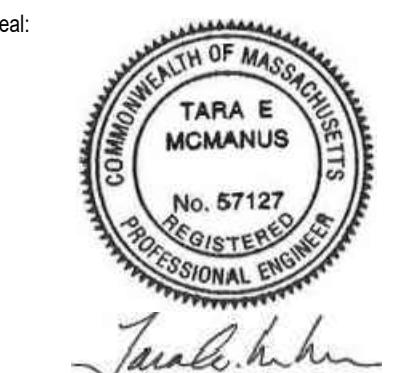


Revisions:		
No.	Date	Description



Scale:	AS NOTED

Date:	AUGUST 2024
Drawn By:	GJK/RWS
Reviewed By:	BAR
Approved By:	TEM
W&S Project No.:	ENG23-0679
W&S File No.:	

LEGEND

DESCRIPTION	EXISTING	PROPOSED
SANITARY SEWER	—S—	—S—
FORCE MAIN	—FM—	—FM—
WATER MAIN	—W—	—W—
TEMPORARY WATER	—TW—	—TW—
STORM DRAIN	—D—	—D—
GAS	—G—	—G—
ELECTRIC	—E—	—E—
OVERHEAD WIRE	—OHW—	—OHW—
TELEPHONE	—T—	—T—
CABLE TELEVISION	CATV	CATV
GRINDER PUMP	○	● GP
SANITARY SEWER MANHOLE	○	● SMH
STORM DRAIN MANHOLE	○	● DMH
ELECTRICAL MANHOLE	○	● EMH
TELEPHONE MANHOLE	○	● TMH
AIR RELEASE VALVE MANHOLE	○	● ARMH
FORCE MAIN CLEANOUT MANHOLE	○	● FMCO
CLEANOUT	○	● CO
CATCH BASIN	□	■ CB
HYDRANT	○	◆
TEMPORARY HYDRANT	○	● H
GATE VALVE	■	■
CHECK VALVE	■	■
CURB STOP	○	■
BUTTERFLY VALVE	■	■
BALL VALVE	■	■
REDUCER	△	▲
CAP OR PLUG	□	□
GAS GATE VALVE	■	●
UTILITY POLE	○	●
GUY POLE	●	
LIGHT POST	○	
EDGE OF PAVEMENT	—	—
EDGE OF UNPAVED ROAD	—	—
CURB	—	—
SIDEWALK	—	—
STONE WALL	○○○○○○○○	
RETAINING WALL	RET WALL	RET WALL
FENCE	—x—x—	—x—x—
GUARD RAIL	—○—○—	—○—○—
DECIDUOUS TREE	○	○
CONIFEROUS TREE	*	*
TREE LINE	○○○○○	○○○○○
STONE BOUND	□	
PROPERTY LINE	—	
EASEMENT LINE	—	
LIMIT OF WORK	—	—
APPROX. LIMIT OF REFUSE	—	—
SPOT ELEVATIONS	x100.5	x100.5
CONTOUR LINES	— 56 —	— 56 —
HOUSE NUMBER	#35	
FLOOR ELEVATION	FL=56.7	
SILL ELEVATION	S=56.7	
WETLAND FLAGS	WF-7 WF-8	
100-FT WETLAND BUFFER	—	
FEMA 100-YR FLOOD PLAIN	—	
CRUSHED STONE / RIP-RAP	○○○○○○○○○○	○○○○○○○○○○
CRUSHED STONE INFILTRATION TRENCH	○○○○○○○○○○	○○○○○○○○○○
DRAINAGE DITCH / SWALE	—	—
STATION NUMBERING	10	10
GUARD POST	△	▲
BOLLARD	○ ^B	●
SIGN	○	
BENCH MARK	○	
PERCOLATION TEST	PT 1	● PT-1
TEST PIT	TP 1	■ TP-1
BORING	B-1	● B-1
PROBE	P-1	● P-1
GROUNDWATER MONITORING WELL	WS-1	● WS-1
GAS MONITORING WELL	GMW-1	● GMW-1
WATER WELL / OBSERVATION WELL	W	
GAS VENT	○ GV	● GV
COMPOST FILTER TUBE	—	—
COMPOST FILTER TUBE & SILT FENCE	—x—x—	
CATCH BASIN FILTER BAG	□	
ROCK OUTCROP	○ TEP	

NOTE: ITEMS SHOWN IN THE LEGEND MAY NOT BE PRESENT IN THESE PLANS

ABBREVIATIONS

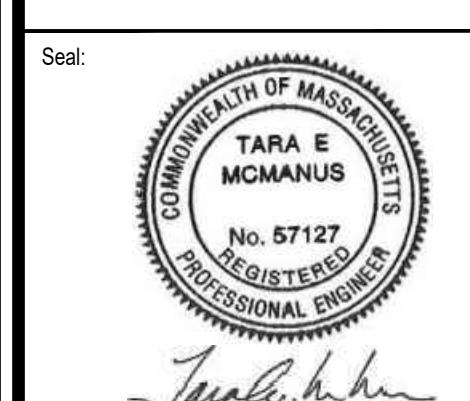
AC	ASBESTOS CEMENT PIPE
ACCP	ASPHALT COATED CORRUGATED METAL PIPE
ARV	AIR RELEASE VALVE
ASTM	ASTM INTERNATIONAL
BC	BITUMINOUS CONCRETE
BIT	BITUMINOUS
BLDG	BUILDING
BM	BENCH MARK
BO	BLOW OFF
BV	BUTTERFLY VALVE
CATV	CABLE TELEVISION
CB	CATCH BASIN
CC	CONCRETE CURB
CI	CAST IRON
CL	CENTERLINE
CMP	CEMENT LINED
CONC	CORRUGATED METAL PIPE
CU FT	CONCRETE
CY	CUBIC FEET
D	CUBIC YARD
DI	STORM DRAIN, DEPTH FROM RIM TO INVERT
DIA	DIAMETER
DMH	DRAIN MANHOLE
DWG	DRAWING
E	EAST, ELECTRIC
EA	EACH
ELEV	EACH FACE
EOP	ELEVATION
EW	EDGE OF PAVEMENT
EXIST	EACH WAY
FLG	EXISTING
FT	FLANGE
G	FEET, FOOT
GALV	NATURAL GAS
GC	GALVANIZED
GR	GRANITE CURB
HC	GRANITE
HORIZ	HOUSE CONNECTION
HP	HORIZONTAL
HYD	HIGH PRESSURE FIRE HYDRANT
I	INVERT
INV	INVERT
ID	INSIDE DIAMETER
IP	IRON PIPE
LB	POUND
LF	LINEAR FEET
LS	LUMP SUM
MAX	MAXIMUM
MB	MAIL BOX
MECH	MECHANICAL
MH	MANHOLE
MassDOT	MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MWRA	MASSACHUSETTS WATER RESOURCES AUTHORITY
N	NORTH
NE	NORTH EAST
NW	NORTH WEST
NF	NOT FOUND
NO #	NUMBER
OD	OUTSIDE DIAMETER
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PE	PLAIN END, POLYETHYLENE
PL	PROPERTY LINE
PVC	PLATE
PVCO	POLYVINYL CHLORIDE
PVMT	MOLECULARLY ORIENTED POLYVINYL CHLORIDE
RCP	PAVEMENT
ROW	REINFORCED CONCRETE PIPE
RQD	RIGHT-OF-WAY
S	ROCK QUALITY
SE	SEWER, SOUTH
SECT	SOUTH EAST
SF	SECTION
SHT	SQUARE FEET
SPEC	SHEET
SO FT	SPECIFICATIONS
SS	SQUARE FEET
STA	SEWER SERVICE, STAINLESS STEEL
STL	STATION
SW	STEEL
T	SIDEWALK, SOUTH WEST
TBM	HYDROSTATIC THRUST, TELEPHONE
THK	TEMPORARY BENCH MARK
TYP	THICK (NESS)
UP	TYPICAL
VC	UTILITY POLE
VERT	VITRIFIED CLAY
W	VERTICAL
W/W	WATER, WEST
W/O	WITHOUT

CONSTRUCTION NOTES

- THE CONTRACTOR SHALL CALL DIGSAFE AT 1-888-344-7233 AND CITY/TOWN DEPARTMENTS AS APPROPRIATE AT LEAST 72 HOURS, SATURDAYS, SUNDAYS, AND HOLIDAYS EXCLUDED, PRIOR TO EXCAVATING AT ANY LOCATION. A COPY OF THE DIGSAFE PROJECT REFERENCE NUMBER(S) SHALL BE GIVEN TO THE OWNER PRIOR TO EXCAVATION.
- LOCATIONS OF EXISTING PIPES, CONDUITS, UTILITIES, FOUNDATIONS AND OTHER UNDERGROUND OBJECTS ARE NOT WARRANTED TO BE CORRECT AND THE CONTRACTOR SHALL HAVE NO CLAIM ON THAT ACCOUNT SHOULD THEY BE OTHER THAN SHOWN.
- TEST PITS TO LOCATE EXISTING UTILITIES MAY BE ORDERED BY THE ENGINEER TO DETERMINE WHETHER TO RAISE OR LOWER THE PROPOSED WATER MAIN TO CLEAR EXISTING UTILITIES OR VERIFY EXISTING UTILITY LOCATION, SIZE AND TYPE.
- STONE WALLS, FENCES, MAIL BOXES, SIGNS, CURBS, LIGHT POLES, ETC. SHALL BE REMOVED AS NECESSARY TO PERFORM THE WORK AND REPLACED TO A CONDITION AT LEAST EQUAL TO THAT BEFORE CONSTRUCTION BEGAN. UNLESS OTHERWISE INDICATED, ALL SUCH WORK SHALL BE INCIDENTAL TO CONSTRUCTION OF THE PROJECT.
- ALL PAVEMENT DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED IN ACCORDANCE WITH THE SPECIFICATIONS AND AS SHOWN ON THE DRAWINGS.
- ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND PAYMENT LIMITS SHALL BE RESTORED AT NO ADDITIONAL COST TO THE OWNER.
- UNLESS OTHERWISE INDICATED, CONCRETE USED FOR PIPE ANCHOR BLOCKS, BACKING, PIPE CRADLES, ARCHES, AND FILL SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
- APPROVED JOINT RESTRAINT METHODS SHALL BE PROVIDED FOR WATER MAINS WHERE ANY BENDS, TEES, PLUGS, OR WYES ARE INSTALLED. CONCRETE THRUST BLOCKS, ANCHOR BLOCKS AND TIE RODS MAY BE USED FOR 6-INCH AND 8-INCH PIPE WHERE JOINT RESTRAINT IS NOT FEASIBLE UPON APPROVAL OF THE ENGINEER. SEE TABLE 1 DETAIL FOR REQUIRED RESTRAINING LENGTHS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- THE CONTRACTOR SHALL NOT STORE ANY APPARATUS, MATERIALS, SUPPLIES, OR EQUIPMENT ON DRAINAGE STRUCTURES OR WITHIN 100 FEET OF WETLANDS.
- NEW WATER MAINS AND SERVICES SHALL BE INSTALLED AT THE MINIMUM DEPTH FROM FINISH GRADE TO TOP OF PIPE AS SHOWN ON THE DRAWINGS. WHERE NECESSARY, NEW WATER MAINS SHALL BE INSTALLED AT A GREATER DEPTH TO CLEAR OBSTACLES SHOWN ON THE DRAWINGS AT NO ADDITIONAL COST TO THE OWNER. MINIMUM CLEARANCES TO UTILITIES, AS SHOWN ON THE DRAWINGS SHALL BE MAINTAINED.
- EXISTING SERVICES SHALL NOT BE CONNECTED TO THE PROPOSED WATER MAIN UNTIL THAT MAIN HAS PASSED PRESSURE TEST AND DISINFECTION REQUIREMENTS.
- EXISTING WATER MAINS OR SERVICES SHALL NOT BE ABANDONED WITHOUT THE APPROVAL OF THE OWNER. WATER SERVICE SHALL NOT BE INTERRUPTED MORE THAN 4 HOURS WITHOUT PRIOR APPROVAL OF THE OWNER. THE OWNER SHALL BE NOTIFIED OF ANY INTERRUPTION IN SERVICE.
- PROPOSED SERVICES AND HYDRANT LOCATIONS ARE APPROXIMATE. SERVICE AND HYDRANT LOCATIONS SHALL BE DETERMINED IN THE FIELD BY THE OWNER.
- LITTLETON ELECTRIC LIGHT AND WATER DEPARTMENT (LELWD) TO EVALUATE GATE BOXES AND HYDRANTS ONSITE AND DETERMINE WHETHER CONTRACTOR SHALL DELIVER TO LELWD OR DISPOSE OF GATE BOXES AND HYDRANTS.

Revisions:		
No.	Date	Description

COA:



Issued For:

BIDDING

Scale: AS NOTED

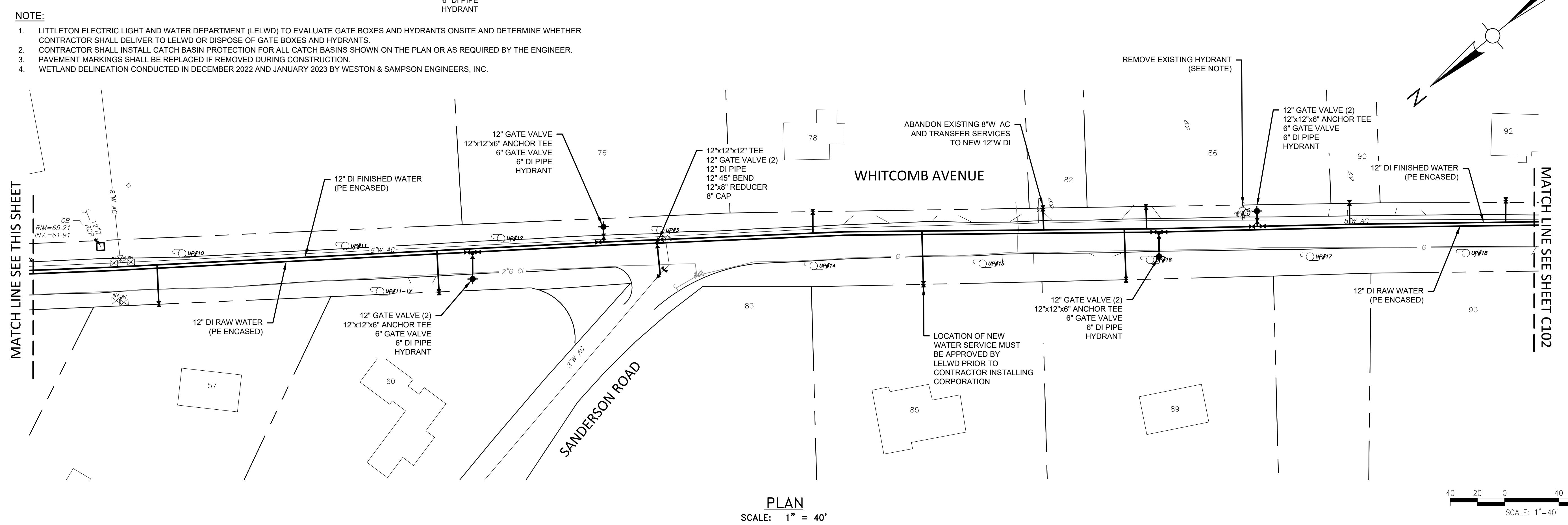
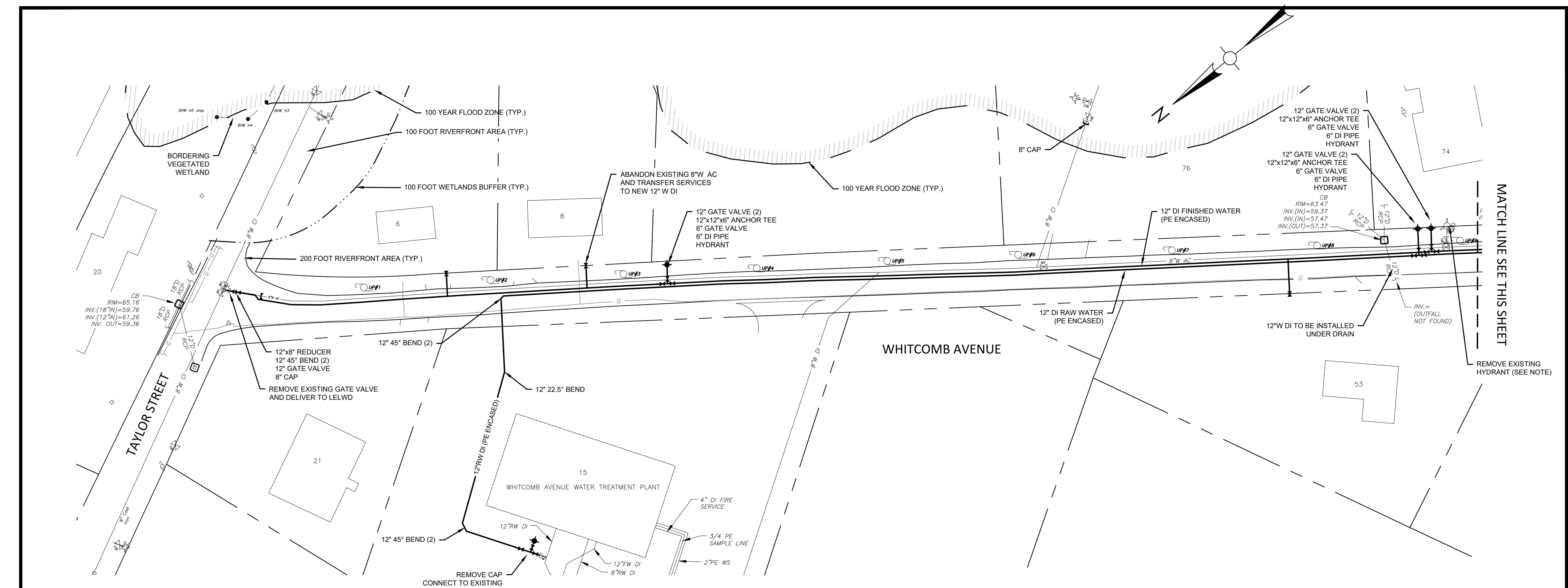
Date: AUGUST 2024
Drawn By: GJKRWS
Reviewed By: BAR
Approved By: TEM
W&S Project No.: ENG23-0679
W&S File No.:

Drawing Title:

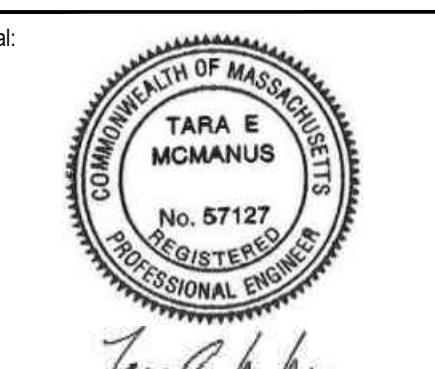
RAW WATER PLAN
WHITCOMB AVENUE

Sheet Number:

C101



Revisions:		
No.	Date	Description



Date:	AUGUST 2024
Drawn By:	GJKRWS
Reviewed By:	BAR
Approved By:	TEM
W&S Project No.:	ENG23-0679
W&S File No.:	

MATCH LINE SEE SHEET C101

MATCH LINE SEE THIS SHEET

PLAN
 SCALE: 1" = 40'

NOTE:

1. LITTLETON ELECTRIC LIGHT AND WATER DEPARTMENT (LELWD) TO EVALUATE GATE BOXES AND HYDRANTS ONSITE AND DETERMINE WHETHER CONTRACTOR SHALL DELIVER TO LELWD OR DISPOSE OF GATE BOXES AND HYDRANTS.
2. CONTRACTOR SHALL INSTALL CATCH BASIN PROTECTION FOR ALL CATCH BASINS SHOWN ON THE PLAN OR AS REQUIRED BY THE ENGINEER.
3. PAVEMENT MARKINGS SHALL BE REPLACED IF REMOVED DURING CONSTRUCTION.
4. WETLAND DELINEATION CONDUCTED IN DECEMBER 2022 AND JANUARY 2023 BY WESTON & SAMPSON ENGINEERS, INC.

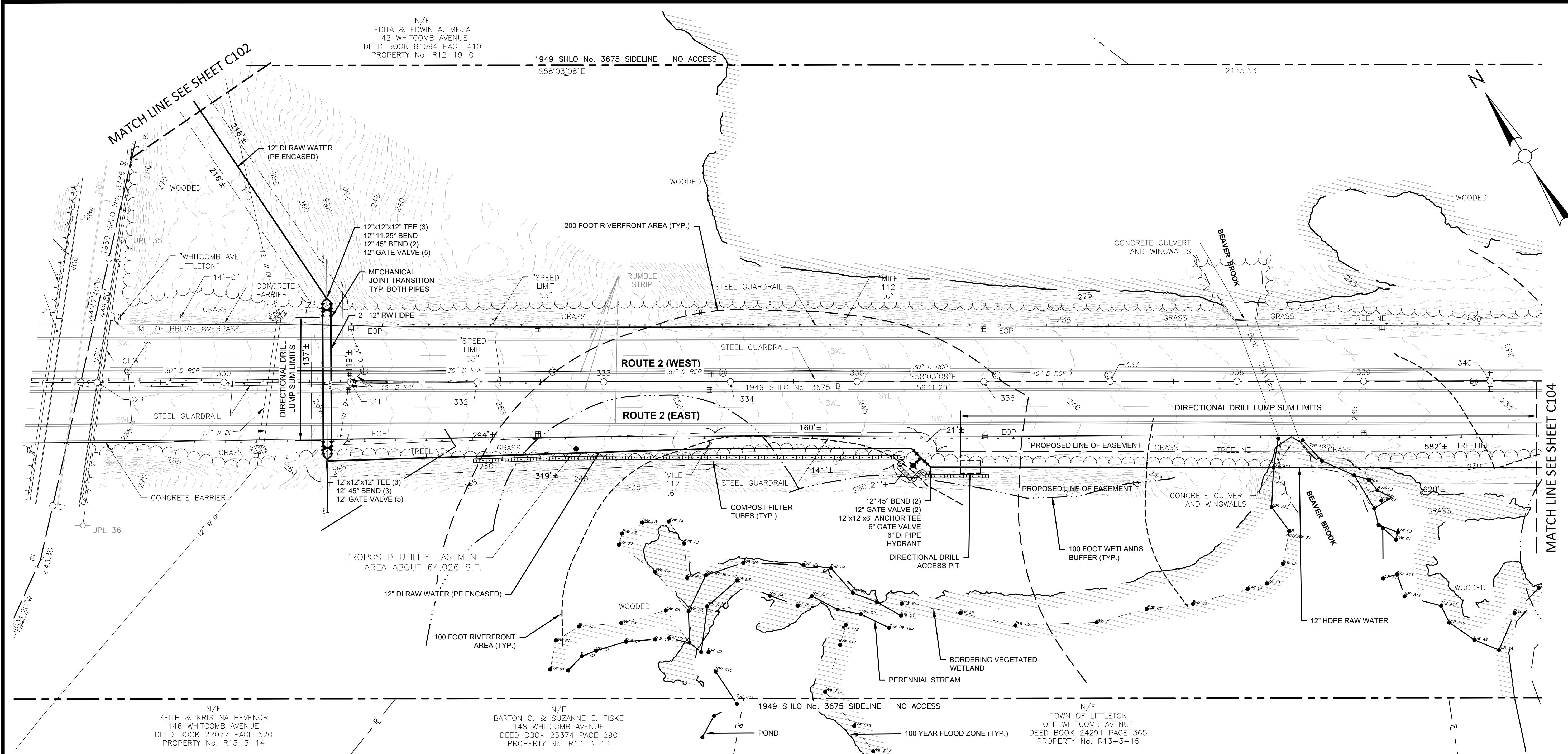
MATCH LINE SEE THIS SHEET

MATCH LINE SEE SHEET C103

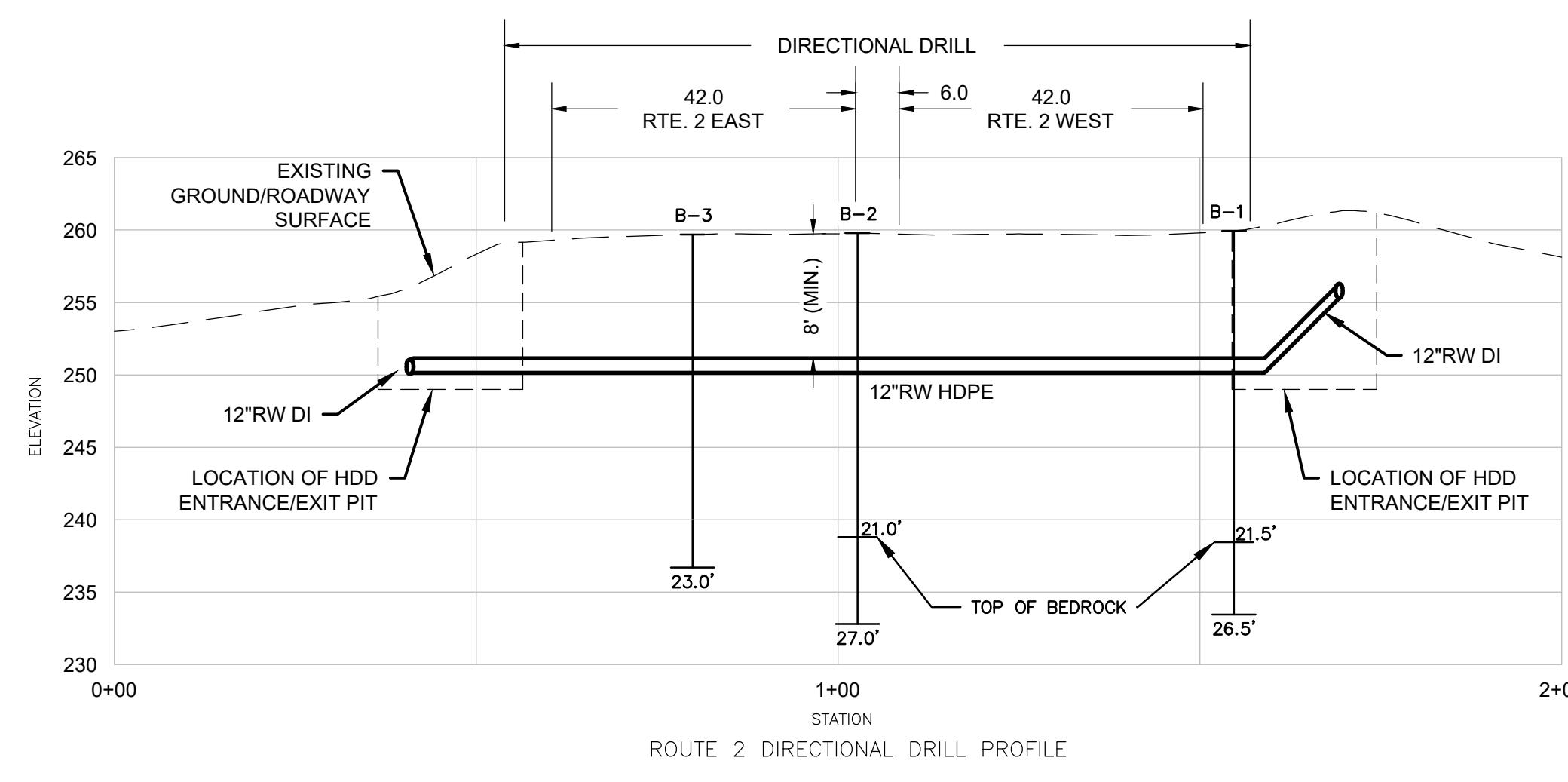
PLAN
 SCALE: 1" = 40'

40 20 0 40 80

SCALE: 1"=40'



P:\MA\MassDOT\107695 Water + Resiliency\04 Water Supply - Littleton to Boxborough\006 CAD\Civil\C103-C104 Raw Water Plans.dwg



PLAN

SCALE: 1" = 40'

NOTES:

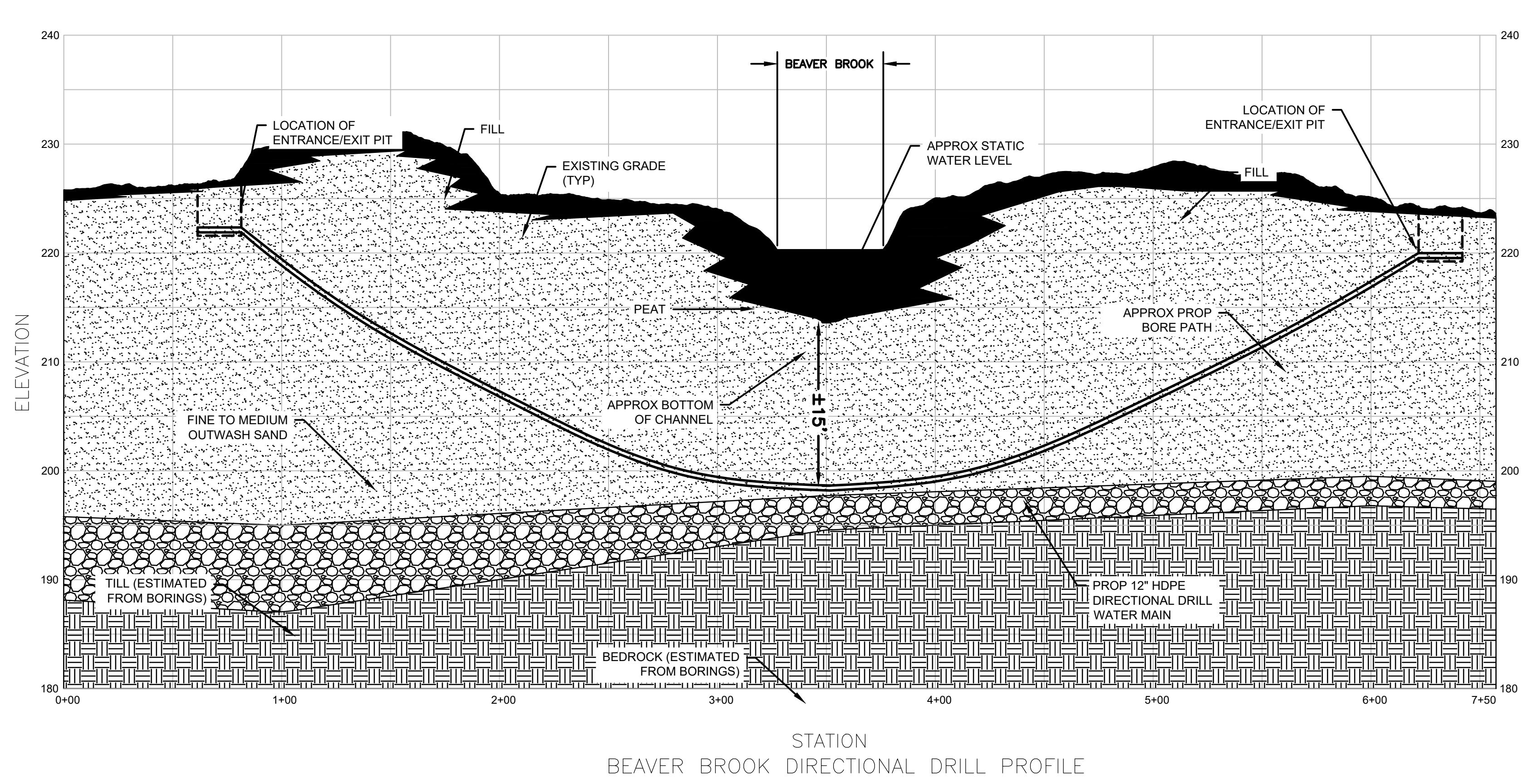
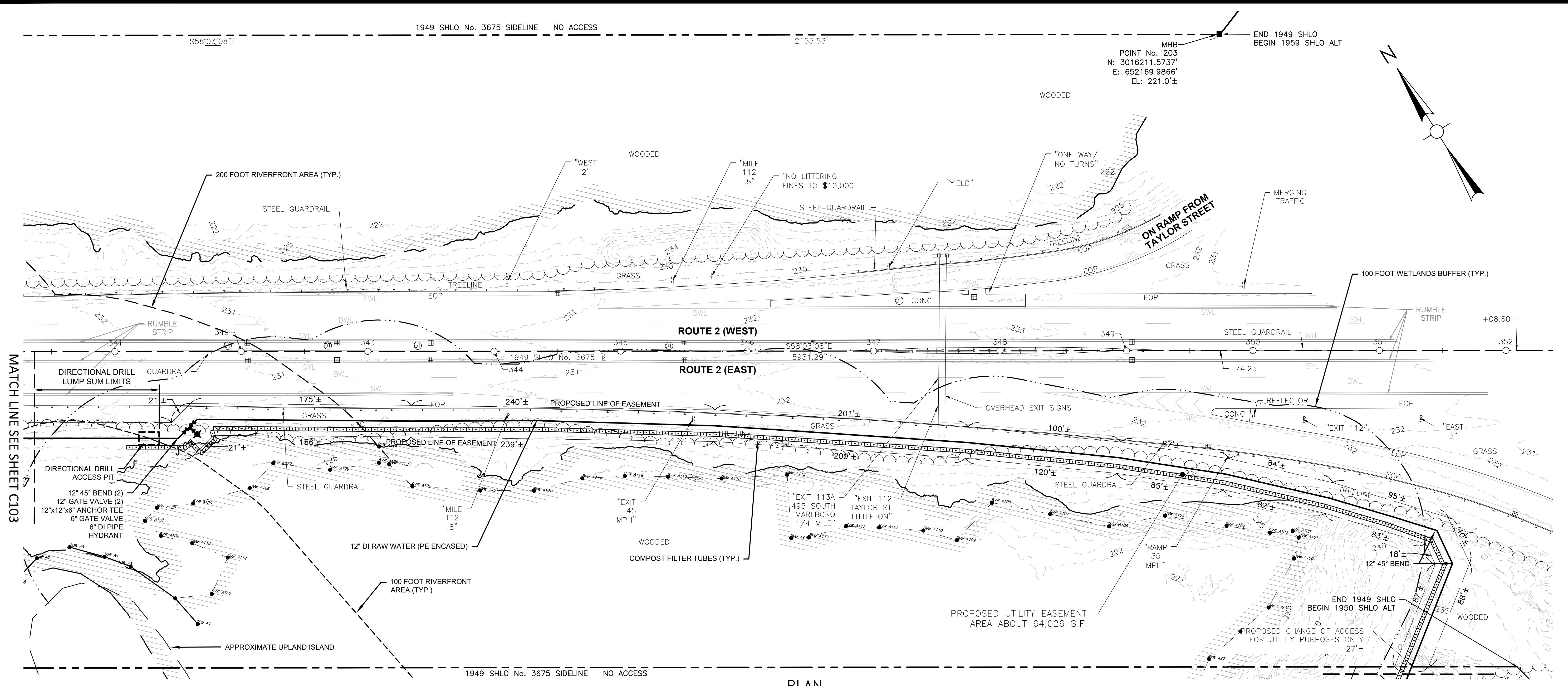
1. THE SURVEY BASEPLAN USED FOR THE PRODUCTION OF THIS PROPOSED EASEMENT PLAN WAS PREPARED BY GCG ASSOCIATES, INC. IN JULY, 2024. UTILITY DATA AND WETLAND FLAG DATA WAS SUPPLEMENTED BY WESTON & SAMPSON.
2. THE MOST RECENT SITE VISIT WAS COMPLETED IN JULY, 2024 TO VERIFY THAT THE EXISTING CONDITIONS SHOWN ON THE PLAN ARE THE CURRENT CONDITIONS IN THE FIELD.
3. THE LAYOUT AND PROPERTY LINES SHOWN ON THE PLAN WERE COMPILED FROM RECORD DEEDS AND PLANS AND CERTIFIED BY HAVELOCK PURSEGLOVE, A PLS IN DIRECT CHARGE AND SUPERVISION OF THE SURVEY BASEPLAN.
4. THE OWNERS HAVE BEEN CHECKED AND UPDATED PER THE REGISTRY OF DEEDS AS OF JULY, 2024.
5. THE SURVEYOR IS PARTICIPATING IN THE DEVELOPMENT OF THE PROPOSED EASEMENT PLANS. HAVELOCK PURSEGLOVE, GCG ASSOCIATES, INC, HAS VERIFIED HIGHWAY LAYOUT BASELINES AND SIDELINES, VERIFIED MUNICIPAL LAYOUTS, VERIFIED THAT ABUTTERS PROPERTY LINES ARE CREATED BASED ON RECORD DEEDS AND PLANS, VERIFIED CURRENT ABUTTERS OWNERSHIP INFORMATION, VERIFIED EXISTING PERMANENT EASEMENTS, AND VERIFIED ANY OTHER ELEMENTS IN THE SURVEY BASEPLAN THAT AFFECTS DISPOSITIONS AND LAND ACQUISITIONS.
6. WETLAND DELINEATION CONDUCTED IN DECEMBER 2022, JANUARY 2023, AND AUGUST 2023 BY WESTON & SAMPSON ENGINEERS, INC.

PROFILE NOTES:

1. AT LEAST 90 DAYS BEFORE THE START OF WORK, THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER THE FOLLOWING SUBMITTALS AS NOTES BELOW:
 - DESCRIPTION OF THE DEWATERING SYSTEM, WITH THE LOCATION OF THE DEWATERING POINT(S), DISCHARGE POINT(S), AND OBSERVATION WELLS PLOTTED ON THE PROJECT PLAN.
 - DESCRIPTION OF THE MONITORING PROGRAM FOR SURFACE SETTLEMENT.
 - DESCRIPTION OF THE GROUTING PROGRAM AND GROUT SPECIFICATIONS.
 - MA PE-STAMPED DESCRIPTION AND DETAILS OF THE CASING, CARRIER PIPE, AND BULKHEADS.
 - MA PE-STAMPED DESCRIPTION OF THE PROPOSED PIPE INSTALLATION METHOD AND APPLICABLE DETAILS.
 - MA PE-STAMPED DESCRIPTION AND DETAILS FOR THE ENTRANCE AND EXIT PITS, INCLUDING ANY REQUIRED PIT BRACING OR SHEETING. THIS ITEM MUST INCLUDE PE-STAMPED DESIGN CALCULATIONS FOR SLOPE STABILITY, SHEETING STABILITY, AND BRACING STRENGTH.
 - UPON REVIEW AND COMMENT, ENGINEER SHALL PROVIDE THE ABOVE INFORMATION TO MASSDOT ALONG WITH AN ORIGINAL, SIGNED LETTER STATING THAT ALL ASSUMPTIONS, DESIGNS, DESCRIPTIONS, AND DETAILS SUBMITTED TO MASSDOT ARE IN CONFORMANCE WITH ACCEPTED ENGINEERING PRACTICE.

0 20 0 40
SCALE: 1' - 40'

Sheet Number:
C103



P:\WMA\MassDOT\107695 Water + Resiliency\04 Water Supply - Littleton to Boxborough\006 CAD\Civil\103-C104 Raw Water Plans.dwg

PLAN NOTE

1. THE SURVEY BASEPLAN USED FOR THE PRODUCTION OF THIS PROPOSED EASEMENT PLAN WAS PREPARED BY GCG ASSOCIATES, INC. IN JULY, 2024. UTILITY DATA AND WETLAND FLAG DATA WAS SUPPLEMENTED BY WESTON & SAMPSON.
2. THE MOST RECENT SITE VISIT WAS COMPLETED IN JULY, 2024 TO VERIFY THAT THE EXISTING CONDITIONS SHOWN ON THE PLAN ARE THE CURRENT CONDITIONS IN THE FIELD.
3. THE LAYOUT AND PROPERTY LINES SHOWN ON THE PLAN WERE COMPILED FROM RECORD DEEDS AND PLANS AND CERTIFIED BY HAVELOCK PURSEGLOVE, A PLS IN DIRECT CHARGE AND SUPERVISION OF THE SURVEY BASEPLAN.
4. THE OWNERS HAVE BEEN CHECKED AND UPDATED PER THE REGISTRY OF DEEDS AS OF JULY, 2024.
5. THE SURVEYOR IS PARTICIPATING IN THE DEVELOPMENT OF THE PROPOSED EASEMENT PLANS. HAVELOCK PURSEGLOVE, GCG ASSOCIATES, INC, HAS VERIFIED HIGHWAY LAYOUT BASELINES AND SIDELINES, VERIFIED MUNICIPAL LAYOUTS, VERIFIED THAT ABUTTERS PROPERTY LINES ARE CREATED BASED ON RECORD DEEDS AND PLANS, VERIFIED CURRENT ABUTTERS OWNERSHIP INFORMATION, VERIFIED EXISTING PERMANENT EASEMENTS, AND VERIFIED ANY OTHER ELEMENTS IN THE SURVEY BASEPLAN THAT AFFECTS DISPOSITIONS AND LAND ACQUISITIONS.
6. WETLAND DELINEATION CONDUCTED IN DECEMBER 2022, JANUARY 2023, AND AUGUST 2023 BY WESTON & SAMPSON ENGINEERS, INC.

PROFILE NOTES

1. AT LEAST 90 DAYS BEFORE THE START OF WORK, THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER THE FOLLOWING SUBMITTALS AS NOTES BELOW:
 - DESCRIPTION OF THE DEWATERING SYSTEM, WITH THE LOCATION OF THE DEWATERING POINT(S), DISCHARGE POINT(S), AND OBSERVATION WELLS PLOTTED ON THE PROJECT PLAN.
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 - DESCRIPTION OF THE GROUTING PROGRAM AND GROUT SPECIFICATIONS.
 - MA PE-STAMPED DESCRIPTION AND DETAILS OF THE CASING, CARRIER PIPE, AND BULKHEADS.
 - MA PE-STAMPED DESCRIPTION OF THE PROPOSED PIPE INSTALLATION METHOD AND APPLICABLE DETAILS.
 - MA PE-STAMPED DESCRIPTION AND DETAILS FOR THE ENTRANCE AND EXIT PITS, INCLUDING ANY REQUIRED PIT BRACING OR SHEETING. THIS ITEM MUST INCLUDE PE-STAMPED DESIGN CALCULATIONS FOR SLOPE STABILITY, SHEETING STABILITY, AND BRACING STRENGTH.
 - UPON REVIEW AND COMMENT, ENGINEER SHALL PROVIDE THE ABOVE INFORMATION TO MASSDOT ALONG WITH AN ORIGINAL, SIGNED LETTER STATING THAT ALL ASSUMPTIONS, DESIGNS, DESCRIPTIONS, AND DETAILS SUBMITTED TO MASSDOT ARE IN CONFORMANCE WITH ACCEPTED ENGINEERING PRACTICE.

Project: **LITTLETON WATER
DEPARTMENT**

The logo for the Littleton Electric Light & Water Departments. It features the word "LITTLETON" in a serif font above a stylized "L" and "ELWD" in a large, bold, blue sans-serif font. A yellow swoosh graphic is positioned between the "L" and "ELWD". Below the main text, the words "ELECTRIC LIGHT & WATER DEPARTMENTS" are written in a smaller, all-caps, sans-serif font.

TRUMBULL WELL AND
RAW WATER MAIN
TOWN CONTRACT NO. IFB-2024
DWSRF NO. 12397
CONTRACT NO.1

The logo for Weston & Sampson. It features the word "Weston" in blue, the word "&" in a large green circle, and the word "Sampson" in green. A small "SM" symbol is in the top right corner of the green area.

Consultants:

Revisions:

COA:

The seal of the Commonwealth of Massachusetts, featuring a circular design with a five-pointed star in the center, surrounded by the words "THE COMMONWEALTH OF MASSACHUSETTS" and "SIGILLUM REIPUBLICÆ MASSACHUSETTENSIS".

10 of 15

11. *What is the primary purpose of the following statement?*

Date:	AUGUST 2024
Drawn By:	GJK/RWS
Reviewed By:	BAR
Approved By:	TEM
W&S Project No.:	ENG23-0679

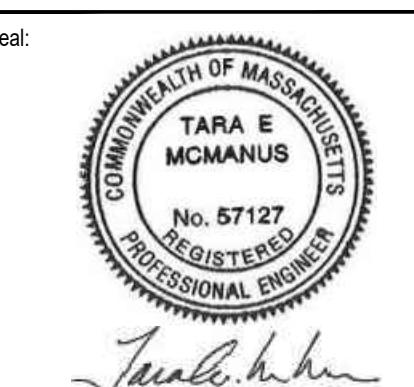
Review Title

RAW WATER PLAN CROSS COUNTRY

Sheet Number:

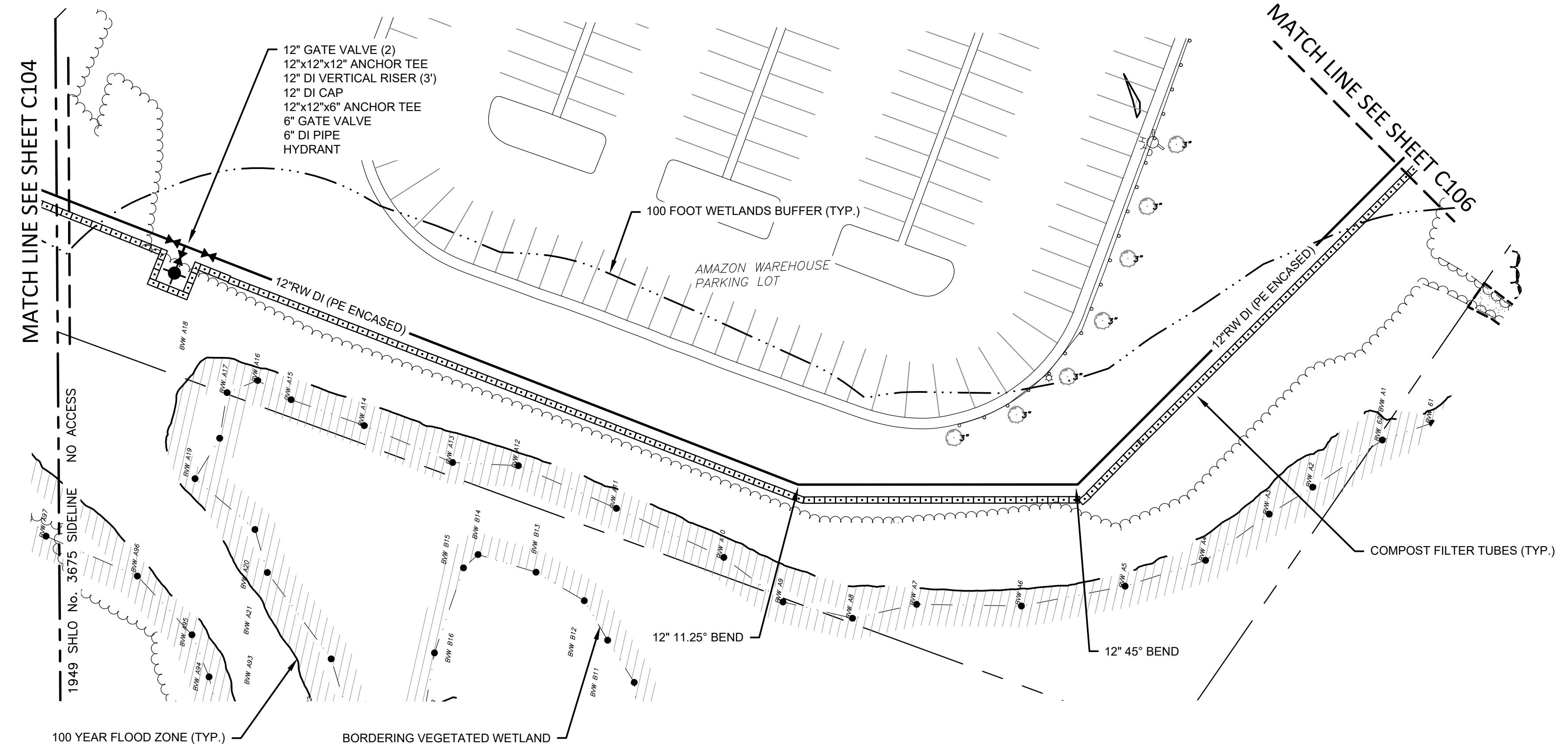
C104

Revisions:		
No.	Date	Description



Scale:	AS NOTED

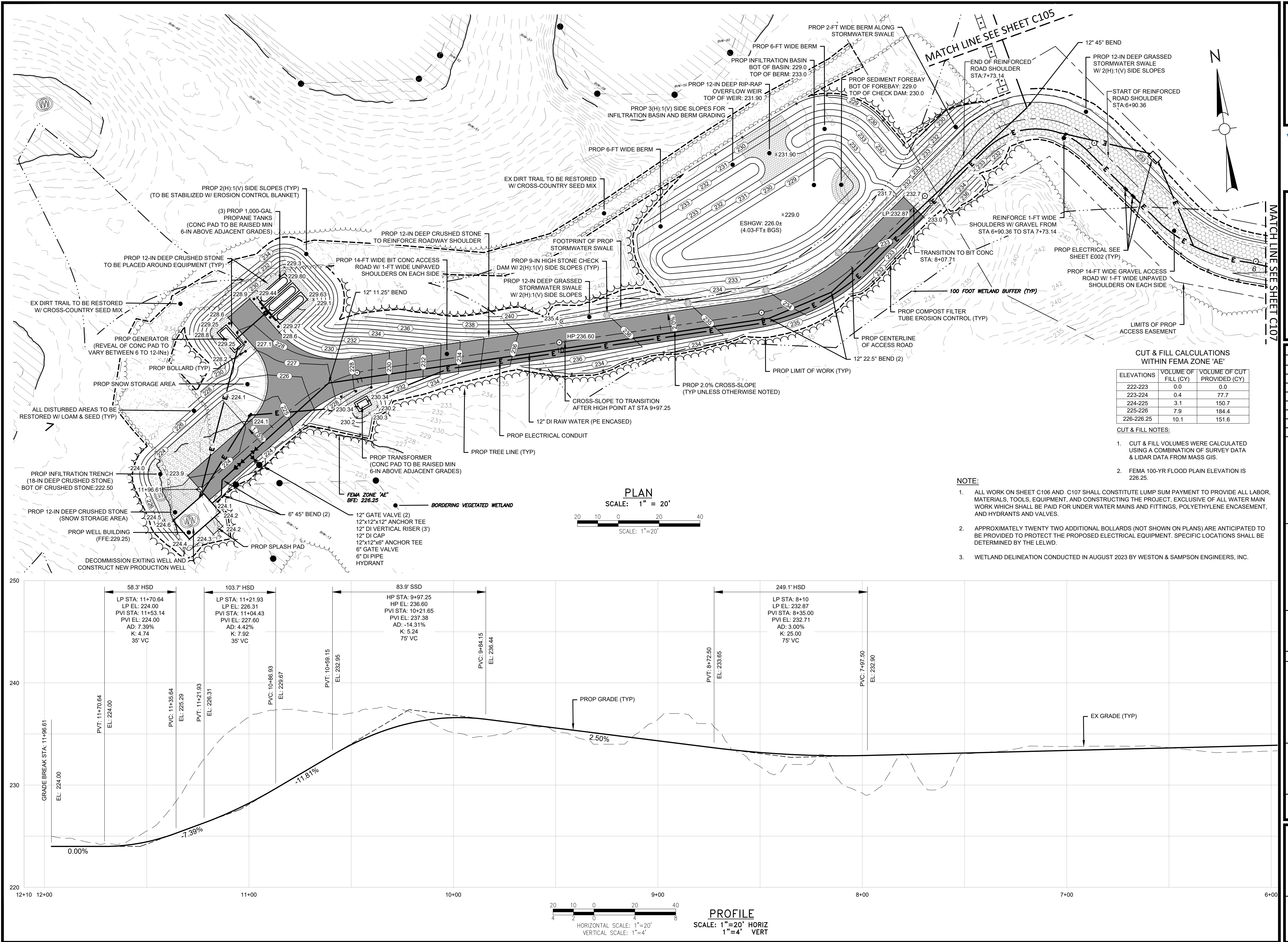
Date:	AUGUST 2024
Drawn By:	GJK/RWS
Reviewed By:	BAR
Approved By:	TEM
W&S Project No.:	ENG23-0679
W&S File No.:	



NOTE:

1. WETLAND DELINEATION CONDUCTED IN DECEMBER 2022, JANUARY 2023, AND AUGUST 2023 BY WESTON & SAMPSON ENGINEERS, INC.

40 20 0 40 80
SCALE: 1"=40"



ject:
LITTLETON WATER
DEPARTMENT

The logo for the Littleton Electric Light & Water Departments. It features the word "LITTLETON" in a black, sans-serif font inside a dark blue rectangular box. Below it, the acronym "ELWD" is written in a large, bold, blue font, with a stylized yellow and white swoosh graphic positioned above the letters. At the bottom, the words "ELECTRIC LIGHT & WATER DEPARTMENTS" are written in a smaller, black, sans-serif font inside a dark blue rectangular box.

TRUMBULL WELL AND
RAW WATER MAIN
TOWN CONTRACT NO. IFB-2024
DWSRF NO. 12397
CONTRACT NO.1

nsultants:

visions:

STATIONS	VOLUME OF FILL (CY)	VOLUME OF CUT PROVIDED (CY)
2-223	0.0	0.0
3-224	0.4	77.7
4-225	3.1	150.7
5-226	7.9	184.4
226.25	10.1	151.6

FILL NOTES:

UT & FILL VOLUMES WERE CALCULATED
SING A COMBINATION OF SURVEY DATA
LIDAR DATA FROM MASS GIS.

EMA 100-YR FLOOD PLAIN ELEVATION IS
26.25.

A:

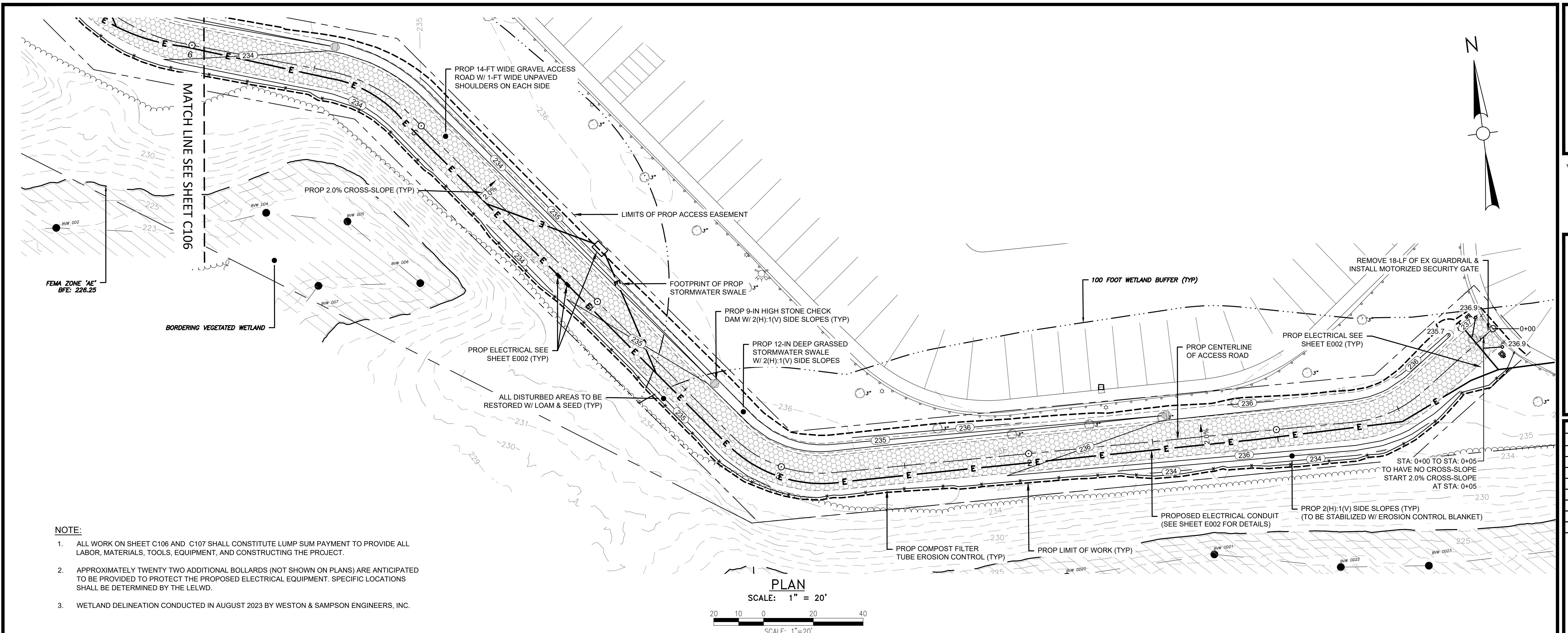
A circular seal with a serrated outer edge. The outer ring contains the text "COMMONWEALTH OF MASSACHUSETTS" at the top and "PROFESSIONAL ENGINEER" at the bottom. The center of the seal contains the name "TARA E" on top and "MCMANUS" below it, with "No. 57127" written below that.

✓ male. m. m.

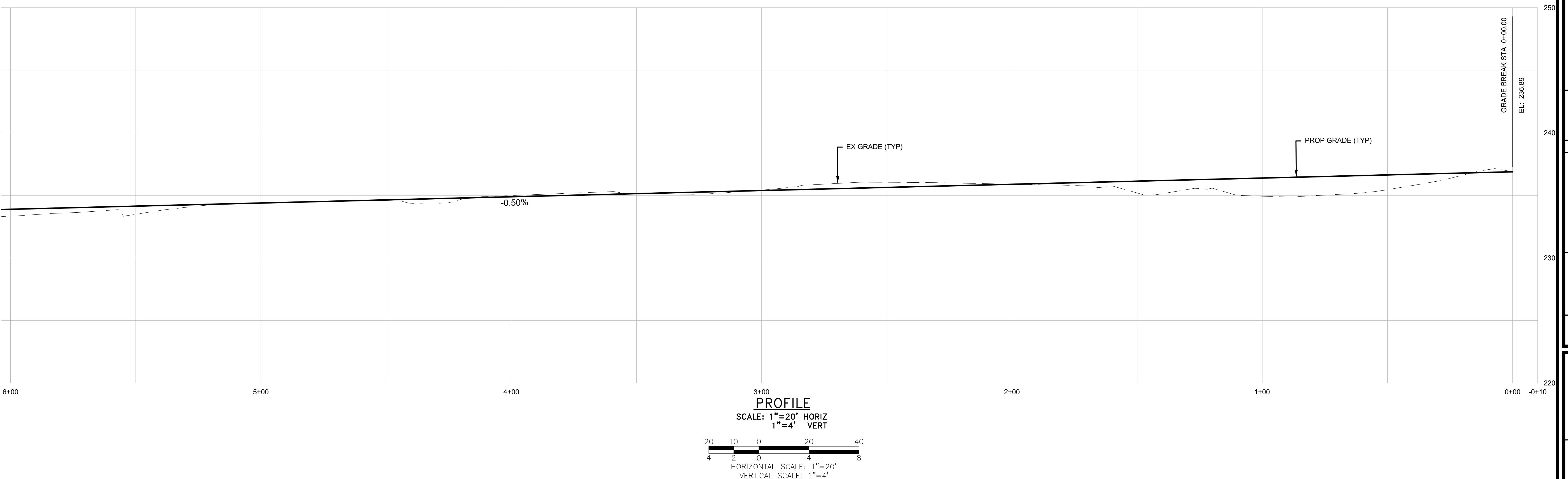
te:	AUGUST 2024
awn By:	AKG
viewed By:	JIP
proved By:	TEM
<hr/>	
&S Project No.:	ENG23-0679
<hr/>	

Access Road Grading & Drainage Plan

Street Number:



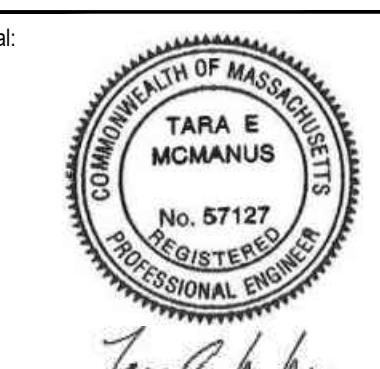
P:\WMA\MassDOT\107695 Water + Resiliency\04 Water Supply - Littleton to Boxborough\006 CAD\Civil\C101 C102 C105-C107 Raw Water Plans.dwg



The image shows the Littleton Water Department logo at the top, featuring the text 'LITTLETON WATER DEPARTMENT' in a serif font above a stylized 'L' logo with a water drop and sun graphic, and the text 'ELECTRIC LIGHT & WATER DEPARTMENTS' below it. Below the logo, the text 'TRUMBULL WELL AND RAW WATER MAIN TOWN CONTRACT NO. IFB-2024 DWSRF NO. 12397 CONTRACT NO.1' is displayed in a serif font.

nsultants:

A:

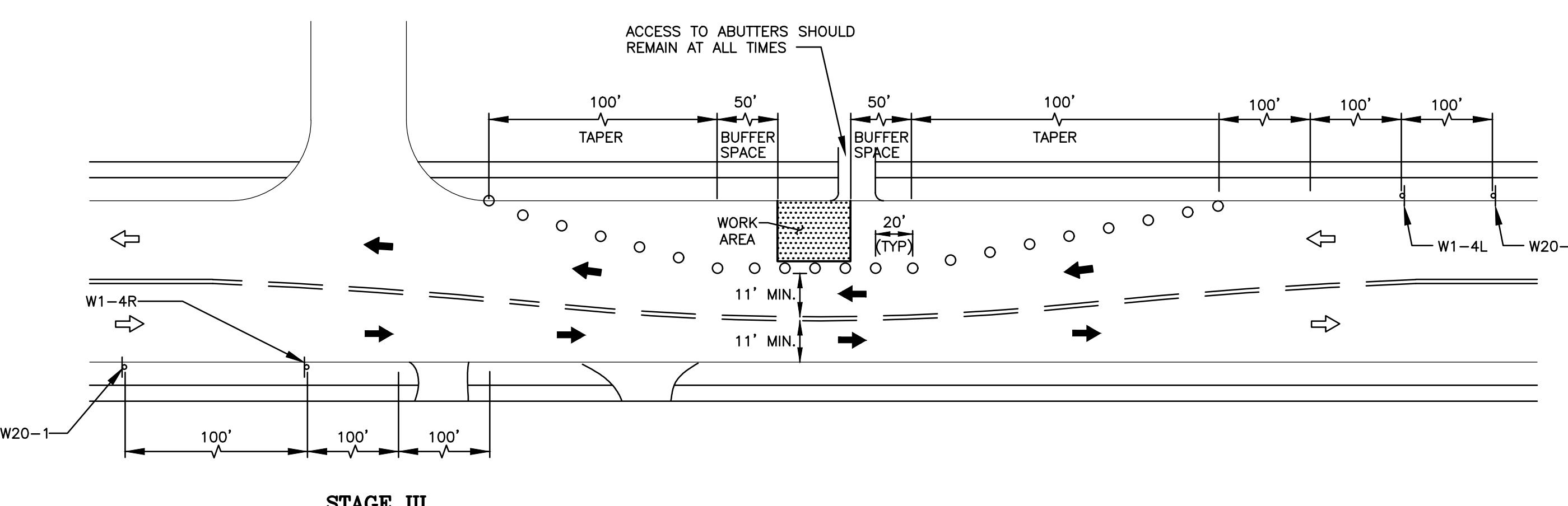
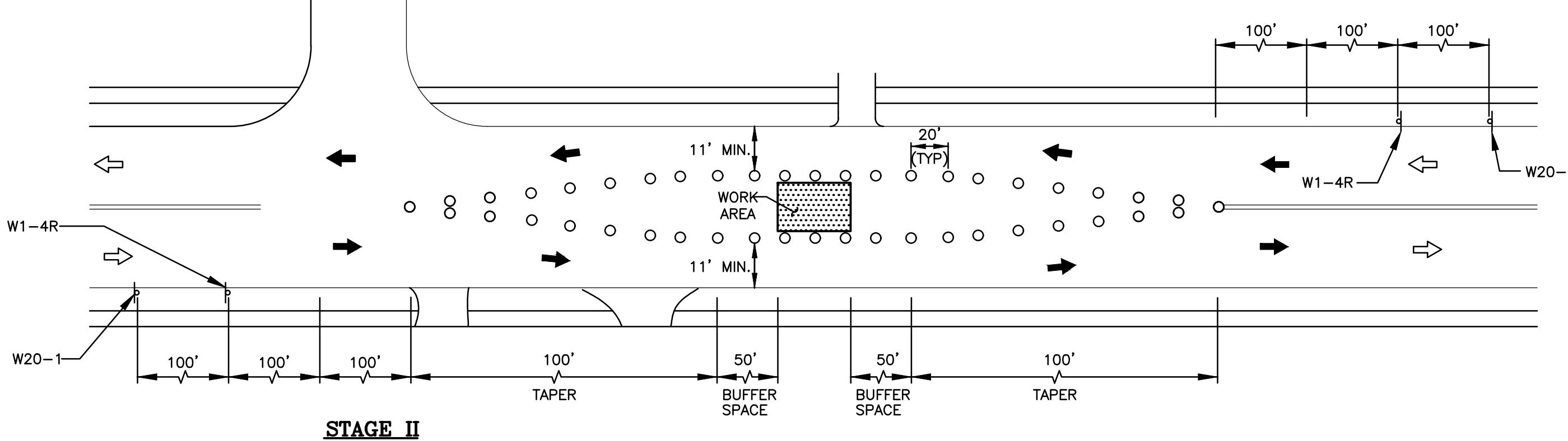
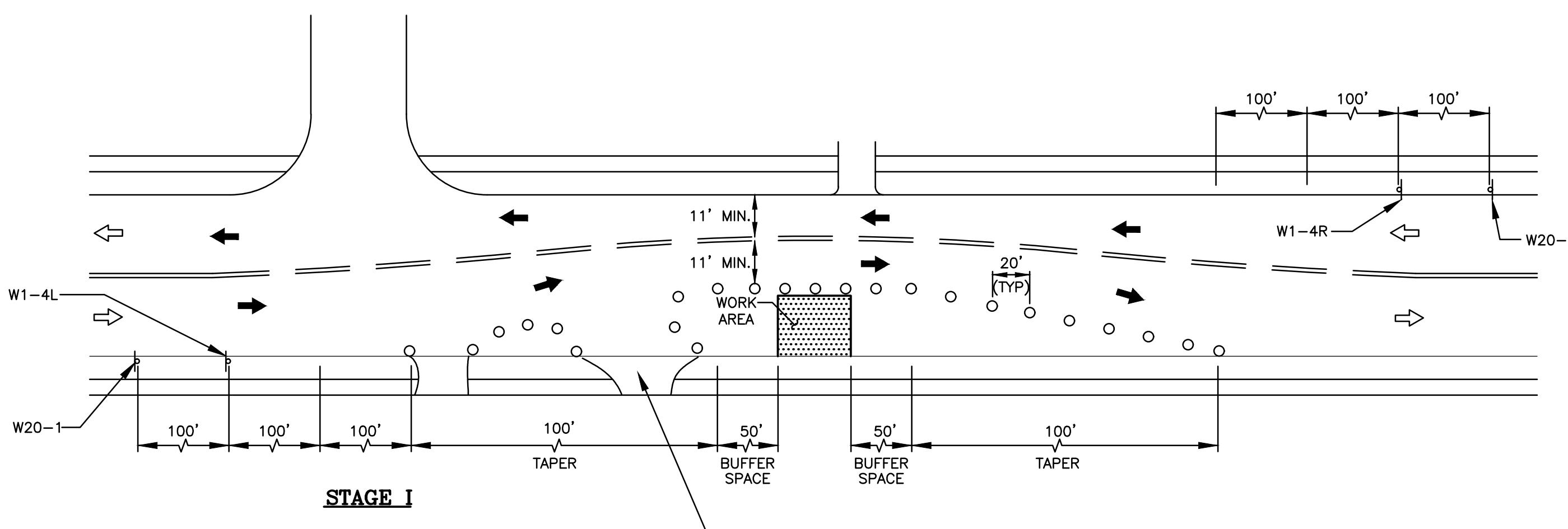


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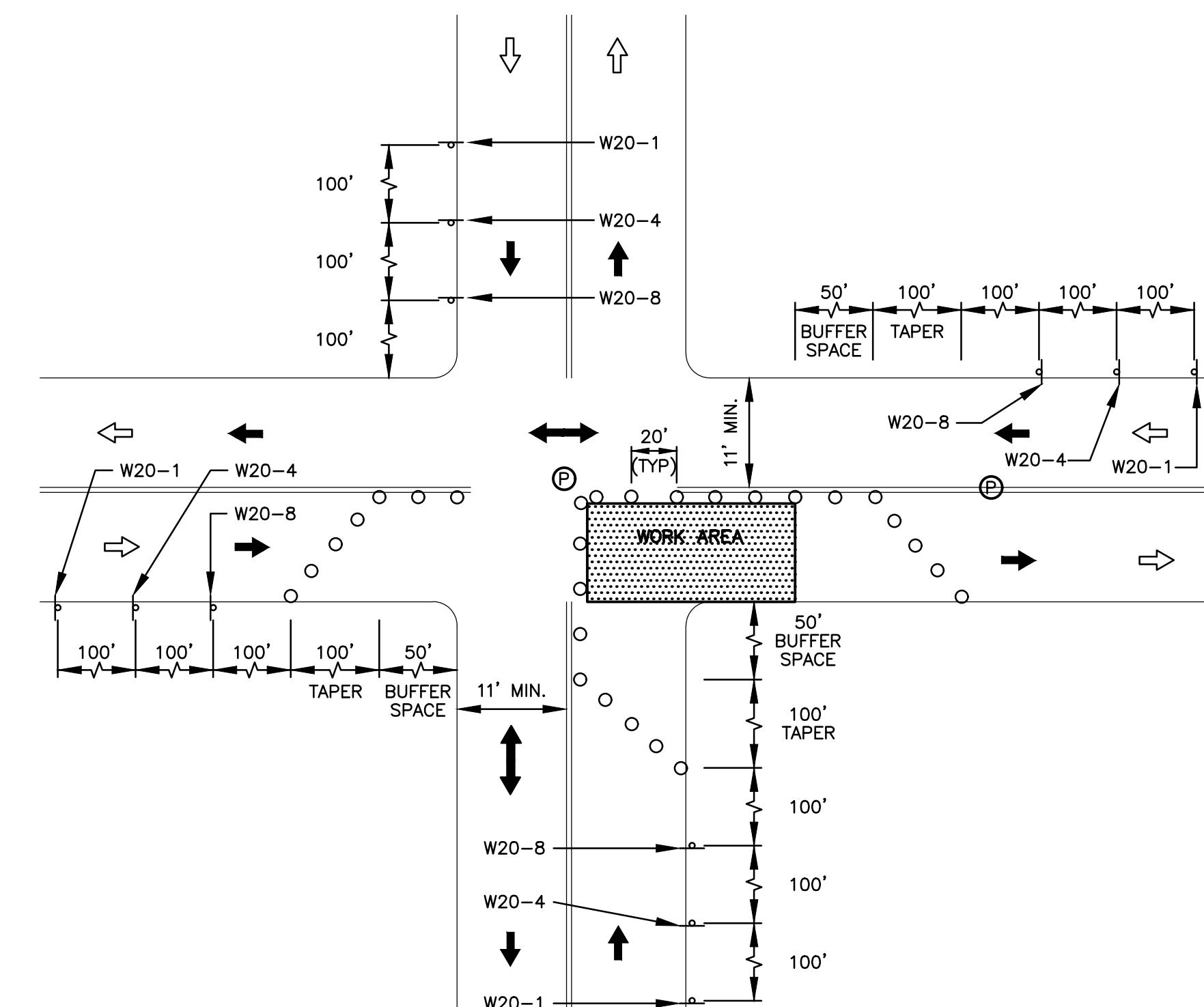
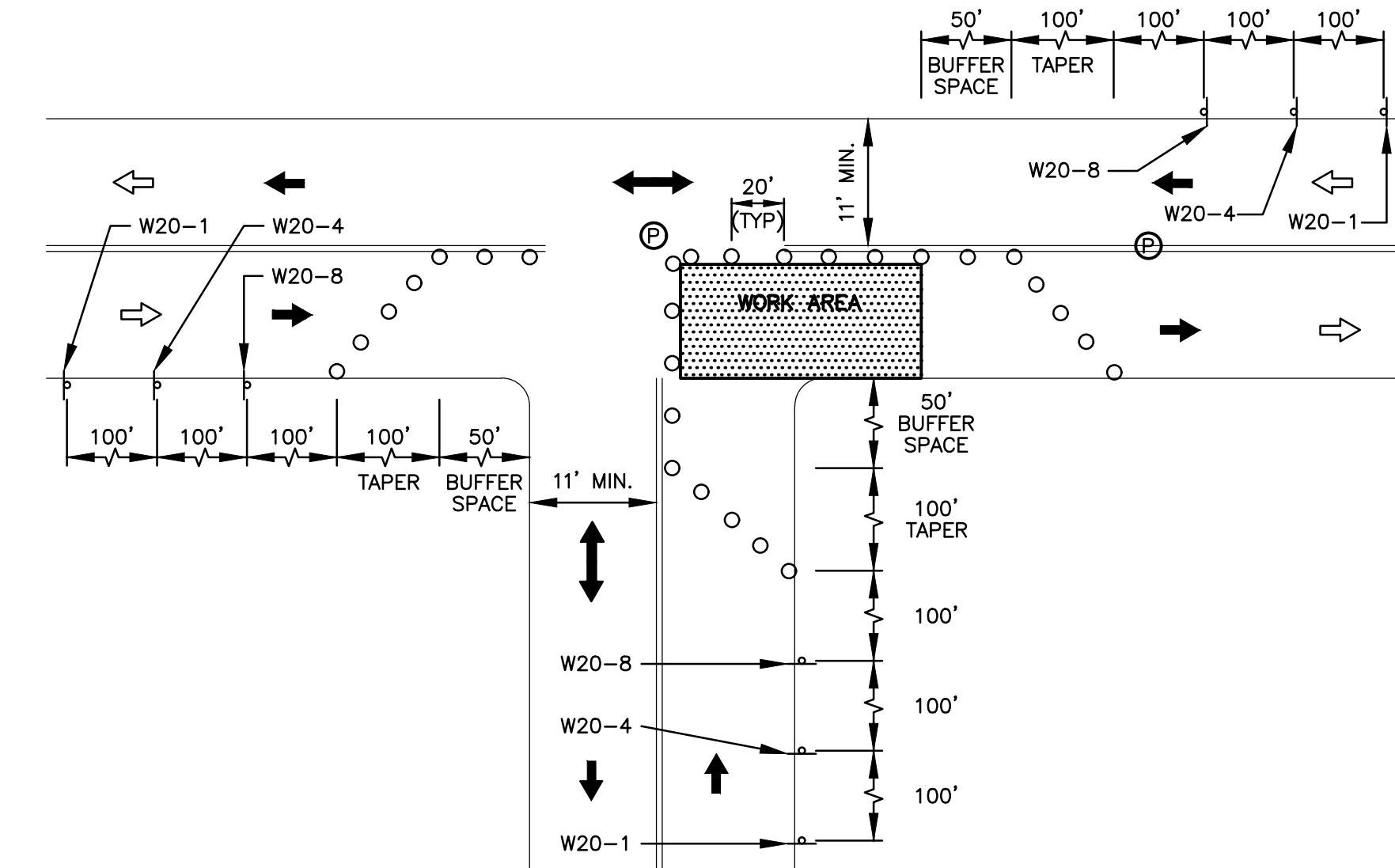
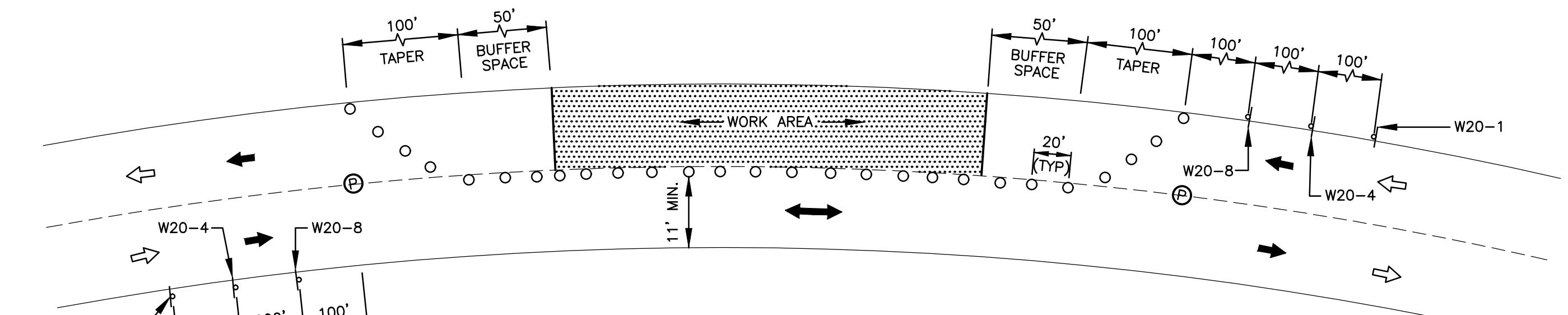
ACCESS ROAD GRADING & DRAINAGE PLAN

Street Number:

TEMPORARY TRAFFIC SIGN SUMMARY		
MUTCD CODE	SIZE OF SIGN	SIGN
	WIDTH	HEIGHT
W1-4L	30"	30"
W1-4R	30"	30"
W20-1	36"	36"
W20-4	36"	36"
W20-8	36"	36"
G20-2	36"	18"
		END CONSTRUCTION



TRAFFIC OPERATION STAGES
N.T.S.



MUTCD CODE	SIZE OF SIGN	SIGN
W1-4L	30"	30"
W1-4R	30"	30"
W20-1	36"	36"
W20-4	36"	36"
W20-8	36"	36"
G20-2	36"	18"
		END CONSTRUCTION

NOTE:

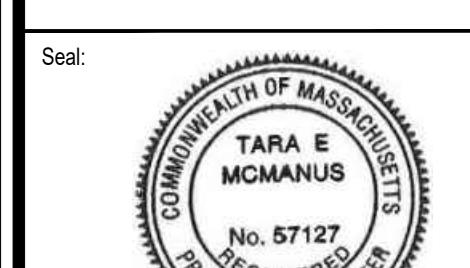
1. FOR THE LATEST SPECIFICATION ON TEXT DIMENSIONS AND COLOR, CONTRACTOR SHALL REFER TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CURRENT EDITION).

LEGEND:

- REFLECTORIZED DRUM
- ← TRAFFIC FLOW DURING CONSTRUCTION
- ↔ NORMAL TRAFFIC FLOW
- ◎ POLICE DETAIL OFFICER
- ↑ CONSTRUCTION SIGN
- WORK AREA

GENERAL NOTES:

1. PLACEMENT OF ALL CONSTRUCTION SIGNS, DRUMS, BARRICADES, TRAFFIC DEVICES AND THE SHAPE, SIZE & COLOR OF ALL TEMPORARY TRAFFIC SIGNS SHALL CONFORM WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. ADVANCE WARNING SIGN PLACEMENT AND TAPER LENGTH TO BE ADJUSTED ACCORDING TO STREET CONDITIONS AND DRIVEWAY OPENINGS.
3. ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES.
4. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND SIMILAR OPERATIONS.
5. NONESSENTIAL TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS.
6. PEDESTRIANS SHALL BE PROVIDED WITH ACCESS AND SAFE PASSAGE THROUGH THE TEMPORARY TRAFFIC CONTROL ZONE AT ALL TIMES.
7. W20-8 SHALL BE TAKEN DOWN OR COVERED AFTER EACH WORKING DAY OR WHEN OTHERWISE NOT APPLICABLE, OR WHEN POLICE OFFICERS ARE NOT PRESENT TO DIRECT TRAFFIC.
8. ADVISORY SPEED PLATES (W13-1 - SEE CURRENT EDITION OF MUTCD) SHALL BE USED IF APPLICABLE AND AS REQUIRED BY THE ENGINEER.
9. NO DIFFERENCE IN ROADWAY LANE ELEVATION WILL BE ALLOWED AT THE END OF THE WORK DAY.
10. SAMPLE TRAFFIC PLANS INCLUDED ON THIS PLAN SHEET ARE BASED ON AN URBAN (LOW SPEED) ROAD TYPE FROM THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
11. DASHED LINES SHOW LANE DESIGNATIONS TO BE USED DURING CONSTRUCTION.
12. THE CONTRACTOR SHALL SUBMIT ANY REVISIONS TO THE CONSTRUCTION ZONE SAFETY PLAN TO THE ENGINEER FOR APPROVAL.
13. THIS CONSTRUCTION ZONE SAFETY PLAN SHALL NOT RELIEVE THE CONTRACTOR OF HIS SOLE RESPONSIBILITY FOR CONSTRUCTION SITE SAFETY.



Issued For:

BIDDING

Scale: AS NOTED

Date: AUGUST 2024

Drawn By: GJK/RWS

Reviewed By: SBR

Approved By: TEM

W&S Project No.: ENG23-0679

Drawing Title:

CONSTRUCTION ZONE
SAFETY PLAN II

Sheet Number:

C109

Revisions:		
No.	Date	Description

COA:



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Scale: AS NOTED

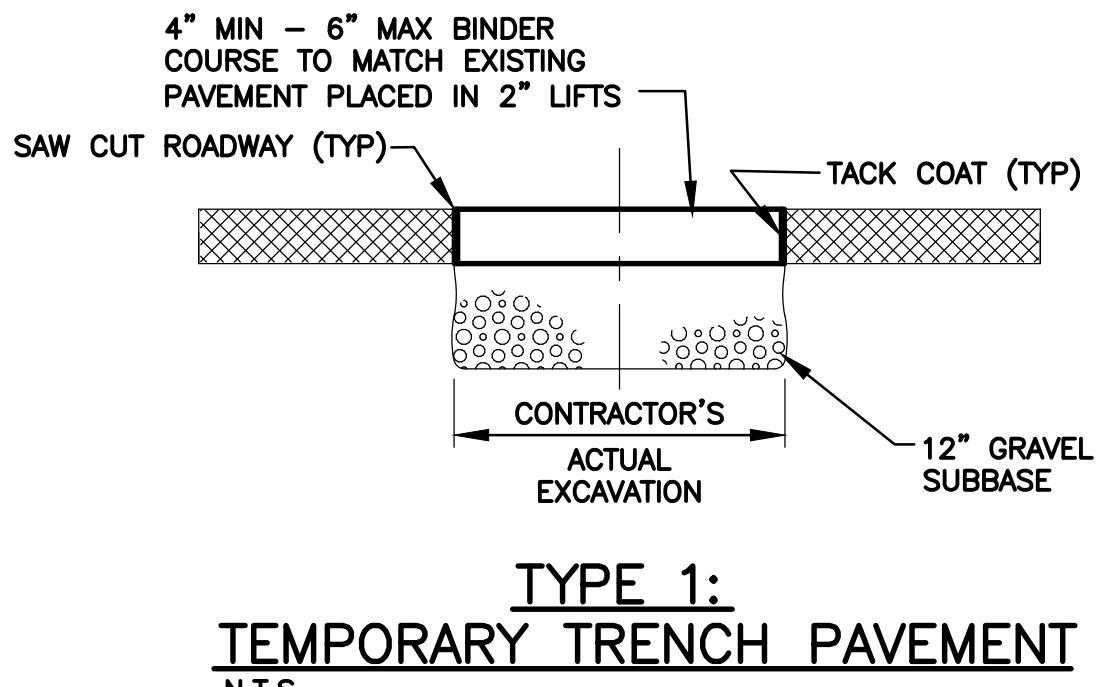
Date:	AUGUST 2024
Drawn By:	GJK/RWS
Reviewed By:	SBR
Approved By:	TEM
W&S Project No.:	ENG23-0679
W&S File No.:	

Drawing Title:

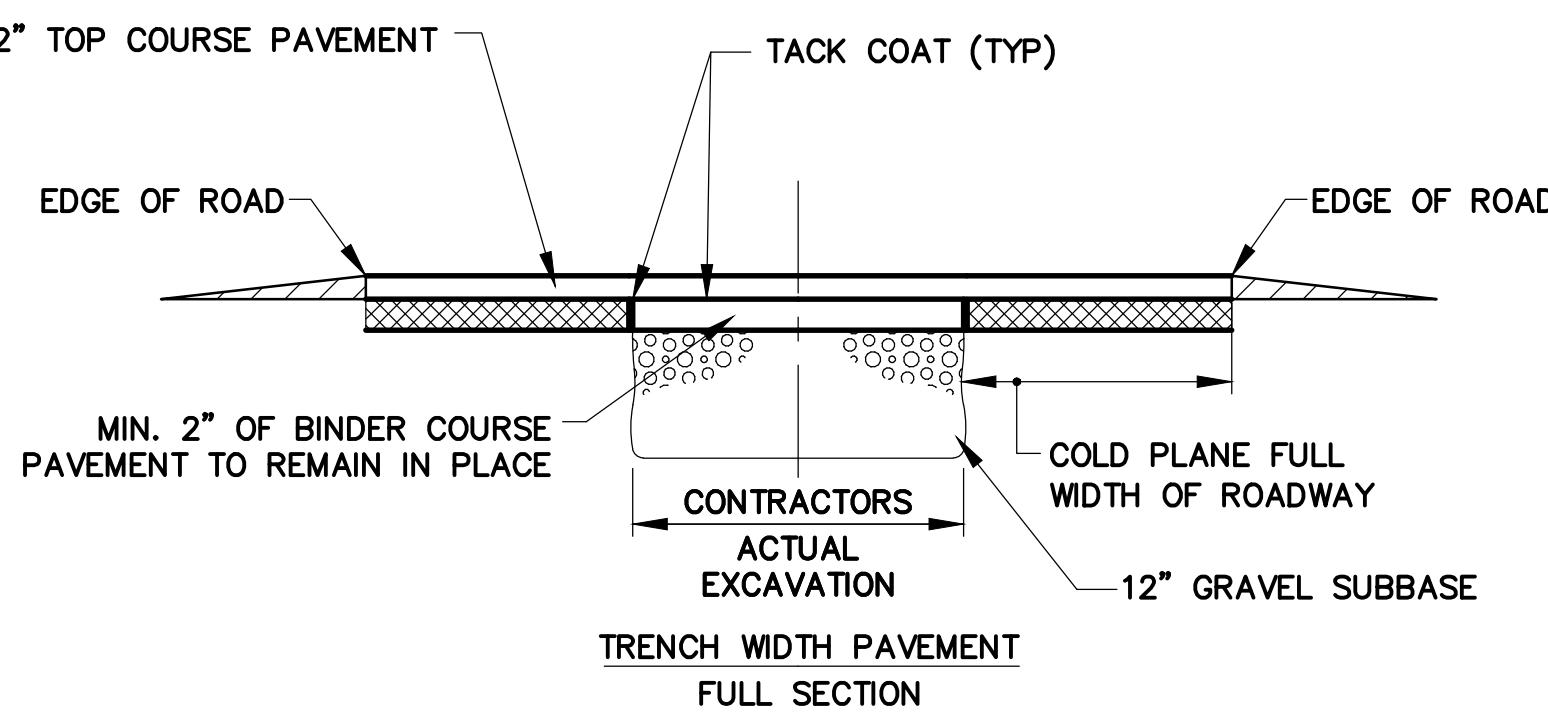
DETAILS I

Sheet Number:

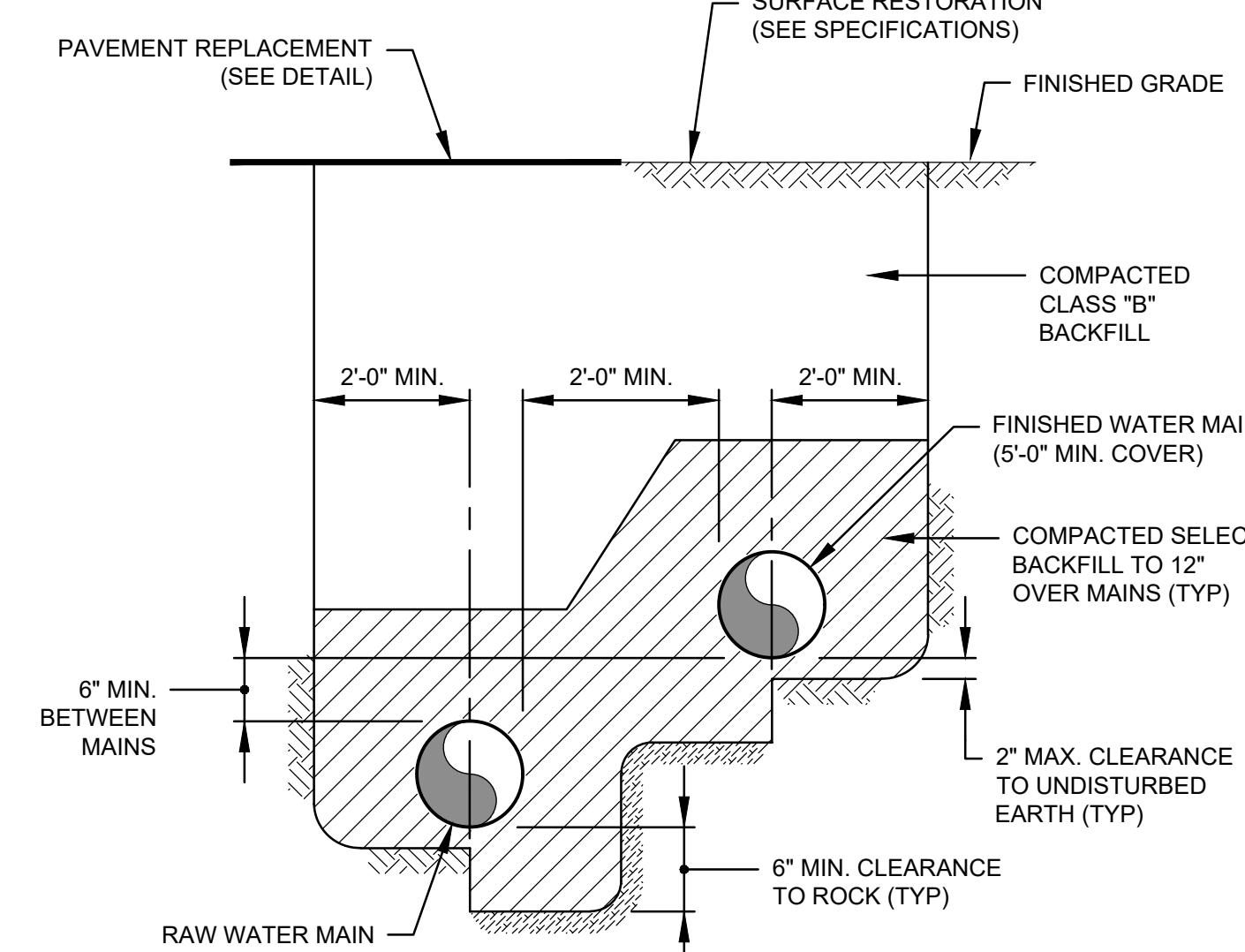
C501



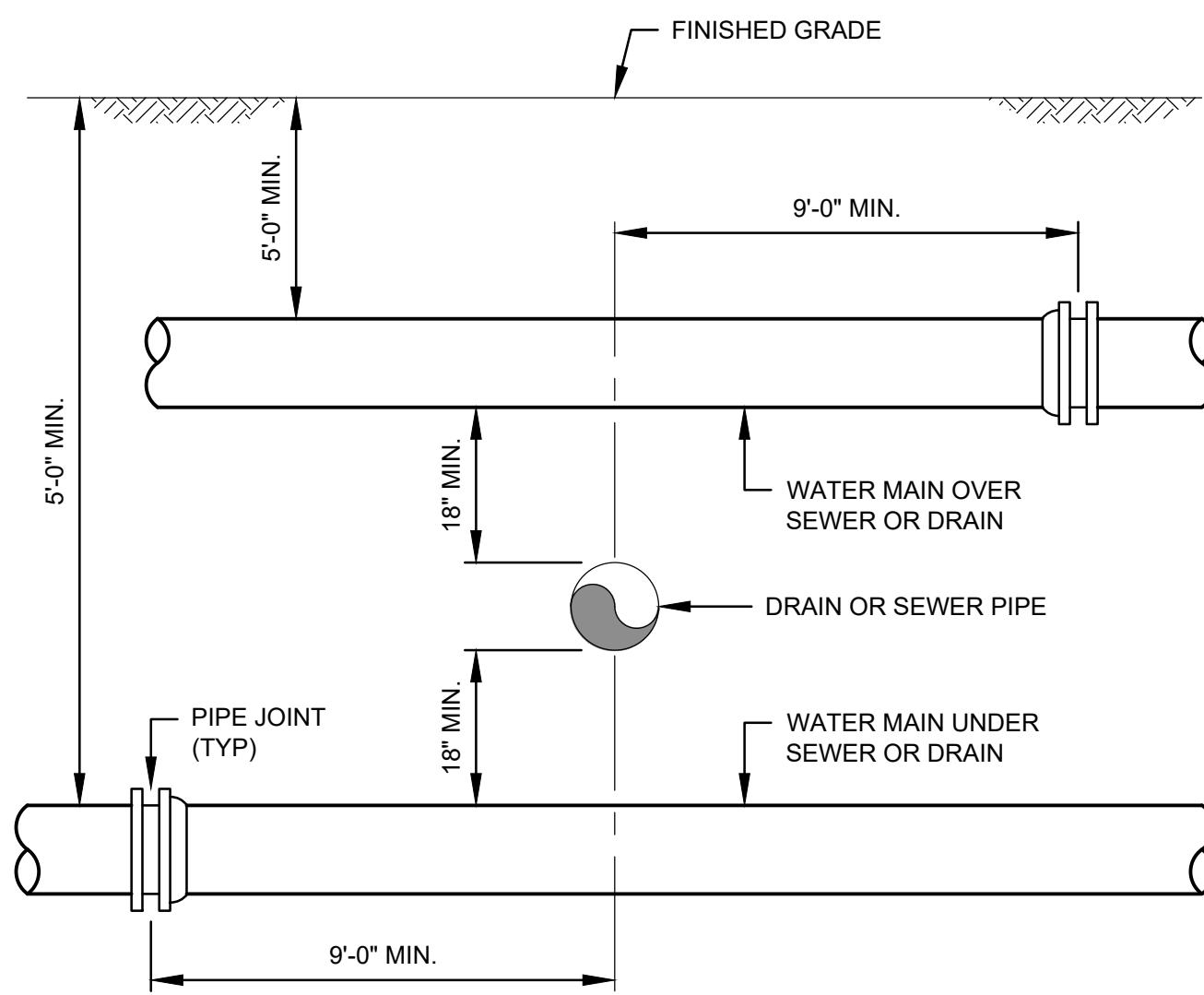
**TYPE 1:
TEMPORARY TRENCH PAVEMENT**
N.T.S.



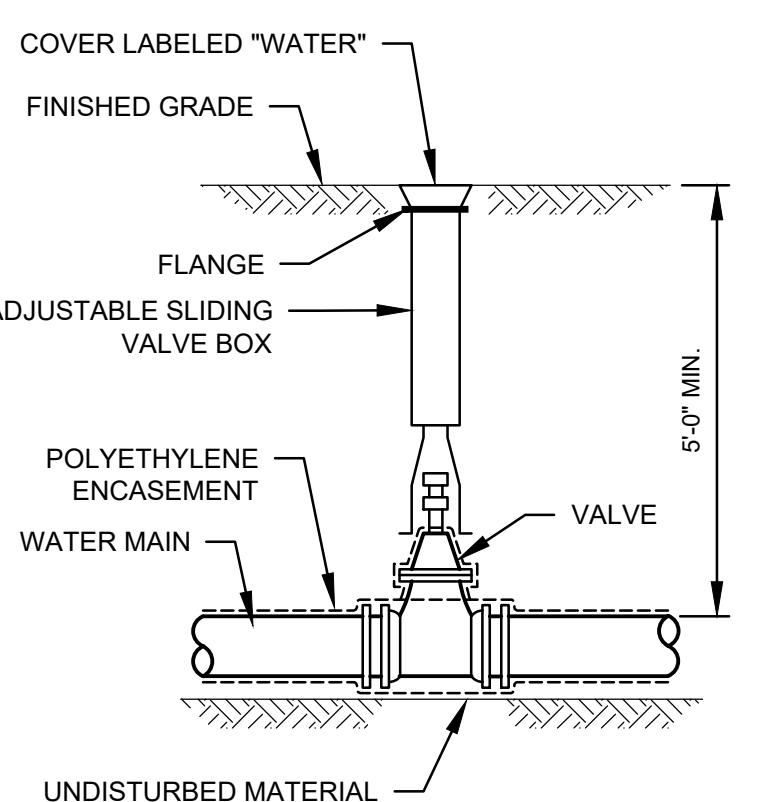
**TYPE 2: LITTLETON PERMANENT
FULL WIDTH AND OVERLAY PAVEMENT DETAIL**
N.T.S.



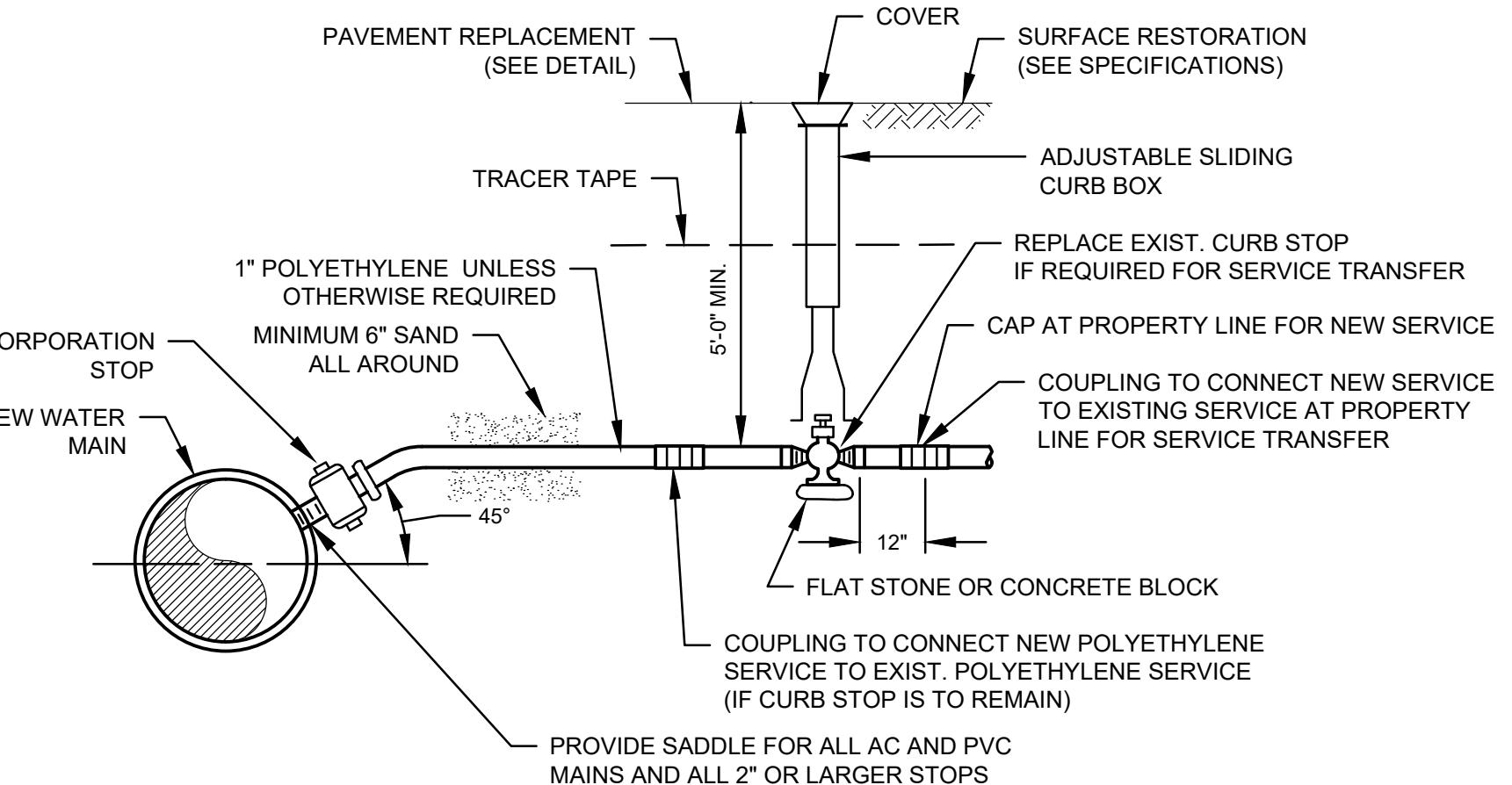
DUAL WATER MAIN TRENCH DETAIL
N.T.S.



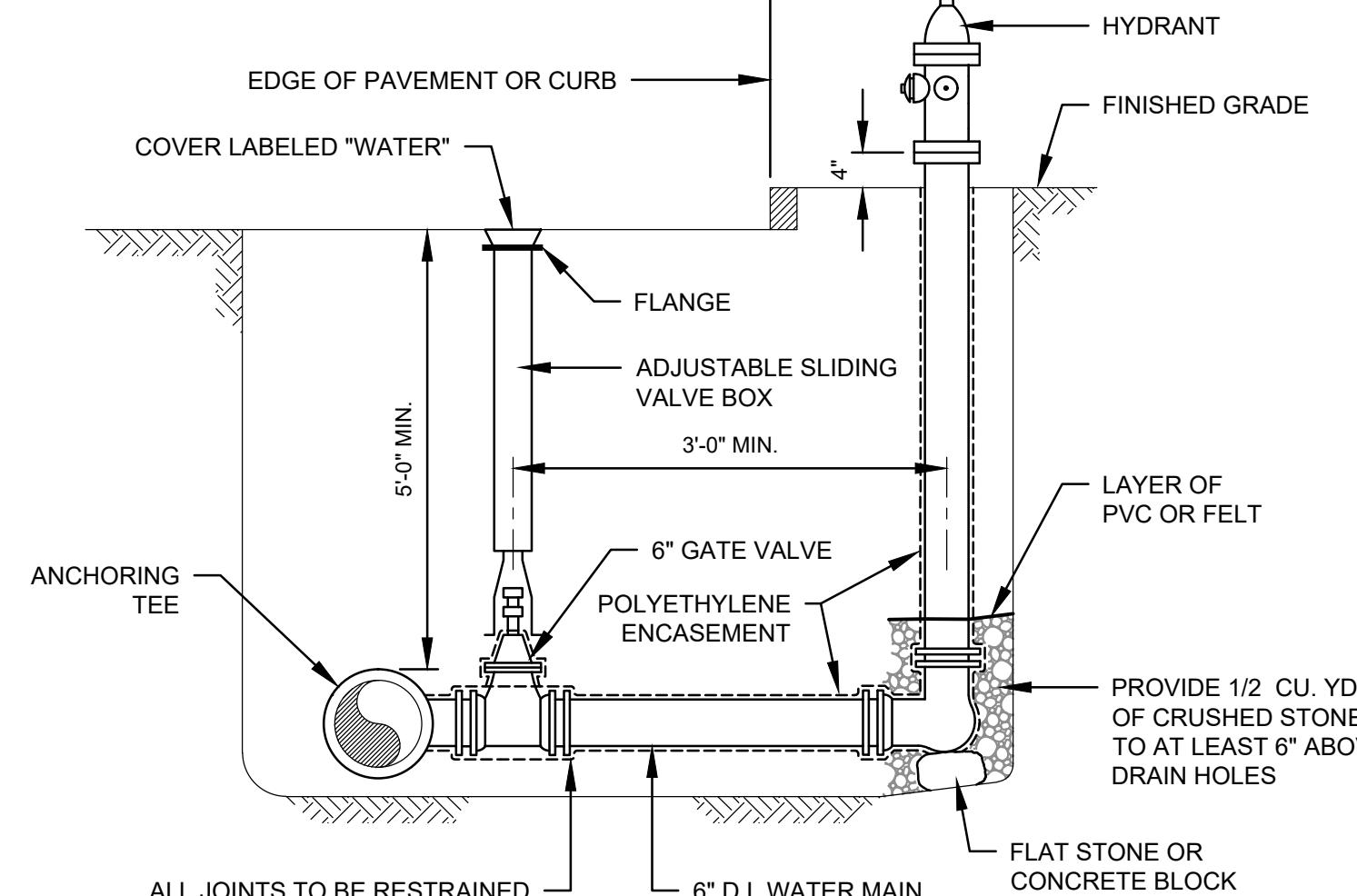
SEWER OR DRAIN CROSSING DETAIL
N.T.S.



VALVE AND BOX DETAIL
N.T.S.



WATER SERVICE DETAIL
N.T.S.



HYDRANT AND VALVE DETAIL
N.T.S.

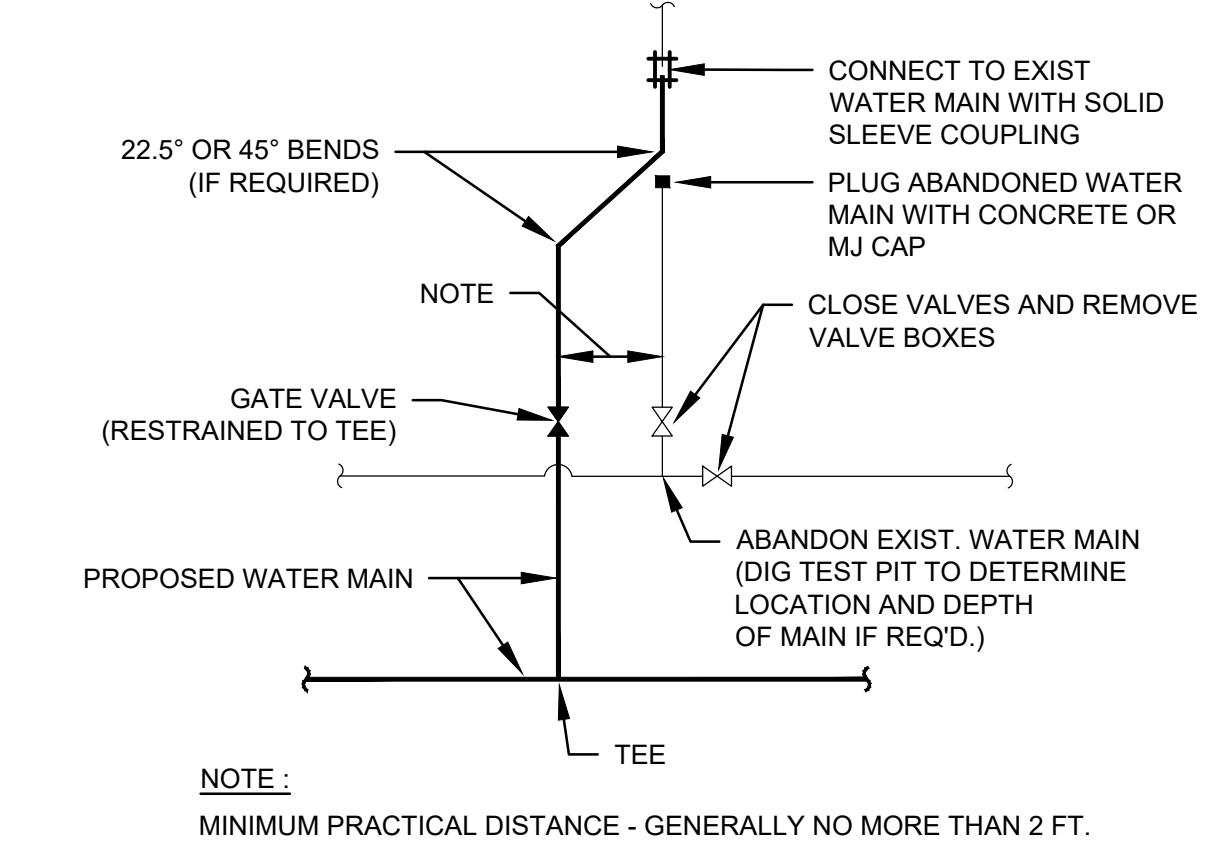
REQUIRED LENGTH OF RESTRAINED JOINTS FROM FITTINGS (FEET)

PIPE SIZE	90° BEND	45° BEND OR WYE BRANCH	22 1/2° BEND	11 1/4° BEND	PLUG, CAP OR IN-LINE VALVE	TEE (BRANCH)
6"	25 (30.5)	10.5 (12.5)	5 (6)	2.5 (3)	43 (64)	34 (51)
8"	33 (40)	13.5 (16.5)	6.5 (8)	3 (4)	55 (82)	47 (70)
10"	40 (48.5)	16.5 (20)	8 (9.5)	4 (5)	67 (100)	58 (87)
12"	47 (56.5)	19.5 (23.5)	9.5 (11.5)	4.5 (5.5)	79 (118)	70 (105)
16"	59.5 (72)	24.5 (30)	12 (14.5)	6 (7)	101 (152)	92 (139)
20"	72 (86.5)	30 (36)	14.5 (17)	7 (8.5)	123 (184)	114 (171)
24"	84 (100)	35 (41)	16.5 (20)	8 (10)	144 (216)	134 (202)
30"	100 (120)	41 (50)	20 (24)	10 (12)	174 (261)	165 (247)

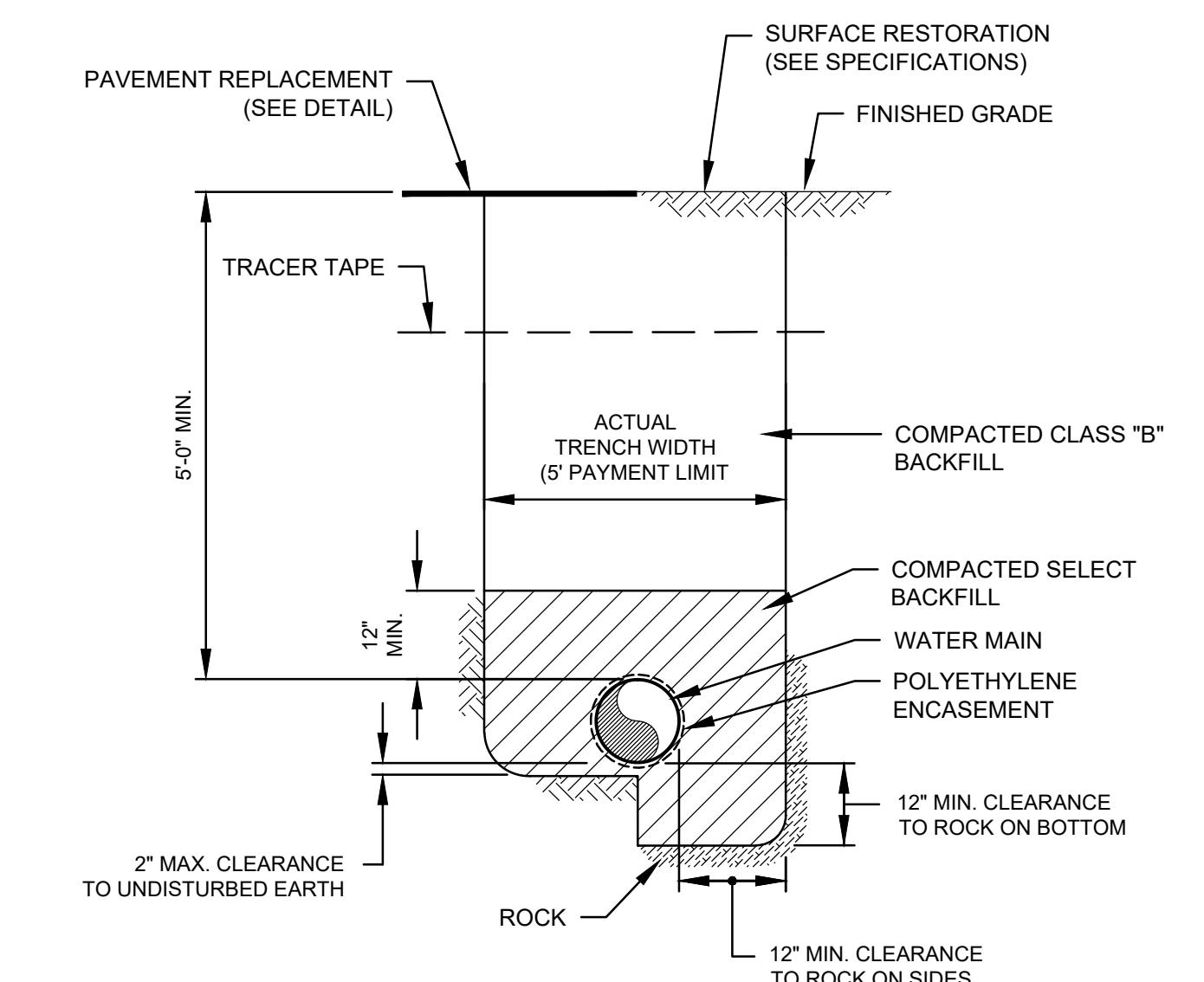
NOTES:

1. RESTRAINED LENGTHS LISTED IN PARENTHESES ARE FOR PIPE WRAPPED IN POLYETHYLENE. THE OTHER ASSOCIATED LENGTHS ARE FOR PLAIN UNWRAPPED DUCTILE IRON PIPE.
2. THE CONTRACTOR SHALL USE THIS TABLE IN CONJUNCTION WITH THE APPROPRIATE PIPE SPECIFICATION SECTION.

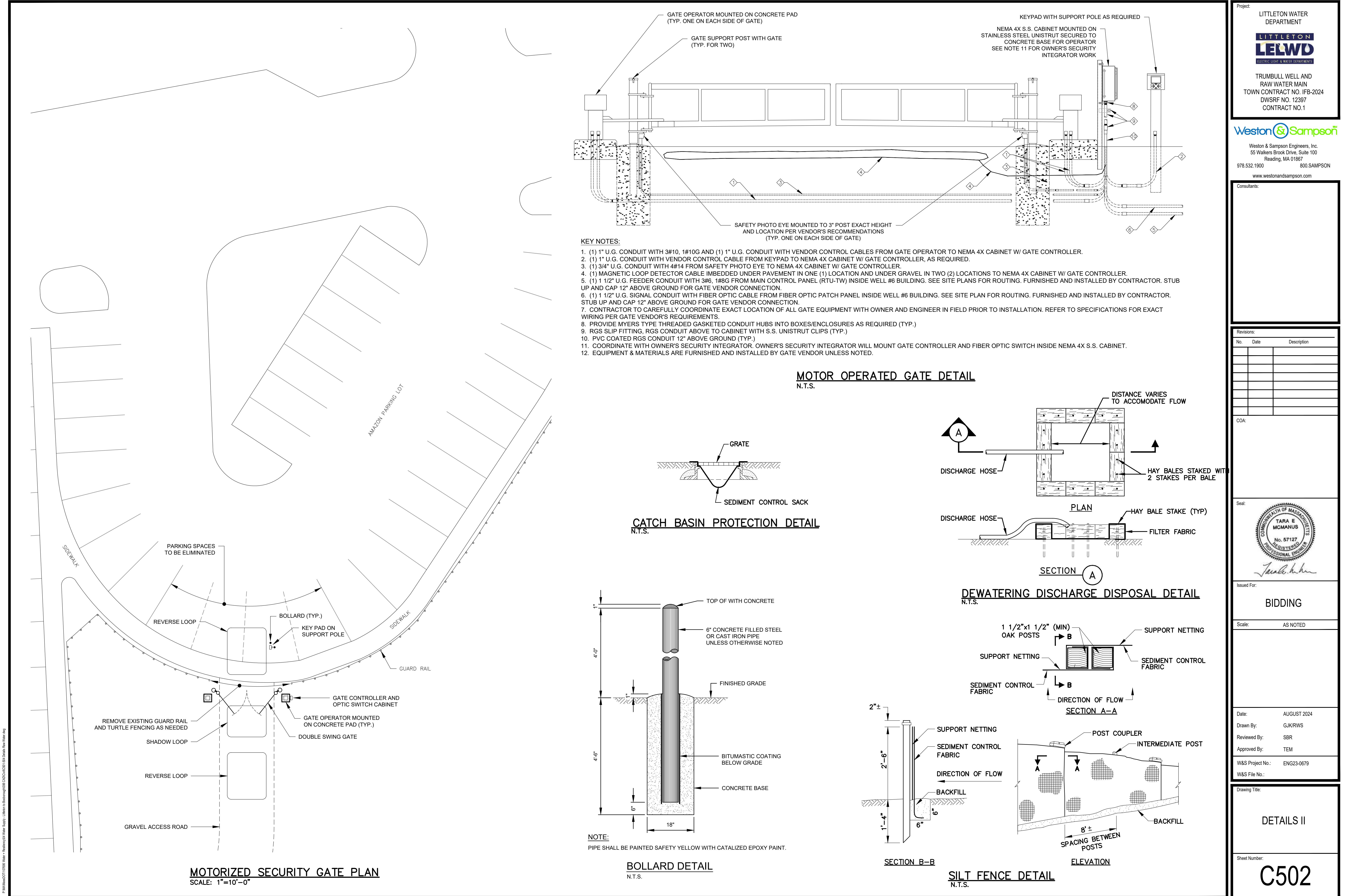
RESTRAINED JOINT TABLE



WATER MAIN LATERAL CONNECTION
N.T.S.

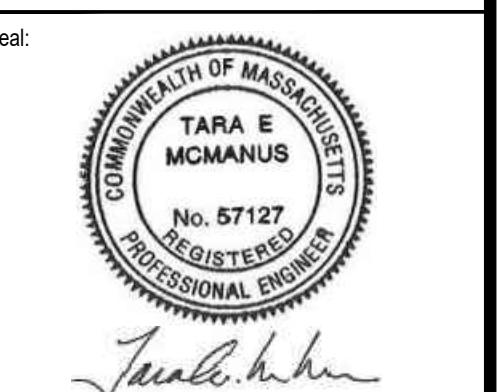


WATER MAIN TRENCH DETAIL
N.T.S.



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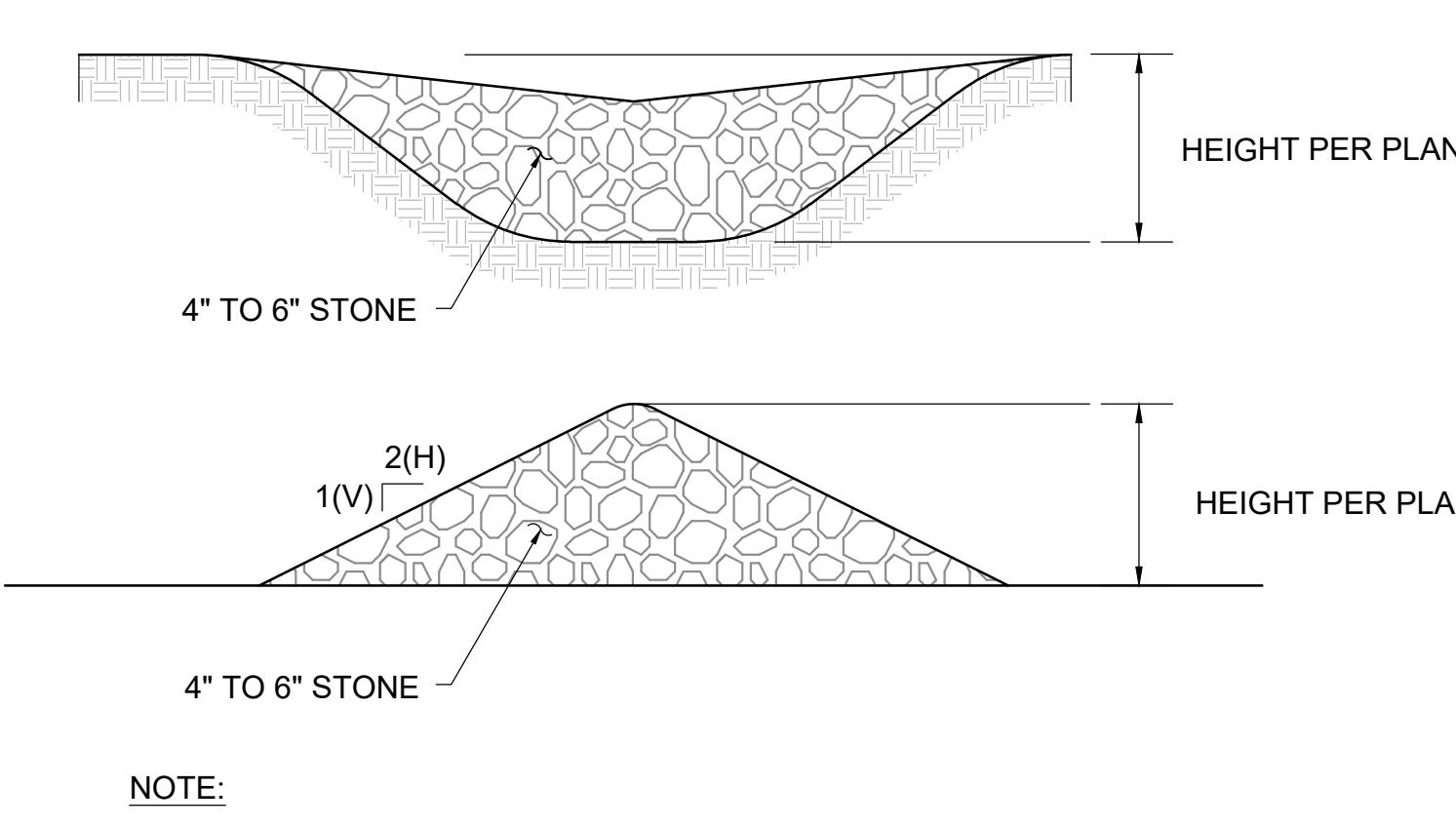
Date: AUGUST 2024
 Drawn By: GJK/RWS
 Reviewed By: SBR
 Approved By: TEM
 W&S Project No.: ENG23-0679
 W&S File No.:

Drawing Title:

DETAILS III

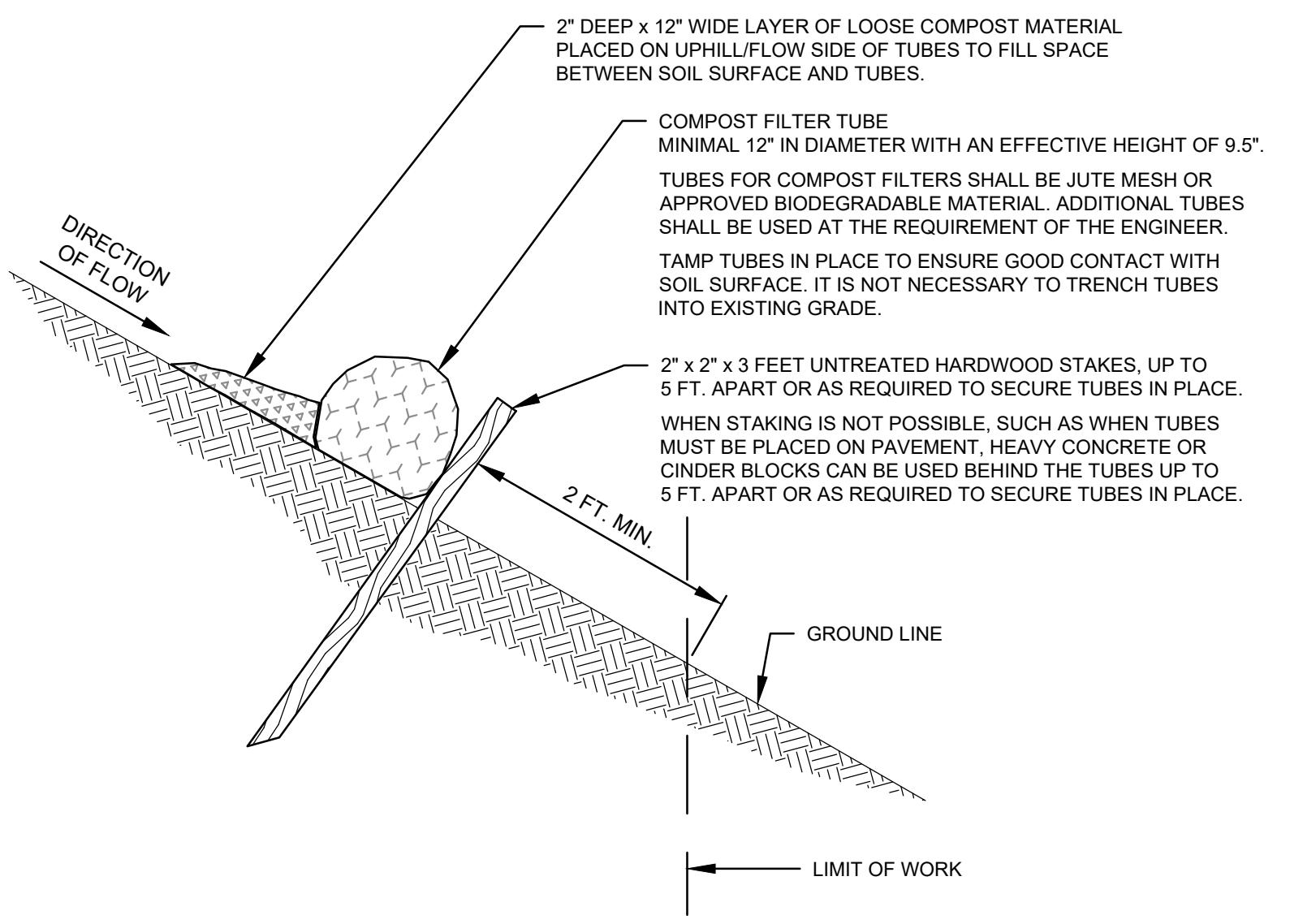
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C503



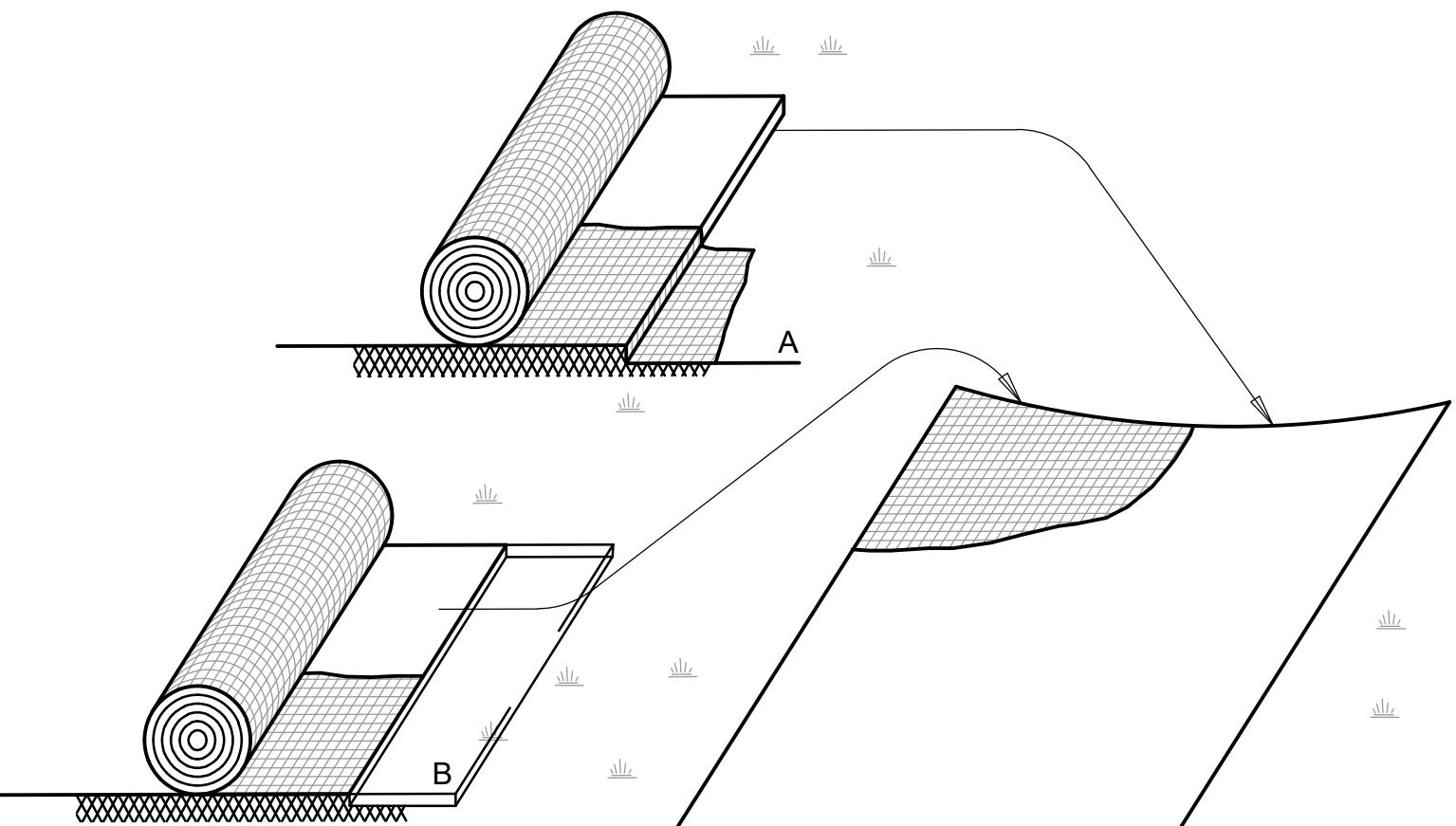
SEDIMENT FOREBAY / STONE CHECKDAM DETAIL

N.T.S.



NOTE:

- STRUCTURES SHALL BE INSTALLED ACCORDING TO THE DIMENSIONS SHOWN ON THE PLANS WHERE SEDIMENT FOREBAYS OR STONE CHECK DAMS ARE LOCATED.

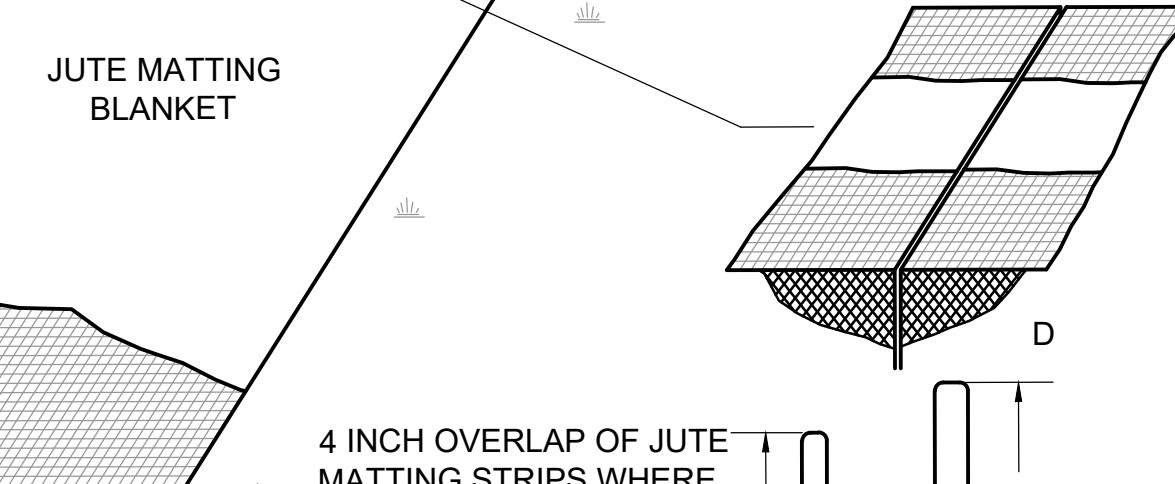


A. BURY THE TOP END OF JUTE MATTING STRIPS MINIMUM 6 INCHES.

B. TAMP THE TRENCH FULL OF SOIL. SECURE WITH ROW OF STAPLES, 6 INCH SPACING 4 INCHES DOWN FROM THE TRENCH.

C. OVERLAP- BURY UPPER END OF LOWER STRIP AS IN 'A' AND 'B': OVERLAP END OF TOP STRIP 4 INCHES AND STAPLE.

D. EROSION STOP-FOLD EDGE OF JUTE MATTING BURIED IN SILT TRENCH AND TAMPED; DOUBLE ROW OF STAPLES.

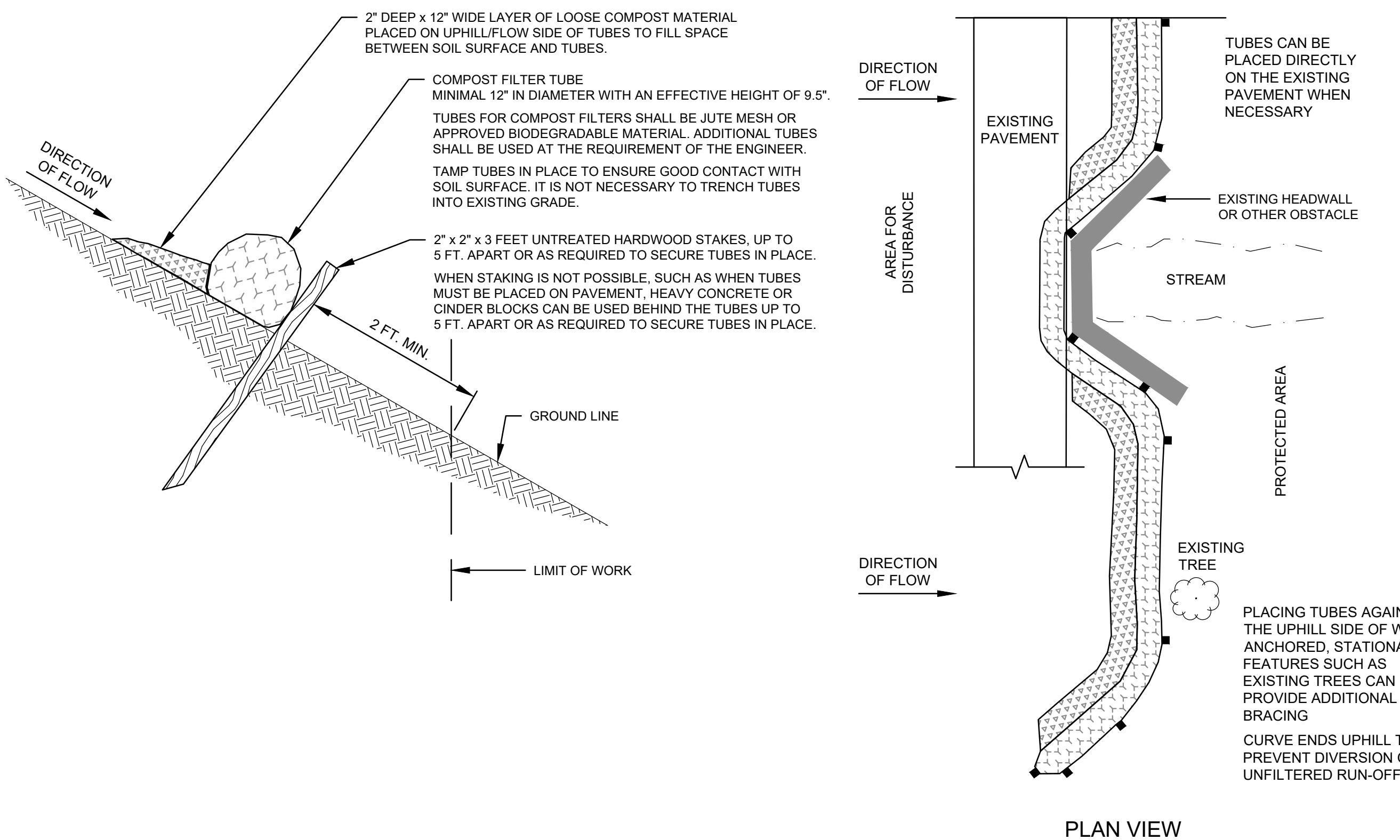


NOTES:

- EROSION CONTROL BLANKET TO BE USED ON ALL SLOPES GREATER THAN 2.5H:1V AS INDICATED ON GRADING PLANS.
- EROSION CONTROL BLANKET TO BE PRODUCED FROM BIODEGRADABLE JUTE OR COIR MATTING AND IS NOT TO CONTAIN PLASTICS.

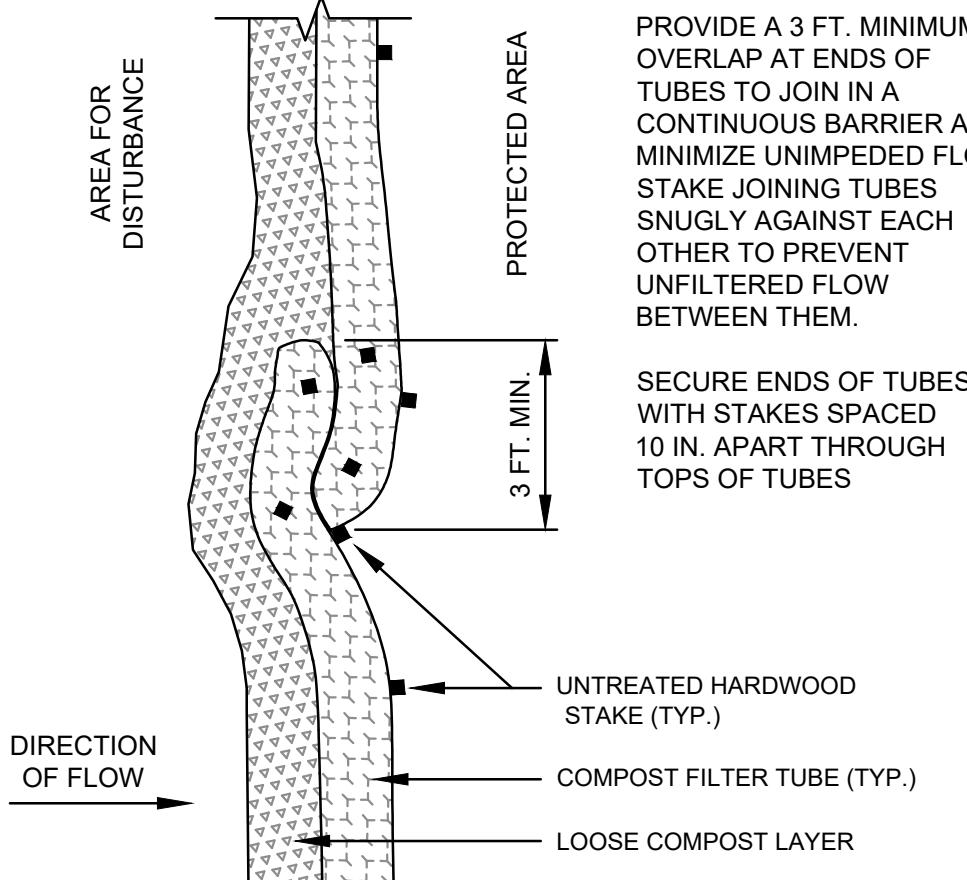
EROSION CONTROL BLANKET DETAIL

N.T.S.



GENERAL NOTES:

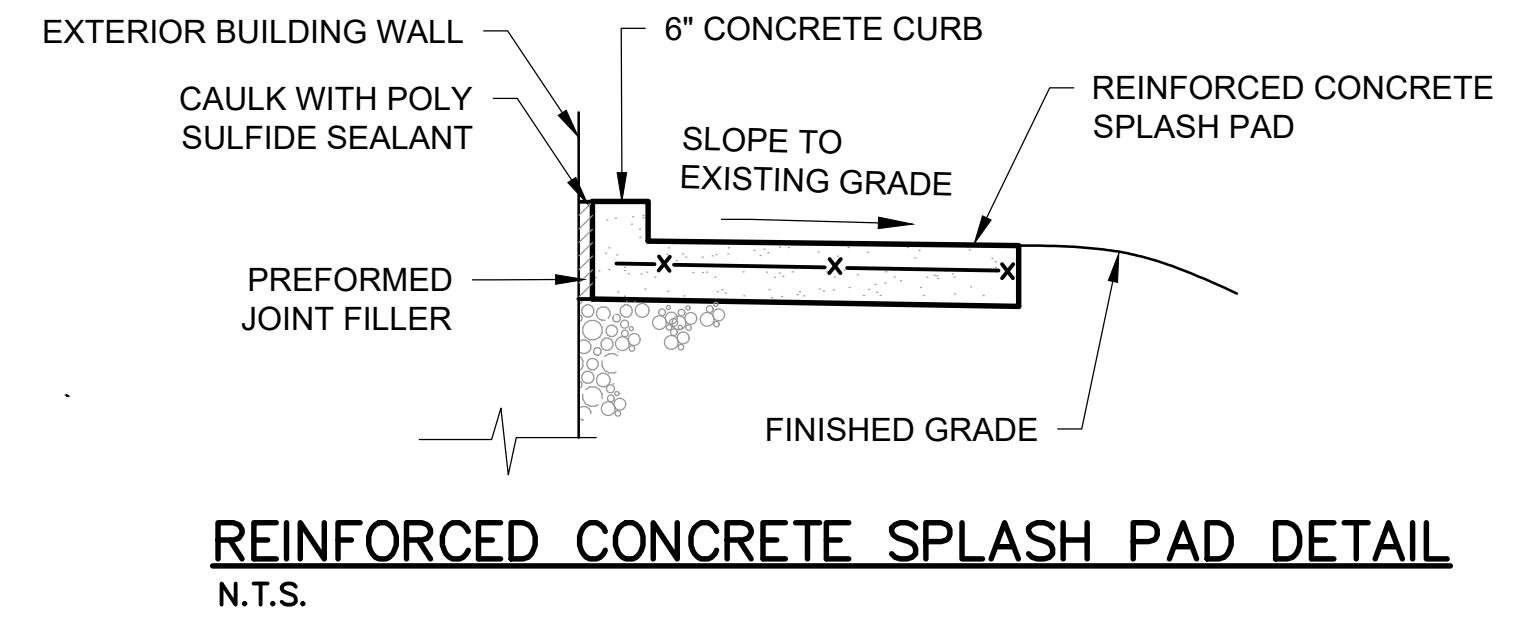
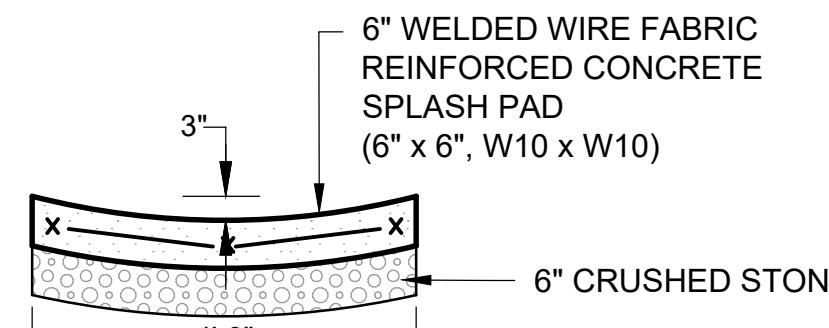
- PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
- INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
- DO NOT INSTALL IN PERENNIAL, Ephemeral OR INTERMITTENT STREAMS.
- CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORM WATER RUN-OFF.



PLAN VIEW - OVERLAP DETAIL

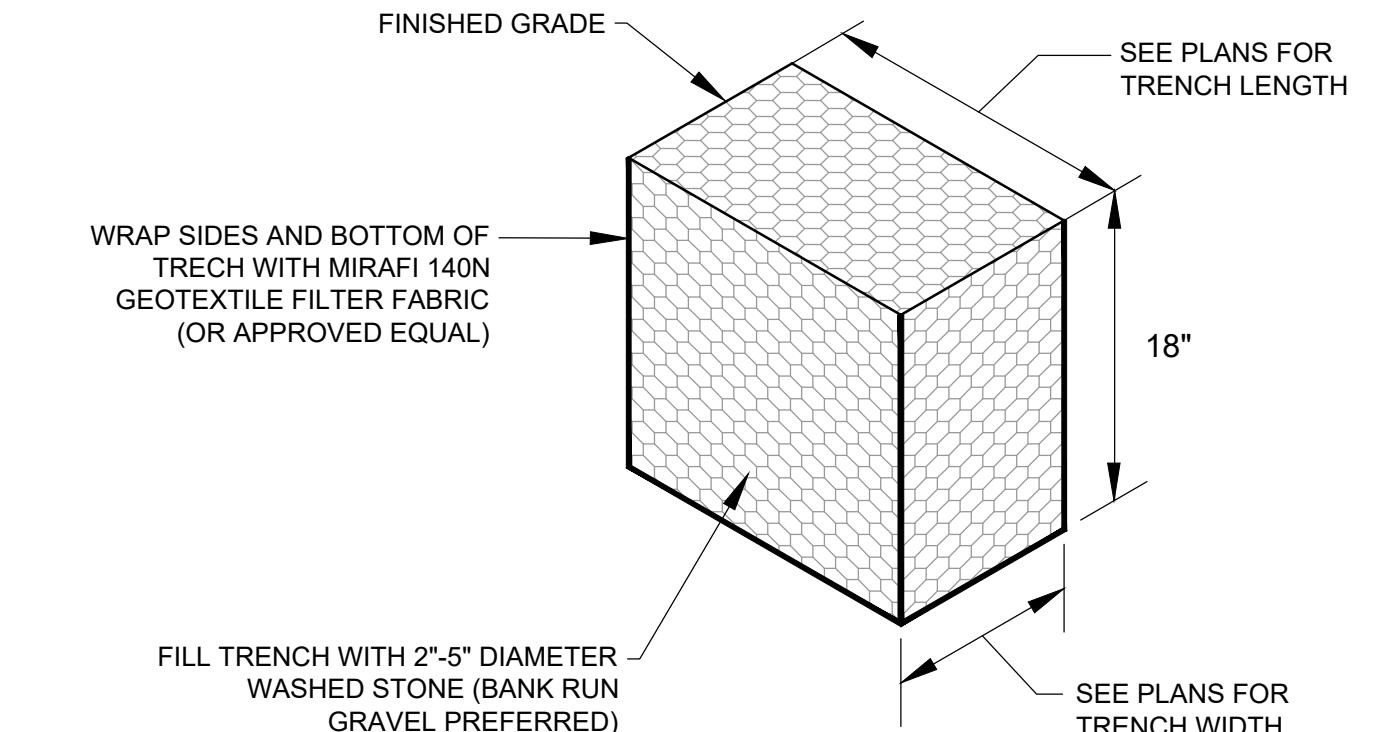
SINGLE COMPOST FILTER TUBE DETAIL

N.T.S.



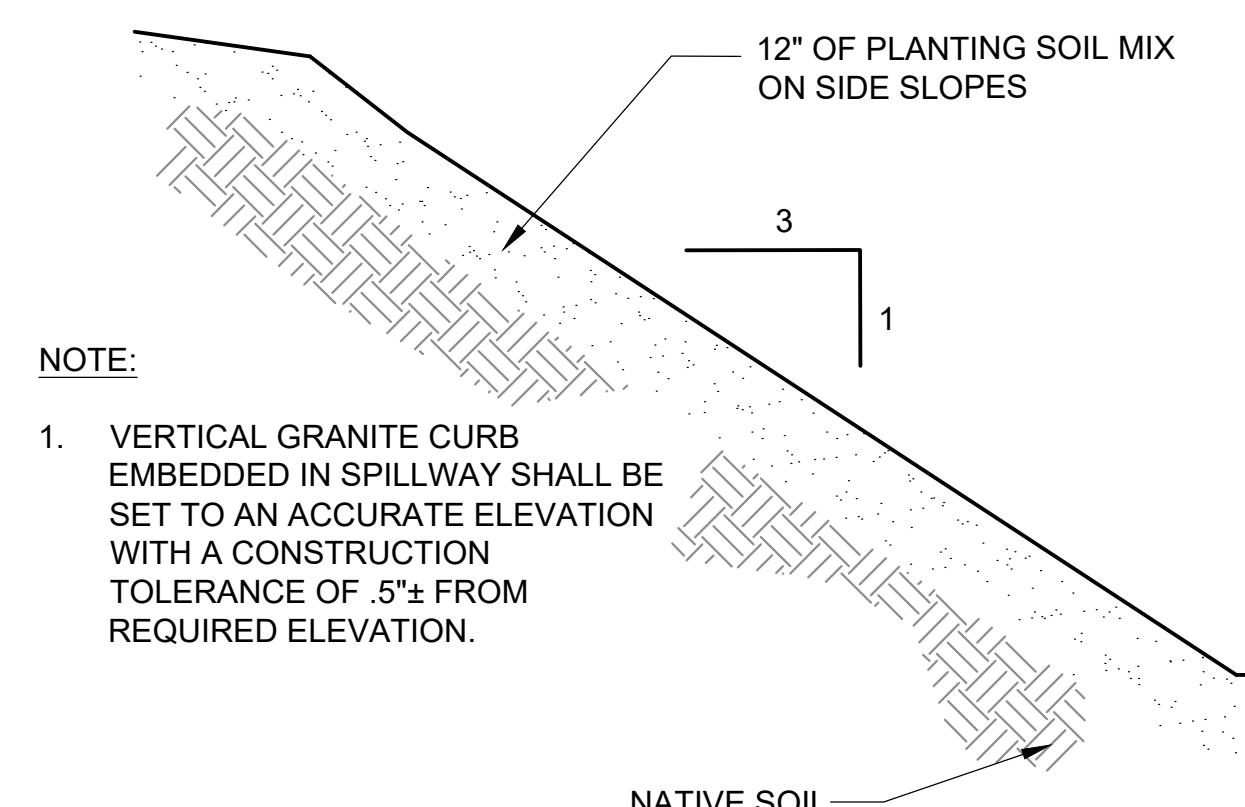
REINFORCED CONCRETE SPLASH PAD DETAIL

N.T.S.



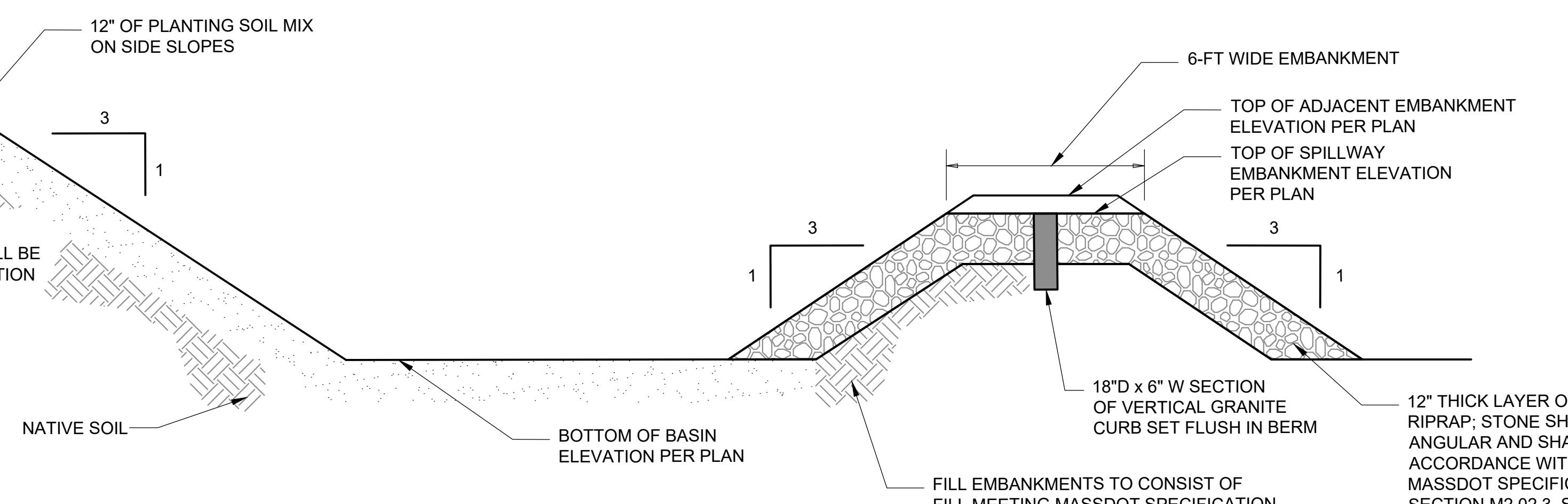
STORMWATER INFILTRATION TRENCH

N.T.S.



NOTE:

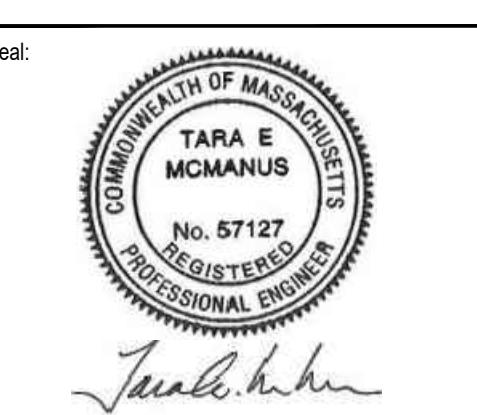
- VERTICAL GRANITE CURB EMBEDDED IN SPILLWAY SHALL BE SET TO AN ACCURATE ELEVATION WITH A CONSTRUCTION TOLERANCE OF .5"± FROM REQUIRED ELEVATION.



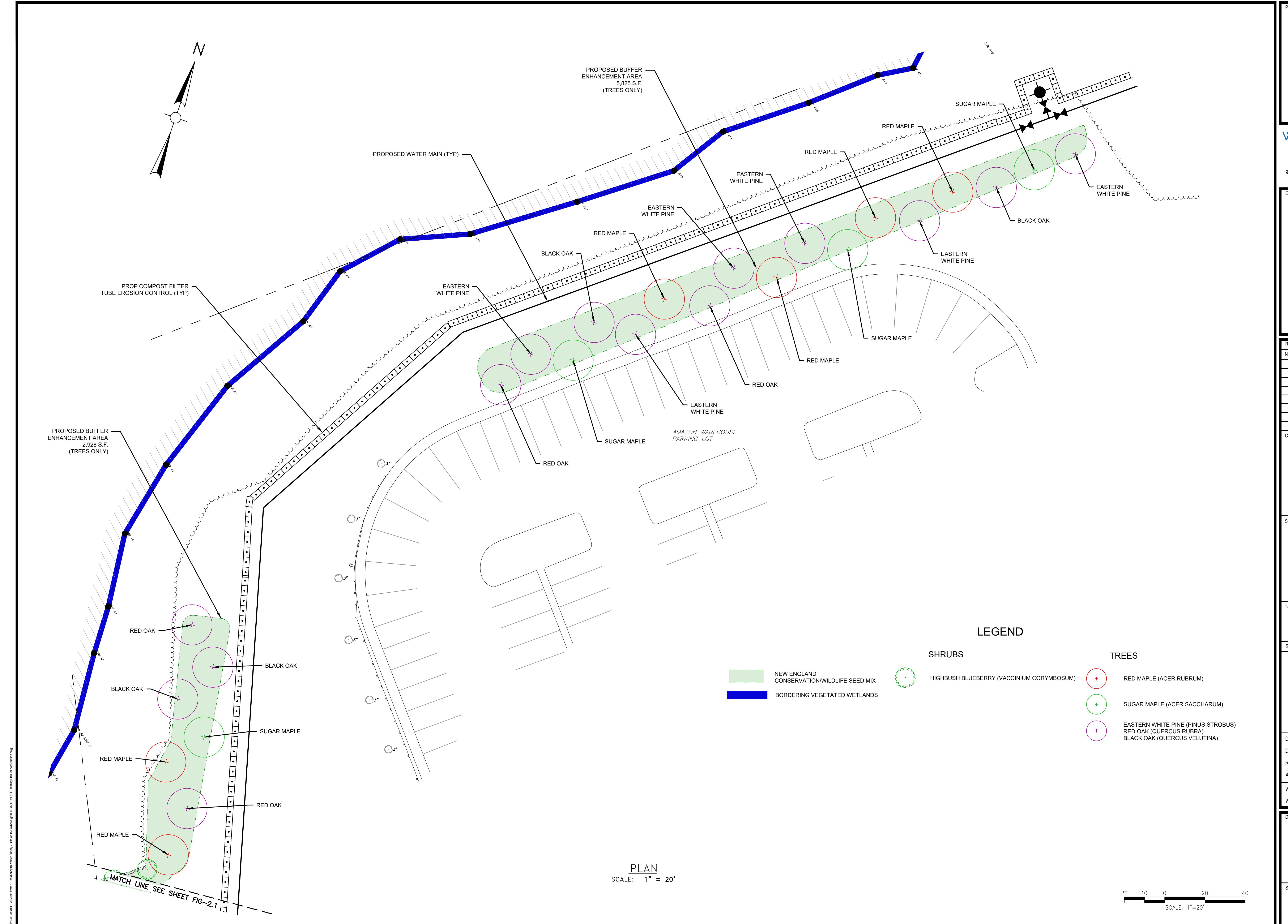
INFILTRATION BASIN DETAIL

N.T.S.

Revisions:		
No.	Date	Description



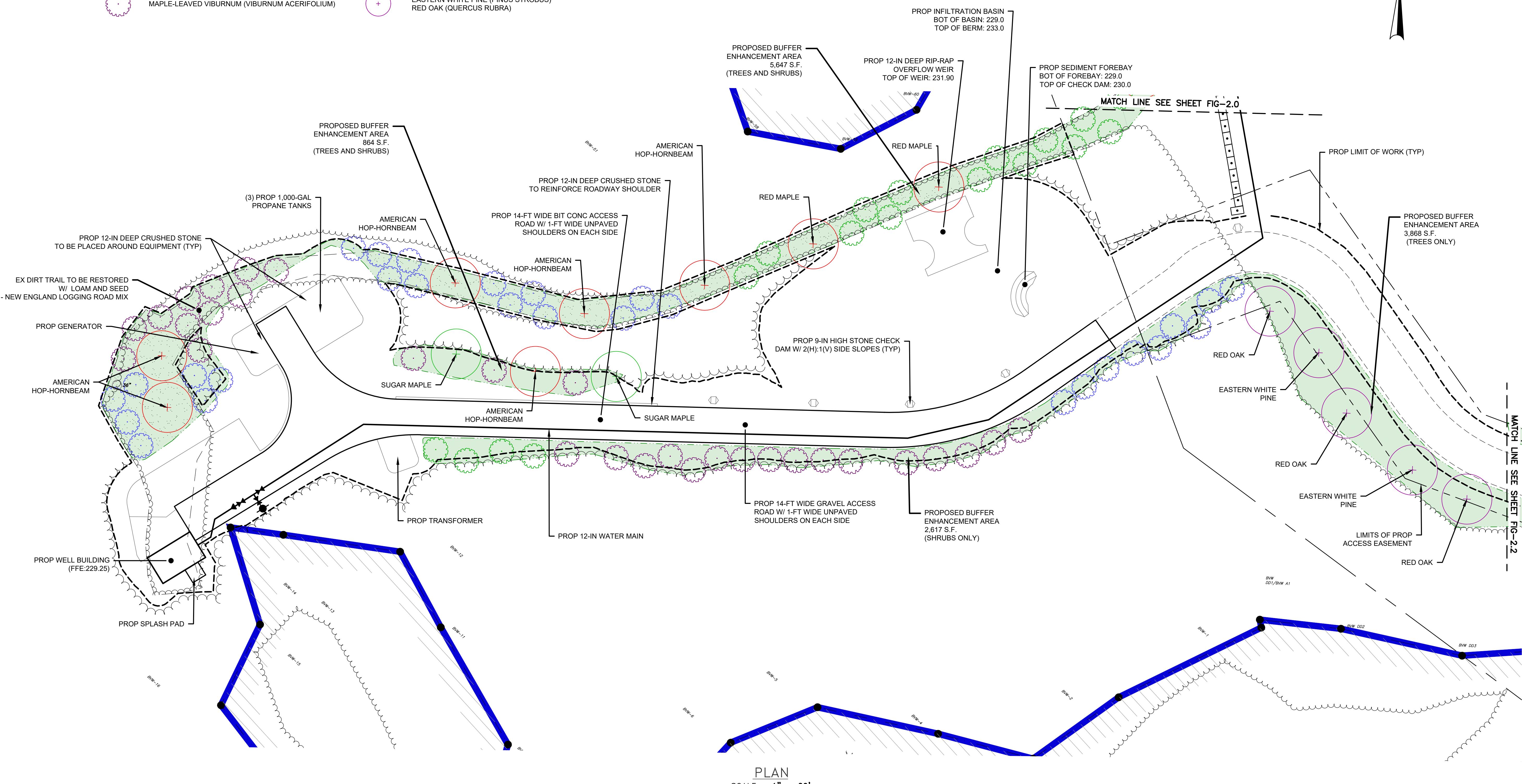
Date:	AUGUST 2024
Drawn By:	GJK
Reviewed By:	RNS
Approved By:	TEM
W&S Project No.:	ENG23-0679
W&S File No.:	



LEGEND

	NEW ENGLAND CONSERVATION/WILDLIFE SEED MIX
	NEW ENGLAND LOGGING ROAD MIX (EXISTING TRAIL TO BE RESTORED)
SHRUBS	
	AMERICAN WITCH HAZEL (<i>HAMAMELIS VIRGINIANA</i>)
	HIGHBUSH BLUEBERRY (<i>VACCINUM CORYMBOSUM</i>)
	MAPLE-LEAVED VIBURNUM (<i>VIBURNUM ACERIFOLIUM</i>)
TREES	
	RED MAPLE (<i>ACER RUBRUM</i>)
	AMERICAN HOP-HORNBEAM (<i>Ostrya VIRGINIANA</i>)
	SUGAR MAPLE (<i>ACER SACCHARUM</i>)
	EASTERN WHITE PINE (<i>PINUS STROBOS</i>)
	RED OAK (<i>QUERCUS RUBRA</i>)

N



20 10 0 20 40
SCALE: 1" = 20'

Project: LITTLETON WATER DEPARTMENT

LITTLETON
LELWD
ELECTRIC LIGHT & WATER DEPARTMENTS

TRUMBULL WELL AND
RAW WATER MAIN
TOWN CONTRACT NO. IFB-2024
DWSRF NO. 12397
CONTRACT NO.1

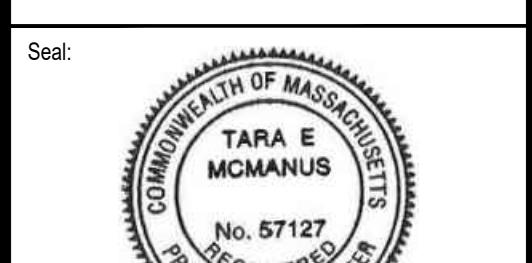
Weston & Sampson

Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

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Date: AUGUST 2024
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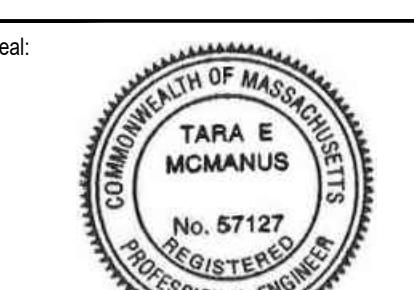
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PLANTING PLAN

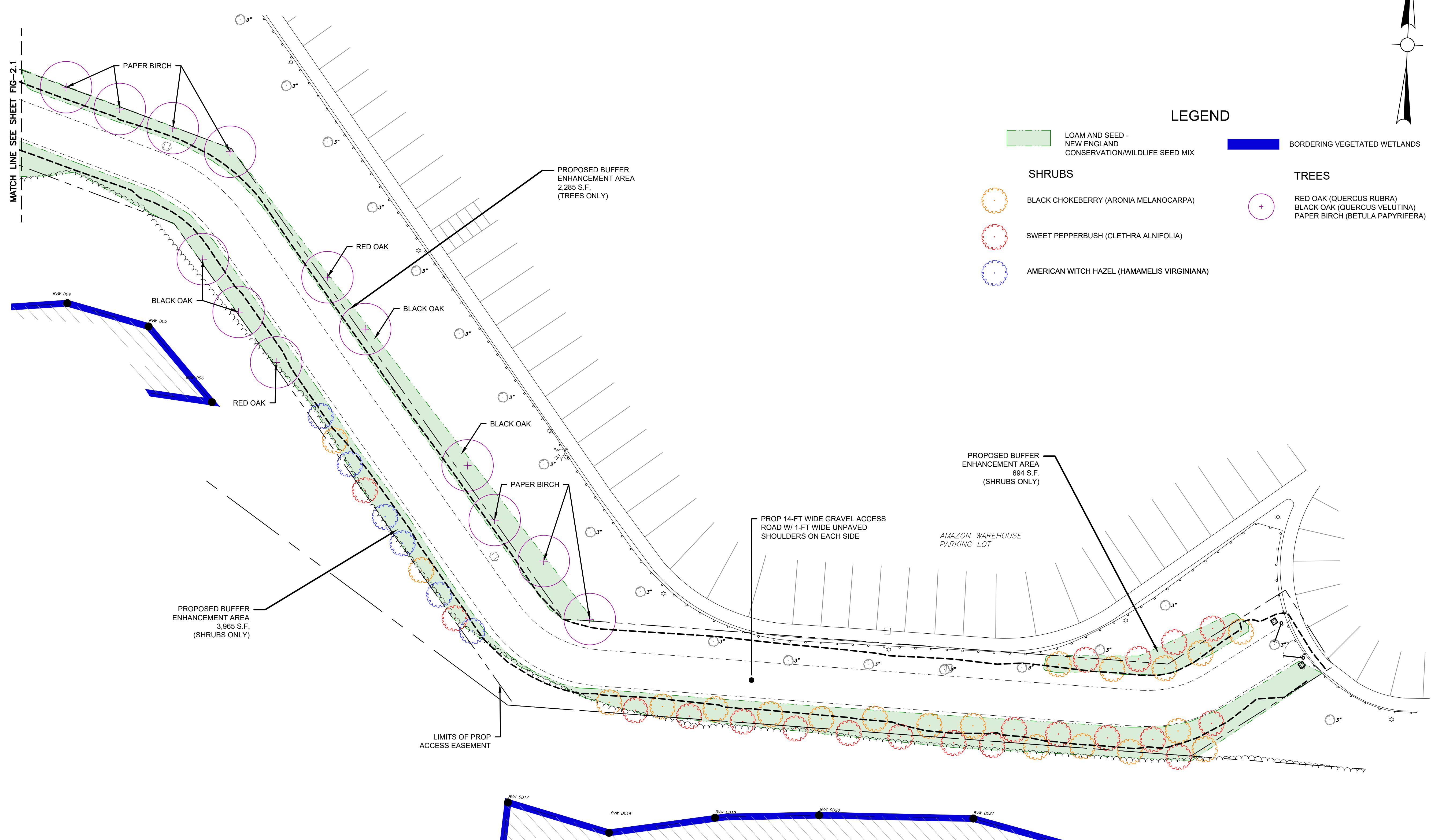
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L002

No.	Date	Description

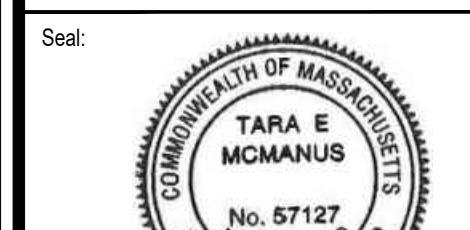


Date:	AUGUST 2024
Drawn By:	GJK
Reviewed By:	RNS
Approved By:	TEM
W&S Project No.:	ENG23-0679
W&S File No.:	



Revisions:		
No.	Date	Description

COA:



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Scale: AS NOTED

Date: AUGUST 2024

Drawn By: GJK

Reviewed By: RNS

Approved By: TEM

W&S Project No.: ENG23-0679

W&S File No.:

Drawing Title:

PLANTING PLAN DETAILS

Sheet Number:

L501

Restoration and Enhancement Plantings

Species	Plant Size	Plant Quantity	Planting Notes
Red Oak (<i>Quercus rubra</i>)	2-3" caliper saplings, bare root or 20 gallon min.	10	Red oak provides good cover for mammal and bird species and nesting sites for songbirds. Deer browse the leaves, and acorns are eaten by a variety of mammals. Adds important leaf litter.
Black Oak (<i>Quercus velutina</i>)	2-3" caliper saplings, bare root or 20 gallon min.	8	Black oak provides cover for mammal and bird species and nesting sites for songbirds. Acorns provide a food source for numerous species including small mammals, deer, and wild turkey.
Eastern White Pine (<i>Pinus strobus</i>)	2-3" caliper saplings, bare root or 20 gallon min.	8	Songbirds and small mammals eat eastern white pine seeds. Deer and rabbits browse the foliage. Several mammal species feed on the bark.
White Birch (<i>Betula papyrifera</i>)	2-3" caliper saplings, bare root or 20 gallon min.	6	Some small mammals eat the twigs and bark. Birds feed on the catkins.
American Hop-Hornbeam (<i>Ostrya virginiana</i>)	2-3" caliper saplings, bare root or 20 gallon min.	6	Excellent pollinator habitat. Nutlets are eaten by songbirds, turkeys, and small mammals.
Red Maple (<i>Acer rubrum</i>)	2-3" caliper saplings, bare root or 20 gallon min.	8	Red maple flowers early in the spring. The leaves and shoots are browsed by deer. Rodents feed on the fruits. Adds important leaf litter.
Sugar Maple (<i>Acer saccharum</i>)	2-3" caliper saplings, bare root or 20 gallon min.	6	Deer, porcupine, and rodents eat the bark, twigs, or fruit. Songbirds and woodpeckers nest in the branches.
Tree Total		52	
Highbush Blueberry (<i>Vaccinium corymbosum</i>)	2-3'	17	Berries provide a food source for birds and small mammals. Foliage is browsed by deer and rabbits. Plant attracts many pollinators.
Sweet Pepperbush (<i>Clethra alnifolia</i>)	2-3'	20	A medium-sized shrub found in coastal and inland wetlands. Sweet-smelling flowers in July. Provides food and cover for birds.
Maple-leaved Viburnum (<i>Viburnum acerifolium</i>)	2-3'	30	Deer, rabbits, and beavers eat the twigs, bark and leaves.
American Witch Hazel (<i>Hamamelis virginiana</i>)	2-3'	35	Fruit is eaten by deer and rabbits.
Black Chokeberry (<i>Aronia melanocarpa</i>)	2-3'	20	Host plant for pollinators. Provides shelter and nesting sites for birds. Browsed by deer and rabbits.
Shrub Total		122	
New England Conservation/Wildlife Seed Mix			The New England Conservation/Wildlife Mix™ (or equivalent) contains a variety of grasses, wildflowers, and legumes. This seed mix enhances wildlife habitat value.
New England Logging Road Mix (for use within the former access road)			The New England Logging Road Seed Mix™ provides native plant cover in low fertility and compacted soils.

NEW ENGLAND WETLAND PLANTS, INC

820 WEST STREET, AMHERST, MA 01002
PHONE: 413-548-8000 FAX 413-549-4000
EMAIL: INFO@NEWP.COM WEB ADDRESS: WWW.NEWP.COM

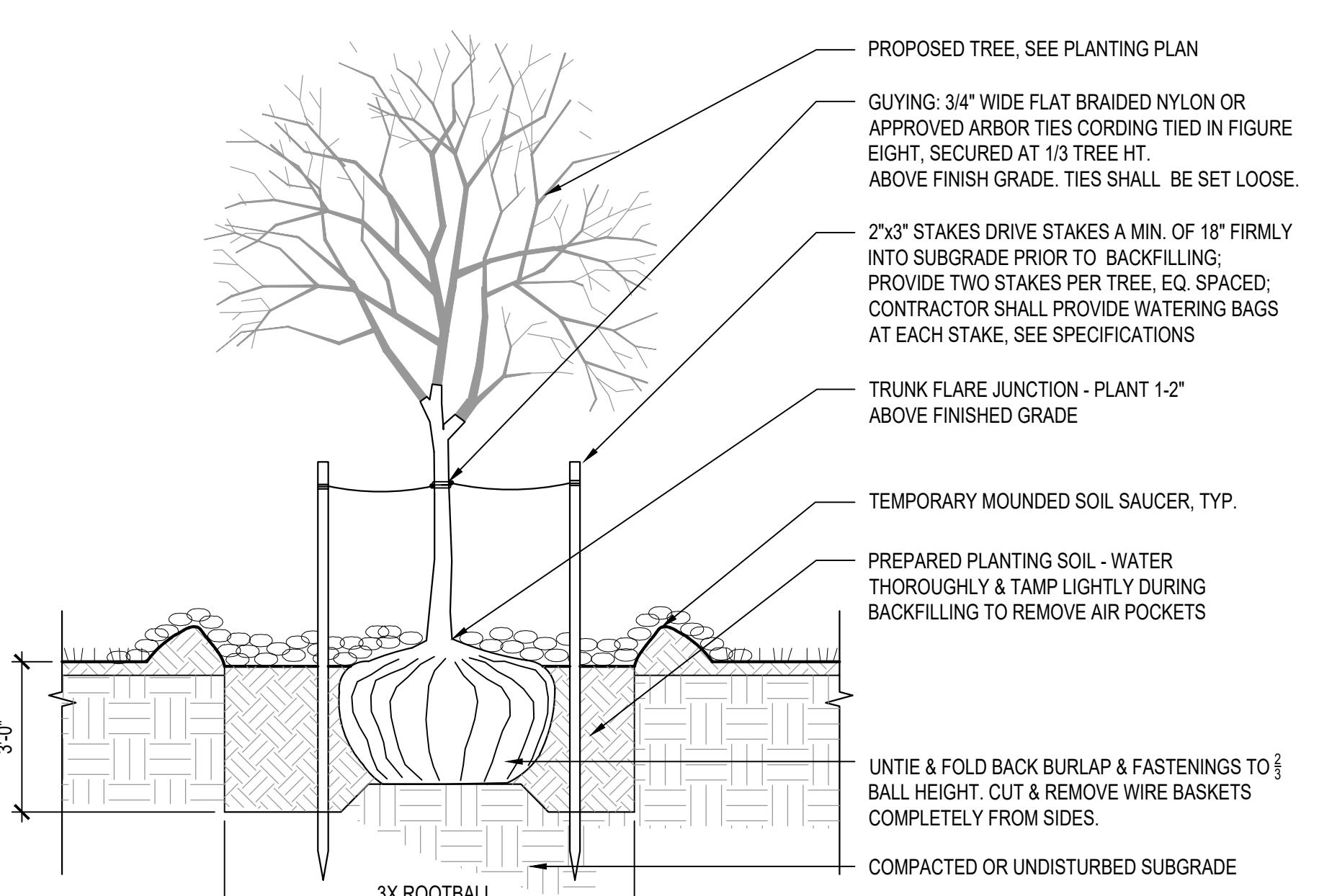
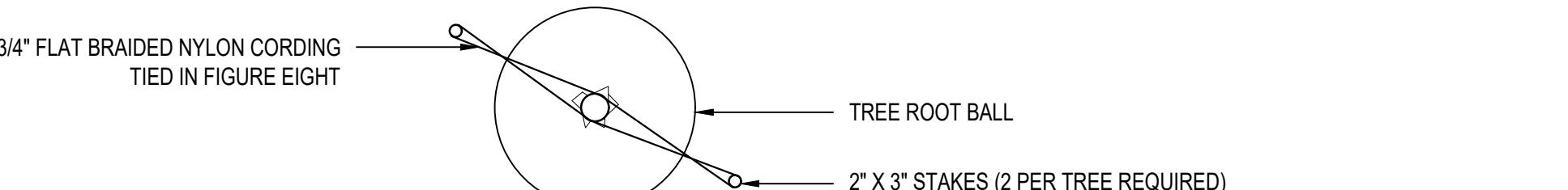
New England Logging Road Mix

Botanical Name	Common Name	Indicator
<i>Festuca rubra</i>	Red Fescue	FACU
<i>Schizachyrium scoparium</i>	Little Bluestem	FACU
<i>Panicum virgatum</i>	Switch Grass	FAC
<i>Elymus virginicus</i>	Virginia Wild Rye	FACW
<i>gerardii</i>	Big Bluestem	FAC
<i>Sorghastrum nutans</i>	Indian Grass	UPL
<i>Chamaecrista fasciata</i>	Partridge Pea	FACU
<i>Agrostis perennans</i>	Upland Bentgrass	FACU
<i>Juncus tenuis</i>	Path Rush	FAC
<i>Juncus effusus</i>	Soft Rush	FACW+

PRICE PER LB. \$26.00 MIN. QUANTITY 3LBS.TOTAL: \$78.00 APPLY: 20 LBS/ACRE :2200 sq ft/lb

The New England Logging Road Seed Mix was originally designed for restoring Maine logging roads, but has application on other types of restoration sites. Provides native plant cover in low fertility and compacted soils. Always apply on clean bare soil. The mix may be applied by hydro-seeding, by mechanical spreader, or on small sites it can be spread by hand. Lightly rake, or roll to ensure proper seed to soil contact. Best results are obtained with a Spring or late Summer seeding. Late Spring and early Summer seeding will benefit from a light mulching of weed-free straw to conserve moisture. If conditions are drier than usual, watering may be required. Late Fall and Winter dormant seeding require an increase in the seeding rate. Fertilization is not required unless the soils are particularly infertile. Preparation of a clean weed free soil surface is necessary for optimal results.

New England Wetland Plants, Inc. may modify seed mixes at any time depending upon seed availability. The design criteria and ecological function of the mix will remain unchanged. Price is \$/bulk pound, FOB warehouse, Plus SH and applicable taxes.



LOAM & SEED

SECTION NO SCALE



SHRUB PLANTING

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MISCELLANEOUS PLANTING REQUIREMENTS:

1. THE WETLAND SPECIALIST (WS) OR ARBORIST MAY PROPOSE SUBSTITUTIONS RELATIVE TO SPECIES, SIZE, AND QUANTITIES IF THERE IS LIMITED AVAILABILITY OF PLANT STOCK AT THE TIME OF PLANTING. ANY SUBSTITUTIONS MUST BE APPROVED BY THE ENGINEER/WS AND THE LITTLETON CONSERVATION COMMISSION. ALL PLANT MATERIAL SHALL BE PURCHASED FROM A NEW ENGLAND NURSERY AND GUARANTEED BY THE SITE CONTRACTOR TO BE IN VIGOROUS GROWING CONDITION.
2. ANY SUBSTITUTIONS MUST BE APPROVED BY THE ENGINEER/WS AND THE LITTLETON CONSERVATION COMMISSION.
3. INSOFA AS IT IS PRACTICABLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT PRACTICABLE, THE SITE CONTRACTOR SHALL PROTECT, AND WATER STOCK NOT PLANTED IN CONSULTATION WITH THE WS AND NURSERY. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A 3-DAY PERIOD AFTER DELIVERY TO THE SITE. ANY PLANTS NOT INSTALLED DURING THIS 3-DAY PERIOD MAY BE REJECTED BY THE WS.
4. QUALITY AND SIZE OF PLANTS AND SPREAD OF ROOTS SHALL BE IN ACCORDANCE WITH ANSI 260 (REV. 1980) "AMERICAN STANDARD FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
5. ALL PLANTS SHALL BE PLANTED IN TRANSPORTED TOPSOIL THAT IS THOROUGHLY WATERED. RAISE AND REPLANT ANY PLANT WHICH SETTLES MORE THAN 2 INCHES AFTER PLANTING AND WATERING.
6. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME TO DAMAGE THE BARK OR BREAK BRANCHES. PLANTS SHALL BE HANDLED FROM THE BOTTOM OF CONTAINER ONLY.
7. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AS DETERMINED BY THE SUPERVISING WS. THIS IS TYPICALLY BETWEEN APRIL 15 AND JUNE 15 AND SEPTEMBER 15 AND NOVEMBER 15. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS MUDDY OR FROZEN. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-SETTING ANY PLANTS THAT BECOME DISLODGED OR UPROOTED BECAUSE OF FROST HEAVES OR OTHER ENVIRONMENTAL FACTORS DURING THE FIRST TWO GROWING SEASONS.
8. SET ALL PLANTS PLUMB AND STRAIGHT. LOCATED PLANT IN THE CENTER OF THE PIT.
9. THE SEED MIXES SHALL BE SOWN ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.
10. CONTRACTOR WILL BE RESPONSIBLE FOR TREE MAINTENANCE FOR ONE YEAR AFTER PLANTING. ANY TREE THAT IS IN POOR HEALTH AFTER ONE YEAR SHALL BE REPLACED BY THE CONTRACTOR, FREE OF CHARGE.
11. PLANTED TREES SHALL RECEIVE PROTECTION FROM DEER AND RODENT BROWSE THROUGH A TRUNK WRAP OR SIMILAR.
12. APPROXIMATELY 5% OF THE RESTORATION AREA SHALL BE COVERED IN COARSE WOODY DEBRIS CONSISTING OF TREE BRANCHES OR LOGS THAT WILL PROVIDE COVER FOR AMPHIBIANS, SNAKES, AND SMALL MAMMALS. THREE TO FIVE BRUSH PILES SHALL BE PLACED IN THE BUFFER ZONE RESTORATION AREAS FOR THE SAME PURPOSE.
13. FOR THE TREE PLANTINGS, 2"X3" WOODEN STAKES SHOULD BE DRIVEN INTO THE GROUND A MINIMUM OF 18" INTO THE SUBGRADE PRIOR TO BACKFILLING. TWO STAKES SHOULD BE PROVIDED FOR EACH TREE. ADDITIONALLY, 3/4" FLAT BRAIDED NYLON OR APPROVED ARBOR TIES SHALL BE USED TO SECURE THE TREE TO THE STAKES. TIES SHALL BE SET LOOSE.

NEW ENGLAND WETLAND PLANTS, INC

820 WEST STREET, AMHERST, MA 01002

PHONE: 413-548-8000 FAX 413-549-4000

EMAIL: INFO@NEWP.COM WEB ADDRESS: WWW.NEWP.COM

New England Conservation/Wildlife Mix

Botanical Name	Common Name	Indicator
<i>Elymus virginicus</i>	Virginia Wild Rye	FACW
<i>scoparium</i>	Little Bluestem	FACU
<i>Andropogon gerardii</i>	Big Bluestem	FAC
<i>Festuca rubra</i>	Red Fescue	FACU
<i>Sorghastrum nutans</i>	Indian Grass	UPL
<i>Panicum virgatum</i>	Switch Grass	FAC
<i>Chamaecrista fasciata</i>	Partridge Pea	FACU
<i>Desmodium canadense</i>	Showy Tick Trefoil	FAC
<i>Asclepias tuberosa</i>	Butterfly Milkweed	NI
<i>Bidens frondosa</i>	Beggar Ticks	FACW
<i>Eupatorium purpureum (Eutrochium maculatum)</i>	Purple Joe Pye Weed	FAC
<i>Rudbeckia hirta</i>	Black Eyed Susan	FAC
<i>pilosus (Symphytum pilosum)</i>	Heath (Hairy) Aster	FAC
<i>Solidago juncea</i>	Early Goldenrod	UPL

PRICE PER LB. \$39.50 MIN. QUANTITY 2LBS. TOTAL: \$79.00 APPLY: 25 LBS/ACRE :1750 sq ft/lb

The New England Conservation/Wildlife Mix provides a permanent cover of grasses, wildflowers, and legumes. For both good erosion control and wildlife habitat value. The mix is designed to be a no maintenance seeding, and is appropriate for cut and fill slopes, detention basin side slopes, and disturbed areas adjacent to commercial and residential projects.

New England Wetland Plants, Inc. may modify seed mixes at any time depending upon seed availability. The design criteria and ecological function of the mix will remain unchanged. Price is \$/bulk pound, FOB warehouse, Plus SH and applicable taxes.

