2023 WATER MAIN IMPROVEMENT PROJECT

FOR

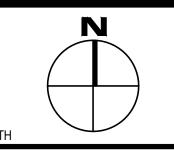
WALKER ROAD, OCEAN STREET, MAGNOLIA AVENUE, RAYMOND STREET & TAPPAN STREET

MANCHESTER-BY-THE-SEA, MA AUGUST 2023





SHEET INDEX:			
SHEET NO.:	DESCRIPTION:		
C-000	COVER SHEET		
BASE	BID AREAS		
C-100 C-101 C-102	WALKER ROAD WATER MAIN IMPROVEMENTS WALKER ROAD WATER MAIN IMPROVEMENTS WALKER ROAD WATER MAIN IMPROVEMENTS		
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BOBREK

PO BOX 2185 DANVERS, MA 0192 WWW.gobobrek.COM

MANCHESTER DPW 10 CENTRAL ST MANCHESTER-BY-THE-SEA, MA 01944

CLIENT INFO

2023 WATER MAIN IMPROVEMENT PROJECT

ROJECT INFO

REV DESCRIPTION DATI

08.03.2021

COVER

SHEET NAME

C-000

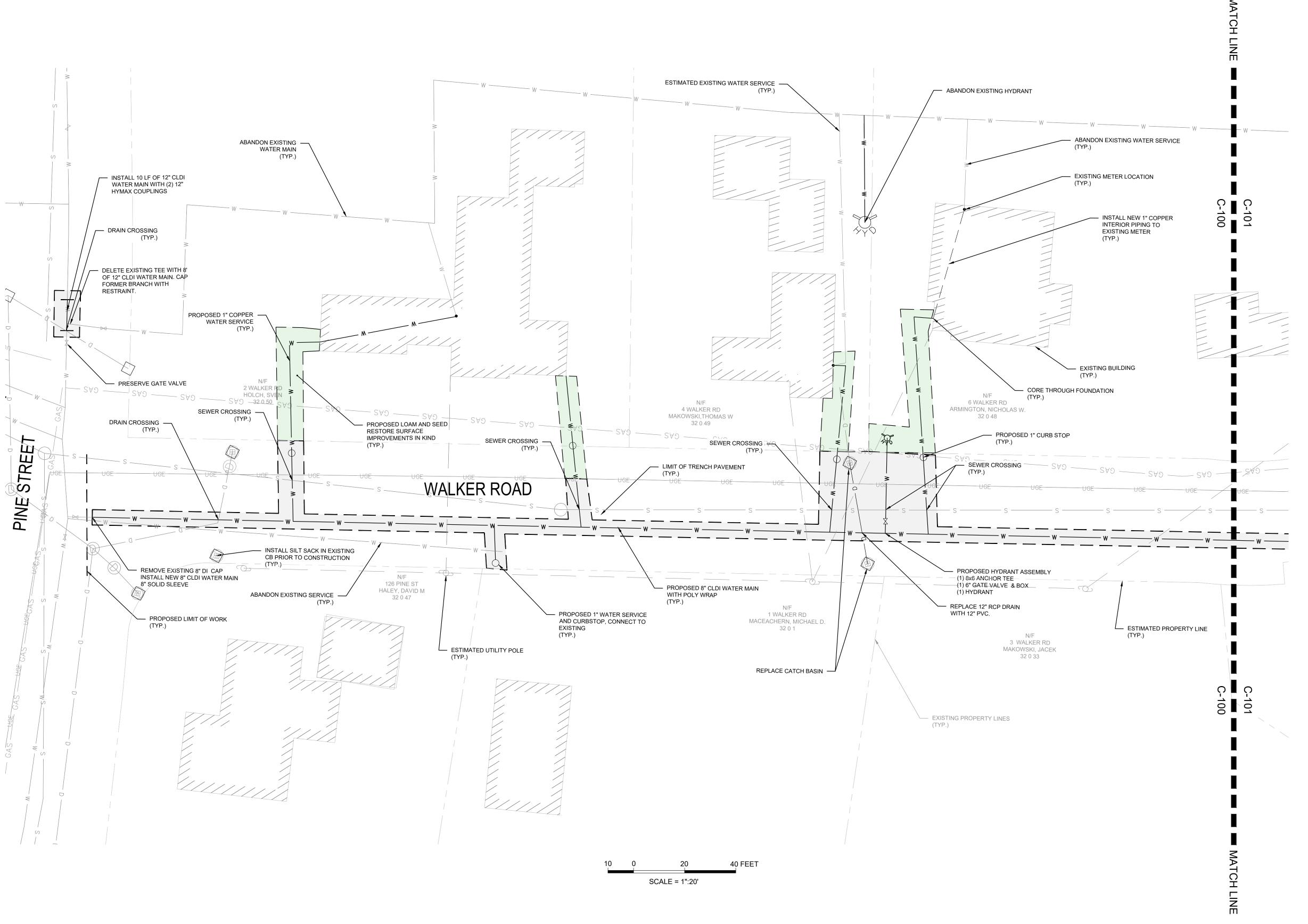
DR BY: JJS

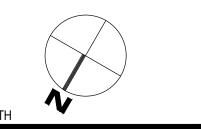
CHK BY: JPB

PROJ NO: 18-014

DATE: AUGUST 2023

- 1. BASE MAPPING OF THE PROJECT SITE HAS BEEN TAKEN FROM THE MANCHESTER BY THE SEA, GIS SYSTEM.
- 2. CONTACT THE TOWN OF MANCHESTER BY THE SEA FOR THE MARKING OF MANCHESTER MUNICIPAL UTILITIES, CONTACT DIG-SAFE AT 1-888-344-7233 OR 1-800-322-4844 AT LEAST 72 HOURS PRIOR TO EXCAVATION.
- 3. CONTRACTOR IS TO NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH PROPOSED WORK.
- 4. THIS PLAN DOES NOT NECESSARILY DEPICT THE EXACT LOCATION AND SIZE OF ALL UTILITIES WHICH MAY EXIST AT THIS TIME INSIDE OR OUTSIDE OF EXISTING OR PROPOSED BUILDINGS, ON THE SUBJECT PROPERTY, WITHIN THE STREET RIGHT-OF-WAY, OR ON ABUTTING LOTS.
- 5. THE ADJACENT ABUTTER(S) MUST BE NOTIFIED TWO WEEKS PRIOR TO MOBILIZATION ON A ROADWAY AND 48 HOURS PRIOR TO A SCHEDULED SHUTDOWN. NOTIFICATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. ASSISTANCE MAY BE PROVIDED BY THE TOWN IS STAFF IS AVAILABLE.
- 6. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND RECORDING THE EXACT LOCATION OF EACH PROPOSED UTILITY CONNECTION AND SUBMITTING TO THE ENGINEER/OWNER.
- 7. DURING EXCAVATION AND CONSTRUCTION OF PIPES AND STRUCTURES, TRENCHES MUST BE ADEQUATELY BRACED AND PROTECTED AGAINST CAVE-IN.
- 8. INSTALL 4" TEMPORARY TRENCH PAVEMENT, PER SPECIFICATIONS, AT THE END OF EACH WORK WEEK.
- 9. CONTRACTOR SHALL INSTALL TEMPORARY WATER SERVICE FOR UNINTERRUPTED FIRE AND POTABLE WATER SERVICE TO RESIDENTS IN THE WORK ZONE.
- 10. CONTRACTOR SHALL OBTAIN PLUMBING PERMIT FOR ALL INTERIOR PLUMBING PORTIONS OF THE WORK AND COMPLETE IN ACCORDANCE WITH APPLICABLE REGULATIONS AND LAWS.
- 11. 90 DAYS SHALL PASS BETWEEN TEMPORARY AND PERMANENT TRENCH PAVEMENT





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MANCHESTER DPW 10 CENTRAL ST MANCHESTER-BY-THE-SEA, MA 01944

CLIENT INFO

2023 WATER MAIN IMPROVEMENTS
PROJECT

REV DESCRIPTION DA

AMP:

BASE BID
WALKER ROAD
WATER MAIN
IMPROVEMENTS

HEET NAME:

C-100

SHT NO:

DR BY: JJS

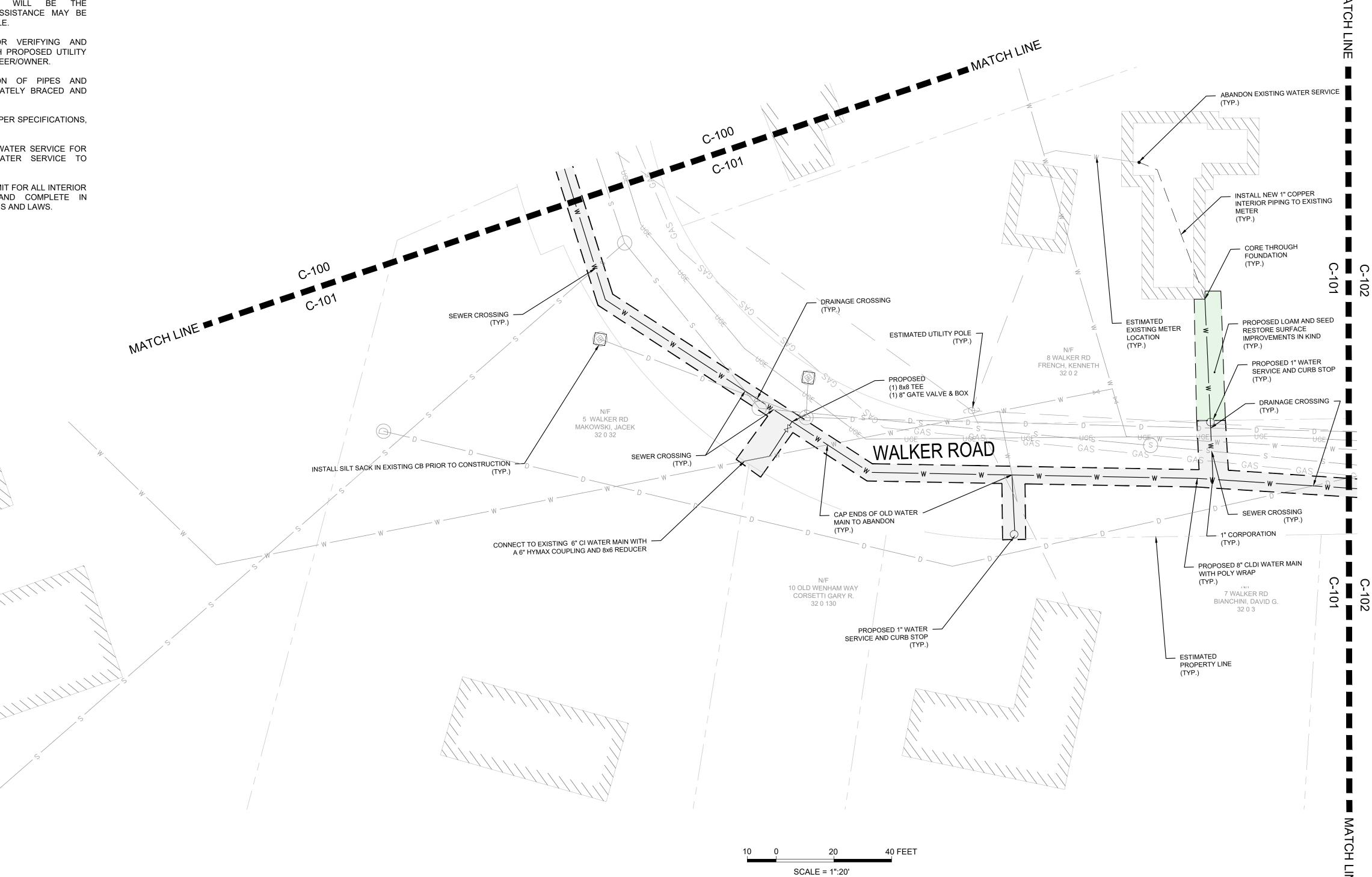
CHK BY: JPB

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DATE: AUGUST 2023

SCALE: 1" = 20'

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Engineering & C

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MANCHESTER DPW 10 CENTRAL ST MANCHESTER-BY-THE-SEA, MA 01944

CLIENT INFO

2023 WATER MAIN IMPROVEMENTS PROJECT

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MP:

BASE BID
WALKER ROAD
WATER MAIN
IMPROVEMENTS

SHEET NA

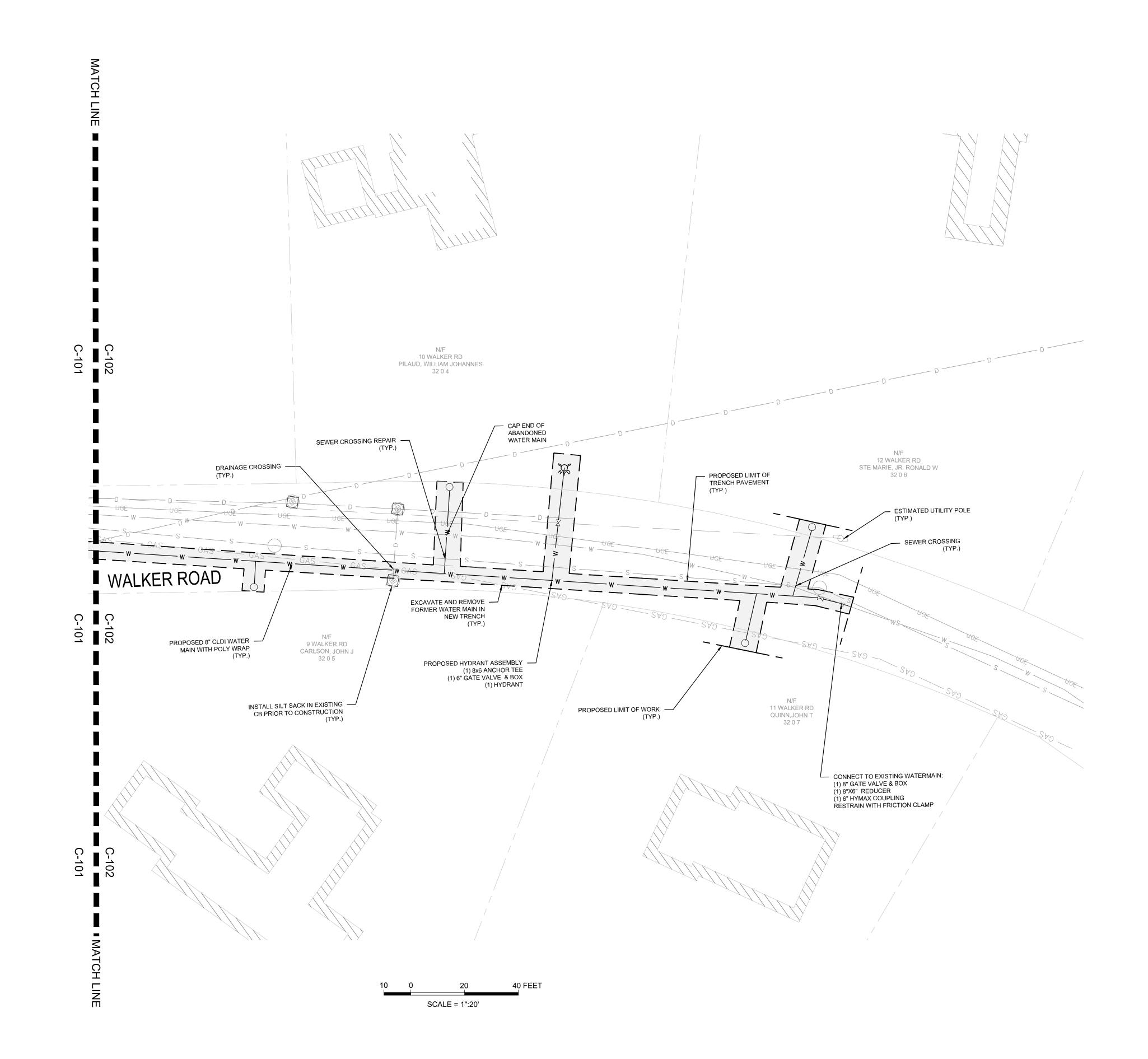
C-10

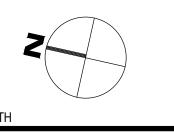
SHT NO:

DR BY: JJS
CHK BY: JPB
PROJ NO: 18-014

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- 8. INSTALL 4" TEMPORARY TRENCH PAVEMENT, PER SPECIFICATIONS, AT THE END OF EACH WORK WEEK.
- 9. CONTRACTOR SHALL DESIGN AND INSTALL TEMPORARY WATER SERVICE FOR UNINTERRUPTED FIRE AND POTABLE WATER SERVICE TO RESIDENTS IN THE WORK ZONE.





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CLIENT INFO

2023 WATER MAIN IMPROVEMENTS PROJECT

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DESCRIPTION	DATE

TAMP:

BASE BID WALKER ROAD WATER MAIN IMPROVEMENTS

SHEET NA

C-102

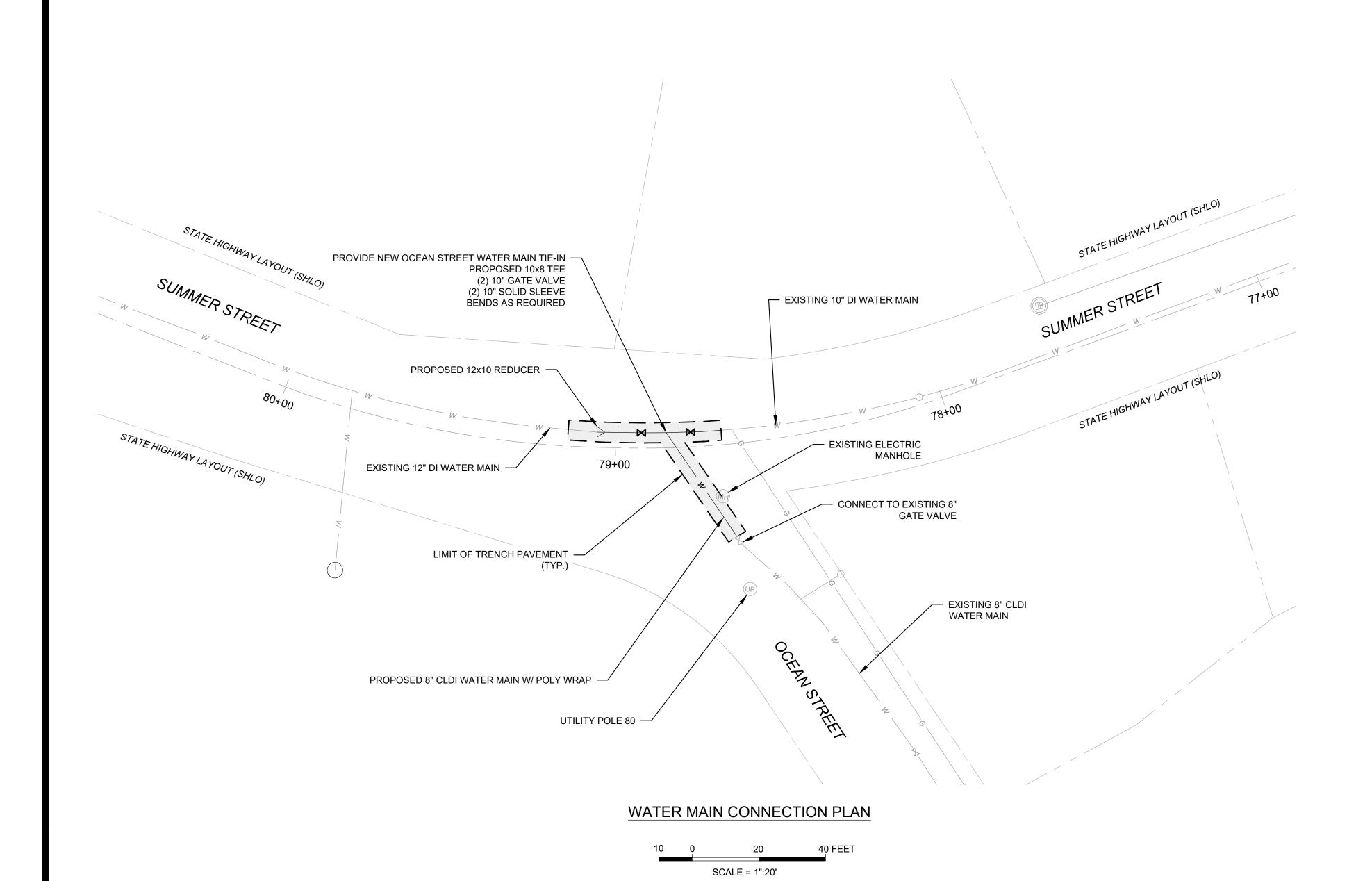
DR BY: JJS
CHK BY: JPB

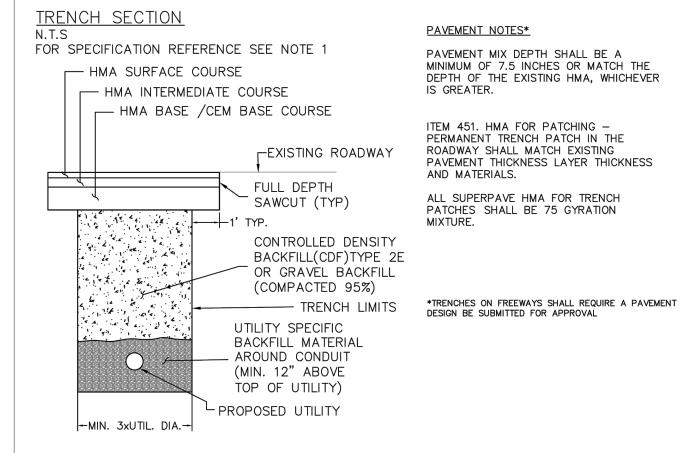
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- 10. CUTTING AND CAPPING FOR SAID UTILITIES AND REMOVAL/ABANDONMENT/CAPPING BEYOND THE PROPERTY LINE SHALL BE AS PER INSTRUCTED BY THE RESPECTIVE UTILITY COMPANY.
- 11. CONTRACTOR TO MAINTAIN TRAFFIC IN ACCORDANCE WITH THE MASSDOT TRAFFIC MANAGEMENT PLAN AND/OR MUTCD STANDARDS.
- 12. CONTRACTOR SHALL COMPLY WITH MASSDOT PERMIT AND CONSTRUCTION STANDARDS.
- 13. 90 DAYS SHALL PASS BETWEEN TEMPORARY AND PERMANENT TRENCH PAVEMENT.





1.) ALL TRENCH PATCHES IN THE ROADWAY SHALL MATCH EXISTING PAVEMENT MATERIALS AND LAYER THICKNESSES. ALL HOT MIX ASPHALT SHALL BE IN ACCORDANCE WITH SUBSECTION 450 HOT MIX ASPHALT PAVEMENT. HMA SURFACE COURSE SHALL RESURFACE (MILL AND OVERLAY) TRAVEL LANE FULL WIDTH WITH JOINTS OUTSIDE OF TRAVEL LANE AND WHEEL PATHS AND AS DIRECTED BY THE ENGINEER.

2.) MATERIAL WHICH MEETS THE SPECIFICATION FOR GRAVEL BORROW, PLACED AND COMPACTED IN LAYERS PER STANDARD SPECIFICATIONS, MAY BE USED IN PLACE OF THE CDF WITH APPROVAL FROM THE DISTRICT

3.)THE VERTICAL SAWCUT FACE AND HORIZONTAL SURFACES SHALL BE TREATED WITH ASPHALT EMULSION FOR TACK COAT. THE LANE WIDTH RESURFACING SHALL BE TREATED WITH ASPHALT EMULSION FOR TACK COAT AND COLD JOINTS IN THE SURFACE COURSE SHALL BE SEALED WITH HMA JOINT SEALANT. TACK SHALL BE APPLIED BETWEEN .07 AND .09 GAL PER SY.

4.) YELLOW METAL FOIL MARKING TAPE SHALL BE PLACED 18" OVER THE CONDUIT (METAL MARKING TAPE/WIRE SHOULD BE USED FOR NON-METALLIC CONDUIT.)

5.) FOR ROADS WITH AN EXISTING CEMENT CONCRETE BASE, A REINFORCED, HIGH EARLY STRENGTH CEMENT CONCRETE BASE SHALL BE CAST IN PLACE TO MEET THE EXISTING PAVEMENT. SPECIFIC JOINT DETAILS WITH THE EXISTING PAVEMENT SHALL BE APPROVED DEPENDENT ON THE EXISTING SITE CONDITIONS. STEEL PLATES SHALL BE USED FOR TRENCHES IN THE TRAVELED LANE AND AS NEEDED.

6.) ALL TRENCH DIMENSIONS SHALL BE IN ACCORDANCE WITH SUB-SECTION 140.80 OF THE MASSDOT STANDARDS AND SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.

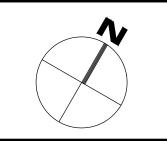


HIGHWAY DIRECTOR.

UTILITY TRENCH PERMANENT PAVEMENT REPAIR

ATE: 1/5/21	NTS
DRAWING	NO.: XXXX
Drawn By: PMC	Checked By: PMC

MASSDOT PERMIT TRENCH DETAIL



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MANCHESTER DPW 10 CENTRAL ST MANCHESTER-BY-THE-SEA, MA 01944

CLIENT INFO

2023 WATER MAIN IMPROVEMENT PROJECT

PROJECT INFO

/	DESCRIPTION	DATE

P: 08.03.2021

ALT. 1 OCEAN ST. AT SUMMER ST. WATER MAIN CONNECTION

SHEET NAMI

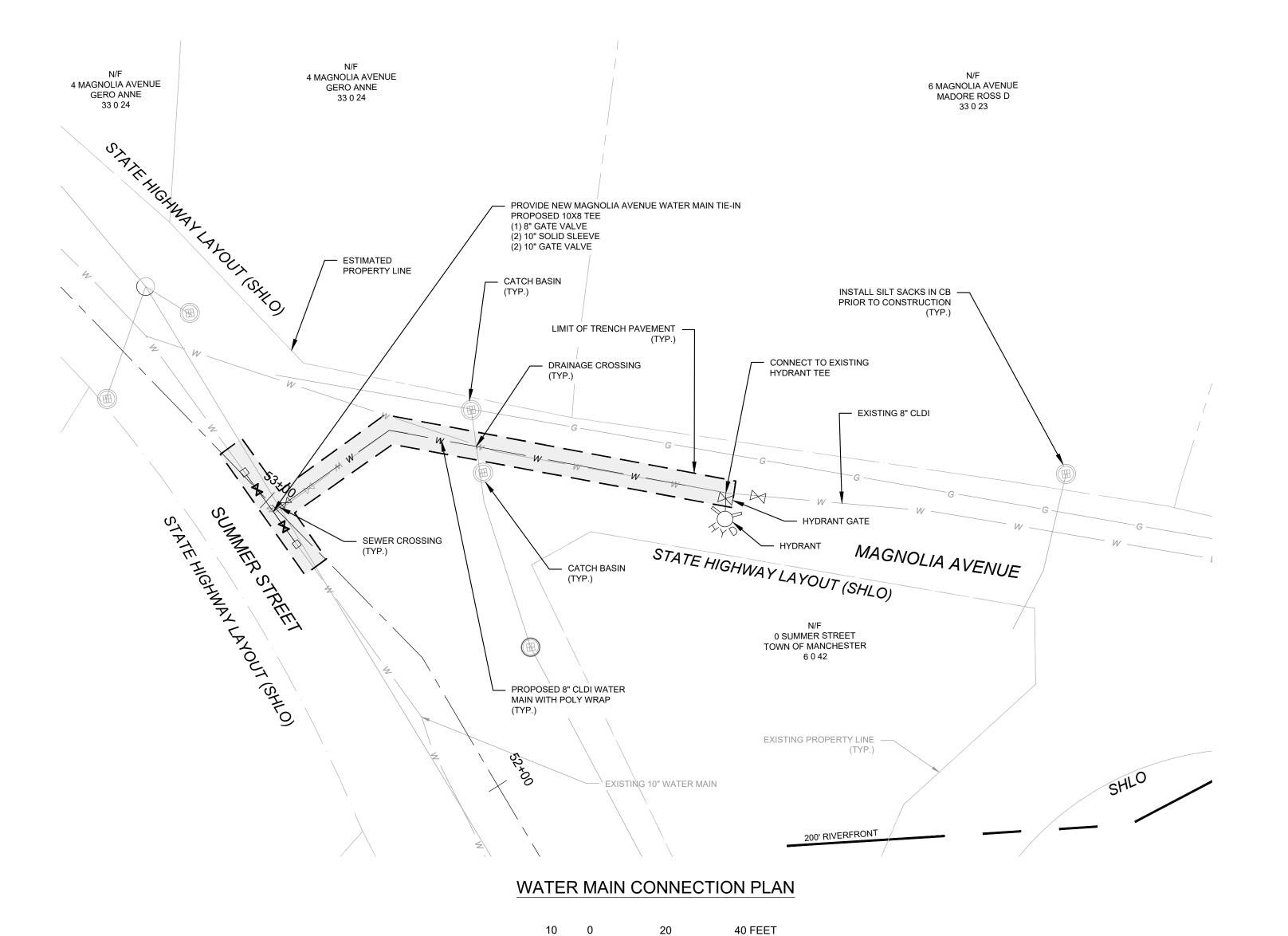
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DR BY: JJS
CHK BY: JPB
PROJ NO: 18-014

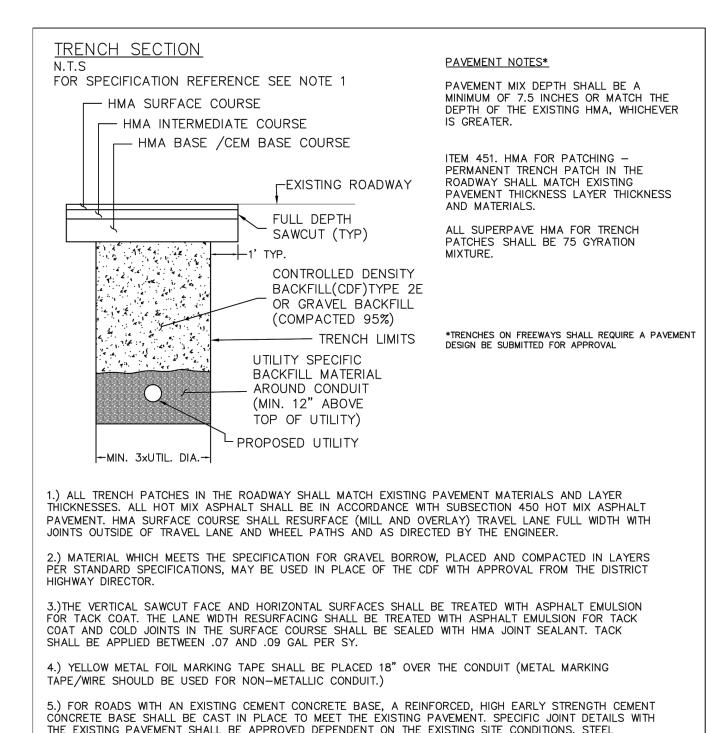
DATE: AUGUST 2023

SCALE: 1"=20'

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- 10. CUTTING AND CAPPING FOR SAID UTILITIES AND REMOVAL/ABANDONMENT/CAPPING BEYOND THE PROPERTY LINE SHALL BE AS PER INSTRUCTED BY THE RESPECTIVE UTILITY COMPANY.
- 11. CONTRACTOR TO MAINTAIN TRAFFIC IN ACCORDANCE WITH THE MASSDOT TRAFFIC MANAGEMENT PLAN.
- 12. ANY DRAINAGE PIPES DAMAGED DURING CONSTRUCTION ARE TO BE REPLACED FROM STRUCTURE TO STRUCTURE.
- 13. CONTRACTOR SHALL COMPLY WITH MASSDOT PERMIT AND CONSTRUCTION STANDARDS.
- 14. 90 DAYS SHALL PASS BETWEEN TEMPORARY AND PERMANENT TRENCH PAVEMENT.



SCALE = 1":20'



CONCRETE BASE SHALL BE CAST IN PLACE TO MEET THE EXISTING PAVEMENT. SPECIFIC JOINT DETAILS WITH THE EXISTING PAVEMENT SHALL BE APPROVED DEPENDENT ON THE EXISTING SITE CONDITIONS. STEEL PLATES SHALL BE USED FOR TRENCHES IN THE TRAVELED LANE AND AS NEEDED.

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UTILITY TRENCH PERMANENT PAVEMENT REPAIR DATE: 1/5/21 NTS DRAWING NO.: XXXX Drawn By: Checked By:
PMC PMC

MASSDOT PERMIT TRENCH DETAIL

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MANCHESTER DPW 10 CENTRAL ST MANCHESTER-BY-THE-SEA, MA 01944

CLIENT INFO

MAIN ROVEMENT M **PROJE**(202 PROJECT INFO

REV	DESCRIPTION	DATE

08.03.2021

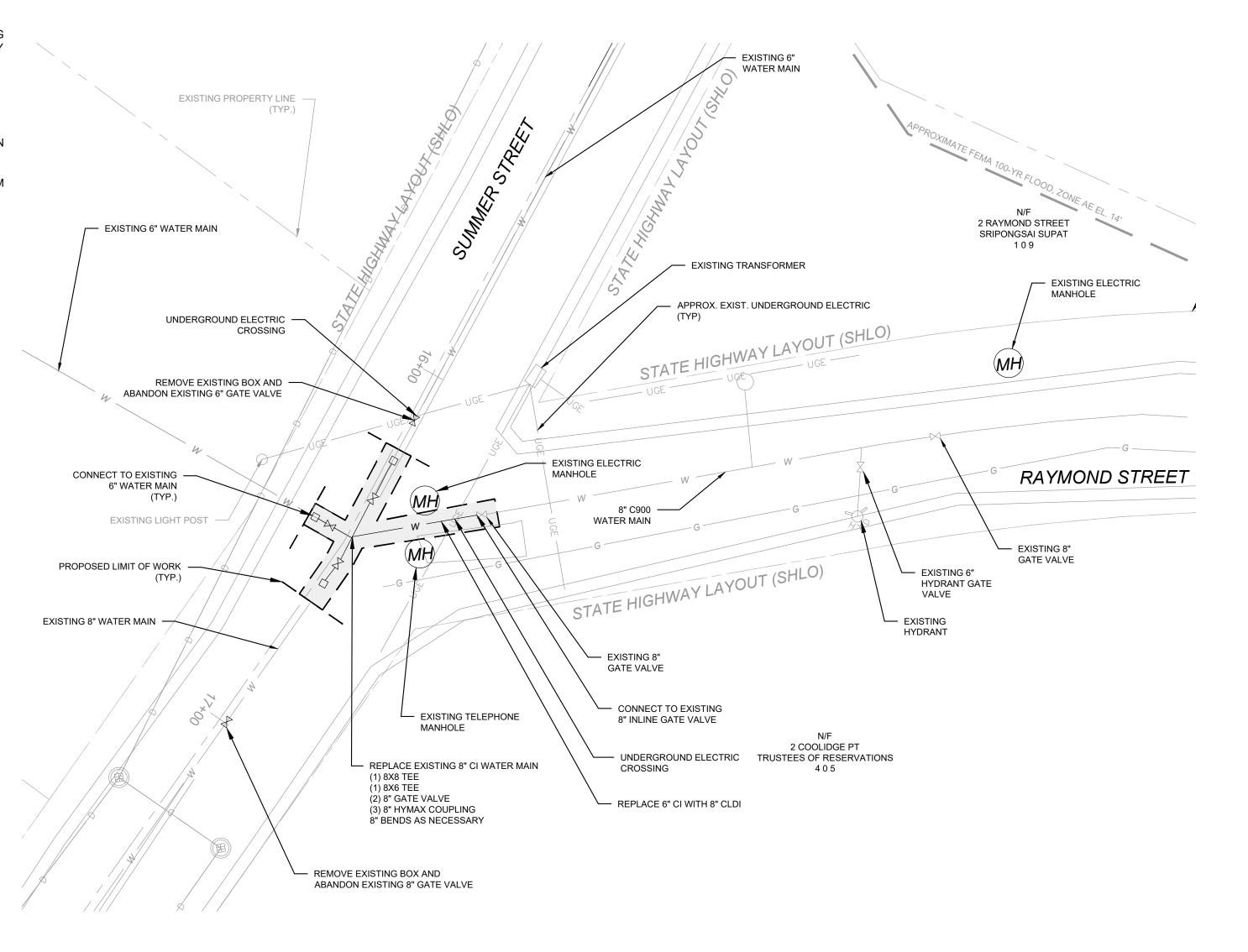
ALT. 2 MAGNOLIA AVE. AT SUMMER ST. WATER MAIN CONNECTION

DR BY: JJS CHK BY: JPB PROJ NO: 18-014

DATE: AUGUST 2023

SCALE: 1"=20'

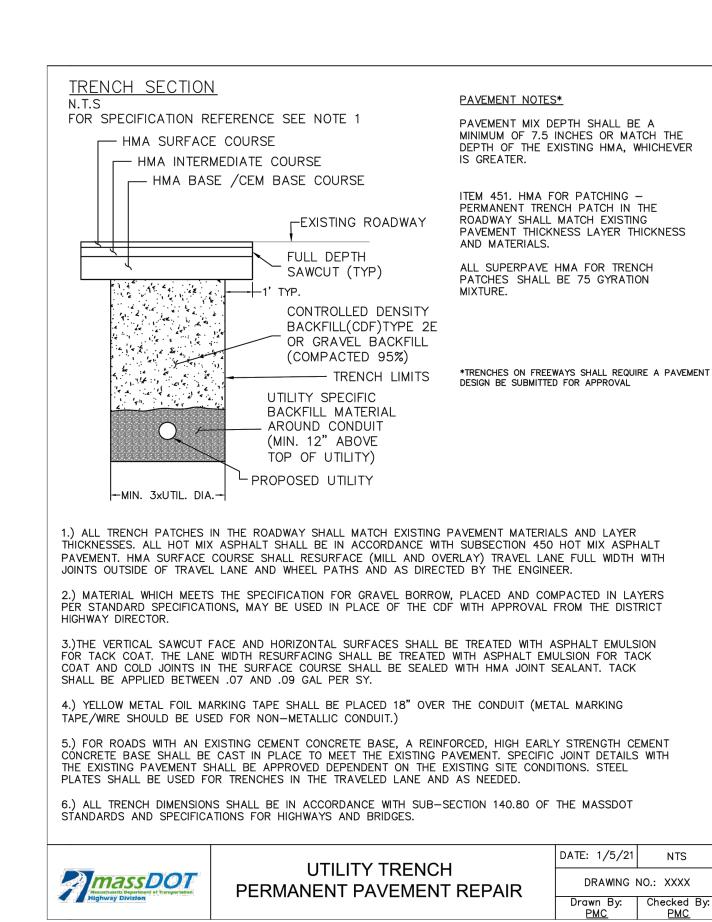
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- 13. ALL FITTINGS TO BE WAX TAPED PER SPECIFICATIONS.
- 14. ALL HARDWARE ON RAYMOND STREET TO BE SS304.
- 15. EXISTING WATER MAINS SHALL BE ABANDONED BY CUTTING AND CAPPING, UPON TESTING * ACCEPTANCE OF NEW WATER MAINS.
- 16. ANY DRAINAGE PIPES DAMAGED DURING CONSTRUCTION ARE TO BE REPLACED FROM STRUCTURE TO STRUCTURE.
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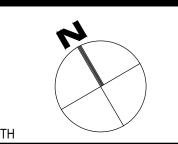
WATER MAIN CONNECTION PLAN

SCALE = 1":20'

40 FEET



MASSDOT PERMIT TRENCH DETAIL



BOBREK

PO BOX 2185 DANVERS, MA 01923 WWW.gobobrek.COM

MANCHESTER DPW 10 CENTRAL ST MANCHESTER-BY-THE-SEA, MA 01944

CLIENT INFO

2023 WATER MAIN IMPROVEMENT PROJECT

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ALT. 3
RAYMOND ST.
AT SUMMER ST
WATER MAIN
CONNECTION

SHEET NAI

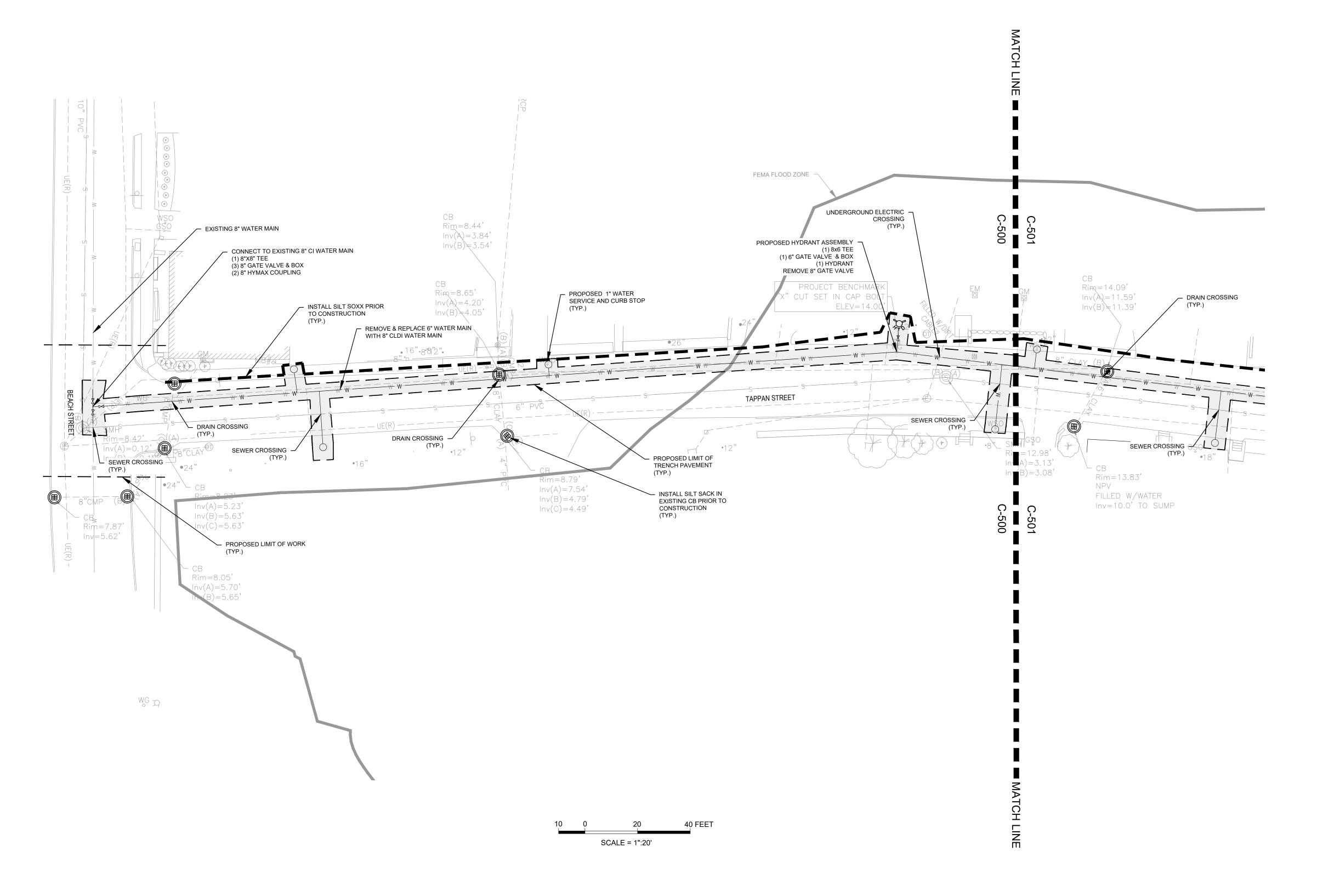
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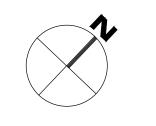
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- 10. CONTRACTOR SHALL NOT BLOCK DRIVEWAY OPENINGS WITH THE SILT SOXX.





BOBREK

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MANCHESTER DPW 10 CENTRAL ST MANCHESTER-BY-THE-SEA, MA 01944

CLIENT INFO

MAIN IMPROVEMENT **WATER** 2023 PROJECT INFO

REV DESCRIPTION DATE

ALT. 4 LOWER TAPPAN WATER MAIN **IMPROVEMENTS**

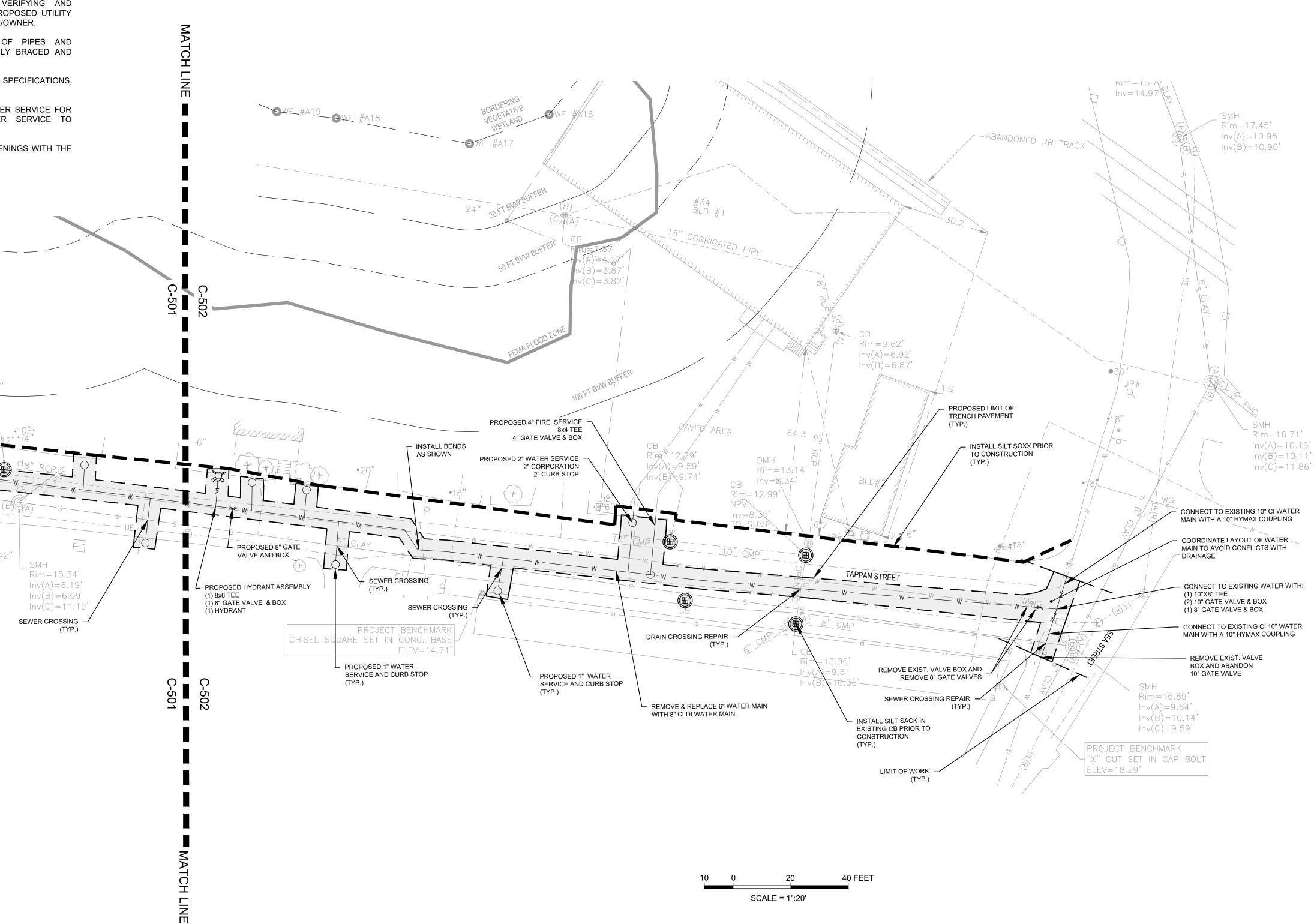
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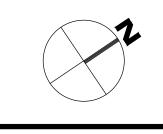
DATE: AUGUST 2023

SCALE: 1" = 20'

GENERAL NOTES 1. BASE MAPPING OF THE PROJECT SITE HAS BEEN TAKEN FROM THE MANCHESTER BY THE SEA, GIS SYSTEM. 2. CONTACT THE TOWN OF MANCHESTER BY THE SEA FOR THE MARKING OF MANCHESTER MUNICIPAL UTILITIES, CONTACT DIG-SAFE AT 1-888-344-7233 OR 1-800-322-4844 AT LEAST 72 HOURS PRIOR TO EXCAVATION. BOBREK 3. CONTRACTOR IS TO NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH PROPOSED WORK. 4. THIS PLAN DOES NOT NECESSARILY DEPICT THE EXACT LOCATION AND SIZE OF ALL UTILITIES WHICH MAY EXIST AT THIS TIME INSIDE OR OUTSIDE OF EXISTING OR PROPOSED BUILDINGS, ON THE SUBJECT PROPERTY, WITHIN THE STREET RIGHT-OF-WAY, OR ON PO BOX 2185 ABUTTING LOTS. DANVERS, MA 01923 WWW.gobobrek.COM 5. THE ADJACENT ABUTTER(S) MUST BE NOTIFIED TWO WEEKS PRIOR TO MOBILIZATION ON A ROADWAY AND 48 HOURS PRIOR TO A SCHEDULED SHUTDOWN. NOTIFICATION WILL BE THE MANCHESTER DPW RESPONSIBILITY OF THE CONTRACTOR. ASSISTANCE MAY BE PROVIDED BY THE TOWN IS STAFF IS AVAILABLE. 10 CENTRAL ST 6. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND MANCHESTER-RECORDING THE EXACT LOCATION OF EACH PROPOSED UTILITY CONNECTION AND SUBMITTING TO THE ENGINEER/OWNER. BY-THE-SEA, MA 7. DURING EXCAVATION AND CONSTRUCTION OF PIPES AND STRUCTURES, TRENCHES MUST BE ADEQUATELY BRACED AND 01944 PROTECTED AGAINST CAVE-IN. 8. INSTALL 4" TEMPORARY TRENCH PAVEMENT, PER SPECIFICATIONS, AT THE END OF EACH WORK WEEK. CLIENT INFO BORDERING VEGETATIVE WETLAND 9. CONTRACTOR SHALL INSTALL TEMPORARY WATER SERVICE FOR UNINTERRUPTED FIRE AND POTABLE WATER SERVICE TO MAIN RESIDENTS IN THE WORK ZONE. 10. CONTRACTOR SHALL NOT BLOCK DRIVEWAY OPENINGS WITH THE Inv(A) = -0.22SILT SOXX. IMPROVEMENT Inv(B) = -0.52**WATER** FEMA FLOOD ZONE 30 FT BVW BUFFER FEMA FLOOD ZONE UNDERGROUND ELECTRIC CROSSING 50 FT BVW BUFFER PROPOSED HYDRANT ASSEMBLY -2023 (1) 6" GATE VALVE & BOX (1) HYDRANT REMOVE 8" GATE VALVE Rim = 14.09'PROJECT BENCHM " CUT SET IN CAP B $Inv(\lambda) = 11.59'$ - DRAIN CROSSING PROJECT INFO $Inv(B) \neq 11.39'$ - PROPOSED LIMIT OF TRENCH PAVEMENT INSTALL SILT SOXX PRIOR TO CONSTRUCTION 100 FT BVW BUFFER TAPPAN STREET SEWER CROSSING FILLED W/WATER SEWER CROSSING -Inv=10.0' TO SUMP (TYP.) REV DESCRIPTION PROPOSED 8" GATE REMOVE & REPLACE 6" CI WATER MAIN WITH 8" CLDI WATER MAIN VALVE AND BOX Rim = 15.34'Inv(A) = 6.19'PROPOSED HYDRANT ASSEMBLY (1) 8x6 TEE (1) 6" GATE VALVE & BOX (1) HYDRANT Inv(B) = 6.09Inv(C) = 11.19SEWER CROSSING 08.03.2021 ALT. 4 LOWER TAPPAN WATER MAIN **IMPROVEMENTS** SCALE = 1":20' DR BY: JJS CHK BY: JPB PROJ NO: 18-014 BID SET - NOT FOR CONSTRUCTION DATE: AUGUST 2023 SCALE: 1" = 20'

GENERAL NOTES 1. BASE MAPPING OF THE PROJECT SITE HAS BEEN TAKEN FROM THE MANCHESTER BY THE SEA, GIS SYSTEM. 2. CONTACT THE TOWN OF MANCHESTER BY THE SEA FOR THE MARKING OF MANCHESTER MUNICIPAL UTILITIES, CONTACT DIG-SAFE AT 1-888-344-7233 OR 1-800-322-4844 AT LEAST 72 HOURS PRIOR TO EXCAVATION. 3. CONTRACTOR IS TO NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH PROPOSED WORK. 4. THIS PLAN DOES NOT NECESSARILY DEPICT THE EXACT LOCATION AND SIZE OF ALL UTILITIES WHICH MAY EXIST AT THIS TIME INSIDE OR OUTSIDE OF EXISTING OR PROPOSED BUILDINGS, ON THE SUBJECT PROPERTY, WITHIN THE STREET RIGHT-OF-WAY, OR ON ABUTTING LOTS. 5. THE ADJACENT ABUTTER(S) MUST BE NOTIFIED TWO WEEKS PRIOR TO MOBILIZATION ON A ROADWAY AND 48 HOURS PRIOR TO A SCHEDULED SHUTDOWN. NOTIFICATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. ASSISTANCE MAY BE PROVIDED BY THE TOWN IS STAFF IS AVAILABLE. 6. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND RECORDING THE EXACT LOCATION OF EACH PROPOSED UTILITY CONNECTION AND SUBMITTING TO THE ENGINEER/OWNER. 7. DURING EXCAVATION AND CONSTRUCTION OF PIPES AND STRUCTURES, TRENCHES MUST BE ADEQUATELY BRACED AND PROTECTED AGAINST CAVE-IN. 8. INSTALL 4" TEMPORARY TRENCH PAVEMENT, PER SPECIFICATIONS, AT THE END OF EACH WORK WEEK. 9. CONTRACTOR SHALL INSTALL TEMPORARY WATER SERVICE FOR UNINTERRUPTED FIRE AND POTABLE WATER SERVICE TO RESIDENTS IN THE WORK ZONE. 10. CONTRACTOR SHALL NOT BLOCK DRIVEWAY OPENINGS WITH THE SILT SOXX.





BOBREK

PO BOX 2185 DANVERS, MA 01923 WWW.gobobrek.COM

MANCHESTER DPW 10 CENTRAL ST MANCHESTER-BY-THE-SEA, MA 01944

CLIENT INFO

2023 WATER MAIN IMPROVEMENT PROJECT

REV DESCRIPTION DATE

08.03.2021

ALT. 4
UPPER TAPPAN
WATER MAIN
IMPROVEMENTS

SHEET NAI

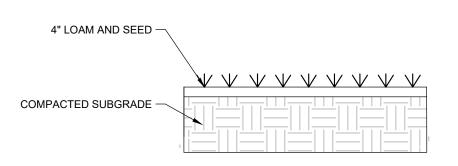
C-502

DR BY: JJS
CHK BY: JPB
PROJ NO: 18-014

SCALE: 1" = 20'

PROJ NO: 18-014

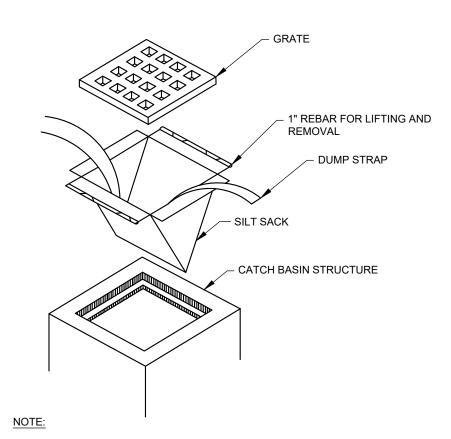
DATE: AUGUST 2023



GRASS RESTORATION

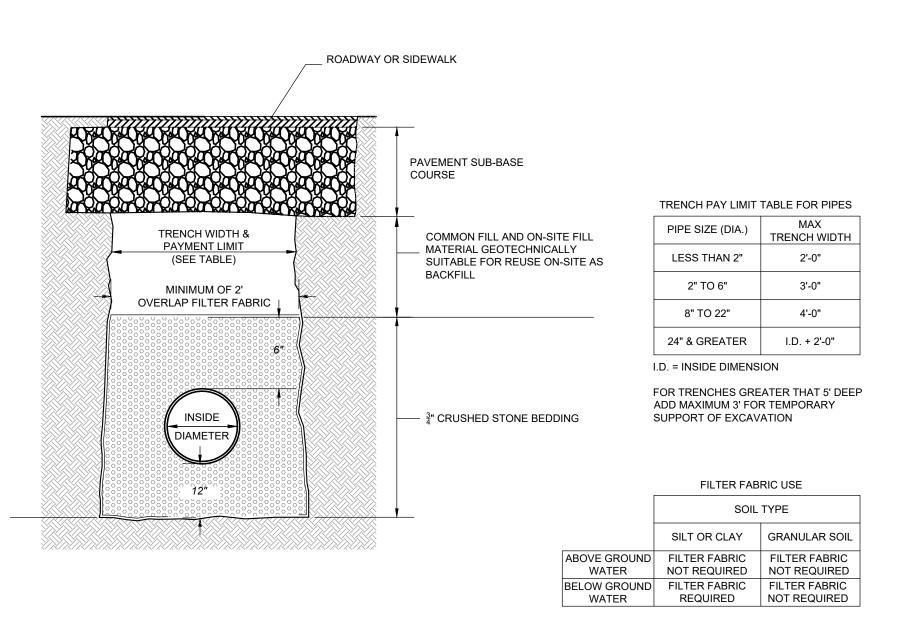
NOT TO SCALE

NOTES:
1. CONTRACTOR RESPONSIBLE FOR GRASS
ESTABLISHMENT AND WATERING FOR 1
GROWING SEASON.



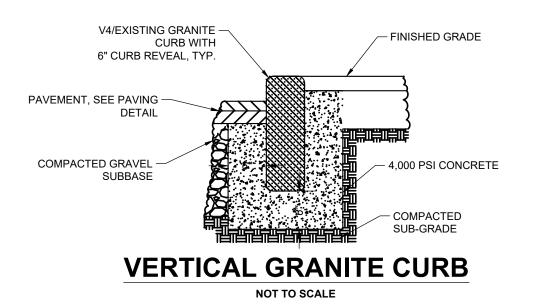
- 1. INSTALL SILTSACK PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. EMPTY OR REMOVE SEDIMENT FROM SILTSACK WHEN RESTRAINT CORD IS NO LONGER VISIBLE. CLEAN, RINSE, AND REPLACE AS NEEDED.
- 2. SILT SACKS TO BE INSTALLED AND MAINTAINED DURING CONSTRUCTION OPERATIONS.
- 3. CONTRACTOR SHALL PROVIDE SILT SACKS WITH OVERFLOW ORIFICE.

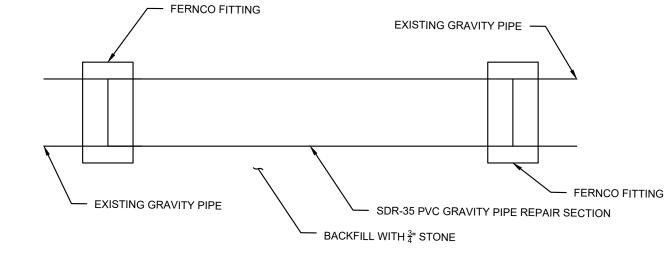
TYPICAL EROSION CONTROL - SILT SACK



TYPICAL UTILITY TRENCH
NOT TO SCALE

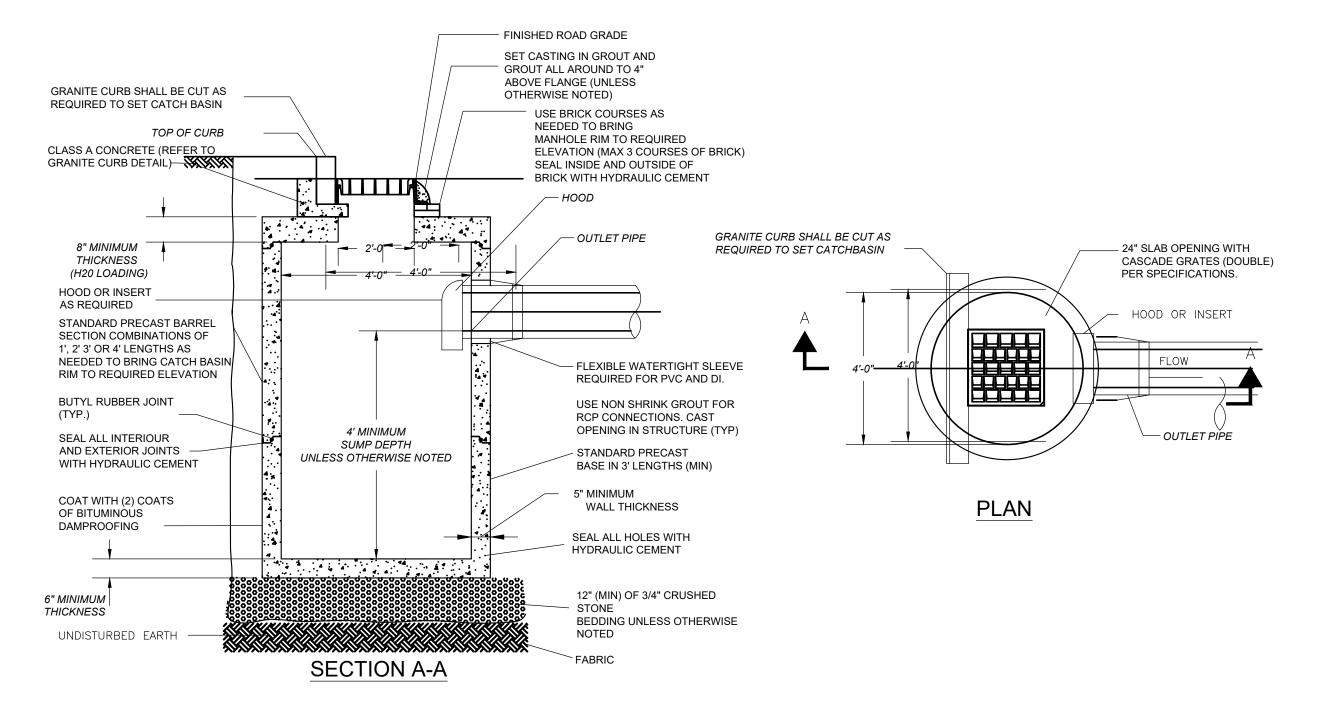
ANY LENGTHS OF PIPE BETWEEN STRUCTURES OVER 150' IN LENGTH SHALL HAVE A BENTONITE CHIP DAM INSTALLED 1' WIDE BY PIPE BEDDING CROSS SECTION





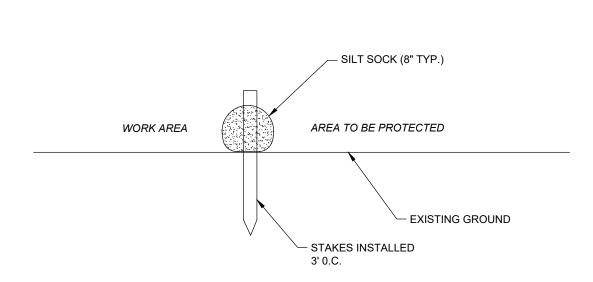
TYPICAL PVC PIPE REPAIR DETAIL

NOT TO SCALE



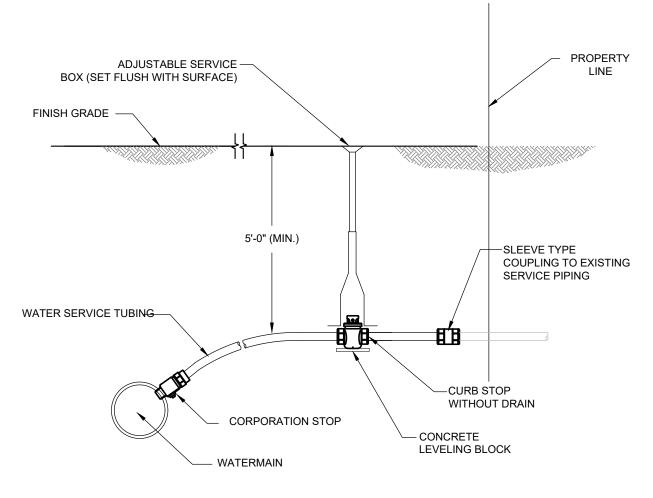
CATCH BASIN

NOT TO SCALE



TYPICAL EROSION CONTROL - SILT SOXX

NOT TO SCALE



NOTES:

- ALL JOINTS SHALL BE COMPRESSION TYPE.
- 2. WATER SERVICES SHALL BE BACKFILLED WITH SAND BY HAND TO 6" ABOVE COPPER TUBING AT 98% COMPACTION
- 3. CORPORATION STOP LARGER THAN ONE INCH SHALL HAVE A SADDLE
- 4. SERVICE TO BE WRAPPED WITH #12 TRACER WIRE FROM CORPORATION TO CURB STOP AS
- 5. CORPORATIONS INSTALLED AFTER CIPP LINING SHALL BE INSTALLED WITH SADDLE.

WATER SERVICE CONNECTION
NOT TO SCALE

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MANCHESTER DPW 10 CENTRAL ST MANCHESTER-BY-THE-SEA, MA

CLIENT INFO

2023 WATER MAIN IMPROVEMENT PROJECT

PROJECT INFO

: 08.03.2021

DETAILS I

SHEET NAME:

C-600

SHT NO:

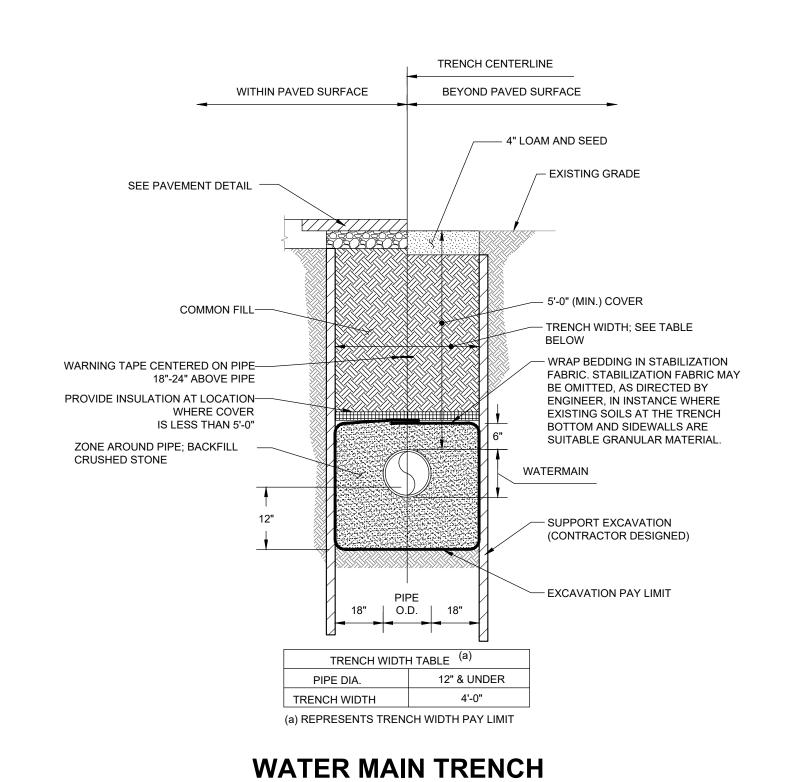
DR BY: JJS

CHK BY: JPB

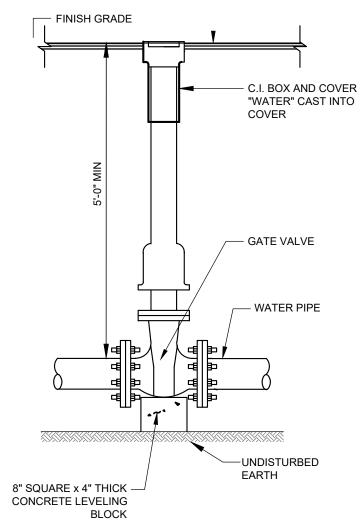
PROJ NO: 18-014

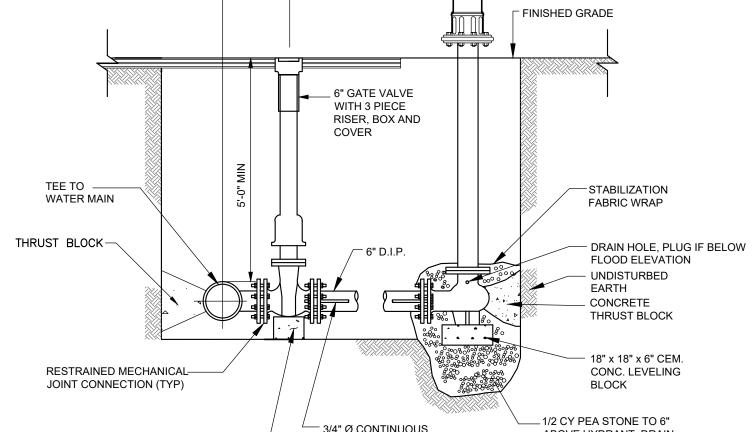
DATE: AUGUST 2023

SCALE: 1"=20'



NOT TO SCALE



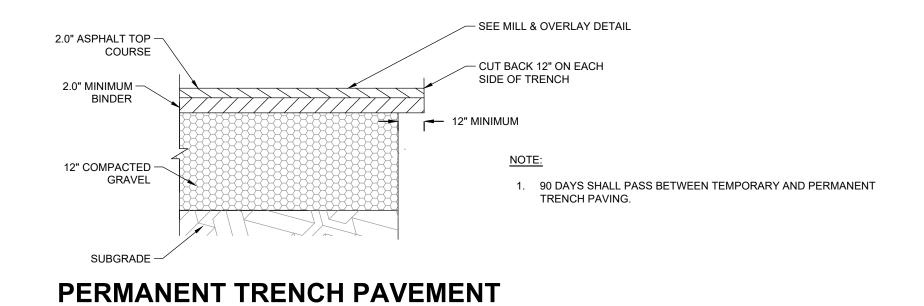


2'-6"

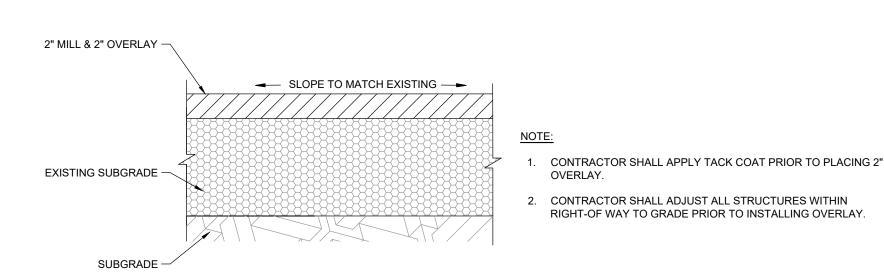
FIRE HYDRANT

VARIES

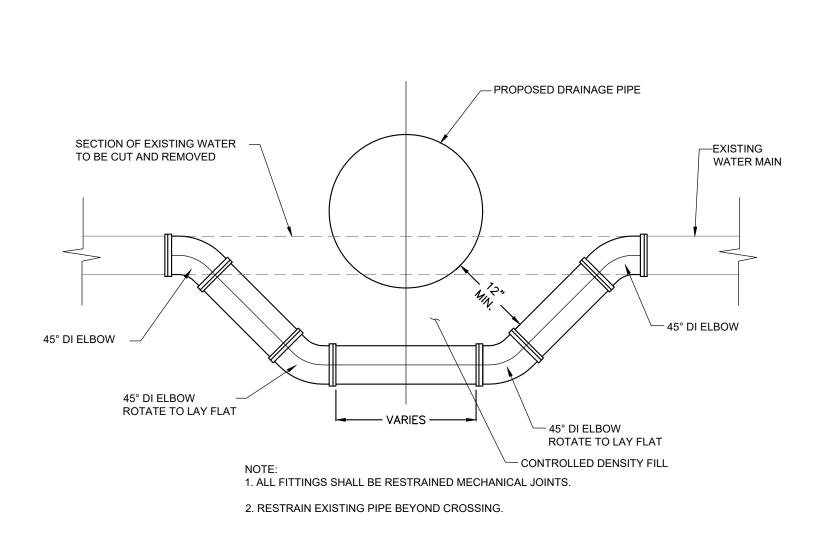
4" BINDER OR MATCH -EXISTING DEPTH (WHICH EVER IS GREATER) 12" COMPACTED — SUBGRADE -



NOT TO SCALE



NOT TO SCALE



DETAILS II MILL & OVERLAY

SHEET NAME:

BOBREK

PO BOX 2185

DANVERS, MA 01923

WWW.gobobrek.COM

MANCHESTER DPW

10 CENTRAL ST

MANCHESTER-

CLIENT INFO

MAIN

WATER

2023

PROJECT INFO

REV DESCRIPTION

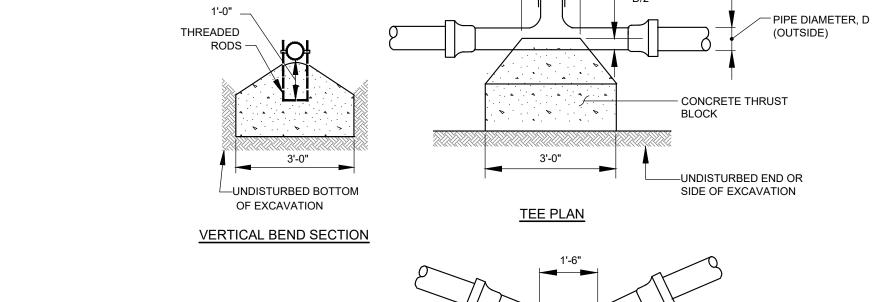
DATE

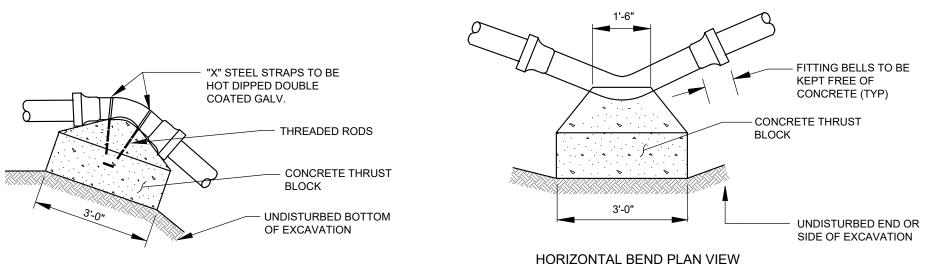
08.03.2021

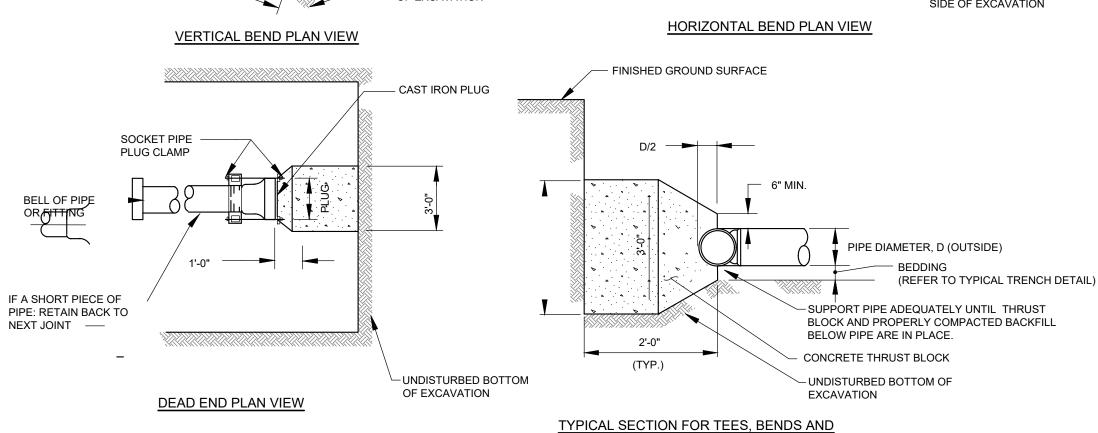
IMPROVEMENT

BY-THE-SEA, MA

DR BY: JJS CHK BY: JPB PROJ NO: 18-014 DATE: AUGUST 2023 SCALE: 1"=20'





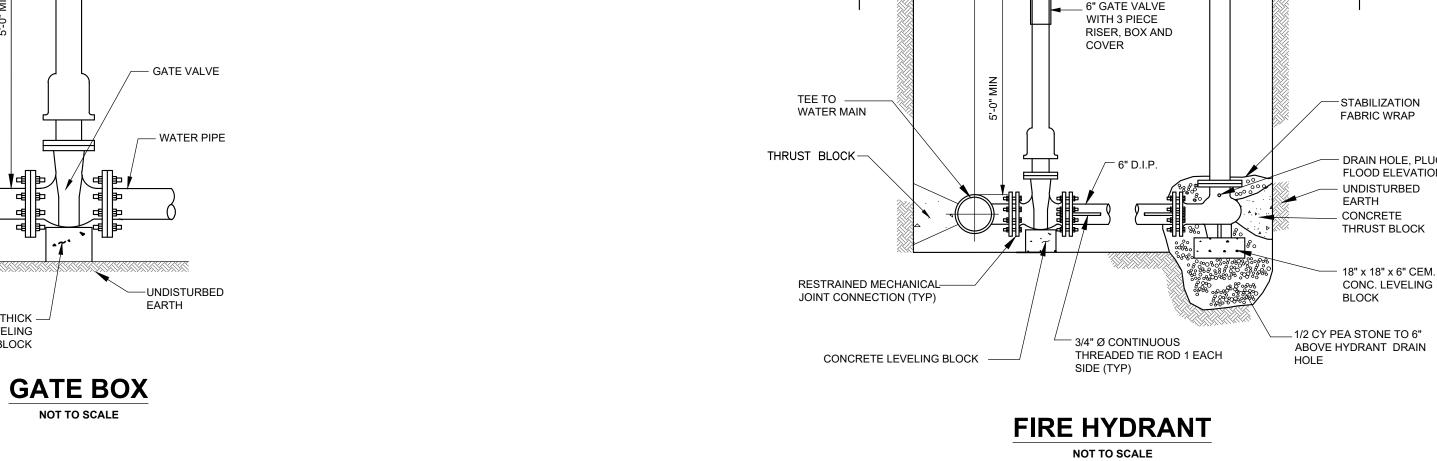


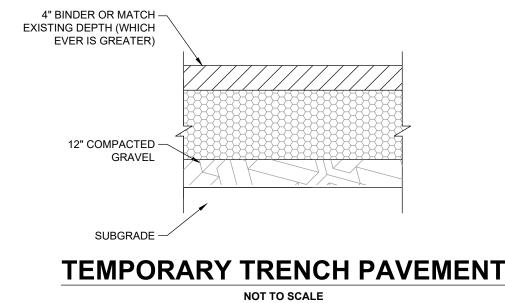
- ALL FITTINGS SHALL BE ANCHORED BY MECHANICAL MEANS OR BY CONCRETE THRUST BLOCKS, OR BOTH. ALL EXPOSED METAL SHALL BE SS304 AS SPECIFIED. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRESS OF 3000 P.S.I. AT 28 DAYS.
- 4. THESE ARE TYPICAL THRUST BLOCK INSTALLATIONS. ACTUAL METHOD OF RESTRAINT MUST BE DETERMINED BY FIELD CONDITIONS. SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER.

TYPICAL THRUST BLOCKS

DEAD ENDS

NOT TO SCALE





WATER LINE CROSSING NOT TO SCALE