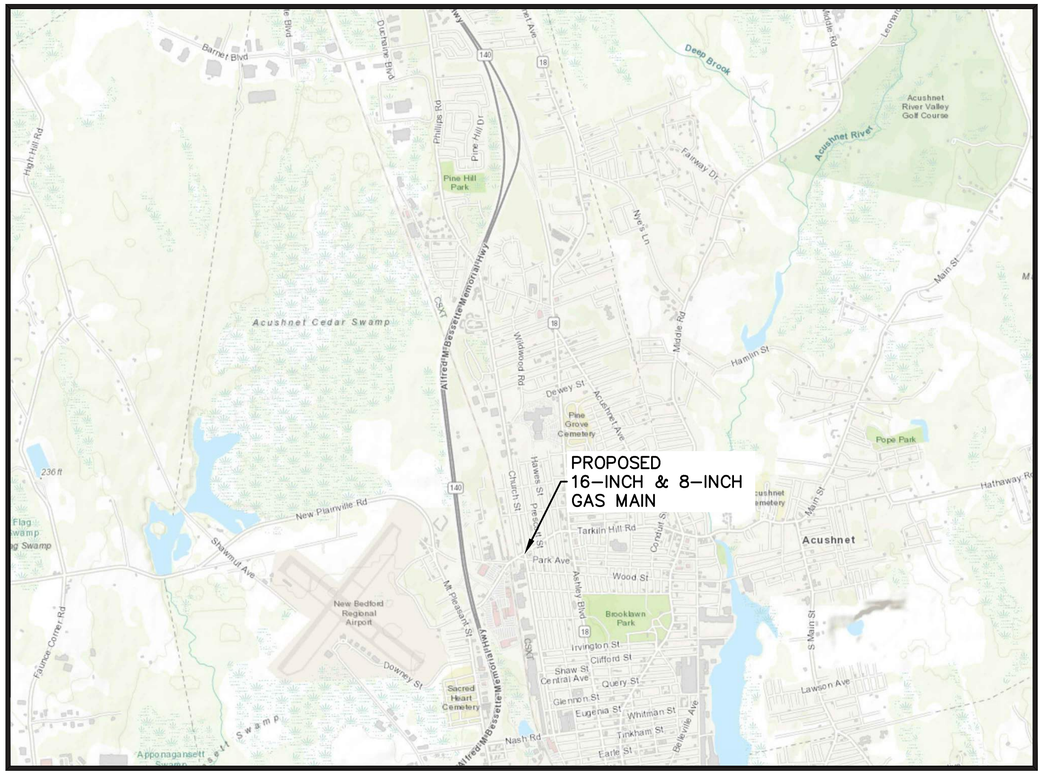
DRAWING NO.	REVISION	DWG. DESCRIPTION
MA-21-PIP-NEB-499-01	00	TITLE SHEET
MA-21-PIP-NEB-499-G01	00	GENERAL OVERVIEW
MA-21-PIP-NEB-499-G02	00	GEOTECHNICAL SOIL BORES
MA-21-PIP-NEB-499-M01	00	BILL OF MATERIALS
ALIGNMENT SHEETS		
MA-21-PIP-NEB-499-C01	00	GAS PIPELINE ALIGNMENT SHEET
MA-21-PIP-NEB-499-D01	00	TIE-IN DETAIL SHEET 1
MA-21-PIP-NEB-499-D02	00	TIE-IN DETAIL SHEET 2
MA-21-PIP-NEB-499-D03	00	TYPICAL DETAILS SHEET 1
MA-21-PIP-NEB-499-D04	00	TYPICAL DETAILS SHEET 2
MA-21-PIP-NEB-499-D05	00	TYPICAL DETAILS SHEET 3
MA-21-PIP-NEB-499-D06	00	TYPICAL DETAILS SHEET 4
MA-21-PIP-NEB-499-D07	00	TYPICAL DETAILS SHEET 5
MA-21-PIP-NEB-499-D08	00	TYPICAL DETAILS SHEET 6
MA-21-PIP-NEB-499-D09	00	TYPICAL DETAILS SHEET 7
MA-21-PIP-NEB-499-T01	00	TRAFFIC CONTROL DETAILS SHEET 1
MA-21-PIP-NEB-499-T02	00	TRAFFIC CONTROL DETAILS SHEET 2
MA-21-PIP-NEB-499-T03	00	TRAFFIC CONTROL DETAILS SHEET 3

EVERSOURCE ENERGY
475' OF 16" COATED STEEL GAS MAIN REPLACEMENT PLAN
476' OF 8" HDPE PLASTIC GAS MAIN REPLACEMENT PLAN
CHURCH STREET, NEW BEDFORD, MA
WORK ORDER #G200412Y
WORK ORDER #4709354



00	ISSUED FOR CONSTRUCTION	08/13/21	RJP/MWF/DBD
No.	Description	Date	Dw/Ck/Ap

Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

TARKILN STREET SECTION - 145+70 TO 150+47

TITLE SHEET

SCALE: N.T.S. SHEET 1 OF 17

Drawn by / Date	Checked by / Date	Sheet Number	Rev. No.
RJP / 07-06-2021	MWF / 07-06-2021	MA-21-PIP-NEB-499-01	00
Approved by / Date: DBD / 07-09-2021	MA21PIPNEB499		

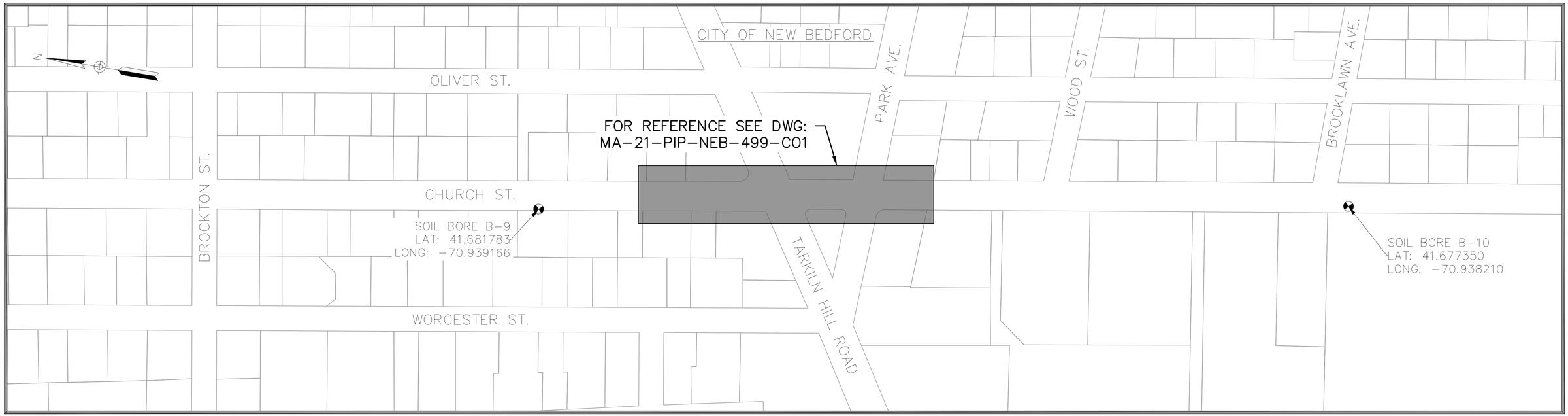
COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

FIELD VERIFY DIMENSIONS PRIOR TO PIPE FABRICATION

G:\EversourceEnergy\507102597_New_Bedford_RelayPlan\drawing_Tarkiln_Street_SetICoverIndex\

Aug 05, 2021 - 4:31pm



GENERAL SITE PLAN

SCALE: 1" = 100'

GENERAL NOTES

1. EXISTING CONDITIONS SHOWN HEREON ARE BASED ON A SURVEY PERFORMED BY VHB BETWEEN SEPTEMBER AND NOVEMBER 2020.
2. CONTRACTOR IS REQUIRED TO PROTECT EXISTING UTILITIES, STRUCTURES, LANDSCAPE FEATURES, SIGNAGE, CURBS, ETC.; CARE SHALL BE TAKEN NOT TO DISTURB OR DAMAGE SUCH ITEMS AND THE CONTRACTOR WILL BE RESPONSIBLE TO REPAIR OR RESTORE ANY DAMAGE OR DISTURBANCE TO THE SATISFACTION OF THE CITY.
3. PROPOSED WORK SHALL BE PERFORMED AND COMPLETED IN COMPLIANCE WITH ALL PERMITS AND APPROVALS.
4. PROPOSED WORK SHALL BE PERFORMED AND COMPLETED IN COMPLIANCE WITH MASSDOT AND CITY OF NEW BEDFORD SPECIFICATIONS AND STANDARDS WHERE APPLICABLE UNLESS OTHERWISE SPECIFIED ON THESE PLANS AND ACCOMPANYING PROJECT SPECIFICATIONS.
5. PROPOSED WORK SHALL BE PERFORMED AND COMPLETED IN ACCORDANCE WITH THE EVERSOURCE BMP MANUAL.
6. ALL WORK SHALL BE PERFORMED PER EVERSOURCE, LOCAL, STATE, OSHA, AND FEDERAL REGULATIONS AND STANDARDS.
7. PROPERTY LINES, RIGHT-OF-WAY AND BUILDING LOCATION DATA SHOWN HEREON ARE APPROXIMATE AND HAVE BEEN PROVIDED BY VHB AND GIS DATA.
8. THE SURVEY BAND SHOWN ON THESE PLANS IS INTENDED TO SHOW THE DIRECTIONAL ORIENTATION OF THE PROPOSED PIPE AS WELL AS THE PROPOSED LOCATION AND ANGLE OF PROPOSED BENDS.
9. NATURAL RESOURCE INFORMATION SHOWN HEREON IS BASED ON INFORMATION PROVIDED BY SWCA.
10. METHODS OF EROSION CONTROL SHOWN HEREON IS BASED ON INFORMATION PROVIDED BY SWCA.
11. IF ANY OF THE FOLLOWING OCCUR A DRAWING REVISION IS REQUIRED AND MUST BE APPROVED AND/OR STAMPED BY THE ENGINEER OF RECORD. CHANGES CAN BE APPROVED AND/OR STAMPED BY A PROJECT ENGINEER, BUT THE ENGINEER OF RECORD MUST BE INFORMED.
    A. IF THE TIE-IN POINT MOVES TO A DIFFERENT SEGMENT OF PIPE IS SHOWN.
    B. IF A CHANGE IN THE LOCATION OF VALVES IS REQUIRED.
    C. IF THERE IS ANY CHANGE TO WHAT IS SHOWN ON THE DRAWING WITHIN 50 FT OF A PRESSURE REGULATING STATION, DISTRICT REGULATOR, OR GATE STATION.
    D. IF A CHANGE IN PIPE SIZE, MATERIAL, FITTINGS, OR WALL THICKNESS IS REQUIRED.
12. MINOR CHANGES SUCH AS OFFSETS MAY NOT REQUIRE DRAWING CHANGES.
13. CONSTRUCTION DRAWINGS ARE BASED ON EVERSOURCE HISTORICAL DOCUMENTATION AND HAVE NOT BEEN FIELD VERIFIED. WHEN THE PIPE IS EXPOSED AND VARIANCES TO THE CERTIFIED DRAWINGS ARE FOUND, CONTACT GAS ENGINEERING TO DETERMINE PATH FORWARD.
14. WORK LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. EXACT LOCATIONS OF TIE-INS SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION TO SUIT FIELD CONDITIONS AT THE SPECIFIC TIE-IN POINT. VERIFY LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO BEGINNING ANY TIE-IN WORK.
15. ALL LIVE GAS WORK INCLUDING BUT NOT LIMITING TO TAPPING OF FITTINGS ON LIVE MAINS, STOPPING, MANIPULATING VALVE, ABANDONMENT, SHALL BE PREFORMED BY, OR AT THE DIRECTION AND UNDER THE DIRECT SUPERVISION OF EVERSOURCE GAS PERSONNEL AND IN ACCORDANCE WITH THE WRITTEN PROCEDURE. DRAWING CHANGES MAY ALSO REQUIRE A CHANGE TO THE PROCEDURE.

GENERAL NOTES (CONTINUED)

16. IF THE PROJECT IS WITHIN 50 FEET OF A DISTRICT REGULATOR OR GATE STATION, ENSURE THAT A QUALIFIED I&R TECHNICIAN IS ON SITE.
17. EXISTING SERVICES SHOWN ON PLAN ARE FOR INFORMATION ONLY. PROPOSED SERVICES ARE NOT SHOWN ON PLANS AND ARE TO BE INSTALLED PER EVERSOURCE CONSTRUCTION STANDARDS.

CONSTRUCTION NOTES

1. THE PIPELINE WILL BE CONSTRUCTED IN ACCORDANCE WITH FEDERAL MINIMUM SAFETY REGULATIONS CFR 49, PART 192, "TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE"; ASME B31.8, "GAS TRANSMISSION AND DISTRIBUTION PIPING", CMR 220 PART 100, EVERSOURCE ENERGY GAS CONSTRUCTION STANDARDS AND APPLICABLE STATE REGULATIONS.
2. THE PROPOSED STEEL PIPELINE SHALL BE 16.00" OD X 0.375"WT AND PRITEC COATED UNLESS OTHERWISE INDICATED BY OWNER OR ON THESE PLANS. THE PIPE WILL HAVE A MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP) OF 90 PSIG, WITH A FUTURE MAOP OF 150 PSIG, AND WILL BE PRESSURE TESTED TO A MINIMUM OF 225 PSIG, FOR A MINIMUM DURATION OF 4-HOURS. A PRESSURE CHART RECORDER, PROVIDED BY EVERSOURCE, WILL BE REQUIRED. TEST MEDIUM WILL BE AIR OR NITROGEN AND WILL BE PROVIDED BY THE CONTRACTOR.
3. THE PROPOSED PLASTIC PIPELINE SHALL BE 8" HDPE 3408/4710 SDR11 PERFORMANCE PIPE UNLESS OTHERWISE INDICATED BY OWNER OR ON THESE PLANS. THE PIPE WILL BE PRESSURE TESTED TO A MINIMUM OF 90 PSIG FOR A MINIMUM OF DURATION OF 4-HOURS. A PRESSURE CHART RECORDER, PROVIDED BY EVERSOURCE, WILL BE REQUIRED. TEST MEDIUM WILL BE AIR OR NITROGEN AND WILL BE PROVIDED BY THE CONTRACTOR.
4. CONTRACTOR WILL MAINTAIN A 12-INCH MINIMUM CLEARANCE (24" PREFERRED) BETWEEN THE NEW GAS PIPE AND FOREIGN STRUCTURES OR OTHER UTILITIES. ANY VARIANCE MUST BE REVIEWED AND APPROVED BY EVERSOURCE ENGINEERING.
5. PROPOSED PIPE SHALL MAINTAIN A 12-INCH MINIMUM CLEARANCE (24" PREFERRED) FROM EXISTING GAS PIPE.
6. ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES AND OTHER DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) INCLUDING ALL REVISIONS AND ADDENDA. CONTRACTOR IS TO SUPPLY THESE ITEMS.
7. ALL VEHICLES ARE TO BE HIGHLY VISIBLE USING ROTATING BEACONS AND BE MARKED BY USE OF TRAFFIC CONES.
8. CONTRACTOR SHALL SUPPLY TEMPORARY ROAD SIGNS AS NECESSARY.
9. ALL TRENCH EXCAVATION PROTECTION SYSTEMS SHALL BE IN COMPLIANCE WITH OSHA SPECIFICATIONS.
10. LOCATION OF ANY IDENTIFIED UNDERGROUND UTILITIES IS APPROXIMATE ONLY, AND IS NOT WARRANTED TO BE CORRECT. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT INDICATED ON THESE PLANS WHICH MAY REQUIRE ADDITIONAL OFFSETS IN THE PIPELINE. ALL EXISTING UTILITIES SHALL BE VERIFIED BY CONTRACTOR FOR SERVICE, SIZE, INVERT ELEVATIONS, LOCATION, ETC.
11. THE PIPE COATING TYPE, LOCATION, AND LENGTH IDENTIFIED ON THE DRAWINGS IS TO BE VERIFIED PRIOR TO CONSTRUCTION BASED ON ACTUAL FIELD CONDITIONS. THE CONTRACTOR WILL PROVIDE THE APPROPRIATE PIPE COATING TYPE, LOCATION, AND LENGTH AS DETERMINED BY THE CONSTRUCTION MANAGER BASED ON ACTUAL CONDITIONS.
12. FIELD JOINT COATING SHALL BE CONDUCTED IN ACCORDANCE WITH EVERSOURCE STANDARDS AND SPECIFICATIONS.

CONSTRUCTION NOTES (CONTINUED)

13. MAINTAIN A MINIMUM VERTICAL DISTANCE OF 3' FROM THE ROAD SURFACE TO TOP OF PIPE.
14. CONTRACTOR MUST NOTIFY DIG SAFE (811) AT LEAST 72 HOURS PRIOR TO THE START OF CONSTRUCTION. SATURDAYS, SUNDAYS, AND HOLIDAYS ARE EXCLUDED FROM THE 72-HOUR TIME SPAN, NOT CONSIDERED BUSINESS WORKDAYS.
15. EXISTING PIPELINE WILL BE ABANDONED IN-PLACE.
16. ALL TRENCHES SHALL EITHER BE BACKFILLED OR COVERED WITH STEEL SHEET AT THE END OF DAY.
17. SOIL SPOIL PILES SHALL BE PLACED DIRECTLY NEXT TO THE TRENCH IN PREPARATION FOR BACKFILLING OF PROPOSED PIPE. ANY SOIL MATERIAL BROUGHT FROM AN OFF-SITE LOCATION TO THE PROJECT SITE SHALL BE STORED IN AN UPLAND, NON-JURISDICTIONAL LOCATION AND SURROUNDED WITH APPROPRIATE EROSION CONTROL MEASURES.
18. NO EQUIPMENT REFUELING MAY TAKE PLACE WITHIN WETLANDS, THE 100 FT BUFFER ZONE, 25 FT RIVERFRONT AREA, OR FLOODPLAIN.
19. SILT SACKS SHALL BE INSTALLED IN ALL CATCH BASINS IN ACTIVE CONSTRUCTION ZONES IN ADVANCE OF ALL EXCAVATIONS.
20. MATERIALS SHALL NOT BE STORED WITHIN CHURCH STREET RIGHT-OF-WAY OR SIDEWALK. ANY MATERIALS STORED ON PUBLIC RIGHT-OF-WAY MUST BE APPROVED IN ADVANCE BY EVERSOURCE AND CITY OF NEW BEDFORD.

ALIGNMENT SHEET PLAN VIEW LEGEND

- 11+00 — PROPOSED 8-INCH PLASTIC GAS LINE
- 11+00 — PROPOSED 16-INCH STEEL GAS LINE
- RETIRED PIPING
- CENTER OF ROAD
- PAVEMENT
- PARCEL BOUNDARY
- EXISTING FENCE
- EROSION CONTROL BARRIER
- CHAIN LINK FENCE
- EXISTING GAS LINE
- OVERHEAD WIRE
- DRAIN LINE
- SEWER LINE
- WATER LINE
- ELECTRIC LINE
- STONE WALL
- DELINEATED WATERCOURSE CENTERLINE
- 100-FT STREAM/WETLAND BUFFER
- BORDERING VEGETATED WETLAND (BVW)
- WETLAND FLAG
- 10-FT & 25-FT NO DISTURBANCE ZONE
- 1' CONTOUR
- EXISTING TREELINE
- UTILITY/LIGHT POLE
- MANHOLES
- CATCH BASIN
- FIRE HYDRANT
- GATES/VALVES
- SOIL BORE LOCATIONS

PROFILE VIEW LEGEND

- PROPOSED 8-INCH PLASTIC GAS LINE
- PROPOSED 16-INCH STEEL GAS LINE
- EXISTING GRADE

SCALE LIST

0 10 20 40 60 80
VERTICAL SCALE: 1" = 20'
0 10 20 40 60 80
HORIZONTAL SCALE: 1" = 20'

COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

FIELD VERIFY DIMENSIONS PRIOR TO PIPE FABRICATION

No.	Description	Date	Dw/Ck/Ap
00	ISSUED FOR CONSTRUCTION	08/13/21	RJP/MWF/DBD

Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

TARKILN STREET SECTION - 145+70 TO 150+47

GENERAL OVERVIEW

SCALE: N.T.S. SHEET 2 OF 17

Drawn by / Date	Checked by / Date	Sheet Number	Rev. No.
RJP / 07-06-2021	MWF / 07-06-2021	MA-21-PIP-NEB-499-G01	00
Approved by / Date	MA21PIPNEB499		
DBD / 07-09-2021			

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Aug 05, 2021 - 4:43pm

MOTT MACDONALD

SOIL BORING LOG

BORING NO.: **B-9**

Project: New Bedford Relay Project
Location: New Bedford, Massachusetts, United States
Client: Eversource Energy
Drilling Co.: New England Boring
Driller: Gary Twombly, Jr.

Project No.: 507102597
Project Mgr: Scott Kibby, P.E.
Field Eng. Staff: Alex Joseph Toporek, E.I.T.
Date/Time Started: 2021 January 15 at 7:50 am
Date/Time Finished: 2021 January 15 at 10:43 am

Elevation: 111 ft. **Vertical Datum:** NAVD 1988
Boring Location: 581 Church Street, New Bedford, MA 02745 Southbound Parking Lane
Coord.: N: 41.681782901 E: -70.939166368
Horizontal Datum: World Geodetic System (WGS) 1984

Item	Casing	Sampler	Core Barrel
Type	HW	SS	-
Length (ft)	5	2	-
Inside Dia. (in.)	4	-	-
Hammer Wt. (lb.)	140	-	-
Hammer Fall (in.)	30	-	-

Rig Make & Model: CME-75
☑ Truck ☐ Tripod ☐ Cat-Head
☐ Rubber Tire ☐ Geoprobe ☑ Winch
☐ Track ☐ Air Track ☑ Roller Bit
☐ Skid ☐ Cutting Head

Hammer Type
☐ Safety ☐ Doughnut ☑ Automatic ☐

Drilling Fluid
☐ Bentonite ☐ Polymer ☑ Water ☐ None

Drill Rod Size:
Casing Advance
Driven Split Spoon / Drive and Wash

Depth/ Elev. (ft)	Sample No. / Interval (ft)	Rec. / Pen. (in)	Sample Blows per 6"	Stratum Graphic	USCS Group Symbol	Visual - Manual Identification & Description* (density/consistency, color, Group Name & Symbol, maximum particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Field Tests: Dilatancy	Toughness	Plasticity	Dry Strength	Remarks
110	SS-S-1 0.0'- 2.0'	13/24	22 16 10 7		FILL SM	0.5 8" ASPHALT PAVEMENT Medium dense, black, gray, Well-Graded SAND (SW), fine- to coarse-grained, moist, STRUCTURAL FILL Medium dense, light brown, Silty SAND (SM), trace Gravel, medium-grained, dry, GLACIAL TILL	-	-	-	-	Sample S-1 sent for environmental sampling
	SS-S-2 2.0'- 4.0'	4/24	6 8 11 14		SM	Medium dense, light brown, Silty SAND (SM), trace Gravel, medium-grained, dry, GLACIAL TILL	-	-	-	-	Sample S-2 recovery only gravel wash / Additional oversized split spoon redriven from 2' - 4' (Sample S-2A) gathered for environmental testing because of insufficient recovery / Sample S-2A used for visual classification
5 105	SS-S-3 4.0'- 6.0'	14/24	20 27 39 29		SM	Very dense, light brown, Silty SAND (SM), trace Gravel, trace Silt, fine-grained, moist, GLACIAL TILL	-	-	-	-	Sample S-3 sent for environmental sampling
	SS-S-4 6.0'- 8.0'	19/24	36 41 36 28		SM	Very dense, light brown, Silty SAND (SM), trace Gravel, fine-grained, moist, GLACIAL TILL	-	-	-	-	Sample S-4 sent for environmental sampling
10	SS-S-5 8.0'- 10.0'	14/24	23 23 21 22		SM	Dense, light brown, Silty SAND (SM), trace Gravel, fine- to coarse-grained, moist, GLACIAL TILL	-	-	-	-	
100							-	-	-	-	
	SS-S-6 13.0'- 14.8'	0/22	73 69 62 46/4"			NO RECOVERY	-	-	-	-	No recovery from Sample S-6 / Additional oversized split spoon redriven from 13' - 15' (Sample S-6A) / Sample S-6A gathered GRANODIORITE coarse-grained Gravel and prevented recovery in orginalin split spoon sample
15							-	-	-	-	
	SS-S-7 18.0'- 20.0'	18/24	26 23 25 29		SM	Dense, light brown, Silty SAND (SM), fine-grained, wet, GLACIAL TILL	-	-	-	-	18.00' - 20.00' - decomposed rock fragments in split spoon sample

Water Level Data

Date	Time	Elapsed Time (hr)	Depth in feet to: Bot. of Casing	Bottom of Hole	Water

Sample Type
O Open End Rod
T Thin-Wall Tube
U Undisturbed Sample
SS Split Spoon Sample
G Geoprobe

Notes:
1. The northing and easting coordinates were estimated from online mapping services and were not surveyed. The coordinates should be considered close approximations of the location.
2. The elevation was estimated from the New Bedford North Quadrangle Map (2018) prepared by the United States Geological Survey (USGS) and should be considered a close approximation.

Boring No.: **B-9**

Field Test Legend: Dilatancy: N - None S - Slow R - Rapid; Toughness: L - Low M - Medium H - High; Plasticity: NP - Non-Plastic L - Low M - Medium H - High; Dry Strength: N - None L - Low M - Medium H - High VH - Very High

NOTES: 1.) "ppd" denotes soil sample average diametral pocket penetrometer reading. 2.) "ppa" denotes soil sample average axial pocket penetrometer reading.
3.) Maximum Particle Size is determined by direct observation within limitations of sampler size. 4.) Soil identifications and field tests based on visual-manual methods per ASTM D2488.

MOTT MACDONALD

SOIL BORING LOG
(continued)

BORING NO.: **B-9**

Depth/ Elev. (ft)	Sample No. / Interval (ft)	Rec / Pen. (in)	Sample Blows per 6"	Stratum Graphic	USCS Symbol Group	Visual - Manual Identification & Description* (density/consistency, color, Group Name & Symbol, maximum particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Field Tests: Dilatancy	Toughness	Plasticity	Dry Strength	Remarks*
95											
	SS-S-8 23.0'- 25.0'	19/24	34 34 44 42		SM	Very dense, light brown, Silty SAND (SM), fine-grained, wet, GLACIAL TILL	-	-	-	-	
25 90						25.0 END OF BORING AT 25 FEET - MONITORING WELL INSTALLED FROM 2 FEET TO 12 FEET					
30											
85											
35											
40											
80											
45											

NOTES:

PROJECT NO.: **507102597** BORING NO.: **B-9**

NOTES: 1.) "ppd" denotes soil sample average diametral pocket penetrometer reading. 2.) "ppa" denotes soil sample average axial pocket penetrometer reading.
3.) Maximum Particle Size is determined by direct observation within limitations of sampler size. 4.) Soil identifications and field tests based on visual-manual methods per ASTM D2488.

COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

FIELD VERIFY DIMENSIONS PRIOR TO PIPE FABRICATION

No.	Description	Date	Dw/Ck/Ap
00	ISSUED FOR CONSTRUCTION	08/13/21	RJP/MWF/DBD

Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA
TARKILN STREET SECTION - 145+70 TO 150+47
BORE LOG B-9

SCALE: N.T.S. SHEET 3 OF 17

Drawn by / Date	Checked by / Date	Sheet Number	Rev. No.
RJP / 07-06-2021	MWF / 07-06-2021	MA-21-PIP-NEB-499-G02	00
Approved by / Date: DBD / 07-09-2021	MA21PIPNEB499		

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Aug 05, 2021 - 4:50pm

NEW BEDFORD RELAY - BILL OF MATERIALS						
NO	QTY	UNIT	SIZE	MAXIMO #	DESCRIPTION	REMARKS
9	2	EA	2"	562087	VALVE,BALL, 2 IN IPS, POLYETHYLENE, SDR 11, BUTT WELD, W/ FULL PORT OPENING	
54	AS REQ'D	EA	2"	545367	ELBOW,PIPE, 90 DEG, 2 IN SDR 11, BUTT WELD ENDS, POLYETHYLENE, P100	
57	AS REQ'D	EA	8"	545343	ELBOW,PIPE, 90 DEG, 8 IN SDR 11, BUTT WELD ENDS, POLYETHYLENE, P100	
63	AS REQ'D	EA	8"	545340	ELBOW,PIPE, 45 DEG, 8 IN SDR 11, BUTT WELD ENDS, POLYETHYLENE, P100	
92	2	EA	8"	542540	CAP,PIPE, 8 IN IPS SDR 11, BUTT END, POLYETHYLENE, P100	
112	3	EA	2"	546256	FITTING, TRANSITION, 2 IN IPS CS X 2 IN IPS, PE4710, SDR 11, STEEL WELD X PLASITC, BUTT WELD	
154	1	EA	8"x1"	560788	TEE,PIPE, NON-BLOWING, 8 X 1 IN IPS SDR 11, ELECTROFUSION X COMPRESSION ENDS, LIGHT WALL, POLYETHYLENE, PE3408/PE100, 25/BOX	
176	2	EA	8"x2"	577623	FITTING,TEE, 8 IN IPS X 2 IN IPS, HIGH VOLUME ELECTROFUSION TAPPING TEE WITH BUTT FUSION OUTLET, HDPE, BLACK, ASTM F1055 , RESTRICTED PURCHA	
260	3	EA	2"	580024	FITTING,TEE, FLAT BOTTOM, 3-WAY, 2 IN, FOR USE WITH SHORTSTOPP 60, SHORTSTOP II & SHORTSTOPP 275 PLUGGING MACHINES	26-0220-0000
306	2	EA	1"	542509	CAP, PIPE, 1 IN, FNPT END, SCH 40, MI, ASTM A197, 150 LB	
360	20	FT	2"	592667	PIPE, 2 IN IPS SDR 11, 20 FT LG, HDPE PE4710, BLACK, ASTM D2513, 102 PSIG, W/ YELLOW STRIPES	
364	476	FT	8"	554010	PIPE, 8 IN IPS X 8-3/8 IN X 0.784 IN THK WALL SDR 11, 40 FT LG, POLYETHYLENE, PE3408/PE100	
371	1	EA	1"	583182	FITTING,CAP, METFIT, 1 IN IPS X 0.119 IN THK WALL SDR 11, ASTM F1924 , FOR CAPPING PE GAS DISTRIBUTION PIPE AND TUBING, REPLACED IN 542612	
374	1	EA	2"	581633	FITTING,CAP, METFIT, 2 IN IPS X 0.216 IN THK WALL SDR 11, ASTM F1924 , FOR CAPPING PE GAS DISTRIBUTION PIPE AND TUBING, NSTAR M-410	
503	2	EA	1"	587271	FITTING, TEE, PUNCH-IT, 3/4 IN WELD INLET X 1 IN BUTT WELD X 3/4 SOCKET WELD OUTLET, CS BODY, 3/8 IN DIA TAP TOOL, NSTAR M-143	
768	475	FT	16"	592782	PIPE, BUTT END, 16 IPS X 3/8 IN THK WALL, 15-1/4 IN ID X 16 IN OD, 45 FT LG, ELECTRIC RESISTANCE WELD, CS, GR B, API 5L, PRITEC 10/40 COATED	
1049	2	EA	16"	542543	CAP,PIPE, 16 IN X 15.25 IN BORE X 0.375 IN THK WALL, WELDED END, CS, ASTM A234, ANSI B16.9, FOR USE IN GAS DISTRIBUTION	
A	AS REQ'D	EA	16"	545355	ELBOW, LR, 90°, SEGMENTABLE, BW, SCH 40, ASTM A860, WPHY52, ASME B16.9	
B	AS REQ'D	EA	16"	545353	ELBOW, LR, 45°, SEGMENTABLE, BW, SCH 40, ASTM A860, WPHY52, ASME B16.9	
C	AS REQ'D	EA	16"		ELBOW, LR, 22.5°, SEGMENTABLE, BW, SCH 40, ASTM A860, WPHY52, ASME B16.10	
D	1	EA	2"	578396	FITTING,TEE, FLAT BOTTOM, 2 IN, FOR USE WITH SHORTSTOPP 60, SHORTSTOP II & SHORTSTOPP 275 PLUGGING MACHINES	26-0319-0000

COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

FIELD VERIFY DIMENSIONS PRIOR TO PIPE FABRICATION

No.	Description	Date	Dw/Ck/Ap
00	ISSUED FOR CONSTRUCTION	08/13/21	RW/JVV/DBD

Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

NEW BEDFORD, MA

BILL OF MATERIALS

SCALE: AS SHOWN

SHEET 4 OF 17

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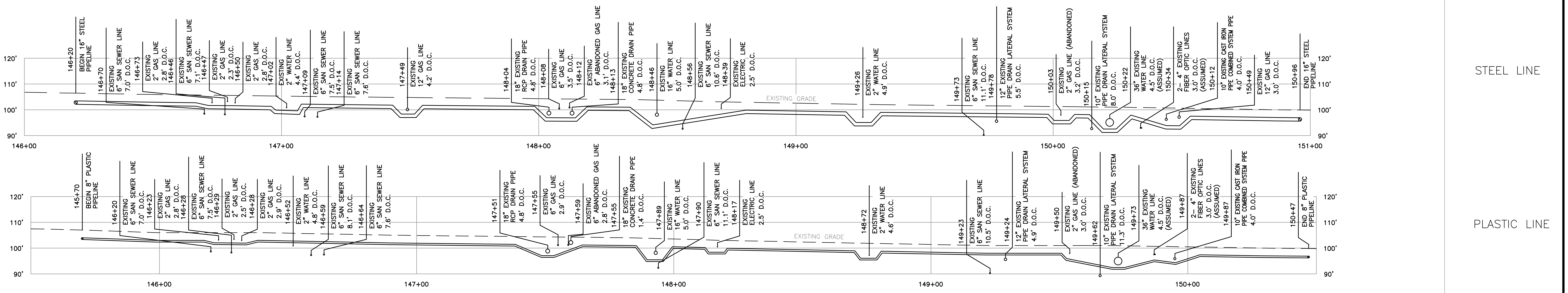
RW / 06-28-2021	JVV / 07-28-2021	MA-21-PIP-NEB-499-M01	00
Approved by / Date	MA21PIPNEB499		
DBD / 07-28-2021			

PLAN VIEW

SCALE:1" = 20'

1) INSTALLATION TO BE IN ACCORDANCE WITH EVERSOURCE BEST MANAGEMENT PRACTICE MANUAL AND EVERSOURCE OPERATIONS AND MAINTENANCE MANUAL.
2) PIPELINE TRENCHES SHALL BE REPAIRED IN ACCORDANCE WITH TRENCHING DETAILS ON SHEET MA–PIP–NEB–499–D03. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIRING LINE STRIPING, CURBING, AND THE FULL DEPTH OF PAVEMENT WITHIN THE TRENCH LIMITS TO MATCH EXISTING CONDITIONS. EVERSOURCE WILL CONDUCT MILL AND OVERLAY CURB TO CURB THE FOLLOWING CONSTRUCTION SEASON.
3) EROSION CONTROLS ARE TO BE INSTALLED ON THE DOWNSLOPE SIDE OF AREAS OF DISTURBANCE WHERE THERE IS POTENTIAL FOR SOIL EROSION/SEDIMENT RUNOFF. SEE APPENDIX A OF EVERSOURCE BMP MANUAL AND DETAILS ON SHEET MA–PIP–NEB–499–D08 FOR MORE INFORMATION ON THE INSTALLATION OF EROSION CONTROLS.
4) EXTREME CARE SHALL BE TAKEN WHEN WORKING IN CLOSE PROXIMITY TO THE EXISTING STEEL EVERSOURCE GAS MAIN.
5) CONTRACTOR SHALL SHORE/PROTECT UTILITY POLES AS REQUIRED TO INSTALL THE PROPOSED GAS MAINS.
6) ALL EXISTING NON–ADA COMPLIANT WHEELCHAIR RAMPS IN THE WORK AREA (EASTERN SIDEWALK) SHALL BE REPLACED WITH AN ADA–COMPLIANT WHEELCHAIR RAMP. SEE DETAILS ON SHEET MA–PIP–NEB–499–D09.



PROFILE VIEW

HORIZONTAL SCALE:1" = 20'
VERTICAL SCALE:1" = 20'

VERTICAL SCALE: 1" = 20'

HORIZONTAL SCALE: 1" = 20'

CARLOS J. CHAVES
No. 49237

8/13/2021

MOTT MACDONALD

FIELD VERIFY DIMENSIONS PRIOR TO PIPE FABRICATION

No.	Description	Date	Dw/Ck/Ap
00	ISSUED FOR CONSTRUCTION	08/13/21	RJP/MWF/DBD

Revision/Status

EVERSOURCE
ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA
TARKILN STREET SECTION - 145+70 TO 150+47
16" AND 8" PIPELINE ALIGNMENT SHEET

SCALE1" = 20'
SHEET 5 OF 17

Drawn by / Date	Checked by / Date	Sheet Number	Rev. No.
MWF / 6/10/2021	MWF / 06/10/2021	MA-21-PIP-NEB-499-C01	00
Approved by / Date DBD / 07-19-2021	MA21PIPNEB499		

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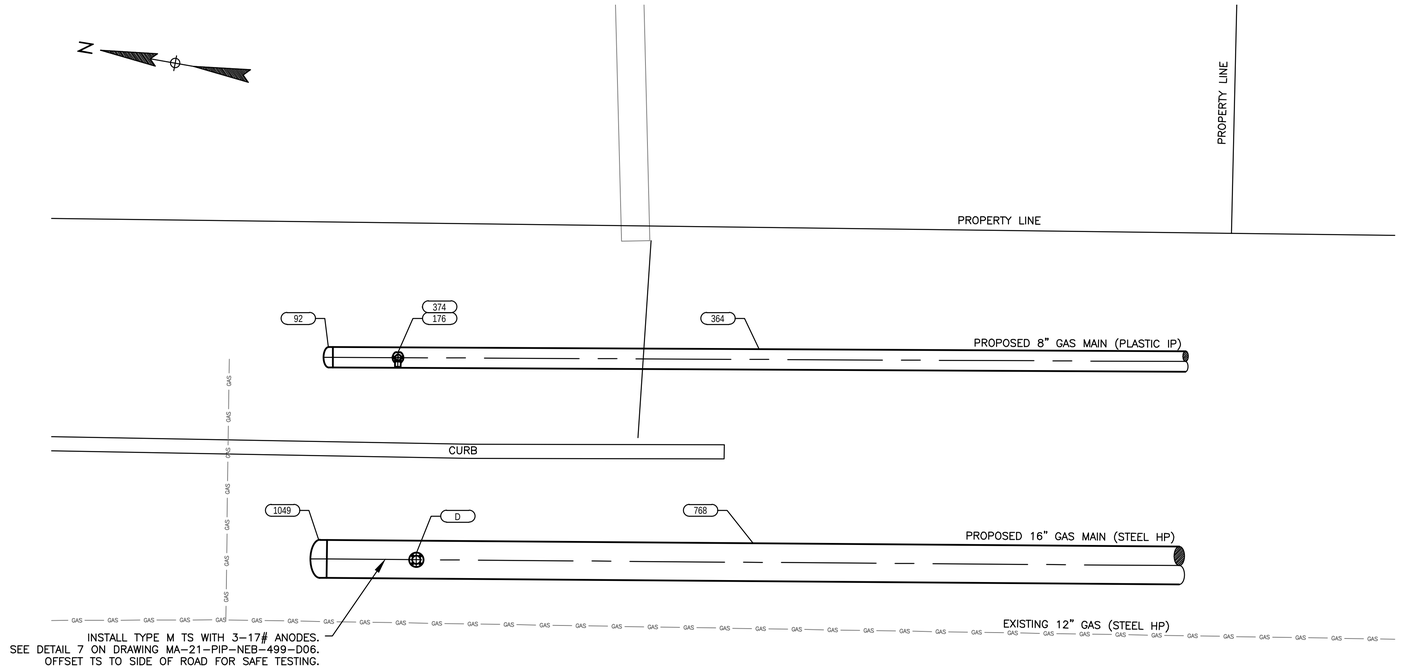

TIE-IN AT STA. 146+20 (1)

(BEGINNING OF PROPOSED PIPING)
SCALE: 3/8"=1'-0"

COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

FIELD VERIFY DIMENSIONS PRIOR TO PIPE FABRICATION

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00	ISSUED FOR CONSTRUCTION	08/13/21	RW/JVV/DBD

Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

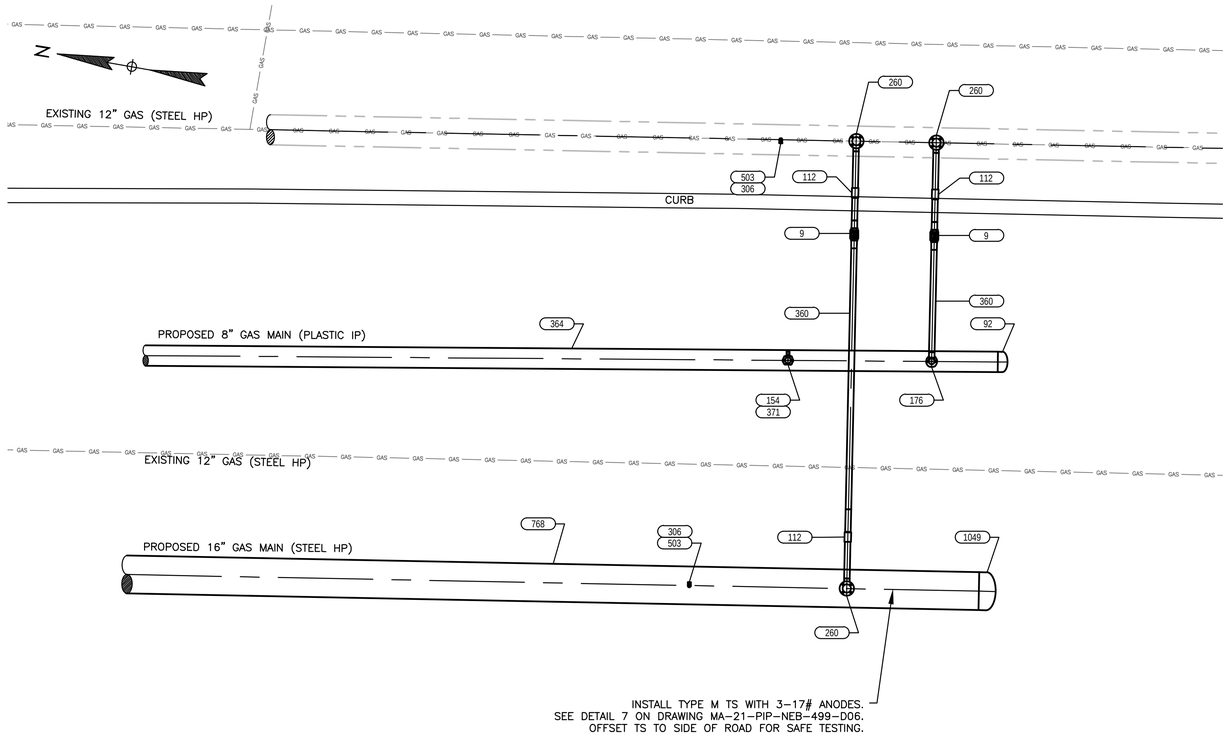
NEW BEDFORD, MA

TIE-IN DETAIL

SCALE: AS SHOWN

SHEET 6 OF 17

Drawn by / Date	Checked by / Date	Sheet Number	Rev. No.
RW / 06-28-2021	JVV / 07-28-2021	MA-21-PIP-NEB-499-D01	00
Approved by / Date: DBD / 07-28-2021	MA21PIPNEB499		



TIE-IN AT STA. 150+96 (2)

(END OF PROPOSED PIPING)
SCALE: 3/8"=1'-0"

COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

FIELD VERIFY DIMENSIONS PRIOR TO PIPE FABRICATION

No.	Description	Date	Dw/Ck/Ap
00	ISSUED FOR CONSTRUCTION	08/13/21	RW/JVV/DBD

Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

NEW BEDFORD, MA

TIE-IN DETAIL

SCALE: AS SHOWN

SHEET 7 OF 17

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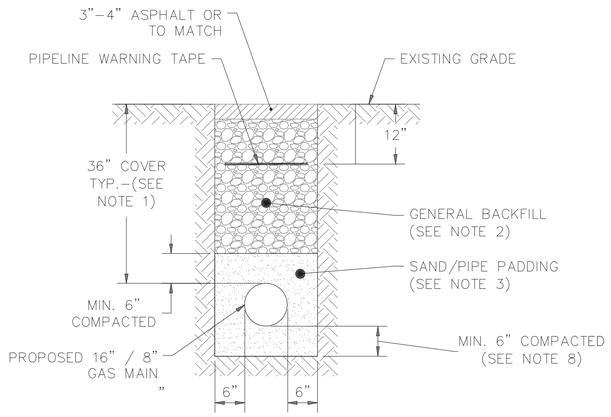
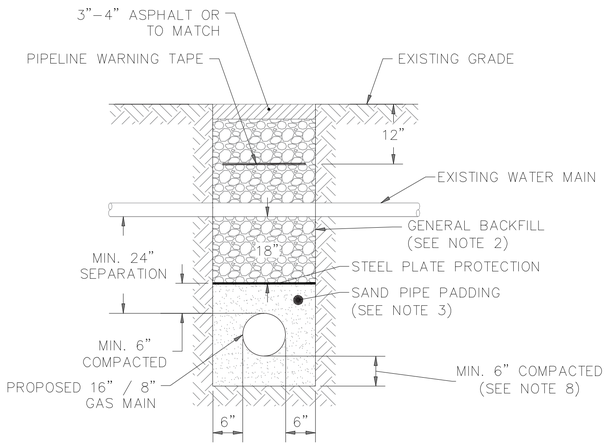
RW / 06-28-2021	JVV / 07-28-2021	MA-21-PIP-NEB-499-D02	00
Approved by / Date	MA21PIPNEB499		
DBD / 07-28-2021			

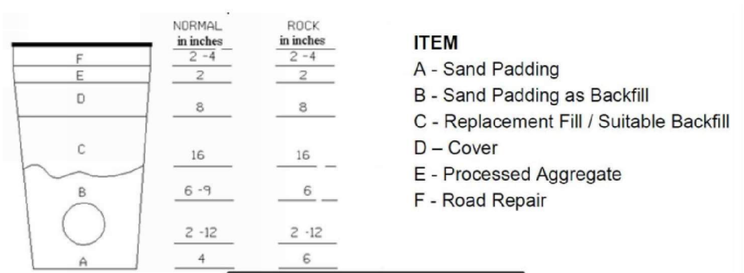


TYPICAL TRENCH

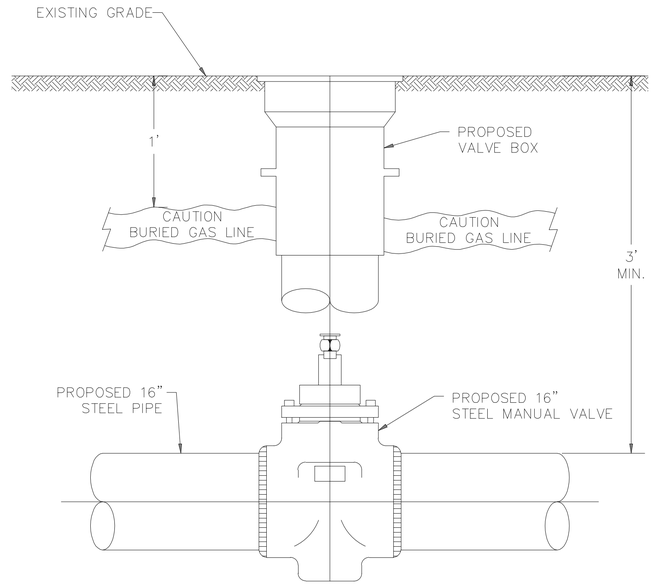


CROSSING UNDER EXISTING WATER MAIN

NOTES:
1. MINIMUM PIPELINE COVER IS 36" IN TYPICAL AREAS. SEE PROJECT DRAWINGS FOR MORE INFORMATION ON AREAS WHERE DEPTH OF COVER IS OTHER THAN 36".
2. GENERAL BACKFILL SHALL CONTAIN NO STONES OR CLODS GREATER THAN 6".
3. PIPE PADDING SHALL BE SAND OR ROCK FREE SOIL (NO ROCKS LARGER THAN 3/8" DIAMETER.
4. IN NATURAL RESOURCE AREAS, BACKFILL SHALL BE NATIVE MATERIAL AND SHALL MATCH PROFILE DEPTH OF ADJACENT NATIVE, UNDISTURBED SOIL.
5. PROPOSED PIPE SHALL MAINTAIN MIN. 12"-HORIZONTAL AND VERTICAL SEPARATION FROM ALL EXISTING UTILITIES. (24" SEPARATION PREFERRED).
6. BACKFILL SHALL BE COMPACTED IN 12" LIFTS IN ACCORDANCE WITH EVERSOURCE STANDARDS.
7. ALL TRENCH CONSTRUCTION SHALL CONFORM TO APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
8. IN AREAS OF CONSOLIDATED ROCK A MINIMUM DEPTH OF PIPE PADDING UNDERNEATH PIPE TO BE 6".
9. FUTURE FINAL RESTORATION OF THE ROAD SHALL BE COORDINATED WITH THE CITY OF NEW BEDFORD AND WILL BE COMPLETED FROM EASTERN CURB LINE TO CENTERLINE OF ROAD.



1 OPEN CUT TRENCHING
NOT TO SCALE



NOTES:
1. CONTRACTOR TO FURNISH ALL MATERIALS.

2 PROPOSED 16" MANUAL VALVE (STEEL)
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
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REGISTERED PROFESSIONAL ENGINEER
8/13/2021

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FIELD VERIFY DIMENSIONS PRIOR TO PIPE FABRICATION

No.	Description	Date	Dw/Ck/Ap
00	ISSUED FOR CONSTRUCTION	08/13/21	RJP/MWF/DBD

Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

TARKILN STREET SECTION - 145+70 TO 150+47

TYPICAL DETAILS

SCALE: N.T.S. SHEET 8 OF 17

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RJP / 07-06-2021	MWF / 07-06-2021	MA-21-PIP-NEB-499-D03	00
Approved by / Date: DBD / 07-09-2021	MA21PIPNEB499		

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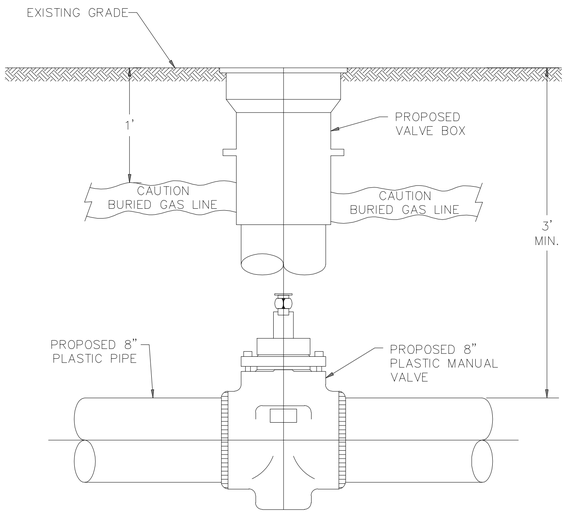
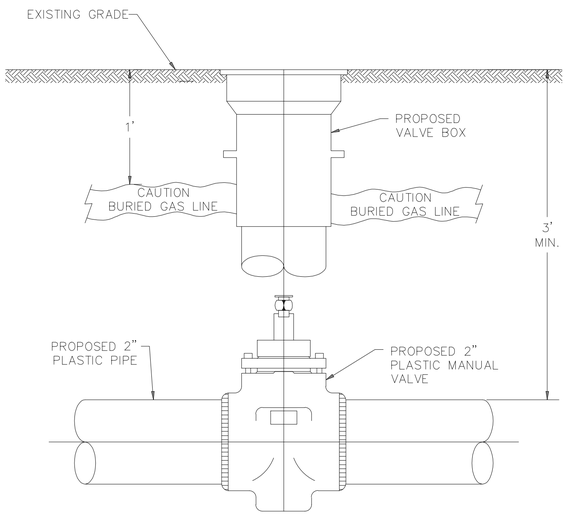


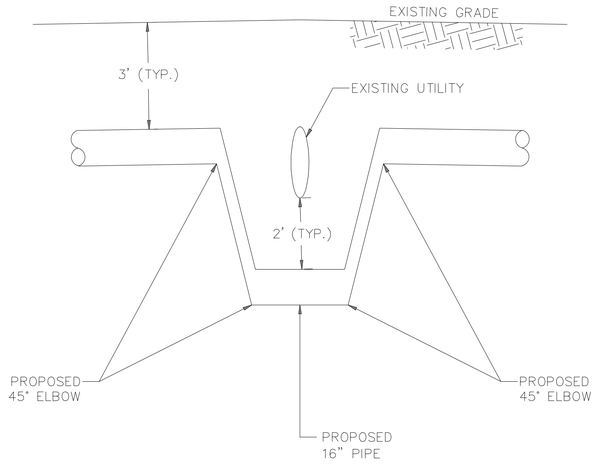
NOTES:
1. CONTRACTOR TO FURNISH ALL MATERIALS.

2 PROPOSED 8" MANUAL VALVE (PLASTIC)
NOT TO SCALE



NOTES:
1. CONTRACTOR TO FURNISH ALL MATERIALS.

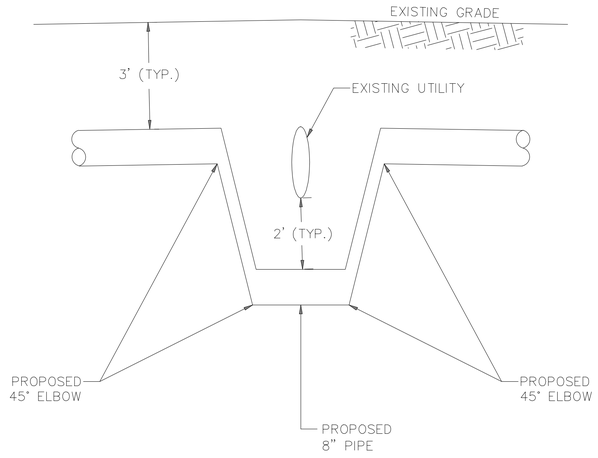
1 PROPOSED 2" MANUAL VALVE (PLASTIC)
NOT TO SCALE



NOTES:
1. PROPOSED PIPE SHALL MAINTAIN A MINIMUM OF 12" VERTICAL CLEARANCE FROM EXISTING UTILITY (2' CLEARANCE PREFERRED).

2 EXISTING UTILITY OFFSET CROSSING – 16" PIPELINE
NOT TO SCALE

WIDTH
VARIES



NOTES:
1. PROPOSED PIPE SHALL MAINTAIN A MINIMUM OF 12" VERTICAL CLEARANCE FROM EXISTING UTILITY (2' CLEARANCE PREFERRED).

3 EXISTING UTILITY OFFSET CROSSING – 8" PIPELINE
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

FIELD VERIFY DIMENSIONS
PRIOR TO PIPE FABRICATION

No.	Description	Date	Dw/Ck/Ap
00	ISSUED FOR CONSTRUCTION	08/13/21	RJP/MWF/DBD

Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

TARKILN STREET SECTION - 145+70 TO 150+47

TYPICAL DETAILS

SCALE: N.T.S. SHEET 9 OF 17

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RJP / 07-06-2021	MWF / 07-06-2021	MA-21-PIP-NEB-499-D04	00
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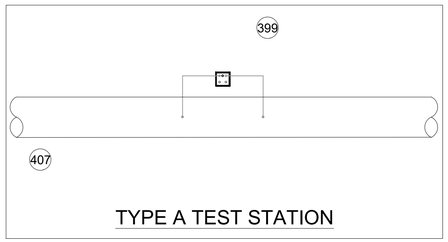
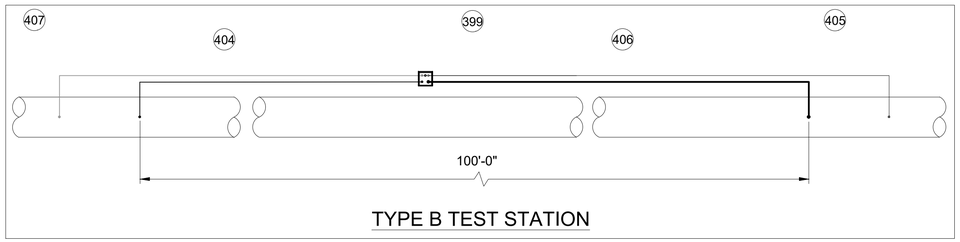


TYPE A TEST STATION

DETAIL CP1

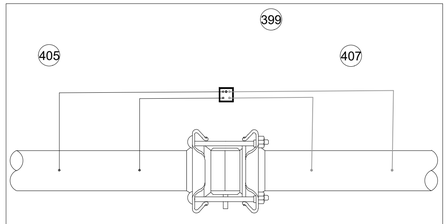
SCALE: 1/2" = 1'-0"



TYPE B TEST STATION

DETAIL CP2

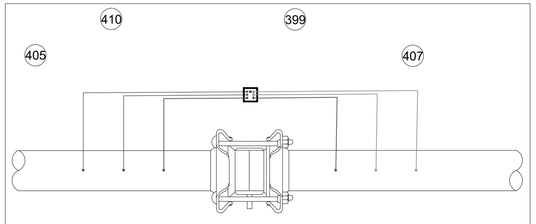
SCALE: 1/2" = 1'-0"



TYPE C TEST STATION

DETAIL CP3

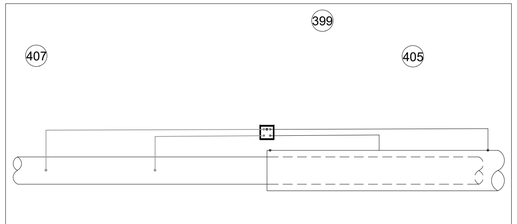
SCALE: 1/2" = 1'-0"



TYPE C TEST STATION - WITH #4 HWMPE CABLE

DETAIL CP4

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



TYPE D TEST STATION (INSULATED CASING)

DETAIL CP5

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

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COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

FIELD VERIFY DIMENSIONS PRIOR TO PIPE FABRICATION

No.	Description	Date	Dw/Ck/Ap
00	ISSUED FOR CONSTRUCTION	08/13/21	RJP/MWF/DBD

Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

TARKILN STREET SECTION - 145+70 TO 150+47

TYPICAL DETAILS

SCALE: N.T.S.

SHEET 10 OF 17

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RJP / 07-06-2021	MWF / 07-06-2021	MA-21-PIP-NEB-499-D05	00
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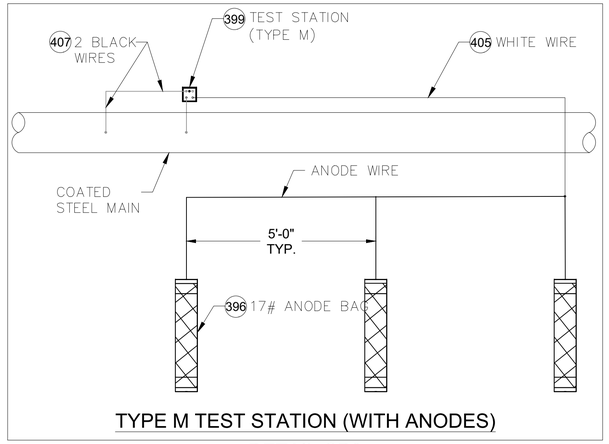
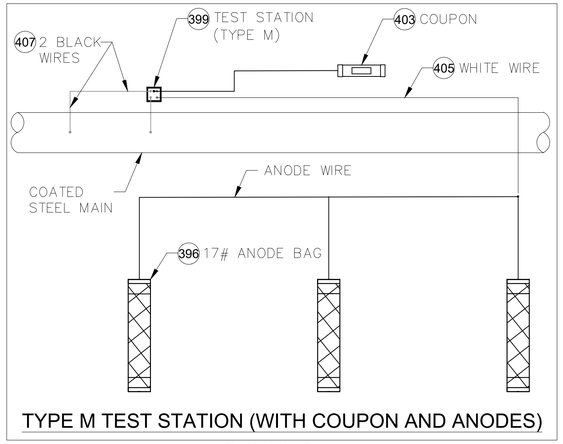


TYPE M TEST STATION (WITH ANODES)

DETAIL CP6

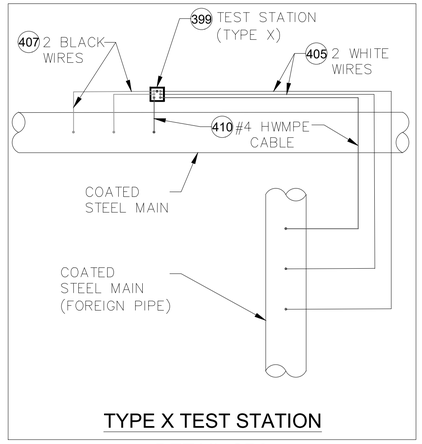
SCALE: 1/2" = 1'-0"



TYPE M TEST STATION (WITH COUPON AND ANODES)

DETAIL CP7

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



TYPE X TEST STATION

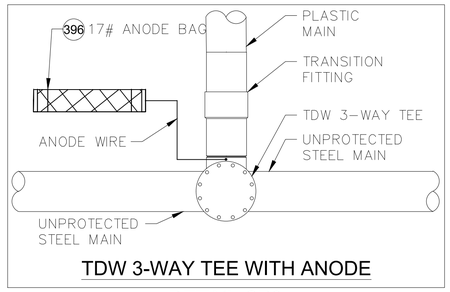
DETAIL CP8

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

CATHODIC PROTECTION BILL OF MATERIALS				
ITEM	MAXIMO NO.	DESCRIPTION	UNITS	QTY
396	577776	ANODE,BAG, 17 LB NET, HIGH POTENTIAL MAGNESIUM, W/ 10 FT #10 AWG TW ORANGE LEAD WIRE, PACKED IN CARDBOARD BOX 42 LB TOTAL WEIGHT	EA	6
398	590389	HOUSING, 50 V MAX, 10 AWG MAX, FOR PROTECTING TRACER WIRE SPLICES, USED WITH CONNECTOR IN 517626. 10/BAG	EA	6
399	590871	BOX VALVE, TEST STATION, CP TEST #178, 10-1/4 IN DIA. LID, 8-3/8 IN I.D. 16 IN H., ASTM A48 CL 25 CAST IRON, FOR OFF-ROAD USE ONLY	EA	2
400	508567	POWDER, CARTRIDGE, TYPE IS F-33, ALLOY , CAP COLOR CLEAR, 15 GM CHARGE, 20/PAC, FOR STEEL PIPE	BOX	1
401	559168	SLEEVE,ELECTRICAL, #14 TO 10 AWG, W/ THERMITE WELDER, FOR CATHODIC PROTECTION	EA	4
405	578415	WIRE,ELECTRICAL, THHN, 1/C, #10 AWG, STRANDED, WHITE, INSULATED, CU, 500 FT SPOOL, WIRE	ROLL	1
407	603139	WIRE,ELECTRICAL, THHN, 1/C, #10 AWG, STRANDED, BLACK, INSULATED, CU, 500 FT SPOOL,WIRE	ROLL	1
408	500804	WELDER,THERMITE, THERMITE, FOR GAS PIPE, #12 CABLE,HORIZONTAL STEEL PIPE 4 IN AND LARGER DIAMETER	EA	1
575	508572	PRIMER, 4 GAL/CASE, BROWN, FOR WAX TAPE, APPLICATION TEMP 0 TO 230 F, TEMCOAT 3000	EA	1
	603423	TAPE,WAX, 9 FT LG X 6 IN W X 70-90 MIL THK, 16 ROLLS/CS, ABOVE AND BELOW GROUND APPLICATIONS, TR-#2A WAX, ALUMINUM	CASE	2
	503674	TAPE,WAX, 9 FT LG X 4 IN W, **BELOW GROUND USE ONLY**, BROWN, 24 ROLLS/CS, **TR-1WAX**	EA	AS NEEDED
	603422	TAPE,WAX, 9 FT LG X **6 IN** W X 70-90 MIL THK, BROWN, 16 ROLLS/CS, BELOW GROUND USE ONLY, TR-1WAX	EA	AS NEEDED
	603433	WRAP, BLACK, 27 FT LG X 6 IN W (13.5SQFT/ROLL), ABOVE AND BELOW GROUND APPLICATIONS, MCO OUTERWRAP - MECHANICAL PROTECTION (Quantity as required)	FT	AS NEEDED
	593270	SLEEVE, HEATSHRINK, 24 in LG, W/CLOSURE TAB, BLACK, FOR 16 IPS GIRTH WELDS	FT	AS NEEDED
	578966	TAPE COAT, 2 IN, W x 50 MIL THK, GRAY, 12 ROLLS/CTN, TOOL	CASE	AS NEEDED
	578965	TAPE, COAT, 50 FT LG X 4 IN W X 50 MIL THK, GRAY, 6 ROLLS/CTN, TOOL	CASE	AS NEEDED
	578967	TAPE, COAT, 6 IN W X 50 MIL THK, TOOL	CASE	AS NEEDED
	581534	TAPE, COAT, 25 FT LG X 2 IN W ("T" Tape)	CASE	AS NEEDED

NOTES:

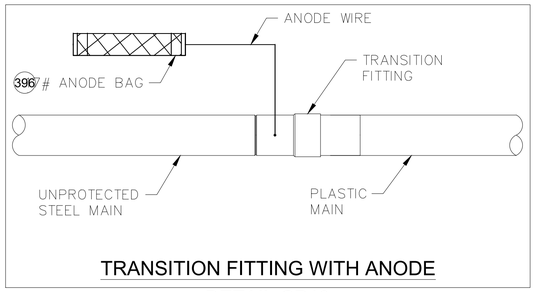
1. ALL TEST STATION BOXES SHOULD BE INSTALLED IN A SAFE LOCATION WHERE ONE INDIVIDUAL CAN SAFELY OPEN AND ACCESS THE TEST WIRES. ALL TEST WIRES INSIDE THE BOX SHOULD HAVE ENOUGH SLACK ON THE WIRES SO THEY CAN EXTEND A MINIMUM OF 12" ABOVE GRADE.
2. FOR TYPE A TEST STATIONS, THE TWO WIRES SHOULD BE THERMITE WELDED TO THE COATED STEEL MAIN AND BE THE SAME COLOR. (COUPONS COULD BE ADDED TO THE TEST STATION TYPE).
3. FOR TYPE B TEST STATIONS, EACH OF THE FOUR WIRES SHOULD BE A DIFFERENT COLOR AND DOCUMENTED
4. FOR TYPE C TEST STATIONS, THE WIRES SHOULD BE THE SAME COLOR ON EACH SIDE OF THE INSULATED COUPLING. (ANODES AND/OR COUPONS COULD BE ADDED TO THIS TEST STATION TYPE).
5. FOR TYPE D TEST STATIONS WHICH ARE AT A CASING, WHITE WIRES ARE NORMALLY INSTALLED ON THE STEEL CASING AND BLACK WIRES ARE INSTALLED ON THE CARRIER PIPE. (ANODES AND/OR COUPONS COULD BE ADDED TO THIS TEST STATION TYPE).
6. FOR TYPE M TEST STATIONS, THE TWO WIRES THERMITE WELDED TO THE CARRIER PIPE SHOULD BE THE SAME COLOR WIRE. THERE IS ALSO MAGNESIUM ANODE(S) WIRE(S) LOCATED INSIDE THE TEST STATION BOX.THE WIRE COLOR (TYPICALLY ORANGE) FOR THE ANODES. IF THE ANODE WIRES ARE SPLICED TO A COMMON ANODE HEADER CABLE, THE ANODE HEADER CABLE SHOULD BE A (WHITE OR RED) DIFFERENT COLOR WIRE THAN THE WIRE THAT WAS THERMITE WELDED TO THE CARRIER PIPE. AT A TYPE M TEST STATION, NO MAGNESIUM ANODES SHOULD BE DIRECTLY THERMITE WELDED TO THE CARRIER PIPE OR IN CONTACT WITH THE CARRIER PIPE. THE ANODE HEADER WIRE OR INDIVIDUAL ANODE WIRES SHOULD TERMINATE INSIDE THE TEST STATION BOX. ANODES SHOULD BE SPACED A MINIMUM OF 5' ON CENTER FROM EACH OTHER AND A MINIMUM OF 12" AWAY AND BELOW THE BOTTOM OF THE STEEL MAIN.
7. IF COUPONS ARE TO BE INSTALLED , FIRST REMOVE THE PROTECTIVE LABEL COVERING THE STEEL COUPON AND THE RED STICKERS COVERING EACH SENSING PORT. CLEAN THE ENTIRE STEEL COUPON SURFACE WITH ALCOHOL TO REMOVE THE CORROSION INHIBITOR .PLACE THE COUPON ASSEMBLY APPROXIMATELY 12" FROM THE GAS MAIN BEING MONITORED WITH THE SENSING PORTS FACING THE GAS MAIN. THE COUPON ASSEMBLY SHOULD BE LOCATED ADJACENT TO THE BOTTOM PORTION OF THE GAS MAIN, ANYWHERE BETWEEN 3 O'CLOCK AND 9 O'CLOCK. THE SOIL BETWEEN THE COUPON AND THE MAIN SHOULD BE WELL COMPACTED AND CONTAIN NO ROCKS LARGER THAN A CENTIMETER IN DIAMETER OR FOREIGN MATERIAL.
8. ONE (1) 3# ANODE (MINIMUM) SHALL BE INSTALLED TO PROTECT THE CLAMPS ON EACH 10-FOOT SPAN OF PIPE. EACH 10-FOOT SPAN OF PIPE MUST BE A CONTINUOUS SECTION OF STEEL. CLAMPS ON NON-CONTINUOUS SECTIONS OF STEEL EVEN IF THEY ARE WITHIN 10 FEET OF EACH CANNOT BE PROTECTED BY THE SAME ANODE.
9. REFER TO CONSTRUCTION STANDARD CS-500 SECTION IV.G WHICH PROVIDES GENERAL GUIDANCE REGARDING "WRAPPING" FOR CORROSION PROTECTION. CS-500 SECTION IV.G.5. DESCRIBES THE BASIC STEPS REQUIRED TO WRAP LEAK REPAIR CLAMPS.



TDW 3-WAY TEE WITH ANODE

DETAIL CP9

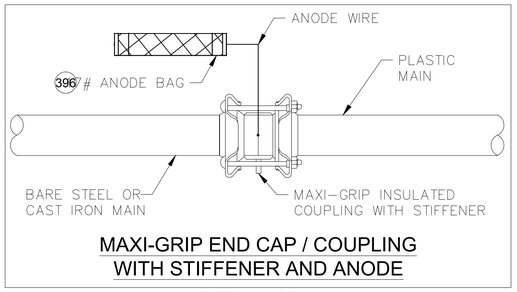
SCALE: 1/2" = 1'-0"



TRANSITION FITTING WITH ANODE

DETAIL CP10

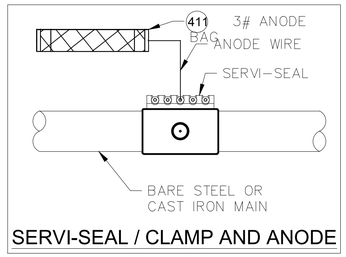
SCALE: 1/2" = 1'-0"



MAXI-GRIP END CAP / COUPLING WITH STIFFENER AND ANODE

DETAIL CP11

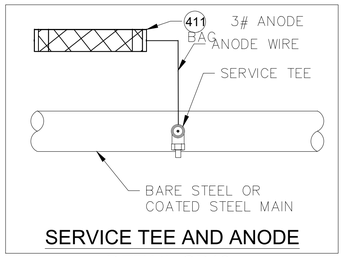
SCALE: 1/2" = 1'-0"



SERVI-SEAL / CLAMP AND ANODE

DETAIL CP12

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



SERVICE TEE AND ANODE

DETAIL CP13

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

COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

FIELD VERIFY DIMENSIONS PRIOR TO PIPE FABRICATION

No.	Description	Date	Dw/Ck/Ap
00	ISSUED FOR PERMITTING	08/13/21	RJP/MWF/DBD

Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

TARKILN STREET SECTION - 145+70 TO 150+47

TYPICAL DETAILS

SCALE: N.T.S. SHEET 11 OF 17

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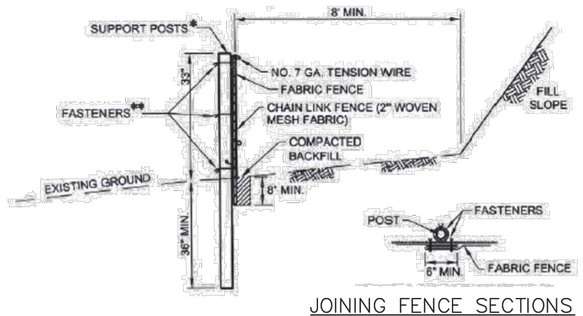


JOINING FENCE SECTIONS

*POSTS SPACED @10' MAX. USE 2 ½" DIA. HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.

** CHAIN LINK TO POST FASTENERS SPACED @ 14" MAX. USE NO. 9 GA. ALUMINUM WIRE OR NO. 9 GALVANIZED STEEL PRE-FORMED CLIPS. CHAIN LINK TO TENSION WIRE FASTENERS SPACED @ 60" MAX. USE NO. 13.5 GA. GALVANIZED STEEL WIRE. FABRIC TO CHAIN FASTENERS SPACED @ 24" MAX C. TO C.

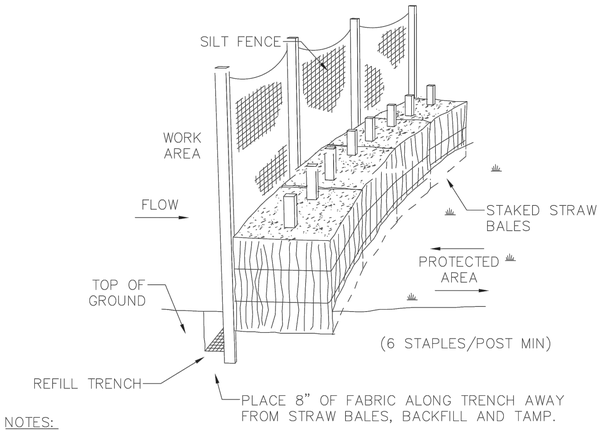
NOTES:

1. FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3.
2. FILTER FABRIC WIDTH SHALL BE 42" MINIMUM.
3. POSTS SHALL BE INSTALLED USING A POSTHOLE DRILL.
4. CHAIN LINK SHALL BE GALVANIZED NO. 11.5 GA. STEEL WIRE WITH 2 ¼" OPENING, NO. 11 GA. ALUMINUM COATED STEEL WIRE IN ACCORDANCE WITH ASTM-A-491, OR GALVANIZED NO. 9 GA. STEEL WIRE TOP AND BOTTOM WITH GALVANIZED NO. 11 GA. STEEL INTERMEDIATED WIRES. NO. 7 GAGE TENSION WIRE TO BE INSTALLED HORIZONTALLY THROUGH HOLES AT TOP AND BOTTOM OF CHAIN LINK FENCE OR ATTACHED WITH HOG OF RINGS AT 5' (MAX.) CENTERS.
5. SILT FENCE SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UPSLOPE AT 45 DEGREES TO MAIN BARRIER ALIGNMENT.
6. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVEGROUND HEIGHT OF THE FENCE.
7. FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.
8. IN ADDITION TO THE SUPPORT POSTS, THE CONTRACTOR MAY FASTEN THE REINFORCED SILT FENCE TO THE EDGE OF THE TIMBER MATS TO PROVIDE A TIGHTER SEAL BETWEEN THE FENCE AND MATS. EVERSOURCE'S ON-SITE ENVIRONMENTAL INSPECTOR WILL DETERMINE IF THIS EXTRA MEASURE IS NECESSARY AT THE TIME OF CONSTRUCTION BASED ON FIELD CONDITIONS.

TABLE 4.3
Fabric Properties for Silt Fence

Fabric Property	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lb)	120	ASTM D1682
Elongation at Failure (%)	20% Max.	ASTM D1682
Mullen Burst Strength (psi)	200	ASTM D 3786
Trapezoidal Tear Strength (lb)	50	
Puncture Strength (lb)	40	ASTM D 751 (modified)
Slurry Flow Rate (gal/min/sf)	0.3	ASTM 5141
Equivalent Opening Size	30	US Std. Sieve CW-02215
Ultraviolet Radiation Stability (%)	80	ASTM G-26

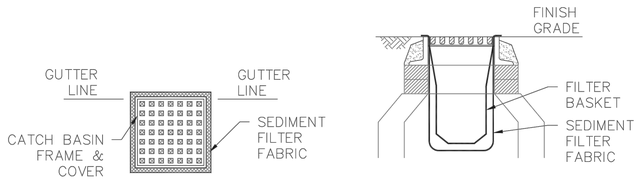
1 REINFORCED SILT FENCE "SUPER SILT FENCE"
NOT TO SCALE



NOTES:

1. WHERE EXTREMELY ERODIBLE SOIL CONDITIONS EXIST, AT THE DIRECTION OF THE COMPANY'S INSPECTOR A COMBINED STRAW BALE AND SILT FENCE OR REINFORCED SILT FENCE SEDIMENT CONTROL BARRIER SHALL BE INSTALLED. FOR INSTALLATION CONDITIONS AND INSTRUCTIONS SEE:
   1.1. STRAW BALE SEDIMENT BARRIERS. SEE DETAIL 2 ON SHEET MA-21-PIP-NEB-499-D09
   1.2. SILT FENCE SEDIMENT BARRIERS. SEE DETAIL 2 ON SHEET MA-21-PIP-NEB-499-D09.
   1.3. REINFORCED SILT FENCE WITH WIRE MESH. SEE DETAIL 2 ON SHEET MA-21-PIP-NEB-499-D09.

2 TYPICAL STRAW BALE & SILT FENCE
NOT TO SCALE



NOTES:

1. FILTER BASKET SHALL BE "SILT SAK" BY JENNIAN, MELROSE, MA; "DANDY BAG" BY DANDY PRODUCTS (1-800-591-2284); DRAIN PAC (91-800-272-2832); OR APPROVED EQUIVALENT.
2. FILTER BASKETS SHOULD BE USED IN COMBINATION WITH ANOTHER INLET PROTECTION MEASURE SUCH AS SEDIMENT FILTER FABRIC IF DRAINAGE AREA IS SMALL WITH SHALLOW FLOWS.

3 CATCH BASIN/INLET PROTECTION WITHIN PAVED ROAD SURFACE SEDIMENT FILTER FABRIC AND FILTER BASKET
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

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Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

TARKILN STREET SECTION - 145+70 TO 150+47

TYPICAL DETAILS

SCALE: N.T.S. SHEET 12 OF 17

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RJP / 07-06-2021	MWF / 07-06-2021	MA-21-PIP-NEB-499-D07	00
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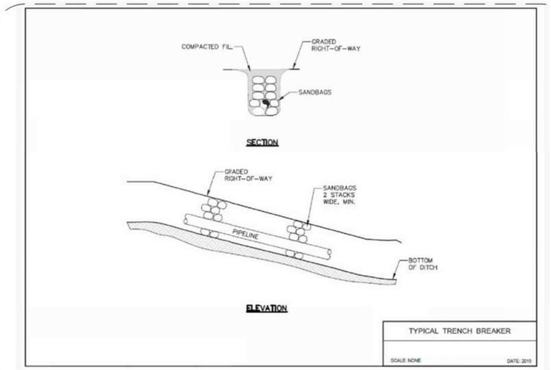
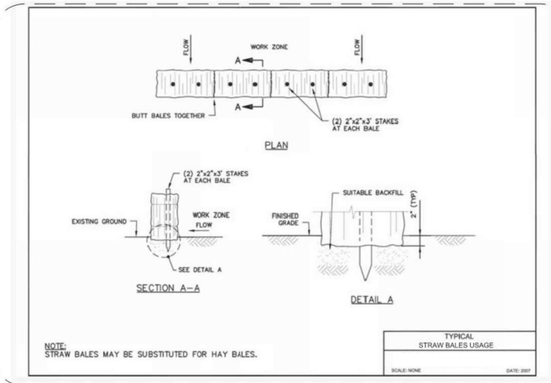
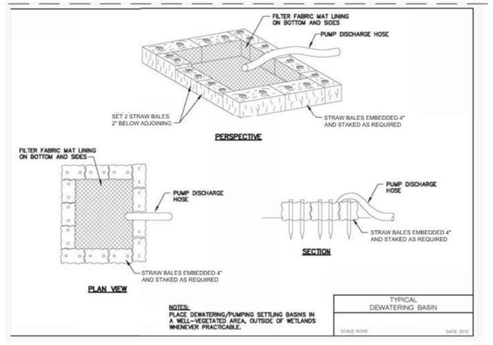


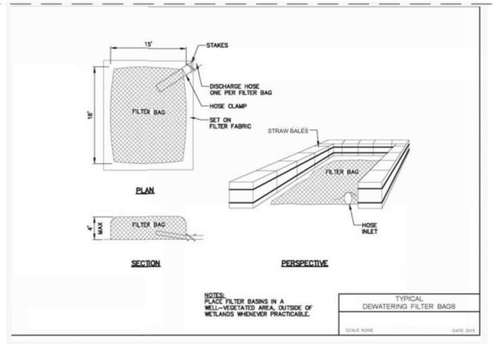
1 TYPICAL TRENCH BREAKER
NOT TO SCALE



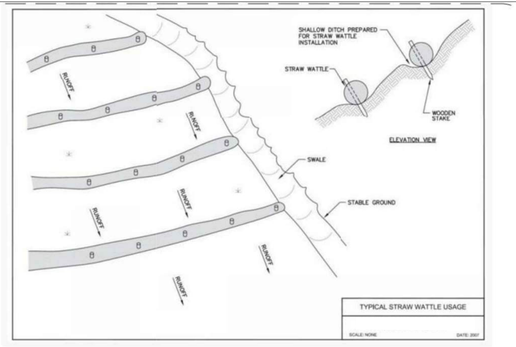
2 TYPICAL STRAW BALES USAGE
NOT TO SCALE



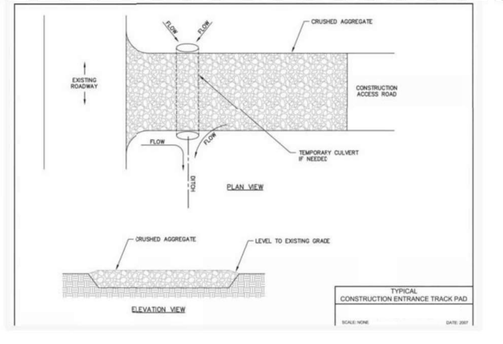
3 TYPICAL DEWATERING BASIN
NOT TO SCALE



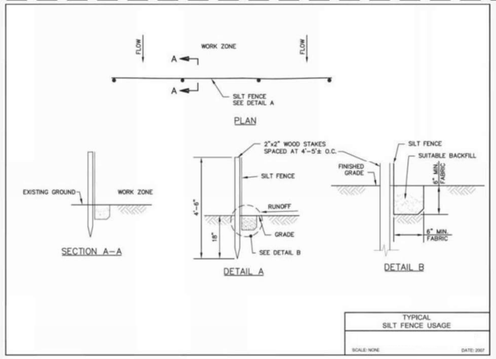
4 TYPICAL DEWATERING FILTER BAGS
NOT TO SCALE



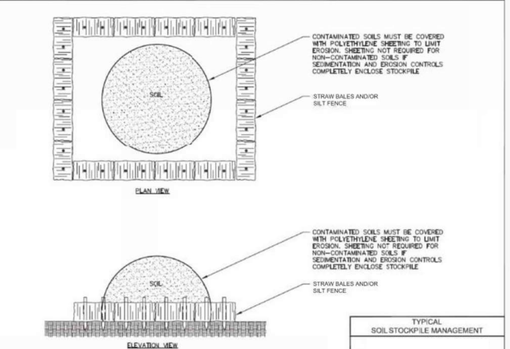
5 TYPICAL STRAW WATTLE USAGE
NOT TO SCALE



6 TYPICAL CONSTRUCTION ENTRANCE TRACK PAD
NOT TO SCALE



7 TYPICAL SILT FENCE USAGE
NOT TO SCALE



8 TYPICAL SOIL STOCKPILE MANAGEMENT
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

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Revision/Status

EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

TARKILN STREET SECTION - 145+70 TO 150+47

TYPICAL DETAILS

SCALE: N.T.S.

SHEET 13 OF 17

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RJP / 07-06-2021	MWF / 07-06-2021	MA-21-PIP-NEB-499-D08	00
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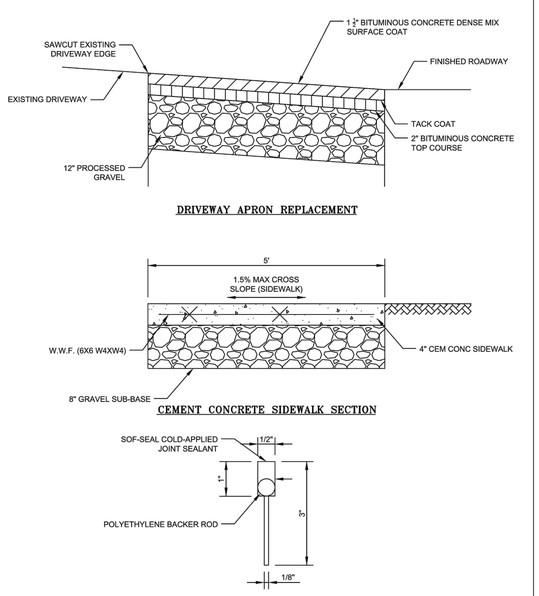


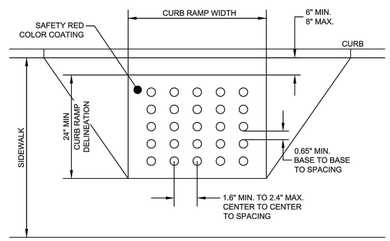
DRIVEWAY APRON REPLACEMENT

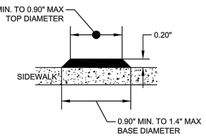
CEMENT CONCRETE SIDEWALK SECTION

CONTRACTION JOINT DETAIL

TITLE: ROADWAY DETAILS			
LOC.:			REV. 0
CKD. BY: MM	ENG.	DATE: 07/2018	W.O.
DRN BY: MM	SCALE: NTS	PG: 1 OF 1	

MOTT MACDONALD
134 CAPITAL DRIVE
WEST SPRINGFIELD,
MA 01089
UNITED STATES
413-535-0135
INFO@MOTTMAC.COM



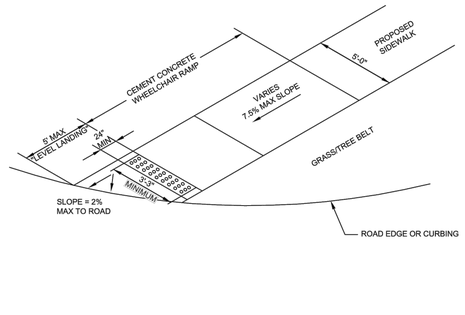


ELEVATION – TRUNCATED DOME (TD)

NOTE: DETECABLE WARNING SURFACES SHALL BE * CAST IN PLACE * TYPE

TITLE: DETECTABLE WARNING SURFACE			
LOC.:			REV. 0
CKD. BY: MM	ENG.	DATE: 07/2018	W.O.
DRN BY: MM	SCALE: NTS	PG: 1 OF 1	

MOTT MACDONALD
134 CAPITAL DRIVE
WEST SPRINGFIELD,
MA 01089
UNITED STATES



TITLE: TYPE 1 WHEELCHAIR RAMP			
LOC.:			REV. 0
CKD. BY: MM	ENG.	DATE: 07/2018	W.O.
DRN BY: MM	SCALE: NTS	PG: 1 OF 1	

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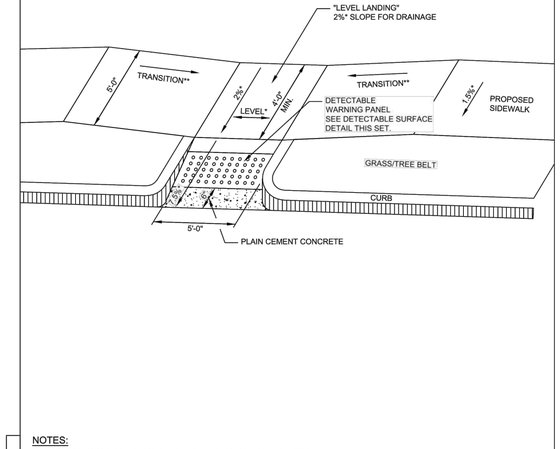
UNITED STATES



NOTES:
* MAX CROSS-SLOPE OF ACESSIBLE RAMP LANDING NOT TO EXCEED 2%
** ACCESSIBLE RAMP TRANSITIONS NOT TO EXCEED 7.5% TO LANDING OR TRAVELED WAY

TITLE: TYPE 2 WHEELCHAIR RAMP			
LOC.:			REV. 0
CKD. BY: MM	ENG.	DATE: 07/2018	W.O.
DRN BY: MM	SCALE: NTS	PG: 1 OF 1	

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134 CAPITAL DRIVE
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MA 01089
UNITED STATES

COMMONWEALTH OF MASSACHUSETTS
CARLOS J. CHAVES
CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

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CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

TARKILN STREET SECTION - 145+70 TO 150+47

TYPICAL DETAILS

SCALE: N.T.S. SHEET 14 OF 17

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RJP / 07-06-2021	MWF / 07-06-2021	MA-21-PIP-NEB-499-D09	00
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LEGEND

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- P/F — POLICE/FLAGGER DETAIL
- TYPE III BARRICADE
- CHANGEABLE MESSAGE SIGN
- ARROW BOARD
- WORK ZONE
- DIRECTION OF TRAFFIC
- WORK VEHICLE
- TRUCK MOUNTED ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN
- IMPACT ATTENUATOR
- MEDIAN BARRIER
- MEDIAN BARRIER WITH WARNING LIGHTS

GENERAL NOTES:

1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
2. ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
4. TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
6. CONTRACTORS SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
7. THE FIRST FIVE PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH TYPE A LIGHTS.
8. THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
9. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
10. MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
11. MINIMUM LANE WIDTH IS TO BE 11 FEET (3.3m) UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
12. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
13. ALL MAINTENANCE AND PROTECTION OF TRAFFIC SETUPS SHALL BE IN CONFORMANCE WITH THE 2009 EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.), AND THE MASSACHUSETTS AMENDMENTS TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
14. CHANNELIZING DEVICE SPACING SHALL BE A MAXIMUM OF 20' CENTER TO CENTER. ALL TAPERS SHALL HAVE A MINIMUM OF 6 CHANNELIZING DEVICES, EQUALLY SPACED, AT NO GREATER THAN 25' CENTER TO CENTER.
15. ALL TEMPORARY CONSTRUCTION SIGNS SHALL BE 36"x36" UNLESS OTHERWISE NOTED ON PLANS.
16. SIGNS INSTALLED ON PORTABLE STANDS REQUIRE 60" MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF SIGN.
17. SIGNS MOUNTED ON POSTS REQUIRE A MINIMUM 84" MOUNTING HEIGHT FROM THE ROADWAY OR SIDEWALK SURFACE TO BOTTOM OF SIGN.
18. ALL TRAFFIC CONTROL DEVICES, UNLESS OTHERWISE NOTED, SHALL CONFORM TO APPLICABLE SPECIFICATIONS OF THE M.U.T.C.D. PART 6, AND STANDARD HIGHWAY SIGNS, CURRENT EDITIONS. ALL SIGNS AND CHANNELIZING DEVICES SHALL BE RETRO-REFLECTORIZED.
19. EXISTING OR TEMPORARY SIGNS WHICH ARE IN CONFLICT WITH DAILY TRAFFIC MANAGEMENT SETUPS SHALL BE COVERED. IMMEDIATELY PRIOR TO COMPLETION, CONTRACTOR SHALL UNCOVER SIGNS, AS DIRECTED BY THE ENGINEER.
20. ALL DETAILS DEPICT THE MINIMAL REQUIREMENTS FOR MAINTENANCE OF TRAFFIC. THE DETAILS SHALL BE USED AS A GUIDE TO PROVIDE TRAFFIC MANAGEMENT FOR DAILY OPERATIONS AND MAY BE AUGMENTED AT THE DISCRETION OF THE GOVERNING TRAFFIC AUTHORITY.
21. WORKERS SHALL WEAR PERSONAL PROTECTIVE EQUIPMENT IN ACCORDANCE WITH MUTCD AND OSHA STANDARDS AT ALL TIMES.
22. DETOURS SHALL BE COORDINATED WITH THE CITY.

SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS **		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350 (100)	350 (100)	350 (100)
MOST OTHER ROADWAYS*	500 (150)	500 (150)	500 (150)
FREEWAYS AND EXPRESSWAYS*	1,000 (300)	1,500 (450)	2,640 (800)

* ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.

** DISTANCES ARE SHOWN IN FEET (METERS). THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL/ TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTCP SETUPS. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (i.e. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT. ADDITIONAL SIGNS (i.e. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

R2-10a, R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

COMMONWEALTH OF MASSACHUSETTS
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CIVIL
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FIELD VERIFY DIMENSIONS PRIOR TO PIPE FABRICATION

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EVERSOURCE ENERGY

CHURCH STREET MAIN RELAY AND INSTALLATION, NEW BEDFORD, MA

TARKILN STREET SECTION - 145+70 TO 150+47

TRAFFIC CONTROL DETAILS

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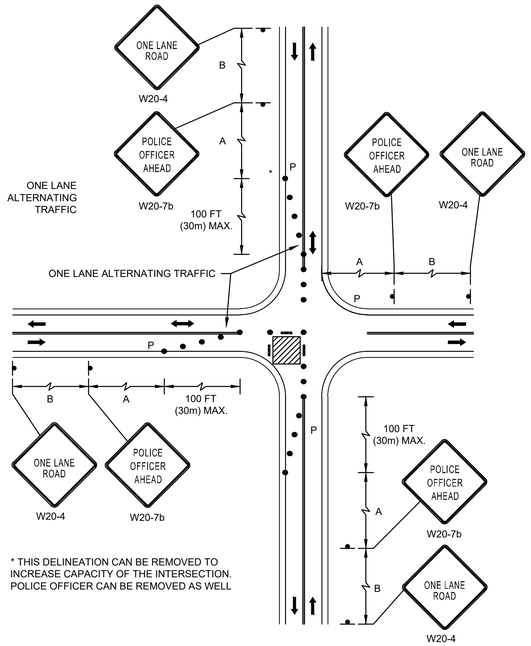
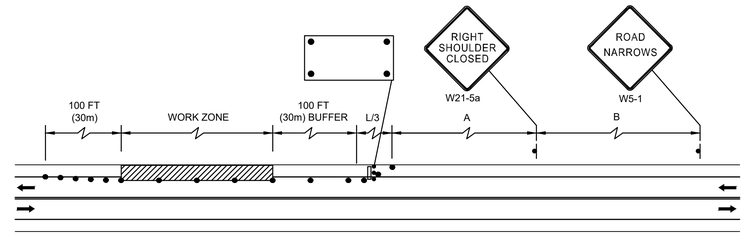
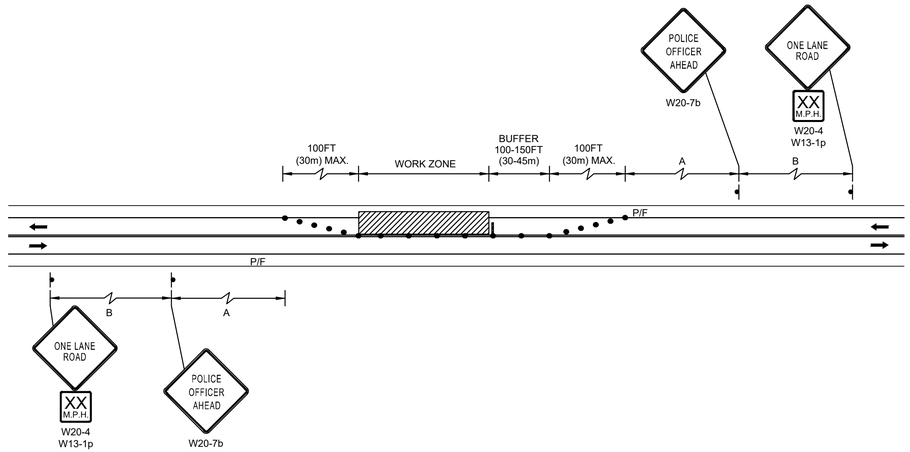


* THIS DELINEATION CAN BE REMOVED TO INCREASE CAPACITY OF THE INTERSECTION. POLICE OFFICER CAN BE REMOVED AS WELL

SINGLE LINE APPROACH
ONE QUADRANT CLOSURE
NTS



TWO LANE ROAD
SHOULDER CLOSURE
NTS



TWO LANE ROAD
ONE LANE ALTERNATING TRAFFIC
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CIVIL
No. 49237
REGISTERED PROFESSIONAL ENGINEER
8/13/2021

MOTT MACDONALD

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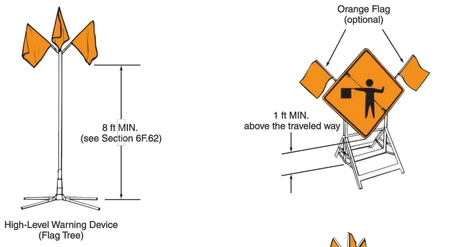
Figure 6F-2. Methods of Mounting Signs Other Than on Posts



METHODS OF MOUNTING SIGNS OTHER THAN ON POSTS

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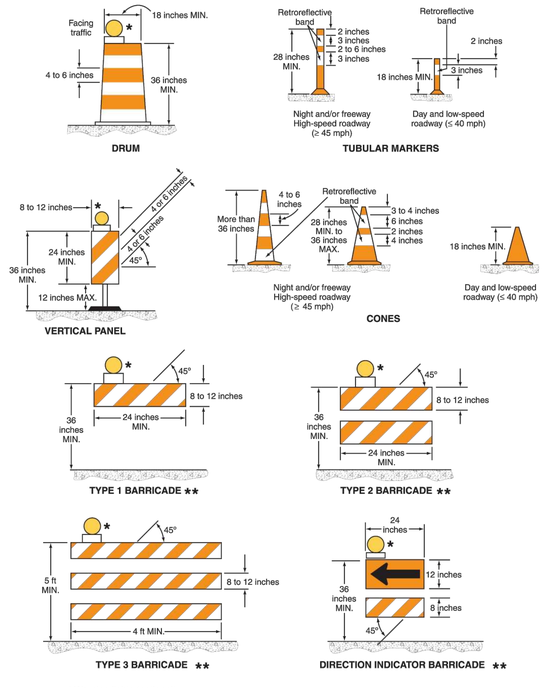
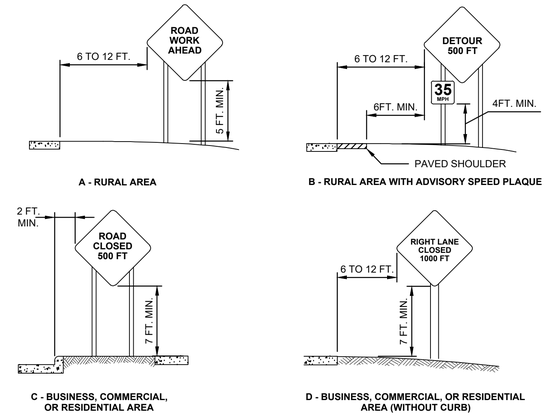
Figure 6F-7. Channelizing Devices



* Warning lights (optional)
** Rail stripe widths shall be 6 inches, except that 4-inch wide stripes may be used if rail lengths are less than 36 inches. The sides of barricades facing traffic shall have retroreflective rail faces.

CHANNELIZING DEVICES

NTS



HEIGHT AND LATERAL LOCATION OF SIGNS - TYPICAL INSTALLATIONS

NTS

NOTES:

STANDARD:
WHERE IT HAS BEEN DETERMINED THAT THE ACCOMMODATION OF PEDESTRIANS WITH DISABILITIES IS NECESSARY, SIGNS SHALL BE MOUNTED AND PLACED IN ACCORDANCE WITH SECTION 4.4 OF THE "AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAAG)" (SEE SECTION 1A.11).

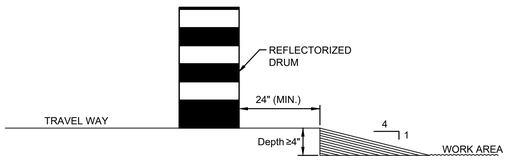
SIGNS MOUNTED ON BARRICADES AND BARRICADE/SIGN COMBINATIONS SHALL BE CRASHWORTHY.

GUIDANCE:
EXCEPT AS PROVIDED IN PARAGRAPH 12, SIGNS MOUNTED ON PORTABLE SIGN SUPPORTS THAT DO NOT MEET THE MINIMUM MOUNTING HEIGHTS PROVIDED IN PARAGRAPHS 4 THROUGH 6 SHOULD NOT BE USED FOR A DURATION OF MORE THAN 3 DAYS.

OPTION:
THE R9-8 THROUGH R9-11A SERIES, R11 SERIES, W1-6 THROUGH W1-8 SERIES, M4-10, E5-1, OR OTHER SIMILAR TYPE SIGNS (SEE FIGURES 6F-3, 6F-4, AND 6F-5) MAY BE USED ON PORTABLE SIGN SUPPORTS THAT DO NOT MEET THE MINIMUM MOUNTING HEIGHTS PROVIDED IN PARAGRAPHS 4 THROUGH 6 FOR LONGER THAN 3 DAYS. SUPPORT: 13 METHODS OF MOUNTING SIGNS OTHER THAN ON POSTS ARE ILLUSTRATED IN FIGURE 6F-2.

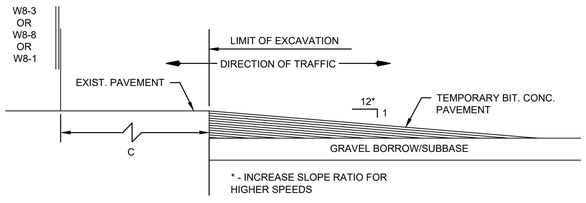
GUIDANCE:
SIGNS MOUNTED ON TYPE 3 BARRICADES SHOULD NOT COVER MORE THAN 50 PERCENT OF THE TOP TWO RAILS OR 33 PERCENT OF THE TOTAL AREA OF THE THREE RAILS.

STANDARD:
SIGN SUPPORTS SHALL BE CRASHWORTHY. WHERE LARGE SIGNS HAVING AN AREA EXCEEDING 50 SQUARE FEET ARE INSTALLED ON MULTIPLE BREAKAWAY POSTS, THE CLEARANCE FROM THE GROUND TO THE BOTTOM OF THE SIGN SHALL BE AT LEAST 7 FEET.



LATERAL DROP-OFF DETAIL

NTS



LONGITUDINAL DROP-OFF DETAIL

NTS

FORMULAS FOR DETERMINING TAPER LENGTH

SPEED (S)	TAPER LENGTH (L) IN FEET
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	L = WS

WHERE: L = TAPER LENGTH IN FEET
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH

CARLOS J. CHAVES
CIVIL
No. 49237
COMMONWEALTH OF MASSACHUSETTS
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