May 29, 2019

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATION
DEPARTMENT OF ADMINISTRATION

DIVISION OF PURCHASES BID No. 7598774

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

RHODE ISLAND CONTRACT No. 2017-CB-053

FEDERAL-AID PROJECT NO. FAP No: BHO-0153(002)

Rehabilitation of Silver Creek Bridge No. 153

CITY/TOWN OF BRISTOL

COUNTY OF BRISTOL

NOTICE TO PROSPECTIVE BIDDERS

ADDENDUM NO. 2 Prospective bidders and all concerned are hereby notified of the following changes in the Plans, Specifications, Proposal and Distribution of Quantities for this contract. These changes shall be incorporated in the Plans, Specifications, Proposal and Distribution of Quantities, and shall become an integral part of the Contract Documents.

A. Plan Sheets

1. Replace Plan Sheet 1 with Sheet 1(R-1) attached to this Addendum #2. The Sheet Index has been revised to reflect the changes in this addendum.

2. Replace Plan Sheet 5 with Sheet 5(R-1) attached to this Addendum #2. The Job Specific National Grid Gas Notes have been revised. The description for Job Specific callout "TP" has been revised.

3. Replace Plan Sheet 7 with Sheet 7(R-1) attached to this Addendum #2. New section of sidewalk called out to be replaced to allow for temporary connection of the gas bypass.

4. Replace Plan Sheet 8 with Sheet 8(R-1) attached to this Addendum #2.
   The following water and sewer information have revised:
   The anticipated temporary pit locations for the jacking of the water and sewer have been moved directly behind the existing abutment walls.
   The water bypass pipe has been changed to 8" Insulated HDPE.
   The following gas line information have been revised:
   The gas main casing has been changed to 10"
   Gas gates have been called to be adjusted to grade
   The layout of the gas bypass has been revised to 4" Steel over the channel crossing and 4" plastic buried pipe elsewhere.
   A 2-inch steel casing vent is to be installed to the back of the guardrail in between the posts.
   National Grid will be responsible to cap active gas pipe in place. Contractor is responsible to remove the pipe in the vicinity of the casing.

5. Replace Plan Sheet 11 with Sheet 11(R-1) attached to this Addendum #2. The existing abutment locations have been added to the sheet.

6. Replace Plan Sheets 22, 23, 32, and 34 with Sheet 22(R-1), Sheet 23(R-1), Sheet 32(R-1), and Sheet 34(R-1) attached to this Addendum #2. The gas main casing has been revised to 10" diameter.

7. Add Plan Sheet 23A attached to this Addendum #2 to the plan set. The sheet was added to show the alignment and details of the proposed gas main replacement.

8. Replace Plan Sheet 24 with Sheet 24(R-1) attached to this Addendum #2. The estimated pile tip elevation have been revised.

9. Replace Plan Sheet 25 with sheet 25(R-1) attached to this Addendum #2. The gas main casing has been revised to 10" diameter, and the Elevation and Section Thru Abutment have been revised to indicate cast-in-place pile caps.

10. Replace Plan Sheet 39 with Sheet 39(R-1) attached to this Addendum #2. A detail has been added to show the limits of removal of the existing abutments to place the casings for the sewer and water mains.

11. Replace Plan Sheet 40 with Sheet 40(R-1) attached to this Addendum #2. The groundwater elevations on the boring logs have been revised.

B. Job Specific Pages

1. Replace Job Specific Page JS-i and JS-ii with Page JS-i(R-1) and JS-ii(R-1) attached to this Addendum #2. The table of contents has been revised to reflect the additional items, and changes to item codes and page numbers.

2. Replace Job Specific Page JS-12 with Page JS-12(R-1) attached to this Addendum #2. The Method and Measurement and Basis of Payment section of the JS specification for Item Code 201.9954 have been revised.

3. Replace Job Specific Page JS-17 with Page JS-17(R-1) attached to this Addendum #2. Item Code 700.9901 "12 Inch Steel Casing for Gas Main" has been replaced with Item Code 700.9906 "10 Inch Steel Casing for Gas Main".

4. Replace Job Specific Page JS-25 with JS-25 (R-1) attached to this Addendum #2. References to asbestos concrete pipe have been removed from the Pipe Removal section.

5. Replace Job Specific Page JS-30 with Page JS-30(R-1) attached to this Addendum #2. The Description has been revised.

6. Replace Job Specific Pages JS-33 and JS-34 with Page JS-33(R-1) and JS-34(R-1) attached to this Addendum #2. The requirements for the water and sewer bypasses have been revised.

7. Replace Job Specific Pages JS-54 and JS-55 with Pages JS-54(R-1) and JS-55(R-1) attached to this Addendum #2. The Description has been revised.

8. Replace page JS-60 with JS-60(R-1) attached to this Addendum #2. Requirements for the removal of concrete for the placement of the sewer and watermain casings have been added.

9. Replace page JS-70 with JS-70(R-1) and add pages JS-71(R-1) to JS-78(R-1) to Item Code 804.9902 for additional micropile requirements.

10. Replace page JS-71 to JS-84 with page JS-79(R-1) to JS-92(R-1). The pages number for these specifications have changed.

11. Replace Job Specific Page JS-85 with Page JS-93(R-1) attached to this Addendum #2. Item Code T20.9901- Epoxy Resin Pavement Markings- Red, White and Blue have been replaced with Item Code T20.9902- Waterborne Pavement Markings- Red, White and Blue.

12. Add Job Specific Pages JS-94 and JS-95 attached to this addendum. Item Code 700.9905- 8 Inch Plastic Gas Main and Item Code 700.9907- 4 Inch Steel and Plastic Gas Bypass have been added.

C. Contract Specific

1. Replace page CS-i to CS-12 with CS-i(R-1) to CS-12(R-1). The following changes have been made:

   a) The Verizon and National Grid utility relocation schedules have been provided in Section 3 of the CS pages.
   b) The pages numbers of the sections following the updated Section 3 have been revised.
   c) Subsection A of Section 6 has been revised to clarify the utility relocation process.

2. Add the Water Quality Certification and Army Corps of Engineer's permits, and the RIPDES Remediation General permit conceptual approval letter and groundwater sample results to Appendix D of the General Provisions-Contract Specific.

3. Add the National Grid Specifications attached to this Addendum #2 to Appendix F of the General Provisions-Contract Specific.

D. Bidder Questions and Answers

1. All questions and answers from http://www.dot.ri.gov/contracting/bids/quesanswer.php?job=2017-CB-053 have been attached to this Addendum #2.

E. Distribution of Quantities

1. The Distribution of Quantities has been reissued in its entirety with the following changes:
   a) The quantity for Item Code 201.0403 Remove and Dispose Sidewalk has been revised.
   b) The quantity for Item Code 201.0409 Remove and Dispose Flexible Pavement has been revised.
   c) The quantity for Item Code 201.0414 Remove and Dispose Pipe-All Sizes has been revised.
   d) The quantity for Item Code 204.0100 Trimming and Fine Grading has been revised.
   e) The quantity for Item Code 401.3005 Class 9.5 HMA for Miscellaneous Work has been revised.
   f) The quantity for Item 403.0300 Asphalt Emulsion Tack Coat has been revised.
   g) Item Code 700.9901 12 Inch Steel Casing for Gas Main has been deleted.
   h) The quantity for Item Code 701.9908 Utility Pipe Ramming has been revised.
   i) The stationing for Item Code 706.9000 Plug and Cap Pipe All Sizes has been revised.
   j) The quantity for Item Code 905.0110 Portland Cement Sidewalk Monolithic Standard 43.1.0 has been revised.
   k) The quantity for Item Code 932.0200 Full Depth Sawcut of Bituminous Pavement has been revised.
   l) The stationing for Item Code 932.0230 Full Depth Sawcut of Portland Cement Concrete Sidewalk/Driveway have been revised.
   m) The quantities for Item Code L01.0102- Loam Borrow 4 Inches Deep and Item Code L02.0102- Residential Seeding (Type 2) have been revised.
   n) Item Code T20.9901 Epoxy Pavement Markings – Red White and Blue has been deleted.
   o) Item Code 201.0440 Remove and Dispose Asbestos Cement Pipe/ Duct (Transite) All Types and Sizes has been added.

p) Item Code 401.3100 Modified Class 9.5 HMA has been added.

q) Item Code 700.9905 8 Inch Plastic Gas Main has been added.

r) Item Code 700.9906 10 Inch Steel Casing for Gas Main has been added.

s) Item Code 700.9907 4 Inch Gas Bypass has been added.

t) Item Code 713.8300 Adjust Gas Gate Boxes to Grade has been added.

u) Item Code 935.0400 Removing Bituminous Pavement by Micro Milling has been added.

v) Item T20.9902 Waterborne Pavement Markings- Red, White and Blue has been added.

David W. Fish

RI Department of Transportation
Administrator, Division of Project Management

May 29, 2019

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DEPARTMENT OF ADMINISTRATION

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RI Department of Transportation
Administrator, Division of Project Management

INDEX OF DRAWINGS

R.I. STANDARD SPECIFICATIONS AND STANDARD DETAILS

SPECIFICATIONS TO GOVERN THIS PROJECT ARE THE R.I. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION (AMENDED MARCH 2018), WITH ALL REVISIONS AND THE STATE AND FEDERAL SPECIAL PROVISIONS INCLUDED IN THE CONTRACT DOCUMENTS. STANDARD DETAILS FOR THIS PROJECT ARE R.I. STANDARD DETAILS, 1998 EDITION, WITH ALL REVISIONS.

ADDENDUM No.1

STATE OF RHODE ISLAND

DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED

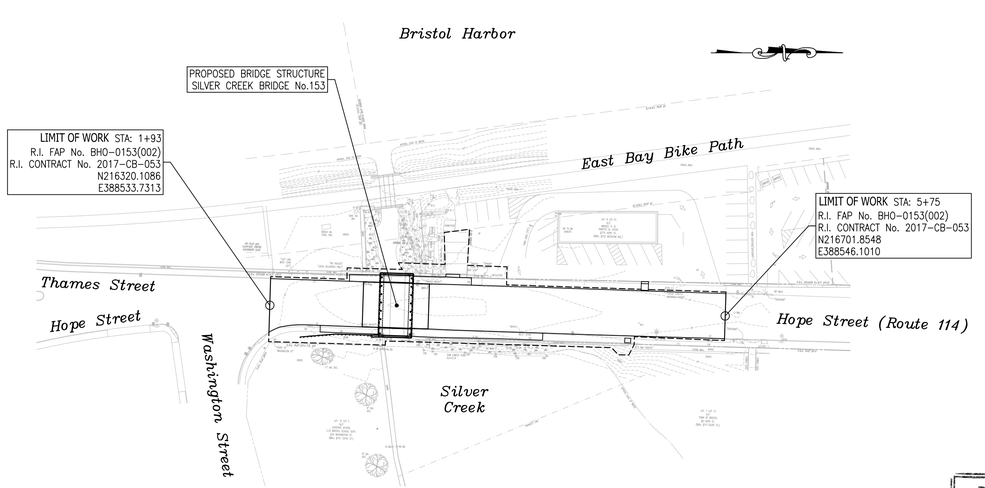
SILVER CREEK BRIDGE NO. 153

ROUTE 114 (HOPE STREET)

BRISTOL, RHODE ISLAND
BRISTOL COUNTY

R.I. CONTRACT NO. 2017-CB-053 F.A. PROJECT NO. BHO-0153(002)

0.07 MILES



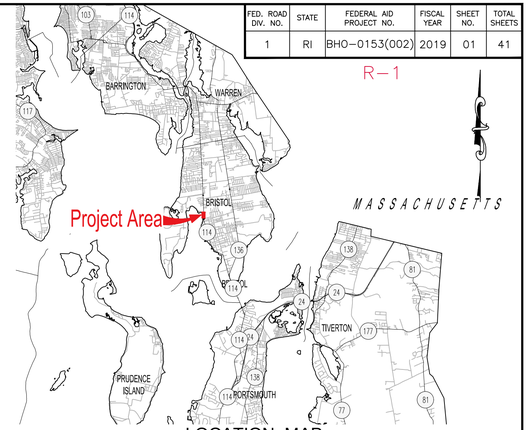
LAYOUT PLAN
SCALE: 1" = 60'

SCALES OF DRAWINGS
PLANS: 1 INCH = 20 FEET

BASE OF LEVELS
VERTICAL DATUM USED: NAVD-88
HORIZONTAL DATUM: RHODE ISLAND STATE PLANE, NAD-83 (2007) (2002.00)

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

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	BHO-0153(002)	2019	01	41



LOCATION MAP
SCALE: N.T.S.

DESIGN DESIGNATION

AADT (2019) = 19,100 VEH
AADT (2039) = 23,400 VEH
DHV (2039) = 2,340 VEH
D = 50/50
T = 15%
DESIGN SPEED = 35 MPH

HURRICANE EVACUATION ROUTE

THIS PROJECT INCLUDES WORK ON A DESIGNATED HURRICANE EVACUATION AND DIVERSIONARY ROUTE AS FOLLOWS:
ROUTE 114 (HOPE STREET)

REFER TO GENERAL NOTE 18 ON SHEET 3 AND BRIDGE GENERAL NOTE 10 ON SHEET 19.

PROPOSED PAVEMENT STRUCTURE

ROUTE 114 HOPE STREET:

FULL DEPTH CONSTRUCTION:
2" MODIFIED CLASS 12.5 HMA
5" CLASS 19.0 HMA (PLACED IN TWO 2.5" LIFTS)
12" GRAVEL BORROW SUBBASE COURSE
ASPHALT EMULSION TACK COAT BETWEEN HMA LAYERS

BRIDGE DECK:
3" MIN. MODIFIED CLASS 9.5 HMA
(PLACED IN TWO 1.5" MIN. LIFTS, DEPTH VARIES)
ASPHALT EMULSION TACK COAT BETWEEN HMA LAYERS

DAVID J. ELWELL
No. 7127
REGISTERED PROFESSIONAL ENGINEER
CIVIL
4-1-19

CARL J. ADAMO
No. 4211
REGISTERED PROFESSIONAL ENGINEER
4/1/19

R.I. DEPARTMENT OF TRANSPORTATION

APPROVED
David W. Fink 4-1-19
ADMINISTRATOR, PROJECT MANAGEMENT DATE

APPROVED
Robert Rocchio 4-1-19
CHIEF ENGINEER OF INFRASTRUCTURE DATE

APPROVED
4-2-19
DIRECTOR DATE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

Contract Number 2017-CB-053
Number of Sheet 01
Total Sheets 41

1000E_V1_001_COVER_REV01

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	05	41

R-1

JOB SPECIFIC GENERAL NOTES:

1. EXISTING CONDITIONS SURVEY WAS PREPARED BY AEROTECH CORP. PROVIDENCE, RHODE ISLAND, IN MAY OF 2017.
2. FOR SURVEY WORK PERFORMED BY THE CONTRACTOR, ALL SURVEY FIELD BOOKS AND ELECTRONIC DATA SHALL BE SUBMITTED TO THE RIDOT SURVEY SECTION UPON COMPLETION OF THE CONSTRUCTION WORK. FIELD BOOKS SHALL INCLUDE A LISTING OF ALL RI HIGHWAY BOUNDS THAT WERE SET WITH STATIONS, OFFSETS, COORDINATES, AND DATE SET CERTIFIED BY THE CONTRACTOR'S PROFESSIONAL LAND SURVEYOR.
3. ALL REQUIRED TREE TRIMMING WILL BE COMPLETED UNDER THE RIDOT STATEWIDE TRIMMING CONTRACT. THERE IS NO SEPARATE PAY ITEM FOR THIS WORK.
4. ALL GRASSED AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE REESTABLISHED WITH LOAM AND TYPE 2 SEED. IF AREAS ARE BEYOND WORK LIMIT LINES, THEN THE COST SHALL BE BORNE BY THE CONTRACTOR.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING TREES AND THEIR ROOT SYSTEMS DURING CONSTRUCTION.
6. LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING UTILITIES AND NOTIFY THE APPROPRIATE UTILITY AUTHORITIES INCLUDING "DIG SAFE" PRIOR TO STARTING WORK. ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THE COST OF REPAIRS SHALL BE BORNE BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
7. ALL EXISTING STREET NAME SIGNS SHALL REMAIN IN PLACE.
8. THE CONTRACTOR SHALL BE AWARE OF THE PRESENCE OF OVERHEAD UTILITIES WITHIN THE WORK ZONE AND SHALL PLAN ALL CONSTRUCTION ACCORDINGLY. NO ADDITIONAL PAYMENT WILL BE MADE FOR EQUIPMENT AND METHODS REQUIRED TO ACCOMMODATE THE OVERHEAD UTILITIES.
9. NO SEPARATE PAYMENT WILL BE MADE FOR TEMPORARY EARTH SUPPORT. SHOULD THE CONTRACTOR USE ANY TEMPORARY EARTH SUPPORT STRUCTURES, THE COST SHALL BE CONSIDERED INCIDENTAL TO THE CORRESPONDING ITEMS OF WORK.
10. CONTRACTOR TO EXCAVATE TEST PITS IN AREAS OF POTENTIAL UTILITY CONFLICTS AND RELAY INFORMATION TO RESIDENT ENGINEER PRIOR TO COMMENCEMENT OF UTILITY WORK.
11. THERE SHALL BE NO PARKING OR STORING OF CONSTRUCTION EQUIPMENT UNDER THE DRIPLINE OF ANY TREE.
12. WETLANDS WERE FLAGGED BY PARE ON MAY 24, 2017 AND SURVEYED BY AEROTECH CORP. THE FOLLOWING GPS-LOCATED POINTS WERE OBTAINED BY PARE AS THERE WERE NO SUITABLE LOCATIONS TO SET FLAGS: FLAGS A-7 TO A-13, B-5 TO B-12, ASSF-1, SF-200 TO SF-201, HTL-100 TO HTL-101, AND HTL-300 TO HTL-302.
13. ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP FOR BRISTOL COUNTY, RHODE ISLAND (COMMUNITY PANEL 44001C0014H, EFFECTIVE DATE JUNE 7, 2014), THE SITE IS LOCATED WITHIN THE 100-YEAR FLOODPLAIN ASSOCIATED WITH SILVER CREEK AND BRISTOL HARBOR. THE AREA DOWNSTREAM OF THE BRIDGE, WEST OF RT. 114, IS MAPPED AS ZONE VE, COASTAL FLOOD ZONE SUBJECT TO WAVE ACTION, WITH A BASE FLOOD ELEVATION OF 14 FEET. THE BRIDGE AND THE REMAINING SITE IS MAPPED AS ZONE AE, WITH A BASE FLOOD ELEVATION OF 13 FEET.
14. NEW GUARDRAIL AND GUARDRAIL TERMINAL INSTALLATIONS SHALL COMPLY WITH THE REQUIREMENTS OF MASH 2016.

JOB SPECIFIC VERIZON UTILITY NOTES:

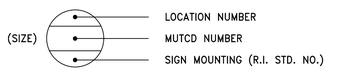
1. ANY/ALL ADJUSTMENTS TO VERIZON OWNED UNDERGROUND EQUIPMENT (MANHOLES, FRAME & COVERS, CONDUITS, ETC) MUST BE PERFORMED BY AN APPROVED VERIZON CONTRACTOR. ADDITIONALLY, ALL ADJUSTMENTS MUST BE INSPECTED BY VERIZON'S CONTRACT WORK INSPECTOR (CWI). PLEASE CONTACT DAN MELLO (CWI) @ (401)439-5571...48 HOURS IN ADVANCE BEFORE COMMENCING WORK.
2. IF VERIZON'S UNDERGROUND (UG) STRUCTURES (CONDUITS, CABLES, MANHOLES, ETC...) ARE EXPOSED DURING CONSTRUCTION, THE GENERAL CONTRACTOR (GC) MUST PROVIDE PROTECTION FOR THE EXPOSED PLANT IN ACCORDANCE WITH VERIZON'S METHODS AND PROCEDURES AND WITH THE APPROVAL OF VERIZON'S CWI. ADDITIONALLY, AN APPROVED PARTITION MUST BE PLACED BETWEEN EXISTING VERIZON STRUCTURES AND NEW CONCRETE CONSTRUCTION WHERE CONTACT AND/OR ENCROACHMENT MAY ARISE.
3. THE UNDERMINING OF VERIZON DUCTS (INCLUDING THOSE CONCRETE ENCASED) IS NOT PERMITTED WITHOUT INSPECTION/PERMISSION OF VERIZON'S CWI.
4. A RADIAL CLEARANCE OF THREE FEET (3') MUST BE MAINTAINED BETWEEN VERIZON'S AERIAL EQUIPMENT (CABLES, TERMINALS, POLES, ETC) IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS. THIS INCLUDES TRAFFIC SIGNAL AND CONSTRUCTION EQUIPMENT.... EITHER TEMPORARY OR PERMANENT. PLEASE REFER TO R.I.D.O.T. DOCUMENT TAC-0049 FOR ADDITIONAL INFORMATION.

JOB SPECIFIC NATIONAL GRID GAS NOTES:

1. REMOVAL AND DISPOSAL OF GAS MAINS:

   NATIONAL GRID WILL PURGE OUR OLD GAS MAIN OF GAS, WIPE TEST SAMPLE THE INSIDE OF THE PIPE, CAP THE ENDS AND ABANDON IN PLACE. PIPE FOUR INCHES AND LESS IN DIAMETER CAN'T BE SAMPLED; THIS PIPE WILL BE ASSUMED TO BE CONTAMINATED. IF THE WIPE TEST RESULTS SHOW PCB CONTAMINATION AND A SECTION OR SECTIONS NEED TO BE REMOVED BY THE CONTRACTOR THEN THERE ARE TWO POSSIBILITIES: IF THE QUANTITY TO BE REMOVED IS SMALL THE CONTRACTOR COULD TRANSPORT THE REMOVED SECTIONS WITH SEALED ENDS TO EITHER OUR ALLENS AVE FACILITY AT 642 ALLENS AVE IN PROVIDENCE OR OUR DEXTER ST FACILITY AT 477 DEXTER ST IN PROVIDENCE AND PLACE THEM IN OUR RED OPEN TOP "PIPE TO BE CLEANED" CONTAINER ON SITE. NATIONAL GRID WOULD THEN HANDLE THE CLEANING AND PROPER DISPOSAL ... OR ... THE CONTRACTOR COULD HIRE CLEAN HARBORS TO DELIVER AN OPEN TOP CONTAINER TO THE SITE, PLACE THE REMOVED SECTION INTO THE DUMPSTER AND THEN ARRANGE TO HAVE CLEAN HARBORS PICK UP THE CONTAINER. THE CHARGES ASSOCIATED WITH DELIVERY, ONSITE RENTAL AND PICK UP OF THE DUMPSTER WOULD BE THE CONTRACTORS RESPONSIBILITY AND NATIONAL GRIDS RESPONSIBILITY WILL BE FOR THE CLEANING AND PROPER DISPOSAL. NATIONAL GRID ALSO REQUIRES THAT THE OPEN PIPE ENDS OF THE ABANDONED PIPE REMAINING IN THE GROUND BE CAPPED OR SEALED WITH EXPANDING FOAM.
2. ALL VALVE BOXES AND CORROSION (CP) TEST BOXES HAVE BEEN MARKED ON THE PLANS. THESE BOXES SHALL BE ADJUSTED TO THE NEW ROAD SURFACE. NEW BOXES CAN BE OBTAINED AT THE NATIONAL GRID PROVIDENCE FACILITY AT 477 DEXTER STREET. ALL VALVE BOXES MUST BE ACCESSIBLE AT ALL TIMES TO BE OPERATED IN THE EVENT OF AN EMERGENCY.
3. GAS BY-PASS LINE DETAIL NOT PROVIDED AND WILL BE PROVIDED AT CONSTRUCTION PHASE.
4. 10" STEEL CASING PIPE SUPPLIED BY NATIONAL GRID TO BE INSTALLED BY BRIDGE CONTRACTOR.
5. ALL NEW GAS INSTALLATIONS BY BRIDGE CONTRACTOR'S NATIONAL GRID APPROVED GAS SUBCONTRACTOR. ALL MATERIALS SUPPLIED BY NATIONAL GRID. ALL GAS TIE-INS AND CUT-OFFS BY NATIONAL GRID CREW. THIS GAS LINE CAN NOT COME OUT OF SERVICE. BY-PASS INSTALL AND ACTIVATE BY NOVEMBER 15TH.
6. BYPASS TO BE IN PLACE AND ONLINE PRIOR TO FULL BRIDGE CLOSURE. TIE-IN OFF BY-PASS BY NATIONAL GRID.
7. CUT-OFF OF BRIDGE MAIN AND ABANDONMENT IN PLACE BY NATIONAL GRID. BYPASS MUST BE INSTALL AND ACTIVE BETWEEN APRIL 1ST AND NOVEMEBER 15TH. (1)
8. CUT-OFF AND REMOVAL OF ABANDONED GAS MAINS BY BRIDGE CONTRACTOR IN ACCORDANCE WITH NATIONAL GRID ABANDONED MAIN POLICY.

TYPICAL SIGN DESIGNATION SYMBOL



JOB SPECIFIC PLAN SYMBOLS

EXISTING		NEW
	CUT AND MATCH	
	DIRECTION OF TRAVEL	
C.L.F.	CHAIN LINK FENCE	
SW	STONE WALL	
	TREE	
	BOLLARD	
	SIGN	
	TEMPORARY CHAIN LINK FENCE	
U.P.#	UTILITY POLE	
GV	GAS GATE	
CPT	C.P. TEST (GAS)	
WV	WATER GATE	
S	SEWER MANHOLE	SMH
D	DRAIN MANHOLE	
	CATCH BASIN	CB
T	TELEPHONE MANHOLE	
CI	CURB INLET	
GC	VERTICAL GRANITE CURB	
BIT	BITUMINOUS	
CONC	CONCRETE	
CW	CONCRETE WALK	
B7 B8 B9	WETLAND EDGE	
	200' FEET CONTIGUOUS BUFFER	
OHW	OVERHEAD WIRES	
SMRW	STONE MASONRY RETAINING WALL	
	GUARDRAIL	
	COMPOST FILTER SOCK	

JOB SPECIFIC LEGEND:

BCD	HMA DRIVEWAY 3" MODIFIED CLASS 12.5 HMA 8" GRAVEL BORROW SUBBASE COURSE
CFS	COMPOST FILTER SOCK (SEE DETAILS)
CM	CUT AND MATCH (SEE DETAILS)
FDS	FULL DEPTH SAWCUT OF BITUMINOUS PAVEMENT
ISCD	INLET SEDIMENT CONTROL DEVICE (SEE DETAILS)
MEPM	MATCH EXISTING PAVEMENT MARKING
P	FULL DEPTH CONSTRUCTION 2" MODIFIED CLASS 12.5 HMA 5" CLASS 19.0 HMA (PLACED IN TWO 2.5" LIFTS) 12" GRAVEL BORROW SUBBASE ASPHALT EMULSION TACK COAT BETWEEN LAYERS
PMG	PLACEMENT OF MILLINGS BENEATH GUARDRAIL TO A MINIMUM DEPTH OF 5"
R&R	REMOVE AND RESET
RWB	RED WHITE BLUE PAVEMENT MARKING (MATCH EXISTING)
STE	STEEL BACKED TIMBER GUARDRAIL TRANSITION TO END POST (SEE BRIDGE END POST DETAILS)
TP	TEMPORARY PATCH 4" CLASS 9.5 HMA (PLACED IN TWO 2.0" LIFTS) REGRADE/ADD COMPACTED GRAVEL BORROW SUBBASE TO GRADE ASPHALT EMULSION TACK COAT BETWEEN HMA LAYERS (1)
T4DY	4" TEMPORARY DOUBLE YELLOW WATERBORNE PAVEMENT MARKINGS
T6W	6" TEMPORARY WHITE WATERBORNE PAVEMENT MARKINGS

R.I. STD. DETAILS:

20.1.0	PAVEMENT MARKING "ARROW" AND "ONLY"
26.1.0	FLUORESCENT TRAFFIC CONES
29.1.0	CONSTRUCTION SIGNS
47.1.1	TRANSVERSE PAVEMENT CUT AND MATCH

ADDENDUM No.1

REVISIONS		
NO.	DATE	BY
1	5/17/19	ETS

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

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

JOB SPECIFIC
PLAN SYMBOLS, LEGEND & NOTES

CHECKED BY _____ DATE _____ SCALE _____

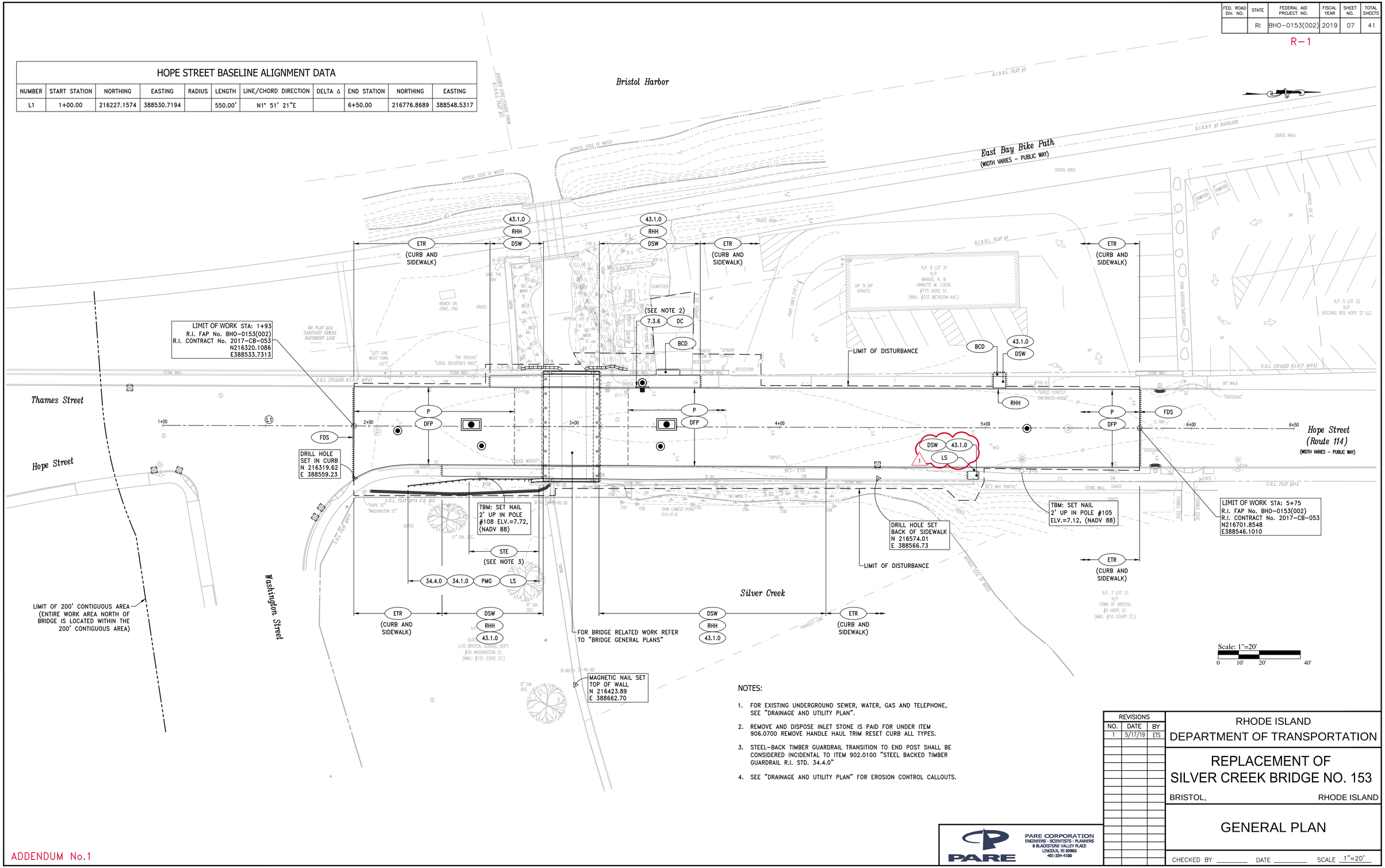
1000E_V1_005_JSNOTSYM_REV01

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	07	41

R-1

HOPE STREET BASELINE ALIGNMENT DATA

NUMBER	START STATION	NORTHING	EASTING	RADIUS	LENGTH	LINE/CHORD DIRECTION	DELTA Δ	END STATION	NORTHING	EASTING
L1	1+00.00	216227.1574	388530.7194		550.00'	N1° 51' 21"E		6+50.00	216776.8689	388548.5317



NOTES:

1. FOR EXISTING UNDERGROUND SEWER, WATER, GAS AND TELEPHONE, SEE "DRAINAGE AND UTILITY PLAN".
2. REMOVE AND DISPOSE INLET STONE IS PAID FOR UNDER ITEM 906.0700 REMOVE HANDLE HAUL TRIM RESET CURB ALL TYPES.
3. STEEL-BACK TIMBER GUARDRAIL TRANSITION TO END POST SHALL BE CONSIDERED INCIDENTAL TO ITEM 902.0100 "STEEL BACKED TIMBER GUARDRAIL R.I. STD. 34.4.0"
4. SEE "DRAINAGE AND UTILITY PLAN" FOR EROSION CONTROL CALLOUTS.

REVISIONS		
NO.	DATE	BY
1	5/17/19	ETS

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

GENERAL PLAN

CHECKED BY _____ DATE _____ SCALE 1"=20'

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

ADDENDUM No.1

1000E_V1_007_GENERAL001_REV01

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	08	41

R-1

NOTES:

1. REMOVE AND RESET INLET STONE SHALL BE CONSIDERED INCIDENTAL TO ITEM 906.0700 REMOVE, HANDLE, HAUL, TRIM, RESET CURB EDGING STRAIGHT, CIRCULAR ALL TYPES.
2. INSTALL "INLET-SEDIMENT CONTROL DEVICES" ON ALL CATCH BASINS WITHIN AS SHOWN ON PLAN FOR THE DURATION OF CONSTRUCTION (SEE "DETAILS-2").
3. RESET EXISTING RIPRAP, AND ADD ADDITIONAL RIPRAP AS DIRECTED BY THE ENGINEER. PAID FOR UNDER ITEM 920.0070 "DUMPED STONE RIPRAP" R-3, R-4, R-5 STD. 8.3.0.
4. REFER TO "SEWER MAIN AND WATER MAIN PROFILES" FOR SEWER MAIN AND WATER MAIN PROFILES.
5. TIE EXISTING 12" RCP PIPE INTO NEW CATCH BASIN. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO INSTALLATION OF THE CATCH BASIN.
6. SEE "DETAILS-1" AND "DETAILS-2" FOR UTILITY DETAILS.
7. REMOVE AND RESET TIDE CHECK VALVE SHALL BE CONSIDERED INCIDENTAL TO THE CLEANING AND FLUSHING OF DRAINAGE PIPES.
8. ALL PROPOSED DRAINAGE STRUCTURES SHALL BE BACKFILLED USING CONTROLLED LOW STRENGTH MATERIAL (CLSM) CLASS I AND II (EXCAVATABLE) AS A SUBSTITUTE FOR COMPACTED GRAVEL AND STRUCTURAL FILL, IN ACCORDANCE WITH SECTION 603 OF THE RI STANDARD SPECIFICATIONS. BACKFILL WITH CLSM SHALL BE CONSIDERED INCIDENTAL TO THE DRAINAGE ITEMS AND NO ADDITIONAL PAYMENT WILL BE MADE FOR THE WORK.
9. CONTRACTOR SHALL NOT DISTURB OR ENCROACH ON EXISTING SALT MARSH. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER.
10. FOR NATIONAL GRID NOTES REFER TO "JOB SPECIFIC PLAN SYMBOLS, LEGEND, & NOTES". 1

Bristol Harbor

East Bay Bike Path (WIDTH VARIES - PUBLIC WAY)

Thames Street

Hope Street

Hope Street (Route 114) (WIDTH VARIES - PUBLIC WAY)

Washington Street

Silver Creek

LIMIT OF WORK STA: 1+93
R.I. FAP No. BHO-0153(002)
R.I. CONTRACT No. 2017-CB-053
N216320.1086
E388533.7313

LIMIT OF WORK STA: 5+75
R.I. FAP No. BHO-0153(002)
R.I. CONTRACT No. 2017-CB-053
N216701.8548
E388546.1010

LIMIT OF 200' CONTIGUOUS AREA (ENTIRE WORK AREA NORTH OF BRIDGE IS LOCATED WITHIN THE 200' CONTIGUOUS AREA)

INSTALL 12" DR 11 BUTT-FUSED HDPE SEWER MAIN INSIDE A 20" CARRIER PIPE BENEATH SILVER CREEK VIA PIPE RAMMING OR EQUIVALENT TRENCHLESS TECHNOLOGY APPROVED BY THE ENGINEER. CARRIER PIPE SHALL HAVE AT LEAST ONE (1) FT OF COVER TO THE BOTTOM OF THE CHANNEL.

83'-12" DR 11 HDPE S=0.004 FT/FT

(GAS) DP — CAP ABANDONED GAS PIPE IN PLACE (SEE NOTE 10)

CONTROL OF WATER

TEMPORARY RECEIVING PIT FOR PIPE RAMMING OR EQUIVALENT TRENCHLESS UTILITY INSTALLATION TECHNOLOGY APPROVED BY THE ENGINEER.

(TELEPHONE) DMH

REMOVE AND DISPOSE ABANDONED TELEPHONE DUCT BANK

(3) 4" SCH 40 PVC TELEPHONE CONDUITS ENCASED IN CONCRETE

CONTROL OF WATER

DP

DCB DFG DFC — REMOVE AND RESET INLET STONE (SEE NOTE 1)

REFER TO INSET 'A'

INSTALL 18" DIA. INLINE TIDE CHECK VALVE INSIDE NEW 18" RCP

15'-18" RCP S=0.0100 FT/FT

(2) 4" SCH 40 PVC TELEPHONE CONDUITS ENCASED IN CONCRETE (BY OTHERS)

TRANSITION FROM 12" CI TO 8" HDPE BYPASS PIPIPING (TYP.)

174'-10" SDR 35 PVC S=0.021 FT/FT

1" COPPER WATER SERVICE REPLACEMENT INCLUDING CURB STOP (SEE "DETAILS-1")

LIMIT OF DISTURBANCE

20'-10" SDR 35 PVC S=0.002 FT/FT

DMH (SEWER)

CONNECT 10" SEWER TO 10" SDR 35 PVC PIPE WITH 10" FERNCO STRONG BACK COUPLING

TMH-1
STA: 2+50, OFF: 3'L
RIM: 5.66
TMH (BY OTHERS)
AT (BY CONTRACTOR PRIOR TO FINAL PAVING)

TMH-2
STA: 3+45, OFF: 3'L
RIM: 6.13
TMH (BY OTHERS)
AT (BY CONTRACTOR PRIOR TO FINAL PAVING)

CB-1
STA: 3+33, -21'LT
RIM: MEET SIDEWALK GRADE
INV IN (N): 1.86 (12" RCP)
INV OUT (SW): 1.76 (18" RCP)
3.4.1 6.1.0 6.3.2 TEP ISCD
(SEE NOTE 5 AND 8)

SMH-1
STA: 2+14, 2'RT
RIM: 5.30
INV IN (N): -3.10 (10" PVC)
INV OUT (S): -3.20 (10" PVC)
(SEE "DETAILS-1")

SMH-2
STA: 2+55, OFF: 10'
RIM: 5.58
INV IN (N): -2.85 (12" DR 11 HDPE)
INV OUT (S): -2.95 (10" PVC)
(SEE "DETAILS-1")

SMH-3
STA: 3+42, OFF: 10'
RIM: 5.95
INV IN (N): -2.42 (10" SDR 35 PVC)
INV OUT (S): -2.52 (12" DR 11 HDPE)
(SEE "DETAILS-1")

SMH-4
STA: 5+20, OFF: 0'
RIM: 5.28
INV IN (N): 1.45 (10" SDR 35 PVC)
INV OUT (S): 1.35 (10" SDR 35 PVC)
(SEE "DETAILS-1")

CFS R&R — TIDE CHECK VALE (SEE NOTE 7)

CFP

ISCD CCB

AS SMH-1 — 5'-10" PVC S=0.050 FT/FT

CONNECT 10" SEWER TO 10" SDR 35 PVC PIPE WITH 10" FERNCO STRONG BACK COUPLING

(SEWER) DP

37'-10" PVC S=0.004 FT/FT

(TYP) FDS

DFP TP

SOLID SLEEVE COUPLING TO CONNECT 12" WATER MAIN TO EXISTING 12" CI WATER MAIN

12" GATE VALVE

AG 1

CONNECT 10" PVC SEWER TO EXISTING MANHOLE INV IN (N): -3.5

12" CLASS 52 ZINC COATED, V-BIO WRAPPED DI PIPE

12" HDPE MJ ADAPTER

12" HDPE WALL ANCHOR

4" BURIED GAS BY-PASS (PLASTIC). FINAL LOCATION TO BE COORDINATED WITH NATIONAL GRID AND RIDOT 1

CAP ACTIVE GAS PIPE IN PLACE (BY OTHERS) (SEE NOTE 10,TYP)

(2) 4" SCH 40 PVC TELEPHONE CONDUITS ENCASED IN CONCRETE (BY OTHERS)

(GAS) DP — CAP ABANDONED GAS PIPE IN PLACE ALL IN ACCORDANCE WITH NATIONAL GRID ABANDONMENT POLICY (TYP)

4" GAS BYPASS (STEEL). FINAL LOCATION TO BE COORDINATED WITH NATIONAL GRID AND RIDOT. 1

INSTALL 2" STEEL GAS CASING VENT (3') TO BACK OF GUARDRAIL BETWEEN GUARDRAIL POST IN ACCORDANCE WITH STD DWG MAIN-6100

(SEWER) DMH — DURING BRIDGE REPLACEMENT PHASE

DP — INSTALL 8" PLASTIC GAS MAIN INSIDE 10" STEEL CARRIER PIPE 1

TEMPORARY ENTRY PIT FOR PIPE RAMMING OR EQUIVALENT TRENCHLESS UTILITY INSTALLATION TECHNOLOGY APPROVED BY THE ENGINEER. CONTRACTOR SHALL DESIGN ENTRY PIT.

DMH (TELEPHONE)

DMH (SEWER) — DURING BRIDGE REPLACEMENT PHASE

INSTALL 24" DIA. INLINE TIDE CHECK VALVE INSIDE EXISTING 24" RCP

INSTALL 12" DR 11 BUTT-FUSED HDPE WATER MAIN INSIDE A 20" CARRIER PIPE BENEATH SILVER CREEK VIA PIPE RAMMING OR EQUIVALENT TRENCHLESS TECHNOLOGY APPROVED BY THE ENGINEER. CARRIER PIPE SHALL HAVE AT LEAST ONE (1) FT OF COVER TO THE BOTTOM OF THE CHANNEL. 1

8" INSULATED HDPE WATER BYPASS (FINAL LOCATION TO BE COORDINATED WITH BCWA AND RIDOT). BYPASS TO BE IN PLACE AND ONLINE PRIOR TO SEWER MAIN INSTALLATION. ALL BYPASS VALVES SHALL BE BURIED. 1

AG

CUT AND CAP 12" CI WATER MAIN (TYP)

12" HDPE WALL ANCHOR

12" HDPE MJ ADAPTER

4" BURIED GAS BY-PASS (PLASTIC). FINAL LOCATION TO BE COORDINATED WITH NATIONAL GRID AND RIDOT 1

AW

12" CLASS 52 ZINC COATED, V-BIO WRAPPED DI PIPE

SOLID SLEEVE COUPLING TO CONNECT 12" WATER MAIN TO EXISTING 12" CI WATER MAIN

12" GATE VALVE

LOCATION OF SEWER LATERAL IS APPROXIMATE AND BASED ON AS-BUILT DRAWINGS. WYE ON SEWER LINE IS APPROXIMATELY STA: 5+10. CONTRACTOR SHALL MAINTAIN SEWER SERVICE FOR SIP'N DIP DONUTS RESTAURANT THROUGHOUT CONSTRUCTION.

Scale: 1"=20'
0 10' 20' 40'

INSET 'A'
SCALE: 1"=5'

RRP (SEE NOTE 3)

(SEE NOTE 9)

CONTROL OF WATER

ADDENDUM No.1

REVISIONS		
NO.	DATE	BY
1	5/17/19	ETS

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

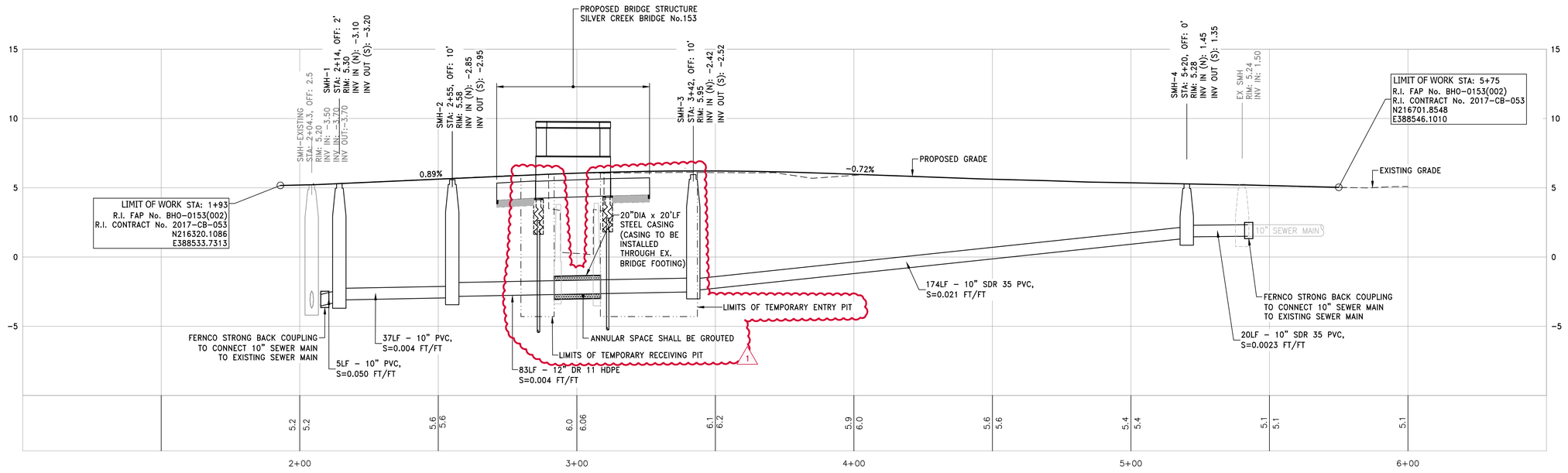
DRAINAGE AND UTILITY PLAN

CHECKED BY _____ DATE _____ SCALE 1"=20'

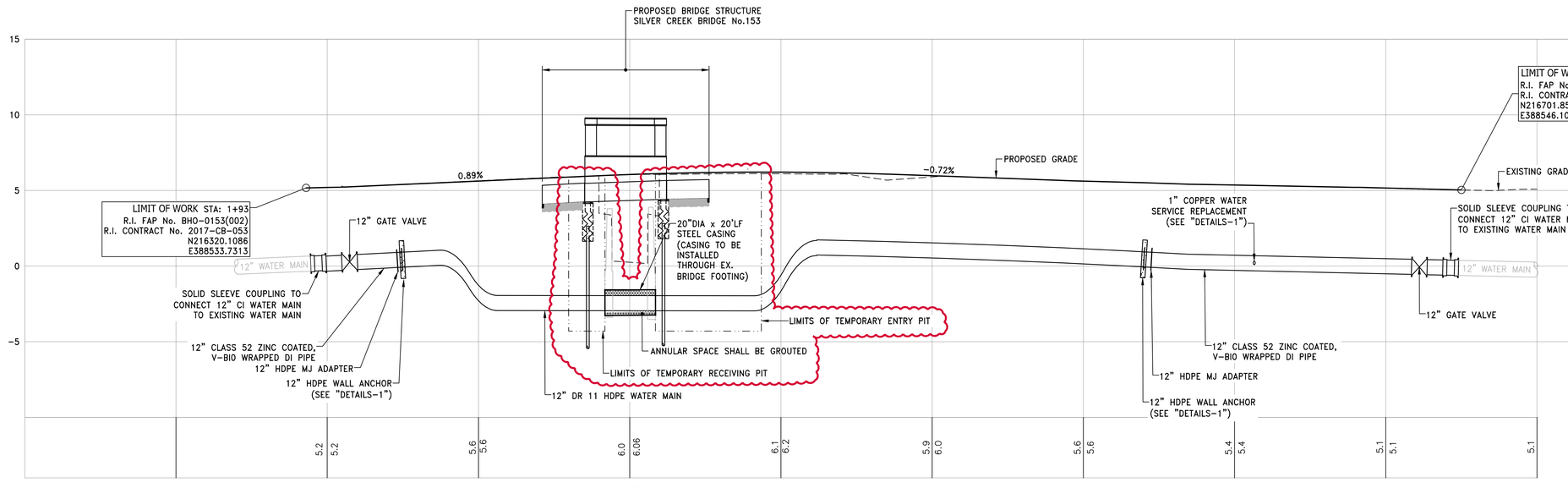
PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	11	41

R-1



SEWER MAIN PROFILE



WATER MAIN PROFILE

NOTE:

SEE "EXISTING CONCRETE FOOTING REMOVAL LIMITS" DETAIL ON "MISCELLANEOUS DETAILS" SHEET FOR LIMITS OF THE FOOTING REMOVAL FOR PLACEMENT OF CASINGS.

1

Scale: 1"=20' Horizontal
0 10' 20' 40'
0 2' 4' 8'
Scale: 1"=4' Vertical

ADDENDUM No.1

REVISIONS		
NO.	DATE	BY
1	5/17/19	ETS

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401-334-4100

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

SEWER MAIN AND WATER MAIN PROFILES

CHECKED BY _____ DATE _____ SCALE AS NOTED

1000E_V1_011_PROFILE002

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	22	41

PROPOSED TELECOMMUNICATIONS REPLACEMENT (SEE "DRAINAGE AND UTILITY PLAN")

℄ BRG. (EXP.) SOUTH ABUTMENT STA. 2+86.15

℄ BRG. (EXP.) NORTH ABUTMENT STA. 3+11.15

PROPOSED CONCRETE LIMIT OF SIDEWALK AND CURB (TYP.) (TO MATCH EXISTING)

REBUILD EXISTING STONE WALLS AT APPROACHES (TYP.)

PROPOSED RELOCATED CATCH BASIN AND DRAIN PIPE (SEE "DRAINAGE AND UTILITY PLAN")

PROPOSED CONCRETE LIMIT OF SIDEWALK AND CURB (TYP.) (TO MATCH EXISTING)

LIMIT OF FULL DEPTH CONCTRUCTION

6'-6" SIDEWALK

B17-2

FACE OF NORTH PILE CAP (BELOW)

FACE OF SOUTH PILE CAP (BELOW)

GRANITE CURB (TYP)

B17-1

FACE OF GRANITE CURB

PROPOSED TELECOMMUNICATIONS MANHOLE

ABANDONED GAS MAIN

HOPE STREET (ROUTE 114)

LIMIT OF WORK
R.I. FAP NO. BHO-0153(002)
R.I. CONTRACT NO. 2017-CB-053
STA: 1+93

BASELINE OF CONSTRUCTION & P.G.L.

W.P.#1 STA. 2+86.15

CURB TO CURB 37'-8"

WP #2 STA. 3+11.15

REMOVE AND DISPOSE TELECOMMUNICATION DUCTS BETWEEN PROPOSED TELECOMMUNICATION MANHOLES

PROPOSED SEWER MAIN REPLACEMENT (SEE "DRAINAGE AND UTILITY PLAN")

APPROACH SLAB 14'-0"

SAW AND SEAL JOINT (TYP.)

12'-0" EXISTING CONC FRAME PORTION TO REMAIN

APPROACH SLAB 14'-0"

PROPOSED TELECOMMUNICATIONS REPLACEMENT (SEE "DRAINAGE AND UTILITY PLAN")

10" STEEL CASING PIPE

TEST MICROPILE

FACE OF GRANITE CURB

ABANDONED GAS MAIN

TEST MICROPILE

CUT AND MATCH

PROPOSED STEEL BACKED TIMBER GUARDRAIL (TYP.)(HIGHWAY ITEM)

REMOVE AND DISPOSE PORTION OF EXISTING GAS MAIN

6'-6" SIDEWALK

1'-8" CONCRETE PARAPET (TYP.)

CUT AND CAP GAS MAIN (TYP.)

PROPOSED RELOCATION OF WATER MAIN (SEE "DRAINAGE AND UTILITY PLAN")

PROPOSED CONCRETE LIMIT OF SIDEWALK AND CURB (TYP.) (TO MATCH EXISTING)

PROPOSED MODIFIED ENDPOST

PROPOSED MICROPILE (TYP.)

PROPOSED RELOCATED GAS MAIN (SEE "DRAINAGE AND UTILITY PLAN")

EBB

SILVER CREEK

FLOW

EXISTING GAS MAIN (SEE "DRAINAGE AND UTILITY PLAN")

WORKING POINT COORDINATES		
W.P. #1	N 216413.2085	E 388536.7480
W.P. #2	N 216438.1951	E 388537.5577

REVISIONS		
NO.	DATE	BY
1	5/3/19	ETS

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

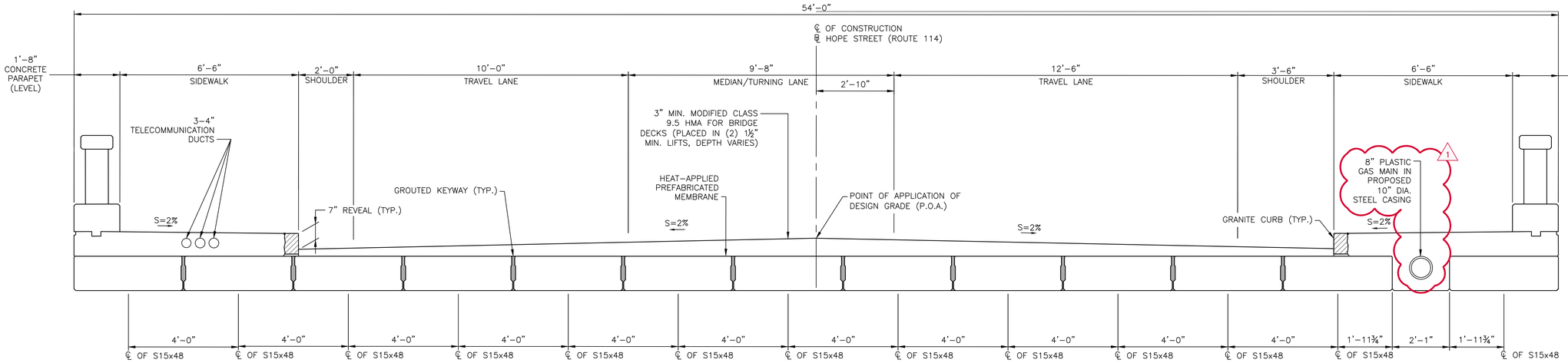
BRIDGE GENERAL PLAN

CHECKED BY _____ DATE _____ SCALE 1"= 1'-0"

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

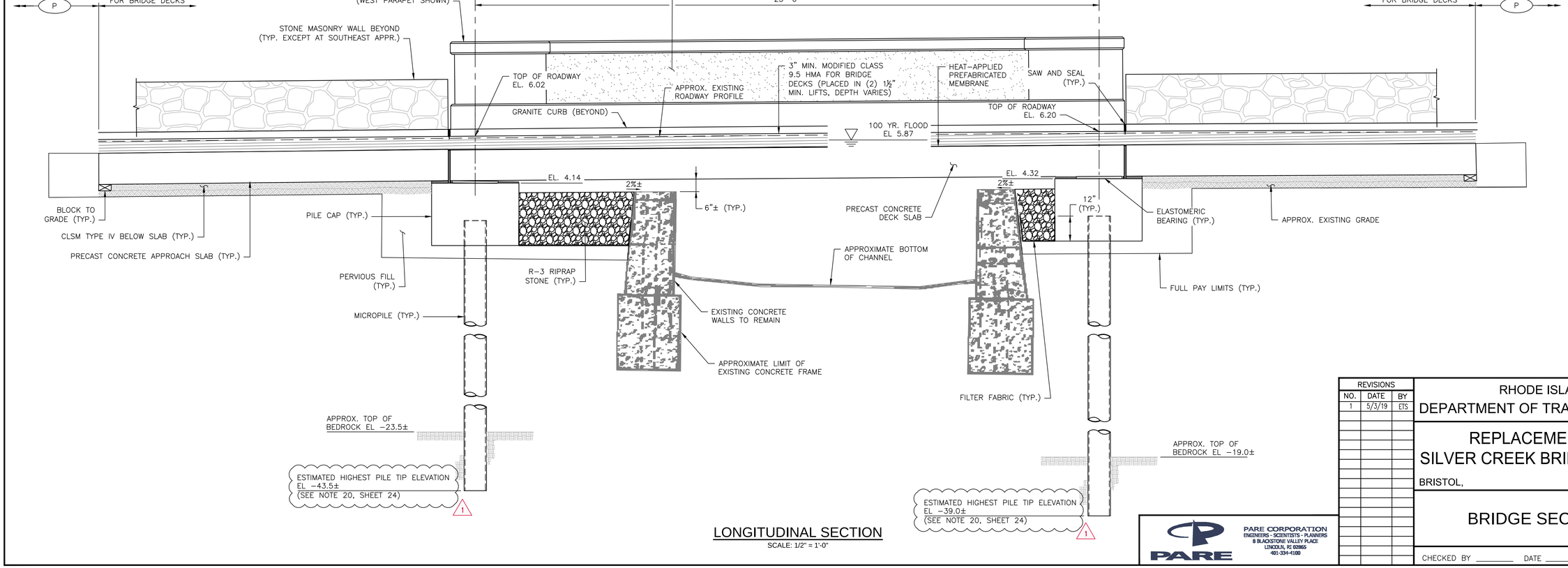
1000E_V1_022_BGENERAL

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	23	41



TRANSVERSE SECTION

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



LONGITUDINAL SECTION

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

REVISIONS		
NO.	DATE	BY
1	5/3/19	ETS

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

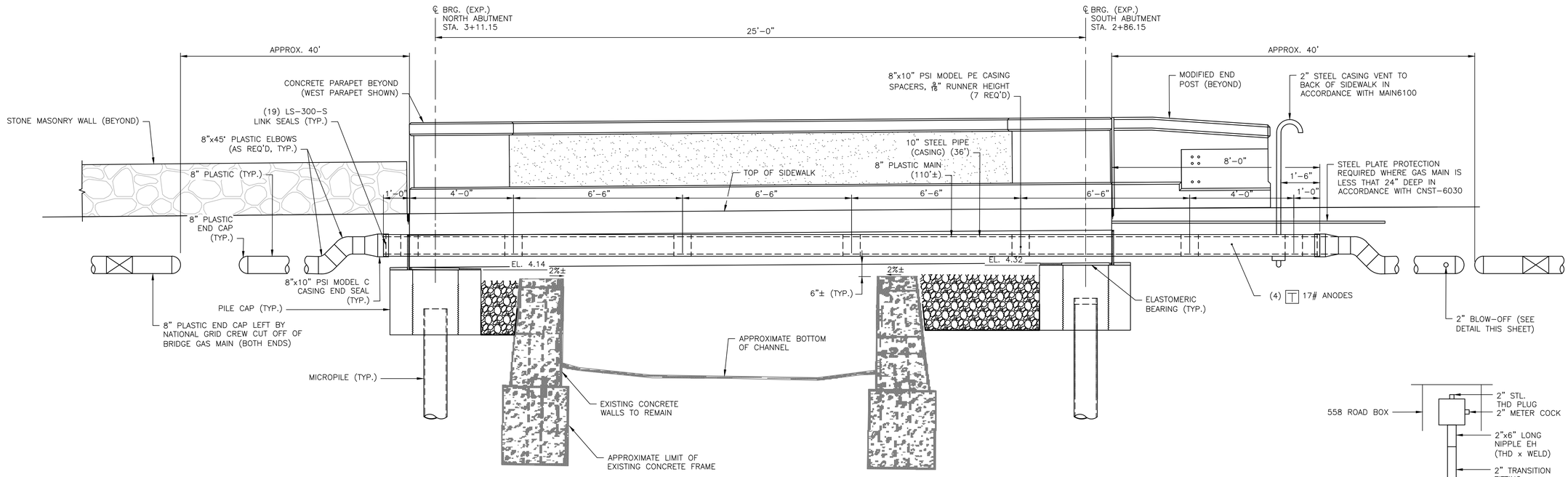
BRIDGE SECTIONS

CHECKED BY _____ DATE _____ SCALE _____

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

1000E_V1_023_BTYPICAL

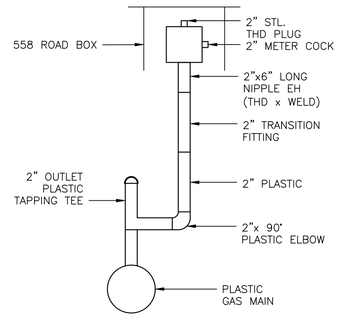
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	23A	41



BRIDGE GAS MAIN INSTALL DETAIL

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

NOTE: SECTION SHOWN FACING EAST.



BLOW-OFF DETAIL

SCALE: 1" = 1'-0"

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

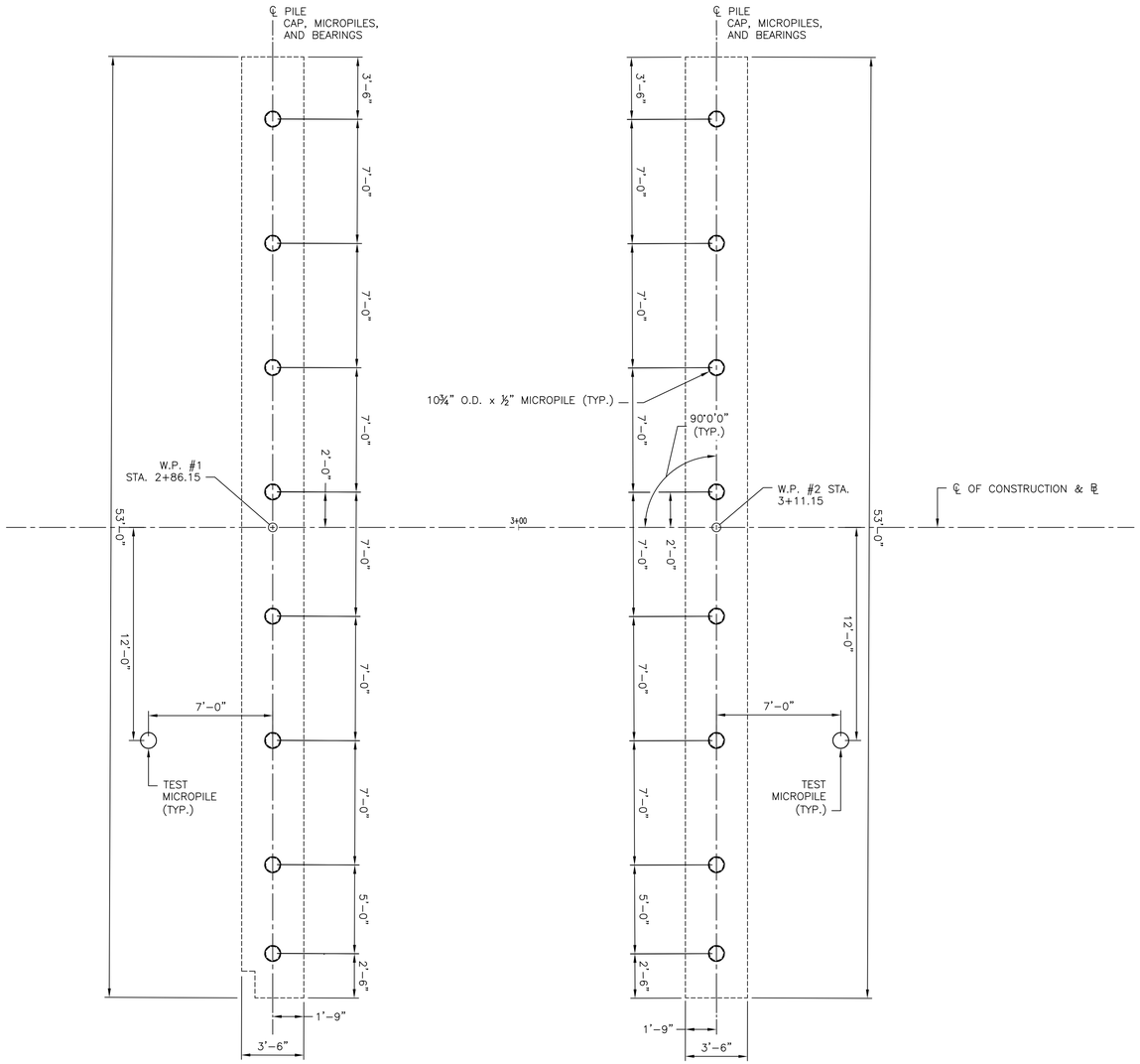
BRIDGE GAS MAIN INSTALLATION DETAIL

CHECKED BY _____ DATE _____ SCALE _____

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

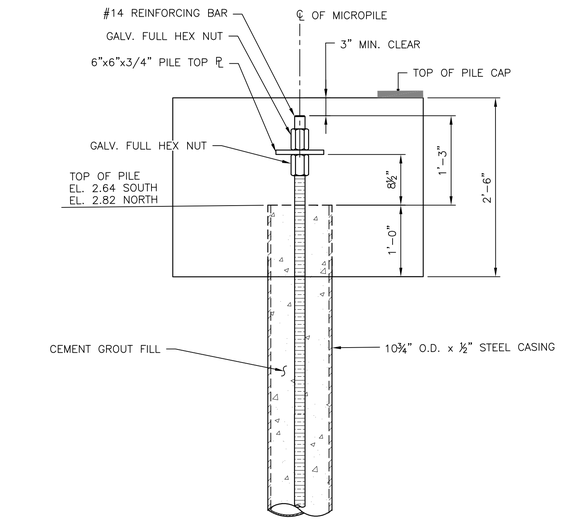
1000E_V1_023A_GAS MAIN RELOCATION

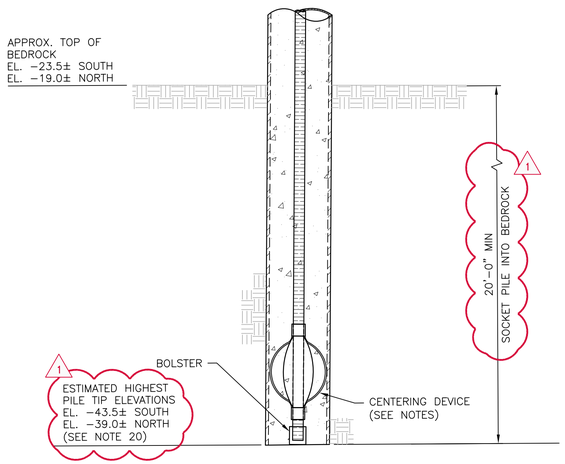
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	24	41



FOUNDATION LOCATION PLAN

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





ELEVATION

MICROPILE DETAIL

SCALE: 1" = 1'-0"

PILE NOTES:

1. THE CONTRACTOR SHALL BE AWARE OF THE PRESENCE OF OVERHEAD UTILITIES WITHIN THE WORK ZONE AND SHALL SELECT INSTALLATION EQUIPMENT ACCORDINGLY. NO ADDITIONAL PAYMENT WILL BE MADE FOR LOW-CLEARANCE EQUIPMENT.
2. THE CONTRACTOR SHALL SUBMIT A PILE SCHEDULE AND A PILE INSTALLATION AND TESTING PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER.
3. STEEL CASINGS SHALL BE ASTM 252, GRADE 3 OR BETTER.
4. CEMENT GROUT SHALL BE A NEAT MIX OF PORTLAND CEMENT (TYPE I OR TYPE II) CONFORMING TO THE REQUIREMENTS OF AASHTO DESIGNATION M85 (ASTM DESIGNATION C150) WITH A WATER-CEMENT RATIO OF 0.45 AND A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.
5. THE QUALITY OF THE GROUT SHALL BE MONITORED BY COLLECTING GROUT CUBES FOR LATER COMPRESSION TESTING AND BY MEASURING THE SPECIFIC GRAVITY OF THE GROUT FROM ONE BATCH PER DAY. COMPRESSION TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO DESIGNATION T106 (ASTM DESIGNATION C109).
6. STEEL PILE TOP PLATES SHALL CONFROM TO THE REQUIREMENTS OF AASHTO M270 (ASTM A709) GRADE 50. PLATES SHALL BE FABRICATED WITH 2" HOLES AT THEIR CENTERS FOR #14 REINFORCING BARS.
7. ALL REINFORCING BARS SHALL BE GALVANIZED AND CONFORM TO THE REQUIREMENTS OF AASHTO M31 (ASTM A615) GRADE 60 OR 75, OR AASHTO M275 (ASTM A702) GRADE 50.
8. ALL REINFORCING BAR HARDWARE SHALL BE GALVANIZED AND CONFORM TO THE REQUIREMENTS OF AASHTO DESIGNATION M232 (ASTM DESIGNATION A153).
9. WELDING OF THE REINFORCING BARS SHALL NOT BE PERMITTED.
10. BAR TENDON COUPLERS, IF NECESSARY, SHALL DEVELOP THE ULTIMATE TENSILE STRENGTH OF THE BARS WITHOUT ANY EVIDENCE OF FAILURE.
11. CENTERING DEVICES SHALL BE CONSTRUCTED OF AN APPROVED NON-METALLIC DURABLE MATERIAL.
12. THE NON-METALLIC CENTRALIZERS SHALL BE OF ADEQUATE SIZE TO ENSURE THE STEEL REINFORCING BAR WILL BE CENTERED IN THE STEEL CASING.
13. CENTERING DEVICES SHALL BE PLACED WITHIN 3 FEET OF THE TOP AND BOTTOM OF THE PLACED REBAR AND EVERY 10 FEET THEREAFTER.
14. THE TOPS-OF-PILES SHALL HAVE A HORIZONTAL TOLERANCE OF ±3" FROM THE EXACT LOCATIONS SHOWN ON THE PLANS IN ANY DIRECTION.
15. DETERMINATION OF THE MICROPILE RESISTANCE, MICROPILE INSTALLATION CRITERIA, AND MICROPILE INTEGRITY SHALL BE PERFORMED AS FOLLOWS:

    MICROPILE VERIFICATION LOAD TEST: ONE AT NORTH ABUTMENT
    MICROPILE PROOF LOAD TEST: ONE AT SOUTH ABUTMENT

    THE LOCATION OF THE TEST PILES CAN BE MOVED PENDING ENGINEER APPROVAL.
16. PILE SHALL BE PLUMB WITHIN 2 PERCENT OF TOTAL LENGTH PLAN ALIGNMENT.
17. TOP ELEVATION OF PILE SHALL BE PLUS 1" OR MINUS 2" MAXIMUM FROM VERTICAL ELEVATION INDICATED.
18. CENTERLINE OF REINFORCING STEEL SHALL NOT BE MORE THAN ¾" FROM INDICATED LOCATION.
19. ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.
20. THE ESTIMATED HIGHEST PILE TIP ELEVATIONS (MINIMUMS MICROPILE LENGTHS) INDICATED ON THE MICROPILE DETAIL ARE PROVIDED FOR ESTIMATING PURPOSES ONLY.

MICROPILE INSTALLATION PROCEDURE NOTES:

1. SEE SECTION 6 OF THE CONTRACT SPECIFIC PAGES OF THE CONTRACT BOOK FOR SEQUENCE OF MICROPILE INSTALLATION.
2. PRIOR TO REOPENING THE ROADWAY TO TRAFFIC, EACH MICROPILE SHALL BE TERMINATED A MINIMUM OF 6 INCHES BELOW THE TOP OF PAVEMENT, AND THE AREA OVER THE PILE SHALL BE BACKFILLED WITH GRAVEL BORROW AND PATCHED WITH A MINIMUM OF 4 INCHES OF ASPHALT COLD PATCH.

REVISIONS		
NO.	DATE	BY
1	5/24/19	ETS

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

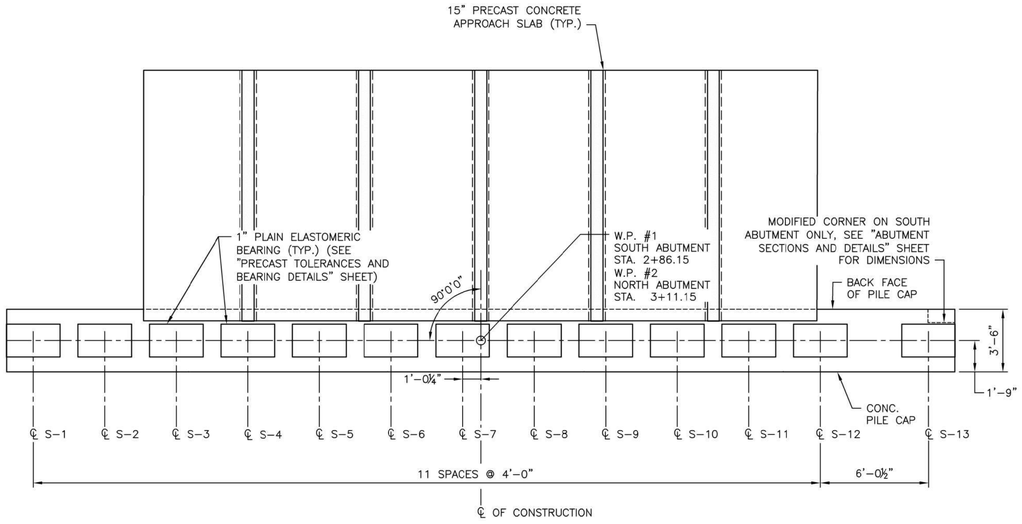
PILE LAYOUT PLAN AND DETAILS

CHECKED BY _____ DATE _____ SCALE _____

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

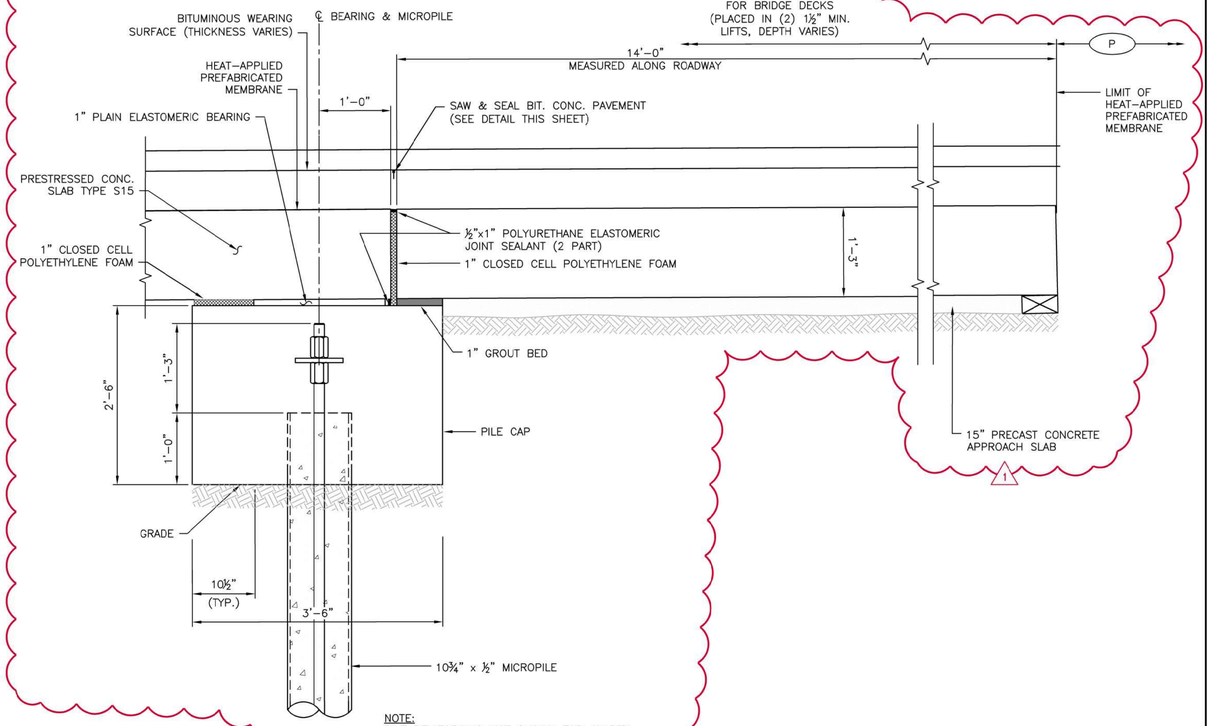
1000E_V1_024_PILEDET

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	25	41



PLAN AT BEAM SEATS

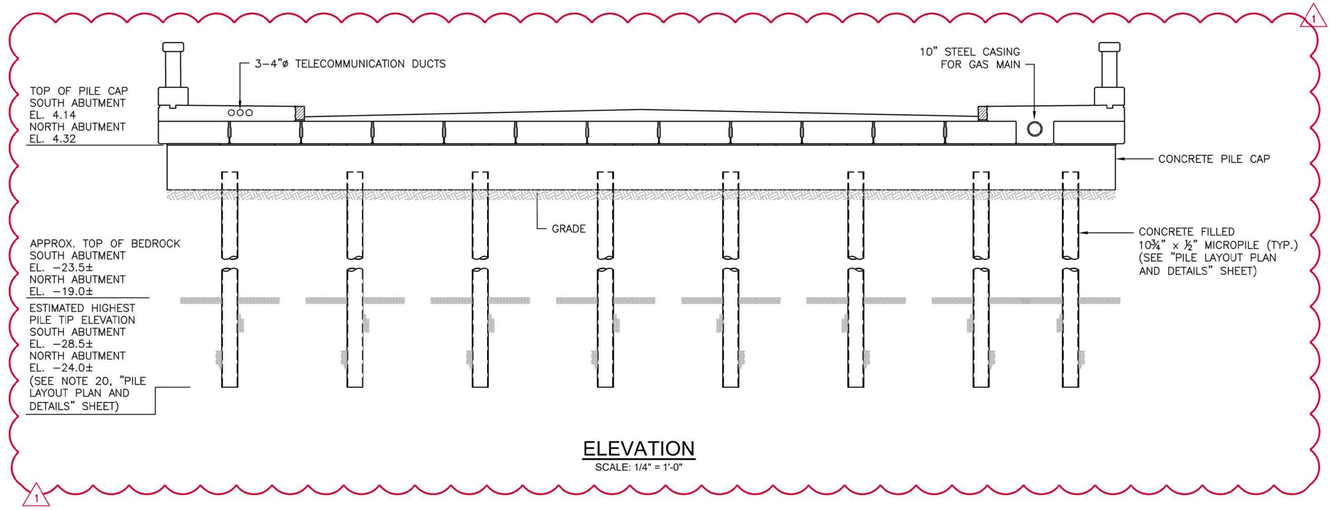
SCALE: 1/4" = 1'-0"



NOTE:
PILE REINFORCING NOT SHOWN FOR CLARITY.

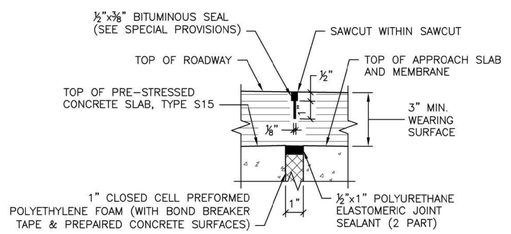
SECTION THRU ABUTMENT

SCALE: 1" = 1'-0"



ELEVATION

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



SAW AND SEAL DETAIL

SCALE: 3" = 1'-0"

REVISIONS		
NO.	DATE	BY
1	5/3/19	ETS

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

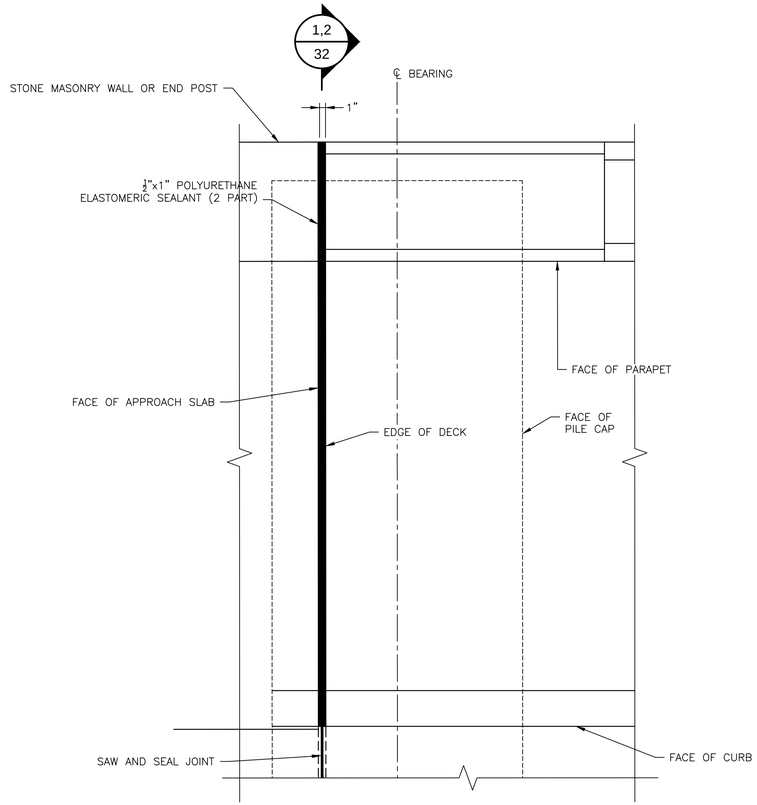
TYPICAL ABUTMENT PLAN, ELEVATION, AND SECTION

CHECKED BY _____ DATE _____ SCALE AS NOTED

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

1000E_V1_025_ABUTPLAN

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	32	41

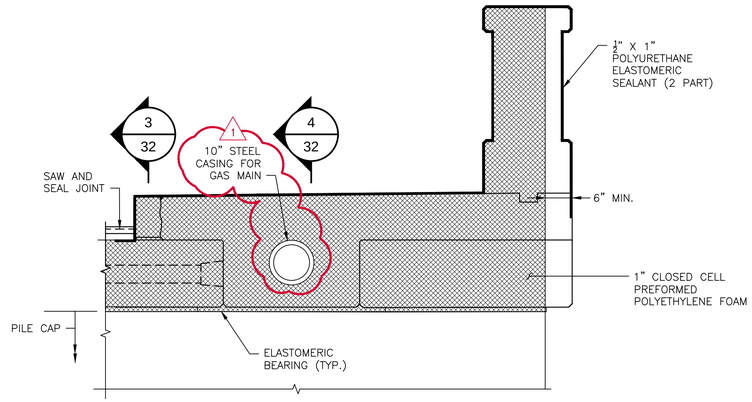


TYPICAL BRIDGE JOINT AT SIDEWALK

SCALE: 1" = 1'-0"

NOTE:

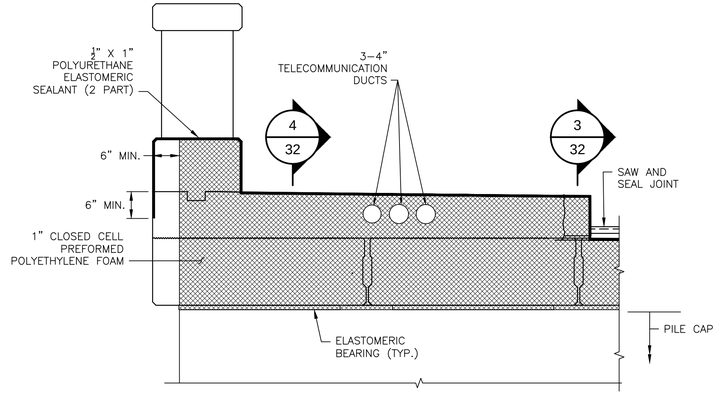
1. JOINT AT PARAPET SHOWN, JOINT AT ENDPOST SIMILAR.



JOINT AT END POST FACING UP STATION

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

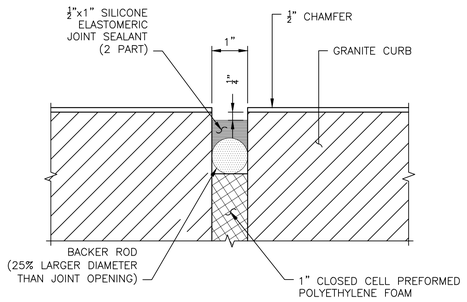
1
32



JOINT AT SIDEWALK FACING UP STATION

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

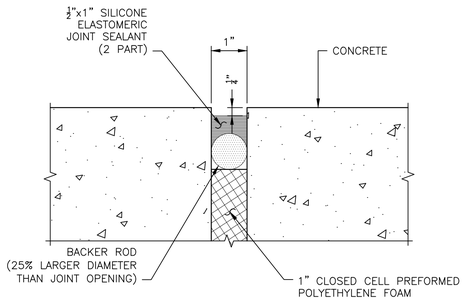
2
32



SECTION

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

3
32



SECTION

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

4
32

REVISIONS		
NO.	DATE	BY
1	5/3/19	ETS

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

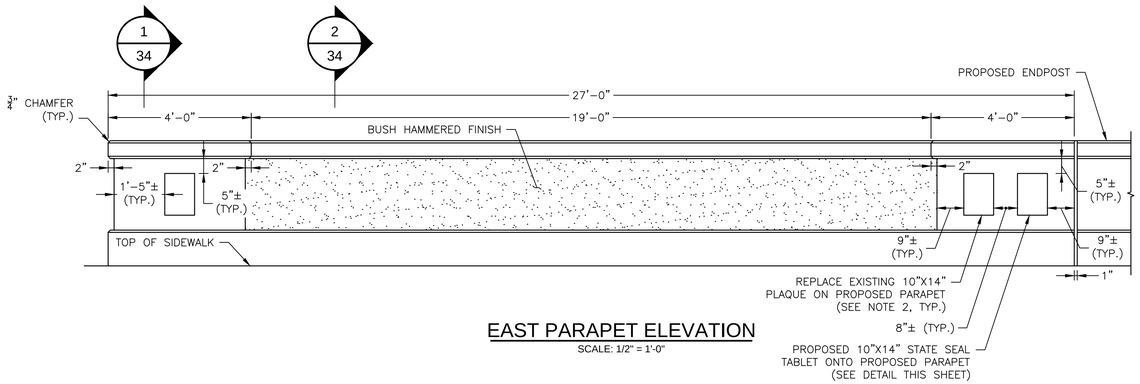
SIDEWALK JOINTS AT ABUTMENTS

CHECKED BY _____ DATE _____ SCALE _____

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

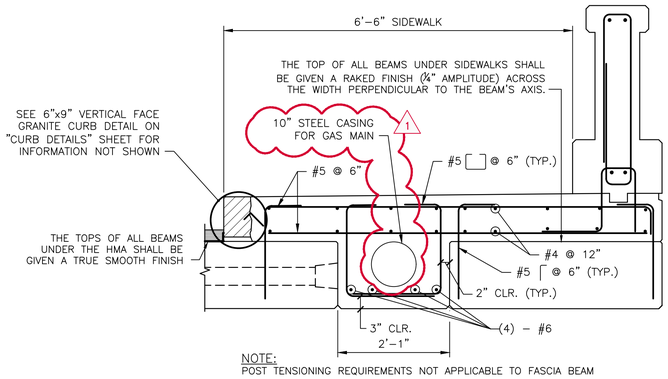
1000E_V1_032_JNTDETL

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	34	41



EAST PARAPET ELEVATION

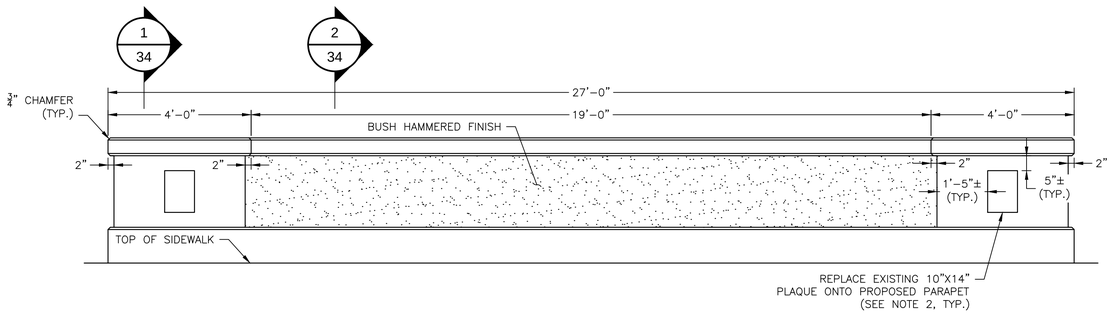
SCALE: 1/2" = 1'-0"



NOTE:
POST TENSIONING REQUIREMENTS NOT APPLICABLE TO FASCIA BEAM

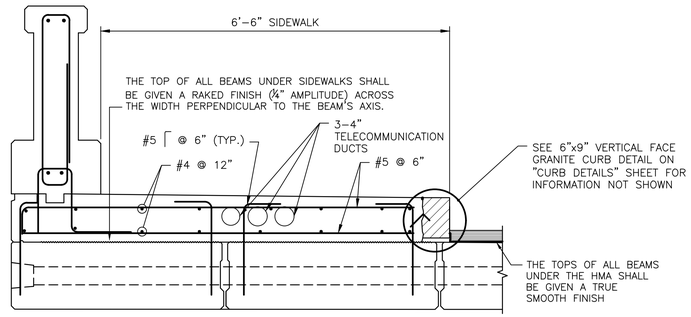
EAST SIDEWALK OVERHANG

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



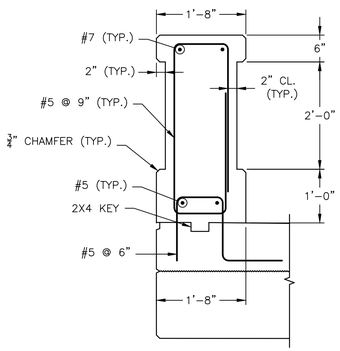
WEST PARAPET ELEVATION

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



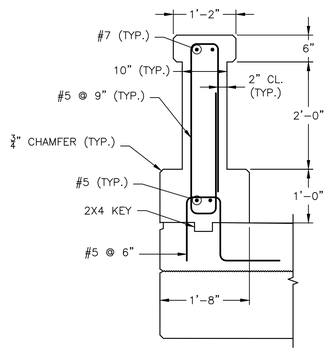
WEST SIDEWALK OVERHANG

3/4" = 1'-0"



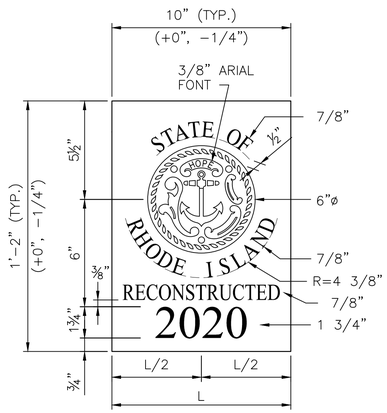
SECTION 1/34

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



SECTION 2/34

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



NOTE:
ALL FONT STYLES ARE TO BE TIMES NEW ROMAN, UNLESS NOTED OTHERWISE.

STATE SEAL TABLET

SCALE: 3" = 1'-0"

NOTES:

1. THE CONTRACTOR SHALL CONSTRUCT PARAPETS TO MATCH EXISTING, AND SHALL FIELD VERIFY DIMENSIONS.
2. THE CONTRACTOR SHALL REMOVE EXISTING PLAQUES USING HAND TOOLS ONLY TO LIMIT DAMAGE TO THE PLAQUES. IF THE ENGINEER DEEMS THE PLAQUES UNFIT FOR REUSE THE CONTRACTOR SHALL FURNISH A REPLICA OF THE PLAQUE AT THEIR OWN EXPENSE.

REVISIONS		
NO.	DATE	BY
1	5/3/19	ETS

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

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

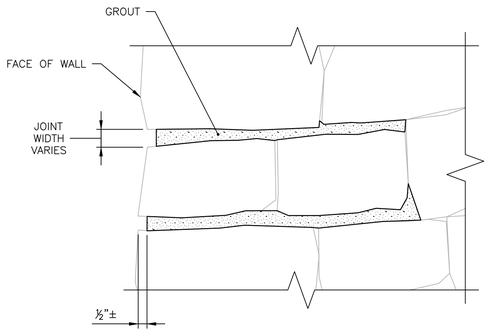
BRISTOL, RHODE ISLAND

PARAPET DETAILS

CHECKED BY _____ DATE _____ SCALE AS NOTED

1000E_V1_034_RAILDETL

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	39	41

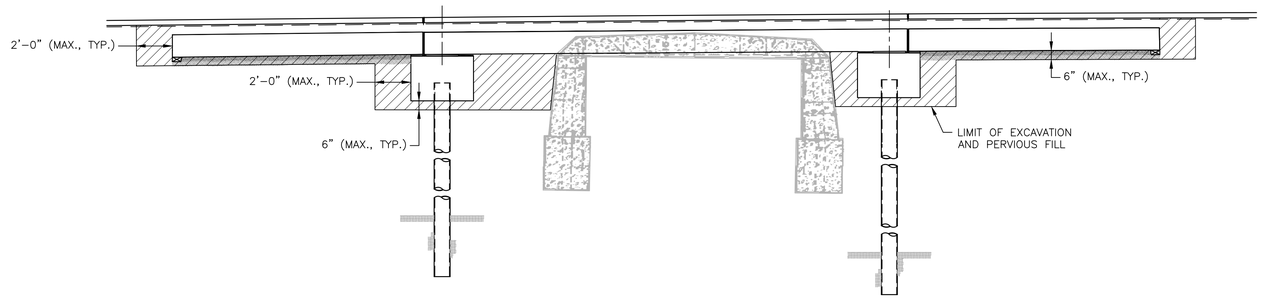


NOTES:

1. ALL EXPOSED EXISTING WALL FACES TO BE REBUILT SHALL BE GROUTED AS SHOWN IN THE DETAIL ON THIS SHEET AND AS DESCRIBED IN THE SPECIAL PROVISIONS TO CLOSELY MATCH EXISTING.
2. NO GROUT MATERIAL SHALL REMAIN ON THE SURFACE OF THE STONE OUTSIDE THE LIMITS OF THE ½" SETBACK AS SHOWN IN THE DETAIL. ANY GROUT MATERIAL REMAINING AT THE COMPLETION OF THE WORK SHALL BE REMOVED AT NO ADDITIONAL COST TO THE STATE.

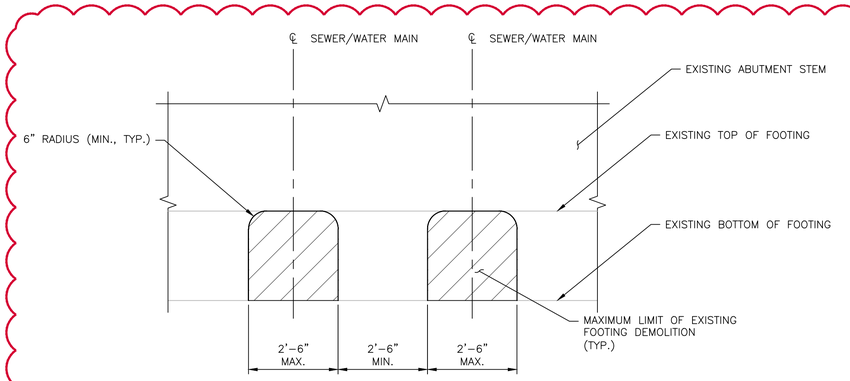
STONE MASONRY WALL GROUTING DETAIL

NOT TO SCALE



EXCAVATION AND FILL PAY LIMITS AT BRIDGE

NOT TO SCALE



EXISTING CONCRETE FOOTING REMOVAL LIMITS

NOT TO SCALE

1

REVISIONS		
NO.	DATE	BY
1	5/28/19	ETS

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

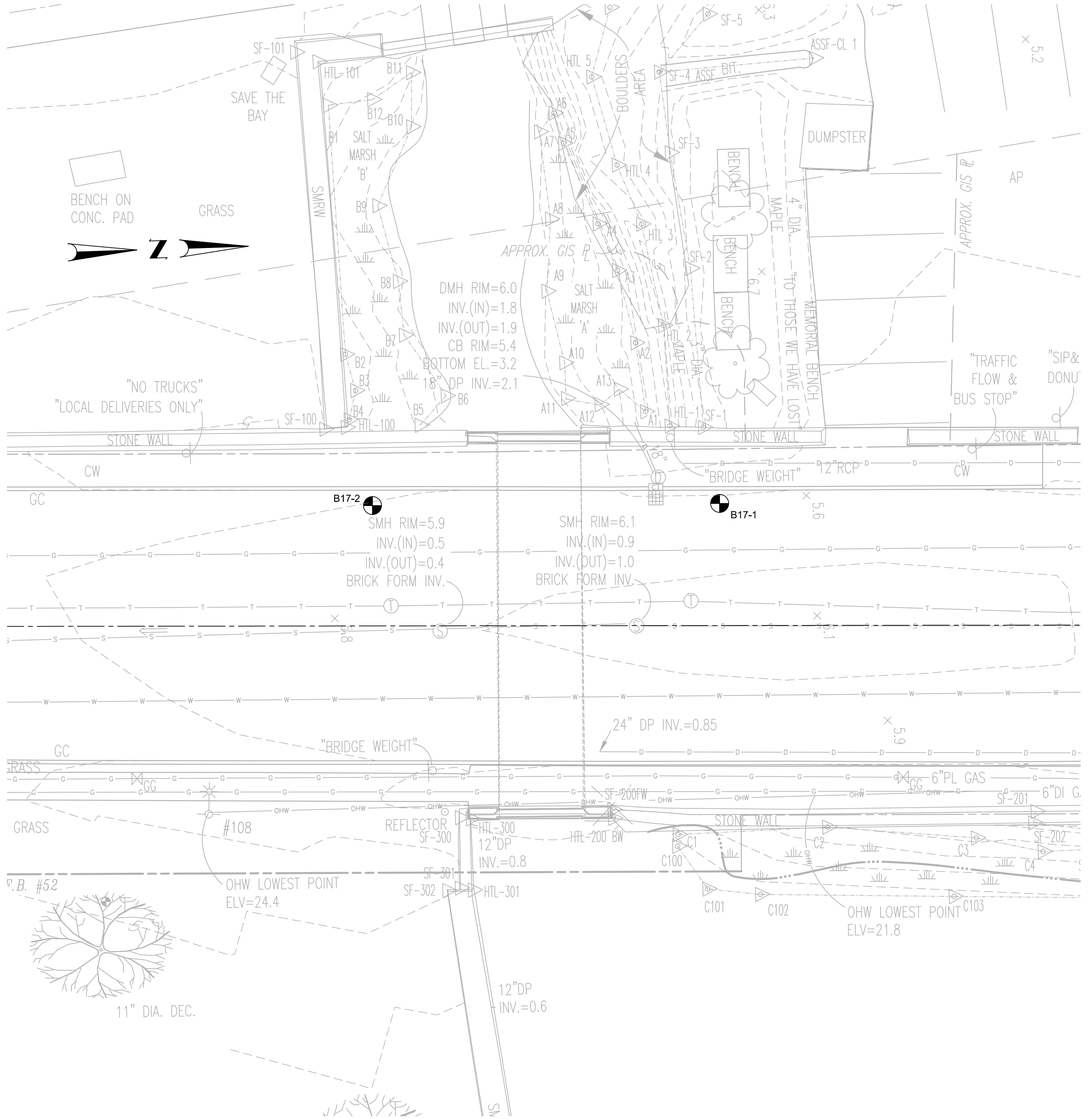
MISCELLANEOUS DETAILS

CHECKED BY _____ DATE _____ SCALE _____

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

1000E_V1_039_MISCDETL005

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	BHO-0153(002)	2019	40	41



PLAN
SCALE: 1"=10'

1

Pare Corporation
10 Lincoln Road, Suite 210
Foxboro, MA 02035
508-543-1755
508-543-1881

BORING NUMBER B17-1
PAGE 1 OF 1

CLIENT Rhode Island Department of Transportation
PROJECT NAME Silver Creek Bridge
PROJECT NUMBER 17022.01
PROJECT LOCATION Bristol, RI
DATE STARTED 06/20/17 **COMPLETED** 06/20/17
GROUND ELEVATION 6.4 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR Geologic-Earth Exploration, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Wash and Drive/NX Coring
AT TIME OF DRILLING --- --
LOGGED BY B. Dutra **CHECKED BY** SJM
AT END OF DRILLING 3.5 ft / Elev 2.9 ft
BORING LOCATION 41.6771636N, 71.2787716W

DEPTH (ft)	CASING (blr/ft)	SAMPLE TYPE NUMBER	RECOVERY (in)	DEPTH (FT)	BLOW COUNTS/6"	POCKET PEN. (tsf)	GRAPHIC LOG	SAMPLE DESCRIPTION	STRATUM DESCRIPTION
0		1	10 / 24	0 - 2	19-12-14-10 (26)			Moist, medium dense, black, fine to coarse SAND, some fine to coarse gravel, little silt, brick.	7" ASPHALT 4" BRICK
		2	10 / 24	2 - 4	14-12-9-6 (21)			Moist, medium dense, tan, fine to coarse SAND and trace brick.	
		3	4 / 24	4 - 6	6-3-7-2 (10)			Moist, loose, black, fine to coarse GRAVEL, some fine to coarse sand, little silt, trace brick.	FILL
		4	8 / 24	6 - 8	6-2-2-1 (4)			Moist, very loose, black, fine to coarse SAND, little silt, little fine to coarse gravel.	
5		5	6 / 24	8 - 10	2-7-3-3 (10)			Moist, loose, black, fine to coarse SAND, little silt, little fine gravel, "organic" odor.	
10									
15		6	6 / 24	14 - 16	3-1-2-1 (3)			Wet, soft, black, CLAY and SILT, little fine sand, wood 3-4 inches long, organic odor.	ORGANIC MARINE SILTY CLAY
		7	13 / 14	19 - 21	10-75-120/2"			Moist, very dense, gray, highly weathered SANDSTONE recovered as fine sand and trace silt.	ESTIMATED PILE TIP. EL. -24.0±
20									
25		8	4 / 4	24 - 26	120/4"			Moist, very dense, gray, highly weathered SANDSTONE recovered as fine sand and trace silt.	SANDSTONE
30		C-1	42.5 / 60	29 - 34				Greenish gray, highly weathered, very soft, slightly fractured, fine grained, SANDSTONE. REC = 79.2% RQD = 46.7%	
35								Bottom of borehole at 34.0 feet.	

GRANULAR SOILS BLOWS/FT	DENSITY	COHESIVE SOILS BLOWS/FT	DENSITY
0 - 4	V. LOOSE	<2	V. SOFT
4 -10	LOOSE	2 - 4	SOFT
10 - 30	M. DENSE	4 - 8	M. STIFF
30 - 50	DENSE	8 - 15	STIFF
>50	V. DENSE	15 - 30	V. STIFF
		>30	HARD

REMARKS:
1. Asphalt depth 7".
2. S-2: 2B Moist, medium dense, black, fine to coarse SAND, little silt, trace fine to coarse gravel.
3. S-3: 3" brick wedged in tip of spoon.
4. S-4: 2" long timber fragment recovered in sample.

BURMISTER CLASSIFICATION	
TRACE	0 -10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

Pare Corporation
10 Lincoln Road, Suite 210
Foxboro, MA 02035
508-543-1755
508-543-1881

BORING NUMBER B17-2
PAGE 1 OF 1

CLIENT Rhode Island Department of Transportation
PROJECT NAME Silver Creek Bridge
PROJECT NUMBER 17022.01
PROJECT LOCATION Bristol, RI
DATE STARTED 06/20/17 **COMPLETED** 06/21/17
GROUND ELEVATION 6.4 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR Geologic-Earth Exploration, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Wash and Drive/NX Coring
AT TIME OF DRILLING --- --
LOGGED BY B. Dutra **CHECKED BY** SJM
AT END OF DRILLING -4.00 ft / Elev 2.4 ft
BORING LOCATION 41.6770305N, 71.2787769W

DEPTH (ft)	CASING (blr/ft)	SAMPLE TYPE NUMBER	RECOVERY (in)	DEPTH (FT)	BLOW COUNTS/6"	POCKET PEN. (tsf)	GRAPHIC LOG	SAMPLE DESCRIPTION	STRATUM DESCRIPTION
0		1	6 / 12	1 - 2	17-13			Moist, medium dense, black, fine to coarse SAND, some fine gravel, little silt.	7" ASPHALT 4" BRICK
		2	14 / 24	2 - 4	17-17-13-10 (30)			Moist, medium dense, gray/black, fine to coarse SAND, little silt, trace fine to coarse gravel, brick.	
		3	6 / 24	4 - 6	17-21-20-10 (41)			Wet, dense, gray, SHALE, recovered as fine to coarse gravel, little fine to coarse sand, little silt.	FILL
		4	8 / 24	6 - 8	7-8-5-5 (13)			Wet, medium dense, black, fine to coarse SAND, some fine to coarse gravel, trace silt.	
5		5	6 / 24	8 - 10	5-3-3-3 (6)			Wet, loose, black, fine to coarse SAND, little silt, little fine to coarse gravel.	
10									
15		6	10 / 24	14 - 16	1-1-4-20 (5)			Moist, soft, CLAY and SILT, trace fine to coarse sand, "organic" odor.	ORGANIC MARINE SILTY CLAY
		7	20 / 21	19 - 20	32-50-60-120/3"			Moist, very dense, gray, completely weahtered SILTSTONE recovered as silt.	ESTIMATED PILE TIP. EL. -28.5±
20									
25		C-1	24 / 60	24 - 29				Gray, highly weathered, very soft, moderately fractured, SILTSTONE. REC = 43.3% RQD = 6.7%	SILTSTONE
30								Bottom of borehole at 29.0 feet.	
35									

GRANULAR SOILS BLOWS/FT	DENSITY	COHESIVE SOILS BLOWS/FT	DENSITY
0 - 4	V. LOOSE	<2	V. SOFT
4 -10	LOOSE	2 - 4	SOFT
10 - 30	M. DENSE	4 - 8	M. STIFF
30 - 50	DENSE	8 - 15	STIFF
>50	V. DENSE	15 - 30	V. STIFF
		>30	HARD

REMARKS:
1. S-3: Brick found at top of sample, most likely driven down from rollerbit.
2. S-6: Stone in tip. Added to jar not to be included in sieve.
3. 6B: Moist, medium stiff, gray, SILT, little fine to coarse sand.
4. C-2: Core barrel jumped at 22' and 27'.

BURMISTER CLASSIFICATION	
TRACE	0 -10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

1

REVISIONS		
NO.	DATE	BY
1	5/3/19	ETS

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF
SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

BORING LOGS

CHECKED BY _____ DATE _____ SCALE AS NOTED

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

1000E_V1_040_BORELOGS

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SPECIFICATIONS - JOB SPECIFIC

2. It is presumed that the material that the Contractor will use to backfill the former area of contaminated soil would be the same material used elsewhere at the site. Therefore, payment for the acquisition, transport, and placement of backfill at this location is covered under item 203.0800 "Gravel Borrow." No specific, separate payment item will be made for the acquisition, transport, and placement of backfill in the former area of contaminated soil.

3. After backfilling, the Contractor shall place temporary bituminous pavement, temporary bituminous sidewalk, and reset granite curb to the limits shown on the plans. Payment for the temporary pavement, temporary sidewalk, and reset curb items is covered under the respective items in the contract for each.

METHOD OF MEASUREMENT: "Sampling and Testing Contaminated Soil" will be measured by each sample and test of contaminated soil in accordance with the plans and/or as directed by the Engineer.

"Remove, Stockpile, Handle, Haul, and Dispose Contaminated Soil" shall be measured for payment by the actual cost, as approved by the Engineer for the cost of performing the work as directed by the Engineer.

BASIS OF PAYMENT: "Sampling and Testing Contaminated Soil" will be paid for at the contract unit price per each as listed in the Proposal. The price so stated shall constitute full and complete compensation for all labor, tools, materials, equipment, transportation, disposal, and other incidentals required to finish the work, complete in place and accepted by the Engineer.

"Remove, Stockpile, Handle, Haul, and Dispose Contaminated Soil" will be paid for at the actual dollar amount. The estimated dollar figure for this item of work established by Department at 150,000 units at $1.00 each and is inserted in the proposal as an authorized amount from which the payments shall be drawn.

JOB SPECIFIC

CODE 700.9906
10-INCH STEEL CASING FOR GAS MAIN

DESCRIPTION: This item includes installation of a 10-inch steel casing pipe (casing) and 2-inch steel casing vent for gas main, complete and in place including excavation, and all other related and appurtenant work. The casing and vent shall be installed to the lines and grades, and at the locations shown on the Plans. This item does not include the relocation and installation of the gas main in the casing.

All work shall be in accordance with Rhode Island Rhode Island Standard Specifications for Road and Bridge Construction, amended March 2018, with all revisions, the requirements of National Grid, and this Special Provision

MATERIALS: Materials shall be in accordance with Appendix F "National Grid Gas requirements", RIDOT Material Specification M.01.04 and the following:

A. The steel casing pipe and steel vent will be supplied by National Grid.

B. The padding-backfill material (padding sand) immediately adjacent (within 6" any direction) to main, sleeve, and services of all diameters and materials shall consist of well compacting material which is non-injurious to the pipe. Non-injurious clean material is defined as material which passes through a 1½" screen. Care should be taken to prevent injurious material from contacting the pipe. Recycled material which meets the above requirements may be used.

CONSTRUCTION METHODS: Construction shall be in accordance with Appendix F "National Grid Gas Requirements" and the following:

A. The casing shall be handled in such a manner that the casing is not damaged by dragging or rolling over sharp objects or by lifting equipment. The casing shall be carried manually or by mechanical equipment with flat forks or fabric slings. Cables and chains shall not be used.

B. The casing shall be stored on timber blocking on clean, level, dry ground. The interior of the casing shall be kept free from all dirt, joint material, and other foreign materials as the work progresses.

C. The Contractor shall repair any areas of the bridge that are damaged during installation of the casing.

D. The Contractor shall seal the ends of the casing to prevent intrusion of dirt and foreign materials until installation of the gas main by National Grid.

E. Installation of the 2-inch steel casing vent shall be in accordance with the requirements of National Grid and shall be installed at the location as shown on the plan.

F. The Contractor shall supply compressed air, inert air or any combination thereof for all required pressure testing. All pressure testing shall be in accordance with the requirements of National Grid.

METHOD OF MEASUREMENT: "10-Inch Steel Casing for Gas Main" will be measured for payment by the number of linear foot of pipe actually installed in accordance with the Plans and/or as directed by the Engineer.

BASIS OF PAYMENT: The accepted quantity of "10-Inch Steel Casing for Gas Main" will be paid for at the Contract bid price per linear foot as listed in the Proposal. The price so-stated constitutes full and complete compensation for all necessary excavation, support of excavations, dewatering, padding sand, installing new 10-inch steel casing pipe and 2-inch steel casing vent, backfilling with suitable excavated material, removing and disposing of concrete, and removing excess soil.

7. The interior of the pipeline shall be kept free from all dirt, joint material, and other foreign materials as the work progresses. Tight fitting stoppers or bulkheads shall be securely placed at the ends and any other openings of the pipe when work is stopped temporarily or at the end of the workday to prevent dirt or refuse from entering the pipe.

8. All water pipe lubricants shall be ANSI/NSF certified for potable water use.

9. Compaction of bedding and backfill material and associated testing shall be in accordance with Section 205.03.5 "Backfill and Compaction" of the RIDOT Standards. Frequency shall be at a minimum of every lift at every 50 linear foot of trench.

10. Ductile iron pipe shall be wrapped in polyethylene encasement where pipe depth is at or below groundwater level.

11. BCWA does not guarantee a tight shut-off for existing water valves. The Contractor shall not submit a claim for damages due to delays in dewatering pipes caused by water leaking through existing closed valves, or having to dewater the excavation while making a connection. It is the Contractor's responsibility to provide the means to dewater the excavation while making the connection.

PIPE REMOVAL

1. Where old pipe conflicts with new pipe, the old pipe shall be removed and disposed of properly. The old pipe shall be cut and capped or concrete filled on both ends. No fitting or pipe deflections will be allowed on new pipe to go over or under old pipe.

VALVE INSTALLATION

1. Valves shall be set in the pipelines as directed. Blocking or supports of a permanent nature shall be placed under each valve to ensure against settlement.

2. Each valve shall be tightly closed before being placed in the line and shall remain so until the joints on each side are completely tightened.

3. Valve boxes shall be set for all valves and shall be locking type. They shall be carefully fitted together and to the valve and securely held during backfilling. They shall be centered over the valve-operating nut. The bedding material around them shall be thoroughly tamped in place and the box cover set to the finished grade.

4. The interior of valves shall be thoroughly cleaned of foreign matter before being lowered into the trench and shall be kept clean during laying operation.

5. Valves shall be constructed in dry trenches and shall not be laid when the conditions of the trench or the weather are unsuitable for such work.

6. Valves shall be laid to the line and grade in such a manner as to form a close concentric joint with the adjoining pipe and to prevent sudden offsets of the flow line.

7. At times when work is not in progress, open ends of valves shall be securely closed so that no trench water, earth or other substances will enter.

8. Any valves that have been disturbed after laying shall be taken up and re-laid.

JOB SPECIFIC

CODE 701.9903
12-INCH HDPE WATER MAIN

CODE 701.9904
12-INCH HDPE SEWER MAIN

CODE 701.9905
8-INCH HDPE WATER BYPASS PIPE

DESCRIPTION: These items include the furnishing and installing high density polyethylene pipe complete and in place including pipe, fittings, connections to existing water mains, jointing and jointing materials, all testing and disinfecting, and all other related and appurtenant work. The pipe shall be installed to the lines and grades, and at the locations shown on the Drawings. The Contractor shall maintain the integrity of the channel throughout the installation of the pipe. All materials included in this section that are to come into contact with potable water shall be either NSF 61 or NSF 60 approved as applicable.

MATERIALS:

All products as specified herein shall be new, unused, and purchased specifically for this contract. All materials that shall come in contact with the potable water shall be NSF 61 certified. All fittings shall be lead free. All brass goods must have a weighted average of not more than 0.25% of lead in the wetted surface material and be "lead free" as described in 40 CFR 141.43 and the USEPA SDWA Sec. 1417. Certifications for all such materials will be required to be submitted to the Engineer with Shop Drawings.

HDPE PIPE

1. Polyethylene material used for the manufacture of polyethylene pipe and fittings shall be SDR-11 having a 200 psi pressure rating. HDPE pipe shall be manufactured of black PE materials and have ASTM D3550 Cell Classification 445474C. The material and finished product shall be listed and approved for potable water usage per NSF Standard 61. HDPE pipe shall comply with AWWA C-906 standard for PE for Water Distribution.

2. Pipe shall be ductile iron pipe size (DIPS), iron pipe size (IPS) shall not be allowed. Pipe shall be butt-fused conforming to ASTM D-3261, except where mechanical joints are specified on the Contract Drawings.

FITTINGS

1. Fittings shall be PE3408 and, where applicable, shall meet the requirements of AWWA C906. Molded fittings shall be manufactured in accordance with either ASTM D2683 (socket fused) or ASTM D3261 (butt fused) and shall be so marked.

JOINTS

1. Joints between plain ends of HDPE shall be made by butt fusion (ASTM D3261).

4. Preparation:
   a. The Contract Drawings provide the size and location of most known pipes on the main streets impacted by the construction. The Contractor shall become familiar with the existing water systems and be responsible for the adequate temporary feed of all domestic and fire service lines.

   b. The Contractor shall notify Bristol County Water Authority and the Fire Department 48 hours in advance of the time of connecting and disconnecting temporary and permanent facilities so that representatives of the water utility and Fire Department may be present at installation or removal of permanent and temporary connections and to permit the water utility to inform customers and users as the water utility deems necessary.

   c. The Contractor shall provide proper disinfection of the by-pass system in accordance with their submitted disinfection plan reviewed and approved by the Engineer and Bristol County Water Authority.

5. Installation:
   a. The Contractor shall furnish, install, maintain and later remove devices necessary to ensure public safety as required and as approved.

   b. The Contractor shall not operate Bristol County Water Authority's valves, stops, and hydrants.

   c. Temporary bypass, connections, laterals, and customer services shall not be installed across streets except as permitted and approved by the Engineer.

   d. The bypass shall be laid out of the traveled way in a manner as to protect the bypass piping from damage. Whenever possible the temporary bypass shall be laid in the gutter unless otherwise directed by the Engineer.

   e. Where bypass has received prior approval to cross streets and street intersections, it must be valved on both sides and shall be laid in a trench with temporary pavement placed over it except as permitted otherwise, in writing by the Engineer.

   f. Where the bypass crosses driveways and similar access ways to properties, suitable ramp shall be constructed of cold patch to allow driving and passing over the pipe except where the Engineer requires bypass to be laid in a trench with temporary pavement placed over it. Where bypass piping crossing driveways, handicap ramps and similar access ways would impede travel (i.e. vehicle undercarriage will come into contact with the bypass system), the contractor will bury the pipe to a minimum cover of 3 inches. In addition, any bypass pipe 6-inch or larger that crosses driveways, handicap ramps and similar access ways shall be buried to a minimum cover of 3 inches or as directed by the Engineer

   g. When water bypass will be in service between November 15 and March 31, the pipe shall be installed with polyurethane insulation with a waterproof polyethylene jacket.

SEWER BYPASS REQUIREMENTS

1. If bypass pumping is used the Contractor shall meet with following requirements:
   a. The Contractor shall furnish, install, and operate pumps, plugs, conduits, and other equipment to divert the flow of sewage around the pipeline reach in which work is to be performed. The By-Pass pumping plan shall be submitted for approval by shop drawing for approval. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum. It is the intention to install the new sewer main in dry weather, as wet weather flows may be very high.

   b. Pumping shall be done by the Contractor in such manner as will not damage public or private property or create a nuisance or health menace. The pumped sewage shall be in an enclosed hose or pipe and shall be reinserted into the sanitary sewer system. Sewage shall not be allowed to free flow in gutters, streets or over sidewalks, etc. Nor shall any sewage be allowed to flow into the storm inlets or conduits. After the work has been completed, flow shall be restored to normal.

   c. Standby pumps shall be provided.

   d. Service connection effluent may be plugged only after proper notification to the affected residence and may not remain plugged overnight.

   e. If Contractor elects to bypass sewer, the installation of the sewer main shall not begin until the Contractor has installed a sewage by-pass system and all pumping facilities have been installed and tested under full operating conditions including the bypass of mainline and side sewer flows. Once the sewer installation has begun, existing sewage flows shall be maintained, until the sewer and manhole installation is completed.

CONSTRUCTION METHODS:

PIPE INSTALLATION

12. Contractor shall verify the locations of all potentially conflicting utilities and structures as indicated on the Drawings.
13. Lay out piping as shown on the Drawings. Any deviation from the layout shown must be approved by the Engineer.
14. Pipe shall be carried manually or by mechanical equipment with flat forks or fabric slings. Cables and chains shall not be used.
15. Pipe shall be stored on a clean, level, dry ground. If the pipe must be stacked for storage, such stacking should be done in accordance with the pipe supplier's recommendations. The handling of the pipe should be done in such a manner that the pipe is not damaged by dragging over sharp objects or cut by lifting equipment.
16. Carefully inspect all pipe fittings before installation, removing all dirt. The pipe shall be installed with the markings up for visual inspection and verification.

JOB SPECIFIC

CODE 701.9908
UTILITY PIPE RAMMING

DESCRIPTION:

This work includes furnishing and installing cased tunnels by pipe ramming methods where indicated to pass other utilities or obstructions without open excavation, and installation of specified appurtenances as shown on the drawings. For the purpose of this Section, pipe ramming is defined as the trenchless installation of a pipe by pushing the pipe using a pneumatically powered driving device from a drive/launch pit to a reception pit. During the ramming process, the pipe may be unloaded using a screw auger or screw conveyor system. The Contractor shall have the option to select the necessary steps and methods for the casing pipe installation, subject to approval by the Engineer. The Contractor shall maintain the integrity of the channel throughout the installation of the pipe.

The Contractor has the option to propose alternate methods to complete the work subject to the approval of the Engineer. The Contractor shall be responsible for providing a submittal stamped by a Rhode Island P.E. detailing the proposed methods, and shall be responsible for all associated modifications to the Project including environmental permits and utility coordination.

SUBMITTALS

A. Submit for approval complete working drawings showing details of the proposed method of construction and the sequence of operations to be performed during construction. Show the method of pipe ramming, including the ramming system to be used, location of working pits including method of excavation, shoring and bracing appurtenance installation, and dewatering techniques that are proposed to be used. These submittals shall include all the restrictions and limitations imposed by the special provisions. The following is not intended to limit, but to provide, the minimum of details which must be included.

    1. A detailed description of the pipe ramming procedure including construction techniques to provide the access required to install pipe in conformance with contract documents, and the method to maintain the flows and integrity of the channel.

    2. Manufacturer's literature describing in detail the pipe ramming system to be used. Detailed description of projects on which this system has been successfully used including the names, addresses and telephone numbers of owner's representatives for these projects as well as length, diameter, and pipe material used.

    3. Calculations and drawings indicating limits of access pits and any ground support to be utilized.

    4. Methods of spoils disposal.

5. A groundwater stabilization scheme covering the excavations for starter and receiver pits. Verify this plan to stabilize anticipated unstable soil conditions. Such verifications shall include all calculations and detail drawings for methods of controlling groundwater.

6. Certification by the pipe ramming manufacturer of the thrust, condition, and operational characteristics of all equipment to be used for installing the specified pipes. The equipment shall employ a spoil removal system. The system shall include a safeguard to prevent caving beyond the outside diameters of the pipe.

7. Working Drawings, including the following pages:
   a. Layout of pipe ramming and ancillary equipment at each pit location.
   b. Shop drawings including configuration of cutter head shoe and overcut.
   c. Spoil removal system details.
   d. Pipe lubrication system details.
   e. Grade and alignment control system details.
   f. Groundwater control provisions.

8. Details of mucking system and soil disposal methods.

9. Calculations demonstrating that the pipe selected has been designed to support the maximum anticipated earth loads and superimposed live loads, both static and dynamic, which may be imposed on the pipe. Determine the additional stresses imposed on the pipe during ramming operations and upgrade the quality and strength of the pipe and pipe joints to extent necessary to withstand the additional stresses imposed by the ramming operation. The details shall be submitted for approval.

10. Complete information on Contractor's safety plan for personnel conducting the ramming operations and appurtenance installation. The plan shall include provisions for lighting and electrical safeguards.

11. Keep and maintain at the construction site a complete set of field drawings for recording as built conditions. It shall have marked or noted there on all field information, properly dated, recording as built conditions. This set of drawings shall be kept up to date.

12. Pipe certification of compliance.

13. Pipe jointing method and details.

14. All contractor submittals requiring structural design shall be signed by a professional civil or structural engineer registered in the State of Rhode Island.

15. Written documentation summarizing the qualifications of the project, superintendent, operators, and site safety representative.

7. Before beginning construction at any location of this project, adequately protect existing structures and other permanent objects. The repair of or compensation for damage to permanent facilities due to negligence or lack of adequate protection on the part of the contractor will be at no cost to the Authority.

8. Provide surface drainage during the period of construction to protect the work.

9. Conduct operations in such a fashion that trucks and other vehicles do not create a dirt nuisance on the taxiway, runway or impact airport operations. Secure the required permits and promptly remove and dispose of any spillage.

10. Blasting will not be permitted.

11. Provide all dewatering and test any groundwater discharges. All discharge limits and reporting requirements shall be the responsibility of the contractor.

12. Traffic: Size and locate pits and their work areas so as to avoid interferences with all forms of traffic.

13. Removal of the existing structure's footing shall be limited to the extent needed to install the casings, with a portion of the footing to remain between the voids for the casings as shown on the plans. Corners of any removal shall be rounded, with a minimum radius of 6".

B. Control of Line and Grade

1. The Engineer will establish the baseline and benchmarks indicated on the plans. Check these baselines and benchmarks at the beginning of the contract period and report any error or discrepancies to the Engineer.

2. Use these baselines and benchmarks to furnish and maintain all reference lines and grades for the pipe installation. Use these lines and grades to establish the exact starting location of the pipe.

3. Submit to the Engineer copies of field notes used to establish all lines and grades; however, the contractor remains fully responsible for the accuracy of his work and the correction of it, as requires.

4. The excavation and run of pipe rammed shall be controlled such that the deviation from grade is below the design grade.

5. After installation of the pipe, provide the Engineer with access to both casing ends for visual inspection of the line and grade of the completed casing.

JOB SPECIFIC

CODE 804.9902
STEEL MICROPILES

DESCRIPTION: This work shall consist of constructing drilled micropiles in accordance with the Plans, approved working drawings, the Rhode Island Standard Specifications for Road and Bridge Construction, amended March 2018, provisions of the FWHA "Micropile Design and Construction", Report No. FHWA NHI-05-039, the AASHTO LRFD Bridge Design Specifications, and as specified herein. The Micropile Contractor shall be responsible for furnishing all materials, products, accessories, tools, equipment, services, transportation, labor and supervision, and manufacturing techniques required for the installation and testing of drilled micropiles and pile top attachments for this project. Included in this item is all backfilling and patching required to maintain the roadway surface following pile installation and prior to closing the roadway to traffic.

MICROPILE CONTRACTOR'S EXPERIENCE REQUIREMENTS AND SUBMITTALS: The Micropile Contractor shall be experienced in the construction and load testing of micropiles and have successfully constructed at least five (5) projects in the last five (5) years involving the construction of similar micropiles to those required in these plans and specifications.

The Micropile Contractor shall have previous micropile drilling and grouting experience in soil/rock similar to project conditions. The Micropile Contractor shall submit construction details, structural details and load test results for at least three (3) previous successful micropile load tests from different projects of similar scope to this project.

The Micropile Contractor shall assign an Engineer to supervise the work with experience on at least three (3) projects of similar scope to this project completed over the past five (5) years. The Micropile Contractor shall not use consultants or Manufacturers' representatives to satisfy the supervising Engineer requirements of this section.

The onsite foremen and drill rig operators shall also have at least (3) years of experience installing micropiles of equal or greater capacity than required in these plans and specifications.

The micropiles shall be designed by a micropile system design engineer (MSD Engineer), which is defined as a Registered Professional Engineer licensed by the State of Rhode Island with experience in the design of at least three (3) successfully completed micropile projects over the past five (5) years, with micropiles of similar capacity to those required in these plans and specifications. The MSD Engineer may be either an employee of the Micropile Contractor or a separate consultant design engineer meeting the stated experience requirements.

At least 45 calendar days before the planned start of micropile construction, the Micropile Contractor shall submit five (5) copies of the completed project reference list and a personnel list. The project reference list

shall include a brief project description with the owner's name and current phone number and load test reports. The personnel list shall identify the MSD Engineer, supervising project engineer, drill rig operators, and on-site foremen to be assigned to the project. The personnel list shall contain a summary of each individual's experience and be complete enough for the Engineer to determine whether each individual satisfies the required qualifications. The Engineer will approve or reject the Micropile Contractor's qualifications within 45 calendar days after receipt of a complete submission. Additional time required due to incomplete or unacceptable submittals will not be cause for time extension or impact or delay claims. All costs associated with incomplete or unacceptable submittals shall be borne by the Micropile Contractor.

Work shall not be started, nor materials ordered, until the Engineer's written approval of the Micropile Contractor's experience qualifications is given. The Engineer may suspend the work if the Micropile Contractor uses nonapproved personnel. If work is suspended, the Micropile Contractor shall be fully liable for all resulting costs and no adjustment in contract time will result from the suspension.

The pile shall be designed to withstand a nominal lateral load of 2 kips.

SUBSURFACE INFORMATION: Available boring information is provided on the Plans. Boring Samples are available for inspection, by appointment, at the offices of Pare Corporation, 10 Lincoln Road, Suite 210, Foxboro, MA 02035.

CONSTRUCTION SITE SURVEY: Prior to bidding, the Micropile Contractor shall review the available subsurface information and visit the site to assess the site geometry, equipment access conditions, and location of existing structures and above ground facilities.

The Micropile Contractor is responsible for coordinating with DigSafe and for field locating and verifying the location of all utilities shown on the plans prior to starting the work and shall maintain uninterrupted service for those utilities designated to remain in service throughout the work.

Prior to the start of any micropile construction activity, the Micropile Contractor and Engineer shall jointly inspect the site to observe and document the pre-construction condition of the site, existing structures and facilities.

CONSTRUCTION SUBMITTALS: The Micropile Contractor shall prepare and submit to the Engineer, for review of completeness, eight (8) copies of the following for the micropile system to be constructed:

1. Detailed step-by-step description of the proposed micropile construction procedure, including personnel, testing and equipment to assure quality control. This step-by-step procedure shall be shown on the working drawings in sufficient detail to allow the Engineer to monitor the construction and quality of the micropiles.

2. Proposed start date and time schedule and micropile installation schedule and a plan with proposed micropile layout with the micropile numbering system.

3. If welding of casing is proposed, the Micropile Contractor shall submit the proposed welding procedure, certified by a qualified welding specialist.

4. Information on headroom and space requirements for installation equipment that verifies the proposed equipment can operate at the site.

5. Plan describing how surface water, drill flush, and excess waste grout will be controlled and disposed.

6. Certified mill test reports for the reinforcing steel or coupon test results for permanent casing without mill certification. The ultimate strength, yield strength, elongation, and material properties composition shall be included.

7. Proposed Grouting Plan. The grouting plan shall include complete descriptions, details, and supporting calculations for the following:
    a. Grout mix design and type of materials to be used in the grout including certified test data and trial batch reports.

    b. Methods and equipment for accurately monitoring and recording the grout depth, grout volume and grout pressure as the grout is being placed.

    c. Grouting rate calculations, when requested by the Engineer. The calculations shall be based on the initial pump pressures or static head on the grout and losses throughout the placing system, including anticipated head of drilling fluid (if applicable) to be displaced.

    d. Estimated curing time for grout to achieve specified strength. Previous test results for the proposed grout mix completed within one year of the start of grouting may be submitted for initial verification and acceptance and start of production work. During production, grout shall be tested in accord with this specification.

    e. Procedure and equipment used by the Micropile Contractor to monitor grout quality.

Work shall not begin until the construction submittals have been received, reviewed, and accepted in writing by the Engineer. Provide submittal items 1 through 5 at least 45 calendar days prior to initiating micropile construction, item 7 as the work progresses for each delivery and submittal items 6, 8 and 9 at least seven (7) days prior to start of micropile load testing or incorporation of the respective materials into the work. The Micropile Contractor shall allow the Engineer forty-five (45) calendar days to review the construction submittals after a complete set has been received. Additional time required due to incomplete or unacceptable submittals shall not be cause for delay or impact claims. All costs associated with incomplete or unacceptable submittals shall be the responsibility of the Micropile Contractor.

PRE-CONSTRUCTION MEETING: A pre-construction meeting will be scheduled by the Engineer and held prior to the start of micropile construction. The Engineer, Contractor, Micropile Contractor, MSD Engineer, Excavation Contractor and Geotechnical Instrumentation Specialist (if applicable) shall attend the meeting. Attendance is mandatory. The pre-construction meeting will be conducted to clarify the construction requirements for the work, to coordinate the construction schedule and activities, and to identify contractual relationships and delineation of responsibilities amongst the Contractor and the various Subcontractors - specifically those pertaining to excavation for micropile structures, anticipated subsurface conditions, micropile installation and testing, micropile structure survey control and site drainage control.

MATERIALS: The Micropile Contractor shall furnish materials new and without defects. Any defective materials shall be removed from the jobsite at no additional cost. Materials for micropiles shall consist of the following:

Admixtures for Grout: Admixtures shall conform to the requirements of ASTM C 494/AASHTO M194. Admixtures that control bleed, improve flowability, reduce water content, and retard set may be used in the grout, subject to the review and acceptance of the Engineer. Admixtures shall be compatible with the grout and mixed in accordance with the Manufacturer's recommendations. Expansive admixtures shall only be added to the grout used for filling sealed encapsulations and anchorage covers. Accelerators are not permitted. Admixtures containing chlorides are not permitted.

Cement: All cement shall be Portland cement conforming to ASTM C 150/AASHTO M85, Types I, II, III or V.

Centralizers and Spacers: Centralizers and spacers shall be fabricated from an approved non-metallic durable material. Wood shall not be used. They shall be securely attached to the reinforcement; sized to position the reinforcement within ½ inch of plan location from center of pile; sized to allow grout tremie pipe insertion to the bottom of the drill hole; and sized to allow grout to freely flow up the drill hole and casing and between adjacent reinforcing bars.

Fine Aggregate: If sand-cement grout is used, sand shall conform to ASTM C144/AASHTO M45.

Galvanization: Galvanization shall meet the requirements of ASTM A-153.

Grout: RIDOT approved neat cement or sand/cement mixture with a minimum 3-day compressive strength of 2,000 psi and a minimum 28-day compressive strength of 4,000 psi per AASHTO T106/ASTM C109.

Permanent Casing Pipe: Permanent steel casing/pipe shall have the diameter and at least minimum wall thickness shown on the approved working drawings. The permanent steel casing/pipe shall meet the following requirements:

1. The Tensile Requirements of ASTM A252, Grade 3, except the yield strength shall be a minimum of 50,000 psi to 80,000 psi as used in the design submittal.

For permanent casing/pipe that will be welded for structural purposes, the following material conditions apply:

1. The carbon equivalency (CE) as defined in AWS Dl.l, Section XI5.1, shall not exceed 0.45, as demonstrated by mill certifications.

2. The sulfur content shall not exceed 0.05%, as demonstrated by mill certifications.

For permanent casing/pipe that will be shop or field welded, the following fabrication or construction conditions apply:

1. The steel pipe shall not be joined by welded lap splicing.
2. Welded seams and splices shall be complete penetration welds.
3. Partial penetration welds may be restored in conformance with AWS D1.1.
4. The proposed welding procedure certified by a welding specialist shall be submitted for approval.

Threaded casing joints shall develop at least the required compressive, tensile, and/or bending strength used in the design of the micropile.

Plates and Shapes: Structural steel plates and shapes for pile top attachments shall conform to AASHTO M270 Grade 50.

Reinforcing Bars: Reinforcing steel shall be galvanized deformed bars in accordance with ASTM A6l5/AASHTO M31, Grade 60 or Grade 75 or ASTM A 722/AASHTO M275, Grade 150. When a bearing plate and nut are required to be threaded onto the top end of reinforcing bars for the pile top to footing anchorage, the threading may be continuous spiral deformed ribbing provided by the bar deformations (e.g., Dywidag or Williams continuous threadbars) or may be cut into a reinforcing bar. If threads are cut into a reinforcing bar, the next larger bar number designation from that shown on the Plans shall be provided, at no additional cost.

Bar tendon couplers, if required, shall develop the ultimate tensile strength of the bars without evidence of any failure.

Water: Water used in the grout mix shall conform to AASHTO T 26 and shall be potable, clean, and free from substances that may be injurious to cement and steel.

CONSTRUCTION METHODS:

Site Drainage Control: The Contractor shall control and properly dispose of drill flush and construction related waste, including excess grout, in accordance with all Project permits, the Rhode Island Standard Specifications for Road and Bridge Construction, amended May 2016, and all applicable local codes and regulations. The Contractor shall provide positive control and discharge of all surface water that will affect construction of the micropile installation and maintain all pipes or conduits used to control surface water during construction. The Contractor shall repair damage caused by surface water at no additional cost. Upon substantial completion of the work, the Contractor shall remove surface water control pipes or conduits from the site. Alternatively, with the approval of the Engineer, pipes or conduits that are left in place may be fully grouted and abandoned or left in a way that protects the structure and all adjacent facilities from migration of fines through the pipe or conduit and potential ground loss.

Micropile Allowable Construction Tolerances and Acceptance Criteria:

1. The center of gravity of the entire group of micropiles at an individual abutment shall not be more than 2 inches from the center of gravity location for the group as indicated on the plans.

2. Centerline of piling shall not be more than 3" from indicated plan location.

3. Pile shall be plumb within 2 percent of total-length plan alignment.

4. Top elevation of pile shall be plus 1" or minus 2" maximum from vertical elevation indicated.

5. Centerline of reinforcing steel shall not be more than ¾" from indicated location.

Piles that are damaged or defective due to defective materials, improper installation procedure, or piles that have an installed volume of cement grout not exceeding a volume equal to 110% of the theoretical volume of the drill hole will not be accepted. Pile acceptance will be by the sole judgment of the Engineer.

Piles that are damaged or defective shall be cut off one foot below bottom of footing elevation and located on the Micropile Contractor's developed pile as-built drawing. These piles shall be replaced by additional pile(s) installed adjacent thereto, as directed by the Engineer, at no additional cost. The replacement pile(s) must be installed at a location which results in the center of gravity of the group meeting the location criteria stated above. Any modification that necessitates change to the structure shall require the Engineer's prior review and acceptance. Any modifications shall be at the Micropile Contractor's expense.

Piles which are mislocated beyond the specified tolerances shall be required to be corrected by installing an additional pile. The location of the additional pile shall be such that the center of gravity of the combination of the two piles falls within the location tolerance for the original location and the allowable tolerance for the abutment.

Micropile Installation. The Micropile Contractor shall select the drilling method, the grouting procedure, and the grouting pressure used for the installation of the micropiles. The Micropile Contractor shall also determine the micropile casing size, final drill hole diameter and bond length, and central reinforcement steel sizing necessary to develop the specified load capacities and load testing requirements. The Micropile Contractor is also responsible for estimating the grout take. There will be no extra payment for grout overruns.

The drilling equipment and methods shall be suitable for drilling through the conditions to be encountered, without causing damage to any overlying or adjacent structures or services. The drill hole must be open along its full length to at least the design minimum drill hole diameter prior to placing grout and reinforcement.

Temporary casing or other approved method of pile drill hole support will be required in caving or unstable ground to permit the pile shaft to be formed to the minimum design drill hole diameter. The Micropile Contractor's proposed method(s) to provide drill hole support and to prevent detrimental ground movements shall be reviewed by the Engineer. Detrimental ground movement is defined as movement which requires remedial repair measures. Use of drilling fluid containing bentonite is not allowed.

During construction, the Micropile Contractor shall observe the conditions in the vicinity of the micropile construction site on a daily basis for signs of ground heave or subsidence. The Micropile Contractor shall immediately notify the Engineer and MSD Engineer if signs of movements are observed. The Micropile

Contractor shall immediately suspend or modify drilling or grouting operations if ground heave or subsidence is observed, if the micropile structure is adversely affected, or if adjacent structures are damaged from the drilling or grouting. If the Engineer determines that the movements require corrective action, the Micropile Contractor shall take corrective actions necessary to stop the movement or perform repairs, at no additional cost to the State.

Reinforcement shall be placed into the drill hole prior to grouting and before temporary casing (if used) is withdrawn. Reinforcement surface shall be free of deleterious substances such as soil, mud, grease or oil that might contaminate the grout or coat the reinforcement and impair bond. Pile cages and reinforcement groups, if used, shall be sufficiently robust to withstand the installation and grouting process and the withdrawal of the drill casings without damage or disturbance.

The Contractor shall check pile top elevations and adjust all installed micropiles to the planned elevations.

Centralizers and spacers shall be provided at 10’ centers maximum spacing in order to provide a minimum 2” of grout cover over all steel reinforcing. At least two centralizers and spacers shall be provided per pile. The upper and lower most centralizer shall be located a maximum of 5’ from the top and bottom of the micropile. Centralizers and spacers shall permit the free flow of grout without misalignment of the reinforcing bar(s) and permanent casing. The central reinforcement bars with centralizers shall be lowered into the stabilized drill hole and set. The reinforcing steel shall be inserted into the drill hole to the desired depth without difficulty. Partially inserted reinforcing bars shall not be driven or forced into the hole. The Micropile Contractor shall redrill and reinsert reinforcing steel when necessary to facilitate insertion.

Lengths of casing and reinforcing bars to be spliced shall be secured in proper alignment and in a manner to avoid eccentricity or angle between the axes of the two lengths to be spliced. Splices and threaded joints shall meet the requirements of this specification. Threaded pipe casing joints shall be located at least two casing diameters (OD) from a splice in any reinforcing bar. When multiple bars are used, bar splices shall be staggered at least 12”.

Micropiles shall be primary grouted the same day the load transfer bond length is drilled. The Micropile Contractor shall use a stable neat cement grout or a sand cement grout with a minimum 28-day unconfined compressive strength of 4,000 psi. Admixtures, if used, shall be mixed in accordance with Manufacturer’s recommendations. The grouting equipment used shall produce a grout free of lumps and undispersed cement. The Micropile Contractor shall have an approved means and methods of measuring the grout quantity and pumping pressure during the grouting operations. The grout pump shall be equipped with a pressure gauge to monitor grout pressures. A second pressure gauge shall be placed at the point of injection into the pile top. The pressure gauges shall be capable of measuring pressures of at least 150 psi or twice the actual grout pressures used, whichever is greater. The grout shall be kept in agitation prior to mixing. Grout shall be placed within one hour of mixing. The grouting equipment shall be sized to enable each pile to be grouted in one continuous operation.

Immediately prior to grouting, the hole shall be flushed with clean water to remove all contaminated water and cuttings. The hole shall be flushed with the grout pipe located at the bottom of the hole. The water shall be pumped at a high velocity until the wash water at the top of the casing is clear.

The grout shall be injected from the lowest point of the drill hole and injection shall continue until uncontaminated grout flows from the top of the pile. The grout may be pumped through grout tubes, casing, hollow-stem augers, or drill rods. Temporary casing, if used, shall be extracted in stages ensuring that, after

each length of casing is removed the grout level is brought back up to the ground level before the next length is removed. The tremie pipe or casing shall always extend below the level of the existing grout in the drill hole. The grout pressures and grout takes shall be controlled to prevent excessive heave or fracturing of rock or soil formations. Upon completion of grouting, the grout tube may remain in the hole, but must be filled with grout.

Grout within the micropiles shall be allowed to attain the required design strength prior to being loaded.

If the Micropile Contractor elects to use a postgrouting system, working drawings and details shall be submitted to the Engineer for review in accordance with this specification.

Grout within the micropile verification and proof test piles shall attain the minimum required 3-day compressive strength of 2,000 psi prior to load testing. During production, micropile grout shall be tested by the Micropile Contractor for compressive strength in accordance with AASHTO T106/ASTM C109 at a frequency of no less than one set of three 2" grout cubes from each grout plant each day of operation or per every 10 piles, whichever occurs more frequently. Unconfined compressive testing shall be completed at 3, 7 and 28 days.The compressive strength shall be the average of the 3 cubes tested.

Grout consistency as measured by grout density shall be determined by the Micropile Contractor per ASTM C188/AASHTO T 133 or API RP-13B-1 at a frequency of at least one test per pile, conducted just prior to start of pile grouting. The Baroid Mud Balance used in accordance with API RP-13B-1 is an approved device for determining the grout density of neat cement grout.

Grout samples shall be taken directly from the onsite grout plant. The Micropile Contractor shall provide grout cube compressive strength and grout density test results to the Engineer within 24 hours of testing.

Micropiles shall be installed under the full-time inspection of the Engineer. The Micropile Contractor shall notify the Engineer a minimum of 48 hours prior to any operations in this section. Any pile installed when the Engineer is not present to obtain the necessary records shall not be accepted for payment and the Micropile Contractor shall install additional pile(s) as directed at no additional cost to the State.

Obstructions. If, during the installation of a pile, an obstruction is encountered that prevents the practical advancement of the hole, the hole shall be abandoned and filled with grout. A new pile shall be drilled at a location to be determined by the Engineer, although it must be acknowledged that in certain structures, relocation options may be severely limited, and further attempts at the original location with different methods may be required.

If during drilling, obstructions are encountered of a frequency, composition and location that were not portrayed, inferable, expected and/or notified at the time of preparation of the bid, the additional costs utilized in trying to overcome such obstructions shall be paid for as approved by the Engineer and State.

Micropile Installation Records. The Micropile Contractor shall prepare and submit to the Engineer full-length installation records for each micropile installed. The records shall be submitted within one work shift after that pile installation is completed. The data shall be recorded on the micropile installation log. A separate log shall be provided for each micropile. The Micropile Contractor shall submit for approval a pile numbering plan identifying a unique pile designation number for each micropile. The Engineer shall keep an independent record of each micropile installation.

Each micropile installation log shall include the following information:

1. Top of pile elevation immediately after installation to the nearest 0.1 foot.
2. Pile cut-off elevation as installed to the nearest 0.1 foot.
3. Bottom of pile casing elevation to the nearest 0.1 foot.
4. Pile tip elevation as installed to the nearest 0.1 foot
5. Deviation from specified plan location in inches to the nearest ½ inch.
6. Pile length immediately after installation to the nearest 0.1 foot.
7. Pile designation number.
8. Damage (if any) to pile as well as any required corrective action taken.
9. Grout takes and pressures.

METHOD OF MEASUREMENT: "Steel Micropiles" will be measured for payment per "Each" micropile actually installed in accordance with the Plans and/or as directed by the Engineer.

BASIS OF PAYMENT: "Steel Micropiles" will be paid for at the contract unit price per "Each" as listed in the Proposal. The price so stated shall constitute full and complete compensation for all labor, materials, tools, equipment, and all other incidentals required to complete the work as described in this Special Provisions and elsewhere in the Contract Documents, complete in place and accepted by the Engineer. All asphalt removal, excavation, backfilling, and asphalt patching associated with the pile installation shall be considered incidental to this Item.

Pile load tests will be paid for under item 804.1630 Pile Load Test 60 Ton.

JOB SPECIFIC

CODE 803.9901
PARTIAL REMOVAL AND DISPOSAL OF STONE MASONRY

CODE 807.9901
POINTING AND GROUTING MASONRY

CODE 807.9902
REBUILD STONE MASONRY

807.9903
STONE VENEER

807.9904
SUPPLEMENTAL STONES

DESCRIPTION: The work covered by this section shall consist of partially removing and disposing stone masonry, pointing and grouting stone masonry, rebuilding stone masonry, placing stone veneer on the exposed ends of concrete pile caps, and providing supplemental stones as necessary, all as shown on the Plans and in accordance with the Rhode Island Rhode Island Standard Specifications for Road and Bridge Construction, amended March 2018, with all revisions, and this Special Provision.

SUBMITTALS: The Contractor shall submit the following for approval by the Engineer and RIDOT Historic Preservation Specialist prior to beginning the work:

A. Masonry Contractor Qualifications as described in this Special Provision.

B. A narrative description of how all stone work will be performed, covering all aspects of the work including but not limited to equipment to be used, stone removal and stockpiling methods and locations, stabilization methods, surface preparation, mortar preparation and application, and any other methods and equipment proposed to carry out the work under this Special Provision.

C. Field Inspection/Verification Plans. These plans shall be ¼" scale elevation drawings of all exposed faces of masonry of wall elements showing actual field measured depths of any all voids in mortar joints, measured from the face of line of masonry. Details showing depth of voids shall be adequate to detail replacement stones, or verify fit of stones to be reset.

D. The Masonry Contractor shall prepare a cured mortar sample approx. 6" X 6" X 1" to be reviewed by the Engineer in consultation with the RIDOT Historic Preservation Specialist. Once the mortar color and texture are approved, the Masonry Contractor shall point and grout an area designated by the Engineer as a sample. The sample area will not exceed six square feet in area.

E. Samples of proposed supplemental stone.

F. Cut sheets of the proposed galvanized masonry anchors.

QUALIFICATIONS: All work performed under this Special provision shall be performed by a qualified Masonry Contractor. The Masonry Contractor shall have stone masons with demonstrated proficiency in historic stone masonry construction/reconstruction practices. Documentation in the form of professional certifications and the location of at least three successfully completed stone walls of a similar type to the work to be performed shall be submitted to the Engineer for approval. The documentation must be approved by the Engineer in consultation with RIDOT Historic Preservation Specialist prior to the Masonry Contractor being permitted to begin the work. The approved masons are to complete the entire work item for which approval was given.

MATERIALS: All materials shall be in accordance with the Standard Specifications and the following:

A. Mortar for pointing and grouting joints shall conform to the Standard Specifications, as amended, subsection M.04.03.5, and as follows:

Properties of the mixed Portland cement grout:

1. Time of Set (ASTM C-191)
   a. Initial Set: 3.0 hours min.
   b. Final Set: 6.5 hours max.
2. Flow (CRD C-621):100-124%
3. Color: concrete gray to match existing stone as much as possible
4. The grout shall not exhibit bleeding.
5. The grout shall be segregate.
6. The grout shall be pumpable through standard grout pumping equipment.

Properties of the cured Portland cement grout:

1. Compressive Strength (CRD C-496) at 28 days: 500 psi min.
   a. 1 day: 3,800 psi min.
   b. 28 day: 7,600 psi min.
2. Splitting Tensile Strength (ASTM C-496) at 28 days: 500 psi min.
3. Flexural Strength (ASTM C-580) at 28 days: 1200 psi min.
4. Bond Strength (ASTM C-882 Modified) Plastic grout to hardened concrete at 28 days (moist cure): 1950 psi min.
5. Expansion (CRD C-621) at 28 days: +0.015% min.
6. The grout shall not produce a vapor barrier.
7. The grout shall exhibit positive expansion when tested in accordance to ASTM C-827.
8. The grout shall conform to United States Army Corps of Engineers Specification CRD C-621.
9. The grout shall conform to ASTM C-ll07.
10. The material shall be approved by the United States Department of Agriculture.

B. To the extent possible, all stones shall be selected from stone salvaged from the existing structure. New granite stones shall match the existing stones with respect to shape, color, size, finish, grain and composition.

CONSTRUCTION METHODS: Construction shall be in accordance with the Standard Specifications and the following:

A. General

1. The Engineer shall be notified of any masonry work no later than 24 hours prior to the work.

2. Contractor shall stabilize existing stones during stone work. This stone stabilization shall continue through the duration of the work to ensure a safe working environment and avoid loss and/or damage of additional stones and/or work already completed.

3. Any stones which become loose, or those stones surrounded by mortar joints which become cracked as a result of the Contractor's operation shall be removed, cleaned and reset at no extra cost to the State.

4. Deliver the specified products in original, unopened containers with the Manufacturer's name, labels, product identification, and batch numbers. Store and condition the specified product as recommended by the Manufacturer.

5. All work to be performed in the partial removal or rebuilding of the existing structure shall be done in such a manner that no debris falls into the waterway and/or onto adjacent properties. In the event that any materials fall into the water or beyond the work zone, the Contractor shall remove said materials immediately to the satisfaction of the Engineer.

6. Do not apply material if it is raining or snowing or if they appear to be imminent. Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified repair material.

7. The surfaces must be mechanically prepared. Areas to be grouted must be clean, sound and free of contaminants. All loose and deteriorated stone and debris shall be removed by mechanical means approved by the Engineer. Perform all other surface and joint preparation as per Manufacturer's requirements.

8. Contractor shall prevent excess grout from falling into the water or onto the ground below.

9. Grouting operations shall be done concurrently with the replacing/resetting of the new or re-used stones.

10. Any damage to the structure to remain resulting from the Contractor's operations shall be repaired by the Contractor to the satisfaction of the Engineer at no additional cost to the State.

B. Partial Removal and Disposal of Stone Masonry

1. The work of dismantling and rebuilding the stone masonry shall be carried out in accordance with Section 939 "Stone Walls in Historic, Scenic or Rural Areas" of the Standard Specifications as it applies to historic stone masonry. The limits of dismantling shall be only as required to reconstruct the stone masonry to conform to the specified finished elevations. The rebuilding of the stone masonry shall be carried out using the original stones removed from the structure, which shall be reset to match the appearance of the existing (intact) masonry. Drilling into or anchoring/attaching staging, netting, false work, etc. into the faces of the stone masonry that will remain when the project is complete is prohibited.

2. Dismantling of the masonry shall be carefully carried out in a workmanlike manner so as to prevent damage to the stones to be reused and the existing structure to remain. The stones are to be removed by hand when possible. Stones requiring machinery to move are to be lifted using suitable straps to protect the stones from damage. It may be necessary to dismantle the stone masonry beyond the limits depicted on the Plans in order to reconstruct the masonry up to the finished elevation using stones that match the overall size distribution of stones within the original stone masonry. Large stones that extend into the limits of removal shall be removed, cut and reset in their existing location, unless a single, appropriately sized stone is available.

3. Stones that are to be reused shall be stockpiled in a secure area approved by the Engineer and protected from vandalism and theft. Stockpiled stones shall be covered with tarps.

4. Any materials not incorporated in the final work shall be removed and legally disposed of in accordance with state and federal regulations. Storing or burying of material/debris on site shall not be permitted.

C. Rebuild Stone Masonry/Stone Veneer

1. To the extent possible, all stones visible in the final work shall be selected from stones salvaged from the existing structure. Should it be necessary to use supplemental stones in visible locations, deference shall be given to using the existing stones on the vertical wall faces and using supplemental stones in the arch.

2. The reconstructed stone masonry shall match the appearance, joint construction, and coursing of the existing historic masonry. All stones that are to be reused for rebuilding the masonry shall be carefully cleaned of all mortar, soil and any other deleterious materials without cracking, chipping or otherwise defacing them. The masonry shall be rebuilt as mortared stone masonry with the pointing set back 2 inches from the face line of the masonry as shown on the Plans. The masonry shall be rebuilt to the finished elevation shown on the Plans. The top of the masonry shall be left with a relatively even mortar surface (±½ inch). The use of or grouping of disproportionately small or thin stones at the top of the masonry will not be accepted.

3. Rebuilding of stone masonry shall be done in workmanlike manner so as to ensure proper selection, preparation, fabrication and installation of all stones so as to restore, to the maximum extent possible, the original stone construction.

4. Where stone walls are rebuilt around the proposed pile caps, they shall be rebuilt in accordance with R.I. Standard Detail 10.1.0.

5. Stone for veneer shall be cut and/or split as required for installation in a manner that presents a visually uniform face with the existing and rebuilt wall. Galvanized masonry anchors shall be installed in the ends of the pile caps at vertical and horizontal spacings not to exceed 8 inches.

METHOD OF MEASUREMENT: "Partial Removal and Disposal of Stone Masonry" will be measured for payment per "Cubic Yard" of stone masonry actually removed and disposed in accordance with the Plans and/or as directed by the Engineer.

"Pointing and Grouting Stone Masonry" will be measured for payment per "Square Foot" of masonry actually pointed and grouted in accordance with the Plans and/or as directed by the Engineer.

"Rebuild Stone Masonry" will be measured for payment per "Cubic Yard" of stone wall actually rebuilt in accordance with the Plans and/or as directed by the Engineer.

"Stone Veneer" will be measured for payment per "Square Foot" of stone veneer actually installed in accordance with the Plans and/or as directed by the Engineer.

"Supplemental Stones" will be measured for payment per "Pound" of stone actually furnished in accordance with the Plans and/or as directed by the Engineer.

BASIS OF PAYMENT: "Partial Removal and Disposal of Stone Masonry" will be paid for at the contract unit price per "Cubic Yard" as listed in the Proposal. The price so stated shall constitute full and complete compensation for all labor, materials, tools, equipment, and all other incidentals required to complete the work as described in this Special Provisions and elsewhere in the Contract Documents, complete in place and accepted by the Engineer.

"Pointing and Grouting Stone Masonry" will be paid for at the contract unit price per "Square Foot" as listed in the Proposal. The price so stated shall constitute full and complete compensation for all labor, materials, tools, equipment, and all other incidentals required to complete the work as described in this Special Provisions and elsewhere in the Contract Documents, complete in place and accepted by the Engineer.

"Rebuild Stone Masonry" will be paid for at the contract unit price per "Cubic Yard" as listed in the Proposal. The price so stated shall constitute full and complete compensation for all labor, materials, tools, equipment, and all other incidentals required to complete the work as described in this Special Provisions and elsewhere in the Contract Documents, complete in place and accepted by the Engineer.

"Stone Veneer" will be paid for at the contract unit price per "Square Foot" as listed in the Proposal. The price so stated shall constitute full and complete compensation for all labor, materials, tools, equipment, and all other incidentals required to complete the work as described in this Special Provisions and elsewhere in the Contract Documents, complete in place and accepted by the Engineer.

"Supplemental Stones" will be paid for at the contract unit price per "Pound" as listed in the Proposal. The price so stated shall constitute full and complete compensation for all labor, materials, tools, equipment, and all other incidentals required to complete the work as described in this Special Provisions and elsewhere in the Contract Documents, complete in place and accepted by the Engineer.

JOB SPECIFIC

SECTION 905.1000
SIDEWALKS

DESCRIPTION: **Subsection 905.03.1(a) – Failure to Comply**, In the event the Engineer determines that new sidewalks have not been constructed within the seven consecutive calendar days required by **Subsection 905.03.1(a)** of the Rhode Island Standard Specifications for Road and Bridge Construction (Amended March 2018), with all revisions, a daily charge will be deducted from the monies due the Contractor.

The charge for this Contract will be $500 per day, for each day that the Contractor is not in compliance with **Subsection 905.03.1(a)** of the Rhode Island Standard Specifications for Road and Bridge Construction (Amended March 2018), with all revisions.

JOB SPECIFIC

CODE 907.1000
DUST CONTROL

DESCRIPTION:

Subsection 907.05.3, **Failure to Comply,** of the Standard Specifications requires that a daily charge be deducted from monies due the Contractor in the event the Engineer decides that dust has not been adequately controlled.

The charge for this Contract will be $1,000.00 per day.

JOB SPECIFIC

CODE 923.9901
LONGITUDINAL PEDESTRIAN CHANNELIZING DEVICE

DESCRIPTION: This work consists of furnishing, installing, and final removal of Longitudinal Pedestrian Channelizing Devices as part of temporary traffic control setups under this contract used to channelize pedestrian traffic. Placement of the devices shall be in accordance with the "Sidewalk Closed with Pedestrian Detour" and "Crosswalk Closed with Pedestrian Detour" details included on the Temporary Traffic Control Plan of the contract drawings.

MATERIALS: The Longitudinal Pedestrian Channelizing Devices shall conform to the minimum requirements of the *Manual on Uniform Traffic Control Devices* (MUTCD), latest edition, including all revisions, for such devices. The device must meet NCHRP-350 or MASH crash test requirements, and a Federal Acceptance Letter is required.

The top and bottom rails shall be continuous to allow for detection for hand trailing and cane trailing, respectively.

- The top surface of the device shall be a minimum of 32 inches above ground.
- The bottom surface of the device shall be a minimum of 2 inches above the ground.
- The top of the bottom rail of the device shall be lower than 6 inches above the ground.

All devices shall be free of sharp or rough edges that could cause harm to hands, arms, or clothing of pedestrians.

Color or markings along this detectable edge shall be contrasting with the walkway surface, and should be orange, yellow, or white as specified in MUTCD Section 6F.74. The devices shall be supplemented with alternating retroreflective orange and white colored material as shown in Figure 6F-7 of the MUTCD for improved nighttime visibility.

Devices shall not block water drainage from the roadway. A gap height or opening from the walkway surface up to a 2-inch maximum height is allowed for drainage purposes.

CONSTRUCTION METHODS: The devices shall be interlocking, such that gaps will not allow pedestrians to stray from the channelized path. The device shall be used to close the entire width of the walkway surface. The devices shall be placed across the full width of the closed sidewalk.

METHOD OF MEASUREMENT: "Longitudinal Pedestrian Channelizing Device" will be measured for payment per linear foot provided in accordance with the Plans and/or as directed by the Engineer.

BASIS OF PAYMENT: The accepted quantities of "Longitudinal Pedestrian Channelizing Device" will be paid for at the contract bid price per linear foot, as listed in the Proposal. The prices so-stated constitute full and complete compensation for all labor, material, and equipment, including placing devices at their initial locations and for eventually removing said devices from their final locations, and all other incidentals necessary to finish the work, complete and accepted by the Engineer. Movement and/or relocation of the device will be paid for under Item 937.0200 – Maintenance and Movement Traffic Protection.

Remove **Subsection 936, MOBILIZATION and DEMOBILIZATION,** pages 9-78 through 9-79 of the RI Standard Specifications for Road and Bridge Construction its entirety and replace it with the following.

SECTION 936

MOBILIZATION AND DEMOBILIZATION

936.1 DESCRIPTION.

936.1.1 Mobilization consists of those efforts necessary for the movement of the Contractor's personnel and equipment to the project site, the establishment of all the Contractor's field offices, buildings and other facilities required for the performance of the Contract, and all other incurred costs for work or operations required to be performed prior to the actual commencement of work on the Proposal items in the Contract.

936.1.2 Demobilization consists of removal of all materials, equipment, temporary structures and all other facilities of a temporary nature from the project site at the conclusion of the project, and restoration of the project site, including those areas used for storage of equipment, materials or the placement of temporary facilities.

936.2 MATERIALS. Not applicable.

936.3 CONSTRUCTION METHODS. Not applicable.

936.4 METHOD OF MEASUREMENT. This work will be measured for payments as follows:

a. First Payment. The first payment of 50 percent of the lump sum price for Mobilization and Demobilization, or 5 percent of the total contract amount minus the bid amount for Mobilization and Demobilization, whichever is the lesser, will be made on the first progress payment, following notice to proceed and the complete, approved set up of the project field office.

b. Second Payment. The second payment of 35 percent of the lump sum price for Mobilization and Demobilization, or 3.5 percent of the total contract amount minus the bid amount for Mobilization and Demobilization, whichever is the lesser, will be made when the progress payment estimate of the amount earned, not including that amount earned for Mobilization and Demobilization, is 5 percent of the total contract amount minus the bid amount for Mobilization and Demobilization.

c. Third Payment. The third payment of 15 percent of the lump sum price for Mobilization and Demobilization, or 1.5 percent of the total contract amount minus the bid amount for Mobilization and Demobilization, whichever is the lesser, will be made when the progress payment estimate of the amount earned, not including that amount earned for Mobilization and Demobilization, is 10 percent of the total contract amount minus the bid amount for Mobilization and Demobilization.

d. Final Payment. Upon completion of all the work on the project, including the completion of all Punch List items in accordance with **Subsection 105.17(b) Para. 4** of these Specifications, and Demobilization of the project site in accordance with **Subsection 936.01.2** above, payment of the remaining balance of the lump sum price for Mobilization and Demobilization will be paid.

936.5 BASIS OF PAYMENT. "Mobilization and Demobilization" will be paid for at the contract lump sum price as listed in the Proposal, in accordance with the provisions of **Subsection 936.04** above. The price so-stated constitutes full and complete compensation for all labor, materials, equipment and incidentals required to establish the Contractor's facilities at the site and, at the conclusion of the contract, for the complete removal thereof.

No lump sum breakdown will be required for this item of work.

JOB SPECIFIC

CODE 937.1000
MAINTENANCE AND MOVEMENT OF TRAFFIC PROTECTIVE DEVICES

DESCRIPTION:

Subsection 937.05.2; Failure to Comply, part a. Maintenance, of the Rhode Island Rhode Island Standard Specifications for Road and Bridge Construction, amended March 2018, with all revisions requires that a daily charge be deducted from monies due the Contractor for failure to adequately and safely maintain traffic control devices along any portion of the project.

The charge for this Contract will be:

$ 1000.00 per day

Subsection 937.05.2; Failure to Comply, part b. Movement, of the Rhode Island Rhode Island Standard Specifications for Road and Bridge Construction, amended March 2018, with all revisions requires that a charge be deducted from monies due the Contractor for failure to remove and/or relocate traffic control devices for compliance with the traffic-related work restrictions included in the Transportation Management Plan or to otherwise meet changes in traffic conditions, construction operations, or other conditions affecting the safety and/or mobility of the traveling public.

The charge for this Contract will be:

$ 1000.00 per half hour per travel lane that is closed to traffic

Remove **SECTION 938, PRICE ADJUSTMENTS,** pages 9-82 to 9-83 of the RI Standard Specifications for Rhode and Bridge Construction and page AC-136 of the Compilation of Approved Specifications, September 2018 in their entirety and replace them with the following.

JOB SPECIFIC

CODE 938.1000
PRICE ADJUSTMENTS

DESCRIPTION.

f. Liquid Asphalt Cement. The Base Price of Liquid Asphalt Cement as required to implement **Subsection 938.03.1** of the Standard Specifications is $ 537.50 per ton.

g. Diesel Fuel. The Base Price of Diesel Fuel as required to implement **Subsection 938.03.2** of the Standard Specifications is $ 2.2339 per gallon.

c. Steel. The Base Price of Steel as required to implement **Subsection 938.03.3** of the Standard Specifications is:

Reinforcing Steel $ 0.40 per pound

JOB SPECIFIC

CODE L02.1000
SEEDING

DESCRIPTION:

Subsection L.02.03.7; Para. c, Failure to Perform Care During Construction, of the Standard Specifications requires that a daily charge be deducted from monies due the Contractor in the event the Engineer decides that the Care During Construction has not been adequately performed.

The charge for this Contract will be $500.00 per day.

JOB SPECIFIC

CODE T06.9901
4-INCH SCHEDULE 40 PVC CONDUIT ENCASED IN CONCRETE

DESCRIPTION: This work includes, but is not limited to, excavation, placement of PVC conduits, and forming and placing of concrete surrounding the duct bank across the bridge and under the roadway to the limits shown on the plans, and per the Engineer's approval. This work shall be in accordance with all applicable Standard Specification, this Special Provision, and the plans.

CONSTRUCTION METHODS: Refer to the "Job Specific Verizon Utility Notes" on the "Job Specific Plan Symbols, Legend, and Notes" drawing of the plan set and Appendix E of the Contract Specific Documents.

METHOD OF MEASUREMENT: "4-Inch Schedule 40 PVC Conduit Encased in Concrete" will be measured by the number of linear feet of the PVC duct actually installed in accordance with the plans and/or as directed by the Engineer.

BASIS OF PAYMENT: "4-Inch Schedule 40 PVC Conduit Encased in Concrete" will be paid for at the contract unit price per linear foot as listed in the Proposal. The price so stated shall constitute full and complete compensation for all labor, tools, materials, equipment, transportation, and other incidentals required to finish the work, complete in place and accepted by the Engineer.

JOB SPECIFIC

CODE T20.9902
WATERBORNE PAVEMENT MARKINGS- RED, WHITE AND BLUE

DESRIPTION: The work to be performed under this item shall consist of furnishing and applying Waterborne Pavement Markings, at the width, and locations indicated on the Plans, as directed by the Engineer.

MATERIALS:

Pavement marking should be installed to match existing pavement markings

4-Inch Waterborne Pavement Marking- Red
4-Inch Waterborne Pavement Marking- Blue
4-Inch Waterborne Pavement Marking- White

Epoxy Resin Pavement Markings shall be in accordance with relevant sections of the Rhode Island Standard Specifications for Road and Bridge Construction (Amended March 2018) **Sections T.20 and M.17**

CONSTRUCTION METHOD: Waterborne Pavement Markings shall be furnished and applied in accordance with the relevant sections of the of the Rhode Island Standard Specifications for Road and Bridge Construction (Amended March 2018) **Section T.20.**

The Contractor shall coordinate with the Engineer and comply with the Towns striping requirements for this section of road.

METHOD OF MEASUREMENT: Item Code T20.9902 "Waterborne Pavement Markings- Red, White, and Blue" shall be measured for payment per the number of "Linear Feet" (excludes skips and spaces) actually installed as the case may be approved in accordance with the Plans and/ or as directed by the Engineer.

BASIS OF PAYMENT: Item Code T20.9902 "Waterborne Pavement Markings- Red, White and Blue" will be paid for at their respective contract unit price bid per "Linear Foot" as listed in the proposal. The price-so-stated shall constitute full and complete compensation for all labor, tools, materials and equipment, including protection of newly applied pavement markings from traffic, removal of existing pavement markings, layout, cleaning and sweeping, furnishing and applying the pavement markings, and all other incidentals required to complete the work as described in these Special Provisions and elsewhere in the Contract Documents, complete in place and accepted by the Engineer.

JOB SPECIFIC

700.9905
8 INCH PLASTIC GAS MAIN

DESCRIPTION: This work includes, but is not limited to the installation of a 8 inch gas main to the limits shown on the plans, in strict accordance with National Grid Specifications Section 100 and all other relevant sections of Appendix F "National Grid Gas Requirements."

MATERIALS: All materials shall be in strict accordance to National Grid Specifications Section 100 and all other relevant sections of Appendix F "National Grid Gas Requirements."

CONSTRUCTION: All construction shall be in strict accordance to National Grid Specifications Section 100 and all other relevant sections of Appendix F "National Grid Gas Requirements."

METHOD OF MEASUREMENT: "8 Inch Plastic Gas Main" will be measured for payment by the number of linear feet of pipe actually installed in accordance with the Plans, National Grid, and/or as directed by the Engineer.

BASIS OF PAYMENT: The accepted quantity of "8-Inch Plastic Gas Main" will be paid for at the Contract bid price per linear foot as listed in the Proposal. The price so-stated constitutes full and complete compensation for all necessary excavation, support of excavations, dewatering, padding sand, installing, backfilling with suitable excavated material, and all other incidentals needed to complete the work as required by National Grid, complete in place and accepted by the Engineer.

JOB SPECIFIC

700.9907
4 INCH STEEL & PLASTIC GAS BYPASS

DESCRIPTION: This work includes, but is not limited to the installation of a 4 inch gas bypass along the side of Silver Creek Bridge as shown on the plans, in strict accordance with National Grid Specifications Section 100 and all other relevant sections of Appendix F "National Grid Gas Requirements."

MATERIALS: All materials shall be in strict accordance to National Grid Specifications Section 100 and all other relevant sections of Appendix F "National Grid Gas Requirements."

CONSTRUCTION: All construction shall be in strict accordance to National Grid Specifications Section 100 and all other relevant sections of Appendix F "National Grid Gas Requirements."

METHOD OF MEASUREMENT: Not applicable

BASIS OF PAYMENT: The accepted quantity of "4 Inch Gas Bypass" will be paid for at the contract lump sum price as listed in the Bid Proposal. The price so-stated constitutes full and complete compensation for furnishing all materials, equipment, tools and labor as required including fittings, connections to existing gas main, roller supports, insulators, and all other incidentals needed to complete the work as required by National Grid, complete in place and accepted by the Engineer

GENERAL PROVISIONS – CONTRACT SPECIFIC

Addendum No. 2
R-1

1. BRIEF SCOPE OF WORK:

Rhode Island Contract No. 2017-CB-053, Federal-Aid Project No. BHO-0153(002), is for the Rehabilitation of Silver Creek Bridge No. 153, Hope Street (Route 114) over Silver Creek, in the Town of Bristol, Bristol County, Rhode Island.

The work associated with the Replacement of Silver Creek Bridge No. 153 generally consists of but is not limited to partial demolition of the existing bridge and installing a new bridge, including but not limited to concrete pile caps, steel micropiles, approach slabs, rehabilitation of existing stone masonry walls, elastomeric bearings, prestressed concrete deck beams, an asphaltic wearing surface, and granite curb.

Roadway work associated with the project generally consists of, but is not limited to: a) full depth reconstruction of the bridge approaches and roadway to the limits of new sidewalk within the project limits, b) adjustment and replacement of roadway utility structures (such as frame & cover, frames & grates, gate valve boxes, etc.), c) removal, resetting and installation of new curbing and sidewalk at the specified locations within the project limits, and d) replacement of signs and new pavement markings.

Overhead utilities along with underground telephone, gas (active and inactive), sewer (active), and water (active) are present at Bridge No. 153. The overhead utilities are to remain. The active gas main will remain beneath the east sidewalk and inactive gas mains will be removed. The water and sewer mains are to be relocated underneath the Silver Creek channel. Telephone manholes and proposed duct banks are proposed to cross the structure beneath the west sidewalk and ducts connecting from the manholes to utility poles to the north and south of Silver Creek Bridge.

The work will be conducted in two primary phases. The first will consist of relocation of the sewer and water mains. The second will consist of the bridge replacement and remaining utility work with the bridge closed to traffic during construction. A detour will be posted when the bridge is closed to traffic.

The project wide installation of erosion controls and maintenance and protection of traffic will be required during the construction period along with all other incidentals complete-in-place and accepted by the Resident Engineer.

2. LIST OF CONTRACT DRAWINGS:

Sheet	Description
1.	Cover Sheet
2.	Standard Plan Symbols & Standard Legend
3.	Standard Notes - 1
4.	Standard Notes - 2
5.	Job Specific Plan Symbols, Legend, & Notes
6.	Typical Sections
7.	General Plan
8.	Drainage & Utility Plan
9.	Signing & Striping Plan
10.	Roadway Profile
11.	Sewer Main and Water Main Profiles

12. Temporary Traffic Control Plan No. 1
13. Temporary Traffic Control Plan No. 2
14. Temporary Traffic Control Plan No. 3
15. Temporary Traffic Control Plan No. 4
16. Temporary Traffic Control Plan No. 5
17. Details – 1
18. Details – 2
19. Bridge Notes – 1
20. Bridge Notes – 2
21. Bridge Demolition Plan
22. Bridge General Plan
23. Bridge Sections
23a. Bridge Gas Main Installation Detail
24. Pile Layout Plan and Details
25. Typical Abutment Plan, Elevation, and Section
26. Abutment Sections and Details
27. Precast Tolerances and Bearing Details
28. Approach Slab Details
29. Framing Plan and Details
30. Beam Sections and Details
31. Typical Beam Details
32. Sidewalk Joints at Abutments
33. Curb Details
34. Parapet Details
35. End Post Base Details
36. Modified 6 Foot End Post
37. Steel-Backed Timber Guardrail Connection to End Post – 1
38. Steel-Backed Timber Guardrail Connection to End Post – 2
39. Miscellaneous Details
40. Boring Logs

3. UTILITY AND MUNICIPAL NOTIFICATION AND COORDINATION:

The Contractor shall schedule his construction to allow for a coordinated highway and utility effort. The Contractor is to coordinate utility work with the appropriate utility companies to avoid conflicts during construction. Upon award, the Contractor shall notify the lead utility relative to his anticipated construction start date. Immediately following the Pre-Construction Conference, the Contractor shall initiate the survey layout required for utilities.

The Contractor shall coordinate all lane closures and detours with the Engineer such that the Engineer can coordinate with the Town at least three days in advance for each lane closure and detour. The following municipal agencies and utility companies can be contacted for information regarding utilities, verification, or monitoring:

Gas & Electric
Mr. Thomas Capobianco
Lead Program Manager
RIDOT Gas and Electric National Grid
280 Melrose Street
Providence, RI 02907
Telephone: (401) 784-7248

Telephone
Mr. Peter DeCosta
Verizon Outside Plant Engineer
Verizon Communications, Inc. - RI
85 High Street
Pawtucket, RI 02860
Telephone: (508) 884-4950
Email: peter.x.decosta@verizon.com

Cable
Mr. David Velilla
Capital Support & Utility Contractor
CoxCom, LLC
9 J.P.Murphy Highway
West Warwick, RI 02893
Telephone: (401) 615-1284

Sewer
Mr. Jose DaSilva
Superintendent
Bristol Sewer Department
2 Plant Avenue
Bristol, RI 02809
Telephone (401) 253-8877
Email: jdsumpman@yahoo.com

Town of Bristol, DPW
Mr. Kevin R. McBride
Director
Bristol Public Works Department
111 Mount Hope Avenue
Bristol, RI 02809
Telephone: (401) 253-4100

Town of Bristol
Mr. Steven Contente
Town Administrator
Town of Bristol
10 Court Street
Bristol, RI 02809
Telephone (401) 253-7000

Bristol County Water Authority
Ms. Susan H. Rabideau, P.E.
Project Manager
450 Child Street
Warren, RI 02885
Telephone: (401) 245-2022, Ext. 38
Email: srabideau@bcwari.com

Fiberoptic
Mr. Doug Yock
Plant Manager
Full Channel TV
57 Everett Street
Warren, RI 02885
401-247-1250
dougy@fullchannel.com

National Grid Gas

All gas boxes need to be adjusted to the new road surface and all valve boxes need to be accessible at all times to be operated in the event of an emergency. New boxes, if needed, can be obtained at National Grid's Providence facility warehouse at 477 Dexter St.

The following shall be noted with regard to drain line crossings:

1. National Grid requires a minimum separation of 12" between their facility and the crossing drain line.
2. If a gas facility is exposed then the presence of a Damage Prevention inspector is required. Mr. David Soltys at 401-523-0579 or Mr. Rick LePage at 508-948-8432 shall be contacted.
3. If a gas facility is exposed, proper backfill and compaction of the gas line is required in accordance with Nation Grid document "Guidelines for Backfill and Compaction Around Gas Pipes".

4. If a gas main or gas main coating is damaged call 800-870-1664.
5. For a gas leak call 800-640-1595.

The anticipated schedule provided by National Grid Gas is as follows:

- The temporary gas main will be installed on the utility bridge by the gas subcontractor. – 2 weeks
- National Grid crew will tie-in first on the north end by teeing into the existing main and activate the temporary line. – 3 days
- National Grid crew will tie-in on the south end and with the tie-in they will cut the existing bridge main and install a valve and cap on the to remain end. – 3 days
- National Grid crew will then on the north end approx. 40 feet from the bridge cut the bridge main and install a valve and cap on the to remain end. The bridge main is now abandoned, and the bridge work may proceed. – 3 days
- The steel casing gets installed by the bridge contractor.
- The 8-inch plastic gas main gets installed in the casing and in the sidewalk by the gas sub all the way up to the capped main ends. Steel plate protection will be installed if the main is less than 24 inches deep. – 2 weeks
- National Grid crew ties in the new line on each end by closing the valves to do the tie-ins then reopening. – 3 days
- National Grid crew closes the valves on the temporary gas main and cuts, caps and abandons. – 3 days

See Paragraph 6. "Sequence of Construction" for additional requirements regarding micropile installation relative to the active gas main location.

See Appendix F for additional National Grid Gas Requirements.

Verizon

Based on the force account prepared by Verizon, the estimated duration of the installation of the duct banks and manholes is 7 weeks.

Dig Safe

The locations of all utilities as shown on the plans are approximate. The Contractor shall use care when working in or within the vicinity of existing drainage structures and underground utilities. The Contractor shall check and verify the location of all existing utilities and service connections both underground and overhead in accordance with the "Dig Safe Program Law" enacted by Rhode Island Legislation Bill No. 79S-291, which became effective July 1, 1979 and was amended effective November 1, 2009. No excavation shall be done until all involved utility companies and Dig Safe are notified 48 hours in advance. The Contractor should be aware that not all utility companies subscribe to the Dig Safe Program. It is the Contractor's responsibility to ensure that all utility companies have been notified and all utilities have been marked prior to commencing their work. Any damage to existing utilizes marked in the field, or as a results of failing to contact the appropriate utility company, shall be repaired or replaced at no additional cost to the State. The Contractor shall contact DigSafe (1-888-344-7233) prior to commencing with construction.

4. SPECIALTY ITEMS:

The following items are hereby designated "Specialty Items":

a. Pavement Markings (Temporary & Permanent)
b. Directional, Regulatory, and Warning Signs (other than temporary construction signs)
c. Seeding
d. Guardrail Installation
e. Utility Pipe Ramming
f. Prestressed Concrete Beams
g. Elastomeric Bearings
h. Granite Identification Tablets

5. TRANSPORTATION MANAGEMENT PLAN

Included as Appendix A to these Contract Specific General Provisions is the Transportation Management Plan (TMP) for this project. The TMP lays out the set of coordinated transportation management strategies that will be used to manage the work zone safety and mobility impacts of this project. In the event of a discrepancy between information in the TMP and information elsewhere in the Contract Documents, the former shall govern.

The Contractor's attention is called to the applicable portions of Section 100 – Award and Execution of the Rhode Island Department of Administration Emergency Procurement Regulations, which describes the requirements for the Contractor's designation of a TMP Implementation Manager for the Contract and the requirements for the training of all Contractor and Subcontractor personnel involved in work zone design, implementation, operation, inspection, management, and/or enforcement.

The Department's latest Training Guidelines for Personnel Responsible for Work Zone Safety & Mobility is available under the "Training" section at:
http://www.dot.ri.gov/documents/doingbusiness/TrainingGuidelinesWZSM.pdf

6. SEQUENCE OF CONSTRUCTION:

All work shall be completed in accordance with the Traffic-Related Work Restrictions indicated in the Transportation Management Plan.

A. The Contractor shall coordinate the work to ensure that all utility relocations may proceed without delay. The Contractor shall, immediately upon commencing work at the site, perform all work necessary for the preparation of utility company involvement prior to beginning any other work on the project. Such work will include, but not be limited to, site preparation, removal and disposal of trees, traffic control, etc. Tree trimming will be performed through the Statewide Tree Trimming contract. The Contractor shall notify the Resident Engineer at least two weeks in advance of when tree trimming is required.

B. The Contractor must submit, for the Department review and acceptance, a detailed construction schedule that complies with Section 12, Specification 108.03 of the latest revisions of the Supplemental Specifications. The required Schedule Level for this project is B. Per the Specifications the Contractor is required to generate the Schedules in Primavera P6, Version 7 or 8.

C. The proposed construction and time schedule must consider and address the safe vehicle and pedestrian passage through the project.

D. During the pavement removal operations, no over breakage into the operational travel lanes will be allowed.

E. The Contractor shall coordinate the proposed work schedule as stipulated in the permits for this project (see "Environmental Permits" Section).

F. No additional payment will be made for material, equipment, labor or incidentals necessary to perform operations during cold or inclement weather. Any additional costs associated with cold or inclement weather work will be considered incidental to the respective items for which the costs are incurred.

G. The Contractor shall schedule pavement removal and placement such that no location within the limits of the project shall remain without the surface course for longer than 10 working days, unless otherwise approved in writing by the Resident Engineer.

H. The Contractor shall plan the work such that at the end of each working day all of the pavement removal and/or paving operation shall be squared off from one edge of pavement to the other edge of pavement.

I. The Contractor shall be responsible for maintaining appropriate construction related signing at all times. Any signs not appropriate for construction activity taking place at any given time shall be removed or covered to the satisfaction of the Resident Engineer.

J. The required detour shall be posted and be in place before the bridge is closed, but no earlier the July 5. The Town of Bristol shall be notified of the closure a minimum of fourteen (14) days in advance.

K. All erosion controls shall be in-place and accepted by the Engineer prior to commencing work.

L. Any deviations from the requirements stated here or detailed in the reference drawings, as well as any deviations from the approved construction work sequence and time schedule must be submitted to the Resident Engineer in writing for approval.

M. The roadway and both sidewalks shall be open to traffic and pedestrians without restrictions from June 1 through July 5. All pavement and sidewalk joints and patches resulting from construction activities shall be made flush with the

surrounding pavement and sidewalk to the satisfaction of the Engineer by the start of this period.

N. All micropiles shall be installed prior to the full closure of the bridge.

O. The Contractor is to coordinate, through the RIDOT Project Manager, with the Rhode Island Historical Preservation and Heritage Commission for the proposed masonry work at the walls surrounding the bridge, and for approval of the proposed concrete color of the parapets and endpost.

P. The existing Verizon telecommunication duct bank and manholes must remain in service until the proposed manholes and conduit are placed by Verizon's Contractor. After the proposed manholes and conduit are in place then the existing system can be removed and disposed. The Contractor shall coordinate with Verizon's Contractor for scheduling of the utility relocation.

7. SPECIAL REQUIREMENT FOR TRAFFIC PROTECTION:

In addition to the requirements of the *Standard Specifications for Road and Bridge Construction*, the *Manual on Uniform Traffic Control Devices, 2009* and the special requirements of other sections of this contract document, the Contractor is advised that the signs and other traffic control devices shown on the Traffic Control Plans are minimum requirements. It is the Contractor's responsibility to supplement the plans and specifications as necessary to ensure the public's safety. All Maintenance and Protection of Traffic Devices shall be in place and approved by the Engineer prior to starting construction at a particular location. This work shall be included under Item Code 937.0200, "Maintenance and Movement of Traffic Protection". There will be no separate payment.

8. SPECIAL REQUIREMENTS FOR PAVEMENT MARKINGS:

Waterborne markings including edge lines, center lines, and stop line markings shall be installed before the end of the work shift on all newly installed pavement surface areas that will be opened to traffic at the end of the shift.

Final pavement markings shall be Epoxy Resin. The Epoxy Resin permanent pavement markings shall be placed on the final surface course no sooner than two weeks but no later than four weeks from the completion of the paving operation.

All pavement markings are to be in accordance with the requirements of the *Manual on Uniform Traffic Control Devices, 2009 Edition,* including all revisions.

9. UTILITY STRUCTURES AND WATERWAYS WITHIN ROADWAY:

No existing utility structures or waterways (i.e. paved waterways, gutter lines) shall be blocked by new pavement. Also, as indicated on the plan, the Contractor shall verify the locations of all manholes for adjustments to grade. Where necessary, the utility structures within the micro milling areas have been called for adjustment to new grade. Otherwise, at all other areas within the micro milling and pave areas, the new pavement shall be tapered in towards the inlet opening.

10. CONTRACTOR'S RESPONSIBILITY FOR DAMAGED STORM DRAINS

The Contractor shall use care when working within or in the vicinity of existing drainage structures. Any drainage structures, pipe or culverts damaged during the disposing of, cleaning of, and installation of or while making repairs to drainage structures, pipes or culverts or while carrying out any other work on this contract shall be the Contractor's responsibility. Any pipe/culvert damaged by the Contractor while carrying out this contract shall be replaced or repaired by the Contractor to the satisfaction of the Engineer at no additional charge to the State.

The Contractor will be responsible for:

- any damage to any existing structures, pipe, or equipment in the roadway, and
- any damage to existing walls, fences, etc.

The Contractor shall make every effort to prevent debris from falling into catch basins. Should any debris fall inside a structure, it shall be removed immediately.

11. STORAGE OF CONSTRUCTION MATERIAL AND/OR EQUIPMENT:

a. Roads with Curbing and Sidewalks:

No portion of the shoulders and sidewalks are to be used for storage of construction equipment and/or material.

There shall be no parking or storage of construction equipment under the dripline of any trees.

Due to the extremely sensitive nature of the vegetation along RI Route 114, the Contractor will not be allowed to park or store vehicles, equipment, or stockpile any materials on the root system of any street trees or any other vegetation within the project corridor.

12. TRAFFIC FINES IN WORK ZONE:

"Traffic Fines in Work Zone Regulatory Signs", RI Standard 27.1.1, shall be utilized whenever construction activities are in progress and construction personnel are present. The signs shall either be removed from the site or covered at all other times.

13. SIDEWALK SAWCUT NOTES

Prior to sidewalk removal, a full-depth sawcut shall be provided in all sidewalks to be removed at a distance to be determined by the Engineer (6 inches minimum) from the face of adjacent buildings and retaining walls. If a determination is made in the field by the Engineer that the final 6 inches (minimum) of sidewalk must be removed, it will be carefully removed by hand in a manner such that the adjacent structure is not damaged. There will be no separate payment for this handwork or sawcutting, as payment will be included in the bid price of Item Code 201.0403, "Remove and Dispose Sidewalks". New sidewalk will match at cut line locations to be determined. If the new sidewalk matches at a longitudinal cut line, the required expansion joint material will be considered incidental to the price of the new sidewalk.

14. BLASTING RESTRICTIONS

No blasting will be allowed on this project.

15. SURVEY LAYOUT NOTES

Prior to removal of existing pavement, curb, drainage structures, or gutter line pavement, the Contractor must coordinate with the Engineer. The Contractor's survey crews shall establish all existing curb (where the curb line is not changing), and rim elevations. Once these grades have been established, the Contractor may remove curb, drainage structures, or gutter line pavement and then replace or reset them to the original elevations unless otherwise noted on the plans. There will be no separate payment for this type of survey work.

The Engineer will not authorize construction activities to begin until he is satisfied that all appropriate ground control has been established, tied down, and duly recorded in standard field books. It is the Contractor's responsibility to ensure that construction layout is provided in sufficient detail, thereby enabling him to construct the project in conformity with the plans, details and specifications.

16. RIGHT-OF-WAY AND DAMAGE TO PROPERTY:

If the Contractor desires to use additional areas outside of the Right-of-Way, he shall arrange for such areas at his own expense.

The Contractor shall take adequate precautions to avoid unnecessary damage to pavements, utilities, or private properties. The Contractor shall promptly repair (in kind), at his own expense, any damage attributed to his work to such pavements, utilities, or private property to the satisfaction of the Engineer.

The Contractor shall assume all risk and liability for his equipment left on site during both working and non-working hours.

17. COORDINATION WITH OTHER PROJECTS

The Contractor shall be aware of other projects ongoing or commencing during the construction period of this project. It shall be the Contractor's responsibility to coordinate with the Engineer to determine the impacts of his construction operations on adjacent projects. The Contractor may be required to attend periodic coordination meetings with representatives of the State to discuss and resolve potential conflicts.

18. INCIDENT MANAGEMENT

In the event of an accident or other unforeseen incident within the work zone, the Contractor shall positively cooperate with local authorities by providing traffic control devices, personnel, equipment and material as required, both on and off site. The Contractor shall assist in whatever way possible to clear debris from the roadway and maintain traffic flow.

19. DESIGNATED SCENIC HIGHWAY

The Contractor is hereby notified that RI Route 114 in the Town of Bristol is a designated scenic roadway. The street trees along the roadway are one of the major elements that make this roadway scenic. Refer to Section 11, Storage of Construction Material and/or Equipment.

20. STORMWATER POLLUTION PREVENTION PLAN

Included as Appendix B to these Contract Specific General Provisions is the Small Site Stormwater Pollution Prevention Plan (SWPPP) for this project. It shall be the Contractor's responsibility to adhere to all restrictions as stated or implied by the plan and orders attached hereto and included as part of these Contract Documents.

There will be no special payment for work done to comply with these plans and orders.

21. ENVIRONMENTAL PERMITS

Environmental Permits for the Rehabilitation of Silver Creek Bridge No. 153 are included in Appendix D. It shall be the Contractor's responsibility to comply with all restrictions and stipulations stated or implied by the permits and orders.

Any and all deviations from the approved permit operations or conditions shall be submitted for approval to the corresponding permitting agency or agencies. Work that deviates from approved permit operations or conditions shall not begin without receipt of the proper approvals.

The conceptual approval letter for the RIPDES Remediation General Permit for construction dewatering and groundwater sample test results have been included in Appendix D. The final authorization to discharge will not be issued until the awarded Contractor has completed the permit as the Owner/Operator per the conceptual approval letter.

There will be no special payment for work done to obtain and comply with the RIPDES permit

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22. SHOP DRAWINGS AND SUBMITTALS

The following list of items of work for which shop drawings and/or other submittals are required is provided for the convenience of the Contractor. This list includes only the major items of bridge/structural work; it does not itemize all submittals required by the Contract Documents. All submittals shall be in accordance with Section 105.02 of Standard Specifications. The Contractor is responsible for the timely submission of all shop drawings and other documents required by the Contract. No extra payment will be made, nor will any extension be made to the Contract completion date for making required submittals.

A submittal for the Guardrail End Treatment, Energy Absorbing Terminal is required for information detailing the end treatment measurements and must be a product listed on the RIDOT Approved Materials List for approved equal.

Structural/Bridge

1. Construction Procedures: type, size, and placement of equipment, detailed sequence of work, methods, concrete falsework details, etc.
2. Control of Water: methods, equipment, and detailed sequence of work
3. Bridge Demolition: methods, equipment, shielding, and detailed sequence of work
4. Steel Micropiles: pipe, concrete fill, coatings, installation equipment and sequence, and load testing plan and results
5. Concrete and CLSM: mix designs, placing & pouring sequence, methods and equipment, curing plan including heat flow analyses and methods, personal resources, formliners, finishing methods
6. Waterstops
7. Joint Fillers
8. Precast Concrete
9. Non-Shrink Grout
10. Reinforcing Steel, Splicers, and Inserts
11. Elastomeric Bearings
12. Granite Curb for Bridges
13. Filter Fabric
14. Steel-Backed Timber Guardrail Connection to Endpost
15. Stone Masonry Walls

Highway/Utility

1. Water: pipe, valves, couplings, bypass design, support of excavation, pressurizing and disinfection of system, etc.
2. Sewer: pipe, valves, couplings, bypass design, support of excavation, etc.
3. Utility Pipe Ramming: methods, procedures, and equipment, including the design of the trench required for the equipment and pipe ramming.
4. Drainage: Inline check valves

23. POLICE COMPENSATION

It will be the responsibility of the Resident Engineer to retain the services of the local police for traffic control and protection of this project. The Contractor shall give the Resident Engineer four (4) working days' notice of anticipated lane closures (location and duration) in order for the Resident Engineer to determine if police details are appropriate and to obtain their services. The Contractor will not be required to bid, or be compensated for, the services of the police.

24. AVAILABLE DOCUMENTS

The following documents are available for review:

1. Rhode Island Department of Transportation, Bridge Inspection Report – Silver Creek Bridge No. 015301, 5/04/2016.

This document is available for informational purposes only and may be requested from RIDOT. It shall not be considered part of the Contract Documents. The Contractor shall be responsible for field-verifying the information shown in this document.

APPENDIX D

ENVIRONMENTAL PERMITS

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

April 30, 2019

Regulatory Division
File Number: NAE-2019-00539

Robert Innocent
Rhode Island Department of Transportation
2 Capital Hill
Providence, Rhode Island 02903

Dear Mr. Innocent:

We have reviewed the application for work associated with the replacement Silver Creek Bridge No. 153, which will include the placement of 0.75 cubic yards of rip rap over 20 square feet, located below the high tide line in Silver Creek at Route 114, Bristol, Rhode Island. The work is shown on the enclosed plans titled "SILVER CREEK" on 14 sheets, and dated "FEBRUARY 2019".

Based on the information that you have provided, we verify that the activity is authorized under General Permit 8 of the enclosed March 3, 2017 Federal permit known as the Rhode Island General Permits (GPs).

Please review the enclosed GPs carefully, including the general conditions beginning on Page 25, to be sure that you and whoever does the work understand its requirements. A copy of the GPs and this verification letter shall be available at the project site throughout the time the work is underway. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with any special condition provided above or all of the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations. You must perform this work in compliance with the terms and conditions of the GPs.

This authorization expires on March 3, 2022. You must commence or be under contract to commence the work authorized herein by March 3, 2022, and complete the work by March 3, 2023. If not, you must contact this office to determine the need for further authorization before beginning or continuing the activity. We recommend that you contact us *before* this authorization expires to discuss reissuance. Please contact us immediately if you change the plans or construction methods for work within our jurisdiction. We must approve any changes before you undertake them.

This authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law.

We continually strive to improve our customer service. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Please contact Mr. Taylor Bell, of my staff, at (978) 318-8952 if you have any questions.

Sincerely,

Kevin R Kotelly

Kevin R. Kotelly, P.E.
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosures

cc:
Neal Personeus, RI DEM, Providence, RI; neal.personeus@dem.ri.gov
Erica Sachs, U.S. EPA, Region 1, Boston, Massachusetts, sachs.erica@epa.gov

INDEX OF DRAWINGS

R.I. STANDARD SPECIFICATIONS AND STANDARD DETAILS

SPECIFICATIONS TO GOVERN THIS PROJECT ARE THE R.I. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AMENDED MARCH 2018, WITH ALL REVISIONS AND THE STATE AND FEDERAL SPECIAL PROVISIONS INCLUDED IN THE CONTRACT DOCUMENTS. STANDARD DETAILS FOR THIS PROJECT ARE R.I. STANDARD DETAILS, 1998 EDITION, WITH ALL REVISIONS.

STATE OF RHODE ISLAND

DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED

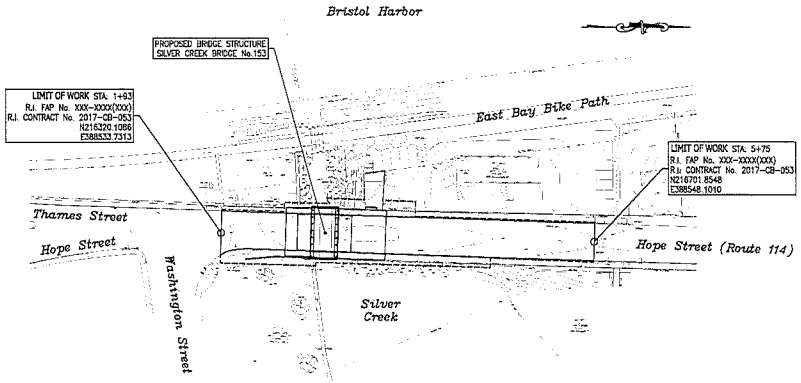
SILVER CREEK BRIDGE NO. 153

ROUTE 114 (HOPE STREET)

BRISTOL, RHODE ISLAND
BRISTOL COUNTY

R.I. CONTRACT NO. 2017-CB-053 F.A. PROJECT NO. XXX-XXXX(XXX)

0.07 MILES



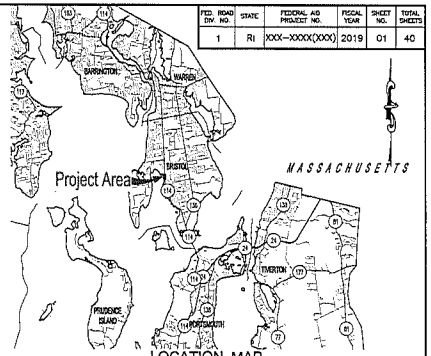
LAYOUT PLAN
SCALE: 1" = 60'

SCALES OF DRAWINGS
PLANS: 1 INCH = 20 FEET

BASE OF LEVELS
VERTICAL DATUM USED: NAVD-88
HORIZONTAL DATUM: RHODE ISLAND STATE PLANE, NAD-83 (2007) (2002.00)

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

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	XXX-XXXX(XXX)	2019	01	40



LOCATION MAP
SCALE: N.T.S.

DESIGN DESIGNATION

AADT (2019) = 19,100 VEH
AADT (2039) = 23,400 VEH
DHV (2039) = 2,340 VEH
D = 50/50
T = 15%
DESIGN SPEED = 35 MPH

HURRICANE EVACUATION ROUTE

THIS PROJECT INCLUDES WORK ON A DESIGNATED HURRICANE EVACUATION AND DIVERSIONARY ROUTE AS FOLLOWS:
ROUTE 114 (HOPE STREET)

REFER TO GENERAL NOTE 18 ON SHEET 3 AND BRIDGE GENERAL NOTE 10 ON SHEET 19.

PROPOSED PAVEMENT STRUCTURE

ROUTE 114 HOPE STREET:

FULL DEPTH CONSTRUCTION:
2" MODIFIED CLASS 12.5 HMA
5" CLASS 19.0 HMA (PLACED IN TWO 2.5" LIFTS)
12" GRAVEL BORROW SUBBASE COURSE
ASPHALT EMULSION TACK COAT BETWEEN HMA LAYERS

BRIDGE DECK:
3" MIN. MODIFIED CLASS 9.5 HMA
(PLACED IN TWO 1.5" MIN. LIFTS, DEPTH VARIES)
ASPHALT EMULSION TACK COAT BETWEEN HMA LAYERS

PERMIT SUBMISSION
FEBRUARY 2019

Contract Number 2017-CB-053
Number of Sheet 01
Total Sheets 40

R.I. DEPARTMENT OF TRANSPORTATION

APPROVED

ADMINISTRATOR, PROJECT MANAGEMENT — DATE

APPROVED

CHIEF ENGINEER OF INFRASTRUCTURE — DATE

APPROVED

DIRECTOR — DATE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR — DATE

1000E_V1_D01_CDVER

EXISTING		NEW
	EDGE OF PAVEMENT	
	BERM	
	CURB	
	GUARDRAIL	
MB	MAILBOX	
UP NO.	UTILITY POLE	NO.
	POLE GUY	GUY
	LUMINARE	
SIGN	SIGN	
(SIZE)SD	SUBDRAIN	N(SIZE)SD (Length — Size)
(SIZE)D	STORMDRAIN	
(SIZE)S	SANITARY SEWER	(Length — Size)
(SIZE)W	WATER MAIN	N(SIZE)W
(SIZE)G	GAS MAIN	N(SIZE)G
(SIZE)T	TELEPHONE DUCT	N-#(SIZE)T
(SIZE)E	ELECTRIC DUCT	N-#(SIZE)E
	PLUG AND CAP PIPE	
	ABANDONED UTILITY	
	FLARED END SECTION	
	HEADWALL	
WC GC GC	WATER OR GAS GATE	
CB	CATCH BASIN	
MH	MANHOLE	
HYD	HYDRANT	
1+00	BASELINE OR CENTERLINE	1+00
EXIST. S.H.L. PLAT NO. XX	STATE HIGHWAY LINE	NEW S.H.L. PLAT NO. XX
EXIST. S.F.L. PLAT NO. XX	STATE FREEWAY LINE	NEW S.F.L. PLAT NO. XX
EXIST. P.E.B.	PERMANENT EASEMENT LINE	NEW P.E.B.
EXIST. T.E.B.	TEMPORARY EASEMENT LINE	NEW T.E.B.
	PROPERTY LINE	
CITY NAME / TOWN NAME	CITY OR TOWN LINE	
PSW	PAVED WATERWAY	
ELEV.	CONTOUR LINE	ELEV.
	OPEN DITCH	
R.I.H.B.	R.I. HIGHWAY BOUND	
S.B.	STONE BOUND	
	RETAINING WALL	
	FIELD STONE WALL	
NO.	BORINGS	NO.
TYPE	FENCE	
	WOOD OR BRUSH LINE	
	TREES	
(LIGHT)	RIVER OR STREAM	
	WETLAND AREA	
NO TYPE MATERIAL	BUILDING	
	FOUNDATION	
	BUILDING TO BE REMOVED	
	RAILROAD TRACKS	
	CUT AND MATCH	
RIP	RIP-RAP	
	CUT SLOPE	ROADWAY / TOP OF SLOPE
	FILL SLOPE	ROADWAY / TOE OF SLOPE
	ROCK CUT	ROCK TOP OF CUT / ROCK CUT
00.00	SPOT GRADE	00.00
	AREA GRADED TO DRAIN	ELEV.
	BALED HAY RI STD 9.1.0	
	BALED HAY & SILT FENCE RI STD. 9.3.0	
123 124 125	EDGE OF WETLAND	
	WETLAND PERIMETER	
ASSF	AREA SUBJECT TO STORM FLOW	
100 YR. FLOOD BOUNDARY	100-YEAR FLOOD PLAIN	
	LIMIT OF DISTURBANCE	LIMIT OF DISTURBANCE
	LIMIT OF GLEARING	LIMIT OF GLEARING

1.1.0	UNDERDRAIN	7.4.2	GRANITE TRANSITION CURB (VERTICAL FACE TO SLOPE FACE)	AB	ADJUST CATCH BASIN TO GRADE
1.3.0	CONCRETE CONNECTING COLLAR	7.5.0	BITUMINOUS CONCRETE LIP CURB	ABM	ADJUST CATCH BASIN TO MANHOLE
2.1.0	CONCRETE HEADWALLS FOR PIPE CULVERTS	7.5.1A	BITUMINOUS BERM (CONSTRUCTION METHOD A)	AC	ADJUST CURB STOP TO GRADE
2.2.0	STANDARD HEADWALLS FOR MULTIPLE 3'-6" TO 7'-0" PIPE CULVERTS	7.5.1B	BITUMINOUS BERM (CONSTRUCTION METHOD B)	AD	ADJUST DRAINAGE MANHOLE TO GRADE
2.3.0 (DIA.)	PRECAST CONCRETE FLARED END SECTION	7.6.0	CURB SETTING DETAIL	AE	ADJUST ELECTRIC MANHOLE TO GRADE
3.2.0	BRICK/SOLID BLOCK 4'-0" ROUND MANHOLE	8.2.0	BITUMINOUS CONCRETE DITCH	AFG	ADJUST FRAME AND COVER TO GRADE
3.2.1 (DIA.)	BRICK/SOLID BLOCK 5'-0" OR 6'-0" ROUND MANHOLE	8.3.0	RIP-RAP DITCH	AFG	ADJUST FRAME AND GRATE TO GRADE
3.3.0	BRICK/SOLID BLOCK TYPE "D" SQUARE CATCH BASIN	8.4.0	PAVED WATERWAY	AG	ADJUST GAS CATE BOX TO GRADE
3.3.2	BRICK/SOLID BLOCK TYPE "F" SQUARE CATCH BASIN	9.1.0	BALED HAY EROSION CHECK	ANH	ADJUST HANDHOLE TO GRADE
3.3.3	SOLID BLOCK FLUSH SQUARE CATCH BASIN	9.2.0	SILT FENGE OETAIL	AS	ADJUST SANITARY SEWER MANHOLE TO GRADE
3.4.0	BRICK/SOLID BLOCK TYPE "D" ROUND CATCH BASIN	9.3.0	BALED HAY DITCH EROSION CHECK AND SILT FENGE COMBINED	AT	ADJUST TELEPHONE MANHOLE TO GRADE
3.4.1	BRICK/SOLID BLOCK ROUND CATCH BASIN WITH GUTTER INLET	9.4.0	BALED HAY DITCH AND SWALE EROSION CHECK	AW	ADJUST WATER CATE BOX TO GRADE
3.4.2	BRICK/SOLID BLOCK TYPE "F" ROUND CATCH BASIN	9.5.0	LOG AND HAY CHECK DAM	BCO	BITUMINOUS CONCRETE DRIVEWAY
3.4.3	BRICK/SOLID BLOCK TYPE "R" CATCH BASIN	9.7.0	DEWATERING BASIN		3" BITUMINOUS CONCRETE TYPE I-2 8" GRAVEL BORROW SUBBASE COURSE
3.4.4	SOLID BLOCK FLUSH ROUND CATCH BASIN	9.8.0	BALED HAY CATCH BASIN INLET PROTECTION	BPS	BUILD NEW STRUCTURE OVER EXISTING PIPE
3.4.5 (DIA.)	BRICK/SOLID BLOCK 5'-0" OR 6'-0" ROUND CATCH BASIN	9.9.0	CONSTRUCTION ACCESS	CCB	CLEAN CATCH BASIN
3.5.0	SOLID BLOCK SHALLOW TYPE "F" SQUARE CATCH BASIN	10.1.0	WET STONE MASONRY RETAINING WALL	CCP	CUT AND CAP PIPE WITH RESTRAINT (ALL SIZES)
3.5.1 (SIZE)	SOLID BLOCK SHALLOW 5'-0" OR 6'-0" SQUARE CATCH BASIN	10.2.0	RUBBLE MASONRY WALL	CFP	CLEAN AND FLUSH PIPE
3.6.0	BRICK/SOLID BLOCK DROP INLET	10.3.0	CONCRETE RETAINING WALL	CG	CLEARING AND GRUBBING
3.7.0 (DIA.)	BRICK/SOLID BLOCK ROUNG MANHOLE OR CATCH BASIN GREATER THAN 12'-0"	10.4.0	STONE MASONRY STEPS	CMH	CLEAN MANHOLE
4.2.0	PRECAST 4'-0" ROUND MANHOLE	14.1.0	CONCRETE HIGHWAY BOUND	GP (DEPTH)	COLD PLANE
4.2.1	PRECAST 5'-0" ROUND MANHOLE	15.1.0	POST AND MOUNTINGS FOR RURAL MAILBOX	CPP	CUT AND PLUG PIPE (ALL TYPES, ALL SIZES)
4.2.2	PRECAST 6'-0" ROUND MANHOLE	15.2.0 (NO.)	POST AND MULTIPLE MOUNTINGS FOR RURAL MAILBOXES	DB	REMOVE AND DISPOSE BITUMINOUS GURB
4.3.0 (SIZE)	PRECAST 4'-0" OR 8'-0" SQUARE MANHOLE OR CATCH BASIN	18.2.0	PRECAST TYPE "A" HANDHOLE	DC	REMOVE AND DISPOSE CONCRETE CURB
4.4.0 (DIA.)	PRECAST 4'-0", 5'-0", OR 6'-0" ROUND CATCH BASIN	18.2.2	HEAVY DUTY TYPE "H" HANDHOLE	DCB	REMOVE AND DISPOSE CATCH BASIN
4.5.0	PRECAST CONCRETE DROP INLET	18.3.0	ALUMINUM LIGHTING STANDARDS	DDI	REMOVE AND DISPOSE DROP INLET
4.5.1	PRECAST CONCRETE DROP INLET LATERAL OUTLET	20.2.0	BI-DIRECTIONAL CONTROL DEVICE	DF	REMOVE AND DISPOSE FENCE
4.5.2	PRECAST CONCRETE DROP INLET LONGITUDINAL OUTLET	24.6.1	STREET SIGN MOUNTING DETAIL	DFG	REMOVE AND DISPOSE FRAME AND GOVER
5.3.0	CATCH BASIN AND MANHOLE STEP	26.2.0	POLYETHYLENE DRUM WITH MARKINGS	DFE	REMOVE AND DISPOSE FLARED END SECTION
5.4.0	CONCRETE COLLARS	26.3.0	PVC PLASTIC PIPE TYPE III BARRICADE	DFG	REMOVE AND DISPOSE FRAME AND GRATE
6.1.0	LIGHT-DUTY SQUARE FRAME AND ROUND COVER	31.1.0	CHAIN LINK FENCE 3'-0" TO 4'-0"	DFH	REMOVE AND DISPOSE FIRE HYDRANT
6.1.1	HEAVY DUTY SQUARE FRAME AND ROUND COVER	31.2.0	CHAIN LINK FENCE 5'-0" TO 6'-0"	DFP	REMOVE AND DISPOSE FLEXIBLE PAVEMENT
6.2.0	LIGHT-DUTY ROUND FRAME AND COVER	31.2.1	CHAIN LINK FENCE 5'-0" TO 6'-0" INTERMEDIATE POST	DG	REMOVE AND DISPOSE GUARDRAIL
6.2.1	HEAVY-DUTY ROUND FRAME AND GOVER	31.3.0	WOVEN WIRE RIGHT-OF-WAY FENCE (STEEL POST)	DH	REMOVE AND DISPOSE HEADWALL
6.3.0	SQUARE FRAME AND GRATE	34.1.0	TYPICAL GUARDRAIL INSTALLATION	DHB	REMOVE AND DISPOSE HIGHWAY BOUND
6.3.1	SQUARE FRAME AND GRATE	34.2.0	STEEL BEAM GUARDRAIL	DHH	REMOVE AND DISPOSE HANDHOLE
6.3.2	SQUARE FRAME AND GRATE (BICYGLE SAFE)	34.2.1	STEEL BEAM GUARDRAIL OETAILS	DL	REMOVE AND DISPOSE LIGHT AND FOUNDATION
6.3.3	HIGH CAPACITY FRAME AND GRATE	34.2.2	STEEL BEAM GUARDRAIL DOUBLE FAGED ASSEMBLY	DMB	REMOVE AND DISPOSE MEDIAN BARRIER
6.3.4	HIGH CAPACITY FRAME AND GRATE (BICYCLE SAFE)	34.2.3	STEEL BEAM GUARDRAIL FIXTURES	DMH	REMOVE AND DISPOSE MANHOLE
6.4.0	ROUND FRAME AND GRATE	34.2.5	STEEL BEAM GUARDRAIL REFLECTORIZED TRIANGULAR DELINEATOR	DMM	REMOVE AND DISPOSE MEDIAN MARKER
7.1.0S	PRECAST CONCRETE CURB (STRAIGHT)	34.3.1	GUARDRAIL END SECTION	DOW	REMOVE AND DISPOSE OBSERVATION WELL
7.1.0C	PRECAST CONCRETE CURB (CIRCULAR)	34.3.2	TERMINAL END SECTION (SINGLE FACE)	DP	REMOVE AND DISPOSE PIPE
7.1.1	3'-0" PRECAST CONGRETE TRANSITION CURB	34.3.3	ANCHORAGE DETAILS APPROACH END SECTION	DPB	REMOVE AND DISPOSE PAVEMENT AND RIGID BASE
7.1.2	6'-0" PRECAST CONCRETE TRANSITION CURB	34.3.4	ANCHORAGE DETAILS TRAILING END SECTION	DRB	REMOVE AND DISPOSE RIGID BASE
7.1.4	PRECAST 2'-0" RADIUS CORNER	34.4.0	STEEL BACKED TIMBER GUARDRAIL	DS	REMOVE AND DISPOSE SIGN
7.1.5	PRECAST CONCRETE INLET STONE (FOR SQUARE CATCH BASIN)	34.4.1	STEEL BACKED TIMBER GUARDRAIL TERMINAL SECTION-TYPE 1	DSS	REMOVE AND DISPOSE TRAFFIC SIGNAL SYSTEM
7.1.6	PRECAST CONCRETE INLET STONE (FOR ROUND CATCH BASIN)	40.1.0	DOUBLE-FACED PRECAST MEDIAN BARRIER	DSW	REMOVE AND DISPOSE SIDEWALK
7.1.7	PRECAST CONCRETE APRON STONE (FOR SQUARE CATCH BASIN)	40.2.0	SINGLE-FACED PRECAST MEDIAN BARRIER	DTD	REMOVE AND DISPOSE TELEPHONE DUCT BANKS
7.1.8	PRECAST CONCRETE APRON STONE (FOR ROUND CATCH BASIN)	40.2.1	SINGLE-FACED PRECAST MEDIAN BARRIER	DUP	REMOVE AND DISPOSE UTILITY POLE
7.2.0S	PRECAST CONCRETE SLOPED FACE CURB (STRAIGHT)	40.3.0	PRECAST MEDIAN BARRIER TRANSITION UNIT	DWW	REMOVE AND DISPOSE PAVED WATERWAY
7.2.0C	PRECAST CONCRETE SLOPED FACE CURB (CIRCULAR)	40.5.0	PRECAST MEDIAN BARRIER FOR TEMPORARY TRAFFIC CONTROL	FF	FILTER FABRIC RIPRAP FLARED END UNDERLAYMENT
7.2.1	PRECAST CONCRETE SLOPED FACE TRANSITION GURB	43.1.0	GEMENT CONCRETE SIDEWALK	GET	FLARED GUARDRAIL END TREATMENT
7.2.2	PRECAST CONCRETE TRANSITION CURB (VERTICAL FACE TO SPLDPED FACE)	43.2.0	BITUMINOUS CONCRETE SIDEWALK	IA	IMPACT ATTENUATOR
7.3.0S	GRANITE CURB (STRAIGHT)	43.3.0	WHEELCHAIR RAMP	IDL	IMPERVIOUS DITCH LINER
7.3.0C	GRANITE CURB (CIRCULAR)	43.3.1	WHEELCHAIR RAMP FOR LIMITED RIGHT-OF-WAY AREAS	LOD	LIMIT OF DISTURBANCE
7.3.1	3'-0" GRANITE TRANSITION CURB	43.4.0	DRIVEWAY DEVELOPMENT FOR 3'-0" TRANSITION CURB	LOR	LIMIT OF REGRADING
7.3.2	6'-0" GRANITE TRANSITION CURB	43.4.1	DRIVEWAY DEVELOPMENT FOR 6'-0" TRANSITION CURB	LS	4" LOAM AND SEED
7.3.3	GRANITE WHEELCHAIR RAMP TRANSITION CURB	43.5.0	GEMENT CONCRETE DRIVEWAYS		
7.3.4	GRANITE 2'-0" RADIUS CORNER	48.1.0	DETECTABLE WARNING SYSTEM		
7.3.5	GRANITE INLET STONE (FOR SQUARE CATCH BASIN)	51.1.0	TREE PROTECTION DEVICE		
7.3.6	GRANITE INLET STONE (FOR ROUND CATCH BASIN)	51.1.1	DRIP LINE TREE PROTECTION DEVICE FOR EXISTING TREES		
7.3.7	GRANITE APRON STONE (FOR SQUARE CATCH BASIN)	51.2.0	SHRUB PROTECTION OEVICE		
7.3.8	GRANITE APRON STONE (FOR ROUNG CATCH BASIN)	51.3.0	TREE WELL		
7.4.0	GRANITE SLOPED FACE GURB	51.4.0	TREE WALL		
7.4.1	GRANITE SLOPED FACE TRANSITION CURB				

NFH	NEW FIRE HYDRANT WITH GATE VALVE	SBAE	STEEL BEAM BRIDGE CONNECTION APPROACH END (W/O NESTED RAIL)
NIC	NOT IN THIS CONSTRUCTION CONTRACT	SBTE	STEEL BEAM BRIDGE CONNECTION TRAILING END (W/NESTED RAIL)
NWB	FURNISH AND INSTALL NEW WATER CATE VALVE BOX	SD--	STRUCTURAL DISPOSITION - SEE CS PAGES OF SPECIFICATION
NWVB	FURNISH AND INSTALL NEW WATER CATE VALVE AND BOX	SF	REMOVE AND STOCKPILE FENCE
NWCB	FURNISH AND INSTALL NEW WATER CURB STOP BOX	SGG	SPEGIAL GRADED AGGREGATE
NWSB	FURNISH AND INSTALL NEW WATER CURB STOP ANO BOX	SGG	REMOVE AND STOCKPILE GRANITE GURB
PCD	PERMANENT CHECK DAM	SGR	REMOVE AND STOCKPILE GUARDRAIL
PS	4" PLANTABLE SOIL AND SEED	SH	REMOVE AND STOCKPILE HYDRANT
RCB	RECONSTRUCT TYPE "D" CATCH BASIN, TO CATCH BASIN WITH GUTTER INLET	SS	REMOVE AND STOCKPILE SIGN
RCM	R.I.D.O.T. COMMUNICATIONS MANHOLE	STS	REMOVE AND STOCKPILE TRAFFIC SIGNAL SYSTEM
RHH	REMOVE, HANDLE, HAUL, TRIM, RESET CURB	TB	CONCRETE THRUST BLOCK
RMB	EDGING, STRAIGHT, GIRCULAR (ALL TYPES)	TEP	TIE EXISTING PIPE INTO NEW STRUCTURE
RPM	RELOCATE LAMP POST	TNP	TIE NEW PIPE INTO EXISTING STRUCTURE
RRP	RELOCATE MAILBOX (BY OTHERS)	TBT	THRIE BEAM TRANSITION
RRS	REMOVE PAVEMENT MARKINGS	TBBG	THRIE BEAM BRIDGE GONNECTION
RUP	REMOVE AND RELOCATE SIGN	TT	TREE TRIMMING
SB	RELOCATE UTILITY POLE (BY OTHERS)	WCM	4" WOOD CHIP MULCH
SBE	STONE BAFFLE	4DY	4" EPOXY RESIN PAVEMENT MARKINGS - DOUBLE YELLOW
		6W	6" EPOXY RESIN PAVEMENT MARKINGS - WHITE
		12W	12" EPOXY RESIN PAVEMENT MARKINGS - WHITE
		6WT	6" PREFORMED PATTERNED MARKING (HIGH PERFORMANCE TAPE)
		4Y	4" EPOXY RESIN PAVEMENT MARKINGS - YELLOW
		6Y	6" EPOXY RESIN PAVEMENT MARKINGS - YELLOW
		P.G.L.	PROFILE GRADE LINE

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	XXX-XXXX(XXX)	2019	D2	40

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

REVISIONS		
NO.	DATE	BY
1	6/07	TRB

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

STANDARD PLAN SYMBOLS & STANDARD LEGEND

CHECKED BY _____ DATE _____ SCALE _____

1000E_V1_002_STDSYM

GENERAL NOTES:

1. ANY DAMAGE TO EXISTING PAVEMENT, BRIDGES, CONDUIT, SIDEWALK, FENCES, ETC., CAUSED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE.

2. THE CONTRACTOR SHALL PLACE ALL EQUIPMENT AND MATERIAL AS FAR AWAY AS POSSIBLE FROM THE EDGE OF THE TRAVEL LANE SO AS NOT TO CAUSE A SAFETY HAZARD, IN ACCORDANCE WITH SECTION 106.06 OF THE R.I.D.O.T. STANDARD SPECIFICATION, LATEST EDITION.

3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE EXISTING CONDITIONS ARE NOT OBLITERATED BEFORE CONTROL POINTS ARE LOCATED AND CONSTRUCTION LAYOUT IS ESTABLISHED. THE CONSTRUCTION LAYOUT SHALL BE PROVIDED IN SUFFICIENT DETAIL, THEREBY ENABLING HIM TO CONSTRUCT THE PROJECT IN CONFORMITY WITH THE PLANS AND SPECIFICATIONS. SURVEY WILL BE PROVIDED BY THE CONTRACTOR. THE RESIDENT ENGINEER WILL NOT AUTHORIZE CONSTRUCTION ACTIVITIES TO BEGIN UNTIL HE IS SATISFIED THAT ALL GROUND CONTROL HAS BEEN ESTABLISHED, TIED DOWN, AND DULY RECORDED IN STANDARD FIELD BOOKS.

4. ALL R.I. STD. 9.9.0 CONSTRUCTION ACCESS ROADS SHALL BE CONSTRUCTED PRIOR TO ANY ROADWAY ACCEPTING CONSTRUCTION TRAFFIC.

5. THE FREQUENCY AND APPLICATION RATES FOR THE DUST CONTROL ITEMS WILL BE AS DIRECTED BY THE ENGINEER.

6. ALL SIDEWALK AND DRIVEWAYS DESIGNATED FOR REPLACEMENT SHALL BE CUT AND MATCHED AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

7. ASPHALT EMULSION TACK COAT SHALL BE PLACED PRIOR TO PAVEMENT PLACEMENT ON THE CONCRETE BASE OR COLD PLANED PAVEMENT, AND ON ANY NEW COURSE WHICH HAS BEEN OPEN TO TRAFFIC, OR ANY NEW COURSE WHICH HAS BEEN EXPOSED FOR MORE THAN 3 DAYS, AND/OR AS DIRECTED BY THE ENGINEER. IT SHALL ALSO BE APPLIED TO VERTICAL PAVEMENT FACES BETWEEN ADJOINING PAVEMENT SECTIONS. ALL APPLICATIONS ON BOTH HORIZONTAL AND VERTICAL SURFACES SHALL BE PAID FOR UNDER THE CONTRACT UNIT BID PRICE FOR CODE 403.0300 "ASPHALT EMULSION TACK COAT."

8. THE LIMITS OF CLEARING AND SURFACE DISTURBANCE MUST BE STRICTLY ADHERED TO IN ALL AREAS. IN ADDITION TO THOSE AREAS SPECIFICALLY DESIGNATED ON THE PLANS, THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING AND PLACING, AT HIS OWN EXPENSE, PLANTABLE SOIL AND SEED IN AREAS WHICH ARE OUTSIDE OF THE PROJECT'S AREAS OF DISTURBANCE AND WHICH ARE IMPACTED BY CONSTRUCTION OPERATIONS INCLUDING THOSE AREAS WHERE VEHICLES, EQUIPMENT AND MATERIALS ARE STORED WITH THE PERMISSION OF THE ENGINEER.

9. UNDER NO CIRCUMSTANCE WILL THE CONTRACTOR BE ALLOWED TO STOCKPILE REMOVED PAVEMENT MATERIALS WITHIN THE PROJECT LIMITS.

10. CLEANING AND SWEEPING OF PAVEMENT WILL INCLUDE REMOVAL OF ALL PAVEMENT DEBRIS PRIOR TO THE PLACEMENT OF EACH BITUMINOUS PAVEMENT LIFT. ALL CLEANING AND SWEEPING SHALL BE DONE TO THE SATISFACTION OF THE ENGINEER.

11. PRIOR TO INSTALLATION, ALL SIGNS, MOUNTINGS AND LOCATIONS SHALL BE APPROVED OR MODIFIED BY THE ENGINEER.

12. THE COORDINATE SYSTEM, IF SHOWN, IS THE RHODE ISLAND STATE PLANE COORDINATE SYSTEM.

13. PAVEMENT OPERATIONS FOR CURBED SECTIONS: IN AREAS WHERE CURBING IS SET TO FINISH LINE AND GRADE, THE CONTRACTOR WILL NOT BE REQUIRED TO UTILIZE THE SENSOR AND SKI-TYPE DEVICE FOR AUTOMATIC GRADE CONTROL, BUT WILL BE ALLOWED TO MANUALLY ADJUST THE BITUMINOUS PAVER FOR CONTROLLING GRADE.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ROADWAYS FREE OF DEBRIS RESULTING FROM THEIR CONSTRUCTION OPERATIONS. ALL DEBRIS SHALL BE REMOVED TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE STATE.

15. NO FUEL STORAGE, VEHICLE REFUELING, OR EQUIPMENT STORAGE SHALL TAKE PLACE IN DESIGNATED WETLANDS, NOR WITHIN 100' OF ANY WATER BODY. THIS REQUIREMENT SHALL NOT SUPERSEDE ANY FEDERAL, STATE OR LOCAL LAW, ORDINANCE, RULE OR REGULATION THAT APPLIES TO THE SAME, UNLESS THIS REQUIREMENT IS MORE STRINGENT THAN SAID LAW, ORDINANCE, RULE OR REGULATION.

16. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT AT THE END OF FINAL PAVING OPERATIONS, FLOW TO EXISTING DRAINAGE STRUCTURES HAS BEEN REESTABLISHED AND THAT NO ISOLATED DEPRESSIONS REMAIN. THERE SHALL BE NO SEPARATE PAYMENT FOR THIS PROVISION; IT SHALL BE CONSIDERED INCIDENTAL TO PAVING AND COLD PLANING OPERATIONS.

17. ALL EMBANKMENTS SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 12" (AFTER COMPACTION) AND SHALL BE COMPACTED AS SPECIFIED BEFORE THE NEXT LAYER IS PLACED. ALSO, EMBANKMENT CONSTRUCTION SHALL CONFORM TO SECTION 202.03.2 OF THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION.

18. IF THIS PROJECT IS ON A HURRICANE EVACUATION AND DIVERSIONARY ROUTE, AS DESIGNATED ON THE COVERSHEET, THE CONTRACTOR IS ADVISED THAT UPON 12 (TWELVE) HOURS NOTICE THE ROADWAY SHALL BE OPEN TO EVACUEES AND EMERGENCY PERSONNEL. ANY EXTRA WORK NECESSARY TO COMPLY WITH THIS REQUIREMENT WILL BE REIMBURSED UNDER FORCE ACCOUNT PROCEDURES.

19. THE CONTRACTOR SHALL READ, BECOME FAMILIAR WITH, AND ADHERE TO ALL OF THE PROVISIONS, CONDITIONS, AND STIPULATIONS STATED IN THE ENVIRONMENTAL APPROVALS ISSUED FOR THE PROJECT FROM THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (RIDEM), AND/OR THE ARMY CORPS OF ENGINEERS (ACOE), AND/OR THE COASTAL RESOURCES MANAGEMENT COUNCIL (CRMC). COPIES OF EACH OF THESE PERMITS ARE INCLUDED IN THE CS PAGES OF THE CONTRACT DOCUMENTS. ALL COSTS ASSOCIATED WITH THESE CONDITIONS SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION AND INCLUDED WITH THE COST FOR THE ASSOCIATED BID ITEM(S).

20. FOR ALL PROJECTS INVOLVING KNOWN SITE REMEDIATION ISSUES, THE CONTRACTOR SHALL READ, BECOME FAMILIAR WITH, AND ADHERE TO ALL OF THE CONSTRUCTION RELATED PROVISIONS, CONDITIONS, AND STIPULATIONS OF ANY REMEDIAL PLANS DEVELOPED FOR THE PROJECT. COPIES OF THESE DOCUMENTS ARE INCLUDED IN THE CS PAGES OF THE CONTRACT DOCUMENTS. ALL COSTS ASSOCIATED WITH COMPLIANCE WITH THESE DOCUMENTS SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION AND INCLUDED WITH THE COST FOR THE ASSOCIATED BID ITEM(S).

21. NO UNPROTECTED CONSTRUCTED FEATURE MAY PROJECT MORE THAN 4 INCHES ABOVE THE FINISHED GRADE OF A TRAVERSABLE SLOPE IN A CLEAR ZONE, e.g. HEADWALL, DRAINAGE INLET, ETC.

22. THE REMAINING SECTION OR STUB OF A BREAKAWAY BASE MAY NOT PROJECT MORE THAN 4 INCHES ABOVE THE FINISHED GRADE OF A TRAVERSABLE SLOPE IN A CLEAR ZONE, e.g. SIGN POSTS, LIGHT POLES, FIRE HYDRANTS, ETC.

DRAINAGE AND EROSION CONTROL NOTES:

1. FOR ALL PROJECTS WITH AT LEAST ONE(1) ACRE OF SOIL DISTURBANCE, R.I.D.O.T. IS REQUIRED TO DEVELOP AND ENFORCE A SITE SPECIFIC STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN ORDER TO REMAIN IN COMPLIANCE WITH THE RIPDES GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL READ, BECOME FAMILIAR WITH, AND ADHERE TO ALL OF THE PROVISIONS, CONDITIONS, AND STIPULATIONS OF THE GENERAL PERMIT AND THE SITE SPECIFIC SWPPP FOR THIS PROJECT. COPIES OF THESE DOCUMENTS ARE INCLUDED IN THE CS PAGES OF THE CONTRACT DOCUMENTS. ALL COSTS ASSOCIATED WITH ADHERENCE TO THE SWPPP SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION AND INCLUDED WITH THE COST FOR THE ASSOCIATED BID ITEM(S).

2. NO UNDISTURBED AREAS SHALL BE CLEARED OF EXISTING VEGETATION AFTER OCTOBER 15 OF ANY CALENDAR YEAR OR DURING ANY PERIOD OF FULL OR LIMITED WINTER SHUTDOWN. ALL DISTURBED SOILS EXPOSED PRIOR TO OCTOBER 15 OF ANY CALENDAR YEAR SHALL BE SEEDED OR PROTECTED BY THAT DATE. ANY SUCH AREAS THAT DO NOT HAVE ADEQUATE VEGETATIVE STABILIZATION, AS DETERMINED BY THE RESIDENT ENGINEER OR ENVIRONMENTAL INSPECTOR, BY NOVEMBER 15 OF ANY CALENDAR YEAR, MUST BE STABILIZED THROUGH THE USE OF EROSION CONTROL MATTING OR HAY MULCH, IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK. IF WORK CONTINUES WITHIN ANY OF THESE AREAS DURING THE PERIOD FROM OCTOBER 15 THROUGH APRIL 15, CARE MUST BE TAKEN TO ENSURE THAT ONLY THE AREA REQUIRED FOR THAT DAY'S WORK IS EXPOSED, AND ALL ERODIBLE SOIL MUST BE RESTABILIZED WITHIN 5 WORKING DAYS. ANY WORK TO CORRECT PROBLEMS RESULTING FROM FAILURE TO COMPLY WITH THIS PROVISION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THERE WILL BE NO SEPARATE PAYMENT FOR THIS PROVISION. IT SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION OPERATIONS. STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN 2 WEEKS OF FINAL GRADING.

3. STOCKPILES OF MATERIAL SHALL NOT BE LOCATED WITHIN REGULATED WETLANDS OR BUFFER ZONE AREAS. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN 30% AND STOCKPILES OF ERODABLE MATERIAL SHALL ALSO BE SEEDED AND RINGED WITH R.I. STD. 9.1.0 TO STABILIZE.

4. IF THE PLANS INCLUDE SPECIFIC AREAS FOR PLACEMENT OF CONSTRUCTION DEWATERING BASINS AND/OR EQUIPMENT AND MATERIALS STORAGE AND STOCKPILING, AND IF THE CONTRACTOR ELECTS TO UTILIZE ANY OTHER AREAS FOR THESE PURPOSES, THIS SHALL BE APPROVED BY THE ENGINEER ONLY AFTER OBTAINING ANY NECESSARY PERMITS AND/OR PERMIT MODIFICATIONS FROM THE APPROPRIATE REGULATORY AUTHORITY(IES). ANY PERMITTING REQUIREMENTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED AT NO COST TO THE STATE. THE ENGINEER WILL COORDINATE SUBMISSION OF ANY REQUIRED PERMIT APPLICATION MATERIALS WITH THE R.I.D.O.T. OFFICE OF ENVIRONMENTAL PROGRAMS.

5. JUTE MESH SHALL BE USED TO STABILIZE PLANTABLE SOIL AND/OR LOAM IN ALL DITCHES, ON ALL SLOPES ADJACENT TO WETLANDS AND WETLAND PERIMETERS, AND ON ALL SLOPES WITHIN WATER QUALITY BASINS. JUTE MESH IN DITCHES SHALL EXTEND TO AN ELEVATION 2 FEET ABOVE THE BOTTOM OF THE DITCH.

6. SEEDING ON ALL SLOPES 3 TO 1 OR STEEPER SHALL CONSIST OF THE FOLLOWING APPLICATIONS UNLESS CHANGED IN THE CONTRACT.

   a. SEEDING TYPE 1.

   b. ADHESIVE MULCH STABILIZER

7. UNVEGETATED SLOPES SHALL NOT BE UNATTENDED OR EXPOSED FOR PERIODS IN EXCESS OF 2 WEEKS OR THROUGH THE INACTIVE WINTER SEASON.

8. PRIOR TO DRAINAGE AND UTILITY CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION (HORIZONTAL AND VERTICAL) OF ALL EXISTING PIPES AND/OR STRUCTURES WHICH ARE TO BE CONNECTED. ANY VARIATION FOUND FROM THE PLANS MUST BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO DRAINAGE AND UTILITY CONSTRUCTION. WORK CAN COMMENCE ONLY UPON THE ENGINEER'S AUTHORIZATION.

9. ALL DRAINAGE AND UTILITY STRUCTURES WITHIN THE PAVED ROADWAY SHALL BE ADJUSTED TO GRADE WITH THE SURROUNDING PAVEMENT PRIOR TO THE WINTER SHUTDOWN.

10. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUNOFF FLOW DURING STORMS AND PERIODS OF RAINFALL THROUGHOUT THE WORK AREA.

11. CATCH BASIN RIM GRADES NOTED ON PLANS ARE DEPRESSED 0.1' LOWER THAN THE GUTTER GRADE. RIM ELEVATIONS SHOWN ARE FINAL GRADES. THE CONTRACTOR SHALL PLACE FRAMES AND GRATES 0.1' BELOW THE GRADE CONSTRUCTED IN THIS CONTRACT OR AS DIRECTED BY THE ENGINEER.

12. PROVISIONS FOR CLEARING TO ACCESS OUTFALLS DURING THE CLEANING AND FLUSHING OF THE CLOSED DRAINAGE SYSTEM SHALL BE KEPT TO A MINIMUM.

   a. ANY VEGETATIVE CLEARING SHALL BE LIMITED TO BRUSH AND TREES LESS THAN 3" DIAMETER.

   b. NO HEAVY EQUIPMENT MAY ENCROACH UPON VEGETATED PERIMETER OR RIVERBANK WETLANDS AS WELL AS BIOLOGICAL WETLANDS.

13. THE CONTRACTOR SHALL INSTALL ALL EROSION CONTROL DEVICES FOR OUTLET PROTECTION PRIOR TO CLEANING AND FLUSHING STORM WATER DRAINAGE. EROSION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL ALL FLUSHED SEDIMENTS ARE REMOVED. AT ALL OUTFALL LOCATIONS WHERE PIPES ARE TO BE CLEANED AND FLUSHED, OUTLET PROTECTION (R.I. STD. 9.1.0 OR 9.3.0) SHALL BE INSTALLED TO TRAP SEDIMENTS. THESE SEDIMENTS SHALL THEN BE REMOVED AND DISPOSED OF LEGALLY BEFORE THE OUTLET PROTECTION DEVICES ARE REMOVED. IF OUTLET PROTECTION AT THE OUTFALL IS NOT FEASIBLE, THEN THE OUTLET PIPE OF THE LAST DRAINAGE STRUCTURE TO BE CLEANED SHALL BE PLUGGED TO CAPTURE ALL MATERIALS FLUSHED FROM PIPES. AFTER THE MATERIALS ARE REMOVED FROM THE DRAINAGE STRUCTURE, THE OUTLET SHALL BE UNPLUGGED TO RESUME NORMAL FUNCTIONING.

14. R.I. STD. 9.8.0 BALED HAY INLET PROTECTION SHALL BE INSTALLED AT ALL CATCH BASINS AND INLETS WHENEVER SUBBASE IS EXPOSED, AND SHALL REMAIN IN PLACE UNTIL THE ABUTTING GROUND SURFACES ARE STABILIZED.

15. WHERE BALED HAY INLET PROTECTION AND SILT FENCES ARE USED AT CATCH BASINS, THEY SHALL BE REMOVED AT THE END OF THE PROJECT OR AS DIRECTED BY THE ENGINEER IN ORDER TO PREVENT CLOGGING OF THE INLET.

DRAINAGE AND EROSION CONTROL NOTES (CONTINUED):

16. DETENTION AND RETENTION BASINS MAY BE ROUGH GRADED AND STABILIZED WITH VEGETATION AND/OR OTHER EROSION CONTROL MEASURES AS REQUIRED BY THE ENGINEER PRIOR TO USE AS TEMPORARY SEDIMENTATION BASINS DURING PROJECT CONSTRUCTION. FINAL BASIN CONSTRUCTION SHALL NOT COMMENCE UNTIL ALL SOURCES OF SEDIMENT HAVE BEEN ELIMINATED, FINAL ROADSIDE VEGETATION IS ESTABLISHED AND USE OF TEMPORARY BASINS IS NO LONGER REQUIRED AS DIRECTED BY THE ENGINEER. ANY ISSUES RELATING TO EROSION AND/OR SEDIMENT TRANSPORT INTO WETLAND AREAS RESULTING FROM SUCH USE OF SEDIMENTATION BASINS DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ANY CORRECTIVE ACTION REQUIRED TO RESOLVE SUCH ISSUES SHALL BE COMPLETED BY THE CONTRACTOR.

17. THE TOE OF ANY FILL SLOPE IS TO REMAIN AT LEAST 1' INSIDE OF ALL EROSION CONTROLS. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR COVER ANY PORTION OF THE EROSION CONTROL MEASURES WITH MATERIAL. ANY MATERIAL THAT IS PLACED ON ANY EROSION CONTROLS BY THE CONTRACTOR, OR ANY AGENT OF THE CONTRACTOR, SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR, AND ANY NECESSARY REPAIRS TO THE EROSION CONTROLS ACCOMPLISHED.

18. PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES, EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED AT THOSE AREAS INDICATED ON THE PLANS. CLEARING MAY OCCUR PRIOR TO INSTALLATION OF SUCH CONTROLS, HOWEVER NO GRUBBING, GRADING, FILLING, OR OTHER SOIL DISTURBANCE SHALL OCCUR PRIOR TO INSTALLATION. THE LIMITS OF CLEARING AND SURFACE DISTURBANCE MUST BE STRICTLY ADHERED TO IN ALL AREAS.

19. ALL HAY BALES, SILT FENCE OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS IS ESTABLISHED. IF NEEDED, TEMPORARY SEEDING CAN HELP TO MINIMIZE EROSION. TEMPORARY SEED WILL CONFORM TO R.I.D.O.T. STANDARD TEMPORARY SEED MIX.

20. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND HE SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE STATE.

21. THE NORMAL ACCEPTABLE SEASONAL SEEDING DATES ARE SPECIFIED IN SUBSECTION L.D2.03 OF THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION.

22. ADDITIONAL EROSION CONTROLS, SHALL BE INSTALLED AS DIRECTED BY THE RESIDENT ENGINEER. THESE ADDITIONAL ITEMS WILL BE PAID AT THE UNIT PRICE FOR THAT BID ITEM.

UTILITY NOTES:

1. EXISTING UTILITIES HAVE BEEN SHOWN ON THE PLANS USING THE BEST AVAILABLE INFORMATION AND ARE APPROXIMATE. BUILDING SERVICE CONNECTIONS (ELECTRIC, GAS, TELEPHONE, WATER AND SANITARY) ARE NOT SHOWN. CONTRACTOR IS TO ASSUME SERVICES ARE PRESENT TO ALL BUILDINGS.

2. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING DRAINAGE AND UTILITIES BOTH UNDERGROUND AND OVERHEAD BEFORE EXCAVATION BEGINS IN ACCORDANCE WITH CHAPTER 39-1.2 OF THE R.I. GENERAL LAWS ENTITLED "EXCAVATION NEAR UNDERGROUND UTILITY FACILITIES", WITH AMENDMENTS EFFECTIVE AS OF NOVEMBER 1, 2009 AND, WHEN NECESSARY, BY CONTACTING THE INDIVIDUAL UTILITY COMPANIES. EXCAVATION SHALL BE IN ACCORDANCE WITH ALL STATUTES, ORDINANCES, RULES AND REGULATIONS OF ANY APPLICABLE CITY, TOWN, STATE OR FEDERAL AGENCY. THE CONTRACTOR SHOULD UNDERSTAND THAT NOT ALL UTILITIES SUBSCRIBE TO THE DIG SAFE PROGRAM. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY ALL UTILITY COMPANIES AND ENSURE THAT ALL UTILITIES HAVE BEEN MARKED PRIOR TO COMMENCING THEIR WORK. ANY DAMAGE TO EXISTING UTILITIES MARKED IN THE FIELD, OR AS A RESULT OF FAILING TO CONTACT THE APPROPRIATE UTILITY COMPANY, SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE STATE.

3. ALL EXISTING UTILITIES TO BE ABANDONED SHALL BE CAPPED.

4. EXISTING WATER SERVICES SHALL BE RECONNECTED TO THE NEW WATER MAINS.

5. UTILITY SERVICE CONNECTIONS SHALL BE MAINTAINED TO ALL EXISTING FACILITIES TO REMAIN.

6. FIRE HYDRANTS SHALL NOT BE REMOVED FROM SERVICE WITHOUT WRITTEN AUTHORIZATION FROM THE FIRE DEPARTMENT OR THE WATER AUTHORITY.

7. ALL NEW WATER LINES SHALL BE DISINFECTED TO THE SATISFACTION OF THE WATER AUTHORITY IN ACCORDANCE WITH THE SPECIFICATIONS.

8. ALL UTILITY POLE RELATED WORK SHALL BE BY OTHERS.

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	RI	XXX-XXXX(XXX)	2019	03	40

REVISIONS		
NO.	DATE	BY
1	4/07	TRB
2	3/10	RBH
3	4/14	MLP

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF
SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

STANDARD NOTES - 1

CHECKED BY _____ DATE _____ SCALE _____

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

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LANDSCAPE NOTES:

1. ALL PLANT MATERIAL MUST BE TAGGED AT THE NURSERY (A RECOGNIZED GROWER OF PLANT MATERIAL) IN ACCORDANCE WITH THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION. ALL PLANT MATERIAL MUST BE NURSERY GROWN; NO PLANTATION GROWN PLANT MATERIAL WILL BE ACCEPTED.
2. ALL PLANT SUBSTITUTIONS AND/OR CHANGES IN PLANT LOCATION MUST BE APPROVED IN ACCORDANCE WITH THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION.
3. ALL PLANT MATERIAL IS TO BE FIELD LOCATED BY A REPRESENTATIVE FROM THE R.I.D.O.T. LANDSCAPE ARCHITECTURE UNIT.
4. A R.I.D.O.T. LANDSCAPE REPRESENTATIVE MUST BE ON SITE TO APPROVE ALL TRIMMING AND CLEARING NECESSARY TO COMPLETE THE WORK AS SHOWN ON THE PLANS.
5. ANY TOPSOIL USED AS PLANTABLE SOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS, AND SHALL CONFORM TO SECTION M.18 OF THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION.
6. ALL TREES AND SHRUBS SHALL BE MULCHED WITH PINE BARK MULCH IN ACCORDANCE WITH THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION.
7. ALL TREES AND/OR SHRUBS THAT ARE PLANTED AS A BED SHALL BE MULCHED AS A BED.
8. PROVIDE A MINIMUM 6'-8" BRANCHING STANDARD ON ALL TREES INSTALLED ADJACENT TO SIDEWALKS AND/OR PEDESTRIAN ACCESS AREAS.

STRUCTURAL NOTES FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS:

GENERAL

1. ALL SUPPORT DESIGNS AND ASSOCIATED SHOP DRAWING REVIEWS SHALL BE IN CONFORMANCE WITH THE LATEST EDITION, OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (THE "SPECIFICATIONS"), INCLUDING THE LATEST INTERIM SPECIFICATIONS, EXCEPT AS MODIFIED HEREIN.

CONSTRUCTION DRAWINGS AND DETAILS

1. THE FOLLOWING NOTES SHALL BE INCLUDED ON ALL PLANS AND/OR SHOP DRAWINGS IN REFERENCE TO ANCHOR BOLTS:
   - "PRETENSIONING OF ALL ANCHOR NUTS IS REQUIRED, AND SHALL BE ACCOMPLISHED BY TIGHTENING TO 1/6TH TURN BEYOND THE SNUG-TIGHT POSITION."
   - "THE MAXIMUM CLEARANCE BETWEEN THE BOTTOM OF THE LEVELING NUTS AND THE TOP OF THE CONCRETE IS CRITICAL AND SHALL NOT EXCEED THE AMOUNT SPECIFIED ON THIS DRAWING."
2. THE USE OF CROUT UNDER BASE PLATES SHALL GENERALLY NOT BE PERMITTED. IF SPECIFIC CONDITIONS WARRANT ITS USE, THE GROUT SHALL NOT BE CONSIDERED LOAD CARRYING; LOADS SHALL BE DIRECTLY SUPPORTED BY THE ANCHOR BOLTS. ADEQUATE DRAINAGE SHALL BE PROVIDED.
3. THE DAMPENING EFFECTS OF VIBRATION MITIGATION DEVICES SHALL NOT BE CONSIDERED IN THE DESIGN OF STRUCTURAL SUPPORTS FOR SIGNS AND TRAFFIC SIGNALS. IF THE CONTRACTOR CHOOSES TO USE THESE DEVICES FOR WARRANTY PURPOSES, THE TYPE OF DEVICES PROPOSED SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO FABRICATION OF SUPPORTS.

TRAFFIC SIGNAL NOTES:

1. ALL SALVAGED TRAFFIC SIGNAL EQUIPMENT SHALL BE DELIVERED TO THE R.I.D.O.T. MAINTENANCE HEADQUARTERS, 360 LINCOLN AVENUE, WARWICK, RHODE ISLAND, 02888.
2. BACK PLATES SHALL BE INSTALLED ON ALL TRAFFIC SIGNAL HEADS.
3. THE CONTRACTOR SHALL SUPPLY AND INSTALL ON THE UPPER LEFT HAND CORNER OF THE BACK OF THE CONTROLLER CABINET DOOR A LAMINATED INTERSECTION GRAPHIC AND TABLE DEPICTING THE TRAFFIC DETECTOR RELAY CHANNEL ASSIGNMENTS. THE DIAGRAM SHALL BE A GRAPHIC OF THE INDIVIDUAL INTERSECTION ORIENTED SIMILAR TO THE PLANS SHOWING THE LOCATIONS OF EACH OF THE LOOP DETECTORS. THE DIAGRAM SHALL, AT A MINIMUM, INCLUDE DETECTOR NUMBERS, STREET NAME LABELS, NORTH ARROW, AND CONTROLLER CABINET LOCATION. THE ASSIGNMENT INFORMATION SHALL BE INCLUDED IN A TABLE WHICH SHALL INCLUDE, AT A MINIMUM, THE APPROACH NAME, DETECTOR NUMBER, TERMINAL NUMBER, DETECTOR RACK SLOT NUMBER, RELAY NUMBER, RELAY CHANNEL NUMBER, AND PHASE ASSOCIATED WITH EACH DETECTOR.
4. TRAFFIC CONTROLLER CABINETS, UNLESS OTHERWISE NOTED, SHALL BE NEMA TS2 TYPE 1 CABINET SIZE 6 ("P" TYPE) WITH NOMINAL DIMENSIONS OF 52"Hx44"Wx24"D.
5. ALL DELAY AND EXTENSION TIMES, AS CALLED FOR ON THE PLANS, FOR PROPOSED LOOP DETECTORS SHALL BE PROGRAMMED IN THE TRAFFIC SIGNAL CONTROLLER AND NOT THE DETECTOR RELAY.
6. A BARE GROUND WIRE SHALL BE PLACED IN ALL PVC CONDUITS AND SHALL BE BONDED TO GROUND RODS IN ACCORDANCE WITH SECTION 7.03 OF THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
7. THE FINAL POSITION OF SIGNAL HEADS, PEDESTRIAN PUSHBUTTONS, DETECTORS, AND STOP LINE AND CROSSWALK PAVEMENT MARKINGS SHALL BE AS DIRECTED BY THE ENGINEER IN THE FIELD ACCORDING TO ACTUAL INTERSECTION CHARACTERISTICS.
8. A 2' MINIMUM BUFFER SHALL BE PROVIDED BETWEEN THE CURB AND ALL LATERAL OBSTRUCTIONS (INCLUDING ALL SIGNAL POLES AND TRAFFIC/PEDESTRIAN SIGNAL HEADS) TO PROVIDE ADEQUATE CLEARANCE FOR TURNING VEHICLES.
9. ALL FOUNDATIONS MUST HAVE CONES OR BARRELS BOLTED TO FOUNDATION BASES UNTIL ACTUAL POLE IS INSTALLED.
10. WHEN PLACING TRAFFIC SIGNAL HANDHOLES OR CONDUIT IN EXISTING PORTLAND CEMENT CONCRETE SIDEWALKS, THE ENTIRE SIDEWALK SQUARE OF CONCRETE SHALL BE REPLACED IN ACCORDANCE WITH R.I. STD. 43.1.D. NO PATCHES WILL BE ALLOWED.
11. ALL PEDESTRIAN PUSHBUTTONS SHALL BE COMPLIANT WITH "THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES" (ADAAG) AND SHALL INCLUDE A PRESSURE-ACTIVATED (NON-MOVING) BUTTON. SIGNS APPLICABLE TO PUSHBUTTON ACTUATION SHALL BE INSTALLED SUCH THAT THE CROSSING ASSIGNED TO EACH BUTTON IS CLEARLY INDICATED. IF SITE CONDITIONS DO NOT ALLOW PEDESTRIAN PUSHBUTTONS TO BE INSTALLED WHERE CALLED FOR ON THE PLANS, THE R.I.D.O.T. TRAFFIC ENGINEERING UNIT SHALL BE CONSULTED WITH THROUGH AN R.F.I. PRIOR TO INSTALLING THE PUSHBUTTONS. THE FINAL PLACEMENT OF ALL PEDESTRIAN PUSHBUTTONS SHALL BE IN ACCORDANCE WITH ADAAG AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
12. ALL LOOP DETECTORS SHALL BE CENTERED WITHIN EACH LANE AS DELINEATED, UNLESS OTHERWISE DIMENSIONED ON PLANS.
13. ALL LOOP DETECTORS SHALL BE CUT INTO THE FINAL PAVEMENT SURFACE COURSE.
14. TRAFFIC SIGNAL CONTROLLERS SHALL BE WIRED SO THAT ANY FIRE PRE-EMPTION SHALL OVERRIDE MANUAL (PUSH BUTTON) OPERATION.
15. THE CONTRACTOR SHALL WORK CONTINUOUSLY TO RESTORE TRAFFIC SIGNAL OPERATION TO ITS INTENDED PURPOSE WHEN REPLACING THE TRAFFIC SIGNAL EQUIPMENT. A POLICE DETAIL IS REQUIRED TO DIRECT TRAFFIC AT THE INTERSECTION AT ALL TIMES WHEN THE TRAFFIC SIGNAL IS INOPERATIVE. AT NO TIME SHALL THE CONTRACTOR LEAVE THE SITE BEFORE RESTORING FULL TRAFFIC OPERATIONS.

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	RI	XXX-XXXX(XXX)	2019	04	4D

MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:

1. ALL MAINTENANCE AND PROTECTION OF TRAFFIC CONTROL SETUPS, SIGNS, CHANNELIZING DEVICES, ETC., SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
2. ALL SIGN MOUNTINGS FOR TEMPORARY AND CONSTRUCTION SIGNS SHALL BE IN ACCORDANCE WITH THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION.
3. THE CONTRACTOR SHALL COVER ALL EXISTING AND/OR TEMPORARY SIGNS THAT ARE NOT RELEVANT TO THE TRAFFIC CONTROL REQUIRED DURING ANY PARTICULAR STAGE OF THE CONTRACT.
4. ADVANCE FLAGPERSON SIGNS (W2D-7A) SHALL BE USED IN ADVANCE OF ANY POINT AT WHICH A FLAGPERSON OR A POLICE OFFICER HAS BEEN STATIONED TO CONTROL TRAFFIC. WHEN NEEDED, AN APPROPRIATE DISTANCE MESSAGE MAY BE DISPLAYED ON A SUPPLEMENTAL PLATE (24"x18") BELOW THE FLAGPERSON SYMBOL SIGN. THE SIGN SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE FLAGPERSON IS NOT AT THE STATION.
5. POLICE OFFICERS (AND NOT FLAGPERSONS) SHALL BE UTILIZED WHEN WORK WILL IMPACT SIGNALIZED INTERSECTIONS AND LIMITED ACCESS HIGHWAYS.
6. POLYETHYLENE DRUMS SHALL BE UTILIZED AS A CHANNELIZING DEVICE WHEN A TRAFFIC CONTROL SET-UP IS TO REMAIN BEYOND WORKING HOURS WHEN NO WORKERS ARE PRESENT. CONES SHALL BE UTILIZED WHEN A TRAFFIC CONTROL SET-UP IS TO REMAIN ONLY DURING WORKING HOURS AND IS SUBSEQUENTLY BROKEN DOWN AT THE END OF THE WORKDAY.
7. ARROW PANELS SHALL BE SET IN THE FLASHING FOUR CORNERS CAUTION MODE UNLESS UTILIZED FOR A MERGING TAPER. ARRDW PANELS SET IN THE FLASHINC ARRDW MODE SHALL NOT BE UTILIZED FOR LANE SHIFTS.
8. TEMPORARY CONSTRUCTION SIGNS AND OTHER WORKZONE TRAFFIC CONTROL DEVICES THAT ARE DAMAGED OR REQUIRE RELOCATION SHALL BE REPLACED AND / OR RELOCATED UNDER THE PAY ITEM FOR "MAINTENANCE AND MOVEMENT TRAFFIC PROTECTION."
9. THE PRIVATE VEHICLES OF CONSTRUCTION WORKERS SHALL NOT BE PARKED ON THE TRAVEL LANES OR SHOULDERS. THEY MAY BE PARKED WITHIN THE STATE RIGHT-OF-WAY ONLY IN AREAS 30' BEYOND THE OUTSIDE EDGE OF THE TRAVEL LANES AND/OR IN AREAS APPROVED BY THE ENGINEER.
10. TEMPORARY CONSTRUCTION SIGNS AND OTHER TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC, AND SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER APPROPRIATE.
11. THE INTENDED VEHICLE PATHS THROUGH EACH WORK ZONE SHALL BE CLEARLY MARKED AT ALL TIMES. WATERBORNE PAVEMENT MARKINGS SHALL BE INSTALLED BEFORE THE END OF THE WORK SHIFT ON ALL COLD-PLANED AND NEW ROADWAY SURFACES THAT WILL BE OPENED TO TRAFFIC AT THE END OF THE SHIFT.

REVISIONS		
NO.	DATE	BY
1	4/07	TRB
2	11/07	TRB
3	3/10	RBH

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF
SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

STANDARD NOTES - 2

CHECKED BY _____ DATE _____ SCALE _____

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

1000E_V1_004_STDNOTES002

JOB SPECIFIC GENERAL NOTES:

1. EXISTING CONDITIONS SURVEY WAS PREPARED BY AEROTECH CORP. PROVIDENCE, RHODE ISLAND, IN MAY OF 2017.
2. FOR SURVEY WORK PERFORMED BY THE CONTRACTOR, ALL SURVEY FIELD BOOKS AND ELECTRONIC DATA SHALL BE SUBMITTED TO THE RIDOT SURVEY SECTION UPON COMPLETION OF THE CONSTRUCTION WORK. FIELD BOOKS SHALL INCLUDE A LISTING OF ALL RI HIGHWAY BOUNDS THAT WERE SET WITH STATIONS, OFFSETS, COORDINATES, AND DATE SET CERTIFIED BY THE CONTRACTOR'S PROFESSIONAL LAND SURVEYOR.
3. ALL REQUIRED TREE TRIMMING WILL BE COMPLETED UNDER THE RIDOT STATEWIDE TRIMMING CONTRACT. THERE IS NO SEPARATE PAY ITEM FOR THIS WORK.
4. ALL GRASSED AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE REESTABLISHED WITH LOAM AND TYPE 2 SEED. IF AREAS ARE BEYOND WORK LIMIT LINES, THEN THE COST SHALL BE BORNE BY THE CONTRACTOR.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING TREES AND THEIR ROOT SYSTEMS DURING CONSTRUCTION.
6. LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING UTILITIES AND NOTIFY THE APPROPRIATE UTILITY AUTHORITIES INCLUDING "DIG SAFE" PRIOR TO STARTING WORK. ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THE COST OF REPAIRS SHALL BE BORNE BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
7. ALL EXISTING STREET NAME SIGNS SHALL REMAIN IN PLACE.
8. THE CONTRACTOR SHALL BE AWARE OF THE PRESENCE OF OVERHEAD UTILITIES WITHIN THE WORK ZONE AND SHALL PLAN ALL CONSTRUCTION ACCORDINGLY. NO ADDITIONAL PAYMENT WILL BE MADE FOR EQUIPMENT AND METHODS REQUIRED TO ACCOMMODATE THE OVERHEAD UTILITIES.
9. NO SEPARATE PAYMENT WILL BE MADE FOR TEMPORARY EARTH SUPPORT. SHOULD THE CONTRACTOR USE ANY TEMPORARY EARTH SUPPORT STRUCTURES, THE COST SHALL BE CONSIDERED INCIDENTAL TO THE CORRESPONDING ITEMS OF WORK.
10. CONTRACTOR TO EXCAVATE TEST PITS IN AREAS OF POTENTIAL UTILITY CONFLICTS AND RELAY INFORMATION TO RESIDENT ENGINEER PRIOR TO COMMENCEMENT OF UTILITY WORK.
11. THERE SHALL BE NO PARKING OR STORING OF CONSTRUCTION EQUIPMENT UNDER THE DRIPLINE OF ANY TREE.
12. WETLANDS WERE FLAGGED BY PARE ON MAY 24, 2017 AND SURVEYED BY AEROTECH CORP. THE FOLLOWING GPS-LOCATED POINTS WERE OBTAINED BY PARE AS THERE WERE NO SUITABLE LOCATIONS TO SET FLAGS: FLAGS A-7 TO A-13, B-5 TO B-12, ASSF-1, SF-200 TO SF-201, NTL-100 TO NTL-101, AND NTL-300 TO NTL-302.
13. ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP FOR BRISTOL COUNTY, RHODE ISLAND (COMMUNITY PANEL 44001C0014H, EFFECTIVE DATE JUNE 7, 2014), THE SITE IS LOCATED WITHIN THE 100-YEAR FLOODPLAIN ASSOCIATED WITH SILVER CREEK AND BRISTOL HARBOR. THE AREA DOWNSTREAM OF THE BRIDGE, WEST OF RT. 114, IS MAPPED AS ZONE VE, COASTAL FLOOD ZONE SUBJECT TO WAVE ACTION, WITH A BASE FLOOD ELEVATION OF 14 FEET. THE BRIDGE AND THE REMAINING SITE IS MAPPED AS ZONE AE, WITH A BASE FLOOD ELEVATION OF 13 FEET.

JOB SPECIFIC VERIZON UTILITY NOTES:

1. ANY/ALL ADJUSTMENTS TO VERIZON OWNED UNDERGROUND EQUIPMENT (MANHOLES, FRAME & COVERS, CONDUITS, ETC) MUST BE PERFORMED BY AN APPROVED VERIZON CONTRACTOR. ADDITIONALLY, ALL ADJUSTMENTS MUST BE INSPECTED BY VERIZON'S CONTRACT WORK INSPECTOR (CWI). PLEASE CONTACT DAN MELLO (CWI) @ (401)438-5571...48 HOURS IN ADVANCE BEFORE COMMENCING WORK.
2. IF VERIZON'S UNDERGROUND (UC) STRUCTURES (CONDUITS, CABLES, MANHOLES, ETC...) ARE EXPOSED DURING CONSTRUCTION, THE GENERAL CONTRACTOR (GC) MUST PROVIDE PROTECTION FOR THE EXPOSED PLANT IN ACCORDANCE WITH VERIZON'S METHODS AND PROCEDURES AND WITH THE APPROVAL OF VERIZON'S CWI. ADDITIONALLY, AN APPROVED PARTITION MUST BE PLACED BETWEEN EXISTING VERIZON STRUCTURES AND NEW CONCRETE CONSTRUCTION WHERE CONTACT AND/OR ENCROACHMENT MAY ARISE.
3. THE UNDERMINING OF VERIZON DUCTS (INCLUDING ENDSE CONCRETE ENCASED) IS NOT PERMITTED WITHOUT INSPECTION/PERMISSION OF VERIZON'S CWI.
4. A RADIAL CLEARANCE OF THREE FEET (3') MUST BE MAINTAINED BETWEEN VERIZON'S AERIAL EQUIPMENT (CABLES, TERMINALS, POLES, ETC) IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS. THIS INCLUDES TRAFFIC SIGNAL AND CONSTRUCTION EQUIPMENT.... EITHER TEMPORARY OR PERMANENT. PLEASE REFER TO R.I.D.O.T. DOCUMENT TAC-0049 FOR ADDITIONAL INFORMATION.

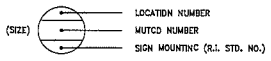
JOB SPECIFIC NATIONAL GRID GAS NOTES:

REMOVAL AND DISPOSAL OF GAS MAINS

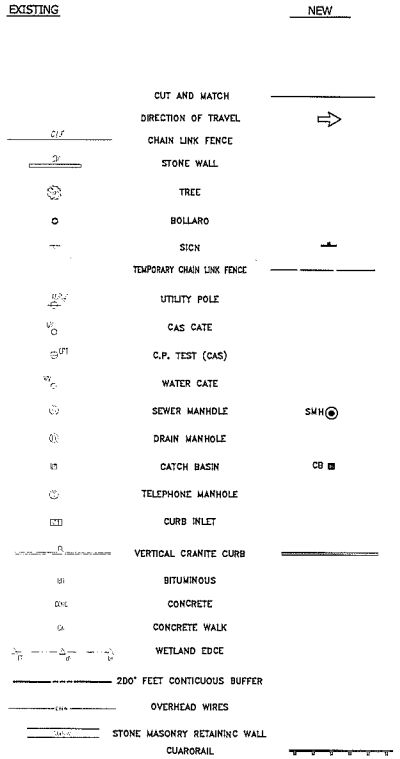
NATIONAL GRID WILL PURGE OUR OLD GAS MAIN OF GAS, WIPE TEST SAMPLE THE INSIDE OF THE PIPE, CAP THE ENDS AND ABANDON IN PLACE. PIPE FOUR INCHES AND LESS IN DIAMETER CAN'T BE SAMPLED; THIS PIPE WILL BE ASSUMED TO BE CONTAMINATED. IF THE WIPE TEST RESULTS SHOW PCB CONTAMINATION AND A SECTION OR SECTIONS NEED TO BE REMOVED BY THE CONTRACTOR THEN THERE ARE TWO POSSIBILITIES: IF THE QUANTITY TO BE REMOVED IS SMALL THE CONTRACTOR COULD TRANSPORT THE REMOVED SECTIONS WITH SEALED ENDS TO EITHER OUR ALLENS AVE FACILITY AT 642 ALLENS AVE IN PROVIDENCE OR OUR DEXTER ST FACILITY AT 477 DEXTER ST IN PROVIDENCE AND PLACE THEM IN OUR RED OPEN TOP "PIPE TO BE CLEANED" CONTAINER ON SITE. NATIONAL GRID WOULD THEN HANDLE THE CLEANING AND PROPER DISPOSAL ... OR ... THE CONTRACTOR COULD HIRE CLEAN HARBORS TO DELIVER AN OPEN TOP CONTAINER TO THE SITE, PLACE THE REMOVED SECTION INTO THE DUMPSTER AND THEN ARRANGE TO HAVE CLEAN HARBORS PICK UP THE CONTAINER. THE CHARGES ASSOCIATED WITH DELIVERY, ONSITE RENTAL AND PICK UP OF THE DUMPSTER WOULD BE THE CONTRACTORS RESPONSIBILITY AND NATIONAL GRIDS RESPONSIBILITY WILL BE FOR THE CLEANING AND PROPER DISPOSAL. NATIONAL GRID ALSO REQUIRES THAT THE OPEN PIPE ENDS OF THE ABANDONED PIPE REMAINING IN THE GROUND BE CAPPED OR SEALED WITH EXPANDING FOAM.

ALL VALVE BOXES AND CORROSION (CP) TEST BOXES HAVE BEEN MARKED ON THE PLANS. THESE BOXES NEED TO BE ADJUSTED TO THE NEW ROAD SURFACE. NEW BOXES CAN BE OBTAINED AT THE NATIONAL GRID PROVIDENCE FACILITY AT 477 DEXTER STREET. ALL VALVE BOXES MUST BE ACCESSIBLE AT ALL TIMES TO BE OPERATED IN THE EVENT OF AN EMERGENCY.

TYPICAL SIGN DESIGNATION SYMBOL



JOB SPECIFIC PLAN SYMBOLS



JOB SPECIFIC LEGEND:

BCD	NMA DRIVEWAY 3" MODIFIED CLASS 12.5 NMA 8" GRAVEL BORROW SUBBASE COURSE
CFS	COMPOST FILTER SOCK (SEE DETAILS)
CM	CUT AND MATCH (SEE DETAILS)
FDS	FULL DEPTH SAWCUT OF BITUMINOUS PAVEMENT
ISCD	INLET SEDIMENT CONTROL DEVICE (SEE DETAILS)
MEPM	MATCH EXISTING PAVEMENT MARKING
MMD	MICROMILL 2" OF EXISTING PAVEMENT INSTALL 2" OF MODIFIED CLASS 12.5 NMA ASPHALT EMULSION TACK COAT BETWEEN LAYERS
P	FULL DEPTH CONSTRUCTION 2" MODIFIED CLASS 12.5 NMA 5" CLASS 19.0 NMA (PLACED IN TWO 2.5" LIFTS) 12" GRAVEL BORROW SUBBASE ASPHALT EMULSION TACK COAT BETWEEN LAYERS
P1	FULL DEPTH PAVEMENT PATCH 7" CLASS 19 NMA (PLACED IN TWO 3.5" LIFTS) RECRADE/ADD COMPACTED GRAVEL BORROW SUBBASE TO GRADE ASPHALT EMULSION TACK COAT BETWEEN NMA LAYERS
PMG	PLACEMENT OF MILLINGS BENEATH GUARDRAIL TO A MINIMUM DEPTH OF 5"
R&R	REMOVE AND RESET
RWB	RED WHITE BLUE PAVEMENT MARKING (MATCH EXISTING)
STC	STEEL BACKED TIMBER GUARDRAIL TRANSITION TO END POST (SEE BRIDGE END POST DETAILS)
TP	TEMPORARY PATCH 3" CLASS 9.5 NMA RECRADE/ADD COMPACTED GRAVEL BORROW SUBBASE TO GRADE
T4DY	4" TEMPORARY DOUBLE YELLOW WATERBORNE PAVEMENT MARKINGS
T6W	6" TEMPORARY WHITE WATERBORNE PAVEMENT MARKINGS

R.I. STD. DETAILS:

7.2.4	PRECAST CONCRETE CAR STOPS
20.1.0	PAVEMENT MARKING "ARROW" AND "ONLY"
26.1.0	FLUORESCENT TRAFFIC CONES
29.1.0	CONSTRUCTION SIGNS
47.1.1	TRANSVERSE PAVEMENT CUT AND MATCH

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	XXX-XXXX(XXX)	2019	05	40

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF
SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

JOB SPECIFIC
PLAN SYMBOLS, LEGEND & NOTES

CHECKED BY _____ DATE _____ SCALE _____

PARE CORPORATION
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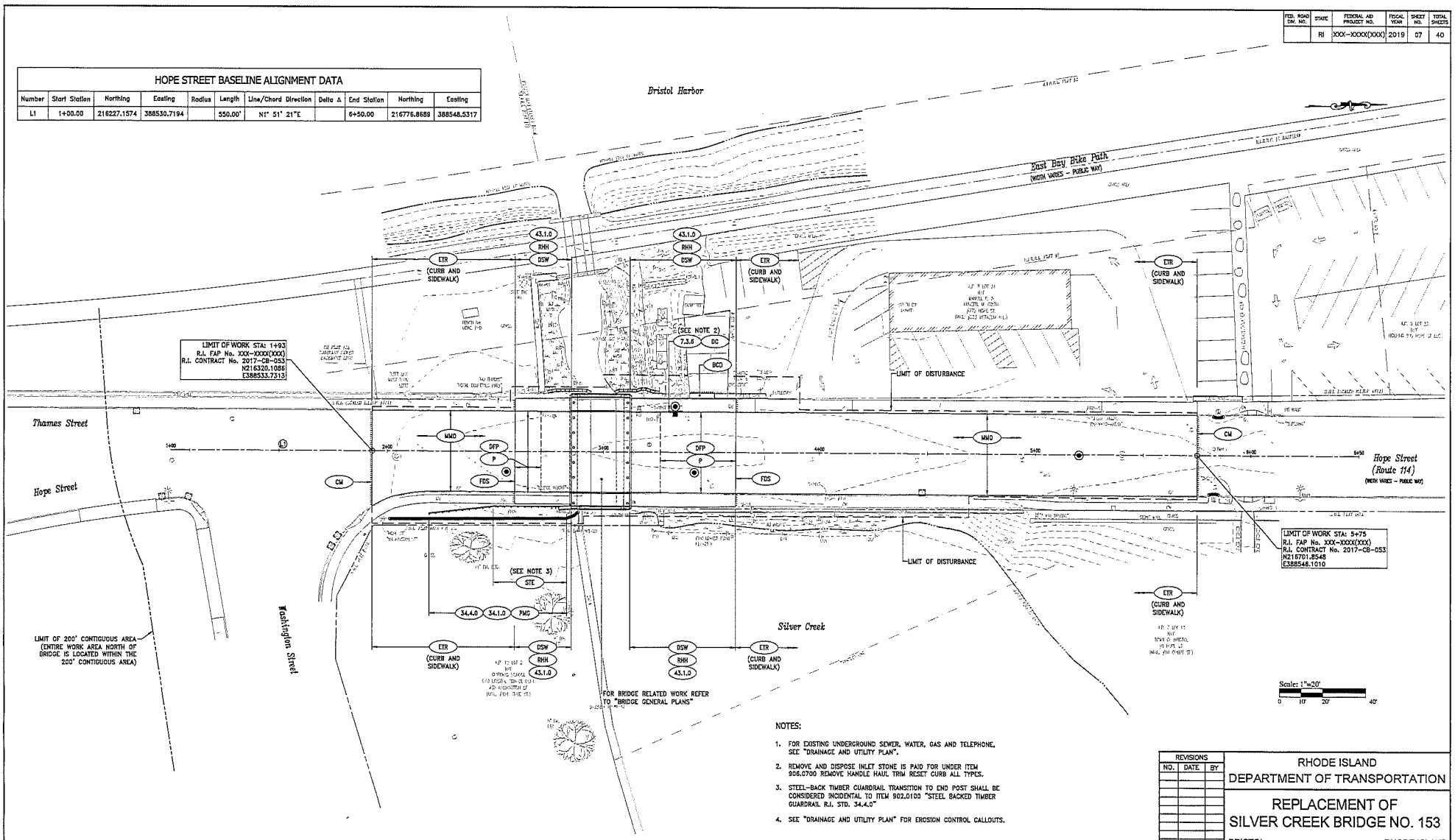
LINCOLN, RI 02865
401-334-4100

1000E_V1_005_JSNOTSYM

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	XXX-XXXX(XXX)	2019	07	40

HOPE STREET BASELINE ALIGNMENT DATA

Number	Start Station	Northing	Easting	Radius	Length	Line/Chord Direction	Delta Δ	End Station	Northing	Easting
L1	1+00.00	216227.1574	388530.7194		550.00'	N1° 51' 21"E		6+50.00	216776.8689	388548.5317



NOTES:

1. FOR EXISTING UNDERGROUND SEWER, WATER, GAS AND TELEPHONE, SEE "DRAINAGE AND UTILITY PLAN".
2. REMOVE AND DISPOSE INLET STONE IS PAID FOR UNDER ITEM 906.0700 REMOVE HANDLE HAUL TRIM RESET CURB ALL TYPES.
3. STEEL-BACK TIMBER GUARDRAIL TRANSITION TO END POST SHALL BE CONSIDERED INCIDENTAL TO ITEM 902.0100 "STEEL BACKED TIMBER GUARDRAIL R.I. STD. 34.4.0"
4. SEE "DRAINAGE AND UTILITY PLAN" FOR EROSION CONTROL CALLOUTS.

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RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

GENERAL PLAN

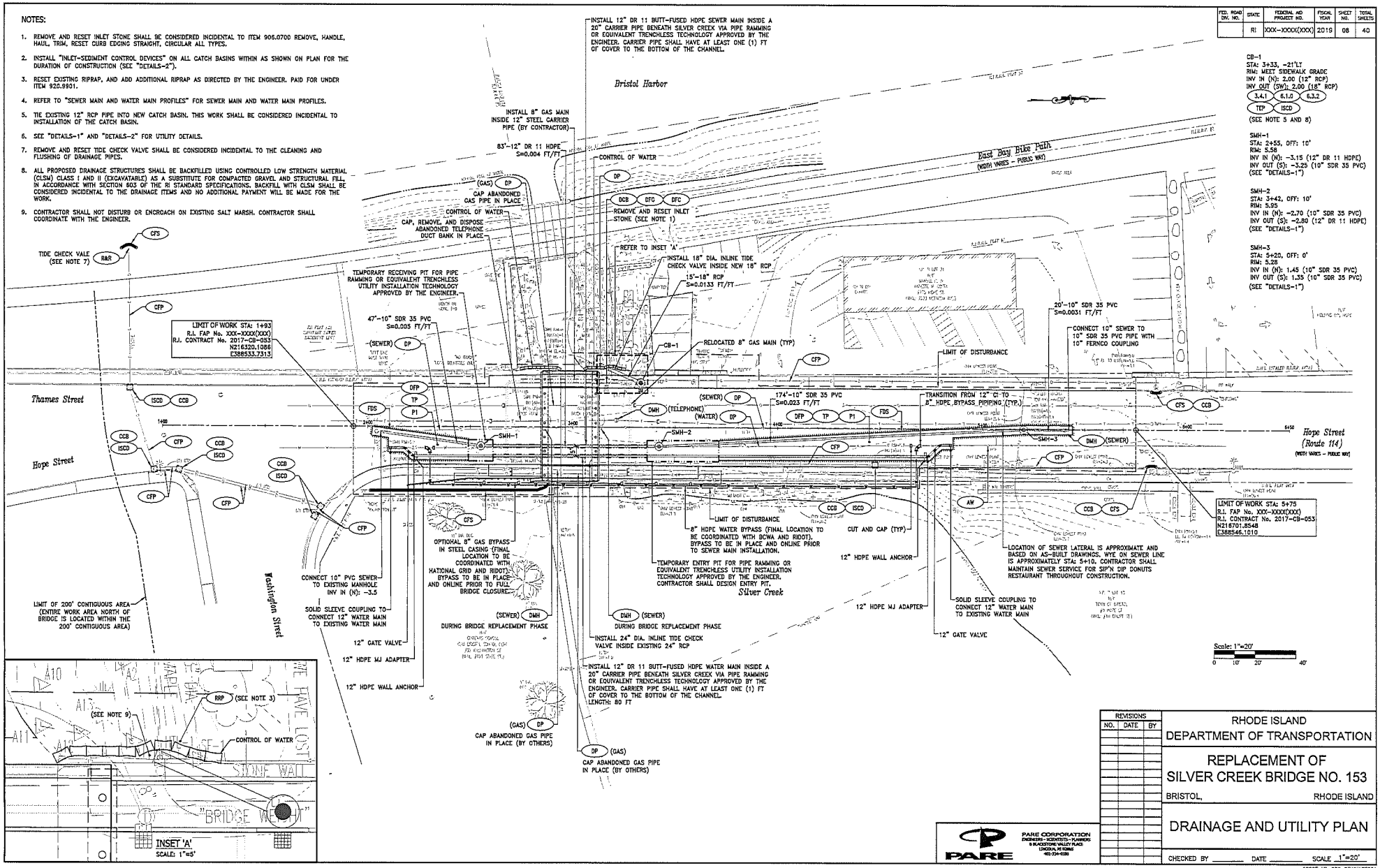
CHECKED BY _____ DATE _____ SCALE 1"=20'

1000E_V1_007_GENERAL001

NOTES:

1. REMOVE AND RESET INLET STONE SHALL BE CONSIDERED INCIDENTAL TO ITEM 906.0700 REMOVE, HANDLE, HAUL, TRIM, RESET CURB EDGING STRAIGHT, CIRCULAR ALL TYPES.
2. INSTALL "INLET-SEDIMENT CONTROL DEVICES" ON ALL CATCH BASINS WITHIN AS SHOWN ON PLAN FOR THE DURATION OF CONSTRUCTION (SEE "DETAILS-2").
3. RESET EXISTING RIPRAP, AND ADD ADDITIONAL RIPRAP AS DIRECTED BY THE ENGINEER. PAID FOR UNDER ITEM 920.9901.
4. REFER TO "SEWER MAIN AND WATER MAIN PROFILES" FOR SEWER MAIN AND WATER MAIN PROFILES.
5. TIE EXISTING 12" RCP PIPE INTO NEW CATCH BASIN. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO INSTALLATION OF THE CATCH BASIN.
6. SEE "DETAILS-1" AND "DETAILS-2" FOR UTILITY DETAILS.
7. REMOVE AND RESET TIDE CHECK VALVE SHALL BE CONSIDERED INCIDENTAL TO THE CLEANING AND FLUSHING OF DRAINAGE PIPES.
8. ALL PROPOSED DRAINAGE STRUCTURES SHALL BE BACKFILLED USING CONTROLLED LOW STRENGTH MATERIAL (CLSM) CLASS I AND II (EXCAVATABLE) AS A SUBSTITUTE FOR COMPACTED GRAVEL AND STRUCTURAL FILL IN ACCORDANCE WITH SECTION 603 OF THE RI STANDARD SPECIFICATIONS. BACKFILL WITH CLSM SHALL BE CONSIDERED INCIDENTAL TO THE DRAINAGE ITEMS AND NO ADDITIONAL PAYMENT WILL BE MADE FOR THE WORK.
9. CONTRACTOR SHALL NOT DISTURB OR ENCROACH ON EXISTING SALT MARSH. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER.

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	XXX-XXXX(XXX)	2019	08	40



REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

DRAINAGE AND UTILITY PLAN

CHECKED BY _____ DATE _____ SCALE 1"=20'

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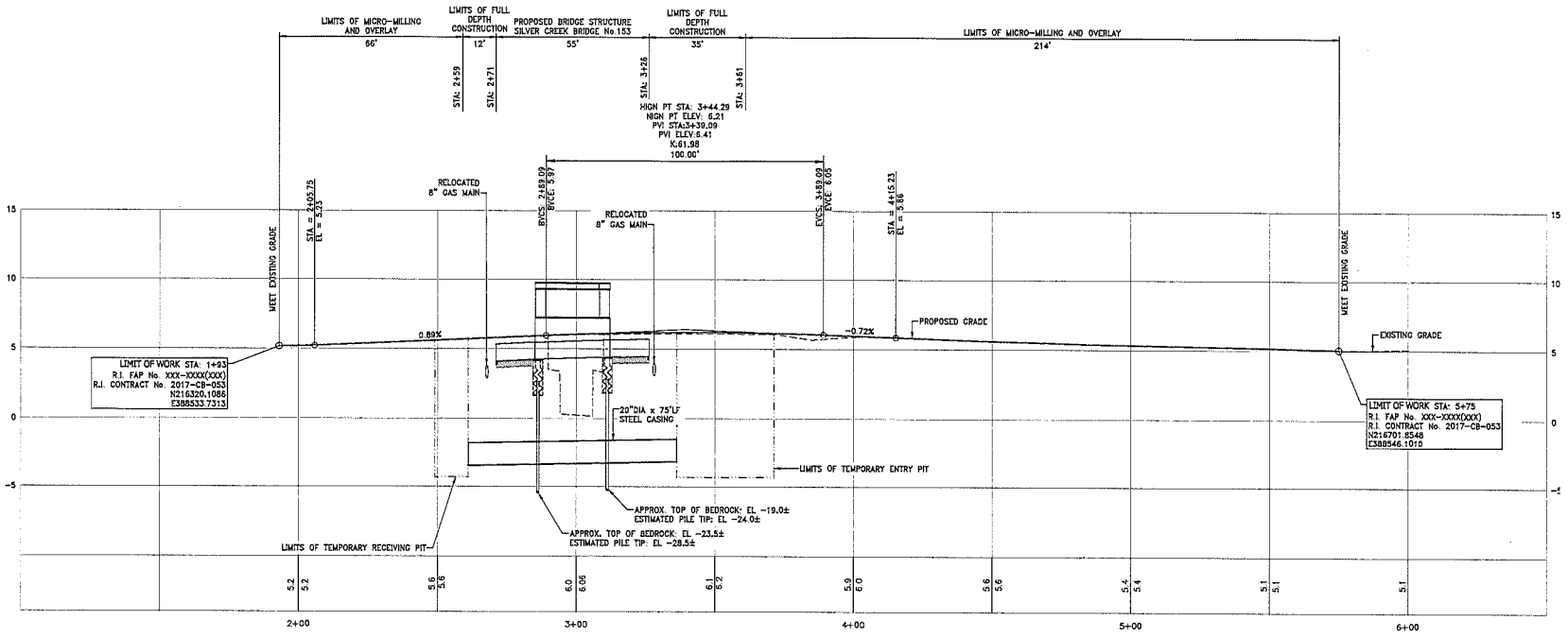
1000E_V1_008_DRAINAGE001

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	XXX-XXXX(XXX)	2019	10	40



HOPE STREET PROFILE

Scale: 1"=20' Horizontal
0 10' 20' 40'
0 2 4 8
Scale: 1"=4' Vertical

NOTES:

1. REFER TO "SEWER MAIN AND WATER MAIN PROFILES" FOR SEWER MAIN AND WATER MAIN PROFILE.

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RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF
SILVER CREEK BRIDGE NO. 153

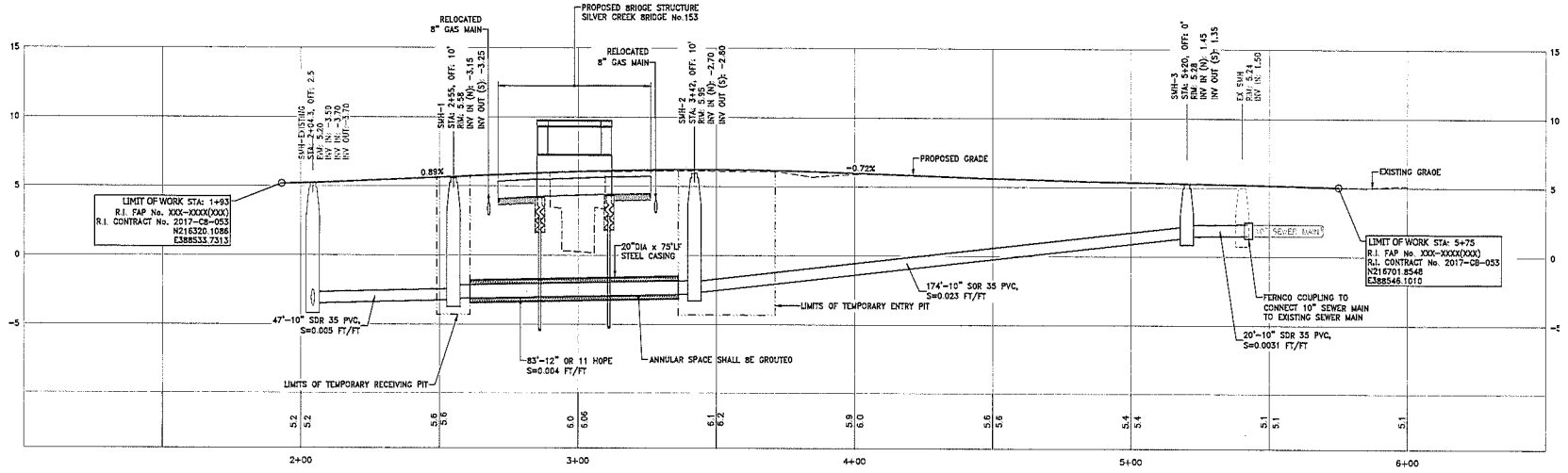
BRISTOL, RHODE ISLAND

ROADWAY PROFILE

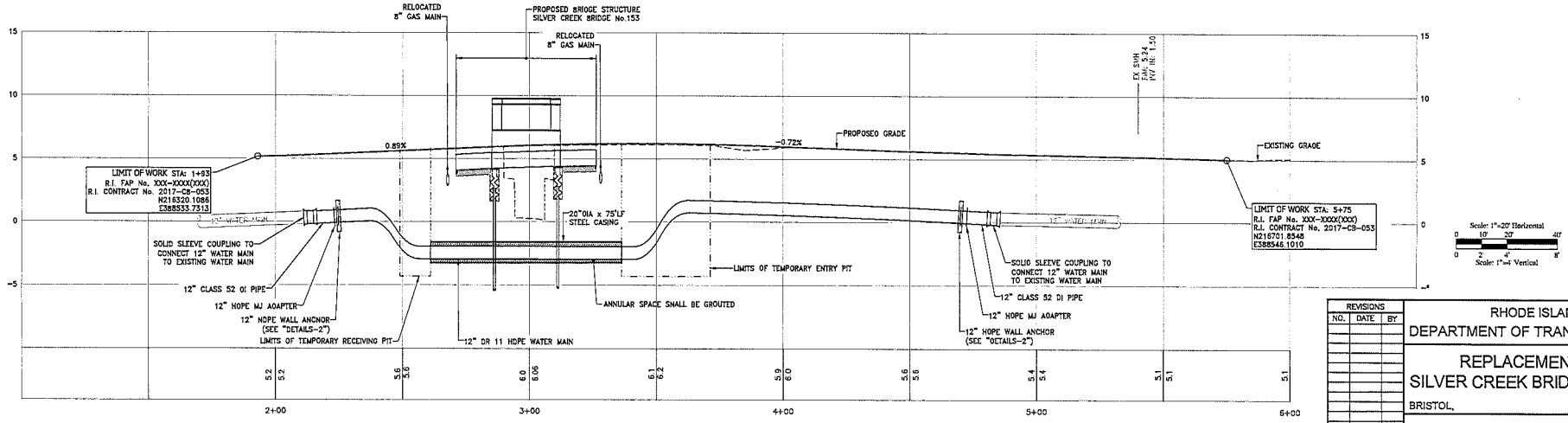
CHECKED BY _____ DATE _____ SCALE N/A

1000E_V1_010_PROFILE001

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	XXX-XXXX(XXX)	2019	11	40



SEWER MAIN PROFILE



WATER MAIN PROFILE

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RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

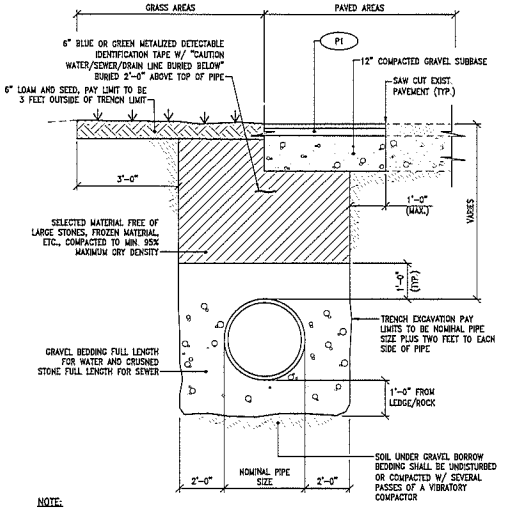
BRISTOL, RHODE ISLAND

SEWER MAIN AND WATER MAIN PROFILES

CHECKED BY _____ DATE _____ SCALE AS NOTED

1000E_V1_011_PROFILE002

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	XXX-XXXX(XXX)	2019	16	40

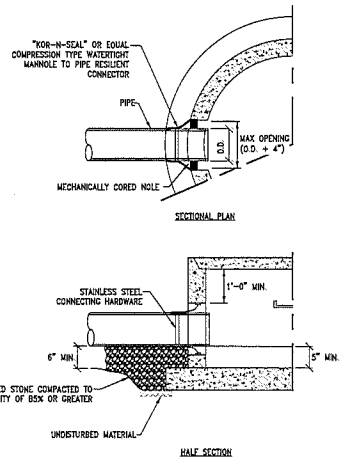


NOTE:

1. ACTUAL TRENCH WIDTH TO BE DETERMINED BY THE CONTRACTOR. EXCAVATION SHALL BE SUPPORTED WITH OSHA COMPLIANT TRENCH SUPPORT(S). PAYMENT LIMITS SHALL BE AS DESCRIBED ABOVE. CONTRACTOR SHALL ADJUST BID PRICES FOR TRENCHING AND RESTORATION ACCORDINGLY SHOULD A WIDER TRENCH WIDTH BE USED.

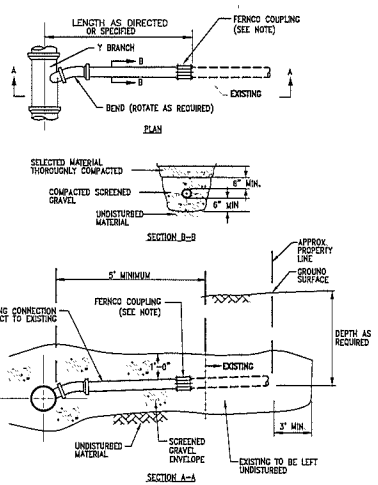
SEWER AND WATER TRENCH DETAIL

NOT TO SCALE



CORED HOLE AND RESILIENT SEAL FOR CONNECTING PIPES TO EXISTING MANHOLES

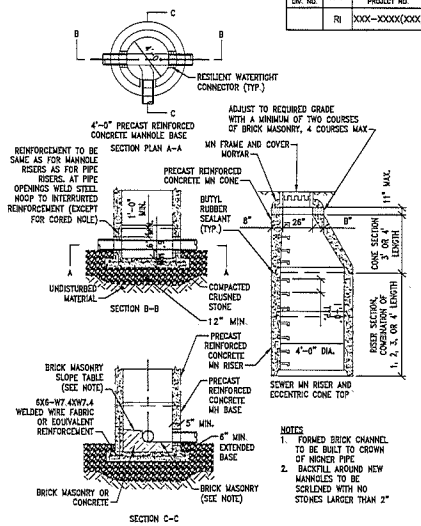
NOT TO SCALE



NOTE: COUPLING SHALL BE SHIELDED REPAIR COUPLING - FERNCO STRONGBACK RC SERIES WITH STAINLESS STEEL MOLDED BUSHING AND HARDWARE, SIZED TO SUIT OR EQUAL

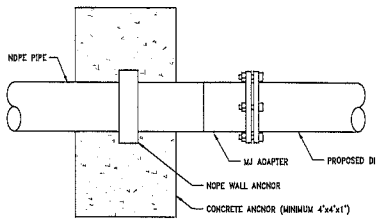
CONNECTION OF NEW GRAVITY SEWER SERVICE TO EXISTING GRAVITY SEWER SERVICE FOR PVC PIPE (BUILDING CONNECTION)

NOT TO SCALE



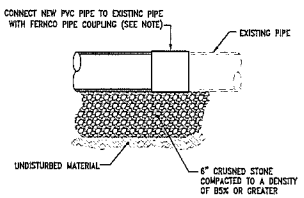
MANHOLE FOR PVC SEWERS 24" DIAMETER AND SMALLER

NOT TO SCALE



CONCRETE ANCHOR DETAIL

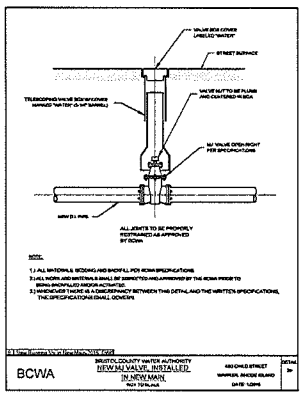
NOT TO SCALE

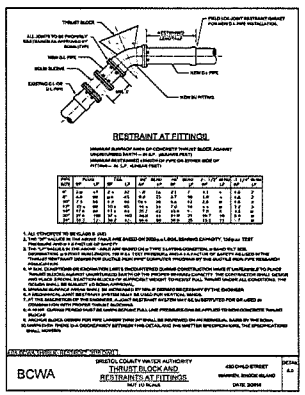


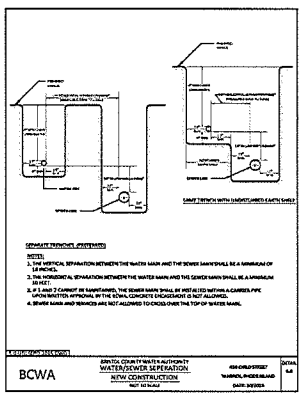
NOTE: COUPLING SHALL BE SHIELDED REPAIR COUPLING - FERNCO STRONGBACK RC SERIES WITH STAINLESS STEEL MOLDED BUSHING AND HARDWARE, SIZED TO SUIT OR EQUAL

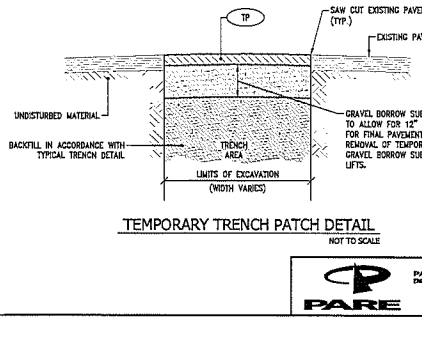
CONNECTING NEW SEWER MAIN TO EXISTING SEWER MAIN

NOT TO SCALE









TEMPORARY TRENCH PATCH DETAIL

NOT TO SCALE

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

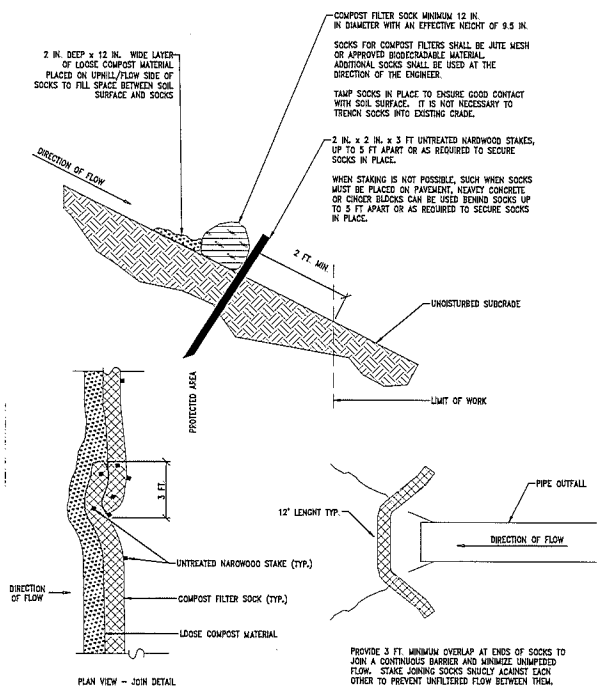
BRISTOL, RHODE ISLAND

DETAILS-1

CHECKED BY _____ DATE _____ SCALE NTS

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

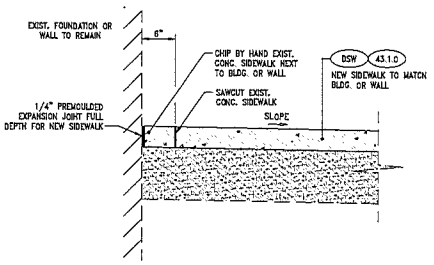
1000E_V1_016_DETAILS001



GENERAL NOTES:

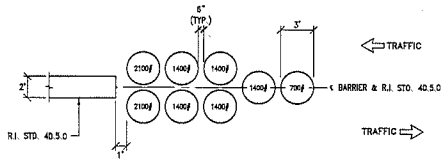
1. PROVIDE A MINIMUM SOCK DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER SOCK DIAMETER OR ADDITIONAL COURSING OF FILTER SOCKS TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. INSTALL SOCKS ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. CONFIGURE SOCKS AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.

CFS COMPOST FILTER SOCK DETAIL
NOT TO SCALE



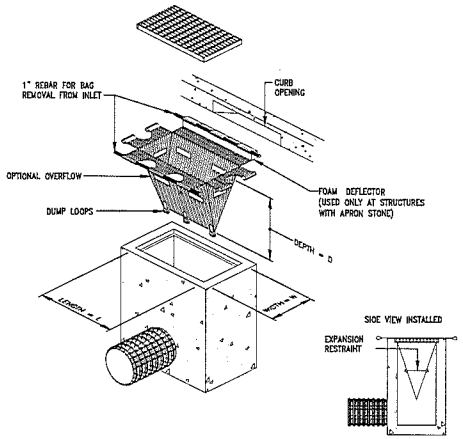
NOTE:
EXTREME CARE SHALL BE TAKEN WHEN REMOVING SIDEWALKS NOT TO AFFECT THE STRUCTURAL INTEGRITY OF WALLS OR FOUNDATIONS.
THE CONTRACTOR SHALL CUT A 6" x 12" TEST AREA AT EACH WALL OR FOUNDATIONS AND REMOVE THE SIDEWALK, FOR THE ENGINEER TO VISUALLY INSPECT THE DISTURBED AREA AS DESCRIBED IN THE GENERAL PROVISIONS - CONTRACT SPECIFIC DOCUMENTS.

SIDEWALK AT WALL OR FOUNDATION
NOT TO SCALE

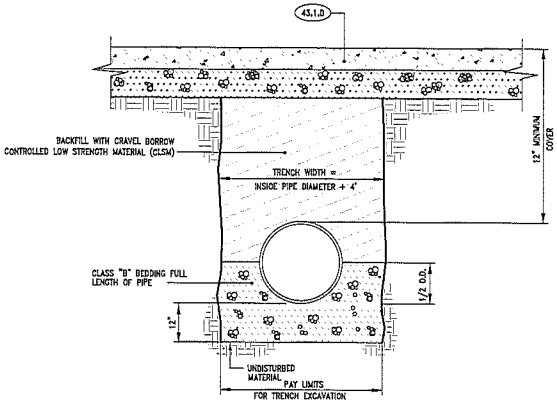


NOTE:
THIS ARRAY DESIGNED FOR 35 MPH APPROACH SPEED.

SHOCK ABSORBING BARRIER MODULE
NOT TO SCALE

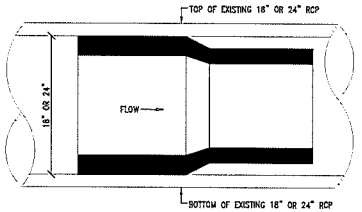


ISCO INLET SEDIMENT CONTROL DEVICE (WITH OPTIONAL CURB DEFLECTOR)
NOT TO SCALE



NOTE:
1. "COVER" AT ANY POINT SHALL BE DEFINED AS THE VERTICAL DISTANCE FROM THE UPPER MOST POINT OF THE PIPE TO A LINE WHICH CONNECTS THE SURFACE OF UNDISTURBED GROUND AT EITHER SIDE OF THE TRENCH AND IS AT RIGHT ANGLES TO THE DIRECTION OF THE PIPE.

TYPICAL TRENCH FOR DRAINAGE INSTALLATION
NOT TO SCALE



NOTE:
1. TIDE IN-LINE CHECK VALVE SHALL BE INSTALLED PER MANUFACTURERS INSTRUCTION AND AS DESCRIBE IN THE CONTRACT SPECIFICATIONS.

TIDE INLINE CHECK VALVE DETAIL
NOT TO SCALE

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	XXX-XXXX(XXX)	2019	17	40

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF
SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

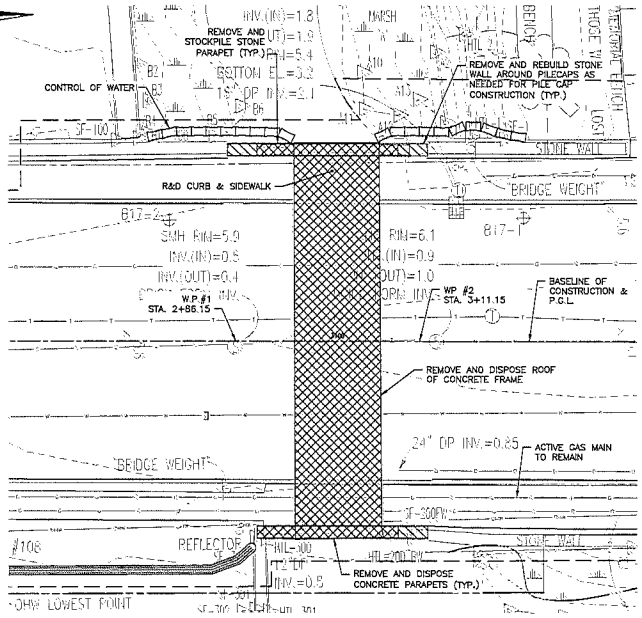
DETAILS-2

CHECKED BY _____ DATE _____ SCALE NTS

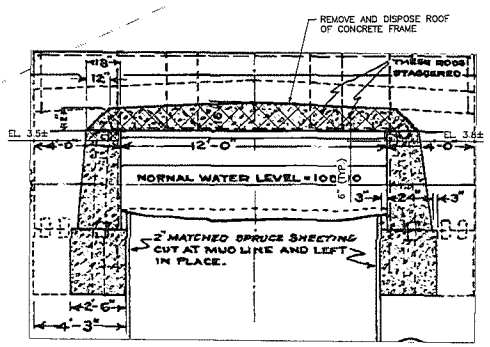
PARE CORPORATION
ENGINEERS · SCIENTISTS · PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

1000E_V1_017_DETAILS002

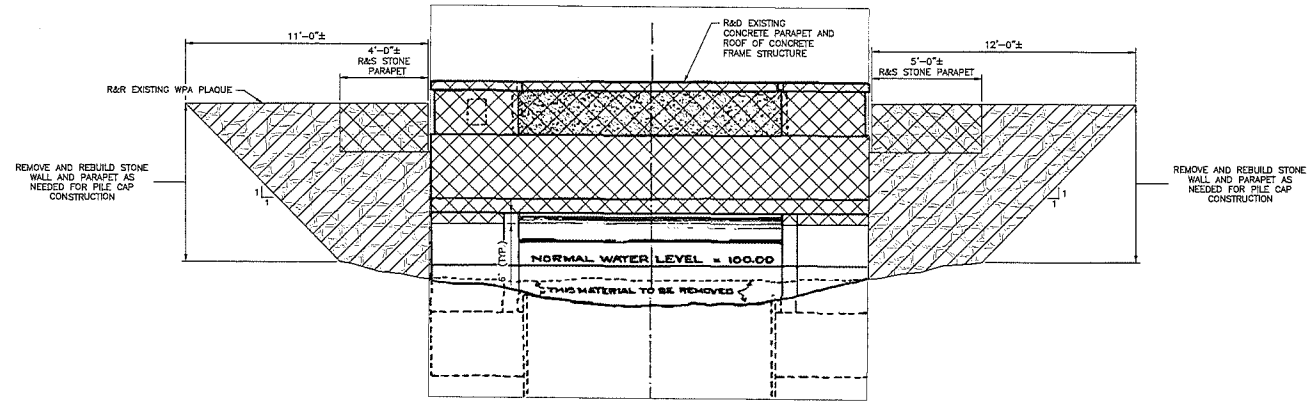
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	XXX-XXXX(XXX)	2019	21	40



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



SECTION AT ROAD ℄
SCALE: 3/8" = 1'-0"



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

DEMOLITION NOTES

1. THE STRUCTURE SHALL BE DEMOLISHED ACCORDING TO THE THE RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AMENDED MARCH 2018.
2. THE CONTRACTOR SHALL PROTECT THE WATERWAY AND SURROUNDING AREAS FROM DEBRIS DURING DEMOLITION.

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

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

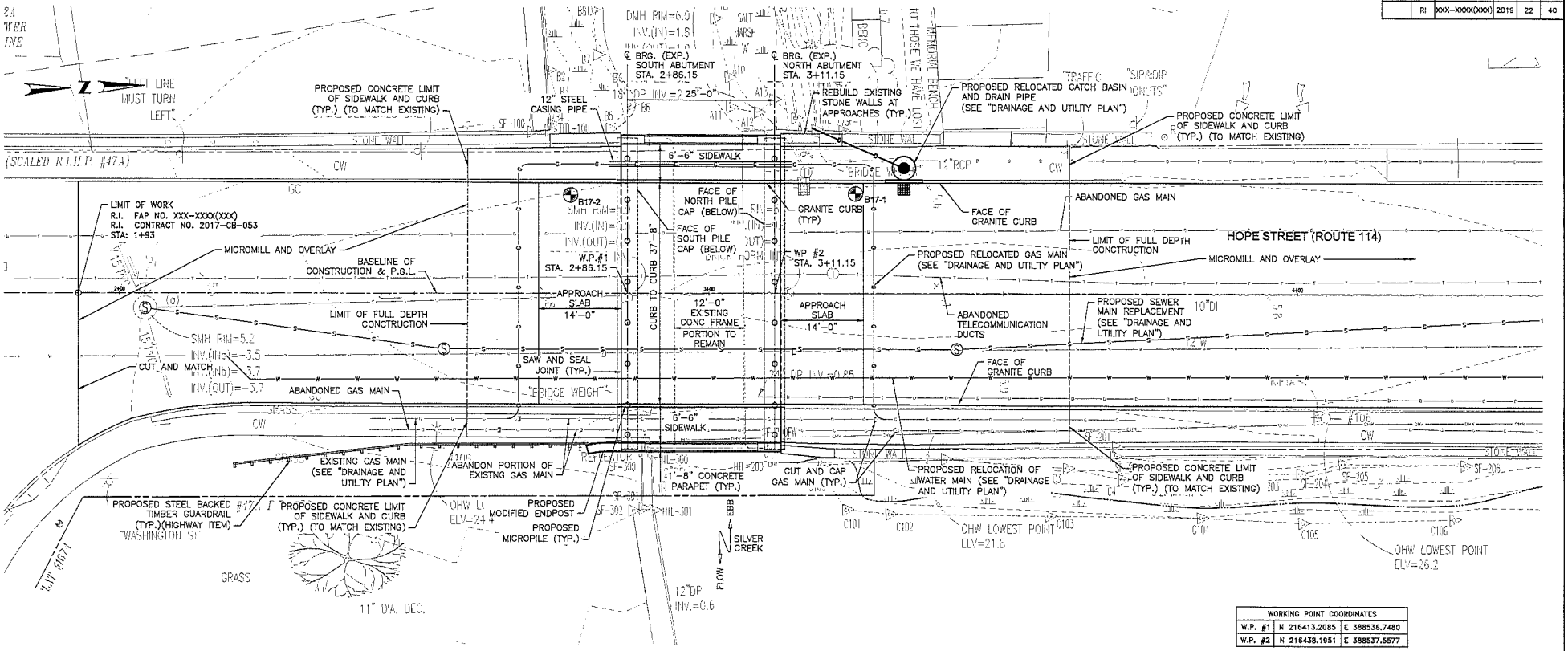
REPLACEMENT OF
SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

BRIDGE DEMOLITION PLAN

CHECKED BY _____ DATE _____ SCALE AS NOTED

1000E_V1_021_BDEM0



WORKING POINT COORDINATES		
W.P. #1	N 216413.2085	E 388536.7480
W.P. #2	N 216438.1951	E 388537.5577

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	XXX-XXXX(XXX)	2019	22	40

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

BRIDGE GENERAL PLAN

CHECKED BY _____ DATE _____ SCALE 1"= 1'-0"

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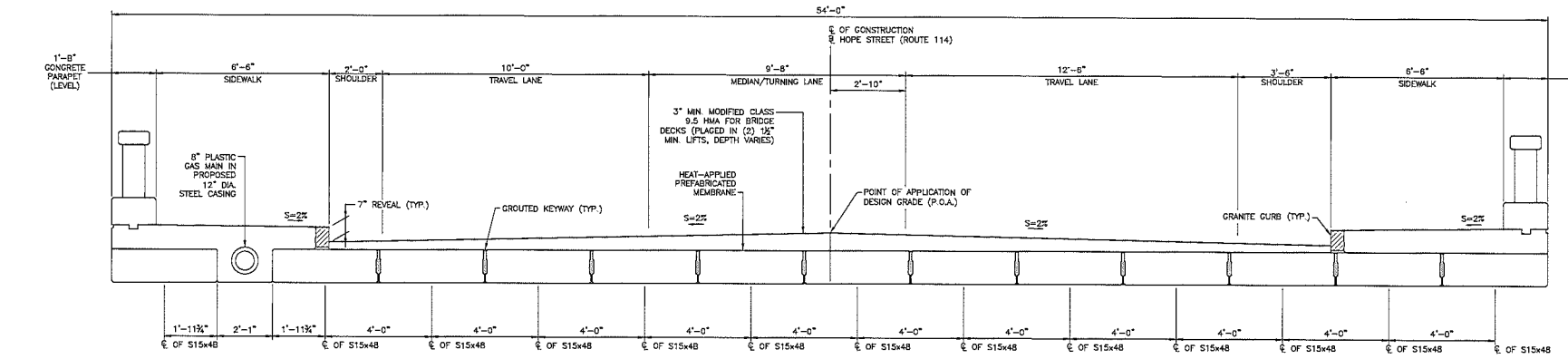
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

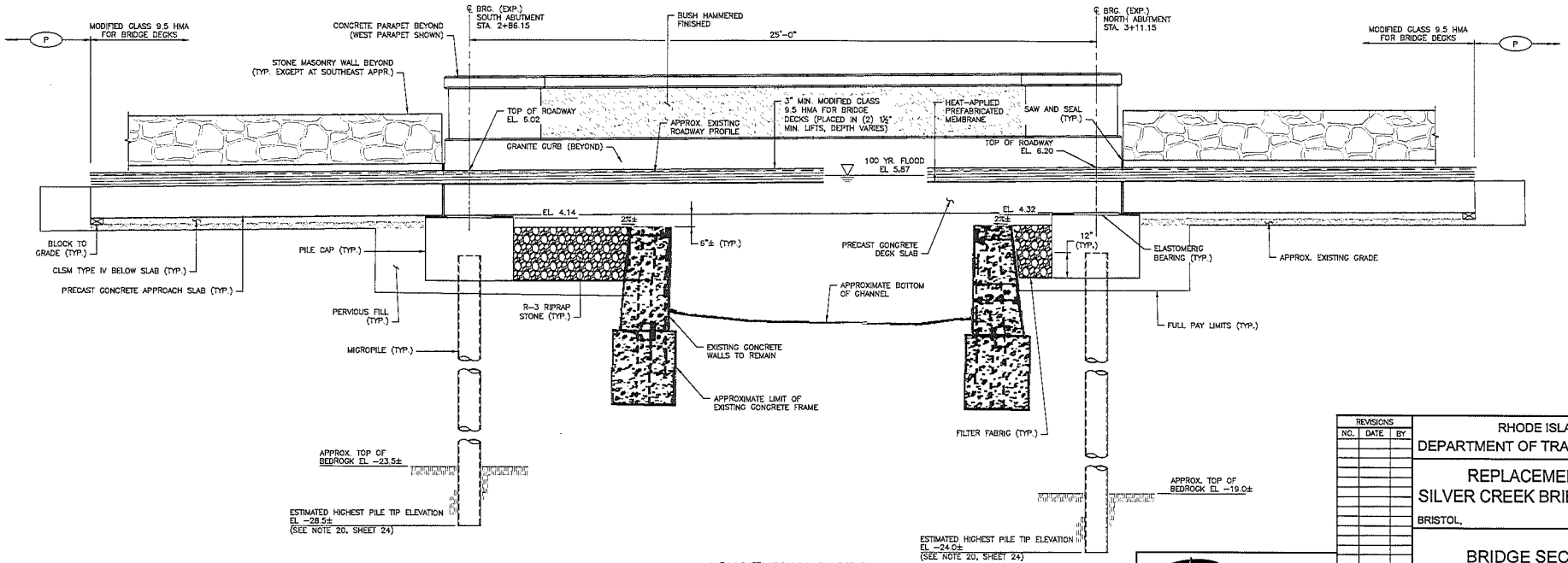
1000E_V1_022_BGENERAL

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI	XXX-XXXX(XXX)	2019	23	40



TRANSVERSE SECTION

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



LONGITUDINAL SECTION

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

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

REPLACEMENT OF SILVER CREEK BRIDGE NO. 153

BRISTOL, RHODE ISLAND

BRIDGE SECTIONS

CHECKED BY _____ DATE _____ SCALE _____

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

1000E_V1_023_BTYPICAL

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

May 22, 2019

Rhode Island Department of Transportation
c/o Mr. David Fish
2 Capitol Hill
Providence, RI 02903

RE: **Water Quality Certification: Silver Creek Bridge #153 Replacement**
Route 114 (Hope Street) Right-of-Way, Bristol
WQC No. 19-053

Dear Mr. Fish,

The RIDEM Office of Water Resources has reviewed the above referenced project for compliance with the State Water Quality Regulations. The project involves the removal and replacement of the existing bridge superstructure, replacement of existing utility main lines, and partial reconstruction of a stone masonry wall.

We have reviewed the subject application and site plans entitled "State of Rhode Island, Department of Transportation, Plan of Proposed Silver Creek Bridge No. 153, Route 114 (Hope Street), Bristol, Rhode Island", sheets 1 thru 5, 7, 8, 10, 11, 16, 17, and 21 thru 23 of 40, dated April 2 2019, date stamped by RIDEM on May 21, 2019, signed by David J. Elwell P.E. and Carl J. Adamo P.E., both with PARE Corp. of Lincoln, RI. The State Water associated with this project is the Silver Creek at Bristol Harbor, Class B/SB.

It has been determined that the above project is compliant with the requirements of the RI Water Quality Regulations provided that the Applicant complies with the above referenced application materials and the following conditions:

1) You **must** notify the RIDEM contact person identified below of the anticipated date of construction and your contractor's contact information, prior to any site disturbance.

2) Prior to construction, you **shall** erect or post a sign resistant to the weather and at least twelve (12) inches wide and (eighteen) inches long, which boldly identifies the initials "DEM" and the application number(s) assigned to this permit. The sign must be maintained at the site in a conspicuous location until such time that the project is complete.

3) All fill material **shall** be clean and free of matter that could cause pollution of the waters of the State.

4) A copy of this permit **must** be kept at the site at all times during site preparation, construction, and final stabilization. Copies of this permit must be made available for review by any DEM or City/Town representative upon request.

5) Any alterations, additions and/or modifications to the site design plans **must** be reviewed and approved by RIDEM prior to being affected.

6) This permit for the construction phase of this project shall expire on May 21, 2022. Project construction is to be completed by this date. You shall be required to submit a request for any modification(s) and/or extension(s).

In addition to any necessary enforcement actions stemming from the violation of any of the terms or conditions of this permit, issuance of this permit does not bar the Department, or any of its various Divisions, form instituting any investigation and/or enforcement actions that it may deem necessary for violations of any and all applicable statutes, regulations and/or permits, including but not limited to violations of the terms or conditions of any previous permit issued to you as an applicant or for this site.

This permit does not relieve your obligation to obtain any other applicable local, state and federal permits prior to commencing construction. This permit has the full force and effect of a permit issued by the Director. If you have any questions regarding the contents of the permit, you may contact Mr. Neal Personeus at (401) 222-4700, extension 7610.

Sincerely,

Neal B. Personeus
Senior Environmental Scientist / Project Manager
Federal 401 / State WQC Program
Office of Water Resources

ec: Greg Garibault, RI CRMC
Taylor Bell, US ACOE
Eric Schneider, RIDEM F&W
David Elwell, PARE Corp.

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 Promenade Street, Providence, Rhode Island 02908

April 16, 2019

CERTIFIED MAIL

Mr. Robens Innocent
Project Manager
Rhode Island Department of Transportation
Two Capitol Hill
Providence, RI 02903

RE: Proposed Silver Creek Bridge No. 153 Project, Bristol, RI
RIPDES Application No. RIG85G039

Dear Mr. Innocent:

Enclosed is the Rhode Island Department of Environmental Management's (DEM's) conceptual approval to discharge treated groundwater associated with contaminated construction dewatering under the Rhode Island Pollutant Discharge Elimination System (RIPDES) Program in accordance with the application that was submitted to the DEM by Pare Corporation (Pare) on behalf of the Rhode Island Department of Transportation (DOT) on April 3, 2019. The groundwater dewatering will be generated to facilitate the replacement of Silver Creek Bridge No. 153 in Bristol, RI. The Remediation General Permit (RGP) Notice of Intent (NOI) submitted by Pare did not specify the proposed groundwater treatment system to be installed for this project. The NOI did however specify that, based on the analytical results, pretreatment prior to discharge using standard sedimentation controls (such as bag filters or sedimentation tank) will likely be required. The treated groundwater will discharge to Silver Creek and ultimately into Bristol Harbor as identified in the application.

Prior to the DEM's final authorization to discharge a revised NOI that includes the following items must be submitted to the DEM:

1. Section II. (Operator) and Section VIII. (Owner/Operator Certification) must be updated to include the appropriate operator information and operator signature, respectively.

2. Section V.b. (Treatment System Information) must be updated to include all major control points and treatments units, design calculations and breakthrough time of any proposed activated carbon or ion exchange treatment units if required (see the

below comments), and manufacturers' specifications on major components of the treatment system. Plans and specifications on all treatment systems must be signed and certified by a professional engineer registered in the State of Rhode Island.

3. The NOI compares the groundwater pollutant concentrations from monitoring wells (MW-North and MW-South) to GA water quality limits. It should be noted that the effluent limitations and monitoring requirements that should be used to evaluate the analytical results are those listed in the RGP Part II.D.21. Discharge Category G – Contaminated Construction Dewatering Sites Discharging to Class SA and SB receiving waters.

4. The RGP requires that effluent samples to be taken on the 1st, 3rd, and 6th day during the first week of discharge and analyzed using 72-hour turnaround time and that sampling for the remainder of the first month shall be weekly and then at a frequency of twice per month thereafter for the term of the permit. If the treatment system and its discharge are interrupted for 120 or greater consecutive days it will be considered an extended system shut down. Any system restart after this period shall revert to the monitoring and reporting requirements for initial system startup. This must be reflected in the final application that is submitted to the DEM by the permittee or its contractor.

5. The Analytical Data Report attached to the NOI reported Arsenic, Mercury, and Silver as Not Detected (ND) in the groundwater sample. However, the method reporting limit (MRL) for these analytes exceeds the effluent limits for Category G – Contaminated Construction Dewatering Sites Discharging to Class SA and SB receiving waters. Specifically, the reported MRL values for Arsenic, Mercury, and Silver were 10 µg/L, 0.2 µg/L, and 5 µg/L, while the RGP monthly average limits for these pollutants are 1.12 µg/L, 0.12 µg/L, and 1.78 µg/L respectively. Since the data presented in the NOI does not demonstrate that the permittee will be capable of meeting the applicable limits for metals, the permittee should either:

   a. Reanalyze the groundwater in accordance with the method detection limits (MDLs) listed in Part II.G. of the RGP using 40 CFR 136 approved methods and sufficiently sensitive methods and resubmit the results to the DEM for review or

   b. Include an acceptable method of metals treatment prior to discharge and updated the NOI application, as necessary, and provide design calculations demonstrating that the treatment technology can adequately remove the influent metals to comply with the RGP's limits.

6. The NOI states that the expected dates of discharge will be from 7/1/2019 to 12/31/2020. Since the expected duration of this project is more than 12 months, the permittee will be required to submit the Discharge Monitoring Reports (DMRs)

electronically using NetDMR reporting tool. More information on how to submit DMRs can be found at the following webpage: http://www.dem.ri.gov/programs/water/permits/ripdes/reporting.php

If you have any questions regarding the RGP or the conditions of this conceptual approval, feel free to contact me at 401-222-4700, ext. 7201 or via email at Abed.Ragab@dem.ri.gov.

Sincerely,

Abdulrahman Ragab
Sanitary Engineer

cc: David Fish, DOT (electronic)
Erika Klinkhammer, Pare (electronic)
Eric Silva, Pare (electronic)
Joseph Haberek, PE, DEM (electronic)
Traci Pena, DEM (electronic)
Crystal Charbonneau, DEM (electronic)

CERTIFICATE OF ANALYSIS

Michael Flynn
Pare Corporation
8 Blackstone Valley Place
Lincoln, RI 02865

RE: Silver Creek Bridge No 153 (17022.01)
ESS Laboratory Work Order Number: 1804644

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 4:02 pm, May 30, 2018

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153

ESS Laboratory Work Order: 1804644

SAMPLE RECEIPT

The following samples were received on April 23, 2018 for the analyses specified on the enclosed Chain of Custody Record.

Revision 1 May 29, 2018: This report has been revised to include TPH, zinc, and iron analysis.

Lab Number	Sample Name	Matrix	Analysis
1804644-01	Well - North	Ground Water	1010, 2540C, 2540D, 6010C, 6020A, 7470A, 8081B, 8082A, 8100M, 8151A, 8260B, 8270D, 8270D SIM, 9040, 9050A
1804644-02	Well - South	Ground Water	1010, 2540C, 2540D, 6010C, 6020A, 7470A, 8081B, 8082A, 8100M, 8151A, 8260B, 8270D, 8270D SIM, 9040, 9050A

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

PROJECT NARRATIVE

8100M Total Petroleum Hydrocarbons

1804644-01 **Estimated value. Sample hold times were exceeded (H).**

1804644-02 **Estimated value. Sample hold times were exceeded (H).**

8260B Volatile Organic Compounds

CD82437-BS1 **Blank Spike recovery is above upper control limit (B+).**
Hexachlorobutadiene (134% @ 70-130%)

8270D Semi-Volatile Organic Compounds

C8D0415-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (120% @ 80-120%), 4,6-Dinitro-2-Methylphenol (127% @ 80-120%), Benzoic Acid (114% @ 80-120%)

C8D0415-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
2,4-Dinitrotoluene (21% @ 20%), 4,6-Dinitro-2-Methylphenol (27% @ 20%), Phenol (22% @ 20%)

8270D(SIM) Semi-Volatile Organic Compounds

C8D0433-CCV1 **Calibration required quadratic regression (Q).**
Hexachlorobenzene (124% @ 80-120%), Pentachlorophenol (119% @ 80-120%)

C8D0433-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
Hexachlorobenzene (24% @ 20%)

C8D0456-CCV1 **Calibration required quadratic regression (Q).**
Hexachlorobenzene (117% @ 80-120%), Pentachlorophenol (107% @ 80-120%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153

ESS Laboratory Work Order: 1804644

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water
Units: mg/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	ND (0.010)		6010C		5	KJK	04/25/18 21:53	100	10	CD82503
Barium	**0.033** (0.025)		6010C		1	KJK	04/24/18 22:42	50	25	CD82439
Cadmium	ND (0.0025)		6010C		1	KJK	04/25/18 16:58	50	25	CD82439
Chromium	ND (0.020)		6010C		2	KJK	04/25/18 16:53	50	25	CD82439
Iron	**6.22** (0.100)		6010C		10	KJK	05/23/18 22:16	100	10	CD82503
Lead	**0.028** (0.010)		6020A		4	NAR	04/27/18 13:41	50	25	CD82439
Mercury	ND (0.00020)		7470A		1	MJV	04/25/18 11:39	20	40	CD82342
Selenium	ND (0.025)		6010C		1	KJK	04/24/18 22:42	50	25	CD82439
Silver	ND (0.005)		6010C		1	KJK	04/24/18 22:42	50	25	CD82439
Zinc	ND (0.025)		6010C		1	KJK	04/24/18 22:42	50	25	CD82439

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 5
Extraction Method: 3510C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: TJ
Prepared: 4/24/18 14:35

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
4,4´-DDE	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
4,4´-DDT	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Aldrin	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
alpha-BHC	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
alpha-Chlordane	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
beta-BHC	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Chlordane (Total)	ND (0.000467)		8081B		1	04/25/18 0:21	C8D0413	CD82414
delta-BHC	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Dieldrin	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Endosulfan I	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Endosulfan II	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Endosulfan Sulfate	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Endrin	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Endrin Aldehyde [2C]	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Endrin Ketone	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
gamma-BHC (Lindane)	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
gamma-Chlordane	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Heptachlor	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Heptachlor Epoxide	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Hexachlorobenzene	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Methoxychlor	ND (0.000047)		8081B		1	04/25/18 0:21	C8D0413	CD82414
Toxaphene	ND (0.00121)		8081B		1	04/25/18 0:21	C8D0413	CD82414

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*61 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*63 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*67 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*68 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 4/24/18 14:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.09)		8082A		1	04/25/18 1:59		CD82413
Aroclor 1221	ND (0.09)		8082A		1	04/25/18 1:59		CD82413
Aroclor 1232	ND (0.09)		8082A		1	04/25/18 1:59		CD82413
Aroclor 1242	ND (0.09)		8082A		1	04/25/18 1:59		CD82413
Aroclor 1248	ND (0.09)		8082A		1	04/25/18 1:59		CD82413
Aroclor 1254	ND (0.09)		8082A		1	04/25/18 1:59		CD82413
Aroclor 1260	ND (0.09)		8082A		1	04/25/18 1:59		CD82413
Aroclor 1262	ND (0.09)		8082A		1	04/25/18 1:59		CD82413
Aroclor 1268	ND (0.09)		8082A		1	04/25/18 1:59		CD82413

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*76 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*80 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*64 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*71 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: SMR
Prepared: 5/22/18 13:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	ND (0.19)		8100M		1	05/22/18 18:20	C8E0310	CE82203

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*101 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A
Initial Volume: 500
Final Volume: 4
Extraction Method: 3510C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: DMC
Prepared: 4/24/18 17:55

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.00008)		8151A		1	04/25/18 20:31	C8D0447	CD82448
2,4,5-TP (Silvex)	ND (0.00008)		8151A		1	04/25/18 20:31	C8D0447	CD82448
2,4-D	ND (0.00075)		8151A		1	04/25/18 20:31	C8D0447	CD82448
2,4-DB	ND (0.00076)		8151A		1	04/25/18 20:31	C8D0447	CD82448
Dalapon	ND (0.00182)		8151A		1	04/25/18 20:31	C8D0447	CD82448
Dicamba	ND (0.00008)		8151A		1	04/25/18 20:31	C8D0447	CD82448
Dichlorprop	ND (0.00075)		8151A		1	04/25/18 20:31	C8D0447	CD82448
Dinoseb	ND (0.00076)		8151A		1	04/25/18 20:31	C8D0447	CD82448
MCPA	ND (0.372)		8151A		1	04/25/18 20:31	C8D0447	CD82448
MCPP [2C]	ND (0.376)		8151A		1	04/25/18 20:31	C8D0447	CD82448

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*136 %*		*30-150*
Surrogate: DCAA [2C]	*110 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,1,1-Trichloroethane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,1,2,2-Tetrachloroethane	ND (0.0005)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,1,2-Trichloroethane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,1-Dichloroethane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,1-Dichloroethene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,1-Dichloropropene	ND (0.0020)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,2,3-Trichlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,2,3-Trichloropropane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,2,4-Trichlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,2,4-Trimethylbenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,2-Dibromoethane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,2-Dichlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,2-Dichloroethane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,2-Dichloropropane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,3,5-Trimethylbenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,3-Dichlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,3-Dichloropropane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,4-Dichlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1,4-Dioxane - Screen	ND (0.500)		8260B		1	04/24/18 22:04	C8D0412	CD82437
1-Chlorohexane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
2,2-Dichloropropane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
2-Butanone	ND (0.0100)		8260B		1	04/24/18 22:04	C8D0412	CD82437
2-Chlorotoluene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
2-Hexanone	ND (0.0100)		8260B		1	04/24/18 22:04	C8D0412	CD82437
4-Chlorotoluene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
4-Isopropyltoluene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
4-Methyl-2-Pentanone	ND (0.0250)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Acetone	ND (0.0100)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Benzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Bromobenzene	ND (0.0020)		8260B		1	04/24/18 22:04	C8D0412	CD82437

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromochloromethane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Bromodichloromethane	ND (0.0006)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Bromoform	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Bromomethane	ND (0.0020)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Carbon Disulfide	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Carbon Tetrachloride	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Chlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Chloroethane	ND (0.0020)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Chloroform	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Chloromethane	ND (0.0020)		8260B		1	04/24/18 22:04	C8D0412	CD82437
cis-1,2-Dichloroethene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
cis-1,3-Dichloropropene	ND (0.0004)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Dibromochloromethane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Dibromomethane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Dichlorodifluoromethane	ND (0.0020)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Diethyl Ether	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Di-isopropyl ether	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Ethyl tertiary-butyl ether	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Ethylbenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Hexachlorobutadiene	ND (0.0006)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Hexachloroethane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Isopropylbenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Methyl tert-Butyl Ether	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Methylene Chloride	ND (0.0020)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Naphthalene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
n-Butylbenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
n-Propylbenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
sec-Butylbenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Styrene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
tert-Butylbenzene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Tertiary-amyl methyl ether	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Tetrachloroethene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrahydrofuran	ND (0.0050)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Toluene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
trans-1,2-Dichloroethene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
trans-1,3-Dichloropropene	ND (0.0004)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Trichloroethene	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Trichlorofluoromethane	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Vinyl Acetate	ND (0.0050)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Vinyl Chloride	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Xylene O	ND (0.0010)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Xylene P,M	ND (0.0020)		8260B		1	04/24/18 22:04	C8D0412	CD82437
Xylenes (Total)	ND (0.0020)		8260B		1	04/24/18 22:04		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*99 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*104 %*		*70-130*
Surrogate: Dibromofluoromethane	*102 %*		*70-130*
Surrogate: Toluene-d8	*106 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: TJ
Prepared: 4/24/18 13:55

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
1,2,4-Trichlorobenzene	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
1,2-Dichlorobenzene	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
1,3-Dichlorobenzene	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
1,4-Dichlorobenzene	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2,3,4,6-Tetrachlorophenol	ND (0.047)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2,4,5-Trichlorophenol	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2,4,6-Trichlorophenol	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2,4-Dichlorophenol	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2,4-Dimethylphenol	ND (0.047)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2,4-Dinitrophenol	ND (0.047)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2,4-Dinitrotoluene	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2,6-Dinitrotoluene	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2-Chloronaphthalene	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2-Chlorophenol	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2-Methylphenol	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2-Nitroaniline	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
2-Nitrophenol	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
3,3´-Dichlorobenzidine	ND (0.019)		8270D		1	04/25/18 16:01	C8D0415	CD82409
3+4-Methylphenol	ND (0.019)		8270D		1	04/25/18 16:01	C8D0415	CD82409
3-Nitroaniline	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
4,6-Dinitro-2-Methylphenol	ND (0.047)		8270D		1	04/25/18 16:01	C8D0415	CD82409
4-Bromophenyl-phenylether	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
4-Chloro-3-Methylphenol	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
4-Chloroaniline	ND (0.019)		8270D		1	04/25/18 16:01	C8D0415	CD82409
4-Chloro-phenyl-phenyl ether	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
4-Nitroaniline	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
4-Nitrophenol	ND (0.047)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Acetophenone	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Aniline	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Azobenzene	ND (0.019)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Benzoic Acid	ND (0.093)		8270D		1	04/25/18 16:01	C8D0415	CD82409

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: TJ
Prepared: 4/24/18 13:55

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzyl Alcohol	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
bis(2-Chloroethoxy)methane	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
bis(2-Chloroethyl)ether	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
bis(2-chloroisopropyl)Ether	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
bis(2-Ethylhexyl)phthalate	ND (0.006)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Butylbenzylphthalate	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Carbazole	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Dibenzofuran	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Diethylphthalate	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Dimethylphthalate	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Di-n-butylphthalate	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Di-n-octylphthalate	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Hexachlorobutadiene	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Hexachlorocyclopentadiene	ND (0.023)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Hexachloroethane	ND (0.005)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Isophorone	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Nitrobenzene	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
N-Nitrosodimethylamine	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
N-Nitroso-Di-n-Propylamine	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
N-nitrosodiphenylamine	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Phenol	ND (0.009)		8270D		1	04/25/18 16:01	C8D0415	CD82409
Pyridine	ND (0.093)		8270D		1	04/25/18 16:01	C8D0415	CD82409

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*59 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*61 %*		*15-110*
Surrogate: 2-Chlorophenol-d4	*58 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*57 %*		*30-130*
Surrogate: 2-Fluorophenol	*48 %*		*15-110*
Surrogate: Nitrobenzene-d5	*61 %*		*30-130*
Surrogate: Phenol-d6	*59 %*		*15-110*
Surrogate: p-Terphenyl-d14	*67 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3520C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: VSC
Prepared: 4/24/18 13:55

8270D(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2-Methylnaphthalene	ND (0.00019)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Acenaphthene	ND (0.00019)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Acenaphthylene	ND (0.00019)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Anthracene	ND (0.00019)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Benzo(a)anthracene	ND (0.00005)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Benzo(a)pyrene	ND (0.00005)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Benzo(b)fluoranthene	ND (0.00005)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Benzo(g,h,i)perylene	ND (0.00019)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Benzo(k)fluoranthene	ND (0.00005)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Chrysene	ND (0.00005)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Dibenzo(a,h)Anthracene	ND (0.00005)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Fluoranthene	ND (0.00019)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Fluorene	ND (0.00019)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Hexachlorobenzene	ND (0.00019)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Indeno(1,2,3-cd)Pyrene	ND (0.00005)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Naphthalene	ND (0.00019)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Pentachlorophenol	ND (0.00084)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Phenanthrene	ND (0.00019)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409
Pyrene	ND (0.00019)		8270D SIM		1	04/25/18 20:53	C8D0433	CD82409

%Recovery	Qualifier	Limits

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - North
Date Sampled: 04/23/18 10:15
Percent Solids: N/A

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-01
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**18300** (5)		9050A		1	JLK	04/24/18 17:41	umhos/cm	CD82433
Flashpoint	**> 200** (N/A)		1010		1	JLK	04/26/18 16:11	°F	CD82634
pH	**7.54** (N/A)		9040		1	CCP	04/23/18 19:52	S.U.	CD82333
pH Sample Temp	**Aqueous pH measured in water at 18.5**								
Total Dissolved Solids	**25500** (100)		2540C		1	CCP	04/25/18 17:14	mg/L	CD82530
Total Suspended Solids	**700** (20)		2540D		1	CCP	04/24/18 18:21	mg/L	CD82426

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water
Units: mg/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	ND (0.010)		6010C		5	KJK	04/25/18 21:58	100	10	CD82503
Barium	ND (0.025)		6010C		1	KJK	04/24/18 22:48	50	25	CD82439
Cadmium	ND (0.0025)		6010C		1	KJK	04/25/18 17:10	50	25	CD82439
Chromium	ND (0.030)		6010C		3	KJK	04/25/18 20:30	50	25	CD82439
Iron	ND (0.400)		6010C		40	KJK	05/23/18 22:52	100	10	CD82503
Lead	ND (0.010)		6020A		4	NAR	04/27/18 13:46	50	25	CD82439
Mercury	ND (0.00020)		7470A		1	MJV	04/25/18 11:42	20	40	CD82342
Selenium	ND (0.025)		6010C		1	KJK	04/24/18 22:48	50	25	CD82439
Silver	ND (0.005)		6010C		1	KJK	04/24/18 22:48	50	25	CD82439
Zinc	ND (0.025)		6010C		1	KJK	04/24/18 22:48	50	25	CD82439

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 5
Extraction Method: 3510C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: TJ
Prepared: 4/24/18 14:35

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
4,4´-DDE	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
4,4´-DDT	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Aldrin	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
alpha-BHC	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
alpha-Chlordane	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
beta-BHC	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Chlordane (Total)	ND (0.000467)		8081B		1	04/25/18 0:50	C8D0413	CD82414
delta-BHC	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Dieldrin	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Endosulfan I	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Endosulfan II	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Endosulfan Sulfate	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Endrin	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Endrin Aldehyde	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Endrin Ketone	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
gamma-BHC (Lindane)	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
gamma-Chlordane	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Heptachlor	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Heptachlor Epoxide	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Hexachlorobenzene	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Methoxychlor	ND (0.000047)		8081B		1	04/25/18 0:50	C8D0413	CD82414
Toxaphene	ND (0.00121)		8081B		1	04/25/18 0:50	C8D0413	CD82414

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*80 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*85 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*59 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*60 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 4/24/18 14:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.09)		8082A		1	04/25/18 2:18		CD82413
Aroclor 1221	ND (0.09)		8082A		1	04/25/18 2:18		CD82413
Aroclor 1232	ND (0.09)		8082A		1	04/25/18 2:18		CD82413
Aroclor 1242	ND (0.09)		8082A		1	04/25/18 2:18		CD82413
Aroclor 1248	ND (0.09)		8082A		1	04/25/18 2:18		CD82413
Aroclor 1254	ND (0.09)		8082A		1	04/25/18 2:18		CD82413
Aroclor 1260	ND (0.09)		8082A		1	04/25/18 2:18		CD82413
Aroclor 1262	ND (0.09)		8082A		1	04/25/18 2:18		CD82413
Aroclor 1268	ND (0.09)		8082A		1	04/25/18 2:18		CD82413

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*100 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*105 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*74 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*84 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A
Initial Volume: 1060
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: SMR
Prepared: 5/22/18 13:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	ND (0.19)		8100M		1	05/22/18 18:53	C8E0310	CE82203

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	99 %		40-140

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A
Initial Volume: 500
Final Volume: 4
Extraction Method: 3510C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: DMC
Prepared: 4/24/18 17:55

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.00008)		8151A		1	04/25/18 21:03	C8D0447	CD82448
2,4,5-TP (Silvex)	ND (0.00008)		8151A		1	04/25/18 21:03	C8D0447	CD82448
2,4-D	ND (0.00075)		8151A		1	04/25/18 21:03	C8D0447	CD82448
2,4-DB	ND (0.00076)		8151A		1	04/25/18 21:03	C8D0447	CD82448
Dalapon	ND (0.00182)		8151A		1	04/25/18 21:03	C8D0447	CD82448
Dicamba	ND (0.00008)		8151A		1	04/25/18 21:03	C8D0447	CD82448
Dichlorprop	ND (0.00075)		8151A		1	04/25/18 21:03	C8D0447	CD82448
Dinoseb	ND (0.00076)		8151A		1	04/25/18 21:03	C8D0447	CD82448
MCPA	ND (0.372)		8151A		1	04/25/18 21:03	C8D0447	CD82448
MCPP	ND (0.376)		8151A		1	04/25/18 21:03	C8D0447	CD82448

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*148 %*		*30-150*
Surrogate: DCAA [2C]	*117 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,1,1-Trichloroethane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,1,2,2-Tetrachloroethane	ND (0.0005)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,1,2-Trichloroethane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,1-Dichloroethane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,1-Dichloroethene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,1-Dichloropropene	ND (0.0020)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,2,3-Trichlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,2,3-Trichloropropane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,2,4-Trichlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,2,4-Trimethylbenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,2-Dibromoethane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,2-Dichlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,2-Dichloroethane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,2-Dichloropropane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,3,5-Trimethylbenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,3-Dichlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,3-Dichloropropane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,4-Dichlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1,4-Dioxane - Screen	ND (0.500)		8260B		1	04/24/18 22:30	C8D0412	CD82437
1-Chlorohexane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
2,2-Dichloropropane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
2-Butanone	ND (0.0100)		8260B		1	04/24/18 22:30	C8D0412	CD82437
2-Chlorotoluene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
2-Hexanone	ND (0.0100)		8260B		1	04/24/18 22:30	C8D0412	CD82437
4-Chlorotoluene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
4-Isopropyltoluene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
4-Methyl-2-Pentanone	ND (0.0250)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Acetone	ND (0.0100)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Benzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Bromobenzene	ND (0.0020)		8260B		1	04/24/18 22:30	C8D0412	CD82437

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromochloromethane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Bromodichloromethane	ND (0.0006)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Bromoform	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Bromomethane	ND (0.0020)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Carbon Disulfide	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Carbon Tetrachloride	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Chlorobenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Chloroethane	ND (0.0020)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Chloroform	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Chloromethane	ND (0.0020)		8260B		1	04/24/18 22:30	C8D0412	CD82437
cis-1,2-Dichloroethene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
cis-1,3-Dichloropropene	ND (0.0004)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Dibromochloromethane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Dibromomethane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Dichlorodifluoromethane	ND (0.0020)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Diethyl Ether	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Di-isopropyl ether	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Ethyl tertiary-butyl ether	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Ethylbenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Hexachlorobutadiene	ND (0.0006)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Hexachloroethane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Isopropylbenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Methyl tert-Butyl Ether	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Methylene Chloride	ND (0.0020)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Naphthalene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
n-Butylbenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
n-Propylbenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
sec-Butylbenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Styrene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
tert-Butylbenzene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Tertiary-amyl methyl ether	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Tetrachloroethene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrahydrofuran	ND (0.0050)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Toluene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
trans-1,2-Dichloroethene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
trans-1,3-Dichloropropene	ND (0.0004)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Trichloroethene	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Trichlorofluoromethane	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Vinyl Acetate	ND (0.0050)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Vinyl Chloride	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Xylene O	ND (0.0010)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Xylene P,M	ND (0.0020)		8260B		1	04/24/18 22:30	C8D0412	CD82437
Xylenes (Total)	ND (0.0020)		8260B		1	04/24/18 22:30		[CALC]

	%Recovery	*Qualifier*	*Limits*
Surrogate: 1,2-Dichloroethane-d4	*98 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*104 %*		*70-130*
Surrogate: Dibromofluoromethane	*102 %*		*70-130*
Surrogate: Toluene-d8	*108 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: TJ
Prepared: 4/24/18 13:55

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
1,2,4-Trichlorobenzene	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
1,2-Dichlorobenzene	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
1,3-Dichlorobenzene	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
1,4-Dichlorobenzene	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2,3,4,6-Tetrachlorophenol	ND (0.047)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2,4,5-Trichlorophenol	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2,4,6-Trichlorophenol	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2,4-Dichlorophenol	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2,4-Dimethylphenol	ND (0.047)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2,4-Dinitrophenol	ND (0.047)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2,4-Dinitrotoluene	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2,6-Dinitrotoluene	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2-Chloronaphthalene	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2-Chlorophenol	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2-Methylphenol	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2-Nitroaniline	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
2-Nitrophenol	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
3,3´-Dichlorobenzidine	ND (0.019)		8270D		1	04/25/18 16:35	C8D0415	CD82409
3+4-Methylphenol	ND (0.019)		8270D		1	04/25/18 16:35	C8D0415	CD82409
3-Nitroaniline	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
4,6-Dinitro-2-Methylphenol	ND (0.047)		8270D		1	04/25/18 16:35	C8D0415	CD82409
4-Bromophenyl-phenylether	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
4-Chloro-3-Methylphenol	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
4-Chloroaniline	ND (0.019)		8270D		1	04/25/18 16:35	C8D0415	CD82409
4-Chloro-phenyl-phenyl ether	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
4-Nitroaniline	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
4-Nitrophenol	ND (0.047)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Acetophenone	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Aniline	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Azobenzene	ND (0.019)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Benzoic Acid	ND (0.093)		8270D		1	04/25/18 16:35	C8D0415	CD82409

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: TJ
Prepared: 4/24/18 13:55

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzyl Alcohol	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
bis(2-Chloroethoxy)methane	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
bis(2-Chloroethyl)ether	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
bis(2-chloroisopropyl)Ether	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
bis(2-Ethylhexyl)phthalate	ND (0.006)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Butylbenzylphthalate	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Carbazole	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Dibenzofuran	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Diethylphthalate	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Dimethylphthalate	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Di-n-butylphthalate	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Di-n-octylphthalate	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Hexachlorobutadiene	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Hexachlorocyclopentadiene	ND (0.023)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Hexachloroethane	ND (0.005)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Isophorone	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Nitrobenzene	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
N-Nitrosodimethylamine	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
N-Nitroso-Di-n-Propylamine	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
N-nitrosodiphenylamine	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Phenol	ND (0.009)		8270D		1	04/25/18 16:35	C8D0415	CD82409
Pyridine	ND (0.093)		8270D		1	04/25/18 16:35	C8D0415	CD82409

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*71 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*71 %*		*15-110*
Surrogate: 2-Chlorophenol-d4	*71 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*70 %*		*30-130*
Surrogate: 2-Fluorophenol	*58 %*		*15-110*
Surrogate: Nitrobenzene-d5	*75 %*		*30-130*
Surrogate: Phenol-d6	*69 %*		*15-110*
Surrogate: p-Terphenyl-d14	*77 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3520C

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: VSC
Prepared: 4/24/18 13:55

8270D(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2-Methylnaphthalene	ND (0.00019)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Acenaphthene	ND (0.00019)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Acenaphthylene	ND (0.00019)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Anthracene	ND (0.00019)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Benzo(a)anthracene	ND (0.00005)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Benzo(a)pyrene	ND (0.00005)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Benzo(b)fluoranthene	ND (0.00005)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Benzo(g,h,i)perylene	ND (0.00019)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Benzo(k)fluoranthene	ND (0.00005)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Chrysene	ND (0.00005)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Dibenzo(a,h)Anthracene	ND (0.00005)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Fluoranthene	ND (0.00019)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Fluorene	ND (0.00019)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Hexachlorobenzene	ND (0.00019)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Indeno(1,2,3-cd)Pyrene	ND (0.00005)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Naphthalene	ND (0.00019)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Pentachlorophenol	ND (0.00084)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Phenanthrene	ND (0.00019)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409
Pyrene	ND (0.00019)		8270D SIM		1	04/26/18 15:27	C8D0456	CD82409

%Recovery	Qualifier	Limits

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: Well - South
Date Sampled: 04/23/18 11:45
Percent Solids: N/A

ESS Laboratory Work Order: 1804644
ESS Laboratory Sample ID: 1804644-02
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**21800** (5)		9050A		1	JLK	04/24/18 17:41	umhos/cm	CD82433
Flashpoint	**> 200** (N/A)		1010		1	JLK	04/26/18 16:11	°F	CD82634
pH	**7.42** (N/A)		9040		1	CCP	04/23/18 19:52	S.U.	CD82333
pH Sample Temp	**Aqueous pH measured in water at 19.6 ºC.** (N/A)								
Total Dissolved Solids	**26300** (100)		2540C		1	CCP	04/25/18 17:14	mg/L	CD82530
Total Suspended Solids	**30** (5)		2540D		1	CCP	04/24/18 18:21	mg/L	CD82426

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CD82439 - 3005A/200.7										
Blank										
Barium	ND	0.025	mg/L							
Cadmium	ND	0.0025	mg/L							
Chromium	ND	0.010	mg/L							
Lead	ND	0.002	mg/L							
Selenium	ND	0.025	mg/L							
Silver	ND	0.005	mg/L							
Zinc	ND	0.025	mg/L							
LCS										
Barium	0.217	0.025	mg/L	0.2500		87	80-120			
Cadmium	0.120	0.0025	mg/L	0.1250		96	80-120			
Chromium	0.212	0.010	mg/L	0.2500		85	80-120			
Lead	0.251	0.012	mg/L	0.2500		100	80-120			
Selenium	0.441	0.025	mg/L	0.5000		88	80-120			
Silver	0.111	0.005	mg/L	0.1250		89	80-120			
Zinc	0.210	0.025	mg/L	0.2500		84	80-120			
LCS Dup										
Barium	0.224	0.025	mg/L	0.2500		90	80-120	3	20	
Cadmium	0.124	0.0025	mg/L	0.1250		99	80-120	3	20	
Chromium	0.220	0.010	mg/L	0.2500		88	80-120	4	20	
Lead	0.268	0.012	mg/L	0.2500		107	80-120	7	20	
Selenium	0.458	0.025	mg/L	0.5000		92	80-120	4	20	
Silver	0.114	0.005	mg/L	0.1250		91	80-120	3	20	
Zinc	0.217	0.025	mg/L	0.2500		87	80-120	3	20	
Batch CD82503 - 3005A/200.7										
Blank										
Arsenic	ND	0.002	mg/L							
LCS										
Arsenic	0.052	0.002	mg/L	0.05000		103	80-120			
LCS Dup										
Arsenic	0.051	0.002	mg/L	0.05000		101	80-120	2	20	
8081B Organochlorine Pesticides										
Batch CD82414 - 3510C										
Blank										
4,4´-DDD	ND	0.000050	mg/L							
4,4´-DDD [2C]	ND	0.000050	mg/L							
4,4´-DDE	ND	0.000050	mg/L							
4,4´-DDE [2C]	ND	0.000050	mg/L							
4,4´-DDT	ND	0.000050	mg/L							
4,4´-DDT [2C]	ND	0.000050	mg/L							
Aldrin	ND	0.000050	mg/L							
Aldrin [2C]	ND	0.000050	mg/L							

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8081B Organochlorine Pesticides										
Batch CD82414 - 3510C										
alpha-BHC	ND	0.000050	mg/L							
alpha-BHC [2C]	ND	0.000050	mg/L							
alpha-Chlordane	ND	0.000050	mg/L							
alpha-Chlordane [2C]	ND	0.000050	mg/L							
beta-BHC	ND	0.000050	mg/L							
beta-BHC [2C]	ND	0.000050	mg/L							
delta-BHC	ND	0.000050	mg/L							
delta-BHC [2C]	ND	0.000050	mg/L							
Dieldrin	ND	0.000050	mg/L							
Dieldrin [2C]	ND	0.000050	mg/L							
Endosulfan I	ND	0.000050	mg/L							
Endosulfan I [2C]	ND	0.000050	mg/L							
Endosulfan II	ND	0.000050	mg/L							
Endosulfan II [2C]	ND	0.000050	mg/L							
Endosulfan Sulfate	ND	0.000050	mg/L							
Endosulfan Sulfate [2C]	ND	0.000050	mg/L							
Endrin	ND	0.000050	mg/L							
Endrin [2C]	ND	0.000050	mg/L							
Endrin Aldehyde	ND	0.000050	mg/L							
Endrin Aldehyde [2C]	ND	0.000050	mg/L							
Endrin Ketone	ND	0.000050	mg/L							
Endrin Ketone [2C]	ND	0.000050	mg/L							
gamma-BHC (Lindane)	ND	0.000050	mg/L							
gamma-BHC (Lindane) [2C]	ND	0.000050	mg/L							
gamma-Chlordane	ND	0.000050	mg/L							
gamma-Chlordane [2C]	ND	0.000050	mg/L							
Heptachlor	ND	0.000050	mg/L							
Heptachlor [2C]	ND	0.000050	mg/L							
Heptachlor Epoxide	ND	0.000050	mg/L							
Heptachlor Epoxide [2C]	ND	0.000050	mg/L							
Hexachlorobenzene	ND	0.000050	mg/L							
Hexachlorobenzene [2C]	ND	0.000050	mg/L							
Methoxychlor	ND	0.000050	mg/L							
Methoxychlor [2C]	ND	0.000050	mg/L							
Surrogate: Decachlorobiphenyl	*0.000189*		mg/L	*0.0002500*		*75*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.000216*		mg/L	*0.0002500*		*86*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.000183*		mg/L	*0.0002500*		*73*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.000179*		mg/L	*0.0002500*		*72*	*30-150*			
LCS										
4,4´-DDD	0.000217	0.000050	mg/L	0.0002500		87	40-140			
4,4´-DDD [2C]	0.000228	0.000050	mg/L	0.0002500		91	40-140			
4,4´-DDE	0.000208	0.000050	mg/L	0.0002500		83	40-140			
4,4´-DDE [2C]	0.000216	0.000050	mg/L	0.0002500		86	40-140			
4,4´-DDT	0.000233	0.000050	mg/L	0.0002500		93	40-140			

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8081B Organochlorine Pesticides										
Batch CD82414 - 3510C										
4,4´-DDT [2C]	0.000207	0.000050	mg/L	0.0002500		83	40-140			
Aldrin	0.000206	0.000050	mg/L	0.0002500		82	40-140			
Aldrin [2C]	0.000194	0.000050	mg/L	0.0002500		78	40-140			
alpha-BHC	0.000242	0.000050	mg/L	0.0002500		97	40-140			
alpha-BHC [2C]	0.000236	0.000050	mg/L	0.0002500		94	40-140			
alpha-Chlordane	0.000228	0.000050	mg/L	0.0002500		91	40-140			
alpha-Chlordane [2C]	0.000231	0.000050	mg/L	0.0002500		93	40-140			
beta-BHC	0.000240	0.000050	mg/L	0.0002500		96	40-140			
beta-BHC [2C]	0.000229	0.000050	mg/L	0.0002500		92	40-140			
delta-BHC	0.000235	0.000050	mg/L	0.0002500		94	40-140			
delta-BHC [2C]	0.000223	0.000050	mg/L	0.0002500		89	40-140			
Dieldrin	0.000250	0.000050	mg/L	0.0002500		100	40-140			
Dieldrin [2C]	0.000249	0.000050	mg/L	0.0002500		100	40-140			
Endosulfan I	0.000277	0.000050	mg/L	0.0002500		111	40-140			
Endosulfan I [2C]	0.000241	0.000050	mg/L	0.0002500		97	40-140			
Endosulfan II	0.000227	0.000050	mg/L	0.0002500		91	40-140			
Endosulfan II [2C]	0.000238	0.000050	mg/L	0.0002500		95	40-140			
Endosulfan Sulfate	0.000239	0.000050	mg/L	0.0002500		96	40-140			
Endosulfan Sulfate [2C]	0.000237	0.000050	mg/L	0.0002500		95	40-140			
Endrin	0.000233	0.000050	mg/L	0.0002500		93	40-140			
Endrin [2C]	0.000243	0.000050	mg/L	0.0002500		97	40-140			
Endrin Aldehyde	0.000234	0.000050	mg/L	0.0002500		94	40-140			
Endrin Aldehyde [2C]	0.000276	0.000050	mg/L	0.0002500		110	40-140			
Endrin Ketone	0.000242	0.000050	mg/L	0.0002500		97	40-140			
Endrin Ketone [2C]	0.000256	0.000050	mg/L	0.0002500		102	40-140			
gamma-BHC (Lindane)	0.000234	0.000050	mg/L	0.0002500		94	40-140			
gamma-BHC (Lindane) [2C]	0.000227	0.000050	mg/L	0.0002500		91	40-140			
gamma-Chlordane	0.000233	0.000050	mg/L	0.0002500		93	40-140			
gamma-Chlordane [2C]	0.000237	0.000050	mg/L	0.0002500		95	40-140			
Heptachlor	0.000211	0.000050	mg/L	0.0002500		85	40-140			
Heptachlor [2C]	0.000182	0.000050	mg/L	0.0002500		73	40-140			
Heptachlor Epoxide	0.000237	0.000050	mg/L	0.0002500		95	40-140			
Heptachlor Epoxide [2C]	0.000237	0.000050	mg/L	0.0002500		95	40-140			
Hexachlorobenzene	0.000223	0.000050	mg/L	0.0002500		89	40-140			
Hexachlorobenzene [2C]	0.000217	0.000050	mg/L	0.0002500		87	40-140			
Methoxychlor	0.000235	0.000050	mg/L	0.0002500		94	40-140			
Methoxychlor [2C]	0.000235	0.000050	mg/L	0.0002500		94	40-140			
Surrogate: Decachlorobiphenyl	*0.000199*		mg/L	*0.0002500*		*79*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.000228*		mg/L	*0.0002500*		*91*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.000213*		mg/L	*0.0002500*		*85*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.000204*		mg/L	*0.0002500*		*82*	*30-150*			
LCS Dup										
4,4´-DDD	0.000212	0.000050	mg/L	0.0002500		85	40-140	2	20	
4,4´-DDD [2C]	0.000216	0.000050	mg/L	0.0002500		86	40-140	5	20	

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8081B Organochlorine Pesticides										
Batch CD82414 - 3510C										
4,4´-DDE	0.000209	0.000050	mg/L	0.0002500		83	40-140	0.1	20	
4,4´-DDE [2C]	0.000202	0.000050	mg/L	0.0002500		81	40-140	7	20	
4,4´-DDT	0.000225	0.000050	mg/L	0.0002500		90	40-140	3	20	
4,4´-DDT [2C]	0.000206	0.000050	mg/L	0.0002500		82	40-140	0.8	20	
Aldrin	0.000180	0.000050	mg/L	0.0002500		72	40-140	13	20	
Aldrin [2C]	0.000176	0.000050	mg/L	0.0002500		70	40-140	10	20	
alpha-BHC	0.000214	0.000050	mg/L	0.0002500		86	40-140	12	20	
alpha-BHC [2C]	0.000208	0.000050	mg/L	0.0002500		83	40-140	13	20	
alpha-Chlordane	0.000210	0.000050	mg/L	0.0002500		84	40-140	8	20	
alpha-Chlordane [2C]	0.000213	0.000050	mg/L	0.0002500		85	40-140	8	20	
beta-BHC	0.000217	0.000050	mg/L	0.0002500		87	40-140	10	20	
beta-BHC [2C]	0.000214	0.000050	mg/L	0.0002500		86	40-140	7	20	
delta-BHC	0.000218	0.000050	mg/L	0.0002500		87	40-140	8	20	
delta-BHC [2C]	0.000208	0.000050	mg/L	0.0002500		83	40-140	7	20	
Dieldrin	0.000231	0.000050	mg/L	0.0002500		92	40-140	8	20	
Dieldrin [2C]	0.000255	0.000050	mg/L	0.0002500		102	40-140	2	20	
Endosulfan I	0.000235	0.000050	mg/L	0.0002500		94	40-140	16	20	
Endosulfan I [2C]	0.000222	0.000050	mg/L	0.0002500		89	40-140	9	20	
Endosulfan II	0.000214	0.000050	mg/L	0.0002500		86	40-140	6	20	
Endosulfan II [2C]	0.000225	0.000050	mg/L	0.0002500		90	40-140	6	20	
Endosulfan Sulfate	0.000229	0.000050	mg/L	0.0002500		91	40-140	5	20	
Endosulfan Sulfate [2C]	0.000225	0.000050	mg/L	0.0002500		90	40-140	5	20	
Endrin	0.000236	0.000050	mg/L	0.0002500		95	40-140	1	20	
Endrin [2C]	0.000228	0.000050	mg/L	0.0002500		91	40-140	6	20	
Endrin Aldehyde	0.000256	0.000050	mg/L	0.0002500		102	40-140	9	20	
Endrin Aldehyde [2C]	0.000326	0.000050	mg/L	0.0002500		130	40-140	17	20	
Endrin Ketone	0.000232	0.000050	mg/L	0.0002500		93	40-140	4	20	
Endrin Ketone [2C]	0.000243	0.000050	mg/L	0.0002500		97	40-140	5	20	
gamma-BHC (Lindane)	0.000209	0.000050	mg/L	0.0002500		84	40-140	11	20	
gamma-BHC (Lindane) [2C]	0.000203	0.000050	mg/L	0.0002500		81	40-140	11	20	
gamma-Chlordane	0.000214	0.000050	mg/L	0.0002500		86	40-140	9	20	
gamma-Chlordane [2C]	0.000219	0.000050	mg/L	0.0002500		88	40-140	8	20	
Heptachlor	0.000190	0.000050	mg/L	0.0002500		76	40-140	10	20	
Heptachlor [2C]	0.000164	0.000050	mg/L	0.0002500		66	40-140	10	20	
Heptachlor Epoxide	0.000217	0.000050	mg/L	0.0002500		87	40-140	9	20	
Heptachlor Epoxide [2C]	0.000215	0.000050	mg/L	0.0002500		86	40-140	10	20	
Hexachlorobenzene	0.000198	0.000050	mg/L	0.0002500		79	40-140	12	20	
Hexachlorobenzene [2C]	0.000190	0.000050	mg/L	0.0002500		76	40-140	13	20	
Methoxychlor	0.000243	0.000050	mg/L	0.0002500		97	40-140	3	20	
Methoxychlor [2C]	0.000236	0.000050	mg/L	0.0002500		94	40-140	0.3	20	
Surrogate: Decachlorobiphenyl	*0.000177*		mg/L	*0.0002500*		*71*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.000214*		mg/L	*0.0002500*		*86*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.000180*		mg/L	*0.0002500*		*72*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.000171*		mg/L	*0.0002500*		*68*	*30-150*			

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch CD82413 - 3510C										
Blank										
Aroclor 1016	ND	0.10	ug/L							
Aroclor 1016 [2C]	ND	0.10	ug/L							
Aroclor 1221	ND	0.10	ug/L							
Aroclor 1221 [2C]	ND	0.10	ug/L							
Aroclor 1232	ND	0.10	ug/L							
Aroclor 1232 [2C]	ND	0.10	ug/L							
Aroclor 1242	ND	0.10	ug/L							
Aroclor 1242 [2C]	ND	0.10	ug/L							
Aroclor 1248	ND	0.10	ug/L							
Aroclor 1248 [2C]	ND	0.10	ug/L							
Aroclor 1254	ND	0.10	ug/L							
Aroclor 1254 [2C]	ND	0.10	ug/L							
Aroclor 1260	ND	0.10	ug/L							
Aroclor 1260 [2C]	ND	0.10	ug/L							
Aroclor 1262	ND	0.10	ug/L							
Aroclor 1262 [2C]	ND	0.10	ug/L							
Aroclor 1268	ND	0.10	ug/L							
Aroclor 1268 [2C]	ND	0.10	ug/L							
Surrogate: Decachlorobiphenyl	*0.0451*		ug/L	*0.05000*		*90*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0464*		ug/L	*0.05000*		*93*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0311*		ug/L	*0.05000*		*62*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0320*		ug/L	*0.05000*		*64*	*30-150*			
LCS										
Aroclor 1016	1.00	0.10	ug/L	1.000		100	40-140			
Aroclor 1016 [2C]	0.92	0.10	ug/L	1.000		92	40-140			
Aroclor 1260	0.85	0.10	ug/L	1.000		85	40-140			
Aroclor 1260 [2C]	0.86	0.10	ug/L	1.000		86	40-140			
Surrogate: Decachlorobiphenyl	*0.0482*		ug/L	*0.05000*		*96*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0515*		ug/L	*0.05000*		*103*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0384*		ug/L	*0.05000*		*77*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0377*		ug/L	*0.05000*		*75*	*30-150*			
LCS Dup										
Aroclor 1016	1.15	0.10	ug/L	1.000		115	40-140	14	20	
Aroclor 1016 [2C]	0.99	0.10	ug/L	1.000		99	40-140	8	20	
Aroclor 1260	0.99	0.10	ug/L	1.000		99	40-140	15	20	
Aroclor 1260 [2C]	1.02	0.10	ug/L	1.000		102	40-140	17	20	
Surrogate: Decachlorobiphenyl	*0.0511*		ug/L	*0.05000*		*102*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0532*		ug/L	*0.05000*		*106*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0341*		ug/L	*0.05000*		*68*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0348*		ug/L	*0.05000*		*70*	*30-150*			
8100M Total Petroleum Hydrocarbons										

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Client Name: Pare Corporation
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8100M Total Petroleum Hydrocarbons										
Batch CE82203 - 3510C										
Blank										
Decane (C10)	ND	0.005	mg/L							
Docosane (C22)	ND	0.005	mg/L							
Dodecane (C12)	ND	0.005	mg/L							
Eicosane (C20)	ND	0.005	mg/L							
Hexacosane (C26)	ND	0.005	mg/L							
Hexadecane (C16)	ND	0.005	mg/L							
Nonadecane (C19)	ND	0.005	mg/L							
Nonane (C9)	ND	0.005	mg/L							
Octacosane (C28)	ND	0.005	mg/L							
Octadecane (C18)	ND	0.005	mg/L							
Tetracosane (C24)	ND	0.005	mg/L							
Tetradecane (C14)	ND	0.005	mg/L							
Total Petroleum Hydrocarbons	ND	0.20	mg/L							
Triacontane (C30)	ND	0.005	mg/L							
Surrogate: O-Terphenyl	*0.100*		mg/L	*0.1000*		*100*	*40-140*			
LCS										
Decane (C10)	0.038	0.005	mg/L	0.05000		75	40-140			
Docosane (C22)	0.044	0.005	mg/L	0.05000		87	40-140			
Dodecane (C12)	0.041	0.005	mg/L	0.05000		81	40-140			
Eicosane (C20)	0.043	0.005	mg/L	0.05000		86	40-140			
Hexacosane (C26)	0.043	0.005	mg/L	0.05000		87	40-140			
Hexadecane (C16)	0.043	0.005	mg/L	0.05000		86	40-140			
Nonadecane (C19)	0.046	0.005	mg/L	0.05000		92	40-140			
Nonane (C9)	0.032	0.005	mg/L	0.05000		64	30-140			
Octacosane (C28)	0.043	0.005	mg/L	0.05000		87	40-140			
Octadecane (C18)	0.043	0.005	mg/L	0.05000		86	40-140			
Tetracosane (C24)	0.044	0.005	mg/L	0.05000		88	40-140			
Tetradecane (C14)	0.043	0.005	mg/L	0.05000		85	40-140			
Total Petroleum Hydrocarbons	0.611	0.20	mg/L	0.7000		87	40-140			
Triacontane (C30)	0.043	0.005	mg/L	0.05000		86	40-140			
Surrogate: O-Terphenyl	*0.0962*		mg/L	*0.1000*		*96*	*40-140*			
LCS										
Decane (C10)	0.007	0.005	mg/L	0.01000		69	40-140			
Docosane (C22)	0.010	0.005	mg/L	0.01000		103	40-140			
Dodecane (C12)	0.006	0.005	mg/L	0.01000		61	40-140			
Eicosane (C20)	0.010	0.005	mg/L	0.01000		98	40-140			
Hexacosane (C26)	0.010	0.005	mg/L	0.01000		101	40-140			
Hexadecane (C16)	0.009	0.005	mg/L	0.01000		93	40-140			
Nonadecane (C19)	0.012	0.005	mg/L	0.01000		124	40-140			
Nonane (C9)	0.004	0.005	mg/L	0.01000		43	30-140			
Octacosane (C28)	0.010	0.005	mg/L	0.01000		102	40-140			
Octadecane (C18)	0.010	0.005	mg/L	0.01000		98	40-140			

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Client Name: Pare Corporation
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8100M Total Petroleum Hydrocarbons										
Batch CE82203 - 3510C										
Tetracosane (C24)	0.010	0.005	mg/L	0.01000		103	40-140			
Tetradecane (C14)	0.009	0.005	mg/L	0.01000		88	40-140			
Total Petroleum Hydrocarbons	0.150	0.20	mg/L	0.1400		107	40-140			
Triacontane (C30)	0.010	0.005	mg/L	0.01000		100	40-140			
Surrogate: O-Terphenyl	*0.100*		mg/L	*0.1000*		*100*	*40-140*			
LCS Dup										
Decane (C10)	0.038	0.005	mg/L	0.05000		76	40-140	2	25	
Docosane (C22)	0.047	0.005	mg/L	0.05000		94	40-140	8	25	
Dodecane (C12)	0.043	0.005	mg/L	0.05000		86	40-140	6	25	
Eicosane (C20)	0.047	0.005	mg/L	0.05000		94	40-140	9	25	
Hexacosane (C26)	0.047	0.005	mg/L	0.05000		94	40-140	7	25	
Hexadecane (C16)	0.046	0.005	mg/L	0.05000		92	40-140	7	25	
Nonadecane (C19)	0.050	0.005	mg/L	0.05000		99	40-140	7	25	
Nonane (C9)	0.032	0.005	mg/L	0.05000		65	30-140	1	25	
Octacosane (C28)	0.047	0.005	mg/L	0.05000		93	40-140	7	25	
Octadecane (C18)	0.046	0.005	mg/L	0.05000		93	40-140	7	25	
Tetracosane (C24)	0.047	0.005	mg/L	0.05000		94	40-140	7	25	
Tetradecane (C14)	0.046	0.005	mg/L	0.05000		91	40-140	6	25	
Total Petroleum Hydrocarbons	0.645	0.20	mg/L	0.7000		92	40-140	5	25	
Triacontane (C30)	0.046	0.005	mg/L	0.05000		93	40-140	7	25	
Surrogate: O-Terphenyl	*0.101*		mg/L	*0.1000*		*101*	*40-140*			
8151A Chlorinated Herbicides										
Batch CD82448 - 3510C										
Blank										
2,4,5-T	ND	0.00008	mg/L							
2,4,5-T [2C]	ND	0.00008	mg/L							
2,4,5-TP (Silvex)	ND	0.00008	mg/L							
2,4,5-TP (Silvex) [2C]	ND	0.00008	mg/L							
2,4-D	ND	0.00075	mg/L							
2,4-D [2C]	ND	0.00075	mg/L							
2,4-DB	ND	0.00076	mg/L							
2,4-DB [2C]	ND	0.00076	mg/L							
Dalapon	ND	0.00182	mg/L							
Dalapon [2C]	ND	0.00182	mg/L							
Dicamba	ND	0.00008	mg/L							
Dicamba [2C]	ND	0.00008	mg/L							
Dichlorprop	ND	0.00075	mg/L							
Dichlorprop [2C]	ND	0.00075	mg/L							
Dinoseb	ND	0.00076	mg/L							
Dinoseb [2C]	ND	0.00076	mg/L							
MCPA	ND	0.372	mg/L							
MCPA [2C]	ND	0.372	mg/L							

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Client Name: Pare Corporation
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8151A Chlorinated Herbicides										
Batch CD82448 - 3510C										
MCPP	ND	0.376	mg/L							
MCPP [2C]	ND	0.376	mg/L							
Surrogate: DCAA	*0.00528*		mg/L	*0.004000*		*132*	*30-150*			
Surrogate: DCAA [2C]	*0.00435*		mg/L	*0.004000*		*109*	*30-150*			
LCS										
2,4,5-T	0.00027	0.00008	mg/L	0.0003800		70	40-140			
2,4,5-T [2C]	0.00026	0.00008	mg/L	0.0003800		68	40-140			
2,4,5-TP (Silvex)	0.00027	0.00008	mg/L	0.0003800		70	40-140			
2,4,5-TP (Silvex) [2C]	0.00029	0.00008	mg/L	0.0003800		76	40-140			
2,4-D	0.00282	0.00075	mg/L	0.003760		75	40-140			
2,4-D [2C]	0.00291	0.00075	mg/L	0.003760		77	40-140			
2,4-DB	0.00259	0.00076	mg/L	0.003800		68	40-140			
2,4-DB [2C]	0.00286	0.00076	mg/L	0.003800		75	40-140			
Dalapon	0.00711	0.00182	mg/L	0.009100		78	40-140			
Dalapon [2C]	0.00788	0.00182	mg/L	0.009100		87	40-140			
Dicamba	0.00035	0.00008	mg/L	0.0003760		92	40-140			
Dicamba [2C]	0.00033	0.00008	mg/L	0.0003760		88	40-140			
Dichlorprop	0.00338	0.00075	mg/L	0.003760		90	40-140			
Dichlorprop [2C]	0.00325	0.00075	mg/L	0.003760		86	40-140			
Dinoseb	0.00109	0.00076	mg/L	0.001900		57	40-140			
Dinoseb [2C]	0.00135	0.00076	mg/L	0.001900		71	40-140			
MCPA	0.318	0.372	mg/L	0.3720		85	40-140			
MCPA [2C]	0.463	0.372	mg/L	0.3720		125	40-140			
MCPP	0.445	0.376	mg/L	0.3760		118	40-140			
MCPP [2C]	0.398	0.376	mg/L	0.3760		106	40-140			
Surrogate: DCAA	*0.00558*		mg/L	*0.004000*		*140*	*30-150*			
Surrogate: DCAA [2C]	*0.00552*		mg/L	*0.004000*		*138*	*30-150*			
LCS Dup										
2,4,5-T	0.00026	0.00008	mg/L	0.0003800		68	40-140	3	20	
2,4,5-T [2C]	0.00027	0.00008	mg/L	0.0003800		72	40-140	6	20	
2,4,5-TP (Silvex)	0.00027	0.00008	mg/L	0.0003800		70	40-140	0	20	
2,4,5-TP (Silvex) [2C]	0.00029	0.00008	mg/L	0.0003800		76	40-140	0	20	
2,4-D	0.00296	0.00075	mg/L	0.003760		79	40-140	5	20	
2,4-D [2C]	0.00298	0.00075	mg/L	0.003760		79	40-140	2	20	
2,4-DB	0.00264	0.00076	mg/L	0.003800		69	40-140	2	20	
2,4-DB [2C]	0.00287	0.00076	mg/L	0.003800		76	40-140	0.5	20	
Dalapon	0.00742	0.00182	mg/L	0.009100		82	40-140	4	20	
Dalapon [2C]	0.00820	0.00182	mg/L	0.009100		90	40-140	4	20	
Dicamba	0.00037	0.00008	mg/L	0.0003760		98	40-140	6	20	
Dicamba [2C]	0.00030	0.00008	mg/L	0.0003760		80	40-140	10	20	
Dichlorprop	0.00329	0.00075	mg/L	0.003760		88	40-140	2	20	
Dichlorprop [2C]	0.00305	0.00075	mg/L	0.003760		81	40-140	6	20	
Dinoseb	0.00105	0.00076	mg/L	0.001900		55	40-140	4	20	
Dinoseb [2C]	0.00137	0.00076	mg/L	0.001900		72	40-140	2	20	

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8151A Chlorinated Herbicides										
Batch CD82448 - 3510C										
MCPA	0.315	0.372	mg/L	0.3720		85	40-140	1	20	
MCPA [2C]	0.478	0.372	mg/L	0.3720		128	40-140	3	20	
MCPP	0.428	0.376	mg/L	0.3760		114	40-140	4	20	
MCPP [2C]	0.394	0.376	mg/L	0.3760		105	40-140	1	20	
Surrogate: DCAA	*0.00554*		mg/L	*0.004000*		*138*	*30-150*			
Surrogate: DCAA [2C]	*0.00513*		mg/L	*0.004000*		*128*	*30-150*			
8260B Volatile Organic Compounds										
Batch CD82437 - 5030B										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0010	mg/L							
1,1,1-Trichloroethane	ND	0.0010	mg/L							
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L							
1,1,2-Trichloroethane	ND	0.0010	mg/L							
1,1-Dichloroethane	ND	0.0010	mg/L							
1,1-Dichloroethene	ND	0.0010	mg/L							
1,1-Dichloropropene	ND	0.0020	mg/L							
1,2,3-Trichlorobenzene	ND	0.0010	mg/L							
1,2,3-Trichloropropane	ND	0.0010	mg/L							
1,2,4-Trichlorobenzene	ND	0.0010	mg/L							
1,2,4-Trimethylbenzene	ND	0.0010	mg/L							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/L							
1,2-Dibromoethane	ND	0.0010	mg/L							
1,2-Dichlorobenzene	ND	0.0010	mg/L							
1,2-Dichloroethane	ND	0.0010	mg/L							
1,2-Dichloropropane	ND	0.0010	mg/L							
1,3,5-Trimethylbenzene	ND	0.0010	mg/L							
1,3-Dichlorobenzene	ND	0.0010	mg/L							
1,3-Dichloropropane	ND	0.0010	mg/L							
1,4-Dichlorobenzene	ND	0.0010	mg/L							
1,4-Dioxane - Screen	ND	0.500	mg/L							
1-Chlorohexane	ND	0.0010	mg/L							
2,2-Dichloropropane	ND	0.0010	mg/L							
2-Butanone	ND	0.0100	mg/L							
2-Chlorotoluene	ND	0.0010	mg/L							
2-Hexanone	ND	0.0100	mg/L							
4-Chlorotoluene	ND	0.0010	mg/L							
4-Isopropyltoluene	ND	0.0010	mg/L							
4-Methyl-2-Pentanone	ND	0.0250	mg/L							
Acetone	ND	0.0100	mg/L							
Benzene	ND	0.0010	mg/L							
Bromobenzene	ND	0.0020	mg/L							
Bromochloromethane	ND	0.0010	mg/L							
Bromodichloromethane	ND	0.0006	mg/L							

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CD82437 - 5030B										
Bromoform	ND	0.0010	mg/L							
Bromomethane	ND	0.0020	mg/L							
Carbon Disulfide	ND	0.0010	mg/L							
Carbon Tetrachloride	ND	0.0010	mg/L							
Chlorobenzene	ND	0.0010	mg/L							
Chloroethane	ND	0.0020	mg/L							
Chloroform	ND	0.0010	mg/L							
Chloromethane	ND	0.0020	mg/L							
cis-1,2-Dichloroethene	ND	0.0010	mg/L							
cis-1,3-Dichloropropene	ND	0.0004	mg/L							
Dibromochloromethane	ND	0.0010	mg/L							
Dibromomethane	ND	0.0010	mg/L							
Dichlorodifluoromethane	ND	0.0020	mg/L							
Diethyl Ether	ND	0.0010	mg/L							
Di-isopropyl ether	ND	0.0010	mg/L							
Ethyl tertiary-butyl ether	ND	0.0010	mg/L							
Ethylbenzene	ND	0.0010	mg/L							
Hexachlorobutadiene	ND	0.0006	mg/L							
Hexachloroethane	ND	0.0010	mg/L							
Isopropylbenzene	ND	0.0010	mg/L							
Methyl tert-Butyl Ether	ND	0.0010	mg/L							
Methylene Chloride	ND	0.0020	mg/L							
Naphthalene	ND	0.0010	mg/L							
n-Butylbenzene	ND	0.0010	mg/L							
n-Propylbenzene	ND	0.0010	mg/L							
sec-Butylbenzene	ND	0.0010	mg/L							
Styrene	ND	0.0010	mg/L							
tert-Butylbenzene	ND	0.0010	mg/L							
Tertiary-amyl methyl ether	ND	0.0010	mg/L							
Tetrachloroethene	ND	0.0010	mg/L							
Tetrahydrofuran	ND	0.0050	mg/L							
Toluene	ND	0.0010	mg/L							
trans-1,2-Dichloroethene	ND	0.0010	mg/L							
trans-1,3-Dichloropropene	ND	0.0004	mg/L							
Trichloroethene	ND	0.0010	mg/L							
Trichlorofluoromethane	ND	0.0010	mg/L							
Vinyl Acetate	ND	0.0050	mg/L							
Vinyl Chloride	ND	0.0010	mg/L							
Xylene O	ND	0.0010	mg/L							
Xylene P,M	ND	0.0020	mg/L							
Xylenes (Total)	ND	0.0020	mg/L							
Surrogate: 1,2-Dichloroethane-d4	*0.0236*		mg/L	*0.02500*		*94*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0259*		mg/L	*0.02500*		*103*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0258*		mg/L	*0.02500*		*103*	*70-130*			
Surrogate: Toluene-d8	*0.0270*		mg/L	*0.02500*		*108*	*70-130*			

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CD82437 - 5030B										
LCS										
1,1,1,2-Tetrachloroethane	10.4		ug/L	10.00		104	70-130			
1,1,1-Trichloroethane	10.2		ug/L	10.00		102	70-130			
1,1,2,2-Tetrachloroethane	10.6		ug/L	10.00		106	70-130			
1,1,2-Trichloroethane	10.1		ug/L	10.00		101	70-130			
1,1-Dichloroethane	9.95		ug/L	10.00		100	70-130			
1,1-Dichloroethene	10.7		ug/L	10.00		107	70-130			
1,1-Dichloropropene	10.9		ug/L	10.00		109	70-130			
1,2,3-Trichlorobenzene	11.7		ug/L	10.00		117	70-130			
1,2,3-Trichloropropane	10.8		ug/L	10.00		108	70-130			
1,2,4-Trichlorobenzene	11.5		ug/L	10.00		115	70-130			
1,2,4-Trimethylbenzene	11.2		ug/L	10.00		112	70-130			
1,2-Dibromo-3-Chloropropane	10.5		ug/L	10.00		105	70-130			
1,2-Dibromoethane	10.5		ug/L	10.00		105	70-130			
1,2-Dichlorobenzene	11.1		ug/L	10.00		111	70-130			
1,2-Dichloroethane	9.82		ug/L	10.00		98	70-130			
1,2-Dichloropropane	10.3		ug/L	10.00		103	70-130			
1,3,5-Trimethylbenzene	11.6		ug/L	10.00		116	70-130			
1,3-Dichlorobenzene	10.7		ug/L	10.00		107	70-130			
1,3-Dichloropropane	10.8		ug/L	10.00		108	70-130			
1,4-Dichlorobenzene	10.9		ug/L	10.00		109	70-130			
1,4-Dioxane - Screen	208		ug/L	200.0		104	0-332			
1-Chlorohexane	9.43		ug/L	10.00		94	70-130			
2,2-Dichloropropane	10.2		ug/L	10.00		102	70-130			
2-Butanone	48.5		ug/L	50.00		97	70-130			
2-Chlorotoluene	11.0		ug/L	10.00		110	70-130			
2-Hexanone	49.3		ug/L	50.00		99	70-130			
4-Chlorotoluene	11.3		ug/L	10.00		113	70-130			
4-Isopropyltoluene	11.1		ug/L	10.00		111	70-130			
4-Methyl-2-Pentanone	51.4		ug/L	50.00		103	70-130			
Acetone	41.5		ug/L	50.00		83	70-130			
Benzene	10.4		ug/L	10.00		104	70-130			
Bromobenzene	11.4		ug/L	10.00		114	70-130			
Bromochloromethane	10.2		ug/L	10.00		102	70-130			
Bromodichloromethane	9.21		ug/L	10.00		92	70-130			
Bromoform	9.24		ug/L	10.00		92	70-130			
Bromomethane	11.7		ug/L	10.00		117	70-130			
Carbon Disulfide	11.0		ug/L	10.00		110	70-130			
Carbon Tetrachloride	10.1		ug/L	10.00		101	70-130			
Chlorobenzene	10.8		ug/L	10.00		108	70-130			
Chloroethane	10.1		ug/L	10.00		101	70-130			
Chloroform	9.85		ug/L	10.00		98	70-130			
Chloromethane	11.3		ug/L	10.00		113	70-130			
cis-1,2-Dichloroethene	10.7		ug/L	10.00		107	70-130			
cis-1,3-Dichloropropene	10.5		ug/L	10.00		105	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CD82437 - 5030B										
Dibromochloromethane	10.2		ug/L	10.00		102	70-130			
Dibromomethane	10.0		ug/L	10.00		100	70-130			
Dichlorodifluoromethane	9.49		ug/L	10.00		95	70-130			
Diethyl Ether	10.2		ug/L	10.00		102	70-130			
Di-isopropyl ether	10.2		ug/L	10.00		102	70-130			
Ethyl tertiary-butyl ether	10.4		ug/L	10.00		104	70-130			
Ethylbenzene	10.6		ug/L	10.00		106	70-130			
Hexachlorobutadiene	13.4		ug/L	10.00		134	70-130			B+
Hexachloroethane	11.0		ug/L	10.00		110	70-130			
Isopropylbenzene	10.8		ug/L	10.00		108	70-130			
Methyl tert-Butyl Ether	10.2		ug/L	10.00		102	70-130			
Methylene Chloride	10.1		ug/L	10.00		101	70-130			
Naphthalene	9.92		ug/L	10.00		99	70-130			
n-Butylbenzene	11.2		ug/L	10.00		112	70-130			
n-Propylbenzene	11.4		ug/L	10.00		114	70-130			
sec-Butylbenzene	11.6		ug/L	10.00		116	70-130			
Styrene	10.4		ug/L	10.00		104	70-130			
tert-Butylbenzene	11.2		ug/L	10.00		112	70-130			
Tertiary-amyl methyl ether	9.65		ug/L	10.00		96	70-130			
Tetrachloroethene	8.12		ug/L	10.00		81	70-130			
Tetrahydrofuran	12.1		ug/L	10.00		121	70-130			
Toluene	10.7		ug/L	10.00		107	70-130			
trans-1,2-Dichloroethene	10.4		ug/L	10.00		104	70-130			
trans-1,3-Dichloropropene	9.51		ug/L	10.00		95	70-130			
Trichloroethene	10.4		ug/L	10.00		104	70-130			
Trichlorofluoromethane	9.32		ug/L	10.00		93	70-130			
Vinyl Acetate	10.9		ug/L	10.00		109	70-130			
Vinyl Chloride	10.4		ug/L	10.00		104	70-130			
Xylene O	11.0		ug/L	10.00		110	70-130			
Xylene P,M	21.7		ug/L	20.00		108	70-130			
Xylenes (Total)	32.7		mg/L							
Surrogate: 1,2-Dichloroethane-d4	*0.0259*		mg/L	*0.02500*		*104*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0264*		mg/L	*0.02500*		*106*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0263*		mg/L	*0.02500*		*105*	*70-130*			
Surrogate: Toluene-d8	*0.0279*		mg/L	*0.02500*		*112*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	10.1		ug/L	10.00		101	70-130	3	25	
1,1,1-Trichloroethane	9.99		ug/L	10.00		100	70-130	2	25	
1,1,2,2-Tetrachloroethane	10.4		ug/L	10.00		104	70-130	2	25	
1,1,2-Trichloroethane	10.5		ug/L	10.00		105	70-130	4	25	
1,1-Dichloroethane	10.2		ug/L	10.00		102	70-130	2	25	
1,1-Dichloroethene	11.0		ug/L	10.00		110	70-130	3	25	
1,1-Dichloropropene	10.7		ug/L	10.00		107	70-130	2	25	
1,2,3-Trichlorobenzene	11.0		ug/L	10.00		110	70-130	6	25	
1,2,3-Trichloropropane	10.7		ug/L	10.00		107	70-130	1	25	

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153

ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CD82437 - 5030B										
1,2,4-Trichlorobenzene	11.0		ug/L	10.00		110	70-130	5	25	
1,2,4-Trimethylbenzene	10.9		ug/L	10.00		109	70-130	2	25	
1,2-Dibromo-3-Chloropropane	9.97		ug/L	10.00		100	70-130	5	25	
1,2-Dibromoethane	10.2		ug/L	10.00		102	70-130	3	25	
1,2-Dichlorobenzene	10.9		ug/L	10.00		109	70-130	2	25	
1,2-Dichloroethane	9.73		ug/L	10.00		97	70-130	0.9	25	
1,2-Dichloropropane	10.4		ug/L	10.00		104	70-130	0.5	25	
1,3,5-Trimethylbenzene	11.0		ug/L	10.00		110	70-130	6	25	
1,3-Dichlorobenzene	10.5		ug/L	10.00		105	70-130	2	25	
1,3-Dichloropropane	10.6		ug/L	10.00		106	70-130	2	25	
1,4-Dichlorobenzene	10.6		ug/L	10.00		106	70-130	3	25	
1,4-Dioxane - Screen	229		ug/L	200.0		114	0-332	10	200	
1-Chlorohexane	9.16		ug/L	10.00		92	70-130	3	25	
2,2-Dichloropropane	9.96		ug/L	10.00		100	70-130	3	25	
2-Butanone	48.6		ug/L	50.00		97	70-130	0.2	25	
2-Chlorotoluene	10.6		ug/L	10.00		106	70-130	4	25	
2-Hexanone	46.5		ug/L	50.00		93	70-130	6	25	
4-Chlorotoluene	10.9		ug/L	10.00		109	70-130	3	25	
4-Isopropyltoluene	10.8		ug/L	10.00		108	70-130	3	25	
4-Methyl-2-Pentanone	52.7		ug/L	50.00		105	70-130	2	25	
Acetone	39.6		ug/L	50.00		79	70-130	5	25	
Benzene	10.4		ug/L	10.00		104	70-130	0.9	25	
Bromobenzene	10.8		ug/L	10.00		108	70-130	5	25	
Bromochloromethane	10.1		ug/L	10.00		101	70-130	0.6	25	
Bromodichloromethane	9.41		ug/L	10.00		94	70-130	2	25	
Bromoform	8.41		ug/L	10.00		84	70-130	9	25	
Bromomethane	11.6		ug/L	10.00		116	70-130	0.3	25	
Carbon Disulfide	11.0		ug/L	10.00		110	70-130	0.4	25	
Carbon Tetrachloride	10.0		ug/L	10.00		100	70-130	0.4	25	
Chlorobenzene	10.1		ug/L	10.00		101	70-130	7	25	
Chloroethane	10.1		ug/L	10.00		101	70-130	0.5	25	
Chloroform	9.84		ug/L	10.00		98	70-130	0.1	25	
Chloromethane	10.9		ug/L	10.00		109	70-130	3	25	
cis-1,2-Dichloroethene	10.0		ug/L	10.00		100	70-130	7	25	
cis-1,3-Dichloropropene	10.7		ug/L	10.00		107	70-130	2	25	
Dibromochloromethane	9.92		ug/L	10.00		99	70-130	2	25	
Dibromomethane	9.90		ug/L	10.00		99	70-130	1	25	
Dichlorodifluoromethane	9.34		ug/L	10.00		93	70-130	2	25	
Diethyl Ether	10.0		ug/L	10.00		100	70-130	2	25	
Di-isopropyl ether	9.99		ug/L	10.00		100	70-130	2	25	
Ethyl tertiary-butyl ether	9.91		ug/L	10.00		99	70-130	4	25	
Ethylbenzene	10.5		ug/L	10.00		105	70-130	1	25	
Hexachlorobutadiene	12.4		ug/L	10.00		124	70-130	8	25	
Hexachloroethane	10.9		ug/L	10.00		109	70-130	0.8	25	
Isopropylbenzene	10.6		ug/L	10.00		106	70-130	2	25	

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CD82437 - 5030B										
Methyl tert-Butyl Ether	10.3		ug/L	10.00		103	70-130	0.4	25	
Methylene Chloride	9.84		ug/L	10.00		98	70-130	3	25	
Naphthalene	9.58		ug/L	10.00		96	70-130	3	25	
n-Butylbenzene	10.8		ug/L	10.00		108	70-130	4	25	
n-Propylbenzene	11.1		ug/L	10.00		111	70-130	3	25	
sec-Butylbenzene	10.7		ug/L	10.00		107	70-130	8	25	
Styrene	10.1		ug/L	10.00		101	70-130	2	25	
tert-Butylbenzene	10.8		ug/L	10.00		108	70-130	3	25	
Tertiary-amyl methyl ether	9.41		ug/L	10.00		94	70-130	3	25	
Tetrachloroethene	7.68		ug/L	10.00		77	70-130	6	25	
Tetrahydrofuran	10.4		ug/L	10.00		104	70-130	16	25	
Toluene	10.7		ug/L	10.00		107	70-130	0	25	
trans-1,2-Dichloroethene	10.7		ug/L	10.00		107	70-130	3	25	
trans-1,3-Dichloropropene	9.33		ug/L	10.00		93	70-130	2	25	
Trichloroethene	10.6		ug/L	10.00		106	70-130	2	25	
Trichlorofluoromethane	9.55		ug/L	10.00		96	70-130	2	25	
Vinyl Acetate	10.5		ug/L	10.00		105	70-130	3	25	
Vinyl Chloride	10.9		ug/L	10.00		109	70-130	5	25	
Xylene O	10.7		ug/L	10.00		107	70-130	3	25	
Xylene P,M	21.3		ug/L	20.00		106	70-130	2	25	
Xylenes (Total)	32.0		mg/L							
Surrogate: 1,2-Dichloroethane-d4	*0.0253*		mg/L	*0.02500*		*101*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0271*		mg/L	*0.02500*		*108*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0262*		mg/L	*0.02500*		*105*	*70-130*			
Surrogate: Toluene-d8	*0.0265*		mg/L	*0.02500*		*106*	*70-130*			
8270D Semi-Volatile Organic Compounds										
Batch CD82409 - 3520C										
Blank										
1,1-Biphenyl	ND	0.010	mg/L							
1,2,4-Trichlorobenzene	ND	0.010	mg/L							
1,2-Dichlorobenzene	ND	0.010	mg/L							
1,3-Dichlorobenzene	ND	0.010	mg/L							
1,4-Dichlorobenzene	ND	0.010	mg/L							
2,3,4,6-Tetrachlorophenol	ND	0.050	mg/L							
2,4,5-Trichlorophenol	ND	0.010	mg/L							
2,4,6-Trichlorophenol	ND	0.010	mg/L							
2,4-Dichlorophenol	ND	0.010	mg/L							
2,4-Dimethylphenol	ND	0.050	mg/L							
2,4-Dinitrophenol	ND	0.050	mg/L							
2,4-Dinitrotoluene	ND	0.010	mg/L							
2,6-Dinitrotoluene	ND	0.010	mg/L							
2-Chloronaphthalene	ND	0.010	mg/L							
2-Chlorophenol	ND	0.010	mg/L							
2-Methylphenol	ND	0.010	mg/L							

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CD82409 - 3520C										
2-Nitroaniline	ND	0.010	mg/L							
2-Nitrophenol	ND	0.010	mg/L							
3,3´-Dichlorobenzidine	ND	0.020	mg/L							
3+4-Methylphenol	ND	0.020	mg/L							
3-Nitroaniline	ND	0.010	mg/L							
4,6-Dinitro-2-Methylphenol	ND	0.050	mg/L							
4-Bromophenyl-phenylether	ND	0.010	mg/L							
4-Chloro-3-Methylphenol	ND	0.010	mg/L							
4-Chloroaniline	ND	0.020	mg/L							
4-Chloro-phenyl-phenyl ether	ND	0.010	mg/L							
4-Nitroaniline	ND	0.010	mg/L							
4-Nitrophenol	ND	0.050	mg/L							
Acetophenone	ND	0.010	mg/L							
Aniline	ND	0.010	mg/L							
Azobenzene	ND	0.020	mg/L							
Benzoic Acid	ND	0.100	mg/L							
Benzyl Alcohol	ND	0.010	mg/L							
bis(2-Chloroethoxy)methane	ND	0.010	mg/L							
bis(2-Chloroethyl)ether	ND	0.010	mg/L							
bis(2-chloroisopropyl)Ether	ND	0.010	mg/L							
bis(2-Ethylhexyl)phthalate	ND	0.006	mg/L							
Butylbenzylphthalate	ND	0.010	mg/L							
Carbazole	ND	0.010	mg/L							
Dibenzofuran	ND	0.010	mg/L							
Diethylphthalate	ND	0.010	mg/L							
Dimethylphthalate	ND	0.010	mg/L							
Di-n-butylphthalate	ND	0.010	mg/L							
Di-n-octylphthalate	ND	0.010	mg/L							
Hexachlorobutadiene	ND	0.010	mg/L							
Hexachlorocyclopentadiene	ND	0.025	mg/L							
Hexachloroethane	ND	0.005	mg/L							
Isophorone	ND	0.010	mg/L							
Nitrobenzene	ND	0.010	mg/L							
N-Nitrosodimethylamine	ND	0.010	mg/L							
N-Nitroso-Di-n-Propylamine	ND	0.010	mg/L							
N-nitrosodiphenylamine	ND	0.010	mg/L							
Phenol	ND	0.010	mg/L							
Pyridine	ND	0.100	mg/L							
Surrogate: 1,2-Dichlorobenzene-d4	*0.0765*		mg/L	*0.1000*		*77*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*0.109*		mg/L	*0.1500*		*73*	*15-110*			
Surrogate: 2-Chlorophenol-d4	*0.109*		mg/L	*0.1500*		*73*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*0.0736*		mg/L	*0.1000*		*74*	*30-130*			
Surrogate: 2-Fluorophenol	*0.0826*		mg/L	*0.1500*		*55*	*15-110*			
Surrogate: Nitrobenzene-d5	*0.0810*		mg/L	*0.1000*		*81*	*30-130*			
Surrogate: Phenol-d6	*0.110*		mg/L	*0.1500*		*73*	*15-110*			
Surrogate: p-Terphenyl-d14	*0.0903*		mg/L	*0.1000*		*90*	*30-130*			

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CD82409 - 3520C										
LCS										
1,1-Biphenyl	0.080	0.010	mg/L	0.1000		80	40-140			
1,2,4-Trichlorobenzene	0.083	0.010	mg/L	0.1000		83	40-140			
1,2-Dichlorobenzene	0.078	0.010	mg/L	0.1000		78	40-140			
1,3-Dichlorobenzene	0.073	0.010	mg/L	0.1000		73	40-140			
1,4-Dichlorobenzene	0.075	0.010	mg/L	0.1000		75	40-140			
2,3,4,6-Tetrachlorophenol	0.083	0.050	mg/L	0.1000		83	40-140			
2,4,5-Trichlorophenol	0.084	0.010	mg/L	0.1000		84	30-130			
2,4,6-Trichlorophenol	0.081	0.010	mg/L	0.1000		81	30-130			
2,4-Dichlorophenol	0.084	0.010	mg/L	0.1000		84	30-130			
2,4-Dimethylphenol	0.082	0.050	mg/L	0.1000		82	30-130			
2,4-Dinitrophenol	0.086	0.050	mg/L	0.1000		86	30-130			
2,4-Dinitrotoluene	0.109	0.010	mg/L	0.1000		109	40-140			
2,6-Dinitrotoluene	0.096	0.010	mg/L	0.1000		96	40-140			
2-Chloronaphthalene	0.079	0.010	mg/L	0.1000		79	40-140			
2-Chlorophenol	0.072	0.010	mg/L	0.1000		72	30-130			
2-Methylphenol	0.080	0.010	mg/L	0.1000		80	30-130			
2-Nitroaniline	0.098	0.010	mg/L	0.1000		98	40-140			
2-Nitrophenol	0.085	0.010	mg/L	0.1000		85	30-130			
3,3´-Dichlorobenzidine	0.093	0.020	mg/L	0.1000		93	40-140			
3+4-Methylphenol	0.170	0.020	mg/L	0.2000		85	30-130			
3-Nitroaniline	0.098	0.010	mg/L	0.1000		98	40-140			
4,6-Dinitro-2-Methylphenol	0.108	0.050	mg/L	0.1000		108	30-130			
4-Bromophenyl-phenylether	0.091	0.010	mg/L	0.1000		91	40-140			
4-Chloro-3-Methylphenol	0.093	0.010	mg/L	0.1000		93	30-130			
4-Chloroaniline	0.080	0.020	mg/L	0.1000		80	40-140			
4-Chloro-phenyl-phenyl ether	0.089	0.010	mg/L	0.1000		89	40-140			
4-Nitroaniline	0.095	0.010	mg/L	0.1000		95	40-140			
4-Nitrophenol	0.097	0.050	mg/L	0.1000		97	30-130			
Acetophenone	0.089	0.010	mg/L	0.1000		89	40-140			
Aniline	0.069	0.010	mg/L	0.1000		69	40-140			
Azobenzene	0.085	0.020	mg/L	0.1000		85	40-140			
Benzoic Acid	0.069	0.100	mg/L	0.1000		69	40-140			
Benzyl Alcohol	0.092	0.010	mg/L	0.1000		92	40-140			
bis(2-Chloroethoxy)methane	0.087	0.010	mg/L	0.1000		87	40-140			
bis(2-Chloroethyl)ether	0.083	0.010	mg/L	0.1000		83	40-140			
bis(2-chloroisopropyl)Ether	0.085	0.010	mg/L	0.1000		85	40-140			
bis(2-Ethylhexyl)phthalate	0.108	0.006	mg/L	0.1000		108	40-140			
Butylbenzylphthalate	0.099	0.010	mg/L	0.1000		99	40-140			
Carbazole	0.104	0.010	mg/L	0.1000		104	40-140			
Dibenzofuran	0.086	0.010	mg/L	0.1000		86	40-140			
Diethylphthalate	0.094	0.010	mg/L	0.1000		94	40-140			
Dimethylphthalate	0.088	0.010	mg/L	0.1000		88	40-140			
Di-n-butylphthalate	0.106	0.010	mg/L	0.1000		106	40-140			
Di-n-octylphthalate	0.106	0.010	mg/L	0.1000		106	40-140			

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CD82409 - 3520C										
Hexachlorobutadiene	0.081	0.010	mg/L	0.1000		81	40-140			
Hexachlorocyclopentadiene	0.067	0.025	mg/L	0.1000		67	40-140			
Hexachloroethane	0.073	0.005	mg/L	0.1000		73	40-140			
Isophorone	0.085	0.010	mg/L	0.1000		85	40-140			
Nitrobenzene	0.084	0.010	mg/L	0.1000		84	40-140			
N-Nitrosodimethylamine	0.080	0.010	mg/L	0.1000		80	40-140			
N-Nitroso-Di-n-Propylamine	0.089	0.010	mg/L	0.1000		89	40-140			
N-nitrosodiphenylamine	0.088	0.010	mg/L	0.1000		88	40-140			
Phenol	0.081	0.010	mg/L	0.1000		81	30-130			
Pyridine	0.063	0.100	mg/L	0.1000		63	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*0.0821*		mg/L	*0.1000*		*82*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*0.134*		mg/L	*0.1500*		*89*	*15-110*			
Surrogate: 2-Chlorophenol-d4	*0.111*		mg/L	*0.1500*		*74*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*0.0822*		mg/L	*0.1000*		*82*	*30-130*			
Surrogate: 2-Fluorophenol	*0.0799*		mg/L	*0.1500*		*53*	*15-110*			
Surrogate: Nitrobenzene-d5	*0.0879*		mg/L	*0.1000*		*88*	*30-130*			
Surrogate: Phenol-d6	*0.114*		mg/L	*0.1500*		*76*	*15-110*			
Surrogate: p-Terphenyl-d14	*0.105*		mg/L	*0.1000*		*105*	*30-130*			
LCS Dup										
1,1-Biphenyl	0.082	0.010	mg/L	0.1000		82	40-140	3	20	
1,2,4-Trichlorobenzene	0.086	0.010	mg/L	0.1000		86	40-140	3	20	
1,2-Dichlorobenzene	0.080	0.010	mg/L	0.1000		80	40-140	3	20	
1,3-Dichlorobenzene	0.076	0.010	mg/L	0.1000		76	40-140	4	20	
1,4-Dichlorobenzene	0.078	0.010	mg/L	0.1000		78	40-140	4	20	
2,3,4,6-Tetrachlorophenol	0.089	0.050	mg/L	0.1000		89	40-140	7	20	
2,4,5-Trichlorophenol	0.091	0.010	mg/L	0.1000		91	30-130	8	20	
2,4,6-Trichlorophenol	0.087	0.010	mg/L	0.1000		87	30-130	7	20	
2,4-Dichlorophenol	0.091	0.010	mg/L	0.1000		91	30-130	8	20	
2,4-Dimethylphenol	0.085	0.050	mg/L	0.1000		85	30-130	4	20	
2,4-Dinitrophenol	0.088	0.050	mg/L	0.1000		88	30-130	1	20	
2,4-Dinitrotoluene	0.115	0.010	mg/L	0.1000		115	40-140	6	20	
2,6-Dinitrotoluene	0.101	0.010	mg/L	0.1000		101	40-140	5	20	
2-Chloronaphthalene	0.082	0.010	mg/L	0.1000		82	40-140	4	20	
2-Chlorophenol	0.077	0.010	mg/L	0.1000		77	30-130	8	20	
2-Methylphenol	0.084	0.010	mg/L	0.1000		84	30-130	4	20	
2-Nitroaniline	0.103	0.010	mg/L	0.1000		103	40-140	6	20	
2-Nitrophenol	0.093	0.010	mg/L	0.1000		93	30-130	9	20	
3,3´-Dichlorobenzidine	0.097	0.020	mg/L	0.1000		97	40-140	3	20	
3+4-Methylphenol	0.177	0.020	mg/L	0.2000		89	30-130	4	20	
3-Nitroaniline	0.105	0.010	mg/L	0.1000		105	40-140	7	20	
4,6-Dinitro-2-Methylphenol	0.112	0.050	mg/L	0.1000		112	30-130	3	20	
4-Bromophenyl-phenylether	0.092	0.010	mg/L	0.1000		92	40-140	2	20	
4-Chloro-3-Methylphenol	0.102	0.010	mg/L	0.1000		102	30-130	9	20	
4-Chloroaniline	0.084	0.020	mg/L	0.1000		84	40-140	5	20	
4-Chloro-phenyl-phenyl ether	0.094	0.010	mg/L	0.1000		94	40-140	5	20	

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CD82409 - 3520C										
4-Nitroaniline	0.098	0.010	mg/L	0.1000		98	40-140	3	20	
4-Nitrophenol	0.103	0.050	mg/L	0.1000		103	30-130	7	20	
Acetophenone	0.089	0.010	mg/L	0.1000		89	40-140	0.9	20	
Aniline	0.070	0.010	mg/L	0.1000		70	40-140	0.6	20	
Azobenzene	0.086	0.020	mg/L	0.1000		86	40-140	1	20	
Benzoic Acid	0.057	0.100	mg/L	0.1000		57	40-140	19	20	
Benzyl Alcohol	0.093	0.010	mg/L	0.1000		93	40-140	1	20	
bis(2-Chloroethoxy)methane	0.090	0.010	mg/L	0.1000		90	40-140	4	20	
bis(2-Chloroethyl)ether	0.084	0.010	mg/L	0.1000		84	40-140	1	20	
bis(2-chloroisopropyl)Ether	0.087	0.010	mg/L	0.1000		87	40-140	2	20	
bis(2-Ethylhexyl)phthalate	0.110	0.006	mg/L	0.1000		110	40-140	2	20	
Butylbenzylphthalate	0.100	0.010	mg/L	0.1000		100	40-140	2	20	
Carbazole	0.109	0.010	mg/L	0.1000		109	40-140	4	20	
Dibenzofuran	0.090	0.010	mg/L	0.1000		90	40-140	5	20	
Diethylphthalate	0.098	0.010	mg/L	0.1000		98	40-140	5	20	
Dimethylphthalate	0.092	0.010	mg/L	0.1000		92	40-140	5	20	
Di-n-butylphthalate	0.109	0.010	mg/L	0.1000		109	40-140	3	20	
Di-n-octylphthalate	0.107	0.010	mg/L	0.1000		107	40-140	0.4	20	
Hexachlorobutadiene	0.084	0.010	mg/L	0.1000		84	40-140	4	20	
Hexachlorocyclopentadiene	0.068	0.025	mg/L	0.1000		68	40-140	0.4	20	
Hexachloroethane	0.075	0.005	mg/L	0.1000		75	40-140	4	20	
Isophorone	0.088	0.010	mg/L	0.1000		88	40-140	4	20	
Nitrobenzene	0.088	0.010	mg/L	0.1000		88	40-140	4	20	
N-Nitrosodimethylamine	0.084	0.010	mg/L	0.1000		84	40-140	5	20	
N-Nitroso-Di-n-Propylamine	0.090	0.010	mg/L	0.1000		90	40-140	2	20	
N-nitrosodiphenylamine	0.090	0.010	mg/L	0.1000		90	40-140	2	20	
Phenol	0.087	0.010	mg/L	0.1000		87	30-130	7	20	
Pyridine	0.067	0.100	mg/L	0.1000		67	40-140	6	20	
Surrogate: 1,2-Dichlorobenzene-d4	*0.0834*		mg/L	*0.1000*		*83*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*0.137*		mg/L	*0.1500*		*91*	*15-110*			
Surrogate: 2-Chlorophenol-d4	*0.117*		mg/L	*0.1500*		*78*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*0.0834*		mg/L	*0.1000*		*83*	*30-130*			
Surrogate: 2-Fluorophenol	*0.0895*		mg/L	*0.1500*		*60*	*15-110*			
Surrogate: Nitrobenzene-d5	*0.0892*		mg/L	*0.1000*		*89*	*30-130*			
Surrogate: Phenol-d6	*0.118*		mg/L	*0.1500*		*79*	*15-110*			
Surrogate: p-Terphenyl-d14	*0.104*		mg/L	*0.1000*		*104*	*30-130*			
8270D(SIM) Semi-Volatile Organic Compounds										
Batch CD82409 - 3520C										
Blank										
2-Methylnaphthalene	ND	0.00020	mg/L							
Acenaphthene	ND	0.00020	mg/L							
Acenaphthylene	ND	0.00020	mg/L							
Anthracene	ND	0.00020	mg/L							
Benzo(a)anthracene	ND	0.00005	mg/L							

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D(SIM) Semi-Volatile Organic Compounds										
Batch CD82409 - 3520C										
Benzo(a)pyrene	ND	0.00005	mg/L							
Benzo(b)fluoranthene	ND	0.00005	mg/L							
Benzo(g,h,i)perylene	ND	0.00020	mg/L							
Benzo(k)fluoranthene	ND	0.00005	mg/L							
Chrysene	ND	0.00005	mg/L							
Dibenzo(a,h)Anthracene	ND	0.00005	mg/L							
Fluoranthene	ND	0.00020	mg/L							
Fluorene	ND	0.00020	mg/L							
Hexachlorobenzene	ND	0.00020	mg/L							
Indeno(1,2,3-cd)Pyrene	ND	0.00005	mg/L							
Naphthalene	ND	0.00020	mg/L							
Pentachlorophenol	ND	0.00090	mg/L							
Phenanthrene	ND	0.00020	mg/L							
Pyrene	ND	0.00020	mg/L							
LCS										
2-Methylnaphthalene	0.0777	0.00400	mg/L	0.1000		78	40-140			
Acenaphthene	0.0796	0.00400	mg/L	0.1000		80	40-140			
Acenaphthylene	0.0833	0.00400	mg/L	0.1000		83	40-140			
Anthracene	0.0821	0.00400	mg/L	0.1000		82	40-140			
Benzo(a)anthracene	0.0796	0.00100	mg/L	0.1000		80	40-140			
Benzo(a)pyrene	0.0901	0.00100	mg/L	0.1000		90	40-140			
Benzo(b)fluoranthene	0.0964	0.00100	mg/L	0.1000		96	40-140			
Benzo(g,h,i)perylene	0.105	0.00400	mg/L	0.1000		105	40-140			
Benzo(k)fluoranthene	0.0793	0.00100	mg/L	0.1000		79	40-140			
Chrysene	0.0810	0.00100	mg/L	0.1000		81	40-140			
Dibenzo(a,h)Anthracene	0.0907	0.00100	mg/L	0.1000		91	40-140			
Fluoranthene	0.0936	0.00400	mg/L	0.1000		94	40-140			
Fluorene	0.0873	0.00400	mg/L	0.1000		87	40-140			
Hexachlorobenzene	0.119	0.00400	mg/L	0.1000		119	40-140			
Indeno(1,2,3-cd)Pyrene	0.111	0.00100	mg/L	0.1000		111	40-140			
Naphthalene	0.0798	0.00400	mg/L	0.1000		80	40-140			
Pentachlorophenol	0.103	0.0180	mg/L	0.1000		103	30-130			
Phenanthrene	0.0868	0.00400	mg/L	0.1000		87	40-140			
Pyrene	0.0912	0.00400	mg/L	0.1000		91	40-140			
LCS Dup										
2-Methylnaphthalene	0.0803	0.00400	mg/L	0.1000		80	40-140	3	20	
Acenaphthene	0.0802	0.00400	mg/L	0.1000		80	40-140	0.8	20	
Acenaphthylene	0.0851	0.00400	mg/L	0.1000		85	40-140	2	20	
Anthracene	0.0849	0.00400	mg/L	0.1000		85	40-140	3	20	
Benzo(a)anthracene	0.0810	0.00100	mg/L	0.1000		81	40-140	2	20	
Benzo(a)pyrene	0.0917	0.00100	mg/L	0.1000		92	40-140	2	20	
Benzo(b)fluoranthene	0.0941	0.00100	mg/L	0.1000		94	40-140	2	20	
Benzo(g,h,i)perylene	0.108	0.00400	mg/L	0.1000		108	40-140	3	20	
Benzo(k)fluoranthene	0.0868	0.00100	mg/L	0.1000		87	40-140	9	20	
Chrysene	0.0819	0.00100	mg/L	0.1000		82	40-140	1	20	

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D(SIM) Semi-Volatile Organic Compounds										
Batch CD82409 - 3520C										
Dibenzo(a,h)Anthracene	0.0960	0.00100	mg/L	0.1000		96	40-140	6	20	
Fluoranthene	0.0967	0.00400	mg/L	0.1000		97	40-140	3	20	
Fluorene	0.0884	0.00400	mg/L	0.1000		88	40-140	1	20	
Hexachlorobenzene	0.119	0.00400	mg/L	0.1000		119	40-140	0.2	20	
Indeno(1,2,3-cd)Pyrene	0.109	0.00100	mg/L	0.1000		109	40-140	2	20	
Naphthalene	0.0817	0.00400	mg/L	0.1000		82	40-140	2	20	
Pentachlorophenol	0.103	0.0180	mg/L	0.1000		103	30-130	0.5	20	
Phenanthrene	0.0899	0.00400	mg/L	0.1000		90	40-140	4	20	
Pyrene	0.0932	0.00400	mg/L	0.1000		93	40-140	2	20	
Classical Chemistry										
Batch CD82426 - General Preparation										
Blank										
Total Suspended Solids	ND	5	mg/L							
LCS										
Total Suspended Solids	24		mg/L	22.00		109	80-120			
Batch CD82433 - General Preparation										
Blank										
Conductivity	ND	5	umhos/cm							
LCS										
Conductivity	1360		umhos/cm	1411		96	90-110			
Batch CD82530 - General Preparation										
Blank										
Total Dissolved Solids	ND	10	mg/L							
LCS										
Total Dissolved Solids	220		mg/L	225.0		98	80-120			
Batch CD82634 - General Preparation										
Reference										
Flashpoint	81		°F	81.00		100	97.9-102.1			

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1804644

Notes and Definitions

Z16a	Aqueous pH measured in water at 19.6 ºC.
Z16	Aqueous pH measured in water at 18.5 ºC.
U	Analyte included in the analysis, but not detected
Q	Calibration required quadratic regression (Q).
H	Estimated value. Sample hold times were exceeded (H).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
B+	Blank Spike recovery is above upper control limit (B+).
>	Greater than.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153

ESS Laboratory Work Order: 1804644

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Pare Corporation - TB/HDM

Shipped/Delivered Via: ESS Courier

ESS Project ID: 1804644
Date Received: 4/23/2018
Project Due Date: 4/30/2018
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 1.8 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** (Yes) / No / NA
10. Were any analyses received outside of hold time? Yes / (No)

11. Any Subcontracting needed? Yes / (No)
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? Yes / (No)
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? (Yes) / No
    a. If metals preserved upon receipt: Date: Time: By:
    b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / (No)
    a. Was there a need to contact the client? Yes / (No)
    Who was contacted? Date: Time: By:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	220905	Yes	NA	Yes	1L Amber - Unpres	NP	
01	220906	Yes	NA	Yes	1L Amber - Unpres	NP	
01	220907	Yes	NA	Yes	1L Amber - Unpres	NP	
01	220908	Yes	NA	Yes	1L Amber - Unpres	NP	
01	220909	Yes	NA	Yes	1L Amber - Unpres	NP	
01	220910	Yes	NA	Yes	1L Amber - Unpres	NP	
01	220911	Yes	NA	Yes	1L Amber - Unpres	NP	
01	220912	Yes	NA	Yes	1L Amber - Unpres	NP	
01	220913	Yes	NA	Yes	250 mL Amber - Unpres	NP	
01	220914	Yes	NA	Yes	500 mL Poly - Unpres	NP	
01	220915	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
01	220916	Yes	NA	Yes	VOA Vial - HCl	HCl	
01	220917	Yes	NA	Yes	VOA Vial - HCl	HCl	
01	220918	Yes	NA	Yes	VOA Vial - HCl	HCl	
02	220935	Yes	NA	Yes	1L Amber - Unpres	NP	
02	220936	Yes	NA	Yes	1L Amber - Unpres	NP	
02	220937	Yes	NA	Yes	1L Amber - Unpres	NP	
02	220938	Yes	NA	Yes	1L Amber - Unpres	NP	
02	220939	Yes	NA	Yes	1L Amber - Unpres	NP	
02	220940	Yes	NA	Yes	1L Amber - Unpres	NP	
02	220941	Yes	NA	Yes	1L Amber - Unpres	NP	
02	220942	Yes	NA	Yes	1L Amber - Unpres	NP	
02	220943	Yes	NA	Yes	250 mL Amber - Unpres	NP	
02	220944	Yes	NA	Yes	500 mL Poly - Unpres	NP	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Pare Corporation - TB/HDM

ESS Project ID: 1804644

Date Received: 4/23/2018

02	220945	Yes	NA	Yes	250 mL Poly - HNO3	HNO3
02	220946	Yes	NA	Yes	VOA Vial - HCl	HCl
02	220947	Yes	NA	Yes	VOA Vial - HCl	HCl
02	220948	Yes	NA	Yes	VOA Vial - HCl	HCl

2nd Review

Are barcode labels on correct containers? (Yes) / No

Completed By: _____ Date & Time: 4/23/18 18:11

Reviewed By: _____ Date & Time: 4/23/18 1821

Delivered By: _____ 4/23/18 1840

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 180464

Turn Time: 5-day Rush:
Regulatory State: RI
Is this project for any of the following?: ☐ MA-MCP ☐ CT-RCP ☐ RGP ☐ Remediation
Reporting Limits
Electonic Deliverables ☐ Limit Checker ☒ Excel ☐ Other (Please Specifiy) →

Company Name: Pare Corporation
Project #: [redacted] 17022.01
Project Name: [redacted] Silver Creek
Contact Person: [redacted] Harsha
Address: 8 Blackstone Valley Place
City: Lincoln
State: RI
Zip Code: 02865
PO #:
Telephone Number: (401) 334-4100
FAX Number:
Email Address: [redacted]@parecorp.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	VOC	SVOC	Herbicides	Pesticides	Metals - Total	pH	TSS	Conductivity	Flashpoint	PCBs	pH	TDS	Conductivity	TPH*	Zinc, Iron*
1	4/23	10:15	Aq.		Well - North	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	↓	11:45	↓		Well - South	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	X	X

Container Type: AG-Amber Glass B-BOD Bottle G-Glass P-Poly S-Sterile V-Vial O-Other — ag ag
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*
Number of Containers:

Laboratory Use Only
Cooler Present: —
Seals Intact: —
Cooler Temperature: Ice 1.8 °C @ 16:58 4/23/18

Sampled by :
Comments: Please specify "Other" preservative and containers types in this space

*DPS 05/21/18

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
4:58 4/23	4/23/18 16:58		
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 180464

Turn Time: 5-day Rush:
Regulatory State: RI
Reporting Limits

Is this project for any of the following?:
☐ MA-MCP ☐ CT-RCP ☐ RGP ☐ Remediation

Electonic Deliverables ☐ Limit Checker ☒ Excel ☐ Other (Please Specifiy) →

Company Name: Pare Corporation
Project #: [redacted] / 17022.01
Project Name: [redacted] Board
Contact Person: [redacted] Harsha
Address: 8 Blackstone Valley Place Silver Creek
City: Lincoln
State: RI
Zip Code: 02865
PO #:
Telephone Number: (401) 334-4100
FAX Number:
Email Address: [redacted]@parecorp.com

Analysis

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	VOC	SVOC	Herbicides	Pesticides	Metals - Total	pH	TSS	Conductivity	Flashpoint	PCBs	pH	TDS	Conductivity
1	4/23	10:15	Aq.		hprasad Well - North	X	X	X	X	X	X	X	X	X	X	X	X	X
2	↓	11:45	↓		Well - South	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓

Container Type: AG-Amber Glass B-BOD Bottle G-Glass P-Poly S-Sterile V-Vial O-Other — ag ag
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*
Number of Containers:

Laboratory Use Only
Cooler Present: —
Seals Intact: —
Cooler Temperature: Ice 1.8 °C @ 16:58 4/23/18

Sampled by :
Comments: Please specify "Other" preservative and containers types in this space

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
[signature] 4:58 4/23	[signature] 4/23/18 16:58		
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

CERTIFICATE OF ANALYSIS

Michael Flynn
Pare Corporation
8 Blackstone Valley Place
Lincoln, RI 02865

RE: Silver Creek Bridge No 153 (17022.01)
ESS Laboratory Work Order Number: 1901365

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 5:13 pm, Jan 17, 2019

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153

ESS Laboratory Work Order: 1901365

SAMPLE RECEIPT

The following samples were received on January 16, 2019 for the analyses specified on the enclosed Chain of Custody Record.

Lab Number	Sample Name	Matrix	Analysis
1901365-01	WELL-NORTH	Ground Water	6010C, 6020A

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1901365

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153

ESS Laboratory Work Order: 1901365

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 04-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: WELL-NORTH
Date Sampled: 01/16/19 14:00
Percent Solids: N/A

ESS Laboratory Work Order: 1901365
ESS Laboratory Sample ID: 1901365-01
Sample Matrix: Ground Water
Units: mg/L

Extraction Method: 200.7/6010BNoDigest

Dissolved Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	ND (0.001)		6020A		1	NAR	01/17/19 12:11	10	10	CA91623

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153
Client Sample ID: WELL-NORTH
Date Sampled: 01/16/19 14:00
Percent Solids: N/A

ESS Laboratory Work Order: 1901365
ESS Laboratory Sample ID: 1901365-01
Sample Matrix: Ground Water
Units: mg/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	ND (0.010)		6010C		1	KJK	01/17/19 2:46	50	25	CA91642

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1901365

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Dissolved Metals										
Batch CA91623 - 200.7/6010BNoDigest										
Blank										
Lead	ND	0.001	mg/L							
LCS										
Lead	21.1		ug/L	19.98		105	80-120			
Total Metals										
Batch CA91642 - 3005A/200.7										
Blank										
Lead	ND	0.010	mg/L							
LCS										
Lead	0.243	0.010	mg/L	0.2500		97	80-120			
LCS Dup										
Lead	0.244	0.010	mg/L	0.2500		98	80-120	0.6	20	

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153 ESS Laboratory Work Order: 1901365

Notes and Definitions

U	Analyte included in the analysis, but not detected
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probably Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge No 153

ESS Laboratory Work Order: 1901365

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory
Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 1901365

Turn Time: 1-day Rush: 24hr

Regulatory State: RI

Reporting Limits

Is this project for any of the following?:
☐ MA-MCP ☐ CT-RCP ☐ RGP ☐ Remediation

Electonic Deliverables ☐ Limit Checker ☐ Excel ☐ Other (Please Specifiy) →

Company Name	Project #	Project Name
Pare Corporation	17022.01	Silver Creek Bridge

Contact Person	Address			
Harsha				
City	**State**	**Zip Code**	**PO #**	
Telephone Number	**FAX Number**	**Email Address**		

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Analysis: Total Lead	Analysis: Dissolved Lead
1	1/16	2:00	GW	Aq	Well- North	X	X
2	↓	2:50	↓	↓	Well- South	X	X

Container Type: AG-Amber Glass B-BOD Bottle G-Glass P-Poly S-Sterile V-Vial O-Other — ag ag

Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*

Number of Containers:

Laboratory Use Only

Cooler Present: Y

Seals Intact: NA

Cooler Temperature: 5.5 °C

Sampled by :

Comments: Please specify "Other" preservative and containers types in this space

Samples to be filtered by the lab. 24 hr turnaround Rush

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
1/16 3:22	1/16/19 1523		
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

CERTIFICATE OF ANALYSIS

Harsha Prasad
Pare Corporation
8 Blackstone Valley Place
Lincoln, RI 02865

RE: Silver Creek Bridge - RGP (17022.01)
ESS Laboratory Work Order Number: 1905480

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 6:12 pm, May 23, 2019

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge - RGP

ESS Laboratory Work Order: 1905480

SAMPLE RECEIPT

The following samples were received on May 14, 2019 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2017 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

Lab Number	Sample Name	Matrix	Analysis
1905480-01	Well North	Ground Water	200.7, 245.1, 3113B
1905480-02	Well South	Ground Water	200.7, 245.1, 3113B

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge - RGP

ESS Laboratory Work Order: 1905480

PROJECT NARRATIVE

Total Metals

1905480-01 **Elevated Method Reporting Limits due to sample matrix (EL).**
Antimony , Cadmium , Chromium , Copper , Iron , Selenium , Silver

1905480-02 **Elevated Method Reporting Limits due to sample matrix (EL).**
Antimony , Cadmium , Copper , Selenium , Silver , Zinc

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge - RGP

ESS Laboratory Work Order: 1905480

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge - RGP
Client Sample ID: Well North
Date Sampled: 05/14/19 14:20
Percent Solids: N/A

ESS Laboratory Work Order: 1905480
ESS Laboratory Sample ID: 1905480-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	**EL** ND (25.0)		200.7		5	KJK	05/17/19 16:04	100	10	CE91550
Arsenic	**1.4** (1.0)		3113B		5	KJK	05/16/19 18:09	100	10	CE91550
Cadmium	**EL** ND (5.00)		200.7		5	KJK	05/17/19 16:04	100	10	CE91550
Chromium	**EL** ND (5.0)		200.7		5	KJK	05/17/19 16:04	100	10	CE91550
Copper	**EL** ND (10.0)		200.7		5	KJK	05/17/19 16:04	100	10	CE91550
Iron	**EL** ND (50.0)		200.7		5	KJK	05/17/19 16:04	100	10	CE91550
Lead	**64.0** (10.0)		200.7		5	KJK	05/17/19 16:04	100	10	CE91550
Mercury	ND (0.2)		245.1		1	MKS	05/17/19 9:39	20	40	CE91551
Nickel	**10.8** (10.0)		200.7		5	KJK	05/17/19 16:04	100	10	CE91550
Selenium	**EL** ND (5.0)		3113B		5	KJK	05/17/19 14:35	100	10	CE91550
Silver	**EL** ND (2.5)		200.7		5	KJK	05/17/19 16:04	100	10	CE91550
Zinc	**26.9** (25.0)		200.7		5	KJK	05/17/19 16:04	100	10	CE91550

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge - RGP
Client Sample ID: Well South
Date Sampled: 05/14/19 15:35
Percent Solids: N/A

ESS Laboratory Work Order: 1905480
ESS Laboratory Sample ID: 1905480-02
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	**EL** ND (25.0)		200.7		5	KJK	05/17/19 16:10	100	10	CE91550
Arsenic	ND (1.0)		3113B		5	KJK	05/16/19 18:15	100	10	CE91550
Cadmium	**EL** ND (5.00)		200.7		5	KJK	05/17/19 16:10	100	10	CE91550
Chromium	ND (1.0)		200.7		1	KJK	05/17/19 0:59	100	10	CE91550
Copper	**EL** ND (10.0)		200.7		5	KJK	05/17/19 16:10	100	10	CE91550
Iron	**435** (50.0)		200.7		5	KJK	05/17/19 16:10	100	10	CE91550
Lead	**192** (10.0)		200.7		5	KJK	05/17/19 16:10	100	10	CE91550
Mercury	ND (0.2)		245.1		1	MKS	05/17/19 9:41	20	40	CE91551
Nickel	**14.3** (10.0)		200.7		5	KJK	05/17/19 16:10	100	10	CE91550
Selenium	**EL** ND (5.0)		3113B		5	KJK	05/17/19 14:41	100	10	CE91550
Silver	**EL** ND (2.5)		200.7		5	KJK	05/17/19 16:10	100	10	CE91550
Zinc	**EL** ND (50.0)		200.7		10	KJK	05/17/19 16:23	100	10	CE91550

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge - RGP

ESS Laboratory Work Order: 1905480

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CE91550 - 3005A/200.7										
Blank										
Antimony	ND	25.0	ug/L							
Arsenic	ND	0.2	ug/L							
Cadmium	ND	5.00	ug/L							
Chromium	ND	1.0	ug/L							
Copper	ND	2.0	ug/L							
Iron	ND	10.0	ug/L							
Lead	ND	10.0	ug/L							
Nickel	ND	2.0	ug/L							
Selenium	ND	1.0	ug/L							
Silver	ND	2.5	ug/L							
Zinc	ND	5.0	ug/L							
LCS										
Antimony	47.6	10.0	ug/L	50.00		95	85-115			
Arsenic	51.5	5.0	ug/L	50.00		103	85-115			
Cadmium	23.5	2.00	ug/L	25.00		94	85-115			
Chromium	51.2	1.0	ug/L	50.00		102	85-115			
Copper	50.3	2.0	ug/L	50.00		101	85-115			
Iron	231	10.0	ug/L	250.0		93	85-115			
Lead	50.7	4.0	ug/L	50.00		101	85-115			
Nickel	48.6	2.0	ug/L	50.00		97	85-115			
Selenium	97.0	25.0	ug/L	100.0		97	85-115			
Silver	27.5	1.0	ug/L	25.00		110	85-115			
Zinc	51.2	5.0	ug/L	50.00		102	85-115			
LCS Dup										
Selenium	95.0	25.0	ug/L	100.0		95	85-115	2	20	
Batch CE91551 - 245.1/7470A										
Blank										
Mercury	ND	0.2	ug/L							
LCS										
Mercury	6.2	0.2	ug/L	6.042		103	85-115			
LCS Dup										
Mercury	6.3	0.2	ug/L	6.042		104	85-115	1	20	

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge - RGP ESS Laboratory Work Order: 1905480

Notes and Definitions

U	Analyte included in the analysis, but not detected
EL	Elevated Method Reporting Limits due to sample matrix (EL).
D	Diluted.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probably Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: Pare Corporation
Client Project ID: Silver Creek Bridge - RGP

ESS Laboratory Work Order: 1905480

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Pare Corporation - TB/HDM

Shipped/Delivered Via: Client

ESS Project ID: 1905480
Date Received: 5/14/2019
Project Due Date: 5/21/2019
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 5.8 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. Were labs informed about short holds & rushes? Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? Yes / No
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA
13. Are the samples properly preserved? Yes / No
    a. If metals preserved upon receipt: Date: Time: By:
    b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / No
    a. Was there a need to contact the client? Yes / No
    Who was contacted? Date: Time: By:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	344793	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
02	344792	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	

2nd Review

Were all containers scanned into storage/lab? Initials Yes / No
Are barcode labels on correct containers? Yes / No / NA
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: Date & Time: 5/14/19 1650
Reviewed By: Date & Time: 5/14/19 1655
Delivered By: 5/14/19 1655

ESS Laboratory
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185 Frances Avenue, Cranston RI 02910
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www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 1905480

Turn Time 5-Day Rush

Regulatory State RI

Reporting Limits RGP - Category G Construction Dewatering

Is this project for any of the following?: ○CT RCP ○MA MCP ☒RGP RI

Electonic Deliverables ☑Limit Checker ☑Standard Excel ☐Other (Please Specify →)

Company Name	Project #	Project Name
Dare Corp	17022.01	Silver Creek Bridge

Contact Person	Address
Harsha	

City	State	Zip Code	PO #

Telephone Number	FAX Number	Email Address

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Analysis: Total [Sb As Cd Cr Cu Pb Hg Ni Se Ag Zn Fe]	Analysis: Dissolved [Sb As Cd Cr Cu Pb Hg Ni Se Ag Zn Fe]
1	5/14	[redacted]	2:20	Aq	Well North	X	X
2	↓	3:55		↓	Well South	X	X

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer G - Glass O-Other P-Poly S-Sterile V-Vial

Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*

Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Ascorbic Acid 12-Other*

Number of Containers per Sample:

Laboratory Use Only

Cooler Present: Y

Seals Intact: NA

Cooler Temperature: 5.4 °C

Sampled by :

Comments: Please specify "Other" preservative and containers types in this space

Hold Dissolved Metals Samples; Samples to be filtered by Lab

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
[signature] 5/14/19 4:16	[signature] 5/14/19 1616		
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

NATIONAL GRID

DOT REPLACEMENT OF
SILVER CREEK BRIDGE NO. 153

MAIN INSTALLATION ACROSS BRIDGE

ROUTE 114 (HOPE STREET)

BRISTOL, RI

SECTION 100

JOB DESCRIPTION
AND
DESIGN SPECIFICS

April 25, 2019

101 **JOB DESCRIPTION**

101.1 Work within this project by the state appointed bridge contractor consists of:

101.11 Installation of (1) 10-inch steel casing pipe cast within the bridge precast slab sections, 36 feet total.

101.2 Work within this project by the bridge contractor's appointed National Grid approved gas contractor consists of:

101.21 Installation of approximately 36 feet of 8-inch plastic pipe across the new bridge structure within the steel sleeve, installed by the bridge contractor, including (7) casing insulators, (38) link seals, (2) casing end seals and (1) 2-inch steel casing vent line (document MAIN-6100).

101.22 Installation of an additional 74 feet of 8-inch plastic pipe within the roadway butting up with the existing main ends for tie-in.

101.23 Installation of approximately 60 feet of 4-inch plastic buried pipe including associated fittings and 190 feet of 4-inch steel pipe on a temporary utility bridge including associated weld fittings and (14) double roller supports with 220/240 casing insulators.

101.24 Installation of steel plate protection for all gas piping with less than 24 inches of cover in accordance with document CNST-6030.

101.25 Fabrication of (2) tie-in sections, one consisting of (1) 8-inch plastic tee and (3) 8-inch plastic pup pieces each 3 feet long, the other consisting of (1) 6-inch plastic tee and (3) 6-inch plastic pup pieces each 3 feet long.

101.26 Pressure testing the plastic bridge and street main together to 90 psig for a minimum of 1 hour in accordance with Section 106 and document CNST04003.

101.27 Pressure testing the buried plastic and steel temporary bridge piping together to 90 psig for a minimum of 1 hour in accordance with Section 106 and document CNST04003.

101.28 Installation of cathodic protection consisting of the installation of (4) 17# anodes on the steel casing pipe in (1) location as shown on the state gas design sheets.

101.29 Development of "as-built" drawings based upon the National Grid Location Plans.

101.3 All work included in this section shall be performed by the state appointed National Grid approved gas piping contractor.

101.4 Live gas tie-ins and cut-offs will be done exclusively by the National Grid.

101.5 National Grid reserves the right to make inspections of the work during the progress of installation and, where required, have all installation sequences performed in the presence of its inspector or authorized agent.

102 **MATERIAL AVAILABILITY**

102.1 All piping materials, including pipe, valves, fittings and appurtenances shall be provided by National Grid and shall not include padding sand and special backfill. Material shall be available at a designated National Grid location during normal working hours. Transportation to the job site, including loading and unloading, shall be performed by the contractor.

103 **MATERIAL – SPECIFICATIONS – PIPE**

103.1 **Ten-Inch Steel Pipe: (Casing Pipe to be provided by National Grid and installed by Bridge Contractor**

103.11 Length Required: Approximately 36 feet

103.12 Specifications: API-5L, Grade B, PSL-2, HFW, bevel ends, double random lengths.

103.13 Wall Thickness - std wall(t): 0.250"

103.14 Pipe Coating: Pritec 10/40

103.2 **Four-Inch Steel Pipe: (Temporary Gas Line Bridge Portion)**

103.21 Length Required: Approximately 190 feet

103.22 Specifications: API-5L, Grade B, PSL-1, HFW, bevel ends, double random lengths.

103.23 Wall Thickness – std wall(t): 0.237”

103.27 Pipe Coating: Pritec 10/40

103.3 **Two-Inch Steel Pipe: ((1) Casing Vent Line)**

103.31 Length Required: Approximately 12 feet

103.32 Specifications: API-5L, Grade B, PSL-1, HFW, bevel ends, double random lengths.

103.33 Wall Thickness – std wall(t): 0.154”

103.37 Pipe Coating: Pritec 10/40

103.4 **Four-Inch Plastic Pipe: (Temporary Gas Line Buried Portion)**

103.41 Length Required: Approximately 60 feet

103.42 Specifications: Performance Pipe Yellowstripe 8300, PE 4710/PE100, Polyethylene Pipe, 40-foot lengths.

103.43 Wall Thickness (t): 0.409” (DR 11.0)

103.44 Long Term Hydrostatic Strength (S): 1600 psi @ 73.4 degrees F

103.45 Maximum Operating Pressure $\frac{(2xSxtx0.32)}{(D-t)} = \frac{(2x1600x0.409x0.32)}{(4.5-0.409)} =$ 102 psig*

- These values are limited to a maximum of 100 psig by DOT Code of Federal Regulations, Part 192, Title 49, Subpart C, Section 192.123.

103.5 **Two-Inch Plastic Pipe (Blow-off’s):**

103.51 Length Required: Approximately 6 feet

103.52 Specifications: Performance Pipe Yellowstripe 8300, PE 4710/PE100, Polyethylene Pipe, 40-foot lengths.

103.53 Wall Thickness (t): 0.216” (DR 11.0)

103.54 Long Term Hydrostatic Strength (S): 1600 psi @ 73.4 degrees F

103.55 Maximum Operating Pressure $\frac{(2xSxtx0.32)}{(D-t)} = \frac{(2x1600x0.216x0.32)}{(2.375-0.216)} =$ 102 psig*

- These values are limited to a maximum of 100 psig by DOT Code of Federal Regulations, Part 192, Title 49, Subpart C, Section 192.123.

104 **OTHER MATERIAL**

104.1 **Weld Valves**

104.11 None

104.2 **Plastic Valves**

104.21 (2) 4” Full Bore

104.3 **Weld Fittings:**

104.31 Elbow: (6) 2”x 90 degree; (4) 4”x 90 degree
104.32 Weld-o-let: (1) 10”x 2”
104.33 Transition Fitting: (2) 4”; (2) 2”
104.34 Screened Elbow: (1) 180 degree

104.4 **Plastic Fittings**

104.41 Cap: (1) 8”; (1) 6”
104.42 Reducer: (1) 8”x 6”; (2) 6”x 4”
104.44 Elbow: (4) 8”x45; (2) 4”x 90 degree; (4) 4”x 45 degree; (2) 2”x 90 degree
104.45 Transition Fitting: See Weld Fittings
104.46 Tapping Tee: (1) 8”x 2”; (1) 6”x 2”

104.5 **Other:**

105.51 (2) 8”x 10” PSI Model S Casing End Seal
(7) 8”x 10” PSI Model PE Casing Spacers (carrier pipe within casing alignment)
(38) LS-300-S Link Seals (carrier pipe to casing end seal)
(4) 566 Street Valve Box
(4) 17# Anodes
(14) 4” LB&A Double Roller Supports
(14) 4” Glasmesh 220/240 Casing Insulators
(1) 2” Steel Thread Coupling
(2) 2” weld x thread EH Nipple

(2) 2” Meter Cock
(2) 2” Steel Thread Plugs
170’ of No. 12 Tracing Wire & 6” Marking Tape

105 **INSTALLATION OF MAIN**

105.1 All plastic pipe installation work shall conform to the requirements of National Grid’s Installation Specifications and Code Reconciliation: Section 200A, Installation of Polyethylene Gas Mains, Revised January 18, 1988.

105.2 All steel pipe installation work shall conform to the requirements of National Grid’s Installation and Code Reconciliation: Section 200, Installation of Steel Gas Mains, Revised March 26, 1992 and Installation of Steel Distribution Mains CNST04005 and the RIDOT project plans.

105.3 The installation of the gas main across the bridge and within the roadway shall conform to the RIDOT Silver Creek Bridge Installation Plans and Details and to the National Grid Silver Creek Bridge Installation Plans and Details. The casing vent line installation shall be in accordance with National Grid Vent Installation for Gas Main Casings MAIN-6100.

105.4 Installations will terminate as close to the tie-in points as practical. Both tie-in locations must be aligned with the existing pipe when installed.

105.5 Any damage to the pipe or pipe coating should be immediately brought to the attention of National Grid construction department or the on-site inspector for inspection and, if necessary, repair or replacement.

106 **PRESSURE TEST**

106.1 Pressure test the plastic bridge and street main together and the buried plastic and steel temporary bridge piping together both to 90 psig for a minimum of 1 hour in accordance with National Grid document CNST04003—Pressure Testing Mains Operating Below 125psig.

106.2 Test Media: Compressed air, inert gas, or any combination thereof. The contractor shall provide the air compressor and/or inert gas for all required pressure testing.

INSTALLATION SPECIFICATIONS
AND CODE RECONCILIATION
SECTION 200
INSTALLATION OF STEEL GAS MAIN
MARCH 21, 1975

(Revised March 26, 1992 - See Revision List Page 8)

201 CONSTRUCTION SPECIFICS (FR 192.5, .303; ANSI 841.21)

201.01 All construction work performed by the Contractor shall be in accordance with the primary and supplemental publications of 49CFR 1921/; the ANSI Standard2/, B31.8-1968 Code; and National Grid Construction Specifications and Drawings. The Contractor shall also abide by the Terms and Conditions for General Construction. Any variation with, deletion from, or additions to the named references and the Project Drawings due to local conditions must originate from sound and specific reason. Arbitrary changes are not permitted. Remedial work required for noncompliance, unacceptable changes or additions, or acceptable changes or additions, where neither have received proper Company approval, will be at the Contractor's expense.

201.02 In the event specifics are detailed by both 49CFR 192 and ANSI B31.8, the more rigorous requirement shall control, unless specifically stated otherwise by the Company specifications.

201.03 All construction must meet the requirements of a Class 4 installation as defined by 49CFR 192 and as provided for by these specifications. All piping shall be designed for Design Hoop Stress levels of less than 20% of SMYS.

201.04 As used in this section "may" means "is permitted to" or "is authorized to," "may not" means "is not permitted to" or "is not authorized to," and "shall" is used in the mandatory and imperative sense.

202 GENERAL REQUIREMENTS (FR 192.305, .307; ANSI 841.221, .223, .271)

202.01 The Company has authority to enforce construction in accordance with Subsection 201, including the removal and replacement of any section of main that fails to meet the described standards.

1) The Federal Register, Volume 35, Number 161, Title 49 Part 192 (Under OPS, DOT) dated August 19, 1970 and effective November 1970, is designated as 49CFR 192. Specific paragraph references are preceded by FR to indicate source.

2) The ANSI Standard B31.8-1968 is designated as ANSI B31.8. Specific paragraph references are preceded by ANSI as to indicate source.

3) National Grid and its agents are designated as the Company.

202.02 Material Handling

202.02.1 Materials issued to the Contractor by the Company become his responsibility. The Contractor shall assume the responsibility of inventory and inspection before acceptance of materials. Methods of material transfer, handling, and storage are subject to the approval of the Company. Any material determined, by the sole determination of the Company, to be unsatisfactory for construction after acceptance by the Contractor, shall be repaired to the complete satisfaction of the Company, or replaced at the Contractor's expense. Any damage discovered previous to the Contractor's acceptance shall be replaced by the Company or repaired by the Contractor at a predetermined expense to the Company.

202.02.2 The hauling and stringing of pipe or other materials shall be performed in such manner as to prevent damage and to cause the least interference with the normal use of roadways or driveways. Gaps shall be left at intervals to permit passage of vehicles

and pedestrians. In the event transportation by rail or flatcar is involved, the provisions of API Standard RP5L1 shall apply.

202.02.3 Should it become necessary for the Contractor to store material, the Contractor shall do so at his expense and in a manner that will prevent damage from weather, vandalism, or other causes.

202.03 Primary material shall be provided by the Company. The Contractor shall provide all equipment necessary for installation of the facility as designated in Table 200-1, unless otherwise specified.

202.04 The Contractor shall provide all equipment necessary to test for gas tightness, structure integrity, and pigging as designated in Table 200-2, unless otherwise specified.

202.05 Permits for installation shall be provided by the Company. All permits for the transportation of pipe and other materials, and for construction procedures such as blasting shall be secured by the Contractor.

203 TRENCHING (FR 192.327; ANSI 841.16)

203.01 The route of the main shall be as shown on the plans. The specifications and drawings unless otherwise required by field conditions and specifically agreed to by the Company. The Contractor shall conduct his operations so that paving, driveway, and sidewalk cuts are bridged immediately after the trenching operation. Work shall be executed by the Contractor so that all fire hydrants and hydrant valves adjacent to the work area shall be readily accessible to fire-fighting apparatus. Under no conditions shall any materials or obstacles be placed within 15 feet of any fire hydrant or control valve unless by permit secured by the Contractor from the proper authorities.

203.02 All trenching operations shall conform to local Township, Town, City, State, or Federal specifications as required with regard to the overall length, width, and depth of the operation.

203.03 Trenching includes all excavation whether by trenching machine, power shovel, hand or other methods, which may be necessary for preparation of the pipe bed. The Company Specifications require a normal minimum cover of 44 inches. In no event shall depths less than 24 inches be allowed.

203.04 Payment for ledge removal by blasting or other means is limited to the specified dimensions of the trench plus an additional six inches (6") below the pipe for padding. Any ledge removal in excess, without the written approval of the Company, will be at the expense of the Contractor.

203.05 The normal width of the trench shall be the diameter of the pipe plus 14" unless otherwise required to meet minimum trench requirements, or as specified or agreed on in order to facilitate or expedite installation, or to improve the efficiency of construction so as to attain minimum cost of overall installation. Opening width may be increased as necessary for the installation of valves, fittings and appurtenances.

203.06 The minimum width of the trench shall be that which is necessary for the proper fabrication, installation, and padding or other protection of the pipeline and all materials and appurtenances associated with the system installation, unless otherwise specified by the Company.

203.07 A minimum clearance of three feet (3') shall be maintained between parallel runs, and a minimum clearance of six inches (6") shall be maintained at crossings of the Company main and a foreign structure, or shall be otherwise protected as specifically indicated by design detail. Where in-field conditions require variations with the above, the Design Engineer shall be consulted and methods of appropriate protection shall be in accordance with his specifications.

203.08 Pavement Cuts

203.08.1 Pavement shall be cut to the full trench width prior to excavation to provide a neat patch joint.

203.08.2 Where required by local governmental agencies, paving shall be cut six inches (6") wider than the trench in order to provide for a neat joint overlap on both sides unless one edge is adjacent to the curbing.

203.08.3 No payment for paving excavations wider than specified will be allowed unless specifically agreed to by the Company.

203.09 Surface materials must be kept separate from potential backfill material. The term "surface materials" includes asphalt, oiled sand, concrete, brick, paving stones, loam, and other surface substance which is dissimilar to the substrata materials of the trench excavation. Trenching includes removal and appropriate disposition of this material as the work progresses.

203.10 Care shall be taken in placing excavated material so that lawns and shrubs are not covered or damaged, and, if possible, streets and gutters are left unobstructed.

203.11 Excess excavated material that is acceptable for backfill shall be removed to a site satisfactory to the Company at the Contractor's expense.

203.12 Precautions shall be taken to avoid damage to any existing utilities. Proper support shall be provided before excavating below any utility line. However, when a utility line is accidentally damaged or broken, the Contractor shall immediately notify the authorities of the utility involve Contractor shall then cooperate and assist with immediate repair of damaged line, and in no case shall the trench be backfilled before approval by authorities of the involved utility is obtained.

203.13 Shoring will be provided in accordance with OSHA requirements, or where soil conditions are such that excessive widening of the trench occurs due to caving.

204 INSTALLATION

204.01 Welding or other joining procedure must be continuous from the point of origin to terminus and intermittent installations along the route of traverse is not permitted without special approval of the Design Engineer.

204.02 Due to difficulties encountered in support and alignment of "double joined" sections of double random lengths of pipe, the practice of double joining is not allowed.

204.03 All connecting points with the existing main must be aligned and spaced for connection to the existing main when installed in order that connecting segments may be true and continuous.

204.04 Adequate methods shall be employed to prevent the entrance of dirt or debris into the pipe during stringing and installation.

204.05 All pipe and associated equipment shall be inspected prior to installation but after stringing to insure that damage has not occurred to the hardware or protective coating during handling. The provisions of Subsection 202.02 apply to any damages discovered.

205 WELDING OF STEEL (FR 192.223, .225, .227, .229, 231, .235, .241,.243, .245; ANSI 821.3, 823.1, 824.1, 825.1, .2, 828.1, 841.22)

205.01 General

205.01.1 Welds and welding procedures must be qualified under API Standard 1104 and Subpart E of 49CFR 192.

205.01.2 All welders must be qualified under National Grid Safety Department Standards and FR 192.227.

205.01.3 The quality of field welds will be checked by either destructive or nondestructive inspection.

205.01.3.1 Nondestructive inspection shall consist of radiographic examination over the entire weld circumference, unless otherwise specified.

205.01.3.2 Destructive testing requires a field weld to be cut from the pipe as a cylinder and tested according to the requirements of API standard 1104.

205.01.4 The Contractor will cooperate with the Company during inspection of welded joints. The welds inspected will be selected at random by the Company. Inspected weld shall be identified and noted on the Foreman's Work Order. If a weld is nondestructively tested, the testing company will examine the welds and classify approval or rejection.

205.01.5 If there is any reason to believe that a field weld is defective after nondestructive testing and it cannot be repaired in accordance with FR 192.245, it shall be removed from the line with the cost for cutting and rewelding borne by the Contractor. The welder may be disqualified for further construction if deemed appropriate by the Company.

205.02 Testing and Inspection

205.02.1 Initial weld inspection for steel main

205.02.1.1 A testing company shall be employed by the Company, at its expense, unless otherwise specified, to nondestructively test by techniques described in Sub-section 205.01.3.1 all welds done by each welder during his first day on the job. A minimum of five (5) welds shall be tested during the testing period. Results of the test must be satisfactory and shall be reported to the project inspector and the Company Safety Department before proceeding with further construction.

205.02.1.2 The radiographic contractor must provide documentary evidence that the radiographer who interprets the film is a certified SNT-TC-1A Level 11 or Level 111 radiographer.

205.02.2 In addition to Subsection 205.02.1, the Company will inspect, at its expense, 10% of the project's welds. The specifications of Subsections 205.01.4 and 205.01.5 will apply.

205.03 Welding Specifics

205.03.1 A firm and positive grounding electrical connection must be established. Connecting apparatus equal to or exceeding the requirements of the Pipetron Quick-Bond Clamp is required, and jury-rig attachments such as homemade spring bars, etc., are disallowed.

205.03.2 Arc burns have been found to cause serious stress concentrations in pipe. The metallurgical notch caused by arc burns shall be prevented or eliminated in all mains. Arc burns resulting from faulty grounds and connections are not allowed and must be removed by cutting out the damaged portion of the pipe as a cylinder and replaced at the Contractor's expense. (See Subsection 209.)

205.03.3 It is suggested that grinding be given consideration after both the root and hot pass of welds in order to assure a clean field for subsequent welding. This practice may obviate an area of potential weld test failure.

205.03.4 The different wall thickness between pipe and fittings requires that the thicker wall be ground or the weld joint backwelded to avoid stress concentrations.

206 BENDS, ELBOWS, AND FITTINGS (FR 192.147, .149, .155, .313, .315; ANSI 831.21, .22, .23, .3, .4, .5, 841.23)

206.01 Flanges, Gaskets and Bolting

206.01.1 Steel pipeline flanges shall be manufactured in accordance with MSS Standard SP-44.

206.01.2 Flange connections between 150 psi steel and Class 125 cast iron flanges will be made with flat faced flanges, full faced gaskets, and allow steel bolts conforming to ASTM Specification A-193.

206.01.3 Flange connections between steel flanges will be made with raised face flanges, flat ring gaskets, and alloy steel bolts conforming to ASTM Specification A-193.

206.01.4 PSI products flange insulating gasket kits shall be used wherever points of isolation are specified in Section 900. Gasket kit specification is as follows: PSI Gasket Seal Type E with Phenolic Retainer and Nitrile (Buna N) Seal equipped with one piece sleeve and washers and steel washers. Alloy-steel bolts conforming to ASTM Specification A-193 with A-194 nuts shall be used in conjunction with raised face flanges when both are steel and with flat face flanges when one is steel and the other Class 125 cast iron.

206.02 Elbows and Bends

206.02.1 Miter bends shall be disallowed.

206.02.2 Elbows, reducers, tees, laterals, and other fittings shall be standard wall conforming with ASTM Speciation A-234, Grade WPB.

206.02.3 Field formed cold bends may be used for changes of direction less than 1-1/2 degrees per diameter length. They must be free from buckling, cracks, or other evidence of mechanical damage, and shall be formed with an appropriate die or shoe such that the deformation does not produce a difference between the maximum and minimum diameters in excess of 2.5% of the nominal diameter.

206.02.4 For greater changes in direction than that provided for in Subsection 206.02.3, factory-made wrought-steel welding elbows or transverse segments, cut there from shall be used. For tranverse segments, the arc length measured along the crotch shall be at least on inch (1") on pipe sizes two inches (2") and larger.

206.03 Branch Connections

206.03.1 Tees and branches for branch connections with d/D ratios greater than 1/3 and operating at less than 20% of SMYS, shall be fabricated with factory manufactured fittings having smooth configuration and manufactured in accordance with applicable codes. Where the complete fitting cannot be used, full encirclement fittings shall be provided in accordance with Figure 831-D of the ANSI B31.8.

206.03.2 Tees or laterals for branch connections or manifolds, with d/D ratios of less than 1/3 and operating at less than 20% of SMYS, may be field- or shop fabricated from pipe, if approved by the Design Engineer.

206.03.3 Thread-o-let and weld-o-let penetrations shall be clean cut holes for the full diameter of the connection.

207 SURFACE DAMAGE AND IMPERFECTIONS (FR 192.309)

207.01 Inspection for the detection of dents, gouges, and grooves shall be made prior to the pipe section being welded into the line, or just ahead of the backfilling operation. A dent is a depression which produces a gross disturbance in the curvature of the pipe wall without reducing the pipe wall thickness. A gouge or groove results where the metal of the pipe has been disrupted producing

minor changes in wall thickness and resulting points of stress concentrators.

207.02 A dent shall be removed where: it contains a stress concentrator such as a gouge, groove, or scratch; or if the dent results in a depression of more than 2% of the nominal pipe diameter, enclosed in an area of less than one pipe diameter in any direction. Gouges and grooves shall always be removed.

207.03 Dents requiring removal shall be removed by cutting out the damaged portion of the pipe as a cylinder, or shall be repaired by installing full encirclement reinforcing segments to completely lap the damaged area. Patching or coupon replacement is not permissible.

207.04 A gouge or groove shall be removed by smoothly grinding or sanding, provided that the remaining wall thickness is not less than that required by the pipe specification tolerances. Where the remaining wall thickness becomes less than the pipe specification tolerances, repair must be made by cutting out the damaged portion of the pipe as a cylinder. Patching or coupon replacement is not permitted.

208 INTERNAL CLEANING

208.01 Prior to the pressure test, each section of completed construction shall be "pigged" to remove any scale, dirt, or debris which may have been inadvertently entrained. Pigging shall be repeated until the exit air is free of traces of dust and dirt. The Contractor shall be responsible, at his expense, for locating and removing a trapped pig, and shall repair the main as may be necessary. It is recommended that a signaling device be incorporated in the pig for easy location. The pig used by the Contractor must be approved by the Company.

208.02 Care must be exercised during the pigging operation to prevent the pressure from exceeding the design pressure of the main.

208.03 The Contractor shall install a device to restrain and retain the pig upon exit from the main such that injury or damage to persons or property will be prevented. Any device judged unsuitable by the Company may be rejected.

209 PIPE TESTING (FR 192.507, .509, .619; ANSI 841.3, .42, .43, .44, .5, 845.22)

209.01 New mains shall be tested after construction and before being placed in operation to demonstrate gas tightness and structural integrity.

209.02 All steel welded main shall have a design operating pressure of 75 psig, be qualified for a Class 4 location as defined by the Register, and be tested to a minimum pressure of 150 psig, unless otherwise specified.

209.03 Testing procedure shall be by either standup static test or by direct inspection methods as designated in the Job Specifications.

209.03.1 Standup static testing prodecure shall require a minimum of 24 hours, after compression, for stabilization, and a static period of an additional 24 hours. The temperature and pressure shall be recorded immediately after the initial compression, after the 24-hour stabilization period, and after the 24-hour static test period. Pressures adjusted for temperature differential must remain static over the test period.

209.03.2 Direct inspection testing procedure shall require that all welds and mechanical connections be soap tested by thoroughly soaping the area and determining that no leaks are evident. During the test, the soaped area must be thoroughly shielded from wind or other disturbances. A standup period, at the required test pressure, must be maintained for a minimum of one hour prior to initiation of the test.

209.03.3 The pipe should be open and free to the test when possible.

209.04 The test medium shall be air, inert gas (N2 or CO2), or any combination thereof, unless otherwise specified.

209.05 Costs shall be borne by the Contractor for repair of defects disclosed by testing, and any further testing necessitated thereby, except that the Company shall assume responsibility for defects which are shown to be solely attributable to materials which the Company has supplied.

209.06 All temporary connections to the line shall be repaired to the satisfaction of the Company.

210 PADDING AND BACKFILL (FR 192.319; ANSI 841.273)

210.01 Backfill must be performed in a manner to provide firm support under the pipe. Care shall be used to prevent damage to the coating, by such means as the use of rock-shield material, or by making the initial fill with rock-free material to a sufficient depth over the main to prevent rock damage. (See Subsection 210.08)

210.02 Where it is indicated that soil conditions will be unstable, a clean backfill material must be provided around the pipe to provide continuous support along the section. (Clay soils can undergo severe volume changes resulting in soil plasticity with corresponding shifting and heaving producing increased secondary stresses on the pipeline.)

210.03 The Contractor shall provide all equipment necessary to place padding and backfill. Padding material shall be uniform natural bank sand, graded from all particles sizes smaller than the No. 10 sieve and coarser than a No. 200. Backfill material shall consist of natural bank gravel having durable particles graded from fine (greater than No. 200) to coarse (2-inch) in a reasonable uniform combination with no boulders or stones larger than 2-inch in size. Padding and backfill material must be free of lumps, frozen material, cinders, ash rubbish, paving material, clay, loam, rocks and any other material which might subject pipe, associated equipment, or coating, to injury. All padding and backfilled material must meet the approval of the Company. All wood used for blocking or shoring must be removed from the trench prior to the backfill operation.

210.04 Where suitable material, approved by the Company, for either padding or backfill is available along the line of traverse, the Contractor shall haul and place such fill under the contract price without extra cost. Where suitable fill is not available from excavated materials, by the sole determination of the Company, the Contractor shall procure, haul, and place suitable gravel to the satisfaction of the Company.

210.05 The Contractor shall submit a unit price for gravel fill, purchased, hauled, and placed, and shall be entitled to payment determined as the product of said price quotation and placed quantities only when such quantities are appropriately measured or otherwise accounted for at delivery and approved by the Company as correctly received. Gravel needed to replace fill which has been excavated from the trench and made unusable, in the opinion of the Company, due to failure by the Contractor to exercise reasonable care to save such otherwise usable fill in accordance with these specifications, and gravel to fill that portion of a trench opening which exceeds the width of the nominal run of the trench or the maximum trench width otherwise specified, whichever is the lesser, will be provided by the Contractor without extra cost, unless previously and specifically agreed to by the Company.

210.06 Where the Contractor fails to specify a unit price for gravel fill as an extra in his original quotation, no payment will be allowed.

210.07 Where padding is necessary in the opinion of the Company, it shall be placed in the trench bottom to a minimum depth of four inches (4") and to a minimum dimension of six inches (6") elsewhere around the pipe so as to completely encase and protect the pipe, piping materials, and coating from injury.

210.08 Wherever, in the opinion of the Company, the conditions of trench and surroundings is such that damage to any coating used would result from using machine methods of placing backfill to a depth of six inches (6") above pipe, Contractor shall place same by hand shoveling. This backfill, to a depth of six inches (6") above the top of appurtenances along the top of the main, shall be

placed as soon as possible after the pipe has been lowered in the trench.

210.09 Backfill shall be carefully placed under the main and any appurtenances, and compaction of the backfill to the original density is required by wetting and/or tamping by six-inch (6") layers to a level six inches (6") above the top of appurtenances along the top of the main. Similar compaction of the remainder of the trench shall be performed if required by local governmental authorities.

210.10 Whenever crossing under an existing Cast Iron or Ductile Iron main is required, the backfill material below the Cast Iron or Ductile Iron main shall be compacted to its original density by wetting and tamping in four-inch (4") layers to a level six inches (6") above the top of appurtenances along the top of the main.

210.11 The trench shall be backfilled to a point of within ten feet (10') of the end of the completed main installed each day. The trench may be left open overnight, to the extent necessary to permit testing by direct inspection methods, provided the amount is not in excess of that allowed by local governmental authorities.

211 RESURFACING

211.01 All roadway paving, sidewalk resurfacing, backfilling and compaction shall conform to local Township, Town, City, State or Federal specifications as required.

211.02 All resurfacing shall be kept in repair by the Contractor for two years. If settling or any other defect is evident, the Contractor shall make repairs at his expense until the resurfacing is determined acceptable by all governmental bodies concerned.

212 PURGING (FR 192.629, .751; ANSI 841.28)

212.01 A minimum of two (2) tested gascopes are required for each test when purging. Continuous sampling with two (2) gascopes at each location is required during each purge and all welding and cutting operations.

212.02 Purging During Welding and Cutting Operations

212.02.1 If no gas is detected on the L.E.L. scale of either of two (2) gascopes, or the reading is below 10% L.E.L., it is safe to proceed without adding nitrogen.

212.02.2 If gas is detected and complete shut-off is impossible or impractical, nitrogen must be added either upstream or downstream of the welding or cutting operation until the combustible gas concentration of the mixture is decreased to a point where the admixture of any additional amount of air will not result in a flammable mixture.

212.02.2.1 If nitrogen is added downstream of the welding or cutting operation, it is safe to proceed only when sufficient nitrogen has been added to reduce the L.E.L. readings taken upstream of the welding or cutting operation with two (2) gascopes, to below 30% L.E.L. in nitrogen

212.02.2.2 Although it is normally preferred that nitrogen be added downstream of the welding or cutting operation, specific conditions may require that nitrogen be added at an upstream location. If nitrogen is added upstream of the welding or cutting operation, it is safe to preceed only when sufficient nitrogen has been added to reduce the L.E.L. readings taken downstream of the welding or cutting operation with two (2) gascopes, to below 20% L.E.L. in nitrogen.

Revision Section	Date	By
210.03	1/18/88	PGR
206.01.4	3/26/92	JMP

INSTALLATION SPECIFICATIONS
AND CODE RECONCILIATION
SECTION 200A
INSTALLATION OF POLYETHYLENE GAS MAIN
AUGUST 6, 1976
(REVISED JANUARY 24, 1979)
(REVISED JANUARY 18, 1988)

201A CONSTRUCTION SPECIFICS

201.01A These specifications set forth standards to which the installation of piping shall adhere to.

201.02A The specifications cover the installation and handling procedures for polyethylene pipe, tubing, and associated fittings when used for mains and service piping.

201.03A Piping material is manufactured as outlined by the Department of Transportation Title 49, Part 192, TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE - MINIMUM SAFETY REGULATIONS and the ANSI B 31.8 Code for GAS TRANSMISSION AND DISTRIBUTION PIPING SYSTEM based on ASTM D-2513 SPECIFICATION FOR THERMOPLASTIC GAS PRESSURE PIPE TUBING FITTINGS.

202A GENERAL REQUIREMENTS

202.02A The Company has the authority to enforce these specifications in accordance with Section 200 (Installation of Steel Gas Main, 3/21/75) and Section 200A (Installation of Polyethylene Gas Main, 8/6/76), (Revised January 24, 1979). This includes the stipulation that: "Any variation with, deletion from, or additions to the named references and the Project Drawings due to local conditions must originate from sound and specific reason. Arbitrary changes are not permitted. Remedial work required for noncompliance, unacceptable changes or additions, or acceptable changes or additions, where neither have received prior Company approval, will be at the Contractor's expense."

203A MATERIAL STORAGE AND HANDLING

203.01A For periods of storage in excess of two weeks, the piping material shall be stored indoors, or shall be covered so as to shield it from direct sunlight. It shall be stacked so that no out-of-round flattening, or "egging" results. Exposure to excessive heat or harmful chemicals shall be avoided.

203.02A When the polyethylene material must be transported, the pipe, tubing and fittings shall be handled carefully. Proper support so as to minimize movement between the pipe and its support to avoid kinking, cutting, gouging, or abrading the surface will be maintained.

203.03A Prior to actual installation, polyethylene piping shall be stored on the job site in a cool dry place protected from direct sunlight.

203.04A Polyethylene pipe shall not be left exposed in the work area during the absence of the installation crew, because of possible damage by vehicular or foot traffic, construction equipment and miscellaneous foreign objects.

204A INSTALLATION PROCEDURES

204.01A The polyethylene pipe must be carefully inspected for cuts, gouges, deep scratches and other imperfections before use. Defective pipe will be rejected.

204.02A Adequate attention must be given to polyethylene pipe during placement in the trench to prevent kinking, stretching or the striking of sharp objects. The pipe shall be snaked in the trench to permit contraction. The extra length installed shall amount to one foot per 100 feet of trench.

204.03A The bottom of the trench shall be as smooth and level as practical and free of rocks and other abrasive materials. Sand or soil, free of stones and other abrasive materials, shall be used as base to protect the polyethylene piping from damage. A minimum of six inches of padding sand will be installed at the bottom of
the trench.

204.04A Polyethylene mains require a normal minimum cover of 44 inches. Depths less than 24 inches will not be allowed.

204.05A Polyethylene service pipe shall be installed at least 30 inches below grade between the curb and the property line. The cover at the foundation wall will be 24 inches below finished grade. Depths less than 18 inches cover on private property and 24 inches cover on public property will not be allowed.

204.06A A minimum clearance of three feet shall be maintained between parallel runs. A minimum clearance of twelve inches shall be maintained at crossings of a Company main and a foreign structure, or shall otherwise be protected as specifically indicated by design detail. Where in-field conditions require variations with the above, the Design Engineer shall be consulted and methods of appropriate protection shall be in accordance with his specifications.

204.07A Polyethylene pipe may be bent in conformity with the natural curve of a reel. Otherwise changes in direction must be made with suitable fittings. Miter bends are not permitted and neither are bends which exhibit buckles, cracks, or other evidence of damage. There shall be a minimum of 3 feet straight run out of a branching tee, coupling, service tee, meter riser or any rigid filling before the initiation of a bend.

204.08A Polyethylene pipe or tubing will be cut utilizing special cutters designed for plastic pipe to insure square cut ends.

204.09A Adequate pipe anchorage will be properly installed as noted on design specifications.

205A PIPELINE SUPPORTS

205.01A When polyethylene pipe or tubing is used and soil conditions are indicated to be unstable, additional support shall be provided by installing a protective polyethylene sleeve.

205.02A A protective polyethylene sleeve will be installed at metal-to-plastic transition fittings, at services with a saddle and tapping tee, and at those locations where forces on the pipe may result in bending and shear stresses.

205.03A The protective polyethylene sleeve will be installed in such a way that it fits securely around the pipe being protected. It will be backfilled and compacted as soon as possible to provide ground support across the span. The installation of a protective polyethylene sleeve does not eliminate the need for proper backfilling and compaction around and under the sleeve. Care must be exercised to insure that the protective polyethylene sleeve does not move from its intended position during backfilling and tamping.

206A POLYETHYLENE FUSION AND MECHANICAL JOINTS

206.01A When field joints are required, the polyethylene pipe shall be cut several inches too long and the extra length distributed as slack as near as possible to the joint. This will provide for contraction of the polyethylene pipe due to temperature changes and should be in proportion of 12 inches per 100 feet of pipe.

206.02A Heat-fusion joints. Each heat-fusion joint on polyethylene pipe must comply with the following:

(1) A butt heat-fusion joint must be joined by a device that holds the heater element square to the ends of the piping, compresses the heated ends together, and holds the

pipe in proper alignment while the polyethylene hardens.

(2) A socket heat-fusion joint must be joined by a device that heats the mating surfaces of the joint uniformly and simultaneously to essentially the same temperature

(3) Heat may not be applied with a torch or other open flame.

206.03A Heat-fusion joint will not be disturbed until it has properly set for 10 minutes. Cooling time for "rough handling" will be 20 minutes after the last joint has set.

206.04A Any fused joint of questionable integrity will be removed and repaired at contractor expense.

206.05A Mechanical joints - each compression-type mechanical joint on polyethylene pipe must comply with the following:-

(1) The gasket material in the compression coupling must be compatible with the polyethylene.

(2) A metal insert stiffener must be used in conjunction with the coupling.

(3) They must effectively resist pull-out forces caused by thermal contraction or by external loading forces.

207A VALVES AND METER RISERS

207.01A Valves installed in polyethylene systems must be properly anchored to prevent rotational stresses when operated.

207.02A Meter risers shall be installed to permit easy installation of the meter at the foundation wall.

207.03A Curb boxes or other enclosures shall not be supported by the polyethylene pipe, or in any way impose stress on the pipe.

208A PRESSURE TESTING PROCEDURES

208.01A Pressure testing will not be initiated until 20 minutes after the final heat fused joint has set.

208.02A In accordance with the rating of polyethylene pipe and tubing, installations shall be tested to a pressure of at least 1.5 times the maximum operating pressure or 90 psig, whichever is greater. The test pressure, however, must not exceed three times the design pressure of the pipe or 100 psig, whichever is the least. All joints will be soap tested at this pressure before being backfilled.

208.03A Temperature of the polyethylene pipe shall not exceed 100°F during test.

209A PIPE LOCATOR AND MARKING TAPE

209.01A To facilitate location of directly buried pipe, No. 12 AWG THW coated copper wire will be strung along the full length of the pipe. The locator wire will be secured to the steel meter riser at the building wall. If the polyethylene service is connected to a polyethylene main, the locator wires for both the service and the main must be connected by stripping sufficient insulation to twist the bare copper end of the service wire onto a bare section of the main wire within six inches (6") of the service tee. This connection must be thoroughly coated with TAPECOAT MASTIC.

209.02A The locator wire and marking tape shall be installed after backfilling and tamping 12 inches above all direct burial polyethylene mains and stubs. The marking tape is high-visibility orange and is imprinted with the words, "CAUTION BURIED GAS LINE BELOW".

210A STATIC ELECTRICITY

210.01A Procedures to minimize the possibility of static electricity will include keeping the pipe wet (water spray, wet rag, wet rope), wetting down both the polyethylene pipe and excavation hole before attempting to work on the piping, and by performing squeeze-off operations in a separate excavation hole, removed from and upwind of any escaping gas.

211A INSPECTION AND REPAIR

211.01A If any section of polyethylene pipe or tubing is found to be kinked, flattened, or out-of-round, or if there is evidence of damage due to sunlight, excessive heat, or chemicals, the damaged section must be replaced.

211.02A All metal fittings and bare metallic surfaces used in conjunction with polyethylene pipe shall not be coated by any material which requires the application of heat. Fittings and surfaces requiring coating protection shall be protected by thorough application of Tapecoat Mastic.

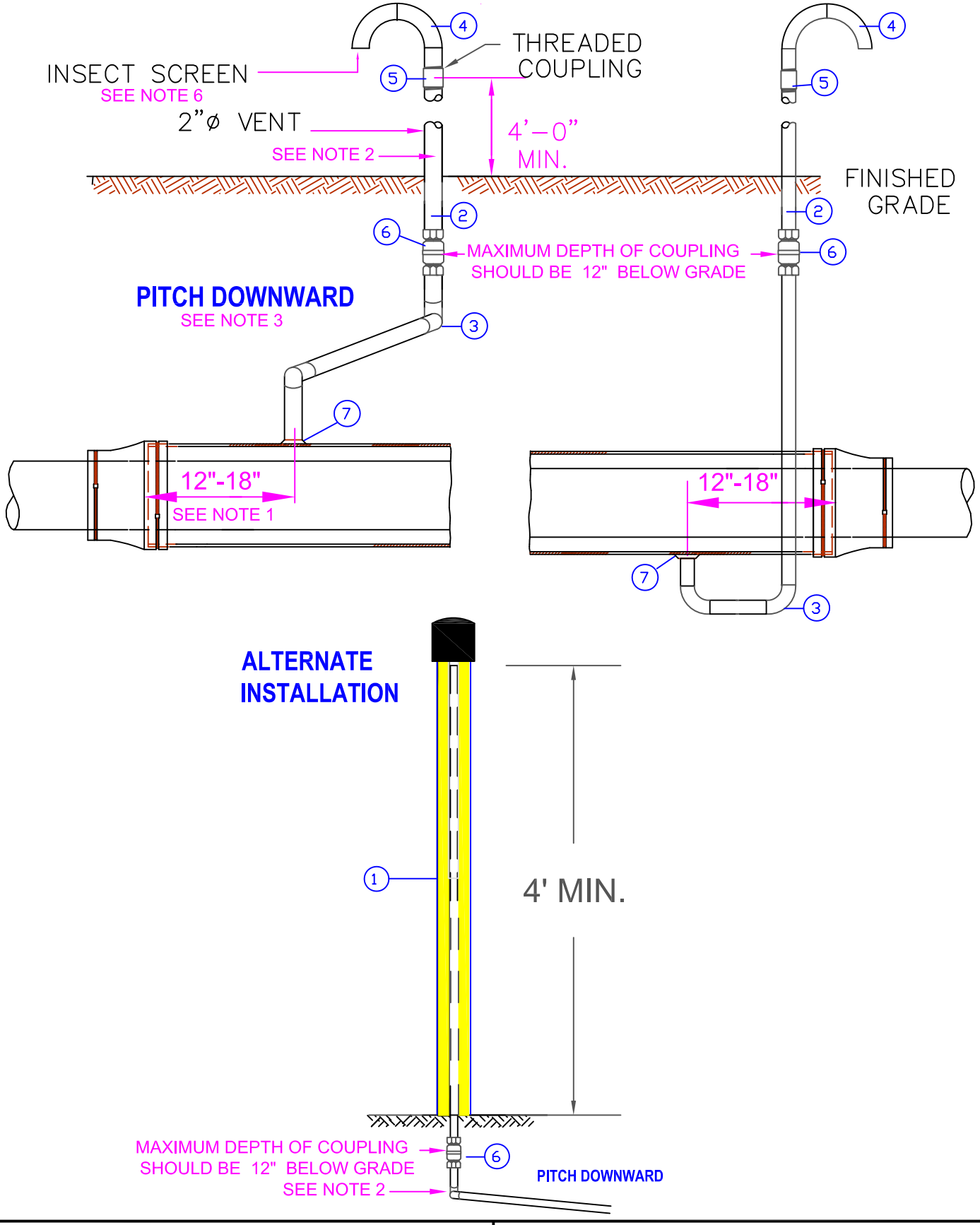
211A PADDING AND BACKFILL

212.01A Padding sand will be installed in such a way that there will be a layer of 6 inches below and 12 inches above the pipe.

212.02A Care must be exercised when backfilling to insure that no sharp objects or rocks will be in contact with the pipe. Mechanical tamping shall not be used until 12 inches of cover has been placed over the pipe.

212.03A Special care shall be exercised to backfill and tamp the excess soil at the service tee and at all other joints of the polyethylene system.

212.04A The Contractor shall provide all equipment necessary to place padding and backfill. Padding material shall be uniform natural bank sand, graded from all particles sizes smaller than the No. 10 sieve and coarser than a No. 200. Backfill material shall consist of natural bank gravel having durable particles graded from fine (greater than No. 200) to coarse (2-inch) in a reasonably uniform combination with no boulders or stones larger than 2-inch in size. Padding and backfill material must be free of lumps, frozen material, cinders, ash, rubbish, paving material, clay, loam, rocks and any other material which might subject pipe, associated equipment, or coating, to injury. All padding and backfill material must meet the approval of the Company. All wood used for blocking or shoring must be removed from the trench prior to the backfill operation.



nationalgrid

ALL REGIONS

VENT INSTALLATION FOR GAS MAIN CASINGS

REVISIONS: REVISED USING SAP ITEM ID #'S	DATE: 07/01/2003	EFFECTIVE DATE: 09/15/2013
	DESIGN: PG	STD. DWG. NO. **MAIN-6100**
	DRAWN: PG	

~~Addendum #2~~

NOTES:

1. VENT PIPE SHALL BE WELDED AND COATED. VENT CONNECTION SHALL BE INSTALLED A MINIMUM OF 12"-18" (MAX.) FROM THE END OF CASING.

2. VENT PIPING (ABOVE AND BELOW GRADE) SHALL BE A MINIMUM OF 2" IN DIAMETER. WAX FILL VOLUME MUST BE CONSIDERED WHEN SIZING VENT DIAMETER. SEE TABLE 1 BELOW. VENT LINES SHALL BE WELDED STEEL AND FACTORY OR FIELD COATED PER APPROVED MATERIALS AND PROCEDURES.

3. PIPING SHALL BE PITCHED DOWNWARD TOWARD CASING.

4. A NON-RESTRAINING INSULATED COUPLING SHOULD BE INSTALLED NEAR THE BASE OF THE VENT RISER TO PREVENT DAMAGE TO BELOW GRADE PIPING FROM VEHICULAR DAMAGE. AN INSULATING RESTRAINING COUPLING CAN BE USED; HOWEVER, THE GRIPPER RING MUST BE REMOVED. A THREADED COUPLING SHALL BE INSTALLED ABOVE GRADE TO ALLOW FOR FILLING AND THE REMOVAL OF THE VENT SCREEN FOR INSPECTION OF THE CASING FILL.

5. THE VENT RISER PIPING SHALL BE STEEL AND EXTEND A MINIMUM OF 4' ABOVE GRADE.

6. THE VENT SHALL BE COVERED WITH A REMOVABLE RAIN CAP OR A 180 DEGREE SCREENED VENT

TABLE 1: VENT SIZING

VENT SIZE	VOLUME OF WAX FILL
2"	UP TO 1,000 GALLONS
3"	FROM 1,001 TO 2,500 GALLONS
4"	GREATER THAN 2,500 GALLONS

TABLE 2:
ESTIMATING VOLUME OF WAX FILL PER LINEAR FOOT OF CASING

CASING SIZE (INCHES) PIPE X CASING SIZE	GALLONS OF WAX FILL PER LINEAR FOOT OF CASING
4" X 8" 6" X 10" 8" X 12"	1.8 2.3 3.0
10" X 14" 12" X 16" 14" X 20"	2.5 2.9 7.2
16" X 20" 20" X 24" 22" X 26"	4.8 5.9 6.0
24" X 30" 26" X 30" 30" X 34"	11.4 7.3 8.3
30" X 36" 36" X 42" 40" X 46"	14.1 16.4 18.3
42" X 48" 48" X 54"	19.1 27.1

ITEM #	DESCRIPTION	ORACLE ITEM LI/MASS/NYC	PEOPLESOFT ITEM UNY/RI	QTY	NOTES
1	YELLOW PLASTIC VENT COVERING WITH CAP FOR VENT LINES > 2" ADDITIONAL VENT CAPS	9383811	NON STOCK	1	SECURE WITH SELF TAPPING SCREWS INTO STEEL PIPE AT THE TOP OF THE VENT RISER USING ANTI-CORROSION THREAD SEALER. FITS OVER 2" VENT PIPING ONLY.
2	PIPE, 2" SCHEDULE 40 WRAPPED PIPE, 2" SCHEDULE 40 BARE	9340728 9340729	9312235 9312351	AS REQD	
3	ELBOW STEEL 90 DEG. WELD END. STD. WALL ELBOW STEEL 45 DEG. WELD END. STD. WALL	9341213 9341214	9315522 9315523	AS REQD	
4	SCREENED ELBOW 180 DEGREE	NEW ITEM	9316404	1	
5	COUPLING 2" THREADED - STEEL	9339683	9308541	1	
6	DRESSER STYLE 90 INSULATINGCOUPLING 2" NON-LOCKING	9341468	9312184	1	REMOVE GRIPPER RING FROM LOCK-TYPE COUPLING
7	WELD-O-LET 8" - 10" X 2" WELD-O-LET 18" - 12" X 2" WELD-O-LET 20" - 36" X 2" WELD-O-LET 2" - 6" X 2"	9342084 9341653 9341654 ---	--- --- --- 9308370	1 1 1 1	ASTM A-105 GRADE B
*	AIR X-HAUSTER, 5 INCH NECK REPLACEMENTS FOR EXISTING VENT POLES IN PREVIOUS NYC / LI INSTALATIONS	9340135	NON STOCK	1	REPLACEMENT CAPS FOR EXISTING VENT POLES LI/NYC SECURE TO POLE WITH SELF TAPPING SCREWS RIVITS ARE ACCEPTABLE. USE ITEM 00302001 FOR REPAIR OF PRE-2003 INSTALLATIONS (6" NECK). USE ONLY WITH ALUM. POLE.

Installing Steel Distribution Mains CNST04005

1. Purpose

This document describes the requirements for installing steel distribution mains that will have maximum allowable operating pressures (MAOPs) below 125 psig and less than 20% SMYS. If the pipeline will exceed either of these parameters, then the pipeline shall be installed in accordance with, Installing Transmission Lines and Pipelines Operating at 125 psig or Greater [CNST04006].

2. Responsibilities

Construct & Maintain or Designee shall be responsible for:

- Installing steel distribution mains in accordance with this procedure

3. Personal & Process Safety

All required PPE shall be worn and utilized in accordance with the National Grid Safety Policy.

4. Operator Qualification Required Tasks [Qualified or Directed & Observed]

- Task 31 – Installation of Pipe
- Task 49 – Mechanical Joining of Pipe Other Than Plastic
- Task 53 – Non-Destructive Testing of Welds
- Task 54 – Welding on a Pipeline
- Task 70 – Abnormal Operating Conditions and Properties of Natural Gas

Not all personnel shall be required to perform all tasks associated with this document. Therefore, Operations personnel shall only be required to qualify on those tasks associated with the tasks they will perform.

5. Content

General

	Mains shall be installed in accordance with the line and grade specified on the drawings for the job. Where no grade is specified, mains shall be installed in accordance with the cover requirements in the section below titled, “Steel Pipe Installation.”
	The trench width shall be as described in the specifications or as directed by the National Grid representative. There shall be no undercutting of the pavement.
	All underground facilities shall be marked prior to construction. Test holes may be required to verify and determine the depth, size, and exact location of all subsurface facilities that cross or lay parallel (within the affected work area) to any excavation for the proposed installation of the gas main prior to excavating the line trench.
	Where drawings or field conditions indicate the presence of other substructures and facilities notification, mark-out, and excavation shall be in accordance with regional damage prevention procedures.
	Pipeline welding shall be performed in accordance with Welding policy [CNST05002] and Pipe

	Welding Safety [CNST05003].
	All excavations shall be performed in accordance with, Standards for Working in Excavations M-1301.
	The finished pipe shall be clean, dry, and free of foreign material.
	Install cathodic protection in accordance with National Grid's specifications including, Corrosion Design Criteria [COR01100]. Steel mains including welds, valves, and fittings shall be properly coated per the, Facility Coating Guide [030031-CS].
	Anodes and test stations shall be installed as designated on the drawings. In the absence of specific guidance on the drawings or from Corrosion Engineering refer to, Installation of Magnesium Anodes [COR04001] and Installation of Test Stations for Cathodic Protection [COR04003].
	Insulating joints shall be installed as designated on the drawings. Install and electrically-test each insulated joint in accordance with, Installation of Insulating Joints for Cathodic Protection [COR04005].
	Pipeline markers shall be installed at locations indicated on the installation drawings and as per, Pipeline Markers for Main and Transmission Lines [DAM01020].
	If supplemental odorization is required prior to placing the pipeline in service, it shall be performed in accordance with, Supplemental Odorization for New Piping [INR06002].
	Prior to and after the pressure test, the pipeline shall be cleaned to the satisfaction of National Grid. Brush pigs shall be used to clean the pipe before testing. After a hydrostatic test, foam pigs shall be used to remove all water and to dry the pipeline. Sufficient "pig" runs shall be made to ensure a clean, dry pipeline prior to introducing natural gas into the pipeline. This is determined by measuring dust penetration into the pig. Generally, dust penetration of less than 1 inch is acceptable.
	For pressure testing mains refer to, Pressure Testing Mains Operating Below 125 psig [CNST04003].
	If there is a plan to uprate the pipeline in the future to operate at pressures of 125 psig or greater, or operate at 20% SMYS or greater, then the pipeline shall be installed and repaired in accordance with the more stringent requirements described in, Installing Transmission Lines and Pipelines Operating at 125 psig or Greater [CNST04006].
	NY Only: Per 16 NYCRR Part 255.552 (b), any operator proposing to increase the maximum allowable operating pressure of a pipeline which was originally constructed to operate at a pressure of less than 125 psig to a pressure of 125 psig or more shall comply with the reporting requirement of subdivision 255.552 (a). If the increase in pressure is proposed within three years of the initial operation of a pipeline which, at the higher pressure proposed, would fall within the definition of "major utility transmission facility" as set forth in Section 120(2) of the Public Service Law, a hearing will be held on the proposed increase, unless such hearing is waived by the Commission on the application of staff of the Department. In addition with respect to any such increase, the operator shall, in addition to the reporting requirements set forth above, provide in writing to staff the basis of the need for the increase, a discussion of how the increase will serve the public interest, convenience and necessity, and such assurance as staff may require, including documentation, that no undue hazard will result from operation of the line at the higher

	pressure.
	For situations where pipelines are exposed to the public (such as aboveground piping) and where the pipeline may be used by the public for unintended purposes, signs should be posted to warn the public to keep away from these facilities.

Inspections

	Perform a thorough field inspection to prevent damaged/gouged, grooved pipe, or coating from being installed in the completed pipeline. The inspection shall be performed by someone other than a person who participated in the construction (49 CFR 192.305).
	When an applied-coating holiday test is required, perform the test in accordance with, Testing of Pipe Coating [COR03001].
	Inspect the bottom of the excavation just before the pipe is lowered in and remove any object that could harm the piping.
	Inspect the fit of the pipe to the ditch prior to backfilling to prevent unnecessary strain on the pipe.
⚠	All exposed existing piping shall be inspected for hazardous liquids in accordance with, Handling Contaminated Materials and Piping [SHE02001] prior to working on the pipe.
	Examine all exposed existing piping for external corrosion and the condition of the coating in accordance with, Inspection of Exposed Steel Pipe for Corrosion [COR02020]. In addition, existing piping, whenever accessible or removed such as at tie-ins, shall be internally examined for signs of corrosion in accordance with, Inspection of Exposed Steel Pipe for Corrosion [COR02020].

Supporting Existing Structures and Utilities

	Exposed gas facilities shall be properly supported
	Gas facilities that will be crossed or exposed shall be excavated in accordance with regional damage prevention procedures.
⚠	If an in-service unrestrained coupling is unearthed on a high-pressure (pressures above low pressure) pipeline while excavating, then precautions shall be taken to prevent pipe pullout. Unrestrained couplings located near pipeline offsets or bends present a higher risk than couplings on straight segments of pipe due to the longitudinal force applied to the offset or bend from the pressure in the pipe. Prior to fully exposing the unrestrained coupling, in order to prevent pipe pullout, ensure that the pipe on each side of the coupling is embedded in the earth before fully exposing the coupling. If an unrestrained coupling is unearthed after a pipeline offset or bend is unearthed, then further excavation work shall stop until the pipeline is adequately braced horizontally and vertically.
	If Gas Control and Gas Systems Engineering provide permission for the operating pressure of the in-service pipeline to be lowered or for the pipeline to be shut down, then the risk of pipe pullout will be reduced.

	An unrestrained coupling that is unearthed shall be restrained using anchorage lugs and threaded rods. Provide plastic insulators for the reinforcing lugs as necessary (refer to Construction standard, Supplemental Restraining of Non-Restraining Mechanical Compression Couplings and Caps on Steel Pipe [MAIN-6220]). Following the installation of an insulating coupling, contact Corrosion for testing.
	If visual inspection is not conclusive about whether an exposed coupling is self-restraining or unrestrained, refer to the markings on the coupling to determine its status. Contact Engineering if guidance is needed.
	The Installer shall notify the National Grid field representative when cast iron mains, eight (8) inches and less in diameter, are exposed. Prior to undermining any cast iron, refer to the regional cast iron encroachment policy.
	Adequately support all other subsurface facilities to ensure protection from damage. Any damage shall be promptly reported to Supervision.
	Maintain the integrity of fences, poles, and other structures adjacent to the trench, pits, and work area.
	Exercise care to prevent damage to transverse and parallel curbs, sidewalks, driveways, and property monuments.

Materials

	Steel pipes shall comply with the material specifications contained in, Steel Pipe API 5L Grade B, X42 and Greater [120020-MS]. Factory-coated steel pipes shall comply with External Coating of Steel Pipe with Pritec [MS-017] or Coating and Inspection of Steel Pipe with Fusion Bonded Epoxy (FBE) and Powercrete Abrasion Resistant Epoxy Overlay [MS-018].
	Steel fittings such as flanges, ells, tees, reducers, and caps shall be forged welded fittings in accordance with National Grid specifications. Prior to the start of construction, material certifications and material grades/markings shall be verified to ensure that they meet the design requirements.

Steel Pipe Installation

	The pipe shall be laid without causing unnecessary strain on the pipe. The pipe shall be laid with as few vertical and horizontal changes in direction as possible.
	The bottom of the trench shall be relatively smooth and free of any objects which may damage the pipe coating. The backfill material to be used around the main and for a minimum of six (6) inches over the piping shall be free of any material that could be harmful to the pipe surface (see Backfill and Restoration [CNST01003]).
	In areas where it is not practicable to pad the trench with sand prior to lowering the pipe into the trench, sand bags shall be placed in the trench to act as a bed for the pipe. These bags shall generally be placed at intervals of ten (10) feet or as directed. After the pipe has been positioned and welded in the trench, sand backfill acceptable to the National Grid field representative shall be placed. The sand bags shall then be broken in a manner acceptable to the National Grid field

	representative.
	Downstate NY: An alternative method is to use pressure-treated wood (creosote wood shall not be allowed) bed blocks having a minimum width of ten (10) inches with protective felt or ½-inch thick pads for line-up and support prior to welding so as not to damage the pipe coating. When pressure-treated wedges are used with the bed blocks, they shall be driven between the bed blocks and pads and not between the pipe and the pad. Following welding, the pipe shall be inspected and jeep tested. The blocks shall be removed prior to backfilling and compaction.
	The amount of cover from the top of the pipeline (e.g., tees, couplings, and other appurtenances) to finished grade shall be as shown on the project drawings and as described in the project specifications. If not specified, the pipeline shall be installed with the covers shown in Table 1 below. The cover may be varied at the discretion of the National Grid Project Engineer in order to avoid interference with existing structures or high ground water conditions. Where an underground structure prevents the installation of the pipeline with the minimum cover, obtain permission from the appropriate agency, where required, and protect the pipeline (such as with steel plates). For highway and railroad crossings refer to, Design Requirements for Installation of Casings [ENG04010] for casing cover requirements when casings are required and Design of Distribution Mains [ENG04001].

Table 1: Cover Requirements

Region	Streets and Roads Not Controlled by the State or the DOT		State Right-of-Way	
	Recommended	Minimum	Below the Roadway Minimum	Outside the Roadway but within the Right-of-Way Minimum
MA[1]	36”	24” (MA DPU approval required for less than 24”)	36” (MA DPU approval required for less than 36”)	36” (MA DPU approval required for less than 36”)
RI	30”	24”	36”	36”
DNY[2]	30” (< 20” pipe) 36” (≥ 20” pipe)	24” (<20” pipe) 36” (≥ 20” pipe)	60” NY (DOT approval required for less than 60”)	36” (NY DOT approval required for less than 36”)
UNY[2]	30”	24”	60” (NY DOT approval required for less than 60”)	36” (NY DOT approval required for less than 36”)
All	48 inches of cover in soil below navigable river, stream, or harbor or 24 inches in consolidated rock between the top of the pipe and the underwater natural bottom.			

Notes

1. In MA:

- Pipelines installed in highways under the jurisdiction and control of the Massachusetts Department of Transportation (DOT) shall have a minimum cover of 36-inches from the top of the main to the finished

	grade (220 CMR 101.06 (12)). • Minimum cover of less than that in the table shall meet the following requirements (220 CMR 101.06 (12)(e)), unless approved otherwise in writing by the MA DPU: o Minimum cover shall be approved by MA Department of Public Utilities, o Pipeline shall be properly protected from anticipated external loads (e.g., steel plates) o Pipeline MAOP shall produce a stress of less than 20% of its SMYS 2. In NY: • All pipe which is installed in areas actively cultivated for commercial farm purposes in at least two out of the last five years, as identified by the farmland operator, shall be installed with a minimum cover of 40 inches unless the farmland operator agrees to or requires a different depth. (16 NYCRR Part 255.327) STATE ROADS: (NY State permit required.) No gas main installations in roadways shall be made except by special permission. Install gas mains behind the curb or in the sidewalk areas. All new gas mains crossing state highways shall be enclosed in sleeves or directionally drilled and wherever possible, be jacked or drilled beneath the roadway without disturbance to the pavement. The point of penetration shall not be less than five (5) feet below the lowest point of pavement. (17 NYCRR Part 131.9)
	Each pipe segment shall be thoroughly cleaned to remove all dirt or foreign matter from the ends of the pipe before the joints are aligned for welding.
	In order to keep the inside of the pipe free of foreign material, a suitable tamp plug or cap shall be installed on the open ends of the pipeline at the end of each day. Any foreign matter which may enter the pipe after laying and joining operations have been completed shall be removed by suitable means before the final test.
	If pigging is to be performed to clean the pipe and the need arises to cap the laterals, then only full-restraint or welded end caps shall be used to resist the pressure from the pigging operations.
⚠	It is imperative that the inside of the pipe be kept free and clean of all obstructions and it shall be the Installer's responsibility to protect the pipe from any hazard. In the event that a storm, broken water main, or other condition should allow water and muck into the line, the Installer shall be required to clean the pipe in a manner that is acceptable to National Grid.
	At the end of each day's work, the pipe shall be capped, made watertight, and anchored to prevent movement in the event the trench becomes flooded.
	The preferred clearance for distribution piping when crossing other underground structures is twelve (12) inches. However, distribution piping shall have a minimum clearance of six (6) inches from other underground facilities or structures not used in conjunction with the installation of the gas pipeline, except as follows. Where this distance cannot be achieved, a field representative shall notify Gas Systems Engineering for guidance on how to protect the gas distribution facility. The minimum clearance, provided the main is suitably protected from other underground structures, is two (2) inches (four (4) inches minimum preferred for LI). Note: Six (6) inches of clearance from water lines should be maintained, whenever practicable.
	Consideration should be given regarding protection for the coating on steel pipes located in close proximity to steam lines.
	Changes in direction of piping should be made with welded fittings such as ells, whenever possible. If field cold bending is necessary for line pipe, it shall be performed in accordance with,

	Field Cold Bending of Line Pipe [CNST04007] to ensure that pipe ovality limits and minimum radii requirements are met. Upon completion of the bending, check the coating for defects in accordance with, Testing of Pipe Coating [COR03001] and repair it in accordance with, Application of Coating Systems [COR02001].
	The preferred method of joining steel pipe is by welding. The cut end of the pipe shall be beveled in accordance with Welding Policy [CNST05002]. Welding elbows furnished by National Grid should be either 90 degrees or 45 degrees long radius with a wall thickness that at least matches the pipe thickness.
	When welded sections of pipe are lowered into the trench, care shall be taken to prevent a permanent bend or distortion to the pipe.

Repairing Steel Pipe

	Each imperfection or damage that impairs the serviceability of the pipe shall be repaired or removed. If repair is made by grinding, the remaining wall thickness shall at least be equal to either (49 CFR 192.309(a)): • The minimum thickness required by the tolerances in the specification to which the pipe was manufactured; or • The nominal wall thickness required for the design pressure of the pipeline.
	A gouge, groove, arc burn, or dent shall not be repaired by insert patching or pounding out.
	Each gouge, groove, arc burn, or dent that is removed from a length of pipe shall be removed by cutting out the damaged portion as a cylinder. The cylinder shall be replaced with a new pipe that meets the design specification.
	Notches and laminations on pipe ends shall not be repaired; the damaged portion shall be removed as a cylinder and the pipe ends re-beveled.

Pipe Joining

	Unless otherwise noted, joints between pipe sections, valves, and fittings shall be welded. All welding, inspections, and nondestructive testing shall be performed in accordance with, Welding Policy [CNST05002] and Pipe Welding Safety [CNST05003].
	Whenever practicable, joints shall not be located under active tracks or any other substructures.
	The welder and inspector or foreman shall visually examine the quality of all the welds.
	All steel distribution mains shall have at least 10% of all welds nondestructively examined in accordance with, Welding Policy [CNST05002]. A Main Field Record (weld map) should be created with the welds numbered along the length of the pipeline.
	In MA, these weld examinations shall be made available to the DPU (220 CMR 101.06 (9)).
	Compression couplings and caps may only be used under extenuating circumstances, such as for tie-ins, where welding is not practicable. If non-restraining mechanical couplings or caps are

	used, then they shall be restrained in the field using anchorage lugs and threaded rods in accordance with, Supplemental Restraining of Non-Restraining Mechanical Compression Couplings and Caps on Steel Pipe [MAIN-6220]. Approved self-restraining couplings and caps require no further supplemental restraining when installed in accordance with the manufacturer's specifications.
	Threaded joints shall not be used, unless specifically approved by the National Grid VP of Gas Systems Engineering or the VP of Asset Management for a particular project or condition.

	Valves
	Valves shall be furnished as specified in the particular project specifications and they shall be of the appropriate pressure class to meet or exceed the MAOP of the pipeline.
	All valves should be below grade and shall have roadway boxes which provide access to the operating mechanism.
	At National Grid's option, valves may be pressure tested prior to installation as specified in the particular project specification.
	The Installer shall use extreme care when making a valve weld.
	If the valve leaks during a pressure test National Grid, at its option, may arrange to contact the manufacturer's representative for assistance, and if National Grid determines it necessary, a replacement valve will be ordered.
	The Installer shall leave line valves in an open position and purge valves in a closed position. The Installer shall not open and close valves after installation unless directed by the Field representative.
	System Interconnection Valves – A minimum of two valves placed in series that are used for manual pressure control between two mains operating at different MAOPs may be installed provided they are approved by Gas Control and Long-Term Planning. The valves shall be installed in accordance with current standards or special designs as specified by Project Engineering & Design, but as a minimum shall be of the appropriate pressure class for the system with the highest MAOP and shall be installed with pressure taps upstream, downstream, and between both valves. Lock high-pressure valves to prevent unauthorized operation.

	Application and Testing of Protective Coating
	Field-Applied Coating: The external surfaces of bare steel pipe, pipe welded joints, anode and test lead connections, valves, fittings, and pipe coating damage, etc. shall be cleaned and coated in accordance with, Application of Coating Systems [COR02001].
	Tests and Inspection of Coating: • Standards of Acceptance: It is the intent of this procedure to require protective coating completely free from holidays and other faults. Work not satisfying these requirements shall

	be repaired in accordance with, Application of Coating Systems [COR02001]. Care shall be exercised during all phases of the application of protective coating to prevent cleaning, priming, or coating materials from damaging or adhering to any internal surfaces. Prior to backfilling, holiday testing should be performed by jeep testing the pipe in accordance with Testing of Pipe Coating [COR03001]. • National Grid Acceptance Test: National Grid or its representative will perform a pipe-to-earth electrical potential test, as it deems necessary, to ensure adequate cathodic protection and coating integrity in accordance with, Measuring Pipe-to-Soil Potential [COR03002].

	Recordkeeping
	Main field records shall be required for all pipe installations per, Preparation of Gas Facility Historical Records [CNST01005].
	The Installer shall keep a historical record and update all related drawings of work performed and facilities encountered in performing the work. The location of all welds shall be indicated and numbered in sequence on the project historical drawings. These historical records and drawings shall include the following: • The locations of pipes, valves, directional drills, welds, mechanical couplings, and casings by stations and offsets relative to the baseline. Cover or elevations relative to the bench run shall be taken at every weld and sleeve end. • The locations of insulating joints and valves by stations and offsets relative to baseline and take-offs from physical structures such as houses, poles, etc. • The locations of cathodic protection test stations and attachment to pipe by station, offset, and elevation. • The locations of subsurface obstructions, listing the type of obstruction by station, offset, and elevation.
	The final completed historical package shall be presented to the National Grid Project Engineer prior to placing the pipeline in service. Refer to Processing Gas Main and New Services Work Packages [GEN03002].

6. Knowledge Base & References **(Click here)**

Knowledge Base		References
1 - Compliance History	5 - Job Aid	1 - Regulatory – Codes
2 - Data Capture	6 - Learning & Development	2 - Technical Documents
3 - Definitions	7 - Standard Drawings	3 - Tools Catalog
4 - Document History	8 - Tools & Equipment	

7. Attachments

No attachments

Pressure Testing Mains Operating Below 125 psig CNST04003

1. Purpose

All newly-installed mains shall be subjected to the pressure test requirements herein prior to being placed in service to demonstrate the strength and tightness of the pipeline. This procedure describes the requirements for performing pressure tests on pipelines with maximum allowable operating pressures (MAOPs) below 125 psig and less than 20% of their specified minimum yield strength (SMYS). Refer to Pressure Testing Mains Operating at 125 psig or Greater [CNST04004] for pressure testing mains with MAOPs at or above 125 psig, or greater than or equal to 20% SMYS.

2. Responsibilities

Construct & Maintain or Designee shall be responsible for:

- Conducting the pressure test on distribution mains according to this procedure.
- Recording all appropriate information required for the pressure test.

Instrumentation & Regulation or Designee shall be responsible for:

- Preparing regulator stations and piping associated with the main being tested.

3. Personal & Process Safety

All required PPE shall be worn and utilized in accordance with the current National Grid Safety Policy.

Inspect all test equipment for proper operation prior to each use.

When possible, consideration should be given to cover (plate) openings where pipelines and fittings are under test pressure. Signs may be displayed warning the public and the crew members that a pressure test is underway.

All testing of pipelines during construction shall be conducted in a manner which provides a safe environment for employees and the public during the test. Suitable steps shall be taken to keep persons not working on the testing operations out of the testing area.

4. Operator Qualification Required Tasks [Qualified or Directed & Observed]

- Task 34 – Performing Pressure Test on a Pipeline
- Task 70 – Abnormal Operating Conditions / Properties of Natural Gas

5. Content

	General
	As necessary, all construction debris and/or loose scale should be removed from the pipeline via suitable methods.

STOP	The pipeline subjected to the pressure test shall be isolated from all other piping containing gas or combustible material. Closed valves are not acceptable isolating devices between the test section and other piping containing gas.
	All components of the pipeline being tested shall be designed for the required test pressure.
	It is recommended that test gauges be located at the pipe ends opposite to that used for introduction of the test medium to ensure that the entire run of the pipeline is subjected to the test pressure and that any interposed valves are open.
	Gauges shall be verified for accuracy, calibrated, or replaced as required. A calibrated pressure gauge that will indicate increments of two psig or less shall be attached to the test section (16 NYCRR Part 255.507(e)).
	Air, nitrogen, or water, when specified, shall be used as the test medium.
	Attachment 1: Pressure Test Guide may be used as an aid during the job briefing and pressure test.
	Pipelines shall be purged into service in accordance with, Purging Requirements for Gas Pipelines [CNST03005].

	Pipe End Restraint
STOP	Except as noted below, prior to pressure testing, the pipe ends shall be welded or flanged on steel pipe and fused on plastic pipe. Restraining or non-restraining mechanical end caps shall not be used (except as noted below).
	Elster Perfection fully-stab end caps 2” diameter or less are acceptable for plastic pipe end restraint, provided they are used within the manufacturer’s maximum allowable test pressure of 150 psig.
	If there is a known mechanical coupling or if an all-fused or welded installation cannot be confirmed in the main being tested, refer to Pressure Testing of New Mains: MAOP of 124 psig or Less [CS-MAIN004] for approved restraining methods, where required.
	When pressure testing cast iron pipe as part of an inner seal or lining project, the use of mechanical caps is allowed, provided the cap is properly mechanically anchored and blocked. Refer to the regional-approved method.

	Test Pressure and Minimum Durations
	All new mains, or new segments of main replaced in existing pipelines, shall be tested to the minimum pressures and durations listed in Table 1. Cast iron and steel mains reconditioned with cured-in-place liners shall be tested in accordance with Table 2. The test duration shall be measured after the pressure source has been disconnected and sufficient time has elapsed for

the main and the test medium to reach a state of pressure equilibrium.

Whenever possible, tie-in joints should be included in the pressure test. Tie-in joints that are not pressure tested shall be soap tested at the pipeline's operating pressure.

Table 1: Minimum Pressure Test Durations for Plastic Pipelines (≤ 12-inch diameter) and Steel Pipelines Operating Below 20% of SMYS[1]

Main Length, (Ft)	**Pipe Diameter**		
	<12 in	**12 to 16 in**	**> 16 in**
< 1,500	1 hour	2 hours	4 hours
1,500 to 2,999	2 hours	4 hours	6 hours
3,000 to 4,499	3 hours	6 hours	8 hours
4,500 to 5,999	4 hours	8 hours	10 hours
≥ 6,000	Consult Gas Systems Engineering for pressure test durations		

Note 1: The minimum required test pressures are as follows:

MAOP	**Required Test Pressure**
≤ 60 psig	90 psig
> 60 psig	1.5 times the MAOP

Table 2: Cast Iron and Steel Mains Reconditioned with Cured-in Place Liners

Pipeline	**Test Pressure**		**Duration**
	Pipelines Operating at Low Pressure	Pipelines Operating above Low Pressure but below 100 psig	
Cast Iron	10 psig	10 psig or 1.5 times MAOP, whichever is greater	See Table 1, with the exception that in New York the minimum duration is 2 hrs. for < 12" diameter pipe and < 1,500 ft. main.*
Steel	90 psig	90 psig	See Table 1

*Per NY PSC encroachment waiver Case 03-G-1507, Appendix A, "Procedure for use of cured-in-place liners for 6 inch and 8 inch cast iron mains affected by third-party excavations".

Test requirements for steel pipelines to operate at a hoop stress less than 30% of SMYS and at or above 100 psig:

Whenever the test pressure on steel pipelines is 20% or more of SMYS and natural gas, inert gas, or air is the test medium, the line shall be checked for leaks either by a leak test at a pressure greater than 100 psig but less than 20% SMYS or by walking the line while the pressure is held at 20% SMYS (49 CFR 192.507)

	NY Only: To allow for minimal interruption when large groups of customers are serviced, plastic piping in lengths not exceeding 1,500 feet that will be used for dead main insert renewals may be tested for 30 minutes prior to insertion followed by a 30-minute test after insertion at 90 psig or one and a half times MAOP, whichever is greater (16 NYCRR Part 255.507 (g)).
	The plastic pipe surface shall not exceed 100°F during the pressure test (49 CFR 192.513 (d)). Exposed piping shall be protected from direct sunlight which may produce temperatures that exceed this during the pressure test. Several options are available for pressure testing on hot days: • Conduct the pressure test in the morning before the temperature gets too hot • Cover the pipe with soil to protect the pipe from the sun • Perform the pressure test when the temperature cools down • Use an intercooler for the compressed air, if available
	No work shall be performed on pipelines undergoing a pressure test.

Pressure Test Failures

	Leaks indicated by a pressure loss not attributable to temperature variation or that cannot be detected by the standard soap and water test shall be cause to discontinue the pressure test. Any test failure shall be reported immediately to the National Grid supervisor. After any leaks are repaired, the pressure test shall be repeated in its entirety to the satisfaction of National Grid and the safety inspector, where applicable.
	If the failure is suspected to be material related, the National Grid Supervisor shall report the issue to Gas Standards, & Materials following the steps outlined in Gas Operating Procedure Reporting Nonconforming Material [GEN01009]. Furthermore, if the failed section involves PE pipe or fittings, and the failure is suspected to be due to installation or fusion error, the section should be cut out and removed in the "as-tested" configuration and returned with the Nonconforming Material Report. Do not disassemble or attempt to repair. Gas Materials & Standards shall investigate and determine the root cause. If a fitting, such as an untapped fused tee) can not be cut out due to field conditions, it may be abandoned in place, but a full report must still be submitted.

Pretested Pipe

	Polyethylene (PE) and steel tie-in sections of pipe for mains shall be pressure tested. Piping for drop-in piece tie-ins made up from pipe, elbows and offset components (or a straight section of short pipe as required) shall be pre-tested in accordance with Table 1 prior to installation. The drop-in piece shall be tested as a whole to include the intermediate joints connecting the components. Once installed, the tie-in joints for this pretested pipe shall be soap tested with leak detection fluid at the operating pressure of the main (49 CFR 192.503 (d)).

	For complex drop-in pieces where it is impractical to handle, transport, or install the assembly in one piece (e.g., large-diameter pipe, full tees, unwieldy configurations, space constraints for fit-up), the complex drop-in piece may be installed in sections provided that the individual sections have been pre-tested. Once installed, all tie-in joints for the pre-tested complex drop-in piece pipe shall be soap tested with leak detection fluid at the operating pressure of the main (49 CFR 192.503 (d)). If field conditions permit, the drop-in piece, or straight section of pipe may be pressure tested at the worksite inside the excavation if space permits. If tested inside the excavation, the pipe may be capped and pressure tested independently or as part of the main line being tested and then cut off. A drop-in piece may be pretested off-site. Straight pipe to be used for drop-in pieces may be tested off-site and stored at designated off-site locations. Any pipe pretested off-site shall be identified by a suitable means including a traceable pressure test record which includes the information listed below under, “Test Records.” Identification shall be maintained on the tested parent host pipe as it is drawn down from storage. Air or water may be used as the test medium. Pipe to be pretested shall have welded connections and welded end caps. Pipe pretesting shall be conducted in a manner that provides a safe environment for employees and the public during the test. Suitable steps shall be taken to keep persons not working on the testing operations out of the testing area.
	New York Only: For steel mains reconditioned with cured-in-place liners (CIP) if a single welded end cap component is the only item being added to the steel pipeline, the end cap does not require a pretest. Once installed, the weld shall be soap leak-tested with leak detection fluid at the operating pressure of the main (49 CFR 192.503 (d)). A single component with a valid ASME or MSS specification pressure rating (e.g., 150# Class, 300# Class) may be installed without a pressure test if its design test pressure is equal to or greater than the minimum test pressure shown in Table 1.
	MA Only: Pretested Pipe Per Mass. DPU letter of Interpretation dated April 04, 2008: • Pre-tested pipe shall be used for mains only. • Pre-tested pipe shall be no more than 12 feet in length. • Pre-tested pipe shall be tested at least 90 psig or 1.5 times the MAOP of the main, whichever is greater. • Pre-tested pipe shall have been tested within twelve (12) months prior to the installation date. • Pre-tested pipe shall be visually inspected for damage at the time of installation. • Tie-in joints, for pre-tested pipe, shall be soap or leak-tested at the operating pressure of the main. No intermediate joints are permitted • Pipe used for bypasses shall be tested or pre-tested in accordance with this procedure.

Reducing Pressures in the Pipeline Following the Pressure Test

STOP	Bleed-down of the pressure medium shall be controlled in such a manner as to minimize the hazard to life and property.
⚠	All internal pressure shall be released from the main prior to removing test equipment, end caps, and required blocking.

Mains Not Immediately Gassed-in Upon Completion of Construction

On rare occasions, circumstances may prevent the pipeline from being gassed-in immediately following the pressure test. For example, this may occur when the pipeline needs to be installed in advance due to a road paving moratorium. Under these circumstances, it may be advantageous to leave residual air pressure (not greater than 15 psig) in the pipeline after the pipeline has been pressure tested.

When there is a delay gassing-in a main residual air pressure, left in the pipeline, provides a way to detect whether the pipeline has been subject to third-party excavation damage. To ensure that this practice is performed only when necessary, prior approval shall be obtained from the director responsible for the area before leaving residual air pressure in a pipeline.

Once the area director provides approval, the requirements below shall be followed:

- Provide a valve and pressure gauge at a suitable location (e.g., at a service riser)
- Do not exceed a maximum residual air pressure of 15 psig
- On the pressure test tag, indicate the residual air pressure being left in the pipeline and attach the tag adjacent to the pressure gauge
- Revise the SOP if the step of removing the air pressure from the pipeline prior to performing any other work was not already included
- If the residual pressure remains in the pipeline for more than seven (7) days, then weekly pressure checks should be performed
- Perform a pressure test just prior to gassing-in the main

Test Records

Each operator shall make a record of each test performed. The record shall contain at least the following information (49 CFR 192.517):

- The operator's name, the date, the name of the operator's employee responsible for making the test (including signature), and the name of any test company used.
- Test medium used.
- Test pressure.

	• Test duration. • Pressure recording charts, or other record of pressure readings. • Elevation variations, whenever significant for the particular test. • Leaks and failures noted and their disposition.
	Each operator shall maintain the record for the useful life of the pipeline in accordance with regional practices.

6. Knowledge Base & References (Click here)

Knowledge Base		References
1 - Compliance History	5 - Job Aid	1 - Regulatory – Codes
2 - Data Capture	6 - Learning & Development	2 - Technical Documents
3 - Definitions	7 - Standard Drawings	3 - Tools Catalog
4 - Document History	8 - Tools & Equipment	

7. Attachments

Attachment 1: Pressure Test Guide

Attachment 1: Pressure Test Guide

Pressure Test Guide

Use as a guide during the job briefing session and during the pressure test.

(For each category check all that apply)

1. Type of Pipe Construction Under Test
- [ ] Welded
- [ ] Fused
- [ ] Coupled
- [ ] Cured-In-Place Lining

2. Type of Couplings
- [ ] Self-Restraining Compression
- [ ] Self-Restraining Hydraulic
- [ ] Electrofusion
- [ ] Non-Restraining Compression
- [ ] Other _____

3. Design MAOP Pressure
- [ ] LP
- [ ] HP - 15 PSIG
- [ ] HP - 60 PSIG
- [ ] Other: _____

4. Test Pressure
- [ ] 90 PSIG
- [ ] Other: _____

5. Test Medium
- [ ] Air
- [ ] Nitrogen
- [ ] Water

6. Test Duration
- [ ] 1 Hour
- [ ] 2 Hours
- [ ] 4 Hours
- [ ] 6 Hours
- [ ] Other: _____

7. Test Recorder
- [ ] Dial Gauge
- [ ] Recording Chart
- [ ] Recording Chart w/Dead Weight Tester
- [ ] Temperature Recording Chart

8. Pipe End Cap Blocking
- [ ] None Required
- [ ] Per CS-MAIN004
- [ ] Other – attach sketch

9. Strapping
- [ ] None
- [ ] Other: _____

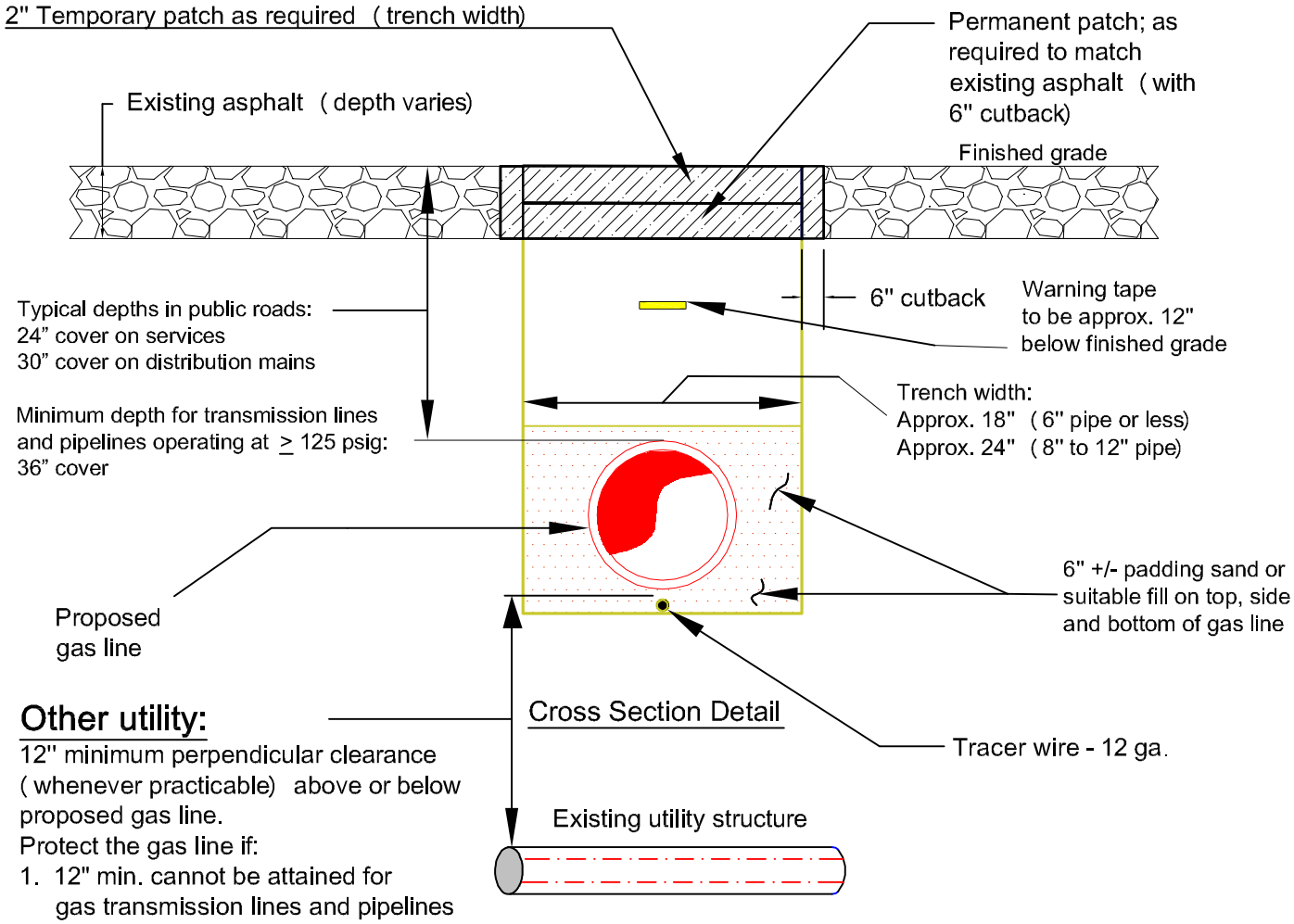
10. Backfill
- [ ] Entire Run Except Ends
- [ ] Exposed/Inserted
- [ ] Other: _____

11. [ ] **Barricades**

12. [ ] **Warning Signs**

13. Soap Test
- [ ] All exposed fittings.
- [ ] Tie-in Connections & Couplings.

Typical Utility Crossing and Trench Guidelines



Other utility:

12" minimum perpendicular clearance (whenever practicable) above or below proposed gas line.

Protect the gas line if:

1. 12" min. cannot be attained for gas transmission lines and pipelines operating at ≥ 125 psig.
2. 6" min. cannot be attained for distribution mains.
3. 4" min. cannot be attained for services.

Minimum clearance when protection is provided against damage is 2" for all gas lines.

Pipeline backfill will consist of suitable materials (medium to coarse sands with little or no silts) placed in layers of no more than 8" to 12" after compaction. Trench spoil materials suitable for backfilling will be mechanically compacted to the industry standards of 95% (as measured by Drop-Cone Penetrometer method) or until a density comparable to the unexcavated material is achieved.

nationalgrid

RI

TYPICAL UTILITY CROSSING AND TRENCH GUIDELINES

Key Changes:

DATE: 09/15/2014	EFFECTIVE DATE: 09/15/2014
DESIGN: N. COSTANZO	STD. DWG. NO. CS-CNST002
DRAWN: N. COSTANZO	

NATIONAL GRID APPROVED
GAS PIPING CONTRACTORS
IN
RHODE ISLAND

Last Update
3/30/2018

Contractor Name	Address or PO Box	Town	State	Zip	Contact Name	Contact Phone	Contact Email	Notes
AGI Construction Inc	34 Appian Way	Smithfield	RI	02917	Mark Albert	401-233-0021	malbert@agiconstruction.com	All
GPL Construction Inc.	2612 Victory Highway	Glendale	RI	02826	Mike Gaudette	401-568-2810	mgaudette@gpl-construction.com	All
M&X Utility Company Inc.	1130 Dorchester Ave	Dorchester	MA	02125	Coleman Mannion	617-201-7533	mxutility2003@yahoo.com	All
Bond Bros Inc.	145 Spring St	Everett	MA	02149	Mario Fabiano	617-394-6242	mfabiano@bondbrothers.com	All

Questions and Answers For:

Silver Creek Bridge 2017-CB-053

Please Note: *If this is the first time accessing our system on our new web site, you will be required to reset your password.*

The ask question function is now disabled;
please call 401-563-4100 with any new questions.

Date Asked: 05/24/2019	**Date Answered:** 05/29/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
Can you provide a detail for the Stone Veneer Work?

Answer:
The Stone Venner work shall be in accordance with the Job Specific Specification for Item 807.9903

Date Asked: 05/24/2019	**Date Answered:** 05/29/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
Is the micro pile casing prime or can it be new mill secondary pipe?

Answer:
This will be addressed by addendum.

Date Asked: 05/23/2019	**Date Answered:** 05/29/2019
Poster: Lee Taylor	**Company:** D'Ambra Const. Co., Inc.

Question:
do the drill casings for micropiles require mill certifications?

Answer:
This will be addressed by addendum.

Date Asked: 05/23/2019	**Date Answered:** 05/29/2019
Poster: Lee Taylor	**Company:** D'Ambra Const. Co., Inc.

Question:
Spec for micropiles says to furnish and install as per details on the plans. Will an additional PE stamped design be required by the micropile subcontractor?

Answer:
This will be addressed by addendum.

Date Asked: 05/23/2019	**Date Answered:** 05/29/2019
Poster: Lee Taylor	**Company:** D'Ambra Const. Co., Inc.

Question:
Are there lateral loads for the micropiles? None are provided.

Answer:
This will be addressed by addendum.

Date Asked: 05/22/2019	**Date Answered:** 05/29/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
The Contaminated Soil Removal and Disposal(Item 201.9954) calls for it to be tested, then disposed of at the appropriate facility. Please clarify how we are paid if it is not accepted at RIRRC. Hauling and tipping fees can vary wildly depending on what contaminants the soil has.

Answer:
The plans and specifications will be revised by addendum to more clearly define the work included in the utility relocations.

Date Asked: 05/15/2019	**Date Answered:** 05/16/2019
Poster: Susan Cullen	**Company:** J.H. Lynch & Sons, Inc.

Question:
The boring logs on Plan Sheet 40 suggest that groundwater was encountered at ground surface / elevation 6.4 (Boring Number B17-1) and at 2 feet above ground surface /elevation 8.4 (Boring B17-2). There is also a third parameter (3.5 feet @B1 and 4 feet @B2) that is not defined as to what this parameter refers to. The "normal" water elevation in the adjacent pond is noted at approximately elevation 1.8 (which is reasonably close to Bristol mean high water when converted to NAVD88), the (assumed MLW) water elevation in Bristol harbor is mapped at approximately -1.5 (which is also reasonable close to the Bristol MLLW elevation, when converted to NAVD88). Please confirm that Groundwater elevations on the boring logs are correct and identify the significance of the third groundwater parameter (3.5 feet @B17-1 and 4 feet @B17-2)." ---------- "There appears to be a discrepancy between ground surface elevations provided on Plan Sheet 40. The ground surface elevations on the boring logs on Plan Sheet 40 are noted as El. 6.4. The topographic information on the exploration location plan suggests ground surface elevations of between 5.6 and 5.1 for Borings B17-1 and B17-2, respectively. Please confirm the datum to which the elevations are referenced on the boring logs, and confirm that the topographical information on the boring location plan is referenced to NAVD88.

Answer:
The groundwater elevations on the boring logs will be revised by addendum

Date Asked: 05/14/2019	**Date Answered:** 05/15/2019
Poster: Susan Cullen	**Company:** J.H. Lynch & Sons, Inc.

Question:
Please clarify the limits in plan view for widening (Pavement Makeup "A") on Route 4.

Answer:
There is no proposed work to Route 4 within the scope of this project.

Date Asked: 05/14/2019	**Date Answered:** 05/15/2019
Poster: Lee Taylor	**Company:** D'Ambra Const. Co., Inc.

Question:
Regarding Code 108.9901 what is the "Interim" completion date to be used to determine incentive or disincentive payment? Is there a proposed "Bridge open to traffic" date?

Answer:
The start date and duration are defined in Code 108.1000. The bridge shall be fully opened to vehicular traffic by the end of August 30th.

Date Asked: 05/13/2019	**Date Answered:** 05/15/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
Are the Pile Caps Cast in Place or Precast? Section thru abutment detail on Sheet 25 calls out CLSM Type II and Leveling blocks under the pile cap. Please Clarify.

Answer:
The Contractor may elect to use Precast Pile Caps provided they submit shop drawings with details based on the Precast Concrete Institute's "Suggested Guide Details Precast Substructures" for the Engineer's approval. The Plans will be modified by addendum to show only cast-in-place details and to provide the requirements for the precast alternative.

Date Asked: 05/13/2019	**Date Answered:** 05/29/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
Is it the intent of the Utility Pipe Ramming to go through the existing bridge structure to remain? Reviewing the elevation drawings, it seems that the carrying pipe would be going through the existing sections as drawn. Please Clarify.

Answer:
The plans and specifications will be revised by addendum to more clearly define the work included in the utility relocations.

Date Asked: 05/13/2019	**Date Answered:** 05/15/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
On Plan Sheet 8, there is a note about using other Trenchless Technologies to install the Utility Pipes. Please confirm that other techniques can be used to install the casing pipe, other than utility pipe ramming.

Answer:
The Contractor has the option to propose alternate methods to complete the work subject to the approval of the Engineer. The Contractor shall be responsible for providing a submittal stamped by a Rhode Island P.E. detailing the proposed methods, and shall be responsible for all associated modifications to the Project including environmental permits and utility coordination.

Date Asked: 05/08/2019	**Date Answered:** 05/15/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
What is the expected duration for the gas line utility work?

Answer:
National Grid's time estimate assumes 2 weeks for the placement of the gas bypass by the gas subcontractor, 9 days for a National Grid crew to place the tie ins. After placement of the gas main casing across the bridge, National Grid has estimated approximately 2 weeks for the installation of the gas main by the gas subcontractor, 6 days for a National Grid crew to tie in the new line and cut, cap, and abandon the bypass pipe. The schedule for the gas main relocation will be included by addendum.

Date Asked: 05/08/2019	**Date Answered:** 05/15/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
CS-6 Item P references the Verizon Contractor installing duct banks and manholes. What is the expected duration for this work?

Answer:
Based on Verizon's force account, the estimated duration of the installation of the duct banks and manholes is 7 weeks.

Date Asked: 05/08/2019	**Date Answered:** 05/15/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
Installation of the new water main calls out removal of pipe in conflict as incidental. There is also waterline being removed under the R&D pipe item. Please clarify where this pipe removal is being paid. Also, it mentions the existing water line being asbestos, if this is the case shouldn't this be carried under R&D Asbestos Cement pipe instead?

Answer:
There is no known asbestos water main to be removed. The Plans and Specifications will be updated accordingly. A contingency item for removing and disposing asbestos pipe, should any be encountered, will be added by addendum.

Date Asked: 05/08/2019	**Date Answered:** 05/15/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
Are all of the additional qualifications listed on JS-62 Required? If not, which are required for this project?

Answer:
The listed qualifications are required.

Date Asked: 05/08/2019	**Date Answered:** 05/29/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
In order to size the sewer bypass pumping, what flows are we to design the system for? Without this we cannot properly size the bypass for bidding purposes.

Answer:
We will provide answer per addendum. As of now the Flow rates are not available. The Contractor shall determine the method of maintaining flow. Acceptable methods include, but are not limited to, using a bypass pipe and using bypass pumping. If by pass pumping is used, the contractor should size to accommodate the flow in a 10" DI gravity pipe with a 0.0023 TF/FT slope.

Date Asked: 05/08/2019	**Date Answered:** 05/15/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
Will there be any testing for contaminants required on the removed gas pipe?

Answer:
Testing (by National Grid), removal, and disposal of the existing gas mains shall be in accordance with the "Job Specific National Grid Gas Notes" on Sheet 5.

Date Asked: 05/08/2019	**Date Answered:** 05/15/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
The 12" Water Main has the cutting and removal of existing asbestos water main where it is in conflict. How much of this is expected to be removed?

Answer:
There is no known asbestos water main to be removed. The Plans and Specifications will be updated accordingly. A contingency item for removing and disposing asbestos pipe, should any be encountered, will be added by addendum.

Date Asked: 05/08/2019	**Date Answered:** 05/15/2019
Poster: Joe Colapietro	**Company:** Cardi Corporation

Question:
When should we receive the environmental permits for this project?

Answer:
The environmental permits will be issued through addendum.

Table of Contents - Distribution of Quantities

Project Name - Bridge Group 44A - Silver Creek
Estimate Name - Addendum 2
R.I. Contract No. - 2017-CB-053
FAP Nos: BHO-0153(002)

Table of Contents - Distribution of Quantities

Project Name - Bridge Group 44A - Silver Creek
Estimate Name - Addendum 2
R.I. Contract No. - 2017-CB-053
FAP Nos: BHO-0153(002)

Table of Contents - Distribution of Quantities

Project Name - Bridge Group 44A - Silver Creek
Estimate Name - Addendum 2
R.I. Contract No. - 2017-CB-053
FAP Nos: BHO-0153(002)

Distribution of Quantities

Project Name - Bridge Group 44A - Silver Creek
Estimate Name - Addendum 2
R.I. Contract No. - 2017-CB-053
FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
001	**201.0403**	**REMOVE AND DISPOSE SIDEWALKS**	**SY**			
		HOPE STREET				
		2+36 R - 2+85 R		31.00	0010	01
		2+59 L - 2+85 L		19.00	0010	01
		3+12 L - 3+61 L		33.00	0010	01
		3+12 R - 4+23 R		78.00	0010	01
		4+91R - 4+96R		3.00	0010	01
		5+03 L - 5+09 L		4.00	0010	01
		Item 201.0403 Total:		**168.00**		
002	**201.0409**	**REMOVE AND DISPOSE FLEXIBLE PAVEMENT**	**SY**			
		BIT DRIVEWAY				
		3+40 L - 3+52 L		2.00	0010	01
		5+03 L - 5+09 L		2.00	0010	01
		HOPE STREET				
		1+93 - 2+85		334.00	0010	01
		3+26 5+75		1,061.00	0010	01
		TEMP PED WALKWAY		20.00	0010	01
		SEWER AND WATER TRENCH				
		1+93 - 2+61			0010	01
		3+36 - 5+75			0010	01
		Item 201.0409 Total:		**1,419.00**		
003	**201.0411**	**REMOVE AND DISPOSE CATCH BASIN AND GUTTER INLETS**	**EACH**			
		HOPE STREET				
		3+17 L		1.00	0010	01
		Item 201.0411 Total:		**1.00**		
004	**201.0412**	**REMOVE AND DISPOSE MANHOLE**	**EACH**			
		HOPE STREET				
		2+79 (TMH)		1.00	0010	01

Distribution of Quantities

Project Name - Bridge Group 44A - Silver Creek
Estimate Name - Addendum 2
R.I. Contract No. - 2017-CB-053
FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
004	**201.0412 Cont.**	2+86 (SMH)		1.00	0010	01

Distribution of Quantities

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
004	**201.0412 Cont.**	3+16 (SMH)		1.00	0010	01
		3+21 (TMH)		1.00	0010	01
		5+40 (SMH)		1.00	0010	01
		Item 201.0412 Total:		**5.00**		
005	**201.0414**	**REMOVE AND DISPOSE PIPE - ALL SIZES**	**LF**			
		DRAINAGE				
		3+13 L - 3+16 L		8.00	0010	01
		GAS				
		2+44 R - 3+49 R		105.00	0010	01
		2+67 L - 3+30 L		63.00	0010	01
		2+67 R - 3+30 R		63.00	0010	01
		SUPPL		30.00	0010	01
		SEWER				
		2+06 - 2+63		80.00	0010	01
		2+67 - 3+30		28.00	0010	01
		3+34 - 5+38		226.00	0010	01
		WATER				
		2+32 R - 4+65 R			0010	01
		Item 201.0414 Total:		**603.00**		
006	**201.0428**	**REMOVE AND DISPOSE FRAME AND GRATE OR FRAME AND COVER**	**EACH**			
		HOPE STREET				
		2+79 (TMH)		1.00	0010	01
		2+86 (SMH)		1.00	0010	01
		3+14 (SMH)		1.00	0010	01
		3+17 L (DMH)		2.00	0010	01
		3+21 L (TMH)		1.00	0010	01
		5+40 (SMH)		1.00	0010	01
		Item 201.0428 Total:		**7.00**		
007	**201.0610**	**REMOVE AND DISPOSE DIRECTIONAL,**	**EACH**			

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
007	**201.0610 Cont.**	**WARNING, REGULATORY, SERVICE, AND STREET SIGNS**				
		HOPE STREET				
		2+87 R		2.00	0010	01
		3+18 L		1.00	0010	01
		3+60 L		2.00	0010	01
		3+77 L		1.00	0010	01
		4+04 R		1.00	0010	01
		5+23 L		1.00	0010	01
		Item 201.0610 Total:		**8.00**		
008	**201.9901**	**REMOVE AND DISPOSE TELEPHONE DUCT BANK**	**LF**			
		HOPE STREET				
		2+40 L- 3+50 L		110.00	0010	01
		Item 201.9901 Total:		**110.00**		
009	**201.9952**	**SAMPLING AND TESTING CONTAMINATED SOIL**	**EACH**			
		HOPE STREET				
		HOPE STREET		8.00	0010	01
		Item 201.9952 Total:		**8.00**		
010	**201.9954**	**REMOVE, STOCKPILE, HANDLE, HAUL, AND DISPOSE CONTAMINATED SOIL**	**EACH**			
		HOPE STREET				
		HOPE STREET		150,000.00	0010	01
		Item 201.9954 Total:		**150,000.00**		
011	**202.0100**	**EARTH EXCAVATION**	**CY**			
		HOPE STREET				
		BIT DRIVEWAY		2.00	0010	01
		LOAM		10.00	0010	01

Distribution of Quantities

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
011	**202.0100 Cont.**	ROADWAY		465.00	0010	01
		SIDEWALKS		37.00	0010	01
		TEMPORARY PEDESTRIAN WALKWAY		6.00	0010	01
		Item 202.0100 Total:		**520.00**		
012	**202.0201**	**ROCK EXCAVATION MECHANICAL**	**CY**			
		HOPE STREET				
		ROADWAY		25.00	0010	01
		UTILITY (SEWER, WATER, DRAINAGE)		100.00	0010	01
		Item 202.0201 Total:		**125.00**		
013	**202.0800**	**GRAVEL BORROW**	**CY**			
		HOPE STREET				
		HOPE STREET		100.00	0010	01
		Item 202.0800 Total:		**100.00**		
014	**203.0100**	**STRUCTURAL EXCAVATION EARTH**	**CY**			
		BRIDGE				
		BRIDGE		70.00	0010	01
		Item 203.0100 Total:		**70.00**		
015	**203.0530**	**DEWATERING**	**LS**			
		BRIDGE				
		BRIDGE		1.00	0010	01
		Item 203.0530 Total:		**1.00**		
016	**203.0700**	**PERVIOUS FILL**	**CY**			
		BRIDGE				
		BRIDGE		120.00	0010	01
		Item 203.0700 Total:		**120.00**		
017	**203.9951**	**CONSTRUCTION DEWATERING TREATMENT**	**LS**			

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
017	**203.9951 Cont.**	HOPE STREET				
		UTILITY TRENCH		1.00	0010	01
		Item 203.9951 Total:		**1.00**		
018	**204.0100**	**TRIMMING AND FINE GRADING**	**SY**			
		HOPE STREET				
		BIT DRIVEWAY		4.00	0010	01
		LOAM AND SEED AREA		25.00	0010	01
		ROADWAY		1,395.00	0010	01
		SIDEWALK		165.00	0010	01
		TEMPORARY PEDESTRIAN WALKWAY		20.00	0010	01
		TRENCH PATCHING		678.00	0010	01
		Item 204.0100 Total:		**2,287.00**		
019	**206.0301**	**COMPOST FILTER SOCK**	**LF**			
		HOPE STREET				
		0+85 L		10.00	0010	01
		2+01 R - 2+89 R		90.00	0010	01
		5+83 R		6.00	0010	01
		5+85 L		6.00	0010	01
		SUPPLEMENTAL		32.00	0010	01
		Item 206.0301 Total:		**144.00**		
020	**209.9901**	**INLET SEDIMENT CONTROL DEVICE**	**EACH**			
		HOPE STREET				
		0+84 L		1.00	0010	01
		0+96 R		1.00	0010	01
		1+08 R		1.00	0010	01
		1+74 R		1.00	0010	01
		1+77 R		1.00	0010	01
		4+48 R		1.00	0010	01
		Item 209.9901 Total:		**6.00**		

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
021	**212.2000**	**CLEANING AND MAINTENANCE OF EROSION CONTROLS**	**LS**			
		HOPE STREET				
		HOPE STREET		1.00	0010	01
		Item 212.2000 Total:		**1.00**		
022	**213.0100**	**PLACEMENT OF MILLINGS BENEATH GUARDRAIL**	**LF**			
		HOPE STREET				
		2+19 R - 2+83 R		70.00	0010	01
		Item 213.0100 Total:		**70.00**		
023	**302.0100**	**GRAVEL BORROW SUBBASE COURSE**	**CY**			
		HOPE STREET				
		BIT DRIVEWAY		2.00	0010	01
		ROADWAY		465.00	0010	01
		SIDEWALKS		37.00	0010	01
		TEMPORARY PEDESTRIAN WALKWAY		5.00	0010	01
		Item 302.0100 Total:		**509.00**		
024	**401.1000**	**CLASS 19.0 HMA**	**TON**			
		FULL DEPTH RECONSTRUCTION				
		1+93 - 2+85		100.00	0010	01
		3+26 - 5+75		310.00	0010	01
		Item 401.1000 Total:		**410.00**		
025	**401.2100**	**MODIFIED CLASS 12.5 HMA**	**TON**			
		BIT DRIVEWAY				
		3+40 L - 3+52 L		0.50	0010	01
		5+03 L - 5+09 L		0.50	0010	01
		HOPE STREET				
		1+93- 2+85		40.00	0010	01
		3+26- 5+75		123.00	0010	01

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FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
025	**401.2100 Cont.**	TEMPORARY PEDESTRIAN WALKWAY				
		TEMP PEDESTRIAN WALKWAY		3.00	0010	01
		Item 401.2100 Total:		**167.00**		
026	**401.3005**	**CLASS 9.5 HMA FOR MISCELLANEOUS WORK**	**TON**			
		PROJECT WIDE				
		SUPPL		5.00	0010	01
		TEMP PAVEMENT UTILTY PATCH				
		1+93 -2+61		30.00	0010	01
		3+36 - 5+75		115.00	0010	01
		Item 401.3005 Total:		**150.00**		
027	**403.0300**	**ASPHALT EMULSION TACK COAT**	**SY**			
		HOPE STREET				
		BIT DRIVEWAY		4.00	0010	01
		ROADWAY		2,790.00	0010	01
		ROADWAY (MILL AND OVERLAY)		1,627.00	0010	01
		TRENCH PATCHING		678.00	0010	01
		Item 403.0300 Total:		**5,099.00**		
028	700.9901	12 INCH STEEL CASING FOR GAS MAIN	LF			
		BRIDGE				
		2+83 - 3+14			0010	01
		Item 700.9901 Total:		**DELETED**		
029	**700.9902**	**18 INCH INLINE TIDE CHECK VALVE**	**EACH**			
		HOPE STREET				
		3+05L		1.00	0010	01
		Item 700.9902 Total:		**1.00**		
030	**700.9903**	**24 INCH INLINE TIDE CHECK VALVE**	**EACH**			
		HOPE STREET				

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
030	**700.9903 Cont.**	3+08 R		1.00	0010	01

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
030	**700.9903 Cont.**	**Item 700.9903 Total:**		**1.00**		
S031	**701.9901**	**12-INCH DUCTILE IRON WATER MAIN**	**LF**			
		HOPE STREET				
		1+93-2+23		30.00	0010	01
		4+72-5+75		110.00	0010	01
		Item 701.9901 Total:		**140.00**		
S032	**701.9902**	**12-INCH GATE VALVE**	**EACH**			
		HOPE STREET				
		2+03		1.00	0010	01
		5+65		1.00	0010	01
		Item 701.9902 Total:		**2.00**		
S033	**701.9903**	**12-INCH HDPE WATER MAIN**	**LF**			
		HOPE STREET				
		2+23-4+72		275.00	0010	01
		Item 701.9903 Total:		**275.00**		
S034	**701.9904**	**12-INCH HDPE SEWER MAIN**	**LF**			
		HOPE STREET				
		2+57- 3+40		100.00	0010	01
		Item 701.9904 Total:		**100.00**		
S035	**701.9905**	**8-INCH HDPE WATER BYPASS PIPE**	**LF**			
		ROADWAY				
		2+30- 4+68		300.00	0010	01
		Item 701.9905 Total:		**300.00**		
S036	**701.9906**	**4-FOOT DIAMETER MANHOLE**	**EACH**			
		HOPE STREET				
		2+15		1.00	0010	01
		2+55		1.00	0010	01

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
S036	**701.9906 Cont.**	3+42		1.00	0010	01
		5+20		1.00	0010	01
		Item 701.9906 Total:		**4.00**		
S037	**701.9907**	**10-INCH PVC SEWER MAIN**	**LF**			
		HOPE STREET				
		2+06- 2+53		75.00	0010	01
		3+44- 5+42		200.00	0010	01
		Item 701.9907 Total:		**275.00**		
S038	**701.9908**	**UTILITY PIPE RAMMING**	**LF**			
		HOPE STREET				
		2+80-2+92		20.00	0010	01
		3+09-3+44		30.00	0010	01
		Item 701.9908 Total:		**50.00**		
039	**701.9909**	**WATER SERVICE**	**LF**			
		ROADWAY				
		5+07		50.00	0010	01
		Item 701.9909 Total:		**50.00**		
040	**702.0511**	**FRAME AND COVER STANDARD 6.1.0**	**EACH**			
		HOPE STREET				
		3+33 L		1.00	0010	01
		Item 702.0511 Total:		**1.00**		
041	**702.0517**	**FRAME AND GRATE, STANDARD 6.3.2**	**EACH**			
		HOPE STREET				
		3+33 L		1.00	0010	01
		Item 702.0517 Total:		**1.00**		
042	**702.0541**	**GRANITE INLET STONE 38'' STANDARD 7.3.6**	**EACH**			

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
042	**702.0541 Cont.**	HOPE STREET				

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
042	**702.0541 Cont.**	3+33 L		1.00	0010	01
		Item 702.0541 Total:		**1.00**		
043	**702.0705**	**CATCH BASIN W/GUTTER INLET**	**EACH**			
		STANDARD 3.4.1				
		HOPE STREET				
		3+33 L		1.00	0010	01
		Item 702.0705 Total:		**1.00**		
044	**706.9000**	**PLUG AND CAP PIPE ALL SIZES**	**EACH**			
		HOPE STREET				
		2+32 R			0010	01
		2+64 R		2.00	0010	01
		2+66 L		1.00	0010	01
		3+30 L		1.00	0010	01
		3+32 R		2.00	0010	01
		4+65 R			0010	01
		Item 706.9000 Total:		**6.00**		
045	**707.0950**	**ADJUST TELEPHONE MANHOLE TO GRADE**	**EACH**			
		HOPE STREET				
		2+52 L		1.00	0010	01
		3+43 L		1.00	0010	01
		Item 707.0950 Total:		**2.00**		
046	**707.1000**	**ADJUST SANITARY MANHOLE**	**EACH**			
		HOPE STREET				
		2+04 R		1.00	0010	01
		2+15 R		1.00	0010	01
		2+55 R		1.00	0010	01
		3+42 R		1.00	0010	01
		5+20 R		1.00	0010	01
		Item 707.1000 Total:		**5.00**		

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
047	**708.9040**	**CLEANING AND FLUSHING PIPE ALL SIZES**	**LF**			
		HOPE STREET				
		0+85 L		90.00	0010	01
		0+85 L- 0+97 R		40.00	0010	01
		0+97 R- 1+07 R		20.00	0010	01
		1+10 R - 1+75 R		140.00	0010	01
		1+74 R- 1+75 R		6.00	0010	01
		3+08 R - 4+49 R		140.00	0010	01
		3+33 L - 5+86 L		220.00	0010	01
		4+49 R - 5+81 R		135.00	0010	01
		SUPPLEMENTAL		100.00	0010	01
		Item 708.9040 Total:		**891.00**		
048	**708.9041**	**CLEANING CATCH BASINS ALL TYPES AND SIZES**	**EACH**			
		HOPE STREET				
		0+84 L		1.00	0010	01
		0+95 R		1.00	0010	01
		1+09 R		1.00	0010	01
		1+75 R		1.00	0010	01
		1+77 R		1.00	0010	01
		4+48 R		1.00	0010	01
		5+83 R		1.00	0010	01
		5+85 L		1.00	0010	01
		Item 708.9041 Total:		**8.00**		
049	**713.8269**	**ADJUST WATER GATE BOXES TO GRADE**	**EACH**			
		HOPE STREET				
		5+03 R		1.00	0010	01
		Item 713.8269 Total:		**1.00**		
050	**800.9901**	**SILVER CREEK BRIDGE NO. 153**	**LS**			

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
050	**800.9901 Cont.**	BRIDGE				
		BRIDGE		1.00	0010	01
		Item 800.9901 Total:		**1.00**		
051	**802.9901**	**TEMPORARY UTILITY BRIDGE**	**LS**			
		BRIDGE				
		BRIDGE		1.00	0010	01
		Item 802.9901 Total:		**1.00**		
052	**803.0100**	**REMOVE AND DISPOSE EXISTING SUPERSTRUCTURE**	**LS**			
		BRIDGE				
		BRIDGE		1.00	0010	01
		Item 803.0100 Total:		**1.00**		
053	**803.9901**	**PARTIAL REMOVAL AND DISPOSAL OF STONE MASONRY**	**CY**			
		BRIDGE				
		BRIDGE		5.00	0010	01
		Item 803.9901 Total:		**5.00**		
054	**804.1720**	**PILE LOAD TEST OVER 100 TON**	**EACH**			
		BRIDGE				
		BRIDGE		2.00	0010	01
		Item 804.1720 Total:		**2.00**		
055	**804.9902**	**STEEL MICROPILES**	**EACH**			
		BRIDGE				
		BRIDGE		17.00	0010	01
		Item 804.9902 Total:		**17.00**		
056	**807.9901**	**POINTING & GROUTING MASONRY**	**SF**			
		BRIDGE				

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
056	807.9901 Cont.	BRIDGE		175.00	0010	01
		Item 807.9901 Total:		**175.00**		
057	807.9902	**REBUILD STONE MASONRY**	**CY**			
		BRIDGE				
		BRIDGE		12.00	0010	01
		Item 807.9902 Total:		**12.00**		
058	807.9903	**STONE VENEER**	**SF**			
		BRIDGE				
		BRIDGE		40.00	0010	01
		Item 807.9903 Total:		**40.00**		
059	807.9904	**SUPPLEMENTAL STONES**	**LBS**			
		BRIDGE				
		BRIDGE APPROACHES		2,000.00	0010	01
		Item 807.9904 Total:		**2,000.00**		
060	902.0100	**STEEL BACKED TIMBER GUARDRAIL STANDARD 34.4.0**	**LF**			
		HOPE STREET				
		2+19 R- 2+79 R		60.00	0010	01
		Item 902.0100 Total:		**60.00**		
061	903.0410	**TEMPORARY CHAIN LINK FENCE**	**LF**			
		BRIDGE CLOSURE				
		TTCP #2		310.00	0010	01
		UTILITY WORK				
		TTCP #4		290.00	0010	01
		TTCP #5		510.00	0010	01
		Item 903.0410 Total:		**1,110.00**		
062	903.0411	**TEMPORARY CHAIN LINK GATE**	**EACH**			

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
062	**903.0411 Cont.**	BRIDGE WORK				
		TTCP #2		2.00	0010	01
		UTILITY WORK				
		TTCP #4		2.00	0010	01
		TTCP #5		2.00	0010	01
		Item 903.0411 Total:		**6.00**		
063	**905.0110**	**PORTLAND CEMENT SIDEWALK**	**CY**			
		MONOLITHIC STANDARD 43.1.0				
		HOPE STREET				
		2+36 R - 2+85 R		4.00	0010	01
		2+59 L - 2+85 L		3.00	0010	01
		3+12 L - 3+61 L		4.00	0010	01
		3+12 R - 4+23 R		26.00	0010	01
		4+91-4+96		1.00	0010	01
		5+03 L - 5+09 L		1.00	0010	01
		Item 905.0110 Total:		**39.00**		
064	**906.0700**	**REMOVE, HANDLE, HAUL TRIM RESET**	**LF**			
		CURB EDGING, STRAIGHT, CIRCULAR				
		ALL TYPES				
		HOPE STREET				
		2+36 R - 2+85 R		49.00	0010	01
		2+59 L - 2+85 L		27.00	0010	01
		3+12 L - 3+61 L		51.00	0010	01
		3+12 R - 4+23 R		112.00	0010	01
		5+03 L - 5+09 L		6.00	0010	01
		Item 906.0700 Total:		**245.00**		
065	**907.0100**	**WATER FOR DUST CONTROL**	**MGAL**			
		HOPE STREET				
		HOPE STREET		60.00	0010	01
		Item 907.0100 Total:		**60.00**		

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Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
066	**914.5010**	**FLAGPERSONS**	**MHRS**			
		HOPE STREET				
		HOPE STREET		1,000.00	0010	01
		Item 914.5010 Total:		**1,000.00**		
067	**914.5020**	**FLAGPERSONS - OVERTIME**	**MHRS**			
		HOPE STREET				
		HOPE STREET		100.00	0010	01
		Item 914.5020 Total:		**100.00**		
068	**916.0600**	**SHOCK ABSORBING BARRIER MODULES**	**GRP**			
		UTILITY WORK				
		NORTH SIDE		1.00	0010	01
		SOUTH SIDE		1.00	0010	01
		Item 916.0600 Total:		**2.00**		
069	**916.0650**	**REMOVE, RELOCATE AND RESET SHOCK ABSORBING BARRIER MODULES**	**GRP**			
		UTILITY WORK				
		NORTH SIDE		1.00	0010	01
		SOUTH SIDE		1.00	0010	01
		Item 916.0650 Total:		**2.00**		
070	**919.0101**	**TEST PITS**	**EACH**			
		HOPE STREET				
		PROJECT WIDE		5.00	0010	01
		Item 919.0101 Total:		**5.00**		
071	**920.0070**	**DUMPED STONE RIPRAP R-3, R-4, 4-5 STANDARD 8.3.0**	**CY**			
		BRIDGE				
		BRIDGE		32.00	0010	01
		OUTFALL				

Distribution of Quantities

Project Name - Bridge Group 44A - Silver Creek
Estimate Name - Addendum 2
R.I. Contract No. - 2017-CB-053
FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
071	920.0070 Cont.	3+13 L - 3+23 L		2.00	0010	01
		Item 920.0070 Total:		**34.00**		
S072	922.0100	**TEMPORARY CONSTRUCTION SIGNS**	SF			
		STANDARD 29.1.0 AND 27.1.1				
		HOPE STREET				
		G20-2		18.00	0010	01
		M4-10L		6.00	0010	01
		M4-10R		12.00	0010	01
		M4-8A		6.00	0010	01
		M4-9AL		15.00	0010	01
		M4-9AR		10.00	0010	01
		M4-9BL		20.00	0010	01
		M4-9BR		20.00	0010	01
		M4-9L		30.00	0010	01
		M4-9R		45.00	0010	01
		M4-9V		105.00	0010	01
		OM4-2		18.00	0010	01
		R11-2		20.00	0010	01
		R11-4		25.00	0010	01
		R4-7		10.00	0010	01
		R9-11L		8.00	0010	01
		R9-11R		4.00	0010	01
		R9-9		8.00	0010	01
		RI STD 27.1.1		30.00	0010	01
		SP-1 (DETOUR)		5.00	0010	01
		SP-2		45.00	0010	01
		SP-3		9.00	0010	01
		SP-4		8.00	0010	01
		SP-5		72.00	0010	01
		SP-6		18.00	0010	01
		W1-4L		45.00	0010	01
		W1-4R		54.00	0010	01

Distribution of Quantities

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Estimate Name - Addendum 2
R.I. Contract No. - 2017-CB-053
FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
S072	922.0100 Cont.	W20-1		81.00	0010	01
		W20-3		36.00	0010	01
		W20-4		27.00	0010	01
		W20-7A		27.00	0010	01
		W5-1		27.00	0010	01
		W8-1		18.00	0010	01
		W8-8		18.00	0010	01
		Item 922.0100 Total:		**900.00**		
073	**923.0105**	**DRUM BARRICADE STANDARD 26.2.0**	**BDAY**			
		HOPE STREET				
		HOPE STREET		8,000.00	0010	01
		Item 923.0105 Total:		**8,000.00**		
074	**923.0120**	**PLASTIC PIPE BARRICADE STANDARD 26.3.0**	**EACH**			
		HOPE STREET				
		HOPE STREET		12.00	0010	01
		Item 923.0120 Total:		**12.00**		
075	**923.0200**	**FLUORESCENT TRAFFIC CONES STANDARD 26.1.0**	**EACH**			
		HOPE STREET				
		HOPE STREET		35.00	0010	01
		Item 923.0200 Total:		**35.00**		
076	**923.9901**	**LONGITUDINAL CHANNELIZING DEVICES**	**LF**			
		HOPE STREET				
		ROADWAY (UTILITY WORK)		24.00	0010	01
		SIDEWALK CLOSURE		36.00	0010	01
		TEMPORARY PEDESTRIAN WALKWAY		120.00	0010	01
		Item 923.9901 Total:		**180.00**		

Distribution of Quantities

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FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
077	**924.0113**	**ADVANCE WARNING ARROW PANEL**	**PDAY**			
		HOPE STREET				
		UTILITY WORK		600.00	0010	01
		Item 924.0113 Total:		**600.00**		
078	**925.0112**	**PORTABLE CHANGEABLE MESSAGE SIGN**	**PDAY**			
		HOPE STREET				
		PROJECT WIDE		2,370.00	0010	01
		Item 925.0112 Total:		**2,370.00**		
079	**926.0121**	**UNANCHORED PRECAST CONCRETE BARRIER FOR TEMPORARY TRAFFIC CONTROL STANDARD 40.5.0**	**LF**			
		BRIDGE CLOSURE				
		NORTH SIDE		30.00	0010	01
		SOUTH SIDE		30.00	0010	01
		UTILITY WORK				
		SUPPL		100.00	0010	01
		TELEPHONE		530.00	0010	01
		WATER AND SEWER		280.00	0010	01
		Item 926.0121 Total:		**970.00**		
080	**926.0140**	**REFLECTIVE DELINEATORS FOR TEMPORARY CONCRETE BARRIERS**	**EACH**			
		UTILITY WORK				
		TEMP BARRIERS		22.00	0010	01
		Item 926.0140 Total:		**22.00**		
081	**929.0110**	**FIELD OFFICE**	**PMO**			
		HOPE STREET				
		PROJECT DURATION		24.00	0010	01
		Item 929.0110 Total:		**24.00**		

Distribution of Quantities

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Estimate Name - Addendum 2
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FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
082	**931.0110**	**CLEANING AND SWEEPING PAVEMENT**	**HSY**			
		HOPE STREET				
		HOPE STREET		20.00	0010	01
		Item 931.0110 Total:		**20.00**		
083	**932.0200**	**FULL-DEPTH SAWCUT OF BITUMINOUS PAVEMENT**	**LF**			
		HOPE STREET				
		1+93 L - 1+93 R		45.00	0010	01
		2+59 L - 2+59 R		40.00	0010	01
		3+61 L - 3+61 R		40.00	0010	01
		5+75 L - 5+75 R		40.00	0010	01
		SEWER & WATER				
		1+93 - 2+61		178.00	0010	01
		3+36 - 5+75		406.00	0010	01
		Item 932.0200 Total:		**749.00**		
084	**932.0220**	**FULL DEPTH SAWCUT OF BITUMINOUS SIDEWALK/DRIVEWAY**	**LF**			
		HOPE STREET				
		3+40 L - 3+52 L		15.00	0010	01
		5+03 L - 5+09 L		15.00	0010	01
		Item 932.0220 Total:		**30.00**		
085	**932.0230**	**FULL DEPTH SAWCUT OF PORTLAND CEMENT CONCRETE SIDEWALK/DRIVEWAY**	**LF**			
		HOPE STREET				
		2+36 R		6.00	0010	01
		2+39 R		7.00	0010	01
		2+42 R		6.00	0010	01
		2+59 L		8.00	0010	01
		2+59 R			0010	01
		3+61 L		10.00	0010	01

Distribution of Quantities

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FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
085	**932.0230 Cont.**	4+23 R		7.00	0010	01
		4+91 R		6.00	0010	01
		4+96 R		7.00	0010	01
		5+03 L		7.00	0010	01
		5+09 L		6.00	0010	01
		Item 932.0230 Total:		**70.00**		
086	**936.0100**	**MOBILIZATION AND DEMOBILIZATION**	**LS**			
		HOPE STREET				
		HOPE STREET		1.00	0010	01
		Item 936.0100 Total:		**1.00**		
087	**937.0200**	**MAINTENANCE AND MOVEMENT TRAFFIC PROTECTION**	**LS**			
		HOPE STREET				
		HOPE STREET		1.00	0010	01
		Item 937.0200 Total:		**1.00**		
S088	**L01.0102**	**LOAM BORROW 4 INCHES DEEP**	**SY**			
		HOPE STREET				
		2+19 R- 2+79 R		17.00	0010	01
		2+59 R - 2+85 R		5.00	0010	01
		4+91R-4+96R		3.00	0010	01
		PEDESTRIAN WALKWAY		20.00	0010	01
		Item L01.0102 Total:		**45.00**		
089	**L02.0102**	**RESIDENTIAL SEEDING (TYPE 2)**	**SY**			
		HOPE STREET				
		FROM ITEM CODE L01.0102		45.00	0010	01
		Item L02.0102 Total:		**45.00**		
090	**T06.9901**	**4 INCH SCH 40 PVC CONDUIT ENCASED IN CONCRETE**	**LF**			

Distribution of Quantities

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Estimate Name - Addendum 2
R.I. Contract No. - 2017-CB-053
FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
090	**T06.9901 Cont.**	HOPE STREET				
		HOPE STREET		200.00	0010	01

Distribution of Quantities

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Estimate Name - Addendum 2
R.I. Contract No. - 2017-CB-053
FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
090	**T06.9901 Cont.**	**Item T06.9901 Total:**		**200.00**		
S091	**T15.0100**	**DIRECTIONAL REGULATORY AND WARNING SIGNS**	**SF**			
		HOPE STREET				
		OM3-R (1-1)		3.00	0010	01
		OM3-R (1-3)		3.00	0010	01
		R3-8 (1-2)		7.00	0010	01
		RIPTA (1-2)		2.00	0010	01
		RIPTA (1-4)		2.00	0010	01
		SP-1 (1-5)		7.00	0010	01
		Item T15.0100 Total:		**24.00**		
S092	**T20.0006**	**6 INCH WHITE FAST - DRYING WATERBORNE PAVEMENT MARKING PAINT**	**LF**			
		HOPE STREET				
		1+93 - 2+67		225.00	0010	01
		1+93 L - 5+75 L		1,170.00	0010	01
		1+93 R - 5+75 R		1,170.00	0010	01
		Item T20.0006 Total:		**2,565.00**		
093	**T20.0012**	**12 INCH WHITE FAST - DRYING WATERBORNE PAVEMENT MARKING PAINT**	**LF**			
		HOPE STREET				
		1+93 - 3+71		975.00	0010	01
		4+04 - 5+75		1,080.00	0010	01
		Item T20.0012 Total:		**2,055.00**		
S094	**T20.0820**	**FAST DRYING WATERBONE PAVEMENT ARROW - STRAIGHT, LEFT, RIGHT, OR COMBINED STANDARD 20.1.0**	**EACH**			
		HOPE STREET				
		2+20		3.00	0010	01

Distribution of Quantities

Project Name - Bridge Group 44A - Silver Creek
Estimate Name - Addendum 2
R.I. Contract No. - 2017-CB-053
FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
S094	T20.0820 Cont.	2+64		3.00	0010	01
		Item T20.0820 Total:		**6.00**		
095	T20.1000	**REMOVE EXISTING PAVEMENT MARKINGS**	LF			
		HOPE STREET (GORES)				
		1+93 - 3+71		650.00	0010	01
		4+04 - 5+75		720.00	0010	01
		ROADWAY CENTER				
		1+93 - 2+67		150.00	0010	01
		SHOULDERS				
		1+93 L - 5+75		780.00	0010	01
		1+93 R - 5+75		780.00	0010	01
		LEFT TURN ARROW		112.00	0010	01
		TEMPORARY				
		TTCP #4		1,320.00	0010	01
		TTCP #5		1,130.00	0010	01
		Item T20.1000 Total:		**5,642.00**		
096	T20.1106	**6 INCH TEMPORARY WATERBORNE PAINT PAVEMENT MARKINGS WHITE**	LF			
		TEMPORARY				
		TTCP #4		555.00	0010	01
		TTCP #5		370.00	0010	01
		Item T20.1106 Total:		**925.00**		
097	T20.1204	**4 INCH TEMPORARY WATERBORNE PAINT PAVEMENT MARKINGS YELLOW**	LF			
		TEMPORARY				
		TTCP #4		860.00	0010	01
		TTCP #5		860.00	0010	01
		Item T20.1204 Total:		**1,720.00**		
098	T20.2006	**6 INCH EPOXY RESIN PAVEMENT**	LF			

Distribution of Quantities

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FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
098	**T20.2006 Cont.**	**MARKINGS WHITE**				
		HOPE STREET				
		FROM ITEM CODE T20.0006		2,565.00	0010	01
		Item T20.2006 Total:		**2,565.00**		
099	**T20.2020**	**EPOXY RESIN PAVEMENT ARROW - STRAIGHT, LEFT, RIGHT, OR COMBINED STANDARD 20.1.0**	**EACH**			
		HOPE STREET				
		2+20		3.00	0010	01
		2+64		3.00	0010	01
		Item T20.2020 Total:		**6.00**		
100	T20.9901	EPOXY PAVEMENT MARKINGS- RED, WHITE AND BLUE	LF			
		HOPE STREET (GORES)				
		1+93 - 3+71			0010	01
		4+04- 5+75			0010	01
		Item T20.9901 Total:		**DELETED**		
101	**201.0440**	**REMOVE AND DISPOSE ASBESTOS CEMENT PIPE/ DUCT (TRANSITE) ALL TYPES AND SIZES**	**LF**			
		HOPE STREET				
		HOPE STREET		30.00	0010	01
		Item 201.0440 Total:		**30.00**		
102	**401.3100**	**MODIFIED CLASS 9.5 HMA**	**TON**			
		HOPE STREET				
		1+93 - 5+75		142.00	0010	01
		Item 401.3100 Total:		**142.00**		
103	**700.9905**	**8 INCH PLASTIC GAS MAIN**	**LF**			

Distribution of Quantities

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Estimate Name - Addendum 2
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FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
103	**700.9905 Cont.**	HOPE STREET				
		2+46R-3+49R		110.00	0010	01
		Item 700.9905 Total:		**110.00**		
104	**700.9906**	**10 INCH STEEL CASING FOR GAS MAIN**	**LF**			
		HOPE STREET				
		BRIDGE		45.00	0010	01
		Item 700.9906 Total:		**45.00**		
105	**700.9907**	**4 INCH STEEL AND PLASTIC GAS BYPASS**	**LF**			
		HOPE STREET				
		HOPE STREET		250.00	0010	01
		Item 700.9907 Total:		**250.00**		
106	**713.8300**	**ADJUST GAS GATE BOXES TO GRADE**	**EACH**			
		HOPE STREET				
		1+96R		1.00	0010	01
		2+44R		1.00	0010	01
		3+51R		1.00	0010	01
		4+28L		1.00	0010	01
		Item 713.8300 Total:		**4.00**		
107	**935.0400**	**REMOVING BITUMINOUS PAVEMENT BY MICRO MILLING**	**SY**			
		HOPE STREET				
		1+93 - 5+75		1,630.00	0010	01
		Item 935.0400 Total:		**1,630.00**		
108	**T20.9902**	**WATERBORNE PAVEMENT MARKINGS - RED, WHITE, AND BLUE**	**LF**			
		HOPE STREET				
		1+93 - 3+71		975.00	0010	01
		4+04 - 5+75		1,080.00	0010	01

Distribution of Quantities

Project Name - Bridge Group 44A - Silver Creek
Estimate Name - Addendum 2
R.I. Contract No. - 2017-CB-053
FAP Nos: BHO-0153(002)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
108	**T20.9902 Cont.**	**Item T20.9902 Total:**		**2,055.00**		