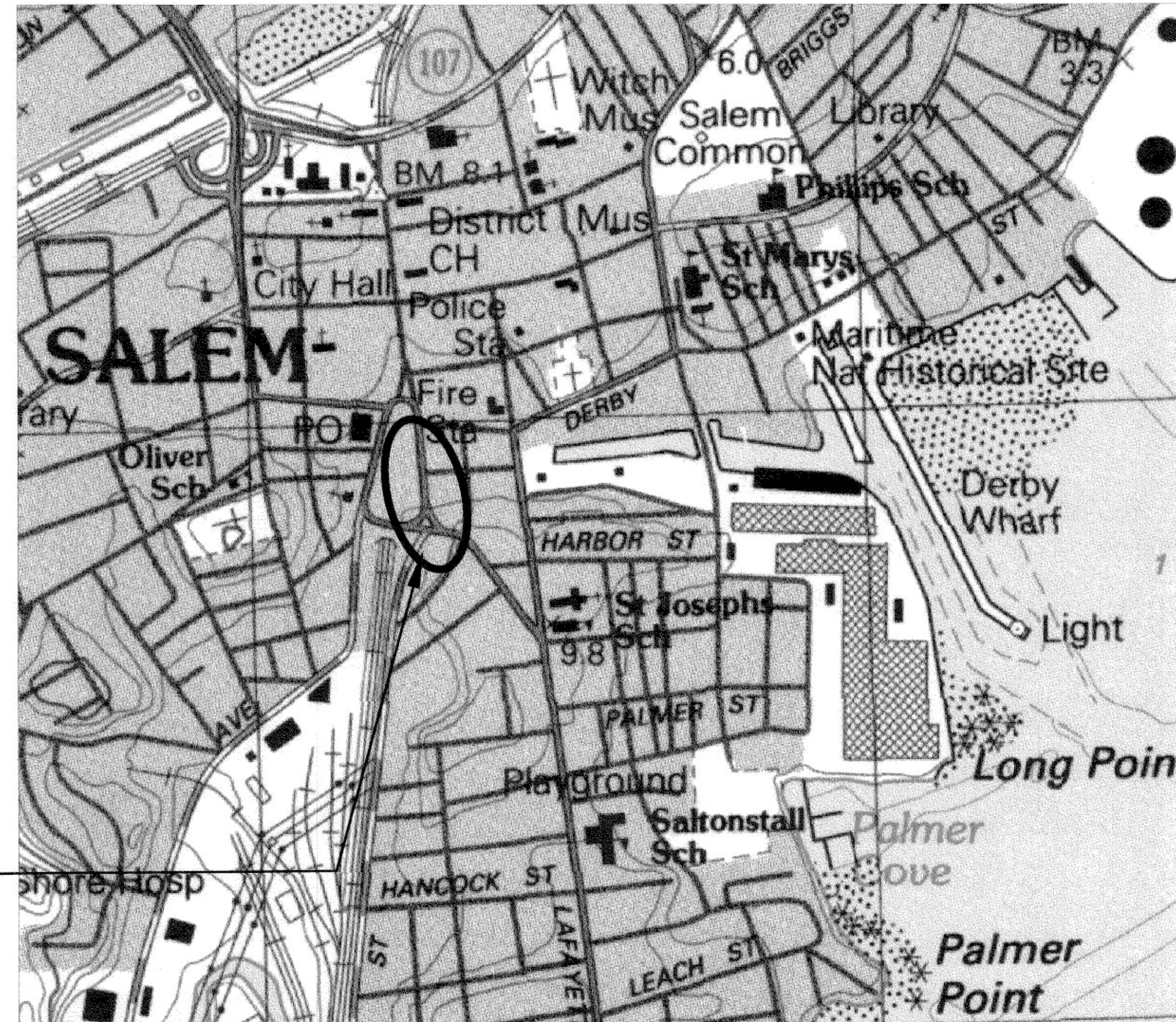


CITY OF SALEM, MASSACHUSETTS WASHINGTON STREET AND DODGE STREET UTILITY REPLACEMENT PROJECT AUGUST 2015

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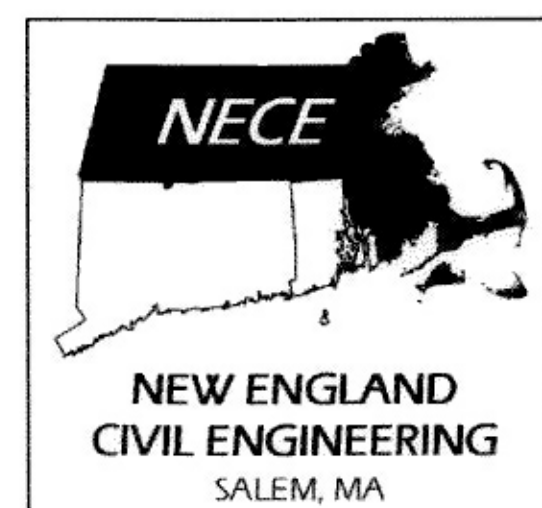
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PROJECT LOCATION

LOCUS MAP (NO SCALE)

NEW ENGLAND CIVIL ENGINEERING CORP.



120 Washington Street
Suite #202E
Salem, MA 01970

(978) 741-7401
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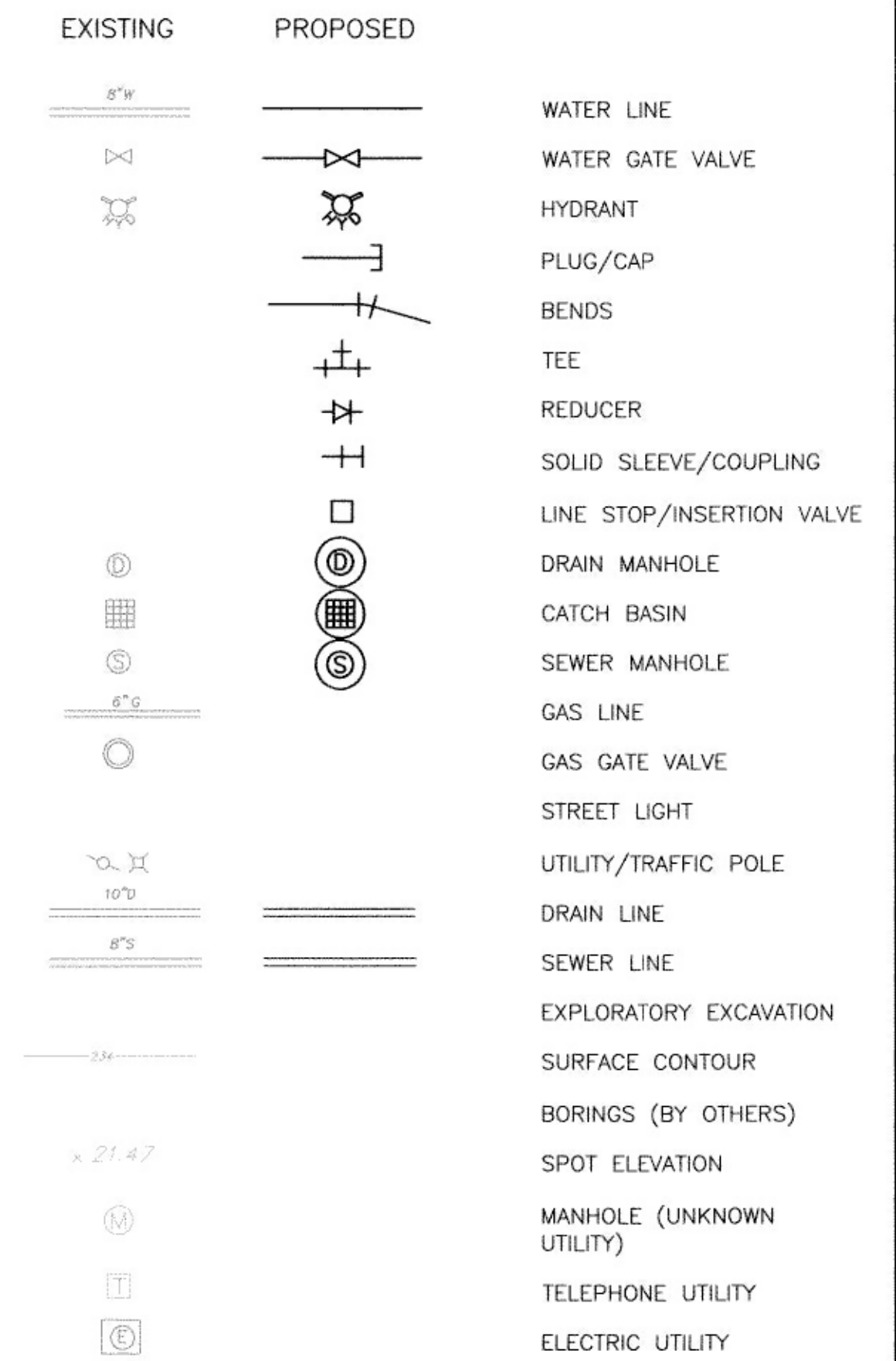


GENERAL NOTES

- VERTICAL DATUM BASED ON THE CITY OF SALEM VERTICAL DATUM.
- BASE SURVEY PREPARED FOR AND PROVIDED BY RCG, LLC AND NATIONAL GRID (NEP).
- BENCHMARKS ARE PROVIDED BY THE OWNER AS INDICATED ON SHEET C-1. CONTRACTOR RESPONSIBLE TO ESTABLISH NEW BENCHMARKS AND MAINTAIN AND RESET BENCHMARKS.
- THE EXISTENCE, SIZE, PIPE MATERIAL, LOCATION, ORIENTATION AND DESCRIPTION OF UTILITIES ARE FROM THE EXISTING INFORMATION PROVIDED, BUT ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UNDERGROUND UTILITIES BEFORE EXCAVATING.
- ALL RIM AND INVERT ELEVATIONS ARE APPROXIMATE AND ARE SHOWN TO WITHIN 0.1 FEET. CONTRACTOR TO COMPLETE INDEPENDENT SURVEY VERIFICATION IN THE FIELD BY PROFESSIONAL LAND SURVEYOR.
- ALL BURIED ELECTRONIC AND TELECOM CONDUITS ARE SHOWN SCHEMATICALLY AND NOT TO SCALE. CONTRACTOR TO ASSUME ALL BURIED 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.
- THE LOCATION OF ALL BURIED ELECTRIC AND TELECOMMUNICATIONS CONDUITS, MANHOLES, HANDHOLES, AND WIRES IS NOT KNOWN. NEW OR ADDITIONAL BURIED ELECTRIC AND TELECOMMUNICATIONS CONDUITS AND WIRES MAY HAVE BEEN INSTALLED OR MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS.
- EXISTING PAVEMENT THICKNESS, SIDEWALK MATERIALS, AND SUBBASE MATERIALS VARY AND MAY INCLUDE MULTIPLE, VARIED PAVEMENT MATERIALS, AND COBBLESTONES.
- BEFORE EXCAVATING, BLASTING, BACK FILLING, 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 OWNER AND ENGINEER ASSUME NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACURATELY SHOWN.
- 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. ASBESTOS CEMENT (AC) PIPES ARE NOT KNOWN TO EXIST WITHIN PROJECT AREA, BUT IF ENCOUNTERED CONTRACTOR SHALL IMPLEMENT APPROPRIATE HEALTH AND SAFETY PROVISIONS AND REMOVE AND DISPOSE AS PIPE IN LEGAL MANNER.
- 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. IN ADDITION, NOTIFICATION SHALL ALSO BE GIVEN TO ALL AFFECTED PRIVATE AND/OR PUBLIC UTILITIES TO PERMIT STREET MARKING OF THEIR LINES.
- CONTRACTOR TO COORDINATE WITH GAS COMPANY AND OWNERS OF OTHER UTILITIES TO PROTECT AND SUPPORT (OR REMOVE AND REPLACE) ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION.
- IF THE CONTRACTOR DAMAGES UTILITY SERVICES, HE SHALL IMMEDIATELY NOTIFY THE RESPECTIVE UTILITY COMPANY AND SHALL IMMEDIATELY REPLACE OR REPAIR.
- 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.
- THE CONTRACTOR'S ATTENTION IS DIRECTED TO EXISTING LABELED SEWER MANHOLE OR DRAINAGE MANHOLE COVERS SHOWN ON THE PLANS AS THEY MAY NOT ACCURATELY REPRESENT THE UNDERGROUND SERVICE BELOW. ALL DRAINS AND SEWERS ARE TIDALLY INFLUENCED WITH SALT WATER INFLOW / INFILTRATION DURING HIGH TIDES. CONTRACTOR SHALL ANTICIPATE BYPASS PUMPING WILL BE REQUIRED DURING CONSTRUCTION INVOLVING INCREASED BYPASS PUMPING CAPACITY DURING RAINFALL AND HIGH TIDES.
- 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.
- EXPLORATORY EXCAVATIONS (TEST PITS) SHALL BE EXCAVATED AT THOSE LOCATIONS INDICATED ON THE PLANS AND WHERE ORDERED AND APPROVED BY THE OWNER. TEST PIT EXCAVATIONS SHALL BE MADE TO DETERMINE THE LOCATIONS OF ALL EXISTING UTILITIES, STRUCTURES, OR SUBSURFACE CONDITIONS IN ADVANCE OF CONSTRUCTION OPERATIONS 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.
- PROPOSED INVERT ELEVATIONS AND SLOPES OF NEW OR REPLACEMENT SEWER/DRAIN PIPES AND SERVICES TO BE DETERMINED IN THE FIELD BY THE ENGINEER BASED ON CONTRACTOR'S SURVEY OF EXISTING RIM AND INVERT ELEVATIONS COMPLETED IN CONJUNCTION WITH CONFINED SPACE ENTRY OR TEST PITS. 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.
- CONTRACTOR SHALL NOT ORDER PRECAST CONCRETE STRUCTURES OR MANHOLE/CATCH BASIN CASTINGS UNTIL TEST PITS AND CONTRACTOR'S LEVEL SURVEY HAVE BEEN COMPLETED ON ALL EXISTING STRUCTURES AND CONNECTIONS ON EACH STREET OR IN EACH WORK AREA AS DETERMINED BY THE ENGINEER AND THE ENGINEER CAN CONFIRM NUMBER, SIZE, AND TYPE. PIPE OPENINGS IN EACH MANHOLE OR STRUCTURE TO BE FACTORY CAST OR CORED IN FIELD AS DIRECTED BY ENGINEER.
- DAMAGE OF PROPERTY BEYOND THE WORK LIMITS CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE, SUBJECT TO THE APPROVAL OF THE ENGINEER.
- WHERE WATER LINES, DRAINAGE PIPES, STRUCTURES, OR CONDUITS ARE ABANDONED IN PLACE, CONTRACTOR SHALL MAKE SURE THAT ALL CONNECTING PIPES, INLETS AND OUTLETS ARE PLUGGED.
- CONTRACTOR TO PROTECT AND SUPPORT OR REMOVE AND REPLACE SIGNS, POSTS, HYDRANTS, FENCES, GATES, OR OTHER SURFACE FEATURES THAT OBSTRUCT CONSTRUCTION OPERATIONS OR ARE DAMAGED BY CONSTRUCTION.
- CONTRACTOR TO PROTECT AND SUPPORT OR REMOVE AND REPLACE SIGNS, POSTS, HYDRANTS, FENCES, GATES, 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, SUBJECT TO THE APPROVAL OF THE ENGINEER.
- ALL EXISTING MANHOLE FRAMES AND COVERS AND CATCH BASIN FRAMES AND GRATES REMOVED BUT NOT REUSED, AND SELECTED FOR SALVAGE BY THE OWNER, SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE DELIVERED BY THE CONTRACTOR TO A LOCATION DESIGNATED BY THE OWNER. CASTINGS NOT SELECTED BY THE OWNER FOR SALVAGE SHALL BE DISPOSED OF BY THE CONTRACTOR.
- A MINIMUM 10-FOOT HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN WATER AND SEWER (SANITARY OR STORM) MAINS. SEPARATION IS MEASURED FROM EDGE TO EDGE. IN CASES WHERE 10-FOOT 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. AT CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE WITH 18 INCH VERTICAL SEPARATION, WITH WATER MAIN ABOVE SEWER IF AT ALL POSSIBLE.
- CONTRACTOR SHALL BACKFILL, COMPACT, AND PAVE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION (MDOT) AND THE CITY OF SALEM, INCLUDING AT A MINIMUM THE REQUIREMENTS SHOWN ON DETAILS.
- THE CONTRACTOR SHALL INSTALL TEMPORARY PAVEMENT ON A DAILY BASIS 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 CITY. TEMPORARY CENTERLINE OR FOGLINE PAVEMENT PAINT SHALL BE PLACED ON THE TEMPORARY PAVEMENT WHEREVER EXISTING PAINT IS DISTURBED DURING CONSTRUCTION.
- PERMANENT PAVEMENT SHALL BE PLACED BETWEEN APRIL 15TH AND OCTOBER 15TH OF EACH CALENDAR YEAR UNLESS AUTHORIZED BY THE TOWN OUTSIDE THESE DATES.
- THE CONTRACTOR SHALL PROTECT ALL TRAVELED WAYS AND PEDESTRIAN WAYS FROM CONSTRUCTION DEBRIS AT ALL TIMES.

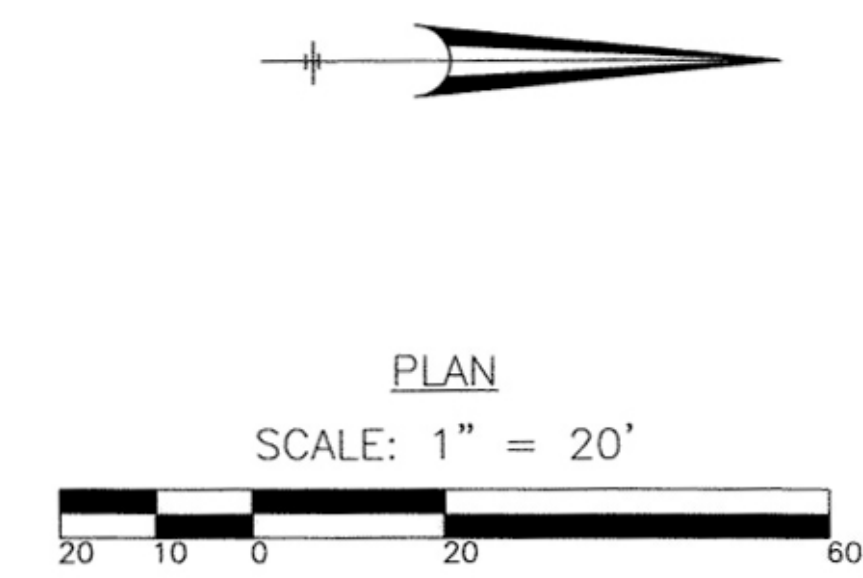
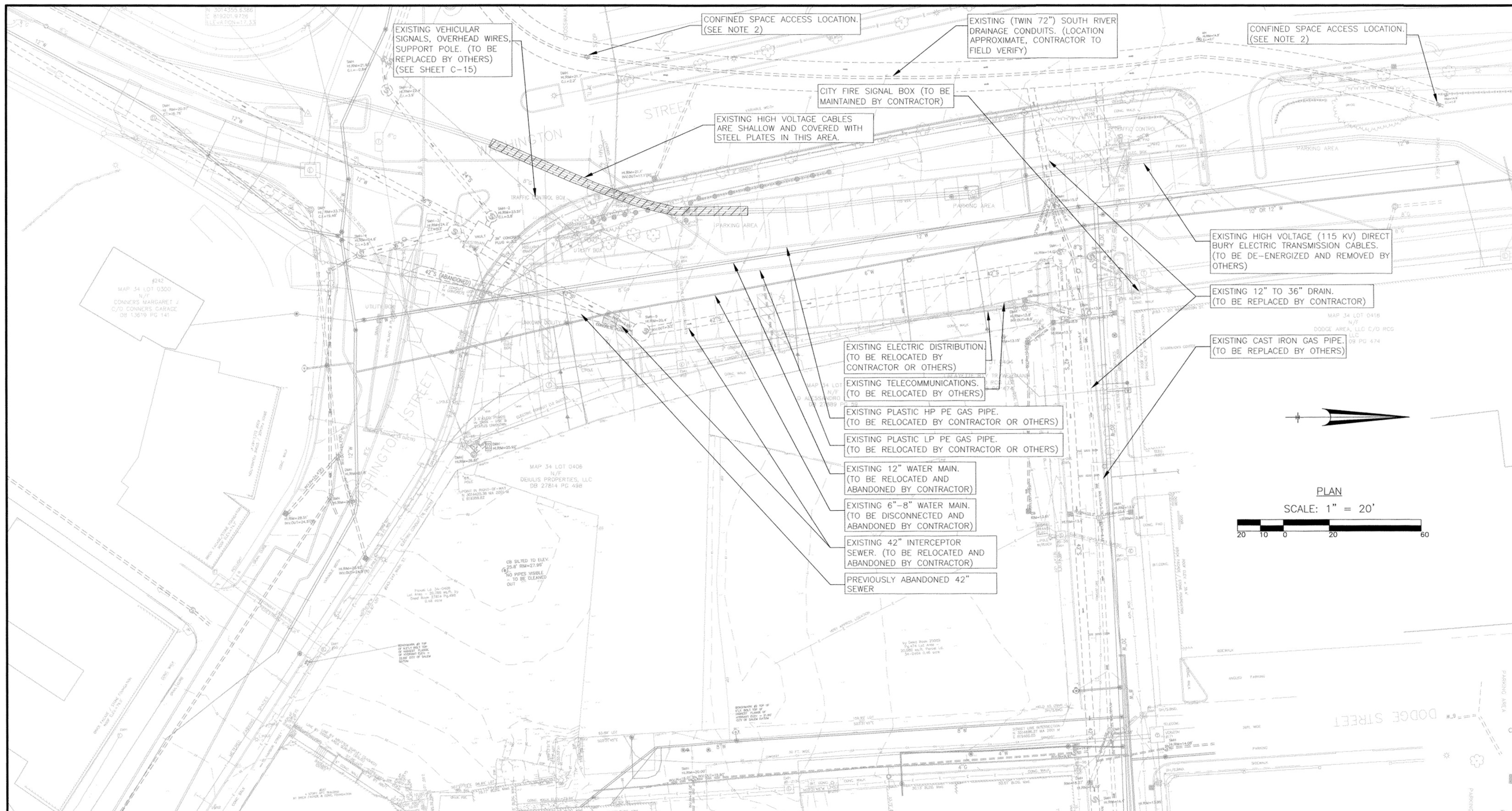
- CONTRACTOR SHALL MAINTAIN TWO LANE (TWO-WAY) OF TRAFFIC AT ALL TIMES AND ACCESS FOR EMERGENCY VEHICLES AND PEDESTRIANS, CONTRACTOR SHALL COORDINATE TRAFFIC MANAGEMENT PLAN WITH CITY OF SALEM POLICE DEPARTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGEMENT OF TRAFFIC AND PUBLIC SAFETY, INCLUDING SIGNAGE AND DETOURS. TRENCHES MUST BE PASSABLE AND GRAVEL MUST BE MAINTAINED. CONTRACTOR 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.
- CONTRACTOR IS RESPONSIBLE TO PREVENT STEEL PLATES FROM MOVING, INCLUDING CUTTING PAVEMENT TO RECESS PLATES, UTILIZATION OF STEEL SPIKES AND WEDGES, AND COLD PATCH SHIMS AND RAMP.
- CONTRACTOR SHALL BE PROVIDED A STAGING AREA BY THE OWNER AS INDICATED ON PLANS, CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY, SECURITY, AND CLEANUP
- 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/ STRAW WATTLES AROUND SOIL STOCKPILES AND ALONG PROJECT BOUNDARY 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.
- CONTRACTOR SHALL MAINTAIN EDGE OF ROADWAY DRAINAGE PATTERNS INCLUDING REPLACEMENT OF PAVED AND UNPAVED SWALES, BERMS, AND CURBS.
- DIVERSION AND CONTROL OF EXISTING SANITARY, STORM SEWER, DRAINAGE CULVERTS 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.
- THE CONTRACTOR SHALL PROVIDE METHODS 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. CONTRACTOR RESPONSIBLE FOR ALL PERMITTING REQUIREMENTS RELATED TO DEWATERING IF DISCHARGE TO DRAINAGE OR SURFACE WATER WILL BE REQUIRED.
- 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.
- NO TRASH, GREASE TUBES, OR DEBRIS SHALL BE THROWN INTO CONSTRUCTION TRENCHES PRIOR TO BACKFILL.
- CONTRACTOR TO MAINTAIN HAZMAT SPILL KITS ON SITE AT ALL TIMES.
- 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.
- THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE UTILITY COMPANIES DOING WORK IN THE SAME AREA. THE CONTRACTOR SHALL ALLOW THE UTILITY COMPANIES AND THEIR REPRESENTATIVES TO INSTALL OR MAINTAIN THEIR SYSTEMS WITHIN CITY OWNED STREETS AND EASEMENTS.
- CONTRACTOR TO PREPARE A VALVE OPERATION AND WATER SERVICE INTERRUPTION SEQUENCING PLAN AND SUBMIT FOR REVIEW BY THE CITY 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.
- CONTRACTOR IS RESPONSIBLE TO ASSIST THE CITY WITH IDENTIFYING VALVES TO BE EXERCISED OR OPERATED TO ACHIEVE SERVICE INTERRUPTION, ASSIST CITY WITH OPERATING ALL VALVES REQUIRED FOR SERVICE SHUTDOWN, AND DISTRIBUTING SERVICE INTERRUPTION NOTIFICATION FLYERS TO ALL BUSINESSES AND RESIDENCES PRIOR TO EACH SERVICE INTERRUPTION. CONTRACTORS 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.
- NO WATER SERVICE INTERRUPTIONS SHALL BE PERMITTED UNLESS THE CONTRACTOR PROVIDES THE SALEM WATER DEPARTMENT 72 HOUR (3 DAY) NOTICE EXCLUDING WEEKEND DAYS.
- ALL SERVICES TO BE RECONNECTED, NUMBER AND LOCATION OF PROPOSED SERVICE LINES (1"-6") SHOWN ARE APPROXIMATE, CONTRACTOR TO LAY OUT PROPOSED SERVICE LINES IN FIELD.
- BACKFLOW PREVENTION DEVICE TO BE PROVIDED BY THE CONTRACTOR AND USED FOR ALL CONSTRUCTION WATER.
- ANY LABORATORY USED FOR WATER ANALYTICAL TESTING SHALL BE STATE OF MASSACHUSETTS CERTIFIED LABORATORY.
- THE CONTRACTOR SHALL BE AWARE THAT BORINGS HAVE NOT BEEN PROVIDED FOR ALL AREAS AND THE EXISTING 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 THE OCEAN, SOUTH RIVER, AND TIDAL IMPACTS. UNSUITABLE SOILS ARE KNOWN TO EXIST DUE TO THE PROXIMITY OF THE PROJECT TO WATER. CONTRACTOR SHALL ANTICIPATE THAT REMOVAL AND DISPOSAL OF UNSUITABLE SOILS AND CONSTRUCTION DEWATERING DUE TO GROUNDWATER WILL BE REQUIRED THROUGHOUT THE PROJECT AREA WITH INCREASED DEWATERING REQUIRED DURING RAINFALL AND HIGH TIDE CONDITIONS.
- CONTRACTOR TO SCHEDULE NEW WATER MAIN INSTALLATIONS AND ADJUST LAYOUT OF NEW WATER MAINS IN THE FIELD TO AVOID CONFLICTS WITH EXISTING AND PROPOSED SEWERS, DRAINS, GAS, ELECTRIC, AND OTHER EXISTING UTILITIES.

LEGEND





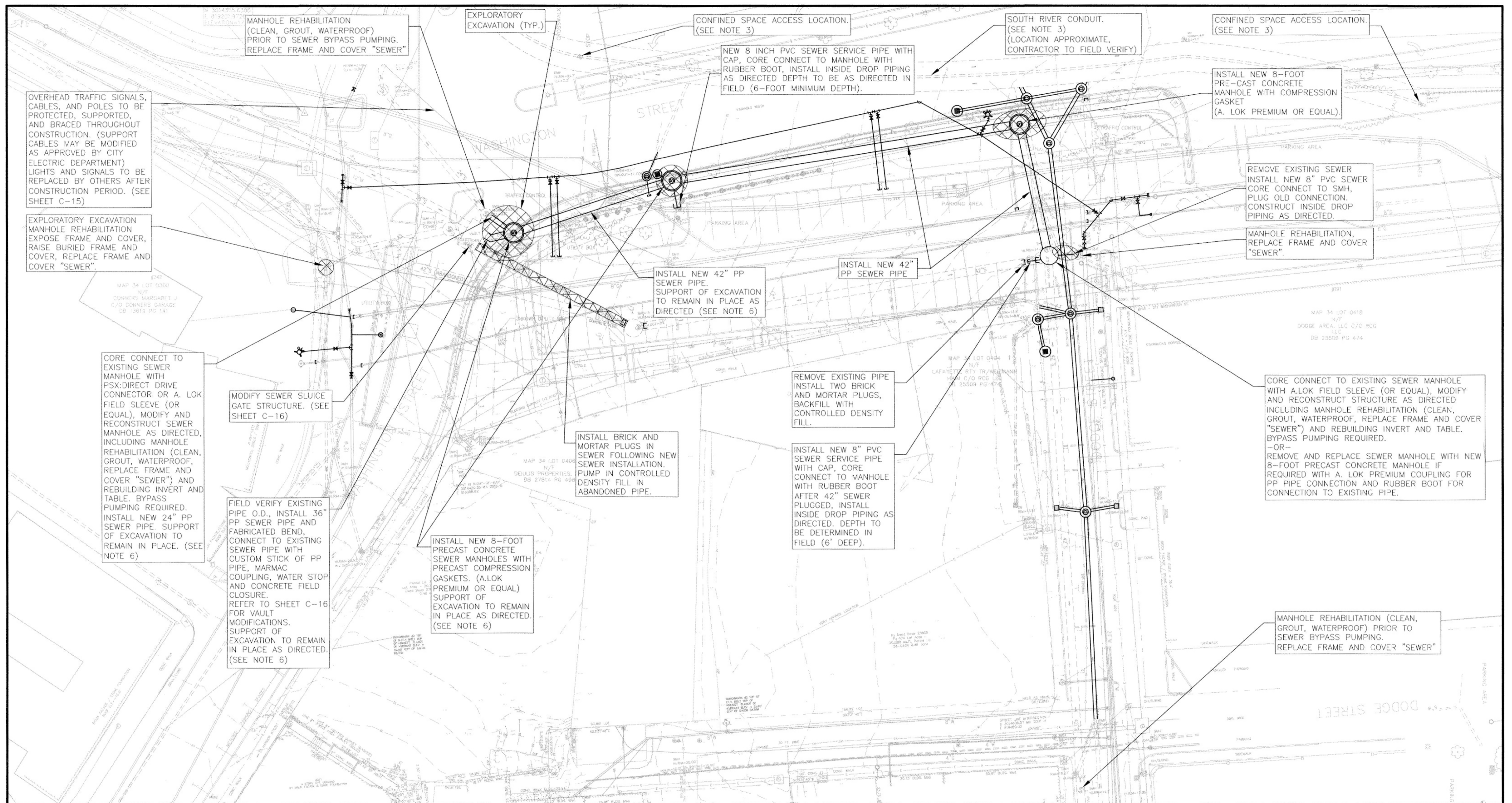
<p>Client: CITY OF SALEM, MASSACHUSETTS</p> <p>Project: MASSWORKS UTILITY RELOCATION</p> <p style="text-align: center;">GENERAL NOTES AND LEGEND</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr><td>Scale:</td><td>N.T.S.</td></tr> <tr><td>Date:</td><td>7/30/2015</td></tr> <tr><td>Job:</td><td>MAWorks</td></tr> <tr><td>Designed by:</td><td>WMR</td></tr> <tr><td>Drawn by:</td><td>DJW</td></tr> <tr><td>Checked by:</td><td>WMR</td></tr> <tr><td>Approved by:</td><td>WMR</td></tr> </table>	Scale:	N.T.S.	Date:	7/30/2015	Job:	MAWorks	Designed by:	WMR	Drawn by:	DJW	Checked by:	WMR	Approved by:	WMR	<div style="text-align: center;"> NEW ENGLAND CIVIL ENGINEERING SALEM, MA </div>	<p style="text-align: center; font-size: 1.2em;">New England Civil Engineering Corp.</p> <p style="text-align: center; font-size: 0.8em;">120 Washington Street SALEM, MASSACHUSETTS</p>	<p style="text-align: center;">Sheet</p> <p style="text-align: center; font-size: 1.5em;">G-2</p>
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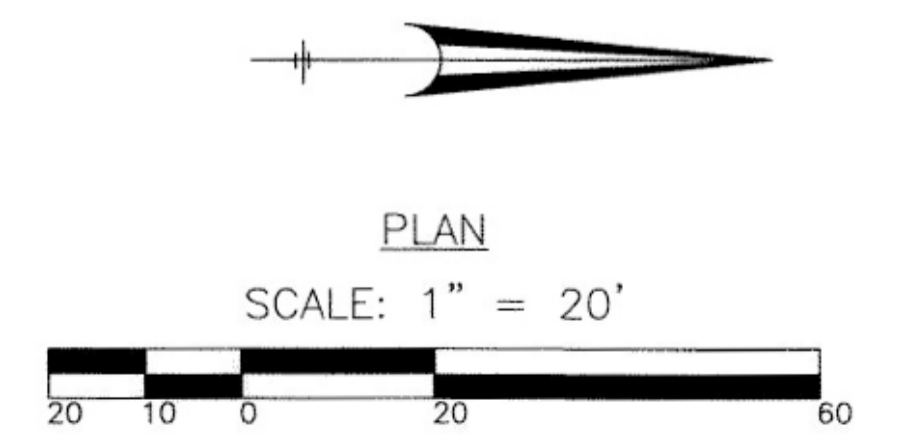


- NOTES:
- REFER TO SHEET C-5 FOR "COORDINATION, UTILITY WORK AND WORK BY OTHERS" FOR ADDITIONAL INFORMATION ABOUT WORK BY OTHERS.
 - SOUTH RIVER CONDUITS ARE TWIN 72" CONCRETE PIPES SUPPORTED ON TIMBER PILES, WITH BURIED GRANITE SLABS ADJACENT TO CONDUIT IN SOME AREAS. (SEE DETAILS FOR SCHEMATIC CONFIGURATION)

Client	CITY OF SALEM, MASSACHUSETTS	Scale	1"=20'	 	New England Civil Engineering Corp. 120 Washington Street SALEM, MASSACHUSETTS	Sheet
Project	MASSWORKS UTILITY RELOCATION	Date	7/30/2015			C-1
	EXISTING CONDITIONS	Job	MAWorks			
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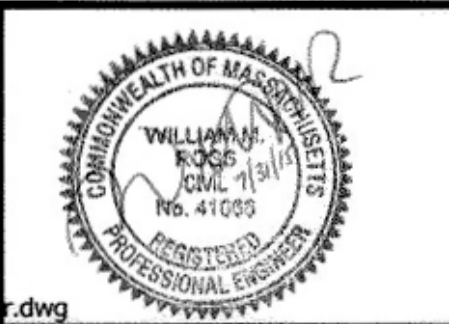


- NOTES:
- 1.) PREVIOUSLY INSTALLED SHEETING (OR OTHER TYPE OF SUPPORT OF EXCAVATION (S.O.E.)) MAY EXIST AROUND SEWER SLUICE GATE STRUCTURE, MANHOLES, OR PIPES. CONTRACTOR TO REMOVE OR CUT AND DISPOSE EXISTING S.O.E. AS DIRECTED.
 - 2.) EXISTING INTERSECTION ALIGNMENT HAS CHANGED OVER TIME, PREVIOUS TRAFFIC ISLANDS, ABUTMENTS, AND STONE REVETMENTS MAY BE BURIED WITHIN CONSTRUCTION ROUTE.
 - 3.) SOUTH RIVER CONDUITS ARE TWIN 72" CONCRETE PIPES SUPPORTED ON TIMBER PILES, WITH BURIED GRANITE SLABS ADJACENT TO CONDUIT IN SOME AREAS. (LOCATION APPROXIMATE, CONTRACTOR TO FIELD VERIFY)
 - 4.) SEWER PIPE TO BE TRIPLE WALLED POLYPROPYLENE (PP) PIPE (TW SANITITE HP BY ADS) OR APPROVED EQUAL.
 - 5.) SOUTH RIVER CONDUITS ARE TIDALLY INFLUENCED; BACK FLOW PREVENTION, BYPASS PUMPING, AND DEWATERING REQUIRED WHEN WORKING NEAR CONDUITS, PARTICULARLY DURING HIGHER TIDE AND WET WEATHER CONDITIONS.
 - 6.) SUPPORT OF EXCAVATION (S.O.E.) TO BE CUT OFF AT 8 FOOT DEPTH FOLLOWING BACKFILL, AND TO REMAIN IN PLACE AS INDICATED AND/OR AS DIRECTED. BACKFILL AROUND PIPE CONNECTIONS WITH CONTROLLED DENSITY FILL (CDF) IF REQUIRED AS DIRECTED.



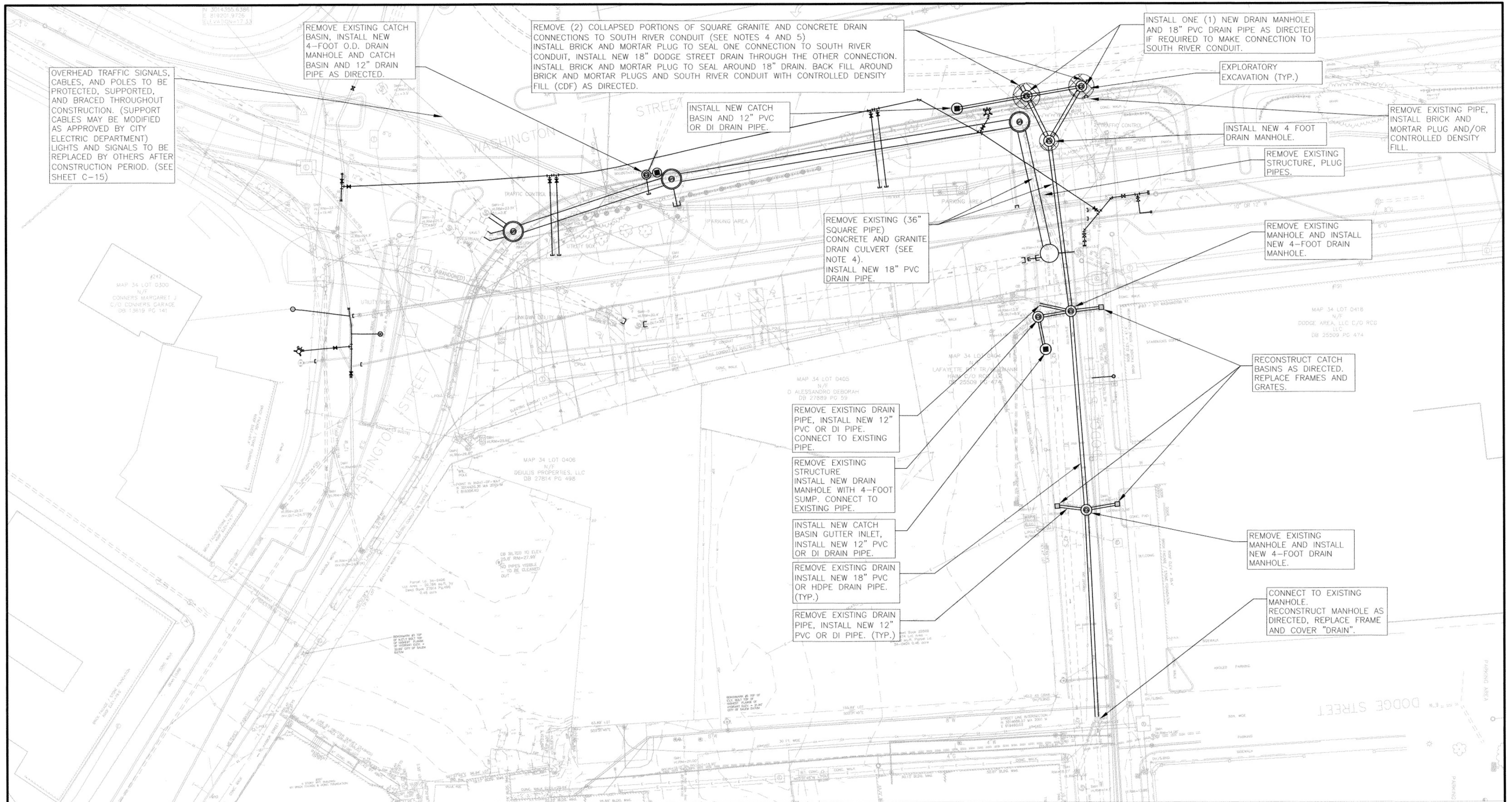
Client	CITY OF SALEM, MASSACHUSETTS
Project	MASSWORKS UTILITY RELOCATION
	SEWER PLAN

Scale	1"=20'
Date	7/31/2015
Job	MAWorks
Designed by	WMR
Drawn by	DJW
Checked by	WMR
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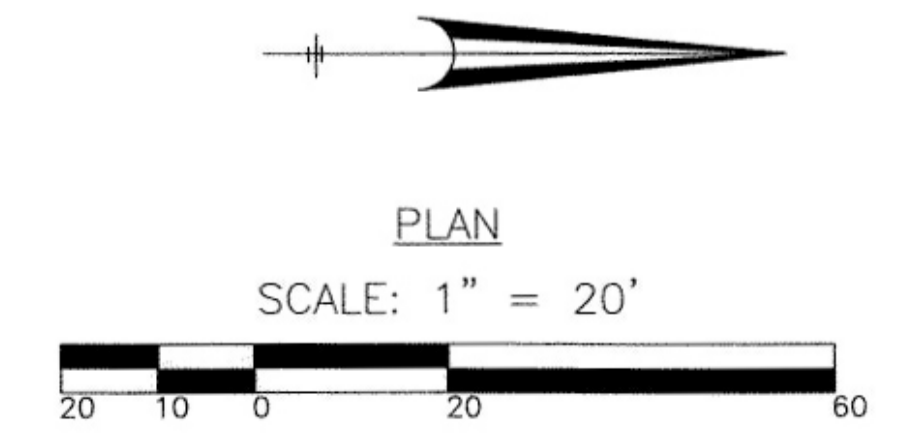


New England Civil Engineering Corp.
 120 Washington Street
 SALEM, MASSACHUSETTS

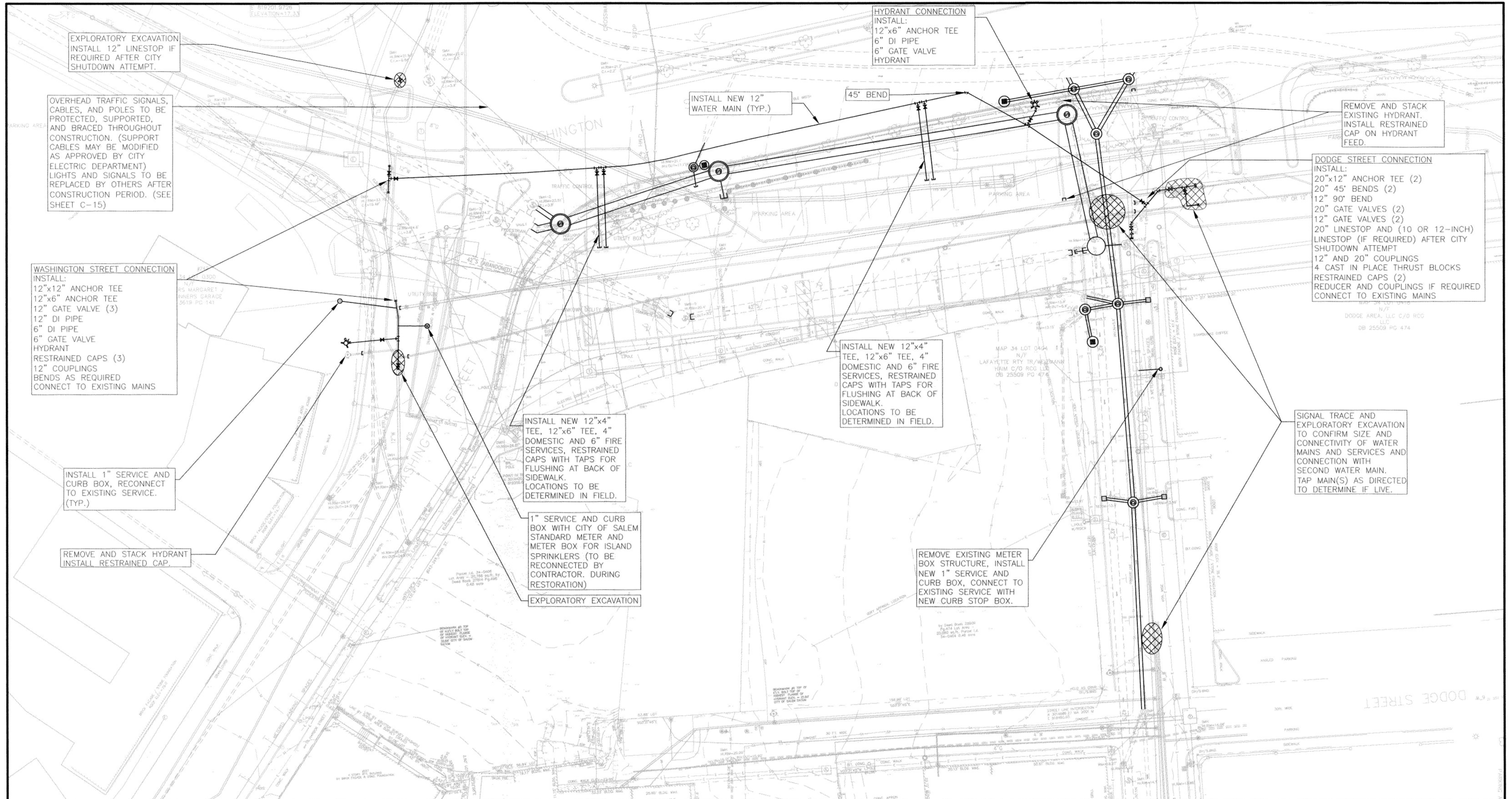
Sheet
C-2



- NOTES:
- 1.) PREVIOUSLY INSTALLED SHEETING (OR SUPPORT OF EXCAVATION (S.O.E.)) MAY EXIST AROUND SEWER SLUICE GATE STRUCTURE, MANHOLES, OR PIPES. CONTRACTOR TO REMOVE OR CUT AND DISPOSE EXISTING SHEETING.
 - 2.) EXISTING INTERSECTION ALIGNMENT HAS CHANGED OVER TIME, PREVIOUS TRAFFIC ISLANDS, ABUTMENTS, AND STONED REVETMENTS MAY BE BURIED WITHIN CONSTRUCTION ROUTE.
 - 3.) SOUTH RIVER CONDUITS ARE TWIN 72" CONCRETE PIPES SUPPORTED ON TIMBER PILES, WITH BURIED GRANITE SLABS ADJACENT TO CONDUIT IN SOME AREAS.
 - 4.) EXISTING DODGE STREET DRAIN IS CONNECTED TO SOUTH RIVER CONDUIT IN A SQUARE, STACKED GRANITE AND CONCRETE APPROXIMATELY 3 FOOT SQUARE AND IS PARTIALLY COLLAPSED (SEE PHOTOS). A SECOND COLLAPSED SECTION IS LOCATED APPROXIMATELY 28' DOWNSTREAM.
 - 5.) SOUTH RIVER CONDUITS ARE TIDALLY INFLUENCED; BACK FLOW PREVENTION, BYPASS PUMPING, AND DEWATERING REQUIRED WHEN WORKING NEAR CONDUITS, PARTICULARLY DURING HIGHER TIDE AND WET WEATHER CONDITIONS. SEE SHEET C-1 FOR APPROXIMATE LOCATION OF CONDUIT ACCESS LOCATIONS.



Client	CITY OF SALEM, MASSACHUSETTS	Scale	1"=20'			New England Civil Engineering Corp. 120 Washington Street SALEM, MASSACHUSETTS	Sheet
Project	MASSWORKS UTILITY RELOCATION	Date	7/31/2015				C-3
	DRAIN PLAN	Job	MAWorks				
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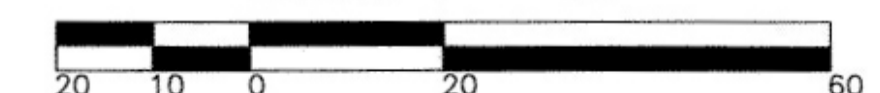


- NOTES:
- 1.) ALL WATER WORK IN TRAVEL LANE OR PARKING LOT OUTSIDE THE CONSTRUCTION STAGING AREA OR TRAFFIC DETOUR ZONE (SEE SHEETS C-6 OR C-8) TO BE COMPLETED AT NIGHT OR AS DIRECTED.
 - 2.) CONTRACTOR TO COORDINATE AND SCHEDULE SEWER, WATER, DRAIN INSTALLATION SEQUENCING TO MINIMIZE SERVICE INTERRUPTIONS.
 - 3.) CONTRACTOR SHALL AWARE THAT BOTH EXISTING AND PROPOSED GAS AND ELECTRIC UTILITY LINES ARE SHOWN. LOCATIONS ARE APPROXIMATE AND NOT VERIFIED.
 - 4.) OTHER COMPANIES INCLUDING TELECOMMUNICATIONS (AND GAS AND ELECTRIC IF NOT RELOCATED BY CONTRACTOR) PLAN TO RELOCATE UTILITIES BUT SCHEDULE NOT DETERMINED.
 - 5.) CONTRACTOR SHALL PLAN FOR WORKING AROUND EXISTING OR PROPOSED UTILITIES IN EITHER OR BOTH LOCATIONS DURING THIS PROJECT AND SHALL COORDINATE WITH OTHER COMPANIES TO GIVE THEM ACCESS TO MAINTAIN OR RELOCATE UTILITIES DURING THIS PROJECT.



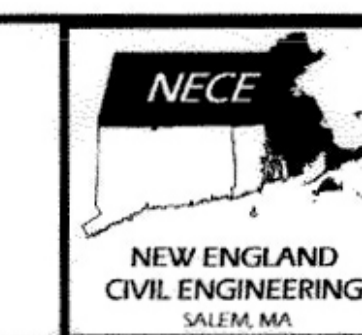
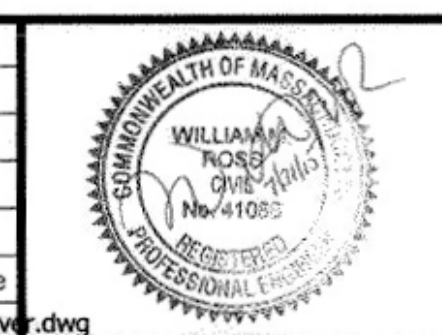
PLAN

SCALE: 1" = 20'



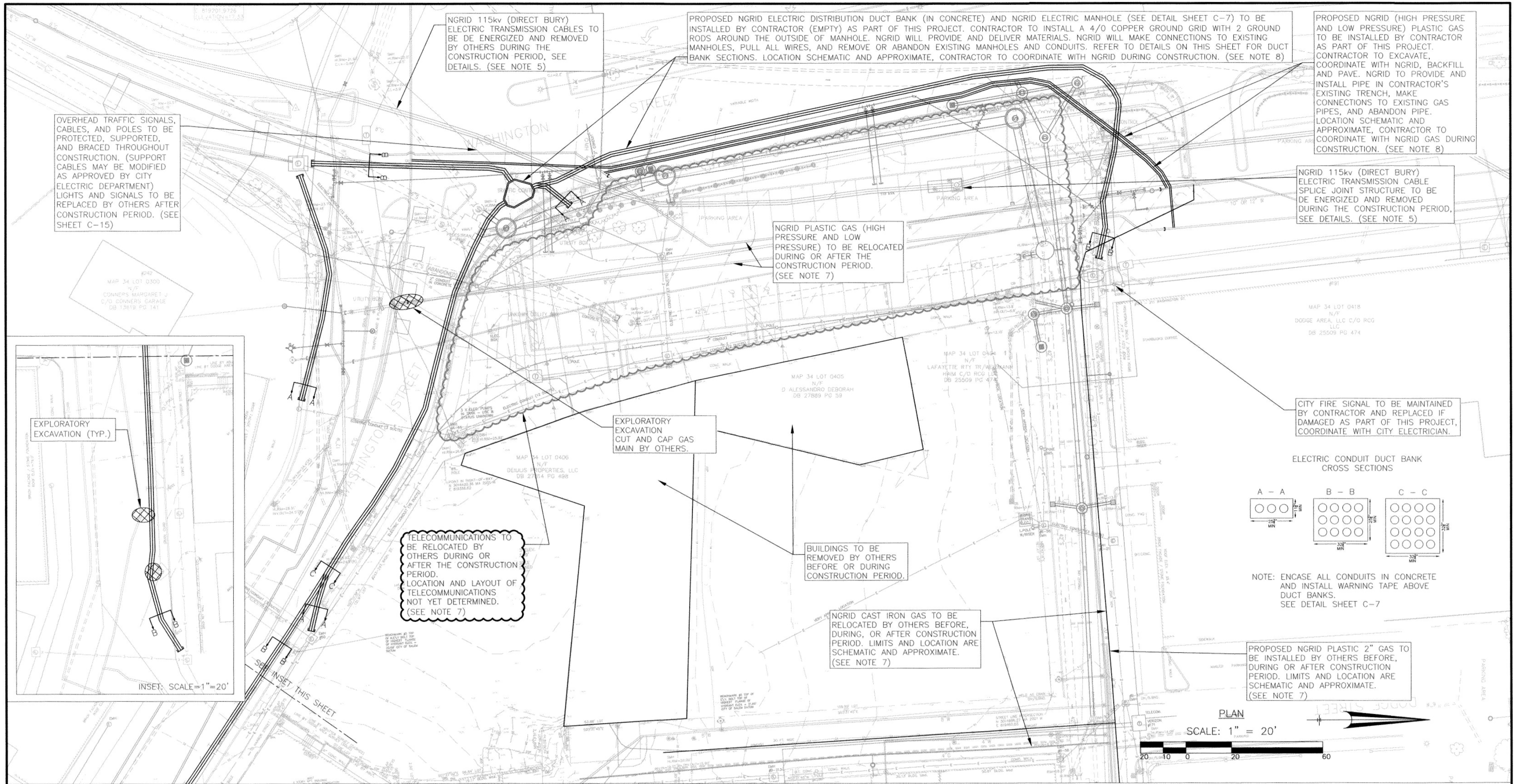
Client	CITY OF SALEM, MASSACHUSETTS
Project	MASSWORKS UTILITY RELOCATION
	WATER PLAN

Scale	1"=20'
Date	7/31/2015
Job	MAWorks
Designed by	WMR
Drawn by	DJW
Checked by	WMR
Approved by	WMR
No.	
Description	
Date	
File: H:\Clients\Salem\Dodge Washington RCG review\CAD\Design_recover_recover_recover.dwg	



New England Civil Engineering Corp.
120 Washington Street
SALEM, MASSACHUSETTS

Sheet
C-4



- NOTES:
- 1.) CITY UTILITIES INCLUDING WIRING AND CONDUITS FOR STREET LIGHTS, PEDESTRIAN AND SIGNAL LIGHTS, AND FIRE BOXES SHALL BE MAINTAINED AND PROTECTED OR REMOVED, REPLACED TEMPORARILY THEN REPLACED PERMANENTLY BY CONTRACTOR AS DIRECTED BY CITY ELECTRICIAN.
 - 2.) ALL BURIED CONDUITS AND WIRES ARE SHOWN SCHEMATICALLY AND CONTRACTOR TO COORDINATE WITH EACH UTILITY TO CONFIRM LOCATIONS. CONTRACTOR TO COORDINATE WITH ADJACENT PROPERTY OWNERS THROUGHOUT CONSTRUCTION TO SUPPORT OR PROTECT EXISTING UTILITIES OR PROVIDE ACCESS TO UTILITIES TO REMOVE THEM.
 - 3.) CONTRACTOR TO SCHEDULE WORK AND ADJUST LAYOUTS OF WORK IN THE FIELD TO AVOID CONFLICTS WITH EXISTING AND PROPOSED TELEPHONE AND ELECTRIC DISTRIBUTION LINES.
 - 4.) MILL/CANAL/WASHINGTON INTERSECTION CURBING AND VEHICULAR/PEDESTRIAN SIGNALS AND LIGHTS TO BE REPLACED BY OTHERS AFTER CONSTRUCTION PERIOD. (SEE SHEET C-15)
 - 5.) NGRID 115kv (DIRECT BURY) ELECTRIC TRANSMISSION CABLES ARE SCHEDULED TO BE TAKEN OUT OF SERVICE BY MARCH 2016 AND REMOVED FROM GROUND BEGINNING IN MARCH 2016. NGRID IS ALSO PLANNING TO TEMPORARILY DE-ENERGIZE THE CABLES FOR APPROXIMATELY A WEEK IN SEPTEMBER OF 2015. (9/14/15-9/19/15).
 - 6.) A SCHEMATIC LAYOUT SHOWING THE APPROXIMATE LIMITS AND LOCATIONS OF PROPOSED GAS AND ELECTRIC WORK (BY CONTRACTOR AND/OR BY OTHERS) IS SHOWN ON PLANS. THE LIMITS AND LOCATIONS OF GAS AND ELECTRIC WORK ARE APPROXIMATE, CONTRACTOR SHALL COORDINATE WITH NATIONAL GRID TO REVIEW REVISED/FINAL LIMITS AND LOCATIONS OF PROPOSED/COMPLETED GAS AND ELECTRIC UTILITY WORK IN THE AREA, THEN ADJUST PROPOSED LAYOUT OF CONTRACTOR'S WORK AS REQUIRED.
 - 7.) CONTRACTOR TO SCHEDULE WORK AND ADJUST LAYOUTS OF WORK IN THE FIELD TO AVOID CONFLICTS WITH EXISTING AND PROPOSED GAS MAIN, ELECTRIC, AND TELECOMMUNICATIONS.
 - 8.) IF ALTERNATE BID ITEMS NOT AUTHORIZED BY OWNER, PROPOSED RELOCATED GAS AND ELECTRIC UTILITIES WILL BE INSTALLED BY OTHERS DURING OR AFTER THE CONSTRUCTION PERIOD, CONTRACTOR TO COORDINATE WITH EACH UTILITY TO AVOID CONFLICTS WITH PROPOSED WORK AND PROVIDE ACCESS TO THE SITE AS REQUIRED.

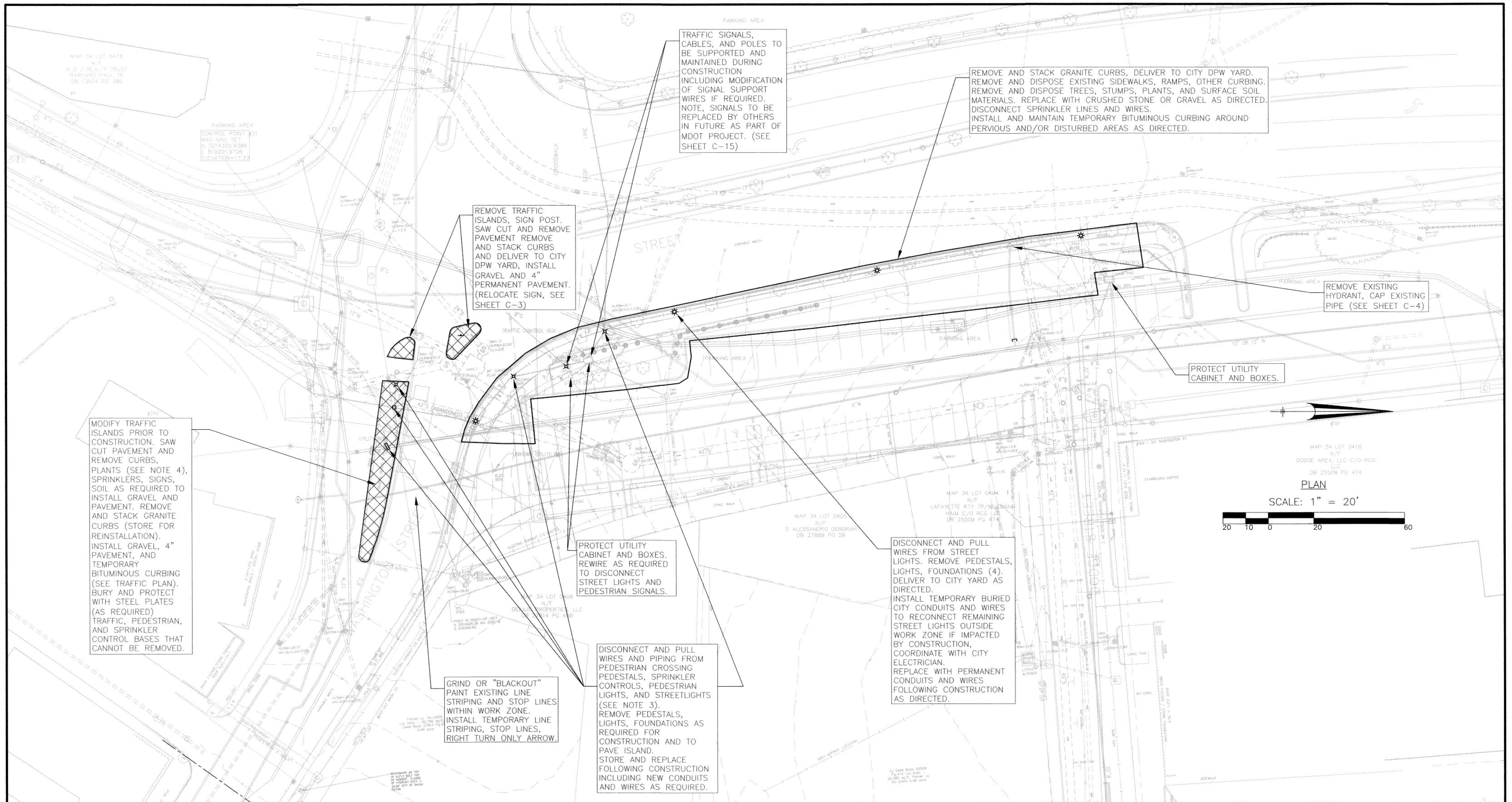
Client	CITY OF SALEM, MASSACHUSETTS	Scale	1"=20'
Project	MASSWORKS UTILITY RELOCATION	Date	7/31/2015
	COORDINATION, PRIVATE UTILITY WORK, AND WORK BY OTHERS	Job	MAWorks
		Designed by	WMR
		Drawn by	DJW
		Checked by	WMR
		Approved by	WMR
		No.	
		Description	
		Date	
		File:	H:\Clients\Salem\Dodge Washington RCG review\CAD\Design_recover_recover_recover.dwg



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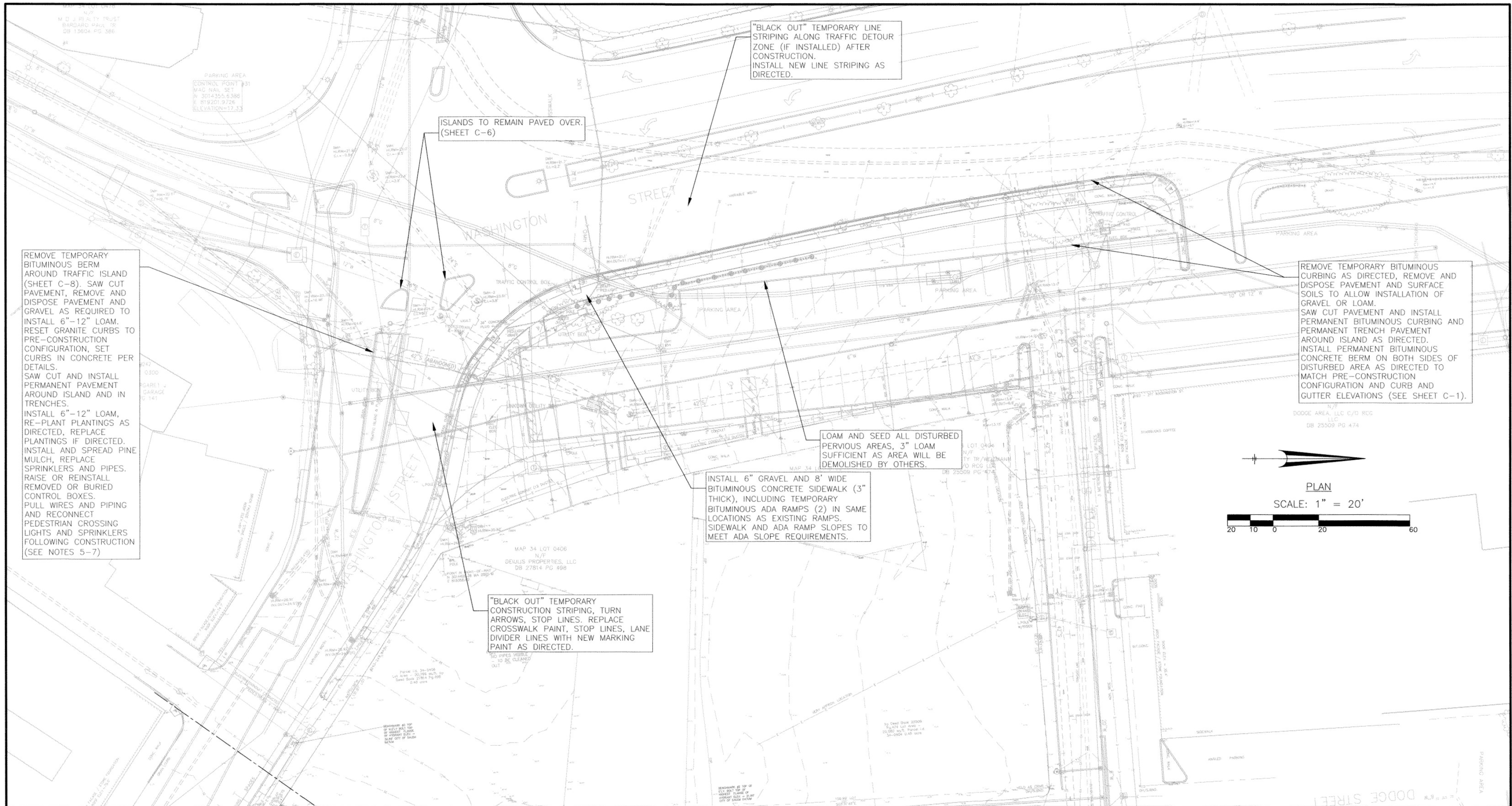
120 Washington Street
SALEM, MASSACHUSETTS

Sheet
C-5



- NOTES:
- 1.) REFER TO SHEETS C-12, C-13, C-14 FOR SCHEMATIC LAYOUT OF EXISTING CONDUITS, WIRES, AND SPRINKLER PIPING.
 - 2.) REFER TO RESTORATION PLAN C-7 FOR ADDITIONAL INFORMATION ABOUT RESTORATION SCOPE OF WORK AND FUTURE WORK BY OTHERS.
 - 3.) DISCONNECT LOOP DETECTOR WIRES AND REPROGRAM TRAFFIC LIGHT SEQUENCE AND TIMING TO ACCOUNT FOR TEMPORARILY REMOVED PEDESTRIAN LIGHTS AND LOOP DETECTORS.
 - 4.) REMOVE AND STORE PLANTINGS. WATER AND PROTECT FOR REPLANTING. INVENTORY SIZE AND TYPE OF PLANTINGS FOR REPLACEMENT.
 - 5.) INSTALL AND MAINTAIN EROSION AND SEDIMENTATION BARRIERS (MULCH SOCK OR STRAW WATTLES) AROUND ALL DISTURBED AREAS AS REQUIRED TO PREVENT SILTATION AND EROSION. INSTALL SILT SACKS IN ALL CATCH BASINS SURROUNDING PROJECT AREA. MAINTAIN AND CLEAN DURING CONSTRUCTION. REMOVE AND REPLACE AS REQUIRED TO PREVENT FLOODING DURING LARGE RAIN EVENTS AS DIRECTED.

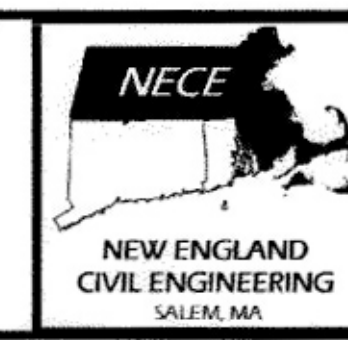
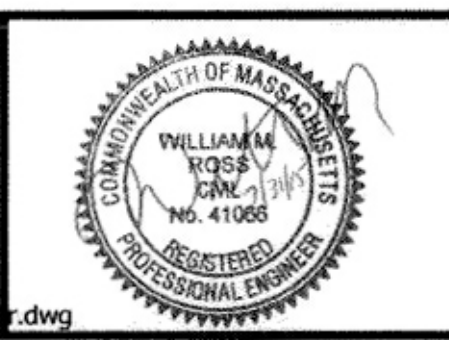
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Project	MASSWORKS UTILITY RELOCATION	Date	7/31/2015				<table border="1"> <thead> <tr> <th>No.</th> <th>Description</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No.	Description	Date													C-6
No.	Description	Date																					
		Job	MAWorks																				
		Designed by	WMR																				
		Drawn by	DJW																				
		Checked by	WMR																				
		Approved by	WMR	File: H:\Clients\Salem\Dodge Washington RCG review\CAD\Design_recover_recover_recover.dwg																			



- NOTES:
- 1.) WASHINGTON/CANAL/MILL STREET INTERSECTION TO BE MODIFIED AS PART OF MDOT PROJECT, REFER TO SHEET C-15.
 - 2.) SIDEWALK AND RAMPS TO BE RESTORED AND ACCESS TO CROSSWALKS ACROSS WASHINGTON STREET IN TWO LOCATIONS TO BE REESTABLISHED.
 - 3.) PARKING LOT AND SIDEWALK WITHIN WORK ZONE TO BE DEMOLISHED IN THE FUTURE BY OTHERS AS PART OF REDEVELOPMENT PROJECT. RESTORATION MUST BE SUFFICIENT TO PROVIDE SMOOTH PARKING AND WALKING SURFACE WITHOUT PUDDLES.
 - 4.) STREET LIGHTS REMOVED (4) WILL NOT BE REINSTALLED AS PART OF THIS PROJECT.
 - 5.) PEDESTRIAN AND TRAFFIC SIGNAL LIGHTS TO BE REPLACED IN FUTURE BY OTHERS, CONTRACTOR TO RE-INSTALL (3) PEDESTRIAN ACTIVATION AND LIGHT POSTS REMOVED DURING CONSTRUCTION SO THEY CONTINUE OPERATION UNTIL INTERSECTION WORK IS COMPLETE.
 - 6.) REPLACE TEMPORARY ELECTRIC CONDUITS AND WIRES WITH PERMANENT CONDUITS AND WIRES AS DIRECTED TO SERVE LIGHTS AND SIGNALS OUTSIDE THE WORK ZONE THAT WERE IMPACTED BY CONSTRUCTION.
 - 7.) REPROGRAM TRAFFIC LIGHT SEQUENCE AND TIMING TO PREVIOUS CONDITIONS PRIOR TO CONSTRUCTION FOLLOWING REINSTALLATION OF PEDESTRIAN LIGHTS.
 - 8.) LOOP DETECTORS DISCONNECTED AS PART OF THIS PROJECT WILL NOT BE RECONNECTED.

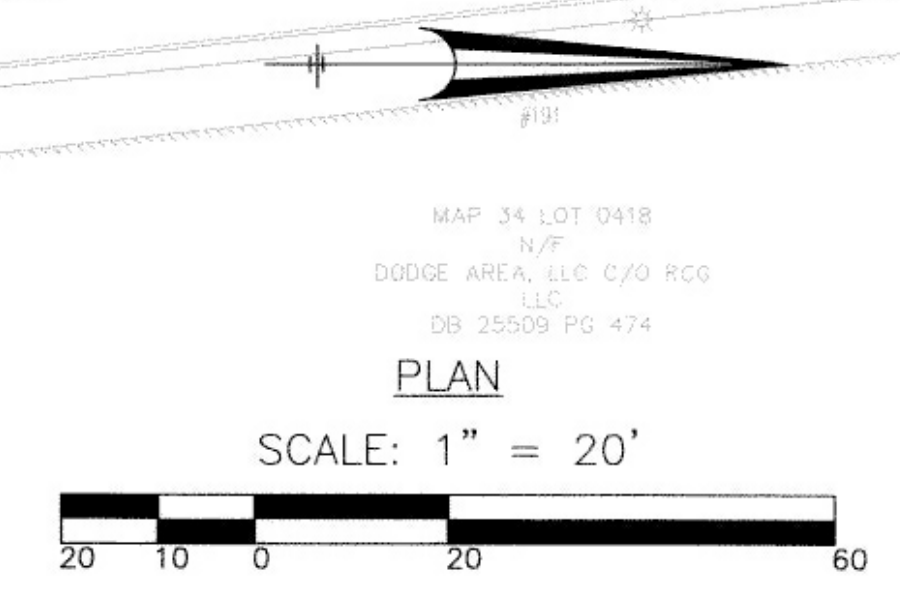
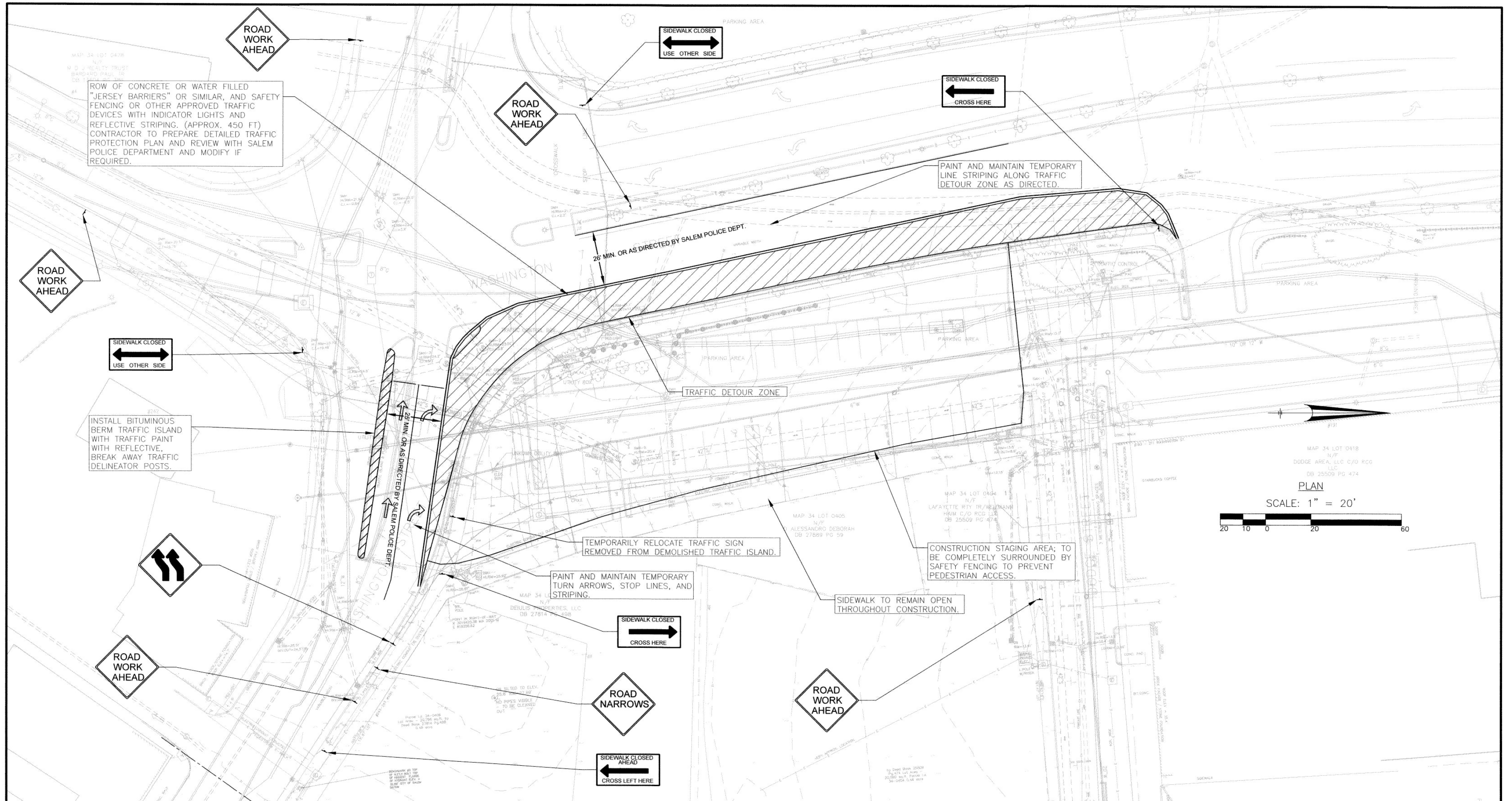
Client	CITY OF SALEM, MASSACHUSETTS
Project	MASSWORKS UTILITY RELOCATION
	RESTORATION PLAN

Scale	1"=20'
Date	7/31/2015
Job	MAWorks
Designed by	WMR
Drawn by	DJW
Checked by	WMR
Approved by	WMR



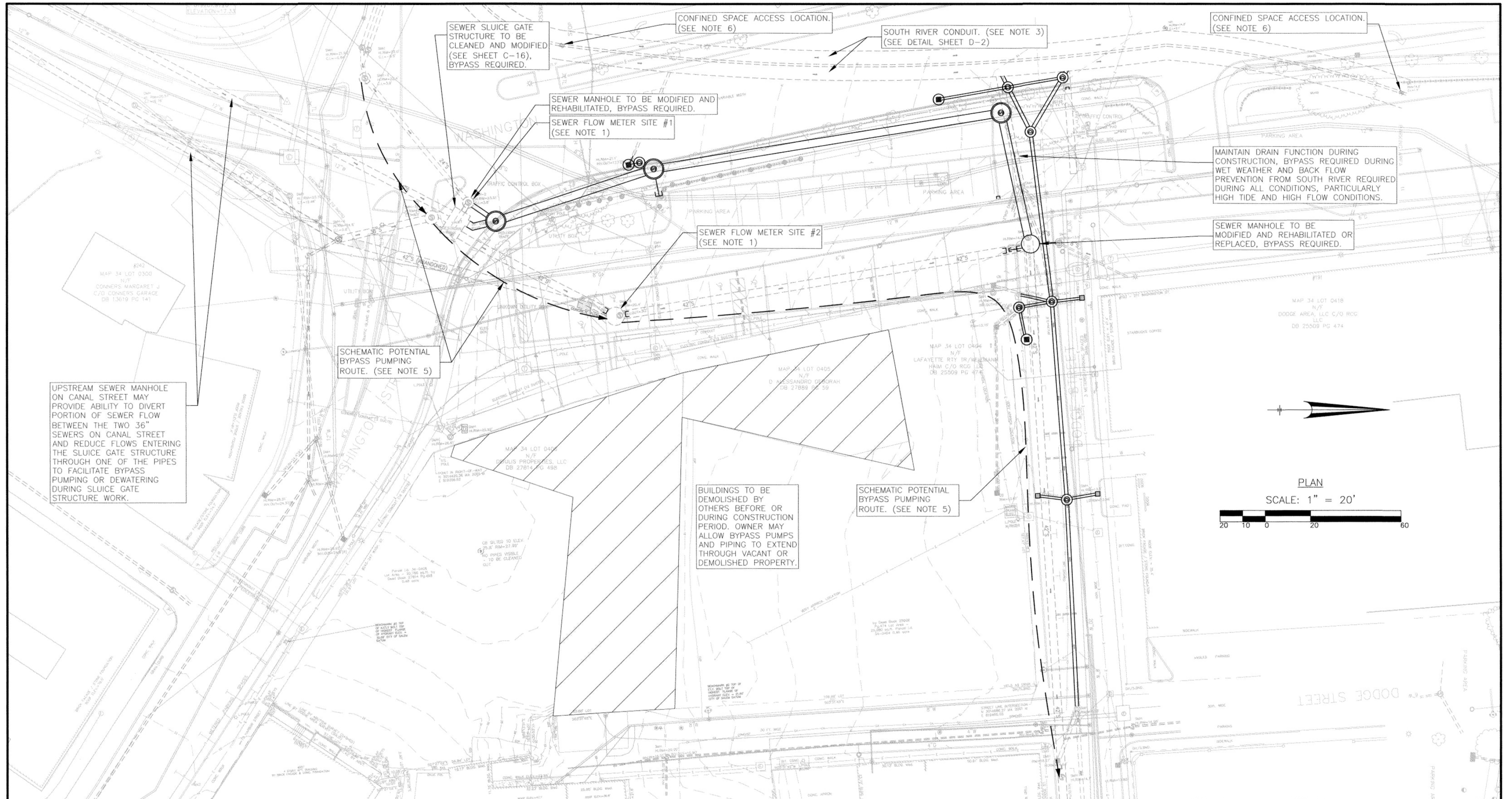
New England Civil Engineering Corp.
120 Washington Street
SALEM, MASSACHUSETTS

Sheet
C-7



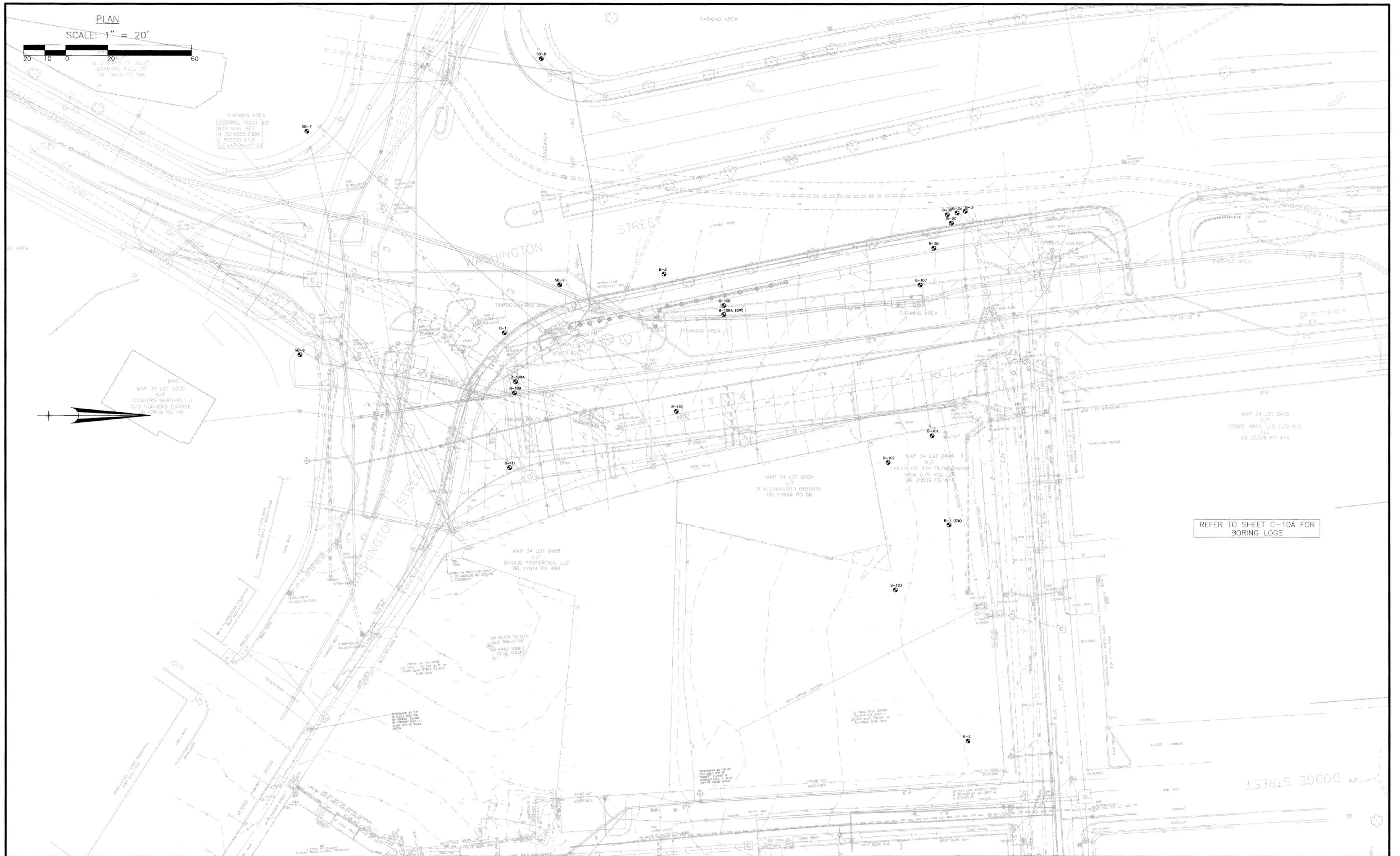
- NOTES:
- 1.) WORK ON DODGE STREET AND IN PARKING LOT TO BE COORDINATED TO ALLOW ACCESS TO PROPERTIES AND BUSINESSES INCLUDING TRACTOR TRAILER DELIVERIES.
 - 2.) WORK OUTSIDE TRAFFIC DETOUR WORK ZONE ON WASHINGTON STREET TO BE COMPLETED AT NIGHT AND WITH TRAFFIC DETOURS AS APPROVED AND DIRECTED BY THE CITY OF SALEM POLICE DEPARTMENT.
 - 3.) MINIMUM SIGNAGE SHOWN FOR REFERENCE TO SUGGEST OPTION TO DIVERT PEDESTRIAN TRAFFIC AROUND CONSTRUCTION ZONE. CONTRACTOR RESPONSIBLE TO DEVELOP A DETAILED TRAFFIC AND PEDESTRIAN MANAGEMENT PLAN, INCLUDING PROPOSED DETOURS, IN ACCORDANCE WITH MDT SECTION 850 AND MUTCD STANDARDS AND CITY OF SALEM POLICE DEPARTMENT REQUIREMENTS.
 - 4.) ROAD WORK AHEAD SIGNS TO BE INSTALLED IN APPROXIMATE LOCATIONS AS SHOWN, WITH SECOND SIGN IN EACH LOCATION INSTALLED APPROXIMATELY 500 FEET UPSTREAM.
 - 5.) SIGNAGE TO ALSO INCLUDE "POLICE OFFICER AHEAD" SIGNS WHENEVER DETAILS ARE IN USE.
 - 6.) CONTRACTOR TO INSTALL, PROGRAM, MAINTAIN, AND RELOCATE PORTABLE, VARIABLE MESSAGE BOARDS AS REQUIRED.
 - 7.) LANE CLOSURE AND TRAFFIC DETOUR ZONE MUST BE REMOVED AND NORMAL TRAFFIC PATTERNS ESTABLISHED IF CONTRACTOR IS NOT ON SITE WORKING.
 - 8.) SIGNS SHOWN INCLUDE MINIMUM SIGNS REQUIRED. CONTRACTOR TO PROVIDE AND MAINTAIN ADDITIONAL SIGNAGE AS REQUIRED AND DIRECTED.
 - 9.) INSTALL AND MAINTAIN EROSION AND SEDIMENTATION BARRIERS (MULCH SOCK OR STRAW WATTLES) AROUND ALL DISTURBED AREAS AND SOIL STOCKPILE AREAS AS REQUIRED TO PREVENT SILTATION AND EROSION.

Client	CITY OF SALEM, MASSACHUSETTS	Scale	1"=20'			New England Civil Engineering Corp. 120 Washington Street SALEM, MASSACHUSETTS	Sheet C-8
Project	MASSWORKS UTILITY RELOCATION	Date	7/31/2015				
	TRAFFIC MANAGEMENT PLAN	Job	MAWorks				
		Designed by	WMR				
		Drawn by	DJW				
		Checked by	WMR				
		Approved by	WMR	No.	Description	Date	
					File: H:\Clients\Salem\Dodge Washington RCG review\CAD\Design\recovery_recover_recover.dwg		



- NOTES:
- 1.) FLOW METER DATA PROVIDED FOR REFERENCE BUT ACTUAL FLOWS WILL VARY AND MAY BE GREATER DURING PERIODS OF WET WEATHER, HIGH TIDE, OR HIGH USAGE. CONTRACTOR TO MONITOR WEATHER, TIDAL, AND SANITARY FLOW PATTERNS AND SCHEDULE WORK ACCORDINGLY AROUND LOW FLOW AND LOW TIDE CONDITIONS WHENEVER POSSIBLE.
 - 2.) BYPASS PUMPING AS REQUIRED TO MODIFY OR REPLACE MANHOLES AND CLEAN AND MODIFY SLUICE GATE STRUCTURE. WORK TO BE COMPLETED AT NIGHT AND WITH APPROVED TRAFFIC DETOUR PLAN AS DIRECTED.
 - 3.) BYPASS PUMPING AND/OR DEWATERING TO INCLUDE INFLATABLE PLUGS, RIGID PIPE PLUGS, RESTRAINED SAND BAGS, PRIMARY AND REDUNDANT SOUND ATTENUATED PUMPS, AND BURIED PIPING IN ALL TRAVELED WAYS REQUIRED AND PAVING AS NEEDED FOR PEDESTRIAN AND VEHICULAR ACCESS, CROSSINGS, AND SAFETY.
 - 4.) EXISTING DRAINS AND SOUTH RIVER CONDUITS ARE WEATHER AND TIDALLY INFLUENCED, CONTRACTOR SHALL PLAN ACCORDINGLY FOR RAINFALL AND TIDALLY INFLUENCED WATER LEVELS AND FLOWS.
 - 5.) SCHEMATIC BYPASS PUMPING ROUTES (SOURCE AND DISCHARGE MANHOLES) IDENTIFIED FOR CONSIDERATION, CONTRACTOR TO INVESTIGATE MANHOLES AND PIPE CONFIGURATION AND DETERMINE THE NUMBER OF BYPASS LOCATIONS REQUIRED AND PREFERRED ROUTE OF BYPASS PIPING. CONTRACTOR TO DESIGN AND IMPLEMENT BYPASS PUMPING PLAN FOLLOWING REVIEW AND APPROVAL BY ENGINEER. BYPASS TO INCLUDE BURIED PIPING, WELDED HDPE PIPING OR AS APPROVED, SPILL CONTAINMENT FOR PUMPS, AND TRAFFIC AND PEDESTRIAN PROTECTION FOR PUMPS, ACCESS MANHOLES, AND PIPING.
 - 6.) SOUTH RIVER CONDUITS ARE TWIN 72" CONCRETE PIPES SUPPORTED ON TIMBER PILES, WITH BURIED GRANITE SLABS ADJACENT TO CONDUIT IN SOME AREAS. (LOCATION APPROXIMATE, CONTRACTOR TO FIELD VERIFY)
 - 7.) BYPASS TO INCLUDE MODIFICATION OF MANHOLES AS REQUIRED FOR ACCESS INCLUDING REMOVAL OF MANHOLE FRAME, CHIMNEY, LID, CONE, CORBEL, ETC. AND INTERNAL PIPING WITH INTERNAL PIPING WITH SPLASH PROTECTION OR DIFFUSER TO PREVENT MANHOLE DAMAGE. MANHOLES TO BE REPAIRED OR RECONSTRUCTED AFTER BYPASS AS PART OF THIS WORK.

Client	CITY OF SALEM, MASSACHUSETTS	Scale	1"=20'			New England Civil Engineering Corp. 120 Washington Street SALEM, MASSACHUSETTS	Sheet	C-9
Project	MASSWORKS UTILITY RELOCATION	Date	7/31/2015					
		Job	MAWorks					
		Designed by	WMR					
		Drawn by	DJW					
		Checked by	WMR	No.	Description	Date		
	SEWER AND DRAIN BYPASS REQUIREMENTS	Approved by	WMR	File: H:\Clients\Salem\Dodge Washington RCG review\CAD\Design_recover_recover_recover.dwg				



Client	CITY OF SALEM, MASSACHUSETTS
Project	MASSWORKS UTILITY RELOCATION
	BORING LOCATIONS (BY OTHERS)

Scale	1"=20'
Date	6/25/2015
Job	MAWorks
Designed by	WMR
Drawn by	DJW
Checked by	WMR
Approved by	WMR
No.	
Description	
Date	
File: H:\Clients\Salem\Dodge Washington RCG review\CAD\Design.dwg	



New England Civil Engineering Corp.

120 Washington Street
SALEM, MASSACHUSETTS

Sheet	C-10
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Client CITY OF SALEM, MASSACHUSETTS
 Project MASSWORKS UTILITY RELOCATION
 BORING LOGS

Scale N.T.S.
 Date 6/25/2015
 Job MAWorks
 Designed by WMR
 Drawn by DJW
 Checked by WMR
 Approved by WMR

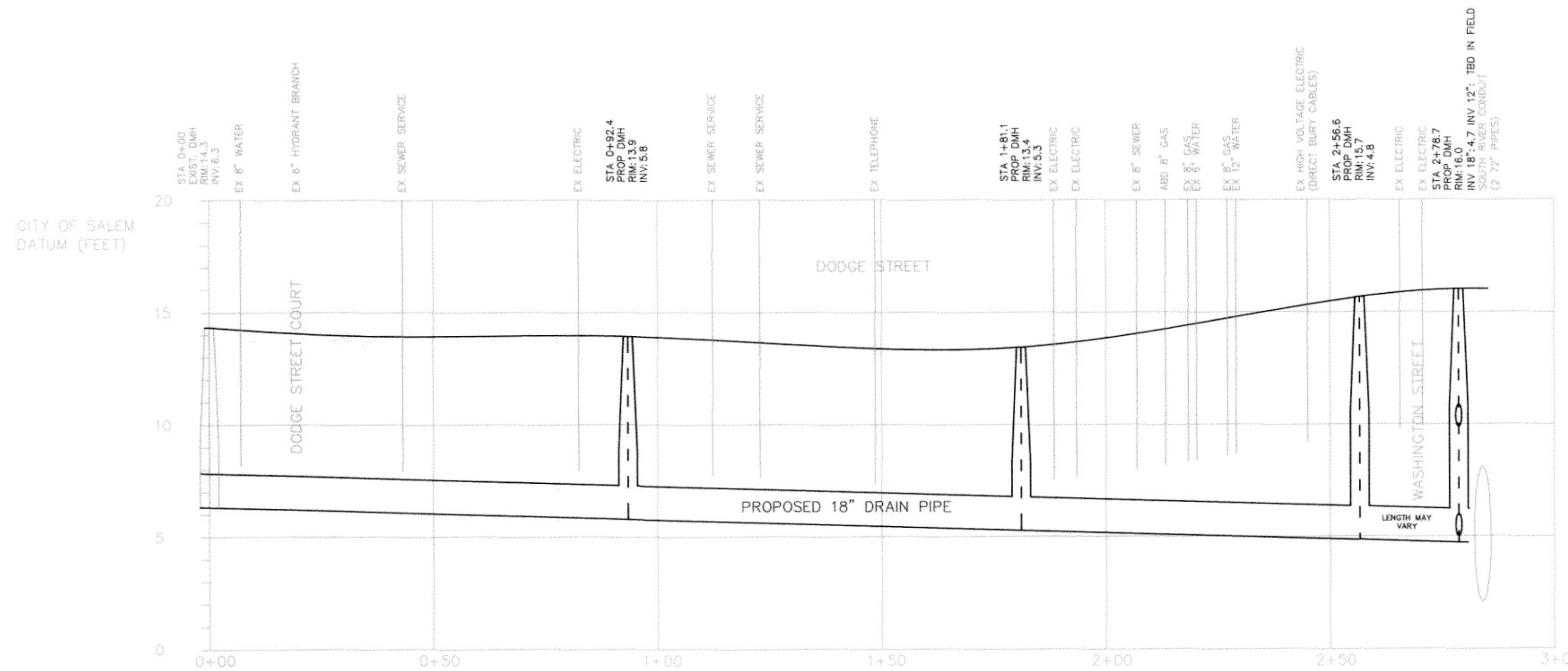
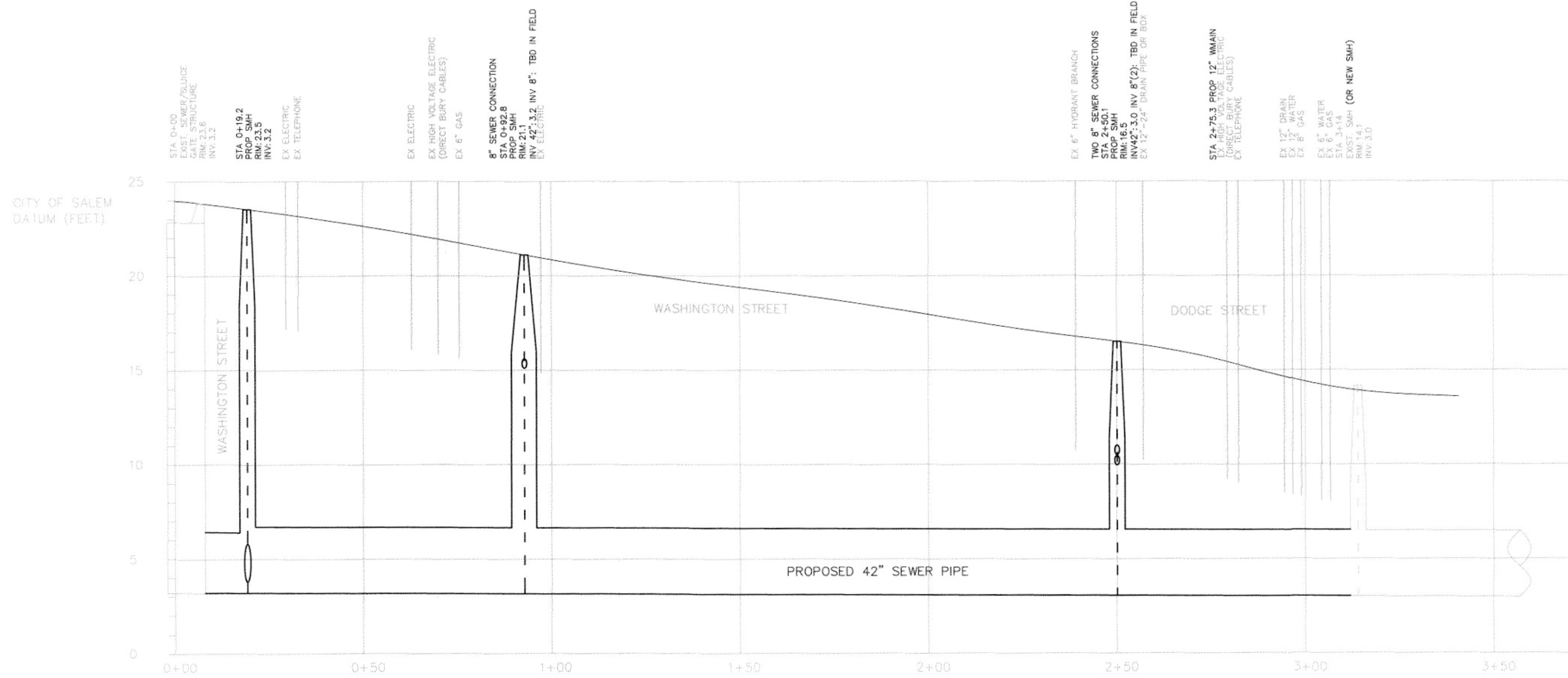
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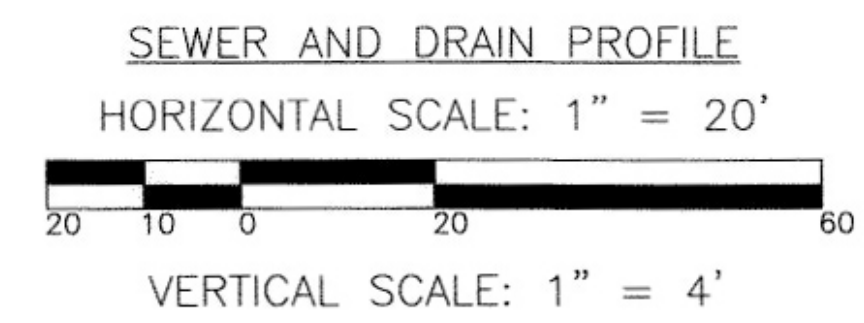


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 120 Washington Street
 SALEM, MASSACHUSETTS

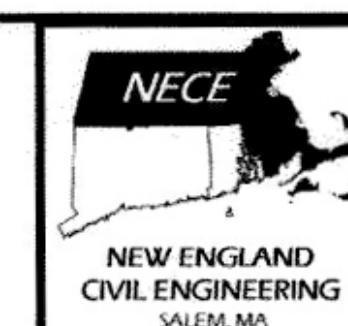
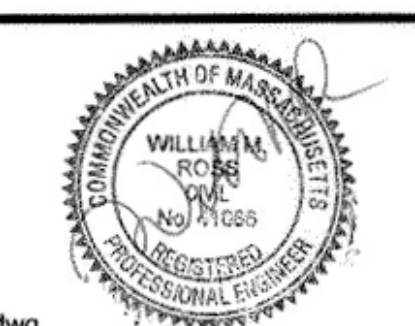
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C-10A



- NOTES:
- 1.) NUMBER, TYPE, AND LOCATION AND DEPTH OF UTILITY CROSSINGS ARE APPROXIMATE ONLY, CONTRACTOR TO FIELD VERIFY BEFORE BEGINNING CONSTRUCTION BASED ON UTILITY MARK OUTS AND EXPLORATORY EXCAVATIONS.
 - 2.) EXISTING UTILITIES IN TRENCH PARALLEL TO PROFILE AND CITY FIRE SIGNAL NOT SHOWN. PROPOSED UTILITY CROSSINGS NOT SHOWN.
 - 3.) RIM AND INVERT ELEVATIONS APPROXIMATE, BASED ON PLAN REVIEW AND RECORD INFORMATION, ROAD PROFILE MAY HAVE CHANGED OVER TIME. CONTRACTOR TO COMPLETE FIELD SURVEY WITH LICENSED SURVEYOR, TO VERIFY RIM AND INVERT DEPTHS AND TOP OF PIPE DEPTHS AND ELEVATIONS (TO 0.01' ACCURACY) IN CONJUNCTION WITH CONFINED SPACE ENTRY AND EXPLORATORY EXCAVATIONS AS REQUIRED BEFORE BEGINNING CONSTRUCTION.
 - 4.) STATIONING MEASURED ALONG ONE DEPICTED PIPE ROUTE, WILL CHANGE BASED ON ACTUAL INSTALLED LOCATION OF PIPES AND MANHOLES.
 - 5.) ELEVATION OF SOUTH RIVER CONDUIT AND CONNECTION ELEVATION TO BE DETERMINED AFTER EXPLORATORY EXCAVATION, SLOPE TO BE DETERMINED IN FIELD AFTER CONTRACTOR'S SURVEY OF EXISTING STRUCTURES AND PIPES.
 - 6.) DEPTH OF EXISTING AND PROPOSED SEWER PIPES TO BE DETERMINED AFTER EXPLORATORY EXCAVATION, SLOPE TO BE DETERMINED IN FIELD AFTER CONTRACTOR'S SURVEY OF EXISTING STRUCTURES AND PIPES.



Client	CITY OF SALEM, MASSACHUSETTS	Scale	1"=20'
Project	MASSWORKS UTILITY RELOCATION	Date	7/31/2015
		Job	MAWorks
		Designed by	WMR
		Drawn by	DJW
		Checked by	WMR
		Approved by	WMR
		Description	
		Date	
		File:	H:\Clients\Salem\Dodge Washington RCG review\CAD\Design recover_recover_recover.dwg



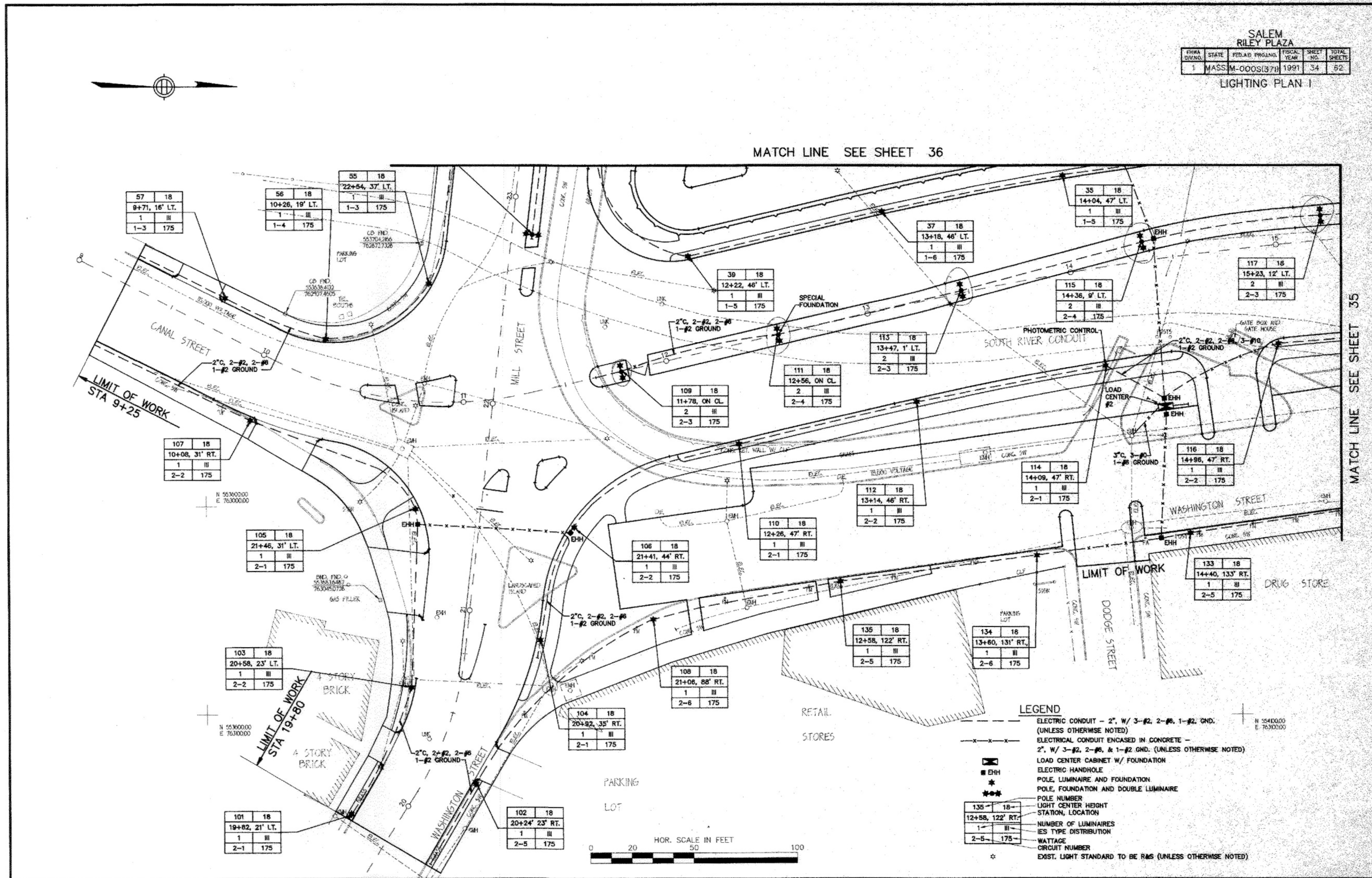
New England Civil Engineering Corp.

120 Washington Street
 SALEM, MASSACHUSETTS

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C-11

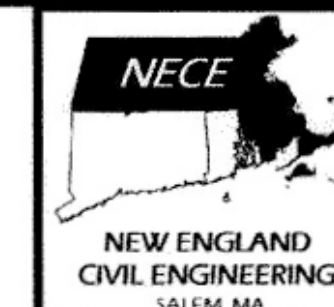
SALEM RILEY PLAZA					
FWHA DIV.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS	M-000S(37)	1991	34	52

LIGHTING PLAN I



- NOTES:
- 1.) SCHEMATIC CONDUIT AND WIRING DIAGRAM PROVIDED FOR REFERENCE TO APPROXIMATELY REPRESENT EXISTING CONDITIONS. LAYOUT NOT CONFIRMED, CONTRACTOR TO FIELD VERIFY AND ADJUST WORK AS REQUIRED BASED ON ACTUAL EXISTING CONDITIONS.
 - 2.) MILL/CANAL/WASHINGTON INTERSECTION CURBING AND VEHICULAR/PEDESTRIAN SIGNALS AND LIGHTS TO BE REPLACED BY OTHERS AFTER CONSTRUCTION PERIOD. REFER TO SHEET C-15.

Client	CITY OF SALEM, MASSACHUSETTS	Scale	N.T.S.
Project	MASSWORKS UTILITY RELOCATION	Date	7/31/2015
	EXISTING STREET LIGHTING	Job	MAWorks
		Designed by	WMR
		Drawn by	DJW
		Checked by	WMR
		Approved by	WMR

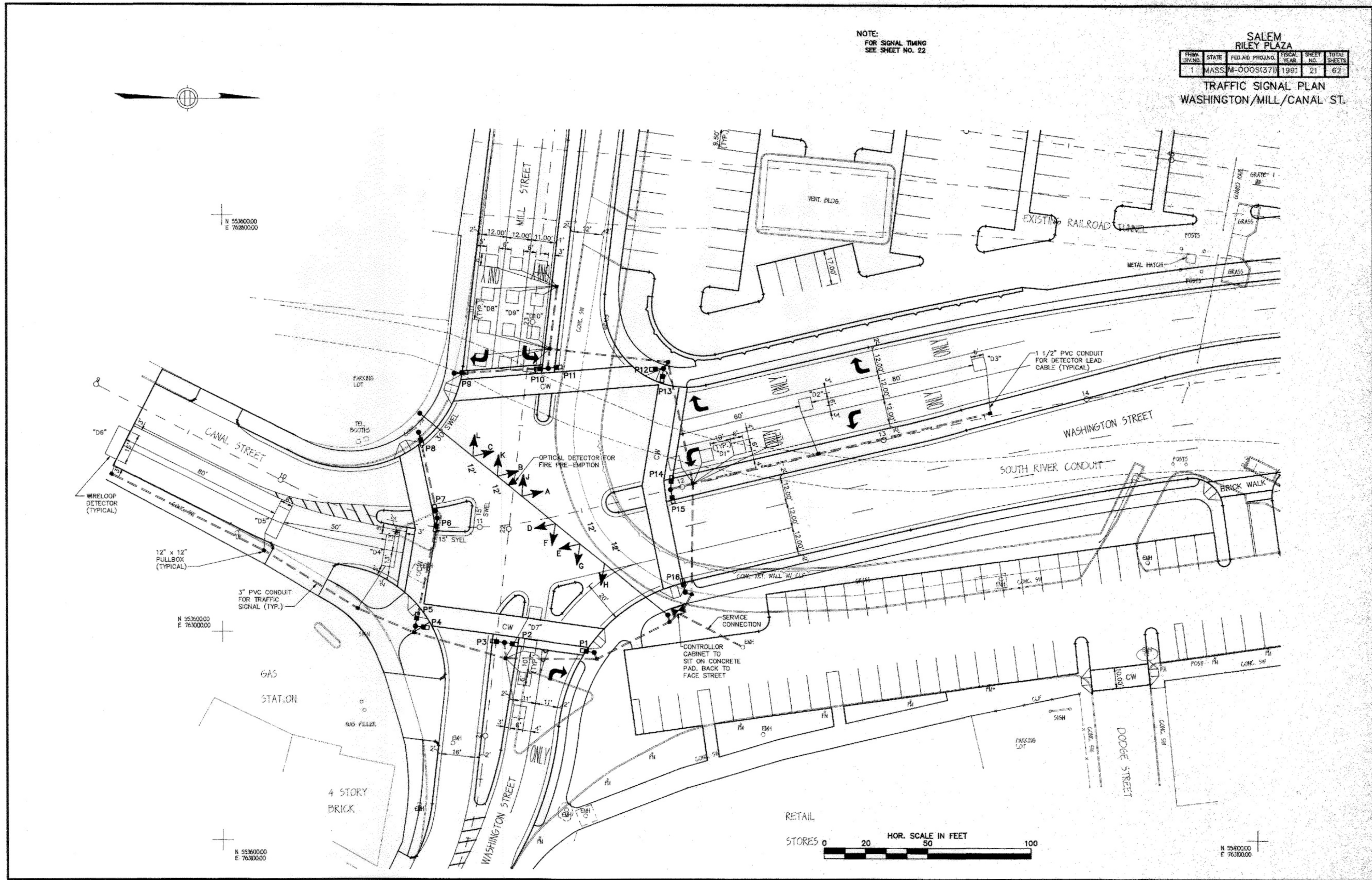


New England Civil Engineering Corp.

120 Washington Street
SALEM, MASSACHUSETTS

Sheet

C-12



NOTE:
FOR SIGNAL TIMING
SEE SHEET NO. 22

SALEM RILEY PLAZA					
FUND. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	M-000S(37)	1991	21	62

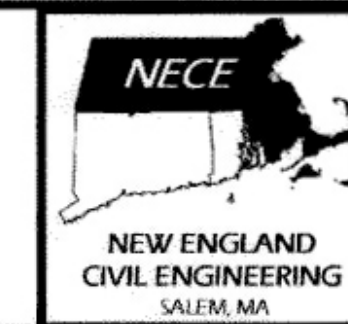
TRAFFIC SIGNAL PLAN
WASHINGTON/MILL/CANAL ST.

NOTES:
1.) SCHEMATIC CONDUIT AND WIRING DIAGRAM PROVIDED FOR REFERENCE TO APPROXIMATELY REPRESENT EXISTING CONDITIONS. LAYOUT NOT CONFIRMED, CONTRACTOR TO FIELD VERIFY AND ADJUST WORK AS REQUIRED BASED ON ACTUAL EXISTING CONDITIONS.
2.) MILL/CANAL/WASHINGTON INTERSECTION CURBING AND VEHICULAR/PEDESTRIAN SIGNALS AND LIGHTS TO BE REPLACED BY OTHERS AFTER CONSTRUCTION PERIOD. REFER TO SHEETS C-15.

Client	CITY OF SALEM, MASSACHUSETTS
Project	MASSWORKS UTILITY RELOCATION
	EXISTING TRAFFIC LIGHTING

Scale	N.T.S.
Date	7/31/2015
Job	MAWorks
Designed by	WMR
Drawn by	DJW
Checked by	WMR
Approved by	WMR
No.	
Description	
Date	

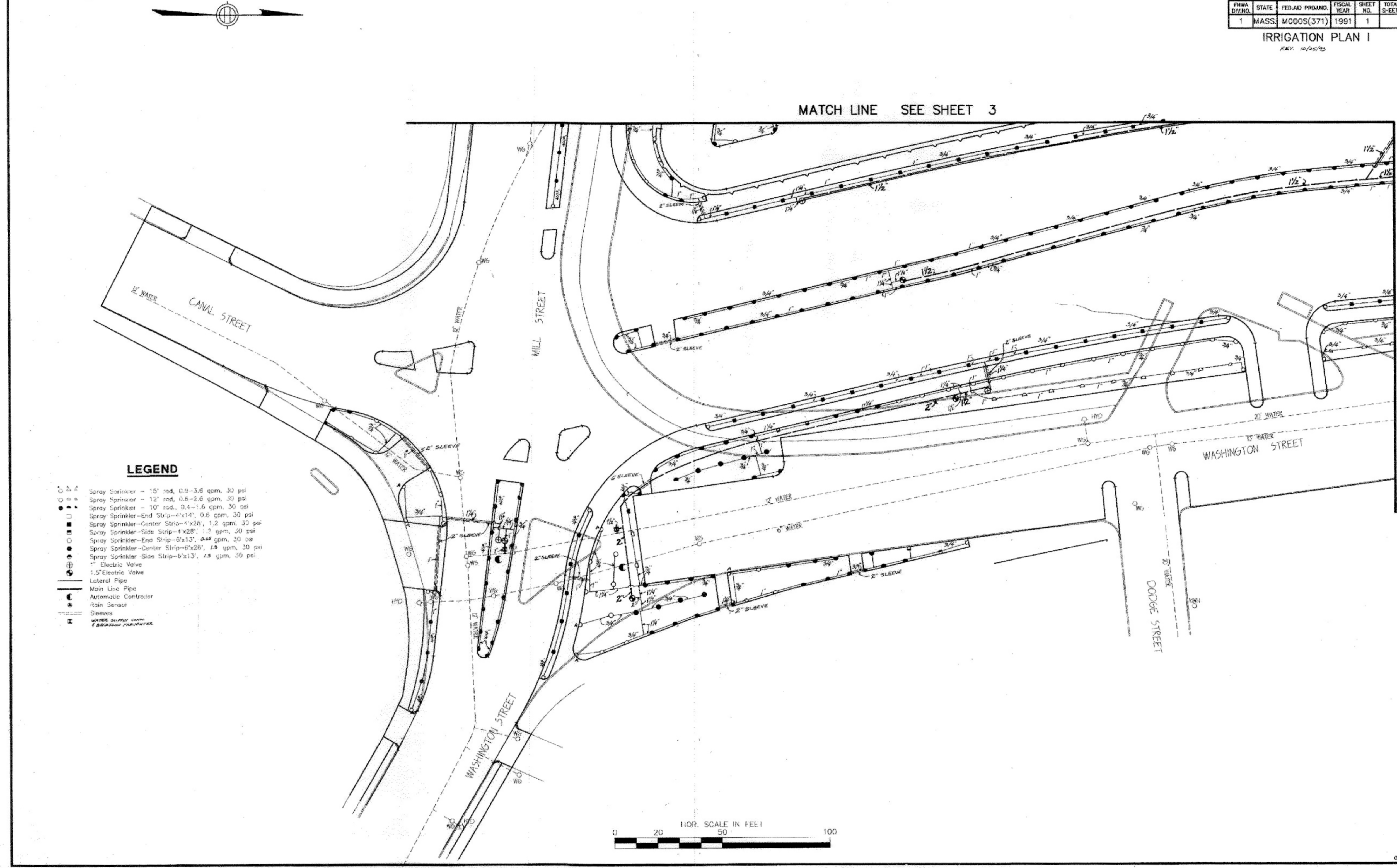
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120 Washington Street
SALEM, MASSACHUSETTS


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C-13

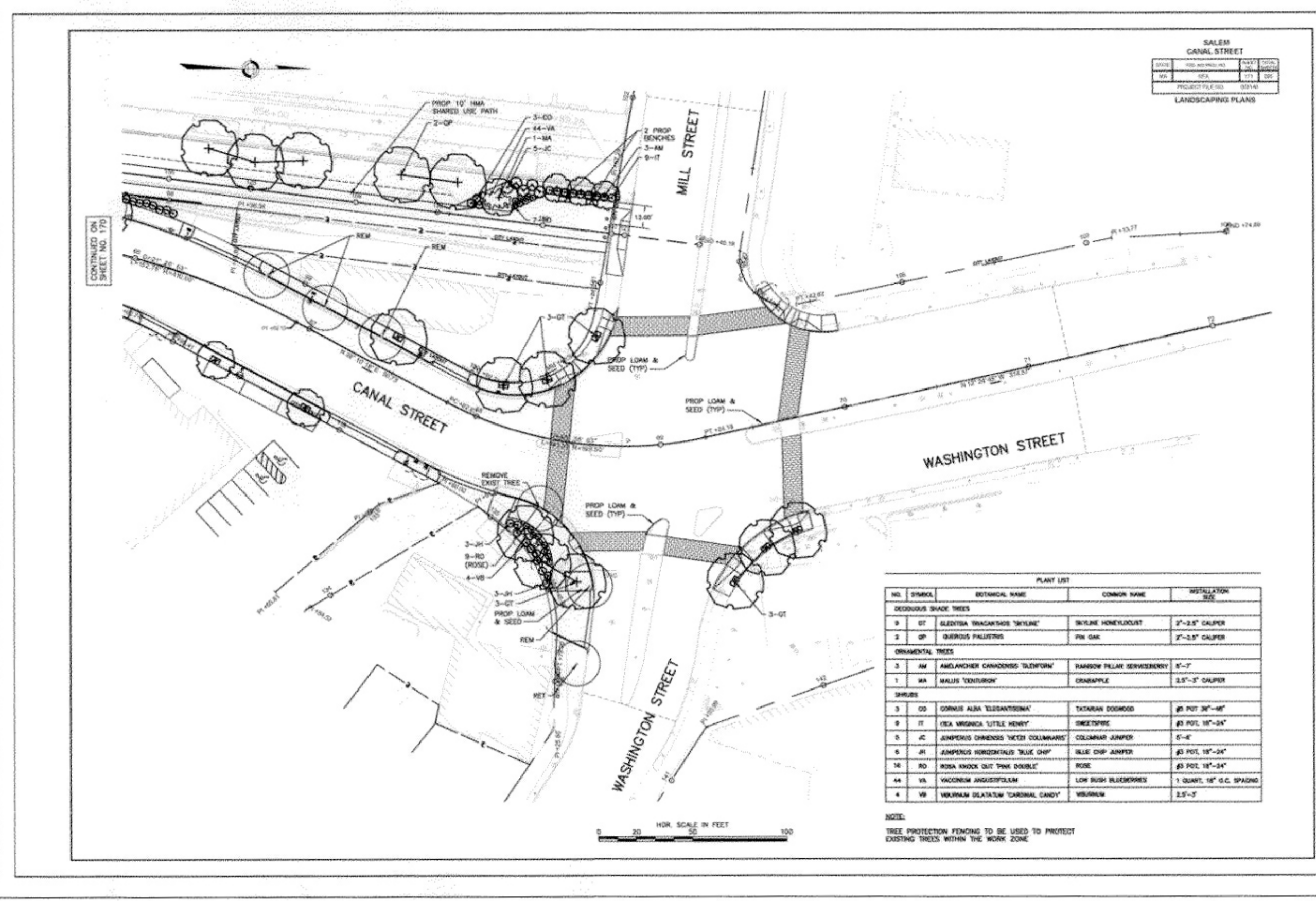
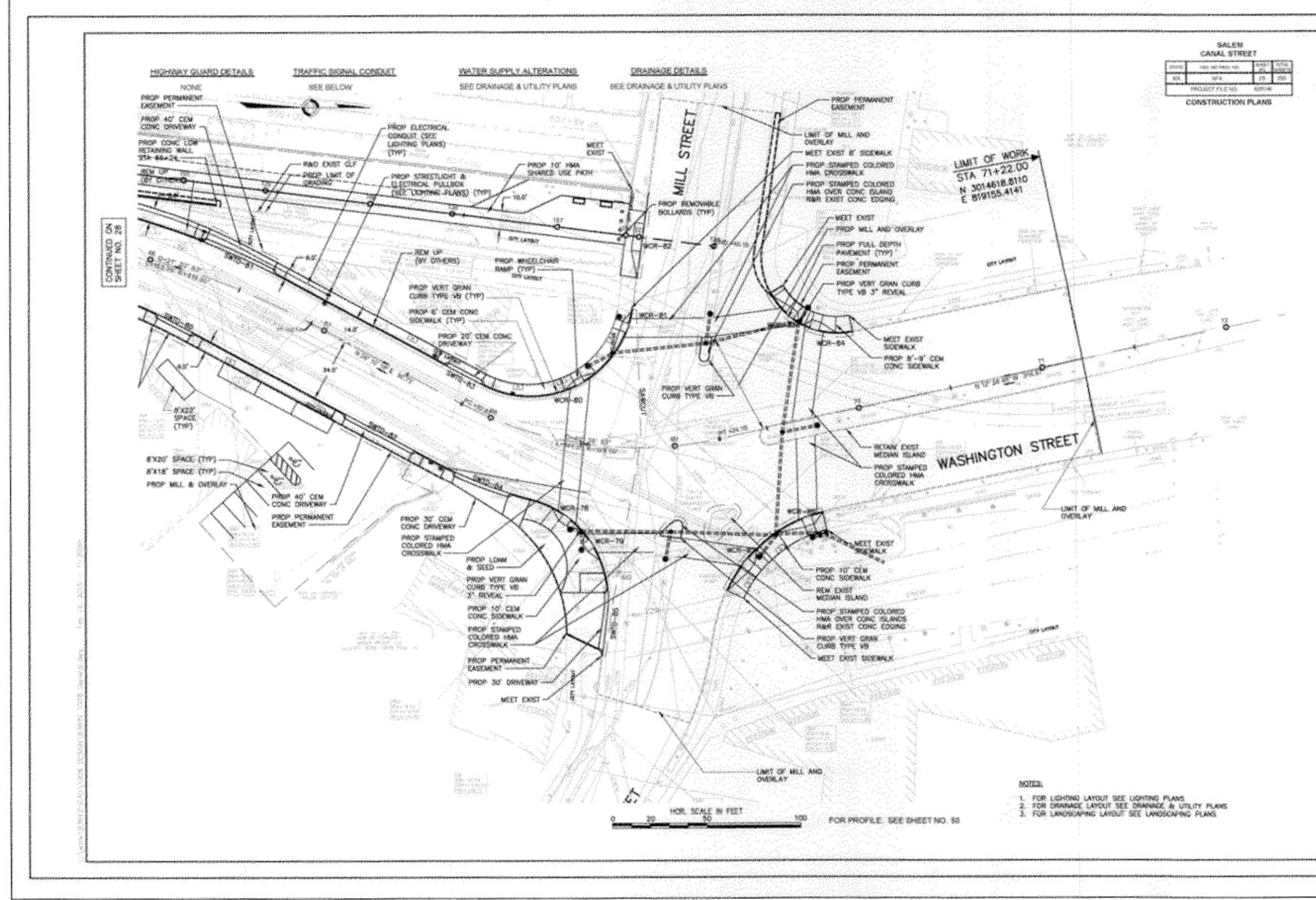
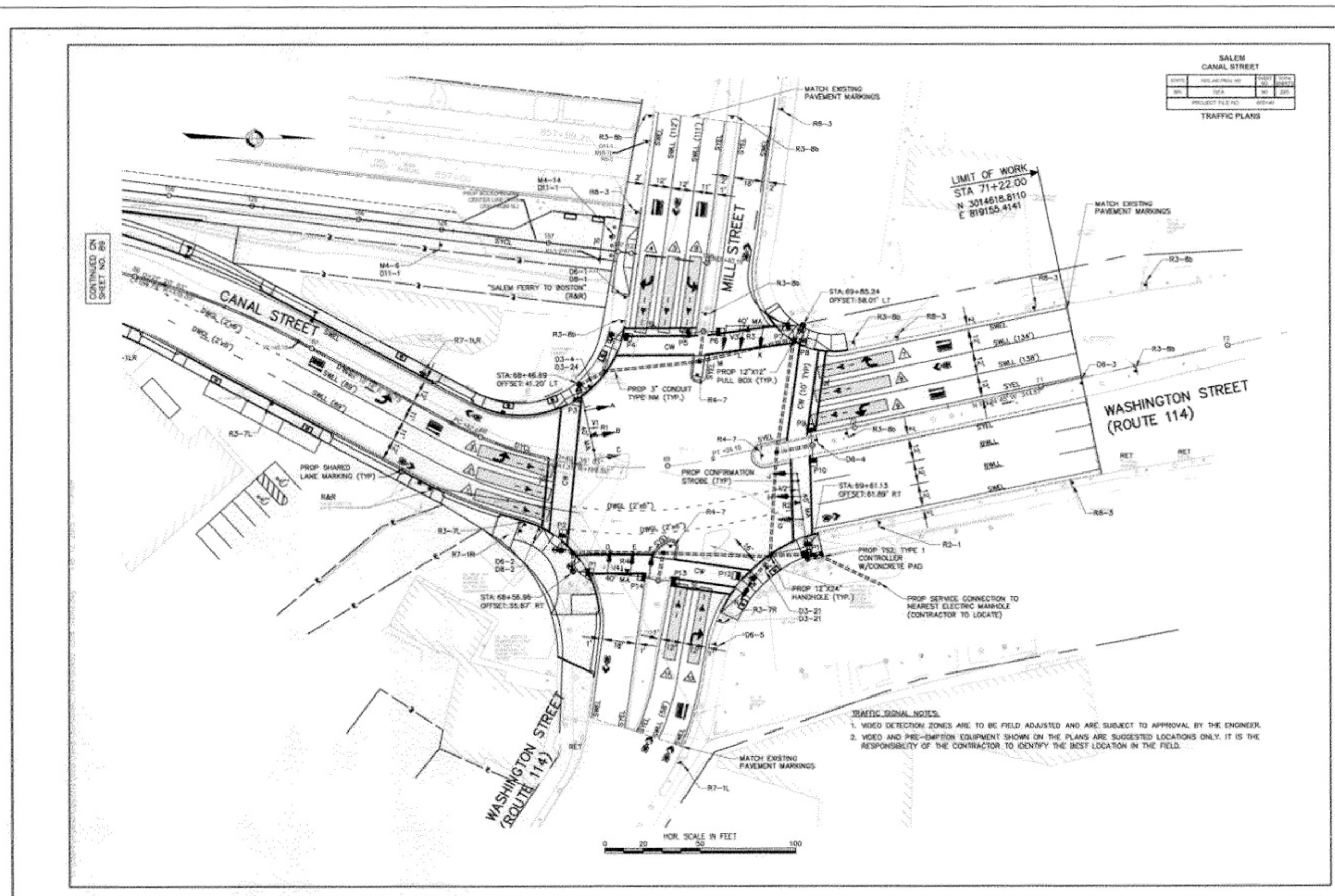
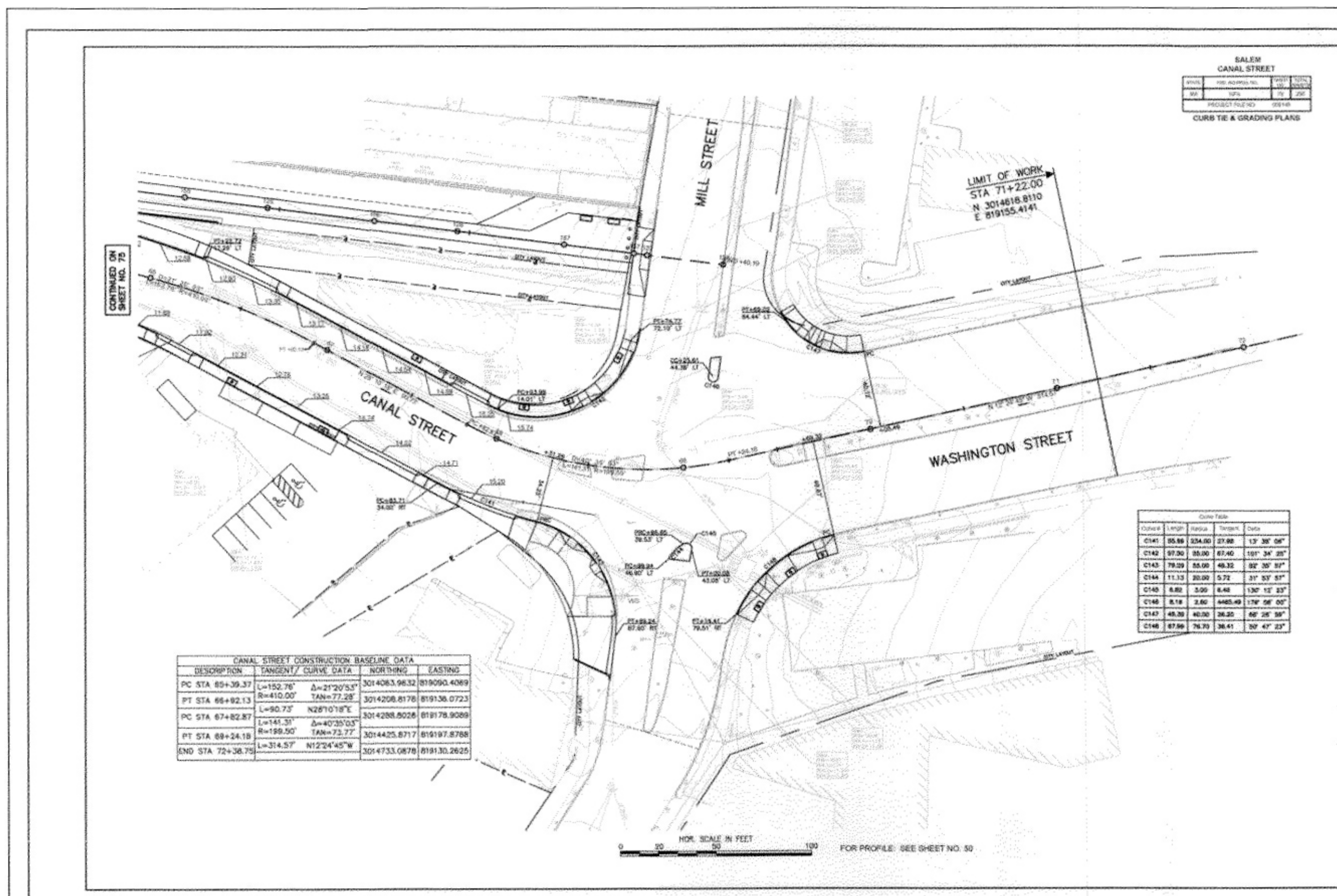
SALEM RILEY PLAZA					
FUND. DIVISION	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	MOODS(371)	1991	1	
IRRIGATION PLAN I					
REV. 10/26/93					



- LEGEND**
- Spray Sprinkler - 15' rad, 0.9-3.6 gpm, 30 psi
 - Spray Sprinkler - 12' rad, 0.6-2.6 gpm, 30 psi
 - Spray Sprinkler - 10' rad, 0.4-1.6 gpm, 30 psi
 - Spray Sprinkler - End Strip-4'x14', 0.6 gpm, 30 psi
 - Spray Sprinkler - Center Strip-4'x28', 1.2 gpm, 30 psi
 - Spray Sprinkler - Side Strip-4'x28', 1.2 gpm, 30 psi
 - Spray Sprinkler - End Strip-6'x13', 0.4 gpm, 30 psi
 - Spray Sprinkler - Center Strip-6'x26', 2.9 gpm, 30 psi
 - Spray Sprinkler - Side Strip-6'x13', 2.9 gpm, 30 psi
 - ⊖ 1" Electric Valve
 - ⊖ 1.5" Electric Valve
 - Lateral Pipe
 - Main Line Pipe
 - ⊖ Automatic Controller
 - ⊖ Rain Sensor
 - Sleeves
 - ⊖ WARDER SIGNAL VALVE
 - ⊖ BRASS SIGNAL VALVE

NOTES:
 1.) SCHEMATIC IRRIGATION DIAGRAM PROVIDED FOR REFERENCE TO APPROXIMATELY REPRESENT EXISTING CONDITIONS. LAYOUT NOT CONFIRMED, CONTRACTOR TO FIELD VERIFY AND ADJUST WORK AS REQUIRED BASED ON ACTUAL EXISTING CONDITIONS.

Client	CITY OF SALEM, MASSACHUSETTS	Scale	N.T.S.	 New England Civil Engineering Corp. 120 Washington Street SALEM, MASSACHUSETTS	Sheet C-14
Project	MASSWORKS UTILITY RELOCATION	Date	7/31/2015		
	EXISTING IRRIGATION	Job	MAWorks		
		Designed by	WMR		
		Drawn by	DJW		
		Checked by	WMR		
		Approved by	WMR	No. _____ Description _____ Date _____ File: H:\Clients\Salem\Dodge Washington RCG review\CAD\Design_recover_recover_recover.dwg	



NOTES:
 1.) DRAFT PLANS PROVIDED FOR REFERENCE TO REPRESENT PROPOSED CONDITIONS IN FUTURE (2016/2017) PROJECT. PLANS NOT FINALIZED (NOT FOR CONSTRUCTION) AND MAY CHANGE.

Client	CITY OF SALEM, MASSACHUSETTS	Scale	N.T.S.		
Project	MASSWORKS UTILITY RELOCATION	Date	7/31/2015		
	CONSTRUCTION, CURB TIE, LANDSCAPING AND TRAFFIC PLANS	Job	MAWorks		
		Designed by	WMR		
		Drawn by	DJW		
		Checked by	WMR	No.	
		Approved by	WMR	Description	Date

New England Civil Engineering Corp.

120 Washington Street
SALEM, MASSACHUSETTS

Sheet

C-15

REMOVE AND REPLACE (OR INSTALL NEW) STOP LOGS. CONCRETE SLOTS ARE DETERIORATED. CLEAN, MODIFY, AND REPAIR STOP LOG SLOTS AS NEEDED TO INSTALL STOP LOGS, INCLUDING CONCRETE REPAIR AND/OR INSTALLATION OF GALVANIZED CHANNELS. INSTALL AND REMOVE INFLATABLE PLUGS AS REQUIRED WITH BYPASS PUMPING AS REQUIRED TO DEWATER WORK AREAS.

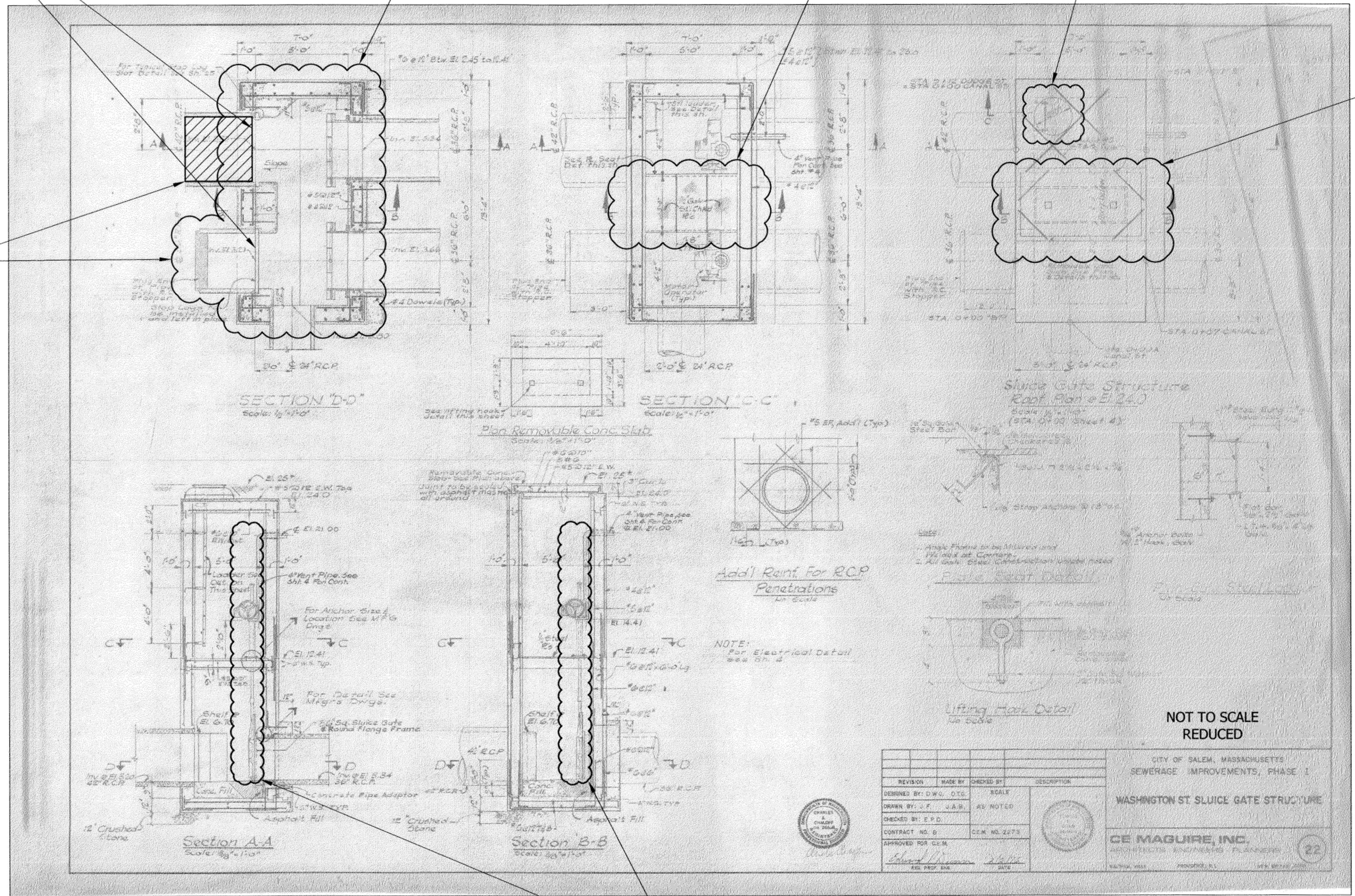
POWER WASH AND REMOVE DEBRIS AND GREASE FROM ENTIRE STRUCTURE WITH POWER WASHER AND VACTOR (TOP TO BOTTOM) BEFORE AND AFTER DEMOLITION WORK.

REMOVE AND DISPOSE PLYWOOD AND DEBRIS BEFORE AND AFTER DEMOLITION WORK. REPAIR STEEL PLATES AND FRAMES AS REQUIRED TO ACCESS LOWER LEVELS. REMOVE AND DISPOSE STEEL PLATES AND FRAMES AS DIRECTED.

REMOVE AND REPLACE BURIED FRAME AND COVER, FIELD VERIFY SIZE. (NON-STANDARD 32" SQUARE FLANGE, 24" SQUARE COVER "SEWER") WORK TO BE MEASURED FOR PAYMENT AS PART OF SLUICE GATE STRUCTURE-MODIFICATION BID ITEM.

EXCAVATE TO EXPOSE TOP OF STRUCTURE AND REMOVE THE "REMOVABLE CONCRETE SLAB" INCLUDING SAW CUTTING AND INSTALLATION OF NEW LIFTING HOOKS. AFTER WORK IS COMPLETE, CONSTRUCT NEW REINFORCED CONCRETE SLAB IN PLACE WITH NEW LIFTING HOOKS, REINFORCING PLAN SHOWN ON THIS SHEET FOR REFERENCE BUT CONTRACTOR TO PROVIDE CERTIFIED, STAMPED STRUCTURAL DESIGN PRIOR TO CONSTRUCTION FOR H-25 RATED SLAB, REMOVE AND DISPOSE FORMS AFTER CURING.

REMOVE 36" PLUG AFTER WORK IS COMPLETE AND REPAIR PIPE AS REQUIRED. CONSTRUCT NEW 42" PLUG AS DIRECTED. WORK TO BE MEASURED FOR PAYMENT AS PART OF SLUICE GATE STRUCTURE-MODIFICATION BID ITEM.



GATE MOTORS MAY STILL BE WIRED; DISCONNECT AT SOURCE IF REQUIRED AND PULL WIRES FROM STRUCTURE, COORDINATE WITH CITY ELECTRIC DEPARTMENT. REMOVE AND DISPOSE SLUICE GATES, MOTORS, FRAMES, POSTS, RISERS, WHEELS, PEDESTALS, FLANGES, BOLTS, CONDUITS, WIRES, ETC. AS DIRECTED.

- REFER TO "BYPASS PUMPING" PLAN FOR ADDITIONAL INFORMATION
- REFER TO PHOTOGRAPHS OF INTERIOR OF STRUCTURE FOR REFERENCE

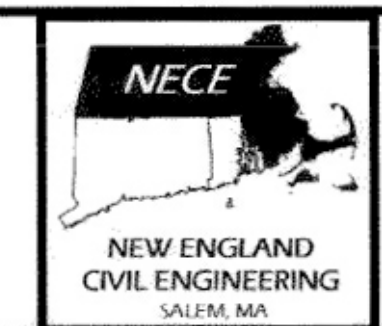
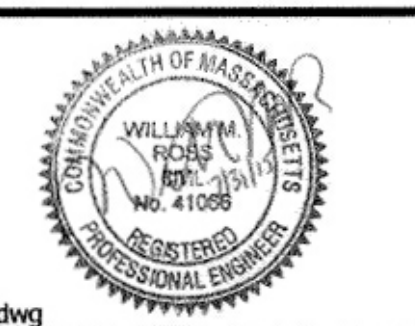
NOT TO SCALE
REDUCED

REVISION	MADE BY	CHECKED BY	DESCRIPTION
DESIGNED BY: D.W. DTC	SCALE		
DRAWN BY: J.F. J.A.R.	AS NOTED		
CHECKED BY: E.P.D.			
CONTRACT NO. 6	C.E.M. NO. 2675		
APPROVED FOR C.E.M.			
DATE			

CITY OF SALEM, MASSACHUSETTS
SEWERAGE IMPROVEMENTS, PHASE I
WASHINGTON ST SLUICE GATE STRUCTURE
CE MAGUIRE, INC.
ARCHITECTS ENGINEERS PLANNERS
22





Client	CITY OF SALEM, MASSACHUSETTS
Project	MASSWORKS UTILITY RELOCATION SEWER SLUICE GATE STRUCTURE DETAIL




Scale	N.T.S.
Date	6/23/2015
Job	MAWorks
Designed by	WMR
Drawn by	DJW
Checked by	WMR
Approved by	WMR
Description	File: H:\Clients\Salem\Dodge Washington RCG review\CAD\Design_recover_recover_recover.dwg



New England Civil Engineering Corp.

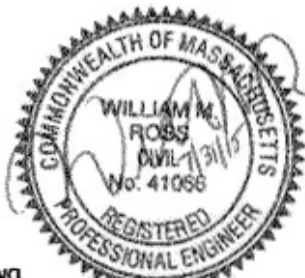

120 Washington Street
SALEM, MASSACHUSETTS

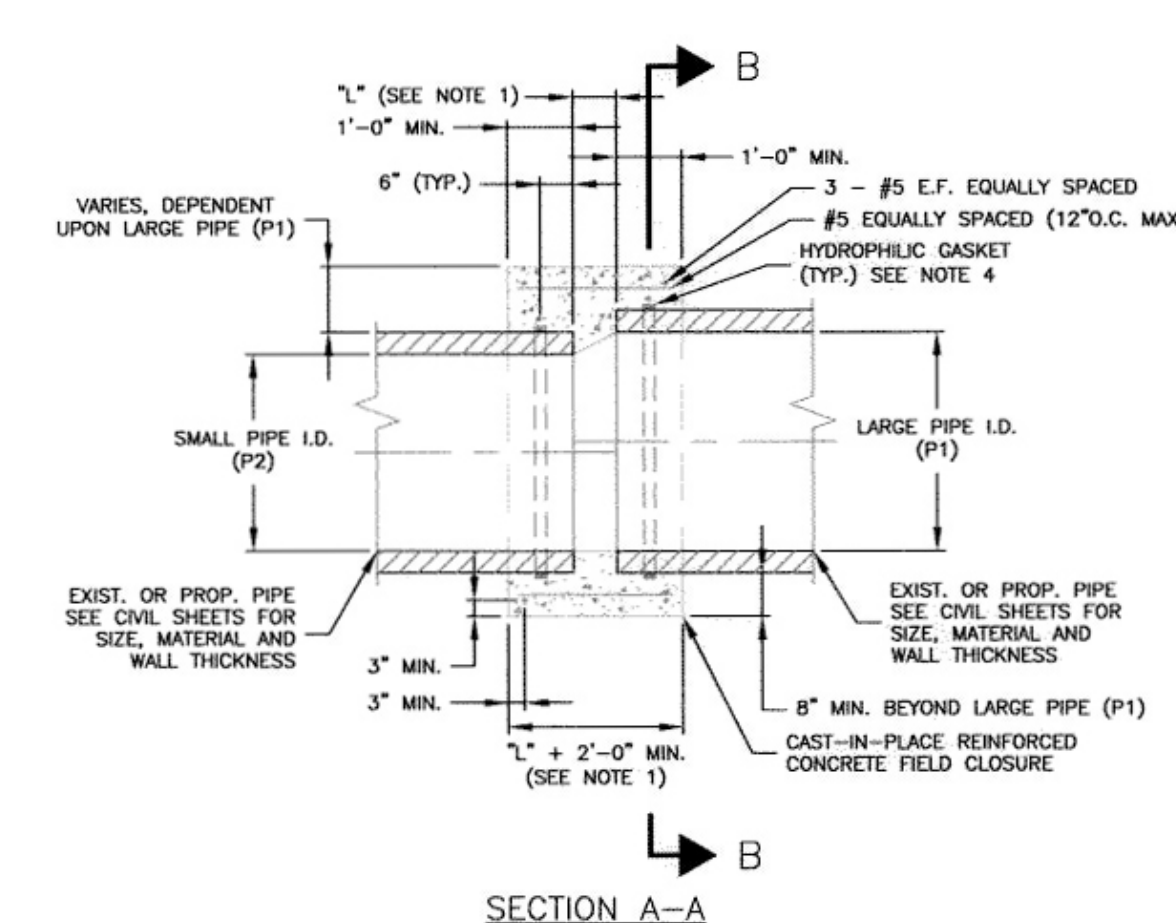
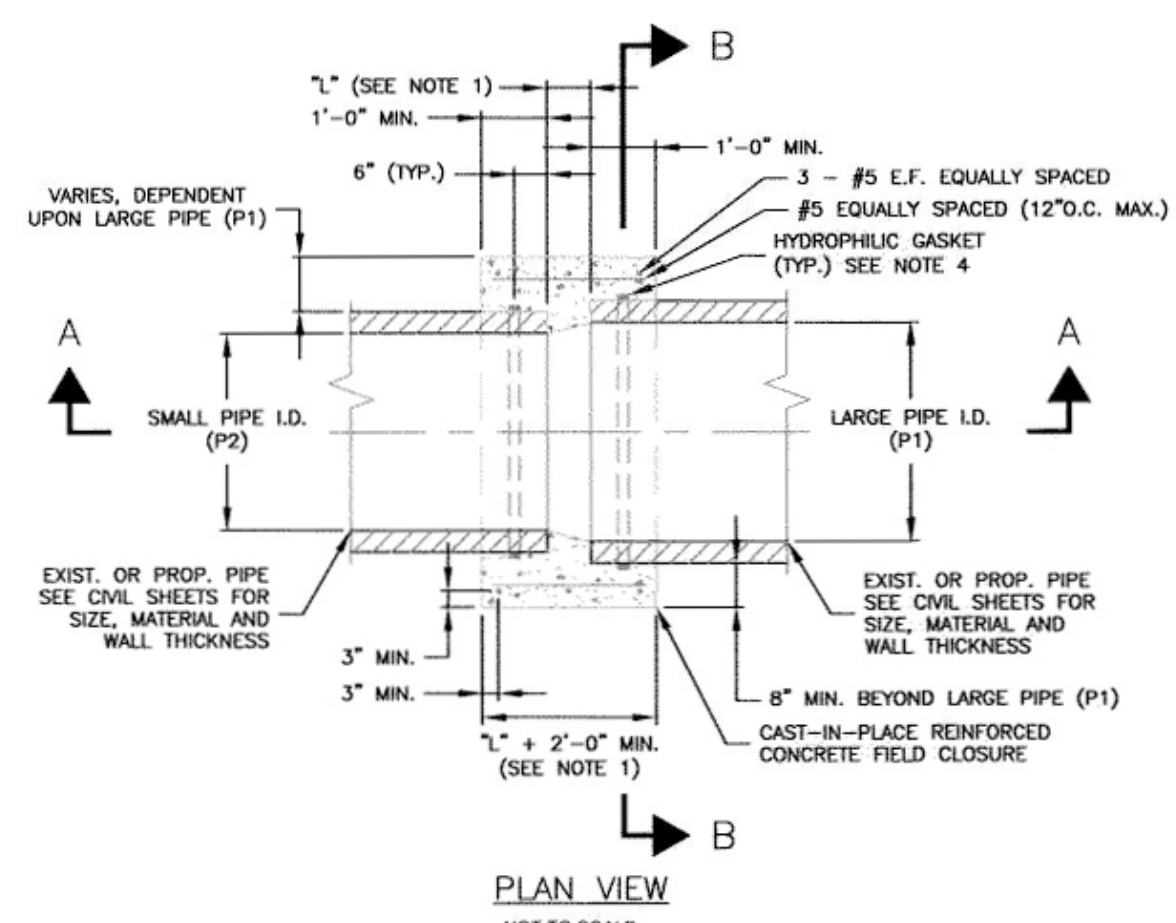
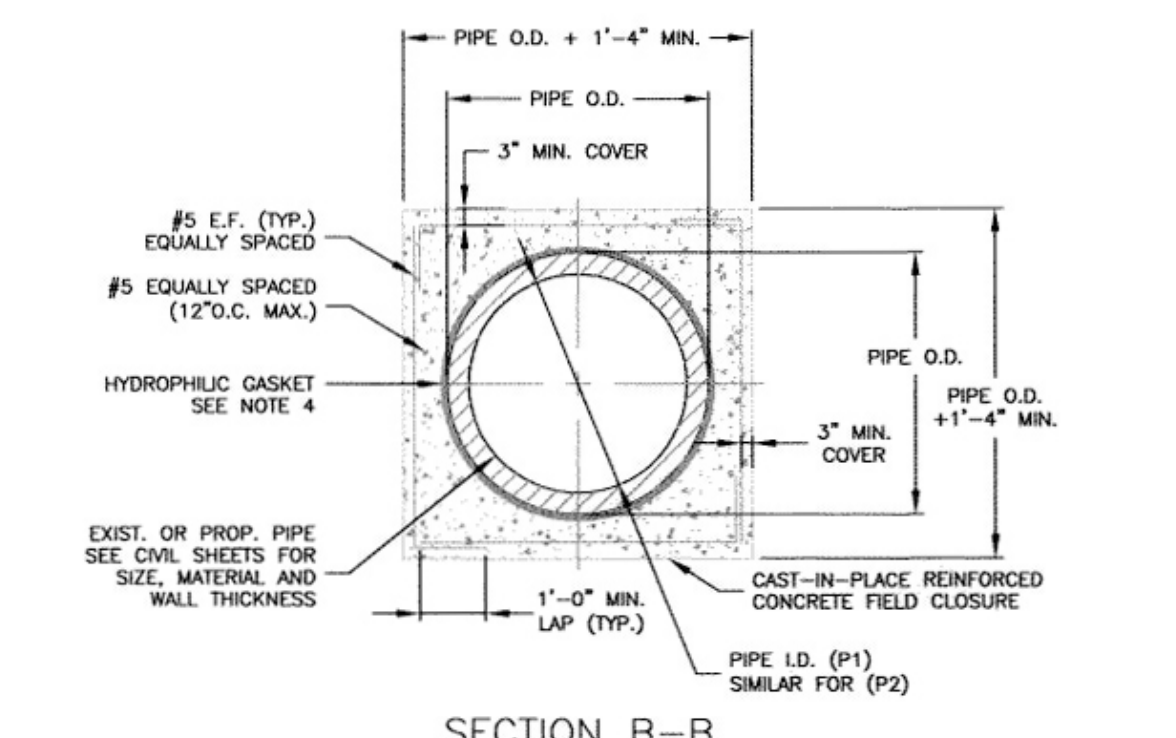
CONSTRUCTION SIGN SUMMARY			
IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT
	WIDTH (IN.)	HEIGHT (IN.)	
R9-8	36	18	PEDESTRIAN CROSSWALK
R9-9	30	18	SIDEWALK CLOSED
R9-10	48	24	SIDEWALK CLOSED ← → USE OTHER SIDE
R9-11L	48	24	SIDEWALK CLOSED AHEAD ← CROSS HERE
R9-11R	48	24	SIDEWALK CLOSED AHEAD → CROSS HERE
R9-11aL	48	24	SIDEWALK CLOSED ← CROSS HERE
R9-11aR	48	24	SIDEWALK CLOSED → CROSS HERE
W1-4L	30	30	
W1-4R	30	30	
W4-2L	36	36	
W4-2R	36	36	
W5-1	36	36	ROAD NARROWS

CONSTRUCTION SIGN SUMMARY			
IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT
	WIDTH (IN.)	HEIGHT (IN.)	
W20-1	36	36	
W20-7	36	36	
W20-8	36	36	

- NOTES:
- UNLESS OTHERWISE NOTED, ALL SIGN SUPPORTS SHALL BE WOODEN BREAKAWAY POSTS PER MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARDS AND THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AND THE 1996 DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR SIGNS AND SUPPORTS.
 - WORK OUTSIDE TRAFFIC DETOUR WORK ZONE ON WASHINGTON STREET TO BE COMPLETED AT NIGHT AND WITH TRAFFIC DETOURS AS APPROVED AND DIRECTED BY THE CITY OF SALEM POLICE DEPARTMENT.
 - MINIMUM SIGNAGE SHOWN FOR REFERENCE TO SUGGEST OPTION TO DIVERT PEDESTRIAN TRAFFIC AROUND CONSTRUCTION ZONE. CONTRACTOR RESPONSIBLE TO DEVELOP A DETAILED TRAFFIC AND PEDESTRIAN MANAGEMENT PLAN, INCLUDING PROPOSED DETOURS, IN ACCORDANCE WITH MDOT SECTION 850 AND MUTCD STANDARDS AND CITY OF SALEM POLICE DEPARTMENT REQUIREMENTS.
 - ROAD WORK AHEAD SIGNS TO BE INSTALLED IN APPROXIMATE LOCATIONS AS SHOWN, WITH SECOND SIGN IN EACH LOCATION INSTALLED APPROXIMATELY 500 FEET UPSTREAM.
 - SIGNS SHOWN INCLUDE MINIMUM SIGNS REQUIRED. CONTRACTOR TO PROVIDE AND MAINTAIN ADDITIONAL SIGNAGE AS REQUIRED AND DIRECTED.

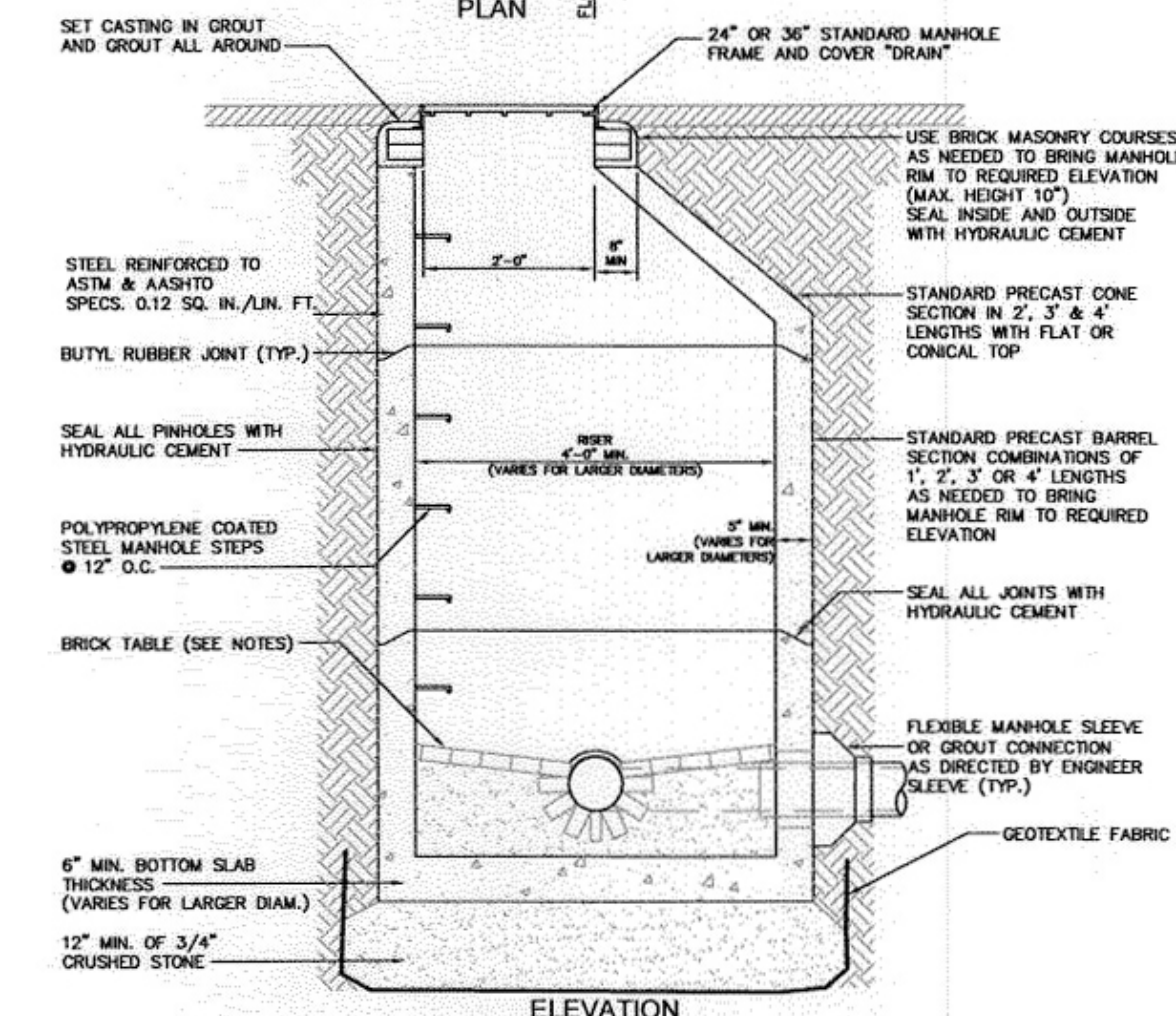
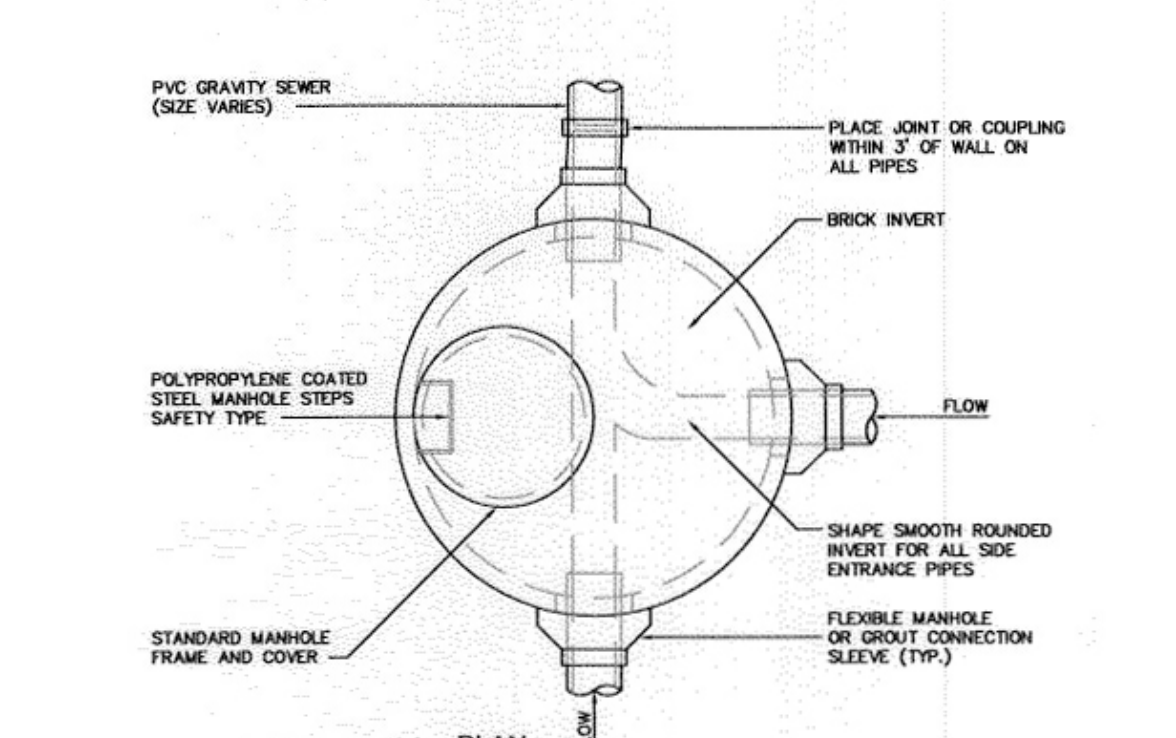
* PER MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY CONTROL PLANS.

Client	CITY OF SALEM, MASSACHUSETTS	Scale	N.T.S.			New England Civil Engineering Corp. 120 Washington Street SALEM, MASSACHUSETTS	Sheet
Project	MASSWORKS UTILITY RELOCATION	Date	7/31/2015				
		Job	MAWorks				
		Designed by	WMR				
		Drawn by	DJW				
		Checked by	WMR				
		Approved by	WMR	No.	Description	Date	



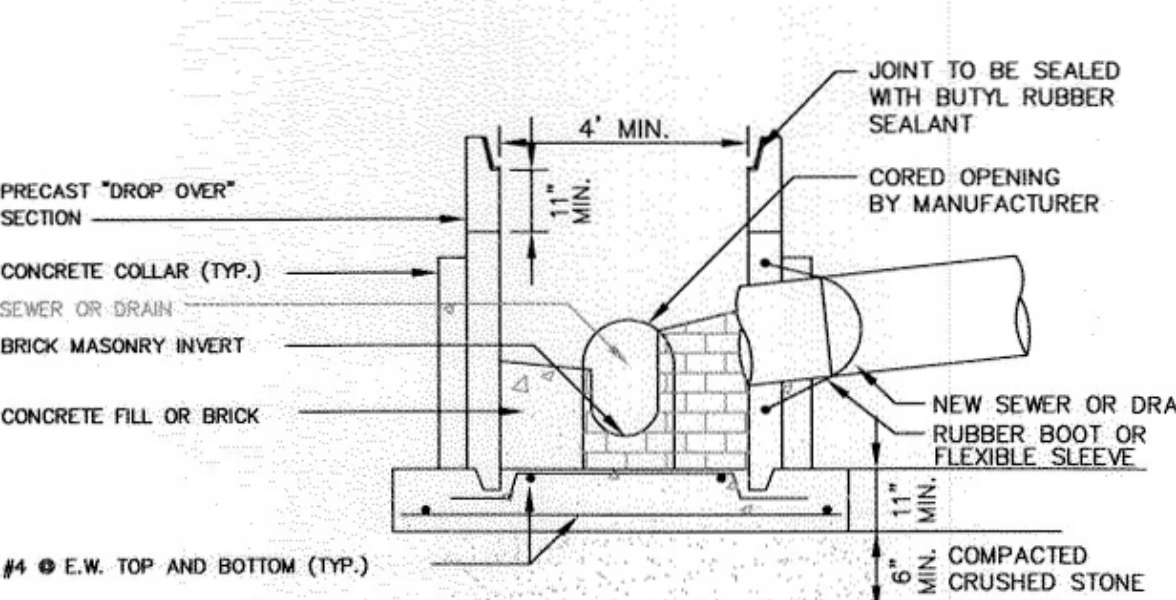
CAST-IN-PLACE FIELD CLOSURE DETAIL
FOR NON-PRESSURE PIPES OF DIFFERENT MATERIALS OR SIZES (P1 = 48" MAX.)

NOTES:
1. SPACING BETWEEN PIPES (L) DEPENDS ON PIPE SIZES, FOR PIPES OF THE SAME SIZE USE 4" MINIMUM. THE DISTANCE "L" EQUALS THE LARGE PIPE I.D. MINUS THE SMALL PIPE I.D. TIMES TWO [L=(P1-P2)2].
2. PROPOSED PIPE INVERT SHALL MATCH EXISTING PIPE INVERT UNLESS OTHERWISE SHOWN ON CIVIL SHEETS.
3. SAND BLAST EXISTING PIPE PERIMETER AND APPLY BONDING AGENT PRIOR TO CONCRETE ENCASEMENT.
4. INSTALL HYDROPHILIC (WATER STOP) GASKET ALONG PIPE PERIMETER FOR EACH PIPE AS SPECIFIED.
5. CONCRETE AND REBAR REQUIREMENTS SHALL CONFORM TO THE SPECIFICATIONS.
6. LOCATION OF FIELD CLOSURE SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL.



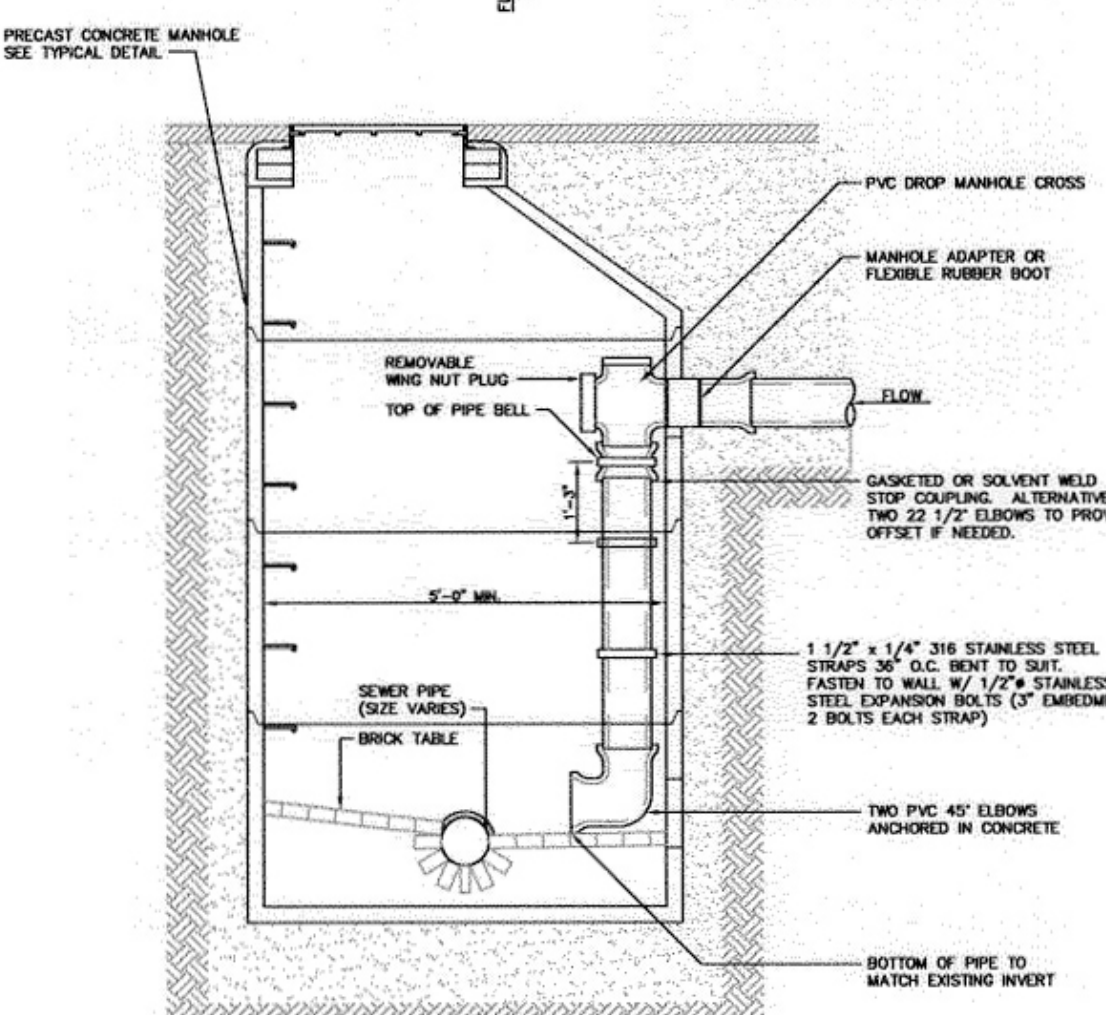
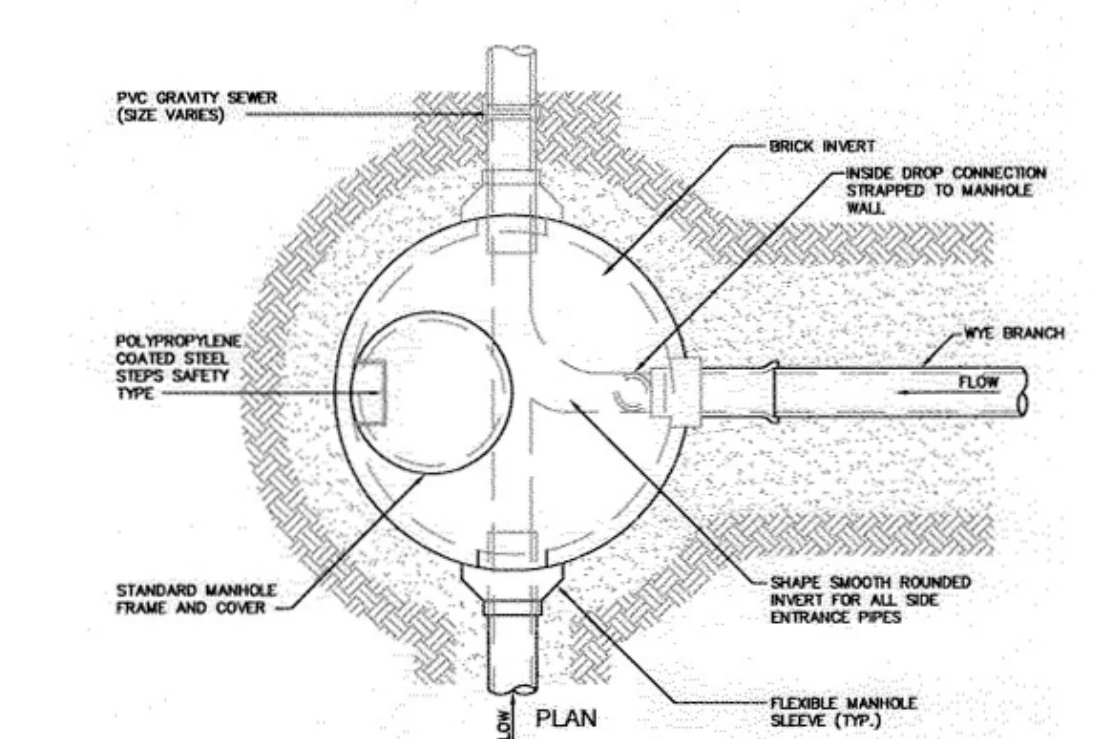
NOTES:
1. INNER EDGE OF BRICK TABLE TO BE AT ELEVATION OF CROWN OF TOP PIPE. TABLE TO SLOPE AT 1" PER 1' TO INSIDE OF MANHOLE BASE.
2. TYPICAL MANHOLE RISER TO BE 4-FOOT DIAMETER MINIMUM.
3. CONTRACTOR TO SELECT MANHOLE DIAMETER TO ACCOMMODATE NUMBER OF PIPE OPENINGS PER MANUFACTURERS REQUIREMENTS AND INTERNAL DROP PIPING.

TYPICAL MANHOLE DETAIL
NOT TO SCALE



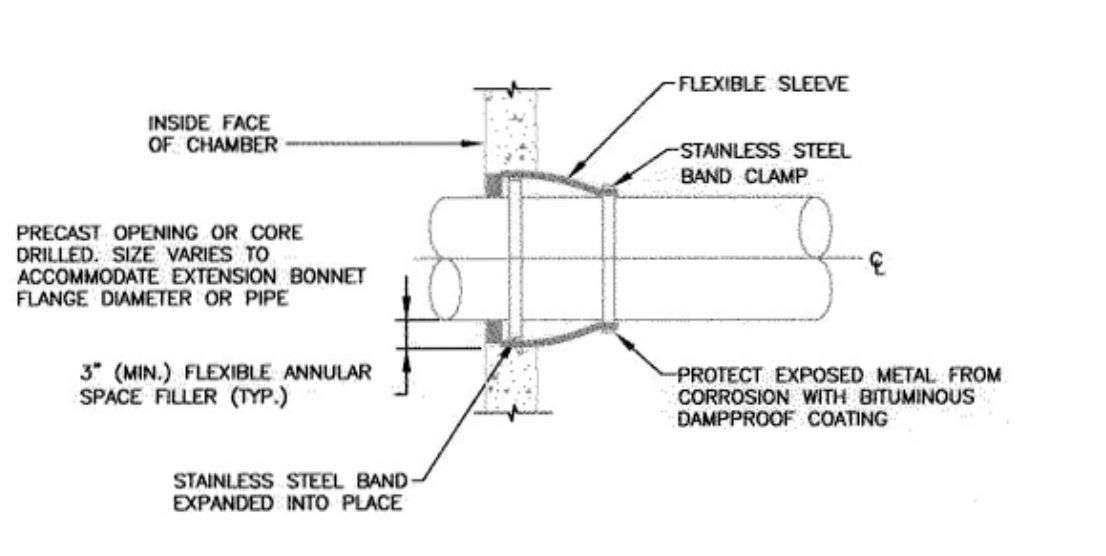
NOTE:
THE "DROP OVER" SECTION SHALL BE INDEPENDENTLY SUPPORTED TO ALLOW FOR PROPER CURLING OF THE BASE SLAB.

DROP OVER MANHOLE DETAIL
NOT TO SCALE



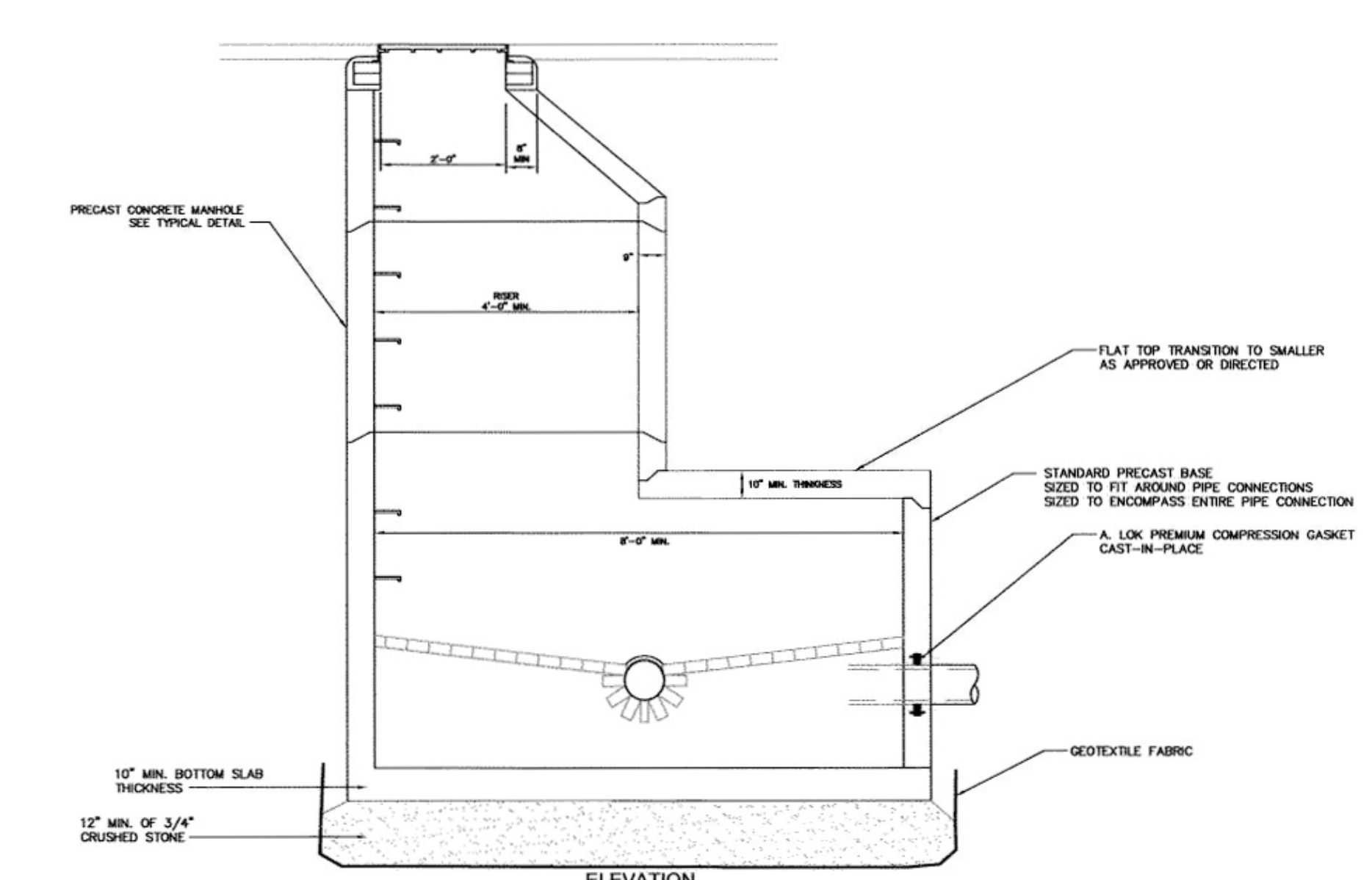
NOTES:
1. DROP MANHOLE SHALL BE USED WHEN ENTRANCE PIPE INVERTS ARE 2' OR GREATER THAN MANHOLE INVERT.
2. CONTRACTOR TO SELECT MANHOLE DIAMETER TO ACCOMMODATE NUMBER OF PIPE OPENINGS PER MANUFACTURERS REQUIREMENTS AND INTERNAL DROP PIPING.

INTERIOR DROP MANHOLE
NOT TO SCALE

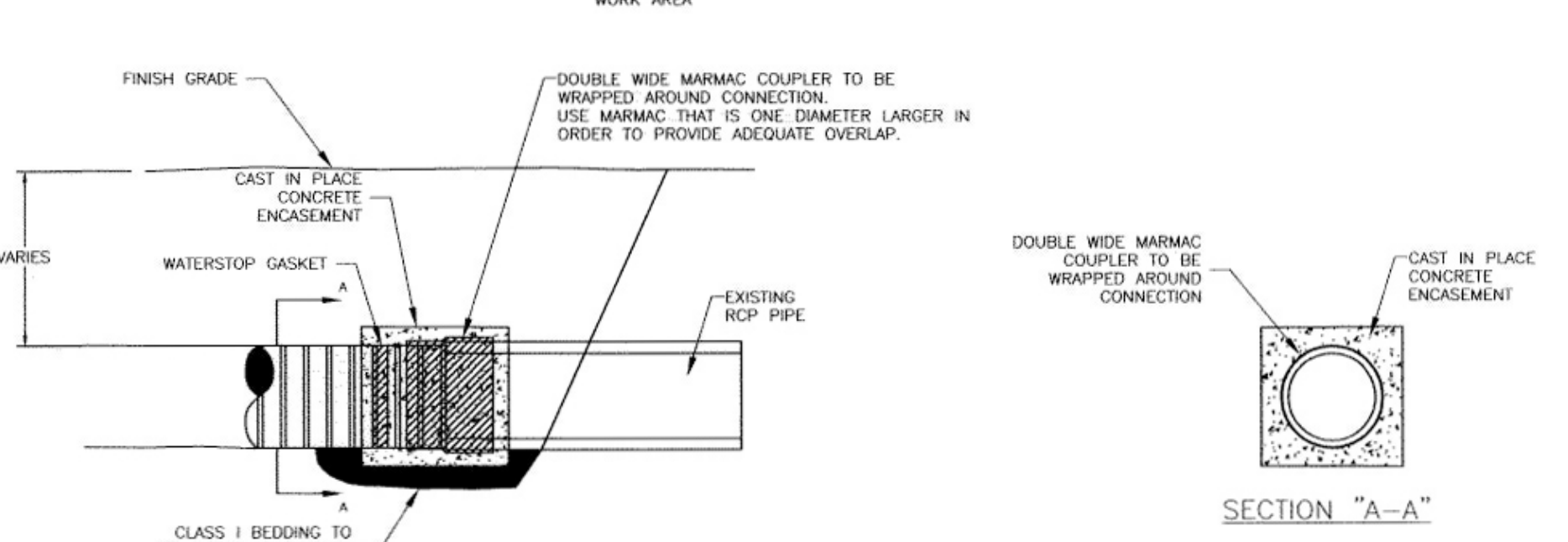
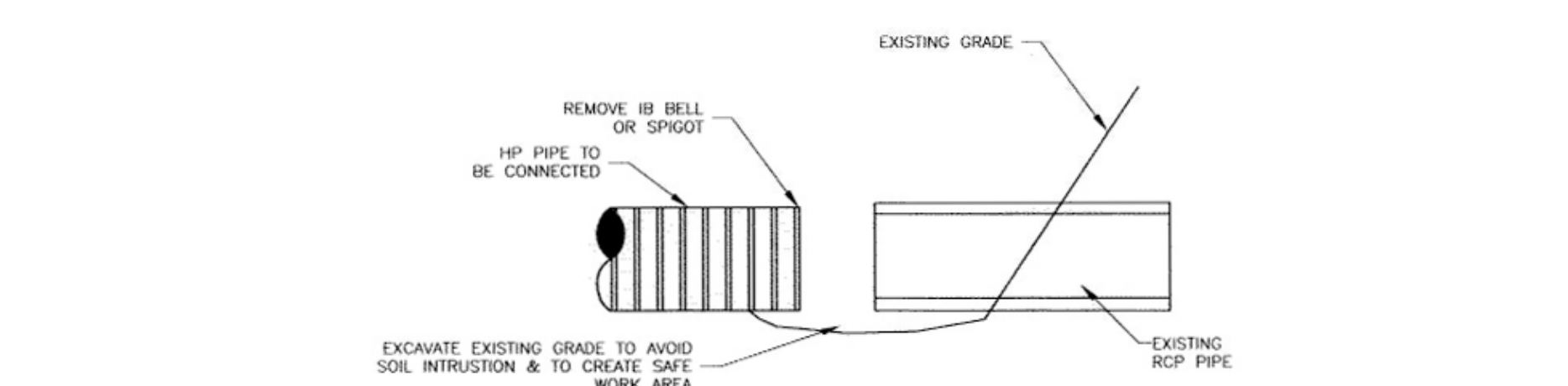


NOT TO SCALE
- ACCEPTED MATERIALS AS DIRECTED:
A. LOK PREMIUM COMPRESSION GASKET
A. LOK FIELD SLEEVE
KOR-N-SEAL RUBBER BOOTS

MANHOLE CONNECTION DETAIL
NOT TO SCALE



LARGE DIAMETER MANHOLE DETAIL
NOT TO SCALE



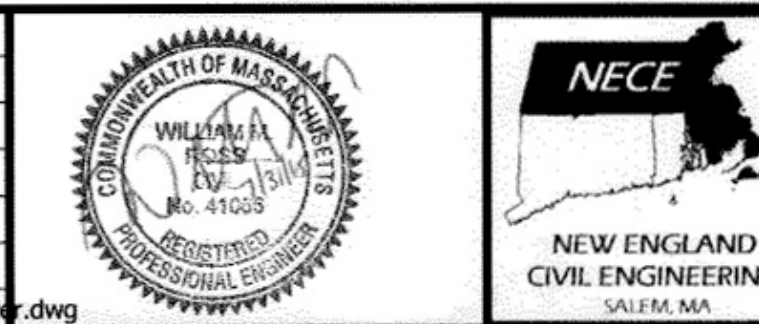
SANITITE HP TO RCP CONNECTION DETAIL (MARMAC)
NOT TO SCALE

NOTES:
1. CONNECTION AND PIPE TO BE BACKFILLED PER ASTM D2921, LATEST EDITION.
2. AN INTERNAL CYLINDER MAY BE WELDED TO THE PIPE TO BE INSERTED INTO THE ID OF THE EXISTING PIPE AND MINIMIZE JOINT MOVEMENT. HOWEVER, AN INTERNAL CYLINDER IS NOT RECOMMENDED FOR DOWNSTREAM CONNECTIONS.

Client	CITY OF SALEM, MASSACHUSETTS
Project	MASSWORKS UTILITY RELOCATION
	DETAILS

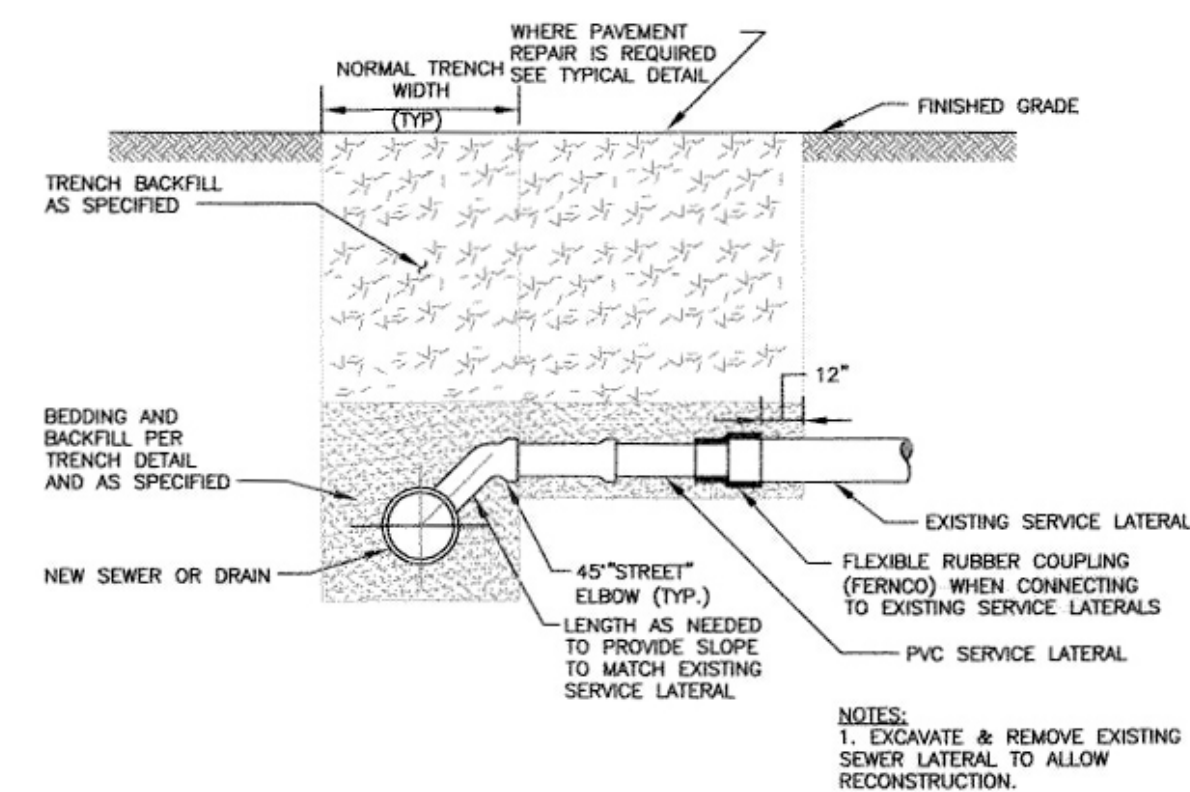
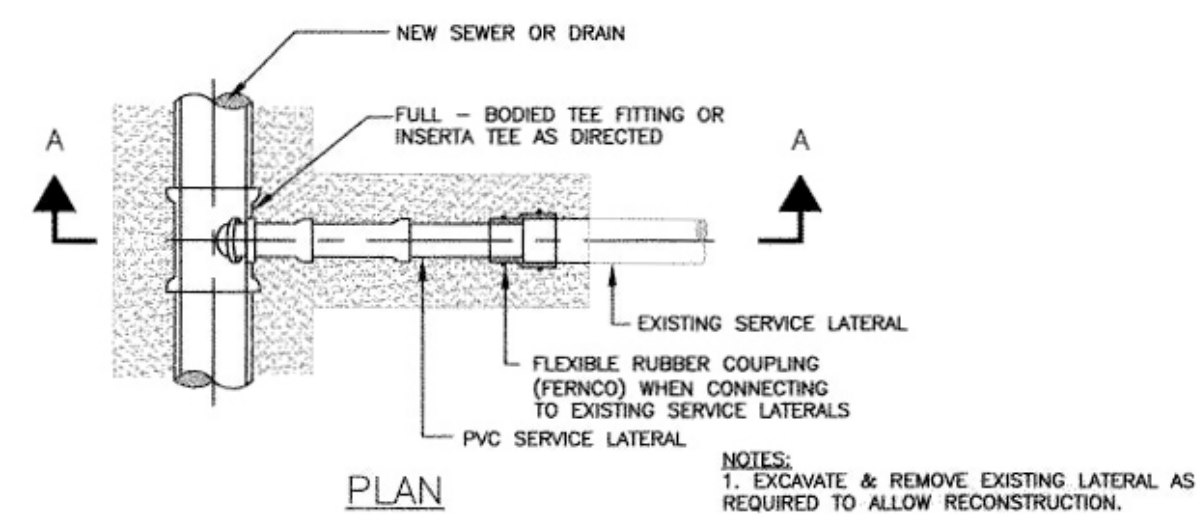
Scale	N.T.S.
Date	7/29/2015
Job	MAWorks
Designed by	WMR
Drawn by	DJW
Checked by	WMR
Approved by	WMR

No.	Description	Date



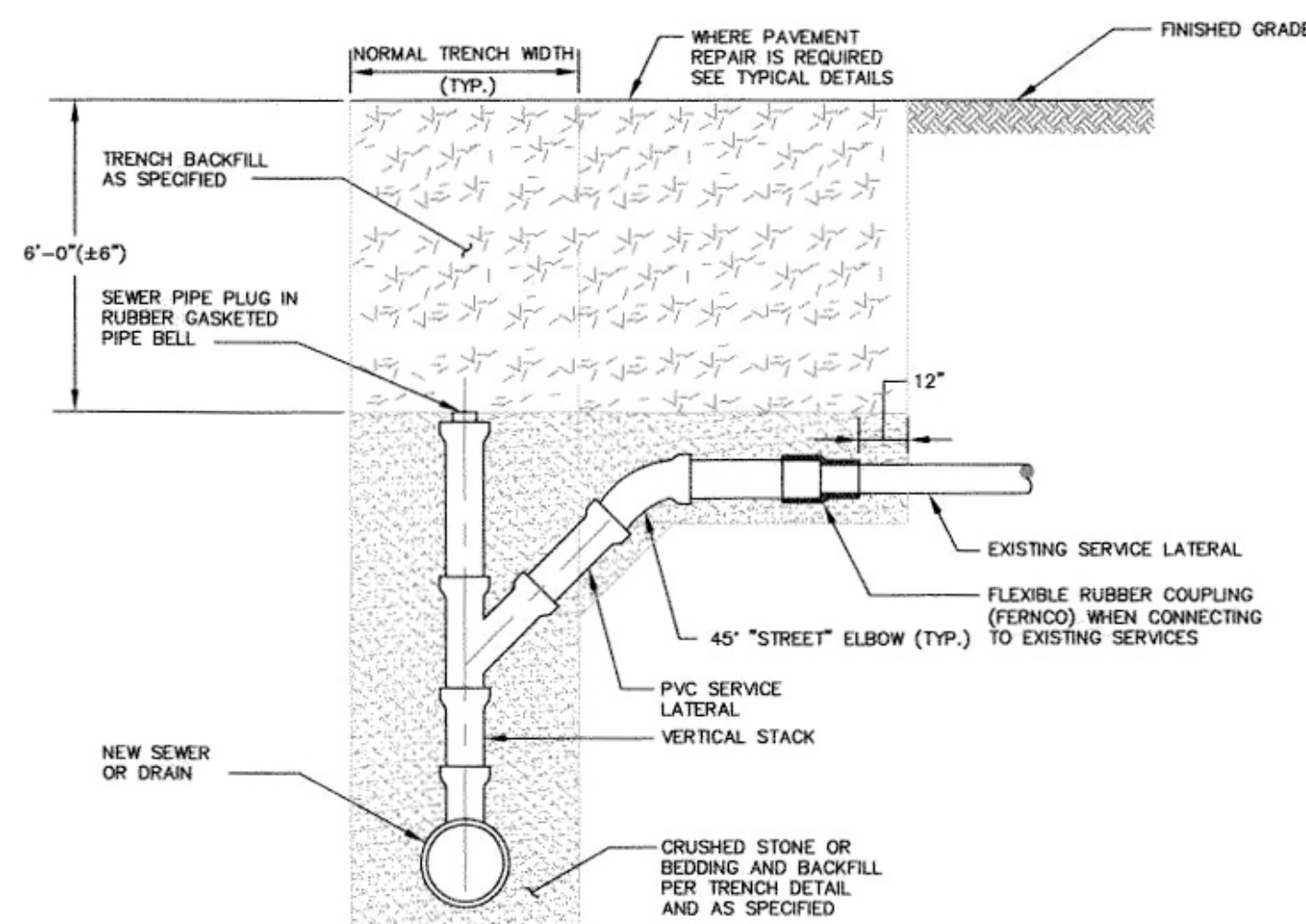
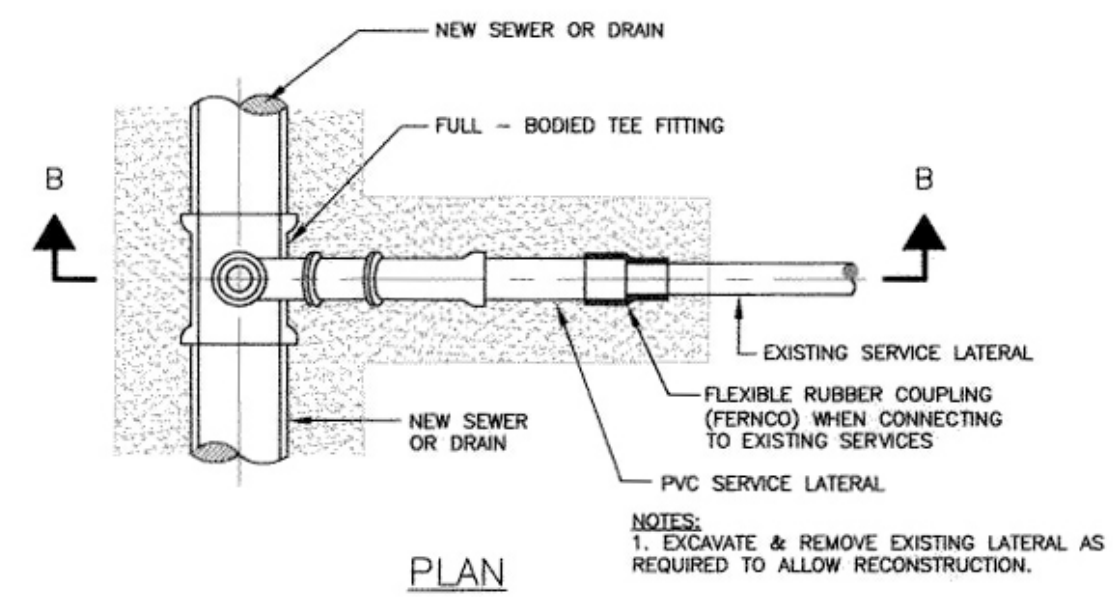
NECE
NEW ENGLAND CIVIL ENGINEERING
SALEM, MA

New England Civil Engineering Corp.
120 Washington Street
SALEM, MASSACHUSETTS



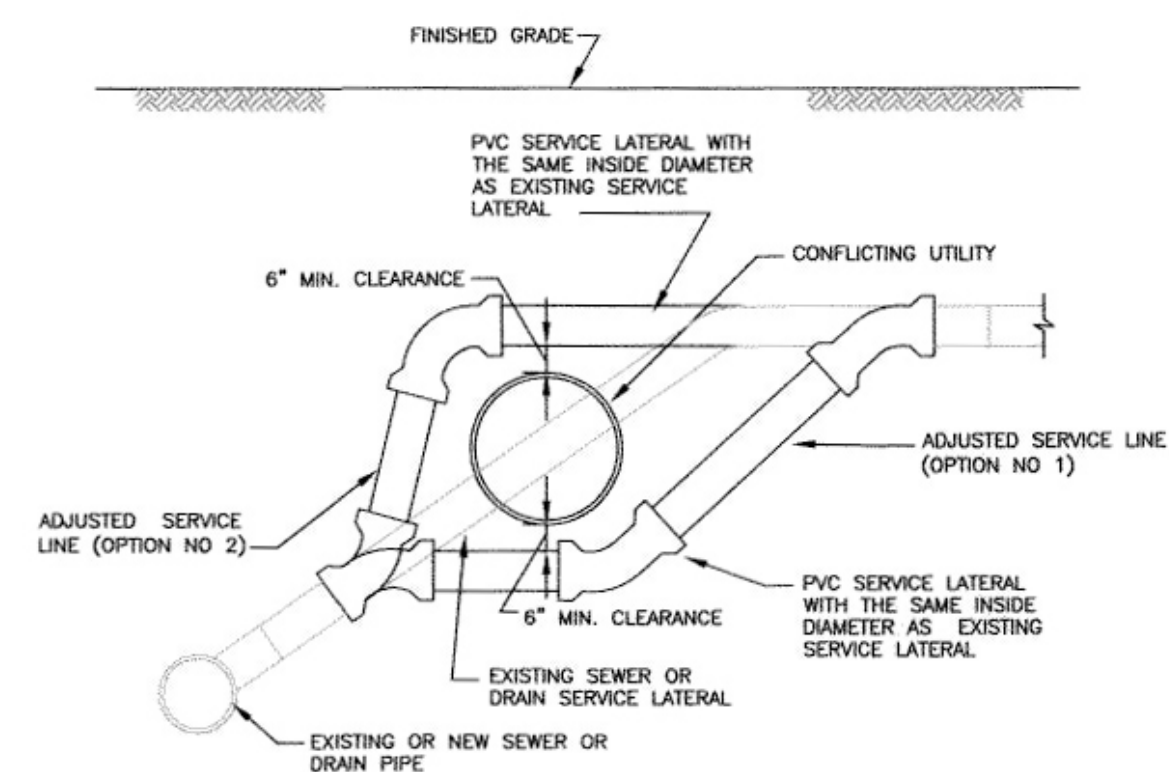
SECTION A-A

SEWER OR DRAIN SERVICE CONNECTION DETAIL < 12' DEEP
NOT TO SCALE

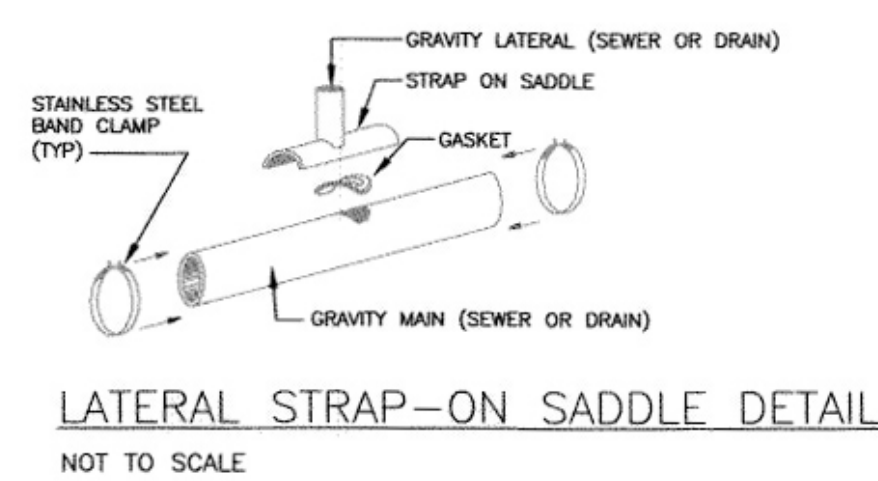


SECTION B-B

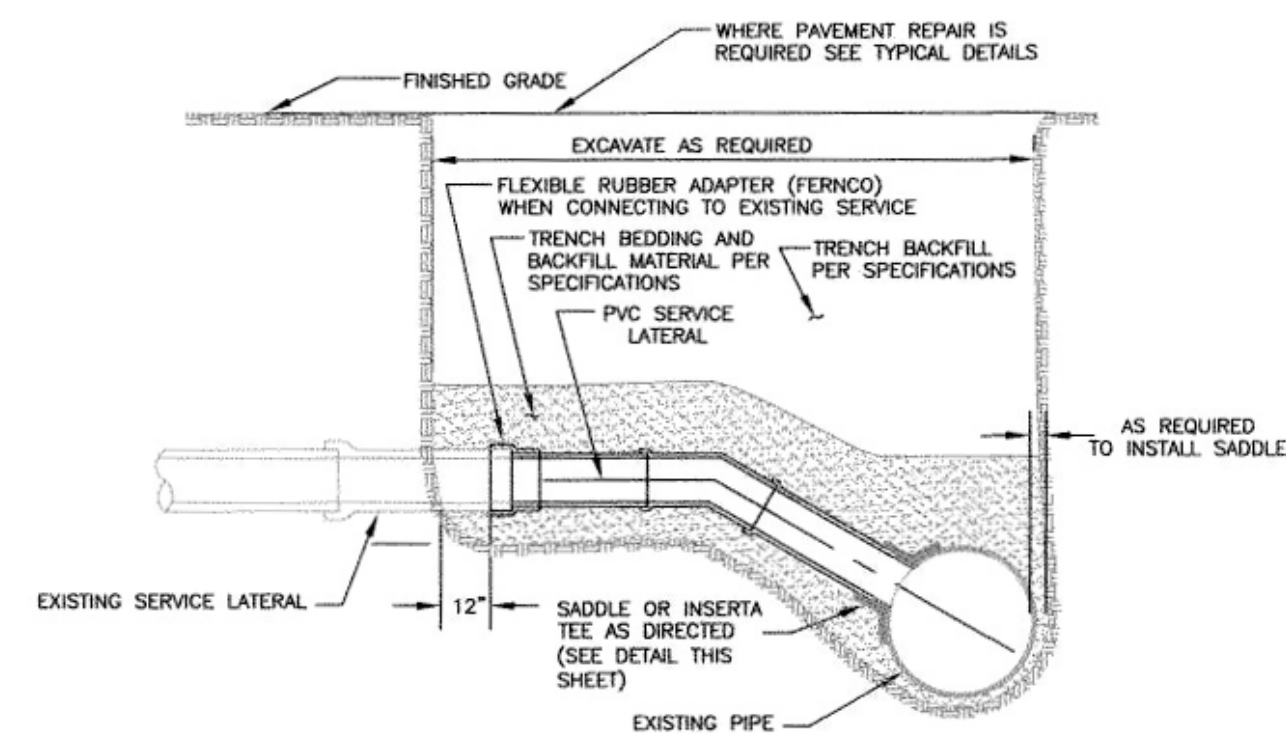
SEWER OR DRAIN SERVICE CONNECTION WITH CHIMNEY DETAIL > 12' DEEP
NOT TO SCALE



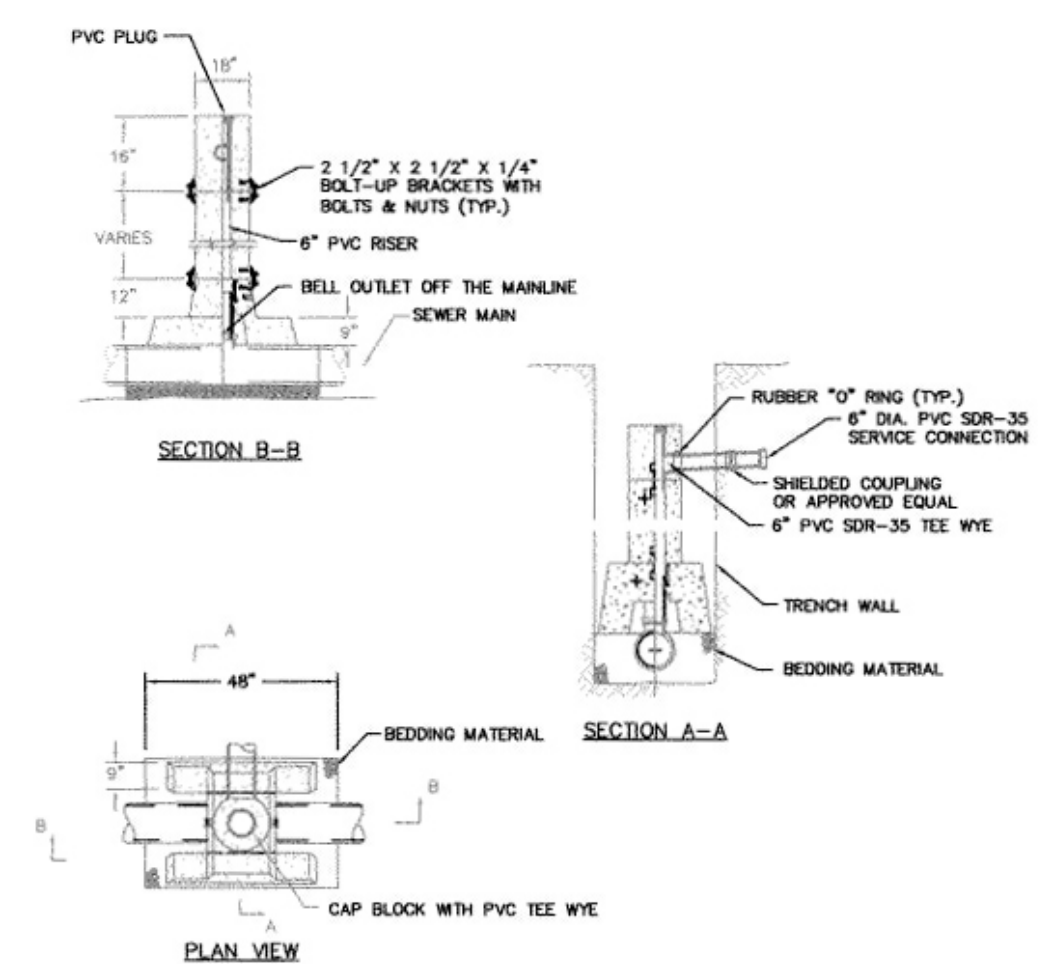
SANITARY SEWER OR DRAIN SERVICE LATERAL
RECONNECTION FOR CONFLICTS WITH OTHER UTILITY
NOT TO SCALE



LATERAL STRAP-ON SADDLE DETAIL
NOT TO SCALE



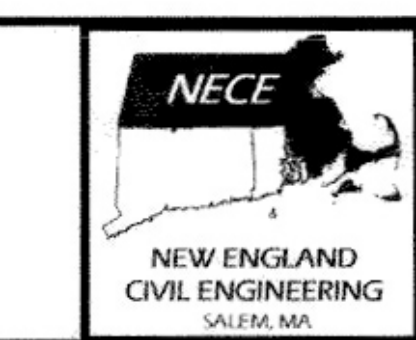
SEWER OR DRAIN SERVICE CONNECTION
TO EXISTING PIPE DETAIL
NOT TO SCALE



PRECAST CONCRETE CHIMNEY
NOT TO SCALE

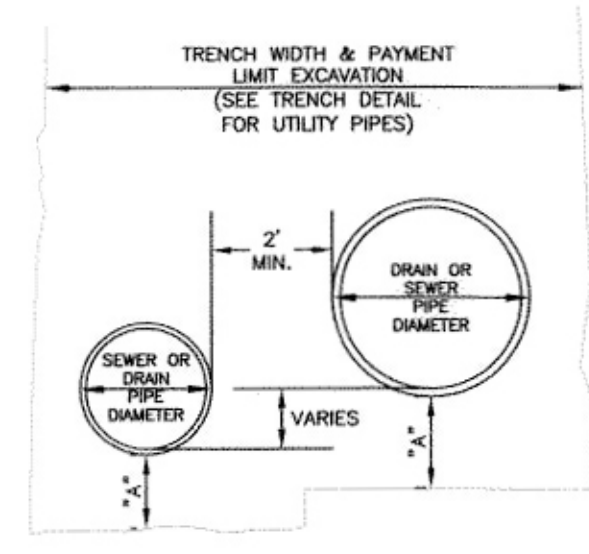
Client	CITY OF SALEM, MASSACHUSETTS
Project	MASSWORKS UTILITY RELOCATION
	DETAILS

Scale	N.T.S.
Date	7/29/2015
Job	MAWorks
Designed by	WMR
Drawn by	DJW
Checked by	WMR
Approved by	WMR



New England Civil Engineering Corp.
120 Washington Street
SALEM, MASSACHUSETTS

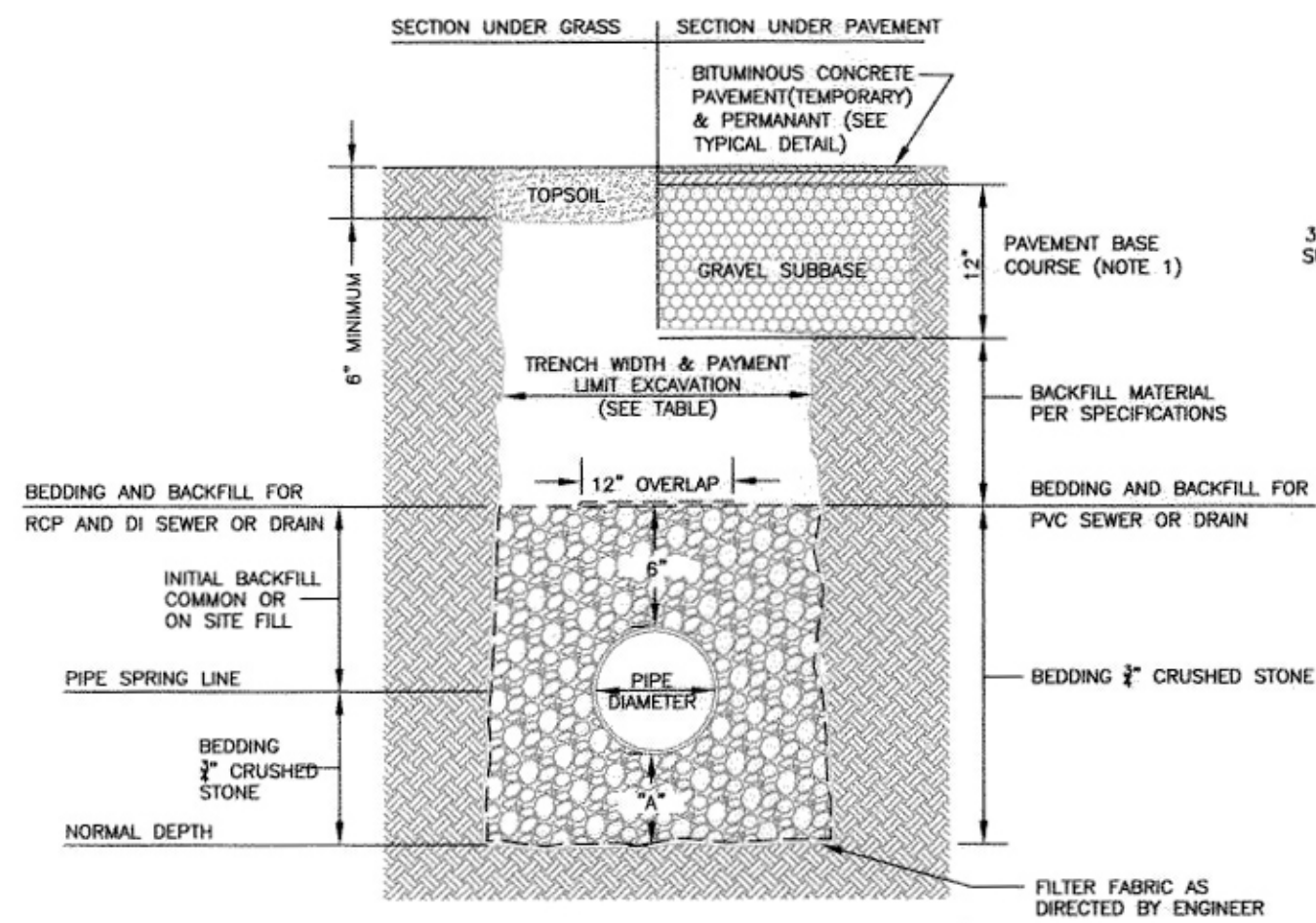
Sheet
D-2



- NOTES:
1. MINIMUM SEPARATION BETWEEN PIPES TO BE 2- FEET UNLESS DIRECTED OTHERWISE BY ENGINEER.
 2. REFER TO TRENCH DETAIL FOR UTILITY PIPES FOR BEDDING AND BACKFILL DETAILS AND PAYMENT LIMITS.

TRENCH DETAIL FOR SEWER AND DRAIN PIPES IN SAME TRENCH

NOT TO SCALE



TYPICAL TRENCH DETAIL FOR SEWER/ DRAIN PIPES

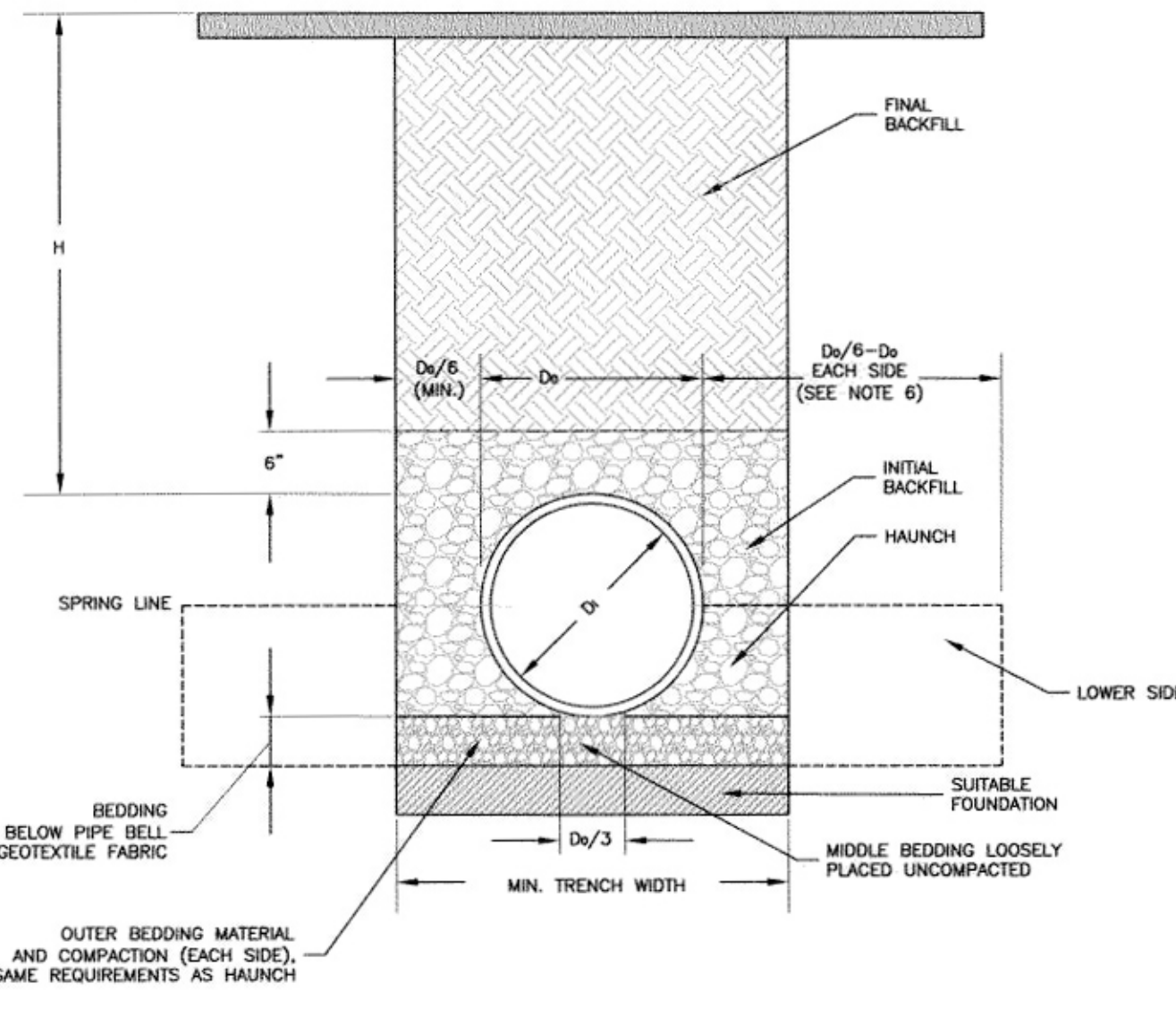
NOT TO SCALE

- NOTES:
1. REFER TO SPEC. SECTION 02500-PAVING AND SURFACING, AND PAVEMENT DETAILS FOR PAVEMENT AND BASE COURSE REQUIREMENTS.
 2. REFER TO SPEC. SECTION 02210-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 THICKNESS SHALL BE PER TABLE UNLESS OTHERWISE INDICATED.

TRENCH LIMITS OF PAYMENT (DEPTH TO INVERT <8')		
PIPE SIZE OR DUCT BANK SIZE	TRENCH WIDTH	"A"
<12" Ø OR DUCT BANK WIDTH	4'	6"
>12" Ø OR DUCT BANK WIDTH	O.D. DIA. +3'	9"
MANHOLES AND ALL STRUCTURES	O.D. DIA. +3'	12"

TRENCH LIMITS OF PAYMENT (DEPTH TO INVERT >8')		
PIPE SIZE OR DUCT BANK WIDTH	O.D. DIA.	"A"
<12" Ø OR DUCT BANK WIDTH	5'	12"
>12" Ø OR DUCT BANK WIDTH	O.D. DIA. +4'	12"
MANHOLES AND ALL STRUCTURES	O.D. DIA. +4'	12"

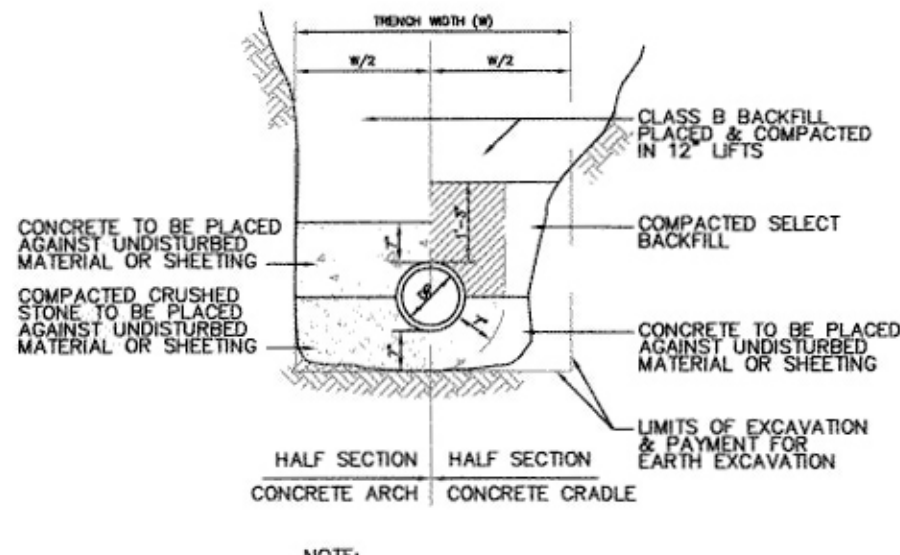
O.D. = OUTSIDE DIMENSION



INTERCEPTOR SEWER TRENCH INSTALLATION

NOT TO SCALE

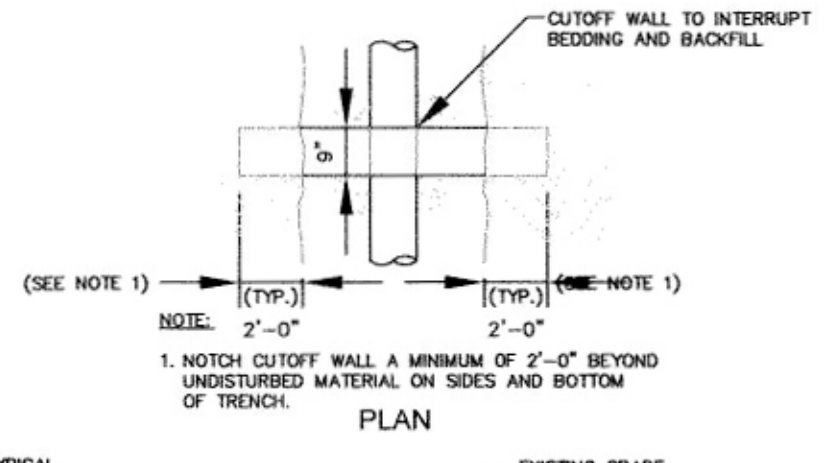
- NOTES:
1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C-1479, "STANDARD PRACTICE FOR INSTALLATION OF PRECAST CONCRETE SEWER, STORM DRAIN, AND CULVERT PIPE USING STANDARD INSTALLATIONS", LATEST EDITION.
 2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL WHEN REQUIRED.
 3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL WITH CRUSHED STONE OR CAST-IN-PLACE CONCRETE SLAB.
 4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I OR II, UNFROZEN, CLEAN, COARSE GRAINED SOILS PER ASTM C-1479. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. COMPACTION SHALL BE IN ACCORDANCE WITH ASTM C-1479 FOR TYPE II BACKFILL. MINIMUM BEDDING THICKNESS SHALL BE 3" BELOW BELL (6" IF ROCK). THE MIDDLE 1/2 BENEATH THE PIPE INVERT SHALL BE LOOSELY PLACED.
 5. BEDDING, HAUNCH, AND LOWER SIDE SOILS TO BE CATEGORY I OR II, UNFROZEN, CLEAN, COARSE, GRAINED SOILS PER ASTM C-1479 IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM C-1479, LATEST EDITION, COMPACTED IN ONE LIFT, WITH NO STONES LARGER THAN 1/2 LIFT THICKNESS.
 6. FINAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I OR II, UNFROZEN, CLEAN, COARSE GRAINED SOILS PER ASTM C-1479 IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM C-1479, LATEST EDITION, COMPACTED IN ONE LIFT, WITH NO STONES LARGER THAN 1/2 LIFT THICKNESS.
 7. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I OR II, UNFROZEN, CLEAN, COARSE GRAINED SOILS PER ASTM C-1479 IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM C-1479, LATEST EDITION, COMPACTED IN ONE LIFT, WITH NO STONES LARGER THAN 1/2 LIFT THICKNESS.
 8. FINAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I OR II, UNFROZEN, CLEAN, COARSE GRAINED SOILS PER ASTM C-1479 IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM C-1479, LATEST EDITION, COMPACTED IN ONE LIFT, WITH NO STONES LARGER THAN 1/2 LIFT THICKNESS.
 9. FOR DEPTHS H<12- FEET, REFER TO TYPICAL TRENCH DETAIL FOR SEWER/ DRAIN PIPES.



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

CONCRETE ARCH AND CRADLE DETAIL

NOT TO SCALE



NOTE:
1. THE TOP OF THE CUTOFF WALL SHALL EXTEND A MINIMUM OF 5'-0" ABOVE THE GROUND WATER LEVEL, AS DETERMINED BY THE NEAREST BORING OR BY THE ENGINEER.

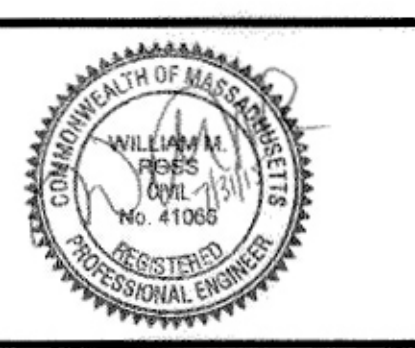
NOTE:
2. CUTOFF WALLS SHOULD ONLY BE INSTALLED WHERE DIRECTED BY THE ENGINEER.

TYPICAL CUTOFF WALL DETAIL

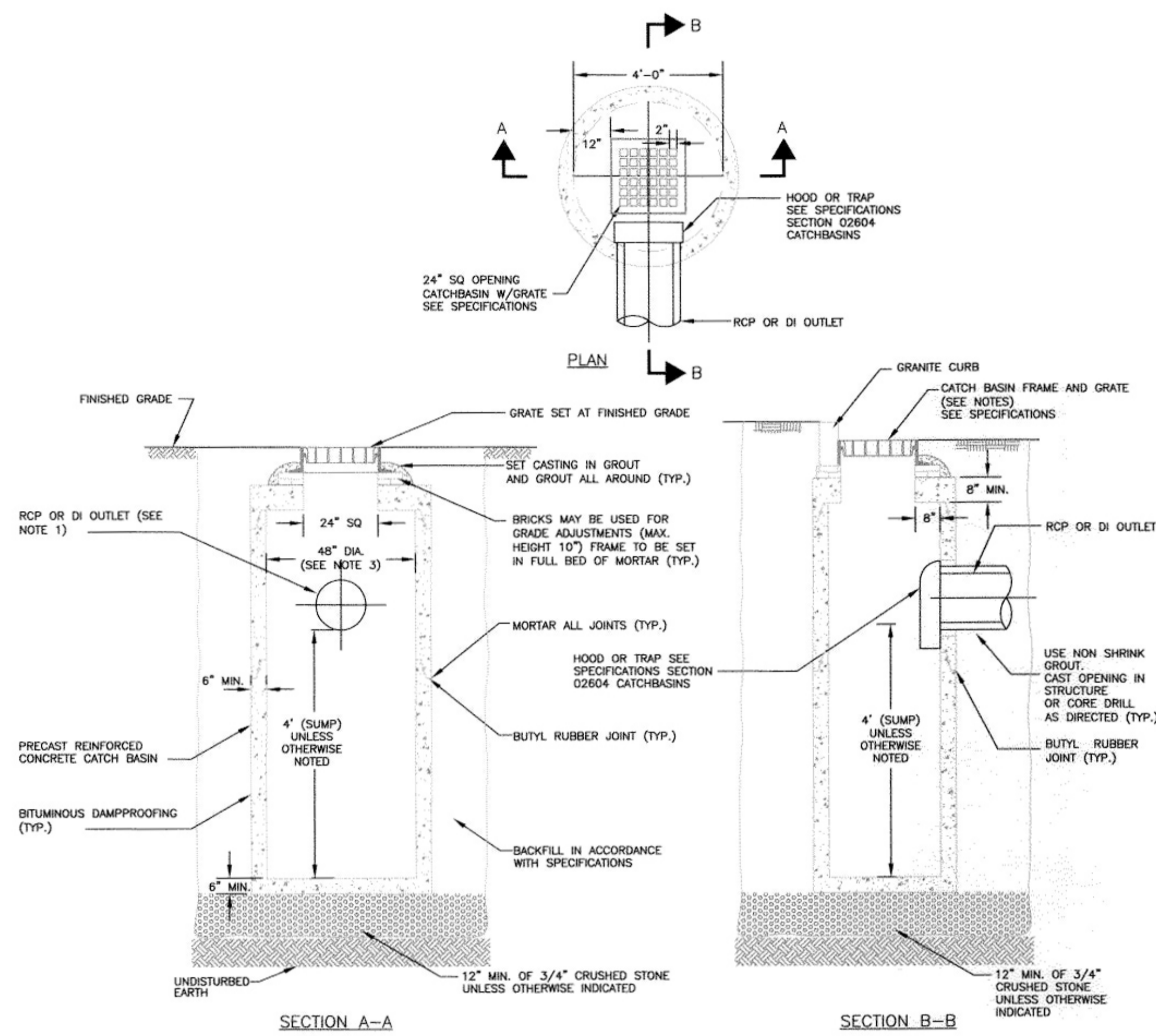
NOT TO SCALE

Client	CITY OF SALEM, MASSACHUSETTS
Project	MASSWORKS UTILITY RELOCATION
	DETAILS

Scale	N.T.S
Date	7/29/2015
Job	MAWorks
Designed by	WMR
Drawn by	DJW
Checked by	WMR
Approved by	WMR

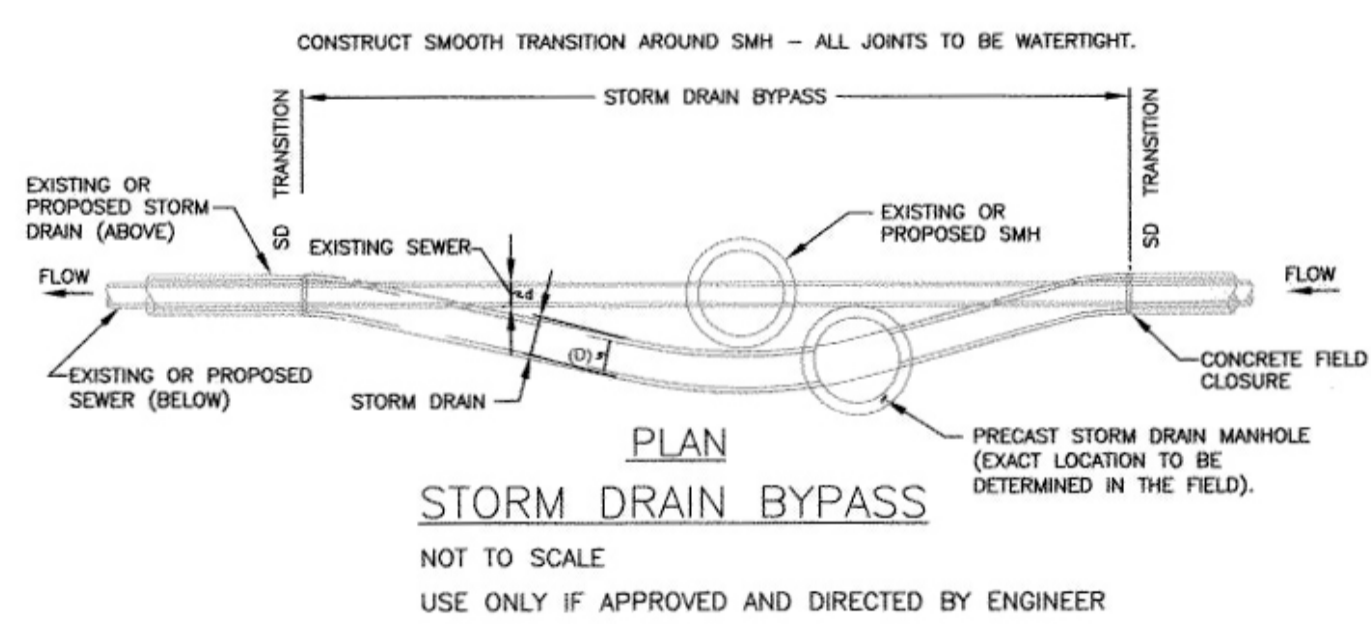


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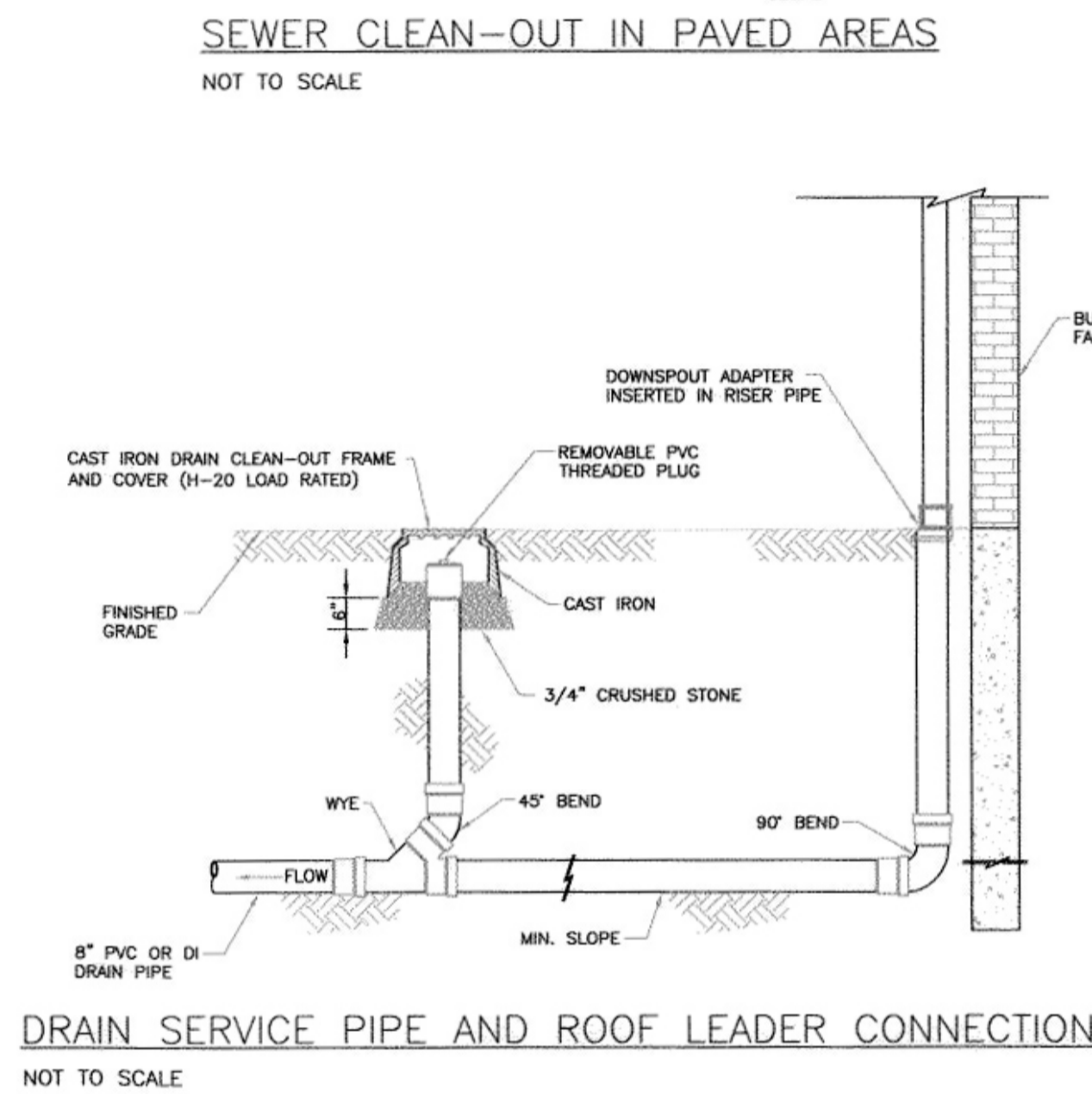
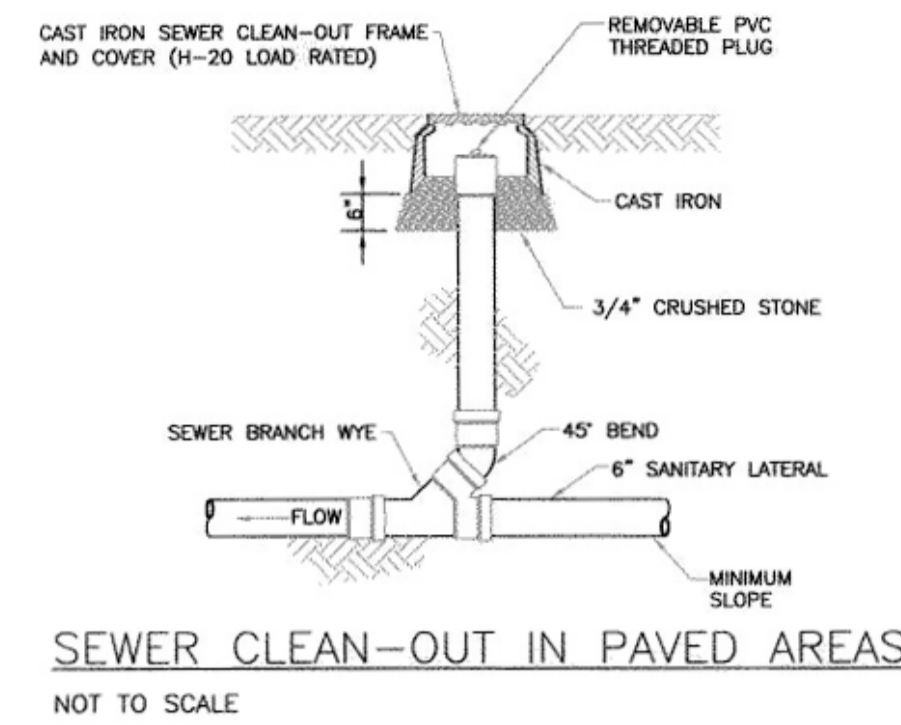
**CATCH BASIN WITH GRATE
(OR CB CONVERTED TO DMH WITH SUMP)**
NOT TO SCALE

- NOTES:
1. FACE OF PIPE NOT TO PROJECT MORE THAN 4" FROM FACE OF WALL ALONG CENTERLINE OF PIPE.
 2. FOR DESCRIPTION OF MATERIALS AND CONSTRUCTION METHOD, SEE SPECIFICATIONS.
 3. 5" DIAMETER MANHOLES FOR DOUBLE CATCH BASINS, 3" BASE SLAB THICKNESS.
 4. DESIGN PRECAST SECTIONS WITH FRAME AND GRATE FOR ASHTO H20 LOADING.
 5. CATCH BASIN FRAME AND GRATE REPLACED WITH "DRAIN" FRAME AND COVER FOR NEW CBS INSTALLED WITH GUTTER INLETS (OR CBS CONVERTED TO DMHS).

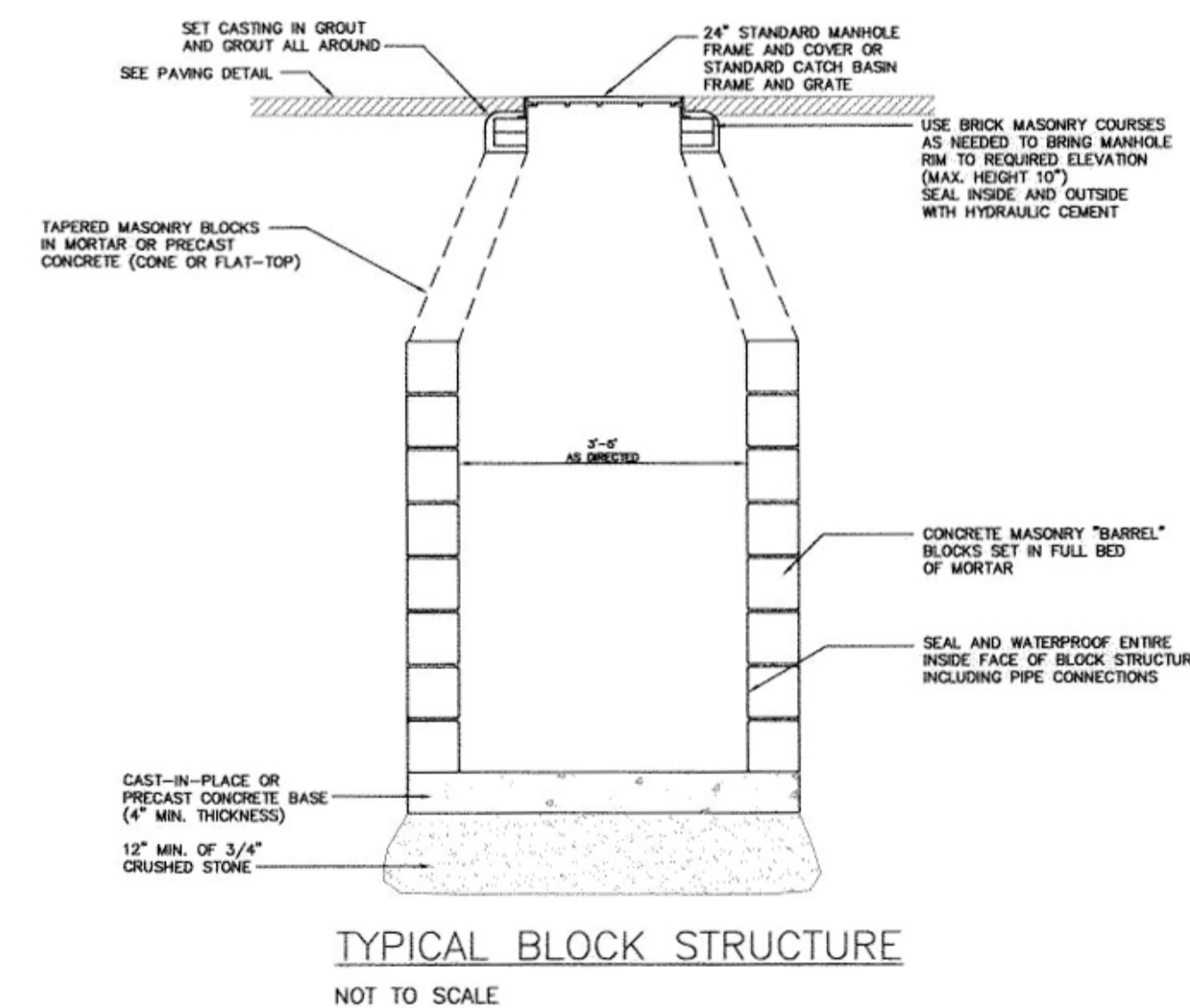


STORM DRAIN BYPASS

NOT TO SCALE
USE ONLY IF APPROVED AND DIRECTED BY ENGINEER

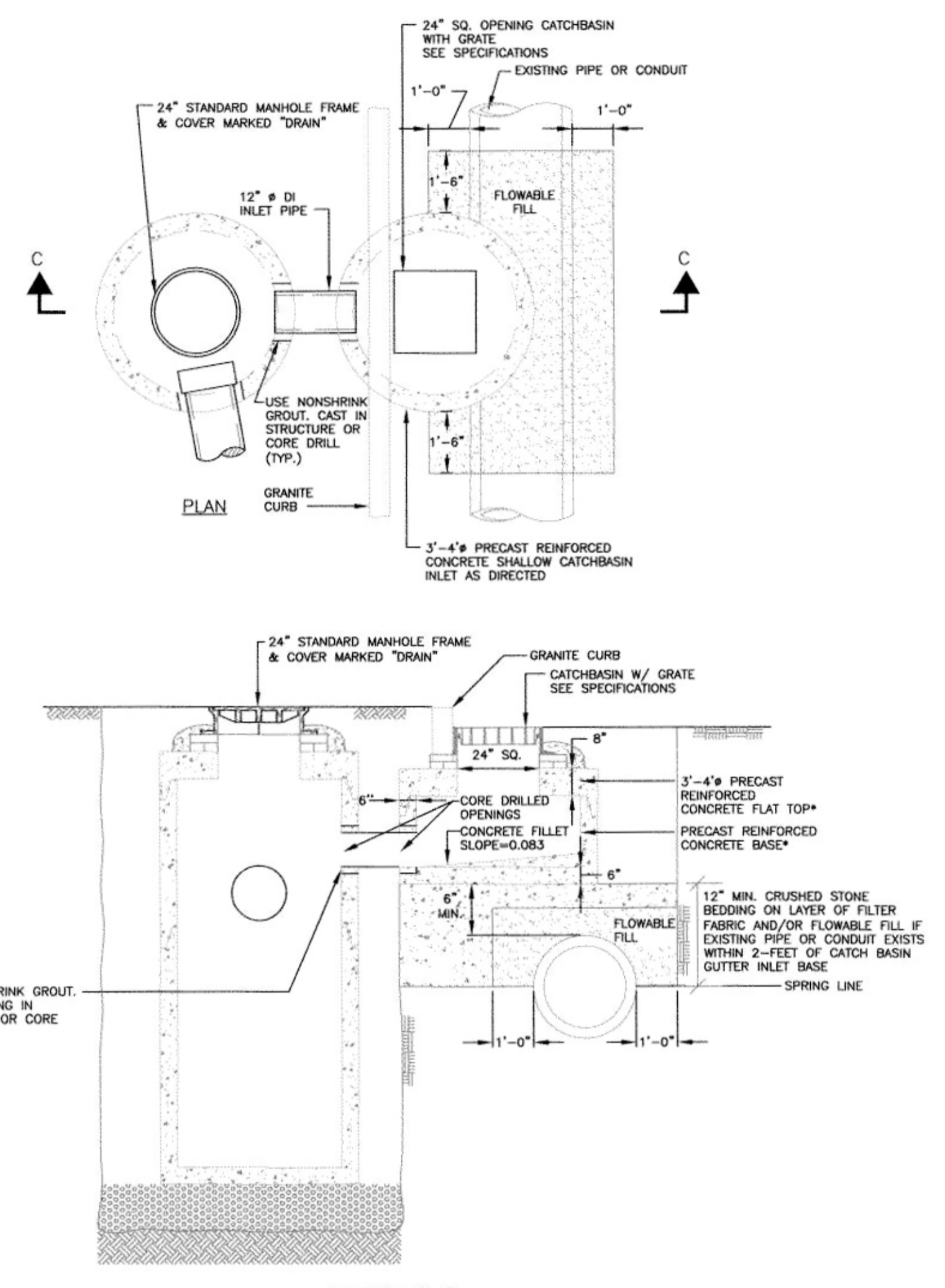


DRAIN SERVICE PIPE AND ROOF LEADER CONNECTION
NOT TO SCALE



TYPICAL BLOCK STRUCTURE

NOT TO SCALE

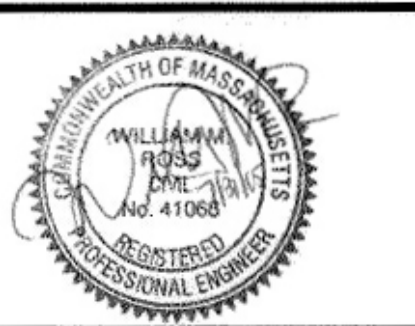


CATCH BASIN - GUTTER INLET
NOT TO SCALE

*6-INCH CAST CONCRETE BASE AND SOLID CONCRETE BLOCK MANHOLE MAY BE SUBSTITUTED FOR PRECAST BASE AND FLAT TOP MANHOLE AT THE DIRECTION AND APPROVAL OF THE ENGINEER.

Client	CITY OF SALEM, MASSACHUSETTS
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	DETAILS

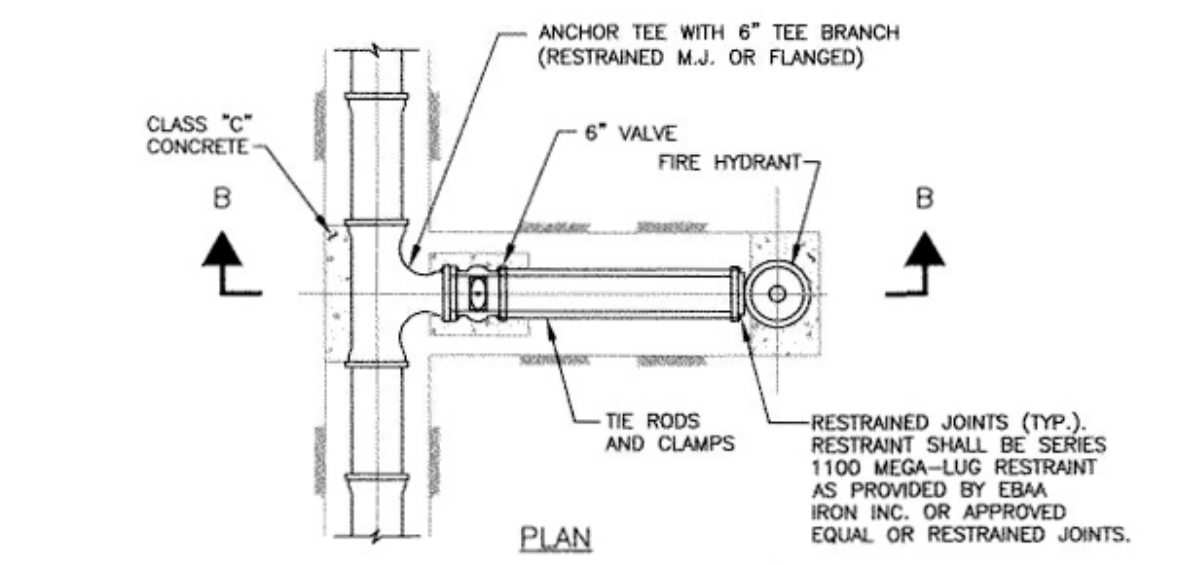
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Date	7/29/2015
Job	MAWorks
Designed by	WMR
Drawn by	DJW
Checked by	WMR
Approved by	WMR
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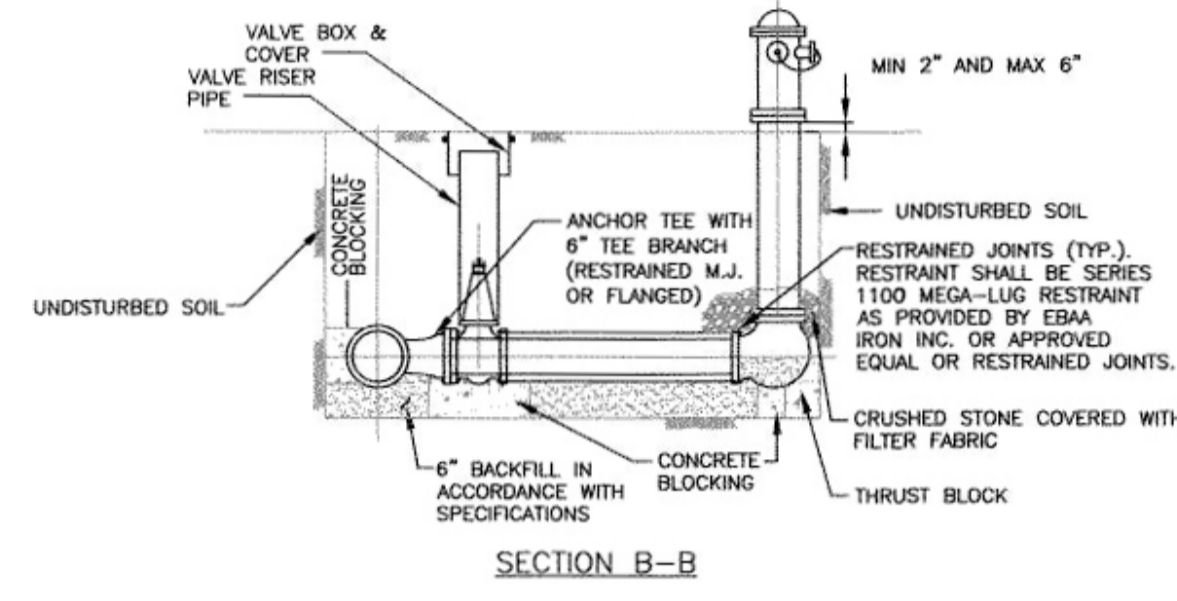
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120 Washington Street
SALEM, MASSACHUSETTS

Sheet	D-4
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PLAN

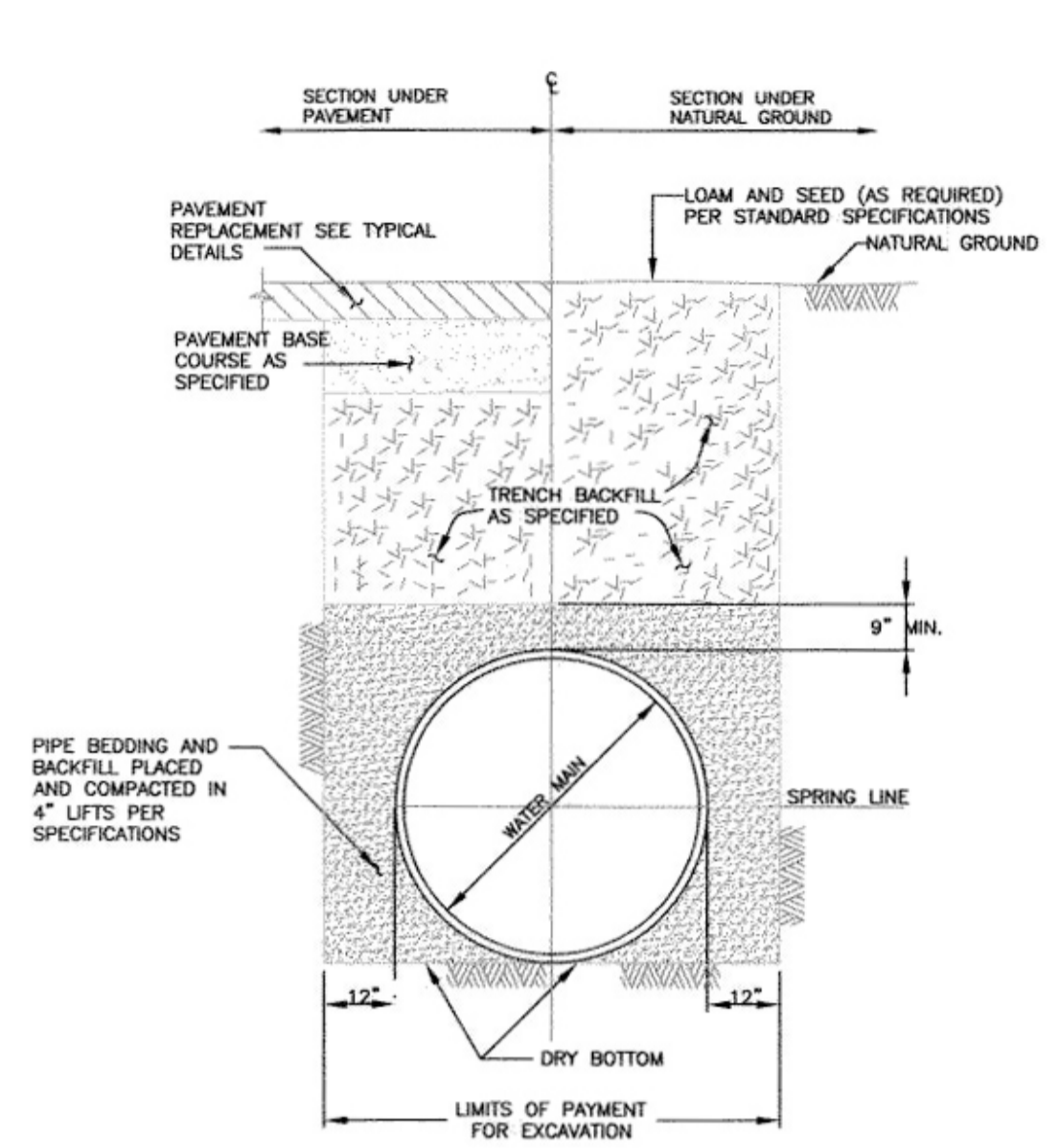


SECTION B-B

FIRE HYDRANT DETAIL

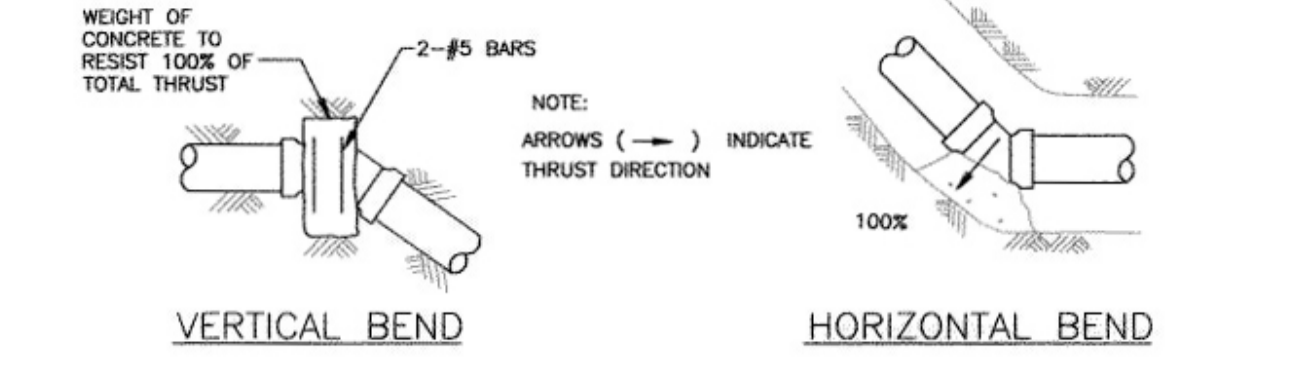
NOT TO SCALE

- 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 BLOCKS.
 4. PROVIDE HYDRANT, VALVE AND TEE JOINTS WITH RESTRAINED MECHANICAL JOINTS AND STAINLESS RODS AND CLAMPS AS DIRECTED.

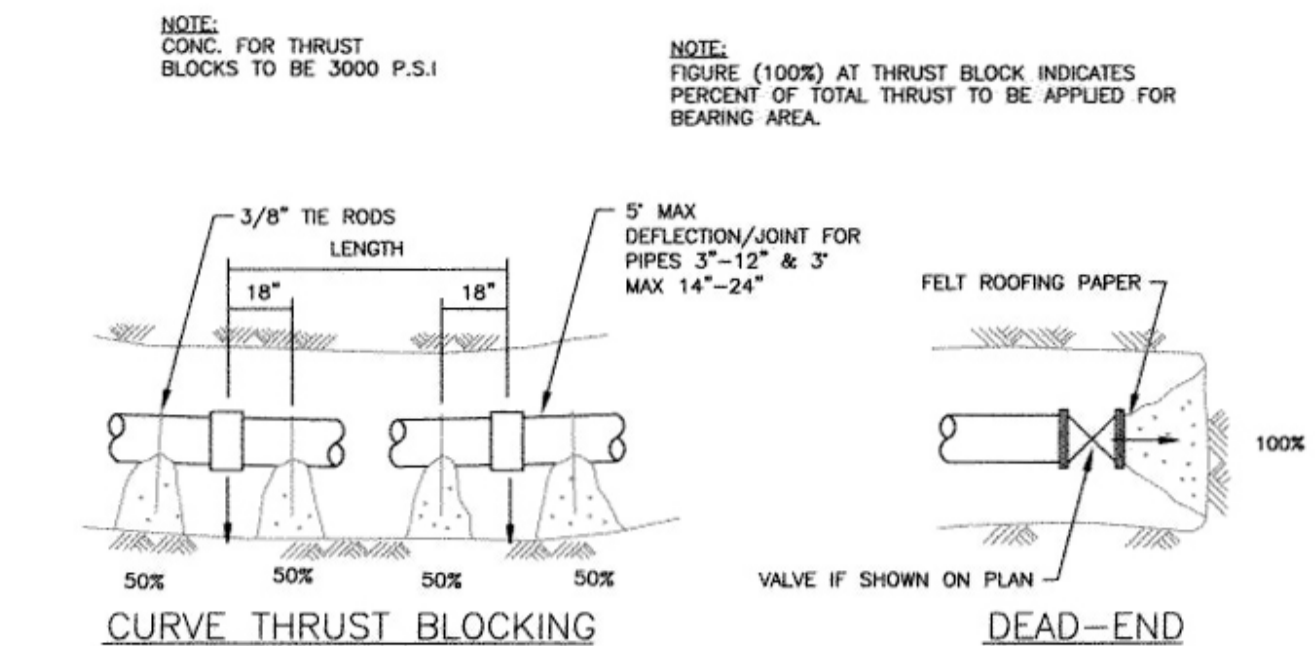


WATER MAIN TRENCH DETAIL

NOT TO SCALE



VERTICAL BEND HORIZONTAL BEND



CURVE THRUST BLOCKING DEAD-END

CONCRETE THRUST BLOCKS FOR DUCTILE IRON PIPE

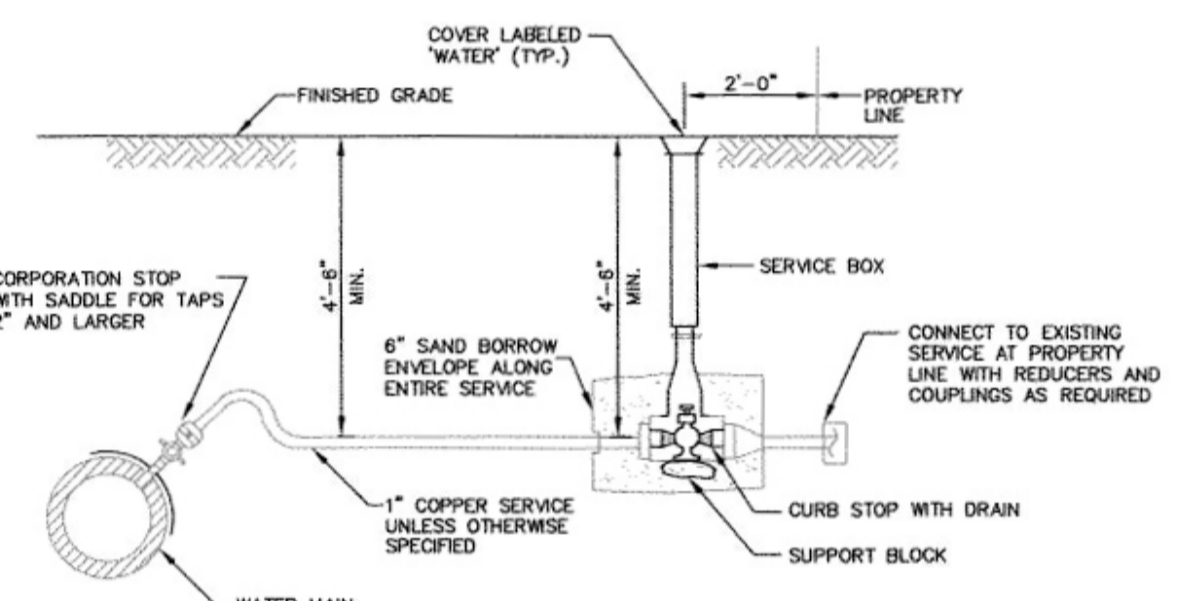
NOT TO SCALE

PIPE SIZE	THRUST PER PSI OF WATER PRESSURE AT VARIOUS FITTINGS
DEAD END	90° ELBOW 45° ELBOW 22 1/2° ELBOW
6	39 55 30 15
8	67 94 51 26
10	109 154 84 43
12	155 218 119 61
16	275 383 259 106
18	351 494 289 137

- EXAMPLE:
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.
18,800 / 2000 = 9.4 SQ.FT. = AREA OF BEARING REQUIRED FOR THRUST BLOCK
- NOTES:
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.
 4. REFER TO SPECIFICATION SECTION 03300 - CONCRETE FOR CONCRETE REQUIREMENTS

PIPE SIZE	THRUST PER 100 LB./SQ.IN. PRESSURE PER DEGREE OF DEFLECTION
6	72 12 278
8	122 16 486
10	197 18 665

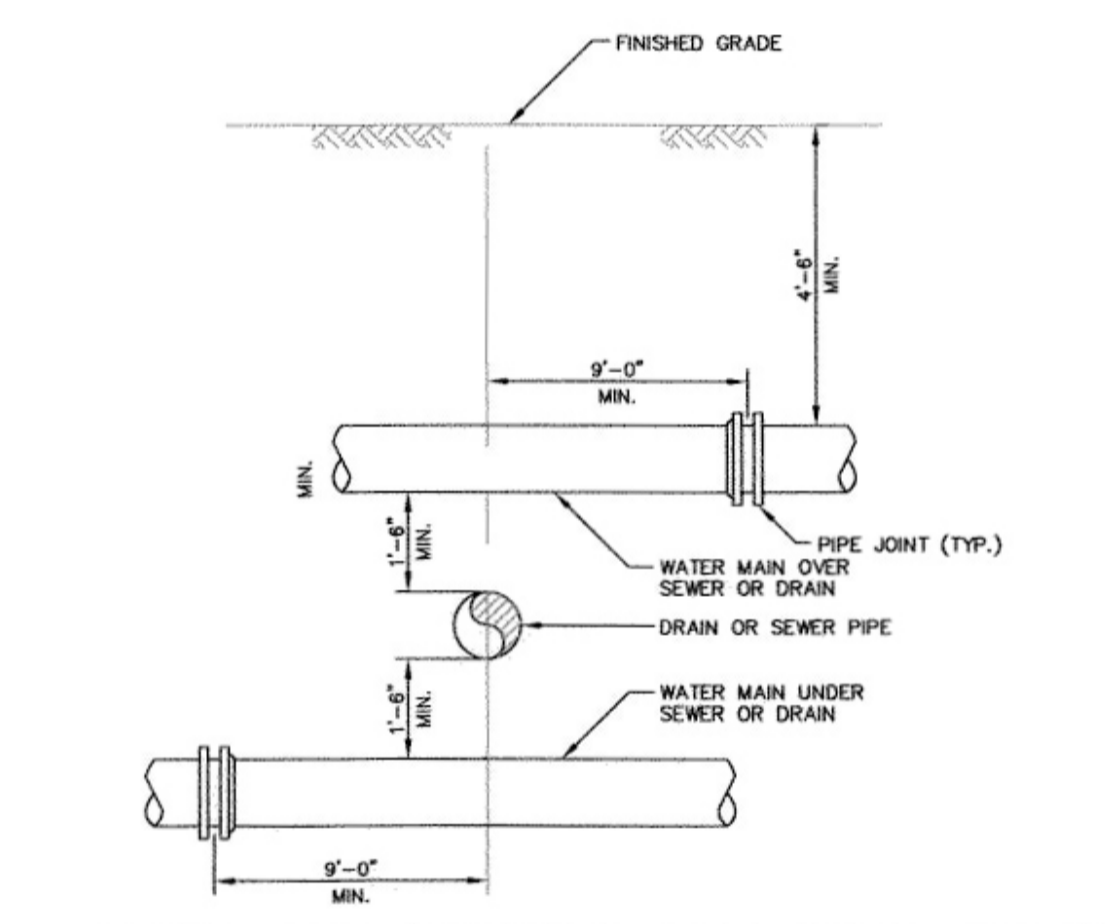
MULTIPLY THRUST BY DEGREE OF DEFLECTION TO OBTAIN TOTAL THRUST



COPPER SERVICE CONNECTION DETAIL

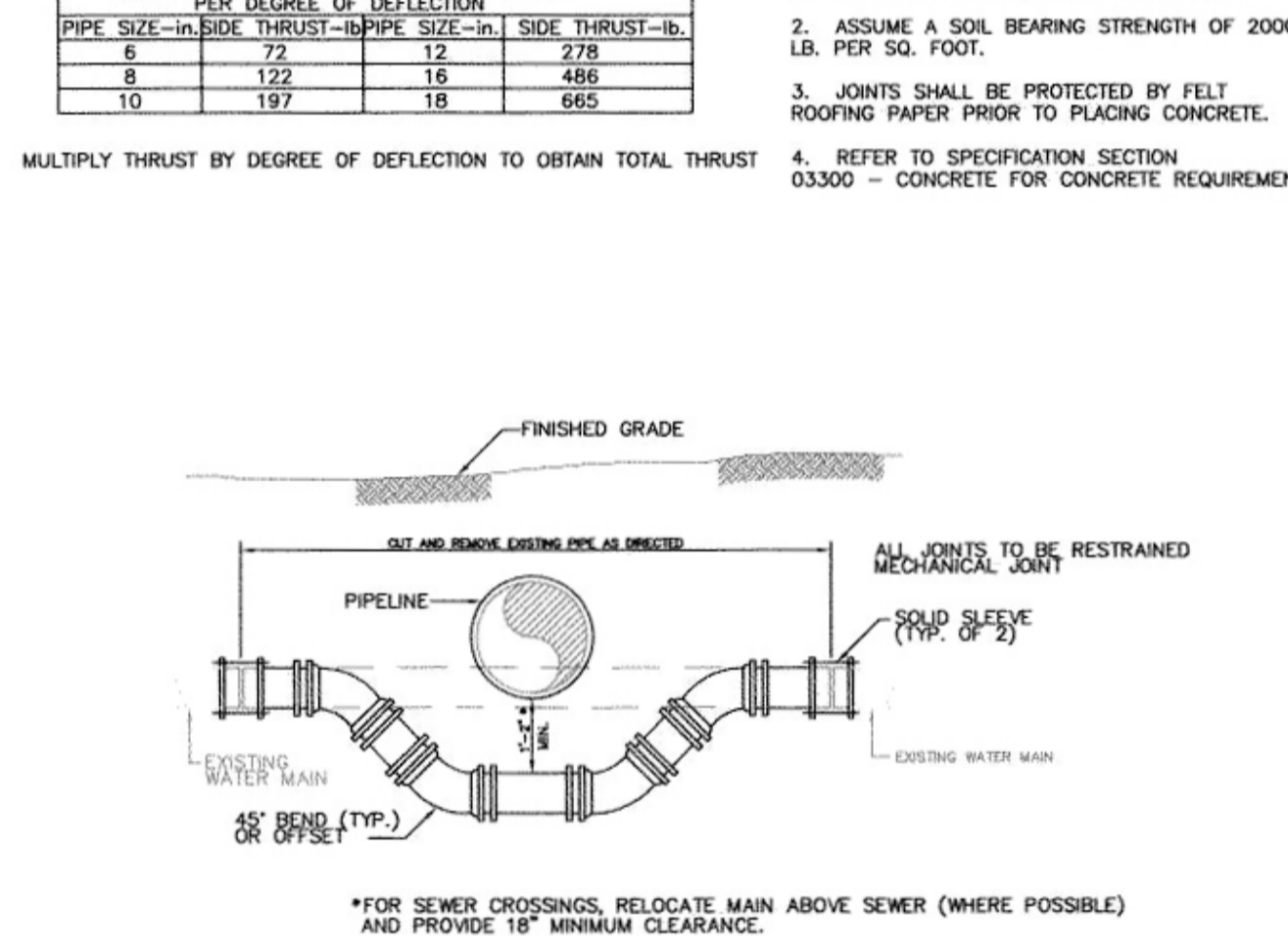
NOT TO SCALE

- NOTES:
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.



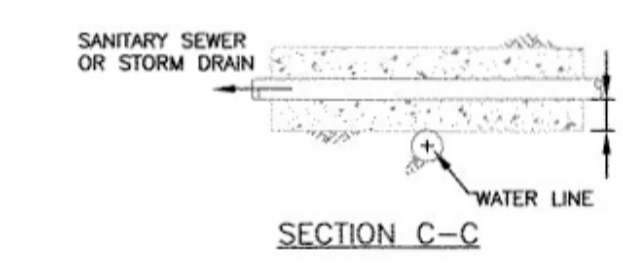
WATER MAIN CROSSING WITH SEWER OR DRAIN

NOT TO SCALE

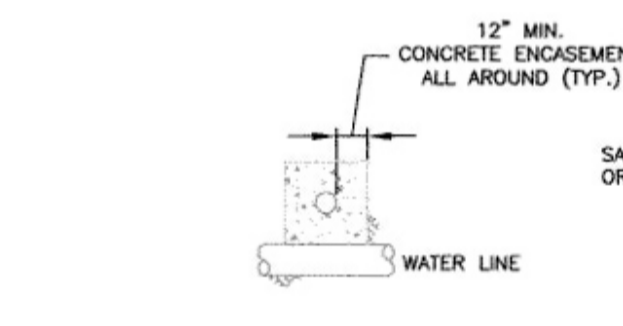


RELOCATION OF EXISTING WATER MAIN DETAIL

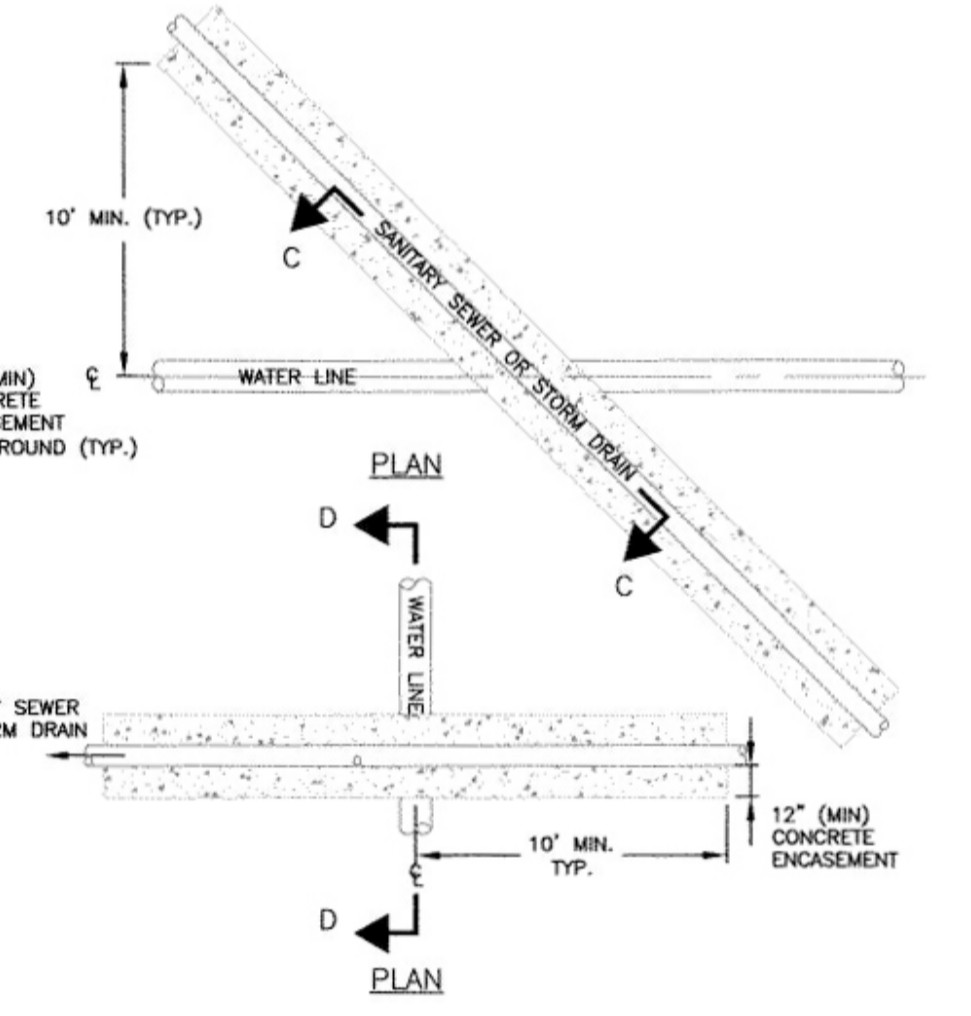
NOT TO SCALE



SECTION C-C



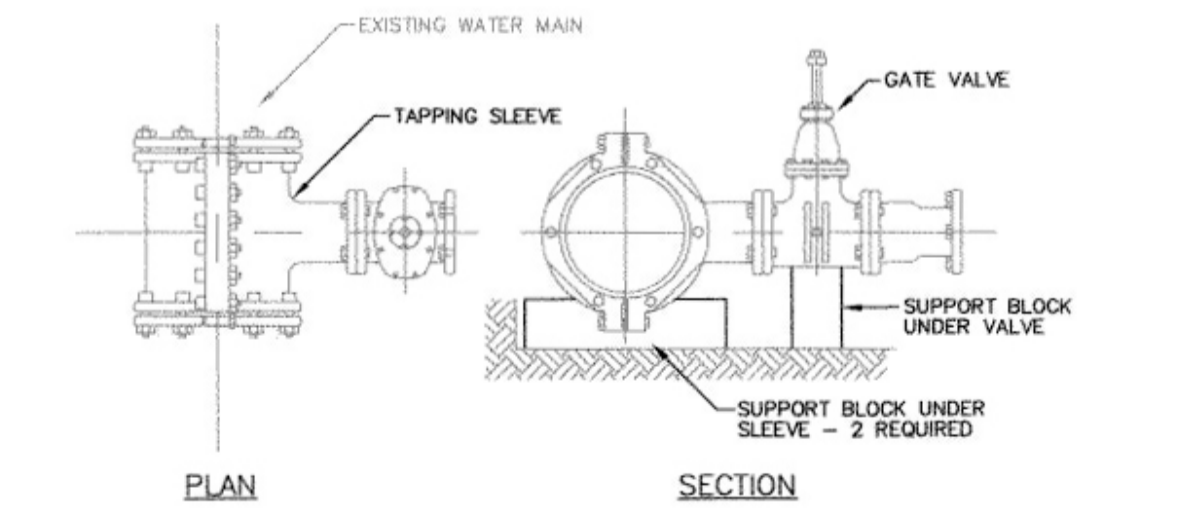
SECTION D-D



UTILITY CROSSING DETAIL

NOT TO SCALE

NOTE:
1. CONCRETE SHALL BE 3,000 PSI STRENGTH AS INDICATED IN SPECIFICATIONS



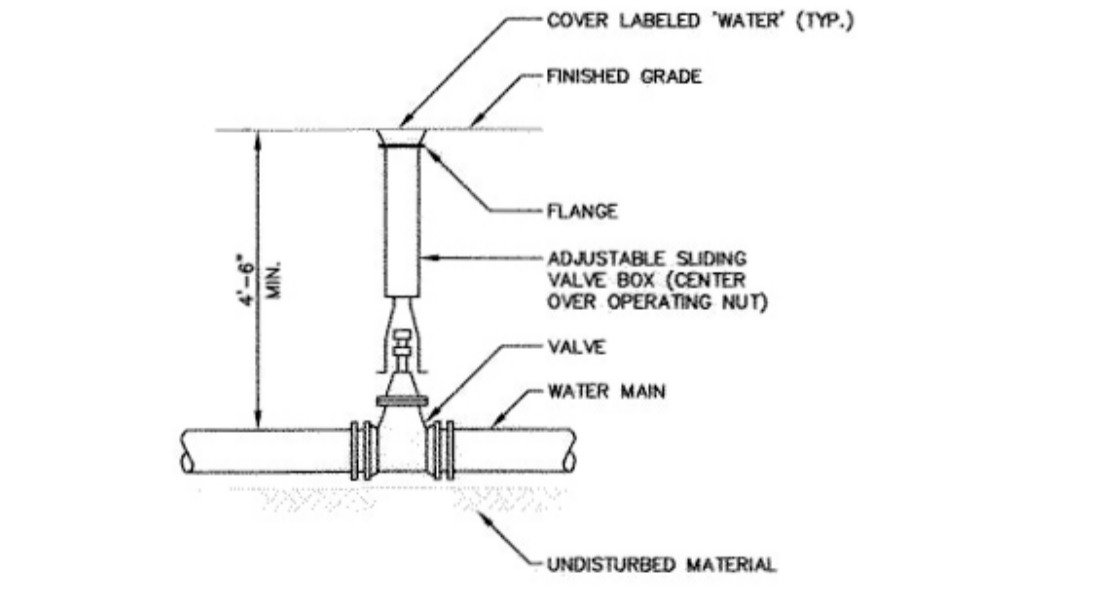
PLAN

SECTION

NOTE:
SUPPORT BLOCKS TO BE PRESSURE TREATED WOOD OR CONCRETE MASONRY BLOCK.

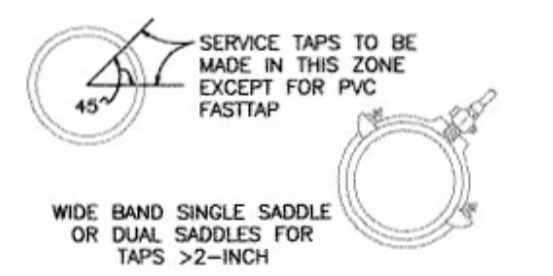
TAPPING SLEEVE WITH GATE VALVE

NOT TO SCALE



TYPICAL VALVE BOX DETAIL

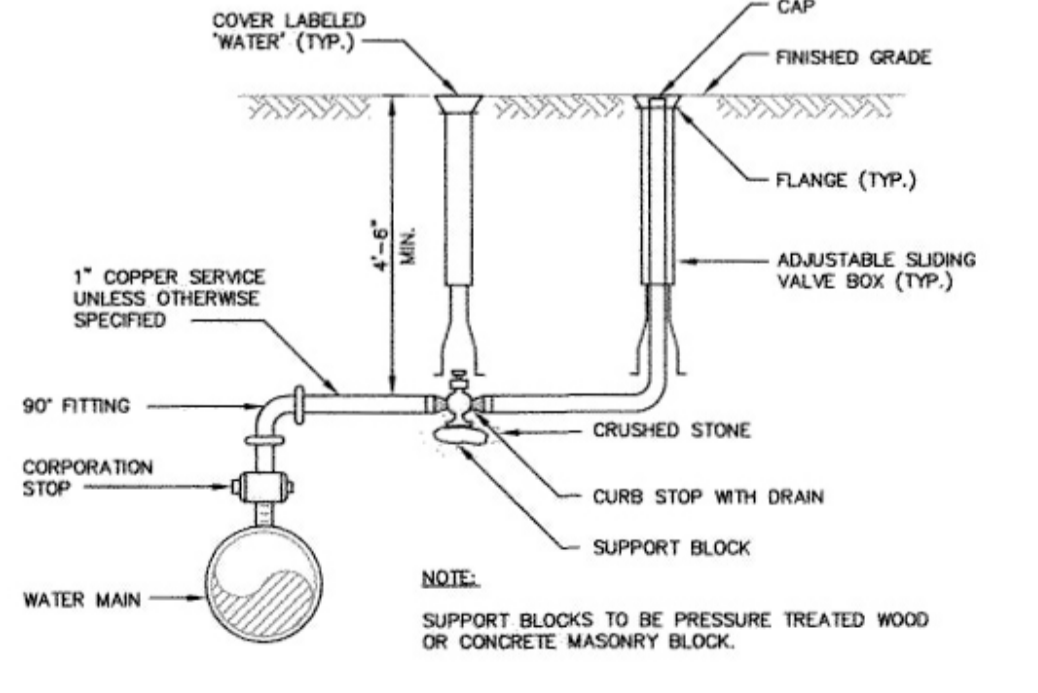
NOT TO SCALE



SERVICE CONNECTION

NOT TO SCALE

- NOTES:
1. BLOW-OFF & CHLORINATION TAPS ARE MADE IN VERTICAL POSITION
- | WATER MAIN TYPE AND DIAMETER | SERVICE TAP TYPE |
|---------------------------------------|------------------|
| 12" OR LESS CAST IRON OR DUCTILE IRON | DSS, WBS |
| 16" AND UP CAST IRON OR DUCTILE IRON | DWBS |
- DSS - DUAL STRAP SADDLES
WBS - WIDE BAND STRAP SADDLES
DWBS - DUAL WIDE BAND STRAP SADDLES



CURB STOP BLOWOFF DETAIL

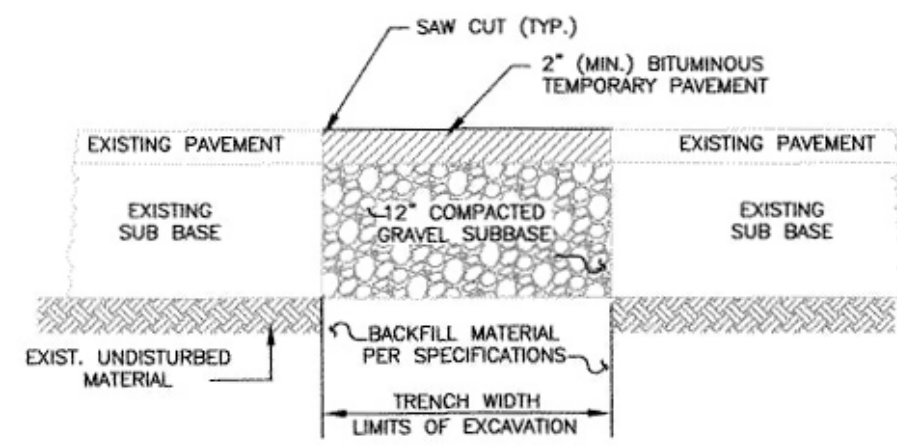
NOT TO SCALE

Client	CITY OF SALEM, MASSACHUSETTS
Project	MASSWORKS UTILITY RELOCATION
	DETAILS

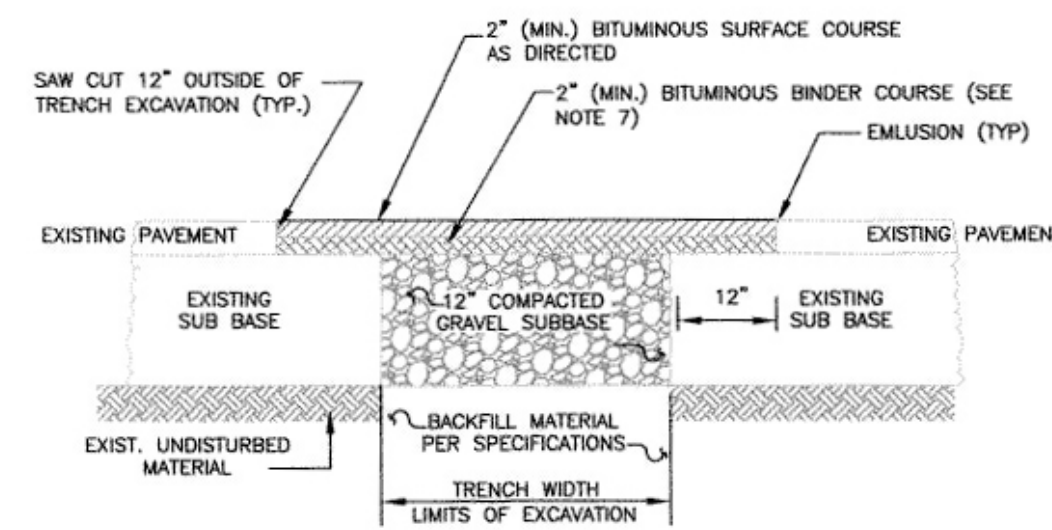
Scale	N.T.S.
Date	7/29/2015
Job	MAWorks
Designed by	WMR
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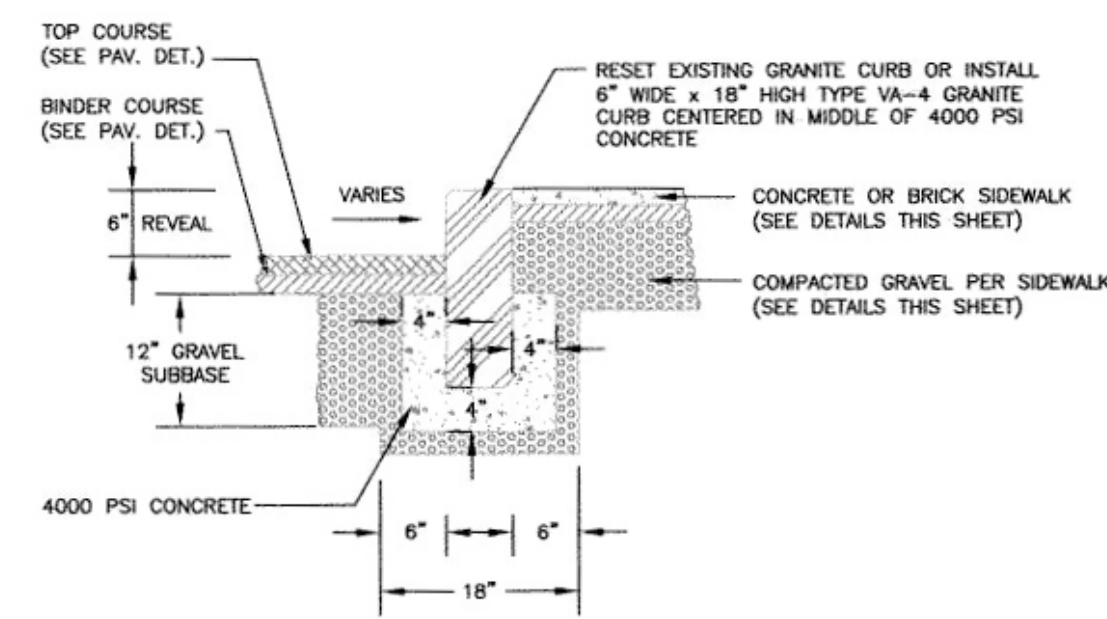
TEMPORARY TRENCH PAVEMENT DETAIL
NOT TO SCALE



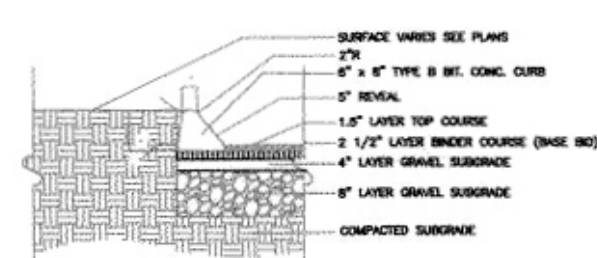
PERMANENT PAVEMENT DETAIL
NOT TO SCALE

GENERAL PAVING NOTES:

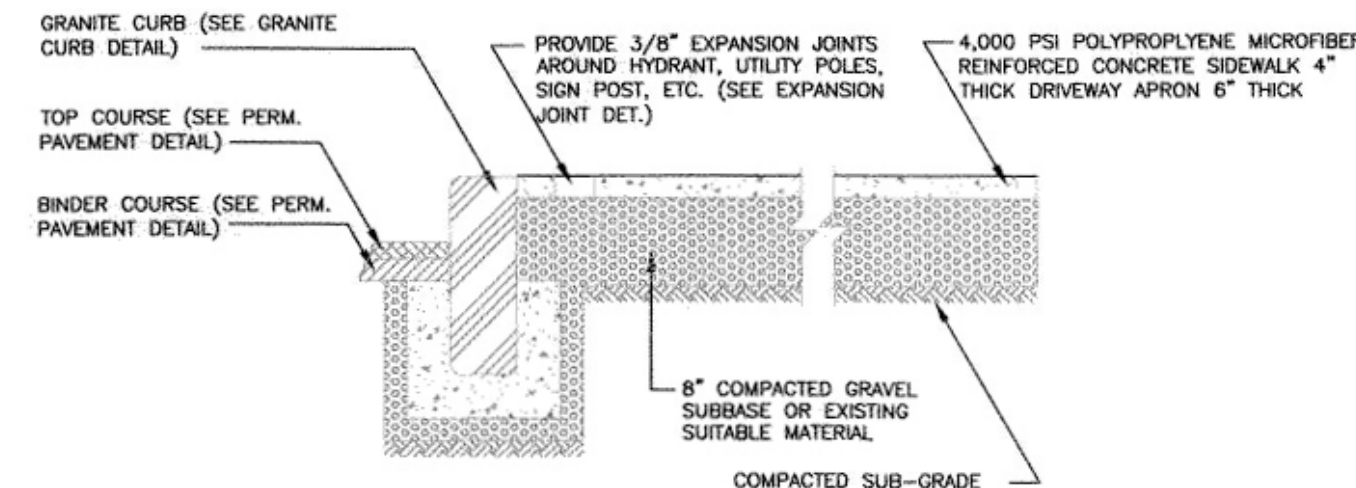
1. THE CONTRACTOR SHALL MAINTAIN TEMPORARY PAVEMENT FOR A MINIMUM OF 90 DAYS EXCEPT IF TEMPORARY PAVEMENT IS PLACED AFTER OCTOBER 15, THEN IT SHALL BE MAINTAINED UNTIL APRIL 15 OF THE FOLLOWING YEAR.
2. PERMANENT PAVEMENT SHALL BE PLACED BETWEEN APRIL 15 AND OCTOBER 15 OF EACH CALENDAR YEAR.
3. THE CONTRACTOR 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.
4. CONTRACTOR SHALL MATCH EXISTING ROADWAY GRADES AND EXISTING THICKNESS UNLESS OTHERWISE DIRECTED.
5. REFER TO SPECIFICATION SECTION 02500 PAVING AND SURFACING FOR ADDITIONAL REQUIREMENTS.
6. PERMANENT PAVEMENT DETAIL TO APPLY TO TRENCH PAVEMENT AND FULL WIDTH ROADWAY RECONSTRUCTION AND/OR PAVEMENT.
7. BITUMINOUS BINDER COURSE FOR SIDEWALK RECONSTRUCTION (CURB TO CURB) TO BE 3-INCH MIN. THICKNESS.



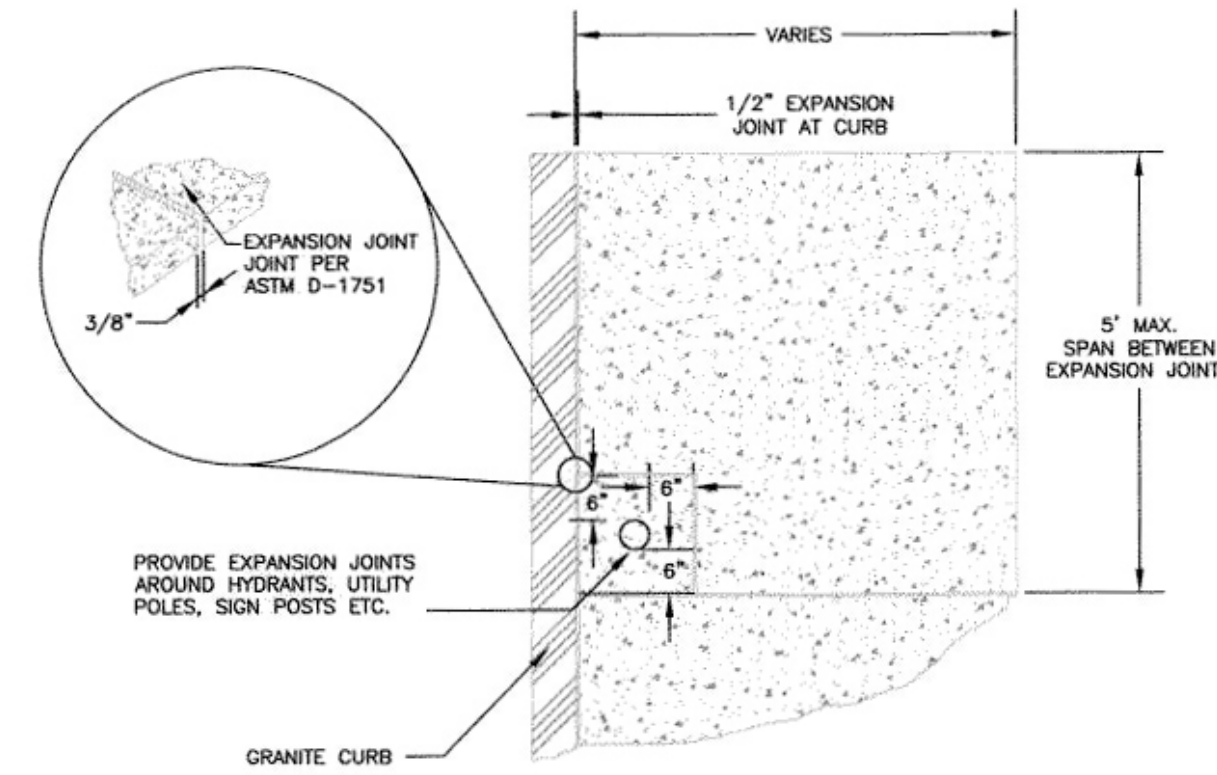
GRANITE CURB DETAIL
NOT TO SCALE



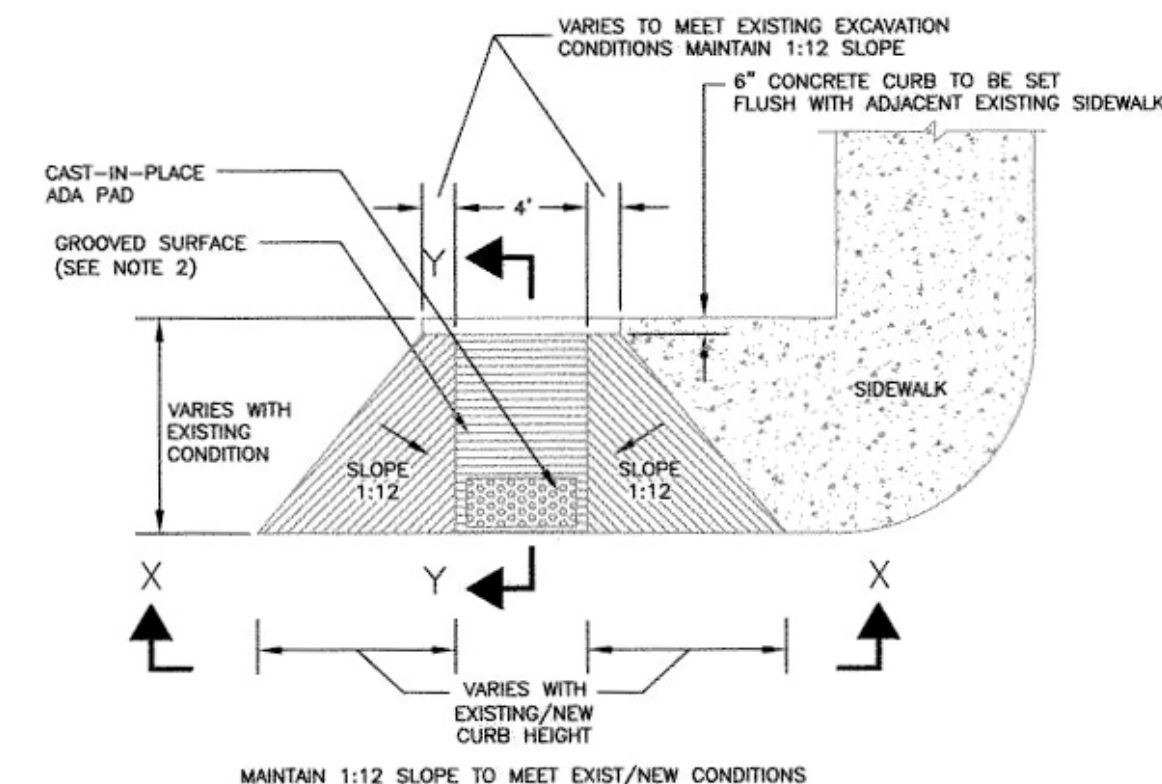
BITUMINOUS CONCRETE CURB/BERM
NOT TO SCALE



CONCRETE SIDEWALK DETAIL
NOT TO SCALE



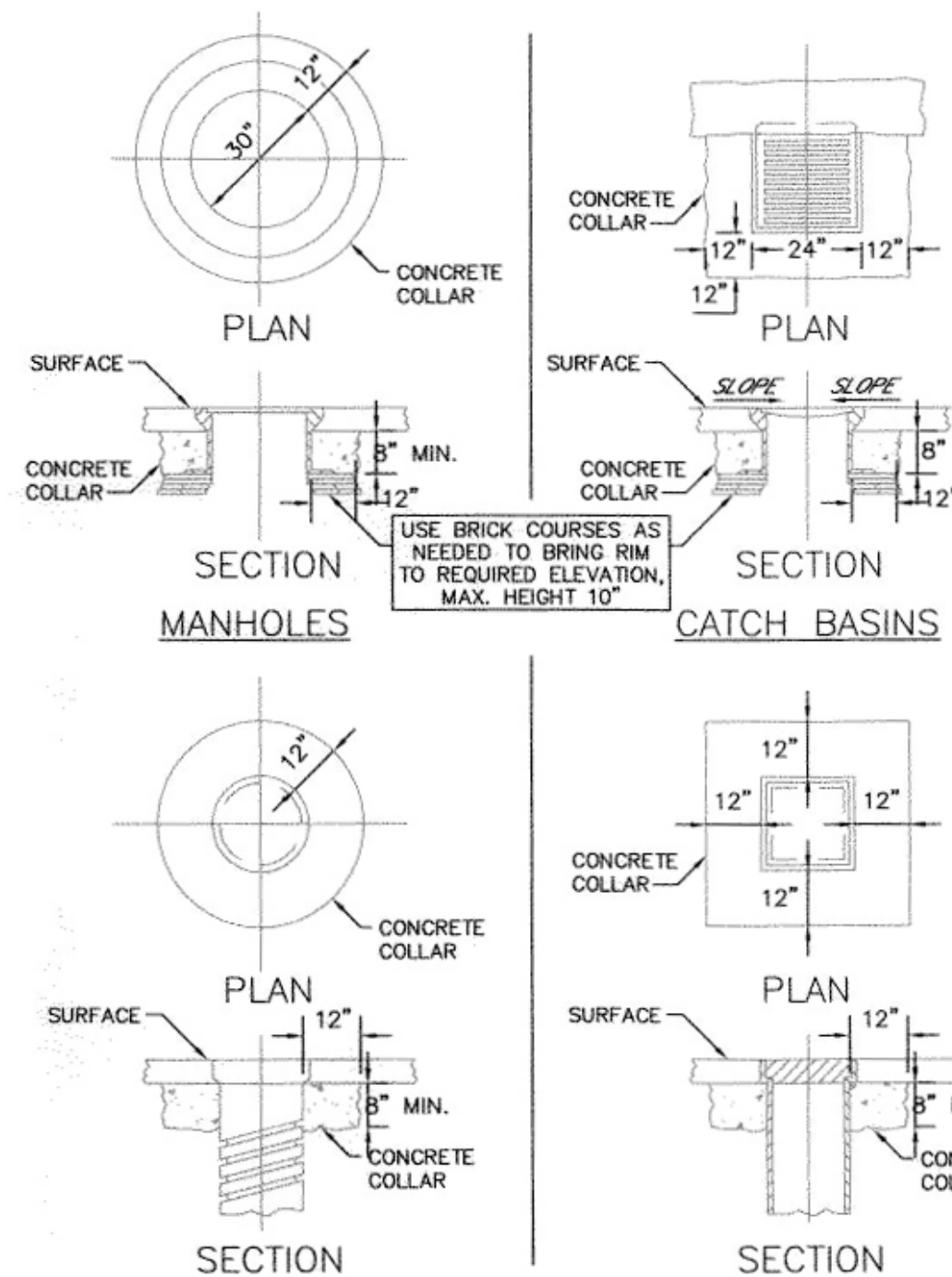
CONCRETE SIDEWALK EXPANSION JOINT
NOT TO SCALE



ADA RAMP DETAIL
NOT TO SCALE

GENERAL HANDICAP NOTES:

1. REINFORCEMENT FOR HANDICAP RAMP SHALL BE THE SAME AS MICROFIBER REINFORCED CONCRETE FOR SIDE WALK.
2. THE FINISHED SURFACE OF HANDICAP RAMP IS TO BE GROOVED LATERALLY WITH 1/4" WIDE BY 1/4" DEEP GROOVES, SPACED 2-1/4" AND ROUGHENED WITH NO LESS THAN A BROOM FINISH TO DIFFERENTIATE ITS TEXTURE FROM THAT OF STANDARD SIDEWALK.
3. TEMPORARY, BITUMINOUS CONCRETE ADA RAMPS TO MEET SLOPE AND DIMENSION REQUIREMENTS.

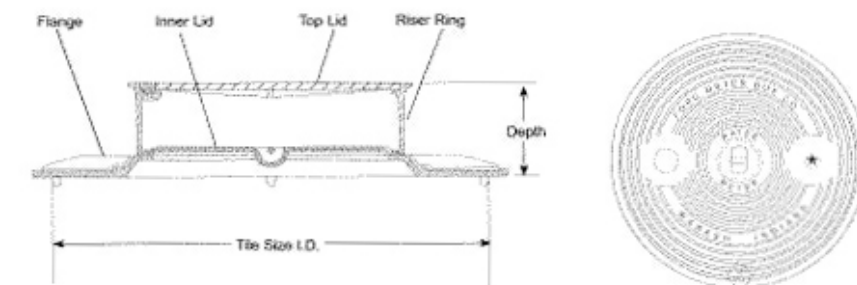


DETAILS FOR RAISING CASTINGS
NOT TO SCALE

SUBMITTAL INFORMATION

Monitor Cover - (No. MC-xx-MB-T style)

MONITOR COVER WITH INNER LID AND LOCKING ELECTRONIC METER READING LID



Lo Sect	Code	Tile Sect ID	Approx. Wt. Lbs.	Part Number	# Submitted Items
20"	7.1/2"	24"	154.0	MC-24-MB-T	
20"	7.1/2"	30"	154.0	MC-30-MB-T	
20"	8"	30"	200.0	MC-30-MB-T	
20"	7.1/2"	24"	150.0	MC-24-MB-T	
20"	7.1/2"	30"	150.0	MC-30-MB-T	
20"	8"	30"	200.0	MC-30-MB-T	
20"	7.1/2"	24"	150.0	MC-24-MB-T	
20"	7.1/2"	30"	150.0	MC-30-MB-T	
20"	8"	30"	187.0	MC-30-MB-T	
20"	8"	30"	187.0	MC-30-MB-T	

*Lid size indicates approximate pit access opening, actual lid diameter is approximately 1" larger.

FEATURES

- Manufactured of cast iron per ASTM A48 Class 25
- Hat-shape design to minimize surface exposure and provide additional ground insulation.
- Inset lid design rests flush with the top of the Riser Ring.
- Standard pentagon bolt furnished with locking lids.
- Larger sizes to available. Add "L" to catalog number. For non-locking lid, add "LL".
- Lid has a 2" precast hole for electronic meter reading module. Add to catalog number: "-TT" for double holes.
- Inner lid provides added protection against frost damage.

The Ford Meter Box Company considers the information in this submittal form to be correct at the time of publication. Item and option availability, including specifications, are subject to change without notice. Please verify that your product information is current.

The Ford Meter Box Company, Inc.
P.O. Box 443, Wabash, Indiana U.S.A. 46780-0443
Phone: 260-563-3171 / Fax: 800-626-3487
Overseas Fax: 260-563-0167
http://www.fordmeterbox.com

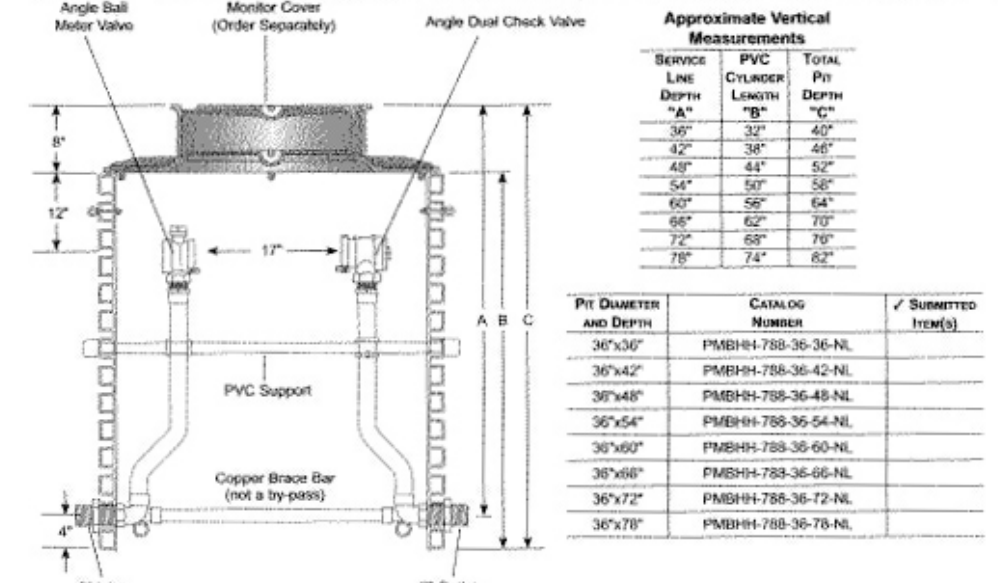
Submitted by:

SUBMITTAL INFORMATION

Plastic Pitsetter - (PMBH-788-36-xx-NL style)

MALE IRON PIPE THREAD INLET AND OUTLET - FOR 2" METER

ANGLE BALL METER VALVE INLET BY ANGLE DUAL CHECK VALVE OUTLET



Approximate Vertical Measurements

Service Line	PVC Tee	Top	Pit
Depth	Cruciform	Depth	Depth
"A"	"B"	"C"	"D"
12"	30"	48"	66"
18"	36"	54"	72"
24"	42"	60"	78"
30"	48"	66"	84"
36"	54"	72"	90"
42"	60"	78"	96"
48"	66"	84"	102"
54"	72"	90"	108"
60"	78"	96"	114"
66"	84"	102"	120"
72"	90"	108"	126"

Pit Diameter and Depth

Pit Diameter and Depth	Catalog Number	# Submitted Items
30"x42"	PMBH-788-36-42-NL	
36"x48"	PMBH-788-36-48-NL	
36"x54"	PMBH-788-36-54-NL	
36"x60"	PMBH-788-36-60-NL	
36"x66"	PMBH-788-36-66-NL	
36"x72"	PMBH-788-36-72-NL	
36"x78"	PMBH-788-36-78-NL	

FEATURES

- All brass that comes in contact with potable water conforms to AWWA Standard C800 (UNS NO C89333)
- Brass components that do not come in contact with potable water conform to AWWA Standard C800 (ASTM B-62 and ASTM B-584, UNS NO C83600 - 85-5-5)
- The product has the letters "NL" cast into the main body for proper identification
- All Ford Setters are assembled with lead-free solder.
- Meter is held rigidly and at the proper height for easy installation and removal.
- Monitor cover is not included and must be ordered separately.
- Service lines are a minimum of 2" from pit walls to prevent "frost jump" in colder climates.
- Easy installation - simply make inlet and outlet connections and install cover.
- When bottom of pit is below frost line, service and meter freeze-ups are greatly reduced or eliminated by the circulation of air from the warmer soil at the pit base.

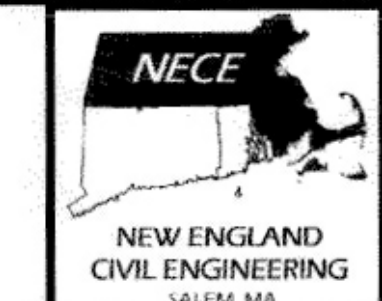
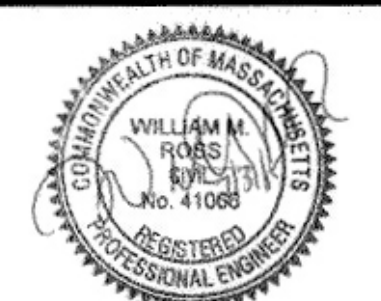
The Ford Meter Box Company considers the information in this submittal form to be correct at the time of publication. Item and option availability, including specifications, are subject to change without notice. Please verify that your product information is current.

The Ford Meter Box Company, Inc.
P.O. Box 443, Wabash, Indiana U.S.A. 46780-0443
Phone: 260-563-3171 / Fax: 800-626-3487
Overseas Fax: 260-563-0167
http://www.fordmeterbox.com

Submitted by:

CITY OF SALEM STANDARD WATER METER BOX AND COVER
NOT TO SCALE

Client	CITY OF SALEM, MASSACHUSETTS	Scale	N.T.S
Project	MASSWORKS UTILITY RELOCATION	Date	7/29/2015
		Job	MAWorks
		Designed by	WMR
		Drawn by	DJW
		Checked by	WMR
		Approved by	WMR
		No.	
		Description	
		Date	
		File:	H:\Clients\Salem\Dodge Washington RCG review\CAD\Design_recover_recover.dwg



New England Civil Engineering Corp.

120 Washington Street
SALEM, MASSACHUSETTS

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Size	Intermediate	Edge
3"	UKSE	UK4E
4"	UKSF	UK4F
5"	UKSG	UK4G
6"	UKSH	UK5H

Table 3 - Conduit Spacer Std Item Numbers

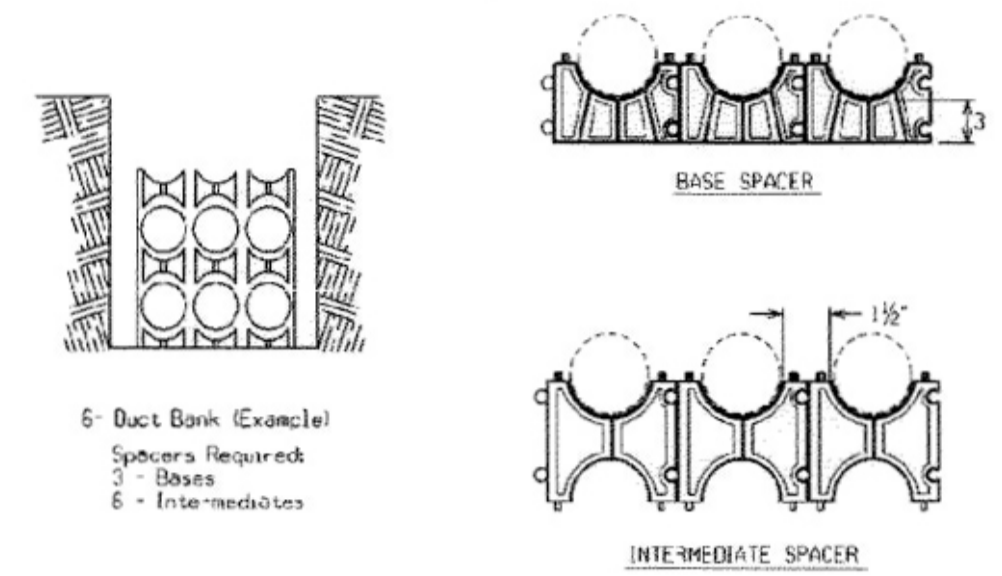


Figure 6

32.4.20 Ductbank Face (in Manholes)
The spacing is increased at the manhole face to allow the cables within the ducts to enter the manhole freely without being too close to the cables from the adjacent ducts and to allow for the use of bell end conduit.

Use the following table and Figure 7 as a guide for installing ducts at the manhole face.

Spacing between conduits (S)	6" Conduit	5" Conduit	4" Conduit
Spacing between conduit and edge of ductbank (E)	9"	9"	8"
	6"	6"	5"

Table 4 - Spacing at Ductbank Face (in Manholes)

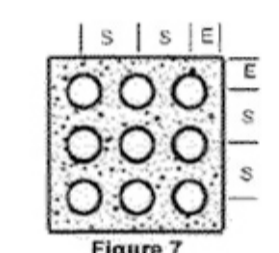
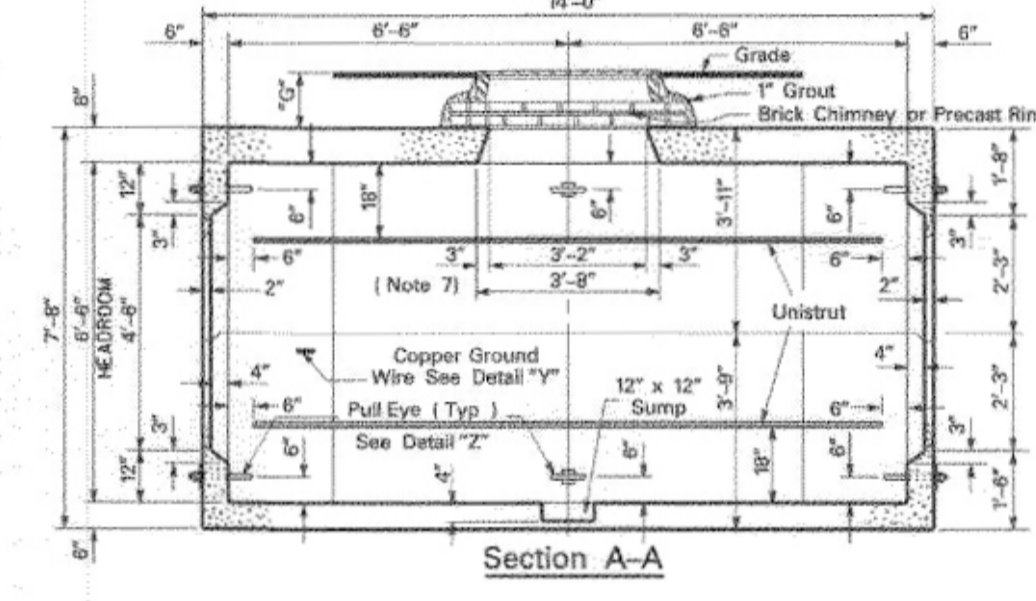
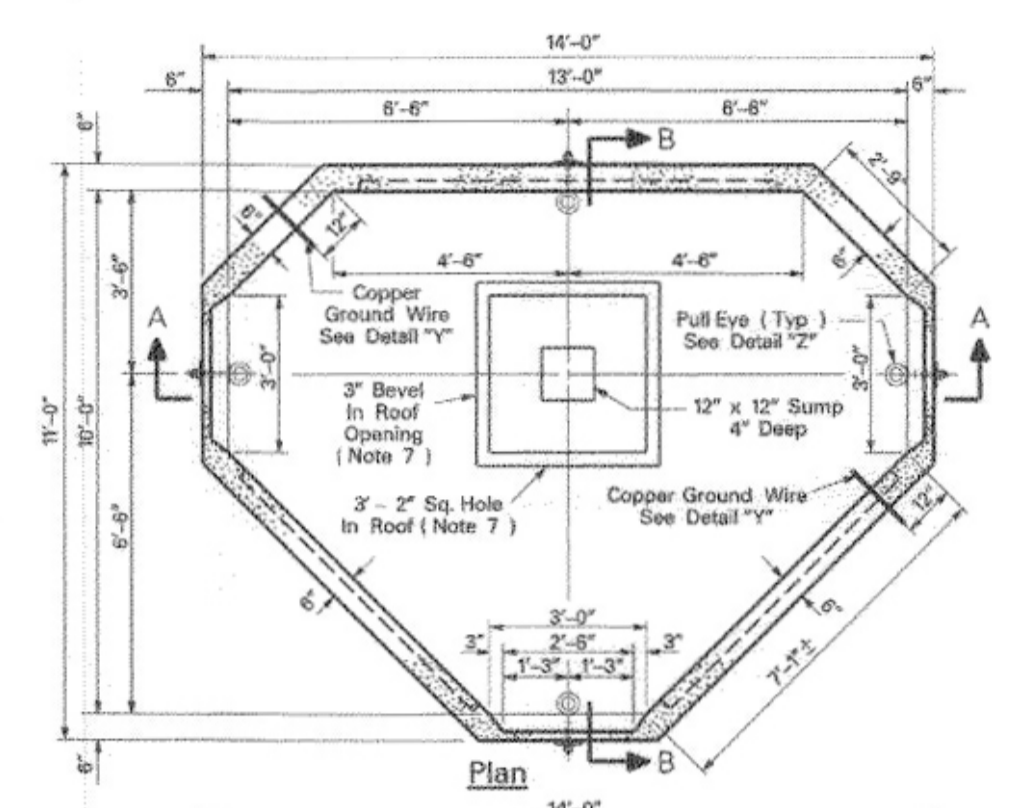


Figure 7

nationalgrid	UNDERGROUND CONSTRUCTION STANDARD	PAGE NUMBER	ISSUE
		32-3	7/08

NOTE: CONDUITS IN DUCT BANK TO BE ENCASED IN CONCRETE AND DETECTABLE WARNING TAPE AS DIRECTED.

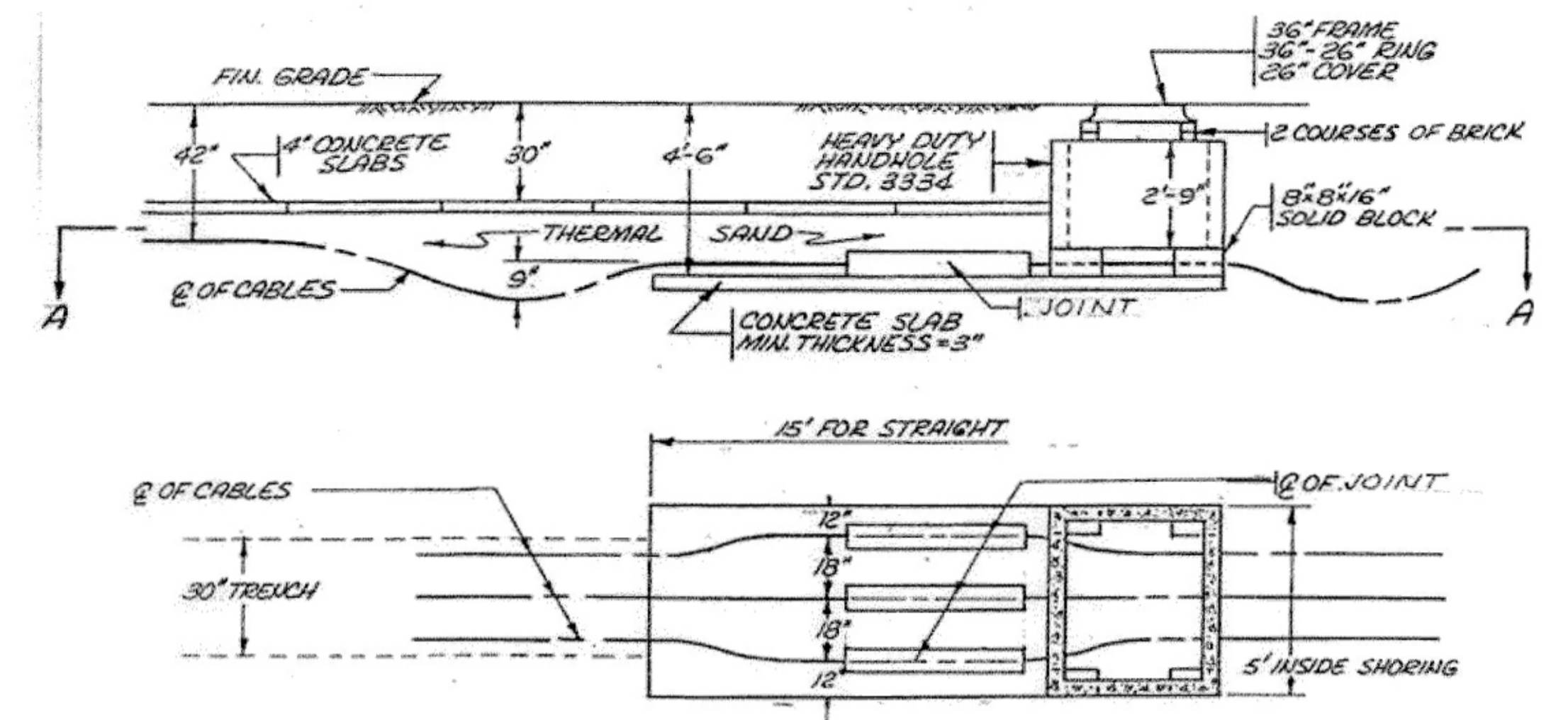
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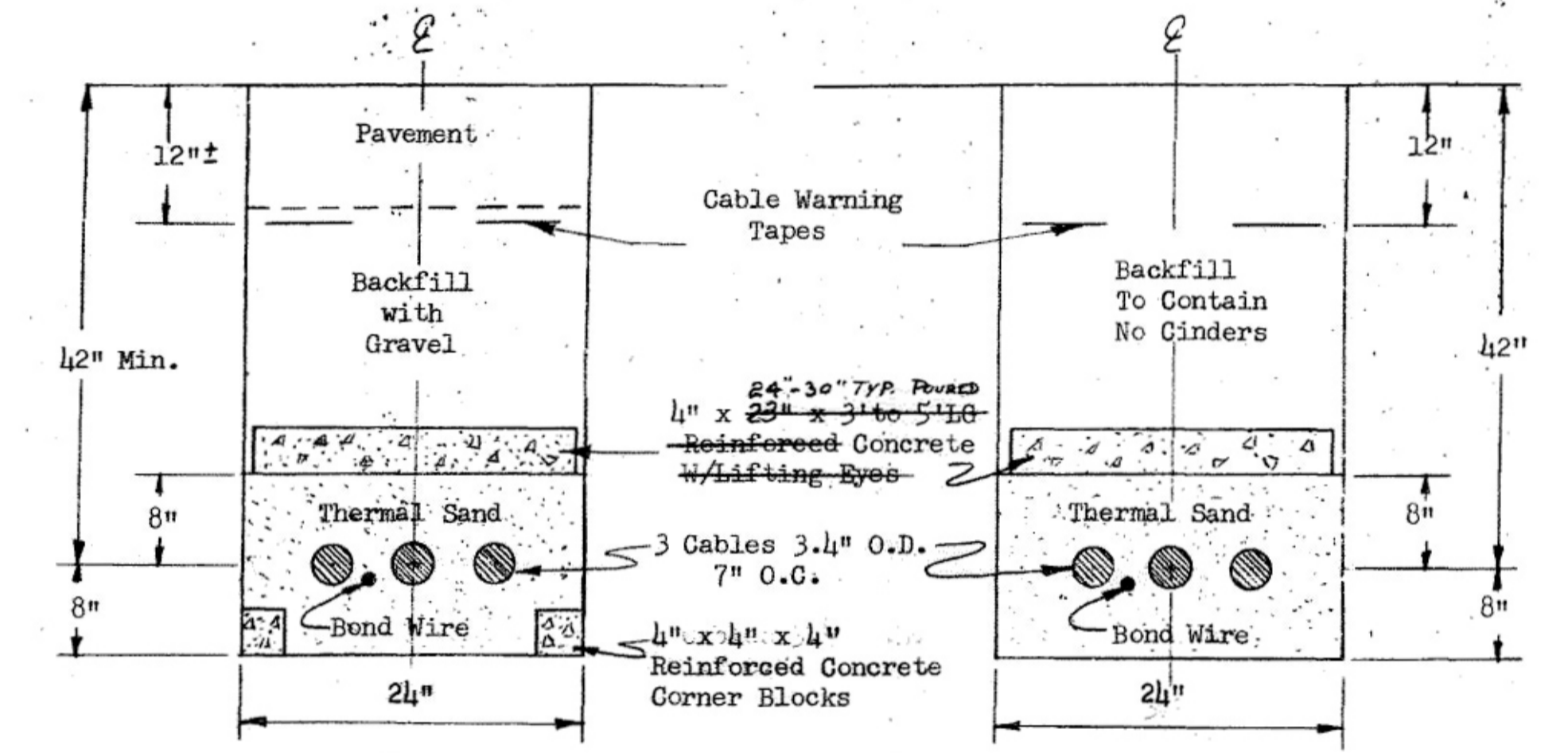
Supersedes 1/07 Issue - Drawing Update

nationalgrid	UNDERGROUND CONSTRUCTION STANDARD	PAGE NUMBER	ISSUE
		33-105	7/09

NGRID ELECTRIC MANHOLE
NOT TO SCALE

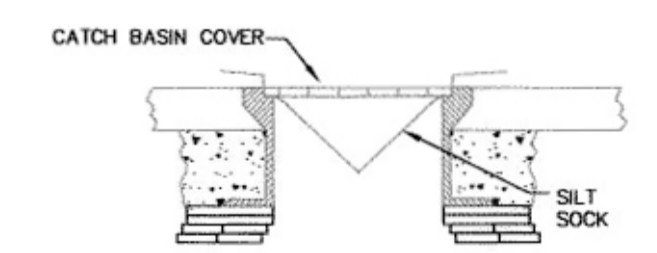


NGRID 115 kv (DIRECT BURY) ELECTRIC TRANSMISSION CABLE SPLICE JOINT
NOT TO SCALE
SCHEMATIC ONLY, FOR REFERENCE

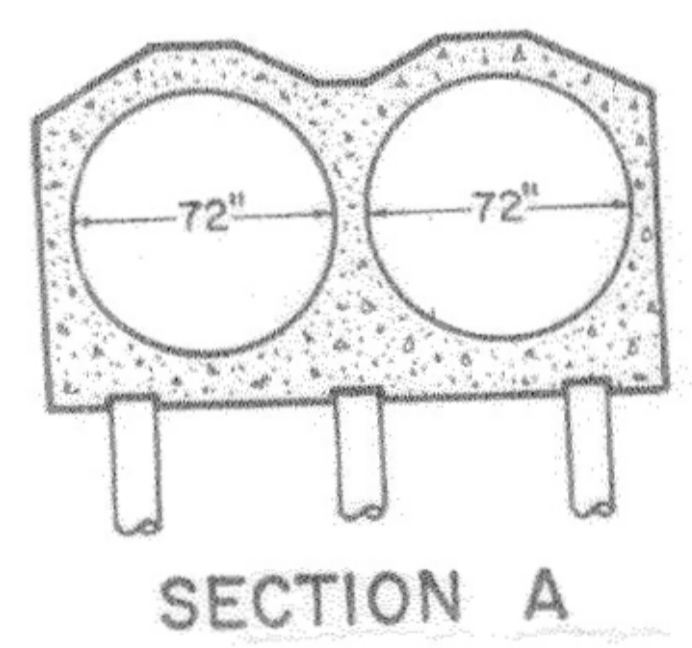


Cross Section
On Streets & Street Crossings
N.T.S.
Cross Section
On Private Property
N.T.S.

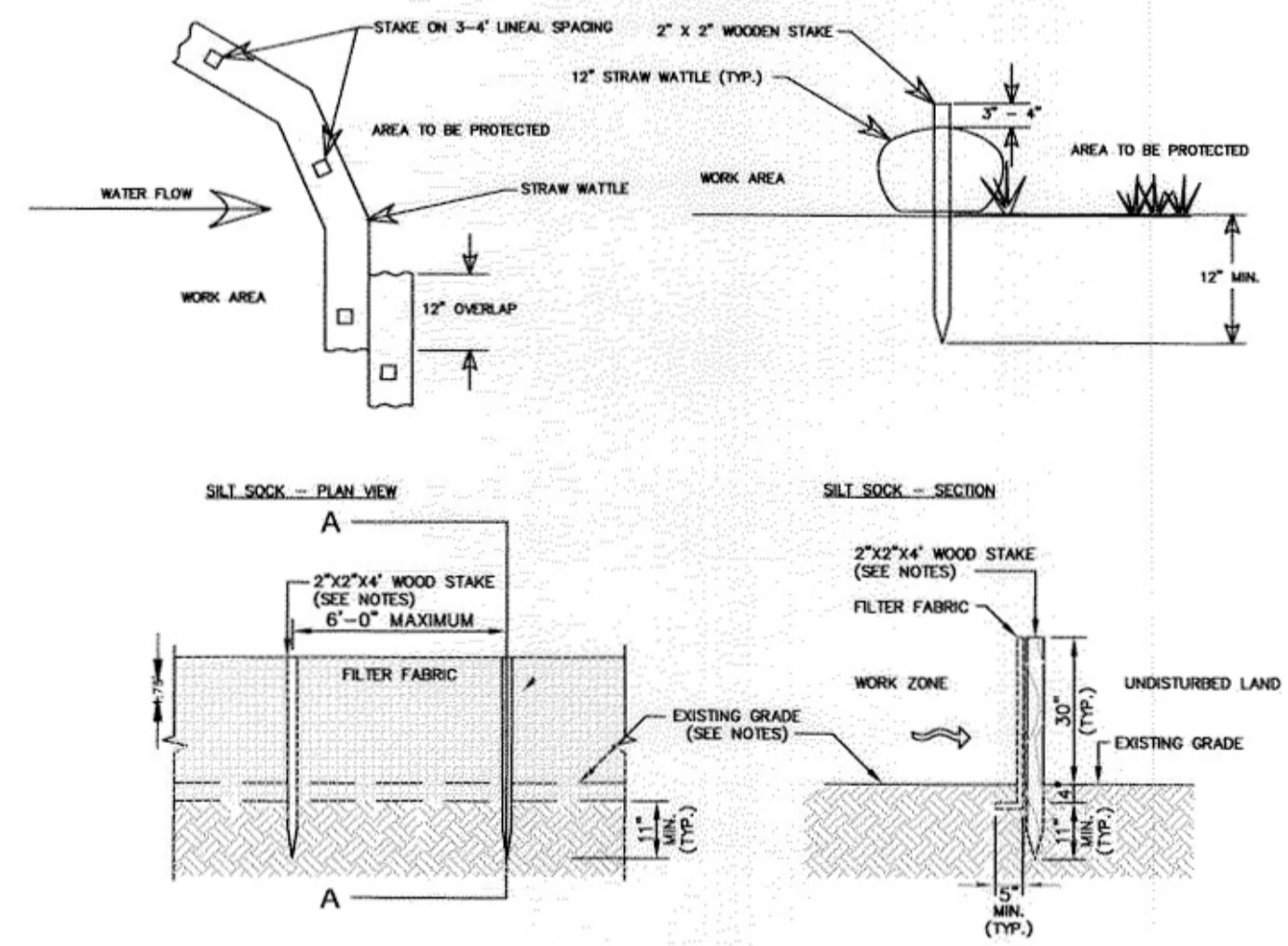
NGRID 115 kv (DIRECT BURY) ELECTRIC TRANSMISSION CABLES
NOT TO SCALE
SCHEMATIC ONLY, FOR REFERENCE.
DEPTHS VARY FROM TYPICAL DEPTH SHOWN.



CATCH BASIN SEDIMENTATION BARRIER
NOT TO SCALE



SOUTH RIVER CONDUIT CROSS SECTION DETAIL
NOT TO SCALE
SCHEMATIC ONLY, FOR REFERENCE.
TWIN CONCRETE PIPES ON TIMBER PILES



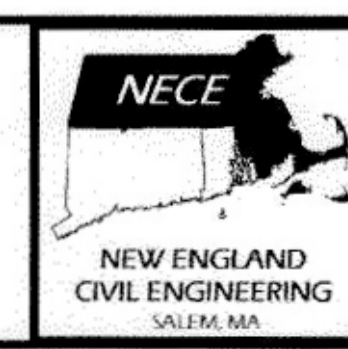
- NOTES:
- CONTRACTOR TO INSTALL 12-INCH STRAW WATTLES OR SILT FENCE AS DIRECTED AND APPROVED BY LOCAL CONSERVATION COMMISSION.
 - FABRIC FOR FENCES TO BE UV RESISTANT POLYPROPYLENE WITH A MINIMUM WEIGHT OF 2.5 OZ./S.Y. TUBULAR BLACK POLYPROPYLENE FOR STRAW WATTLES SHALL BE PHOTO DEGRADABLE.
 - FABRIC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

Scale	N.T.S.
Date	7/30/2015
Job	MAWorks
Designed by	WMR
Drawn by	DJW
Checked by	WMR
Approved by	WMR

No.	Description	Date



New England Civil Engineering Corp.
120 Washington Street
SALEM, MASSACHUSETTS

Sheet
D-7