

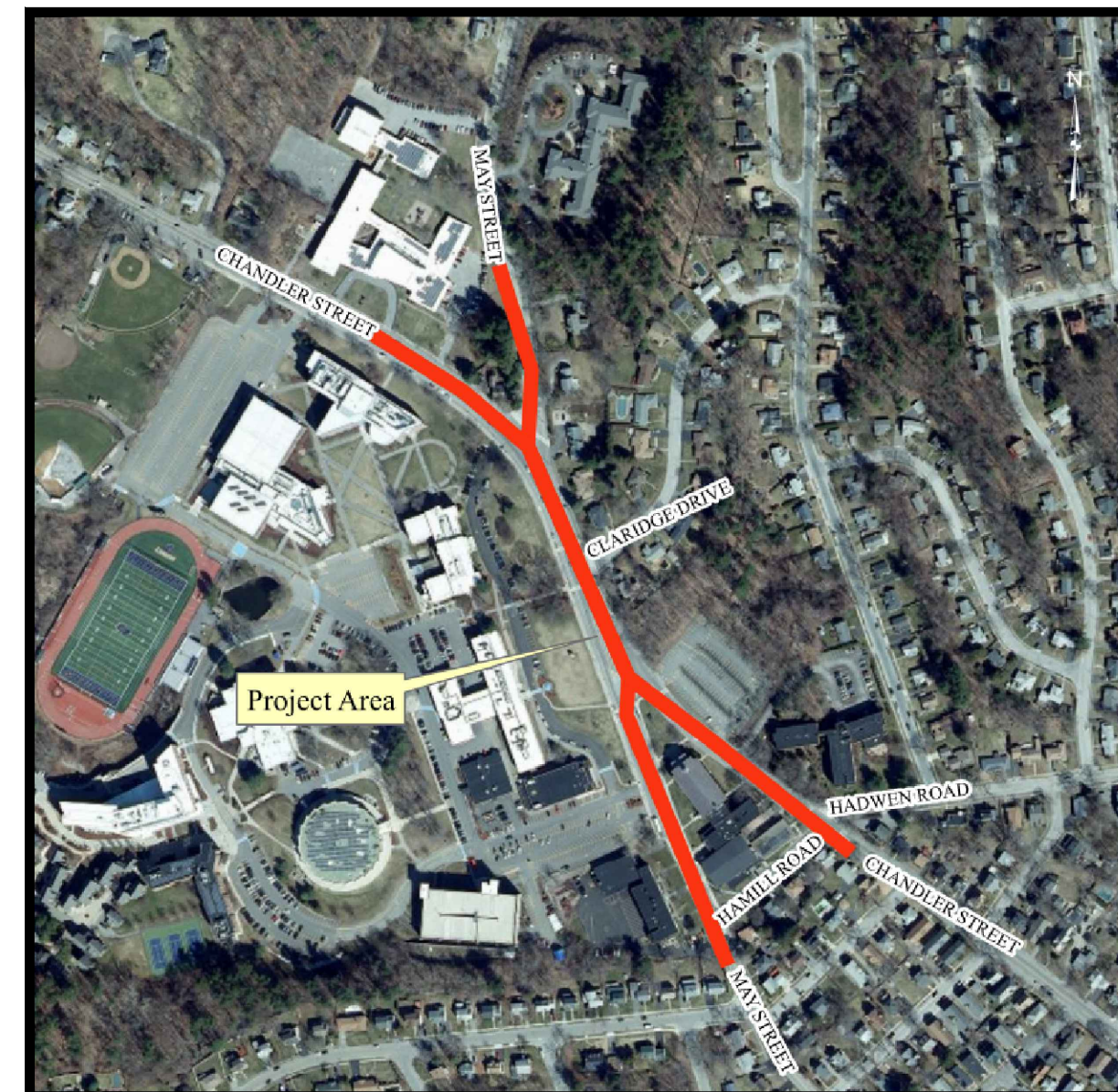
CITY OF WORCESTER, MASSACHUSETTS

# CHANDLER STREET WATER MAIN IMPROVEMENTS AND LARGE DIAMETER VALVE REPLACEMENTS

CONTRACT NO. 190-26

DEPARTMENT OF PUBLIC WORKS

John K. Westerling, Commissioner



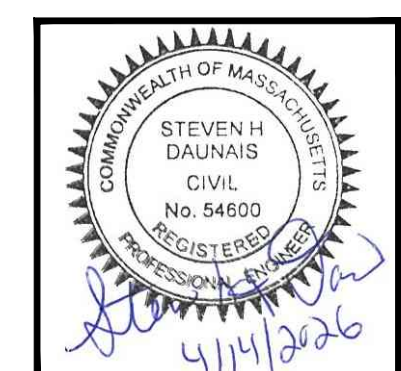
LOCATION PLAN  
NO SCALE

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TATA & HOWARD



**LEGEND**

EXISTING	DESCRIPTION	PROPOSED
— W —	WATER MAIN	— W —
— W —	WATER SERVICE	— W — W —
⊗	GATE VALVE	⊗
⊗	BUTTERFLY VALVE	⊗
⊗	HORIZONTAL GATE VALVE BOX	⊗
⊗	AIR RELEASE VALVE	⊗
⊗	REDUCER	⊗
⊗	SOLID SLEEVE	⊗
⊗	TRANSITION COUPLING	⊗
⊗	PIPE FITTINGS	⊗
⊗	CAP	⊗
⊗	FIRE HYDRANT	⊗
⊗	CURB STOP	⊗
⊗	WATER MANHOLE	⊗
⊗	MONITORING WELL	⊗
⊗	SEWER MANHOLE	⊗
— S —	SEWER LINE	— S —
— S —	SEWER SERVICE	— S —
⊗	DRAIN MANHOLE	⊗
⊗	CATCH BASIN	⊗
— D —	DRAIN LINE	— D —
— UGE —	ELEC. UNDERGROUND	— UGE —
⊗	ELEC. MANHOLE	⊗
— CHE —	ELEC. OH. WIRE	— CHE —
⊗	COMM. MANHOLE	⊗
⊗	COMMUNICATIONS BOX	⊗
— C —	COMMUNICATIONS LINE	— C —
⊗	UTILITY POLE	⊗
⊗	GUY WIRE	⊗
⊗	LIGHT POLE	⊗
— G —	GAS LINE	— G —
⊗	GAS VALVE	⊗
⊗	TREE LINE	⊗
⊗	SHRUB/BUSH LINE	⊗
⊗	TREE	⊗
⊗	SHRUB	⊗
⊗	ROCK	⊗
● ● ● ● ●	LIMITS OF CONSTRUCTION	● ● ● ● ●
— 101 —	1' CONTOUR	— 102 —
100 x	SPOT ELEVATION	100 x
⊗	SURVEY MARKER	⊗
⊗	BENCH MARK	⊗
⊗	TRAVERSE STATION	⊗
—	STATIONING	0+00
—	FENCE - CHAIN LINK	—
—	FENCE - WOOD	—
—	STONE WALL	—
—	SIGN POST	—
—	TRAIL	—
—	BUILDING	—
—	ASPHALT ROAD/EOP	—
—	GRAVEL AREA	—
—	CONCRETE	—
—	GRASS	—
—	RIGHT-OF-WAY	—
—	PROPERTY LINE	—
—	SILT SACK	—
⊗	TEST PIT	⊗

**ABBREVIATIONS**

ADA	AMERICANS WITH DISABILITIES ACT
APPROX.	APPROXIMATE
BFV	BUTTERFLY VALVE
BWL	BROKEN WHITE LINE
BLDG	BUILDING
CB	CATCH BASIN
C.I.	CAST IRON
CONC.	CONCRETE
D.I.	DUCTILE IRON
DIA.	DIAMETER
DMH	DRAIN MANHOLE
DWGS	DRAWINGS
DWL	DOTTED WHITE LINE
ELEV.	ELEVATION
FM	FORCE MAIN
FW	FINISHED WATER
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HYD	HYDRANT
INV.	INVERT
LR	LONG RADIUS
MAX.	MAXIMUM
MIN.	MINIMUM
MJ	MECHANICAL JOINT
MW	MONITORING WELL
PE	POLYETHYLENE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
SMH	SEWER MANHOLE
SS	STAINLESS STEEL
SWL	SOLID WHITE LINE
SYL	SOLID YELLOW LINE
TOW	TOP OF WALL
TYP.	TYPICAL
VC	VERTICAL CURVE
VERT.	VERTICAL

**GENERAL NOTES**

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF WORCESTER. ALL EXCAVATION AND RESTORATION SHALL MEET CITY SPECIFICATIONS.
- THE ENGINEER MAY DIRECT THE CONTRACTOR TO VARY THE PROPOSED WORK DURING CONSTRUCTION TO MEET EXISTING CONDITIONS.
- THE SITE IS NOT LOCATED WITHIN A FLOOD ZONE.
- STATIONING ALONG THE LENGTH OF THE WATER MAIN IS INTENDED FOR GENERAL REFERENCE. WHERE PRECISE GROUND LOCATION IS REQUIRED, REFER TO ACTUAL FIELD MEASUREMENTS FOR ACTUAL DISTANCES FROM EXISTING GROUND FEATURES.
- STOCKPILES SHALL BE LOCATED AS NEEDED, WITHIN THE LIMIT OF WORK, IN AREAS OF MINIMAL IMPACT.
- IF SEASON OR ADVERSE WEATHER CONDITIONS DO NOT ALLOW THE ESTABLISHMENT OF VEGETATION, TEMPORARY MULCHING WITH HAY, TACKFIELD WOOD CHIPS OR OTHER METHODS SHALL BE PROVIDED.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES AND SHALL PROVIDE ALL NECESSARY CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE AND STRENGTH TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE COMPLETION OF EACH WORK DAY.
- THE CONTRACTOR AT HIS EXPENSE SHALL BRACE UTILITY POLES IF REQUIRED, AND REPAIR ANY DAMAGE TO EXISTING SIDEWALKS, CURBS, PAVING, SHRUBS, TREES, STONE WALLS, LAWNS, ETC. ALL EXCAVATED MATERIALS SHALL BE RETURNED TO EQUAL OR BETTER THAN PRIOR CONDITION BY THE CONTRACTOR.
- ALL EXISTING CONCRETE AND ASPHALT PAVEMENT SHALL BE SAW-CUT PRIOR TO EXCAVATION IN ORDER TO PROVIDE UNIFORM ASPHALT REPLACEMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF PAVEMENT MARKINGS, TRAFFIC SIGN LOOPS, STRIPING, ARROWS, CROSSWALKS, ETC.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR CONSTRUCTION AS INDICATED IN THE SPECIFICATIONS.
- THE CONTRACTOR IS REQUIRED TO SUBMIT SOIL COMPACTION REPORTS.
- THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF WORCESTER ON ALL SHUT DOWN AND TIE-IN PROCEDURES FOR ALL WATER MAIN IMPROVEMENT WORK AND VALVE INSTALLATION WORK.
- ALL REMOVED HYDRANTS ARE PROPERTY OF THE OWNER AND SHALL BE DELIVERED TO THE CITY OF WORCESTER STOCKYARD.
- AS APPROPRIATE, THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES, INCLUDING HAND DIGGING, TO MAINTAIN THE INTEGRITY OF EXISTING UTILITIES.

**SURVEY NOTES**

- BASE PLANS AND PROPERTY LINE DETERMINATIONS WERE PREPARED BY VANASSE HANGEN BRUSTLIN, INC. (260 ARSENAL PLACE, WATERTOWN, MA 02472) USING AN ON-GROUND SURVEY IN FEBRUARY 2019.
- THE LOCATION OF THE EXISTING UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE INTENDED ONLY TO ADVISE THE CONTRACTOR OF THEIR PRESENCE. CALL "DIG SAFE" (1-888-344-7233) FOR FIELD LOCATIONS OF ALL EXISTING UTILITIES.
- BENCHMARKS HAVE BEEN ESTABLISHED BY THE SURVEYOR PRIOR TO THE START OF CONSTRUCTION. BENCHMARK LOCATIONS ARE SHOWN ON THE CONTRACT DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL BENCHMARKS THROUGHOUT CONSTRUCTION. ANY COST TO RE-ESTABLISH THESE ITEMS WILL BE AT NO COST TO THE OWNER.

**WATER MAIN NOTES**

- THE CONTRACTOR SHALL MAKE EVERY EFFORT NOT TO DISTURB THE EXISTING WATER SYSTEM. NO ADDITIONAL PAYMENT SHALL BE MADE FOR DAMAGE CREATED FOR THE CONVENIENCE OF THE CONTRACTOR.
- ALL NEW WATER MAINS ARE TO BE LAID WITH A MINIMUM OF 5'-0" COVER. EXCEPT WHERE NOTED IN THE PROFILE DRAWINGS.
- ALL BENDS, TEE, CAPS AND HYDRANTS SHALL BE BACKED WITH CONCRETE THRUST BLOCKS AS INDICATED ON THE CONTRACT DRAWINGS. ALL BENDS, TEE, CAPS, VALVES AND MISCELLANEOUS FITTINGS SHALL BE RESTRAINED AS SPECIFIED.
- CONTRACTOR SHALL USE A WATER TIGHT PLUG DURING THE WATER MAIN INSTALLATION. PLUG SHALL REMAIN IN PLACE AT ALL TIMES.
- THE CONTRACTOR SHALL NOT CONNECT TO THE EXISTING WATER MAIN UNTIL IT HAS BEEN PRESSURE TESTED AND CHLORINATED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL PROVIDE ADDITIONAL TAPS IF REQUIRED FOR CHLORINATING AND HYDROSTATIC TESTING AT HIS EXPENSE. TAPS SHALL BE REMOVED AND THE WATER MAIN PLUGGED AFTER TESTING IS COMPLETE.
- UNLESS OTHERWISE NOTED, ALL WATER SERVICES ARE 1" AND SHALL EACH CONSIST OF A CORPORATION, COPPER TUBING SIZE POLYETHYLENE PRESSURE TUBING, TRACER WIRE, CURB STOP AND SERVICE BOX. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE SIZE OF EXISTING WATER SERVICES AND INSTALL ANY NECESSARY TRANSITION FITTINGS. THE NEW WATER SERVICE SHALL MATCH THE EXISTING WATER SERVICE MATERIALS.
- ALL WATER SERVICES AND CONNECTIONS CROSSING THE 48-INCH D.I. WATER MAIN SHALL BE INSTALLED BENEATH THE 48-INCH D.I. WATER MAIN AS NECESSARY.
- TEMPORARY TRENCH PAVEMENT SHALL BE INSTALLED AT A MINIMUM EVERY FRIDAY IN ALL TRENCHES.
- ALL PROPOSED WATER MAINS SHALL BE INSTALLED IN THE EXISTING TRENCH UNLESS OTHERWISE NOTED. THE EXISTING WATER MAINS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
- THE FINAL HYDRANT TEE LOCATIONS ON THE NEW 24-INCH D.I. WATER MAIN SHALL BE DETERMINED IN THE FIELD.
- IN ADDITION TO THE CHANDLER STREET WATER MAIN IMPROVEMENTS INCLUDED IN THESE DRAWINGS, THE CONTRACTOR SHALL ALSO COMPLETE VALVE REPLACEMENTS/INSTALLATIONS AND OTHER WATER MAIN IMPROVEMENT WORK ALONG CHANDLER STREET AND PARK AVENUE. REFERENCE SPECIFICATION SECTION 01100 SPECIAL PROJECT PROCEDURES FOR A CONSTRUCTION SEQUENCE OF ALL WORK TO BE COMPLETED. ALSO REFERENCE APPENDICES A AND B FOR FIGURES INDICATING THE ADDITIONAL VALVE REPLACEMENT/INSTALLATION WORK AND ALL OTHER PROPOSED WATER MAIN IMPROVEMENT WORK.

**TEMPORARY BY-PASS PIPING GENERAL NOTES**

- PRIOR TO THE START OF CONSTRUCTION, A TEMPORARY BY-PASS PIPING SYSTEM SHALL BE INSTALLED, CHLORINATED, TESTED AND TEMPORARY WATER SERVICES INSTALLED BY THE CONTRACTOR. UPON COMPLETION OF THE NEW WATER MAIN, THE TEMPORARY BY-PASS PIPING SHALL BE REMOVED BY THE CONTRACTOR. THE CONTRACTOR SHALL MAINTAIN BY-PASS SYSTEM AND PROTECT DAMAGE THROUGHOUT THE DURATION OF THE PROSPECT.
- THE TEMPORARY BY-PASS PIPING AND VALVING SHALL BE PRESSURED RATED FOR 200 PSI.
- AT LOCATIONS WHERE TEMPORARY SERVICES CROSS THE ROAD, SERVICES SHALL BE ADEQUATELY PROTECTED IN A SOLID SLEEVE, PLACED IN A TRENCH OF ADEQUATE DEPTH AND COVERED WITH BITUMINOUS PAVEMENT TO PREVENT BREAKAGE DURING CONSTRUCTION OF THE NEW WATER MAIN. ALL TEMPORARY SERVICE CROSSINGS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.
- TEMPORARY HYDRANTS SHALL BE INSTALLED EVERY 500 FEET WHEREVER TEMPORARY SERVICE IS REQUIRED.

**EROSION & SEDIMENT CONTROL NOTES**

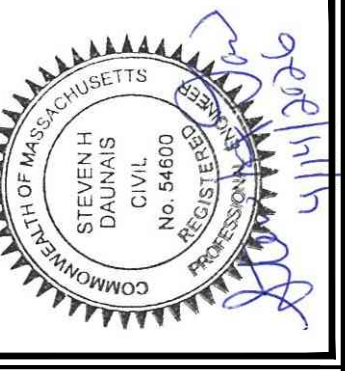
- SILT SACKS SHALL BE INSTALLED IN ALL CATCH BASINS IN THE WORK AREA PRIOR TO CONSTRUCTION. SILT SACKS SHALL REMAIN AND BE PROPERLY MAINTAINED DURING CONSTRUCTION. SILT SACKS SHALL BE CLEANED BEFORE AND AFTER STORMS.

Test Pit Number	Top Pipe Elevation(ft.)	Road Elevation(ft.)	Depth (ft.)
SB #1	566.342	569.562	3.22
SB #2	568.195	571.483	3.288
SB #3	573.758	576.247	2.489
SB #4	575.105	577.922	2.817
SB #5	575.873	579.376	3.503
SB #6	576.889	580.116	3.227
SB #7	576.737	580.020	3.283
SB #8	575.815	579.597	3.782
SB #9	575.412	579.498	4.086
SB #10	575.274	579.200	3.926
SB #11	575.291	578.934	3.643
SB #12	574.685	578.087	3.402
SB #13	573.025	576.170	3.145
SB #14	571.800	574.948	3.148
SB #15	573.631	579.287	5.656
SB #16	574.125	578.232	4.107
SB #17	575.252	579.175	3.923
SB #18	575.905	579.785	3.880
SB #19	576.854	579.825	2.971
SB #20	576.545	578.731	2.186
SB #21	575.135	577.685	2.550
SB #22	572.900	578.114	5.214
SB #23	570.174	576.08	5.906

CITY OF WORCESTER,  
MASSACHUSETTS  
CHANDLER STREET  
WATER MAIN IMPROVEMENTS

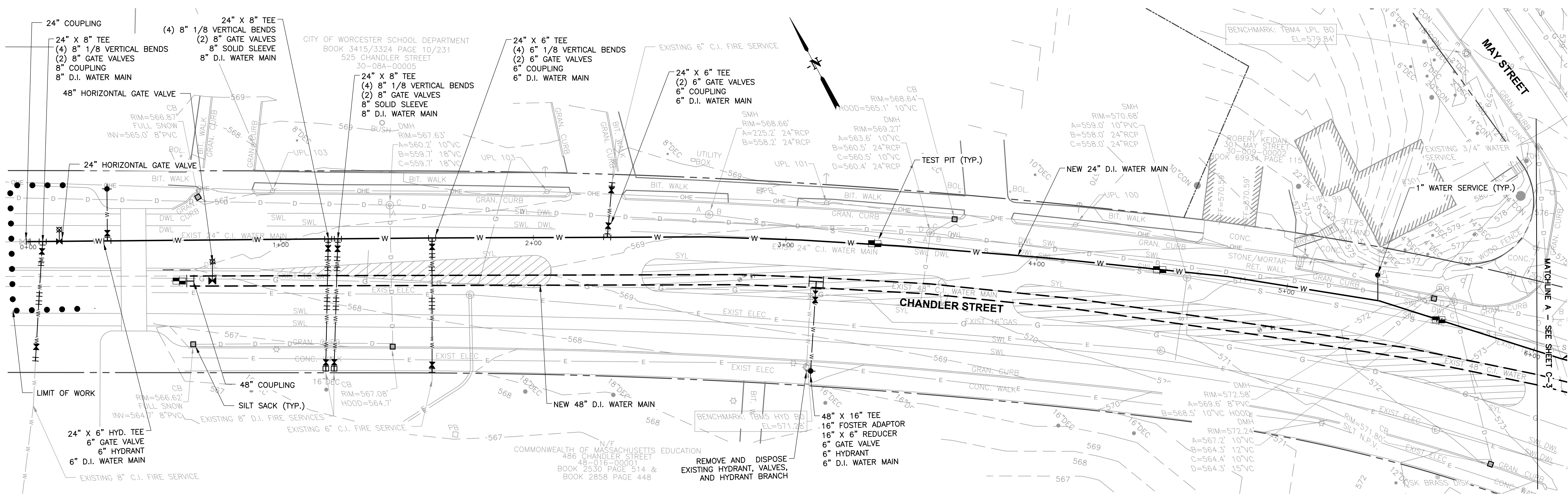
CIVIL  
LEGEND, GENERAL NOTES, AND  
ABBREVIATIONS

Date	Rev.	Description

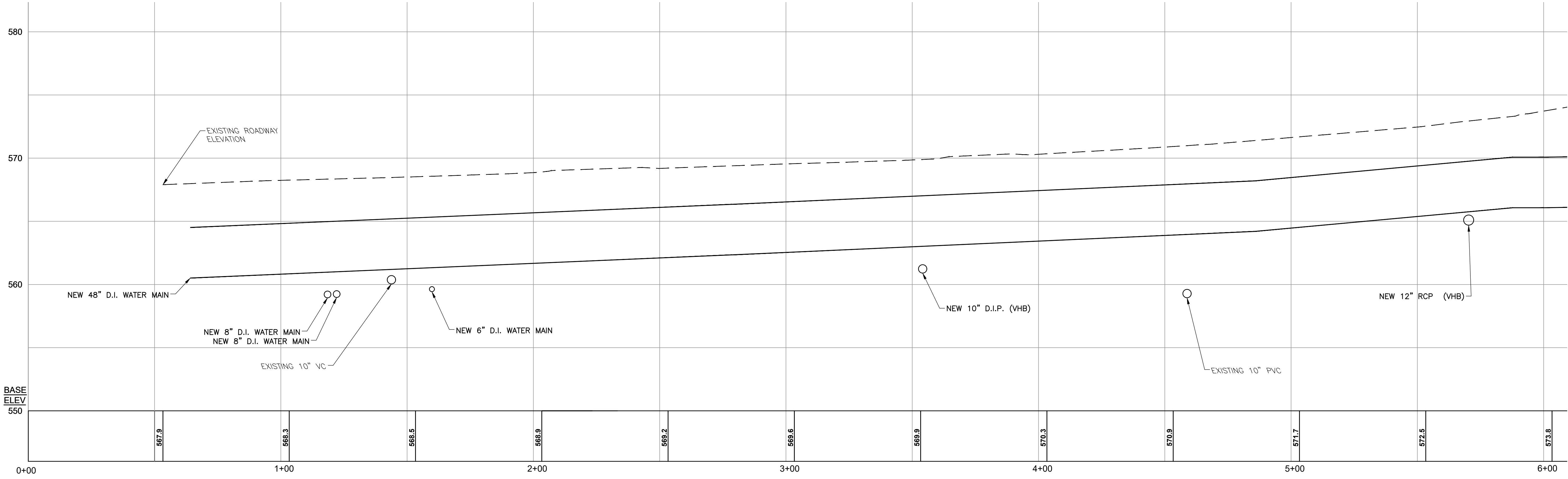


**TATA & HOWARD**

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DATE: APRIL 2026  
SCALE: AS NOTED



**CHANDLER STREET STA. 0+00 TO 6+00**  
SCALE: 1" = 20'

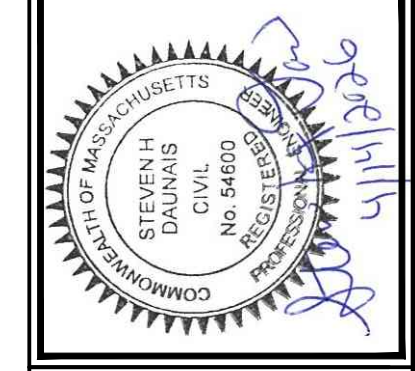


**CHANDLER STREET PROFILE STA. 0+00 TO STA. 6+00**  
SCALE: HORIZ. 1" = 20'  
VERT. 1" = 4'

CITY OF WORCESTER,  
MASSACHUSETTS  
CHANDLER STREET  
WATER MAIN IMPROVEMENTS

CIVIL  
CHANDLER STREET STA. 0+00 TO 6+00

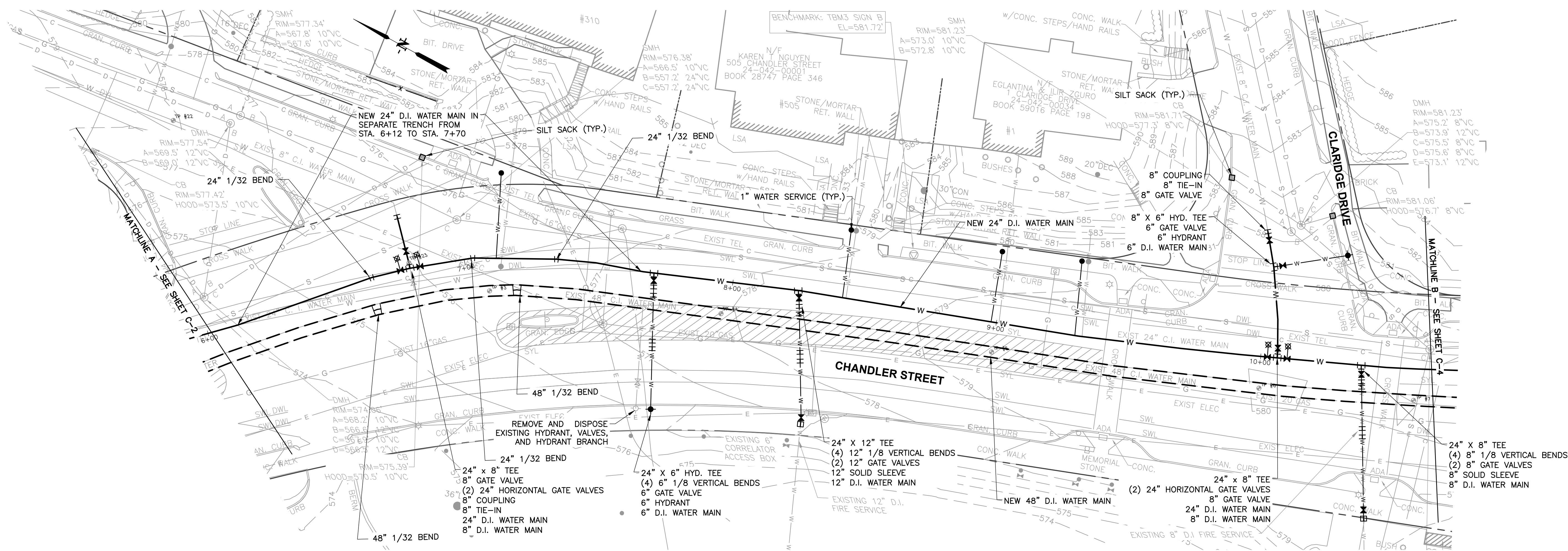
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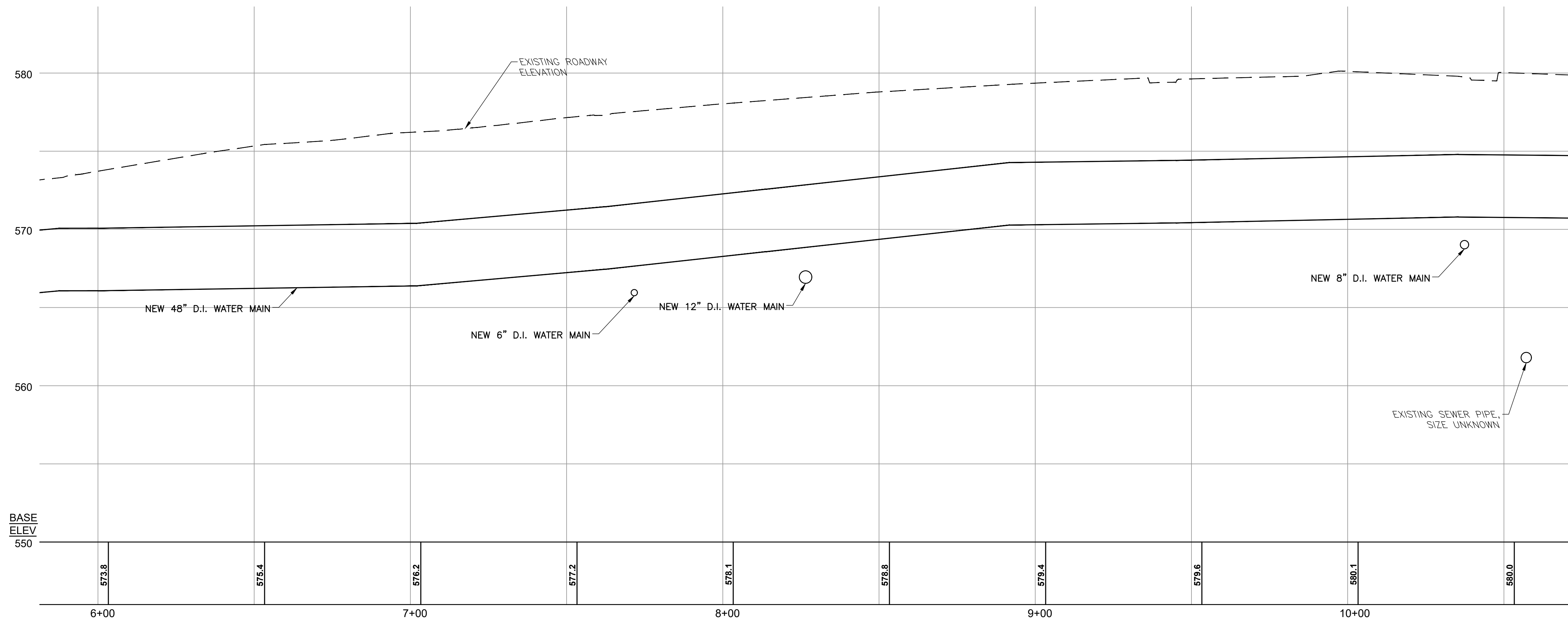
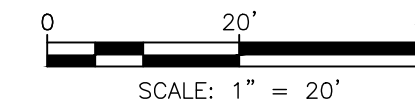
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**CHANDLER STREET STA. 6+00 TO 10+65**

SCALE: 1" = 20'



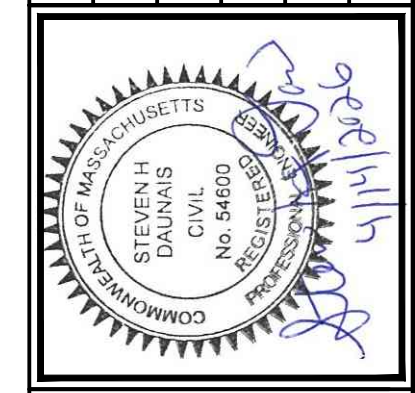
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VERT. 1" = 4'

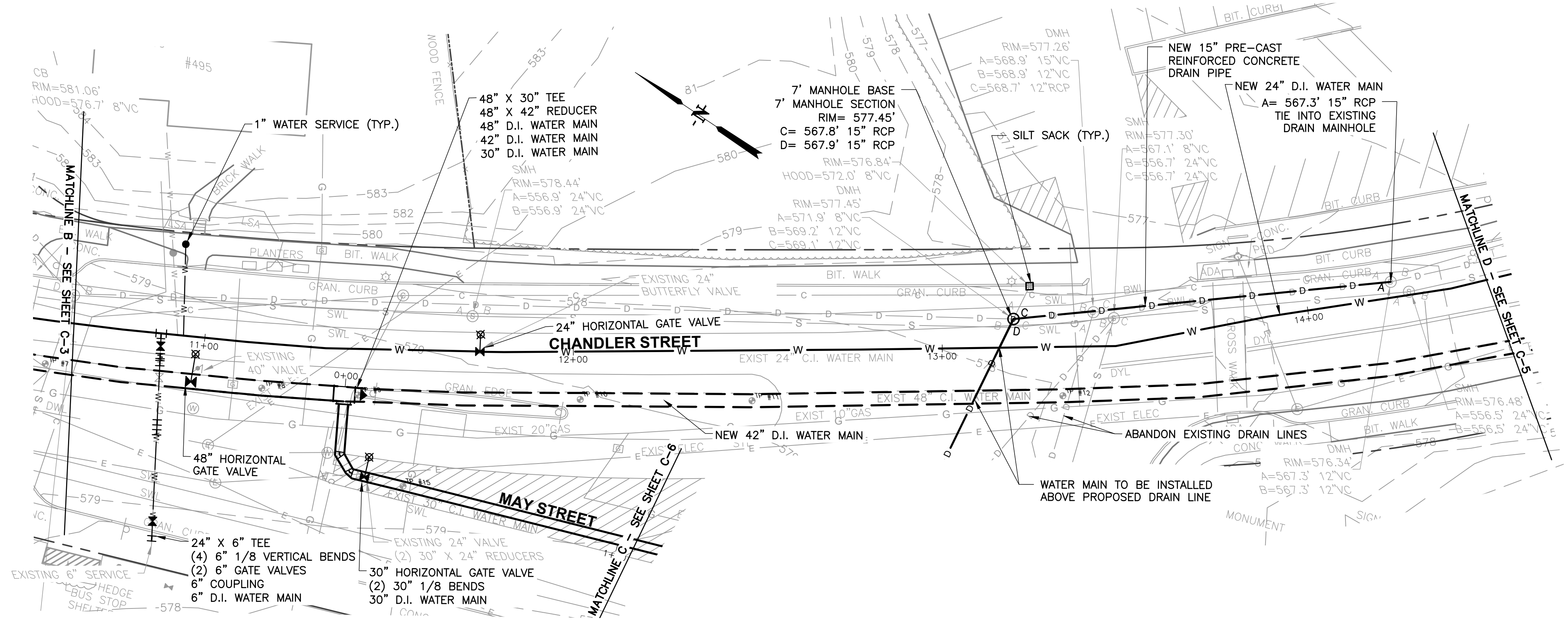
CITY OF WORCESTER,  
MASSACHUSETTS  
CHANDLER STREET  
WATER MAIN IMPROVEMENTS

CIVIL  
CHANDLER STREET STA. 6+00 TO 10+65

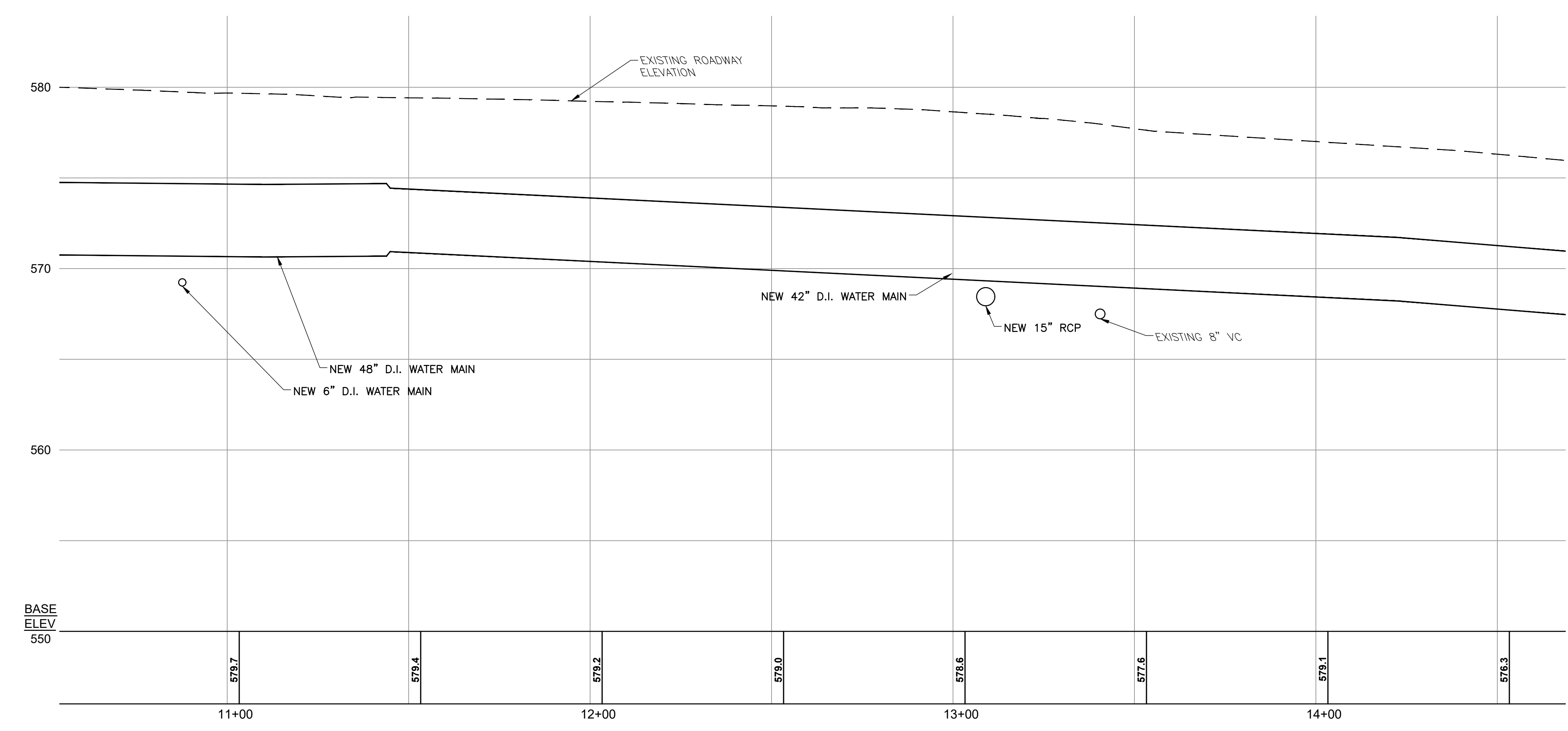
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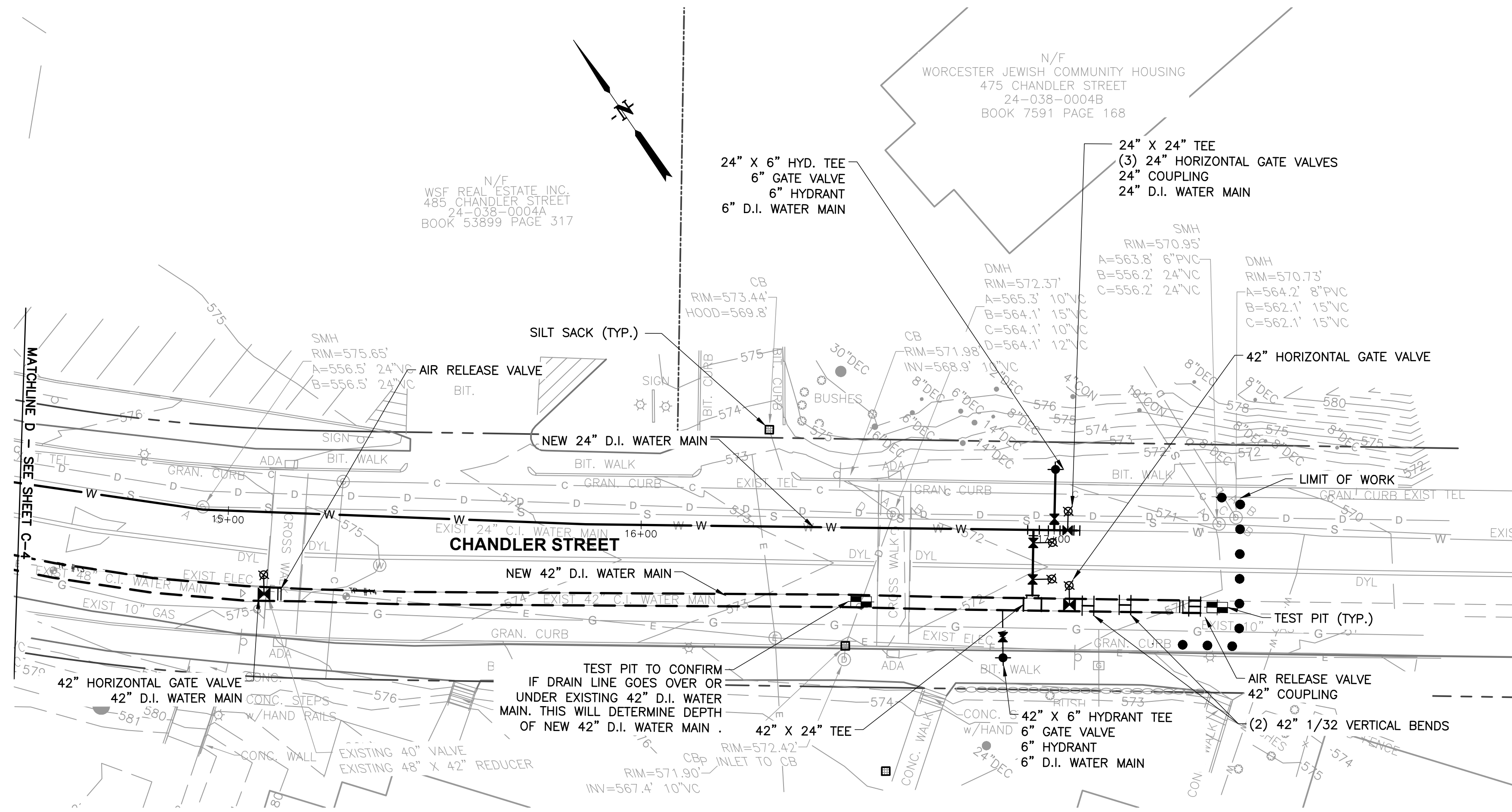
**CHANDLER STREET STA. 10+65 TO 14+50 AND  
MAY STREET STA. 0+00 TO 1+00**  
SCALE: 1" = 20'



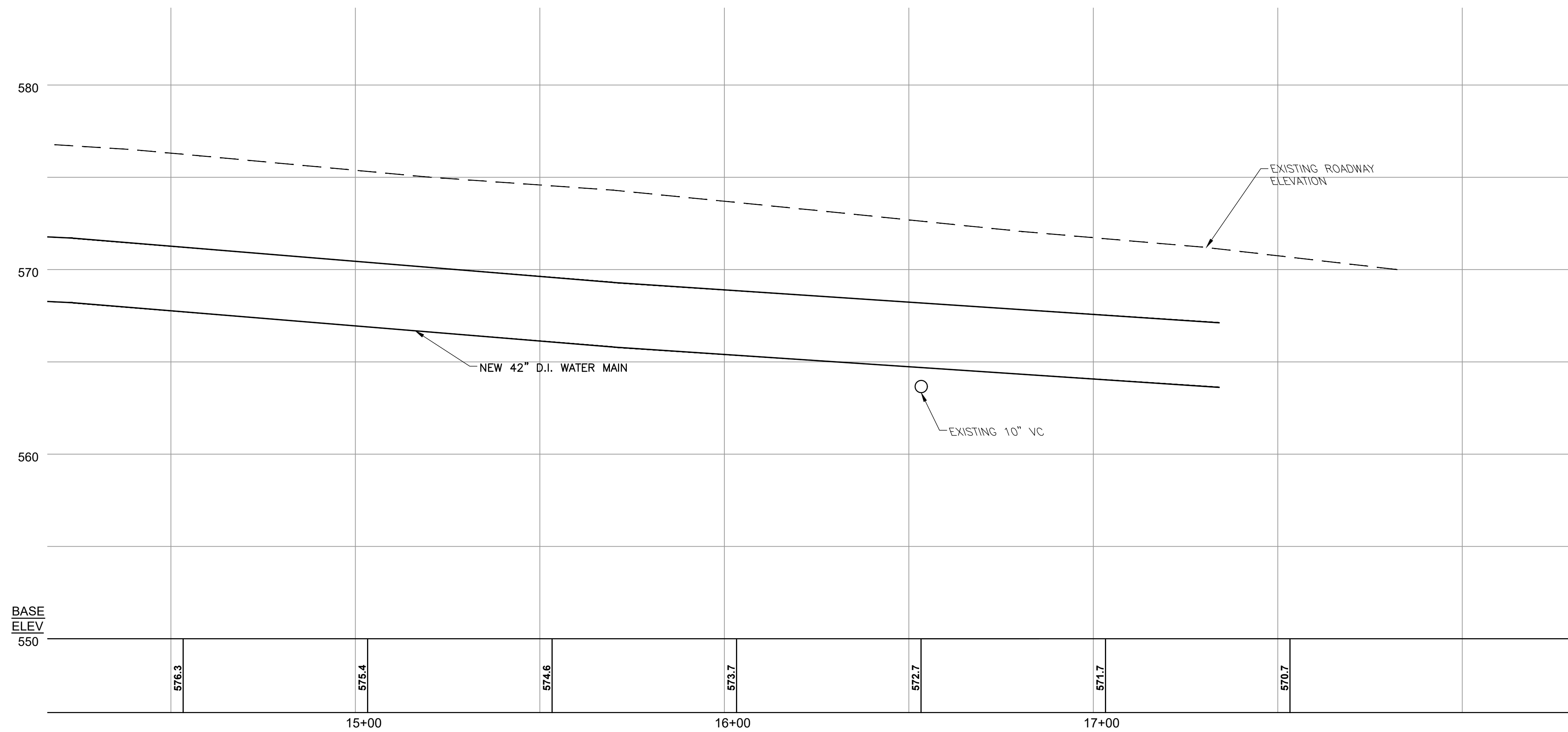
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SCALE: HORIZ. 1" = 20'  
VERT. 1" = 4'

CITY OF WORCESTER, MASSACHUSETTS <b>CHANDLER STREET          WATER MAIN IMPROVEMENTS</b>
CIVIL <b>CHANDLER STREET STA. 10+65 TO 14+50          AND MAY STREET STA. 0+00 TO 1+00</b>
T&H NO.: 6675 DATE: APRIL 2026 SCALE: AS NOTED
<b>C-4</b>

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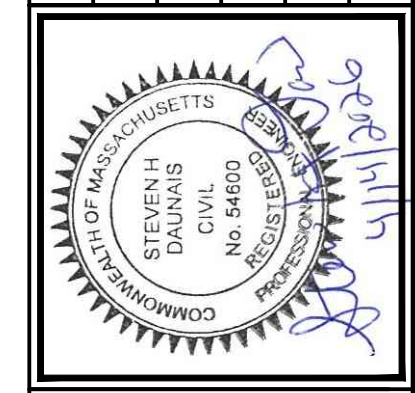


**CHANDLER STREET PROFILE STA. 14+50 TO STA. 17+05**  
SCALE: HORIZ. 1" = 20'  
VERT. 1" = 4'

CITY OF WORCESTER,  
MASSACHUSETTS  
CHANDLER STREET  
WATER MAIN IMPROVEMENTS

CIVIL  
CHANDLER STREET STA. 14+50 TO 17+05

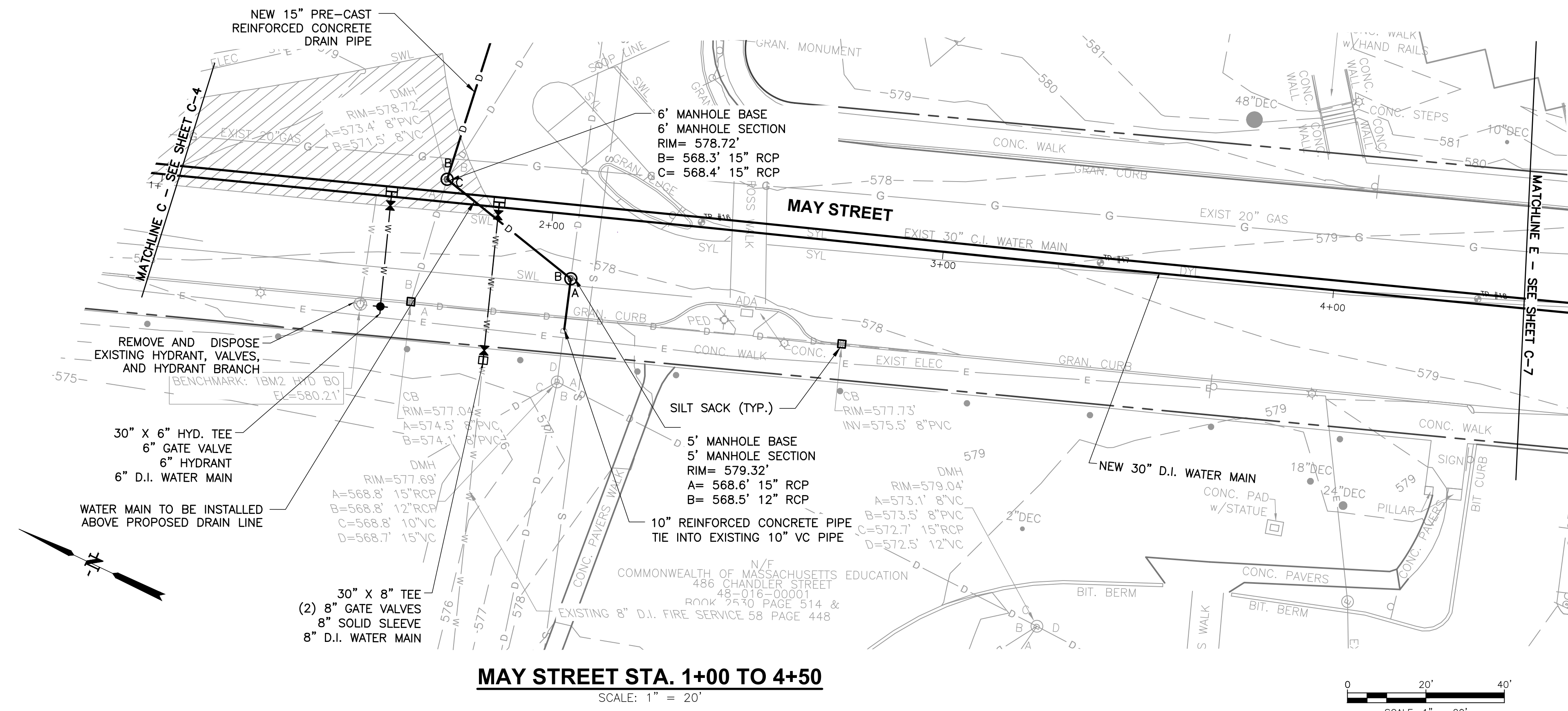
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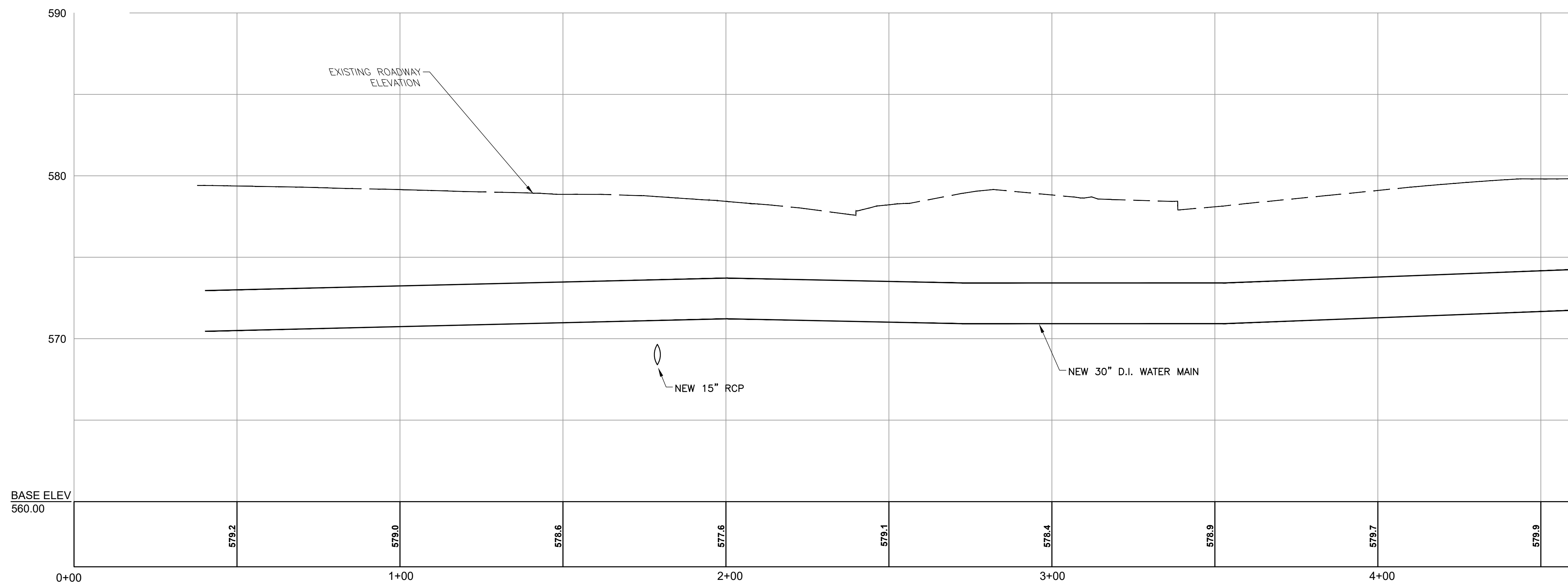
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C-5

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**MAY STREET STA. 1+00 TO 4+50**  
SCALE: 1" = 20'

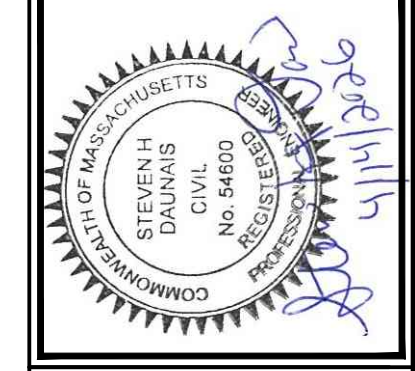


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CITY OF WORCESTER,  
MASSACHUSETTS  
CHANDLER STREET  
WATER MAIN IMPROVEMENTS

CIVIL  
MAY STREET STA. 1+00 TO 4+50

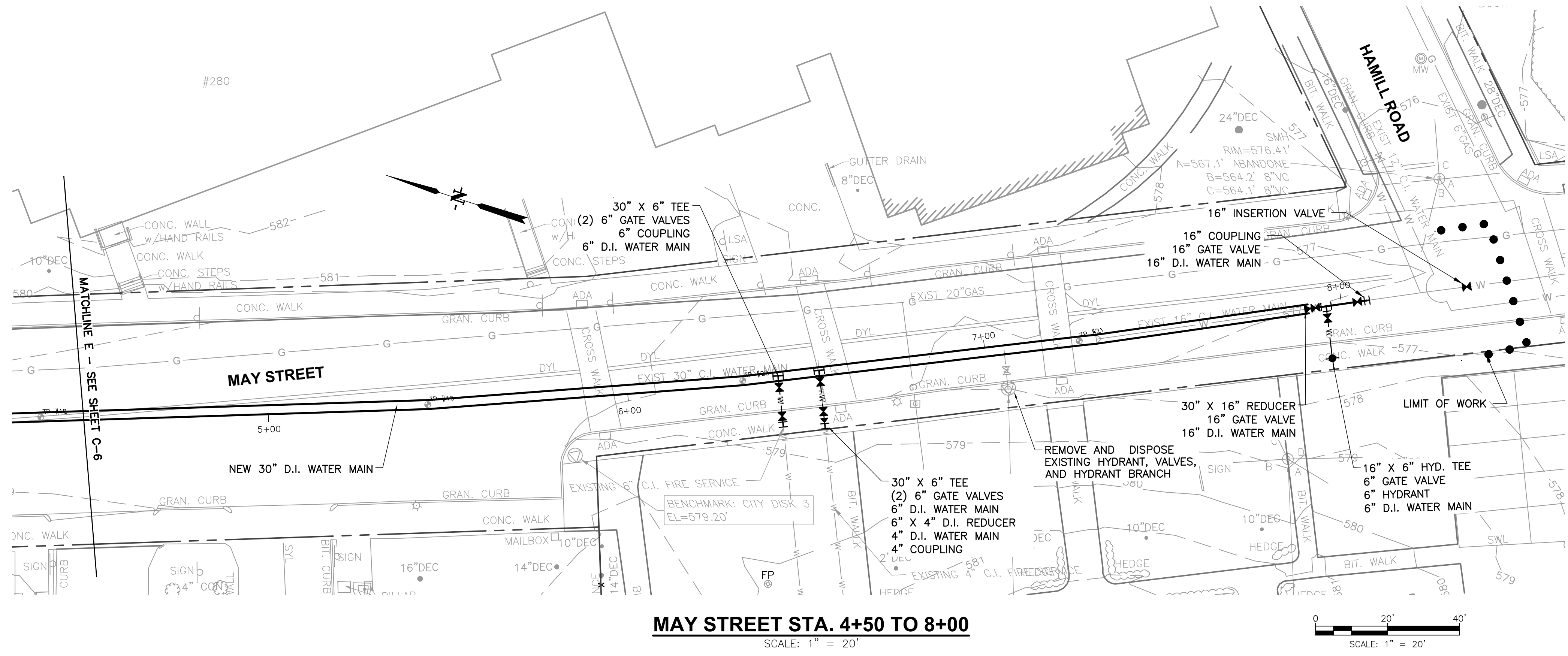
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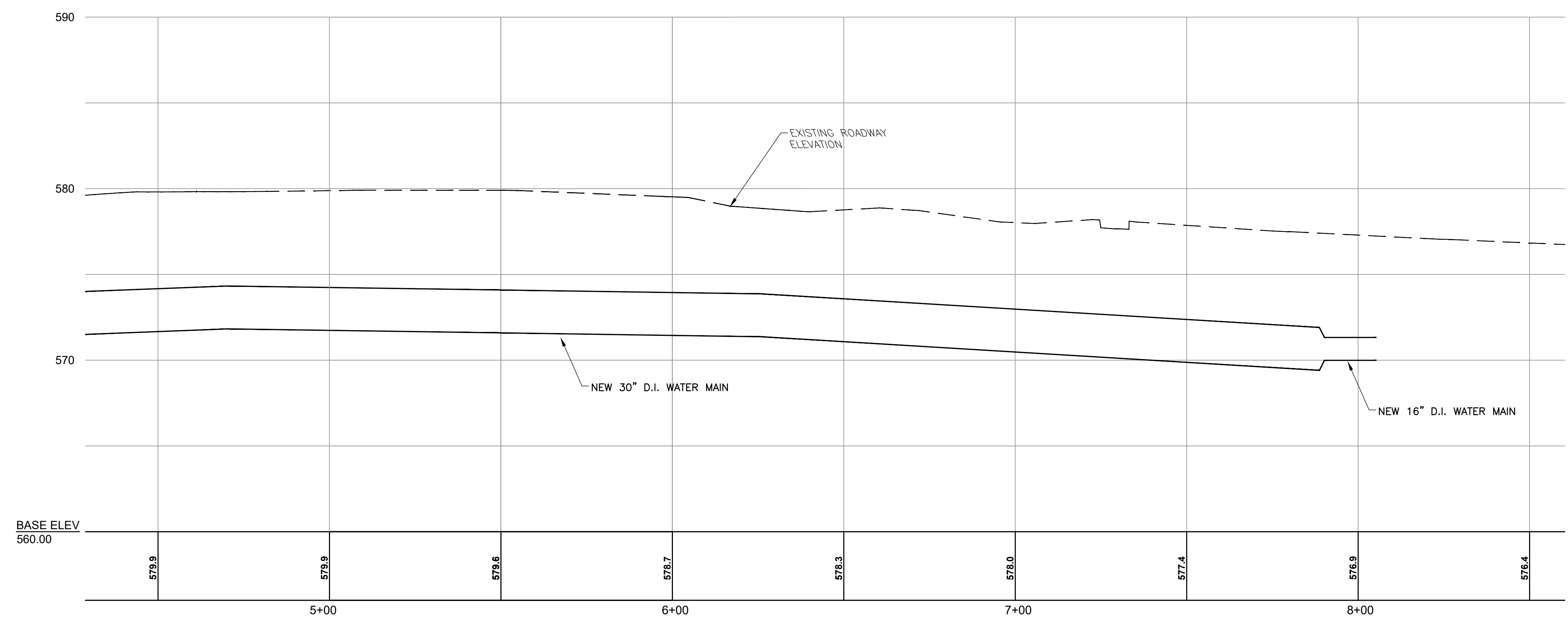
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C-6

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**MAY STREET STA. 4+50 TO 8+00**  
SCALE: 1" = 20'

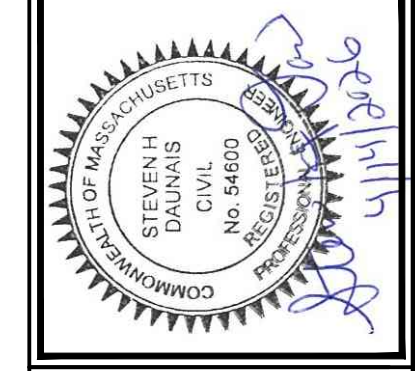


**MAY STREET PROFILE STA. 4+50 TO STA. 8+00**  
SCALE: HORIZ. 1" = 20'  
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CITY OF WORCESTER,  
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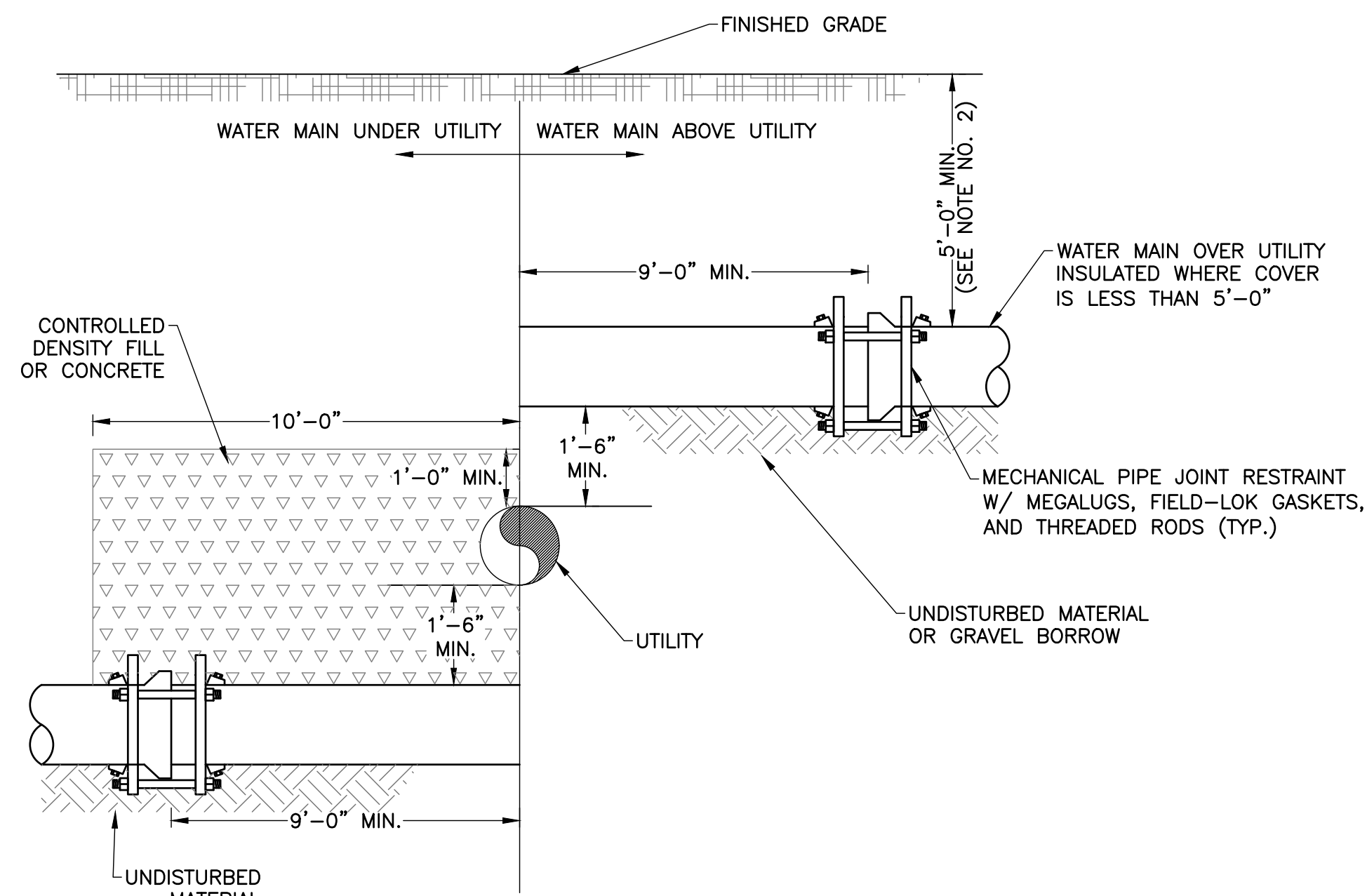
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MAY STREET STA. 4+50 TO STA. 8+00

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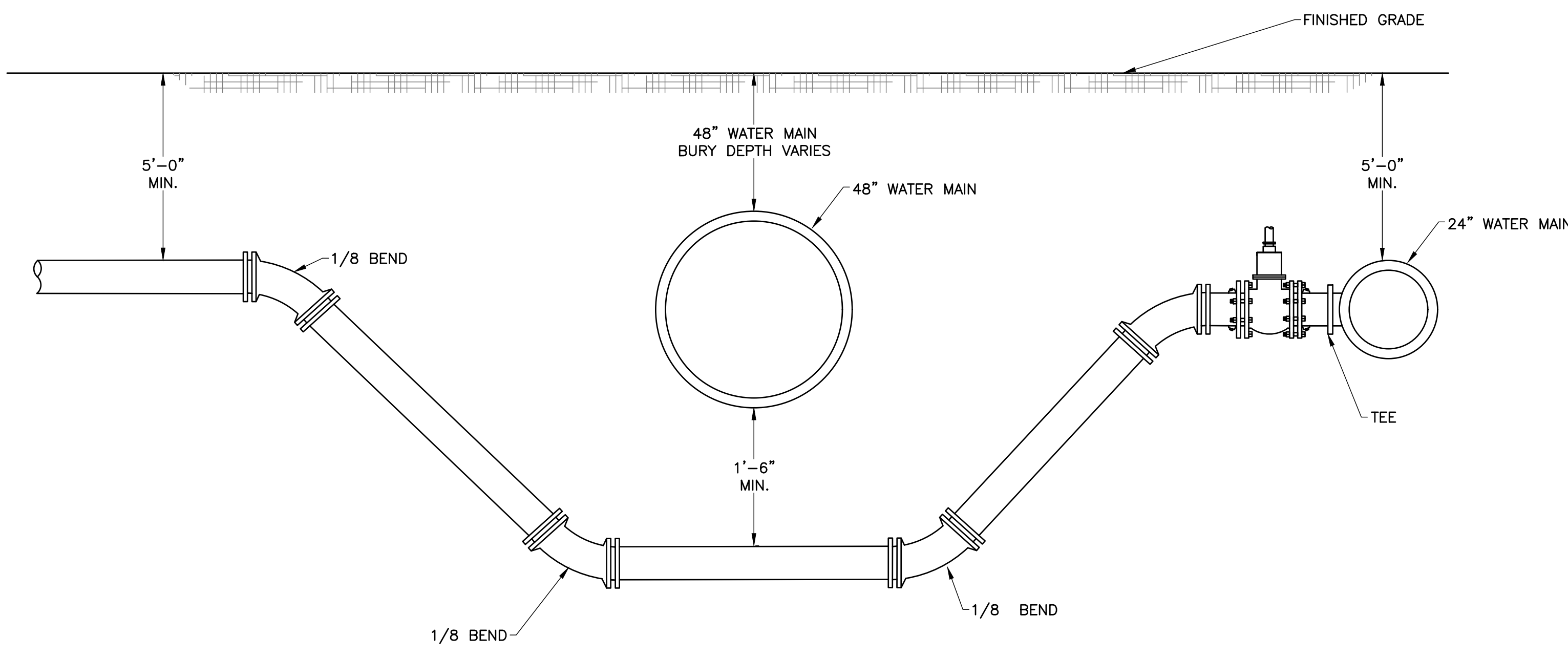
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- NOTES:**
- "UTILITY" REFERS TO SEWER, DRAIN AND ASBESTOS CEMENT PIPE IN THE CONTEXT OF THIS DETAIL.
  - WATER MAINS AND SERVICES SHALL BE KEPT REMOTE FROM SEWER PIPING AND STRUCTURES. WHEREVER FEASIBLE, WATER MAINS SHOULD BE LAID AT A MINIMUM HORIZONTAL DISTANCE OF 10 FEET FROM UTILITY PIPING. IF LOCAL CONDITIONS PREVENT THIS, THE WATER MAIN SHOULD BE INSTALLED SO THAT THE INVERT OF THE WATER MAIN IS 18 INCHES ABOVE THE CROWN OF THE UTILITY PIPING.
  - WHENEVER WATER MAINS MUST CROSS UTILITY PIPING, THE INVERT OF THE WATER MAIN SHALL BE INSTALLED SO THAT IT IS 18 INCHES ABOVE THE CROWN OF THE UTILITY PIPING UNLESS THE TOP OF THE WATER MAIN WILL BE SET AT A DEPTH BELOW GRADE OF LESS THAN 5'-0". IN ADDITION, THE WATER MAIN SHALL BE CONSTRUCTED WITH ONE FULL LENGTH OF PIPE CENTERED ABOUT THE UTILITY CROSSING. THE WATER MAIN SHALL HAVE MECHANICAL JOINT RESTRAINTS FOR A DISTANCE OF 9 FEET ON EACH SIDE OF THE UTILITY CROSSING. THE DISTANCE BETWEEN THE INVERT OF THE WATER MAIN AND THE CROWN OF THE UTILITY PIPING MAY BE REDUCED TO 6" TO MAINTAIN 5'-0" OF COVER WITH THE APPROVAL OF THE ENGINEER, IN WHICH CASE BOTH THE WATER MAIN AND UTILITY PIPING SHALL BE ENCASED IN CONTROLLED DENSITY FILL FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE UTILITY CROSSING AT THE DISCRETION OF THE ENGINEER.
  - IF WATER MAIN HAS TO BE INSTALLED BELOW UTILITY PIPING, THE CROWN OF THE WATER MAIN SHALL BE INSTALLED SO THAT IT IS 18 INCHES BELOW THE INVERT OF THE UTILITY PIPING. THE WATER MAIN SHALL BE CONSTRUCTED WITH ONE FULL LENGTH OF PIPE CENTERED ABOUT THE UTILITY CROSSING. THE WATER MAIN SHALL HAVE MECHANICAL JOINT RESTRAINTS FOR A DISTANCE OF 9 FEET ON EACH SIDE OF THE UTILITY CROSSING. BOTH THE WATER MAIN AND UTILITY PIPING SHALL BE ENCASED IN CONTROL DENSITY FILL FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE UTILITY CROSSING.

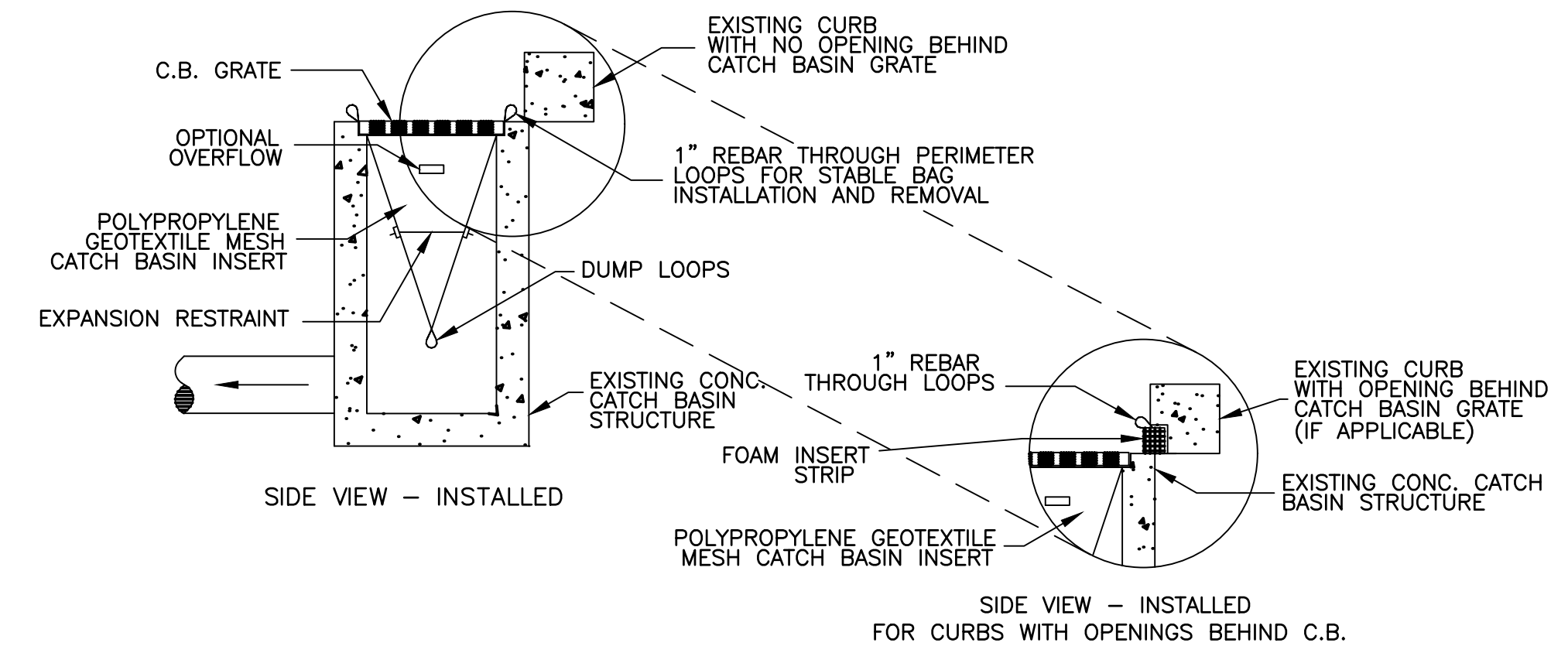
**SEWER AND DRAIN CROSSING**

SCALE: NONE



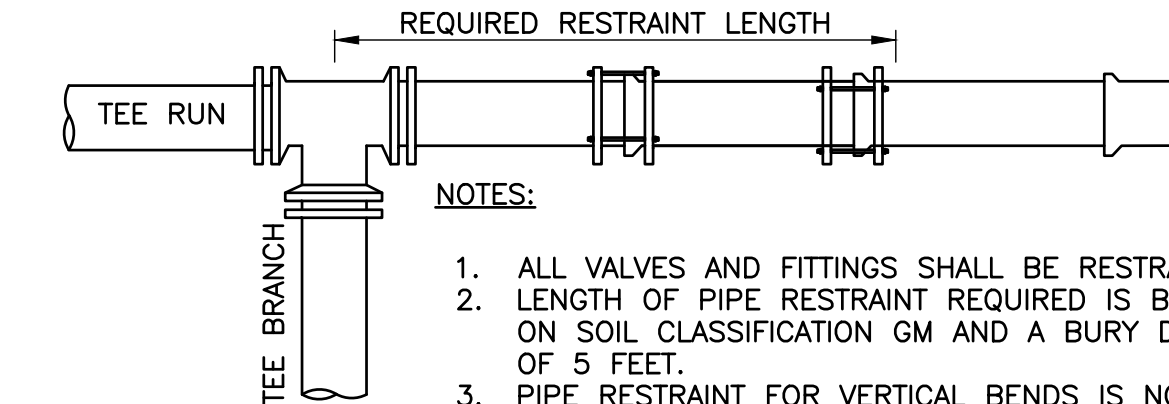
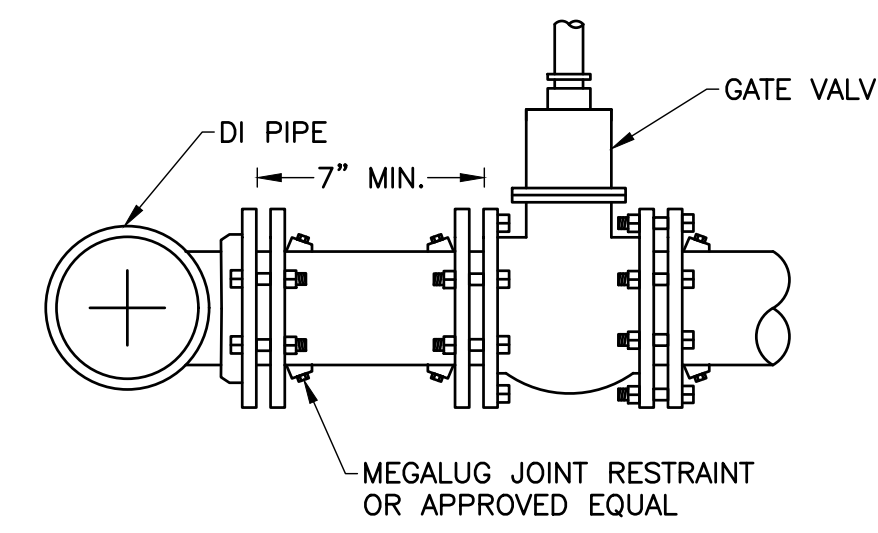
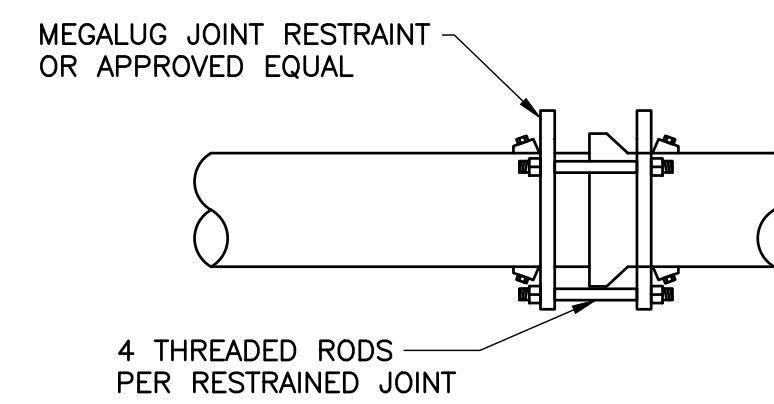
**24" WATER MAIN SERVICE CONNECTION AND 48" WATER MAIN CROSSING (TYP.)**

SCALE: NONE



**SILT SACK**

SCALE: NONE



**NOTES:**

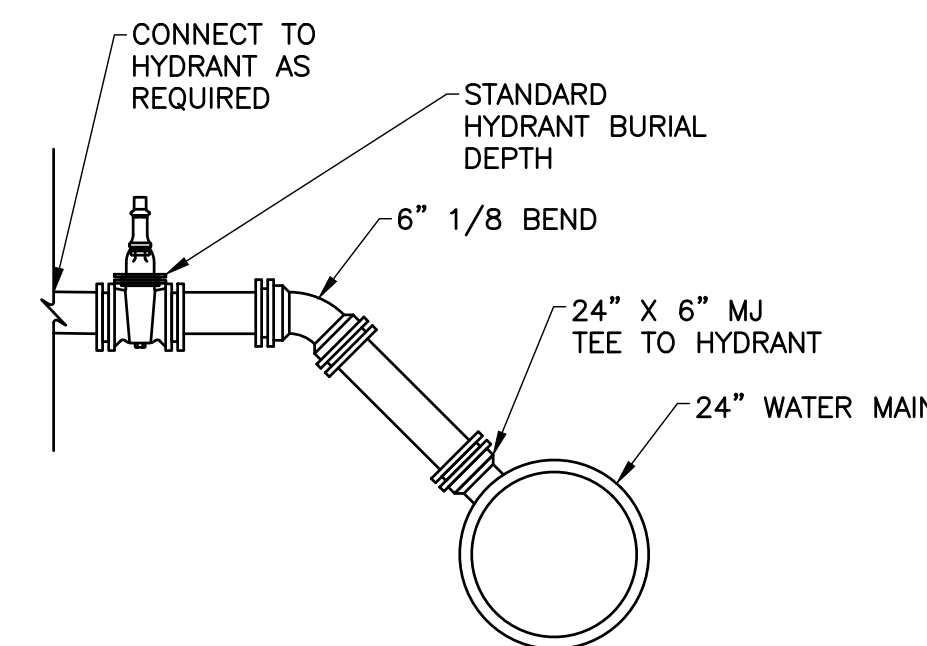
- ALL VALVES AND FITTINGS SHALL BE RESTRAINED.
- LENGTH OF PIPE RESTRAINT REQUIRED IS BASED ON SOIL CLASSIFICATION GM AND A BURY DEPTH OF 5 FEET.
- PIPE RESTRAINT FOR VERTICAL BENDS IS NOT COVERED BY THIS DETAIL.
- ALL JOINTS THAT FALL WITHIN THE REQUIRED RESTRAINT LENGTH SHALL BE MECHANICALLY RESTRAINED.

PIPE SIZE (IN)	MINIMUM LENGTH OF PIPE TO BE RESTRAINED (IN FEET)								
	1/4 BEND (90°)	1/8 BEND (45°)	1/16 BEND (22°)	PLUG/CAP	TEE* (2')	TEE* (5')	TEE* (10')	TEE* (15')	TEE* (20')
6"	12	5	3	21	18	10	1	1	1
8"	16	7	4	28	24	16	4	1	1
12"	22	10	5	40	37	28	16	4	1
16"	29	12	6	51	48	39	27	15	3
20"	37	16	8	87	78	66	45	25	4
24"	43	18	9	102	93	81	60	39	18
36"	59	25	12	144	136	123	101	79	58

\*The values in parenthesis (X) indicate the required restraint length for each side of the Tee Run. The values in the column are the required restraint length for the Tee Branch.

**MECHANICAL JOINT RESTRAINT**

SCALE: NONE



**FACILITY HYDRANT PIPING DETAIL**

SCALE: NONE

CIVIL  
WATER MAIN DETAILS

CITY OF WORCESTER,  
MASSACHUSETTS

CHANDLER STREET  
WATER MAIN IMPROVEMENTS

Designed By: SHD/KEC  
Checked By: JMG  
Drawn By: JJO/AMH

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Description

Date

Rev.



T&H NO.: 6675  
DATE: APRIL 2026  
SCALE: AS NOTED

\\T&H-PROD-MA\Project\_Files\Worcester\6675\_07 - Large Diameter Valve Replacement Design & Bid\CADD\Sheets\6675\_07 Chandler Street and May Street\_REV3.dwg 4/14/2026 2:29 PM JORIEGA