

City of Portsmouth, New Hampshire

Department of Public Works

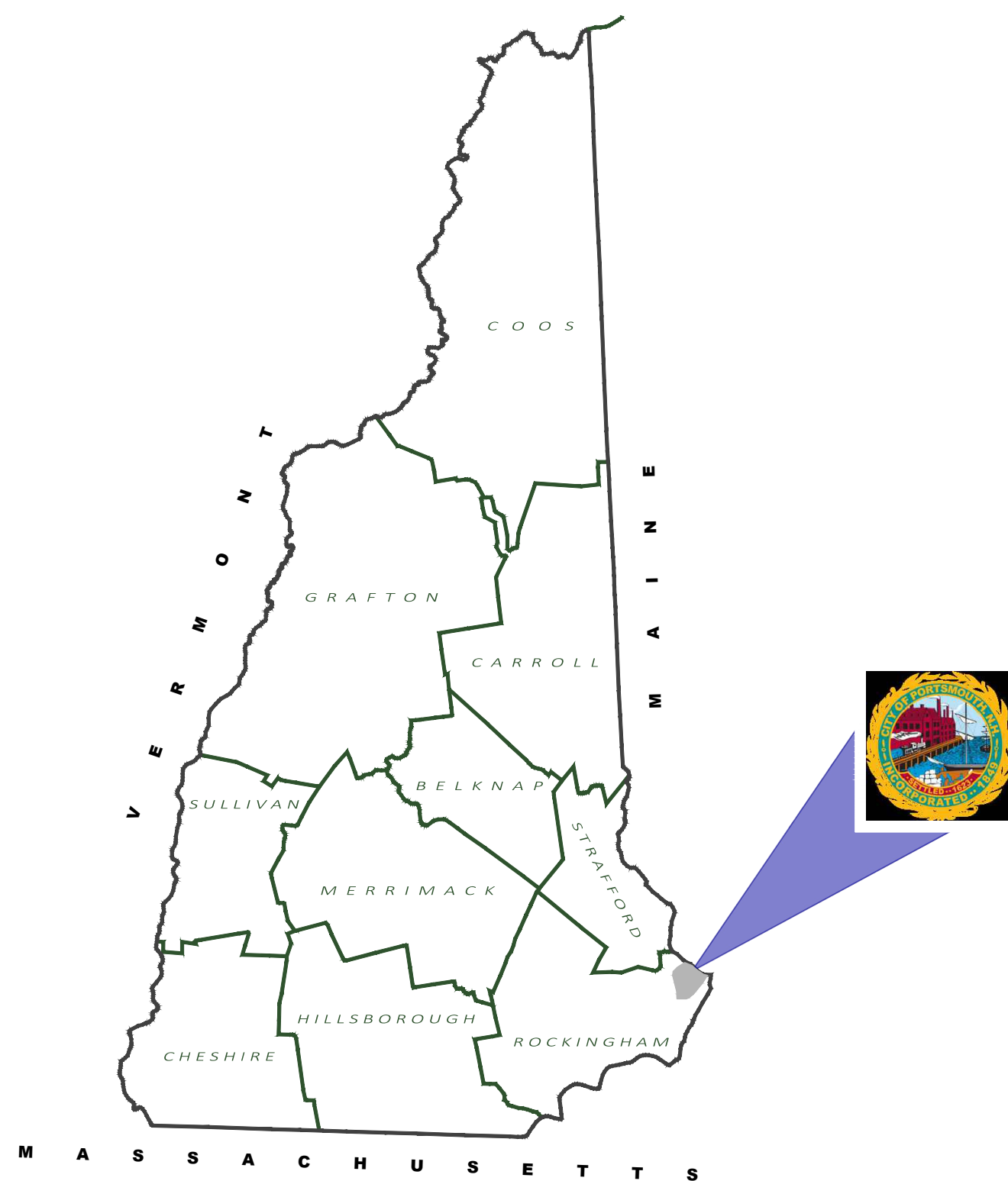
Union Street Area Improvement Project

Issued for Bid

January 2023

Sheet Index

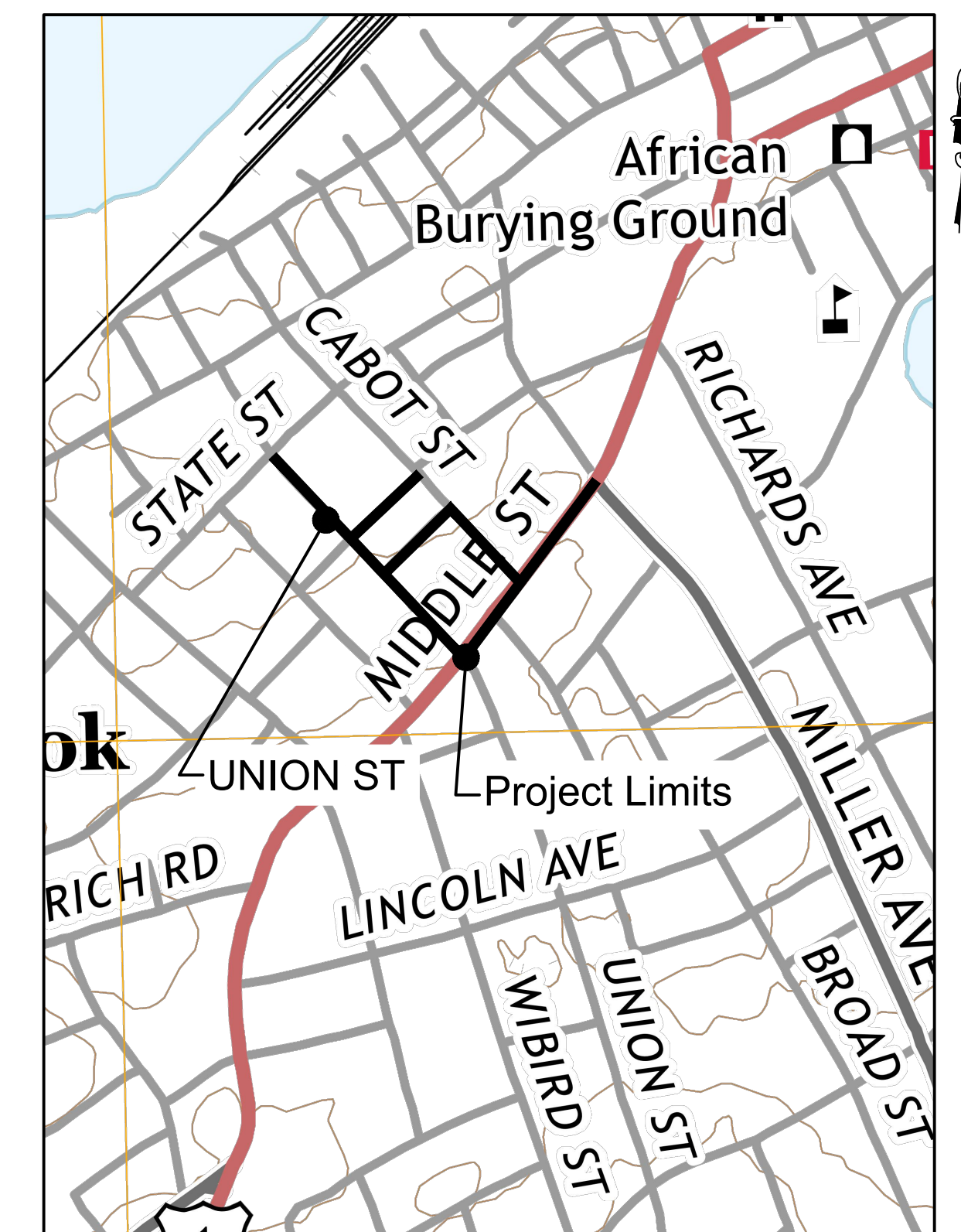
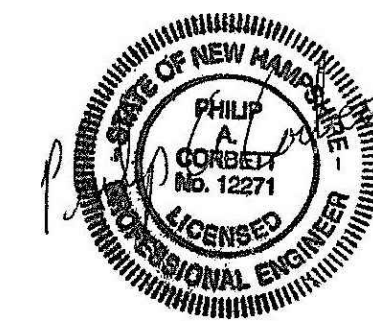
1.	Cover Sheet
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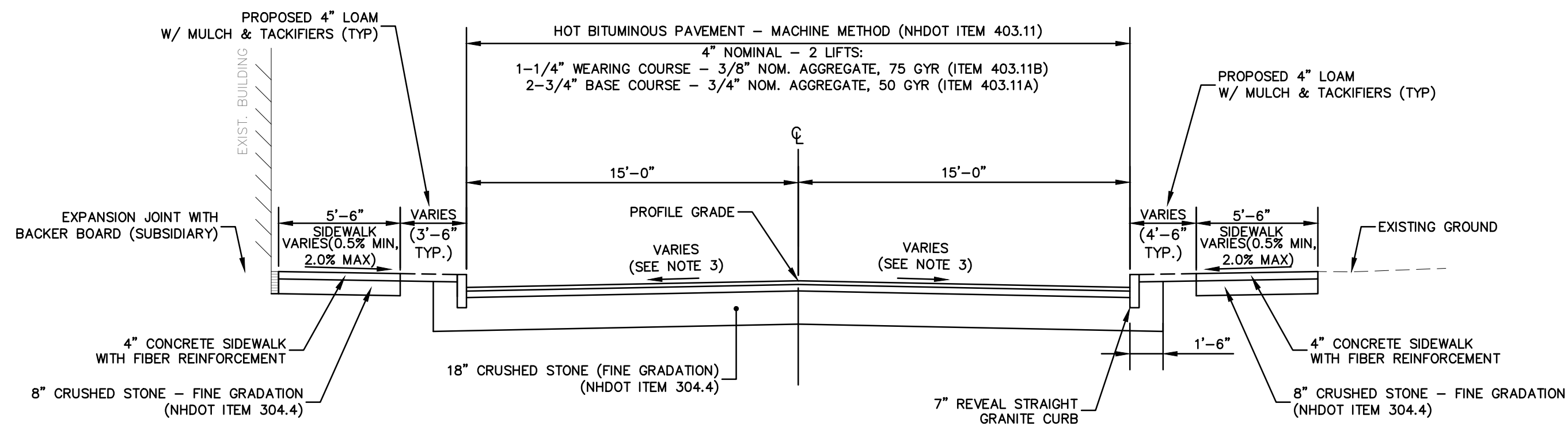
Locus Plan

Prepared For:
City of Portsmouth
Department of Public Works
680 Peverly Hill Road
Portsmouth, NH 03801

Prepared By:
CMA
ENGINEERS
CIVIL/ENVIRONMENTAL/STRUCTURAL
 Portsmouth, NH • Manchester, NH • Portland, ME
 603/431-6196 • 603/627-0708 • 207/541-4223
 cmaengineers.com

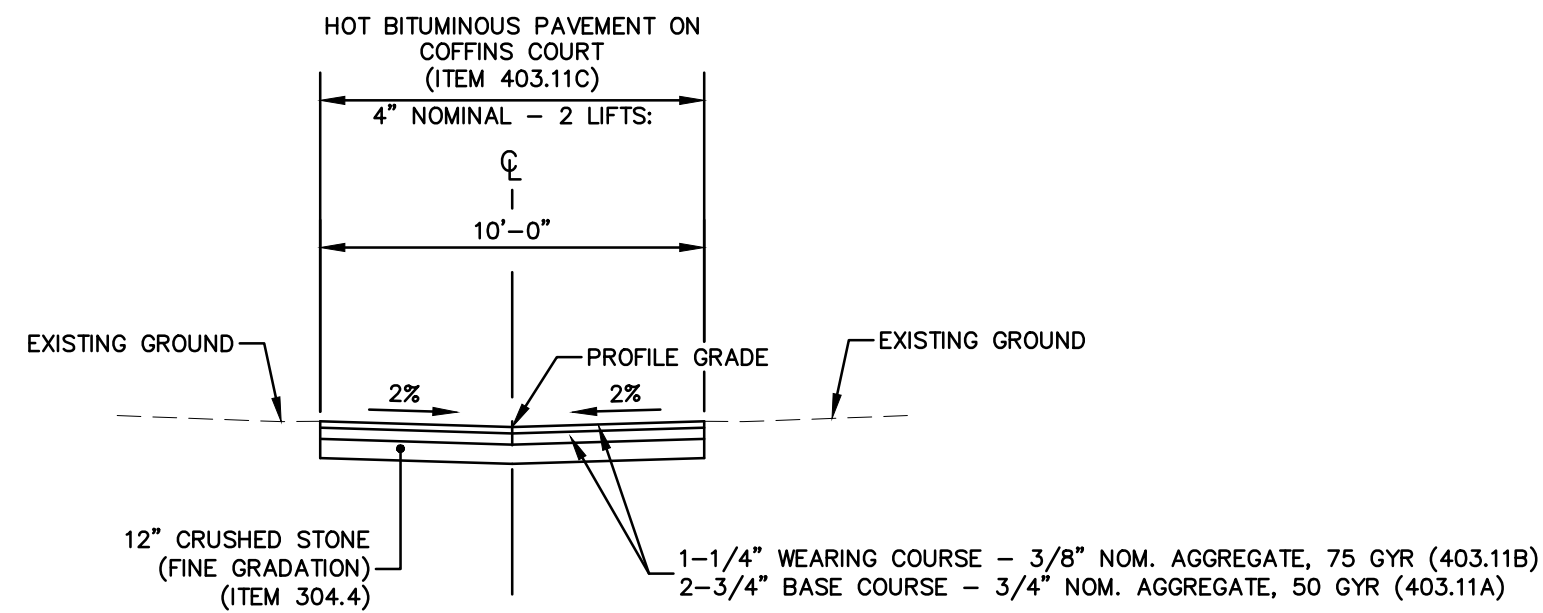


Project Location



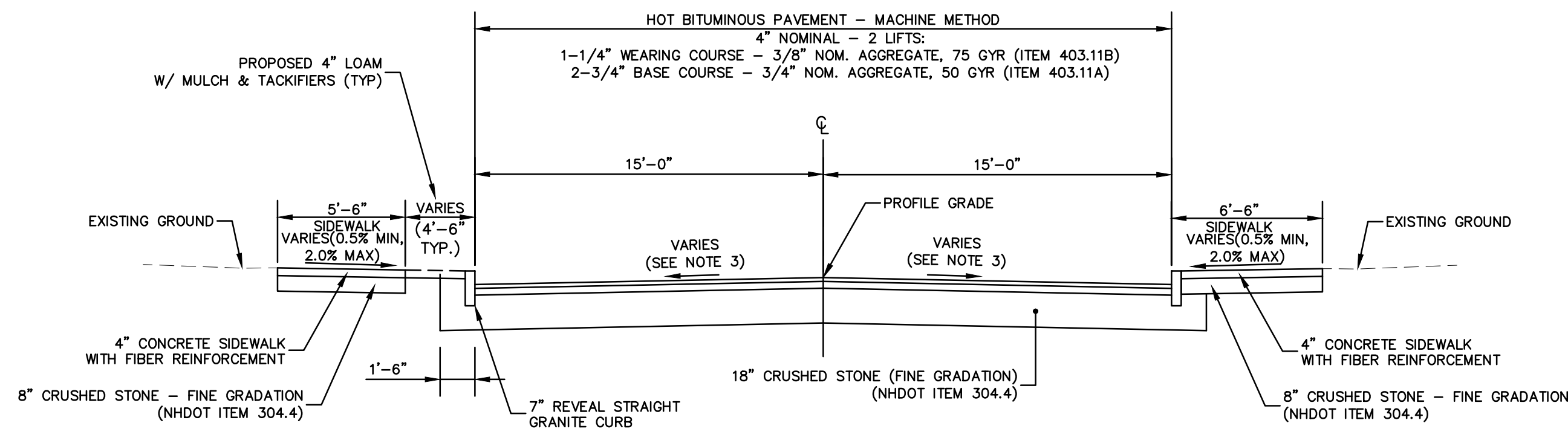
UNION STREET (BASE BID)

Not to Scale
Sta 104+26 TO 109+86



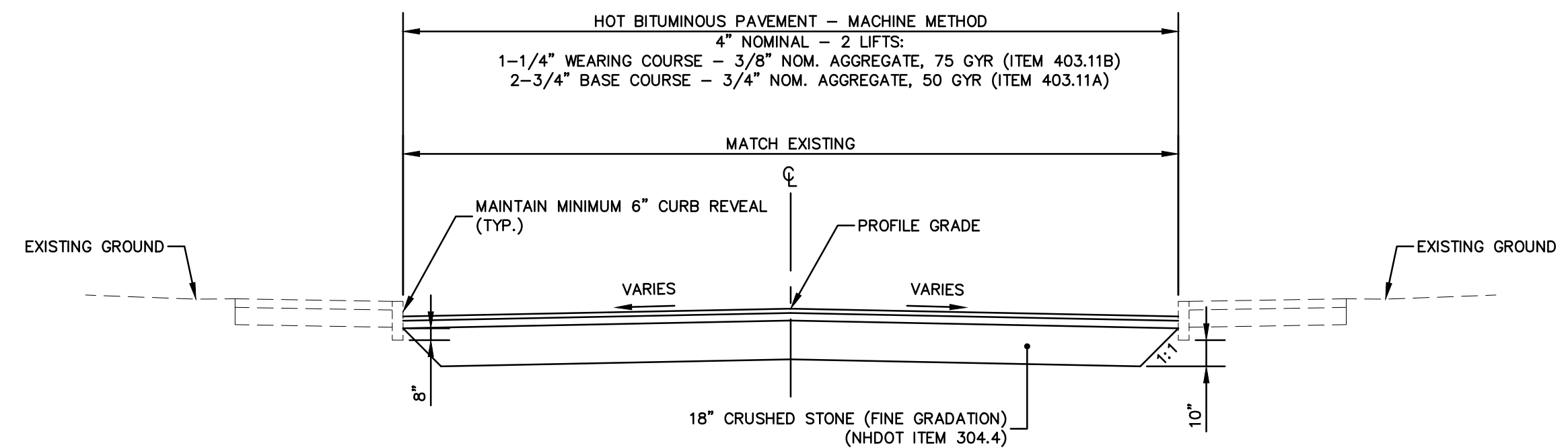
COFFINS COURT (BID ALTERNATE A)

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Sta 400+41 TO 403+32



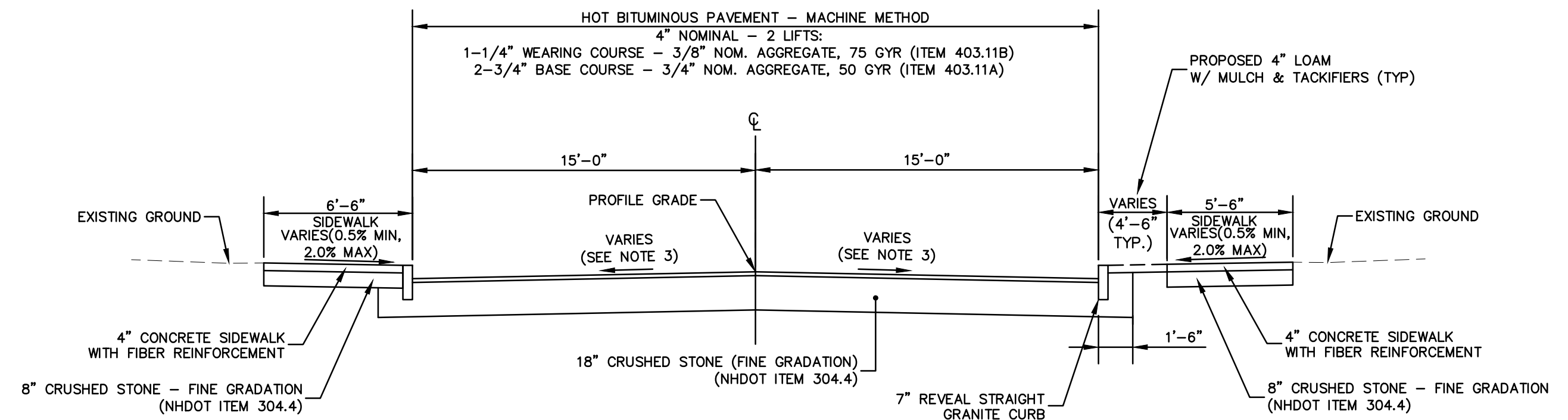
AUSTIN STREET (BID ALTERNATE C)

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Sta 300+40 TO 303+40



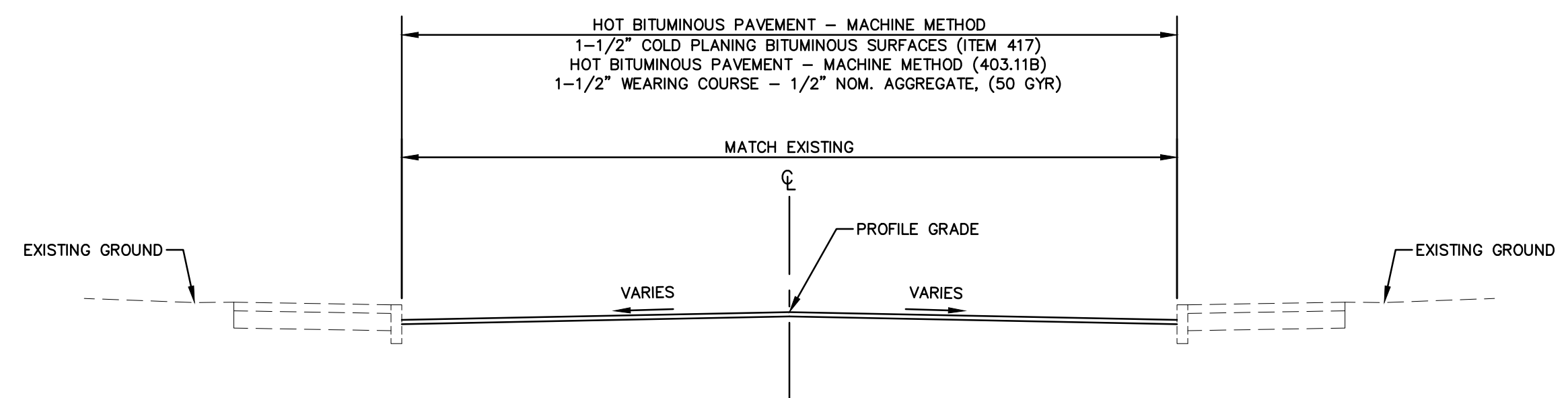
CABOT STREET (BID ALTERNATE A)

Not to Scale
Sta 600+27 TO 603+70



UNION STREET (BID ALTERNATE B)

Not to Scale
Sta 100+00 TO 104+26



MIDDLE STREET (BID ALTERNATE D)

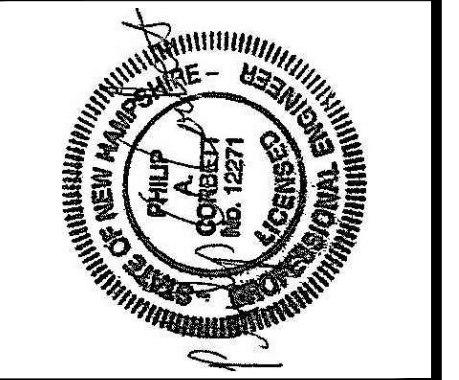
Not to Scale
Sta 500+68 TO 504+75

NOTES:

- Asphalt emulsion for tack coat shall be applied at the rate of 0.07 gal/sy for milled surfaces and 0.05 gal/sy for smooth paved surfaces, subsidiary to paving.
- Pavement joint adhesive required on longitudinal joints (all lifts), subsidiary to paving.
- See general plan profiles for superelevation transition sections. See cross sections for additional cross slope grades.

revision	no.	date	by
1	Issued for Bid	1/17/2023	PAC

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Civil/Environmental/Structural
Portsmouth, NH • 603/627-0708 • 207/641-4223
Manchester, NH • 603/627-0708 • 207/641-4223
c m a e n g i n e e r s . c o m



date:	January 2023	designed by:	STF/WAB
project no.:	1211	drawn by:	WWG
checked by:	PAC	approved by:	PAC
scale:	0 10' 20'	Scale:	1" = 10'

City of Portsmouth, New Hampshire
Department of Public Works
Union Street Area
Improvement Project
Typical Sections

LEGEND:

- IRON ROD FOUND
IRON PIPE FOUND
GRANITE POST FOUND
RAILROAD SPIKE FOUND
SURVEY NAIL FOUND
CHAIN LINK FENCE
FENCE
WOOD FENCE POST
STEEL FENCE POST
CONSOLIDATED COMMUNICATIONS
FAIRPOINT
NEW ENGLAND TELEPHONE AND TELEGRAPH CO.
PUBLIC SERVICE CO. OF NH
VERIZON
EVERSOURCE
SEE SIGNAGE TABLE
ROCKINGHAM COUNTY REGISTRY OF DEEDS
EDGE OF PAVEMENT
EDGE OF TRAVELLED WAY
VERTICAL FACED GRANITE CURB
BRICK RETAINING WALL
CONCRETE RETAINING WALL
MORTARED RETAINING WALL
STONE RETAINING WALL
WOOD RETAINING WALL
GRANITE RETAINING WALL
BOLLARD
SIGN
UTILITY POLE
UTILITY POLE W/TRANSFORMER
LIGHT POLE
UTILITY POLE WITH ARM & LIGHT
GUY
ELECTRICAL CONDUIT
ELECTRICAL PANEL
ELECTRICAL BOX
ELECTRIC METER
COMMUNICATIONS MANHOLE
TELEPHONE MANHOLE
GAS METER
GAS SHUT OFF
GAS VALVE
WATER GATE VALVE
WATER SHUT OFF VALVE
HYDRANT
FIRE CONNECTION
CATCH BASIN
CATCH BASIN
DRAIN MANHOLE
ROOF DOWNSPOUT
SEWER MANHOLE
SEWER CLEAN OUT
BRUSH/HEDGE LINE
CONIFEROUS TREE
DECIDUOUS TREE
CONIFEROUS SHRUB
DECIDUOUS SHRUB
WATER LINE
SEWER LINE
DRAIN LINE
GAS LINE
FORCE MAIN
UNDERGROUND COMMUNICATIONS
UNDERGROUND ELECTRIC
CEMENT CONCRETE
BRICK PAVERS
CRUSHED STONE
RETAINING WALL
LANDSCAPED AREA
SPOT GRADE

SEWER TABLE

Table listing sewer manholes (SMH#) with details such as RIM EL, INV IN, and INV OUT for various pipe materials and sizes.

DRAIN TABLE

Table listing catch basins (CB#) with details such as RIM EL, INV IN, and INV OUT for various pipe materials and sizes.

NOTES:

- 1. THIS PLAN IS BASED ON A FIELD SURVEY PERFORMED 6/2021-9/2022 BY JAMES VERRA AND ASSOC., INC. ON SITE CONTROL ESTABLISHED USING SURVEY GRADE GPS.
2. THE RELATIVE ERROR OF CLOSURE WAS LESS THAN 1 FOOT IN 15,000 FEET.
3. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES...
4. CONTRACTOR TO VERIFY SITE BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE SETTING OR ESTABLISHMENT OF ANY GRADES/ELEVATIONS.

REFERENCE PLANS:

- 1. AS BUILT PLAN, 211 UNION STREET, LLC, PORTSMOUTH, NH, TAX MAP 135, LOT 70, REVISED TO 8/20/2018, BY ROSS ENGINEERING.
2. CITY OF PORTSMOUTH, N.H., RECORD DRAWINGS, LINCOLN AREA SEWER SEPERATION, CONTRACT 3B, DATED 12/2014, BY UNDERWOOD ENGINEERS, INC.
3. CITY OF PORTSMOUTH, N.H., RECORD DRAWINGS, LINCOLN AREA SEWER SEPERATION, CONTRACT 3C, DATED 12/2016, BY UNDERWOOD ENGINEERS, INC.

PROJECT TEMPORARY BENCHMARKS table with columns: I.D., DESCRIPTION, ELEV. Rows A through P listing benchmark locations and elevations.

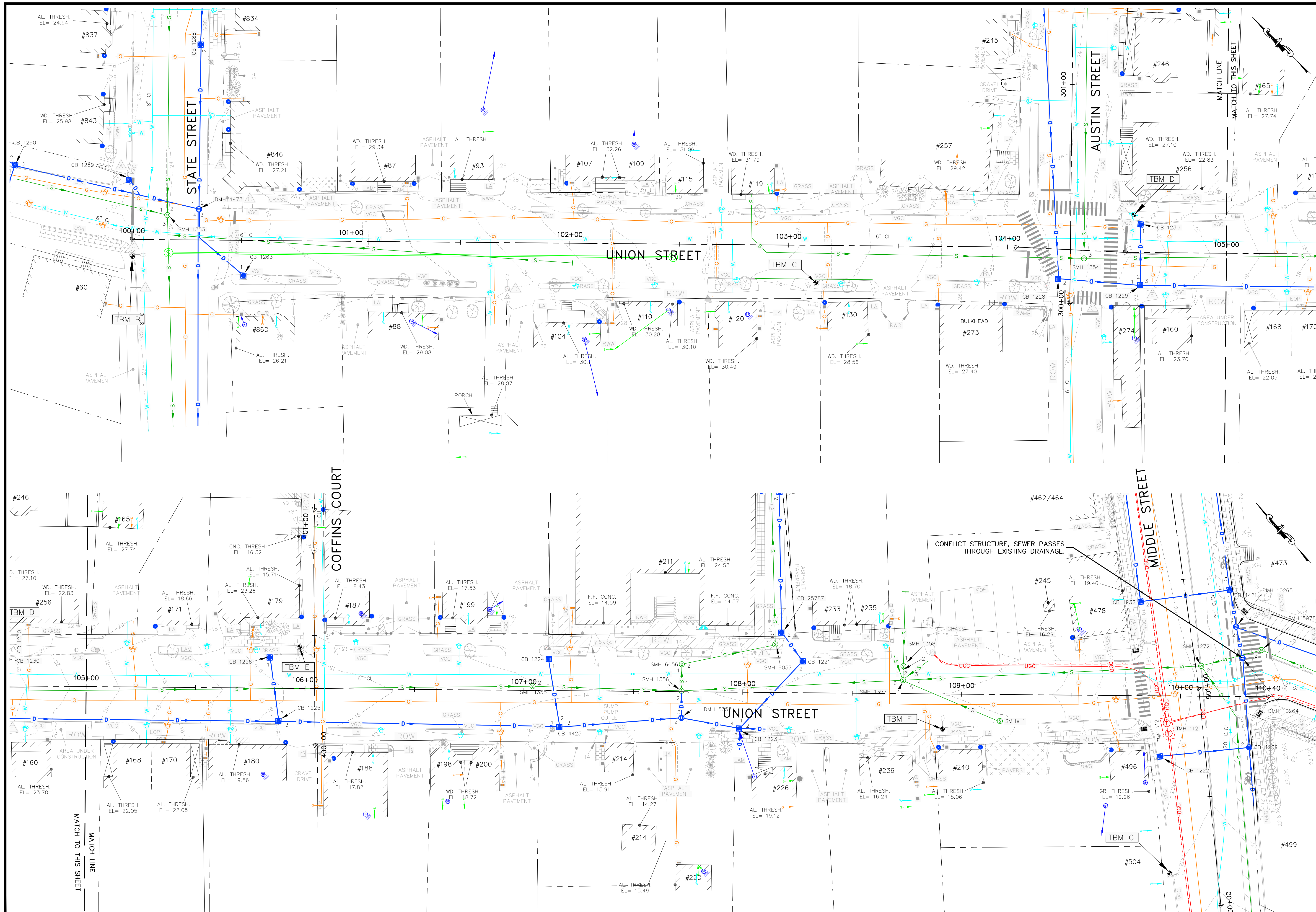
SIGNAGE TABLE table with columns: I.D., DESCRIPTION. Rows A through L listing various traffic signs and their descriptions.

Revision table with columns: REV. NO., DATE, DESCRIPTION, APPR'D.

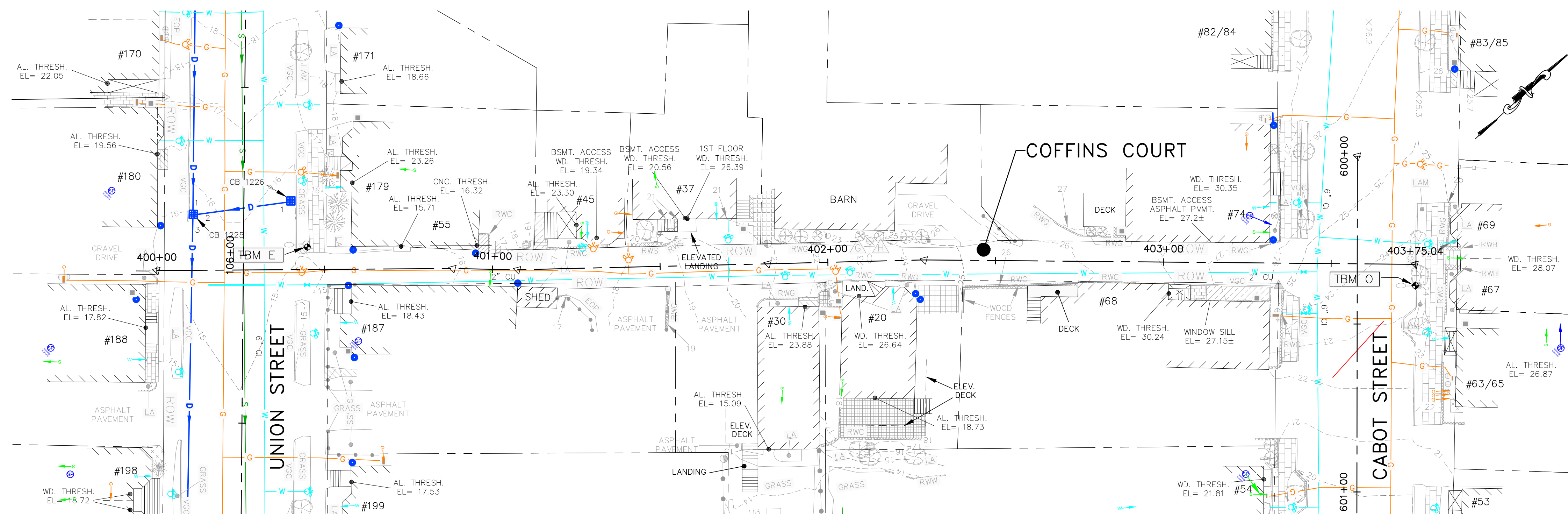
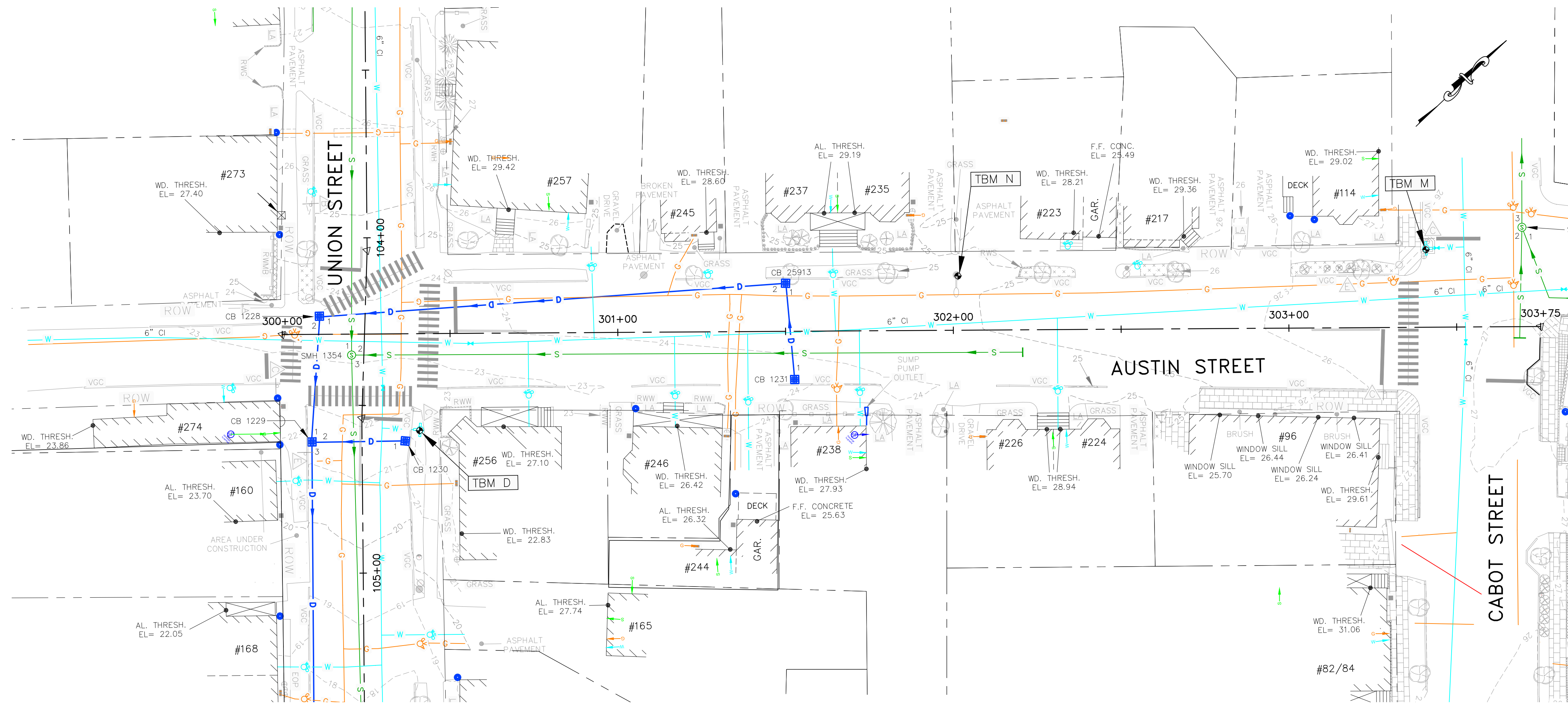
EXISTING CONDITIONS PLAN
UNION STREET IMPROVEMENT PROJECT
AUSTIN, CABOT, MIDDLE, UNION & STATE STREETS & COFFINS COURT
PORTSMOUTH, NEW HAMPSHIRE
for CMA ENGINEERS, INC.


Project information table including: JAMES VERRA and ASSOCIATES, INC., DATE: 3/21/2022, JOB NO: 23933, SCALE: 1" = 60', DWG NAME: 23933, PLAN NO: 23933, SHEET: 1 OF 6.

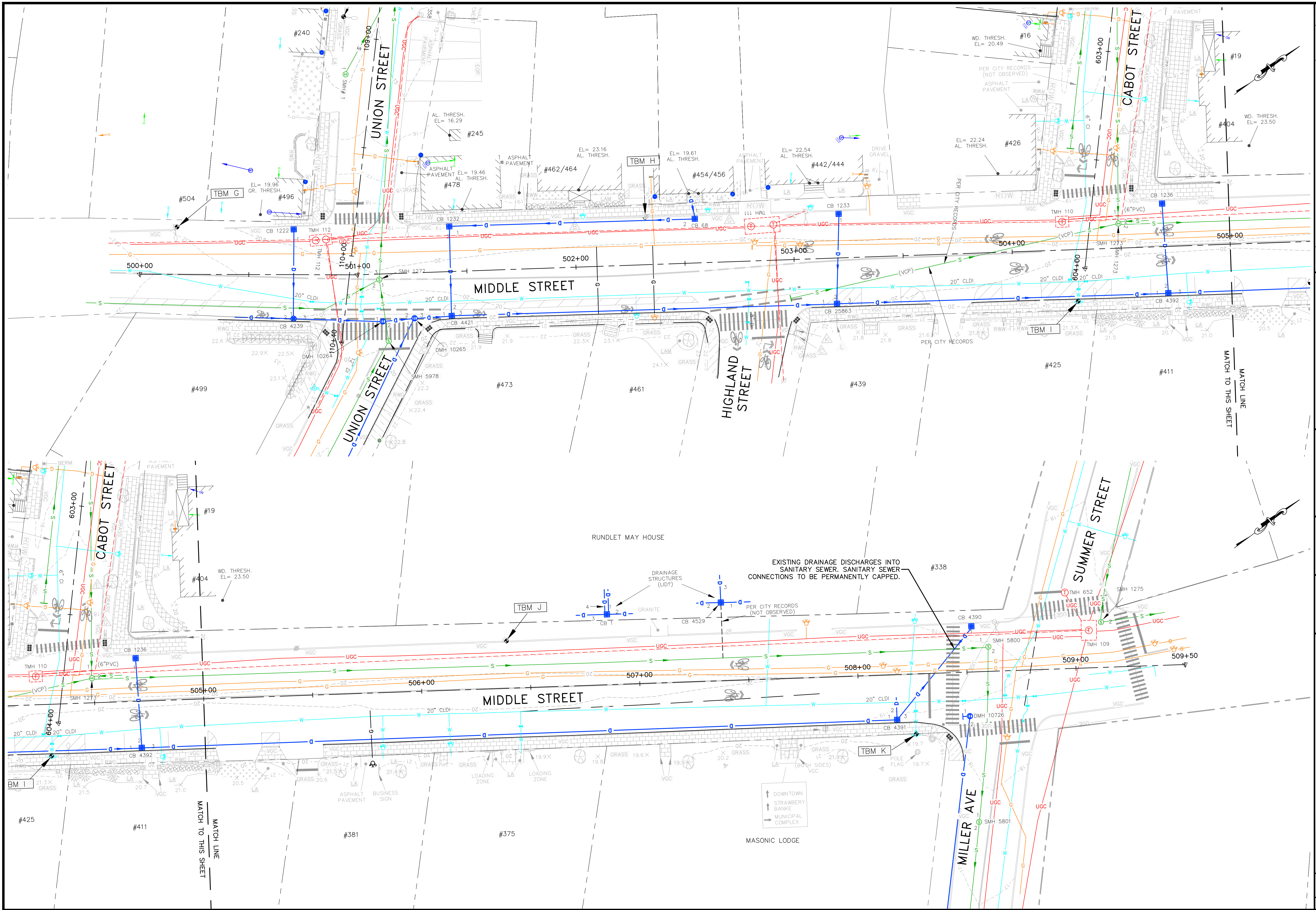
Vertical sidebar containing: CMA ENGINEERS logo, project title 'City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Existing Conditions Plan', drawing no. ECP-1, sheet 5 of 54, and a revision table.




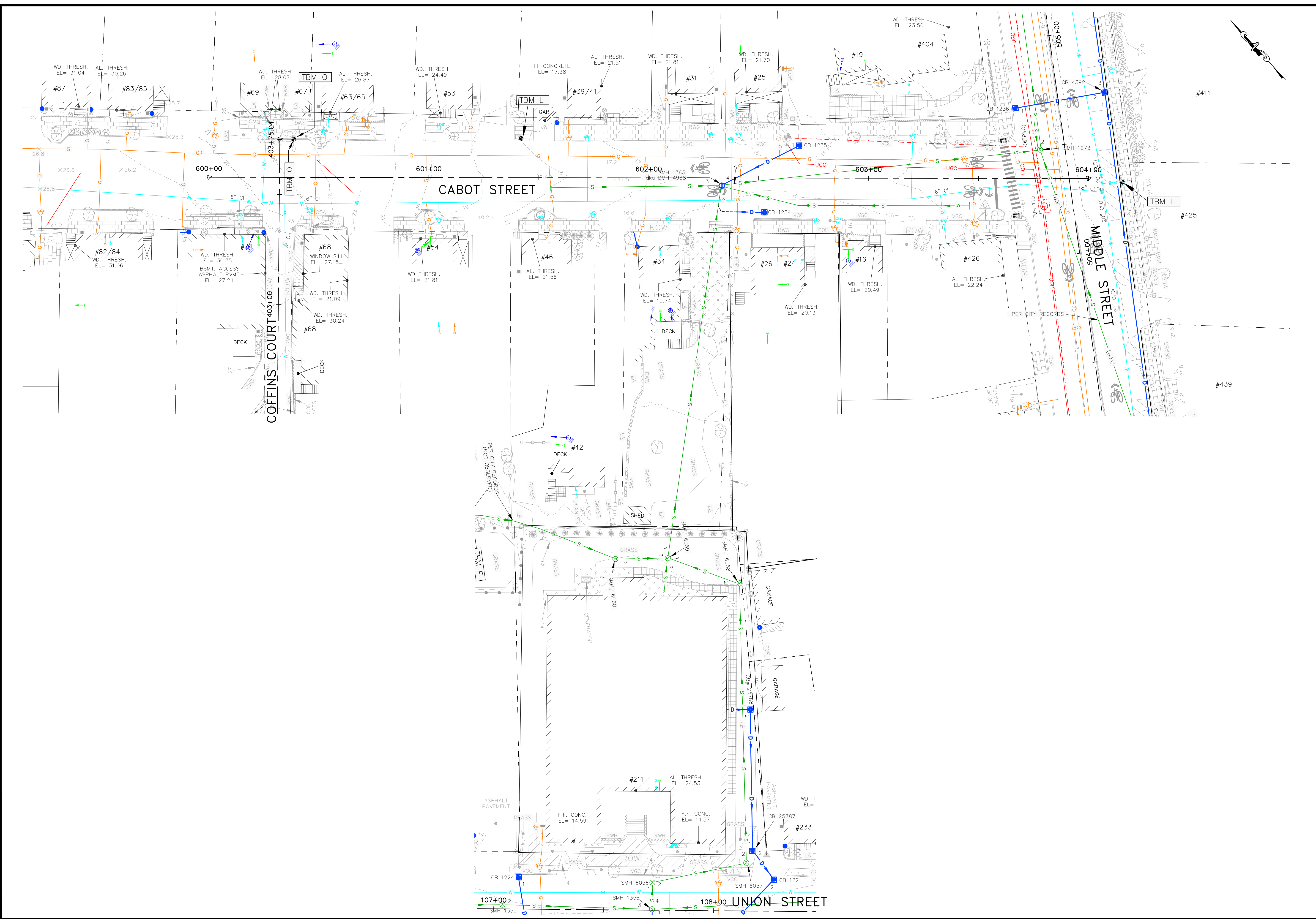
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CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/541-4223 c m a e n g i n e e r s . c o m		City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Existing Conditions Plan		
drawing no. ECP-2		sheet: 6 of 54		
1 Issued for Bid		no. revision date by 1/17/2023 PAC		



 CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH 603/431-6196 • Manchester, NH 603/627-0708 • Portland, ME 207/641-4223 c m a e n g i n e e r s . c o m		Issued for Bid 1/17/2023 date by
designed by: ST7/WAB	drawn by: WWG	approved by: PAC
date: January 2023	project no: 1211	checked by: PAC
City of Portsmouth, New Hampshire Department of Public Works		Union Street Area Improvement Project Existing Conditions Plan
drawing no. ECP-3		sheet: 7 of 54



 CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0706 • 207/541-4223 c m a e n g i n e e r s . c o m		1 no.	1/17/2023 date	PAC by
date: January 2023	project no: 1211	checked by: PAC	approved by: PAC	scale: 0 20' 40' Scale: 1" = 20'
City of Portsmouth, New Hampshire Department of Public Works		Union Street Area Improvement Project Existing Conditions Plan		
drawing no. ECP-4		sheet: 8 of 54		



<p>CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/541-4223</p> <p>1 Issued for Bid</p>		<p>revision</p>	<p>date</p>
<p>City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Existing Conditions Plan</p>		<p>no.</p>	<p>1/17/2023</p>
<p>date: January 2023</p>	<p>designed by: STF/WAB</p>	<p>drawn by: WWG</p>	<p>approved by: PAC</p>
<p>project no: 1211</p>	<p>checked by: PAC</p>	<p>scale: 0 20' 40' Scale: 1" = 20'</p>	<p>drawing no: ECP-5</p>
<p>sheet: 9 of 54</p>		<p>by</p>	

LEGEND	
	PROPOSED SEWER
	PROPOSED DRAIN
	EXISTING SEWER
	EXISTING DRAINAGE
	EXISTING COMBINED SEWER AND DRAINAGE
	MAINTAIN EXISTING SEWER FLOWS (SEE NOTE 4.2, THIS SHEET)
	REPLUMB SEWER SERVICE DUE TO RAISED SEWER
	REPLUMB SEWER SERVICE TO RECONFIGURE ROUTING
	DYE TEST SEWER SERVICE TO CONFIRM IF PROPERTIES ARE IN SERVICE AREA
	BASE BID WORK AREA LIMITS
	BID ALTERNATE WORK AREA LIMITS

UTILITY SEQUENCING NOTES:

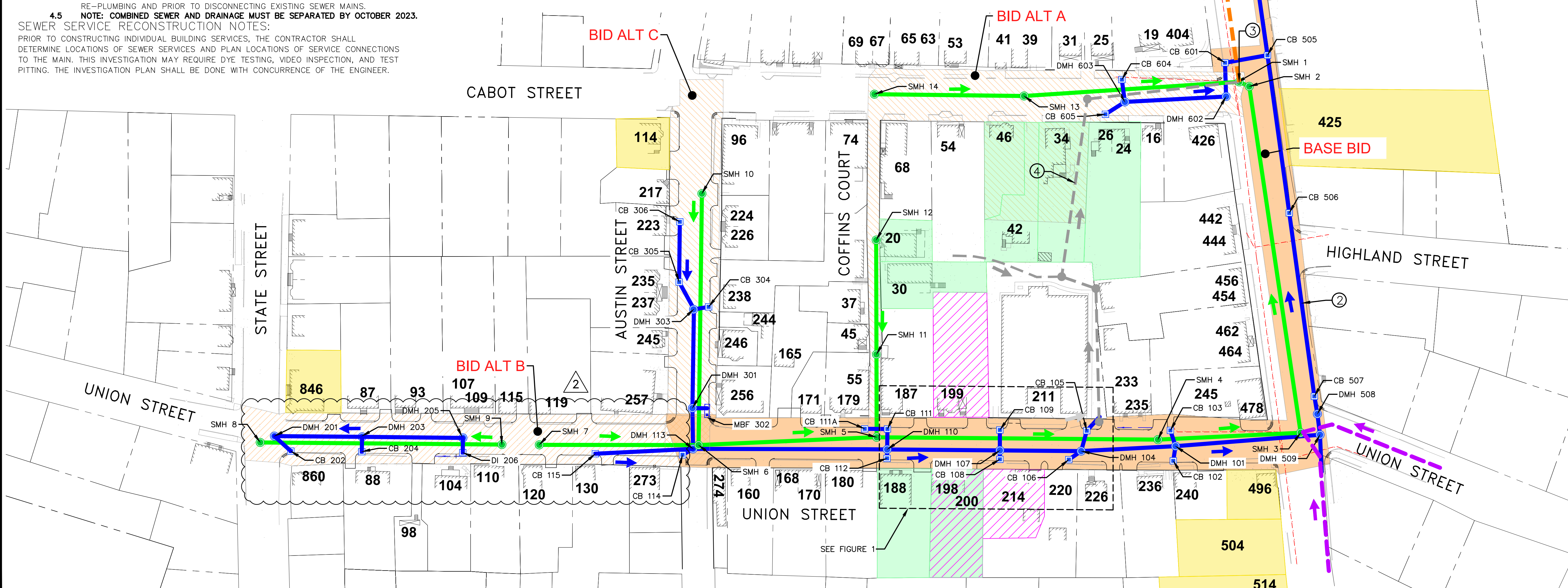
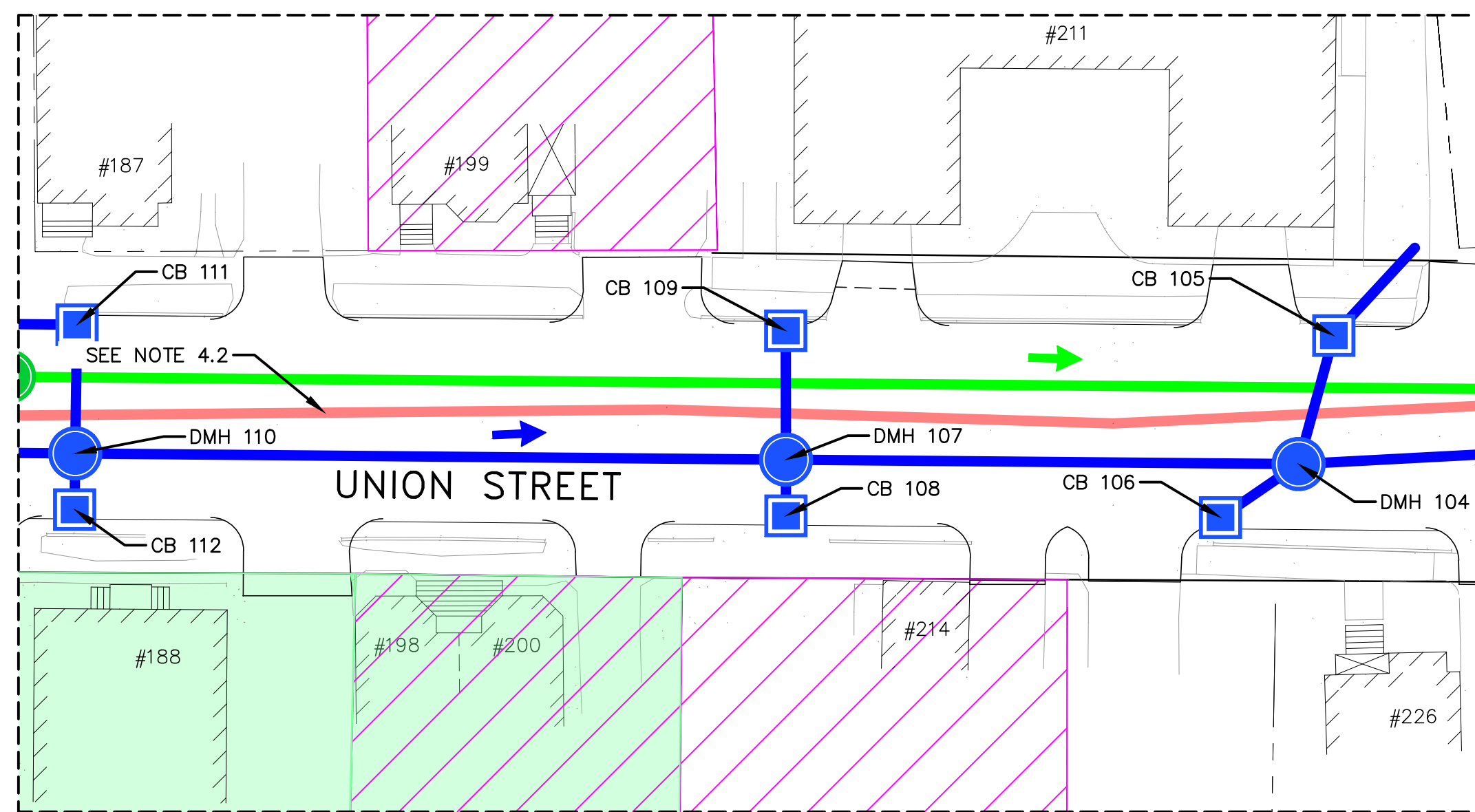
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SEWER, STORMWATER, AND COMBINED SEWER AND DRAINAGE FLOWS DURING CONSTRUCTION.
- CONTRACTOR MUST SUBMIT A PROPOSED CONSTRUCTION SCHEDULE FOR APPROVAL BY THE CITY AND ENGINEER.
- BYPASS PIPING AND PUMPING MAY BE REQUIRED DURING CONSTRUCTION TO MAINTAIN EXISTING SEWER AND STORMWATER DRAINAGE FLOWS.
- THE FOLLOWING PRESENTS MAINTENANCE OF DRAIN AND SEWER FLOW CONSIDERATIONS AND RECOMMENDED SEQUENCING:
 - TEMPORARY BYPASS WATER SHOULD BE INSTALLED PRIOR TO ANY UTILITY AND DRAIN CONSTRUCTION ON UNION ST, CABOT ST, COFFINS CT, AND AUSTIN ST.
 - IN A SECTION OF UNION STREET (SMH 4 TO SMH 5), THE EXISTING SEWER MAIN AND SERVICES SHOULD REMAIN IN SERVICE (STA 106+00 TO EX SMH 1357) UNTIL THE PROPOSED SEWER MAIN AND SERVICES ARE ACTIVE AND THE HOMES IN THIS AREA ARE RE-PLUMBED.
 - UNLESS STORMWATER IS BYPASS PUMPED, THE COMBINED SEWER AND THE EXISTING DRAINAGE SYSTEM ON UNION STREET BETWEEN MIDDLE STREET AND AUSTIN STREET MUST REMAIN ACTIVE UNTIL THE PROPOSED DRAINAGE SYSTEM IS ACTIVE FROM THE MILLER AVE/MIDDLE ST CONNECTION (DMH 101) TO THE AUSTIN ST/UNION ST INTERSECTION (DMH 113). THE EXISTING DRAINAGE SYSTEM CONNECTS TO THE COMBINED SEWER AND DRAINAGE SYSTEM AT EXISTING SMH 1356. THIS CONNECTION AND THE DOWNSTREAM COMBINED SEWER AND DRAINAGE SYSTEM MUST ALSO BE MAINTAINED TO PROVIDE GRAVITY FLOWS FOR THE DRAINAGE SYSTEM UNTIL THE PROPOSED DRAINAGE SYSTEM IS CONSTRUCTED FROM DMH 101 TO DMH 113.
 - FOR HOMES THAT NEED TO BE RE-PLUMBED TO REROUTE THE SEWER SERVICE, THE PROPOSED SEWER MAINS AND SERVICES TO THE HOME SHOULD BE INSTALLED PRIOR TO RE-PLUMBING AND PRIOR TO DISCONNECTING EXISTING SEWER MAINS.

SEWER SERVICE RECONSTRUCTION NOTES:

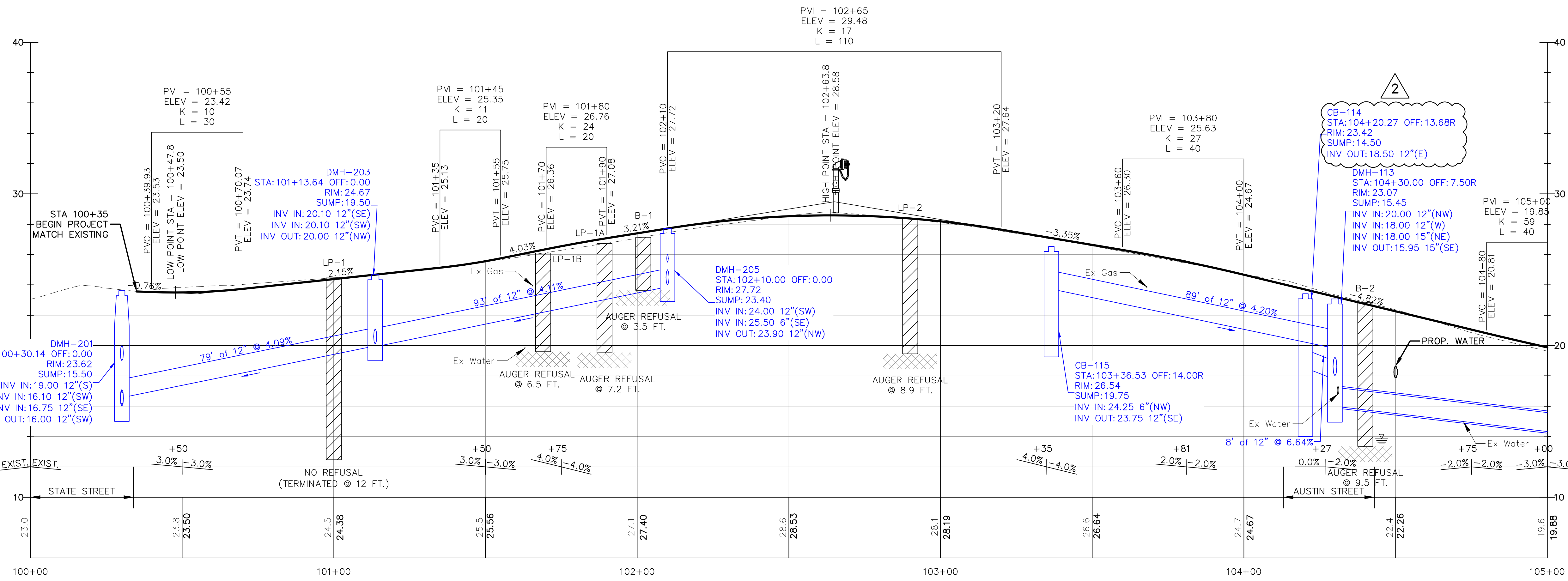
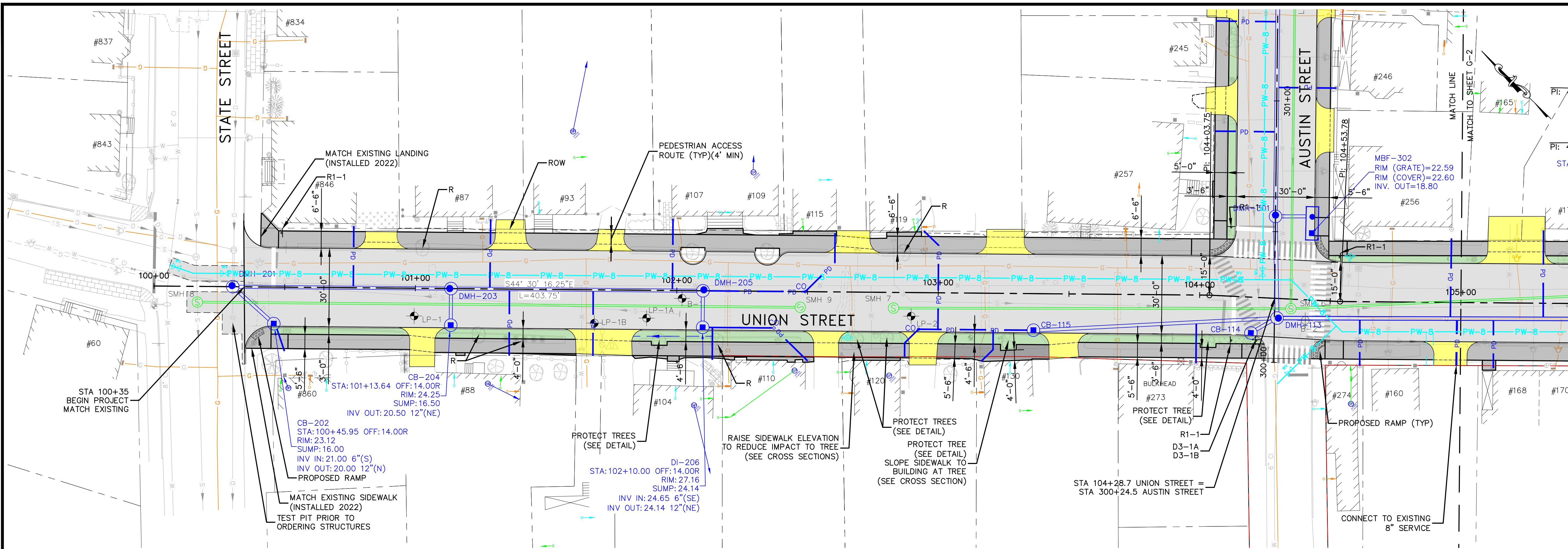
PRIOR TO CONSTRUCTING INDIVIDUAL BUILDING SERVICES, THE CONTRACTOR SHALL DETERMINE LOCATIONS OF SEWER SERVICES AND PLAN LOCATIONS OF SERVICE CONNECTIONS TO THE MAIN. THIS INVESTIGATION MAY REQUIRE DYE TESTING, VIDEO INSPECTION, AND TEST PITTING. THE INVESTIGATION PLAN SHALL BE DONE WITH CONCURRENCE OF THE ENGINEER.

- PLAN NOTES:**
- THE PROPOSED DRAINAGE SYSTEM CONNECTS TO AN EXISTING DRAIN MANHOLE (DMH 501) AT THE INTERSECTION OF MIDDLE ST & MILLER AVE.
 - THE PROPOSED DRAINAGE IS CONSTRUCTED IN THE SAME LOCATION AS THE EXISTING DRAIN PIPE ON MIDDLE STREET, AT A DEEPER ELEVATION, WHICH WILL REQUIRE BYPASS PIPING AND/OR PUMPING TO MAINTAIN FLOWS.
 - THE PROPOSED SEWER SYSTEM CONNECTS TO THE OUTLET PIPE FOR EX SMH 1273.
 - IF BID ALTERNATE 1 IS SELECTED, THE BACKLOT CROSS-COUNTRY SEWER BETWEEN UNION ST AND CABOT ST WILL BE ABANDONED, WHICH WILL REQUIRE REROUTING SEWER SERVICES FOR THE HOMES THAT ARE CONNECTED TO THIS SEWER MAIN.

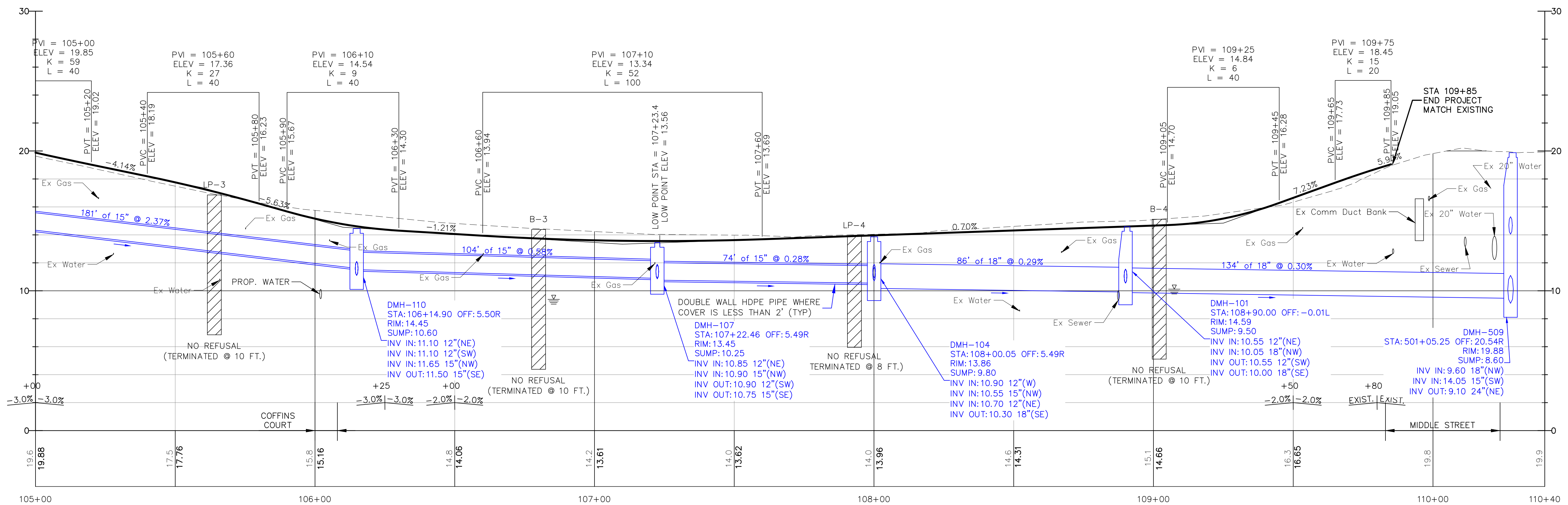
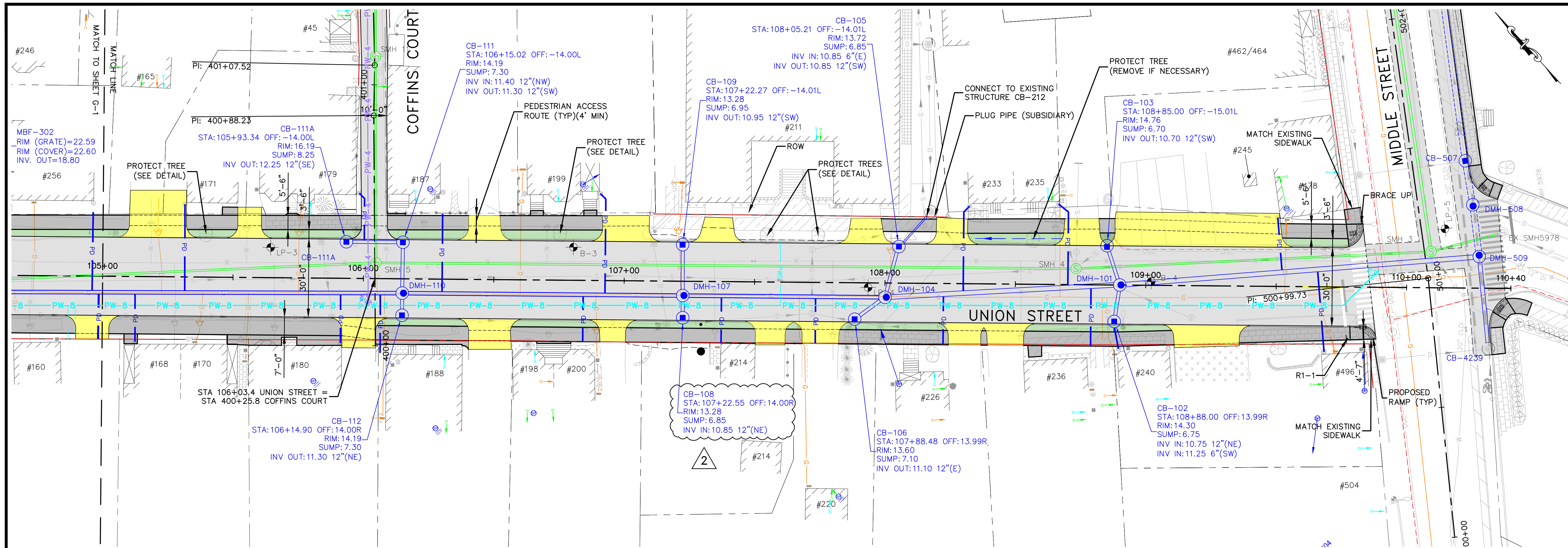
FIGURE 1: AREA WHERE PROPOSED SEWER IS HIGHER THAN EXISTING SEWER



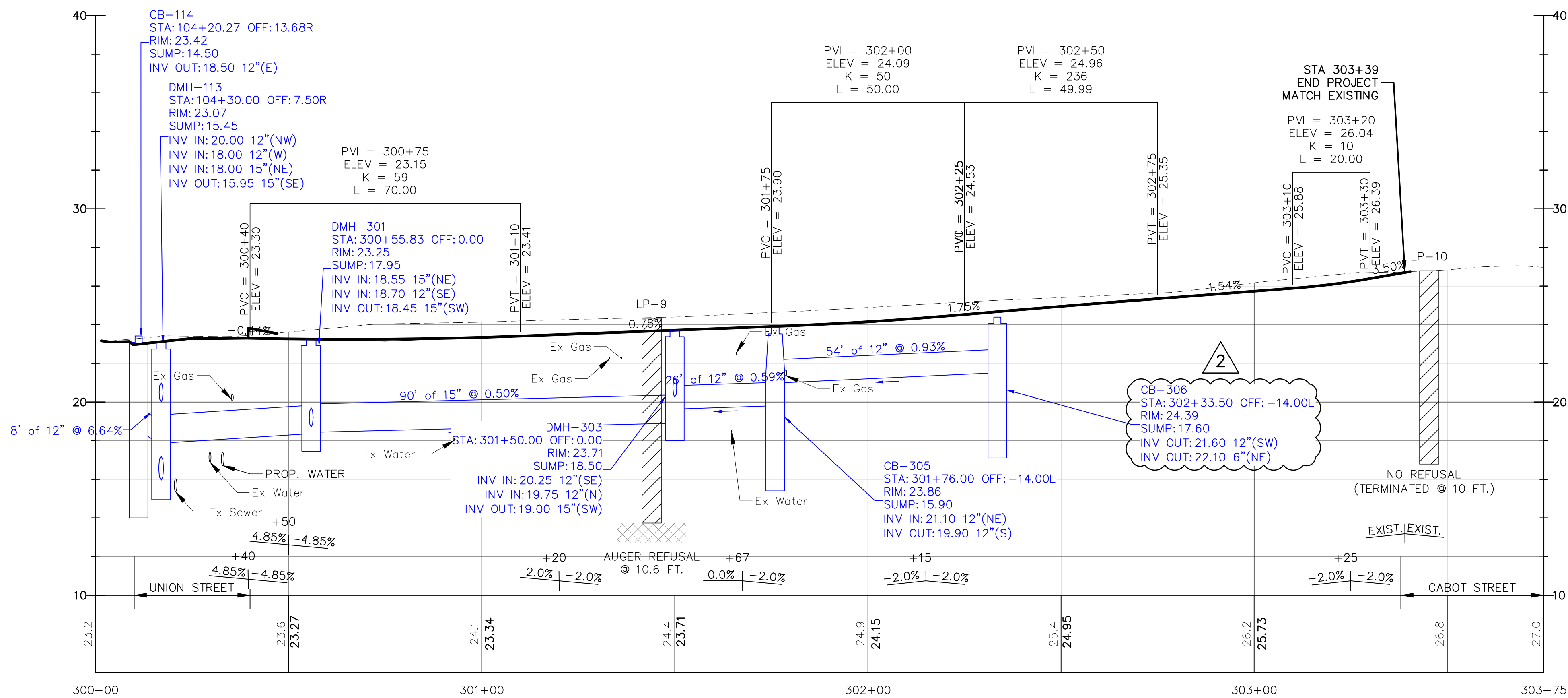
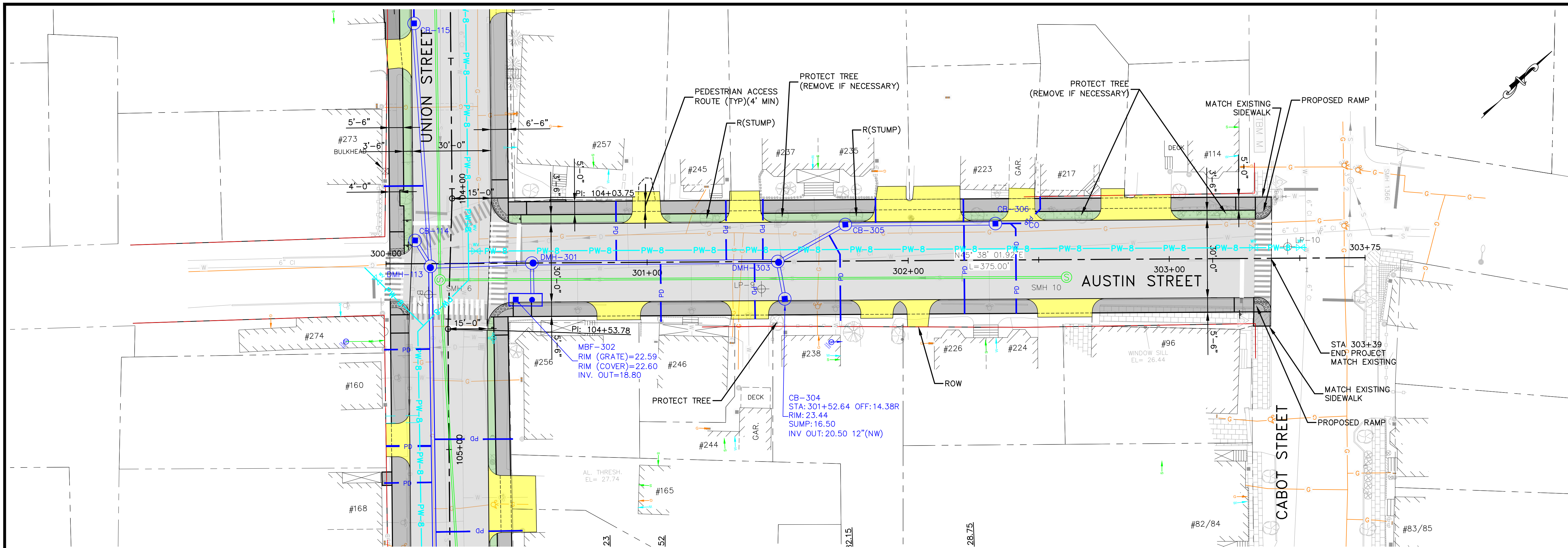
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		c m a e n g i n e e r s . c o m		no. 1 date 1/17/2023 PAC	
designed by: STFWAB	drawn by: WWG	approved by: PAC			
date: January 2023	project no: 1211	checked by: PAC	City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Utility Sequencing Plan		
drawing no. OSP-2			sheet: 11 of 54		




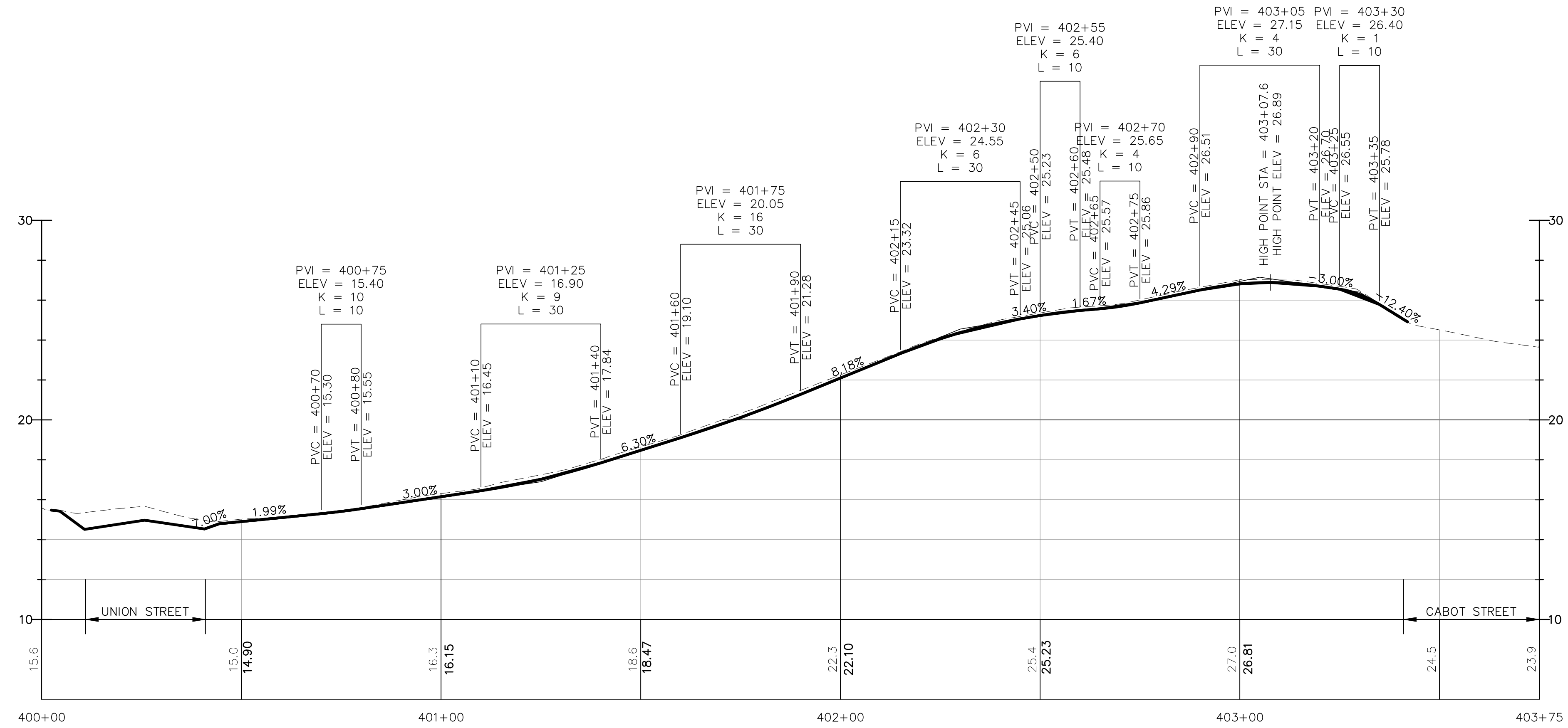
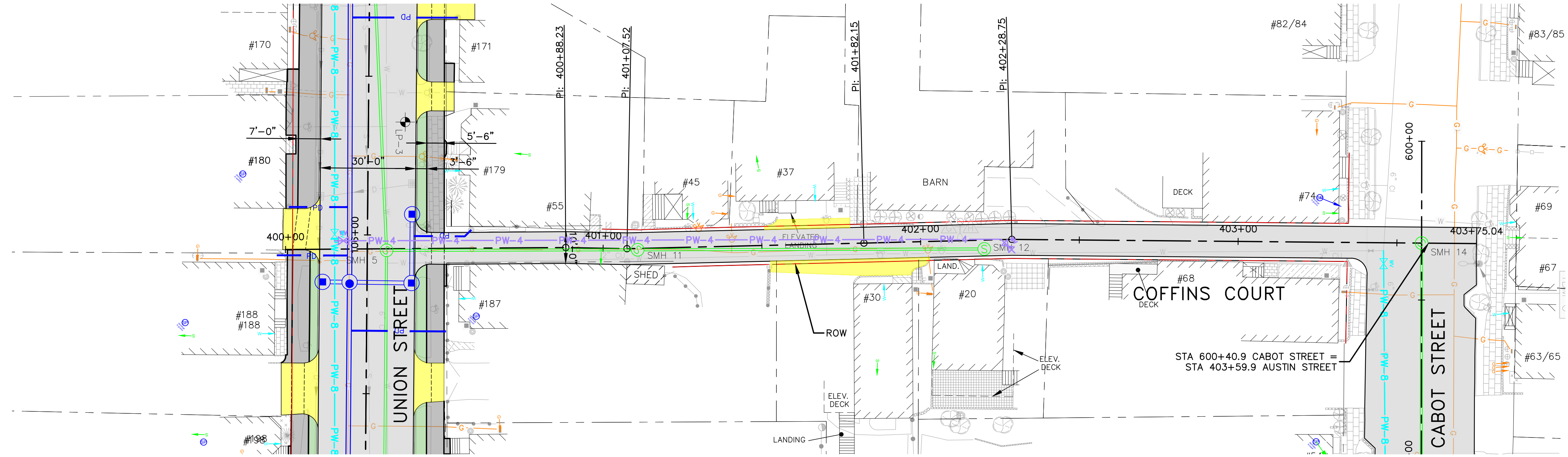
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date: January 2023 project no: 1211		revision no. 1 Issued for Bid
City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project		date no. 1 Issued for Bid
drawing no. G-1		sheet: 12 of 54


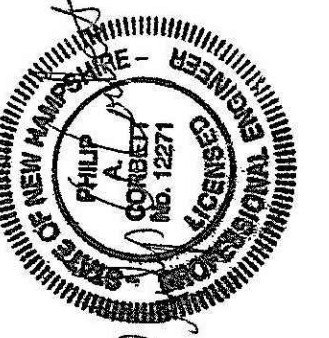


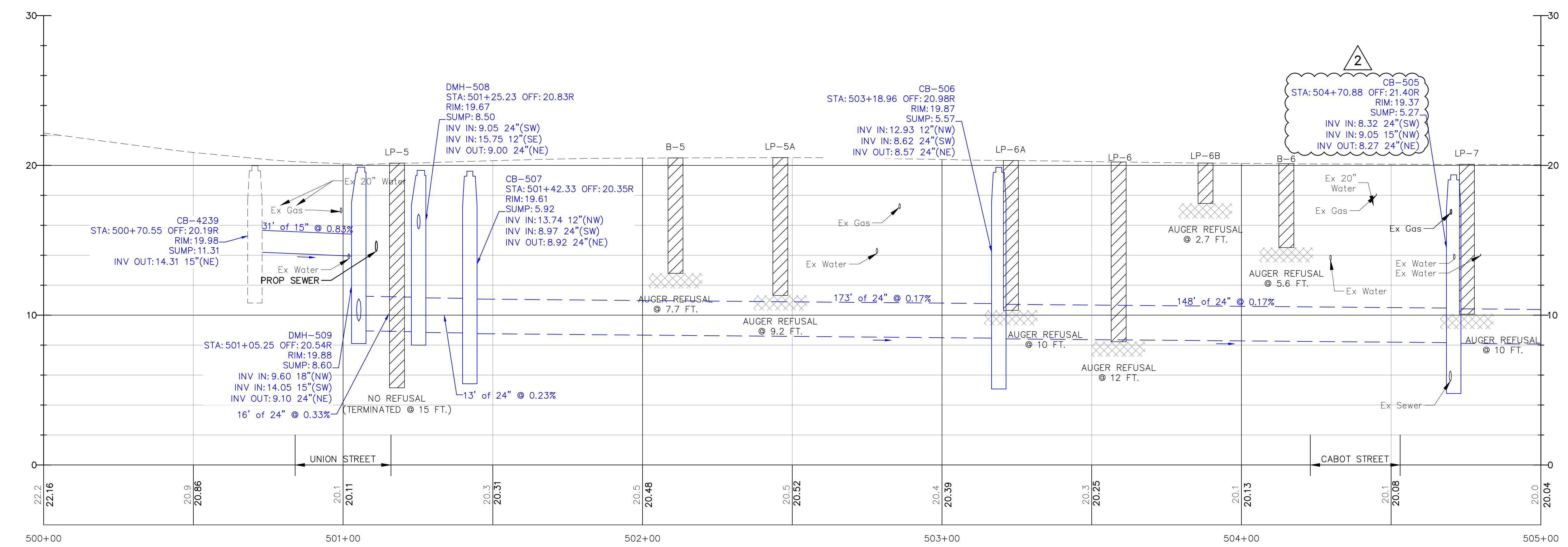
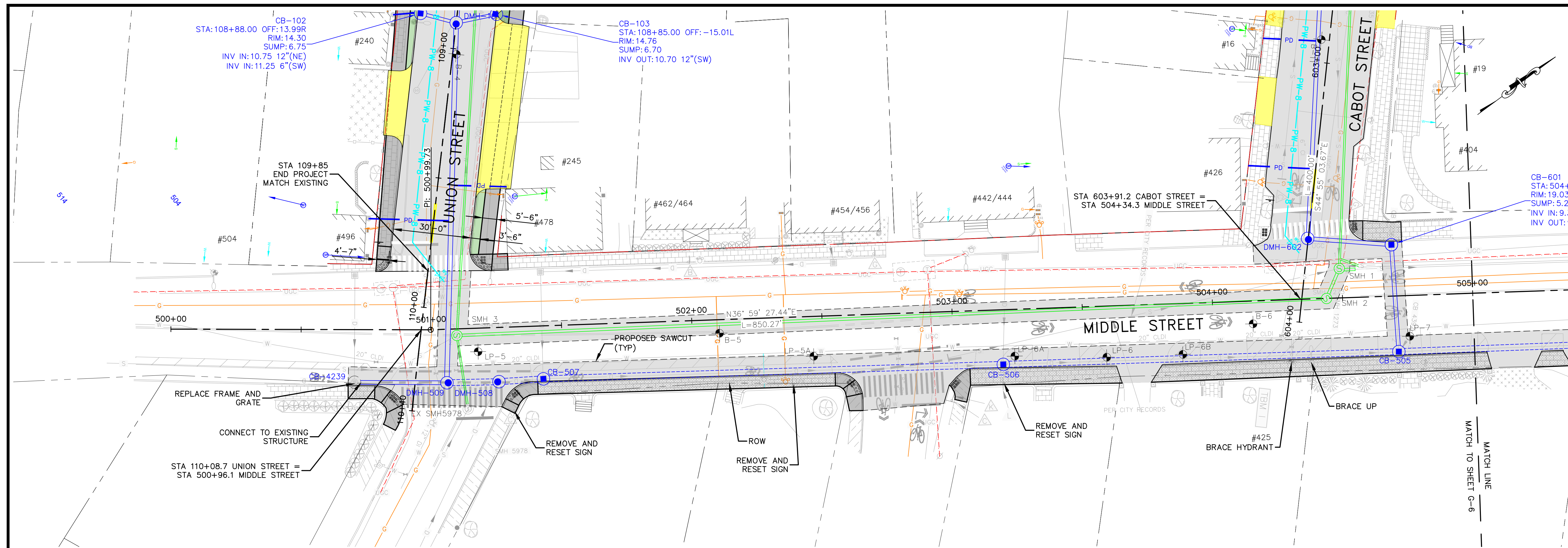
 CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/541-4223 c m a e n g i n e e r s . c o m	
designed by: STP/WAB date: January 2023 project no: 1211	drawn by: WWG checked by: PAC approved by: PAC
City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project	Proposed Roadway & Drainage Union Street STA 105+00 to STA 110+30
drawing no: G-2	sheet: 13 of 54



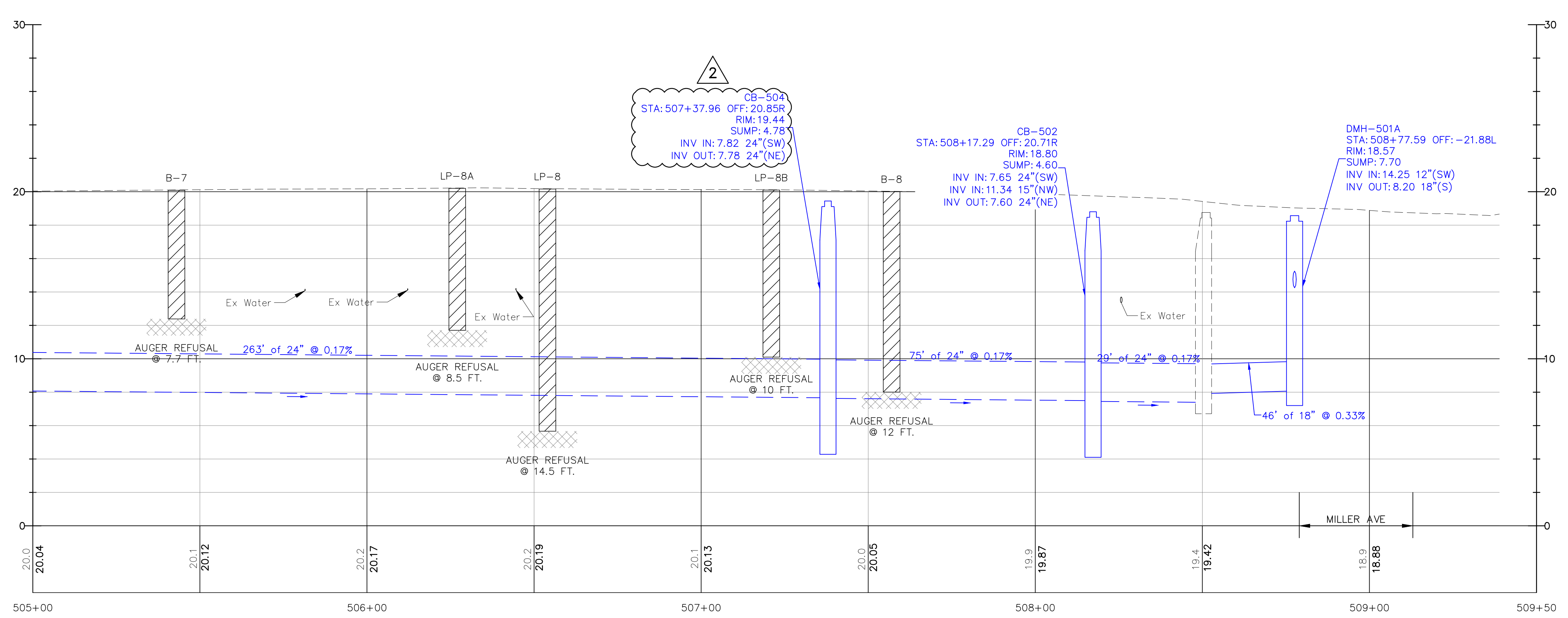
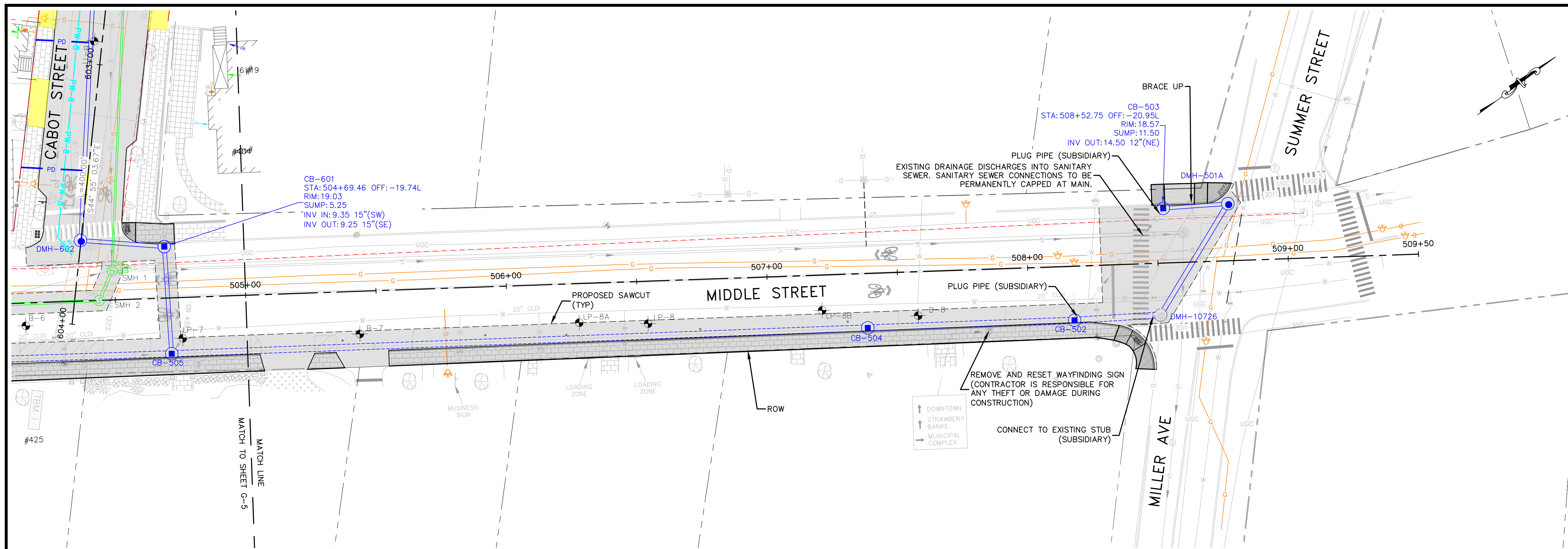
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Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/641-4223		1/17/2023 PAC
c m a e n g i n e e r s . c o m		date
City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Proposed Roadway & Drainage Austin Street STA 300+00 to STA 303+75		no. 2 revision 1 Issued for Bid
designed by: STP/WAB drawn by: WWG approved by: PAC	date: January 2023 project no: 1211 checked by: PAC	scale: 1" = 20'H/4'V 0 20' 40'
drawing no. G-3		sheet: 14 of 54



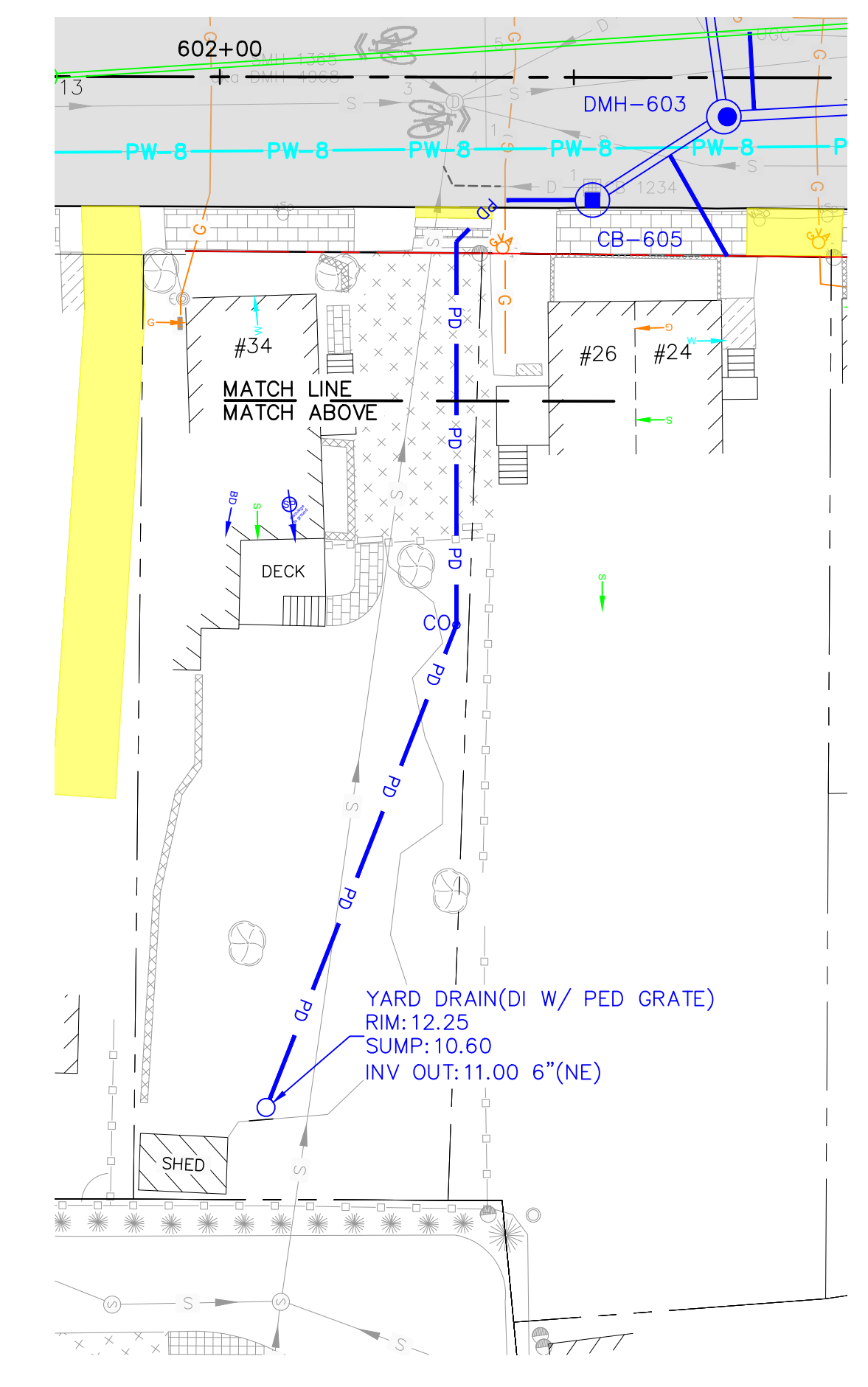
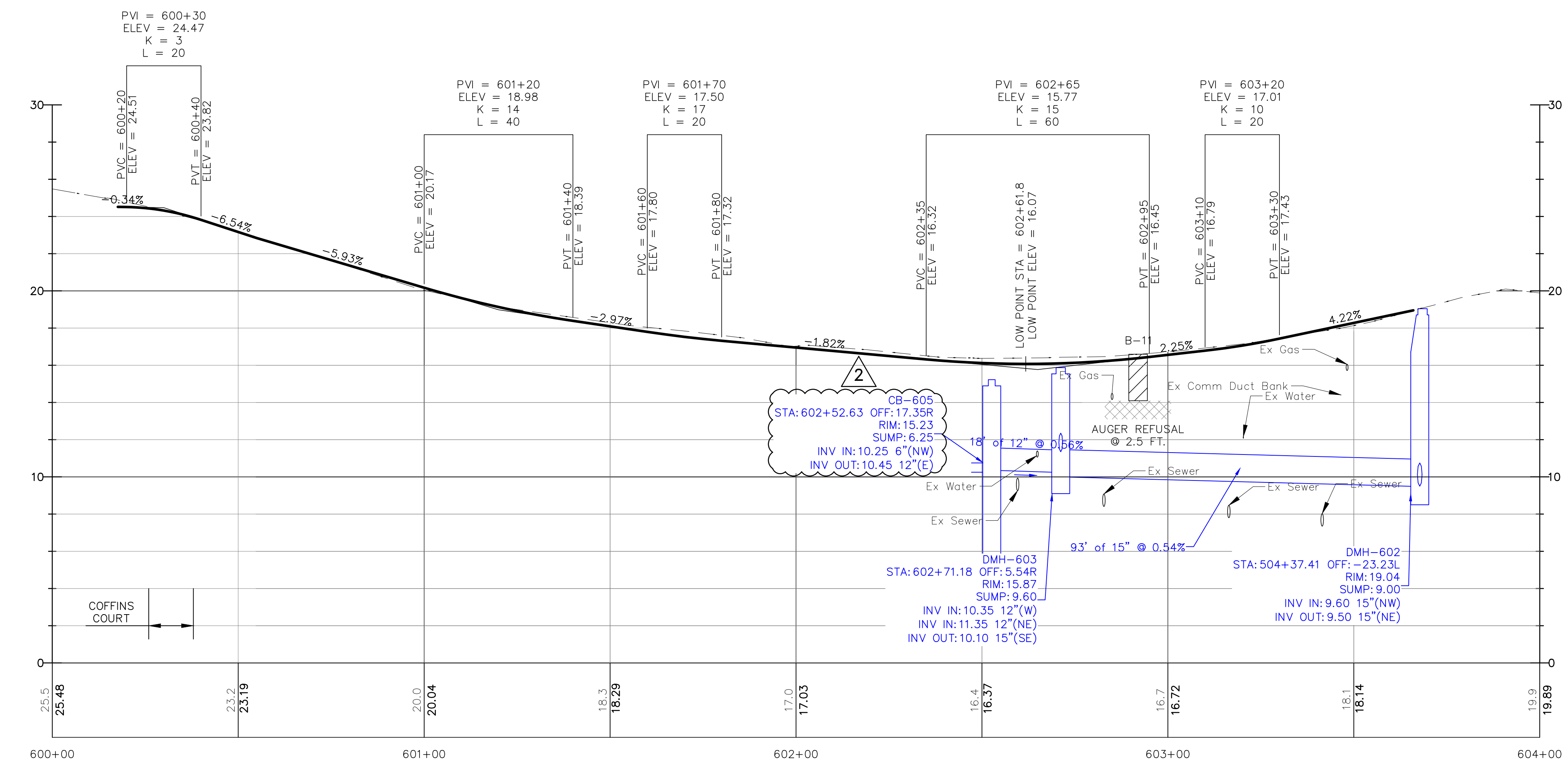
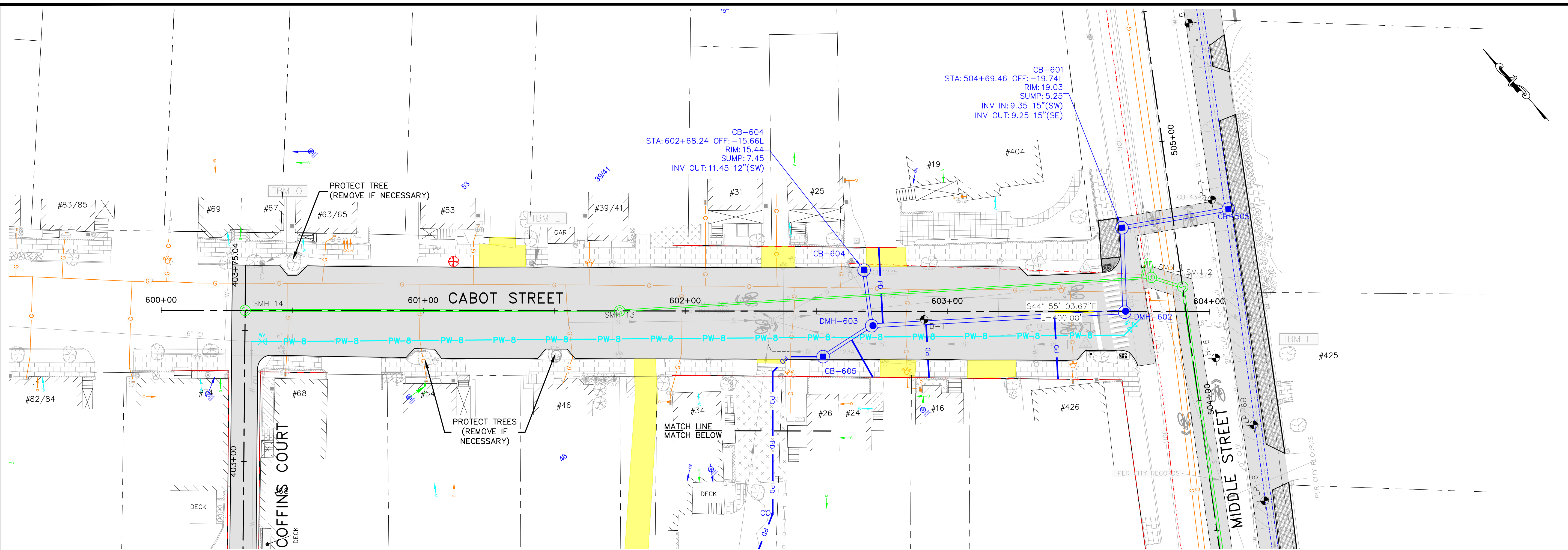
 CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/641-4223 c m a e n g i n e e r s . c o m		Issued for Bid 1/17/2023 PAC
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date: January 2023 project no: 1211		scale: 1" = 20'H/4'V 0 20' 40'
City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project		drawing no. G-4
Proposed Roadway & Drainage Coffins Court STA 400+00 to STA 403+75		sheet: 15 of 54



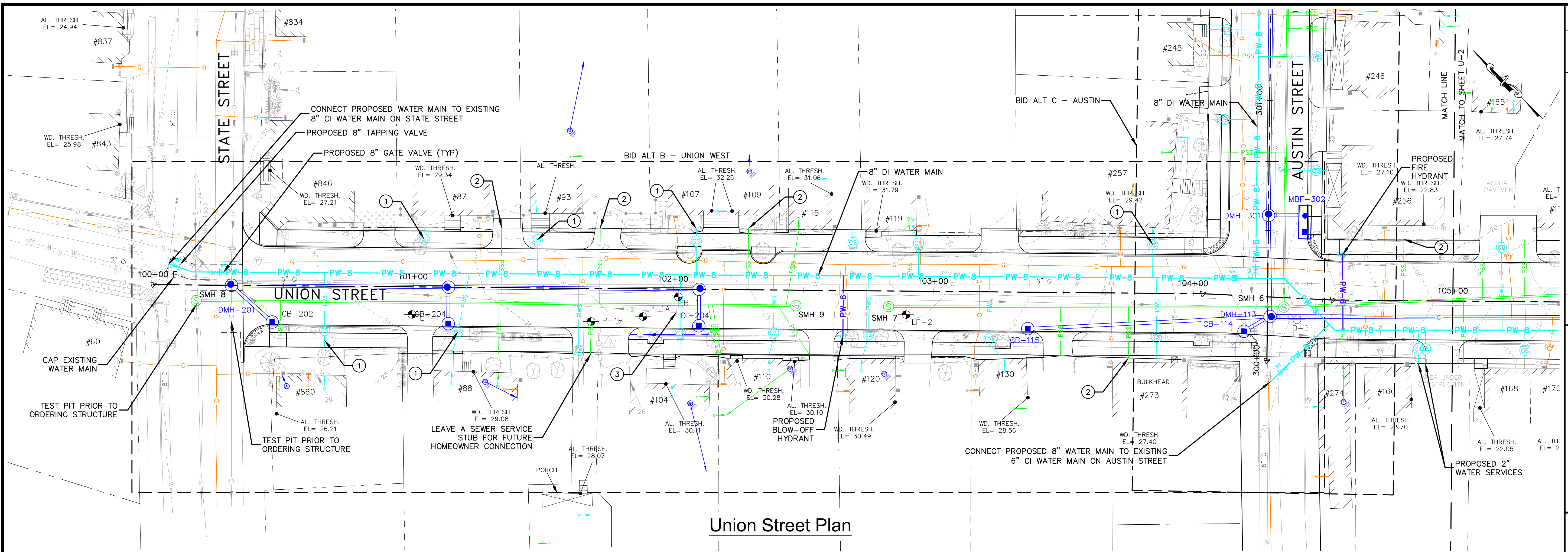
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approved by: PAC	checked by: PAC
scale: 0 20' 40' Scale: 1" = 20'H/4'V	
City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Proposed Roadway & Drainage Middle Street STA 500+00 to STA 505+00	
drawing no. G-5	
sheet: 16 of 54	
no. 2 1	revision Bid Addendum 2 Issued for Bid
date 1/27/2023 1/17/2023	by PAC PAC



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designed by: STP/WAB date: January 2023 project no: 1211	drawn by: WWG checked by: PAC approved by: PAC
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City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Proposed Roadway & Drainage Middle Street STA 505+00 to STA 509+50	
drawing no: G-6	
sheet: 17 of 54	no. 2 date 1/27/2023 revision 1 date 1/17/2023 by PAC

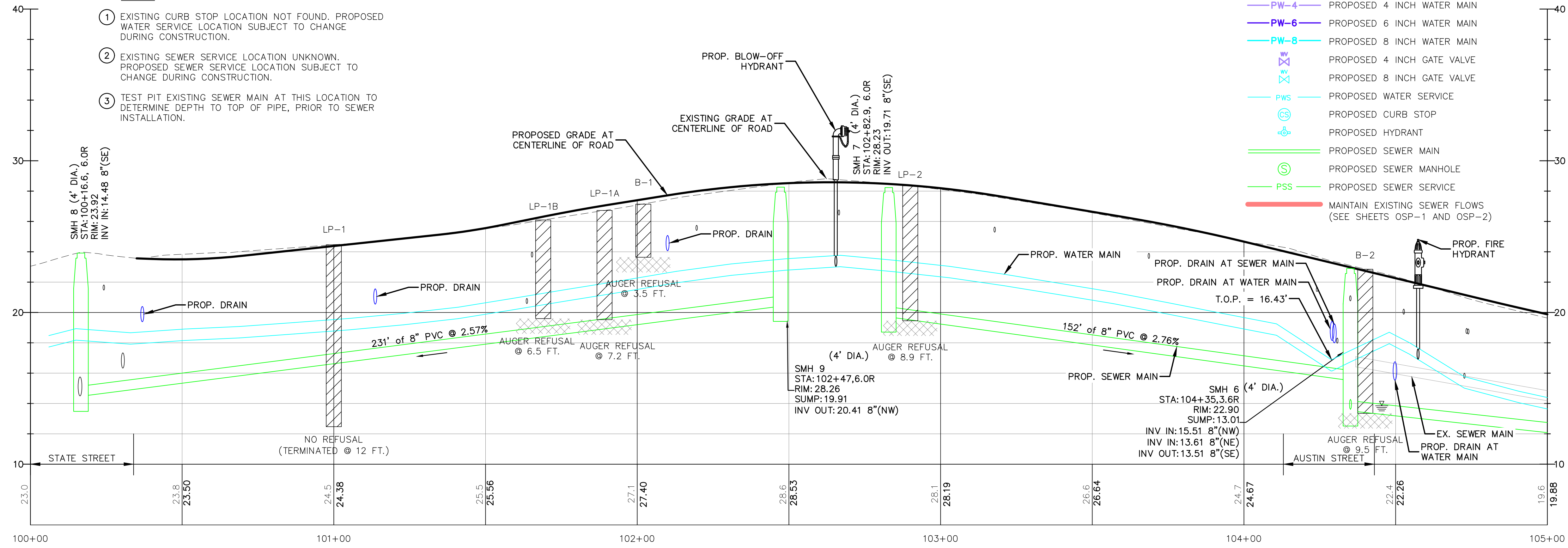


 CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/641-4223 c m a e n g i n e e r s . c o m	
designed by: STP/WAB date: January 2023 project no: 1211	drawn by: WWG checked by: PAC approved by: PAC
City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Proposed Roadway & Drainage Cabot Street STA 600+00 to STA 604+00	
drawing no. G-7 sheet: 18 of 54	
2 Bid Addendum 2 1 Issued for Bid	no. 1 revision date 1/27/2023 by PAC

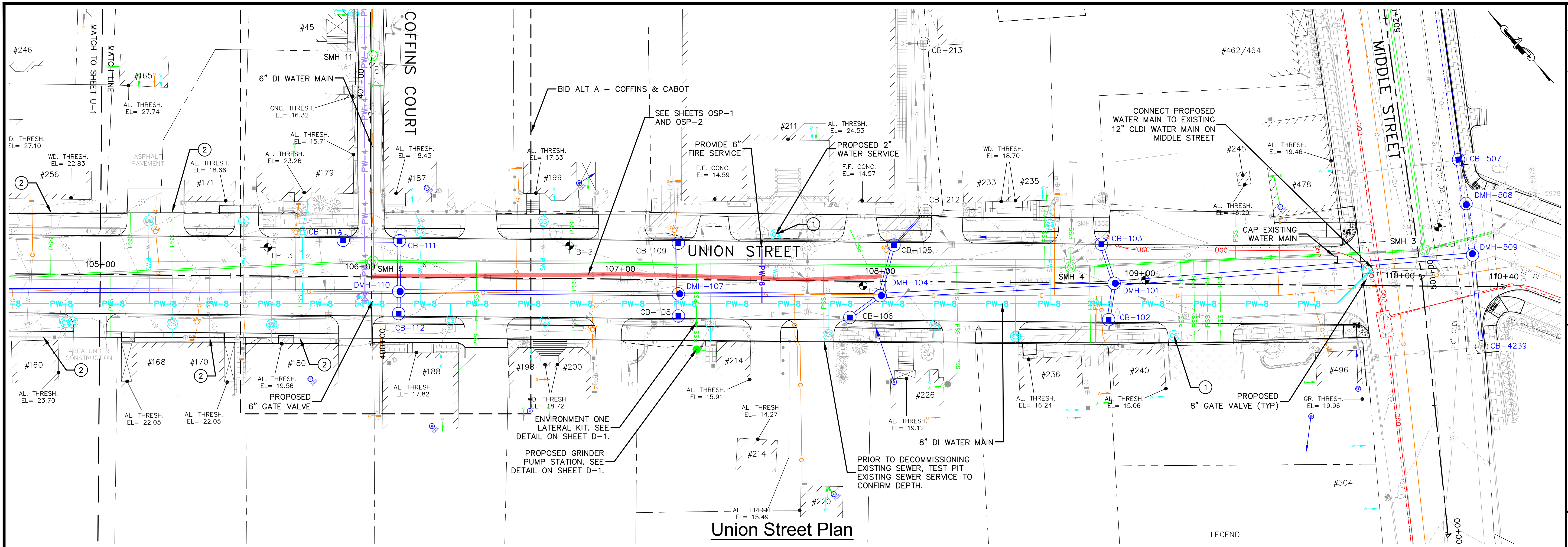


- NOTES:**
- EXISTING CURB STOP LOCATION NOT FOUND. PROPOSED WATER SERVICE LOCATION SUBJECT TO CHANGE DURING CONSTRUCTION.
 - EXISTING SEWER SERVICE LOCATION UNKNOWN. PROPOSED SEWER SERVICE LOCATION SUBJECT TO CHANGE DURING CONSTRUCTION.
 - TEST PIT EXISTING SEWER MAIN AT THIS LOCATION TO DETERMINE DEPTH TO TOP OF PIPE, PRIOR TO SEWER INSTALLATION.

- LEGEND**
- PW-4 PROPOSED 4 INCH WATER MAIN
 - PW-6 PROPOSED 6 INCH WATER MAIN
 - PW-8 PROPOSED 8 INCH WATER MAIN
 - GV-4 PROPOSED 4 INCH GATE VALVE
 - GV-8 PROPOSED 8 INCH GATE VALVE
 - PWS PROPOSED WATER SERVICE
 - CS PROPOSED CURB STOP
 - HYD PROPOSED HYDRANT
 - SM PROPOSED SEWER MAIN
 - SMH PROPOSED SEWER MANHOLE
 - PSS PROPOSED SEWER SERVICE
 - MAINTAIN EXISTING SEWER FLOWS (SEE SHEETS OSP-1 AND OSP-2)

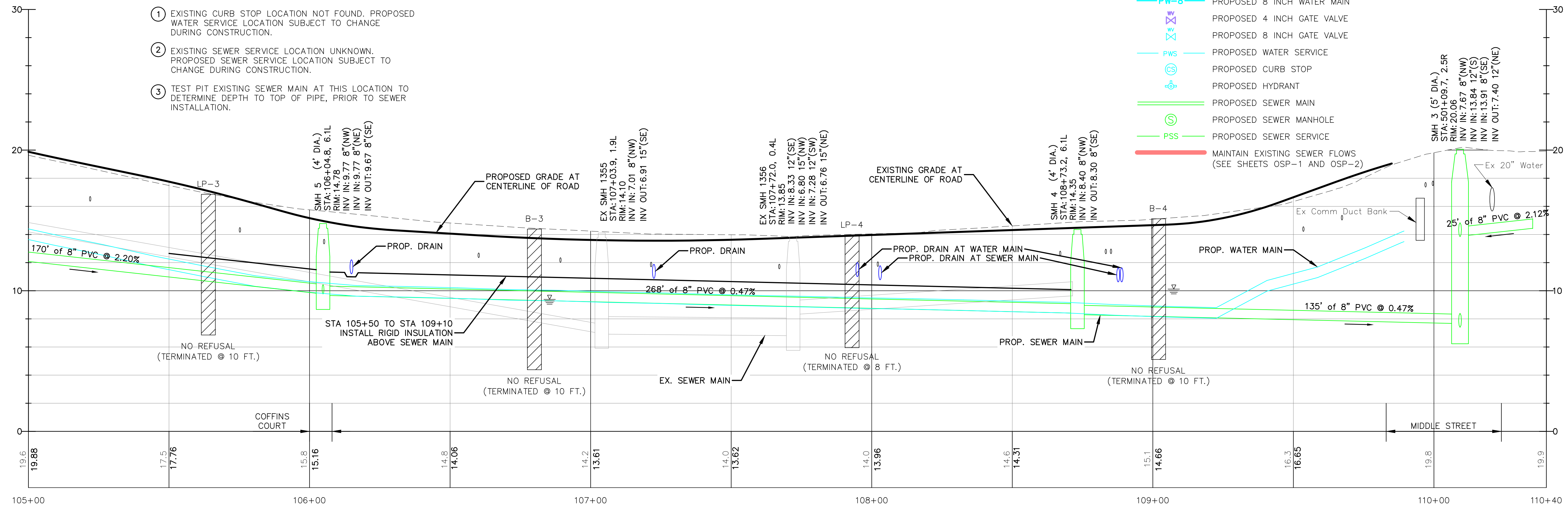


<p>CIVIL/ENVIRONMENTAL/STRUCTURAL</p> <p>Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/641-4223</p> <p>c m a e n g i n e e r s . c o m</p>		<p>1/17/2023</p> <p>date</p>
<p>1</p> <p>Issued for Bid</p>		<p>revision</p>
<p>January 2023</p> <p>date</p>		<p>designed by: STP/WAB</p>
<p>project no: 1211</p>		<p>drawn by: WWG</p>
<p>checked by: PAC</p>		<p>approved by: PAC</p>
<p>scale: 1" = 20'H/4'V</p>		<p>scale: 40'</p>
<p>City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Proposed Water & Sewer Union Street STA 100+00 to STA 105+00</p>		
<p>drawing no: U-1</p>		
<p>sheet: 19 of 54</p>		



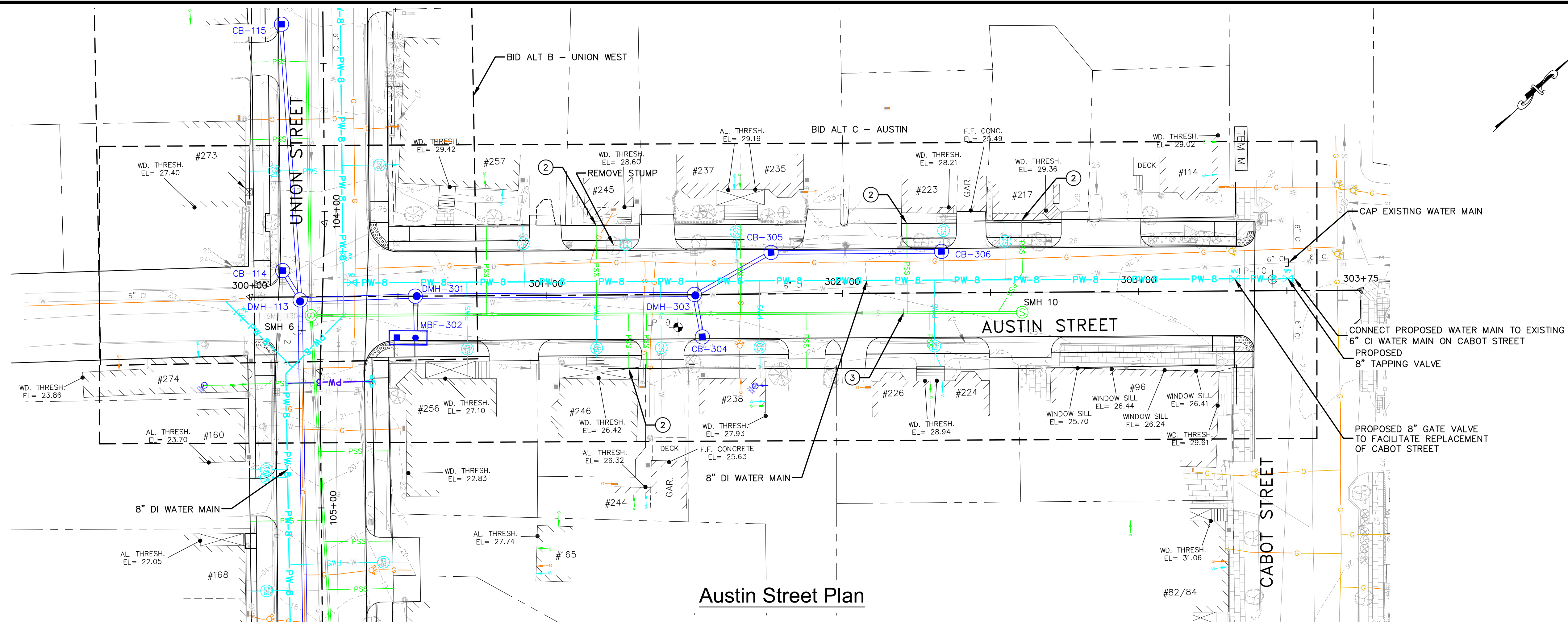
- NOTES:**
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- LEGEND**
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 - PW-6 PROPOSED 6 INCH WATER MAIN
 - PW-8 PROPOSED 8 INCH WATER MAIN
 - PROPOSED 4 INCH GATE VALVE
 - PROPOSED 8 INCH GATE VALVE
 - PWS PROPOSED WATER SERVICE
 - PROPOSED CURB STOP
 - PROPOSED HYDRANT
 - PROPOSED SEWER MAIN
 - PROPOSED SEWER MANHOLE
 - PSS PROPOSED SEWER SERVICE
 - MAINTAIN EXISTING SEWER FLOWS (SEE SHEETS OSP-1 AND OSP-2)



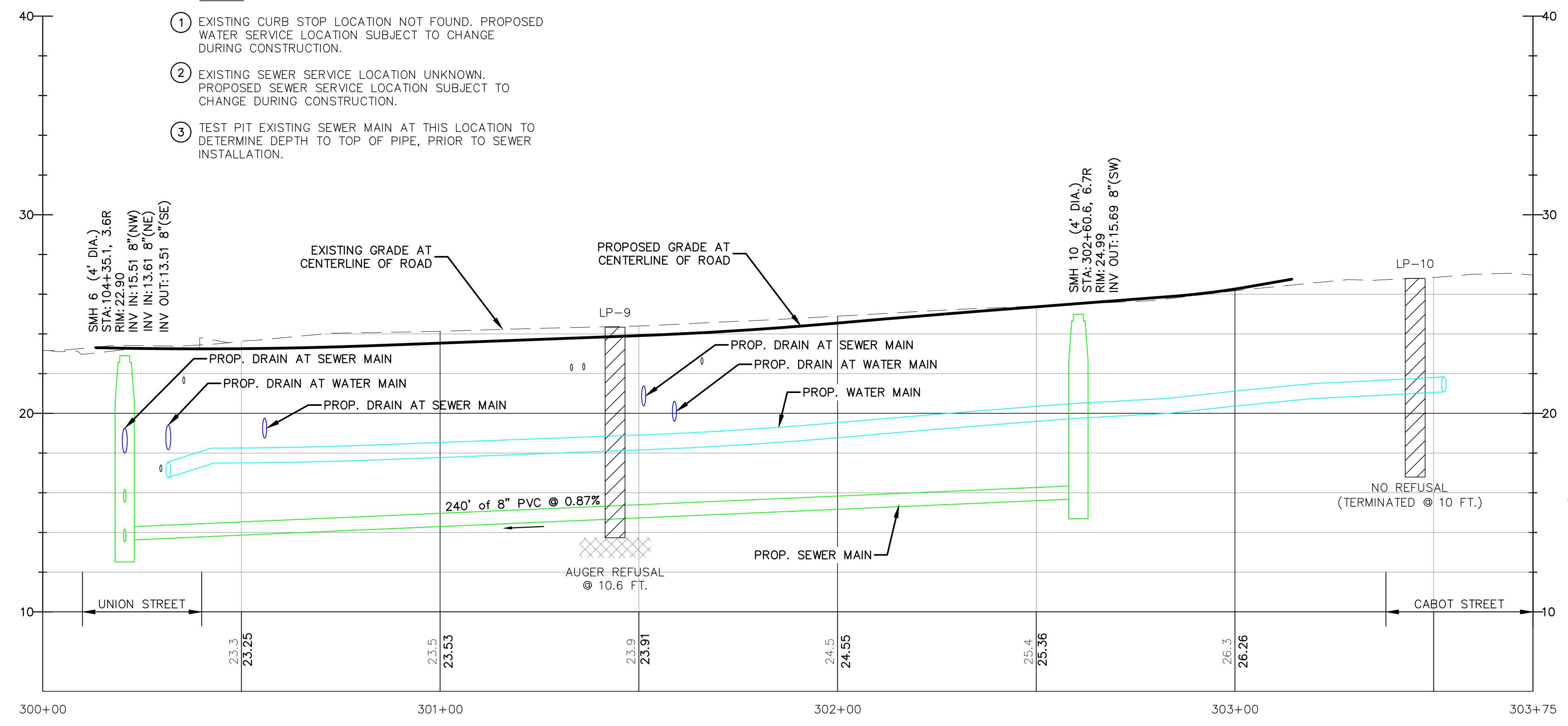
Union Street Profile Sta 105+00 To 110+30

<p>CIVIL/ENVIRONMENTAL/STRUCTURAL</p> <p>Portland, ME Manchester, NH Parsmouth, NH</p> <p>603/431-6196 • 603/627-0708 • 207/641-4223</p> <p>c m a e n g i n e e r s . c o m</p>	
date: January 2023 project no: 1211 checked by: PAC	designed by: STW/WAB drawn by: WWG approved by: PAC
City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Proposed Water & Sewer Union Street STA 105+00 to STA 110+30	
drawing no: U-2 sheet: 20 of 54	
no: 1 revision: Issued for Bid	date: 1/17/2023 by: PAC



Austin Street Plan

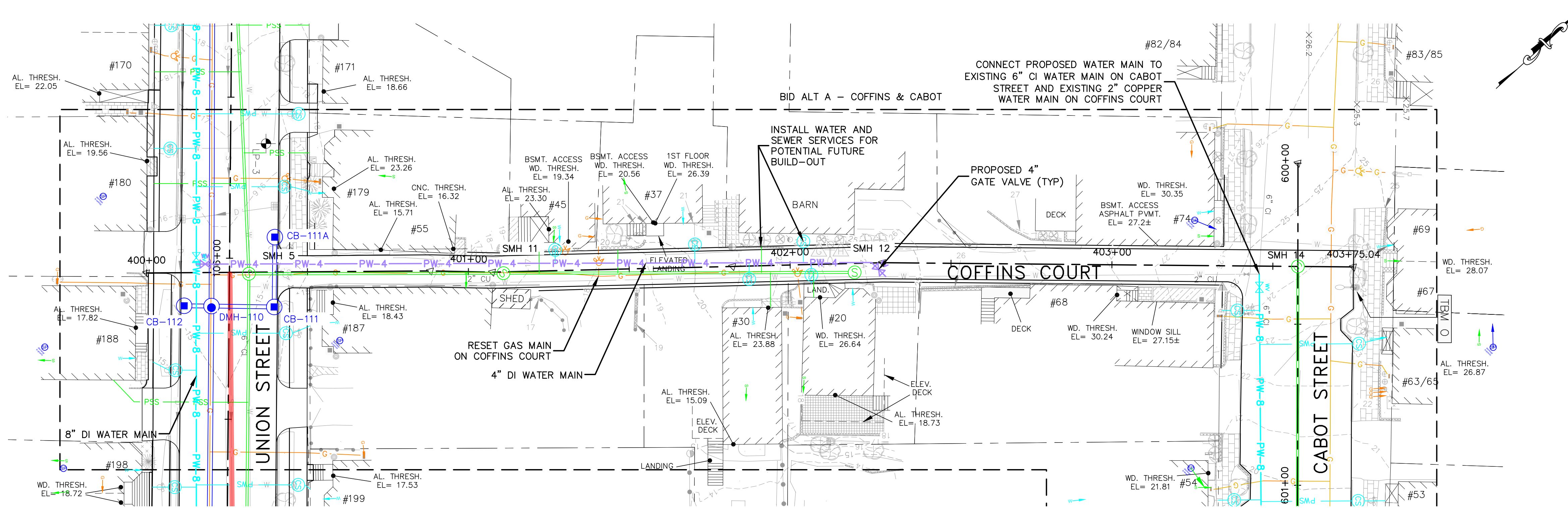
- NOTES:
- EXISTING CURB STOP LOCATION NOT FOUND. PROPOSED WATER SERVICE LOCATION SUBJECT TO CHANGE DURING CONSTRUCTION.
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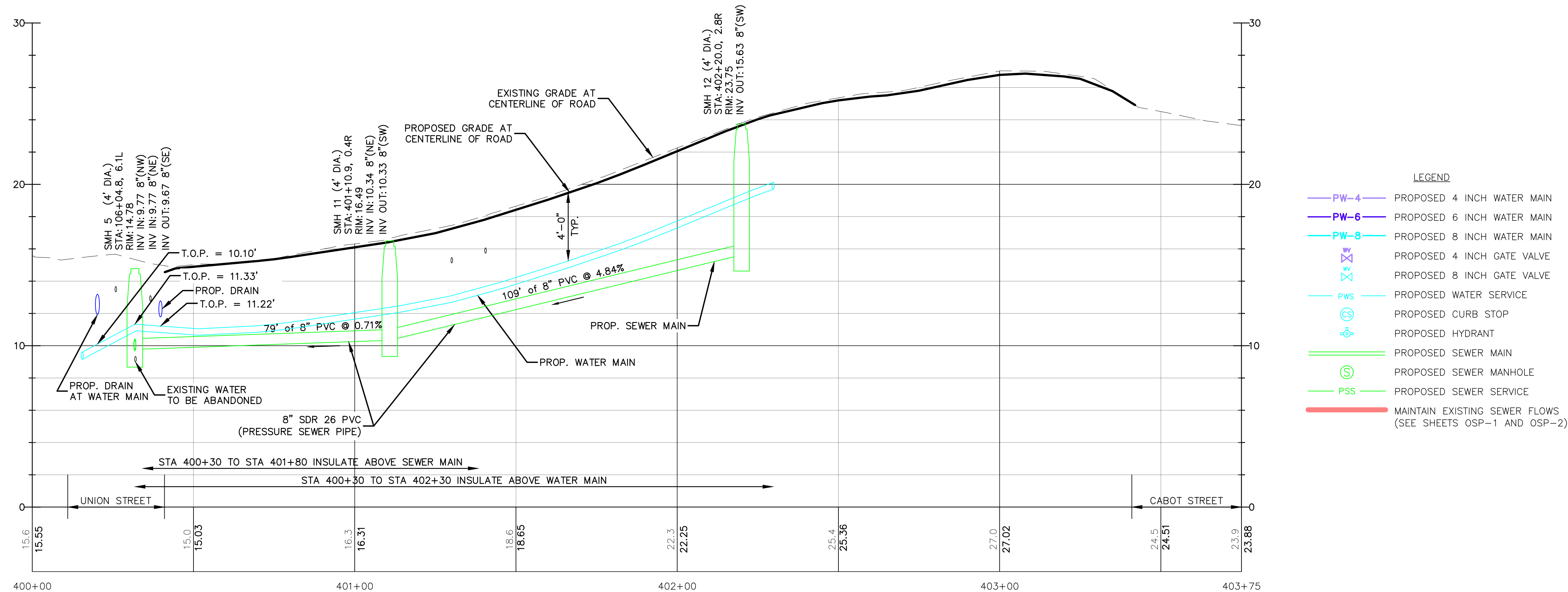
- LEGEND
- PW-4 PROPOSED 4 INCH WATER MAIN
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 - PROPOSED 4 INCH GATE VALVE
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 - PROPOSED HYDRANT
 - PROPOSED SEWER MAIN
 - PROPOSED SEWER MANHOLE
 - PSS PROPOSED SEWER SERVICE
 - MANTAIN EXISTING SEWER FLOWS (SEE SHEETS OSP-1 AND OSP-2)

Austin Street Profile

<p>CIVIL/ENVIRONMENTAL/STRUCTURAL</p> <p>Portland, ME 603/431-6196</p> <p>Manchester, NH 603/627-0708</p> <p>Portland, ME 207/541-4223</p> <p>c m a e n g i n e e r s . c o m</p>		<p>1/17/2023</p> <p>date</p>
<p>1</p> <p>Issued for Bid</p>	<p>no.</p>	<p>revision</p>
<p>City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Proposed Water & Sewer Austin Street STA 300+00 to STA 303+75</p>		
<p>January 2023</p> <p>date:</p>	<p>1211</p> <p>project no.:</p>	<p>STP/WAB</p> <p>designed by:</p>
<p>PAC</p> <p>checked by:</p>	<p>PAC</p> <p>approved by:</p>	<p>WWG</p> <p>drawn by:</p>
<p>0 20' 40'</p> <p>Scale: 1" = 20'H/4'V</p>		<p>40'</p> <p>scale:</p>
<p>drawing no. U-3</p>		
<p>sheet: 21 of 54</p>		

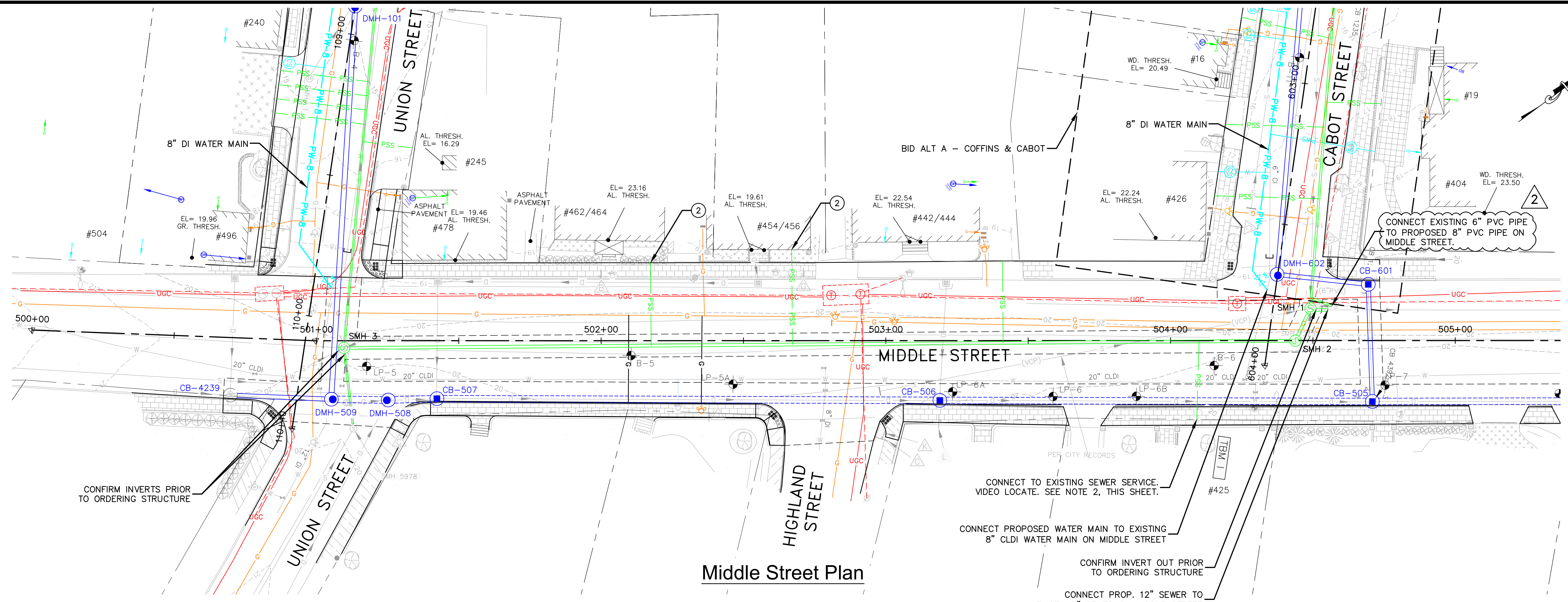


Coffins Court Plan



Coffins Court Profile

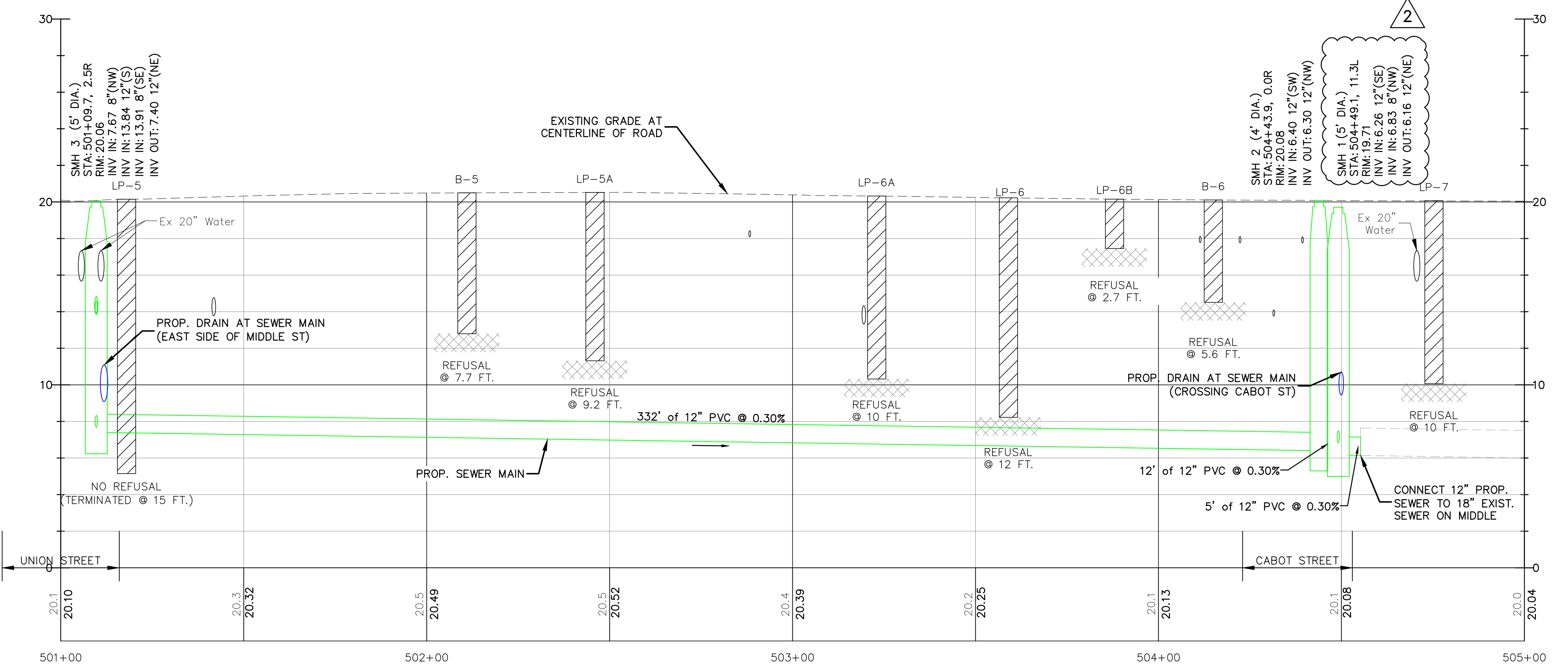
<p>CIVIL/ENVIRONMENTAL/STRUCTURAL</p> <p>Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/641-4223</p> <p>cmengineers.com</p>		
designed by: STF/WAB	drawn by: WWG	approved by: PAC
date: January 2023	project no: 1211	checked by: PAC
City of Portsmouth, New Hampshire Department of Public Works		Union Street Area Improvement Project Proposed Water & Sewer Coffins Court STA 400+00 to STA 403+75
drawing no: U-4		sheet: 22 of 54
revision: 1 Issued for Bid		date: 1/17/2023 by: PAC



Middle Street Plan

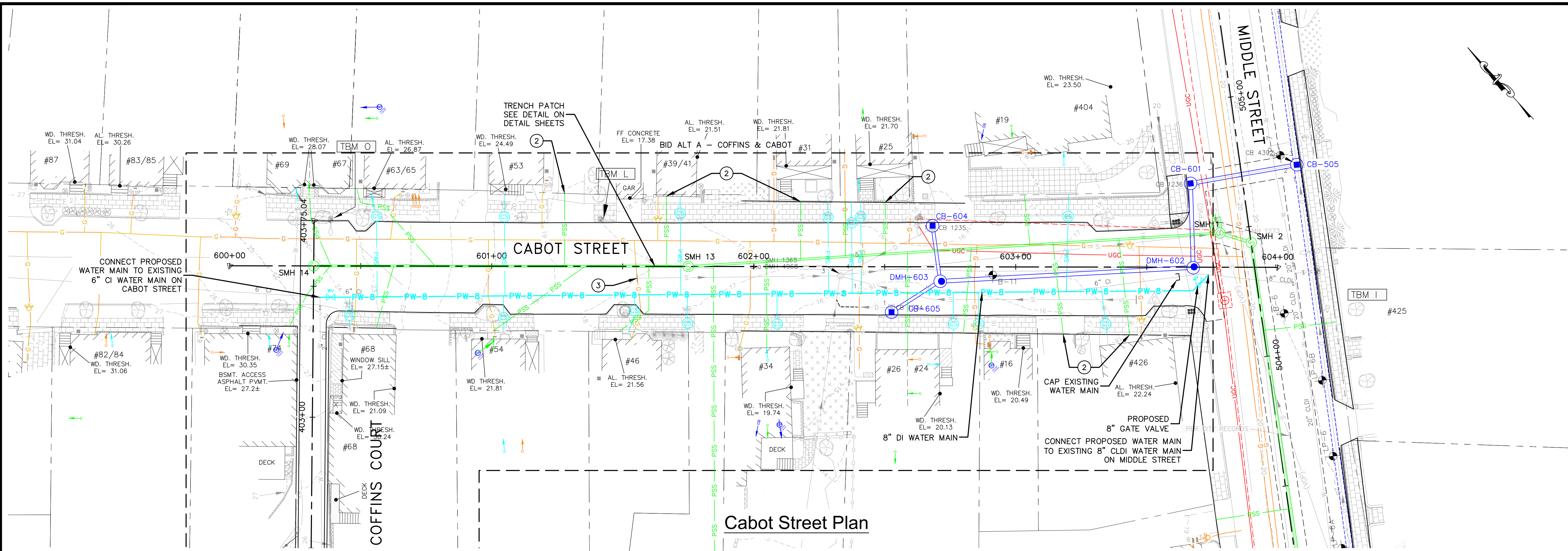
- NOTES:
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 - EXISTING SEWER SERVICE LOCATION UNKNOWN. PROPOSED SEWER SERVICE LOCATION SUBJECT TO CHANGE DURING CONSTRUCTION.
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 - PW-8 PROPOSED 8 INCH WATER MAIN
 - PROPOSED 4 INCH GATE VALVE
 - PROPOSED 8 INCH GATE VALVE
 - PWS PROPOSED WATER SERVICE
 - PROPOSED CURB STOP
 - PROPOSED HYDRANT
 - PROPOSED SEWER MAIN
 - PROPOSED SEWER MANHOLE
 - PSS PROPOSED SEWER SERVICE
 - MAINTAIN EXISTING SEWER FLOWS (SEE SHEETS OSP-1 AND OSP-2)

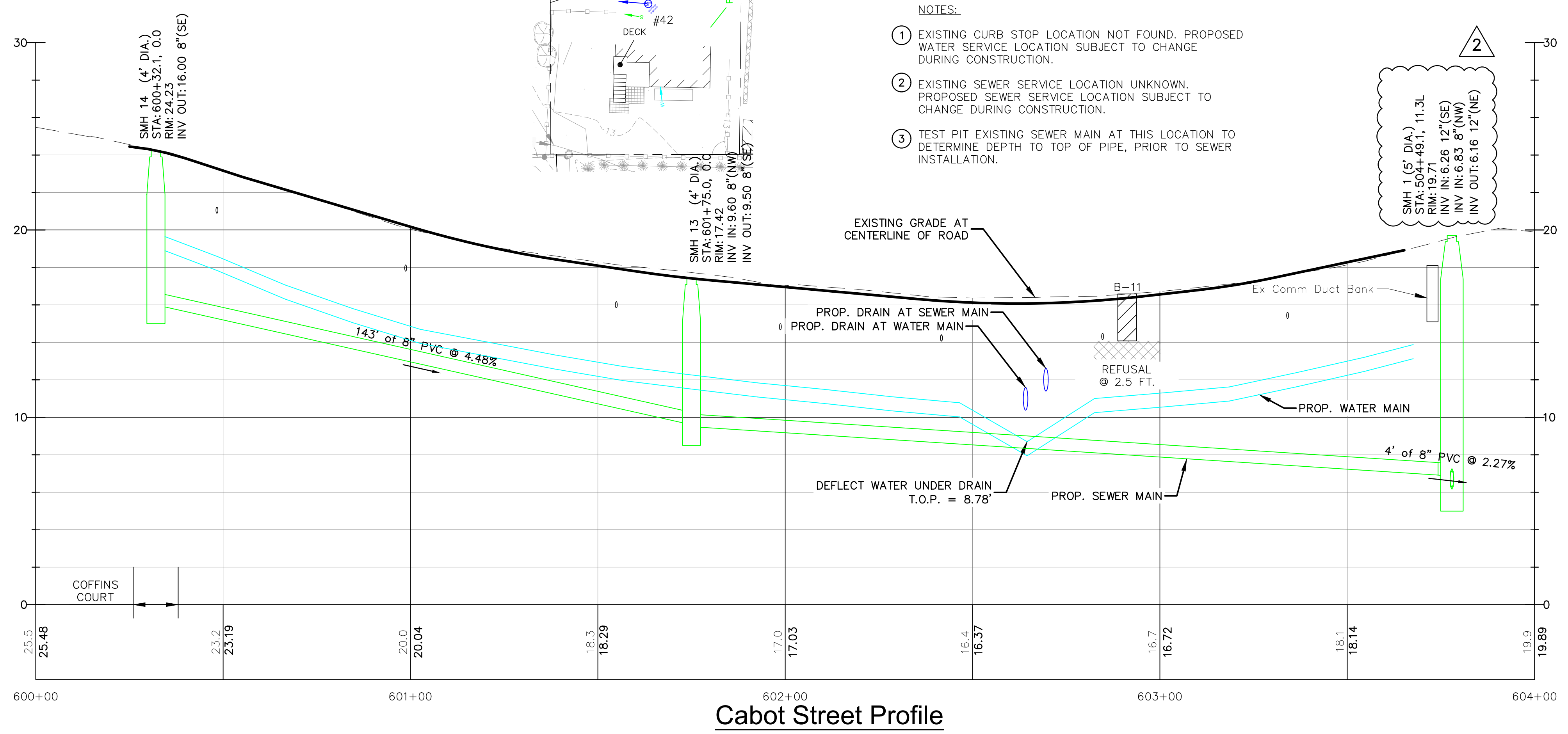


Middle Street Profile

		CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/541-4223		c m a e n g i n e e r s . c o m	
designed by: STP/WAB	date: January 2023	project no.: 1211	checked by: PAC	drawn by: WWG	approved by: PAC
City of Portsmouth, New Hampshire Department of Public Works			Union Street Area Improvement Project		
Proposed Water & Sewer Middle Street STA 500+00 to STA 505+00			drawing no. U-5		
sheet: 23	of 54	no. 2	no. 1	revision 1/27/23	by PAC



Cabot Street Plan



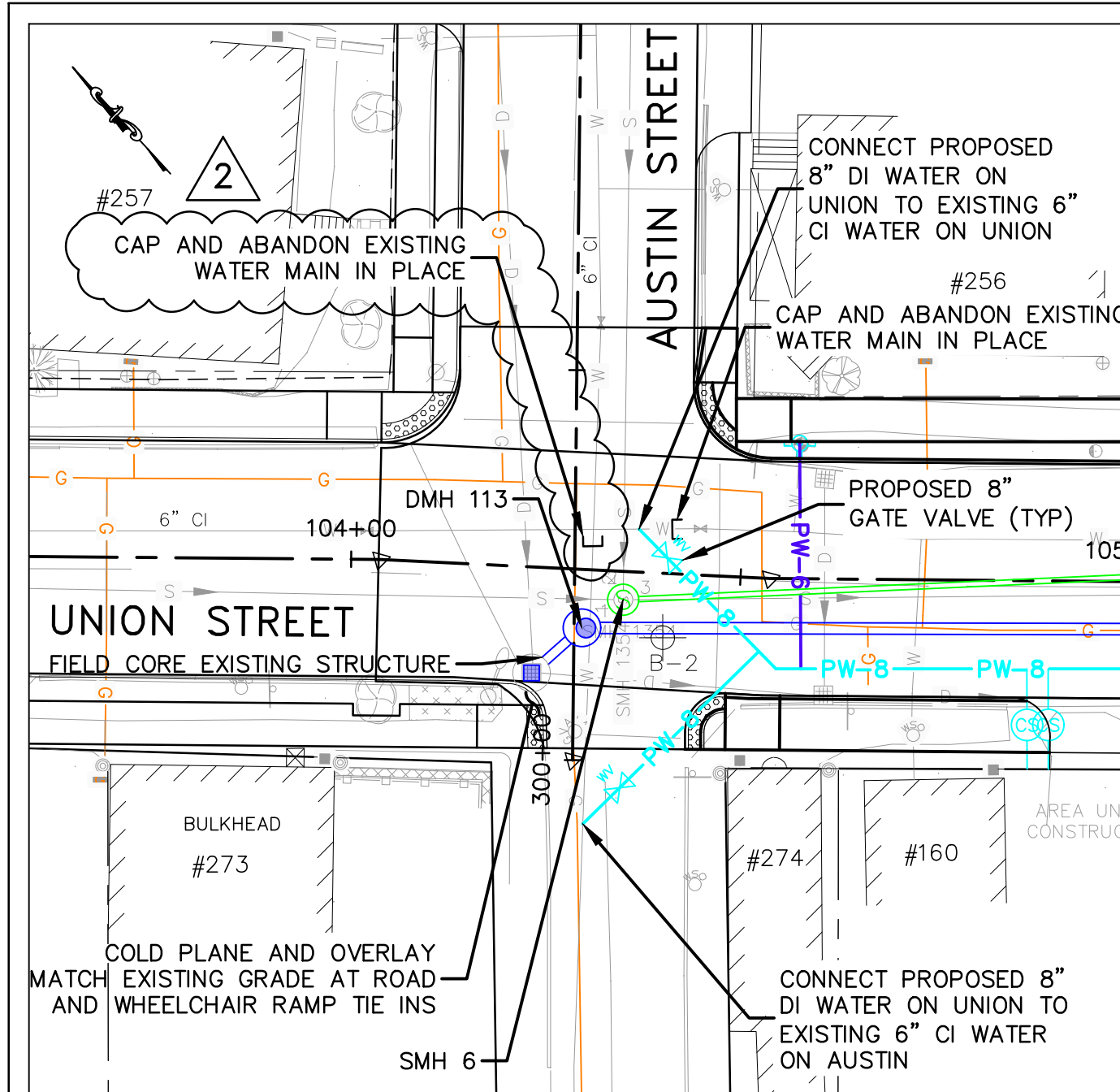
Cabot Street Profile

- NOTES:
- EXISTING CURB STOP LOCATION NOT FOUND. PROPOSED WATER SERVICE LOCATION SUBJECT TO CHANGE DURING CONSTRUCTION.
 - EXISTING SEWER SERVICE LOCATION UNKNOWN. PROPOSED SEWER SERVICE LOCATION SUBJECT TO CHANGE DURING CONSTRUCTION.
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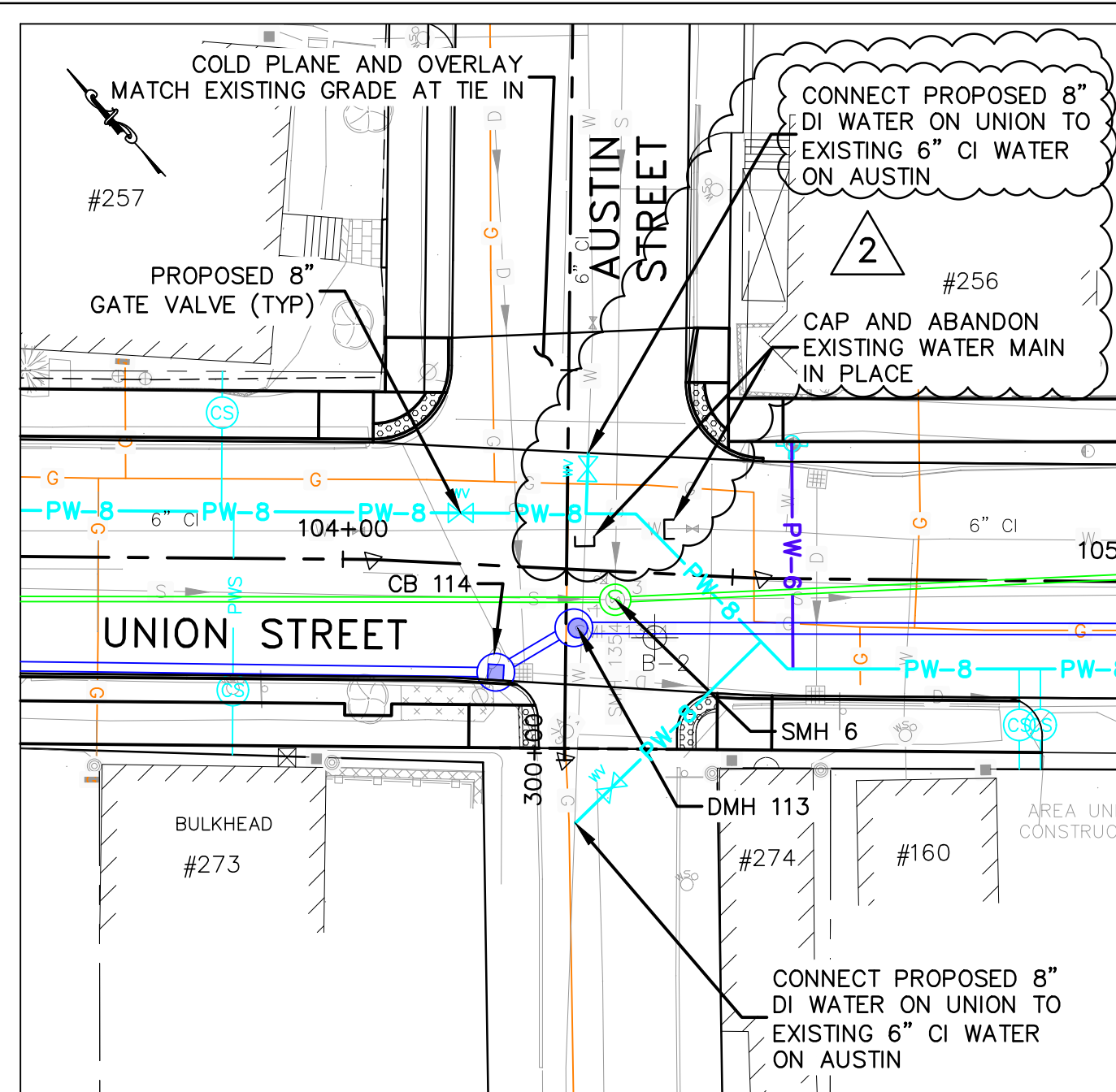
LEGEND

- PW-4 PROPOSED 4 INCH WATER MAIN
- PW-6 PROPOSED 6 INCH WATER MAIN
- PW-8 PROPOSED 8 INCH WATER MAIN
- ⊗ PROPOSED 4 INCH GATE VALVE
- ⊗ PROPOSED 8 INCH GATE VALVE
- PWS PROPOSED WATER SERVICE
- ⊙ PROPOSED CURB STOP
- ⊙ PROPOSED HYDRANT
- PROPOSED SEWER MAIN
- ⊙ PROPOSED SEWER MANHOLE
- PSS PROPOSED SEWER SERVICE
- MAINTAIN EXISTING SEWER FLOWS (SEE SHEETS OSP-1 AND OSP-2)

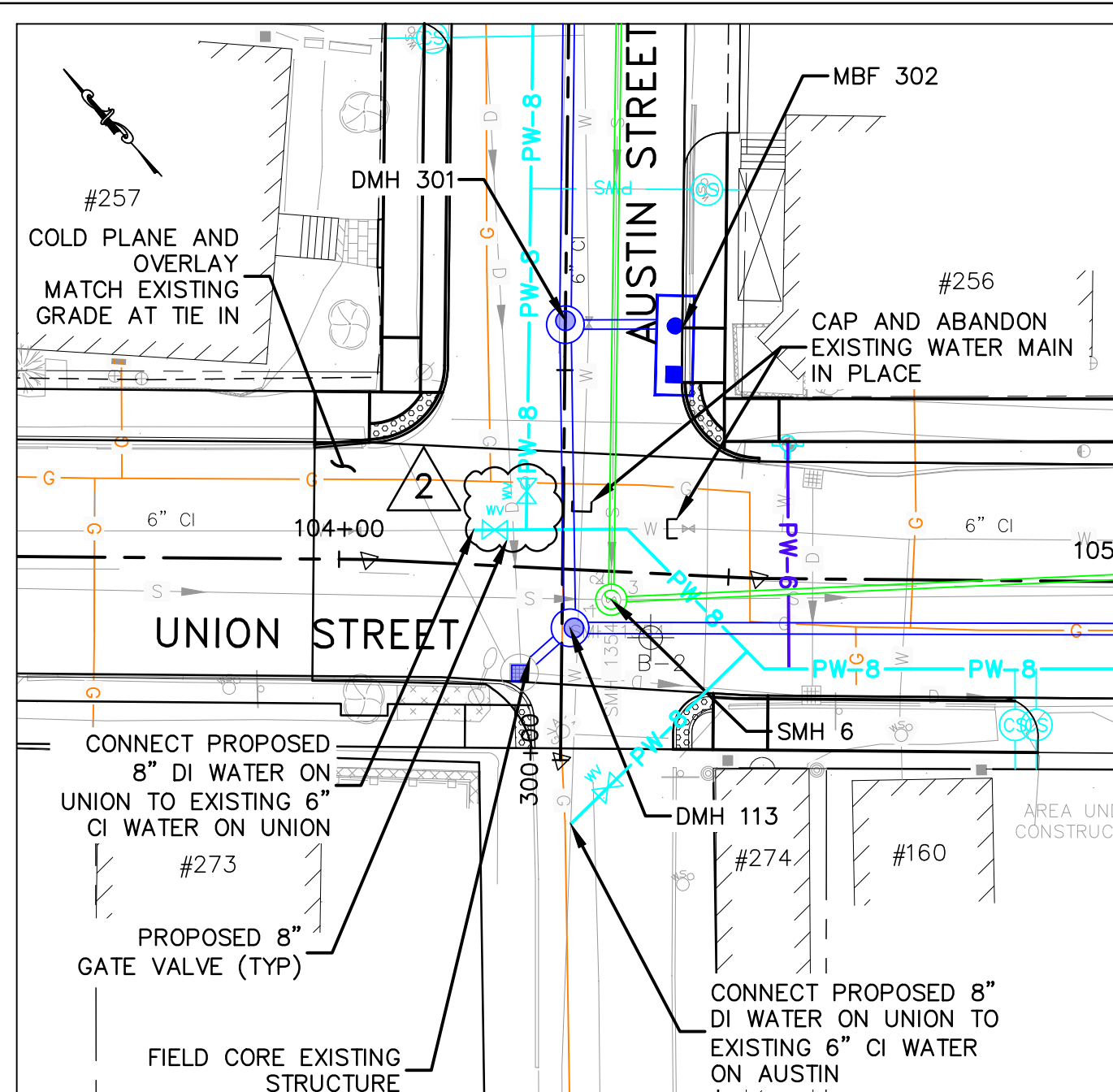
<p style="font-size: small; margin: 0;">CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH 603/431-6196 • Manchester, NH 603/627-0708 • Portland, ME 207/541-4223 c m a e n g i n e e r s . c o m</p>		Bid Addendum 2 Issued for Bid	1/27/23 1/17/2023	PAC PAC	by date
		no.	revision	date	by
City of Portsmouth, New Hampshire Department of Public Works		Union Street Area Improvement Project		Proposed Water & Sewer Cabot Street STA 600+25 to STA 604+00	
designed by: STF/WAB		drawn by: WWG		approved by: PAC	
date: January 2023		project no: 1211		checked by: PAC	
scale: 1" = 20'H/4'V		scale: 1" = 20'H/4'V		scale: 1" = 20'H/4'V	
drawing no. U-6					
sheet: 24 of 54					



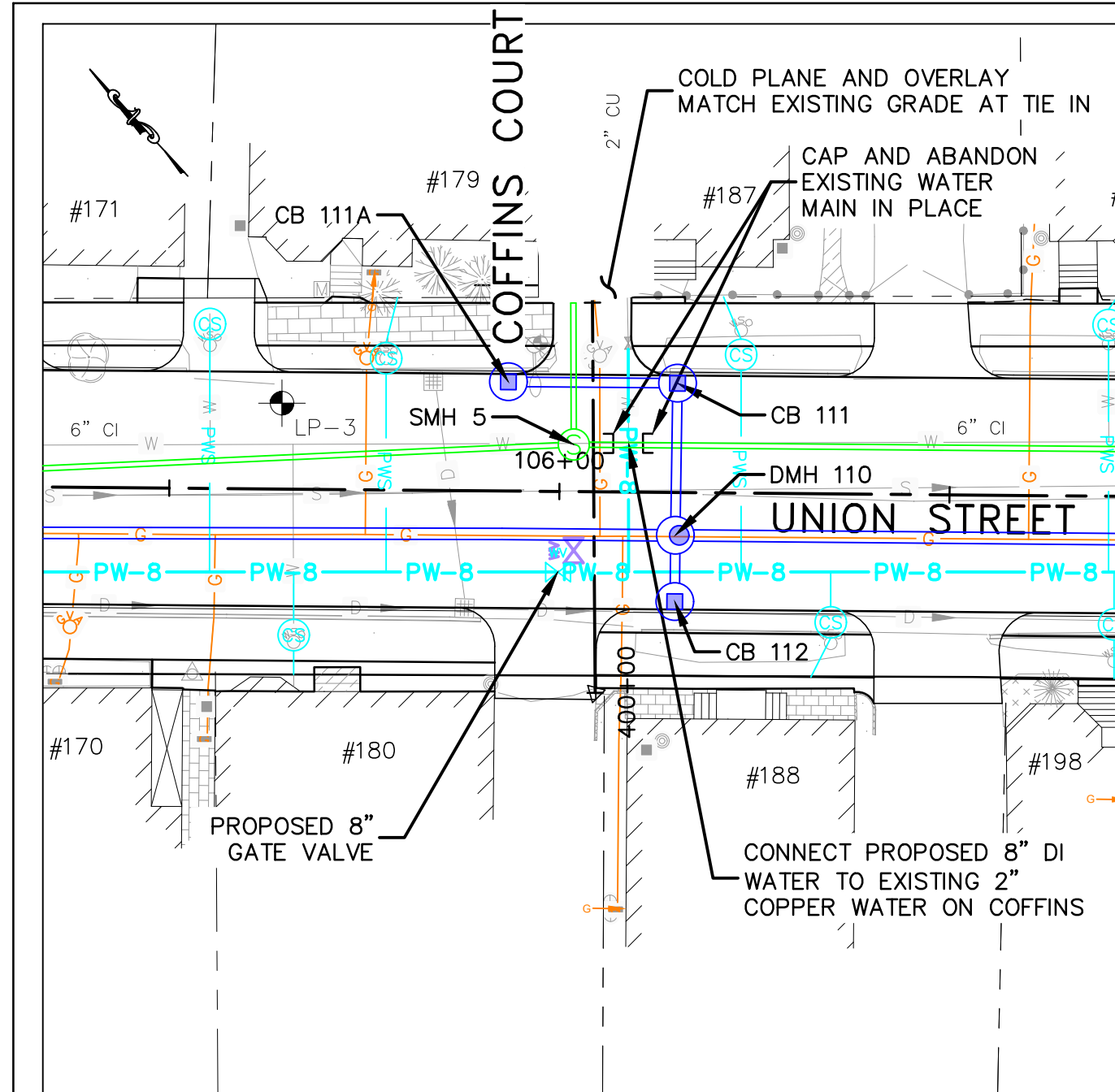
BASE BID AND BID ALTERNATE A



BASE BID AND BID ALTERNATE B



BASE BID AND BID ALTERNATE C



BASE BID ONLY

UNION AND COFFINS INTERSECTION

UNION AND AUSTIN INTERSECTION

WATER CONNECTION PHASING NOTES:

- EXISTING PIPING CONFIGURATION SHOWN IS APPROXIMATE. PIPING CONFIGURATION MAY CHANGE DUE TO ACTUAL CONDITIONS.
- ALL PROPOSED PIPING SHALL BE FULLY COORDINATED PRIOR TO TIE-IN AND SHALL BE PLANNED TO COMPLETE CONNECTIONS.

BASE BID

- THE BASE BID INCLUDES PROPOSED WATER, DRAINAGE AND SEWER ON UNION STREET (AUSTIN TO MIDDLE), PROPOSED SEWER ON MIDDLE STREET (UNION TO CABOT), AND PROPOSED DRAINAGE ON MIDDLE STREET (UNION TO MILLER).
- THE "BASE BID ONLY" AND "BASE BID AND BID ALTERNATE A" DIAGRAMS ON THIS SHEET INDICATE THE UTILITY CONNECTIONS IF ONLY THE BASE BID IS SELECTED.

BID ALTERNATE A

- BID ALTERNATE A INCLUDES PROPOSED WATER, DRAINAGE AND SEWER ON CABOT STREET (COFFINS TO MIDDLE), AND PROPOSED WATER AND SEWER ON COFFINS COURT.
- IF THE BASE BID AND BID ALTERNATE A ARE SELECTED, CONTRACTOR SHALL REFER TO THE PLANS FOR UTILITY LAYOUT AND CONNECTIONS ON CABOT STREET AND COFFINS COURT. THE CONTRACTOR SHALL REFER TO "BASE BID AND BID ALTERNATE A" DIAGRAM ON THIS SHEET FOR THE UTILITY CONNECTION AT THE UNION AND AUSTIN INTERSECTION.

BID ALTERNATE B

- BID ALTERNATE B INCLUDES PROPOSED WATER, DRAINAGE AND SEWER ON UNION STREET (STATE TO AUSTIN).
- IF THE BASE BID AND BID ALTERNATE B ARE SELECTED, CONTRACTOR SHALL REFER TO "BASE BID AND BID ALTERNATE B" DIAGRAM ON THIS SHEET FOR UTILITY CONNECTIONS.

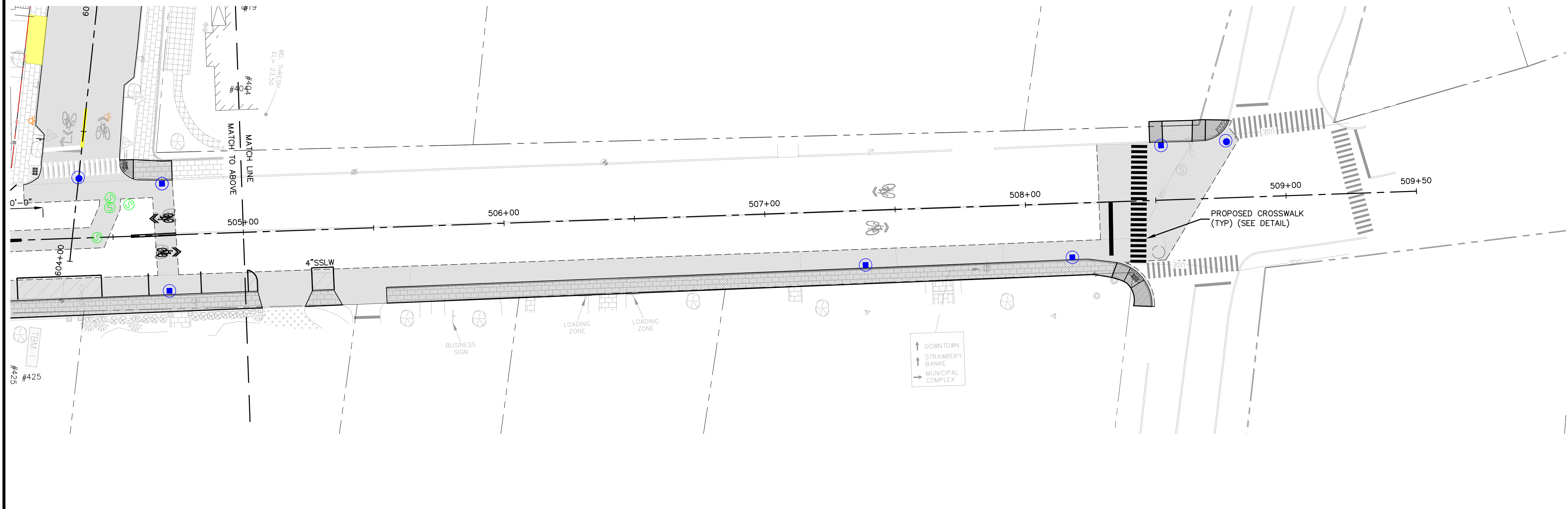
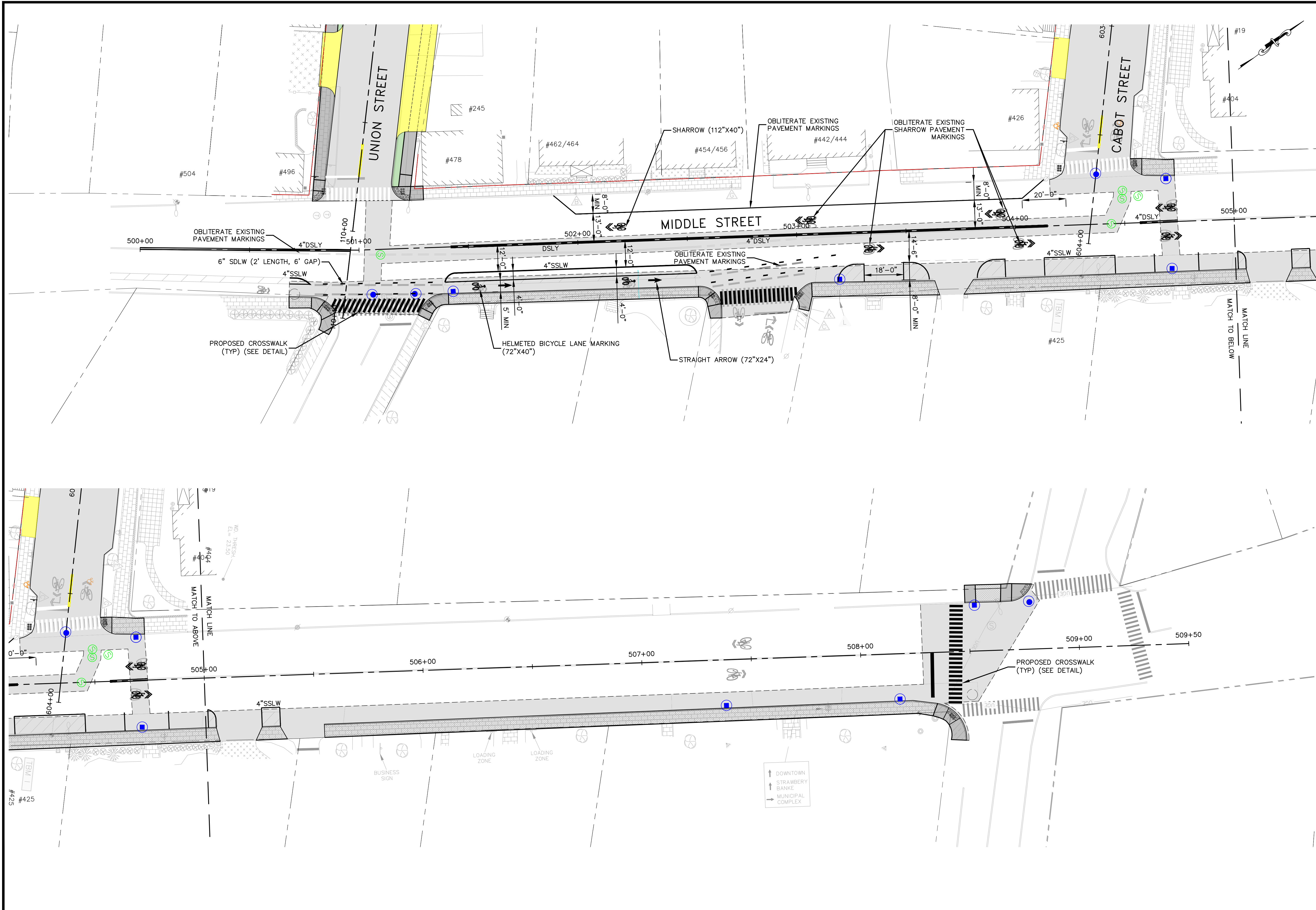
BID ALTERNATE C


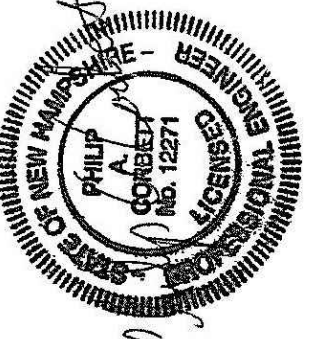
- BID ALTERNATE C INCLUDES PROPOSED WATER, DRAINAGE AND SEWER ON AUSTIN STREET (CABOT TO UNION).
- IF THE BASE BID AND BID ALTERNATE C ARE SELECTED, CONTRACTOR SHALL REFER TO "BASE BID AND BID ALTERNATE C" DIAGRAM ON THIS SHEET FOR UTILITY CONNECTIONS.

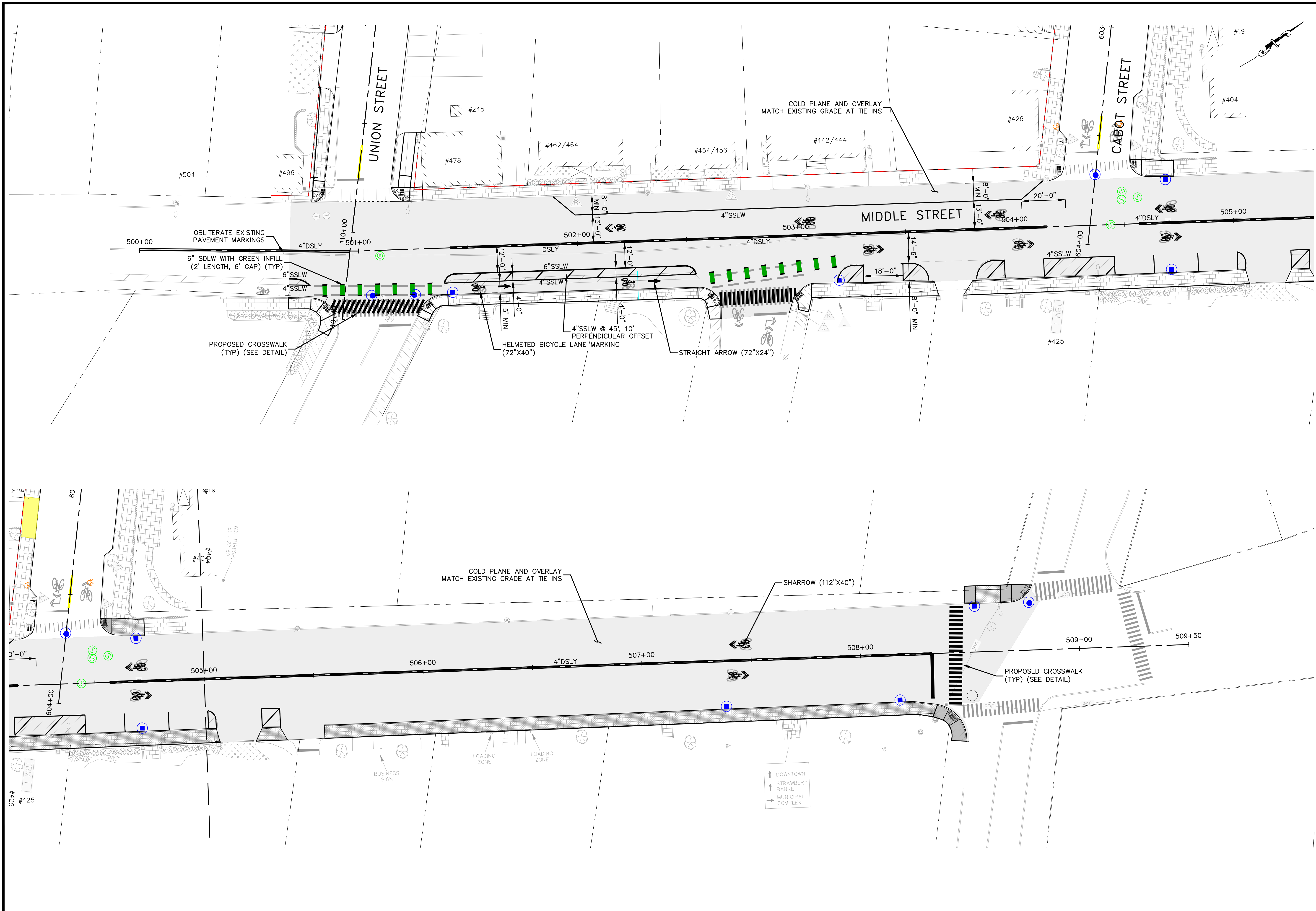
BID ALTERNATE D

- BID ALTERNATE D INCLUDES COLD PLANING AND PAVEMENT OVERLAY ON MIDDLE STREET (CABOT TO UNION).
- SEE MIDDLE STREET STRIPING PLAN – BID ALTERNATE D FOR PAVING LIMITS AND STRIPING LAYOUT.

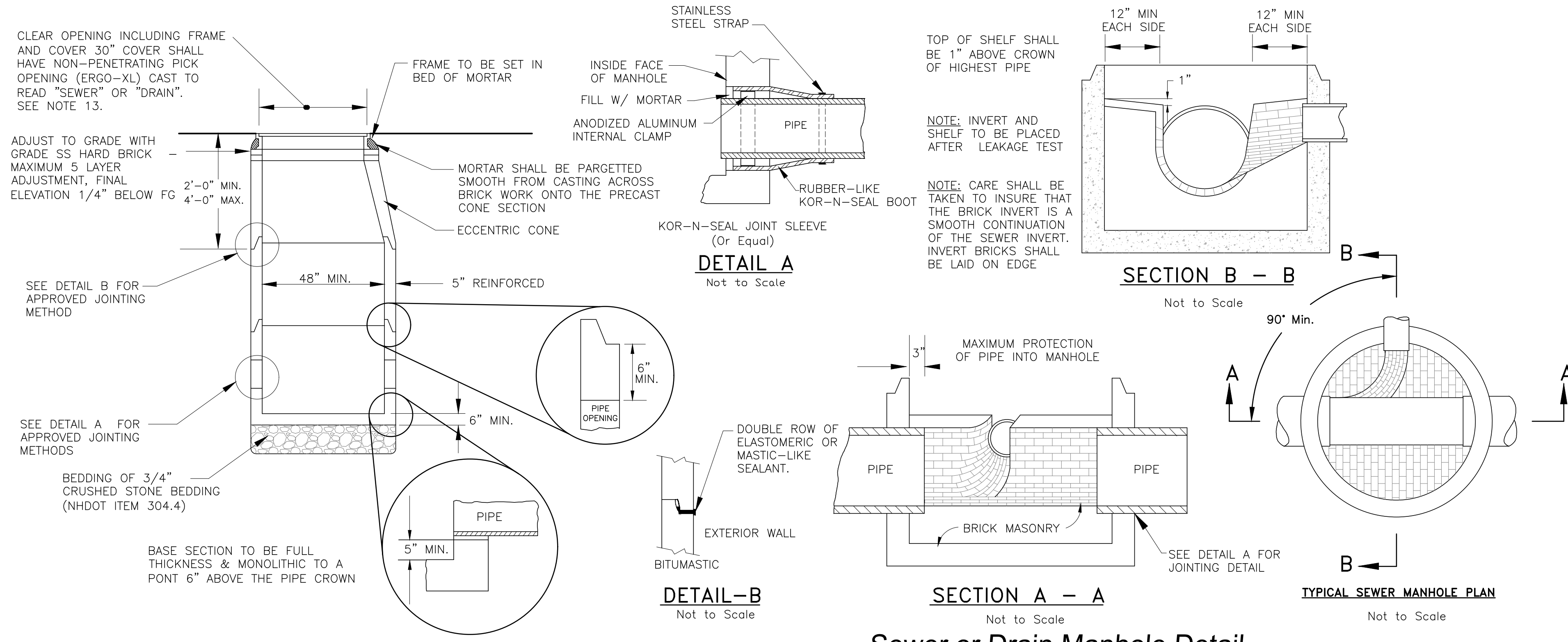
		Bid Addendum 2 Issued for Bid	
Civil/Environmental/Structural		no.	
Portsmouth, NH 03801 Manchester, NH 03103 Portland, ME 04106		revision	
603/431-6196 • 603/627-0708 • 207/541-4223		date	
c m a e n g i n e e r s . c o m		1/27/23 1/17/2023 PAC PAC	
		by	
designed by: STFWAB		drawn by: WWG	
date: January 2023		approved by: PAC	
project no: 1211		checked by: PAC	
City of Portsmouth, New Hampshire Department of Public Works		Union Street Area Improvement Project	
Limits of Construction for Bid Alternates		drawing no: U-7	
sheet: 25 of 54		scale: 1" = 20' 0 20' 40'	



 CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/541-4223 c m a e n g i n e e r s . c o m		1 Issued for Bid 1/17/2023 PAC by
		designed by: STFWAB drawn by: WWG checked by: PAC approved by: PAC scale: 1" = 20'H/4'V 0 20' 40'
City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Middle Street Striping Plan Base Bid		date: January 2023 project no: 1211 drawing no: S-1 sheet: 26 of 54

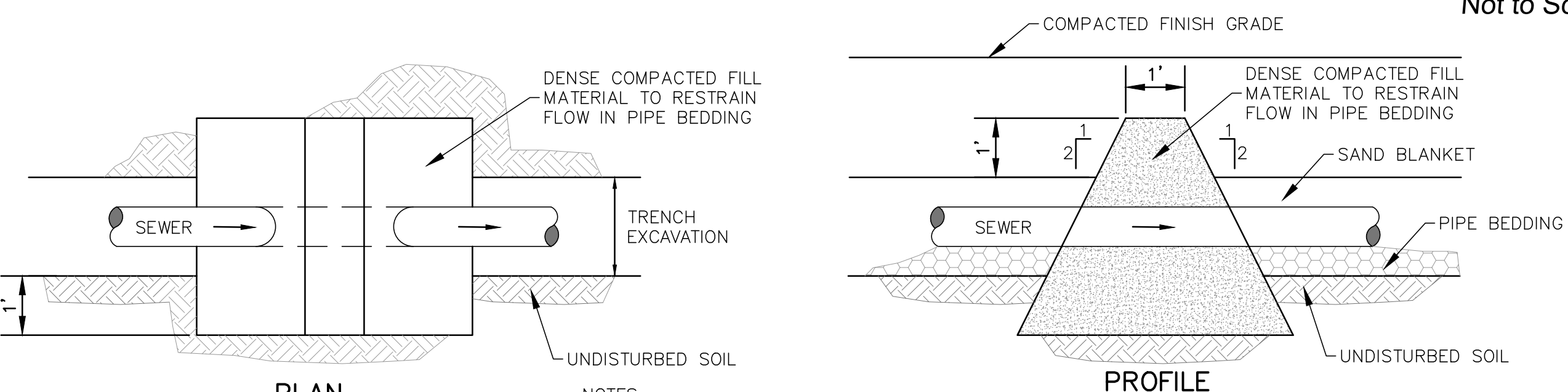


<p>CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/641-4223 c m a e n g i n e e r s . c o m</p>		<p>1 Issued for Bid revision no.</p>	<p>1/17/2023 date PAC</p>
<p>City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Middle Street Striping Plan Bid Alternate D</p>		<p>designed by: STFWAB</p> <p>drawn by: WWG</p> <p>checked by: PAC</p> <p>approved by: PAC</p>	<p>date: January 2023</p> <p>project no: 1211</p> <p>scale: 0 20' 40' Scale: 1" = 20'H/4'V</p>
<p>drawing no. S-2</p>		<p>sheet: 27 of 54</p>	



Sewer or Drain Manhole Detail

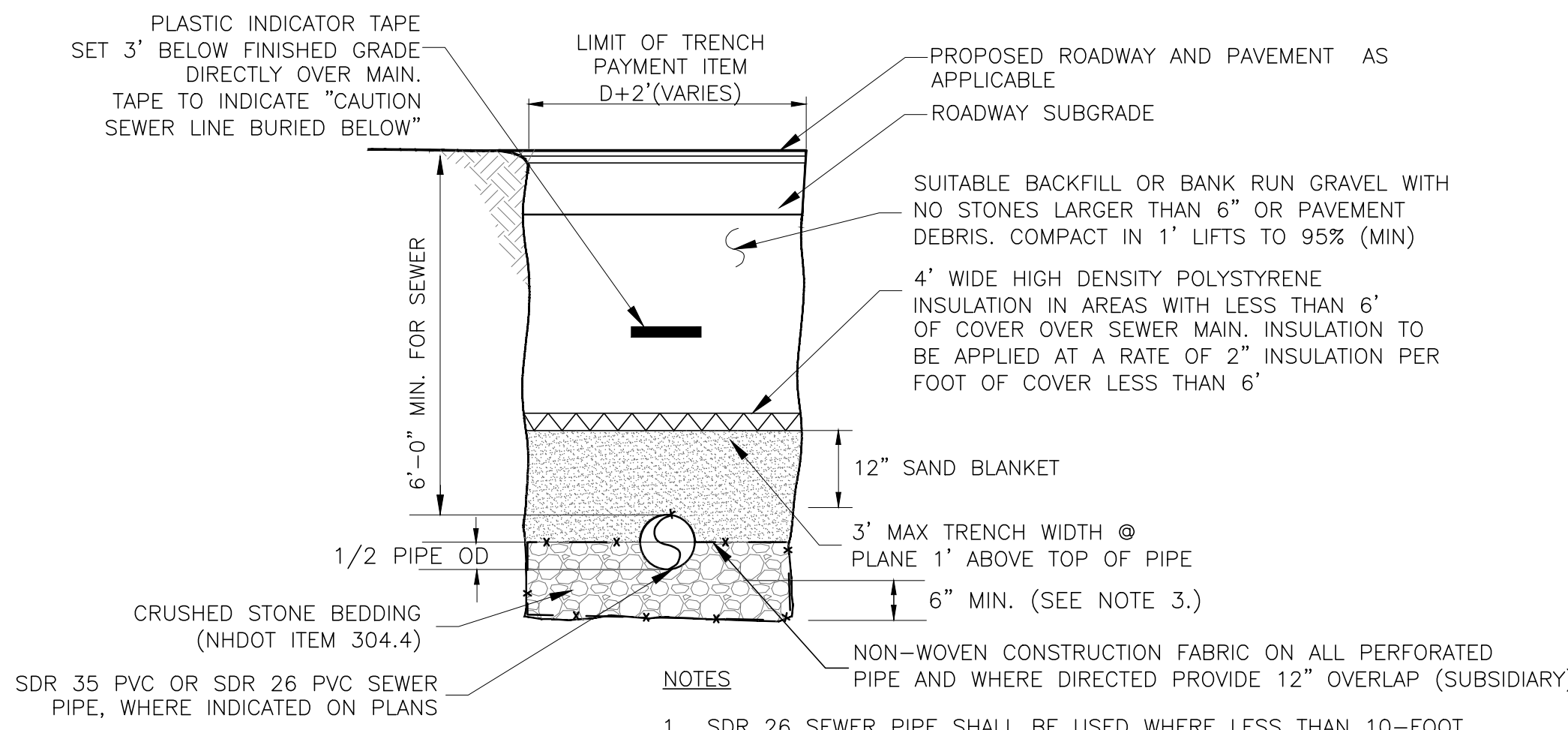
- NOTES:
- ALL SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES MAY BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH OR WITHOUT REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H=20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.
 - MANHOLE BARRELS AND CONE SECTIONS SHALL BE PRECAST CONCRETE.
 - PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C 478.
 - LEAKAGE TEST SHALL BE PERFORMED PRIOR TO BACKFILL IN ACCORDANCE WITH THE SPECIFICATIONS.
 - INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TO THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.
 - FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) "SEWER" OR "DRAIN" SHALL BE PROVIDED CAST INTO THE CENTER OF EACH COVER.
 - BEDDING: 3/4" CRUSHED STONE BEDDING (NHDOT ITEM 304.4).
 - HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE ENGINEER, WHICH TYPE SHALL, IN GENERAL, DEPEND FOR WATERTIGHTNESS UPON AN ELASTOMERIC OR MASTIC-LIKE GASKET APPLIED IN DOUBLE ROWS.
 - PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL WILL DEPEND FOR WATERTIGHTNESS UPON EITHER AN APPROVED NON-SHRINKING MORTAR OR ELASTOMERIC SEALANT.
 - FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY. APPROVED BITUMASTIC SEALANTS: RAM-NEK KENT SEAL NO. 2EZ
 - ALL PRECAST SECTIONS AND BASES SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING.
 - NO MANHOLE STEPS ARE ALLOWED.
 - THE CITY HAS THEIR OWN ERGO-XL COVERS. THE CONTRACTOR CAN PICK UP SEWER MANHOLE COVERS WITH NO CHARGE, BUT MUST PAY THE CITY FOR THE DRAINAGE MANHOLE COVERS.



Trench Dam

- NOTES:
- TRENCH DRAINS TO BE AT LOCATIONS SHOWN ON THE PLAN OR AS DIRECTED TO CONTROL BACK WATER IN STONE BEDDING, SUBSIDIARY.

Not to Scale



SCREENED GRAVEL BEDDING

PERCENT PASSING	SIEVE SIZE
100%	1"
90-100%	3/4"
20-55%	3/8"
0-10%	#4
0-5%	#8

- NOTES:
- SDR 26 SEWER PIPE SHALL BE USED WHERE LESS THAN 10-FOOT HORIZONTAL SEPARATION BETWEEN WATER AND SEWER LINE OCCURS.
 - WHERE WATER LINES CROSS OVER SEWER LINES, PROVIDE 22 1/2" MJ BENDS AND THRUST BLOCKS TO ADJUST WATER LINE PROFILE TO PROVIDE MINIMUM 18" VERTICAL SEPARATION.
 - WHERE LEDGE IS ENCOUNTERED, THE TRENCH SHALL BE EXCAVATED 12 INCHES BELOW THE BOTTOM OF THE PIPE.

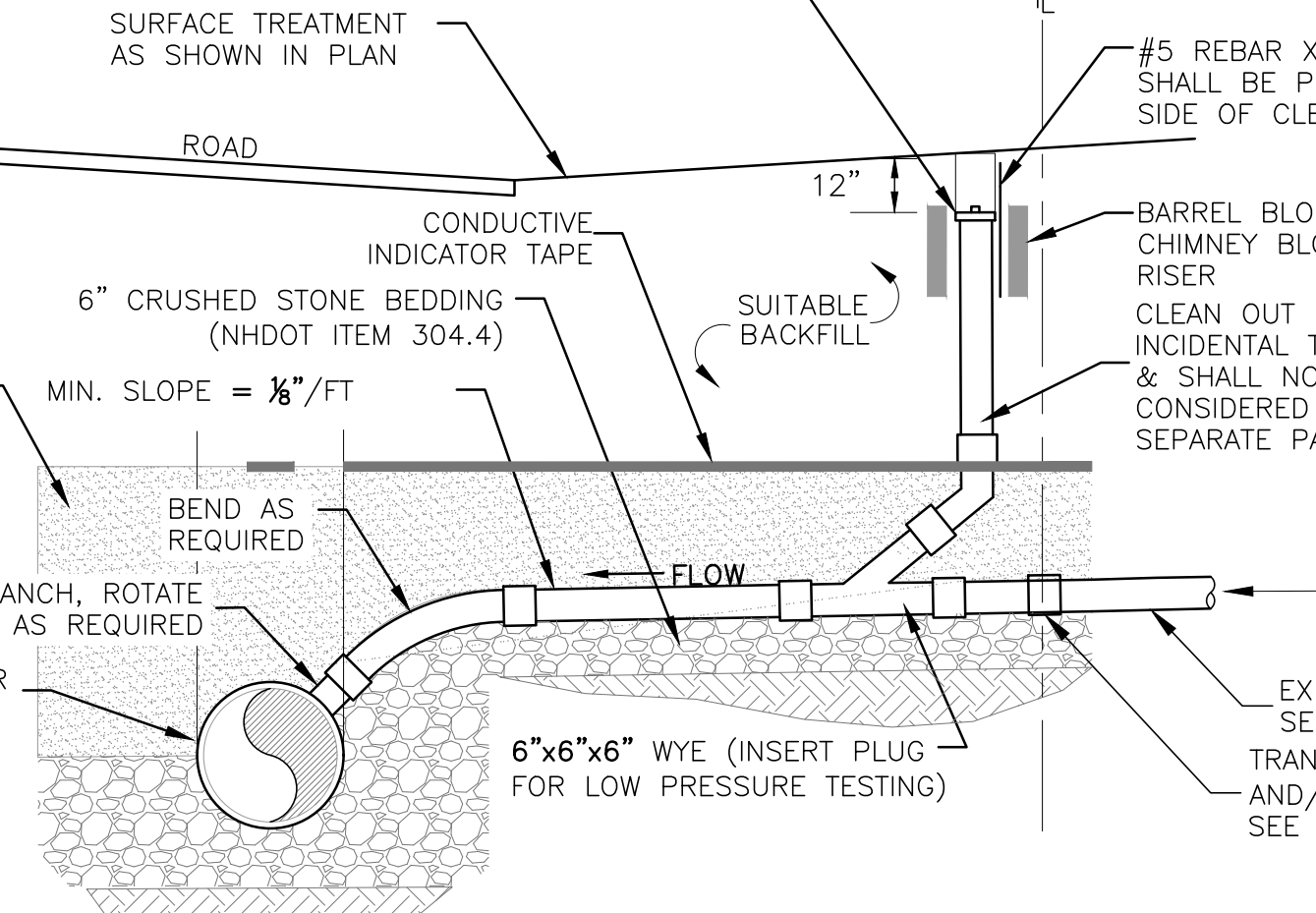
Typical Sanitary Sewer and Drain Trench

Not to Scale

Cast Iron Cleanout Covers

Not to Scale

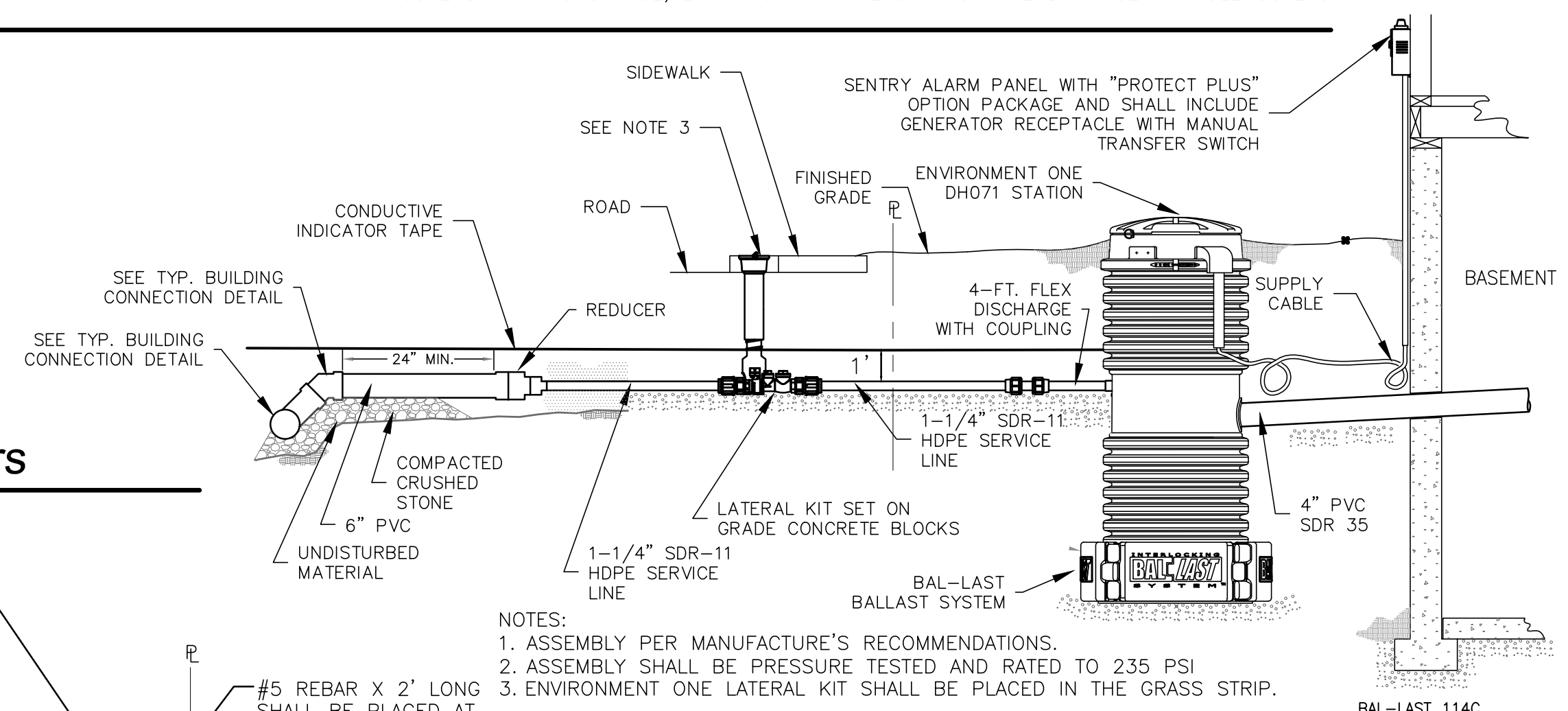
FOR NON-PAVED AREAS, PROVIDE BARREL BLOCK AND REBAR AROUND 6" LONG PIECE OF 6" DI PIPE AT GRADE. PROVIDE CAST IRON CLEANOUT FRAME & COVERS.



- SEWER SERVICE NOTES:**
- SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.
 - CLEANOUTS SHALL BE INSTALLED AT EACH SERVICE CONNECTION.
 - CLEANOUT RISER PIPE AND FITTINGS ARE INCIDENTAL AND SHALL NOT BE CONSIDERED FOR PAYMENT.
 - COUPLING TO BE GASKETED PVC IF EXISTING SERVICE IS PLASTIC. IF FERNCO COUPLINGS ARE USED, USE A PATIO BLOCK FOR SUPPORT UNDER THE COUPLING CONNECTION.

Sewer Service Connection with Cleanout

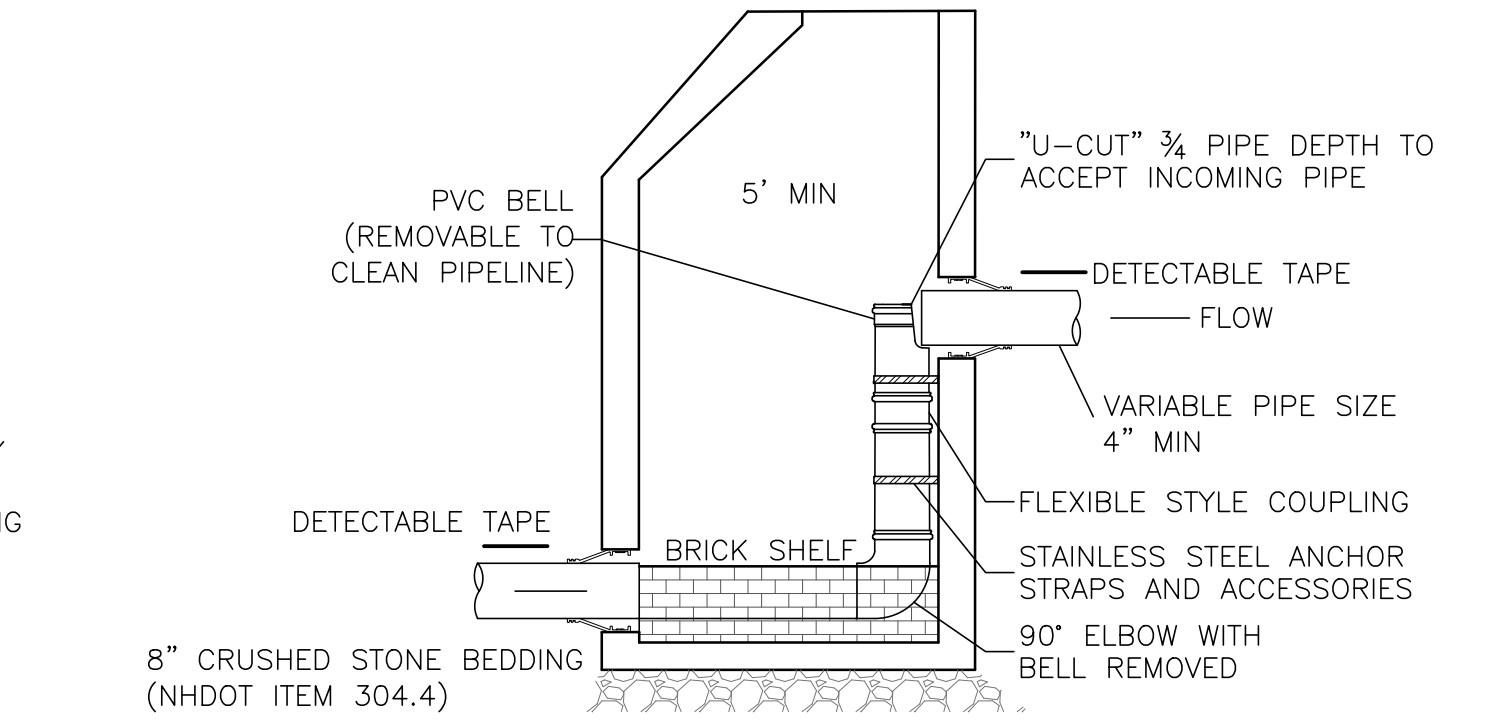
Not to Scale



Grinder Pump Station Detail

Not to Scale

- NOTES:
- ASSEMBLY PER MANUFACTURE'S RECOMMENDATIONS.
 - ASSEMBLY SHALL BE PRESSURE TESTED AND RATED TO 235 PSI
 - ENVIRONMENT ONE LATERAL KIT SHALL BE PLACED IN THE GRASS STRIP.



- NOTES:
- DROP DIAMETER TO MATCH INLET DIAMETER
 - ANCHOR STRAPS (MINIMUM OF 2) AND BOLTS TO BE 304 OR 316 STAINLESS STEEL AND NOT MORE THAN 3" ON CENTER. SECURE AS DIRECTED: STRAPS - 1" WIDE, BOLTS - 3/8" X 2 1/2" LONG

Drop Inlet Manhole Detail

Not to Scale

City of Portsmouth, New Hampshire
Department of Public Works
Union Street Area
Improvement Project
Sewer Details

designed by: STJ/WAB
drawn by: WWG
checked by: PAC
approved by: PAC

date: January 2023
project no: 1211

scale: 1" = 10'
0 10' 20'

revision
1
no.

date
1/17/2023
PAC

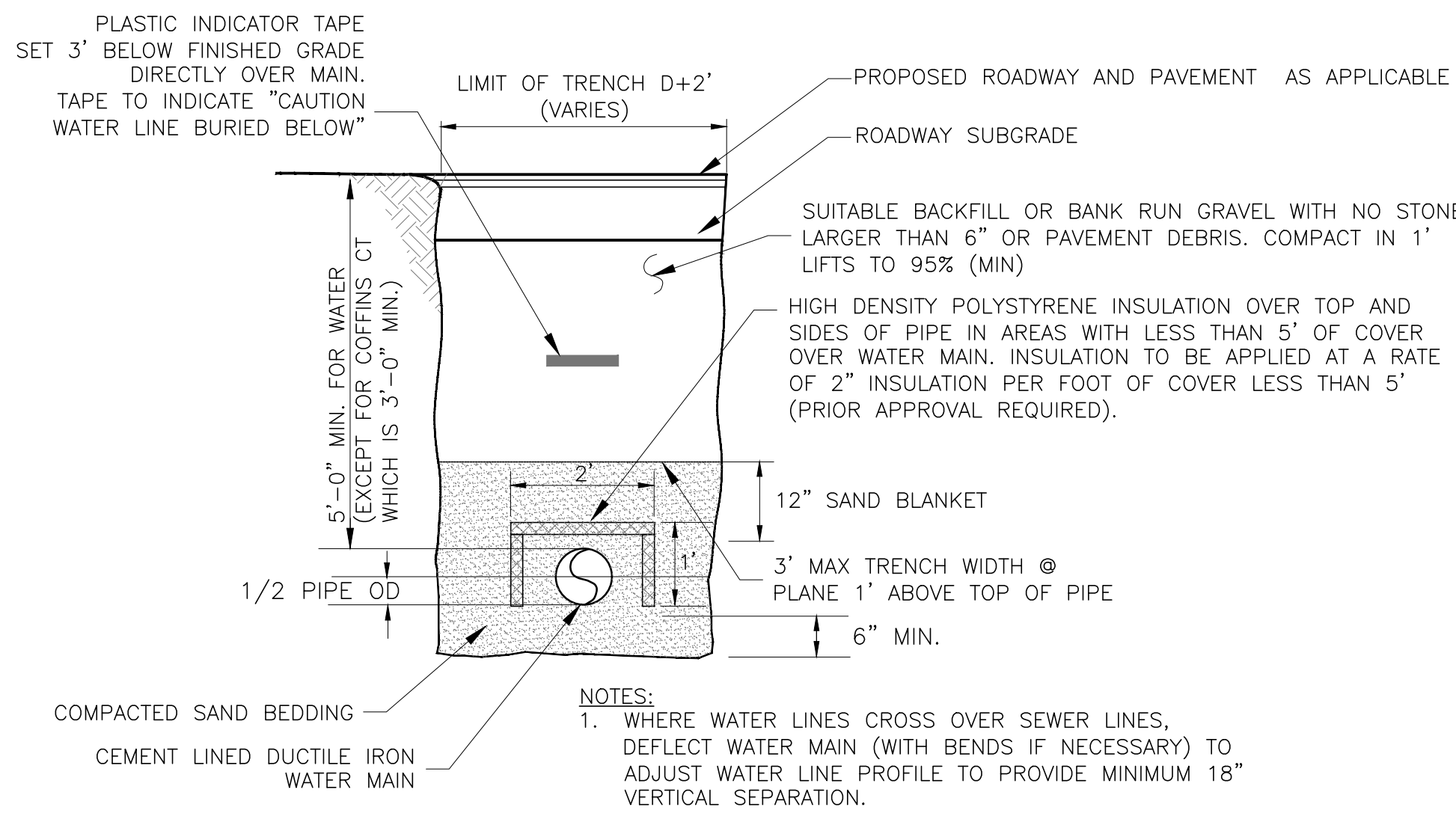
by

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Portland, ME 207/541-4223

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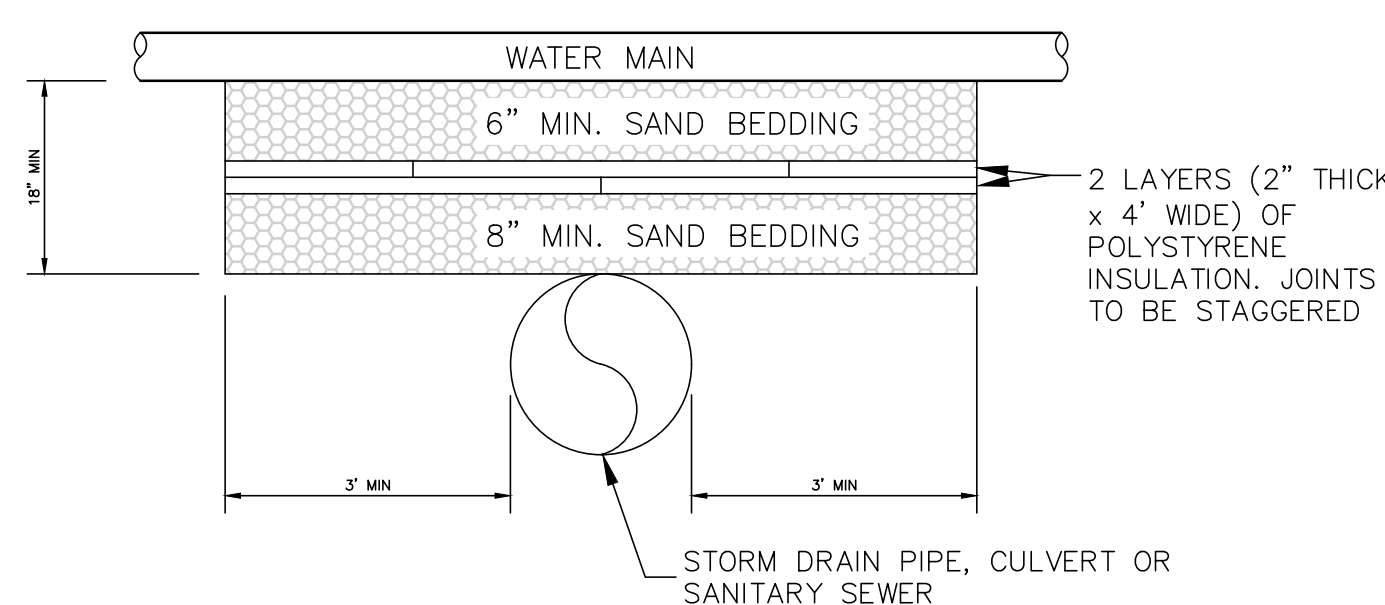
drawing no:
D-1

sheet: 28 of 54



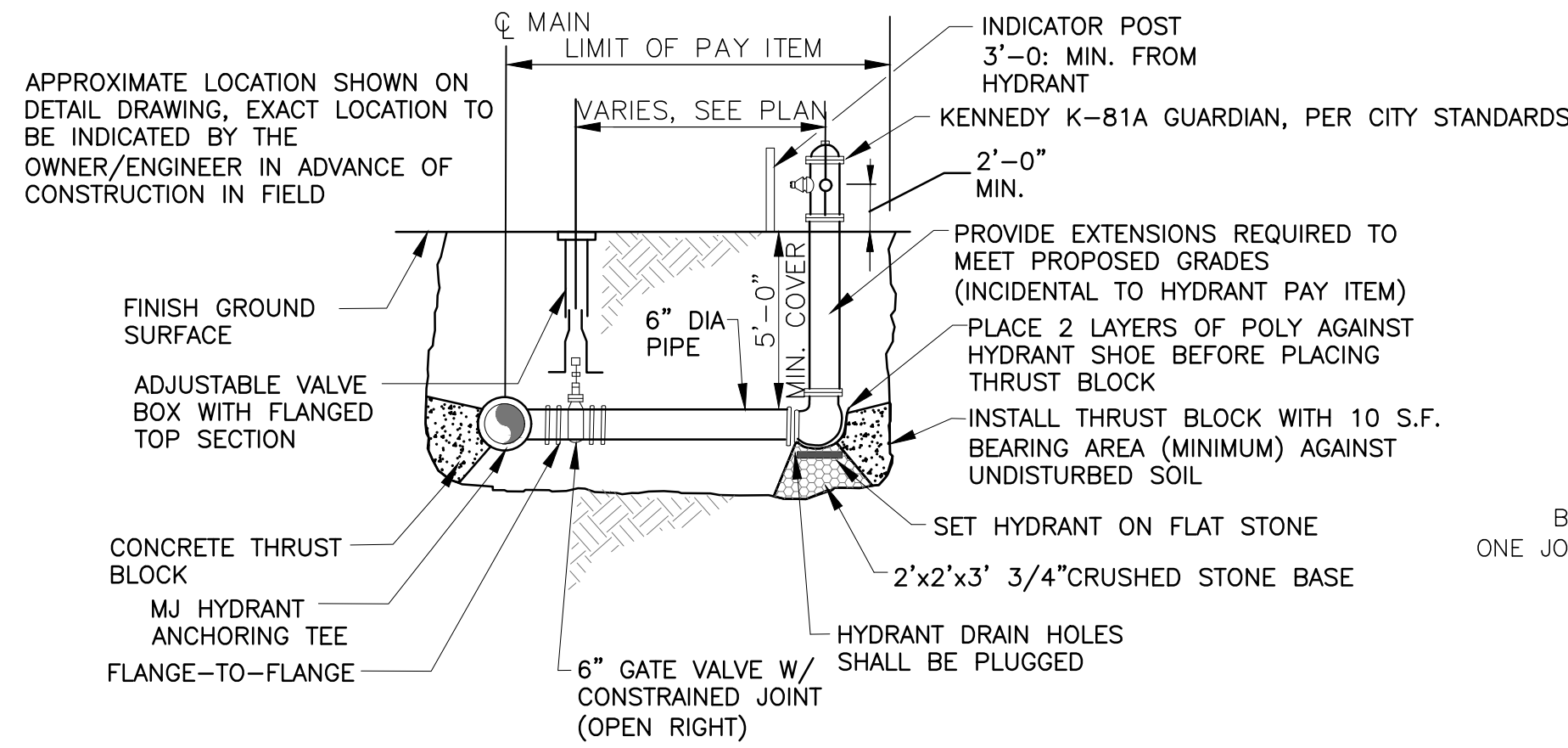
Typical Water Main Trench

Not to Scale



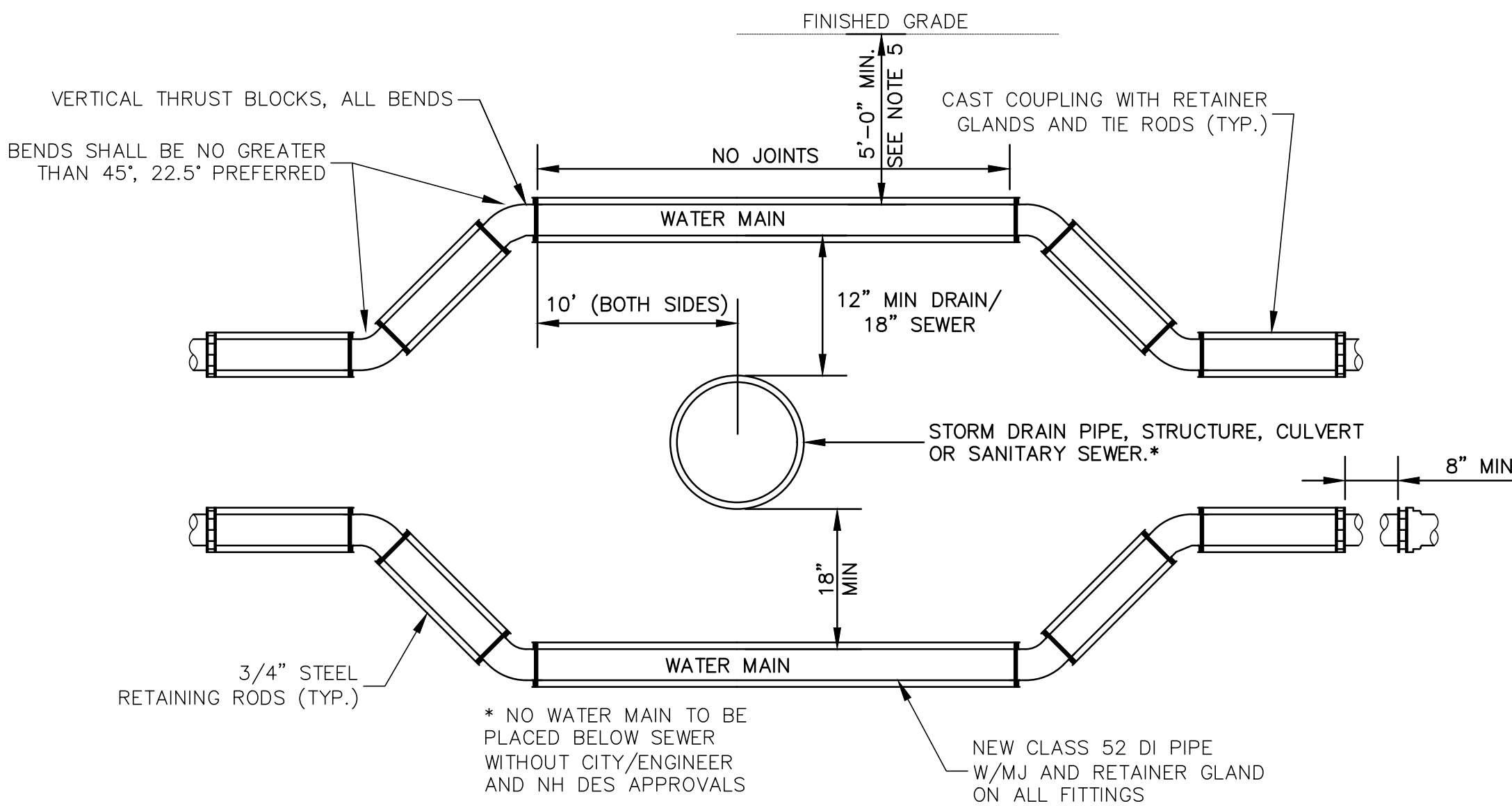
WATER MAIN INSTALLATION NOTES:

- INSULATION TO BE USED WHERE VERTICAL PIPE SEPARATION IS 24" OR LESS.
- INSTALL VERTICAL MJ BENDS WITH RESTRAINED JOINT FITTINGS OR SWEEP PIPE WITHIN THE SPECIFICATION LIMITS IF NECESSARY TO ADJUST WATER MAIN PROFILE TO GAIN MINIMUM VERTICAL SEPARATION ABOVE SEWER.
- 2" OF INSULATION TO BE USED AROUND WATER SERVICE CONNECTIONS WHERE PIPE CROSSINGS OCCUR.
- WHERE WATER MAIN CROSSES SEWER AT 45° TO 90° PROVIDE MAXIMUM SPACING OF PIPE JOINTS FROM CROSSING LOCATION FOR BOTH WATER MAIN AND SEWER PIPE.
- IF LESS THAN 5' OF COVER, SEE INSULATION NOTE IN THE "TYPICAL WATER MAIN TRENCH DETAIL", THIS SHEET.



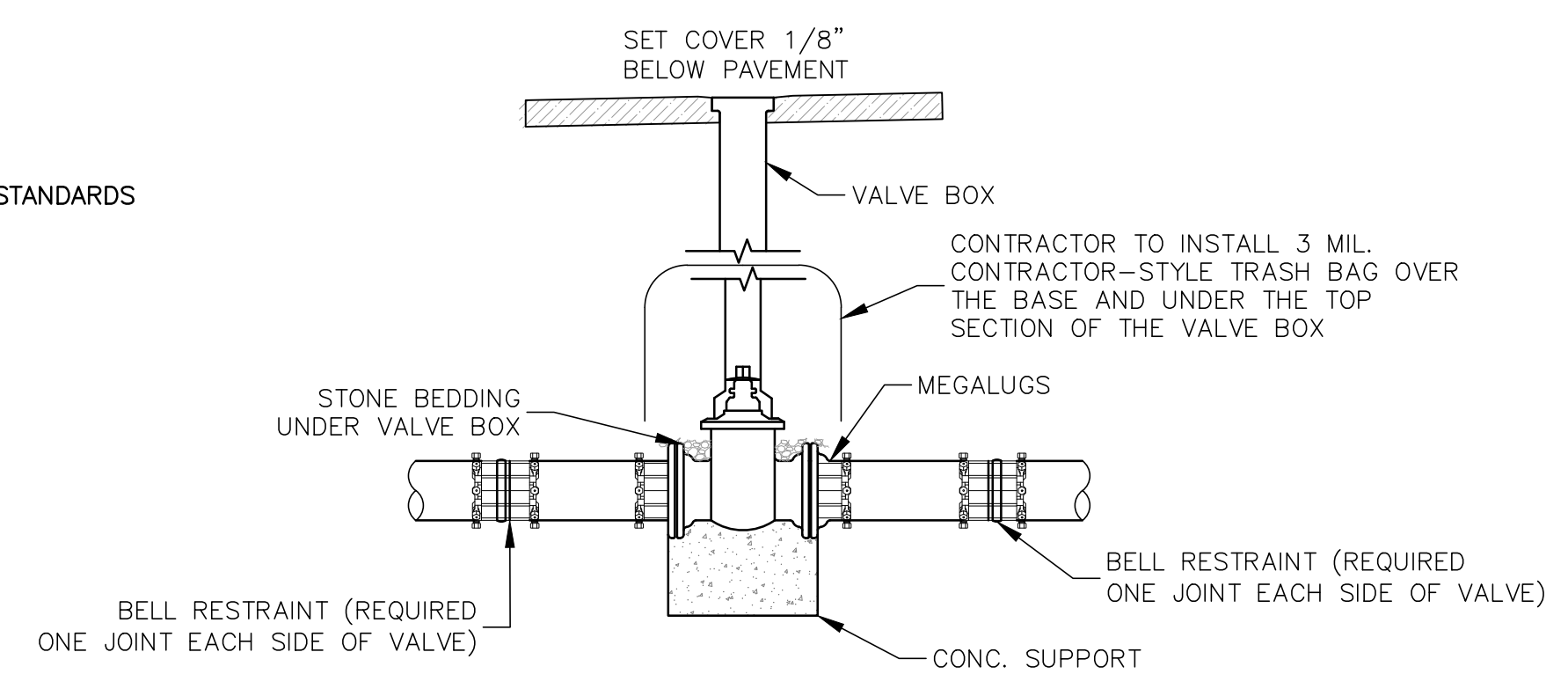
Hydrant Assembly

Not to Scale



Water/Utility Crossing

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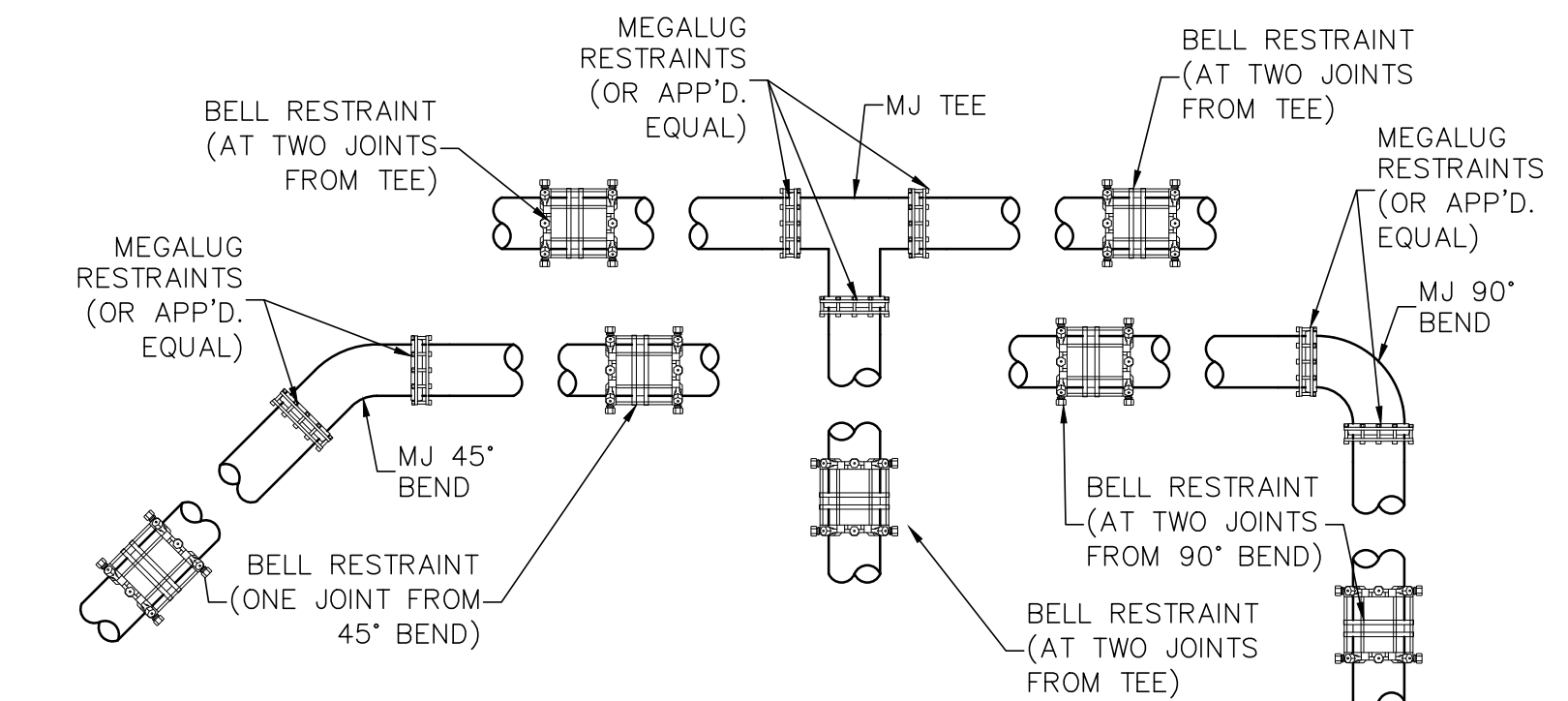


NOTES:

- VALVE BOXES SHALL BE HEAVY PATTERN CAST IRON, TWO PIECE, SLIP TYPE, 5-INCH DIAMETER SHAFT WITH EXTENSION PIECES TO ALLOW SUFFICIENT COVER.
- THE UPPER SECTION OF THE BOX SHALL BE TOP-FLANGE TYPE TO PREVENT SETTLEMENT.
- THE LOWER SECTION SHALL BE BELLED-TYPE TO ENCLOSE THE OPERATING NUT OF THE VALVE.
- THE COVER SHALL BE CAST IRON WITH THE WORD "WATER" PLAINLY CAST THEREON.
- GATE VALVES SHALL OPEN LEFT.
- CONTRACTOR SHALL INSTALL 3 MIL CONTRACTOR STYLE TRASH BAG OVER THE BASE SECTION AND UNDER THE TOP SECTION OF THE VALVE BOX DURING INSTALLATION TO PREVENT BONDING OF THE UPPER AND LOWER VALVE BOXES.

Valve & Valve Box Detail

Not to Scale



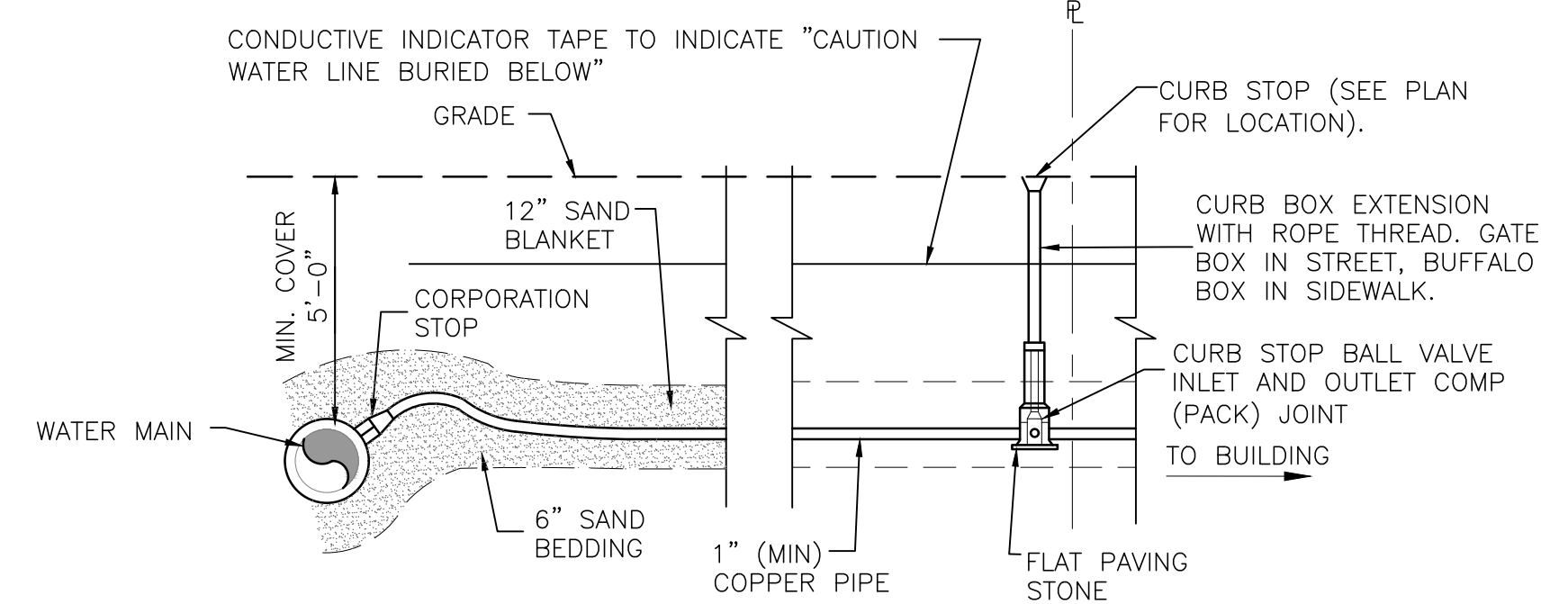
NOTES:

- ALL BENDS AND TEES SHALL BE DUCTILE IRON FITTINGS.
- JOINT RESTRAINT IS REQUIRED AT ALL FITTINGS PER THE ABOVE TABLE.

VALVE	RESTRAINED JOINTS
IN LINE VALVES	BELL RESTRT'S REQUIRED 1 JOINT EACH SIDE/VALVE
FITTING	RESTRAINED JOINTS
22.5° BEND	1 EACH SIDE
45° BEND	1 EACH SIDE
90° BEND	2 EACH SIDE
TEE	1 EA SIDE/RUN 2 ON BRANCH

Joint Restraint Detail

Not to Scale

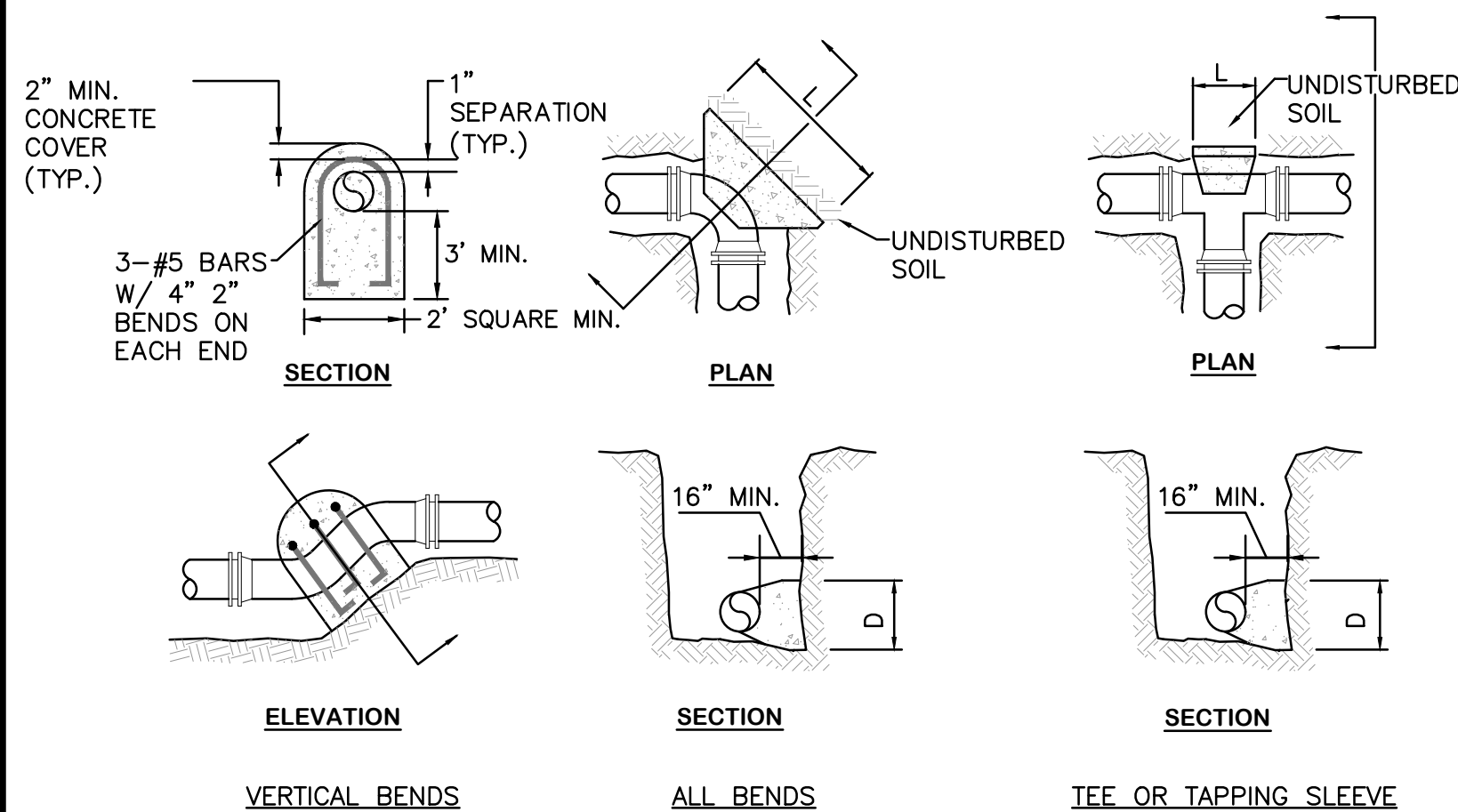


NOTES:

- TAPS TO BE MADE AT APPROX. 10:00 AND 2:00
- PROVIDE FOR SERVICE LINE CONTRACTION AND EXPANSION BY INSTALLING "S" IN SERVICE LINE NEAR MAIN.
- IF SERVICE IS INSTALLED WITH LESS THAN 5'-0" COVER, INSULATE OVER LINE.
- REMOVE EXISTING CURB STOP AND REPLACE.
- PRESSURE TEST, DISINFECT, AND FLUSH ALL WATER SERVICE CONNECTIONS.
- MAINTAIN 18" SEPARATION BETWEEN THE NEW WATER SERVICE AND THE NEW SEWER MAIN (WATER SHALL BE OVER SEWER).
- CONNECT CURB STOP TO EXISTING SERVICE AT PROPERTY LINE AFTER PRESSURE TESTING AND DISINFECTION. IF CURB STOP IS NOT AT THE PROPERTY LINE, EXTEND NEW PIPE BEYOND THE CURB STOP TO CONNECT TO EXISTING SERVICE AT PROPERTY LINE.
- 2" SERVICE CONNECTIONS SHALL USE A STAINLESS STEEL SERVICE SADDLE.
- CONTRACTOR SHALL COORDINATE SERVICE INSTALLATIONS WITH THE HOMEOWNERS AND NOTIFY HOMEOWNERS IF THE SERVICE LINES TO THE BUILDINGS ARE GALVANIZED.

Water Service Installation

Not to Scale



Thrust Blocks

Not to Scale

THRUST BLOCK SCHEDULE

Nominal Dia. (in)	PIPE SIZE		
	4	6	8
Tees, Caps, Plugs, & Tapping Sleeves	1.05	2.32	4.15
90 Degree Bends	1.48	3.29	5.86
45 Degree Bends	0.80	1.78	3.17
22-1/2 Degree Bends	0.41	0.91	1.62
11-1/4 Degree Bends	0.21	0.46	0.81
System Pressure:	100psi		
Safety Factor:	1.5		
Soil Bearing Capacity:	2,000psf		

NOTES:

- THRUST BLOCKS SHALL BE PRECAST CONCRETE, EXCEPT THRUST BLOCKS FOR VERTICAL BENDS CAN BE CIP CONCRETE.
- THE MINIMUM BEARING AREAS SHOWN ABOVE ARE BASED ON A SYSTEM PRESSURE OF 100 PSI. IF THE SYSTEM PRESSURE IS ABOVE 100 PSI, INCREASE THE NOTED AREAS PROPORTIONAL TO THE ACTUAL SYSTEM PRESSURE. FOR EXAMPLE, IF THE ACTUAL SYSTEM PRESSURE IS 160 PSI, MULTIPLY THE ABOVE VALUES BY 160%.
- PLACE THRUST BLOCKS SUCH THAT THE LENGTH (L) OF THE BLOCK IS APPROXIMATELY TWICE AS LONG AS THE DEPTH (D).
- PLACE THRUST BLOCKS AGAINST UNDISTURBED SOIL.
- PLACE THRUST BLOCKS ALONG THE FULL LENGTH OF THE FITTING TO MAXIMIZE BEARING AREA.
- PLACE 2 LAYERS OF POLYETHYLENE OR ROOFING PAPER AROUND FITTINGS PRIOR TO PLACEMENT OF THE CONCRETE TO CREATE A BOND BREAK & PROTECT THE BOLTS.
- PLACE A SOLID CONCRETE BLOCK BETWEEN CAP/PLUGS AND THRUST BLOCKS.
- PLACE A 12" LONG STEEL HORSESHOE-SHAPED PICKUP HOOK IN ALL PLUG AND CAP THRUST BLOCKS. DIAMETER OF HOOK SHALL BE A MINIMUM OF 5/8".
- USE OF THRUST BLOCKS DOES NOT ELIMINATE THE REQUIREMENT OF RETAINER GLANDS.
- THRUST BLOCKS ARE REQUIRED ON ALL FITTINGS.
- COAT ALL THREADED RODS, NUTS, AND BOLTS WITH BITUMINOUS PAINT.
- PLACE ANTI-SEIZE LUBRICANT ON ALL BOLTS.

City of Portsmouth, New Hampshire
Department of Public Works
Union Street Area Improvement Project
Water Details

designed by: STFWAB
drawn by: WWG
checked by: PAC
approved by: PAC

date: January 2023
project no: 1211

scale: 1" = 10'

drawing no: D-2

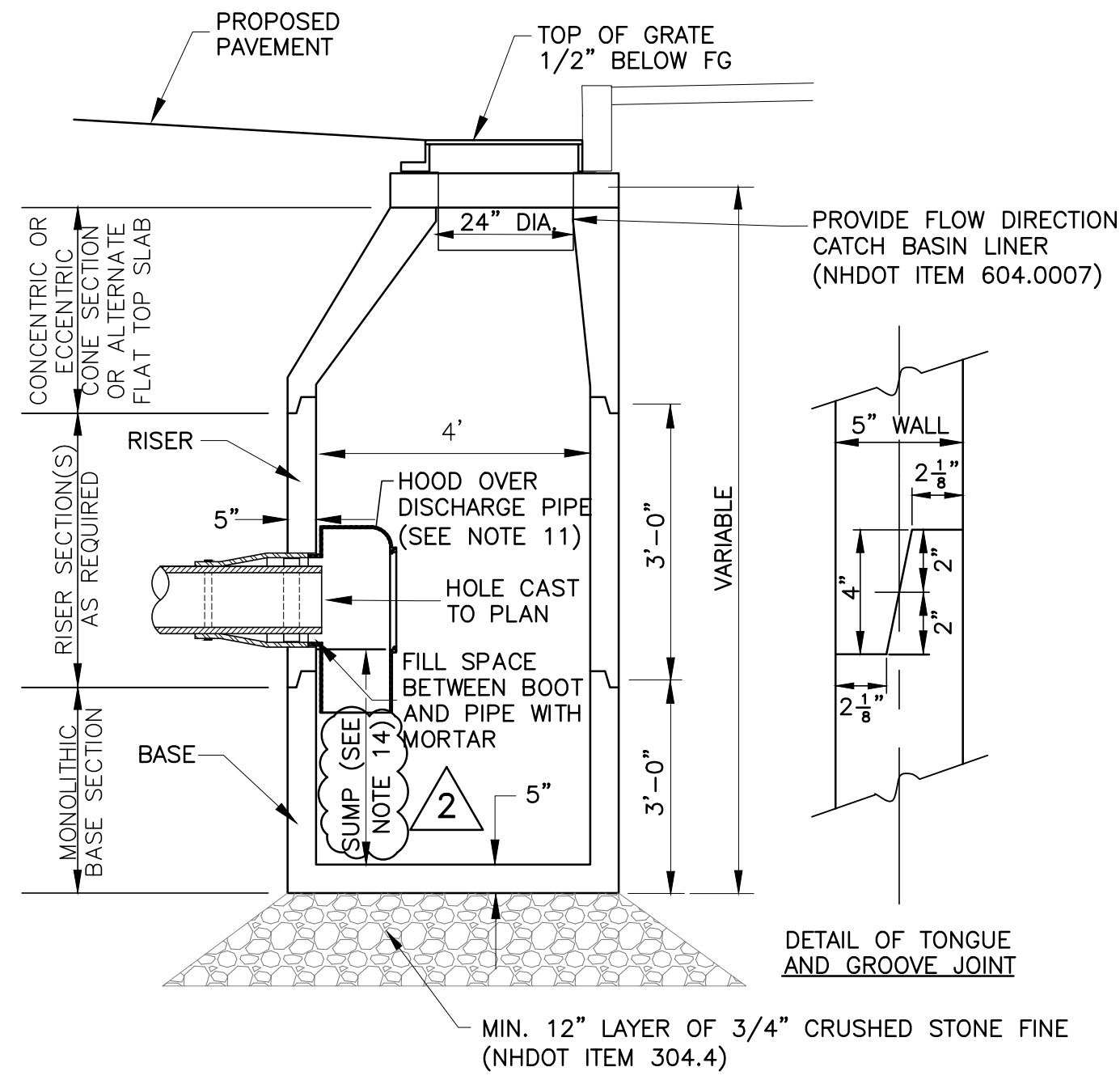
sheet: 29 of 54

revision: 1
date: 1/17/2023
Issued for Bid

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Portland, ME 207/541-4223
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PROVIDE NH STANDARD TYPE B CAST IRON FRAME AND GRATE. HEIGHT OF FRAME TO BE 8 INCHES. USE BLIND FLANGES AT CURBSIDE LOCATIONS.

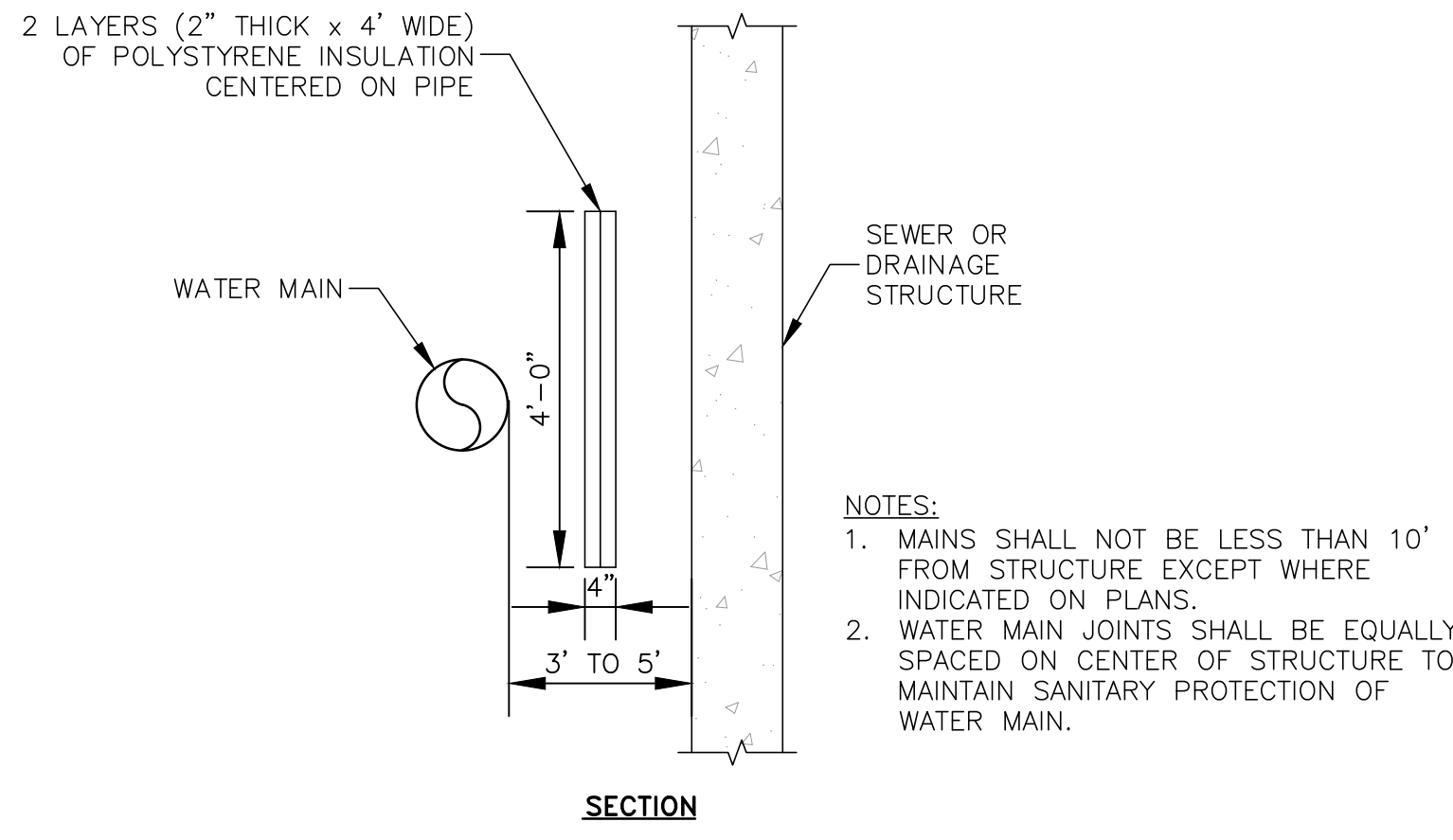
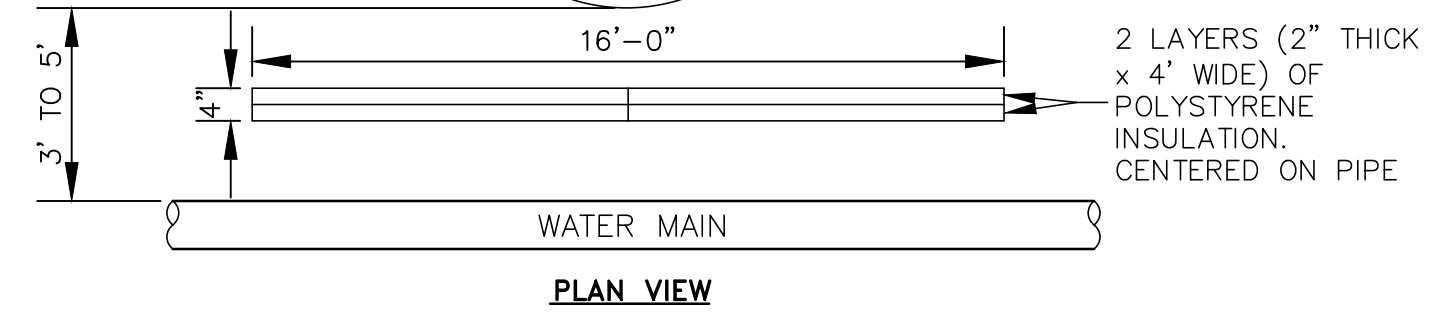
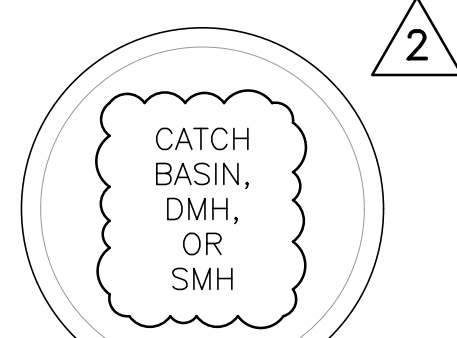
MODIFY STANDARD CURB AS NEEDED. C.B. CURB SHALL BE INSTALLED ON BED OF MORTAR.



- NOTES:**
- HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE ENGINEER, WHICH SHALL, IN GENERAL, DEPEND FOR WATERTIGHTNESS UPON AN ELASTOMERIC OR MASTIC-LIKE GASKET.
 - PIPE-TO-MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL WILL DEPEND FOR WATERTIGHTNESS UPON EITHER AN APPROVED NON-SHRINKING MORTAR OR ELASTOMERIC SEALANT.
 - FOR BITUMASTIC TYPE JOINTS, THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY. APPROVED BITUMASTIC SEALANTS INCLUDE RAM-NEK, KENT SEAL NO. 2, EZ OR EQUAL.
 - ALL STRUCTURES SHALL MEET H-20 LOADING. CONCRETE SHALL BE 4,000 PSI AFTER 28 DAYS.
 - THE TONGUE OR THE GROOVE OF THE JOINT OF THE WALL SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ.IN. PER LINEAR FOOT.
 - CONCRETE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION.
 - CATCH BASIN GRATES TO BE NHDOT TYPE B OR TYPE E GRAY IRON. FOR TYPE B FRAME SHALL BE 3 FLANGE TYPE.
 - HOOD ON CATCH BASINS SHALL BE "THE ELIMINATOR" OIL AND FLOATING DEBRIS TRAP AS MANUFACTURED BY GROUNDWATER RESCUE, INC. OR APPROVED EQUAL.
 - ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES.
 - ECCENTRIC CONES SHALL BE USED WHEN DEPTH TO CROWN OF SHALLOWEST PIPE EXCEEDS 30"; OTHERWISE FLAT TOP SLABS SHALL BE USED. RISERS OF 12", 36" AND 48" CAN BE USED TO REACH THE DESIRED DEPTH.
 - HOOD ON CATCH BASINS SHALL BE "THE ELIMINATOR" OIL AND FLOATING DEBRIS TRAP AS MANUFACTURED BY GROUNDWATER RESCUE, INC. OR APPROVED EQUAL. CONTRACTOR SHALL DRILL 1/4" VERTICAL HOLE AT TOP OF HOOD.
 - FRAME AND GRATES SHALL BE BROUGHT TO GRADE USING GRADE SS HARD BRICKS (2 COURSE MIN., 12" MAX.) LAID FLAT. FRAMES SHALL BE SET IN A FULL BED OF MORTAR AND SEALED WITH PORTLAND CEMENT.
 - ECCENTRIC CONES SHALL BE USED WHEN DEPTH TO CROWN OF SHALLOWEST PIPE EXCEEDS 30".
 - ALL CATCH BASINS SHALL HAVE A 4' SUMP EXCEPT FOR CATCH BASINS ON MIDDLE STREET WHICH SHALL HAVE 3' SUMPS.

Catch Basin Detail

Not to Scale

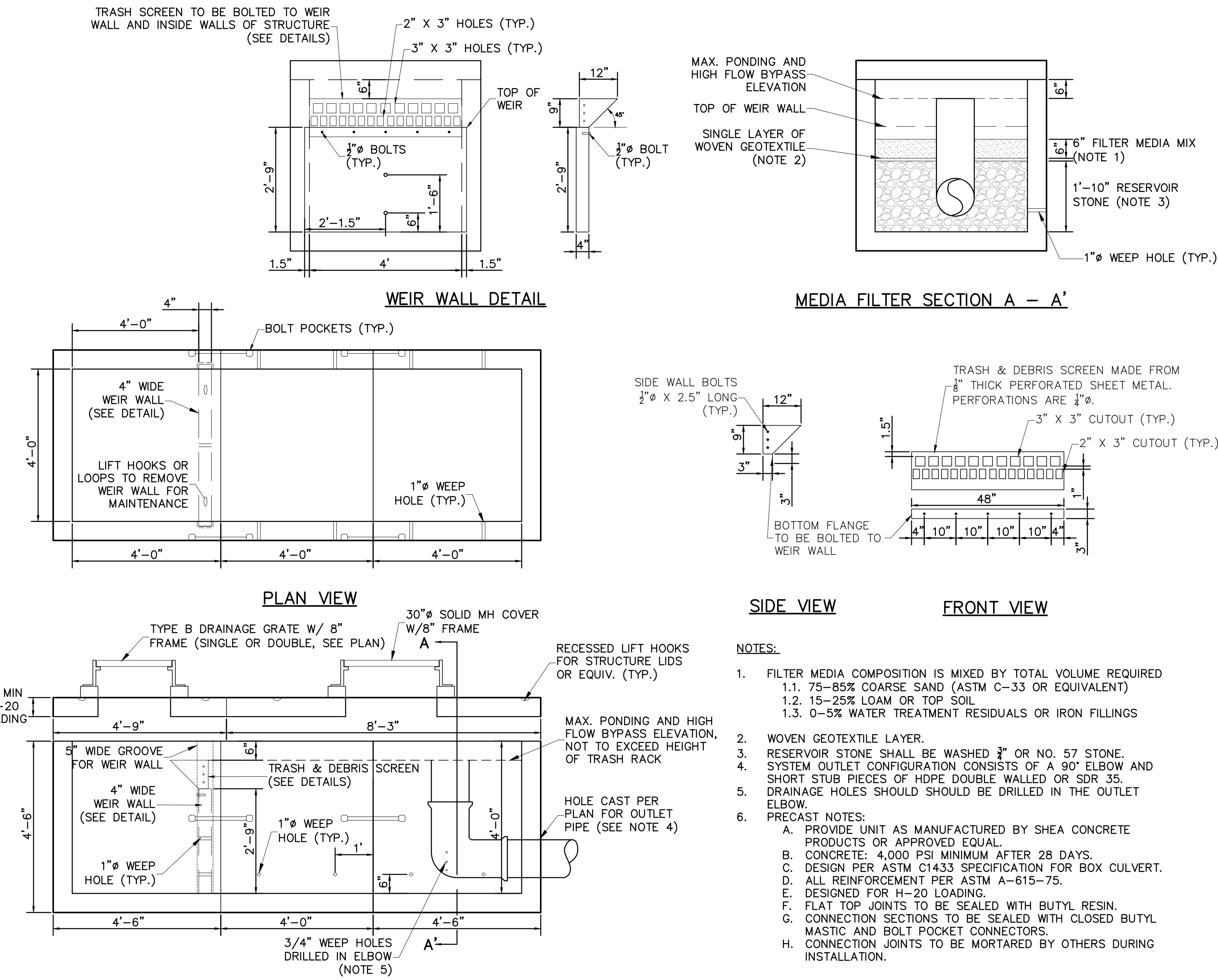


Water Main Insulation Detail

Not to Scale

Media Box Filter

Not to Scale

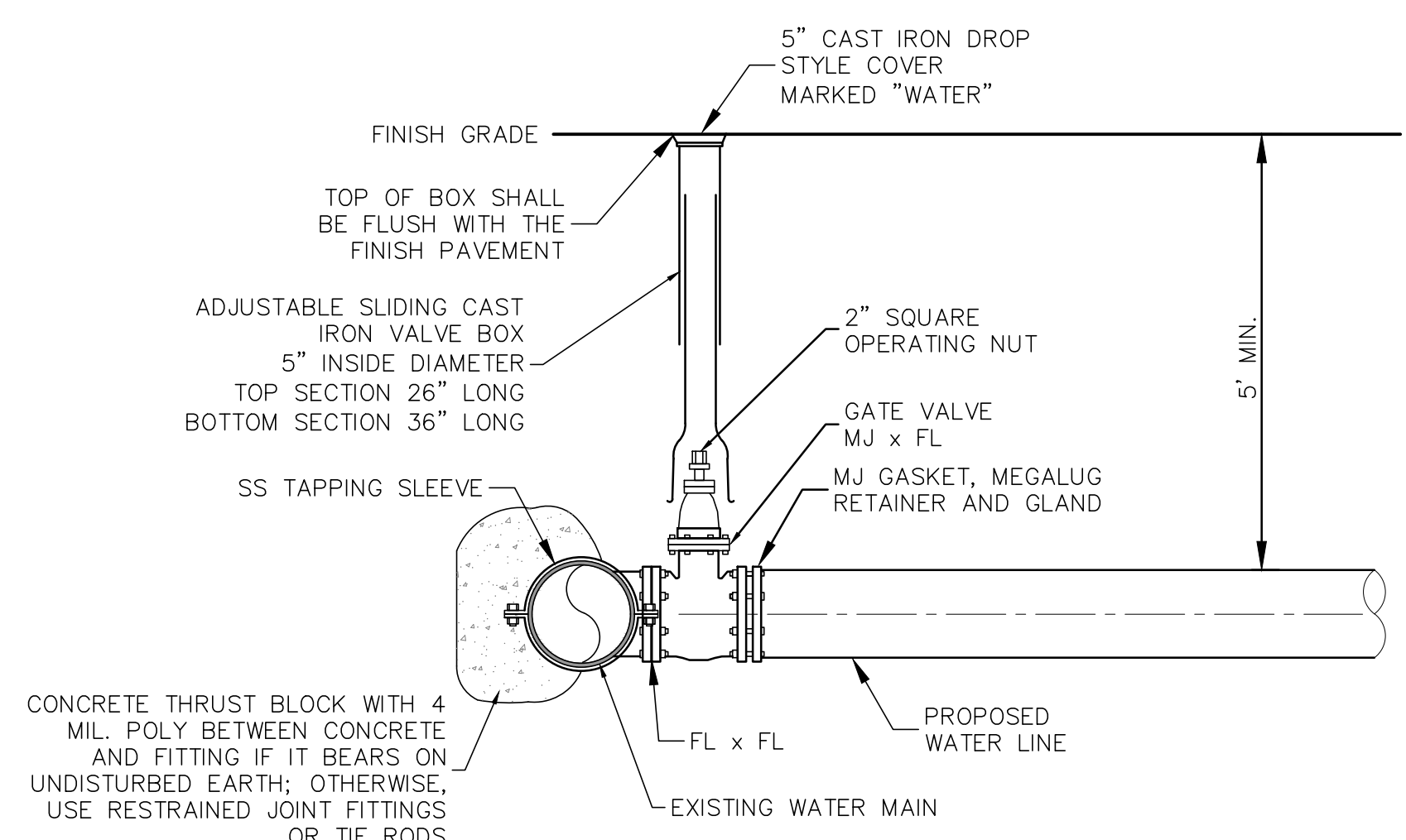


NOTES:

- FILTER MEDIA COMPOSITION IS MIXED BY TOTAL VOLUME REQUIRED
 - 75-85% COARSE SAND (ASTM C-33 OR EQUIVALENT)
 - 15-25% LOAM OR TOP SOIL
 - 0-5% WATER TREATMENT RESIDUALS OR IRON FILLINGS
- WOVEN GEOTEXTILE LAYER.
- RESERVOIR STONE SHALL BE WASHED 3/8" OR NO. 57 STONE. SYSTEM OUTLET CONFIGURATION CONSISTS OF A 90° ELBOW AND SHORT STUB PIECES OF HDPE DOUBLE WALLED OR SDR 35. DRAINAGE HOLES SHOULD BE DRILLED IN THE OUTLET ELBOW.
- PRECAST NOTES:
 - PROVIDE UNIT AS MANUFACTURED BY SHEA CONCRETE PRODUCTS OR APPROVED EQUAL.
 - CONCRETE - 4,000 PSI MINIMUM AFTER 28 DAYS.
 - DESIGN PER ASTM C1433 SPECIFICATION FOR BOX CULVERT.
 - ALL REINFORCEMENT PER ASTM A-615-75.
 - DESIGNED FOR H-20 LOADING.
 - FLAT TOP JOINTS TO BE SEALED WITH BUTYL RESIN.
 - CONNECTION SECTIONS TO BE SEALED WITH CLOSED BUTYL MASTIC AND BOLT POCKET CONNECTORS.
 - CONNECTION JOINTS TO BE MORTARED BY OTHERS DURING INSTALLATION.

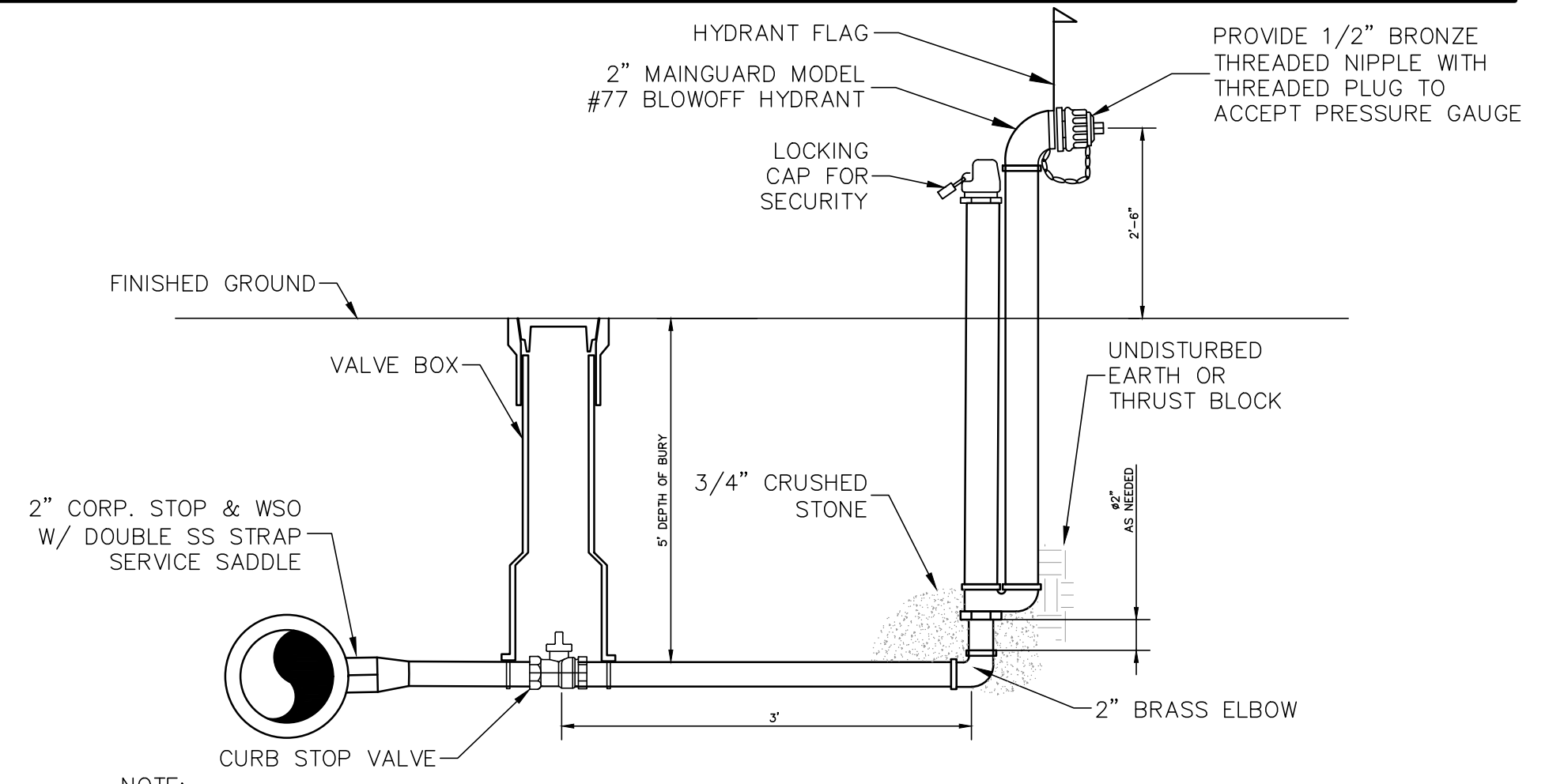
Water Main Connection with Tapping Sleeve

Not to Scale



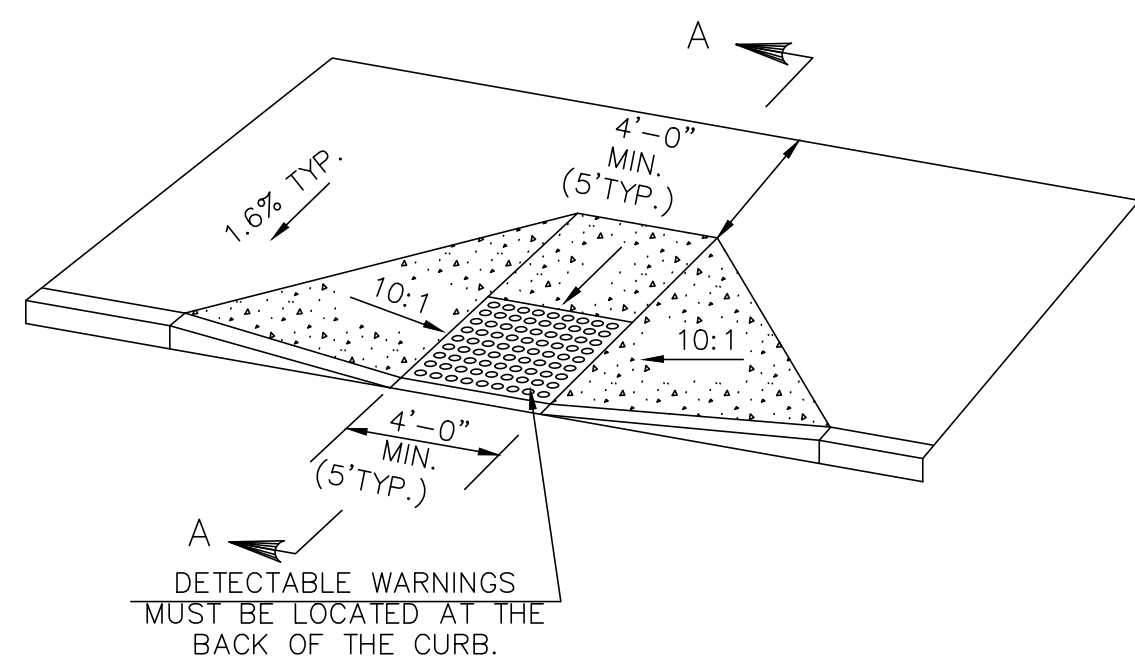
Blowoff Detail

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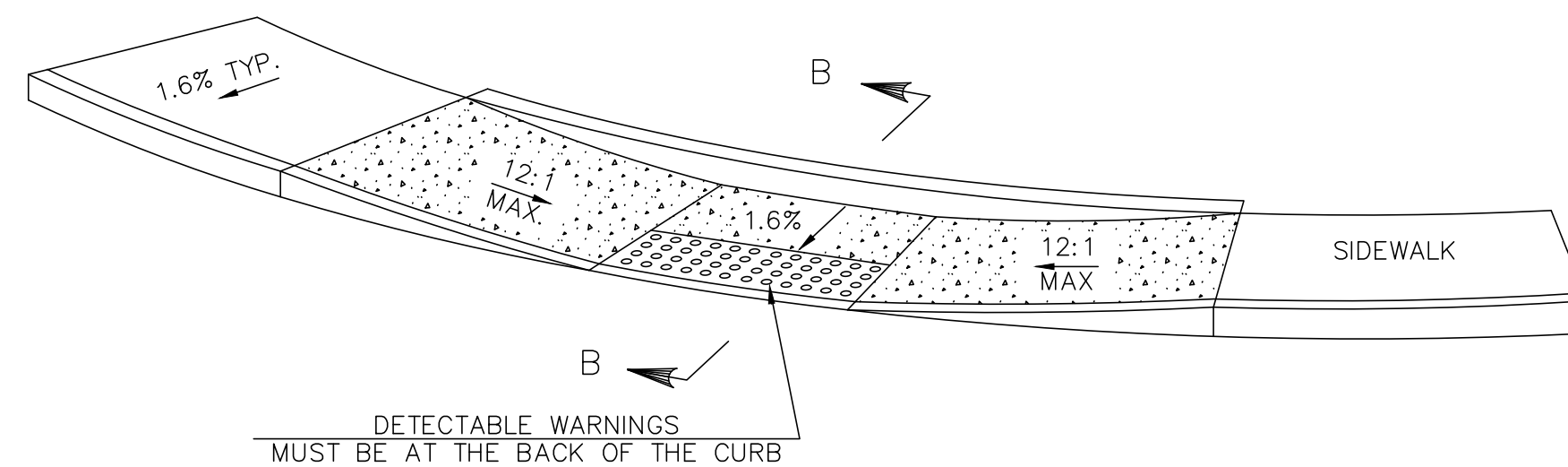


- NOTE:**
- HYDRANTS SHALL BE MAINGUARD #77 AS MANUFACTURED BY JOHN C. KUPFERLE FOUNDRY COMPANY, OR ENGINEER APPROVED EQUAL.
 - HYDRANTS ARE POST TYPE WITH 2" FIP INLET AND 2 1/2" NST NOZZLE.
 - HYDRANTS SHALL BE MANUALLY OPERATED FROM THE TOP AND SHALL OPEN LEFT.
 - THE HYDRANT SHALL BE SELF-DRAINING, NON-FREEZING TYPE.
 - ALL OPERATING PARTS OF THE HYDRANT SHALL BE OF BRONZE-TO-BRONZE DESIGN AND SHALL BE SERVICED OR REPLACED WITHOUT DIGGING UP OR DISTURBING THE SUPPLY LINE CONNECTION.

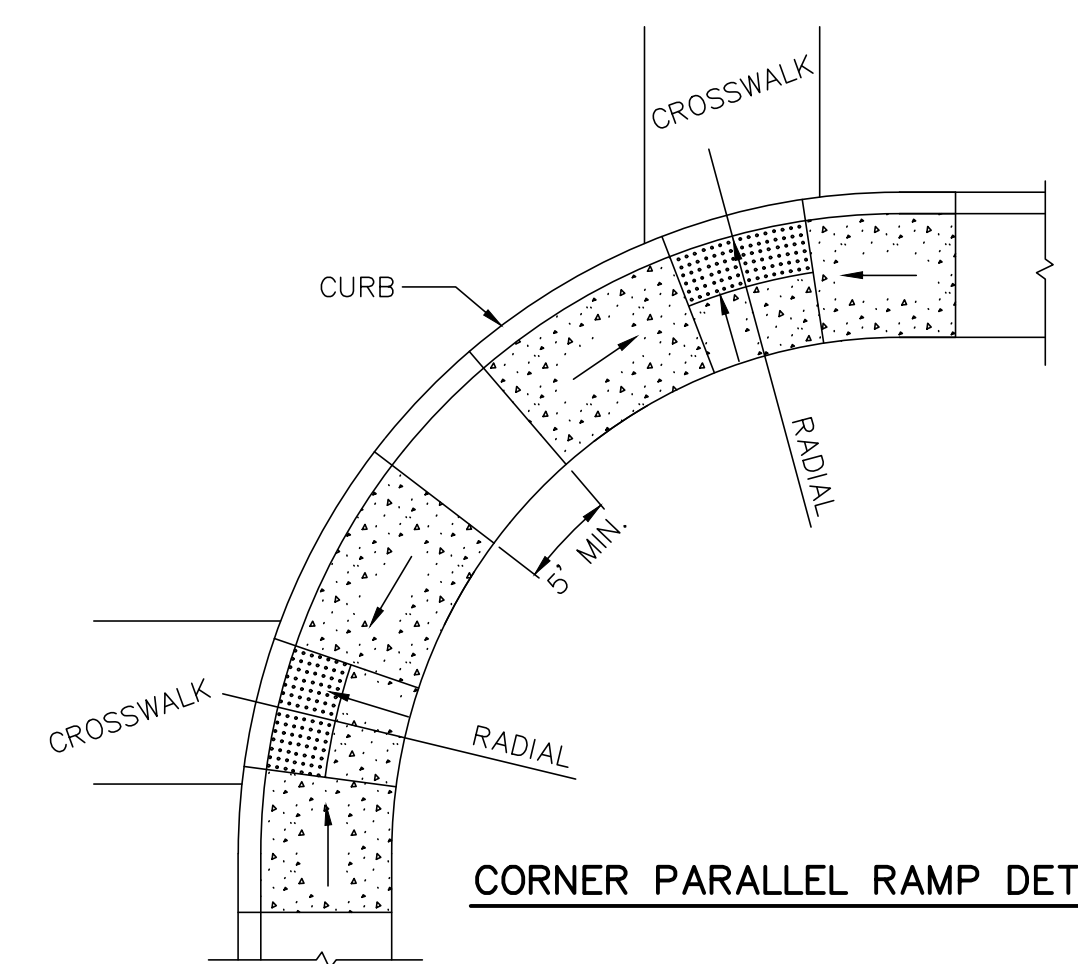
		designed by: STF/WAB	drawn by: WWG	approved by: PAC	date: January 2023	project no: 1211	checked by: PAC	scale: 1" = 10' 20' 10' 0'
City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Water and Drainage Details		Bid Addendum 2 2 1 no.			1/27/2023 1/17/2023 PAC PAC		date revision	
CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/641-4223		c m a e n g i n e e r s . c o m		1/27/2023 1/17/2023 PAC PAC		date revision		sheet: 30 of 54



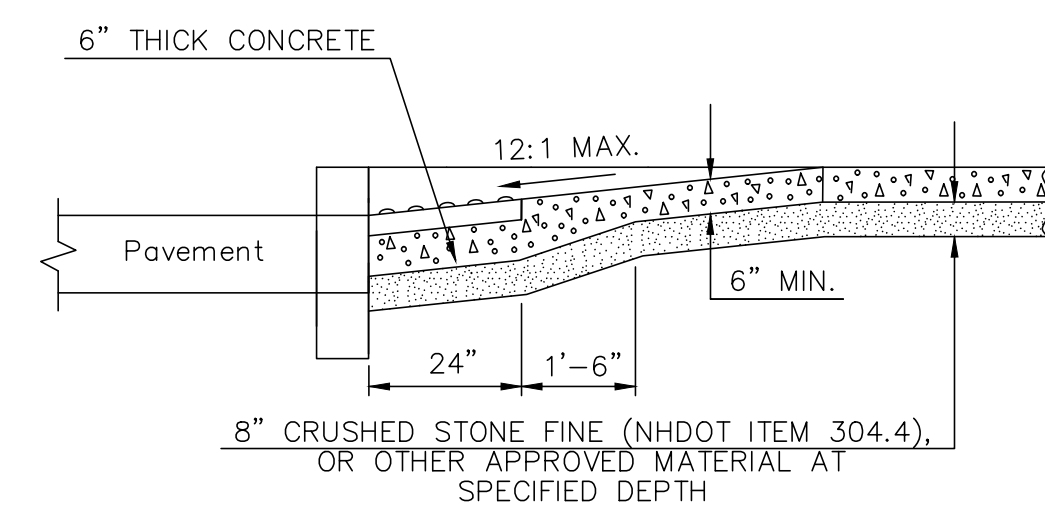
PERPENDICULAR CURB RAMP DETAIL



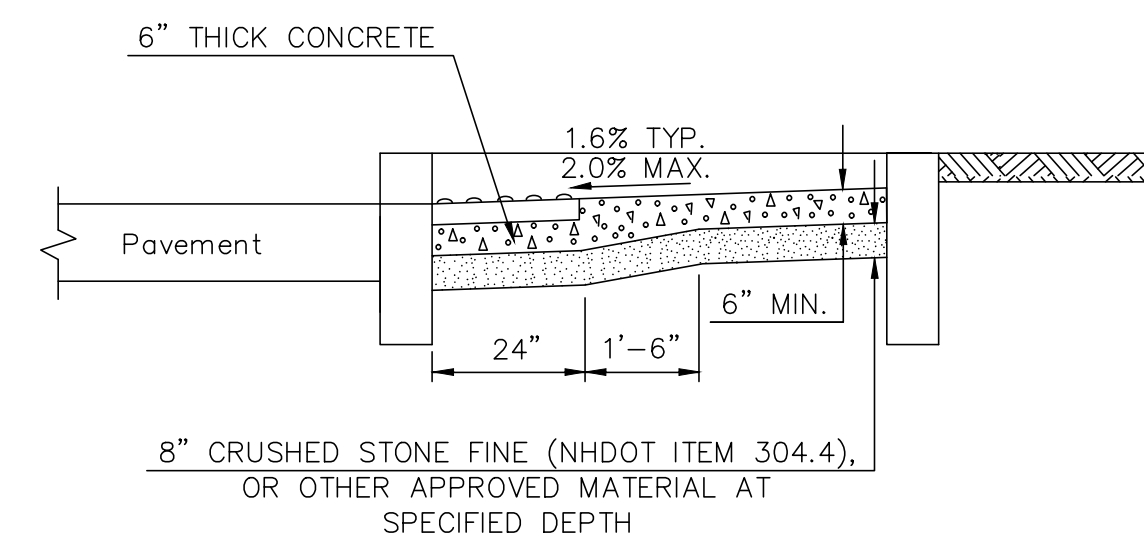
PARALLEL CURB RAMP DETAIL



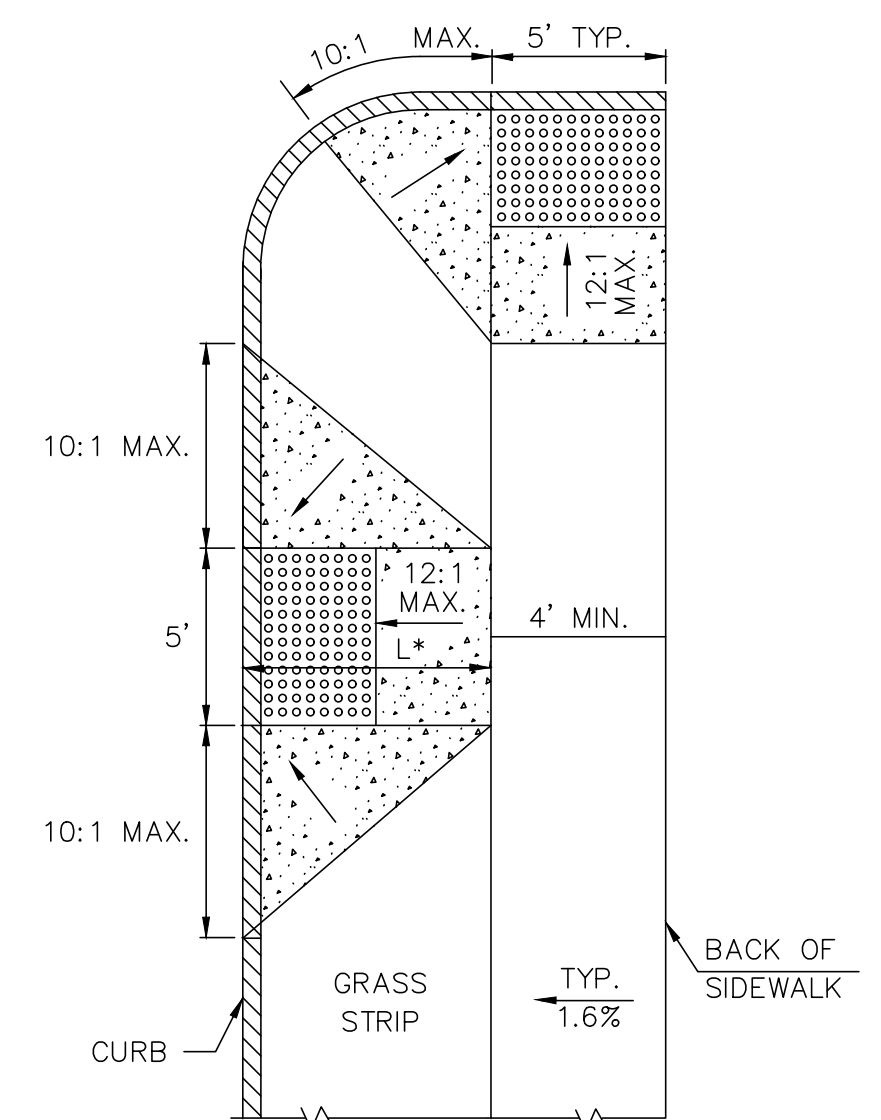
CORNER PARALLEL RAMP DETAIL



SECTION A-A



SECTION B-B



PERPENDICULAR RAMP WITH GRASS PANEL

* LENGTH OF RAMP VARIES WITH SLOPE & WIDTH OF GRASS PANEL

THE ORDER OF PREFERENCE FOR LOCATION OF CORNER RAMPS:

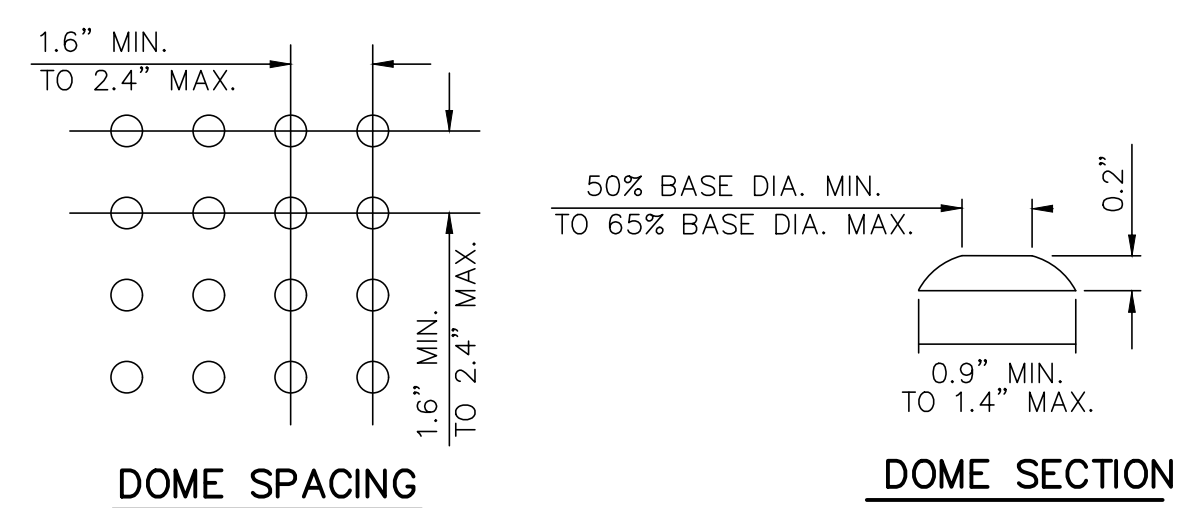
1. TWO SEPARATE RAMPS LOCATED ON TANGENT SIDEWALK AREA IMMEDIATELY OUTSIDE OF CORNER RADIUS.
2. TWO SEPARATE RAMPS SEPARATED BY 5' MINIMUM AS SHOWN ABOVE.
3. SINGLE RAMP SERVING TWO CROSSWALKS.

GENERAL NOTES

1. THE MAXIMUM RUNNING SLOPE OF ANY SIDEWALK CURB RAMP IS 12:1. THE MAXIMUM CROSS SLOPE IS 2%. THE SLOPE OF THE LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION. RAMP RUNNING SLOPE EXCEPTION: A GREATER THAN 8.33% RAMP RUNNING GRADE IS ALLOWED WHERE THE ROADWAY AND THE SIDEWALK(S) ARE PARALLEL AND VERY CLOSE TOGETHER, WITH THE SAME GRADE, AND USING A GRADE OF 8.33% WOULD RESULT IN A RAMP LENGTH LONGER THAN 15'. IN THOSE CIRCUMSTANCES USE A MAXIMUM RAMP LENGTH OF 15' AND THE ALLOWABLE RUNNING SLOPE OF THE RAMP(S) IS GREATER THAN 8.33%
2. TRANSITIONS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. ROADWAY SHOULDER SLOPES ADJOINING SIDEWALK CURB RAMPS SHALL BE A MAXIMUM OF 5% (FULL WIDTH) FOR A DISTANCE OF 2 FT. FROM THE ROADWAY CURB LINE.
3. INTERCEPT DRAINAGE ALONG THE CURB IN ADVANCE OF SIDEWALK CURB RAMPS OR LANDINGS. CATCH BASINS, MANHOLES, ETC. SHALL NOT BE LOCATED IN, OR AT THE BASE OF, SIDEWALK CURB RAMPS OR LANDINGS.
4. THE BOTTOM OF THE SIDEWALK CURB RAMP OR LANDING, EXCLUSIVE OF THE FLARED SIDES, SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK MARKINGS.
5. THE SURFACE OF A PERPENDICULAR SIDEWALK CURB RAMP OR THE LANDING OF A PARALLEL SIDEWALK CURB RAMP SHALL CONTRAST VISUALLY WITH THE ADJOINING SIDEWALK SURFACE, EITHER ASPHALT/LIGHT-COLORED CONCRETE OR LIGHT-COLORED CONCRETE/DARK-STAINED CONCRETE. THE CONCRETE SURFACE SHALL BE SLIP RESISTANT.
6. DETECTABLE WARNING PANELS SHALL BE THE FULL WIDTH OF THE LANDING, BLENDED TRANSITION, OR CURB RAMP THEY ARE A PART OF AND SHALL BE A MINIMUM OF 2 FEET IN DEPTH. THE ROWS OF TRUNCATED DOMES SHALL BE ALIGNED PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP, BLENDED TRANSITION, OR LANDING AND THE STREET.

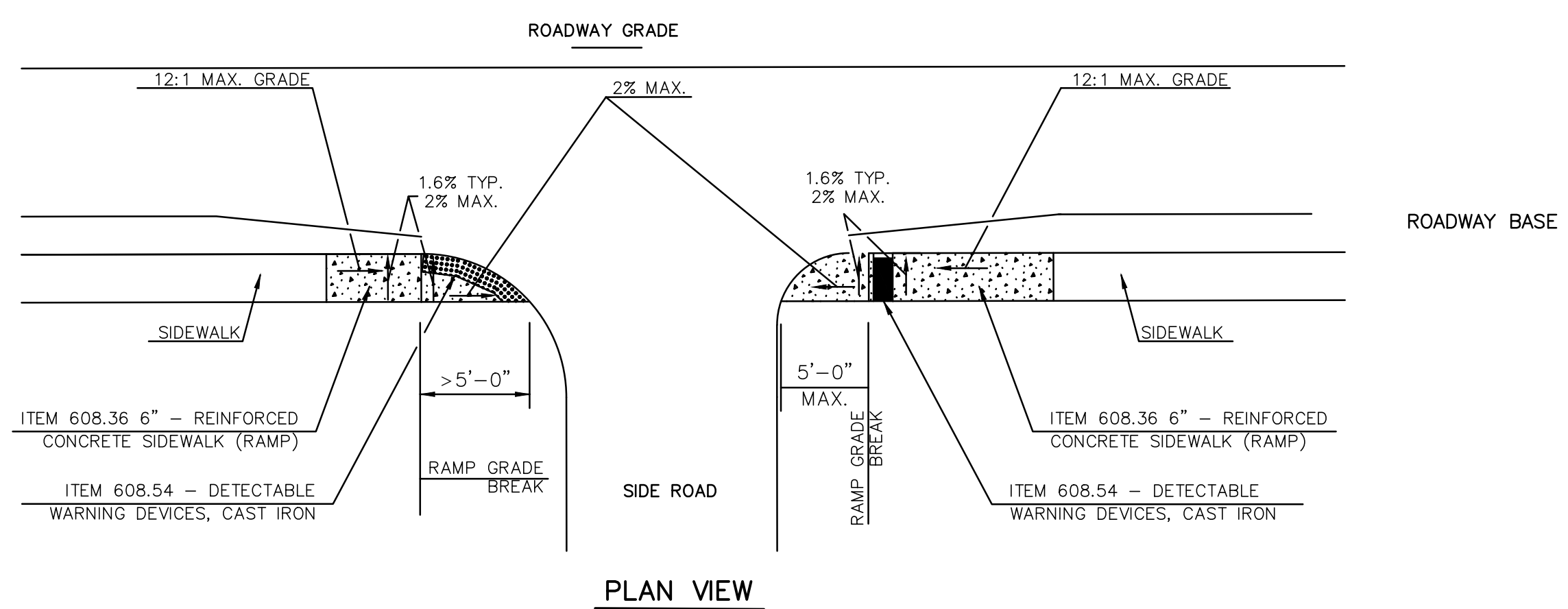
Sidewalk & Curb Ramp Details

Not to Scale



DOMES SPACING

DOMES SECTION



PLAN VIEW

TRANSITION RAMPS:

BLENDED TRANSITIONS HAVE A RUNNING SLOPE GREATER THAN 2% BUT LESS THAN 5%. CURB RAMPS HAVE A RUNNING SLOPE OF 5% MIN. TO 8.33% MAX. SIDEWALK, BLENDED TRANSITIONS, AND CURB RAMPS HAVE A MAX. CROSS SLOPE OF 2%.

ALL GRADE BREAKS BETWEEN LANDINGS, RAMPS, AND BLENDED TRANSITIONS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL.

IF IT IS NECESSARY TO USE SIDEWALK WIDTHS 5'-0" OR LESS, PROVIDE A WIDENED AREA A MINIMUM OF 5'-0" WIDE BY 5'-0" LONG SPACED AT INTERVALS OF 200' MAXIMUM TO ALLOW FOR USERS TO PASS EACH OTHER.

PROVIDE DETECTABLE WARNING SURFACES ANYTIME THAT A CURB RAMP, BLENDED TRANSITION, OR LANDING CONNECTS TO A STREET. PLACEMENT FOR DETECTABLE WARNING SURFACES ARE AS FOLLOWS:

PERPENDICULAR CURB RAMPS:

WHERE BOTH ENDS OF THE BOTTOM GRADE ARE LESS THAN 5'-0" FROM THE BACK OF THE CURB, LOCATE THE DETECTABLE WARNING PANELS ON THE RAMP SURFACE AT THE BOTTOM OF THE RAMP. WHERE EITHER END OF THE BOTTOM GRADE IS GREATER THAN 5'-0" FROM THE BACK OF THE CURB, LOCATE THE DETECTABLE WARNINGS AT THE BOTTOM OF THE LANDING.

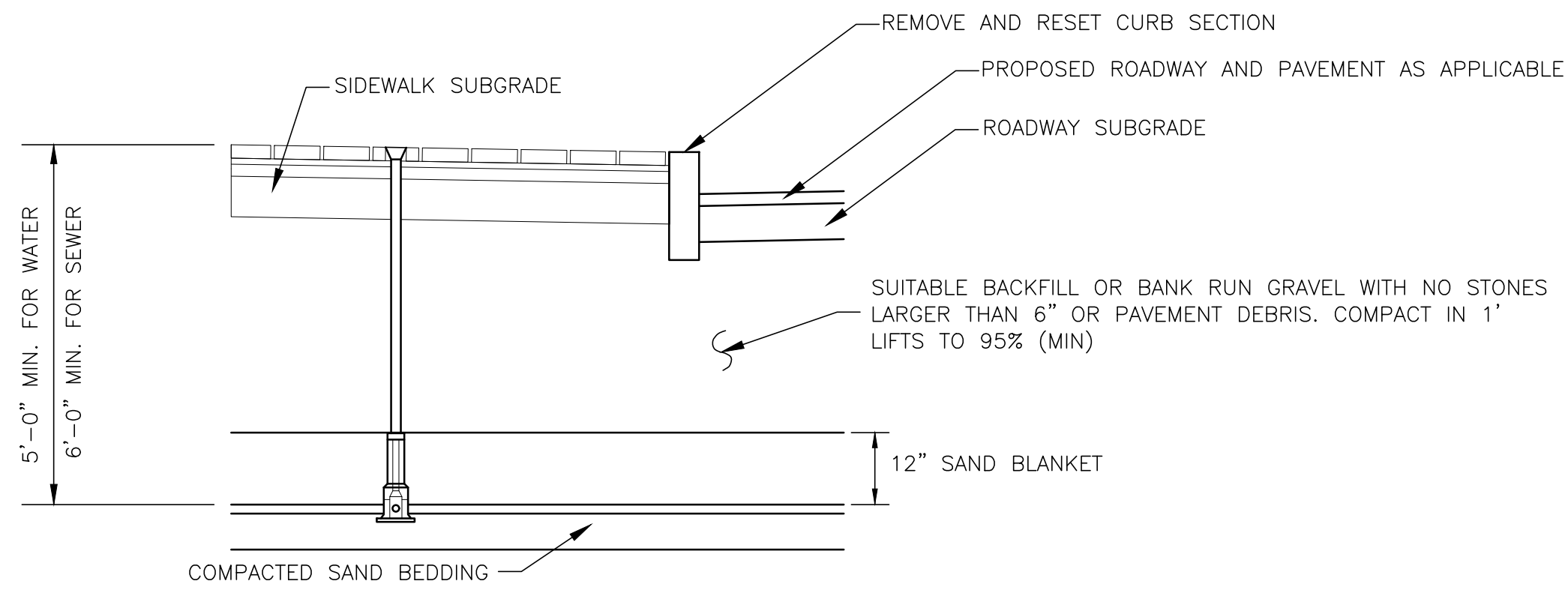
PARALLEL CURB RAMPS:

LOCATE THE DETECTABLE WARNING SURFACES AT THE BACK OF THE CURB ALONG THE EDGE OF THE LANDING.

FOR BLENDED TRANSITIONS AND LANDINGS:

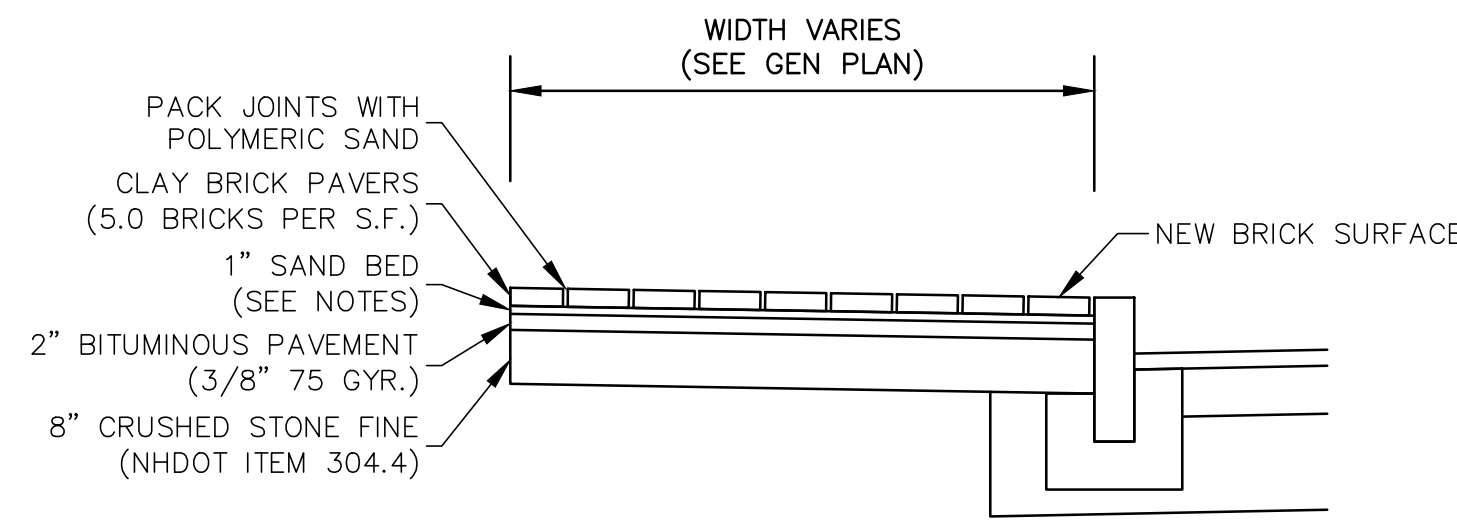
LOCATE THE DETECTABLE WARNING SURFACES AT THE BACK OF THE CURB.

		designed by: STF/WAB	drawn by: WWG	approved by: PAC	date: January 2023	project no: 1211	checked by: PAC	scale: 0 10' 20' Scale: 1" = 10'
City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Sidewalk Details					drawing no: D-4			
					sheet: 31 of 54			
CMA ENGINEERS Civil/Environmental/Structural Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/641-4223		c m a e n g i n e e r s . c o m			revision 1 Issued for Bid	no.	date 1/17/2023	by PAC



Sidewalk Repair Detail

Not to Scale

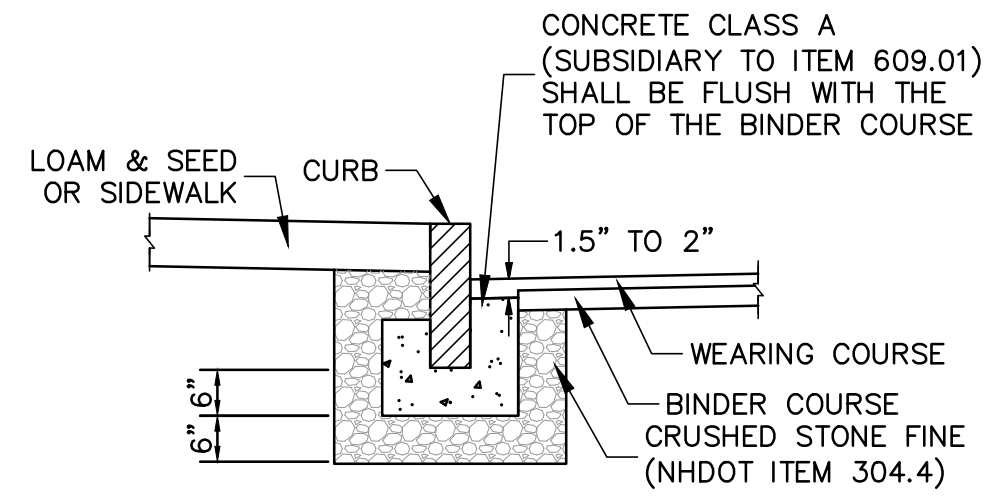


Brick Sidewalk

Not to Scale

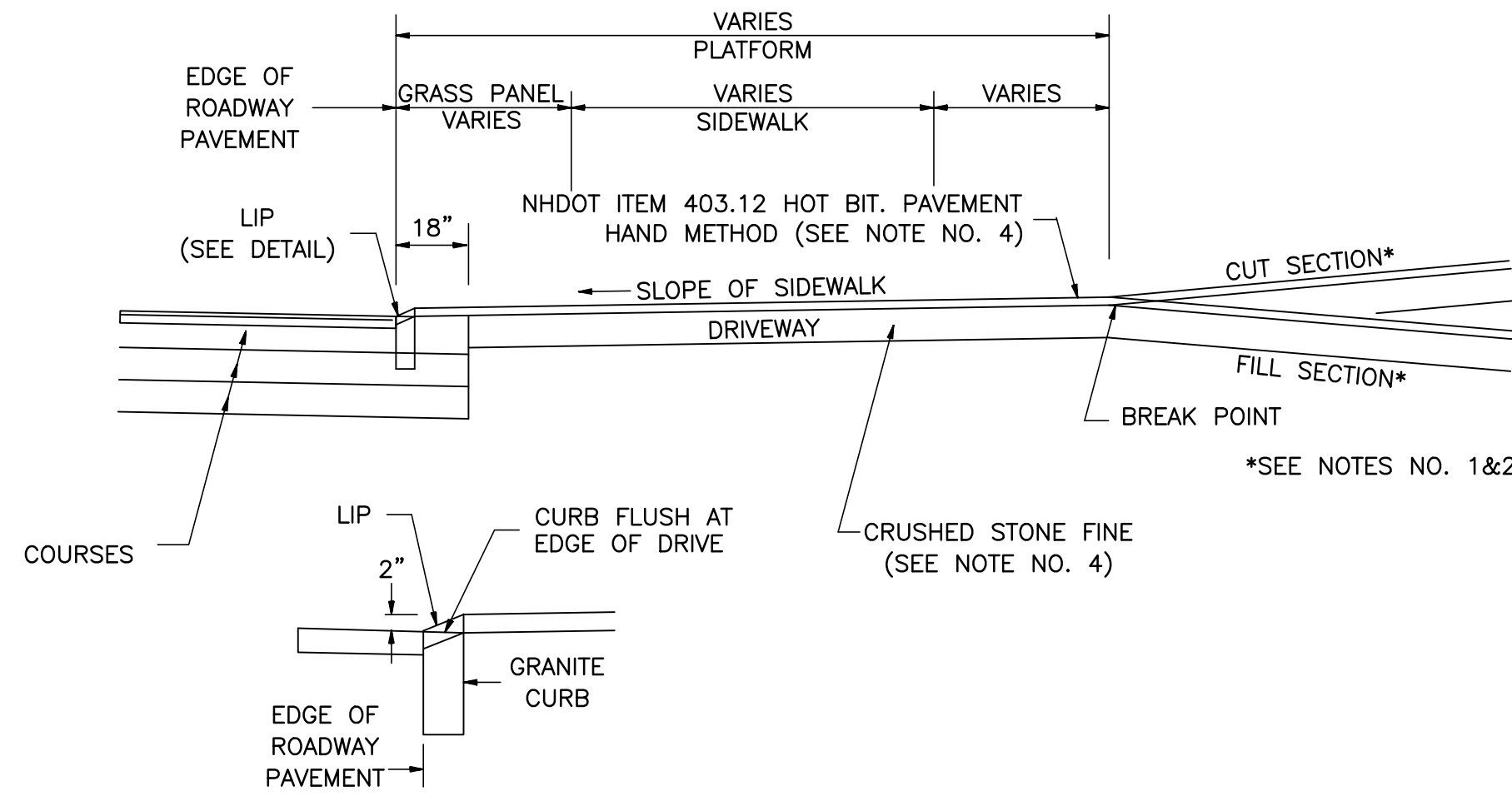
NOTES:

1. PINE HALL BRICK PAVERS, TRADITIONAL EDGE, FULL RANGE 4"x8"x2.25" ARE REQUIRED. CONTRACTOR SHALL SUBMIT SAMPLE OF BRICKS FOR APPROVAL BY THE CITY OF PORTSMOUTH.
2. IN AREAS WHERE BRICK DOES NOT ABUT CURBING, EDGING SHALL BE INSTALLED TO HOLD BRICKS IN PLACE.
3. SAND BEDDING: 3 PARTS SAND TO 1 PART PORTLAND CEMENT TYPE S.
4. BRICKS SHALL BE CLASS SX, TYPE 1, APPLICATION PX. BRICKS SHALL BE NO.1, WIRE CUT FOR PAVING WITH COMPRESSIVE STRENGTH OF 6,000psi (MIN.). BRICKS SHALL NOT BE CORED OR HAVE FROGS.
5. SUB-GRADE SHALL BE COMPACTED PRIOR TO PLACEMENT OF CRUSHED STONE BASE.
6. CRUSHED STONE BASE MATERIAL SHALL BE COMPACTED WITH JUMPING JACK ALONG BACK SIDE OF CURB PRIOR TO PLACEMENT OF ASPHALT PAVEMENT. CRUSHED STONE SHALL BE COMPACTED TO 95% PROCTOR.
7. BRICK SHALL BE SET IN SAND/CEMENT MIX, CUT PIECES PLACED, LOCKED IN, AND COMPACTED AT THE END OF EACH DAY UNLESS APPROVED OTHERWISE BY THE CITY ENGINEER.



Granite Curb w/ Concrete Backing

Not to Scale

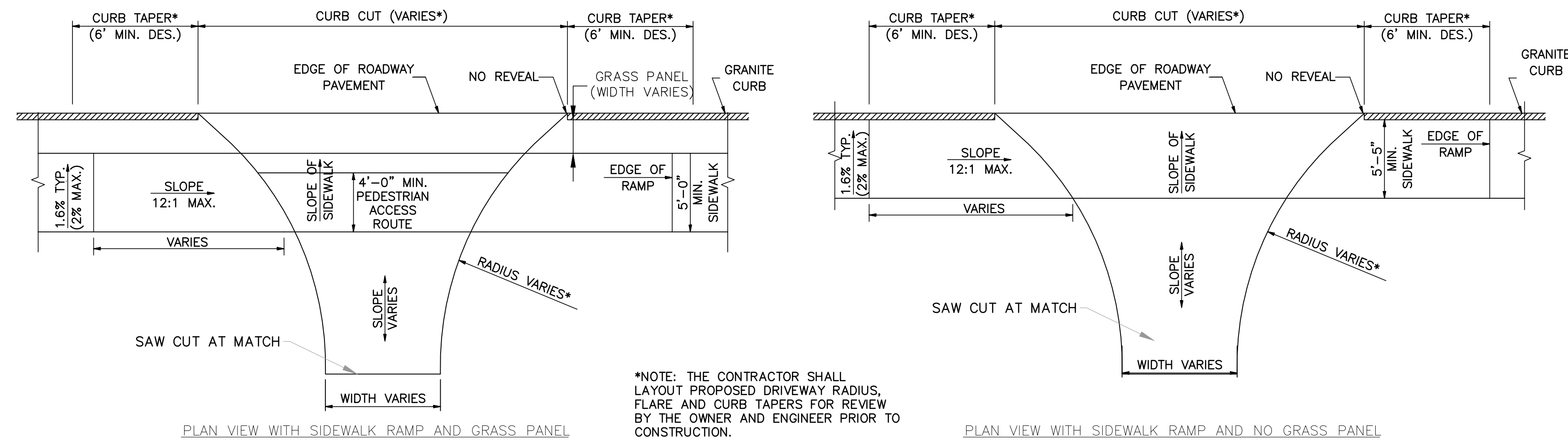


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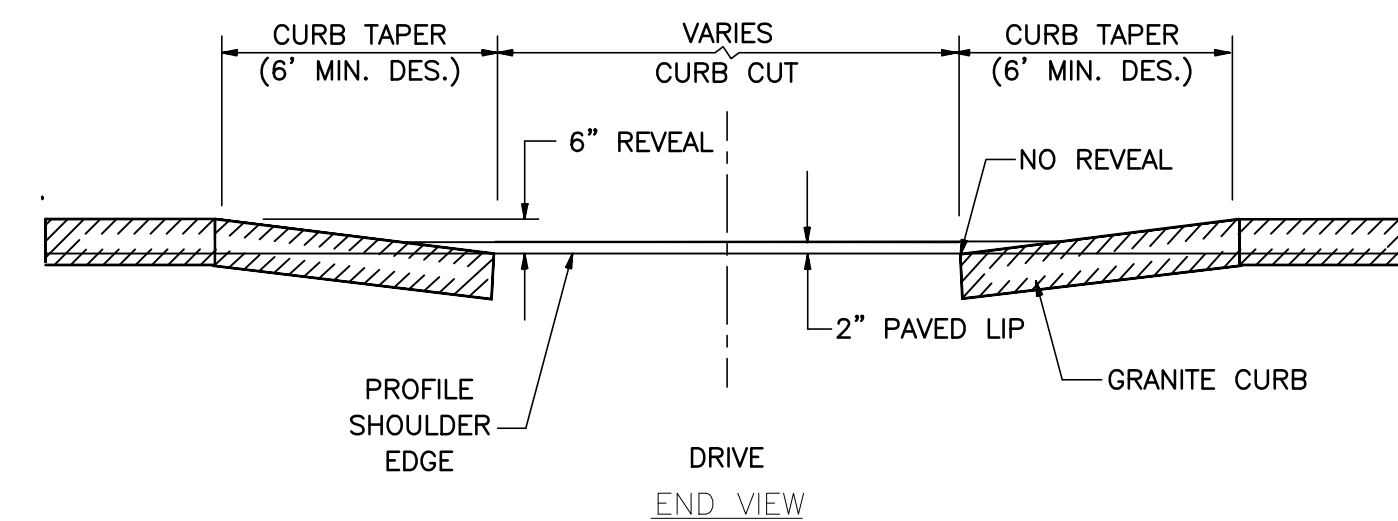
1. GRADES OF MAJOR ENTRANCES BEYOND THE PLATFORM SHOULD NOT EXCEED 8%.
2. GRADES OF OTHER DRIVES BEYOND THE PLATFORM SHOULD NOT EXCEED 15%.
3. THE ALGEBRAIC DIFFERENCE BETWEEN TWO ADJACENT GRADES SHOULD NOT EXCEED 10%.
4. PAVEMENT & BASE COURSE DEPTHS FOR RESIDENTIAL DRIVES SHALL BE 8" CRUSHED STONE FINE (NHDOT ITEM 304.4) WITH TWO COURSES OF HOT BITUMINOUS PAVEMENT (HAND METHOD) TOTALING BETWEEN 2.75" AND 3". CURBING CAN BE FLARED TO FIT DRIVE RADIUS IF APPROPRIATE OR ENDED AS DETAILED ABOVE.
5. FOR UNPAVED DRIVES, THE PAVED APRON NORMALLY ENDS AT THE RADIUS TANGENT POINT.
6. SEE SHEET D-4 FOR NHDOT STANDARD RAMP DETAILS.
7. THE CONTRACTOR SHALL LAYOUT PROPOSED DRIVEWAY RADIUS, FLARE, AND CURB TAPERS FOR REVIEW BY THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION.

Typical Driveway Section

Not to Scale



*NOTE: THE CONTRACTOR SHALL LAYOUT PROPOSED DRIVEWAY RADIUS, FLARE AND CURB TAPERS FOR REVIEW BY THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION.

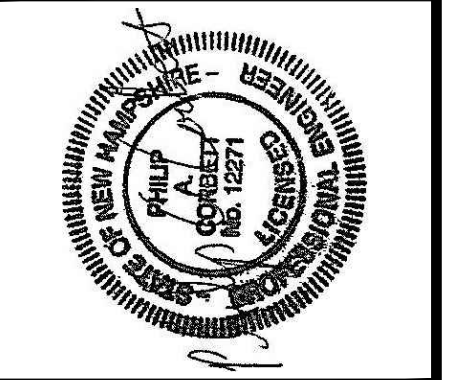


Driveway Detail

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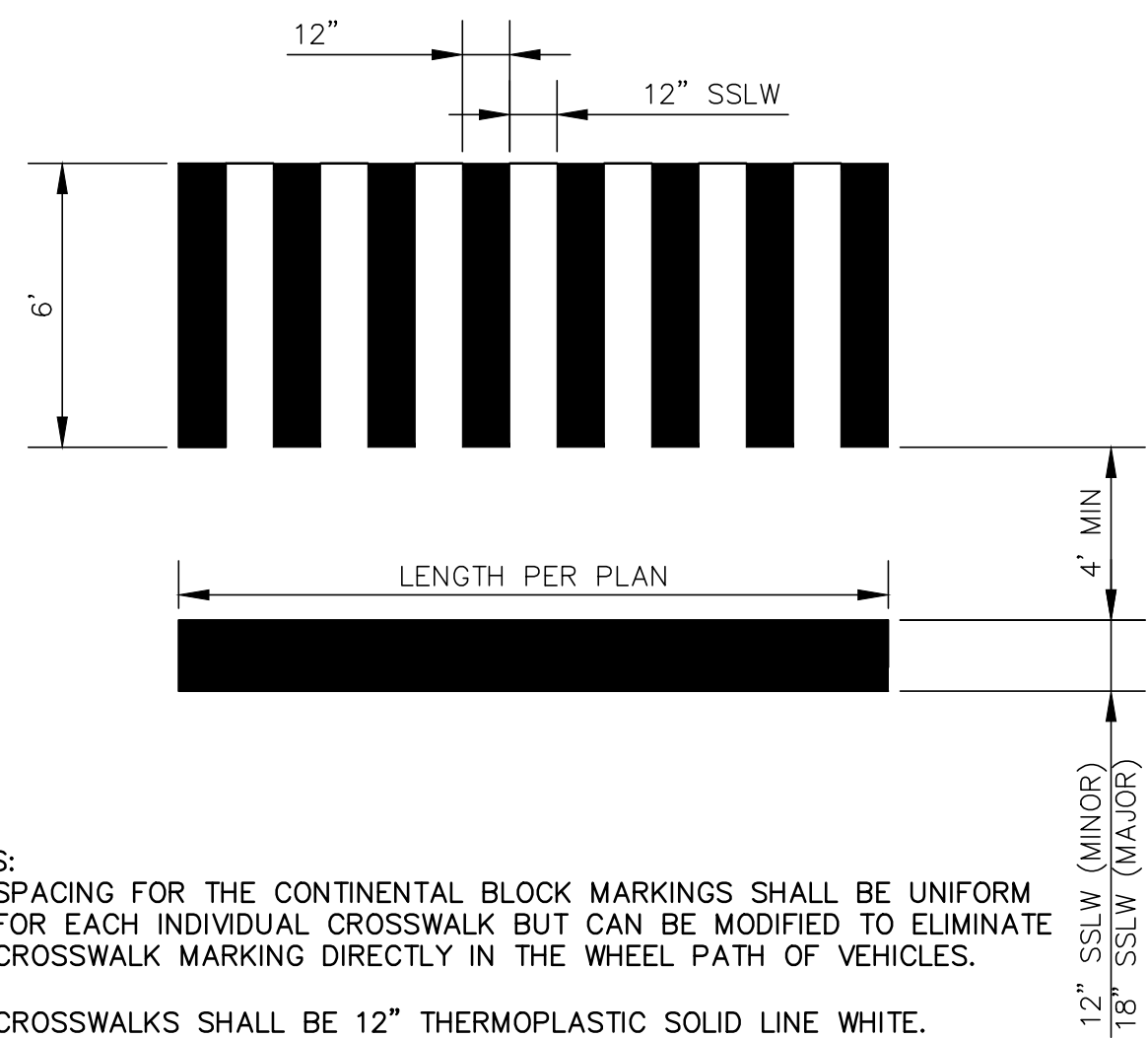
1	Issued for Bid	1/17/2023	PAC
	revision	date	by

CMA ENGINEERS
 CIVIL/ENVIRONMENTAL/STRUCTURAL
 Portsmouth, NH 603/431-6196
 Manchester, NH 603/627-0708
 Portland, ME 207/641-4223
 c m a e n g i n e e r s . c o m



date:	January 2023	designed by:	STF/WAB
project no:	1211	drawn by:	WWG
checked by:	PAC	approved by:	PAC
scale:	1" = 10'		

City of Portsmouth, New Hampshire
 Department of Public Works
 Union Street Area
 Improvement Project
 Roadway and Sidewalk Details



- NOTES:
- SPACING FOR THE CONTINENTAL BLOCK MARKINGS SHALL BE UNIFORM FOR EACH INDIVIDUAL CROSSWALK BUT CAN BE MODIFIED TO ELIMINATE CROSSWALK MARKING DIRECTLY IN THE WHEEL PATH OF VEHICLES.
 - CROSSWALKS SHALL BE 12" THERMOPLASTIC SOLID LINE WHITE.
 - STOP LINE SHALL BE PLACED 4' IN ADVANCE OF CROSSWALKS.
 - STOP LINE SHALL BE THERMOPLASTIC SOLID LINE WHITE. WIDTH OF STOP LINE SHALL BE 12" ON MINOR STREETS, 18" ON MAJOR STREETS.

Crosswalk and Stop Line Detail

Not to Scale

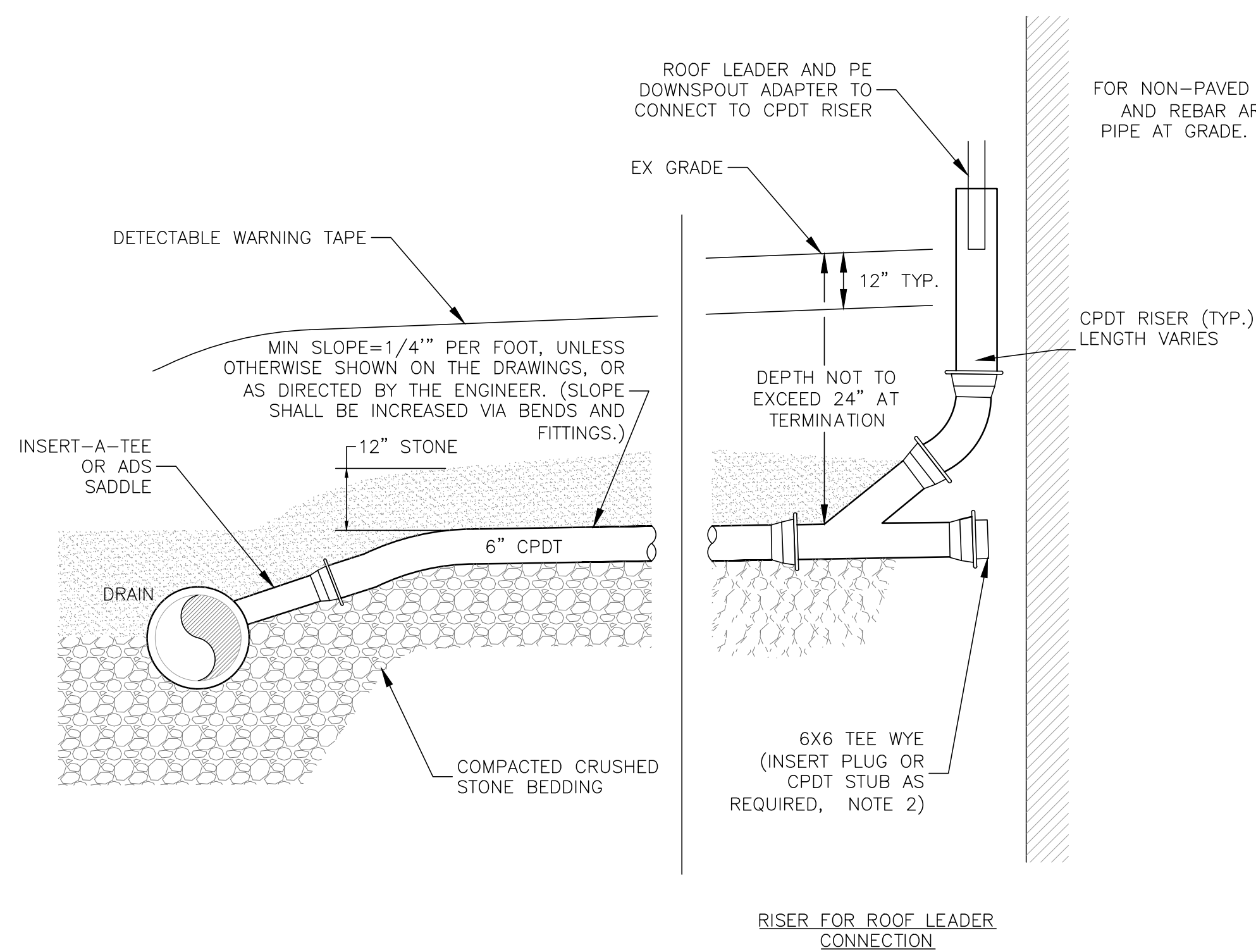
SIGNING NOTES:

- EXISTING SIGNS THAT CONFLICT WITH THE PROPOSED LAYOUT SHALL BE REMOVED OR RELOCATED AS DIRECTED BY THE ENGINEER. THIS WORK PAID UNDER CONTRACT ITEMS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND RELOCATION OF ALL ROADWAY SIGNS. ANY SIGNS DAMAGED DURING THE COMPLETION OF WORK SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
- NOTE NEW REFLECTIVITY REQUIREMENTS IN THE 2016 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 718 PUBLISHED BY THE NHDOT.
- REFER TO THE 2016 STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION AS PUBLISHED BY THE NHDOT FOR EXACT DETAILS OF PERMANENT SIGNING STANDARDS AND NHDOT SPECIFIC SIGNS.
- REFER TO THE LATEST EDITION OF THE STANDARD HIGHWAY SIGNS MANUAL AS PUBLISHED BY THE USDOT-FHWA FOR EXACT DETAILS OF BORDERS, ETC.
- THE MINIMUM SIGN HEIGHT FOR A ROAD SIGN SHALL BE 7- FEET WHERE PEDESTRIANS ARE PRESENT. ALL OTHER SIGN HEIGHTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MUTCD.
- ALL WARNING SIGNS SHALL HAVE TYPE IV BACKGROUND SHEETING UNLESS OTHERWISE SPECIFIED.
- ALL EXISTING SIGNS THAT ARE REMOVED ARE TO BE STORED BY THE CONTRACTOR AND RESET AS DIRECTED. ANY EXISTING SIGNS TO BE RESET THAT ARE DAMAGED BY THE CONTRACTOR'S OPERATIONS ARE TO BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY.
- WHERE NEEDED, SIGNS POSTS SHALL BE U-CHANNEL, DIRECT BURIED, SINGLE POST.

SIGN TABLE (ITEM 2.42)												
IDENT #	SIGN SIZE		TEXT	TEXT DIMENSIONS			SHIELD SIZE (INCH)	ARROW (INCH)	NUMERAL (INCH)	# SIGNS REQ'D	SIGN AREA (SQ. FT)	
	WIDTH (INCH)	HEIGHT (INCH)		LETTER HEIGHT (INCH)							NOM. AREA	TOTAL AREA
				UC	LC	CAPS						
R1-1	30	30	STOP			10C				BASE BID = 2 ALT A = 0 ALT B = 0 ALT C = 2 ALT D = 0	6.25	12.5 0 12.5 0
D3-1A	42	8	Union St	6D	4.5D				1		2.33	2.33
D3-1B	42	8	Austin St	6D	4.5D				1		2.33	2.33

Sign Table

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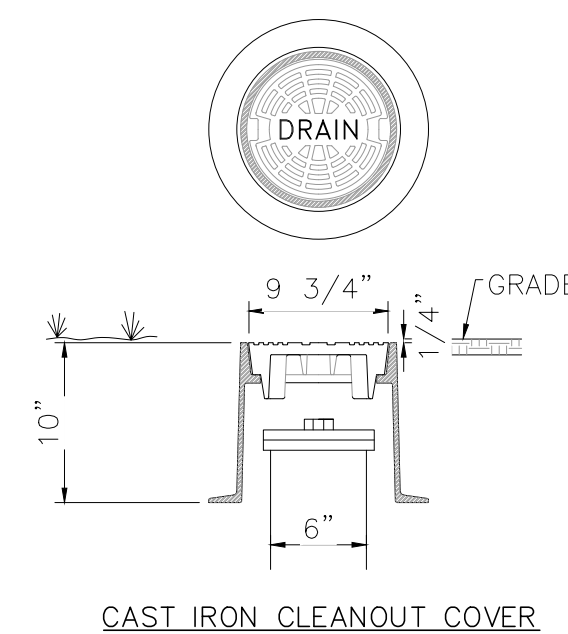
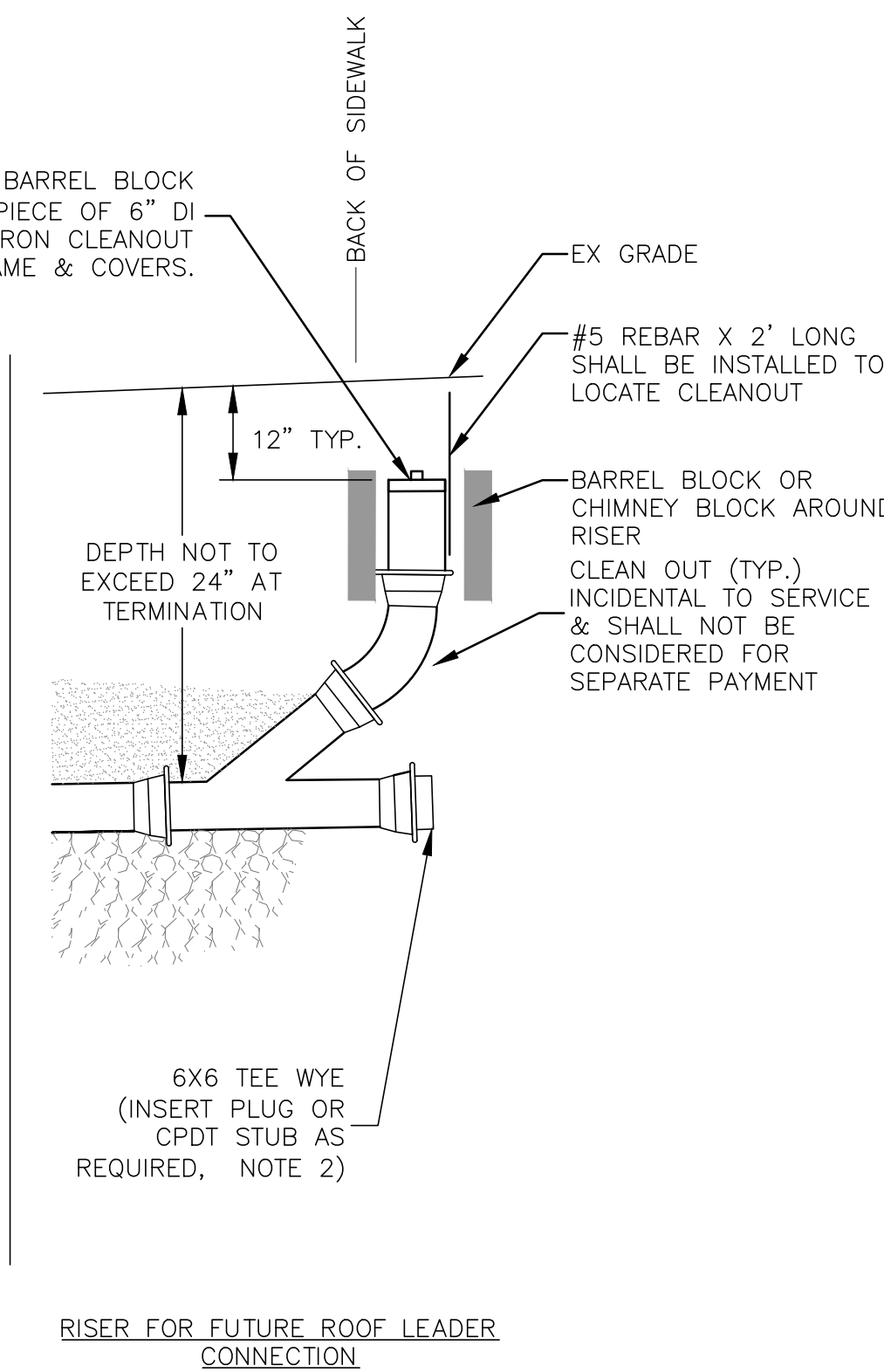


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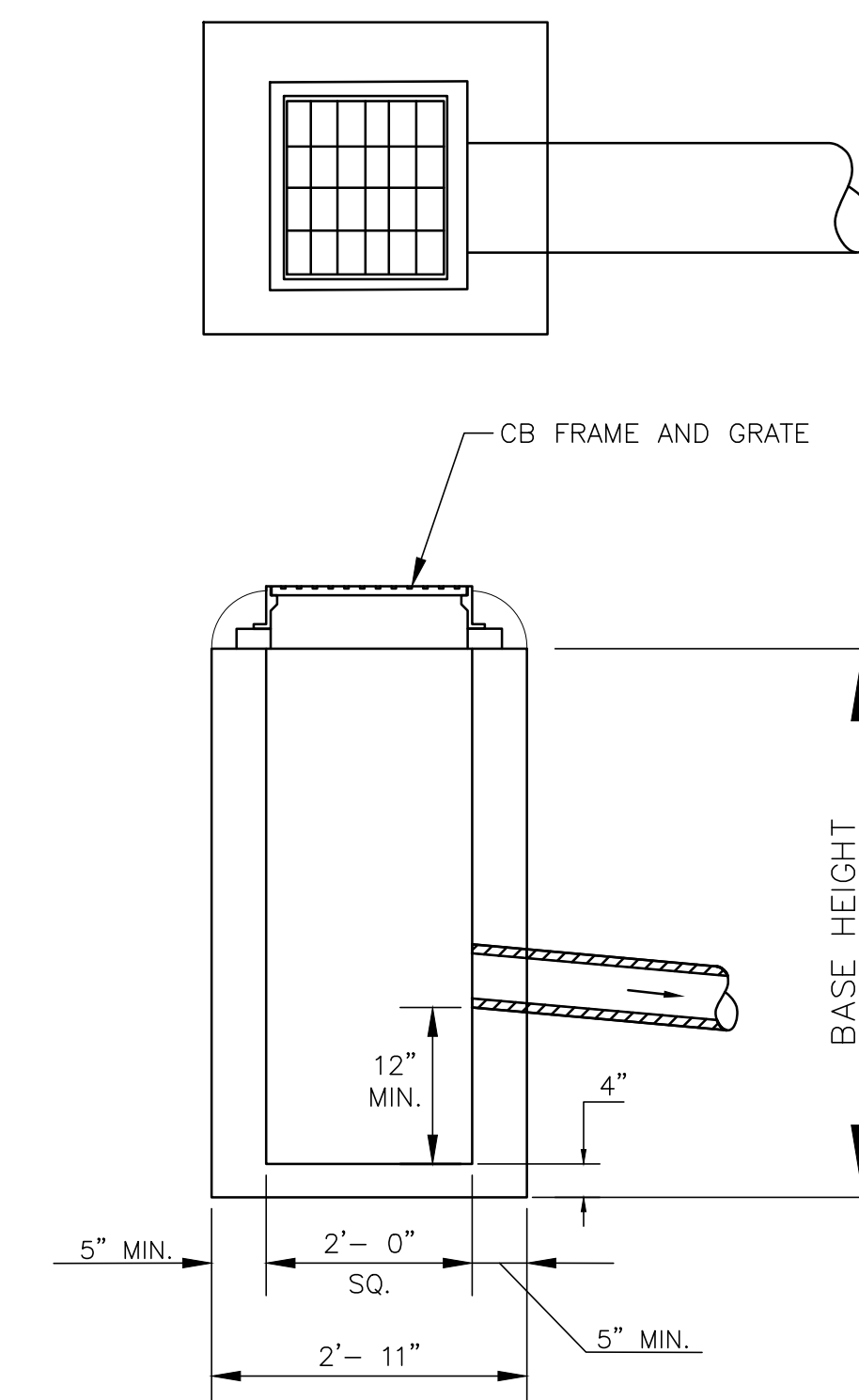
- PROVIDE ROOF LEADER CONNECTIONS AT EXISTING DOWNSPOUTS. AT ADJACENT BUILDING CORNERS, TWO DOWNSPOUTS MAY BE CONNECTED TO ONE LATERAL USING APPROPRIATE WYE (AND OTHER) FITTING(S).
- EACH PROPERTY SHALL BE PROVIDED A DRAIN LATERAL TO FACILITATE PRIVATE SUMP CONNECTIONS WHERE ROOF LEADER CONNECTIONS ARE PROVIDED, ONE PER PROPERTY WILL INCLUDE A 6" CPDT STUB FROM THE TEE-WYE FOR THE PURPOSE OF SUMP PUMP CONNECTIONS.
- DRAIN SERVICE LATERALS WILL BE PROVIDED AT EACH DOWNSPOUT OR AS DIRECTED BY THE ENGINEER. ONE SERVICE PROVIDED FOR DOWNSPOUTS WILL INCLUDE A 6" STUB FOR EACH PROPERTY TO FACILITATE PRIVATE SUMP PUMP/DRAIN SERVICE CONNECTIONS.
- CPDT DOWNSPOUT RISER PIPE, FITTINGS, AND CLEANOUTS ARE INCIDENTAL TO ITEM 603.8126 AND WILL NOT BE CONSIDERED FOR PAYMENT.
- SERVICE TEES SHALL BE ORIENTED @ 10:30 OR 1:30 (TYP.). UNDER NO CIRCUMSTANCES SHALL SERVICES BE LOCATED BETWEEN 3:00 AND 9:00.
- 8" PIPE AND FITTINGS SHALL BE USED TO TIE INTO EXISTING 8" SERVICES.

Drain Lateral and Roof Leader Connection

Not to Scale



CAST IRON CLEANOUT COVER



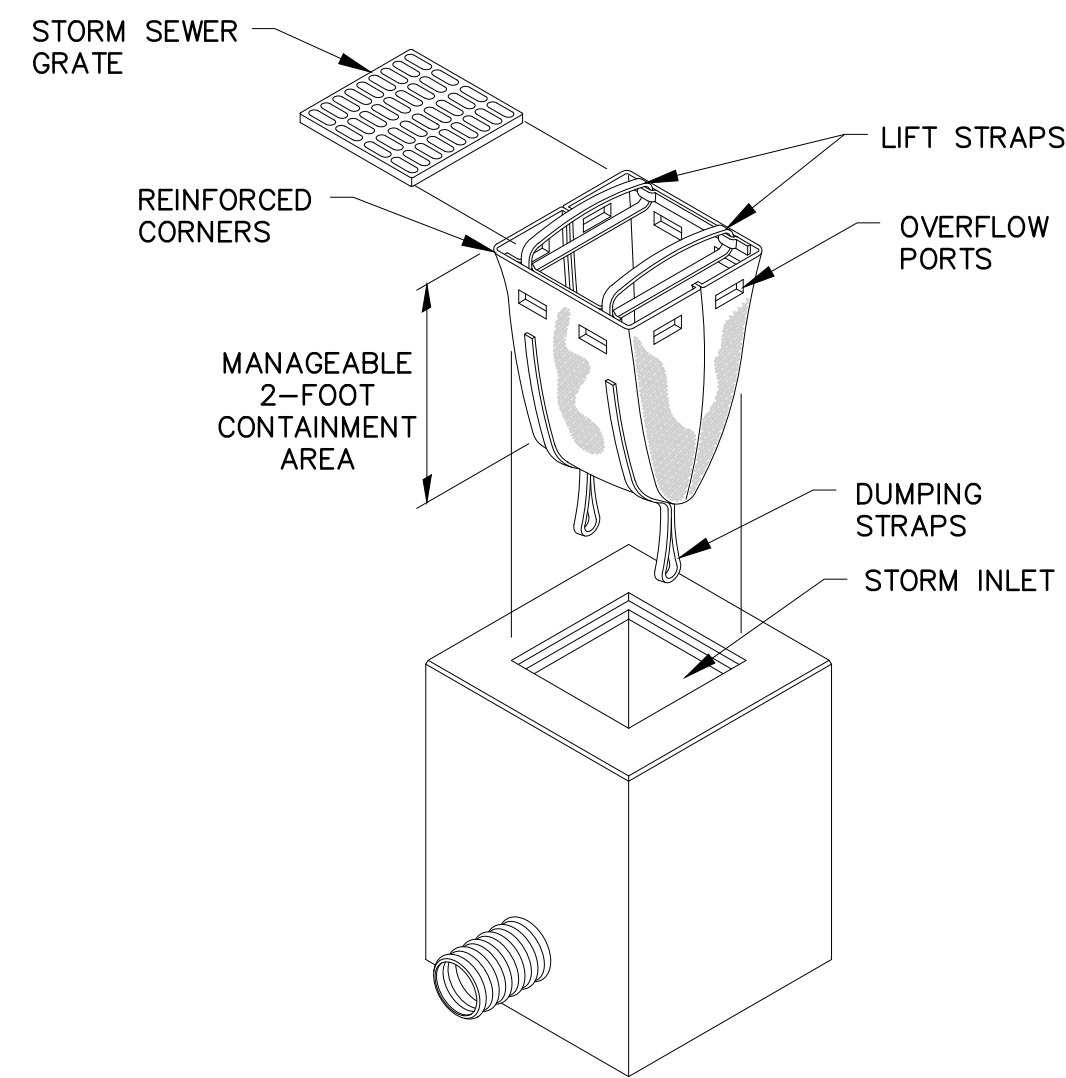
NOTES:

- CONCRETE: 5,000 PSI AT 28 DAYS.
- REINFORCING: 1 LAYER OF 4x4/4/x4 W.W.M.
- TO ACCOMMODATE A 24" SQ. C.I. FRAME AND GRATE.

Drop Inlet Detail

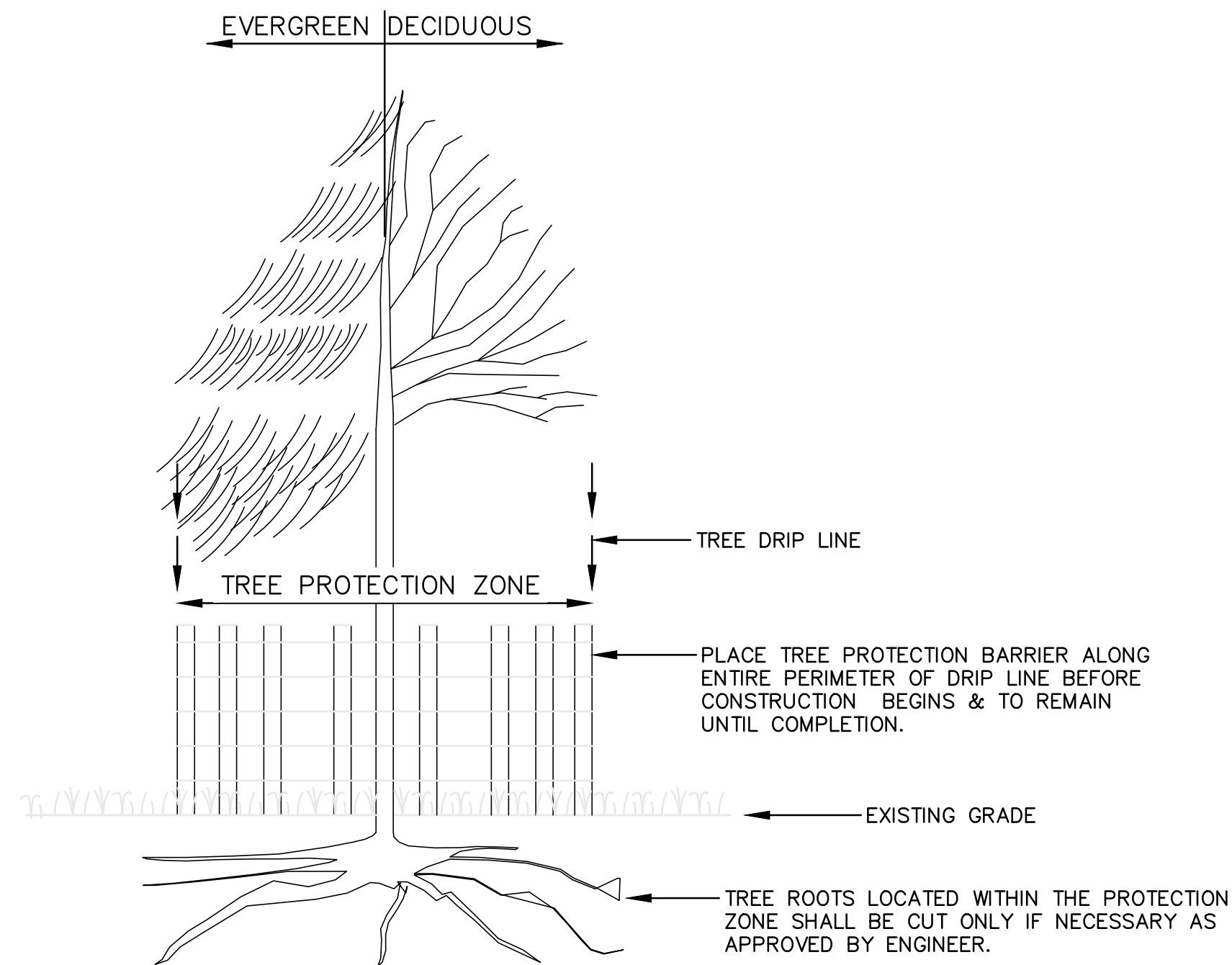
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		CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/651-4223		c m a e n g i n e e r s . c o m	
		designed by: STF/WAB	drawn by: WWG	approved by: PAC	date: January 2023
project no: 1211	checked by: PAC	scale: 1" = 10' 0 10' 20'	City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Roadway and Drainage Details		
drawing no: D-6		sheet: 33 of 54			
issued for bid: 1/17/2023		revision: no.			



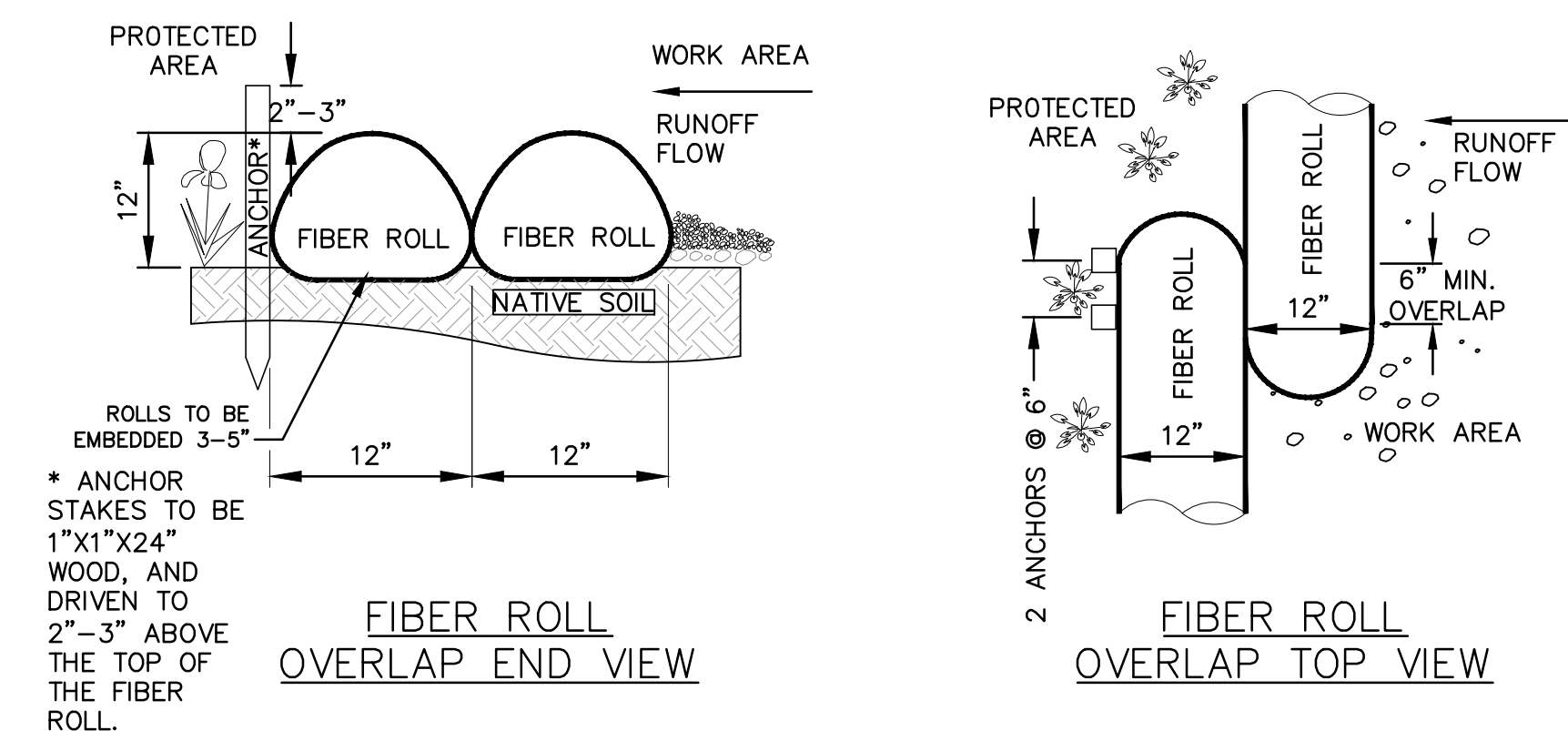
"Silt Sack" Sediment Control Device for Inlet Protection

Not to Scale



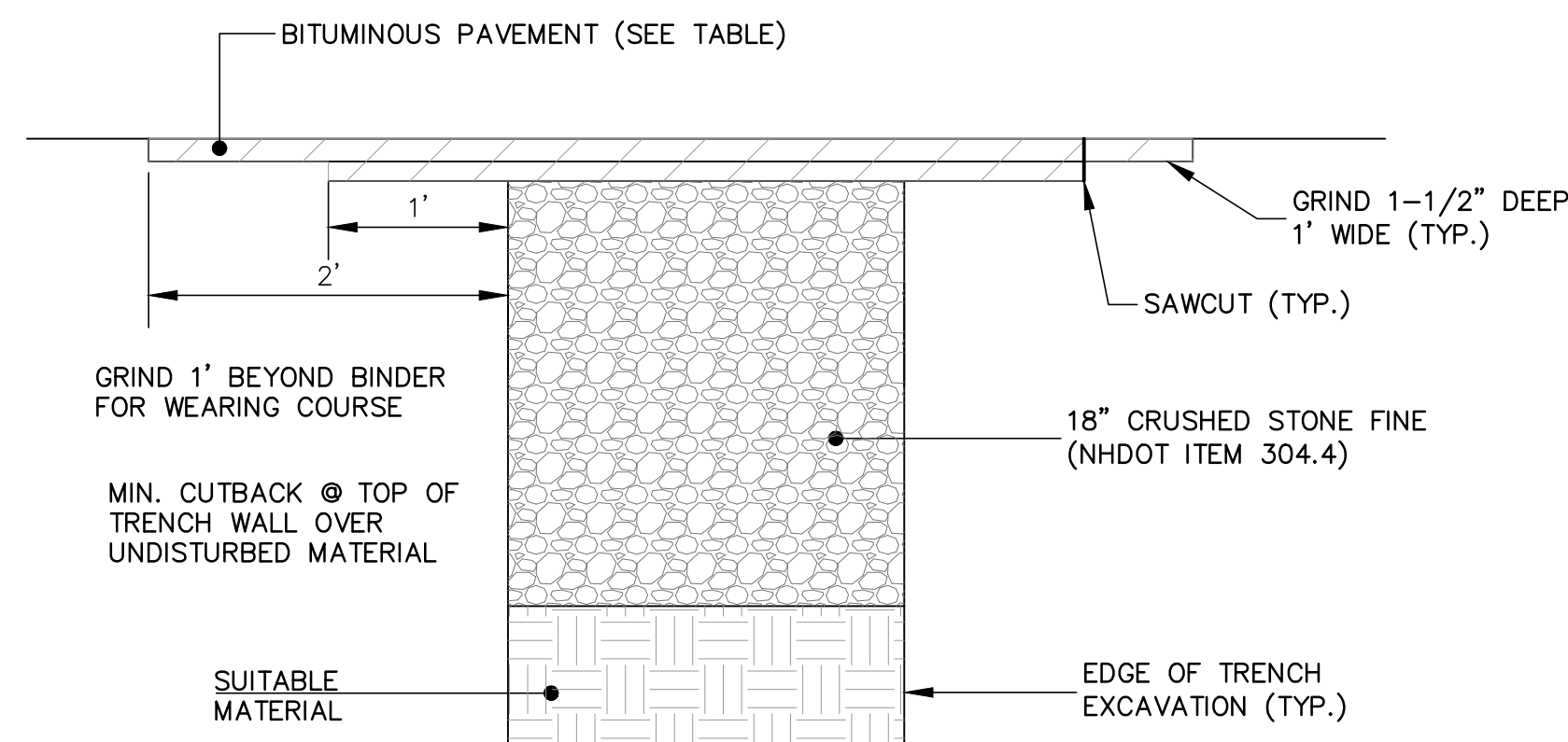
Temporary Tree Protection

Not to Scale



Erosion Control Fiber Roll

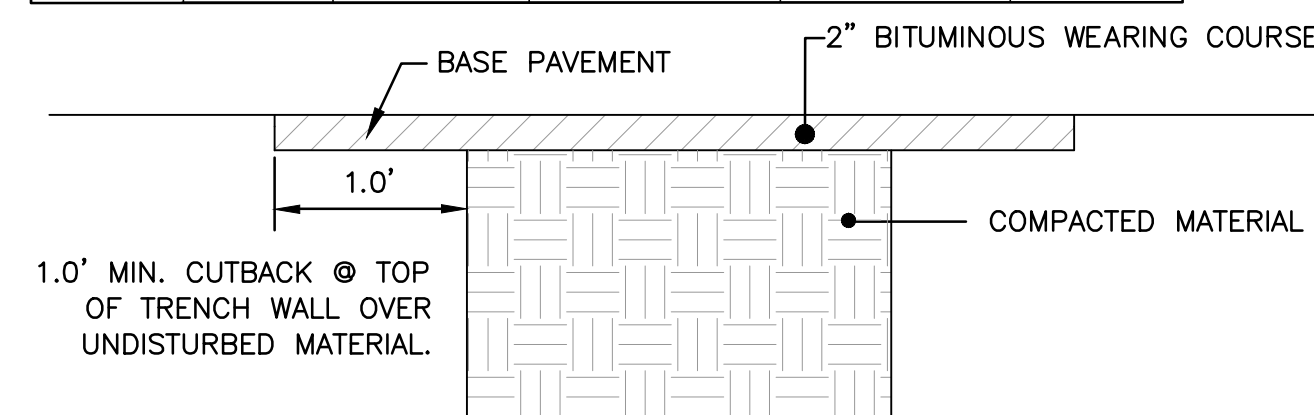
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Permanent Trench Patch

PAVEMENT COURSES:

ROADS	COURSE	MINIMUM LIFT THICKNESS	NOMINAL MAX. AGGREGATE SIZE	GYRATORY COMPACTION EFFORT	MINIMUM BINDER CONTENT
SIDE ROADS	WEARING	1-1/2"	3/8"	75	5.9%
	BASE	2-1/2"	3/4"	50	5.3%
MIDDLE STREET	WEARING	1-1/2"	1/2"	50	5.9%
	BASE	2-1/2"	3/4"	50	5.3%



PAVEMENT COURSE:

COURSE	MINIMUM LIFT THICKNESS	NOMINAL MAX. AGGREGATE SIZE	GYRATORY COMPACTION EFFORT	MINIMUM BINDER CONTENT
WEARING	2"	1/2"	50	5.9%

Temporary Trench Patch

PAVEMENT NOTES:

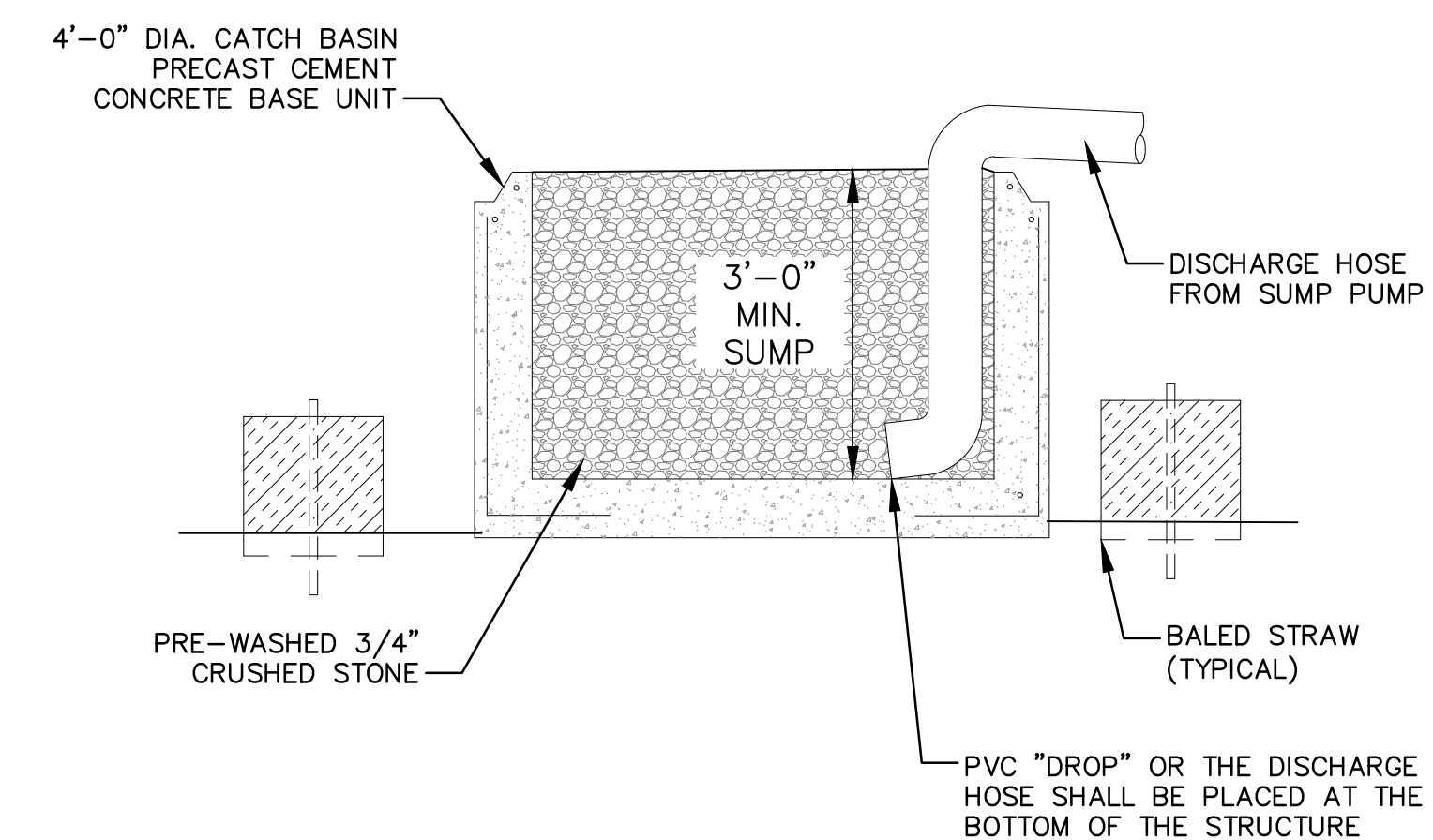
- THE CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ALL AREAS DISTURBED BEYOND THE TRENCH PATCH LIMITS.
- ANY TEMPORARY TRENCH PATCH IS CONSIDERED SACRIFICIAL AND REMOVAL/INCORPORATION OF TEMPORARY PATCH MATERIALS AND BASE MATERIALS SHALL BE SUBSIDIARY TO PERMANENT TRENCH PATCH REPAIR.
- ALL PAVEMENT EDGES SHALL BE SAWCUT AND THE CONTRACTOR SHALL TRIM, TACK, AND MATCH EXISTING PAVEMENT AT LOCATIONS WHERE NEW PAVEMENT MEETS EXISTING PAVEMENT (ALL SUBSIDIARY TO PAYMENT FOR TRENCH PATCH REPAIR).

Trench Patch Details

Not to Scale

EROSION CONTROL NOTES:

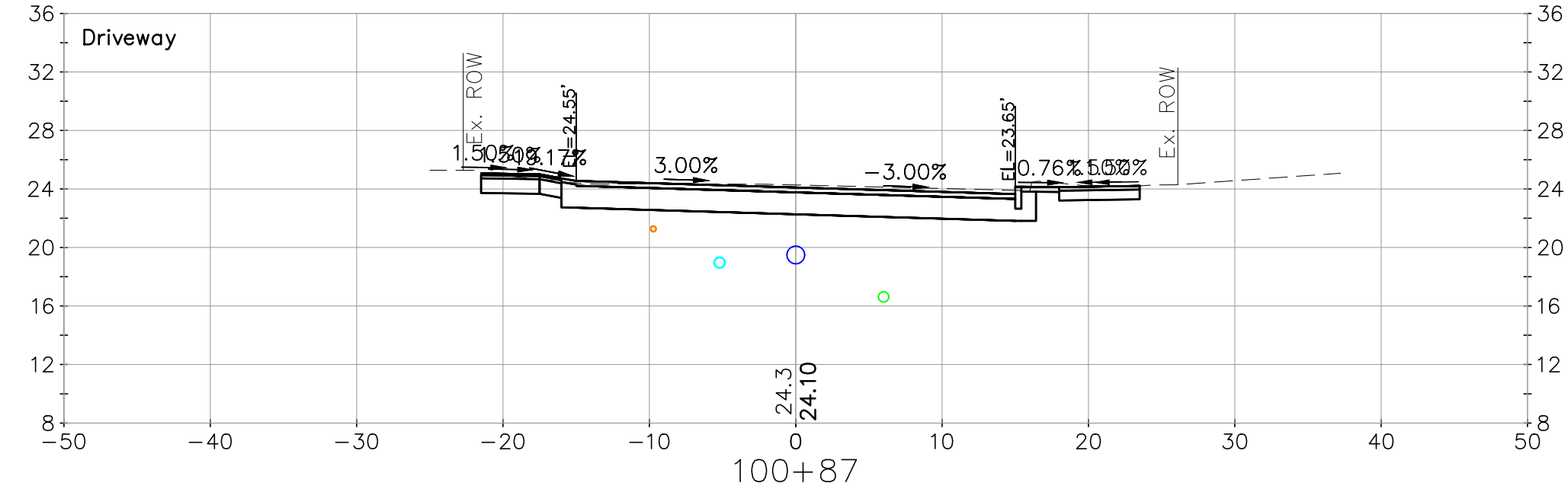
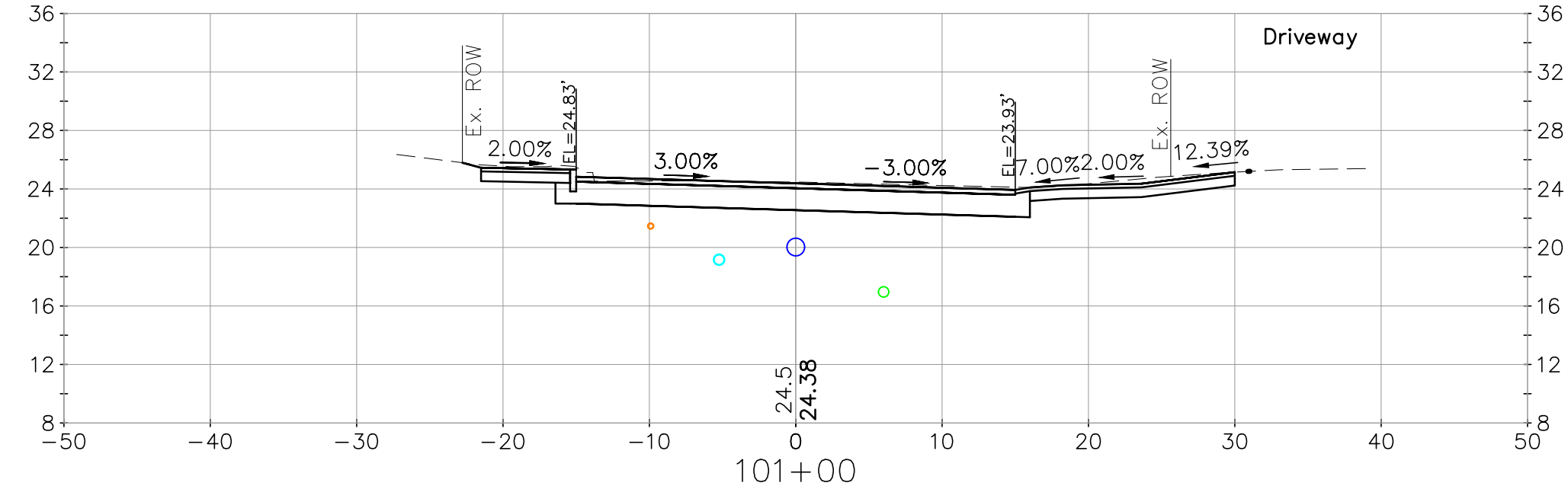
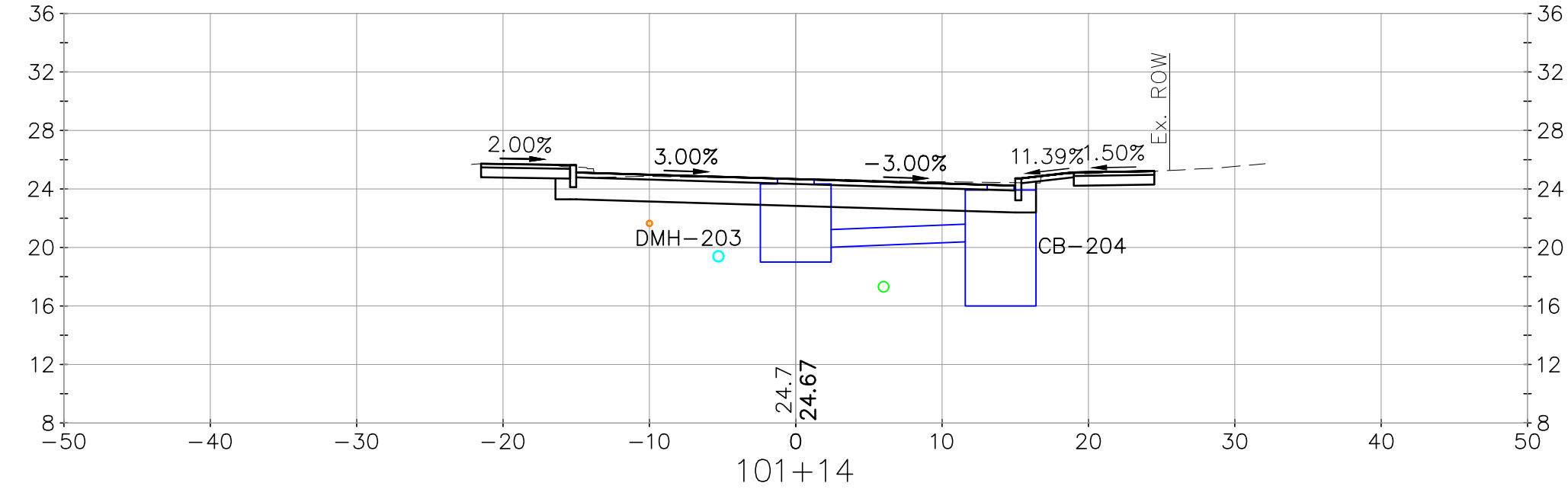
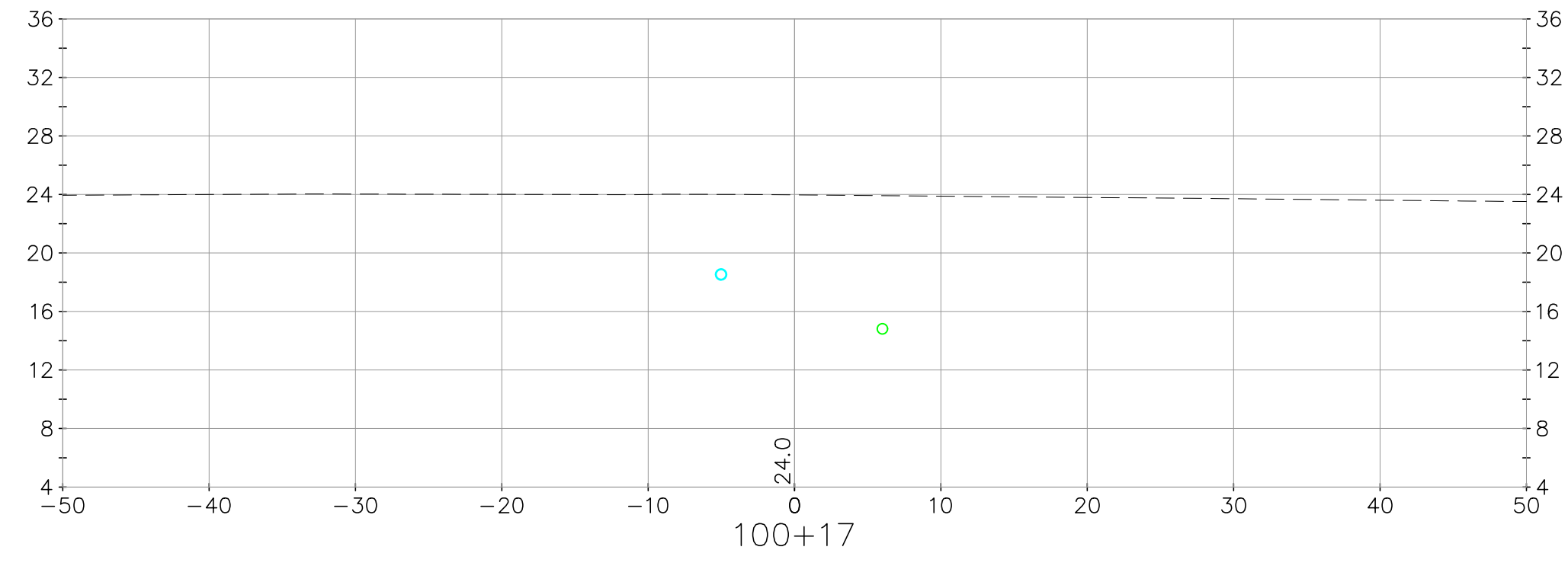
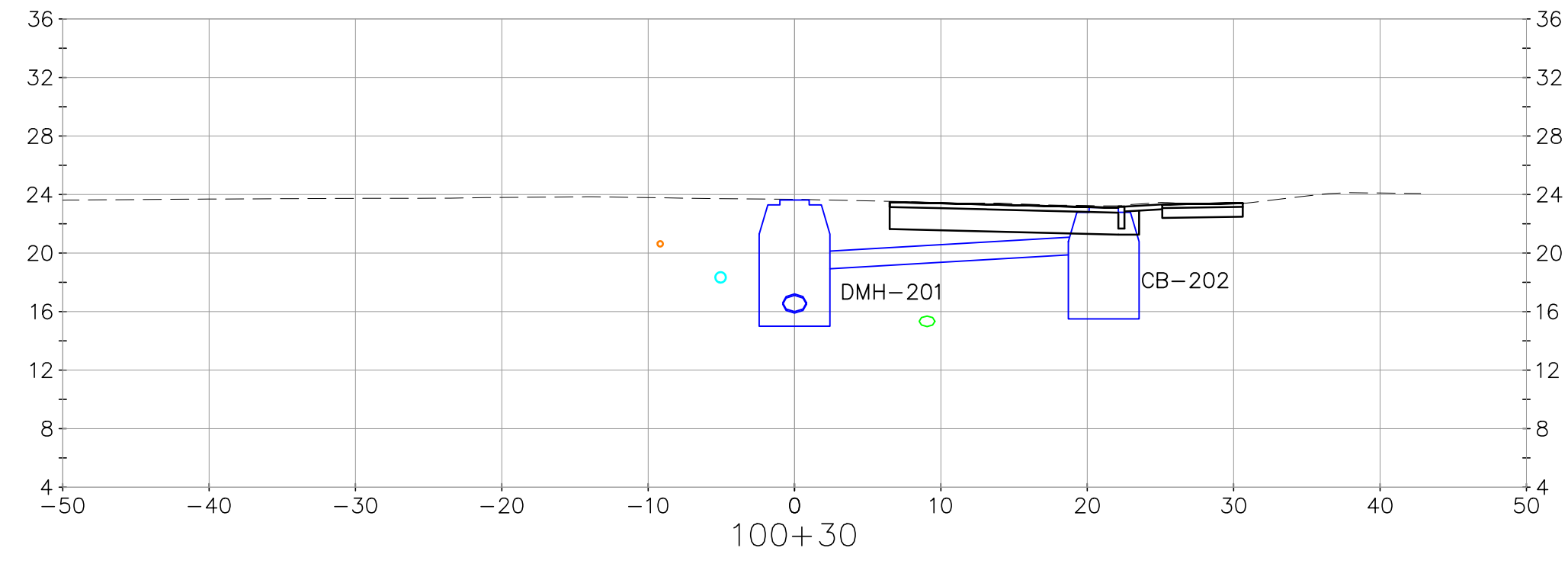
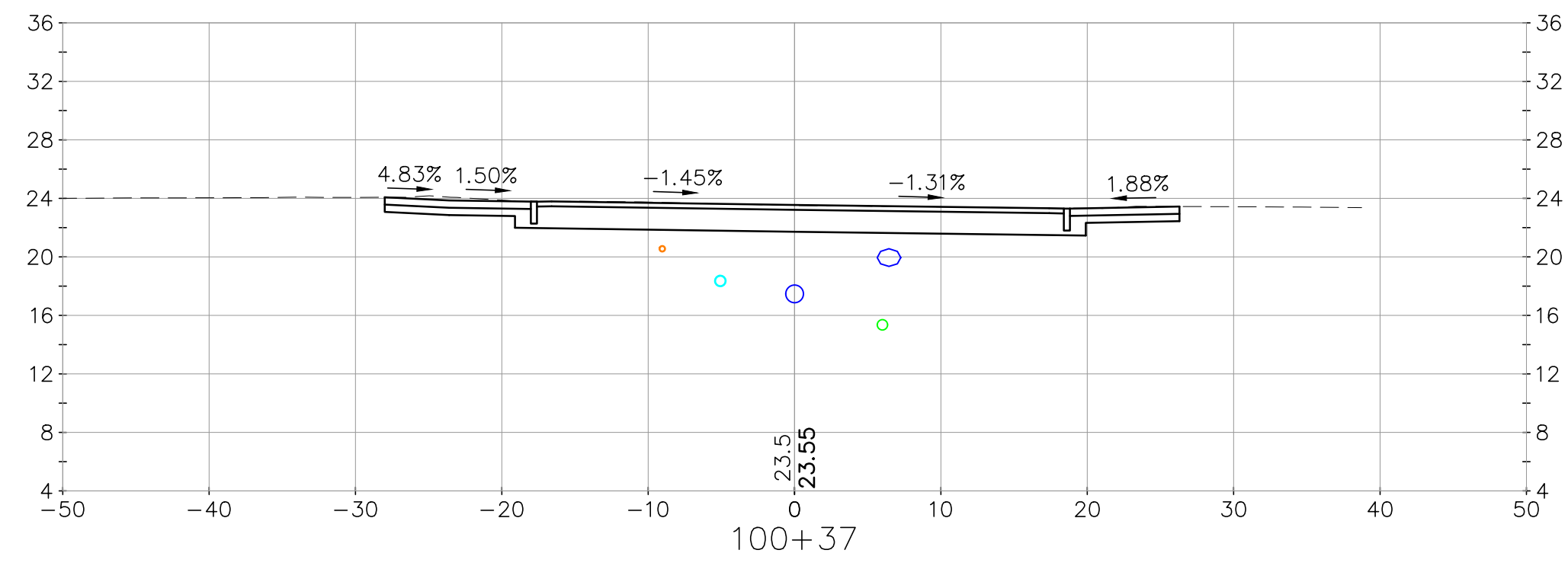
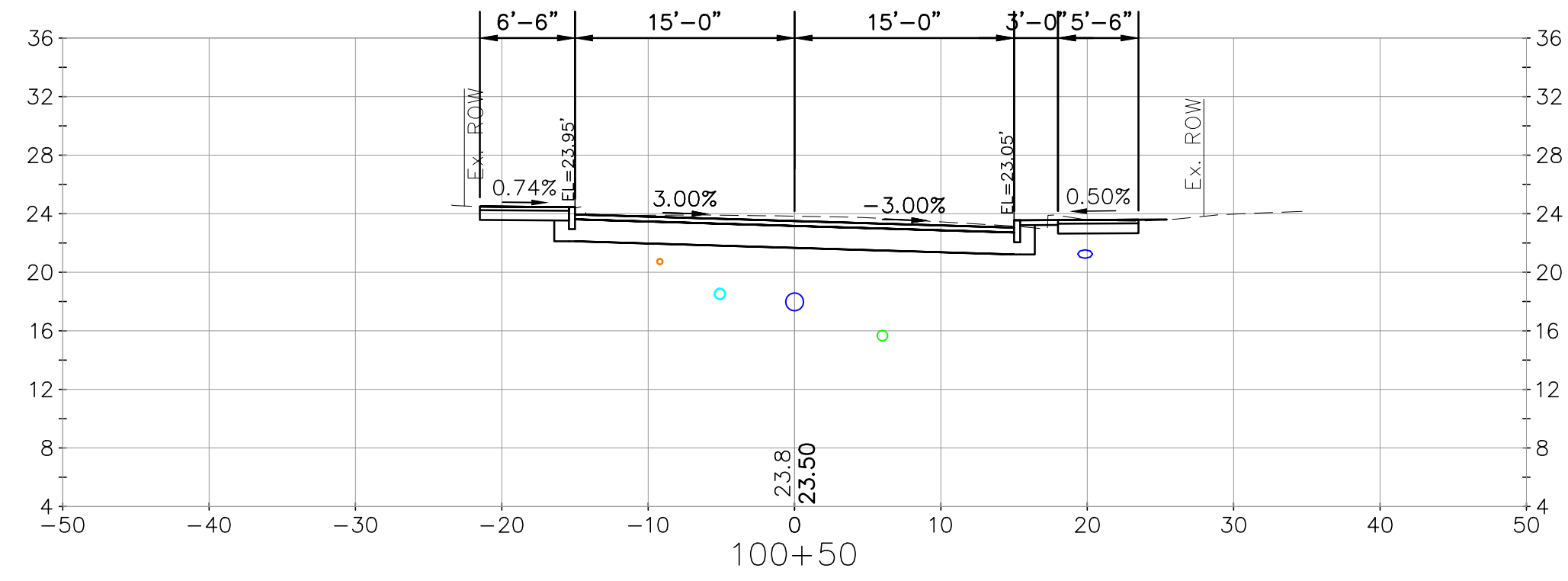
- PERIMETER CONTROLS TO BE INSTALLED PRIOR TO EARTH MOVING OPERATIONS.
- PRIOR TO CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NECESSARY. THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHOULD BE KEPT TO THE SHORTEST PRACTICAL PERIOD OF TIME. LAND SHOULD NOT BE LEFT EXPOSED DURING THE WINTER MONTHS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL REMEDIAL WORK REQUIRED TO REPAIR AREAS WHICH ARE DAMAGED BY EROSION.
- CATCH BASIN INSERTS, MIRAFI DANDY SACK OR EQUAL, SHALL BE INSTALLED AND MAINTAINED AT CATCH BASINS UNTIL PAVEMENT IS INSTALLED. SEDIMENT AND DEBRIS SHALL BE REMOVED FOLLOWING EACH STORM EVENT.
- HAY BALE BARRIERS SHALL BE INSTALLED AND MAINTAINED AT DRAIN INLETS AND OUTLETS (NOT PLACED CLOSER THAN 25-FEET) AND ALONG LIMITS OF WORK WHERE NECESSARY. ADDITIONAL HAY BALES SHALL BE ADDED AS REQUIRED BY THE ENGINEER. HAY BALES WILL BE STAKED AND MAINTAINED PRIOR TO AND DURING CONSTRUCTION UNTIL DISTURBED AREAS HAVE ESTABLISHED A HEALTHY STAND OF GRASS. BALED HAY AND MULCH SHALL BE MOWINGS OF ACCEPTABLE HERBACEOUS GROWTH, FREE FROM NOXIOUS WEEDS OR WOODY STEMS AND SHALL BE DRY WHEN PLACED.
- ALL DISTURBED AREAS AND SIDE SLOPES WHICH ARE FINISH GRADED WITH NO FURTHER CONSTRUCTION TO TAKE PLACE SHALL BE SEEDED AND MULCHED. ALL DISTURBED AREAS OUTSIDE LIMITS OF BUILDING, AND PAVEMENT SHALL BE STABILIZED WITH LOAM AND SEED. ALL SEED, LIME AND FERTILIZER PROGRAMS SHALL CONFORM TO ALL APPLICABLE SECTIONS OF THE SPECIFICATIONS.
- ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, OR LONGER THAN TWO WEEKS AND WHICH WILL BE RE-GRADED LATER DURING CONSTRUCTION, SHALL BE TEMPORARILY SEEDED AND MACHINE STRAW MULCHED AT A RATE OF 1.5 TONS/ACRE.
- AVOID USE OF UNDISTURBED AREAS WHEREVER POSSIBLE DURING CONSTRUCTION. CONSTRUCTION TRAFFIC SHALL TRAVEL THE ROADBEDS OF EXISTING AND FUTURE ROADS AND SHALL BE LIMITED TO WITHIN THE LIMITS OF CONSTRUCTION NOTED ON THE PLANS.
- IF SILT FENCES ARE TO BE USED, THEY SHALL BE MINIMUM OF 36 INCHES HIGH WITH THE BOTTOM OF THE CLOTH KEED INTO THE GROUND (SEE DETAIL). POSTS SHALL BE OF WOOD OR STEEL. SILT FENCE SHALL BE INSTALLED AND MAINTAINED AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. ADDITIONAL SILT FENCE MAY BE ADDED AS REQUIRED BY THE ENGINEER PRIOR TO ANY ON-SITE GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL. IT SHOULD BE MAINTAINED DURING AND AFTER DEVELOPMENT TO REMOVE SEDIMENT FROM RUNOFF WATER AND FROM LAND UNDERGOING DEVELOPMENT. WHERE POSSIBLE NATURAL DRAINAGE WAYS SHOULD BE UTILIZED AND LEFT OPEN TO REMOVE CLEAN EXCESS SURFACE WATER. THE SILT FENCE IS TO BE MAINTAINED AND CLEANED UNTIL ALL SLOPES HAVE A HEALTHY STAND OF GRASS.
- EROSION CONTROL DEVICES SHOWN REPRESENT MINIMUM MEASURES REQUIRED FOR EROSION CONTROL. THE CONTRACTOR SHALL TAKE ANY AND ALL NECESSARY MEASURES TO PREVENT TRANSPORTATION OF SEDIMENT BEYOND THE WORK AREA.
- AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED AND ACCUMULATED SEDIMENT DISPOSED OF AT THE CONTRACTOR'S EXPENSE.
- ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
- ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
- ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY 0.5" OF RAINFALL.
- AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
 - A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
 - A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED
 - EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED
- ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
- TEMPORARY SEEDING (IF USED) SHALL BE PERENNIAL RYE GRASS, SPREAD 0.7LB/1000 SQ. FT.
- WINTER CONSTRUCTION NOTES
 - ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
 - ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
 - AFTER NOVEMBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
- AFTER CONSTRUCTION IS COMPLETE, THE CONTRACTOR SHALL REMOVE THE STABILIZED CONSTRUCTION ENTRANCE AND REPLACE WITH THE IMPROVED GRAVEL SECTION PER THE NOTES AND DETAIL.



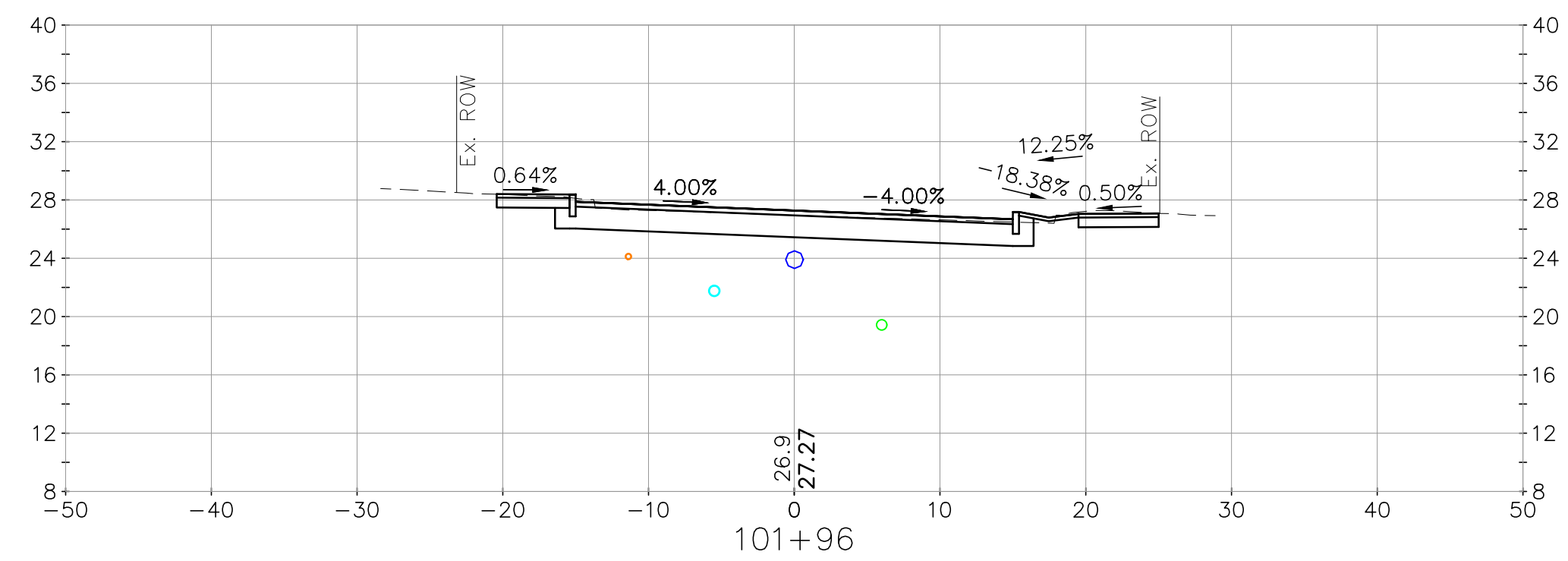
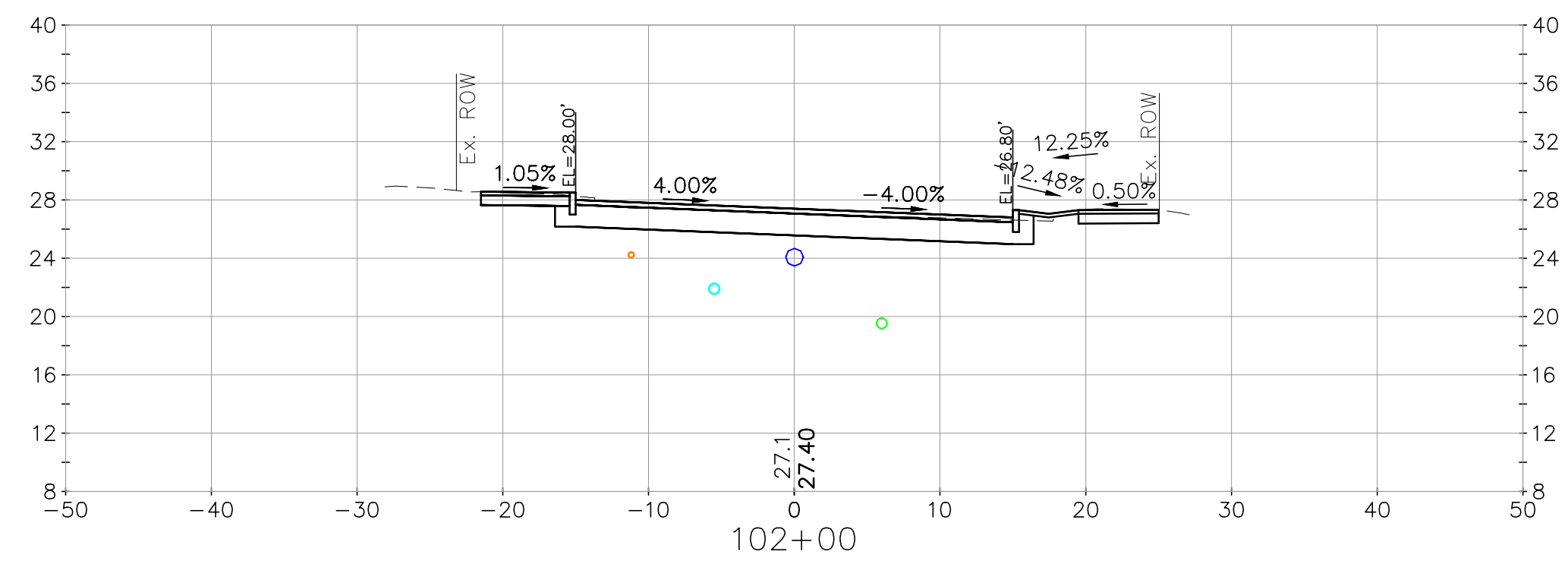
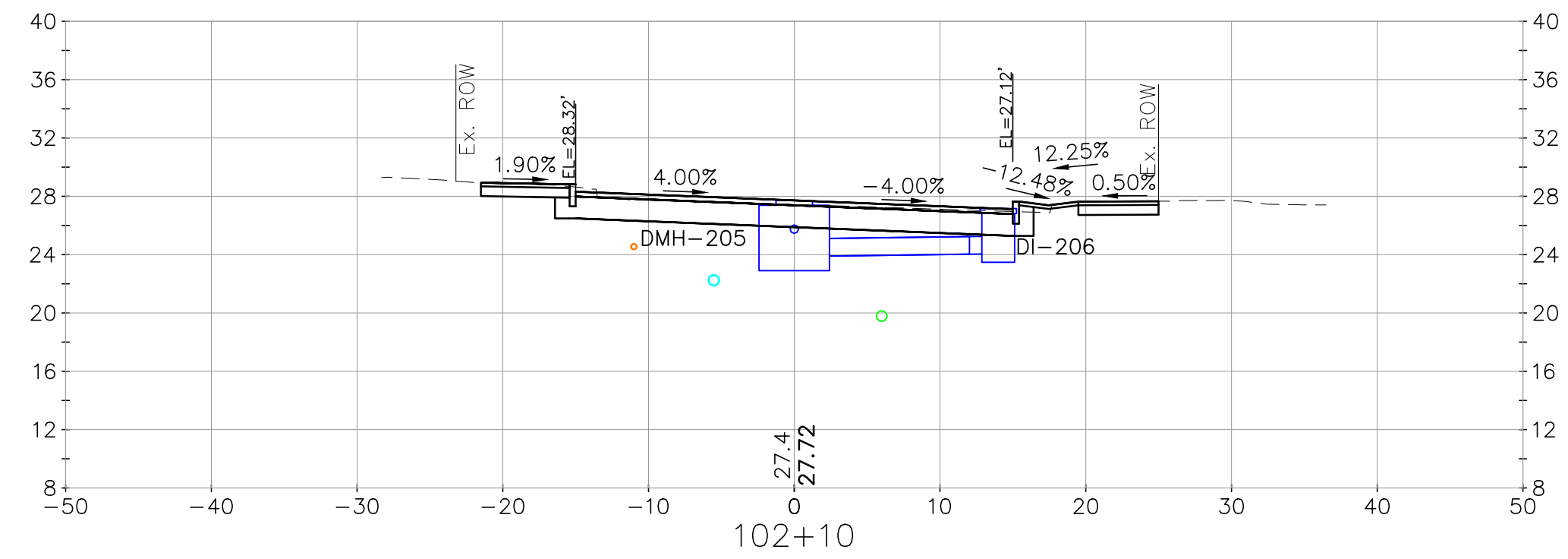
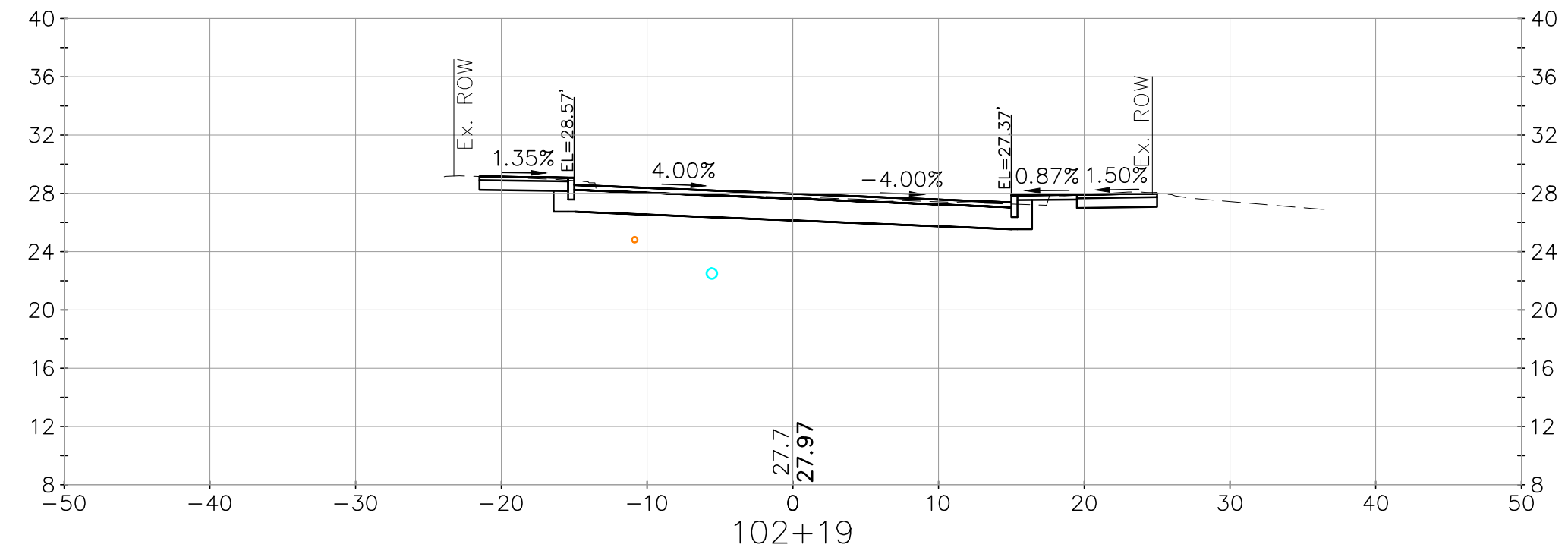
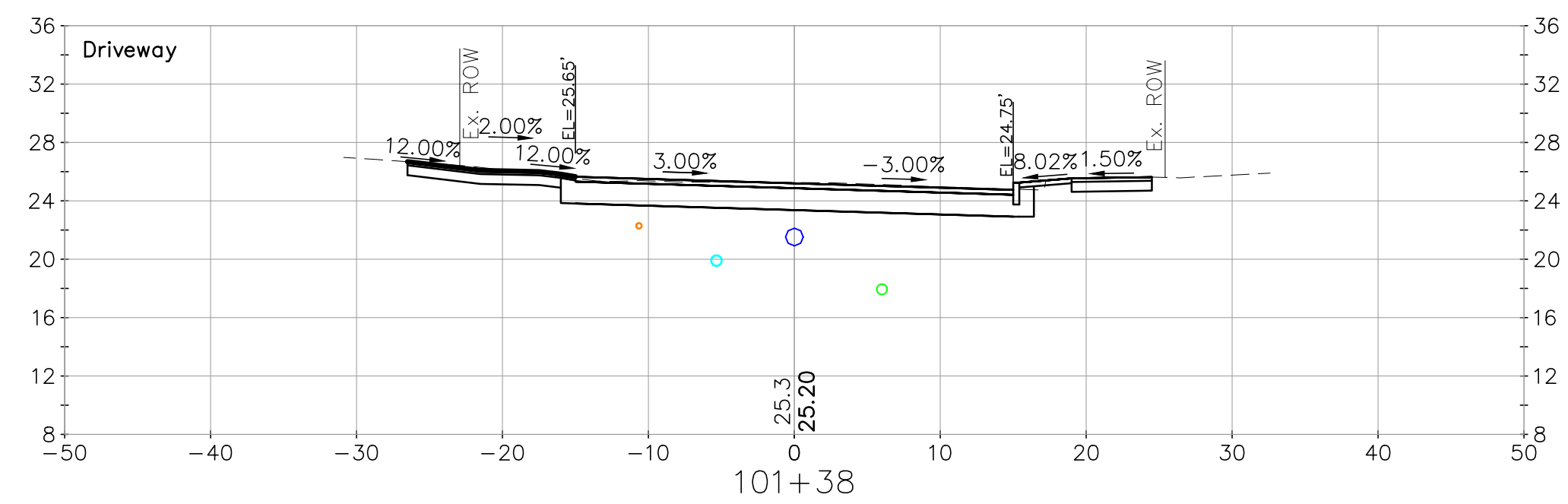
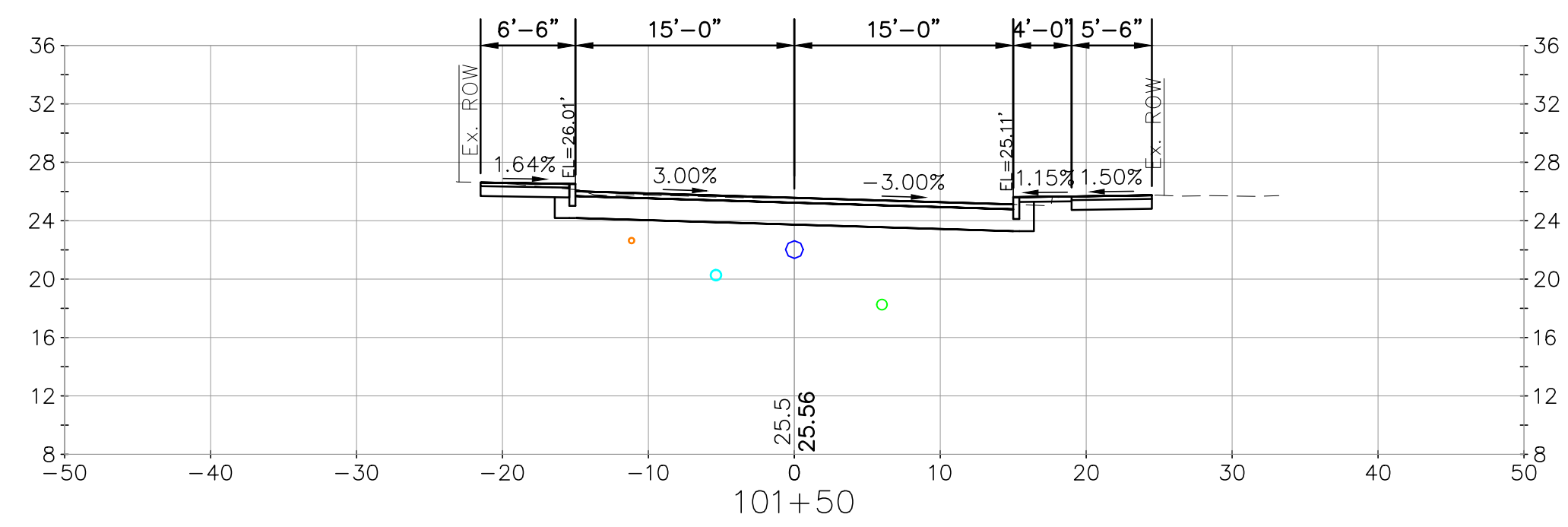
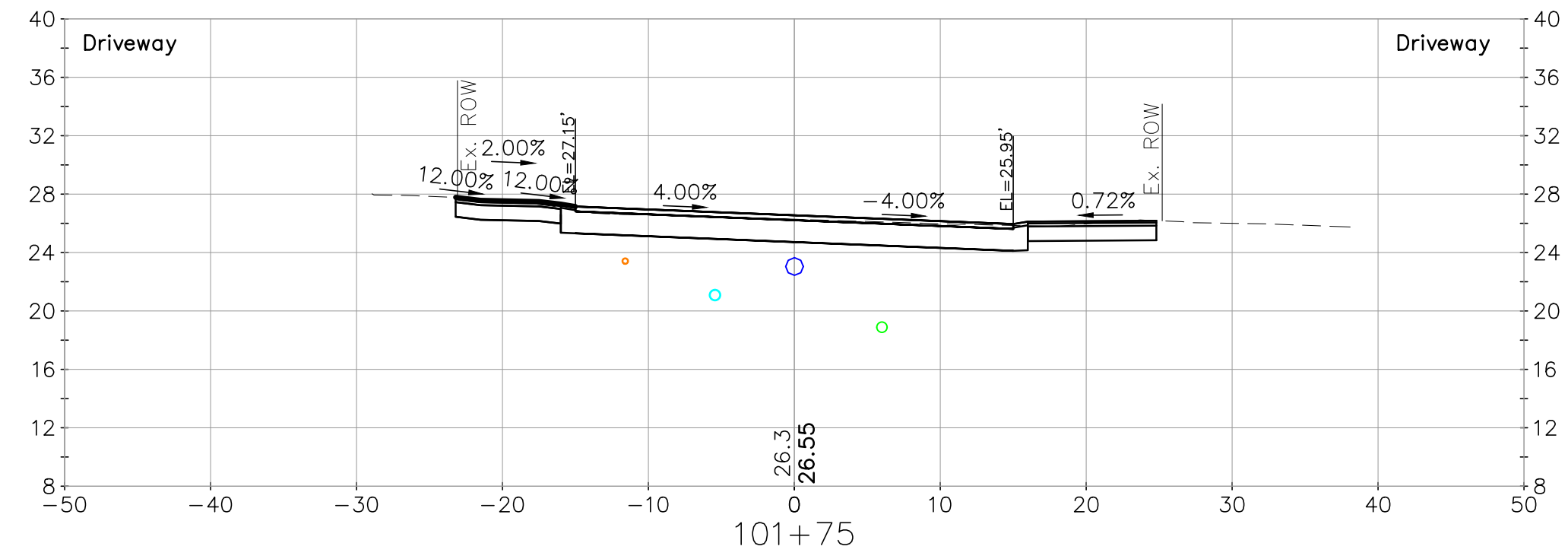
Dewatering Basin (Section)

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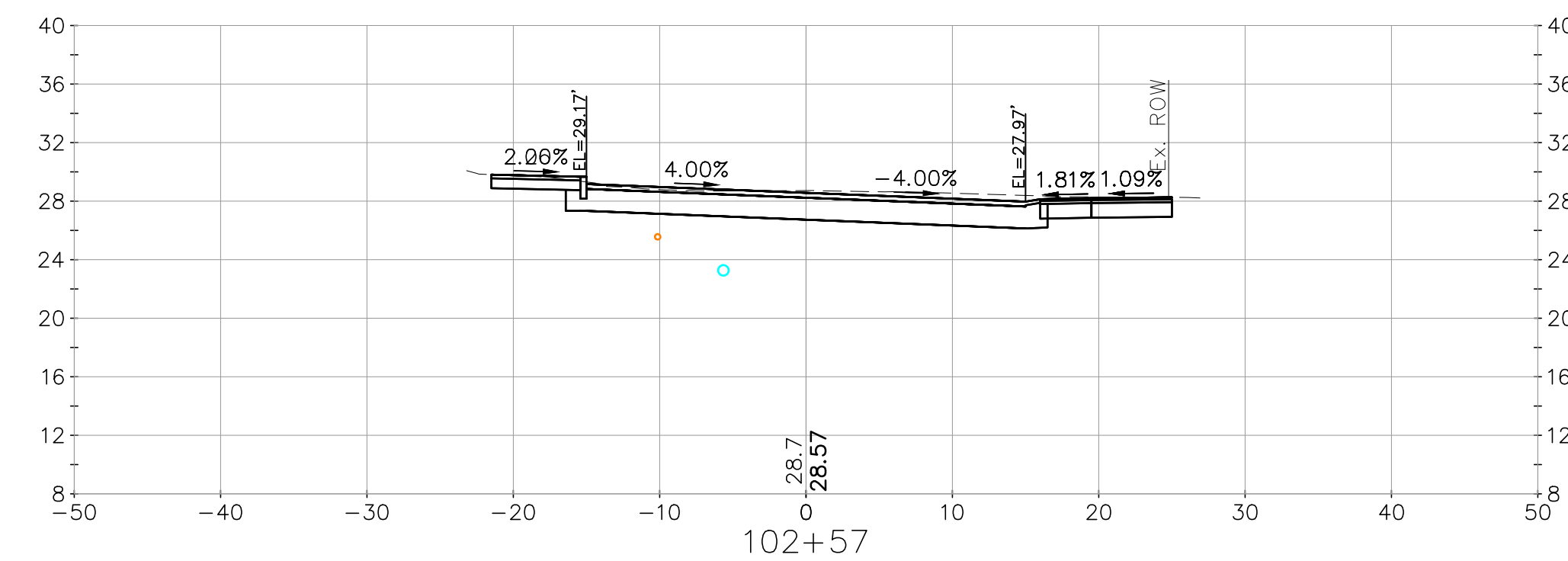
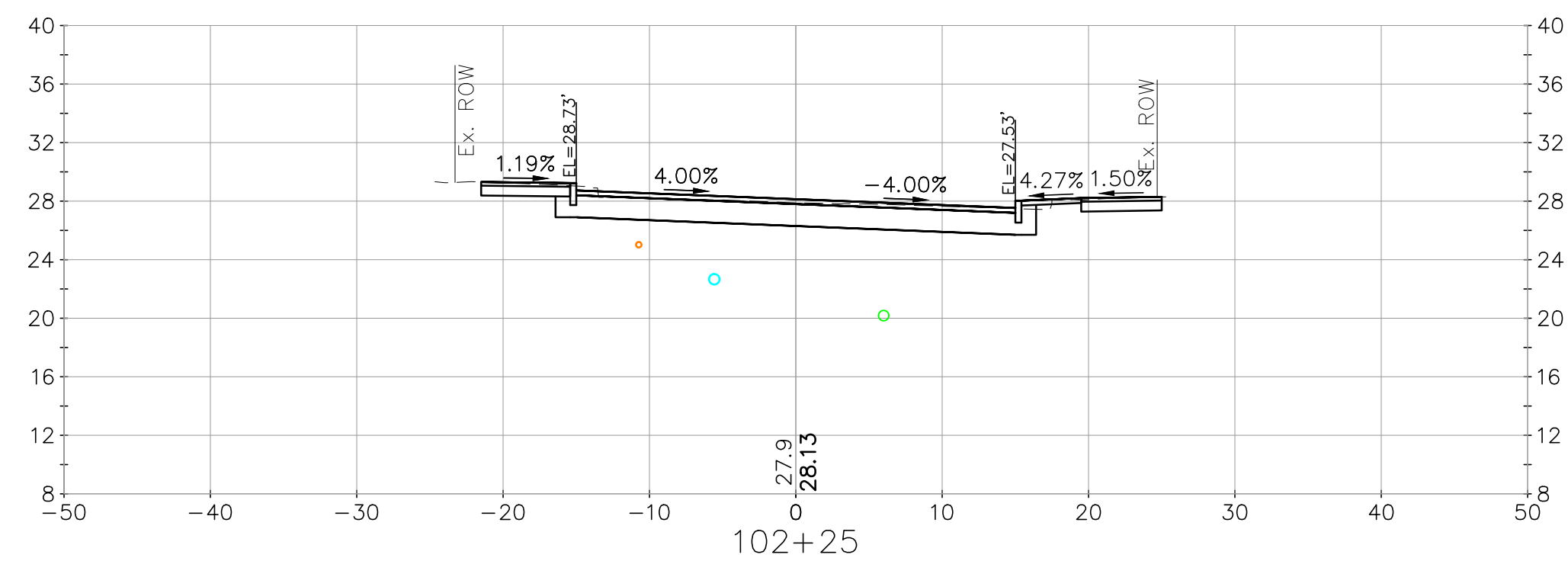
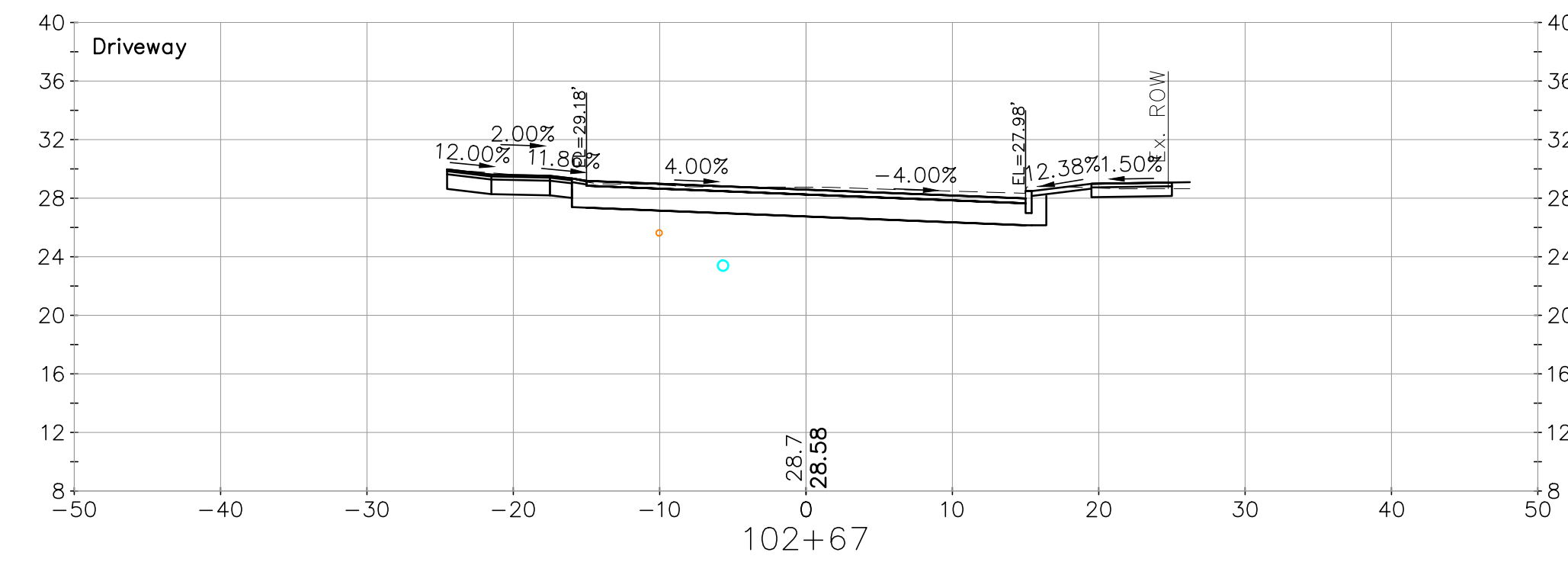
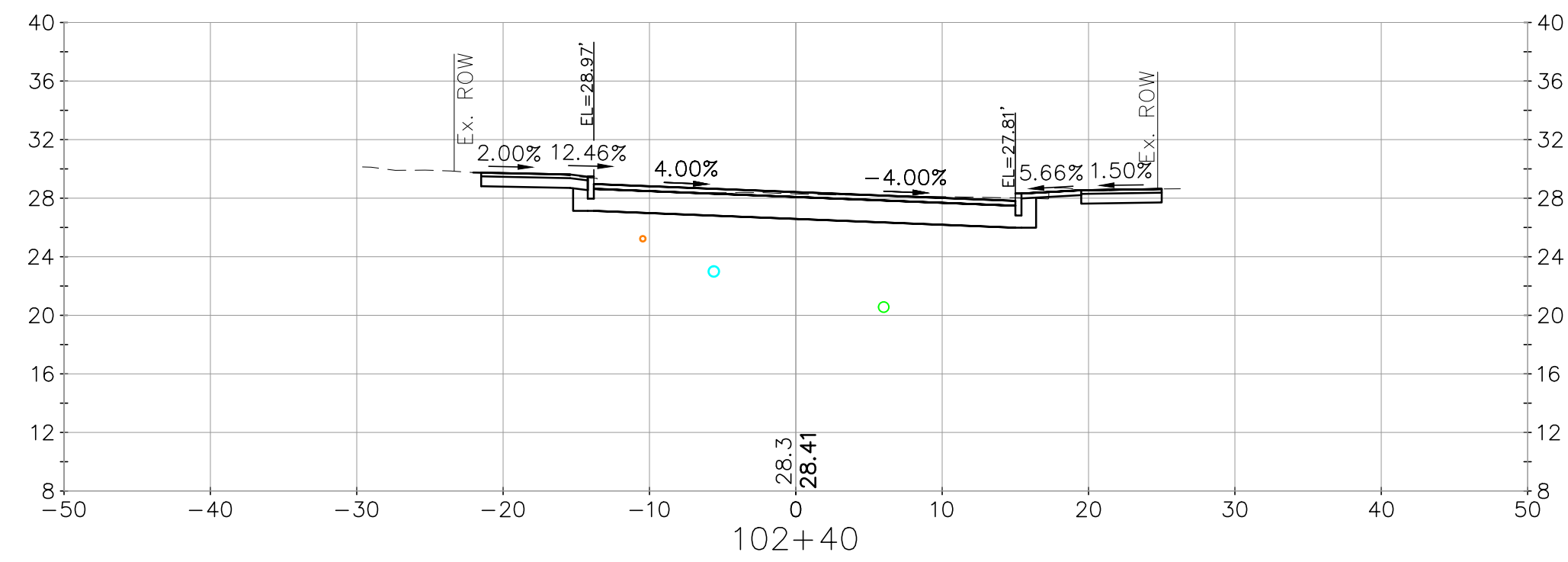
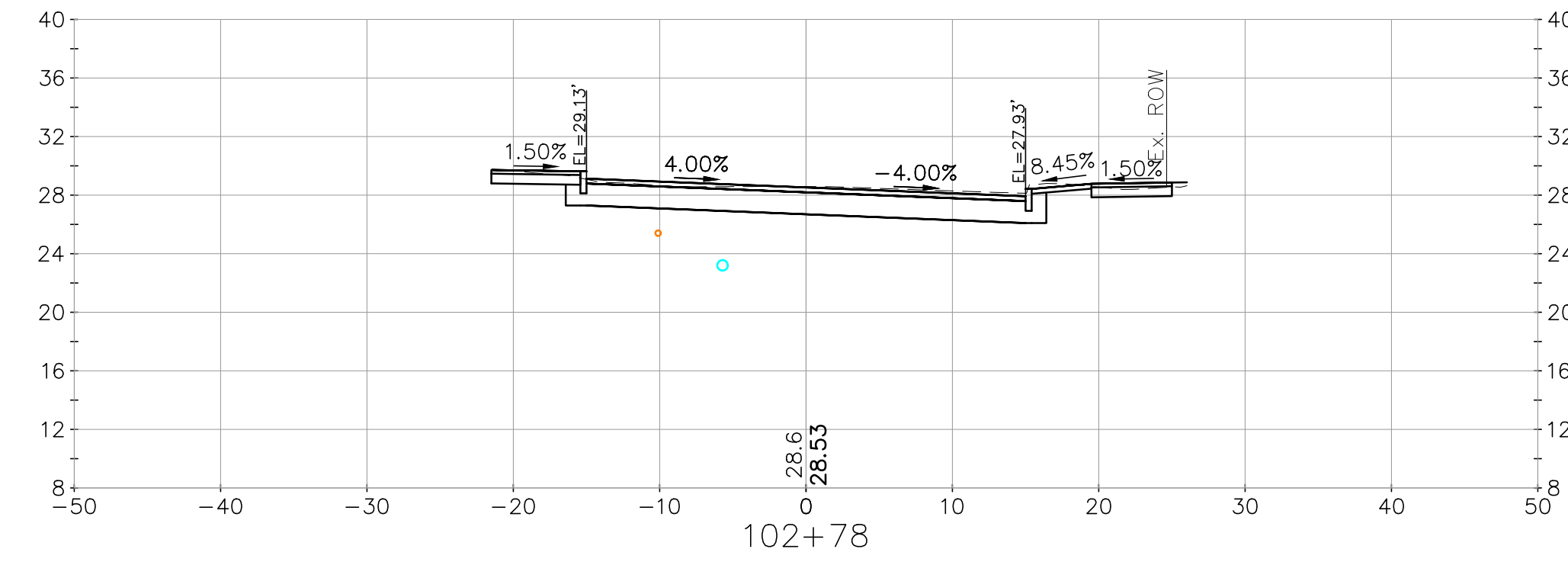
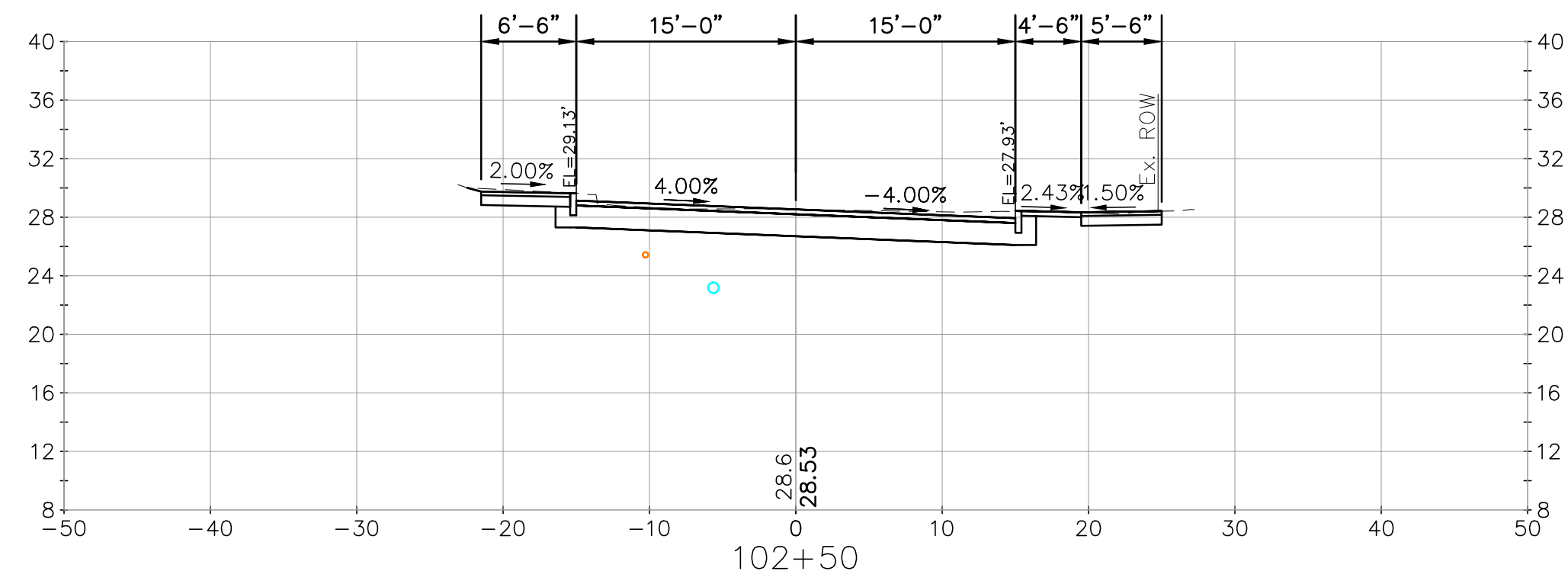
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scale:	1" = 10'	scale:	1" = 10'	scale:	1" = 10'
City of Portsmouth, New Hampshire	Department of Public Works	Union Street Area Improvement Project	Erosion Control Details	drawing no. D-7	sheet: 34 of 54
CMA ENGINEERS	CIVIL/ENVIRONMENTAL/STRUCTURAL	Portsmouth, NH 603/431-6196	Manchester, NH 603/627-0708	Portland, ME 207/651-4223	revision: 1
1/17/2023					date
Issued for Bid					no.
c m a e n g i n e e r s . c o m					by



<p>CIVIL/ENVIRONMENTAL/STRUCTURAL</p> <p>Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/541-4223</p> <p>c m a e n g i n e e r s . c o m</p>		no. 1 revision date 1/17/2023 by PAC
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City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Cross Sections Union Street		drawing no: XS-1
sheet: 35 of 54		

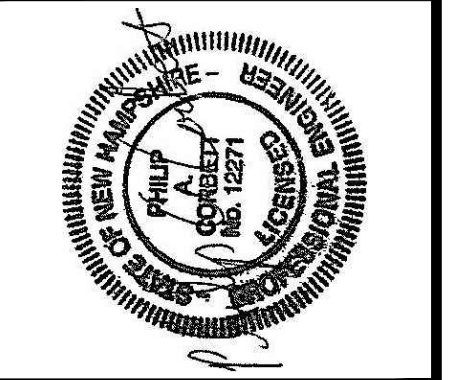


CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/641-4223 c m a e n g i n e e r s . c o m		1 Issued for Bid 1/17/2023 PAC by
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City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Cross Sections Union Street		
sheet: 36 of 54		date



1	Issued for Bid	1/17/2023	PAC
no.	revision	date	by

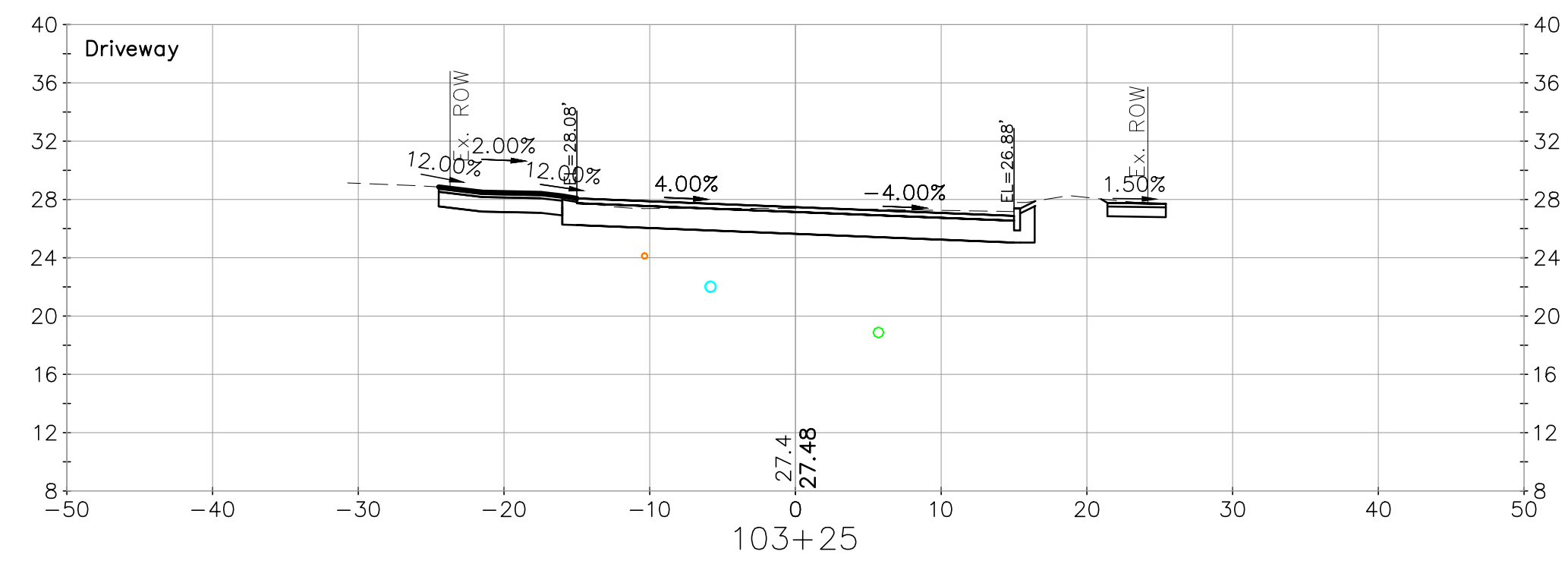
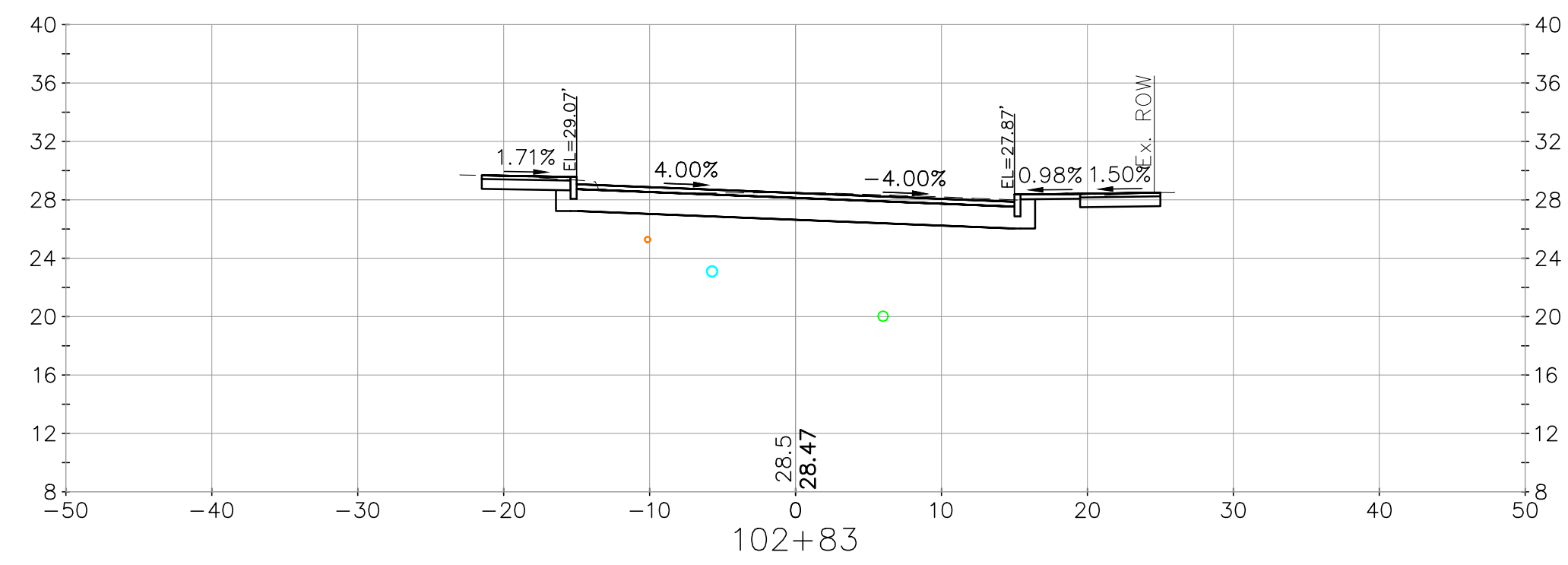
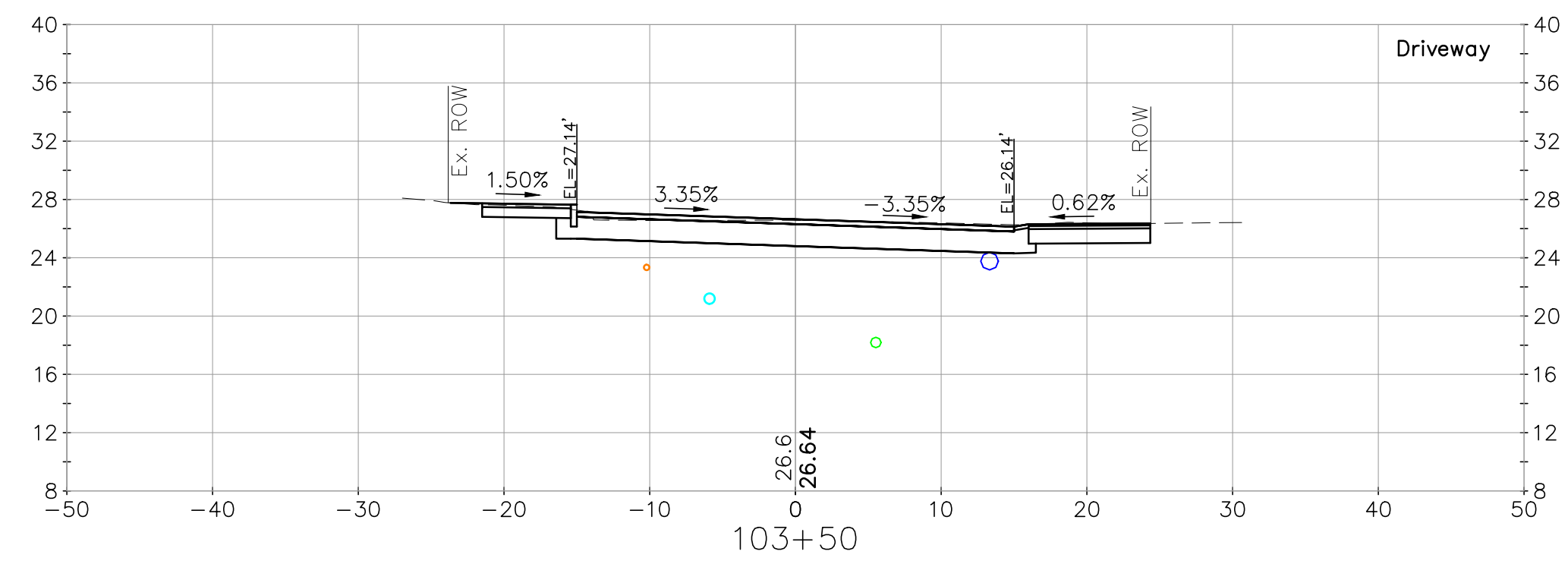
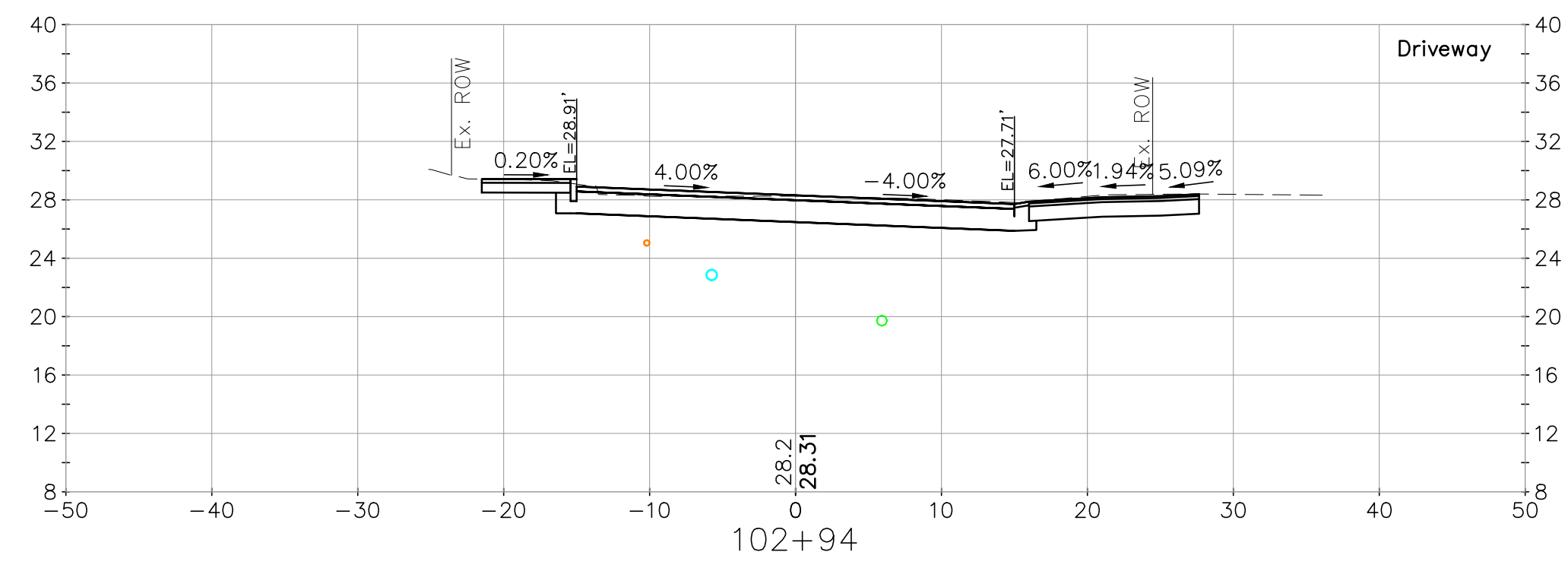
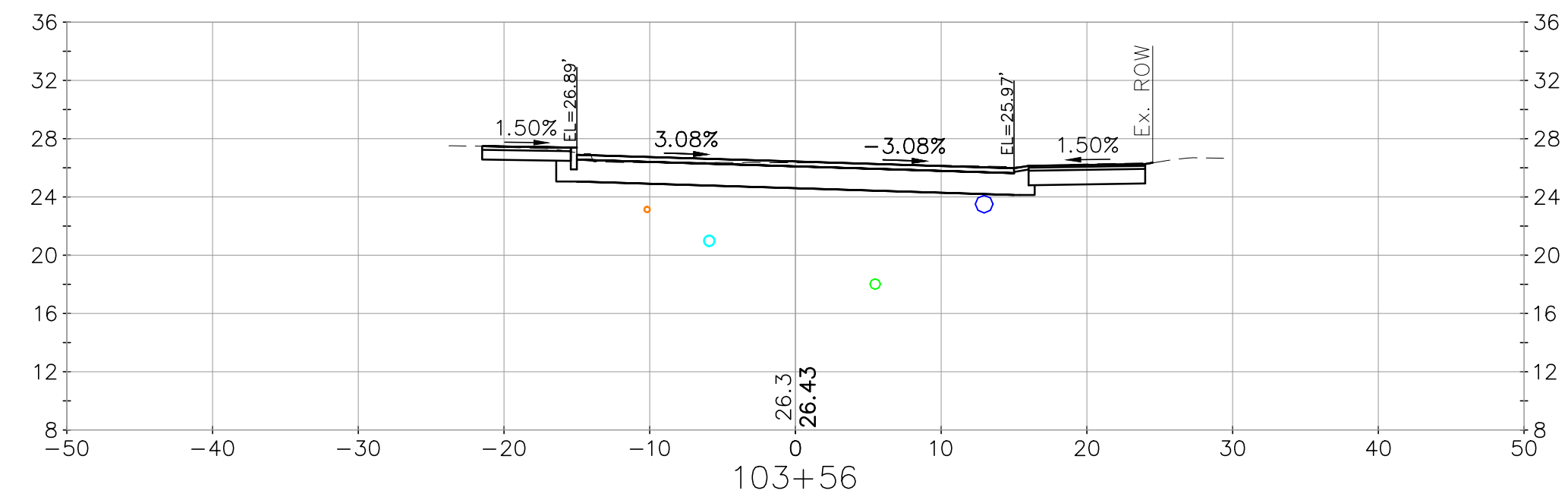
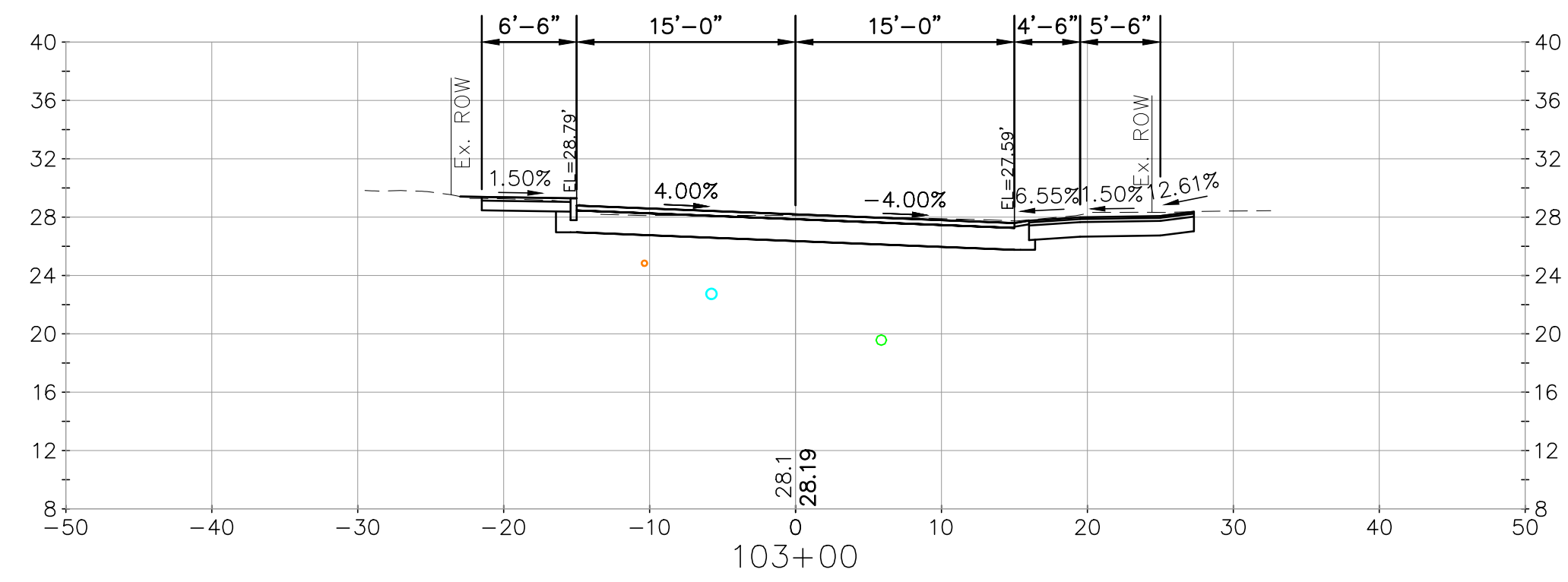
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date:	January 2023	designed by:	STFWAB
project no.:	1211	drawn by:	WWG
checked by:	PAC	approved by:	PAC

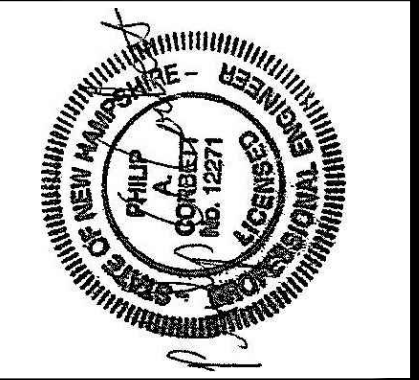
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City of Portsmouth, New Hampshire
 Department of Public Works
 Union Street Area
 Improvement Project
 Cross Sections
 Union Street



no.	1	Issued for Bid	1/17/2023	PAC
revision			date	by

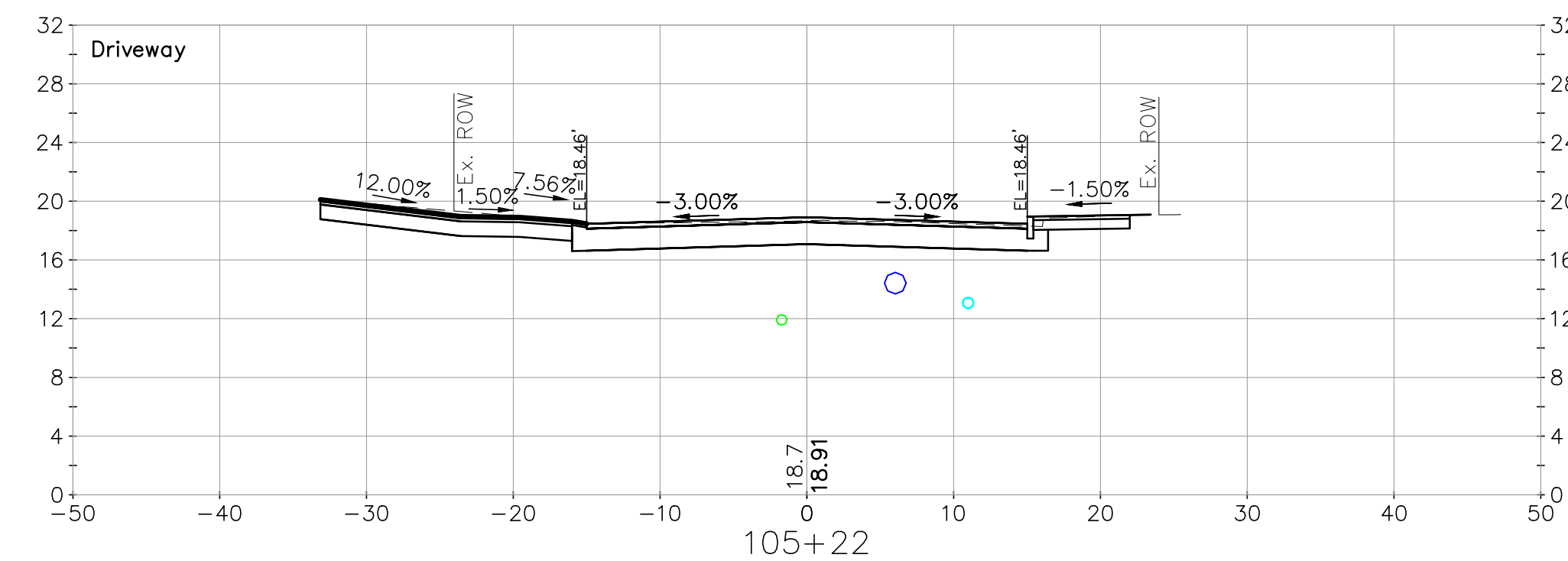
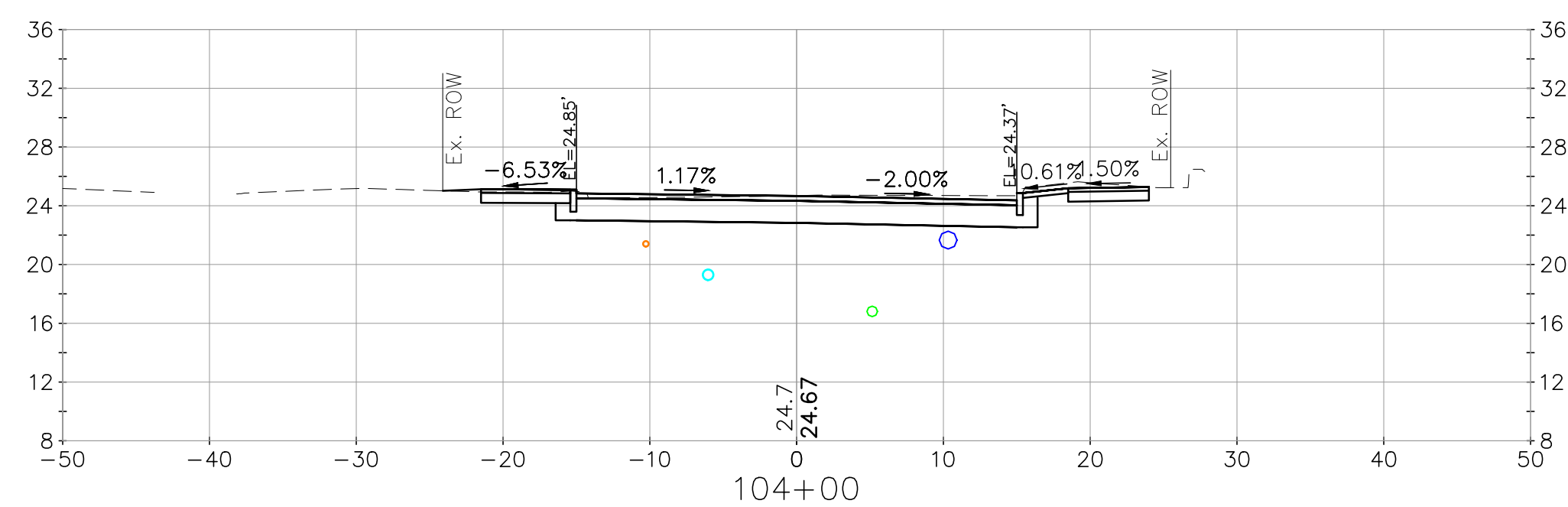
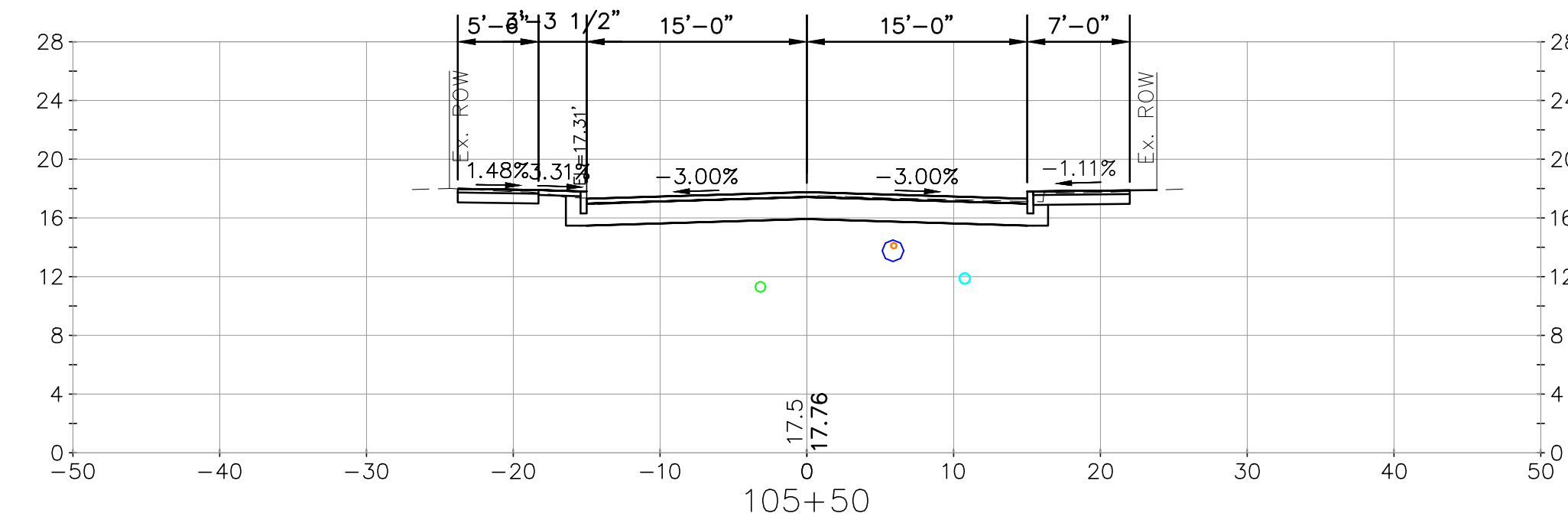
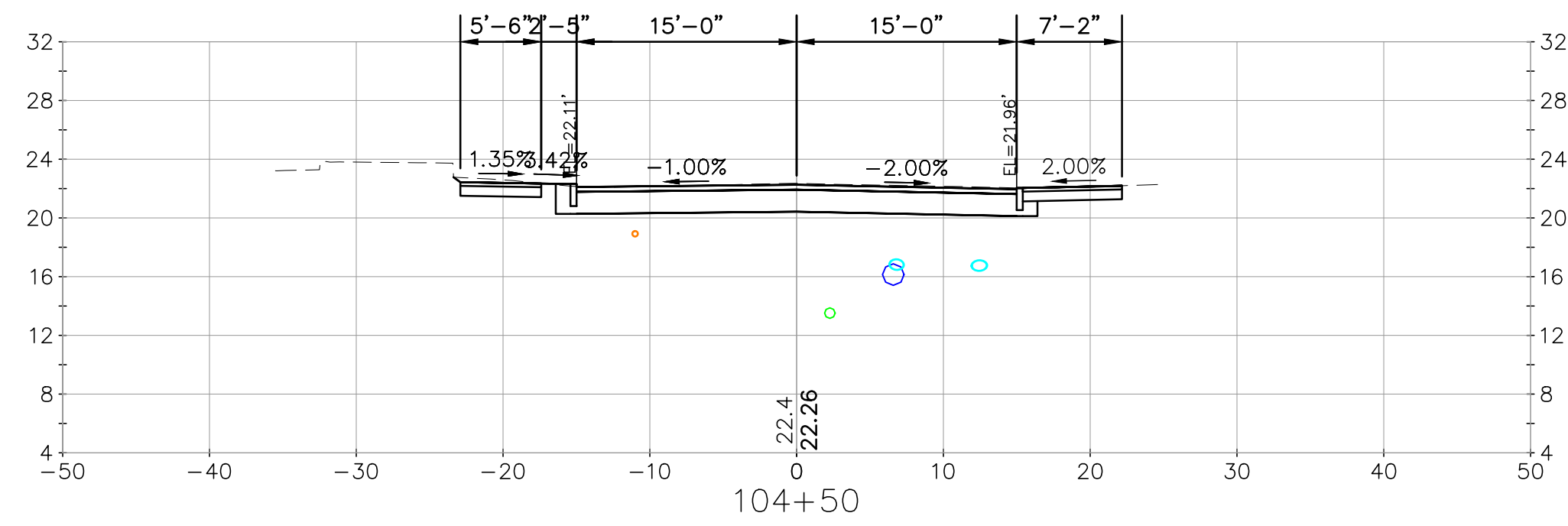
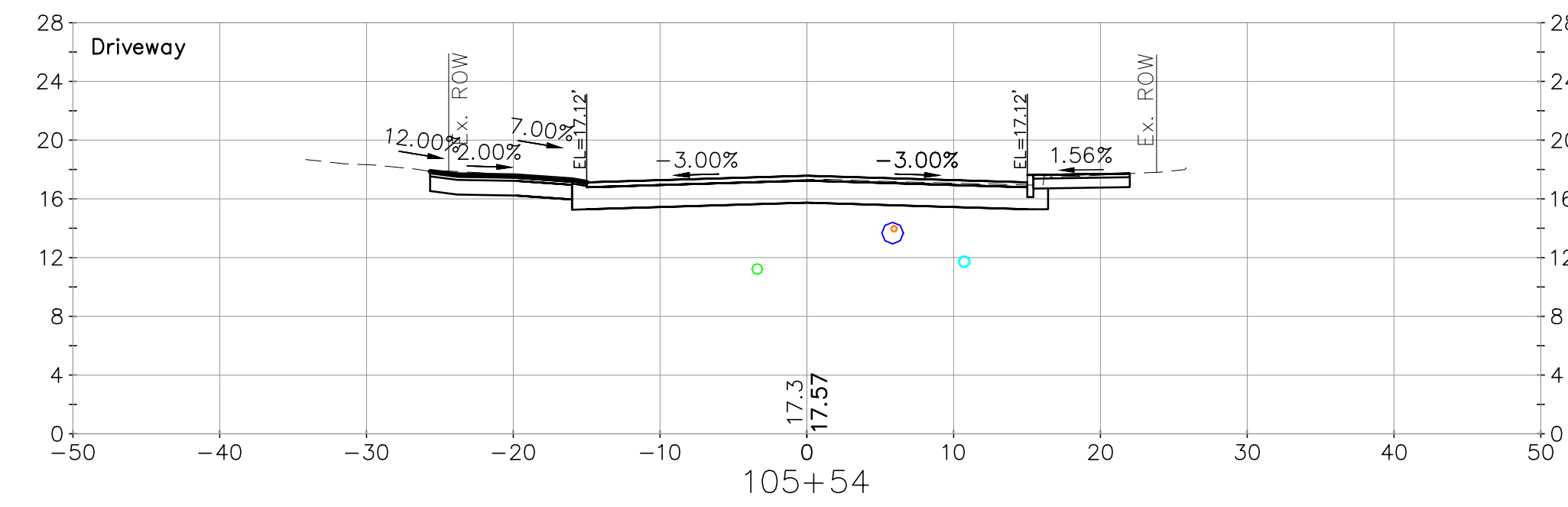
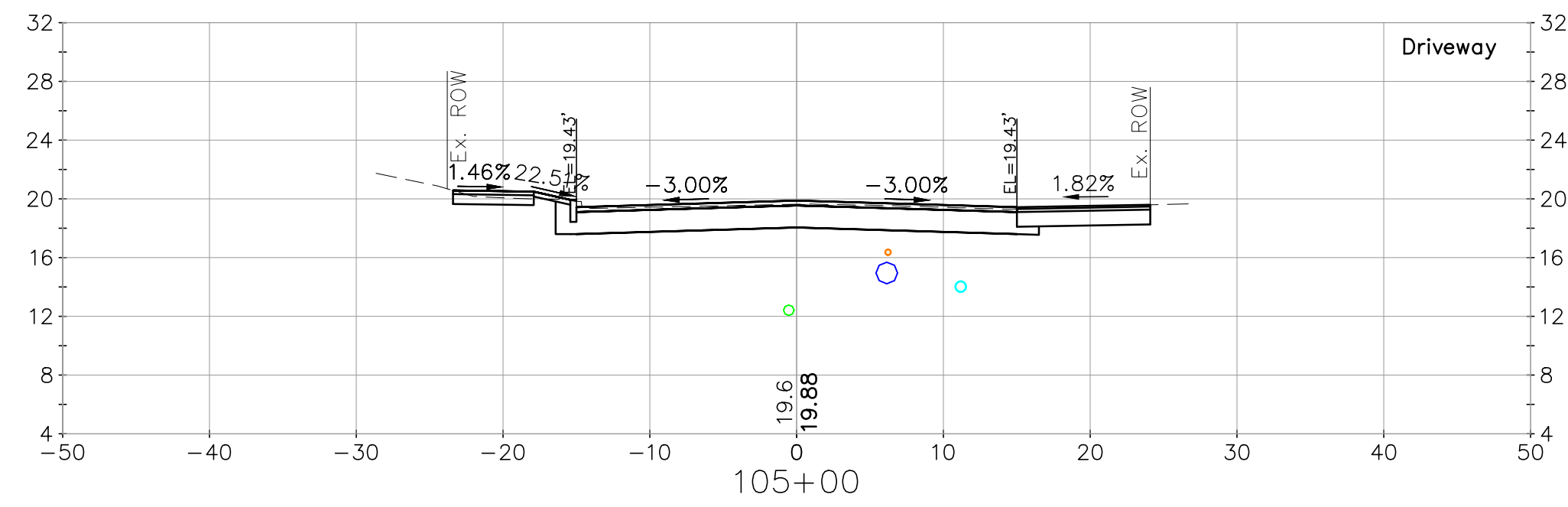
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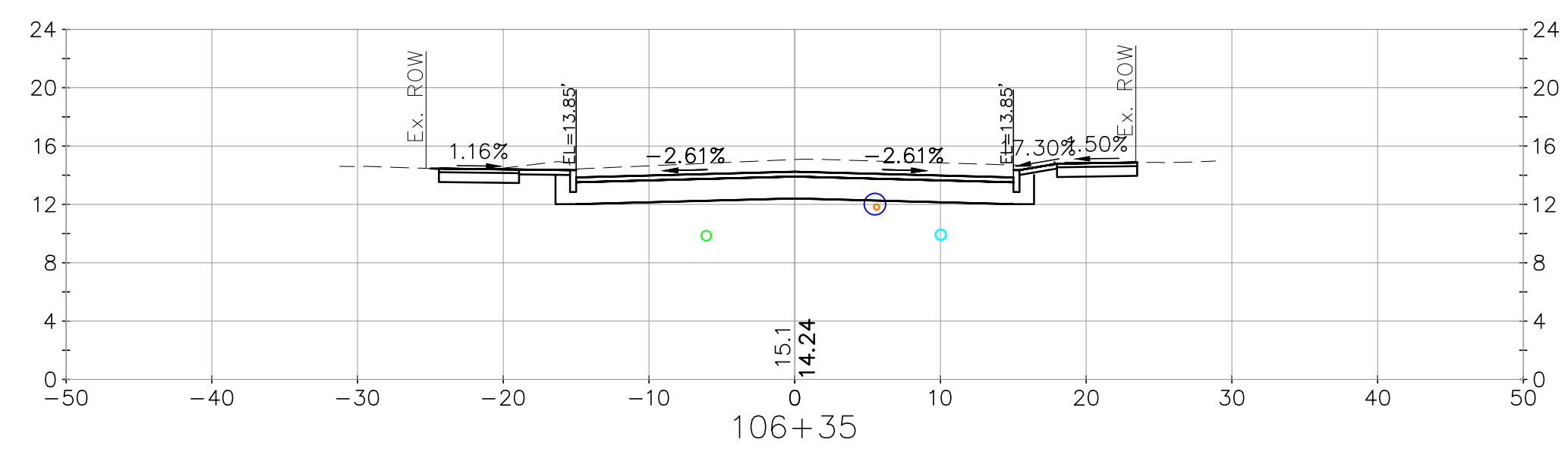
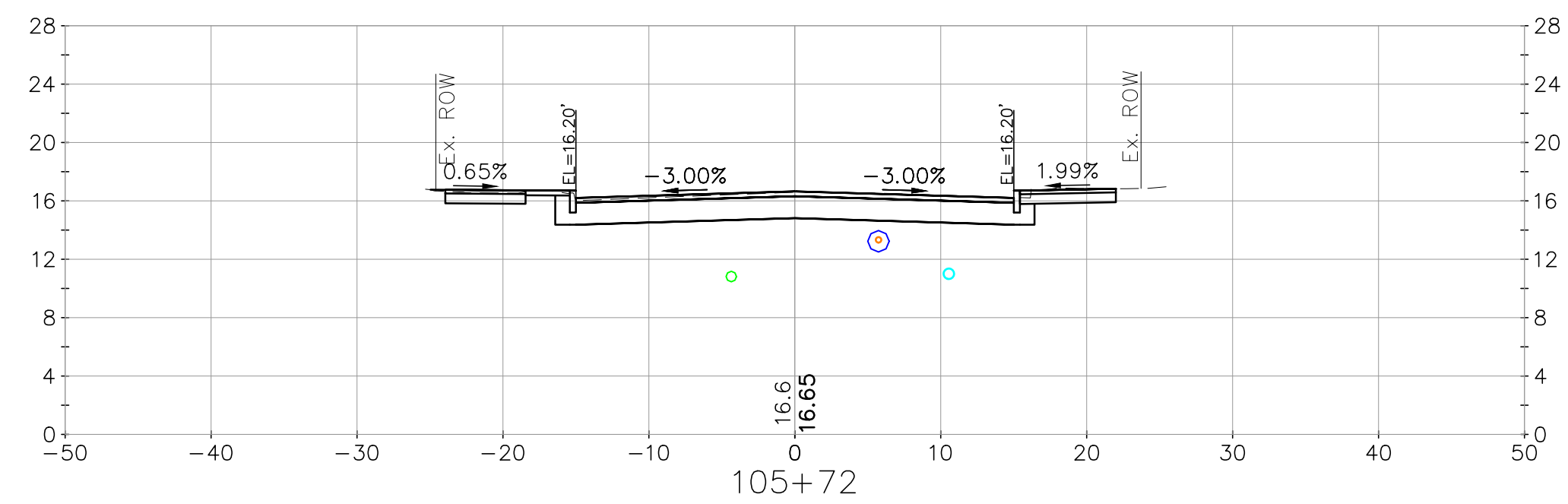
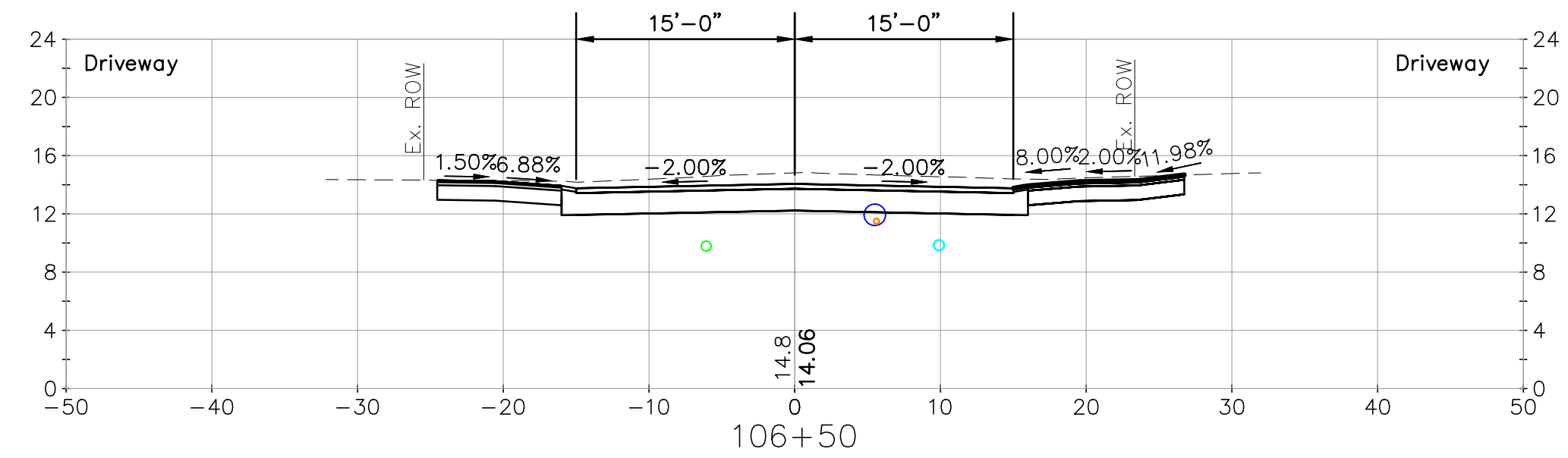
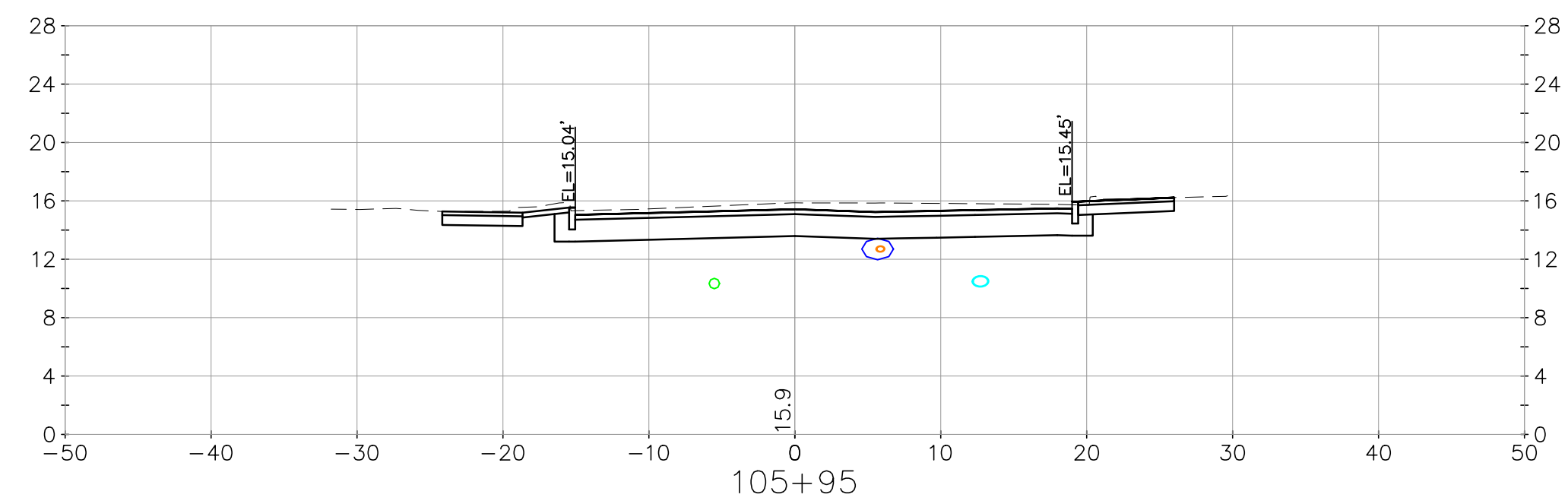
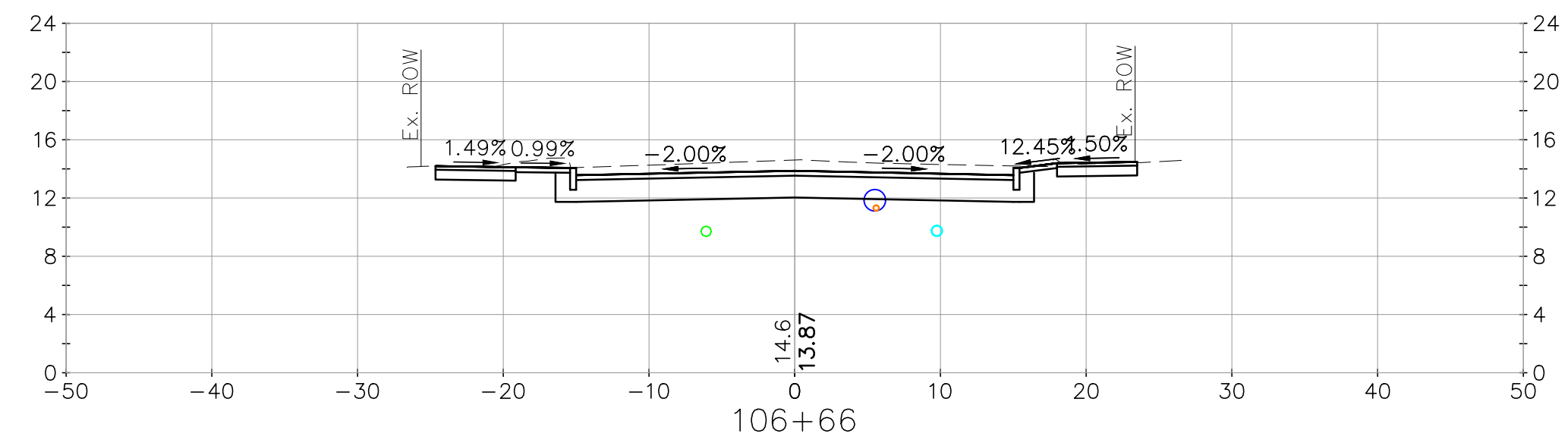
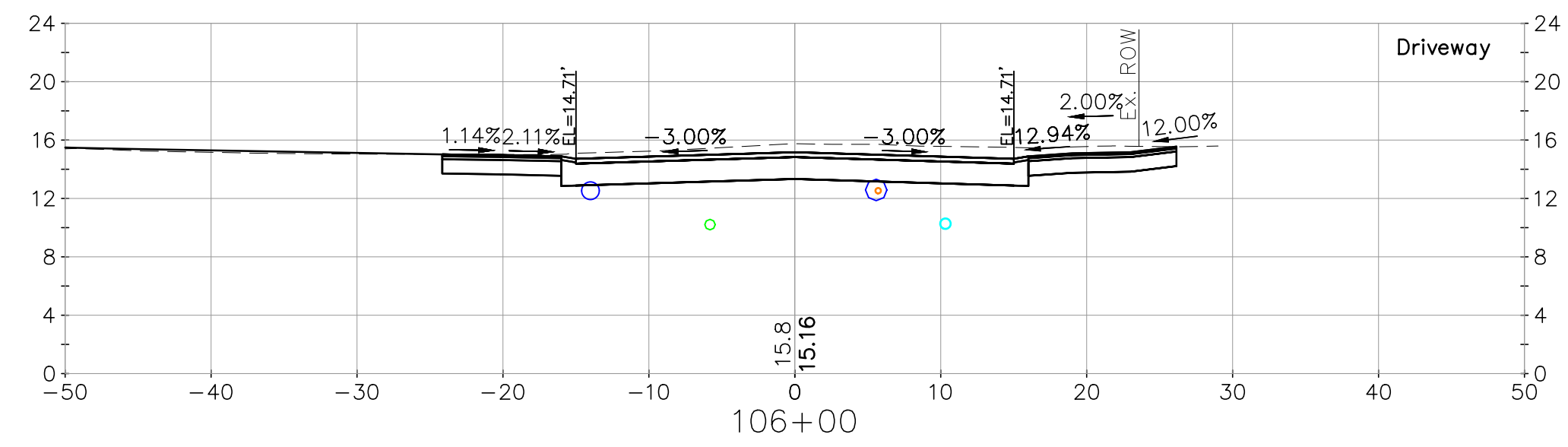
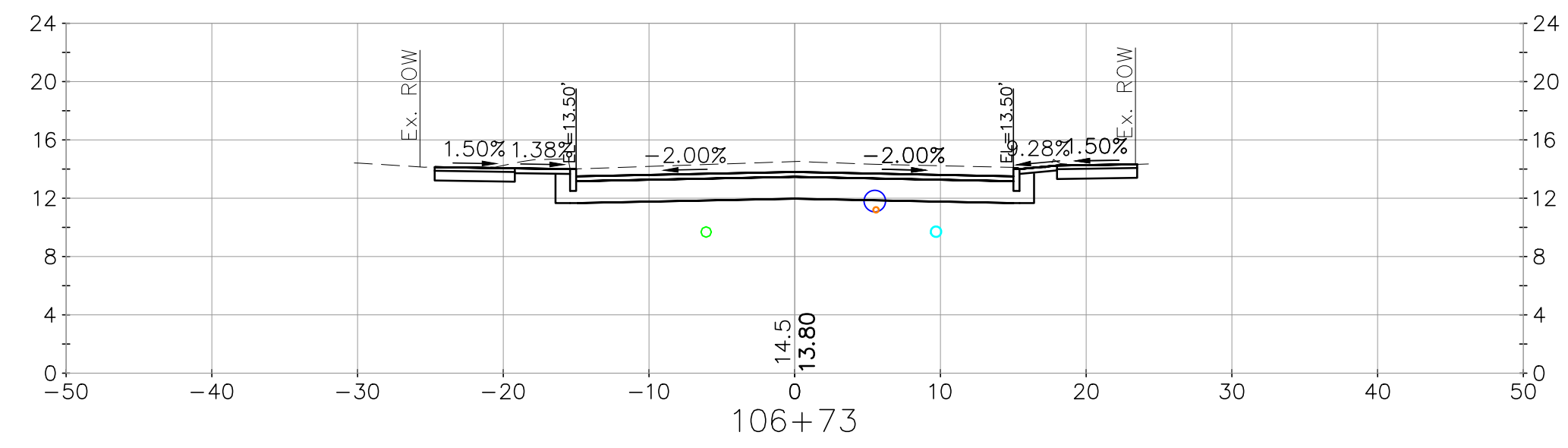
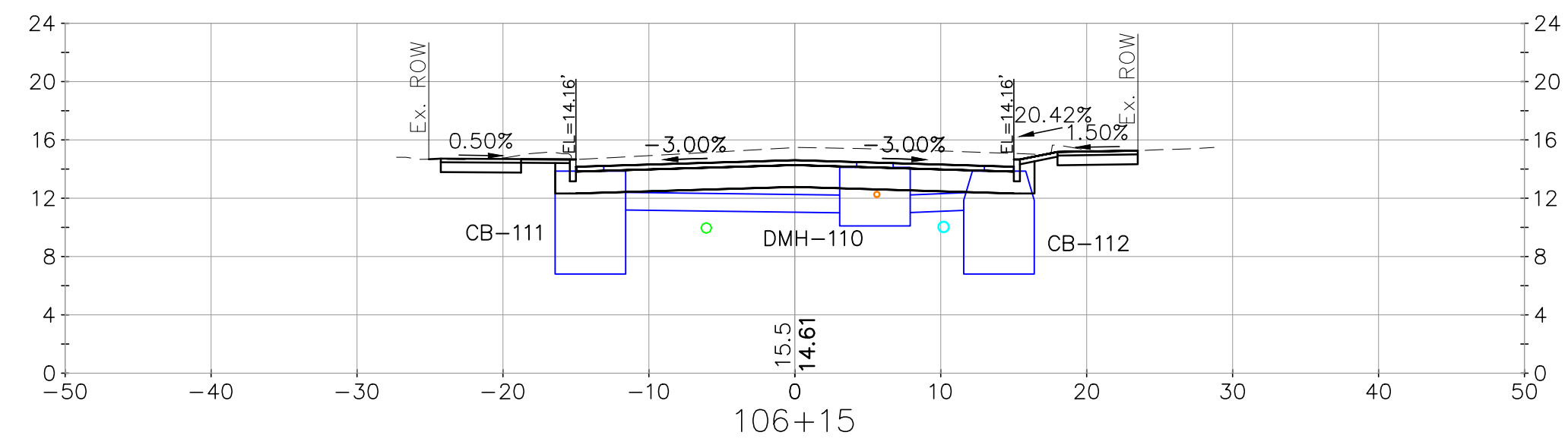
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project no:	1211	drawn by:	WVG
checked by:	PAC	approved by:	PAC


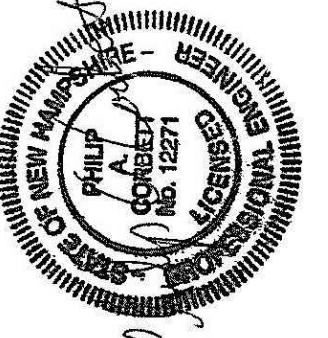
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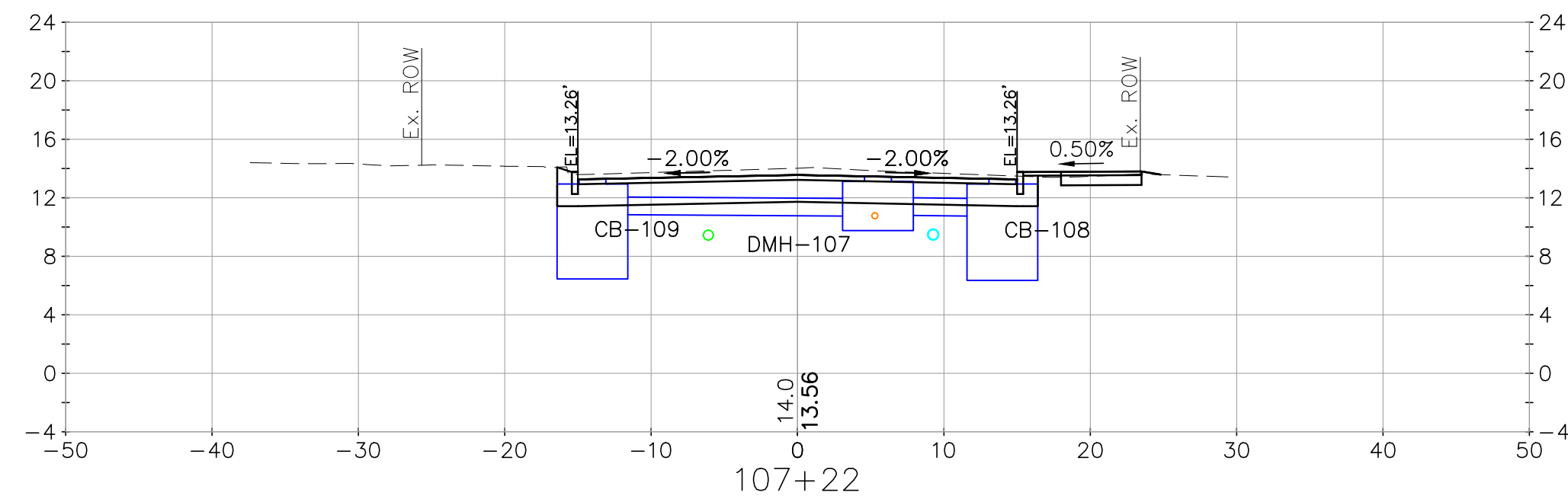
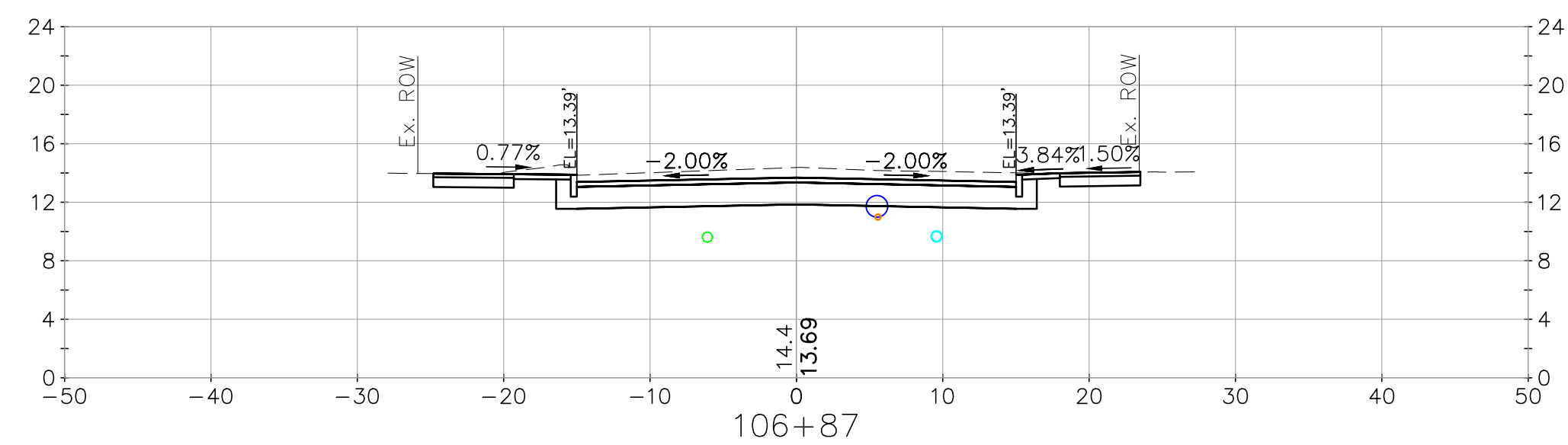
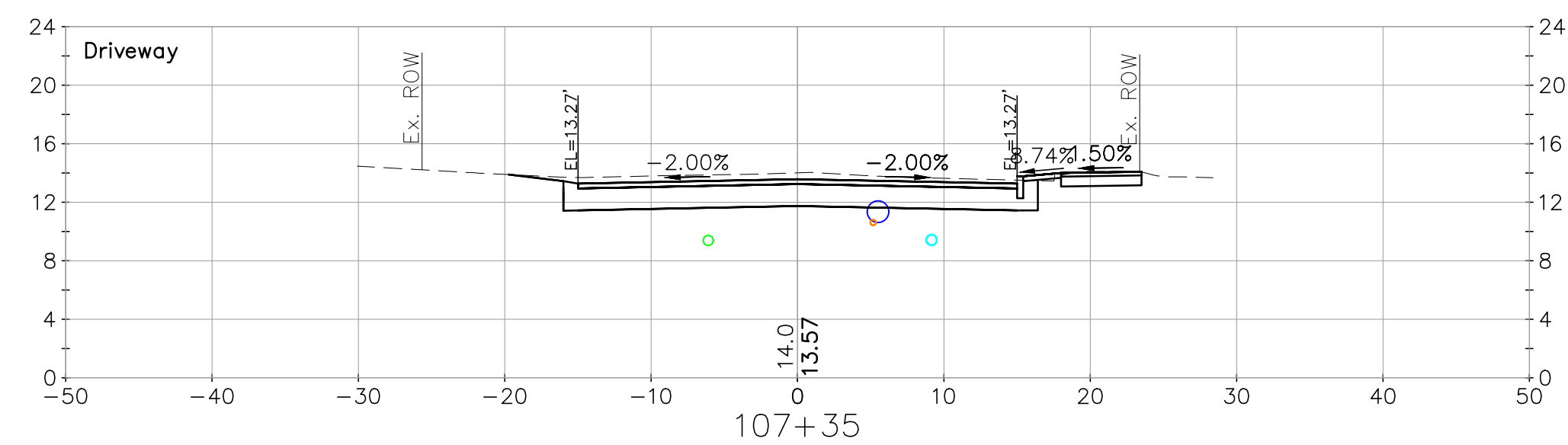
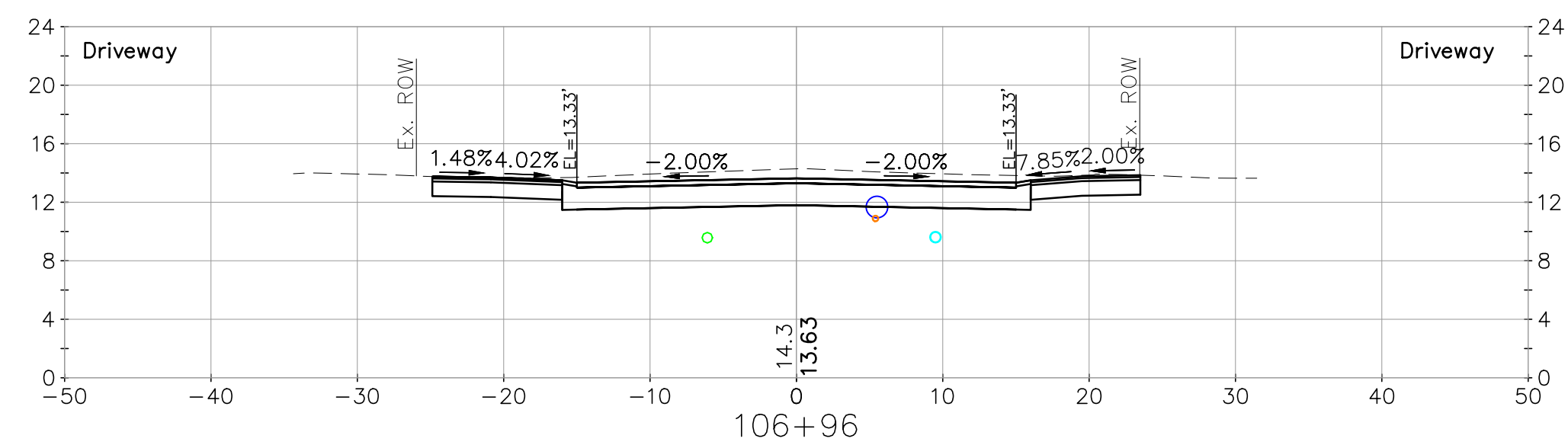
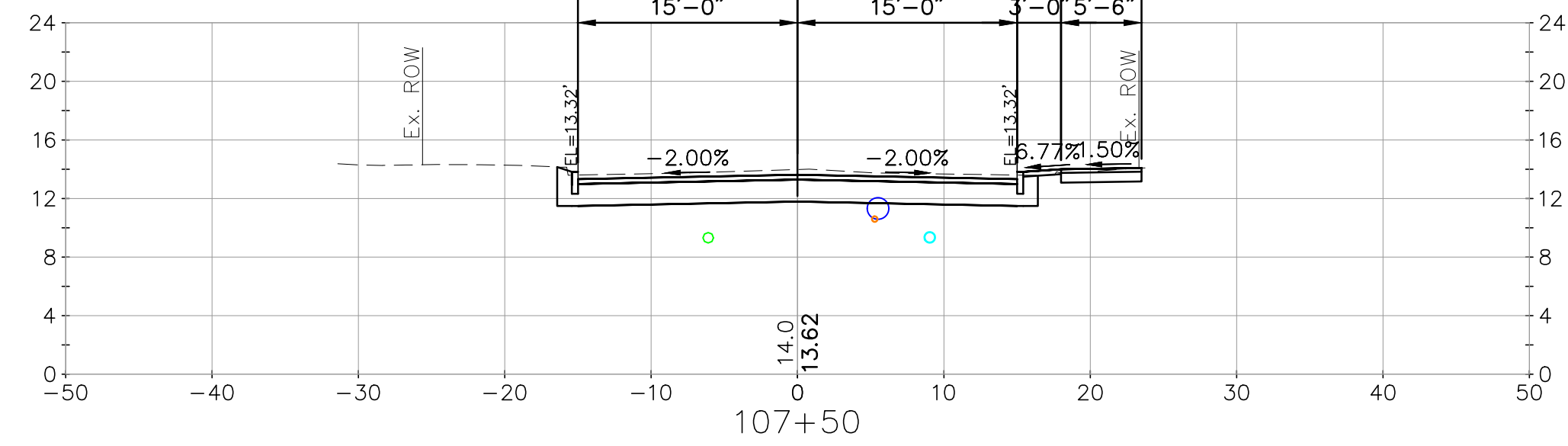
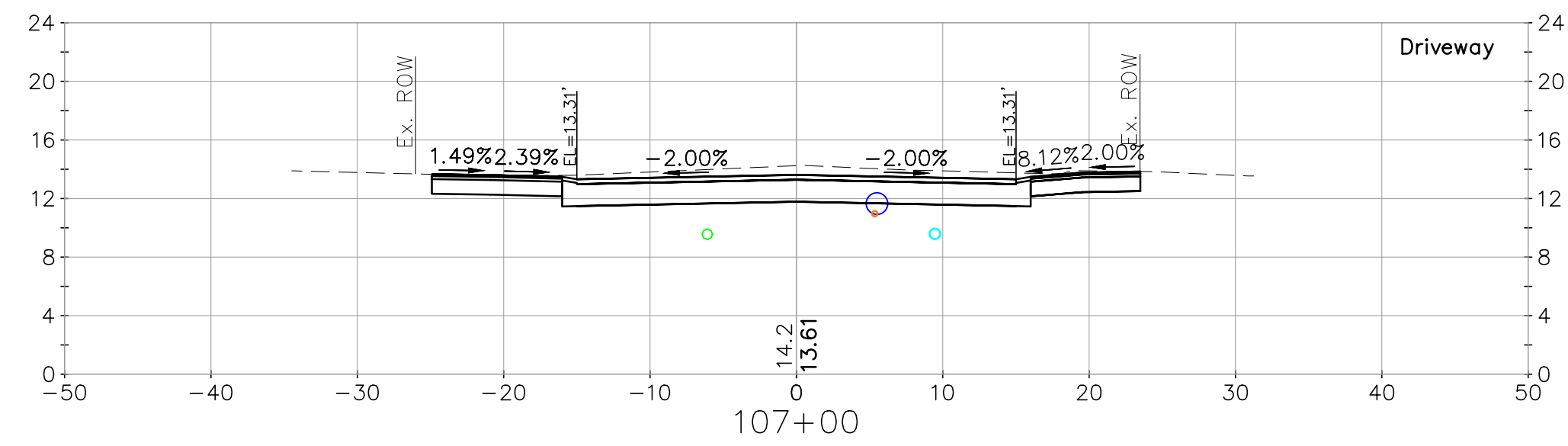
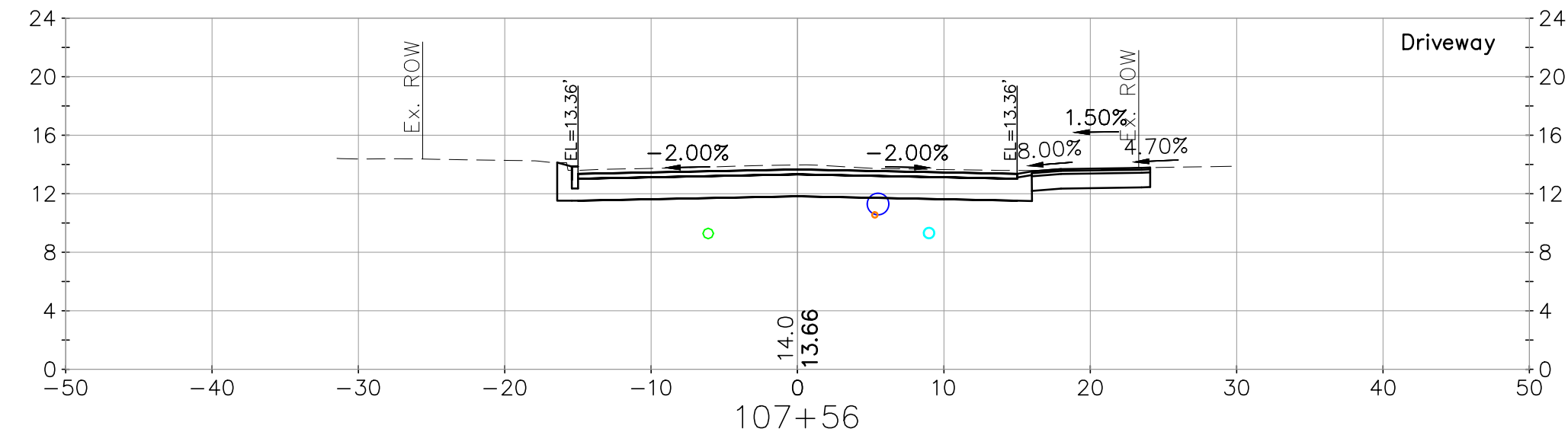
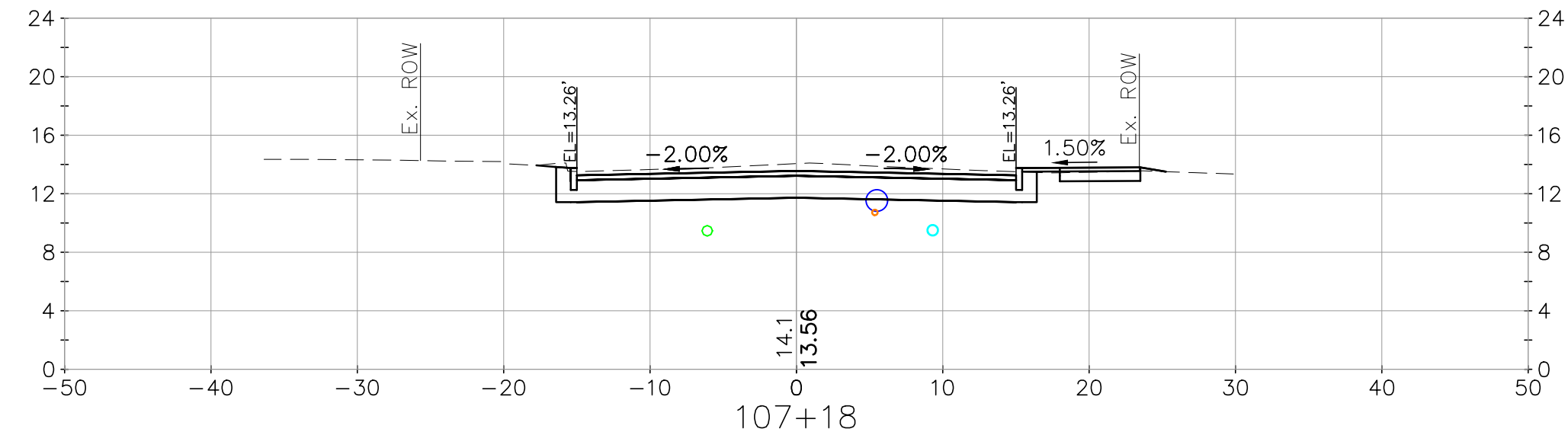
City of Portsmouth, New Hampshire
 Department of Public Works
 Union Street Area
 Improvement Project
 Cross Sections
 Union Street



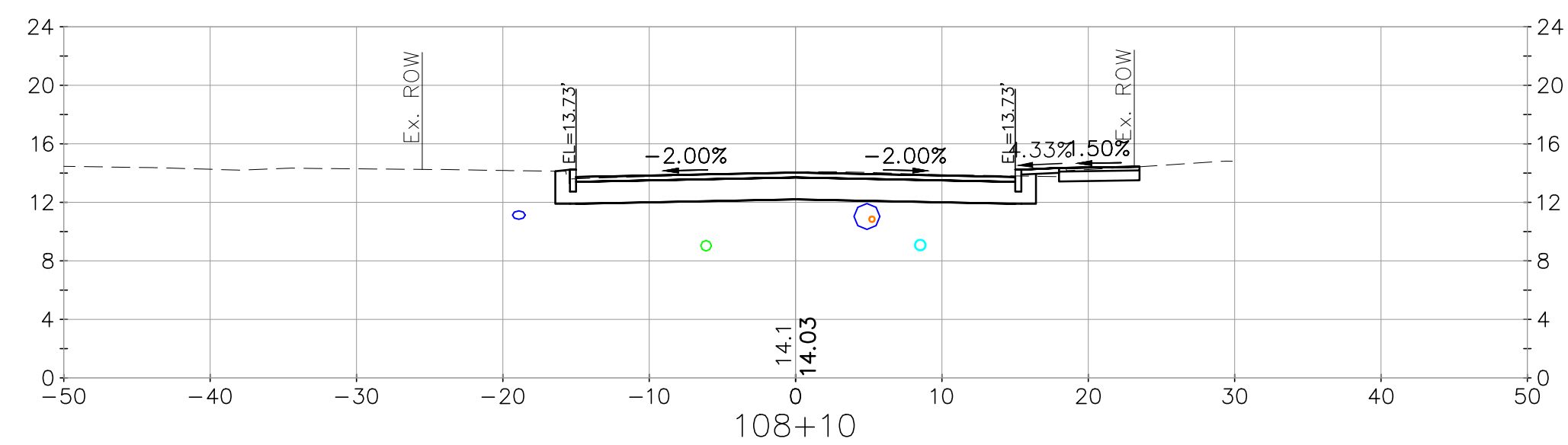
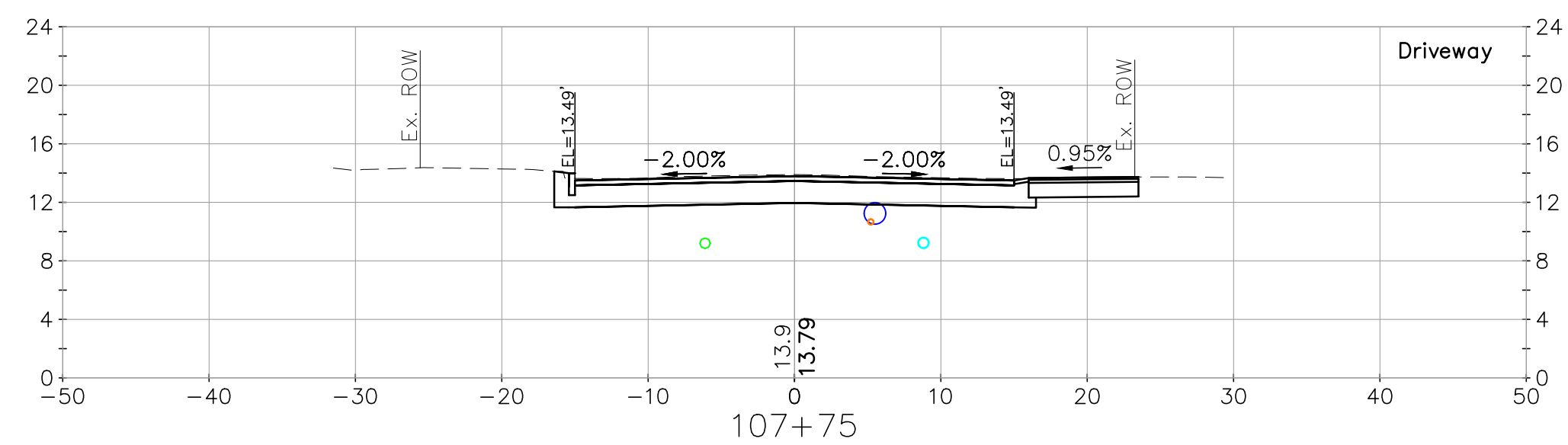
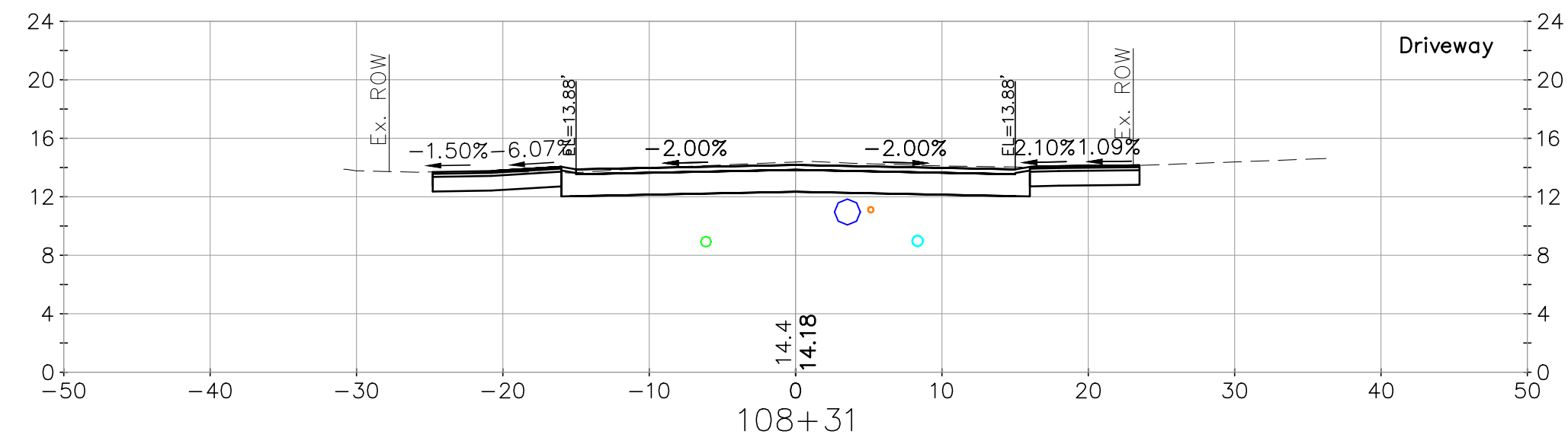
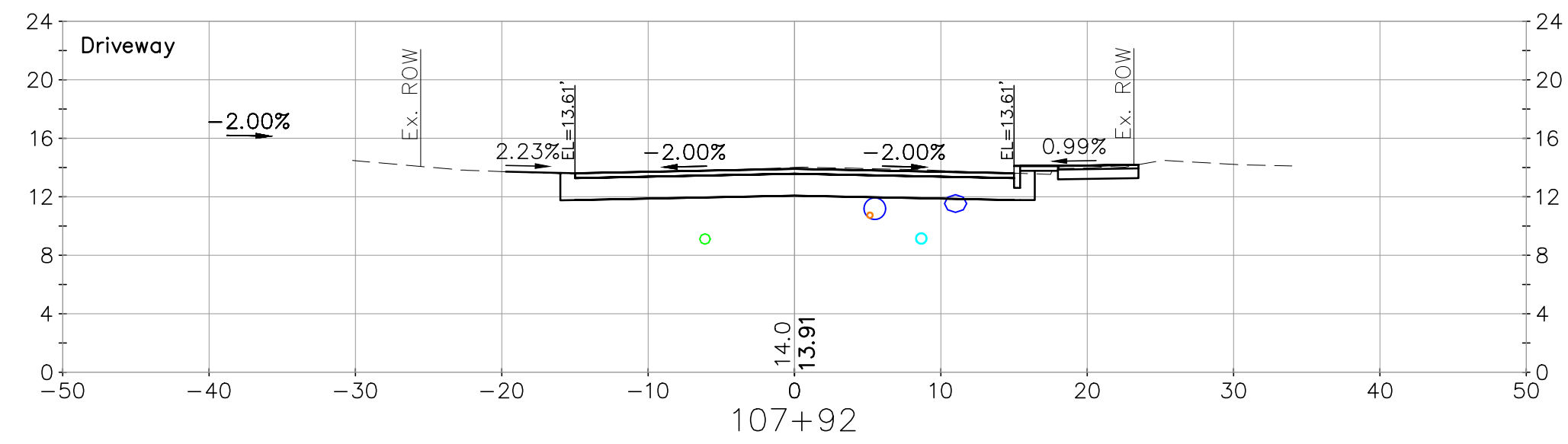
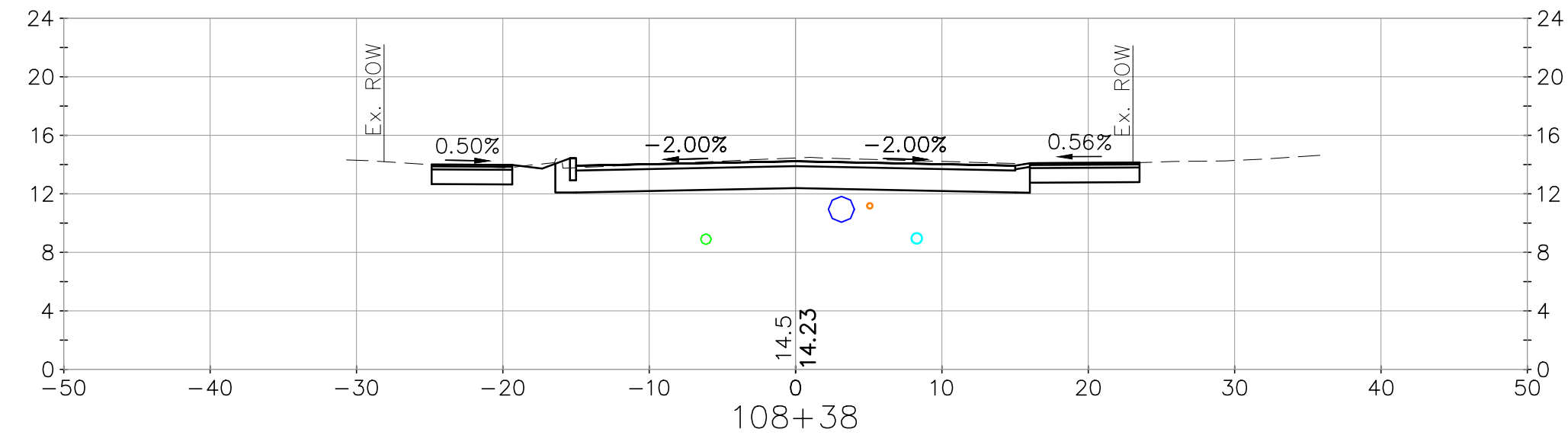
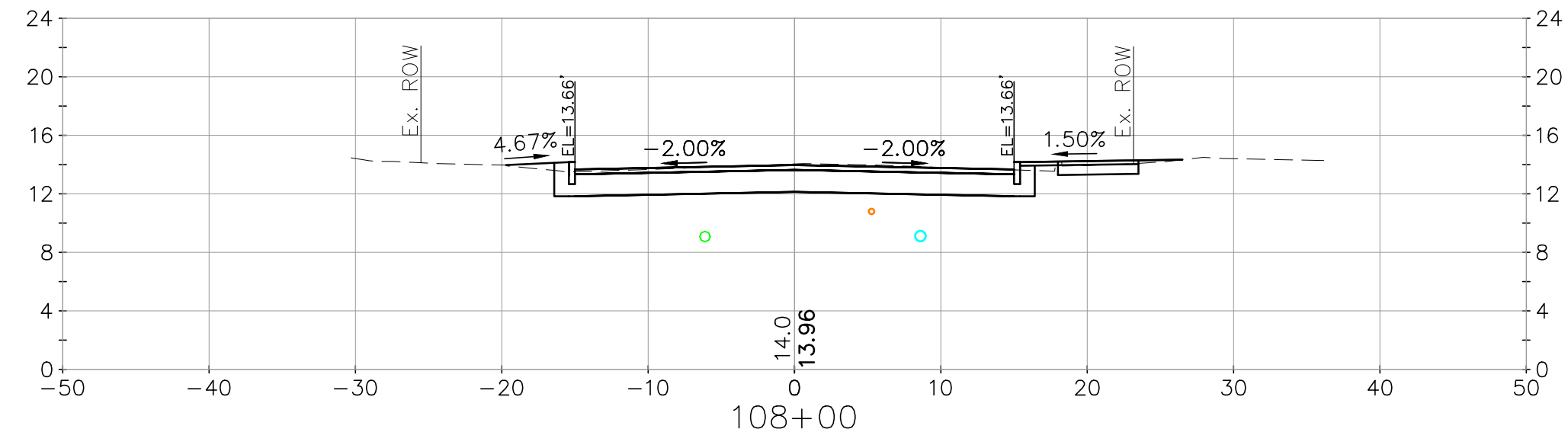
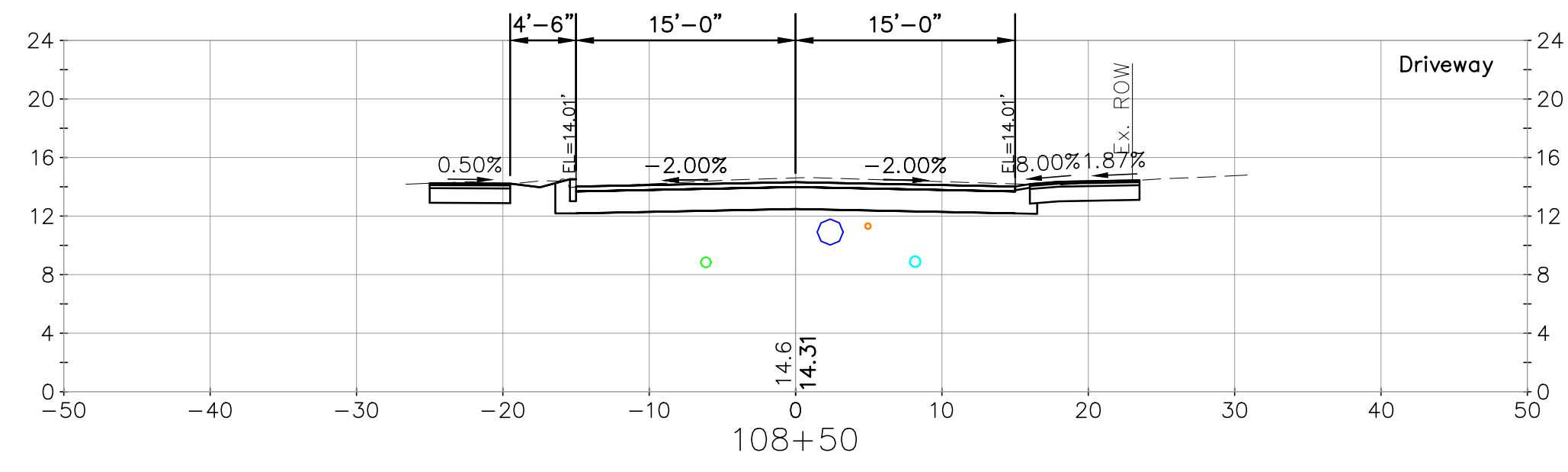
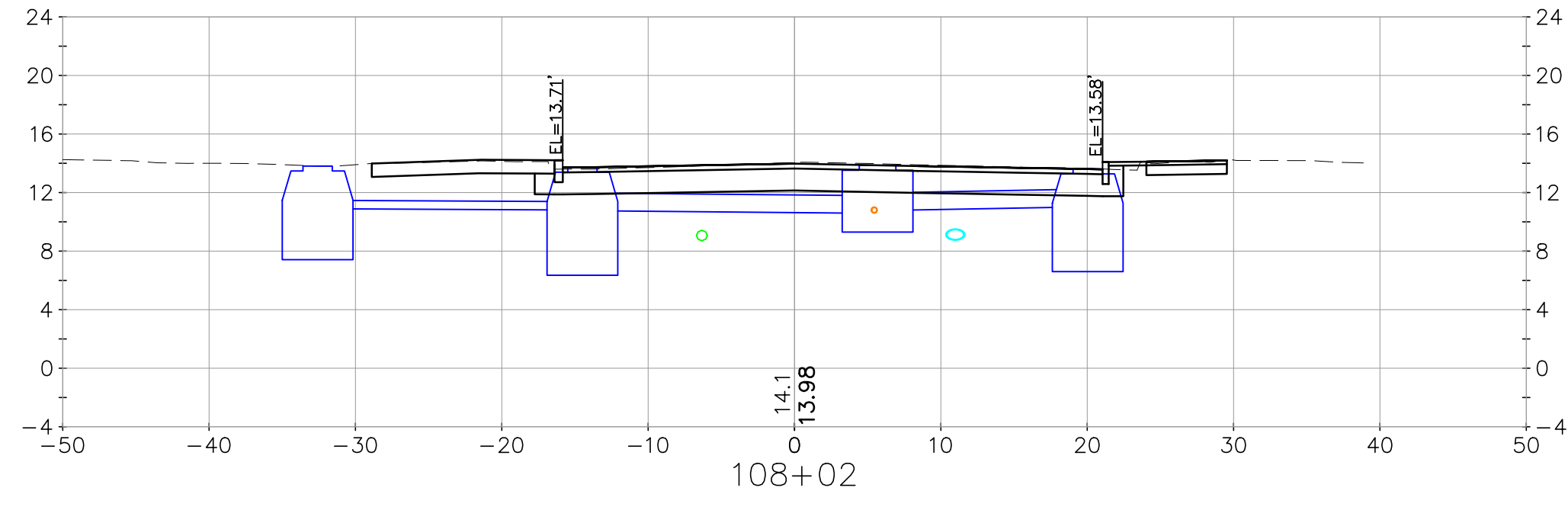
<p>CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/641-4223 c m a e n g i n e e r s . c o m</p>		<p>1 Issued for Bid 1/17/2023 PAC</p>
<p>designed by: STFWAB</p>	<p>drawn by: WWG</p>	<p>approved by: PAC</p>
<p>date: January 2023</p>	<p>project no: 1211</p>	<p>checked by: PAC</p>
<p>Scale: 1" = 10'</p>		<p>Scale: 20'</p>
<p>City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Cross Sections Union Street</p>		
<p>drawing no. XS-5</p>		
<p>sheet: 39 of 54</p>		




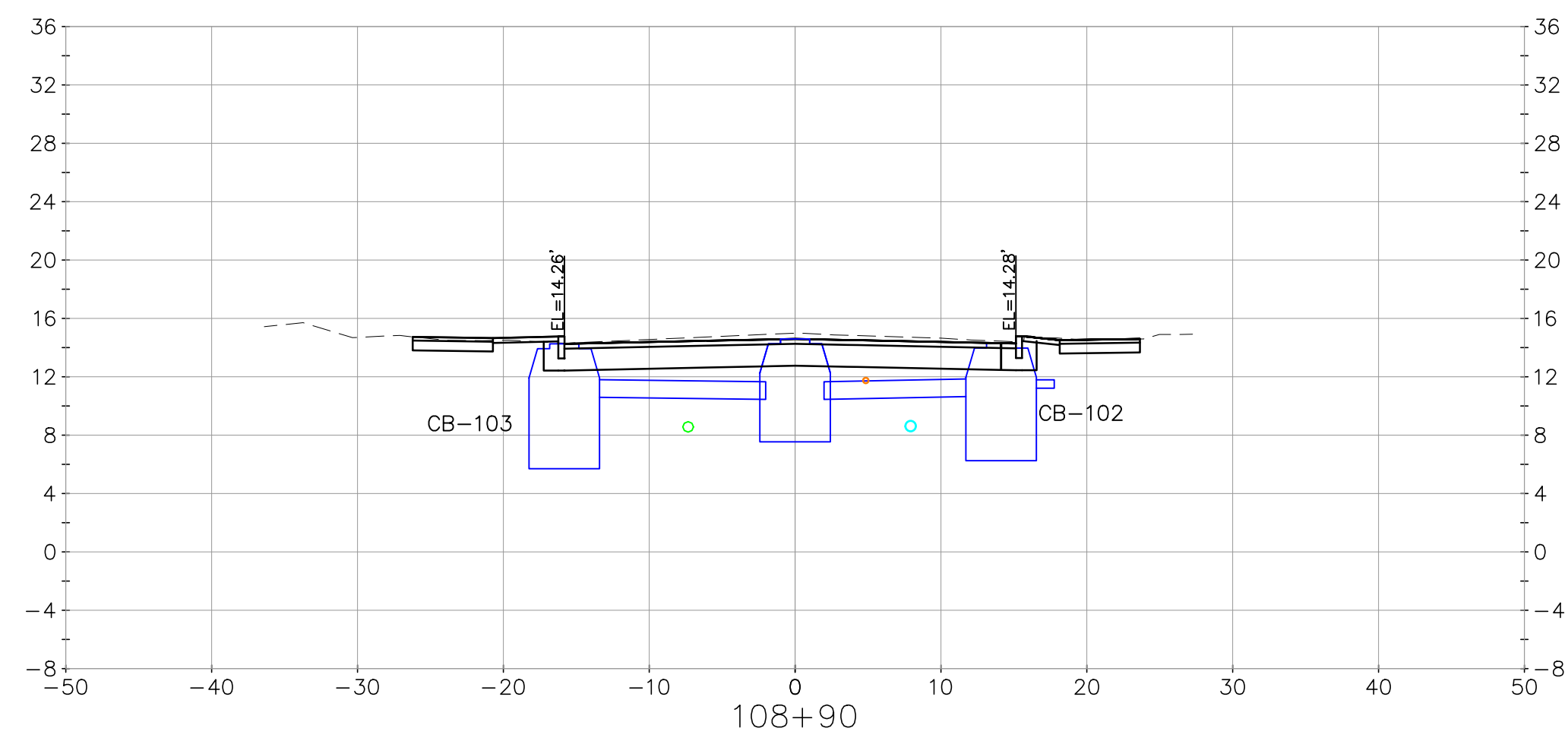
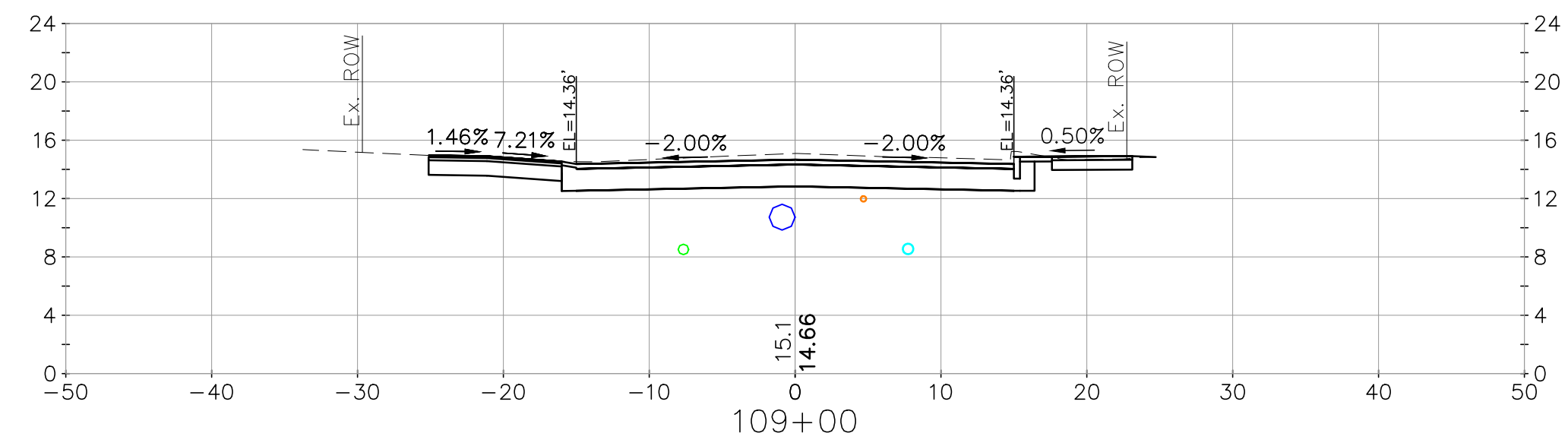
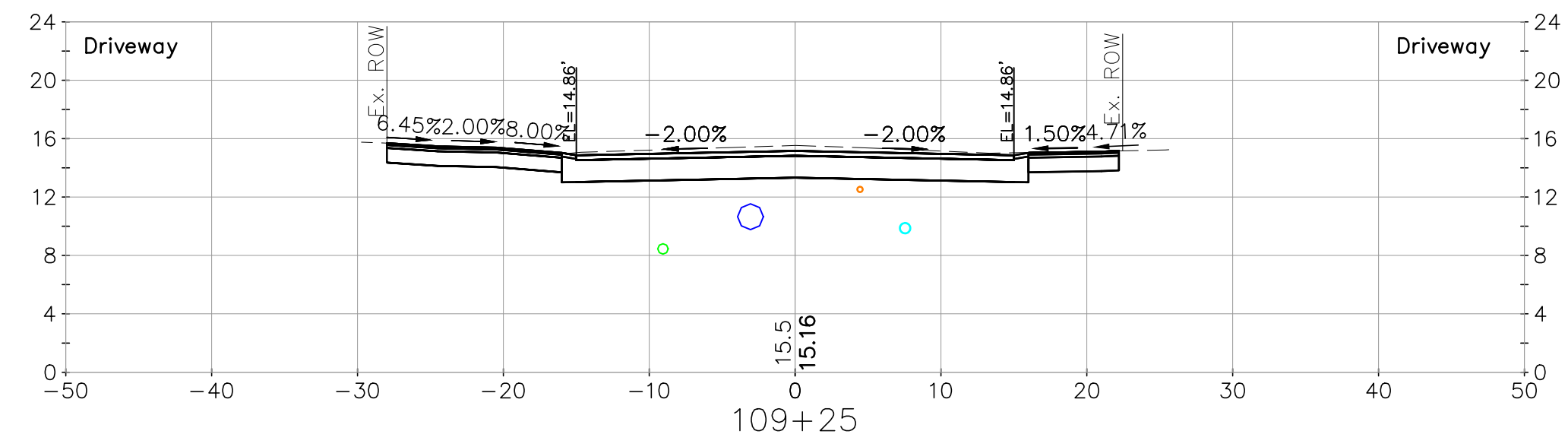
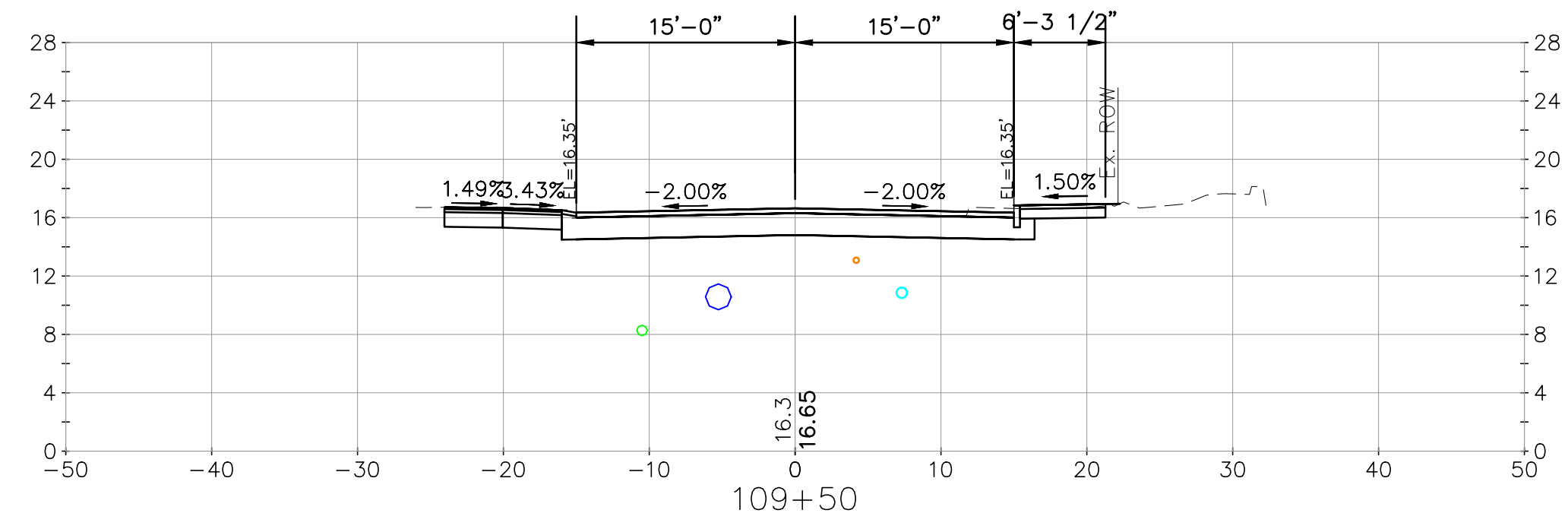
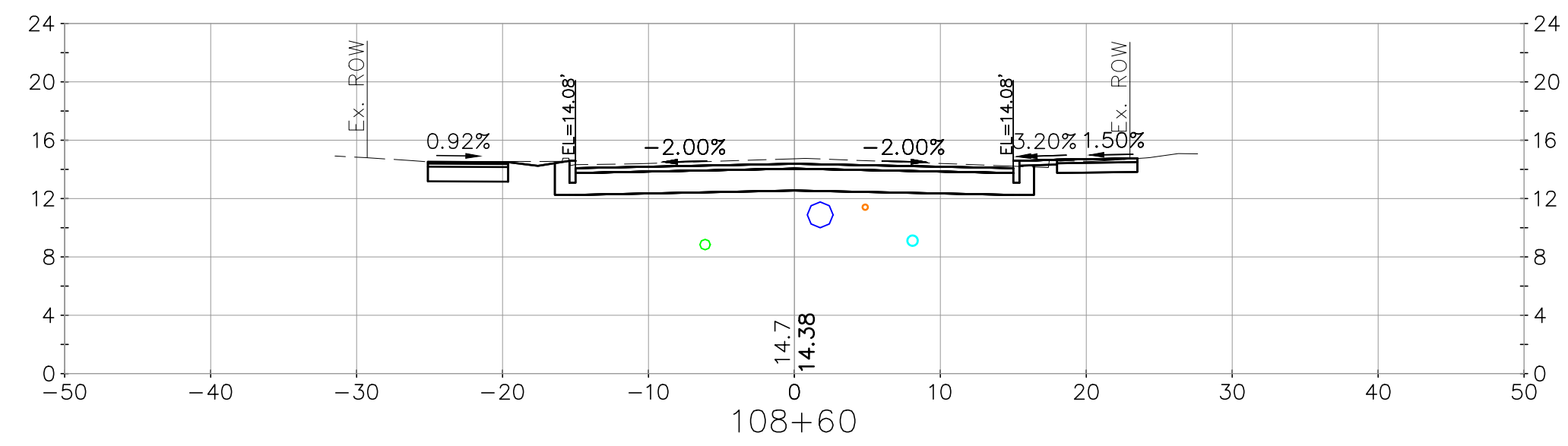
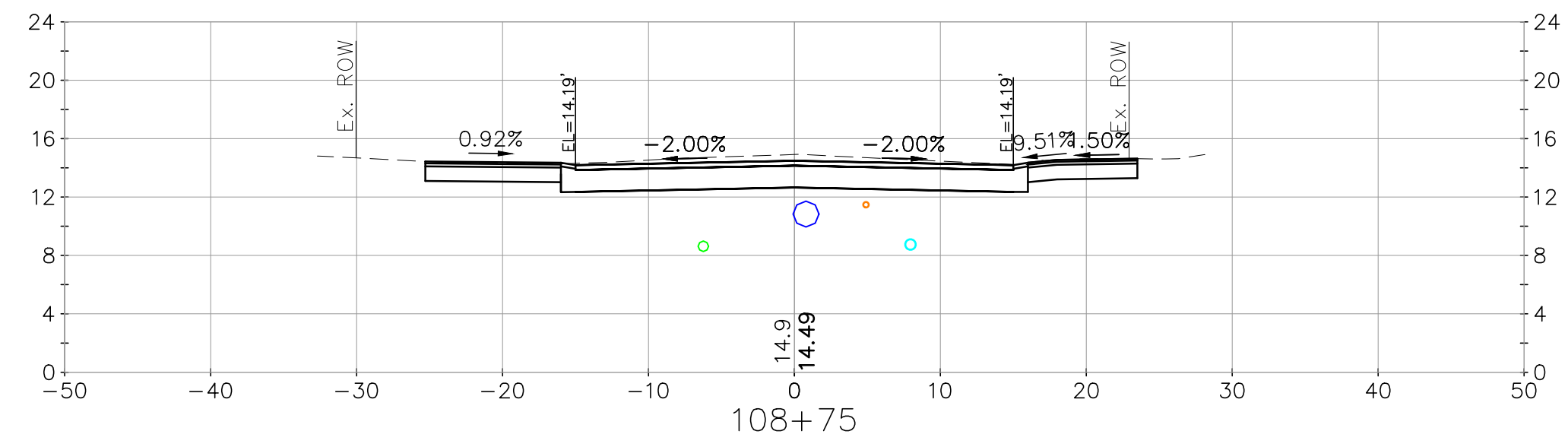
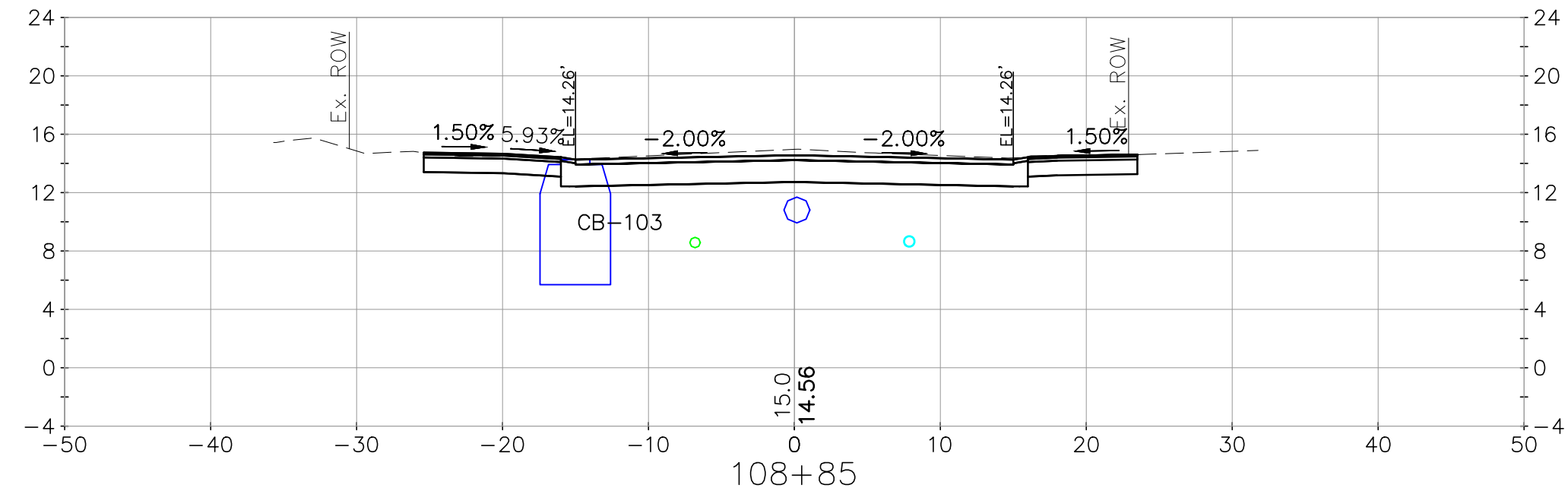
 CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/641-4223 c m a e n g i n e e r s . c o m		1 Issued for Bid 1/17/2023 PAC	no. revision date by
		designed by: STF/WAB	drawn by: WWG
date: January 2023	project no: 1211	checked by: PAC	approved by: PAC
City of Portsmouth, New Hampshire Department of Public Works		Union Street Area Improvement Project Cross Sections Union Street	
drawing no. XS-6		scale: 1" = 10' 0 10' 20'	
sheet: 40 of 54			



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<p>date: January 2023</p>	<p>designed by: STFWAB</p>	<p>revision no.</p>
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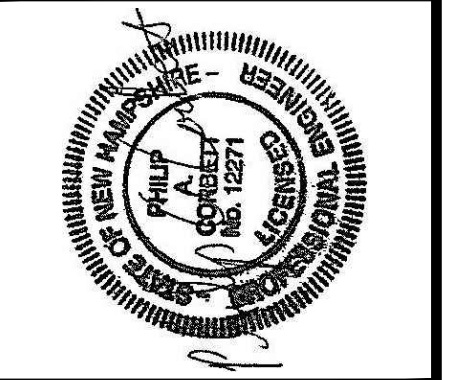


 CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/641-4223 c m a e n g i n e e r s . c o m		drawing no. XS-8
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checked by: PAC	approved by: PAC	scale: 1" = 10' 10' 20'
City of Portsmouth, New Hampshire Department of Public Works		Union Street Area Improvement Project Cross Sections Union Street
sheet: 42 of 54	no. 1	revision Issued for Bid
date 1/17/2023	by PAC	



revision	no.	date
1	Issued for Bid	1/17/2023

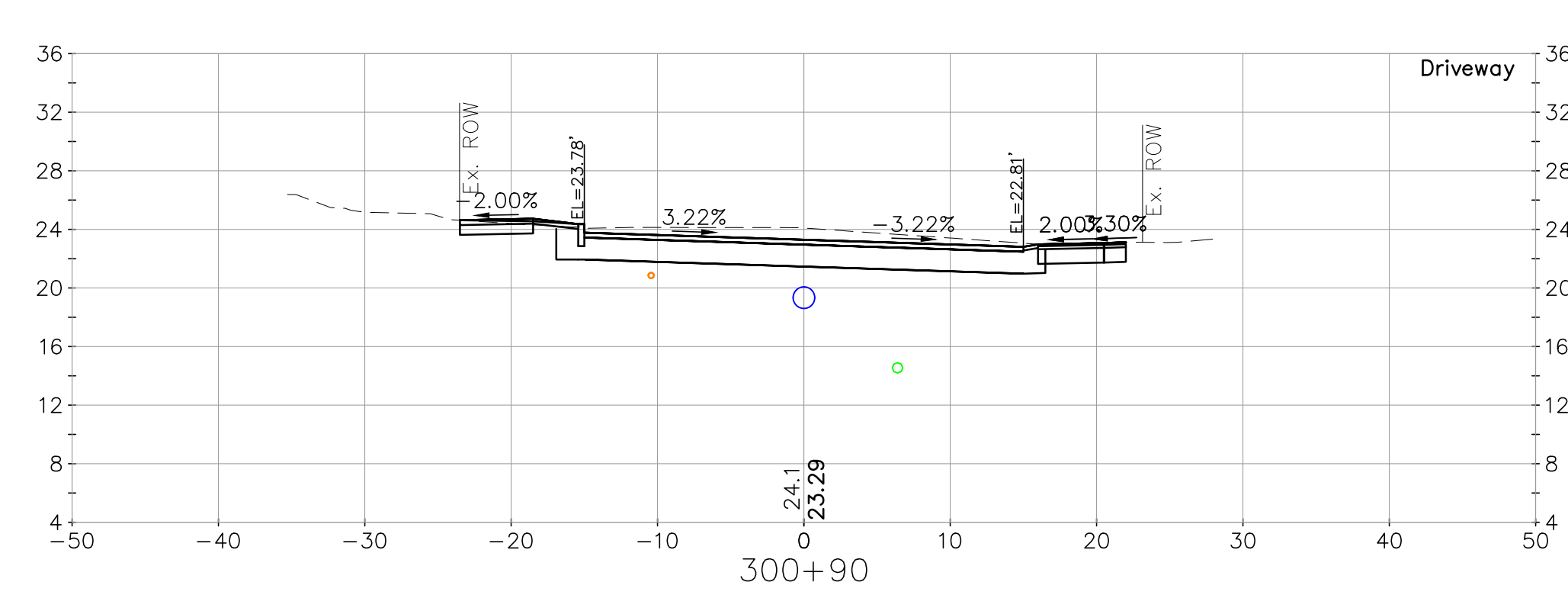
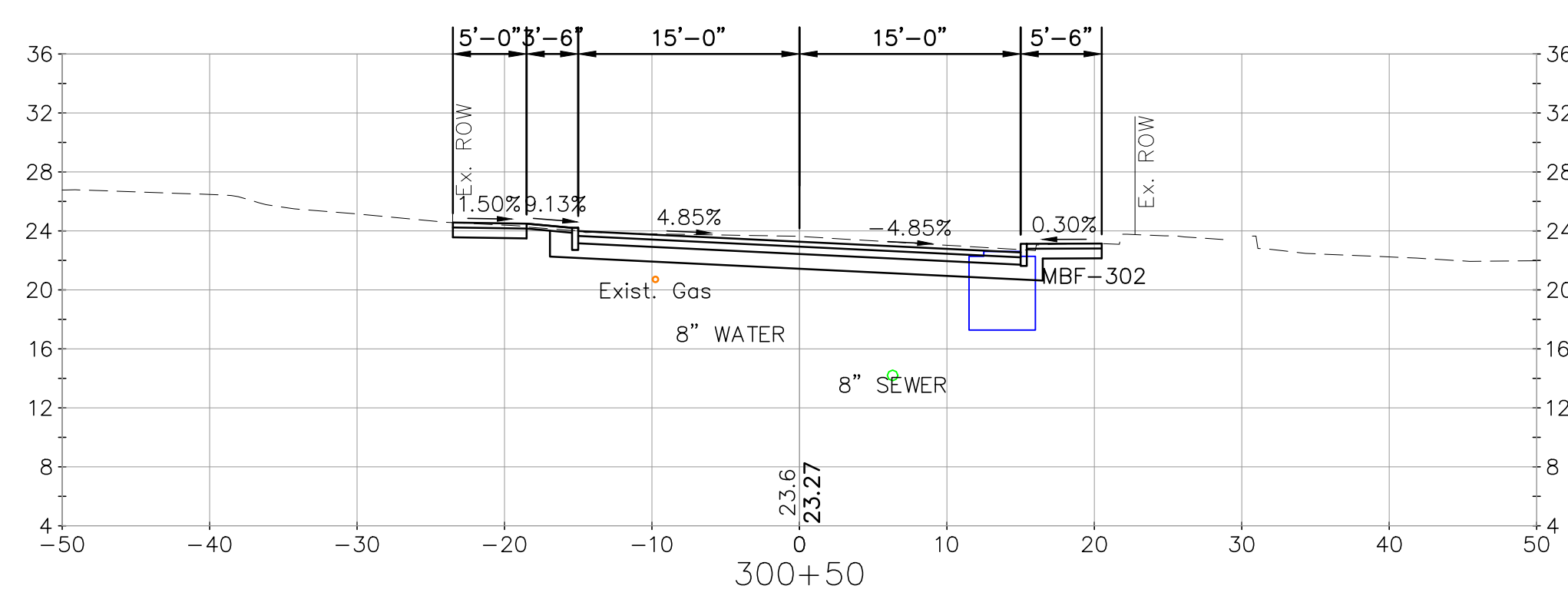
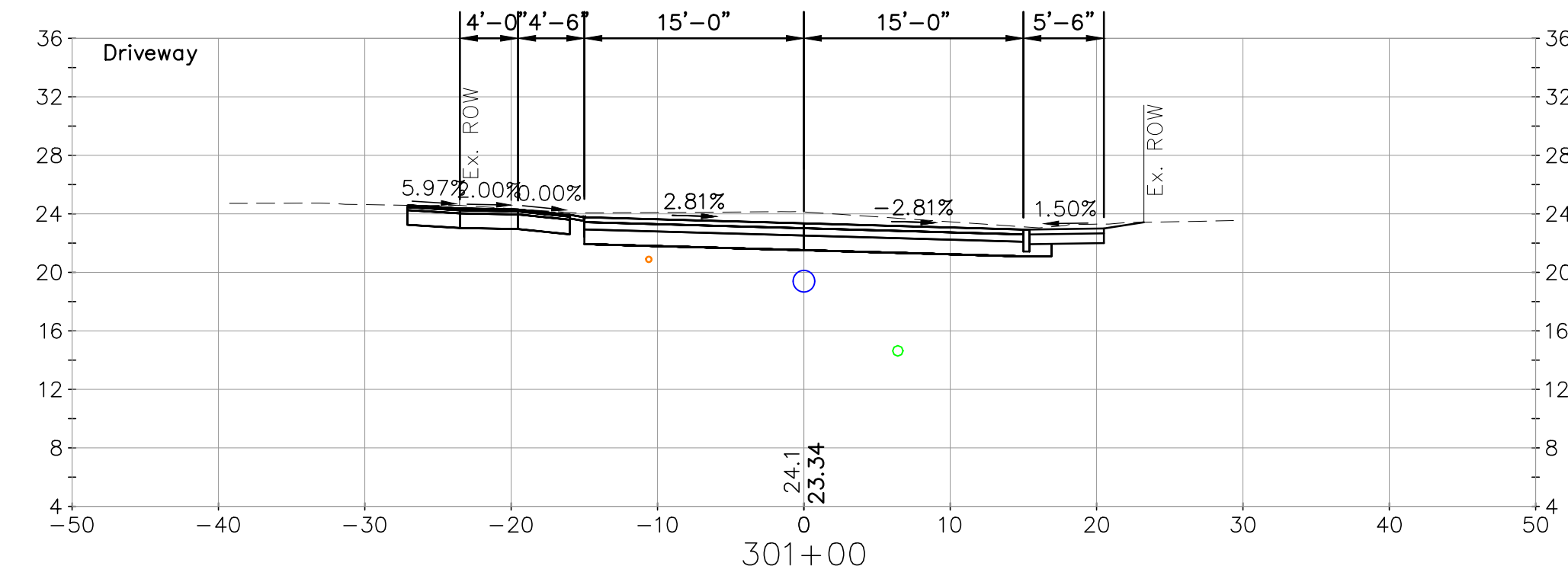
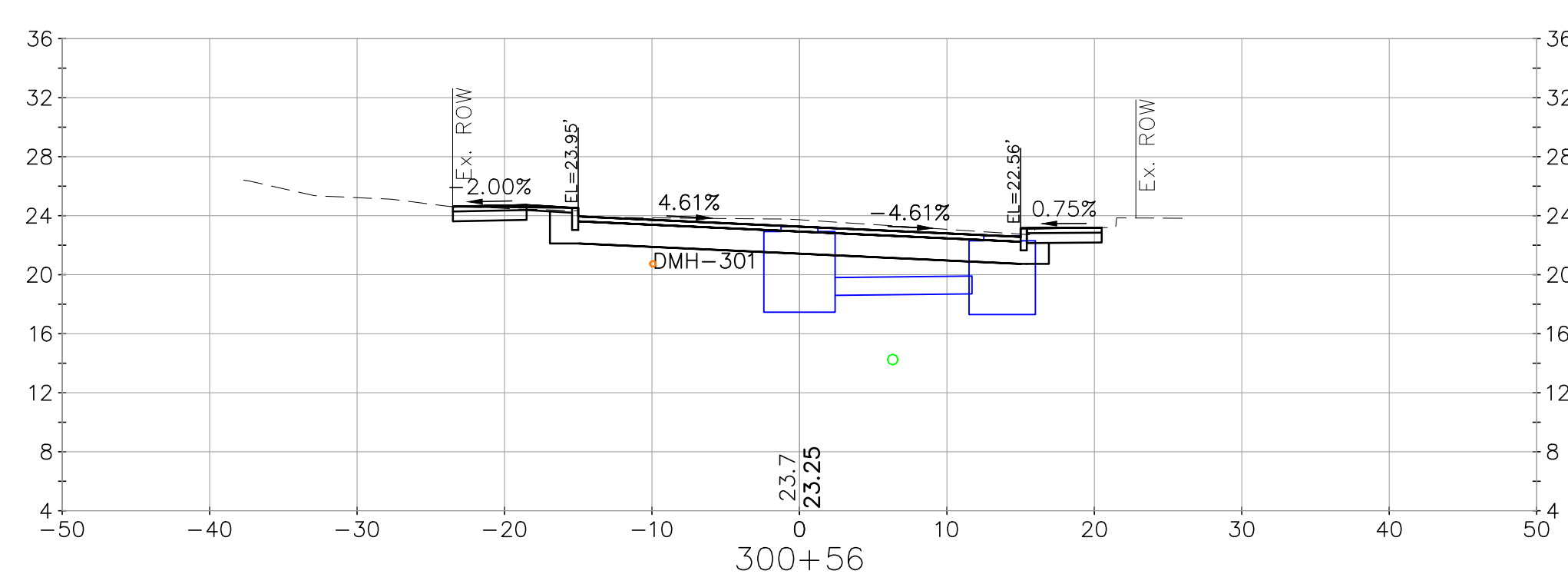
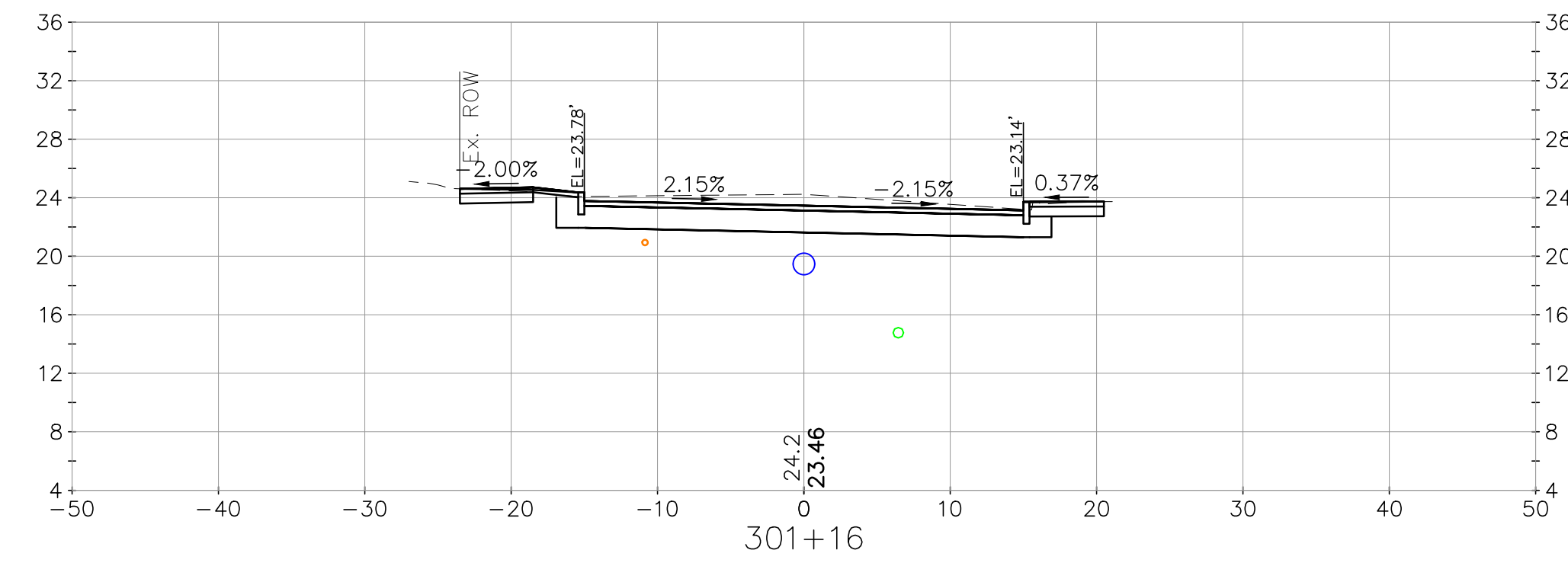
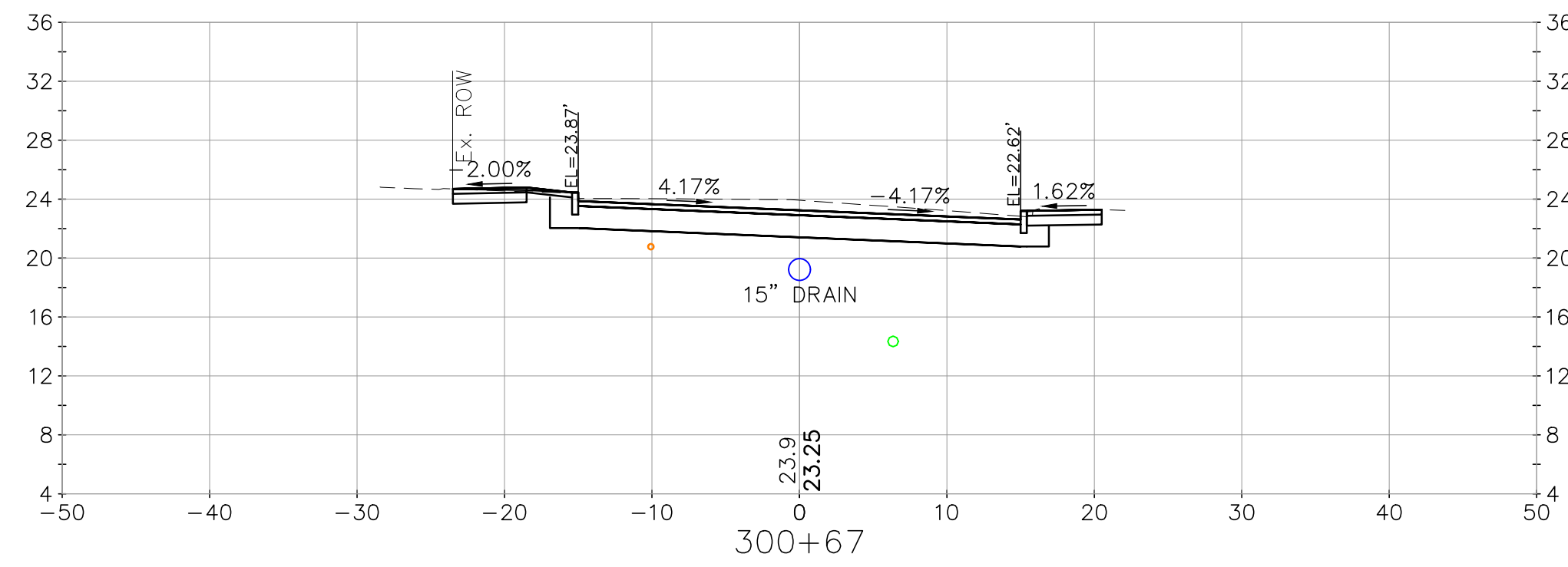
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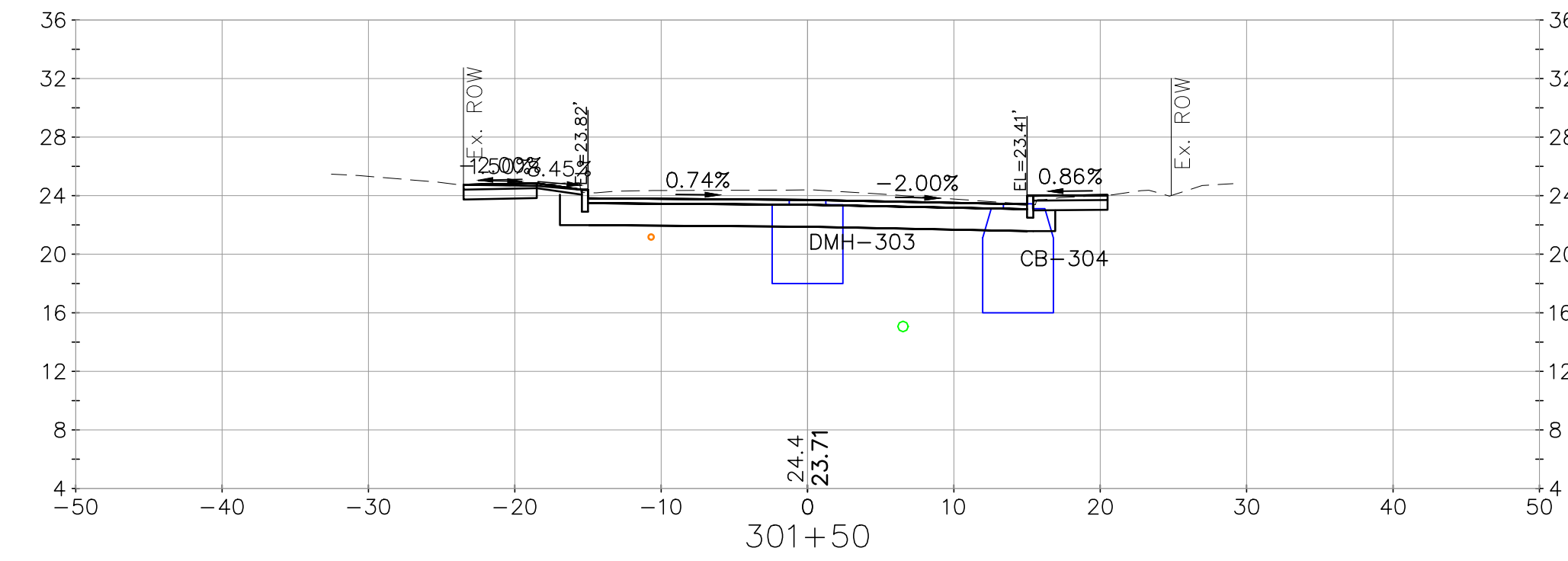
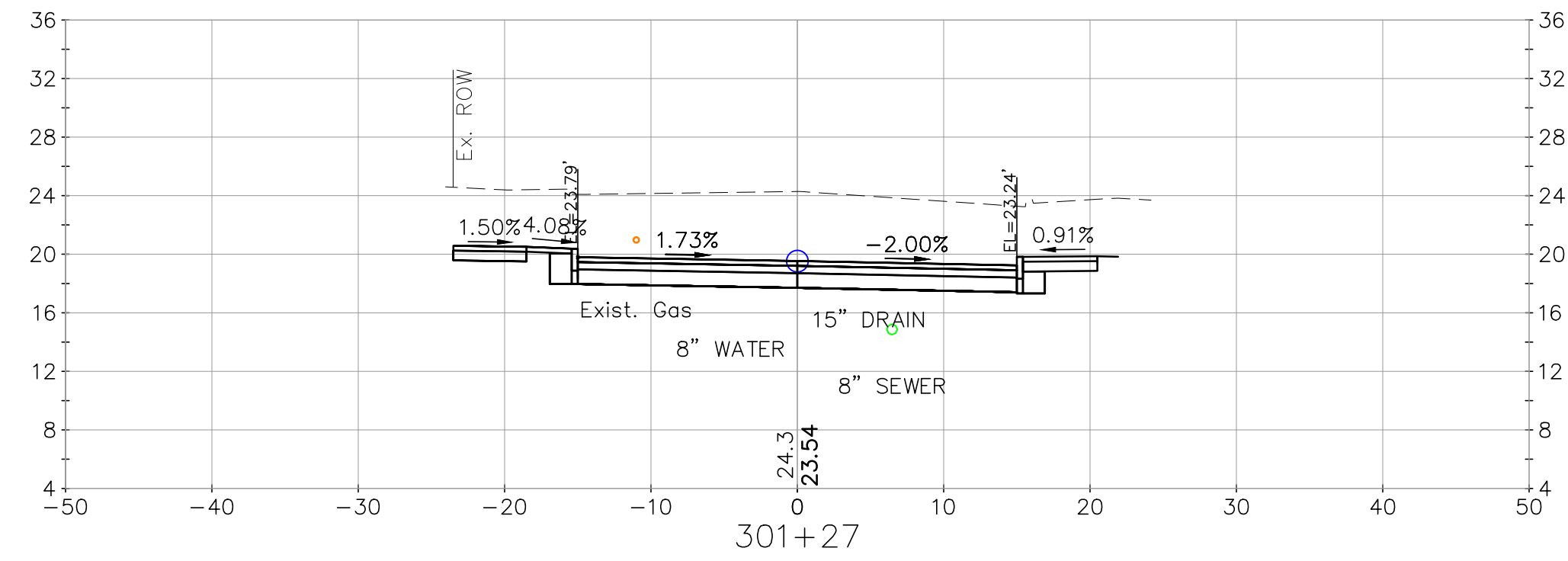
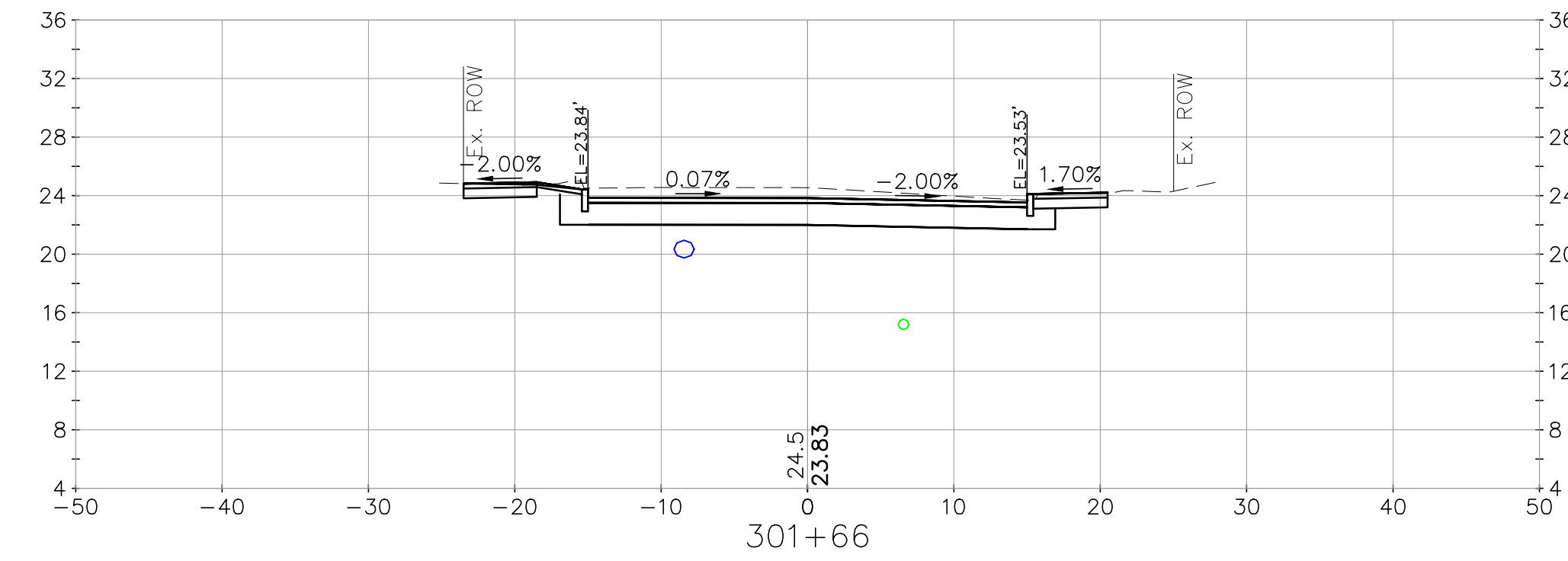
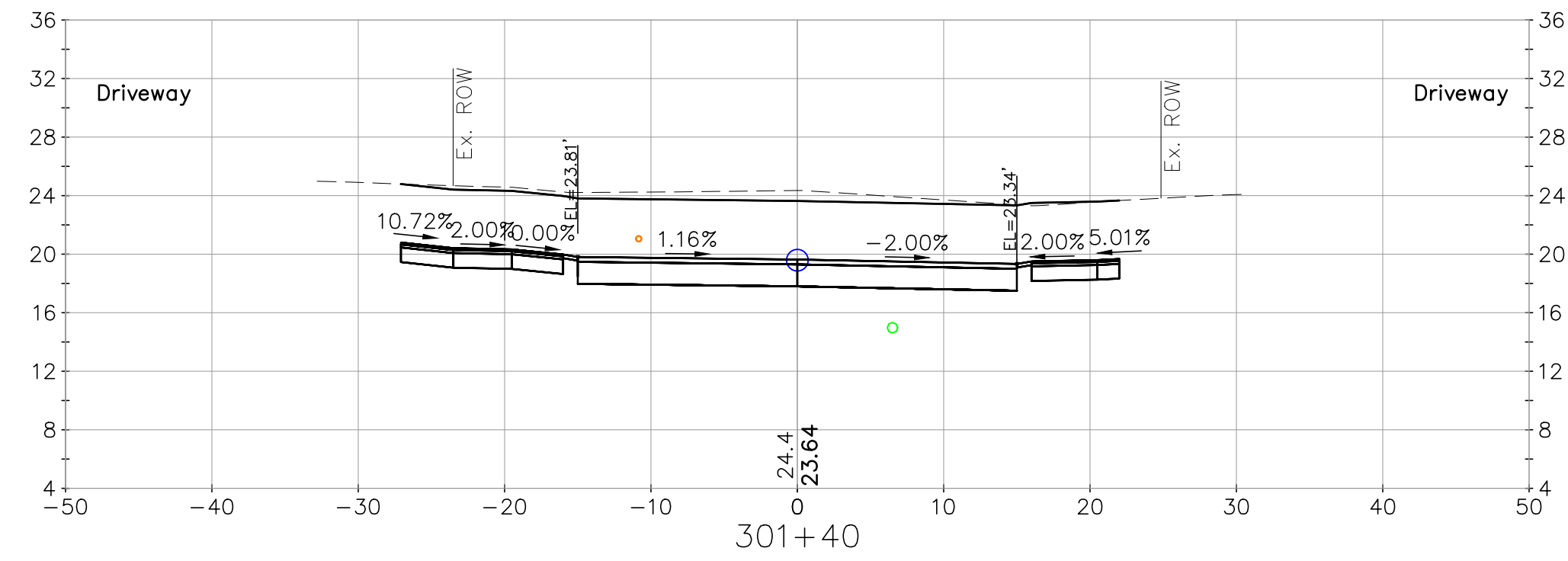
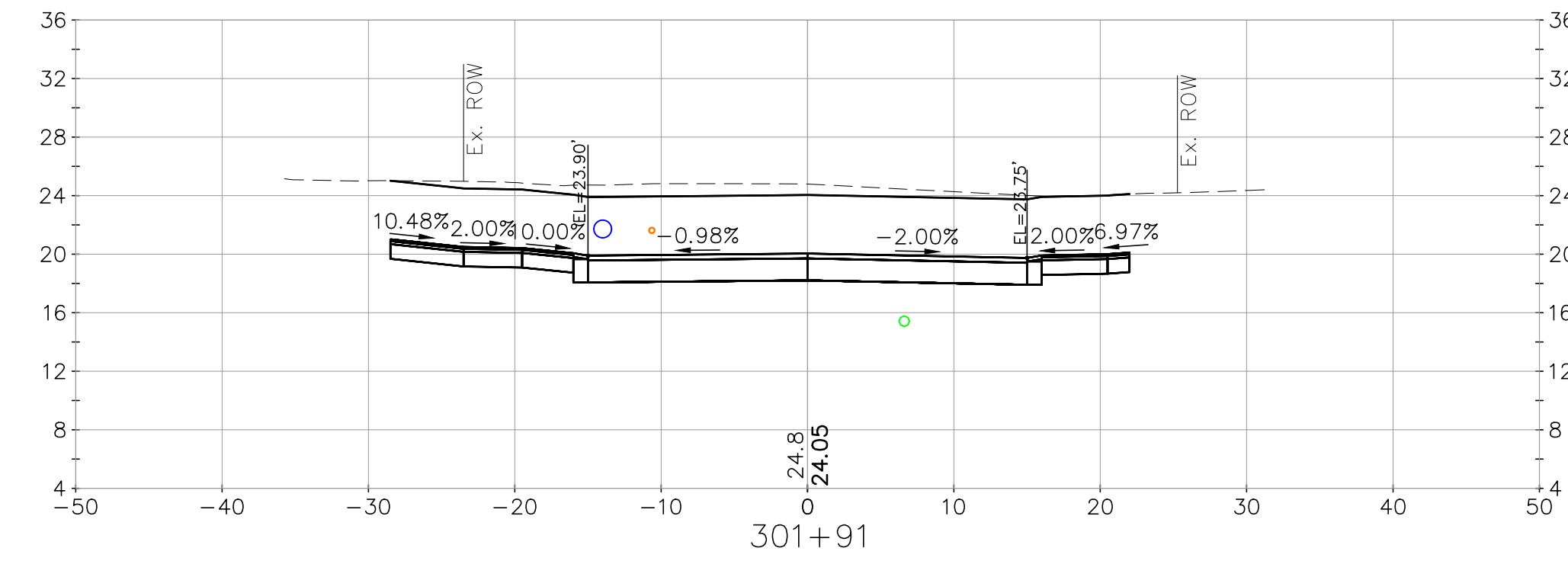
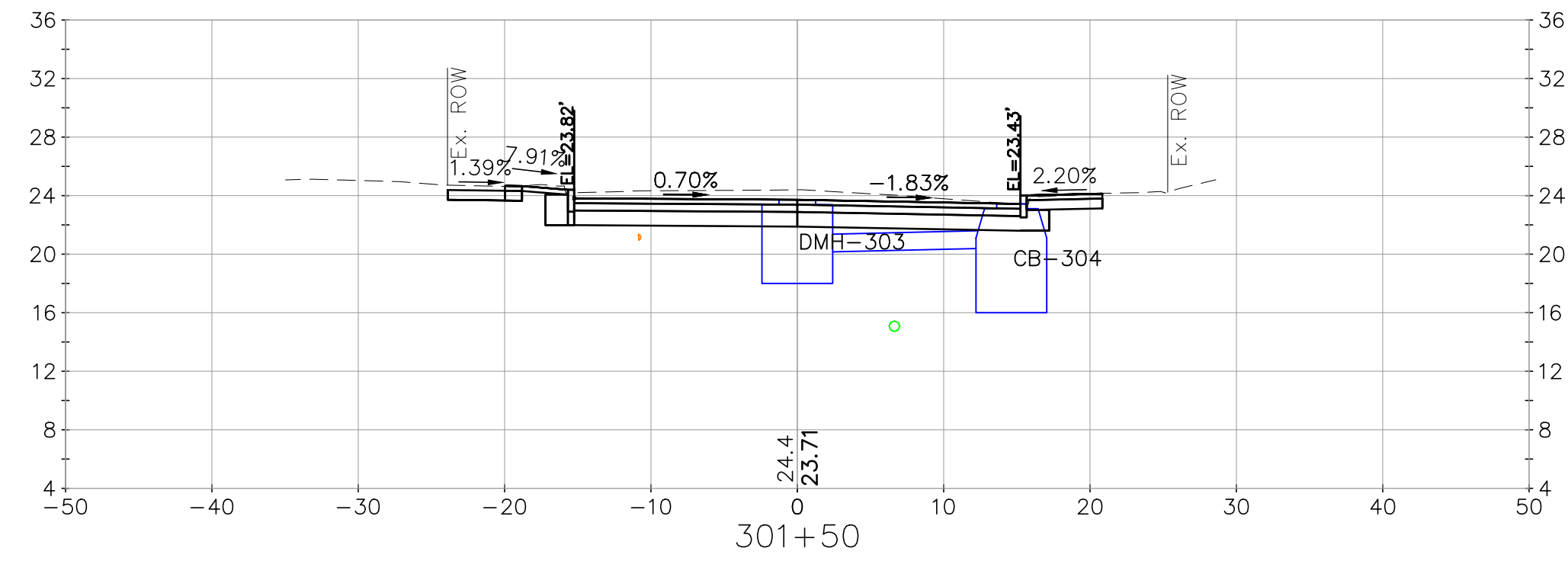
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drawn by:	WWG
checked by:	PAC
approved by:	PAC
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City of Portsmouth, New Hampshire
 Department of Public Works
 Union Street Area
 Improvement Project
 Cross Sections
 Union Street

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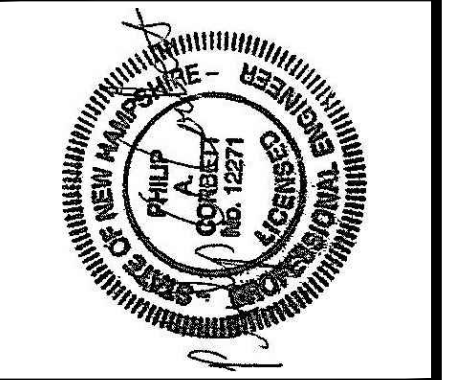


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		1 Issued for Bid 1/17/2023 PAC
date:	January 2023	designed by:
project no:	1211	STF/WAB
checked by:	PAC	drawn by:
		WVG
		approved by:
		PAC
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City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Cross Sections Austin Street		sheet: 45 of 54



no.	1	Issued for Bid	1/17/2023	PAC
revision			date	by

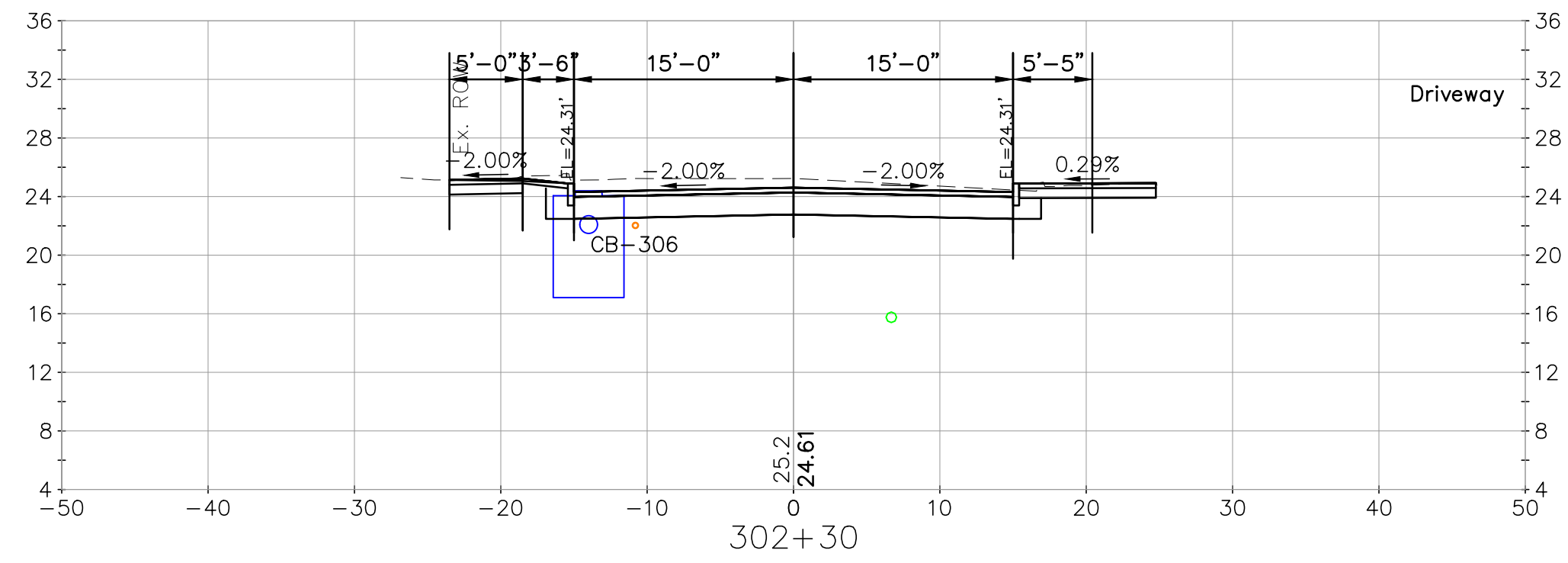
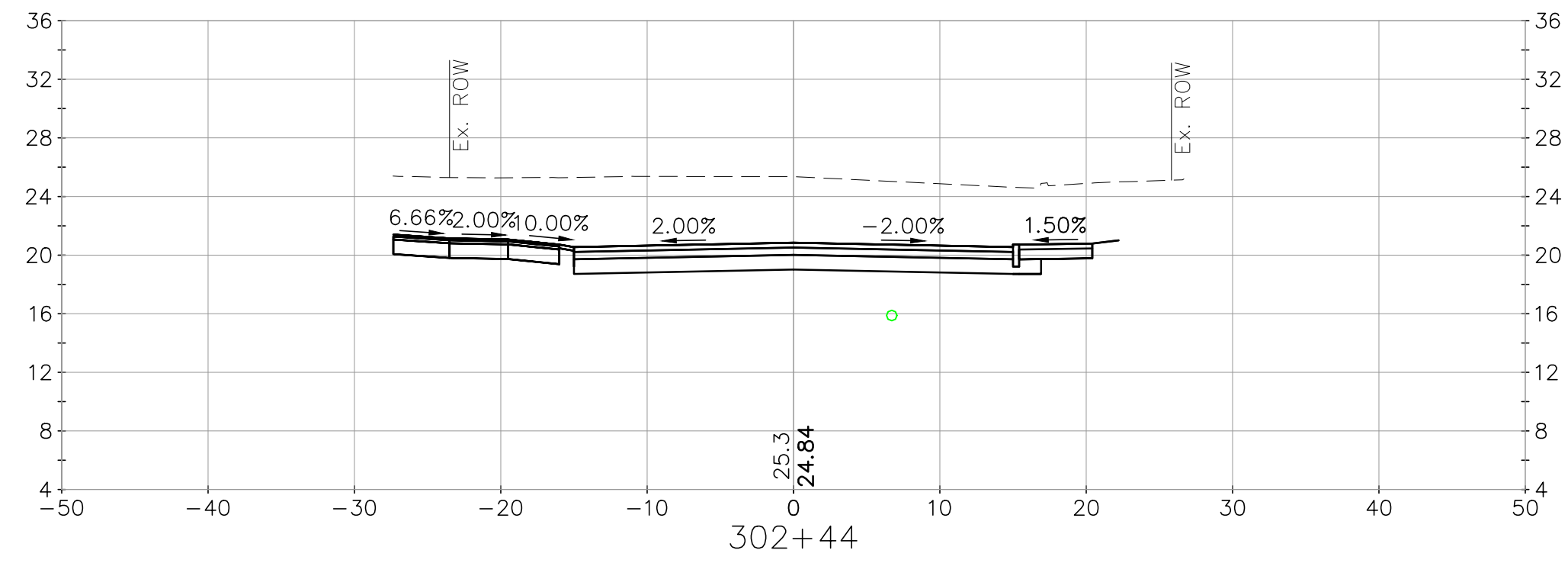
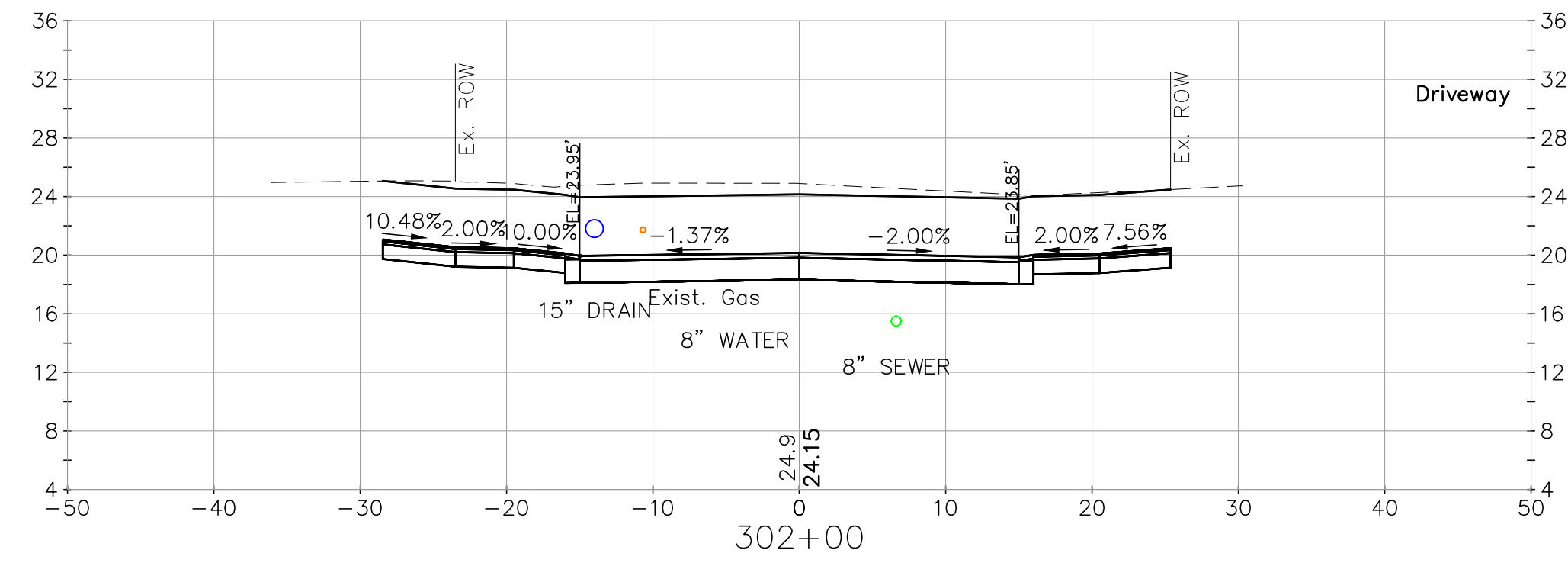
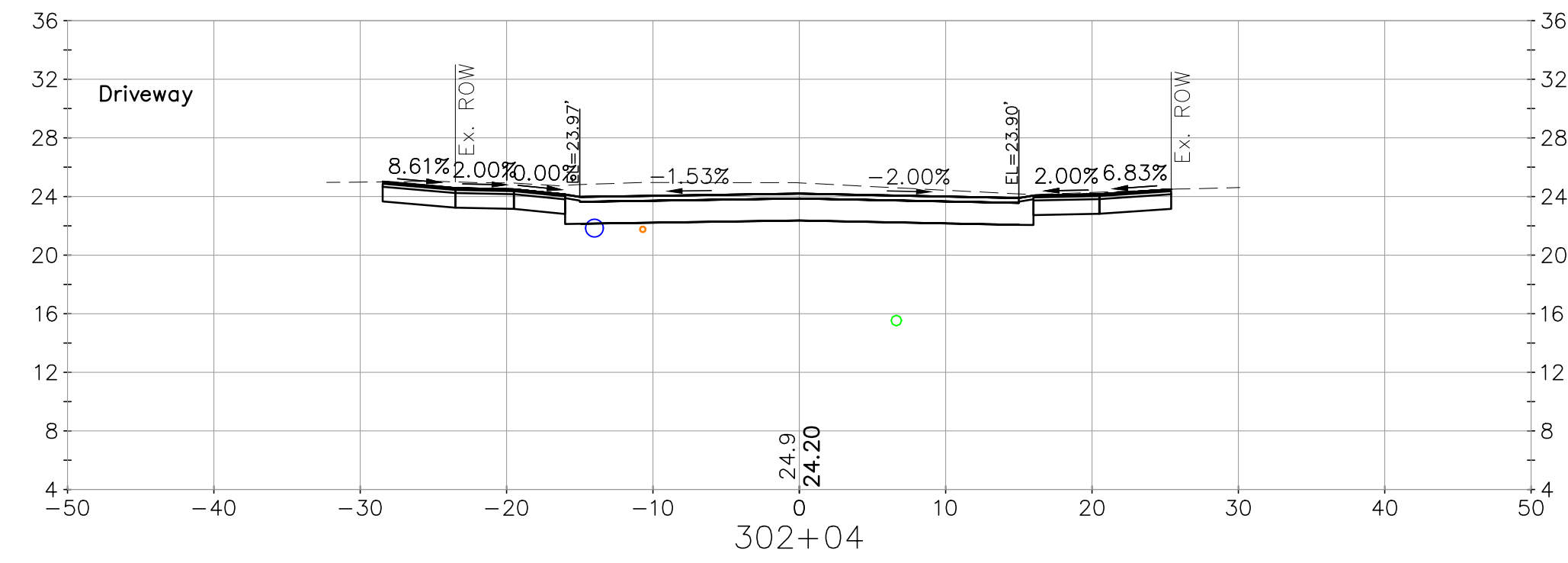
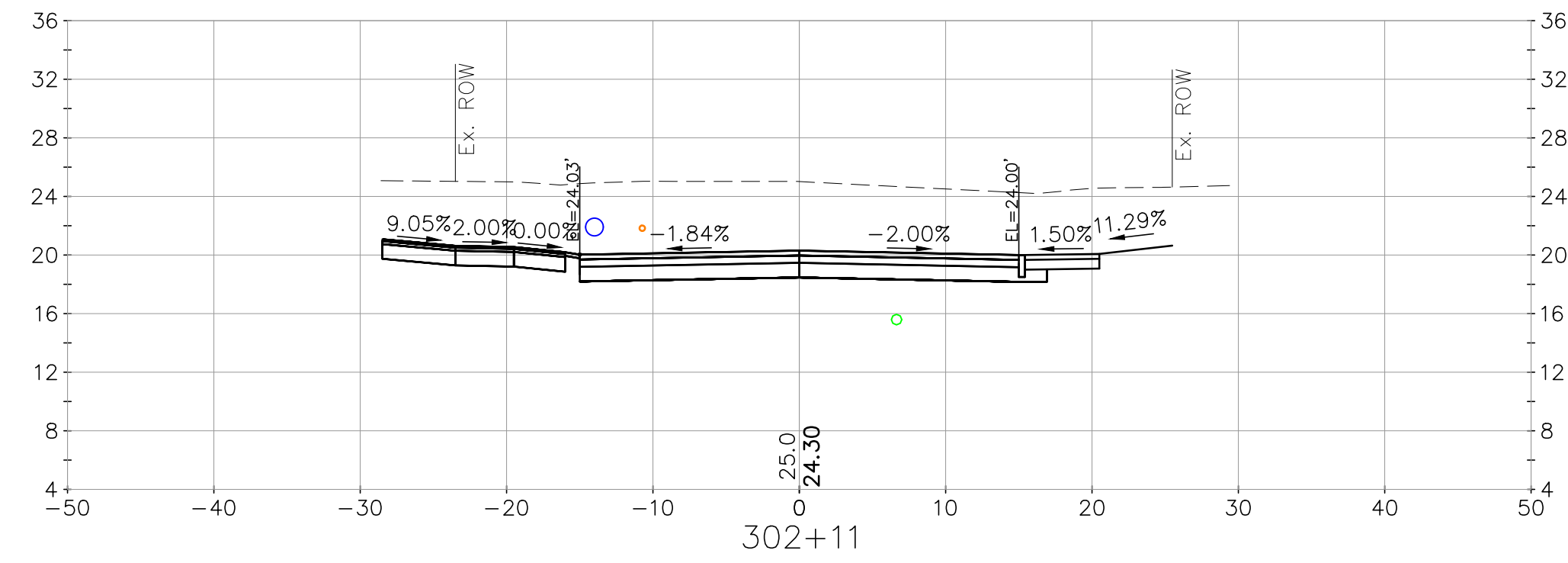
CMA ENGINEERS
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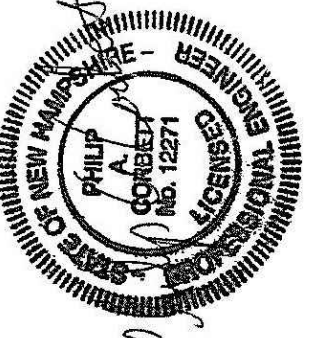


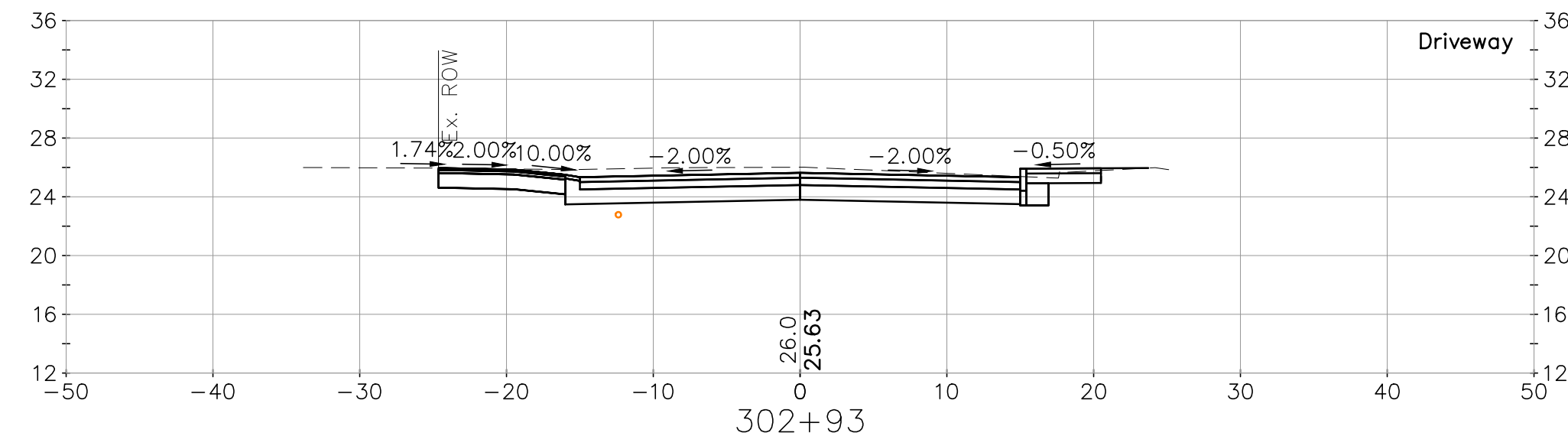
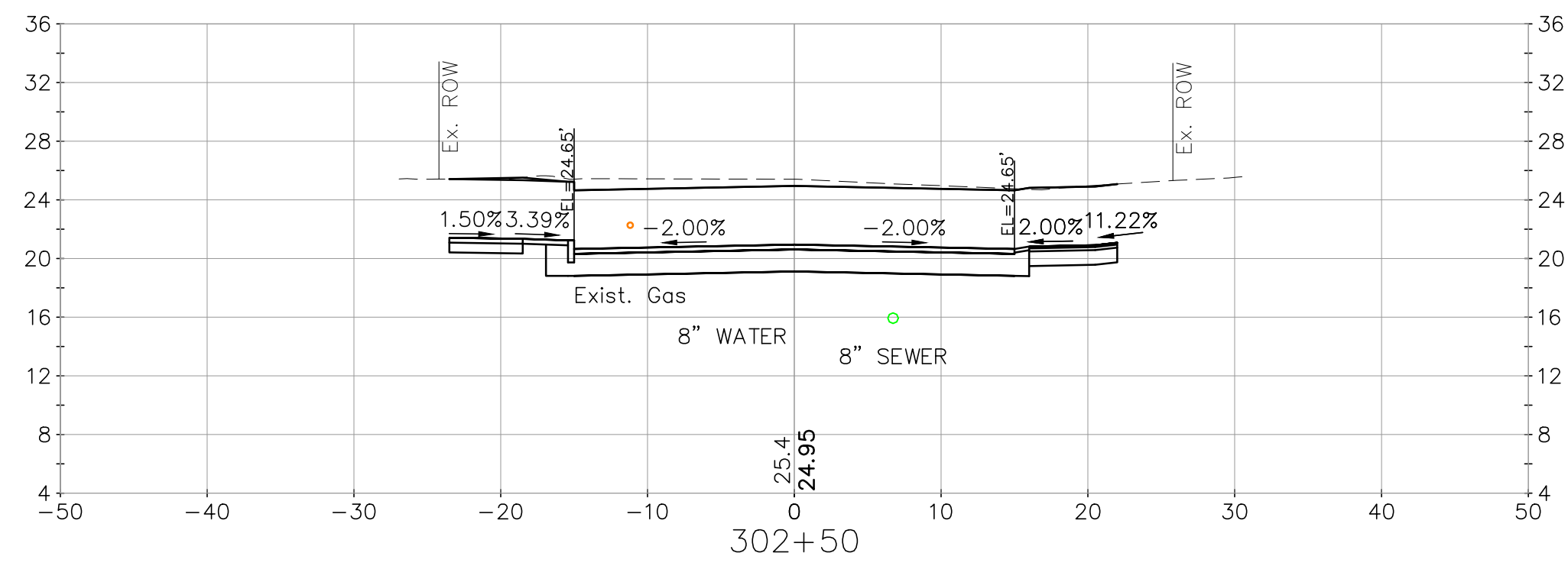
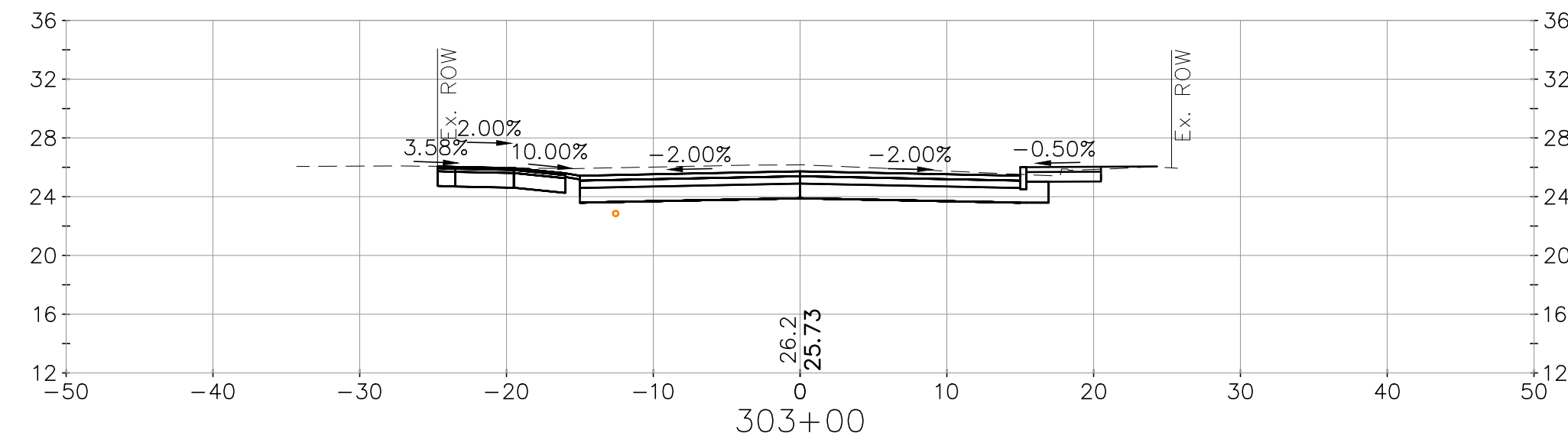
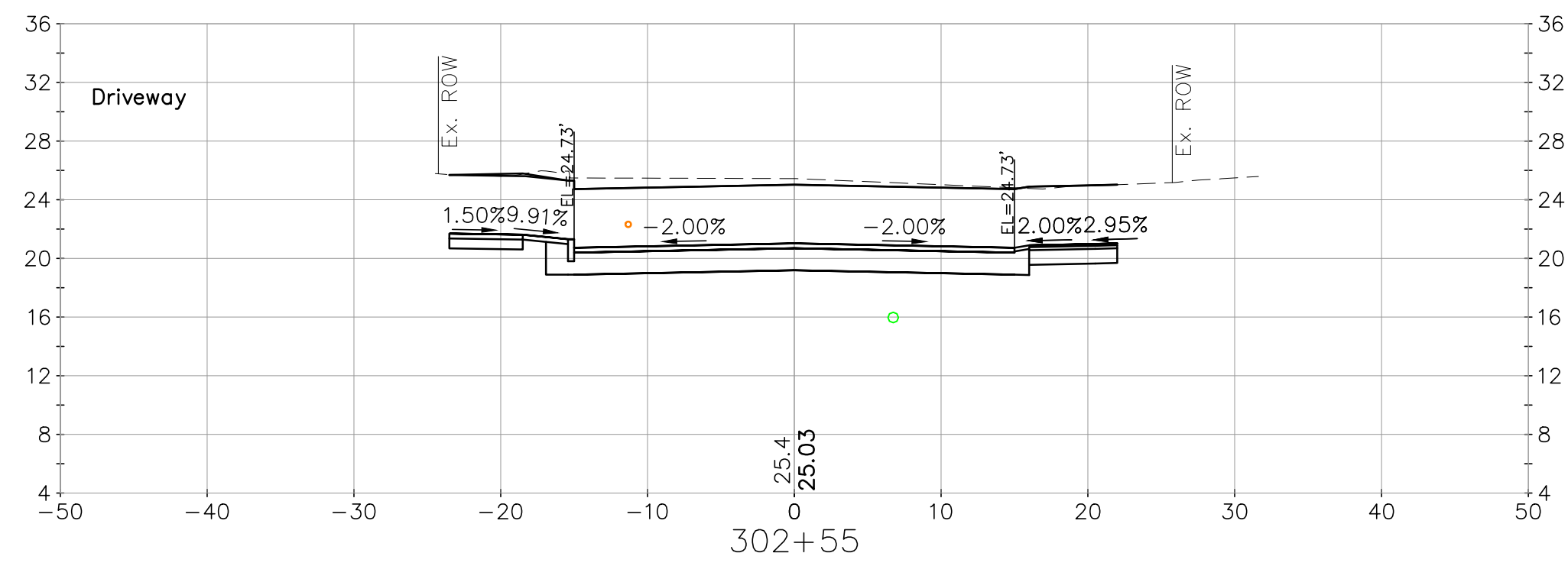
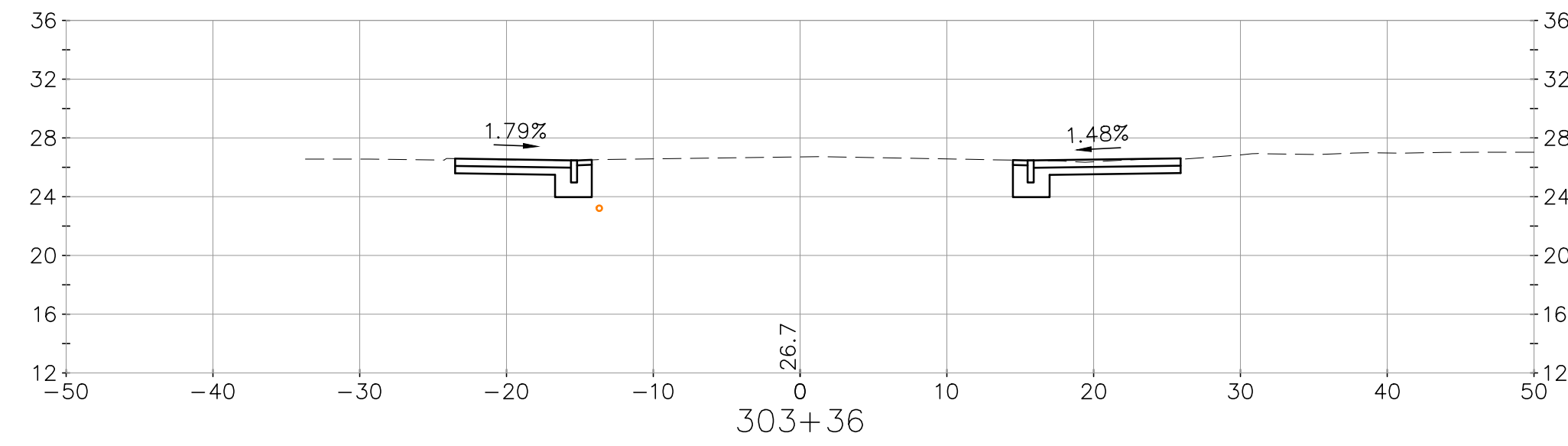
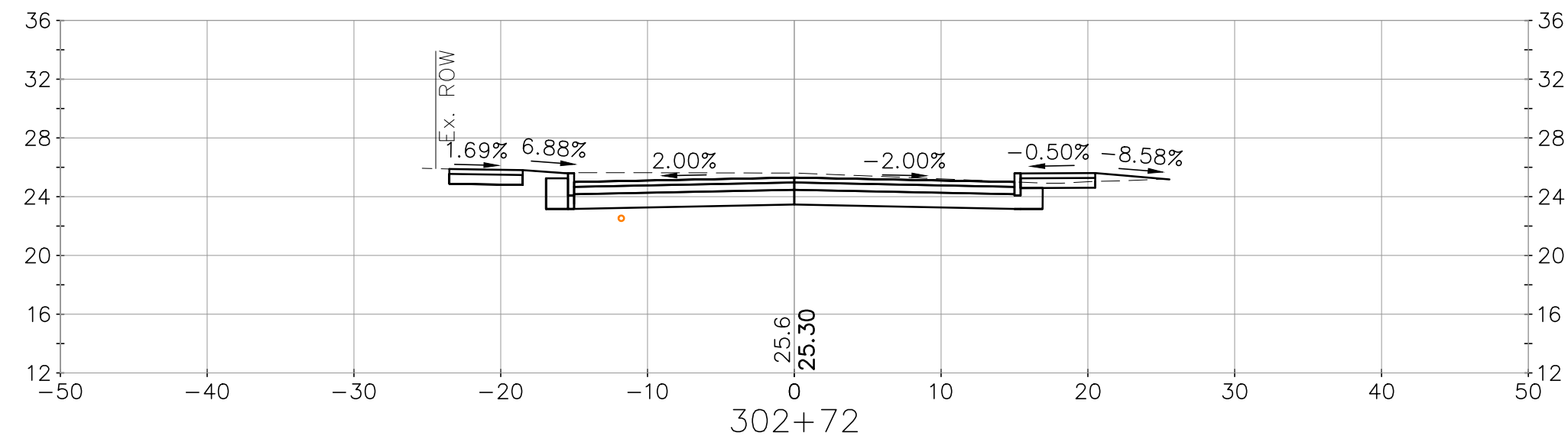
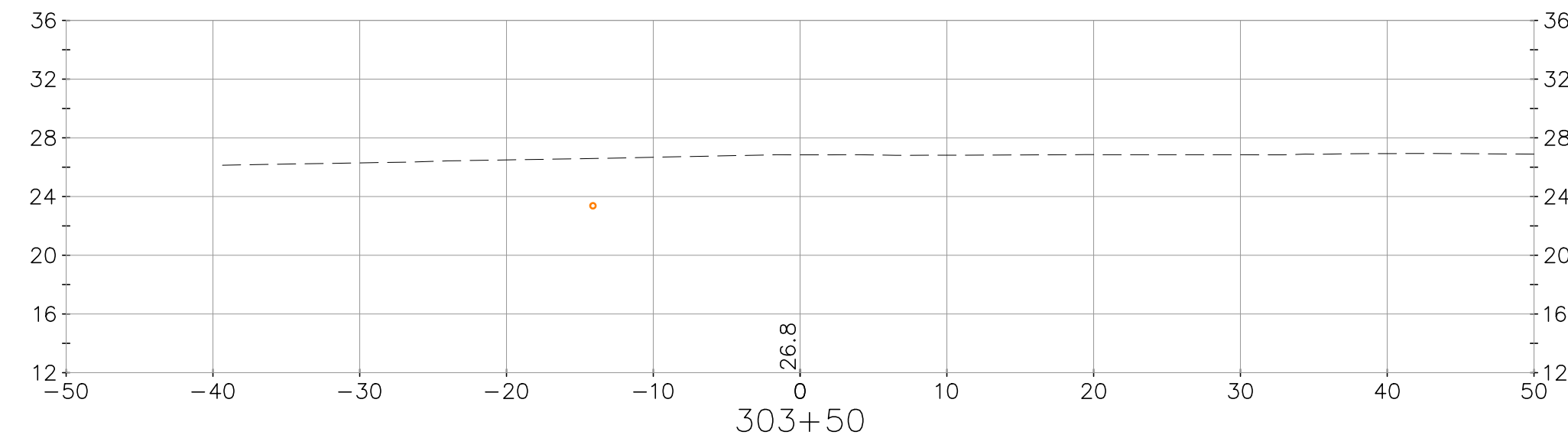
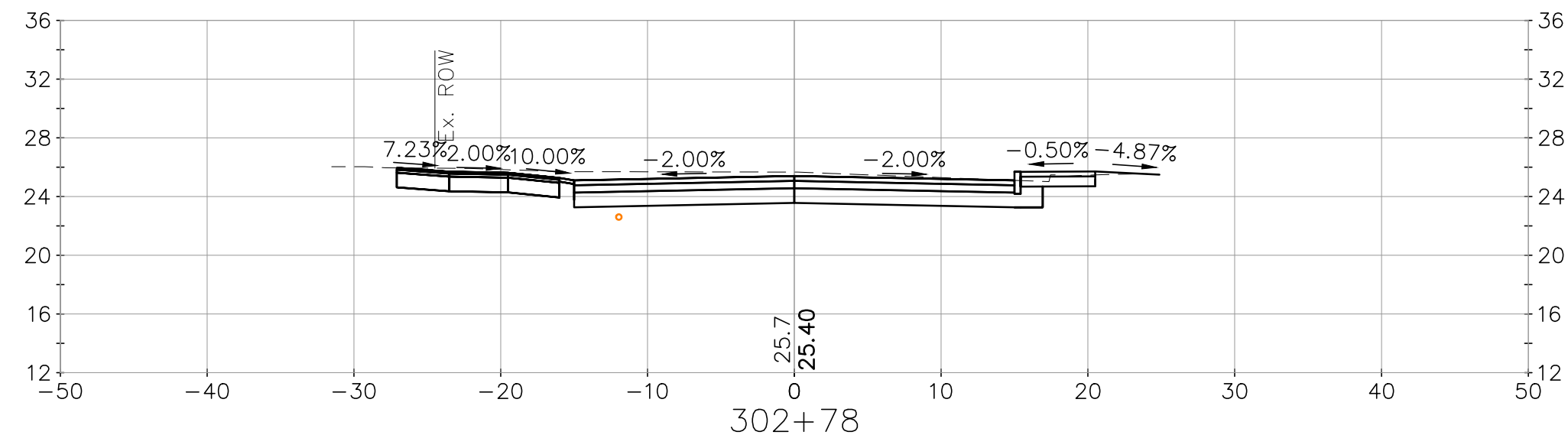
date:	January 2023	designed by:	STF/WAB
project no.:	1211	drawn by:	WWG
checked by:	PAC	approved by:	PAC

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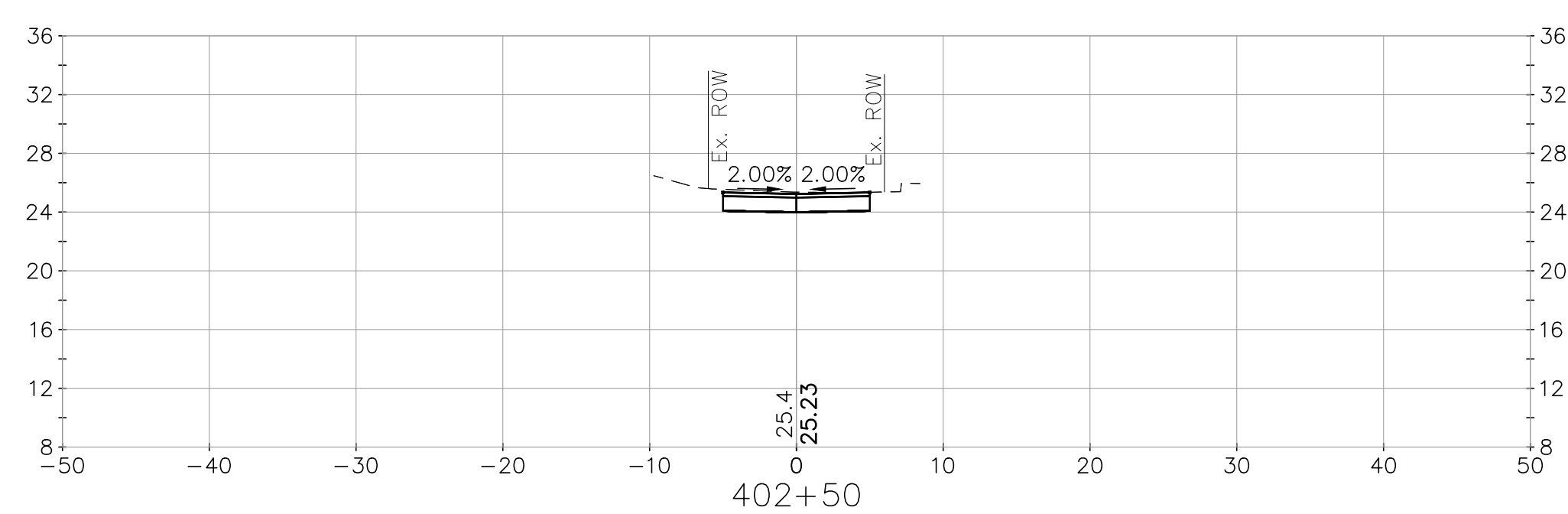
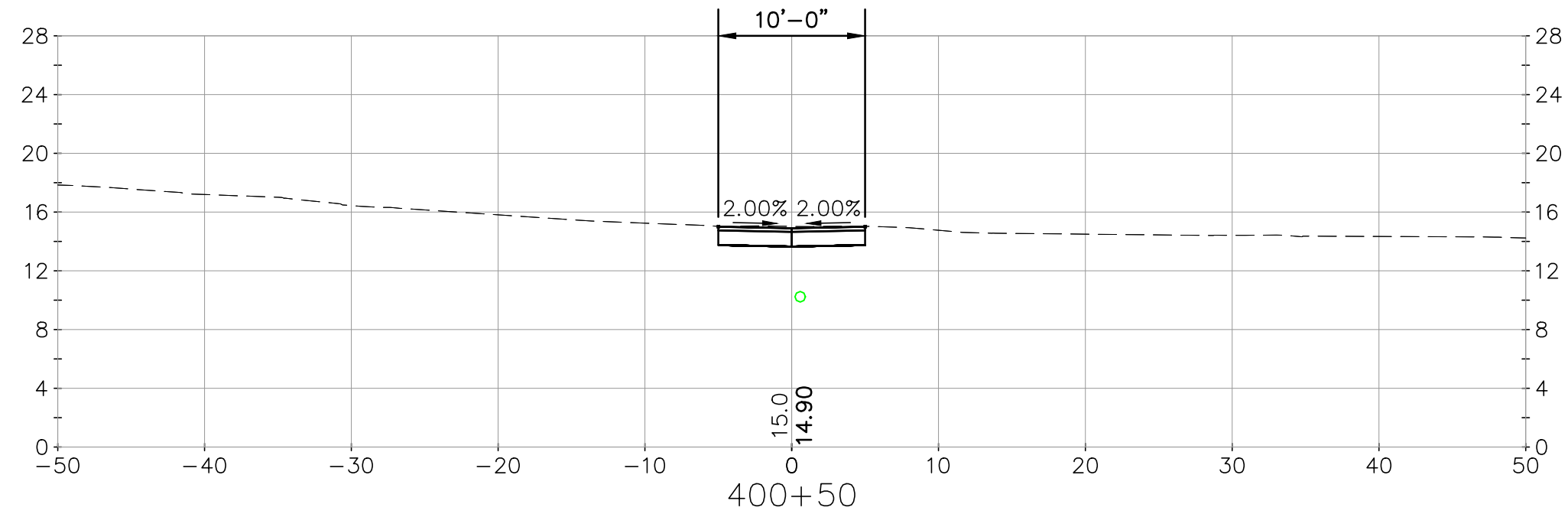
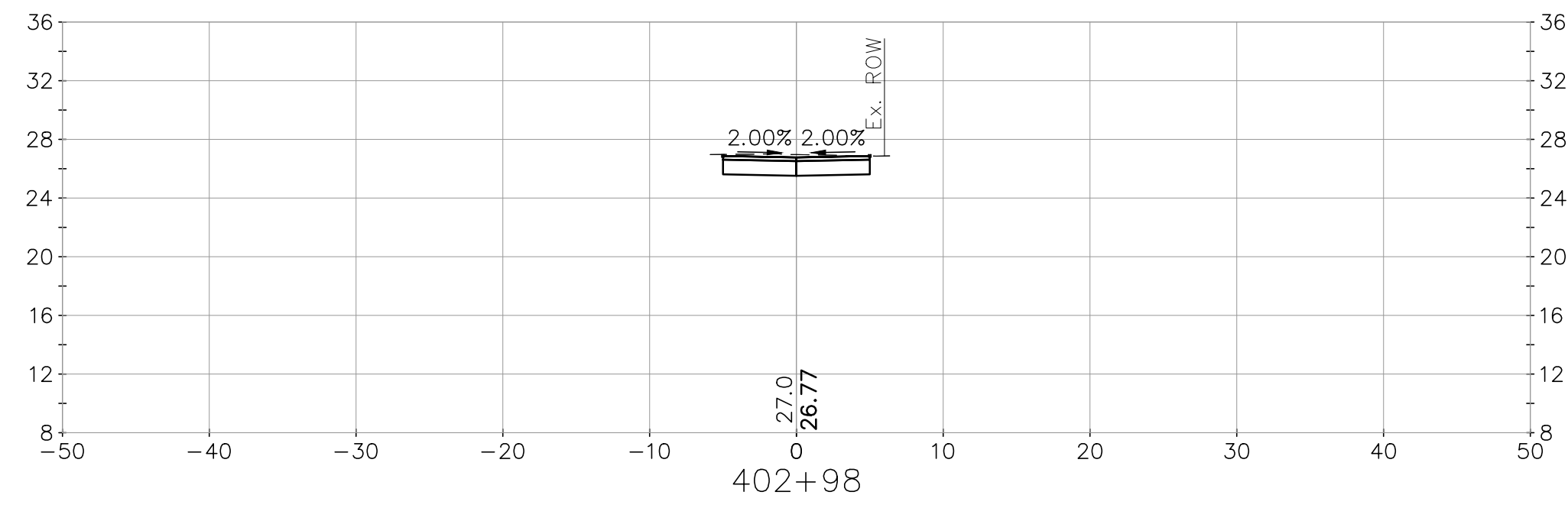
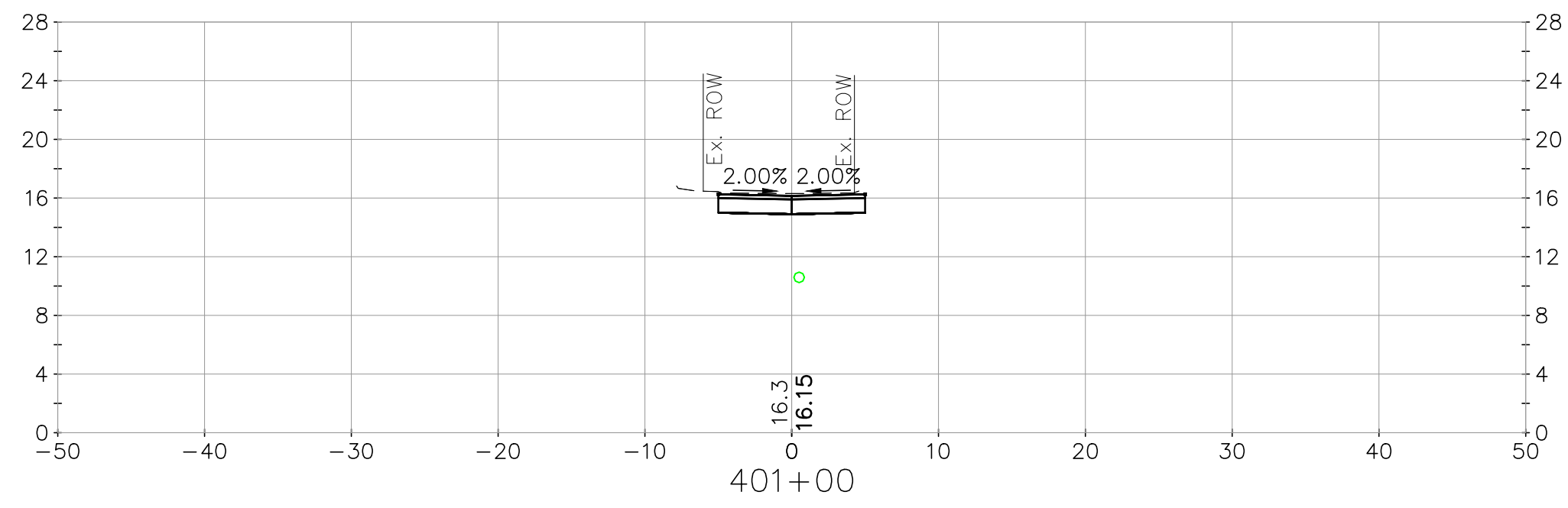
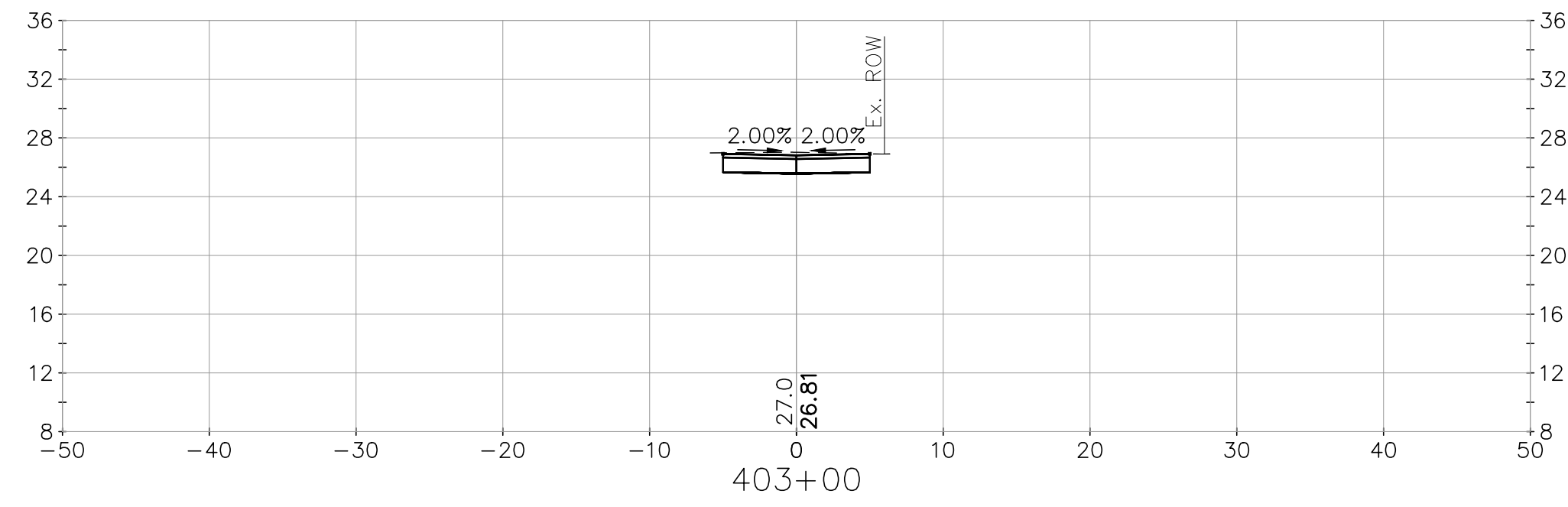
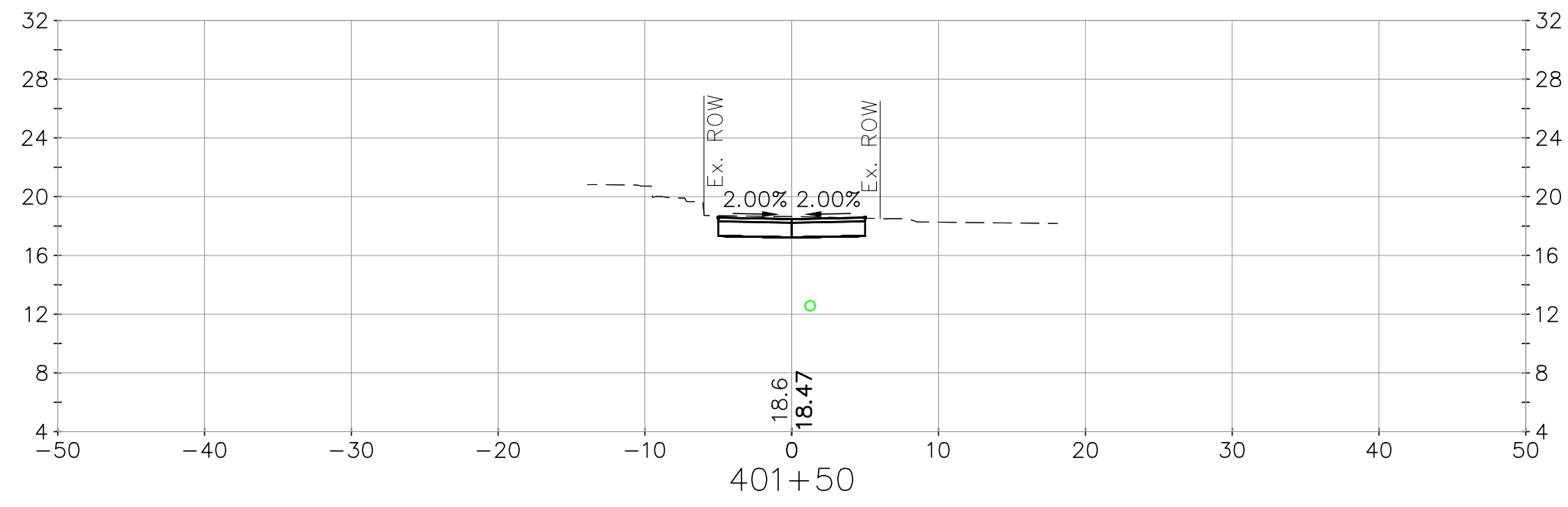
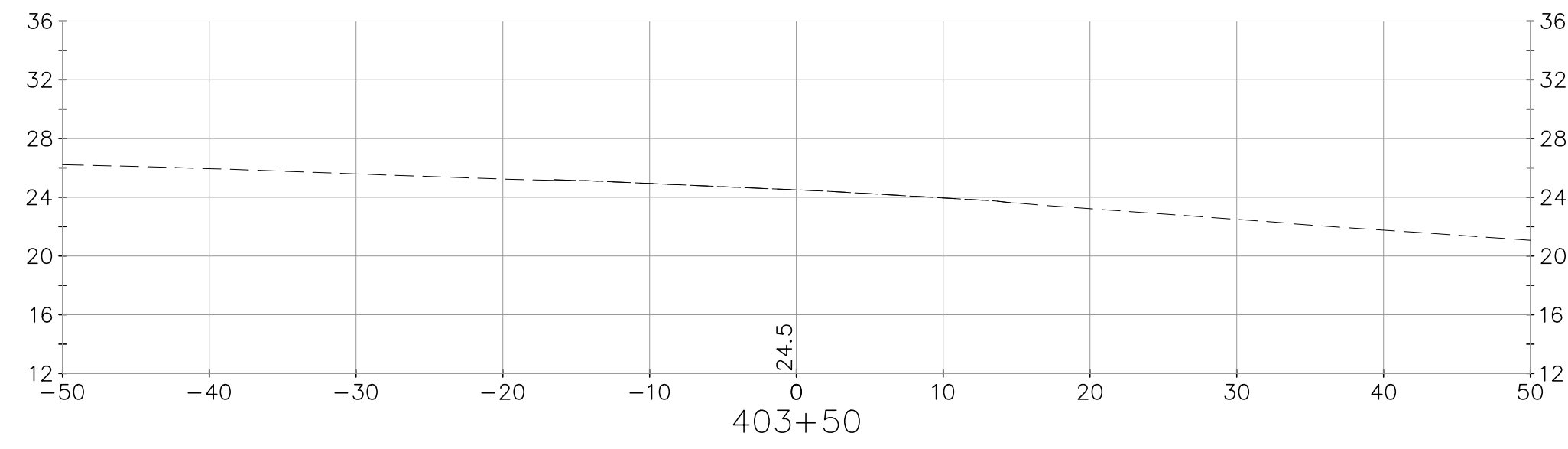
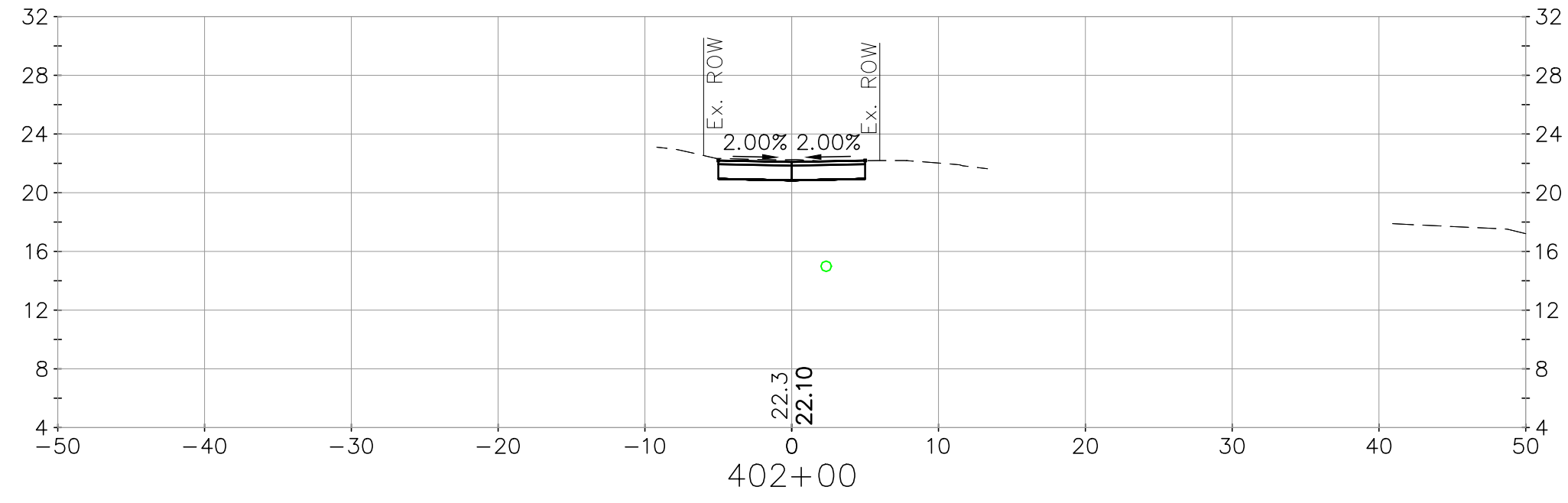
City of Portsmouth, New Hampshire
 Department of Public Works
 Union Street Area
 Improvement Project
 Cross Sections
 Austin Street



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		no. 1 revision date 1/17/2023 by PAC
date: January 2023 project no: 1211 checked by: PAC	designed by: STF/WAB drawn by: WWG approved by: PAC	scale: 0 10' 20' Scale: 1" = 10'
City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Cross Sections Austin Street		
drawing no. XS-13		
sheet: 47 of 54		

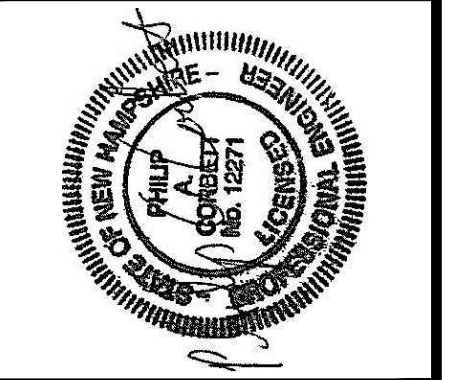


<p>City of Portsmouth, New Hampshire Department of Public Works</p>		<p>Union Street Area Improvement Project</p>		<p>Cross Sections Austin Street</p>	
<p>date: January 2023</p>	<p>project no: 1211</p>	<p>designed by: STF/WAB</p>	<p>drawn by: WWG</p>	<p>checked by: PAC</p>	<p>approved by: PAC</p>
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<p>sheet: 48 of 54</p>		<p>no. 1</p>		<p>revision</p>	
<p>date: 1/17/2023</p>		<p>by: PAC</p>			
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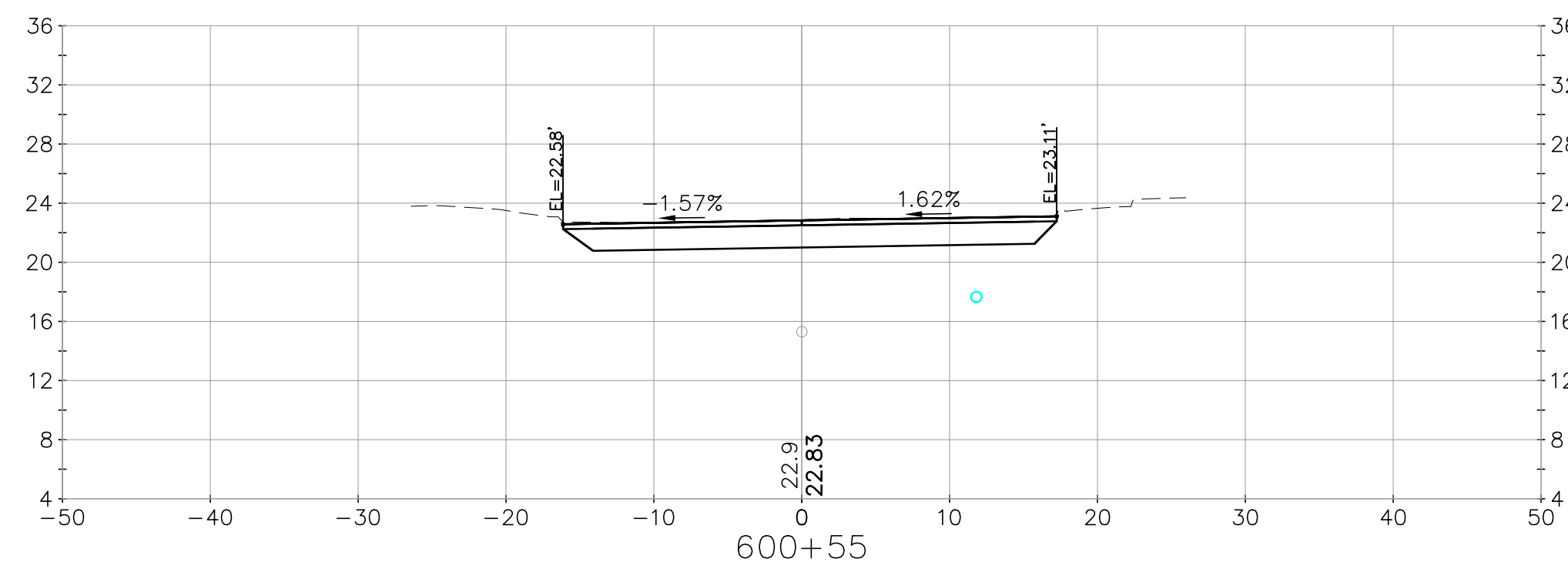
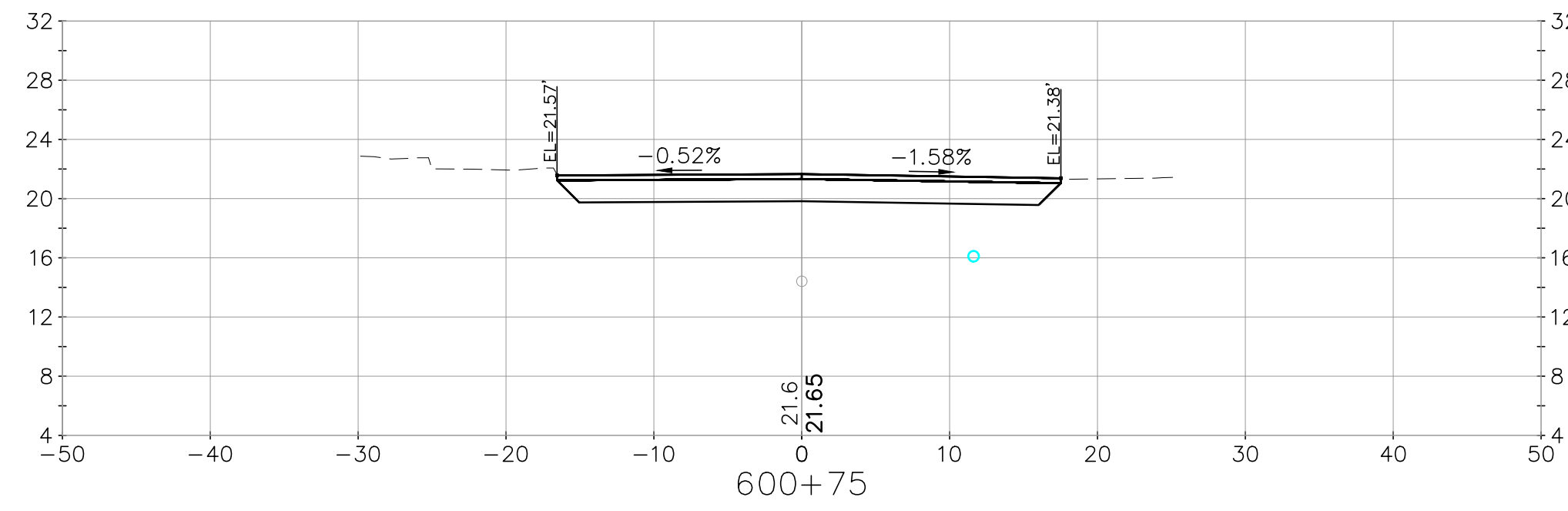
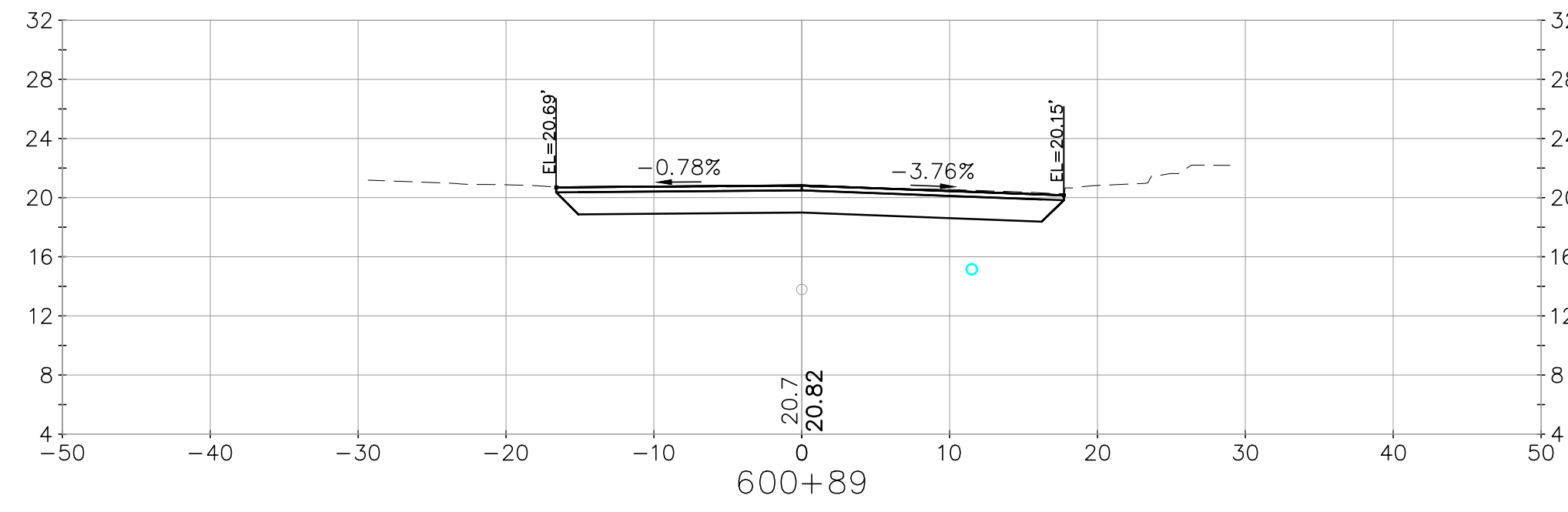
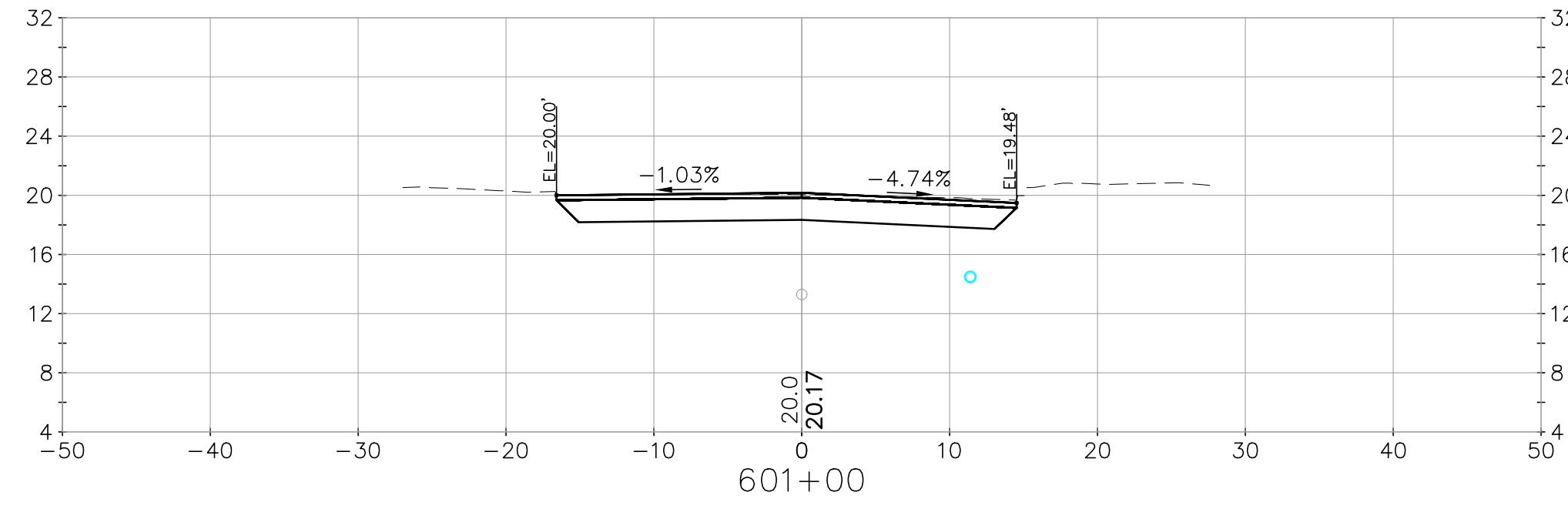
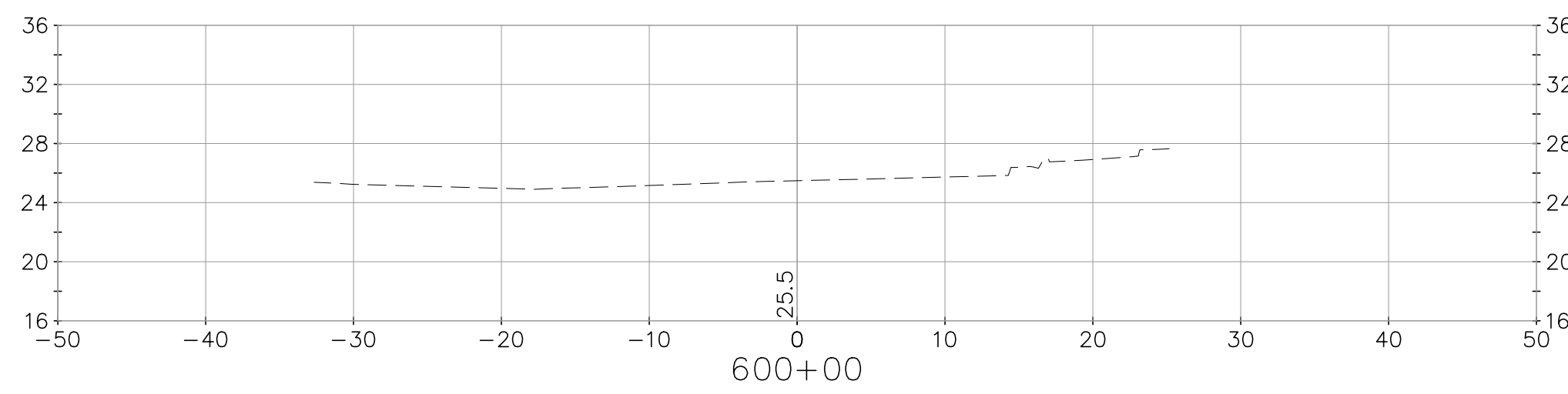
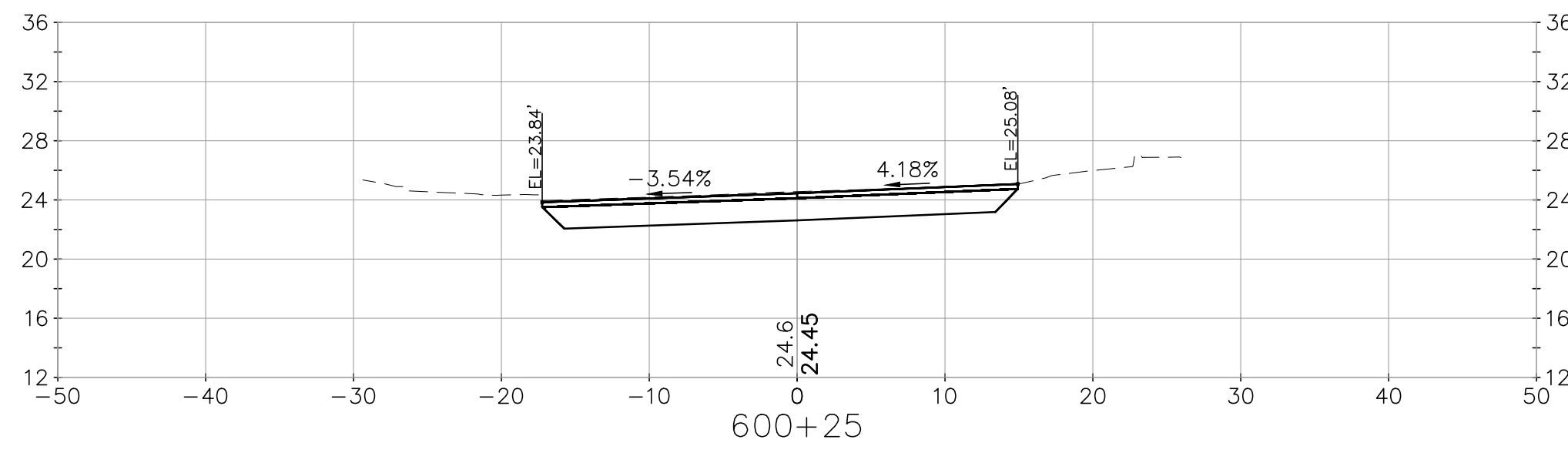
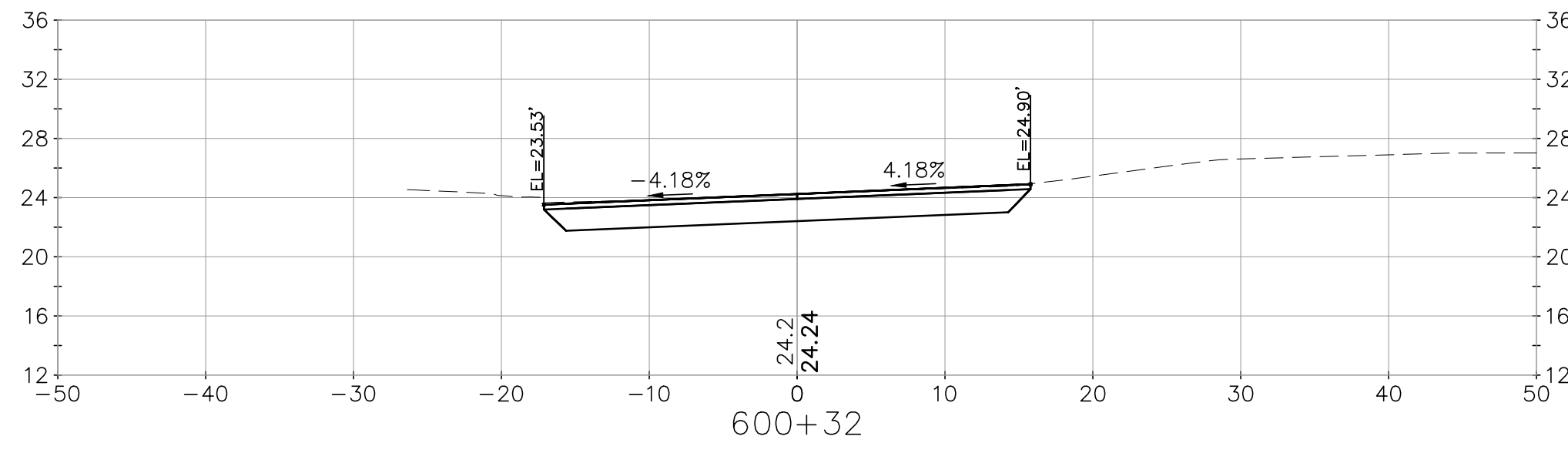
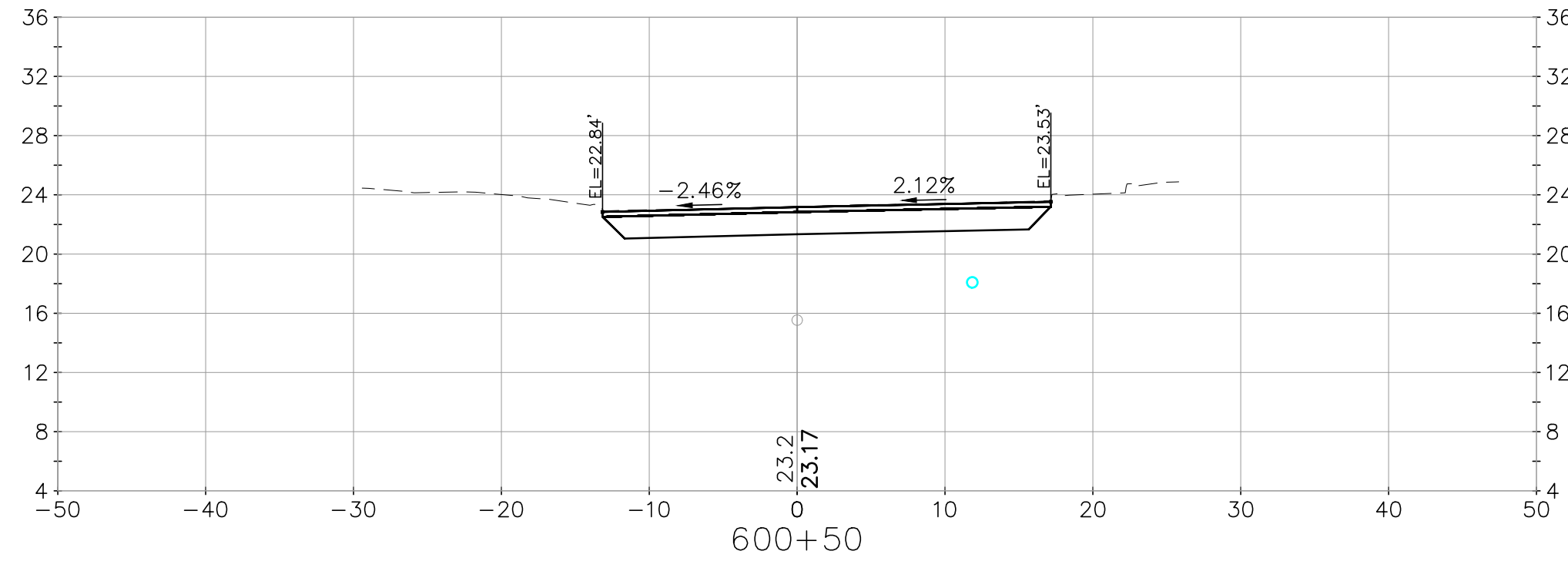


date:	January 2023	designed by:	STF/WAB
project no.:	1211	drawn by:	WWG
checked by:	PAC	approved by:	PAC

scale: 1" = 10'
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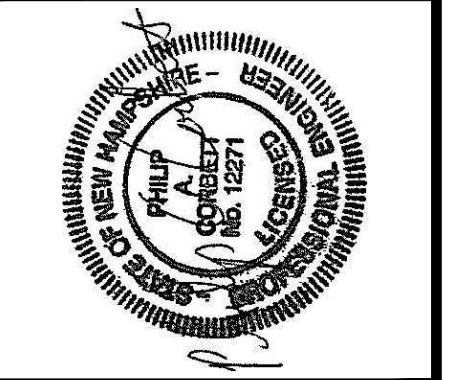
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 Union Street Area
 Improvement Project
 Cross Sections
 Coffins Court

drawing no.
XS-15
 sheet: 49 of 54



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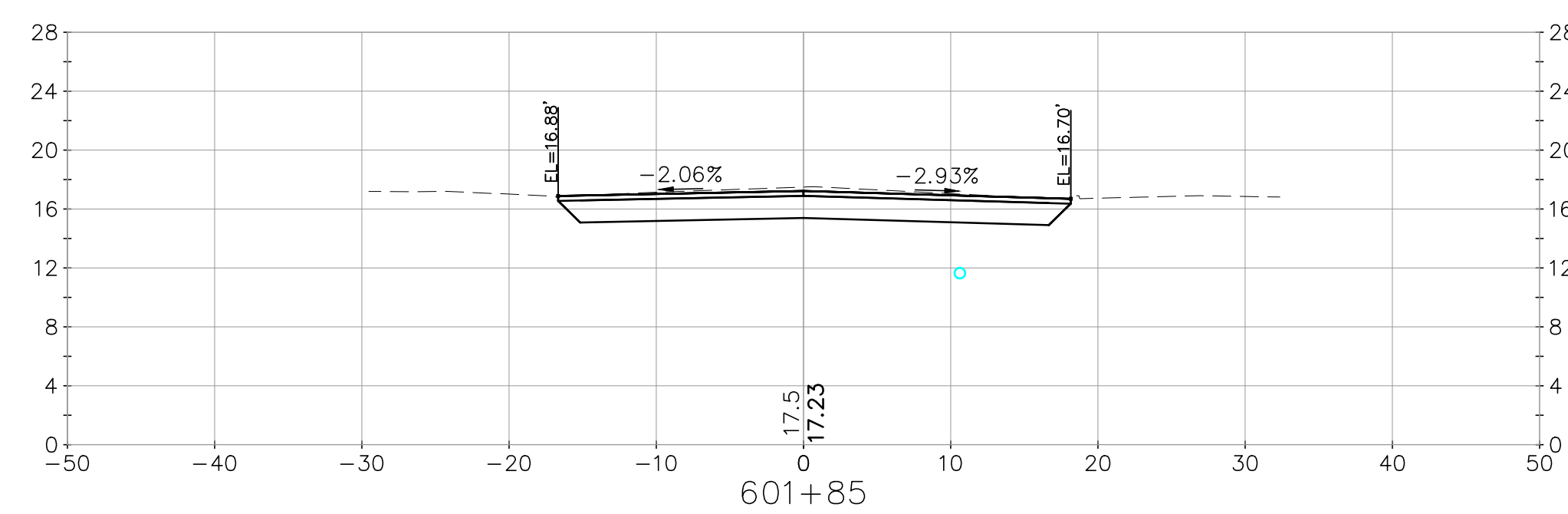
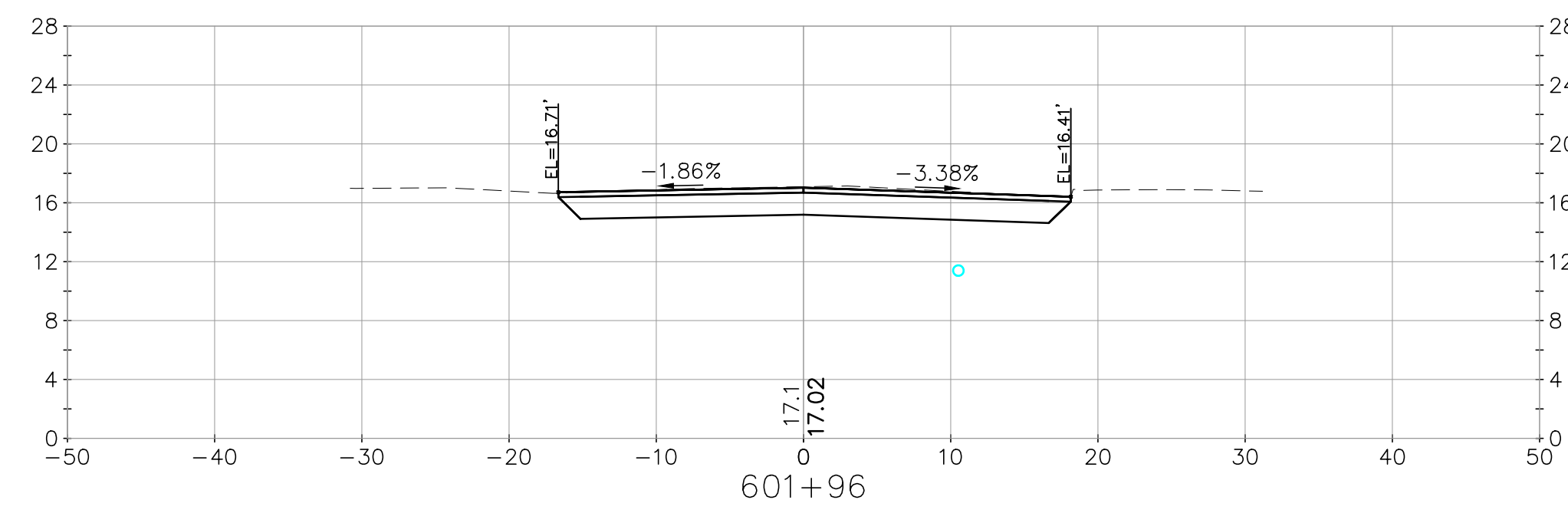
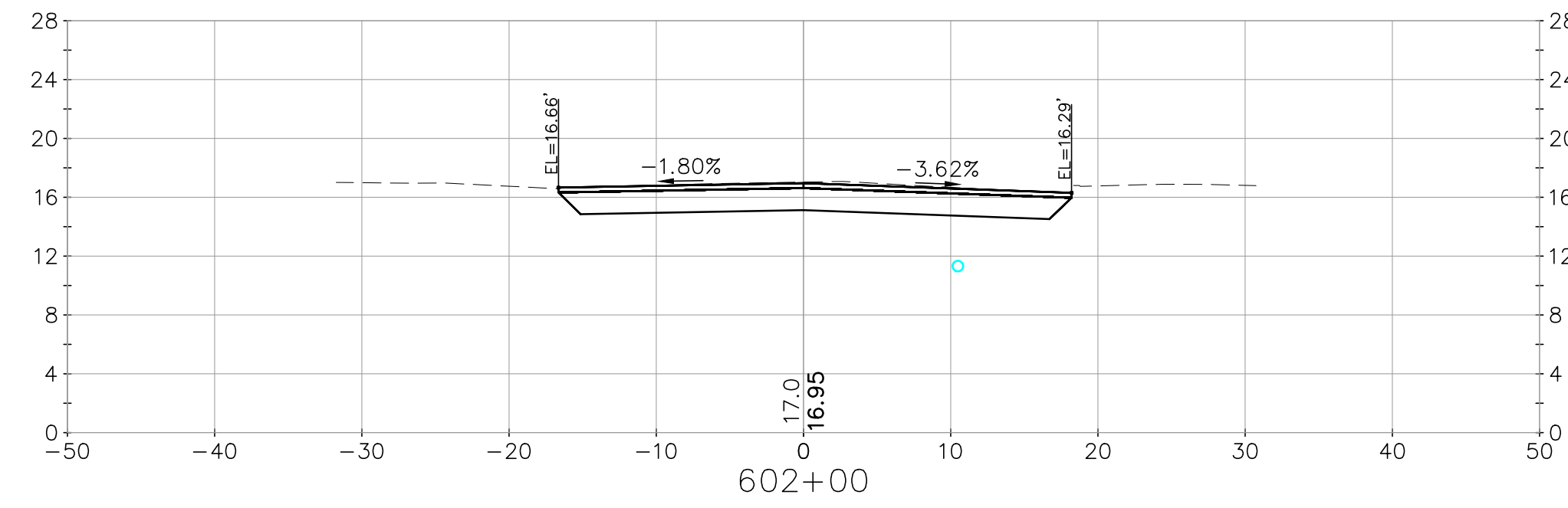
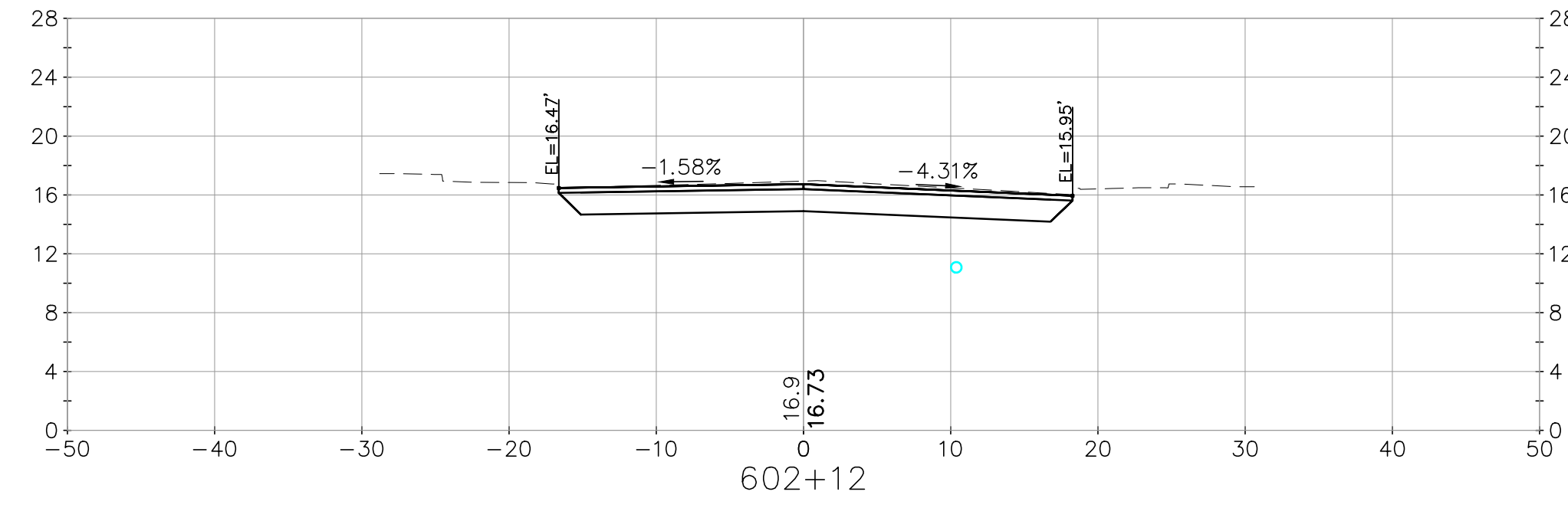
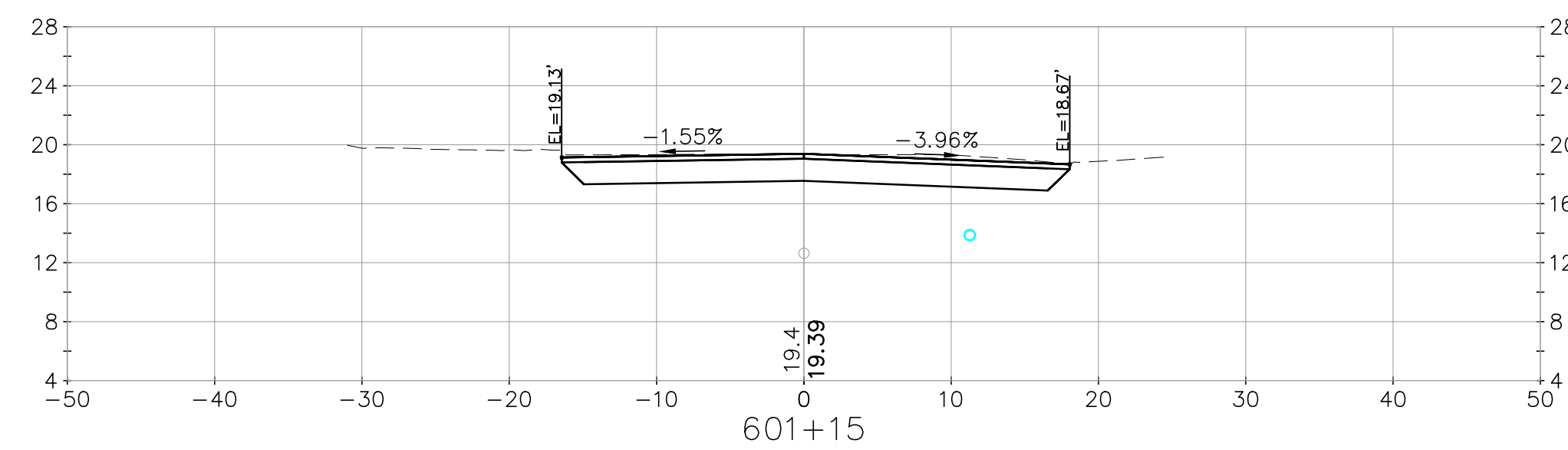
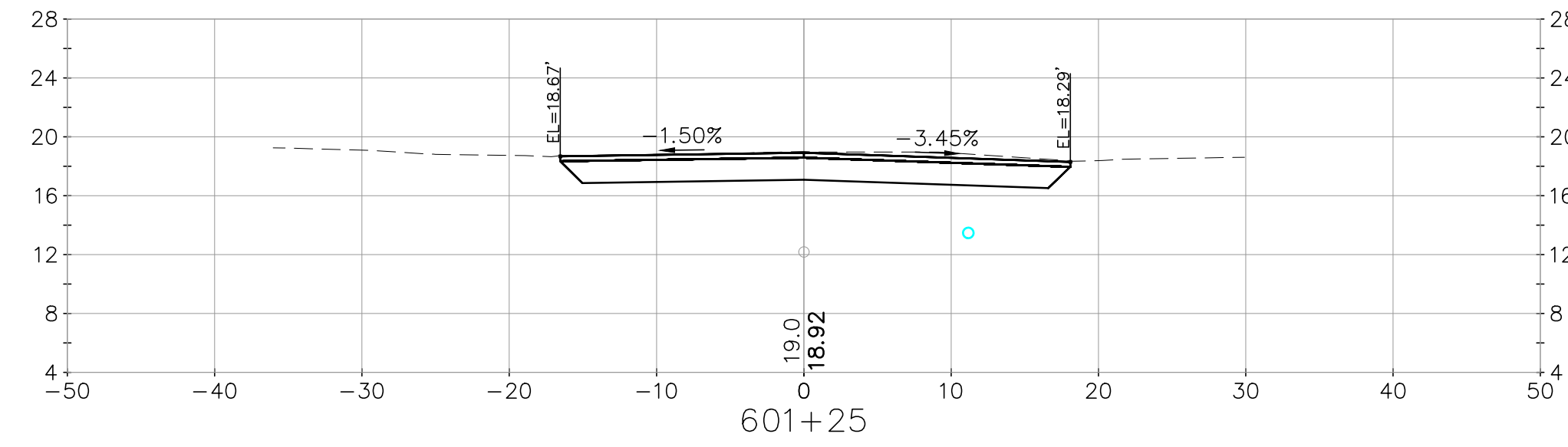
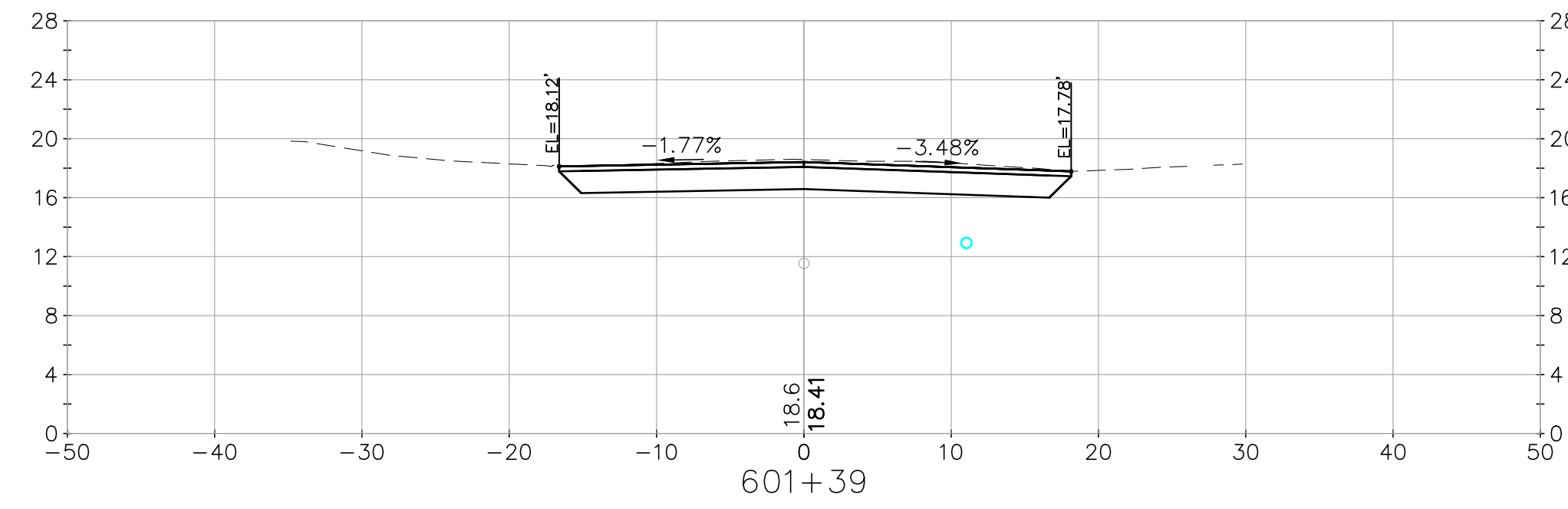
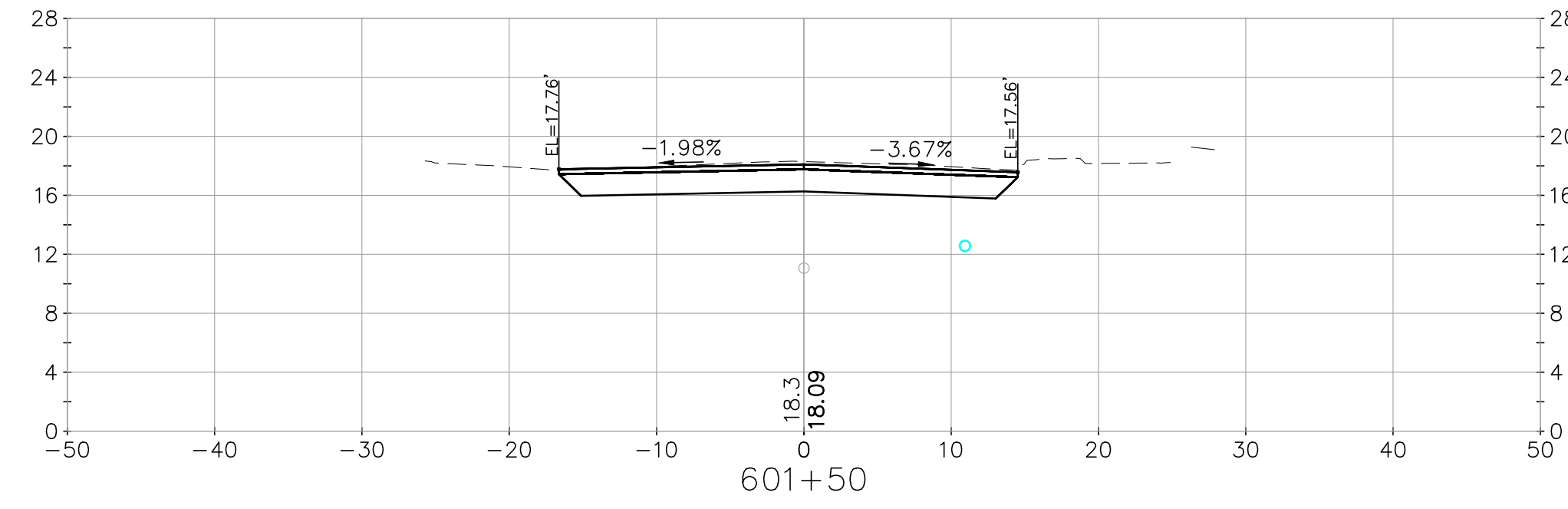
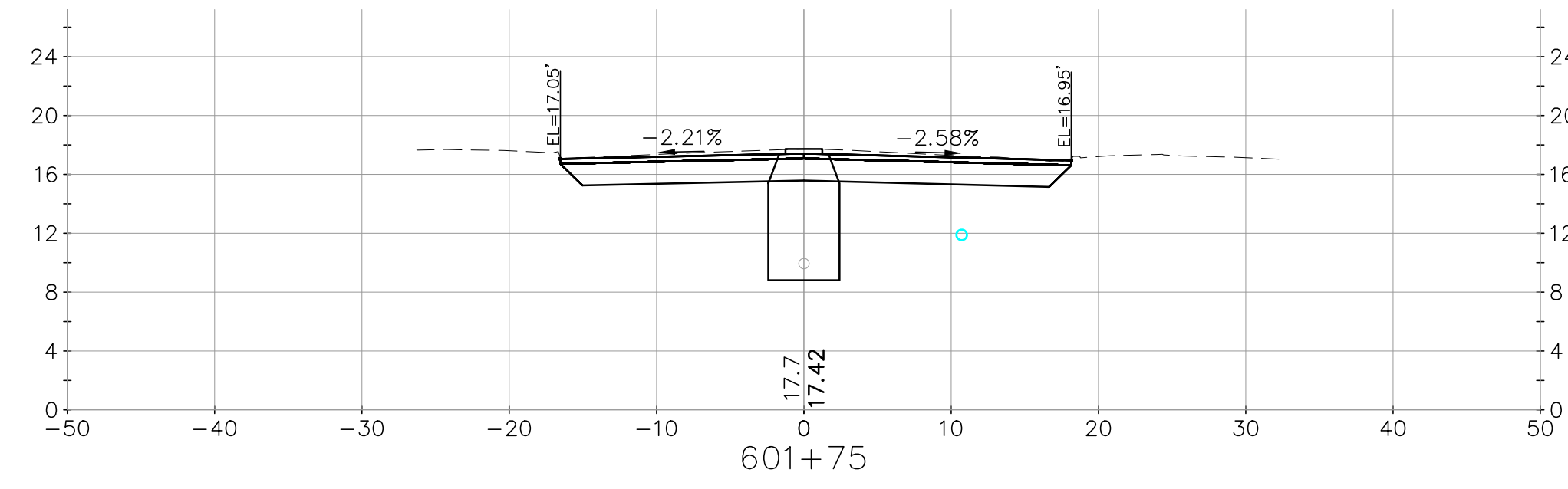
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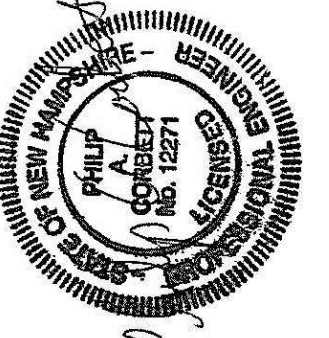


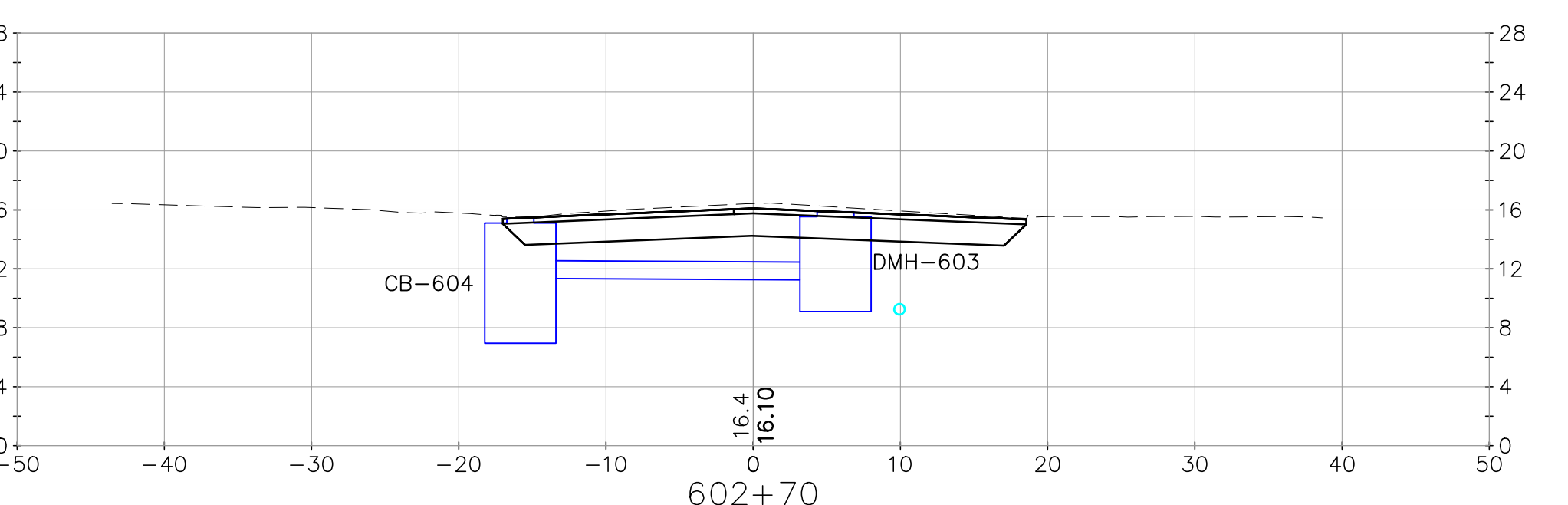
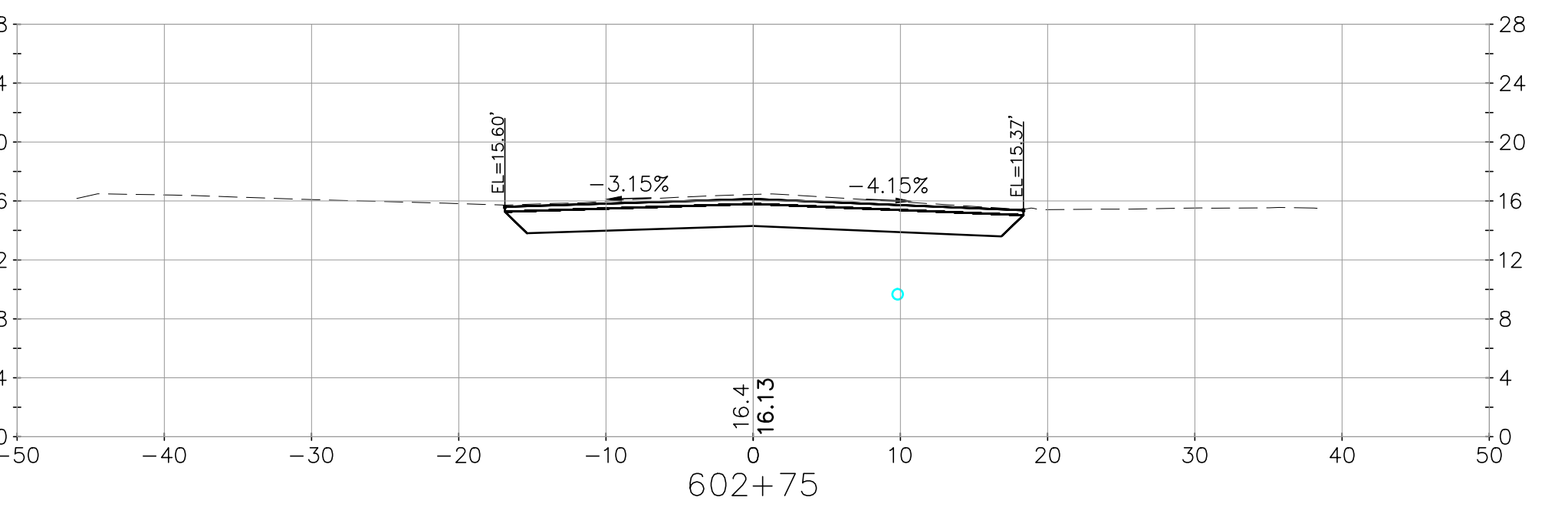
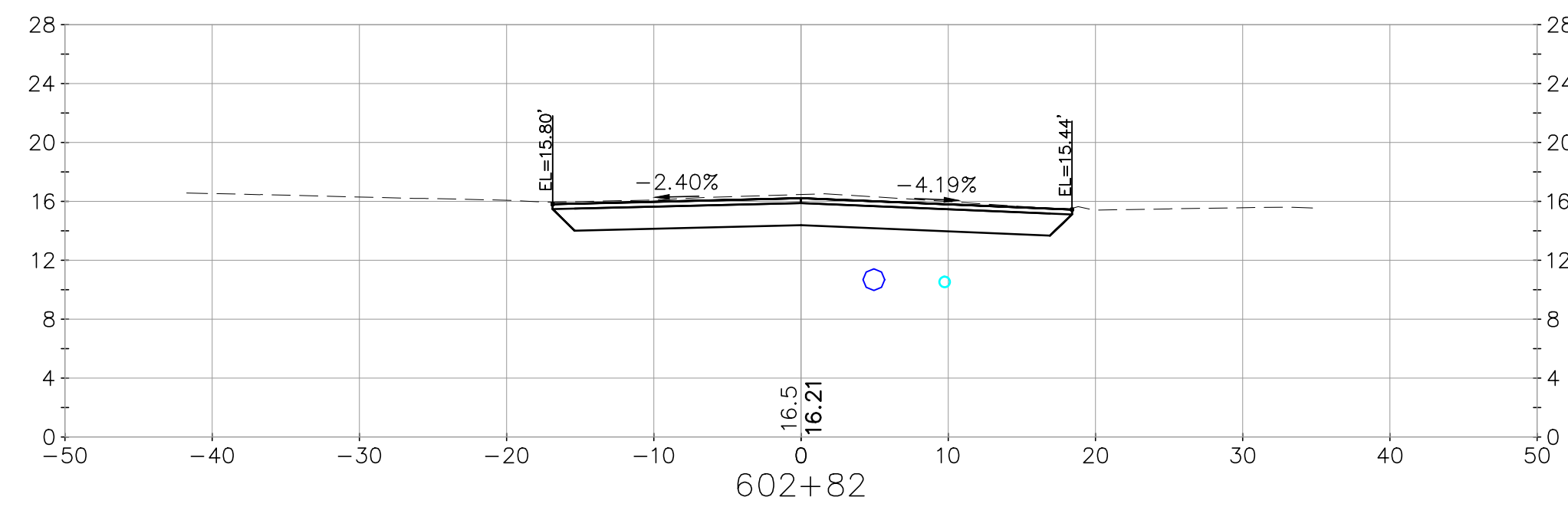
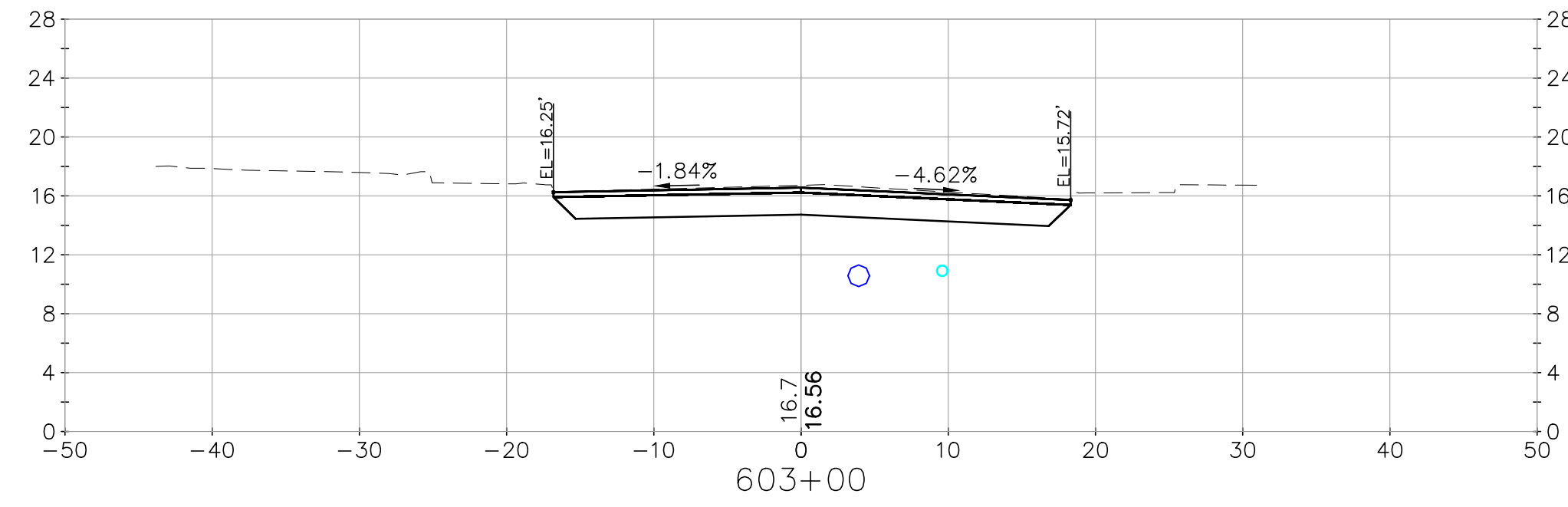
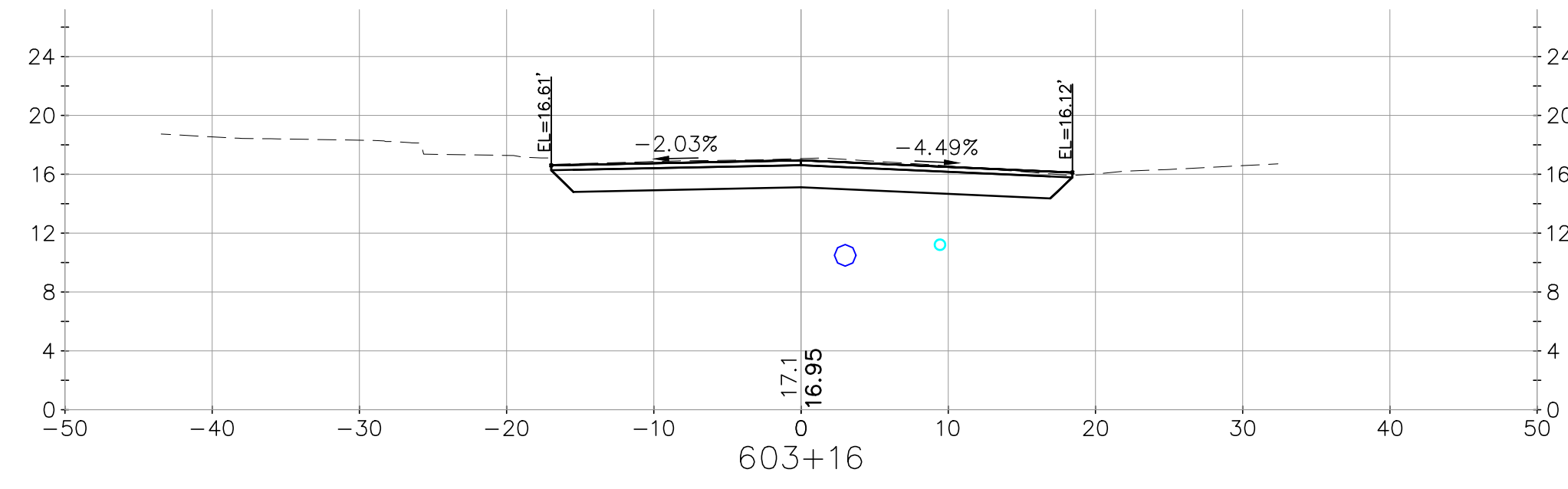
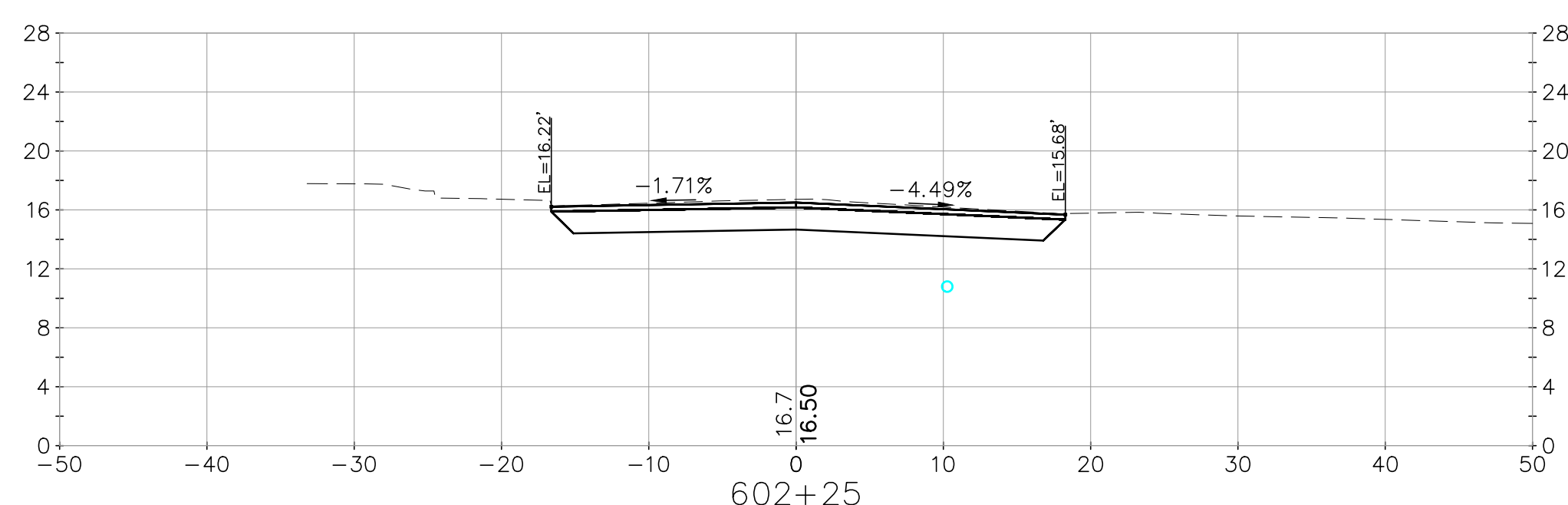
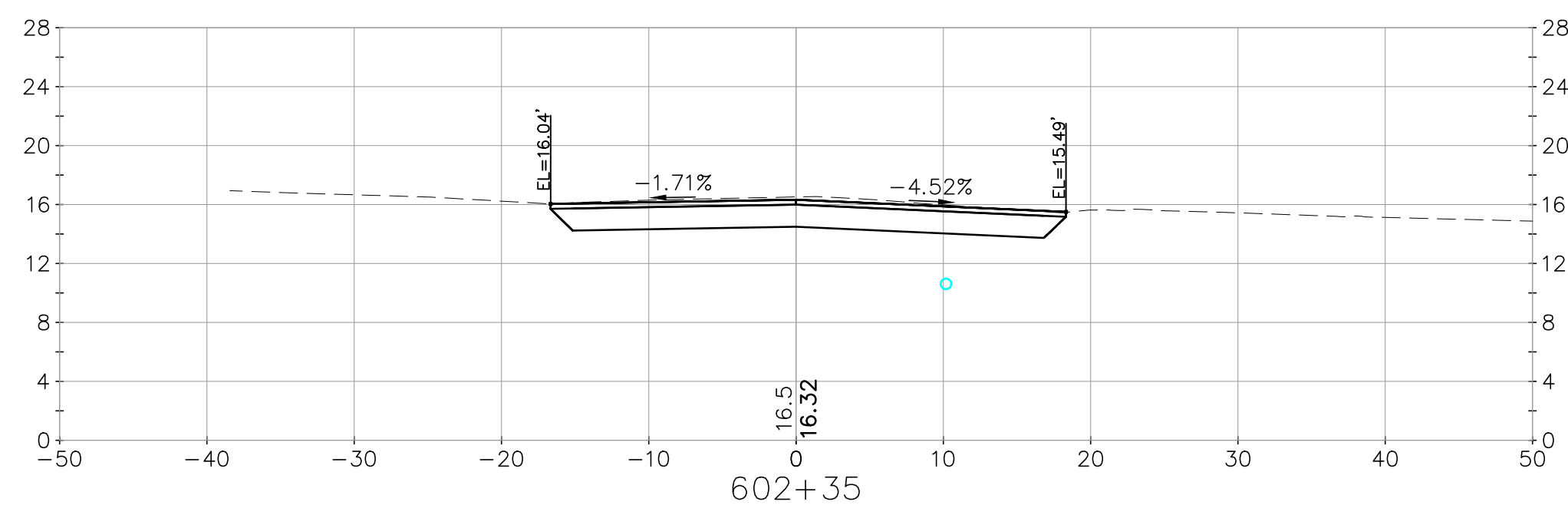
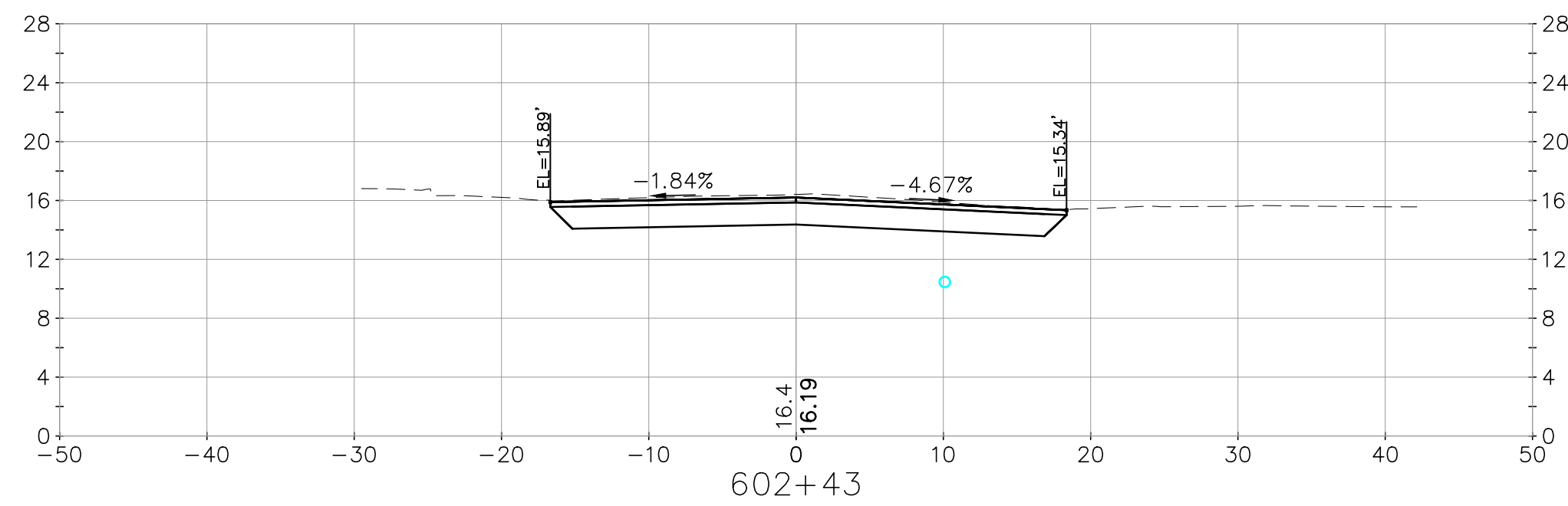
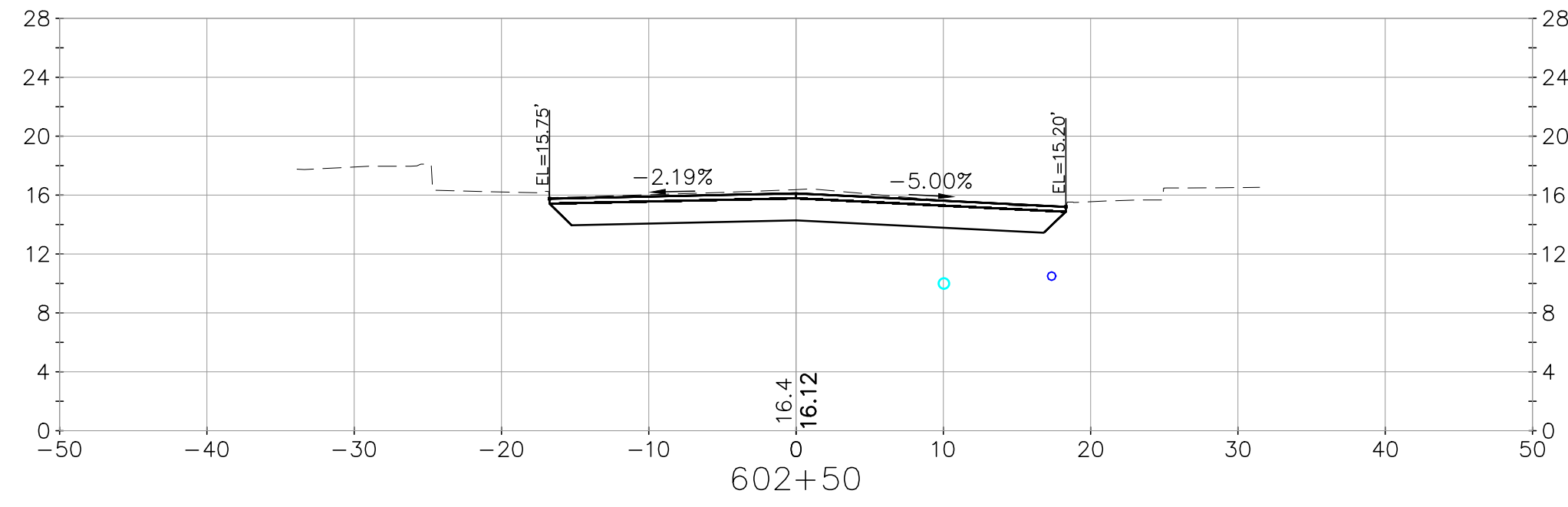
date:	January 2023	designed by:	STF/WAB
project no.:	1211	drawn by:	WWG
checked by:	PAC	approved by:	PAC

scale: 1" = 10'
 0 10' 20'

City of Portsmouth, New Hampshire
 Department of Public Works
 Union Street Area
 Improvement Project
 Cross Sections
 Cabot Street

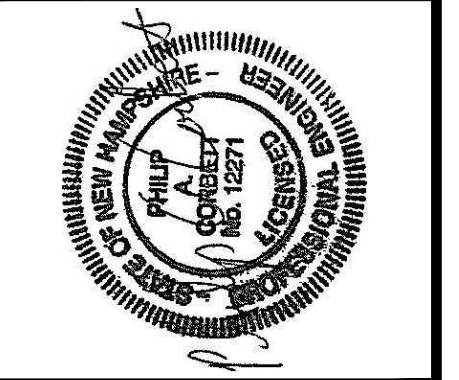


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		designed by: STF/WAB drawn by: WWG approved by: PAC	
date: January 2023 project no: 1211 checked by: PAC		scale: 0 10' 20' Scale: 1" = 10'	
City of Portsmouth, New Hampshire Department of Public Works		Union Street Area Improvement Project Cross Sections Cabot Street	
drawing no: XS-17		sheet: 51 of 54	
1 Issued for Bid		no. revision date 1/17/2023 PAC by	



revision	no.	date	by
1	Issued for Bid	1/17/2023	PAC

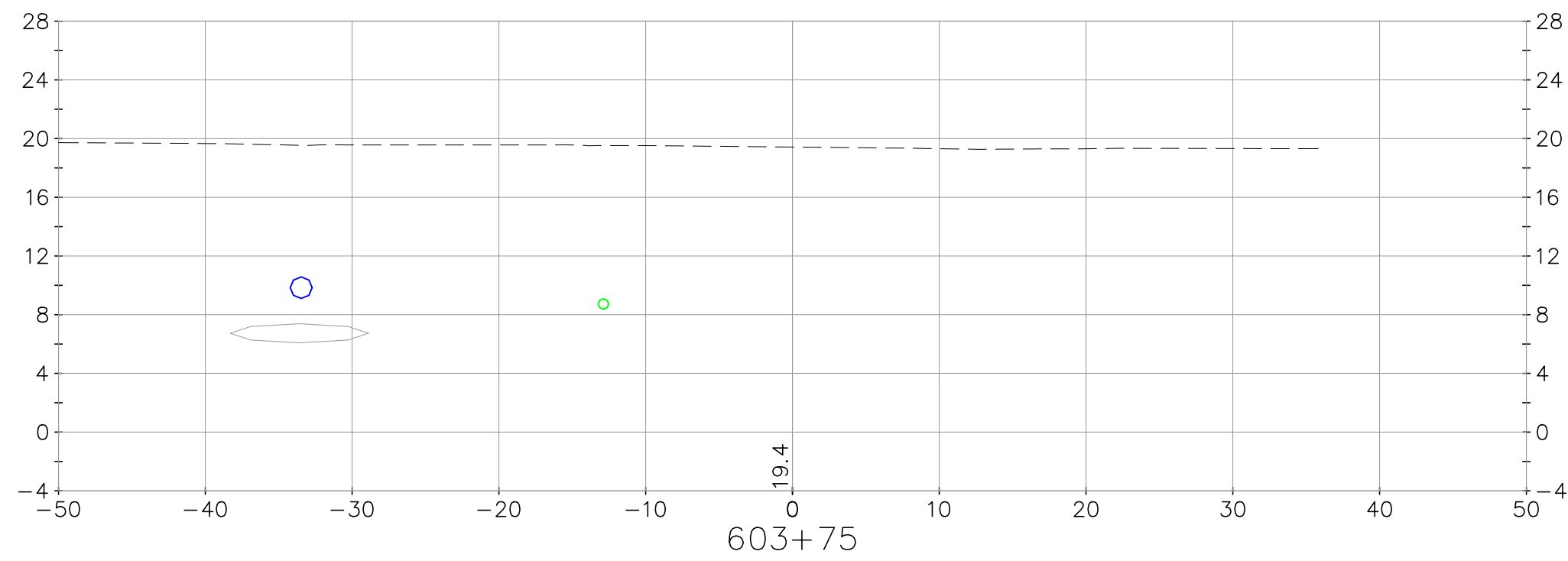
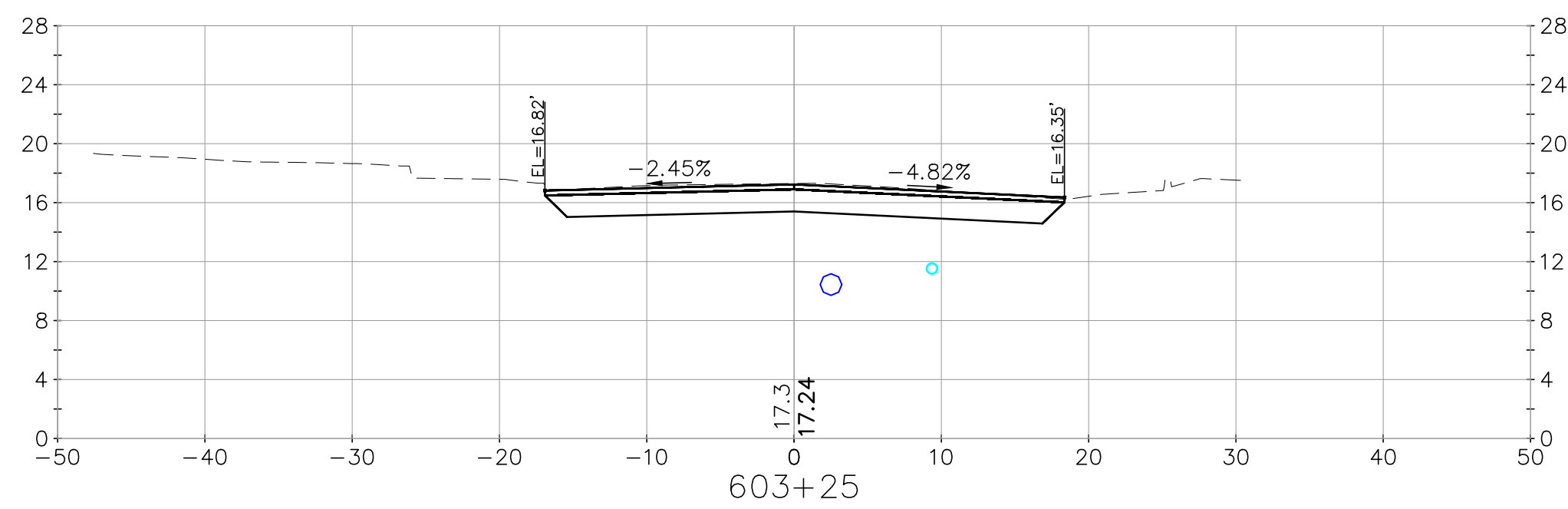
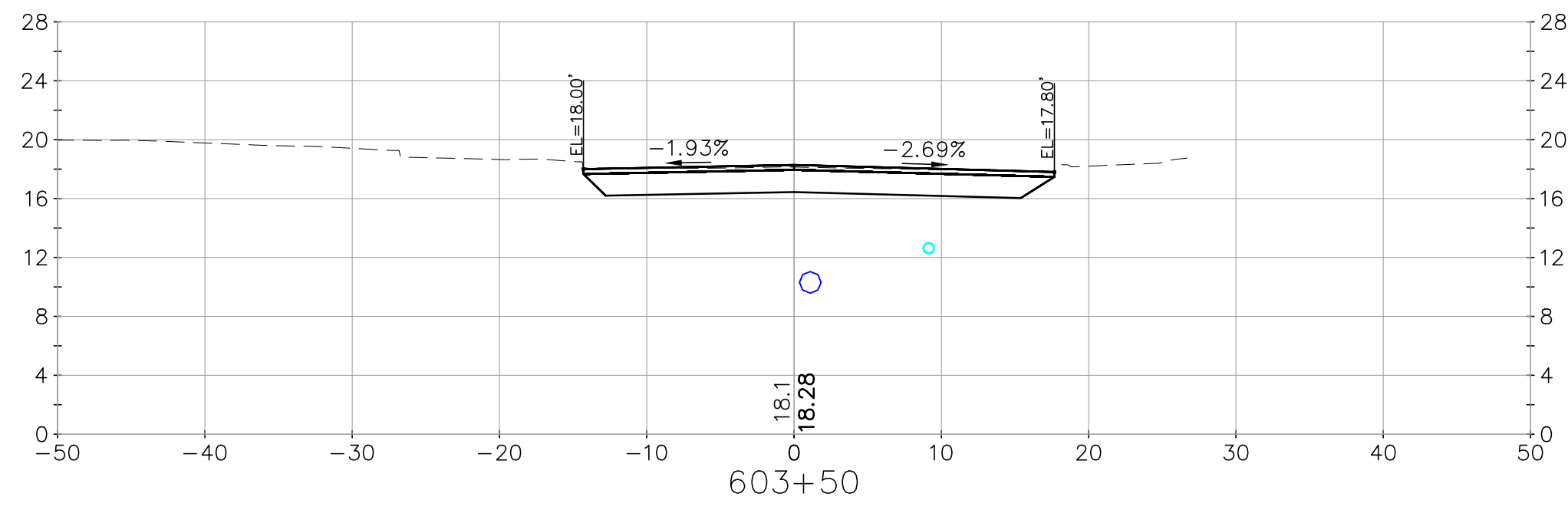
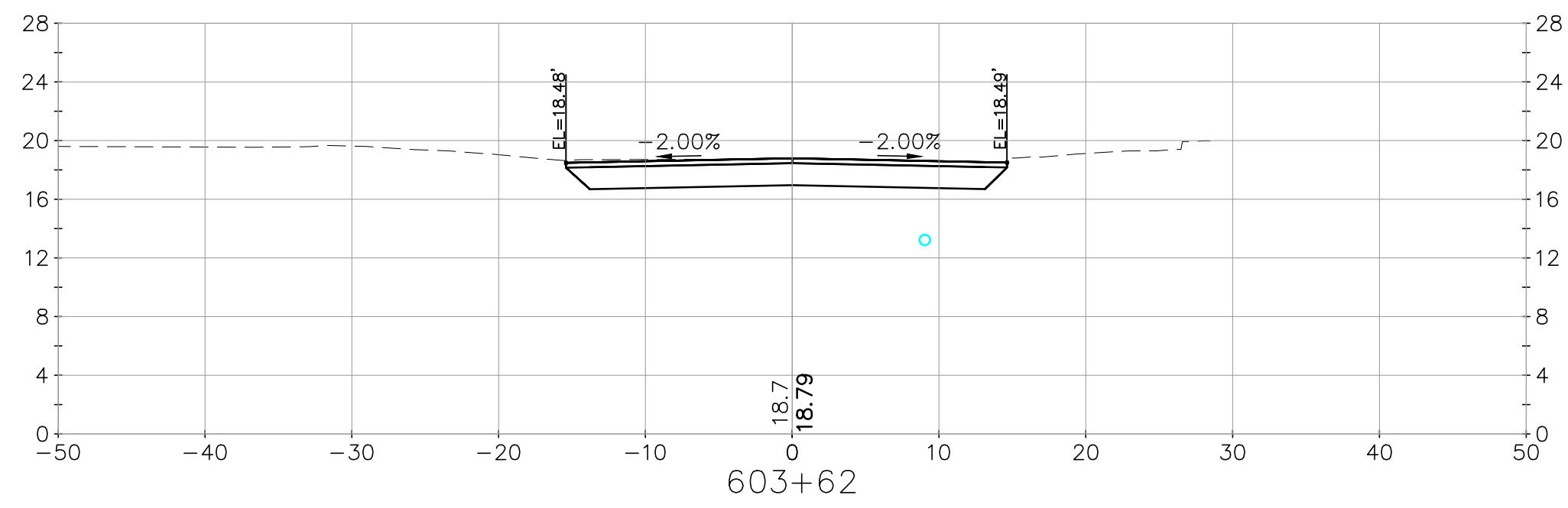
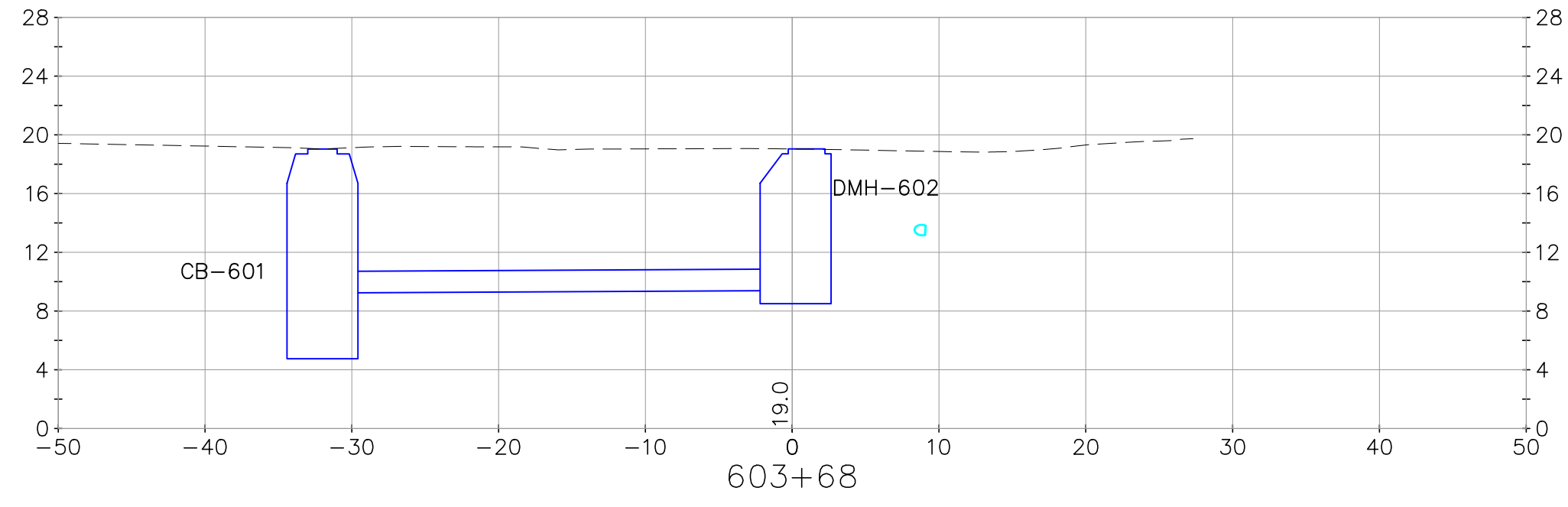
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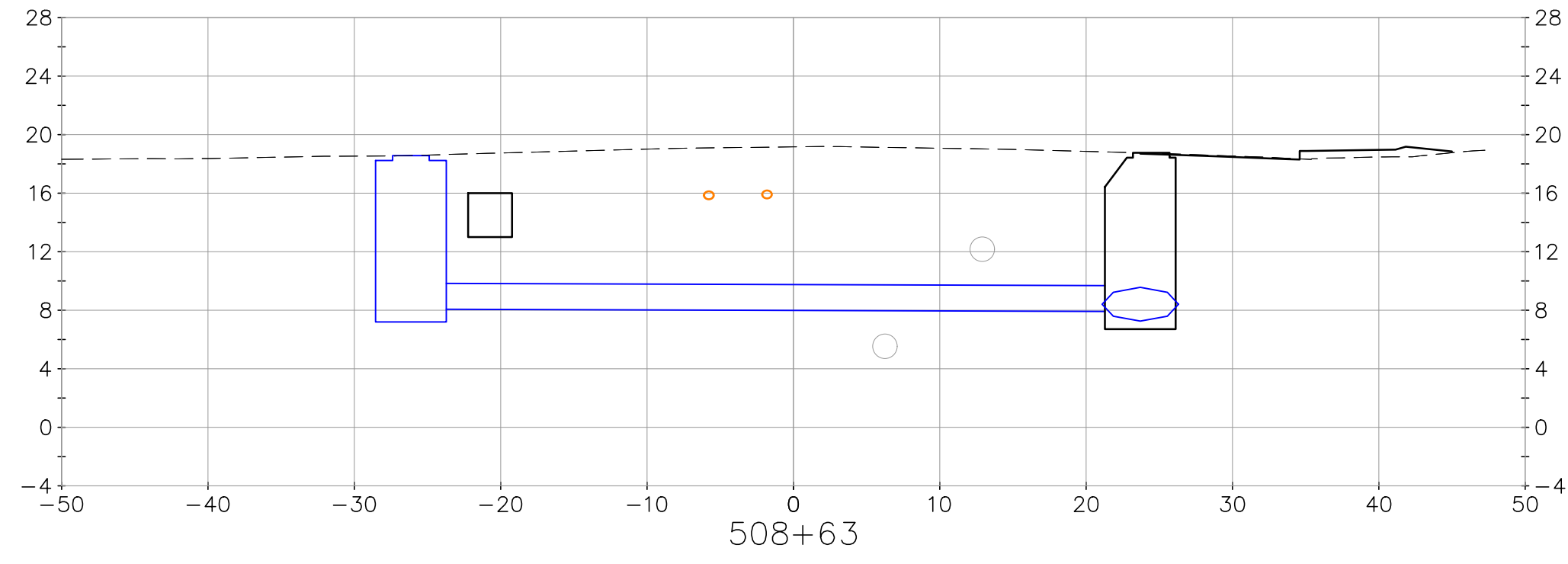
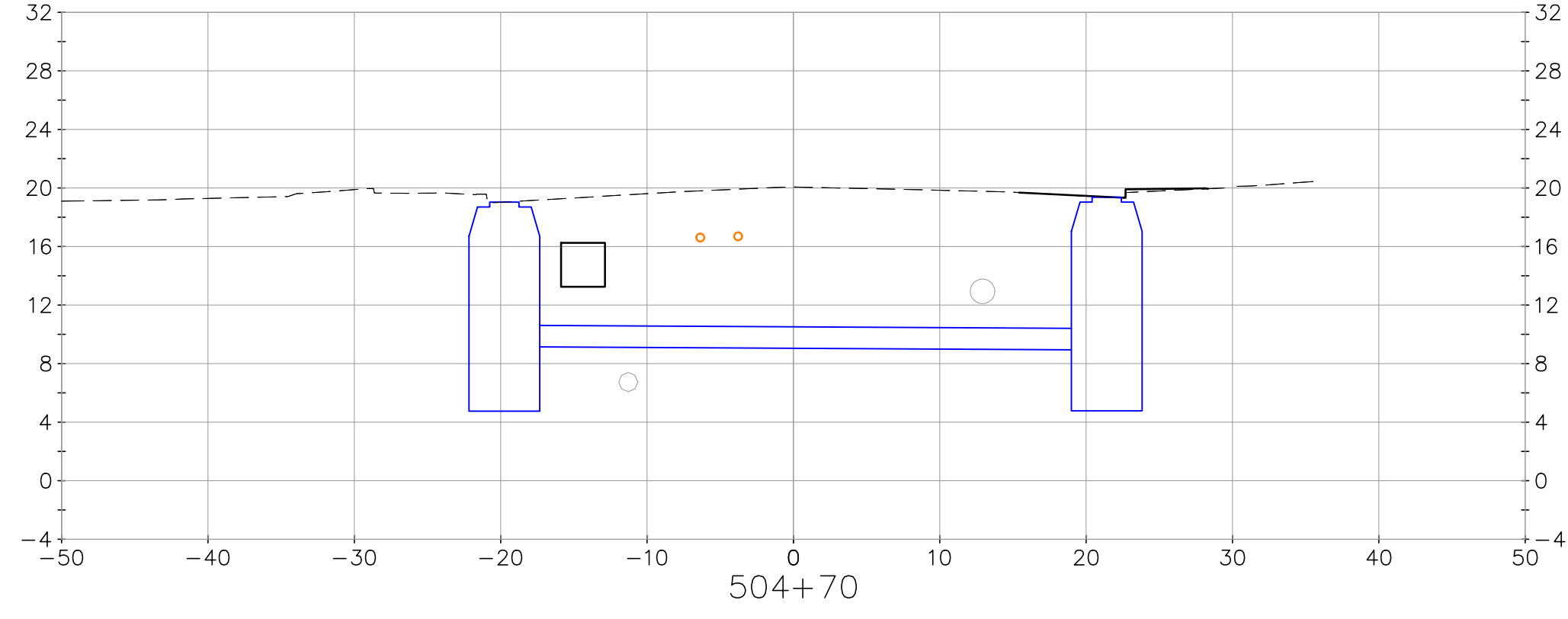
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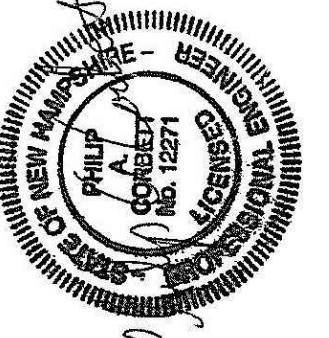
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City of Portsmouth, New Hampshire
 Department of Public Works
 Union Street Area
 Improvement Project
 Cross Sections
 Cabot Street



<p>City of Portsmouth, New Hampshire Department of Public Works</p>		<p>Union Street Area Improvement Project</p>		<p>Cross Sections Cabot Street</p>	
date:	January 2023	project no.:	1211	checked by:	PAC
designed by:	STF/WAB	drawn by:	WWG	approved by:	PAC
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<p>drawing no. XS-19</p>					
<p>sheet: 53 of 54</p>					
<p>revision</p>					
<p>no. 1</p>					
<p>date 1/17/2023</p>					
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City of Portsmouth, New Hampshire Department of Public Works Union Street Area Improvement Project Cross Sections Middle Street		drawing no. XS-20		no. revision date by	1 Issued for Bid 1/17/2023 PAC
sheet: 54 of 54					