

TRANSPORTATION AND WATER DISTRIBUTION IMPROVEMENT PROJECT

PLAN AND PROFILE OF

MAIN STREET

IN THE TOWN OF

WESTFORD

MIDDLESEX COUNTY

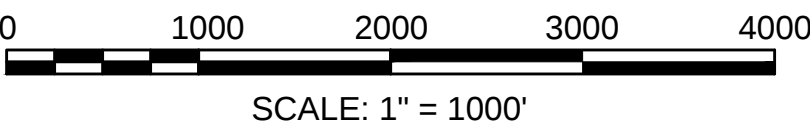
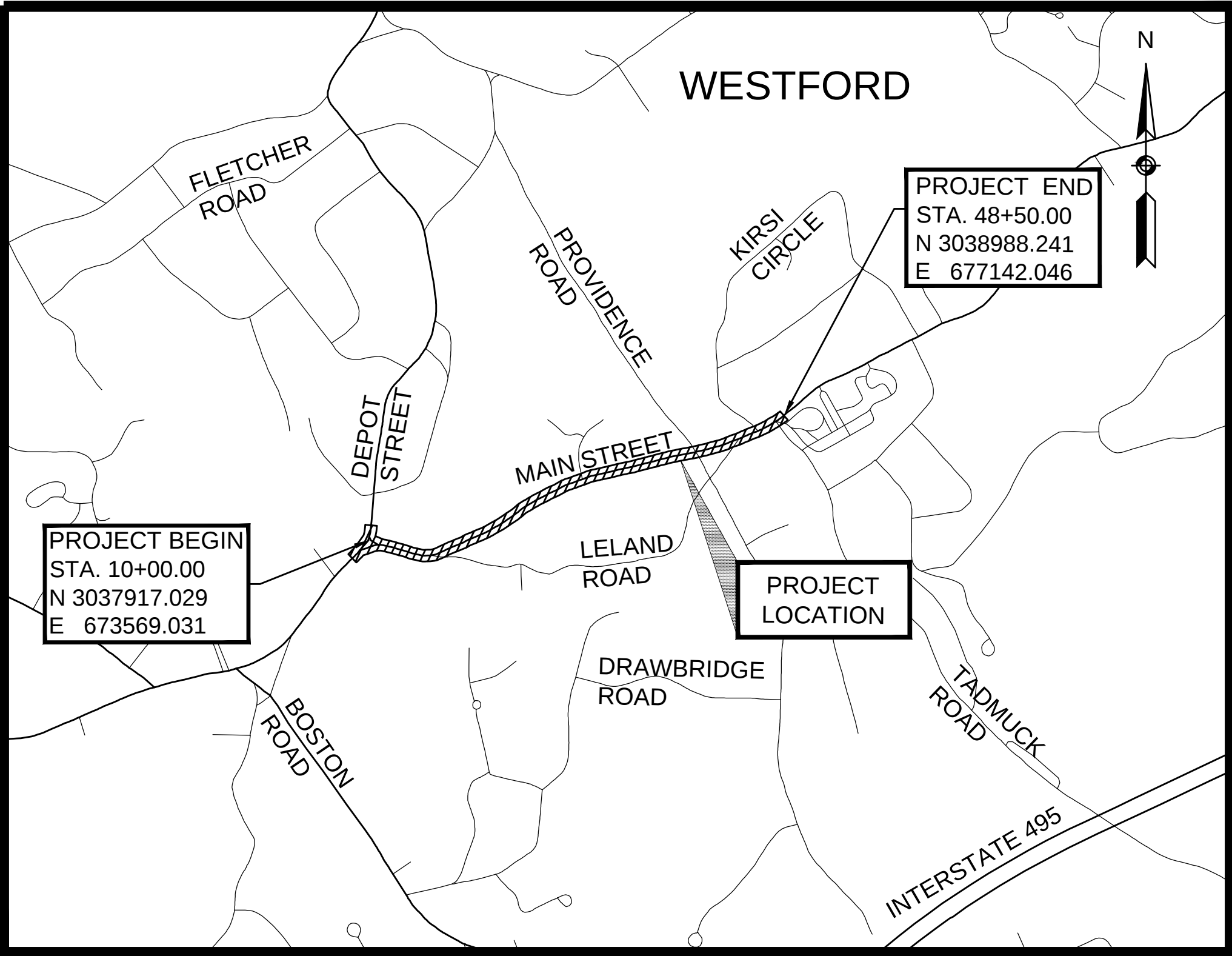
WESTFORD
MAIN STREET
TITLE SHEET & INDEX
SHEET 1 OF 68

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED JULY 1, 2015, THE 2014 CONSTRUCTION STANDARD DETAILS, THE 1996 CONSTRUCTION AND TRAFFIC STANDARD DETAILS, (AS RELATES TO THE PAVEMENT MARKINGS DETAILS ONLY), THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS AND THE STANDARD MUNICIPAL TRAFFIC CODE, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

75% SUBMITTAL

INDEX

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LENGTH OF PROJECT = 3,850 FEET = 0.729 MILES

DESIGN DESIGNATION

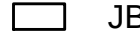
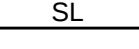
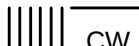
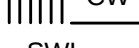
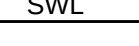
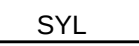
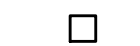
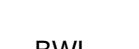
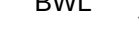
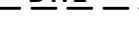
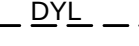
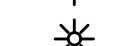
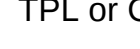
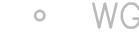
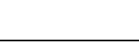
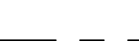
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ADT (2015)	4,000 VPD
ADT (2025)	4,420 VPD
K	9.7%
D	51.0%
T (PEAK HOUR)	3.1%
T (AVERAGE DAY)	1.7%
DHV	430 VPH
DDHV	219 VPH
FUNCTIONAL CLASSIFICATION	URBAN MINOR ARTERIAL

12/18/2016	75% DESIGN	
DATE	DESCRIPTION	REV #



TEC, Inc.
65 Glenn Street | 169 Ocean Blvd
Lawrence, MA 01843 | Hampton, NH 03842

DESIGNED BY SJM	CHECKED BY ADC	DATE 12/18/2015
DRAWN BY PFE	APPROVED BY MCM	PROJECT NO. T0577

GENERAL SYMBOLS			PAVEMENT MARKINGS SYMBOLS			ABBREVIATIONS		WESTFORD MAIN STREET LEGEND & ABBREVIATIONS SHEET 2 OF 68	
EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION	GENERAL	DESCRIPTION		
 JB	 JB	JERSEY BARRIER	 ONLY	 ONLY	PAVEMENT ARROW - WHITE	AADT	ANNUAL AVERAGE DAILY TRAFFIC		
 CB	 CB	CATCH BASIN		 SL	LEGEND "ONLY" - WHITE	ABAN	ABANDON	ABBREVIATIONS (cont.)	
 CBI	 CBI	CATCH BASIN CURB INLET		 CW	STOP LINE	ADJ	ADJUST		
 FP	 FP	FLAG POLE		 SWL	CROSSWALK	APPROX.	APPROXIMATE	GENERAL	
 GP	 GP	GAS PUMP		 SYL	SOLID WHITE LINE	A.C.	ASPHALT CONCRETE		
 MB	 MB	MAIL BOX		 BWL	SOLID YELLOW LINE	ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE	DESCRIPTION	
 PS	 PS	POST SQUARE		 BYL	BROKEN WHITE LINE	BIT.	BITUMINOUS		
 PC	 PC	POST CIRCULAR		 DWL	BROKEN YELLOW LINE	BC	BOTTOM OF CURB	GENERAL	
 WELL	 WELL	WELL		 DYL	DOTTED WHITE LINE	BD.	BOUND		
 EHH	 EHH	ELECTRIC HANDHOLE		 DWLEx	DOTTED WHITE LINE EXTENSION	BL	BASELINE	DESCRIPTION	
 FGP	 FGP	FENCE GATE POST		 DYLEx	DOTTED YELLOW LINE	BLDG	BUILDING		
 GG	 GG	GAS GATE		 DBWL	DOTTED YELLOW LINE EXTENSION	BM	BENCHMARK	GENERAL	
 BHL #	 BHL #	BORING HOLE		 DBYL	DOUBLE WHITE LINE	BO	BY OTHERS		
 MW #	 MW #	MONITORING WELL			DOUBLE YELLOW LINE	BOS	BOTTOM OF SLOPE	DESCRIPTION	
 TP #	 TP #	TEST PIT				BR.	BRIDGE		
 HYD	 HYD	HYDRANT				CB	CATCH BASIN	GENERAL	
 LP	 LP	LIGHT POLE				CBCI	CATCH BASIN WITH CURB INLET		
 CO.BD.		COUNTY BOUND				CC	CEMENT CONCRETE	DESCRIPTION	
 GPS		GPS POINT				CCM	CEMENT CONCRETE MASONRY		
 CMH	 CMH	CABLE MANHOLE (CMH)				CEM	CEMENT	GENERAL	
 DMH	 DMH	DRAINAGE MANHOLE (DMH)				CGMA	COLUMBIA GAS OF MASSACHUSETTS		
 EMH	 EMH	ELECTRIC MANHOLE (EMH)				CI	CURB INLET	DESCRIPTION	
 GMH	 GMH	GAS MANHOLE (GMH)				CIP	CAST IRON PIPE		
 MISC	 MISC	MISC MANHOLE				CIT	CHANGE IN TYPE	GENERAL	
 SMH	 SMH	SEWER MANHOLE (SMH)				CLF	CHAIN LINK FENCE		
 TMH	 TMH	TELEPHONE MANHOLE (TMH)				CL	CENTERLINE	DESCRIPTION	
 WMH	 WMH	WATER MANHOLE (WMH)				CMP	CORRUGATED METAL PIPE		
 MHB	 MHB	MASSACHUSETTS HIGHWAY BOUND				CSP	CORRUGATED STEEL PIPE	GENERAL	
 MON		MONUMENT				CO.	COUNTY		
 SB		STONE BOUND				CONC	CONCRETE	DESCRIPTION	
 TB		TOWN OR CITY BOUND				CONT	CONTINUOUS		
 TAS		TRAVERSE OR TRIANGULATION STATION				CONST	CONSTRUCTION	GENERAL	
 Trolley Pole or Guy Pole	 Trolley Pole or Guy Pole	TROLLEY POLE OR GUY POLE				CR GR	CROWN GRADE		
 HTP	 HTP	TRANSMISSION POLE				DHV	DESIGN HOURLY VOLUME	DESCRIPTION	
 UFB	 UFB	UTILITY POLE W/ FIREBOX				DI	DROP INLET		
 UPDL	 UPDL	UTILITY POLE WITH DOUBLE LIGHT				DI	DUCTILE IRON	GENERAL	
 ULT	 ULT	UTILITY POLE W / 1 LIGHT				DIA	DIAMETER		
 UPL	 UPL	UTILITY POLE				DIP	DUCTILE IRON PIPE	DESCRIPTION	
 BUSH		BUSH				DW	STEADY DON'T WALK - PORTLAND ORANGE		
 TREE		TREE				DWY	DRIVEWAY	GENERAL	
 STUMP		STUMP				ELEV (or EL.)	ELEVATION		
 SWAMP / MARSH		SWAMP / MARSH				EMB	EMBANKMENT	DESCRIPTION	
 WG	 WG	WATER GATE				EOP	EDGE OF PAVEMENT		
 PM	 PM	PARKING METER				EXIST (or EX)	EXISTING	GENERAL	
		OVERHEAD CABLE/WIRE				EXC	EXCAVATION		
		CURBING				F&C	FRAME AND COVER	DESCRIPTION	
 Contours (On-the-ground survey data)		CONTOURS (ON-THE-GROUND SURVEY DATA)				F&G	FRAME AND GRATE		
 Contours (Photogrammetric data)		CONTOURS (PHOTOGRAMMETRIC DATA)				FDN.	FOUNDATION	GENERAL	
 Underground Drain Pipe		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)				FLDSTN	FIELDSTONE		
 Underground Electric Duct		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)				GAR	GARAGE	DESCRIPTION	
 Underground Gas Main		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)				GD	GROUND		
 Underground Sewer Main		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)				GG	GAS GATE	GENERAL	
 Underground Telephone Duct		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)				GI	GUTTER INLET		
 Underground Water Main		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)				GIP	GALVANIZED IRON PIPE	DESCRIPTION	
 Balanced Stone Wall		BALANCED STONE WALL				GRAN	GRANITE		
 Guard Rail - Steel Posts		GUARD RAIL - STEEL POSTS				GRAV	GRAVEL	GENERAL	
 Guard Rail - Wood Posts		GUARD RAIL - WOOD POSTS				GRD	GUARD		
 Chain Link or Metal Fence		CHAIN LINK OR METAL FENCE				HDW	HEADWALL	DESCRIPTION	
 Wood Fence		WOOD FENCE				HMA	HOT MIX ASPHALT		
 Compost Filter Tube		COMPOST FILTER TUBE				HOR	HORIZONTAL	GENERAL	
 Tree Line		TREE LINE				HYD	HYDRANT		
 Sawcut Line		SAWCUT LINE				INV	INVERT	DESCRIPTION	
 Top or Bottom of Slope		TOP OR BOTTOM OF SLOPE				JCT	JUNCTION		
 Limit of Edge of Pavement or Cold Plane and Overlay		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY				L	LENGTH OF CURVE	GENERAL	
 Bank of River or Stream		BANK OF RIVER OR STREAM				LB	LEACH BASIN		
 Border of Wetland		BORDER OF WETLAND				LP	LIGHT POLE	DESCRIPTION	
 100 FT Wetland Buffer		100 FT WETLAND BUFFER				LT	LEFT		
 200 FT Riverfront Buffer		200 FT RIVERFRONT BUFFER				LSA	LANDSCAPED AREA	GENERAL	
 State Highway Layout		STATE HIGHWAY LAYOUT				MAX	MAXIMUM		
 Town or City Layout		TOWN OR CITY LAYOUT				MB	MAILBOX	DESCRIPTION	
 County Layout		COUNTY LAYOUT				MH	MANHOLE		
 Railroad Sideline		RAILROAD SIDELINE				MHB	MASSACHUSETTS HIGHWAY BOUND	GENERAL	
 Town or City Boundary Line		TOWN OR CITY BOUNDARY LINE				MIN	MINIMUM		
 Property Line or Approximate Property Line		PROPERTY LINE OR APPROXIMATE PROPERTY LINE				NGRID	NATIONAL GRID	DESCRIPTION	
 Easement		EASEMENT				NIC	NOT IN CONTRACT		
						NO.	NUMBER	GENERAL	
						PC	POINT OF CURVATURE		
						PCC	POINT OF COMPOUND CURVATURE	DESCRIPTION	
						P.G.L.	PROFILE GRADE LINE		
						PI	POINT OF INTERSECTION	GENERAL	
						POC	POINT ON CURVE		
						POT	POINT ON TANGENT	DESCRIPTION	
						PRC	POINT OF REVERSE CURVATURE		
						PROJ	PROJECT	GENERAL	
						PROP	PROPOSED		
						PSB	PLANTABLE SOIL BORROW	DESCRIPTION	

GENERAL NOTES:

1.

EXISTING CONDITIONS INFORMATION COMPILED FROM SURVEY BY GCG ASSOCIATES, INC., WILMINGTON, MASSACHUSETTS COMPLETED IN JULY 2015.

HORIZONTAL DATUM = NAD83 (MASSACHUSETTS STATE PLANE COORDINATES)
VERTICAL DATUM = NAVD88
2.

ALL EXISTING TOWN LOCATION LINES HAVE BEEN ESTABLISHED BY ON-THE-GROUND SURVEY. ALL PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR LOCATIONS ARE SHOWN AS APPROXIMATE.
3.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL CONTACT DIGSAFE (1-888-DIGSAFE) A MINIMUM OF 72 HOURS PRIOR TO ANY CONSTRUCTION TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
4.

WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
5.

ALL MUNICIPALLY OWNED UTILITY STRUCTURES (CATCH BASINS, DRAIN MANHOLES, SEWER MANHOLES, WATER GATES, ETC.) SHALL BE ADJUSTED BY THE CONTRACTOR TO FINISHED GRADE UNLESS DIRECTED OTHERWISE. CONTRACTOR SHALL COORDINATE WITH THE WESTFORD DEPARTMENT OF PUBLIC WORKS (WDPW) TO ALLOW FOR THE REPLACEMENT OF EXISTING UTILITY STRUCTURES IN POOR CONDITION.
6.

ALL PRIVATELY OWNED UTILITY STRUCTURES (GAS GATES, ELECTRIC/TELEPHONE MANHOLES, ETC.) SHALL BE ADJUSTED TO FINISHED GRADE BY THE PRIVATE UTILITY COMPANY, UNLESS DIRECTED OTHERWISE. THE CONTRACTOR SHALL COORDINATE PAYMENT FROM PRIVATE UTILITY COMPANIES FOR ADJUSTMENT OF PRIVATE UTILITY STRUCTURES DONE BY THE CONTRACTOR.
7.

CATCH BASIN FRAMES AND GRATES SHALL BE IN CONFORMANCE WITH TOWN OF WESTFORD STANDARDS.
8.

PROPOSED LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 1.0% (MINIMUM) UNLESS OTHERWISE NOTED. ALL DRAIN PIPES SHALL BE INSTALLED 0.1' (MINIMUM) ABOVE EXISTING INVERT OUT.
9.

AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
10.

ALL DISTURBED AREAS OUTSIDE THE CURBLINE SHALL BE STABILIZED WITH 4" LOAM AND SEED, UNLESS OTHERWISE NOTED.
11.

THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R), AS APPROVED BY THE ENGINEER.
12.

THE TERM "MEET EXIST" MEANS TO MEET BOTH THE EXISTING ALIGNMENT AND ELEVATION.
13.

ALL EXISTING TREES WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS OTHERWISE NOTED. ALL PROVIDED DIMENSIONS REFER TO THE DIAMETER AT BREAST HEIGHT.
14.

ALL PROPOSED CURVED GRANITE CURB SHALL BE ORDERED NEW, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
15.

ELECTRONIC FILES TO BE PROVIDED BY THE ENGINEER TO THE CONTRACTOR FOR LAYOUT PURPOSES BY THEIR SURVEYOR.
16.

BOLD TEXT AND LINES INDICATE PROPOSED WORK.
17.

LIGHT TEXT AND LINES INDICATE APPROXIMATE EXISTING CONDITIONS.
18.

SILTATION CONTROL MEASURES SHALL BE TAKEN AT ALL CATCH BASINS WITHIN THE PROJECT AREA TO PREVENT SILTATION OF THE TOWN'S EXISTING AND PROPOSED STORM DRAINAGE SYSTEM.
19.

CONTRACTOR SHALL BE AWARE OF OVERHEAD UTILITIES AND MAKE THE NECESSARY ARRANGEMENTS TO PERFORM ANY WORK NEAR THE OVERHEAD UTILITIES, PRIOR TO THE START OF CONSTRUCTION.
20.

EXISTING UTILITY POLES IN CLOSE PROXIMITY TO CONSTRUCTION MAY REQUIRE TEMPORARY SUPPORT BY THE UTILITY COMPANY. INCLUDE COST UNDER THE PRICES BID FOR VARIOUS ITEMS OF WORK.
21.

TAKE ALL NECESSARY MEASURES AND PROVIDE ALL NECESSARY CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE, AND STRENGTH, TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE COMPLETION OF EACH DAY'S WORK.
22.

PROVIDE TO THE OWNER AND LOCAL FIRE/POLICE/SCHOOL AUTHORITIES A DETAILED PLAN OF APPROACH INDICATING METHODS OF PROPOSED TRAFFIC ROUTING ON A DAILY BASIS WHEN WORKING IN THE ROAD. PROVIDE COORDINATION TO ENSURE COMMUNICATION AND COORDINATION BETWEEN OWNER, CONTRACTOR, AND LOCAL FIRE/POLICE/SCHOOL AUTHORITIES THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.
23.

STORE FUEL, OIL, PAINT, OR OTHER HAZARDOUS MATERIALS IN A SECONDARY CONTAINER AND REMOVE FROM THE SITE TO A LOCKED INDOOR AREA WITH AN IMPERVIOUS FLOOR DURING NON-WORK HOURS.
24.

PROVIDE A SUPPLY OF ABSORBENT SPILL RESPONSE MATERIALS, SUCH AS BOOMS OR BLANKETS, AT THE CONSTRUCTION SITES AT ALL TIMES TO CLEAN UP POTENTIAL SPILLS OF HAZARDOUS MATERIALS.
25.

IMMEDIATELY REPORT SPILLS OF OIL AND/OR HAZARDOUS MATERIALS (OHM) TO THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION.
26.

ANY EXISTING DRAINAGE PIPES IN CONFLICT WITH PROPOSED WATER SYSTEM INSTALLATION OR PROPOSED DRAINAGE SHALL BE REMOVED. ALL REMAINING EXISTING DRAINAGE PIPES SHALL BE ABANDONED IN PLACE AND FILLED WITH CONTROLLED DENSITY FLOWABLE FILL AND CAPPED.
27.

ALL MAILBOXES SHALL BE RESET TO CONFORM WITH UNITED STATES POSTAL SERVICE STANDARDS.

WATER DISTRIBUTION NOTES:

1.

NEW WATER MAIN CROSSINGS OF EXISTING UTILITIES ALONG PROJECT ROUTE MUST BE COMPLETED IN A MANNER THAT WILL NOT INTERRUPT UTILITY SERVICE. ENGINEER AND UTILITY OWNER APPROVAL MUST BE OBTAINED TO TEMPORARILY SHUT DOWN UTILITY.
2.

FOR NEW WATER SERVICES, THE CONTRACTOR SHALL PROVIDE AND INSTALL NEW CORPORATION, POLYETHYLENE TUBING AND CURB STOP AND BOX AT LOCATION DESIGNATED BY ENGINEER. IN GENERAL, NEW SERVICES SHALL BE INSTALLED TO THE RIGHT OF WAY LINE. EXISTING SERVICE PIPING SHALL BE CAPPED ONCE SERVICE IS TRANSFERRED TO NEW WATER MAIN.
3.

ALL ABANDONED WATER MAIN OPEN ENDS SHALL BE PLUGGED WITH CONCRETE.
4.

EXISTING UTILITY LOCATIONS ARE BASED ON AVAILABLE INFORMATION. THE CONTRACTOR SHALL DETERMINE THE ACTUAL LOCATION OF UTILITIES BY TEST PIT OR OTHER METHOD WHERE REQUIRED. SECTIONS OF NEW WATER MAIN MAY BE ADJUSTED BASED ON LOCATION AND DEPTH OF EXISTING UTILITIES.
5.

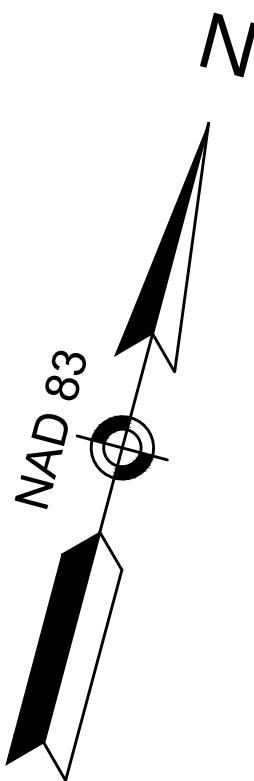
FIELD MEASURE TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS, AND OTHER CONDITIONS.
6.

HORIZONTAL AND VERTICAL LOCATION OF WATER MAIN MAY BE MODIFIED TO FIT EXISTING FIELD CONDITIONS UPON APPROVAL OF THE ENGINEER OR OWNER.
7.

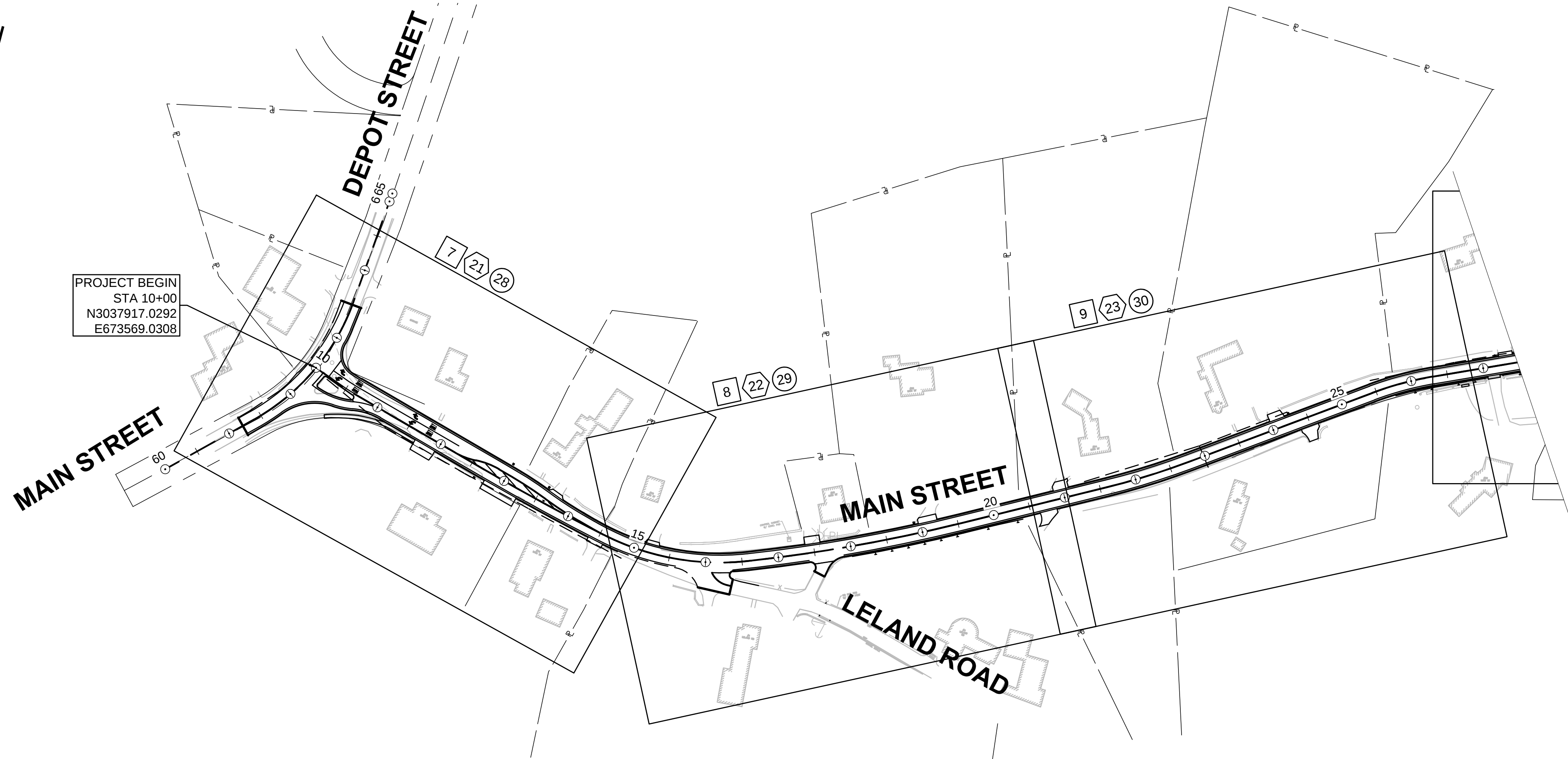
SLEEVES, NIPPLES, AND ACCESSORIES NECESSARY FOR CONNECTIONS BETWEEN EXISTING AND NEW PIPES MAY NOT BE SHOWN IN THE DETAILS. FURNISH AND INSTALL ITEMS NECESSARY FOR CONNECTING TO EXISTING MAINS AND AS INDICATED IN THE CONTRACT DOCUMENTS.
8.

PROVIDE ALL DUCTILE IRON FITTINGS WITH MECHANICAL JOINTS AND MEGA-LUG TYPE RESTRAINING GLANDS. PROVIDE ALL BENDS, TEES, END CAPS, AND PLUGS WITH CONCRETE THRUST BLOCKS IN ADDITION TO MEGA-LUG TYPE RESTRAINING GLANDS AND ADEQUATE RESTRAINED JOINT PIPE PER THE DRAWING DETAIL OR AS DIRECTED BY THE ENGINEER.
9.

THE CONTRACTOR SHALL MAINTAIN EXISTING WATER AND GAS SERVICES TO BUILDINGS ALONG THE PROJECT ROUTE. DAMAGED SERVICES SHALL BE REPAIRED IMMEDIATELY AT NO ADDITIONAL COST TO THE OWNER.



PROJECT BEGIN
STA 10+00
N3037917.0292
E673569.0308



LEGEND



CONSTRUCTION PLANS

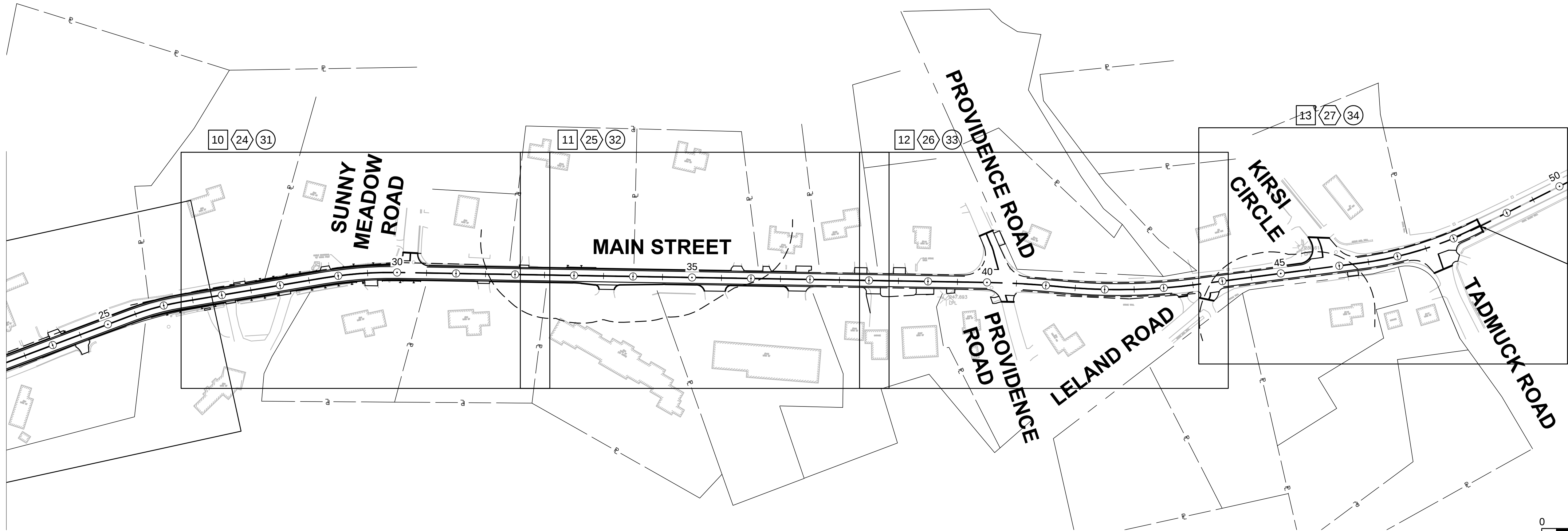


DRAINAGE & UTILITY PLANS

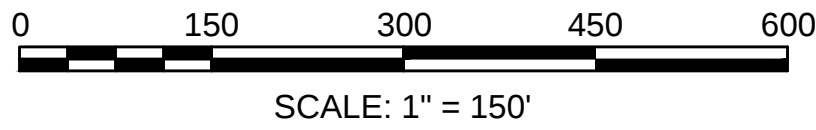
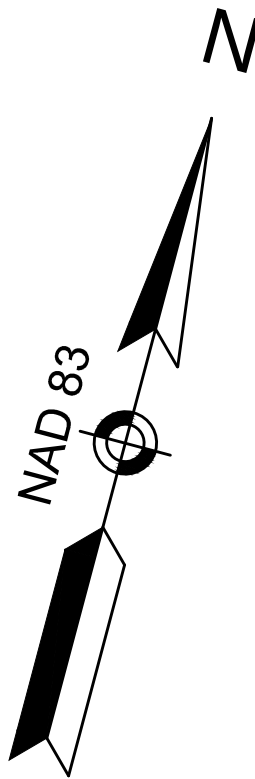


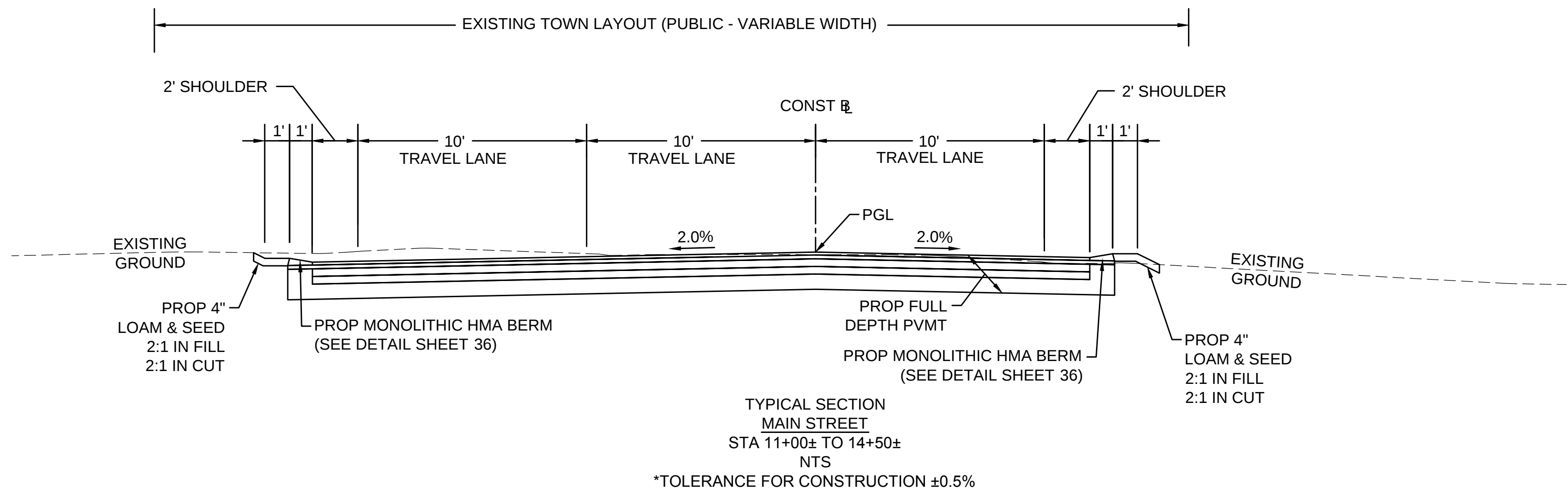
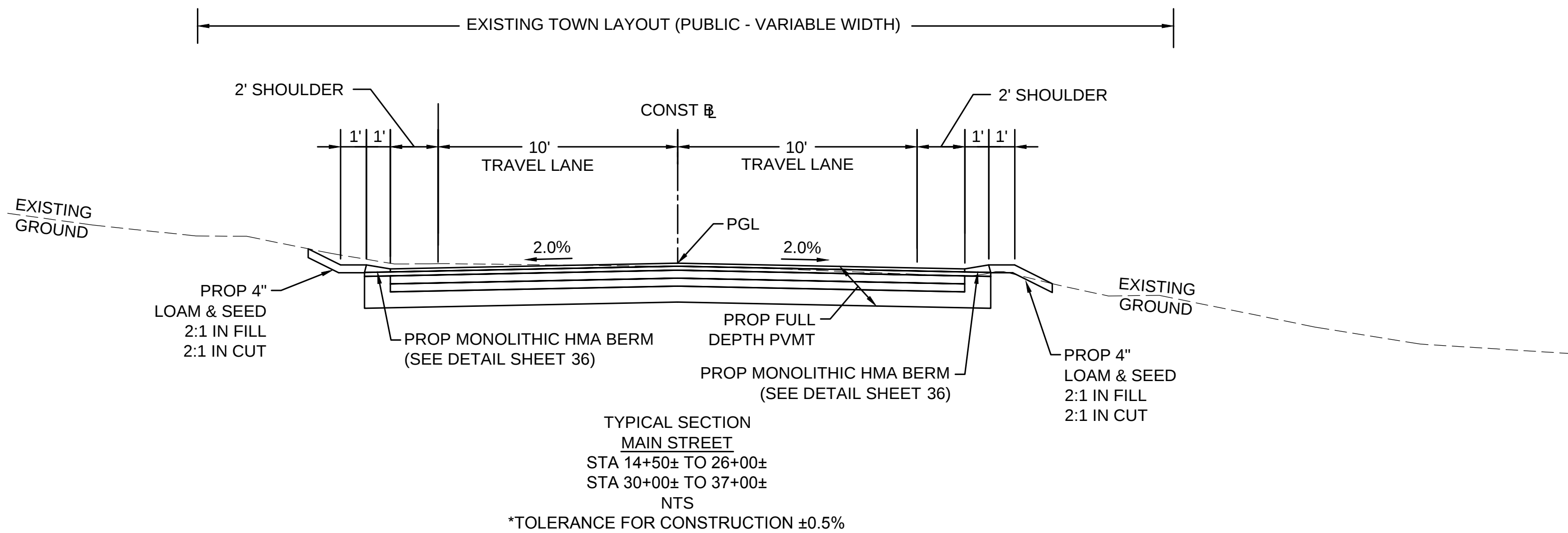
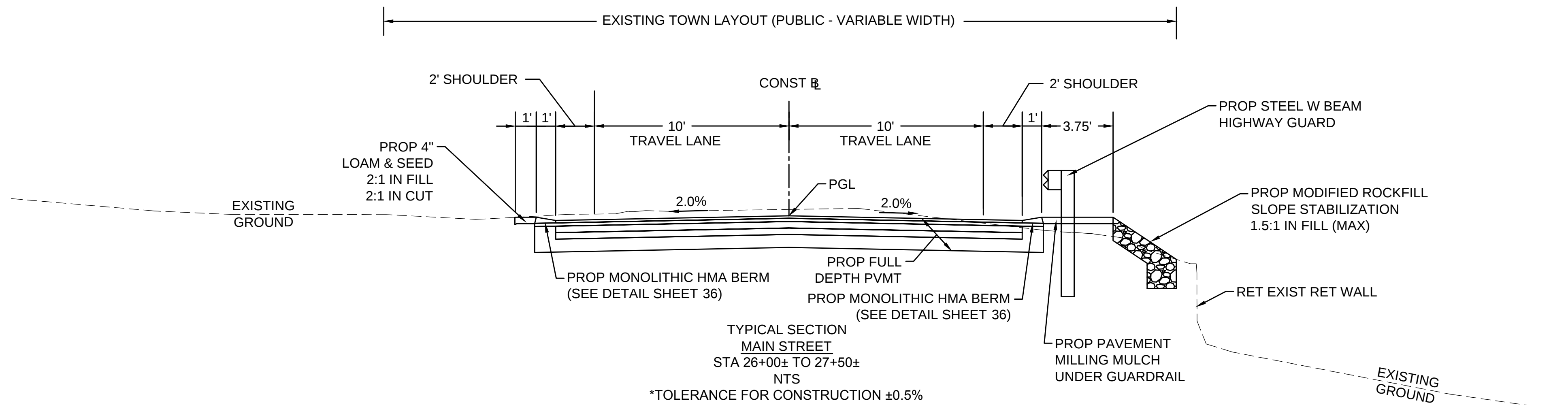
TRAFFIC SIGN & PAVEMENT MARKING PLANS

CONTINUED
ABOVE



PROJECT END
STA 48+50
N3038988.2414
E677142.0463





PAVEMENT NOTES

PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1½" HMA SURFACE COURSE OVER
1¾" HMA INTERMEDIATE COURSE OVER

BASE: 3½" HMA BASE COURSE OVER

SUBBASE: 4" DENSE GRADED CRUSHED STONE OVER
8" GRAVEL BORROW, TYPE b (COMPACTED) (SEE PAVEMENT NOTE 2 BELOW)

PROPOSED FULL DEPTH PAVEMENT LESS THAN 4 FEET WIDE

SURFACE: 1½" HMA SURFACE COURSE OVER
1¾" HMA INTERMEDIATE COURSE OVER

BASE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE OVER

SUBBASE: 12" GRAVEL BORROW, TYPE b (COMPACTED) (SEE PAVEMENT NOTE 2 BELOW)

PROPOSED HMA OVERLAY

SURFACE: 1½" HMA SURFACE COURSE OVER
VARIABLE HMA LEVELING COURSE AS REQUIRED TO MAINTAIN 2% MIN CROSS SLOPE

PROPOSED PERMANENT UTILITY TRENCH PATCH

SURFACE: 1¾" HMA INTERMEDIATE COURSE TO MEET EXIST ROADWAY GRADE OVER

BASE: 3½" HMA BASE COURSE OVER

SUBBASE: 12" GRAVEL BORROW, TYPE b (COMPACTED) (SEE PAVEMENT NOTE 2 BELOW)

PROPOSED HMA DRIVEWAY (TO MATCH EXISTING)

SURFACE: 1½" HMA SURFACE COURSE OVER
2" HMA INTERMEDIATE COURSE OVER

BASE: 8" GRAVEL BORROW, TYPE b (COMPACTED) (SEE PAVEMENT NOTE 2 BELOW)

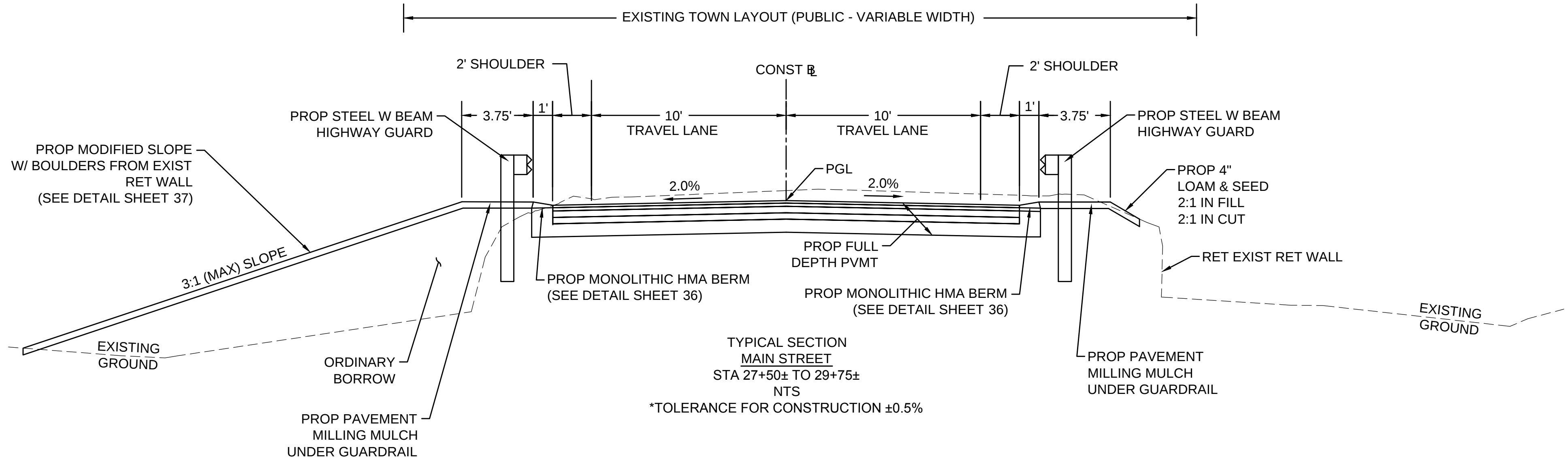
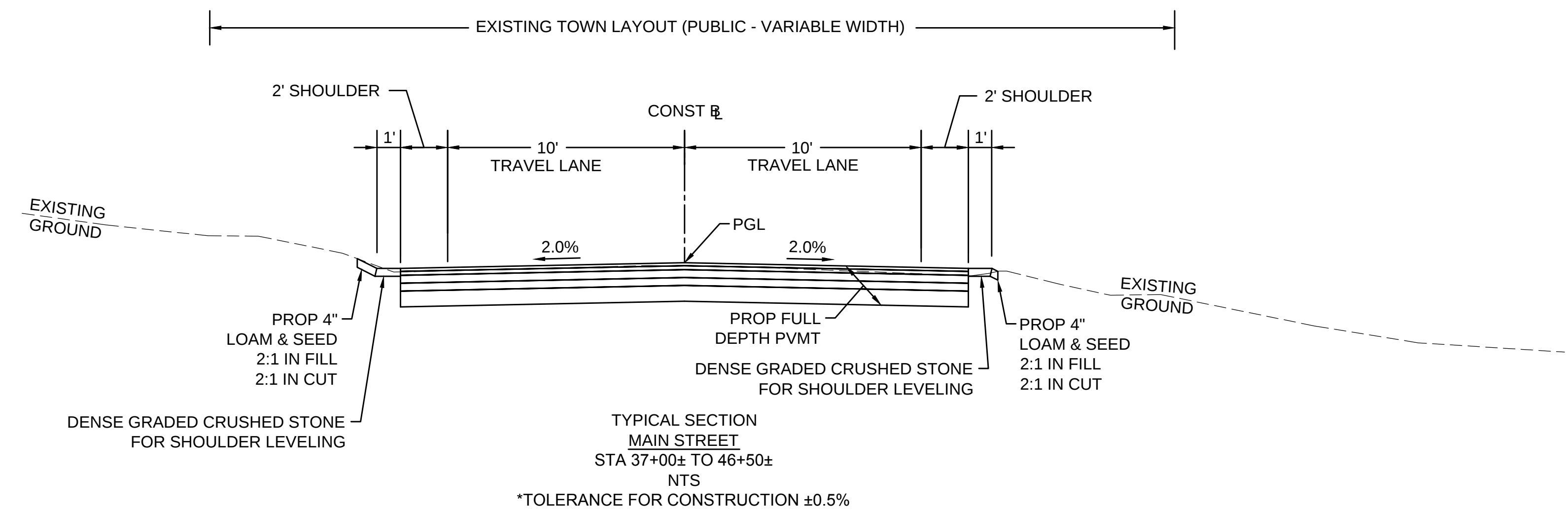
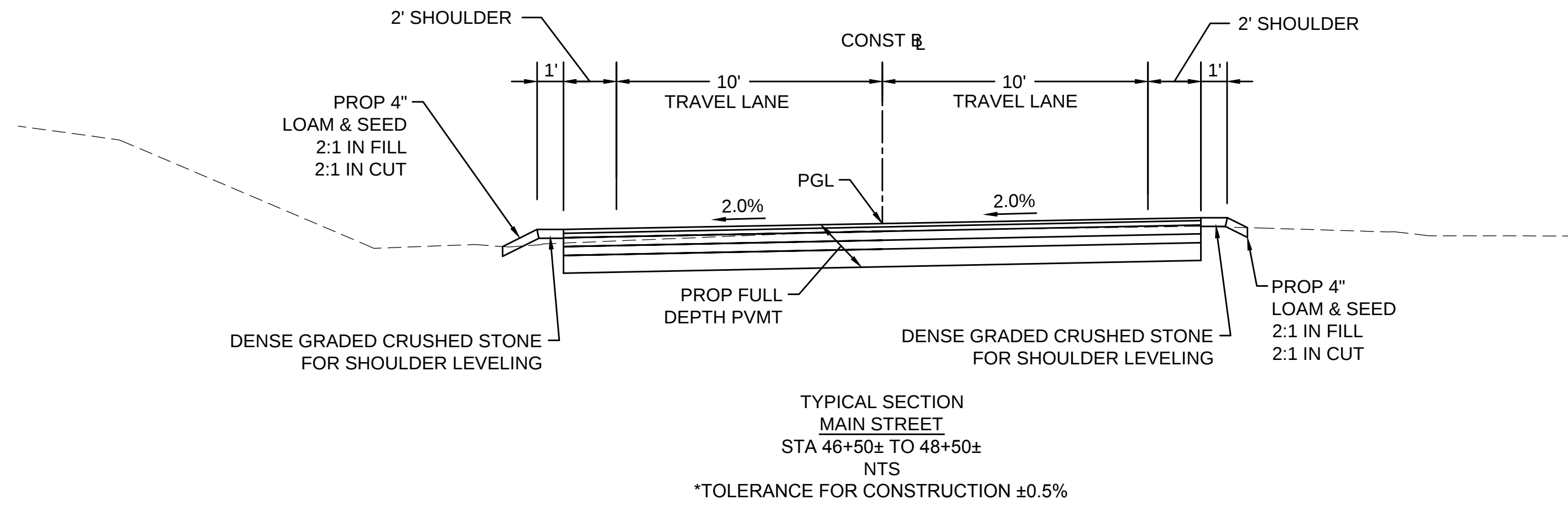
PROPOSED HMA WALK (TO MATCH EXISTING)

SURFACE: 1½" HMA SURFACE COURSE OVER
2" HMA INTERMEDIATE COURSE OVER

BASE: 8" GRAVEL BORROW, TYPE b (COMPACTED) (SEE PAVEMENT NOTE 2 BELOW)

GENERAL PAVEMENT NOTES:

1. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED BETWEEN ALL ASPHALT SURFACES AND SAWCUT JOINTS BEFORE PAVING. HMA JOINT SEALANT SHALL BE APPLIED TO ALL COLD JOINTS (LONGITUDINAL AND TRANSVERSE) BEFORE PAVING SURFACE COURSE. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT A RATE OF 0.05 GAL/SY, EXCEPT OVER MILLED AND CEMENT CONCRETE SURFACES, WHERE THE APPLICATION RATE SHALL BE 0.07 GAL/SY. ALL SURFACES SHALL BE CLEAN OF ALL ORGANICS, DEBRIS, AND SAND PRIOR TO PAVING.
2. ALL GRAVEL BORROW MEETING SPECIFICATION SHALL BE RETAINED IN PLACE, COMPACTED, AND LEVELED WITH DENSE GRADED CRUSHED STONE AS REQUIRED. CONTRACTOR SHALL PROVIDE TEST RESULT SUBMITTALS TO THE ENGINEER FOR APPROVAL.



HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

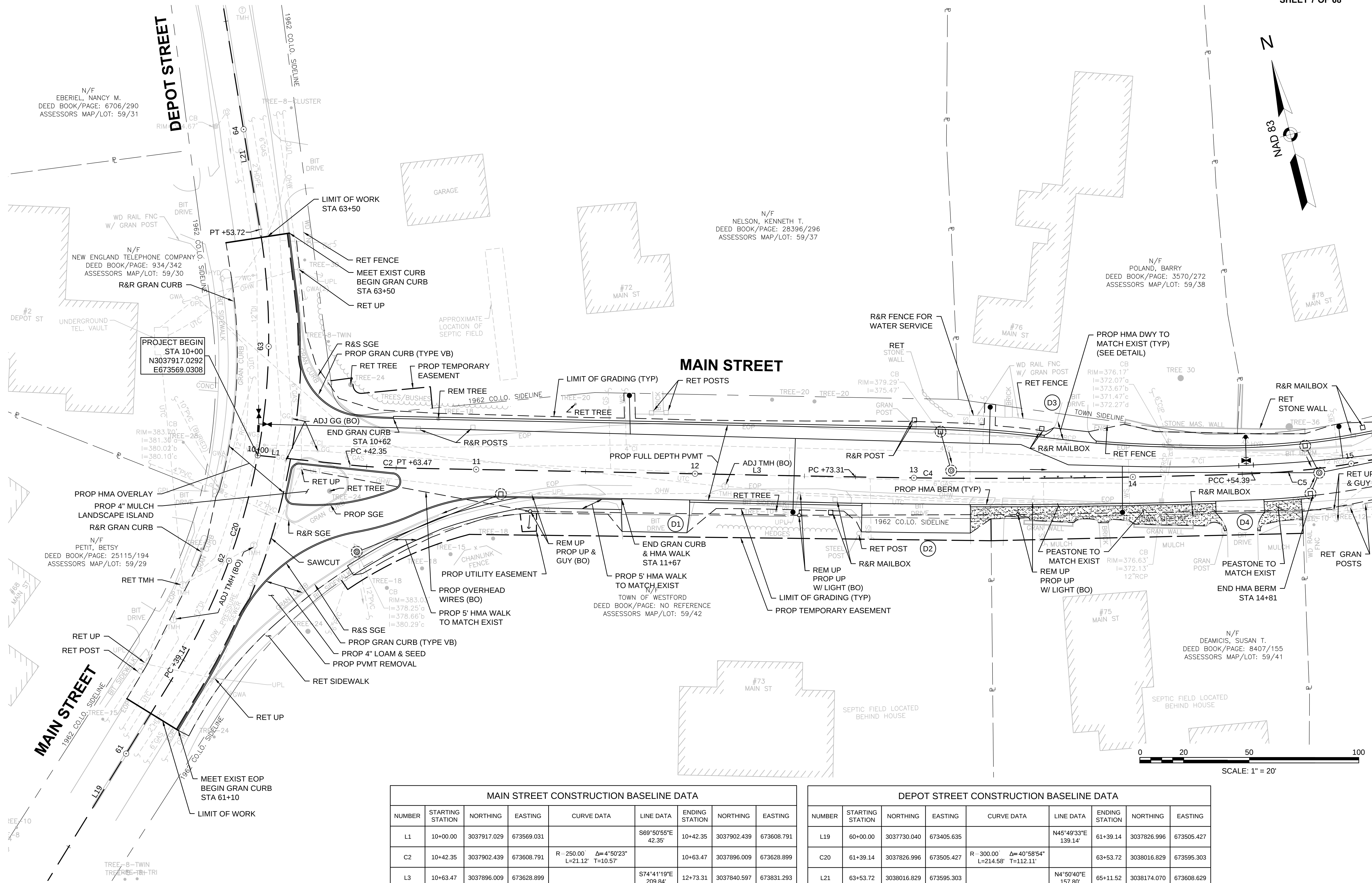
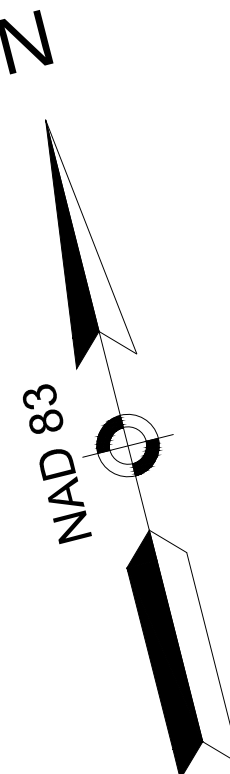
WATER SUPPLY ALTERATIONS

SEE DRAINAGE & WATER PLANS

DRAINAGE DETAILS

SEE DRAINAGE & WATER PLANS

WESTFORD
MAIN STREET
CONSTRUCTION PLANS - 1
SHEET 7 OF 68



MAIN STREET CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING
L1	10+00.00	3037917.029	673569.031		S69°50'55"E 42.35'	10+42.35	3037902.439
C2	10+42.35	3037902.439	673608.791	R = 250.00' Δ= 4°50'23" L=21.12' T=10.57'		10+63.47	3037896.009
L3	10+63.47	3037896.009	673628.899		S74°41'19"E 209.84'	12+73.31	3037840.597
C4	12+73.31	3037840.597	673831.293	R = 3250.00' Δ= 3°11'32" L=181.08' T=90.56'		14+54.39	3037797.669

DEPOT STREET CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING
L19	60+00.00	3037730.040	673405.635		N45°49'33"E 139.14'	61+39.14	3037826.996
C20	61+39.14	3037826.996	673505.427	R = 300.00' Δ= 40°58'54" L=214.58' T=112.11'		63+53.72	3038016.829
L21	63+53.72	3038016.829	673595.303		N4°50'40"E 157.80'	65+11.52	3038174.070

CONTINUED ON
SHEET NO. 7

HIGHWAY GUARD DETAILS

STA 18+00± RT TANGENT END TREATMENT
STA 18+37.5 RT TO 20+25 RT STEEL W BEAM
HIGHWAY GUARD WEATHERING STEEL
STA 20+25± RT TERMINAL END SECTION

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

SEE DRAINAGE & WATER PLANS

DRAINAGE DETAILS

SEE DRAINAGE & WATER PLANS

WESTFORD MAIN STREET CONSTRUCTION PLANS - 2 SHEET 8 OF 68

CONTINUED ON
SHEET NO. 7

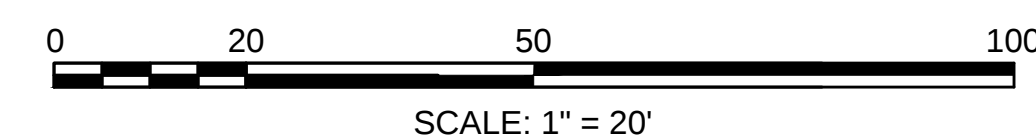
CONTINUED ON
SHEET NO. 9

MAIN STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C5	14+54.39	3037797.669	674007.183	R = 350.00' Δ= 33°19'26" L=203.56' T=104.75'		16+57.95	3037813.566	674207.259
C6	16+57.95	3037813.566	674207.259	R = 2250.00' Δ= 7°32'48" L=296.36' T=148.39'		19+54.31	3037938.616	674475.702
L7	19+54.31	3037938.616	674475.702		N61°14'56"E 205.07'	21+59.38	3038037.256	674655.490

0 20 50 100
SCALE: 1" = 20'

**WESTFORD
MAIN STREET
CONSTRUCTION PLANS - 3
SHEET 9 OF 68**

SEE DRAINAGE & WATER PLANS



MAIN STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L7	19+54.31	3037938.616	674475.702		N61°14'56"E 205.07	21+59.38	3038037.256	674655.490
C8	21+59.38	3038037.256	674655.490	R = 1000.00' L = 117.52' Δ = 6°44'01" T = 58.83'		22+76.90	3038099.702	674754.969
L9	22+76.90	3038099.702	674754.969		N54°30'55"E 267.20'	25+44.10	3038254.810	674972.544
C10	25+44.10	3038254.810	674972.544	R = 450.00' Δ = 11°00'53" L = 86.51' T = 43.39'		26+30.61	3038297.969	675047.366
L11	26+30.61	3038297.969	675047.366		N65°31'48"E 241.93'	28+72.54	3038398.180	675267.564

CONTINUED ON
SHEET NO. 10

STA 25+75± RT TANGENT END TREATMENT
STA 26+12.5 RT TO STA 27+00 RT STEEL W BEAM
HIGHWAY GUARD WEATHERING STEEL
STA 27+00± RT TERMINAL END SECTION

NONE

SEE DRAINAGE & WATER PLANS

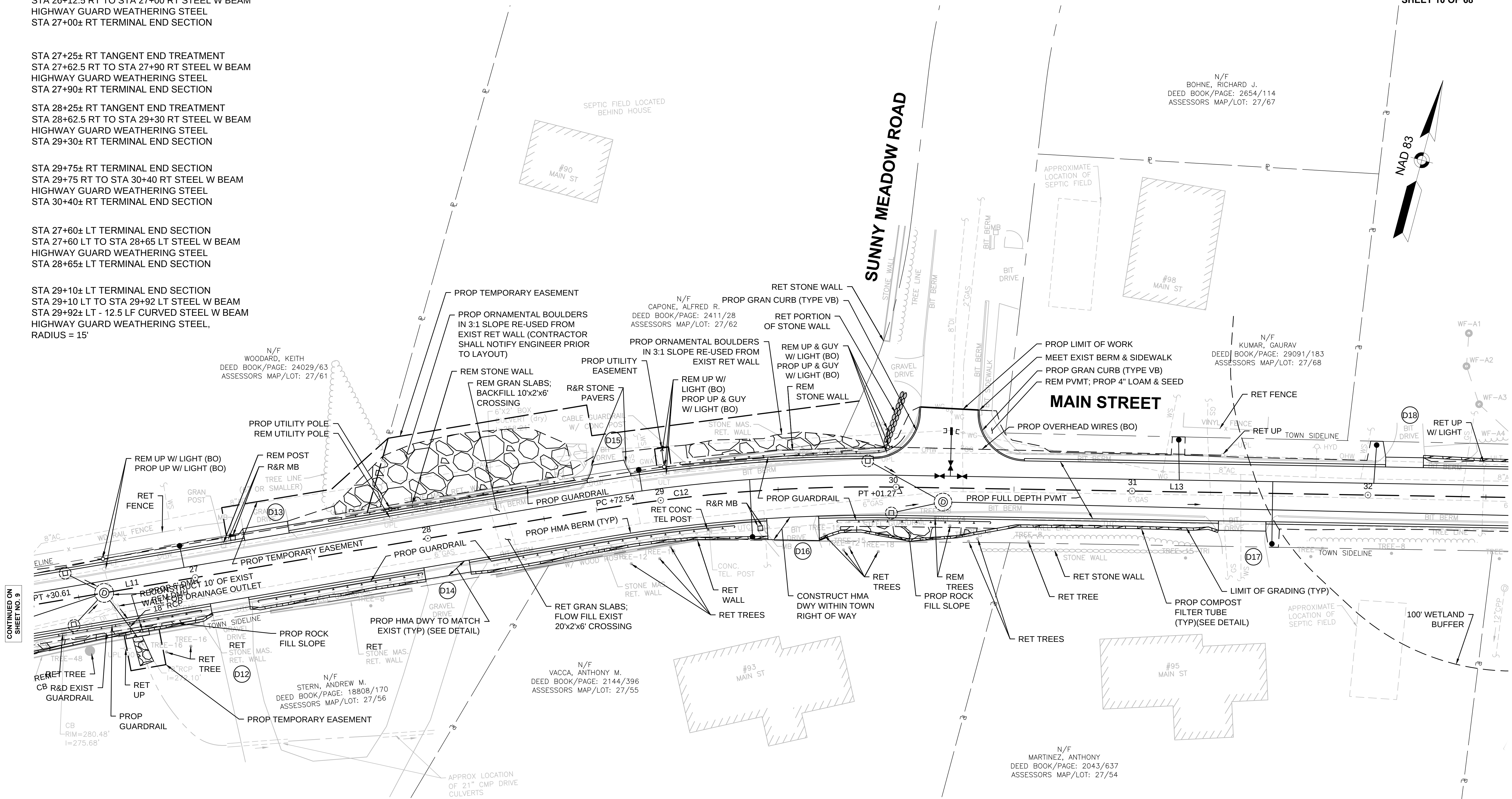
SEE DRAINAGE & WATER PLANS

STA 28+25± RT TANGENT END TREATMENT
STA 28+62.5 RT TO STA 29+30 RT STEEL W BEAM
HIGHWAY GUARD WEATHERING STEEL
STA 29+30± RT TERMINAL END SECTION

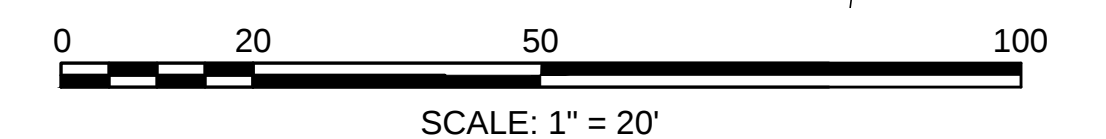
STA 29+75± RT TERMINAL END SECTION
STA 29+75 RT TO STA 30+40 RT STEEL W BEAM
HIGHWAY GUARD WEATHERING STEEL
STA 30+40± RT TERMINAL END SECTION

STA 27+60± LT TERMINAL END SECTION
STA 27+60 LT TO STA 28+65 LT STEEL W BEAM
HIGHWAY GUARD WEATHERING STEEL
STA 28+65± LT TERMINAL END SECTION

STA 29+10± LT TERMINAL END SECTION
STA 29+10 LT TO STA 29+92 LT STEEL W BEAM
STA 29+92± LT - 12.5 LF CURVED STEEL W BEAM
HIGHWAY GUARD WEATHERING STEEL,
RADIUS = 15'



MAIN STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L11	26+30.61	3038297.969	675047.366		N65°31'48"E 241.93'	28+72.54	3038398.180	675267.564
C12	28+72.54	3038398.180	675267.564	R = 700.00' L=128.73' Δ= 10°32'12" T=64.55'		30+01.27	3038440.458	675388.960
L13	30+01.27	3038440.458	675388.960		N76°04'00"E 998.74'	40+00.01	3038680.948	676358.310



CONTINUED ON
SHEET NO. 11

HIGHWAY GUARD DETAILS

STA 32+87± LT TERMINAL END SECTION
STA 32+87 LT TO STA 33+37 LT STEEL W BEAM
HIGHWAY GUARD WEATHERING STEEL
STA 33+37± LT TERMINAL END SECTION

TRAFFIC SIGNAL CONDUIT

NONE

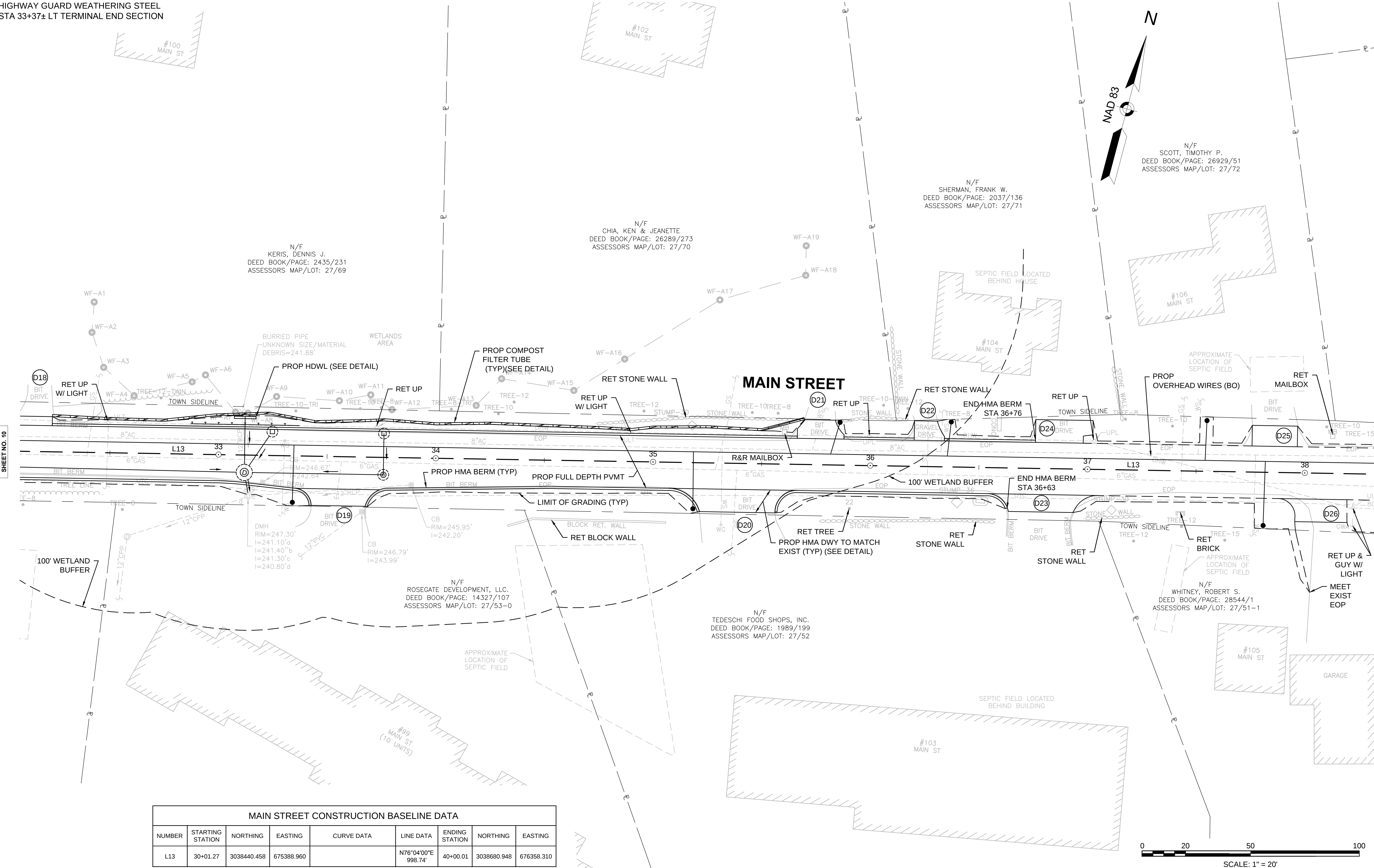
WATER SUPPLY ALTERATIONS

SEE DRAINAGE & WATER PLANS

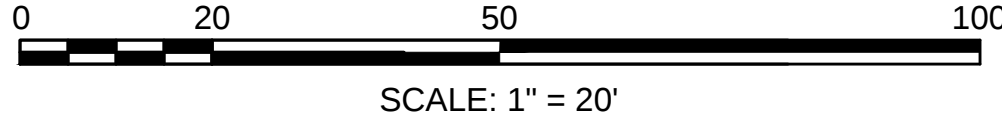
DRAINAGE DETAILS

SEE DRAINAGE & WATER PLANS

WESTFORD
MAIN STREET
CONSTRUCTION PLANS - 5
SHEET 11 OF 68



MAIN STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L13	30+01.27	3038440.458	675388.960		N76°04'00"E 998.74'	40+00.01	3038680.948	676358.310



CONTINUED ON
SHEET NO. 10

CONTINUED ON
SHEET NO. 12

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

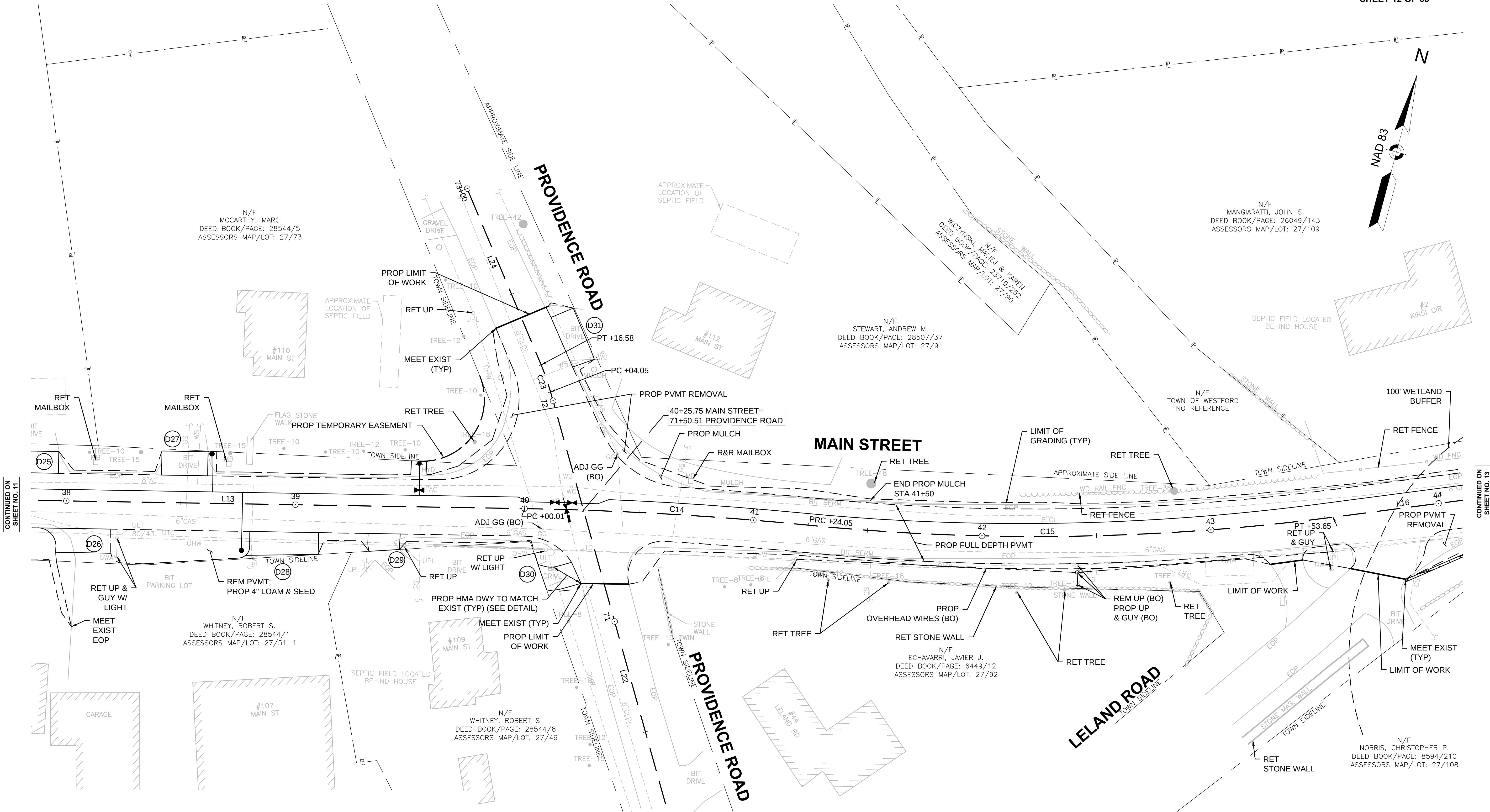
WATER SUPPLY ALTERATIONS

SEE DRAINAGE & WATER PLANS

DRAINAGE DETAILS

SEE DRAINAGE & WATER PLANS

WESTFORD
MAIN STREET
CONSTRUCTION PLANS - 6
SHEET 12 OF 68

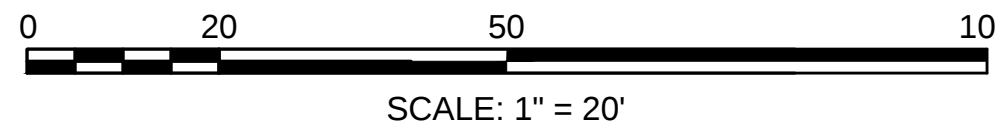


MAIN STREET CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L13	30+01.27	3038440.458	675388.960		N76°04'00"E 998.74'	40+00.01	3038680.948	676358.310
C14	40+00.01	3038680.948	676358.310	R=1500.00' Δ=4°44'17" L=124.04' T=62.06'		41+24.05	3038705.807	676479.798
C15	41+24.05	3038705.807	676479.798	R=1000.00' Δ=13°09'19" L=229.61' T=115.31'		43+53.65	3038768.083	676700.272
L16	43+53.65	3038768.083	676700.272		N67°38'57"E 284.31'	46+37.96	3038876.198	676963.219

PROVIDENCE ROAD CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L22	70+00.00	3038557.232	676459.705		N30°29'06"W 204.05'	72+04.05	3038733.075	676356.188
C23	72+04.05	3038733.075	676356.188	R=100.00' Δ=7°10'45" L=12.53' T=6.27'		72+16.58	3038743.447	676349.172
L24	72+16.58	3038743.447	676349.172		N37°39'51"W 83.42'	73+00.00	3038809.482	676298.200



CONTINUED ON
SHEET NO. 11

CONTINUED ON
SHEET NO. 13

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

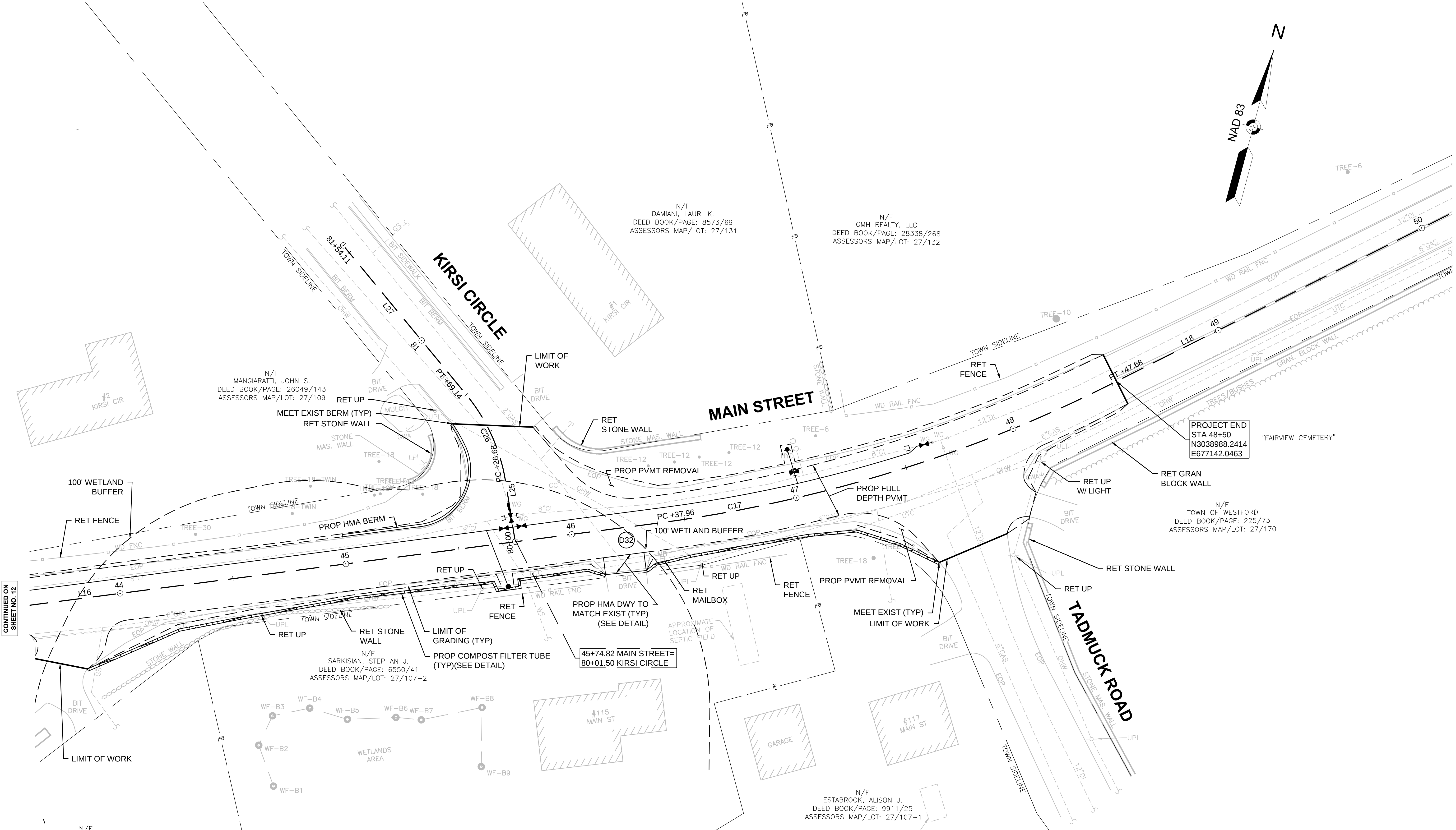
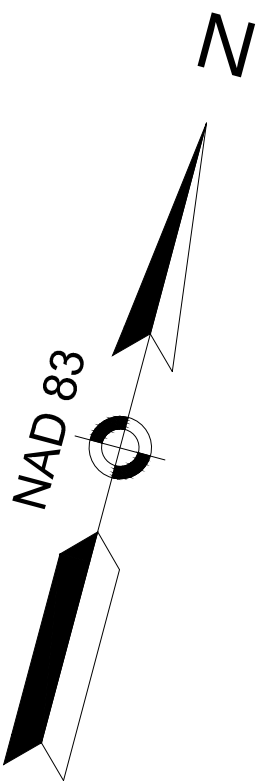
WATER SUPPLY ALTERATIONS

SEE DRAINAGE & WATER PLANS

DRAINAGE DETAILS

SEE DRAINAGE & WATER PLANS

WESTFORD
MAIN STREET
CONSTRUCTION PLANS - 7
SHEET 13 OF 68

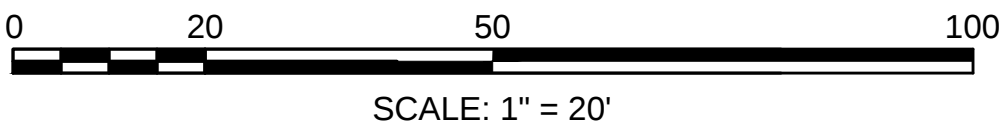


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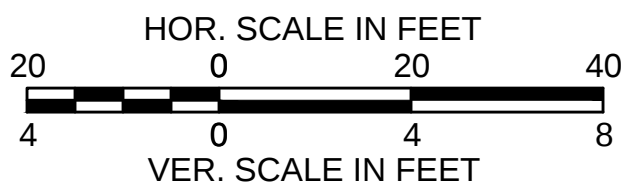
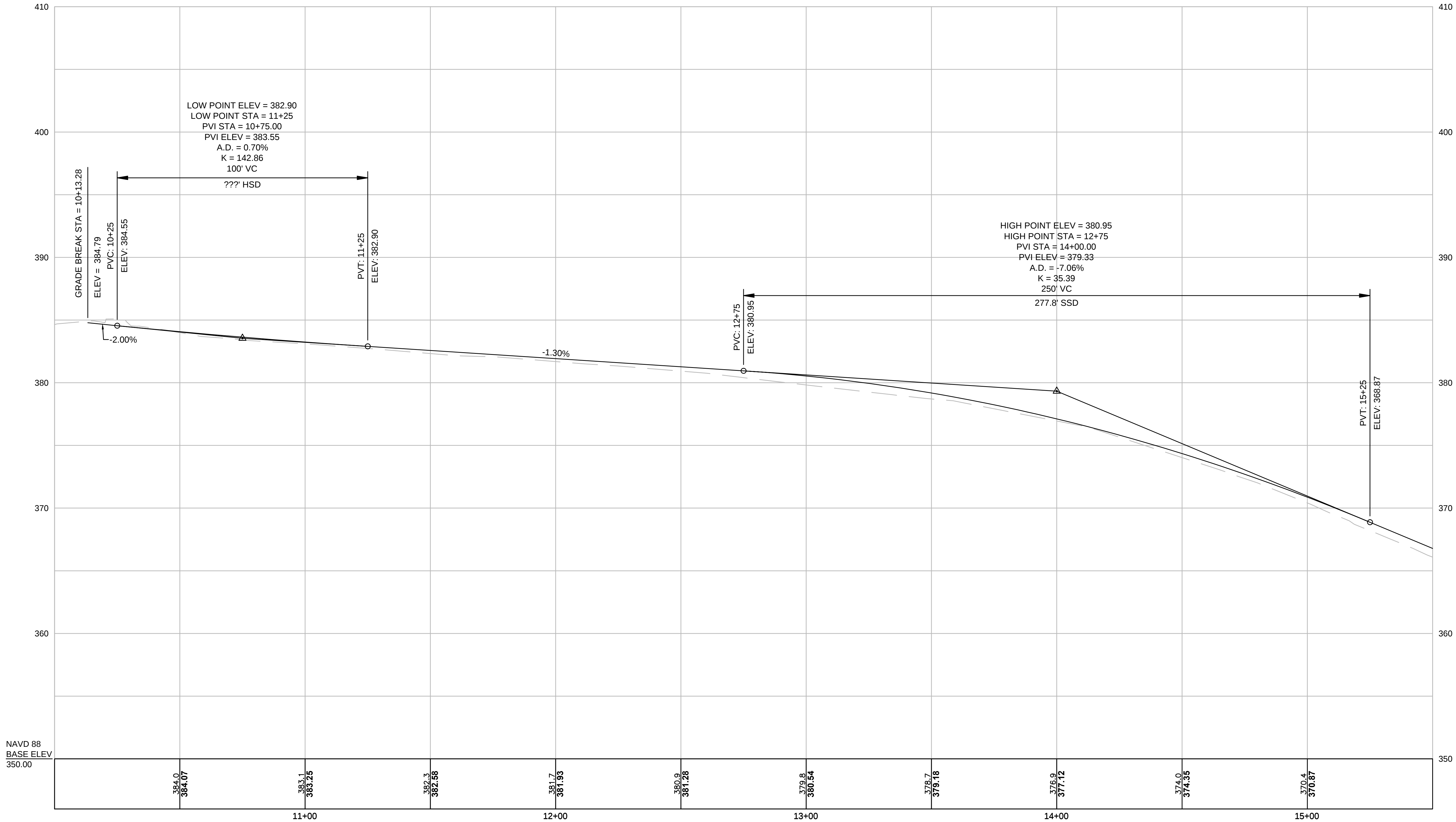
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DEED BOOK/PAGE: 8594/210
ASSESSORS MAP/LOT: 27/108

MAIN STREET CONSTRUCTION BASELINE DATA							
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L16	43+53.65	3038768.083	676700.272		N67°38'57"E 284.31'	46+37.96	3038876.198
C17	46+37.96	3038876.198	676963.219	R=625.00' Δ=19°13'34" L=209.72' T=105.86'		48+47.68	3038986.702
L18	48+47.68	3038986.702	677140.311		N48°25'24"E 253.41'	51+01.09	3039154.872

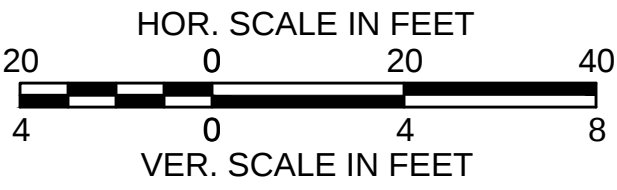
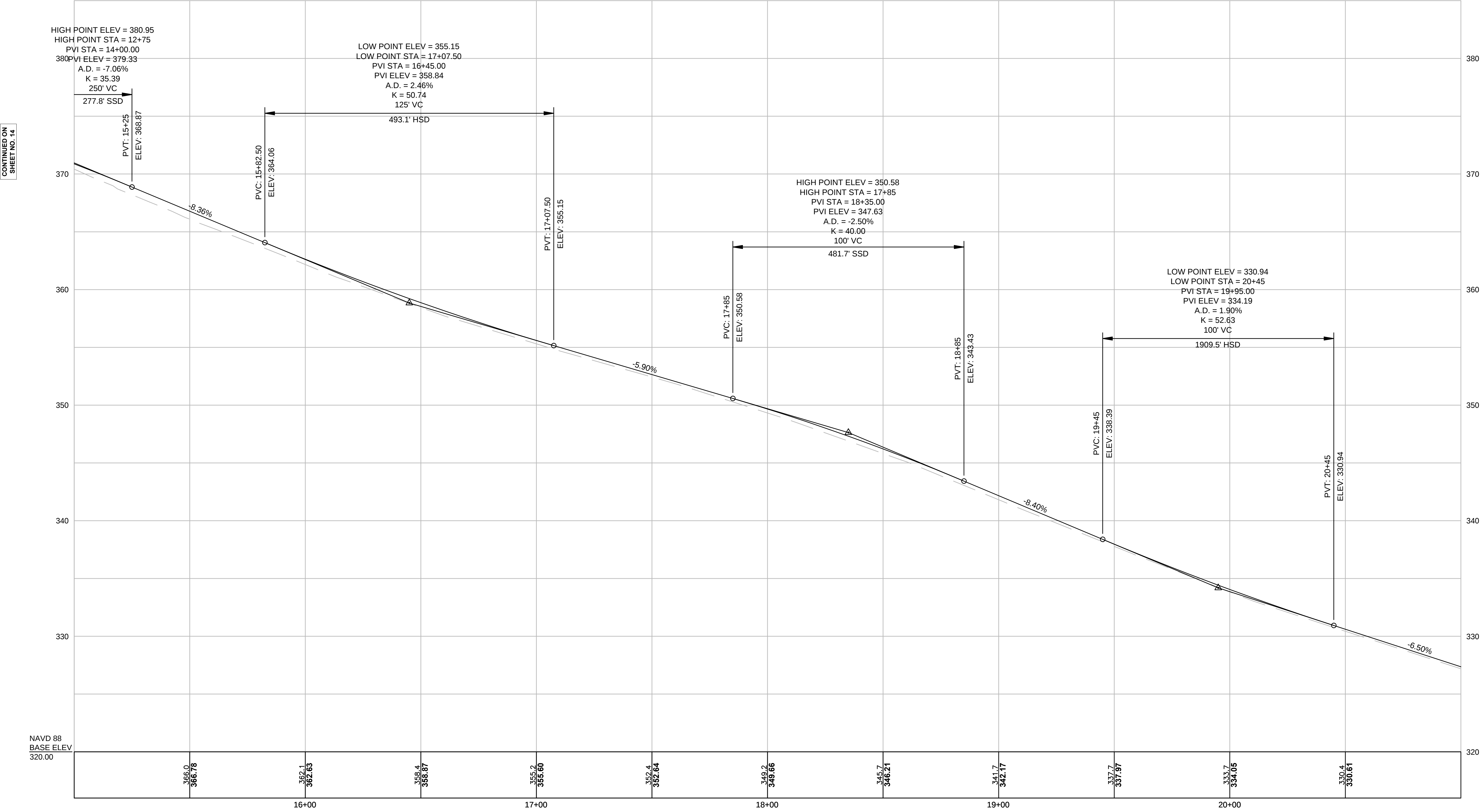
KIRSI CIRCLE CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	EASTING
L25	80+00.00	3038852.257	676904.992		N23°59'24"W 26.68'	80+26.68	3038876.631
C26	80+26.68	3038876.631	676894.145	R=80.00' Δ=30°24'51" L=42.47' T=21.75'		80+69.14	3038909.156
L27	80+69.14	3038909.156	676867.621		N54°24'15"W 84.96'	81+54.11	3038958.610



MAIN STREET



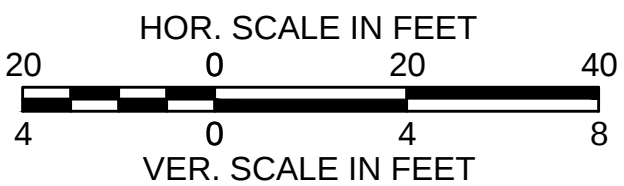
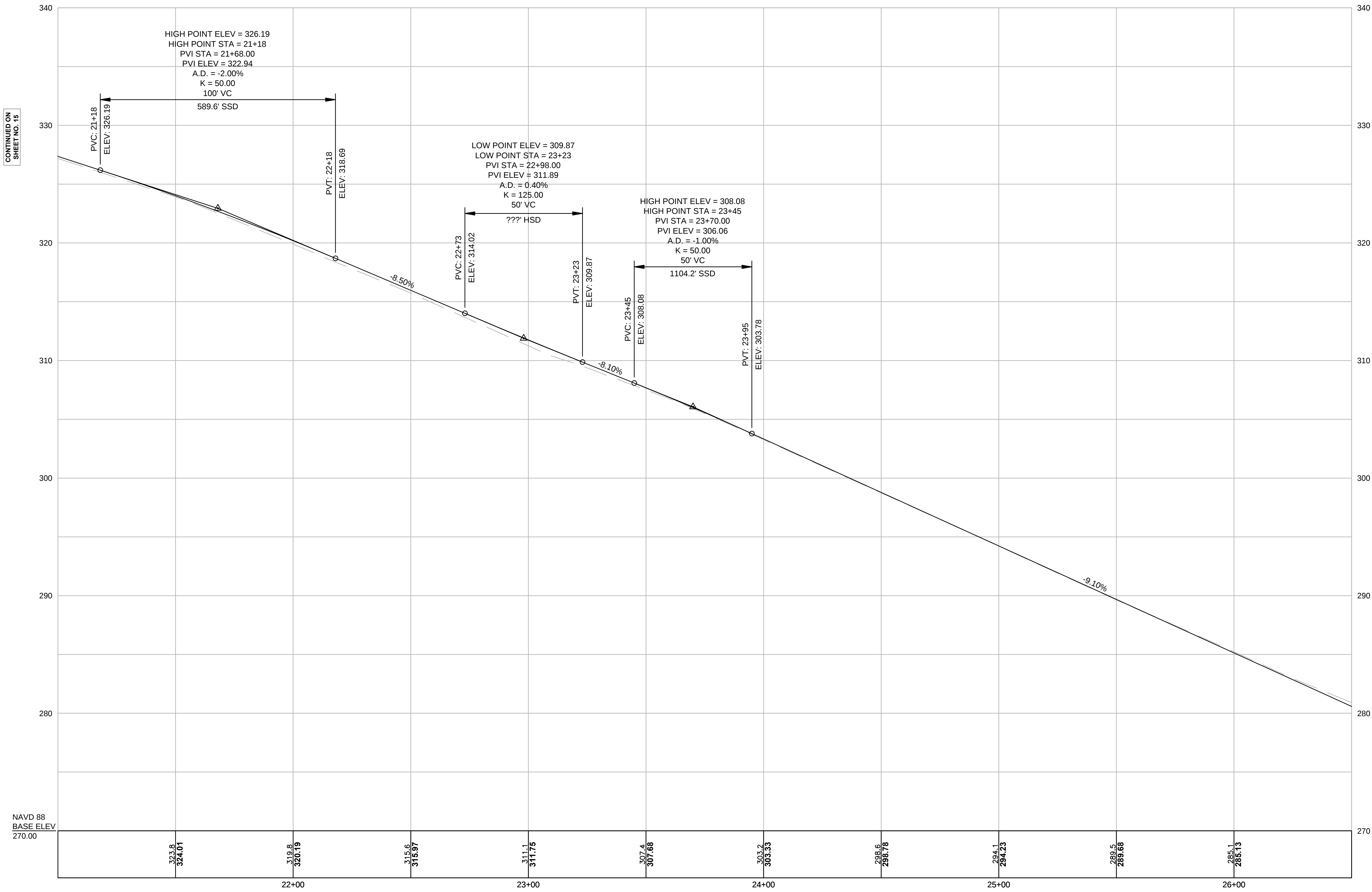
MAIN STREET



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SHEET NO. 16

MAIN STREET

WESTFORD
MAIN STREET
PROFILES - 3
SHEET 16 OF 68

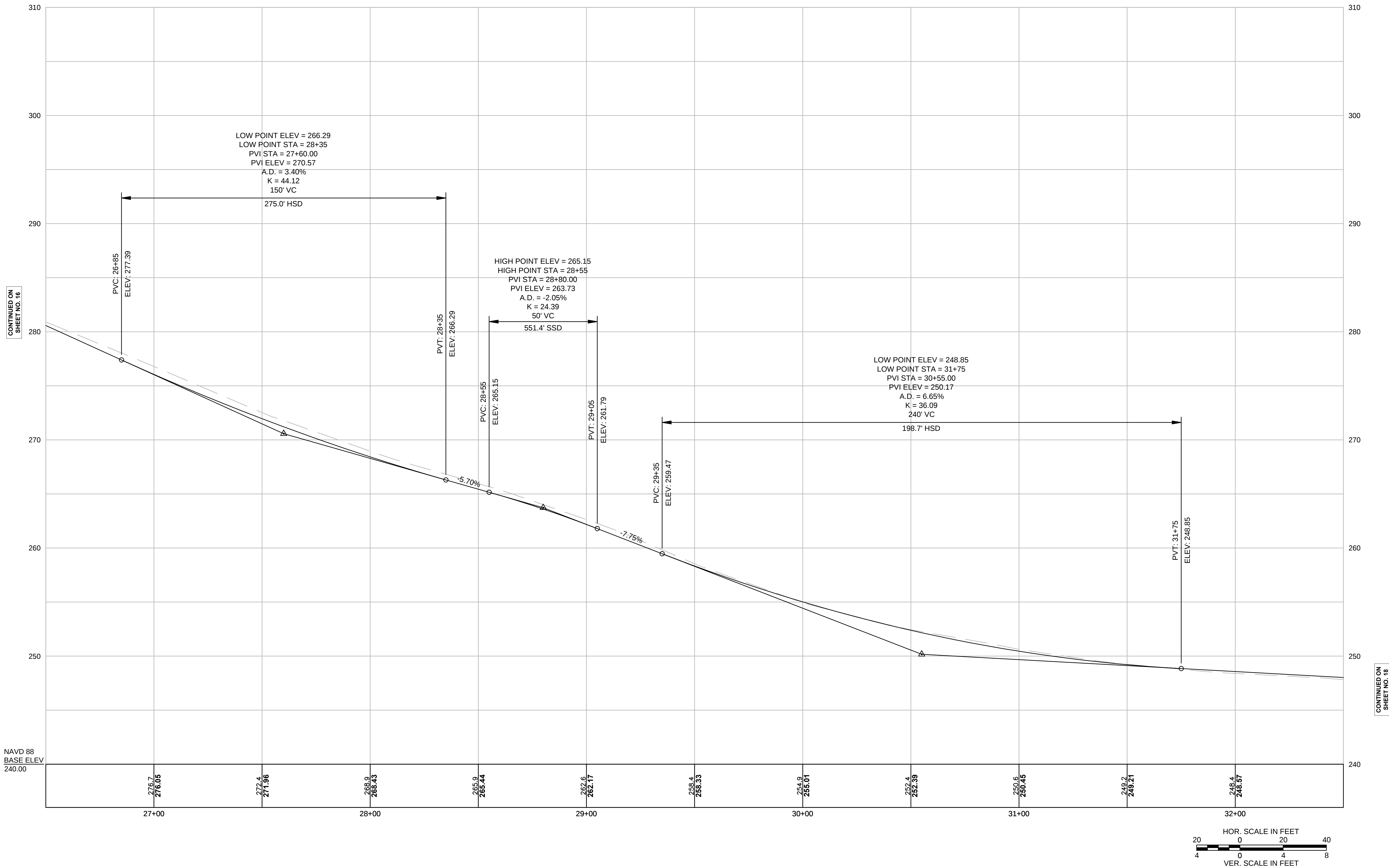


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SHEET NO. 17

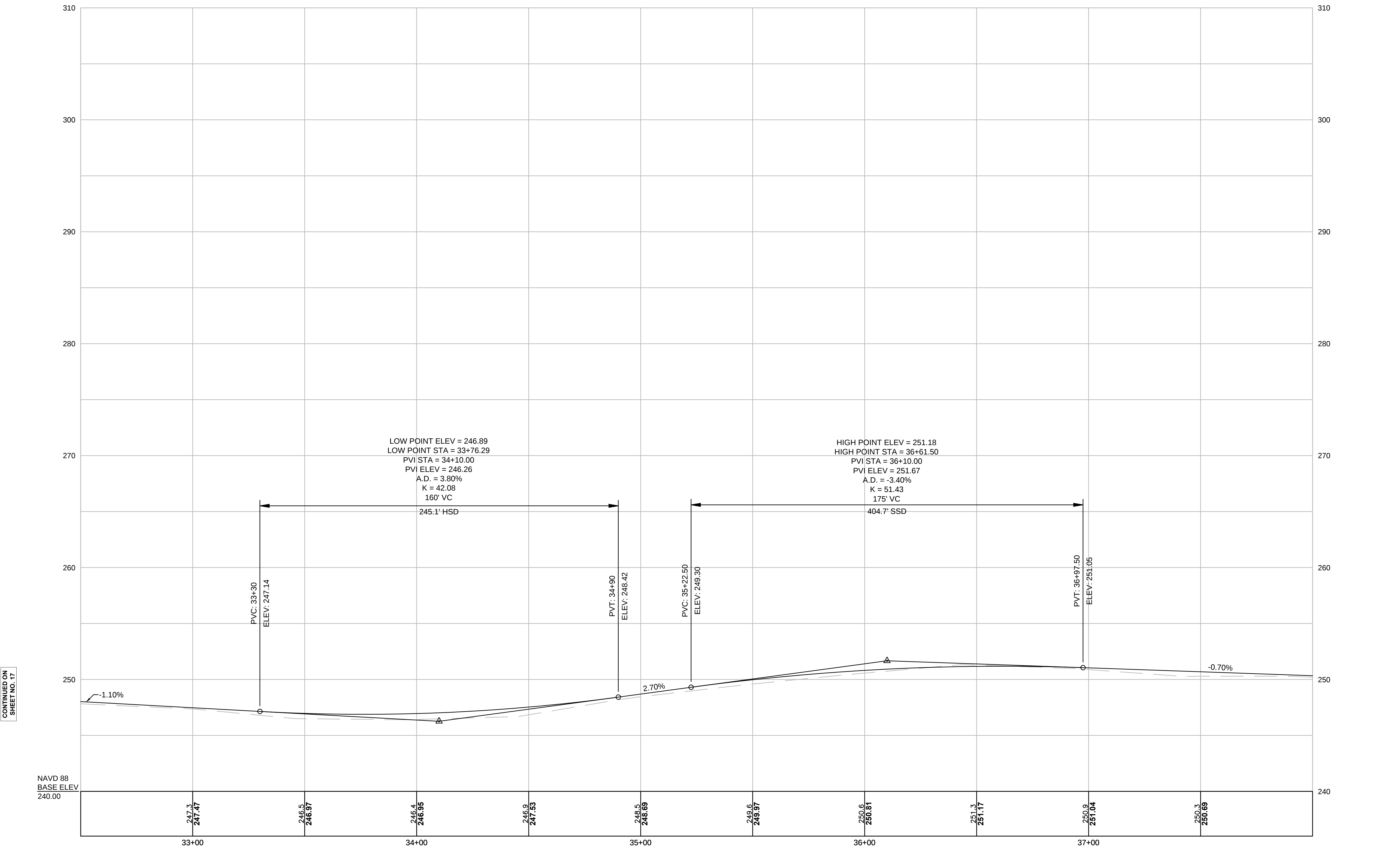
MAIN STREET

WESTFORD
MAIN STREET
PROFILES - 4
SHEET 17 OF 68



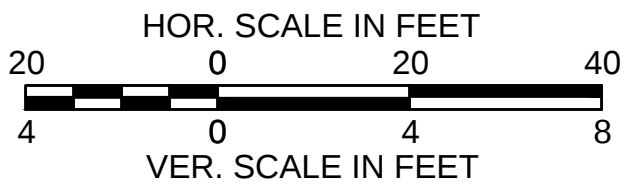
MAIN STREET

WESTFORD
MAIN STREET
PROFILES - 5
SHEET 18 OF 68

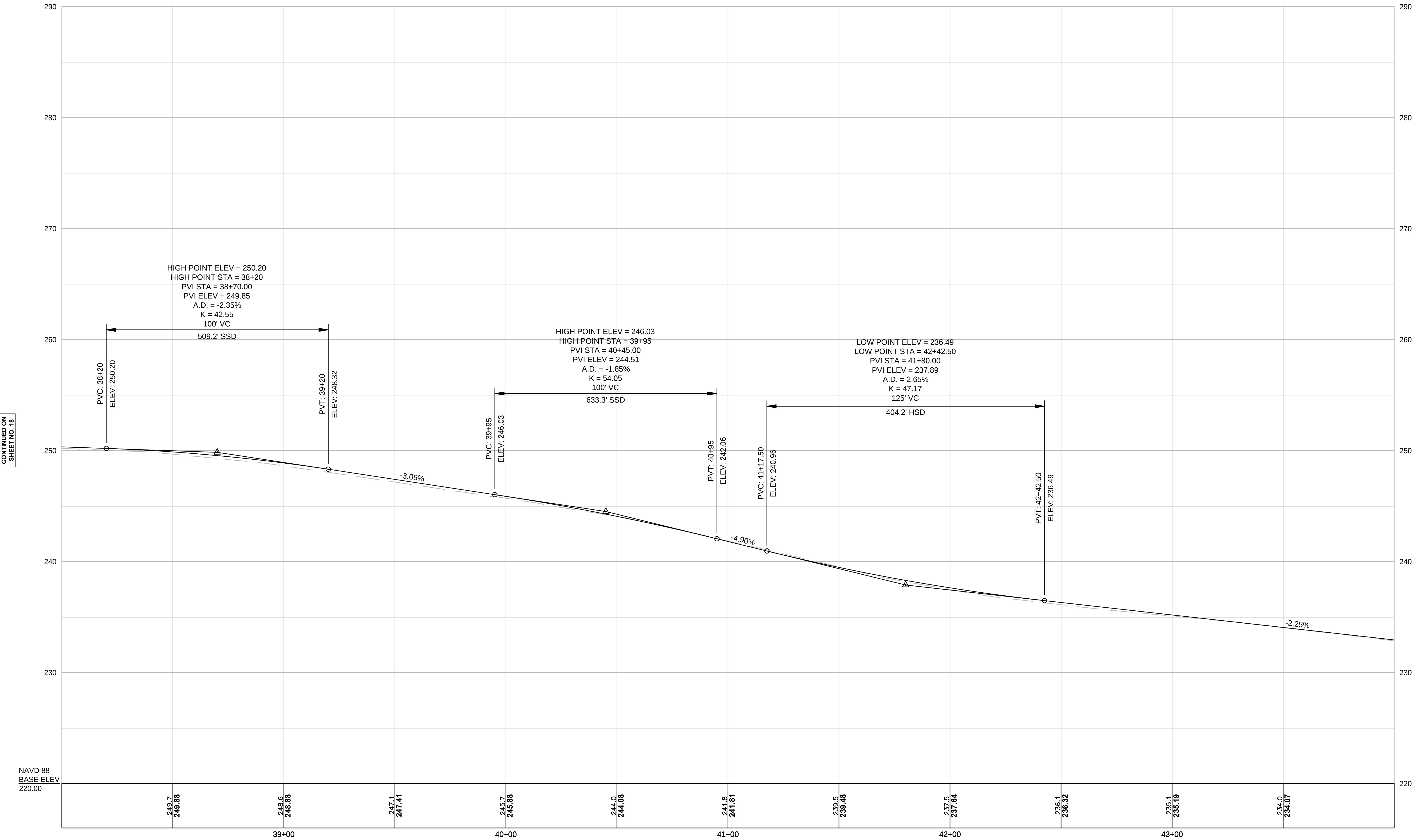


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SHEET NO. 19

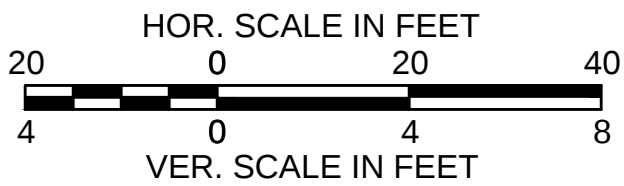


MAIN STREET



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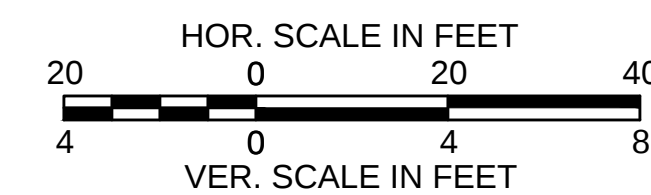
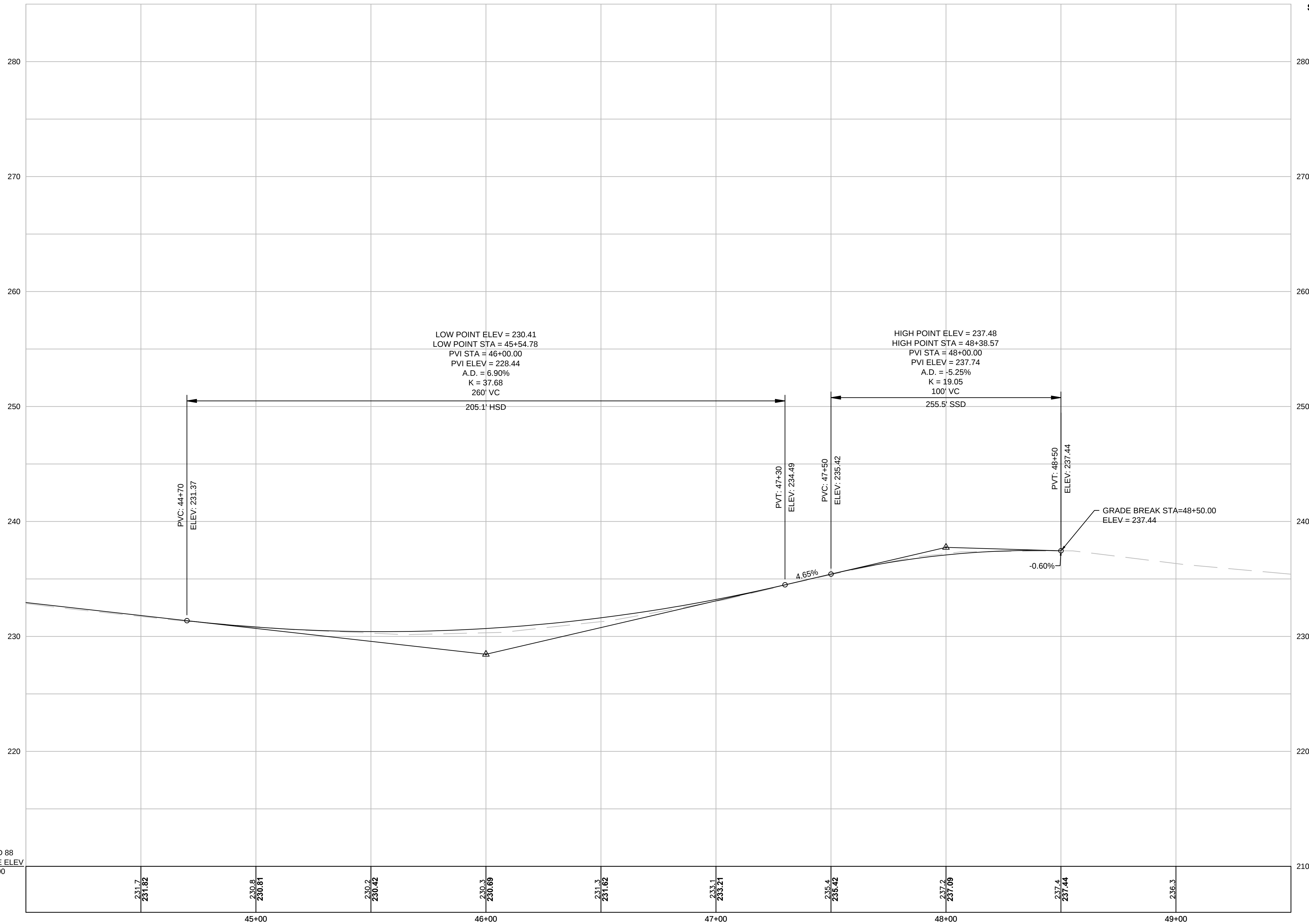


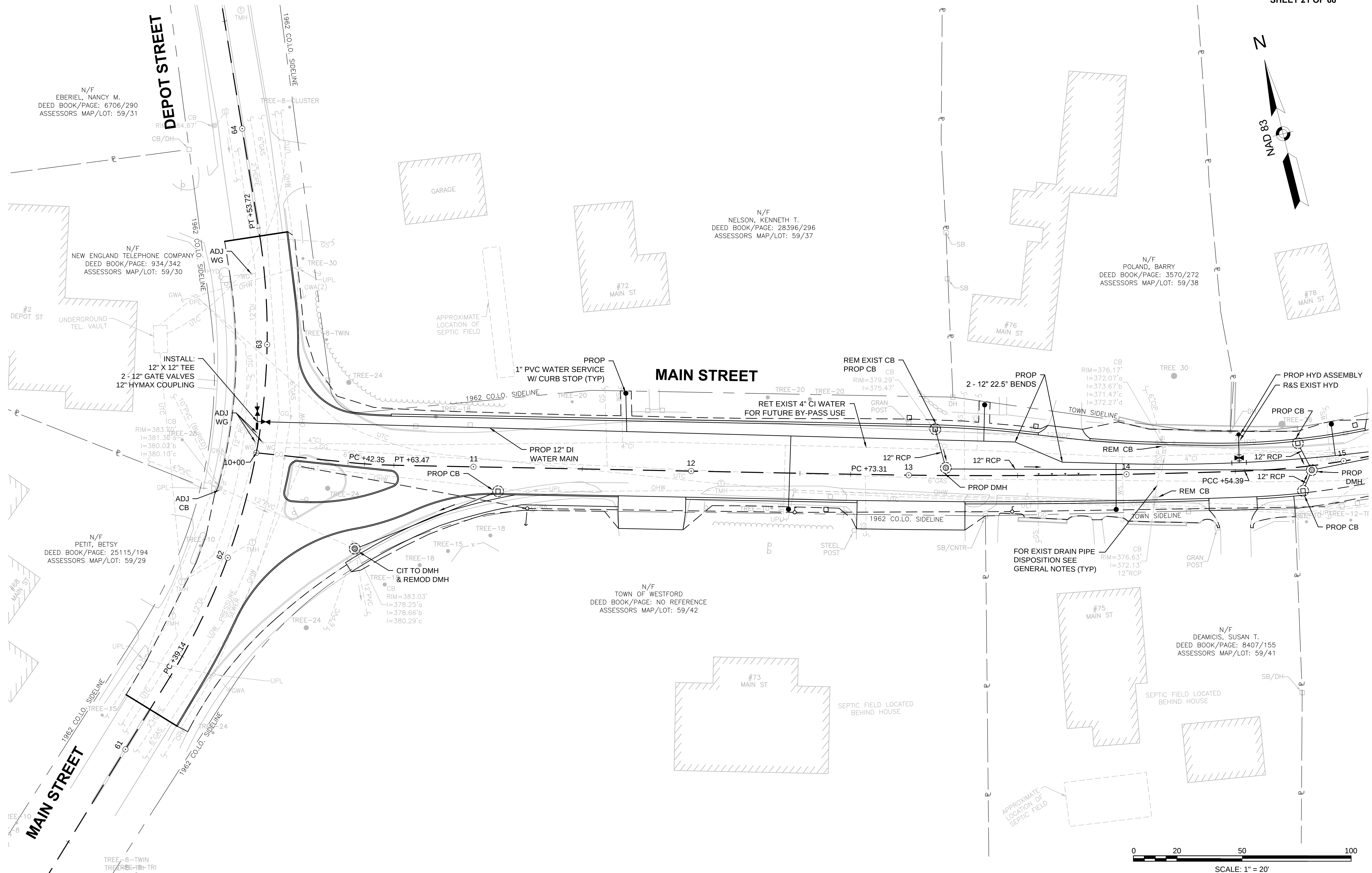
MAIN STREET

WESTFORD
MAIN STREET
PROFILES - 7
SHEET 20 OF 68

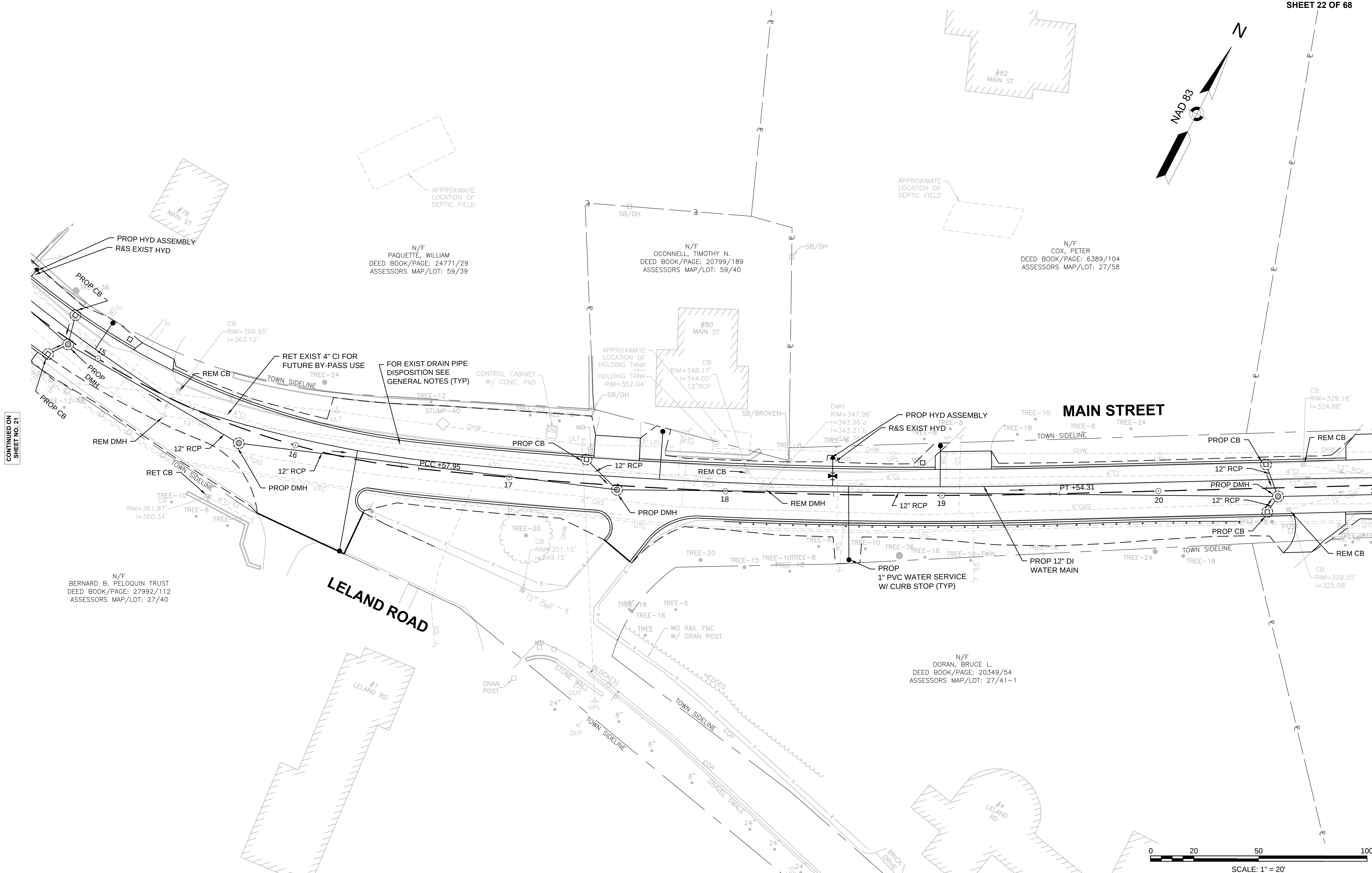
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NAVD 88
BASE ELEV
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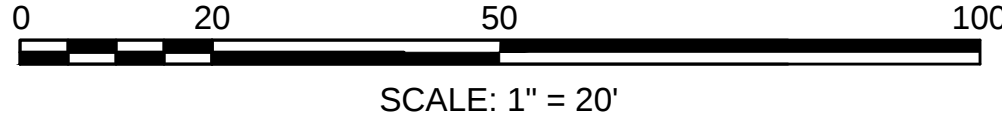


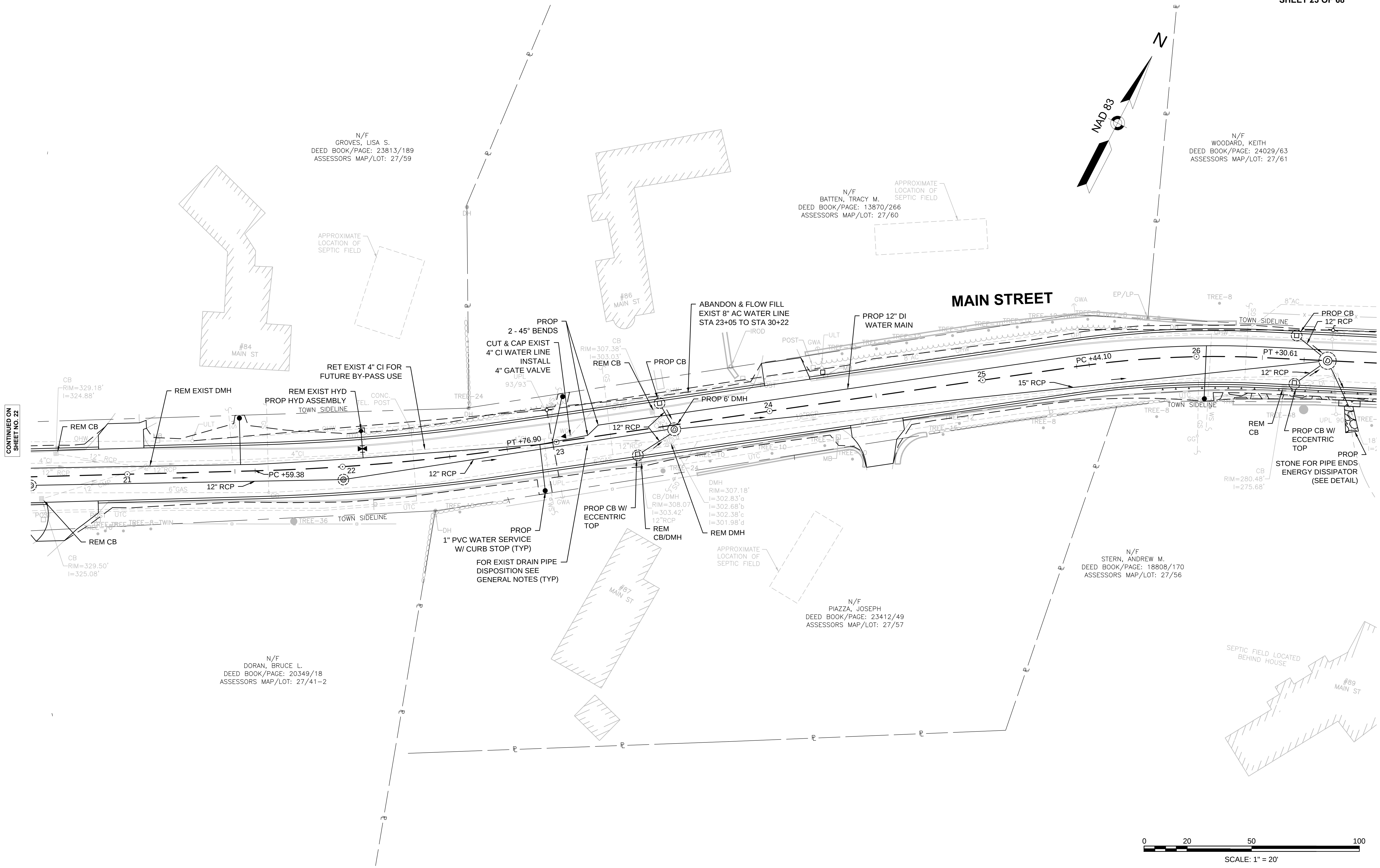
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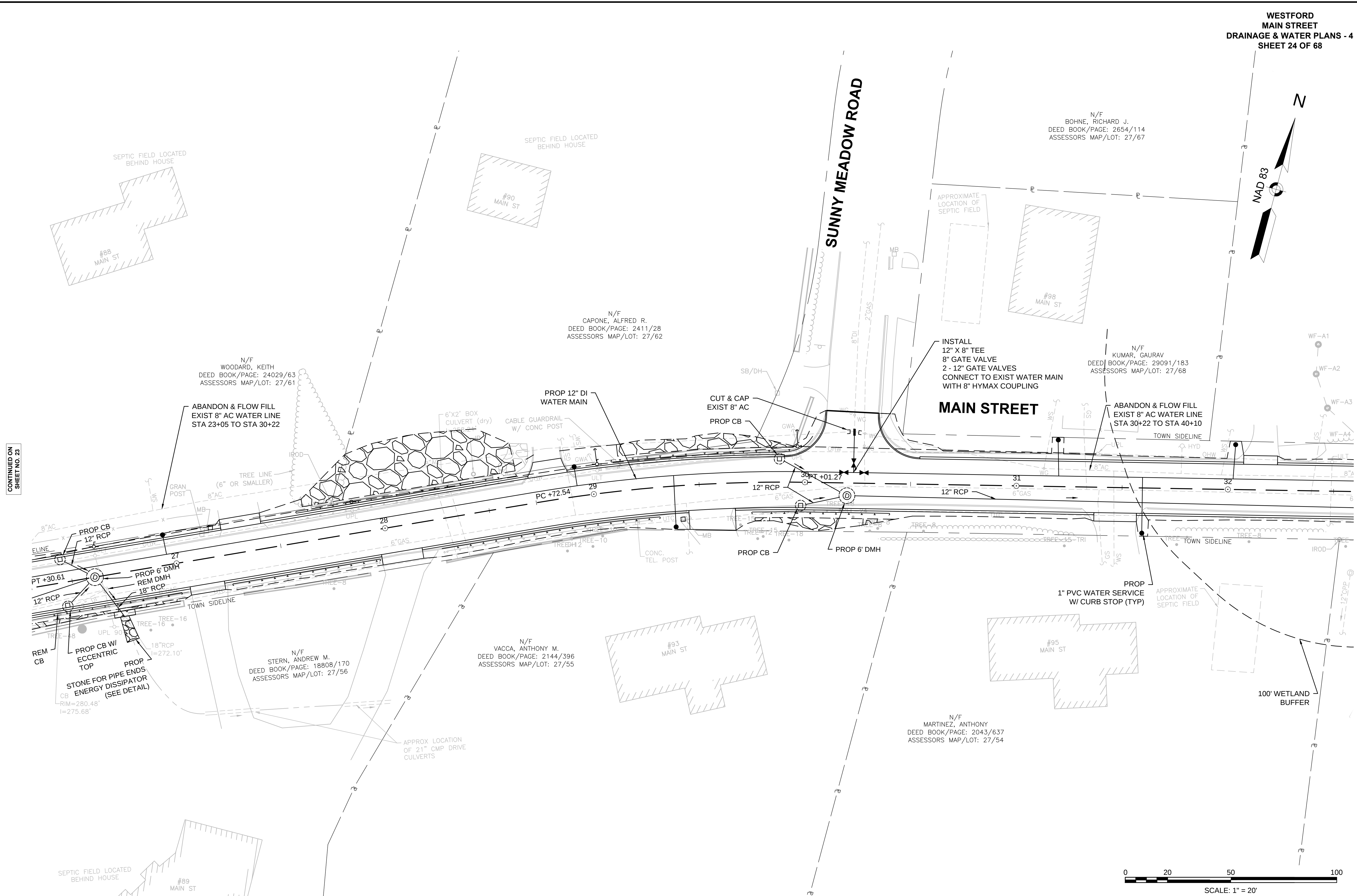
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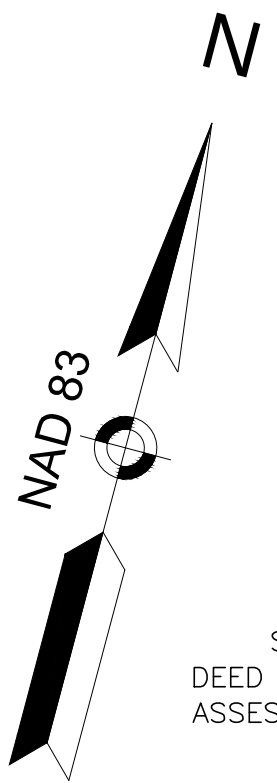




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SHEET NO. 23

CONTINUED ON
SHEET NO. 25





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SCOTT, TIMOTHY P.
DEED BOOK/PAGE: 26929/51
ASSESSORS MAP/LOT: 27/72

N/F
SHERMAN, FRANK W.
DEED BOOK/PAGE: 2037/136
ASSESSORS MAP/LOT: 27/71

N/F
CHIA, KEN & JEANETTE
DEED BOOK/PAGE: 26289/273
ASSESSORS MAP/LOT: 27/70

N/F
KERIS, DENNIS J.
DEED BOOK/PAGE: 2435/231
ASSESSORS MAP/LOT: 27/69

N/F
WHITNEY, ROBERT S.
DEED BOOK/PAGE: 28544/1
ASSESSORS MAP/LOT: 27/51-1

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ASSESSORS MAP/LOT: 27/52

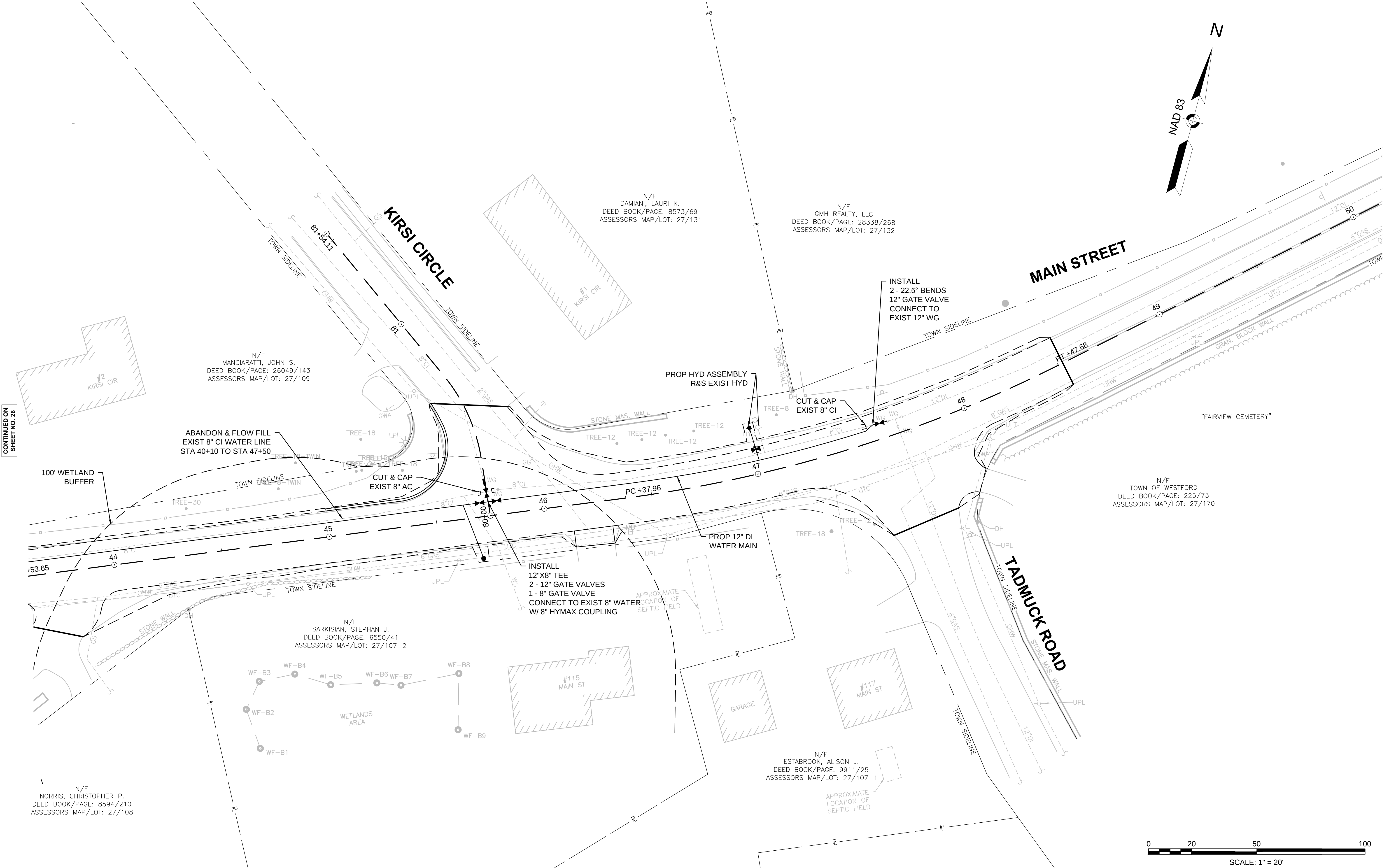
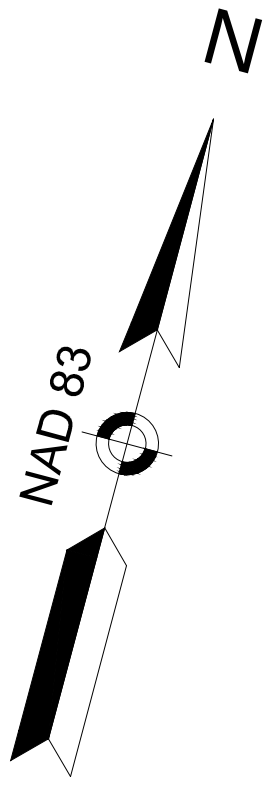
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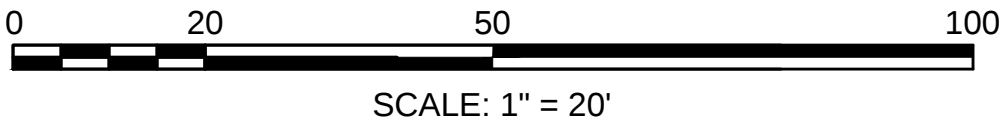
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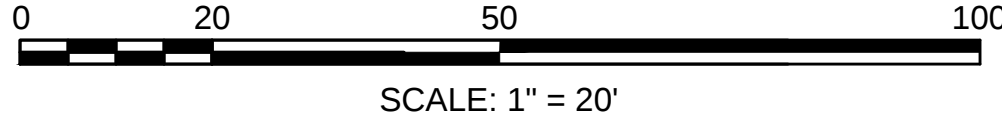
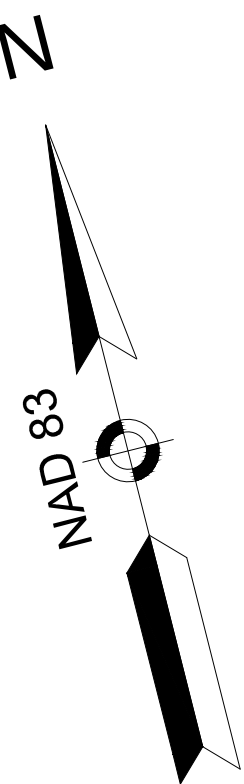
CONTINUED ON
SHEET NO. 26

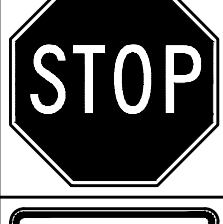
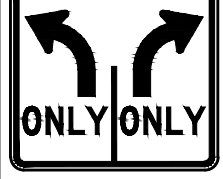




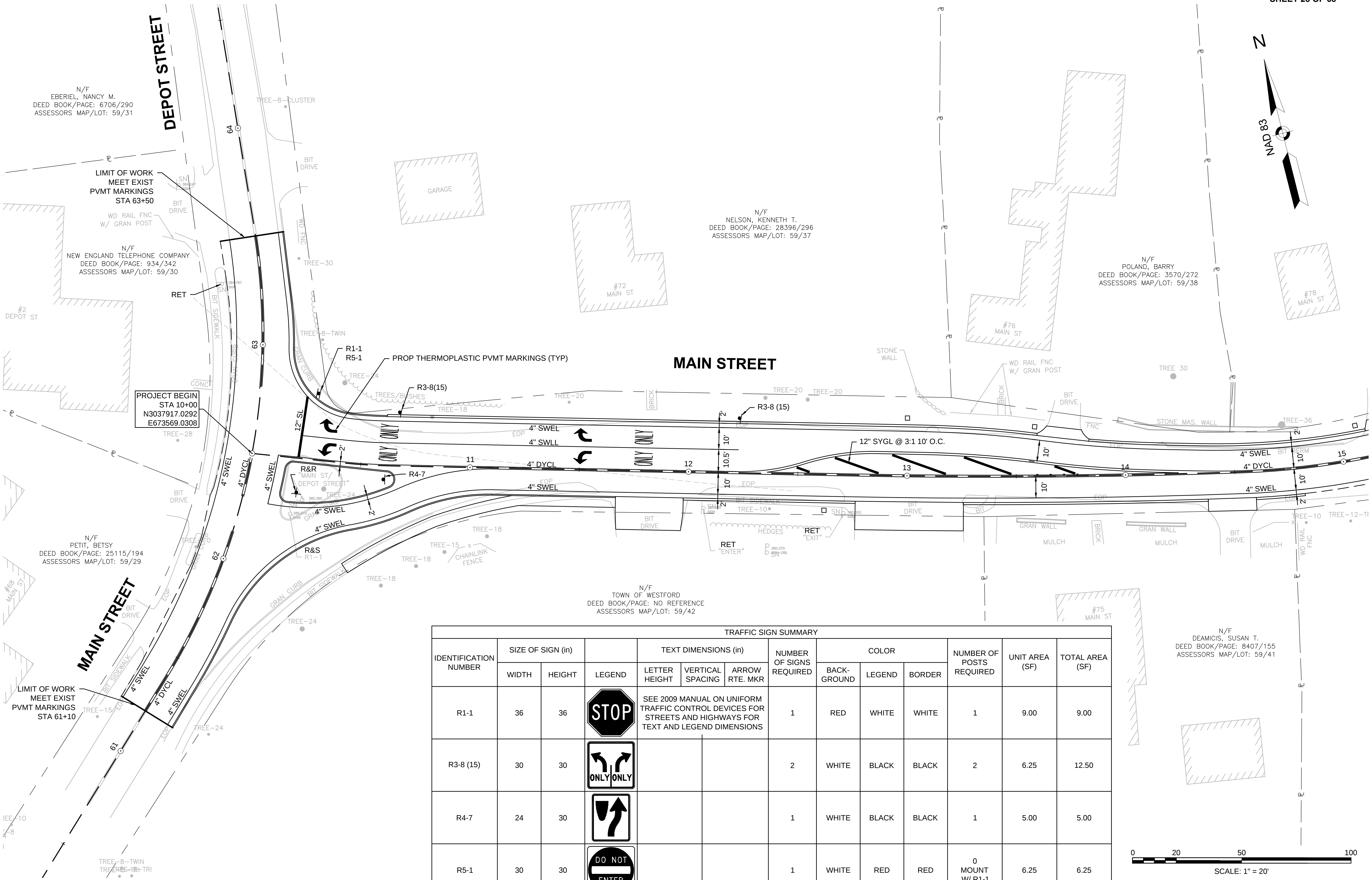
CONTINUED ON
SHEET NO. 26





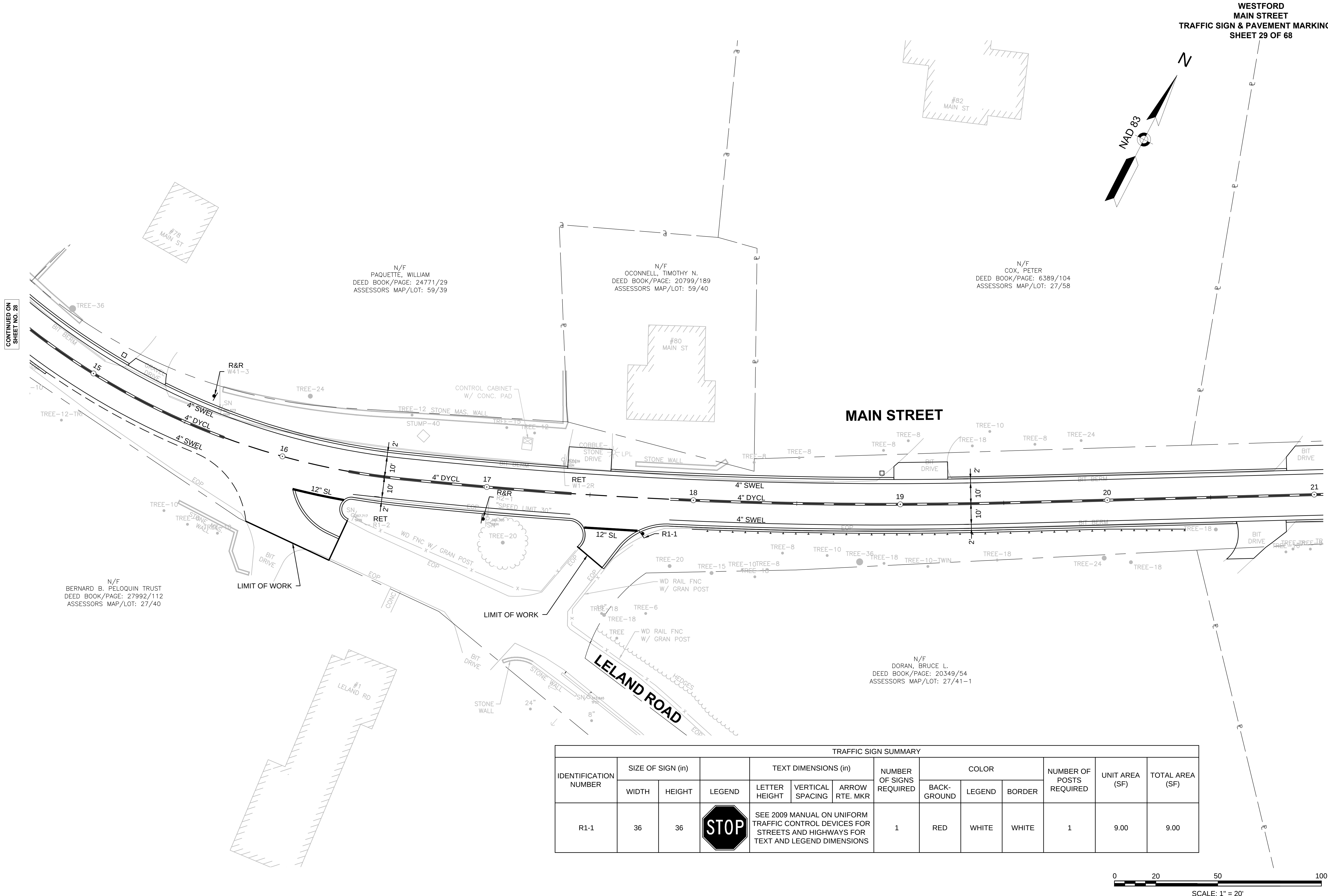
TRAFFIC SIGN SUMMARY													
IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			NUMBER OF POSTS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK-GROUND	LEGEND	BORDER			
R1-1	36	36		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR TEXT AND LEGEND DIMENSIONS			1	RED	WHITE	WHITE	1	9.00	9.00
R3-8 (15)	30	30					2	WHITE	BLACK	BLACK	2	6.25	12.50
R4-7	24	30					1	WHITE	BLACK	BLACK	1	5.00	5.00
R5-1	30	30					1	WHITE	RED	RED	0 MOUNT W/ R1-1	6.25	6.25

CONTINUED ON
SHEET NO. 29



CONTINUED ON
SHEET NO. 28

CONTINUED ON
SHEET NO. 23



N/F
PAQUETTE, WILLIAM
DEED BOOK/PAGE: 24771/29
ASSESSORS MAP/LOT: 59/39

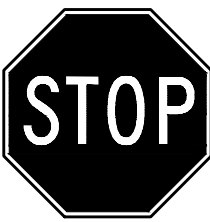
N/F
O'CONNELL, TIMOTHY N.
DEED BOOK/PAGE: 20799/189
ASSESSORS MAP/LOT: 59/40

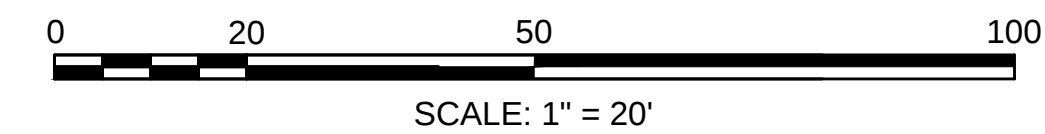
N/F
COX, PETER
DEED BOOK/PAGE: 6389/104
ASSESSORS MAP/LOT: 27/58

N/F
BERNARD B. PELOQUIN TRUST
DEED BOOK/PAGE: 27992/112
ASSESSORS MAP/LOT: 27/40

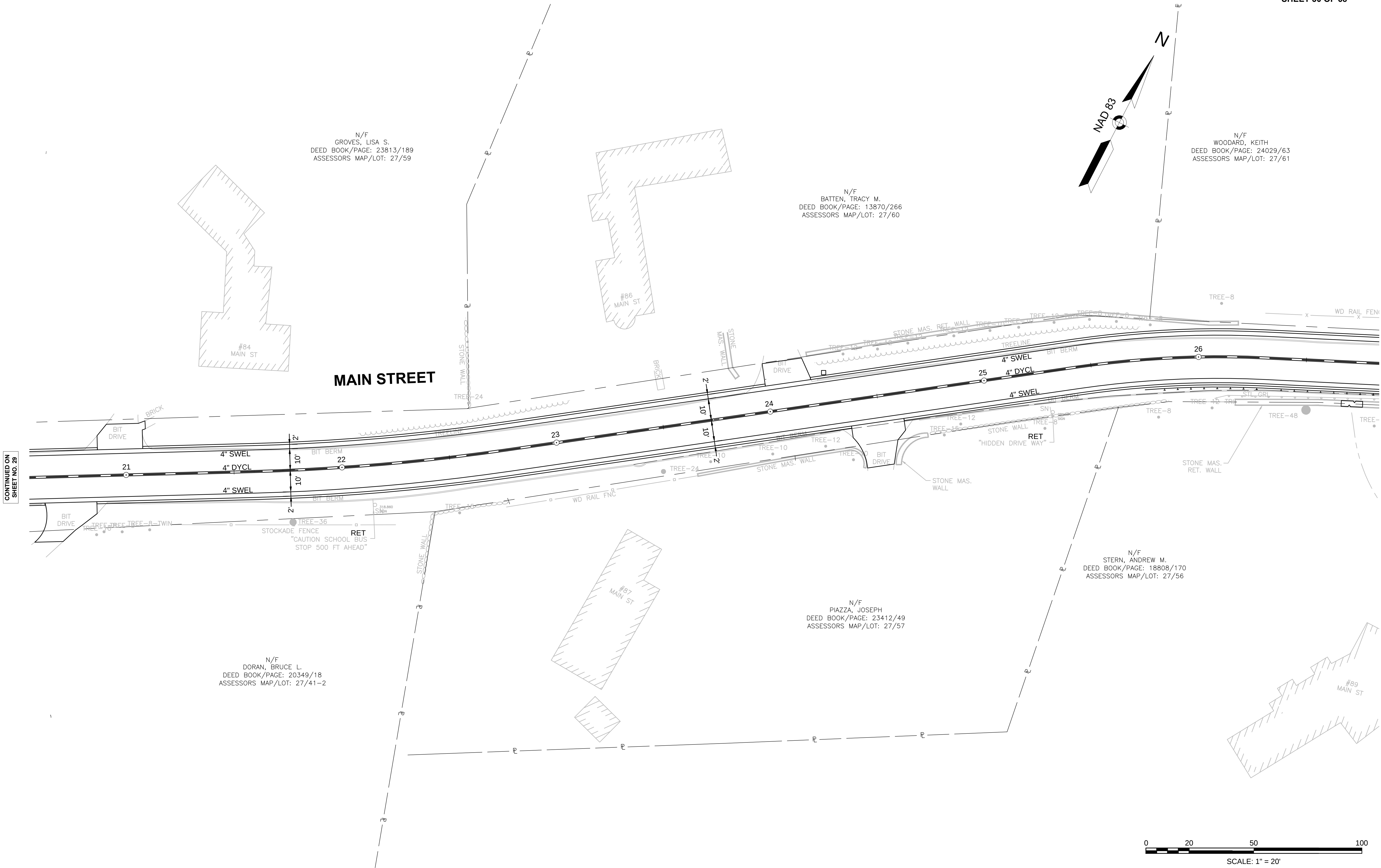
N/F
DORAN, BRUCE L.
DEED BOOK/PAGE: 20349/54
ASSESSORS MAP/LOT: 27/41-1

TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			NUMBER OF POSTS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK- GROUND	LEGEND	BORDER			
R1-1	36	36		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR TEXT AND LEGEND DIMENSIONS			1	RED	WHITE	WHITE	1	9.00	9.00



WESTFORD
MAIN STREET
TRAFFIC SIGN & PAVEMENT MARKING - 3
SHEET 30 OF 68



N/F
GROVES, LISA S.
DEED BOOK/PAGE: 23813/189
ASSESSORS MAP/LOT: 27/59

N/F
BATTEN, TRACY M.
DEED BOOK/PAGE: 13870/266
ASSESSORS MAP/LOT: 27/60

N/F
WOODARD, KEITH
DEED BOOK/PAGE: 24029/63
ASSESSORS MAP/LOT: 27/61

NAD 83



CONTINUED ON
SHEET NO. 29

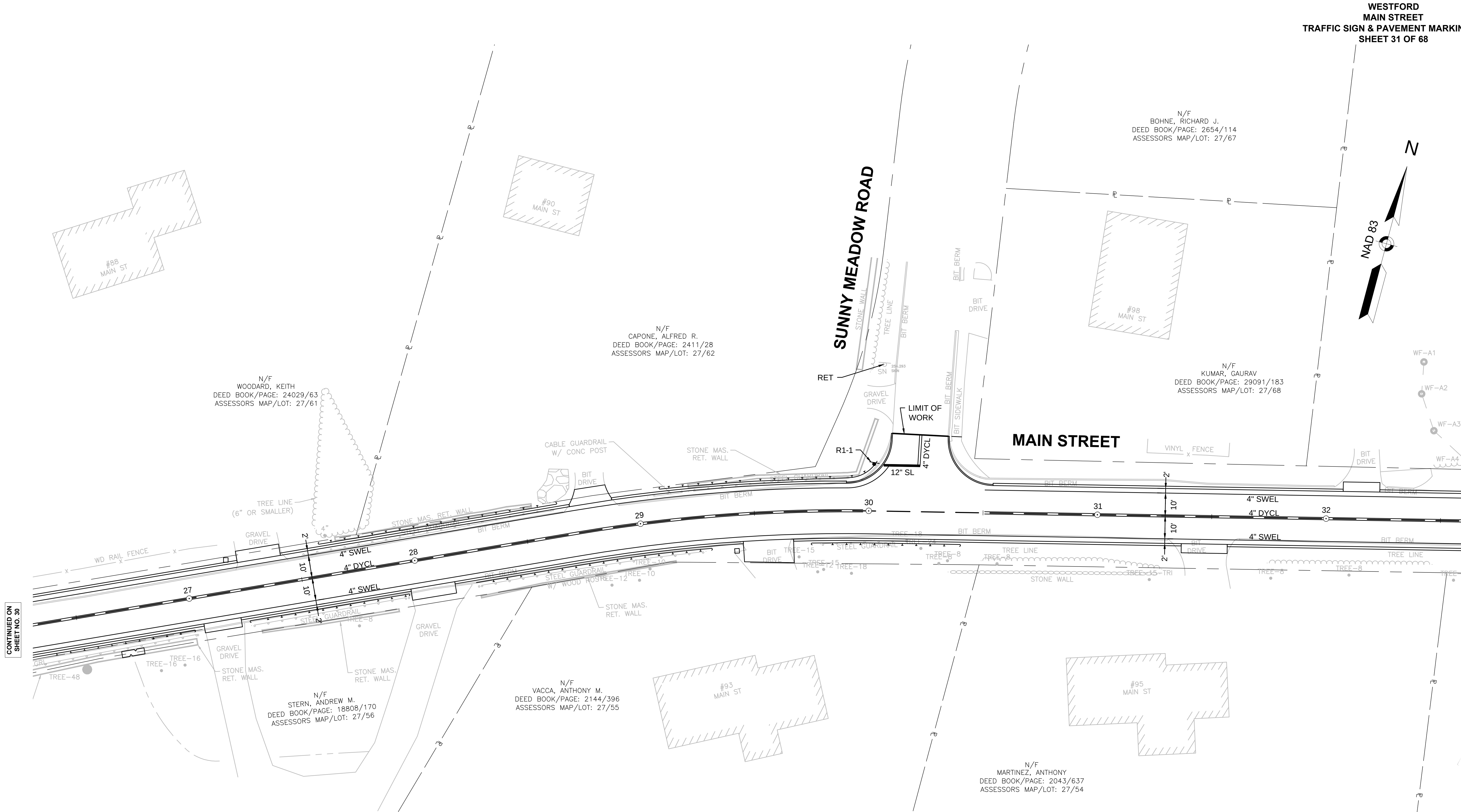
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SHEET NO. 31

N/F
DORAN, BRUCE L.
DEED BOOK/PAGE: 20349/18
ASSESSORS MAP/LOT: 27/41-2

N/F
PIAZZA, JOSEPH
DEED BOOK/PAGE: 23412/49
ASSESSORS MAP/LOT: 27/57

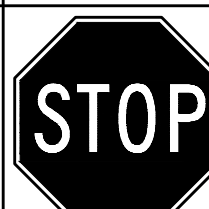
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STERN, ANDREW M.
DEED BOOK/PAGE: 18808/170
ASSESSORS MAP/LOT: 27/56

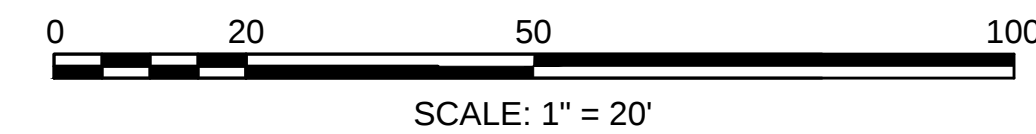
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SCALE: 1" = 20'

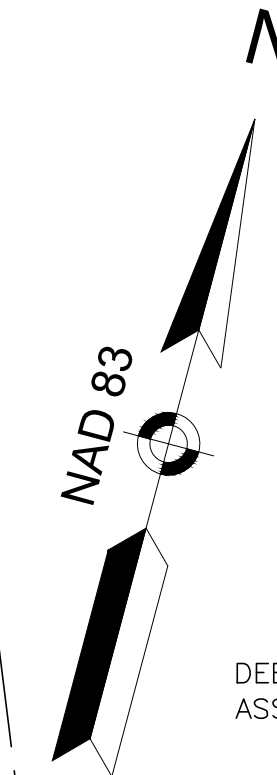


CONTINUED ON
SHEET NO. 30

CONTINUED ON
SHEET NO. 32

TRAFFIC SIGN SUMMARY													
IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			NUMBER OF POSTS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK- GROUND	LEGEND	BORDER			
R1-1	36	36		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR TEXT AND LEGEND DIMENSIONS			1	RED	WHITE	WHITE	1	9.00	9.00





N/F
SCOTT, TIMOTHY P.
DEED BOOK/PAGE: 26929/51
ASSESSORS MAP/LOT: 27/72

N/F
SHERMAN, FRANK W.
DEED BOOK/PAGE: 2037/136
ASSESSORS MAP/LOT: 27/71

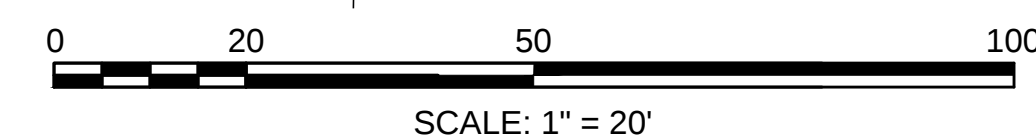
N/F
CHIA, KEN & JEANETTE
DEED BOOK/PAGE: 26289/273
ASSESSORS MAP/LOT: 27/70

N/F
KERIS, DENNIS J.
DEED BOOK/PAGE: 2435/231
ASSESSORS MAP/LOT: 27/69

N/F
WHITNEY, ROBERT S.
DEED BOOK/PAGE: 28544/1
ASSESSORS MAP/LOT: 27/51-1

N/F
TEDESCHI FOOD SHOPS, INC.
DEED BOOK/PAGE: 1989/199
ASSESSORS MAP/LOT: 27/52

N/F
ROSEGATE DEVELOPMENT, LLC.
DEED BOOK/PAGE: 14327/107
ASSESSORS MAP/LOT: 27/53-0

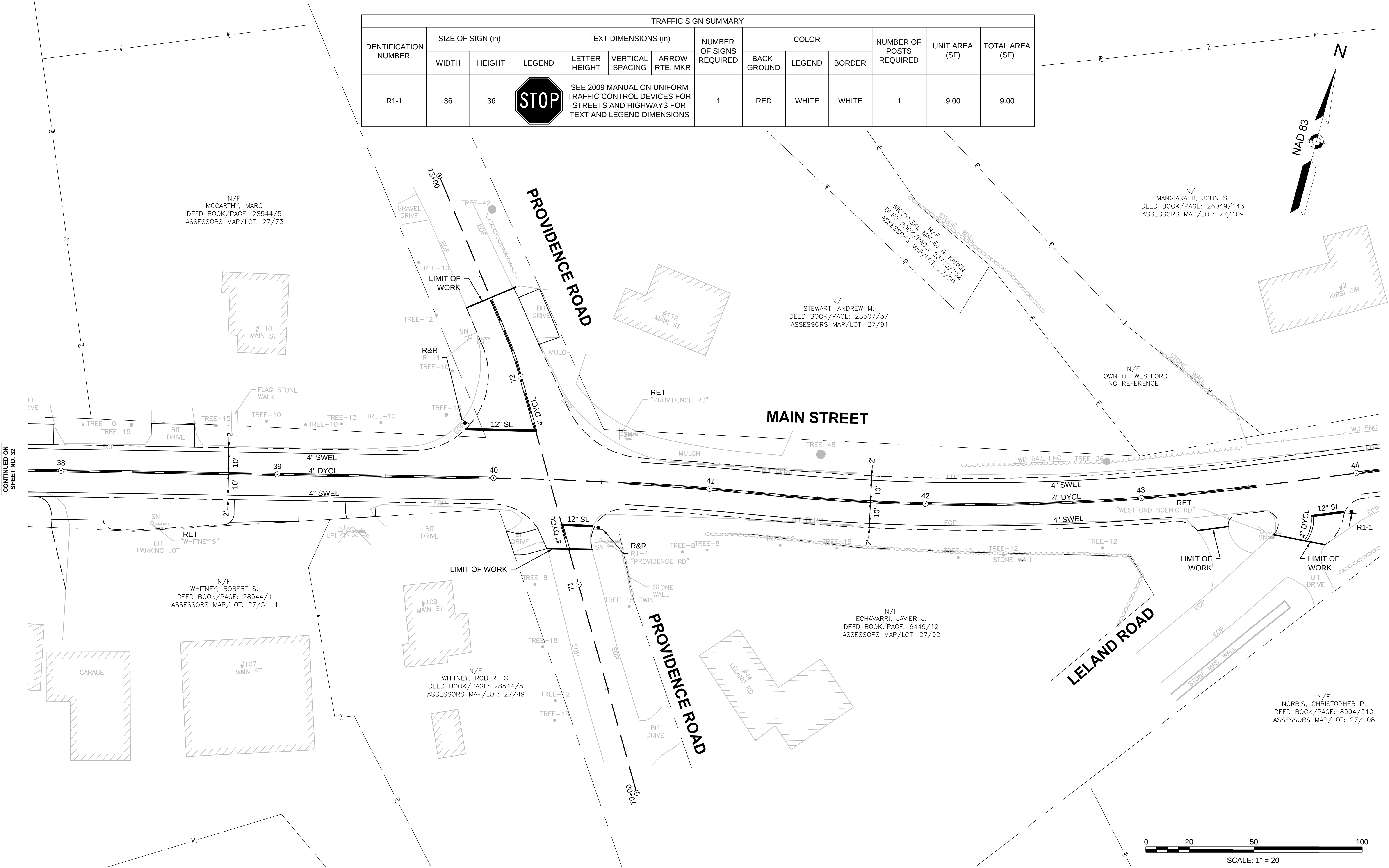
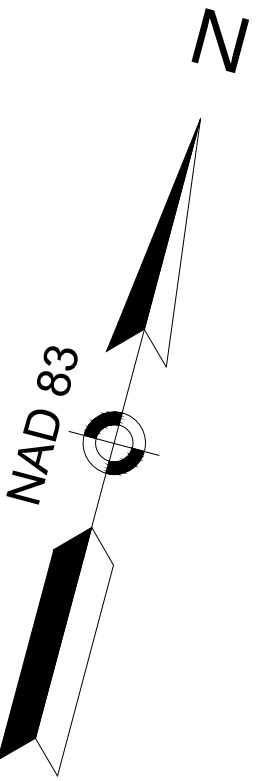


MAIN STREET

CONTINUED ON
SHEET NO. 31

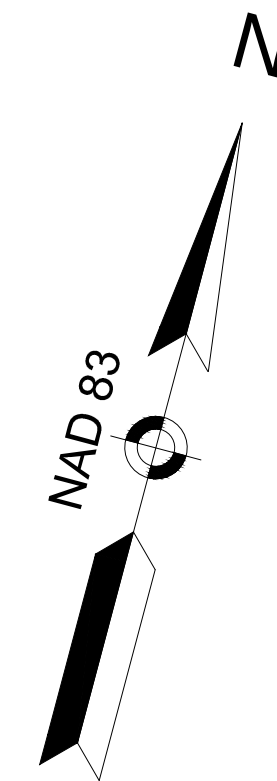
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SHEET NO. 33

TRAFFIC SIGN SUMMARY													
IDENTIFICATION NUMBER	SIZE OF SIGN (in)			TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			NUMBER OF POSTS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT	LEGEND	LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK- GROUND	LEGEND	BORDER			
R1-1	36	36		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR TEXT AND LEGEND DIMENSIONS			1	RED	WHITE	WHITE	1	9.00	9.00



CONTINUED ON
SHEET NO. 32

CONTINUED ON
SHEET NO. 34

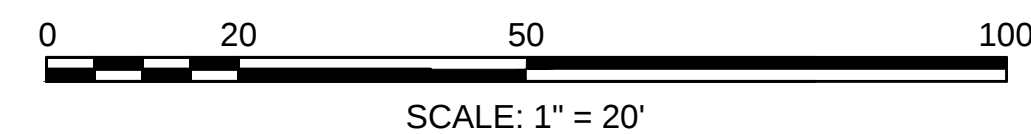


PROJECT END
STA 48+50
N3038988.2414
E677142.0463

LIMIT OF WORK
MEET EXIST
PVMT MARKINGS
STA 48+50

N/F
TOWN OF WESTFORD
DEED BOOK/PAGE: 225/73
ASSESSORS MAP/LOT: 27/170

TRAFFIC SIGN SUMMARY													
IDENTIFICATION NUMBER	SIZE OF SIGN (in)			TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			NUMBER OF POSTS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT	LEGEND	LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK- GROUND	LEGEND	BORDER			
W3-1	30	30		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR TEXT AND LEGEND DIMENSIONS			1	YELLOW	BLACK RED/WHITE	BLACK	1	6.25	6.25



CONTINUED ON
SHEET NO. 33

N/F
NORRIS, CHRISTOPHER P.
DEED BOOK/PAGE: 8594/210
ASSESSORS MAP/LOT: 27/108

N/F
SARKISIAN, STEPHAN J.
DEED BOOK/PAGE: 6550/41
ASSESSORS MAP/LOT: 27/107-2

N/F
MANGIARATTI, JOHN S.
DEED BOOK/PAGE: 26049/143
ASSESSORS MAP/LOT: 27/109

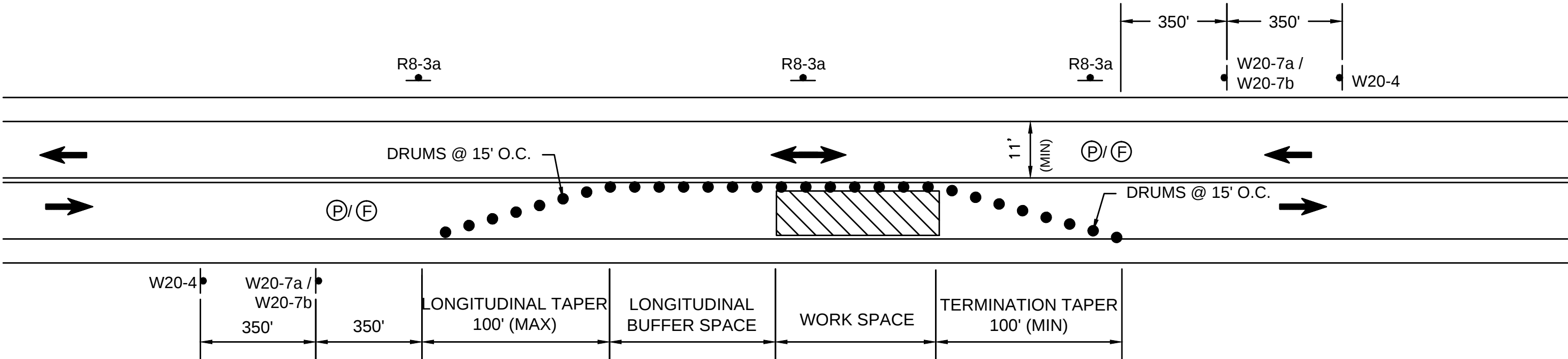
N/F
DAMIANI, LAURI K.
DEED BOOK/PAGE: 8573/69
ASSESSORS MAP/LOT: 27/131

N/F
GMH REALTY, LLC
DEED BOOK/PAGE: 28338/268
ASSESSORS MAP/LOT: 27/132

GENERAL NOTES

1. ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES AND OTHER DEVICES SHALL CONFORM WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AS AMENDED.
2. ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORKING HOURS, TO MAINTAIN SUCH ACCESS.
3. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS DRAINAGE AND WATER PIPE INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND SIMILAR OPERATIONS.
4. A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION ON TWO WAY STREETS SHALL BE MAINTAINED AT ALL TIMES, EXCEPT THAT DURING WORKING HOURS, TRAFFIC MAY BE REDUCED TO ONE LANE UNDER POLICE OR FLAGGER CONTROL FOR SHORT TIME PERIODS WHEN REQUIRED FOR THE WORK, AS SHOWN.
5. GRADE SEPARATIONS IN EXCESS OF 2" DURING NON-WORKING HOURS SHALL REQUIRE DELINEATION BY USE OF DRUMS.
6. EXCAVATION EDGES IN EXCESS OF 4" DEEP SHALL BE PROTECTED DURING NON-WORKING HOURS BY BACKFILLING WITH A WEDGE OF GRAVEL OR SOIL TO COMPACTED 4:1 SLOPE.
7. 11' MINIMUM LANE WIDTHS SHALL BE MAINTAINED AT ALL TIMES.
8. NON-ESSENTIAL TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS.
9. ADVISORY SPEED PLATES (W13-1) SHALL BE USED IF APPROPRIATE AND AS DIRECTED BY THE ENGINEER.
10. TEMPORARY FENCE SHOULD BE USED TO PROTECT WORK AREAS DURING NON-WORKING HOURS AS DIRECTED BY THE ENGINEER.
11. CONSTRUCTION SIGNING MAY BE MOVED AT THE DISCRETION OF THE RESIDENT ENGINEER.

ID NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS(in)			COLOR			NUMBER OF SIGNS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK-GROUND	LEGEND	BORDER			
R8-3a	24	30		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			WHITE	RED	RED	3	5.00	25.00
W20-1 (AHEAD)	36	36					ORANGE	BLACK	BLACK	11	9.00	108.00
W20-4	36	36					ORANGE	BLACK	BLACK	3	9.00	45.00
R2-10a	48	36		MASSDOT STANDARD SIGN			ORANGE WHITE	BLACK BLACK	BLACK BLACK	11	12.00	121.00
R2-10e	36	48					ORANGE WHITE	BLACK BLACK	BLACK BLACK	11	12.00	121.00
W20-7a	36	36					ORANGE	BLACK	BLACK	3	9.00	27.00
W20-7b	36	36					ORANGE	BLACK	BLACK	3	9.00	27.00

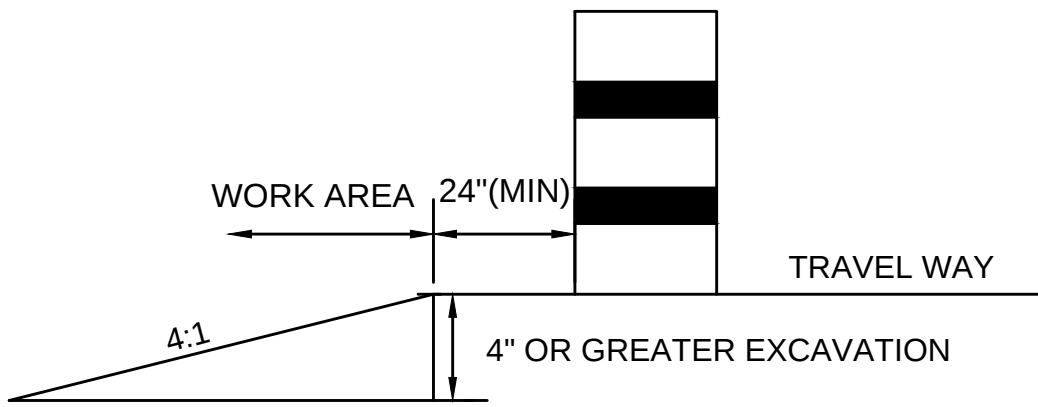


NOTES:

1. DRUM SPACING FOR LONGITUDINAL TAPER SECTION SHALL NOT EXCEED A DISTANCE IN FEET EQUAL TO THE POSTED SPEED.
2. DRUM SPACING FOR TANGENT SECTION SHALL NOT EXCEED A DISTANCE IN FEET EQUAL TO TWICE THE POSTED SPEED.
3. DRUM SPACING FOR TERMINATION TAPER SECTION SHALL NOT EXCEED 20 FEET.

TYPICAL LANE CLOSURE ON TWO-LANE ROAD USING POLICE OFFICERS / FLAGGERS

N.T.S.



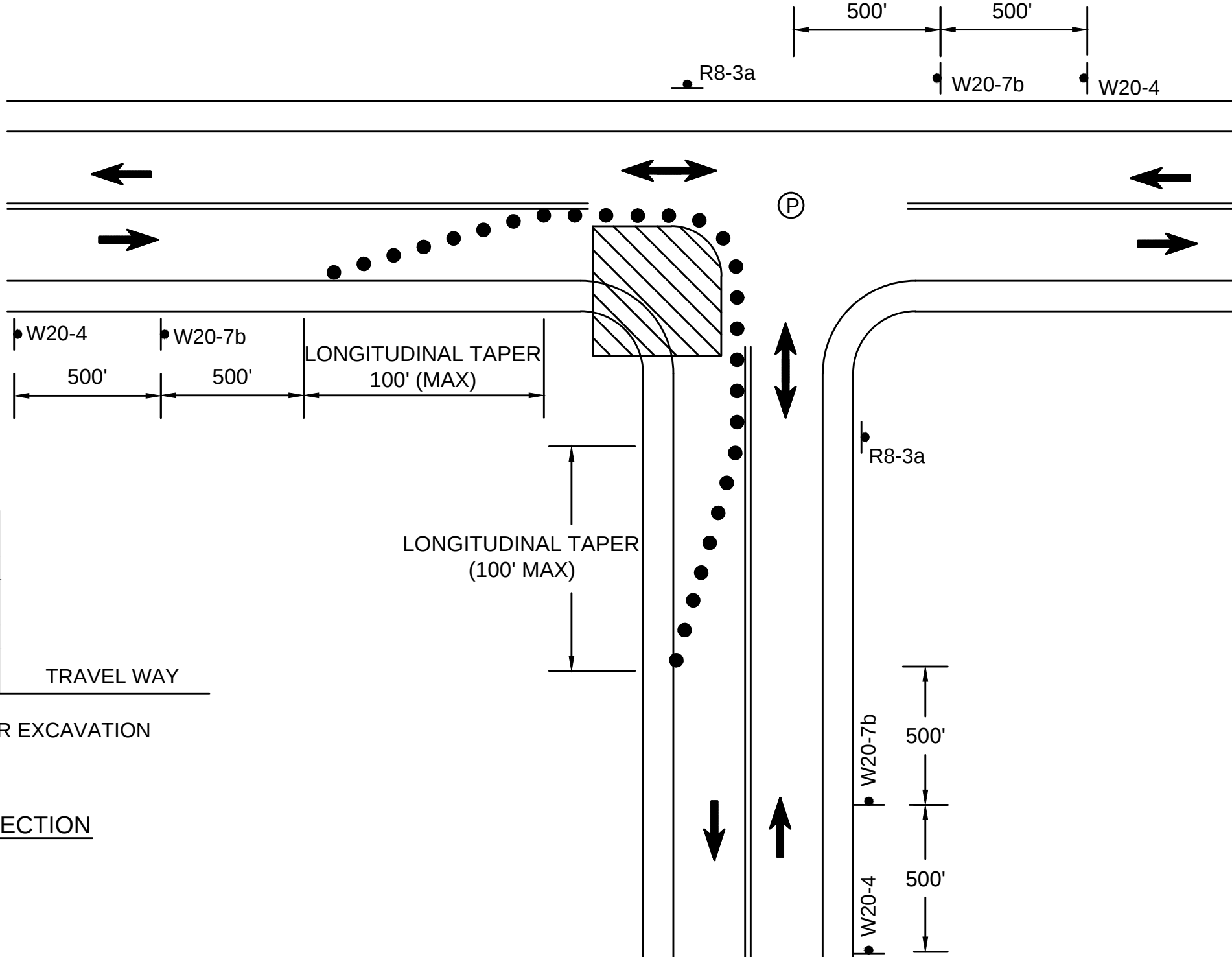
ROADWAY SLOPE PROTECTION

N.T.S.

LEGEND

- DRUM
- POLICE OFFICER OR FLAGGER
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- WORK AREA
- PROPOSED TRAFFIC FLOW
- N.T.S. NOT TO SCALE

WESTFORD
MAIN STREET
TEMPORARY TRAFFIC CONTROL DETAILS
SHEET 35 OF 68

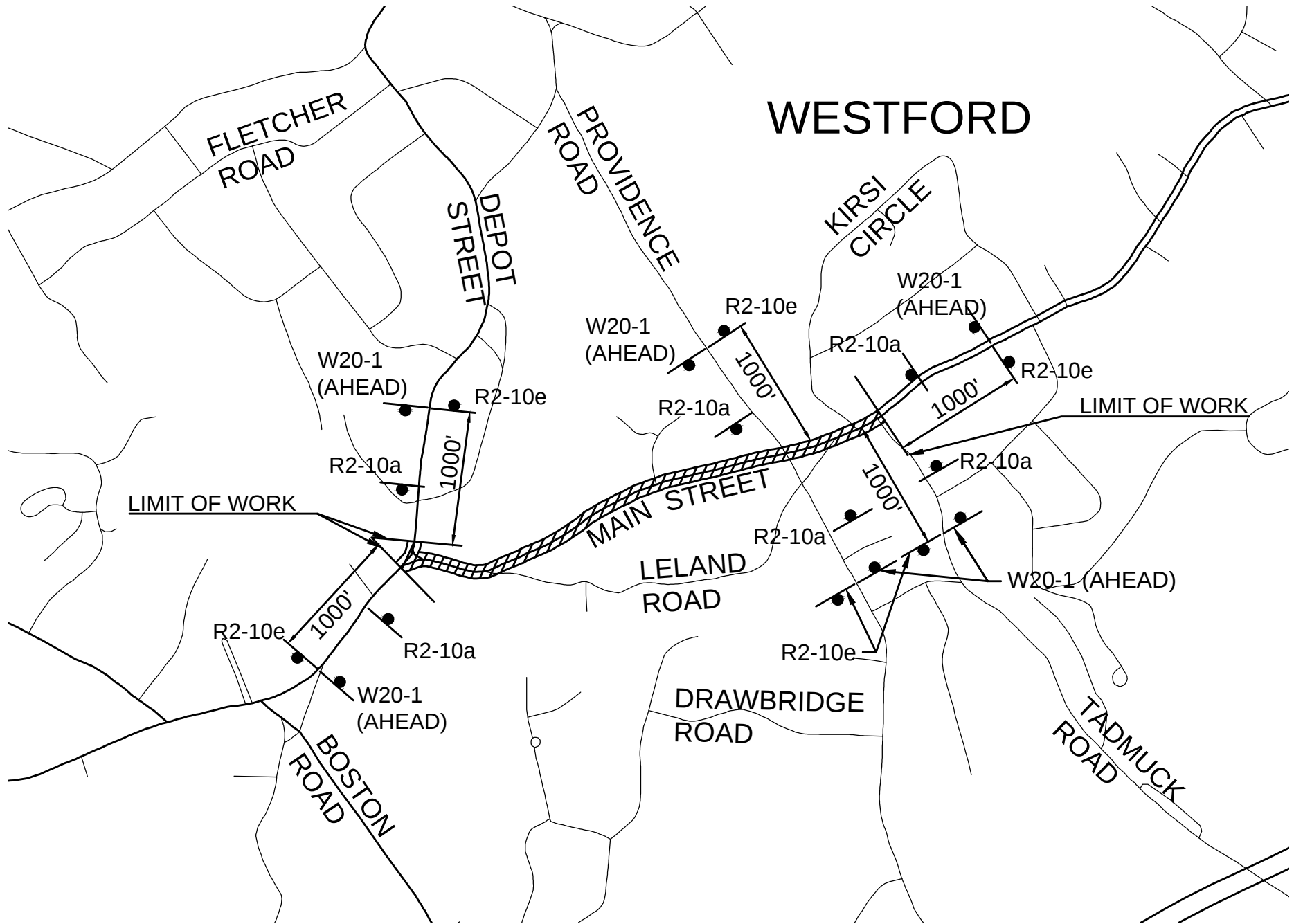


NOTES:

1. DRUM SPACING FOR LONGITUDINAL TAPER SECTION SHALL NOT EXCEED A DISTANCE IN FEET EQUAL TO THE POSTED SPEED.
2. DRUM SPACING FOR TANGENT SECTION SHALL NOT EXCEED A DISTANCE IN FEET EQUAL TO TWICE THE POSTED SPEED.
3. DRUM SPACING FOR TERMINATION TAPER SECTION SHALL NOT EXCEED 20 FEET.

TYPICAL LANE CLOSURE ON TWO-LANE ROAD
USING POLICE OFFICERS

N.T.S.



ADVANCED SIGNING SCHEMATIC

N.T.S.

NOTES

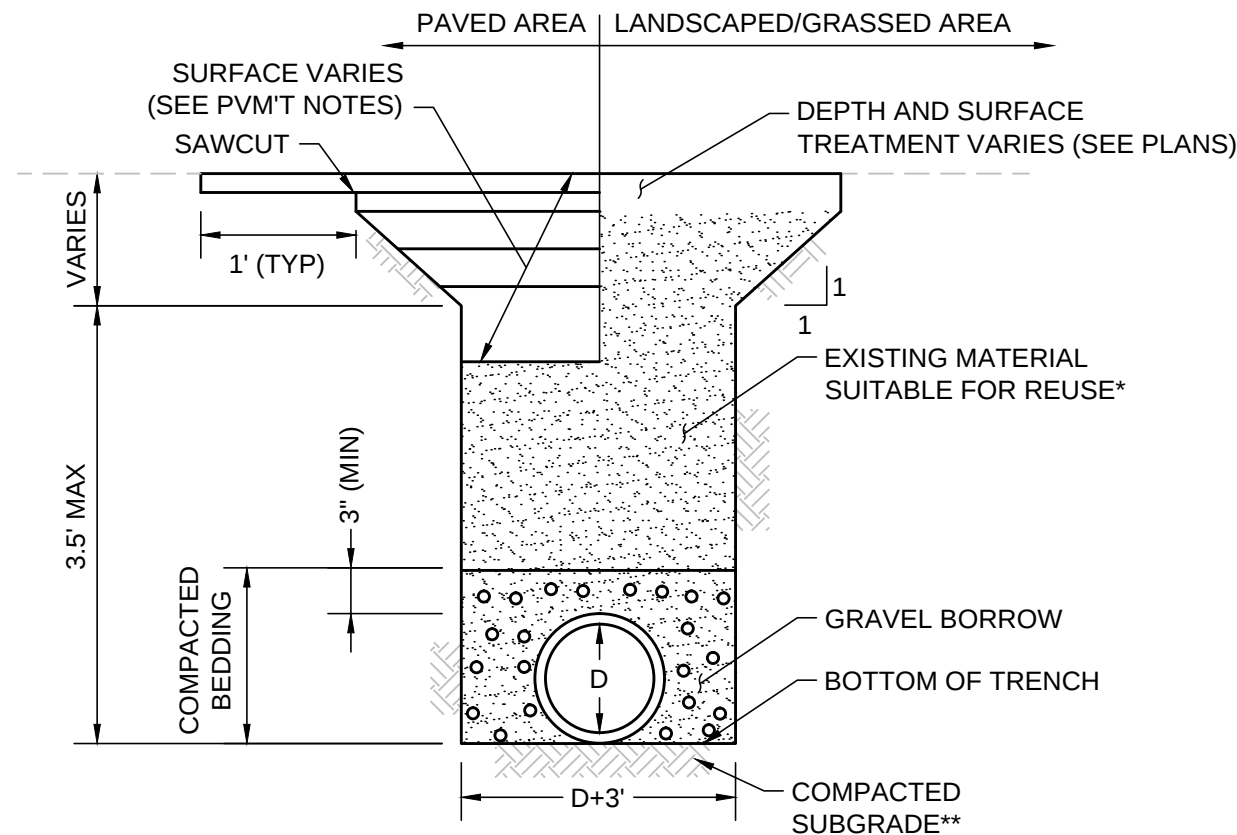
ALL SIDE STREETS WITHIN THE PROJECT LIMITS SHALL INCLUDE W20-1, R2-10a, AND R2-10e SIGNS. SIGNS SHALL BE PLACED IN CONFORMANCE WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

LONGITUDINAL BUFFER

SPEED (mph)	BUFFER (FT)
20	115
25	155
30	200
35	250
40	305
45	360

MERGING TAPER LENGTH (L)

SPEED (mph)	TAPER WIDTH (FT)			
	9	10	11	12
25	95	105	115	125
30	135	150	165	180
35	185	205	225	245
40	240	270	295	320
45	405	450	495	540

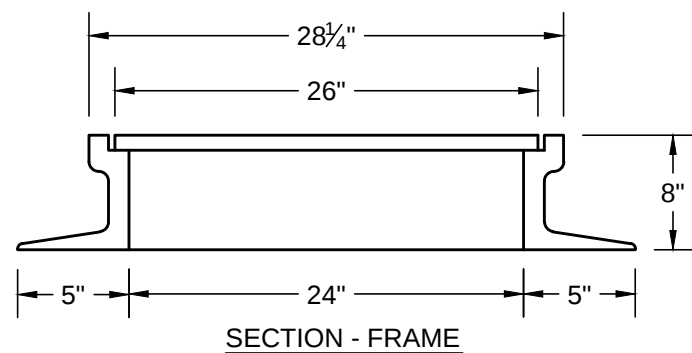
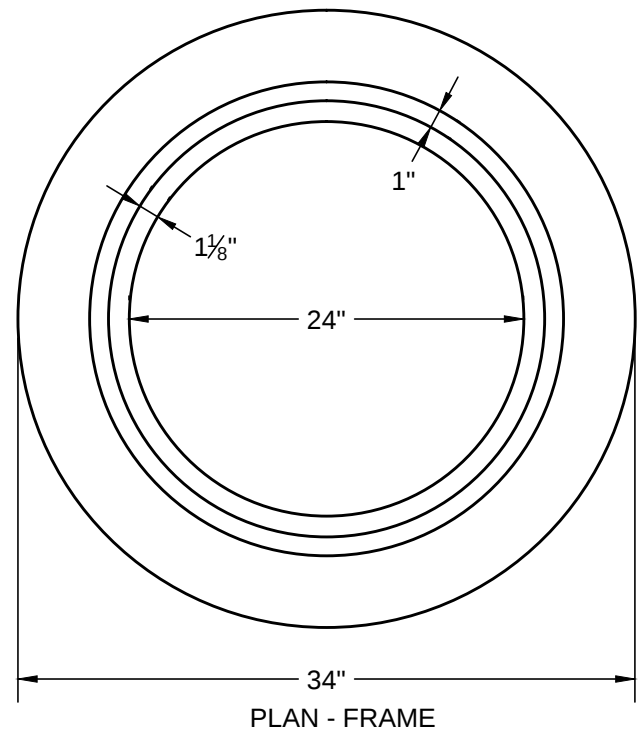


NOTES:

* EXISTING MATERIAL OBTAINED FROM EXCAVATION THAT IS DETERMINED TO BE SUITABLE, AND APPROVED BY THE ENGINEER SHALL BE USED. BACKFILL SHALL BE PLACED IN LAYERS NO MORE THAN 6" IN DEPTH AND THOROUGHLY COMPACTED. BACKFILLING TO A POINT 2' OVER THE PIPE SHALL CONTAIN NO STONES LARGER THAN 3".

**SOFT OR UNSUITABLE MATERIAL EXISTING BELOW THE REQUIRED BEDDING GRADE SHALL BE REMOVED AS DIRECTED AND REPLACED WITH SAND, GRAVEL, CRUSHED STONE OR OTHER SUITABLE MATERIAL AND THOROUGHLY COMPACTED.

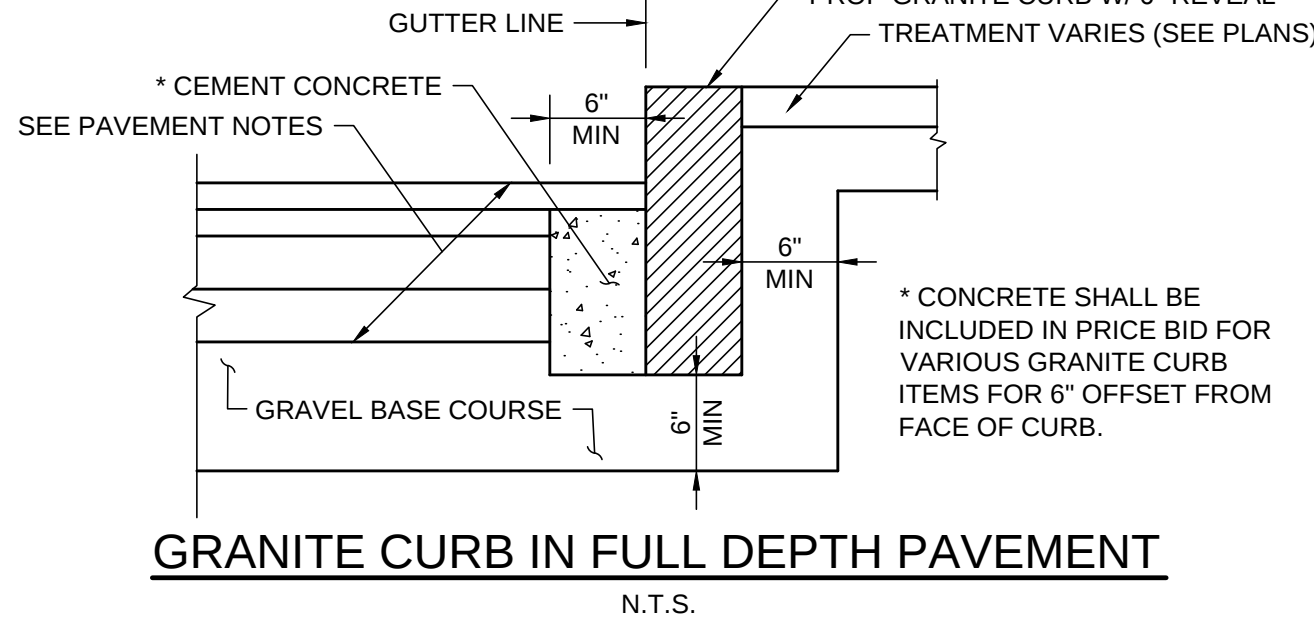
UTILITY TRENCH
N.T.S.



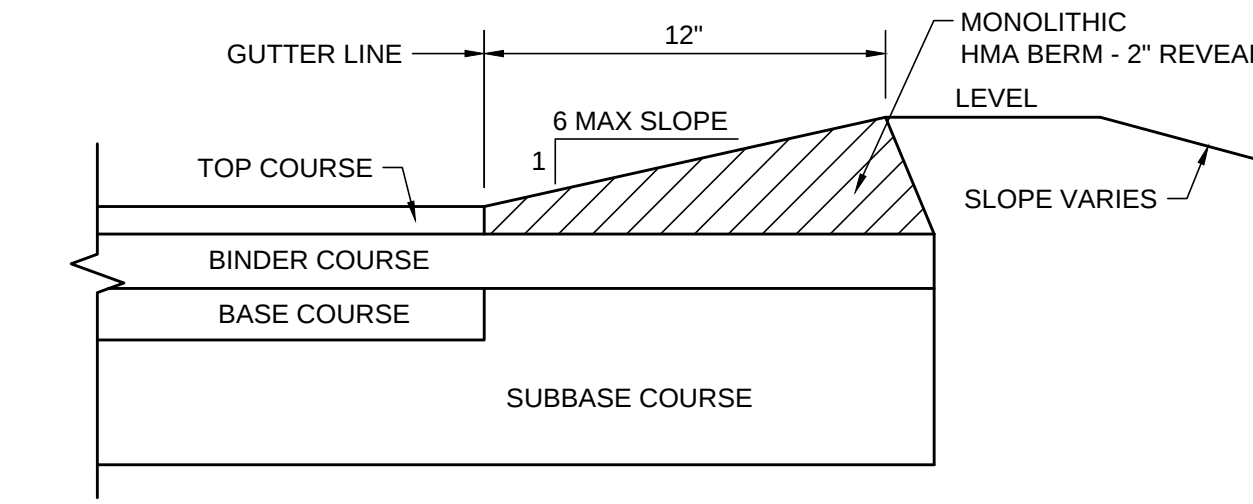
MANHOLE FRAME & COVER
N.T.S.

NOTES:

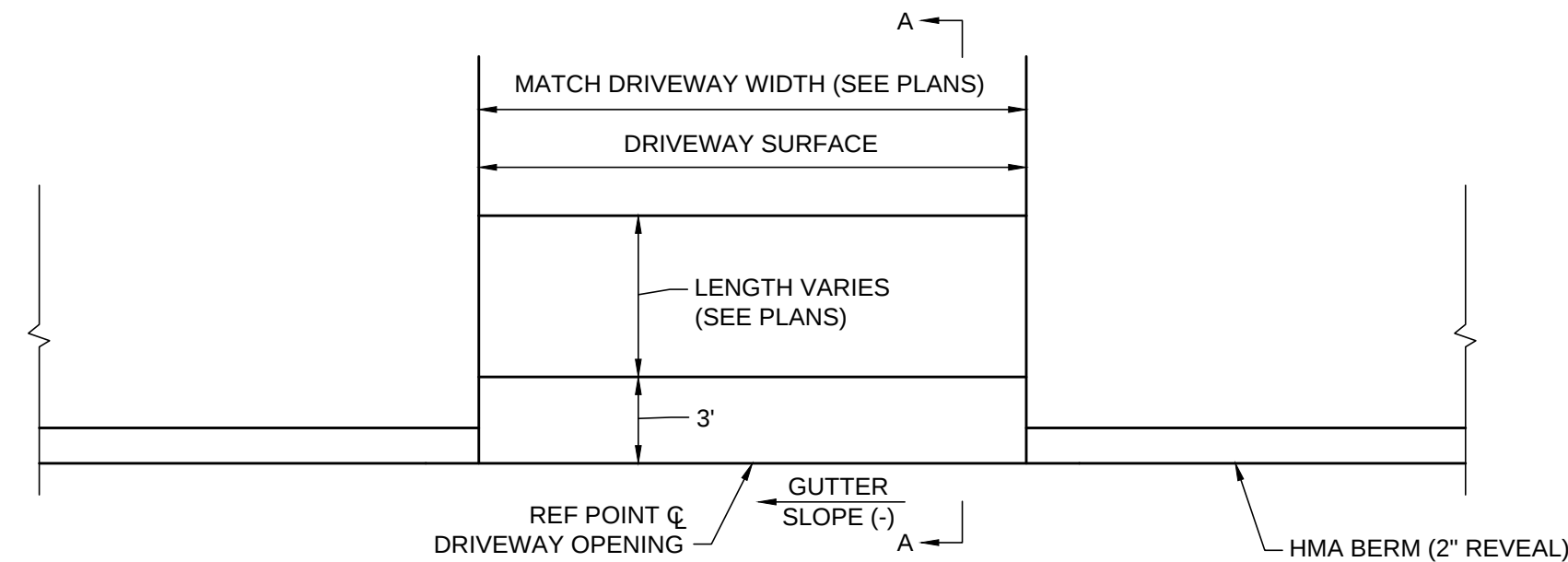
1. FRAME AND COVER SHALL BE RATED FOR HL-93 LOADING.
2. MATERIAL - CAST IRON.
3. MINIMUM MASS - 265 LBS.
4. ALL MH FRAMES AND COVERS SHALL BE ADA AND AAB COMPLIANT.
5. MANHOLE COVERS SHALL HAVE A DIAMOND PATTERN, PICK HOLES, AND THE WORD "DRAIN" CAST IN 3-INCH LETTERS.



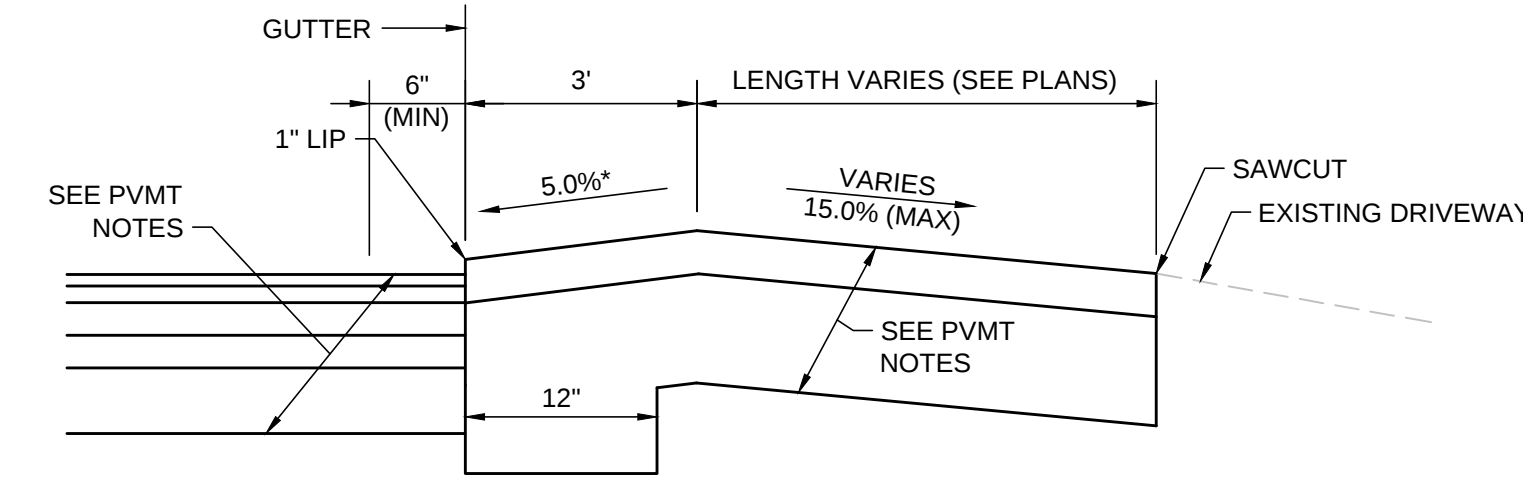
GRANITE CURB IN FULL DEPTH PAVEMENT
N.T.S.



MONOLITHIC HOT MIX ASPHALT BERM - 2" REVEAL
N.T.S.

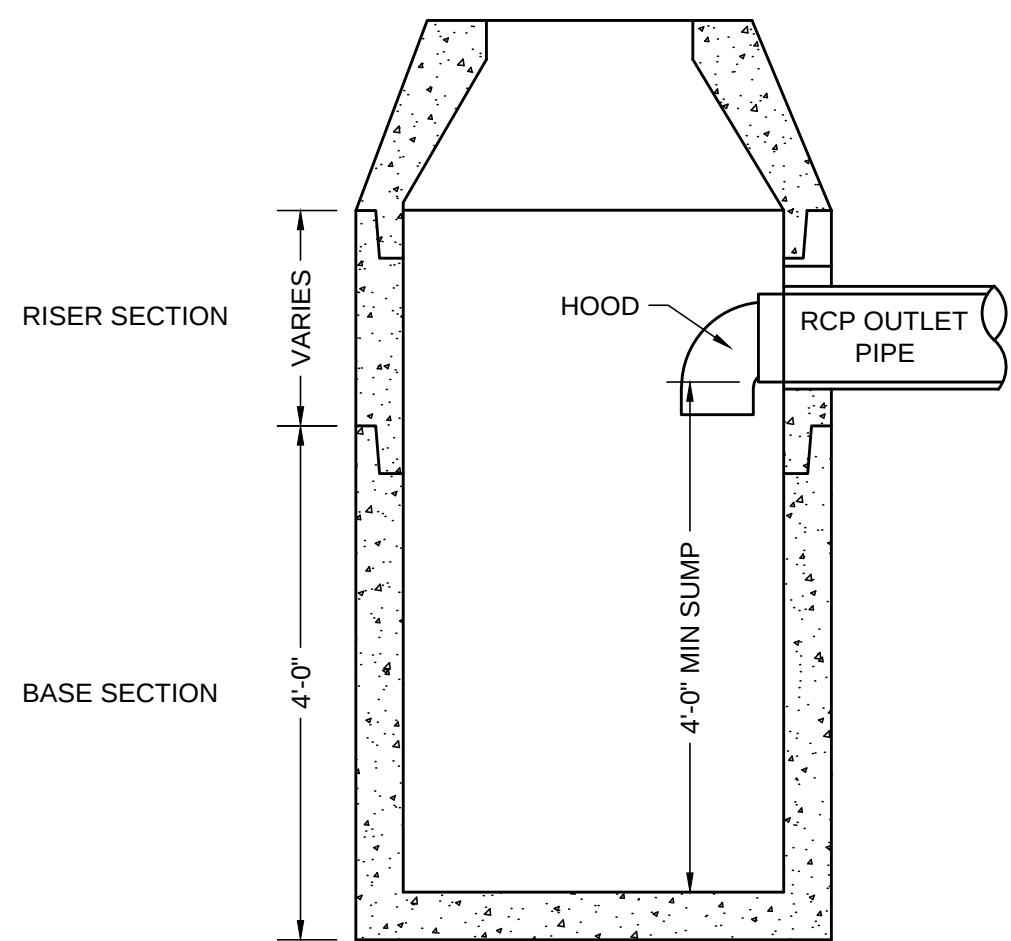


*TOLERANCE FOR CONSTRUCTION ±0.5%



*CROSS SLOPE MODIFIED TO MATCH STEEP DRIVEWAY SLOPES (SEE CROSS SECTIONS)

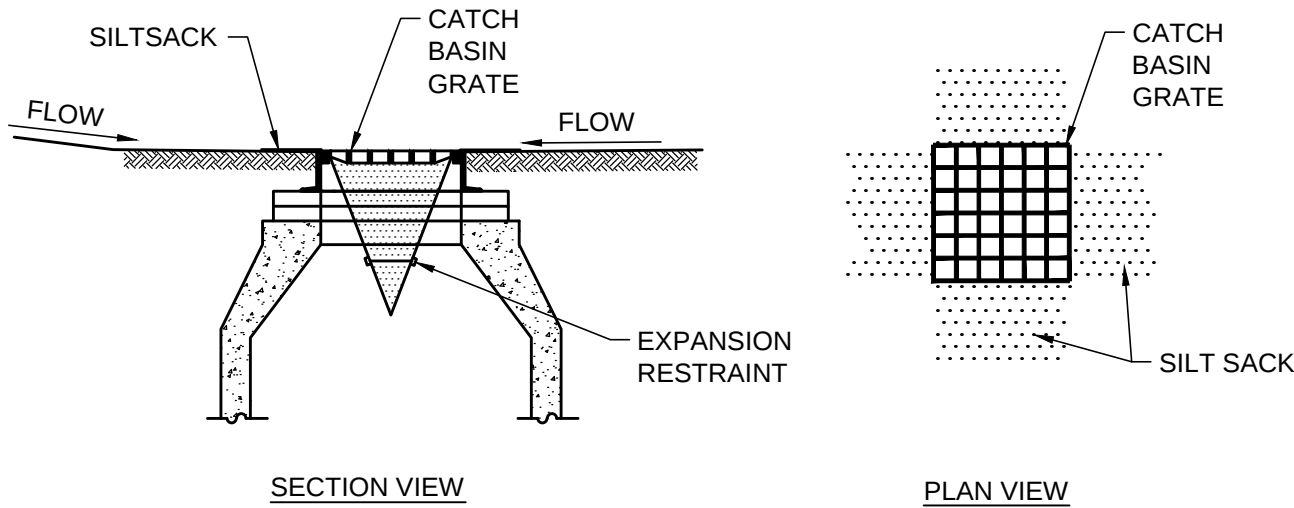
HMA DRIVEWAY TO MATCH EXIST
N.T.S.



NOTE:

ALL CATCH BASINS SHALL CONFORM TO MASSDOT CONSTRUCTION STANDARD E 201.4.0 EXCEPT FOR 4' SUMP DEPTH AS SHOWN

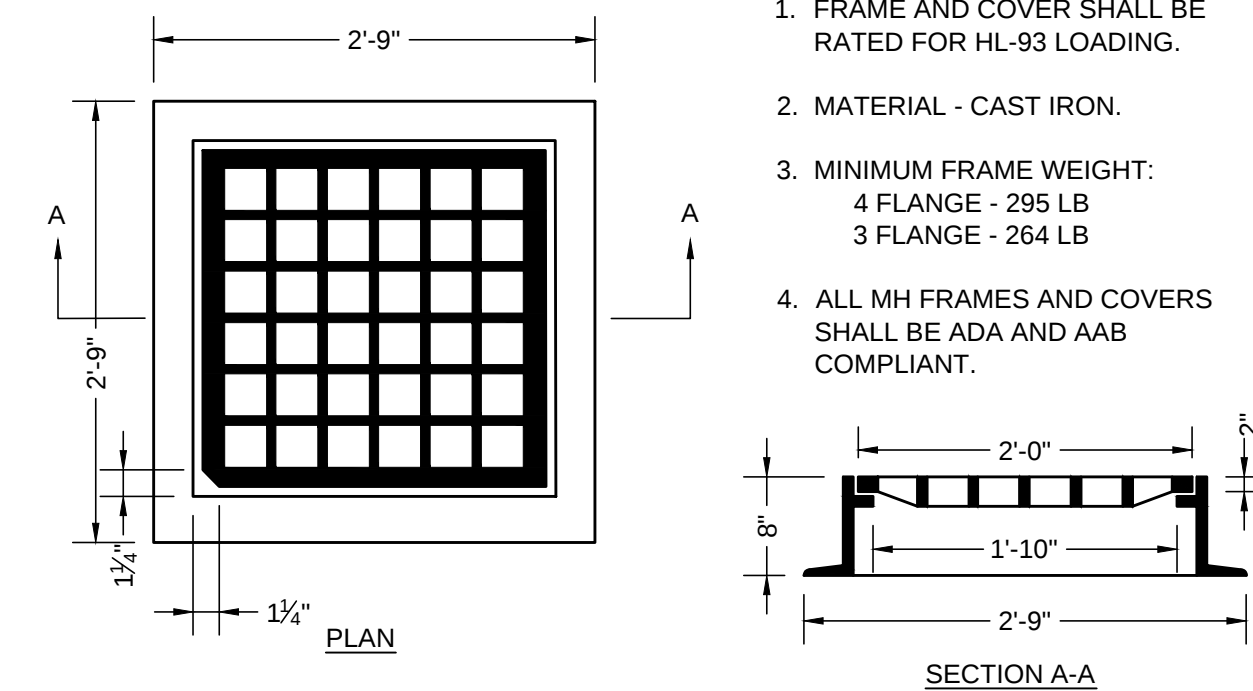
DEEP SUMP CATCH BASIN WITH HOOD
N.T.S.



NOTES:

1. INSTALL SILT SACK IN EXISTING CATCH BASINS BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL BINDER COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. GRATE TO BE PLACED OVER SILT SACK.
3. SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

INLET PROTECTION SILT SACK IN CATCH BASIN
N.T.S.



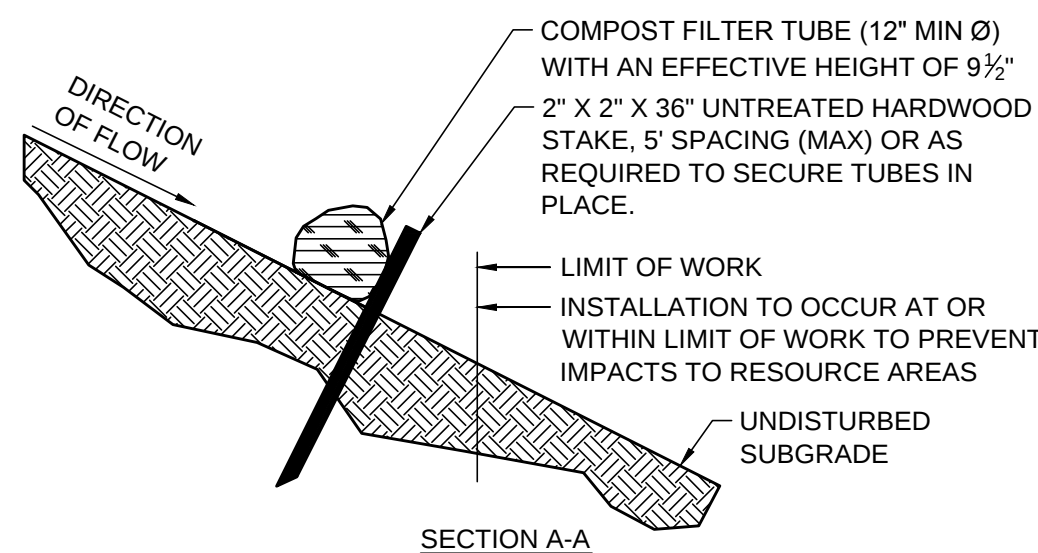
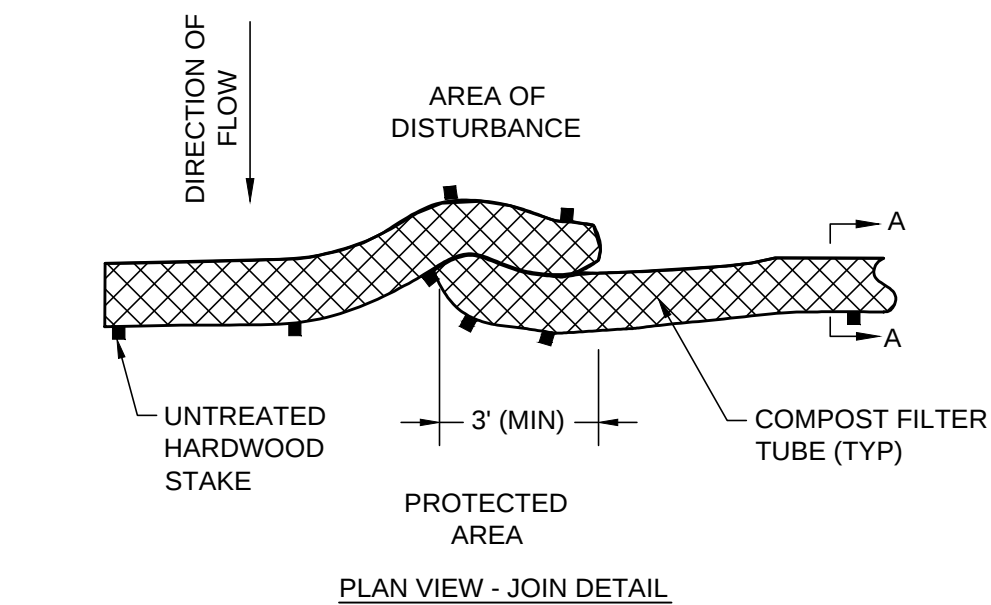
CATCH BASIN FRAME & GRATE
N.T.S.

NOTES:

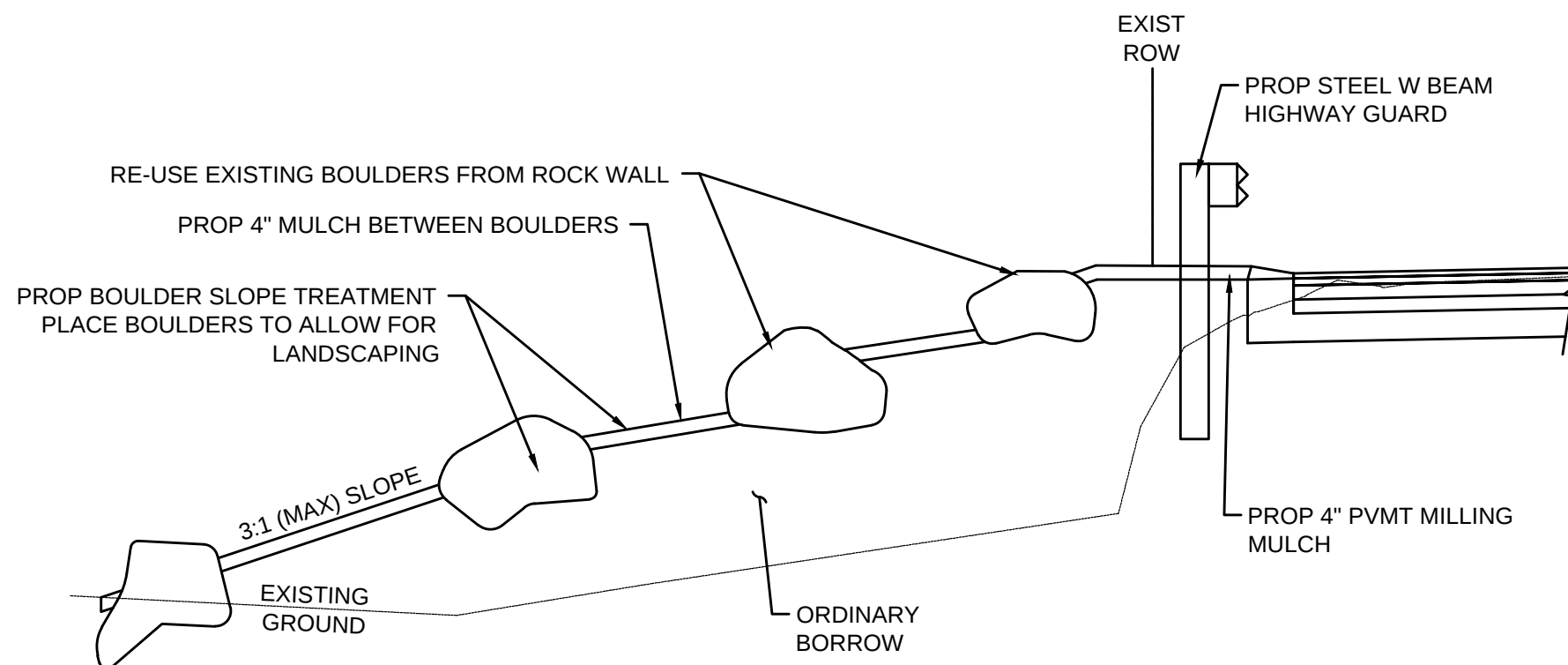
1. FRAME AND COVER SHALL BE RATED FOR HL-93 LOADING.
2. MATERIAL - CAST IRON.
3. MINIMUM FRAME WEIGHT:
4 FLANGE - 295 LB
3 FLANGE - 264 LB
4. ALL MH FRAMES AND COVERS SHALL BE ADA AND AAB COMPLIANT.

NOTES:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12" FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.
5. TUBES FOR COMPOST FILTERS SHALL BE JUTE MESH OR APPROVED BIODEGRADABLE MATERIAL. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER.
6. TAMP TUBES IN PLACE TO ENSURE GOOD CONTACT WITH SOIL SURFACE. IT IS NOT NECESSARY TO TRENCH TUBES INTO EXISTING GRADE.
7. WHEN STAKING IS NOT POSSIBLE, SUCH AS WHEN TUBES MUST BE PLACED ON PAVEMENT, HEAVY CONCRETE OR CINDER BLOCKS CAN BE USED BEHIND TUBES UP TO 5 FT. APART OR AS REQUIRED TO SECURE TUBES IN PLACE. DO NOT PUNCTURE TUBES WITH STAKES.
8. TUBES CAN BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.
9. PROVIDE A 3" MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND MINIMIZE UNIMPEDED FLOW. STAKE JOINING TUBES SNUGLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THEM.
10. SECURE ENDS OF TUBES WITH STAKES SPACED 18" APART. DO NOT PUNCTURE TUBES WITH STAKES.
11. UPON COMPLETION OF PROJECT, ALL TUBES USED FOR EROSION CONTROL SHALL BE REMOVED FROM PROJECT LIMITS.



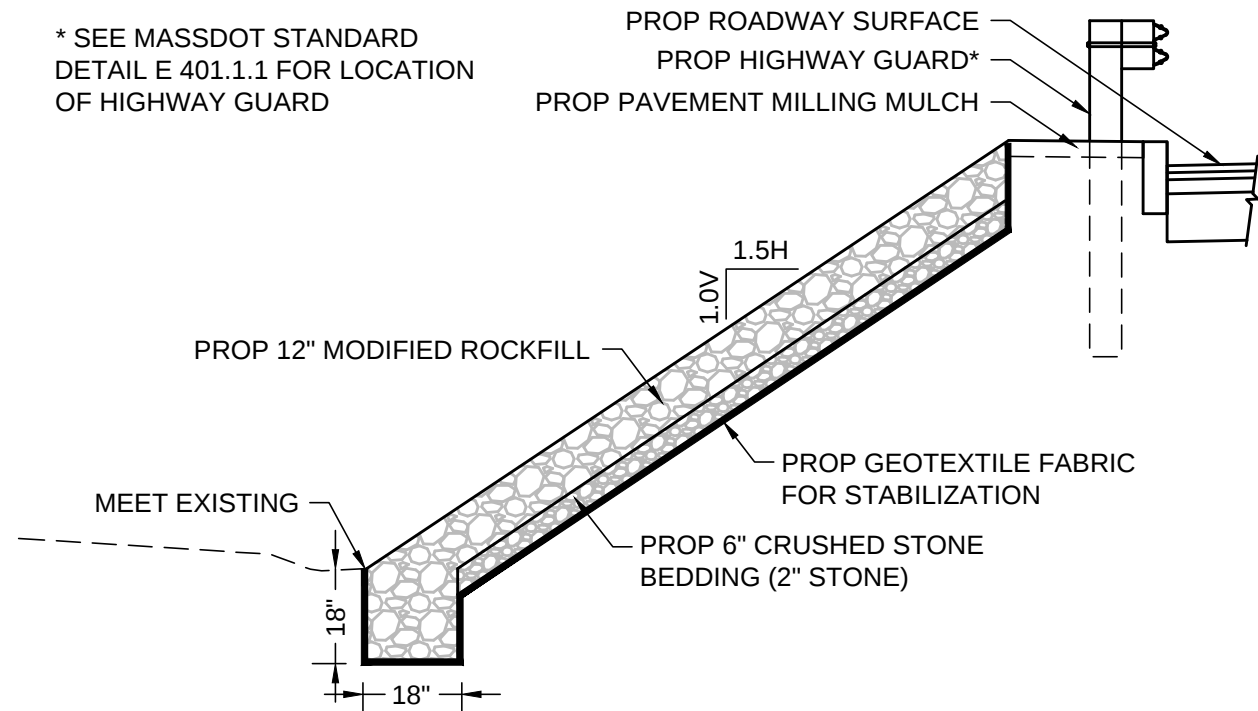
COMPOST FILTER TUBE
N.T.S.



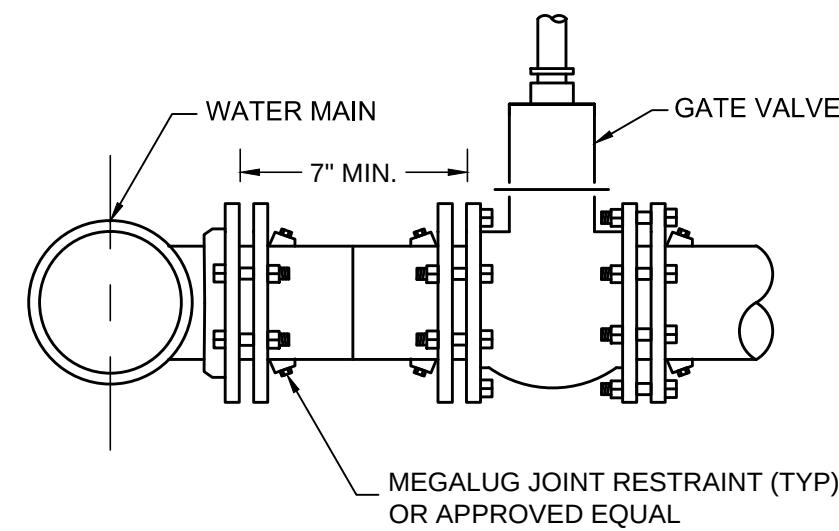
BOULDER SLOPE TREATMENT
N.T.S.

DRIVEWAY DATA				
NUMBER	STREET NAME &	DRIVEWAY REFERENCE		WIDTH
		STATION	OFFSET	
D1	MAIN STREET	11+82	12' RT	31.0
D2	MAIN STREET	13+01	12' RT	49.5
D3	MAIN STREET	13+72	17' LT	24.0
D4	MAIN STREET	14+47	12' RT	22.0
D5	MAIN STREET	15+24	12' LT	20.0
D6	MAIN STREET	17+49	12' LT	21.0
D7	MAIN STREET	19+10	12' LT	26.0
D8	MAIN STREET	20+74	12' RT	24.0
D9	MAIN STREET	20+98	12' LT	21.0
D10	MAIN STREET	24+10	12' LT	21.0
D11	MAIN STREET	24+49	12' RT	24.5
D12	MAIN STREET	27+13	12' RT	16.5
D13	MAIN STREET	27+33	12' LT	19.0
D14	MAIN STREET	28+06	12' RT	19.5
D15	MAIN STREET	28+80	12' LT	18.5
D16	MAIN STREET	29+56	12' RT	22.0
D17	MAIN STREET	31+47	12' RT	20.0

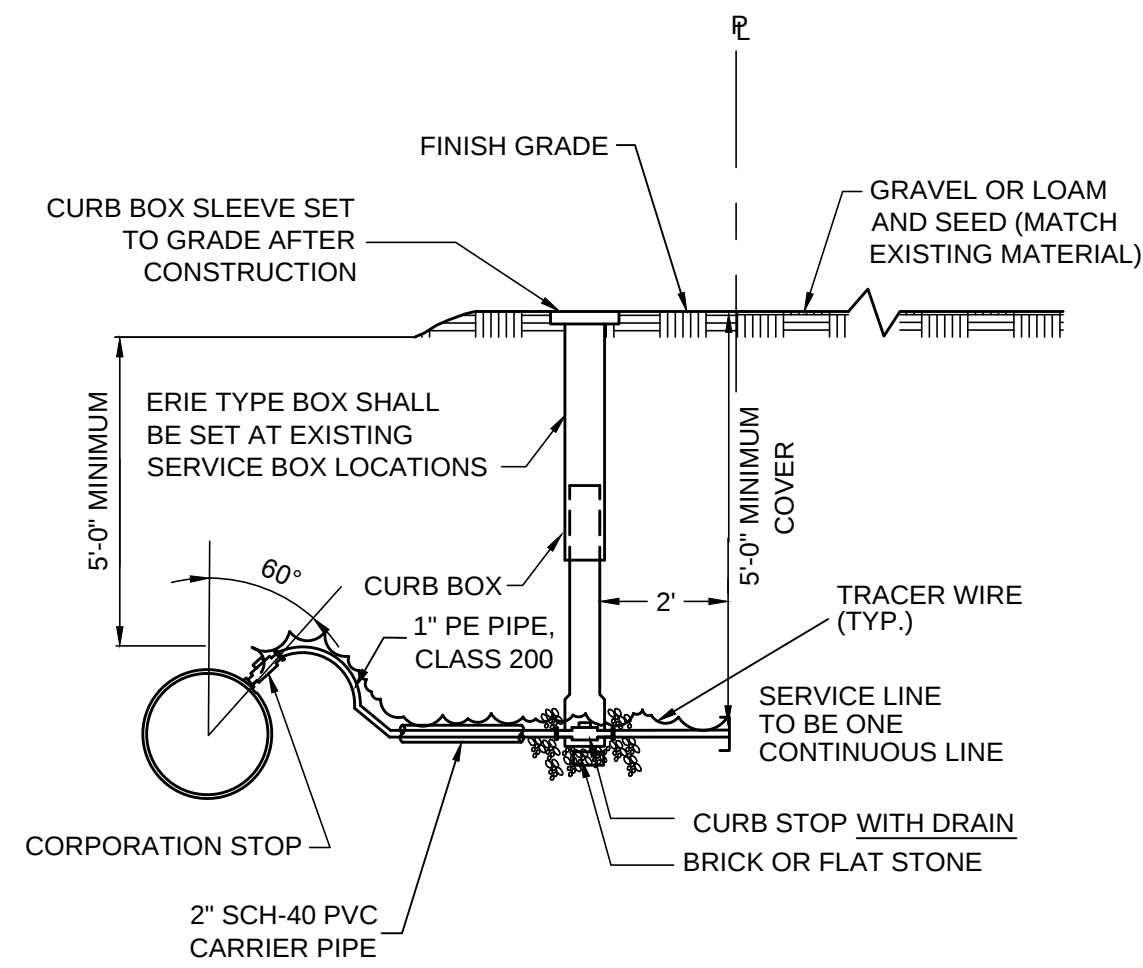
DRIVEWAY DATA				
NUMBER	STREET NAME &	DRIVEWAY REFERENCE		WIDTH
		STATION	OFFSET	
D18	MAIN STREET	32+15	12' LT	16.0
D19	MAIN STREET	33+55	12' RT	38.5
D20	MAIN STREET	35+39	12' RT	59.0
D21	MAIN STREET	35+77	12' LT	21.5
D22	MAIN STREET	36+27	12' LT	14.0
D23	MAIN STREET	36+78	12' RT	51.0
D24	MAIN STREET	36+87	12' LT	22.0
D25	MAIN STREET	37+86	12' LT	21.0
D26	MAIN STREET	38+04	12' RT	32.0
D27	MAIN STREET	38+51	12' LT	20.0
D28	MAIN STREET	38+95	12' RT	30.0
D29	MAIN STREET	39+39	12' RT	14.0
D30	PROVIDENCE ROAD	71+25	10' LT	10.0
D31	PROVIDENCE ROAD	72+22	12' RT	23.5
D32	MAIN STREET	46+21	12' RT	18.0



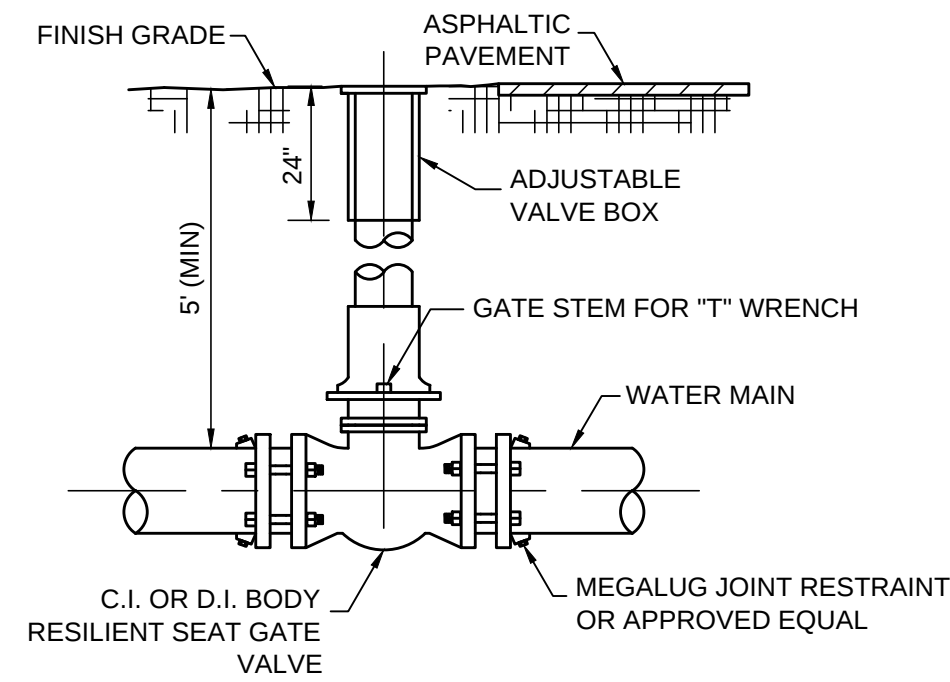
MODIFIED ROCKFILL SLOPE STABILIZATION
N.T.S.



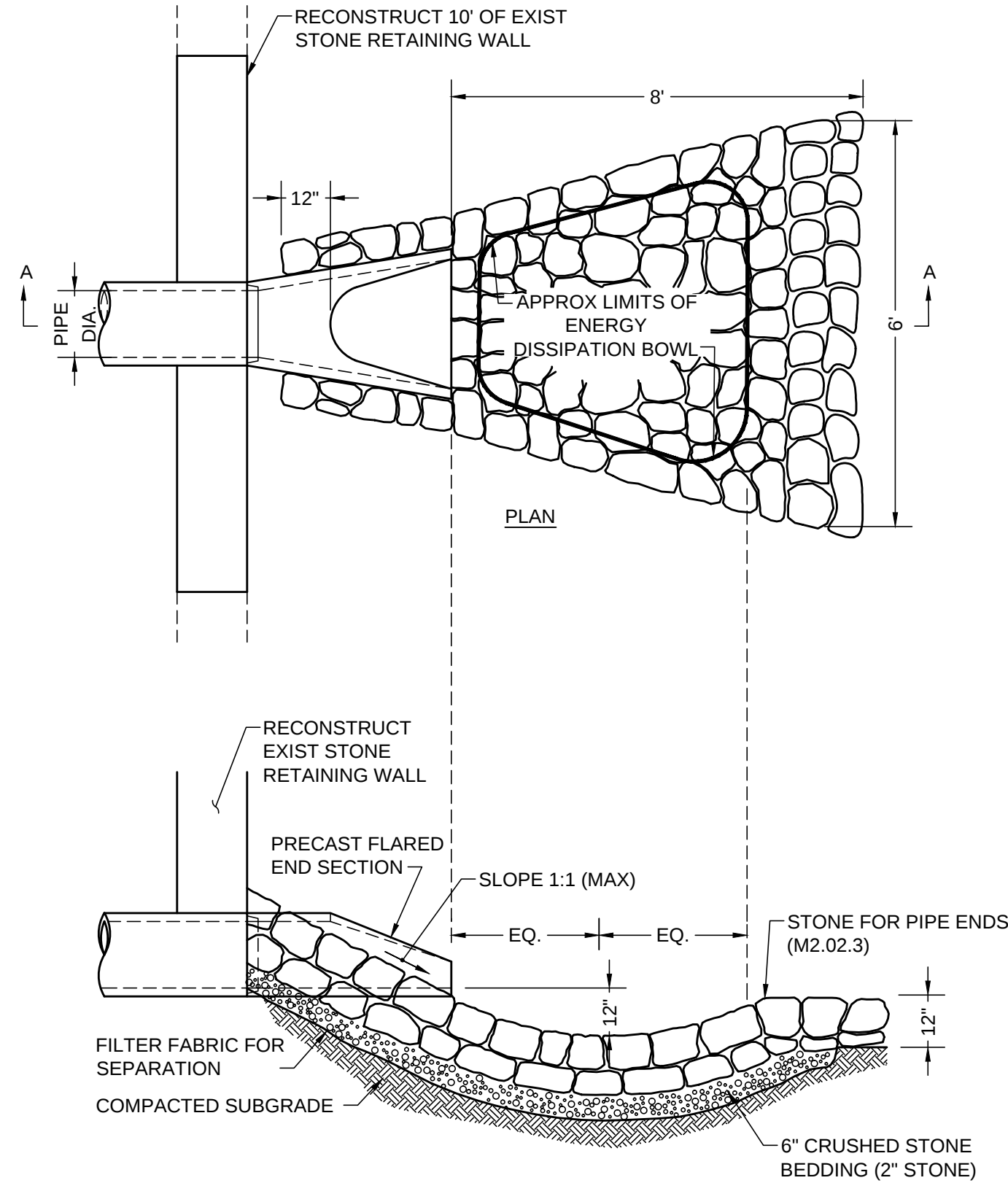
MECHANICAL JOINT RESTRAINT
N.T.S.



WATER SERVICE CONNECTION
N.T.S.



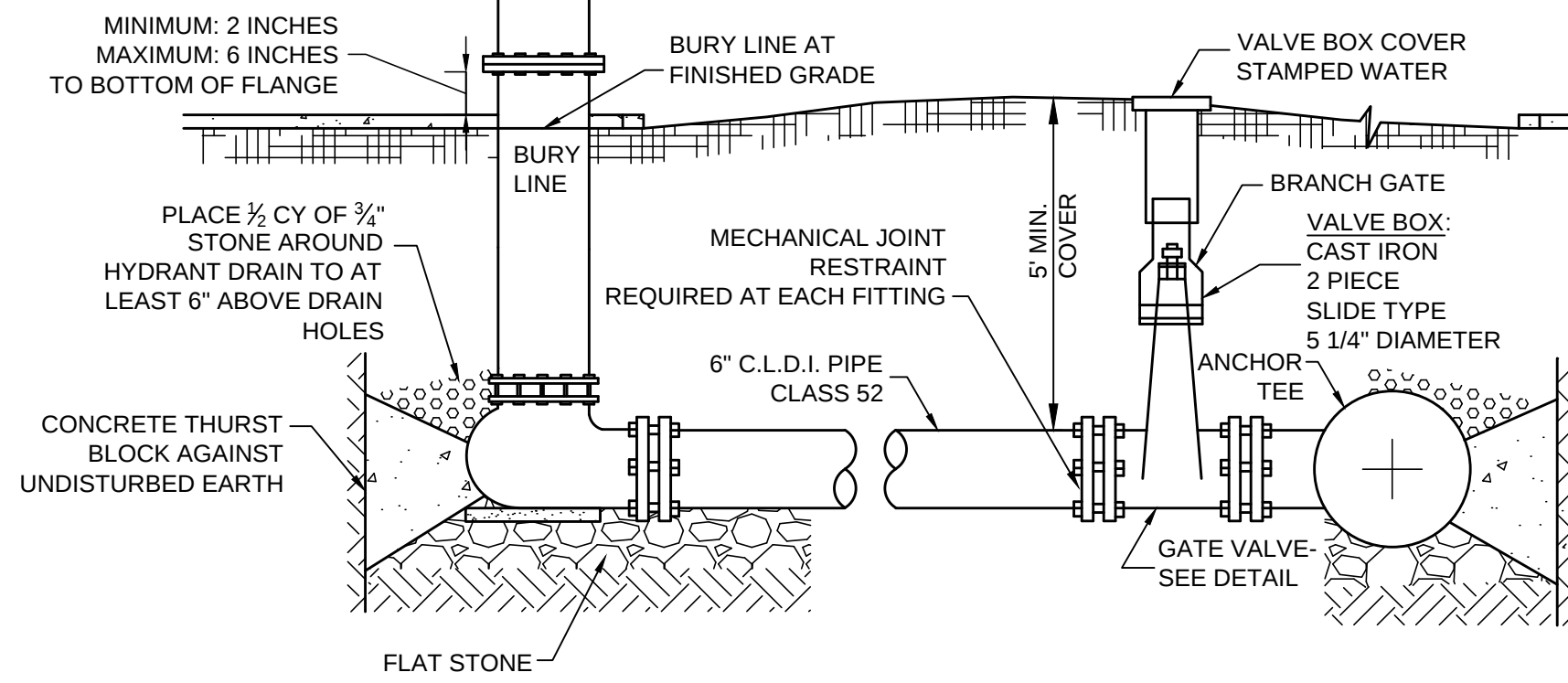
GATE VALVE
N.T.S.



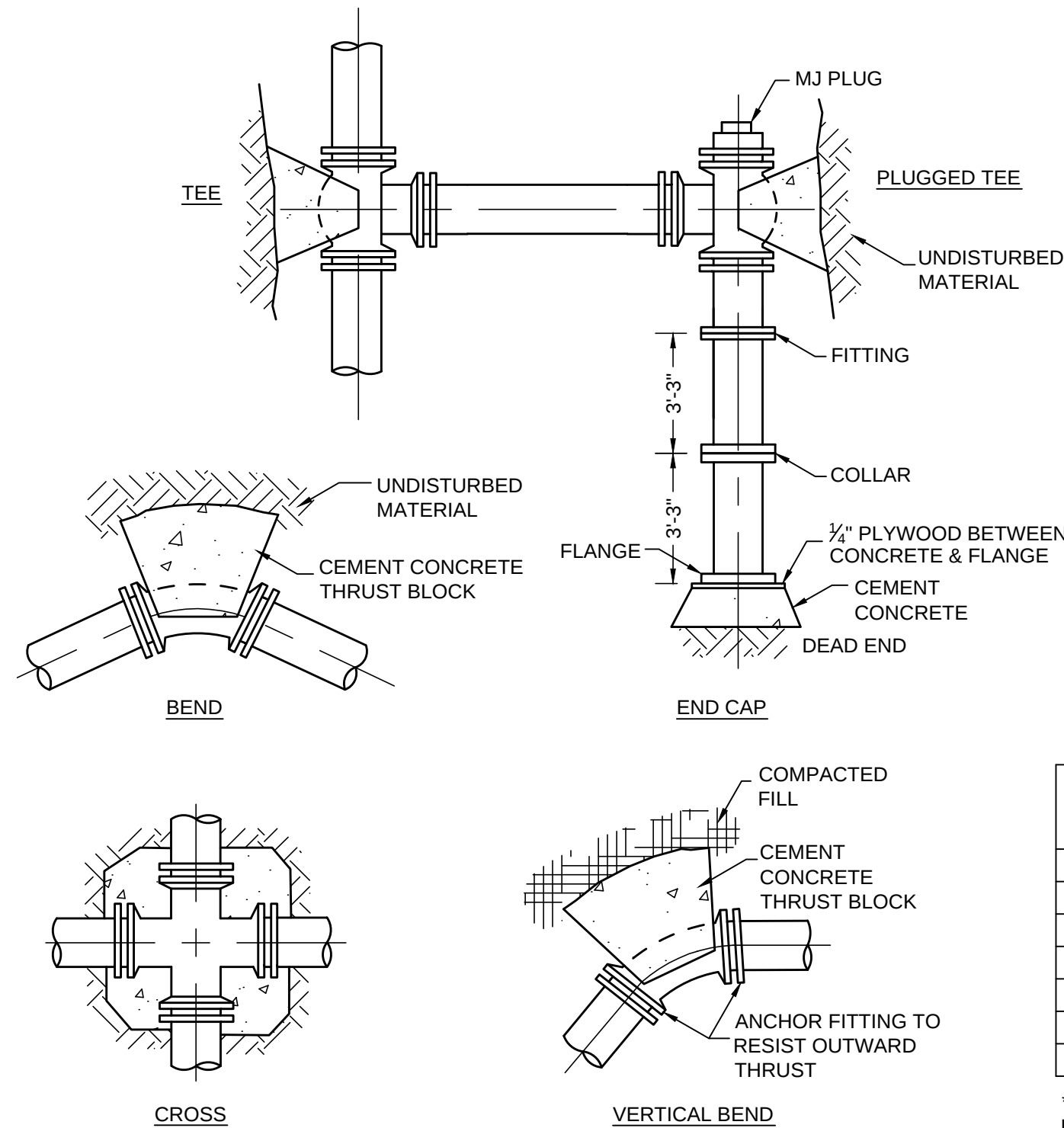
STONE FOR PIPE ENDS
N.T.S.

NOTES:

1. THRUST BLOCKS BACKED AGAINST UNDISTURBED SOIL AT HYDRANT & ANCHOR TEE.
2. HYDRANT SHALL BE A MINIMUM OF 5'-0" FROM EDGE OF TRAVELED WAY (WHERE POSSIBLE).
3. ALL HYDRANTS SHALL HAVE RETAINER GLANDS.
4. ALL COMPACTION SHALL BE BY MECHANICAL MEANS.



HYDRANT ASSEMBLY
N.T.S.



NOTES:

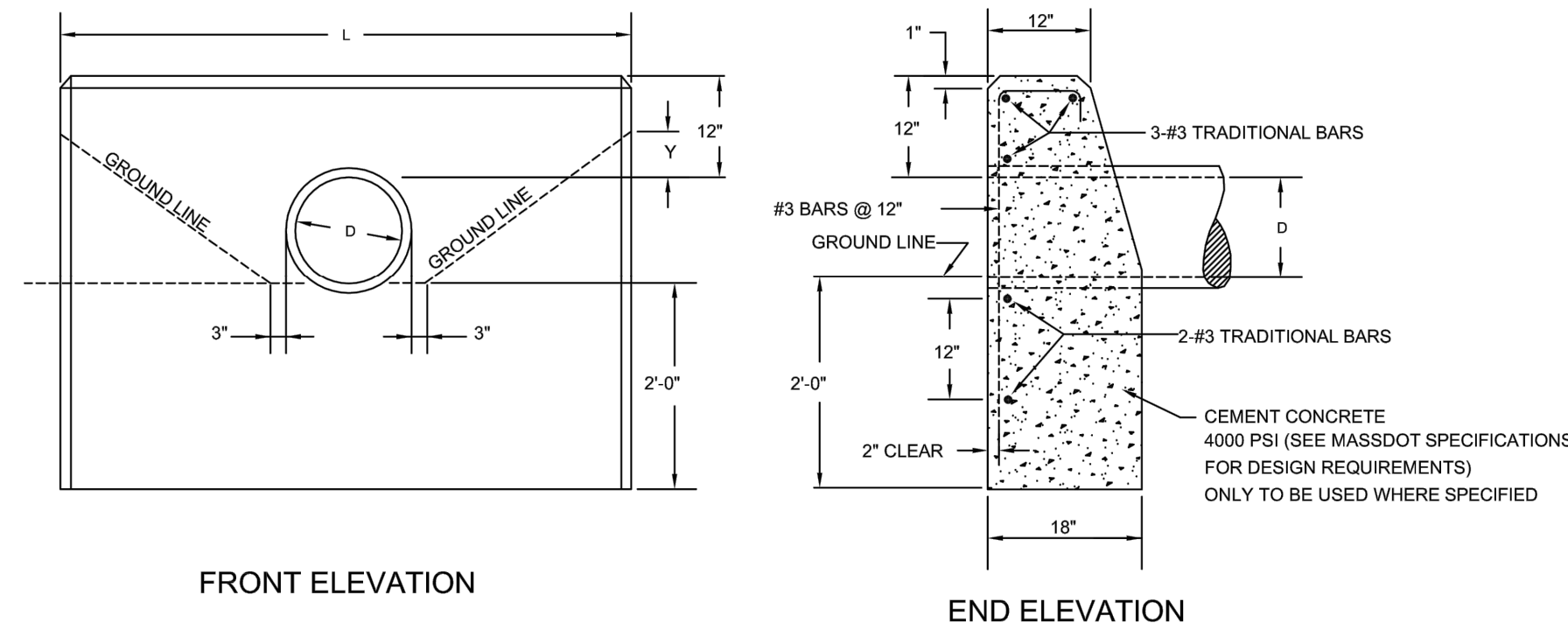
1. CONCRETE SHALL BE 3,000 PSI MINIMUM AT 28 DAYS.
2. THRUST BLOCKS SHALL BE PLACED AGAINST UNDISTURBED MATERIAL WHENEVER POSSIBLE.
3. ALL FITTINGS SHALL BE SUPPORTED IN CONCRETE.
4. FOR FIRE HYDRANT THRUSTING SEE HYDRANT DETAIL.
5. POURED CONCRETE NOT TO COME WITHIN 6" OF MECHANICAL JOINTS.

AREA OF BEARING FACE OF CONCRETE THRUST BLOCKS IN SQUARE FEET BASED ON 250 PSI & 1.5 TON/SF ALLOWABLE SOIL BEARING CAPACITY				
PIPE SIZE (IN.)	1/4 BEND	1/8 BEND	1/16 BEND	PLUG & TEES
4,6,8	6.0	2.9	2.3	4.5
10	9.6	5.2	2.3	6.7
12	13.3	6.7	3.7	9.6
16	24.0	11.8	3.7	17.0
20	30.0	14.8	6.2	22.5

MINIMUM LENGTH OF PIPE TO BE RESTRAINED IN THE REQUIRED DIRECTION (IN FEET) BASED ON DUCTILE IRON PIPE WITH A 150 PSI TEST PRESSURE WITH 5.0 FT OF BURY IN UNIFIED SOIL CLASSIFICATION SM.					
PIPE SIZE (IN.)	1/4 BEND	1/8 BEND	1/16 BEND	TEES*	PLUG/CAP
6	16.0	7.0	3.0	29.0	29.0
8	21.0	9.0	4.0	29.0	38.0
10	26.0	11.0	5.0	38.0	46.0
12	33.0	14.0	6.0	48.0	69.0
16	42.0	17.0	8.0	57.0	89.0
20	53	21.0	10.0	80.0	115.0

*LENGTHS SHOWN ARE FOR TEE BRANCH. THE REQUIRED LENGTH OF RESTRAINT FOR TEE RUN IS 18 FT.

CONCRETE THRUST BLOCKS
N.T.S.



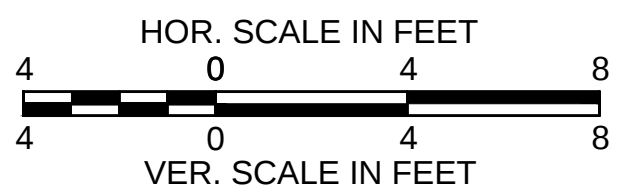
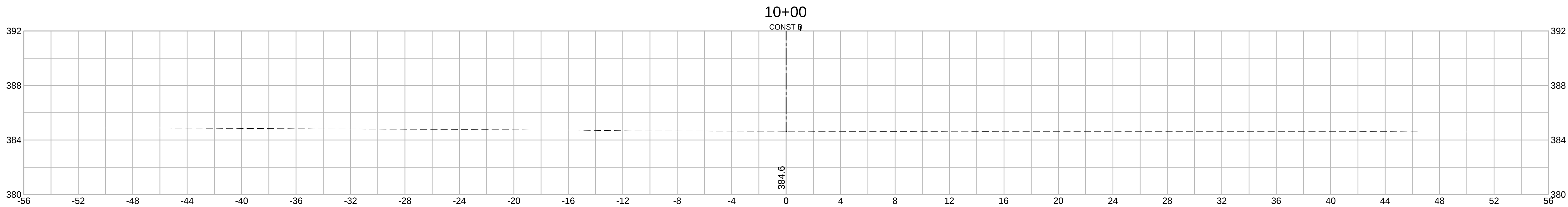
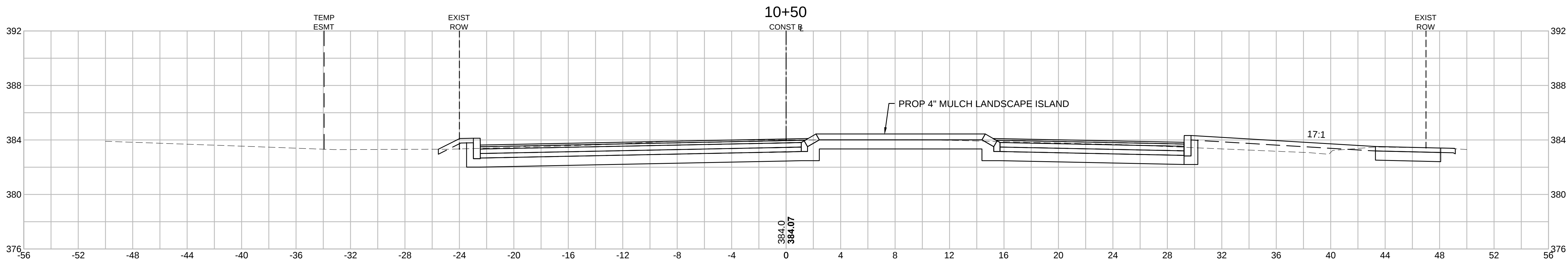
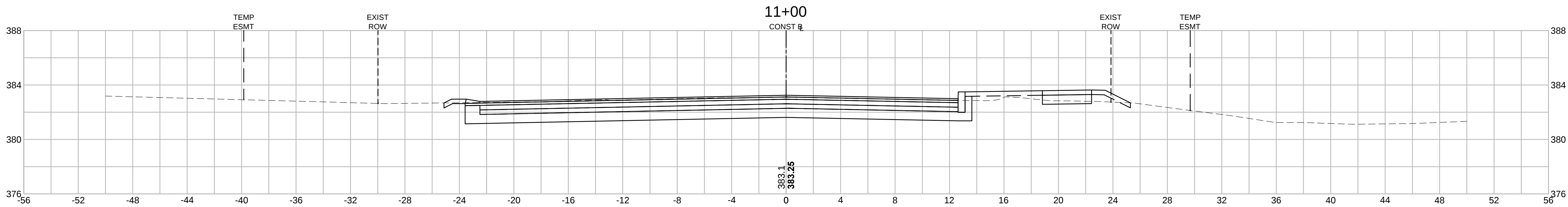
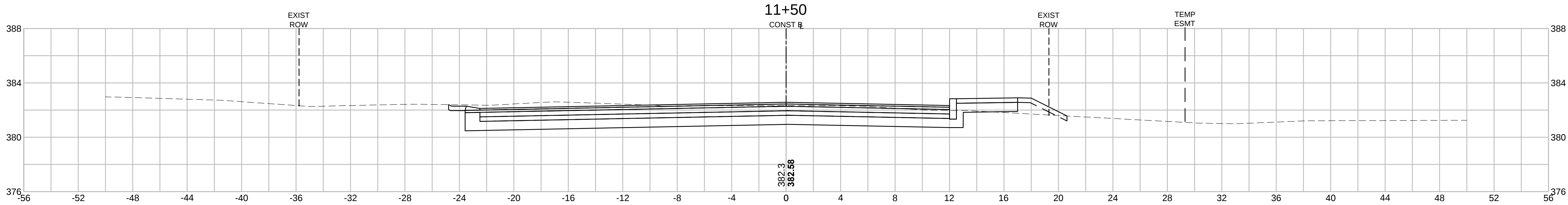
**CONCRETE CRADLE
FOR PIPE CULVERTS**

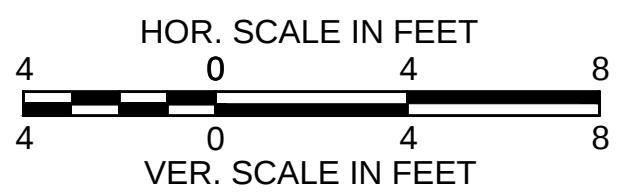
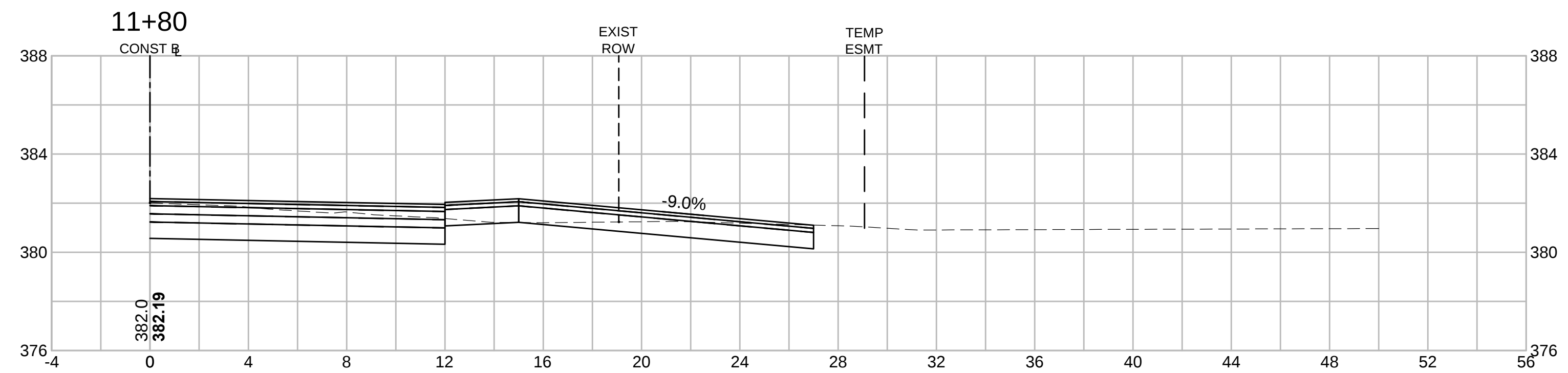
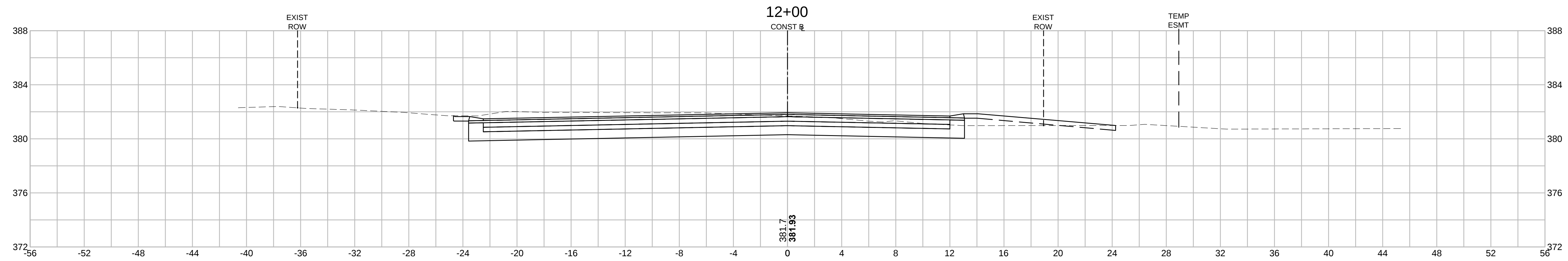
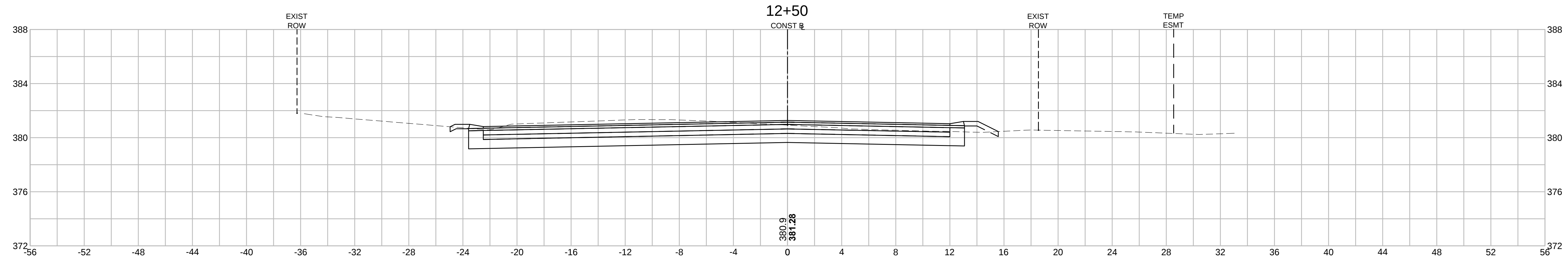
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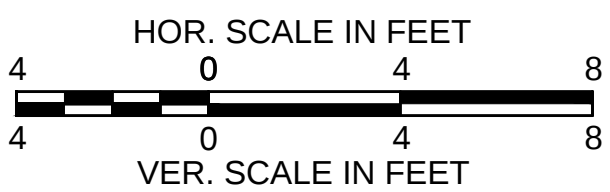
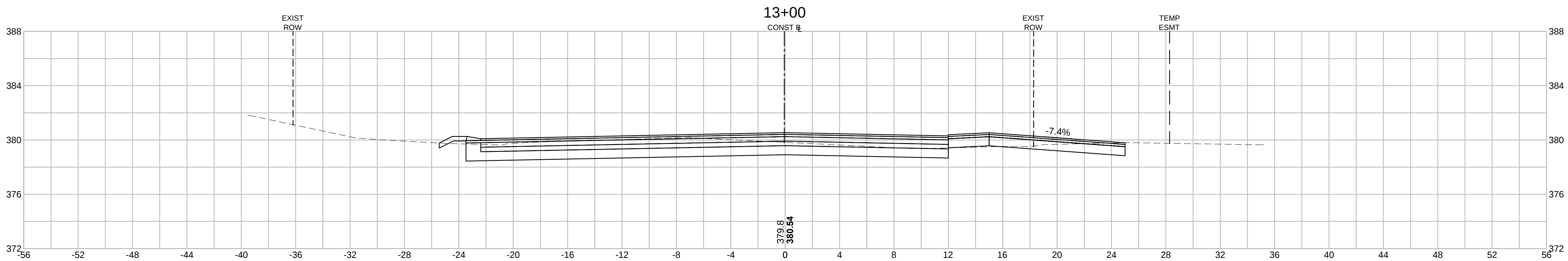
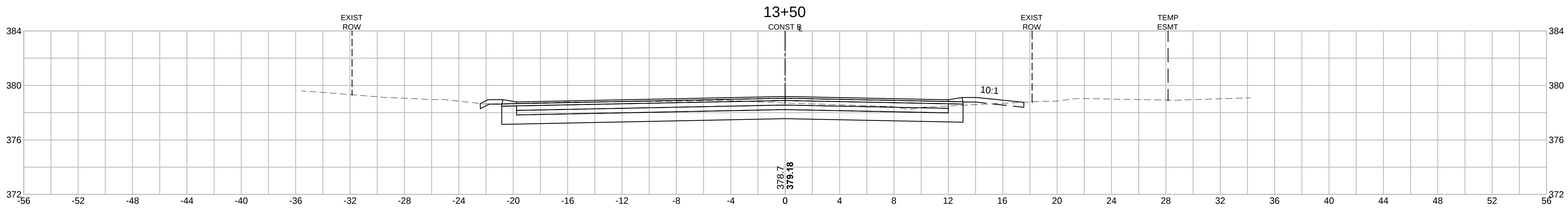
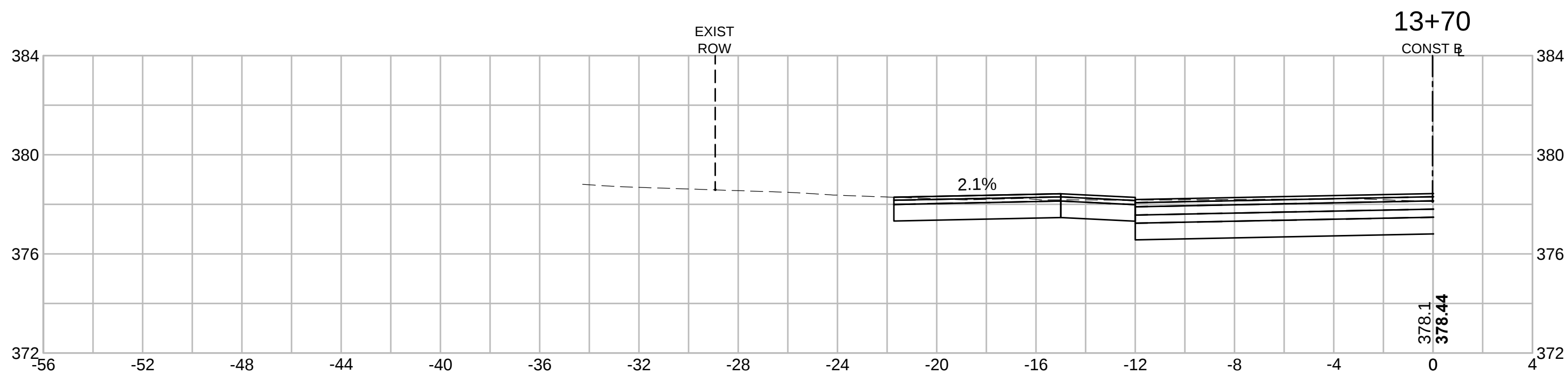
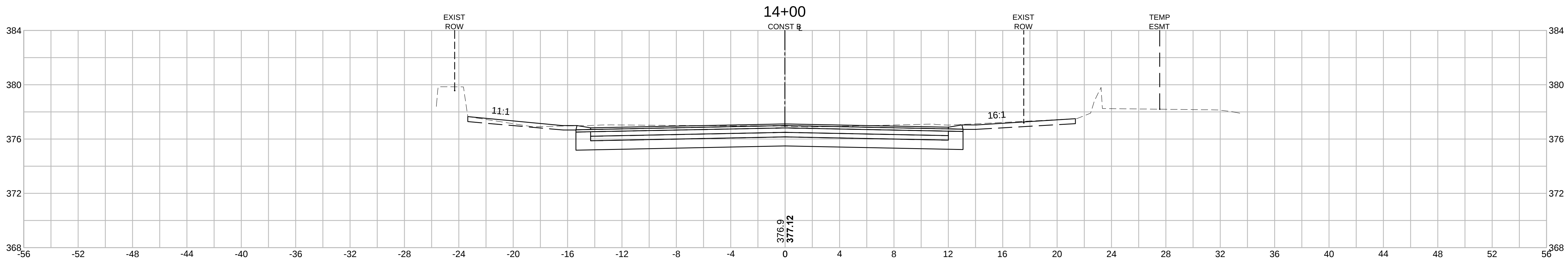
1. FOR DESCRIPTIONS, MATERIALS AND CONSTRUCTION METHODS, SEE LATEST STANDARD SPECIFICATIONS.
2. ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM.

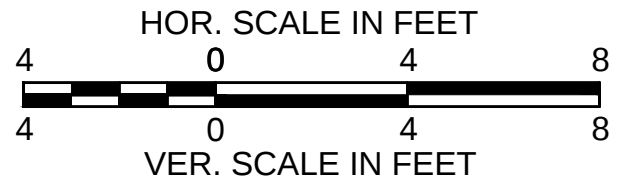
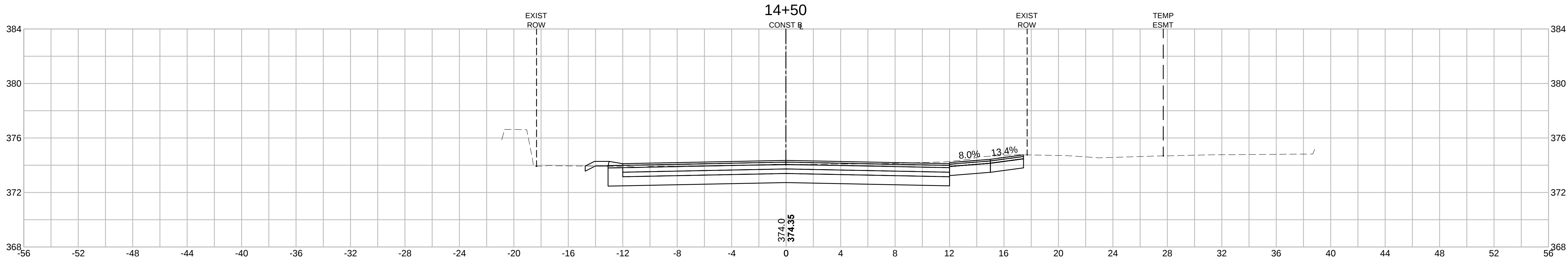
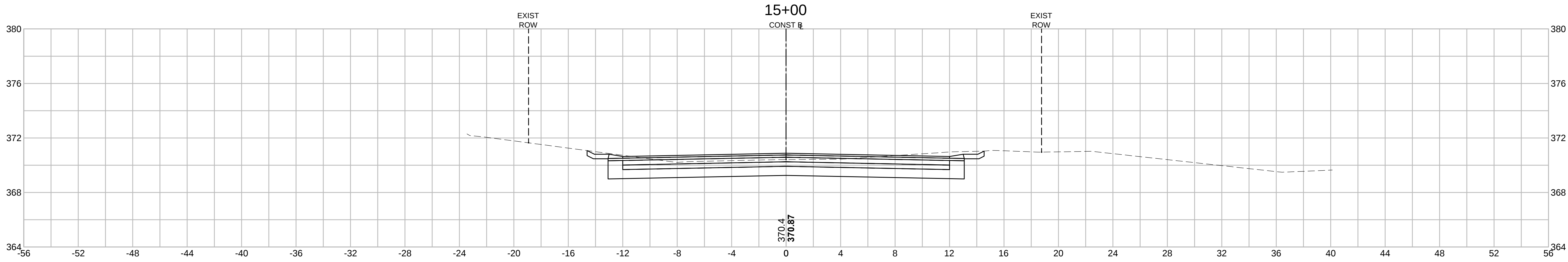
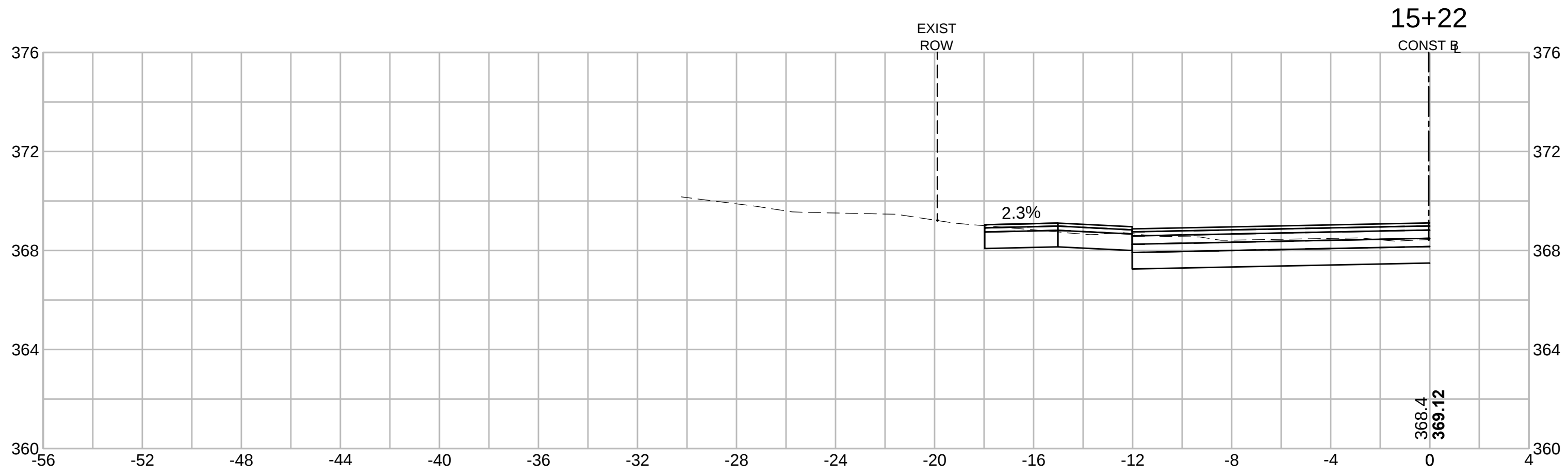
CONCRETE HEADWALL
N.T.S.

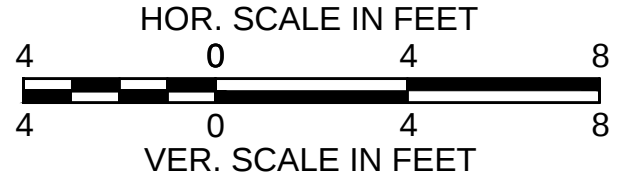
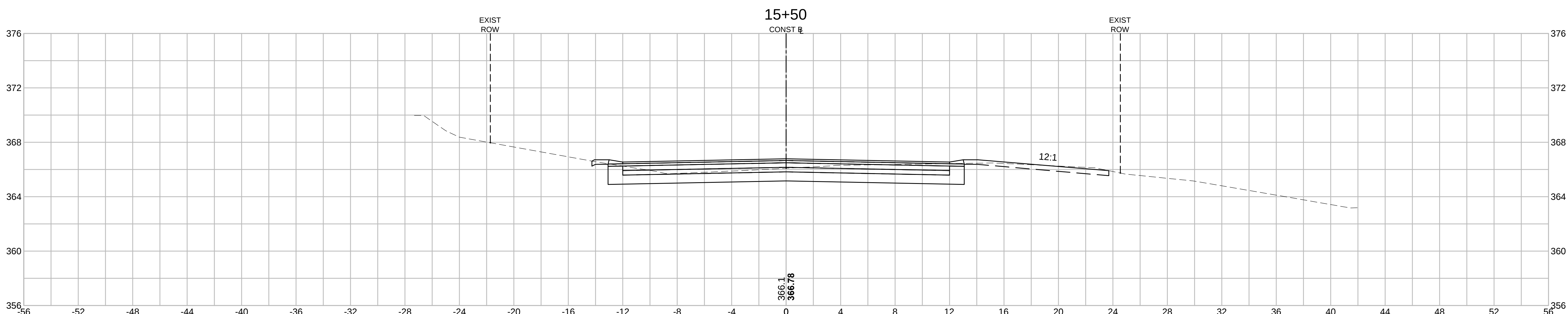
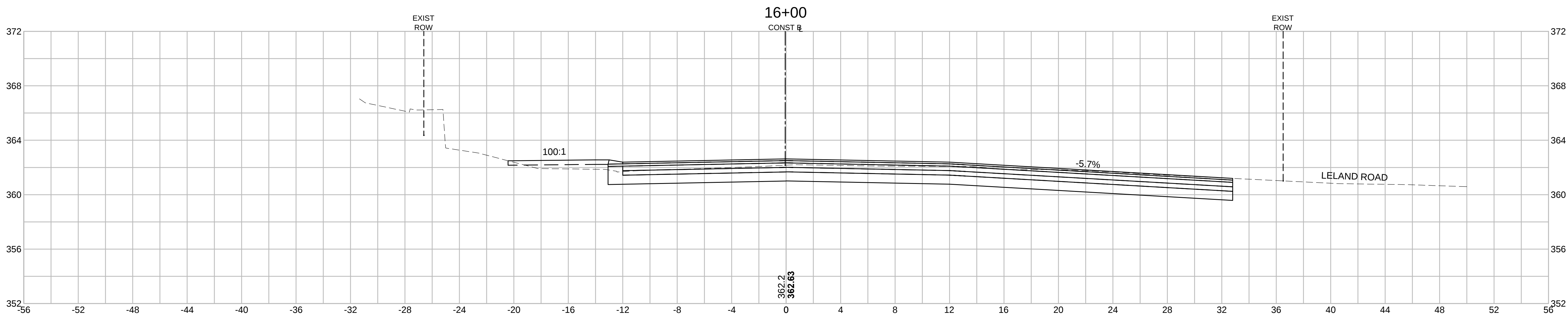
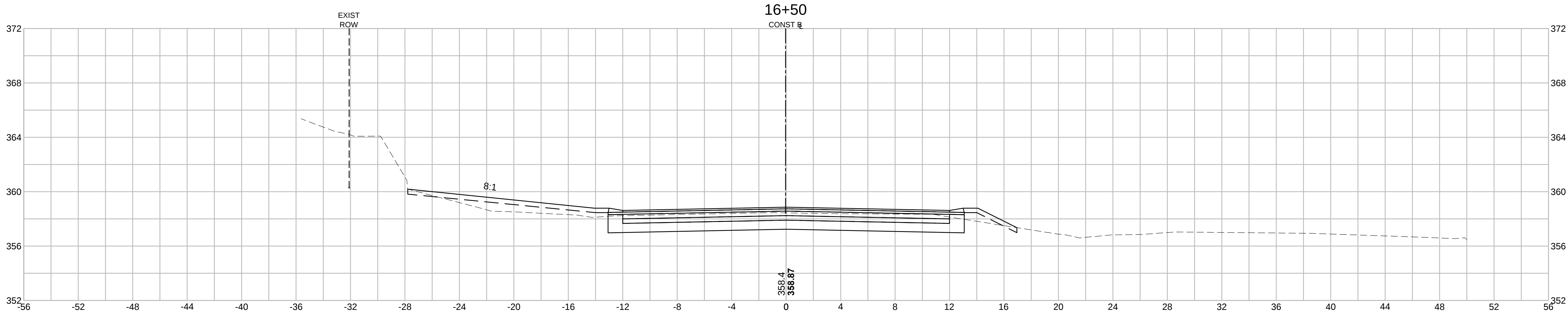
WESTFORD
MAIN STREET
CROSS SECTIONS - 1
SHEET 38 OF 68

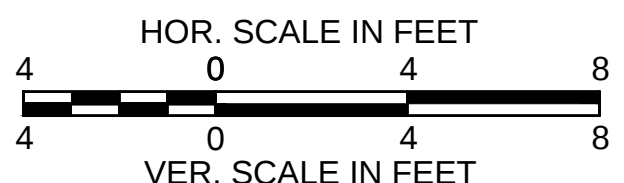
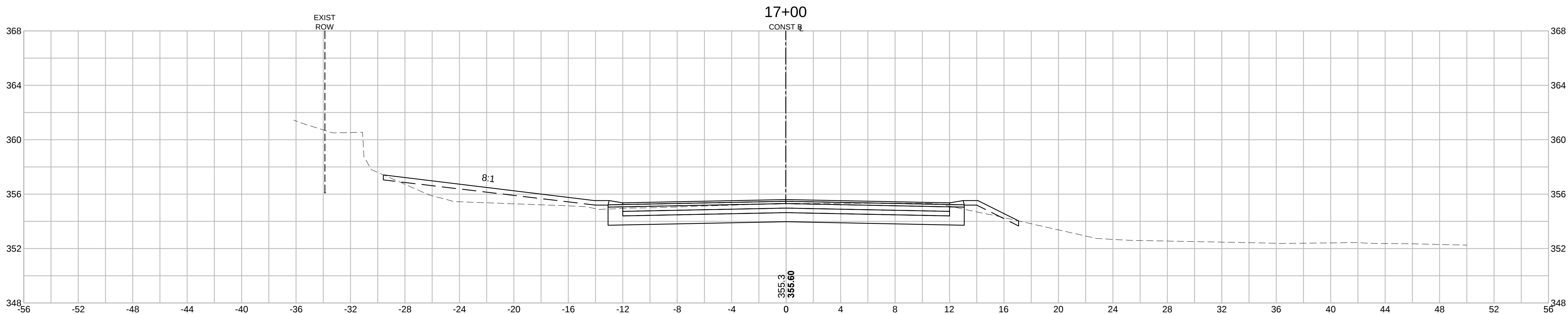
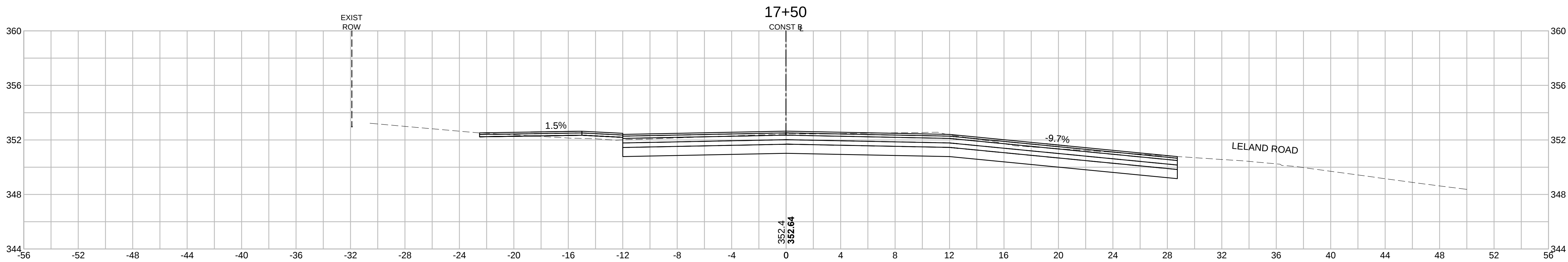
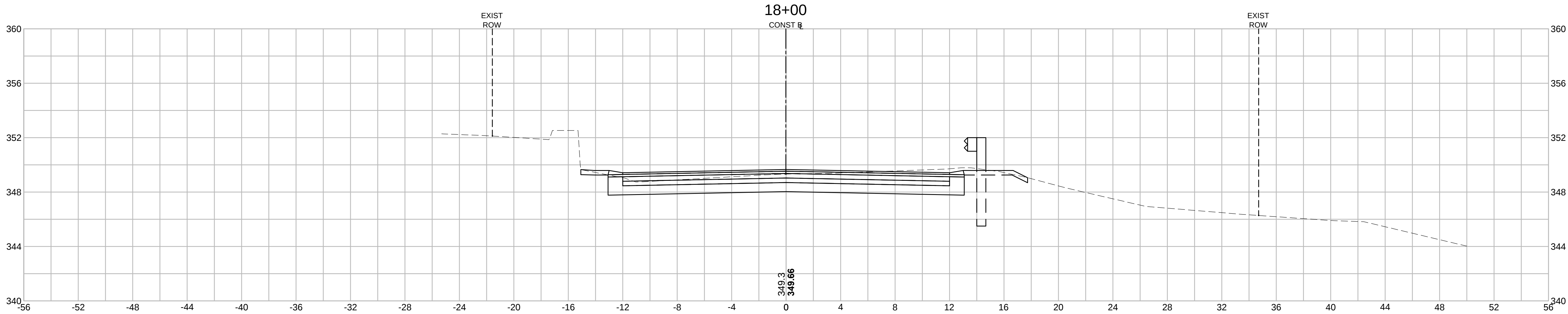


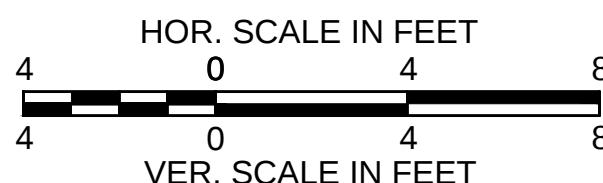
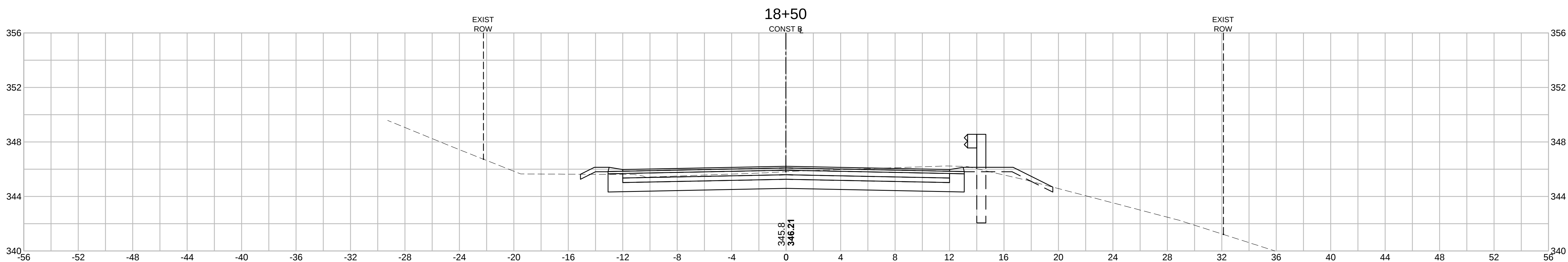
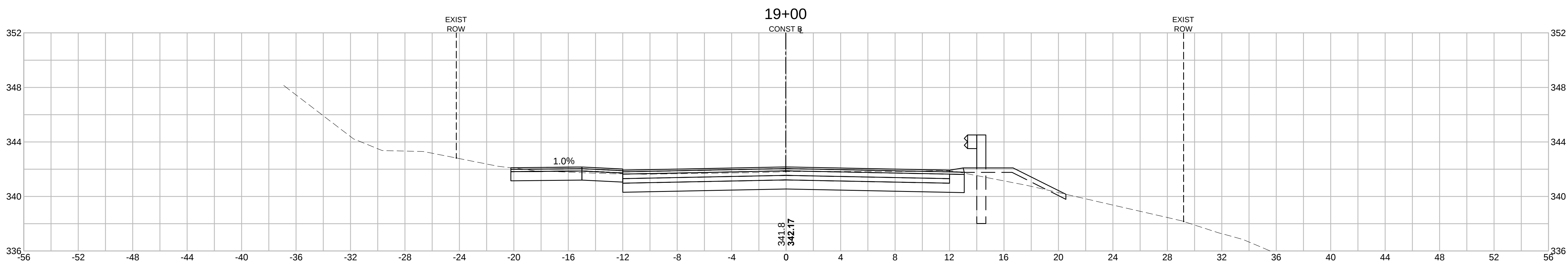
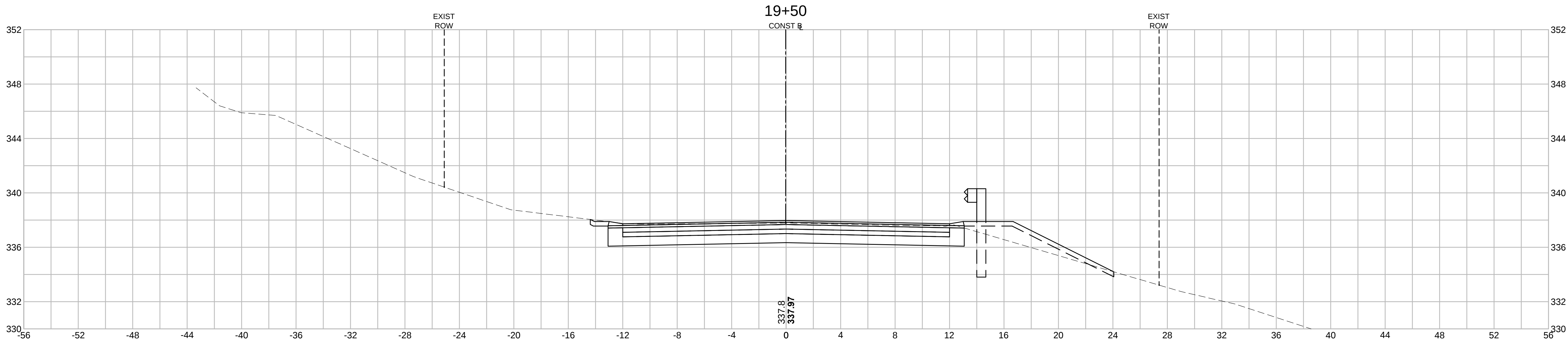


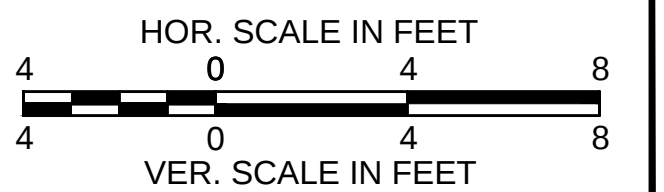
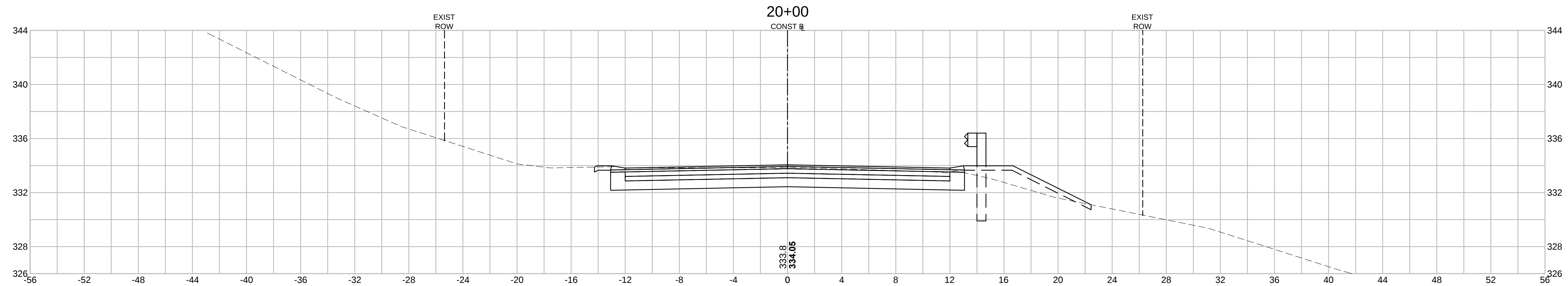
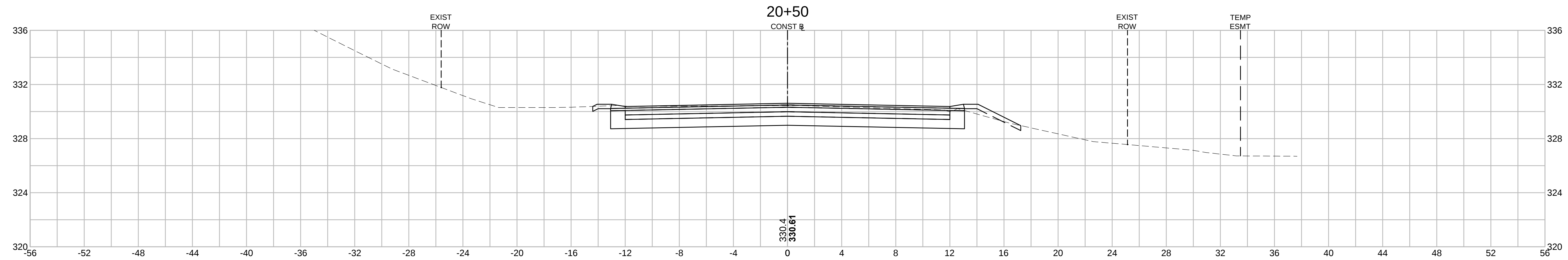
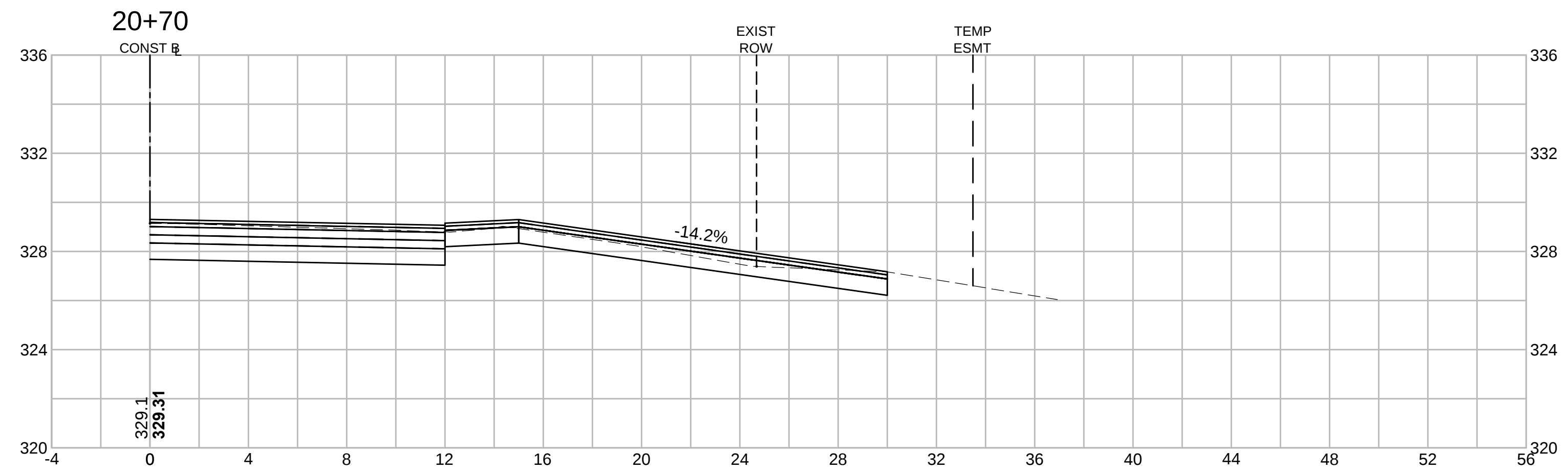


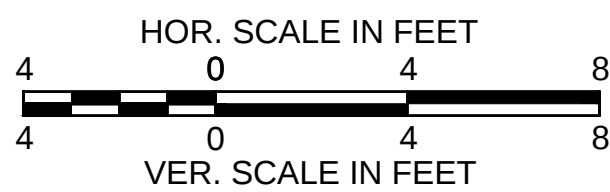
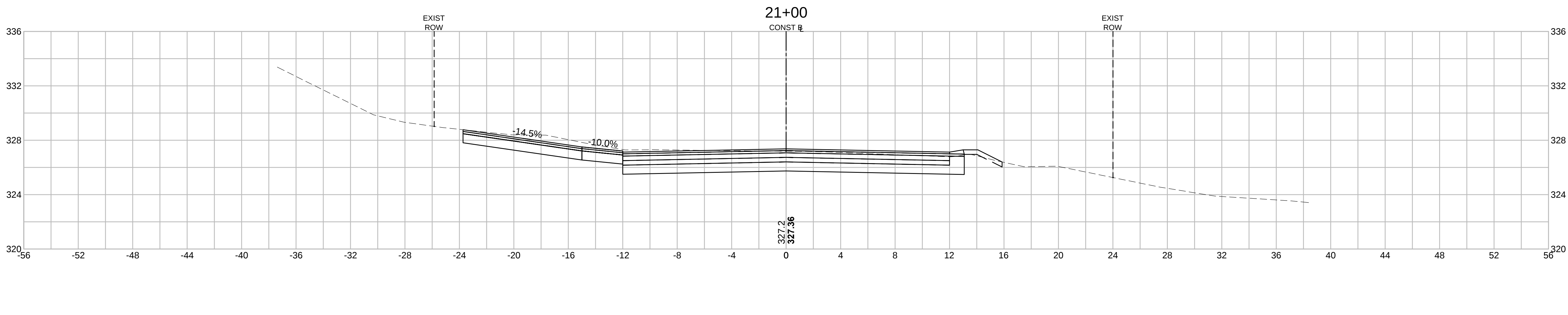
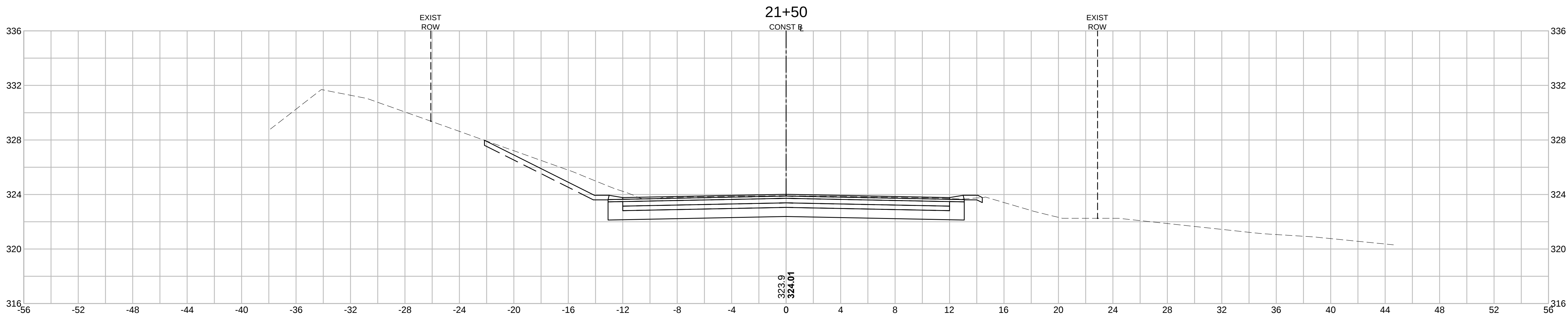
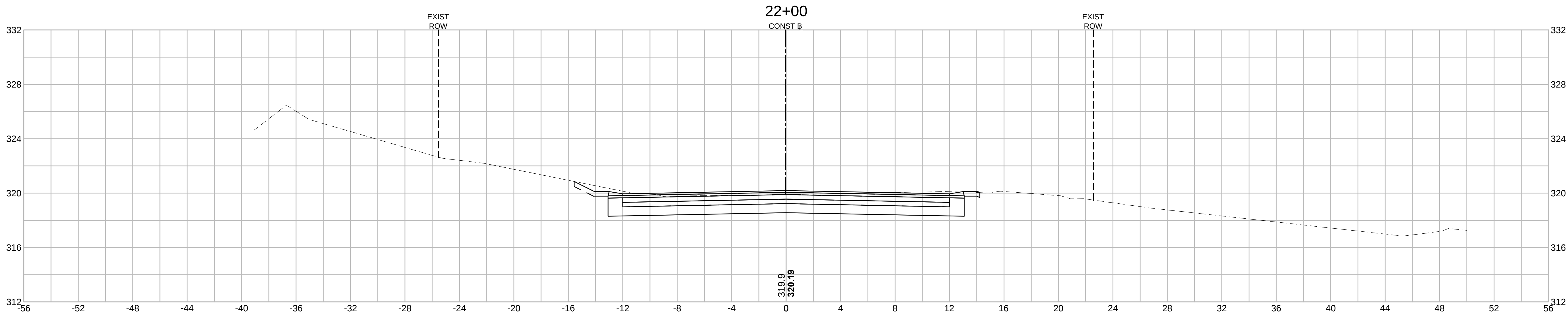


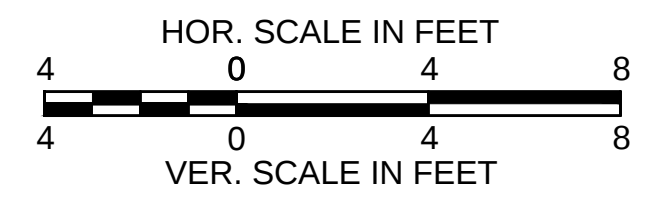
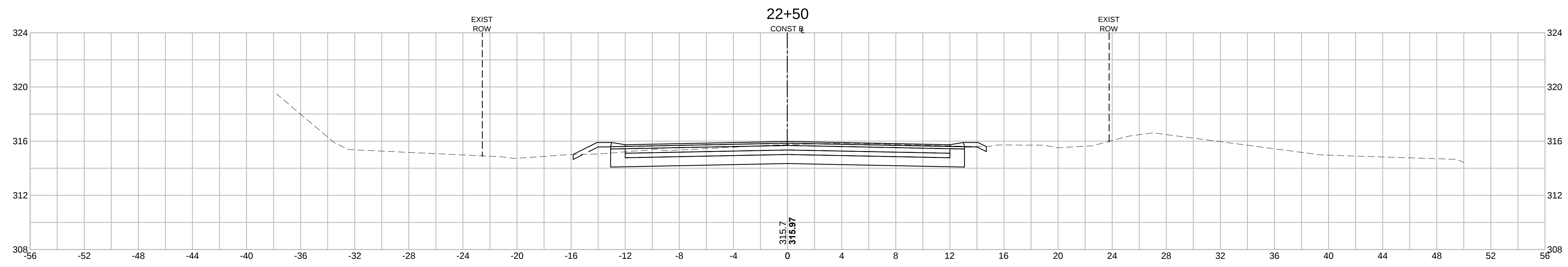
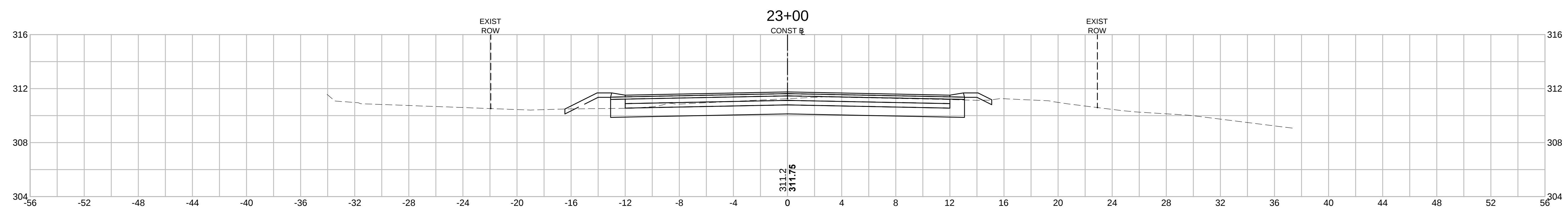
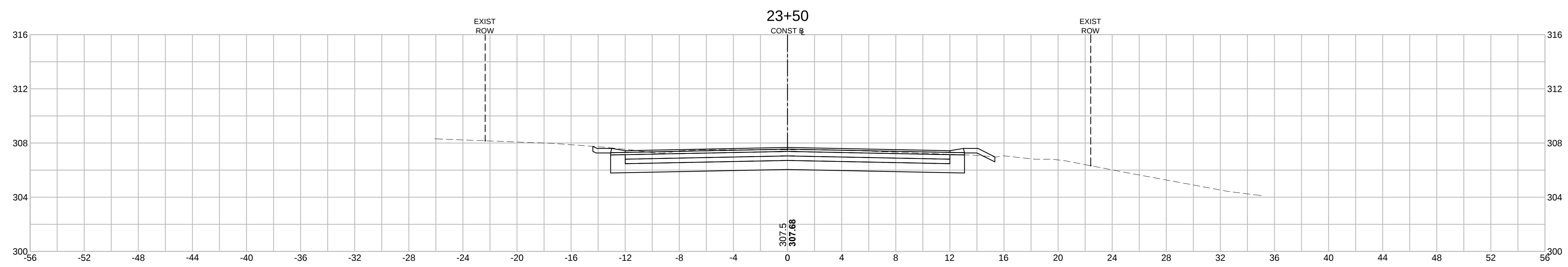




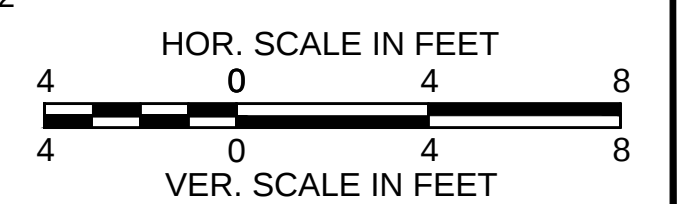
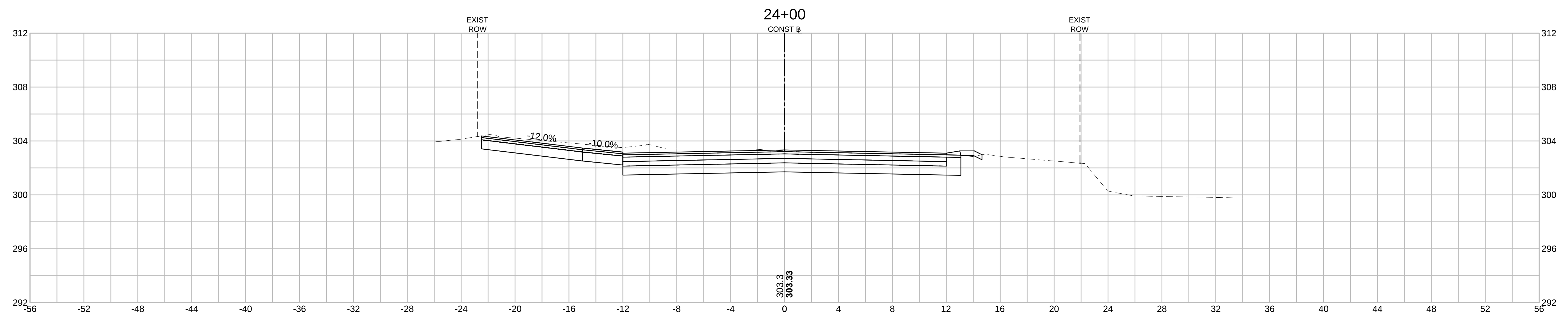
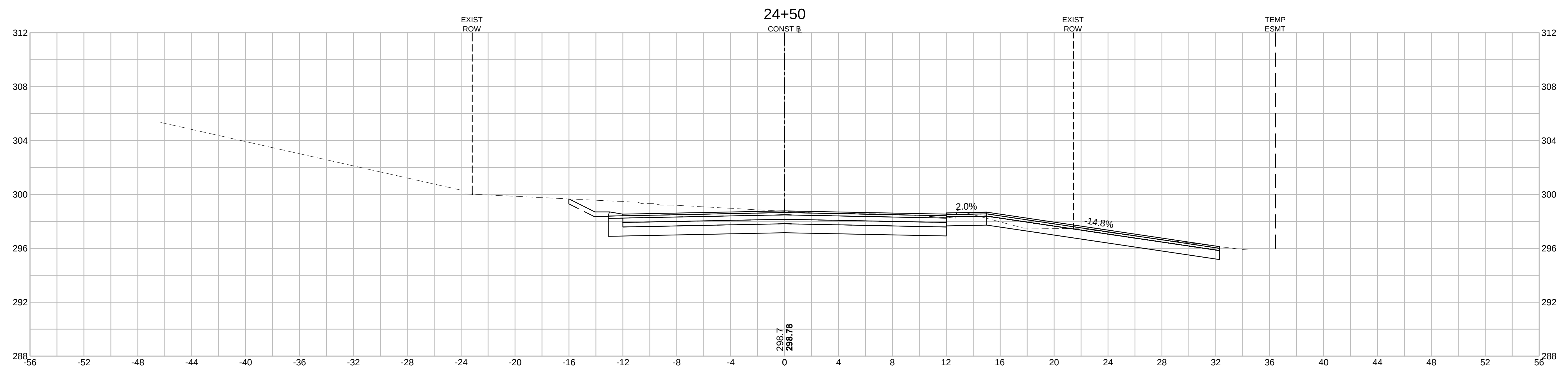
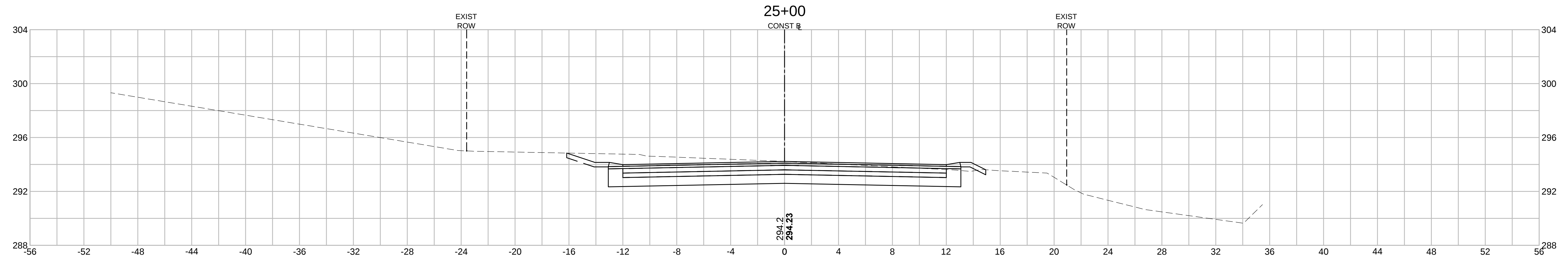


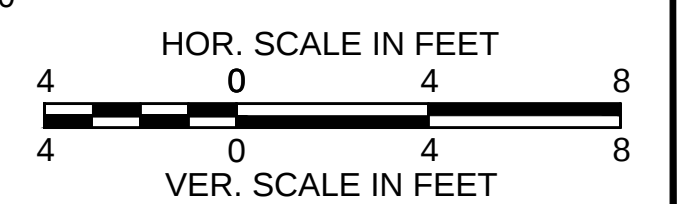
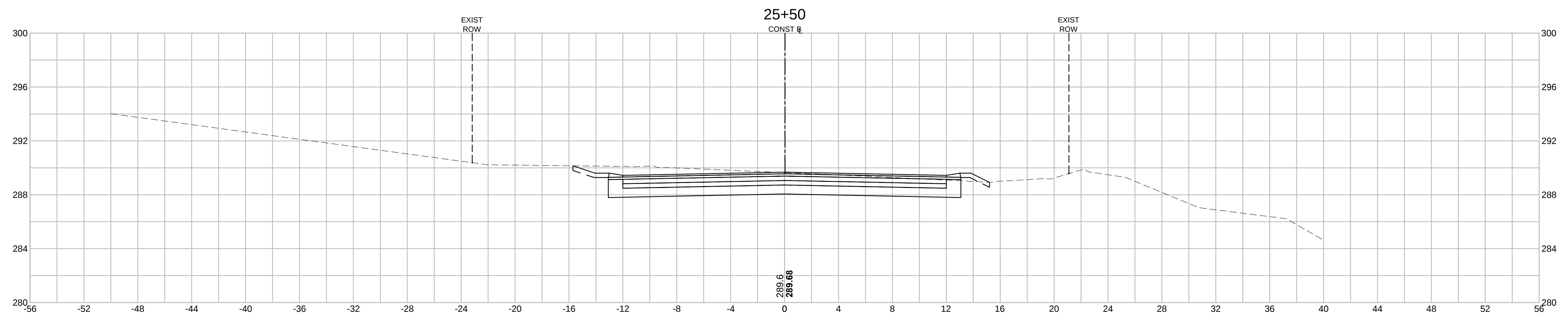
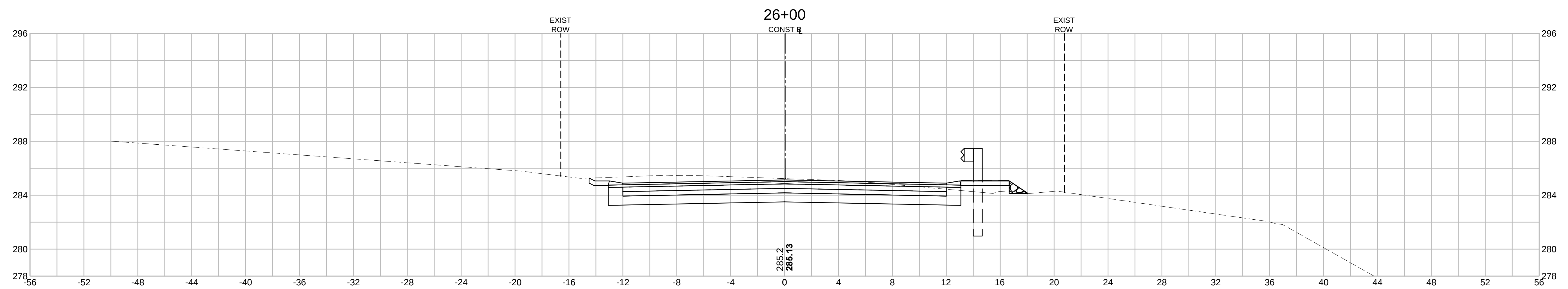
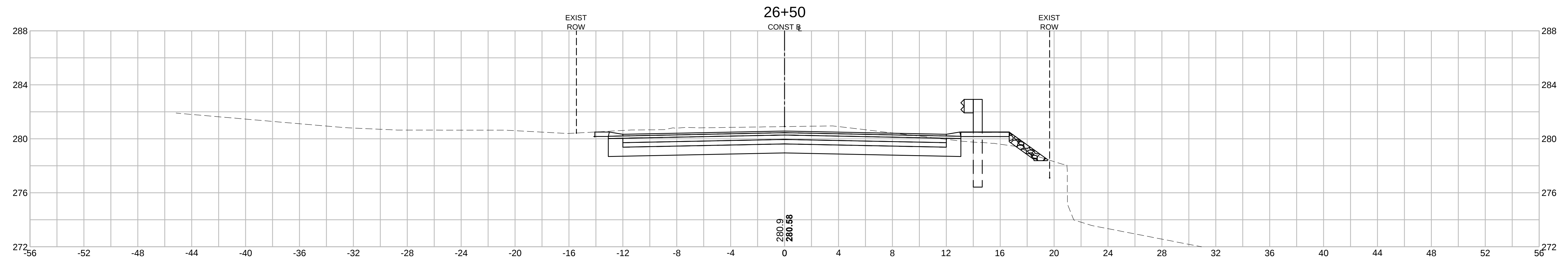


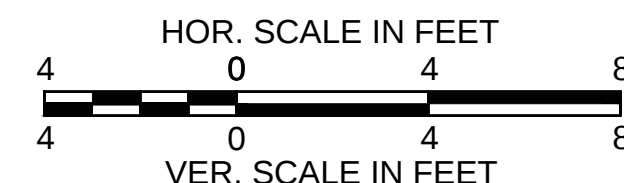
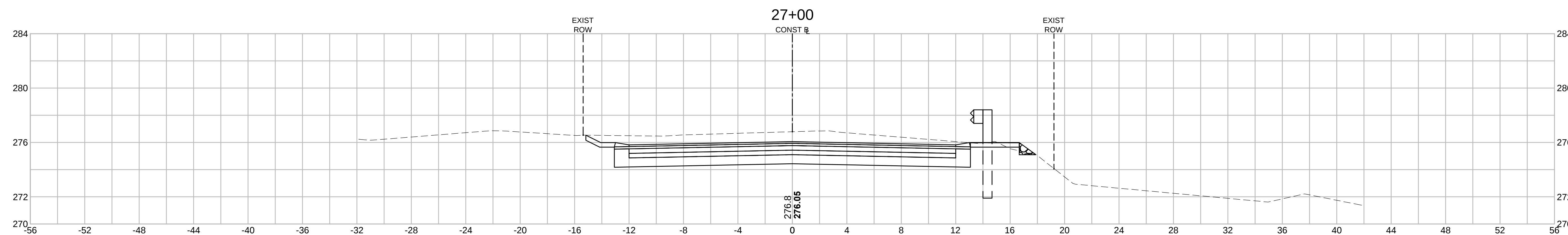
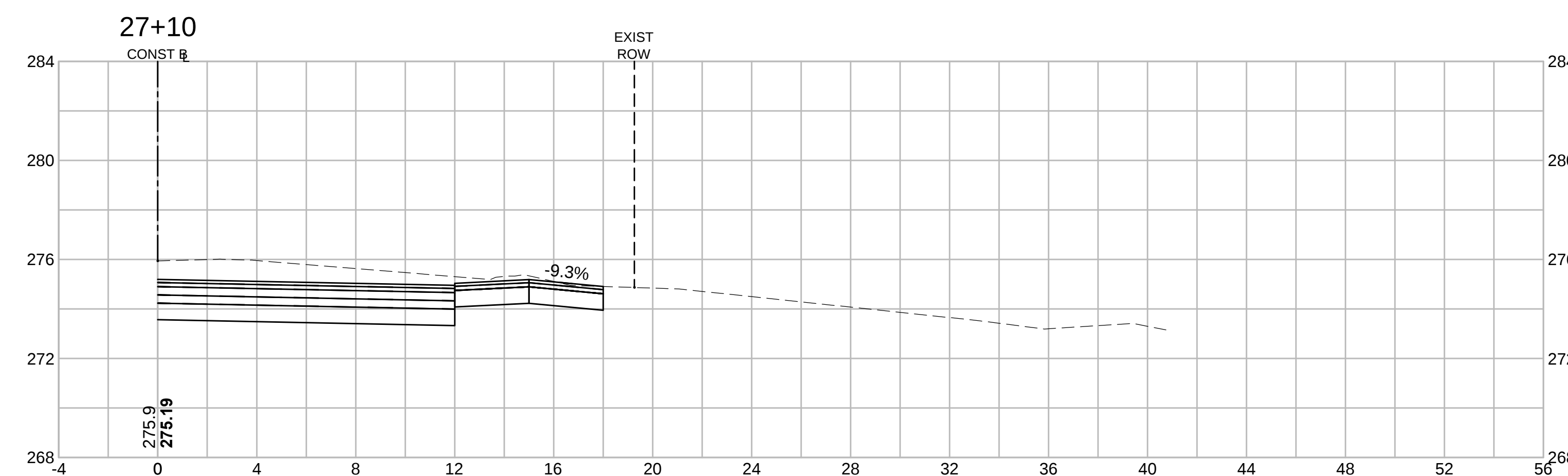
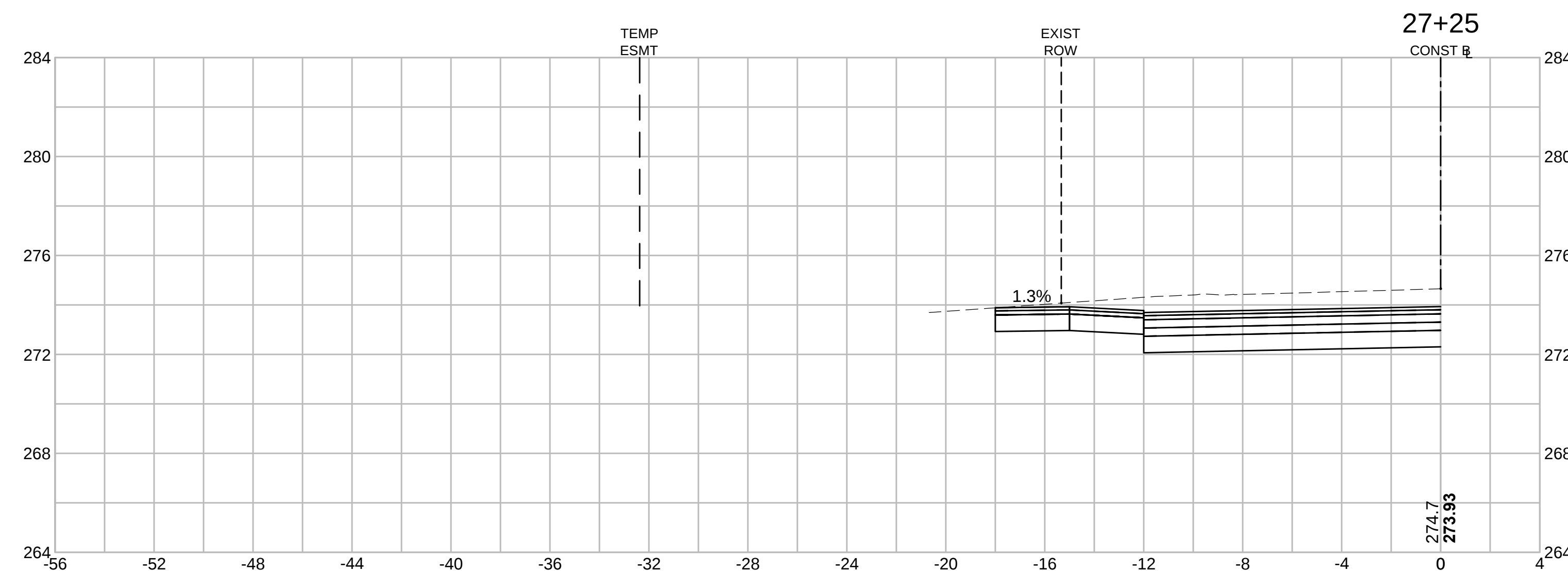


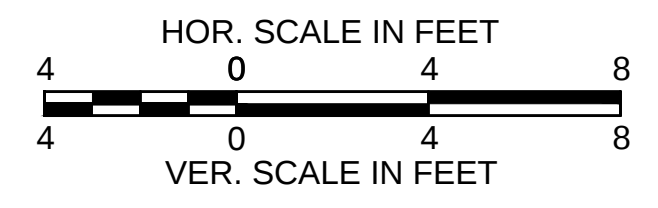
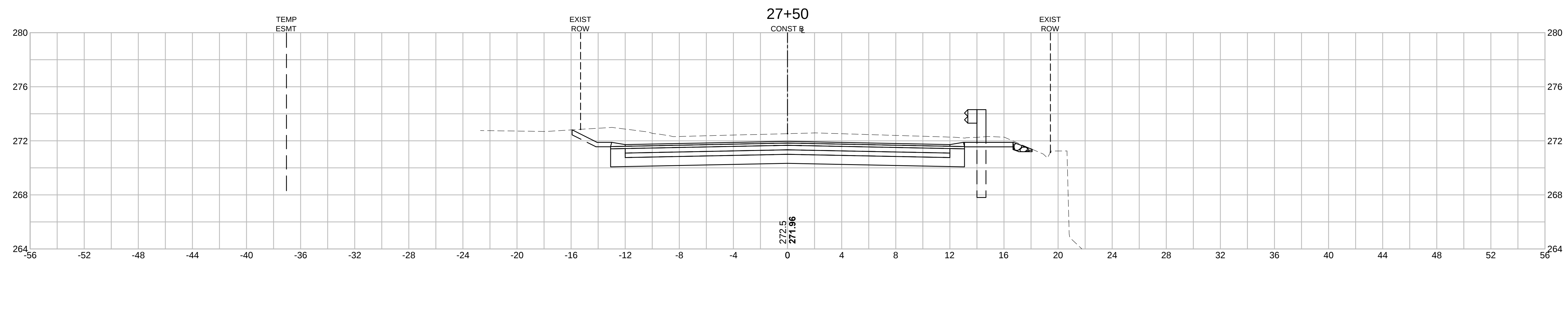
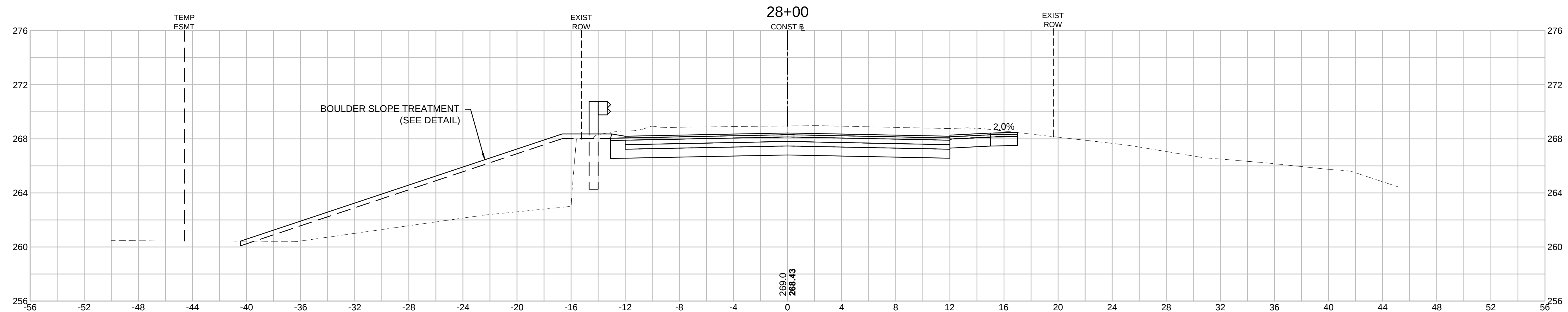
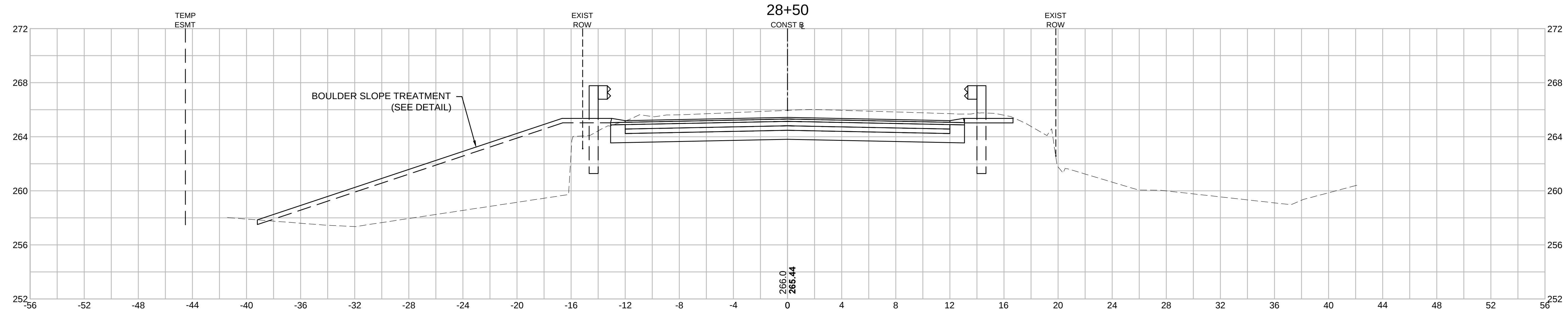


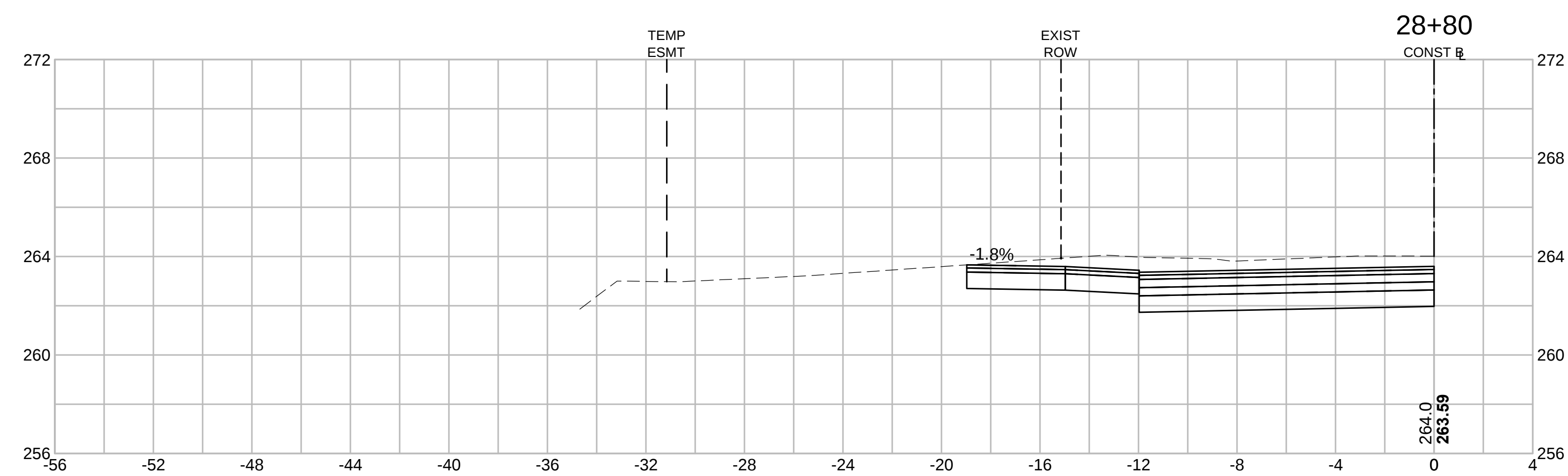
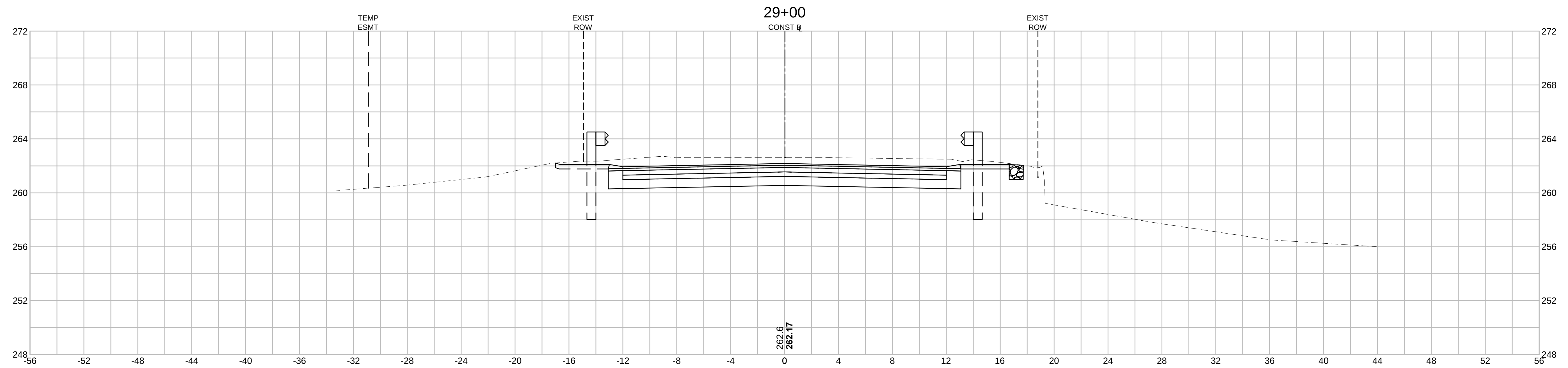
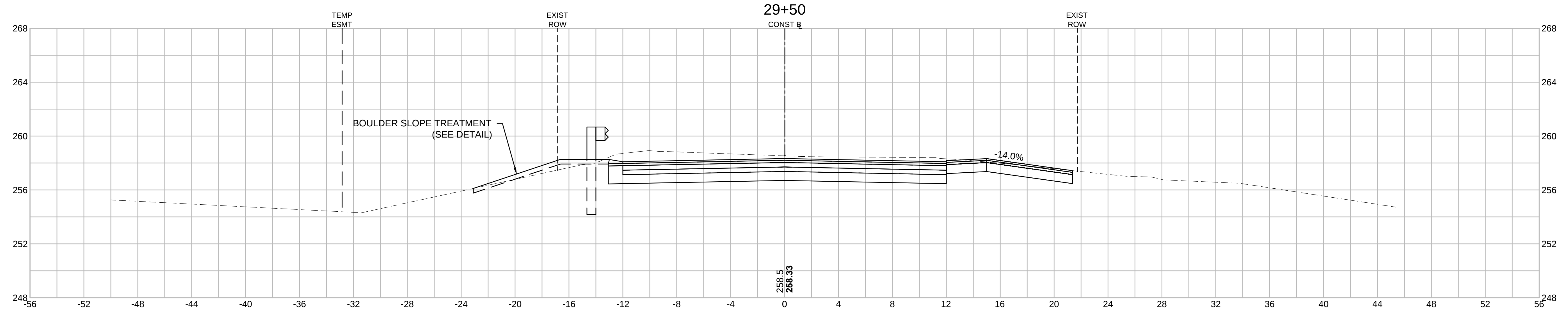
**WESTFORD
MAIN STREET
CROSS SECTIONS - 11
SHEET 48 OF 68**

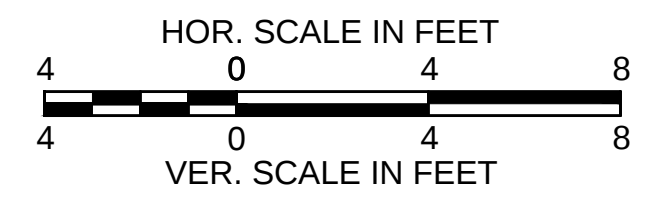
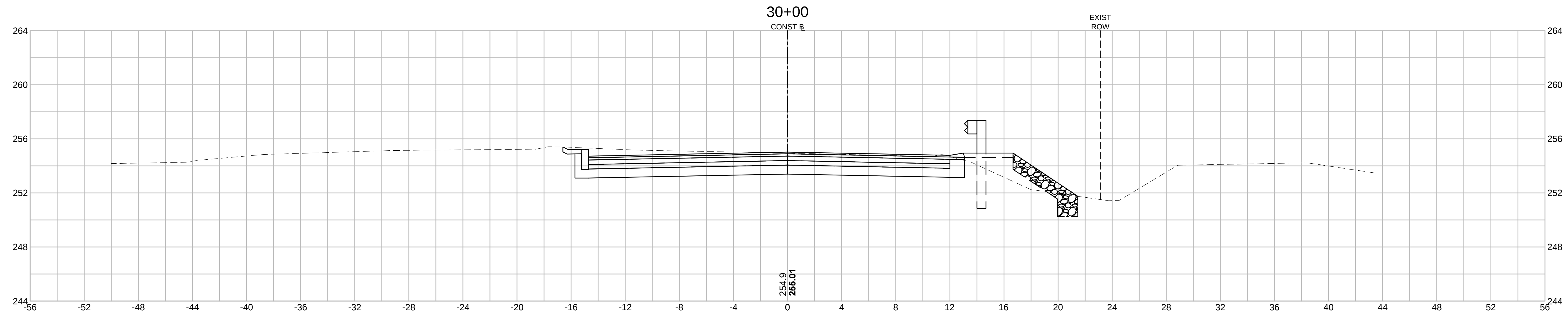
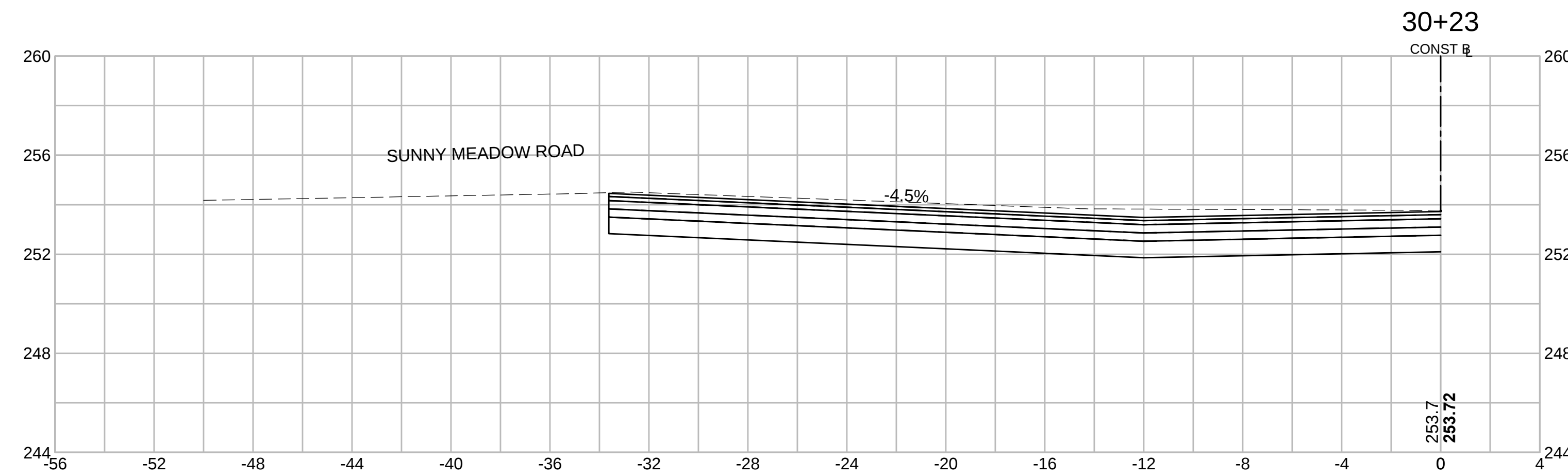
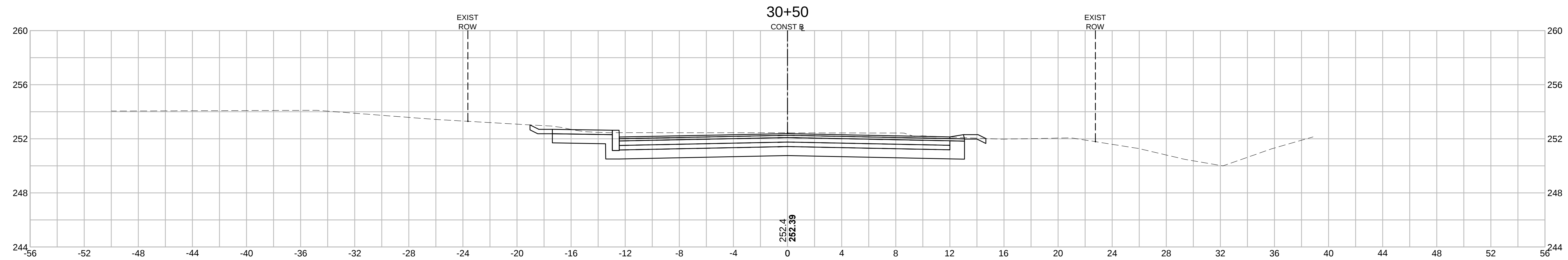


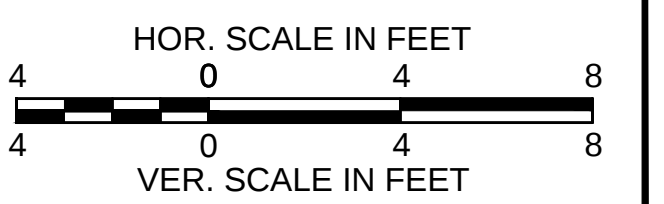
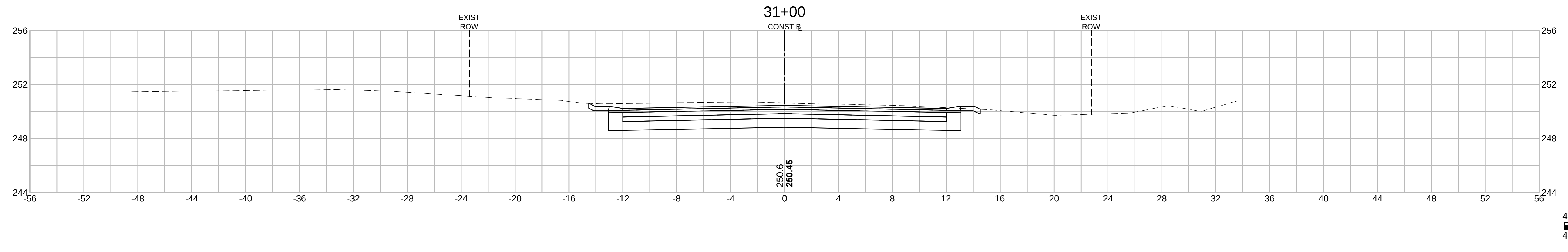
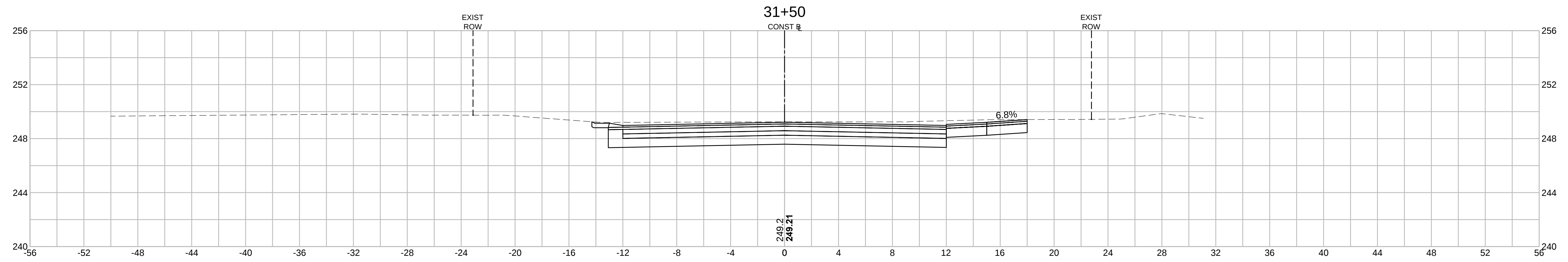
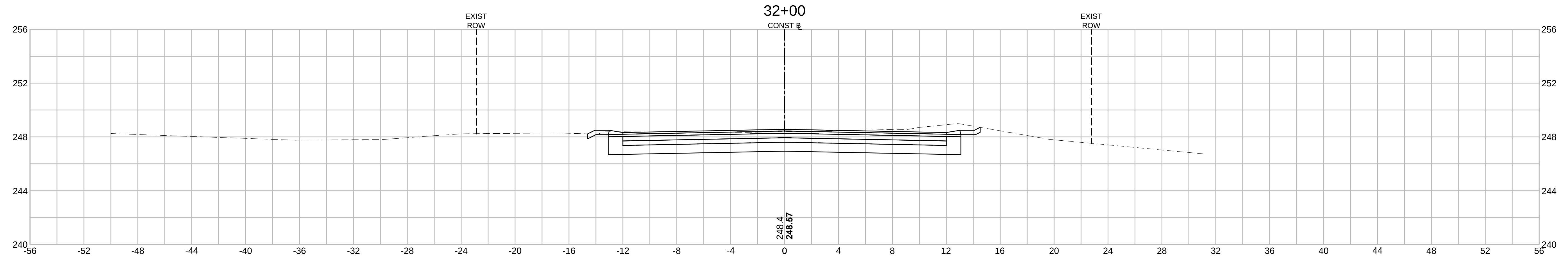


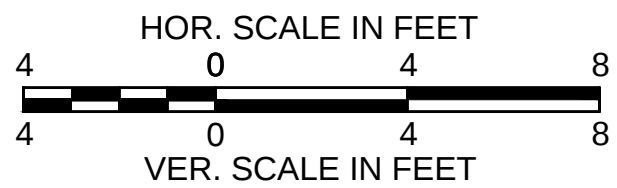
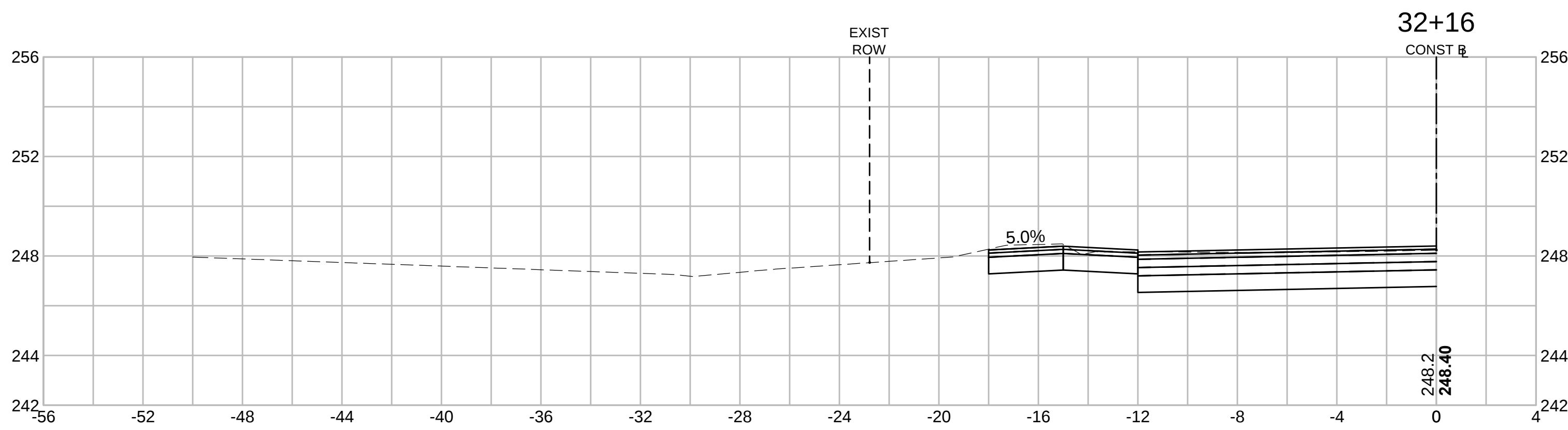
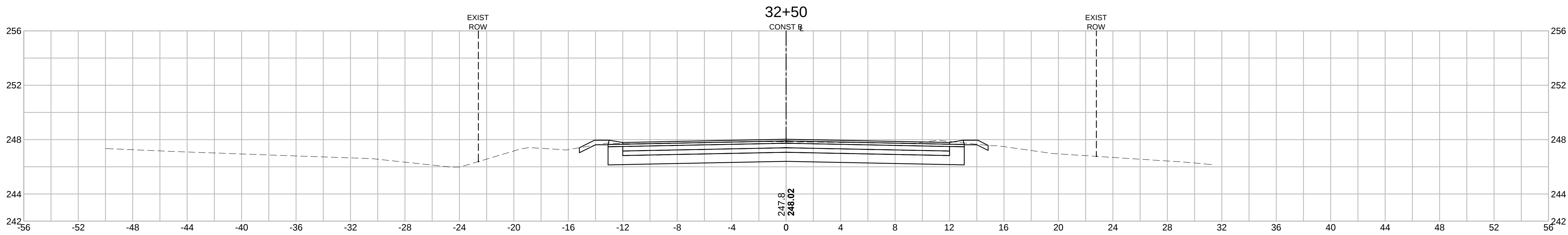
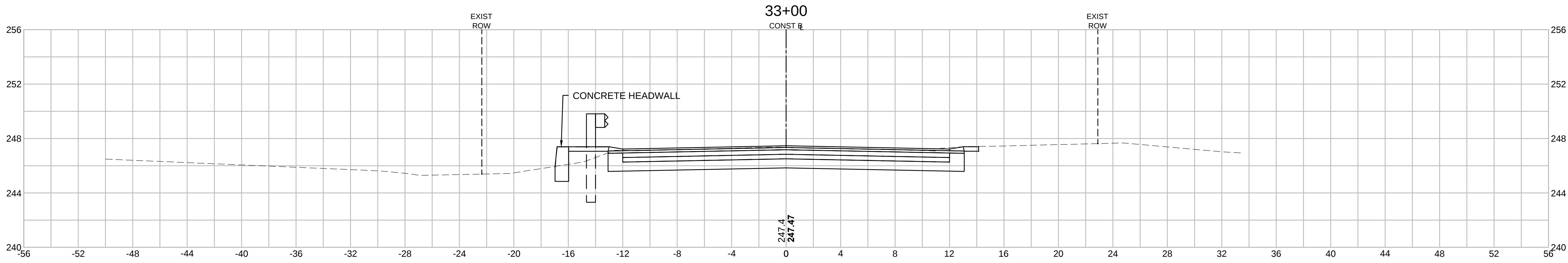
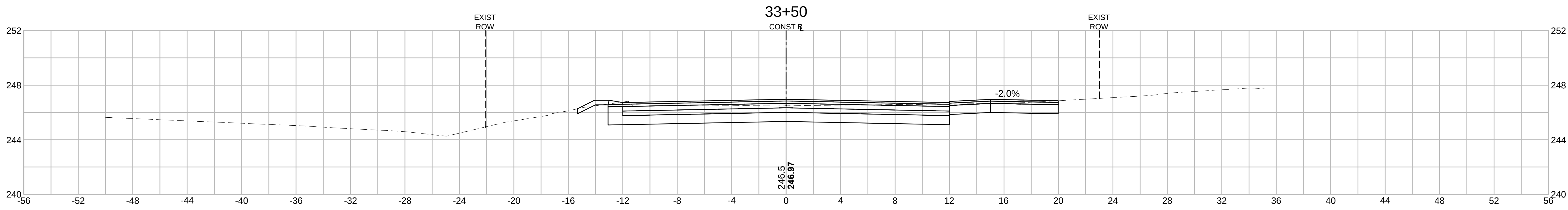


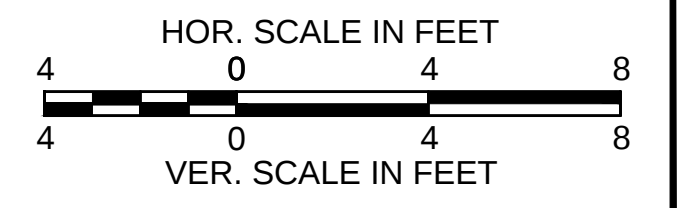
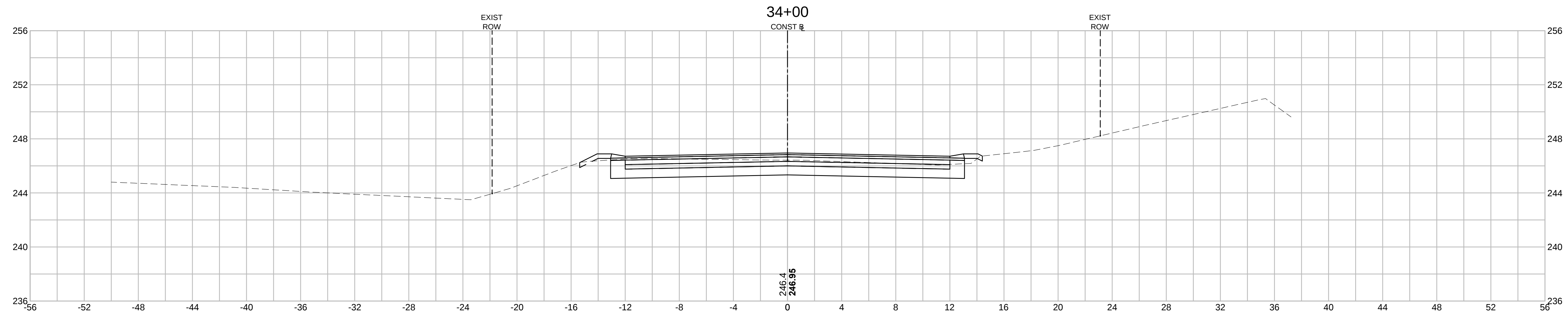
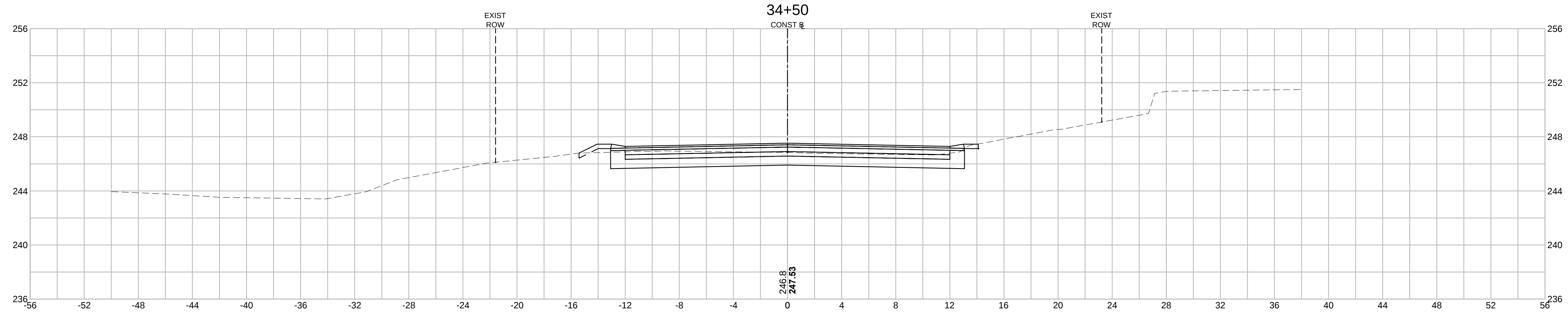
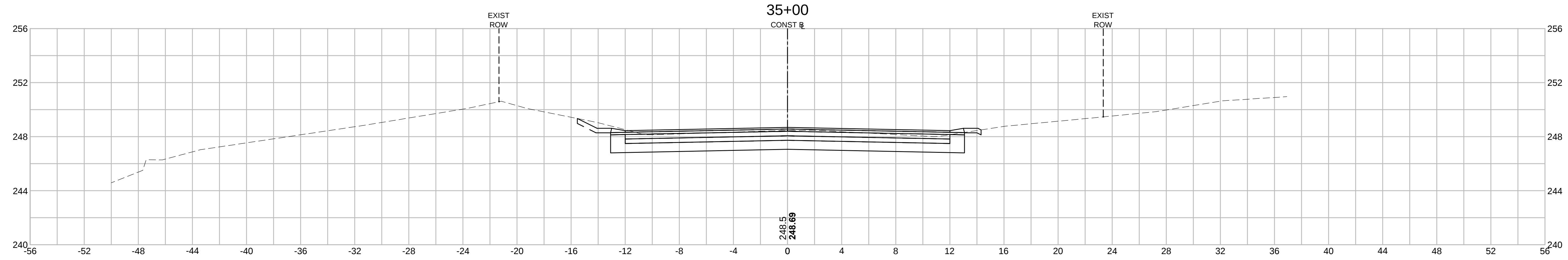


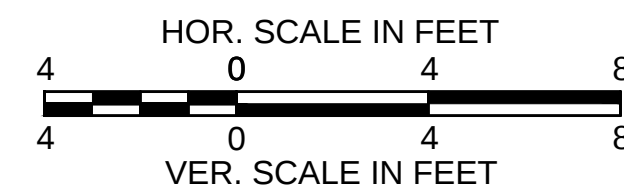
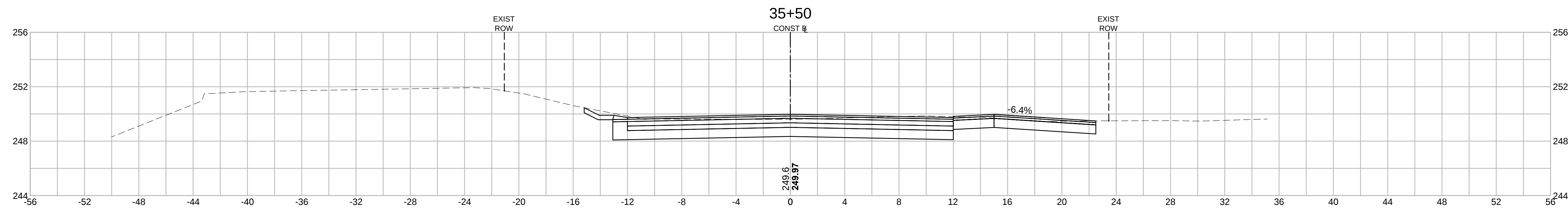
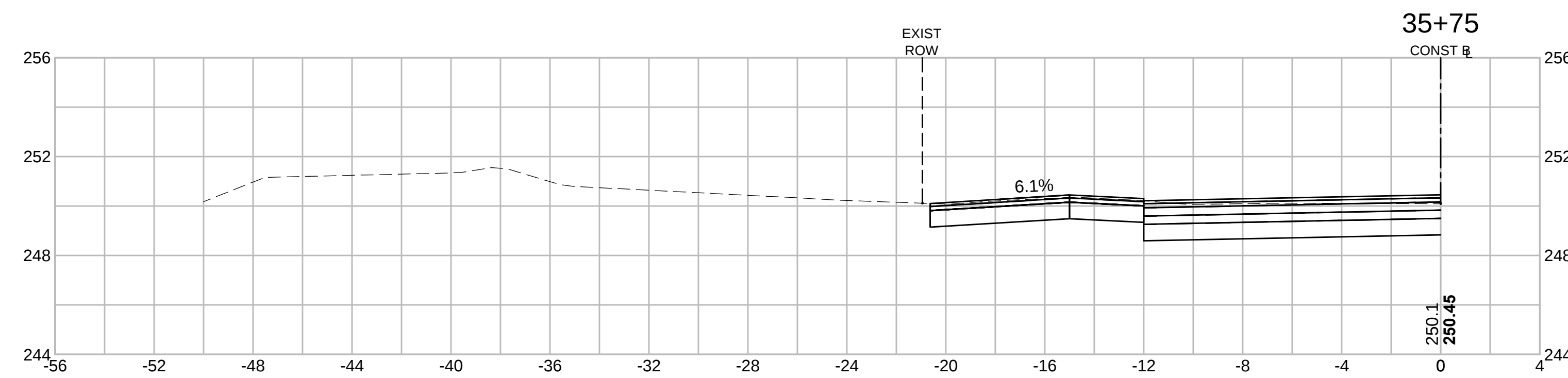
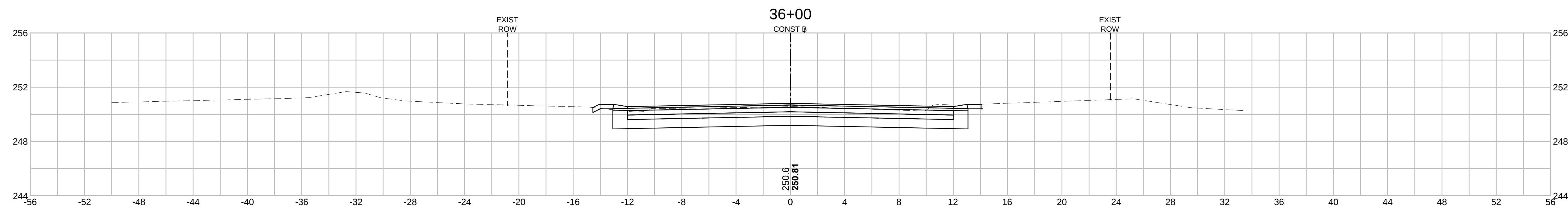
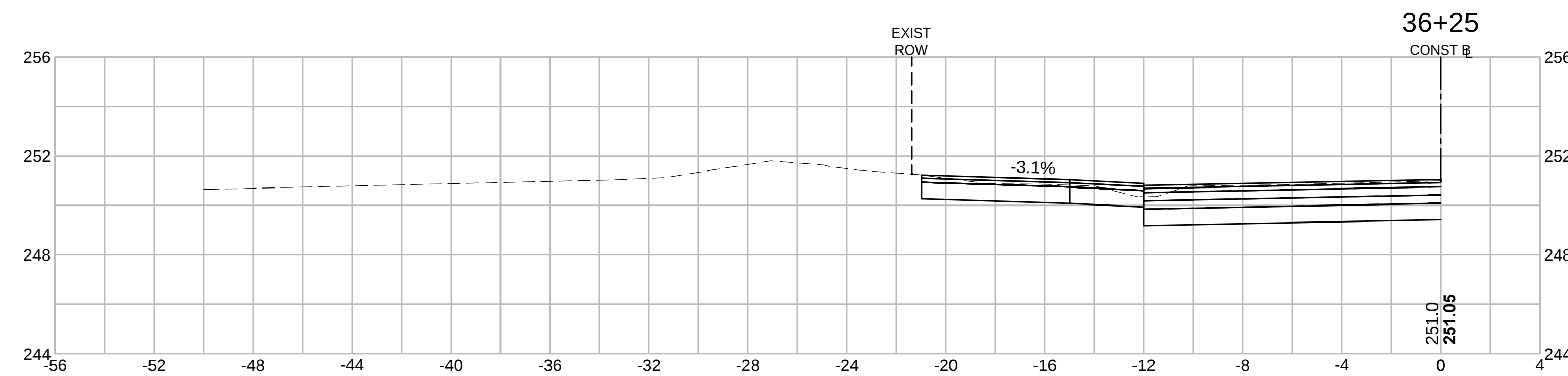


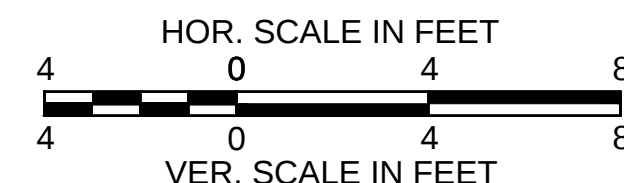
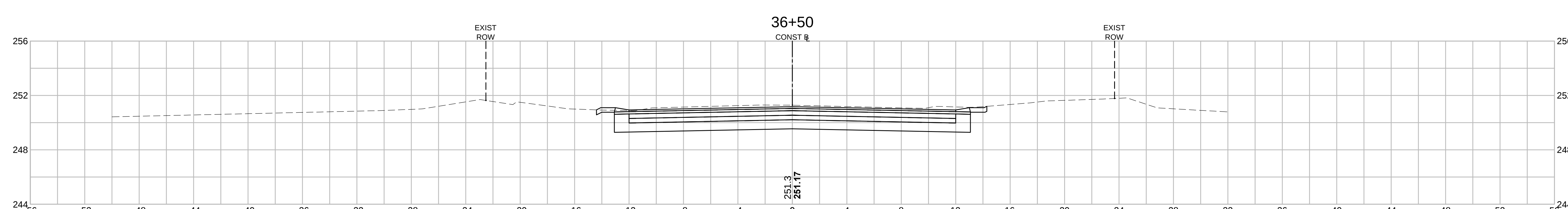
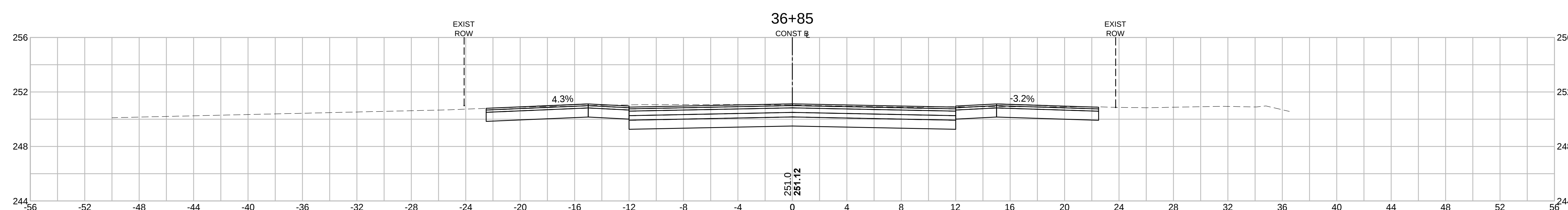
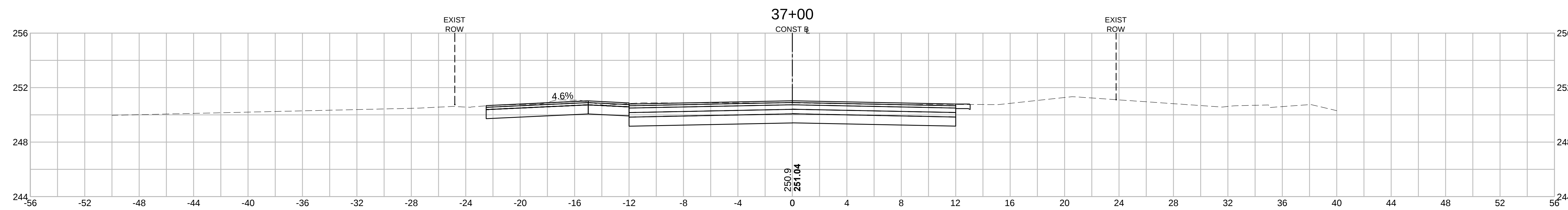
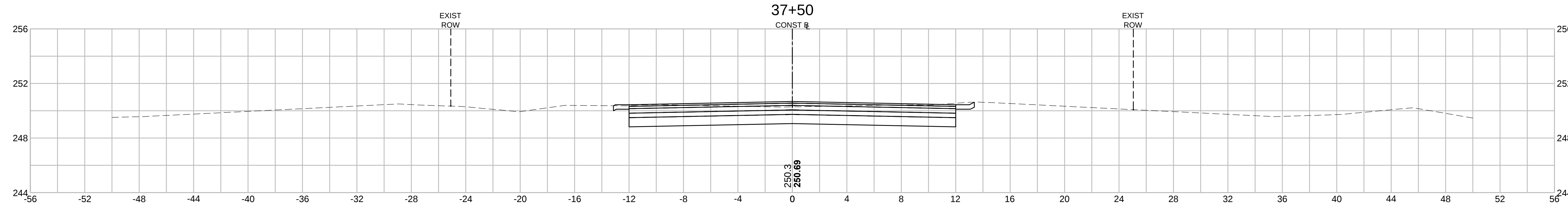


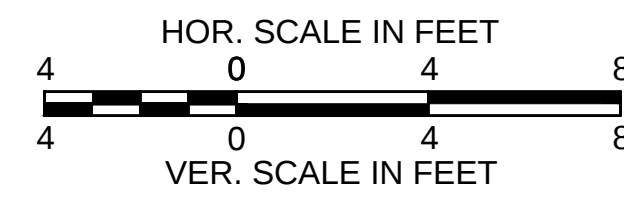
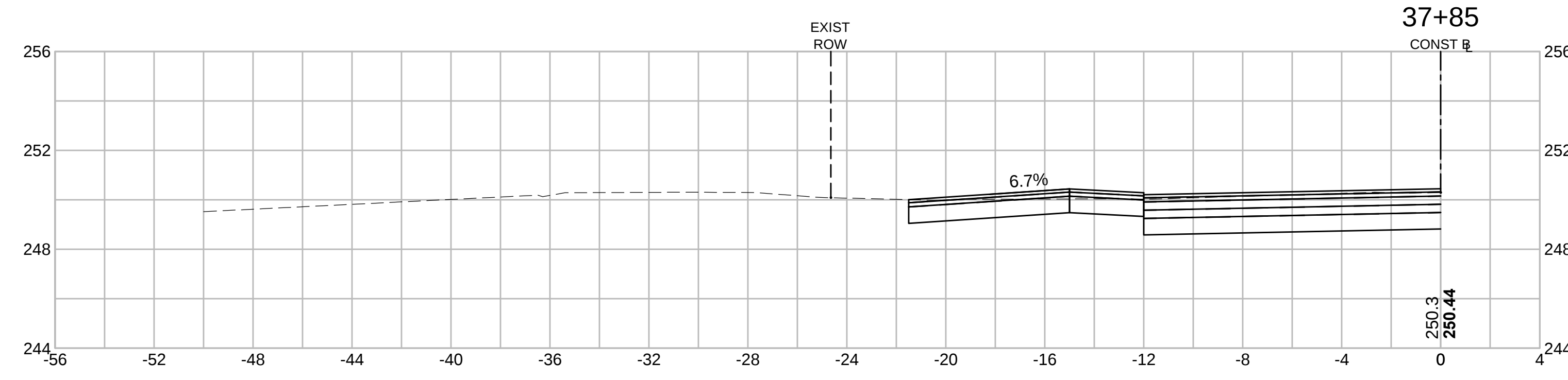
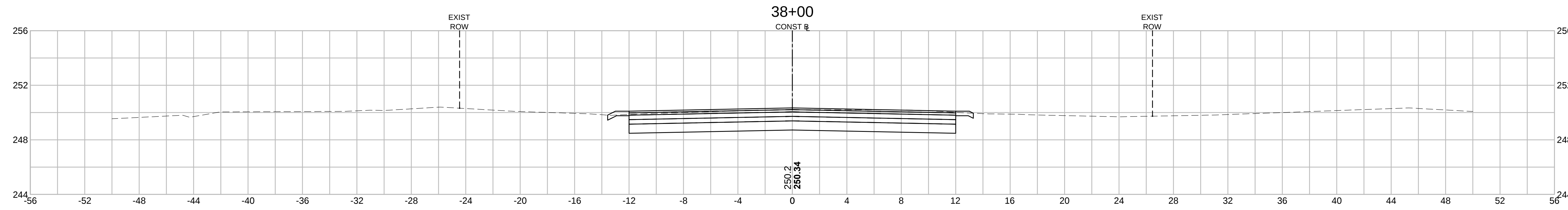
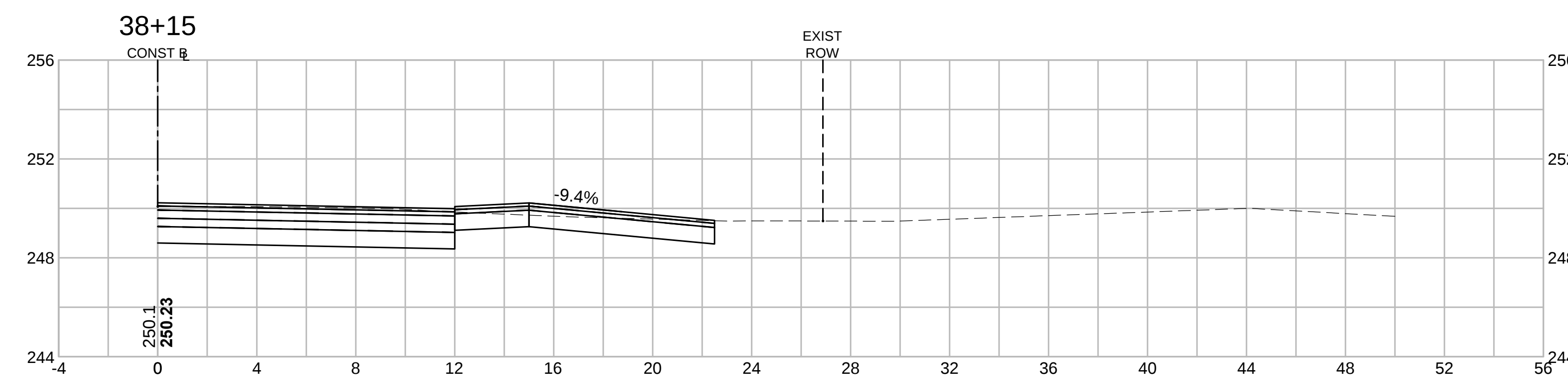
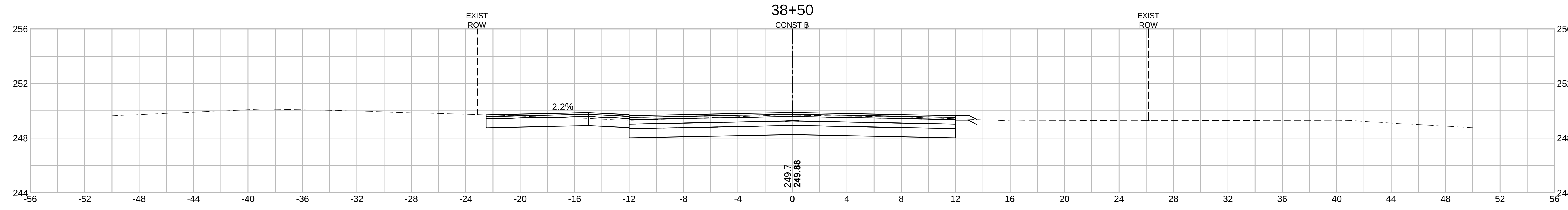


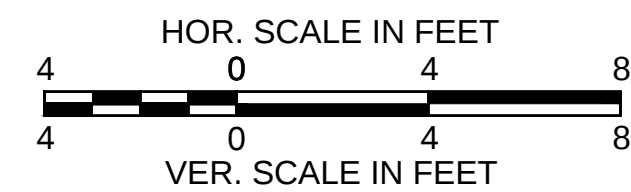
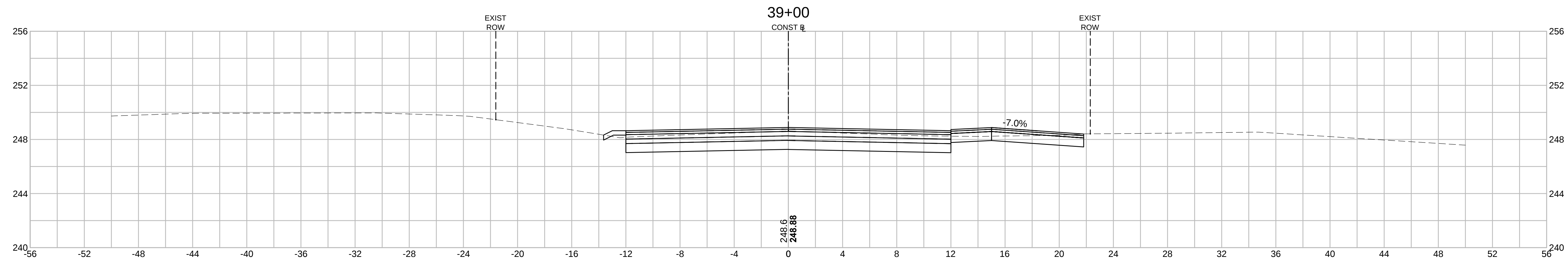
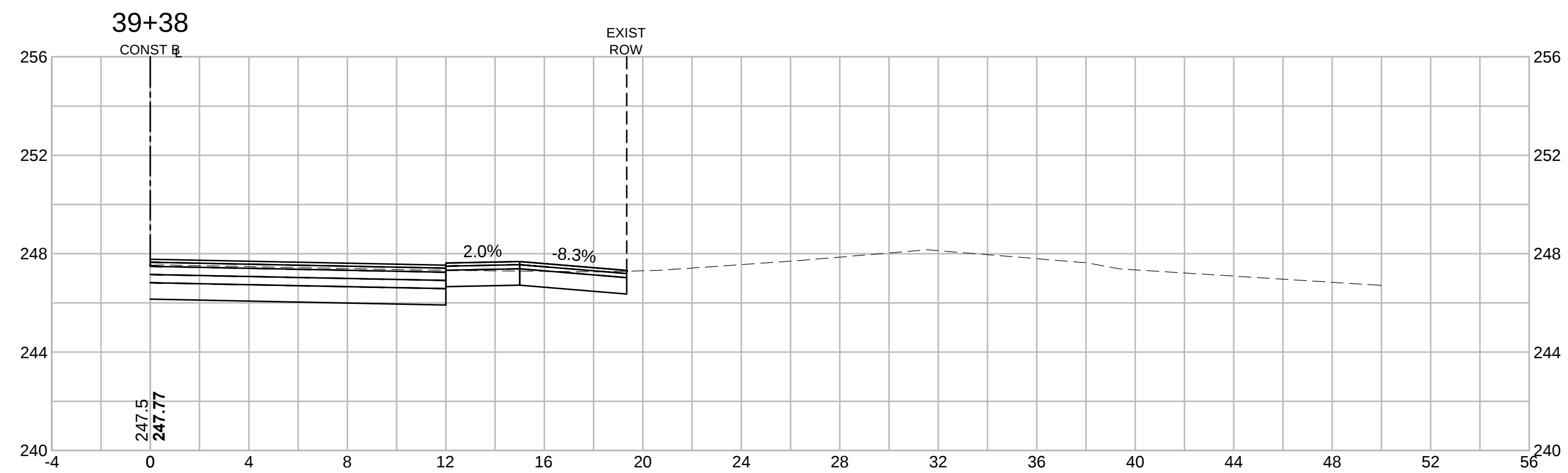
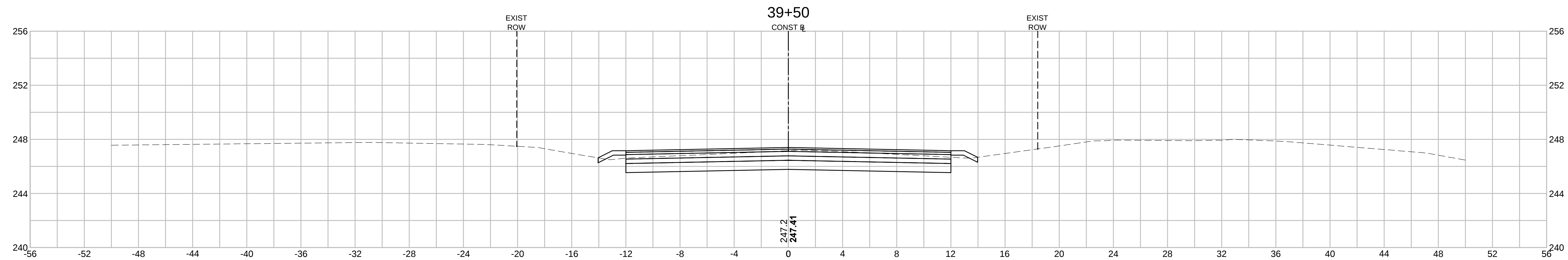


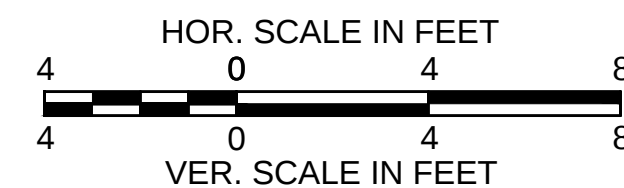
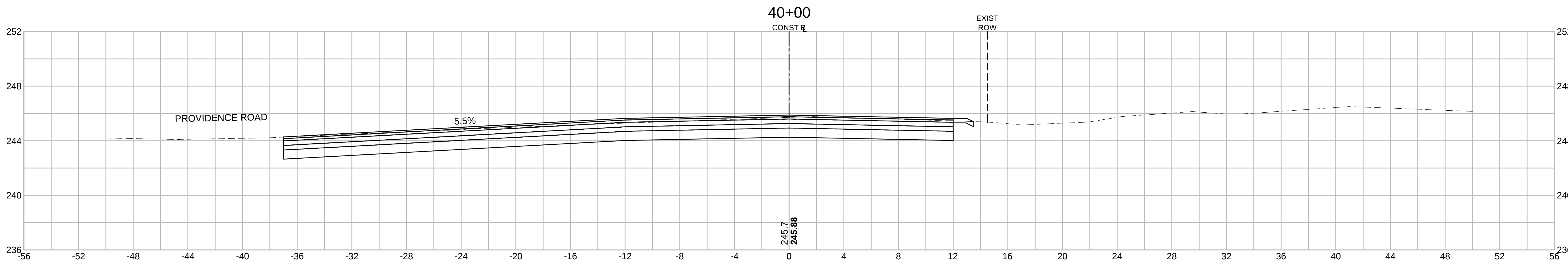
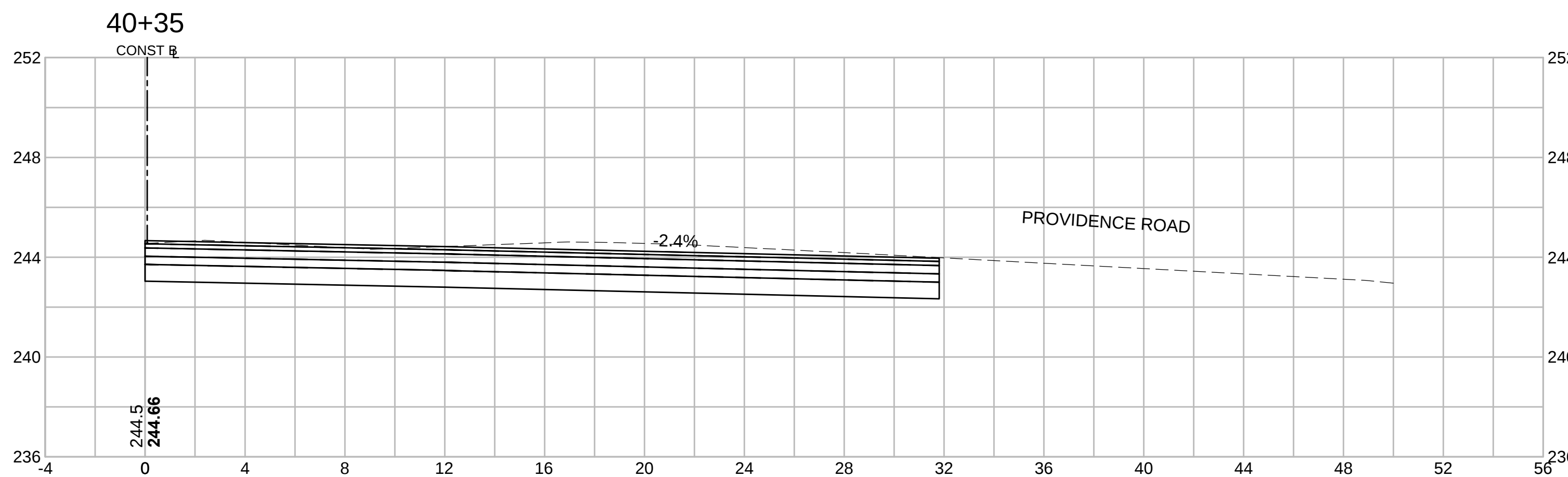
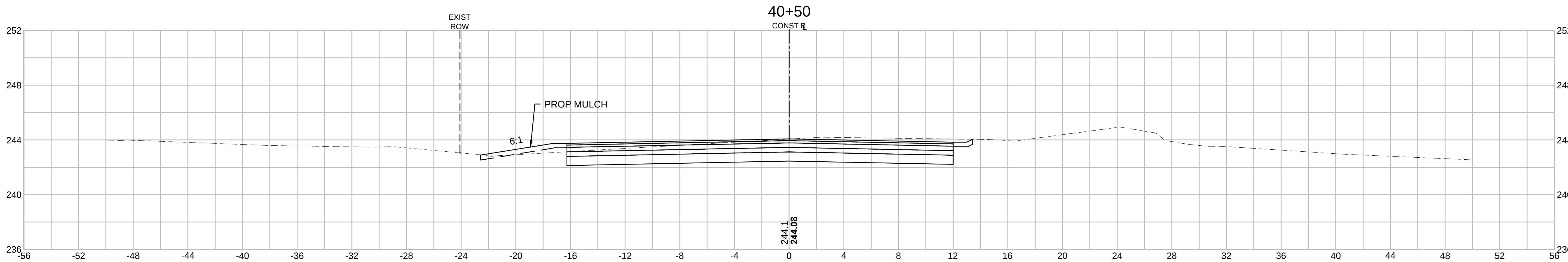


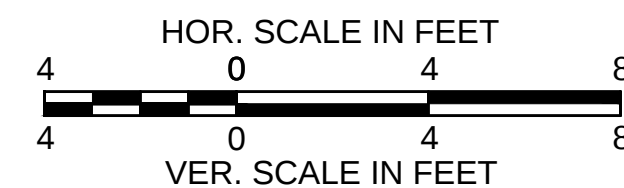
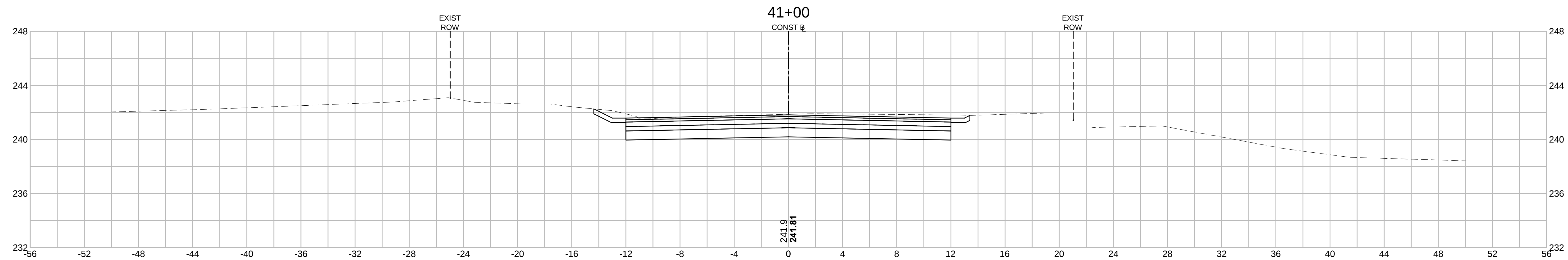
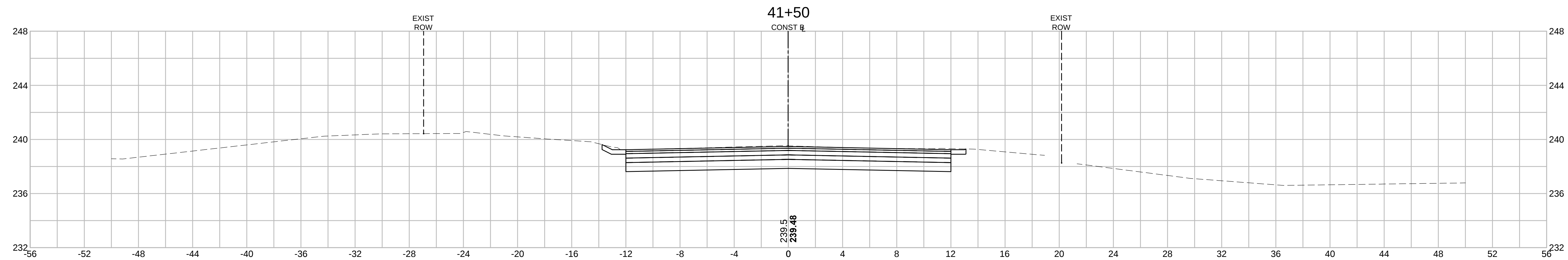
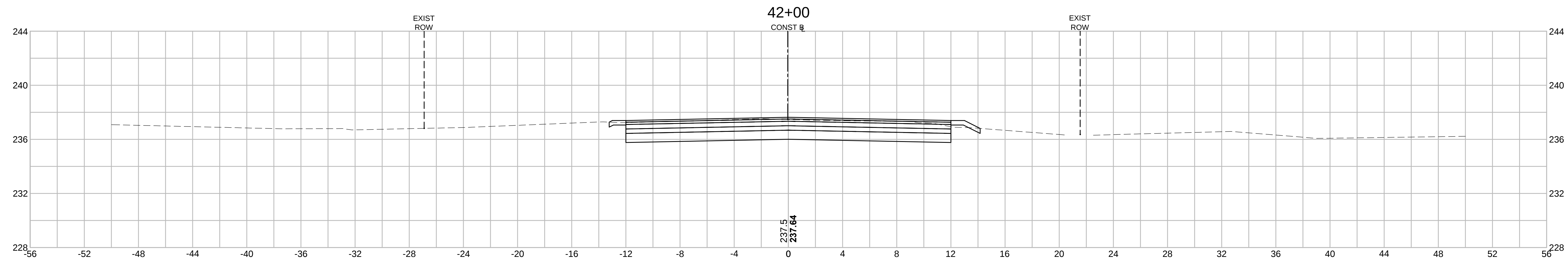


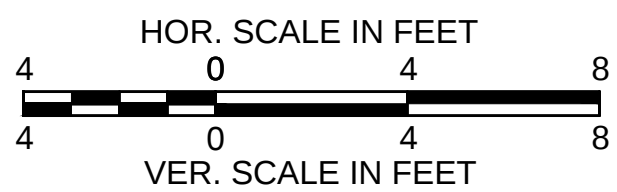
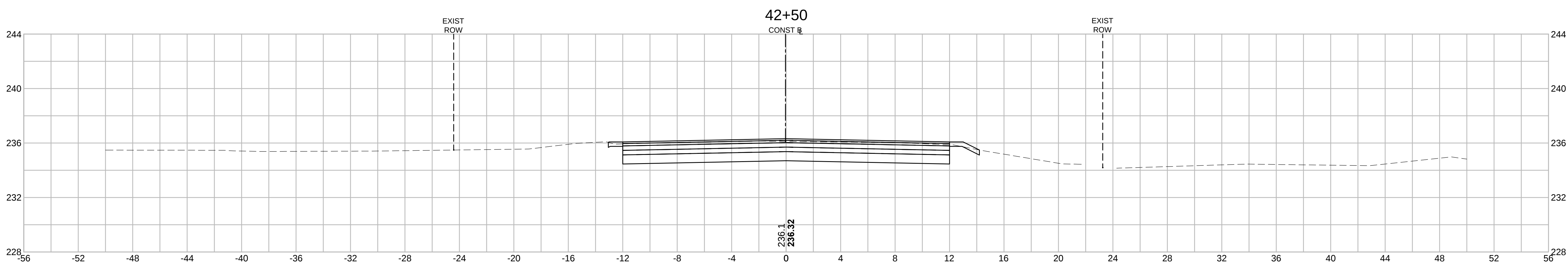
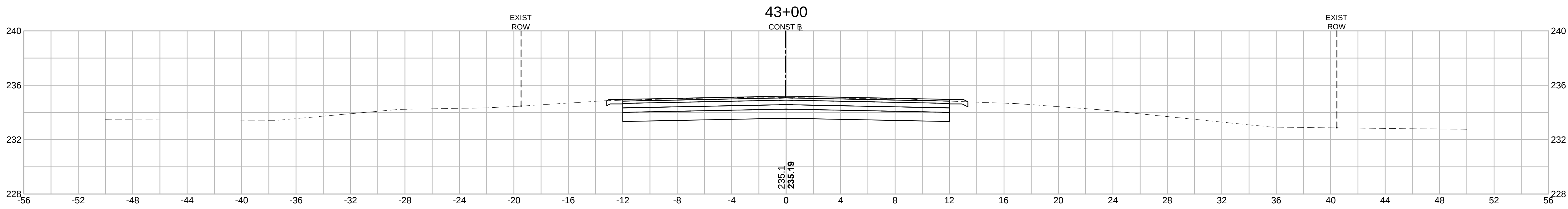
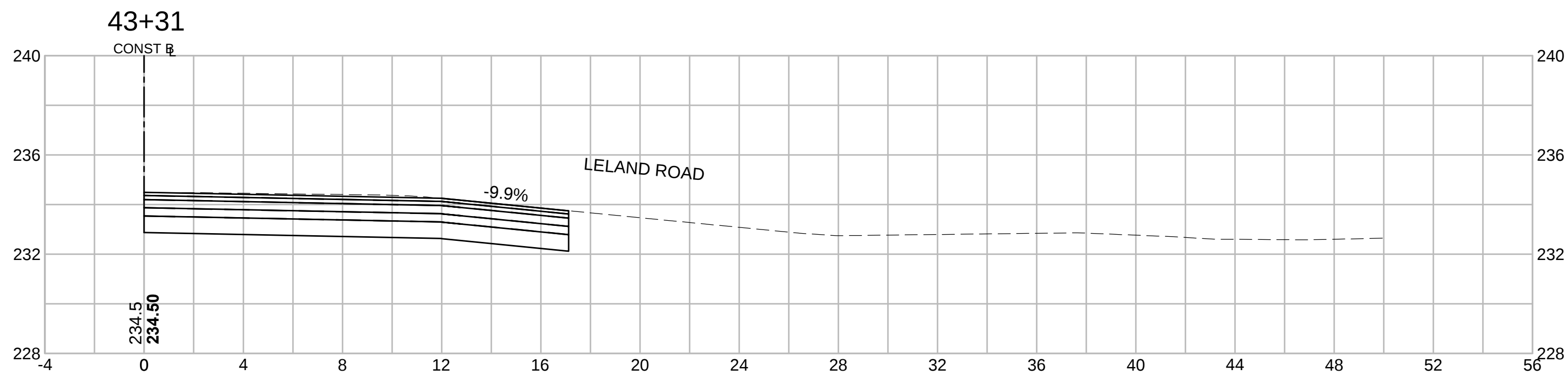
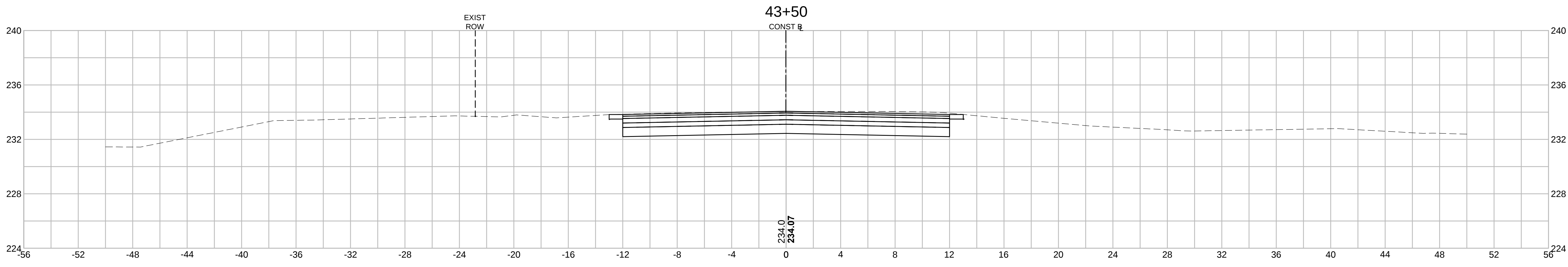


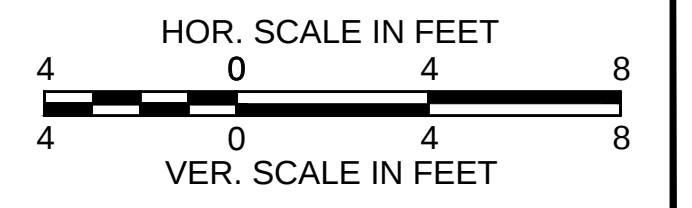
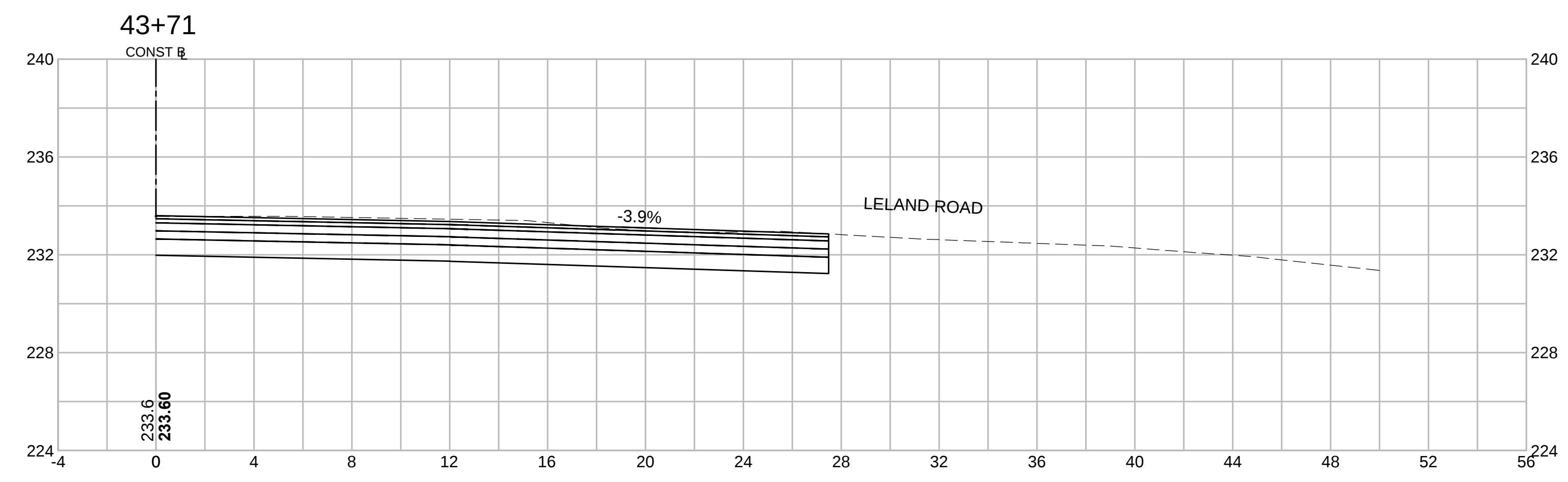
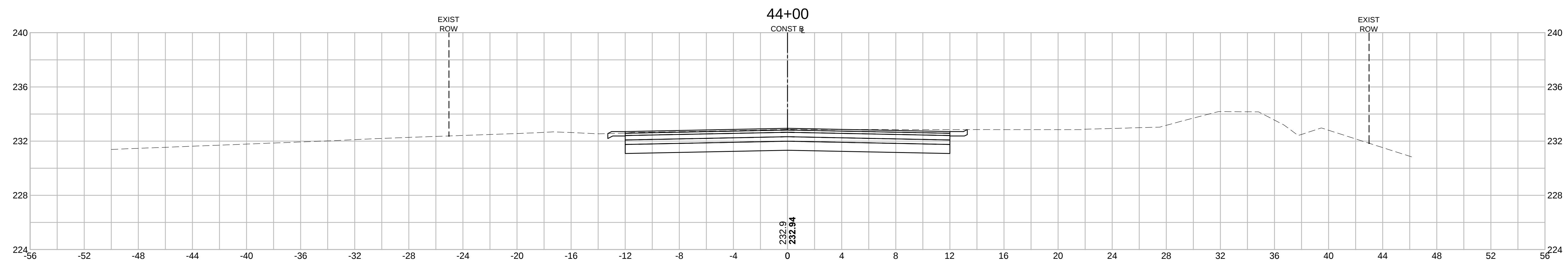
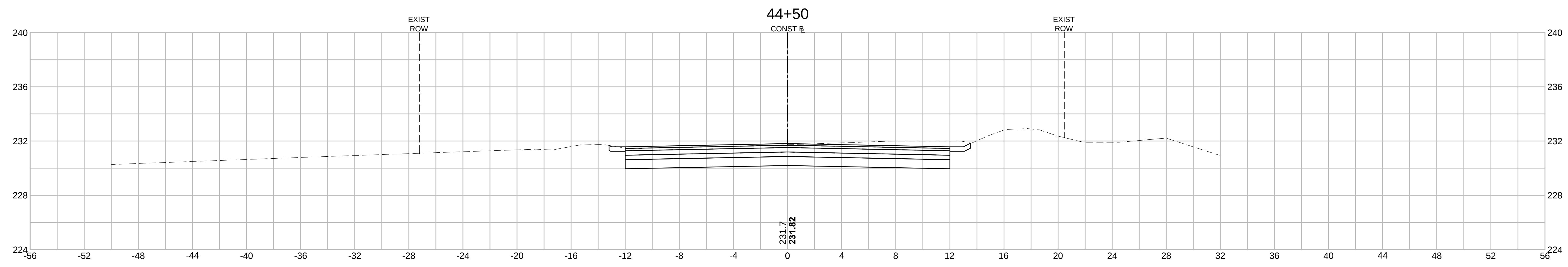












WESTFORD
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