LOCUS MAP
NOT TO SCALE

STATE OF RHODE ISLAND

D ■ E ■ M

PROJECT LOCATION
NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

DIVISION OF PLANNING AND DEVELOPMENT

SHOOTING RANGE EXPANSION

GREAT SWAMP MANAGEMENT AREA

WEST KINGSTON, RHODE ISLAND

P&D CONTRACT NUMBER 9-17

JULY, 2017

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PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

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APPROVED BY _____
RIDEM DIRECTOR

APPROVED BY _____
RIDEM ASSOCIATE DIRECTOR

APPROVED BY _____
RIDEM CHIEF, DIVISION PLANNING & DEVELOPMENT

APPROVED BY _____
RIDEM CHIEF, OPERATING DIVISION

REFERENCE

1. PROJECT LOCATION: GREAT SWAMP MANAGEMENT AREA, WEST KINGSTON, RI.
2. HORIZONTAL DATUM IS NAD 83, RI STATE PLANE COORDINATE SYSTEM.
3. VERTICAL DATUM IS NAVD88.
4. PLAN REFERENCE: BASE MAP DEVELOPED FROM PLAN BY NATIONAL SURVEYORS – DEVELOPERS, INC. 42 HAMLET AVE. WOONSOCKET, RI ENTITLED "RHODE ISLAND D.E.M. SHOOTING RANGE OFF GREAT NECK ROAD, WEST KINGSTON, RI – EXISTING CONDITIONS"; DATED JANUARY, 2015; SCALE: 1"=40'.
5. WETLANDS SHOWN HEREIN WERE DELINEATED BY RIDEM DIVISION OF FISH AND WILDLIFE.
6. THE CONTRACTOR SHALL NOTIFY DIG SAFE 1–888–DIG–SAFE AT LEAST 48 HOURS PRIOR TO ANY ON–SITE EXCAVATION.
7. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ANY EROSION/SEDIMENT CONTROL DEVICES IN ACCORDANCE WITH THE RHODE ISLAND EROSION AND SEDIMENT CONTROL MANUAL AND THE SOIL EROSION AND SEDIMENT CONTROL PLAN DATE APRIL 2016, PREPARED BY RIDEM.
8. CONTRACTOR SHALL BLOCK PUBLIC ACCESS TO THE SITE FOR THE DURATION OF THE WORK AND DISPLAY SIGNS THAT READ "SHOOTING RANGE CLOSED" AT ALL ENTRANCES.
9. REFER TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (RIDEM) FRESHWATER WETLANDS PROGRAM APPLICATION NO. 16–0062 AND RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM NO. RIR101382.
10. REFER TO THE RIDEM SHORT–TERM RESPONSE ACTION APPROVAL LETTER DATED MAY 10, 2016.

GENERAL NOTES

1. PER AVAILABLE RIDEM MAPPING, THE PROJECT SITE IS LOCATED WITHIN A NATURAL HERITAGE AREA.
2. THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION OR LATEST REVISION, AND THE RHODE ISLAND STANDARD DETAILS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO. ALL WORK SHALL CONFORM TO THE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2004 EDITION OR LATEST REVISION. THE 2004 EDITION OF THE STANDARD SPECIFICATIONS MAY BE OBTAINED AT THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION.
3. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS, PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH THE SAME, AND COORDINATE WITH THE ENGINEER AND OWNER'S REPRESENTATIVE AS REQUIRED.
4. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR SHALL PROVIDE TEMPORARY FENCING AND/OR BARRIERS AROUND ALL OPEN EXCAVATED AREAS IN ACCORDANCE WITH OSHA STANDARDS AND ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS.
5. IF ANY DEVIATION OR ALTERATION OF THE WORK PROPOSED ON THESE DRAWINGS IS REQUIRED, THE CONTRACTOR IS TO IMMEDIATELY CONTACT AND COORDINATE WITH THE ENGINEER AND OWNER.
6. ANY AREA OUTSIDE OF THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO THE OWNER.
7. ALL SITE WORK SHALL MEET OR EXCEED THE SITE WORK SPECIFICATIONS PREPARED FOR THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
8. ALL UTILITIES (LOCATION & ELEVATION) SHOWN SHALL BE CONSIDERED APPROXIMATE ONLY. BEFORE COMMENCING SITE WORK IN ANY AREA, CONTACT "DIG SAFE" AT 1–888–344–7233 TO ACCURATELY LOCATE UNDERGROUND UTILITIES. ALL DAMAGE TO EXISTING UTILITIES OR STRUCTURES, AND THE COST TO REPAIR THE DAMAGES TO INITIAL CONDITIONS, AS SHOWN ON THE PLANS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
9. NO EXCAVATION SHALL BE DONE UNTIL COMPANIES ARE PROPERLY NOTIFIED IN ADVANCE. NOTE THAT NOT ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT ALL RESPECTIVE UTILITY COMPANIES TO VERIFY AND LOCATE EXISTING UTILITIES.
10. SUBMIT AN ENVIRONMENTAL HEALTH AND SAFETY PLAN (PER OSHA) WHICH COVERS ALL ASPECTS OF THE WORK BEING PERFORMED ON–SITE INCLUDING, BUT NOT LIMITED TO, METHODS FOR DUST CONTROL, PERSONAL AIR MONITORING, DECONTAMINATION OF EQUIPMENT AND CLOTHING, AND PERSONAL PROTECTIVE EQUIPMENT (PPE). PPE LEVEL D SHALL BE INCLUDED AS THE BASIS OF DESIGN. THIS TRADE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR OWN WORKER SAFTEY.
11. ALL WORKERS ARE TO BE LEAD SAFETY TRAINED PER OSHA 29 CFR 1926.62 AND RESPIRATOR QUALIFIED PER 20 CFR 1910.134.
12. FURNISH AND INSTALL HAND WASHING STATION.
13. DUST CONTROL SHALL BE INCLUDED AND MAINTAINED THROUGHOUT THE PROJECT. DUST CONTROL IS PROVIDED ON A DAILY BASIS, OR AS NEEDED, WITH NO EXCEPTIONS.

LAYOUT NOTES

1. ALL LINES ARE PERPENDICULAR OR PARALLEL TO THE LINES FROM WHICH THEY ARE MEASURED UNLESS OTHERWISE INDICATED.
2. CONTRACTOR TO PERFORM BENCHMARK FIELD LEVEL VERIFICATION AND COORDINATE LAYOUT CHECK PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CONTACT PARE CORPORATION IF ANY DISCREPANCIES ARE FOUND.
3. CENTER WALKWAYS ON DOORWAYS THEY SERVE.
4. THE PROPOSED WALKWAYS SHALL HAVE A MAXIMUM CROSS SLOPE OF 2% AND RUNNING SLOPE OF 5% AS SHOWN ON THE CONSTRUCTION DETAILS AND GRADING PLAN.

DEMOLITION NOTES

1. THE CONTRACTOR SHALL COORDINATE ALL DEMOLITION OF STRUCTURES, PAVEMENT AND CONCRETE MATERIALS, AND UTILITIES WITH APPROPRIATE PROPOSED SITE GENERAL, GRADING, AND UTILITY DRAWINGS.
2. ALL NOTED UTILITIES TO BE REMOVED AND DISPOSED OF, RELOCATED OR CAPPED REPRESENT ALL KNOWN SITE CONDITIONS TO BE DEMOLISHED. CONTRACTOR TO COORDINATE ALL UNFORESEEN CONDITIONS WITH THE PROJECT ENGINEER, OWNER AND/OR RESPECTIVE UTILITY COMPANIES PRIOR TO PROCEEDING WITH WORK.

GRADING AND UTILITY NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED. NO FIELD ADJUSTMENTS IN THE LOCATION OF SITE ELEMENTS SHALL BE MADE WITHOUT THE ENGINEERS APPROVAL.
2. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION. THE CONTRACTOR SHALL NOT CONTINUE WORK ON THE AFFECTED UTILITIES UNTIL THE CONFLICT IS RESOLVED.
3. ALL WORK PERFORMED AND ALL MATERIALS FURNISHED SHALL CONFORM WITH THE LINES AND GRADES ON THE PLANS AND SITE WORK SPECIFICATIONS.
4. AT ALL LOCATIONS WHERE EXISTING CURBING OR PAVEMENT ABUT NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE. BLEND NEW PAVEMENT AND CURBS SMOOTHLY INTO EXISTING BY MATCHING LINES, GRADES AND JOINTS.
5. ALL UTILITY COVERS, GRATES, ETC. SHALL BE ADJUSTED TO BE FLUSH WITH THE SURROUNDING SURFACE OR PAVEMENT FINISH GRADE. RIM ELEVATIONS OF STRUCTURES AND MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH AND CONSISTENT WITH THE GRADING PLANS.
6. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION OF PRIVATE UTILITIES BY THE UTILITY COMPANIES, AS REQUIRED.
7. THE CONTRACTOR SHALL PROTECT ALL UNDERGROUND UTILITIES FROM EXCESSIVE VEHICULAR LOADS DURING CONSTRUCTION. ANY DAMAGE TO THESE FACILITIES RESULTING FROM CONSTRUCTION LOADS WILL BE RESTORED TO ORIGINAL CONDITION.
8. DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES BY PROVIDING TEMPORARY SUPPORTS OR SHEETING AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
9. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.
10. PITCH EVENLY BETWEEN SPOT GRADES. ALL PARKING AREAS MUST PITCH TO DRAIN AT A MIN. OF 1/8" PER FOOT UNLESS SPECIFIED OTHERWISE.

EROSION AND SEDIMENTATION CONTROL NOTES

1. THE CONTRACTOR AND RELEVANT SUBCONTRACTORS SHALL READ AND UNDERSTAND THE FRESHWATER WETLANDS PERMIT AND THE SITE SPECIFIC SOIL EROSION AND SEDIMENT CONTROL PLAN (SESC) PREPARED FOR THIS PROJECT. ALL SOIL EROSION AND SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK," LATEST REVISION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL TEMPORARY SEDIMENT AND EROSION CONTROLS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE PLANS ARE INTENDED TO REPRESENT THE MINIMUM CONTROLS NECESSARY TO MEET ANTICIPATED SITE CONDITIONS. ADDITIONAL MEASURES SHALL BE IMPLEMENTED AS CONDITIONS WARRANT OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
4. REQUIRED PERIMETER CONTROL SHALL BE PROPERLY ESTABLISHED, CLEARLY VISIBLE AND IN OPERATION PRIOR TO INITIATING ANY LAND CLEARING ACTIVITY AND/OR OTHER CONSTRUCTION RELATED WORK. SUCH FACILITIES SHALL REPRESENT THE LIMIT OF WORK. WORKERS SHALL BE INFORMED THAT NO CONSTRUCTION ACTIVITY IS TO OCCUR BEYOND THE LIMIT OF WORK AT ANY TIME THROUGHOUT THE CONSTRUCTION PERIOD.
5. AS FEASIBLE, CONSTRUCTION WILL BE PHASED TO LIMIT THE AREA OF EXPOSED SOIL AND THE DURATION OF EXPOSURE. ALL DISTURBED AREAS WILL BE TEMPORARILY AND/OR PERMANENTLY STABILIZED WITHIN 14 DAYS FOLLOWING COMPLETION OF GRADING ACTIVITIES.
6. THE CONTRACTOR SHALL INSPECT AND MAINTAIN ALL EROSION AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
7. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED ON A WEEKLY BASIS AND AFTER EACH STORM EVENT OF 0.25 INCH OR GREATER DURING CONSTRUCTION TO ENSURE THAT THE EROSION CONTROL BARRIERS ARE INTACT.
8. CLEAN AND MAINTAIN SEDIMENTATION CONTROL BARRIERS WHEN SEDIMENT ACCUMULATES TO ONE HALF THE HEIGHT OF THE BARRIER. MATERIAL COLLECTED FROM THE SEDIMENTATION BARRIER SHALL BE REMOVED AS NECESSARY AND DISPOSED IN AN UPLAND AREA.
9. THE CONTRACTOR SHALL MAINTAIN A SUFFICIENT RESERVE OF VARIOUS EROSION CONTROL MATERIALS ONSITE AT ALL TIMES FOR EMERGENCY PURPOSES OR ROUTINE MAINTENANCE.
10. THE CONTRACTOR SHALL SCHEDULE HIS WORK TO ALLOW THE FINISHED SUB GRADE ELEVATIONS TO DRAIN PROPERLY WITHOUT PUDDLING. SPECIFICALLY, ALLOW WATER TO ESCAPE WHERE PROPOSED CURB MAY RETAIN RUNOFF PRIOR TO PAVING. PROVIDE TEMPORARY POSITIVE DRAINAGE, AS REQUIRED, TO STABILIZED DISCHARGE POINTS.
11. SOIL AND OTHER MATERIALS RESULTING FROM SITE CLEARING MAY BE RECYCLED AND/OR REUSED ON THE SITE AS APPROPRIATE. WASTE MATERIALS SHALL BE REMOVED FROM THE SITE.
12. CRUSHED STONE CONSTRUCTION ENTRANCES SHALL BE ESTABLISHED AT ALL POINTS OF INGRESS AND EGRESS.
13. TEMPORARY DIVERSIONS (TD) MAY CONSIST OF A DITCH OR SWALE, OR MAY BE ACHIEVED USING WOOD CHIP PILES, COIR LOGS, OR SIMILAR MATERIALS.
14. TEMPORARY SEDIMENT TRAPS (TST) AND TEMPORARY SWALES (TS) SHALL BE SIZED BY THE CONTRACTOR USING THE PARAMETERS CONTAINED IN THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK.
15. TEMPORARY DIVERSIONS UTILIZED DURING ROADWAY CONSTRUCTION (TDC) MAY CONSIST OF SHALLOW DITCHES OR BARRIERS CONSISTING OF COIR LOGS OR LOW EARTH BERMS.
16. DUST SHALL BE CONTROLLED BY SPRINKLING OR OTHER APPROVED METHODS AS NECESSARY, OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE. CONTRACTOR SHALL BE AWARE WATER IS NOT AVAILABLE ON SITE. CONTRACTOR SHALL CONSIDER TRUCKING WATER TO THE SITE AS NEEDED.
17. CATCH BASINS AND STORM DRAINS SHALL BE PROTECTED WITH STRAW BALES OR SEDIMENT BAGS IN PAVED AREAS UNTIL CONTRIBUTING AREA IS PERMANENTLY STABILIZED.
18. DEWATERING WASTEWATER PUMPED FROM EXCAVATIONS WILL BE CONVEYED BY HOSE TO AN UPLAND AREA AND DISCHARGED INTO A DEWATERING BASIN, STRAW BALE CORRALS, OR SEDIMENTATION BAGS.
19. CONSTRUCTION SITE WASTE MATERIALS WILL BE PROPERLY CONTAINED ONSITE AND DISPOSED OFF SITE AT A LOCATION IN ACCORDANCE WITH THE LOCAL AND STATE REGULATIONS.
20. RIPRAP OR OTHER ENERGY DISSIPATERS WILL BE USED WHERE NECESSARY TO CONTROL EROSION.
21. ANY EQUIPMENT THAT IS NOT READILY MOBILE (TRACK MACHINERY) SHALL BE PARKED WITHIN THE PROJECT LIMIT OF DISTURBANCE. LARGE AND/OR BULKY MATERIALS WILL BE STORED SUCH THAT THEY WILL NOT INTERFERE WITH THE ONGOING CONSTRUCTION ACTIVITY AND EROSION CONTROL MEASURES.
22. NEWLY VEGETATED AREAS SHALL BE REGULARLY INSPECTED AND MAINTAINED TO ENSURE THE ESTABLISHMENT OF STABLE VEGETATED SURFACES.
23. THE CONTRACTOR SHALL NOT REMOVE ANY COMPOST FILTER SOCKS OR OTHER EROSION CONTROLS UNTIL THE CONTRIBUTING AREA IS PERMANENTLY STABILIZED.
24. ALL DRAINAGE STRUCTURES SHALL BE CLEARED OF ACCUMULATED SEDIMENT PRIOR TO ACCEPTANCE OF THE FINAL PROJECT. THE CONTRACTOR SHALL SCHEDULE HIS WORK TO ALLOW THE FINISHED SUB GRADE ELEVATIONS TO DRAIN PROPERLY WITHOUT PONDING. SPECIFICALLY, ALLOW WATER TO ESCAPE WHERE PROPOSED CURB MAY RETAIN RUNOFF PRIOR TO APPLICATION OF SURFACE PAVING. PROVIDE TEMPORARY POSITIVE DRAINAGE, AS REQUIRED, TO STABILIZED DISCHARGE POINTS.

STORMWATER MANAGEMENT SYSTEM INSPECTION AND MAINTENANCE NOTES

DURING CONSTRUCTION

1. THE CONTRACTOR SHALL REMOVE SEDIMENT AND DEBRIS FROM ALL STORMWATER FACILITIES ON A ROUTINE BASIS, IMMEDIATELY FOLLOWING SITE STABILIZATION AND PRIOR TO PROJECT COMPLETION AND ACCEPTANCE.
2. ANY ACCUMULATION OF PONDING WATER IN AREAS WITHIN THE LIMITS OF DISTURBANCE, OTHER THAN DESIGNATED AREAS, SHALL BE REMOVED ACCORDINGLY AND PREVENTED IN THE FUTURE.
3. PLANTINGS AND GRASSES MUST BE PLANTED IMMEDIATELY FOLLOWING CONSTRUCTION TO STABILIZE THE SLOPES AND PREVENT EROSION. TREES AND SHRUBS SHOULD NOT BE PLANTED ON ANY IMPOUNDING EMBANKMENTS, TO PREVENT POTENTIAL SUBSURFACE DISTURBANCE AND POSSIBLE FAILURE OF THE STRUCTURE.

POST CONSTRUCTION MAINTENANCE NOTES (BY OWNERS)

1. ALL CLEANING AND MAINTENANCE ACTIVITIES OF DRAINAGE SYSTEM BMP'S SHALL BE PERFORMED PER THE APPROVED RIDEM RIPDES PERMIT.
2. THE PH OF THE SOIL ON THE RANGE SURFACE SHALL BE MAINTAINED BETWEEN 6.5 AND 8.5 TO PREVENT MIGRATION OF LEAD TO THE GROUNDWATER OR CONVEYANCE WITH STORMWATER RUN–OFF DURING RAINFALL EVENTS.
3. LEAD REMOVAL FROM THE BACKSTOP SHALL BE PERFORMED AS NEEDED TO PREVENT THE MIGRATION OF LEAD FROM THE SITE.

LEGEND

EXISTING		PROPOSED
	EDGE OF GRAVEL	
	TIMBER GUARDRAIL	
	STONE WALL	
255	CONTOUR	262
X 407.5	SPOT ELEVATION	× 261.5
	TREE LINE	
	DRAINAGE LINE	D D
	LIMIT OF DISTURBANCE	LOD
	COMPOST FILTER SOCK	
WF A52 WF A51	WETLAND EDGE	
	50' PERIMETER WETLAND	

ASSF = AREA SUBJECT TO STORM FLOWAGE
BIT. = BITUMINOUS
BM = BENCHMARK
BMP = BEST MANAGEMENT PRACTICE
BOB = BOTTOM OF BAFFLE
BS = BOTTOM OF STAIR
BW = BOTTOM OF WALL
CB = 4' DIA. CATCH BASIN UNLESS OTHERWISE NOTED
CC = VERTICAL CONCRETE CURB
CI = CAST IRON
CL. = CLASS
CLDI = CEMENT–LINED DUCTILE IRON
CO = CLEANOUT
CONC. = CONCRETE
DEMO = DEMOLITION
DIA = DIAMETER
DIV = DIVERSION
DMH = DRAIN MANHOLE
ELEV.EL = ELEVATION
EOP = EDGE OF PAVEMENT
EXIST. = EXISTING
EXCB = EXISTING CATCH BASIN
EXDMH = EXISTING DRAIN MANHOLE
FFE = FINISH FLOOR ELEVATION
FND. = FOUND
FT = FOOT
GRAN. = GRANITE
GTD = GRADE TO DRAIN
HDPE = HIGH DENSITY POLYETHYLENE PIPE
HYD = HYDRANT
I.D. = INNER DIAMETER
INV. = INVERT
LOD = LIMIT OF DISTURBANCE
LP = LOW POINT
MAX. = MAXIMUM
MIN. = MINIMUM
MON. = MONITORING
MUTCD = MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION
OWS = OIL WATER SEPARATOR
PE = POLYETHYLENE
PERF. = PERFORATED
PVC = POLYVINYL CHLORIDE
RCP = REINFORCED CONCRETE PIPE
RIDEM = RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
R.I.D.O.T. = RHODE ISLAND DEPARTMENT OF TRANSPORTATION
R.I. STD. = RHODE ISLAND STANDARD
R=X' = RADIUS
SDR = STANDARD DIMENSIONAL RATIO
SESC = SOIL EROSION AND SEDIMENT CONTROL
SMH = SEWER MANHOLE
TOB = TOP OF BAFFLE
TP = TEST PIT
TS = TOP OF STAIR
TW = TOP OF WALL
(TYP.) = TYPICAL
UP = UTILITY POLE
VGC = VERTICAL GRANITE CURB
w/ = WITH
YD = YARD DRAIN

CFS = COMPOST FILTER SOCK (SEE DETAIL)
CG = CLEAR AND GRUB VEGETATION
CLF = CHAIN LINK FENCE
DBLDG = REMOVE & DISPOSE BUILDING
DCP = REMOVE & DISPOSE CONCRETE PAD
DCW = REMOVE & DISPOSE CONCRETE WALK
DD = REMOVE & DISPOSE DRAINAGE
DG = REMOVE & DISPOSE GUARDRAIL
ETR = EXISTING TO REMAIN. PROTECT DURING CONSTRUCTION.
G = GRAVEL DRIVE (SEE DETAIL)
LS = LOAM AND SEED (SEE DETAIL)
RLS = RIPRAP LEVEL SPREADER
RTSD = REFER TO STRUCTURAL DRAWINGS
R&D = REMOVE AND DISPOSE
R&R = REMOVE AND RESET
R&S = REMOVE AND STOCKPILE/SALVAGE
9.9.0 = CONSTRUCTION ACCESS – R.I. STD. 9.9.0
43.1.0M = CEMENT CONCRETE SIDEWALK – R.I. STD. 43.1.0M

ISSUED FOR CONSTRUCTION

No.	Description	Date

REVISIONS:

STATE OF RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DIVISION OF PLANNING AND DEVELOPMENT

The Nature Conservancy

PARE CORPORATION
ENGINEERS · SCIENTISTS · PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

SHOOTING RANGE EXPANSION
GREAT SWAMP MGT AREA
WEST KINGSTON, RI

Design by: MA
Drawn by: AKL
Checked by: JW
Date: June 23, 2017
Scale: As Noted
Project No.: 03-16

JOSEPH WEED
No. 11763
7/21/17
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

GENERAL NOTES

C1.1

SAVE DATE:21-Jul-17 12:33:15 PM PLOT DATE:21-Jul-17 1:05:40 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RI\DWGS\C1.1 NOTES & LEGEND.DWG

NOTES:

1. THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE PLANS ARE INTENDED TO REPRESENT THE MINIMUM CONTROLS NECESSARY TO MEET ANTICIPATED SITE CONDITIONS. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ANY EROSION/SEDIMENT CONTROL DEVICES IN ACCORDANCE WITH THE RHODE ISLAND EROSION AND SEDIMENT CONTROL MANUAL AND PERMITS. ADDITIONAL MEASURES SHALL BE IMPLEMENTED AS CONDITIONS WARRANT OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
2. CONTRACTOR SHALL INSTALL AND MAINTAIN CONSTRUCTION ACCESS IN ACCORDANCE WITH RI STD. 9.9.0 AT ALL POINTS OF EGRESS FROM THE SITE THROUGHOUT CONSTRUCTION.
3. THE CONTRACTOR SHALL MAINTAIN EROSION CONTROLS THROUGHOUT CONSTRUCTION. THE CONTRACTOR SHALL REPLACE DAMAGED EROSION CONTROLS AT THE OWNER AND ENGINEER'S REQUEST AT NO ADDITIONAL EXPENSE TO THE OWNER.
4. THE CONTRACTOR SHALL NOT LEAVE DISTURBED AREAS UNSTABILIZED FOR PERIODS MORE THAN 14 DAYS. PROVIDE TEMPORARY SEED OR MULCH ON DISTURBED AREAS THAT WILL REMAIN EXPOSED FOR GREATER THAN 14 DAYS.
5. CONTRACTOR SHALL BLOCK PUBLIC ACCESS TO THE SITE FOR THE DURATION OF THE WORK AND DISPLAY SIGNS THAT READ "SHOOTING RANGE CLOSED" AT ALL ENTRANCES.
6. PROVIDE TURF REINFORCEMENT MATTING ON ALL SLOPES > 3:1.
7. LEAD RECLAMATION SHALL BE CONDUCTED IN THE AREA DEPICTED PER THE PROPOSED LEAD RECLAMATION PLAN PREPARED BY RIDEM DIVISION OF PLANNING AND DEVELOPMENT DATED MAY 2016 TO A DEPTH OF 3 FT.
8. THE CONTRACOTR SHALL SUBMIT A REMEDIAL PLAN FOR THE RECLAMATION OF LEAD BASED MATERIALS IN THE EXISTING SOIL BERM AND PROPER RECYCLING AND/OR DISPOSAL TO RIDEM OFFICE OF WASTE MANAGEMENT PER THE SHORT-TERM RESPONSE ACTION APPROVAL LETTER DATED MAY 10, 2016.
9. THE SOILS WITHIN THE LEAD RECLAMATION AREA SHALL BE PASSED THROUGH A STANDARD 3/16 INCH SCREEN TO REMOVE LARGE PARTICLES. THE SIFTED MATERIAL INCLUDING THE LEAD AND BULLET FRAGMENTS SHALL BE PASSED THROUGH A SECOND SCREEN (5/100 INCH) TO CAPTURE THE LEAD AND LEAD FRAGMENTS.
10. THE RECLAIMED LEAD SHALL BE TAKEN TO A LICENSED RECYCLER ONCE COLLECTED. THE CONTRACTOR SHALL SUBMIT THE SELECTED RECYCLING FACILITY TO RIDEM FOR REVIEW AND APPROVAL.

ISSUED FOR CONSTRUCTION

No.	Description	Date

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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DIVISION OF PLANNING AND DEVELOPMENT

The Nature Conservancy

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8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

SHOOTING RANGE EXPANSION
GREAT SWAMP MGT AREA
WEST KINGSTON, RI

Design by: MA
Drawn by: AKL
Checked by: JW
Date: June 23, 2017
Scale: As Noted
Project No.: 03-16

JOSEPH WEED
No. 11763
7/21/17
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

SEDIMENT & EROSION CONTROL AND DEMOLITION PLAN

C2.1

SAVE DATE:21-Jul-17 1:03:56 PM PLOT DATE:21-Jul-17 1:06:02 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RI\DWGS\C2.1 DEMOLITION & EROSION CONTROL.DWG

NOTES:

1. CONTRACTOR SHALL PROVIDE LOAM AND SEED ON ALL DISTURBED AREAS. SLOPES 3:1 AND GREATER SHALL RECEIVE SLOPE MIX SEED (RI STD. SPECIFICATION M.18.10.3) AND TURF REINFORCEMENT MATS. ALL OTHER AREAS TO RECEIVE PARK MIX SEED (RI STD. SPECIFICATION M.18.10.2).
2. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL EMPLOY A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF RHODE ISLAND TO ESTABLISH CONTROL ON THE SITE AND TO PERFORM FIELD MEASUREMENTS AS REQUIRED TO LAYOUT THE PROPOSED BUILDING AND SITE IMPROVEMENTS. THE CONTRACTOR'S SURVEYOR SHALL COORDINATE THE BUILDING LAYOUT WITH THE PROJECT LAND SURVEYOR TO ACCURATELY LOCATE THE BUILDING ON THE SITE.
3. STATION 0+00 = ZERO LINE/FIRING LINE LOCATED AT FRONT FACE OF POST AND SHOOTING BENCH. REFER TO STRUCTURAL DRAWINGS.
4. THE TOP OF FENCE CONNECTED TO THE GATE SHALL BE SET AT ELEVATION OF THE GATE AND RUN UNTIL THE GRADE OF THE SIDE BERM IS WITHIN 2' OF THE TOP OF FENCE. TWISTED AND BARBED BOTTOM SELVAGE SHALL BE CONSTRUCTED AT GRADE.
5. CONTRACTOR SHALL PROVIDE AND INSTALL TARGETS AND TARGET HOLDERS. COORDINATE WITH OWNER FOR DETAILS AND SPECIFICATIONS PRIOR TO BID.

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No.	Description	Date

REVISIONS:

STATE OF RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DIVISION OF PLANNING AND DEVELOPMENT

The Nature Conservancy

PARE CORPORATION
ENGINEERS · SCIENTISTS · PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

SHOOTING RANGE EXPANSION
GREAT SWAMP MGT AREA
WEST KINGSTON, RI

Design by: MA
Drawn by: AKL
Checked by: JW
Date: June 23, 2017
Scale: As Noted
Project No.: 03-16

JOSEPH WEED
No. 11763
7/21/17
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

GENERAL PLAN

C3.1

SAVE DATE:21-Jul-17 11:39:42 AM PLOT DATE:21-Jul-17 1:06:23 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RI\DWGS\C3.1 GENERAL PLAN.DWG

NOTES:

1. ALL DRAIN PIPES SHALL BE HDPE PIPE UNLESS NOTED OTHERWISE. PROVIDE FITTINGS AS REQUIRED.
2. ALL SLOPES PROVIDED ARE FT/FT.
3. PITCH SLAB PER STRUCTURAL DRAWINGS.
4. ALL JOINTS AND CONNECTIONS OF THE 12" HDPE PIPE CUT IN HALF TO FORM "U" CHANNEL SHALL REMAIN UNCUT SUCH THAT CONNECTORS CAN BE MADE PER THE MANUFACTURER'S RECOMMENDATIONS.

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JOSEPH WEED
No. 11763
7/21/17
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

GRADING & UTILITY PLAN

C4.1

SAVE DATE:21-Jul-17 12:49:13 PM PLOT DATE:21-Jul-17 1:06:50 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RI\DWGS\C4.1 GRADING & UTILITY PLAN.DWG

NOTES:

1. COMPOST/ SOIL/ ROCK/ SEED FILL TO MEET APPLICATION REQUIREMENTS.
2. COMPOST MATERIAL TO BE REMOVED OR DISPERSED ON SITE AS DETERMINED BY ENGINEER.

COMPOST FILTER SOCK DETAIL

NOT TO SCALE

CLEANOUT DETAIL

NOT TO SCALE

NOTES:

1. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL PREPARE A PLAN SHOWING THE PROPOSED LOCATION OF ALL STOCKPILE AREAS.
2. STOCKPILE AREA SHALL NOT EXCEED SPECIFIED DIMENSIONS WITHOUT APPROVAL FROM ENGINEER.
3. STOCKPILED ERODIBLE MATERIAL THAT WILL NOT BE USED FOR GREATER THAN 14 DAYS SHALL BE STABILIZED WITH TEMPORARY SEED IMMEDIATELY FOLLOWING PLACEMENT. USE RIDOT STD. M.18.10.5 SEED MIX.

ERODIBLE MATERIAL STOCKPILE

NOT TO SCALE

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SHOOTING RANGE EXPANSION
GREAT SWAMP MGT AREA
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JOSEPH WEED
No. 11763
7/21/17
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

DETAILS 1

C5.1

SAVE DATE:21-Jul-17 1:05:56 PM PLOT DATE:21-Jul-17 1:07:06 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RI\DWGS\C5.1-5.2 DETAILS.DWG

NOTES:

1. 3/4" DIA. CRUSHED STONE SHALL BE USED AS BEDDING WHERE TRENCH IS BELOW THE GROUND WATER TABLE.

DRAIN TRENCH DETAIL

NOT TO SCALE

NOTE:
SEE PLANS FOR EXTENTS OF RIPRAP LEVEL SPREADER.

RLS RIPRAP LEVEL SPREADER

NOT TO SCALE

G GRAVEL DRIVE

NOT TO SCALE

LS LOAM & SEED DETAIL

NOT TO SCALE

NOTES:

1. CONTRACTOR MAY REUSE TIMBER GUARDRAIL SALVAGED ON SITE AND IN GOOD CONDITION. CONTRACTOR SHALL REPLACE DAMAGED AND POOR CONDITION MATERIALS IN WITH NEW TIMBER GUARDRAIL AS NEEDED.

TIMBER GUARDRAIL DETAIL

NOT TO SCALE

NOTES:

1. PROVIDE GALVANIZED CHAIN LINK FENCE FABRIC, POLES, HANDRAILS, ETC.
2. FENCE SHALL BE DESIGNED BY FENCE MANUFACTURER TO WITHSTAND LOCAL WIND LOADS AND OTHER ENVIRONMENTAL FACTORS. PROVIDE DESIGN FOR REVIEW BY ENGINEER.

CLF CHAIN LINK FENCE

NOT TO SCALE

NOTES:

1. PROVIDE GALVANIZED CHAIN LINK FENCE FABRIC, POLES, HANDRAILS, ETC.
2. GATE SHALL BE DESIGNED BY GATE MANUFACTURER TO WITHSTAND LOCAL WIND LOADS AND OTHER ENVIRONMENTAL FACTORS. PROVIDE DESIGN FOR REVIEW BY THE OWNER'S REPRESENTATIVE.
3. PROVIDE SIGNAGE ON GATE STATING "DANGER ACTIVE FIRING RANGE DO NOT ENTER". SIGN SHALL BE APPROVED BY THE OWNERS REPRESENTATIVE.

12' WIDE SWING GATE DETAIL

NOT TO SCALE

GRASS FILTER DETAIL

NOT TO SCALE

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DETAILS 2

C5.2

SAVE DATE:21-Jul-17 1:05:56 PM PLOT DATE:21-Jul-17 1:07:12 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RI\DWGS\C5.1-5.2 DETAILS.DWG

NOTE:

1. REFER TO PLAN FOR TOP OF BERM AND TOE OF SLOPE ELEVATIONS
2. CLAY LINER SHALL HAVE A MAXIMUM REMOLDED COEFFICIENT OF PERMEABILITY OF 1×10^{-5} CENTIMETERS PER SECOND THROUGHOUT ITS THICKNESS. THE SOIL MUST BE FREE OF PARTICLES GREATER THAN THREE INCHES (3") IN ANY DIMENSION.

TYPICAL BACKSTOP SECTION A–A

NOT TO SCALE

NOTE:

1. REFER TO PLAN FOR TOP OF BERM AND TOE OF SLOPE ELEVATIONS

SIDE BERM SECTION B–B

NOT TO SCALE

BALLISTIC SAND AND DRAIN DETAIL

NOT TO SCALE

LIMESTONE FILTER BED DETAIL

NOT TO SCALE

"U" CHANNEL DRAIN CONNECTION

NOTES:

1. REMOVE ALL TOPSOIL AND ORGANIC MATERIAL ESTIMATED AT 12" PRIOR TO CONSTRUCTING BERMS. ADDITIONAL EXCAVATION SHALL BE CONSIDERED UNANTICIPATED UNUSABLE SOILS.
2. THE CONTRACTOR SHALL PERFORM TEST PITS TO VERIFY THE DEPTH TO AND TYPE OF NATURAL SOIL. THE CONTRACTOR SHALL PERFORM FIVE 5–FOOT DEEP TEST PITS OBSERVED BY THE OWNER'S REPRESENTATIVE TO VERIFY THE ADEQUACY OF THE DESIGN ASSUMPTIONS.
3. THE COMPACTED SUBGRADE SHALL BE PROOF COMPACTED WITH A MINIMUM OF 6 PASSES OF A 10 TON ROLLER. THE SUBGRADE SHALL BE FIRM, STABLE, AND CAPABLE OF A BEARING CAPACITY OF 3000 PSF AS APPROVED BY OWNER'S REPRESENTATIVE.
4. MATERIAL USED FOR BERM CONSTURCTION SHALL HAVE A MINIMUM INTERNAL FRICTION ANGLE OF 40 DEGREES AS DETERMINED BY A ASTM D3080 DIRECT SHEAR TEST WITH A CONFINED PRESSURES EQUAL TO 5', 10', AND 15'.
5. BERM HEIGHT VARIES, SEE GRADING PLAN.
6. BALLISTIC SAND SHALL HAVE A NATURAL ANGLE OF REPOSE OF >1.5:1 OR GREATER PER ASTM C1444.
7. GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR TESTING OF SCREENED LOAM AND BALLISTIC SAND PH LEVELS PRIOR TO USE AND WILL BE RESPONSIBLE FOR PROVIDING PROJECT COMPLETED TESTING CONFIRMING PH RANGE OF 6.5–7.5.
8. AGRICULTURAL LIME OR ECOBOND AS PER MANUFACTURER'S RECOMMENDATIONS SHALL BE APPLIED TO MAINTAIN A NEUTRAL PH ON RANGE SURFACE AND BALLISTIC SAND.

ISSUED FOR CONSTRUCTION

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DETAILS 3

C5.3

SAVE DATE:21-Jul-17 1:05:56 PM PLOT DATE:21-Jul-17 1:07:18 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RI\DWGS\C5.1-5.2 DETAILS.DWG

A. GENERAL STRUCTURAL REQUIREMENTS

1. ALL METHODS OF CONSTRUCTION, DETAILS, NOTES, ETC., INDICATED ON THE DRAWINGS ARE TO BE CONSIDERED TYPICAL FOR ALL SIMILAR CONDITIONS.
2. CONSTRUCTION SHALL BE MADE FROM APPROVED SHOP DRAWINGS ONLY.
3. ANY DISCREPANCIES ON THESE PLANS WITH REGARD TO DIMENSIONS OR CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE AFFECTED PORTION OF WORK.
4. ALL APPLICABLE FEDERAL, STATE, AND MUNICIPAL REGULATIONS SHALL BE FOLLOWED, INCLUDING THE FEDERAL DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ACT AND THE RHODE ISLAND STATE BUILDING CODE.
5. THE LATEST EDITION OF THE FOLLOWING LISTED CODES SHALL APPLY. IN CASE OF CONFLICT, THE MORE RIGID REQUIREMENTS AND CODES SHALL GOVERN.
   - RHODE ISLAND STATE BUILDING CODE (STATE CODE). INTERNATIONAL BUILDING CODE, 2012 EDITION AND ITS APPLICABLE REFERENCED STANDARDS.
   - AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATIONS AND ITS CODE OF STANDARD PRACTICE (AISC)
   - AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318.
   - AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES, ACI 530 AND ACI 530.1.
6. THE DESIGN LOADS ARE RESISTED BY THE COMPLETED STRUCTURE ACTING AS A UNIT. THE CONTRACTOR SHALL DESIGN AND PROVIDE ANY AND ALL TEMPORARY BRACING, SHORING, OR ADDITIONAL REINFORCEMENT NECESSARY TO RESIST LOADS IMPOSED ON ANY PORTION OF THE STRUCTURE THROUGHOUT ALL STAGES OF CONSTRUCTION. THE SHORING SHALL BE DESIGNED TO RESIST ALL DEAD LOADS AND ANY APPLICABLE CONSTRUCTION LOADS.
7. ALL SHORING DESIGNS AND PLANS SHALL BE STAMPED BY A RHODE ISLAND REGISTERED PROFESSIONAL ENGINEER.
8. NOTES AND TYPICAL DETAILS APPLY TO ALL STRUCTURAL WORK UNLESS OTHERWISE NOTED. FOR CONDITIONS NOT SPECIFICALLY SHOWN PROVIDE DETAILS OF SIMILAR NATURE. VERIFY APPLICABILITY BY SUBMITTING SHOP DRAWINGS FOR REVIEW.
9. PLANS SHALL NOT BE SCALED FOR DIMENSIONS.

B. USE AND OCCUPANCY CLASSIFICATION

PRIMARY USE - SHOOTING SHELTER A-5
INCIDENTAL USE - STORAGE BUILDING S-1

C. TYPE OF CONSTRUCTION

SHOOTING SHELTER ..... TYPE V-B
STORAGE BUILDING ..... TYPE V-A

D. DESIGN LOADS

1. GENERAL:
   BUILDING RISK CATEGORY II
   MINIMUM FROST DEPTH ..... 3'-4"
2. ROOF LIVE LOADS (SNOW):
   IMPORTANCE FACTOR 1.0
   GROUND SNOW LOAD (Pg) ..... 30 psf
   FLAT ROOF SNOW LOAD (Pf) ..... 30 psf
   EXPOSURE FACTOR (Ce) 1.0
   THERMAL FACTOR (Ct) ..... 1.0 (STORAGE BUILDING)
   1.2 (SHOOTING RANGE SHELTER)
3. WIND LOADS:
   RISK CATEGORY II
   ULTIMATE WIND DESIGN SPEED (Vult) ..... 138 mph
   NOMINAL DESIGN WIND SPEED (Vasd) ..... 107 mph
   EXPOSURE CATEGORY ..... B
   ENCLOSED BUILDING (Gcpi) ..... +/-0.18
4. EARTHQUAKE LOADS:
   IMPORTANCE FACTOR 1.0
   MAPPED SPECTRAL RESPONSE ACCELERATIONS (Ss, S1) 0.161, 0.058
   SITE CLASS ..... D
   DESIGN SPECTRAL RESPONSE COEFFICIENTS (Sds, Sd1) 0.17, 0.09
   SEISMIC DESIGN CATEGORY ..... B
   DESIGN PROCEDURE ..... EQUIVALENT LATERAL FORCE PROCEDURE
   LATERAL FORCE RESISTING SYSTEMS ..... LIGHT FRAME (WOOD) WALLS SHEATHED WITH WOOD STRUCTURAL PANELS FOR SHEAR RESISTANCE (R=6.5) (OFFICE BUILDING)
   TIMBER FRAMES (R=1.5) (SHOOTING RANGE SHELTER)

E. MASONRY

1. CONCRETE MASONRY UNITS SHALL BE ASTM C90, TYPE I, NORMAL WEIGHT HOLLOW LOAD BEARING UNITS, UNLESS NOTED OTHERWISE. THE AVERAGE ASTM E447 PRISM STRENGTH SHALL BE A MINIMUM OF 1,900 PSI.
2. JOINT REINFORCEMENT SHALL BE PREFABRICATED FROM 9-GAUGE DEFORMED WIRE CONFORMING TO ASTM A82, JOINT REINFORCEMENT SHALL BE HOT-DIPPED GALVANIZED IN CONFORMANCE WITH ASTM A153. USE EXTRA HEAVY DUTY LADDER TYPE AT 16" O.C. VERTICAL - 3/16" SIDE RODS AND 9 GA. CROSS RODS.
3. REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60.
4. MORTAR SHALL BE ASTM C270, TYPE M OR S PORTLAND CEMENT MORTAR (LOAD BEARING WALLS) AND TYPE N PORTLAND CEMENT MORTAR (NON-LOAD BEARING WALLS). DO NOT USE CALCIUM CHLORIDE IN MORTAR OR GROUT.
5. MASONRY SHALL BE SET ON FULL MORTAR BED.
6. CONCRETE FILL FOR LINTELS AND BOND BEAMS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2,500 PSI.
7. GROUT FILL FOR MASONRY CELLS SHALL CONFORM TO ASTM C476 AND HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2,500 PSI.
8. ALL REINFORCING SHALL BE GROUTED SOLID CONTINUOUSLY IN 4" OR WIDER CELLS OR BOND BEAMS.
9. ALL MASONRY WALLS SHALL BE LATERALLY BRACED AGAINST FAILURE OR COLLAPSE UNTIL ANCHORED BY THE STRUCTURE.
10. ENGINEER AND/OR SPECIAL INSPECTOR SHALL INSPECT ALL GROUTING OPERATIONS AND THE INSTALLATION OF REINFORCING IN LOAD BEARING CONCRETE MASONRY WALLS.
11. REINFORCE WALLS AS SHOWN ON PLANS.

F. FOUNDATIONS

1. NEW FOUNDATIONS HAVE BEEN DESIGNED BASED UPON A PRESUMED ALLOWABLE BEARING PRESSURE OF 2.0 KSF.
2. NO FOOTING OR SLAB SHALL BE PLACED ON FROZEN SOIL OR IN WATER.
3. FOOTINGS SHALL REST ONLY ON SUITABLE UNDISTURBED PROOF-ROLLED OR COMPACTED BEARING MATERIAL AND SHALL BEAR A MINIMUM OF 3'-4" BELOW FINISH GRADE, UNLESS NOTED OTHERWISE.
4. UNSUITABLE BEARING MATERIALS, SUCH AS "FILL" MAY BE PRESENT BELOW PROPOSED FOOTINGS AND SLABS. EXISTING UNSUITABLE MATERIAL WITHIN THE BUILDING FOOTPRINT SHALL BE OVER EXCAVATED AND REPLACED WITH COMPACTED GRANULAR FILL.
5. ALL SURFACE WATER SHALL BE DIVERTED AWAY FROM EXCAVATION BY THE CONTRACTOR. CONTRACTOR SHALL MAINTAIN CONTINUOUS CONTROL OF SURFACE AND SUBSURFACE WATER DURING CONSTRUCTION SO THAT WORK IS DONE UNDER DRY CONDITIONS.
6. SHORING AND BRACING FOR THE LATERAL SUPPORT OF EXCAVATION SHALL REMAIN IN PLACE UNTIL ALL PERMANENT STRUCTURAL SYSTEMS ARE COMPLETE.
7. PERCENT COMPACTION IS DEFINED AS THE RATIO OF THE FIELD DRY DENSITY, DETERMINED BY ASTM D-1556, TO THE MAXIMUM DRY DENSITY, DETERMINED BY ASTM D-1557 (MODIFIED PROCTOR).
8. COMPACT SUITABLE IN-SITU SOIL OR BACKFILL UNDER FOUNDATION FOOTINGS AND SLABS ON GRADE TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557, UNLESS OTHERWISE INDICATED OR SPECIFIED.
9. DO NOT BACKFILL AGAINST CONCRETE WALLS UNTIL WALLS AND SUPPORTING SLABS HAVE REACHED THE 7-DAY SPECIFIED DESIGN STRENGTH.
10. BACKFILL SHALL BE PLACED AND COMPACTED SIMULTANEOUSLY ON BOTH SIDES OF FOUNDATION WALLS WHEREVER POSSIBLE.
11. ANY BOULDER LOCATED OR ANY OTHER OBSTRUCTION WITHIN THE BUILDING AREA SHALL BE REMOVED TO A DEPTH OF AT LEAST 12" (MIN.) BELOW THE FOUNDATION. VOIDS SHALL BE BACKFILLED WITH COMPACTED GRANULAR FILL APPROVED BY THE GEOTECHNICAL ENGINEER.
12. ANY BEDROCK EXCAVATION FOR FOOTINGS OR SLABS SHALL BE OVER EXCAVATED TO ALLOW FOR THE PLACEMENT OF A 12" (MIN.) COMPACTED GRANULAR FILL BELOW.
13. PROVIDE 12" (MIN.) OF WELL-COMPACTED SAND-GRAVEL FILL APPROVED BY THE ENGINEER, AND VAPOR BARRIER UNDER ALL SLABS ON GRADE.
14. PROVIDE 12" (MIN.) OF WELL-COMPACTED SAND-GRAVEL FILL APPROVED BY THE ENGINEER UNDER ALL NEW FOOTINGS AND FOUNDATION WALLS.
15. COORDINATE PIPING PASSING THROUGH EXTERIOR FOUNDATION WALLS. PIPING SHALL NOT PASS THROUGH OR BELOW WALL FOOTING. FOOTING SHALL STEP AS REQUIRED TO ALLOW PIPING TO PASS THROUGH THE WALL.
16. FOOTINGS SHALL BE STEPPED AT A MAXIMUM SLOPE OF 2 HORIZONTAL TO 1 VERTICAL, UNLESS NOTED OTHERWISE. (SEE TYPICAL DETAILS).

G. CAST-IN-PLACE CONCRETE

1. CONCRETE WORK SHALL CONFORM TO THE LATEST EDITIONS OF THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318) AND STATE CODE.
2. CONCRETE SHALL BE PROPORTIONED, MIXED, AND PLACED UNDER THE SUPERVISION OF THE APPROVED TESTING AGENCY.
3. UNLESS NOTED OTHERWISE, CONCRETE SHALL BE NORMAL WEIGHT, WITH TYPE II CEMENT, AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS FOLLOWS:

   4,000 PSI 3/4" AGGREGATE-TYPICAL, U.N.O.
   5,000 PSI 3/4" AGGREGATE-EXTERIOR SLABS ON GRADE
4. ALL CONCRETE, EXCEPT SLABS ON GRADE, SHALL BE AIR-ENTRAINED WITH AN AIR CONTENT OF 6%± 1%. EXTERIOR SLABS ON GRADE SHALL BE AIR-ENTRAINED WITH AN AIR CONTENT OF 5.5% ± 1%. INTERIOR SLABS ON GRADE SHALL NOT BE AIR-ENTRAINED.
5. CALCIUM CHLORIDE SHALL NOT BE USED.
6. ALL SHORING SHALL REMAIN IN PLACE UNTIL CONCRETE HAS ATTAINED ITS SPECIFIED 28-DAY MINIMUM COMPRESSIVE STRENGTH.
7. ALL CONSTRUCTION JOINT LOCATIONS MUST BE SHOWN ON SHOP DRAWINGS AND APPROVED BY THE ENGINEER. CONSTRUCTION JOINTS NOT SHOWN ON THE DRAWINGS SHALL BE LOCATED SO AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHOULD GENERALLY BE LOCATED AT MIDSPAN OR AT POINTS OF MINIMUM SHEAR.
8. ALL TYPES OF SLABS AND WALLS SHALL BE PLACED WITHOUT HORIZONTAL CONSTRUCTION JOINTS UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS OR APPROVED IN WRITING BY THE ENGINEER. ALL CONSTRUCTION JOINTS SHALL BE FORMED WITH A STANDARD KEY OR WITH A ROUGHENED SURFACE, UNLESS SHOWN OTHERWISE.
9. PROVIDE A SMOOTH RUBBED SURFACE, FREE FROM BURRS, TIE HOLES, HONEYCOMBING, ETC. ON EXPOSED CONCRETE SURFACES.
10. PROVIDE A STEEL TROWELED FINISH FOR INTERIOR SLABS AND A BROOM FINISH FOR EXTERIOR SLABS.
11. ALL EXPOSED EDGES SHALL BE CHAMFERED 1" UNLESS NOTED OTHERWISE.
12. WHEN CONCRETE IS PLACED AGAINST PREVIOUSLY HARDENED CONCRETE, THE INTERFACE SHALL BE CLEAN, FREE OF LAITANCE, AND INTENTIONALLY ROUGHENED TO FULL AMPLITUDE OF APPROXIMATELY 1/4 INCH.
13. AT ALL CONSTRUCTION JOINTS NOT DESIGNATED TO BE CONTROL JOINTS, NEW CONCRETE SHALL BE EPOXY BONDED TO HARDENED CONCRETE WITH SIKADUR 32 HI-MOD LPL MANUFACTURED BY SIKA CORP. OR ENGINEER APPROVED EQUAL. APPLY PER MANUFACTURER'S RECOMMENDATIONS.
14. ELASTOMERIC JOINT SEALANT FOR SLAB EXPANSION AND CONSTRUCTION JOINTS SHALL BE "SIKAFLEX ICSL" BY SIKA CORP. OR ENGINEER APPROVED EQUAL. SEMI-RIGID EPOXY JOINT SEALANT FOR SLAB CONTROL JOINTS (OR SAWN JOINTS) SHALL BE "SIKADUR 51 SL" AS MANUFACTURED BY SIKA CORP. OR ENGINEER APPROVED EQUAL.
15. ALL CONCRETE SHALL BE PLACED IN THE DRY.
16. PROVIDE POUR STOPS AT THE EDGES OF CONCRETE SLAB POURS WHERE NOT OTHERWISE CONTAINED.

H. REINFORCING STEEL

1. REINFORCING BARS SHALL BE DETAILED IN ACCORDANCE WITH ACI 315 MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES AND THE STATE CODE.
2. COMPLETE SHOP DRAWINGS AND SCHEDULES OF ALL REINFORCING STEEL SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF THAT PORTION OF THE WORK. ALL ACCESSORIES MUST BE SHOWN ON THE SHOP DRAWINGS.
3. REINFORCING BARS SHALL CONFORM TO ASTM A615 OR A706 (WELDABLE) GRADE 60.
4. REINFORCING STEEL SHALL BE UNCOATED, UNLESS NOTED OTHERWISE. HOWEVER, ALL SUPPORTS SUCH AS CHAIRS, BOLSTERS, SPACERS, BLOCKS AND HANGERS SHALL BE OF NON-CORROSIVE MATERIAL. PROVIDE MINIMUM #5 SUPPORT BAR.
5. UNLESS NOTED ON THE DRAWINGS, THE MINIMUM CONCRETE PROTECTION (CLEAR COVER) FOR CAST-IN-PLACE CONCRETE COVER SHALL BE AS FOLLOWS:

   A. CONCRETE PLACED AGAINST EARTH ..... 3"
   B. FORMED CONCRETE EXPOSED TO EARTH OR WATER ..... 2"
6. ALL MECHANICAL SLEEVE CONNECTIONS SHALL CONFORM TO ACI 318 REQUIREMENTS AND DEVELOP IN TENSION AND COMPRESSION AT LEAST 125% OF THE YIELD STRENGTH OF THE BAR.
7. WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185 AND SHALL BE SUPPLIED IN FLAT SHEETS ONLY. SPLICES OF WWF SHALL BE AT LEAST 12 INCHES.
8. ALL REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS.
9. UNLESS NOTED OTHERWISE, BARS SHALL BE CONTINUOUS AND SHALL RUN CONTINUOUSLY AROUND CORNERS AND LAPPED AT NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS. SPLICES SHALL GENERALLY OCCUR AT MID-SPAN FOR TOP AND MIDDLE BARS, AT SUPPORT FOR BOTTOM BARS AND SHALL BE STAGGERED WHEREVER POSSIBLE.
10. BARS SHALL NOT BE CUT OR OMITTED FOR SLEEVE OR OPENINGS IN FLOORS. BARS MAY BE MOVED LATERALLY WITHOUT CHANGING THE DISTANCE FROM THE FACE OF CONCRETE. NO BARS SHALL BE BENT IN FIELD WITHOUT APPROVAL OF THE ENGINEER.
11. PIPES AND SLEEVES EMBEDDED IN CONCRETE SHALL NOT BE LARGER IN OUTSIDE DIAMETER THAN 1/4 THE THICKNESS OF THE SLAB OR WALL IN WHICH THEY ARE EMBEDDED, UNLESS OTHERWISE SHOWN ON THE DRAWINGS, NOR SHALL THEY BE LOCATED SO AS TO IMPAIR THE STRENGTH OF THE CONCRETE.
12. MINIMUM REINFORCEMENT DEVELOPMENT LENGTH AND LAP SPLICE LENGTHS SHALL BE IN ACCORDANCE WITH ACI 318 FOR CLASS B LAPS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
13. PROVIDE ADDITIONAL #5 BAR REINFORCEMENT ALONG EACH SIDE OF OPENINGS (AND EACH FACE), UNLESS NOTED OTHERWISE. BARS SHALL EXTEND AT LEAST 1'-0" BEYOND THE OPENING PERIMETER.

I. CONCRETE ANCHORS

1. EXPANSION TYPE ANCHORS SHALL CONFORM TO THE REQUIREMENTS OF ASTM E488, "STANDARD TEST METHODS FOR STRENGTH OF ANCHORS IN CONCRETE AND MASONRY ELEMENTS" AND ICBO ES AC-01, ACCEPTANCE CRITERIA FOR ADHESIVE ANCHORS IN CONCRETE AND MASONRY ELEMENTS.
2. ADHESIVE TYPE ANCHORS SHALL FURTHER CONFORM TO THE REQUIREMENTS OF ASTM E1512, "STANDARD TEST METHODS FOR TESTING BOND PERFORMANCE OF ADHESIVE-BONDED ANCHORS" AND ICBO ES AC-01, "ACCEPTANCE CRITERIA FOR ADHESIVE ANCHORS IN CONCRETE AND MASONRY ELEMENTS".
3. PROVIDE SIZE, TYPE, AND EMBEDMENT OF ANCHOR INDICATED INSTALLED TO DEVELOP THE MAXIMUM CAPACITY FOR THE EMBEDMENT, TYPE AND ANCHOR SIZE WITH A MINIMUM SAFETY FACTOR OF FOUR.
4. DRILL AND EPOXY ANCHORAGES SHALL BE HILTI "HIT-HY 200 ADHESIVE SYSTEM" WITH STANDARD "HAS" RODS, OR APPROVED EQUAL. ROD EMBEDMENT LENGTH AND DIAMETER SHALL BE AS INDICATED ON DRAWINGS.
5. ANCHOR INSTALLATION SHALL CONFORM TO THE MANUFACTURER'S CURRENT PRINTED INSTRUCTIONS. FOR CORRESPONDING HOLE DIAMETER, REFER TO MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) AS INCLUDED WITH EACH ADHESIVE PACKAGE.
6. A QUALIFIED MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT DURING FIRST INSTALLATION TO ENSURE CORRECT PROCEDURE.
7. REMOVE DUST AND DEBRIS FROM DRILLED HOLES USING COMPRESSED AIR OR VACUUM AT BOTTOM OF HOLE. IMMEDIATELY REMOVE STANDING WATER FROM HOLES TO RECEIVE ADHESIVE ANCHORS.
8. DO NOT HAMMER IN ANCHOR BOLTS. INSTALL ANCHOR BOLTS USING A WET DIAMOND DRILLING PROCESS WITH EXTENSION BITS ADDED AS REQUIRED. DO NOT HAMMER DRILL.
9. USE ONLY DRILL TYPE AND BIT TYPE AND DIAMETER RECOMMENDED BY ANCHOR MANUFACTURER.
10. WHEN EMBEDDED STEEL OR REBAR IS ENCOUNTERED IN THE DRILL PATH, SLANT DRILL TO CLEAR OBSTRUCTION. IF DRILL MUST BE SLANTED MORE THAN 10 DEGREES TO CLEAR OBSTRUCTION, NOTIFY PROGRAM MANAGER FOR DIRECTION ON HOW TO PROCEED.
11. ALL ANCHORS TO BE GALVANIZED.

J. WOOD FRAMING

1. ALL LUMBER FRAMING AND BUILDING COMPONENTS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THE STATE CODE, MANUFACTURER'S REQUIREMENTS, THE AMERICAN FOREST AND PAPER ASSOCIATION (AFPA)/NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS), AND THESE DRAWINGS. LUMBER SHALL HAVE A MAXIMUM MOISTURE CONTENT OF 19%. WOOD FRAMING SHALL BE AS FOLLOWS *:
   - TYPICAL FRAMING: SPRUCE-PINE-FIR No.1/2 OR BETTER (Fb=875 PSI)
   - STUD FRAMING: SPRUCE-PINE-FIR STUD GRADE OR BETTER (Fc=725 PSI)
   - POSTS (INTERIOR): SPRUCE-PINE-FIR No.1 OR BETTER (Fc=700 PSI)
   - PRESSURE TREATED LUMBER (P.T.): SOUTHERN YELLOW PINE No.2 OR BETTER
   - GLULAMS: GLULAMS SHALL BE TREATED FOR EXTERIOR USE.
     MAXIMUM MOISTURE CONTENT OF 16%
     UNBALANCED LAYUP
     MODULUS OF ELASTICITY 1.8×10^6 psi MINIMUM, LOADED PERPENDICULAR TO WIDE FACES OF LAMINATIONS
     TENSION ZONE STRESSED IN TENSION (Fb=2,400 psi)
     COMPRESSION ZONE STRESSED IN COMPRESSION (Fb=1,850 psi)
     SHEAR STRESS (Fv=265 psi)
     PERPENDICULAR TO GRAIN (Fperp=650 psi)
   - LVL: 1.4E "MICROLLAM LVL" (Fb=2,600 psi) BY WEYERHAUSER OR APPROVED EQUIVALENT
   - PSL: 2.0E "PARALLAM PSL" (Fb=2,900 psi) BY WEYERHAUSER OR APPROVED EQUIVALENT
   - WOOD I-JOIST (W.I.J. OR T.J.I.): TRUS JOIST BY WEYERHAUSER OR APPROVED EQUIVALENT
   - LSL: 1.3E "TIMBERSTRAND LSL" (Fb=1,700 psi) BY WEYERHAUSER OR APPROVED EQUIVALENT

   * ALL STRENGTH VALUES NOTED IN ( ) ARE MINIMUM BASE DESIGN VALUES *
2. FOR ENGINEERED FRAMING (LVL, PSL, W.I.J) NOT ALL CONDITIONS AND DETAILS ARE SHOWN ON THESE PLANS. MANUFACTURER'S TYPICAL DETAILS AND INSTALLATION GUIDELINES SHALL BE CONSIDERED PART OF THESE CONSTRUCTION DOCUMENTS.
3. LVL PLIES SHALL BE FASTENED AS FOLLOWS:
   - (2) - 1 3/4" PLIES: (2) ROWS OF SDS 1/4 x 3 1/2 SCREWS @ 16" O.C. (2" FROM TOP & BOT. OF PLY)
   - (3) - 1 3/4" PLIES: (2) ROWS OF SDS 1/4 x 3 1/2 SCREWS @ 12" O.C., EA. FACE STAGGERED (2" FROM TOP & BOT. OF PLY)
   - AT POINT LOAD (HANGER) LOCATIONS, PROVIDE (4)-SDS 1/4 x 3 1/2 SCREWS EACH SIDE OF HANGER (8 TOTAL). INSTALL ON ONE FACE FOR 2-PLY AND BOTH FACES FOR 3-PLY.
4. ALL SILL PLATES AND CMU NAILER PLATES SHALL BE PRESSURE TREATED AND SIZED AS INDICATED ON PLANS. PROVIDE GALV. $3"\times6\frac{1}{4}"\times1/4"$ PLATE WASHER ON ALL ANCHORS IN 8" CMU AND 2x8 WALLS. PROVIDE GALV. $4\frac{1}{2}"\times3"\times1/4"$ PLATE WASHER FOR 2x6 WALLS. ORIENT LONG DIMENSION PARALLEL TO STUD OR BLOCK DEPTH.
5. USE GALVANIZED JOIST HANGERS AT ALL FLUSH JOINTS AND BEAM LOCATIONS IN ACCORDANCE WITH SCHEDULE OR AS INDICATED ON DRAWINGS. JOIST HANGERS SHALL BE AS MANUFACTURED BY SIMPSON OR APPROVED EQUIVALENT. INSTALL PER MANUFACTURER'S REQUIREMENTS.
6. ALL JOISTS SHALL BEAR A MINIMUM OF 2" ON ALL BEAMS AND WALL PLATES. PROVIDE CONTINUOUS DOUBLE TOP PLATES ALONG ALL WALLS, LAPPED 6'-0" MIN. WITH (3)-16d COMMON OR BOX NAILS PER FOOT.
7. REFER TO PLANS FOR SHEATHING REQUIREMENTS.
8. SPACING OF 1/8" IS RECOMMENDED AT PANEL ENDS AND EDGES, UNLESS OTHERWISE INDICATED BY THE PANEL MANUFACTURER.
9. PROVIDE PANEL EDGE CLIPS, TYPE "PSCL" BY SIMPSON OR EQUIVALENT, ALONG ROOF SHEATHING. ONE CLIP SHALL BE PLACED MIDWAY BETWEEN EACH SUPPORT.
10. COMPONENTS, ANCHORS, AND FASTENERS DESIGNATED AS "GALVANIZED" OR "GALV." SHALL BE HOT-DIPPED GALVANIZED (G90 MINIMUM) IN ACCORDANCE WITH ASTM A123, A153, OR A653 AS APPROPRIATE.
11. GLULAMS SHALL BE PROTECTED DURING TRANSIT, STORAGE, AND ERECTION IN ACCORDANCE WITH AITC 111.

ABBREVIATIONS

ADD'L	Additional	Long.	Longitudinal
ALT	Alternate	LLV	Long Leg Vertical
A.B.	Anchor Bolt	L.W.	Long Way
ARCH	Architect	LWC	Light Weight Concrete
B.P.	Base Plate	Max.	Maximum
B.	Bottom	M.C.	Moment Connection
BEW	Bottom Each Way	MECH	Mechanical
BM	Beam	M.M.	Miscellaneous Metal
BOF	Bottom Of Footing	Min.	Minimum
BRG	Bearing	MTL	Metal
BS	Both Sides	NF	Near Face
C	Camber	N-S	Non-shrink
CIP	Cast-in-place	NTS	Not To Scale
Clr.	Clear	O.C.	On Center
COL	Column	PL	Plate
Comp. DK.	Composite Deck	R & D	Remove and Dispose
Conc.	Concrete	Reinf.	Reinforcing
CMU	Concrete Masonry Unit	SC	Shear Connector
C.J	Control Joint	SLV	Short Leg Vertical
℄	Center Line	SOG	Slab On Grade
Const. Jt.	Construction Joint	S.W.	Short Way
Cont.	Continuous	S.S.	Stainless Steel
DIA or Φ	Diameter	STIFF	Stiffener
DWL'S	Dowels	STL	Steel
Dwg	Drawing	S.J	Sawn Joint
Ea.	Each	T	Top
EF	Each Face	TCX	Top Chord Extension
EW	Each Way	Thk	Thick
EL	Elevation	TOC	Top Of Concrete
E.J.	Expansion Joint	TOF	Top Of Footing
EQ.	Equal	TOW	Top Of Wall
FF	Far Face	Trans.	Transverse
FFE	Finish Floor Elevation	TSL	Top Of Slab
FND	Foundation	TST	Top Of Steel
FTG	Footing	Typ.	Typical
Ga.	Gauge	U.N.O.	Unless Noted Otherwise
Galv.	Galvanized	Vert.	Vertical
Horiz.	Horizontal	V.I.F.	Verify In Field
HS	High Strength	WWF	Welded Wire Fabric
HSS	Hollow Structural Shape	W/	With
IF	Inside Face	W.P.	Working Point

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No.	Description	Date

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STATE OF RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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The Nature Conservancy

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LINCOLN, RI 02865
401-334-4100

SHOOTING RANGE EXPANSION
GREAT SWAMP MGT AREA
WEST KINGSTON, RI

Design by: DM
Drawn by: JDB
Checked by: NR
Date: July 21, 2017
Scale: As Noted
Project No.: 03-16

DAVID B. MACOMBER
No. 7320
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

GENERAL NOTES

S1.1

SAVE DATE:21-Jul-17 9:10:17 AM PLOT DATE:21-Jul-17 1:10:09 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RIDWGSS1.1.DWG

DEMOLITION PLAN - SHOOTING SHELTER

SCALE: 1/4"=1'-0"

PHOTO 1

PHOTO 2
(SECTION A-A)

DEMOLITION NOTES:

1. EXISTING CONDITIONS SHOWN ON THE PLANS ARE BASED UPON LIMITED VISUAL OBSERVATIONS IN THE FIELD AND EXISTING PLANS PROVIDED BY THE OWNER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AS THEY RELATE TO THE WORK AND REPORT TO THE ENGINEER ALL OBSERVATIONS AND DISCREPANCIES BEFORE PROCEEDING WITH ANY WORK. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS, AND ELEVATIONS IN THE FIELD AND COORDINATE WITH THE ENGINEER PRIOR TO STARTING THE WORK.
2. THE CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY SHORING TO SUPPORT THE EXISTING STRUCTURE FOR NEW WORK AND AS REQUIRED DURING DEMOLITION. ALL SHORING SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF RHODE ISLAND. SUBMIT STAMPED SHORING CALCULATIONS, PROCEDURES, AND PLANS FOR REVIEW.
3. STRUCTURE SCHEDULED TO REMAIN SHALL BE PROTECTED DURING ALL DEMOLITION OPERATIONS. THE CONTRACTOR SHALL EXERCISE PROPER CARE WHEN REMOVING STRUCTURE SCHEDULED FOR DEMOLITION TO AVOID DAMAGING EXISTING CONSTRUCTION THAT IS SCHEDULED TO REMAIN. ANY STRUCTURE SCHEDULED TO REMAIN THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER. THE ENGINEER SHALL HAVE SOLE DISCRETION IN DETERMINING REPAIR REQUIREMENTS.
4. THE EXISTING CANOPY STRUCTURE AND ADJACENT SHED IS CLASSIFIED AS NON-HARZARDOUS WASTE. PLEASE REFER TO THE INCLUDED LETTER FROM EFI GLOBAL LOCATED ON THIS SHEET. ATTACHMENTS LISTED ON THE LETTER ARE AVAILABLE UPON REQUEST.
5. EXISTING CONCRETE SLABS AND FOOTINGS ARE TO BE BROKEN DOWN TO 6" MINUS PIECES AND TO BE UTILIZED IN THE CONSTRUCTION OF THE INNER PORTION OF THE BERM.

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Wilmington, MA 01887
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TF: 800-659-1202
F: 978-688-5494
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EFI Global
Engineering, Fire & Environmental Services

June 1, 2017

Mr. Michael Rongione, P.E.
Managing Engineer
Pare Corporation
8 Blackstone Valley Place
Lincoln, Rhode Island 02865

RE: **Asbestos & Lead Testing Report**
RIDEM Great Swamp Shooting Range
277 Great Neck Road
West Kingston, Rhode Island 02892
EFI Project No. 98350-06206

Dear Mr. Rongione:

EFI Global, Inc. (EFI) is pleased to provide the results of asbestos and lead testing conducted at the Rhode Island Department of Environmental Management (RIDEM) shooting range located at 277 Great Neck Road in West Kingston, Rhode Island (Site). EFI understands that the existing wood frame canopy and an adjacent shed will be demolished as part of a re-configuration of the shooting range. Representative photographs of EFI's observations during the testing activities are presented in Attachment A.

SURVEY PROCEDURES

EFI asbestos inspector, Mr. Sean Cassidy, conducted the site visit and asbestos testing of roof shingles associated with the canopy and shed on May 11, 2017. Samples of suspect ACMs identified during the survey were collected and submitted under chain of custody protocol to EMSL Analytical, Inc. (EMSL) of Cinnaminson, New Jersey, a Rhode Island-licensed laboratory. EMSL is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos fiber analysis which is administered by the National Institute of Standards and Testing (NIST). The samples were analyzed using polarized light microscopy (PLM) with dispersion staining via EPA's "Method for the Determination of Asbestos in Bulk Building Materials" (EPA/600/R-93/116). Asbestos concentrations for the samples were determined by visual area estimation. Rhode Island asbestos regulations define an ACM as a material containing greater than one percent asbestos.

EFI also collected a representative composite pre-characterization sample of representative wood components (trusses, framing, columns, etc.) of the shooting range canopy and adjacent shed for lead analysis by EMSL using the toxicity characteristic leaching procedure (TCLP) via Flame Atomic Absorption.

LEAD REGULATORY FRAMEWORK

Waste disposal is governed by the Environmental Protection Agency's (EPA's) Resource Conservation and Recovery Act (RCRA) regulations, which distinguish between solid wastes and hazardous wastes. Solid wastes include general construction debris and are subject to minimum handling, transportation, and landfill disposal requirements under RCRA regulations. Hazardous wastes, including certain lead-containing materials, are subject to restrictions designed to prevent the hazardous materials from entering the environment. Lead waste is classified as hazardous or non-hazardous based on the results of the TCLP testing. The TCLP method measures whether or not lead leaches from the waste in excess of the regulated concentration of 5.0 mg/L. If the results of the TCLP analysis exceed this concentration, the waste must be handled, transported and disposed as a hazardous waste in an approved waste disposal facility, reclamation facility or incinerator site. EPA's regulations require the TCLP test be performed such that it represents the matrix and material of the waste stream generated.

TESTING RESULTS

The suspect asbestos containing roof shingles associated with the shooting range canopy and adjacent shed were reported by EMSL as containing no detectable asbestos. No other suspect ACMs were observed by EFI associated with the shooting range canopy and shed. A copy of the asbestos laboratory report prepared by EMSL is presented in Attachment B.

The composite pre-characterization sample of the wood frame shooting range canopy structure and adjacent shed was reported by EMSL as containing a lead concentration of 0.72 mg/L, which is significantly less than the hazardous waste threshold of 5.0 mg/L. A copy of the lead laboratory report prepared by EMSL is presented in Attachment C.

CONCLUSIONS AND RECOMMENDATIONS

The asphalt roof shingles were reported as containing no detectable asbestos and must be disposed/recycled in accordance with RIDEM solid waste disposal regulations. No other suspect ACMs were observed at the Site.

The pre-characterization sample of the wood frame shooting range canopy structure and adjacent shed was reported by EMSL as containing a lead concentration of less than 5.0 mg/L. The wood components of the canopy and shed must be recycled/disposed as non-hazardous waste in accordance with RIDEM solid waste disposal regulations.

Based on EFI's understanding of the scope of work of the shooting range re-configuration project, no further asbestos and pre-characterization lead testing is recommended at this time.

EFI is pleased to provide environmental consulting services to Pare Corporation. If you have any questions regarding the contents of this report, or are in need of additional information, please do not hesitate to contact Sean Cassidy at 800-659-1202. Thank you for the opportunity to serve your environmental needs.

Sincerely,

EFI Global, Inc.

Sean E. Cassidy, CIEC
District Manager

Attachments:
Attachment A - Photographs
Attachment B - Asbestos Laboratory Report
Attachment C – Lead Laboratory Report

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No.	Description	Date

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SHOOTING RANGE EXPANSION
GREAT SWAMP MGT AREA
WEST KINGSTON, RI

Design by: DM
Drawn by: JDB
Checked by: NR
Date: July 21, 2017
Scale: As Noted
Project No.: 03-16

DAVID B. MACOMBS
No. 7320
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

EXISTING SHOOTING SHELTER DEMOLITION PLAN

S2.1

SAVE DATE:21-Jul-17 9:05:05 AM PLOT DATE:21-Jul-17 1:11:03 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RI\DWGS\S2.1.DWG

OVERALL FLOOR PLAN

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

PAINTED LINE SCHEDULE	
LINE	WIDTH & COLOR
ZERO YARD LINE / FIRING LINE	4" RED
ACTIVE LINE	4" ORANGE
READY LINE	4" ORANGE

NOTE:
PROPOSED PAINT SHALL BE COMPATIBLE FOR USE WITH EXTERIOR CONCRETE APPLICATIONS. EXACT COLOR AND TYPE SHALL BE APPROVED BY OWNER.

PRECAST CONCRETE
SHOOTING BENCH

- DURABLE PRECAST CONCRETE TOP & SEAT!
- STEEL MOUNTING PLATES, LEGS, SEAT ARM & SEAT POST!
- SHOOTING BENCH CAN BE RELOCATED!

- BOLT-DOWN LEGS FOR PERMANENT INSTALLATION!
- SEAT HEIGHT IS ADJUSTABLE!
- SEAT PIVOTS FOR RIGHT & LEFT HANDED SHOOTERS!

- PRECAST CONCRETE TOP & SEAT SUPPLIED WITH A STANDARD GRAY FORM FINISH
- DURABLE PRECAST TOP IS APPROXIMATELY 42" WIDE X 42" LONG X 4" THICK
- OVERALL HEIGHT OF SHOOTING BENCH IS APPROXIMATELY 36"
- ENTIRE SHOOTING BENCH ASSEMBLY WEIGHS APPROXIMATELY 580 LBS.

vaughn concrete products, inc.
SHOOTING RANGES PRECAST PRODUCTS
12650 Tucson Street • Henderson, Colorado 80640 • 303-659-3747, Fax 303-659-1333
2671 South Greeley Hwy • Cheyenne, Wyoming 82007 • 307-634-0695, Fax 307-634-0694
10021 Amarillo Blvd East • Amarillo, Texas 79108 • 806-374-3747, Fax 806-335-3717
www.vaughnconcreteproducts.com

NOTE:
OWNER WOULD LIKE A FINISH COATING APPLIED. TYPE AND COLOR TO BE DETERMINED BY OWNER.

DESIGN BASIS FOR SHOOTING BENCH

DOOR AND WINDOW SCHEDULE			
I.D.	DIMENSIONS (H x W)	MIN. U-FACTOR	DESCRIPTION
	DOORS		
1	7'-0" x 6'-0"	0.77	DOUBLE OUT-SWINGING VINYL DOOR
2	7'-0" x 3'-0"	0.77	SINGLE OUT-SWINGING VINYL DOOR
	WINDOWS		
A	2'-6" x 4'-7"	0.45	DOUBLE-HUNG WINDOW
B	2'-6" x 4'-7"	0.45	HORIZONTAL SLIDING WINDOW

NOTE:
BASIS OF DESIGN IS SILVER LINE BY ANDERSEN (V3 SERIES).

PARTIAL PLAN - STORAGE BUILDING

SCALE: 1/4"=1'-0"

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SHOOTING SHELTER PLAN

S3.1

SAVE DATE:21-Jul-17 9:09:48 AM PLOT DATE:21-Jul-17 1:11:45 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RIDWGS\S3.1.DWG

WEST ELEVATION
NOT TO SCALE

EAST ELEVATION
NOT TO SCALE

SOUTH ELEVATION
NOT TO SCALE

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SHOOTING SHELTER ELEVATIONS

S4.1

SAVE DATE:21-Jul-17 9:09:33 AM PLOT DATE:21-Jul-17 1:12:29 PM
Z:\JOBS\16 JOBS\16233.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RI\DWGS\S4.1.DWG

OVERALL FOUNDATION PLAN

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

NOTES:

1. REFER TO DRAWINGS S1.0 FOR GENERAL NOTES AND S9.1 FOR ADDITIONAL DETAILS.
2. REFER TO PLAN FOR BOTTOM OF WALL (B.O.W.) ELEVATION.
3. 6" CONCRETE SLAB-ON-GRADE SHALL BE REINFORCED WITH 6x6, W2.9xW2.9 WELDED WIRE FABRIC (WWF), INSTALLED AT MID-DEPTH.
4. FOUNDATIONS ARE SIMILAR FOR OVERHEAD BAFFLE LINES #3 & #4.

PARTIAL FOUNDATION PLAN - STORAGE BUILDING

SCALE: 3/16"=1'-0"

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REGISTERED PROFESSIONAL ENGINEER (CIVIL)

FOUNDATION PLANS

S5.1

SAVE DATE:21-Jul-17 1:13:45 PM PLOT DATE:7-Aug-17 11:07:11 AM
Z:\JOBS\16_JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RI\DWGS\S5.1.DWG

SECTION 1 / S5.1
SCALE: 3/4"=1'-0"

SECTION B-B

SECTION C-C

SECTION A-A

SECTION 2 / S5.1
SCALE: 3/4"=1'-0"

SECTION 3 / S5.1
SCALE: 3/4"=1'-0"

SECTION 4 / S5.1
SCALE: 3/4"=1'-0"

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FOUNDATION SECTIONS AND DETAILS - 1

S6.1

SAVE DATE:21-Jul-17 9:09:00 AM PLOT DATE:21-Jul-17 1:14:24 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RIDWGS\S6.1 - S6.2 - S6.3.DWG

PLAN

ELEVATION

BAFFLE FOUNDATION AT CENTER BERM

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

TYPICAL FOUNDATION WALL SECTION AT STUD WALL - STORAGE BUILDING

SCALE: 3/4"=1'-0"

NOTE:
THERE IS NO MECHANICAL ATTACHMENT BETWEEN THE FOUNDATION AND THE BAFFLE ASSEMBLY. THE BAFFLE IS RESTING ON THE FOUNDATION AND IS SHIMMED TIGHT AS DESCRIBED.

SECTION 1
SCALE: 3/4"=1'-0"

SECTION 2
SCALE: 3/4"=1'-0"

SECTION B-B

TYPICAL POST BASE DETAIL AT 8" x 8" POST

SCALE: 3/4"=1'-0"

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FOUNDATION SECTIONS AND DETAILS - 2

S6.2

SAVE DATE:21-Jul-17 9:09:00 AM PLOT DATE:21-Jul-17 1:14:44 PM
Z:\JOBS\16 JOBS\16233.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RI\DWGS\S6.1 - S6.2 - S6.3.DWG

CENTER CMU WALL ELEVATION

SCALE: 3/8"=1'-0"

SINGLE HSS COLUMN (ROOF BAFFLE PLAN VIEW)

DOUBLE HSS COLUMN (OVERHEAD BAFFLES PLAN VIEW)

TYPICAL HSS COLUMN PROTECTION DETAILS

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

SECTION 1

SCALE: 3/4"=1'-0"

SECTION 2

SCALE: 3/4"=1'-0"

PSL POCKET AT CENTER CMU WALL

SCALE: 1"=1'-0"

SECTION A-A

TYPICAL CMU WALL CAP DETAIL

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

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8 BLACKSTONE VALLEY PLACE
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401.334.4100

SHOOTING RANGE EXPANSION
GREAT SWAMP MGT AREA
WEST KINGSTON, RI

Design by: DM
Drawn by: JDB
Checked by: NR
Date: July 21, 2017
Scale: As Noted
Project No.: 03-16

DAVID B. MACOMBS, JR.
No. 7320
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

FOUNDATION SECTIONS AND DETAILS - 3

S6.3

SAVE DATE:21-Jul-17 9:09:00 AM PLOT DATE:21-Jul-17 1:15:06 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE\ RIDWGS\S6.1 - S6.2 - S6.3.DWG

CEILING JOIST FRAMING - PARTIAL PLAN

SCALE: 1/4"=1'-0"

ROOF FRAMING - PARTIAL PLAN

SCALE: 1/4"=1'-0"

SECTION 1

SCALE: 3/4"=1'-0"

GENERAL FRAMING NOTES:

1. REFER TO DRAWINGS S1.0 FOR GENERAL NOTES AND S6.1 THRU S9.1 FOR ADDITIONAL DETAILS.
2. STUD WALL CONSTRUCTION (REFER TO S1 FOR MATERIAL GRADE):
   - TYPICAL: 2x6 @ 16" O.C.
3. FOR QUANTITIES OF TWO STUDS OR MORE, INDIVIDUAL STUDS SHALL BE NAILED TOGETHER AS FOLLOWS:
   - (2)-2x STUDS: 16d NAILS @ 9" O.C. VERTICALLY, (2) ROWS PER FACE.
   - (3)-2x STUDS: 30d NAILS @ 9" O.C. VERTICALLY, (2) ROWS PER EXPOSED FACE.
4. PROVIDE FULL-HEIGHT (KING) STUDS AT EACH END OF EXTERIOR HEADER:
   - HEADER SPAN ≤ 4'-0 : (2) KING STUDS
   - 4'-0" < HEADER SPAN ≤ 7'-0" : (3) KING STUDS
5. PROVIDE A MINIMUM OF DOUBLE STUD SUPPORT FOR ALL HEADER/POINT LOADS UNLESS NOTED OTHERWISE ON PLANS.
6. ALL HEADERS FOR DOORS AND WINDOWS IN STUD WALLS SHALL BE:
   - SPAN ≤ 6'-0" : (3)-2x10's
7. ALL HEADERS SHALL BE TIGHT TO UNDERSIDE OF TOP PLATES, UNLESS NOTED OTHERWISE. FOR NON-LOAD BEARING PARTITION WALLS, HEADERS FOR PENETRATIONS SHALL BE LOCATED AT THE TOP OF THE OPENING.
8. WHERE PIER BETWEEN OPENINGS DOES NOT ALLOW FOR REQ'D JACK STUDS AND KING (FULL-HEIGHT) STUDS, USE HUCQ610-SDS HEADER HANGER BY SIMPSON (P=4,680#) OR EQUAL AND FILL PIER WITH KING STUDS.
9. EXTERIOR WALL SHEATHING SHALL BE APA RATED SHEATHING, EXPOSURE 1 GRADE, SPAN RATING NOT LESS THAN 40/20, THICKNESS NOT LESS THAN 1/2". NAIL 6 INCHES ON-CENTER ALONG PANEL EDGES AND 6 INCHES ON-CENTER AT INTERMEDIATE SUPPORTS WITH 10d COMMON NAILS.
10. PROVIDE LUMBER BLOCKING AT ALL UNSUPPORTED PLYWOOD WALL PANEL EDGES.
11. SPACING OF 1/8" IS RECOMMENDED AT PANEL ENDS AND EDGES, UNLESS OTHERWISE INDICATED BY THE PANEL MANUFACTURER.
12. ROOF SHEATHING SHALL BE APA RATED SHEATHING, T&G, EXPOSURE 1 GRADE, SPAN RATING NOT LESS THAN 40/20, THICKNESS NOT LESS THAN 1/2". ORIENT FACE GRAIN PERPENDICULAR TO ROOF FRAMING. FASTEN SHEATHING TO EACH FRAMING MEMBER USING 10d COMMON NAILS AT A MAXIMUM SPACING OF 4 INCHES ALONG THE EDGES OF THE SHEATHING AND A MAXIMUM OF 6 INCHES ALONG INTERMEDIATE SUPPORTS.

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STORAGE BUILDING FRAMING PLANS

S7.1

SAVE DATE:21-Jul-17 9:07:22 AM PLOT DATE:21-Jul-17 1:15:49 PM
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ROOF FRAMING - SHOOTING SHELTER

NOT TO SCALE

SECTION 1
SCALE: 1/2"=1'-0"

SECTION 2
SCALE: 1/2"=1'-0"

SECTION A-A

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SHOOTING RANGE EXPANSION
GREAT SWAMP MGT AREA
WEST KINGSTON, RI

Design by: DM
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DAVID B. MACOMBS
No. 7320
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

SHOOTING SHELTER FRAMING PLANS

S7.2

SAVE DATE:21-Jul-17 9:07:22 AM PLOT DATE:21-Jul-17 1:16:16 PM
Z:\JOBS\16 JOBS\16293.00 RIDEM - GREAT SWAMP SHOOTING RANGE- RIDWGS\S7.1 - S7.2 - S8.1.DWG

DETAIL A / S7.1
SCALE: 1-1/2"=1'-0"

DETAIL B / S7.2
SCALE: 1-1/2"=1'-0"

DETAIL C / S7.2
SCALE: 1-1/2"=1'-0"

NOTE:
ALL TRIM SHALL BE 3/4" SOLID PVC AND BE ATTACHED WITH PROPRIETARY HIDDEN FASTENERS WITH PLUGS. FOLLOW MANUFACTURER'S INSTALLATION MANUAL. FINAL PRODUCT TO BE APPROVED BY OWNER.

TYPICAL SOFFIT DETAIL
NOT TO SCALE

BAFFLE ROOF - PARTIAL PLAN VIEW
NOT TO SCALE

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SHOOTING RANGE EXPANSION
GREAT SWAMP MGT AREA
WEST KINGSTON, RI

Design by: DM
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Date: July 21, 2017
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No. 7320
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FRAMING DETAILS

S8.1

SAVE DATE:21-Jul-17 9:07:22 AM PLOT DATE:21-Jul-17 1:16:39 PM
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TYPICAL BAFFLE PLAN

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

1 | FR-18 | FR-18

ISSUED FOR CONSTRUCTION

STRUCTURAL BY OTHERS

FR-18

DESIGN DEVELOPMENT DATED 06-19-17

GLU-LAM BAFFLE PLANS

RIDEM SHOOTING RANGE

DO NOT SCALE DRAWINGS

NO.	REVISION	DATE	BY

C. VARGAS & ASSOCIATES, LTD.
CONSULTING ENGINEERS
8808 JUNCTION EXPRESSWAY
JACKSONVILLE, FLORIDA 32211
PHONE 904.723.2284 FAX 904.723.2297
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DRAWN BY DM CHECKED BY C. VARGAS DATE 6-12-17
SUBMITTED BY REG. ENGR. NO.

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SHOOTING RANGE EXPANSION
GREAT SWAMP MGT AREA
WEST KINGSTON, RI

Design by: DM
Drawn by: JDB
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Scale: As Noted
Project No.: 03-16

DAVID B. MACOMBS
No. 7320
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BAFFLE DESIGN BY C. VARGAS & ASSOCIATES LTD. - 1

S8.2

TYP. END COLUMN

ELEVATION (1 / FR-18 FR-19)

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

TYP. INTERIOR COLUMN

ELEVATION (3 / FR-18 FR-19)

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

TYP. COLUMN CONNECTION

SECTION (4 / FR-18 FR-19)

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

ELEVATION (5 / FR-19 FR-19)

SCALE: 3/4"=1'-0"

SECTION (6 / FR-19 FR-19)

SCALE: 3/4"=1'-0"

DETAIL (8 / FR-19 FR-19)

SCALE: 1"=1'-0"

DETAIL (7 / FR-19 FR-19)

SCALE: 1"=1'-0"

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FR-19

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DESIGN DEVELOPMENT DATED 06-19-17

GLU-LAM BAFFLE SECTIONS & DETAILS

RIDEM SHOOTING RANGE

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C. VARGAS & ASSOCIATES, LTD.
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BAFFLE DESIGN BY C. VARGAS & ASSOCIATES LTD. - 2

S8.3

TYPICAL SECTION AT ENTRYWAY

NOT TO SCALE

TYPICAL PERIMETER FOUNDATION WALL DETAIL

NOT TO SCALE

NOTE:

1. PROVIDE CONTROL JOINTS AT 15'-0" O.C. (MAX.) FOR 6" SLAB OR AS NOTED ON PLANS.
   - A) ALTERNATE CONCRETE PLACEMENTS ALLOWING 36 HOURS BETWEEN ADJACENT POURS.
   - B) SAW-CUT JOINTS 1/4 OF SLAB DEPTH IMMEDIATELY AFTER SLAB FINISHING.
   - C) ALL SAW-CUT JOINTS SHALL BE MADE WITHIN 8 HOURS OF CONCRETE PLACEMENT.
   - D) CLEAN ALL CONTROL JOINTS BY HIGH PRESSURE WASHING AFTER SAW CUTTING, SAND BLASTING AFTER THE JOINTS ARE DRY AND THEN BLOWING OUT THE JOINTS WITH CLEAN, DRY COMPRESSED AIR.
   - E) FILL JOINTS IN EXPOSED SLABS WITH A FLEXIBLE EPOXY CONTROL JOINT RESIN (SIKADUR 51 SL OR EQUIVALENT). INSTALL 60-90 DAYS AFTER CONCRETE PLACEMENT.

TYPICAL EXTERIOR SLAB ON GRADE DETAIL

NOT TO SCALE

PLAN OF HORIZONTAL REINFORCING OF CONCRETE WALLS AND FOUNDATION WALLS

NOT TO SCALE

NOTE:
PROVIDE CONSTRUCTION JOINTS @ 60' O.C. (MAX.) ALTERNATE PLACING OF PANELS, ALLOWING 36 HOURS FROM THE END OF ONE POUR TO THE BEGINNING OF ADJACENT POURS.

TYPICAL CONCRETE WALL CONSTRUCTION JOINT DETAIL

NOT TO SCALE

TYPICAL SLAB ON GRADE EXPANSION JOINT

NOT TO SCALE

TYPICAL KEY DETAIL

NOT TO SCALE

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TYPICAL DETAILS

S9.1

SAVE DATE:21-Jul-17 9:11:12 AM PLOT DATE:21-Jul-17 1:19:12 PM
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