

WFL Sample Plan Sheets

D Sheets

Plan and Profile Sheets

Revised: January 2023

GENERAL

To create the Plan-Profile Sheets in OpenRoads Designer, refer to ORD Manual chapter 14: Plan Sheet Production (<https://highways.dot.gov/federal-lands/cadd-support/ord-user-manual/14-plan-production>)

Plan Sheet Order

- SURVEY CONTROL
- TABULATION OF QUANTITIES
- PLAN-PROFILE SHEETS
- DETAIL SHEETS
- STANDARD DRAWINGS

Survey Control Sheets

The survey control sheets are typically provided by Survey to include by the 70% Plan-in-hand package.

Tabulation of Quantities

Tabulation of Quantity sheets are used to tabulate the locations, quantities and notes pertaining to specific bid items. Include all bid items that are to be paid for under the specific section. Identify Bid items in order as they appear in the FP-14 and on the Summary of Quantities.

Create all Tabulation of Quantities sheets within the sheet model in ORD to ensure proper scaling when pasting tables from Microsoft Excel. See ORD Manual chapter 14D.4, Manually create the sheet model.

Earthwork Summary Table

Include an Earthwork Summary table on all projects that require modelling. The Earthwork Summary table articulates the assumptions made for each project and clearly communicate how all earthwork is generated, where it is placed and how it is accounted for.

The spreadsheet and Template illustrate a single scenario; they both may need to be adjusted to reflect the particulars of each individual project.

TABLE SECTIONS

1	RAW DATA			
	2	3	4	5
<i>LOCATION</i>	<i>Volumes_Cut</i> (Total Cut volume excluding topsoil) Source: ORD, Quantities by Named Boundary	<i>Volumes_Fill</i> (Total Fill volume including Topsoil) Source: ORD Quantities by Named Boundary	<i>Exist Topsoil (removed)</i> (existing topsoils in cut) Source: ORD Quantities by Named Boundary	<i>Exist Topsoil (removed and replaced)</i> (existing topsoil in fill) Source: ORD Quantities by Named Boundary
<i>UNITS</i>	CUYD	CUYD	CUYD	CUYD
Main 01	1,000	1,000	100	100

Column 1, Location: Identify each individual alignment, corridor or surface template where quantities could be taken from within this columns.

It may be necessary to break up an alignment as needed in the case of varying shrink/swell locations, varying depths of topsoil, and at structures (i.e. Walls, Bridges, AOP culverts).

RAW DATA

This is the Raw earthwork data taken directly from ORD. Columns can be added in this section if needed to account for all data that is pulled from ORD. The Designer fills in the data under this section.

IMPORTANT: If columns are added or removed, update the formulas within the template to ensure the math is correctly adding the additional columns.

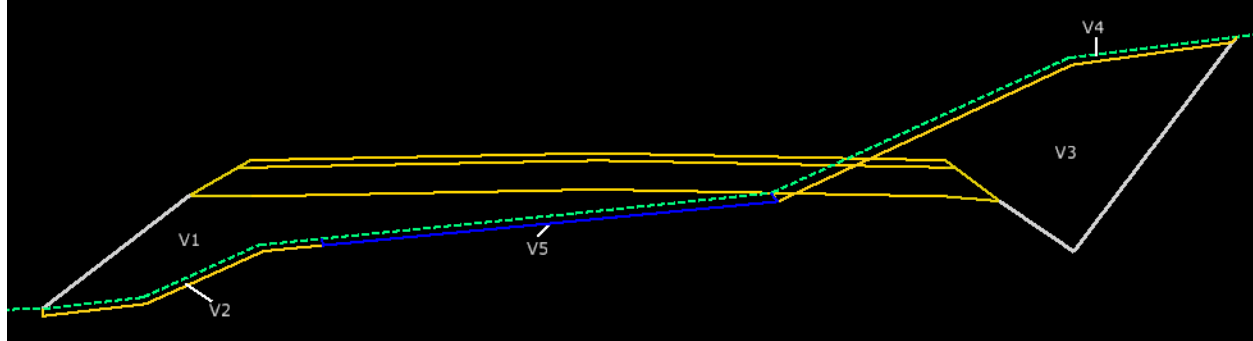
Column 2, Volumes_Cut: Includes cut volumes produced from ORD excluding topsoil. Account for topsoil by calculating the quantity using the topsoil modelling template provided in the ORD. For example, In Figure 1, the values from shape “V3” should be included here. ORD will keep the excavation and topsoil values separated.

Column 3, Volumes_fill: Includes fill volumes produced from ORD including topsoil. Account for conserved topsoil by calculating the quantity using the topsoil modelling template provided in the ORD. For example, In Figure 1 Using this method, ORD automatically adds “V1” and “V2” together.

Column 4, Exist topsoil (removed and replaced): Include the existing topsoil value within a fill section in this column. See “V2” in figure 1. The spreadsheet calculates the effects of the topsoil within the fill section.

Column 5, Exist Topsoil (removed): Include the existing topsoil value within a cut section in this column. See "V4" in figure 1. The spreadsheet calculates the effects of Topsoil within the cut section.

Figure 1: Topsoil template example



- V1: Proposed fill (Excluding existing topsoil)
 V2: Existing topsoil within fill section
 V3: Proposed cut (Excluding existing topsoil)
 V4: Existing topsoil within cut section
 V5: Existing Asphalt

ASSUMPTIONS

ASSUMPTIONS				
6	7	8	9	10
Shrink/Swell Factor Source: Geotech recommendation dated 12/25/22	Specific areas with unsuitable material	Assumed percent unsuitable Source: Geotechnical recommendation dated 1/1/23	Unsuitable material based on Volumes_Cut and Assumed Percent Unsuitable	Topsoil removal Depth Source: NPS
%	CUYD	%	CUYD	INCH
-10%		10%	100	6

Columns 6 through 10 are meant to document all assumptions that went into the earthwork calculations including the assumed topsoil depths, shrink/swell factors and unsuitable material assumptions.

Column 6, Shrink/Swell factor: Geotech provides the Shrink swell factor expressed as a percentage as shown on the sample plans (ex. -10% shrink or 5% swell).

Column 7, 8 & 9, Unsuitable material: The amount of unsuitable material on a project should be discussed and recommendations provided by the Geotechnical office. The amount will typically be specified as either a set quantity (Column 7) or a percent of the total volume (Column 8), but not both. Column 9 automatically calculates the unsuitable material when a percentage is provided in Column 8.

Column 10, Topsoil removal depth: Document the assumed depth of existing topsoil that is being removed or conserved.

CUT

CUT					
11	12	13	14	15	16
Item 20401-0000 ROADWAY EXCAVATION	(+) Additional Excavation (See Note 2) for info only	(-) Topsoil Stripped from Cuts for info only	(-) Estimate of Unsuitable Material for info only	Total Unadjusted Excavation Available for Fill for info only	Total Adjusted Available for Fill (adjusted based on shrink/swell factor) for info only
CUYD	CUYD	CUYD	CUYD	CUYD	CUYD
1,100	100	100	100	1,000	900

Columns 11 through 16 capture and calculate the material available for embankment.

Column 11, ROADWAY EXCAVATION: Calculating the roadway excavation pay item volume including the existing topsoil in cuts.

Column 12, Additional Excavation: This column is manually inputted, this should include any excavated material that is suitable for fill on a project that is not included within the roadway corridor or ORD quantities. For example, structure excavation for a wall, bridge, or culvert or Subexcavation. The material should be quantified on the respective sheets. Revise Note 2 to describe only the appropriate pay items the quantity is coming from.

Column 13, Topsoil Stripped from cuts: existing topsoil in the cut

Column 14, Estimate of Unsuitable material: Includes either the specific areas called out for unsuitable material or the total unsuitable based on a percentage of the total cut.

Column 15, Total unadjusted excavation available for fill: This column calculates the fill available before accounting for the shrink/swell.

Column 16, Total adjusted excavation available for fill: This column calculates the fill available with Shrink/swell accounted for.

FILL

FILL			
17	18	19	20
<i>Embankment for info only</i>	<i>(+) Additional Backfill Needed (See Note 3) for info only</i>	<i>(+) Topsoil stripped from embankment foundation areas for info only</i>	<i>Total Fill Needed for info only</i>
<i>CUYD</i>	<i>CUYD</i>	<i>CUYD</i>	<i>CUYD</i>
900	100	100	1,100

Columns 17 through 20 will capture and calculate the material needed for embankment.

Column 17, Embankment: The total fill needed excluding existing topsoil.

Column 18, Additional backfill needed: This column is manually inputted, this could include any backfill that may be needed that was not modelled in the ORD fill quantities. This can include fill needed for items in other sections as well. For example, the fill needed to fill a hole for removing a large object or structure such as a drainage structure.

Column 19, Topsoil stripped from embankment foundation areas: existing topsoil in the fill

Column 20, Total Fill Needed: this column totals up all the fill needed for the project

TOTALS

TOTALS		
21	22	23
Total Adjusted Available For Fill less Total Fill Needed for info only	Waste for info only	Item 20403-0000 UNCLASSIFIED BORROW
CUYD	CUYD	CUYD
-200		
TOTALS	-200	0 200

Columns 21 through 23 will calculate the total fill or waste needed for a project and determine whether the project is a borrow or waste project.

Column 21, Total adjusted available for fill less total fill needed: This column calculates the total earthwork when combining the cut and fill quantities.

Column 22, Waste: This column will populate automatically if the project is a waste project.

Column 23, UNCLASSIFIED BORROW: Classified Borrow pay item.

Plan - Profile Sheets

The plan and profile sheets should be able to clearly communicate the design intent for the project. Items to consider when creating the plan – profile sheets:

SCALE

- select for an appropriate scale in plan view so that the linework and design intent can be clearly communicated. 1" = 40' scale is typically recommended for the D section.

GENERAL LAYOUT

- Place the Begin project approximately in the middle of the sheet to allow space for other information (i.e. Utility contacts, flexibility in shifting the begin project location)
- Technical group work elements (ex. Bridges, culverts)
 - Graphical representations of elements from technical groups may need to be shown. if a drawing is available it can be referenced into the plan view.

- In profile view, provide a graphical representation of the structure. Design details are not needed.
- Avoid short distances on the final sheet (<100').
- Avoid cutting significant project elements between sheets (i.e. Bridges, intersections)
- Ensure the plan view layout at sharp horizontal curves adequately captures all necessary information.
- In plan view, the proposed alignment beginning location, should extend beyond the beginning/end of the project through the horizontal curve to the beginning of the tangent.
- In profile view, The existing ground profile should be shown beyond the beginning/end of project for a sufficient distance to show the proposed profile adequately ties in without introducing inflections.
- Guardrails, Guardwalls, Special Ditches
 - Include in the profile view, call out the transition rail and terminal sections separately
- Culverts
 - Show in profile view at the proper elevation and stationing where they intersect Centerline. Should be drawn to scale.
 - Include existing culverts in profile view
- Construction limits/Clearing limits
 - Clearing limits only need to be called out in plan view if they diverge from the construction limits
- Legends
 - Provide legends for items not called out on the sheet or identified in the Plans, Symbols and abbreviations detail sheet (I.e. subexcavation, roadway obliteration, etc..)
- Alignments
 - Each plan sheet has a reference alignment that is identified by "To be constructed"
 - Any callout on the sheet should refer to the reference alignment identified by "to be constructed" on the sheets. All location references should be in reference to this alignment
- Alignment naming
 - "To be Constructed" callout should always callout the alignment name (I.e. "Main 01" Line to be constructed), not the name of the road. See alignment naming convention here under Feature type descriptors (<https://highways.dot.gov/federal-lands/cadd-support/standards/naming-ord-features>).
- Item's paid for in other sections
 - Items called out in the D sheets that are not paid for in the D sheets, should be referenced to the section they are paid for in For example: (Turnouts, "See Section XX for details")
 - May include but not limited to: Bridges, turnouts, large culverts (> 48"), guardrail, guardwalls, walls

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PROJECT	SHEET NUMBER
WY NPS YELL 12(2)	D.1

PROJECT : Canyon-Fishing Bridge
DATE OF FIELD WORK : Multiple entries
DATE OF FINAL ADJUSTMENT : June 2021

EPOCH DATE : 2010.00

PROJECT UNITS : US SURVEY FOOT
COORDINATE SYSTEM : Wyoming West SPCS NAD83 2011
DESIGN SOFTWARE COORDINATE SYSTEM : WY83/2011-WF NSRS11(NAD83/2011)
Wyoming, West Zone, US Foot
VERTICAL DATUM : Orthometric elevations based on the NAVD88GEOID18

POINT NUMBER	STATE PLANE COORDINATES			GEO COORDINATES				DESCRIPTION
	NORTH	EAST	ELEVATION	LATITUDE	LONGITUDE	ELLIPSOID HEIGHT	COMBINED FACTOR	
10_26	1871876.457	2515439.701	7886.729	44°44'07.494894"N	110°30'13.217959"W	7858.7497	0.999575714	Brass cap
10_27	1848037.635	2523664.712	7791.932	44°40'12.499437"N	110°28'17.698104"W	7763.5154	0.999578285	Brass cap
10_28	1822615.651	2545551.218	7793.253	44°36'02.380117"N	110°23'13.519938"W	7765.0791	0.999573707	Brass cap
10_29	1820576.921	2545366.834	7758.951	44°35'42.241117"N	110°23'15.963290"W	7730.7818	0.999575378	Brass cap
10_30	1809884.834	2544997.037	7820.310	44°33'56.644087"N	110°23'20.520600"W	7792.1523	0.999572513	Brass cap
CFB2	1810583.411	2545186.068	7814.690	44°34'03.549466"N	110°23'17.945500"W	7786.533	0.999572747	5/8" ir w/fhwa alum cap
CFB5	1829077.688	2536543.452	7721.511	44°37'05.841629"N	110°25'18.392153"W	7693.2119	0.999578859	5/8" ir w/fhwa alum cap
CFB6	1829683.829	2535296.342	7729.714	44°37'11.775701"N	110°25'35.669660"W	7701.3968	0.999578721	5/8" ir w/fhwa alum cap
CFB7	1833589.934	2532066.814	7753.721	44°37'50.211009"N	110°26'20.557101"W	7725.3425	0.999578249	5/8" ir w/fhwa alum cap
CFB8	1836607.369	2528523.855	7754.885	44°38'19.851908"N	110°27'09.740440"W	7726.4677	0.999578959	5/8" ir w/fhwa alum cap
CFB9	1838378.957	2527395.580	7728.241	44°38'37.295106"N	110°27'25.457458"W	7699.8122	0.999580481	5/8" ir w/fhwa alum cap
CFB10	1839598.924	2526905.544	7717.195	44°38'49.319706"N	110°27'32.313263"W	7688.7645	0.999581118	5/8" ir w/fhwa alum cap
CFB12	1850084.999	2520905.063	7703.473	44°40'32.584847"N	110°28'56.024801"W	7675.0695	0.999583154	5/8" ir w/fhwa alum cap
CFB13	1851613.684	2518982.367	7700.675	44°40'47.586246"N	110°29'22.739083"W	7672.302	0.999583746	5/8" ir w/fhwa alum cap
CFB14	1857538.102	2515994.117	7691.071	44°41'45.938277"N	110°30'04.517913"W	7662.802	0.999584931	5/8" ir w/fhwa alum cap
CFB15	1860107.711	2514947.533	7681.777	44°42'11.258793"N	110°30'19.191263"W	7653.5588	0.999585634	5/8" ir w/fhwa alum cap
CFB16	1866460.438	2516727.830	7839.060	44°43'14.079526"N	110°29'54.990128"W	7810.9542	0.999577676	5/8" ir w/fhwa alum cap
CFB17	1867240.506	2517690.484	7864.722	44°43'21.830617"N	110°29'41.711987"W	7836.6207	0.999576215	5/8" ir w/fhwa alum cap
CFB18	1871275.578	2517998.532	7898.555	44°44'01.690436"N	110°29'37.727150"W	7870.5368	0.99957452	5/8" ir w/fhwa alum cap
CFB19	1872162.693	2516991.705	7898.843	44°44'10.399907"N	110°29'51.737427"W	7870.8509	0.999574752	5/8" ir w/fhwa alum cap
KAYGEE	1845375.267	2525613.231	7694.190	44°39'46.300183"N	110°27'50.562364"W	7665.7781	0.999582507	Brass cap

NOTE:

1. To precisely check distances between points as measured on the ground, inverse the state plane coordinates and divide the computed distance by a mean combined factor of the two points.

SURVEY CONTROL

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PROJECT	SHEET NUMBER
WY NPS YELL 12(2)	D.2

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EARTHWORK SUMMARY TABLE

LOCATION	RAW DATA				ASSUMPTIONS					CUT						FILL				TOTALS		
	Volumes_Cut (Total Cut volume excluding topsoil) Source: ORD, Quantities by Named Boundary	Volumes_Fill (Total Fill volume including Topsoil) Source: ORD Quantities by Named Boundary	Exist Topsoil (removed) (existing topsoils in cut) Source: ORD Quantities by Named Boundary	Exist Topsoil (removed and replaced) (existing topsoil in fill) Source: ORD Quantities by Named Boundary	Shrink/Swell Factor Source: Geotech recommendation dated 12/25/22	Specific areas with unsuitable material	Assumed percent unsuitable Source: Geotech recommendation dated 1/1/23	Unsuitable material based on Volumes_Cut and Assumed Percent Unsuitable	Topsoil removal Depth Source: NPS	Item 20401-0000 ROADWAY EXCAVATION	(+) Additional Excavation (See Note 2) for info only	(-) Topsoil Stripped from Cuts for info only	(-) Estimate of Unsuitable Material for info only	Total Unadjusted Excavation Available for Fill for info only	Total Adjusted Available for Fill (adjusted based on shrink/swell factor) for info only	Embankment for info only	(+) Additional Backfill Needed (See Note 3) for info only	(+) Topsoil stripped from embankment foundation areas	Total Fill Needed for info only	Total Adjusted Available For Fill less Total Fill Needed for info only	Waste for info only	Item 20403-0000 UNCLASSIFIED BORROW
UNITS	CUYD	CUYD	CUYD	CUYD	%	CUYD	%	CUYD	INCH	CUYD	CUYD	CUYD	CUYD	CUYD	CUYD	CUYD	CUYD	CUYD	CUYD	CUYD	CUYD	CUYD
"MAIN 01" 10+00 - 20+00	25,000	15,000	2,000	350	-15%	3,200	0%	-	6	27,000	2,000	2,000	3,200	23,800	20,230	14,650	120	350	15,120	5,110		
"MAIN 01" 20+00 - 30+00	13,000	14,500	700	250	-10%		20%	2,600	6	13,700	500	700	2,600	10,900	9,810	14,250	135	250	14,635	-4,825		
"MAIN 01" 30+00 - 45+20	5,000	18,500	600	400	-5%	1,500	0%	-	6	5,600	-	600	1,500	3,500	3,325	18,100	110	400	18,610	-15,285		
"MAIN 02" 10+00 - 20+00	40,000	35,000	1,450	900	-15%	-	20%	8,000	6	41,450	1,500	1,450	8,000	33,500	28,475	34,100	85	900	35,085	-6,610		
"MAIN 03" 10+00 - 20+00	35,000	33,000	700	800	15%	-	5%	1,750	6	35,700	800	700	1,750	34,050	39,158	32,200	-	800	33,000	6,158		
Horsetail Parking Lot	4,000	2,700	-	90	-10%	-	0%	-	6	4,000	-	-	-	4,000	3,600	2,610	-	90	2,700	900		
Granite Canyon Parking Lot	2,300	100	-	20	-10%	-	0%	-	6	2,300	-	-	-	2,300	2,070	80	-	20	100	1,970		
"APPR 01" 1+00 - 1+95	1,200	120	100	20	-5%	-	0%	-	6	1,300	-	100	-	1,200	1,140	100	-	20	120	1,020		
"APPR 02" 2+00 - 2+85	850	1,200	100	80	-10%	-	0%	-	6	950	-	100	-	850	765	1,120	-	80	1,200	-435		
"APPR 03" 3+00 - 3+65	1,100	330	80	60	-10%	-	0%	-	6	1,180	120	80	-	1,220	1,098	270	-	60	330	768		
"ACCESS 01" 5+00 - 6+25	850	-	50	-	0%	-	0%	-	6	900	-	50	-	850	850	-	-	-	-	850		
"DETR 01" 10+00 - 11+35	1,200	-	100	-	0%	-	0%	-	6	1,300	-	100	-	1,200	1,200	-	-	-	-	1,200		
Bridge @ 10+00 (Grading)	-	-	-	-	-5%	-	0%	-	6	-	120	-	-	120	114	-	-	-	-	114		
AOP 12+00	-	-	-	-	-15%	-	0%	-	6	-	120	-	-	120	102	-	350	-	350	-248		
AOP 24+50	-	-	-	-	-10%	-	0%	-	6	-	105	-	-	105	95	-	-	-	-	95		
"WALL 01" 1+00 - 3+85	-	-	-	-	-5%	-	0%	-	6	-	350	-	-	350	333	-	-	-	-	333		
"WALL 02" 5+00 - 7+75	-	-	-	-	-10%	-	0%	-	6	-	400	-	-	400	360	-	-	-	-	360		
TOTALS	129,500	120,450	5,880	2,970		4,700		12,350		135,380	6,015	5,880	17,050	118,465	112,724	117,480	800	2,970	121,250	-8,527	0	8,527

NOTE:

1. All volumes are in-place cubic yards (i.e. in situ or compacted in place).
2. Additional excavation that is suitable for use in embankment construction (Deep patch excavation, Structure Excavation).
3. Additional material needed for embankment construction (Structural backfill).

Shaded columns hidden at 100%

Designer to update list to match project needs

TABULATION OF QUANTITIES

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PROJECT	SHEET NUMBER
WY NPS YELL 12(2)	D.3

Table linked, or pasted, into Sheet model at scale = 1

ROADWAY QUANTITIES						
ITEM	DESCRIPTION	UNIT	LOCATIONS		TOTAL	NOTES
			"MAIN 01"	"MAIN 02"		
20101-0000	CLEARING AND GRUBBING	ACRE	9.1	1.9	11.0	
20401-0000	ROADWAY EXCAVATION	CUYD	11,090	7,183	18,274	Quantity excludes Conserve and Stockpile Topsoil
20403-0000	UNCLASSIFIED BORROW	CUYD	4,654	0	4,654	Includes carryover from parking areas
20410-0000	SELECT BORROW	CUYD	7,088	4,036	11,124	
30101-2000	AGGREGATE BASE GRADING D	TON	4,777	2,905	7,682	1.94 ton/cuyd
40101-5600	ASPHALT CONCRETE PAVEMENT, GYRATORY MIX, 1/2-INCH OR 3/4-INCH NOMINAL MAXIMUM SIZE AGGREGATE, 0.3 TO <3 MILLION ESAL	TON	3,015	2,035	5,050	1.97 ton/cuyd
40105-3000	ANTISTRIP ADDITIVE, TYPE 3	TON	30	20	51	1%/ton Asphalt Concrete Pavement
40601-0000	FOG SEAL	TON	6	4	11	0.10 gal/SQYD; 233 gal/ton
40605-0000	BLOTTER	TON	106	71	177	14.75 lb/sqyd; 2000lb/ton
40801-0000	COLD RECYCLED ASPHALT BASE COURSE	TON	2737	1705	4,442	1.97 ton/cuyd
40807-0000	LIME	TON	30	20	51	1%/ton Cold Recycled Asphalt Base
41201-0000	TACK COAT	TON	6	4	10	0.10 gal/SQYD; 233 gal/ton
62406-0200	PLACING CONSERVED TOPSOIL, 3-INCH DEPTH	ACRE	4.9	1.2	6.1	
62510-1000	SEEDING, DRY METHOD	ACRE	4.9	1.2	6.1	
62515-1000	MULCHING, DRY METHOD	ACRE	4.9	1.2	6.1	

Supplementary sheet number
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TABULATION OF QUANTITIES

Sheet 2 of 3

PROJECT	SHEET NUMBER
WY NPS YELL 12(2)	D.4

Table linked, or pasted, into Sheet model at scale = 1

Item 61501-0100 SIDEWALK, CONCRETE (CROSSWALK STAMPED EDGE)	
LOCATIONS	QUANTITY (SQYD)
"MAIN 01" 130+60 to 130+78	60
"MAIN 01" 144+51 to 144+69	60
TOTAL	120

Item 62010-1000 STONE MASONRY GUARDWALL (SIT WALL)	
LOCATIONS	QUANTITY (SQYD)
"MAIN 01" 129+08 to 130+05 LT	97
"MAIN 01" 130+35 to 130+64 RT	31
"MAIN 01" 145+50 to 146+50 RT	95
TOTAL	223

Title text:
Font = Verdana, Italic, Bold
Size = 10

Body text:
Font = Verdana, Italic
Size = 8

Item 61505-1000 ACCESSIBILITY RAMP, CONCRETE	
LOCATIONS	QUANTITY (EACH)
"MAIN 01" 130+69 RT	1
"MAIN 01" 130+69 LT	1
"MAIN 01" 144+60 RT	1
"MAIN 01" 144+60 LT	1
TOTAL	4

Item 62010-1000 STONE MASONRY GUARDWALL (30-INCH)	
LOCATIONS	QUANTITY (SQYD)
"MAIN 01" 130+05 to 130+78 LT	73
"MAIN 01" 130+64 to 130+92 RT	47
"MAIN 01" 144+51 to 146+50 LT	212
"MAIN 01" 144+51 to 145+50 RT	99
TOTAL	431

Total text:
Font = Verdana, Italic, Bold
Size = 8

thin black line around column titles and total rows

Bold outline

Thin grey lines dividing listed items

Excel settings for tables:
Row Height = 15

Item 61904-0000 BOLLARD POST	
LOCATIONS	QUANTITY (SQYD)
"MAIN 01" 130+82 RT	3
"MAIN 01" 130+85 LT	2
"MAIN 01" 144+46 RT	2
"MAIN 01" 144+46 LT	2
TOTAL	9

Item 62010-1000 STONE MASONRY GUARDWALL (42-INCH)	
LOCATIONS	QUANTITY (SQYD)
"MAIN 01" 130+78 to 131+20 LT	42
"MAIN 01" 130+92 to 131+20 RT	28
"MAIN 01" 144+25 to 144+51 LT	26
"MAIN 01" 144+25 to 144+51 RT	26
TOTAL	122

UTILITY OWNER CONTACT(S):

Lumen/CenturyLink Communications (Telephone)
Kimberly Hessel
kimberly.hessel@lumen.com
Phone: (307) 630-4402

Northwestern Energy (Power)
Matthew Fettig
matthew.fettig@northwestern.com
Office Phone: (406) 582-4606
Cell Phone: (515) 581-8805

Diamond Communications (Fiber Optics)
Jeff Peters
jpeters@diamondcomm.com
Office Phone: (973) 544-6825
Cell Phone: (512) 627-7483

Park Facilities (Water, Power,
Telecommunications, Sewer, Gas, Etc.)
Yellowstone National Park
Mike Angermeier
mike.angermeier@nps.gov
Phone: (307) 344-2623

Text element; Template
Annotation\General\Note
heading

Text element; Template
Annotation\General\Plan
notes Feet

Note element; Template
Annotation\General\Heading

BEGIN PROJECT

"MAIN 01" 110+05.00
N= 937984.0982
E= 540096.9997

BEGIN CONSTRUCTION

"MAIN 01" 110+25.00
N= 938002.4670
E= 540105.0424

Text element; Template
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Left justified

Text Style 006_Verdana_CC;
Justification Left Top

Dimension element; Template
Annotation\General\Plan notes Feet

Text Style
007_Verdana_Italics_CC

PI 116+60.13
 $\Delta = 28^{\circ}09'18''$ (RT)
R = 1,190.00'
T = 298.41'
L = 584.76'
e = 3.8%

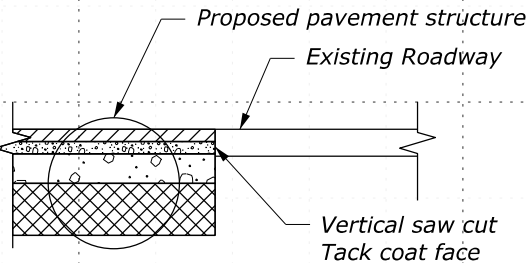
GRAND LOOP ROAD

N23°38'45"E
NORTHEAST ENTRANCE ROAD

Edges of pavement

"MAIN 01" Line
to be constructed
Turnout
112+00 to 114+00
See Section X for details

Template Proposed\End Conditions\Prop Clearing



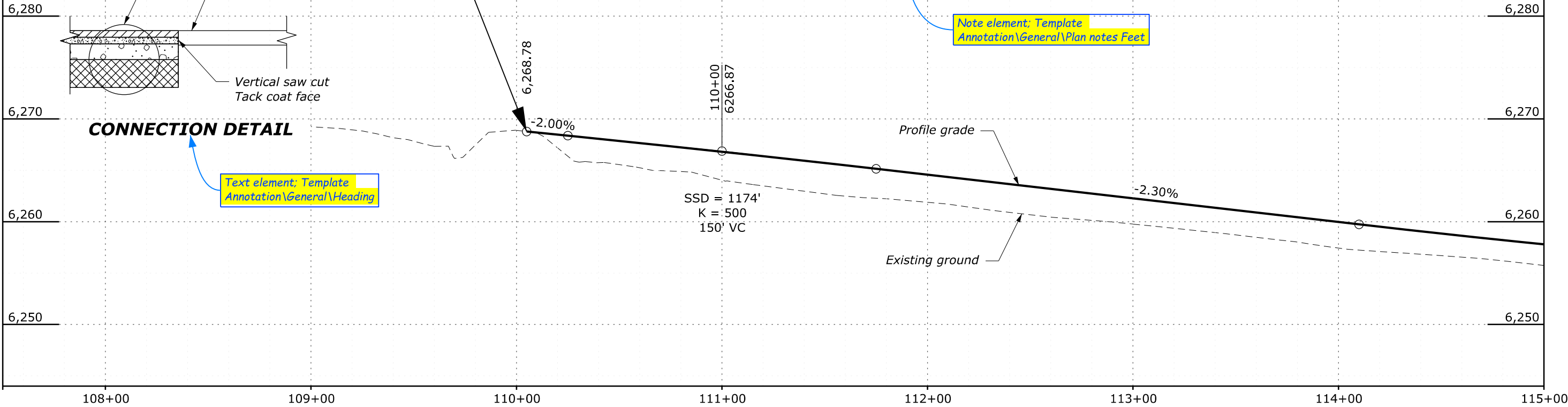
CONNECTION DETAIL

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Text Style
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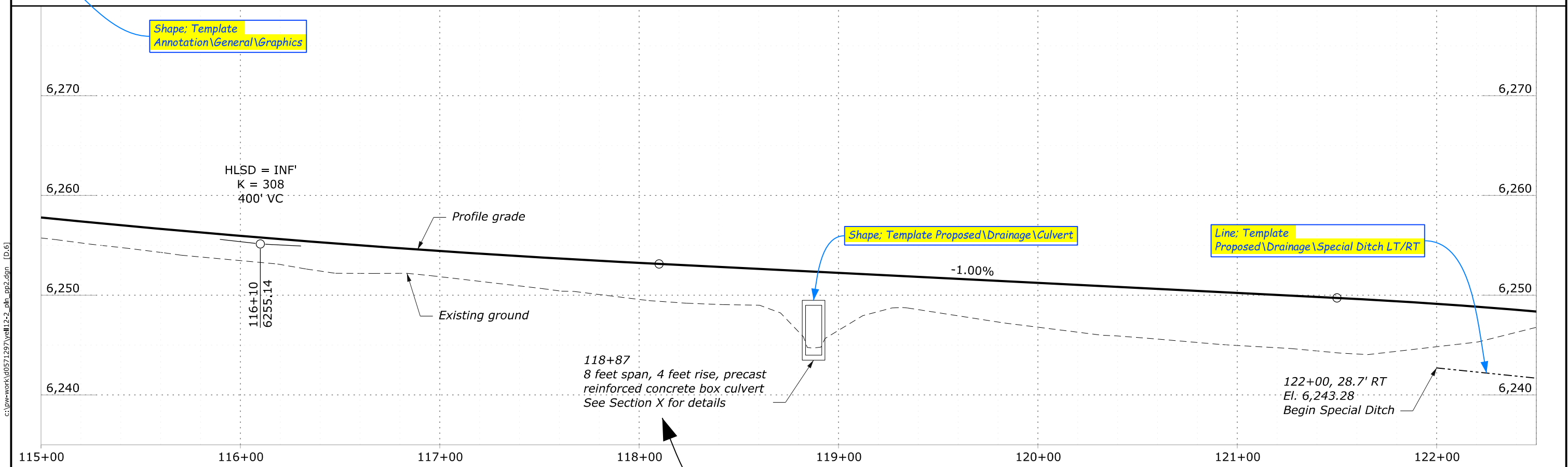
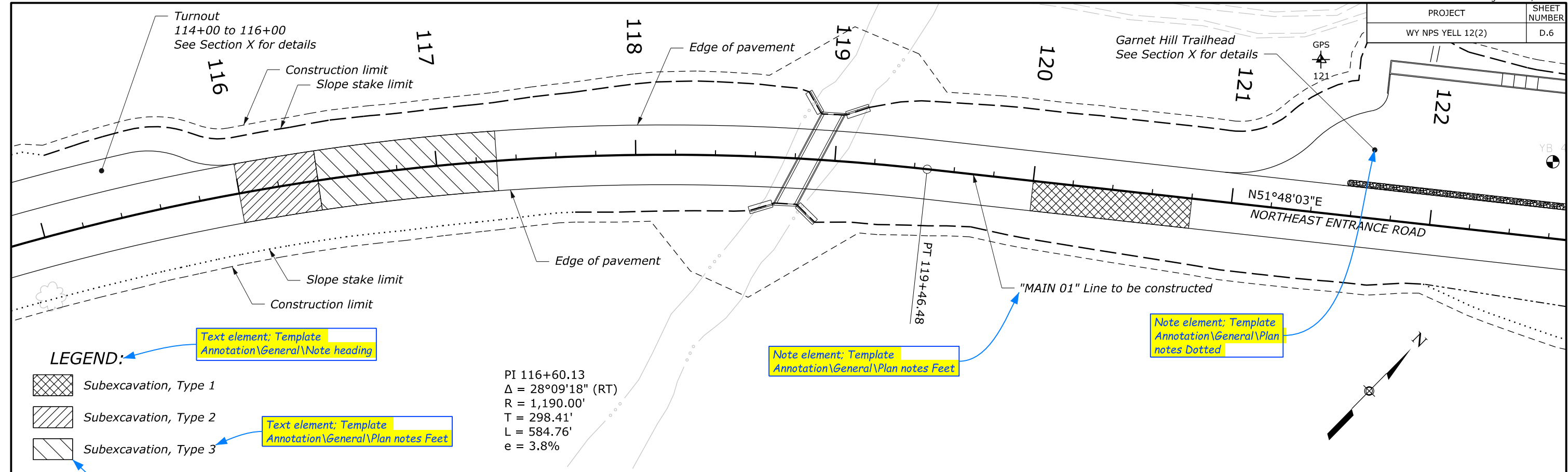
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Annotation\General\Plan notes Dotted

Note element; Template
Annotation\General\Plan notes Feet



Hold for future superelevation diagram

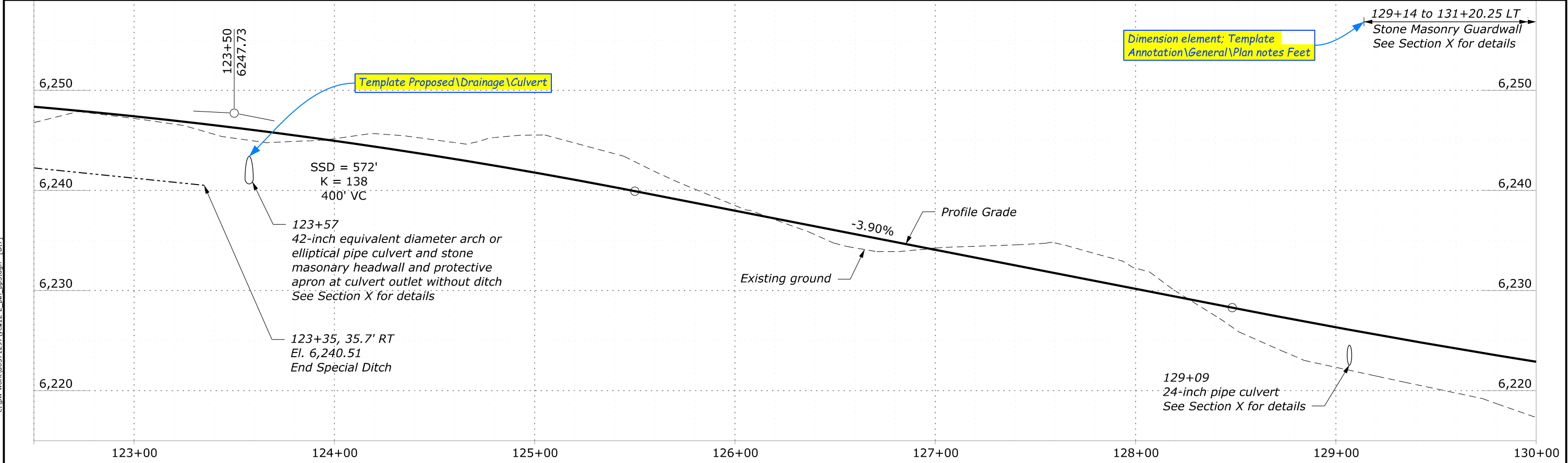
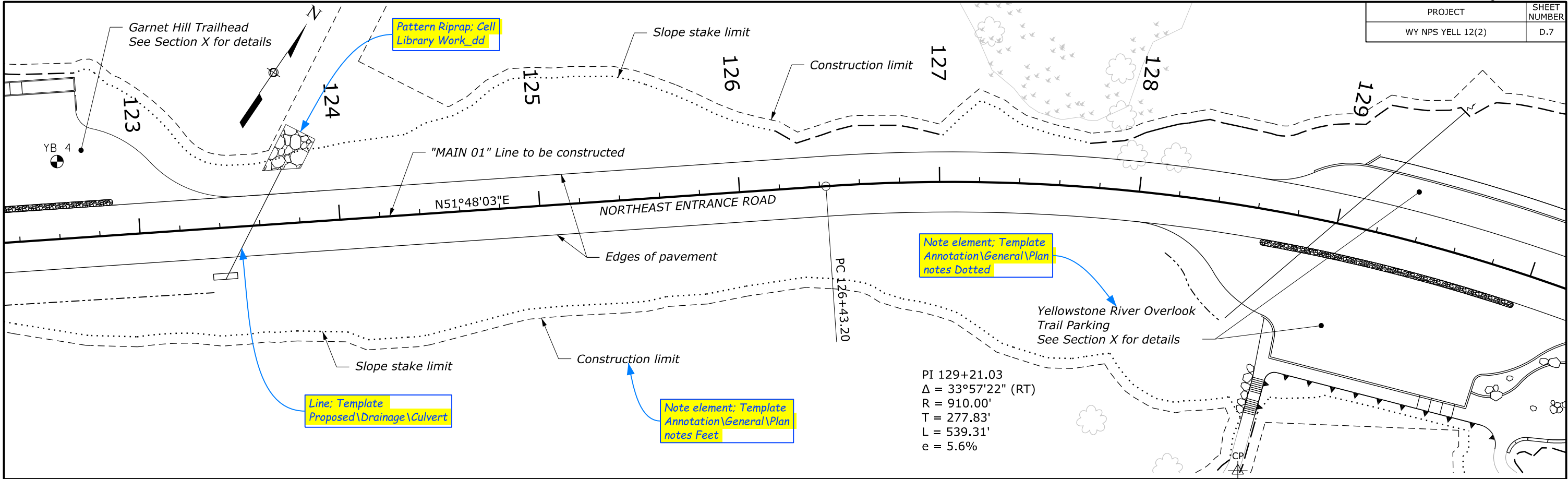
PROJECT	SHEET NUMBER
WY NPS YELL 12(2)	D.6



Hold for future superelevation diagram

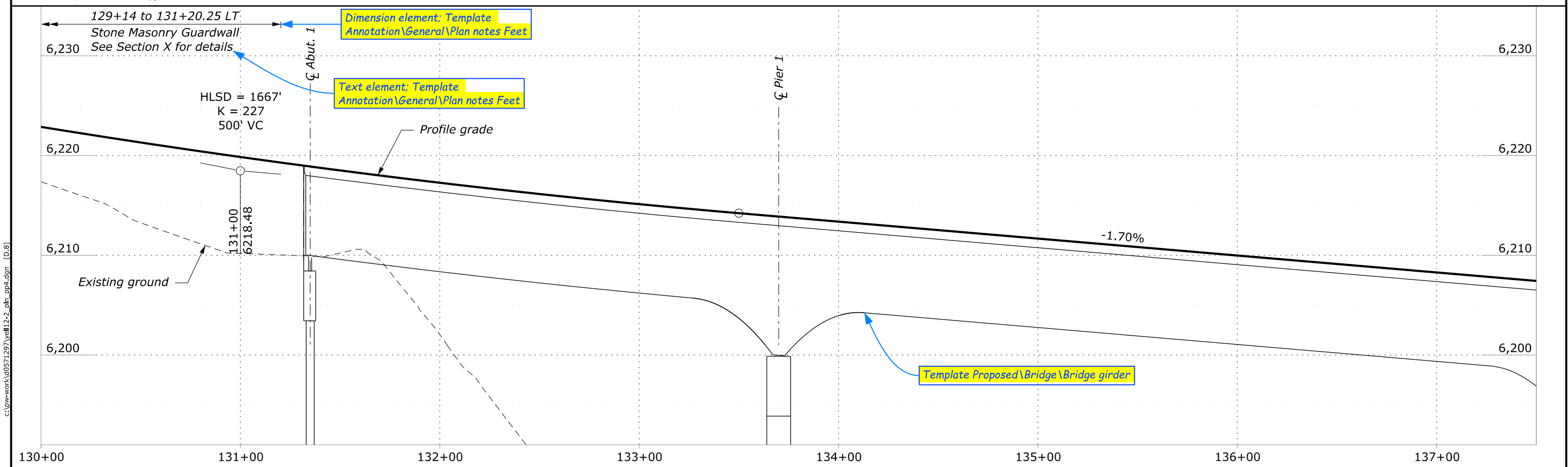
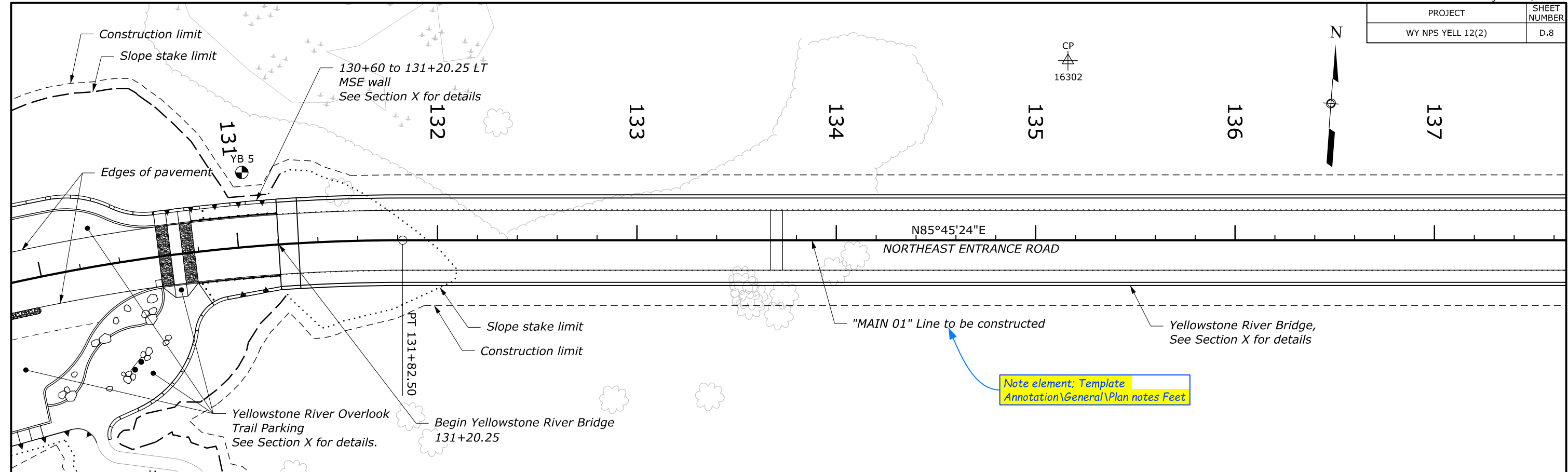
Fill in Section number

PROJECT	SHEET NUMBER
WY NPS YELL 12(2)	D.7



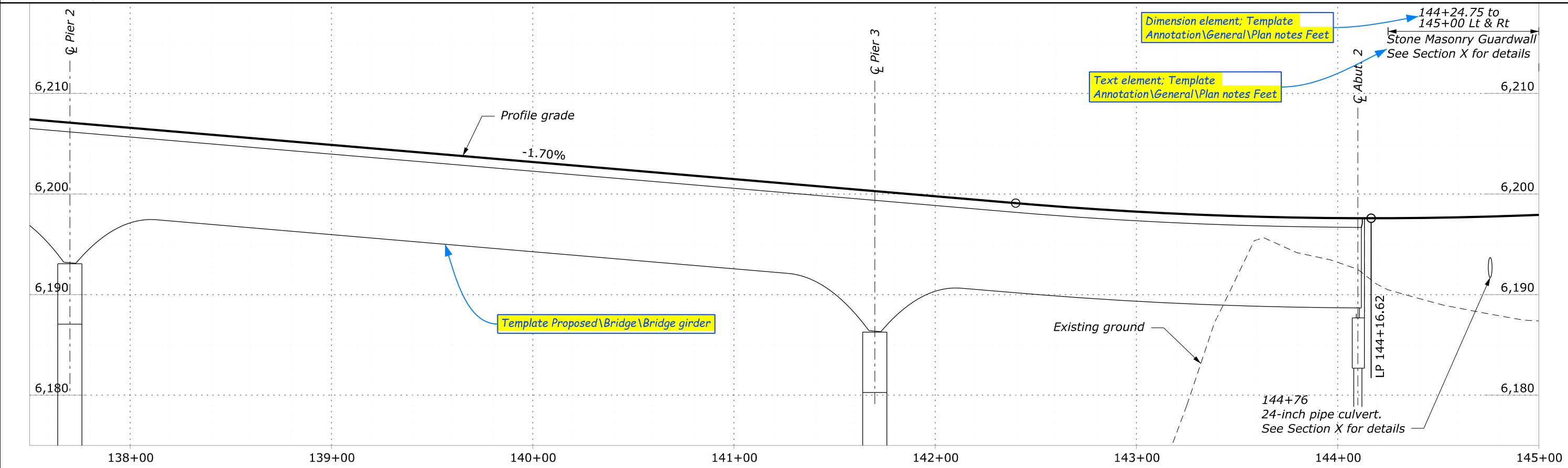
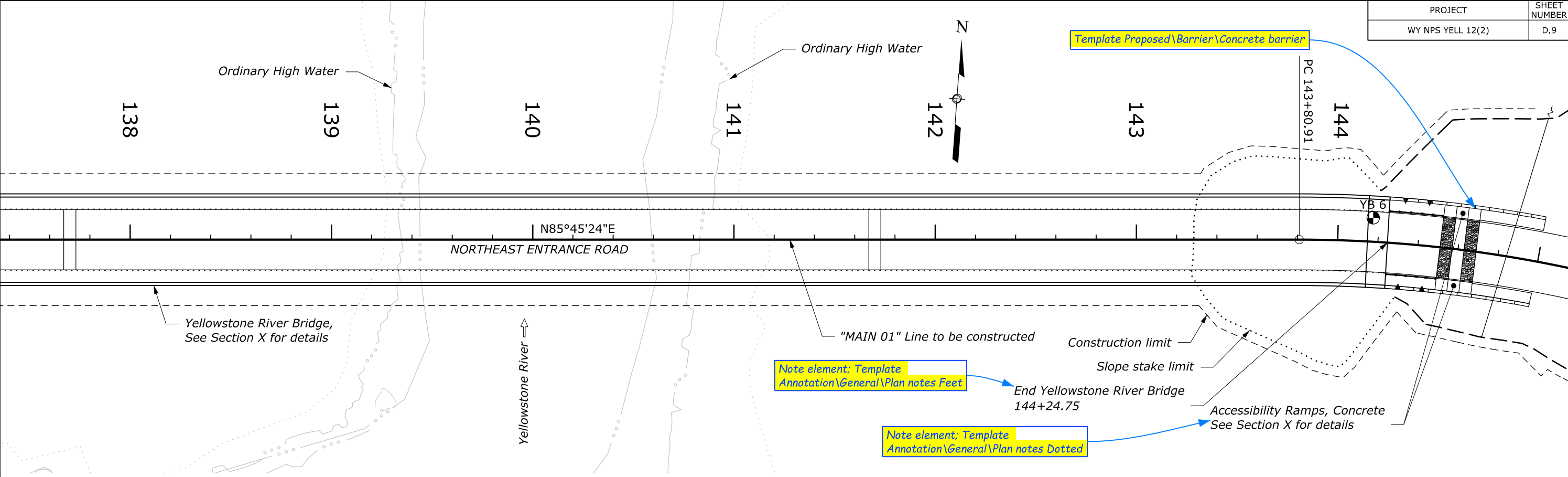
Hold for future superelevation diagram

PROJECT	SHEET NUMBER
WY NPS YELL 12(2)	D.8



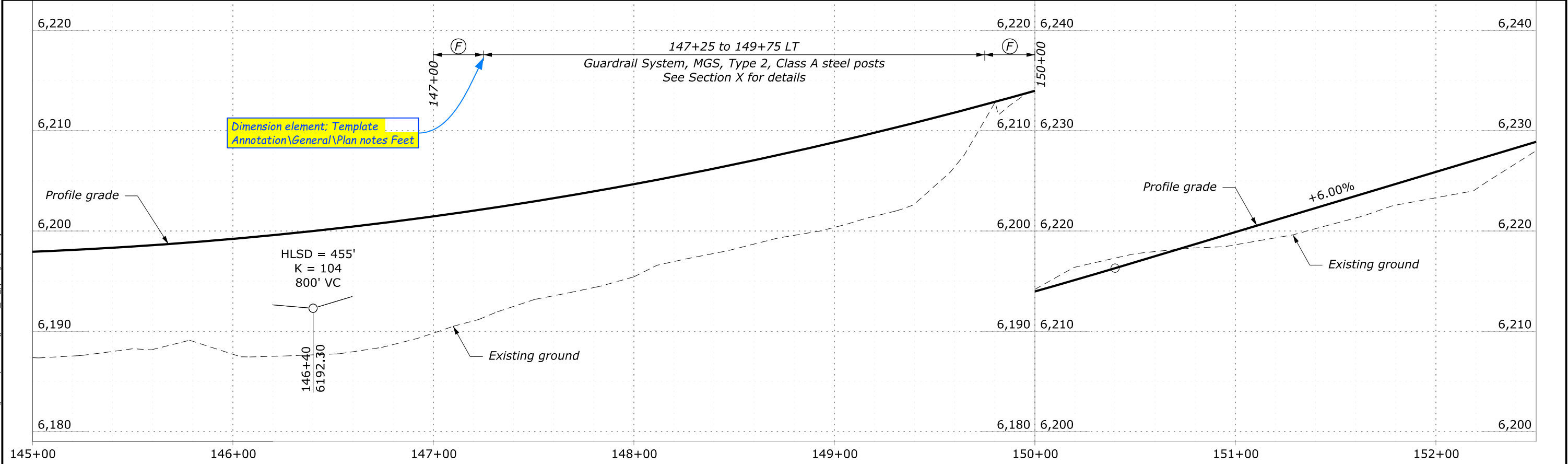
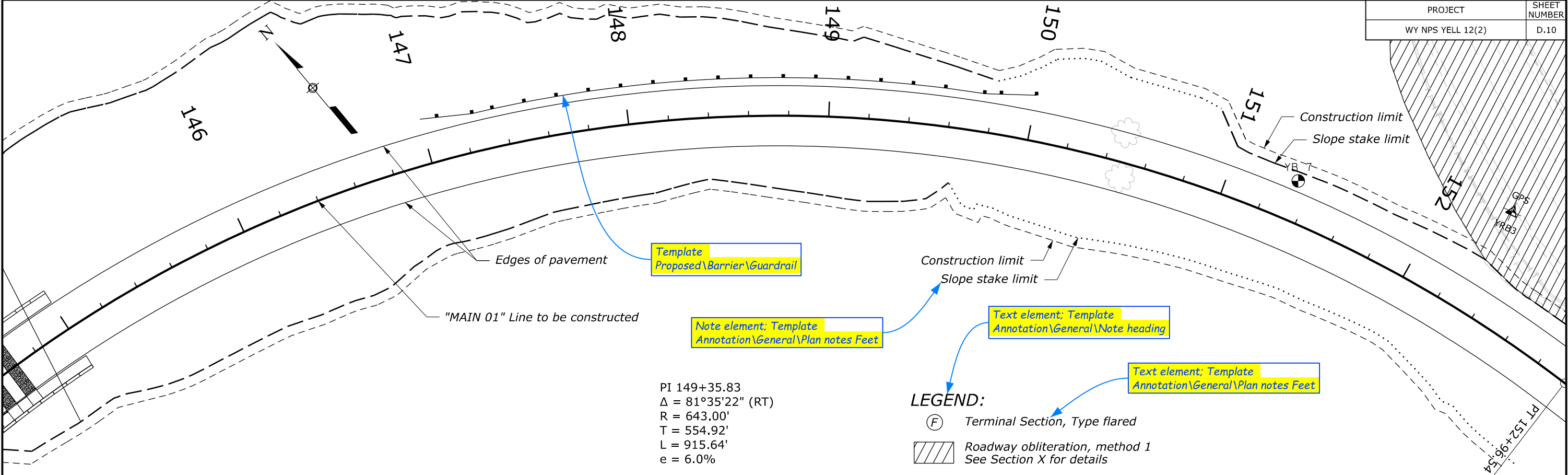
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PROJECT	SHEET NUMBER
WY NPS YELL 12(2)	D.9



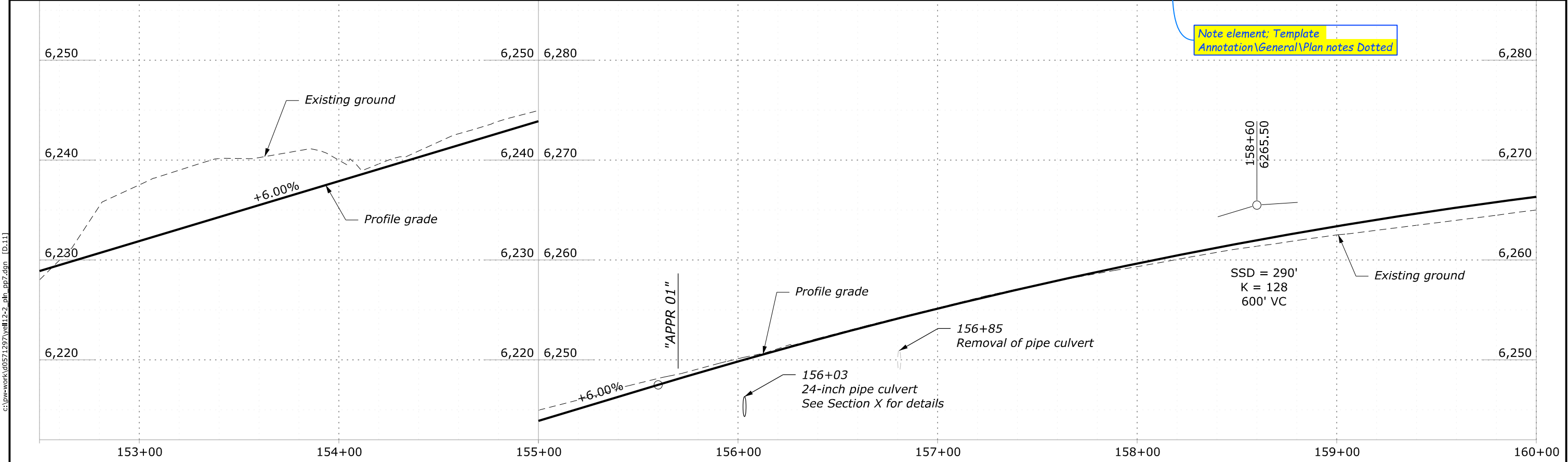
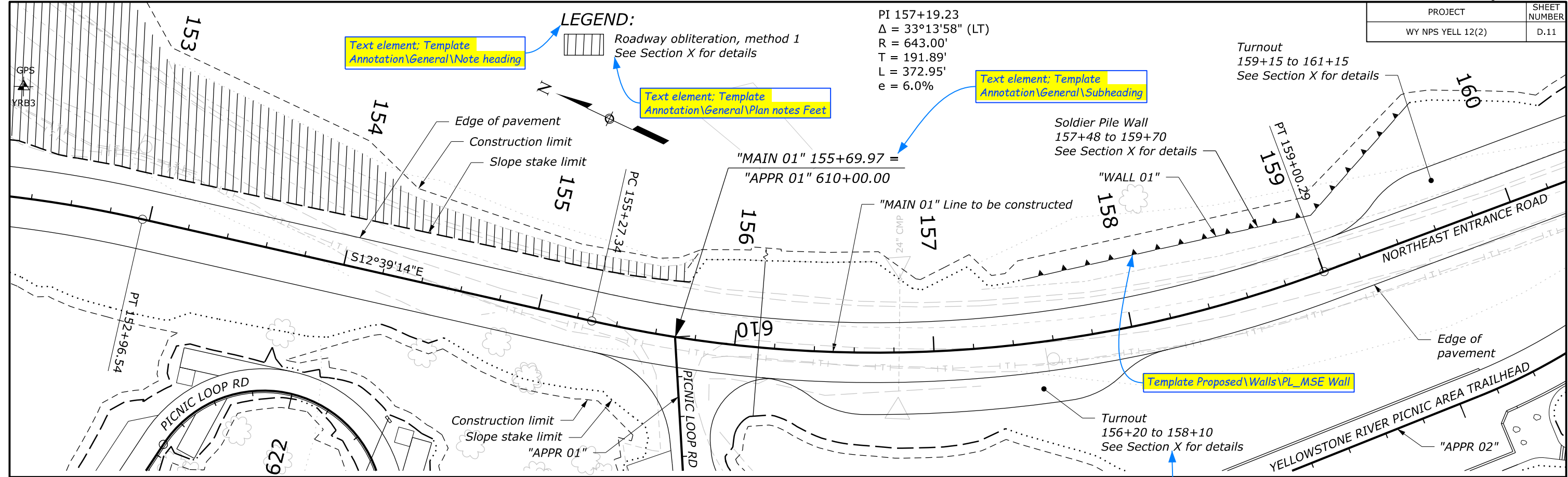
Hold for future superelevation diagram

PROJECT	SHEET NUMBER
WY NPS YELL 12(2)	D.10



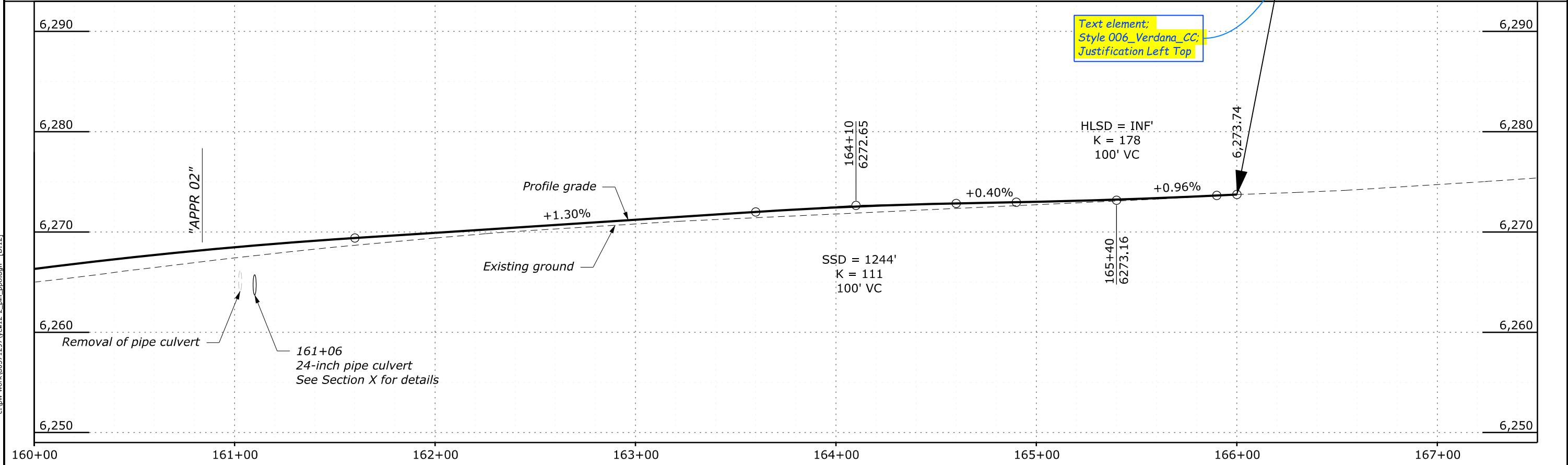
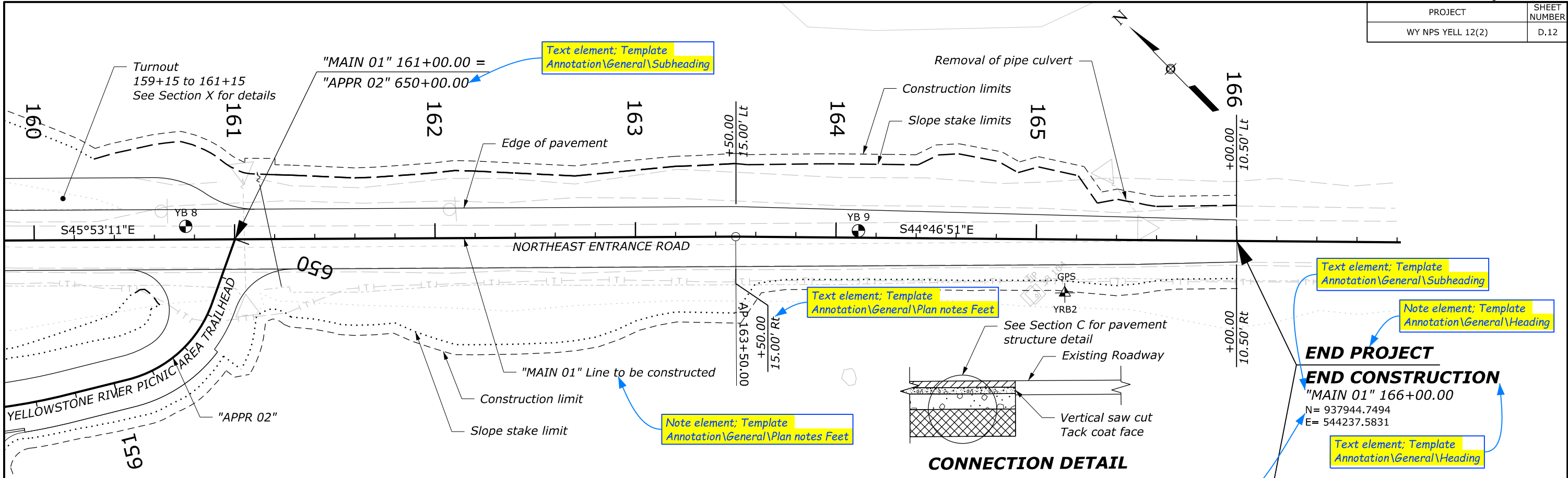
Hold for future superelevation diagram

PROJECT	SHEET NUMBER
WY NPS YELL 12(2)	D.11



Hold for future superelevation diagram

PROJECT	SHEET NUMBER
WY NPS YELL 12(2)	D.12



Hold for future superelevation diagram