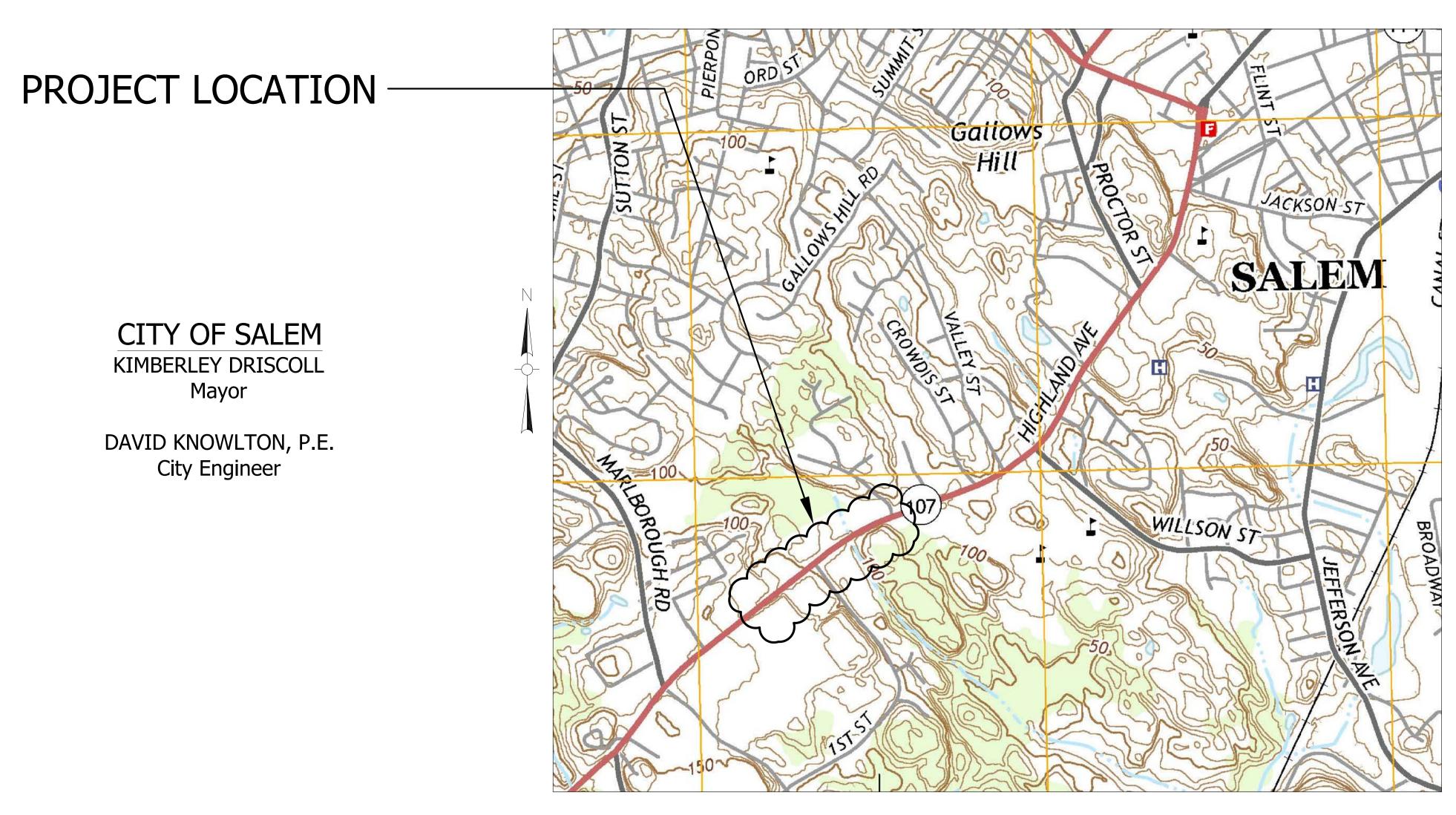
CITY OF SALEM, MASSACHUSETTS

HIGHLAND AVENUE WATER LINING PROJECT NOVEMBER 2020

IFB NO. 21-19-230



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G-2 GENERAL NOTES AND LEGEND

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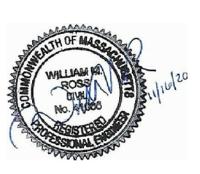
LOCUS MAP (NO SCALE)

NEW ENGLAND CIVIL ENGINEERING CORP.



265 Essex Street Suite #102 Salem, MA 01970

(978) 741-7401



Shee

G-1

GENERAL NOTES

- 1. VERTICAL DATUM BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). HORIZONTAL DATUM BASED ON THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM, 1983 (NAD83).
- 2. BASE SURVEY INFORMATION PROVIDED BY CITY OF SALEM AND MASSGIS.
- 3. BENCHMARKS ARE NOT PROVIDED.
- 4. FULL PERIMETERS AND EXTERIOR DIMENSIONS OF BUILDINGS NOT ACCURATELY SHOWN ON BASE SURVEY, CONTRACTOR TO CONFIRM DIMENSIONS AND FOOTPRINTS OF BUILDINGS BEFORE BEGINNING WORK CLOSE TO BUILDINGS AND ON PRIVATE PROPERTY.
- 5. THE EXISTENCE, SIZE, LOCATION, ORIENTATION AND DESCRIPTION OF SEWER AND DRAIN STRUCTURES, PIPES, AND SERVICES, WATER VALVES AND MAINS, AND OTHER UTILITIES ARE FROM THE EXISTING INFORMATION PROVIDED, BUT ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UNDERGROUND UTILITIES BEFORE EXCAVATING.
- 6. ALL RIM AND INVERT ELEVATIONS ARE APPROXIMATE AND SHOWN TO WITHIN ONE TENTH OF A FOOT (0.1FT) PLUS OR MINUS 0.1FT.
- 7. LINES FOR ALL SERVICES, POLICE AND FIRE ALARM BOXES, STREET LIGHTS, TRAFFIC SIGNALS AND OVERHEAD POWER, TELEPHONE AND CABLE TELEVISION LINES ARE NOT SHOWN ON THE PLANS. CONTRACTOR TO ASSUME ALL BUILDINGS AND HOMES ARE SERVED BY WATER, SEWER, GAS, ELECTRIC, AND TELECOMMUNICATION; AND SHALL PROTECT, RELOCATE, AND REPLACE SERVICES AS REQUIRED. THE APPROPRIATE UTILITY COMPANIES OR AUTHORITIES SHALL BE CONSULTED FOR LOCATIONS OF THE ABOVE, AND THE CONTRACTOR SHALL COORDINATE WITH THE OWNERS OF OTHER UTILITIES TO PROTECT AND SUPPORT (OR REMOVE AND REPLACE) ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION.
- 8. ALL BURIED UTILITIES (WATER, GAS, SEWER, DRAIN, ELECTRIC, TELECOMMUNICATION) ARE SHOWN SCHEMATICALLY AND NOT TO SCALE AND CANNOT BE USED TO SCALE OFF OUTSIDE PIPE DIAMETERS. CONTRACTOR TO ASSUME ALL BURIED ELECTRIC AND TELECOMMUNICATION UTILITIES ARE INSTALLED IN MULTIPLE CONDUIT DUCT BANKS AND MAY BE CONCRETE ENCASED. CONTRACTOR TO COMPLETE TEST PITS AND ADJUST LAYOUT AND MEANS AND METHODS TO AVOID CONFLICTS BETWEEN NEW AND EXISTING UTILITIES.
- 9. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AND APPROVED BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. DEVICES SHALL INCLUDE AT A MINIMUM GEOTEXTILE (SILT SACK) IN ALL CATCH BASINS AND A BARRIER CONSISTING OF SILT FENCE OR MULCH SOCK AROUND SOIL STOCKPILES AND ALONG PROJECT BOUNDARY AS SHOWN ON PLANS AND AS DIRECTED. ALL CONSTRUCTION DEWATERING WATER MUST BE TREATED WITH A SEDIMENTATION TANK PRIOR TO DISCHARGE UPGRADIENT OF OTHER EROSION AND SEDIMENTATION DEVICES AND CONTROLS.
- 10. CONTRACTOR SHALL MAINTAIN EDGE OF ROADWAY DRAINAGE PATTERNS INCLUDING REPLACEMENT OF PAVED AND UNPAVED SWALES, BERMS, AND
- 11. THE CONTRACTOR SHALL BE AWARE THAT BORINGS HAVE NOT BEEN COMPLETED FOR THIS PROJECT. THE EXISTING SUBSURFACE SOIL CONDITIONS AND GROUNDWATER LEVEL ARE NOT KNOWN, BUT GROUNDWATER LEVELS ARE ASSUMED TO BE HIGH AND HIGHLY VARIABLE DUE TO THE CLOSE PROXIMITY OF THE PROJECT TO RESOURCE AREAS AND THE RIVER WITH TIDAL IMPACTS. CONTRACTOR SHALL ANTICIPATE THAT REMOVAL AND DISPOSAL OF UNSUITABLE SOILS AND CONSTRUCTION DEWATERING DUE TO GROUNDWATER WILL BE REQUIRED DURING CONSTRUCTION THROUGHOUT THE PROJECT AREA, WITH INCREASED DEWATERING REQUIRED DURING RAINFALL AND HIGH TIDE CONDITIONS.
- 12. CONTRACTOR SHALL BE AWARE THAT LEDGE IS KNOWN TO EXIST THROUGHOUT THE PROJECT AREA AND EXISTS ON THE MAJORITY OF THE PROJECT AREA. CONTRACTOR SHALL PLAN FOR ROCK EXCAVATION AND REMOVAL WITHIN THE EXCAVATIONS AND LINING PITS.
- 13. CONTRACTOR SHALL BE AWARE THAT MANY "DRAIN" AND "SEWER" PIPES IN THE PROJECT AREA ARE COMBINED, WITH BOTH SANITARY SEWER AND STORMWATER FLOWS, AND ARE TIDALLY INFLUENCED WITH SALT WATER INFLOW/INFILTRATION DURING HIGHER TIDE CYCLES. CONTRACTOR SHALL ANTICIPATE BYPASS PUMPING WILL BE REQUIRED DURING CONSTRUCTION INVOLVING DRAIN AND SEWER PIPES, WITH INCREASED PUMPING REQUIRED DURING RAINFALL AND HIGH TIDE CONDITIONS.
- 14. DIVERSION AND CONTROL OF EXISTING SANITARY, STORM SEWER, PROCESS WATER AND PROCESS DRAIN FLOWS AND DEWATERING ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR'S INTENDED METHODS FOR DIVERSION AND CONTROL AND DEWATERING SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL. BYPASS HOSES SHALL NOT BE ALLOWED TO LEAK AND SURFACE WATER RELATING TO CONSTRUCTION OPERATIONS SHALL BE PREVENTED FROM FREEZING.
- 15. THE CONTRACTOR SHALL PROVIDE METHODS TO BE EMPLOYED DURING DEWATERING OPERATIONS AND FOR STORM WATER RUNOFF NOT TO ALLOW SILT OR DEBRIS TO ENTER EXISTING DRAINAGE FACILITIES OR CREATE NUISANCES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING EXISTING OR NEW FACILITIES IF SILTATION OCCURS DUE TO THE CONTRACTOR'S OPERATIONS
- 16. EXISTING PAVEMENT THICKNESS, SIDEWALK MATERIALS, AND SUBBASE MATERIALS VARY AND MAY INCLUDE MULTIPLE, VARIED PAVEMENT MATERIALS, AND COBBLESTONES. ROADWAY LAYOUTS MAY HAVE PREVIOUSLY INCLUDED TROLLEY/TRAIN TRACKS AND MAY STILL INCLUDE COBBLES, TROLLEY TRACKS,
- 17. CONTRACTOR SHALL COORDINATE WITH THE PHONE AND CABLE COMPANIES TO ARRANGE AND SCHEDULE CONSTRUCTION TO AVOID IMPACTS ON EXISTING PHONE/CABLE UTILITIES AND/OR ALLOW PHONE/CABLE COMPANY ACCESS TO THE PROJECT SITE TO SUPPORT/RELOCATE THEIR UTILITIES AS REQUIRED.
- 18. BEFORE EXCAVATING, BACKFILLING, GRADING, PAVEMENT RESTORATION OR REPAIRING, ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE CONTACTED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THESE PLANS. SEE CHAPTER 370, ACT OF 1963, MASSACHUSETTS GENERAL LAWS. THE CONTRACTOR SHALL PREMARK THE EXCAVATION AREA IN WHITE PAINT PRIOR TO CALLING THE DIG SAFE CENTER (TEL. NO. 1—888—DIG—SAFE). THE CONTRACTOR SHALL CONTACT THE DIG SAFE CENTER AT LEAST THREE BUSINESS DAYS PRIOR TO ANY EXCAVATION, AND NOTIFY ALL AFFECTED PRIVATE AND/OR PUBLIC UTILITIES TO PERMIT STREET MARKING OF THEIR LINES. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN.
- 19. IF THE CONTRACTOR DAMAGES UTILITY SERVICES, HE SHALL IMMEDIATELY NOTIFY THE RESPECTIVE UTILITY COMPANY AND SHALL IMMEDIATELY REPLACE OR REPAIR.
- 20. WHERE UTILITY RELOCATION IS REQUIRED, THE CONTRACTOR SHALL NOTIFY THE AFFECTED UTILITY COMPANY AT LEAST 30 DAYS IN ADVANCE OF CONSTRUCTION AND SHALL COORDINATE THE PROPOSED WORK WITH THE UTILITY RELOCATION.
- 21. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS INFORMATION AND REPORT ANY DISCREPANCIES BETWEEN THE PLANS AND THE ACTUAL CONDITIONS TO THE ENGINEER PRIOR TO BEGINNING WORK. THE CONTRACTOR'S ATTENTION IS DIRECTED TO EXISTING LABELED SEWER MANHOLE OR DRAIN MANHOLE COVERS SHOWN ON THE PLANS AS THEY MAY NOT ACCURATELY REPRESENT THE UNDERGROUND SERVICE. PRIOR TO ANY WORK THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF AN EXISTING COVER NOT ACCURATELY REPRESENTING THE SERVICE BELOW.
- 22. EXPLORATORY EXCAVATIONS (TEST PITS) SHALL BE EXCAVATED AT THOSE LOCATIONS INDICATED ON THE PLANS AND WHERE ORDERED AND APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE. TEST PIT EXCAVATIONS SHALL BE MADE TO DETERMINE THE LOCATIONS OF ALL EXISTING UTILITIES OR STRUCTURES IN ADVANCE OF CONSTRUCTION OPERATIONS AND TO IDENTIFY POTENTIAL CONFLICTS SO THAT ANY REQUIRED CHANGES IN ALIGNMENT AND/OR GRADE OF THE PROPOSED WORK OR UTILITY LOCATIONS MAY BE DETERMINED. ALL DECISIONS RELATIVE TO UTILITY CONFLICTS AND RELOCATION REQUIREMENTS WILL BE MADE BY THE RESIDENT ENGINEER. TEST PITS MAY NOT BE COMPLETED TOO FAR IN ADVANCE OF PIPELINE INSTALLATION, AUTHORIZATION REQUIRED FROM ENGINEER TO BEGIN TEST PITS ON EACH STREET OR IN EACH WORK AREA.
- 23. EXISTING PIPE SIZE AND MATERIAL ARE APPROXIMATE AND MAY HAVE DIFFERING HORIZONTAL AND/OR VERTICAL DIMENSIONS DEPENDING ON THE SHAPE (EGG-SHAPED, TEAR-DROP, ETC.). EXISTING PIPES MAY BE SLIPLINED IN LARGER PIPES OF DIFFERENT MATERIAL.
- 24. CONTRACTOR TO PROTECT AND SUPPORT OR REMOVE AND REPLACE SIGNS, POSTS, HYDRANTS, FENCES, GATES, UTILITY POLES, OR OTHER SURFACE FEATURES THAT OBSTRUCT CONSTRUCTION OPERATIONS OR ARE DAMAGED BY CONSTRUCTION. AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. DAMAGE OF PROPERTY BEYOND THE WORK LIMITS CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR
- 25. CONTRACTOR RESPONSIBLE TO REMOVE, PROTECT, AND REPLACE ALL SURFACE FEATURES OFF ROAD INCLUDING SIGNS, MAILBOXES, WALKS, PAVEMENT, STONES, PLANTINGS, AND MULCH.

GENERAL NOTES

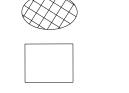
- 26. NOT ALL GAS AND SEWER SERVICE LINES NOT SHOWN ON PLAN. CONTRACTOR TO ASSUME EACH BUILDING HAS, AT A MINIMUM, ONE GAS SERVICE AND ONE SEWER SERVICE LINE CONNECTED TO MAINS IN STREET.
- 27. CONTRACTOR TO SCHEDULE NEW WATER MAIN INSTALLATIONS AND ADJUST LAYOUT OF NEW WATER MAINS IN THE FIELD TO AVOID CONFLICTS WITH GAS MAIN, EXISTING UTILITIES.
- 28. ALL TEMPORARY WATER BYPASS TO BE LOOPED BETWEEN TWO FEED LOCATIONS. CONTRACTOR TO INSTALL 8" FEED LOCATIONS AS SHOWN ON PLANS.

- 29. A MINIMUM 10-F00T HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN WATER AND SEWER (SANITARY OR STORM) MAINS. IN CASES WHERE 10-F00T SEPARATION CANNOT BE MAINTAINED. WATER MAIN SHALL BE LAID IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18—INCHES ABOVE THE TOP OF THE SEWER.
- 30. CONTRACTOR SHALL BACKFILL, COMPACT, AND PAVE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT (MHD) AND THE CITY OF SALEM AS DIRECTED BY ENGINEER, INCLUDING AT A MINIMUM THE REQUIREMENTS SHOWN ON DETAILS.
- 31. THE CONTRACTOR SHALL INSTALL TEMPORARY PAVEMENT ON A DAILY BASIS AND MAINTAIN TEMPORARY PAVEMENT FOR A MINIMUM OF 90 DAYS UNLESS DIRECTED OTHERWISE BY THE ENGINEER EXCEPT IF TEMPORARY PAVEMENT IS PLACED AFTER OCTOBER 15TH, THEN IT SHALL BE MAINTAINED UNTIL APRIL 15TH OF THE FOLLOWING YEAR UNLESS DIRECTED OTHERWISE BY THE ENGINEER. TEMPORARY CENTERLINE PAVEMENT PAINT SHALL BE PLACED ON THE TEMPORARY PAVEMENT WHEREVER EXISTING PAINT IS DISTURBED DURING CONSTRUCTION.
- 32. PERMANENT PAVEMENT SHALL BE PLACED BETWEEN APRIL 15TH AND OCTOBER 15TH OF EACH CALENDAR YEAR UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
- 33. CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGEMENT OF TRAFFIC AND PUBLIC SAFETY, INCLUDING SIGNAGE AND DETOURS, AND PROTECTING ALL TRAVELED WAYS AND PEDESTRIAN WAYS FROM CONSTRUCTION DEBRIS AT ALL TIMES. TRENCHES MUST BE PASSABLE AND GRAVEL MUST BE MAINTAINED. CONTRACTOR SHALL MAINTAIN ONE LANE OF TRAFFIC IN EACH DIRECTION AT ALL TIMES AND ACCESS FOR EMERGENCY VEHICLES AND PEDESTRIANS, AND SHALL PREPARE A TRAFFIC MANAGEMENT PLAN IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF SALEM POLICE DEPARTMENT IF REQUIRED. CONTRACTOR SHALL REVIEW TRAFFIC MANAGEMENT PLAN WITH THE POLICE DEPARTMENT PRIOR TO BEGINNING CONSTRUCTION LAYOUT.
- 34. CONTRACTOR IS RESPONSIBLE TO PREVENT STEEL PLATES FROM MOVING, INCLUDING CUTTING PAVEMENT TO RECESS PLATES, UTILIZING STEEL SPIKES AND WEDGES, AND APPLYING COLD PATCH SHIMS AND RAMPS.
- 35. CONTRACTOR SHALL NOT BE PROVIDED A STAGING AREA BY THE OWNER.
- 36. THE CONTRACTOR SHALL DISPOSE OF ALL DEMOLISHED MATERIALS, RUBBISH, EXCAVATED MATERIAL AND DEBRIS, UNLESS OTHERWISE NOTED, IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL REQUIRED DISPOSAL PERMITS AND FEES.
- 37. NO TRASH, GREASE TUBES, OR DEBRIS SHALL BE THROWN INTO CONSTRUCTION TRENCHES PRIOR TO BACKFILL.
- 38. CONTRACTOR TO MAINTAIN HAZMAT SPILL KITS ON SITE AT ALL TIMES.

W:\Salem\Water Work\Highland Avenue\CAD Drawings\HighlandCIPPLining.dwg

- 39. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING DUST DURING CONSTRUCTION OPERATIONS INCLUDING BUT NOT LIMITED TO REGULAR STREET SWEEPING AND APPLICATIONS OF CALCIUM CHLORIDE OR OTHER APPROVED DUST INHIBITOR.
- 40. ALL CAST IRON FRAMES TO BE 8-INCHES TALL UNLESS DIRECTED OTHERWISE BY ENGINEER, NEW MANHOLES AND CATCH BASINS TO BE TYPICAL PRECAST STRUCTURES (4-FOOT INSIDE DIAMETER) UNLESS INDICATED OR AS DIRECTED OTHERWISE BY ENGINEER BASED ON EXPLORATORY EXCAVATIONS, LEVEL SURVEY, AND FIELD CONDITIONS. SIZES, SHAPES, AND MATERIALS OF CONSTRUCTION FOR EACH STRUCTURE TO VARY AS SHOWN ON CONSTRUCTION DETAILS.
- 41. ALL SEWER AND DRAIN PIPE TO BE SDR 35 PVC OR CLASS 52 DI AS DIRECTED UNLESS OTHERWISE SHOWN ON PLANS. ALL REINFORCED CONCRETE PIPE USED FOR STORM DRAINS SHALL BE CLASS IV, UNLESS OTHERWISE SHOWN ON THE PLANS, AND THE DIAMETER SHALL BE AS SHOWN ON THE PLANS. WHERE REQUIRED, PIPE JOINTS SHALL BE DEFLECTED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS TO MAINTAIN ALIGNMENT.
- 42. CONTRACTOR TO SCHEDULE NEW WATER MAIN INSTALLATIONS AND ADJUST LAYOUT OF NEW WATER MAINS IN THE FIELD TO AVOID CONFLICTS WITH EXISTING UTILITIES. CONTRACTOR TO SCHEDULE NEW PIPE INSTALLATIONS TO AVOID ANY INTERRUPTION OF WATER SERVICE AND ADJUST LAYOUT OF NEW PIPE IN THE FIELD TO AVOID CONFLICTS WITH EXISTING UTILITIES.
- 43. CONTRACTOR SHALL ASSUME THAT NONE OF THE EXISTING WATER VALVES TO REMAIN IN SERVICE WILL PROVIDE A COMPLETE (WATERTIGHT) SHUTDOWN AND WILL RESULT IN LEAKAGE INTO THE CONSTRUCTION TRENCH, REQUIRING ADDITIONAL DEWATERING OF THE CONSTRUCTION TRENCH DURING CONSTRUCTION.
- 44. CONTRACTOR TO PREPARE A VALVE OPERATION AND WATER SERVICE INTERRUPTION SEQUENCING PLAN AND SUBMIT FOR REVIEW BY THE OWNER PRIOR TO BEGINNING CONSTRUCTION. THE CITY WILL REVIEW THE PLAN AND PROVIDE FEEDBACK ON THE EXTENT OF THE SERVICE INTERRUPTION NOTIFICATION FLYERS TO BE DISTRIBUTED BY THE CONTRACTOR TO AFFECTED RESIDENTS. CONTRACTOR SHALL BE AWARE THAT COMPLETE (WATERTIGHT) SHUTDOWN AND/OR ISOLATION OF ANY EXISTING WATER VALVE TO REMAIN IN SERVICE WILL NOT BE POSSIBLE DUE TO THE CONDITION OF THE EXISTING VALVES TO REMAIN IN SERVICE. CONTRACTOR SHALL ASSUME ALL EXISTING VALVES WILL LEAK AND SHALL PREPARE FOR DEALING WITH THE LEAKAGE DURING CONSTRUCTION AND WHEN MAKING ALL CONNECTIONS BETWEEN NEW AND EXISTING WATER MAINS AND SERVICES.
- 45. CONTRACTOR IS RESPONSIBLE TO ASSIST THE OWNER WITH IDENTIFYING VALVES TO BE EXERCISED OR OPERATED TO ACHIEVE SERVICE INTERRUPTION, ASSIST CITY WITH OPERATING ALL VALVES REQUIRED FOR SERVICE SHUTDOWN, AND DISTRIBUTE SERVICE INTERRUPTION NOTIFICATION FLYERS TO ALL BUSINESSES AND RESIDENCES PRIOR TO EACH SERVICE INTERRUPTION.
- 46. NO WATER SERVICE INTERRUPTIONS SHALL BE PERMITTED UNLESS THE CONTRACTOR PROVIDES THE CITY OF SALEM DPW 72-HOUR (3-DAY) NOTICE, EXCLUDING WEEKENDS AND HOLIDAYS.
- 47. WITH THE EXCEPTION OF A BRIEF INITIAL WATER SERVICE INTERRUPTION OF THE EXISTING WATER MAIN ON HIGHLAND AVENUE TO CUT IN AND INSTALL TEES AND VALVES TO FACILITATE WATER BYPASS AS INDICATED; NO WATER SERVICE INTERRUPTIONS WILL BE PERMITTED WITHIN THE PROJECT AREA UNTIL THE NEW WATER MAIN HAS BEEN CLEANED, LINED, DISINFECTED, AND BROUGHT BACK INTO SERVICE PAST THE POINT OF EACH SERVICE CONNECTION; ALLOWING FOR A SINGLE, BRIEF SERVICE INTERRUPTION FOR EACH NEW AND EXISTING SERVICE CONNECTION AND FIRE HYDRANT. NO ADDITIONAL SERVICE INTERRUPTIONS WILL BE PERMITTED UNTIL ALL SERVICE CONNECTIONS AND FIRE HYDRANTS ARE BROUGHT BACK IN SERVICE.
- 48. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND CONNECTING EVERY WATER SERVICE (INCLUDING FIRE SERVICES) AFFECTED BY THE WORK ON EACH STREET (AND SIDE STREETS) INCLUDING BUT NOT LIMITED TO THOSE SERVICES IDENTIFIED ON PLANS. NUMBER AND LOCATION OF PROPOSED SERVICE LINES (1"-6") SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD DURING CONSTRUCTION BY CONTRACTOR AND APPROVED BY THE ENGINEER BEFORE INSTALLATION. ALL NEW SERVICES TO BE 1" COPPER UNLESS OTHERWISE INDICATED. ALL SERVICE TAPS FOR NEW 1", 1—1/2" AND 2" SERVICES SHALL BE "WET TAPS" INSTALLED AFTER THE NEW WATER MAIN HAS BEEN BROUGHT BACK INTO SERVICE.
- 49. BACKFLOW PREVENTION DEVICE TO BE PROVIDED BY THE CONTRACTOR AND USED FOR ALL CONSTRUCTION WATER.
- 50. ANY LABORATORY USED FOR WATER ANALYTICAL TESTING SHALL BE STATE OF MASSACHUSETTS CERTIFIED LABORATORY.
- 51. TEMPORARY WATER BYPASS SHALL INCLUDE AND 8-12" HDPE (8-INCH MINIMUM) DIAMETER BYPASS PIPE AND TEMPORARY DOMESTIC AND FIRE SERVICE CONNECTIONS TO MATCH DIAMETER OF EXISTING SERVICES; PYPÀSS PIPING SHALL BE BURIED, INSULATED, AND HEATED AS REQUIRED TO PREVENT FREEZING AND AVOID PEDESTRIAN AND TRAFFIC IMPACTS. TEMPORARY PIPING AND HOSES MUST BE IDENTIFIED FOR POTABLE WATER USE BY NSF OR AWWA. AND DISINFECTED IN ACCORDANCE WITH AWWA STANDARDS.
- 52. BYPASS PIPING TO BE BURIED AND PROTECTED FROM FREEZING, AND BURIED ACROSS DRIVEWAYS. BYPASS MAIN AND SERVICE PIPING TO BURIED, FIRE AND DOMESTIC BYPASS SERVICES SHALL ALSO BE BURIED.
- 51. SIDEWALK, CURB, DRIVEWAY APRONS, AND ADA RAMP REPAIRS AND REPLACEMENTS ARE NOT SHOWN ON DRAWINGS AND SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER IN AREAS WHERE PROPOSED WORK IMPACTS EXISTING SIDEWALKS.
- 52. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING TRAFFIC AND NOISE CONTROLS AND SCHEDULING ACTIVITIES TO MINIMIZE DISRUPTION OF BUSINESSES, AND SHALL SCHEDULE ACTIVITIES IN THESE AREA TO MINIMIZE DISRUPTION, INCLUDING BUT NOT LIMITED TO WORK ON NIGHTS AND/OR WEEKENDS AS ALLOWED BY THE CITY. ALL WORK ON HIGHLAND AVENUE OR IMPACTING TRAFFIC ON HIGHLAND AVENUE IS TO BE DONE AT NIGHT (9:00 P.M. TO 5:00 A.M.).
- 53. BID ITEM FOR FURNISH AND INSTALL 1—INCH COPPER SERVICE PIPE TO INCLUDE WATER SERVICE PIPE REPLACEMENT SHOWN ON PLANS PLUS ADDITIONAL SERVICE PIPE REPLACEMENT WITHIN THE WATER BYPASS AREAS TO REPLACE LEAD, IRON, STEEL, OR LEAKING COPPER SERVICE PIPE AT LOCATIONS NOT INDICATED ON THE PLANS; AS DIRECTED BY THE ENGINEER.

<u>LEGEND</u>



EXPLORATORY EXCAVATION/TEST PIT

LINING PIT LOCATION



NEW HYDRANT

NEW WATER TEE

NEW GATE VALVE

INSPECT AND CIPP LINE WATER MAIN

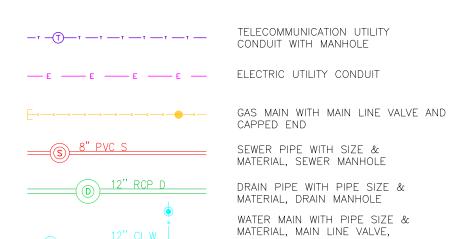
NEW WATER SERVICE WITH NEW

CURB STOP WITH COUPLING

NEW WATER MAIN WITH COUPLINGS

NEW RISER STRUCTURE WITH "WATER" COVER

** EROSION AND SEDIMENTATION BARRIER



TELECOMMUNICATION UTILITY

CAPPED END WATER MAIN WITH PIPE SIZE &

SEWER PIPE WITH SIZE & MATERIAL, SEWER MANHOLE DRAIN PIPE WITH PIPE SIZE & MATERIAL, DRAIN MANHOLE

MATERIAL, MAIN LINE VALVE, WATER SERVICE & CURB STOP PARCEL/PROPERTY LINE

VEGETATION BOUNDARY

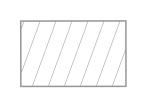
GUARDRAII



CONTOUR ELEVATION LINE WITH LABEL (FEET)



ELEVATION SPOT GRADE (FEET)



STRUCTURE/BUILDING



CATCHBASIN CAST IRON CANNOT LOCATE CONCRETE

ASBESTOS CEMENT DRAIN MANHOLE ELECTRIC GATE VALVE

GRANITE VERTICAL CURB MINIMUM NOT TO SCALE PEDESTRIAN

POLYVINYL CHLORIDE REINFORCED CONCRETE PIPE SEWER MANHOLE UNKNOWN

VITRIFIED CLA DRAIN ELECTRIC GAS SEWER **TELECOMMUNICATION** CATCHBASIN HYDRANT UTILITY POLE WITH IDENTIFICATION NUMBER

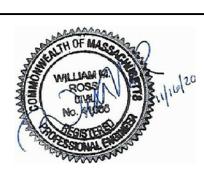
ELECTRIC HANDHOLE STREET SIGN

TRAFFIC/STREET LIGHT

CITY OF SALEM, MASSACHUSETTS 11/12/2020 Salem-HighlandWLining roject HIGHLAND AVENUE WATER LINING PROJECT esigned by rawn by RLM

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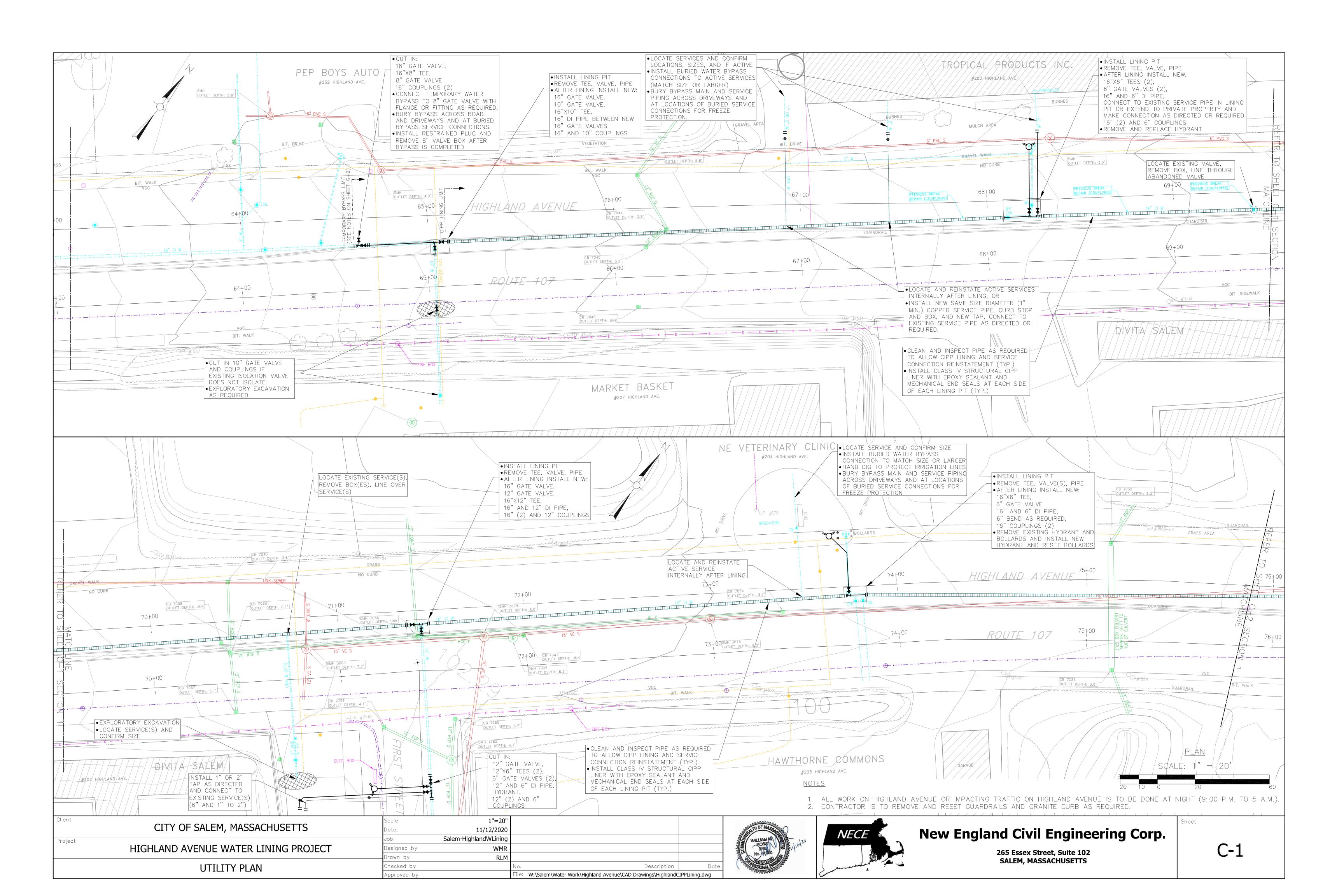


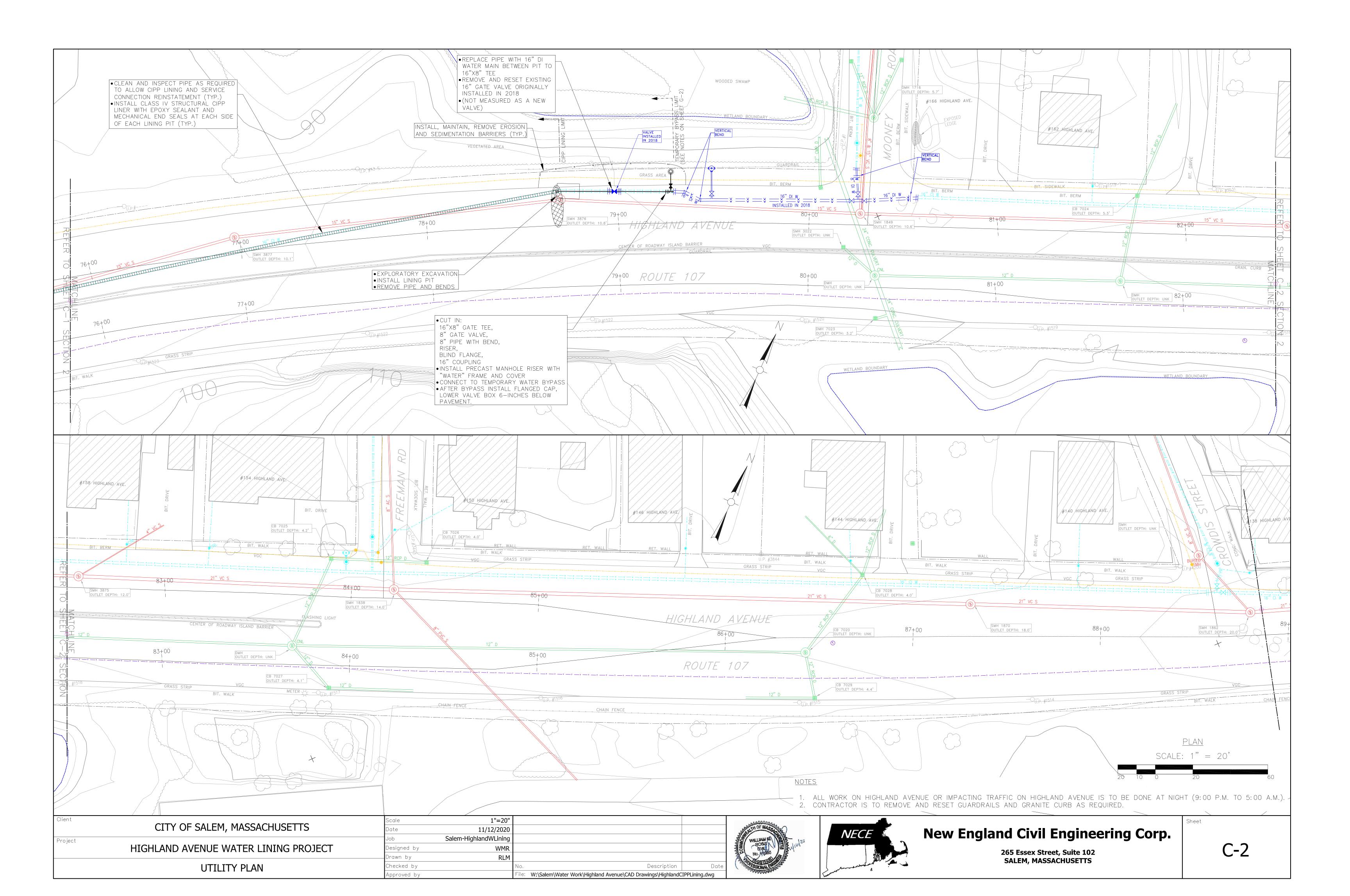


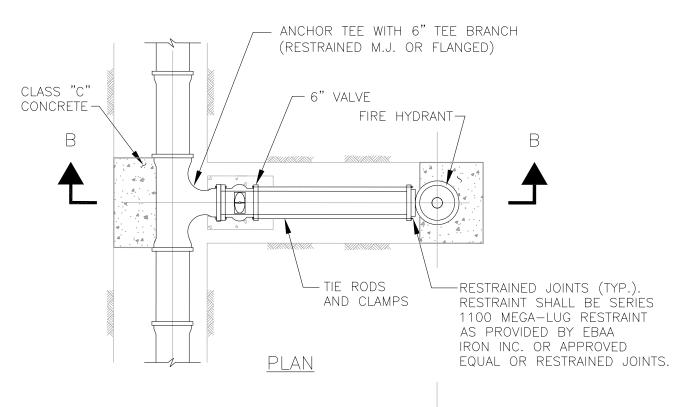
New England Civil Engineering Corp.

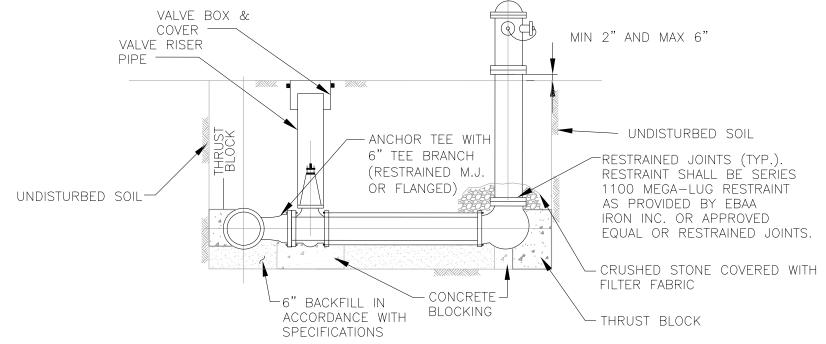
265 Essex Street, Suite 102 SALEM, MASSACHUSETTS

G-2









FIRE HYDRANT DETAIL

<u>SECTION B-B</u>

NOT TO SCALE

NOTES:

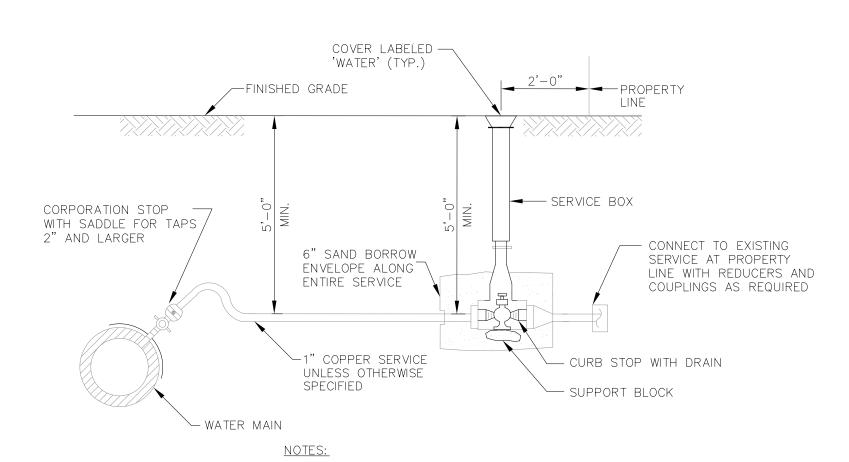
1. LOCATE FIRE HYDRANTS AS SHOWN ON DRAWINGS, APPROXIMATELY 3 FEET BEHIND CURB OR PROJECTED FUTURE CURB.

2. THE FIRE HYDRANT STEAMER NOZZLE SHALL FACE THE STREET.

3. REFER TO SPECIFICATION SECTION 03300 FOR CONCRETE (3,000 PSI) THRUST

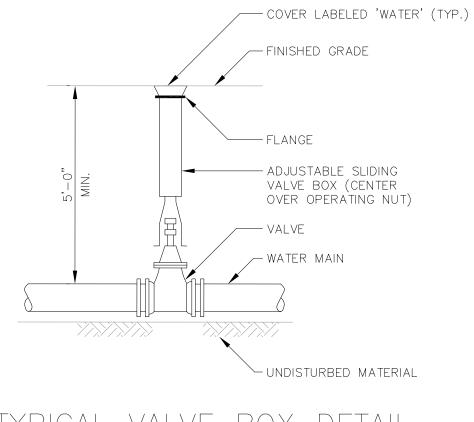
4. PROVIDE HYDRANT, VALVE AND TEE JOINTS WITH RESTRAINED MECHANICAL JOINTS

5. HYDRANTS TO BE 5'6" BURY DEPTH UNLESS DIRECTED OTHERWISE.

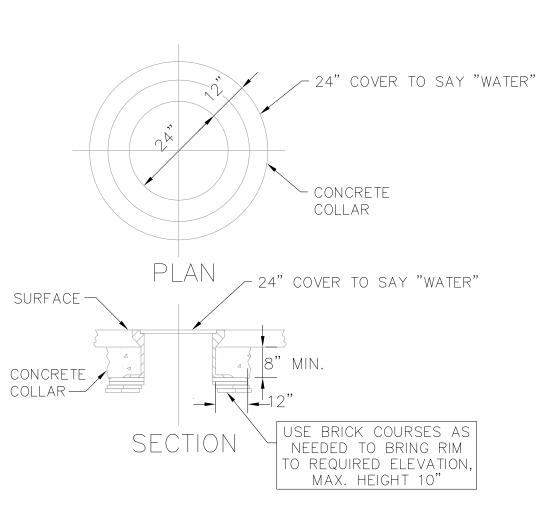


- 1. FLUSH ALL NEW SERVICE LINES PRIOR TO CONNECTING TO EXISTING.
- 2. AFTER CONNECTION, CONTRACTOR SHALL ASSIST WATER DEPT. PERSONNEL IN FLUSHING SERVICE LINES UP TO THE METER.
- 3. COPPER SERVICE TO BE INSTALLED IN 6-INCH SAND ENVELOPE.
- 4. CONNECT TO EXISTING SERVICE. WHERE EXISTING SERVICES DO NOT EXIST, PLUG END OF CURB STOP.
- 5. ALL NEW COPPER SERVICES TO BE CONTINUOUS WITHOUT UNIONS OR COUPLINGS BETWEEN CORPORATION AND CURB STOP.

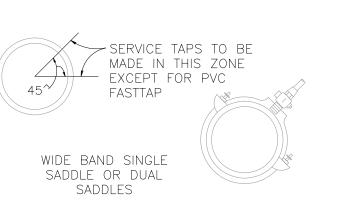
COPPER SERVICE CONNECTION DETAIL



TYPICAL VALVE BOX DETAIL NOT TO SCALE



MANHOLE FRAME AND COVER



SERVICE CONNECTION

NOT TO SCALE

<u>NOTES</u>: 1. BLOW-OFF & CHLORINATION TAPS ARE MADE IN VERTICAL POSITION

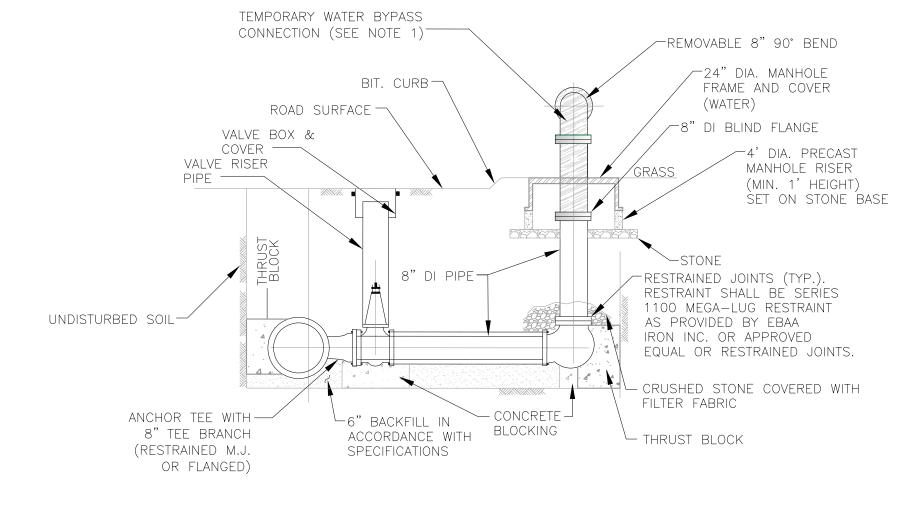
PIPE TAPPING SCHEDULE							
WATER MAIN TYPE AND DIAMETER	SERVICE TAP TYPE						
12" OR LESS CAST IRON OR DUCTILE IRON	DSS, WBSS						
16" AND UP CAST IRON OR DUCTILE IRON	DWBSS						

DSS - DUAL STRAP SADDLES WBSS - WIDE BAND STRAP SADDLES DWBSS - DUAL WIDE BAND STRAP SADDLES

> FILL FROM UNDISTURBED EARTH TO MID-DIAMETER

> > OF NEW OR EXISTING UTILITY

ELEVATION



BYPASS CONNECTION FOR TEMPORARY BYPASS

PIPING AND FUTURE USE

NOT TO SCALE

- FINISHED GRADE

-NEW OR EXISTING

-NEW OR EXISTING

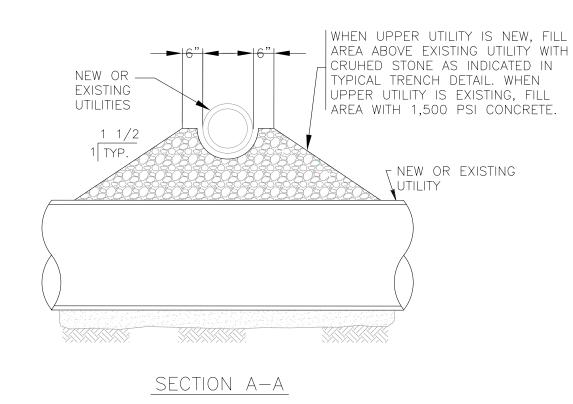
UTILITY

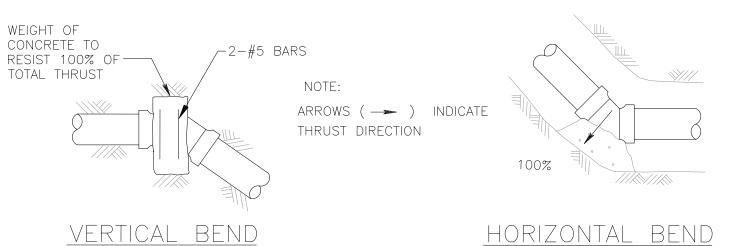
UTILITY

NOTE: INSTALL RESTRAINED CAP

UTILITY CROSSING DETAIL

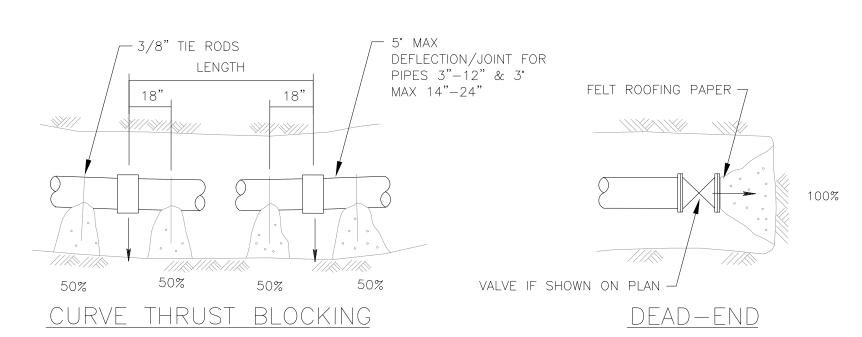
NOT TO SCALE



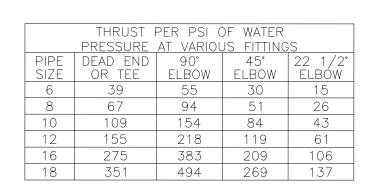


NOTE: CONC. FOR THRUST BLOCKS TO BE 3000 P.S.I

FIGURE (100%) AT THRUST BLOCK INDICATES PERCENT OF TOTAL THRUST TO BE APPLIED FOR BEARING AREA.



CONCRETE THRUST BLOCKS FOR <u>DUCTILE IRON PIPE</u> NOT TO SCALE



SIDE THRUST PER 100 lb./sq.in. PRESSURE PER DEGREE OF DEFLECTION

PIPE SIZE—in.SIDE THRUST—IbPIPE SIZE—in. SIDE THRUST—Ib.

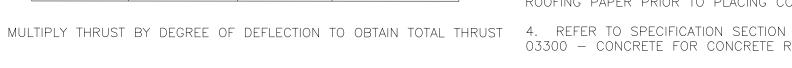
8-INCH 90° ELBOW, PRESSURE=200lb./SQ.IN. FROM TABLE: THRUST=94 x 200=18,800 lb. ASSUME BEARING STRENGTH OF SOIL=2000 lb./SQ.FT.

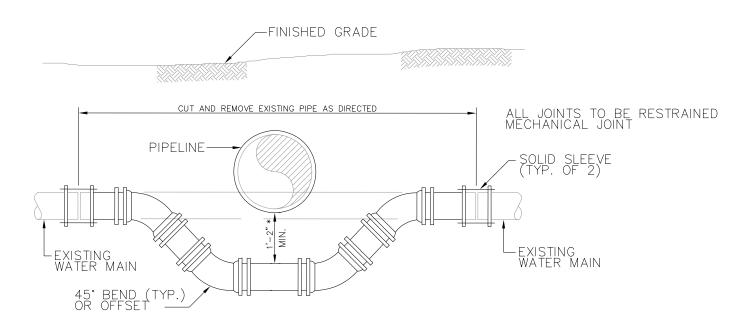
AREA OF BEARING REQUIRED FOR THRUST BLOCK

> 1. IN USING THE ABOVE TABLES, USE THE MAXIMUM INTERNAL PRESSURE ANTICIPATED (i.e. HYDROSTATIC TEST PRESSURE, POSSIBLE SURGE PRESSURE DUE TO PUMP SHUT-OFF, ETC. 2. ASSUME A SOIL BEARING STRENGTH OF 2000 LB. PER SQ. FOOT.

3. JOINTS SHALL BE PROTECTED BY FELT ROOFING PAPER PRIOR TO PLACING CONCRETE.

03300 - CONCRETE FOR CONCRETE REQUIREMENTS





*FOR SEWER CROSSINGS, RELOCATE MAIN ABOVE SEWER (WHERE POSSIBLE) AND PROVIDE 18" MINIMUM CLEARANCE.

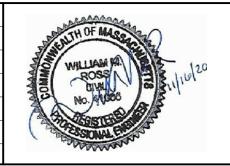
RELOCATION OF EXISTING WATER MAIN DETAIL NOT TO SCALE

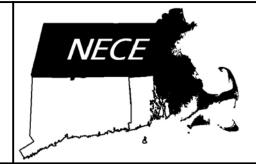
	CITY OF SALEM, MASSACHUSETTS
roject	HIGHLAND AVENUE WATER LINING PROJECT
	DETAILS

Scale	N.T.S.			
Date	11/12/2020			
Job	Salem-HighlandWLining			
Designed by	WMR			
Drawn by	RLM			
Checked by		No.	Description	Date
Approved by		File:	W:\Salem\Water Work\Highland Avenue\CAD Drawings\HighlandC	IPPLining.dwg

TRENCH

EXCAVATION

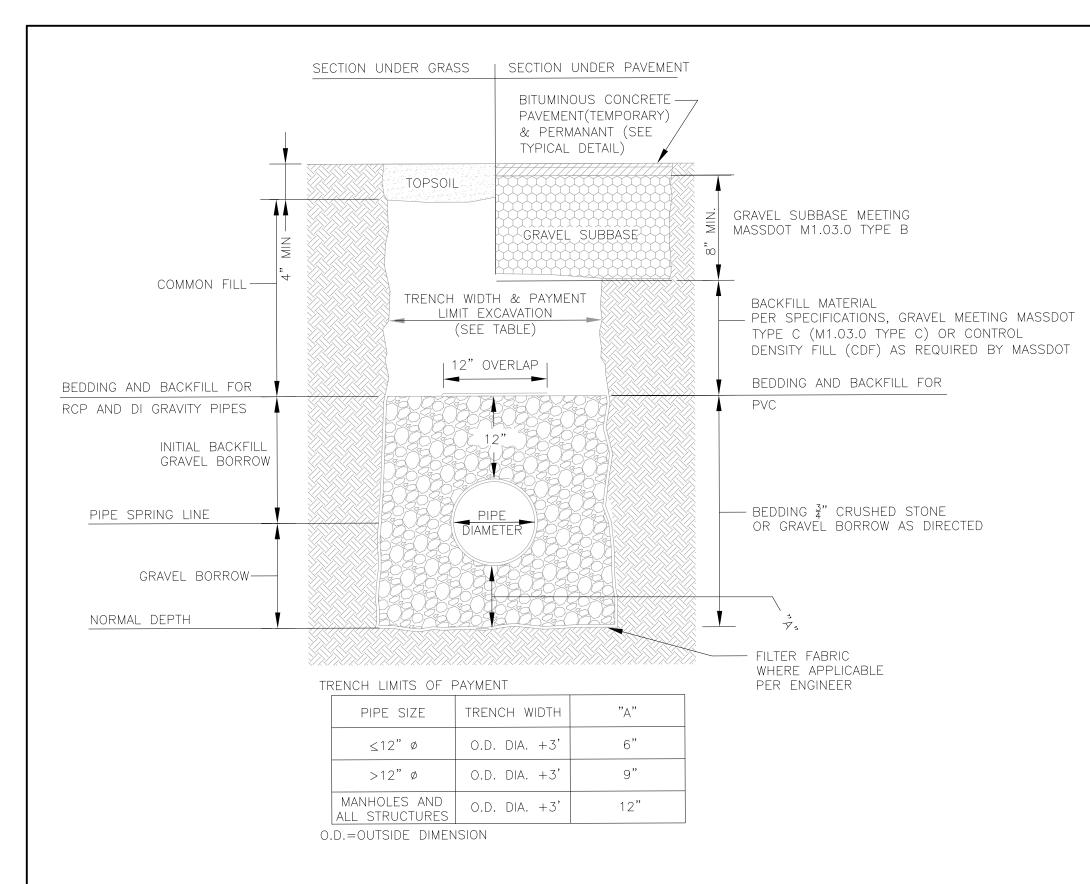




New England Civil Engineering Corp.

265 Essex Street, Suite 102 **SALEM, MASSACHUSETTS**

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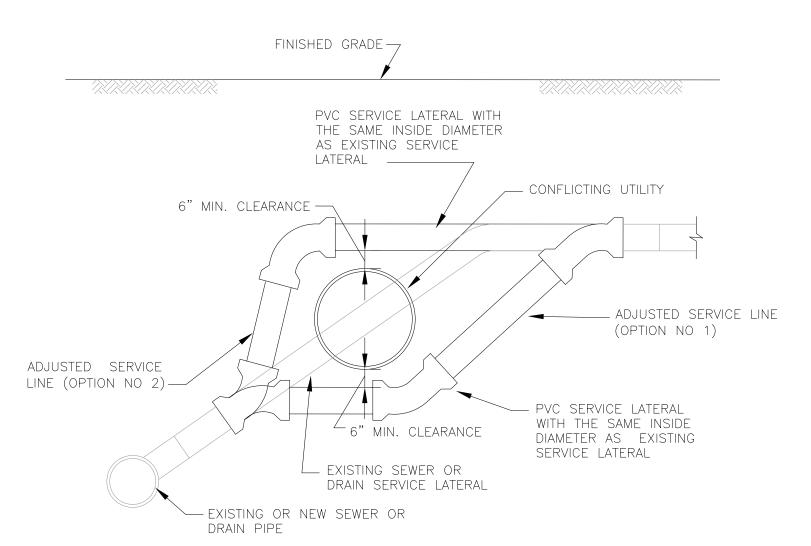


TRENCH DETAIL

NOT TO SCALE

1. REFER TO SPEC. SECTION 02500—PAVING AND SURFACING, MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, AND PAVEMENT DETAILS FOR PAVEMENT AND BASE COURSE REQUIREMENTS.

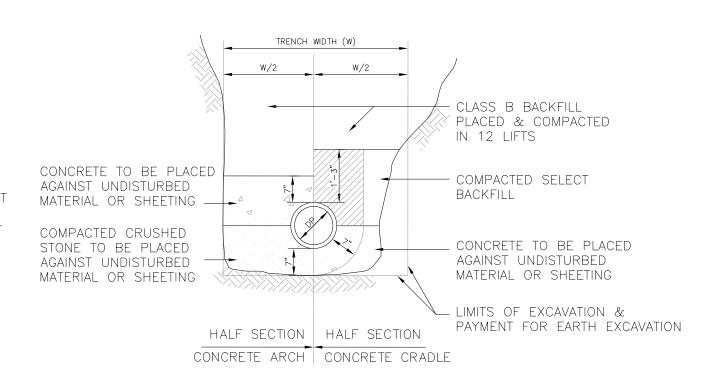
- 2. REFER TO SPEC. SECTION 02200-EARTH EXCAVATION, BACKFILL, FILL, GRADING AND FOR BEDDING AND BACKFILL MATERIAL REQUIREMENTS.
- 3. FOR USE IN PAYMENT OF ALL ITEMS IN WHICH PAY TRENCH WIDTH IS A VARIABLE FOR THE CALCULATION OF QUANTITIES.
- 4. BEDDING SHALL BE PER TABLE UNLESS OTHERWISE INDICATED.
- 5. METAL FOIL MARKING TAPE TO BE PLACE ABOVE WATER PIPE AND SERVICES (MIN. 18" SEPARATION)



SANITARY SEWER OR DRAIN SERVICE LATERAL

RECONNECTION FOR CONFLICTS WITH OTHER UTILITY

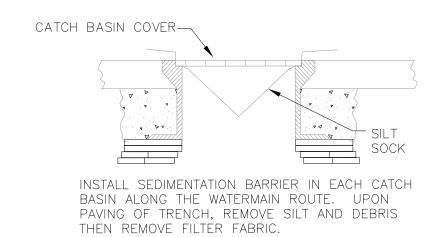
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NOTE:

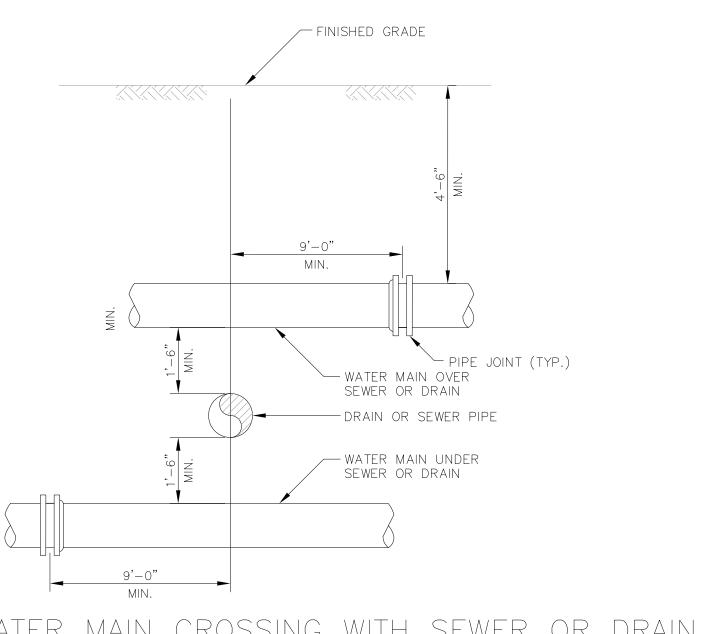
IF CONCRETE ENCASEMENT IS REQUIRED, CONCRETE OF 6"
MINIMUM THICKNESS SHALL BE PLACED ALL AROUND PIPE.

CONCRETE ARCH AND CRADLE DETAIL NOT TO SCALE

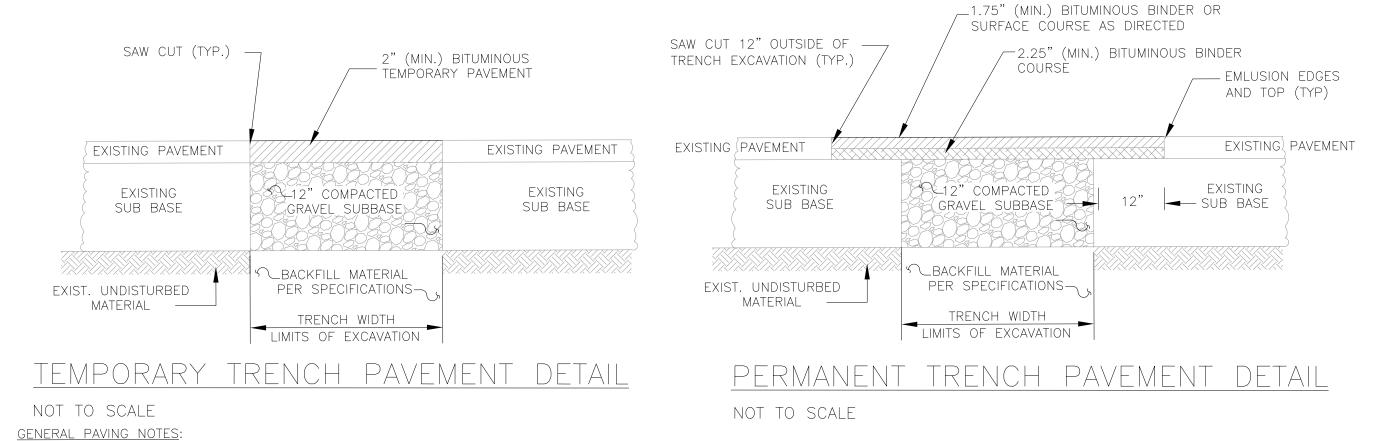


CATCH BASIN SEDIMENTATION BARRIER

NOT TO SCALE

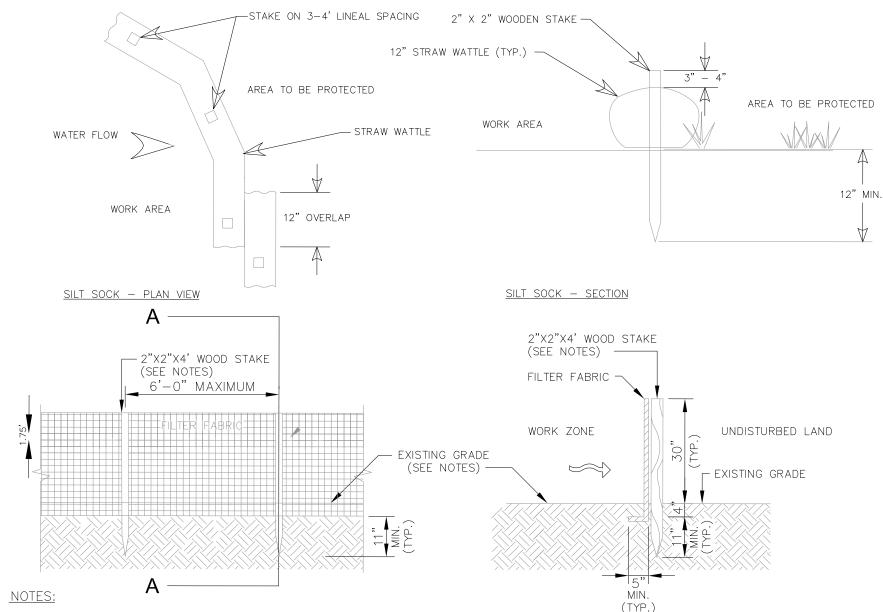


WATER MAIN CROSSING WITH SEWER OR DRAIN NOT TO SCALE



1. THE CONTRACTOR SHALL INSTALL TEMPORARY PAVEMENT ON A DAILY BASIS AS DIRECTED AND SHALL MAINTAIN TEMPORARY PAVEMENT FOR A MINIMUM OF 90 DAYS EXCEPT IF TEMPORARY PAVEMENT IS PLACED AFTER OCTOBER 15TH, THEN IT SHALL BE MAINTAINED UNTIL APRIL 15TH OF THE FOLLOWING YEAR UNLESS AUTHORIZED BY THE TOWN. TEMPORARY CENTERLINE OR FOG LINE PAVEMENT PAINT SHALL BE PLACED ON THE TEMPORARY PAVEMENT WHEREVER EXISTING PAINT IS DISTURBED DURING CONSTRUCTION.

- 2. CONTRACTOR TO INSTALL TEMPORARY PAVEMENT AS DIRECTED BY ENGINEER. CONTRACTOR TO INSTALL PERMANENT TRENCH PAVEMENT OVERLAY PAVEMENT AS DIRECTED BY ENGINEER.
- 3. PERMANENT PAVEMENT SHALL BE PLACED BETWEEN APRIL 15TH AND OCTOBER 15TH OF EACH CALENDAR YEAR UNLESS AUTHORIZED BY THE TOWN OUTSIDE THESE DATES.
- 4. THE CONTRACTOR SHALL SAW CUT 12" OUTSIDE OF TRENCH EXCAVATION. TEMPORARY PAVEMENT SHALL BE REMOVED AND DISPOSED OF. THE GRAVEL SHALL BE FINE GRADED, EMULSION PLACED ON ALL JOINTS, AND PERMANENT PAVEMENT PLACED IN TWO COURSES.
- 5. CONTRACTOR SHALL MATCH EXISTING ROADWAY GRADES AND EXISTING THICKNESS UNLESS OTHERWISE DIRECTED.
- 6. REFER TO SPECIFICATION SECTION 02500 PAVING AND SURFACING FOR ADDITIONAL REQUIREMENTS.
- 7. PERMANENT PAVEMENT DETAIL TO APPLY TO TRENCH PAVEMENT AND ROADWAY RECONSTRUCTION AND/OR PAVEMENT OUTSIDE OF TRENCH LIMITS.

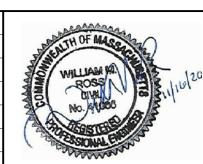


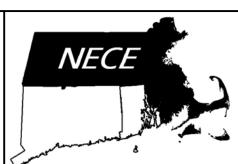
- 1. CONTRACTOR TO INSTALL 12-INCH STRAW WATTLES OR SILT FENCE AS DIRECTED AND APPROVED BY LOCAL CONSERVATION COMMISSION
- 2. FABRIC FOR FENCES TO BE UV RESISTANT POLYPROPYLENE WITH A MINIMUM WEIGHT OF 2.5 OZ/S.Y. TUBULAR BLACK POLYPROPYLENE FOR STRAW WATTLES SHALL BE PHOTO DEGRADABLE.
- 3. FABRIC TO BE ATTACHED TO STAKES WITH STAPLES.
- 4. HAY BALES, WHERE USED, SHALL BE SALT MARCH HAY AS APPROVED BY LOCAL CONSERVATION COMMISSION.
- 5. WHERE HAY BALES ARE USED, TRENCH A MINIMUM OF 4" INTO EXISTING GRADE.
- 6. A MINIMUM OF (2) WOODEN OR METAL STAKES PER HAY BALE. DRIVE STAKES A MINIMUM OF 12" INTO GROUND.
- 7. STRAW MATERIAL TO BE DISPERSED ON SITE OR HAULED OFFSITE AND DISPOSED AS DETERMINED BY THE ENGINEER.
- 8. CONTRACTOR TO INSTALL GEOTEXTILE (SILT SACK) IN ALL CATCH BASINS PRIOR TO EXCAVATION.
- 9. ALL CONSTRUCTION DEWATERING MUST BE TREATED WITH A FILTRATION DEVICE (DIRTBAG) AND/OR SEDIMENTATION TANK OR APPROVED TREATMENT DEVICE PRIOR TO DISCHARGE UPGRADIENT OF OTHER EROSION AND SEDIMENTATION DEVICES AND CONTROLS.

10. SEDIMENTATION AND FLOATABLE DEBRIS BARRIER TO BE SIZED AND MAINTAINED TO ACCOMMODATE VARIED WATER LEVELS IN ADJACENT WATER BODIES.

EROSION AND SEDIMENTATION BARRIER NOT TO SCALE

Client	CITY OF CALEMA MARCON CHUICETTC	Scale	N.T.S.			
Project	CITY OF SALEM, MASSACHUSETTS HIGHLAND AVENUE WATER LINING PROJECT	Date	11/12/2020			
		Job	Salem-HighlandWLining			
		Designed by	WMR			
	DETAILS	Drawn by	RLM	1.)	REVISED FOR MASSDOT PERMIT	12/4/2020
		Checked by		No.	Description	Date
		Approved by		File: W:\Salem\ V	Vater Work\Highland Avenue\CAD Drawings\HighlandCIF	PPLining.dwg
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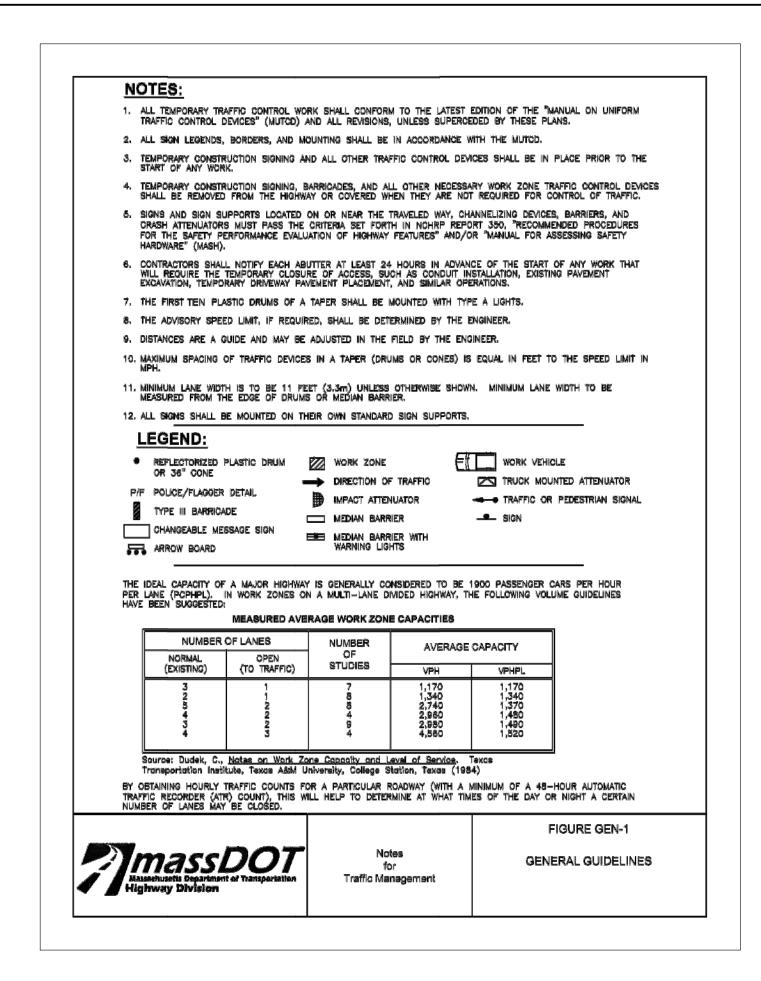


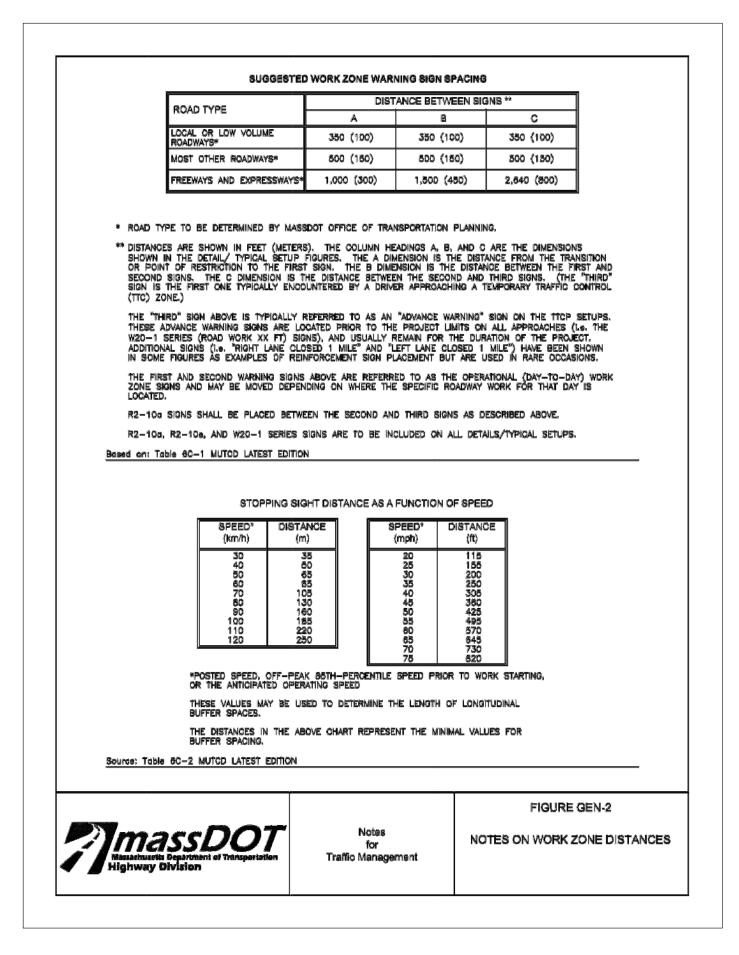


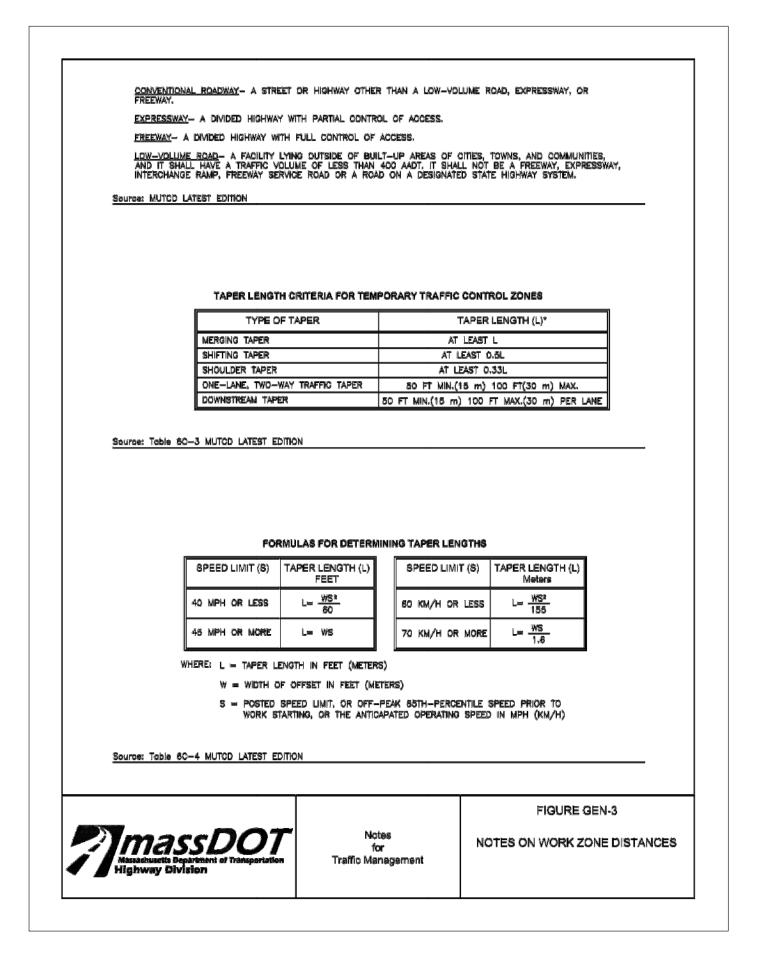


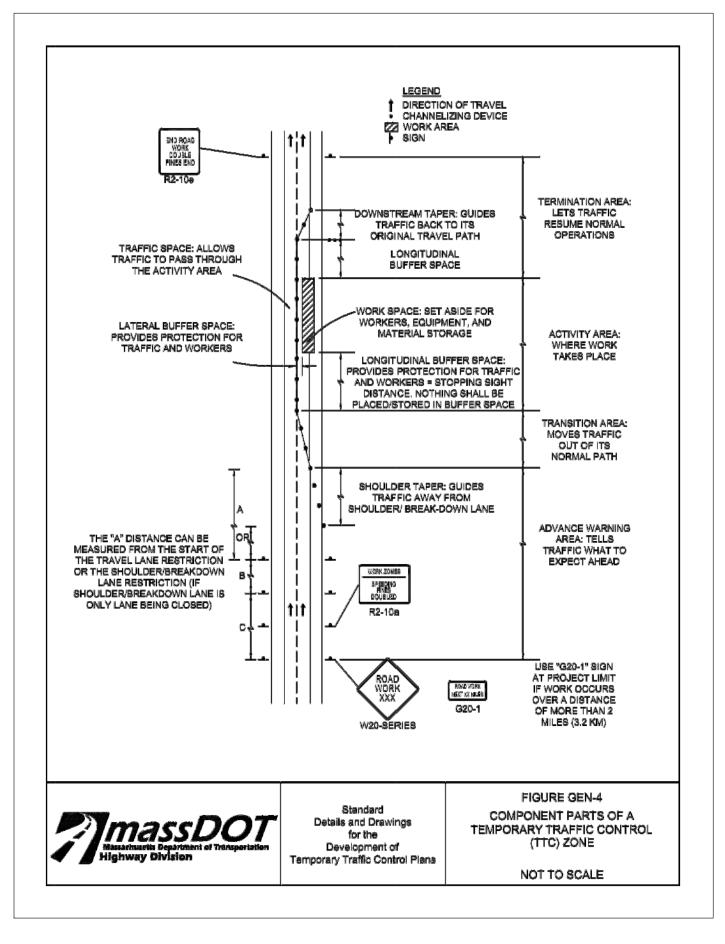
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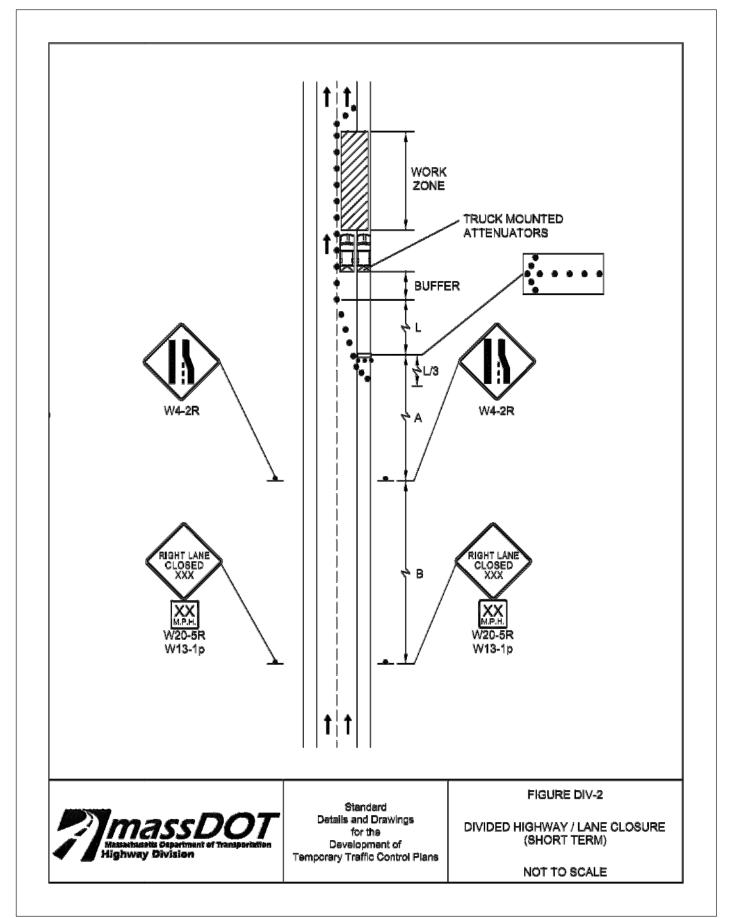
265 Essex Street, Suite 102 SALEM, MASSACHUSETTS

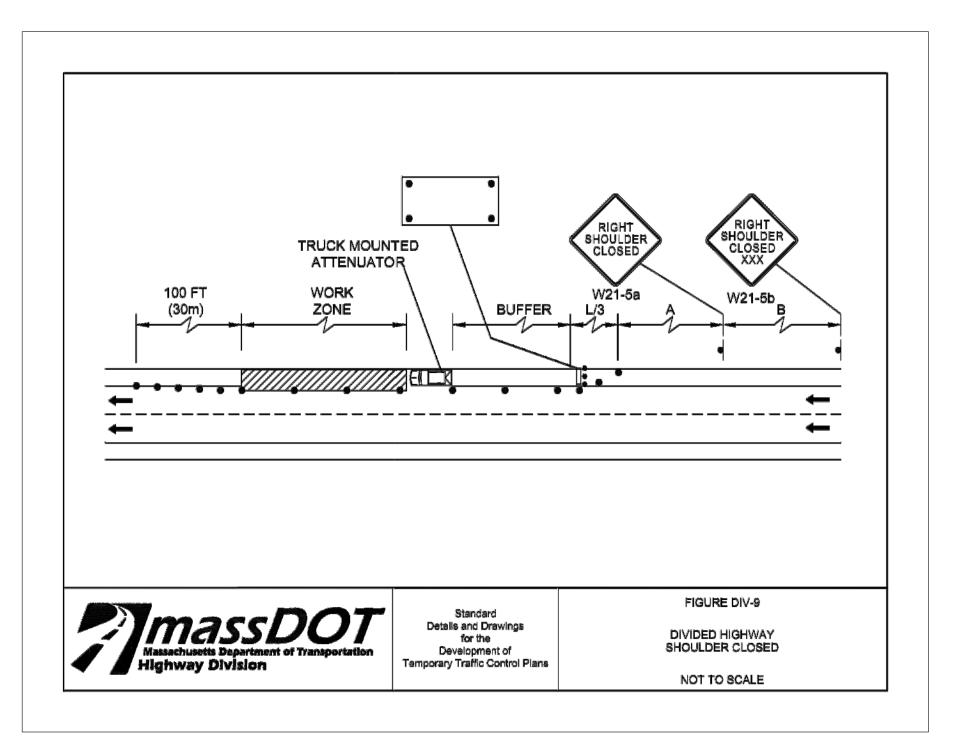


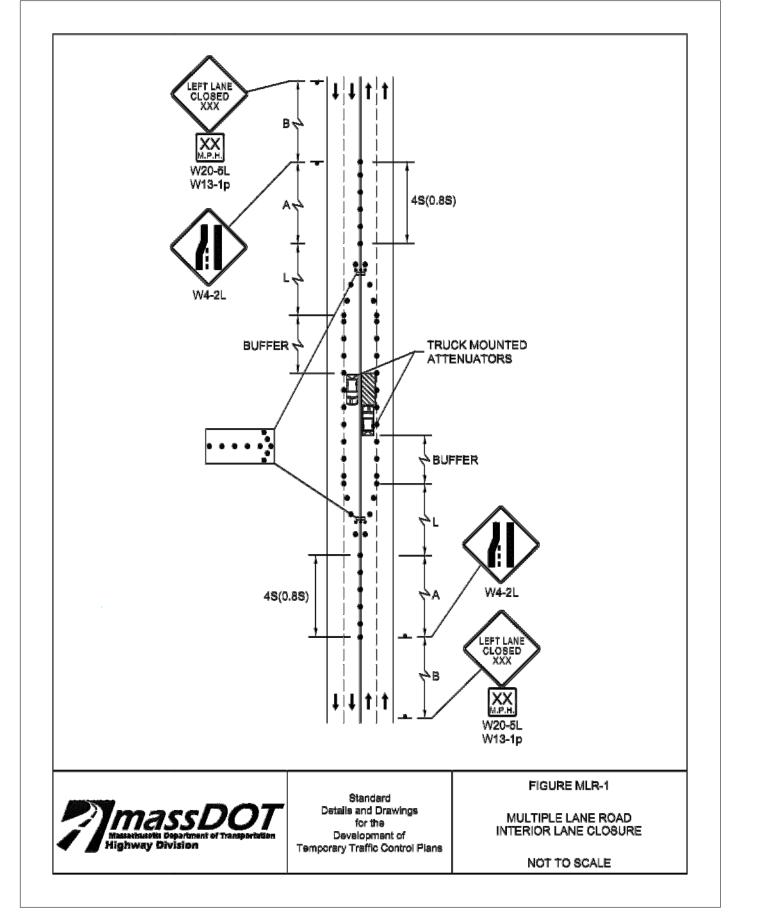








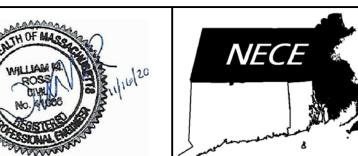




<u>NOTES</u>

- 1. TRAFFIC CONTROL MEASURES SHALL INCLUDE USE OF
- POLICE DETAILS AS REQUIRED. 2. TRAFFIC CONTROL SIGNAGE SHALL UTILIZE POLICE
- OFFICER AHEAD IN LIEU OF FLAGGER AHEAD. 3. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE
- FIELD BY THE ENGINEER OR POLICE DETAIL. 4. ALL TEMPORARY WALKWAYS SHALL MEET ADA/AAB
- GUIDELINES.
- 5. ADA COMPLIANT PEDESTRIAN ACCESS SHALL BE MAINTAINED AT ALL TIMES AND SHALL INCLUDE ADDITIONAL SIGNAGE WHERE NEEDED TO DIRECT
- PEDESTRIAN TRAFFIC AROUND WORK ZONE. 6. ALL WORK IN THE STATE HIGHWAY LAYOUT MUST BE COMPLETED BETWEEN THE HOURS OF 9:00 P.M. TO 5:00

N.T.S. 11/12/2020 Salem-HighlandWLining REVISED FOR MASSDOT PERMIT rawn by RLM 12/4/202 necked by proved by : W:\Salem\Water Work\Highland Avenue\CAD Drawings\HighlandCIPPLining.dwg







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Project

CITY OF SALEM, MASSACHUSETTS

LEFT LANE CLOSURES SHALL USE W4-2L AND W20-5L SIGNS IN

PLACE OF W44-2R AND W20-5R SIGNS RESPECTIVELY.

HIGHLAND AVENUE WATER LINING PROJECT

DETAILS