NOTE: This includes change shanties inside of a building.

E. Open Yard Storage

1. Keep the entire storage site clean of combustible debris, and also maintain an access way of at least 15 feet width.

2. Store materials in an orderly fashion, in no case higher than 20 feet, and not within 10 feet of any building or structure.

3. Protect tanks and dispensing units against collision damage.

4. Provide a fire extinguisher of at least 2A rating 25 feet and no more than 75 feet from any storage area.

F. Indoor Storage (combustible materials)

1. Storage shall not obstruct exits.

2. Separate non-compatible materials by a one-hour fire rated barrier.

3. Keep materials piled neatly and with regard to the possibility of fire, maintain an open access way for fire fighting.

4. Maintain at least 36 inches clearance between materials and sprinkler heads. Keep materials at least 36 inches away from fire doors.

G. Flammable and Combustible Liquids

1. Use only approved containers and portable tanks for storage and handling of flammable and combustible liquids. Use only approved metal safety cans for the handling and use of flammable liquids. Do not store flammable and combustible liquids in areas of exits, stairways, or other areas used for the safe passage of people.

2. Do not store more than 25 gallons of flammable and combustible liquids in a room outside of an approved storage locker. Store no more than 60 gallons in a single approved storage cabinet. *Note: See specific OSHA standards 1926. 152 (b) for details concerning approved storage lock/cabinet for flammable and combustible liquids.*

H. Flammable and Combustible Liquids Storage (outside)

1. Post danger/hazard signage (No Smoking or Ignition)

2. Do not exceed 1,100 gallons of individual containers of not more than 60 gallons each in any pile or group, and keep them separated from each other by at least 5 feet. Keep containers at least 20 feet from any building.

3. Grade or dike storage areas to divert spills away from buildings.

4. Separate individual portable tanks exceeding 1,100 gallons from each other by at least feet. Keep tanks at least 20 feet from any building. Vent all tanks per NFPA codes.

5. Maintain all areas of outside storage free of debris, excessive weeds, and other combustibles, and provide a 12-foot access way for fire personnel within 200 feet of storage area.

6. Locate a fire extinguisher rated of not less than 20B not less than 25 feet and not more than 75 feet from the storage area.

I. Dispensing Flammable Liquids

1. Dispense flammable liquids through a closed system.

2. Transfer liquids from one container to another only if containers are bonded.

3. Post "no smoking" signs in area.

4. Use only approved safety cans for minor equipment refueling. Mark can contents such as gasoline, diesel, kerosene, etc.

5. Dispose of flammable and combustible liquids in accordance with governing EPA requirements.

06. CONFINED SPACES

This procedure outlines the requirements for working in Confined Spaces. The purpose is to establish procedures and controls for employees who enter confined spaces that may contain hazardous atmospheres. No contractor or subcontractor employee will be permitted to enter any confined space until the appropriate entry procedures are complete.

A. Responsibilities

The General Contractor shall ensure compliance with this procedure and administer all necessary permitting requirements.

B. Identification of Confined Space Workers

1. Qualified Person: An employee who by virtue of training and/or experience is capable of authorizing Confined Space entry, determining atmospheric conditions, and validating an entry permit. Authorization is delegated by site management and must include the authority to cancel or terminate entry at his / her discretion if hazardous conditions arise or are suspected.

2. Confined Space Attendant (also referred to as "standby personnel"): An employee trained in basic rescue techniques, hazard recognition, communication methods, and control of Confined Space entrants.

3. Confined Space Worker/Entrant: An employee authorized to work in a Confined Space who has received appropriate training to perform his / her assigned duties under the entry permit program.

4. Rescue Team: A team of rescue personnel, either onsite or members of an outside organization, with the responsibility to respond to Confined Space emergencies and perform advanced rescue if and when required.

C. Confined Spaces

1. A confined space is one by which by design, construction, or configuration, has limited means of access and egress, has inadequate natural ventilation, contains or could produce dangerous air contaminants, and which is not designed for continuous occupancy.

2. Each contractor is responsible for determining if the places they work will fall under the confined space requirements.

D. Confined Space Types/Classes

1. **Class "A"** - Presents a situation which is immediately dangerous to life or health (IDLH). These include, but are not limited to, oxygen deficient, explosive or flammable atmospheres, and/or concentrations of toxic substances.

2. **Class "B"** - Has the potential for causing injury and/or illness if preventative measures are not used, but is not considered immediately dangerous to life and health.

3. **Class "C"** - Has had the hazards or potential hazards eliminated or controlled through the use of preventative measures. A Class "C" is considered safe but may be entered only after the Contractor has met the following requirements:

a. Report to the confined space location.

1) Test the confined space for the presence or absence of hydrogen sulfide gas, oxygen, and carbon monoxide.

2) Approve entry based on testing results.

3) Issue an approved confined space entry permit for each confined space entered.

b. Provide standby person for emergency purposes.

c. Have emergency retrieval equipment at the location. e.g. tripod, full body harness, retrieval line, etc.

d. Provide continuous forced air ventilation during the time work is being performed and at least 30 minutes prior to confined space entry.

E. Training and Responsibilities of Designated Employees

1. Qualified Person:

a. Persons to authorize or be in charge of entry will be trained in and perform assigned duties as follows:

1) Ensure that required procedures, practices, and equipment for safe entry are in effect before allowing entry.

2) Conduct appropriate atmospheric evaluation of the Confined Space via the use of testing equipment on which he or she has been trained to operate.

3) Determine that all requirements of the entry permit have been met before allowing entry.

4) Ensure that operations remain consistent with the terms of the entry permit at all times.

5) Cancel entry authorization at any time conditions are inconsistent with the guidelines of this procedure.

6) Terminate entry authorization upon completion of the work.

7) Prohibit unauthorized personnel from entry at all times.

b. Specific training/instruction for Qualified Persons will include:

1) Use of Monitoring Equipment.

2) Hazard Communication.

3) Respiratory Protection.

4) Permit Authorization and Termination

5) Hazard Recognition

6) Contacting Advanced Rescue Personnel

2. Confined Space Attendant

a. Persons authorized as attendants will be trained in and perform assigned duties as follows:

1) Remain stationed outside the Confined Space at all times during entry operations.

2) Maintain an accurate count of all persons inside Confined Spaces.

3) Ensure that permits specifically required by certain projects will be used as required.

4) Recognize potential hazards and monitor conditions to ensure that a safe atmosphere remains.

5) Maintain continuous communication with authorized entrants.

6) Authorize evacuation of Confined Spaces when hazardous conditions or permit violations exist.

7) Prevent entry of unauthorized personnel.

8) Contact advanced rescue personnel if required.

b. Specific training/instruction for Confined Space Attendants will include:

1) Hazard Communication

2) Respiratory Protection

3) Hazard Recognition

4) Communication Techniques

5) Basic Rescue

6) Evacuation Authority

3. Authorized Entrants

a. Employees who work as authorized entrants will be trained in and perform assigned duties as follows:

1) Be aware of Confined Space hazards that may be encountered.

2) Recognize hazard exposure symptoms.

3) Understand exposure hazards and their results.

4) Maintain contact with the attendant.

5) Recognize the need and initiate self-evacuation when necessary or when they perceive that danger is present.

6) Hazard Recognition:

- Communication Techniques
- Use of Personal Protection Equipment
- Self-rescue
- Hazard Communication

F. Permit Requirements

1. The General Contractor will be responsible for issuing permits and ensure compliance with the requirements of this program.

2. Contractor and subcontractor employees will be required to work within the provisions outlined in Confined Space Entry Permit Form CS1. The Qualified Person will complete all portions of the permit. The completed permit will be posted at the Confined Space entrance and will then become the responsibility of the attendant. Upon completion of the shift or the work (whichever is the first to occur), the attendant will sign the permit to indicate that all entrants have safely exited the Confined Space and return the permit to the Qualified Person for retention.

3. Upon placement of the permit, the attendant is responsible for control of the work area and has full authority to cease operations or terminate entry at any time. These actions will be reported to the Qualified Person immediately following their occurrence.

4. A blanket Confined Space Entry Permit may be requested for spaces opened for extended periods of time and in which permanent or temporary/portable ventilation equipment is utilized. Ventilation equipment should be capable of maintaining suitable atmosphere in the space when utilized.

G. Rescue Operations

1. No employee is allowed to make an entry into a confined space for rescue purposes unless properly trained and equipped to do so. If no personnel are authorized for rescue entry, the contractor and/or subcontractor shall secure outside assistance for rescue operations prior to entry into a confined space.

CONFINED SPACE ENTRY PERMIT

Date and Time Issued: _____

Job Site/Space I.D.:_____

Equipment to be worked on:_____

Date and Time Expires:

Job Supervisor:_____

Work to be performed_____

Stand-by Personnel:_____

1. Atmospheric Checks: Time: _____

Oxygen: _____%

Explosive: _____% LFL

Toxic: _____ PPM

2. Tester's Signature_____

3. Source Isolation (No Entry): N/A YES NO

Pumps or lines blinded ( ) ( ) ( )
disconnected, or blocked ( ) ( ) ( )

4. Ventilation Modification N/A YES NO

Mechanical ( ) ( ) ( )
Natural Ventilation Only ( ) ( ) ( )

5. Atmospheric Check after isolation and ventilation:

Oxygen _____% 19.5 %

Explosive _____% LFL 10 %

Toxic _____ PPM 10 PPM H2S

Time _____

Testers Signature _____

6. Communication Procedures: _____

_____

_____

7. Rescue procedures: _____

_____

8. Entry, standby, and back up persons: YES NO

successfully completed required training? ( ) ( )
Is it current? ( ) ( )

9. Equipment: N/A YES NO

Direct reading gas monitor tested ( ) ( ) ( )

Safety harness and lifelines for
entry and standby persons: ( ) ( ) ( )

Hoisting Equipment: ( ) ( ) ( )

Communication line established: ( ) ( ) ( )
SCBA for entry, standby persons: ( ) ( ) ( )
Protective Clothing: ( ) ( ) ( )
All Electric equipment listed
Class I Division I, Group D and
non-sparking tools: ( ) ( ) ( )

10.Periodic atmospheric tests:

Oxygen _____% Time_____ Oxygen _____% Time_____

Oxygen _____% Time_____Oxygen _____% Time_____

Explosive _____% Time_____Explosive ____% Time_____

Explosive _____% Time_____ Explosive ____% Time_____

Toxic _____% Time_____Toxic _____% Time_____

Toxic _____% Time_____ Toxic _____% Time_____

We have reviewed the work authorized by this permit and the information contained here-in. Written instructions and safety procedures have been received and are understood. Entry cannot be approved

if any squares are marked in the "no" column. This permit is not valid unless all appropriate items are completed.

Permit Prepared By PRINT NAME_____ SIGNATURE_____

Approved By: PRINT NAME_____ SIGNATURE_____

Reviewed By: PRINT NAME_____ SIGNATURE_____

THIS PERMIT IS TO BE KEPT POSTED AT THE JOB SITE. RETURN COPY TO SAFETY OFFICE FOLLOWING JOB COMPLETION.

07. COMPRESSED GAS CYLINDERS

The purpose of this procedure is to prevent injury to personnel and damage to property caused by the mishandling of compressed gas cylinders. This procedure applies to all employees, contractors, and visitors who handle compressed gas cylinders.

A. Responsibility:

All contractors will ensure that their affected employees are trained in the proper use and inspection of gas cylinders.

B. General Requirements

1. Secure all cylinders upright and store in assigned places.

2. Never drop cylinders or permit them to strike each other.

3. Replace the valve caps on cylinders when regulators are removed. Do not transport cylinders without valve caps in place.

4. Do not use cylinders for rollers, supports, or any purpose other than to contain gas.

5. Keep sparks and flame away from cylinders. Never place or store cylinders near furnaces, boilers, or other high-temp sources.

6. Identify all compressed gas cylinders by a legibly marked label. Do not accept for use any cylinder that is not identified by a legible label and notify shipping personnel to retrieve the cylinder.

7. Open cylinder valves slowly. Stand to one side of the glass-covered gauge faces when opening cylinder valves. Close cylinder valves when stopping work, moving cylinders, or when cylinders are empty.

8. Mark empty cylinders "**EMPTY**" or "**MT**". Ensure all valves are closed and caps installed.

9. Never tamper with safety devices on valves or cylinders.

10. Cylinders must be equipped with the proper regulators. Inspect all connections and seating surfaces when applying regulators.

11. Contractors are responsible for ensuring that all pressure regulators are inspected/tested.

12. Contractors shall maintain inspection/test records onsite.

13. Contractors will ensure the integrity of each cylinder.

14. Cylinders must not be taken inside tanks or vessels where work is to be performed.

C. Special Rules For Oxygen Cylinders

1. Keep oxygen cylinders clean. Prevent oil or grease from contacting valves, regulators, gauges, fittings, hose lines, pipelines, blowpipes, and any connections.

2. Open the cylinder valve fully when cylinder is in use.

3. Never use oxygen as a pressure medium to blow out obstructed pipelines.

4. Hoses must be equipped with backflow controls and flame arrestors.

5. Oxygen cylinders in storage must be separated from fuel-gas cylinders by a minimum distance of 20 feet or by a 5-foot barrier having a fire rating of at least 30 minutes.

D. Special Rules For Acetylene Cylinders

1. Do not ever use Acetylene at a pressure exceeding 15 pounds per square inch.

2. Do not open an acetylene cylinder valve more than one full turn; then, in case of fire, the valve can be closed immediately.

3. Move acetylene cylinders to open air away from possible sources of ignition if leak occurs that cannot be stopped.

4. Never test for acetylene leaks with an open flame. Use leak detector or soapy water.

08. DRILLING AND BLASTING OPERATIONS

In order to minimize the risk of injury to employees or anyone on this site, the following conditions will set forth the requirements for drilling and blasting operations.

A. Scope

These requirements apply to all activities involving drilling, blasting and hauling of debris on this project.

B. Responsibilities

1. **All Contractors** shall be responsible for implementing the requirements of this plan and directing the activities of their employees and other sub- contractors to ensure compliance. **NOTE: Use of Personal Protective Equipment, i.e. hard hats, safety glasses and safety shoes, are required in all drilling and blasting areas.**

C. Drilling

1. A competent person shall inspect all drilling and associated equipment prior to each use. Correct equipment defects affecting safety before the equipment is used.

2. Inspect the drilling area for hazards before starting the drilling operation.

3. Do not allow employees on a drill mast while the drill bit is in operation or the drill machine is being moved.

4. When a drill machine is being moved from one drilling area to another, secure drill steel, tools, and other equipment, and place the mast in a safe position.

5. Do not drill blasting holes through blasted rock (muck) or water.

D. Haulage of Debris

1. A competent person shall inspect haulage equipment before each shift.

2. Correct equipment defects affecting safety and health before using the equipment.

3. Safely remove debris from all surrounding areas immediately after each blast.

E. Blasting - Use of Explosives

1. Only authorized and qualified persons will be allowed to handle and use explosives on this project.

2. Smoking, firearms, matches, open flame lamps, and other fires, flame or heat producing devices and sparks shall be prohibited in or near explosive magazines or while explosives are being handled, transported or used.

3. No person shall be allowed to handle or use explosives while under the influence of intoxicating liquors, narcotics, or other dangerous drugs.

4. Account for all explosives at all times. Keep explosives not being used in a locked magazine, unavailable to persons not authorized to handle them. Keep an inventory and record of all explosives used onsite at all times. **Notify the University of Rhode Island upon discovery of any loss, theft, or unauthorized entry into a magazine**.

5. Do not abandon explosives or blasting agents.

6. Do not fight any fire where the fire is in imminent danger of contact with explosives. Remove all employees to a safe area and guard the fire area against intruders.

7. Use only original containers, or magazines, for taking detonators and other explosives from storage magazines to the blasting area.

8. When blasting is done in congested areas or in proximity to a structure or highway, or any other installation that may be damaged, the blaster shall take special precautions in the loading, delaying, initiation, and confinement of each blast with mats or other methods so as to control the throw of fragments, and thus prevent bodily injury to employees.

9. Employees authorized to prepare explosive charges or conduct blasting operations shall use every reasonable precaution including, but not limited to, visual and audible warning signals, flags, or barricades, to ensure employee safety.

10. Insofar as possible, conduct blasting operations above ground between sunrise and sundown.

11. Empty boxes and paper and fiber packing materials, which have previously contained high explosives, shall not be used again for any purpose, but shall be destroyed by burning at an approved location.

12. Do not use explosives, blasting agents, and blasting supplies that are obviously deteriorated or damaged.

13. Delivery and issue of explosives shall only be made by and to authorized persons and into authorized magazines or approved temporary storage or handling areas.

14. Do not carry on blasting operations in the proximity of overhead power lines, communication lines, utility services, or other services and structures until the operators and/or owners have been notified and measures for safe control have been taken.

15. The use of black powder on this project is prohibited.

16. Direct and supervise all loading and firing by competent persons thoroughly experienced in this field.

F. Transportation of explosives

1. Transportation of explosives shall meet the provisions of Department of Transportation regulations contained in 49 CFR Parts 171-179, Highways and Railways; and 49 CFR Parts 390-397, Motor Carriers.

2. Motor vehicles or conveyances transporting explosives shall only be driven by, and be in the charge of, a licensed driver who is physically fit. He/she shall be familiar with the local, State, and Federal regulation governing the transportation of explosives.

3. No person shall smoke, or carry matches or any other flame-producing device, nor shall firearms or loaded cartridges be carried while in or near a motor vehicle or conveyance transporting explosives.

4. Do not transport explosives, blasting agents, and blasting supplies with other materials or cargoes. Do not transport blasting caps (including electric) in the same vehicle with other explosives.

5. Vehicles used for transporting explosives shall be strong enough to carry the load without difficulty, and shall be in good mechanical condition.

6. When a vehicle with an open body transports explosives, secure the original manufacturer's container to the bed to contain the cargo.

7. All vehicles used for the transportation of explosives shall have tight floors and any exposed spark-producing metal on the inside of the body shall be covered with wood, or other nonsparking material, to prevent contact with containers of explosives.

8. Every motor vehicle or conveyance used for transporting explosives shall be marked or placarded on both sides, the front, and the rear with the word "Explosives" in red letters, not less than 4 inches in height, on white background. In addition to marking or placarding, the vehicle or conveyance may display, in a manner that will be readily visible from all directions, a red flag 18 inches by 30 inches, with the word "Explosives" painted, stamped, or sewed thereon, in white letters, at least 6 inches in height.

9. Equip each vehicle used for transportation of explosives with a fully charged fire extinguisher, in good condition. An Underwriters Laboratory-approved extinguisher of not less than 10-ABC rating will meet the minimum requirement. Train the driver in the use of the extinguisher on his vehicle.

10. Do not allow vehicles or conveyances carrying explosives, blasting agents, or blasting supplies, inside a building for repairs or servicing.

11. Every motor vehicle transporting explosives shall be **attended to at all times**.
NOTE: **Attended** means the driver or authorized person is physically on the vehicle or can see the vehicle and reach it quickly without any kind of interference.

G. Storage of explosives and blasting agents.

1. Store explosives and related materials in approved facilities required under the applicable provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR part 55; State and Local regulations.

2. Do not store blasting caps, detonating primers and primed cartridges in the same magazine with other explosives or blasting agents.

3. Do not permit smoking and open flames within 50 feet of explosives and detonator storage magazine.

4. Slope ground around magazines away for drainage. Keep the land surrounding magazines clear of brush, dried grass, leaves, and other materials for a distance of at least 25 feet.

5. Explosives and blasting agents storage area must be secured and inaccessible to unauthorized persons.

H. Blaster Qualifications

1. A blaster shall be able to understand and give written and oral orders.

2. A blaster shall be in good physical condition and not be addicted to narcotics, intoxicants, or similar types of drugs.

3. A blaster shall be qualified, by reason of training, knowledge, or experience, in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of State and local laws and regulations which pertain to explosives.

4. Blasters shall be required to furnish satisfactory evidence of competency in handling explosives and performing in a safe manner the type of blasting that will be required.

5. The blaster shall be knowledgeable and competent in the use of each type of blasting method used.

I. Loading of explosives or blasting agents

1. Establish procedures that permit safe and efficient loading before loading is started.

2. All drill holes shall be sufficiently large to admit freely the insertion of the cartridges of explosives.

3. Tamping shall be done only with wood rods or plastic tamping poles without exposed metal parts, but nonsparking metal connectors may be used for jointed poles. Avoid violent tamping. Do not tamp primer.

4. No holes shall be loaded except those to be fired in the next round of blasting. After loading, immediately return all remaining explosives and detonators to an authorized magazine.

5. Do not start drilling until all remaining butts of old holes are examined for unexploded charges. Refire any that are found before work proceeds.

6. No person shall be allowed to deepen drill holes, which have contained explosives or blasting agents.

7. Do not leave explosives or blasting agents unattended at the blast site.

8. Remove machines, and all tools not used for loading explosives into borehole, from the immediate location of holes before explosives are delivered. **Do not operate equipment within 50 feet of loaded holes**.

9. Do not permit activity of any nature other than that which is required for loading holes with explosives in a blast area.

10. Check holes prior to loading to determine depth and conditions. Do not perform drilling within 50 feet of a hole that has been loaded with explosives and the explosives have failed to detonate.

11. When loading a long line of holes with more than one loading crew, separate the crews by practical distance consistent with efficient operation and supervision of crews.

12. Do not load or use explosives underground in the presence of combustible gases or combustible dusts.

13. Stem all blast holes in open work to the collar or to a point, which will confine the charge.

14. Maintain warning signs, indicating a blast area, at all approaches to the blast area. Use minimum 4 inches high warning sign lettering on a contrasting background.

15. Never spring a borehole when it is adjacent to or near a hole that is loaded. Do not use flashlight batteries for springing holes.

16. Allow drill holes to cool, which have been sprung or chambered, and which are not water-filled, before explosives are loaded.

17. Do not leave loaded holes unattended or unprotected.

18. The blaster shall keep an accurate, up-to-date record of explosives, blasting agents, and blasting supplies used in a blast and shall keep an accurate running inventory of all explosives and blasting agents stored on the operation.

J. Inspection after Blasting

1. Immediately after the blast has been fired, disconnect the firing line from the blasting machine.

2. Allow sufficient time, not less than 15 minutes in tunnels, for the smoke and fumes to leave the blasted area before returning to the shot. Have the blaster perform an inspection of the area and the surrounding rubble to determine if all charges have been exploded before employees are allowed to return to the operation, and in tunnels, after the muck pile has been wetted down.

K. Misfires

1. If a misfire is found, the blaster shall provide proper safeguards for excluding all employees from the danger zone.

2. No other work shall be done except that necessary to remove the hazard of the misfire and only those employees necessary to do the work shall remain in the danger zone.

3. Do not attempt to extract explosives from any charged or misfired hole; put in a new primer and reblast the hole. If refiring of the misfired hole presents a hazard, the explosives may be removed by washing out with water or, where the misfire is under water, blown out with air.

4. If there are any misfires while using cap and fuse, keep all employees away from the charge for at least 1 hour. Handle misfires under the direction of the person in charge of the blasting. Carefully trace all wires and search for unexploded charges.

5. Do not permit drilling, digging, or picking until all missed holes have been detonated or the authorized representative has approved that work can proceed.

09. EXCAVATIONS

Every contractor performing excavation work on site must have a properly trained and designated competent person. Contractors shall maintain on site all required excavation documentation in accordance with the provisions of 29 CFR 1926 Subpart P. All such records shall be available for inspection upon request.

A. General Requirements

1. Utility companies and owners shall be contacted, advised of the proposed work, and asked to establish the location of the utility underground installations prior to the start of actual excavation

2. Do not permit employees underneath loads handled by lifting or digging equipment.

3. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials

B. Protection/Barricade

1. Excavations must be barricaded to alert pedestrians and vehicle traffic.

2. Spoil dirt may be used to barricade one side of an excavation.

3. The spoil pile must be at least three (3) feet high and also must be piled at least three (3) feet from the edge of the excavation.

C. Access/Egress

1. Provide access and egress for all excavations. Provide ladders at intervals no greater than 25 feet. Ladders must extend at least three (3) feet above the top of the excavation and must be secured at top and bottom.

D. Fall Protection

1. Provide walkways where employees or equipment are required or permitted to cross over excavations. Provide guardrails, which comply with 1926.502(b), where walkways are 6 feet (1.8 m) or more above lower levels.

2. Provide adequate barrier physical protection at all remote excavations. Barricade or cover all wells, pits, shafts, etc.

3. Upon completion of tasks, excavation must be back-filled.

E. Sloping/Shoring

1. Excavations must be sloped or shored when deeper than five (5) feet.

2. A competent person must check all sloping prior to anyone entering the excavation. See Table (1) for slope requirements.

3. Sloping or benching for excavations greater than 20 feet shall be designed by a registered professional engineer. The approved contract drawing must be kept on site.

F. Inspections

1. The competent person shall conduct an inspection prior to the start of work and as needed throughout the shift.

2. Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions.

3. Conduct inspections after every rainstorm or other hazard-increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.

4. Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, remove exposed employees from the hazardous area until the necessary precautions have been taken to ensure their safety.

G. Water Accumulation

1. Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation.

2. If water is controlled or prevented from accumulating by the use of water removal equipment, a competent person shall monitor the water removal equipment and operations to ensure proper operation

TABLE 1.
Maximum Allowable Slopes

Soil or Rock Type	Maximum Allowable Slopes (H : V)* For Excavations Less Than 20 Feet Deep**
Stable Rock	Vertical (90 Degrees)
Type A ***	3/4:1 (53 Degrees)
Type B	1:1 (45 Degrees)
Type C	1 1/2:1 (34 Degrees)

Notes:

* Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.

****** Sloping or benching for excavations greater than 20 feet shall be designed by a registered professional engineer.

******* A short-term maximum allowable slope of 1/2H:1V (63 degrees) is allowed in excavations in type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H:1V (53 degrees).

10. CRANE OPERATIONS

All cranes must be inspected by qualified persons prior to being used on this jobsite. Affected contractors shall maintain a copy of annual inspection records of such cranes on the jobsite all the time.

A. Set Up

1. <u>Ground/Crane Condition</u>

a. Do not set cranes on unstable ground, backfill or buried pipes.

b. Do not set up cranes where the crane cannot be made level.

2. <u>Overloading</u>

a. Do not use crane to lift more than the rated capacity.

b. Do not ignore or misinterpret load chart.

c. If load computer is used, correctly program the computer.

B. Responsibilities for Crane Operations

1. <u>Affected Contractors/Subcontractors shall ensure that</u>:

a. Personnel involved in maintaining, repairing, transporting, preparing, and assembling the equipment are well trained.

b. Employees clearly understand their responsibilities and the authority necessary to operate cranes safely.

c. Maintenance and inspection program is established and maintained through a written program or ensure that the crane owner has the program in place.

d. Ensure that site supervisors are aware of their responsibilities.

e. Crane and associated equipment are in accordance with the manufacturer's requirements.

2. <u>Crane Operators</u> are responsible for:

a. Knowing the machine functions and limitations

b. Being familiar with crane operating manual

c. Understanding the crane's load chart

d. Inspecting and maintaining the crane regularly

e Informing supervisor of problems, needed maintenance, or necessary repairs (**in writing**)

f. Completing inspections in accordance with the manufacturer's requirements

g. Being aware of site conditions that could affect crane operations

h. Finding out the weight of the load and where the load is to be placed

i. Ensuring adequate rigging

j. Considering all factors that may reduce cranes capacity

k. Knowing basic load rigging procedures

l. Shutting down and securing the machine when leaving unattended.

3. Contractor site supervisor is responsible for:

a. Supervising all work involving the crane, including planning meetings in advance of critical lifts

b. Determining the correct load weight and radius

c. Ensuring the rigging crew is experienced and competent

d. Ensuring the load is properly rigged

e. Ensuring the signalmen are competent and capable of directing the crane

f. Designating signalmen and identifying them to the operator

g. Keeping the public and non-essential personnel clear of working radius

h. Ensuring that all safety precautions are taken when working in the vicinity of power lines.

i. Ensuring all personnel involved in the operation understand their job responsibilities and safety related aspects

C. Pre-Job Planning Requirement

1. Operator – All crane operators shall be properly licensed to operate in the State of Rhode Island. Certification records shall be maintained on the job site by the Contractor and made available to the University of Rhode Island on request.

2. Load charts – Provide and attach a legible load chart in a location accessible to the operator while at the control.

D. Inspections

1. The crane operator shall perform inspections on each crane, in accordance with the requirements of its manufacturer.

2. A thorough, annual inspection of hoisting machinery (cranes and derricks) shall be made by a Government or private agency recognized by the U.S. Department of Labor or the University of Rhode Island. The Contractor must post the most current inspection certificates in the cab or operator's station of the hoisting machinery and provide the University, upon request, a copy of the inspection certificate results.

3. A qualified person shall inspect Cranes not in regular use.

E. Wire Rope: Out of Service Criteria – Take cranes out of service with wire ropes that meet the following criteria:

1. In running ropes – six randomly distributed broken wires in one lay or three broken wires in one stand, in one lay

2. One outer wire broken at the point of contact with the core of the rope which has worked its way out of the rope structure and protrudes, or loops, out from the rope structure

3. Wear of one-third of the original diameter of outside individual wires

4. Kinking, crushing, bird-caging, or any other damage resulting in distortion of rope structure

5. Evidence of heat damage

6. Reduction of nominal diameter from 1/64" to 3/32" depending on rope diameter

11. HOUSEKEEPING

This procedure is designed to outline the project housekeeping requirements for all contractors in order to maintain a safe and clean work environment.

A. Introduction

All contractors are required to maintain their respective work areas in clean, sanitary and orderly condition at all times.

B. Housekeeping

1. Each contractor is responsible for arranging for the removal of all scrap material generated during each project.

2. During the course of construction, renovation, alteration, or repairs, keep all construction debris clear from all work areas and do not allow to accumulate.

3. Properly dispose of all materials according to federal, state and local guidelines.

4. Contractors shall ensure that enough trash receptacles are located within their respective work areas.

5. Clearly mark containers for the contents to be disposed of. (e.g. oily rags, metal, paper waste, etc.)

6. Provide covers for containers used to collect garbage, solvents and other flammable wastes, hazardous wastes such as acids or caustics.

7. Arrange building materials so that they do not pose a hazard to personnel in or around the area.

8. Maintain walking and working surfaces clear of materials and or debris. Cords and hoses must be out of walkways or elevated 7 feet above floor level.

9. Glass containers are not allowed on site.

10. Under no circumstances is the Contractor to leave the jobsite for the day until each of the above Housekeeping requirements is fully complied with. The Contractor shall provide periodic cleanup during the day as necessary to provide working conditions that are clean, sanitary, orderly, and safe.

C. Sanitation

1. Contractors shall ensure that there is adequate supply of drinking water for their employees.

2. Contractors shall provide single use cups.

3. Water containers must be tightly closed and equipped with a tap.

4. The water dispenser shall have the lid taped with the date and time the water was prepared.

5. Provide a trash receptacle near each water dispenser.

6. Water containers must be cleaned daily.

7. Contractors must provide sufficient toilet facilities for their personnel onsite.

12. HAZARD COMMUNICATION PROGRAM

All contractors involved with this project are required to obtain information on any chemicals that are intended to be used onsite, take steps to reduce exposures, substitute less hazardous materials, and establish proper work practices. These efforts will help prevent the occurrence of work-related illnesses and injuries caused by chemicals. Most chemicals/substances used in the workplace have some hazard potential, and thus will be covered by this requirement.

REQUIREMENTS

A. Written Program

1. Each contractor on site must have a written hazard communication program that addresses how information on hazardous chemicals will be provided to their exposed employees.

2. The written program must describe how the requirements for labels and other forms of warning, material safety data sheets, and employee information and training, are going to be met.

B. Identify Responsible Staff

All contractors must identify their employees who will be responsible for conducting Hazard Communication training on site.

C. Identify Hazardous Chemicals/Substances

1. All contractors must prepare a list of hazardous chemicals/substances they plan to bring to the site as part of the written HazCom program.

2. A copy of the list must be supplied to the general contractor.

D. Labels and Other Forms of Warning

1. Label, tag, or mark all containers of hazardous chemicals with the identity of the material and appropriate hazard warnings.

2. If the contractor subsequently transfers the material from a labeled container to another container, the contractor will have to label that container unless the material is for immediate use during the shift period.

E. Material Safety Data Sheets

1. Contractors must have an MSDS for each hazardous chemical that they use on site.

2. Contractors shall use the information contained in the MSDS to design protective programs for their workers.

3. MSDS's must be readily accessible to employees when they are in their work areas during their work shifts.

4. Employees shall not use any chemicals for which the contractor has not received an MSDS. The MSDS provides information needed to ensure proper protective measures are implemented prior to exposure.

5. Copies of all MSDS must be furnished to the general contractor.

F. Employee Information and Training

Each employee who may be "exposed" to hazardous chemicals when working must be provided information and trained prior to initial assignment to work with a hazardous chemical, and whenever the hazard changes. "Exposure" or "exposed" means "an employee is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.) and includes potential (e.g., accidental or possible) exposure."

In reviewing the written program with regard to information and training, the following items need to be considered:

1. Designation of person(s) responsible for conducting training;

2. Format of program to be used (audiovisuals, classroom instruction, etc.);

3. Elements of the training program;

4. Procedure to train new employees at the time of their initial assignment to work with a hazardous chemical, and to train employees when a new hazardous chemical is brought to site.

In general, the most important aspects of training required in this section are to ensure that employees are informed if they are exposed to hazardous chemicals, that they know how to read and use labels and material safety data sheets, and that, as a consequence of learning this information, they are following the appropriate protective measures established by the contractor.

G. Other Requirements

In addition to the above specific requirements, all contractors shall ensure that their programs address the following:

1. Outline of methods the contractor will use to inform employees of the hazards of non-routine tasks;

2. Availability of the written program to employees and their designated representatives; and

3. Established procedures to evaluate program effectiveness.

13. ELECTRICAL SAFETY

Contractors shall ensure that electrical equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees. Electrical equipment and installations used to provide electric power and light at the jobsite shall meet all OSHA and NEC regulations.

A. Examination, Installation and Use of Equipment

Before installation or use, examine electrical equipment to ensure that its operation shall not constitute a safety hazard to employees. Examine such equipment for the following characteristics:

1. Suitability for installation and use in conformity with the provisions of all applicable regulations. Suitability of equipment for an identified purpose may be evidenced by a listing, by labeling, or by certification for the identified purpose.

2. Mechanical strength and durability. For parts designed to enclose and protect other equipment, this includes the adequacy of the protection thus provided.

3. Electrical insulation.

4. Heating effects under conditions of use.

5. Arcing effects.

6. Classification by type, size, voltage, current capacity, and specific use.

7. Other factors that contribute to the practical safeguarding of employees who use or are likely to come in contact with the equipment.

B. Guarding

Guard live parts of electric equipment operating at 50 volts or more against accidental contact. Accomplish guarding of live parts as follows:

1. Location in a cabinet, room, vault, or similar enclosure accessible only to qualified persons.

2. Use of permanent, substantial partitions or screens to exclude unqualified persons.

3. Location on a suitable balcony, gallery, or platform elevated and arranged to exclude unqualified persons.

4. Elevation of eight feet or more above the floor.

5. Entrance to rooms and other guarded locations containing exposed live parts must be marked with conspicuous warning signs forbidding unqualified persons to enter.

6. Electric installations that are over 600 volts and that are open to unqualified persons must be made with metal-enclosed equipment or enclosed in a vault or area controlled by a lock. In additional, equipment must be marked with appropriate caution signs.

C. Grounding of Equipment Connected by Cord and Plug

All non-current carrying parts of electrical equipment must be grounded or have an approved double-insulated setup. Grounded circuits must have enough capacity to carry all of the currents likely to be imposed upon it.

D. Safety-Related Work Practices

1. Protection of Employees

a. Contractor shall determine before operations start if there is any energized equipment or electrical circuit in the work area that might have risk to the worker. Identify equipment and conductors that must be de-energized to the University of Rhode Island Project Manager who will authorize de-energizing the Equipment under the Lockout/Tagout procedure/system. The contractor shall use the project Lockout/Tagout procedure and strictly adhere to these requirements. The University will monitor adherence to the procedures on a regular basis.

b. Where the exact location of underground electric power lines is known, provide employees using jack hammers or hand tools that may contact a line with insulated protective gloves.

c. Even before work is begun, the contractor must determine by inquiry, observation, or instruments where any part of an exposed or concealed energized electric power circuit is located. This is necessary because a person, tool or machine could come into physical contact with the electric power circuit.

d. Contractors shall advise their employees of the location of such lines, the hazards involved and protective measures to be taken as well as to post and maintain proper warning signs.

2. Passageways and Open Spaces

Contractors shall provide barriers or other means of guarding to ensure that workspace for electrical equipment will not be used as a passageway during the time when energized parts of electrical equipment are exposed. Walkways and similar working spaces must be kept clear of electric cords.

3. Lockout and Tagging of Circuits

Contractors shall place locks and tags on controls that are to be deactivated during the course of work on energized or de-energized equipment or circuits. Render equipment or circuits inoperative that are de-energized, and have locks and tags attached at all points where such equipment or circuits can be energized.

4. Testing

a. All electrical work, installation and wire capacities shall be in accordance with the pertinent provisions of the National Electrical Code, ANSI and OSHA standards.

b. All tools, cords and power sets shall have an assured equipment inspection program maintained on a quarterly basis. The color codes for identifying inspected and tested equipment on the project are:

January, February, March	White
April, May, June	Green
July, August, September	Red
October, November, December	Orange

NOTE: The cycle of colors repeats annually.

c. Portable tools will have the appropriate color code affixed to the male (plug) end. Extension cords will have the appropriate color code affixed to both ends (plug and receptacle). The previous quarter's color code will be removed to avoid confusion.

d. Immediately destroy all electrical tools and extension cords found to be defective (examples: missing or broken ground pins, exposed internal conductors), etc.) by cutting off the plug end.

5. Temporary Wiring

a. All necessary open wiring must be made inaccessible to unauthorized employees and visitors. Encase lighting on barricades, fences, or sidewalk coverings in metal raceways. Temporary lighting must have guards to prevent accidental contact with the bulb unless the bulb is deeply recessed in the reflector. Do not suspend temporary lighting by the cord unless the fixture was specifically designed in that manner, as with trouble lights. Operate portable electric lighting used in moist or other hazardous locations such as drums, tanks, vessels, bins, bunkers, etc. at a maximum of 12 volts (non-explosive).

b. Extension cords used with portable tools must be of a heavy duty 3-witre type. Flat extension cords are prohibited. Do not use damaged electrical cords.

c. Suspend all extension cords seven feet (7') above finish floor or work platform. Do not fasten extension cords with staples, hung from nails, or suspended by non-insulated wire.

d. All temporary power panels shall have covers installed at all times. All open or exposed breaker spaces shall be adequately covered or labeled.

e. All electrical equipment and wiring in hazardous locations must conform with the National Electric Code standards. Ground the frames of all cutting, and welding (arc, heli-arc, gas-plasma arc) machines.

f. Fish tapes or lines made of metal or any other conductive material are prohibited. Use nonconductive tapes and lines in their place.

g. All temporary wiring shall be effectively grounded in accordance with the national Electric Code (Articles 305 and 310). All wiring used for temporary lighting shall be non-metallic sheathed cable (NM) or the equivalent as approved by the University of Rhode Island.

E. Ground-Fault Circuit Interrupters

1. Contractors shall use approved ground-fault circuit interrupters for all 120-volt, single-phase, 15-and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure, and which are in use by their employees.

2. Receptacles on the ends of extension cords are not part of the permanent wiring and, therefore, must be protected by GFCI's whether or not the extension cord is plugged into a permanent wiring.

3. These GFCI's monitor the current-to-the-load for leakage to ground. When this leakage exceeds 5 mA±1mA, the GFCI interrupts the current. They are rated to trip quickly enough to prevent electrocution.

4. Contractors shall have in place approved program for testing GFCI's. All records shall be made available for inspection at any time.

This protection is required in addition to, not as a substitute for, the grounding requirements of OSHA safety and health rules and regulations as specified in 29 CFR 1926.

14. LOCKOUT AND TAGOUT

This procedure establishes the minimum requirements for the isolation of energy sources to ensure the safety and health of employees where unexpected start-up or release of stored or residual energy could cause injury. The following principles must apply to energy isolation tasks to ensure an appropriate level of safety and compliance with Safety Standards.

A. Lockout

1. Use only individually keyed locks.

2. A lockout hasp that allows the use of more than one lock may be needed.

3. A piece of chain or cable may be necessary to complete a lockout on some valves or controls and shall be used wherever needed.

4. When voltage exceeds 600 volts, components must be grounded.

B. Danger Tags

1. Danger tags, on the spot warning of dangerous conditions, shall conform to OSHA specification. **Note: Use the danger tags for lockout purposes only.**

2. Tags will be supplied by the contractors and shall be clearly marked to show their purpose.

C. Procedure

If a device, valve, switch, control or piece of equipment is locked out, attach a danger tag. **Note: Do not operate any device, valve, switch, control or piece of equipment with a danger tag and/or lockout attached regardless of circumstances!**

Contractors are required to check, lock or tag all systems prior to any work. If any of the above methods shows failure of the lockout, stop work and notify the superintendent.

1. Panel Boards (switch gear, etc.)

- **a.** Where placing of lock is not feasible, disconnect the circuit conductor from the breaker and tag out.
- **b.** The panel cover must be of the type that shall cover all breakers when closed and must be equipped with a fastener in order to secure a lock to prevent the panel door from being opened.
- **c.** If the panel cover is of a type that cannot be locked closed, secure a locked, closed and tagged cover over the panel while any work is being performed on any of those circuits.

Note: If the above cannot be accomplished, tag out each circuit as prescribed and post an employee by the panel board to prevent breakers from being tampered with. Assign this physical presence daily until the work is complete.

2. All danger tags shall be dated and signed by the employee who is working on the system. Also, the intended work and equipment for which the tag has been placed must be shown.

3. If employees of more than one contractor or crew are to work on a system, circuit, machinery, or component, the lead man from the craft shall place his or her individual lock and tag; and verify that the system, circuit, machinery or component being tagged, is indeed the system that is to be worked on.

4. Only the person who placed the lock and tag shall remove it without special authorization from the contractor's safety representative.

5. If the lock must remain after one shift, the incoming lead person will assume the responsibility of securing a new issue lock and tag. Secure the tagged system until all work is accomplished.

6. Remove from the Project any employee(s) or person(s) found to have removed another's lock and/or tag without authorization.

D. Operating Equipment

All systems covered under this section (e.g., electrical, mechanical, or others),are considered to be systems in the care/custody/control of the General Contractor.

Contractor's Responsibility:

1. Contractor/sub-contractor shall ensure that fuses and breakers have been removed, when applicable.

2. Contractor/sub-contractor shall tag, lock and try system to ensure that the system cannot be accidentally re-energized.

E. Lock Cutting/Removal

In the event it becomes necessary to remove an employee's lock, due to his/her absence from the project with a family emergency, or sudden illness, Strictly adhere to the following procedures:

1. Contact the employee's immediate supervisor and inform of the reason for the request.

2. Alternatives shall be considered, for example, rescheduling the work if possible. The contractor's safety representative must take precautions to ensure the safety of all employees in the affected work area.

15. BARRICADE TAPE PROGRAM

Use barricade tape for a visual warning only. Do not use it as a physical protection for floor edges, roof edges, floor openings, etc. For physical protection, barricades capable of supporting 200# must be erected

Listed below are various types of barricade tape and their proper usage.

A. Yellow/Black Caution Tape

Use this type of barricade tape to warn individuals of a hazard that can be seen and avoided. Personnel may enter this type of barricade if they are wearing the appropriate required personal protective equipment. Personnel may enter without permission from contractor. Use this barricade tape for, but not limited to, the following:

1. General material storage area.
2. General work area.
3. Identification of slip/trip hazards.

B. Red "Danger" Tape

Use this type of barricade tape to identify areas where entry of employees is restricted due to the nature of the hazard. No one may enter this area without first obtaining permission from the contractor responsible for erecting the barricade. Use this barricade tape for, but not limited to, the following:

1. Around counterweight of equipment.
2. Overhead works where materials may fall to lower levels.
3. High-pressure water cleaning, sand blasting, etc.

16. HOT WORK

Refer to* Document 00740 – HOT WORK PROCEDURE *in the applicable Project Manual for requirements for safe work practices to be used when performing hot work on the project. Hot work is to be defined as an open flame, welding arc, non-explosion proof electrical tools or equipment and any heat source capable of causing ignition.

17. LADDERS

The purpose of this safety regulation is to outline the proper use and care of portable ladders on site. Scaffold ladders are addressed in the scaffolding procedure.

A. Responsibility

All contractors and subcontractors are responsible for ensuring the portable ladders used by their employees are in good working condition.

B. General Requirements

1. Personnel using ladders will be responsible for inspecting them before use and reporting any defective ladders to their supervisor**. These ladders will be taken out of service immediately and destroyed if repair is not feasible.**

2. Contractors shall inspect ladders prior to use. The inspection will include the rungs, feet, lanyard (for extension ladders), side rails, and rivets.

3. Do not use ladders with broken or missing steps, rungs or cleats, broken side rails or other faulty parts. A **"DANGER, DO NOT USE"** tag must be attached.

4. All personnel shall face the ladder while ascending or descending.

5. All personnel shall have their hands free of material while climbing ladders. Use handlines to raise or lower materials as needed.

6. **No portable metal ladders are permitted on the project**. Use fiberglass ladders for electrical work when there is danger of electrical shock.

7. Portable ladders classification:

a. Portable Ladders: Can be either straight (fixed heights, not taller than 12 feet), or extension (two sections or more combined to reach maximum height).

b. Stepladders: Scissors-type opening ladders that are self-supporting.

8. Identify all portable ladders **by contractor name**, properly stored at their assigned location when not in use, and kept in good, clean condition.

9. Equip all ladders with safety feet. Both feet of extension ladders and stepladders shall rest on solid support and be at the same level.

10. Do not place ladders in front of doors unless the door is locked, roped off, or guarded.

11. Do not use tops of ordinary types of stepladders as steps or work platforms. All ladders shall be of sufficient length so that work can be performed while at or below the fourth rung of the ladder from the top or as recommended by the ladder manufacturer (as labeled on ladder).

12. Place all portable ladders, other than stepladders, on the ground or other support so that the distance from the base of the ladder to a line dropped vertically from the top support is approximately one-fourth of the length of the ladder. Example: Place a 16-foot ladder so that the bottom is four feet away from the wall.

13. Secure all portable ladders before starting a job. Another employee shall hold the bottom of the extension ladder while the ladder is being tied off or secured.

14. All ladders used for access to another level shall be of sufficient length so that the top is at least 3 feet above the upper landing.

15. Ladders shall rest on solid support and the feet shall be level. Do not use boxes, barrels or other unstable bases to obtain additional height.

16. Makeshift ladders are **PROHIBITED**.

17. Do not use stepladders (folding ladders) as straight ladders. When using a stepladder, make sure the spreader braces are locked to prevent collapse.

18. Only one employee shall be on a ladder at a time, except in extreme emergency.

19. Keep rungs of ladders free of grease and oil.

20. Do not lean to outside with a shoulder being more than 12 inches beyond the side rail while on a ladder.

21. When it is necessary to do work requiring the release of both hands from an extension ladder, use fall protection. Secure fall protection to a structure of adequate strength for the purpose. Do not secure to the ladder. When ladders are used as a work platform (meaning not just for access/egress) they must meet the minimum requirements of 100% fall protection over six feet.

22. Do not use tools in a position that will transmit an extensive downward force to the ladder, causing rung or step failure.

23. Adjustment of extension ladders shall only be made by the user when standing at the base of the ladder.

24. At the end of the workday, move ladders from the work areas so as not to create a tripping or bumping hazard. Return the ladders to proper storage areas.

C. Job-Built Ladders

1. Use other means such as stairways, scaffold stair towers, or extension ladders before building job ladder if at all possible.

2. Use the following charts and measurements in constructing the ladder; (Ladder Table 2, 3 and Figures 1 through 14).

18. SCAFFOLDING

Inspect all scaffolds, erected and/or dismantled under the supervision of a competent person. No contractor on this site shall allow any employee to erect or use as scaffold without being properly trained.

Contractors are required to comply with all requirements of OSHA regulations dealing with scaffold erection, inspection and training. Use the following provisions as a guide only. Contractors shall maintain a comprehensive program on scaffold erection and use.

A. General Requirements

1. The footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks, shall not be used to support scaffolds or planks.

2. No scaffold shall be erected, moved, dismantled, or altered except under the supervision of competent persons.

3. Guardrails and toe boards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor, except needle beam scaffolds and floats. Scaffolds 4 feet to 10 feet in height, having a minimum horizontal dimension in either direction of less than 45 inches, shall have standard guardrails installed on all open sides and ends of the platform.

4. Guardrails shall be 2 x 4 inches or equivalent, approximately 42 inches high, with a mid rail, when required. Supports shall be at intervals not to exceed 8 feet. Toe boards shall be a minimum of 4 inches in height.

5. Where persons are required to work or pass under the scaffold, scaffolds shall be provided with a screen between the toe board and the guardrail, extending along the entire opening, consisting of No. 18 gauge U.S.Standard wire ½ inch mesh, or the equivalent.

6. Scaffolds and their components shall be capable of supporting without failure at least 4 times the maximum intended load.

7. Any scaffold including accessories such as braces, brackets, trusses, etc., weakened from any cause shall be immediately repaired or replaced.

8. All load-carrying timber members of scaffold framing shall be a minimum of 1,500 psi. fiber (Stress Grade) construction grade lumber. All dimensions are nominal sizes as proved in the American Lumber Standards, except that where rough sizes are noted, only rough or undressed lumber of the size specified will satisfy the minimum requirements.

9. All planking shall be scaffold grades, or equivalent, as recognized by approved grading rules for the species of wood used.

10. All planking of platforms shall be overlapped (minimum 12 inches), or secured from movement.

11. An access ladder or equivalent safe access shall be provided.

12. Scaffold planks shall extend over their end supports not less than 6 inches or more than 12 inches.

13. The poles, legs, or uprights of scaffolds shall be plumb, and securely and rigidly braced to prevent swaying and displacement.

14. Overhead protection shall be provided for men on a scaffold exposed to overhead hazards.

15. Slippery conditions on scaffolds shall be eliminated as soon as possible after they occur.

16. No welding, burning, riveting, or open flame work shall be performed on any staging suspended by means of fiber or synthetic rope. Only treated or protected fiber or synthetic ropes shall be used for or near any work involving the use of corrosive substances or chemicals. Specific requirements for boatswain's chairs and float or ship scaffolds are contained in the OSHA manual.

17. Wire, synthetic, or fiber rope used for scaffold suspension shall be capable of supporting at least 6 times the rated load.

18. The use of shore or lean-to-scaffolds in prohibited.

B. Tube and Coupler Scaffolds

1. A light duty tube and coupler scaffold shall have all posts, bearers, runners, and bracing of nominal 2-inch O.D. steel tubing. The posts shall be spaced no more than 6 feet apart by 10 feet along the length of the scaffold. Other structural metals when used must be designed to carry an equivalent load. No dissimilar metals shall be used together.

2. A medium duty tube and coupler scaffold shall have all posts, runners, and bracing of nominal 2-inch O.D. steel tubing. Posts spaced not more than 6 feet apart by 8 feet along the length of the scaffold shall have bearers of nominal 2 ½-inch O.D. steel tubing. Posts spaced not more than 5 feet apart by 8 feet along the length of the scaffold shall have bearers of nominal 2-nch O.D. steel tubing. Other structural metals, when used, must be designed to carry an equivalent load. No dissimilar metals shall be used together.

3. A heavy-duty tube and coupler scaffold shall have all posts, runners, and bracing of nominal 2-inch O.D. steel tubing, with the posts spaced not more than 6 feet by 6 feet-6 inches. Other structural metals, when used, must be designed to carry an equivalent load. No dissimilar metals shall be used together.

4. Tube and coupler scaffolds shall be limited in heights and working levels to those permitted in Tables L-10, 11 and 12 (enclosed). Drawings and specifications of all tube and coupler scaffolds above the limitations in Tables L-10, 11 and 12 shall be designed by a qualified engineer competent in this field.

5. All tube and coupler scaffolds shall be constructed and erected to support four times the maximum intended load, as set forth in Tables L-10, 11, and 12, or as set forth in the specifications by a licensed professional engineer competent in this field.

6. Posts shall be accurately spaced, erected on suitable bases, and maintained plumb.

7. Runners shall be erected along the length of the scaffold, located on both the inside and the outside posts at even height. Runners shall be interlocked to the inside and the outside posts at even heights. Runners shall be interlocked to form continuous lengths and coupled to each post. The bottom runners shall be located as close to the base as possible. Runners shall be placed not more than 6 feet-6 inches on centers.

8. Bearers shall be installed transversely between posts and shall be securely coupled to the posts bearing on the runner coupler. When coupled directly to the runners, the coupler must be kept as close to the posts as possible.

9. Bearers shall be at least 4 inches but not more than 12 inches longer than the post spacing or runner spacing.

10. Cross bracing shall be installed across the width of the scaffold at least every third set of posts horizontally and every fourth runner vertically. Such bracing shall extend diagonally from the inner and outer runners upward to the next outer and inner runners. Longitudinal diagonal bracing on the inner and outer rows of poles shall be installed at approximately a 45 degree angle from near the base of the first outer post upward to the extreme top of the scaffold. Where the longitudinal length of the scaffold permits, such bracing shall be duplicated beginning at every fifth post. In a similar manner, longitudinal diagonal bracing shall also be installed from the last post extending back and upward toward the first post. Where conditions preclude the attachment of this bracing to the posts, it may be attached to the runners.

11. The entire scaffold shall be tied and securely braced against the building at intervals not to exceed 30 feet horizontally and 26 feet vertically.

C. Tubular Welded Frame Scaffolds

1. Metal tubular frame scaffolds, including accessories such as braces, brackets, trusses, screw legs, ladders, etc., shall be designed, constructed and erected to safely support four times the maximum rated load.

2. Spacing of panels or frames shall be consistent with the loads imposed.

3. Scaffolds shall be properly braced by cross bracing or diagonal braces, or both, for securing vertical members together laterally, and the cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, square, and rigid. All brace connections shall be made secure.

4. Scaffold legs shall be set on adjustable bases or plain bases placed on mud sills or other foundations adequate to support the maximum rated load.

5. The frames shall be placed one on top of the other with coupling or stacking pins to provide proper vertical alignment of the legs.

6. Where uplift may occur, panels shall be locked together vertically by pins or other equivalent suitable means.

7. To prevent movement, the scaffold shall be secured to the building or structure at intervals not to exceed 30 feet horizontally and 26 feet vertically.

8. Drawings and specifications for all frame scaffolds over 125 feet in height above the base plates shall be designed and stamped by a registered professional engineer.

9. Guardrails made of lumber, not less than 2 x 4 inches (or other material providing equivalent protection), and approximately 42 inches high, with a mid rail of 1 x 6 inch lumber (or other material providing equivalent protection), and toe boards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toe boards shall be a minimum of 4 inches in height.

D. Manually Propelled Mobile Scaffolds

1. When free-standing mobile scaffold towers are used, the height shall not exceed four times the minimum base dimension.

2. Casters shall be properly designed for strength and dimensions to support four times the maximum intended load. All casters shall be provided with a positive locking device to hold the scaffold in position.

3. Scaffolds shall be properly braced by cross bracing and horizontal bracing.

4. Platforms shall be tightly planked for the full width of the scaffold except for any necessary entrance opening. Platforms shall be secured in place.

5. A ladder or stairway shall be provided for proper access and exit, and shall be affixed or built into the scaffold and so located that when in use, it will not have a tendency to tip the scaffold. A landing platform must be provided at intervals not to exceed 35 feet.

6. The force necessary to move the mobile scaffold shall be applied near or as close to the base as practicable and provision shall be made to stabilize the tower during movement from one location to another. Scaffolds shall only be moved on level floor, free of obstructions and openings.

7. The employer shall not allow employees to ride on manually propelled scaffolds unless the following conditions exist:

a. The floor or surface is within 3 degrees of level, and free from pits, holes or obstructions;

b. The minimum dimension of the scaffold base when ready for rolling, is at least one-half of the height. Outriggers, if used, shall be installed on both sides of staging;

c. The wheels are equipped with rubber or similar resilient tires; and all tools and material are secured or removed from the platform before the mobile scaffold is moved.

d. Scaffolds in use by any persons shall rest upon a suitable footing and shall stand plumb. The casters or wheels shall be locked to prevent any movement.

e. Guardrails made of lumber not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a mid rail of 1 x 6 inch lumber (or other material providing equivalent protection) and toe boards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toe boards shall be a minimum of 4 inches in height.

19. SITE SAFETY MANAGEMENT

Project safety is a primary responsibility of all management and supervisors and all employees on this site. Each Contractor represented has overall responsibility for safety for their employees.

A. Functions and Responsibilities

The Owner's Safety Representative is responsible for the following functional operations of the project safety programs:

1. Develop applicable safety standards for the project in accordance with The University of Rhode Island's policies and procedures, and any other applicable government regulations.

2. Participate in work-site layouts to assure adequate work areas, traffic control, parking areas, lighting levels, receiving areas, etc. Assure that location of offices, shops, maintenance areas, medical, and sanitation facilities reflect safety considerations.

3. Maintain liaison with appropriate client personnel, insurers, federal and state inspectors and others in matters of safety.

The General Contractor has the overall responsibility for:

1. Implement applicable safety standards for the project in accordance project policies and procedures, and any other applicable government regulations.

2. Ensuring that all new hires receive appropriate training and orientation before working on the project.

3. Review work schedules as they are planned to be aware of the number of contractors and craft workers working in the various areas; anticipate hazards and implement supporting safety activities.

4. Maintaining surveillance of job-site working conditions and safety practices bring findings to the attention of Owner.

B. Practices and Procedures

1. The General Contractor safety representative monitors orientation for all contractor personnel.

2. Owner's representative may periodically audit contractor files to review the safety programs' contents.

3. Each contractor is expected to conduct Tool Box/safety meetings at a minimum of once per week. More frequent meetings are recommended. Copies of topic discussed must be kept on file for review upon request.

C. Safety Equipment

1. Contractor employees are expected to provide their own safety equipment prior to arriving on site.

2. Approved safety equipment as required by the Federal and State Safety and Health Regulations must be available at all times, and strict enforcement of its proper use is exercised by project supervision.

D. Safety Hazards

The Contractor Safety representative shall conduct written safety inspections of work areas and evaluate conditions as they relate to safe work practices. In any area that the representative identifies as dangerous to personnel or property, work shall be stopped to correct hazards immediately.

E. Safety Inspections & Reports

1. Each contractor is required to conduct frequent, at the minimum, daily inspections of their work areas in order to ensure that their employees are working in a safe manner.

2. The Owner's Safety Representative will also perform periodic safety inspections of the site. Affected contractor(s) shall promptly correct any infractions or poor safety practices uncovered by these inspections.

20. STEEL AND PRE-CAST CONCRETE ERECTION

This procedure provides guidelines for the steel erection process and the protection of personnel during steel erection. The steel erecting contractor is required to submit a fall protection plan for the different phases of erection. The plan shall be presented and discussed with The University of Rhode Island before signing contract documents.

A. Planning

1. The potential for serious injury is high for workers engaged in steel erection. Persons performing this type of work must be adequately trained concerning the procedures and hazards prior to beginning steel erection work.

2. Thorough planning is essential and is required for all steel erection. The steel erection contractor must submit a safety program that will, at the minimum, address the following factors:

- Rigging hardware
- Permit requirements
- Training of personnel
- Scheduling (identify responsibilities, procedures, timing, etc.)
- Equipment (cranes, aerial lifts)
- Erection sequence to decrease exposure
- Barricades and warning signs for personnel and equipment protection
- Availability and location of emergency equipment
- Means of access, e.g. stairs, scaffolds, ladders
- Tools appropriate for the task
- Proper personal protective equipment for each worker
- Detailed pre-lift meetings with specific safety instructions
- Method of fall protection/arrest
- Adjacent structures, high voltage lines, transformers

3. An erection plan will be prepared by the Erection Contractor and reviewed with the University of Rhode Island Project Manager prior to the start of work. The Erection Contractor shall have a qualified person prepare a site-specific safety erection plan prior to the start of erection. This erection plan shall be provided to the University Project Manager.

4. An Erection Contractor qualified person shall approve all changes in the safety erection plan. A copy of the erection plan shall be maintained at the job site showing all approved changes.

5. The implementation of the erection plan shall be under the supervision of a competent person.

B. Flooring

1. Permanent floors shall be installed as the erection of the structural members progresses. At no time shall there be more than four floors or 48 feet of unfinished bolting or welding above the foundation or uppermost permanently secured floor. Where skeletal steel erection is being done, temporary and/or permanent flooring shall be maintained within two stories or 30 feet, whichever is less, below and directly under that portion of each tier of beams on which any work is being performed. Planking shall not be less than two inches thick, full size undressed, and shall be laid tight and secured against movement.

2. On buildings or structures not adaptable to temporary floors, and where scaffolds are not used, safety nets shall be installed and maintained wherever the potential fall distance exceeds two stories or 25 feet. The nets shall be hung with sufficient clearance to prevent contacts with the surface of structures below.

C. Floor Periphery

1. A guardrail system of two (2) ½ inch diameter wire rope cables shall be erected at approximately 42 inches from the floor deck and at the intermediate point immediately following the erection of beams and columns that are connected to provide adequate strength. All sequence breaks will require a two-cable assembly.

2. All connections will require a minimum of tow wire rope clamps. Three wire rope clamps must be installed if the cable is to be used as an anchorage for a fall arrest system.

3. Turnbuckles will be installed at suitable intervals to maintain the tightness of the wire ropes, but in no instance less than one per perimeter side.

4. All anchorage for the wire rope cable will be capable of withstanding a minimum of 200 pounds force if the wire rope is used as a guardrail system or a minimum of 5000 pounds force per person attached if the wire rope is used as an anchorage for a fall arrest system.

D. Bolting, Riveting, Fitting-up, and Plumbing-up

1. When connecting steel, do not release the hoisting line until the steel member is secured with no less than two bolts or the equivalent at each connection and drawn up wrench tight.

2. Containers shall be provided for storing and carrying rivets, bolts, and drift pins, and shall be secured against displacement while aloft. When bolts or drift pins are being knocked out, means shall be provided to keep them from falling. Impact wrenches shall be provided with a locking device for retaining the socket.

E. Personnel Protection

1. In all structures, safety harnesses with shock absorbing lanyards with self-locking hooks must be worn by all employees where exposed to a potential fall of greater than six (6) feet. Static lines shall be installed where needed.

2. Barricades or signs must be placed on lower levels where steel is being erected. All personnel are required to remain outside of the swing radius at all times during lifts. Tag lines shall be used to control all loads.

3. Ladders, stairways, scaffolds, or other means of safe access shall be provided as the work progresses. Climbing or sliding down columns is prohibited. Walking steel must be addressed prior to beginning work. Employees will use 100% fall protection during all phases of steel erection.

F. Safe Work Practices

1. The following guidelines apply to this type of work and shall be part of all pre-job planning safety meetings:

- Use tag lines to control loads
- Provide containers, buckets, bags, etc. for storing or carrying bolts or rivets. When bolts, drift pins or rivet heads are being removed, provide a means to prevent accidental displacement. Secure tools in such a manner as to prevent accidental falling.
- Do not overload bolt bags
- Hoist bolt bags and tools with lines
- When climbing ladders, keep both hands free
- Keep hands and fingers clear of pinch points
- Never work directly over personnel where possible. Where required, provide protection for workers below
- Always inspect all equipment prior to use
- Protect wire rope by using softeners
- Perform no welding or burning operation on scaffolding or staging suspended by synthetic rope
- If working above reinforcing rods, employees must be protected from impalement hazards
- Maintain a safe means of access to the level being worked on. Climbing and sliding on columns and diagonals is not allowed.
- Consider lifeline attachments, dynamic fall restraints and other fall protection provisions during shop drawing preparation, incorporate in fabricated pieces, and anchor safety lines or devices prior to erection whenever possible.
- For the protection of other crafts on the project, post “Danger – Men Working Above” signs in the erection area.
- When loads are being hoisted, prevent all personnel from working under the lift.
- Do not permit anyone to ride a lifting load under any circumstances
- When setting structural steel, secure each piece with not less than two bolts drawn up tight at each connection before the load is released.
- Do not hoist material to a structure unless it is ready to be put into place and secured.
- Secure bundles of sheets or small material so as to prevent their falling from the rigging.
- Rigorously enforce the use of personal fall arrest systems during steel and precast concrete erection.

- Provide all employees engaged in steel and precast concrete erection activities including connecting, bolting up, welding, or other activity that exposes them to a fall of six feet or greater with and use 100% tie-off as the primary means of fall protection. The exception contained within OSHA standard 1926.501.b.12 allowing for a written fall protection program in lieu of this requirement is not acceptable for this project and is prohibited.

21. CONCRETE AND MASONRY

Review the applicable OSHA standards under *Subpart Q- Concrete and Masonry---1926. 700, 701, 702, 703, 704, 706.* ***OSHA lists the full standards; included below are reviews of selected text from the standards and the requirements for our program. If you have any questions regarding the standards or interpretation of a section, notify the safety department for clarification.***

A. General Requirements

1. Do not place construction loads on a concrete structure or portion of a concrete structure unless the employer determines, based on information received from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.

2. Guard all protruding reinforcing steel, onto and into which employees could fall, to eliminate the hazard of impalement.

3. Do not permit any employees (except those essential to the post-tensioning operations) to be behind the jack during tensioning operations.

4. Erect signs and barriers to limit employee access to the post-tensioning area during tensioning operations.

5. Do not permit employees to ride concrete buckets.

6. Do not permit employees to work under concrete buckets while buckets are being elevated or lowered into position.

7. To the extent practical, route elevated concrete buckets so that no employee, or the fewest number of employees, are exposed to the hazards associated with falling concrete buckets.

8. Do not permit any employee to apply a cement, sand, and water mixture through a pneumatic hose unless the employee is wearing protective head and face equipment.

9. Do not permit any employee to place or tie reinforcing steel more than six feet above any adjacent working surface unless the employee is protected by the use of a safety belt or equivalent fall protection.

B. Equipment and Tools

1. Equip concrete mixers with one cubic yard or larger loading skips with a mechanical device to clear the skip of materials; and guardrails installed on each side of the skip.

2. Equip powered and rotating type concrete troweling machines that are manually guided with a control switch that will automatically shut off the power whenever the hands of the operator are removed from the equipment handles.

3. Concrete buggy handles shall not extend beyond the wheels on either side of the buggy. Provide concrete pumping systems using discharge pipes with pipe supports designed for 100 percent overload.

4. Provide compressed air hoses used on concrete pumping systems with positive fail-safe joint connectors to prevent separation of sections when pressurized.

5. Install positive safety latches or similar devices on concrete buckets equipped with hydraulic or pneumatic gates to prevent premature or accidental dumping.

6. Use concrete buckets designed to prevent concrete from hanging up on the top and the sides.

7. Secure sections of tremies and similar concrete conveyances with wire rope (or equivalent materials) in addition to the regular couplings or connections.

8. Construct bull float handles, used where they might contact energized electrical conductors, of nonconductive material or insulated with a nonconductive sheath whose electrical and mechanical characteristics provide the equivalent protection of a handle constructed of nonconductive material.

9. Guard masonry saws with a semicircular enclosure over the blade.

10. Do not permit any employee to perform maintenance or repair activity on equipment (such as compressors, mixers, screens or pumps used for concrete and masonry construction activities) where the inadvertent operation of the equipment could occur and cause injury, unless all potentially hazardous energy sources have been locked out and tagged.

C. Cast-In-Place Concrete

1. Design, fabricate, erect, support, brace, and maintain formwork so that it will be capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork.

2. Drawings or plans, including all revisions, for the jack layout, formwork (including shoring equipment), working decks, and scaffolds, shall be available at the job-site.

3. Inspect all shoring equipment (including equipment used in reshoring operations) prior to erection to determine that the equipment meets the requirements specified in the formwork drawings.

4. Immediately reinforce shoring equipment that is found to be damaged or weakened after erection, such that its strength is reduced to less than that required.

5. The sills for shoring shall be sound, rigid and capable of carrying the maximum intended load.

6. All base plates, shore heads, extension devices, and adjustment screws shall be in firm contact with the foundation and the form, and secured when necessary.

7. Prohibit eccentric loads on shore heads and similar members unless these members have been designed for such loading.

8. Whenever single post shores are used one on top of another (tiered), the employer shall comply with the following specific requirements in addition to the general requirements for formwork:

a. Have the shoring designed by a qualified designer and the erected shoring inspected by an engineer qualified in structural design.

b. Align the single post shores vertically.

c. Splice the single post shores to prevent misalignment.

d. Adequately brace the single post shores in two mutually perpendicular directions at the splice level. Also, diagonally brace each tier in the same two directions.

e. Do not adjust single post shores to raise formwork after the placement of concrete.

f. Erect reshoring , as the original forms and shores are removed, whenever the concrete is required to support loads in excess of its capacity.

D. Vertical slip form

1. The steel rods or pipes on which jacks climb or by which the forms are lifted shall be specifically designed for the purpose; and adequately braced where not encased concrete.

2. Design forms to prevent excessive distortion of the structure during the jacking operation.

3. Provide all vertical slip forms with scaffolds or work platforms where employees are required to work or pass.

4. Position jacks and vertical supports in such a manner that the loads do not exceed the rated capacity of the jacks.

5. Provide the jacks or other lifting devices with mechanical dogs or other automatic holding devices to support the slip forms whenever failure of the power supply or lifting mechanism occurs.

6. Maintain the form structure within all design tolerances specified for plumbness during the jacking operation.

7. Do not exceed the predetermined safe rate of lift.

E. Reinforcing steel

1. Adequately support reinforcing steel for walls, piers, columns, and similar vertical structures to prevent overturning and to prevent collapse.

2. Employers shall take measures to prevent unrolled wire mesh from recoiling. Such measures may include, but are not limited to, securing each end of the roll or turning over the roll.

F. Removal of formwork

1. Do not remove forms and shores (except those used for slabs on grade and slip forms) until the employer determines that the concrete has gained sufficient strength to support its weight and superimposed loads. Base such determination on compliance with one of the following:

a. The plans and specifications stipulate conditions for removal of forms and shores, and such conditions have been followed, or

b. The concrete has been properly tested with an appropriate ASTM standard test method designed to indicate the concrete compressive strength, and the test results indicate that the concrete has gained sufficient strength to support its weight and any superimposed loads.

2. Do not remove reshoring until the concrete being supported has attained adequate strength to support its weight and all loads in place upon it.

G. Pre-cast Concrete

1. Adequately support pre-cast concrete wall units, structural framing, and tilt-up wall panels to prevent overturning and to prevent collapse until permanent connections are completed.

2. Use lifting inserts embedded or otherwise attached to tilt-up pre-cast concrete members capable of supporting at least two times the maximum intended load applied or transmitted to them.

3. Use lifting inserts embedded or otherwise attached to pre-cast concrete members, other than the tilt-up members, capable of supporting at least four times the maximum intended load applied or transmitted to them.

4. Use lifting hardware capable of supporting at least five times the maximum intended load applied or transmitted to the lifting hardware.

5. Do not permit any employee under pre-cast concrete members being lifted or tilted into position except those employees required for the erection of those members.

H. Masonry Construction

Establish a limited access zone whenever a masonry wall is being constructed. The limited access zone shall conform to the following:

1. Establish the limited access zone prior to the start of construction of the wall.

2. The limited access zone shall be equal to the height of the wall to be constructed plus four feet, and shall run the entire length of the wall.

3. Establish the limited access zone on the side of the wall which will be unscaffolded.

4. Restrict the limited access zone to entry by employees actively engaged in constructing the wall. Do not permit any other employees to enter the zone.

5. Maintain the limited access zone in place until the wall is adequately supported to prevent overturning and to prevent collapse unless the height of wall is over eight feet, in which case, the limited access zone shall remain in place.

6. Adequately brace all masonry walls over eight feet in height to prevent overturning and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. Maintain the bracing in place until permanent supporting elements of the structure are in place.

22. HAND AND PORTABLE POWERED TOOLS AND EQUIPMENT

The purpose of this regulation is to provide procedures that will prevent injuries resulting from the use of hand tools. This procedure applies to all hand tools used on site by contractor personnel.

A. Responsibilities

1. Contractors and subcontractors shall ensure only approved tools and equipment are used.

2. All personnel using hand or portable power tools and equipment shall inspect them prior to use.

B. General Requirements

1. Contractors and subcontractors are responsible for the safe conditions of tools and equipment including those furnished by employees.

2. Do not use compressed air for cleaning purposes except when reduced to less than 30 PSI and then only with effective chip guarding and PPE.

3. Tool handles shall be intact and securely attached.

4. Keep cutting tools sharp.

5. Remove any worn or deformed tool shall be removed from service. Repair or discarded it.

6. Secure tools in pouches, sheaths or scabbards to avoid self-inflicted cuts or dropping them on someone else.

7. Do not use "Cheaters" to increase leverage.

8. Use the correct tool for the job.

9. Use the tool properly. Example: When tightening a nut, make sure that the wrench is the proper size, brace yourself and pull on the wrench. Always pull if at all possible. Push only if absolutely necessary.

C. Portable Power Tools

1. Equip circular saws with guards above and below the base plate or shoe.

a. The guards shall cover the saw to the depth of the teeth.

b. The lower guard shall automatically and instantly return to the covering position.

2. Switches: controls

a. Equip all hand held circular and chain saws and precision tools without accessory holding areas with constant pressure switches or controls that turn off when the pressure is released.

b. Hand held power drills, toppers, fastener drivers, disc sanders, grinders, reciprocating saber, scroll and jig saws and other similarly operating tools may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

c. Locate the operating control on hand held power tools so located as to minimize the possibility of its accidental operation.

3. Grounding: Electric tools shall meet all electrical safety requirements.

4. Pneumatic Tools:

a. Install a tool retainer on each piece of equipment where, without such, a blade, bit, wheel or other tool may be ejected.

b. Use air hoses and connections designed for the pressure and service to which they are subjected.

5. Grinders - Portable, Bench and Post

a. General

1) Wear safety glasses and face shields or safety goggles when using grinders. All bench grinders, post grinders, or portable grinders shall have a clean face shield available to this equipment. Clean face shields and leave at the piece of equipment immediately after use.

2) Wheels and drivers must show their rated RPM. The RPM rating of the wheel must be equal to or in excess of the RPM rating of the driver on which it is used.

3) Do not side grind on a wheel unless it is specifically designed for that purpose. Cup grinding wheels and nylon-reinforced wheels are designed for side grinding. Side grinding on a nylon-reinforced wheel

4) Newly mounted wheels must be run at operating speed for at least one minute with the guard in place before beginning grinding. Do not stand in front of the wheel at this time.

5) Keep grinders and buffers in good, safe working condition. Inspect all grinders prior to use. Check face shields for cleanliness and availability.

6) Only a qualified employee shall install abrasive wheels on grinders.

7) Always check to see that grinding wheels, saw blades, sanding and grinding discs are designed to operate at or within intended rotating speed limits.

8) Ensure that protective covers and guards are installed, intact and operational.

9) Check all blades, bits and wheels before every use to insure they are:
- Not cracked (includes ring test for grinding wheels).
- Not out of round
- **N**ot excessively worn.
- Not dull, pitted or caked with clinging bits of material from a previous job.

b. Portable Grinders

1) Equip portable grinders with an operating trigger or handle that automatically stops the power to the wheel when the operator removes his hand.

2) Equip grinding wheels 2" or more in diameter with a safety guard exposing a maximum of 180 degrees of the grinding wheel. Do not remove guards except to change the grinding wheel.

3) Use portable welding shields where portable grinders are in service when the work area is accessible to other people who might be hit by flying sparks, particles, etc.

4) Nylon reinforced wheels shall be limited to a maximum 8-inch diameter.

c. Bench and Post Grinders

1) Equip grinder wheels with wheel guards exposing a maximum of 90 degrees of the grinding wheel, and with an operating light illuminating the grinding wheel work surface.

2) Do not use bench and post grinders for grinding <u>aluminum</u> unless specifically designated for this purpose.

3) Work rests shall be rigid and adjusted within 1/8 inch of the grinding wheel. The tongue guard gap may not exceed 1/4 inch. Do not make adjustments while the wheel is in motion.

d. Cut-Off Saws

1) The automatic raising mechanism shall be in good working order before using a cut-off saw.

2) A hood, which encloses the top half of the cutting wheel, shall be in place before using a cut-off saw.

D. Table Saws

1. Equip all table saws with appropriate blade guards, spreaders and anti-kickback fingers. Equip all other saws with appropriate blade guards. The accessories must be in service while saws are in operation.

2. Only qualified personnel are allowed to operate power saws.

3. Under no circumstances shall adjustments of any kind be made to power saws while in operation.

4. Hand feeding of material near the cutting blade is prohibited. When this work action is required, a push stick must be used.

5. Set a table saw's cutting blade no higher than is necessary to cut through the stock.

6. Keep cutting blades sharp and in good repair.

7. Keep saw tables and work areas clear of scrap and waste.

E. Drill Presses

1. Each drill press must have an approved table work vise on clamps. When the vise is being used, it must be secured to the table with tie-down bolts.

2. **T**he wearing of cloth gloves is prohibited when using this machine.

F. Radial Arm Saws

1. Provide each radial arm saw with an effective device to return the saw automatically to the back of the table when released. Check this device for proper operation before the saw is used.

2. Install the front end of a radial arm saw slightly higher than the back in order to facilitate the cutting head returning to its starting position when released by the operator.

G. Tool Bit Safety

1. Always check to see that grinding wheels, saw blades, sanding and grinding discs are designed to operate at or within intended rotating speed limits.

2. Be sure protective covers and guards are installed, intact and operational.

3. Check that tool rests and tongue guards are the following distances from the grinding sheet, etc.

a. Tool rest gap may not exceed 1/8".

b. Tongue guard gap may not exceed 1/4".

H. Training

1. Contractors and subcontractors are responsible for training employees on proper use of tools, required personal protective equipment and safe work practices that apply to the task/operation to be performed.

2. Conduct Training prior to the use of tools upon initial assignment, when there are changes in associated tooling or previous hazards, and when there is reason to believe the employee does not possess or demonstrate the knowledge or skills required to safely operate or work with a specific tool.

I. Recordkeeping

1. Inspection and training records shall be maintained by each Contractor and subcontractor and shall be available on site.

23. MATERIAL HANDLING AND STORAGE

Review the applicable OSHA standards under Subpart H-Material and storage; 1926, 250, 251. OSHA lists the full standards; included below are reviews of selected text from the standards and the requirements for our program . ***The proper storage and handling of materials will provide for control of material and equipment, increase productivity, and reduce the number of material handling accidents and injuries usually associated with this function.***

A. Requirements for Storage (General)

1. Block, stack, and rack, or otherwise secure all materials to prevent sliding, falling, or collapse.

2. Do not exceed maximum safe loading (pounds per foot) on any elevated floor.

3. In areas of material handling, maintain good access for employees and equipment.

4. Materials stored inside of buildings must not be closer than 6 feet to any floor opening.

5. Materials shall not be stored on scaffolds in excess of supplies needed for immediate use.

B. Bricks

1. Brick stacks shall not be more than 7 feet in height.

2. When a loose brick stack reaches a height of 4 feet, taper it back 2 inches in every additional foot.

3. When masonry blocks are stacked higher than 6 feet, taper the stack back one-half block per tier above 6 feet.

C. Lumber

1. Used lumber shall have the nails withdrawn before stacking.

2. Stack Lumber on level and supported sills and so stacked as to be wholly stable.

3. Lumber piles shall not exceed 20 feet in height.

D. Pipe, Steel

1. Structural steel, poles, pipes, must be racked or stacked and blocked to prevent spreading or falling.

E. Disposal of Waste Materials

1. Whenever materials are dropped more than 20 feet to any point lying outside the exterior walls of the building, use an enclosed (all sides) chute.

2. When debris is dropped inside of a building without a chute, a barricade at least 42 inches high and not closer than 6 feet from the projected edge of the opening must be used. Signs warning of falling material must be posted at each level. Removal of waste material must wait until above operations cease. All scrap lumber, waste material, and rubbish shall be removed from the immediate work area as the work progresses.

24. SAFETY AUDIT

In order to ensure compliance with The University of Rhode Island's safety procedures manual as well as all applicable safety and health regulations, the activities of all contractors and their subcontractors will be audited as often as necessary. The following checklist will be a guide for such an audit. The University of Rhode Island's Safety representative will coordinate this audit with the affected contractor/subcontractor representative.

SAFETY AUDIT CONSTRUCTION SITE SAFETY CHECKLIST

SAFETY BULLETIN BOARD

1. Is there a designated safety bulletin board? Yes_____ No_____

2. Is the OSHA Job Safety and Health Poster on this board? Yes_____ No_____

Corporate Safety Policy Statement? Yes_____ No_____

EEO Poster? Yes_____ No_____

Hazard Communications Poster? Yes_____ No_____

3. Are "Days Without a Lost Time Accident" posted? Yes_____ No_____

4. Are the final totals from OSHA Form 200 posted from Feb 1 to Mar 1 following the year to which they relate? Yes_____ No_____

MEDICAL SERVICES, FIRST AID

1. Is a facility for the treatment of an injured employee reasonably accessible? Yes_____ No_____

2. Is the project provided with an industrial nurse? Yes_____ No_____

3. Are first aid supplies adequate and readily accessible? Yes_____ No_____

4. Are stretchers available throughout the site and easily accessible? Yes_____ No_____

SANITATION

1. Are potable (drinking) water and adequate toilet facilities available at the construction site? Yes_____ No_____

PERSONAL PROTECTION EQUIPMENT

1. Are hard hats worn at all times on the construction site? Yes_____ No_____

Are employees provided with eye and face protection as needed?
Yes_____ No_____

Is this equipment used? Yes_____ No_____

Are employees working more than six (6) feet above any adjacent Working surface provided with safety belt or equivalent? Yes_____ No_____

3. Are safety nets provided when work places are more than (25) feet above ground or water surface where use of ladders, scaffolds etc. are impractical?
Yes_____ No_____

4. Do employees wear all necessary personal protective equipment?
Yes_____ No_____

FIRE PROTECTION AND PREVENTION

1. Has a fire protection program been developed? Yes_____ No_____

2. Is a fire fighting equipment conspicuously located? Yes_____ No_____

3. Is a water supply available and of sufficient volume and pressure to operate fire fighting equipment? Yes_____ No_____

4. Do all fire extinguishers meet requirements established? Yes_____ No_____

5. Are requirements for storage of flammable and combustible liquids being complied with? Yes_____ No_____

MATERIALS STORAGE, HANDLING, AND DISPOSAL

1. Are materials which are stored in tiers either stacked, racked, blocked, interlocked, or otherwise secured so as to prevent sliding, falling, or collapsing?
Yes_____ No_____

2. Are maximum safe load limits of floors posted? Yes_____ No_____

3. Are aisles and passageways clear and in good repair? Yes_____ No_____

4. Are waste materials disposed of properly? Yes_____ No_____

5. Comment on general housekeeping for the entire project.

_____

_____

_____

TOOLS – HAND AND POWER

1. Are hand and power tools maintained in safe conditions? Yes_____ No_____

2. Are power tools, belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, and chains properly guarded? Yes_____ No_____

3. Are electric power operated tools equipped with proper ground or double insulated? Yes_____ No_____

WELDING AND CUTTING

1. When transporting or storing compresses gas cylinders, are cylinders secured and valve protected caps in place? Yes_____ No_____

2. Are cylinders secured in a vertical position when transported by powered vehicles? Yes_____ No_____

3. Are flame arrestors in use on all welding hooks ups? Yes_____ No_____

4. Are employees instructed in the safe use of fuel gas? Yes_____ No_____

5. Are torches inspected at the beginning of each work shift for leaking shutoff valves, hose couplings, and tip connections? Yes_____ No_____

6. Are oxygen and fuel gas pressure regulators in proper working order? Yes_____ No_____

7. Are oxygen cylinders and fittings kept away from oil or grease? Yes_____ No_____

8. Are frames of all arc welding and cutting machines grounded either through a third wire in the cable containing the circuit conductor or through a separate wire which is grounded at the source of the current? Yes_____ No_____

9. Are employees instructed in safe means of arc welding and cutting? Yes_____ No_____

10. Are welding and cutting operations shielded by noncombustible or flameproof screens whenever practicable? Yes_____ No_____

ELECTRICAL

1. Are employees who work near electric power circuits protected against electrical shock? Yes_____ No_____

2. Is sufficient space provided to permit safe operation and maintenance of electrical equipment? Yes_____ No_____

3. Do all 120 volt, single-phase 15- and 20- ampere receptacle outlets on site, which are not a part of the permanent wiring of the building or structure and which are in use by employees, have approved ground fault circuit interrupters, or has an assured equipment grounding conductor program been established?
Yes_____ No_____

4. Are the grounding circuits or equipment checked periodically for effective grounding?
Yes_____ No_____

When? By Whom?

Attach documentation.

5. Are branch circuits and feeders protected by over current devices (fuses, circuit breakers) in accordance with their current carrying capacity? Yes_____ No_____

6. Are switches, circuit breakers, and disconnecting means, identified as to their function? Yes_____ No_____

7. Are receptacles and plugs non-interchangeable when used where different voltages and types of current (AC/DC) are used? Yes_____ No_____

8. Are extension cords used with portable electric tools and appliance of three-wire type?
Yes_____ No_____

9. Have equipment or circuit that are energized been rendered inoperative and have tags been attached to all points where such equipment or circuits can be energized?
Yes_____ No_____

10. Are temporary light equipped with guards to prevent accidental contact with the bulbs? Yes_____ No_____

11. Is it ensured that portable electric lighting used in moist and/or other hazardous locations do not exceed 12 volts? Yes_____ No_____

12. Are flexible cords used only in continuous lengths without splices?
Yes_____ No_____

13. Are extension cords fastened with staples, hung from nails, or suspended by wire?
Yes_____ No_____

14. Are boxes for disconnecting means securely and rigidly fastened to the surface on which they are mounted and fitted with covers? Yes_____ No_____

15. Are boxes and disconnecting means that are installed in damp or wet locations waterproof? Yes_____ No_____

16. Are non-current carrying metal parts or portable and/or plug-connected equipment grounded or double insulated? Yes_____ No_____

LADDERS AND SCAFFOLDING

1. Are defective ladders - broken of missing rungs or steps, broken or splits side rails immediately withdrawn from service? Yes_____ No_____

2. Are scaffold guardrails and toe boards installed on all open sides and ends of platforms more than four (4) feet above ground of floor? Yes_____No_____

3. Do scaffolds four (4) to ten (10) feet in height having a minimum horizontal dimension in either direction of less than 45 inches have standard guardrails on all open sides and ends of platform? Yes_____ No_____

4. Are scaffolds capable of supporting at least four (4) times their maximum intended load? Yes_____ No_____

FLOOR AND WALL OPENINGS, STAIRWAYS

1. Are floor and wall openings properly guarded with standard railing and toe boards? Yes_____ No_____

2. Are skylight openings guarded by fixed standard railings on exposed sides, or are covers capable of holding a 200-pound force? Yes_____ No_____

3. Are wall openings four (4) feet above ground properly guarded? Yes_____ No_____

4. Are extension platforms outside a wall opening properly guarded with side rails or equivalent guards? Yes_____ No_____

5. Are open sided floors or platforms four (4) feet or more above ground? Yes_____ No_____

6. Are runways higher than four (4) feet and on which tools, machine parts, or material are likely to be used, guarded by standard railing and toe board? Yes_____ No_____

7. Are flights of stairs with four (4) or more risers equipped with standard stair railings or standard handrails as required? Yes_____ No_____

CRANES, DERRICKS, HOISTS, ELEVATORS

Prior to operating a crane on the construction site, an up-to-date Certificate of Inspection must be presented to the project safety manager/coordinator for review. The certificate must be signed by a government or by a private agency recognized by the U.S. Department of Labor.

1. Is use of equipment in compliance with the manufacturer's specifications and limitations? Yes_____ No_____

2. Are rated load capacities, recommended operation speeds, and special hazard warnings posted on all equipment and visible from operator's station? Yes_____ No_____

3. Is equipment inspected before each use? Yes_____ No_____

4. Are copies of current inspections on file in the safety office? Yes_____ No_____

5. Are accessible areas within the swing radius of any revolving superstructure barricaded? Yes_____ No_____

6. Before leaving crane unattended, is the load lowered to ground level? Yes_____ No_____

7. Are booms which are being assembled or disassembled on the ground with or without support of the boom harness securely blocked to prevent dropping of the boom and boom sections? Yes_____ No_____

8. Are hoist way entrances on material hoists protected by substantial gates or bars? Yes_____ No_____

9. Are hoist way doors or gates on personal hoists at least six (6) feet, six (6) inches high? Are they provided with mechanical locks which cannot be operated from landing side and are accessible only to persons on the car? Yes_____ No_____

10. Are overhead protective coverings provided on top of hoist cages or platforms? Yes_____ No_____

MOTOR VEHICLES, MECHANIZED EQUIPMENT

1. Are all vehicles, which are left unattended at night, equipped with lights or reflectors, or barricades with lights or reflectors? Yes_____ No_____

2. Are tire racks, cages (or equipment protective devices) provided and used when inflating, mounting, or dismounting tire installed on split rims or rims equipped with licking rings? Yes_____ No_____

3. Are vehicles in use inspected at beginning of each shift to assure that all parts, equipment, and accessories, affecting sage operation are free of defects?
Yes_____ No_____

4. Are bulldozers and scraper blades, dump bodies, etc., fully lowered or blocked when being repaired or not in use? Yes_____ No_____

5. Are parking brakes set on parked equipment, and are wheels chocked when parked on an incline? Yes_____ No_____

6. Are operating levers equipped with latch? Are tailgate handles on dump trucks arranged to keep operator clear? Yes_____ No_____

EXCAVATION, TRENCHING, AND SHORING

1. Are excavation permits filed prior to any excavation? Yes_____ No_____

2. Are excavations inspected daily? Yes_____ No_____

3. Are air quality tests performed daily prior to allowing workers into excavation?
Yes_____ No_____

4. Are walkways, runways, and sidewalks clear of excavated material?
Yes_____ No_____

5. Are sidewalks shored to carry minimum live load of 125 pounds per square foot in undermining is required? Yes_____ No_____

6. Are underground utilities located and protected prior to excavating?
Yes_____ No_____

7. Are walls and faces of all excavations in which employees are exposed to danger from moving ground and trenches four (4) feet or more in depth guarded by shoring system, sloping of ground, or equivalent? Yes_____ No_____

8. Is a registered professional used to design all shoring systems? Yes_____ No_____

9. Is a competent person used to determine soil classification? Yes_____ No_____

10. In excavations which employees may be required to enter, is excavated or other material stored and retained at least two feet from edge of excavation?
Yes____ No_____

11. Do trenches more than four (4) feet deep have ladders or steps located so no more than twenty-five (25) feet of lateral travel is required to reach them?
Yes____ No_____

12. Where employees or equipment are required or permitted to cross over excavations, are walkways or bridges with standard guardrails provided? Yes_____ No_____

CONCRETE, CONCRETE FORMS AND SHORING

1. Do bulk storage bins or silos have conical or tapered bottoms with mechanical or pneumatic means or starting the flow of material? Yes_____ No_____

2. Are concrete mixers equipped with one-yard or larger loading skips equipped with mechanical clearing device and guardrails? Yes_____ No_____

3. Is formwork and shoring capable of supporting all vertical and lateral loads during placement of concrete? Yes_____ No_____

4. Are drawings or plans showing jack layout, formwork, shoring working decks, and scaffolding available at job-sites? Yes_____ No_____

5. Is vertical and horizontal reinforcing steel, guarded to eliminate the hazard of impalement? Yes_____ No_____

6. Is a limited access zone established prior to construction of any masonry wall? This zone shall be established on the unscaffolded side of the wall and shall equal the height of the wall plus four (4) feet and shall run the full length of the wall? Yes_____ No_____

STEEL ERECTION

1. Is permanent flooring installed as erection progresses? Yes_____ No_____

2. Temporary flooring/skeleton steel construction in tiered buildings:

Is the erection floor solidly planked except for access openings?

Is the planking or decking of proper thickness to carry workload?

Is planking two-inch minimum full size undressed, laid tight and secured? Yes_____No_____

3. Are safety nets used when the work area is more than twenty-five (25) feet above ground, water surface, or other surfaces where ladders, scaffolds, catch platforms, temporary floors, safety lines, and safety belts are impractical? Yes_____No_____

4. Where long span joists or trusses forty (40) feet or longer are used, is a center row of bolted bridges installed? Yes_____ No_____

5. Are tag lines used for controlling loads? Yes_____ No_____

6. Bolting, riveting, fitting-up, plumbing-up: Are pneumatic hand tools disconnected and pressure lines released before adjustments or repairs? Yes_____ No_____

7. Are locking devices provided on impact wrenches to retain socket? Yes_____ No_____

8. When riveting in vicinity of combustible material, are precautions taken to prevent fires? Yes_____ No_____

9. Are turnbuckles secured to prevent unwinding while under stress? Yes_____ No_____

10. Are plumbing-up guys and related equipment placed so that employees can reach the connections points? Yes_____ No_____

11. In plumbing-up, so the planks overlap the bearing on each end by a minimum of twelve (12) inches? Yes_____ No_____

12. Is wire mesh placed around columns where planks do not fit tight? Yes_____ No_____

13. Are unused openings in floors planked over or guarded? Yes_____ No_____

14. Are employees who work on float scaffolds provided with safety belt? Yes_____ No_____

ROLLOVER PROTECTIVE STRUCTURES (ROPS)

1. Are rubber tire, self-propelled scrapers, rubber tire dozers, wheel-type agricultural and industrial tractors, crawler tractors, crawler-type loaders, and motor graders (with or without attachments) equipped with rollover protective structures? Yes_____ No_____

2. Do ROPS meet minimum performance criteria? Yes_____ No_____

3. Do operators wear their seat belts at all times while operating the equipment? Yes_____ No_____

OCIP SAFETY AUDIT RECOMMENDATIONS

CONTRACTOR_____

AUDIT DATE_____

RECOMMENDATIONS

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

25. ILLEGAL SUBSTANCE USE & ALCOHOL ABUSE PROGRAM

This document will outline and explain the policies and procedures of this project concerning the use of drugs and abuse of alcohol on this project.

A. Introduction

1. Drugs, alcohol, and any form of non-prescription medications shall be prohibited, as well as reporting to work under their influence. Those involved in distributing or accepting any form of illegal drugs or alcohol on the job site will be terminated.

2. An employee on any type of prescription medication must notify his/her supervisor before starting work for the day.

3. All employees on the jobsite are subject to drug testing for reasonable suspicion, as determined by the Contractor or The University of Rhode Island. The Contractor is responsible for administering drug tests. Employees testing positive in a drug test will be dismissed from the site.

4. Refusal by any employee to submit for reasonable suspicion testing will be interpreted as a positive test result. The employee will be dismissed from this site.

B. Purpose

The policies and procedures set forth herein are adopted for the following purposes:

1. To protect employees from injury to themselves;

2. To protect fellow employees and third parties from injury and, generally, to ensure a safe working environment for all employees;

3. To protect property and equipment of The University of Rhode Island and others from damage;

4. To protect The University of Rhode Island from possible legal liability caused by improper acts of contractor employees/workers on this project; and

5. To prevent/prohibit employees from working under the influence of drugs or alcohol.

C. Policies

The term **"illegal drugs"** as used in the policy refers to drugs which are **"controlled substances"** under federal or state laws, the possession or use of which, without proper prescription therefore, constitutes a violation of law.

In furtherance of the above general policies, the following specific prohibitions shall be in effect and shall be enforced:

1. No one shall report to work on this project or perform any work for The University of Rhode Island while under the influence of illegal drugs or alcohol.

2. No one shall engage in any activity pertaining to the manufacture, distribution, sale, possession or use of illegal drugs. Nor shall anyone possess or consume alcohol while on the project premises, in any company/contractor vehicles, or while engaged in the performance of work for The University of Rhode Island.

3. No one shall use The University of Rhode Island property or equipment, or one's position with project to facilitate any illegal activity pertaining to the manufacture, distribution, sale, possession or use of illegal drugs.

D. Sanctions For Violating This Policy

Violation of this policy by any employee/worker will furnish grounds for immediate removal from the project.

E. Prescription Medication

Any employee/worker who is using prescribed medication which might impair the ability of the employee/worker to perform his or her duties, or which might create a safety hazard to the employee or others, should report to their supervisor. The Supervisor must determine, in consultation with the employee's physician or other medical consultants, if it is safe for the employee/worker to perform his or her regular duties while taking the medication in question. If not, the employee/worker will be directed to perform other duties (if available) or will be directed not to report to work, until it is determined that it is safe to do so.

26. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Contractors are required to utilize appropriate engineering and administrative controls to protect their employees from all recognizable hazards on this project. When implementation of these controls are not feasible, contractors shall issue appropriate personal protective equipment for their employees such as hard hats, eye protection, gloves, body harnesses, and respirators.

Each contractor is responsible for assuring that their employees are properly trained on each type of personal protective equipment (PPE) used.

Contractors are responsible for ensuring that their vendors and visitors abide by all project safety rules.

A. Head Protection

Hard hats must be in good condition, meet ANSI Z89.1 standards, and shall be worn at all times on the jobsite, with the exception of the office trailers.

B. Eyes and Face

Approved safety glasses with rigid side shields that meet ANSI Z87.1 standards must be worn by employees in work areas per OSHA regulations. Office areas are excluded.

Additional eye and/or face protection shall be worn in the following situations:

1. Goggles or a full-face shield shall be worn for chipping, overhead work, and drilling above shoulder height.

2. Full-face shields shall be worn for grinding and abrasive wheel operations, circular saw use or any other tool/equipment that discharges solid material, and when transferring chemicals between two containers.

3. Burning goggles with a minimum shade of 4 shall be worn for all gas welding and burning.

4. Welding hoods will cover all exposed areas of the face and have a minimum shade 10-filter lens.

5. A face-shield and splash-proof goggles must be worn when using a chemical that could splash into the face and/or eyes.

C. Hearing Protection

1. Hearing protection must be worn in all posted areas and around any high noise level producing machines, tools, equipment or operations.

2. High noise areas are defined as areas where employee noise exposure may exceed 90 dBA for an 8-hour Time Weighted Average.

3. Contractors are required to initiate a Hearing Conservation Program for their employees exposed to noise levels beyond 85 dBA.

D. Fingers and Hands

1. Gloves suitable for the job being performed shall be worn unless the use of the gloves creates or increases the hazard.

2. Use the appropriate glove for the task performed (e.g. rubber coated gloves for solvents or chemically treated material; leather gloves for handling rough or sharp material).

3. Do not use gloves around rotating equipment.

4. Electricians shall wear specially designed rubber gloves meeting ANSI standards when working on high voltage.

5. Cut resistant gloves are required on the free hand when using knives or similar type cutters.

6. Keep hands and fingers away from all pinch points.

7. Use tool holders to keep hands out of strike zones.

8. Rings are not to be worn in the work area at any time.

E. Toes, Feet and Legs

1. Sturdy leather work-boots are required on all projects.

2. Steel-toed boots that cover the ankle are strongly suggested and may be required on some projects.

3. Sneakers, sandals, or any other shoe of similar kinds are not allowed to be worn on site.

4. Additional foot protection (foot guards) must be worn when using jackhammers or tampers.

5. Rubber non-slip boots must be worn in slippery areas or in areas where a chemical exposure is possible.

6. Guards, chaps, etc. shall be worn while using equipment such as chainsaws or in areas where snakebites are possible.

F. Fall Protection – Body Harnesses

Fall protection devices include body harnesses, shock-absorbing lanyards, and other equipment that prevent or arrest falls from heights. When exposed to a fall of greater than six (6) feet and not protected by standard handrails, or working under guidelines of an approved Fall Protection Plan, all personnel shall use a body harness. **A fall arresting device is required in the following situations:**

1. Sloping roofs.

2. Flat roofs without handrails within six feet of roof edge or floor opening.

3. Elevated work areas greater than six feet unless employees are protected from falling by standard handrails.

4. Scaffolding that has components missing (e.g. handrails, mid-rails)

5. Steel erection, except for ironworkers doing connecting work.

6. Every employee issued a fall arresting device shall be properly trained on proper use, care, and inspection prior to use.

7. Safety belts shall not be used for fall arresting purposes. They shall only be used as a secondary means of fall protection.

8. 100% fall protection is required in all situations where employees are required to move while in elevated areas.

9. Harnesses shall be equipped with two shock-absorbing lanyards, or as required by additional project rules.

10. Any lifeline, safety harness, or lanyard actually subjected to fall loading shall be removed from service.

G. Respiratory Protection

1. The contractor shall provide respirators where employees' exposure to fumes, dusts, gases or other respiratory hazards are present or reasonably expected.

2. Each affected contractor must have a respiratory protection program in writing that meets or exceeds all OSHA standards.

3. Employees who use respirators must be clean-shaven at the time of use.

4. Respirators must be selected to protect against the appropriate hazard.

5. Respiratory protective equipment shall be regularly inspected and maintained in good condition.

6. Respirators shall be stored in a convenient, clean, and sanitary location.

7. Employees shall not be assigned to tasks requiring a respirator until it has been determined that they are physically able to perform the work and use the equipment.

8. The local physician shall determine what health and physical conditions are pertinent.

9. Contractors shall fit test their employees before allowing them to use respirator.

10. Contractors shall maintain all fit test records on the jobsite.

H. Hearing Protection

1. When employees are subject to sound levels exceeding those specified in OSHA table D-2, ear protective devices must be provided and used.

2. Protective devices inserted in the ear shall be fitted or determined individually by a competent person.

3. Plain cotton is not acceptable to use as hearing protection.

4. When employees are subject to sound levels exceeding those listed in table D-2, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of the table, then personal protective equipment shall be provided and used to reduce the sound levels.

Table D-2

Duration per day, hours	**Sound Levels DBA**
8	**90**
6	**92**
4	**95**
3	**97**
2	**100**
1 ½	**102**
1	**105**
½	**110**
¼ or less	**115**

When the daily noise levels of exposure are composed of different levels, their combined effect should be considered, rather than the individual effect. Each project varies as to the actual noise level that is generated; included are examples of sound levels for various equipment:

60 lb. Jackhammer	@ 10 ft.	104-108 DBA
15 lb. Chipping Hammer	@ 10 ft.	92-96 DBA
Concrete Saw	@ 10 ft.	101-103 DBA
Steel Grinder	@ 10 ft.	94-98 DBA
Circular Saw	@ 10 ft.	95-100 DBA

By checking Table D-2, you can see that these operations would have to include either hearing protection or a limited time of use to prevent overexposure. Use these as guides, and if in doubt, have employees use hearing protection. For specific site "*noise level testing*", contact the safety department for further information.

27. SAFETY MANUAL MANAGEMENT PROCESS

This Safety Procedures Manual management process is designed to ensure effective review of existing procedures and implementation of new or revised procedures so that compliance and prevention requirements are maintained on site.

A. Responsibilities

Manual Holders shall ensure:

1. Their manual is up to date.

2. All revision forms shall be forwarded to the Safety Representative of The University of Rhode Island.

The University of Rhode Island Safety Representative shall ensure that:

1. All procedures meet the regulatory and The University of Rhode Island's performance requirements.

2. All new/revised procedures and associated implementation plans are reviewed and approved by the site Management before being issued to Manual Holders

3. All completed implementation plans and updated versions are maintained for the most recent iteration of each procedure.

4. This management system and all procedures are reviewed as often as necessary, but at least annually from the latest revision date.

5. All revision suggestions are reviewed and the originator is given feedback, whether or not the suggestion is adopted.

6. A master copy of this manual is maintained at all times.

Contractors/Subcontractors shall ensure that:

1. The coordination of all proposed procedures and implementation plans within their assigned work areas.

2. All implementation requirements are fulfilled and documented.

3. Availability of their manual to their employees and subcontractors.

4. All affected employees are trained on new/revised policies, practices and procedures.

5. Tracking the implementation of each procedure or policy.

B. Manual Update Process

The University of Rhode Island Safety Representative shall maintain the master copy of the safety manual.

1. Manual Holders, including contractor employees, may make suggestions for new or revised procedures by forwarding the suggestion to their supervisor or The University of Rhode Island Safety Representative.

2. The originator of each suggested revision shall be given written feedback on the actions planned or taken for each suggestion.

3. Each new or revised procedure shall have an implementation plan attached that includes all steps required for effective implementation.

4. The plan shall contain:

a. The name and revision date of the procedure/policy to be implemented.

b. Each action required for effective implementation (including all affected procedures and policies).

c. Certification that the procedure or policy has been implemented and the date signed.

5. The University of Rhode Island Safety Representative shall develop all new/revised procedures and implementation plans, and forward them to site management for draft review.

6. Comments shall be reviewed by The University of Rhode Island Safety Representative and incorporated as appropriate. Any conflicts shall be resolved in the appropriate forums.

7. Upon receipt of new or revised procedures, manual holders shall update their manuals.

8. In the event that an immediate procedural change is warranted, an interim change memo may be issued to all manual holders by The University of Rhode Island, which may be used in lieu of formal revision.

C. Manual Distribution

Each contractor and subcontractor on the project is entitled to a copy of this manual

1. Other manual holders shall be as determined by The University of Rhode Island.

END OF MANUAL

DOCUMENT 00740 – HOT WORK PROCEDURE

PART 1 – GENERAL

1.1 The following procedure applies to the Contract for Construction and is a part of the Contract Documents:

Welding, Cutting and Brazing
Hot Work Procedure

A. Purpose

To establish regulations and rules for the safe uses of open flames and spark producing equipment in state owned or leased facilities. Applicable regulations pertinent to this guide include OSHA 29 CFR 1910.252-.255 and NFPA 51B, and FM Global Hot Work Requirements.

B. Policy

1. Fire Protection

a. Contractors and employees shall comply with the regulations set forth in this policy to ensure the safe use of open flames and spark producing equipment.

b. When performing work within a state facility with a cutting torch or when using welding, brazing or soldering equipment an FM Global hot work permit is required to be filled out and precautions followed. The FM Global Hot Work Permits are available (free of charge) directly from the state's property insurer by contacting your local FM Global Engineer or maybe ordered on-line at www.fmglobal.com.

c. The individual assigned responsibility to inspect and/or maintain the fire alarm system will deactivate that portion of the alarm system necessary to prevent false alarms prior to the start of the hot work operation.

d. Upon completion of the project the fire alarm system will be restored to operational status.

e. During the hot work operation the following precautions will be followed:

1.) A fire watch will be required by the individual responsible for authorizing the hot work operation.

2.) Welding leads and burning hoses are to be kept out of walkways as much as possible

3.) Inspect all leads, grounds, clamps, torches and cylinders before use. Be sure all fittings, couplings and connections are tight.

4.) In gas welding and cutting, mixtures of fuel gas and air or oxygen must not be permitted except prior to consumption.

5.) Only approved apparatus must be used, and portable cylinders of compressed gas must be properly secured to prevent upset.

6.) Use proper ventilation in the work area.
7.) All exposed combustible and flammable material within 35 feet of the point of operation should be removed where possible. Otherwise, protect with FM Approved welding pads, blankets and curtains, fire resistive tarpaulins or metal shields.
    a.) Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.
8.) All hoses and leads will be inspected frequently and will be replaced as necessary.
9.) A cutting or welding prohibition will be required whenever an area contains or may contain flammable/explosive vapors. The prohibition can only be lifted when the area has been purged and cleaned and the area has been tested and shown to be free of a flammable/explosive mix.

C. Responsibility

1. Supervisor

a. Supervisor will train their employees in the potential fire hazards associated with hot work.
b. Supervisor will initiate a hot work permit prior to assigning work. (A free online training course is available from State of RI property insurer FM Global at: http://training.fmglobal.com.
c. The supervisor will obtain confirmation that:

1.) Available sprinklers, hose streams and extinguishers are in service and operable.
2.) Hot work equipment is in good working condition.
3.) The following requirements within 35 feet of hot work shall be adhered to:
    a.) Flammable liquid, dust, lint and oily deposits have been removed.
    b.) Explosive atmosphere has been eliminated.
    c.) The floors have been swept clean.
    d.) Combustible floors have been wet down, covered with damp sand or fire resistive sheets are in place.
    e.) All exposed combustible and flammable material within 35 feet of the point of operation should be removed where possible. Otherwise, protect with FM Approved welding pads, blankets and curtains, fire resistive tarpaulins or metal shields.
    f.) All wall and floor openings are covered.
    g.) FM approved welding pads, blankets and curtains installed under and around work.
    h.) Protect or shut down ducts and conveyors that might carry sparks to distant combustible material.
4.) The supervisor is responsible for assuring that a 60 minute fire watch is maintained at the completion of all hot work assignments, that a hot work permit

has been acquired for work involving open flames or spark producing tools and for assuring all fire prevention procedures and precautions are followed for protection of people and property including a fire watch, deactivation of the fire alarm.

5.) The supervisor will require that the area be monitored periodically for three hours after the fire watch is completed.

6.) The supervisor will confirm that employees are trained in use of fire extinguishers and hoses, and that the employees are familiar with emergency procedures in the event of a fire.

7.) At least once while the permit is in effect, the area should be inspected by the individual responsible for authorizing, cutting or welding operations to ensure that it is a fire safe area. (See article 3 above for fire safe conditions.)

8.) Proper personnel protective equipment including helmets, eye wear, face and hand shields applicable to the equipment used will be provided by the supervisor.

a.) The equipment will be maintained and fit tested by management.

9.) Personal protective clothing consistent with OSHA standards will be worn.

10.) Tarps or fire resistant coverings sufficient to cover combustible materials within 35 feet of the operation will be provided.

2. Employees

a. The employee shall be responsible to work in a safe manner and follow all safety precautions as trained by the supervisor.

b. The employee charged with performing the hot work will initiate part 2 of the hot work permit and verify that a 60 minute fire watch has been maintained.

c. Employees performing hot work will be required to either properly remove or cover combustible materials in the 35 foot area surrounding the hot work operation.

3. Fire Safety Officer

a. The state employee charged with maintaining or inspecting the fire alarm system will deactivate the system.

b. The area will be evaluated by this individual to identify fire hazards and provide required suppression equipment.

c. The fire safety officer will ensure that combustible materials within 35 feet of the hot work operation are properly tarped or moved a safe distance.

d. In addition, this officer will ensure that personnel in close proximity to this work area are properly protected against heat, sparks and slug.

4. Management

a. Maintain a log of hot work permits.

b. Provide safety training for supervisors.

c. Confirm that all contractors follow all requirements of this protocol.

END OF DOCUMENT

DOCUMENT 00750 – MANAGING FIRE PROTECTION SYSTEM IMPAIRMENT

PART 1 – GENERAL

1.1 The following management procedure applies to the Contract for Construction and is a part of the Contract Documents.

Managing Fire Protection System Impairment

Impairment to fire protection equipment is a situation in which the system is shut off, either in whole or in part. The impairment may be necessary to conduct scheduled maintenance of equipment or to make emergency repairs. Impairment may also be due to new construction. Normal system tests and inspections are not considered impairment.

Regardless of the reason, impairment results in the sprinkler system and/or fire alarm system being temporarily out of service, such a condition may result in severe property loss in the event of a fire. Locations protected by automatic sprinkler systems must have an impairment handling program to control situations when sprinkler systems must be shut down.

Whenever a sprinkler system has been impaired all hot work in the area of the impaired system should be prohibited.
A periodic fire watch should be established when either the sprinkler system or the fire alarm system is out of service.

FM Global the State's property insurance carrier has an impairment handling kit. FM Global's ***Red Tag Permit System*** consists of four key elements:

- A Red Tag Permit
- Fire Protection Equipment Decals
- Reusable Impairment Tag for Fire Service Connections
- Red Tag Permit System Wall Hanger

The Fire Protection Equipment Decals are to be affixed to fire protection equipment as a reminder that authorization is needed before any shut down can occur.
The Red Tag Permit System Wall Hanger contains pockets to keep other elements of the system organized and within reach; also the Hanger lists steps to be taken before, during and after impairment. The Wall Hanger also lists the FM Global office to be notified of the impairment. The FM Global Customer Service Desk number is (888) 606-4570. The Fax number is
(888) 381-4267. There is space on the notification tag for the phone numbers of the Fire department, Alarm Company and the local Water Department as well. In the absence of the Customer Service listing, the FM Global Office closest to you may be found at the

following web site www.fmglobal.com/contact. An engineer and/or client service representative can advise you on how to proceed and follow up until protection has been restored. In addition this representative may be able to help minimize downtime, if possible, reduce fire exposure to the area, arrange for temporary protection and determine how to restore protection as quickly as possible.

For scheduled maintenance of fire alarm systems, vendors must as prescribed in Rhode Island Fire Codes notify the building owner 48 hours in advance of pending maintenance.

FM Global has online training. Of particular interest will be ***Managing Impairments Using FM Global's Red Tag Permit System,*** which provides instructions on impairments to fire protection equipment/systems and how to use FM Global's ***Red Tag Permit System*** to properly manage those impairments. One can access this less than one hour course at training.fmglobal.com.

END OF DOCUMENT

DOCUMENT 00760 – URI WATER SYSTEM REGULATIONS/POLICIES

PART 1 – GENERAL

1.1 The 6-page document following this page titled, "University of Rhode Island Water System Regulations/Policies" last updated 5/14/2010, applies to the Contract for Construction and is a part of the Contract Documents.

END OF DOCUMENT

University of Rhode Island Water System

Regulations/Policies

A. **Water System Installations and Repairs**
   1. Only authorized URI employees or approved contractors shall be allowed to make water service repairs, connections or disconnections of service from a URI water main.

   2. Approved contractors shall consult with URI Utilities Department and receive written permission, prior to beginning work.

B. **Operation of Water Valves**
   1. Only URI employees or designated personnel are authorized to operate URI Water System valves. URI's valves are defined as all water system valves upstream or before the point of delivery to a building to the backflow preventer.

C. Temporary Connections
   1. Filling of tank trucks for any purpose shall only be done at designated locations with approved backflow prevention devices under the direction/supervision of URI Water System personnel.

   2. Any Hydrant use other than fire emergencies shall be coordinated with Water System personnel. Prior to any connection the user must have an approved backflow prevention device with throttling valve attached to the hydrant port.

D. Construction
   1. No connection/modification shall be permitted to the URI Water System unless reviewed and approved by the Utilities Department.

   2. Specification development shall include a Utility Department review of existing/proposed utility separation, depth, bedding and backfill material.

   3. Water distribution system CAD drawn as-builts must be supplied on every project where modifications have been made to the URI water system.

   4. Procedures for installation of water system pipe and connection to the Water System shall conform to all applicable Rules and Regulations of the AWWA Standards, NFPA 24 for fire service mains, NSF 61 for domestic water service, and State regulations and as governed by the RIDOH.

   5. Contamination prevention requirements:
      a. All piping, valves, fittings, etc. delivered for installation shall be kept elevated above the ground and protected from exposure to the elements such as dust, rain and debris.
      b. All piping fittings and valves shall be thoroughly cleaned of any dust, dirt or deposits prior to installation.

c. Work on mains and services shall include protection of all open ended pipes any time pipe ends are to be exposed for any period of time. Protection shall include approved new watertight plug and/or necessary steps to prevent foreign debris from entering the exposed pipe.

6. All water mains and services shall be pressure tested and pass a pressure test in accordance with current *ANSI/AWWA C600 Hydrostatic Testing* prior to acceptance and being placed into service.
   a. Prior to pressure testing, all appurtenances to the water system shall be in place, including concrete thrust blocks.
   b. The duration of the hydrostatic test shall be for a minimum of 2 hours with allowable loss as determined by the Utilities Department.
   c. All tests shall be performed or observed by the Utilities Department or its authorized representative.
   d. Provide a written report of test results to URI Utilities Department.

7. Disinfection of all areas affected by construction is mandatory.
   a. All water main replacements, extensions, fire lines and services shall be disinfected pursuant to AWWA Specification C651 Disinfection of Water Mains, prior to being placed into service. URI will accept the Continuous Feed Method of chlorination for all water mains as specified by AWWA C651. These include but are not limited to:
      - Mains
      - Service Piping
      - Buildings served
   b. It is required that an authorized representative of URI be present during the chlorination process and once complete, witness the sampling procedure for bacteriological testing.
   c. URI will not accept a new water main, service or fire protection connection until a certified bacteriological test indicating the absence of coliform organisms is received.
   d. When construction work being performed is an emergency repair, the isolated portion of the main shall be disinfected and flushed per AWWA C651 "Disinfection Procedures When Cutting into or Repairing Existing Mains". This procedure will be done as thoroughly as possible prior to the main being put back into service. Authorized URI personnel must be present for inspection of the procedures prior to any reconnection to the water system.
   e. Disposal of all water used in the disinfection process shall be the responsibility of the contractor performing the disinfection procedure. Approval for discharge into the sanitary sewer system must be obtained from the South Kingstown Wastewater Authority. If disposal approval is denied, the contractor is advised to contact URI for approval of an alternate disposal or de-chlorination method.

8. Backflow prevention devices are to be installed at **all** building connections to the Water System or at any potential cross connection, including but not limited to domestic, fire, heating and irrigation. Backflow prevention devices shall be installed by a plumber licensed in the State of Rhode Island. All backflow devices shall meet the requirements of the RIDOH and be approved by URI. Backflow prevention device installation shall meet the following criteria:
    a. All devices shall be installed to allow easy access to valves and the backflow prevention device for service maintenance and testing.

    b. All domestic, heating and irrigation devices shall be of the reduced pressure zone type and must be testable. All fire protection devices shall be of the double check vave type and must be testable.
    c. All backflow devices shall be installed above ground, and in horizontal position, unless USC compliant for vertical installation.
    d. URI requires all backflow devices be tested at the time of installation and annually thereafter.
    e. All testing of backflow devices shall be done by a State of Rhode Island certified tester.
    f. All repairs must be completed by a licensed plumber certified to work on backflow prevention devices.
    g. Copies of test reports shall be distributed to the Utilities Department for record keeping.

9. Fire Protection Lines
    a. Dedicated fire protection service lines shall follow all the requirements set forth in this construction section for main or service connections, including but not limited to NFPA 24.
    b. All dedicated fire protection service lines shall have a flush port installed at the building for water system maintenance line flushing.
    c. Backflow prevention shall follow requirements set for in Paragraph 8 of section D.
    d. All fittings and pipe connections upstream of the fire protection backflow preventer must meet the URI requirements for approved materials for potable water distribution pipe, fittings, connections and valves.

10. All fire hydrants shall meet or exceed the current AWWA *C502 Dry-Barrel Fire Hydrant* specifications for compression type main valve, traffic model, dry-barrel hydrants. In addition to the standards, fire hydrants shall meet or exceed the following specifications:
    a. National Standard Specification threads
    b. Operation nut 1-1/2 inch point to flat
    c. Opens counter clockwise
    d. 2 each 2-1/2 inch NST hose ports
    e. 1 each 4-1/2 inch NST steamer port
    f. All ports shall have cast iron caps
    g. All ports shall be mechanically attached

h. All exposed portions of the hydrants shall be painted with (Fuller-O'Brien, Veraflex Alkyd Gloss Enamel or equal).("URI Blue" Base with white top and caps)
i. Hydrants shall be the "High Profile" configuration
j. Hydrant manufacturers shall be reviewed and pre-approved by URI for installation into the water system.

11. Service Connection Materials
    a. All 1 inch through 2 inch water services shall meet the following URI specifications, unless pre-approved by URI:
    b. All material shall meet the current AWWA C800 *Underground Service Line Valves and Fittings* specifications.
    c. All fittings shall be compression type brass material.
    d. All direct tap fittings shall have CC threads for 1 inch only.
    e. Approved Teflon joint compound or triple wrap Teflon tape shall be used on all threaded pipe fittings.
    f. NPT threads shall be used on corporation stops when a tapping saddle is used. (This applies to two inch services only.)
    g. All 1 and 2 inch diameter pipe service lines shall be ASTM B88, Type K soft copper.
    h. All valve boxes shall be installed to finish grade.

12. Standard Water Distribution Pipe Material
    a. All standard water distribution pipe installed shall be Ductile Iron Pipe. URI may deviate from this standard depending upon the design considerations and service requirements. All Ductile Iron Pipe 4 inches and larger shall meet or exceed the current *AWWA C151* specification, be cement mortar lined, and be "push on" joint, bell and plain spiget end, unless grooved or flanged ends are approved. Listed below are the specific pipe specifications for water distribution system pipe:
    b. All 4 inch and greater diameter pipes shall be a minimum of Class 52.
    c. Cement mortar lining shall meet or exceed current *AWWA C104 Cement Mortar Lining Standards*.
    d. Rubber Gasket Joints must meet or exceed current *AWWA C111 Rubber Gasket Joints Standards*.
    e. The following is the approved list of pipe manufacturers:
        - Pacific States Cast Iron Pipe Company
        - United States Pipe Company
        - Griffin Pipe Products Company
        - American Cast Iron Pipe Company

13. Fittings
    a. All fittings shall be ductile iron and meet or exceed the current *AWWA C153 Ductile Iron Compact Fittings* standards.
    b. Fittings shall be mechanical joint with rubber gaskets that meet or exceed current *AWWA C111 Rubber Gasket Joints* specifications. In addition, all fittings shall meet the following URI specifications:
        - The exterior of all fittings shall have a petroleum-asphaltic coating.

- The interior of all fittings shall be cement/mortar petroleum-asphaltic lined in accordance with current *AWWA Specification C104 Cement Mortar Lining for Ductile Iron Pipe*.

14. Gate Valves
    a. All gate valves shall be resilient-seated gate valves and shall meet or exceed current *AWWA C509 Resilient-Seated Gate Valves* specifications or *AWWA C515 Reduced-Wall Resilient-Seated Gate Valves* specifications.
    b. All distribution valves 2 inch diameter through 10 inch shall be resilient-seated gate valves.
    c. All valve boxes shall be installed to finish grade.
    d. All tapping valves regardless of size must be resilient-seated gate valves. In addition, all gate valves shall meet or exceed the following URI specifications:
        - The valve body interior shall have epoxy coating.
        - All operating nuts shall be 2 inch square nuts as specified in current *AWWA C509* specifications or *AWWA C515* specifications.
        - All valves shall open in a counterclockwise direction.
        - The stem seals shall be O rings as specified in current *AWWA C509* specifications or *AWWA C515* specifications.

Any deviations from the above information shall only be allowed upon prior approval from the URI Utilities Department. If material is not noted above then all items not referenced in the above paragraphs will need prior approval of the URI Utilities Department before use/installation.

Definitions

Backflow Prevention Device: Device designed to prevent the flow of water back into the system in the event of a low pressure situation.

Cross Connection Control Device: A Rhode Island Department of Health approved device for the prevention of backflow of a potentially contaminated water source into the water system.

Main: A water pipe owned, operated and maintained by the water system, which is used for the purpose of transmission or distribution of water.

Curb Stop: A shut off valve on the water service line generally located at the curb or where the service connects to the main water line.

Customer: Person(s) served by the water system responsible for the property and its use.

RIDOH: Rhode Island Department of Health

Fire Service Line: A water service pipe used exclusively for fire protection.

Service Connection: The service pipe, including the corporation stop, from the main to the building, including any valves or fittings the water system may require for normal operation.

Tap: The fittings installed at the main to which the service pipe is connected.

Utilities Department: URI Facilities Services Department in charge of all aspects of the URI water system.

Water System: The University of Rhode Island water system that serves the Kingston Campus.

End

DOCUMENT 00850 - PREVAILING WAGE RATES

The State of Rhode Island Department of Labor, Division of Professional Regulation General Decision Modification document current as of the bid posting date for this Project, is an integral part of the Bid Documents for use in fulfilling prevailing wage rate requirements. A copy is available on the web site of the State of Rhode Island Department of Administration, Division of Purchases.

The Division of Purchases Web Site Address:

http://www.purchasing.ri.gov/RIVIP/Info.asp

Click on "Prevailing Wage Table".

END OF DOCUMENT

DOCUMENT 00900 - ADDENDA AND MODIFICATIONS

PART 1 – GENERAL

1.1 As of the time of publication of this Project Manual, no Addenda had been issued.

1.2 Should Addenda be issued during the Bid Period, they will augment this Document and become a part of the Project Manual.

1.3 Such Addenda and Modifications when issued, with reference to the Project Manual, the General Conditions, Drawings or Specifications, shall be inserted following this page and are integral parts of the Contract Documents.

END OF DOCUMENT 00900

SECTION 01100 - SUMMARY

PART 1 - GENERAL

1.01 PROJECT

A. Project Name: Chafee Fire Code Upgrades.

B. Owner's Name: State of Rhode Island. University of Rhode Island, Kingston Campus.

C. The Project consists of the construction of three types of work within Chafee Hall:
   1. Fire Alarm upgrades throughout the facilities to comply with current codes.
   2. Installation of a complete new sprinkler system throughout the facilities.
   3. Fire door replacement, stair guard and rail replacement, installation of a Fire Command Center, new ceilings, doors, hardware, and lighting in areas shown on drawings, and the architectural finish improvements attendant upon installation of the systems above.

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00500 - Agreement.

1.03 DESCRIPTION OF WORK

A. Scope of demolition and removal work is shown on drawings plus as specified in Section 02225.

B. Scope of alterations work is shown on drawings plus as specified herein.

C. Electrical Power and Lighting: Alter existing system and provide new construction as shown on drawings plus as specified herein.

D. Fire Suppression Sprinklers: Provide new construction shown on drawings plus as specified herein.

E. Fire Alarm: Alter existing system and provide new construction shown on drawings plus as specified herein, keeping existing in partial operation until changeover.

F. Lecture Hall: Provide new finishes, AV equipment, and lighting/electrical as detailed or specified. See alternates for some components.

1.04 OWNER OCCUPANCY/SCHEDULE

A. Owner intends to continuously occupy the facility. Work areas will be made available as mutually agreed to during project scheduling. See Attachment A following this section for availability and restrictions on access to spaces.

B. Work to begin within 7 days of receipt of Purchase Order.

C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

1.05 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to area noted on Drawings. Coordinate with Attachment A and Site Utilization Plan following this section. Include all costs of this coordination, including all premium time wages that may be required to meet these

phasing requirements, in the Base Bid.

B. Arrange use of site and premises to allow:
   1. Adjacent projects to progress as planned for the Owner.
   2. Use of street and adjacent properties by the Public.
   3. Continued operation of the facility in accordance with Attachment A.

C. Provide access to and from site as required by law and by Owner:
   1. Maintain appropriate egress for workforce and users of the facility.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit. Provide necessary signage and barriers to direct pedestrians around work areas.

D. Utility Outages and Shutdown:
   1. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
   2. Prevent accidental disruption of utility services to other facilities.

1.06 WORK SEQUENCE

A. Coordinate construction schedule and operations with Owner. See Attachment A following this section.

B. Include all necessary premium costs and additional staffing to meet project Substantial Completion deadline, working in accordance with Attachment A, within the Base Bid price.

1.07 ITEMS TO BE SALVAGED

A. Hardware and card readers from doors being demolished. Deliver to URI where directed on campus.

B. Existing lecture hall seats in large Lecture Hall. See drawings.

C. See Allowances for AV items to be salvaged.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 RI PROVISIONS

A. RI State law states that this project must comply with all regulations and restrictions contained within RIGL 37 and other laws as applicable.

B. Attention is called to a new requirement within RIGL 37 for apprenticeship training. RIGL 37-13-3.1 <u>State public works contract apprenticeship requirements</u> states:
"(a) Notwithstanding any laws to the contrary, all general contractors and subcontractors who perform work on any public works contract awarded by the state after passage of this act and valued at one million dollars ($1,000,000) or more shall employ apprentices required for the performance of the awarded contract. The number of apprentices shall comply with the apprentice to journeyman ratio for each trade approved by the Apprenticeship Council of the Department of Labor and Training."

END OF SECTION

Chafee Hall

This is a fully occupied building. As such, all work must be performed during off hours when offices are not occupied. Allowable work hours are 5:00PM to 7:00 AM Sunday thru Saturday. Any deliveries must occur during these hours.

The Contractor will have exclusive use of the assembly areas (lecture halls) from May 21st thru September 1st. These areas will be available for work 24 hours per day during this time frame. However, there will still be access restrictions with respect to which entrances can be used by the Contractor (see Site Utilization Plan). The assembly areas must be reopened for Owner occupancy by 9/1/11.

The Contractor will be responsible for providing protection for all furniture and belongings in each office. The Contractor is also responsible for cleaning their work areas after each shift so that they are ready for Owner occupancy the next day.

Stair rail work is limited to the summer vacation, May 21st thru September 1st, and must be done one tower at a time. Work in the low rise lobby stairs must be coordinated with URI to maintain sufficient access.

Lobby work in the low rise is restricted to the summer semester (May 21st – September 1st).

Work in the low rise portion of the building is restricted to the summer semester.

There is another project occurring in the 1st floor low rise Psychology Clinic (BCRC Project) which will involve demo and construction. The Contractor will need to coordinate site use with this project. This involves all first floor low rise rooms with the exception of the following: 101, 103, 104, 105, 131, 132-138, and 132A.

The Contractor is responsible for maintaining egress paths during construction to the satisfaction of the Fire Marshall and the AHJ.

The building occupants are sensitive to dust issues. The Contractor will be responsible for providing dust containment in each area while it is under construction and then cleaning each contained area daily when the shift is over. The Contractor will also be responsible for providing and maintaining temporary construction filters on all return air grills and AHUs and replacing with new filters at substantial completion.

The Contractor may not use the building elevators for construction conveyance of any kind at any time. The elevator will be made available for work required for fire alarm system tie-ins only. Tradespeople will not be permitted to use the elevators either.

Contractor is responsible for coordinating with the Owner for exterior hoisting, if needed, with respect to timing, crane placement, window removal, etc, and is responsible for any and all associated costs.

Daytime parking is restricted to areas designated by the University. Nighttime parking will be in the Chafee lot.

Any material not installed during the shift must be removed from occupied areas at the end of each shift.

No tools or materials can be left in any stairwells at the end of a shift.

Site Utilization Plan

SECTION 01200 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Allowances provisions.

B. Contingency allowances.

C. Testing and inspection allowances.

D. Schedule of values.

E. Applications for payment.

F. Warranty inspection retainage.

G. Sales tax exemption.

H. Change procedures.

I. Defect assessment.

J. Unit prices.

K. Alternates.

1.02 ALLOWANCE PROVISIONS

A. Costs Included in Allowances: Cost of Product to Contractor or Subcontractor, less applicable trade discounts, but including freight/delivery to site. URI will not pay sales taxes.

B. Costs Not Included in Allowances But Included in the Contract Sum: Product receipt and handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; labor for installation and finishing.

C. Prime Responsibility:
   1. Consult with Contractor for consideration and selection of products, suppliers, and Installers.
   2. Select products in consultation with Owner and transmit decision to Contractor.
   3. Prepare Change Order to adjust final cost.

D. Contractor Responsibility:
   1. Assist Prime or its Consultants in selection of products, suppliers and installers.
   2. Obtain proposals from suppliers and installers, and offer recommendations.

3. On notification on selection by Prime, execute purchase agreement with designated supplier and installer.
4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

E. Differences in costs will be adjusted by Change order.

1.03 CONTINGENCY ALLOWANCES

A. Schedule of Contingency Allowances:

1. General Contingency Allowance – Include an allowance of $250,000 in the Base Bid for use upon Owners instruction.

2. Signage – Include an allowance of $10,000 in the Base Bid for purchase of custom signage as described in Section 10400.

3. Salvage/reinstallation of AV – Within the base bid, include an allowance of $20,000 for the salvage of existing AV equipment and all stored items within the rear projection storage rooms. All salvaged items shall be stored off site at the Contractor's expense in an insured, climate controlled, storage facility. When work is complete, return items to URI and reinstall where directed.

4. Demolition of obsolete utilities – In the event that Alternate 2 is selected, include an allowance within that alternate of $5,000 for the demolition and disposal of obsolete electrical and AV wiring, conduit, devices and boxes. Salvage operational AV equipment and deliver to URI storage facility on campus.

B. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.

C. Funds will be drawn from the Contingency Allowance only by Change Order.

D. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.04 TESTING AND INSPECTION ALLOWANCE

A. All costs of testing are included in the Base Bid. There is no testing allowance.

1.05 SCHEDULE OF VALUES

A. Submit a printed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet

B. Submit Schedule of Values in duplicate, one copyrighted original and one copy, within 15days after date of receipt of a Purchase Order from URI Department of Purchasing.

C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section. Identify site mobilization, bonds, insurance and closeout.

D. Include in each line item, the amount of Allowances specified in this Section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

E. Include separately for each line item, a direct proportional amount of Contractor's overhead and profit.

F. Revise schedule to list approved Change Orders, with each Application for Payment.

1.06 APPLICATIONS FOR PAYMENT

A. Submit each application on an original AIA Form G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet, accompanied by three copies.
   1. Prepare a draft version “pencil copy” of each application and distribute via email 5 days prior to due date for review by Prime and Owner’s representative.
   2. After making agreed revisions, individually sign and notarize and emboss with notary's official seal, the original and each of the three copies. Deliver to Owner’s representative for further processing and distribution.
   3. Applications not including original copyrighted AIA G702, and G703 Forms, will be rejected, and returned for re-submittal.
   4. Applications not properly signed and notarized will be rejected, and returned for re-submittal.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Provide one hard copy and one copy in disc form of the updated construction schedule with each Application for Payment submission.
   1. Provide a statement signed by the Contractor's firm principal certifying that there are no unidentified outstanding claims for delay.

D. Include with each monthly Application for Payment, following the first application, one copy of the Certified Monthly Payroll Record for the previous month's pay period. Identify apprentice-ship hours required under RIGL 37-13-3.1.

E. Include with each monthly Application for Payment, following the first application, three copies of a Material Status Log on an Excel spreadsheet to be provided by the Owner, illustrating the status of all material orders for the project. A sample spreadsheet is included at the end of this Section.

F. Payment Period: Submit at intervals stipulated in the Agreement.

G. Submit with transmittal letter as specified for Submittals in Section 01330.

H. Beginning with the second Application for Payment, Contractor's right to payment must be substantiated by documenting, on a copy of the URI Waiver of Lien Form included in Document 00614 - Waiver of Lien Form in this Project Manual, that payment monies due, less retainage not exceeding ten percent, have been paid in full to subcontractor and suppliers for work, materials, or rental of equipment billed for under specific line item numbers in the immediately preceding application.

I. Substantiating Data: When the Architect requires substantiating information, submit data justifying dollar amounts in question. Include the following with the Application for Payment :
1. Record Documents as specified in Section 01780, for review by the Owner which will be returned to the Contractor.
2. Affidavits attesting to off-site stored products.
3. Construction progress schedules, revised and current as specified in Section 01330.

1.07 WARRANTY INSPECTION RETAINAGE

A. An amount of 1% of job cost will be retained from final payment, made at the time of Substantial Completion, for a duration of ten months. If, after ten months, all systems, including mechanical and electrical, are determined by the Owner to be properly functioning, the Warranty Inspection Retainage will be released.

B. If, after ten months, there are found to be modifications, adjustments, or corrections necessary to be made to address any system or product malfunction, in order to fulfill specified performance or requirements of such systems or products, release of the warranty inspection retainage will be delayed until such malfunctions are rectified.

1.08 SALES TAX EXEMPTION

A. Owner is exempt from sales tax on products permanently incorporated in Work of the Project.
1. Obtain sales tax exemption certificate number from Owner.
2. Place exemption certificate number on invoice for materials incorporated in the Work of the Project.
3. Furnish copies of invoices to Owner.
4. Upon completion of Work, file a notarized statement with Owner that all purchases made under exemption certificate were entitled to be exempt.
5. Pay legally assessed penalties for improper use of exemption certificate number.

1.09 CHANGE PROCEDURES

A. Submittals: Submit name of the individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. The Prime will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time by issuing supplemental instructions on AIA Form G710.

C. The Prime may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required, and the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate within 15 days.

D. The Contractor may propose changes by submitting a request for change to the Prime, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation, and a statement describing the effect on Work by separate or other Contractors. Document any requested substitutions in accordance with Section 01600.

E. Stipulated Sum Change Order: Based on Proposal Request, and Contractor's fixed price quotation, or Contractor's request for a Change Order as approved by Prime.

F. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute the Work under a Construction Change Directive. Changes in the Contract Sum or Contract Time will be computed as specified for a Time and Material Change Order.

G. Construction Change Directive: Prime may issue a directive, on AIA Form G713 Construction Change Directive signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in the Contract Sum or Contract Time. Promptly execute the change.

H. Time and Material Change Order: Submit an itemized account and supporting data after completion of the change, including timeslips signed by Owner’s representative, within the time limits indicated in the Conditions of the Contract. The Prime will determine the change allowable in the Contract Sum and Contract Time as provided in the Contract Documents. Only Owner-representative-signed timeslips will be considered.

I. Maintain detailed records of work done on a Time and Material basis. Submit timeslips daily for verification and sign-off by Owner’s representative on-site. Provide full information required for an evaluation of the proposed changes, and to substantiate costs for the changes in the Work.

J. Document each quotation for a change in cost or time with sufficient data to allow an evaluation of the quotation. Provide detailed breakdown of costs and estimates for labor and materials including a detailed breakdown for subcontractor's or vendor's Work. Include copies of written quotations from subcontractors or vendors.

K. Change Order Forms: AIA G701 Change Order.

L. Execution of Change Orders: The Prime will issue Change Orders for signatures of the parties as provided in the Conditions of the Contract.

M. Correlation Of Contractor Submittals:
   1. Promptly revise the Schedule of Values and the Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum. Promptly revise progress schedules to reflect any change in the Contract Time, revise sub-schedules to adjust times for any other items of work affected by the change, and resubmit.
   2. Promptly enter changes in the Project Record Documents.

1.10 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of the Prime, it is not practical to remove and replace the Work, the Prime will direct an appropriate remedy or adjust payment.

C. The defective Work may remain, but the unit sum will be adjusted to a new sum at the discretion of the Prime.

D. The defective Work will be partially repaired to the instructions of the Prime, and the unit sum will be adjusted to a new sum at the discretion of the Prime.

E. The individual Specification Sections may modify these options or may identify a specific formula or percentage sum reduction.

F. The authority of the Prime to assess the defect and identify a payment adjustment, is final.

G. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
   1. Products wasted or disposed of in a manner that is not acceptable.
   2. Products determined as unacceptable before or after placement.
   3. Products not completely unloaded from the transporting vehicle.
   4. Products placed beyond the lines and levels of the required Work.
   5. Products remaining on hand after completion of the Work.
   6. Loading, hauling, and disposing of rejected products.

1.11 UNIT PRICES

A. Provide the following unit prices as listed on the Bid Form for use in establishing both Add and Deduct change orders. Allowable overhead and profit mark-ups are not to be included in these figures, but will be applied during the Change Order process.:

1. Suspended Ceiling grid system Type A installed: In that area indicated for sprinkler and fire alarm work on the drawings as the BCRC project, ceiling grid with Type A tile may be required. Provide a square foot cost for provision of that system complete where requested on the Bid Form.
2. Suspended Ceiling grid system Type B installed: Same area, complete grid system with Type B tile. Provide a square foot cost for provision of that system complete where requested on the Bid Form.
3. Light Fixture Type F1 installed: Provide a cost to add or delete Type F1 fixture with wiring during construction. Assume a compatible lighting circuit within 20', and include cutting fixture into ceiling tile. No separate switching will be required. Provide a per fixture cost for providing and FI light installed complete where requested on the Bid Form.

1.12 ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work as required.

C. Schedule of Alternates:
1. Alternate #1 – Lobby Finishes: Provide wood cladding, glass infill panels, rails, and structure on lobby guard rails, lobby central stair, and side stair as indicated on alternate drawings D1.4A, A1.3A, A3.1A, A3.2A, and A5.4A, and per all appropriate specifications sections.
2. Alternate #2 – Front Projection: At all four lecture halls, demolish existing rear projection hoods and associated wiring and conduits in the projection room. Infill the concrete floor at each projection hood. Provide new projection walls at the front of each lecture hall. Relocate four lecterns and install new wireways as indicated on the alternate drawings D1.4A, A1.3A, A1.4A, A3.1A, A5.1A, A5.2A, A5.3A, and M1.1A and per all appropriate specification sections. Coordinate with Owner's vendor installation of new AV equipment. Include allowance of $5,000 as further defined in this section to salvage existing AV equipment and remove obsolete AV and electrical utilities.
3. Alternate #3 – Lecture Hall Finishes: Provide additional finishes as shown on the alternate drawings D1.3A, D1.4A, D1.5A, A1.3A, A1.4A, A2.2A, A3.1A, A5.1A, A5.2A, and A5.3A, and per all appropriate specification sections. This work includes wood cladding at side walls, wood cladding at guard walls, flooring, new doors and alternate ceiling construction.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

Material Status Log

Material Status Log

Job Name_____ Contractor:_____

Item	Spec Section	Supplier Name	Purchase Order		Sub'l Apprvd Y/N	Shop dwg Release Date	Fabrication		Required on Site		
			No.	Date			Lead Time	Start Date	Scheduled	Promised	Delivered

SECTION 01300 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Site administration

B. Construction progress schedules.

C. Coordination and project conditions.

D. Preconstruction meeting.

E. Site mobilization meeting.

F. Progress meetings.

F. Pre-installation meetings.

1.2 SITE ADMINISTRATION

A. Maintain a guest log in format acceptable to Owner. Provide copies when requested.

1.3 COORDINATION AND PROJECT CONDITIONS

A. Coordinate the scheduling, submittals, and the Work of the various Sections of the Project Manual to ensure an efficient and orderly sequence of the demolition elements.

B. Coordinate the completion and clean up of the Work of the separate Sections in preparation for Substantial Completion.

C. Coordinate access to the site for correction of defective Work and the Work not in accordance with the Contract Documents.

1.4 CONSTRUCTION PROGRESS CHEDULES

A. Submit initial progress schedule in duplicate within 15 days after date of established notice to proceed for Architect to review.

B. Revise and resubmit as required.

C. Submit revised schedules with each Application for Payment, identifying changes since previous version.

D. Submit a computerized chart with separate line for each major section of Work or operation, identifying first work day of each week.

E. Show complete sequence of construction activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.

F. Indicate estimated percentage of completion for each item of Work at each submission.

G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates.

1.5 PRECONSTRUCTION MEETING

A. The Prime will schedule a meeting after the RI State Department of Administration, Division of Purchases, issues a Purchase Order to the Contractor.

D. Attendance Required: Owner, Prime, Architectural Consultant, and Contractor.

E. Agenda:
1. Distribution of the Contract Documents.
2. Submission of a list of Subcontractors, a list of products, schedule of values, and a progress schedule.
3. Designation of the personnel representing the parties in the Contract.
4. The procedures and processing of the field decisions, submittals, substitutions, applications for payments, proposal requests, Change Orders, and Contract closeout procedures.
5. Scheduling.

F. Contractor shall record the minutes and distribute copies within two days after the meeting to the participants, with copies to the Prime, Consultants, Owner, other participants, and those consultants affected by the decisions made.

1.6 SITE MOBILIZATION MEETING

A. The Prime will schedule a meeting at the Project site prior to the Contractor's occupancy and may occur at the same time as the Preconstruction meeting noted above.

B. Attendance Required: The Owner, Prime, Contractor, the Contractor's Superintendent, and major Subcontractors.

C. Agenda:
1. Use of the premises by the Contractor.
2. Security and housekeeping procedures.
3. Schedules.
4. Application for payment procedures.

5. Procedures for testing.
6. Procedures for maintaining the record documents.

D. Contractor shall record the minutes and distribute the copies within two days after the meeting to the participants, with copies to the Prime, Consultants, Owner, other participants, and those consultants affected by the decisions made.

1.7 PROGRESS MEETINGS

A. Schedule and administer the meetings throughout the progress of the Work at weekly intervals while work is in process.

G. Make arrangements for the meetings, prepare the agenda with copies for the participants, and preside at the meetings.

H. Attendance Required: The job superintendent, major subcontractors and suppliers, the Owner, Prime, and Consultants as appropriate to agenda topics for each meeting.

I. Agenda:
1. Review the minutes of previous meetings.
2. Review of the Work progress.
3. Field observations, problems, and decisions.
4. Identification of the problems which impede the planned progress.
5. Review of the submittals schedule and status of the submittals.
6. Review of delivery schedules.
7. Maintenance of the progress schedule.
8. Corrective measures to regain the projected schedules.
9. Planned progress during the succeeding work period.
10. Coordination of the projected progress.
11. Maintenance of the quality and work standards.
12. Effect of the proposed changes on the progress schedule and coordination.
13. Other business relating to the Work.

J. Contractor shall record the minutes and distribute the copies within two days after the meeting to the participants, with copies to the Prime, Consultants, Owner, participants, and others affected by the decisions made.

1.8 PREINSTALLATION MEETINGS

A. When required in the individual specification Sections, convene a pre-installation meeting at the site prior to commencing the Work of the Section.

K. Require attendance of the parties directly affecting, or affected by, the Work of the specific Section.

L. Notify the Prime four days in advance of the meeting date.

M. Prepare an agenda and preside at the meeting:
   1. Review the conditions of installation, preparation and installation procedures.
   2. Review coordination with the related work.

N. Record the minutes and distribute the copies within two days after the meeting to the participants, with copies to the Prime, Owner, participants, and those affected by the decisions made.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01330 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures.

B. Construction progress schedules.

C. Proposed products list.

D. Product data.

E. Shop drawings.

F. Samples.

G. Test reports.

H. Certificates.

I. Manufacturer's instructions.

J. Manufacturer's field reports.

K. ARRA Job Reports.

1.2 SUBMITTAL PROCEDURES

A. Master List Submittal:
   1. Submit a master list of the required submittals with a proposed date for each item to be submitted.
   2. Show the date submittal was sent, days since submittal was sent, status of submittal, date submittal was received in return, and any date associated with resubmittals.
   3. Up date master list with each submission and response.
   4. Issue copy of master list at least monthly to the Prime.

B. Transmit each submittal with a dated Prime-accepted transmittal form.

C. Sequentially number the transmittal form. Mark the revised submittals with an original number and a sequential alphabetic suffix.

D. Identify the Project, Contractor, subcontractor and supplier; the pertinent drawing and detail number, and the specification Section number, appropriate to the submittal.

E. Apply a Contractor's stamp, signed or initialed, certifying that the review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of the information is in accordance with the requirements of the Work and the Contract Documents.

F. Schedule submittals to expedite the Project, and deliver to the Prime at their business address. Coordinate the submission of related items.

G. For each submittal for review, allow 15 days excluding the delivery time to and from the Contractor.

H. Identify the variations from the Contract Documents and the Product or system limitations which may be detrimental to a successful performance of the completed Work.

I. Allow space on the submittals for the Contractor's, Prime’s, and Consultant's review stamps.

J. When revised for resubmission, identify the changes made since the previous submission.

K. Distribute copies of the reviewed submittals as appropriate. Instruct the parties to promptly report an inability to comply with the Contract requirements.

1.3 CONSTRUCTION PROGRESS SCHEDULES

A. Submit preliminary outline Schedules within 15 days after the date of receipt of a Purchase Order from the University of RI for coordination with the Owner's requirements. After a review, submit detailed schedules within 15 days modified to accommodate the revisions recommended by the Prime and Owner.

B. Submit revised Progress Schedules with each Application for Payment.

C. Distribute copies of the reviewed schedules to the Project site file, subcontractors, suppliers, and other concerned parties.

D. Instruct the recipients to promptly report, in writing, the problems anticipated by the projections indicated in the schedules.

E. Provide a separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished Products and Products identified under Allowances,

if any, and the dates reviewed submittals will be required from the Prime. Indicate the decision dates for selection of the finishes.

F. Revisions to Schedules:
1. Indicate the progress of each activity to the date of submittal, and the projected completion date of each activity.
2. Identify the activities modified since the previous submittal, major changes in the scope, and other identifiable changes.
3. Provide a narrative report to define the problem areas, the anticipated delays, and impact on the Schedule. Report the corrective action taken, or proposed, and its effect including the effect of changes on the schedules of separate contractors.

1.4 PROPOSED PRODUCTS LIST

A. Within 15 days after the date of receipt of a Purchase Order from the University of RI, submit a list of major products proposed for use, with the name of the manufacturer, the trade name, and the model number of each product.

B. For the products specified only by reference standards, give the manufacturer, trade name, model or catalog designation, and reference standards.

C. With each product listed, indicate the submittal requirements specified to be adhered to, and an indication of relevant "long-lead-time" information , when appropriate.

1.5 PRODUCT DATA

A. Product Data: Submit to the Prime for review for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents. Provide copies and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01780.

B. Submit the number of copies which the Contractor requires, one for the Owner, plus two copies the Prime will retain.

C. Mark each copy to identify the applicable products, models, options, and other data. Supplement the manufacturers' standard data to provide the information specific to this Project.

D. Indicate the product utility and electrical characteristics, the utility connection requirements, and the location of utility outlets for service for functional equipment and appliances.

E. After a review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01780.

1.6 SHOP DRAWINGS

A. Shop Drawings: Submit to the Prime for review for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents. Produce copies and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01780.

1.7 SAMPLES

A. Samples: Submit to the Prime for review for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents. Produce duplicates and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01780.

B. Samples For Selection as Specified in Product Sections:
   1. Submit to the Prime for aesthetic, color, or finish selection.
   2. Submit samples of the finishes in the colors selected for the Prime's records.
   3. After review, produce duplicates and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01780.

C. Submit samples to illustrate the functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate the sample submittals for interfacing Work.

F. Include an identification on each sample, with the full Project information.

G. Submit at least the number of samples specified in the individual specification Sections; the Prime will retain two samples.

H. Reviewed samples, which may be used in the Work, are indicated in the individual specification Sections.

I. Samples will not be used for testing purposes unless they are specifically stated to be in the specification Section.

1.8 TEST REPORTS

A. Submit lab reports for the Prime's knowledge as Contract administrator for the Owner. See Section 01400.

B. Submit manufacturer's test reports for information for the limited purpose of assessing conformance with the information given and the design concept expressed in the Contract Documents.

1.9 CERTIFICATES

A. When specified in the individual specification Sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to the Prime in the quantities specified for the Product Data.

B. Indicate that the material or product conforms to or exceeds the specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on the material or product, but must be acceptable to the Prime and its Consultants.

1.10 MANUFACTURER'S INSTRUCTIONS

A. When specified in the individual specification Sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to the Prime for delivery to the Owner in the quantities specified for Product Data.

B. Indicate the special procedures, and the perimeter conditions requiring special attention, and the special environmental criteria required for application or installation.

1.11 MANUFACTURER'S FIELD REPORTS

A. Submit reports for the Prime's benefit as contract administrator or for the Owner.

B. Submit the report in duplicate within 30 days of observation to the Prime for information.

C. Submit for information for the limited purpose of assessing conformance with the information given and the design concept expressed in the Contract Documents.

1.12 ARRA JOB REPORTS

A. At the end of each work week, Contractor shall submit hours worked by trade category to the Owner's designated project manager for ARRA compliance. If desired by the Contractor, forms will be provided by the University. These forms may be filled in by

hand by each subcontractor and provided to the Contractor's foreman for its input into electronic submittal to the University according to an agreed timeline.

B. Submittal by the Contractor shall be on the Jobs Report template Excel spreadsheet which will be provided by the University. One form with quarterly worksheets will be used throughout the job and updated weekly. Submittal will be via email.
C. At the end of each quarter, the spreadsheet description of work must be updated by the Contractor on the Jobs Report Template, Jobs Data tab.
D. Contractor must also provide their own, and collect from all their subcontractors, the 9 digit zip code of their primary place of business. The entire extended zipcode is required (example = 02903-1648).
E. ARRA funding requirements from time to time will require additional information. Contractor agrees to provide the University with data as necessary to meet ARRA funding requests.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01400 – QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Quality control and control of installation.

B. Verification of Credentials and Licenses.

C. Tolerances

D. References.

E. Testing and inspection services.

F. Manufacturers' field services.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

A. Monitor a quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of the specified quality.

B. Comply with all manufacturers' instructions and recommendations, including each step in sequence.

C. When the manufacturers' instructions conflict with the Contract Documents, request a clarification from the Prime before proceeding.

D. Comply with the specified standards as a minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform the Work by persons qualified to produce the required and specified quality.

F. Verify that field measurements are as indicated on the Shop Drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 VERIFICATION OF CREDENTIALS AND LICENSES

A. The Owner has implemented a project management oversight process and is applying it to current construction projects at URI.

B. An element of this oversight process is the verification that persons employed on the project site have appropriate and current credentials and licenses in their possession, at the project site, for the work they are performing.

C. Be forewarned that state resident inspectors will be checking for verification of credentials and licenses of both union and non-union persons, in their onsite inspections.

D. State resident inspectors will also be reviewing Contractor's Certified Monthly Payroll Records for conformance with RI State Prevailing Wage Rate requirements..

E. Those persons without the appropriate credentials and licenses will be subject to dismissal from the project site.

F. Contractor is also responsible for verifying that all subcontractors and vendors have registered with the ARRA authorities and have obtained a DUNS number as required. DUNS numbers for each firm shall be added to their Waiver of Lien forms. Failure to properly register with ARRA authorities will be justification for withholding payment.

1.4 TOLERANCES

A. Monitor the fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with the manufacturers' tolerances. When the manufacturers' tolerances conflict with the Contract Documents, request a clarification from the Prime before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.5 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by the date of issue current on the date of the Contract Documents, except where a specific date is established by code.

C. Obtain copies of the standards where required by the product specification Sections.

D. When the specified reference standards conflict with the Contract Documents, request a clarification from the Prime before proceeding.

E. Neither the contractual relationships, duties, or responsibilities of the parties in the Contract, nor those of the Prime, shall be altered from the Contract Documents by mention or inference otherwise in reference documents.

1.6 TESTING AND INSPECTION SERVICES

A. The Contractor will submit the name of an independent firm to the Prime for approval by the Owner, to perform the testing and inspection services. The Contractor shall pay for all the services.

B. The independent firm will perform the tests, inspections and other services specified in the individual specification Sections and as required by the Prime or its Consultants.
1. Laboratory: Authorized to operate in the location in which the Project is located.
2. Laboratory Staff: Maintain a full time registered Engineer on staff to review the services.
3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either the National Bureau of Standards or to the accepted values of natural physical constants.

C. Testing, inspections and source quality control may occur on or off the project site. Perform off-site testing as required by the Prime or the Owner.

D. Reports will be submitted by the independent firm to the Prime, the Consultant for that trade, and the Contractor, in duplicate, indicating the observations and results of tests and indicating the compliance or non-compliance with Contract Documents.

E. Cooperate with the independent firm; furnish samples of the materials, design mix, equipment, tools, storage, safe access, and the assistance by incidental labor as requested.
1. Notify the Prime and Engineer and the independent firm 24 hours prior to the expected time for operations requiring services.
2. Make arrangements with the independent firm and pay for additional samples and tests required for the Contractor's use.

F. Testing and employment of the testing agency or laboratory shall not relieve the Contractor of an obligation to perform the Work in accordance with the requirements of the Contract Documents.

G. Re-testing or re-inspection required because of a non-conformance to the specified requirements shall be performed by the same independent firm on instructions by the Prime or its Consultant. Payment for the re-testing or re-inspection will be charged to the Contractor by deducting the testing charges from the Contract Sum.

H. Agency Responsibilities:
1. Test samples of mixes submitted by the Contractor.
2. Provide qualified personnel at the site. Cooperate with the Prime or its Consultant and the Contractor in performance of services.

3. Perform specified sampling and testing of the products in accordance with the specified standards.
4. Ascertain compliance of the materials and mixes with the requirements of the Contract Documents.
5. Promptly notify the Architect, Consultant and the Contractor of observed irregularities or non-conformance of the Work or products.
6. Perform additional tests required by the Prime or its Consultants.
7. Attend the preconstruction meetings and the progress meetings.

I. Agency Reports: After each test, promptly submit two copies of the report to the Prime, appropriate Consultant, and to the Contractor. When requested by the Prime, provide an interpretation of the test results. Include the following:
1. Date issued.
2. Project title and number.
3. Name of inspector.
4. Date and time of sampling or inspection.
5. Identification of product and specifications section.
6. Location in the Project.
7. Type of inspection or test.
8. Date of test.
9. Results of tests.
10. Conformance with Contract Documents.

J. Limits On Testing Authority:
1. Agency or laboratory may not release, revoke, alter, or enlarge on the requirements of the Contract Documents.
2. Agency or laboratory may not approve or accept any portion of the Work.
4. Agency or laboratory may not assume any duties of the Contractor.
5. Agency or laboratory has no authority to stop the Work.

1.8 MANUFACTURERS' FIELD SERVICES

A. When specified in the individual specification Sections, require the material or Product suppliers, or manufacturers, to provide qualified staff personnel to observe the site conditions, the conditions of the surfaces and installation, the quality of workmanship, the start-up of equipment, or test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

B. Submit the qualifications of the observer to the Prime 30 days in advance of the required observations. Observer is subject to approval of the Prime.

C. Report the observations and the site decisions or instructions given to the applicators or installers that are supplemental or contrary to the manufacturers' written instructions.

D. Refer to Section 01330 - SUBMITTAL PROCEDURES, MANUFACTURERS' FIELD

REPORTS article.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities:
1. Temporary electricity.
2. Temporary lighting for construction purposes.
3. Temporary heating.
4. Temporary cooling.
5. Temporary ventilation.
6. Telephone service.
7. Facsimile service.
8. Temporary water service.
9. Temporary sanitary facilities.

B. Construction Facilities:
1. Field offices and sheds.
2. Vehicular access.
3. Parking.
4. Progress cleaning and waste removal.
5. Project identification.
6. Traffic regulation.

C. Temporary Controls:
1. Barriers.
2. Enclosures and fencing.
3. Protection of the Work.
4. Security.
5. Fire detection.
6. Water control.
7. Dust control.
8. Erosion and sediment control.
9. Noise control.
10. Pest control.
11. Pollution control.
12. Rodent control.

D. Removal of utilities, facilities, and controls.

1.02 TEMPORARY ELECTRICITY

A. The Owner will pay the cost of energy used. Exercise measures to conserve energy. Utilize the Owner's existing power service.

B. Complement the existing power service capacity and characteristics as required for construction operations.

C. Provide power outlets, with branch wiring and distribution boxes located at each floor or as required for construction operations. Provide flexible power cords as required for portable construction tools and equipment. All flexible power cords shall be suspended with hangers to eliminate trip hazards.

D. Provide main service disconnect and over-current protection at a convenient location, or a feeder switch at the source distribution equipment or meter.

E. Permanent convenience receptacles may not be utilized during construction.

F. Provide distribution equipment, wiring, and outlets to provide single-phase branch circuits for power. Provide 20-ampere duplex outlets, single-phase circuits for power tools.

1.03 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Maintain lighting and provide routine repairs.

B. Permanent building lighting may be utilized during construction.

1.04 TEMPORARY HEATING

A. Existing facilities will be occupied and heated by the University when temperatures require. Take care to avoid leaving doors open in exterior walls that could compromise heating operations.

B. Supplement with temporary heat devices if needed to maintain the specified conditions for construction operations.

C. Maintain a minimum ambient temperature of 50 degrees F in the areas where construction is in progress, unless indicated otherwise in the product Sections.

D. In areas of work with mechanical hot-air heating, clean units and replace filters after Substantial Completion.

1.05 TEMPORARY COOLING

A. Existing facilities are not available.

B. Provide and pay for cooling devices and cooling as needed to maintain the specified conditions for construction operations.

C. Maintain a maximum ambient temperature of 80 degrees F in the areas where construction is in progress, unless indicated otherwise in the specifications.

1.06 TEMPORARY VENTILATION

A. Ventilate the enclosed areas to achieve a curing of materials, to dissipate humidity, and to prevent the accumulation of dust, fumes, vapors, or gases.

B. If existing ventilation fans are used during construction, clean fans in areas of work after Substantial Completion.

1.07 TELEPHONE SERVICE

A. Provide, maintain, and pay for cell phone service to the field supervisor at the time of project mobilization.

1.08 TEMPORARY WATER SERVICE

A. The Owner will pay the cost of temporary water. Exercise measures to conserve energy. Utilize the Owner's existing water system, extend and supplement with temporary devices as needed to maintain the specified conditions for construction operations.

B. Extend branch piping with outlets located so that water is available by hoses with threaded connections. Provide temporary pipe insulation if needed to prevent freezing.

1.09 TEMPORARY SANITARY FACILITIES

A. Contractor needs to provide and maintain temporary toilet facilities for use by all construction personnel. Tradespoeple will not be permitted to use existing facilities within the building.

1.10 FIELD OFFICES AND SHEDS

A. Do not use existing facilities for storage. Job meetings will be held on campus at a location to be chosen by the University.

D. Storage Areas and Sheds: Size to the storage requirements for the products of the individual Sections, allowing for access and orderly provision for the maintenance and for the inspection of Products to the requirements of Section 01600. Containers will be permitted within the project limit line.

E. Preparation: Fill and grade the sites for the temporary structures to provide drainage away from the buildings.

F. Removal: At the completion of the Work remove the buildings, foundations, utility services, and debris. Restore the areas.

1.11 PARKING/TRAFFIC

A. Workers must park in lots assigned by the University with daily permits. See Site Utilization Plan.
B. Use of designated existing on-site streets and driveways for construction traffic is permitted. Tracked vehicles are not allowed on paved areas.

C. Do not allow heavy vehicles or construction equipment in parking areas.

D. Do not allow vehicle parking on existing sidewalks.

E. Provide and maintain access to fire hydrants and control valves free of obstructions.

F. Remove mud from construction vehicle wheels before entering streets. Cleanup dirt, rocks, and debris left on street from construction vehicles.

G. Use designated existing on-site roads for construction traffic.

H. Maintenance:
   1. Maintain the traffic and parking areas in a sound condition free of excavated material, construction equipment, products, mud, snow, and ice.
   2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain the paving and drainage in original, or specified, condition.

I. Removal, Repair:
   1. Remove temporary materials and at Substantial Completion.
   2. Remove underground work and compacted materials to a depth of 2 feet; fill and grade the site as specified.
   3. Repair existing and permanent facilities damaged by use, to the original or specified condition.

1.12 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain the site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other remote spaces, prior to enclosing the space.

C. Broom and vacuum clean the interior areas prior to the start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from the site daily, as necessary to prevent an on-site accumulation of waste material, debris, and rubbish, and dispose off-site.

E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.13 PROJECT IDENTIFICATION

A. Project Identification Sign: One painted sign, 32 sq ft area, bottom 6 feet above the ground.
   1. Content:
      a. Project title, and name of the Owner as indicated on the Contract Documents.
      b. Names and titles of the authorities.
      c. Names and titles of the Architect and Consultants.
      d. Name of the Prime Contractor.
   2. Graphic Design, Colors, and Style of Lettering: 3 colors, as designated by the Architect.

B. ARRA Project Sign:
   1. See four page sign design guide following this section for ARRA sign requirements.
   2. Provide sign where directed by the University.
   3. 84 inch version will be required for this Project.
   4. In lieu of RIDOT Tiger logo, apply URI logo to be provided by University.
   5. Mount sign 6 feet above ground similar to Identification Sign.

C. Project Informational Signs:
   1. Painted informational signs of same colors and lettering as the Project Identification sign, or standard products; size lettering to provide legibility at 100-foot distance.
   2. Provide sign at each field office, storage shed, [and directional signs to direct traffic into and within site]. Relocate as the Work progress requires.
   3. No other signs are allowed without the Owner's permission except those required by law.

D. Design all signs and their structures to withstand a 60-miles/hr-wind velocity.

E. Sign Painter: Experienced as a professional sign painter for a minimum of three years.

F. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for the duration of construction.

G. Show content, layout, lettering, color, foundation, structure, sizes, and grades of members.

H. Installation:
   1. Install the project identification sign within 15 days after the date of receipt of the Purchase Order from State of Rhode Island Department of Administration, Division of Purchases.
   2. Erect at the designated location.
   3. Erect the supports and framing on a secure foundation, rigidly braced and framed to resist wind loadings.
   4. Install the sign surface plumb and level, with butt joints. Anchor securely.
   5. Paint exposed surfaces of the sign, supports, and framing.

I. Maintenance: Maintain the signs and supports clean, repair deterioration and damage.

J. Removal: Remove the signs, framing, supports, and foundations at the completion of the Project and restore the area.

1.14 TRAFFIC REGULATION

A. Signs, Signals, And Devices:
   1. Post Mounted and Wall Mounted Traffic Control and Informational Signs: As approved by local jurisdictions.
   2. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.
   3. Flag person Equipment: As required by local jurisdictions.
   4. Police Details: Provide all police details as required by local jurisdictions, including payment directly to officers.

B. Flag Persons: Provide trained and equipped flag persons to regulate the traffic when construction operations or traffic encroach on the public traffic lanes.

C. Flares and Lights: Use flares and lights during the hours of low visibility to delineate the traffic lanes and to guide traffic.

D. Haul Routes:
   1. Consult with the authority having jurisdiction, establish the public thoroughfares to be used for haul routes and site access.

E. Traffic Signs and Signals:
   1. At approaches to the site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct the construction and affected public traffic.
   1. Install and operate [automatic] traffic control signals to direct and maintain the orderly flow of traffic in areas under the Contractor's control, and areas affected by the Contractor's operations.
   2. Relocate as the Work progresses, to maintain effective traffic control.

F. Removal:
   1. Remove equipment and devices when no longer required.
   2. Repair damage caused by installation.
   3. Remove post settings to a depth of 2 feet .

1.15 BARRIERS

A. Provide barriers to allow for the Owner's use of the site and to protect existing facilities and adjacent properties from damage from the construction operations, or demolition.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way, or for public access to the building.

C. Provide protection for plants designated to remain. Replace damaged plants.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.16 ENCLOSURES AND FENCING

A. Construction: Provide commercial grade chain link fence around on-site equipment or areas of site disturbance for the period required to protect work and the public.

B. Perform adjustment to the proposed layout as may be directed by the Owner.

C. Interior Enclosures:
   1. Provide temporary partitions and ceilings as indicated to separate the work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to the existing materials and equipment.
   2. Construction: Framing and reinforced polyethylene, plywood, or gypsum board sheet materials with closed joints and sealed edges at intersections with existing surfaces, as agreed with the Owner:
      a. Maximum flame spread rating of 75 in accordance with ASTM E84.

1.17 SECURITY

A. Security Program:
   1. Protect the Work, the existing premises, or the Owner's operations from theft, vandalism, and unauthorized entry.
   2. Initiate the program in coordination with the Owner's existing security system at mobilization.
   3. Maintain the program throughout the construction period until Owner occupancy of each designated area.

B. Entry Control: Coordinate the access of the Owner's personnel to the site in coordination with the Owner's security forces.

1.18 FIRE DETECTION

A. Before beginning any construction operation that can potentially trigger the existing fire alarm detection system, notify and request the URI Superintendent of Alarms at the office of Public Safety to temporarily disconnect the system in the specific areas of construction, for as long as may be necessary.

B. Failure to so notify the Superintendent of Alarms will subject the Contractor to a monetary fine for each occurrence, should the fire detection system be activated inadvertently by a construction activity.

C. Comply with FM Global insurance underwriting standards and insurer recommendations for Hot Work, sprinkler impairment, and site maintenance.

1.19 WATER CONTROL

A. Grade the site to drain. Maintain excavations free of water. Provide, operate, and maintain the pumping equipment.

B. Protect the site from puddling or running water. Provide water barriers as required to protect the site from soil erosion.

1.20 DUST CONTROL

A. Execute the Work by methods to minimize raising dust from construction operations.

B. Provide positive means to prevent air-borne dust from dispersing into the atmosphere.

1.21 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize the amount of bare soil exposed at one time.

C. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

E. Periodically inspect the earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.22 NOISE CONTROL

A. Provide methods, means, and facilities to minimize noise produced by the construction operations.

1.23 PEST CONTROL

A. Provide methods, means, and facilities to prevent pests and insects from damaging the Work, or entering the facility.

1.24 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent the contamination of soil, water, and the atmosphere from discharge of noxious, toxic substances, and pollutants produced by the construction operations.

1.25 RODENT CONTROL

A. Provide methods, means, and facilities to prevent rodents from accessing or invading the premises.

1.26 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials, prior to Substantial Completion.

B. Remove the underground installations to a minimum depth of 2 feet. Grade the site as indicated.

C. Clean and repair the damage caused by installation or use of temporary work.

D. Restore the existing facilities used during construction to the original condition.

E. Restore any temporary exterior laydown or storage areas to the original condition. After each use regrade and reseed as required to meet this requirement.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

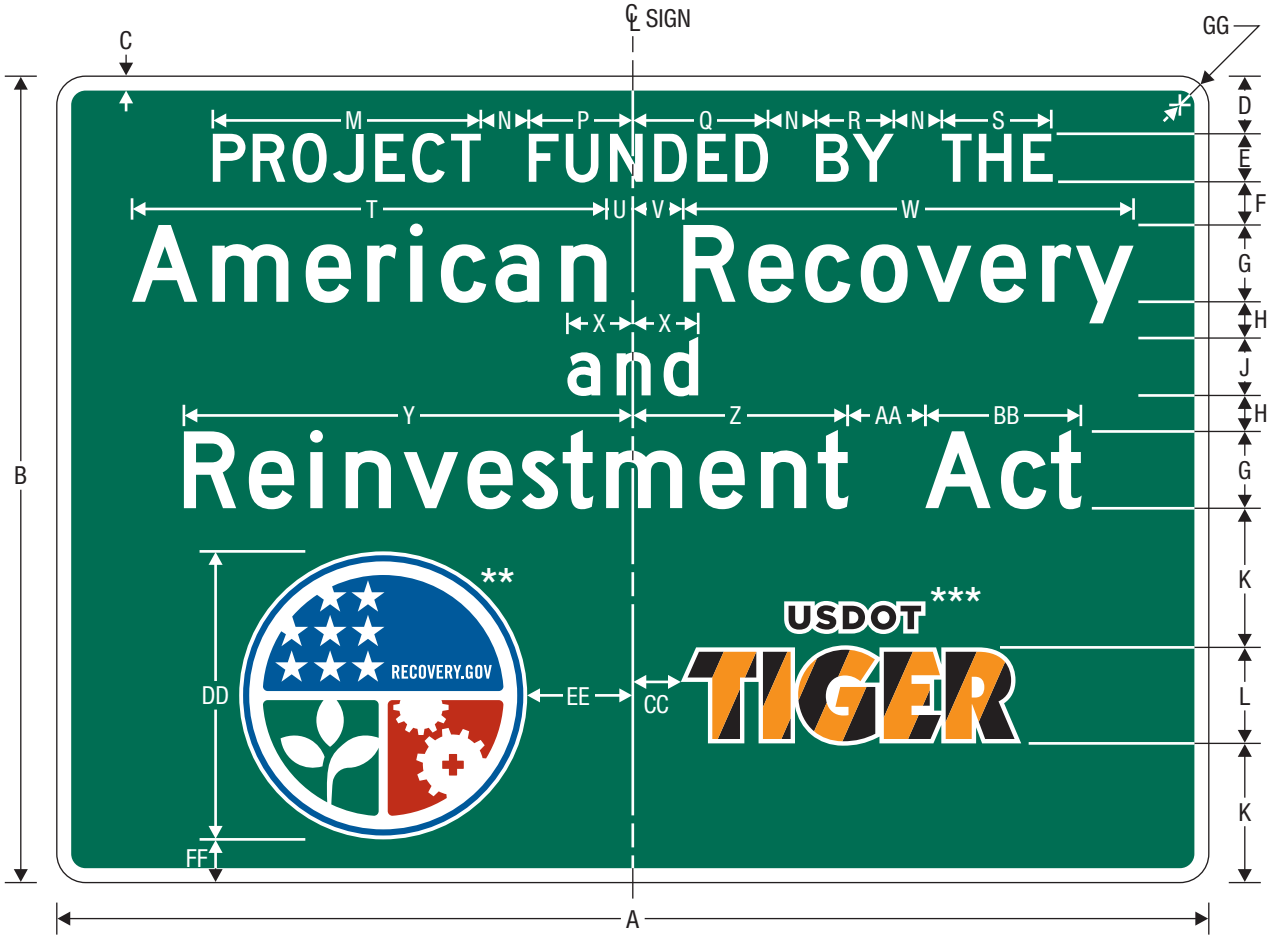
Not Used.

END OF SECTION

PROJECT FUNDING SOURCE SIGN ASSEMBLY
AMERICAN RECOVERY AND REINVESTMENT ACT
SIGN LAYOUT DETAILS

PROJECT FUNDING SOURCE
SIGN ASSEMBLY

PROJECT FUNDING SOURCE SIGN ASSEMBLY
AMERICAN RECOVERY AND REINVESTMENT ACT
SIGN LAYOUT DETAILS



PROJECT FUNDING SOURCE SIGN

NOTE: SIGN SHALL NOT BE INSTALLED WITHOUT PROJECT FUNDING SOURCE PLAQUE (SEE SHEET 3).

Dimensions in inches

A	B	C	D	E	F	G	H	J	K	L	M	N	P
120	84	1.5	6	5 D	4.5	8 D*	3.75	6 D* (4.5 L.C.)	14.5	10	27.917	5	10.831
84	60	1	5	4 C	3.5	6 C*	3	4 D* (3 L.C.)	9.25	7	19.047	4	7.362

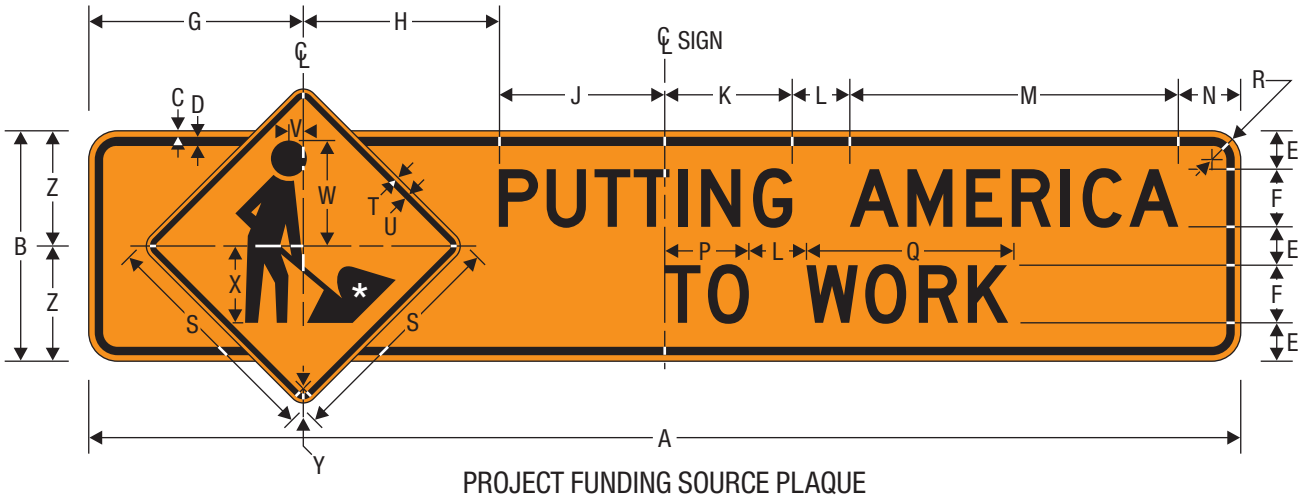
Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD
14.087	8.106	11.556	49.42	2.742	5.258	46.904	6.812	46.76	22.472	8	16.288	5	30
9.484	5.162	7.763	31.722	2.415	3.585	30.552	4.542	30.911	14.737	6	10.175	4	21

EE	FF	GG
11	4.5	3
7.5	2.25	2.25

* Increase character spacing 50%
** See Pictograph page 4
*** See Pictograph page 5

COLORS: LEGEND, BORDER – WHITE (RETROREFLECTIVE)
BACKGROUND – GREEN (RETROREFLECTIVE)

PROJECT FUNDING SOURCE SIGN ASSEMBLY
AMERICAN RECOVERY AND REINVESTMENT ACT
SIGN LAYOUT DETAILS



PROJECT FUNDING SOURCE PLAQUE

NOTE: PLAQUE SHALL NOT BE INSTALLED WITHOUT SIGN (SEE SHEET 2).

* See *Standard Highway Signs* Page 6-59 for symbol design.

Dimensions in inches

A	B	C	D	E	F	G	H	J	K	L	M	N	P
120	24	0.625	0.875	4	6 D	22.349	20.370	17.281	13.28	6	34.22	6.5	8.765
84	18	0.375	0.625	3.5	4 D	16.607	15.686	9.707	10.667	4	22.813	5	5.843

Q	R	S	T	U	V	W	X	Y	Z
21.013	3	24	0.375	0.625	1.5	11	8	1.5	12
14.009	2.25	18	0.375	0.625	1	7	6	1.5	9

COLORS: LEGEND, BORDER — BLACK
BACKGROUND — ORANGE (RETROREFLECTIVE)

PROJECT FUNDING SOURCE SIGN ASSEMBLY
AMERICAN RECOVERY AND REINVESTMENT ACT
SIGN LAYOUT DETAILS

RECOVERY
Vector-Based, Vinyl-Ready Pictograph

COLORS:	LEGEND, OUTLINE	— WHITE (RETROREFLECTIVE)
	BORDER	— BLUE (RETROREFLECTIVE)
	BACKGROUND (UPPER)	— BLUE (RETROREFLECTIVE)
	BACKGROUND (LOWER RIGHT)	— RED (RETROREFLECTIVE)
	BACKGROUND (LOWER LEFT)	— GREEN (RETROREFLECTIVE)

SECTION 01600 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Product delivery requirements.

C. Product storage and handling requirements.

D. Product options.

E. Product substitution procedures.

1.2 PRODUCTS

A. Products: Means new material, machinery, components, fixtures, or systems forming the Work; but does not include the machinery or equipment used for the preparation, fabrication, conveying, or erection of the Work. Products may include the existing materials or components required or specified for reuse.

B. Furnish products of qualified manufacturers suitable for the intended use. Furnish products of each type by a single manufacturer unless specified otherwise.

C. Do not use materials and equipment removed from the existing premises, except as specifically permitted by the Contract Documents.

D. Furnish interchangeable components of the same manufacturer for the components being replaced.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products in accordance with the manufacturer's instructions.

B. Promptly inspect shipments to ensure that the products comply with the requirements, the quantities are correct, and the products are undamaged.

C. Provide equipment and personnel to handle the products by methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect the products in accordance with the manufacturers' instructions.

B. Store with seals and labels intact and legible.

C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to the product.

D. For exterior storage of fabricated products, place on sloped supports above the ground.

E. Provide bonded off-site storage and protection when the site does not permit on-site storage or protection.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent the condensation and degradation of products.

G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

H. Provide equipment and personnel to store the products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of the products to permit access for inspection. Periodically inspect to verify that the products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of one of the manufacturers named and meeting the specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

1.6 PRODUCT SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify the time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.

B. Substitutions may be considered only when a product becomes no longer in production following the date of receipt of the Purchase Order for this Contract. Submit certification both that specified product was carried in Bid, and is no longer obtainable.

C. Document each request with complete data substantiating the compliance of a proposed Substitution with the Contract Documents.

D. A request constitutes a representation that the Bidder:
   1. Has investigated the proposed Product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the Substitution as for the specified Product.
   3. Will coordinate the installation and make changes to other Work which may be required for the Work to be complete with no additional cost to the Owner.
   4. Waives claims for additional costs or time extension which may subsequently become apparent.
   5. Will reimburse the Owner and the Prime for review or redesign services associated with re-approval by the authorities having jurisdiction.

E. Substitutions will not be considered when they are indicated or implied on the Shop Drawing or Product Data submittals, without a separate written request, or when acceptance will require revision to the Contract Documents.

F. Substitution Submittal Procedure, If Permitted Following Contract Award:
   1. Submit three copies of a request for Substitution for consideration, no later than 20 working days following date of receipt of the Purchase Order for this Contract. Limit each request to one proposed Substitution.
   2. Submit the Shop Drawings, Product Data, and the certified test results attesting to the proposed product equivalence. The burden of proof is on the proposer.
   3. The Prime will notify the Contractor in writing of a decision to accept or reject the request.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01700 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Examination.

B. Preparation.

C. Field Engineering.

D. Protection of adjacent construction.

E. Cutting and patching.

F. Special procedures.

G. Progress cleaning and waste removal.

H. Final cleaning.

I. Starting and adjusting of systems.

J. Demonstration and Instructions.

K. Testing, adjusting and balancing.

L. Protecting Installed Construction.

1.2 EXAMINATION

A. Acceptance of Conditions:
   1. Verify that existing applicable site conditions, substrates, or substrate surfaces are acceptable or meet specific requirements of individual specifications Sections, for subsequent Work to proceed.
   2. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
   3. Examine and verify specific conditions described in individual specifications Sections.
   4. Verify that utility services are available, of correct characteristics, and in correct locations.
   5. Beginning of new Work, that relies upon the quality and proper execution of Work of a preceding trade, means acceptance of that preceding Work as appropriate for the proper execution of subsequent Work.

6. Acceptance of preceding Work that can be shown later to have adversely affected proper performance of new Work may result in removal and repeat performance of all Work involved at no cost to the Owner.

1.3 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply substrate primer, sealer, or conditioner, required or recommended by manufacturer, prior to applying any new material or substance in contact or bond.

D. Prior to the application, installation, or erection of any products and product components, perform any other preparatory operations, or surface or substrate modifications, as may be specified or directed by product manufacturers.

1.4 FIELD ENGINEERING

A. Employ a Land Surveyor registered in the State of Rhode Island and acceptable to Prime and the Owner if required by subgrade work.

B. Locate and protect survey control and reference points. Promptly notify Prime of any discrepancies discovered.

C. Control Datum for survey is to be agreed to with the Prime.

D. Verify setbacks and easements, if any; confirm drawing dimensions and elevations.

E. Provide field-engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

F. Submit a copy of site drawings and certificate signed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.

G. Maintain a complete and accurate log of control and survey work as it progresses.

H. If required by the Owner, on completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

I. Protect survey control points prior to starting site work; preserve permanent reference point during construction.

J. Promptly report to Prime the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

K. Replace dislocated survey control point based on original survey control. Make no changes without prior written notice to Prime.

1.5 PROTECTION OF ADJACENT CONSTRUCTION

A. Protect existing adjacent properties and provide special protection where specified in individual Specification Sections.

B. Provide protective coverings at wall, projections, jambs, sills, and soffits of existing openings.

C. Protect existing finished floors, stairs, and other existing surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

D. Cover and protect furnishings, materials and equipment within the spaces receiving new work. Move items as necessary to install new work and return them to original locations at the close of construction in that area.

E. Repair adjacent properties damaged by construction operations to original condition to the satisfaction of the Owner.

F. Prohibit unnecessary traffic from existing landscaped areas.

G. Restore grassed landscaped areas damaged by construction operations to full healthy growth, by installing loam and sod to the requirements, and under the supervision of, the University's Associate Director of Lands and Grounds.

1.6 CUTTING AND PATCHING

A. Employ original, or skilled and experienced installer to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements which affect:
   1. Structural integrity of element.
   2. Integrity of weather-exposed or moisture-resistant elements.
   3. Efficiency, maintenance, or safety of element.
   4. Visual qualities of sight-exposed elements.
   5. Existing construction, or Work of separate contractor.

C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
   1. Fit the several parts together, to integrate with other Work.

2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and non-conforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute Work by methods that will avoid damage to other Work, and provide proper surfaces to receive patching and finishing.

E. Cut masonry, concrete, and other rigid materials using masonry saw or core drill.

F. Remove ceiling tiles as necessary to access areas of work. Store and replace carefully to avoid damage. Replace all ceiling tiles damaged during the work with new tiles to match. Repair ACT grid damaged during the work in accordance with this section.

G. Restore Work with new Products in accordance with requirements of Contract Documents.

H. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.

I. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

J. At penetration of fire rated partitions, ceiling, or floor construction, completely seal voids with fire rated or fire resistant material in accordance with Specifications, to full thickness of the penetrated element.

K. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.

L. Identify any hazardous substance or conditions exposed during the Work to the Owner and Prime for decision or remedy.

1.7 SPECIAL PROCEDURES

A. Materials: As specified in product Sections; match existing with new products, or salvaged products as appropriate, for patching and extending work.

B. Employ skilled and experienced installer to perform alteration work.

C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

D. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

E. Remove debris and abandoned items from area and from concealed spaces.

F. Prepare surface and remove surface finishes to provide installation of new Work and finishes.

G. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.

H. Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring products and finishes to original or specified condition.

I. Refinish existing visible surfaces to remain in renovated rooms and spaces to specified condition for each material, with a neat transition to adjacent finishes.

J. Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

K. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Prime for review.

L. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition to Prime for review.

M. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.

N. Patch or replace portions of existing surfaces which are damaged, or showing other imperfections.

O. Finish surfaces as specified in individual product Sections, or as indicated on the Drawings.

1.8 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition on a daily basis.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from site periodically or weekly and dispose of off-site.

E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.9 FINAL CLEANING

A. Execute final cleaning of areas affected by the Work prior to final project assessment.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Clean equipment and fixtures to a sanitary condition using cleaning materials appropriate to the surface and material being cleaned.

D. Clean or replace filters of operating equipment as directed by Prime.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.10 STARTING AND ADJUSTING OF SYSTEMS

A. Coordinate schedule for starting and adjusting of various equipment and systems.

B. Notify Prime and Owner seven days prior to starting and adjusting of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.

D. Verify that tests, meter readings and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify wiring and support components for equipment are complete and tested.

F. Execute starting and adjusting under supervision of responsible Contractor's personnel or manufacturer's representative, in accordance with manufacturer's instructions.

G. Adjust operating Products and equipment to ensure smooth and unhindered operation.

H. When specified in individual specifications Section, require manufacturer to provide authorized representative to be present at the site to inspect, check, and approve equipment or system installation prior to starting, and to supervise placing of equipment or system in operation.

I. Submit a written report in accordance with Section 01400 that equipment or system has been properly installed and is functioning correctly.

1.11 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manuals with Owner's personnel in detail to explain all aspects of operation and maintenance.

D. Demonstrate start-up, operation, control, adjustment, trouble shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled or agreed upon times, at equipment or system location.

E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

1.12 TESTING, ADJUSTING, AND BALANCING

A. Submit, for the Owner's approval, the name of an independent firm to perform testing of fire systems. The independent firm's services will be paid for by the Contractor.

B. The independent firm will perform services specified in individual specifications Sections.

C. Reports will be submitted by the independent firm to the Prime and the Owner indicating observations and test results, indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.

1.13 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Repair or replace installed Work damaged by construction operations, as directed by the Prime.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01732

WASTE MANAGEMENT

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Owner requires that this project generate the least amount of trash and waste possible.

B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

D. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
   1. Aluminum and plastic beverage containers.
   2. Corrugated cardboard.
   3. Wood pallets.
   4. Clean dimensional wood: May be used as blocking or furring.
   5. Land clearing debris, including brush, branches, logs, and stumps.
   6. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
   7. Glass.
   8. Gypsum drywall and plaster.
   9. Plastic buckets.

E. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.

F. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.

G. Methods of trash/waste disposal that are not acceptable are:
   1. Burning on the project site.
   2. Burying on the project site.
   3. Dumping or burying on other property, public or private.
   4. Other illegal dumping or burying.

H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

A. Section 01300 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.

B. Section 01500 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.

C. Section 01600 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.

D. Section 01700 - Execution Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.03 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Waste Management Plan: Include the following information:
   1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
   2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
   3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
   4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.

5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.

C. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
2. Submit Report on a form acceptable to Owner.
3. Landfill Disposal: Include the following information:
   a. Identification of material.
   b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
   c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
   d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
4. Incinerator Disposal: Include the following information:
   a. Identification of material.
   b. Amount, in tons or cubic yards, of trash/waste material from the project delivered to incinerators.
   c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
   d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
5. Recycled and Salvaged Materials: Include the following information for each:
   a. Identification of material, including those retrieved by installer for use on other projects.
   b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
   c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
   d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
   e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
6. Material Reused on Project: Include the following information for each:
   a. Identification of material and how it was used in the project.
   b. Amount, in tons or cubic yards.
   c. Include weight tickets as evidence of quantity.
7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

A. See Section 01100 for list of items to be salvaged from the existing building for relocation in project or for Owner.

B. See Section 01300 for additional requirements for project meetings, reports, submittal procedures, and project documentation.

C. See Section 01500 for additional requirements related to trash/waste collection and removal facilities and services.

D. See Section 01600 for waste prevention requirements related to delivery, storage, and handling.

E. See Section 01700 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings.
   1. Pre-bid meeting.
   2. Pre-construction meeting.
   3. Regular job-site meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
   1. Provide containers as required.
   2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
   3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

SECTION 01780 - CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Closeout procedures.

B. Quality assurance.

C. Maintenance service.

D. Operations and maintenance manuals.

E. Materials and finishes manuals.

F. Equipment and systems manuals.

G. Spare parts and maintenance materials.

H. Product warranties and product bonds.

I. Project Record documents.

1.02 CLOSEOUT PROCEDURES

A. Submit a written certification that the Contract Documents have been reviewed, the Work has been inspected, and that the Work is complete in accordance with the Contract Documents and is ready for the Owner's review.

B. Provide submittals to Prime that are required by governing or other authorities, including abatement invoices correctly prepared as proscribed in the abatement plan. Failure to include correctly prepared abatement invoices will delay issuing of final payment.

C. Provide submittals to Prime that are required by the governing or other authorities, including the following closeout documents:
   1. AIA Document G706 - Contractor's Affidavit of Payment of Debts and Claims
   2. AIA Document G706A - Contractor's Affidavit of Release of Liens
   3. AIA Document G707 - Consent of Surety to Final payment

D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

E. The Owner will occupy all portions of the building after Substantial Completion as specified in Section 01100.

1.03 QUALITY ASSURANCE

A. Employ personnel assembling submittals experienced in the maintenance and the operation of the described products and systems.

1.04 MAINTENANCE SERVICE

A. Submit a contract for furnishing service and maintenance of the components indicated in the specification Sections for one year from date of Substantial Completion, or during the warranty period, whichever period of time is the longest.

B. Provide for an examination of the system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

C. Include a systematic cleaning, examination, adjustment, and lubrication of the components. Repair or replace the parts whenever required. Use the parts produced by the manufacturer of the original component.

D. Do not assign or transfer the maintenance service to an agent or Subcontractor without the prior written consent of the Owner.

1.05 OWNER'S MANUALS

A. Submit the data for Operations and Maintenance, Materials and Finishes, and Equipment and Systems Manuals bound in 8-1/2 x 11 inch text pages, in minimum 2 inch size three D side ring commercial quality binders with durable cleanable plastic covers.

B. Prepare binder covers with the printed title of the manual, title of the project, and the subject matter of binder.

C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Drawings: Provide with reinforced punched binder tab. Bind in with the text; fold the larger drawings to the size of the text pages.

E. Submit two copies of a preliminary draft of the proposed formats and outline of the contents before the start of work. The Prime and its consultants will review drafts and return one copy with comments.

F. Submit one copy of the completed volumes 15 days prior to final inspection for final review. This copy will be reviewed and returned after final inspection, with the Prime's comments. Revise the content of the document sets as required prior to final submission.

G. Submit two sets of revised final volumes in final form within ten days after final inspection.

1.06 OPERATIONS AND MAINTENANCE MANUALS

A. Contents: Prepare the Table of Contents for each volume, with each product or system description identified, in three parts as follows:
   1. **Part 1:** Directory, listing the names, addresses, and telephone numbers of the Prime, its Consultants, Contractor, Subcontractors, and major equipment suppliers.
   2. **Part 2:** Operation and maintenance instructions, arranged by system and subdivided by the specification Section. For each category, identify the names, addresses, and telephone numbers of the Subcontractors and suppliers. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
      f. Maintenance instructions for [special] finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
   3. **Part 3:** Project documents and certificates, including the following:
      a. Shop drawings and product data.
      b. Air and water balance reports.
      c. Certificates.
      d. Originals of warranties and bonds.
   4. **Part 4:** Scan entire manual and provide 3 copies on disc in electronic PDF format.

1.07 MATERIALS AND FINISHES MANUALS

A. Building Products, Applied Materials, and Finishes: Include product data, with the catalog number, size, composition, and the color and texture designations. Include information for re-ordering custom manufactured products.

B. Instruction for Care and Maintenance: include manufacturer's instructions for cleaning agents and methods, precautions against detrimental agents and methods, and a recommended schedule for cleaning and maintenance.

C. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.

D. Additional Requirements: As specified in the individual product specification Sections.

E. Include a listing in the Table of Contents for design data, with a tabbed flysheet and a space for the insertion of data.

1.08 EQUIPMENT AND SYSTEMS MANUALS

A. For equipment, or component parts of equipment put into service during construction and operated by the Owner, submit documents within 10 days after acceptance.

B. Each Item of Equipment and Each System: Include a description of the unit or system, and the component parts. Identify the function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.

C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

D. Include color-coded wiring diagrams as installed.

E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.

F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

G. Include a servicing and lubricating schedule, and a list of lubricants required.

H. Include the manufacturer's printed operation and maintenance instructions.

I. Include sequence of operation by the controls manufacturer.

J. Include the original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

K. Include control diagrams by the controls manufacturer as installed.

L. Include the Contractor's coordination drawings, with color-coded piping diagrams as installed.

M. Include charts of valve tag numbers, with the location and function of each valve, keyed to the flow and control diagrams.

N. Include a list of the original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

O. Include test and balancing reports as specified in Section 01400.

P. Additional Requirements: As specified in the individual product specification Sections.

1.09 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products (attic stock) in the quantities specified in the individual specification Sections.

B. Deliver to the Project site and place in a location as directed by the Owner; obtain a receipt prior to final payment.

1.10 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by the responsible subcontractors, suppliers, and manufacturers, within 10 days after the completion of the applicable item of work.

B. Execute and assemble the transferable warranty documents and bonds from the subcontractors, suppliers, and manufacturers.

C. Verify that the documents are in the proper form, contain full information, and are notarized.

D. Co-execute the submittals when required.

E. Include a Table of Contents and assemble in a three D side ring binder with a durable plastic cover.

F. Submit prior to the final Application for Payment.

G. Time of Submittals:
   1. For equipment or component parts of equipment put into service during construction with the Owner's permission, submit the documents within 10 days after acceptance.
   2. Make other submittals within 10 days after the Date of Substantial Completion, prior to the final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond the Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty or bond period.

1.11 PROJECT RECORD DOCUMENTS

A. Maintain on the site one set of the following record documents; record actual revisions of the Work for all trades:
   1. Drawings.
   2. Specifications.

3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings, Product Data, and Samples.
6. Manufacturer's instructions for assembly, installation, and adjusting.

B. Ensure the entries are complete and accurate, enabling future reference by the Owner.

C. Store the record documents separate from the documents used for construction.

D. Record information concurrent with the construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product Section description of the actual products installed, including the following:
1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record the actual construction including:
1. Measured horizontal and vertical locations of the underground utilities and appurtenances, referenced to permanent surface improvements.
2. Measured locations of internal utilities and appurtenances concealed in the construction.
3. Field changes of dimension and detail.
4. Details not on the original Contract drawings.

G. Legibly marked Specifications, and legibly marked Record Drawings and Shop Drawings shall constitute the Project Record Documents in paper form.

H. At completion of the Work of the Contract, transfer the information from the Project Record Documents in paper form to the disc, or discs, and return to the Prime along with the Project Record Documents in paper form. The record construction drawings shall be in AutoCAD format, and the record Project Manual shall be in Microsoft Word form. The disc, or discs, will constitute the Project Record Documents in digital form, sometimes referred to as the "As-Built" Documents.

J. The Prime and its Consultants will review the Project Record Documents and compare them for accuracy, and if necessary return them to the Contractor for final correction. At the time of final submission, submit a claim for the final Application for Payment.

K. Abatement Invoices: Application for Payment must be accompanied with shipping documents for disposal of the abated material in compliance with the Abatement Plan.

L. No review or receipt of record of Project Record Documents by the Prime or the Owner shall be interpreted as a waiver of any deviation from the Contract Documents or Shop Drawings, or in any way relieve the Contractor from responsibility to perform the Work in

accordance with the Contract Documents and the Shop Drawings to the extent they are in accordance with the Contract Documents

M. Update the on-site Project Record Documents on a regular basis. Monthly payments will not be processed if Project Record Documents are not maintained up to date.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 02225

DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alterations purposes.

B. Abandonment and removal of existing utilities and utility structures.

C. Salvage, storage, and reinstallation of certain items as noted.

1.02 RELATED REQUIREMENTS

A. Section 01100 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01100 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

C. Section 01500 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

D. Section 01600 - Product Requirements: Handling and storage of items removed for salvage and relocation.

E. Section 01700 - Execution Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2004.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Site Plan: Showing:
   1. Areas for temporary construction and field offices.

C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 MATERIALS (Not used)

PART 3 EXECUTION

3.01 SCOPE

A. Remove items indicated for salvage or relocation and store or deliver to URI where directed. Store AV equipment at Contractor expense in climate controlled, secure location until reinstallation.

B. Remove sections of existing construction as required for the proper installation of new work.

C. Properly remove and dispose of all demolished materials off site. Recycle as much material as possible in accordance with Waste Management Plan.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent

structures and the public.
1. Obtain required permits.
2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
3. Provide, erect, and maintain temporary barriers and security devices.
4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
6. Do not close or obstruct roadways or sidewalks without permit.
7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
2. Prevent movement or settlement of adjacent structures.
3. Stop work immediately if adjacent structures appear to be in danger.

D. If hazardous materials are discovered during removal operations, stop work and notify Prime and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
1. Verify that construction and utility arrangements are as shown.
2. Report discrepancies to Architect before disturbing existing installation.
3. Beginning of demolition work constitutes acceptance of existing conditions.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.
1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01500.

C. Maintain weatherproof exterior building enclosure except for interruptions required for

replacement or modifications; take care to prevent water and humidity damage.

D. Remove existing work as indicated and as required to accomplish new work.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove all demolished material not scheduled to be salvaged, debris, junk, and trash from site and legally dispose of off campus.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete for composite floor construction.

B. Elevated concrete slabs.

C. Concrete reinforcement.

D. Miscellaneous concrete elements, including stair pan fill.

E. Concrete curing.

1.02 RELATED REQUIREMENTS

A. Section 07900 - Joint Sealers.

1.03 REFERENCE STANDARDS

A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International; 2006.

B. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2005.

C. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (Errata 2007).

D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.

E. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 1999.

F. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001 (Reapproved 2008).

G. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2008.

H. ASTM A 185/A 185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.

I. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2007.

J. ASTM A 767/A 767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2005.

K. ASTM C 33 - Standard Specification for Concrete Aggregates; 2007.

L. ASTM C 39/C 39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2005.

M. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete; 2007.

N. ASTM C 143/C 143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2008.

O. ASTM C 150 - Standard Specification for Portland Cement; 2007.

P. ASTM C 173/C 173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2008a.

Q. ASTM C 1107/C 1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2008.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

C. Submit mix design and certification of plant as to design mix and strength.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A 615/A 615M Grade 60 (420).
   1. Type: Deformed billet-steel bars.
   2. Finish: Galvanized in accordance with ASTM A 767/A 767M, Class I, unless otherwise indicated.

B. Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain type.
   1. Form: Coiled Rolls.
   2. Mesh Size and Wire Gage: As indicated on drawings.

C. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.02 CONCRETE MATERIALS

A. Cement: ASTM C 150, Type I - Normal portland type.
   1. Acquire all cement for entire project from same source.

B. Fine and Coarse Aggregates: ASTM C 33.
   1. Acquire all aggregates for entire project from same source.

C. Water: Clean and not detrimental to concrete.

2.03 ACCESSORY MATERIALS

A. Chemical Hardener: Fluosilicate solution designed for densification of cured concrete slabs.
   1. Acceptable Product: Provide LS-Guard manufactured by Prosoco.

B. Non-Shrink Grout: ASTM C 1107/C 1107M; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.

2.04 CONCRETE MIX DESIGN

A. Normal Weight Concrete:
   1. Compressive Strength, when tested in accordance with ASTM C 39/C 39M at 28 days: 4,000 psi.
   2. Water-Cement Ratio: Maximum 40 percent by weight.

3. Total Air Content: 4 percent, determined in accordance with ASTM C 173/C 173M.
4. Maximum Slump: 3 inches.
5. Maximum Aggregate Size: 5/8 inch.

2.05 MIXING

A. Transit Mixers: Comply with ASTM C 94/C 94M.

PART 3 EXECUTION

3.01 INSTALLING REINFORCEMENT

A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.02 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

D. Screed floors level, maintaining surface flatness of maximum 1/4 inch in 10 ft.

3.03 CONCRETE FINISHING

A. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
   1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 301.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, thin set quarry tile, and thin set ceramic tile.
   2. Other Surfaces to Be Left Exposed: "Steel trowel" as described in ACI 302.1R, minimizing burnish marks and other appearance defects.
      a. Chemical Hardener: After slab has cured, apply water-diluted hardener in three coats per manufacturer's instructions, allowing 24 hours between coats.

3.04 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Surfaces Not in Contact with Forms:
   1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
   2. Final Curing: Begin after initial curing but before surface is dry.

3.05 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01400.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.

E. Compressive Strength Tests: ASTM C 39/C 39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.

F. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C 143/C 143M.

3.06 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Prime and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Prime. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Prime for each individual area.

END OF SECTION

SECTION 05120

STRUCTURAL STEEL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural steel framing members, support members.

B. Base plates, shear stud connectors and expansion joint plates.

C. Grouting under base plates.

1.02 RELATED REQUIREMENTS

A. Section 05310 - Steel Deck: Support framing for small openings in deck.

B. Section 05500 - Metal Fabrications: Steel fabrications affecting structural steel work.

1.03 REFERENCE STANDARDS

A. AISC (MAN) - Steel Construction Manual; American Institute of Steel Construction, Inc.; 2005.

B. AISC S303 - Code of Standard Practice for Steel Buildings and Bridges; American Institute of Steel Construction, Inc.; 2005.

C. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.

D. ASTM A 108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2007.

E. ASTM A 514/A 514M - Standard Specification for High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding; 2005.

F. ASTM A 992/A 992M - Standard Specification for Structural Steel Shapes; 2006a.

G. ASTM C 1107/C 1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2008.

H. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2007.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings:
   1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
   2. Connections not detailed.
   3. Indicate cambers and loads.
   4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

C. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.

D. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.05 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC "Steel Construction Manual."

B. Design connections not detailed on the drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Angles and Plates: ASTM A 36/A 36M.

B. Steel W Shapes and Tees: ASTM A 992/A 992M.

C. Rolled Steel Structural Shapes: ASTM A 992/A 992M.

D. Steel Plate: ASTM A 514/A 514M.

E. Shear Stud Connectors: Made from ASTM A 108 Grade 1015 bars.

F. Grout: Non-shrink, non-metallic aggregate type, complying with ASTM C 1107/C 1107M and capable of developing a minimum compressive strength of 7,000 psi at 28 days.

G. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Shop fabricate to greatest extent possible.

2.03 FINISH

A. Shop prime structural steel members. Do not prime surfaces that will be field welded or in contact with concrete.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

A. Erect structural steel in compliance with AISC "Code of Standard Practice for Steel Buildings and Bridges".

B. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.03 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel and aluminum items, including components for guardrail and wall panel systems.

B. All miscellaneous metal not specified elsewhere.

1.02 RELATED REQUIREMENTS

A. Section 03300 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.

B. Section 05520 - Handrails and Railings.

C. Section 09900 - Paints and Coatings: Paint finish.

1.03 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 1998.

B. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2008.

C. ASTM A 53/A 53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2007.

D. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.

E. ASTM A 283/A 283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2003 (Reapproved 2007).

F. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2009a.

G. ASTM A 325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric); 2009.

H. ASTM A 500/A 500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2010.

I. ASTM A 501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2007.

J. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2009a.

K. ASTM B 26/B 26M - Standard Specification for Aluminum-Alloy Sand Castings; 2009.

L. ASTM B 85 - Standard Specification for Aluminum-Alloy Die Castings; 2009.

M. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.

N. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2007.

O. ASTM B 210 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2004.

P. ASTM B 210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes (Metric); 2005.

Q. ASTM B 211 - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire; 2003.

R. ASTM B 211M - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire (Metric); 2003.

S. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2008.

T. ASTM B 221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2007.

U. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2007.

V. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2010.

W. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; American Welding Society; 2003, and Errata 2004.

X. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2004).

Y. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).

Z. SSPC-SP 2 - Hand Tool Cleaning; Society for Protective Coatings; 1982 (Ed. 2004).

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

1.05 QUALITY ASSURANCE

A. Design guardrail system under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A 36/A 36M.

B. Steel Tubing: ASTM A 500, Grade B cold-formed structural tubing.

C. Plates: ASTM A 283.

D. Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish.

E. Slotted Channel Framing: ASTM A 653, Grade 33.

F. Slotted Channel Fittings: ASTM A 1011/A 1011M.

G. Fasteners: as required and appropriate to substrate.

H. Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, galvanized to ASTM A 153/A 153M where connecting galvanized components.

I. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

J. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

K. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 MATERIALS - ALUMINUM

A. Extruded Aluminum: ASTM B 221 (ASTM B 221M), 6063 alloy, T6 temper.

B. Sheet Aluminum: ASTM B 209 (ASTM B 209M), 5052 alloy, H32 or H22 temper.

C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B 210 (ASTM B 210M), 6063 alloy, T6 temper.

D. Aluminum-Alloy Bars: ASTM B 211 (ASTM B 211M), 6061 alloy, T6 temper.

E. Aluminum-Alloy Sand Castings: ASTM B 26.

F. Aluminum-Alloy Die Castings: ASTM B 85.

G. Bolts, Nuts, and Washers: Stainless steel.

H. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.03 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by intermittent welds and plastic filler.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

A. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.

B. Lintels: As detailed; prime paint finish.

C. Custom Aluminum Extrusions, wall panel components: Provide aluminum pieces as detailed that are not a standard part of the wall panel assembly by Armstrong.

2.05 FINISHES - STEEL

A. Prime paint all steel items.
   1. Exceptions: Galvanize items to be embedded in concrete or masonry.

B. Prepare surfaces to be primed in accordance with SSPC-SP2.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Prime Painting: One coat.

2.06 FINISHES - ALUMINUM

A. Interior Aluminum Surfaces: Class I natural anodized.

B. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

2.07 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Perform field welding in accordance with AWS D1.1/D1.1M.

D. Obtain approval prior to site cutting or making adjustments not scheduled.

E. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

END OF SECTION

SECTION 05520

HANDRAILS AND RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall mounted handrails.

B. Stair railings and guardrails.

C. Free-standing railings at lecture hall steps.

D. Special brackets for handrails.

1.02 RELATED REQUIREMENTS

A. Section 05500 - Metal Fabrications: Custom components for railings specified in this section and all aluminum railings and stock.

B. Section 09900 - Paints and Coatings: Paint finish.

1.03 REFERENCE STANDARDS

A. ASTM A 500/A 500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2007.

B. ASTM E 935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2000 (Reapproved 2006).

C. ASTM E 985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings; 2000 (Reapproved 2006).

D. SSPC-Paint 15 - Steel Joist Shop Paint; The Society for Protective Coatings; 1999 (Ed. 2004).

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Brackets:
   1. The Wagner Companies: www.wagnercompanies.com.
   2. Substitutions: See Section 01600 - Product Requirements.

B. Perforated Sheet Material:
   1. McNichols Co.,. www.mcnichols.com
   2. Substitutions: See Section 01600 - Product Requirements.

2.02 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E 985 and applicable local code.

B. Design railing assembly, wall rails, and attachments to resist lateral force of 75 lbs at any point without damage or permanent set. Test in accordance with ASTM E 935.

C. Allow for expansion and contraction of members and building movement without damage to connections or members.

D. Dimensions: See drawings for configurations and heights.

E. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.

F. Provide mechanical and welding fittings where indicated to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.03 STEEL RAILING SYSTEM

A. Steel Tube: ASTM A 500, Grade B cold-formed structural tubing.

B. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

C. Guard panels: Equal to McNichols Co. Quality Round Perforated, 11 gauge plain steel, Item Number 160MX21148. 1-1/4" holes staggered. Weld to angle frame. Prime paint.

D. See details for additional rod, plate, strap, and angle materials.

E. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.04 BRACKETS

A. Post-Mount: MB2302P, Satin Aluminum.

B. Wall-Mount: MB2302W, Satin Aluminum.

2.05 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured.

D. Welded Joints:
   1. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
   2. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.
   3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

C. Apply one coat of bituminous paint to concealed metal surfaces that will be in contact with cementitious or dissimilar materials.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Anchor railings securely to structure.

D. Field weld anchors as indicated on drawings. Touch-up welds with primer. Grind welds smooth.

E. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preservative treated wood materials.

B. Miscellaneous framing and sheathing.

C. Communications and electrical room mounting boards.

D. Concealed wood blocking, nailers, and supports.

E. Miscellaneous wood nailers, furring, and grounds.

1.02 REFERENCE STANDARDS

A. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2005.

B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2008.

C. AWPA U1 - Use Category System: User Specification for Treated Wood; American Wood-Protection Association; 2007.

D. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

1.03 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Douglas Fir-Larch, unless otherwise indicated.
   2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
   3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
   4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry or MC19.

C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E 84.

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   2. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Preservative Treatment:
   1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
      a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
      b. Treat lumber in contact with masonry or concrete.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.02 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

3.03 INSTALLATION OF CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with

edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.

1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
3. Install adjacent boards without gaps.

3.04 SITE APPLIED WOOD TREATMENT

A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.

B. Allow preservative to dry prior to erecting members.

3.05 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.06 CLEANING

A. Waste Disposal: Comply with the requirements of Section 01732.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06200

FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Wood trim and wall caps.

C. Other wood items detailed not provided in other sections.

1.02 RELATED REQUIREMENTS

A. Section 06100 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 09900 - Paints and Coatings: Painting and finishing of finish carpentry items.

1.03 REFERENCE STANDARDS

A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010.

B. AWI (QCP) - Quality Certification Program, www.awiqcp.org; current edition at www.awiqcp.org.

C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.

D. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; Hardwood Plywood & Veneer Association; 2004.

E. PS 1 - Structural Plywood; 2007.

F. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Provide the information required by AWI/AWMAC/WI Architectural Woodwork Standards.
   2. Include certification program label.

C. Samples: Submit two samples of finish plywood, 6 inch x 6 inch in size illustrating wood grain and specified finish.

D. Samples: Submit two samples of wood trim 6 inches long.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Accredited AWI shop participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
   2. Provide labels on each product when required by certification program.
   3. Upon completion of installation provide certificate certifying that the installation and products meet the specified requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect work from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI Architectural Woodwork Standards for Premium Grade.

B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

2.02 LUMBER MATERIALS

A. Hardwood Lumber: white maple species, quarter sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

2.03 SHEET MATERIALS

A. Softwood Plywood Not Exposed to View: Any face species, veneer core; PS 1 Grade A-B; glue type as recommended for application.

B. Hardwood Plywood: Face species as indicated, quarter cut, book matched, medium density fiberboard core; HPVA HP-1, Grade AA, Type 1; glue type as recommended for application.

2.04 FASTENINGS

A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

B. Fasteners: Of size and type to suit application.

2.05 ACCESSORIES

A. Lumber for Shimming, Blocking; poplar species.

B. Wood Filler: Solvent base, tinted to match surface finish color.

2.06 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.03 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Site Finishing: See Section 09900.

3.04 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

SECTION 07270 – FIRESTOPPING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes firestopping for the following:
1. Penetrations through all floor construction including both empty openings and openings containing cables, conduits and other penetrating items.
2. Penetrations through toilet, stair, and auditorium walls including both empty openings and openings containing cables, conduits, and other penetrating items.
3. Penetrations through smoke barriers and construction enclosing compartmentalized areas involving both empty openings and openings containing penetrating items.
4. Sealant joints in fire-resistance-rated construction.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. General: Provide firestopping systems that are produced and installed to resist the spread of fire and the passage of smoke and other gases, according to requirements of new construction if located as currently exists within Edwards Hall.

B. F-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings as determined per ASTM E 814, but not less than that equaling or exceeding the fire-resistance rating of the constructions penetrated.

C. T-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with T ratings, in addition to F ratings, as determined per ASTM E 814, where systems protect penetrating items exposed to contact with adjacent materials in occupyable floor areas. T-rated assemblies are required where the following conditions exist:
1. Where firestop systems protect penetrations located outside of wall cavities.
2. Where firestop systems protect penetrations located outside fire-resistive shaft enclosures.
3. Where firestop systems protect penetrations located in construction containing doors required to have a temperature-rise rating.
4. Where firestop systems protect penetrating items larger than a four-inch (4”) diameter nominal pipe or 16 sq. in. in overall cross-sectional area.

D. Fire-Resistive Joint Sealants: Provide joint sealants with fire-resistance ratings as determined per ASTM E 119, but not less than that equaling or exceeding the equivalent fire-resistance rating of the construction in which the joint occurs.

E. For firestopping exposed to view, traffic, moisture, and physical damage, provide products that do not deteriorate when exposed to these conditions.

1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
2. For floor penetrations with annular spaces exceeding four inches (4”) or more in width and exposed to possible loading and traffic, provide firestop systems capable of supporting the floor loads involved either by installing floor plates or by other means.
3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

F. For firestopping exposed to view, provide products with flame-spread values of less than 25 and smoke-developed values of less than 450, as determined per ASTM E 84.

1.4 SUBMITTALS

A. General: Submit products by a single manufacturer for all applications throughout the project. Submit the following according to Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.
1. Certification by firestopping manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs) and are nontoxic to building occupants.

C. Shop drawings detailing materials, installation methods, and relationships to adjoining construction for each through-penetration firestop system, and each kind of construction condition penetrated and kind of penetrating item. Include firestop design designation of qualified testing and inspecting agency evidencing compliance with requirements for each condition indicated.
1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop configuration for construction and penetrating items.
2. Where Project conditions require modification of qualified testing and inspecting agency's illustration to suit a particular through-penetration firestop condition, submit illustration approved by firestopping manufacturer's fire protection engineer with modifications marked.

D. Product certificates signed by manufacturers of firestopping products certifying that their products comply with specified requirements.

E. Product test reports from, and based on tests performed by, a qualified testing and inspecting agency evidencing compliance of firestopping with requirements based on comprehensive testing of current products.

F. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.

1.5 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide firestopping that complies with the following requirements and those specified under the "System Performance Requirements" article:

1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, Warnock Hersey, or another agency performing testing and follow-up inspection services for firestop systems that is acceptable to authorities having jurisdiction.
2. Through-penetration firestop systems are identical to those tested per ASTM E 814 under conditions where positive furnace pressure differential of at least 0.01 inch of water is maintained at a distance of 0.78 inch below the fill materials surrounding the penetrating items in the test assembly. Provide rated systems complying with the following requirements:
    a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
    b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by UL in their "Fire Resistance Directory," by Warnock Hersey, or by another qualified testing and inspecting agency.
3. Fire-resistive joint sealant systems are identical to those tested for fire-response characteristics per ASTM E 119 under conditions where the positive furnace pressure differential is at least 0.01 inch of water, as measured 0.78 inch from the face exposed to furnace fire. Provide systems complying with the following requirements:
    a. Fire-Resistance Ratings of Joint Sealants: As indicated by reference to design designations listed by UL in their "Fire Resistance Directory" or by another qualified testing and inspecting agency.
    b. Joint sealants, including backing materials, bear classification marking of qualified testing and inspection agency.

B. Information on drawings referring to specific design designations of through-penetration firestop systems is intended to establish requirements for performance based on conditions that are expected to exist during installation. Any changes in conditions and designated systems require the Architect's prior approval. Submit documentation showing that the performance of proposed substitutions equals or exceeds that of the systems they would replace and are acceptable to authorities having jurisdiction.

C. Installer Qualifications: Engage an experienced Installer who has completed firestopping that is similar in material, design, and extent to that indicated for Project and that has performed successfully.

D. Installer Qualifications: Engage an experienced Installer who is certified, licensed, FM approved contractor, member of the Firestop International Contractors Association, certified by the firestopping manufacturer as having the necessary experience, staff, and training to install manufacturer's products per specified requirements. The individuals who will install the firestopping shall be themselves trained and certified. A manufacturer's willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer.

E. Single-Source Responsibility: Obtain through-penetration firestop systems for each kind of penetration and construction condition indicated from a single manufacturer.

F. Field-Constructed Mockup: Prior to installing firestopping, erect mockups for each different through-penetration firestop system indicated to verify selections made and to

demonstrate qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for final installations.

1. Locate mockups on site in locations indicated or, if not indicated, as directed by Engineer.
2. Notify Engineer 1 week in advance of the dates and times when mockups will be erected.
3. Obtain Engineer's acceptance of mockups before start of final unit of Work.
4. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging completed unit of Work.
    a. When directed, demolish and remove mockups from Project site.
    b. Accepted mockups in an undisturbed condition at time of Substantial Completion may become part of completed unit of Work.

G. Provide firestopping products containing no detectable asbestos as determined by the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy."

H. Coordinating Work: Coordinate construction of openings and penetrating items to ensure that designated through-penetration firestop systems are installed per specified requirements.

I. Pre-installation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

J. Owner may employ and pay a qualified inspection agency to check installed firestopping systems for compliance with requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver firestopping products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multi-component materials.

B. Store and handle firestopping materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not install firestopping when ambient or substrate temperatures are outside limits permitted by firestopping manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilation: Ventilate firestopping per firestopping manufacturers' instructions by natural means or, where this is inadequate, forced air circulation.

1.8 SEQUENCING AND SCHEDULING

A. Notify Owner's inspection agency at least one (1) week in advance of firestopping installations; confirm dates and times on days preceding each series of installations.

B. Do not cover up those firestopping installations that will become concealed behind other construction until Owner's inspection agency and authorities having jurisdiction, if required, have examined each installation.

PART 2 - PRODUCTS

2.1 FIRESTOPPING, GENERAL

A. Compatibility: Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by firestopping manufacturer based on testing and field experience.

B. Accessories: Provide components for each firestopping system that are needed to install fill materials and to comply with "System Performance Requirements" article in Part 1. Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire-resistance-rated systems. Accessories include but are not limited to the following items:
1. Permanent forming/damming/backing materials including the following:
   a. Semi-refractory fiber (mineral wool) insulation.
   b. Ceramic fiber.
   c. Sealants used in combination with other forming/damming materials to prevent leakage of fill materials in liquid state.
   d. Fire-rated formboard.
   e. Joint fillers for joint sealants.
2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.

C. Applications: Provide firestopping systems composed of materials specified in this Section that comply with system performance and other requirements.

2.2 FILL MATERIALS FOR THROUGH-PENETRATION FIRESTOP SYSTEMS

A. Ceramic-Fiber and Mastic Coating: Ceramic fibers in bulk form formulated for use with mastic coating, and ceramic fiber manufacturer's mastic coating.

B. Ceramic-Fiber Sealant: Single-component formulation of ceramic fibers and inorganic binders.

C. Endothermic, Latex Compound Sealant: Single-component, endothermic, latex formulation.

D. Intumescent, Latex Sealant: Single-component, intumescent, latex formulation.

E. Intumescent Putty: Nonhardening, dielectric, water-resistant putty containing no solvents, inorganic fibers, or silicone compounds.

F. Intumescent Wrap Strips: Single-component, elastomeric sheet with aluminum foil on one side.

G. Job-Mixed Vinyl Compound: Prepackaged vinyl-based powder product for mixing with water at Project site to produce a paintable compound, passing ASTM E 136, with flame-spread and smoke-developed ratings of zero per ASTM E 84.

H. Mortar: Prepackaged dry mix composed of a blend of inorganic binders, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogenous mortar.

I. Pillows/Bags: Re-usable, heat-expanding pillows/bags composed of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents and fire-retardant additives.

J. Silicone Foam: Two-component, silicone-based liquid elastomer that, when mixed, expands and cures in place to produce a flexible, nonshrinking foam.

K. Silicone Sealant: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealant of grade indicated below:
   1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and non-sag formulation for openings in vertical and other surfaces requiring a non-slumping/ gunnable sealant, unless indicated firestop system limits use to non-sag grade for both opening conditions.
   2. Grade for Horizontal Surfaces: Pourable (self-leveling) grade for openings in floors and other horizontal surfaces.
   3. Grade for Vertical Surfaces: Non-sag grade for openings in vertical and other surfaces.

L. Solvent-Release-Curing Intumescent Sealant: Solvent-release-curing, single-component, synthetic-polymer-based sealant of grade indicated below:
   1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and non-sag formulation for openings in vertical and other surfaces requiring a non-slumping/ gunnable sealant, unless indicated firestop system limits use to non-sag grade for both opening conditions.
   2. Grade for Horizontal Surfaces: Pourable (self-leveling) grade for openings in floors and other horizontal surfaces.
   3. Grade for Vertical Surfaces: Non-sag grade for openings in vertical and other surfaces.

M. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following (Note: UL assembly numbers must be submitted with all supplied products):
   1. Ceramic-Fiber and Mastic Coating:
      a. FireMaster Bulk and FireMaster Mastic, Thermal Ceramics.
   2. Ceramic-Fiber Sealant:
      a. Metacaulk 525, The RectorSeal Corporation.
   3. Endothermic, Latex Sealant:
      a. Fyre-Shield, Tremco Inc.
   4. Endothermic, Latex Compounds:
      a. Flame-Safe FS500/600 Series, International Protective Coatings Corp.

b. Flame-Safe FS900/FST900 Series, International Protective Coatings Corp.

5. Intumescent Latex Sealant:
   a. Metacaulk 950, The RectorSeal Corporation.
   b. Fire Barrier CP 25WB Caulk, 3M Fire Protection Products.
6. Intumescent Putty:
   a. Pensil 500 Intumescent Putty, General Electric Co.
   b. Flame-Safe FSP1000 Putty, International Protective Coatings Corp.
   c. Fire Barrier Moldable Putty, 3M Fire Protection Products.
7. Intumescent Wrap Strips:
   a. Dow Corning Fire Stop Intumescent Wrap Strip 2002, Dow Corning Corp.
   b. CS2420 Intumescent Wrap, Hilti Construction Chemicals, Inc.
   c. Fire Barrier FS-195 Wrap/Strip, 3M Fire Protection Products.
8. Job-Mixed Vinyl Compound:
   a. USG Firecode Compound, United States Gypsum Co.
9. Mortar:
   a. K-2 Firestop Mortar, Bio Fireshield, Inc.
   b. Novasit K-10 Firestop Mortar, Bio Fireshield, Inc.
   c. KBS-Mortar Seal, International Protective Coatings Corp.
10. Pillows/Bags:
    a. Firestop Pillows, Bio Fireshield, Inc.
    b. KBS Sealbags, International Protective Coatings Corp.
11. Silicone Foams:
    a. Dow Corning Fire Stop Foam 2001, Dow Corning Corp.
    b. Pensil 200 Foam, General Electric Co.
12. Silicone Sealants:
    a. Dow Corning Firestop Sealant 2000, Dow Corning Corp.
    b. Dow Corning Firestop Sealant SL 2003, Dow Corning Corp.
    c. Pensil 100 Firestop Sealant, General Electric Co.
    d. CS240 Firestop Sealant, Hilti Construction Chemicals, Inc.
    e. Metacaulk 835, The RectorSeal Corporation.
    f. Metacaulk 880, The RectorSeal Corporation.
    g. Fyre-Sil, Tremco Inc.
    h. Fyre-Sil S/L, Tremco Inc.
13. Solvent-Release-Curing Intumescent Sealants:
    a. Biostop 500 Intumescent Firestop Caulk, Bio Fireshield, Inc.
    b. Fire Barrier CP 25N/S Caulk, 3M Fire Protection Products.
    c. Fire Barrier CP 25S/L Caulk, 3M Fire Protection Products.

2.3 FIRE-RESISTIVE ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer indicated that complies with ASTM C 920 requirements, including those referenced for Type, Grade, Class, and Uses, and requirements specified in this Section applicable to fire-resistive joint sealants.

B. Sealant Colors: Provide color of exposed joint sealants to comply with the following:
   1. Provide custom colors to match Engineer's samples.
   2. Match colors indicated by reference to manufacturer's standard designations.

3. Provide selections made by Engineer from manufacturer's full range of standard colors for products of type indicated.

C. Single-Component, Neutral-Curing Silicone Sealant: Type S; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, G, A, and (as applicable to joint substrates indicated) O.
   1. Additional Movement Capability: Provide sealant with the capability to withstand the following percentage changes in joint width existing at time of installation, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, and remain in compliance with other requirements of ASTM C 920 for uses indicated:
      a. Fifty percent (50%) movement in both extension and compression for a total of 100 percent movement.
      b. One hundred percent (100%) movement in extension and fifty percent (50%) movement in compression for a total of one hundred and fifty percent (150%) movement.

D. Multicomponent, Non-sag, Urethane Sealant: Type M; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, A, and (as applicable to joint substrates indicated) O.
   1. Additional Movement Capability: Provide sealant with the capability to withstand the following percentage change in joint width existing at time of installation, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, and remain in compliance with other requirements of ASTM C 920 for uses indicated:
      a. Forty percent (40%) movement in extension and twenty-five percent (25%) in compression for a total of sixty-five percent (65%) movement.
      b. Fifty percent (50%) movement in both extension and compression for a total of one hundred percent (100%) movement.

E. Single-Component, Non-sag, Urethane Sealant: Type S; Grade NS; Class 25; and Uses NT, M, A, and (as applicable to joint substrates indicated) O.

F. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

G. Products: Subject to compliance with requirements, provide one of the following:
   1. Single-Component, Neutral-Curing, Silicone Sealant:
      a. Dow Corning 790, Dow Corning Corp.
      b. Dow Corning 795, Dow Corning Corp.
      c. Silpruf, General Electric Co.
   2. Multicomponent, Non-sag, Urethane Sealant:
      a. Vulkem 922, Mameco International Inc.
      b. Dynflex, Pecora Corp.
      c. Dynatrol II, Pecora Corp.
      d. Sikaflex 2cn NS, Sika Corp.
   3. Single-Component, Non-sag, Urethane Sealant:
      a. Isoflex 880 GB, Harry S. Peterson Co., Inc.
      b. Isoflex 881, Harry S. Peterson Co., Inc.
      c. Vulkem 921, Mameco International Inc.

d. Sikaflex--15LM, Sika Corp.

2.4 MIXING

A. For those products requiring mixing prior to application, comply with firestopping manufacturer's directions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce firestopping products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings and joints immediately prior to installing firestopping to comply with recommendations of firestopping manufacturer and the following requirements:
1. Remove all foreign materials from surfaces of opening and joint substrates and from penetrating items that could interfere with adhesion of firestopping.
2. Clean opening and joint substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestopping. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form release agents from concrete.

B. Priming: Prime substrates where recommended by firestopping manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestopping materials. Remove tape as soon as it is possible to do so without disturbing firestopping's seal with substrates.

3.3 INSTALLING THROUGH-PENETRATION FIRESTOPS

A. General: Comply with the "System Performance Requirements" article in Part 1 and the through-penetration firestop manufacturer's installation instructions and drawings pertaining to products and applications indicated.

B. Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position needed to produce the cross-sectional shapes and depths required to achieve fire ratings of designated through-penetration firestop systems. After installing fill materials, remove combustible forming

materials and other accessories not indicated as permanent components of firestop systems.

C. Install fill materials for through-penetration firestop systems by proven techniques to produce the following results:
   1. Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.
   2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
   3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 INSTALLING FIRE-RESISTIVE JOINT SEALANTS

A. General: Comply with the "System Performance Requirements" article in Part 1, with ASTM C 1193, and with the sealant manufacturer's installation instructions and drawings pertaining to products and applications indicated.

B. Install joint fillers to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability and develop fire-resistance rating required.

C. Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint width that optimum sealant movement capability. Install sealants at the same time joint fillers are installed.

D. Tool non-sag sealants immediately after sealant application and prior to the time skinning or curing begins. Form smooth, uniform beads of configuration indicated or required to produce fire-resistance rating, as well as to eliminate air pockets, and to ensure contact and adhesion of sealants with sides of joint. Remove excess sealant from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

3.5 FIELD QUALITY CONTROL

A. Inspecting agency employed and paid by Owner will examine completed firestopping to determine, in general, if it is being installed in compliance with requirements.

B. Inspecting agency will report observations promptly and in writing to Contractor and Architect.

C. Do not proceed to enclose firestopping with other construction until reports of examinations are issued.

D. Where deficiencies are found, repair or replace firestopping so that it complies with requirements.

3.6 CLEANING

A. Clean off excess fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.

B. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated firestopping immediately and install new materials to produce firestopping complying with specified requirements.

END OF SECTION 07270

SECTION 07900

JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sealants and joint backing.

B. Precompressed foam sealers.

1.02 RELATED REQUIREMENTS

A. Section 07270 - Firestopping: Firestopping sealants.

B. Section 08800 - Glazing: Glazing sealants and accessories.

C. Section 09260 - Gypsum Board Assemblies: Acoustic sealant.

1.03 REFERENCE STANDARDS

A. ASTM C 834 - Standard Specification for Latex Sealants; 2005.

B. ASTM C 919 - Standard Practice for Use of Sealants in Acoustical Applications; 2008.

C. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 2005.

D. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2009.

E. ASTM D 1667 - Standard Specification for Flexible Cellular Materials--Poly(Vinyl Chloride) Foam (Closed-Cell); 2005.

F. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with other sections referencing this section.

1.05 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating sealant chemical characteristics.

C. Samples: Submit two sample card of actual sealant material illustrating sealant colors for selection.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years experience.

1.07 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Silicone Sealants:

1. Bostik Inc; www.bostik-us.com.
2. Pecora Corporation; www.pecora.com.
3. BASF Construction Chemicals-Building Systems; www.chemrex.com.
4. Substitutions: See Section 01600 - Product Requirements.

B. Polyurethane Sealants:
1. Bostik Inc; www.bostik-us.com.
2. Pecora Corporation; www.pecora.com.
3. BASF Construction Chemicals-Building Systems; www.chemrex.com.
4. Substitutions: See Section 01600 - Product Requirements.

C. Acrylic Sealants:
1. Tremco Global Sealants; www.tremcosealants.com.
2. Substitutions: See Section 01600 - Product Requirements.

D. Butyl Sealants:
1. Bostik Inc; www.bostik-us.com.
2. Pecora Corporation; www.pecora.com.
3. Substitutions: See Section 01600 - Product Requirements.

E. Preformed Compressible Foam Sealers:
1. EMSEAL Joint Systems, Ltd; www.emseal.com.
2. Sandell Manufacturing Company, Inc; www.sandellmfg.com.
3. Dayton Superior Corporation; www.daytonsuperior.com.
4. Substitutions: See Section 01600 - Product Requirements.

2.02 SEALANTS

A. Sealants and Primers - General: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

B. General Purpose Exterior Sealant: Polyurethane; ASTM C 920, Grade NS, Class 25, Uses M, G, and A; single component.
1. Color: Match adjacent finished surfaces.
2. Applications: Use for:
a. Control, expansion, and soft joints in masonry.
b. Joints between concrete and other materials.
c. Joints between metal frames and other materials.
d. Other exterior joints for which no other sealant is indicated.

C. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NF single component, paintable.
1. Color: Match adjacent finished surfaces.
2. Applications: Use for:
a. Interior wall and ceiling control joints.
b. Joints between door and window frames and wall surfaces.
c. Other interior joints for which no other type of sealant is indicated.

D. Bathtub/Tile Sealant: White silicone; ASTM C 920, Uses I, M and A; single component, mildew resistant.
1. Applications: Use for:
a. Joints between plumbing fixtures and floor and wall surfaces.

E. Acoustical Sealant: Butyl or acrylic sealant; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.
1. Applications: Use for concealed locations only:

a. Sealant bead between top stud runner and structure and between bottom stud track and floor.

F. Interior Floor Joint Sealant: Polyurethane, self-leveling; ASTM C 920, Grade P, Class 25, Uses T, M and A; single component.
1. Color: Match adjacent finished surfaces.
2. Applications: Use for:
a. Expansion joints in floors.

G. Butyl Sealant: ASTM C 920, Grade NS, Class 12-1/2, Uses NT, M, A, G, O; single component, solvent release, non-skinning, non-sagging.
1. Movement Capability: Plus and minus 12-1/2 percent.
2. Service Temperature Range: -13 to 180 degrees F.
3. Shore A Hardness Range: 10 to 30.
4. Applications: Use for:
a. lap flashings over lintels.

H. Silicone Sealant: ASTM C 920, Grade NS, Class 25, Uses NT, A, G, M, O; single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding.
1. Color: Match adjacent finished surfaces.

2.03 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C 1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C 1193.

C. Perform acoustical sealant application work in accordance with ASTM C 919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker where joint backing is not used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

H. Tool joints concave.

3.04 CLEANING

A. Clean adjacent soiled surfaces.

3.05 PROTECTION

A. Protect sealants until cured.

END OF SECTION

SECTION 08110

STEEL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated steel doors and frames.

B. Steel frames for wood doors.

C. Fire-rated steel doors and frames.

D. Thermally insulated steel doors.

E. Accessories, including glazing, louvers, and matching panels.

1.02 RELATED REQUIREMENTS

A. Section 08710 - Door Hardware.

B. Section 08800 - Glazing: Glass for doors and borrowed lites.

C. Section 09900 - Paints and Coatings: Field painting.

1.03 REFERENCE STANDARDS

A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2003.

B. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2003.

C. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 1998 (R2004).

D. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.

E. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus; 2005.

F. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2006.

G. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; The National Association of Architectural Metal Manufacturers; 2007.

H. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association; 2007.

I. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

J. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; 1998.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store in accordance with NAAMM HMMA 840.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Doors and Frames:
   1. Assa Abloy Ceco, Curries, or Fleming: www.assaabloydss.com.
   2. Windsor Republic Doors; www.republicdoor.com.
   3. Steelcraft; www.steelcraft.com.
   4. Substitutions: See Section 01600 - Product Requirements.

2.02 DOORS AND FRAMES

A. Requirements for All Doors and Frames:
   1. Accessibility: Comply with ANSI/ICC A117.1.
   2. Door Top Closures: Flush with top of faces and edges.
   3. Door Edge Profile: Beveled on both edges.
   4. Door Texture: Smooth faces.
   5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
   6. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
   7. Galvanizing for Units in Wet Areas: All components hot-dipped zinc-iron alloy-coated (galvannealed), manufacturer's standard coating thickness.
   8. Finish: Factory primed, for field finishing.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 STEEL DOORS

A. Exterior Doors:
   1. Grade: ANSI A250.8 Level 3, physical performance Level A, Model 2, seamless.
   2. Core: Polystyrene foam.
   3. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A 653/A 653M, with manufacturer's standard coating thickness.
   4. Insulating Value: U-value of 0.50, when tested in accordance with ASTM C 1363.
   5. Weatherstripping: Separate, see Section 08710.

B. Interior Doors, Non-Fire-Rated:
   1. Grade: ANSI A250.8 Level 1, physical performance Level C, Model 1, full flush.
   2. Thickness: 1-3/4 inches.

C. Interior Doors, Fire-Rated:
   1. Grade: ANSI A250.8 Level 2, physical performance Level B, Model 1, full flush.
   2. Fire Rating: As indicated on Door and Frame Schedule, tested in accordance with UL 10C ("positive pressure").
      a. Provide units listed and labeled by UL.
      b. Attach fire rating label to each fire rated unit.

D. Interior Smoke and Draft Control Doors: Same construction as fire-rated doors with indicated fire rating, plus:
   1. Gasketing: Provide additional gasketing or edge sealing if necessary to achieve leakage limit.
   2. Label: UL "S" label.

E. Panels: Same construction, performance, and finish as doors.

2.04 STEEL FRAMES

A. General:
   1. Comply with the requirements of grade specified for corresponding door, except:
      a. Frames for Wood Doors: Comply with frame requirements specified in ANSI A250.8 for Level 1, 18 gage
   2. Finish: Same as for door.
   3. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
   4. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.
   5. Frames Wider than 48 Inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

B. Exterior Door Frames: Face welded, seamless with joints filled.
   1. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A 653/A 653M, with manufacturer's standard coating thickness.
   2. Weatherstripping: Separate, see Section 08710.

C. Interior Door Frames, Non-Fire-Rated: Knock-down type.

D. Interior Door Frames, Fire-Rated: Knock-down type.
   1. Fire Rating: Same as door, labeled.

2.05 ACCESSORY MATERIALS

A. Louvers: Roll formed steel with overlapping frame; finish same as door components; factory-installed.
   1. In Fire-Rated Doors: UL-listed fusible link louver, same rating as door.

B. Glazing: As specified in Section 08800, factory installed.

C. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

D. Astragals for Double Doors: Specified in Section 08710.
   1. Fire-Rated Doors: Steel, shape as required to accomplish fire rating.

E. Grout for Frames: Portland cement grout of maximum 4-inch slump for hand troweling; thinner pumpable grout is prohibited.

F. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.

G. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

2.06 FINISH MATERIALS

A. Primer: Rust-inhibiting, complying with ANSI A250.10, door manufacturer's standard.

B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.

B. In addition, install fire rated units in accordance with NFPA 80.

C. Coordinate frame anchor placement with wall construction.

D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

E. Coordinate installation of hardware.

F. Coordinate installation of glazing.

G. Coordinate installation of electrical connections to electrical hardware items.

H. Touch up damaged factory finishes.

3.04 TOLERANCES

A. Clearances Between Door and Frame: As specified in ANSI A250.8.

B. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

END OF SECTION

SECTION 08211

FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush configuration; fire rated and non-rated.

B. Transom panels.

1.02 RELATED REQUIREMENTS

A. Section 08110 - Steel Doors and Frames.

B. Section 08710 - Door Hardware.

C. Section 08800 - Glazing.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.

B. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.

C. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association; 2007.

D. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association; 2008.

E. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

F. UL 10B - Standard for Fire Tests of Door Assemblies; 2008.

G. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; 2001.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements for submittal procedures.

B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

C. Specimen warranty.

D. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, factory finishing criteria, identify cutouts for glazing.

E. Samples: Submit two samples of door construction, 12 by 12 inch in size cut from top corner of door.

F. Samples: Submit two samples of door veneer, 12 by 12 inch in size illustrating wood grain, stain color, and sheen.

G. Manufacturer's Installation Instructions: Indicate special installation instructions.

H. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

A. Maintain one copy of the specified door quality standard on site for review during installation

and finishing.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

C. Installed Fire Rated Door and Transom Panel Assembly: Conform to NFPA 80 for fire rated class as indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging. Inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 WARRANTY

A. See Section 01780 - Closeout Submittals for additional warranty requirements.

B. Interior Doors: Provide manufacturer's warranty for the life of the installation.

C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:
   1. Eggers Industries; www.eggersindustries.com.
   2. Haley Brothers; www.haleybros.com.
   3. Marshfield DoorSystems, Inc; www.marshfielddoors.com.
   4. Substitutions: See Section 01600 - Product Requirements.

2.02 DOORS AND PANELS

A. All Doors: See drawings for locations and additional requirements.
   1. Quality Level: Custom Grade, in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Section 1300.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at all locations.
   2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with NFPA 252, UL 10B, or UBC Standard 7-2-94 ("neutral pressure"); UL or WH (ITS) labeled without any visible seals when door is open.
   3. Smoke and Draft Control Doors: In addition to required fire rating, provide door assemblies tested in accordance with UL 1784 with maximum air leakage of 3.0 cfm per sq ft of door opening at 0.10 inch w.g. pressure at both ambient and elevated temperatures; with "S" label; if necessary, provide additional gasketing or edge sealing.
   4. Wood veneer facing with factory transparent finish. Red birch.

C. Transom Panels: Same construction and finish as door; same performance rating as door.

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated above.

B. Fire Rated Doors: Mineral core, Type FD, plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.

2.04 DOOR FACINGS

A. Wood Veneer Facing for Transparent Finish: Species as specified above, veneer grade as specified by quality standard, plain sliced, book veneer match, running assembly match; unless otherwise indicated.
   1. Pairs: Pair match each pair; set match pairs within 10 feet of each other when doors are closed.
   2. Transoms: Continuous match to doors.

2.05 ACCESSORIES

A. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.

2.06 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.
   2. Provide solid blocking for other throughbolted hardware.

C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
   1. Exception: Doors to be field finished.

E. Provide edge clearances in accordance with AWI Quality Standards Illustrated Section 1700.

2.07 FACTORY FINISHING - WOOD VENEER DOORS

A. Factory finish doors in accordance with approved sample.

B. Seal door top edge with color sealer to match door facing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.
   1. Install fire-rated doors in accordance with NFPA 80 requirements.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

3.03 TOLERANCES

A. Conform to specified quality standard for fit and clearance tolerances.

B. Conform to specified quality standard for maximum diagonal distortion.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.05 SCHEDULE - See Drawings

END OF SECTION

SECTION 08310

ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Access door and frame units, fire-rated, in wall, and ceiling locations.

1.02 RELATED REQUIREMENTS

A. Section 09900 - Paints and Coatings: Field paint finish.

1.03 REFERENCE STANDARDS

A. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

C. Project Record Documents: Record actual locations of all access units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Access Doors:
   1. Acudor Products Inc; www.acudor.com.
   2. Karp Associates, Inc; www.karpinc.com.
   3. Substitutions: See Section 01600 - Product Requirements.

2.02 ACCESS DOORS AND PANELS

A. All Units: Factory fabricated, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies units are to be installed in.

B. Units in Fire Rated Assemblies: Fire rating equivalent to the fire rated assembly in which they are to be installed.
   1. Provide products listed and labeled by UL as suitable for the purpose specified and indicated.

2.03 WALL AND CEILING UNITS

A. Door and Frame Units: Formed steel.
   1. Frames and flanges: 0.058 inch steel.
   2. Hardware:
      a. Hinge: 175 degree stainless steel piano hinge with removable pin.
      b. Lock: Cylinder lock with latch, two keys for each unit.
   3. Prime coat with alkyd primer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

B. Walk site with Prime prior to framing and locate panels.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions and agreed locations.

B. Install frames plumb and level in openings. Secure rigidly in place.

C. Position units to provide convenient access to the concealed work requiring access.

END OF SECTION

SECTION 08710 - FINISH HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes

1. Furnishing and installation of all mechanical finish hardware necessary for all doors, and hardware as specified herein and as enumerated in hardware sets and as indicated and required by actual conditions at the building. The hardware shall include the furnishing of all necessary screws, bolts, expansion shields, drop plates, and all other devices necessary for the proper application of the hardware.

B. Related Sections

1. Division 6 Section - Finish Carpentry

2. Division 8 Section - Hollow Metal Doors and Frames

3. Division 8 Section - Wood Doors

4. Division 8 Section - Aluminum Framed Storefronts

5. Division 8 Section - Glass and Glazing

6. Division 16 Section - Electrical

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere, unless specifically listed in the hardware sets:

1. Windows

2. Cabinets of all kinds, including open wall shelving and locks.

3. Signage, except as noted.

4. Complete toilet accessories including coat hooks, unless note otherwise.

5. Overhead doors, unless noted otherwise.

1.03 REFERENCES

A. Applicable state and local building codes and standards.

B. FIRE/LIFE SAFETY

1. NFPA - National Fire Protection Association

a. NFPA 70 – National Electric Code
b. NFPA 80 - Standard for Fire Doors and Fire Windows
c. NFPA 101 - Life Safety Code
d. NFPA 105 - Smoke and Draft Control Door Assemblies

C. UL - Underwriters Laboratories

1. UL 10B - Fire Test of Door Assemblies

2. UL 10C - Positive Pressure Test of Fire Door Assemblies

3. UL 1784 - Air Leakage Tests of Door Assemblies

4. UL 305 - Panic Hardware

D. Accessibility

1. ADA - Americans with Disabilities Act

2. Rhode Island Accessibility Code – SBC-14, 15, 16

E. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule

2. Recommended Locations for Builders Hardware

F. ANSI - American National Standards Institute

1. ANSI/BHMA A156.1 - A156.29, and ANSI A156.31 - Standards for Hardware and Specialties

1.04 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 requirements. Advise architect within the submittal package of incompatibility or issues.

B. Catalog Cuts: Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

C. Final Hardware Schedule Content: Submit schedule with hardware sets in vertical format as illustrated by the Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, Include the following information:

1. Door Index; include door number, heading number, and Architects hardware set number.

2. Opening Lock Function Spreadsheet; list locking device and function for each opening.

3. Type, style, function, size, and finish of each hardware item.

4. Name and manufacturer of each item.

5. Fastenings and other pertinent information.

6. Location of each hardware set cross-referenced to indications on Drawings.

7. Explanation of all abbreviations, symbols, and codes contained in schedule.

8. Mounting locations for hardware.

9. Door and frame sizes and materials.

10. Name and phone number for the local manufacturer's representative for each product.

11. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and/or access control components). Operational description should include how the door will operate on egress, ingress, and/or fire/smoke alarm connection.

D. Key Schedule: After a keying meeting between representatives of the Owner, Architect, hardware supplier, and, if requested, the representative for the lock manufacturer, provide a keying schedule, listing the levels of keying, as well as an explanation of the key system's function, the key symbols used, and the door numbers controlled. Utilize ANSI A156.28 “Recommended Practices for Keying Systems” as a guideline for nomenclature, definitions, and approach for selecting the optimal keying system.

E. Samples: If requested by the Architect, submit production sample or sample installations as requested of each type of exposed hardware unit in the finish indicated, and tagged with a full description for coordination with the schedule.

1. Samples will be returned to the supplier in like-new condition. Units that are acceptable to the Architect may, after final check of operations, be incorporated into the Work, within limitations of key coordination requirements.

F. Templates: After final approval of the hardware schedule, provide templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware.

G. Riser and Wiring Diagrams: After final approval of the hardware schedule, submit riser and wiring diagrams as required for the proper installation of complete electrical, electromechanical, and electromagnetic products.

H. Operations and Maintenance Data: Provide in accordance with Division 1 and include the following:

1. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.

2. Catalog pages for each product.

3. Name, address, and phone number of local representative for each manufacturer.

4. Parts list for each product.

5. Copy of final approved hardware schedule, edited to reflect “As installed.”

6. Copy of final keying schedule.

7. As installed “Wiring Diagrams” for each opening connected to power, both low voltage and 110 volts.

8. One (1) complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

9. Copy of warranties including appropriate reference numbers for manufacturers to identify the project.

I. Certificates of Compliance: Upon request of Architect or Authority Having Jurisdiction certificates of compliance for fire-rated hardware and installation instructions shall be made available.

1.05 QUALITY ASSURANCE

A. Substitutions: Products are to be those specified to ensure a uniform basis of acceptable materials. Requests for substitutions must be made in accordance with Division 1 requirements. If proposing a substitute product, submit product data for the proposed item with product data for the specified item and indicate basis for substitution and savings to be made. Provide sample if requested. Certain products have been selected for their unique characteristics and particular project suitability.

1. Items specified as "no substitute” shall be provided exactly as listed.

2. Items listed with no substitute manufacturers listed have been requested by the Owner or Architect to match existing for continuity and/or future performance and maintenance standards or because there is no known equal product.

3. If no other products are listed in a category, then "no substitute" is implied.

B. Supplier Qualifications: A recognized architectural hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that provides a certified Architectural Hardware Consultant (AHC) available to the Owner, Architect, and Contractor, at reasonable times during the course of the Work for consultation.

C. Single Source Responsibility: Obtain each type of hardware (latch and locksets, hinges, exit devices, closers, etc.) from a single manufacturer.

D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by Underwrites Laboratories, Intertek Testing Services, or other testing and inspecting organizations acceptable to the authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.

E. Electronic Security Hardware: When electrified hardware is included in the hardware specification, the hardware supplier must employ an individual knowledgeable in electrified components and systems, who is capable of producing wiring diagrams and consulting as needed. Coordinate installation of the electronic security hardware with the Architect and electrical engineers and provide installation and technical data to the Architect and other related subcontractors. Upon completion of electronic security hardware installation, inspect and verify that all components are working properly.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Tag each item or package separately with identification related to the final hardware schedule, and include installation instructions with each item or package.

B. Each article of hardware shall be individually packaged in manufacturer's original packaging.

C. Contractor will provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

D. Items damaged in shipment shall be replaced promptly and with proper material and paid for by whomever did the damage or caused the damage to occur.

E. Hardware shall be handled in a manner to avoid damage, marring, or scratching. Irregularities that occur to the hardware after it has been delivered to the Project shall be corrected, replaced, or repaired by the Contractor. Hardware shall be protected against malfunction due to paint, solvent, cleanser, or any chemical agent.

F. No direct shipments will be allowed unless approved by the Contractor.

1.07 WARRANTY

A. Provide manufacturer's warrantees as specified in Division 1 and as follows:

1. Closers: 10 years, except electronic closers, 2 years.

2. Exit Devices: 3 years, except electrified devices, 1 year.

3. Locksets: 3 years, except electrified locksets, 1 year.

4. Other hardware: 1 year.

B. No liability is to be assumed where damage or faulty operation is due to improper installation, improper use, or abuse.

C. Products judged to be defective during the warranty period shall be replaced or repaired in accordance with the manufacturer's warranty, at no additional cost to the Owner.

1.08 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. The Awarding Authority has determined that certain products should be selected for their unique characteristics and particular project suitability to insure continuity of existing and future performance and maintenance standards. After investigating available product offerings the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: “No Substitute” (NO OTHER PRODUCTS WILL BE CONSIDERED FOR THOSE LISTED IN PROJECTS DOCUMENTS.)

B. Approval of manufacturers other than those listed shall be in accordance with paragraph 1.05.A.

C. Note that even though an acceptable substitute manufacturer may be listed, the product must provide all the functions and features of the specified product or it will not be approved.

Item	Scheduled Manufacturer	Acceptable Substitute
Hinges	Ives (IVE)	Hager, Stanley
Flush Bolts & Coordinators	Ives (IVE)	Burns, Rockwood
Locksets	Schlage (SCH)	No Substitute
Exit Devices	Von Duprin (VON)	Sargent

Door Closers	LCN (LCN)	No Substitute
Protection Plates	Ives (IVE)	Burns, Rockwood
Stops & Holders	Ives (IVE)	Burns, Rockwood
Thresholds & Weatherstrip	Reese (REE)	NGP, Zero
Silencers	Ives (IVE)	Burns, Rockwood
Cylinders & Keying	Schlage (SCH)	No Substitute

D. Hand of Door: Drawings show direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.

E. Where the hardware specified is not adaptable to the finished shape or size of the members requiring hardware, furnish suitable types having the same operation and quality as the type specified, subject to the Architect's approval.

2.02 MATERIALS

A. Fasteners

1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.

2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.

3. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent that no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Review door specification and advise Architect if thru-bolts are required.

4. Hardware shall be installed with the fasteners provided by the hardware manufacturer.

B. Hinges

1. Provide five-knuckle, ball bearing hinges of type, material, and height as outlined in the following guide for this specification:

a. 1-3/4 inch thick doors, up to and including 36 inches wide:
Exterior: standard weight, bronze/stainless steel, 4-1/2 inches high
Interior: standard weight, steel, 4-1/2 inches high
b. 1-3/4 inch thick doors over 36 inches wide:
Exterior: heavy weight, bronze/stainless steel, 5 inches high

Interior: heavy weight, steel, 5 inches high
c. 2 inches or thicker doors:
Exterior: heavy weight, bronze/stainless steel, 5 inches high
Interior: heavy weight, steel, 5 inches high

2. Provide three hinges per door leaf for doors 90 inches or less in height, and one additional hinge for each 30 inches of additional door height.

3. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

   a. Steel Hinges: Steel pins
   b. Non-Ferrous Hinges: Stainless steel pins
   c. Out-Swinging Exterior Doors: Non-removable pins
   d. Out-Swinging Interior Lockable Doors: Non-removable pins
   e. Interior Non-lockable Doors: Non-rising pins

4. The width of hinges shall be 4-1/2 inches at 1-3/4 inch thick doors, and 5 inches at 2 inches or thicker doors. Adjust hinge width as required for door, frame, and/or wall conditions to allow proper degree of opening.

5. Provide mortar guard for each electrified hinge specified, unless specified in hollow metal frame specification.

6. Acceptable manufacturers and/or products: Ives 5BB series, Hager BB series, Stanley FBB Series.

C. Flush Bolts

1. Provide automatic and manual flush bolts with forged bronze face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch steel or brass rods at doors up to 90 inches in height. Top rods at manual flush bolts for doors over 90 inches in height shall be increased by 6 inches for each additional 6 inches of door height. Provide dust-proof strikes at each bottom flush bolt.

2. Acceptable manufacturers and/or products: Ives, Burns, Rockwood.

D. Coordinators

1. Provide a bar-type coordinating device, surface applied to the underside of the stop at the frame head where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors.

2. Provide a filler bar of the correct length for the unit to span the entire width of the opening, and appropriate brackets for parallel arm door closers and surface vertical rod exit device strikes. Factory-prep coordinators for vertical rod devices if required.

3. Acceptable manufacturers and/or products: Ives, Burns, Rockwood.

E. Cylindrical Locks - Grade 1

1. Provide cylindrical locks conforming to ANSI A156.2 Series 4000, Grade 1. Cylinders: Refer to 2.04 KEYING.

2. Provide solid steel rotational stops to control excessive rotation of the lever.

3. Lockset to be completely refunctionable. Lockset design shall allow function of lock to be changed into over twenty other common functions by swapping easily accessible parts.

4. Provide locks with a standard 2-3/4 inches backset, unless noted otherwise, with a 1/2 inch latch throw. Provide proper latch throw for UL listing at pairs.

5. Provide locksets with a separate anti-rotation throughbolts, and shall have no exposed screws. Levers shall operate independently, and shall have two external return spring cassettes mounted under roses to prevent lever sag.

6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.

7. Lever trim shall be solid cast levers without plastic inserts, and wrought roses on both sides. Locksets shall be thru-bolted to assure proper alignment.

   a. Lever design shall be Schlage Rhodes.
   b. Lever trim on the secure side of doors serving rooms considered by the authority having jurisdiction to be hazardous shall have a tactile warning.

8. Acceptable manufacturers and/or products: Schlage ND series, No Substitute.

F. Exit Devices

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1, and UL listed for Panic Exit and/or Fire Exit Hardware. Cylinders: Refer to 2.04 KEYING.

2. Exit devices shall be touchpad type, fabricated of brass, bronze, stainless steel, or aluminum, plated to the standard architectural finishes to match the balance of the door hardware.

3. Touchpad shall extend a minimum of one half of the door width. Touch-pad finish shall be compatible to exit device finish. Compression springs will be used in devices, latches, and outside trims or controls, tension springs also acceptable.

4. Devices to incorporate a deadlatching feature for security and/or for future addition of alarm kits and/or other electrical requirements.

5. Provide manufacturer's standard strikes.

6. Provide exit devices cut to door width and height. Locate exit devices at a height recommended by the exit device manufacturer, allowable by governing building codes, and approved by the Architect.

7. Mechanism case shall sit flush on the face of all flush doors, or spacers shall be furnished to fill gaps behind devices. Where glass trim or molding projects off the face of the door, provide glass bead kits.

8. Non-fire-rated exit devices shall have cylinder dogging.

9. Removable mullions shall be a 2 inches x 3 inches steel tube. Where scheduled, mullion shall be of a type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.

10. Where lever handles are specified as outside trim for exit devices, provide heavy-duty lever trims with forged or cast escutcheon plates. Provide vandal-resistant levers that will travel to a 90-degree down position when more than 35 pounds of torque are applied, and which can easily be re-set.

    a. Lever style will match the lever style of the locksets.
    b. Lever trim on doors serving rooms considered by the authority having jurisdiction to be hazardous shall have a tactile warning.

11. Exit devices for fire rated openings shall be UL labeled fire exit hardware.

12. Acceptable manufacturers and/or products: Von Duprin 99/33 series, Sargent 80 series with deadlatching.

G. Door Closers

1. Provide door closers certified to ANSI/BHMA A156.4 Grade 1 requirements by a BHMA certified independent testing laboratory. Surface mounted mechanical closers shall be certified to exceed ten million (10,000,000) full load cycles by a recognized independent testing laboratory. Closers shall be ISO 9000 certified. Units shall be stamped with date of manufacture code.

2. Door closers shall have fully hydraulic, full rack and pinion action with a high strength cast iron cylinder, and shall utilize full complement bearings at shaft. Cylinder body shall be 1-1/2 inch diameter, and double heat-treated pinion journal shall be 11/16 inch diameter.

3. Provide hydraulic fluid requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F. Fluid shall be fireproof and shall pass the requirements of the UL10C “positive pressure” fire test.

4. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force as required by accessibility codes and standards. Hydraulic regulation shall be by tamper-proof, non-critical valves.

Closers shall have separate adjustment for latch speed, general speed, and backcheck.

5. Provide closers with a solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers. When closers are parallel arm mounted, provide closers which mount within a 6-inch top rail without the use of a mounting plate so that closer shall not be visible through vision panel from pull side.

6. Closers shall not incorporate Pressure Relief Valve (PRV) technology.

7. Closer cylinders, arms, adapter plates, and metal covers shall have a powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or shall have special rust inhibitor (SRI).

8. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other finish hardware items interfering with closer mounting.

9. Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Closers shall not be visible in corridors, lobbies and other public spaces unless approved by Architect.

10. Door closers meeting this specification: LCN 4010/4110 series, No Substitute.

H. Protection Plates

1. Provide kick plates, mop plates, and armor plates minimum of 0.050 inch thick as scheduled. Furnish with machine or wood screws, finished to match plates. Sizes of plates shall be as follows:

   a. Kick Plates – 10 inches high x 2 inches less width of door on single doors, 1 inch less width of door on pairs
   b. Mop Plates – 4 inches high x 2 inches less width of door on single doors, 1 inch less width of door on pairs
   c. Armor Plates – 36 inches high x 2 inches less width of door on single doors, 1 inch less width of door on pairs

2. Acceptable manufacturers and/or products: Ives, Burns, Rockwood.

I. Door Stops and Holders

1. Provide door stops for all doors in accordance with the following requirements:

   a. Provide wall stops wherever possible. Provide convex type where mortise type locks are used and concave type where cylindrical type locks are used.

b. Where wall stops cannot be used, provide dome type floor stops of the proper height.
c. At any opening where a wall or floor stop cannot be used, a medium duty surface mounted overhead stop shall be used.

2. Acceptable manufacturers and/or products: Ives, Burns, Rockwood.

J. Thresholds, Seals, Door Sweeps, Automatic Door Bottoms, and Gasketing

1. Provide thresholds, weatherstripping (including door sweeps, seals, astragals) and gasketing systems (including smoke, sound, and light) as specified and per architectural details. Match finish of other items as closely as possible. Size of thresholds shall be as follows:

a. Saddle Thresholds – 1/2 inch high x jamb width x door width
b. Bumper Seal Thresholds – 1/2 inch high x 5 inches wide x door width

2. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.

3. Acceptable manufacturers and/or products: National Guard, Reese, Zero.

K. Silencers

1. Provide "Push-in" type silencers for each hollow metal or wood frame. Provide three for each single frame and two for each pair frame. Omit where gasketing is specified or required by code.

2. Acceptable manufacturers and/or products: Ives, Burns, Rockwood.

2.03 FINISHES

A. Finish of all hardware shall be US26D (BHMA 626/652) with the exceptions as follows:

1. Protection Plates: US32D (BHMA 630).

2. Door Closers: Powder Coat to Match.

3. Wall Stops: US32D (BHMA 630).

4. Weatherstipping: Clear Anodized Aluminum.

2.04 KEYING

A. Provide cores and cylinders for the Owner’s Existing Schlage Everest D Restricted Conventional Core, key system conforming to the following requirements:

1. Provide restricted patented conventional cylinders at al keyed devices, locksets, and exit device cylinder dogging. Restricted shall control the access to the products

by requiring a signed letter of authorization and/or authorization form from the Owner or authorized agent of the Owner. Patent shall protect against the unauthorized manufacturing and duplication of the products. Restricted patented cylinders shall not be operable by non-patented key blanks. Restricted patented cylinders shall incorporate a mechanism to check for the patented features on the keys. Provide Split Key Construction Keys for use during construction. The hardware supplier, accompanied by the Owner or Owner's security agent, shall remove all Construction Inserts upon completion of the building.

2. Provide permanent cores and cylinders keyed by the manufacturer or authorized distributor into the existing key system as directed by the Owner. Provide owner with a copy of the bitting list, return receipt requested.

3. The hardware supplier, accompanied by a qualified factory representative for the manufacturer of the cores and cylinders, shall meet with Owner and Architect to review keying requirements and lock functions prior to ordering finish hardware. Submit a keying schedule to Architect for approval.

4. Provide keys as follows

   a. Ten grand master keys for each set.
   b. Ten master keys for each set.
   c. Three keys per core and/or cylinder.
   d. Six extractor tools.
   e. Six split key construction keys for each type (Contractor is to provide one set of split key construction keys to Architect).

5. Visual key control:

   a. Keys shall be stamped with their respective key set number and stamped "DO NOT DUPLICATE".
   b. All keys shall be stamped with their respective key set letters.
   c. Do not stamp any keys with the factory key change number.
   d. Do not stamp any cores with key set on face (front) of Core. Stamp on back or side of cores so not to be visible when core is in cylinder.

6. Deliver all keys and/or key blanks from the factory or authorized distributor directly to the Owner in sealed containers, return receipt requested. Failure to comply with these requirements may be cause to require replacement of all or any part of the keying system that was compromised at no additional cost to the Owner.

7. Approved products: Schlage Everest D Restricted, No Substitute.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to installation of any hardware, examine all doors, frames, walls and related items for conditions that would prevent proper installation of finish hardware. Correct all defects prior to proceeding with installation.

3.02 INSTALLATION

A. Coordination:

1. Prior to installation of hardware, schedule and hold a meeting for the purpose of instructing installers on proper installation and adjustment of finish hardware. Representatives of locks, exit devices, closers, automatic operators, and electrified hardware shall conduct training; provide at least 10 days notice to representatives. After training a letter of compliance, indicating when the training was held and who was in attendance, shall be sent to the Architect.

B. Hardware will be installed by qualified tradesmen, skilled in the application of commercial grade hardware. For technical assistance if necessary, installers may contact the manufacturer's rep for the item in question, as listed in the hardware schedule.

C. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.

D. Install each hardware item in compliance with the manufacturer's instructions and recommendations, using only the fasteners provided by the manufacturer.

E. Do not install surface mounted items until finishes have been completed on the substrate. Protect all installed hardware during painting.

F. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

G. Operating parts shall move freely and smoothly without binding, sticking, or excessive clearance.

3.03 ADJUSTING, CLEANING, AND DEMONSTRATING

A. Adjust and check each operating item of hardware and each door, to insure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly.

B. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make a final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of

hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

C. Clean adjacent surfaces soiled by hardware installation.

D. Instruct Owner's personnel in the proper adjustment, lubrication, and maintenance of door hardware and hardware finishes.

3.04 FIELD QUALITY CONTROL

A. Prior to Substantial Completion, the installer, accompanied by representatives of the manufacturers of locks, exit devices, closer, and any electrified hardware, shall perform the following work:

1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.

2. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures.

3. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.

4. Prepare a written report of current and predictable problems of substantial nature in the performance of the hardware.

5. At completion of project, a qualified factory representative for the manufacturers of locksets, closer, exit devices, and access control products shall arrange and hold a training session to instruct the Owner's personnel on the proper maintenance, adjustment, and/or operation of their respective products. After training a letter of compliance, indicating when the training was held and who was in attendance, shall be sent to the Architect.

3.05 PROTECTION

A. Provide for the proper protection of complete items of hardware until the Owner accepts the project as complete. Damaged or disfigured hardware shall be replaced or repaired by the responsible party.

3.06 HARDWARE SCHEDULE

A. Provide hardware for each door to comply with requirements of Section "Finish Hardware," hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.

B. It is intended that the following schedule includes complete items of finish hardware necessary to complete the work. If a discrepancy is found in the schedule, such as a

missing item, improper hardware for a frame, door or fire codes, the preamble will be the deciding document.

C. Locksets, exit devices, and other hardware items are referenced in the Hardware Sets for series, type, and function. Refer to the preamble for special features, options, cylinders/keying, and other requirements.

D. Hardware Sets

HW SET: 01 (SINGLE - ALUMINUM WITH CLASSROOM LOCKSET)

3	EA	HINGE	5BB1 SERIES AS SPECIFIED	652	IVE
1	EA	CLASSROOM LOCK	ND70	626	SCH
1	EA	STOP	WS407/FS436 AS SPECIFIED	630	IVE
3	SET	SEALS	BY ALUMINUM DOOR SUPPLIER.		

HW SET: 02 (SINGLE WITH STOREROOM LOCKSET X CLOSER X GASKETING)

3	EA	HINGE	5BB1 SERIES AS SPECIFIED	652	IVE
1	EA	STOREROOM LOCK	ND80	626	SCH
1	EA	SURFACE CLOSER	4011 REG	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407/FS436 AS SPECIFIED	630	IVE
1	SET	SEALS	798B	BLK	REE
1	EA	DOOR SWEEP	323C	AL	REE

FURNISH PARALLEL ARM CLOSER @ DOOR #108.

HW SET: 03 (SINGLE WITH RIM FIRE EXIT HARDWARE X SMOKE GASKETING)

3	EA	HINGE	5BB1 SERIES AS SPECIFIED	652	IVE
1	EA	FIRE EXIT HARDWARE	99L-BE-F 996L	626	VON
1	EA	SURFACE CLOSER	4011 REG	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407/FS436 AS SPECIFIED	630	IVE
1	SET	SEALS	798B	BLK	REE
1	EA	DOOR SWEEP	323C	AL	REE

HW SET: 04 (SINGLE WITH RIM FIRE EXIT HARDWARE X SMOKE GASKETING)

3	EA	HINGE	5BB1 SERIES AS SPECIFIED	652	IVE
1	EA	FIRE EXIT HARDWARE	99L-F 996L	626	VON

1	EA	RIM CYLINDER	AS REQUIRED	626	SCH
1	EA	SURFACE CLOSER	4011 REG	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407/FS436 AS SPECIFIED	630	IVE
1	SET	SEALS	798B	BLK	REE
1	EA	DOOR SWEEP	323C	AL	REE

FURNISH PARALLEL ARM CLOSER @ DOOR #107.

HW SET: 05 (PAIR WITH STOREROOM LOCKSET X FLUSH BOLTS X CLOSER AT ACTIVE LEAF)

6	EA	HINGE	5BB1 SERIES AS SPECIFIED	652	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQUIRED	626	IVE
1	EA	STOREROOM LOCK	ND80	626	SCH
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	STOP	WS407/FS436 AS SPECIFIED	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 06 (PAIR WITH MORTISE PANIC X AUTO FLUSH BOLTS X CLOSER - UNEQUAL PAIR)

6	EA	HINGE	5BB1 SERIES AS SPECIFIED	652	IVE
1	SET	AUTO FLUSH BOLT	FB31P/FB41P AS REQUIRED	630	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQUIRED	626	IVE
1	EA	FIRE EXIT HARDWARE	9975L-BE-F 996L	626	VON
1	EA	COORDINATOR	COR X FL X MB AS REQUIRED	628	IVE
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	SURFACE CLOSER	4111 EDA X SPECIAL TEMPLATE FOR 18" LEAF.	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	STOP	WS407/FS436 AS SPECIFIED	630	IVE
1	SET	SEALS	798B	BLK	REE

HW SET: 07 (PAIR SURFACE LESS BOTTOM ROD FIRE EXIT HARDWARE X SMOKE GASKETING)

6	EA	HINGE	5BB1 SERIES AS SPECIFIED	652	IVE
2	EA	FIRE EXIT HARDWARE	9927L-BE-F-LBR 996L	626	VON
2	EA	SURFACE CLOSER	4011 REG	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
1	SET	SEALS	798B	BLK	REE
2	EA	DOOR SWEEP	323C	AL	REE
1	SET	DOOR SEAL	959C X 2 PCS	AL	REE

HW SET: 08 (PAIR SURFACE LESS BOTTOM ROD FIRE EXIT HARDWARE X SMOKE GASKETING)

6	EA	HINGE	5BB1 SERIES AS SPECIFIED	652	IVE
2	EA	FIRE EXIT HARDWARE	9927L-F-LBR 996L	626	VON
2	EA	RIM CYLINDER	AS REQUIRED	626	SCH
2	EA	SURFACE CLOSER	4111 EDA	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
1	SET	SEALS	798B	BLK	REE
1	SET	DOOR SEAL	959C X 2 PCS	AL	REE

FURNISH REGULAR ARM CLOSERS @ DOOR #102.

END OF SECTION

SECTION 08800

GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass in door vision lites.

B. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07900 - Joint Sealers: Sealant and back-up material.

B. Section 08110 - Steel Doors and Frames: Glazed doors and borrowed lites.

C. Section 08211 - Flush Wood Doors: Glazed doors.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.

B. ASTM C 864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005.

C. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 2005.

D. ASTM C 1036 - Standard Specification for Flat Glass; 2006.

E. ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass; 2004.

F. ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass; 2003.

G. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2009.

H. ASTM E 1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2007.

I. GANA (GM) - GANA Glazing Manual; Glass Association of North America; 2004.

J. GANA (SM) - FGMA Sealant Manual; Glass Association of North America; 1990.

K. GANA (LGDG) - Laminated Glazing Reference Manual; Glass Association of North America; 2006.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.

C. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual and FGMA Sealant Manual for glazing installation methods.

B. Installer Qualifications: Company specializing in performing the work of this section approved by manufacturer.

1.06 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 50 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.07 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.

B. Laminated Glass: Provide a five (5) year warranty to include coverage for delamination, including replacement of failed units.

PART 2 PRODUCTS

2.01 GLAZING TYPES

A. Fire-Rated Safety Glazing:
   1. Applications: Provide this type of glazing in the following locations:
      a. Glazed lites in fire doors.
      b. Sidelights, borrow lites, and other glazed openings in partitions indicated as having an hourly fire rating.
   2. Fire Rating: As indicated on the drawings.
   3. Thickness: 1/4 inch.

B. Single Safety Glazing: Non-fire-rated.
   1. Applications: Provide this type of glazing in the following locations:
      a. Glazed interior storefront systems.
      b. Glazed lites in doors, except fire doors.
      b. Glazed sidelights to doors, except in fire-rated walls and partitions.
      c. Other locations required by applicable federal, state, and local codes and regulations.
      d. Other locations indicated on the drawings.
   2. Type: Fully tempered float glass as specified.
   3. Tint: Clear.
   4. Thickness: 1/4 inch.

2.02 GLASS MATERIALS

A. Float Glass: All glazing is to be float glass unless otherwise indicated.
   1. Annealed Type: ASTM C 1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).
   2. Heat-Strengthened and Fully Tempered Types: ASTM C 1048.
   3. Tinted Types: Color and performance characteristics as indicated.
   4. Thicknesses: As indicated; for exterior glazing comply with specified requirements for wind load design regardless of specified thickness.

B. Laminated Glass: Float glass laminated in accordance with ASTM C 1172.
   1. Laminated Safety Glass: Comply with 16 CFR 1201 test requirements for Category II.
   2. Plastic Interlayer: 0.060 inch thick, minimum.
   3. Where fully tempered is specified or required, provide glass that has been tempered by the tong-less horizontal method.

C. Laminated Wired Glass: UL- or WH-listed as fire-protection-rated glazing and complying with 16 CFR 1201 test requirements for Category II with or without the use of a surface-applied film.

2.03 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, ASTM C 864 Option I.

Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, ASTM C 864 Option I. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.

C. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.

D. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings for glazing are correctly sized and within tolerance.

3.02 CLEANING

A. Remove labels after Work is complete.

B. Clean glass and adjacent surfaces.

END OF SECTION

SECTION 09511

SUSPENDED ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling systems.

B. 2x2 Acoustical units in 4 styles.

1.02 RELATED REQUIREMENTS

A. Section 07900 - Joint Sealers: Acoustical sealant.

B. Section 08310 - Access Doors and Panels: Access panels.

1.03 REFERENCE STANDARDS

A. ASTM C 635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2004.

B. ASTM C 636/C 636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels; 2006.

C. ASTM E 580/E 580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2008a.

D. ASTM E 1264 - Standard Classification for Acoustical Ceiling Products; 2008.

E. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on suspension system components.

C. Samples: Submit two full size samples illustrating material and finish of acoustical units.

1.05 QUALITY ASSURANCE

A. Fire-Resistive Assemblies: Complete assembly listed and classified by UL for the fire resistance indicated.

B. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 ACOUSTICAL UNITS

A. Manufacturers:
   1. Armstrong World Industries, Inc; www.armstrong.com.
   2. Alpro a Division or Gordon, Inc; www.alproacoustics.com.
   3. Substitutions: See Section 01600 - Product Requirements.

B. Acoustical Units - General: ASTM E 1264, Class A.
   1. Units for Installation in Fire-Rated Suspension System: Listed and classified for the fire-resistive assembly the suspension system is a part of.

C. Acoustical Tile in the North and South Exits: Paint faced mineral fiber, ASTM E 1264 Type III, with the following characteristics:
   1. Size: 24 x 24 inches
   2. Thickness: 5/8 inches.
   3. Edge: Lay-In square
   4. Surface Color: White.
   5. Product: Fine Fissured by Armstrong, #1831.
   6. Suspension System: Standard Prelude grid.
   7. Class A for use in assembly spaces.

D. Acoustical Tile in Lecture Halls: Metal faced
   1. Size: 24 x 24 inches
   2. Thickness: as required to achieve an NRC of .70.
   3. Edge: Lay-In
   4. Surface Pattern: Effects Maple (FXMP) microperforated.
   5. Product: Armstrong Metalworks Vector Panels
   6. Suspension System: Strongback by Armstrong.

E. In Alternate #3, the grid system is changed in the lecture halls to have continuous main channels with short, staggered cross channels as per the reflected ceiling plans. The tile type does not change.

2.02 SUSPENSION SYSTEM(S)

A. Manufacturers:
   1. Armstrong World Industries, Inc; www.armstrong.com.
   2. Alpro a Division or Gordon, Inc; www.alproacoustics.com.
   3. Substitutions: See Section 01600 - Product Requirements.

B. Suspension Systems - General: ASTM C 635; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.

C. For metal Vector panels : Vector Strongback carrying channels and cross tees with Axiom knife-edge perimeter trim, suspended with aircraft cable.

2.03 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Perimeter Moldings: Same material and finish as grid.
   1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
   2. At Strongback Grid: Provide Axiom trim pieces, including Knife-edge-Vector perimeter trim on 4 sides of each cloud section. See details.

C. Acoustical Sealant For Perimeter Moldings: Specified in Section 07900.

D. Touch-up Paint: Type and color to match acoustical and grid units.

E. Seismic Clips: Install in all Vector ceilings.

F. Border Clips: Install in Vector ceilings according to manufacturer's recommendations.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C 636/C 636M, ASTM E 580/E 580M, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Locate system on room axis according to reflected plan.

D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

E. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

I. Do not eccentrically load system or induce rotation of runners.

J. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.
   2. Overlap and rivet corners.

3.03 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install units after above-ceiling work is complete.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Install hold-down clips on each panel to retain panels tight to grid system; comply with fire rating requirements.

3.04 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 09260

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal stud wall framing.

C. Metal channel ceiling framing.

D. Shaft wall system.

E. Acoustic insulation.

F. Cementitious backing board.

G. Gypsum wallboard.

H. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 06100 - Rough Carpentry: Wood blocking product and execution requirements.

B. Section 07270 - Firestopping: Top-of-wall assemblies at fire rated walls.

C. Section 07900 - Joint Sealers: Acoustic sealant.

D. Section 09300 - Tiling: application over cementitious backing board.

1.03 REFERENCE STANDARDS

A. ANSI A108.11 - American National Standard for Interior Installation of Cementitious Backer Units; 1999 (R2005).

B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (R2005).

C. ASTM C 475/C 475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).

D. ASTM C 645 - Standard Specification for Nonstructural Steel Framing Members; 2007.

E. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2006.

F. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2007.

G. ASTM C 840 - Standard Specification for Application and Finishing of Gypsum Board; 2007.

H. ASTM C 954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2007.

I. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.

J. ASTM C 1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2005.

K. ASTM C 1278/C 1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2007a.

L. ASTM C 1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement Substrate Sheets; 2004.

M. ASTM C 1396/C 1396M - Standard Specification for Gypsum Board; 2006a.

N. ASTM C 1629/C 1629 - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2006.

O. ASTM D 3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2000 (Reapproved 2005).

P. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction; 2005.

Q. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2004.

R. ASTM E 413 - Classification for Rating Sound Insulation; 2004.

S. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2007.

T. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

C. Test Reports: For all stud framing products that do not comply with ASTM C 645 or C 754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C 840 and GA-216.

B. Interior Partitions: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E 413, based on tests conducted in accordance with ASTM E 90.

C. Shaft Walls at HVAC Shafts: Provide completed assemblies with the following characteristics:
   1. Air Pressure Within Shaft: Sustained loads of 5 lbf/sq ft with maximum mid-span deflection of L/240.
   2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E 413, based on tests conducted in accordance with ASTM E 90.

D. Fire Rated Assemblies: Provide completed assemblies with the following characteristics:
   1. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL Fire Resistance Directory.

2.02 METAL FRAMING MATERIALS

A. Manufacturers - Metal Framing, Connectors, and Accessories:
   1. Dietrich Metal Framing; www.dietrichindustries.com.
   2. Marino\Ware; www.marinoware.com.
   3. Substitutions: See Section 01600 - Product Requirements.

B. Non-Loadbearing Framing System Components: ASTM C 645; galvanized sheet steel, of size

and properties necessary to comply with ASTM C 754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.

1. Exception: The minimum metal thickness and section properties requirements of ASTM C 645 are waived provided steel of 40 ksi minimum yield strength is used, the metal is continuously dimpled, the effective thickness is at least twice the base metal thickness, and maximum stud heights are determined by testing in accordance with ASTM E 72 using assemblies specified by ASTM C 754.
2. Studs: "C" shaped with flat or formed webs with knurled faces.
3. Runners: U shaped, sized to match studs.
4. Ceiling Channels: C shaped.
5. Furring: Hat-shaped sections, minimum depth of 7/8 inch.

C. Shaft Wall Studs and Accessories: ASTM C 645; galvanized sheet steel, of size and properties necessary to comply with ASTM C 754 and specified performance requirements.

D. Ceiling Hangers: Type and size as specified in ASTM C 754 for spacing required.

E. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
1. Georgia-Pacific Gypsum LLC: www.gp.com/gypsum.
2. National Gypsum Company: www.nationalgypsum.com.
3. USG Corporation: www.usg.com.
4. No substitutions. All material must originate within the United States.

B. Wallboard: Paper-faced gypsum wallboard as defined in ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for soffits and ceilings, unless otherwise indicated.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D 3273.
   a. Mold-resistant board is required at all locations.
3. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
4. Thickness:
   a. Vertical Surfaces: 5/8 inch.
   b. Ceilings: 1/2 inch.
5. Mold-Resistant Paper-Faced Products:
   a. National Gypsum Company; Gold Bond Brand XP Gypsum Board.
   b. National Gypsum Company; Gold Bond Hi-Abuse Brand XP Wallboard.
   c. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.
   d. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels AR.
   e. Substitutions: See Section 01600 - Product Requirements.

C. Impact-Rated Wallboard: Tested to Level 3 soft-body and hard-body impact in accordance with ASTM C 1629.
1. Application: All walls.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D 3273.
3. Paper-Faced Type: Gypsum wallboard as defined in ASTM C 1396/C 1396M.
4. Unfaced Type: Interior fiber-reinforced gypsum panels as defined in ASTM C 1278/C 1278M.
5. Type: Fire-resistance rated Type X, UL or WH listed.
6. Thickness: 5/8 inch.
7. Edges: Tapered.
8. Products:
   a. National Gypsum Company; Gold Bond Hi-Impact Brand XP Wallboard.

b. USG Corporation; Fiberock Brand Panels--VHI Abuse-Resistant.
c. Substitutions: See Section 01600 - Product Requirements.

D. Backing Board For Wet Areas: One of the following products:
1. Application: Surfaces behind tile.
2. ANSI Cement-Based Board: Non-gypsum-based; aggregated portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C 1325.
a. Thickness: 1/2 inch.

E. Ceiling Board: Special sag-resistant gypsum ceiling board as defined in ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings, unless otherwise indicated.
2. Thickness: 1/2 inch.
3. Edges: Tapered.

F. Shaftwall and Coreboard: Type X; 1 inch thick by 24 inches wide, beveled long edges, ends square cut.
1. Paper Faced Type: Gypsum shaftliner board or gypsum coreboard as defined ASTM C 1396/C 1396M; water-resistant faces.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D 3273.
3. Products:
a. National Gypsum Company; Gold Bond Brand 1" Fire-Shield Shaftliner XP (mold-resistant).
b. USG Corporation; Sheetrock Gypsum Liner Panels--Enhanced (mold-resistant).
c. Substitutions: See Section 01600 - Product Requirements.

2.04 ACCESSORIES

A. Acoustic Insulation: ASTM C 665; preformed glass fiber, friction fit type, unfaced. to fill stud depth

B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Finishing Accessories: ASTM C 1047, galvanized steel or rolled zinc, unless otherwise indicated.
1. Types: As detailed or required for finished appearance. Flanges for tape imbedment.
2. Special Shapes: In addition to conventional cornerbead and control joints, provide U-bead at exposed panel edges.

D. Joint Materials: ASTM C 475 and as recommended by gypsum board manufacturer for project conditions.
1. Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.

E. Screws for Attachment to Steel Members Less Than 0.03 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C 1002; self-piercing tapping type; cadmium-plated for exterior locations.

F. Screws for Attachment to Steel Members From 0.033 to 0.112 inch in Thickness: ASTM C 954; steel drill screws for application of gypsum board to loadbearing steel studs.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 SHAFT WALL INSTALLATION

A. Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.

1. Install studs at spacing required to meet performance requirements.

B. Shaft Wall Liner: Cut panels to accurate dimension and install sequentially between special friction studs.

3.03 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C 754 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.

C. Studs: Space studs as permitted by standard.
1. Extend partition framing to structure where indicated and to ceiling in other locations.
2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
3. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.

3.04 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.05 BOARD INSTALLATION

A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

C. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

3.06 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.07 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C 840, as follows:
1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
2. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
1. Feather coats of joint compound so that camber is maximum 1/32 inch.

3.08 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09650

RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient sheet flooring.

B. Resilient tile flooring.

C. Resilient base.

D. Resilient stair accessories.

E. Installation accessories.

1.02 REFERENCE STANDARDS

A. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2008.

B. ASTM F 1066 - Standard Specification for Vinyl Composition Floor Tile; 2004.

C. ASTM F 1303 - Standard Specification for Sheet Vinyl Floor Covering with Backing; 2004 (Reapproved 2009).

D. ASTM F 1700 - Standard Specification for Solid Vinyl Floor Tile; 2004.

E. ASTM F 1861 - Standard Specification for Resilient Wall Base; 2008.

F. BAAQMD 8-51 - Bay Area Air Quality Management District Regulation 8, Rule 51, Adhesive and Sealant Products; www.baaqmd.gov; 2002.

G. FS RR-T-650 - Treads, Metallic and Nonmetallic, Skid Resistant; Federal Specifications and Standards; Revision E, 1994.

H. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2006.

I. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Verification Samples: Submit two samples, 12x12 inch in size illustrating color and pattern for each resilient flooring product specified.

D. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of sub-floor is acceptable.

E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01600 - Product Requirements, for additional provisions.
   2. Extra Flooring Material: 12 square feet of each type and color.
   3. Extra Wall Base: 24 linear feet of each type and color.
   4. Extra Stair Materials: Quantity equivalent to 5 percent of each type and color.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect roll materials from damage by storing on end.

1.05 FIELD CONDITIONS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 SHEET FLOORING

A. Vinyl Sheet Flooring: Color and pattern throughout wear layer thickness
   1. Minimum Requirements: Comply with ASTM F 1303, Type I, with Class A fibrous backing.
   2. Total Thickness: 0.080 inch minimum.
   3. 10 year warranty.
   4. Heat welded seams.
   5. Class 1 fire rated.
   6. Colors:
      a. VSF-1: Ore IP2004
      b. VSF-2: Tundra VM20910.
   7. Manufacturers:
      a. Altro Floors; VSF-1 - Product Impressionist II Safety Flooring on stair landings
      b. Altro Floors; VSF-2 - Product Walkway 20 Safety Flooring in exit hall
      c. Substitutions: Not permitted.

B. Vinyl Welding Rod: Solid vinyl bead produced by manufacturer of vinyl flooring for heat welding seams, in color matching field color.

2.02 TILE FLOORING

A. Vinyl Tile: Vinyl composition tile with color and pattern throughout thickness
   1. Minimum Requirements: Comply with ASTM F 1700, of Class corresponding to type specified.
   2. Size: 12 x 12 inch.
   3. Total Thickness: 0.125 inch.
   4. Pattern: Marbleized.
   5. Colors: VCT-2 is 51868 Smokey Brown (Projection room). VCT-3 is 51877 Earth Green (closets).
   6. Manufacturers:
      a. Armstrong; Product- Imperial Texture Standard Excelon
      b. Substitutions: See Section 01600 - Product Requirements.

2.03 STAIR COVERING

A. Stair Treads: Rubber; full width and depth of stair tread in one piece; tapered thickness; nosing not less than 1-5/8 inch deep.
   1. Minimum Requirements: Comply with FS RR-T-650 requirements corresponding to type specified.
   2. Nominal Thickness: 0.1875 inch.
   3. Nosing: Square.
   4. Style: Contrasting color abrasive grit strips full width.
   5. Color: Solid.
   6. Manufacturers:
      a. Burke Flooring; www.burkemercer.com.
      b. Johnsonite, Inc; www.johnsonite.com.

c. Roppe Corp; Product www.roppe.com.
d. Substitutions: See Section 01600 - Product Requirements.

B. Stair Risers: Full height and width of tread in one piece, matching treads in material and color:
1. Thickness: 0.080 inch.
2. Manufacturers:
a. Burke Flooring; www.burkemercer.com.
b. Johnsonite, Inc; www.johnsonite.com.
c. Roppe Corp; www.roppe.com.
d. Substitutions: See Section 01600 - Product Requirements.

C. Stair Stringers: Full height in one piece and in maximum available lengths, matching treads in material and color:
1. Thickness: 0.080 inch.
2. Pattern: Solid color.
3. Manufacturers:
a. Burke Flooring; www.burkemercer.com.
b. Johnsonite, Inc; www.johnsonite.com.
c. Roppe Corp; www.roppe.com.
d. Substitutions: See Section 01600 - Product Requirements.

2.04 RESILIENT BASE

A. Resilient Base: ASTM F 1861, Type TV, vinyl, thermoplastic; top set Style B, Cove, and as follows:
1. Height: 4 inch.
2. Thickness: 0.125 inch thick.
3. Finish: Satin.
4. Length: Roll.
5. Color: Solid color. 2 different colors will be used. VB-1 is equal to Johnsonite 130 "Sisal", and VB-2 is equal to Johnsonite 150 "Wetlands".
6. Accessories: Premolded external corners and end stops.
7. Manufacturers:
a. Burke Flooring; www.burkemercer.com.
b. Johnsonite, Inc; www.johnsonite.com.
c. Roppe Corp; www.roppe.com.
d. Substitutions: See Section 01600 - Product Requirements.

2.05 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer.
1. Provide only products having lower volatile organic compound (VOC) content than required by the more stringent of the South Coast Air Quality Management District Rule No.1168 and the Bay Area Air Quality Management District Regulation 8, Rule 51.

C. Moldings, Transition and Edge Strips: Same material as flooring.

D. Filler for Coved Base: Plastic.

E. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners,

and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

C. Verify that concrete sub-floor and self leveling underlayment surfaces are dry enough and ready for resilient flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

A. Prepare sub-floor surfaces as recommended by flooring and adhesive manufacturers.

B. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is cured.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install in accordance with manufacturer's instructions.

C. Spread only enough adhesive to permit installation of materials before initial set.

D. Fit joints tightly.

E. Set flooring in place, press with heavy roller to attain full adhesion.

F. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

G. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.04 SHEET FLOORING

A. Lay flooring with joints and seams parallel to longer room dimensions, to produce minimum number of seams. Lay out seams to avoid widths less than 1/3 of roll width; match patterns carefully at seams.

B. Double cut sheet at seams.

C. Lay flooring with tightly butted seams, without any seam sealer unless otherwise indicated.

D. Finish seams in sheet vinyl by heat welding.

3.05 TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless manufacturer's instructions say otherwise.

B. Lay flooring with joints and seams parallel to building lines to produce symmetrical tile pattern.

C. Install tile to ashlar pattern. Allow minimum 1/2 full size tile width at room or area perimeter.

3.06 RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends, use

premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.07 STAIR COVERINGS

A. Install stringers configured tightly to stair profile.

B. Adhere over entire surface. Fit accurately and securely.

3.08 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's instructions.

3.09 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09680

CARPET

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet, direct-glued, in Lecture Halls under Alternate #3.

B. Floor prep for carpet application.

C. Accessories.

1.02 REFERENCE STANDARDS

A. ASTM D 2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials; 2006.

B. ASTM E 648 - Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2008b.

C. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2008.

D. CRI (CIS) - Carpet Installation Standard; Carpet and Rug Institute; 2009.

E. CRI (GLA) - Green Label Testing Program - Approved Adhesive Products; Carpet and Rug Institute; Current Edition.

F. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2006.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate seaming plan, method of joining seams, direction of carpet pile and pattern, location of edge moldings and edge bindings, and location of solid surfacing sills.

C. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

D. Samples: Submit two samples 24” square in size illustrating color and pattern for each carpet specified.

E. Submit two 12” long samples of edge strip for each color specified.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet with minimum three years experience.

C. Warranty: Lifetime static, limited lifetime stain removal and wear.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

B. Maintain minimum 70 degrees F (21 degrees C) ambient temperature 24 hours prior to, during and 24 hours after installation.

C. Ventilate installation area during installation and for 72 hours after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Carpet:
   1. Bolyu Contract, 800-451-1250, 201 Princeton Blvd. PO Box 1110, Adairsville, Georgia 30103.
   2. Substitutions: Not permitted.

2.02 CARPET

A. Carpet Type:
   1. Product: Sashay, tip-sheared textured loop Zeftron nylon
   2. Colors: as scheduled
   3. Fire Characteristics: Class 1, smoke density <450, passes “pill test”.
   4. Durability: Class III, extra heavy traffic.
   5. Recycled Content: Minimum 25%. Recyclable.
   6. CRI Green Label Certified.

2.03 ACCESSORIES

A. Sub-Floor Filler: Type recommended by carpet manufacturer.

B. Moldings and Edge Strips: Color-coordinated rubber, colors to be selected by Architect from full range. Provide transition strips at all carpet edges to meet concrete.

C. Adhesives - General: Compatible with materials being adhered; maximum VOC content of 50 g/L; CRI Green Label certified; in lieu of labeled product, independent test report showing compliance is acceptable.

D. Seam Adhesive: Recommended by manufacturer.

E. Contact Adhesive: Compatible with carpet material; releasable type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet.

B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesives to sub floor surfaces.

C. Verify that concrete sub-floor surfaces are dry enough and ready for adhesive installation by testing for moisture emission rate and alkalinity in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by carpet manufacturer and adhesive materials manufacturer.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

C. Clean substrate.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install carpet in accordance with manufacturer's instructions and CRI Carpet Installation Standard.

C. Verify carpet match before cutting to ensure minimal variation between dye lots.

D. Lay out carpet and locate seams in accordance with shop drawings:
   1. Locate seams in area of least traffic, out of areas of pivoting traffic, and parallel to main traffic.
   2. Do not locate seams perpendicular through door openings.
   3. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
   4. Locate change of color or pattern between rooms under door centerline.
   5. Provide monolithic color, pattern, and texture match within any one area.

E. Install carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance.

3.04 DIRECT-GLUED CARPET

A. Double cut carpet seams, with accurate pattern match. Make cuts straight, true, and unfrayed. Apply seam adhesive to cut edges of woven carpet immediately.

B. Apply contact adhesive to floor uniformly at rate recommended by manufacturer. After sufficient open time, press carpet into adhesive.

C. Apply seam adhesive to the base of the edge glued down. Lay adjoining piece with seam straight, not overlapped or peaked, and free of gaps.

D. Roll with appropriate roller for complete contact of adhesive to carpet backing.

E. Trim carpet neatly at walls and around interruptions.

F. Complete installation of edge strips, concealing exposed edges. Bind cut edges where not concealed by edge strips.

3.05 CLEANING

A. Remove excess adhesive from floor and wall surfaces without damage.

B. Clean and vacuum carpet surfaces.

3.06 SCHEDULE

A. Room 271 – CPT-1, Bolyu Sashay/Grandstand SAS54

B. Room 273 – CPT-3, Bolyu Sashay/Fashionista SAS72

C. Room 275 – CPT-1, Bolyu Sashay/Grandstand SAS54

D. Room 277 – CPT-2, Bolyu Sashay/Swagger SAS34

END OF SECTION

SECTION 09690

Access Flooring

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Access flooring panels and understructure

B. Accessories required for a complete installation.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Shop Drawings: Include complete layout of access flooring system based of field verified dimensions.

   a. Details and sections with descriptive notes indicating materials, finishes, fasteners, typical and special edge conditions, accessories and understructure.

   b. Detail Cut Sheets for each type of product indicated, including accessories, to show the information necessary to make a full evaluation of the entire flooring system.

   c. For installed products indicated to comply with seismic design loads, include calculated structural analysis data signed by the qualified engineer responsible for their preparation.

2. Samples for Initial Selection: For each type of flooring material indicated and exposed finish indicated, submit samples in the form of manufacturers color charts consisting of actual units or sections of units showing full range of colors, textures and patterns

B Product Certificates: For each type of access flooring system indicated, to certify that the flooring system meets the requirements of these written specifications and signed by a qualified employee of the manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, or performed by access flooring manufacturer and witnessed by a qualified testing agency, for each type of flooring material and exposed finish.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who is approved by the access flooring manufacturer for installations of the type of access flooring indicated for this project.

B. Source Limitations: Obtain access flooring system through one source from a single manufacturer.

C. Regulatory Requirements: Fabricate and install access flooring system to comply with NFPA 75 requirements for raised flooring.

D. Provide floor panels that are clearly marked with manufacturer's name and panel type.

1.04 FIELD CONDITIONS

A. Environmental Limitations: Do not install access flooring until installation area is enclosed and has an ambient temperature of between 50 degrees Fahrenheit and 85 degrees Fahrenheit (100 C to 290 C) and a relative humidity of not less than 20 percent and not more than 80 percent.

B. Prior to installation, all floor panels shall be stored for at least 24 hours in a dry enclosed area at no less than 400 F and no more than 950 F (40 C to 350 C).

1.05 COORDINATION

A. Coordinate locations of mechanical and electrical work in under-floor cavity to prevent interferences with access flooring pedestals

B. Pre-mark pedestal locations on a grid of 10' x 10' on sub-floor so that mechanical and electrical work can take place without interfering with pedestals.

C. Do not proceed with installation of access flooring until after substantial completion of other performable construction within affected spaces.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Access Flooring:
   1. ASM Modular Systems, Inc., 843-534-1110, 9500 Industrial Center Drive, Ladson , SC 29456.
   2. Substitutions: See Section 01600 - Product Requirements.

2.02 CARPET

A. Carpet Type:
   1. Product: FS100 cementitious–filled, formed-steel access floor panels
   2. Supports: Corner Lock System, corner-bolted understructure
   3. Panel Size: 24" x 24"

2.03 ACCESSORIES

A. Closures : Where under floor cavity is not enclosed by abutting walls or other construction, provide manufacturer's standard metal closure plates with manufacturer's standard finish.

B. Steps: Provide steps of size and arrangement indicated with floor covering to match access flooring. Apply non-slip aluminum nosing to treads, unless otherwise indicated.

C. Panel Lifting Device: Manufacture's standard portable lifting device of type and number required for lifting panels.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet.

B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesives to sub floor surfaces.

C. Verify that concrete sub-floor surfaces are dry enough and ready for adhesive installation by testing for moisture emission rate and alkalinity in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by carpet manufacturer and adhesive materials manufacturer.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Examine sub-floor for any problems that would prevent a satisfactory installation of access floor, such as moisture an unevenness of top surface. Do not proceed with installation until sub-floor is clean, dry and level as completed by other trades.

B. Verify field dimensions to contract drawings for size of area of installation, height and level of recessed slabs, door openings, ledges, etc.

C. Floor Sealers: Verify that any concrete sealer that has been used is compatible with pedestal adhesive.

D. Access To Installation Area: General Contractor shall provide clear access to installation area throughout entire duration of installation of access floor that is free of construction debris and other trades.

E. Storage Of Materials: Area to receive and store access floor materials shall be enclosed and dry. Storage area shall be maintained at a temperature of not less than 400 F and not more than 950 F (40 C to 350 C), with a relative humidity level between 20% min. to 80% max.

F. Area Of Installation: Shall be maintained throughout entire duration of installation of access floor at a temperature of 500 F min. to 850 F max. (100 C to 290 C) and at 20% min. to 80 % max. relative humidity.

3.03 INSTALLATION - GENERAL

A. Install access floor system and accessories under supervision of the access flooring manufactures authorized representative to ensure rigid, firm installation that complies with performance requirements and is free of vibration, rocking, rattles and squeaks.

B. Layout floor panel installation to keep the number of cut panels at the floor perimeter to a minimum.

C. Set pedestal in adhesive as recommended by the access flooring manufacturer to provide full bearing of the pedestal base on the sub floor.

1. Pedestal locations shall be established from approved shop drawings to allow mechanical and electrical work to be installed without interfering with pedestal installation.

2. Pedestals shall be attached to sub-floor using manufacturer's approved method.

D. Secure grid member to pedestal heads in accordance with access floor manufacturer's instructions.

E. Install floor panels securely in place and properly seated with panel edges flush. Do not force panels into place.

F. Scribe panels at perimeter to provide a close fit with adjoining construction with no voids greater than 1/18" (3 mm) where panels abut vertical surfaces.

G. Install accessories according Manufacturer's instructions.

H. Clean up dust, dirt and construction debris caused by floor installation, and vacuum the sub-floor area, as installation of floor panel proceeds. Extend cleaning under installed panels as far as possible.

I. Level installed access floor to within 0.10" (2.5 mm) over the entire access flooring area and within 0.060" (1.5 mm) of true level in any 10 ft. (3 M) distance.

3.05 CLEANING

A. During installation, all traffic on access floor shall be directed by access floor installer.

1. No traffic, other than access floor installer, shall be allowed on the floor area for 24 hours after installation to allow the pedestal adhesive to set.

2. No access floor panels shall be removed by other trades for 72 hours after installation.

B. After completing installation, vacuum clean access flooring.

C. Replace any flooring panels that are stained, scratched, or otherwise damaged or that do not comply with specified requirements.

D. General contractor and/or owner shall provide and maintain suitable protection to prevent damage to completed access floor throughout entire duration of installation.

END OF SECTION

SECTION 09850

ACOUSTICAL PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabric-covered fiberglass core panels and mounting accessories.

B. Wood veneer faced panels and mounting accessories.

C. See drawings for extent of each type of panel in base bid and alternates.

1.02 RELATED REQUIREMENTS

A. Section 05500 - Metal Fabrications for custom trim pieces

B. Section 06100 – Rough Carpentry for blocking.

1.03 REFERENCE STANDARDS

A. ASTM C 423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2009a.

B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010.

C. ASTM E 795 - Standard Practices for Mounting Test Specimens During Sound Absorption Tests; 2005.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed data sheets for products specified.

C. Shop Drawings: Fabrication and installation details, panel layout, and fabric orientation.

D. Verification Samples: Fabricated samples of each type of panel specified; 12 x 12 in, showing construction, edge details, and fabric covering.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company with not less than 5 years of experience in manufacturing acoustical products similar to those specified.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect acoustical panels from moisture during shipment, storage, and handling. Deliver in factory-wrapped bundles; do not open bundles until panels are needed for installation.

B. Store panels flat, in dry, well-ventilated space; do not stand panels on end.

C. Protect panel edges from damage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustical Panels:
   1. Armstrong World Industries, Inc; Product- Soundsoak: www.armstrong.com.
   2. Armstrong World Industries, Inc; Product- Woodworks Custom Veneer Walls: www.armstrong.com.
   3. Armstrong World Industries, Inc; Product- Ekos Wall Systems: www.armstrong.com.

B. Substitutions: See Section 01600 - Product Requirements.

C. Provide all acoustical panels by one manufacturer.

2.02 ACOUSTICAL WALL PANELS

A. Panels: Prefinished, factory assembled.
   1. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E 84.

B. Fiberglass Core Panels:
   1. Density: 7-10 lb/cu ft.
   2. Noise Reduction Coefficient (NRC): 0.80-0.90 when tested in accordance with ASTM C 423 for Type A mounting, per ASTM E 795.
   3. Panel Width: As detailed.
   4. Panel Height: As detailed.
   5. Panel Thickness: As required to meet required acoustical performance.
   6. Edges: Perimeter edges reinforced by an aluminum frame or a galvanized steel frame.
   7. Mounting: Back mounting.
   8. Fire Rating: Class A for assembly use.

C. Fabric Covering: Seamless fabric facing material, for stretched covering of core material.
   1. Fabric: Manufacturer's standard.
   2. Color: As scheduled.

D. Wood Veneer:
   1. Species: White maple, clear finish.
   2. Perforation: as Scheduled
   3. Grain: as scheduled.

2.03 FABRICATION

A. General: Fabricate panels to sizes and configurations indicated, with fabric facing installed without sagging, wrinkles, blisters, or visible seams.

B. Tolerances: Fabricate to finished tolerance of plus or minus 1/16 in for thickness, overall length and width, and squareness from corner to corner.

2.04 ACCESSORIES

A. Spline-Mounting Accessories: Manufacturer's standard concealed connecting splines of extruded aluminum designed for screw attachment to walls, with coordinating moldings and trim for interior and exterior corners and miscellaneous conditions.
   1. Color of Exposed Trim: mill anodized.

B. Back-Mounting Accessories: Manufacturer's standard accessories for concealed support, designed to allow panel removal:

C. Trim Moldings: Custom aluminum trim moldings as detailed; finish mill anodized.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of acoustical panels. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install acoustical panels in locations indicated, following installation recommendations of panel manufacturer. Align panels accurately, with edges plumb and top edges level. Scribe to fit

accurately at adjoining work and penetrations.

B. Follow details for mounting methods and additional trims.

C. Install panels to construction tolerances of plus or minus 1/16 in for the following:
   1. Plumb and level.
   2. Flatness.

3.03 CLEANING

A. Clean fabric facing upon completion of installation from dust and other foreign materials, following manufacturer's instructions.

B. Remove surplus materials, trimmed portions of panels, and debris resulting from installation.

3.04 PROTECTION

A. Provide protection of installed acoustical panels until completion of the work.

B. Replace panels that cannot be cleaned and repaired to satisfaction of the Architect.

3.05 SCHEDULE

A. Provide panels with fabrics corresponding to the following selections where coded on the drawings:

1. AWP-1: Soundsoak SSFR701 Wheat FRWE (Rooms 271 and 275)

2. AWP-2: Soundsoak SSFR701 Leaf FRLE (Room 277)

3. AWP-3: Soundsoak SSFR701 Bone FRBO (Room 273)

4. AWP-4: Woodworks Custom Veneer Walls, maple unperforated. Vertical grain.

5. AWP-5: Woodworks Custom Veneer Walls, maple perforated. Rd 6006, hole size: 6mm, 6% open. Vertical grain.

6. AWP-6: Woodworks Custom Veneer Walls, maple unperforated. Horizontal grain.

7. AWP-7: Woodworks Custom Veneer Walls, maple unperforated. Mounted with Z clips 1-1/4” from wall to face of panel. Horizontal grain.

8. AWP-8: Woodworks Ekos Wall Systems – Ekos Maple (MP), unperforated. Horizontal grain. Mounted per detail 9/A3.1A.

9. AWP-9: Woodworks Ekos Wall Systems - Ekos Maple (MP), unperforated. Horizontal grain. Mounted per detail 10/A3.1A.

END OF SECTION

SECTION 09900

PAINTS AND COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints, stains, varnishes, and other coatings.

C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Exposed surfaces of steel lintels and ledge angles.
   3. Mechanical and Electrical:
      a. In finished areas, paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
      b. In finished areas, paint shop-primed items.

D. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne, and lead items.
   6. Floors, unless specifically so indicated.
   7. Ceramic and other tiles.
   8. Glass.
   9. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 05500 - Metal Fabrications: Shop-primed items.

B. Section 05510 - Metal Stairs: Shop-primed items.

1.03 DEFINITIONS

A. Conform to ASTM D 16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D 16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2008.

1.05 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on all finishing products, including VOC content.

C. Samples: Submit two painted samples, illustrating selected colors and textures for each color and system selected with specified coats cascaded. Submit on tempered hardboard, 12x12 inch in size.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. Provide all paint and coating products from the same manufacturer to the greatest extent possible. Color names used are from Benjamin Moore.

C. Paints:
1. ICI Paints: www.icipaintsinna.com.
2. Benjamin Moore & Co: www.benjaminmoore.com.
3. PPG Architectural Finishes, Inc: www.ppgaf.com.
4. Pratt & Lambert Paints: www.prattandlambert.com.

D. Substitutions: See Section 01600 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
3. Supply each coating material in quantity required to complete entire project's work from a single production run.
4. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Volatile Organic Compound (VOC) Content:
1. Provide coatings that comply with the most stringent requirements specified in the

following:
a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

D. Colors: As scheduled.
1. See interior elevations for coding.
2. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.

2.03 PAINT SYSTEMS - EXTERIOR

A. Galvanized Metals, Alkyd, 3 Coat:
1. One coat galvanize primer.
2. Semi-gloss: Two coats of alkyd enamel.

2.04 PAINT SYSTEMS - INTERIOR

A. Concrete/Masonry, Opaque, Latex, 2-3 Coat:
1. One coat of block filler on new CMU. Prep existing painted floors as recommended by paint manufacturer.
2. Pearl: Two coats of epoxy-reinforced latex floor and patio enamel equal to Benjamin Moore's 122.

B. Ferrous Metals, Unprimed, Latex, 3 Coat:
1. One coat of zinc-rich primer.
2. Semi-gloss: Two coats of latex enamel.

C. Ferrous Metals, Primed, Latex, 2 Coat:
1. Touch-up with zinc-rich primer.
2. Semi-gloss: Two coats of latex enamel.

D. Galvanized Metals, Latex, 3 Coat:
1. One coat galvanize primer.
2. Semi-gloss: Two coats of latex enamel.

E. Gypsum Board/Plaster, Latex, 3 Coat:
1. One coat of latex primer sealer.
2. Sheen as scheduled: Two coats of latex finish paint.

F. Solid Wood Trim, Polyurethane, 4 Coat:
1. One coat of low-VOC clear sealer.
2. Satin: Three coats of low-VOC water-based polyurethane, sanding between 2nd and 3rd coats.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

G. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

H. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

I. Corroded Steel and Iron Surfaces to be Painted: Prepare using at least SSPC-PC 2 (hand tool cleaning) or SSPC-SP 3 (power tool cleaning) followed by SSPC-SP 1 (solvent cleaning).

J. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

K. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's instructions.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Sand wood and metal surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 SCHEDULE

A. Colors and sheen codes as used on the drawings are:

1. P-1: 306 “Lion Heart”, eggshell
2. P-2: HC-81 “Manchester Tan”, semigloss
3. P-3: 383 “Meadow View”, eggshell
4. P-4: 177 “Mushroom Cap”, semigloss
5. P-5: 312 “Crowne Hill Yellow”, eggshell
6. P-6: HC-80 “Bleeker Beige”, semigloss
7. P-7: 307 “Corn Husk”, eggshell
8. P-8: HC-25 “Quincy Tan”, semigloss
9. P-9: 980 “Woodcliff Lake”, eggshell
10. P-10: HC-82 “Bennington Gray”, pearl
11. P-11: HC-97 “Hancock Grey”, pearl
12. P-12: HC-25 “Quincy Tan”, pearl
13. P-13: not used
14. P-14: “Briarwood” , pearl
15. P-15: OC-63 “winter snow”, flat (all ceiling GWB)

B. Paint fire extinguisher cabinets to match trim color in each lecture hall, semi-gloss.

END OF SECTION

SECTION 10270

Access Flooring

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Access flooring panels and understructure

B. Accessories required for a complete installation.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Shop Drawings: Include complete layout of access flooring system based of field verified dimensions.

   a. Details and sections with descriptive notes indicating materials, finishes, fasteners, typical and special edge conditions, accessories and understructure.

   b. Detail Cut Sheets for each type of product indicated, including accessories, to show the information necessary to make a full evaluation of the entire flooring system.

   c. For installed products indicated to comply with seismic design loads, include calculated structural analysis data signed by the qualified engineer responsible for their preparation.

2. Samples for Initial Selection: For each type of flooring material indicated and exposed finish indicated, submit samples in the form of manufacturers color charts consisting of actual units or sections of units showing full range of colors, textures and patterns

B Product Certificates: For each type of access flooring system indicated, to certify that the flooring system meets the requirements of these written specifications and signed by a qualified employee of the manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, or performed by access flooring manufacturer and witnessed by a qualified testing agency, for each type of flooring material and exposed finish.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who is approved by the access flooring manufacturer for installations of the type of access flooring indicated for this project.

B. Source Limitations: Obtain access flooring system through one source from a single manufacturer.

C. Regulatory Requirements: Fabricate and install access flooring system to comply with NFPA 75 requirements for raised flooring.

D. Provide floor panels that are clearly marked with manufacturer's name and panel type.

1.04 FIELD CONDITIONS

A. Environmental Limitations: Do not install access flooring until installation area is enclosed and has an ambient temperature of between 50 degrees Fahrenheit and 85 degrees Fahrenheit (100 C to 290 C) and a relative humidity of not less than 20 percent and not more than 80 percent.

B. Prior to installation, all floor panels shall be stored for at least 24 hours in a dry enclosed area at no less than 400 F and no more than 950 F (40 C to 350 C).

1.05 COORDINATION

A. Coordinate locations of mechanical and electrical work in under-floor cavity to prevent interferences with access flooring pedestals

B. Pre-mark pedestal locations on a grid of 10' x 10' on sub-floor so that mechanical and electrical work can take place without interfering with pedestals.

C. Do not proceed with installation of access flooring until after substantial completion of other performable construction within affected spaces.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Access Flooring:
   1. ASM Modular Systems, Inc., 843-534-1110, 9500 Industrial Center Drive, Ladson , SC 29456.
   2. Substitutions: See Section 01600 - Product Requirements.

2.02 CARPET

A. Carpet Type:
   1. Product: FS100 cementitious–filled, formed-steel access floor panels
   2. Supports: Corner Lock System, corner-bolted understructure
   3. Panel Size: 24" x 24"

2.03 ACCESSORIES

A. Closures : Where under floor cavity is not enclosed by abutting walls or other construction, provide manufacturer's standard metal closure plates with manufacturer's standard finish.

B. Steps: Provide steps of size and arrangement indicated with floor covering to match access flooring. Apply non-slip aluminum nosing to treads, unless otherwise indicated.

C. Panel Lifting Device: Manufacture's standard portable lifting device of type and number required for lifting panels.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet.

B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesives to sub floor surfaces.

C. Verify that concrete sub-floor surfaces are dry enough and ready for adhesive installation by testing for moisture emission rate and alkalinity in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by carpet manufacturer and adhesive materials manufacturer.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Examine sub-floor for any problems that would prevent a satisfactory installation of access floor, such as moisture an unevenness of top surface. Do not proceed with installation until sub-floor is clean, dry and level as completed by other trades.

B. Verify field dimensions to contract drawings for size of area of installation, height and level of recessed slabs, door openings, ledges, etc.

C. Floor Sealers: Verify that any concrete sealer that has been used is compatible with pedestal adhesive.

D. Access To Installation Area: General Contractor shall provide clear access to installation area throughout entire duration of installation of access floor that is free of construction debris and other trades.

E. Storage Of Materials: Area to receive and store access floor materials shall be enclosed and dry. Storage area shall be maintained at a temperature of not less than 400 F and not more than 950 F (40 C to 350 C), with a relative humidity level between 20% min. to 80% max.

F. Area Of Installation: Shall be maintained throughout entire duration of installation of access floor at a temperature of 500 F min. to 850 F max. (100 C to 290 C) and at 20% min. to 80 % max. relative humidity.

3.03 INSTALLATION - GENERAL

A. Install access floor system and accessories under supervision of the access flooring manufactures authorized representative to ensure rigid, firm installation that complies with performance requirements and is free of vibration, rocking, rattles and squeaks.

B. Layout floor panel installation to keep the number of cut panels at the floor perimeter to a minimum.

C. Set pedestal in adhesive as recommended by the access flooring manufacturer to provide full bearing of the pedestal base on the sub floor.

1. Pedestal locations shall be established from approved shop drawings to allow mechanical and electrical work to be installed without interfering with pedestal installation.

2. Pedestals shall be attached to sub-floor using manufacturer's approved method.

D. Secure grid member to pedestal heads in accordance with access floor manufacturer's instructions.

E. Install floor panels securely in place and properly seated with panel edges flush. Do not force panels into place.

F. Scribe panels at perimeter to provide a close fit with adjoining construction with no voids greater than 1/18" (3 mm) where panels abut vertical surfaces.

G. Install accessories according Manufacturer's instructions.

H. Clean up dust, dirt and construction debris caused by floor installation, and vacuum the sub-floor area, as installation of floor panel proceeds. Extend cleaning under installed panels as far as possible.

I. Level installed access floor to within 0.10" (2.5 mm) over the entire access flooring area and within 0.060" (1.5 mm) of true level in any 10 ft. (3 M) distance.

3.05 CLEANING

A. During installation, all traffic on access floor shall be directed by access floor installer.

1. No traffic, other than access floor installer, shall be allowed on the floor area for 24 hours after installation to allow the pedestal adhesive to set.

2. No access floor panels shall be removed by other trades for 72 hours after installation.

B. After completing installation, vacuum clean access flooring.

C. Replace any flooring panels that are stained, scratched, or otherwise damaged or that do not comply with specified requirements.

D. General contractor and/or owner shall provide and maintain suitable protection to prevent damage to completed access floor throughout entire duration of installation.

END OF SECTION

SECTION 10400

SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cash allowance for signs.

B. Room and door signs for new spaces/doors.

C. Emergency evacuation maps.

1.02 PRICE AND PAYMENT PROCEDURES

1.03 REFERENCE STANDARDS

A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2003.

B. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines; 2002.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
   1. Submit for approval by Owner through Architect prior to fabrication.

D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

F. Verification Samples: Submit samples showing colors specified.

G. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Package room and door signs in sequential order of installation, labeled by floor or building.

C. Store tape adhesive at normal room temperature.

1.06 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Flat Signs:
   1. Custom system designed by Raymond Texeira Design Associates.

B. Emergency Evacuation map to be in same system with text provided by Owner.

2.02 SIGNAGE APPLICATIONS

A. Accessibility Compliance: All signs are required to comply with ADAAG and ANSI/ICC A 117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Room and Door Signs: Provide a sign for new work in areas directed by the Owner.
   1. Sign Type: Flat signs with custom panel media.
   2. Owner to purchase or specifications to be provided for manufacture at a later date.
   3. Office Doors: Identify with room numbers to be determined later, not the numbers shown on the drawings; in addition, provide "window" section for replaceable occupant name.

C. Emergency Evacuation Maps:
   1. Allow for locations as selected by the Owner.
   2. Map content to be provided by Owner.

2.03 SIGN TYPES

A. Flat Signs: Signage media without frame.
   1. Edges: Square.
   2. Corners: Square.
   3. Wall Mounting of One-Sided Signs: custom backer plate system.

B. Color and Font: To be provided.

2.06 ACCESSORIES

A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.

B. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Protect from damage until Substantial Completion; repair or replace damage items.

END OF SECTION

SECTION 10523

FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

C. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 06100 - Rough Carpentry: Wood blocking product and execution requirements.

B. Section 09900 - Paints and Coatings: Field paint finish.

1.03 REFERENCE STANDARDS

A. NFPA 10 - Standard for Portable Fire Extinguishers; 2010.

B. UL (FPED) - Fire Protection Equipment Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate cabinet physical dimensions and rough-in measurements for recessed cabinets.

C. Product Data: Provide extinguisher operational features, color and finish, and anchorage details.

D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Ansul, Inc; www.ansul.com.
   2. Pyro-Chem; www.pyrochem.com.
   3. Larsen; www.larsensmfg.com.
   4. Substitutions: See Section 01600 - Product Requirements.

B. Fire Extinguisher Cabinets and Accessories:
   1. JL Industries, Inc; www.jlindustries.com.
   2. Larsen's Manufacturing Co; www.larsensmfg.com.
   3. Potter-Roemer; www.potterroemer.com.
   4. Substitutions: Not permitted.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL for the purpose specified and indicated.

B. Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gage.
   1. Class: A:B:C.

2. Size: 10 pound.

2.03 FIRE EXTINGUISHER CABINETS

A. Metal: Formed primed steel sheet; 0.036 inch thick base metal.

B. Cabinet Configuration: Semi-recessed type.
1. Sized to accommodate extinguisher.
2. Trim: Returned to wall surface, with 3-1/2 inch projection.
3. Style: Larsen's Architectural Series, Vertical Duo, rolled edge.
4. Model: Larsen's 2409-R4.

C. Door: 0.036 inch thick, reinforced for flatness and rigidity; latch. Hinge doors for 180 degree opening with two butt hinge. Provide nylon catch.

D. Door Glazing: Plastic, clear, 1/8 inch thick acrylic. Set in resilient channel gasket glazing.

E. Cabinet Mounting Hardware: Appropriate to cabinet. Pre-drill for anchors.

F. Weld, fill, and grind components smooth.

G. Finish of Cabinet Exterior Trim and Door: Primed for field paint finish to match trim in each room.

H. Finish of Cabinet Interior: Prime painted for field finish.

2.04 ACCESSORIES

A. Graphic Identification: vertical red letters on cabinet.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Secure rigidly in place.

C. Place extinguishers in cabinets.

3.03 SCHEDULES

A. See interior lecture hall elevations for locations of cabinets.

B. Place an extinguisher inside every cabinet.

END OF SECTION

SECTION 11131

PROJECTION SCREENS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Front projection screen assemblies in Alternate #2.

1.02 RELATED REQUIREMENTS

A. Section 06100 - Rough Carpentry: Wood blocking in walls and ceilings.

B. Section 09260 - Gypsum Board Assemblies. New walls for application of screens.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's catalog cuts and descriptive information on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Shop Drawings: For custom installations, indicate dimensions, verified field measurements, mounting details, and interface with adjacent construction.

D. Samples: For screen fabrics, submit two 4 by in size.

E. Operation and Maintenance Data: Provide manufacturer's operation and maintenance instructions.

F. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Experienced in manufacturing products specified in this section.

B. Installer Qualifications: Experienced in installation of the work of this section.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver projection screens to project site in manufacturer's original unopened packaging. Inspect for damage and size before accepting delivery.

B. Store in a protected, clean, dry area with temperature maintained above 50 degrees F. Stack according to manufacturer's recommendations.

C. Acclimate screens to building temperatures for 24 hours prior to installation, or in accordance with manufacturer's recommendations.

1.06 FIELD CONDITIONS

A. Maintain interior of building between 60 degrees F and 75 degrees F during and after installation of projection screens.

1.07 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.

B. Provide standard manufacturer warranty for projection screen assembly.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Da-Lite Screen Company: www.da-lite.com.

B. Substitutions: See Section 01600 - Product Requirements.

2.02 FRONT PROJECTION SCREENS

A. Front Projection Screens: Da-Snap, HDTV format, size as scheduled.

B. Screen Fabric: Light diffusing screen fabric; washable, flame retardant and mildew resistant, Da-Mat material.

C. Fixed Screen Frame: Aluminum frame, reinforced with truss.
   1. Overall Dimensions: see schedule.
   2. Finish: Black powder coat; self-trimming.
   3. Screen Tensioning: Velcro tabs.
   4. Webbing: Wrap around fabric.
   5. Corners: Welded.
   6. Mounting: On wall.

D. Provide mounting hardware, brackets, supports, fasteners, and other mounting accessories required for a complete installation, in accordance with manufacturer's recommendations for specified substrates and mountings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate is finished and ready to accept screen installation.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Do not install projection screens until climate control systems are in place and interior painting and other finishes are completed.

3.02 PREPARATION

A. Coordinate screen installation with installation of projection systems.

B. Coordinate installation with adjacent construction and fixtures, including ceilings, walls, lighting, fire suppression, and registers and grilles.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, using manufacturer's recommended hardware for relevant substrates.

B. Do not field cut screens.

C. Install screens in mountings as specified and as indicated on drawings.

D. Install plumb and level. See interior elevations for locations.

E. Adjust projection screens and related hardware in accordance with manufacturer's instructions for proper placement and operation.

3.04 SCHEDULE

A. Room 271: (2) screens, each 19’-2 3/8” wide by 12’-0” high.

B. Rooms 273, 275, and 277: (1) screen in each room, each 16’-0” wide by 9’-0” high.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch up, repair, or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 11150

CLOCKS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall-mounted electric clocks.

1.02 RELATED REQUIREMENTS

A. Section 16000 – electrical power for clocks.

B. Section 06200 – blocking in walls for clocks.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's catalog cuts and descriptive information

C. Operation and Maintenance Data: Provide manufacturer's operation and maintenance instructions.

D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Experienced in manufacturing products specified in this section.

B. Installer Qualifications: Experienced in installation of the work of this section.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver to project site in manufacturer's original unopened packaging. Inspect for damage and size before accepting delivery.

B. Store in a protected, clean, dry area with temperature maintained above 50 degrees F. Stack according to manufacturer's recommendations.

1.07 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.

B. Provide standard manufacturer warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. electric time company, inc.: www.electrictime.com.

B. Substitutions: See Section 01600 - Product Requirements.

2.02 MODEL

A. Model 50924 Surface Wall Clock.

B. Size: 24” diameter.

C. Surface mounted.

D. Provide (4) clocks – one in each lecture hall.

D. Provide mounting hardware, brackets, supports, fasteners, and other mounting accessories

required for a complete installation, in accordance with manufacturer's recommendations for specified substrates and mountings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate is finished and ready to accept screen installation.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Coordinate installation with adjacent construction and fixtures, including ceilings, walls, lighting, fire suppression, and registers and grilles.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, using manufacturer's recommended hardware for relevant substrates.

B. Install plumb and level. See interior elevations for locations.

C. Adjust and set in accordance with manufacturer's instructions for proper placement and operation.

3.04 PROTECTION

A. Protect installed products until completion of project.

B. Touch up, repair, or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 12615

FIXED THEATER SEATING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinstall existing salvaged chairs in Lecture Hall 271.

B. Provide new fixed, upholstered theater chairs in other lecture halls.

C. Support standards.

D. Chair accessories.

1.02 REFERENCE STANDARDS

A. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2008.

B. ASTM A 48/A 48M - Standard Specification for Gray Iron Castings; 2003 (Reapproved 2008).

C. ASTM A 879/A 879M - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface; 2006.

D. ASTM D 3597 - Standard Specification for Woven Upholstery Fabrics--Plain, Tufted, or Flocked; 2002 (Reapproved 2009).

E. ASTM E 1352 - Standard Test Methods for Cigarette Ignition Resistance of Mock-Up Upholstered Furniture Assemblies; 2008a.

F. ASTM E 1537 - Standard Test Method for Fire Testing of Upholstered Furniture; 2007.

G. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; Hardwood Plywood & Veneer Association; 2004.

H. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.

I. NFPA 261 - Standard Method of Test for Determining Resistance of Mock-Up Upholstered Furniture Material Assemblies to Ignition by Smoldering Cigarettes; National Fire Protection Association; 2003.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination with Electrical Work: Coordinate installation of wiring to ensure that floor-mounted junction boxes are completely beneath seats and free of aisle spaces.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed data sheets for products specified.

C. Shop Drawings: Fabrication and installation details, chair layouts and dimensions and seat numbering scheme.
   1. Field Measurements: Verify seating layout by field measurements and record field dimensions on shop drawings.

D. Selection Samples: Manufacturer's color charts and swatches for fabric upholstery, indicating full range of materials, colors, and patterns available.

E. Verification Samples: Full-size two-seat fabricated sample of each type of chair specified, including all accessories and one end panel, illustrating all finishes and workmanship to be expected in the finished Work; approved sample may be incorporated into the Work.

F. Maintenance Materials:
   1. See Section 01600 - Product Requirements, for additional provisions.
   2. Extra Seats: Quantity equal to 5 percent of total installed, but not less than one of each type and width of seat, furnished from same production run as that installed.
   3. Extra Fabric: Quantity sufficient for reupholstering 5 percent of installed seating.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer certified in writing by the seating manufacturer to be qualified for installation of specified seating.

B. Fire Retardance of Upholstered Seating: Self-extinguishing when mock-up is exposed to smoldering cigarettes in accordance with ASTM E 1352 or NFPA 261.

C. Fire Retardance of Fixed Theater Seating: Maximum instantaneous net peak rate of heat release of 250 kW or less, and total energy released during first 5 minutes of 40 mJ or less, when tested in accordance with ASTM E 1537.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Retrieve stored salvaged chairs for reinstallation.

B. Deliver new seats to project site in unopened containers clearly labeled with manufacturer's name and identification of contents.

C. Store seating units in dry and clean location until needed for installation. During installation, handle in a manner that will prevent marring and soiling of finished surfaces.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fixed Theater Seating:
   1. American Seating Inc.; Product Stellar 224: www.americanseating.com.

B. Substitutions: See Section 01600 - Product Requirements.

C. Provide all theater seating by one manufacturer.

2.02 MATERIALS

A. Cast Iron: ASTM A 48/A 48M, Class 25A minimum, free of air holes and casting imperfections, all edges ground smooth.

B. Sheet Steel: ASTM A 879/A 879M, Commercial Steel (CS) or Drawing Steel (DS) electrogalvanized sheet, 04Z (12G) coating class on both surfaces; chemically treated for baked enamel finish.

C. Steel plates, bars, and tubes: ASTM A 36/A 36M.

D. Exposed Hardwood: Solid lumber selected for absence of visible defects; northern hard maple.

E. Hardwood Plywood: HPVA HP-1; face veneers for exposed surfaces Grade A hard maple, with no visible defects; concealed surface veneers of sound grade hardwood.

F. Laminated Plastic: NEMA LD 3, Type 1, Grade GP 50, nominal thickness 0.050 in; colors and patterns as scheduled.

G. Polyurethane Foam: Density not less than 1.8 lb/cu ft, fire retardant, non-hardening and non-oxidizing, with high resistance to alkalis, oils, moisture, and mildew.

H. Upholstery Fabric: ASTM D 3597 heavy-duty plain woven nylon fabric, treated to resist cigarette ignition and staining; color and pattern as scheduled.

2.03 UPHOLSTERED CHAIRS

A. Fixed seating system designed to permit radial installation using common middle support standards in each row and aisle standards aligned as indicated on drawings. Width of seats not less than 22 inches, except exit seat locations may be reduced to 20 inches to complete specific row dimensions.

B. Backs: Fixed type; two-panel construction with fabric covering over padding and protective back panel, with installed height not less than 32 inches above finished floor.
   1. Structural Support: One-piece die-formed steel sheet.
   2. Padding: Polyurethane foam not less than 2 in thick bonded to structural support.
   3. Covering: Fabric bonded to padding and fastened by upholstery technique that facilitates replacement. Type 2 fabric.
   4. Rear Panel: One-piece die-formed steel sheet.

C. Seats: Hinged type, constructed to permit reupholstering without removing seat from chair.
   1. Steel Seat Construction: One-piece sheet steel pan construction, reinforced at stress points and designed to completely enclose hinges and self-rising seat mechanism; supporting not fewer than 16 coil springs or five non-sag serpentine springs. Separate padding from springs with burlap sheeting cemented to polyurethane foam padding formed with minimum thickness of 1-3/4 in. Upholster with fabric sewn into box construction without welts and securely fastened to supporting frame to provide smooth, wrinkle-free surface.
      a. For serpentine spring construction, provide not less than 3 in thick foam padding at front edge of seat.

D. Hinges: Self-lubricating, noiseless steel hinges with brass alloy bearings or nylon bushings, equipped with spring mechanism that causes unoccupied seat to rise automatically to uniform 3/4 fold, with 100 percent fold when additional pressure is applied.

E. Arm Rests: Locate at aisles and between chairs; mount to support standard with concealed fasteners; exposed surfaces of solid hardwood lumber with smoothed edges.on aisles. Provide plastic between seats.

F. End Panels: One piece panels fastened securely to aisle standards with concealed fasteners, configured as follows:
   1. Shape: Rectangular with curved bottom edge, #351.
   2. Finish: Solid hardwood, maple.

2.04 STANDARDS

A. Support Standards: Tubular steel with welded mounting points for backs, seats, and arm rests, and welded floor anchor plates.

2.05 ACCESSORIES

A. Folding Tablet Arms: At standard to right side of each seat, provide manufacturer's standard fold-away tablet arm assembly, with hinge and swivel mechanism securely fastened to underside of writing surface and designed to provide solid support in the open position and semi-automatic return to stowed position beneath right arm rest and parallel to right standard.
   1. Finish: Plastic laminate both sides, with smooth, rounded edges.
   2. Size: Writing surface not less than 100 sq inches.

B. Aisle Lights: Manufacturer's standard UL-approved concealed lamp assemblies, Type E, with louvers to conceal lamp and direct light toward floor, mounted beneath aisle arm rest; wiring route concealed to floor connection.

C. Seat and Aisle Numbers: Manufacturer's standard seat numbers securely fastened to front edge of folding seats and row numbers securely fastened to aisle arm rests; anodized aluminum finish, with letters and numbers countersunk and filled with black paint.

D. Power and Data System: Provide raceways and terminals for power and data connections at each chair in the center section of each lecture hall.

2.06 FINISHES

A. Ferrous Metals: Manufacturer's standard two-coat baked enamel finish, applied over conversion coating appropriate to base metal.
   1. Color and Gloss: As scheduled.

B. Hardwood: Manufacturer's standard clear low-gloss finish.

C. Hardwood Plywood: Manufacturer's standard clear low-gloss finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of fixed theater seating. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Comply with manufacturer's instructions for installation and approved shop drawings.

B. Anchor support standards securely to substrate with at least two anchoring devices recommended by manufacturer.
   1. Place standards in each row laterally so the standards at the aisle will be in alignment. Vary width of seats and backs as required to optimize sightlines, and comply with ADA requirements for row and aisle widths.
   2. In curved rows, install standards to form smooth radius, without breaks or angled chords
   3. Attach components to standards with sufficient flexibility to compensate for convergence of seats toward the center.

3.03 ADJUSTING

A. Adjust seat mechanisms to ensure that seats in each row are aligned when unoccupied.

B. Repair minor abrasions and imperfections in painted finishes with a coating that matches factory-applied finish; replace units that cannot be repaired to unblemished appearance.

C. Replace upholstery fabric damaged or soiled during installation.

D. Clean fabric with appropriate materials recommended by fabric manufacturer of installation dirt and debris.

3.04 SCHEDULE

A. Room 271: All existing fixed seating to be removed during demolition and reinstalled at end of project.

B. New seating in other three rooms as follows-

1. Room 277: Chair fabric to be Guilford 34052 Algiers, color 3785 Seamoss. Plastic Laminate is Wilsonart 4885-38 Green Soapstone.

2. Room 273: Chair fabric to be Guilford 34052 Algiers, color 0985 Ginger. Plastic Laminate is Wilsonart 4851-38 Mission Sand.

3. Room 275: Chair fabric to be Guilford 34052 Algiers, color 2555 Stone. Plastic Laminate is Wilsonart 4853-38 Mission Stone.

END OF SECTION

SECTION 13851 – FIRE ALARM SYSTEMS

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PART 1 GENERAL

1.01 Related Documents

A. Drawings and general provisions of the Contract and Agreement apply to this section.

B. Project Manual

1.02 Summary

A. Drawings supplied with this specification shall be used as a reference for the requirement and location of system components. Work includes visiting the site to observe the existing conditions, and confirmation of the required quantities of devices and specific options for locations of the same.

B. At the time of bid, all exceptions taken to these Specifications, variances from these Specifications and all substitutions of equipment specified shall be listed in writing and forwarded to Hughes Associates, Inc. (Engineer) and the University of Rhode Island (Owner). Any such exceptions, variances, or substitutions, which were not listed at the time of bid shall not be approved or considered.

C. The Work includes all labor, materials, services, software, programming, tools, transportation, and temporary construction necessary to fabricate, install, program and test a fully operational and code compliant UL Listed and FM Approved addressable “high-rise” voice evacuation and communication fire alarm system as defined in the Rhode Island Uniform Fire Code (RIUFC).

D. The Work includes all labor, materials, services, tools, transportation, and temporary construction necessary to remove the existing building fire alarm system equipment in the manner and to the extent indicated herein and on the Drawings upon final acceptance of the new fire alarm system.

E. All existing fire alarm equipment, including, but not limited to, control equipment, initiating devices and notification appliances shall be removed and returned to the owner in good condition.

F. The work includes patching and painting of all holes created by the removal of existing equipment to match the existing wall, ceiling, etc. Cover plates on existing back-boxes are not acceptable.

G. All existing wiring and exposed raceway shall be removed and disposed of off-site.

H. The Work includes all fees and activities required to secure approvals for necessary State and Local permits.

I. The Work includes submitting detailed Shop Drawing Plans, Wiring Diagrams, Calculations and Product Data to the Engineer and URI for review prior to submitting same to local officials (as required) for approval and permit.

J. The Work includes performing field quality control activities.

K. The Work includes documenting and submitting the results of integrity and functional testing.

L. The Work includes performing overall system, three (3) full-day “Pre-Acceptance” test(s) for the Engineer’s approval.

M. The Work includes performing overall system, three (3) full-day “Final Acceptance” test(s) for Authority approval.

N. The Work includes submitting As-built Plans and closeout documentation to the Engineer for review prior to scheduling Owner demonstration training.

O. The Work includes training Owner's personnel on the operation of the system, required maintenance tasks and frequencies, and the locations of all equipment necessary to maintain and operate the fire alarm system.

1.03 Performance Requirements

A. 24 VDC closed-circuit, electrically supervised, addressable, analog, automatic fire alarm and emergency voice communication system. The system shall include, but not be limited to:

1. Fire alarm control unit (FACU), emergency voice evacuation communication equipment, including supervised amplifiers, distributed amplification (where applicable), a digitized voice message and power supplies.

2. Addressable manual fire alarm boxes at all exits and/or constantly attended locations, as shown on the drawings. All manual fire alarm boxes shall include protective covers with local alarms to prevent tampering.

3. Photoelectric, addressable analog automatic smoke detection system (in those environments suitable for proper smoke detector operation), as indicated in this section and where shown on the drawings.

   a. Immediate Vicinity of Fire Alarm Control Equipment: System type, analog, addressable, photoelectric smoke detectors with standard bases located in the immediate vicinity of all fire alarm control equipment.

   b. Common Corridors and Stairwells: System type, analog, addressable, photoelectric smoke detectors with standard base located in common corridors and each stairwell landing in the stair tower.

   c. Smoke detectors shall be provided in elevator machine rooms and elevator landings.

   d. Where an area is environmentally unstable such that a smoke detector could experience high levels of dust or temperature variations above 100° F or below 32° F and the area in question is protected by an automatic sprinkler system, smoke detectors shall be omitted. If an automatic sprinkler does not protect the area, an addressable heat detector shall be installed.

4. Audible and visible notification appliance circuits, zoned as shown on the drawings. The Lobby notification appliances shall be on a separate circuit.

5. Audible and visible notification appliances (speaker / strobe notification appliances) in common (public) spaces and public bathrooms, as shown on the drawings.

6. Addressable monitor modules and addressable control relay modules, as shown on the drawings and described in this specification.

7. Magnetic door hold open devices, as shown on the drawings.

8. Connection to an existing local energy master box, as shown on the drawings and described in this specification.

1.04 Order of Precedence

A. Should conflicts arise out of discrepancies between documents referenced in this specification, the most stringent requirement shall apply; however, should a level of stringency be indeterminable, the discrepancies shall be resolved as follows:

1. State and local codes shall take precedence over this specification.

2. The National Fire Protection Association Standards shall take precedence over this specification.

3. University of Rhode Island Standards shall take precedence over this specification.

4. This specification shall take precedence over the drawings.

1.05 Submittals

A. In the event that any of the following submittal packages is required to be revised and re-submitted due to nonconformance with this specification, illegibility of the submittal, incomplete submittals, noncompliance with the referenced local, state and national Codes, Standards and Regulations or nonconformance with pertinent documentation relative to the project, the Contractor, in advance, shall pay a $1,500.00 fee associated with the additional submittal review. Payment of the fee shall be solely the Contractor's responsibility.

B. Pre-Installation Documentation: Absolutely no work or material fabrication shall be conducted prior to submittal and approval by the Engineer.

1. Product Data: For each product specified in Part 2. Submittal shall indicate listing and approvals, selected options and electrical characteristics.

2. Equipment List: Identify type, quantity, make and model number of each piece of equipment (including spare components) included in submittal. Types and quantities of equipment indicated shall coincide with the types and quantities of equipment used in the battery calculations and those shown on the shop drawings.

3. Shop Drawing Plans: Minimum 1/8"=1'-0" scale floor plans and corresponding riser diagram inclusive of information required by NFPA 72-2002 requirements.

4. Wiring Diagrams: Point-to-point fire alarm control equipment installation diagrams inclusive of information required by NFPA 72-2002 requirements; typical wiring diagrams are not acceptable.

5. Battery Calculations: Prepared in accordance with NFPA 72-2002 requirements and showing total standby power and total alarm power required to meet the specified system requirements. Include a complete list of current requirements during normal, supervisory, trouble, and alarm conditions for each component of the system.

6. Voltage-drop Calculations: Prepared in accordance with NFPA 72-2002 requirements to demonstrate that the system will operate per the prescribed backup time periods and under all voltage conditions per UL and NFPA standards.

7. Sequence of Operation: A sequence of operation that describes how the system responds during an alarm, supervisory and trouble condition. The description shall include fire alarm control unit LEDs, audible and visible indications; initiating devices, notification appliances, and auxiliary functions. The description shall provide sufficient information so that the exact function of each installed device and appliance is known.

8. Statement of Equipment Lifecycle: A written statement, signed by a representative of the equipment manufacturer stating that the equipment to be supplied is not at or near the end of its life cycle and that replacement components for all control equipment shall be available from the manufacturer for a minimum of fifteen (15) years from the date of installation.

C. Pre-Programming Documentation:

1. Device Address List: Indicating proposed label verbiage for each address.

D. Pre-Acceptance Documentation:

1. As-Built Drawings: Showing all field changes from original Shop Drawing Plan submittal. Drawings shall include:

a. The exact locations and installation details of all equipment installed including the FACU, all initiating devices, monitor modules, control modules and fault isolator modules with the address of each addressed device and all notification appliances.

b. The installed wiring and color-coding and wire tag notifications for the exact locations of all installed junction boxes and terminal cabinets.

c. Specific point-to-point interconnections between all equipment and internal wiring of the equipment. Typical point-to-point wiring diagrams are not acceptable.

2. Testing Plan: Include a step-by-step description of all tests and indicate type and location of test apparatus to be employed.

3. Preliminary Record of Completion: Prepared in accordance with NFPA 72-2002 §4.5.2.1(a).

4. Statement of Completion; to indicate that system installation, field quality control and commissioning is complete, a signed written statement, substantially in the form as follows:

> "The undersigned, having been engaged as the Fire Alarm Contractor for the University of Rhode Island Chaffee Hall, confirms that the fire alarm system equipment has been installed in accordance with the system manufacturer's wiring diagrams, installation instructions and technical specifications provided to us by the manufacturer and the University of Rhode Island. Field quality control procedures are complete, system indicators are normal, and the system is suitable for demonstration testing."

E. Final Acceptance Documentation:

1. As-Built Drawings: With final revisions per Engineer's comments.

2. Final Record of Completion: Prepared in accordance with NFPA 72-2002.

3. Test Reports: From Pre-Acceptance testing; substantially in the format and inclusive of information required by NFPA 72-2002 Figure 10.6.2.3.

F. Closeout Documentation, refer to Section 01780 for additional submission details:

1. Maintenance Data: Operating and Maintenance Manual to include the following:

a. Final Equipment List identifying the quantities and types of equipment listed by manufacturer's part number.

b. Detailed narrative description of the system inputs, evacuation signaling, ancillary functions, annunciation, sequence of operations, expansion capability, application considerations, and limitations.

c. Product datasheet (or specification sheet) for each piece of fire alarm system equipment installed.

d. Operator instructions for basic system operations, including alarm acknowledgement, system reset, interpretation of system output, operation of manual evacuation signaling and ancillary function controls.

e. Standby power calculations and voltage drop calculations that coincide with the equipment that has been installed in the building.

f. Point ID list referencing the signaling line circuit loops and the devices on those loops.

g. Sensitivity report for all smoke detectors at the time of acceptance.

h. Testing results of all wiring free from faults, as specified in this specification.

i. Detailed description of routine maintenance and testing as required and recommended and as would be provided under a maintenance contract, including testing and maintenance instructions for each type of device installed.

1. This information shall include manuals that outline inspection, testing and cleaning procedures for all detectors and control equipment, as well as any other special maintenance procedures for any other pieces of fire alarm system equipment installed in the buildings.

j. Detailed troubleshooting instructions for each trouble condition generated from the monitored field wiring, including opens, grounds, and loop failures.

1. These instructions shall include a list of all trouble signals annunciated by the system, a description of the condition(s) that causes such trouble signals, and step-by-step instructions describing how to isolate such problems and correct them (or how to call for service, as appropriate).

k. A service directory, including a list of names and telephone numbers of those who provide service for the system.

2. Documentation of programming with the disks containing the programming information. Include necessary non-disclosure agreement or licensing agreement.

3. Electronic As-Built Drawings: Submit electronic AutoCAD files on compact disk. Coordinate AutoCAD version with Owner at time of submittal.

4. Hard-copy set of Final As-built Drawings.

5. Statement of Warranty.

1.06 Coordination

A. Coordinate the installation of the fire alarm system and testing of associated equipment and circuits with all related trades, contractors, equipment maintenance and testing representatives, the Engineer, the Owner and the authorities having jurisdiction.

B. Sprinkler waterflow and valve supervisory switches. Include wiring up to and including connection to all sprinkler waterflow switches and valve supervisory switches. All sprinkler waterflow and supervisory switches shall be monitored for integrity in accordance with NFPA 72. Verify the quantity and location of all sprinkler waterflow and supervisory switches.

C. Phase I Elevator recall, Phase II Fire Fighter's Service, and elevator operation annunciator. The Contractor shall be responsible for all wiring up to and including connection to a terminal block installed in a Space Age Electronics (or approved equal) red lockable terminal cabinet adjacent to the elevator recall control. The Contractor shall provide the terminal block and its enclosure, and shall coordinate the interconnection of the systems. The Contractor shall verify correct operation of these interconnections during an alarm condition, as specified in this specification. The contractor shall coordinate with the elevator contractor to verify all Phase I and Phase II operations function successfully.

D. Magnetic door hold-open circuits. Magnetic door hold-open circuits shall be provided such that upon alarm or loss of power selected magnetic door hold-open devices (as shown on the drawings) shall release, allowing the held open door to automatically close. The Contractor shall be responsible to field verify the number and location of all magnetic door hold-open circuits and for wiring up to and including connection to these circuits. The Contractor shall ensure correct operation of these interconnections during an alarm condition.

E. Air Handling Unit (AHU) Shutdown. Upon any alarm in the building, all AHU's in the building shall be shut down. Upon initiation of any single duct smoke detector, the associated AHU shall be shut down. The duct smoke detectors shall only initiate a supervisory signal unless otherwise specified by the AHJ. The contractor shall ensure correct operation of these interconnections during an alarm condition.

1.07 Quality Assurance

A. Each component of the fire alarm system shall be listed as a product of a single fire alarm system manufacturer under the appropriate category for the intended use in Underwriters Laboratories, Inc. (UL), UL FPED *Fire Protection Equipment Directory*, 2009 Edition. All control equipment shall be listed under UL category UOJZ Control Units System as a single unit. Partial listings, or multiple listings for various major sections of the control equipment, shall not be acceptable.

B. If a UL listing for a specific device is unavailable, approval by FM Global (FM) or other nationally recognized testing laboratory (NRTL) acceptable to the Owner and the Engineer shall be acceptable.

C. Electrical components, devices, and accessories shall be Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

D. All control equipment shall have transient protection devices that comply with the requirements outlined in UL 864 9th Edition, *Standard for Control Units for Fire-Protective Signaling Systems*.

E. All materials and equipment (initiating devices, notification appliances, etc.) shall be new and unused.

F. All equipment supplied shall be first quality and the manufacturer's best type and latest model capable of complying with all requirements of this specification and shall have been in continuous production and in continuous service in commercial applications for at least one year. Obsolete equipment shall not be used.

G. Installer Qualifications:

1. Licensed in the State of Rhode Island and be experienced in the installation of fire alarm systems in buildings similar to the Work described herein and has obtained design and inspection approvals for similar projects from authorities having jurisdiction.

2. Foreman: Provide proof of competence of both their company and the individual foreman that will be assigned to this project, in the area of installing fire detection, alarm, and control systems for at least five (5) years and acceptable to the Owner. Once assigned, the Contractor's foreman shall not be changed without the approval of the Owner.

3. Service Organization shall be capable of providing a minimum NICET Level III certified service technician on-site within four (4) hours of a request for on-site service. This service shall be provided on a 24-hour per day, seven (7) days per week basis.

H. The fire alarm system shall comply with all applicable state and local codes including the Rhode Island Fire Safety Code.

I. Buildings accessible to the disabled or impaired shall comply with the provisions of the *Americans with Disabilities Act Accessibility Guidelines (ADAAG)*.

J. Products, installation and testing shall be in accordance with the State of Rhode Island and the applicable provisions of the following as referenced by the Rhode Island Fire Safety Code:

1. NFPA 1, *Uniform Fire Code,* 2002 Edition, as amended by the State of Rhode Island.

2. NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2002 Edition.

3. NFPA 70, *National Electrical Code*, 2005 Edition.

4. NFPA 72, *National Fire Alarm Code*, 2002 Edition.

K. The requirements and recommendations of the latest published edition of the equipment manufacturers' product datasheets, technical specifications, installation instructions and wiring guidelines shall be followed.

1.08 Scheduling

A. The Contractor's Foreman shall act as primary point of contact and responsible-in-charge for coordinating the Pre-Acceptance Test with the other portions of the Work, Owner and the Engineer.

B. The Contractor's Foreman shall act as primary point of contact and responsible-in-charge for coordinating the Final-Acceptance Test with the other portions of the Work, Owner, Engineer and Authorities.

1.09 Extra Materials

A. The manufacturer shall provide a suggested spare parts list with firm unit prices maintained for the duration of the manufacturers warranty period as specified herein, for items such as power supplies, central processor units, fault isolator modules, monitor addressable modules, addressable control relay output modules and other modules that may be long lead replacement items. Firm costs for programming changes shall also be included. Firm prices shall be maintained for one year beyond the duration of the manufacturers warranty period as specified herein.

B. Furnish an additional 5% of each type of smoke detector installed in the building as spares.

C. Furnish an additional 5% of the manual fire alarm boxes as spares.

D. Furnish an additional 5% of the fault isolation modules as spares.

E. Furnish an additional 5% of each type of notification appliances (speaker, speaker/strobes and strobes of various candela ratings) installed in the building as spares.

F. Spare parts shall be neatly and protectively packed in one or more cartons. The quantity, manufacturer, and model of each unit in the carton shall be identified on the outside of the carton. The name, address, and telephone number of the Contractor and the manufacturer's local representative, plus the date of delivery, shall be neatly identified on the cover of each carton.

1.10 Warranty

A. The Contractor shall guarantee all new equipment installed and new raceways, new wiring and connections to existing wiring from defects in workmanship and inherent mechanical and electrical defects for a period of one (1) year from the date of substantial completion of the project. See Part 1 "Submittals".

B. The Manufacturer or the authorized representative shall guarantee all new system equipment for a period of two (2) years from the date of substantial completion of the project. See Part 1 "Submittals".

PART 2 PRODUCTS

2.01 Manufacturers

A. Fire alarm system control equipment shall be manufactured by:

1. GE Infrastructure, Security (Formerly Edwards System Technology)
2. Gamewell – Fire Control Instruments (A Division of Honeywell International, Inc.)
3. Notifier (A Division of Honeywell International, Inc.)
4. SimplexGrinnell, LP (A Division of Tyco International, LTD.)

B. Distributors of acceptable manufacturer's equipment shall provide documentation indicating that they are authorized by the manufacturer to distribute and service the equipment and that the manufacturer has stated that they have satisfactorily completed all training courses offered by the manufacturer in relation to the equipment provided.

2.02 Functional Description of the System

A. The system shall include the new fire alarm control/communications equipment which is UL Listed to operate with the submitted manual fire alarm boxes, sprinkler waterflow switches, valve supervisory switches and smoke detectors, and shall transmit an alarm to the to the Kingston Fire Department, alert building occupants using audible and visible notification appliances, supervise each system for conditions which would impair proper system operation, annunciate such abnormal conditions, and where applicable, control related equipment as indicated on contract documents.

B. Alarm Condition

1. The system operation shall be such that the alarm operation of any alarm initiating device shall not prevent the subsequent alarm operation of any other initiating device due to wiring or power limitations.
2. The system alarm operation subsequent to the alarm activation of any manual fire alarm box, any common area system-type automatic detection device (smoke or heat detector), or sprinkler waterflow switch shall automatically perform the functions contained in this section and operate as follows:

   a. On an alarm condition in the low-rise building, all audible (speaker) notification appliances in the low-rise building, and first three floors in the tower, as designated on the drawings, shall initiate a general alarm. The general alarm shall consist of the temporal code 3 National Evacuation Signal. All strobe notification appliances shall operate in synchronization (all strobe notification appliance circuits shall be synchronized building-wide from the fire alarm control unit).

   b. On an alarm condition in the high-rise building, broadcast an alert (pre-signal) tone on the incident floor, the floor above, and the floor below. The alert tone shall be a 900 hertz tone pulsed to produce one round of code 4 at approximately one second intervals.

   c. Activate the recorded message regarding the evacuation procedure on the incident floor, floor above, and floor below. The exact wording of the message shall be coordinated with and approved by the Rhode Island State Fire Marshals Office. The message will be transmitted three (3) times. A female voice shall be used for the message.

   d. The evacuation signal (temporal code 3 National Evacuation Signal) and all visible notification appliances (flashing in synchronization) shall activate on the incident floor, the floor above, and the floor below. This shall be repeated until the system is reset.

1. All strobe notification appliances shall operate in synchronization in accordance with the requirements of NFPA 72.

e. The general alarm shall immediately be transmitted to the Kingston Fire Department via the existing local energy Masterbox.

3. Fire Alarm Control Unit Indication

a. Alarm conditions shall be immediately displayed on the control unit alphanumeric display, indicating all information associated with the fire alarm condition including type of device, its location and the time and date of activation. The red “ALARM” LED shall flash on the control unit until the alarm has been acknowledged. Once acknowledged, this same LED shall latch on. A subsequent alarm received from another initiating device after acknowledgment shall flash the alarm LED on the control unit and the display shall show the new alarm information.

b. During an alarm condition, a pulsing alarm tone shall sound within the control unit until the alarm is acknowledged.

c. If the audible alarm signals are silenced for any reason, they shall automatically resound if another initiating device is actuated.

d. When the alarm signals are silenced by pressing the “ACKNOWLEDGE” pushbutton on the control module, the control unit LED’s shall continue to flash until the alarm is reset at the control unit.

e. The alarm sequence shall be recorded with the time and date of all occurrences in the fire alarm system History Log.

4. Auxiliary Functions

a. Where applicable, all auxiliary functions shall be connected to and operated by the control unit.

b. Phase I Automatic Elevator Recall. The alarm activation of any fire alarm in the building, including smoke detectors in the elevator lobbies or elevator machine room shall, in addition to the operations listed above, cause the elevator cabs to be recalled according to the following sequence (RIUFC §13.8.10.5.14):

1. If the alarm originates from any device (smoke detector, heat detector, flow switch, etc.) anywhere in the building other than an alarm originating from a device on the designated level of exit discharge, the elevator cabs shall be recalled to the designated level of exit discharge (Ground Floor).

2. In the event that the primary designated level is the zone or area in alarm, the elevator cabs shall be recalled to the alternate floor as determined by HAI and the Kingston Fire Department.

3. The smoke detectors and heat detectors in the elevator machine room(s) shall actuate the third elevator control circuit causing a separate and distinct visible annunciation at the control unit and required annunciators to alert fire fighters and other emergency personnel that the elevators are no longer safe to use, as described in NFPA 72 and ASME A17.1. In addition, if the elevator machine room is located at the designated level, its smoke detector shall also cause the elevator cabs to be recalled to the alternate floor.

4. Activation of an elevator machine room smoke detector and/or heat detector shall cause the Firefighter’s Service visual signal to illuminate intermittently (flash) in elevator cabs, which have equipment located in the affected machine room.

5. Activation of the manual recall key switch on the ground level shall cause a tone and visual signal within the cabs.

c. Phase I Manual Elevator Recall. A three position key switch shall be located at the designated level. When the key switch is in the on position it shall cause all elevators controlled by the switch to be recalled to the designated level. Elevator recall functions shall be in accordance with ASME A17.1.

1. All cars shall be provided with a visible and audible signal to alert passengers that the cars are returning non-stop to the designated level. The visual signal shall be a "fire-fighter's hat". The signal shall remain active until the cars have returned to the designated level.

2. All call buttons and floor designation buttons shall be rendered inoperative.

d. Phase II Emergency In-Car Fire Fighter's Service. A three position key switch shall be provided in each elevator cab for in car fire fighter's service. Phase II Fire Fighter's Service control and operation shall be provided in accordance with ASME A17.1.

e. HVAC Fan Units

1. The operation of any initiating device shall cause the appropriate fan control relays to activate the shut down of the associated fan(s).

f. Magnetically Held-Open Doors

1. Upon receipt of an alarm from any initiating device or loss of power, selected magnetic door hold-open devices (as shown on the drawings) shall release, allowing the held open door to automatically close from the building in alarm.

C. Supervisory Condition

1. The control unit shall have a "SYSTEM SUPERVISORY" LED and a supervisory signal "ACKNOWLEDGE" switch.

2. When a supervisory condition is detected, the following functions shall immediately occur:

a. The "SYSTEM SUPERVISORY" LED shall flash.

b. A pulsing alarm tone in the control unit shall sound.

c. The display shall indicate all information associated with the supervisory condition, including device, its location within the protected premises, and the time and date of that activation.

d. If more supervisory signals are in the system, the operator shall be able to scroll the display to view new signals.

e. All system output programs assigned via control-by-event equations to be activated by the particular point monitored shall be executed, and the associated system outputs (Supervisory Notification Appliances and/or relays) shall be activated.

3. Unacknowledged alarm messages shall have priority over supervisory messages, and if an Alarm occurs during a supervisory sequence, the Alarm condition shall have display priority.

4. Activating the supervisory "ACKNOWLEDGE" switch shall silence the audible signal while maintaining an LED on, indicating the supervisory condition is still in the off-normal state.

5. Restoring the valve or supervisory contact to the normal position shall cause the supervisory service audible signal to pulse thus indicating restoration to normal position. Activating the "ACKNOWLEDGE" switch shall silence the audible signal and restore the system to normal.

6. The activation of any standpipe or sprinkler valve tamper switch shall activate an audible supervisory signal and illuminate the supervisory LED at the control unit.

D. Trouble Condition

1. When a trouble condition is detected, the following functions shall immediately occur:

   a. An amber “SYSTEM TROUBLE” LED shall light and the system audible signal shall steadily sound when any trouble is detected in the system. Failure of normal power, opens or short circuits on the signaling line circuits or the notification appliance circuits, disarrangements in system wiring, failure of the microprocessor or any identification module, or system ground faults shall activate this trouble circuit.

   b. A trouble signal may be acknowledged by actuating the “ACKNOWLEDGE” switch. This shall silence the control unit trouble buzzer. If additional trouble conditions occur, the trouble circuitry shall resound.

   c. During an “alarm” condition, all “trouble” signals shall be suppressed with the exception of lighting the amber “COMMON TROUBLE” LED steadily.

   d. The display shall indicate all information associated with the trouble condition, including type of trouble point, its location within the protected premises, and the time and date of that activation.

   e. All system output programs assigned via control-by-event equations to be activated by the particular point in trouble shall be executed, and the associated System Outputs (Trouble Notification Appliances and/or relays) shall be activated.

2. Unacknowledged alarm messages shall have priority over trouble messages, and if such an Alarm occurs during a Trouble sequence, the Alarm condition shall have display priority.

E. Occupant Notification

1. Audible Notification:

   a. Audible notification shall be by textual audible appliances (speakers), as shown on the Design Drawings, capable of delivering an alert tone and a pre-recorded message.

   b. Failure of the pre-recorded message sequence shall cause the system to default to a standard evacuation, temporal 3 pattern.

   c. The FACU shall be equipped with an emergency voice alarm communication module that will take precedence over the pre-recorded message when the module microphone is activated.

   d. Manual silencing of the fire alarm notification signal shall be permitted to be silenced. An LED shall be lit at the control panel indicating audible silencing. The LED shall stay lit until the FACU system “RESET” switch has been activated.

2. Visible Notification:

   a. Activate fire alarm notification visible notification appliances. All visible fire alarm notification appliances that can be viewed in the same space shall flash in synchronization. Visible fire alarm notification appliances shall continue to flash until the system “RESET” switch has been actuated. Visible appliances shall be arranged to operate independently of audible appliances.

3. The occurrence of any subsequent alarm after actuation of the “ALARM SILENCE” switch shall re-actuate the audible and visible notification appliances.

4. All alarm signals shall be automatically “locked in” at the FACU until the operated device is returned to its normal condition and the control panel is manually reset.

F. System Supervision

1. All wiring extending from the FACU enclosure to fire alarm system components shall be supervised for opens, shorts and grounds. Systems containing unsupervised wiring of any type shall not be acceptable.
2. The occurrence of any fault shall activate the system trouble circuitry, but shall not interfere with the proper operation of any circuit that does not have a fault condition.
3. Incoming 120 VAC line power shall be supervised so that any power failure shall be audibly and visually indicated at the control unit.
4. Batteries shall be supervised so that a low battery condition or disconnection of the battery shall be audibly and visually indicated at the control unit.

G. System Reset

1. A “SYSTEM RESET” button shall be used to return the system to its normal state after an alarm condition has been remedied. Printed messages shall provide operator assurance of the sequential steps (i.e.: “IN PROGRESS”, “RESET COMPLETED”) as they occur, should all alarm conditions be cleared.
2. Should an alarm condition continue to exist, the system shall remain in an abnormal state. System control relays shall not reset. The control unit “ALARM” LED shall remain on. These points shall not require acknowledgment if they were previously acknowledged.

2.03 Minimum Components

A. The automatic fire detection and alarm system shall consist of, but not be limited to:

1. Addressable Fire Alarm Control Unit, containing a Central Processing Unit (CPU), power, LED indicators, control switches and relays.
2. Input Devices (waterflow switches and tamper switches supervision).
3. Addressable, analog photoelectric smoke detectors, with standard bases.
4. Addressable, spot-type heat detectors.
5. Addressable manual fire alarm boxes.
6. Addressable monitor modules and control relay output modules.
7. Fault Isolator Modules.
8. Remote FACUs, if necessary.
9. Annunciation at the FACU, as shown on the drawings.
10. A permanent record of the alarm signal, time, and date.
11. Primary and secondary amplifiers for speaker circuits.
12. Audible and visible notification appliances.
13. Battery backup supervision.
14. Automatic supervision of alarm initiating circuits, signal line circuits and notification appliance circuits.
15. Transmission of signals to the Kingston Fire Department.

2.04 Fire Alarm Control Unit (FACU)

A. The FACU shall provide all automatic and manual control functions as required for a high-rise command center as prescribed in the RIUFC §13.8.10.4.3.4. The fire alarm system shall have the capability to selectively manually operate the audible notification appliances on any

floor. A microphone and suitable switches shall be provided at the fire command center to selectively manually operate the audible notification appliances on any floor.

B. The FACU shall provide power, English display status, supervision, control, and programming capability for the fire detection and alarm system.

C. The control unit shall be located by the Owner and the Engineer, as shown on the drawings.

D. The control unit shall store a record of alarm and trouble events in a nonvolatile history file. This file shall contain, at least, the most recent 500 events, with time and date of each event. It shall be possible to select the number of events to be viewed in the history file so that the entire file does not have to be downloaded. The history file shall remain intact in the event of a loss of AC and battery power.

E. The control unit shall be modular in construction and receive supervised plug-in component boards to provide system functions as hereinafter specified and/or to accommodate future system expansions.

F. The control unit shall be capable of being expanded in the future to support a minimum of 500 addressable points (inputs or outputs). The control unit shall be capable of being expanded and field reprogrammed at any time up to the predetermined maximum capacity of the system, without the requirement to return the operating system to the factory for program changes. All field programming shall be done by an authorized manufacturer's representative.

G. The control unit shall be capable of supporting a minimum of twelve (12) signaling line circuits. Each signaling line circuit shall support a minimum of 100 addressable input devices or addressable monitor modules and a minimum of 10 output devices. All addressable input and output devices shall be capable of being intermixed on the same signaling line circuit.

H. The control unit shall accommodate all addressable input devices in alarm simultaneously and shall be capable of operating all output relays while all inputs are in alarm.

I. A minimum of ten (10) signaling line circuits shall be used, with devices equally distributed on each circuit. Each signaling line circuit shall be loaded to no more than 75% of its manufacturer specified capacity. Additional SLCs shall be furnished and installed as necessary to comply with this requirement.

J. The control unit shall supply power and communication protocol signals to the addressable input devices over a single pair of wires per signaling line circuit from the control unit. Signaling line circuits shall be field programmable for Class A (Style 6) operation.

K. A minimum of two fault isolator modules shall be used on each signaling line circuit. One fault isolator module shall be installed at the point the SLC leaves the FACU and at the point where new installed Class A (Style 6) SLCs return to the FACU. Fault isolator modules shall be placed in order to minimize loss of addressable devices. Fault isolator modules shall be placed at each floor, where the SLC spans multiple floors. No more than 25 devices shall be installed on a circuit between fault isolators.

L. The control unit shall be capable of supporting a minimum of twelve (12) visible (strobe) and twelve (12) audible notification appliance circuits (NAC) to provide an evenly distributed number of notification appliances per floor and circuit. Visible (strobe) notification appliance circuits shall be independent from the audible notification appliance circuits. Each circuit's power load shall not exceed 75% of the individual circuit power available from the FACU and new installed circuits shall be Class A (Style Z) circuits. Additional NACs shall be furnished and installed as necessary to comply with this requirement.

M. The control unit shall contain all the necessary equipment to support a minimum of one (1) speaker notification appliance circuit per floor. Each floor shall be served by a minimum of one Class A (Style Z) speaker circuit. Speaker circuits shall not be installed in the same ra-

ceway with strobe notification appliance circuits or signaling line circuits unless approved in writing by the supplier of the fire alarm/voice communication system.

N. The fire alarm system shall provide a minimum of one (1) visible (strobe) notification appliance circuit (NAC) per floor. Visible (strobe) notification appliance circuits shall be independent from the audible notification appliance circuits. Each circuit's power load shall not exceed 75% of the individual circuit power available from the FACU and new installed circuits shall be Class A (Style Z) circuits. Additional NACs shall be furnished and installed as necessary to comply with this requirement. Visible notification appliances shall operate on a floor by floor basis and shall be able to be controlled from the main FACU similar to the floor by floor speaker circuits.

O. Power for all notification appliances shall come from integral power supplies in the control unit. Remote power supplies, if needed, shall be of the same manufacturer as the FACU. All locations containing remote control equipment (such as a power supply extender) shall be protected with a smoke detector, in accordance with NFPA 72.

P. All fire alarm / voice communication circuits shall be provided with standby amplifiers equal to the amount of amplification required for complete system operation.

Q. At a minimum, the FACU shall contain the following:

1. Display. A minimum 80 character, highly readable, display. Upon input activation, the display shall provide the following indication:

   a. A device address display.

   b. A field programmed English label indicating the location of the device.

   c. An English description of the type of device activated, such as smoke detector, manual fire alarm box, water flow switch, etc.

   d. The status of the input: alarm, supervisory or trouble.

   e. Multiple alarm conditions shall be sequentially displayed automatically at not more than a five (5) second interval until manually acknowledged by priority.

2. Annunciation. Annunciation shall be an integral part of the control system and shall indicate alarm, supervisory and trouble conditions and the corresponding address. The following initiating devices shall be annunciated individually:

   a. Smoke detectors;

   b. Heat detectors;

   c. Sprinkler waterflow devices;

   d. Manual fire alarm boxes; and

   e. Other approved types of automatic fire detection devices or suppression systems.

3. Battery voltage and ammeter readouts shall be available from the LCD display.

4. Once acknowledged, individual alarms shall be viewed by operating a "next-alarm" switch.

5. Communication Ports. Two supervised RS232C communication ports shall be provided to support a printer or MODEM. Each RS232C port output shall be programmable for printer or display output and shall be programmable to provide access to the control unit's EEPROM operating system to perform the following functions:

   a. Listing and indicating status of all field devices.

   b. Capability of performing alarm tests on any or all addressable smoke detectors and contact input devices.

c. Monitoring of the system from remote locations via printer, terminal, or computer.

6. The control unit shall be provided with a “silent” walk test feature. This feature shall allow for testing of the fire alarm system without activating the notification appliances.

7. Clock. A 24 hour clock shall be provided to continually provide the time of day and day of the week information. During normal standby conditions, the control unit shall display time and date.

8. Any operation of an alarm silence, supervisory silence, trouble silence, acknowledge, lamp test, relay switches, or system reset switch shall cause a display indication of operation with time and date. These operations shall also be recorded in the system's history file.

R. The functional operation of the control unit shall be established by programmable software.

1. The operating program shall be contained in nonvolatile EEPROM memory and shall be configurable in any of the following ways:

a. At the factory;

b. At the job site via modem; or

c. At the job site via standard terminal or standard laptop computer.

S. Access and control of the operating program shall be restricted to proper personnel designated by the Owner

1. The control unit shall have a minimum of three (3) security levels, and they shall be designated: “ELECTRICIAN”, “ALARM SYSTEM SERVICE TECHNICIAN”, and “MANUFACTURER.” Each level shall have individual passwords. Illegal access attempts shall be rejected by the system and shall be displayed and recorded in the history file with time and date.

2. The “ELECTRICIAN” security level shall be the lowest security level and shall only allow access to the system status levels and lists and shall not impair system operation.

3. The “MANUFACTURER” and “ALARM SYSTEM SERVICE TECHNICIAN” security levels shall allow access to the operating system.

4. Accessing a programming function that disables normal system operation shall initiate a trouble sequence.

T. Emergency voice communication system: The FACU shall include central voice alarm system components, complete with microphones, preamplifiers, amplifiers, and tone generators. Features shall include the following:

1. Pre-recorded digitized message: The alarm sequence consists of an alert tone, a digitized recorded voice message providing the occupants with emergency instructions and at the end of the message sequence the activation of a tone pattern transmitting the temporal code 3 National Evacuation Signal in the zones receiving the alarm.

2. A minimum of two (2) voice notification channels to permit simultaneous transmission of different announcements to different zones or floors automatically or by using the central control microphone. All communication lines shall be dedicated, supervised communication lines.

3. Status annunciator indicates the status of various voice alarm speaker zones and the status of firefighter two-way telephone communication zones.

4. Manual voice paging shall take precedence over any automatic messages.

5. Back-up amplifiers shall be provided and arranged so that the loss of any amplifier results in the automatic switchover to the back-up amplifier(s).

6. Red “MANUAL EVAC” Evacuation/Alarm Indication is on when the evacuation Tone/Message is in process.
7. Red “ALL CLEAR” is on when the All Clear tone or message is playing.
8. Green “READY TO TALK” identifies that the microphone is active and talking may begin.
9. Yellow “SYSTEM TROUBLE,” general trouble indication.

U. Failure of the CPU(s) in the control unit module or a channel shall light the CPU Error LED and sound the control unit trouble buzzer. Alarms received while the control unit is in this state shall bypass the software and sound the general alarm signals and light the alarm LED.

V. The channel modules shall be field programmable to report wire-to-wire short conditions as either an alarm or trouble condition.

W. The control unit shall be capable of locating input circuit openings by the associated address and initiate the proper display and trouble sequence.

X. The system response to alarms shall be 2.5 seconds maximum for the first alarm.

Y. The main control unit, all remote control units (if necessary), and remote amplifier/speaker circuit transponders shall contain an integral standby battery to provide continuous power in the event of AC power failure.

1. The batteries shall be capable of providing 60 hours of backup power for the system and enough remaining power to operate all notification appliances for 15 minutes and all system outputs at the end of the 60 hour period.
2. The calculations for battery standby shall include a “safety factor” (reserve power estimate) of a minimum 20%.
3. Transfer from AC to battery power shall be instantaneous when AC voltage drops below 85 percent input. Transfer to battery standby shall be indicated by display and recorded in the history file with time and date. The indication shall be "AC OFF".
4. Loss of building power for the system shall automatically and immediately cause transfer of the system to battery power and cause all audible trouble signals to sound. Upon return of building power, the system shall automatically retransfer thereto, and the batteries shall automatically recharge.
5. During battery operation, the control unit shall process all inputs. However, the display shall provide five (5) seconds of indication for each new input condition, then turn off to conserve battery power.
6. The control unit shall have a dual rate battery charger that shall maintain the batteries in a fully charged condition and shall provide recharge of the batteries to full capacity in forty-eight (48) hours.

Z. The control unit shall provide a nonprogrammable DPDT common alarm relay and common trouble relay both with contacts rated 2 AMP at 24 VDC.

AA. Output Function Modules. The control unit shall utilize output function modules to control output functions. The modules shall plug into the control unit motherboard. The functions and presence of each module shall be supervised, and “UNIVERSITY ELECTRICIAN” password shall enable the user to request a list that locates the module by panel and slot within system. All modules shall be individually programmable by circuit as hereinafter specified.

1. Addressable control relays shall be provided for each of the auxiliary functions; field verify quantities and locations.

2.05 Wiring

A. Wiring for the initiating devices, notification appliances and remote 80 character LCD display shall be solid or stranded copper and shall comply with the appropriate sections of the *National Electrical Code*. All system wiring size shall be as determined suitable by the manufacturer and in compliance with the *National Electrical Code*, yet they shall not be any smaller than as specified herein.

B. Conductors shall be minimum #16 gauge solid copper, type thhn, thwn or tfn. All wiring shall be run continuously from device to device. Wiring size shall be increased as required to limit voltage drop to manufacturer's recommended operating voltage.

C. Shielded wire shall be used as directed by the FACU manufacturer.

D. All wiring shall be installed in metal raceway. Raceways shall include rigid steel threaded conduit, electrical metal conduit (EMT) and surface metal raceway (e.g., wiremold).

E. The minimum separation between the outgoing and return circuits shall be a minimum of 1-foot vertically and 4-foot horizontally in accordance with the provisions of NFPA 72 §6.4.2.2.2.

F. The following shall be 2-hour fire resistance rated cable to meet survivability requirements in NFPA 72.

1. Network wiring from node to node (if applicable).
2. All notification appliance circuits (strobe and speaker circuits) that run vertically from terminal box to terminal box through adjacent fire zones.

2.06 System Field Devices - General

A. Addressable devices shall operate under the following ranges of environmental conditions:

1. Ambient Temperature: 32-100 degrees Fahrenheit.
2. Relative humidity: 0-93 percent, non-condensing.
3. Air velocity: 300 feet per minute.

B. Each addressable device shall include a means to assign a unique address code to the device in the field. This address code shall serve as the means by which the system program recognizes the device.

C. Failure of any single device shall not hinder the operation of any other devices connected to the signaling line circuit.

D. Failure of the control unit to properly communicate with any addressable device shall initiate the proper trouble sequence. While in this trouble condition, the control unit shall cause actual alarm input from devices to override trouble alarm.

2.07 Automatic Detectors – General

A. All automatic smoke detectors shall be of the addressable, analog photoelectric type and shall be interchangeably mounted into a common twist-lock base.

B. The control unit shall recognize changes of detector type in each location and provide proper indication that reprogramming for the affected address is required.

2.08 Addressable Photoelectric Smoke Detectors

A. Addressable analog photoelectric smoke detectors with standard detector bases shall be installed in all common corridors, in stairwells at each floor level, and in the vicinity of all fire alarm system control equipment, in accordance with this specification and as shown on the drawings. Unless otherwise shown on the drawings, these common area detectors shall be spaced at thirty (30) foot centers, and spaced in accordance with NFPA 72 and the manufac-

turer's installation instructions. Smoke detectors shall only be installed in those environments suitable for proper smoke detector operation.

B. UL 268, photoelectric smoke detector with general alarm setting in all common spaces of 3.0% - 4.0% per foot obscuration.

C. The detectors shall provide a combination alarm/power LED. The LED shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control unit. The LED shall be placed into steady illumination under an alarm condition. An output connection shall also be provided in the base to connect an external remote alarm LED. The mounting location of every device shall be approved by the Owner.

2.09 Detector Bases

A. Automatic detectors shall utilize a common, plug-in, twist-lock, tamper-resistant type base that accommodates photoelectric and thermal detectors. Detectors shall be interchangeable to simplify field conversion.

B. Provide bases constructed of white, high impact polycarbonate designed for mounting on a standard 3-1/2 inch or 4 inch octagonal or 4-inch square outlet box. Provide screw terminal connections for No. 14 AWG wire.

C. Removal of the detector from the base shall cause a trouble indication at the FACU. Removal of the detector shall not disrupt the alarm circuit wiring or prevent the receipt of alarms from other devices operating in the circuit.

D. Insertion of an incorrect detector type into the base shall cause a "Wrong Device" trouble condition at the FACU until the proper type of detector is installed, or the system is reprogrammed. The system program shall recognize the insertion of a wrong device and shall automatically default to the setpoint values corresponding to the inserted device, and shall monitor alarm and trouble conditions according to the default parameters.

2.10 Addressable Photoelectric Duct Smoke Detectors

A. Duct smoke detectors shall be installed only in environments appropriate for proper smoke detection and in accordance with manufacturer's installation instructions. Duct smoke detectors shall be rated for an air velocity range of a minimum of 300 ft/min to a maximum of 4000 ft/min.

B. Duct-mounted smoke detectors shall be installed in the supply ducts on all HVAC units that have a supply capability of 2000 CFM or more.

C. Duct smoke detectors shall be photoelectric, addressable analog type, with sampling tube of design and dimensions as recommended by the manufacturer for the specific duct size and installation conditions where applied. Duct smoke detector shall include a "Form C" relay contact (rated for 1A @ 24VDC) as required for HVAC fan shutdown and/or smoke damper closure. This auxiliary relay output shall be fully programmable.

D. For maintenance purposes, it shall be possible to clean the duct housing sampling tubes by accessing them through the duct housing front cover.

E. Duct smoke detector shall have a Remote Test Station with an alarm LED and Test switch, as shown on the drawings. Locations shall be approved by the University of Rhode Island.

2.11 Addressable Heat Detectors

A. Addressable heat detectors shall be UL 521 combination rate-of-rise and fixed temperature. Rate-of-rise temperature detection feature shall operate at 15 °F/minute. Fixed temperature detection feature shall be programmable to operate at either 135 °F or 155 °F.

B. Heat detection element shall be epoxy encapsulated electronic design. It shall be thermistor-based, rate-compensated, self-restoring and shall not be affected by thermal lag.

C. The detectors shall provide a combination alarm/power LED. The LED shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control unit. The LED shall be placed into steady illumination under an alarm condition. An output connection shall also be provided in the base to connect an external remote alarm LED. The mounting location of every device shall be approved by the Owner.

2.12 Addressable Manual Fire Alarm Boxes

A. Manual fire alarm boxes shall be UL 38 non-coded, double-action type, surface or semi-flush mounted, with integral contact monitor module to provide addressable operation.

B. Faceplates shall be red with raised white identification lettering.

C. Stations shall mechanically latch after operation, with a key operated reset feature, keyed the same as FACU.

D. All double-action manual fire alarm boxes installed within the building shall be provided with STI Stopper II polycarbonate covers with integrated audible warning device.

2.13 Addressable Monitor Modules

A. Each addressable monitor module shall be able to support any number of normally open (N/O) devices. Wiring to the devices(s) being monitored shall be Class A supervised (Style D). Module status (normal, alarm, supervisory, trouble) shall be transmitted to the FACU.

B. Addressable monitor modules shall include a mounting plate for installation in a junction box or shall be mounted in a locked cabinet or approved box, as shown on the manufacturers recommended specifications.

C. The addressable monitor modules shall provide address-setting means.

D. An LED shall be provided which shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control unit.

2.14 Addressable Control Relay Output Modules

A. Provide addressable control relay output modules to permit hardwired control capability from the signaling line circuit. Relay contacts shall be DPDT, rated 2 amperes at 24 VDC.

B. Each relay shall operate according to the control program resident in the FACU. Relays shall be supervised for trouble conditions (open, short, device missing/failed) at the FACU.

C. Relay output modules shall include a mounting plate for installation in a junction box.

D. The relay output module shall provide address-setting means and shall also store an internal identifying code which the control unit shall use to identify the type of device.

E. An LED shall be provided which shall flash under normal conditions, indicating that the Relay Output Module is operational and is in regular communication with the control unit.

F. Provide transient suppressors for inductive loads.

G. All wiring and power shall be provided to properly operate all relays connected to the SLC.

H. Relays shall be provided with separate 24 VDC power if required by the chosen manufacturer. Contractor is responsible to provide all required wiring and power supply for powered relays.

2.15 Fault Isolator Modules

A. Fault isolator modules shall provide short circuit isolation for signaling line circuit wiring. Fault isolator modules shall be listed to UL 864, *Standard for Control Units for Fire-Protective Signaling Systems*.

B. The isolator module shall mount directly to a minimum 2 1/8 inch deep, standard 4-inch square electrical box, without the use of special adapters or trim rings.

C. Power and communications shall be supplied by the signaling line circuit.

D. Fault isolator modules shall report faults to the satellite and master FACU.

E. After the wiring fault is repaired, the fault isolator modules shall test the lines and automatically restore the connection.

2.16 Audible and Visible Notification Appliances

A. General

1. All notification appliances shall be rated at 24 VDC and shall be powered by supervised notification appliance circuits originating from the FACU or remote power extenders listed for this purpose.

2. The notification appliances shall be installed in accordance with the required audibility levels and the required illumination levels as described in NFPA 72.

3. All notification appliances shall be installed in environmental conditions in accordance with their listing and manufacturer's specifications and installation instructions. Where required, notification appliances that are to be installed in outdoor areas or in areas with harsh environmental conditions shall be tested and listed for outdoor use or for weatherproof applications.

4. All notification appliances mounted on the ceiling where a drop-type ceiling is provided shall be the color red. All other notification appliances are permitted to be the color red only.

B. Audible (speaker) notification appliances

1. Fire alarm speakers shall be listed in accordance with UL 1480, *Standard for Speakers for Fire Protective Signaling Systems* and amplifiers shall be listed in accordance with UL 1711, *Standard for Amplifiers for Fire Protective Signaling Systems*.

2. Speaker notification appliances and/or combination Speaker/Strobe notification appliances shall be multi-tap units and shall be installed as indicated on drawings.

   a. High-range speaker units shall have adjustable output power taps rated for 2 to 15 W.

   b. Low-range speaker units shall have adjustable output power taps rated for 1/8 to 2 W.

   c. Matching Transformers: Tap range shall be matched to the acoustical environment of the speaker location.

3. Speakers shall operate on a standard 25VRMS audio notification appliance circuit.

4. The speaker shall be tapped such that it has a minimum sound-pressure level of 85 dBA measured 10 feet (3m) from the speaker at its minimum tapped output providing 15 dBA above ambient sound levels. In no case shall speakers produce a sound output on alarm more than 120 dBA.

5. The speaker shall have a frequency response of 400 to 4000 Hz for fire alarm notification and 125 Hz to 12 kHz for general signaling.

6. Speakers shall be either flush-mounted or ceiling mounted as indicated on the drawings.

C. Visible (strobe) notification appliances

1. All strobes shall conform to the requirements of NFPA 72, UFAS and the ADA and shall be listed to UL 1971, *Standard for Signaling Devices for the Hearing Impaired*.

2. All visible notification appliance circuits shall be synchronized and have a rated light output as indicated on design drawings.

2.17 Transmission of Signals

A. All alarm signals shall be transmitted to the Kingston Fire Department via the existing local energy Masterbox.

2.18 Firefighter Phone System

A. Provide a firefighter telephone system as follows:

1. Provide a master control station at the FACP with remote telephone stations in each stair at each floor landing, in each elevator lobby on each floor, and in all elevator cabs. In addition, provide them at specific locations containing essential fire protection equipment, such as the fire pump room and outside the emergency generator room.

2. Provide a firefighter telephone communication system with complete, common talk, closed circuits. The system shall include, but not be limited to, a master control station mounted in the fire alarm control panel, a power supply and standby battery system, and remote telephone stations.

3. Provide a master control station which shall provide all power, supervision and control for all wiring, components and circuits. The act of lifting any remote telephone handset from its cradle shall cause both a visual and audible signal to annunciate at the master control station. Removing the handset at the master control station and depressing a button at the remote telephone handset shall cause the automatic silencing of the audible signal. Communication between the master control station handset and any/or all remote handsets shall require the depressing of a push-to-talk switch located on any/all remote handsets. During the time that the master control handset is removed from its cradle it shall be possible to communicate between 5 remote handsets and the master control station. Handsets shall be able to monitor any conversation in progress and join the conversation by pressing the push-to-talk button. It shall not be possible to communicate between two (2) or more remote handsets with the master control station handset in its cradle. The master control station handset shall be red in color and equipped with a 1.5 meter long strain-relieved coiled cord. All wiring connections shall be made to terminal strips. The master control station shall monitor all wire and connections for any opens, shorts or grounds which would render the system inoperable or unintelligible. The master control station shall be equipped with a silencing switch and ring-back feature such that any audible trouble signal can be silenced and will be so indicated by the lighting of an amber LED. Once any trouble condition has been corrected, the amber LED will be extinguished and the silence switch will sound again until the switch is restored to its original position. The master control station shall be equipped with a separate, LED annunciated switch for each telephone circuit. In addition, LEDs shall provide for the annunciation of operating and supervisory power. The loss of operating or supervisory power shall cause an audible and visual indication at the master control station and shall also cause the fire alarm trouble signal to sound on the FACP. All switches, LEDs and controls shall be fully labeled.

4. Provide surface mounted remote telephone stations. Each station shall be equipped with a hinged door that is magnetically closed. Each handset shall be permanently wired in place with a coiled cord. Each handset shall be red high-impact cycolac and shall be equipped with a push-to talk switch which, when operated, will signal the master control station and a switch-equipped, storage cradle.

5. Provide operating and supervising power from the same supply circuit(s) utilized for the

fire alarm control panel.

6. The fire fighter phone circuits shall be wired vertically so that the stair number or elevator lobby number is known when the handset is removed.

PART 3 EXECUTION

3.01 Examination

A. Coordinate examinations with the Owner.

B. Examine and verify actual location of equipment, initiating devices, notification appliances, monitor modules, output modules, fault isolation modules, remote power supplies and other components.

C. Examine and verify actual locations of vertical and horizontal raceway including existing raceway that may be reused.

D. Examine walls and partitions for suitable thickness, fire- and smoke-rated construction, framing and other conditions where equipment is to be installed prior to preparing pre-installation submittal.

E. Promptly report conflicts with proposed solutions.

3.02 Preparation

A. Prepare and submit a minimum of six (6) complete “Pre-Installation Documentation” submittal packages to the Engineer for review prior to submitting same to local officials (as required) for approval and permit. Resubmit portions or entirety of submittal to address Engineer comments prior to submitting package to local officials (as required) for approval and permit. See Part 1 “Submittals” for submittal content.

B. Obtain Owner approval to deliver materials and begin installation once “Pre-Installation Documentation” review process is complete and necessary local approvals and permits have been secured.

3.03 General Equipment Installation

A. Installation, workmanship, fabrication, assembly, erection, examination, inspection and testing shall be in accordance with NFPA 72.

3.04 Module and Remote Power Supply Installation

A. Install remote power supplies as indicated on Pre Installation Documentation submittal. Obtain Engineer approval for locations not previously identified (and approved) in submittal.

B. If a remote power supply is used to power a NAC and it actuated from the SLC, isolation modules shall be installed on both the feed and return side of the control module.

C. Install addressable isolator modules as indicated on Pre Installation Documentation submittal. Obtain Engineer approval for locations not previously identified (and approved) in submittal.

D. Install addressable monitor modules as indicated on Pre Installation Documentation submittal to supervise and monitor the status of each non-addressable device, such as conventional spot-type heat detectors, sprinkler waterflow alarm switch and valve supervisory switch contacts, special hazard fire suppression alarm contacts and fire pump supervision contacts.. Addressable monitor modules shall be installed to monitor the existing fire alarm control units for alarm and off-normal conditions. Obtain Engineer approval for locations not previously identified (and approved) in submittal.

E. Install addressable control relay output modules as indicated on Pre Installation Documentation submittal. Obtain Engineer approval for locations not previously identified (and approved) in submittal.

F. All wiring and power shall be provided to properly operate all relays connected to the SLC.

3.05 Initiating Device Installation

A. In general, automatic detectors shall be mounted on the structural ceiling or finished ceiling and not on the bottom or side of any type of construction or structure which extends down from the ceiling. Automatic detectors shall be installed as indicated on the plans and in conformance with all codes and Regulations and these specifications. The detectors shall be installed within five (5) feet of the location shown on the drawings to accommodate construction.

B. Automatic detectors shall be located near points where air currents normally intersect. Detectors shall not be located in the direct path of the draft from an HVAC air supply grille, a door, window, or hallway. Detectors shall be installed a minimum of three (3) feet from an HVAC air supply diffuser, in accordance with NFPA 72.

C. Addressable analog photoelectric smoke detectors shall be installed in all common corridors, waiting rooms and other common spaces in accordance with this specification, as shown on the drawings. Unless otherwise shown on the drawings, these common area detectors shall be spaced at thirty (30) foot centers, and in accordance with NFPA 72 and the manufacturer's installation instructions. Smoke detectors shall only be installed in those environments suitable for proper smoke detector operation.

D. Manual fire alarm boxes shall be installed at every exit and in common areas in accordance with NFPA 72, as shown on the drawings.

E. Manual fire alarm boxes shall be mounted at a height between 42-inches and 48-inches measured to the activating handle, above the finished floor, in accordance with NFPA 72 and the ADA.

3.06 Notification Appliance Installation

A. All notification appliances shall be wall-mounted such that that the entire strobe lens is not less than eighty (80) inches and not greater than ninety-six (96) inches above the finished floor, or six (6) inches below the finished ceiling, whichever is lower.

B. Strobes shall be synchronized in accordance with NFPA 72.

3.07 Wiring Installation

A. The wiring and raceway system for the fire alarm system shall be in accordance with NFPA 70, *National Electrical Code*. Device and appliance boxes shall be new and low-profile.

B. Furnish metal raceway, wiring, outlet boxes, junction boxes, cabinets, labels and similar devices necessary for the complete installation of the fire alarm system. Wiring shall be of the type as specified herein and recommended by the manufacturer and shall be installed in metal raceway throughout.

C. Fire alarm system wiring within the building shall be installed in metal raceway with steel couplings and box connectors. Cast "LB" or "T" type connectors shall be permitted. An equipment-bonding conductor shall be provided in all flexible metallic raceways.

D. All fire alarm system riser conduits shall be minimum 1-inch in diameter.

E. All wiring shall be installed continuous from device to device.

F. Terminal cabinets with hinged, lockable red covers, by Space Age Electronics, Marlboro, MA, or approved equal shall be provided at all junction points. All conductor splices shall be made on screw-type terminal blocks – wire nuts, butt, crimp or screw type connectors shall not be used. All terminals within a terminal cabinet shall be properly and permanently labeled. All junction box covers shall be painted red. Locations shall be approved by the University of Rhode Island.

G. Raceways containing conductors identified as "Fire Alarm System" conductors shall not contain other conductors, and no AC carrying conductors shall be allowed in the same raceway with the DC fire alarm detection and signaling conductors.

H. The conductors for the notification appliance circuits shall not be installed in the same raceway as the conductors for signaling line circuits unless written certification from the manufacturer is supplied to the Engineer indicating that the inclusion of these circuits in the same raceway is acceptable and that no additional consideration is needed for these circuits.

I. Notification appliance circuits and control equipment shall be arranged and installed so that loss of any one (1) notification appliance circuit shall not cause the loss of any other notification appliance circuit in the system.

J. Color coding of conductors shall be approved by the Owner. Unless otherwise indicated, the color code for all fire alarm system conductors shall be as follows:

1. Signaling line circuits and initiating device circuits shall be red and black. Red shall be positive and black shall be negative. (SLC/IDC)
2. Audible notification appliance circuits shall be blue and white. Blue shall be positive and white shall be negative (NAC).
3. Sprinkler/standpipe circuits shall be red and black. Red shall be positive and black shall be negative.
4. Smoke detector power circuits shall be brown and violet. Violet shall be positive and brown shall be negative.
5. Auxiliary remote power supply circuits shall be brown and violet. Violet shall be positive and brown shall be negative.
6. Electro-magnetic door hold-open circuits shall be gray and gray.
7. HVAC shut-down circuits shall be orange and yellow.
8. Elevator shut-down circuits shall be brown and yellow.
9. Remote annunciator circuits shall be violet and numbered at each end.
10. Bond wires from the control unit to the master box ground rod, and all required bonding conductors shall be green.
11. AC supply circuit to the main FACU shall be white, black and red. The black shall be one phase, and the red shall be the opposite phase, if required. The white shall be the neutral. If a separate feed is required for the battery charger, it shall be black and white unless the main FACU requires only one AC feed. In that case, the conductors to the battery charger shall be red and white.
12. Municipal master box tripping circuits shall be orange and orange. Conductors for this circuit shall be installed in a separate raceway.

K. Exposed raceways shall be run parallel and perpendicular to the walls and ceilings. Wherever practical, exposed raceways shall be run on the ceiling as close as possible to a wall or as high as possible on a wall. Where exposed raceways shall cross under a structural beam or rib, they shall be run down on one side of the beam or rib, across its bottom, and up to the ceiling on the other side of the beam or rib. No spanning from beam to beam or rib to rib shall be permitted. The use of a raceway body on one side of a beam or rib shall be permitted provided it shall be readily accessible.

L. Fault isolator modules shall be furnished as required and shall be mounted as directed by the manufacturer. The field location of the fault circuit isolators shall be labeled so that the devices may be easily located, and that location shall be noted on the point-to-point and as-built drawings.

M. The power employed to operate the fire alarm system shall have a high degree of reliability and capacity for the intended service. Connections to this power service shall be made on a dedicated branch circuit(s). The circuit shall be mechanically protected.

N. The electrical supply to the FACU shall be equipped with a dedicated fused disconnect with a handle that can be locked in the *"**power on**"* position. This disconnect is to be provided at the connection to the normal power supply serving the FACU. Circuit disconnecting means shall have a red marking, shall be accessible to authorized personnel, and shall be identified as "FIRE ALARM CIRCUIT CONTROL." The location of the circuit disconnecting means shall be permanently identified on a nameplate installed on the inside of the FACU.

O. All wiring within the control unit shall be neatly served in the panel gutters and be secured by means of Thomas & Betts "Ty-Raps" or by other approved means.

P. Where penetrations of floor slabs, fire-resistance rated walls and/or smoke barrier walls are made, the wiring shall be sleeved in metal raceway and the penetrations shall be fire-stopped with UL Listed through-penetration firestop assembly.

Q. All speaker and strobe circuits shall meet the survivability requirements of NFPA 72 and shall be monitored for short circuits. All NAC circuits shall be wired with cable that has a 2-hour fire resistance rating for all vertical runs of cable such that pass through floors that are not served by that NAC circuit.

3.08 Identification

A. Provide Brady, or approved equal, adhesive markers indicating the device address with minimum 12-point font lettering in the following locations:

1. Outside of addressable smoke detector bases.
2. Outside of addressable manual fire alarm boxes.
3. Outside of addressable monitor modules.
4. Outside of addressable relay output modules.
5. Outside of addressable fault isolator modules.

B. See Part 3 "Wiring Installation" for identification of conductors.

3.09 Field Quality Control

A. Work shall be performed in accordance with the best and the most modern practices of the trade. The entire system shall be installed in a neat and workmanlike manner, in accordance with the standard instructions and recommendations of the manufacturer and in accordance with the approved manufacturer's wiring diagrams unless otherwise specifically permitted by the Owner and the Engineer.

B. The system shall be installed under the supervision of a qualified, trained, NICET (minimum Level III) Certified manufacturer's representative. The technical representative is expected to be on site with the Contractor during the installation of wiring and during the entire time of final connections and testing of the fire alarm system. The system shall be demonstrated to perform all of the functions as specified.

C. The supervisory work of the qualified manufacturer's technical representative shall include, but not necessarily be limited to, checking all the system wiring connections; advising the Contractor regarding technical details of the installation; and the adjustment and testing of all components of the system in order to ensure a complete and satisfactorily operable system. The manufacturer's technical representative shall be on site, as required by the Owner and the Engineer, during the entire installation and connection of the new control equipment. The technical representative shall monitor all wiring changes and assist the Contractor to ensure a smooth transition to the new control equipment. The cost of the technical representative shall be paid by the Contractor and shall be included in the bid price. The minimum amount

of man-hours for this technical representative to be carried is 40 hours. The Contractor shall identify the amount of manufacturer's technical representative's man-hours that shall be provided and the per-hour cost (including the cost for possible overtime [premium] hours) for the technical representative's time.

D. Perform Test to verify wiring to be free from grounds and short circuit faults. Document and endorse results, and forward to the supplier, the Owner and the Engineer. No connections to the FACU shall be made until the system wiring has been accepted by the equipment supplier.

E. Perform inspections and tests required by NFPA 72-2002, "Inspection Testing and Maintenance" for control equipment, batteries, conductors, remote transmission, remote annunciators, initiating devices, notification appliances and auxiliary functions.

1. Replace system components that do not pass test procedures and retest to demonstrate compliance. Repeat procedure until satisfactory results are obtained. Replace detectors that our outside their marked sensitivity range.

2. Use the NFPA 72-2002 "Record of Completion" to document the inspection and test results.

3.10 Cleaning and Protection

A. Do not install smoke detectors prior to substantial completion by other portions of the Work.

B. Remove paint splatters and other spots, dirt, and debris. Touch up scratches and marred finish to match original finish. Clean unit(s) internally using methods and materials recommended by manufacturer.

3.11 Equipment Removal

A. Completely remove any unused existing fire detection, alarm system control equipment, wiring and components and equipment that are not specified as being part of the new system. The equipment removed shall be boxed, labeled and delivered to the Owner. All unused, fire alarm system wire and cable shall be removed and disposed of properly off-site.

B. Perform all removal work efforts in accordance with the best and most modern practices. Removal of existing equipment shall include all cutting, patching and painting of existing walls, hard ceilings and/or replacement of suspended ceiling tiles.

3.12 Engineer Pre-Acceptance

A. Prepare and submit one (1) complete "Pre-Acceptance Documentation" submittal package to the Engineer a minimum of five (5) business days prior to proposed pre-acceptance test date. See Part 1 "Submittals" for submittal content. Resubmit portions or entirety of submittal to address Engineer comments prior to scheduling test date.

B. Schedule Pre-Acceptance Test with Owner, Engineer and related trades once submittal package was been reviewed to the satisfaction of the Engineer. Tests shall not be scheduled or conducted prior to satisfactory review of "Pre-Acceptance Documentation" submittal package.

C. Demonstrate system functional performance. Document testing results in the format specified by NFPA 72-2002 Figure 10.6.2.3; at a minimum, perform the following:

1. Functionally operate, in accordance with NFPA 72-2002, each building fire alarm initiating device to ensure proper operation, correct annunciation at each remote annunciator (as shown on the drawings) and at the control unit and proper operation of all alarms and auxiliary functions. "Magnet" testing of smoke detectors will not be accepted as a functional test.

2. All auxiliary functions shall be tested including elevator recall, AHU shutdown, door hold deactivation, and remote key unlock functions.

3. The signaling line circuits and the notification appliance circuits shall be opened in at least two locations per floor to check for the presence of correct supervisory circuitry.

4. The notification appliances shall be tested to automatically sound the voice evacuation sequence and activate the audible and visible notification appliances on the floor where the alarm originated, one floor above and one floor below the floor where the alarm originated.

5. The voice communication system shall be tested to verify the manual operation of the system on all floors or combination of floors.

6. One-half of all tests shall be performed on battery standby power.

D. Reschedule testing where unsatisfactory results cannot be resolved such that testing can be completed during business hours on the scheduled day. See Owner "General Agreement" for possible additional costs and penalties.

E. Upon satisfactory completion of the Pre-Acceptance Test, leave the system operating for a minimum of one (1) week prior to the Final Acceptance Test.

3.13 Authority Having Jurisdiction Final Acceptance

A. Prepare and submit a minimum of six (6) complete "Final Acceptance Documentation" submittal packages to the Engineer for review prior to submitting same to local officials for final system approval. Resubmit portions or entirety of submittal to address Engineer comments prior to submitting package to local officials. See Part 1 "Submittals" for submittal content.

B. Submit reviewed "Final Acceptance Documentation" submittal package to authority and coordinate scheduling (minimum ten (10) business days notice) of common fire sprinkler and fire alarm system acceptance testing. If acceptable to the authority, the reviewed "Approval Documentation" submittal may be submitted to the authority at the time of the final acceptance tests.

C. Coordinate with fire sprinkler portion of final acceptance tests. Operate as required.

D. Demonstrate system components to authority having jurisdiction as necessary.

E. A 60-hour battery test shall be performed if requested by the Authority Having Jurisdiction.

F. Reschedule testing where unsatisfactory results cannot be resolved such that testing can be completed to the satisfaction of the authorities. See Owner "General Agreement" for possible additional costs and penalties.

G. Upon satisfactory completion of the tests, leave the fire alarm system in proper working order.

3.14 Project Closeout Procedures

A. Prepare and submit a minimum of six (6) closeout documentation packages to the Engineer for review prior to scheduling Owner demonstration and training. Resubmit portions or entirety of submittal to address Engineer comments prior to scheduling demonstration and training. See Part 1 "Submittals" for submittal content.

B. Schedule Owner demonstration and training with the Owner for each building. Provide at least five (5) working days notice.

C. Demonstrate equipment, specialties, and accessories with the Owner. Review operating and maintenance information with the Owner.

1. Fire Alarm Response Teams – University Security Personnel: Prior to final acceptance of the fire alarm system, provide operation training to each shift of the Owner's designated Building Manager. Each training session shall be a minimum of one (1) hour and shall be conducted on shift or at a time acceptable to the Owner. Each session shall include an overview of the system and the devices connected to it, emergency procedures (including

alarm, trouble and supervisory condition procedures), control panel operation, and safety requirements. Each session shall include a complete demonstration of the system.

2. The manufacturer's technical representative shall also be required to instruct designated building and management personnel in the general operation of the system and to give the designated personnel an overview of the system functions when the system is in normal, supervisory mode, alarm mode, and trouble mode, as specified in this specification.

END OF SECTION

SECTION 14282

ELEVATOR AMENDMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Changes to elevator operating systems.

B. Tie into control equipment.

C. Professional operation of the elevator to facilitate installation of utilities within the shaftway for the fire alarm and sprinkler systems.

1.02 RELATED REQUIREMENTS

A. Section 13851-Fire Alarm Systems: adjust/replace fireman return feature and other controls to fully interface with new fire alarm system.

PART 2 PRODUCTS

2.01 CONTROLS - GENERAL

A. Amend control systems and fixtures as required to perform as specified within new fire alarm system requirements.

PART 3 EXECUTION

3.01 INSTALLATION –

A. Contractor to retain Otis Elevator, the University's elevator maintenance contractor, to conduct any tie-in operations necessitated by new fire alarm operation and as required to keep elevator within maintenance program parameters/warranty during the job.

B. Retain Otis as needed at Contractor's expense to operate elevators to facilitate Contractor's installation of fire alarm and sprinkler system items. Elevators are not to be used for hoisting. Make one elevator available for occupant use at all times when installation in the other shaft is proceeding.

END OF SECTION

SECTION 15000

MECHANICAL

PART 1 GENERAL

1.01 See drawings for mechanical specifications, including additional demolition work required.

END OF SECTION

SECTION 15300 – AUTOMATIC FIRE SPRINKLER SYSTEM

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PART 1 GENERAL

1.01 Related Documents

A. Drawings, Hydraulic Calculations and general provisions of the Contract and Agreement apply to this Section.

B. Project Manual

1.02 Summary

A. Drawings supplied with this specification shall be used as a reference for the requirement and location of system components. Work includes visiting the site to observe the existing conditions, and confirmation of the required quantities of devices and specific options for locations of the same. The contractor shall not use the drawings only to infer quantities of sprinklers for price quotation.

B. At the time of bid, all exceptions taken to these Specifications, variances from these Specifications and all substitutions of equipment specified shall be listed in writing and forwarded to Hughes Associates, Inc. (Engineer) and University of Rhode Island (Owner). Any such exceptions, variances, or substitutions, which were not listed at the time of bid shall not be approved or considered.

C. The Work includes all labor, materials, tools, transportation, and temporary construction necessary to design, fabricate, install, test and flush a fully operational and code compliant automatic wet-pipe fire sprinkler system in the Chaffee Building. The sprinkler contractor shall be responsible for all new above ground piping up to the flange of the existing water service main, as shown on the drawings.

D. The Work includes furnishing and installing sprinklers including piping, hangers and other associated components in areas of the building discovered during survey or installation that are not necessarily represented on the design drawings that are required to be provided with sprinkler protection at no additional cost to the owner.

E. The Work includes installing a new 5” Storz Fire Department Connection adjacent to the existing fire department connection.

F. The Work includes installing sprinklers in the center of acoustic ceiling tiles.

G. The Work includes fire stopping, patching and painting of all penetrations that were made for installation of new sprinkler piping through existing interior and exterior building walls. The fire stopping shall be conducted by a manufacturer’s trained personnel acceptable to the Owner.

H. The Work includes all fees and activities required to secure approvals for necessary State and Local permits.

I. The Work includes submitting detailed Working Plans, Hydraulic Calculations and Product Data to the Engineer for review prior to submitting same to local officials for permit. Contractor shall not fabricate piping, assemble components or begin installation until HAI has approved the submittal documents.

J. The Work includes performing field quality control and commissioning activities.

K. The Work includes documenting and submitting the results of integrity and functional testing.

L. The Work includes submitting As-built Plans and closeout documentation to HAI for review prior to scheduling Owner demonstration training.

M. The Work includes training Owner’s personnel on the operation of the system, required maintenance tasks and frequencies, and the locations of all spare tools and equipment, valves, flow switches, risers and equipment necessary to maintain and operate the sprinkler system.

1.03 Performance Requirements

A. Wet-pipe, hydraulically calculated automatic fire sprinkler system shall be installed in areas of the building that are not currently protected with automatic sprinklers.

B. Water Flow Test Data

1. A hydrant flow test has been conducted by the Engineer, as indicated on the drawings. The Sprinkler Contractor shall conduct a new test with no additional cost to the Owner prior to developing shop drawings.

C. Pipe sizes for piping downstream and including floor control assemblies shall be determined by hydraulic calculations in accordance with NFPA 13-2002. Verify that field modifications to the system, which require the addition of fittings and pipe do not affect the hydraulic demand of the automatic fire sprinkler system.

1. If, given the available water supply as indicated on the drawings, the automatic fire sprinkler system cannot be designed in compliance with this specification and the applicable codes and standards, provide a report to the Owner documenting the design options that have been investigated. Additionally, copies of the hydraulic calculations, which demonstrate the inability of the water distribution system to supply the necessary water for the sprinkler system demand, shall be submitted for each option.

D. Sprinkler system shall be designed according to the following:

1. A minimum 10% margin of safety shall be provided between the residual water supply pressure and the required sprinkler system demand pressure at the calculated system design flow, including all hose allowances.

2. Sprinkler Occupancy Hazard Classifications shall be as follows:

a. Light Hazard

1. Offices,

2. Common corridors,

3. Classrooms.

b. Ordinary Hazard, Group 1

1. Storage areas,

2. Mechanical equipment rooms,

3. Electrical equipment rooms

c. Ordinary Hazard, Group 2

1. Basement, Mechanical Penthouse.

3. Minimum Density for Automatic-Sprinkler System Piping Design:

a. Light-Hazard Occupancy: 0.10-gpm over 1500- sq. ft. area; 0.10-gpm over 900- sq. ft. design area only allowed to comply with 10% safety factor where unable to comply with 1500- sq. ft. design area.

b. Ordinary-Hazard, Group 1 Occupancy: 0.15-gpm over 1500- sq. ft. area.

c. Ordinary-Hazard, Group 2 Occupancy: 0.20-gpm over 1500- sq. ft. area; 0.20-gpm over 2500- sq. ft. area for Basement.

d. Design areas shall be modified as necessary to comply with the requirements for specific building or system features identified in NFPA 13-2002, such as non-sprinklered concealed combustible spaces that do not conform to the exceptions outlined in NFPA 13

under special conditions, sloped ceilings/roofs, or the installation of a dry pipe sprinkler system.

4. Maximum Protection Area per Sprinkler:

a. Light Hazard Areas: 225-sq. ft. (20.9-sq. m) unless otherwise indicated on drawings.

b. Ordinary Hazard Areas: 130-sq. ft. (9.3-sq. m).

c. All obstruction rules shall be strictly adhered to. Additional sprinklers shall be added, where required for compliance with NFPA 13-2002, at no additional cost to the owner.

5. Calculate pressure loss due to elevation and friction loss through all fittings, pipes, valves and backflow prevention devices in accordance with NFPA 13-2002.

6. Hose Allowance:

1. Light Hazard Areas: 100-gpm outside hose allowance.

2. Ordinary Hazard Areas: 250-gpm outside hose allowance.

b. Components shall be capable of producing piping systems with 175-psig (1200-kPa) minimum working-pressure rating, unless otherwise indicated.

1.04 Order of Precedence

A. Should conflicts arise out of discrepancies between documents referenced in this specification, the most stringent requirement shall apply; however, should a level of stringency be indeterminable, the discrepancies shall be resolved as follows:

1. State and local codes shall take precedence over this specification.

2. The National Fire Protection Association Standards shall take precedence over this specification.

3. University of Rhode Island Standards shall take precedence over this specification.

4. This specification shall take precedence over the drawings.

1.05 Submittals

A. In the event that the any of the following submittal packages is required to be revised and resubmitted due to nonconformance with this specification, illegibility of the submittal, incomplete submittals, noncompliance with the referenced local, state and national Codes, Standards and Regulations or nonconformance with pertinent documentation relative to the project, the Contractor, in advance, shall pay a $1,500.00 fee associated with the additional submittal review. Payment of the fee shall be solely the Contractor's responsibility.

B. Pre-Installation Documentation: Absolutely no work or material fabrication shall be conducted prior to submittal and approval by the Engineer.

1. Product Data: For each product specified in Part 2. Submittal shall indicate listing and approvals, selected options, finishes, etc. and electrical characteristics.

2. Working Plans: Minimum 1/8"=1'-0" scale inclusive of information required by NFPA 13-2002 requirements.

3. Electronic Working Plans: Minimum 1/8"=1'-0" scale inclusive of information required by NFPA 13-2002 requirements. The electronic versions of the hard-copy plans shall be submitted on compact disks in PDF format

4. Hydraulic Calculations: Prepared in accordance with NFPA 13-2002 requirements. Minimum one (1) calculation for each hazard on each level.

C. Acceptance Documentation:

1. Field Test Reports and Certificates (Aboveground): Completed NFPA 13-2002 "Contractor's Material and Test Certificate for Aboveground Piping" including dates of successful hydrostatic tests, functional waterflow tests, and other fire alarm supervisory tests. Tests and documents shall be witnessed and countersigned by the Owner's designee. Annotate portions of the Certificate form that do not apply to the project as "not applicable". Make submittal after commissioning and prior to acceptance testing.

2. Testing documentation of the backflow prevention device.

3. FM Global Form 85A, "Contractor's Material and Test Certificate for Aboveground Piping"

4. Statement of Completion: Upon completion of the installation of the automatic sprinkler system, a signed written statement, substantially in the form as follows:

   a. "The undersigned, having been engaged as the Sprinkler Contractor for the automatic sprinkler systems for the Chaffee Building located on the University of Rhode Island Kingston Campus, Kingston, Rhode Island, confirms that the automatic fire sprinkler system equipment was installed in accordance with the diagrams, instructions, directions, and technical specifications provided to us by the Manufacturer and the University of Rhode Island."

D. Closeout Documentation:

1. Maintenance Data: The maintenance manual shall describe in detail the purpose and function of all sprinkler system devices and valves. The manual shall also include all necessary inspection, testing and maintenance forms. Include one (1) original, soft-bound copy of NFPA 25-2002*, Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems*, in addition to the maintenance manual.

2. As-Built Drawings: Showing all field changes from original Working Plans. Submit full-size hard copy and electronic AutoCAD files on compact disk. Coordinate AutoCAD version with Owner at time of submittal.

3. Valve Chart: Provide a drawing on 11-inch x 17-inch paper identifying the location of the control valves for the fire sprinkler system shown on the floor plan of the building. This valve chart shall be framed and permanently installed adjacent to the fire alarm control unit.

4. Statement of Warranty.

1.06 Quality Assurance

A. Equipment and devices shall be labeled and listed for the intended use in the Underwriters Laboratories, Inc. (UL), UL FPED-2008 *Fire Protection Equipment Directory* and 2009 FM Global Approval Guide.

B. Electrical components, devices, and accessories shall be Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

C. All materials and equipment shall be new and unused.

D. All equipment shall be first quality and capable of complying with all requirements of this specification and shall have been in continuous production and in service in commercial applications for at least one year. Obsolete equipment shall not be used.

E. Installer Qualifications:

1. Licensed in the State of Rhode Island and experienced in the installation of automatic fire sprinkler systems in buildings similar to the Work described herein and has obtained design and inspection approvals for similar projects from authorities having jurisdiction.

2. Foreman: Provide proof of competence of both their company and the individual foreman that will be assigned to this project, in the area of installing automatic fire sprinkler sys-

tems for at least five (5) years and acceptable to Owner. Once assigned, the foreman shall not be changed without the approval of the Owner.

3. Service Organization: Capable of providing a service technician on-site within 4 hours of a request for on-site service.

F. The automatic fire sprinkler systems shall comply with all applicable state and local codes, including the Rhode Island Fire Safety Code (RIFSC).

G. Products, installation and testing shall be in accordance with the applicable provisions of the following as referenced by the RIFSC:

1. National Fire Protection Association (NFPA) 13-2002*, Standard for the Installation of Sprinkler Systems.*

2. NFPA 24-2002*, Standard for the Installation of Private Fire Service Mains and Their Appurtenances.*

3. NFPA 25-2002, *Standard for Inspection, Testing and Maintenance of Water-Based Fire Protection Systems.*

4. NFPA 70-2005, *National Electrical Code.*

5. NFPA 72-2002, *National Fire Alarm Code*.

6. American Water Works Association (AWWA): AWWA Publications apply as referenced by NFPA 24-2002.

1.07 Coordination

A. Coordinate sprinkler location and installation with existing conditions and other portions of the Work to ensure sprinkler locations are at the highest possible elevations and generally located to minimize the risk of mechanical damage.

B. Coordinate sprinkler installation with existing conditions and other portions of the Work to comply with NFPA 13-2002 requirements for obstruction to sprinkler discharge.

C. Coordinate pipe installation with existing conditions and other portions of the Work to facilitate suspended ceiling installation, proper pitch and accessibility for components installed.

D. Coordinate with the Fire Alarm portion of the Work for the connection and testing of waterflow, pressure and valve supervisory switches.

1.08 Extra Materials

A. Furnish extra materials described below that match the products installed and that are packaged with protective covering for storage and identified with labels describing the contents.

1. Sprinkler Cabinet: Finished, wall-mounting steel cabinet and hinged cover, with space for a minimum of six (6) spare sprinklers for each type, model and temperature rating, plus a sprinkler wrench for each model.

1.09 Warranty

A. Guarantee equipment installed to be free from defects in workmanship and inherent mechanical defects for a period of one (1) year from the date of substantial completion of the project. See Part 1 “Submittals”.

PART 2 PRODUCTS

2.01 Manufacturers

A. Subject to compliance with the requirements of this section, product selection shall be limited to those offered by manufacturers included in the “Available Manufacturer” lists in each Part 2 article. Substitution of the products listed requires approval by the Owner in writing prior to installation.

B. Where lists are not indicated, products, subject to compliance with the requirements of this section, may be obtained from an approved domestic manufacturer.

2.02 Pipe and Tube

A. Standard-Weight Steel Pipe: Schedule 40 ASTM A53, ASTM A135, or ASTM A795, carbon steel, threaded ends.

2.03 Pipe and Tube Fittings

A. Cast-Iron Threaded Fittings: ASME B16.4; Class 125 or Class 250 pattern as required by application.

B. Malleable-Iron Threaded Fittings: ASME B16.3; ASME B16.4; Class 125 or Class 250 pattern as required by application.

C. Steel Threaded Couplings: ASTM A865; ASME B16.4; Class 125 or Class 250 pattern as required by application.

D. Steel Welding Fittings: ASTM A234/A 234M, ASME B16.9, or ASME B16.11; 300-psi pressure rating.

E. Cast-Iron Threaded Flanges: ASME B16.1; ASME B16.4; Class 125 plain face or Class 250 raised face pattern as required by application.

F. Steel Flanges and Flanged Fittings: ASME B16.5; ASME B16.4; Class 125 plain-face or Class 250 raised face pattern as required by application.

G. Flange Gaskets and Bolts

1. Plain-face Flanges: ASME B18.2.2 heavy-series hex-nuts and ASME B18.22.1 plain washers with ASME B16.21 1/8” full-face rubber gasket.

    1. Raised-face Flanges: ASME B18.2.2 heavy-series hex-nuts and ASME B18.22.1 plain washers with ASME B16.20 1/8” spiral wound gasket.

H. Mechanical Grooved-End Fittings:

1. Assembly Pressure Rating: 300-psi

2. Fittings and Couplings: UL 213; ASTM A536 ductile iron body.

3. Couplings: UL 213; ASTM A536 ductile iron rigid or flexible pattern as required by application.

4. Gaskets and Bolts: Pre-lubricated EPDM gaskets with ASTM A183 zinc-plated nuts and bolts.

5. Available Manufacturers

    a. Tyco Fire and Building Products.

    b. Victaulic Corporation of America.

2.04 Valves

A. General: Minimum 175-psig (1200-kPa) non-shock working-pressure rating unless higher pressure rating is required by application or otherwise indicated. Valves for grooved-end pipe may be furnished with grooved ends instead of flanged ends.

B. Riser Check Valve: 175-psig (1200-kPa) working pressure, designed for horizontal or vertical installation (UL 312), with mechanical inlet and outlet, bronze grooved seat O-ring seals, and single-hinge pin and lath design. Include gauges and 2-inch drain trim piped to exterior.

C. Gate Valves; NPS 2 (DN50) and Smaller: UL 262; cast-bronze, threaded ends; solid wedge; OS&Y; and pre-grooved rising stem. NPS 2-1/2 (DN65) and Larger: UL 262, iron body,

bronze mounted, tapered wedge, OS&Y, and pre-grooved rising stem. Include replaceable, bronze, wedge facing rings and flanged ends.

1. Available Manufacturers

   a. McWane, Inc; Kennedy Valve Div.

   b. Mueller Co.

   c. NIBCO Inc.

   d. Stockham Valves & Fittings

D. Swing Check Valves; NPS 2 (DN50) and Smaller: UL 312; cast-bronze, threaded ends. NPS 2-1/2 (DN65) and Larger: UL 312, cast-iron body and bolted cap, with bronze disc or cast-iron disc with bronze-disc ring and flanged ends.

1. Available Manufacturers

   a. Grinnell Corp.

   b. McWane, Inc; Kennedy Valve Div.

   c. Mueller Co.

   d. NIBCO Inc.

   e. Stockham Valves & Fittings

   f. Victaulic Co.

   g. Viking Corp.

E. Indicating Valves; NPS 2 (DN65) and Smaller: UL 1091; butterfly or ball-type, bronze body with threaded ends; and integral indicating device and pre-wired supervisory switch. NPS 2-1/2 (DN65) and Larger: UL 1091; butterfly-type, ductile-iron body with grooved ends; and integral indicating device and pre-wired supervisory switch.

1. Available Manufacturers

   a. NIBCO Inc.

   b. Tyco Fire and Building Products.

   c. Milwaukee Valve Co.

   d. Reliable Sprinkler Co.

   e. Victaulic Co.

   f. Viking Corp.

F. Ball Drip Valves: UL 1726, automatic drain valve, NPS 3/4 (DN20), ball check device with threaded ends.

2.05 Backflow Prevention Devices

A. Double Check Valve Assembly (DCVA) type with epoxy-coated cast iron or stainless steel body, test cocks and grooved end UL 1091 indicating butterfly valves or, if required by the local Water Authority, UL 262 gate valves.

1. DCVA shall be approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California (USC).

B. Available Manufacturer and Model

1. Ames Co.

2. Febco.

3. Watts.

2.06 Sprinklers

A. General: UL 199 nominal 1/2-inch (12.7-mm) orifice standard-spray pattern sprinklers with "Ordinary" temperature classification rating, unless otherwise indicated or required by application.

B. Pressure Rating: 175-psi (1200kPa) minimum unless otherwise indicated or required by application.

C. Operating Element: Quick Response (QR) as indicated or required by application, eutectic metal type thermal operating mechanism or frangible glass bulb.

D. Sprinkler Types and Features; include the following:

1. Upright sprinkler.
2. Pendent sprinkler with and without escutcheon plate.
3. Recessed pendent sprinkler.
4. Horizontal sidewall with and without escutcheon plate.

E. Sprinkler Finishes; include the following:

1. Rough-brass (bronze)
2. Chrome-plated.
3. White.

F. Sprinkler Guards: Wire-cage type with red finish, including fastening device for attaching to sprinkler.

G. Available Manufacturers

1. Tyco Fire and Building Products.
2. Reliable Sprinkler Co.
3. Victaulic Co.
4. Viking Corp.

2.07 Fire Alarm Monitoring Devices

A. General: NEMA enclosure suitable for intended application; include tamper resistant cover with switch that transmits signal upon removal of cover; 250-psi (1752-kPa) pressure rating; two sets, single-pole double-throw form 'C contacts.

B. Water-Flow Indicators: UL 346 vane-type with field adjustable 0-90 second retard feature.

C. Valve Supervisory Switches: UL 753 with normally closed contacts and compatible with valve stem to be monitored.

D. Available Manufacturers

1. Pittway Corp.; System Sensor Div.
2. Potter Electric Signal Co.

2.08 Pipe Sleeves

A. General: Provide pipe sleeves where piping passes entirely through walls, floors and partitions. Secure sleeves in position during construction. Provide sleeves of sufficient length to pass through entire thickness of walls, floors and roofs. Provide 1 inch minimum clearance between exterior of piping and interior of sleeve or core-drilled hole. Firmly pack space with mineral wool insulation. Seal space at both ends of the sleeve or core-drilled hole with plastic

waterproof cement, which will dry to a firm but pliable mass, or provide a mechanically adjustable segmented elastomeric material. Penetrations of fire-rated barriers, wall and floor assemblies shall be sealed with a listed through penetration fire stopping assembly

1. Sleeves in Masonry and Concrete Walls, Floors, and Roofs: Provide hot-dip galvanized steel, ductile-iron, or cast-iron sleeves. Core-drilling of masonry and concrete may be provided in lieu of pipe sleeves when cavities in the core-drilled hole are completely grouted smooth.
2. Sleeves in Other Than Masonry and Concrete Walls, Floors, and Roofs: Provide 26 gauge galvanized steel sheet

2.09 Pressure Gages

A. Water Pressure Gages: UL 393, 3-1/2- to 4-1/2-inch- (90- to 115-mm-) diameter dial with dial range of 0 to 250 psig (0 to 1725 kPa).

PART 3 EXECUTION

3.01 Examination

A. Coordinate examinations with the Owner.

B. Examine and verify actual locations of risers, mains and branchline piping prior to preparing pre-installation submittal.

C. Examine and verify points of connection to existing system components.

D. Examine walls and partitions for suitable thickness, fire- and smoke-rated construction, framing and other conditions where pipes, risers and cross-mains are to be installed prior to preparing pre-installation submittal.

E. Promptly report conflicts with proposed solutions.

3.02 Preparation

A. Prepare and submit a minimum of six (6) complete three ring bound “Pre-Installation Documentation” submittal packages to the Engineer for review prior to submitting same to local officials for approval and permit. Resubmit portions or entirety of submittal to address Engineer comments prior to submitting package to local officials for approval and permit. See Part 1 “Submittals” for submittal content.

B. Obtain authority approval and permits with reviewed “Pre-Installation Documentation” submittal package.

3.03 Piping Applications

A. Use the following:

1. NPS 6 (DN150) to NPS 2.5 (DN65): Schedule 10 steel pipe with roll grooved ends; steel, grooved-end fittings with rubber gaskets; and grooved joint couplings.
2. NPS 2 (DN50) and Smaller: Schedule 40 steel pipe with threaded ends, cast- or malleable-iron threaded fittings, and threaded joints.

B. Branch Line Connections to Cross Mains shall be shop welded or cast- or malleable-iron threaded fittings, and threaded joints.

3.04 Piping Installation

A. Refer to manufacturer’s specifications and NFPA 13-2002 for basic piping installation.

B. Where shown to install exposed piping in normally occupied areas as tight to ceiling as possible. Rise with elbows in series as necessary to adjust final height of piping. Cut hanger rods to length that allows nuts to be tightened flush with ceiling and leaves band hangers at the highest elevation possible.

C. Use approved fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

D. Install unions adjacent to each valve in pipes NPS 2 (DN50) and smaller. Unions are not required on flanged devices or in piping installations using grooved joints.

E. Install flanges or flange adapters on valves, apparatus, and equipment having NPS 2-1/2 (DN65) and larger connections.

F. Install sprinkler piping with drains for complete system drainage. All drain piping shall be routed to a location approved by the Owner.

G. Install "Inspector's Test Connections" in sprinkler piping, complete with shutoff valve, sized and located according to NFPA 13-2002. The outlet shall discharge to the exterior of the building.

H. Install alarm devices in piping systems.

I. Hangers and Supports: Install according to NFPA 13-2002 for sprinkler piping.

J. Seismic Restraint: Restrain new piping according to NFPA 13-2002 requirements for protection against earthquake damage.

K. Install piping with grooved joints according to manufacturer's written instructions. Construct rigid piping joints, unless otherwise required by NFPA 13-2002 for protection against Earthquake damage through masonry penetrations. Provide flexible couplings on piping penetrating rigid walls (i.e. masonry walls), within 1-foot on each side of the penetration.

L. Install pressure gages on riser or feed main, at each sprinkler test connection and on both sides of every check valve, including upstream of the DCVA. Include pressure gages with connection not less than NPS 1/4 (DN8) and with soft metal seated 3-way valve, plugged at one end and arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they will not be subject to freezing.

M. Welded joints shall not be used with galvanized steel pipe.

N. Flanges, unions, and transition and special fittings with pressure ratings the same as or higher than the systems pressure rating may be used in aboveground applications, unless otherwise indicated.

O. Pipe Painting

1. Sprinkler System Risers, Mains, and Branchlines shall be painted to match the existing conditions in public areas where exposed. Painting shall be performed by a qualified subcontractor approved by the Owner. Paint colors shall be coordinated with the Owner.

2. Pipe shall be provided with a first coat of primer prior to application of the final coat.

3. Contractor shall paint sample section of pipe and obtain approval from the owner prior to proceeding with final coat.

3.05 Joint Construction

A. Refer to manufacturer’s specifications for basic piping joint construction.

B. Steel-Piping, Grooved Joints: Use Schedule 40 steel pipe with threaded ends or Schedule 10 steel pipe with roll-grooved ends; steel, grooved-end fittings; and groove couplings. Assemble joints with couplings, gaskets, lubricant, and bolts according to manufacturer's written instructions.

C. Dissimilar-Piping-Material Joints: Construct joints using adapters or couplings compatible with both piping materials. Use dielectric fittings if both piping materials are metal.

D. Refer to Manufacturer’s specifications for grooved pipe fittings, pipe-flange gasket materials and welding filler metals.

E. Joint compound or tape shall be applied to male pipe threads only for all threaded joints.

F. Transition Couplings: AWWA C219, sleeve type, or other manufactured fitting the same size as, with pressure rating at least equal to, and with ends compatible with piping to be joined.

3.06 Valve Applications

A. Drawings indicate valve types to be used.

3.07 Valve Installation

A. Install valves in accessible locations with indicators clearly visible from floor level.

3.08 Sprinkler Applications

A. Drawings indicate sprinkler types to be used.

B. Use QR sprinklers in Light Hazard and Ordinary Hazard areas.

C. Use SR sprinklers in Extra Hazard areas.

3.09 Sprinkler Installation

A. Install sprinklers in accordance with NFPA 13-2002 and in the patterns indicated on the working drawings.

B. Install upright sprinklers where ceiling is exposed to structure at the highest elevation possible while observing the NFPA 13-2002 requirements for obstructions to sprinkler discharge. Do not lower the elevation of sprinklers to locate deflector below solid-continuous obstructions in lieu of providing adequate horizontal clearance in accordance with NFPA 13-2002 §8.6.5.1.

C. Install sprinklers in the center of suspended ceiling tiles where such ceilings exist or are planned.

D. Use sprinkler guards listed for use with sprinkler where indicated on drawings and where sprinkler is subject to mechanical damage. At a minimum, provide caged upright or pendent sprinklers in closets, beneath stair landings, storage areas and mechanical areas. Use sprinkler guards where sprinklers are installed at an elevation of 7 ft. or less above the finished floor.

E. Do not install sprinklers, mains or branchline pipes in locations where likely to be inadvertently damaged, such as in front of access hatches, doors, cabinets, etc.

3.10 Fire Alarm Monitoring Device Installation

A. Install water flow, pressure and valve supervisory switches to be connected by the Fire Alarm portion of the Work.

B. Adjust retard feature of “zone” waterflow indicating switches to 35 seconds.

C. Adjust retard feature of “main” waterflow indicating switches to 45 seconds.

3.11 Exterior Wall Penetrations

A. All exterior wall penetrations for drain piping and fire department connections shall be water tight sealed.

3.12 Labeling And Identification

A. Install labeling, signs and pipe markers on valves, equipment and piping in accordance with NFPA 13-2002.

B. Signs and label styles and locations shall be coordinated with and approved by the Owner and the authorities having jurisdiction prior to installation.

C. Install hydraulic design information sign on the “main system riser”.

3.13 Field Quality Control

A. Perform hydrostatic test of entire sprinkler system and inspect sprinkler piping according to NFPA 13-2002, "System Acceptance". Coordinate hydrostatic test date(s) and time(s) with the Owner's designee.

1. Replace piping system components that do not pass test procedures and retest to demonstrate compliance. Repeat procedure until satisfactory results are obtained.

2. Use the NFPA 13-2002 "Contractor's Material and Test Certificate for Aboveground Piping" to document the hydrostatic test results. Prepare a separate form for each sprinkler zone. Obtain dated signature from Owner's designee for each test. Tests that are not witnessed must be repeated.

3.14 Commissioning

A. Verify that specialty valves, trim, fittings, controls, and accessories are installed and operate correctly.

B. Verify that specified tests of piping are complete.

C. Verify that damaged sprinklers and sprinklers with paint or coating not specified, are replaced with new, correct type.

D. Verify that sprinklers are correct types, have correct finishes and temperature ratings, and have guards as required for each application.

E. Verify that potable-water supplies have correct types of backflow prevention devices and have been tested.

F. Verify that spare sprinkler cabinet is installed with correct number of wrenches and spare sprinklers.

G. Verify that labeling, identification and signage is installed.

H. Energize circuits to electrical equipment and devices.

I. Coordinate with fire alarm pre-acceptance tests. Operate as required.

1. Use the NFPA 13-2002 "Contractor's Material and Test Certificate for Aboveground Piping" to document the waterflow switch activation times and other functional test results. Obtain dated signature from Owner's designee for each test. Tests that are not witnessed must be repeated. Use common form for each zone that indicates results of previous hydrostatic testing and fire alarm functional tests.

2. Use the NFPA 24-2002 "Contractor's Material and Test Certificate for Underground Piping." Tests and documents shall be witnessed and countersigned by the Owner's designee. Tests that are not witnessed must be repeated.

3.15 Cleaning and Protection

A. Clean dirt and debris from sprinklers.

B. Remove and replace sprinklers having paint other than factory applied finish.

C. Wipe all excess pipe joint compound from threaded pipe joints.

D. Wipe all excess oil from the exterior surface of sprinkler mains and branchline pipes.

E. Protect sprinklers from damage until substantial completion by other trades.

3.16 Authority Having Jurisdiction Final System Acceptance

A. Prepare and submit a minimum of six (6) complete three ring bound "Approval Documentation" submittal packages to the Owner's representative for review prior to submitting same to local officials for final system approval. Resubmit portions or entirety of submittal to address

Owner's representative comments prior to submitting package to local officials. See Part 1 "Submittals" for submittal content.

B. Submit reviewed "Approval Documentation" submittal package to authority and coordinate scheduling of common fire sprinkler and fire alarm system acceptance testing.

C. Coordinate with fire alarm portion of final acceptance tests. Operate as required. Demonstrate system components to authority having jurisdiction as necessary.

3.17 Project Closeout Procedures

A. Prepare and submit a minimum of six (6) three ring bound closeout documentation packages to the Owner's representative for review prior to scheduling Owner demonstration and training. Resubmit portions or entirety of submittal to address Owner's representative comments prior to scheduling demonstration and training. See Part 1 "Submittals" for submittal content.

B. Schedule Owner demonstration and training with the Owner. Provide at least five (5) working days notice.

C. Demonstrate equipment, specialties, and accessories with the Owner. Review operating and maintenance information with the Owner.

END OF SECTION

Hydraulic Calculations

HRS SYSTEMS, INC
4792 LAVISTA ROAD
TUCKER, GA 30084

HYDRAULIC CALCULATIONS FOR

HUGHES ASSOCIATES, INC.
2374 POST ROAD, SUITE 102
WARWICK,RI 02886

DRAWING NUMBER: FP-1.21 DATE: 5-2-10

-DESIGN DATA-

REMOTE AREA NUMBER: REMOTE AREA LOCATION: 2nd Flr Main Bldg

OCCUPANCY CLASSIFICATION: Light Hazard Classrooms

DENSITY: .10 gpm/sq. ft.
AREA OF APPLICATION: 1500 sq. ft.

COVERAGE PER SPRINKLER: sq. ft.
TYPE OF SPRINKLERS CALCULATED: 5.6K QR
NUMBER OF SPRINKLERS CALCULATED: 16

*IN-RACK SPRINKLER DEMAND: gpm
HOSE-STREAM DEMAND: 250 gpm
TOTAL WATER REQUIRED (INCLUDING HOSE): 522 gpm
FLOW AND PRESSURE (AT BASE OF RISER): 272 gpm @ 38 psi

TIMOTHY J. LAROSE
10-25-10
No. 8352
REGISTERED
PROFESSIONAL ENGINEER
FIRE PROTECTION

TYPE OF SYSTEM: WET
*VOLUME OF DRY OR PREACTION SYSTEM:
*DETAILS:
WATER SUPPLY
Source: PUBLIC Test Date: Test By: HAI
Location: Standpipe
Static: 67 psi Residual: 50 psi Flow: 1233 gpm
Source Elevation Relative to Finished Floor Level: ft.

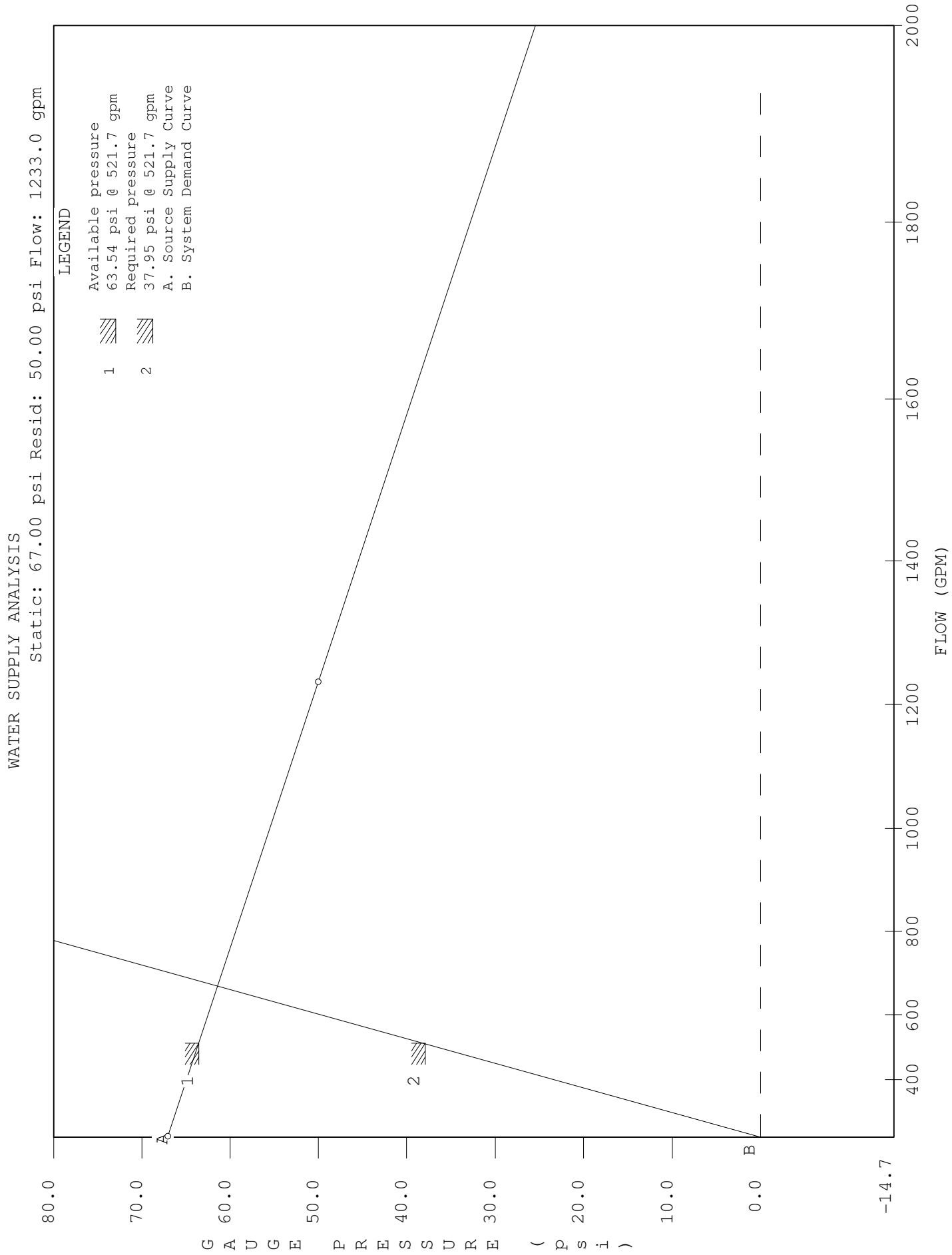
INSTALLING CONTRACTOR
Name:
Address:
Phone: Certification number:

NAME OF DESIGNER: S.Dellasanta
AUTHORITY HAVING JURISDICTION: SFM

NOTES:
Calculations performed by HASS 7.9 under license # 3801093320, granted by HRS SYSTEMS, INC. TUCKER, GA 30084 USA.

(Notes continue after pipe calculations results.)

DATE: 5/3/2010 C:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE 2ND.SDF
JOB TITLE: CHAFFEE 2ND .10/1500



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JOB TITLE: CHAFFEE 2ND .10/1500

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
SOURCE	67.0	50.0	1233.0	63.5	521.7	37.9

Required pressure is 25.6 psi (40%) less than available pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	521.7 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	250.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	271.7 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
SOURCE	193.5	SOURCE	37.9	271.7	
UNDG	185.5	- - - -	41.1	- - -	
DCVA	181.5	- - - -	42.8	- - -	
BOR	181.5	- - - -	37.8	- - -	
TOR	187.5	- - - -	35.0	- - -	
SP1	197.5	- - - -	30.3	- - -	
SP1.1	197.5	- - - -	30.1	- - -	
SP2.1	211.5	- - - -	22.7	- - -	
SP2.2	211.5	- - - -	19.4	- - -	
SP2.3	211.5	- - - -	17.3	- - -	
SP2.4	211.5	- - - -	14.9	- - -	
SP2.5	211.5	- - - -	13.3	- - -	
SP2.6	211.5	- - - -	13.1	- - -	
SP2.7	211.5	- - - -	13.0	- - -	
SP2.8	211.5	- - - -	15.5	- - -	
SP2.9	211.5	- - - -	11.8	- - -	
SP2.10	211.5	- - - -	11.4	- - -	
SP2.11	211.5	- - - -	11.3	- - -	
SP2.12	211.5	- - - -	11.2	- - -	
SP2.13	211.5	- - - -	11.2	- - -	
SP2.14	211.5	- - - -	7.6	- - -	
SP2.21	211.5	- - - -	12.0	- - -	
SP2.22	211.5	- - - -	11.9	- - -	
SP2.23	211.5	- - - -	10.2	- - -	
SP2.24	211.5	- - - -	9.4	- - -	
SP2.25	211.5	- - - -	8.2	- - -	
SP2.26	211.5	- - - -	10.1	- - -	
SP2.27	211.5	- - - -	9.2	- - -	
SP2.28	211.5	- - - -	8.0	- - -	
SP2.29	211.5	- - - -	10.0	- - -	
SP2.30	211.5	- - - -	8.3	- - -	
SP2.31	211.5	- - - -	6.9	- - -	
SP2.32	211.5	- - - -	6.9	- - -	
SP2.33	211.5	- - - -	9.8	- - -	

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JOB TITLE: CHAFFEE 2ND .10/1500

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
SP2.34	211.5	- - - -	8.5	- - -	
SP2.35	211.5	- - - -	9.7	- - -	
SP2.36	211.5	- - - -	8.5	- - -	
S21	210.2	K= 5.60	12.2	19.6	
S22	210.2	K= 5.60	12.0	19.4	
S23	210.2	K= 5.60	9.8	17.6	
S24	210.2	K= 5.60	9.0	16.8	
S25	210.2	K= 5.60	8.5	16.3	
S26	210.2	K= 5.60	9.7	17.4	
S27	210.2	K= 5.60	9.2	16.9	
S28	210.2	K= 5.60	8.2	16.1	
S29	210.2	K= 5.60	9.6	17.3	
S30	210.2	K= 5.60	8.4	16.2	
S31	210.2	K= 5.60	7.2	15.0	
S32	210.2	K= 5.60	7.2	15.0	
S33	210.2	K= 5.60	9.7	17.5	
S34	210.2	K= 5.60	8.8	16.6	
S35	210.2	K= 5.60	9.7	17.4	
S36	210.2	K= 5.60	8.7	16.5	

DATE: 5/3/2010 C:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE 2ND.SDF
JOB TITLE: CHAFFEE 2ND .10/1500

NFPA PIPE DATA

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 1		Source	0.0			E:19	75.00	140	3.1	
SOURCE	193.5	37.9	271.7	DCVA	6.000	T:40	62.51		3.5	
UNDG	185.5	41.1	271.7		6.065	G: 4	137.51	0.002	0.3	
Pipe: 2		0.0	0.0				4.00	120	1.7	
UNDG	185.5	41.1	271.7	BOR	6.000	E:14	14.00		1.7	
DCVA	181.5	42.8	271.7		6.065		18.00	0.003	0.1	
Pipe: 2A			0.0	Fixed Pressure Loss Device						
DCVA	181.5	42.8	271.7	TOR	5.0 psi, 271.7 gpm					
BOR	181.5	37.8	271.7							
Pipe: 3		0.0	0.0				16.00	120	2.8	
BOR	181.5	37.8	271.7	SP1	6.000	E:14	46.00		-2.6	
TOR	187.5	35.0	271.7		6.065	C:32	62.00	0.003	0.2	
Pipe: 4		0.0	0.0				40.00	120	4.7	
TOR	187.5	35.0	271.7	SP1.1	6.000	5E:70	70.00		-4.3	
SP1	197.5	30.3	271.7		6.065		110.00	0.003	0.3	
Pipe: 5		0.0	0.0				8.00	120	0.2	
SP1	197.5	30.3	271.7	SP2.1	6.000	E:14	44.00		0.0	
SP1.1	197.5	30.1	271.7		6.065	T:30	52.00	0.003	0.2	
Pipe: 6		0.0	0.0				17.00	120	7.4	
SP1.1	197.5	30.1	271.7	SP2.2	4.000	2T:40	40.00		-6.1	
SP2.1	211.5	22.7	271.7		4.026		57.00	0.023	1.3	
Pipe: 7		0.0	0.0			6E:60	60.00	120	3.3	
SP2.1	211.5	22.7	271.7	SP2.3	4.000	C:22	84.00		0.0	
SP2.2	211.5	19.4	271.7		4.026	G: 2	144.00	0.023	3.3	
Pipe: 8		0.0	131.8	SP2.8			24.50	120	2.1	
SP2.2	211.5	19.4	139.9	SP2.4	3.000	----	0.00		0.0	
SP2.3	211.5	17.3	271.7		3.068		24.50	0.087	2.1	
Pipe: 9		0.0	0.0				94.00	120	2.4	
SP2.3	211.5	17.3	139.9	SP2.5	3.000	----	0.00		0.0	
SP2.4	211.5	14.9	139.9		3.068		94.00	0.026	2.4	
Pipe: 10		0.0	19.6	SP2.2			46.00	120	1.6	
SP2.4	211.5	14.9	120.4	SP2.6	3.000	T:15	15.00		0.0	
SP2.5	211.5	13.3	139.9		3.068		61.00	0.026	1.6	
Pipe: 11		0.0	19.4	SP2.2			10.00	120	0.2	
SP2.5	211.5	13.3	101.0	SP2.7	3.000	----	0.00		0.0	
SP2.6	211.5	13.1	120.4		3.068		10.00	0.019	0.2	
Pipe: 12		0.0	232.7	SP2.9			7.00	120	0.1	
SP2.6	211.5	13.1	-131.8	SP2.8	3.000	----	0.00		0.0	
SP2.7	211.5	13.0	101.0		3.068		7.00	0.014	0.1	

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 13		0.0	232.7	SP2.9			94.00	120	2.5	
SP2.8	211.5	15.5	-101.0	SP2.6	3.000	T:15	15.00		0.0	
SP2.7	211.5	13.0	131.8		3.068		109.00	0.023	2.5	
Pipe: 14		0.0	0.0				62.00	120	1.8	
SP2.3	211.5	17.3	131.8	SP2.7	3.000	T:15	15.00		0.0	
SP2.8	211.5	15.5	131.8		3.068		77.00	0.023	1.8	
Pipe: 15		0.0	50.7	SP2.2			4.00	120	1.2	
SP2.7	211.5	13.0	182.0	SP2.10	3.000	T:15	15.00		0.0	
SP2.9	211.5	11.8	232.7		3.068		19.00	0.065	1.2	
Pipe: 16		0.0	50.4	SP2.2			9.00	120	0.4	
SP2.9	211.5	11.8	131.6	SP2.11	3.000	----	0.00		0.0	
SP2.10	211.5	11.4	182.0		3.068		9.00	0.042	0.4	
Pipe: 17		0.0	34.1	SP2.3			4.00	120	0.1	
SP2.10	211.5	11.4	97.5	SP2.12	3.000	----	0.00		0.0	
SP2.11	211.5	11.3	131.6		3.068		4.00	0.023	0.1	
Pipe: 18		0.0	63.5	SP2.2			7.50	120	0.1	
SP2.11	211.5	11.3	33.9	SP2.13	3.000	----	0.00		0.0	
SP2.12	211.5	11.2	97.5		3.068		7.50	0.013	0.1	
Pipe: 19		0.0	0.0				2.00	120	0.0	
SP2.12	211.5	11.2	33.9	SP2.35	3.000	----	0.00		0.0	
SP2.13	211.5	11.2	33.9		3.068		2.00	0.002	0.0	
Pipe: 20		0.0	0.0				5.00	120	1.2	
SP2.5	211.5	13.3	19.6	S21	1.000	T: 5	5.00		0.0	
SP2.21	211.5	12.0	19.6		1.049		10.00	0.125	1.2	
Pipe: 21		0.0	0.0				5.00	120	1.2	
SP2.6	211.5	13.1	19.4	S22	1.000	T: 5	5.00		0.0	
SP2.22	211.5	11.9	19.4		1.049		10.00	0.123	1.2	
Pipe: 22		0.0	17.6	S23			2.00	120	1.5	
SP2.9	211.5	11.8	33.1	SP2.24	1.250	T: 6	6.00		0.0	
SP2.23	211.5	10.2	50.7		1.380		8.00	0.191	1.5	
Pipe: 23		0.0	16.8	S24			10.00	120	0.9	
SP2.23	211.5	10.2	16.3	SP2.25	1.250	----	0.00		0.0	
SP2.24	211.5	9.4	33.1		1.380		10.00	0.087	0.9	
Pipe: 24		0.0	0.0				11.00	120	1.2	
SP2.24	211.5	9.4	16.3	S25	1.000	E: 2	2.00		0.0	
SP2.25	211.5	8.2	16.3		1.049		13.00	0.089	1.2	
Pipe: 25		0.0	17.4	S26			1.00	120	1.3	
SP2.10	211.5	11.4	33.0	SP2.27	1.250	T: 6	6.00		0.0	
SP2.26	211.5	10.1	50.4		1.380		7.00	0.190	1.3	

DATE: 5/3/2010 C:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE 2ND.SDF
JOB TITLE: CHAFFEE 2ND .10/1500

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 26		0.0	16.9	S27			10.00	120	0.9	
SP2.26	211.5	10.1	16.1	SP2.28	1.250	----	0.00		0.0	
SP2.27	211.5	9.2	33.0		1.380		10.00	0.087	0.9	
Pipe: 27		0.0	0.0				12.00	120	1.2	
SP2.27	211.5	9.2	16.1	S28	1.000	E: 2	2.00		0.0	
SP2.28	211.5	8.0	16.1		1.049		14.00	0.087	1.2	
Pipe: 28		0.0	17.3	S29			1.00	120	1.2	
SP2.12	211.5	11.2	46.2	SP2.30	1.500	T: 8	8.00		0.0	
SP2.29	211.5	10.0	63.5		1.610		9.00	0.137	1.2	
Pipe: 29		0.0	16.2	S30			10.00	120	1.6	
SP2.29	211.5	10.0	30.0	SP2.14	1.250	----	0.00		0.0	
SP2.30	211.5	8.3	46.2		1.380		10.00	0.161	1.6	
Pipe: 30		0.0	15.0	SP2.3			11.00	120	0.8	
SP2.30	211.5	8.3	15.0	SP2.31	1.250	----	0.00		0.0	
SP2.14	211.5	7.6	30.0		1.380		11.00	0.072	0.8	
Pipe: 31		0.0	0.0				4.00	120	0.7	
SP2.14	211.5	7.6	15.0	S31	1.000	T: 5	5.00		0.0	
SP2.31	211.5	6.9	15.0		1.049		9.00	0.076	0.7	
Pipe: 32		0.0	0.0				4.00	120	0.7	
SP2.14	211.5	7.6	15.0	S32	1.000	T: 5	5.00		0.0	
SP2.32	211.5	6.9	15.0		1.049		9.00	0.076	0.7	
Pipe: 33		0.0	17.5	S33			10.00	120	1.5	
SP2.11	211.5	11.3	16.6	SP2.34	1.250	T: 6	6.00		0.0	
SP2.33	211.5	9.8	34.1		1.380		16.00	0.092	1.5	
Pipe: 34		0.0	0.0				14.00	120	1.3	
SP2.33	211.5	9.8	16.6	S34	1.000	----	0.00		0.0	
SP2.34	211.5	8.5	16.6		1.049		14.00	0.092	1.3	
Pipe: 35		0.0	17.4	S35			10.00	120	1.5	
SP2.13	211.5	11.2	16.5	SP2.36	1.250	T: 6	6.00		0.0	
SP2.35	211.5	9.7	33.9		1.380		16.00	0.091	1.5	
Pipe: 36		0.0	0.0				14.00	120	1.3	
SP2.35	211.5	9.7	16.5	S36	1.000	----	0.00		0.0	
SP2.36	211.5	8.5	16.5		1.049		14.00	0.091	1.3	
Pipe: 37		5.60	19.6	Disch			1.30	120	0.2	
SP2.21	211.5	12.0	0.0		1.000	E: 2	2.00		0.6	
S21	210.2	12.2	19.6		1.049		3.30	0.125	0.4	
Pipe: 38		5.60	19.4	Disch			1.30	120	0.2	
SP2.22	211.5	11.9	0.0		1.000	E: 2	2.00		0.6	
S22	210.2	12.0	19.4		1.049		3.30	0.123	0.4	

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 39		5.60	17.6	Disch			2.30	120	0.4	
SP2.23	211.5	10.2	0.0		1.000	E: 2	7.00		0.6	
S23	210.2	9.8	17.6		1.049	T: 5	9.30	0.102	1.0	
Pipe: 40		5.60	16.8	Disch			2.30	120	0.3	
SP2.24	211.5	9.4	0.0		1.000	E: 2	7.00		0.6	
S24	210.2	9.0	16.8		1.049	T: 5	9.30	0.095	0.9	
Pipe: 41		5.60	16.3	Disch			1.30	120	0.3	
SP2.25	211.5	8.2	0.0		1.000	E: 2	2.00		0.6	
S25	210.2	8.5	16.3		1.049		3.30	0.089	0.3	
Pipe: 42		5.60	17.4	Disch			2.30	120	0.4	
SP2.26	211.5	10.1	0.0		1.000	E: 2	7.00		0.6	
S26	210.2	9.7	17.4		1.049	T: 5	9.30	0.101	0.9	
Pipe: 43		5.60	16.9	Disch			1.30	120	0.0	
SP2.27	211.5	9.2	0.0		1.000	T: 5	5.00		0.6	
S27	210.2	9.2	16.9		1.049		6.30	0.096	0.6	
Pipe: 44		5.60	16.1	Disch			1.30	120	0.3	
SP2.28	211.5	8.0	0.0		1.000	E: 2	2.00		0.6	
S28	210.2	8.2	16.1		1.049		3.30	0.087	0.3	
Pipe: 45		5.60	17.3	Disch			2.30	120	0.4	
SP2.29	211.5	10.0	0.0		1.000	E: 2	7.00		0.6	
S29	210.2	9.6	17.3		1.049	T: 5	9.30	0.100	0.9	
Pipe: 46		5.60	16.2	Disch			1.30	120	0.0	
SP2.30	211.5	8.3	0.0		1.000	T: 5	5.00		0.6	
S30	210.2	8.4	16.2		1.049		6.30	0.088	0.6	
Pipe: 47		5.60	15.0	Disch			1.30	120	0.3	
SP2.31	211.5	6.9	0.0		1.000	E: 2	2.00		0.6	
S31	210.2	7.2	15.0		1.049		3.30	0.076	0.3	
Pipe: 48		5.60	15.0	Disch			1.30	120	0.3	
SP2.32	211.5	6.9	0.0		1.000	E: 2	2.00		0.6	
S32	210.2	7.2	15.0		1.049		3.30	0.076	0.3	
Pipe: 49		5.60	17.5	Disch			1.30	120	0.1	
SP2.33	211.5	9.8	0.0		1.000	T: 5	5.00		0.6	
S33	210.2	9.7	17.5		1.049		6.30	0.101	0.6	
Pipe: 50		5.60	16.6	Disch			1.30	120	0.3	
SP2.34	211.5	8.5	0.0		1.000	E: 2	2.00		0.6	
S34	210.2	8.8	16.6		1.049		3.30	0.092	0.3	
Pipe: 51		5.60	17.4	Disch			1.30	120	0.1	
SP2.35	211.5	9.7	0.0		1.000	T: 5	5.00		0.6	
S35	210.2	9.7	17.4		1.049		6.30	0.101	0.6	

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 52		5.60	16.5	Disch			1.30	120	0.3	
SP2.36	211.5	8.5	0.0		1.000	E: 2	2.00		0.6	
S36	210.2	8.7	16.5		1.049		3.30	0.091	0.3	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.0 computer program under license no. 3801093320 granted by
HRS Systems, Inc.
208 South Public Square
Petersburg, TN 37144

(2) The system has been calculated to provide an average imbalance at each node of 0.001 gpm and a maximum imbalance at any node of 0.063 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 11.8 ft/sec at pipe 8.

HRS SYSTEMS, INC
4792 LAVISTA ROAD
TUCKER, GA 30084

HYDRAULIC CALCULATIONS FOR

HUGHES ASSOCIATES, INC.
2374 POST ROAD, SUITE 102
WARWICK,RI 02886

DRAWING NUMBER: FP-1.33 DATE: 5-2-10

-DESIGN DATA-

REMOTE AREA NUMBER: REMOTE AREA LOCATION: 8th Floor

OCCUPANCY CLASSIFICATION: Light Hazard Offices

DENSITY: .10 gpm/sq. ft.
AREA OF APPLICATION: 900 sq. ft.

COVERAGE PER SPRINKLER: sq. ft.
TYPE OF SPRINKLERS CALCULATED: 5.6K QR
NUMBER OF SPRINKLERS CALCULATED: 9

*IN-RACK SPRINKLER DEMAND: gpm
HOSE-STREAM DEMAND: 100 gpm
TOTAL WATER REQUIRED (INCLUDING HOSE): 246 gpm
FLOW AND PRESSURE (AT BASE OF RISER): 246 gpm @ 55 psi

TIMOTHY J. LAROSE
10-25-10
No. 8352
REGISTERED
PROFESSIONAL ENGINEER
FIRE PROTECTION

TYPE OF SYSTEM: Wet
*VOLUME OF DRY OR PREACTION SYSTEM:
*DETAILS:
WATER SUPPLY
Source: Public Test Date: Test By: HAI
Location: Standpipe
Static: 67 psi Residual: 50 psi Flow: 1233 gpm
Source Elevation Relative to Finished Flow Level: ft.

INSTALLING CONTRACTOR
Name:
Address:
Phone: Certification number:

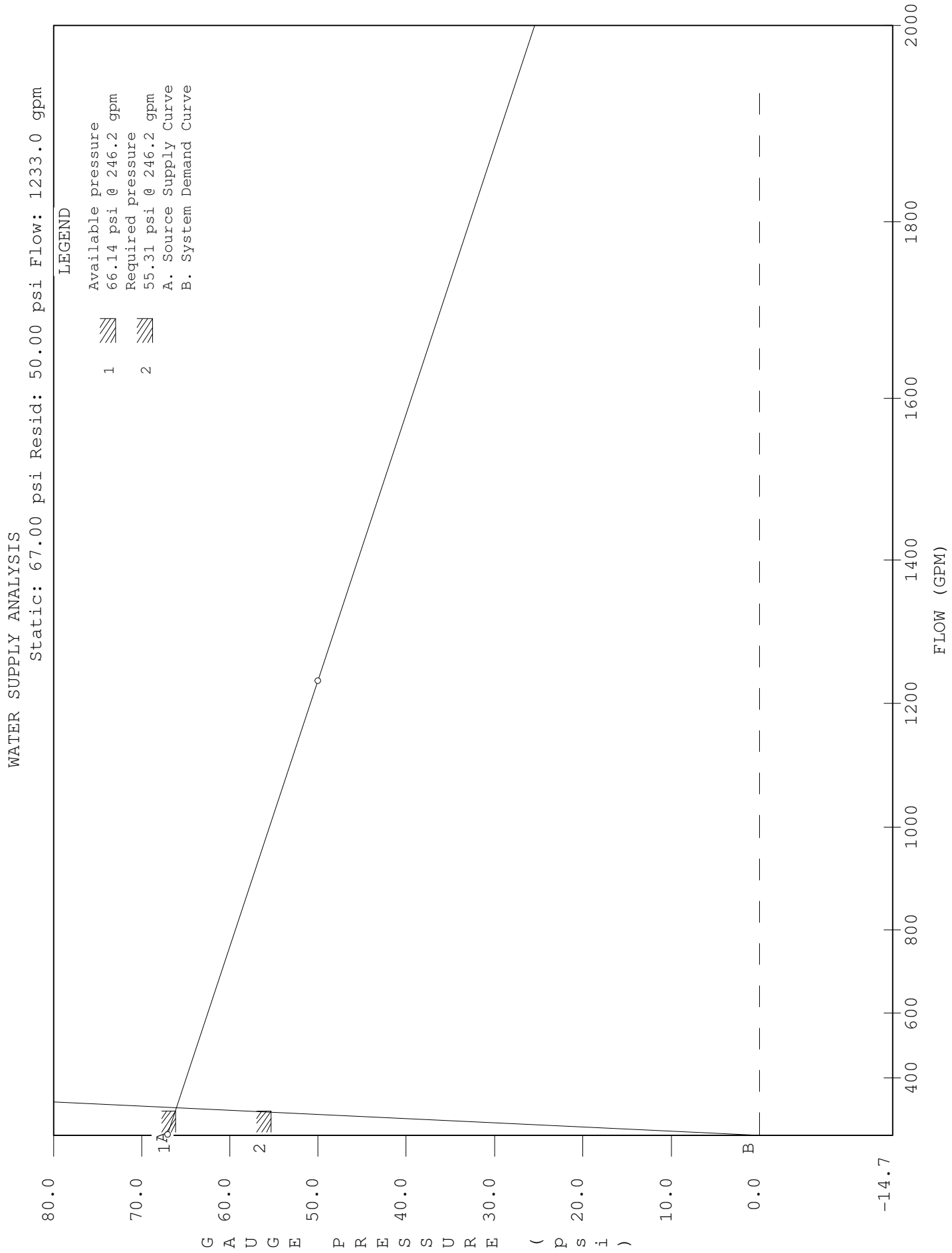
NAME OF DESIGNER: S.Dellasanta
AUTHORITY HAVING JURISDICTION: SFM

NOTES:
Calculations performed by HASS 7.9 under license # 3801093320, granted by HRS SYSTEMS, INC. TUCKER, GA 30084 USA.

(Notes continue after pipe calculations results.)

DATE: 5/3/2010:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE 8TH NFPA.SDF

JOB TITLE: CHAFFEE 8TH FLR .10/900



DATE: 5/3/2010:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE 8TH NFPA.SDF
JOB TITLE: CHAFFEE 8TH FLR .10/900

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
SOURCE	67.0	50.0	1233.0	66.1	246.2	55.3

Required pressure is 10.8 psi (16%) less than available pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	246.2 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	100.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	146.2 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
SOURCE	193.5	SOURCE	55.3	246.2	
UNDG	185.5	- - - -	58.5	- - -	
DCVA	181.5	- - - -	60.2	- - -	
BOR	181.5	- - - -	55.2	- - -	
TOR	187.5	- - - -	52.4	- - -	
SP1	197.5	- - - -	47.8	- - -	
SP2	269.5	HOSE STREAM	16.4	100.0	
SP2.1	269.5	- - - -	15.3	- - -	
SP3	273.5	- - - -	12.3	- - -	
SP4	273.5	- - - -	11.9	- - -	
SP5	273.5	- - - -	10.5	- - -	
SP6	273.5	- - - -	10.0	- - -	
SP7	273.5	- - - -	10.0	- - -	
SP8	273.5	- - - -	9.7	- - -	
SP9	273.5	- - - -	9.5	- - -	
SP10	273.5	- - - -	9.4	- - -	
SP11	273.5	- - - -	9.3	- - -	
SP12	273.5	- - - -	9.3	- - -	
SP13	273.5	- - - -	9.3	- - -	
SP14	273.5	- - - -	10.0	- - -	
SP15	273.5	- - - -	10.0	- - -	
SP16	273.5	- - - -	10.0	- - -	
SP17	273.5	- - - -	9.7	- - -	
SP18	273.5	- - - -	9.7	- - -	
SP19	273.5	- - - -	9.7	- - -	
SP20	273.5	- - - -	8.4	- - -	
SP21	273.5	- - - -	8.9	- - -	
SP22	273.5	- - - -	8.1	- - -	
SP23	273.5	- - - -	8.2	- - -	
SP24	273.5	- - - -	8.7	- - -	
SP25	272.5	- - - -	8.4	- - -	
SP26	273.5	- - - -	8.2	- - -	
SP27	273.5	- - - -	8.7	- - -	
SP28	273.5	- - - -	7.9	- - -	

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JOB TITLE: CHAFFEE 8TH FLR .10/900

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
S1	272.5	- - - -	10.5	- - -	
S2	272.5	- - - -	10.4	- - -	
S3	272.5	- - - -	10.4	- - -	
S4	272.5	- - - -	10.1	- - -	
S5	272.5	- - - -	10.1	- - -	
S6	272.5	- - - -	10.1	- - -	
S7	272.5	K= 5.60	8.5	16.3	
S8	272.5	K= 5.60	8.7	16.6	
S9	272.5	K= 5.60	8.2	16.1	
S10	272.5	K= 5.60	8.4	16.2	
S11	272.5	K= 5.60	8.6	16.5	
S12	272.5	K= 5.60	8.1	16.0	
S13	272.5	K= 5.60	8.3	16.2	
S14	272.5	K= 5.60	8.6	16.4	
S15	272.5	K= 5.60	8.1	16.0	

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JOB TITLE: CHAFFEE 8TH FLR .10/900

NFPA PIPE DATA

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 1		Source	0.0			E:19	75.00	140	3.2	
SOURCE	193.5	55.3	246.1	DCVA	6.000	T:40	62.51		3.5	
UNDG	185.5	58.5	246.2		6.065	G: 4	137.51	0.002	0.3	
Pipe: 2		0.0	0.0				4.00	120	1.7	
UNDG	185.5	58.5	246.1	BOR	6.000	E:14	14.00		1.7	
DCVA	181.5	60.2	246.1		6.065		18.00	0.003	0.0	
Pipe: 2A			0.0	Fixed Pressure Loss Device						
DCVA	181.5	60.2	246.1	TOR	5.0 psi, 246.1 gpm					
BOR	181.5	55.2	246.1							
Pipe: 3		0.0	0.0				16.00	120	2.8	
BOR	181.5	55.2	246.1	SP1	6.000	E:14	46.00		-2.6	
TOR	187.5	52.4	246.1		6.065	C:32	62.00	0.003	0.2	
Pipe: 4		0.0	0.0				40.00	120	4.6	
TOR	187.5	52.4	246.1	SP2	6.000	5E:70	70.00		-4.3	
SP1	197.5	47.8	246.1		6.065		110.00	0.003	0.3	
Pipe: 5		H.S.	100.0	Disch			72.00	120	31.4	
SP1	197.5	47.8	146.1	SP2.1	6.000	----	0.00		-31.2	
SP2	269.5	16.4	246.1		6.065		72.00	0.003	0.2	
Pipe: 5A		0.0	0.0				2.00	120	1.1	
SP2	269.5	16.4	146.1	SP3	2.500	T:12	12.00		0.0	
SP2.1	269.5	15.3	146.1		2.469		14.00	0.080	1.1	
Pipe: 6		0.0	0.0			ETCG	6.00	120	3.0	
SP2.1	269.5	15.3	146.1	SP4	3.000		39.00		-1.7	
SP3	273.5	12.3	146.1		3.068		45.00	0.028	1.2	
Pipe: 7		0.0	0.0				9.50	120	0.5	
SP3	273.5	12.3	146.1	SP5	3.000	E: 7	7.00		0.0	
SP4	273.5	11.9	146.1		3.068		16.50	0.028	0.5	
Pipe: 7A		0.0	0.0				33.00	120	1.3	
SP4	273.5	11.9	146.1	SP6	3.000	T:15	15.00		0.0	
SP5	273.5	10.5	146.1		3.068		48.00	0.028	1.3	
Pipe: 8		0.0	0.0				18.00	120	0.5	
SP5	273.5	10.5	146.1	SP7	3.000	----	0.00		0.0	
SP6	273.5	10.0	146.1		3.068		18.00	0.028	0.5	
Pipe: 9		0.0	0.0				2.00	120	0.1	
SP6	273.5	10.0	146.1	SP8	3.000	----	0.00		0.0	
SP7	273.5	10.0	146.1		3.068		2.00	0.028	0.1	
Pipe: 10		0.0	0.0				10.00	120	0.3	
SP7	273.5	10.0	146.1	SP9	3.000	----	0.00		0.0	
SP8	273.5	9.7	146.1		3.068		10.00	0.028	0.3	

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JOB TITLE: CHAFFEE 8TH FLR .10/900

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 11		0.0	16.3	SP20			7.00	120	0.2	
SP8	273.5	9.7	129.8	SP10	3.000	----	0.00		0.0	
SP9	273.5	9.5	146.1		3.068		7.00	0.028	0.2	
Pipe: 12		0.0	32.6	SP21			3.00	120	0.1	
SP9	273.5	9.5	97.2	SP11	3.000	----	0.00		0.0	
SP10	273.5	9.4	129.8		3.068		3.00	0.022	0.1	
Pipe: 13		0.0	16.2	SP23			8.00	120	0.1	
SP10	273.5	9.4	81.0	SP12	3.000	----	0.00		0.0	
SP11	273.5	9.3	97.2		3.068		8.00	0.013	0.1	
Pipe: 14		0.0	32.4	SP24			2.00	120	0.0	
SP11	273.5	9.3	48.5	SP13	3.000	----	0.00		0.0	
SP12	273.5	9.3	81.0		3.068		2.00	0.009	0.0	
Pipe: 15		0.0	32.4	SP27			10.00	120	0.0	
SP12	273.5	9.3	16.2	SP26	3.000	----	0.00		0.0	
SP13	273.5	9.3	48.5		3.068		10.00	0.004	0.0	
Pipe: 16		0.0	0.0				8.00	120	0.0	
SP14	273.5	10.0	0.0		1.000	T: 5	5.00		0.0	
SP6	273.5	10.0	0.0		1.049		13.00	0.000	0.0	
Pipe: 17		0.0	0.0				1.00	120	0.0	
SP15	273.5	10.0	0.0		1.250	T: 6	6.00		0.0	
SP7	273.5	10.0	0.0		1.380		7.00	0.000	0.0	
Pipe: 18		0.0	0.0				9.00	120	0.0	
SP15	273.5	10.0	0.0		1.000	----	0.00		0.0	
SP16	273.5	10.0	0.0		1.049		9.00	0.000	0.0	
Pipe: 19		0.0	0.0				9.00	120	0.0	
SP17	273.5	9.7	0.0		1.000	E: 2	7.00		0.0	
SP8	273.5	9.7	0.0		1.049	T: 5	16.00	0.000	0.0	
Pipe: 20		0.0	0.0				1.00	120	0.0	
SP18	273.5	9.7	0.0		1.250	T: 6	6.00		0.0	
SP8	273.5	9.7	0.0		1.380		7.00	0.000	0.0	
Pipe: 21		0.0	0.0				9.00	120	0.0	
SP19	273.5	9.7	0.0		1.000	----	0.00		0.0	
SP18	273.5	9.7	0.0		1.049		9.00	0.000	0.0	
Pipe: 22		0.0	0.0				8.00	120	1.2	
SP9	273.5	9.5	16.3	S7	1.000	T: 5	5.00		0.0	
SP20	273.5	8.4	16.3		1.049		13.00	0.090	1.2	
Pipe: 23		0.0	16.6	S8			1.00	120	0.6	
SP10	273.5	9.4	16.1	SP22	1.250	T: 6	6.00		0.0	
SP21	273.5	8.9	32.6		1.380		7.00	0.085	0.6	

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JOB TITLE: CHAFFEE 8TH FLR .10/900

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 24		0.0	0.0				9.00	120	0.8	
SP21	273.5	8.9	16.1	S9	1.000	----	0.00		0.0	
SP22	273.5	8.1	16.1		1.049		9.00	0.087	0.8	
Pipe: 25		0.0	0.0				8.00	120	1.1	
SP11	273.5	9.3	16.2	S10	1.000	T: 5	5.00		0.0	
SP23	273.5	8.2	16.2		1.049		13.00	0.088	1.1	
Pipe: 26		0.0	16.5	S11			1.00	120	0.6	
SP12	273.5	9.3	16.0	SP25	1.250	T: 6	6.00		0.0	
SP24	273.5	8.7	32.4		1.380		7.00	0.084	0.6	
Pipe: 27		0.0	0.0				9.00	120	0.3	
SP24	273.5	8.7	16.0	S12	1.000	----	0.00		0.4	
SP25	272.5	8.4	16.0		1.049		9.00	0.086	0.8	
Pipe: 28		0.0	0.0				8.00	120	1.1	
SP13	273.5	9.3	16.2	S13	1.000	T: 5	5.00		0.0	
SP26	273.5	8.2	16.2		1.049		13.00	0.088	1.1	
Pipe: 29		0.0	16.4	S14			1.00	120	0.6	
SP13	273.5	9.3	16.0	SP28	1.250	T: 6	6.00		0.0	
SP27	273.5	8.7	32.4		1.380		7.00	0.083	0.6	
Pipe: 30		0.0	0.0				9.00	120	0.8	
SP27	273.5	8.7	16.0	S15	1.000	----	0.00		0.0	
SP28	273.5	7.9	16.0		1.049		9.00	0.086	0.8	
Pipe: 31		0.0	0.0				1.00	120	0.4	
SP14	273.5	10.0	0.0		1.000	E: 2	2.00		0.4	
S1	272.5	10.5	0.0		1.049		3.00	0.000	0.0	
Pipe: 32		0.0	0.0				1.00	120	0.4	
S2	272.5	10.4	0.0		1.000	T: 5	5.00		-0.4	
SP15	273.5	10.0	0.0		1.049		6.00	0.000	0.0	
Pipe: 33		0.0	0.0				1.00	120	0.4	
S3	272.5	10.4	0.0		1.000	E: 2	2.00		-0.4	
SP16	273.5	10.0	0.0		1.049		3.00	0.000	0.0	
Pipe: 34		0.0	0.0				1.00	120	0.4	
S4	272.5	10.1	0.0		1.000	E: 2	2.00		-0.4	
SP17	273.5	9.7	0.0		1.049		3.00	0.000	0.0	
Pipe: 35		0.0	0.0				1.00	120	0.4	
S5	272.5	10.1	0.0		1.000	T: 5	5.00		-0.4	
SP18	273.5	9.7	0.0		1.049		6.00	0.000	0.0	
Pipe: 36		0.0	0.0				1.00	120	0.4	
SP19	273.5	9.7	0.0		1.000	E: 2	2.00		0.4	
S6	272.5	10.1	0.0		1.049		3.00	0.000	0.0	

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JOB TITLE: CHAFFEE 8TH FLR .10/900

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 37		5.60	16.3	Disch			1.00	120	0.2	
SP20	273.5	8.4	0.0		1.000	E: 2	2.00		0.4	
S7	272.5	8.5	16.3		1.049		3.00	0.090	0.3	
Pipe: 38		5.60	16.6	Disch			1.00	120	0.1	
SP21	273.5	8.9	0.0		1.000	T: 5	5.00		0.4	
S8	272.5	8.7	16.6		1.049		6.00	0.092	0.6	
Pipe: 39		5.60	16.1	Disch			1.00	120	0.2	
SP22	273.5	8.1	0.0		1.000	E: 2	2.00		0.4	
S9	272.5	8.2	16.1		1.049		3.00	0.087	0.3	
Pipe: 40		5.60	16.2	Disch			1.00	120	0.2	
SP23	273.5	8.2	0.0		1.000	E: 2	2.00		0.4	
S10	272.5	8.4	16.2		1.049		3.00	0.088	0.3	
Pipe: 41		5.60	16.5	Disch			1.00	120	0.1	
SP24	273.5	8.7	0.0		1.000	T: 5	5.00		0.4	
S11	272.5	8.6	16.5		1.049		6.00	0.091	0.5	
Pipe: 42		5.60	16.0	Disch			1.00	120	0.3	
SP25	272.5	8.4	0.0		1.000	E: 2	2.00		0.0	
S12	272.5	8.1	16.0		1.049		3.00	0.086	0.3	
Pipe: 43		5.60	16.2	Disch			1.00	120	0.2	
SP26	273.5	8.2	0.0		1.000	E: 2	2.00		0.4	
S13	272.5	8.3	16.2		1.049		3.00	0.088	0.3	
Pipe: 44		5.60	16.4	Disch			1.00	120	0.1	
SP27	273.5	8.7	0.0		1.000	T: 5	5.00		0.4	
S14	272.5	8.6	16.4		1.049		6.00	0.090	0.5	
Pipe: 45		5.60	16.0	Disch			1.00	120	0.2	
SP28	273.5	7.9	0.0		1.000	E: 2	2.00		0.4	
S15	272.5	8.1	16.0		1.049		3.00	0.086	0.3	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.0 computer program under license no. 3801093320 granted by
HRS Systems, Inc.
208 South Public Square
Petersburg, TN 37144

(2) The system has been calculated to provide an average imbalance at each node of 0.002 gpm and a maximum imbalance at any node of 0.084 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 9.8 ft/sec at pipe 5A.

HRS SYSTEMS, INC
4792 LAVISTA ROAD
TUCKER, GA 30084

HYDRAULIC CALCULATIONS FOR

HUGHES ASSOCIATES, INC.
2374 POST ROAD, SUITE 102
WARWICK,RI 02886

DRAWING NUMBER: FP-1.33 DATE: 5-2-10

-DESIGN DATA-

REMOTE AREA NUMBER: REMOTE AREA LOCATION: 8th Floor

OCCUPANCY CLASSIFICATION: Light Hazard Offices

DENSITY: .10 gpm/sq. ft.
AREA OF APPLICATION: 1500 sq. ft.

COVERAGE PER SPRINKLER: sq. ft.
TYPE OF SPRINKLERS CALCULATED: 5.6K QR
NUMBER OF SPRINKLERS CALCULATED: 15

*IN-RACK SPRINKLER DEMAND: gpm
HOSE-STREAM DEMAND: 100 gpm
TOTAL WATER REQUIRED (INCLUDING HOSE): 346 gpm
FLOW AND PRESSURE (AT BASE OF RISER): 246 gpm @ 63 psi

TIMOTHY J. LAROSE
10-25-10
No. 8352
REGISTERED
PROFESSIONAL ENGINEER
FIRE PROTECTION

TYPE OF SYSTEM: Wet
*VOLUME OF DRY OR PREACTION SYSTEM:
*DETAILS:
WATER SUPPLY
Source: Public Test Date: Test By: HAI
Location: Standpipe
Static: 67 psi Residual: 50 psi Flow: 1233 gpm
Source Elevation Relative to Finished Flow Level: ft.

INSTALLING CONTRACTOR
Name:
Address:
Phone: Certification number:

NAME OF DESIGNER: S.Dellasanta
AUTHORITY HAVING JURISDICTION: SFM

NOTES:
Calculations performed by HASS 7.9 under license # 3801093320, granted by HRS SYSTEMS, INC. TUCKER, GA 30084 USA.

(Notes continue after pipe calculations results.)

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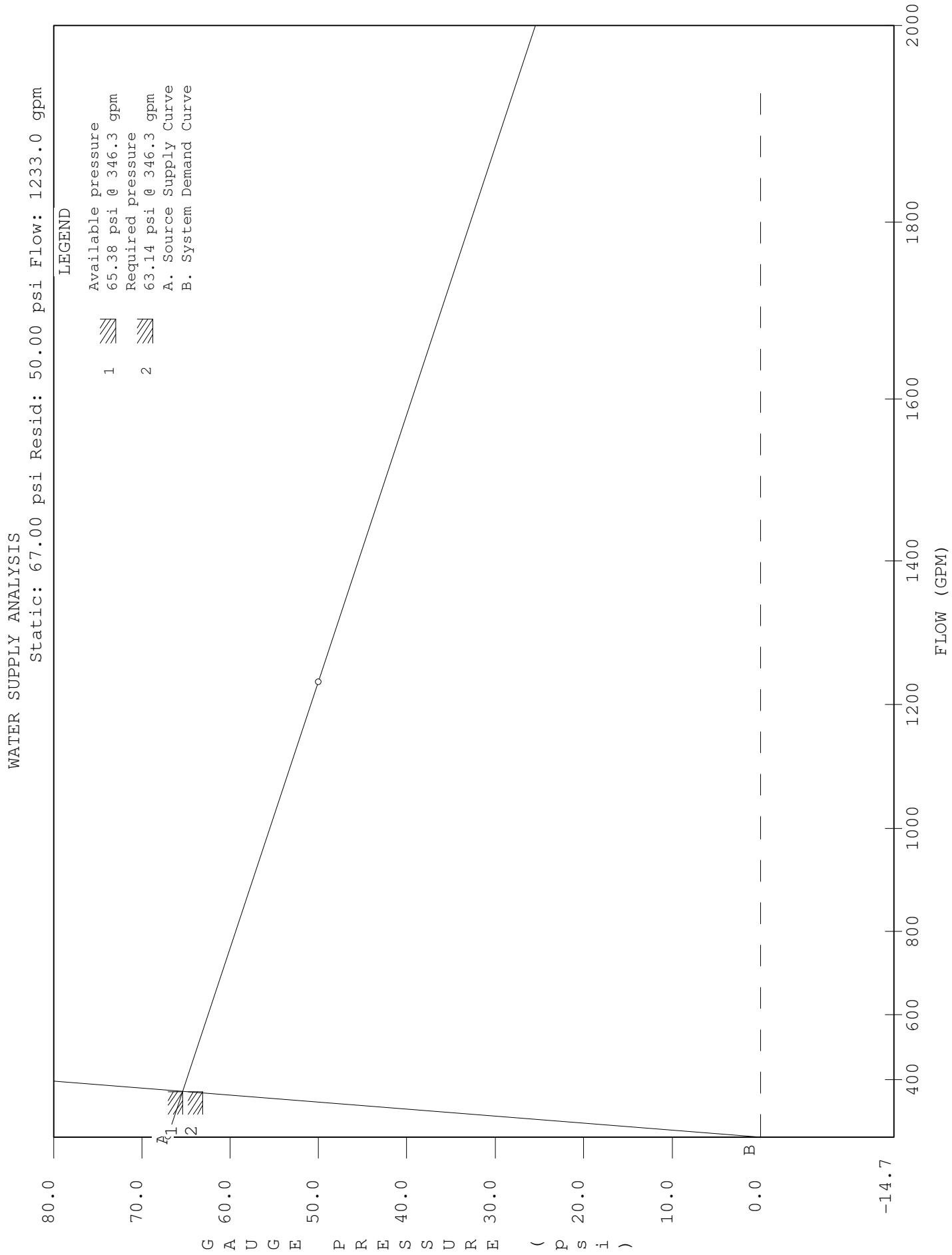
JOB TITLE: CHAFFEE 8TH FLR .10/1500



DATE: 5/3/2010 C:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE 8TH.SDF
JOB TITLE: CHAFFEE 8TH FLR .10/1500

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
SOURCE	67.0	50.0	1233.0	65.4	346.3	63.1

Required pressure is 2.2 psi (3%) less than available pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	346.3 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	100.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	246.3 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
SOURCE	193.5	SOURCE	63.1	246.3	
UNDG	185.5	- - - -	66.3	- - -	
DCVA	181.5	- - - -	68.0	- - -	
BOR	181.5	- - - -	63.0	- - -	
TOR	187.5	- - - -	60.3	- - -	
SP1	197.5	- - - -	55.6	- - -	
SP2	269.5	- - - -	24.3	- - -	
SP2.1	269.5	- - - -	21.3	- - -	
SP3	273.5	- - - -	16.3	- - -	
SP4	273.5	- - - -	15.1	- - -	
SP5	273.5	- - - -	11.6	- - -	
SP6	273.5	- - - -	10.3	- - -	
SP7	273.5	- - - -	10.2	- - -	
SP8	273.5	- - - -	9.7	- - -	
SP9	273.5	- - - -	9.5	- - -	
SP10	273.5	- - - -	9.4	- - -	
SP11	273.5	- - - -	9.3	- - -	
SP12	273.5	- - - -	9.3	- - -	
SP13	273.5	- - - -	9.3	- - -	
SP14	273.5	- - - -	9.1	- - -	
SP15	273.5	- - - -	9.5	- - -	
SP16	273.5	- - - -	8.7	- - -	
SP17	273.5	- - - -	8.3	- - -	
SP18	273.5	- - - -	9.1	- - -	
SP19	273.5	- - - -	8.3	- - -	
SP20	273.5	- - - -	8.4	- - -	
SP21	273.5	- - - -	8.9	- - -	
SP22	273.5	- - - -	8.1	- - -	
SP23	273.5	- - - -	8.2	- - -	
SP24	273.5	- - - -	8.7	- - -	
SP25	272.5	- - - -	8.4	- - -	
SP26	273.5	- - - -	8.2	- - -	
SP27	273.5	- - - -	8.7	- - -	
SP28	273.5	- - - -	7.9	- - -	

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JOB TITLE: CHAFFEE 8TH FLR .10/1500

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
S1	272.5	K= 5.60	9.2	17.0	
S2	272.5	K= 5.60	9.4	17.2	
S3	272.5	K= 5.60	8.9	16.7	
S4	272.5	K= 5.60	8.5	16.3	
S5	272.5	K= 5.60	9.0	16.8	
S6	272.5	K= 5.60	8.5	16.3	
S7	272.5	K= 5.60	8.5	16.3	
S8	272.5	K= 5.60	8.7	16.6	
S9	272.5	K= 5.60	8.2	16.1	
S10	272.5	K= 5.60	8.4	16.2	
S11	272.5	K= 5.60	8.6	16.5	
S12	272.5	K= 5.60	8.1	16.0	
S13	272.5	K= 5.60	8.3	16.2	
S14	272.5	K= 5.60	8.6	16.4	
S15	272.5	K= 5.60	8.1	16.0	

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JOB TITLE: CHAFFEE 8TH FLR .10/1500

NFPA PIPE DATA

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 1		Source	0.0			E:19	75.00	140	3.2	
SOURCE	193.5	63.1	246.3	DCVA	6.000	T:40	62.51		3.5	
UNDG	185.5	66.3	246.3		6.065	G: 4	137.51	0.002	0.3	
Pipe: 2		0.0	0.0				4.00	120	1.7	
UNDG	185.5	66.3	246.3	BOR	6.000	E:14	14.00		1.7	
DCVA	181.5	68.0	246.3		6.065		18.00	0.003	0.0	
Pipe: 2A			0.0	Fixed Pressure Loss Device						
DCVA	181.5	68.0	246.3	TOR	5.0 psi, 246.3 gpm					
BOR	181.5	63.0	246.3							
Pipe: 3		0.0	0.0				16.00	120	2.8	
BOR	181.5	63.0	246.3	SP1	6.000	E:14	46.00		-2.6	
TOR	187.5	60.3	246.3		6.065	C:32	62.00	0.003	0.2	
Pipe: 4		0.0	0.0				40.00	120	4.6	
TOR	187.5	60.3	246.3	SP2	6.000	5E:70	70.00		-4.3	
SP1	197.5	55.6	246.3		6.065		110.00	0.003	0.3	
Pipe: 5		0.0	0.0				72.00	120	31.4	
SP1	197.5	55.6	246.3	SP2.1	6.000	----	0.00		-31.2	
SP2	269.5	24.3	246.3		6.065		72.00	0.003	0.2	
Pipe: 5A		0.0	0.0				2.00	120	2.9	
SP2	269.5	24.3	246.3	SP3	2.500	T:12	12.00		0.0	
SP2.1	269.5	21.3	246.3		2.469		14.00	0.210	2.9	
Pipe: 6		0.0	0.0			ETCG	6.00	120	5.0	
SP2.1	269.5	21.3	246.3	SP4	3.000		39.00		-1.7	
SP3	273.5	16.3	246.3		3.068		45.00	0.073	3.3	
Pipe: 7		0.0	0.0				9.50	120	1.2	
SP3	273.5	16.3	246.3	SP5	3.000	E: 7	7.00		0.0	
SP4	273.5	15.1	246.3		3.068		16.50	0.073	1.2	
Pipe: 7A		0.0	0.0				33.00	120	3.5	
SP4	273.5	15.1	246.3	SP6	3.000	T:15	15.00		0.0	
SP5	273.5	11.6	246.3		3.068		48.00	0.073	3.5	
Pipe: 8		0.0	17.0	SP14			18.00	120	1.3	
SP5	273.5	11.6	229.3	SP7	3.000	----	0.00		0.0	
SP6	273.5	10.3	246.3		3.068		18.00	0.073	1.3	
Pipe: 9		0.0	33.8	SP15			2.00	120	0.1	
SP6	273.5	10.3	195.5	SP8	3.000	----	0.00		0.0	
SP7	273.5	10.2	229.3		3.068		2.00	0.064	0.1	
Pipe: 10		0.0	33.1	SP18			10.00	120	0.5	
SP7	273.5	10.2	146.1	SP9	3.000	----	0.00		0.0	
SP8	273.5	9.7	195.5		3.068		10.00	0.047	0.5	

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 11		0.0	16.3	SP20			7.00	120	0.2	
SP8	273.5	9.7	129.8	SP10	3.000	----	0.00		0.0	
SP9	273.5	9.5	146.1		3.068		7.00	0.028	0.2	
Pipe: 12		0.0	32.6	SP21			3.00	120	0.1	
SP9	273.5	9.5	97.2	SP11	3.000	----	0.00		0.0	
SP10	273.5	9.4	129.8		3.068		3.00	0.022	0.1	
Pipe: 13		0.0	16.2	SP23			8.00	120	0.1	
SP10	273.5	9.4	81.0	SP12	3.000	----	0.00		0.0	
SP11	273.5	9.3	97.2		3.068		8.00	0.013	0.1	
Pipe: 14		0.0	32.4	SP24			2.00	120	0.0	
SP11	273.5	9.3	48.5	SP13	3.000	----	0.00		0.0	
SP12	273.5	9.3	81.0		3.068		2.00	0.009	0.0	
Pipe: 15		0.0	32.4	SP27			10.00	120	0.0	
SP12	273.5	9.3	16.2	SP26	3.000	----	0.00		0.0	
SP13	273.5	9.3	48.5		3.068		10.00	0.004	0.0	
Pipe: 16		0.0	0.0				8.00	120	1.3	
SP6	273.5	10.3	17.0	S1	1.000	T: 5	5.00		0.0	
SP14	273.5	9.1	17.0		1.049		13.00	0.096	1.3	
Pipe: 17		0.0	17.2	S2			1.00	120	0.6	
SP7	273.5	10.2	16.7	SP16	1.250	T: 6	6.00		0.0	
SP15	273.5	9.5	33.8		1.380		7.00	0.091	0.6	
Pipe: 18		0.0	0.0				9.00	120	0.8	
SP15	273.5	9.5	16.7	S3	1.000	----	0.00		0.0	
SP16	273.5	8.7	16.7		1.049		9.00	0.093	0.8	
Pipe: 19		0.0	0.0				9.00	120	1.4	
SP8	273.5	9.7	16.3	S4	1.000	E: 2	7.00		0.0	
SP17	273.5	8.3	16.3		1.049	T: 5	16.00	0.089	1.4	
Pipe: 20		0.0	16.8	S5			1.00	120	0.6	
SP8	273.5	9.7	16.3	SP19	1.250	T: 6	6.00		0.0	
SP18	273.5	9.1	33.1		1.380		7.00	0.087	0.6	
Pipe: 21		0.0	0.0				9.00	120	0.8	
SP18	273.5	9.1	16.3	S6	1.000	----	0.00		0.0	
SP19	273.5	8.3	16.3		1.049		9.00	0.089	0.8	
Pipe: 22		0.0	0.0				8.00	120	1.2	
SP9	273.5	9.5	16.3	S7	1.000	T: 5	5.00		0.0	
SP20	273.5	8.4	16.3		1.049		13.00	0.090	1.2	
Pipe: 23		0.0	16.6	S8			1.00	120	0.6	
SP10	273.5	9.4	16.1	SP22	1.250	T: 6	6.00		0.0	
SP21	273.5	8.9	32.6		1.380		7.00	0.085	0.6	

DATE: 5/3/2010 C:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE 8TH.SDF
JOB TITLE: CHAFFEE 8TH FLR .10/1500

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 24		0.0	0.0				9.00	120	0.8	
SP21	273.5	8.9	16.1	S9	1.000	----	0.00		0.0	
SP22	273.5	8.1	16.1		1.049		9.00	0.087	0.8	
Pipe: 25		0.0	0.0				8.00	120	1.1	
SP11	273.5	9.3	16.2	S10	1.000	T: 5	5.00		0.0	
SP23	273.5	8.2	16.2		1.049		13.00	0.088	1.1	
Pipe: 26		0.0	16.5	S11			1.00	120	0.6	
SP12	273.5	9.3	16.0	SP25	1.250	T: 6	6.00		0.0	
SP24	273.5	8.7	32.4		1.380		7.00	0.084	0.6	
Pipe: 27		0.0	0.0				9.00	120	0.3	
SP24	273.5	8.7	16.0	S12	1.000	----	0.00		0.4	
SP25	272.5	8.4	16.0		1.049		9.00	0.086	0.8	
Pipe: 28		0.0	0.0				8.00	120	1.1	
SP13	273.5	9.3	16.2	S13	1.000	T: 5	5.00		0.0	
SP26	273.5	8.2	16.2		1.049		13.00	0.088	1.1	
Pipe: 29		0.0	16.4	S14			1.00	120	0.6	
SP13	273.5	9.3	16.0	SP28	1.250	T: 6	6.00		0.0	
SP27	273.5	8.7	32.4		1.380		7.00	0.083	0.6	
Pipe: 30		0.0	0.0				9.00	120	0.8	
SP27	273.5	8.7	16.0	S15	1.000	----	0.00		0.0	
SP28	273.5	7.9	16.0		1.049		9.00	0.086	0.8	
Pipe: 31		5.60	17.0	Disch			1.00	120	0.1	
SP14	273.5	9.1	0.0		1.000	E: 2	2.00		0.4	
S1	272.5	9.2	17.0		1.049		3.00	0.096	0.3	
Pipe: 32		5.60	17.2	Disch			1.00	120	0.2	
SP15	273.5	9.5	0.0		1.000	T: 5	5.00		0.4	
S2	272.5	9.4	17.2		1.049		6.00	0.098	0.6	
Pipe: 33		5.60	16.7	Disch			1.00	120	0.2	
SP16	273.5	8.7	0.0		1.000	E: 2	2.00		0.4	
S3	272.5	8.9	16.7		1.049		3.00	0.093	0.3	
Pipe: 34		5.60	16.3	Disch			1.00	120	0.2	
SP17	273.5	8.3	0.0		1.000	E: 2	2.00		0.4	
S4	272.5	8.5	16.3		1.049		3.00	0.089	0.3	
Pipe: 35		5.60	16.8	Disch			1.00	120	0.1	
SP18	273.5	9.1	0.0		1.000	T: 5	5.00		0.4	
S5	272.5	9.0	16.8		1.049		6.00	0.094	0.6	
Pipe: 36		5.60	16.3	Disch			1.00	120	0.2	
SP19	273.5	8.3	0.0		1.000	E: 2	2.00		0.4	
S6	272.5	8.5	16.3		1.049		3.00	0.089	0.3	

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 37		5.60	16.3	Disch			1.00	120	0.2	
SP20	273.5	8.4	0.0		1.000	E: 2	2.00		0.4	
S7	272.5	8.5	16.3		1.049		3.00	0.090	0.3	
Pipe: 38		5.60	16.6	Disch			1.00	120	0.1	
SP21	273.5	8.9	0.0		1.000	T: 5	5.00		0.4	
S8	272.5	8.7	16.6		1.049		6.00	0.092	0.6	
Pipe: 39		5.60	16.1	Disch			1.00	120	0.2	
SP22	273.5	8.1	0.0		1.000	E: 2	2.00		0.4	
S9	272.5	8.2	16.1		1.049		3.00	0.087	0.3	
Pipe: 40		5.60	16.2	Disch			1.00	120	0.2	
SP23	273.5	8.2	0.0		1.000	E: 2	2.00		0.4	
S10	272.5	8.4	16.2		1.049		3.00	0.088	0.3	
Pipe: 41		5.60	16.5	Disch			1.00	120	0.1	
SP24	273.5	8.7	0.0		1.000	T: 5	5.00		0.4	
S11	272.5	8.6	16.5		1.049		6.00	0.091	0.5	
Pipe: 42		5.60	16.0	Disch			1.00	120	0.3	
SP25	272.5	8.4	0.0		1.000	E: 2	2.00		0.0	
S12	272.5	8.1	16.0		1.049		3.00	0.086	0.3	
Pipe: 43		5.60	16.2	Disch			1.00	120	0.2	
SP26	273.5	8.2	0.0		1.000	E: 2	2.00		0.4	
S13	272.5	8.3	16.2		1.049		3.00	0.088	0.3	
Pipe: 44		5.60	16.4	Disch			1.00	120	0.1	
SP27	273.5	8.7	0.0		1.000	T: 5	5.00		0.4	
S14	272.5	8.6	16.4		1.049		6.00	0.090	0.5	
Pipe: 45		5.60	16.0	Disch			1.00	120	0.2	
SP28	273.5	7.9	0.0		1.000	E: 2	2.00		0.4	
S15	272.5	8.1	16.0		1.049		3.00	0.086	0.3	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.0 computer program under license no. 3801093320 granted by
HRS Systems, Inc.
208 South Public Square
Petersburg, TN 37144

(2) The system has been calculated to provide an average imbalance at each node of 0.002 gpm and a maximum imbalance at any node of 0.097 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 16.5 ft/sec at pipe 5A.

HRS SYSTEMS, INC
4792 LAVISTA ROAD
TUCKER, GA 30084

HYDRAULIC CALCULATIONS FOR

HUGHES ASSOCIATES, INC.
2374 POST ROAD, SUITE 102
WARWICK,RI 02886

DRAWING NUMBER: FP-1.01 DATE: 5-2-10

-DESIGN DATA-

REMOTE AREA NUMBER: REMOTE AREA LOCATION: Basement

OCCUPANCY CLASSIFICATION: Ord Haz 2 Mechanical Room

DENSITY: .20 gpm/sq. ft.
AREA OF APPLICATION: 2500 sq. ft.

COVERAGE PER SPRINKLER: 130 sq. ft.
TYPE OF SPRINKLERS CALCULATED: 8.0K QR
NUMBER OF SPRINKLERS CALCULATED: 25

*IN-RACK SPRINKLER DEMAND: gpm
HOSE-STREAM DEMAND: 250 gpm
TOTAL WATER REQUIRED (INCLUDING HOSE): 988 gpm
FLOW AND PRESSURE (AT BASE OF RISER): 738 gpm @ 40 psi

TIMOTHY J. LAROSE
10-25-10
No. 8352
REGISTERED
PROFESSIONAL ENGINEER
FIRE PROTECTION

TYPE OF SYSTEM: WET
*VOLUME OF DRY OR PREACTION SYSTEM:
*DETAILS:
WATER SUPPLY
Source: Public Test Date: Test By: HAI
Location: Standpipe
Static: 67 psi Residual: 50 psi Flow: 1233 gpm
Source Elevation Relative to Finished Flow Level: ft.

INSTALLING CONTRACTOR
Name:
Address:
Phone: Certification number:

NAME OF DESIGNER: S.Dellasanta
AUTHORITY HAVING JURISDICTION: SFM

NOTES:
Calculations performed by HASS 7.9 under license # 3801093320, granted by HRS SYSTEMS, INC. TUCKER, GA 30084 USA.

(Notes continue after pipe calculations results.)

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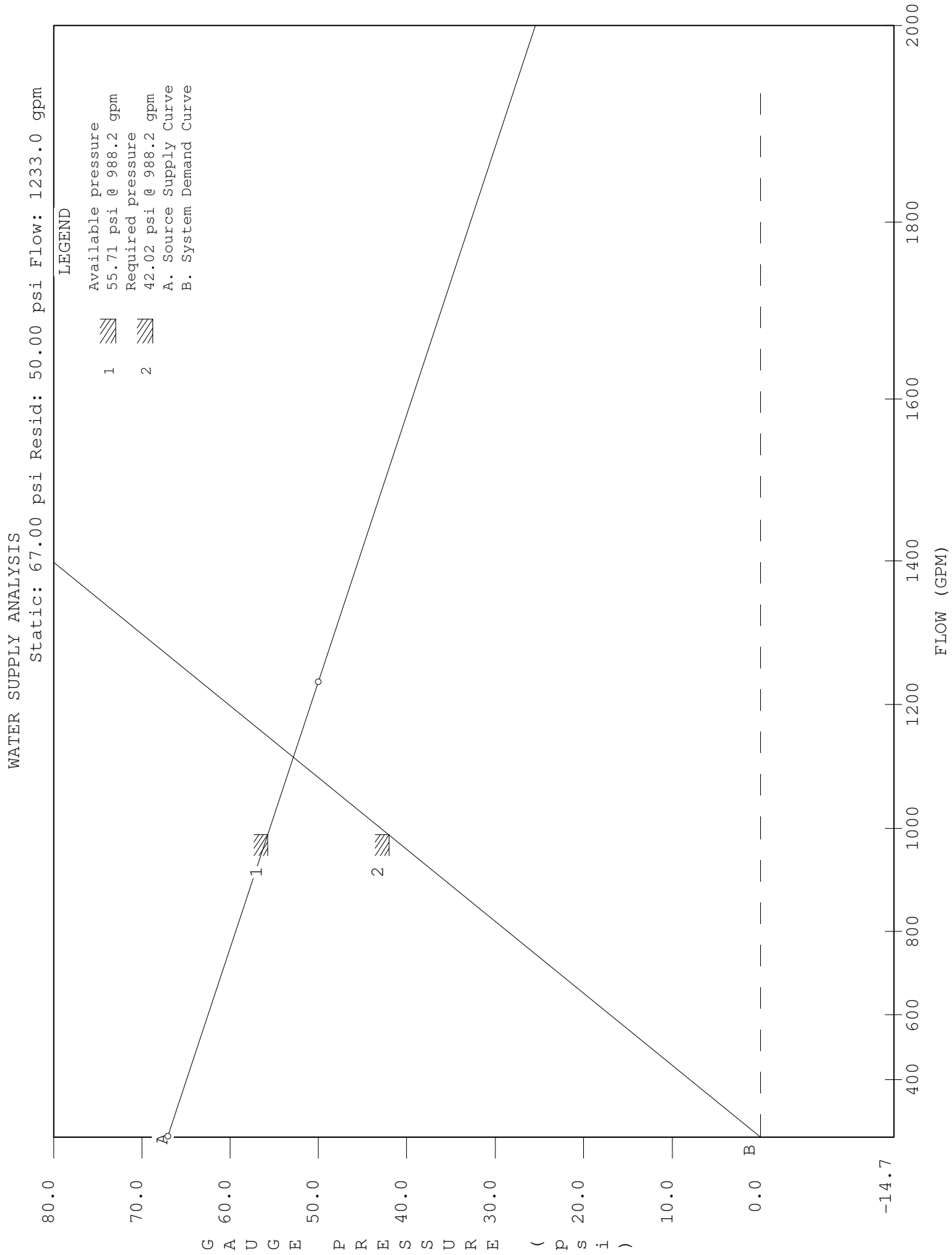
JOB TITLE: CHAFFEE BASEMENT .20/2500



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NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
SOURCE	67.0	50.0	1233.0	55.7	988.2	42.0

Required pressure is 13.7 psi (25%) less than available pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	988.2 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	250.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	738.2 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
SOURCE	193.5	SOURCE	42.0	738.2	
UNDG	185.5	- - - -	43.4	- - -	
DCVA	181.5	- - - -	44.8	- - -	
BOR	181.5	- - - -	39.8	- - -	
TOR	183.5	- - - -	37.8	- - -	
B1	183.5	- - - -	34.2	- - -	
B2	183.5	- - - -	34.0	- - -	
B3	183.5	- - - -	23.7	- - -	
B4	187.5	- - - -	16.2	- - -	
B5	184.5	- - - -	31.4	- - -	
B6	184.5	- - - -	28.7	- - -	
B7	184.5	- - - -	27.4	- - -	
B8	185.5	- - - -	25.7	- - -	
B9	185.5	- - - -	25.4	- - -	
B10	185.5	- - - -	25.2	- - -	
B11	187.5	- - - -	19.7	- - -	
B12	185.5	- - - -	23.4	- - -	
B13	185.5	- - - -	21.8	- - -	
B14	187.5	- - - -	17.1	- - -	
B15	185.5	- - - -	20.8	- - -	
B16	187.5	- - - -	16.6	- - -	
B17	185.5	- - - -	20.3	- - -	
B18	187.5	- - - -	16.2	- - -	
B19	185.5	- - - -	20.2	- - -	
B20	185.5	- - - -	20.1	- - -	
B21	185.5	- - - -	20.1	- - -	
S51	187.5	K= 8.00	18.7	34.6	
S52	187.5	K= 8.00	14.2	30.2	
S53	187.5	K= 8.00	12.7	28.5	
S54	187.5	K= 8.00	22.7	38.1	
S55	187.5	K= 8.00	21.6	37.2	
S56	187.5	K= 8.00	20.5	36.2	
S57	187.5	K= 8.00	16.7	32.7	
S58	187.5	K= 8.00	14.1	30.0	

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JOB TITLE: CHAFFEE BASEMENT .20/2500

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
S59	187.5	K= 8.00	12.0	27.7	
S60	187.5	K= 8.00	10.3	25.7	
S61	187.5	K= 8.00	18.6	34.5	
S62	187.5	K= 8.00	14.6	30.6	
S63	187.5	K= 8.00	12.1	27.9	
S64	187.5	K= 8.00	9.9	25.2	
S65	187.5	K= 8.00	14.7	30.6	
S66	187.5	K= 8.00	10.4	25.8	
S67	187.5	K= 8.00	8.7	23.6	
S68	187.5	K= 8.00	7.3	21.6	
S69	187.5	K= 8.00	14.3	30.3	
S70	187.5	K= 8.00	10.2	25.5	
S71	187.5	K= 8.00	8.4	23.2	
S72	187.5	K= 8.00	7.0	21.2	
S73	187.5	K= 8.00	15.5	31.5	
S74	187.5	K= 8.00	17.0	32.9	
S75	187.5	K= 8.00	16.9	32.9	

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JOB TITLE: CHAFFEE BASEMENT .20/2500

NFPA PIPE DATA

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 1		Source	0.0			E:19	75.00	140	1.4	
SOURCE	193.5	42.0	738.1	DCVA	6.000	T:40	62.51		3.5	
UNDG	185.5	43.4	738.2		6.065	G: 4	137.51	0.015	2.1	
Pipe: 2		0.0	0.0				4.00	120	1.4	
UNDG	185.5	43.4	738.1	BOR	6.000	E:14	14.00		1.7	
DCVA	181.5	44.8	738.1		6.065		18.00	0.020	0.4	
Pipe: 2A			0.0	Fixed Pressure Loss Device						
DCVA	181.5	44.8	738.1	TOR	5.0 psi, 738.1 gpm					
BOR	181.5	39.8	738.1							
Pipe: 3		0.0	0.0				12.00	120	2.0	
BOR	181.5	39.8	738.1	B1	6.000	E:14	46.00		-0.9	
TOR	183.5	37.8	738.1		6.065	C:32	58.00	0.020	1.2	
Pipe: 4		0.0	644.9	B5			4.00	120	3.5	
TOR	183.5	37.8	93.3	B2	4.000	T:20	20.00		0.0	
B1	183.5	34.2	738.1		4.026		24.00	0.148	3.5	
Pipe: 5		0.0	0.0				17.00	120	0.2	
B1	183.5	34.2	93.3	B3	3.000	----	0.00		0.0	
B2	183.5	34.0	93.3		3.068		17.00	0.012	0.2	
Pipe: 6		0.0	34.6	S51			11.50	120	10.3	
B2	183.5	34.0	58.7	B4	1.250	T: 6	6.00		0.0	
B3	183.5	23.7	93.3		1.380		17.50	0.591	10.3	
Pipe: 7		0.0	30.2	S52			17.00	120	7.5	
B3	183.5	23.7	28.5	S53	1.250	2E: 6	6.00		-1.7	
B4	187.5	16.2	58.7		1.380		23.00	0.250	5.8	
Pipe: 8		8.00	28.5	Disch			12.00	120	3.5	
B4	187.5	16.2	0.0		1.000	E: 2	2.00		0.0	
S53	187.5	12.7	28.5		1.049		14.00	0.250	3.5	
Pipe: 9		8.00	34.6	Disch			4.00	120	5.0	
B3	183.5	23.7	0.0		1.000	T: 5	5.00		-1.7	
S51	187.5	18.7	34.6		1.049		9.00	0.359	3.2	
Pipe: 10		8.00	30.2	Disch			2.00	120	1.9	
B4	187.5	16.2	0.0		1.000	T: 5	5.00		0.0	
S52	187.5	14.2	30.2		1.049		7.00	0.278	1.9	
Pipe: 11		0.0	0.0				1.00	120	2.8	
B1	183.5	34.2	644.9	B6	4.000	T:20	20.00		-0.4	
B5	184.5	31.4	644.9		4.026		21.00	0.115	2.4	
Pipe: 12		0.0	38.1	S54			13.50	120	2.7	
B5	184.5	31.4	606.8	B7	4.000	E:10	10.00		0.0	
B6	184.5	28.7	644.9		4.026		23.50	0.115	2.7	

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JOB TITLE: CHAFFEE BASEMENT .20/2500

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 13		0.0	37.2	S55			12.00	120	1.2	
B6	184.5	28.7	569.6	B8	4.000	----	0.00		0.0	
B7	184.5	27.4	606.8		4.026		12.00	0.103	1.2	
Pipe: 14		0.0	36.2	S56			14.75	120	1.8	
B7	184.5	27.4	533.4	B9	4.000	----	0.00		-0.4	
B8	185.5	25.7	569.6		4.026		14.75	0.091	1.3	
Pipe: 15		0.0	417.3	B12			3.00	120	0.2	
B8	185.5	25.7	116.1	B10	4.000	----	0.00		0.0	
B9	185.5	25.4	533.4		4.026		3.00	0.081	0.2	
Pipe: 16		0.0	0.0				12.50	120	0.2	
B9	185.5	25.4	116.1	B11	3.000	----	0.00		0.0	
B10	185.5	25.2	116.1		3.068		12.50	0.018	0.2	
Pipe: 17		0.0	34.5	S61			8.50	120	2.0	
B9	185.5	25.4	382.8	B13	4.000	E:10	30.00		0.0	
B12	185.5	23.4	417.3		4.026	T:20	38.50	0.051	2.0	
Pipe: 18		0.0	83.7	B14			10.00	120	1.6	
B12	185.5	23.4	299.1	B15	3.000	----	0.00		0.0	
B13	185.5	21.8	382.8		3.068		10.00	0.164	1.6	
Pipe: 19		0.0	101.6	B16			10.00	120	1.0	
B13	185.5	21.8	197.5	B17	3.000	----	0.00		0.0	
B15	185.5	20.8	299.1		3.068		10.00	0.104	1.0	
Pipe: 20		0.0	100.1	B18			10.00	120	0.5	
B15	185.5	20.8	97.4	B19	3.000	----	0.00		0.0	
B17	185.5	20.3	197.5		3.068		10.00	0.048	0.5	
Pipe: 21		0.0	31.5	S73			7.00	120	0.1	
B17	185.5	20.3	65.9	B20	3.000	----	0.00		0.0	
B19	185.5	20.2	97.4		3.068		7.00	0.013	0.1	
Pipe: 22		0.0	32.9	S74			9.00	120	0.1	
B19	185.5	20.2	32.9	B21	3.000	----	0.00		0.0	
B20	185.5	20.1	65.9		3.068		9.00	0.006	0.1	
Pipe: 23		0.0	0.0				11.00	120	0.0	
B20	185.5	20.1	32.9	S75	3.000	----	0.00		0.0	
B21	185.5	20.1	32.9		3.068		11.00	0.002	0.0	
Pipe: 24		8.00	38.1	Disch			4.00	120	6.0	
B6	184.5	28.7	0.0		1.000	E: 2	7.00		-1.3	
S54	187.5	22.7	38.1		1.049	T: 5	11.00	0.428	4.7	
Pipe: 25		8.00	37.2	Disch			4.00	120	5.8	
B7	184.5	27.4	0.0		1.000	E: 2	7.00		-1.3	
S55	187.5	21.6	37.2		1.049	T: 5	11.00	0.410	4.5	

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JOB TITLE: CHAFFEE BASEMENT .20/2500

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 26		8.00	36.2	Disch			4.00	120	5.2	
B8	185.5	25.7	0.0		1.000	E: 2	7.00		-0.9	
S56	187.5	20.5	36.2		1.049	T: 5	11.00	0.390	4.3	
Pipe: 27		0.0	83.4	S58			3.00	120	5.5	
B10	185.5	25.2	32.7	S57	1.500	T: 8	8.00		-0.9	
B11	187.5	19.7	116.1		1.610		11.00	0.418	4.6	
Pipe: 28		8.00	32.7	Disch			4.50	120	3.1	
B11	187.5	19.7	0.0		1.000	T: 5	5.00		0.0	
S57	187.5	16.7	32.7		1.049		9.50	0.322	3.1	
Pipe: 29		8.00	30.0	Disch			5.75	120	5.6	
B11	187.5	19.7	53.4	S59	1.250	T: 6	6.00		0.0	
S58	187.5	14.1	83.4		1.380		11.75	0.480	5.6	
Pipe: 30		8.00	27.7	Disch			10.00	120	2.1	
S58	187.5	14.1	25.7	S60	1.250	----	0.00		0.0	
S59	187.5	12.0	53.4		1.380		10.00	0.210	2.1	
Pipe: 31		8.00	25.7	Disch			8.00	120	1.7	
S59	187.5	12.0	0.0		1.000	----	0.00		0.0	
S60	187.5	10.3	25.7		1.049		8.00	0.207	1.7	
Pipe: 32		8.00	34.5	Disch			4.00	120	4.8	
B12	185.5	23.4	0.0		1.000	E: 2	7.00		-0.9	
S61	187.5	18.6	34.5		1.049	T: 5	11.00	0.357	3.9	
Pipe: 33		0.0	0.0				2.00	120	4.7	
B13	185.5	21.8	83.7	S62	1.250	T: 6	6.00		-0.9	
B14	187.5	17.1	83.7		1.380		8.00	0.484	3.9	
Pipe: 34		8.00	30.6	Disch			2.00	120	2.4	
B14	187.5	17.1	53.1	S63	1.250	E: 3	3.00		0.0	
S62	187.5	14.6	83.7		1.380		5.00	0.484	2.4	
Pipe: 35		8.00	27.9	Disch			12.00	120	2.5	
S62	187.5	14.6	25.2	S64	1.250	----	0.00		0.0	
S63	187.5	12.1	53.1		1.380		12.00	0.208	2.5	
Pipe: 36		8.00	25.2	Disch			11.00	120	2.2	
S63	187.5	12.1	0.0		1.000	----	0.00		0.0	
S64	187.5	9.9	25.2		1.049		11.00	0.200	2.2	
Pipe: 37		0.0	0.0				2.00	120	4.1	
B15	185.5	20.8	101.6	S65	1.500	T: 8	8.00		-0.9	
B16	187.5	16.6	101.6		1.610		10.00	0.326	3.3	
Pipe: 38		8.00	30.6	Disch			2.00	120	2.0	
B16	187.5	16.6	70.9	S66	1.500	E: 4	4.00		0.0	
S65	187.5	14.7	101.6		1.610		6.00	0.326	2.0	

DATE: 5/3/2010:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE BASEMENT.SDF
JOB TITLE: CHAFFEE BASEMENT .20/2500

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 39		8.00	25.8	Disch			12.00	120	4.3	
S65	187.5	14.7	45.2	S67	1.250	----	0.00		0.0	
S66	187.5	10.4	70.9		1.380		12.00	0.356	4.3	
Pipe: 40		8.00	23.6	Disch			11.00	120	1.7	
S66	187.5	10.4	21.6	S68	1.250	----	0.00		0.0	
S67	187.5	8.7	45.2		1.380		11.00	0.154	1.7	
Pipe: 41		8.00	21.6	Disch			9.50	120	1.4	
S67	187.5	8.7	0.0		1.000	----	0.00		0.0	
S68	187.5	7.3	21.6		1.049		9.50	0.150	1.4	
Pipe: 42		0.0	0.0				2.00	120	4.0	
B17	185.5	20.3	100.1	S69	1.500	T: 8	8.00		-0.9	
B18	187.5	16.2	100.1		1.610		10.00	0.318	3.2	
Pipe: 43		8.00	30.3	Disch			2.00	120	1.9	
B18	187.5	16.2	69.8	S70	1.500	E: 4	4.00		0.0	
S69	187.5	14.3	100.1		1.610		6.00	0.318	1.9	
Pipe: 44		8.00	25.5	Disch			12.00	120	4.1	
S69	187.5	14.3	44.3	S71	1.250	----	0.00		0.0	
S70	187.5	10.2	69.8		1.380		12.00	0.346	4.1	
Pipe: 45		8.00	23.2	Disch			12.00	120	1.8	
S70	187.5	10.2	21.2	S72	1.250	----	0.00		0.0	
S71	187.5	8.4	44.3		1.380		12.00	0.149	1.8	
Pipe: 46		8.00	21.2	Disch			9.50	120	1.4	
S71	187.5	8.4	0.0		1.000	----	0.00		0.0	
S72	187.5	7.0	21.2		1.049		9.50	0.145	1.4	
Pipe: 47		8.00	31.5	Disch			5.50	120	4.6	
B19	185.5	20.2	0.0		1.000	E: 2	7.00		-0.9	
S73	187.5	15.5	31.5		1.049	T: 5	12.50	0.302	3.8	
Pipe: 48		8.00	32.9	Disch			2.00	120	3.2	
B20	185.5	20.1	0.0		1.000	T: 5	5.00		-0.9	
S74	187.5	17.0	32.9		1.049		7.00	0.328	2.3	
Pipe: 49		8.00	32.9	Disch			2.00	120	3.2	
B21	185.5	20.1	0.0		1.000	T: 5	5.00		-0.9	
S75	187.5	16.9	32.9		1.049		7.00	0.327	2.3	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.0 computer program
under license no. 3801093320 granted by
HRS Systems, Inc.
208 South Public Square
Petersburg, TN 37144

(2) The system has been calculated to provide an average imbalance at each node of 0.002 gpm and a maximum imbalance at any node of 0.080 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 20.0 ft/sec at pipe 6.

HRS SYSTEMS, INC
4792 LAVISTA ROAD
TUCKER, GA 30084

HYDRAULIC CALCULATIONS FOR

HUGHES ASSOCIATES, INC.
2374 POST ROAD, SUITE 102
WARWICK,RI 02886

DRAWING NUMBER: FP-1.21 DATE: 5-2-10

-DESIGN DATA-

REMOTE AREA NUMBER: REMOTE AREA LOCATION: North Penthouse

OCCUPANCY CLASSIFICATION: Ord Haz 2 Mechanical Room

TIMOTHY J. LAROSE
10-25-10
No. 8352
REGISTERED
PROFESSIONAL ENGINEER
FIRE PROTECTION

DENSITY: .20 gpm/sq. ft.
AREA OF APPLICATION: Area

COVERAGE PER SPRINKLER: 130 sq. ft.
TYPE OF SPRINKLERS CALCULATED: 5.6K QR
NUMBER OF SPRINKLERS CALCULATED: 9

*IN-RACK SPRINKLER DEMAND: gpm
HOSE-STREAM DEMAND: 250 gpm
TOTAL WATER REQUIRED (INCLUDING HOSE): 430 gpm
FLOW AND PRESSURE (AT BASE OF RISER): 180 gpm @ 48 psi

TYPE OF SYSTEM: Wet
*VOLUME OF DRY OR PREACTION SYSTEM:
*DETAILS:
WATER SUPPLY
Source: Public Test Date: Test By: HAI
Location: Standpipe
Static: 67 psi Residual: 50 psi Flow: 1233 gpm
Source Elevation Relative to Finished Flow Level: ft.

INSTALLING CONTRACTOR
Name:
Address:
Phone: Certification number:

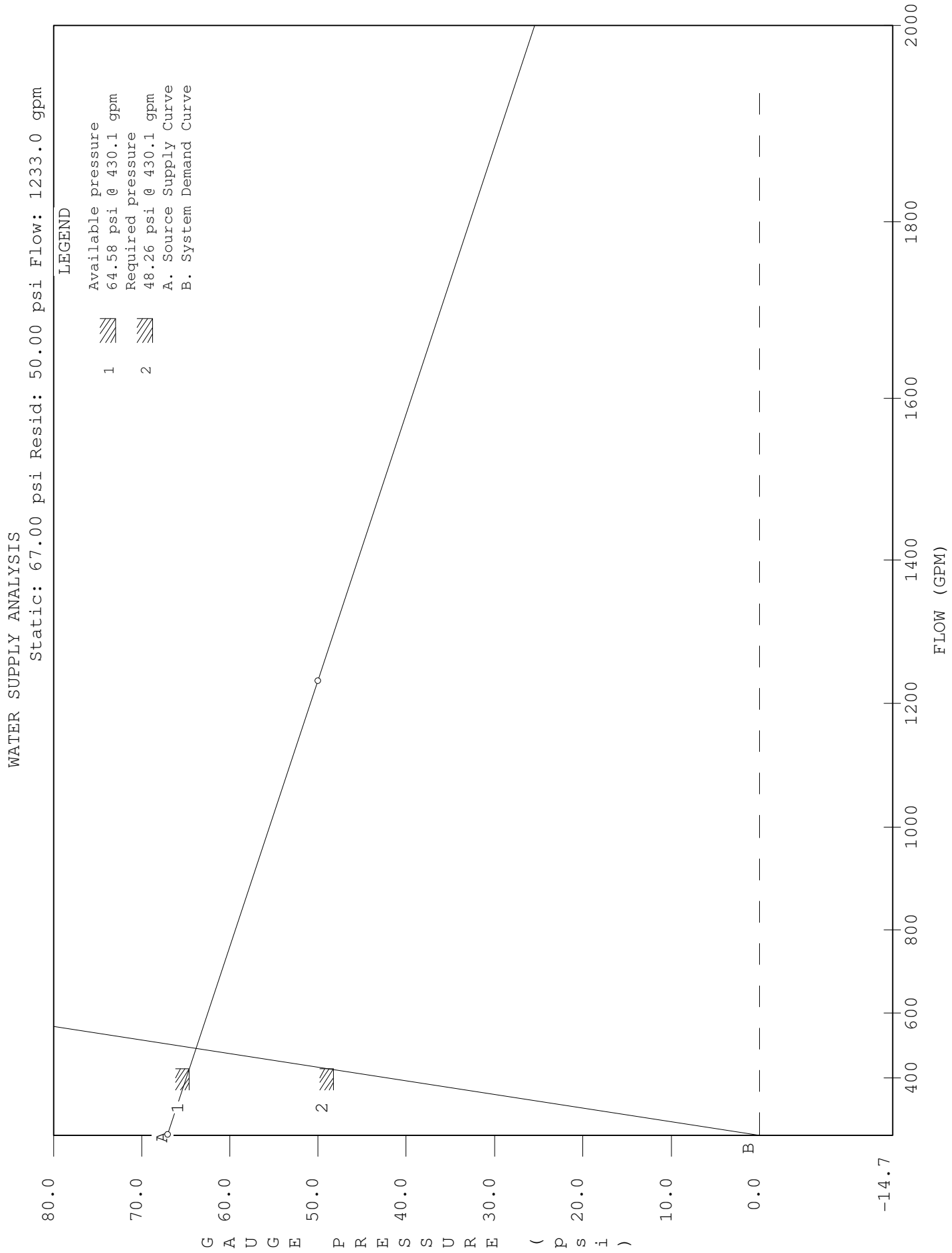
NAME OF DESIGNER: S.Dellasanta
AUTHORITY HAVING JURISDICTION: SFM

NOTES:
Calculations performed by HASS 7.9 under license # 3801093320, granted by HRS SYSTEMS, INC. TUCKER, GA 30084 USA.

(Notes continue after pipe calculations results.)

DATE: 5/3/2010 C:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE PENT1.SDF

JOB TITLE: CHAFFEE NORTH PENT



DATE: 5/3/2010 C:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE PENT1.SDF
JOB TITLE: CHAFFEE NORTH PENT

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
SOURCE	67.0	50.0	1233.0	64.6	430.1	48.3

Required pressure is 16.3 psi (25%) less than available pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	430.1 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	250.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	180.1 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
SOURCE	193.5	SOURCE	48.3	180.1	
UNDG	185.5	- - - -	51.6	- - -	
DCVA	181.5	- - - -	53.3	- - -	
BOR	181.5	- - - -	48.3	- - -	
TOR	187.5	- - - -	45.6	- - -	
SP1	197.5	- - - -	41.1	- - -	
SP1.1	197.5	- - - -	41.0	- - -	
SP2.1	211.5	- - - -	34.3	- - -	
SP2.2	211.5	- - - -	32.8	- - -	
SP2.3	211.5	- - - -	31.8	- - -	
SP2.4	211.5	- - - -	30.1	- - -	
SP2.5	211.5	- - - -	30.5	- - -	
SP2.6	211.5	- - - -	30.6	- - -	
SP2.7	211.5	- - - -	30.6	- - -	
SP2.8	211.5	- - - -	31.3	- - -	
P1.0	211.5	- - - -	28.9	- - -	
P1.1	232.2	- - - -	17.3	- - -	
P1.2	232.2	- - - -	16.7	- - -	
P1.3	232.2	- - - -	16.6	- - -	
P1.4	233.2	- - - -	15.0	- - -	
P1.5	233.2	- - - -	14.5	- - -	
P1.6	233.2	- - - -	14.3	- - -	
S41	233.2	K= 5.60	14.1	21.0	
S42	233.2	K= 5.60	13.2	20.3	
S43	233.2	K= 5.60	12.0	19.4	
S44	233.2	K= 5.60	13.6	20.7	
S45	233.2	K= 5.60	12.8	20.0	
S46	233.2	K= 5.60	11.6	19.1	
S47	233.2	K= 5.60	13.5	20.6	
S48	233.2	K= 5.60	12.6	19.9	
S49	233.2	K= 5.60	11.5	19.0	

DATE: 5/3/2010 C:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE PENT1.SDF
JOB TITLE: CHAFFEE NORTH PENT

NFPA PIPE DATA

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 1		Source	0.0			E:19	75.00	140	3.3	
SOURCE	193.5	48.3	180.1	DCVA	6.000	T:40	62.51		3.5	
UNDG	185.5	51.6	180.1		6.065	G: 4	137.51	0.001	0.2	
Pipe: 2		0.0	0.0				4.00	120	1.7	
UNDG	185.5	51.6	180.1	BOR	6.000	E:14	14.00		1.7	
DCVA	181.5	53.3	180.1		6.065		18.00	0.001	0.0	
Pipe: 2A			0.0	Fixed Pressure Loss Device						
DCVA	181.5	53.3	180.1	TOR	5.0 psi, 180.1 gpm					
BOR	181.5	48.3	180.1							
Pipe: 3		0.0	0.0				16.00	120	2.7	
BOR	181.5	48.3	180.1	SP1	6.000	E:14	46.00		-2.6	
TOR	187.5	45.6	180.1		6.065	C:32	62.00	0.001	0.1	
Pipe: 4		0.0	0.0				40.00	120	4.5	
TOR	187.5	45.6	180.1	SP1.1	6.000	5E:70	70.00		-4.3	
SP1	197.5	41.1	180.1		6.065		110.00	0.001	0.2	
Pipe: 5		0.0	0.0				8.00	120	0.1	
SP1	197.5	41.1	180.1	SP2.1	6.000	E:14	44.00		0.0	
SP1.1	197.5	41.0	180.1		6.065	T:30	52.00	0.001	0.1	
Pipe: 6		0.0	0.0				17.00	120	6.7	
SP1.1	197.5	41.0	180.1	SP2.2	4.000	2T:40	40.00		-6.1	
SP2.1	211.5	34.3	180.1		4.026		57.00	0.011	0.6	
Pipe: 7		0.0	0.0			6E:60	60.00	120	1.6	
SP2.1	211.5	34.3	180.1	SP2.3	4.000	C:22	84.00		0.0	
SP2.2	211.5	32.8	180.1		4.026	G: 2	144.00	0.011	1.6	
Pipe: 8		0.0	65.5	SP2.8			24.50	120	1.0	
SP2.2	211.5	32.8	114.5	SP2.4	3.000	----	0.00		0.0	
SP2.3	211.5	31.8	180.1		3.068		24.50	0.041	1.0	
Pipe: 9		0.0	180.1	P1.0			94.00	120	1.7	
SP2.3	211.5	31.8	-65.5	SP2.5	3.000	----	0.00		0.0	
SP2.4	211.5	30.1	114.5		3.068		94.00	0.018	1.7	
Pipe: 10		0.0	180.1	P1.0			46.00	120	0.4	
SP2.5	211.5	30.5	-114.5	SP2.3	3.000	T:15	15.00		0.0	
SP2.4	211.5	30.1	65.5		3.068		61.00	0.006	0.4	
Pipe: 11		0.0	0.0				10.00	120	0.1	
SP2.6	211.5	30.6	65.5	SP2.4	3.000	----	0.00		0.0	
SP2.5	211.5	30.5	65.5		3.068		10.00	0.006	0.1	
Pipe: 12		0.0	0.0				7.00	120	0.0	
SP2.7	211.5	30.6	65.5	SP2.5	3.000	----	0.00		0.0	
SP2.6	211.5	30.6	65.5		3.068		7.00	0.006	0.0	

DATE: 5/3/2010 C:\PROGRAM FILES\HRS SYSTEMS\HASS80\URI CHAFFEE PENT1.SDF
JOB TITLE: CHAFFEE NORTH PENT

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 13		0.0	0.0				94.00	120	0.7	
SP2.8	211.5	31.3	65.5	SP2.6	3.000	T:15	15.00		0.0	
SP2.7	211.5	30.6	65.5		3.068		109.00	0.006	0.7	
Pipe: 14		0.0	0.0				62.00	120	0.5	
SP2.3	211.5	31.8	65.5	SP2.7	3.000	T:15	15.00		0.0	
SP2.8	211.5	31.3	65.5		3.068		77.00	0.006	0.5	
Pipe: 15		0.0	0.0				30.00	120	1.2	
SP2.4	211.5	30.1	180.1	P1.1	3.000	----	0.00		0.0	
P1.0	211.5	28.9	180.1		3.068		30.00	0.041	1.2	
Pipe: 16		0.0	60.8	P1.4			22.66	120	11.6	
P1.0	211.5	28.9	119.3	P1.2	3.000	4E:28	43.00		-9.0	
P1.1	232.2	17.3	180.1		3.068	T:15	65.66	0.041	2.7	
Pipe: 17		0.0	59.8	P1.5			10.00	120	0.5	
P1.1	232.2	17.3	59.5	P1.3	2.500	----	0.00		0.0	
P1.2	232.2	16.7	119.3		2.469		10.00	0.055	0.5	
Pipe: 18		0.0	0.0				10.00	120	0.2	
P1.2	232.2	16.7	59.5	P1.6	2.500	----	0.00		0.0	
P1.3	232.2	16.6	59.5		2.469		10.00	0.015	0.2	
Pipe: 19		0.0	39.8	S42			1.00	120	2.3	
P1.1	232.2	17.3	21.0	S41	1.250	T: 6	6.00		-0.4	
P1.4	233.2	15.0	60.8		1.380		7.00	0.268	1.9	
Pipe: 20		0.0	39.1	S45			1.00	120	2.2	
P1.2	232.2	16.7	20.7	S44	1.250	T: 6	6.00		-0.4	
P1.5	233.2	14.5	59.8		1.380		7.00	0.259	1.8	
Pipe: 21		0.0	38.9	S48			1.00	120	2.2	
P1.3	232.2	16.6	20.6	S47	1.250	T: 6	6.00		-0.4	
P1.6	233.2	14.3	59.5		1.380		7.00	0.257	1.8	
Pipe: 22		5.60	21.0	Disch			1.00	120	0.9	
P1.4	233.2	15.0	0.0		1.000	T: 5	5.00		0.0	
S41	233.2	14.1	21.0		1.049		6.00	0.143	0.9	
Pipe: 23		5.60	20.3	Disch			8.50	120	1.8	
P1.4	233.2	15.0	19.4	S43	1.250	T: 6	6.00		0.0	
S42	233.2	13.2	39.8		1.380		14.50	0.122	1.8	
Pipe: 24		5.60	19.4	Disch			9.50	120	1.2	
S42	233.2	13.2	0.0		1.000	----	0.00		0.0	
S43	233.2	12.0	19.4		1.049		9.50	0.123	1.2	
Pipe: 25		5.60	20.7	Disch			1.00	120	0.8	
P1.5	233.2	14.5	0.0		1.000	T: 5	5.00		0.0	
S44	233.2	13.6	20.7		1.049		6.00	0.138	0.8	

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JOB TITLE: CHAFFEE NORTH PENT

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 26		5.60	20.0	Disch			8.50	120	1.7	
P1.5	233.2	14.5	19.1	S46	1.250	T: 6	6.00		0.0	
S45	233.2	12.8	39.1		1.380		14.50	0.118	1.7	
Pipe: 27		5.60	19.1	Disch			9.50	120	1.1	
S45	233.2	12.8	0.0		1.000	----	0.00		0.0	
S46	233.2	11.6	19.1		1.049		9.50	0.119	1.1	
Pipe: 28		5.60	20.6	Disch			1.00	120	0.8	
P1.6	233.2	14.3	0.0		1.000	T: 5	5.00		0.0	
S47	233.2	13.5	20.6		1.049		6.00	0.137	0.8	
Pipe: 29		5.60	19.9	Disch			8.50	120	1.7	
P1.6	233.2	14.3	19.0	S49	1.250	T: 6	6.00		0.0	
S48	233.2	12.6	38.9		1.380		14.50	0.117	1.7	
Pipe: 30		5.60	19.0	Disch			9.50	120	1.1	
S48	233.2	12.6	0.0		1.000	----	0.00		0.0	
S49	233.2	11.5	19.0		1.049		9.50	0.118	1.1	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.0 computer program under license no. 3801093320 granted by
HRS Systems, Inc.
208 South Public Square
Petersburg, TN 37144

(2) The system has been calculated to provide an average imbalance at each node of 0.005 gpm and a maximum imbalance at any node of 0.154 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 13.0 ft/sec at pipe 19.

SECTION 16000 ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.

B. Examine all drawings and all other sections of the specifications for requirements therein affecting the work of this trade.

C. These documents are not intended to be complete construction documents. These documents, do, however, show the systems required and approximately where the larger equipment is to be located. This contractor shall include allowances in his estimates to fully complete the system including all interconnecting, coordination and installation details and components and extending the system into and throughout all spaces. This Contractor shall also include allowances for startup and for making the systems fully operational, and for scope and design contingencies. Future changes in price for items not shown on these drawings will not be allowed if the system itself is shown on these Drawings.

D. Give notices, file plans, obtain permits and licenses, pay fees and back-charges, and obtain necessary approvals from authorities that have jurisdiction as required to perform work in accordance with all legal requirements and with Specifications, Drawings, Addenda and Change Orders, all of which are part of Contract Documents.

1.2 SUMMARY

A. This Section specifies the basic requirements for electrical installations and includes requirements common to more than one section of Division 16. It expands and supplements the requirements specified in sections of Division 1.

B. These documents have been prepared with the intention that they call for finished, tested work, in full operating condition and complete with necessary accessories.

C. The contract drawings are generally diagrammatic and convey the scope of work and general arrangement of apparatus and equipment. The locations of all items shown on the drawings or called for in the specifications that are not definitely fixed by dimensions are approximate only. The exact locations necessary to secure the best conditions and results must be determined at the project and shall have the approval of the Architect/Engineer before being installed. The Contractor shall follow the drawings in laying out work and shall check drawings of the other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. If directed by the General Contractor, Engineer and/or Architect, the Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.

D. These contract documents are complementary. What is called for by one shall be as binding as if called for by all. Materials or work described in words, which have well-known technical, or trade meaning shall be held to refer to such recognized standards. Incidental devices and accessories needed for complete, operational systems shall be provided even though they may not be indicated or identified in the documents.

E. If apparatus have been omitted, notify the Architects/Engineers of such belief. It is understood that bidder has included all required items and work in his bid, and will not if bid is successful, claim extra compensation for furnishing a complete and satisfactory system. If a particular item is called for or specified more than once in these contract documents, the higher grade shall be considered specified.

F. Should it appear that the character of the work is not sufficiently explained in these specifications or on the drawings, apply to the A/E for further information. Conform to the A/E's decision and directions as shall become part of these contract documents. The A/E reserves the right to be sole interpreter of the drawings and specifications, and all decisions shall be conclusive, final and binding on the parties.

G. Materials called for in these documents shall be new, unused equipment and of the latest recognized standards.

H. The work to be done under Division 16 is shown on the drawings numbered: E1.0, E1.1, E1.2, E2.1, ED3.0, E3.0, E3.1 & E3.2

1.3 OUTLINE SCOPE OF WORK

A. The work under this contract, without limiting the generality thereof, includes all materials, labor, equipment, services, and transportation, unless otherwise specified, necessary to complete all systems of electrical wiring and equipment required by the drawings and/or as specified herein. It is the intent of this section and accompanying electrical drawings that these systems be furnished complete in every respect. The Electrical Contractor shall furnish all wiring, equipment and labor needed for a complete operating installation.

B. The Electrical Contractor shall fully indemnify the Owner against any damages, removals and alteration work. This is in addition to the requirements of the General Conditions of the Specifications.

1.4 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to equipment specifications in Divisions 2 through 15 for rough-in requirements.

C. Coordinate all devices & outlets above, below or on casework with Architect & Owner in order to position at the proper height and proper location.

1.5 SURVEYS AND MEASUREMENTS

A. Base measurements, both horizontal and vertical, on established bench marks. Work shall agree with these established lines and levels. Verify measurements at site and check the corrections of same as related to the work.

B. Should the Contractor discover any discrepancy between actual measurements and those indicated, which prevents following good practice or the intent of the drawings and specifications, he shall notify the A/E.

1.6 EXAMINATION OF SITE

A. Prior to submitting bid, visit the site where the work is to be performed and the materials are to be delivered. Failure in this respect shall not excuse the Contractor from his obligation to supply and install the work in accordance with the plans and specifications and under all conditions, as they exist.

B. By submitting a bid, this Contractor warrants that all specification sections and drawings showing equipment for plumbing, heating, ventilation, air conditioning, electrical, and architectural, have been examined and is familiar with the conditions and extent of work affecting this contract.

1.7 EQUIPMENT AND MATERIALS

A. All equipment and materials for permanent installation shall be the products of recognized manufacturer's and shall be new, unless noted for re-use, without damaged, functional or aesthetic components.

B. New equipment and materials shall:

1. Be Underwriters Laboratories, Inc. (UL) labeled and/or listed where specifically called for, or where normally subject to such UL labeling and/or listing services.

2. Be without blemish or defect.

3. Be in accordance with the latest applicable NEMA standards.

4. Be products, which will meet with the acceptance of the agency inspecting the electrical work. Where such acceptance is contingent upon having the products examined, tested and certified by UL or other recognized testing laboratory, the product shall be so examined, tested and certified.

C. For items of equipment, which are to be installed but not purchased as part of the electrical work, the electrical work shall include:

1. The coordination of their delivery.

2. Their unloading from delivery trucks driven in to any point on the property line at grade level.

3. Their safe handling and field storage up to the time of permanent placement in the project.

4. The correction of any damage, defacement or corrosion to which they may have been subjected.

5. Their field make-up and internal wiring as may be necessary for their proper operation.

6. Their mounting in place, including the purchase and installation of all dunnage, supporting members and fastenings necessary to adapt them to architectural and structural conditions.

D. Items of equipment, which are to be installed but not purchased as part of the electrical work, shall be carefully examined upon delivery to the project. Claims that any of these items have been received in such condition that their installation will require procedures beyond the reasonable scope of the electric work will be considered only if presented in writing within

one week of the date of delivery to the project of the items in question. The electric work includes all procedures, regardless of how extensive, necessary to put into satisfactory operation, all items for which no claims have been submitted as outlined above.

1.8 ELECTRICAL INSTALLATIONS

A. All materials and labor called for, specified in Division 16 of the specifications, and or shown on the electrical drawings furnished under this contract shall be provided under Division 16 unless called for otherwise in the Division 16 documents. The word “provide” as used in the Division 16 documents, shall mean to furnish, install, connect up, complete with all accessories ready for operation and warranted.

B. Coordinate electrical equipment and materials installation with other building components. Fully coordinate work with that of other trades. Furnish information in writing that is needed for the coordination of clearances, etc., with the work of others, and such information shall be given in a timely fashion so as not to impede the progress of two or more trades. Confer and resolve the conflict immediately. If so directed by the A/E, prepare composite drawings to resolve any space or clearance conflict.

C. Verify all dimensions by field measurements.

D. Arrange for chases, slots, and openings in other building components to allow for electrical installations.

E. Coordinate the installation of required supporting devices and sleeves to be set in poured in place concrete and other structural components, as they are constructed.

F. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing-in the building.

G. Coordinate the cutting and patching of building components to accommodate the installation of electrical equipment and materials.

H. Where mounting heights are not detailed or dimensioned, the exact location shall be determined by the A/E, install electrical services and overhead equipment to provide the code and/or utility requirements.

I. Install electrical equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

J. Coordinate the installation of electrical materials and equipment above ceilings with suspension systems, mechanical equipment and systems, and structural components.

K. Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

L. Attention is directed to areas and items indicated on the drawings by the notations "HOLD", "N.I.C.", "BY OTHERS" and words of similar intent. The work indicated in these areas is shown for information and continuity only. Work or items furnished and installed in these areas solely for the convenience of this Contractor or others, without

M. Provide all required staging and scaffolding for all the work under this section.

1.9 ALTERATION WORK

A. Maintain continuity of service in areas where occupancy is to be maintained during alterations. If it becomes necessary to disconnect or interrupt service, obtain written consent of the Owner, and only disconnect service at the convenience of, and with the consent of the Owner. A copy of the written request for a shutdown shall be forwarded to the A/E.

1.10 CUTTING AND PATCHING

A. Cutting and patching of electrical equipment, components, and materials specified under Division 16 (conduit, sleeves, equipment, etc.) shall be performed by Electrical Contractor.

B. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 Section: "Cutting and Patching" for definitions, requirements, and procedures.

C. Cutting and patching of existing structures (thru walls, floors, ceilings, etc.) to accommodate equipment, components, and materials of all Contractors, including Mechanical and Electrical Contractors, shall be performed by General Contractor and/or his designated Subcontractor.

D. Cutting and patching of new structures (thru walls, floors, ceilings, etc.) to accommodate installation of ill-timed work or removal and replacement of defective work or work not conforming to requirements of Contract Documents, shall be performed by General Contractor and/or his designated Subcontractor and costs shall be back charged to appropriate trade Contractor.

E. Do not endanger or damage installed work through procedures and processes of cutting and patching.

F. Arrange for repairs required to restore other work, because of damage caused as a result of electrical installations.

G. Arrange to have ducts, raceways, conduit, panelboards, boxes, and such other pertinent parts, set in place ahead of construction work so that they will be built-in with structures and eliminate need for cutting and patching. Failure to conform to this paragraph will require that this Contractor perform any cutting and patching required for his work at his expense. Cutting shall be neatly finished to match adjoining work in a manner acceptable to the A/E. Cutting and patching shall not affect the fire rating of walls or structural parts. Cutting and patching required to correct work, due to error or negligence of the Contractor, or to defects in his material or workmanship, shall be corrected at no additional cost to the Owner. Patching shall meet or exceed quality of adjacent surfaces. Cutting must be accomplished as not to weaken adjacent structural members and must be approved by the Structural Engineer before proceeding.

H. Perform cutting, fitting, and patching of electrical equipment and material required to:

1. Uncover work to provide for installation of ill-timed work.
2. Remove and replace defective work.

3. Remove and replace work not conforming to requirements of the contract documents.
4. Remove samples of installed work as specified for testing.
5. Install equipment and materials in existing structures.
6. Upon written instructions from the A/E, uncover and restore work to provide for A/E observation of concealed work.

I. Cut, remove and legally dispose of selected electrical equipment, components and materials as indicated, including, but not limited to, removal of electrical items indicated to be removed and items made obsolete by the work.

J. Protect the structure, furnishing, finishes, and adjacent materials not indicated or scheduled to be removed. Protect the electrical work and the work of others in a manner best suited to the particular case. Correct any damage done to any work at no additional cost.

K. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

L. Locate, identify, and protect electrical services passing through areas that are to under go remodeling or demolition. Electrical services serving other areas required to be maintained, and transit services must be interrupted, provide temporary services for the affected areas and notify the Owner prior to changeover.

1.11 SUBMITTALS

A. Within fifteen (15) days after the date of notice to proceed and before purchasing any materials or equipment, submit for approval a complete list, in six (6) copies, of all materials to be incorporated in the work.

B. Shop drawings/manufacturer's cuts are required for:

1. Conduit, Wire & Cable.
2. Lighting Fixtures.
3. Wiring Devices and Plates.
4. Fire Stopping Materials.
5. Seismic Restraint Components.

C. After the list has been processed, submit complete shop drawings of all equipment. These shop drawings submittals shall be submitted within thirty days after the processing date of the original submittal.

D. All submittals shall be complete and shall be in three-ring loose-leaf binders. No consideration will be given to partial submittals except with prior approval. No consideration will be given to faxed submittals.

E. Explanation of Shop Drawing Stamp:

1. <u>Approved:</u> indicates that we have not found any reason why this item should not be acceptable within the intent of the documents.

2. <u>Approved with Comments:</u> indicates that we have found questionable components which, if corrected or otherwise explained, make the product acceptable.

3. Resubmit for Final Review: indicates that this item should be resubmitted for approval before further processing.

4. Does Not Conform: indicates that the item will not meet the intent of the Contract.

F. No shop drawing stamp or note shall constitute an order to fabricate or ship. Such notification can only be performed by the Project Manager for construction, the Contractor scheduling his own work, or the Owner.

G. Submittal of shop drawings, product data, will be reviewed only when submitted by the Contractor. Data submitted from Sub-contractors and material suppliers directly to the A/E will not be processed.

H. If shop drawing is not in compliance after two submissions, a third submission for the same manufacturer will not be considered for review.

I. Check shop drawings and other submittals to assure compliance with contract documents before submittal to A/E.

J. Review of shop drawings is final and no further changes shall be considered without written application. Shop drawing review does not apply to quantities, dimensions, nor relieve this Contractor of his responsibility for furnishing materials or performing his work in full compliance with these contract drawings and specifications. Review of these shop drawings shall not be considered a guarantee of the measurements of this building or the conditions encountered.

K. General requirements for the substitution of equipment and submittal of shop drawings as follows. If apparatus, systems or materials are substituted for those specified, and such substitution necessitates changes in, or additional connections, wiring, supports, or construction, it shall be provided by this Contractor at no additional cost to the Owner. This Contractor shall assume all cost and entire responsibility thereof. The approval of substituted equipment does not relieve the contractor of his/her responsibility of shop drawing errors related to details, sizes, quantities, wiring diagram arrangements and dimensions which deviate from the Specifications, and/or job conditions as they exist. It is the contractor's responsibility to submit only those items that meet the specified apparatus, systems and material. Should any non-conformance code items be installed, they shall be replaced by this Contractor at no additional cost to the Owner. The construction means and methods used in the project shall be reviewed and approved through the local building department or a deputy inspector to insure compliance with the current codes, project specifications and general building practices.

L. Coordination drawings shall be submitted and shall show all HVAC, Electrical, Plumbing and Fire Protection systems superimposed in order to identify conflicts and ensure inter-coordination of all trades. Coordination drawings shall be initiated under this Section of the Specifications. It is this Contractors responsibility for preparation of project coordination drawings showing the installation of all electrical equipment, switchgear, motor control centers, panelboards, transformers, transfer switches, disconnect switches, enclosed circuit breakers, conduits, outlets, switches and accessories to be provided under this Section of the Specifications. These drawings shall be prepared at not less than 3/8 in. = 1 ft. scale, and shall show building room layouts, structural elements, ductwork and lighting layouts of function. A reproducible copy of each drawing prepared shall then be submitted to the Mechanical, Plumbing and Sprinkler Contractors, who shall be responsible to coordinate his equipment and systems and

shall show these on the drawings submitted. After this Contractor has fulfilled his obligation, he shall notify all other Contractors. After each drawing has been coordinated between trades, each trade shall sign each drawing, indicating acceptance of the installation. This Contractor shall then print the coordination original and these prints submitted through the General Contractor to the architect for review and comment, similar to shop drawings. Comments made on these drawings shall result in a correction and re-submittal of the drawings. A Subcontractor who fails to promptly review and incorporate his work on the drawings shall assume full responsibility of any installation conflicts affecting his work and of any schedule ramifications. Review of coordination drawings shall not diminish responsibility under this Contract for final coordination of installation and maintenance clearances of all systems and equipment with Architectural, Structural, Mechanical, and Electrical Contractors.

1.12 PRODUCT OPTIONS AND SUBSTITUTIONS

A. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 for definitions, requirements, and procedures.

B. If materials of equipment are substituted for specified items that alter the systems shown or its physical characteristics, or which have different operating characteristics, clearly note the alterations or differences and call it to the attention of the A/E. Under no circumstances shall substitutions be made unless identical material or equipment has been successfully operated for at least three consecutive years.

C. All substitution made by the Contractor shall require the Contractor to fully coordinate the substitution with other trades. The Contractor must make any modifications required by the substitution at no additional cost to the Owner. In addition the Contractor must notify the A/E of any changes required and obtain approval for the changes. The review of the shop drawings by the A/E shall not relieve the Contractor from his responsibility as set forth in this specification.

1.13 NAMEPLATE DATA

A. Provide permanent operational data nameplate on each item of power operated equipment, indicating manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and similar essential data. Locate nameplates in a readily accessible location.

1.14 DELIVERY, STORAGE AND HANDLING

A. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels, and similar information needed for distinct identifications; adequately packaged and protected to prevent damage during shipment, storage, and handling.

B. Store equipment and materials at the site, unless off-site storage is authorized in writing. Protect stored equipment and materials from damage. All devices shall be stored in a locked room. Assume responsibility for the devices until the date of final inspection.

C. Coordinate deliveries of electrical materials and equipment to minimize construction site congestion. Limit each shipment of materials and equipment to the items and quantities needed for the smooth and efficient flow of installations.

1.15 RECORD DOCUMENTS

A. As work progresses and for the duration of Contract, maintain a complete and separate set of prints of Contract Drawings at job site at all times. Record work completed and all changes from original Contract Drawings clearly and accurately including work installed as a modification or addition to the original design. Work shall be updated on a weekly basis and shall be made available for review by Architect. Failure to perform this work shall be reason for withholding requisition payments. In addition, take photographs of all concealed equipment in gypsum board ceilings, shafts, and other concealed, inaccessible work. At completion of work, make copies of photographs with written explanation on back. These shall become part of Record Documents.

B. At completion of work prepare a complete set of Record Drawings on mylar drafting film, showing all systems as actually installed, including all fire alarm and electrical circuitry. The design tracings will be made available for the Electrical Contractor's copying, at his expense, onto mylar reproducibles to serve as backgrounds for the drawings. The quantity of design tracings which are made available shall in no way be interpreted as setting a limit to the number of drawings necessary to show the required information. The Electrical Contractor's professional draftperson shall transfer changes to mylars; submit mylars and three (3) sets of prints to Architect for comments as to compliance with this section.

C. The Architect will not certify the accuracy of the Record Drawings. This is the sole responsibility of the Electrical Contractor.

D. This trade shall submit the record set for approval by the Fire and Building Departments in a form acceptable to the departments, when required by the jurisdiction.

E. Drawings shall show record condition of details, sections, riser diagrams, control changes and corrections to schedules. Schedules shall show actual manufacturer and make and model numbers of final equipment installation.

1.16 WARRANTIES

A. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 for definitions, requirements, and procedures.

B. All work and equipment furnished under this Section shall be guaranteed free from defects in workmanship or materials for a period of one (1) year, unless specifically noted otherwise for a particular system, from the date of final acceptance of the systems as set forth in this Contract. The Subcontractor shall replace any defective work developing during this period, unless such defects are clearly the result of misuse of equipment by persons not under the control of the Subcontractor, without cost to the Owner. Where such defective work results in damage to work of other Sections, all such work shall be restored to its original condition by mechanics skilled in the affected trade, at the expense of the Subcontractor. The Subcontractor shall submit a separate written guarantee stipulating the aforesaid conditions.

C. Prior to or at the time of Substantial Completion for the work and during administrative close-out of the project, submit one (1) copy of all specified warranties and guarantees to the Architect for review, approval and subsequent transmittal to the Owner.

D. Warranties and guarantees, including those specified in excess of the general one (1) year guarantee, shall be complete for all specific materials, systems, sub-systems, equipment, appliances and products specified and required by the Contract Document.

E. Warranties and guarantees shall clearly define what is to be guaranteed; the extent, terms, conditions, time and effective dates.

F. Copies of the same warranties and guarantees shall be included in the “Operating and Maintenance Manual” as specified herein.

1.17 CLEANING

A. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 for definitions, requirements, and procedures.

B. Upon completion of work, the Contractor shall clean, polish and leave bright, fixtures and lamps, and shall remove dust, dirt, debris and loose plaster from panelboards, controls, and switchboards. Unused openings in pull boxes, junction boxes, equipment and raceways shall be capped or closed by an approved means. Replace all inoperative lamps.

1.18 DEFINITION OF TERMS

A. "This Contractor" or "E.C." specifically means, the Electrical Contractor working under this section of the specifications.

B. "Concealed" means hidden, in chases, furred spaces, walls, above ceilings or enclosed in construction.

C. "Exposed" means visible in sight or not installed "concealed" as defined above.

D. "Approved Equal" means any equipment or material which is approved by the Engineer and equal in quality, durability, appearance, strength, design and performance to the equipment or material originally specified.

E. "Conduit" shall mean all conduit including fittings, joints, hangers and supports.

F. "Furnish" shall mean to purchase and deliver to the project site complete with every necessary appurtenance and support, all as part of the electrical work.

G. "Install" shall mean to perform every operation necessary to establish secure mounting and correct operation at the proper location in the project, all as part of the electrical work.

H. "Provide" shall mean to furnish and install.

1.19 QUALITY ASSURANCE

A. Obtain services of manufacturer's representatives of electrical equipment, during erection and construction of their respective equipment to insure proper installation of same.

B. A letter is required from each system manufacturer's representative certifying to the A/E that requirements have been checked and are properly installed and operating.

1.20 PERFORMANCE TESTS - ELECTRICAL

A. Test and adjust the electrical systems and equipment during the progress of the work.

B. Upon completion of work and after preliminary tests to assure that all systems are complete and in proper working order, arrange with the A/E to conduct performance

tests of the electrical systems. These tests may be witnessed by the A/E prior to acceptance of systems and shall be arranged for the purpose of demonstrating compliance with contract documents. During this period, visually inspect all electrical equipment. Lighting fixtures shall be tested with specified lamps in place for not less than six (6) hours. Check voltages to assure that all transformer taps are properly set.

C. General operating tests shall be performed under as near design conditions as possible, for a period of not less than one (1) hour for each system, and shall demonstrate that all equipment is functioning in accordance with specifications. Furnish all instruments, ladders, test equipment and personnel required for tests. Any equipment or systems found by test to be deficient or unsatisfactory shall be replaced and tests repeated as often as necessary to assure compliance with contract documents.

D. Test all feeders, sub-feeders and all branch wiring for amperage, voltage, phase balance, phase sequence of A,B,C and insulation resistance, then submit the results of this test to the A/E neatly typed in triplicate for review. This test may be conducted at any time up to, through and including, the guarantee period if requested by the A/E, at no additional cost to the Owner.

E. Phase balance the complete electrical system, phase balance all panels as near as loads will permit under normal working conditions.

F. Test all ground conductors for current flow, as near design operating conditions as possible. If any measured current exceeds one (1) ampere, determine and correct the cause.

1.21 SEISMIC RESTRAINT

A. General

1. All equipment, conduit and pull boxes shall be adequately restrained to resist seismic forces. Restraint devices shall be designed and selected to meet seismic requirements as defined in the latest issue of the BOCA National Building Code in accordance with Seismic Zone 2A with a minimum restraint capability of 4.
2. Anchor bolt calculators, signed and stamped by a registered professional engineer, shall be submitted showing adequacy of the bolt sizing and type. Stamped calculations shall also be furnished for anchors on restraint devices, cables, isolators and rigidly mounted equipment.

B. Products

1. Type SWSR - A unitized adjustable open spring isolator and a welded steel housing, designed to resist seismic forces in all directions. Restraint surfaces forces in all directions. Restraint surfaces which engage under seismic motion shall be cushioned with a resilient elastomer, neoprene or equal, to protect equipment. Restraints shall allow a maximum of 1/4" movement before engaging and shall allow for the spring to be changed if required.

   Isolator shall be a stable spring with a minimum Ky/Ky of 1.0 and the spring shall be isolated from the housing by an internal elastomeric pad on its base for sound absorption. Nuts and bolts shall be zinc-electroplated to prevent corrosion. Bolting equipment to isolator with bolts smaller than main adjusting bolt will not be allowed.

Baseplate shall have adequate means of bolting to the structure. IF elastomeric pad for sound absorption is on baseplate of housing, anchor bolts are to be isolated with elastomeric grommets.

2. Type CTER - A unitized adjustable, stable open spring isolator and seismic restraint housing which serves as a blocking device during equipment installation. The spring package shall be isolated from the housing by an internal elastomeric pad for sound absorption. Nuts, adjusting bolts and washers shall be zinc-electroplated to prevent corrosion.

   The spring assembly shall be removable and shall fit within a welded steel enclosure consisting of a top plate and rigid lower housing. Isolated seismic restraint bolts shall connect top plate to lower housing to resist seismic forces in all directions. Surfaces which engage under seismic elastomer, neoprene or equal, to protect equipment. Top plate shall have adequate means for fastening to the equipment, and baseplate shall have adequate means for bolting to structure. If elastomeric pad for sound absorption is on baseplate of housing, anchor bolts are to be isolated with grommets.

3. Type ER - A restraint assembly for floor mounted equipment consisting of welded steel interlocking assemblies welded or bolted securely to the equipment or the equipment bases and to the supporting structure. Restraint assembly surfaces, which engage under seismic motion, shall be lined with a resilient elastomer, neoprene or equal, to protection equipment. Restraints shall be field adjustable and be positioned for 1/4" clearance both vertically and horizontally or clearance as required to prevent interference during normal operation.

   Restraint assembly shall have minimum rating of 3 times the catalog rating as certified by independent laboratory test.

4. Cables - A restraint assembly for suspended equipment, conduit or pull boxes consisting of galvanized steel aircraft cable attached to steel thimbles with neoprene sleeve (isolated piping only), brackets and bolts all specifically designed for cable service and securely fastened to the equipment, or the equipment base and the building structure.

   Cables shall be sized for a force as listed on SSR-9108-1 for buildings for appropriate zone with minimum safety factor of 2 based upon independent test data. Cables shall be installed to prevent excessive seismic motion and so arranged that they do not engage during normal operation.

C. Application

1. Isolated Equipment

   a. Floor mounted isolated equipment which weights over 300 pounds including base shall be protected with type SWSR or type CTER unitized isolator and restraint or with separate type ER restraints (minimum of 4) and non-seismic isolators. For equipment with high center of gravity, additional cable restraints shall be furnished, as required, to limit forces and motion caused by rocking.

   b. All suspended isolated equipment and vessels shall be protected with cable restraints. Cables shall be installed to prevent excessive seismic

motion and so arranged that they do not engage during normal operation.

2. Isolated Piping

a. All isolated conduit 2-1/2" and over shall be protected in all planes by cable restraints, designed to accommodate thermal movement as well as restrain seismic motion. Control rods should be used on flexible connectors in system. Pull or junction boxes connected to isolated conduit shall be restrained same as the conduit. Locations shall be as determined by the isolator supplier and shall include, but not be limited to:

1) At all drops to equipment connections.

2) At changes in direction of conduit.

3) At horizontal runs of conduit, not to exceed the following spacing as presented in Amber/Booth, design criteria 3. Isolated Equipment.

b. Isolated equipment 6 square feet and larger in cross sectional area or 28" diameter and larger shall be protected in all planes by cable restraints. Locations shall be determined by the isolator supplier and shall include but not be limited to:

1) At all equipment connections.

2) At all equipment runs and equipment run ends transverse bracing and longitudinal bracing not to exceed previously specified spacing).

c. Isolated equipment under 4 square feet in cross sectional area or under 26" diameter need not be additionally restrained.

3. Rigidly Mounted Equipment - Floor mounted and suspended equipment and vessels which weight over 300lbs shall be protected by properly sized anchor bolts or hanger rods and bracing. The need for restraints in addition to anchor bolts shall be determined by and, if required, furnished by the supplier of the seismic restrains of the isolated equipment.

4. Rigidly Mounted Conduit - All uninsolated conduit 2-1/2" inside diameter and larger shall be protected in accordance with the Amber/Booth Guidelines. Conduit suspended by hangers 12" or less in length from the top of the conduit to the bottom of the support for the hanger need not be restrained.

5. Rigidly Mounted Pull or Junction Boxes - All pull or junction boxes shall be protected as for rigidly mounted conduit.

D. Installation

1. All seismic restrains are to be securely anchored or fastened to the equipment and supporting structure in accordance with the approved submittal data.

2. Operating clearances are to be adjusted so that restraints do not interfere during normal operation of the equipment.

3. Upon completion of the installation, the supplier of the seismic restrains shall inspect and certify in writing to the architect that restraints have been installed properly and in accordance with the approved submittal.

1.22 TEMPORARY LIGHT & POWER

A. Under this Section of the specifications, this Contractor shall provide temporary electric service, sized suitable for construction for each trade. This contractor shall provide all material and labor for temporary electrical service per the local power company's requirements and standards with all necessary panelboards, disconnect switches, transformers, conduit, wiring, etc. as required. This contractor shall pay all associated costs, up front.

B. Where temporary electrical service cannot be obtained from the local power company, this contractor shall provide a temporary, on-site, electric generator with all necessary panelboards, disconnect switches, transformers, conduit, wiring, etc. as required. The fuel used for the generator shall be provided and paid for by this Contractor.

C. This contractor shall provide a distribution system with circuits for receptacles and lighting as required for construction. This contractor shall maintain the temporary electrical system during construction and remove the system when construction is complete.

D. Under this section of the specifications, this Contractor shall provide and maintain temporary lighting based on using not less than one 100-watt lamp for each 100 square feet of building floor area and one duplex GFCI receptacle for each 200 square feet of building floor area. Where higher lighting intensities are required by Federal or State laws or otherwise specified, the above specified wattage shall be increased to provide the increase intensities.

E. This contactor shall provide temporary power and telephone services from the local telephone company for site trailers, fax machines, computers, etc., per the general contractor's direction.

F. The service shall incorporate ground fault protection and comply with NEC Article 527 and OSHA requirements.

G. For the Tootell Building: existing lighting fixtures shall be removed for hard ceiling demolition. Upon completion of hard ceiling demolition, the existing fixtures shall be re-installed and remain until completion of roof repairs. Roof repairs are being performed under separate contract.

1.23 PERMITS

A. Obtain all required electrical permits and pay all fees for same.

B. Provide to Engineer, in duplicate, a certificate of final inspection from the authority having jurisdiction for the electrical and systems.

1.24 INSPECTION AND TESTS

A. During the progress of the work it shall be subject to the inspection of the Owner and to such

other inspectors, as may have jurisdiction, including those of the Electric Company, Fire Department and the Telephone Company.

B. The Contractor shall be responsible for correct voltages, tap settings, trip settings and correct phasing on all equipment. Secondary voltages shall be measured at the line side of the main breakers with the breakers in an open position, at panelboards, and at such other location on the distribution systems and branch circuits as directed by the Engineer.

C. At completion of the work, Contractor shall submit to the Owner's representative in writing a statement stating: (1) that the work is complete; (2) that the entire installation is in accordance with the drawings and specifications; (3) that preliminary tests have been made; and (4) that the work is ready for final inspection and test.

D. A final inspection of the installation to determine compliance with the drawings and specifications will be made by the Owner's representative. Work will be checked for quality of materials, quality of workmanship, proper installation and finished appearance. The electrical contractor shall provide the services of the project electrical foreman for inspection purposes. The foreman shall remove and reinstall wiring devices, junction box covers, panelboard trims, switchboard covers, terminal box covers, ceiling tiles, lighting fixtures, etc. as required to facilitate any inspections required by the Owner's representative.

E. The Contractor shall arrange and conduct operating tests on all equipment in the presence of the Owner's representative. The components parts of systems and the various systems shall be demonstrated to operate in accordance with the requirements and intent of this specification. Any non-complying or defective materials or workmanship disclosed as a result of the inspection and tests shall be corrected promptly by the Contractor, and the tests repeated as often as necessary until approved and accepted by the Owner's representative.

F. The Contractor shall visit the site to acquaint himself with existing conditions. No extra compensation will be paid for failure to comply with this paragraph.

1.25 DRAWINGS

A. The drawings show the layout of the electrical systems and indicate the approximate locations of outlets, apparatus, and equipment. The runs of feeders and branches as shown on the drawings are schematic only. The exact routing of branch circuits and feeders shall be determined by the structural conditions and possible obstructions. This shall not be construed to mean that the design of the systems may be changed, but refers only to exact runs between given points. The Engineer reserves the right to revise the drawings from time to time to indicate changes in the work.

B. The Contractor shall consult and review all contract and reference drawings which may affect the location of any outlets, apparatus and equipment to avoid any possible interference and permit full location of outlets, apparatus and equipment up to the time of rough-in is reserved by the Engineer and such change shall be made without additional expense to the Owner.

C. It shall be the responsibility of this Contractor to see that all electrical equipment such as junction and pull boxes, panelboards switches, controls and such other apparatus as may require maintenance and operation from time to time is made accessible. Although the equipment may be shown on the drawings in certain locations, the construction may disclose the fact that such locations do make its position accessible. In such cases this Contractor shall call the attention of the Engineer to the condition before advancing the construction to a state where a change will reflect additional expense to the Owner.

1.26 OPERATING, INSTRUCTION AND MAINTENANCE MANUALS

A. Refer to Section 01700 – CONTRACT CLOSEOUT for submittal procedures pertaining to operating and maintenance manuals.

B. Each copy of the approved operating and maintenance manual shall contain copies of approved shop drawings, equipment literature, cuts, bulletins, details, equipment and engineering data sheets and typewritten instructions relative to the care and maintenance for the operation of the equipment, all properly indexed. Each manual shall have the following minimum contents:

1. Table of Contents.

2. Introduction:

a. Explanation of manual and its purpose and use.
b. Description of the electrical systems.
c. Safety precautions necessary for equipment.
d. Illustrations, schematics and diagrams.
e. Installation drawing.

3. Maintenance:

a. Maintenance and lubricating instructions.
b. Replacement charts.
c. Trouble-shooting charts for equipment components.
d. Testing instructions for each typical component.
e. Two (2) typed sets of instructions for ordering spare parts. Each set shall include name, price, telephone number and address of where they may be obtained.

4. Manufacturer’s Literature:

a. All of the equipment for which shop drawings have been submitted and approved.

1.27 MATERIALS

A. All materials furnished under this Division shall be U.L. listed, labeled and approved for the use intended.

B. All computerized equipment shall be year 2000 (Y2K) compliant.

1.28 BIDDER'S REPRESENTATION

A. By the act of submitting a bid for the proposed contract, the Bidder represents that:

1. The Bidder and all subcontractors the Bidder intends to use have carefully and thoroughly reviewed the drawings, specifications and other construction contract documents and have found them complete and free from ambiguities and sufficient for the purpose intended; further that,

2. The Bidder and workmen, employees and subcontractors the Bidder intends to use are skilled and experienced in the type of construction represented by the construction contract documents bid upon; further that,

3. Neither the Bidder nor any of the Bidder's employees, agents, intended suppliers or subcontractors have relied upon any verbal representations, allegedly authorized or

unauthorized from the Owner, or the Owner's employees or agents including architects, engineers or consultants, in assembling the bid figure; and further that,

4. The bid figure is based solely upon the construction contract documents and properly issued written addenda and not upon any other written representation.

1.29 SUPPLEMENTARY SUPPORTING STEEL

A. Provide all supplementary steelwork required for mounting or supporting equipment and materials.

B. Steelwork shall be firmly connected to building construction as required.

C. Steelwork shall be of sufficient strength to allow only minimum deflection in conformity with manufacturer's published requirements.

D. All supplementary steelwork shall be installed in a neat and workmanlike manner parallel to floor, wall and ceiling construction: all turns shall be made at forty-five and ninety degrees, and/or as dictated by construction and installation conditions.

E. All manufactured steel parts and fittings shall be galvanized.

1.30 DEMOLITION

A. Prior to submitting bid, visit site and identify existing conditions and difficulties that will affect work of this section. Renovation work will require careful site examination prior to bidding. No compensation will be granted for additional work caused by unfamiliarity with site conditions that are visible or readily construed by an experienced observer. Field verify measurements and circuiting arrangements that are as shown on Drawings. The electrical contractor shall review all of the architects and other trades drawings to verify all areas of renovation and to get a complete understanding of the demolition work required by this project.

B. Field verify that abandoned wiring and equipment serve only abandoned facilities.

C. Demolition drawings are based on casual field observation and existing record documents. Report discrepancies to Architect/Engineer before disturbing existing installations. These drawings have been compiled from the best available information and are not intended to limit the scope of the work. The electrical contractor may encounter hidden or covered conditions, not indicated in these documents, requiring the electrical contractor to provide additional work for the completion of his or her contract. It will be assumed that the contractor has inspected the site prior to bidding and verified the information supplied herein and additional work required. Beginning of demolition means the contractor accepts existing conditions. Refer to all construction documents to gain a complete understanding of the demolition work required.

D. Cut, remove and legally dispose of selected electrical equipment, components and materials as indicated, including, but not limited to, removal of electrical items indicated to be removed and items made obsolete by the work. Disconnect and remove all fixtures, wiring devices, conduit and fittings, wiring & cable, fire alarm devices/components, hangers, supports, wireways, and all other electrical components made obsolete by this project. The Owner reserves the option of salvage rights to demolished material and removed equipment. The contractor shall coordinate with the owner's representative to obtain a list of materials and removed equipment to be turned over to the Owner. All other material and removed equipment not being salvaged by the

Owner shall be disposed of by the contractor. Place all demolished electrical materials except hazardous materials (PCB lighting ballasts, fluorescent lamps, etc.) as determined by the Authority having jurisdiction in General Contractor's dumpster. All hazardous electrical materials shall be legally disposed of by the Electrical Subcontractor.

E. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.

F. Maintain access to existing electrical installations which remain active. Modify installation or provide access panels as appropriate. Temporary wall openings and/or modifications required for removal/installation of equipment shall be provided as needed and coordinated with the General Contractor. All HVAC units scheduled to be removed or re-located shall be done so by the HVAC contractor. The electrical contractor shall disconnect and make-safe for removal.

G. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits use personnel experienced in such operations.

H. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Obtain permission from Owner and Architect/Engineer at least 72 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area as required.

I. Existing Fire Alarm System: Maintain the existing system in service until the modified/expanded system is tested and accepted by the fire department. Disable system only to make switchovers and connections. Notify Owner, Architect/Engineer and local fire department at least ten days before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area as required or provide a "fire-watch" system coordinated with the local fire department.

J. Existing Telephone System: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Notify Owner, Architect/Engineer and Telephone Utility Company at least 72 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.

K. Extend existing electrical installations as called for on the drawings.

L. Remove, relocate, and extend existing installations to accommodate new construction.

M. Remove abandoned wiring to source of supply.

N. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

O. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.

P. Disconnect and remove abandoned panelboards and distribution equipment.

Q. Disconnect and remove electrical devices and equipment serving utilization equipment

that has been removed.

R. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.

S. Disconnect and remove other systems and equipment within the work area made obsolete by this work.

T. Protect all existing walls, floors, ceilings, light fixtures, etc. which are to remain & to prevent damage during all construction phases. Repair adjacent construction and finishes damaged during demolition and extension work. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed. Protect the electrical work and the work of others in a manner best suited to the particular case. Correct any damage done to any work at no additional cost.

U. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.

V. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

W. Clean and repair existing materials and equipment which remain or are to be reused.

X. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

Y. Luminaires: Remove existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace lamps ballasts and broken electrical parts.

PART 2 - PRODUCTS

2.1 CONDUIT

A. Minimum Size: ¾-inch, unless otherwise specified.

B. Underground Installations:
1. More than Five Feet from Foundation Wall: Use thick wall nonmetallic conduit concrete encased.
2. Within Five Feet from Foundation Wall: Use rigid steel conduit concrete encased.
3. In or Under Slab on Grade: Use plastic coated conduit.
4. Minimum Size: 1-inch.

C. Outdoor Locations, Above Grade: Use rigid steel conduit.

D. In Slab Above Grade:
1. Use rigid steel conduit.
2. Maximum Size Conduit in Slab: ¾ inch (19 mm); ½ inch (13 mm) for conduits crossing each other.

E. Wet and Damp Locations: Use rigid aluminum conduit.

F. Dry Locations:
   1. Concealed and in Cable-Tray: Use metal clad (MC) cable (see Division 1).
   2. Exposed: (Unfinished or utility spaces) Use electrical metallic tubing.

G. Metal conduit: Rigid Steel Conduit shall comply with ANSI C80.1 and be heavy wall zinc coated steel. Rigid Aluminum Conduit shall comply with ANSI C80.5. Intermediate Metal Conduit (IMC) shall be rigid steel. Fittings and Conduit Bodies shall comply with ANSI/NEMA FB 1 and material to match conduit. Acceptable manufacturers are Western Tube and Conduit Company, Allied Tube and Conduit Company and Triangle Wire and Cable, Inc.

H. Flexible metal conduit shall be interlocked aluminum contruction. Fittings shall comply with ANSI/NEMA FB 1. Acceptable manufacturers are AFC Cable Systems, Electri-Flex Company and Eastern Flexible Conduit Technologies. All flexible conduits shall include a grounding conductor.

I. Electrical metallic tubing (EMT) shall comply with ANSI C80.3; galvanized zinc coated steel tubing. Fittings and Conduit Bodies shall comply with ANSI/NEMA FB 1; steel, compression or set screw type. Acceptable manufacturers are Western Tube and Conduit Company, Allied Tube and Conduit Company and Triangle Wire and Cable, Inc.

J. Nonmetal conduit shall comply with NEMA TC 2; Schedule 40 PVC, or as indicated on plans. Fittings and Conduit Bodies shall comply with NEMA TC 3. Acceptable manufacturers are Carlon or approved equal.

K. Flexible nonmetallic conduit (Sealtite) shall be UL and CSA listed for purpose specified and shown. Acceptable manufacturers are Carlon or approved equal.

L. Install conduit in accordance with NECA "Standard of Installation." Install nonmetallic conduit in accordance with manufacturer's instructions.

M. Arrange supports to prevent misalignment during wiring installation. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits. Fasten conduit supports to building structure and surfaces under provisions of Division 1. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports. Do not attach conduit to ceiling support wires.

N. Arrange conduit to maintain headroom and present neat appearance. Route exposed conduit parallel and perpendicular to walls. Route conduit installed above accessible ceilings parallel and perpendicular to walls. Route conduit in and under slab from point-to-point. Do not cross conduits in slab.

O. Maintain adequate clearance between conduit and piping. Maintain 12-inch (300 mm) clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).

P. Cut conduit square using saw or pipe cutter; de-burr cut ends. Bring conduit to shoulder of fittings; fasten securely. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in

damp and wet locations and to cast boxes.

Q. Install no more than equivalent of three 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender to fabricate or factory elbows for bends in metal conduit larger than 2 inch (50 mm) size.

R. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control and expansion joints. All expansion and deflection fittings shall have a ground strap. Provide suitable pull string in each empty conduit except sleeves and nipples. Use suitable caps to protect installed conduit against entrance of dirt and moisture.

S. Ground and bond conduit under provisions of NEC 250.

2.2 BUILDING WIRE & CABLE

A. Building Wire and Cable shall be copper with 600V insulation rated at 75°C minimum, Type XHHW insulation for feeders and branch circuits larger than #3 AWG; Type THHN/THWN insulation for feeders and branch circuits #4 AWG and smaller.

B. Conductors shall be of soft drawn 98% minimum conductivity properly refined copper, solid construction where No. 10 AWG and smaller, stranded construction where No. 8 AWG and larger.

C. Exterior of wires shall bear repetitive markings along their entire length indicating conductor size, insulation type and voltage rating.

D. Exterior of wires shall be color coded, so as to indicate a clear differentiation between each phase and between each phase and neutral. In all cases, grounded neutral wires and cables shall be identified by the colors “white” or “gray”. In sizes and insulation types where factory applied colors are not available, wires and cables shall be color coded by the application of colored plastic tapes in overlapping turns at all terminal points, and in all boxes in which splices are made. Colored tape shall be applied for a distance of 6 inches along the wires and cables, or along their entire extensions beyond raceway ends, whichever is less.

E. Final connections to motors shall be made with 18” of neoprene sheathed flexible conduit.

F. Minimum branch circuit conductor size shall be No. 12 AWG installed in conduit. Motor control circuit wiring shall be minimum No. 14 AWG installed in conduit.

G. Fire alarm and security system wiring shall be No. 16 twisted non-shielded pairs for alarm and trouble circuits and a minimum of #14 AWG for device power, control and alarm annunciation circuits.

H. Other wires and cables required for the various systems described elsewhere in this section of the Specifications shall be as specified herein, as shown on the Contract Drawings, or as recommended by the manufacturer of the specific equipment for which they are used, all installed in conduit.

I. Metal clad sheathed cable NFPA 70, type MC may be used for branch circuitry where shown and where run concealed and not subject to physical damage. All branch circuits

shall be run in conduit from the panelboard to the first outlet. All type MC cable used shall contain a full size insulated ground conductor. All conductors shall be copper. All type MC cable insulation used shall have voltage rating of 600 volts, shall have a temperature rating of 75° C, and shall be thermoplastic material. Armor material shall be steel and armor design shall be interlocked metal tape. Fire alarm rated MC cable may be used for fire alarm work where concealed and approved by the local Fire Marshal.

J. Metal-Clad cable (Type MC) for circuits supplying computer equipment, electronic discharge lighting and other sensitive electronic equipment shall consist of 90°C THHN copper conductors with insulated ground and oversized neutral conductor (or one full size neutral conductor for each phase conductor). Cable shall be U.L. listed/labeled, and shall meet the requirements of NEC Art. 334 and 675.

K. Use armored cable (AFC Type HCF-90 or equal) for branch circuits and feeders in areas of patient care in hospitals, nursing homes and medical centers, medical office buildings and nurses' office areas of schools. This cable shall consist of 90°C THHN copper conductors with combined armor/bond wire (equipment) plus a green insulated ground (redundant). Use insulated bushings. Cable shall be U.L. listed/labeled, and shall meet the requirements of NEC Art. 333, 517 and 645.

L. Use armored cable (AFC Type HCF-90 or equal) for branch circuits and feeders in all buildings in the following areas; data processing systems, places of assembly, under raised floors, above suspended ceilings and in other environmental air-handling spaces. This cable shall consist of 90°C THHN copper conductors with combined armor/bond wire (equipment) plus a green insulated ground (redundant). Use insulated bushings. Cable shall be U.L. listed/labeled, and shall meet the requirements of NEC Art. 333, 517 and 645.

M. Mineral-insulated metal-sheathed fire-resistive cables, type MI, shall consist of a factory assembly of one or more solid copper conductors insulated with highly-compressed magnesium oxide and enclosed in a seamless, liquid and gas-tight continuous copper sheath. Cables shall be rated for 600 volts. Cable shall comply with Article 330 of the National Electrical Code. Cables shall be classified by Underwriters Laboratories, Inc. as having a 2-hour fire resistive rating. Cable terminations shall be made with UL listed mineral-insulated cable fittings. Installation of MI cables shall be in accordance with the manufacturer's instructions. Cables shall be as manufactured by Pyrotenax USA, Inc., or approved equal.

N. Wiring materials except MI cable shall be manufactured by Triangle, Essex, General Cable, AFC, Southwire or equal.

O. Concealed Dry Interior Locations: Use only building wire Type THHN/THWN or XHHW insulation in raceway, or metal clad cable where concealed and code acceptable.

P. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

Q. Above Accessible Ceilings: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway or metal clad cable where code acceptable.

R. Wet or Damp Interior Locations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

S. Exterior Locations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

T. Underground Installations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

U. Wiring methods, in general, are as follows:

1. Galvanized rigid steel conduit shall be used for telephone system sleeves for main cable runs between floors, closets, etc. and for sweeps, bends, etc. in ductbanks and as specifically noted on the plans. EMT shall be used generally for exposed circuiting in unfinished spaces. Metal clad cable (type MC) may be used for branch circuiting and fire alarm rated MC cable for fire alarm circuiting where run concealed and where code acceptable.

2. To prevent transmittal of vibration to conduit, connections to any vibration producing equipment (i.e. transformers, motors, etc.) shall be terminated by 18 inches of flexible metal conduit. Where flexible connections are exposed to grease and oil, liquid-tight flexible metal conduit shall be used.

3. In general, no splices or joints shall be permitted in either feeders or branches except at outlets or accessible junction boxes. Splices in wire #8 AWG and smaller shall be pigtail type, made mechanically tight. All conduit systems shall be complete.

4. Raceway, boxes, etc., run on walls in wet areas which are subject to being washed down, shall be mounted on the walls with 1/4" stand-offs. All boxes shall be cast type.

V. Route wire and cable as required to meet the Project Conditions. Install cable in accordance with the NECA "Standard of Installation." Use solid conductor for feeders and branch circuits 10 AWG and smaller. Use stranded conductors for control circuits. Use conductor not smaller than 12 AWG for power and lighting circuits. Use conductor not smaller than 16 AWG for control circuits. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet (25 m). Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet (160 m). Pull all conductors into raceway at same time. Use suitable wire pulling lubricant for building wire 4 AWG and larger. Protect exposed cable from damage.

W. Support cables above accessible ceiling, using spring metal clips or metal cable ties to support cables from structure or ceiling suspension system, cables that are not part of the ceiling system cannot be supported from ceiling supports. Do not rest cable on ceiling panels. Use suitable cable fittings and connectors. Neatly train and lace wiring inside boxes, equipment, and panelboards.

X. Clean conductor surfaces before installing lugs and connectors. Make splices, taps, and terminations to carry full ampacities of conductors with no perceptible temperature rise. Use suitable reducing connectors or mechanical connector adapters for connecting aluminum conductors to copper conductors. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape un-insulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller. Identify and color code wire and cable. Identify each conductor with its circuit number or other designation indicated.

2.3 BOXES

A. Outlet Boxes:

1. Each outlet in wiring or raceway systems shall be provided with an outlet box to suit conditions encountered. Boxes installed in normally wet locations shall be of cast-metal type having hubs. Concealed boxes shall be cadmium plated or zinc coated sheet metal type. Old work boxes with Madison clamps are not allowed in new construction.

2. Each box shall have sufficient volume to accommodate number of conductors in accordance with requirements of NFPA 70. Boxes shall not be less than 1-1/2” deep unless shallower boxes are required by structural conditions and are specifically approved by Architect. Ceiling and bracket outlet boxes shall not be less than 4” octagonal except that smaller boxes may be used where required by particular fixture to be installed. Flush or recessed fixtures shall be provided with separate junction boxes when required by fixture terminal temperature requirements. Switch and receptacle boxes shall be 4” square or of comparable volume. Luminaire and equipment supporting boxes shall be rated for weight of equipment supported; include 1/2 inch (13 mm) male fixture studs where required.

3. Acceptable Manufacturers:

   a. Appleton
   b. Crouse Hinds
   c. Steel City
   d. RACO

B. Pull and Junction Boxes: Where necessary to terminate, tap off, or redirect multiple raceway runs or to facilitate conductor installation, furnish and install appropriately designed boxes. Boxes shall be fabricated from code gauge steel assembled with corrosion resistant machine screws. Box size shall be as required by Code. Where intermediate cable supports are necessary because of box dimensions, provide insulated removable core brackets to support conductors. Junction boxes are to be equipped with barriers to separate circuits. Where splices are to be made, boxes shall be large enough to provide ample work space. All conductors in boxes are to be clearly tagged to indicate characteristics. Boxes shall be supported independently of raceways. Junction boxes in moist or wet areas shall be galvanized type. Boxes larger than 4 inches square shall have hinged covers. Boxes larger than 12 inches in one dimension will be allowed to have screw fastened covers, if a hinged cover would not be capable of being opened a full 90 degrees due to installation location.

C. Fiberglass Handholes shall be die molded glass fiber. Cable Entrance shall be pre-cut 6-inch x 6-inch (150 mm x 150 mm) cable entrance at center bottom of each side. Cover shall be glass fiber weatherproof cover with nonskid finish.

D. Install boxes in accordance with NECA "Standard of Installation." Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

E. Set wall mounted boxes at elevations to accommodate mounting heights indicated or specified in section for outlet device. Electrical boxes are shown on drawings in approximate locations unless dimensioned. Adjust box location up to 10 feet (3m) if required to accommodate intended purpose. Orient boxes to accommodate wiring devices. Maintain headroom and present neat mechanical appearance.

F. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Division 7.

G. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

H. Use flush mounting outlet box in finished areas. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening. Do not install flush mounting box back-to-back in walls; provide minimum 6 inches (150 mm) separation. Provide minimum 24 inches (600 mm) separation in acoustic rated walls. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness. Use stamped steel bridges to fasten flush mounting outlet box between studs. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

I. Use adjustable steel channel fasteners for hung ceiling outlet box. Do not fasten boxes to ceiling support wires. Support boxes independently of conduit. Use gang box where more than one device is mounted together. Do not use sectional box. Use gang box with plaster ring for single device outlets. Use cast outlet box in exterior locations exposed to the weather and wet locations. Use cast floor boxes for installations in slab on grade; formed steel boxes are acceptable for other installations. Set floor boxes level.

J. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

K. Adjust floor box flush with finish flooring material. Adjust flush-mounting outlets to make front flush with finished wall material. Install knockout closures in unused box openings.

2.4 WIRING DEVICES

A. Provide wiring device type plates for all wall-mounted devices. All wall plates shall be either brushed aluminum or smooth high impact nylon for all public areas as directed by the Architect. Provide galvanized steel for all Utility, Electric and Mechanical Rooms. Colors of wall plates as directed by the Architect.

B. Wiring devices standard for the project (i.e., with no specific type indicated) shall conform to the following:

1. Visible part colors of wiring devices shall be as directed by the Architect for all public areas. Provide Ivory colored devices for all Utility, Electrical and Mechanical rooms.

2. Exclude compact type devices.

C. Wiring device switches shall be toggle type, A.C. quiet design, specification grade, 20 amps on 120 volt circuits. Switches shall be mounted 48” to center line above finished floor unless noted otherwise. Equivalent 277 volt 20 amp switches shall be used where required.

1. Single pole switch shall be equal to Hubbell No. HBL 1221.

2. Double pole switch shall be equal to Hubbell No. HBL 1222.

3. Three-way switch shall be equal to Hubbell No. HBL 1223

4. Four-way switch shall be equal to Hubbell No. HBL 1224

5. Single pole pilot light switch shall be equal to Hubbell No. HBL 1221PL.

D. Standard duplex convenience receptacles shall be 125 volt, 20 amps, three wire (two circuit wires plus ground), “U-slot” ground NEMA configuration 5-20R, specification grade. Receptacles shall be mounted 18” to center line above finished floor unless noted otherwise.

1. Equal to Hubbell No. 5362.

2. Where indicated on plans provide receptacles with ground fault current interrupters, UL Class A; 20A, 125V to be equal to Hubbell No. GF5362.

E. Non-standard convenience receptacles and special purpose power supply receptacles shall be as listed on plans.

F. Weatherproof Receptacle Enclosures shall be NEMA 3R rated for rain-tight while-in-use, gasketed, impact resistant thermoplastic with hinged gasketed device cover.

G. Provide extension rings to bring outlet boxes flush with finished surface. Clean debris from outlet boxes. Install devices plumb and level. Install receptacles with grounding pole on top. Connect wiring device grounding terminal to branch circuit equipment grounding conductor. Use jumbo size plates for outlets installed in masonry walls. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

H. Install wall switch 48 inches above finished floor to top of handle. On position shall be up. Install convenience receptacles 18 inches above finished floor. Install convenience receptacle 6 inches above backsplash of counter. Install dimmer switches 48 inches above finished floor to top.

I. Coordinate all devices & outlets above, below or on casework with Architect & Owner in order to position at the proper height and proper location.

J. Verify that each receptacle device is energized. Test each receptacle device for proper polarity. Test each GFCI receptacle device for proper operation.

2.5 CABINETS & ENCLOSURES

A. Cabinets shall be as follows: Boxes: Galvanized steel. Box Size: As required and/or indicated on plans. Backboard: Provide 3/4-inch thick plywood backboard for mounting terminal blocks. Paint matte white. Fronts: Steel, flush type with concealed trim clamps, door with concealed hinge, and flush lock keyed to match branch circuit panelboard. Finish with gray baked enamel. Knockouts: As required and/or indicated on plans. Provide metal barriers to form separate compartments wiring of different systems and voltages. Provide accessory feet for free-standing equipment.

B. Hinged Cover Enclosures shall be as follows: Construction: NEMA 250, Type 1, 3R, or 4 steel enclosure, as required and/or indicated on plans. Covers: Continuous hinge, held closed by flush latch operable by key or hasp and staple for padlock. Provide interior

plywood panel for mounting terminal blocks and electrical components; finish with white enamel. Enclosure Finish: Manufacturer's standard enamel.

C. Install in accordance with NECA "Standard of Installation." Install enclosures and boxes plumb. Anchor securely to wall and structural supports at each corner under the provisions of Section 16190. Install cabinet fronts plumb.

D. Clean electrical parts to remove conductive and harmful materials. Remove dirt and debris from enclosure. Clean finishes and touch up damage.

E. ICS 4 - Terminal blocks for industrial control equipment and systems. Power Terminals: Unit construction type with closed back and tubular pressure screw connectors, rated 600 volts. Signal and Control Terminals: Modular construction type, suitable for channel mounting, with tubular pressure screw connectors, rated 300 volts. Provide ground bus terminal block, with each connector bonded to enclosure.

F. Provide grounding provisions for all cabinets/enclosures and bond to grounding system as required per Code.

2.6 GROUNDING & BONDING

A. Ground all systems and equipment in accordance with best industry practice, the requirements of NFPA 70 and the following:

1. The ground bus of the main switchboard shall be connected to the main grounding electrode specified below by means of insulated conductors run in conduit.

2. The main grounding electrode shall be an accessible point on the nearest metallic main water service pipe. Connection shall be made on the street side of the main valve utilizing a ground clamp of a type specifically manufactured for the purpose. Bonding jumpers shall be provided around the water meters and around insulating joints and/or sections.

3. Establish a ground bonding connection from the effectively grounded structural building steel to each cold water main entering the building. Each bonding connection shall consist of insulated conductors run in conduit.

4. The water pipe ground shall be supplemented by:
   a. Additional electrodes (minimum of one setup) consisting of three (3) buried 3/4" diameter by 10’-0” long copperweld ground rods spaced 10’-0” apart, and provided in sufficient quantity so as to have measured resistance to ground of not more than 10 ohms. Provide independent certification confirming ground resistance at each test location. Establish a bonding connection from the electrode consisting of green insulated conductors run in conduit and sized as indicated hereinafter for main and supply side of service bonding jumpers.
   b. Ground ring conductor (counterpoise) extending around the perimeter of the building. Bury counterpoise not less than 30 inches below grade and 10 feet from building foundation. Use tinned-copper conductor not less than #2/0AWG for counterpoise and for the tap to building steel. The counterpoise conductor trench shall be filled with 1” of Erico G.E.M. above and below the conductor.
   c. Ground the steel framework of the building with a ground rod at every column and at every other exterior column. The ground rods shall be located in the counterpoise trench and shall be attached to the counterpoise. The top of the ground rods shall not be less than 24” below grade.

5. Provide grounding bonds between all metallic conduits of the light and power system which enter and leave cable chambers or other non-metallic cable pulling and splicing boxes. Accomplish this by equipping the conduits with bushings of the grounding type individually cross connected.

6. Bond metallic conduits containing grounding electrode conductors and main bonding conductors to the ground bus service enclosure and/or grounding electrode at both ends of each run utilizing grounding bushings and jumpers.

7. Provide grounding bonds for all metallic conduits of the light and power system which terminate in pits below equipment for which a ground bus is specified. Accomplish this by equipping the conduits with bushings of the grounding type connected individually to the ground bus.

8. Provide supplementary ground bonding where metallic conduits terminate at metal clad equipment (or at the metal pull box of equipment) for which a ground bus is specified. Accomplish this be equipping the conduits with bushings of the grounding type connected individually by means of jumpers to the ground bus. Exclude the jumpers where directed. This exclusion will be required where an isolated ground for electronic equipment is to be maintained.

9. Each grounding type bushing shall have the maximum ground wire accommodation available in standard manufacture for the particular conduit size. Connection to bushing shall be with wire of this maximum size.

10. Bonding conductors on the load size of the service device and equipment grounding conductors shall be sized in relation to the fuses or trip size of the overcurrent device supplying the circuit.

11. The central equipment for the fire protective alarm system, telephone system, data system (Data Rooms) and security system shall have its grounding terminal connected to the grounding electrode by means of a No. 6 green coded insulated conductor, run in 3/4" conduit. Utilize a ground clamp of a type specifically manufactured for the purpose.

12. Install rod electrodes per this section & in compliance with Code. Install additional rod electrodes as required to achieve specified resistance to ground. Install 4/0 AWG bare copper wire in foundation footing as required. Provide isolated grounding conductor for circuits supplying personal computers as indicated on the plans. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing. Provide a 3/4” raceway with #6 AWG ground wire from main telephone terminal board to the service ground.

13. Perform inspections and tests listed in NETA ATS, Section 7.13. Document test results in Record Documents.

14. Swimming Pools, fountains & similar installations: Refer to NEC 680 for requirements for grounding and bonding. Provide all grounding and bonding per NEC 680 and 250.

15. Provide a #6AWG insulated grounding conductor in 3/4" conduit to electrical service grounding electrode system. Leave 10'-0" of grounding conductor coiled at backboard.

16. In raceways, use insulated equipment grounding conductors.

17. Exothermic-welded connections shall be used for all connections to structural steel, ground rods, signal reference grid, counterpoise conductors and all underground connections, except those at test wells.

18. Compression connectors (Ilsco type CRA or equal) shall be used for all equipment grounding conductor terminations.

19. Provide an equipment grounding conductor to duct mounted electrical devices operating at 120volts and above, including pumps, fans, lowers, air cleaners and heaters. Bond conductor to each unit and to air ducts. Use braided-type bonding straps.

20. Provide a separate equipment grounding conductor to each electric water heater, heat-tracing assembly and anti-frost heating cable. Bond conductor to heater units, piping, connected equipment and components.

21. Record locations of all ground rods, ground ring and water pipe connections on a set of as-built plans and submit to the Architect and building Owner along with test certification.

2.7 SUPPORTING DEVICES

A. Materials and Finishes: Provide adequate corrosion resistance. Provide materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products. Steel channel shall be galvanized.

B. Anchors and Fasteners:
   1. Concrete Structural Elements: Use precast insert system, expansion anchors.
   2. Steel Structural Elements: Use beam clamps, or welded fasteners.
   3. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
   4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
   5. Solid Masonry Walls: Use expansion anchors or preset inserts.
   6. Sheet Metal: Use sheet metal screws.
   7. Wood Elements: Use wood screws.

C. Installation: Install products in accordance with manufacturer's instructions. Provide anchors, fasteners, and supports in accordance with NECA "Standard of Installation". Do not fasten supports to pipes, ducts, mechanical equipment, and conduit. Do not use spring steel clips and clamps. Do not use powder-actuated anchors. Do no drill or cut structural members. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts. Install surface-mounted cabinets and panelboards with minimum of four anchors. In wet and damp locations use steel channel supports to stand cabinets and panelboards one inch off wall. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

2.8 ELECTRICAL IDENTIFICATION

A. Nameplates: Engraved three-layer laminated plastic, black letters on white background. Locations: Each electrical distribution and control equipment enclosure, communication cabinets and power outlet faceplates indicating panel & circuit number the outlet is fed

from. Letter Size: Use 1/8 inch letters for identifying individual equipment and loads. Use 1/4 inch letters for identifying grouped equipment and loads.

B. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background. Use for identification of individual wall switches and receptacles and control device stations. In addition to nameplates as described above, use labels on all panelboards, disconnect switches and enclosed circuit breakers to identify where the equipment is fed from, voltage & phase.

C. Wire markers: Tape, or tubing type wire markers. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection. Power and Lighting Circuits shall be marked with panel and branch circuit or feeder number as indicated on drawings. Control Circuits shall be marked with control wire number indicated on schematic and interconnection diagrams on drawings.

D. Conduit markers: Corrosion and abrasion resistant. Location: Furnish markers for each conduit longer than 6 feet (2 m). Spacing: 20 foot on center. Indicate voltage and phase.

E. All panelboards shall be provided with a typed (hand written is not allowed) circuit directory indicating the load fed by each circuit breaker and it's location in the building.

2.9 PANELBOARDS

A. Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.

B. Panelboard Bussing: Bus bars shall be copper. Provide copper ground bus bar in all panelboards. Provide additional 200% rated neutral bus bar and isolated ground bus bar as indicated on plans, schedules, etc.

C. Minimum Integrated Short Circuit Rating: 10,000 amperes RMS symmetrical for 240 volt panelboards; 65,000 amperes RMS symmetrical for 480 volt panelboards, or as indicated.

D. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles, listed as Type SWD for lighting circuits, Type HACR for air conditioning equipment circuits, Class A ground fault interrupter circuit breakers where scheduled. Do not use tandem circuit breakers.

E. Current Limiting Molded Case Circuit Breakers: NEMA AB 1, circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical amperes, let-through current and energy level less than permitted for same size Class RK-5 fuse.

F. Enclosure: NEMA PB 1, Type 1.

G. Cabinet Box: 6 inches (153 mm) deep, 20 inches (508 mm) wide for 240 volt and less panelboards, 20 inches (508 mm) wide for 480 volt panelboards.

H. Cabinet Front: Flush or Surface cabinet front as scheduled with concealed trim clamps, concealed hinge, metal directory frame, and flush lock all keyed alike. Finish in manufacturer's standard ANSI 49 enamel.

2.10 ENCLOSED CIRCUIT BREAKERS

A. Enclosed Molded Case Circuit Breaker: Comply with NEMA AB 1. Service Conditions: 86 degrees F. and altitude of 1000 feet. Include provisions for padlocking. Provide insulated grounding lug in each enclosure. Provide Products suitable for use as service entrance equipment where so applied. Fabricate enclosure from steel.

B. Install enclosed circuit breakers where indicated, in accordance with manufacturer's instructions. Install enclosed circuit breakers plumb. Provide supports in accordance with these specifications. Height: 5 ft (1.6 M) to operating handle. Provide engraved plastic nameplates.

C. Inspect each circuit breaker visually. Perform several mechanical ON-OFF operations on each circuit breaker. Verify circuit continuity on each pole in closed position. Determine that circuit breaker will trip on overcurrent condition, with tripping time to NEMA AB 1 requirements. Include description of testing and results in test report.

D. Adjust trip settings so that circuit breakers coordinate with other overcurrent protective devices in circuit. Adjust trip settings to provide adequate protection from overcurrent and fault currents.

2.11 FUSES

A. Cartridge fuses shall be as follows:

1. Provide a complete set of fuses for each item of fusible type equipment. Fusible equipment furnished by other contractors will be complete with fuses.

2. Secondary system fuses, rated at 600 volts or less, shall be UL listed and constructed in conformance with the applicable standards set forth by NEMA and ANSI. All fuses of a particular class shall be of same manufacturer.

3. Regardless of actual fault current, they shall, at full recovery voltage, be capable of safely interrupting fault currents of 200,000 amperes RMS symmetrical or 340,000 amperes RMS asymmetrical, deliverable at the line side of the fuse.

4. Circuits 0-600 amperes shall be protected by the equal of Bussman “Low Peak” current limiting fuses, LPN-RK (250 volts), LPS-RK (600 volts), UL class RK-1.

5. Fuses shall be suitable for application to fuse gaps which reject other types of fusing.

6. Supply 10% spare fuses of each size and type 60 amps and less. Supply three (3) spare fuses for each size and type over 60 amps.

B. Cartridge fuses shall be manufactured by Bussman, Gould or Littlefuse.

C. Install fuse with label oriented such that manufacturer, type, and size are easily read.

2.12 INTERIOR LUMINAIRES

A. Lighting fixtures shall be in accordance with identifications on the drawings and the following:

B. Finishes shall be as selected by the Architect or as indicated on the plans.

C. Any additional appurtenances required for installation and operation, where same are not covered by the identification used on the drawings, shall be included. Lighting fixtures and equipment shall be furnished complete, wired and assembled, including canopies, lamps and other incidental items. Install specified lamps in each luminaire.

D. Recessed fixtures shall be coordinated with ceiling construction.

E. Exact location of all fixtures shall be confirmed with Architect prior to rough-in. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prevent movement.

F. Locate recessed ceiling luminaires as indicated on reflected ceiling plan. Install recessed luminaires to permit removal from below. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating. Install clips to secure recessed grid-supported luminaires in place. Install wall mounted luminaires, and exit signs at height as scheduled. Install accessories furnished with each luminaire. Connect luminaires, and exit signs to branch circuit outlets using flexible conduit. Recessed fixtures throughout shall have their components, wiring and external connections coordinated for use in ceilings utilized as air handling plenums. Install recessed luminaires to permit removal from below. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating. Install clips to secure recessed grid-supported luminaires in place

G. Fixtures for use outdoors or in areas designated as damp locations, shall be suitably gasketed and UL listed for such applications. All exposed lamp fluorescent fixtures specified for use under cabinets/above counters, strip fixtures, etc… shall have lamps fitted with safety tube covers with end caps, Bergen Industries "Tube-Guard" or equal

H. All ballasts or transformers for discharge type lamps shall be for 60-cycles operation. All ballasts or transformers for discharge or fluorescent type lamps shall be high power factor type.

I. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.

J. In-line fuses shall be provided for all ballast and transformers. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire

K. Ballasts for T5 and T8 fluorescent lamps shall be electronic high frequency electronic type (20 KHZ or greater) type “P”, class “A” sound-rated, instant start and parallel wired such that if one lamp burns out the remaining lamps stay lit. Electronic ballasts shall comply with UL 935, ANSI C82.1, CBM certified and meet FCC standards for EMI/RFI (FCC 47 CFR Part 18 non-consumer) with a total harmonic distribution of less than 20%. Ballasts shall carry a manufacturer’s warranty of five (5) years and be manufactured by Osram Sylvania, Magnetek, Advance, or approved equal. Remote ballasts shall be standard core and coil type “P”, sound rating “A”.

L. All fluorescent dimming ballasts shall be continuous, flicker-free and be capable of dimming down the measured light from 100% to 1% of the lamps light output. All fluorescent dimming ballasts shall have internal fusing and the total harmonic distortion (THD) shall be less than 10%. All fluorescent dimming ballasts shall be equal to Lutron Hi-lume.

M. All ballasts or transformers for discharge type lamps intended for use outdoors shall be of the low temperature type having the lowest temperature rating available in standard manufacture.

N. Ballasts and transformers shall be of the “low energy full light output” type where available. Each shall not exceed industry minimum rated input wattage by more than 8%.

O. All fixtures shall be UL approved with labels attesting thereto.

P. All lamps shall be included. Except where specifically noted otherwise all fluorescent lamps shall be as follows:

1. Fluorescent lamps of the proper wattage and voltage rating shall be provided in each fixture as indicated on the fixture schedule. All fluorescent lamps shall be manufactured to appropriate specifications given in ANSI C78. Unless noted otherwise, fluorescent lamps shall be T8 3500K and have a minimum CRI of 82.
2. Unless otherwise noted, all compact fluorescent lamps shall be 3500K and have a minimum CRI of 82. The Contractor shall verify that the proper lamp type for the specified ballast type is furnished with the compact fluorescent fixture. Compact fluorescent ballasts shall be UL listed, Class P, Type 1 and CBM Certified. Where 4-pin electronic ballast compatible compact fluorescent lamps are specified, electronic ballasts shall include circuitry capable of sensing when lamp is approaching end of life and shut show the lamp circuit. This end of life sensing must be impervious to low/high line voltage conditions and result in no false tripping or overheating of lamp bases.

Q. The Contractor shall obtain all information relative to the exact type of hung ceilings and suspension systems to be installed before ordering any recessed fixtures. This Contractor shall furnish the proper type fixtures applicable to the ceiling framing system. If, other than the type of fixtures specified are required for installation due to the type of ceiling construction, this Contractor shall furnish and install the proper type fixtures and mounting appurtenances required at no extra charge.

R. The Contractor shall coordinate the exact locations of all lighting fixtures with the ceiling pattern during the construction period and before installation of the fixtures. Interferences between lighting fixtures, and other equipment, shall be brought to the attention of the General Contractor.

S. Include the aiming and/or adjustments of all lighting fixtures requiring same in accordance with instructions issued by the Architect in the field. Aim and adjust luminaires as indicated or as directed by the Owner, Architect or Engineer. Position exit sign directional arrows as indicated. Operate each luminaire after installation and connection. Ensure proper connection and operation.

T. All lamp sockets in lighting fixtures shall be suitable for the indicated lamps and shall be set so that the lamps are positioned in optically correct relation to all lighting fixture components.

U. Lighting fixtures shall be supported from building structure only, not from hung or suspended ceiling, by means of chains or threaded rods. The use of tie wire will not be allowed. All fixtures shall include seismic clips and shall be supported to comply with seismic regulations. Install suspended luminaires using pendants supported from swivel hangers or other suitable leveling means. All rows of fixtures shall be level, aligned with building lines and run parallel to each other. Provide pendant length required to suspend luminaire at indicated height. Support luminaires to building structure, independent of ceiling framing.

V. Lamps shall be manufactured by General Electric, Phillips. OSRAM, or Sylvania.

W. Bond products and metal accessories to branch circuit equipment grounding conductor.

X. Verify ceiling construction and provide fixtures with ballasts, frames, rings and other accessories suitable for the construction encountered. Fixtures shall be located as indicated on the drawings.

Y. Installation of fixtures shall be coordinated with installation of ceiling materials and suspension method used.

Z. Investigate lighting fixture locations and supporting means to ensure that no interference exists between lighting fixture, supporting means and other equipment.

AA. For specific lamp requirements, refer to fixture schedule. All fixtures shall be furnished complete with lamps.

BB. Incandescent and tungsten halogen lamps shall not be operated other than for initial testing, prior to final inspection.

CC. Fluorescent fixture lenses shall be extruded clear 100 percent virgin acrylic. Lens thickness shall be .125" minimum unless otherwise specified.

DD. Recessed Incandescent Luminaries: Shall be pre-wired type with junction box forming an integral part of the assembly. Provide with thermal protection with identifying label.

EE. All exposed lamp fluorescent fixtures specified for use under cabinets/above counters shall have lamps fitted with safety tube covers with end caps, Bergen Industries "Tube-Guard" or equal.

FF. Lamp locks shall be included in all open 430 ma lamp fixtures installed in areas subject to excessive vibration.

GG. All lighting fixtures (surface or recessed) shall be supported from the building structure, at a minimum of two points for fluorescent light fixtures up to 2' x 4' and at four points for 4' x 4' fixtures. Incandescent light fixtures shall be supported from a minimum of one point and be completely independent of the ceiling involved. Supports shall be wire, chain or threaded rod of sufficient strength to carry the fixture. Fluorescent fixtures shall be supported at each end of a diagonal axis of the fixture.

HH. All parabolic fixtures shall comply with IES RP-24-1989 VDT lighting which states that the average brightness in the lengthwise, crosswise and 45 vertical plans should preferably not exceed 850 cd/m^2 (250fl) at 55 from vertical.

II. Install suspended luminaires using pendants supported from swivel hangers. Provide pendant length required to suspend luminaire at indicated height.

JJ. Support luminaires larger than 2 x 4 foot size independent of ceiling framing.

KK. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prevent movement.

LL. Exposed Grid Ceilings: Support surface mounted luminaires on grid ceiling directly from building structure.

END OF SECTION

3.01 BASIC REQUIREMENTS

A. Adhere to best industry practice and the following:

1. All work shall be concealed.

2. Route circuitry runs embedded in concrete to coordinate with structural requirements.

3. Equip each raceway intended for the future installation of wire or cable with a nylon pulling cord 3/16" in diameter and clearly identify both ends of the raceway.

4. Provide all outlet boxes, junction boxes, and pull boxes for proper wire pulling and device installation. Include those omitted from the drawings due to symbolic methods of notation.

5. Utilize lugs of the limited type to make connections at both ends of cables installed on the line side of main service overcurrent and switching devices. Provide cable limiters for each end of each service entrance cable.

6. Beyond the termination of raceways, fireproof the following:

   a. All wires and cables within pad-mounted transformer enclosure.

   b. All service feeder cables ahead of main service overcurrent protection devices, and elsewhere where not in raceways.

   c. Fireproofing of wires and cables shall be by means of a half-lapped layer of arcproof or by means of sleeving of a type specifically manufactured for the purpose. Ends of tape or sleeving shall be severed with twine. Fireproofing shall be extended up into raceways. After conductors have been finally shaped into their permanent configuration, fireproofing tape or sleeving shall be coated with silicate of soda (water glass). Fireproofing shall be applied in an overall manner to raceway groupings of conductors.

7. Provide all sleeves through fireproof and waterproof slabs, walls, etc., required for electric work.

   a. Provide waterproof sealing for the sleeves through waterproof slabs, walls, etc.

   b. Provide fireproof sealing for the sleeves through fireproof walls, slabs, etc.

   c. Provide fireproof sealing for the openings in fireproof walls, slabs, etc., resulting from removal of existing electrical sleeves, conduits, poke-thru's etc.

8. No splicing of wires will be permitted in Fire Alarm System.

9. Bundle wiring passing through pull boxes and panelboards in a neat and orderly manner with plastic cable ties. Cable ties shall be by Ty-Raps as manufactured by Thomas & Betts, Holub Industries Inc., Quick Wrap, Bundy Unirap, or equal.

10. Turn branch circuits and auxiliary system wiring out of wiring gutters at 90 degrees to circuit breakers and terminal lugs.

3.02 TESTING REQUIREMENTS & INSTRUCTIONS

A. The Electrical Subcontractor shall provide supervision, labor, materials, tools, test instruments and all other equipment or services and expenses required to test, adjust, set, calibrate, and operationally check work and components of the electrical systems and circuitry throughout Division 16 work.

B. The Electrical Subcontractor shall pay for all tests specified in Division 16, including expenses incident to retests occasioned by defects and failures of equipment to meet specifications, at no additional cost to the Owner. Any defects or deficiencies discovered in any of the electrical work shall be corrected.

1. The Electrical Subcontractor shall:

a. Replace wiring and equipment found defective (defined as failing to meet specified requirements) at no additional cost to the Owner.

b. Submit three (3) copies of test results to the Engineer.

C. Do not void equipment warranties or guarantees by testing and checkout work. Checks and tests shall be supplemental to and compatible with the Manufacturer's installation instructions. Where deviations are apparent, obtain the Manufacturer's approved review of procedures prior to testing. Where any repairs, modifications, adjustments, tests or checks are to be made, the Contractor shall contact the Engineer to determine if the work should be performed by or with the Manufacturer's Representative.

D. Tests are to:

1. Provide initial equipment/system acceptance.

2. Provide recorded data for future routine maintenance and trouble-shooting.

3. Provide assurance that each system component is installed satisfactorily and can be expected to perform, and continue to perform its specified function with reasonable reliability throughout the life of the facility.

E. At any stage of construction and when observed, any electrical equipment or system determined to be damaged, or faulty, is to be reported to the Engineer. Corrective action by the Contractor requires prior Engineer approval, retesting, and inspection.

F. Prior to testing and start-up, equipment and wiring shall be properly and permanently identified with nameplates, and other identification as specified in Section 3.7. Check and tighten terminals and connection points, remove shipping blocks and thoroughly clean equipment, repair damaged or scratched finishes, inspect for broken and missing parts and review and collect Manufacturer's drawings and instructions for delivery to the Engineer. Make routine checks and tests as the job progresses to ensure that wiring and equipment is properly installed.

G. Testing and checkout work is to be performed with fully qualified personnel skilled in the particular tests being conducted. Personnel are to have at least five (5) years of experience with tests of same type and size as specified.

H. Inspections and tests shall be in accordance with the following applicable codes and standards as amended to date, unless otherwise specified.

1. National Electrical Manufacturer's Association – NEMA.
2. American Society for Testing and Materials _ ASTM.
3. Institute of Electrical and Electronic Engineers – IEEE.

4. National Electrical Testing Association – NETA.
5. American National Standards Institute – ANSI.
   a. C2: National Electrical Safety Code.
   b. Z244-1: American National Standard for Personnel Protection.
6. Insulated Cable Engineers Association – ICEA.
7. Association of Edison Illuminating Companies – AEIC.
8. Occupational Safety and Health Administration – OSHA.
   a. OSHA Part 1910; Subpart S, 1910.308.
   b. OSHA Part 1926; Subpart V, 1926.950 through 1926.960.
9. National Fire Protection Association – NFPA.
   a. 70B: Electrical Equipment Maintenance.
   b. 70E: Electrical Safety Requirements for Employer Workplaces.
   c. 70: National Electrical Code.
   d. 78: Lightning Protection Code.
   e. 101: Life Safety Code.
10. Inspections and tests shall utilize the following references:
    a. Contract Drawings and Specifications.
    b. Contractor's Short Circuit and Construction Study, in accordance with Section 16100.
    c. Manufacturer's printed test procedures for respective equipment.

I. Test Equipment:

1. Test equipment used by the Contractor is to be inspected and calibrated.

2. Perform calibration and setting checks with calibrated test instruments of at least twice that of the accuracy of the equipment, device, relay or meter under test. Dated calibration labels shall be visible on test equipment. Calibrations over six (6) months old are not acceptable on field test instruments. Inspect test instruments for proper operation prior to proceeding with the tests. Record serial and model numbers of the instruments used on the test forms.

J. Test Procedures:
1. The Electrical Subcontractor is responsible for the preparation of the procedures and schedules for the work specified herein. This work is to be coordinated and compatible with both the work and schedule of the other crafts. Sequence the tests and checks so that the equipment can be energized immediately after the completion of the application tests.
2. Submit proposed testing and checkout forms. The procedures shall provide specific instructions for the checking and testing of each electrical component of each system. Schedule tests and inspections as the job progresses. Test procedures submitted shall include job safety rules.

K. After each electrical system installation is complete, perform the tests to determine that the entire system is in proper working order and in accordance with applicable codes, Manufacturer's instructions, drawings, and specifications. Tests are in addition to shop tests of individual items at the Manufacturer's plant. Perform insulation and ground resistance tests before operating tests.

L. Perform insulation tests on electrical equipment, apparatus, cables, motors, generators, transformers, circuit breakers and switches, switchgear, motor control centers, and similar electrical equipment, at the following items and conditions:

1. Prior to energization and/or placing into service.
2. When damage to the insulation is suspected or known to exist.
3. After repairs or modifications to the equipment affecting the insulation.
4. Where lightning or other surge conditions are known to have existed on the circuit.

M. Make openings in circuits for test instruments and place and connect instruments, equipment, and devices, required for the tests. Upon completion of tests, remove instruments and instrument connections and restore circuits to permanent condition.

N. List each circuit and measured resistance as test data. Maintain record of insulation resistance values. Identify conductor, or equipment, date that value was taken and resistance value. Arrange information in tabular form and submit to Engineer.

O. Report inspections, tests, and calibrations in writing on Engineer approved reports/forms. The recorded data form shall have the signatures of the persons conducting the tests, authorized witnesses and the Engineer. The forms shall serve as the test and inspection checklist.

P. When the electrical tests and inspections specified or required within Division 16 are completed and results reported, reviewed, and approved by the Engineer, the Contractor may consider that portion of the electrical equipment system or installation electrically complete. The Contractor will then affix appropriate, approved, and dated completion or calibration labels to the tested equipment and notify the Engineer of electrical completion. If the Engineer finds completed work unacceptable, he will notify the Contractor in writing of the unfinished or deficient work, with the reason for his rejection, to be corrected by the Contractor. The Contractor will notify the Engineer in writing when exceptions have been corrected. The Contractor will notify the Engineer in writing when exceptions have been corrected. The Contractor will prepare a “Notification or Substantial Electrical Completion” for approval by the Engineer following Engineer’s acceptance of electrical completion. If later in-service operation or further testing identified problems attributable to the Contractor, these will be corrected by the Contractor, at no additional cost to the Authority.

Q. Specific Tests:

1. Perform the following specified tests. De-energize and isolate equipment and cable prior to performing the tests.

2. Grounding Systems:

a. Test main building loops and major equipment grounds to remote earth, directly referenced to an extremely low resistance (approximately 1 ohm) reference ground benchmark. Perform a visual inspection of the systems, raceway and equipment grounds to determine the adequacy and integrity of the grounding. Ground testing results shall be recorded, witnesses, and submitted to the Engineer.

b. Perform ground tests using a low resistance, null-balance type ground testing ohmmeter, with test lead resistance compensated for. Use the type of test instrument which compensates for potential and current rod resistances.

c. Test each ground rod and measure ground resistance. If resistance is not 25 ohms or less, drive additional rods to obtain a resistance of 25 ohms or less. Submit tabulation of results to Engineer. Include identification of electrode, date of reading and ground resistance valve in the test reports.

d. Test each building and major equipment grounding system for continuity of connections and for resistance. Ground resistance of conduits, equipment cases, and supporting frames, shall not exceed 5 ohms to ground. Submit all readings to the Engineer.

e. Where ground test results identify the need for additional grounding conductors or rods that are not indicated or specified, design changes will be initiated to obtain the

3. Wire and Cable: (All conductors originating from main switchboard and distribution panels).

   a. Before energizing any cable or wire, megger the insulation resistance of every external circuit wire to each other and to ground. Tests shall be conducted at voltages of 500 volts or lower. Continuity test each wire and cable to verify the field-applied tag per conductor. Continuity test each wire and cable to verify the field-applied tag per conductor. Minimum insulation resistance valves shall not be less than two (2) megohms.

   b. Take insulation resistance measurements for motor feeders. With motors disconnected, measure insulation resistance from load side of contactors or circuit breakers.

   c. Check cables and wires for the proper identification numbering and/or color coding.

   d. Inspect cables for physical damage and proper connection in accordance with single line diagram.

4. Panelboards:

   a. Inspect for physical damage and proper grounding.

   b. Compare nameplate information with schedules and report any discrepancies.

   c. Inspect all panelboards for cleanliness, workmanship, etc.

3.03 BRANCH CIRCUITRY

A. For all lighting and appliance branch circuitry, raceway sizes shall conform to industry standard maximum permissible occupancy requirements except where these are exceeded by other requirements specified elsewhere.

B. Circuits shall be balanced on phases at their supply as evenly as possible.

C. Feeder connections shall be in the phase rotation which establishes proper operation for all equipment supplied.

D. Reduced size conductors indicated for any feeders shall be taken as their grounding conductors.

E. Feeders consisting of multiple cables and raceways shall be arranged such that each raceway of the feeder contains one (1) cable for each leg and one (1) neutral cable, if any.

F. For circuitry indicated as being protected at 20 Amps or less, abide by the following:

   1. All 20 amp, 120/208 volt, 3-phase, 4-wire combined branch circuit homeruns shall be provided with a #8 AWG neutral conductor.

   2. Minimum conductor size shall be No. 12 AWG cooper.

   3. Conductors operating at 120 volts extending in excess of 100 ft. or at 277 volts extending in excess of 200 ft., or the last outlet or fixture tap shall be No. 10 AWG cooper throughout.

4. Lighting fixtures and receptacles shall not be connected to the same circuit.

5. Circuits shall be balanced on phases at their supply point as evenly as possible.

G. Type MC Cable Installation:

Where cable is permitted under the products section, the installation of same shall be done in accordance with code and the following:

Cable shall be supported in accordance with code. Tie wire is not an acceptable means of support. Cable supports such as Caddy WMX-6, MX-3, and clamps such as Caddy 449 shall be used. Where cables are supported by the structure and only need securing in place, then ty-raps will be acceptable. Ty-raps are not acceptable as a means of support. All fittings, hangers, and clamps for support and termination of cables shall be of type specifically designed for use with cable, i.e., romex connectors not acceptable.

Armor of cable shall be removed with rotary cutter device equal to roto-split by Seatek Co.; not with a hacksaw.

Use split “Insuliner” sleeves at terminations.

3.04 <u>REQUIREMENTS GOVERNING ELECTRICAL WORK IN DAMP OR WET LOCATIONS</u>

A. Outlets and outlet size boxes shall be of galvanized cast ferrous metal only.

B. The finish of threaded steel conduit shall be galvanized only.

C. Wires for pulling into raceways for lighting and appliance branch circuitry shall be limited to “THWN”.

D. Wires for pulling into raceways for feeders shall be limited to “THWN”.

E. Plates for toggle switches and receptacles shall have gasketed snap shut covers suitable for wet locations while in use.

F. Final connections of flexible conduit shall be neoprene sheathed.

G. Apply one (1) layer of half looped plastic electric insulating tape over wire nuts used for joining the conductors of wires.

H. Enclosures, junction boxes, pull boxes, cabinets, cabinet trims, wiring troughs and the like, shall be fabricated of galvanized sheet metal, shall conform to the following:

1. They shall be constructed with continuously welded joints and seams.

2. Their edges and weld spots shall be factory treated with cold galvanizing compound.

3. Their connection to circuitry shall be by means of watertight hub connectors with sealing rings.

I. Enclosures for individually mounted switching and overcurrent devices shall be NEMA Class IV weatherproof construction.

J. The covers, doors and plates and trims used in conjunction with all enclosures, pull boxes, outlet boxes, junction boxes, cabinets and the like shall be equipped with gaskets.

K. Panels shall be equipped with doors without exception.

L. The following shall be interpreted as damp or wet locations within building confines:

1. Spaces where any designations indicating weatherproof (WP) or vapor proof appear on the drawings.

2. Below waterproofing in slabs applied directly on grade.

3. Spaces defined as wet or damp locations by Article 100 of the National Electric Code.

3.05 REQUIREMENTS GOVERNING ELECTRIC WORK IN AIR HANDLING SPACES

A. Within air handling ductwork or plenums (other than spaces within suspended ceilings used for air handling purposes), Area “B” and the media shall comply with requirements for return air plenums.

1. Abide by the requirements specified for electric work in damp locations within building confines.

2. Where circuitry passes through duct walls, include, in accordance with instructions issued in the field, airtight sealing provisions which allow for a relative movement between the circuitry and the duct walls.

3. Exclude the installation of type NM or NMC cable.

B. In spaces within suspended ceilings used for air handling purposes, abide by the requirements specified for normal electric work conditions except:

1. Lighting fixtures recessed into the ceilings shall be certified as being suitable for this purpose.

3.06 IDENTIFICATION AND TAGGING

A. Identify individually:

1. Each transformer.

2. Each panelboard.

3. Each switch and circuit breaker.

4. Each feeder, wire or cable or all systems.

5. Each switchboard.

6. Each end of nylon pullwire in empty conduit.

B. Each wire or cable in a feeder shall be identified at its terminal points of connection and in each pullbox, junction box and panel gutter through which it passes.

C. The nomenclature used to identify panelboards or load center shall designate the numbers assigned to them.

D. The nomenclature used to identify switches or circuit breakers shall:

1. Where they disconnect mains or services designate this fact.

2. Where they control feeders, designate the feeder number and the name of the load supplied.

3. Where they control lighting and appliance branch circuitry, designate the name of the space and the load supplied.

E. The nomenclature used to identify feeder wires and cables shall designate the feeder number.

F. Identification for panelboards or load centers shall be by means of engraved lamacoid nameplates showing 1/4" high white lettering on a black background fastened to the outside face of the front.

G. Identification for switches or circuit breakers shall be by means of the following:

1. Where individually enclosed – engraved lamacoid nameplates showing 1/8” high white lettering on a black background fastened on the outside front face of the enclosure.

2. Where in panelboards or load centers without doors – same as for individually enclosed.

3. Where in panelboards or load centers with doors – typewritten directories mounted behind transparent plastic covers, in metal frames fastened on the inside face of the doors.

H. Identification for wires and cables shall be by means of wrap around “brady” type labels.

I. Device plates for local toggle switches, toggle switch type motor starters, pilot lights and the like, whose function is not readily apparent shall be engraved with 1/8” high letters suitably describing the equipment controlled or indicated.

J. Phase identification letters shall be stamped into the metal of the bus bars of each phase of the main busses of each switchboard and each panelboard. The letters shall be visible from at least one (1) “normal posture” location without having to demount any current carrying or supporting elements.

K. Equip the front face of all switchboard pull boxes junction boxes and the like containing cables, busing or devices operating in excess of 600 volts with enameled sheetmetal “red on white” signs reading “DANGER-HIGH VOLTAGE.”

L. Equip all electric closets and the like with enameled sheet metal “red on white” signs reading “Electrical Equipment Room – No Storage Permitted”. Signs shall be mounted at clearly visible locations within the rooms.

M. Provide a sign at the service entrance equipment room indicating the type and location of all on-site emergency or standby power sources.

N. Identify each outlet box, junction box, and cabinet used in conjunction with empty raceway for wires of a future system by means of indelible markings on the inside denoting the system.

O. Prior to installing identifying tags and nameplates, submit their nomenclature for approval. Conform to all revisions issued by the Architect.

3.07 LIMITING NOISE PRODUCED BY ELECTRICAL INSTALLATION

A. Perform the following work, in accordance with field instructions issued by the Architect to assure that minimal noise is produced by electrical installations due to equipment furnished as part of the electrical work.

B. Check and tighten the fastenings of sheet metal plates, covers, doors and trims used in the enclosures of electrical equipment.

C. Remove and replace any individual device containing one or more magnetic flux path metallic cores (e.g., discharge lamp ballast, transformer, reactor, dimmer, solenoid) which is found to have a noise output exceeding that of other identical devices installed at the project.

3.08 SUPPORTS AND FASTENINGS

A. Support work in accordance with best industry standards, Local Electric Code and the following:

1. Include supporting frames or racks for equipment, intended for vertical surface mounting, which is required in a free standing position.

2. Supporting frames or racks shall be of standard angle, standard channel or specialty support system steel members. They shall be rigidly bolted or welded together and adequately braces to form a substantial structure. Racks shall be of ample size to assure a workmanlike arrangement of all equipment mounted on them.

3. No work intended for exposed installation shall be mounted directly on any building surface. In such locations, flat bar members or spaces shall be used to create a minimum of ¼” air space between the building surfaces and the work. Provide ¾” thick exterior grade plywood painted with two (2) coats of fire-retardant gray paint for mounting of panelboards.

4. Nothing (including outlet, pull and junction boxes and fittings) shall depend on electric conduits, raceways or cables for support.

5. Nothing shall rest on, or depend for support on, suspended ceiling media.

6. Support less than 2” trade size, vertically run, conduits at intervals no greater than 8’. Support such conduits, 2-1/2” trade size or larger, at intervals no greater than they story height, or 15’, whichever is smaller.

7. Where they are not embedded in concrete, support less than 1” trade size, horizontally run, conduits at intervals no greater than 7’. Support such conduits, 1” trade size or larger, at intervals no greater than 10’.

8. Support all lighting fixtures directly from structural slab, deck or framing member.

9. Where fixtures and ceilings are such as to require fixture support from ceiling openings frames, include in the electric work the members necessary to tie back the ceiling opening frames to ceiling suspension members or slabs so as to provide actual support for the fixtures noted above.

10. As a minimum procedure, in suspended ceilings support smalls runs of circuitry (e.g., conduit not in excess of 1" trade size) from ceiling suspension members as defined above. Support larger runs of circuitry directly from structural slabs, decks or framing members.

11. Fasten electric work to building structure in accordance with the best industry practice.

12. Floor mounted equipment shall not be held in place solely by its own dead weight. Include floor anchor fastenings in all cases.

13. For items which are shown as being ceiling mounted at locations where fastenings to the building construction element above is not possible, provide suitably auxiliary channel or angle iron bridging tying to building structural elements.

14. As a minimum procedure, where weight applied to the attachment points is 100 lbs. or less, fasten to concrete and solid masonry with bolts and expansion shields.

15. As a minimum procedure, where weight applied to building attachment points exceed 100 lbs., but is 300 lbs. or less, conform to the following:

    a. At field poured concrete slabs, utilize inserts with 20' minimum length slip-through steel rods, set transverse to reinforcing steel.

3.09 SPLICING AND TERMINATING WIRES AND CABLES

A. Maintain all splices and joints in removable cover boxes or cabinets where they may be easily inspected.

B. Locate each completed conductor splice or joint in the outlet box, junction box, or pull box containing it, so that it is accessible from the removal cover side of the box.

C. Join solid conductors No. 8 AWG and smaller by securely twisting them together and soldering, or by using insulated coiled steel spring "wire nut" type connectors. Exclude "wire nuts" employing non-expandable springs. Terminate conductors No. 8 AWG and smaller by means of a neat and fast holding application of the conductors directly to the binding screws or terminals of the equipment or devices to be connected.

D. Join, tap and terminate standard conductors No. 6 AWG and larger by means of solder sleeves, taps, and lugs with applied solder or by means of bolted saddle type or pressure indent type connectors, taps and lugs. Exclude connectors and lugs of the types which apply set screws directly to conductors. Where equipment or devices are equipped with set screw type terminals which are impossible to change, replace the factory supplied set screws with a type having a ball bearing tip. Apply pressure indent type connectors, taps and lugs utilizing tools manufactured specifically for the purpose and having features preventing their release until the full pressure has been exerted on the lug or connector.

E. Except where wire nuts are used, build up insulation over conductor joints to a value, equal both in thickness and dielectric strength, to that of the factory applied conductor insulation. Insulation of conductor taps and joints shall be by means of half-lapped layers of rubber tape, with an outer layer of friction tape; by means of half-lapped layers of approved plastic electric insulating tape; or by a means of split insulating casings manufactured specifically to insulate the particular connector and conductor, and fastened with stainless steel or non-metallic snaps or clips.

F. Exclude splicing procedures for neutral conductors in lighting and appliance branch circuitry which utilize device terminals as the splicing points.

G. Exclude joints or terminations utilizing solder in any conductors used for grounding or bonding purposes.

H. Exclude all but solder or pressure indent type joints in conductors used for signaling or communication purposes.

I. Lugs for conductors used to make phase leg connections on the line side of the main service overcurrent and switching device shall be of the limiter type.

3.10 PULLING WIRES INTO CONDUITS AND RACEWAYS

A. Delay pulling wires or cables in until the project has progressed to a point when general construction procedures are not liable to injure wires and cables, and when moisture is excluded from raceways.

B. Utilize nylon snakes or metallic fish tapes with ball type heads to set up for pulling. In raceways 2” trade size and larger, utilize a pulling assembly ahead of wires consisting of a suitable brush followed by a 3-1/2” diameter ball mandrel.

C. Leave sufficient slack on all runs of wire and cable to permit the secure connection of devices and equipment.

D. Include circular wedge-type cable supports for wires and cables at the top of any vertical raceway longer than 20 feet. Also include additional supports spaced at intervals which are no greater than 10’. Supports shall be located in accessible pull boxes. Supports shall be of a non-deteriorating insulating material manufactured specifically for the purpose.

E. Pulling lubricants shall be used. They shall be products manufactured specifically for the purpose.

F. Slack on wires and cables located in cabinets and pull boxes shall be formed and set in place in groupings corresponding to their occupancy of raceways. They shall also be arranged, with insulators and supports provided where necessary, such that cable shims or other such temporary expedients do not have to be left permanently in place to prevent the wires and cables from shifting when covers or trims are removed.

3.11 REQUIREMENTS FOR THE INSTALLATION OF JUNCTION BOXES, OUTLET BOXES AND PULL BOXES

A. Flush wall-mounted outlet boxes shall not be set back to back but shall be offset at least 12” horizontally regardless of any indication on the drawings.

B. Locate all boxes so that their removable covers are accessible without necessitating the removal of parts of permanent building structure, including piping, ductwork, and other permanent mechanical elements.

C. In conjunction with concealed circuitry, abide by one of the following instructions (as may be applicable to the conditions) in order to assure the aforementioned accessibility. (Not required for circuitry concealed by removable suspended ceiling tiles.)

1. For a small (outlet size) box on circuitry concealed in a partition or wall, locate box or fitting so that its removable cover side, (or the face of any applied raised cover) penetrates through to within 1/8” of the exposed surface of the building materials concealing the circuitry and apply a blank or device plate to suit the functional requirements.

2. For a large box on circuitry concealed in a partition, suspended ceiling, or wall, locate box totally hidden but with its removable cover directly behind an architectural access door or panel (included for the purpose, separate from the electric work) in the building construction which conceals the circuitry.

3. For a small (outlet size) box on circuitry concealed above and intended as an outlet for a surface mounted lighting fixture or other such electrical item, locate box so that its removable cover side penetrates through to the exposed surface of the building materials concealing the circuitry. Arrange the mounting of the lighting fixture or other item so that it completely covers the opening in the building construction caused by the box.

4. For a small (outlet size) box on circuitry concealed in a suspended ceiling, and intended as an outlet for a non-demountable type of recessed lighting fixtures or other such electrical items, locate box totally hidden but with its removable cover not more than 1' away from the building construction opening occupied by the demountable items.

D. Apply junction and pull boxes in accordance with the following:

1. Include all pull boxes in long straight runs of raceway to assure that cables are not damaged when they are pulled in.

2. Include junction and pull boxes to assure a neat and workmanlike installation of raceways.

3. Include junction and pull boxes to fulfill requirements pertaining to the limitations to the number of bends permitted in raceway between cable access points, the accessibility of cable joints and splices, and the application of cable supports.

4. Include all required junction and pull boxes regardless of indications on the drawings (which, due to symbolic methods of notation, may omit to show some of them).

E. Apply outlet boxes in accordance with the following:

1. Unless noted below or otherwise specifically indicated, include a separate outlet box for each individual wiring device, lighting fixture and signal or communication system outlet component. Outlet boxes supplied attached to lighting fixtures shall not be used as replacements for the boxes specified herein.

2. A continuous row of fixtures of the end-to-end channel type, designed for "through wiring", and wired in accordance with the specification hereinafter pertaining to circuitry through a series of lighting fixtures, may be supplied through a single outlet box.

3. A series of separate fixtures, designed for "through wiring", spaced not more than 4' apart, and inter-connected with conduit or raceway and circuitry which is in accordance with the specifications hereinafter pertaining to circuitry through a series of lighting fixtures, may be supplied through a single outlet box.

4. Connection to recessed ceiling fixtures supplied with pigtails may be arranged so that more than one (1), but not more than four (4) such fixtures are connected into a single outlet box. When adopting this procedure:

   a. Utilize an outlet box no smaller than 5" square by 2-1/2" deep.
   b. Allow no fixture to be supplied from an outlet box in another room.

5. Multiple local switches indicated at a single location shall be gang-mounted in a single outlet box.

6. Include all required outlet boxes regardless of indications on the drawings (which due to symbolic methods of notation, may omit to show some of them).

F. Install junction boxes, pull boxes and outlet boxes in conjunction with concealed circuitry.

1. Exclude surface-mounted outlet boxes in conjunction with concealed circuitry.

2. Exclude unused circuitry openings in junction and pull boxes. In larger boxes each such opening shall be closed with a galvanized sheet steel plate fastened with a continuous weld all around. In small outlet type boxes, utilize plugs as specified for such boxes.

3. Close up all unused circuitry openings in outlet boxes. Unused openings in cast boxes shall be closed with approved cast metal threaded plugs. Unused openings in sheet metal boxes shall be closed with sheet metal knock-out plugs.

4. Outlet boxes for switches shall be located at the strike side of doors. Indicate door swings are subject to field change. Outlet boxes shall be located on the basis of final door swing arrangements.

5. Boxes and plaster covers for duplex receptacles shall be arranged for vertical mounting of the receptacle.

6. Equip outlet boxes used for devices which are connected to wires of systems supplied by more than one set of voltage characteristics with barriers to separate the different systems.

G. Barriers in junction and pull boxes of outlet size shall be of the same metal as the box.

H. Barriers in junction and pull boxes which are larger than outlet size shall be of the polyester resin fiberglass of adequate thickness for mechanical strength, but in no case less than 1/4" thick. Each barrier shall be mounted, without fastenings, between angle iron guides so that they may be readily removed.

3.12 LOCATING AND ROUTING OF CIRCUITRY

A. In general, all circuitry shall be run concealed except that it shall be run exposed where the following conditions occur:

1. Horizontally at the ceiling of permanently unfinished spaces which are not assigned to mechanical or electrical equipment.

2. Horizontally and vertically in mechanical equipment spaces.

3. Horizontally and vertically in electric equipment rooms.

B. Concealed circuitry shall be so located that building construction materials can be applied over its thickest elements without being subject to spalling or cracking.

C. All circuitry and raceways shall not be run within slabs. If field conditions requires raceways to be embedded in field-poured structural building construction concrete fill or slab shall conform to the following:

1. All proposed embedded raceways shall be indicated on plan and elevation and submitted to the Architect and Structural Engineer for review and written approval prior to installation.

Any costs associated with the review and approval shall be borne by the Electrical Subcontractor.

2. They shall be run “single layer” with their outside surface no closer than 1” to any surface of the structural concrete.

3. They shall not be located in any configuration which places the outside surface of one closer than 3” to outside surface of another, except at tees, crosses or other single level wide angle junction points.

4. Where crossovers or close grouping are unavoidable, circuitry shall be carefully field coordinated so as not to cause structural weakness.

5. Where turned up or down into a wall or partition they shall, before entering same, be routed parallel for a long enough distance to assure that no relocation of the wall or partition will be necessary to conceal the required bend.

6. They shall be routed in such a manner as to coordinate with the structural requirements of the building.

7. They shall be routed in accordance with field instructions issued by the Architect where such instructions differ from specifications set forth herein.

D. Circuitry run exposed shall be routed parallel to building walls and column lines.

E. Exposed circuitry located overhead shall be run in a completely accessible manner on the underside of all piping and ductwork.

F. Circuitry run in suspended ceilings shall be routed parallel to building walls, column lines, etc.

G. Circuitry shall be routed so as to prevent electric conductors from being subject to high ambient temperature. Minimum clearances from heated lines or surfaces shall be maintained as follows:

1. Crossing where uninsulated: 3”.

2. Crossing where insulated: 1”

3. Running parallel where uninsulated: 36”.

4. Running parallel where insulated: 6”.

H. Circuitry shall not be run in elevator shafts, hoistways, and the like. Where outlets for trail cables, pit lights, run be level lights, and the like, are involved, only the “final connection” outlet boxes themselves shall be located within or open into, the confines of the shaft.

I. Circuitry for miscellaneous systems indicated without notation as to location and routing shall be run as per the requirements and notations governing the adjacent light and power circuitry.

3.13 INSTALLING CIRCUITRY

A. The outside surface of circuitry, which is to be embedded in cinder concrete, shall be coated with asphaltum paint.

B. In runs of conduit or raceway including flexible limit the number of bends between cable access points to a total which does not exceed the maximum specified for the particular system. Where

no such maximum is specified, limit the number to four (4) right angle bends or the equivalent thereof.

C. In each conduit or raceway assigned for the future pulling in of wires, include a nylon drag cord. In raceways 2" trade size and larger, the cord shall be pulled in utilizing a suitable brush, followed by an 85% diameter ball mandrel ahead of the cord in the pulling assembly. In the event that obstructions are encountered, which will not permit the drag cord to be installed, the blocked section of raceway shall be replaced and any cutting and patching of the structure involved in such replacement shall be included as part of the electric work.

D. Circuitry shall be arranged such that conductors of one feeder or circuitry carrying "going" current are not separated from conductors of the same feeder or circuitry carrying "return" current by any ferrous or other metal. Where not within raceways, all "going" and "return" current conductors of one feeder or circuit shall be laced together so as to minimize induction heating of adjacent metal components.

E. Sleeves used where circuitry is to penetrate waterproof slabs, decks and walls, shall be of a type selected to suit the water condition encountered in the field.

3.14 PHYSICAL SEPARATION OF NORMAL, OPTIONAL STANDBY, AND EMERGENCY SYSTEMS

A. ALL emergency system generation and distribution equipment shall be installed within dedicated two-hour fire rated rooms, closets or shafts. All equipment, conduit, piping, ductwork, etc., alien to the emergency system shall not be located within these rooms, closets, or shafts except the equipment that serves these rooms, closets or shafts.

B. All emergency equipment such as transfer switches, switchboards, transformers, and panelboards, shall be installed in two-hour fire rated rooms. The two-hour fire rated rooms shall be provided by the General Contractor.

C. All portions of the emergency system, such as feeders, located outside of rooms, closets, or shafts described in paragraph "B" shall also be enclosed within two-hour fire rated enclosures, provided by the Electrical Subcontractor. Type, method and material of two-hour rated enclosures shall be approved by the local Electrical Inspector.

D. Emergency system shall be kept entirely independent of all other wiring, devices and equipment, and shall not enter the same raceways, boxes or cabinets with each other or other wiring, except in transfer switches.

E. The Electrical Subcontractor has the option of using UL listed two-hour fire rated MI cable systems only if approved by the local Electrical Inspector. The Electrical Subcontractor shall be responsible for sizing, routing, installation, supports, etc., of this cable in accordance with manufacturer's requirements. Submit for Architect conductor sizing calculations, voltage drop calculations, etc. for review and approval.

3.15 GRADING AND PLANTING

A. Restore surface features, including vegetation, at areas disturbed by electrical work performed by this Contractor. Reestablish original grades, except as otherwise indicated. Where sod has been removed, replace it as soon as possible after backfilling is completed. Restore areas disturbed by trenching, storing of dirt, storing of material, cable laying, vehicles, equipment and other activities to their original condition. Include top-soiling, fertilizing, liming, seeding, sodding, sprigging, and mulching as required.

B. Comply with other divisions of this specification. Maintain restored surfaces. Restore disturbed paving as required.

END OF SECTION