

THIS PROJECT

# MONTANA DEPARTMENT OF TRANSPORTATION

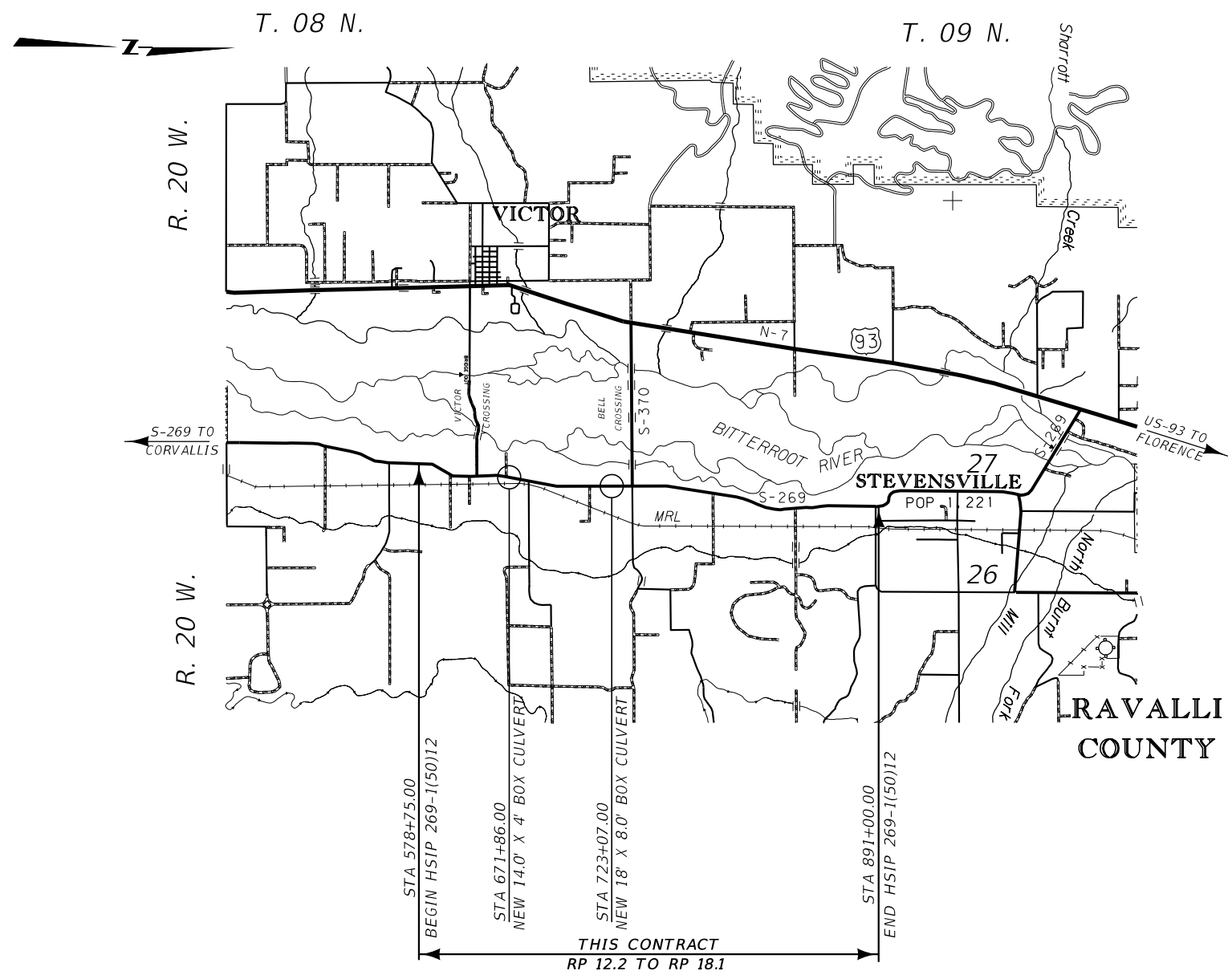
## FEDERAL AID PROJECT HSIP 269-1(50)12 GRADE, GRAVEL, PL. MIX SURF. & DRAINAGE SF 149 S OF STEVENSVLL SFTY IMP RAVALLI COUNTY

PROJECT DESIGN DATA	
PRESENT 2015	A.D.T. = 4,060
LETTING 2020	A.D.T. = 4,685
DESIGN 2040	A.D.T. = 8,300
	D.H.V. = 840
	TRUCKS = 2.1%
	V. = 60 MPH
	EAL = 65
	GROWTH RATE = 2.9%

CSF = 0.99928468

SURFACING SOURCES -  
CONTRACTOR FURNISHED

LENGTH 5.9 MILES



DOWL

PLANS PREPARED BY

**DOWL**  
1300 CEDAR STREET  
HELENA, MONTANA 59601  
(406)442-0370

ASSOCIATED PROJECT AGREEMENT NUMBERS	
R / W	HSIP 269-1(51)12
I.C.	
P. E.	HSIP 269-1(50)12

DOWL	
BY _____	
DATE _____	
MONTANA DEPARTMENT OF TRANSPORTATION	
RECEIVED : _____	
BY _____	
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
APPROVED : _____	
_____ DIVISION ADMINISTRATOR	_____ DATE

	MONTANA DEPARTMENT OF TRANSPORTATION 7/16/2020 2:34:18 PM	DESIGNED BY REVIEWED BY CHECKED BY	ROAD PLANS UPN 8914000
	...8914000\RD\8914000RDT	dzuelke	

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## BASIS OF PLAN QUANTITIES

(QUANTITIES FOR ESTIMATING PURPOSES ONLY)

COMP. AGGREGATE WEIGHT	= 3700 LBS. PER CUBIC YARD
COMP. WEIGHT OF PL. MIX BIT. SURF.	= 3855 LBS. PER CUBIC YARD
ASPHALT CEMENT - GRADE S - 1/2" AGG.	= 5.8% OF PL.MIX BIT.SURF.
HYDRATED LIME	= 1.4% OF PL.MIX BIT.SURF.
BITUMINOUS MATERIAL	= 8.5 LBS. PER GAL.
EMULSIFIED ASPHALT - TACK (ALL OTHER SURFACES)	= 0.05 GAL. PER SQ.YARD (UNDILUTED)
SEAL	= 0.42 GAL. PER SQ.YARD
COVER	= 25 LBS. PER SQ.YARD
EMULSIFIED ASPHALT - FOG SEAL (RUMBLE STRIPS)	= 0.10 GAL. PER SQ.YARD (UNDILUTED)
EMULSIFIED ASPHALT - FOG SEAL (SEAL & COVER)	= 0.075 GAL. PER SQ.YARD (UNDILUTED)

## APPROACHES

CONSTRUCT APPROACHES TO A 24' FINISHED TOP ON A 34' SUBGRADE UNLESS NOTED OTHERWISE IN THE PLANS.

PROVIDE THE FOLLOWING SURFACING:  
0.20' PLANT MIX BITUMINOUS SURF.  
0.60' CRUSHED AGGREGATE COURSE

PLANT MIX SURFACE ALL PUBLIC APPROACHES TO R/W.

PLANT MIX SURFACE ALL PRIVATE APPROACHES TO R/W.

GRAVEL SURFACE ALL FARM FIELD APPROACHES TO R/W WITH A 12' WIDE PLANT MIX STRIP ADJACENT AND PARALLEL TO THE ROADWAY.

## MAILBOXES & MAILBOX TURNOUTS

CONSTRUCT MAILBOX TURNOUTS AT LOCATIONS SHOWN IN THE PLANS OR AS STAKED BY THE PROJECT MANAGER.

PROVIDE THE FOLLOWING SURFACING:  
"MAINLINE depth" PLANT MIX BITUMINOUS SURF.  
"MAINLINE depth" CRUSHED AGGREGATE COURSE

## CLEARING AND GRUBBING

CLEAR AND GRUB TO CONSTRUCTION LIMITS. INCLUDE THE COST OF CLEARING AND GRUBBING IN THE UNIT PRICE BID FOR UNCLASSIFIED EXCAVATION.

## UTILITIES

CALL THE UTILITIES UNDERGROUND LOCATION CENTER (811) OR OTHER NOTIFICATION SYSTEM FOR THE MARKING AND LOCATION OF ALL LINES AND SERVICES BEFORE EXCAVATING. ALL CLEARANCES OR DEPTHS PROVIDED FOR UTILITIES ARE FROM EXISTING GROUND LINE.

## PUBLIC LAND SURVEY MONUMENTS

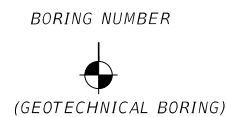
ALL MONUMENTS TO BE REMOVED AND RELOCATED OR RESET BY CONTRACTOR.

## DO NOT DISTURB

837+25 LT. - OXBOW SITE  
731+75 RT. - SEPTIC PIT

## SOILS INFORMATION

SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION. THE LOCATION OF GEOTECHNICAL BORINGS IS SHOWN ON THE PLAN VIEW WITH THE FOLLOWING SYMBOL:



# NOTES

## WETLANDS

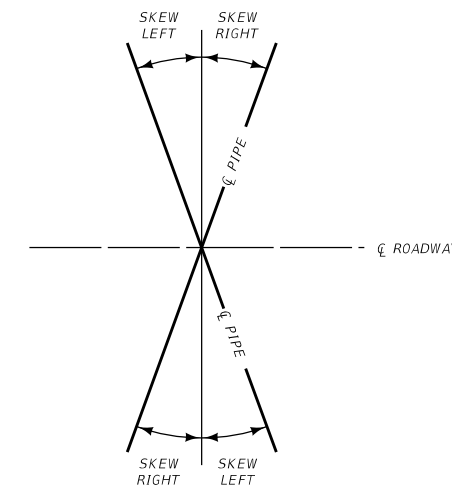
WETLANDS EXIST ADJACENT TO THE ROADWAY AND MAY EXIST BEYOND THE PROJECT LIMITS. WETLAND AREAS AND PERMANENT WETLAND IMPACT AREAS WITHIN THE PROJECT LIMITS HAVE BEEN DELINEATED AND ARE SHOWN ON THE PLANS. ANY ACTION IMPACTING WETLAND AREAS OUTSIDE OF THE PERMANENT IMPACT AREAS SHOWN IS THE RESPONSIBILITY OF THE CONTRACTOR.



WETLAND DESIGNATION	STATION		WETLAND AREA (ACRES)			REMARKS
	FROM	TO	DELINEATED AREA	IMPACTED AREA (TEMP.)	IMPACTED AREA (PERM.)	
WETLAND WL1a	576+60	588+90	0.36		0.31	
WETLAND WL1b	588+74	595+09	0.22		0.22	
WETLAND WL1c	595+01	606+77	0.15		0.14	
WETLAND WL1d	588+87	588+94	0.01		0.01	
WETLAND WL1e	595+45	595+56	0.01		0.01	
WETLAND WL1f	599+82	599+83	0.01		0.01	
WETLAND WL1g	605+23	605+32	0.01		0.01	
WETLAND WL1h	607+97	618+67	0.19		0.13	
WETLAND WL2	633+53	634+92	0.05		0.03	
WETLAND WL3a	635+78	643+89	0.23		0.01	
WETLAND WL3b	635+72	635+99	0.02		0.02	
WETLAND WL3c	643+61	643+83	0.01		0.01	
WETLAND WL4a	671+17	671+61	0.02		0.01	
WETLAND WL4b	670+07	673+14	0.10		0.10	
WETLAND WL5	709+57	711+08	0.03		0.03	
WETLAND WL6a	714+38	716+82	0.24		0.06	
WETLAND WL6b	717+51	722+53	0.80		0.14	
WETLAND WL7	715+44	722+51	0.66		0.17	
WETLAND WL8a	722+84	723+19	0.03	0.01	0.03	
WETLAND WL8b	722+91	727+76	0.47	0.06	0.08	
WETLAND WL9	723+43	730+11	0.44		0.08	
WETLAND WL10	728+99	731+61	0.21		0.02	
WETLAND WL11a	740+81	740+90	0.01		0.01	
WETLAND WL11b	745+25	761+84	0.30		0.30	
WETLAND WL12a	775+73	775+82	0.01		0.01	
WETLAND WL12b	775+78	777+25	0.02		0.02	
WETLAND WL13a	815+84	816+18	0.01		0.01	
WETLAND WL13b	814+91	815+44	0.02		0.01	
WETLAND WL14	826+33	833+94	0.32		0.06	
WETLAND WL15a	856+03	856+66	0.04	0.01	0.02	
WETLAND WL15b	856+60	858+77	0.12	0.01	0.07	
WETLAND WL16	873+78	876+29	0.05		0.04	
TOTAL			5.17	0.09	2.18	

\* AREA OF EXISTING WETLAND EXTENDS BEYOND PLAN LIMITS

## SKEW DIAGRAM



# LINEAR AND LEVEL DATA

LENGTH OF ROADWAY 2 LANE RURAL 31,225.00 ft  


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 TOTAL LENGTH OF HSIP 269-1(50)12 2 LANE RURAL 31,225.00 ft

## BEARING SOURCE

GRID -- MONTANA COORDINATE SYSTEM NAD 83-2011

## LEVEL DATUM SOURCE

NAVD 88 (GNSS DERIVED ELEVATIONS USING GEOID 12A AND HOLDING BM P72)  
OR (ELEVATIONS DERIVED FROM DIFFERENTIAL LEVELS HOLDING BM T72)

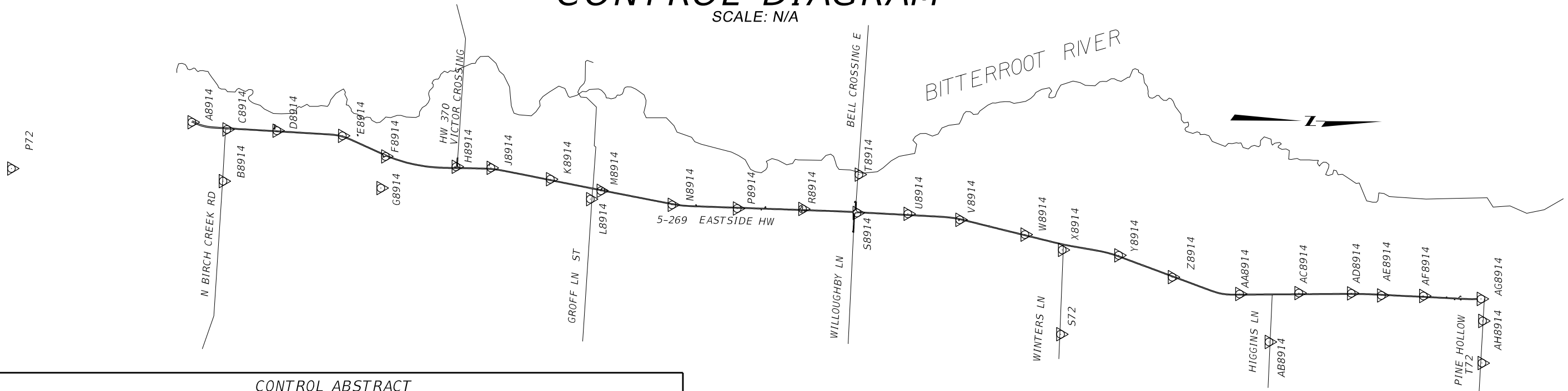
CENTERLINE COORDINATE TABLE				
STATION	DESCRIPTIONS	N OR Y COORDINATES	E OR X COORDINATES	REMARKS
578+75.00	POT	818053.11	809443.98	BEG. PROJECT
602+34.89	PC	820408.81	809584.48	
605+00.00	PI	820673.46	809600.27	
607+59.19	PT	820914.93	809709.72	
616+21.53	PC	821700.35	810065.74	
624+31.19	PI	822437.78	810400.01	
632+18.50	PT	823247.29	810415.57	
641+98.28	PC	824226.89	810434.41	
644+53.91	PI	824482.47	810439.32	
647+08.31	PT	824733.54	810487.41	
648+11.64	PC	824835.03	810506.85	
648+73.97	PI	824896.24	810518.57	
649+36.29	PT	824957.35	810530.80	
662+62.07	PC	826257.35	810791.01	
662+66.21	PI	826261.40	810791.82	
662+70.34	PT	826265.46	810792.63	
668+66.16	PC	826849.75	810909.24	
668+91.51	PI	826874.61	810914.20	
669+16.86	PT	826899.49	810919.08	
678+74.11	PC	827838.85	811103.26	
678+98.74	PI	827863.02	811108.00	
679+23.37	PT	827887.21	811112.66	
690+22.49	PC	828966.48	811320.60	
692+45.10	PI	829185.07	811362.71	
694+66.82	PT	829407.55	811370.55	
706+17.91	PC	830557.92	811411.11	
706+30.98	PI	830570.99	811411.57	
706+44.06	PT	830584.06	811412.01	
715+25.30	PC	831464.81	811441.52	
715+33.95	PI	831473.45	811441.81	
715+42.60	PT	831482.09	811442.11	
726+28.12	PI	832566.96	811479.71	
731+85.61	PC	833124.09	811499.85	
733+09.37	PI	833247.77	811504.32	
734+33.13	PT	833371.36	811510.83	
745+77.42	PC	834514.06	811571.02	
745+89.25	PI	834525.88	811571.64	
746+01.09	PT	834537.70	811572.28	
757+89.09	PC	835723.96	811636.64	
760+59.89	PI	835994.36	811651.31	
763+29.09	PT	836257.23	811716.38	
775+64.64	PC	837456.57	812013.29	
775+81.95	PI	837473.38	812017.45	
775+99.27	PT	837490.20	812021.58	
787+60.22	PC	838617.77	812297.96	
788+90.94	PI	838744.73	812329.08	
790+21.56	PT	838873.45	812351.84	
797+80.36	PC	839620.66	812483.98	
800+50.73	PI	839886.89	812531.06	
803+19.64	PT	840140.42	812624.99	
828+10.84	PC	842476.47	813490.42	
830+68.73	PI	842718.29	813580.01	

CENTERLINE COORDINATE TABLE				
STATION	DESCRIPTIONS	N OR Y COORDINATES	E OR X COORDINATES	REMARKS
833+21.14	PT	842976.17	813579.64	
835+57.29	PC	843212.32	813579.30	
836+19.43	PI	843274.46	813579.21	
836+81.58	PT	843336.60	813578.61	
843+40.77	PC	843995.77	813572.20	
843+74.56	PI	844029.55	813571.87	
844+08.34	PT	844063.33	813571.70	
850+23.81	PC	844678.80	813568.49	
850+45.97	PI	844700.95	813568.37	
850+68.12	PT	844723.11	813568.19	
860+48.92	PC	845703.87	813560.17	
866+06.68	PI	846261.61	813555.62	
871+64.08	PT	846818.56	813585.60	
874+08.13	PC	847062.25	813598.72	
874+71.63	PI	847125.67	813602.13	
875+35.14	PT	847189.11	813605.01	
879+24.06	PC	847577.64	813622.63	
879+58.71	PI	847612.24	813624.20	
879+93.35	PT	847646.84	813625.93	
891+00.00	POT	848752.12	813681.16	END PROJECT
892+77.61	PC	848929.50	813690.03	
895+85.60	PI	849237.11	813705.40	
898+73.47	PT	849495.73	813538.16	
901+24.12	POE	849706.21	813402.06	

DOWL

# CONTROL DIAGRAM

SCALE: N/A



CONTROL ABSTRACT

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
A8914	816,943.012	809,278.556	3383.42	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED A8914. LOCATED 28' RT. MP. 12.000.
B8914	817,724.341	810,755.115	3379.01	1400 FT EAST OF MP 12.168. SET A 3 1/4" A.C. MARKED B8914 2015 ON A 3/4" X 30" REBAR IN THE TOP OF A 8" CONCRETE SONO TUBE 4 FT DEEP WITH A 4 FT SQUARE CONCRETE PAD AROUND THE SONO TUBE. NORTHEAST QUADRANT OF THE INTERSECTION OF N. BIRCH CREEK ROAD AND THE RAILROAD TRACKS. 15 FEET NORTH OF THE CENTERLINE OF N. BIRCH CREEK ROAD AND 33 FEET EAST OF THE RAILROAD TRACKS.
C8914	817,724.341	810,755.115	3379.01	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED C8914. LOCATED AT 25' RT. MP. 12.171, 30' OF N. BIRCH CREEK ROAD.
D8914	819,017.161	809,490.587	3376.01	SET 5/8" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED D8914. LOCATED 15' LT. MP. 12.410. 8' NORTH OF AN IRRIGATION XING.
E8914	820,709.236	809,616.936	3372.92	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED E8914. LOCATED 18' LT. MP. 12.720.
F8914	821,788.694	810,132.156	3367.87	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED F8914. LOCATED 23' RT. MP. 12.946, 55' NORTH OF SPOONER CR. ROAD.
G8914	821,672.608	810,925.190	3368.21	850 FT EAST OF MP 12.941. SET A 3 1/4" A.C. MARKED G8914 2015 ON A 3/4" X 30" REBAR IN THE TOP OF A 8" CONCRETE SONO TUBE 4 FT 4 FT DEEP WITH A 4 FT SQUARE CONCRETE PAD AROUND THE SONO TUBE. SOUTHEAST QUADRANT INTERSECTION OF SPOONER CREEK LANE AND THE RAILROAD TRACKS. 12 FEET SOUTH OF SPOONER CREEK LANE AND 38 FEET EAST OF THE RAILROAD TRACKS. 850 FEET EAST OF THE INTERSECTION OF HIGHWAY 269 AND SPOONER CREEK LANE.
H8914	823,554.347	810,390.233	3364.08	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED H8914. LOCATED AT 23' RT. MP. 13.231, 23' OF S. OF VICTOR CROSSING ROAD.
J8914	824,426.686	810,416.900	3362.19	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED J8914. LOCATED AT 25' RT. MP. 13.398, 15' OF AN IRRIGATION CROSSING.
K8914	825,914.911	810,700.725	3357.30	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED K8914. LOCATED 20' LT. MP. 13.685.
L8914	826,916.155	811,198.576	3353.70	220 FT EAST OF MP 13.933. SET A 3 1/4" A.C. MARKED L8914 2015 ON A 3/4"X30" REBAR IN THE TOP OF A 8" CONCRETE SONO TUBE 4 FT DEEP WITH A 4 FT SQUARE CONCRETE PAD AROUND THE SONO TUBE. SOUTHWEST QUADRANT INTERSECTION OF GROFF LANE AND THE RAILROAD TRACKS. 30 FEET SOUTH OF GROFF LANE AND 40 FEET WEST OF THE RAILROAD TRACKS.
M8914	827,179.085	810,989.177	3355.44	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED M8914 LOCATED 16' RT. MP. 13.932 40' NORTH OF THE BRIDGE END.
N8914	828,958.179	811,340.118	3349.37	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED N8914. LOCATED 18' RT. MP. 14.275.
P72	812,429.744	810,441.900	3393.39	FOUND NGS MARK AS DESCRIBED. SEE NGS DATA SHEET FOR ADDITIONAL INFORMATION.
P8914	830,588.967	811,430.502	3343.94	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED P8914 LOCATED 18' RT. MP. 14.586.
R8914	832,225.377	811,441.089	3337.96	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED R8914 LOCATED 18' RT. MP. 14.897, 8' SOUTH OF AN IRRIGATION XING.

S72	838,683.993	814,575.059	3335.48	FOUND NGS MARK AS DESCRIBED. SEE NGS DATA SHEET FOR ADDITIONAL INFORMATION.
S8914	833,586.270	811,539.373	3336.28	SET 5/8"X30" REBAR WIT BLUE PLASTIC BENCHMARK COLLAR MARKED S8914. LOCATED 16' RT. MP. 15.155, 64' NORTH OF WILLOUGHBY LN.
T72	849,226.991	815,288.514	3375.93	FOUND NGS MARK AS DESCRIBED. SEE NGS DATA SHEET FOR ADDITIONAL INFORMATION.
T8914	833,636.526	810,578.278	3334.60	950 FT WEST OF MP 15.147. SET A 3 1/4" A.C. MARKED T8914 2015 ON A 3/4" X 30" REBAR N THE TOP OF A 8" CONCRETE SONO TUBE 4 FT DEEP WITH A 4 FT SQUARE CONCRETE PAD AROUND THE SONO TUBE. 25 FT NORTH OF THE CL OF BELL CROSSING ROAD AND 950 FT WEST OF THE INTERSECTION OF HIGHWAY 269 AND BELL CROSSING. NORTH OF EAST END OF EAST APPROACH SLAB FOR BRIDGE.
U8914	834,860.223	811,560.495	3333.64	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED U8914 LOCATED 28' RT. MP. 15.397.
V8914	836,157.123	811,709.639	3331.75	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED V8914 LOCATED 15' RT. MP. 15.645.
W8914	837,788.881	812,078.898	3329.69	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED W8914 LOCATED 15' RT. MP. 15.960.
X8914	838,724.455	812,461.962	3326.70	150 EAST OF MP 16.154. SET A 3 1/4" A.C. MARKED X8914 2015 ON A 3/4" 30" REBAR IN THE TOP OF A 8" CONCRETE SONO TUBE 54 FT DEEP WITH A 4 FT SQUARE CONCRETE PAD AROUND THE SONO TUBE. 15 FT SOUTH OF THE CL OF WINTERS LANE AND 150 FT EAST OF THE INTERSECTION OF WINTERS LANE AND HIGHWAY 269.
Y8914	840,134.403	812,461.962	3324.04	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED Y8914 LOCATED 20' RT. MP. 16.420.
Z8914	841,475.197	813,142.123	3320.96	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED Z8914 LOCATED 20' RT. MP. 16.691.
AA8914	843,161.266	813,564.206	3317.56	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED AA8914 LOCATED 15' RT. MP. 17.028.
AB8914	843,899.439	814,764.232	-	1200 FT EAST OF MP 17.167. SET A 3 1/4" A.C. MARKED ZB8914 2015 ON A 3/4"X30" REBAR IN THE TOP OF A 8" CONCRETE SONO TUBE 4 FT DEEP WITH A 4 FT SQUARE CONCRETE PAD AROUND THE SONO TUBE. 30 FT SOUTH OF THE CL OF HIGGINS LANE AND 40 FT WEST OF THE RAILROAD TRACKS. 120 FT EAST OF THE INTERSECTION OF HIGHWAY 268 AND HIGGINS LANE.
AC8914	844,644.177	813,538.320	3320.27	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED AC8914 LOCATED 23' LT. MP. 17.307.
AD8914	845,957.772	813,544.288	3326.47	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED AD8914 LOCATED 18' LT. MP. 17.307.
AE8914	846,711.417	813,596.680	3336.58	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED AD8914 LOCATED 18' LT. MP. 17.701.
AF8914	847,762.575	813,609.498	3341.19	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED AF8914 LOCATED 20' LT. MP. 17.910.
AG8914	849,204.583	813,682.583	-	SET 5/8"X30" REBAR WITH BLUE PLASTIC BENCHMARK COLLAR MARKED AG8914 LOCATED 15' RT. MP. 18.175. NEAR THE STOP SIGN LOCATED IN THE ISLAND FOR PINE HOLLOW RD.
AH8914	849,242.077	814,234.291	-	595 FT EAST OF MP 18.203 SET A 3 1/4" A.C. MARKED AH 8914 2015 ON A 3/4" X 10" REBAR IN THE TOP OF THE SOUTHWEST BRIDGE ABUTMENT. 20 FT SOUTH OF CL PINE HOLLOW RD.

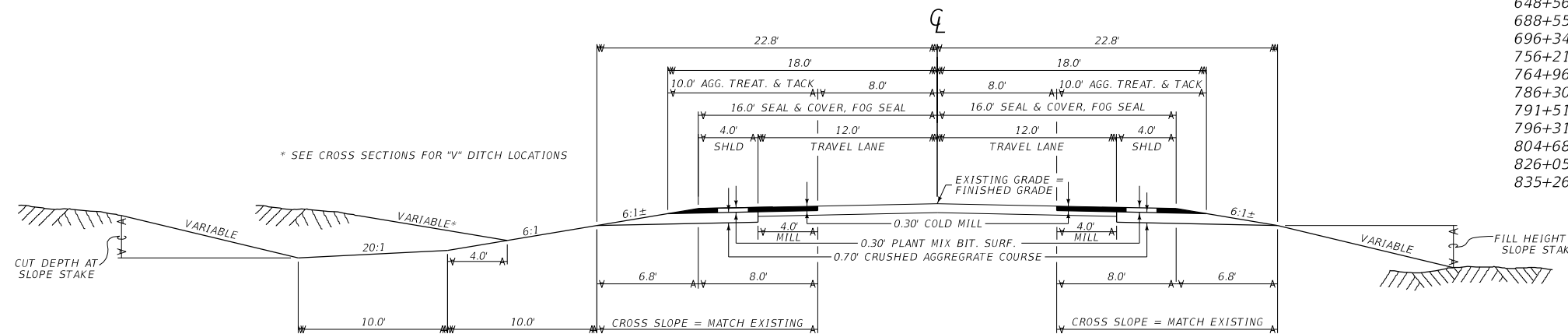
NOTE:  
THIS PROJECT IS ON THE MONTANA COORDINATE SYSTEM NAD83-2011.  
NORTHING AND EASTING COORDINATES ARE EXPRESSED IN UNITS OF INTERNATIONAL FEET AND ELEVATIONS ARE IN UNITS OF U.S. SURVEY FEET.

DIMENSIONS SHOWN ON THE PLANS ARE GRID. ALL SURVEY AND STAKING REQUIRE THE USE OF A COMBINATION SCALE FACTOR (CSF) TO CONVERT GRID DIMENSIONS TO GROUND DIMENSIONS (GRID DISTANCE / CSF = GROUND DISTANCE).  
THE CSF FOR THIS PROJECT IS 0.99928468.



# TYPICAL SECTION NO. 1

MAINLINE



578+75.00	TO	600+29.69	TYP. NO. 1
600+29.69	TO	602+99.69	TRANS. TYP. NO. 1 TO TYP. NO. 2
609+64.39	TO	614+91.93	TYP. NO. 1
614+91.93	TO	616+53.93	TRANS. TYP. NO. 1 TO TYP. NO. 2
633+48.10	TO	640+49.78	TYP. NO. 1
640+49.78	TO	642+38.78	TRANS. TYP. NO. 1 TO TYP. NO. 2
648+56.81	TO	688+55.09	TYP. NO. 1
688+55.09	TO	690+71.09	TRANS. TYP. NO. 1 TO TYP. NO. 2
696+34.22	TO	756+21.69	TYP. NO. 1
756+21.69	TO	758+37.69	TRANS. TYP. NO. 1 TO TYP. NO. 2
764+96.49	TO	786+30.62	TYP. NO. 1
786+30.62	TO	787+92.62	TRANS. TYP. NO. 1 TO TYP. NO. 2
791+51.16	TO	796+31.86	TYP. NO. 1
796+31.86	TO	798+20.86	TRANS. TYP. NO. 1 TO TYP. NO. 2
804+68.14	TO	826+05.64	TYP. NO. 1
826+05.64	TO	828+75.64	TRANS. TYP. NO. 1 TO TYP. NO. 2
835+26.34	TO	891+00.00	TYP. NO. 1

## QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL					COLD MILLING
	COVER	PLANT MIX	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	EMULSIFIED ASPHALT FOG SEAL	AGG. TREATMENT	EMULSIFIED ASPHALT TACK *	
AREA square feet		5.41	11.79	square yards PER STATION		356	356	222	444	89
cubic yards PER STATION		20.0	43.7	tons PER STATION	2.24	0.64				
tons PER STATION		38.6		gals PER STATION			27		22	
square yards PER STATION	356									

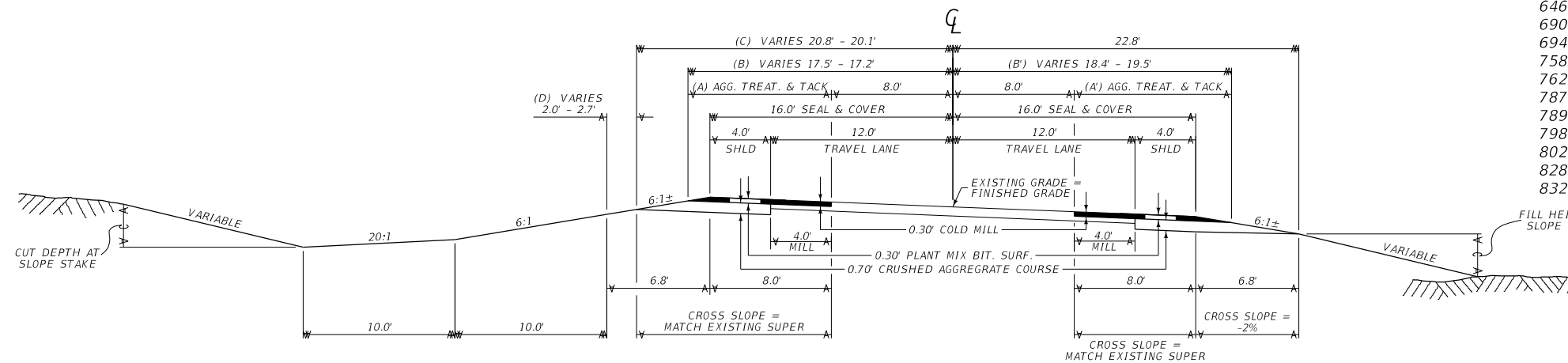
\* BASED ON 2 APPLICATIONS

BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	1.5:1

FILL SLOPES	
0' - 10'	6:1
10' - 20'	4:1
20' - 30'	3:1
OVER 30'	2:1

# TYPICAL SECTION NO. 2

MAINLINE (REVERSE DIMENSIONS FOR CURVES LT)



602+99.69	TO	606+94.39	TYP. NO. 2
606+94.39	TO	609+64.39	TRANS. TYP. NO. 2 TO TYP. NO. 1
616+53.93	TO	631+86.10	TYP. NO. 2
631+86.10	TO	633+48.10	TRANS. TYP. NO. 2 TO TYP. NO. 1
642+38.78	TO	646+67.81	TYP. NO. 2
646+67.81	TO	648+56.81	TRANS. TYP. NO. 2 TO TYP. NO. 1
690+71.09	TO	694+18.22	TYP. NO. 2
694+18.22	TO	696+34.22	TRANS. TYP. NO. 2 TO TYP. NO. 1
758+37.69	TO	762+80.49	TYP. NO. 2
762+80.49	TO	764+96.49	TRANS. TYP. NO. 2 TO TYP. NO. 1
787+92.62	TO	789+89.16	TYP. NO. 2
789+89.16	TO	791+51.16	TRANS. TYP. NO. 2 TO TYP. NO. 1
798+20.86	TO	802+79.14	TYP. NO. 2
802+79.14	TO	804+68.14	TRANS. TYP. NO. 2 TO TYP. NO. 1
828+75.64	TO	832+56.34	TYP. NO. 2
832+56.34	TO	835+26.34	TRANS. TYP. NO. 2 TO TYP. NO. 1

FOR QUANTITIES SEE TYPICAL NO. 1

SUPER %	WIDTHS (ft)					
	A	B	C	D	A'	B'
0.04	9.5	17.5	20.8	2.0	10.4	18.4
0.05	9.4	17.4	20.6	2.2	10.6	18.6
0.06	9.3	17.3	20.4	2.4	10.8	18.8
0.07	9.3	17.3	20.2	2.6	11.1	19.1
0.08	9.2	17.2	20.1	2.7	11.5	19.5

# SUMMARY

GRADING					
STATION		cu. yards			REMARKS
		UNCL. EXC.	UNCL. BORROW	EMB. +	
FROM	TO				
578+75	660+00	7,085		5,381	
660+00	738+00	3,035		11,707	
738+00	820+00	2,484		8,684	
820+00	891+00	3,881		10,088	
		10,715		22,740	ADDITIONAL GRADING
TOTAL		27,200	31,400	# 58,600	

# FOR INFORMATION ONLY

OBLITERATE ROADWAY					
STATION		stations	cu. yards		REMARKS
			UNCL. EXC. #	EMB. + #	
FROM	TO				
00+00.00	3+31.35	3			WILLOUGHBY LANE REALIGNMENT
TOTAL		3	~	~	

# INCLUDED IN ROADWAY QUANTITIES

EMBANKMENT STABILIZATION *					
STATION		cu. yards		sq. yards	REMARKS
		MUCK EXCAVATION	FOUNDATION MATERIAL	GEOTEXTILE HIGH SURV. CLASS C	
FROM	TO				
670+10	672+50	275	275	495	RT
714+70	722+80	300	300	365	LT
716+40	717+00	230	230	280	RT
717+50	721+90	705	705	850	LT
717+50	721+90	560	560	670	RT
723+60	726+80	265	265	315	RT
724+40	727+30	280	280	340	LT
748+30	749+80	180	180	325	LT
826+70	831+00	175	175	310	LT
856+20	856+60	25	25	90	RT
874+00	876+30	135	135	245	LT
TOTAL		3,130	3,130	4,285	

\* SEE CROSS SECTIONS

ADDITIONAL GRADING				
STATION		cu. yards		REMARKS
		UNCL. EXC.	EMB. +	
FROM	TO			
578+49	588+85	1,430	745	TYPE "B" FIELD DITCH LT
588+38		60	95	PRVATE APP LT
588+47		35	0	FARM FIELD APP RT
588+85	595+02	565	245	TYPE "B" FIELD DITCH RT
590+72	593+58	##	##	MALBO X TURNOUT LT
592+03		55	0	PRVATE APP LT
595+08	606+00	830	310	TYPE "B" FIELD DITCH LT
601+50		40	0	FARM FIELD APP RT
602+73		45	0	FARM FIELD APP RT
604+92		50	0	PRVATE APP RT
611+72	631+78	140	1,940	FIELD DITCH LT - VARES
616+88		70	0	PUBLIC APP RT
630+03		20	5	PRVATE APP RT
630+36	632+48	##	##	MALBO X TURNOUT RT
635+46		60	0	PRVATE APP RT
635+48		150	225	PUBLIC APP LT
642+47	644+78	##	##	MALBO X TURNOUT LT
643+42		15	25	PRVATE APP LT
644+00	651+62	50	590	TYPE "B" FIELD DITCH LT
644+07	656+82	145	1,030	TYPE "B" FIELD DITCH RT
646+12		10	260	FARM FIELD APP RT
651+68	656+12	##	##	MALBO X TURNOUT LT
652+78		45	0	PRVATE APP LT
654+82		55	0	PRVATE APP LT
655+76		35	0	PRVATE APP LT
656+66		25	0	PRVATE APP LT
656+66		25	30	FARM FIELD APP RT
657+70		30	0	PRVATE APP LT
658+39		45	0	PRVATE APP LT
661+50		55	40	PRVATE APP LT
668+80	671+47	##	##	MALBO X TURNOUT LT
669+85		65	0	PUBLIC APP RT
669+93		20	5	PRVATE APP LT
670+09	672+54	35	95	TYPE "A" FIELD DITCH RT
672+44		30	0	PRVATE APP LT
673+81		5	15	FARM FIELD APP RT
677+69		20	0	PRVATE APP LT
692+54		75	0	PRVATE APP LT
696+20		30	0	FARM FIELD APP RT
696+84		60	0	FARM FIELD APP LT
698+21		85	0	PRVATE APP LT
697+10	699+77	##	##	MALBO X TURNOUT LT
706+40		60	0	FARM FIELD APP RT
706+96		60	0	FARM FIELD APP LT
709+45		60	0	PRVATE APP LT
710+37		60	0	PRVATE APP LT
711+45		70	0	PRVATE APP LT
713+11		65	0	PRVATE APP LT
713+42		55	0	PRVATE APP RT
722+66		85	0	PRVATE APP LT
722+66		20	0	FARM FIELD APP RT
729+29	733+51	##	##	MALBO X TURNOUT RT
730+86		45	0	PRVATE APP RT
730+99	735+01	##	##	MALBO X TURNOUT LT
732+06		50	0	PRVATE APP RT
732+88		40	0	PRVATE APP LT
736+08		225	80	32' PUBLIC APP LT
736+08		460	75	28' PUBLIC APP RT
740+74		25	0	FARM FIELD APP LT
742+72		55	0	PRVATE APP LT
743+58		55	0	PRVATE APP LT
745+05	761+88	95	1,030	TYPE "A" FIELD DITCH LT
749+13		10	0	FARM FIELD APP RT
756+96		5	35	FARM FIELD APP LT
762+54		30	0	FARM FIELD APP RT
765+48		30	0	PRVATE APP LT
767+02		25	0	FARM FIELD APP RT
767+03		45	0	FARM FIELD APP LT

ADDITIONAL GRADING				
STATION		cu. yards		REMARKS
		UNCL. EXC.	EMB. +	
FROM	TO			
768+48		70	0	PUBLIC APP LT
769+59	772+25	##	##	MALBO X TURNOUT LT
770+89		55	0	PRVATE APP LT
773+36	776+22	##	##	MALBO X TURNOUT LT
773+82	776+70	##	##	MALBO X TURNOUT RT
774+63		20	5	PRVATE APP LT
775+36		75	0	PRVATE APP RT
775+77	777+21	30	0	TYPE "A" FIELD DITCH LT
778+95		10	10	FARM FIELD APP LT
778+95		15	5	FARM FIELD APP RT
789+02		60	0	PUBLIC APP RT
801+57		10	15	FARM FIELD APP LT
801+73		10	0	FARM FIELD APP RT
810+57		45	0	PRVATE APP LT
814+58		10	35	FARM FIELD APP LT
815+61	818+47	##	##	MALBO X TURNOUT LT
815+83		20	5	PRVATE APP LT
816+56		55	0	PRVATE APP RT
816+89		15	25	PRVATE APP LT
817+86		5	15	FARM FIELD APP RT
825+45		20	0	FARM FIELD APP RT
837+03		10	10	FARM FIELD APP LT
837+03		5	25	FARM FIELD APP RT
842+11	844+84	##	##	MALBO X TURNOUT LT
843+22		85	0	PUBLIC APP RT
843+27		110	0	PRVATE APP LT
849+99		15	0	PRVATE APP LT
851+76		40	0	FARM FIELD APP RT
853+74		80	0	PRVATE APP RT
863+15		5	170	FARM FIELD APP LT
863+38		10	5	FARM FIELD APP RT
865+56		105	0	PRVATE APP RT
867+08		35	0	PRVATE APP LT
869+40		70	0	PRVATE APP LT
869+72		65	0	FARM FIELD APP RT
870+42	872+54	##	##	MALBO X TURNOUT LT
871+07		70	0	PRVATE APP RT
872+66	874+78	##	##	MALBO X TURNOUT LT
873+40		55	0	PUBLIC APP RT
876+22	878+35	0	130	TYPE "A" FIELD DITCH LT
876+49		70	0	PRVATE APP RT
877+02	878+96	##	##	MALBO X TURNOUT LT
877+72		65	0	PUBLIC APP LT
878+59		65	0	PRVATE APP LT
878+83	882+64	25	10	TYPE "A" FIELD DITCH LT
880+48	884+68	##	##	MALBO X TURNOUT LT
881+30		65	0	PRVATE APP RT
882+93		70	0	PRVATE APP LT
883+54		150	0	FARM FIELD APP LT
883+90		45	0	PRVATE APP RT
884+41		45	0	PRVATE APP RT
887+80	891+00	##	##	MALBO X TURNOUT LT
888+45		35	0	PRVATE APP LT
888+93		5	10	FARM FIELD APP RT
889+75		45	0	PRVATE APP LT
SUBTOTAL		2,780	22,740	TOPSOIL REPLACEMENT COLD MILLING

# EXCAVATION QUANTITIES - MATERIAL UNSUITABLE FOR ROADWAY EMBANKMENTS

## QUANTITIES INCLUDED IN MAINLINE GRADING

# SUMMARY

SURFACING																			
STATION		linear feet				FOR	tons	AGGREGATE					BITUMINOUS MATERIAL					REMARKS	
		GROSS	NET	+	-			HYDRATED LIME	sq. yards	tons		cu. yards		tons		gals.	gals.		sq. yards
									COVER TYPE 1	PLANT MIX BIT. SURF. GR. S - 1/2"	PLANT MIX BIT. SURF. GR. S - MISC	CRUSHED AGG. COURSE	TRAFFIC GRAVEL	ASPHALT CEMENT PG 64-28	SEAL CRS-2P	EMULSIFIED ASPHALT TACK	EMULSIFIED ASPHALT FOG SEAL		AGG. TREAT.
FROM	TO																		
578+75.00	891+00.00	31,225.00	31,225.00				111,161		12,053		13,645		699.4	199.8	* 6,870	8,431	69,320		
						ADDITIONAL SURFACING			551	1,873	3,931		140.6		1,046	262	18,059		
TOTAL		31,225.00	31,225.00	0.00	0.00		203	111,161	12,604	1,873	17,576	2,776	840.0	199.8	7,916	8,693	87,379		

\*BASED ON TWO APPLICATIONS

ADDITIONAL SURFACING (INCLUDED IN SURFACING FRAME)																			
STATION		linear feet				FOR	tons	AGGREGATE					BITUMINOUS MATERIAL					REMARKS	
		GROSS	NET	+	-			HYDRATED LIME	sq. yards	tons		cu. yards		tons		gals.	gals.		sq. yards
									COVER TYPE 1	PLANT MIX BIT. SURF. GR. S - 1/2"	PLANT MIX BIT. SURF. GR. S - MISC	CRUSHED AGG. COURSE	TRAFFIC GRAVEL	ASPHALT CEMENT PG 64-28	SEAL CRS-2P	EMULSIFIED ASPHALT TACK	EMULSIFIED ASPHALT FOG SEAL		AGG. TREAT.
FROM	TO																		
						31 - FARM FIELD APPROACHES				251	1,125		14.6		90		1,800		
						54 - PRIVATE APPROACHES				1,215	1,921		70.5		475		9,500		
						7 - PUBLIC APPROACHES				407	695		23.6		195	262	3,900		
						18 - MAILBOX TURNOUTS				551		190		32.0	* 286		2,859		
SUBTOTAL		~	~	~	~		~		551	1,873	3,931	~	140.6		1,046	262	18,059		

\*BASED ON TWO APPLICATIONS

DOWL

# SUMMARY

## CULVERTS

STATION	linear feet														CLASS OR THK.	END SECTIONS		REMOVE PIPE CULVERT	cu. yards							RANDOM RIPRAP CLASS 2	GEOTEXTILE PERM. EROS. HIGH SURV. CLASS A	linear feet	SKEW ANGLE	CULVERT IN PL. in x ft	REMARKS			
	RCP				RCB		RCP IRRIGATION									LEFT	RIGHT		FOUNDATION MATERIAL	GRANULAR BEDDING MATERIAL	SPECIAL BACKFILL	CONCRETE CLASS GENERAL	STREAMBED MATERIAL											
	18"	24"	30"	54"	14.0' x 4.0'	18.0' x 8.0'	12"	18"	24"	30"	36"	42"	48"	54"																				
579+52										124					III	CAP	CAP	69.2									1.5		30 x 69.2 C MP	RR. SPHON				
587+48		62													M	SES	SES	44.0									1.0		24 x 44.0 C MP	DR.				
588+38															II	FETS	FETS	59.6									1.9		36 x 59.6 C MP	APP. RR. LT.				
588+85													114		II	CHECK STR. CANAL	OUTLET TRANS.	25.8 6.9 9.2								4.0		1.6		25.8 RCP 6.9 PPE -LT. 9.2 PPE -LT.	RR.			
589+82										20					II		INLET STR.	9.4									1.1		9.4 C MP -RT.	RR. RT.				
595+05														114	II	OUTLET TRANS.	INLET TRANS.	64.9									1.5	3° RT.	36 x 64.9 C MP	RR.				
595+52													20		M	DV. BOX	NONE	61.9 20.0									0.6		61.9 PPE -LT. 20.0 PPE -LT.	RR. LT.				
599+90													20		M	DV. BOX	NONE	10.4									0.6		24 x 10.4 C MP	RR. LT.				
605+31													20		M	DV. BOX	NONE	10.7									0.7		24 x 10.7 C MP	RR. LT.				
605+98													104		M	CAP	CAP	60.5									0.6		24 x 60.5 C MP	RR.				
612+47		64													M	SES	SES	48.3									1.0		24 x 48.3 C MP	DR.				
617+22													118		III	INLET TRANS. W/ TRASHGUARD	OUTLET TRANS. W/ TRASHGUARD	72.6									2.4		18 x 72.6 C MP	RR. SPHON				
635+11		80													M	FETS	SES	66.3									0.6		24 x 66.3 RCP	DR.				
635+90														92	II	OUTLET TRANS.	INLET STR.	70.7									1.4	2° LT.	36 x 70.7 C MP	RR.				
643+74															II	OUTLET TRANS.	INLET STR.	64.4									2.3		48 x 64.4 C MP	RR.				
646+12													40		III	FETS	FETS	N/A									1.1		N/A	APP. RR. RT.				
651+69													20		III	FETS	FETS	15.2									0.5		24 x 15.2 RCP	REMOVE RR. LT.				
656+66													36		III	FETS	FETS	19.7									0.5		30 x 19.7 C MP	APP. RR. RT.				
661+50	66														M	RACET	RACET	65.6									0.6		18 x 65.6 C MP	APP. DR. RT.				
671+86						138											WINGWALL	WINGWALL	N/A		245		100		1,063		50.0	75.0	2.1	44° LT.	N/A	WEBFOOT DITCH		
683+15		58													III	SES	SES	60.6									1.5		18 x 60.6 C MP	DR.				
696+99		62													III	SES	SES	60.3									1.3		24 x 60.3 PPE	DR.				
706+44	24														M	FETS	FETS	23.9									1.5		23.9 PPE	REMOVE APP. RT.				
712+55																		16.4											18 x 16.4 C MP	REMOVE APP. RT.				
713+42	70														M	RACET	RACET	80.8									1.5		80.8 PPE	APP. DR. RT.				
723+07														90			WINGWALL	WINGWALL	N/A		135		80		1,265		90.0	175.0	75.0	0.5		N/A	WILLOUGHBY CR.	
731+35																		43.9											36 x 43.9 C MP	DR.				
731+70													106		II	CAP	CAP	100.0									2.4		24 x 100.0 C MP	RR. SPHON				
736+08		112													M	SES	RACET	74.0									1.3		24 x 74.0 RCP	APP. DR. LT.				
740+95													100		III	C.I.P. CONNECTION	INLET TRANS. W/ TRASHGUARD	67.7									2.4		24 x 67.7 C MP	RR. SPHON				
750+81													20		M	DV. BOX	SES	20.1											12 x 20.1 C MP	RR.				
756+96													36		M	FETS	FETS	18.2										0.9		12 x 18.2 C MP	APP. RR. LT.			
757+51															M	SES	SES	49.4									1.0		18 x 49.4 C MP	DR.				
761+99		68													M	SES	SES	48.6									1.0	6° RT.	48.6 PPE	DR.				
762+24													110		II	DV. BOX	INLET TRANS. W/ TRASHGUARD	65.2									1.2		24 x 65.2 C MP	RR. SPHON				
775+36	60														M	RACET	RACET	18.0									0.6		18 x 18.0 C MP	APP. DR. RT.				
775+77													110		III	OUTLET TRANS. W/ TRASHGUARD	INLET TRANS. W/ TRASHGUARD	67.6									2.4		24 x 67.6 C MP	RR. SPHON				
777+22													18		M	FETS	FETS	18.5											18 x 18.5 PPE	RR. LT.				
788+67													106		III	OUTLET TRANS. W/ TRASHGUARD	INLET TRANS. W/ TRASHGUARD	67.8									2.4		24 x 67.8 C MP	RR. SPHON				
789+02		62													M	RACET	RACET	40.3									1.1		18 x 40.3 C MP	APP. DR. RT.				
810+57	76														M	RACET	RACET	42.3									0.8		18 x 40.3 C MP	APP. DR. LT.				
815+01		84													III	FETS	SES	48.4									2.6		24 x 48.4 C MP	DR.				
815+65													122		II	OUTLET TRANS. W/ TRASHGUARD	C.I.P.	130.0									81		10.0		0.8	39° LT.	36 x 65.0(2) C MP	RR.
818+11		66													III	SES	SES	61.2										1.4	14° LT.	18 x 61.2 C MP	DR.			
824+29		74													III	SES	SES	48.5									6.0	9.0	2.2		24 x 48.5 C MP	DR.		
829+81		80													M	SES	FETS	49.8										1.1		24 x 49.8 C MP	DR.			
837+73			68												III	SES	SES	46.7									9.0	13.0	1.0		18 x 46.7 C MP	DR.		
852+35													116		III	OUTLET TRANS. W/ TRASHGUARD	INLET TRANS. W/ TRASHGUARD	63.9									2.4		24 x 63.9 C MP	RR. SPHON				
856+59						94									II	SES	SES	54.2									25.0	38.0	2.2		4 x 4 x 54.2 RCB	DR.		
869+83													115		III	OUTLET TRANS. W/ TRASHGUARD	INLET TRANS. W/ TRASHGUARD	59.6									2.4		24 x 59.6 C MP	RR. SPHON				
874+37		82													III	FETS	SES	56.5										3.1		24 x 56.5 C MP	DR.			
876+25													110		III	OUTLET TRANS. W/ TRASHGUARD	INLET TRANS. W/ TRASHGUARD	75.1									2.4		24 x 75.1 C MP	RR. SPHON				
881+30																		40.9											18 x 40.9 C MP	DR. LT.				
882+75													114		III	OUTLET TRANS. W/ TRASHGUARD	INLET TRANS. W/ TRASHGUARD	74.6									2.4		24 x 74.6 C MP	RR. SPHON				
883+11													110		III	OUTLET TRANS. W/ TRASHGUARD	INLET TRANS. W/ TRASHGUARD	74.6									2.4		24 x 74.6 C MP	RR. SPHON				
886+57		76													III	SES	SES	60.2									7.0	10.0	3.0		24 x 60.2 C MP	DR.		
888+93		60													M	RACET	RACET	31.7										1.0		24 x 31.7 C MP	APP. DR. RT.			
890+27													90		III	OUTLET TRANS. W/ TRASHGUARD	INLET TRANS. W/ TRASHGUARD	75.7									2.4		24 x 75.7 C MP	RR. SPHON				
TOTAL	296	1,090	134	94	138	90	20	56	1,631	76	268	114	74	122	~	~	~	2,910.5			380		311		2,328	41.6	90.0	272.0	220.0	~	~	~		

NOTE: SEE STANDARD DETAIL DRAWING 615-06 FOR INLET AND OUTLET TRANSITION STRUCTURE.



# SUMMARY

IRRIGATION STRUCTURES *															
STATION		cu. yards		sq. yards		each							REMARKS		
		CONCRETE - CLASS GENERAL	RANDOM RIPRAP	GEOCOMPOSITE LINER	GEOTEXTILE	IRRIGATION CANAL GATE		TRASH GUARD	DIVISION BOX	CHECK STRUCTURE CANAL	INLET STRUCTURE	RELOCATE STRUCTURE		REMOVE IRRIGATION STRUCTURE	GRATE
					PERM. EROS. CNTRL.	24"	18"								
FROM	TO		CL.1		HIGH SURV. CLASS A										
588+85 LT		4.0	25.0		38		1	1		1			1		
589+68 RT		4.0												PUMP HOUSE	
589+72 RT		5.0											1		
595+52 LT		7.0	1.0		4		1		1				2		
599+90 LT		7.0	1.0		4		1		1				2		
605+31 LT		7.0	1.0		4		1		1						
635+90 RT		5.0											1		
643+74 LT		5.0											1		
643+96 LT			1.0		4				1				2		
743+67 LT	744+91 LT												30	STD. DWG. 615-04, TYPE III, B=2, H=3	
745+68 LT														SEE DETAIL	
750+81 LT			1.0		4				1					WETWELL	
762+24 LT			1.0		4				1						
815+65								1						54" RR	
882+00 LT	882+64 LT				71									LINED DITCH	
TOTAL		44.0	31.0	71	62	2	2	2	6	1	3	2	9	30	

\*SEE DETAILS

DOWL

TOPSOIL & SEEDING						
STATION		cu. yards	acres			REMARKS
			TOPSOIL SALVAGING & PLACING	SEED	CONDITION SEEDBED	
FROM	TO		NO.1			
578+75	891+00	15,390	53.0	53.0		
TOTAL		15,390	53.0	53.0		

REMOVE TREES			
STATION	each		REMARKS
	TREE*	REMOVE TREES	
589+09 LT	1	1	
591+51 LT	2	2	
605+89 RT	1	1	
637+51 RT	1	1	
693+14 LT	1	1	
709+68 LT	1	1	
717+01 RT	1	1	
717+55 RT	1	1	
768+05 LT	1	1	
774+45 LT	2	2	
774+88 LT	2	2	
775+43 LT	1	1	
775+63 LT	1	1	
823+82 RT	2	2	
852+41 LT	1	1	
882+53 LT	1	1	
883+08 LT	1	1	
TOTAL	21	21	

\*2 1/2" CALIPER REPLACEMENT

PAVEMENT MARKINGS				
ITEM	UNIT	INTERIM APPLICATION #	FINAL APPLICATION	TOTAL
STRIPING - WHITE PANT	gallon	215		215
STRIPING - YELLOW PANT	gallon	100		100
WORDS & SYMBOLS - WHITE PANT	gallon			
STRIPING - WHITE EPOXY	gallon		286	286
STRIPING - YELLOW EPOXY	gallon		134	134
WORDS & SYMBOLS - WHITE EPOXY	gallon			
TEMPORARY STRIPING	linear feet			31,152
FINAL SWEEP AND BROOM	course mile			

#BASED ON 2 APPLC ATD NS.

# SUMMARY

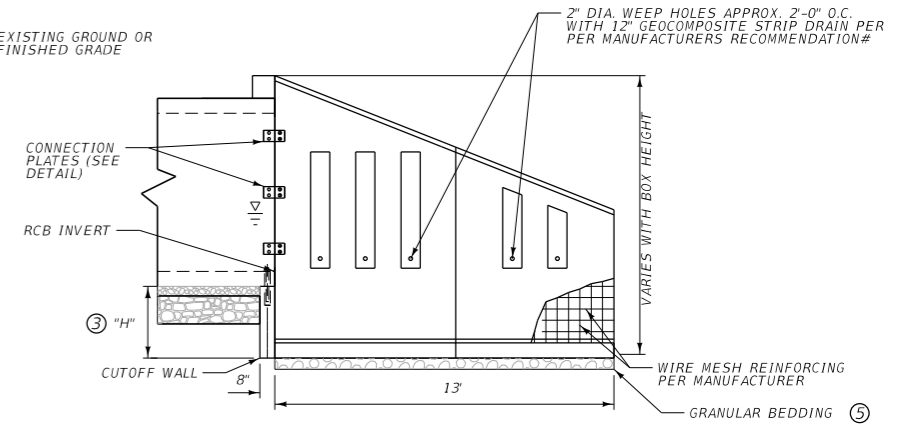
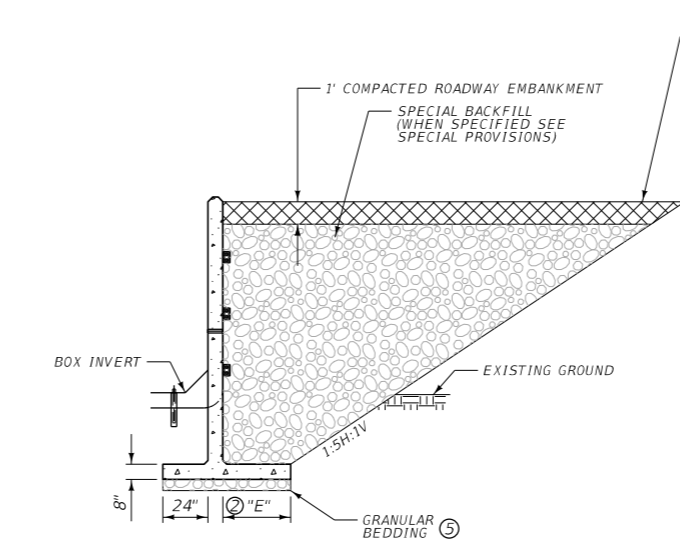
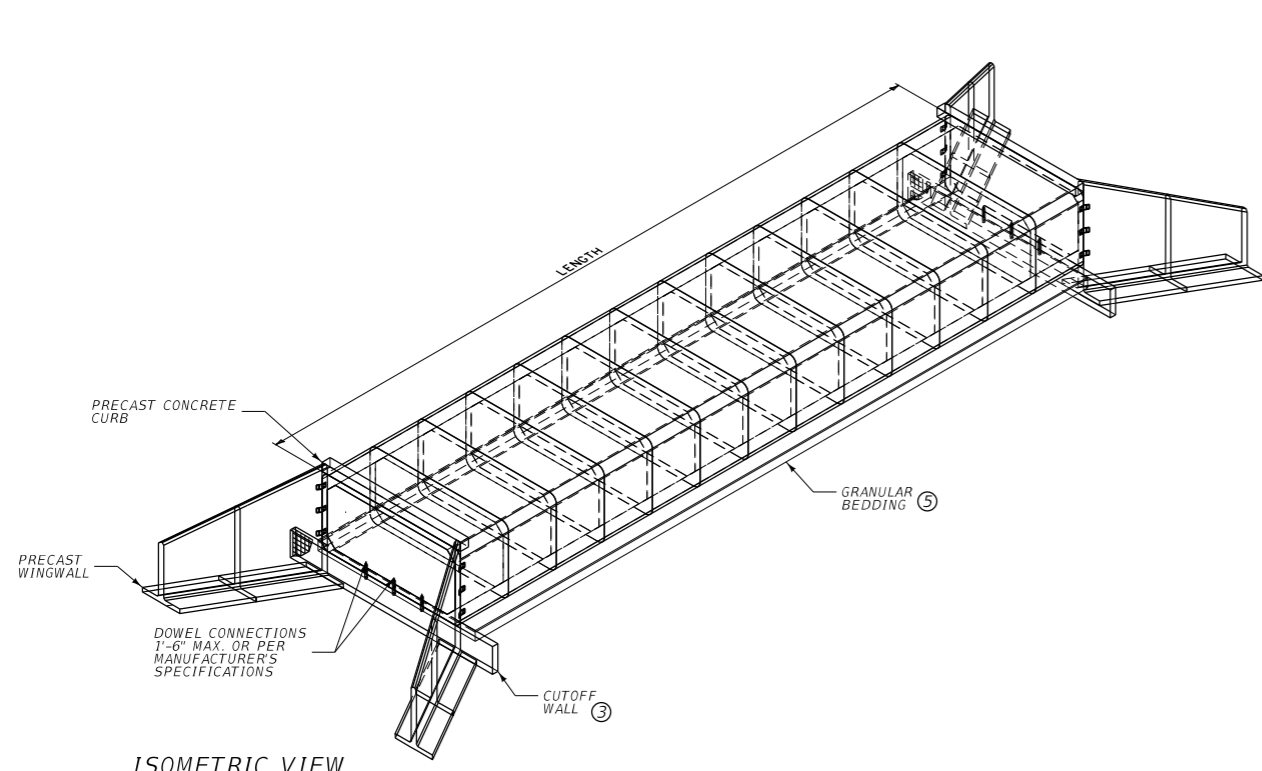
GUARDRAIL										
STATION		linear feet						each		REMARKS
		REMOVE GUARDRAIL		MGS GUARDRAIL - LONG POSTS		MGS INTERSECTING ROADWAY TERMINAL SECTION		MASH W-BEAM TERMINAL SECTION		
FROM	TO	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	
<b>NEW RAIL</b>										
635+65	645+68				937.5		1		1	
723+50	728+00			450.0				2		
726+89	730+71				312.5		1		1	
829+95	836+18			525.0				2		
856+80	861+74			400.0				2		
<b>REMOVE RAIL</b>										
<b>SUBTOTAL</b>				1,375.0	1,250.0		2	6	2	
<b>TOTAL</b>				2,625.0			2	8		

RIPRAP REVEGETATION						
STATION		linear feet	cubic yards	square yards	square yards	REMARKS
		B/D ENGINEERED BANK	RANDOM RIPRAP	GEOTEXTILE	RIPRAP REVEGETATION	
FROM	TO		CL. 2	CL. B		
724+49 LT	725+19 LT	158	70	43	36	BANK PROTECTION
<b>TOTAL</b>		158	70	43	36	

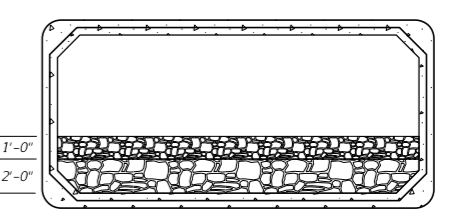
DOWL



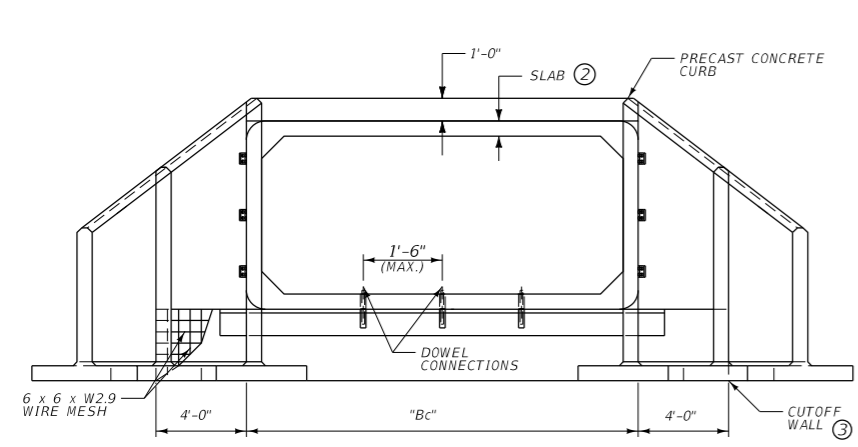




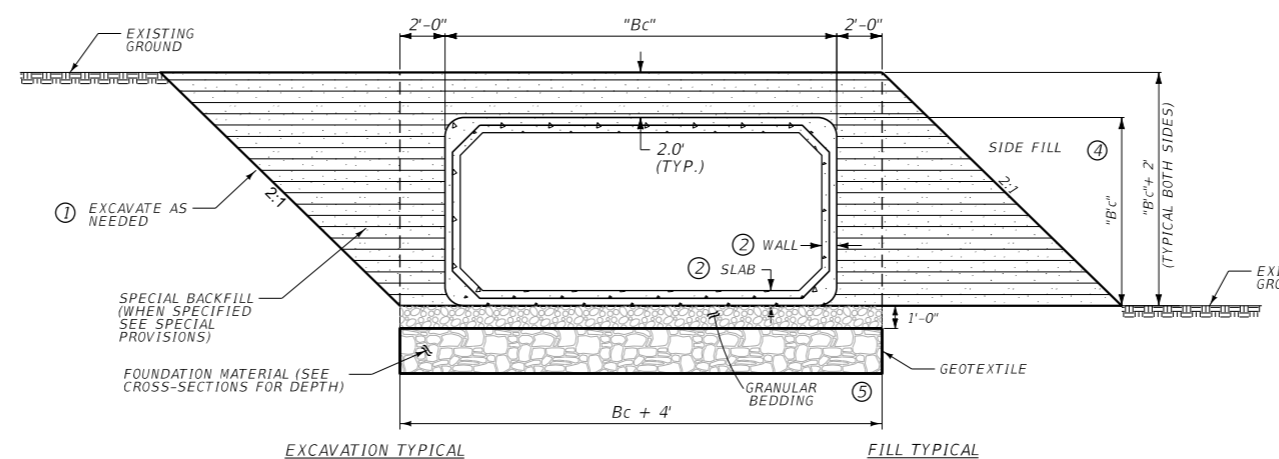
PRECAST WINGWALL DETAIL  
SIDE VIEW



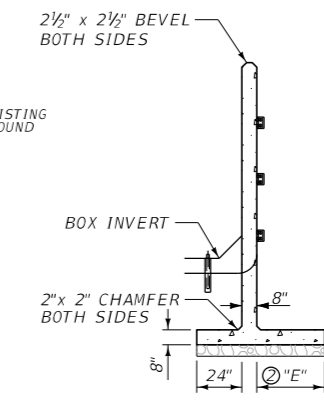
WILLOUGHBY CREEK INFILL



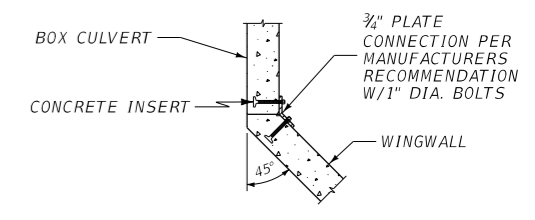
PRECAST SINGLE CELL BOX CULVERT  
WITH CUTOFF WALL AND 45° PRECAST WINGWALLS



BOX CULVERT BEDDING DETAIL



PRECAST WINGWALL DETAIL  
END VIEW



45° CONNECTION  
PLATE DETAIL

- NOTES:
- EXCAVATE A SUFFICIENT AMOUNT TO PROVIDE A SAFE WORKING ENVIRONMENT AND TO ALLOW ACHIEVEMENT OF ALL CULVERT INSTALLATION AND COMPACTION REQUIREMENTS. SLOPE, BENCH OR PROVIDE SHORING FOR ALL EXCAVATIONS IN ACCORDANCE WITH THE U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION.
  - FOR ESTIMATING QUANTITIES ONLY. ACTUAL DIMENSION TO BE DETERMINED BY PRECAST MANUFACTURER.
  - 3'-0" MIN. OR 1'-0" BELOW BOTTOM OF FOUNDATION MATERIAL IF SPECIFIED.
  - COMPACT AND PLACE SIDE FILL PER SECTION 603 AND 203.
  - SEE SECTION 701 OF THE STANDARD SPECIFICATIONS FOR GRANULAR BEDDING REQUIREMENTS. THE CONTRACTOR HAS THE OPTION OF USING A SAND CUSHION ABOVE THE GRANULAR BEDDING TO FACILITATE JOINING OF THE BOX CULVERT SECTIONS.
  - INVERT ELEVATIONS ARE TO THE TOP OF THE CULVERT FLOOR SLAB.

DIMENSIONS												
STATION	SPAN (ft.)	RISE (ft.)	LENGTH (ft.)	② WALL (in.)	② SLAB (in.)	② "E" (in.)	"B'c" (ft.)	③ "H" (ft.)	WINGWALL (ft.)	COVER (ft.)	⑥ INLET INV.	⑥ OUTLET INV.
671+86	14.0	4.0	138	12	12		15.5	5	13	1.6	3349.10	3348.25
723+07	18.0	8.0	90	12	12		20	4	13	0.6	3328.65	3328.08

NOTE: QUANTITIES ARE BASED ON THE DIMENSIONS IN THE TABLE. PROVIDE BOX CULVERTS MEETING ASTM C1577. INCLUDE PRECAST WINGWALLS, PRECAST CONCRETE CURBS, CUTOFF WALLS, SPECIAL BACKFILL BEHIND PRECAST WINGWALLS, GEOCOMPOSITE STRIP DRAINS, AND GRANULAR BEDDING BENEATH THE PRECAST WINGWALLS IN THE UNIT PRICE BID PER LINEAR FOOT OF RCB. #PROVIDE A GEOCOMPOSITE STRIP DRAIN CONSTRUCTED OF A POLYMERIC DRAINAGE CORE WITH A MINIMUM COMPRESSIVE STRENGTH OF 9000 PSF PER ASTM D 1621 AND A MINIMUM FLOW CAPACITY OF 20 GPM PER ASTM D 4716. THE STRIP DRAIN MUST BE WRAPPED IN A SUBSURFACE DRAINAGE GEOTEXTILE FILTER MEETING THE REQUIREMENTS OF HIGH SURVIVABILITY, CLASS B OF SECTION 716.

**DETAILS**

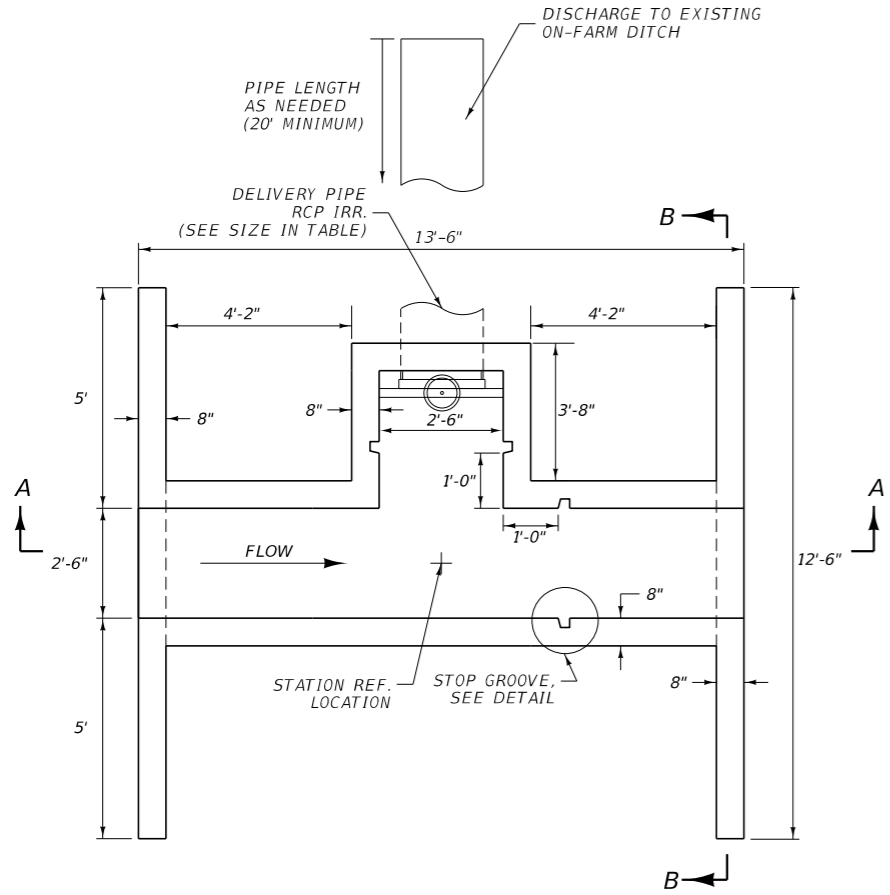
**PRECAST REINFORCED  
CONCRETE BOX CULVERT**

NOT TO SCALE

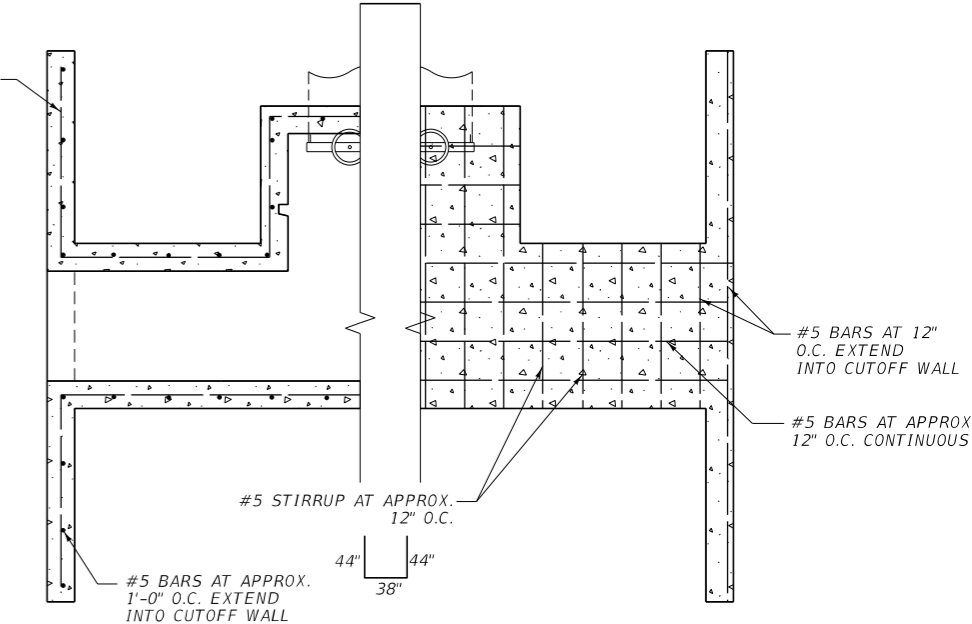
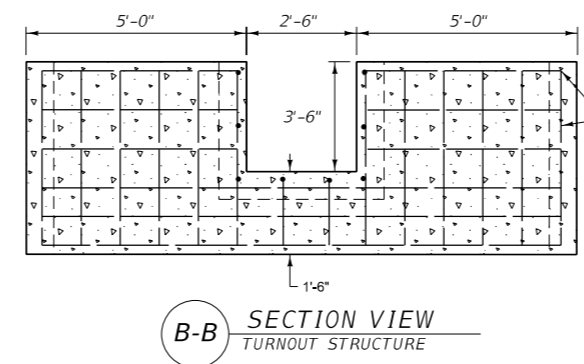
DOWL

DIVISION BOX TURNOUT STRUCTURE DIVERSIONS				
STATION	CANAL GATE LOCATION	CANAL GATE/ PIPE SIZE (in)	INVERT ELEV. OF DIV. BOX (ft)	TURNOUT PIPE LENGTH (ft)
595+52	LT	18	3370.20	20
599+90	LT	24	3369.30	20
605+31	LT	24	3368.15	20
750+81	LT	12	3330.94	20

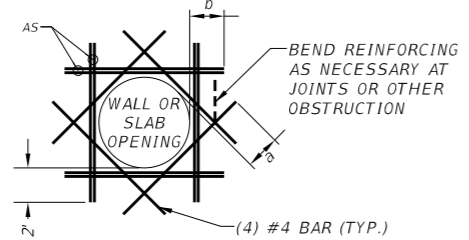
TABLE FOR CUSTOM DIVISION BOXES ONLY



1 PLAN VIEW TURNOUT STRUCTURE

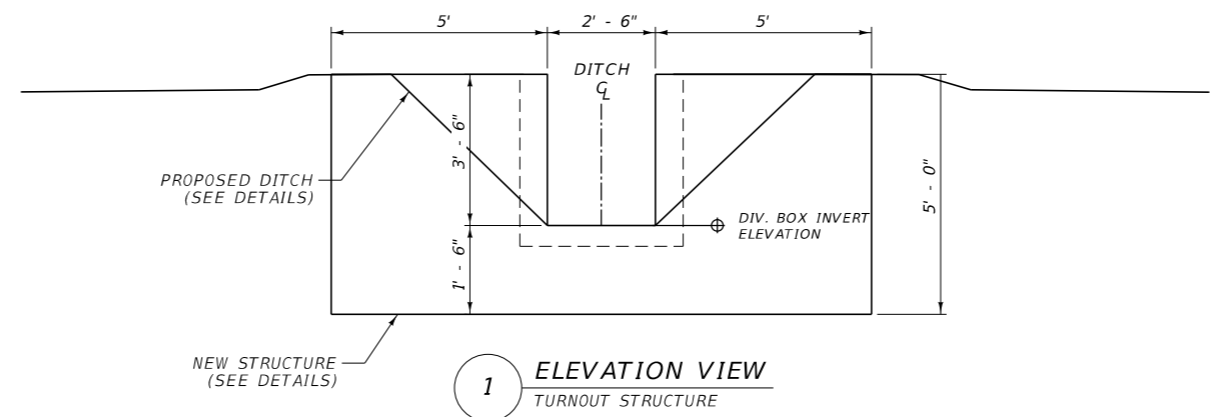
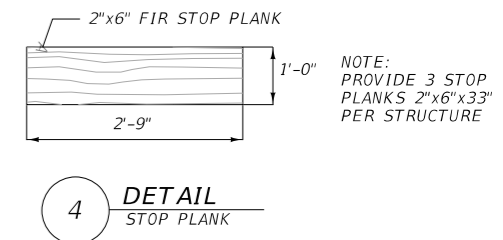
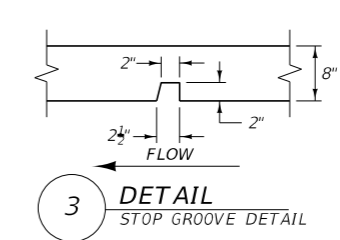
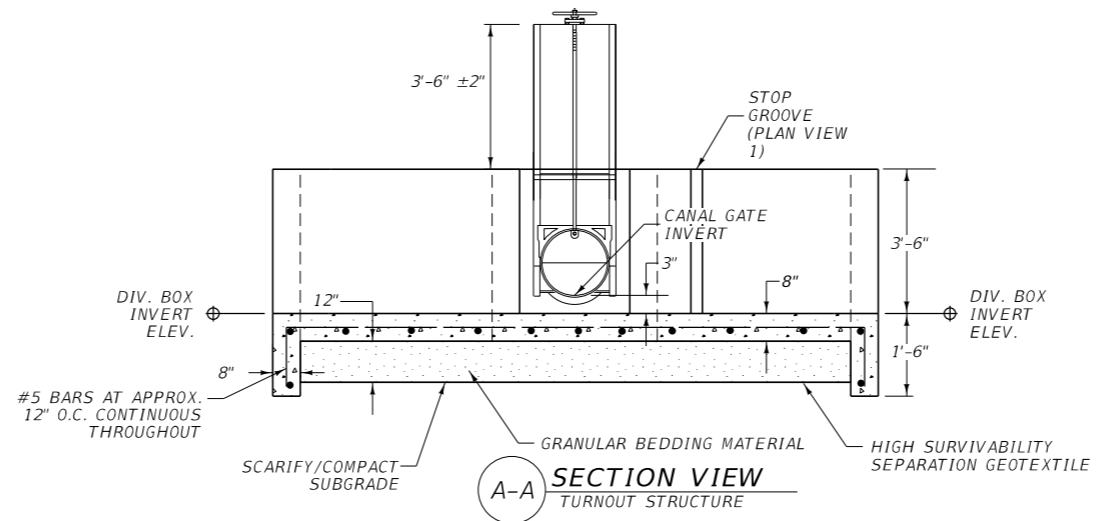


BAR SIZE	a	b
#5	24"	30"



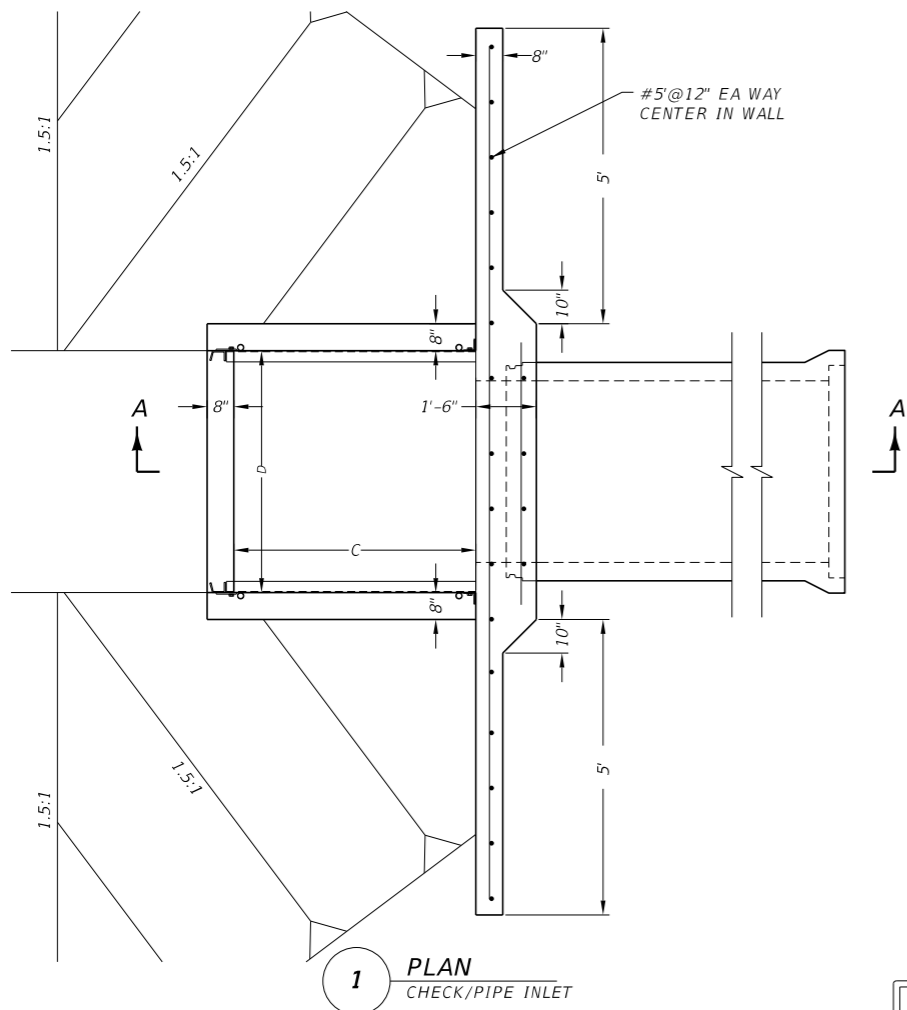
- NOTES:
- 'AS' = ADDITIONAL BARS EQUAL IN TOTAL NUMBER TO REGULAR REINFORCEMENT CUT BY THE OPENING. PLACE ONE-HALF TOTAL BARS TO EACH SIDE OF OPENING & IN THE SAME TRANSVERSE POSITION AS THE REGULAR REINFORCEMENT.
  - 'AS' BAR SIZE TO BE SAME AS REGULAR REINFORCEMENT IN EACH DIRECTION.
  - ADDITIONAL BARS TO BE PLACED AT CENTERLINE OF WALL OR SLAB WHERE ONE LAYER OF REINFORCING IS PROVIDED AND AT EACH FACE WHERE TWO LAYERS OF REINFORCING ARE PROVIDED.
  - ADDITIONAL HORIZONTAL AND VERTICAL BARS ARE NOT NECESSARY FOR HOLES 8 TO 11 INCHES. USE ONLY THE DIAGONAL BARS. FOR HOLES SMALLER THAN 8 INCHES DO NOT CUT BARS, SPREAD NORMAL REINFORCING AROUND HOLE (NO DIAGONALS NEEDED).

2 DETAIL STANDARD REINFORCEMENT AT CIRCULAR OPENINGS



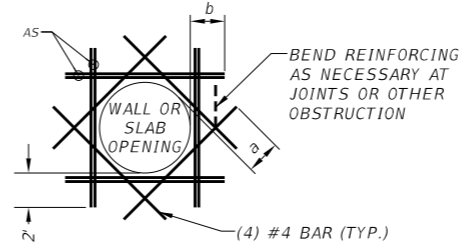
DETAILS
IRRIGATION DIVISION BOX
NOT TO SCALE

DOWL



**1 PLAN**  
CHECK/PIPE INLET

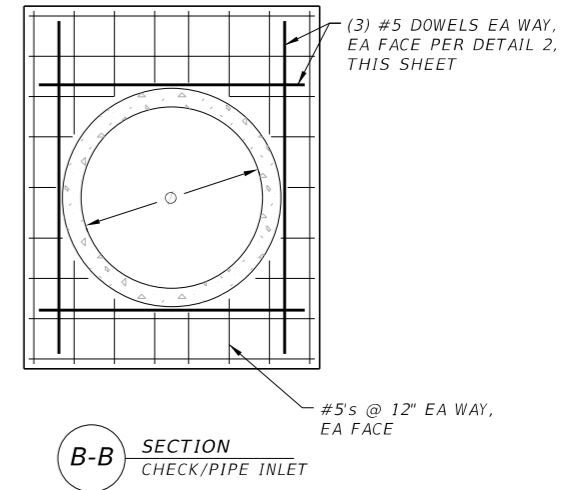
BAR SIZE	a	b
#4	18"	24"
#5	24"	30"
#6	30"	36"
#10	61"	79"



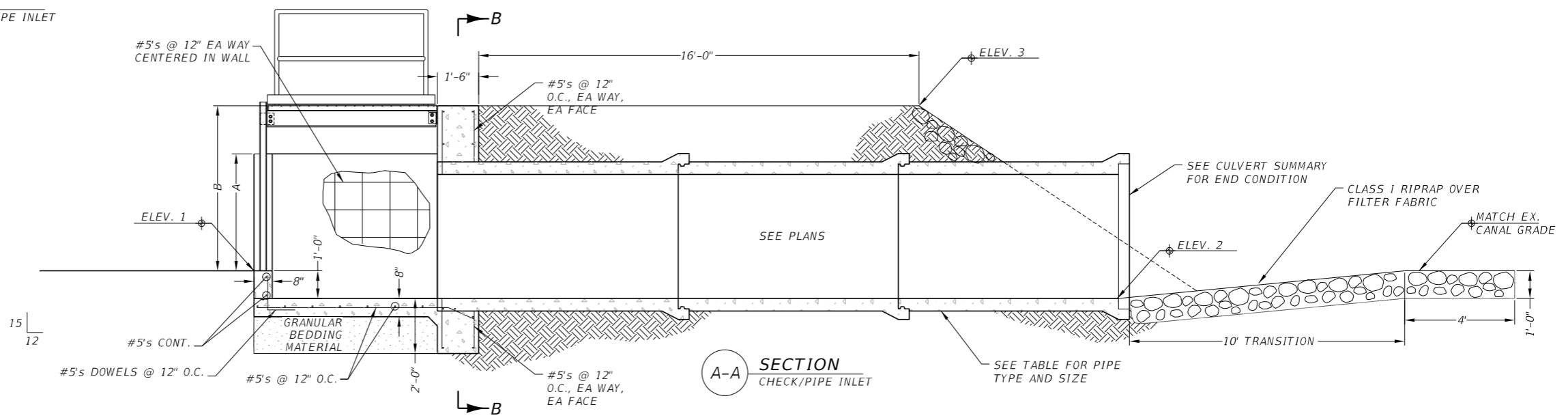
**NOTES:**

- 'AS' = ADDITIONAL BARS EQUAL IN TOTAL NUMBER TO REGULAR REINFORCEMENT CUT BY THE OPENING. PLACE ONE-HALF TOTAL BARS TO EACH SIDE OF OPENING & IN THE SAME TRANSVERSE POSITION AS THE REGULAR REINFORCEMENT.
- 'AS' BAR SIZE TO BE SAME AS REGULAR REINFORCEMENT IN EACH DIRECTION.
- ADDITIONAL BARS TO BE PLACED AT CENTERLINE OF WALL OR SLAB WHERE ONE LAYER OF REINFORCING IS PROVIDED AND AT EACH FACE WHERE TWO LAYERS OF REINFORCING ARE PROVIDED.
- ADDITIONAL HORIZONTAL AND VERTICAL BARS ARE NOT NECESSARY FOR HOLES 8 TO 11 INCHES. USE ONLY THE DIAGONAL BARS. FOR HOLES SMALLER THAN 8 INCHES DO NOT CUT BARS, SPREAD NORMAL REINFORCING AROUND HOLE (NO DIAGONALS NEEDED).

**2 DETAIL**  
STANDARD REINFORCEMENT  
AT CIRCULAR OPENINGS



**B-B SECTION**  
CHECK/PIPE INLET



**A-A SECTION**  
CHECK/PIPE INLET

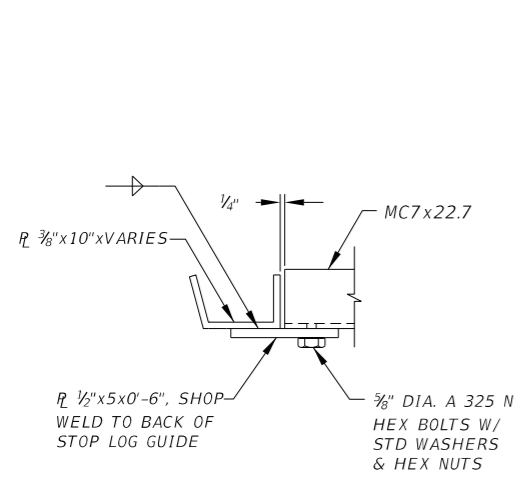
CHECK / PIPE INLET STRUCTURE DIMENSIONS								
STATION	DIAMETER	A	B	C	D	ELEV. 1	ELEV. 2	ELEV. 3
589+72	24" RCP	2.50'	3.50'	3'-0"	3'-0"	3370.53	3369.53	3374.03
635+90	36" RCP	3.75	4.50'	4'-0"	4'-0"	3360.00	3359.00	3364.50
643+74	48" RCP	4.50'	6.00'	3'-6"	3'-6"	3356.70	3355.70	3362.70

**DETAILS**

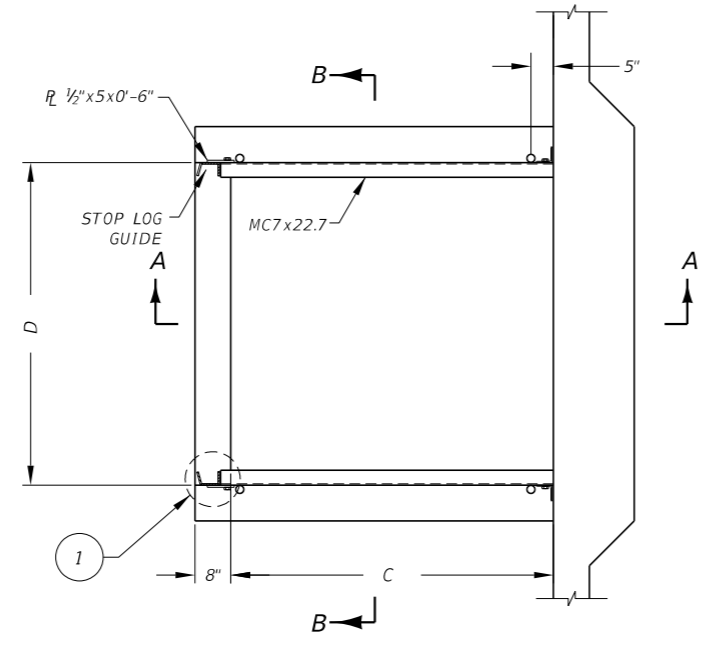
**INLET  
STRUCTURE**

NOT TO SCALE

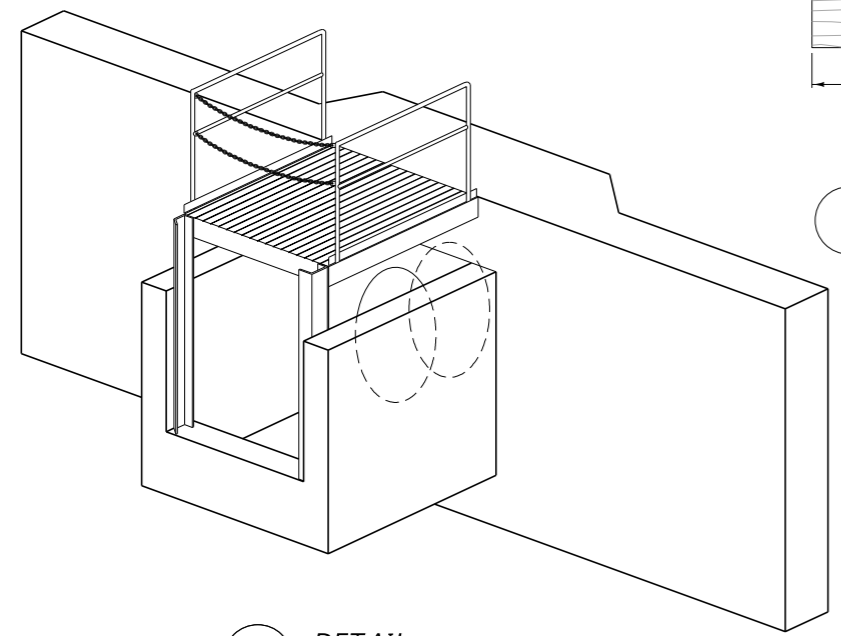
DOWL



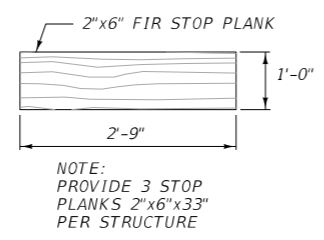
**1** **DETAIL**  
STOP LOG GUIDE ATTACHMENT TO SUPPORT



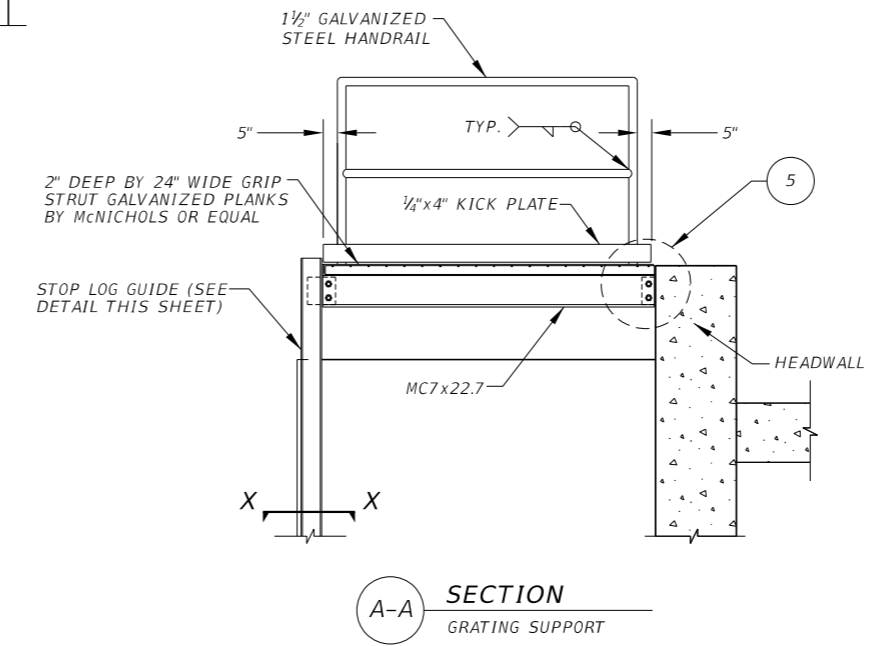
**3** **PLAN**  
GRATING SUPPORT



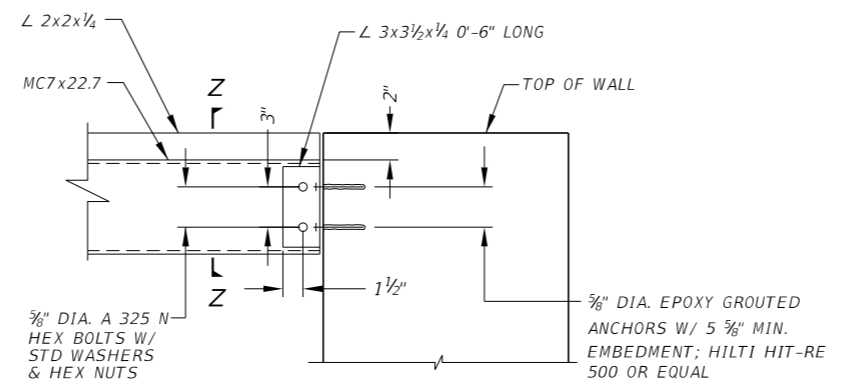
**2** **DETAIL**  
CHECK/PIPE INLET ISOMETRIC VIEW



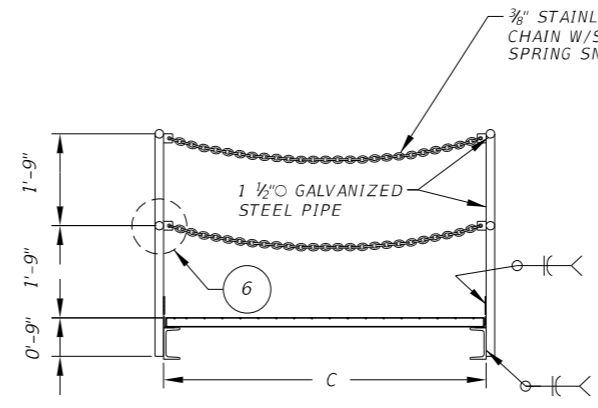
**4** **DETAIL**  
STOP PLANK



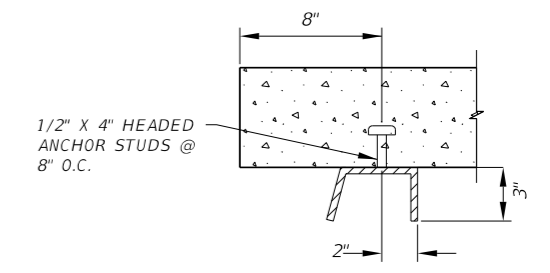
**A-A** **SECTION**  
GRATING SUPPORT



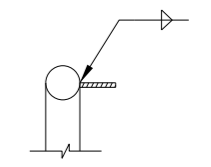
**5** **DETAIL**  
GRATING SUPPORT



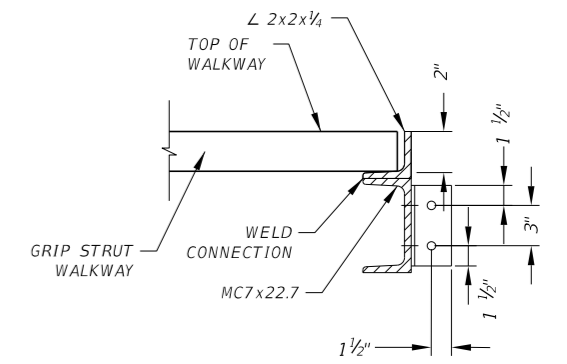
**B-B** **SECTION**  
HANDRAIL AND GUARD CHAIN



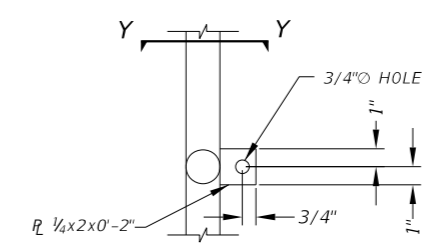
**X-X** **SECTION**  
STOP LOG GUIDE



**Y-Y** **SECTION**  
GUARD CHAIN ATTACHMENT



**Z-Z** **SECTION**  
GRIP STRUT WALKWAY CONNECTION

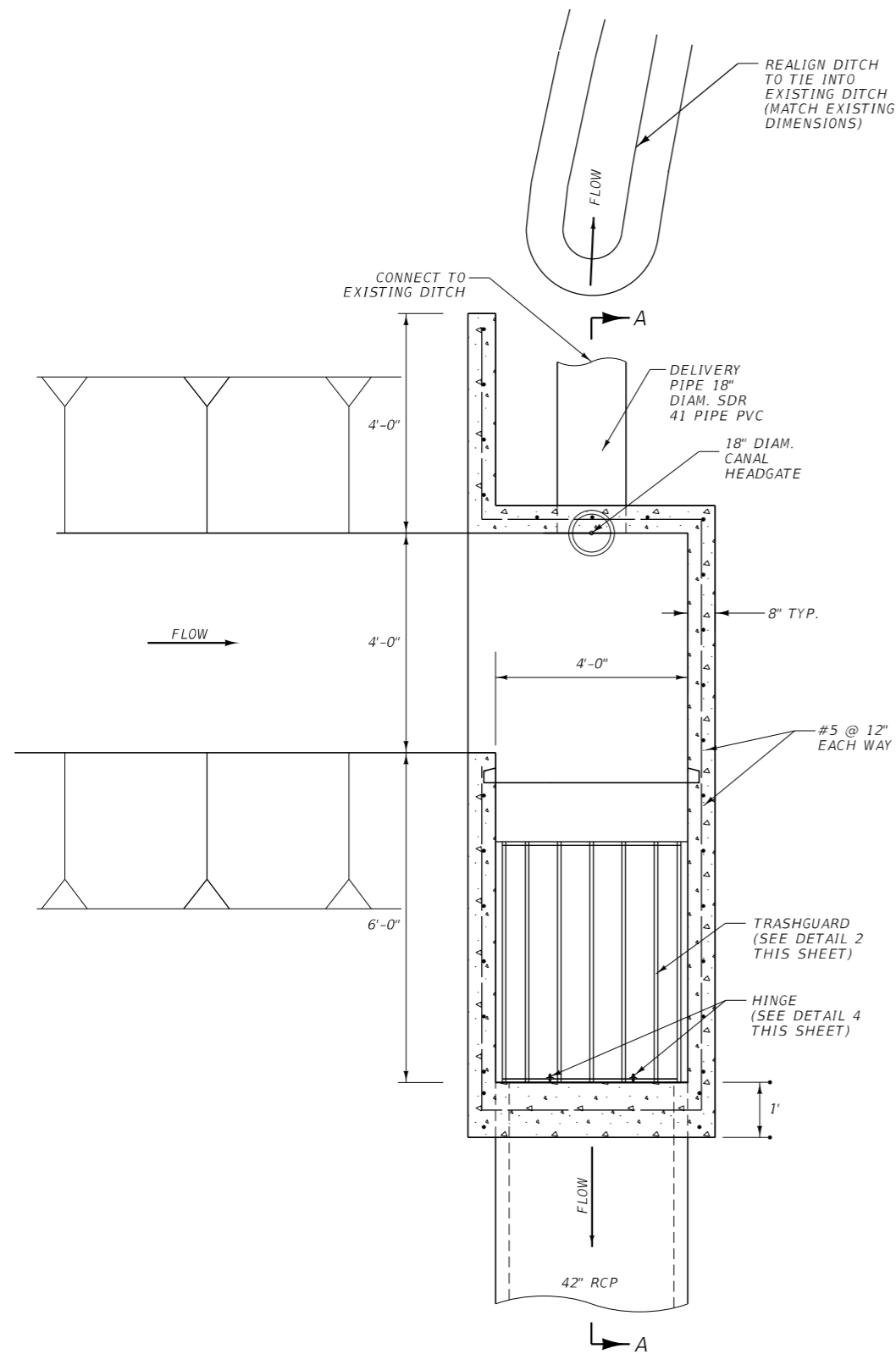


**6** **DETAIL**  
GUARD CHAIN ATTACHMENT

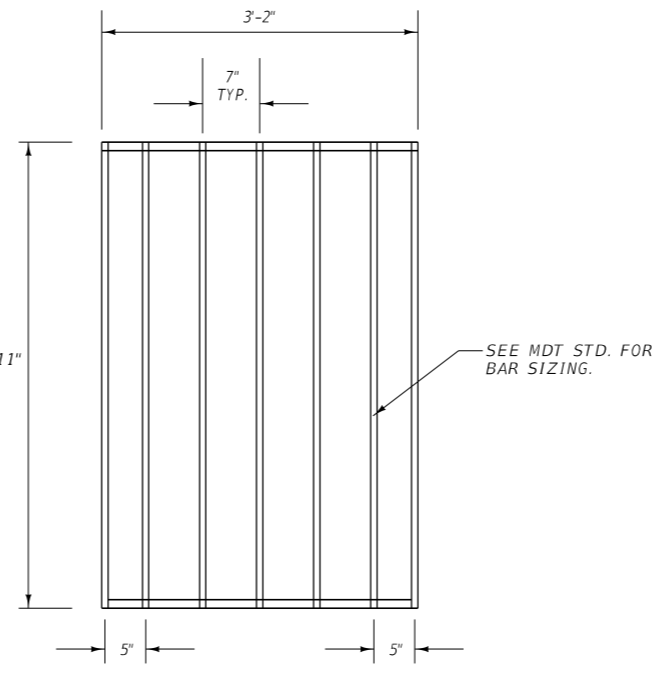
- NOTES:**
- FURNISH A TOTAL NUMBER OF STOP PLANKS FOR EACH STRUCTURE TO PROVIDE TOTAL PLANK HEIGHT EQUAL TO DIM. A W/ LENGTHS 2" SHORTER THAN DIM. D.
  - ALL METAL FABRICATIONS ARE TO BE GALVANIZED (REFER TO SPECIFICATIONS)
  - SEE DIMENSIONS TABLE FOR SPECIFICS.

<b>DETAILS</b>	
<b>INLET STRUCTURE</b>	
NOT TO SCALE	

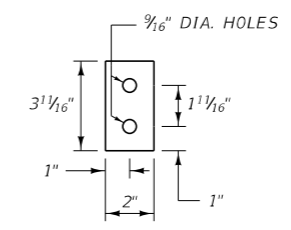
DOWL



**1 PLAN VIEW STA 588+85**  
CHECK STRUCTURE

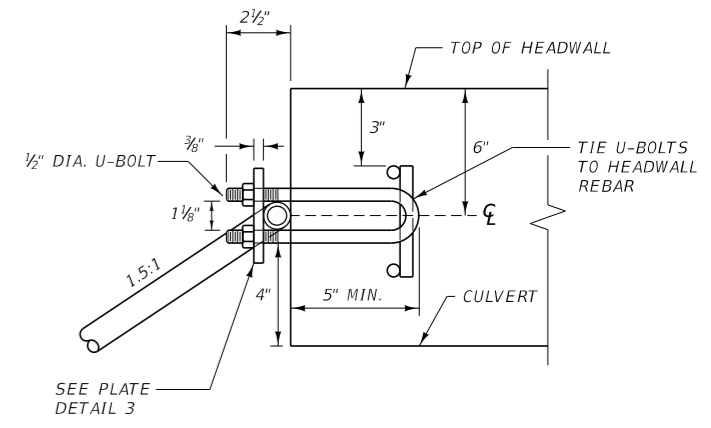


**2 DETAIL TRASH GUARD**

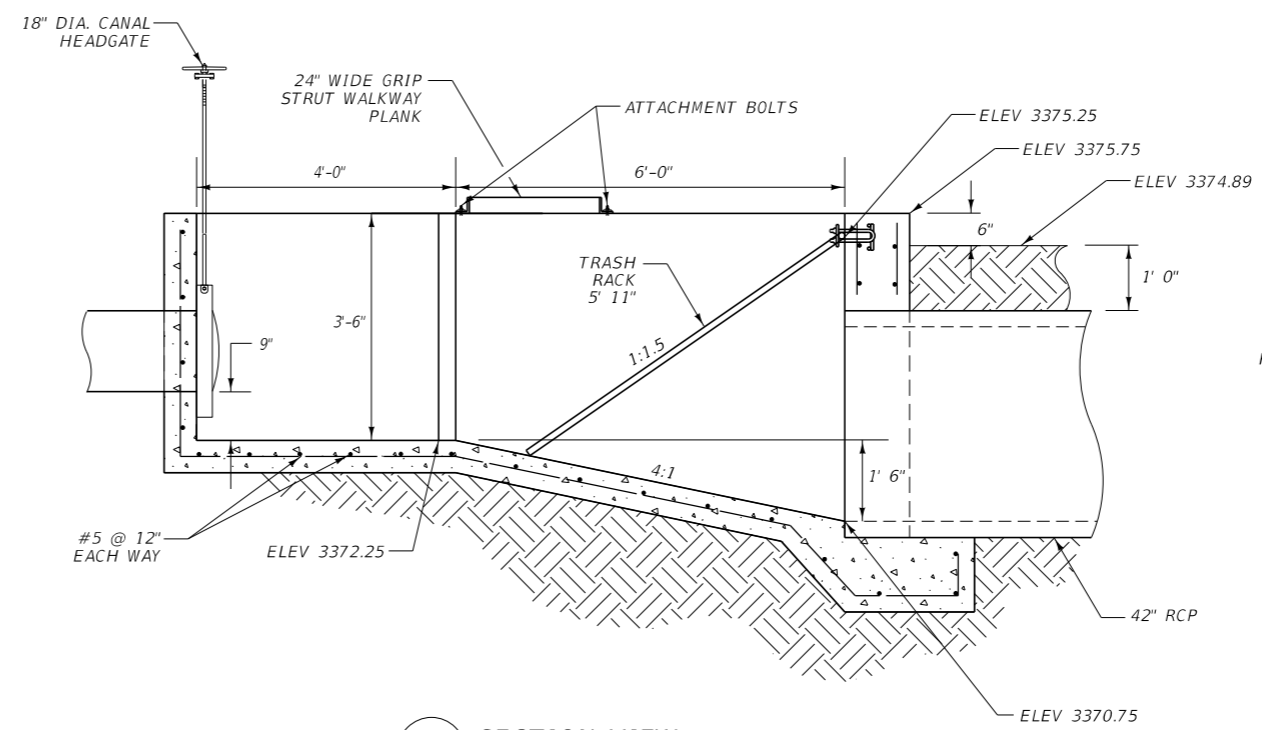


**NOTES:**  
PAINT ALL WELDS AND OTHER NON-GALVANIZED PARTS IN ACCORDANCE WITH SECTION 710 OF THE STANDARD SPECIFICATIONS.  
W = CENTER TO CENTER PIPE SPACING.  
TWO 1/2" DIA. U-BOLT AND PLATE ASSEMBLIES NEEDED PER TRASHGUARD.  
\* 3/4" DIA. SCHEDULE 80 GALV. STEEL PIPE (GSP).

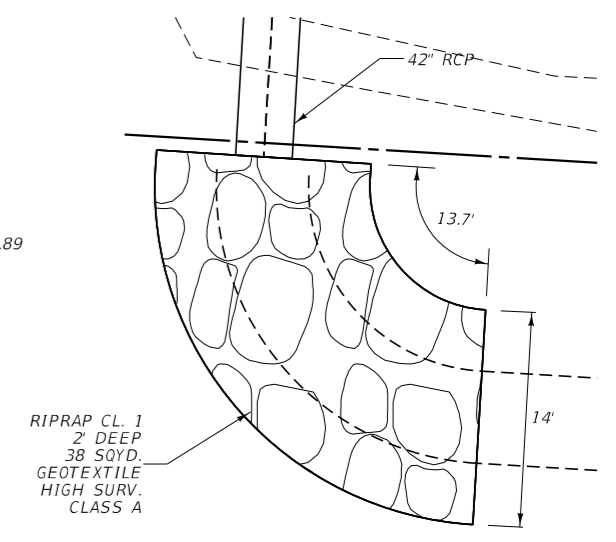
**3 DETAIL PLATE DETAIL**



**4 DETAIL HINGE DETAIL**



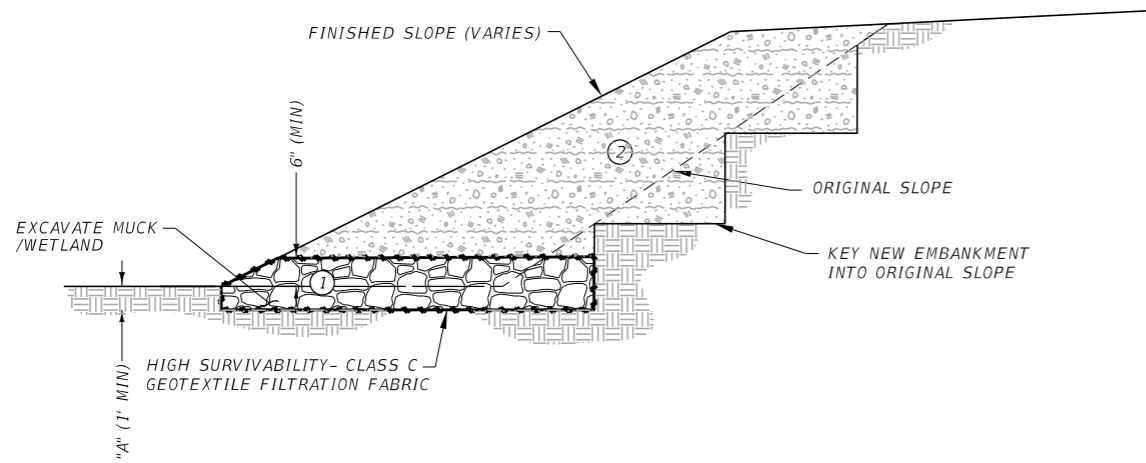
**A-A SECTION VIEW**  
CHECK STRUCTURE



**5 OUTLET VIEW RIPRAP**

DETAILS	
CHECK STRUCTURE CANAL	
NOT TO SCALE	

DOWL



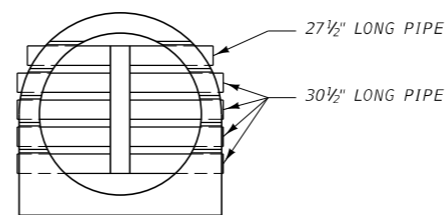
MATERIAL	DESCRIPTION
①	FOUNDATION MATERIAL
②	SPECIAL BORROW

**NOTES:**

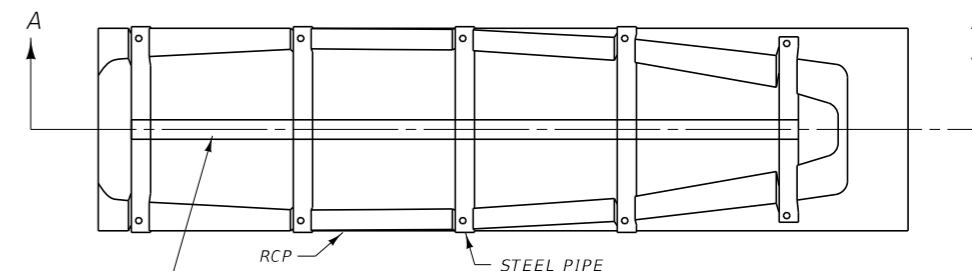
1. GEOTEXTILE SHALL MEET THE SPECIFICATIONS IN SECTION 716, GEOTEXTILES, OF THE MDT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
2. AGGREGATES SHALL MEET THE SPECIFICATIONS IN SECTION 701, AGGREGATES, OF THE MDT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

**EMBANKMENT STABILIZATION**

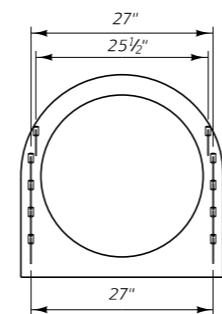
SAFETY END SLOPE										
QUANTITIES (FOR ESTIMATING ONLY)										
DIA. A RCP	H PIPE LENGTH	F-64½" x 4½" FERRULE LOOP INSERT (EACH)	LENGTH 2½" DIA. SCHEDULE 40 GALV. PIPE	DIMENSIONS (FT.)						
				B	C	D	E	G	R	J
15"	4.75'	~	~	~	~	0.69	0.27	4.0	0.25	0.75
18"	6.5'	~	~	~	~	0.71	0.25	5.75	0.25	0.75
24"	10.0'	10	12.5'	0.5	2.0	0.75	0.21	9.25	0.25	0.75



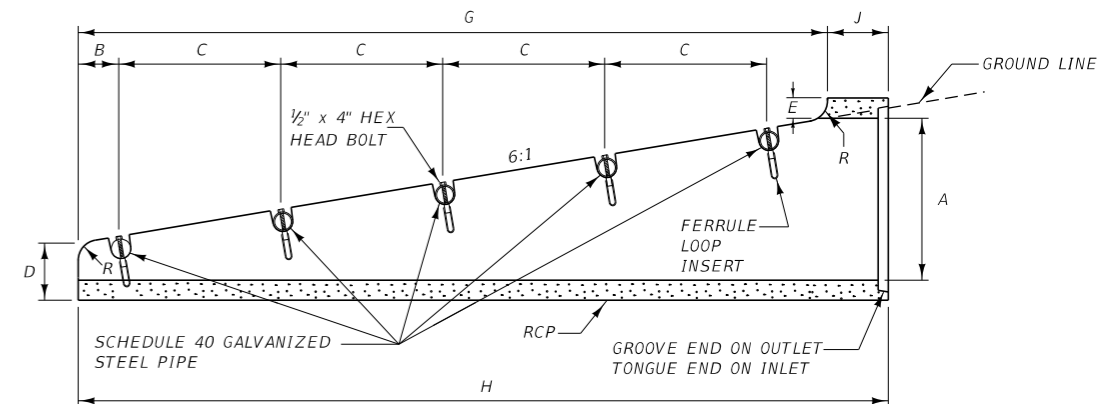
END VIEW



PLAN VIEW

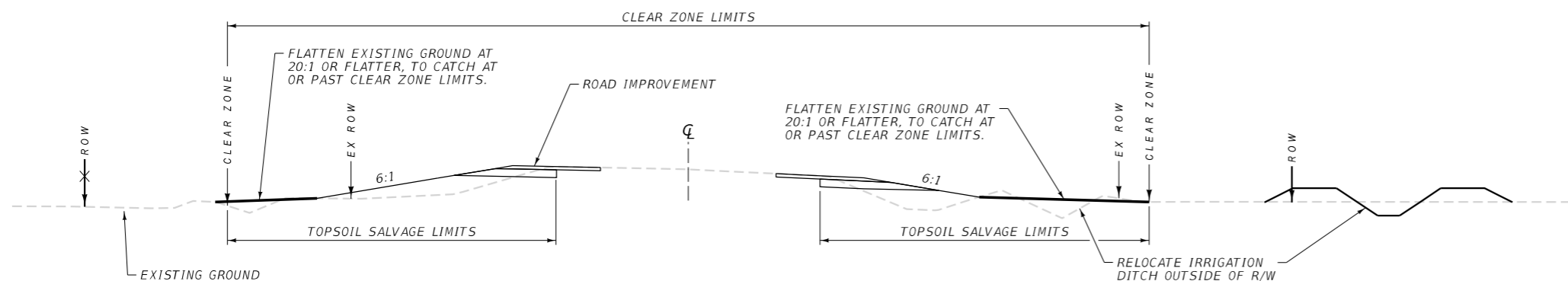


VIEW OF INSERTS



SECTION A-A  
SAFETY END SLOPE SECTION

NOTE:  
PAINT ALL NON-GALVANIZED PARTS  
IN ACCORDANCE WITH SECTION 710  
OF THE STANDARD SPECIFICATIONS.



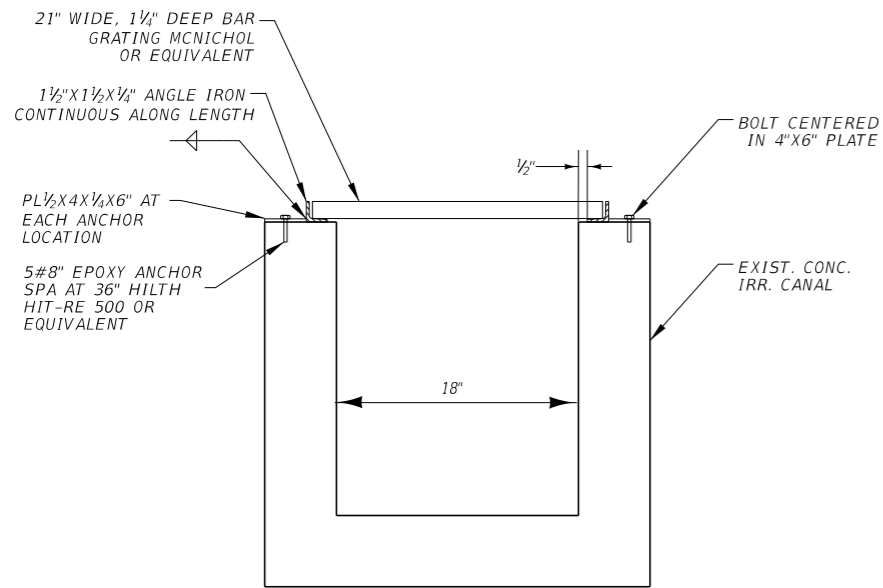
CLEAR ZONE FLATTENING

**DETAILS**

EMBANKMENT STABILIZATION,  
SAFETY SLOPE END SECTION  
&  
CLEAR ZONE FLATTENING

NOT TO SCALE

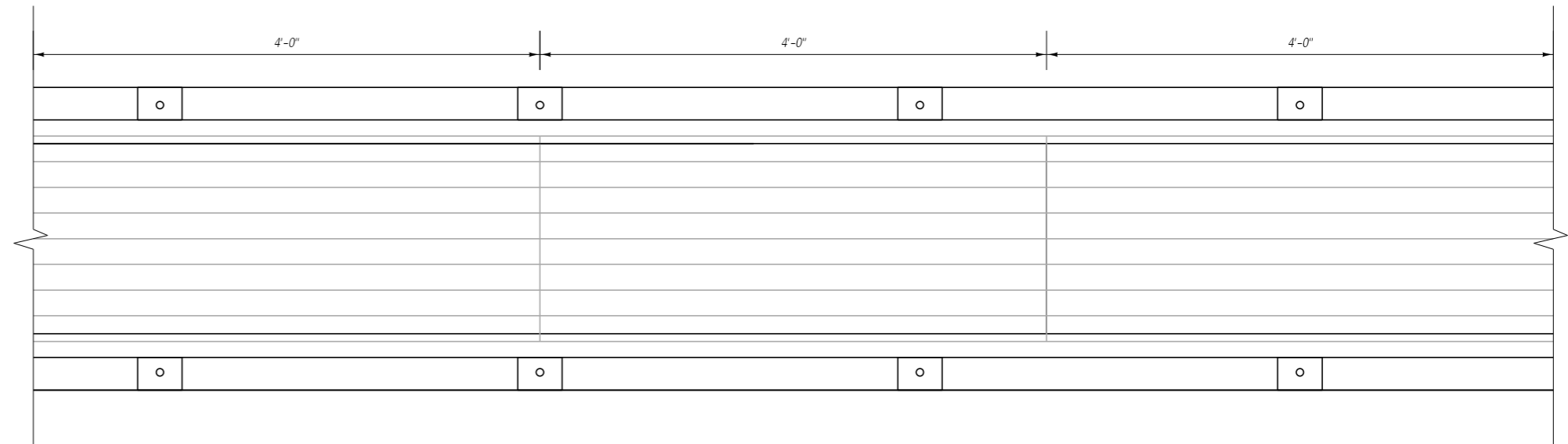
DOWL



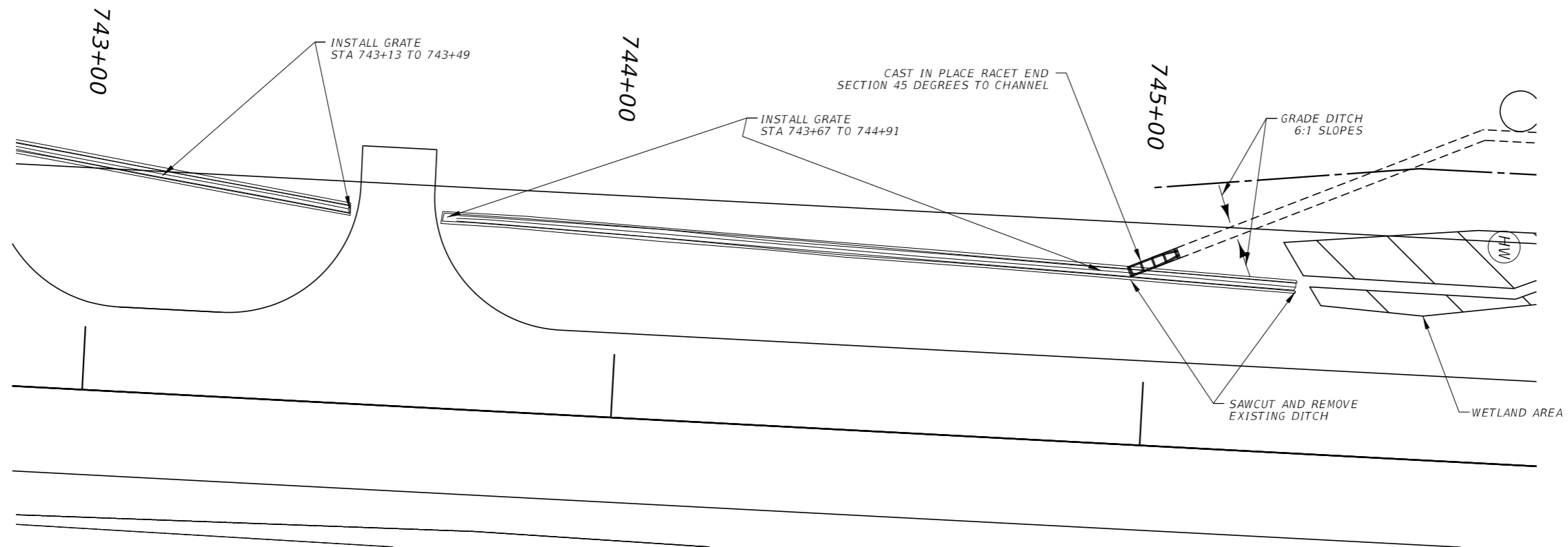
**1** **DETAIL**  
GRATING SUPPORT CONNECTION

NOTES:

1. CONFIRM INTERIOR DIMENSIONS OF EXISTING CONC. CANAL LINING BEFORE ORDERING MATERIALS OR BEGINNING SHOP DRAWINGS.
2. GRATE QUANTITY INCLUDES RACET END.



**2** **PLAN VIEW**  
TYPICAL GRATING SECTIONS



DETAILS
GRATE
NOT TO SCALE

DITCH CENTERLINE ALIGNMENT TABLE

STATION	OFFSET	ELEVATION	DESCRIPTION
TYPE B IRR DITCH 578+49 - 588+85 LEFT			
578+49.19	63.79 LT	3373.62	BEGIN DITCH
578+89.90	77.75 LT	3373.54	PT
587+44.39	77.75 LT	3371.92	PI
588+81.32	64.41 LT	3371.69	PC
588+85.34	60.13 LT	3371.68	PT
588+85.32	57.08 LT	3371.67	END DITCH
TYPE B IRR DITCH 588+85 - 595+02 RIGHT			
588+85.07	56.92 RT	3370.56	BEGIN DITCH, PC
589+00.07	72.00 RT	3370.55	PT
594+87.05	72.00 RT	3370.41	PC
595+02.03	57.77 RT	3370.40	PT, END DITCH
TYPE B IRR DITCH 595+08 - 606+00 LEFT			
595+07.87	55.62 LT	3370.23	BEGIN DITCH, PC
595+19.85	67.00 LT	3370.19	PT
602+34.89	67.00 LT	3368.43	PC
605+99.49	67.00 LT	3367.49	PT, END DITCH
TYPE A IRR DITCH 611+72 - 613+50 LEFT			
611+72.36	68.00 LT	3366.10	BEGIN DITCH
613+50.00	68.00 LT	3365.71	TRANS TO TYPE B IRR DITCH
TYPE B IRR DITCH 614+00 - 619+50 LEFT			
614+00.00	68.00 LT	3365.60	CONTINUE DITCH
616+21.53	68.00 LT	3365.11	PT
617+50.00	68.00 LT	3364.84	PI
618+00.00	63.00 LT	3364.73	PI/PC
619+50.00	63.00 LT	3364.40	TRANS TO TYPE A IRR DITCH
TYPE A IRR DITCH 620+00 - 631+78 LEFT			
620+00.00	63.00 LT	3364.30	CONTINUE DITCH
631+78.30	63.00 LT	3361.76	PT, END DITCH
TYPE B IRR DITCH 644+00 - 651+62 LEFT			
643+99.62	73.59 LT	3359.09	BEGIN DITCH
644+19.26	72.02 LT	3359.05	PT
644+50.13	63.00 LT	3358.99	PI/PC
647+08.31	63.00 LT	3358.50	PT
648+11.64	63.00 LT	3358.30	PC
649+36.29	63.00 LT	3358.07	PT
651+61.95	63.00 LT	3357.65	END DITCH
TYPE B IRR DITCH 644+07 - 656+82 RIGHT			
644+07.47	37.35 RT	3359.27	BEGIN DITCH
644+11.26	37.44 RT	3359.23	PC
644+11.73	37.56 RT	3359.23	PT
644+60.63	63.64 RT	3358.70	PC
644+61.10	63.75 RT	3358.70	PT
644+78.40	63.75 RT	3358.66	PI
645+19.22	63.75 RT	3358.57	PC
647+08.31	63.75 RT	3358.13	PT
648+11.64	63.75 RT	3357.89	PC
649+36.29	63.75 RT	3357.60	PT
656+47.56	63.75 RT	3355.94	PI
656+83.90	63.63 RT	3355.86	PC
656+88.05	67.55 RT	3355.85	PT
656+88.14	71.74 RT	3355.84	PC
656+88.09	72.14 RT	3355.84	PT
656+82.17	89.48 RT	3355.79	END DITCH
TYPE A IRR DITCH 670+09 - 672+54 RIGHT			
670+08.79	76.81 RT	3350.59	BEGIN DITCH, PC
670+20.79	63.38 RT	3350.45	PT
671+02.09	63.38 RT	3349.88	PC
671+02.40	63.43 RT	3349.87	PT
671+48.92	77.34 RT	3349.53	PC
671+49.20	77.38 RT	3349.53	PT
672+36.41	77.38 RT	3348.92	PC
672+36.87	77.27 RT	3348.92	PT
672+53.95	68.17 RT	3348.78	END DITCH
TYPE A IRR DITCH 745+05 - 761+88 LEFT			
745+05.35	36.68 LT	3332.20	BEGIN DITCH
745+61.66	61.90 LT	3332.07	PC
745+62.07	62.00 LT	3332.07	PT
745+77.41	62.00 LT	3332.04	PI
746+00.97	62.00 LT	3331.99	PI
756+81.11	62.00 LT	3329.71	PI
757+18.19	62.00 LT	3329.63	PI
757+89.13	62.00 LT	3329.48	PC
761+88.20	62.00 LT	3328.62	PT, END DITCH
TYPE A IRR DITCH 775+77 - 777+21 LEFT			
775+76.98	55.00 LT	3326.59	BEGIN DITCH
775+77.06	57.00 LT	3326.58	PC
775+82.07	62.00 LT	3326.80	PT
777+18.30	62.00 LT	3326.02	PC
777+21.30	64.81 LT	3326.00	PT, END DITCH

NOTE: ALL STATIONS AND OFFSETS REFERENCE ROAD ALIGNMENT.

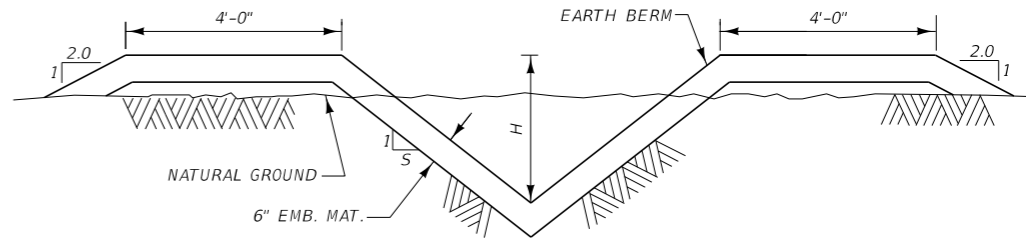
DITCH CENTERLINE ALIGNMENT TABLE

STATION	OFFSET	ELEVATION	DESCRIPTION
TYPE A IRR DITCH 876+22 - 878+35 LEFT			
876+21.96	45.00 LT	3337.25	BEGIN DITCH
876+21.64	50.40 LT	3337.11	PC
876+31.62	61.00 LT	3336.68	PT
878+24.75	61.00 LT	3336.28	PC
878+34.74	70.56 LT	3336.26	PT, END DITCH
TYPE A IRR DITCH 878+83 - 882+64 LEFT			
878+83.37	71.00 LT	3337.49	BEGIN DITCH, PC
878+93.37	61.00 LT	3337.63	PT
879+24.06	61.00 LT	3337.89	PI
879+93.34	61.00 LT	3338.50	PI
882+56.18	61.00 LT	3341.00	PC
882+61.03	57.20 LT	3341.28	PT
882+64.04	45.00 LT	3341.80	END DITCH

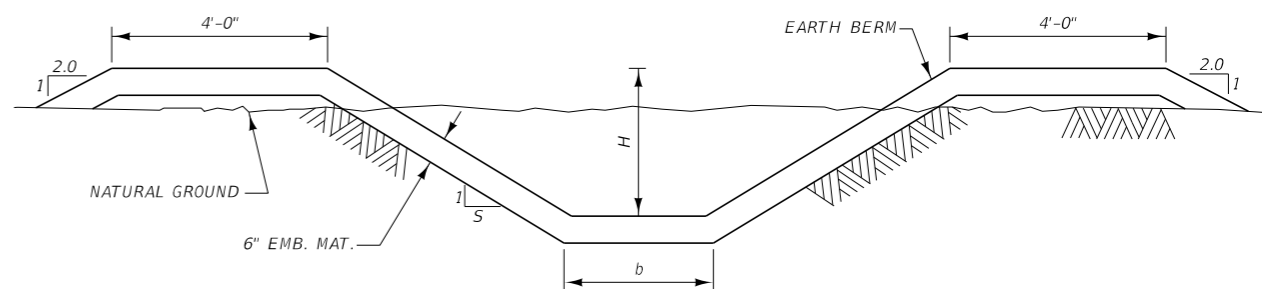
NOTE: ALL STATIONS AND OFFSETS REFERENCE ROAD ALIGNMENT.

TYPE A & TYPE B FIELD DITCH - SCHEDULE

BEGIN STATION	END STATION	OFFSET	LENGTH (ft)	b (ft)	H (ft)	S	DESCRIPTION
578+49	588+85	LT	1044	5.0	5.0	1.25	TYPE "B"
588+85	595+02	RT	633	5.5	3.25	1.5	TYPE "B"
595+08	606+00	LT	1115	6.0	2.75	1.5	TYPE "B"
611+72	613+50	LT	178	0.0	3.00	1.5	TYPE "A"
613+50	614+00	LT	50	-	-	-	TRANS. FROM TYPE "A" TO TYPE "B"
614+00	619+50	LT	550	2.0	2.5	1.5	TYPE "B"
619+50	620+00	LT	50	-	-	-	TRANS. FROM TYPE "B" TO TYPE "A"
620+00	631+78	LT	1178	0.0	2.5	1.5	TYPE "A"
644+00	651+62	LT	774	2.0	2.0	1.5	TYPE "B"
644+07	656+82	RT	1307	2.0	2.5	1.5	TYPE "B"
670+09	672+54	RT	258	0.0	2.25	1.5	TYPE "A"
745+05	761+88	LT	1708	0.0	2.0	1.5	TYPE "A"
775+77	777+21	LT	115	0.0	1.5	1.5	TYPE "A"
876+22	878+35	LT	230	0.0	0.5	5	TYPE "A"
878+83	882+64	LT	398	0.0	0.5	5	TYPE "A"



TYPE "A" FIELD DITCH  
NOT TO SCALE



TYPE "B" FIELD DITCH  
NOT TO SCALE

NOTE: PROVIDE 6 INCHES MIN. OF LOW PERMEABILITY EMBANKMENT MATERIAL. SEE SPECIAL PROVISIONS

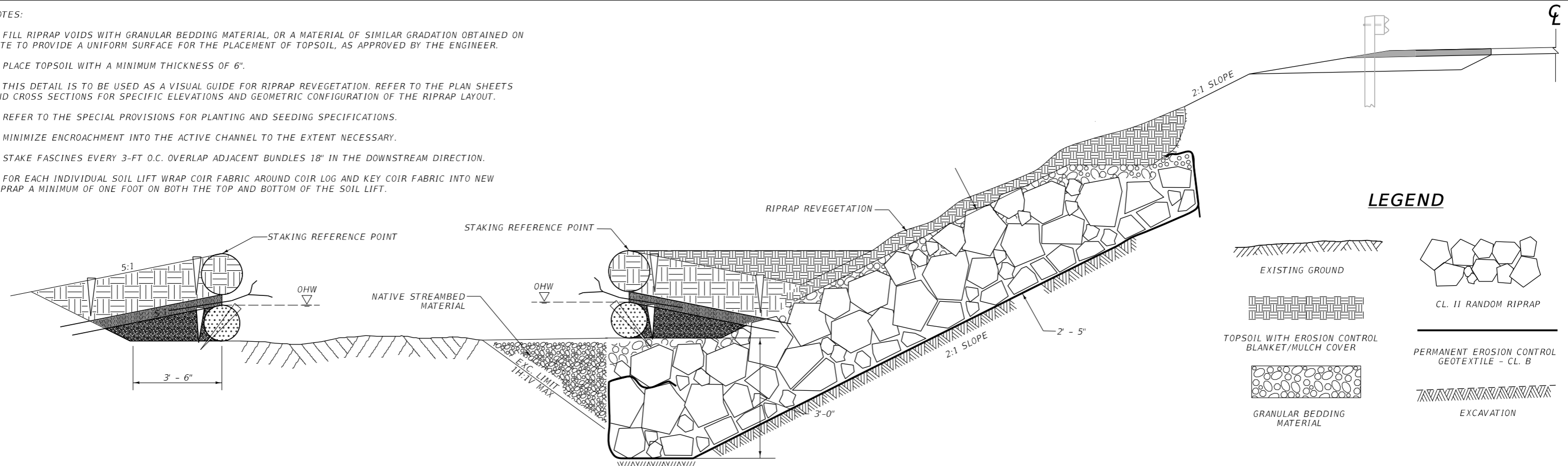
DETAILS
IRRIGATION DITCH RELOCATION
NOT TO SCALE

DOWL

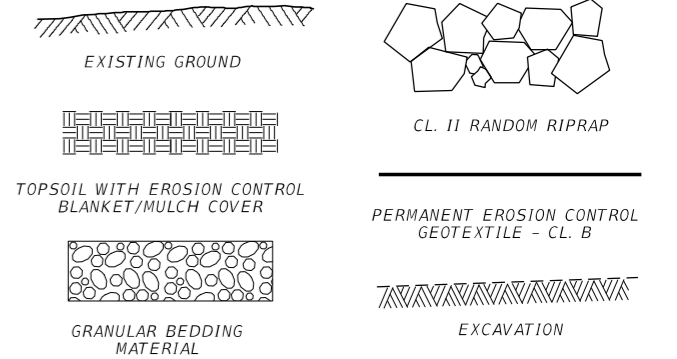


NOTES:

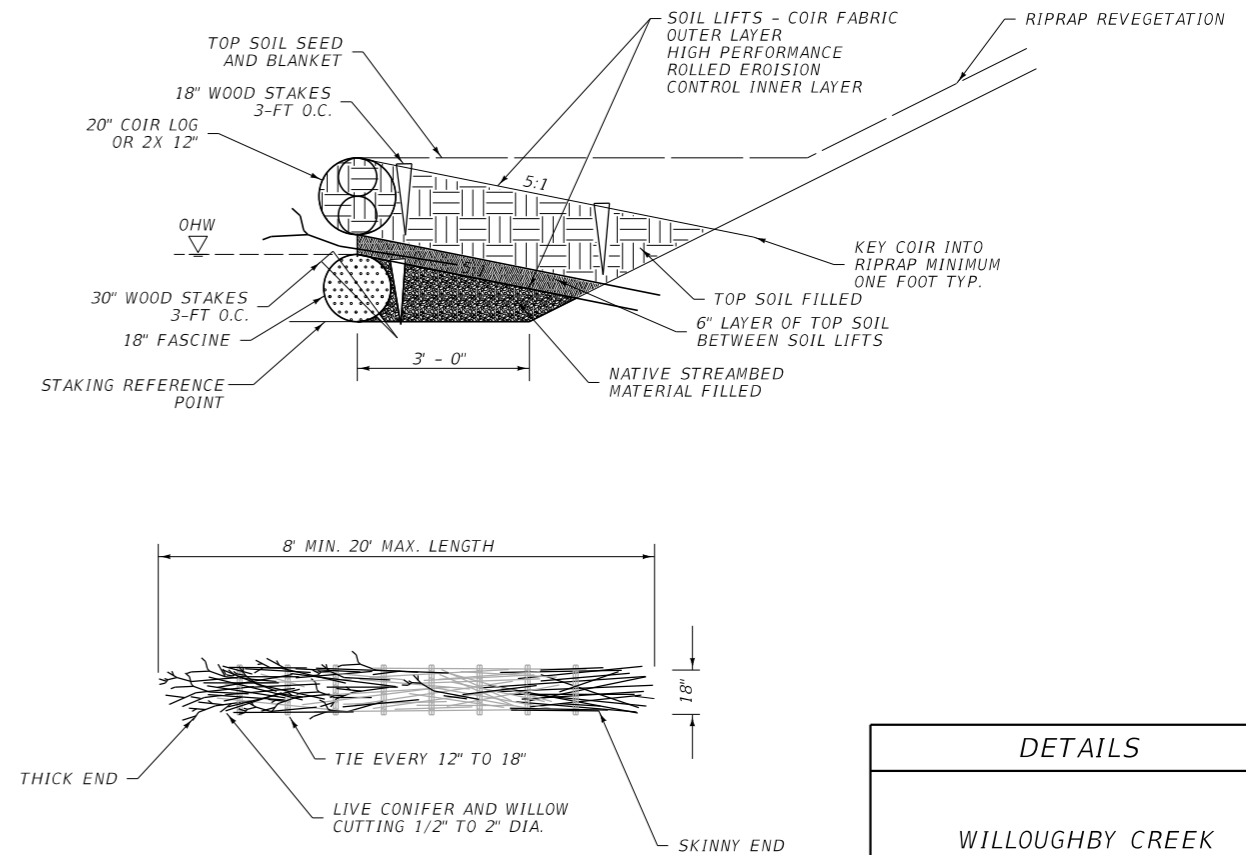
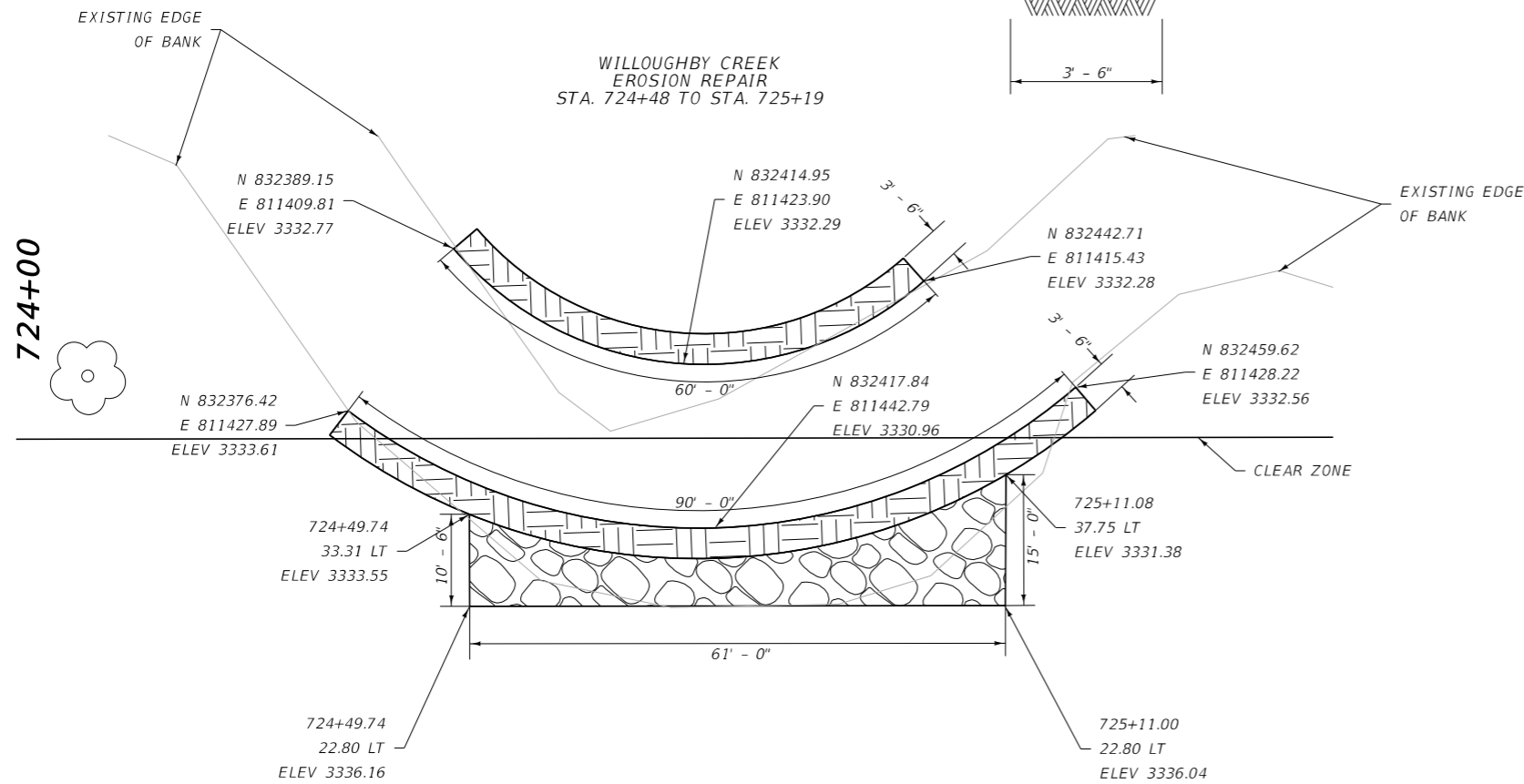
1. FILL RIPRAP VOIDS WITH GRANULAR BEDDING MATERIAL, OR A MATERIAL OF SIMILAR GRADATION OBTAINED ON SITE TO PROVIDE A UNIFORM SURFACE FOR THE PLACEMENT OF TOPSOIL, AS APPROVED BY THE ENGINEER.
2. PLACE TOPSOIL WITH A MINIMUM THICKNESS OF 6".
3. THIS DETAIL IS TO BE USED AS A VISUAL GUIDE FOR RIPRAP REVEGETATION. REFER TO THE PLAN SHEETS AND CROSS SECTIONS FOR SPECIFIC ELEVATIONS AND GEOMETRIC CONFIGURATION OF THE RIPRAP LAYOUT.
4. REFER TO THE SPECIAL PROVISIONS FOR PLANTING AND SEEDING SPECIFICATIONS.
5. MINIMIZE ENCROACHMENT INTO THE ACTIVE CHANNEL TO THE EXTENT NECESSARY.
6. STAKE FASCINES EVERY 3-FT O.C. OVERLAP ADJACENT BUNDLES 18" IN THE DOWNSTREAM DIRECTION.
7. FOR EACH INDIVIDUAL SOIL LIFT WRAP COIR FABRIC AROUND COIR LOG AND KEY COIR FABRIC INTO NEW RIPRAP A MINIMUM OF ONE FOOT ON BOTH THE TOP AND BOTTOM OF THE SOIL LIFT.



LEGEND



DOWL

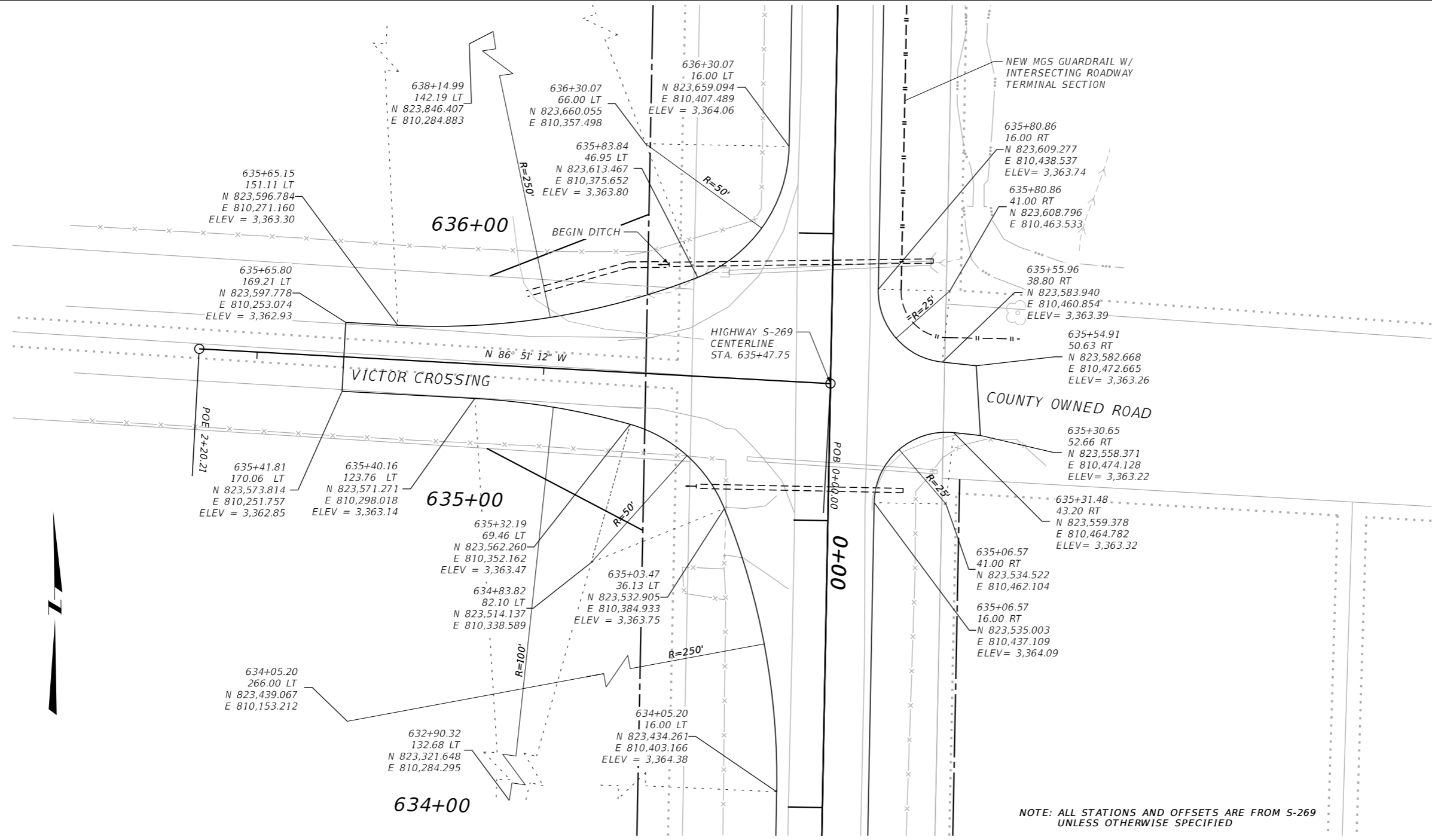


**DETAILS**

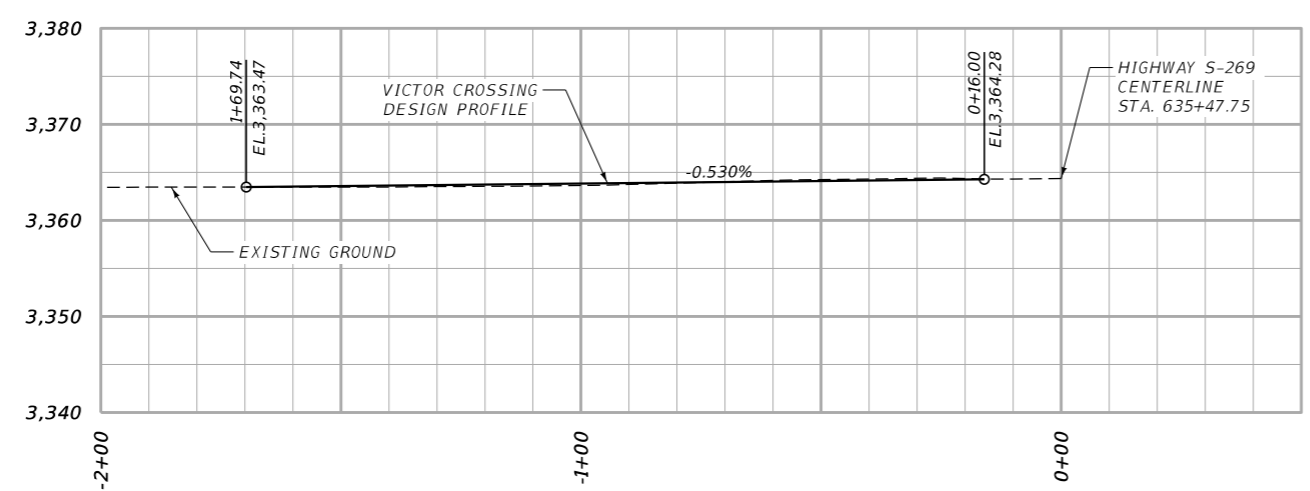
**WILLOUGHBY CREEK  
EROSION REPAIR  
STA. 724+48 TO STA. 725+19**

NOT TO SCALE

DOWL

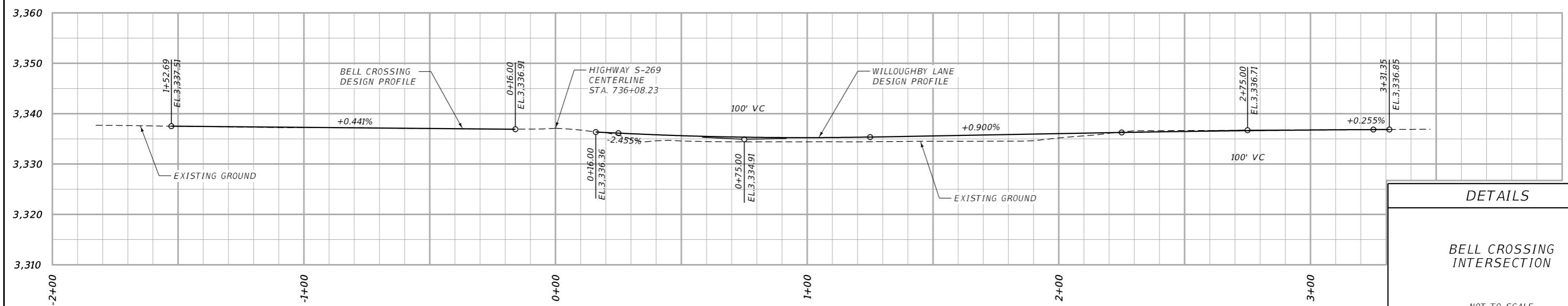
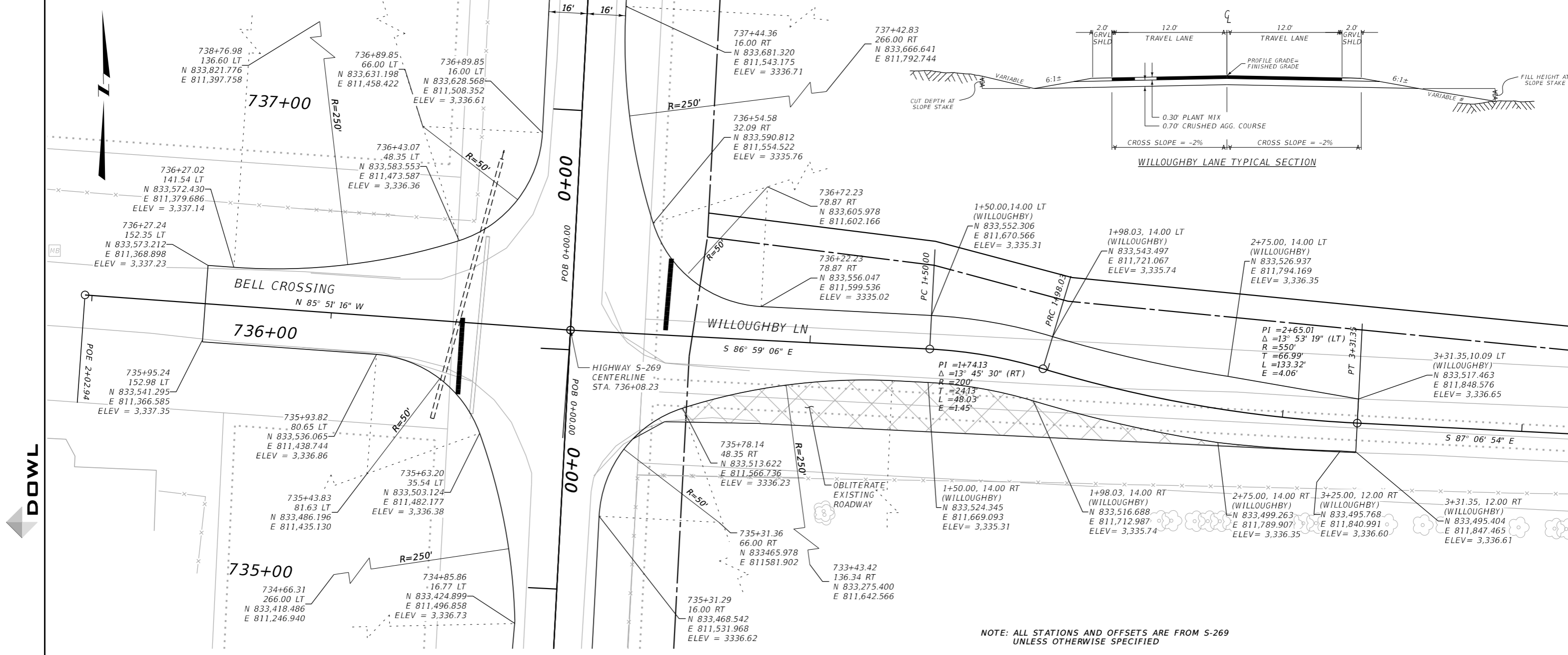


NOTE: ALL STATIONS AND OFFSETS ARE FROM S-269 UNLESS OTHERWISE SPECIFIED



DETAILS

VICTOR CROSSING INTERSECTION



**DETAILS**

**BELL CROSSING INTERSECTION**

NOT TO SCALE

**DITCHES**  
 578+49 TO 588+85 LT. - TYPE "B" FIELD DITCH  
 588+85 TO 595+02 RT. - TYPE "B" FIELD DITCH  
 595+08 TO 606+00 LT. - TYPE "B" FIELD DITCH

**FENCING**  
 578+00 TO 588+00 LT.  
 578+00 TO 595+02 RT.  
 592+33 TO 635+22 LT.  
 594+33 TO 602+57 RT.

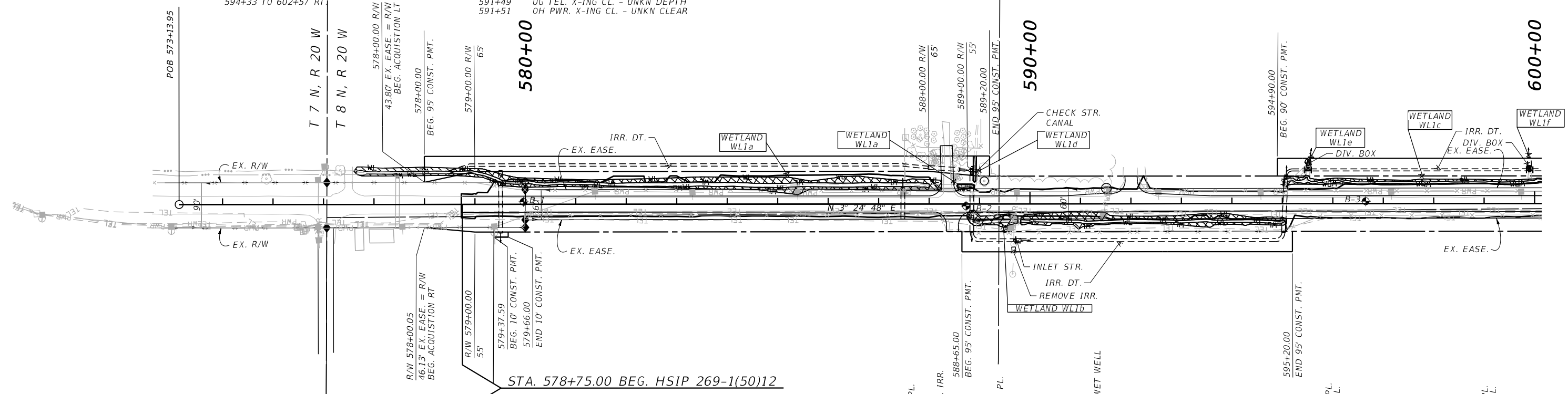
**UTILITY CROSSINGS**  
 575+90 OH PWR. X-ING CL. - UNKN CLEAR  
 580+65 OH PWR. X-ING CL. - UNKN CLEAR  
 589+72 OH PWR. X-ING CL. - UNKN CLEAR  
 591+49 UG TEL. X-ING CL. - UNKN DEPTH  
 591+51 OH PWR. X-ING CL. - UNKN CLEAR

**TREE REMOVAL**  
 589+09 LT.  
 591+51 LT. (2)

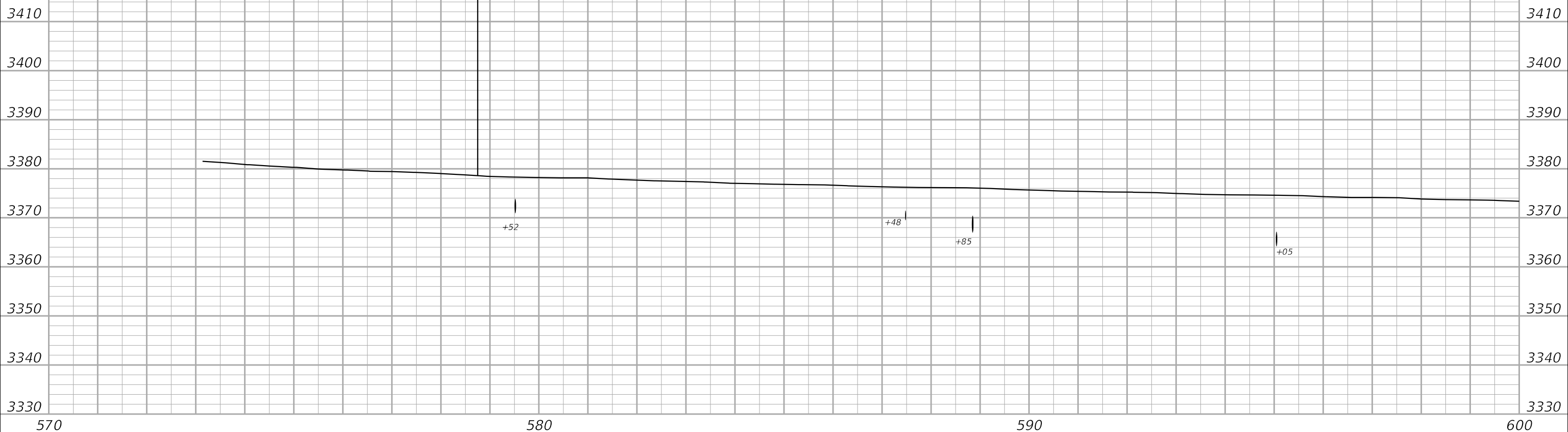
**APPROACHES**  
 588+38 LT. - PRIVATE APPROACH  
 588+47 RT. - FARM FIELD APPROACH  
 592+03 LT. - PRIVATE APPROACH

**MAILBOX TURNOUTS**  
 590+72 TO 593+58 LT. - 1 MAILBOX

**MAILBOXES**  
 592+38 LT.



STA. 578+75.00 BEG. HSIP 269-1(50)12



579+52  
 30" IRR IN PL.  
 REMOVE  
 579+52  
 NEW 24" RCP IRR.  
 Siphon  
 CAP ENDS

587+48  
 24" DR. IN PL.  
 REMOVE  
 587+48  
 NEW 24" RCP DR.

588+38 LT  
 36" APP. IRR. IN PL.  
 REMOVE  
 588+38 LT  
 NEW 36" RCP APP. IRR.  
 IRR. IN PL.  
 REMOVE

588+85 LT  
 20" APP. PIPES IN PL.  
 REMOVE  
 588+85 LT  
 IRR. STR. IN PL.  
 REMOVE  
 588+85  
 NEW 42" RCP IRR.  
 W/ CHECK STR.  
 CANAL LT.

589+68 RT  
 PUMP HOUSE W/ WET WELL  
 RELOCATE STR.  
 589+72 RT.  
 IRR. STR. IN PL.  
 REMOVE  
 589+72 RT.  
 NEW INLET STR.

589+82 RT.  
 IRR. IN PL.  
 REMOVE  
 589+82 RT.  
 NEW 24" RCP IRR.

595+05  
 36" IRR. IN PL.  
 REMOVE  
 595+05  
 NEW 36" RCP IRR.  
 3" SKEW RT.

595+52 LT  
 24" APP. STR. IN PL.  
 REMOVE  
 595+52 LT.  
 NEW DIV. BOX  
 595+52 LT.  
 NEW 18" RCP IRR.

599+90 LT  
 24" CMP IRR. IN PL.  
 (2) APP. STR. IN PL.  
 REMOVE  
 599+90 LT.  
 NEW 24" RCP IRR.  
 599+90 LT.  
 NEW DIV. BOX

**DITCHES**  
 611+72 TO 613+50 LT. - TYPE "A" FIELD DITCH  
 613+50 TO 614+00 LT. - TRANS. FROM TYPE "A" TO TYPE "B" FIELD DITCH  
 614+00 TO 619+50 LT. - TYPE "B" FIELD DITCH  
 619+50 TO 620+00 LT. - TRANS. FROM TYPE "B" TO TYPE "A" FIELD DITCH  
 620+00 TO 631+78 LT. - TYPE "A" FIELD DITCH

**UTILITY CROSSINGS**  
 602+25 OH PWR. X-ING CL. - UNKN CLEAR  
 604+79 OH PWR. X-ING CL. - UNKN CLEAR

**APPROACHES**  
 601+50 RT. - FARM FIELD APPROACH  
 602+73 RT. - FARM FIELD APPROACH  
 604+92 RT. - PRIVATE APPROACH  
 616+88 RT. - PUBLIC APPROACH

**TREE REMOVAL**  
 605+89 RT.

**FENCING**  
 606+50 TO 616+58 RT.  
 617+15 TO 629+88 RT.  
 630+25 TO 631+44 RT.

**MAILBOXES**  
 605+34 RT.

PI = 624+31.19  
 Δ = 23° 16' 57" (LT)  
 R = 3,930'  
 T = 809.66'  
 L = 1,596.97'  
 E = 82.54'

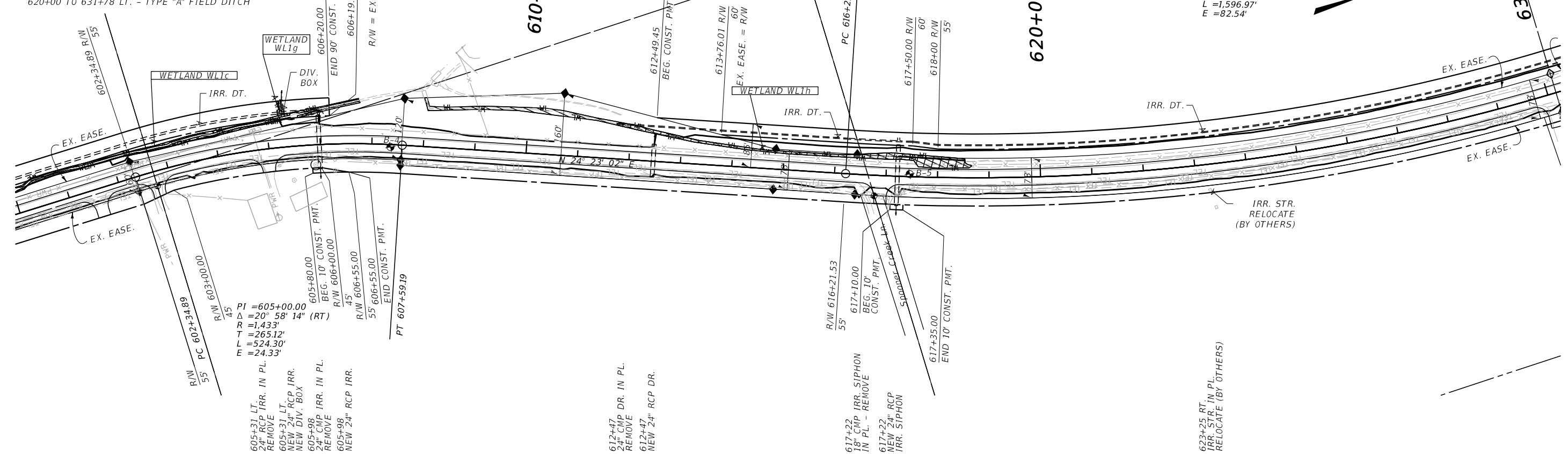


600+00

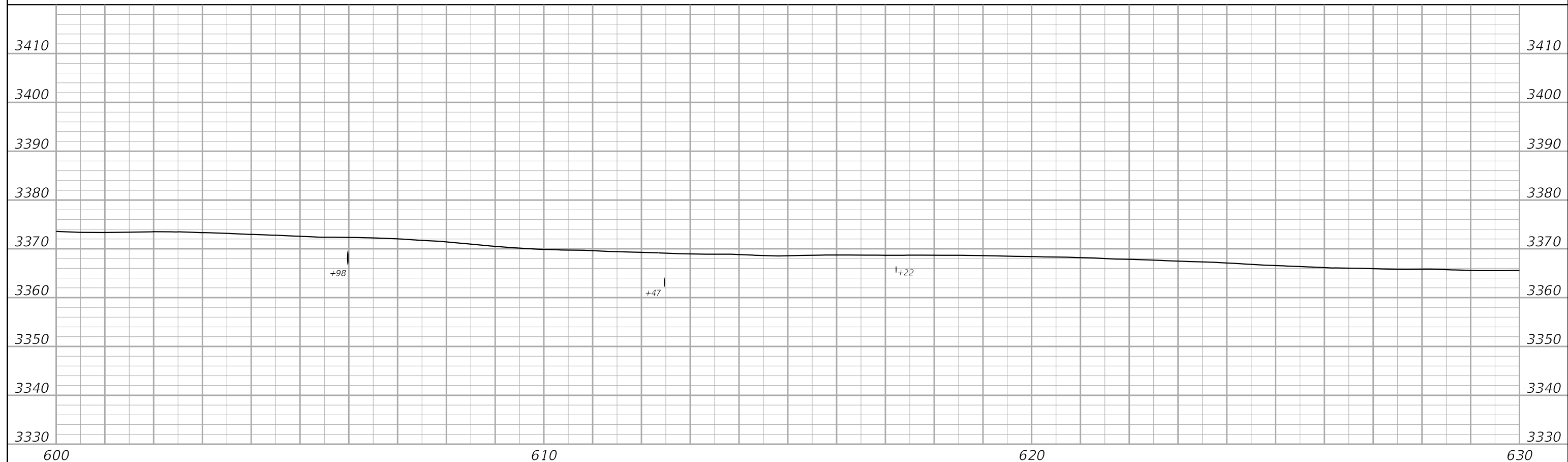
610+00

620+00

630+00



DOWL



3	MDT	MONTANA DEPARTMENT OF TRANSPORTATION	...8914000\RD\8914000RDP	DESIGNED BY		ROAD PLANS	SF 149 S OF STEVENS VLL SFTY IMP	HSIP 269-1(50)12	
			7/16/2020	REVIEWED BY					
			2:39:08 PM	CHECKED BY	dzuelke				
1						RAVALLI COUNTY	UPN 8914000	SHEET 25	

**MAILBOX TURNOUTS**  
 630+36 TO 632+48 RT. - 1 MAILBOX  
 642+42 TO 644+78 LT. - 1 MAILBOX  
 651+68 TO 656+12 LT. - 2 MAILBOXES

**DITCHES**  
 644+00 TO 651+62 LT. - TYPE "B" FIELD DITCH  
 644+07 TO 656+82 RT. - TYPE "B" FIELD DITCH

**TREE REMOVAL**  
 637+51 RT.

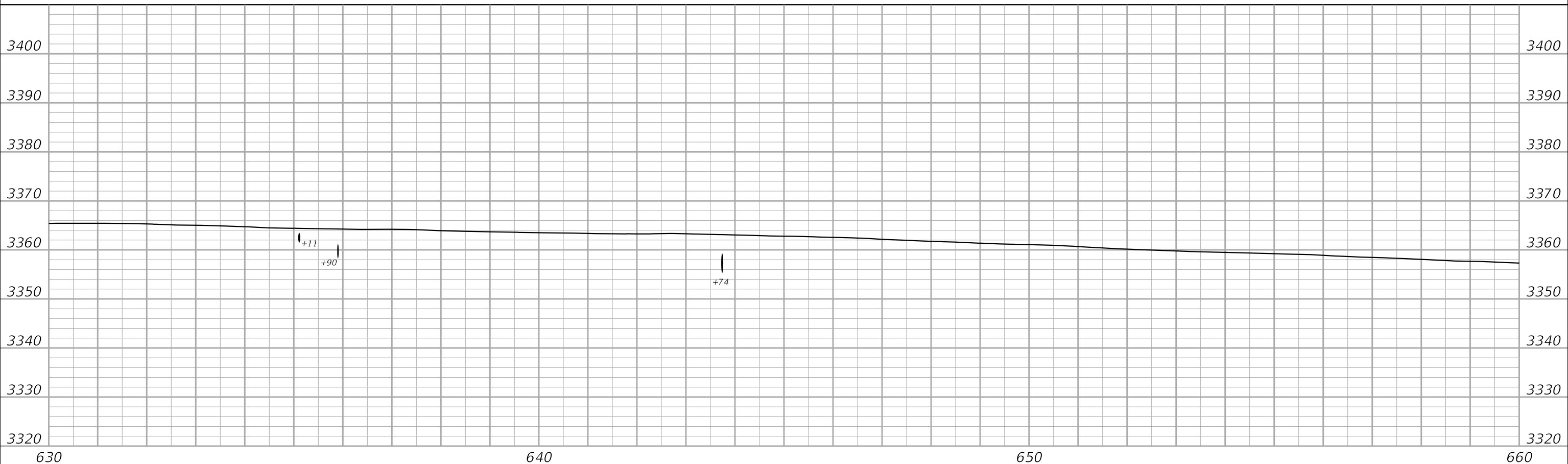
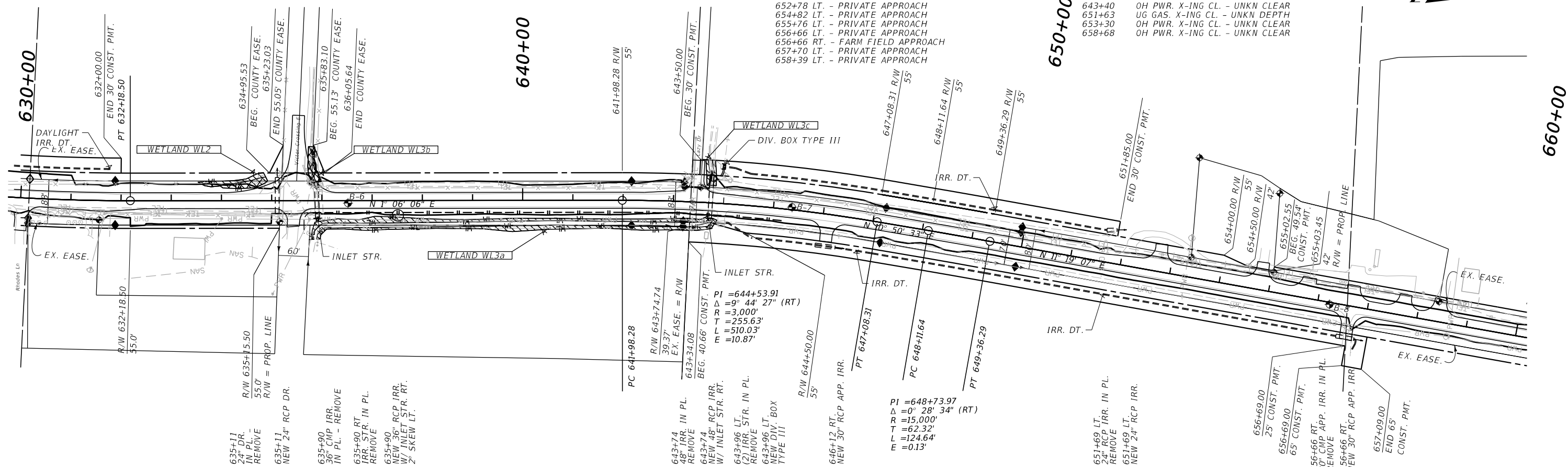
**FENCING**  
 631+79 TO 635+24 RT.  
 636+00 TO 643+22 LT.  
 643+99 TO 651+76 LT.

**GUARDRAIL**  
 635+65 TO 645+68 RT.

**APPROACHES**  
 630+03 RT. - PRIVATE APPROACH  
 635+46 RT. - PRIVATE APPROACH  
 635+48 LT. - PUBLIC APPROACH  
 643+47 LT. - PRIVATE APPROACH  
 646+12 RT. - FARM FIELD APPROACH  
 652+78 LT. - PRIVATE APPROACH  
 654+82 LT. - PRIVATE APPROACH  
 655+76 LT. - PRIVATE APPROACH  
 656+66 LT. - PRIVATE APPROACH  
 656+66 RT. - FARM FIELD APPROACH  
 657+70 LT. - PRIVATE APPROACH  
 658+39 LT. - PRIVATE APPROACH

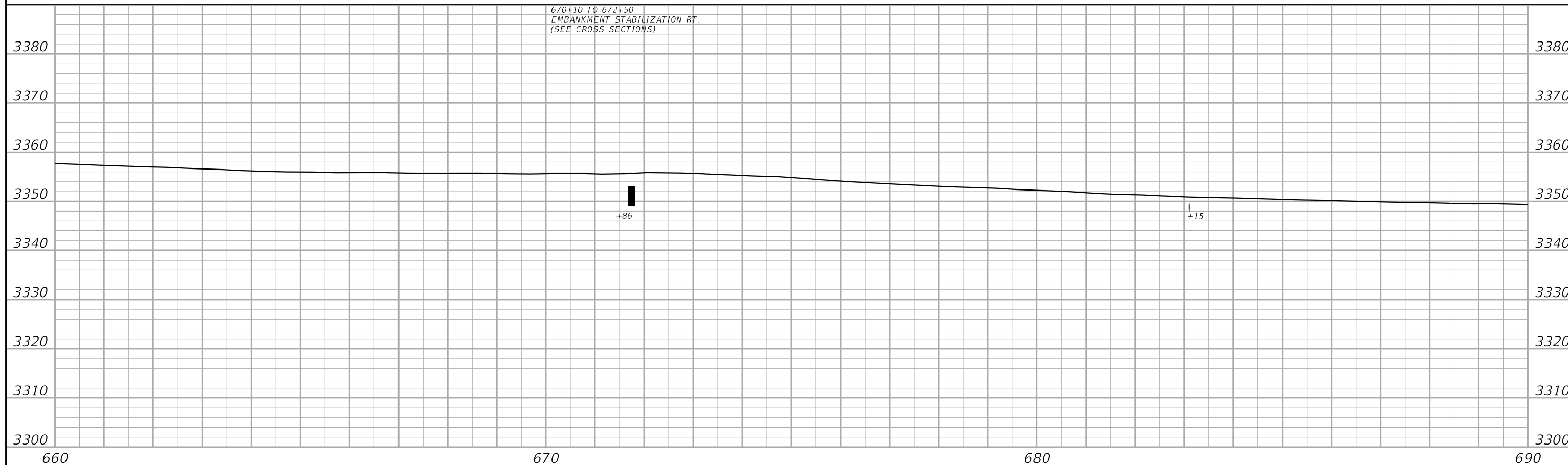
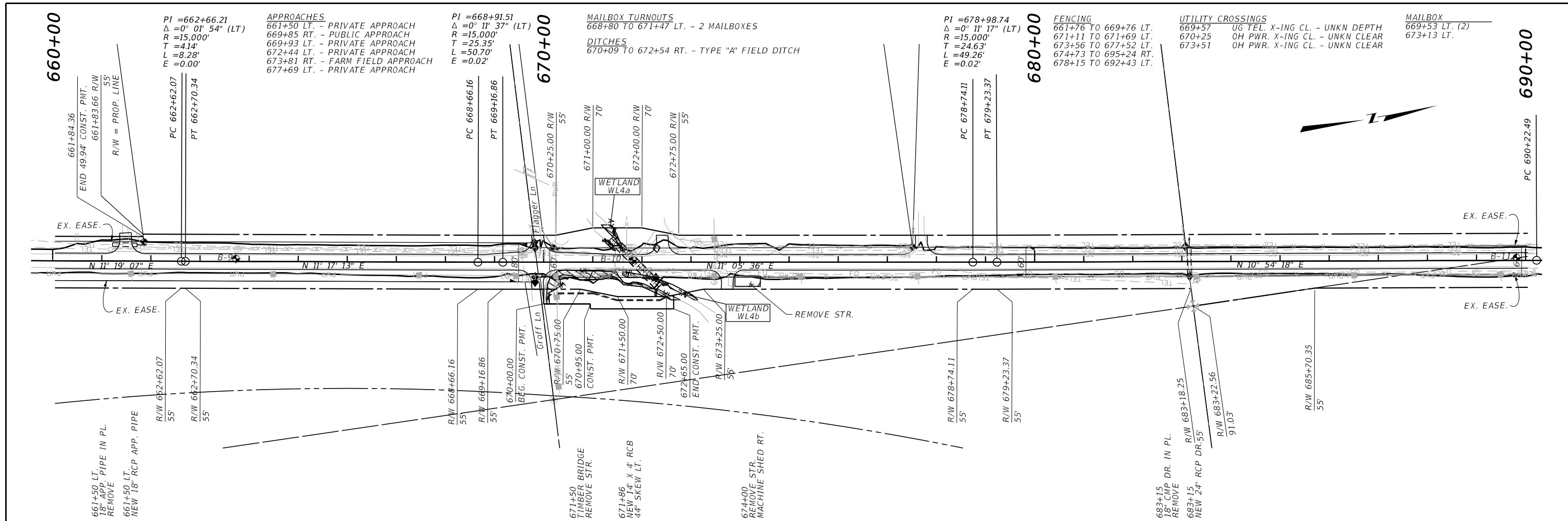
**MAILBOXES**  
 631+70 RT.  
 643+12 LT.  
 653+13 LT.  
 654+44 LT.  
 658+79 LT.

**UTILITY CROSSINGS**  
 635+54 OH PWR. X-ING CL. - UNKN CLEAR  
 635+72 UG TEL. X-ING CL. - UNKN DEPTH  
 635+93 UG TEL. X-ING CL. - UNKN DEPTH  
 635+95 UG TEL. X-ING CL. - UNKN DEPTH  
 635+01 UG TEL. X-ING CL. - UNKN DEPTH  
 643+40 OH PWR. X-ING CL. - UNKN CLEAR  
 651+63 UG GAS. X-ING CL. - UNKN DEPTH  
 653+30 OH PWR. X-ING CL. - UNKN CLEAR  
 658+68 OH PWR. X-ING CL. - UNKN CLEAR



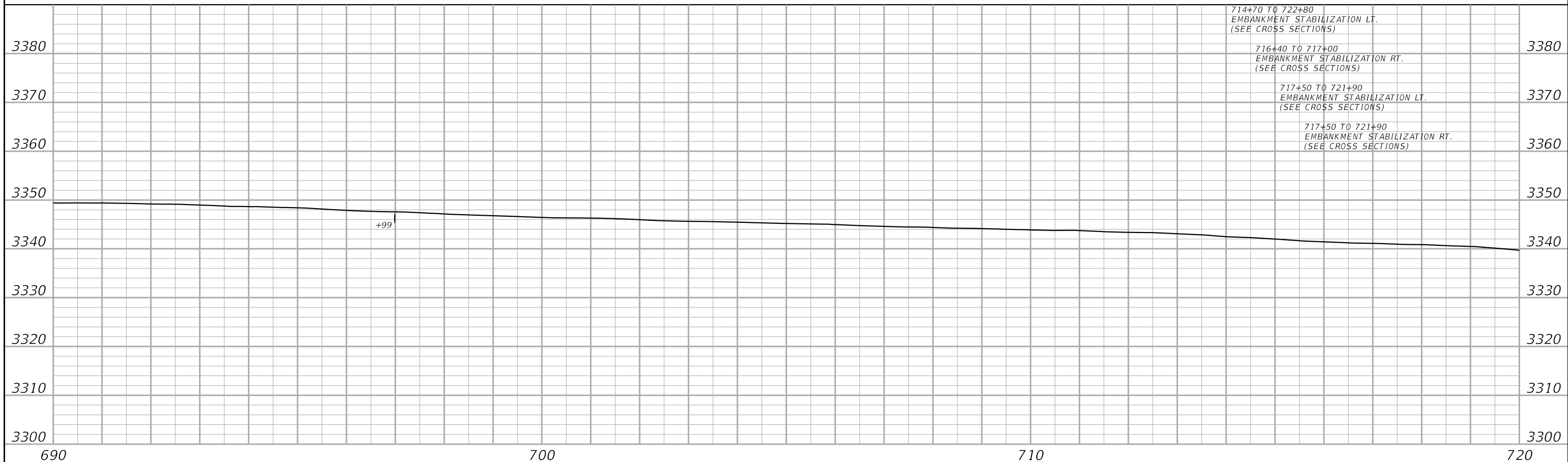
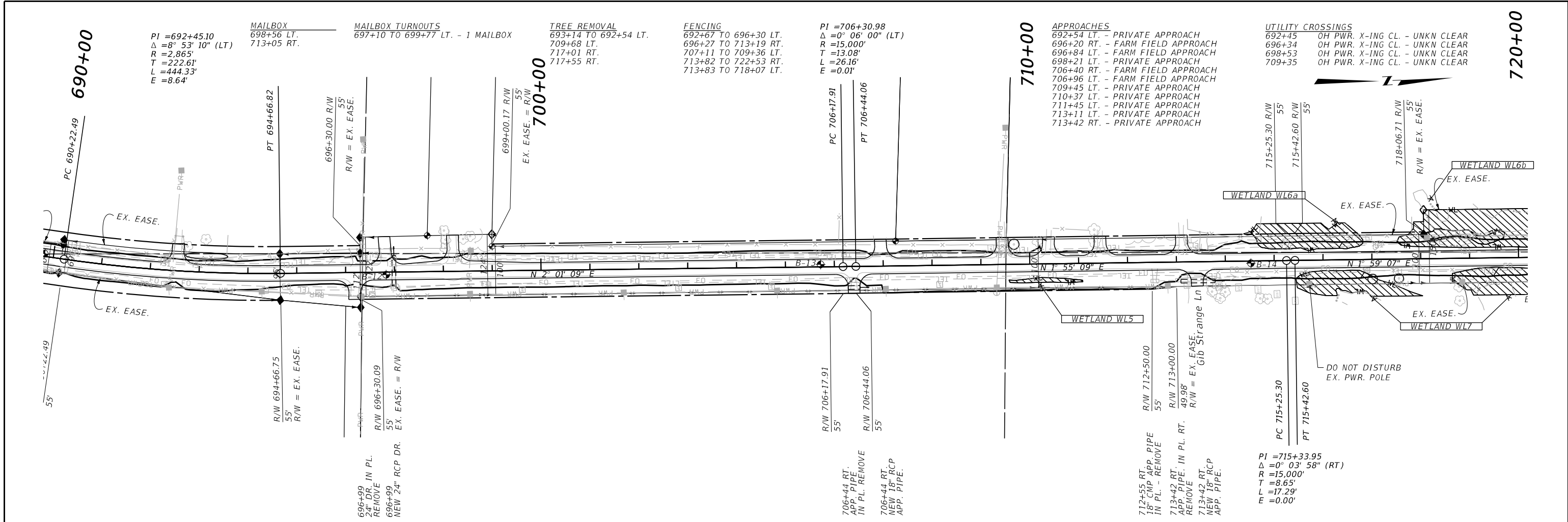
2	MDT	MONTANA DEPARTMENT OF TRANSPORTATION	...8914000\RD\8914000RDP	DESIGNED BY		ROAD PLANS	SF 149 S OF STEVENSVLL SFTY IMP	HSIP 269-1(50)12
1			7/16/2020	REVIEWED BY		RAVALLI COUNTY	UPN 8914000	SHEET 26
			2:39:09 PM	CHECKED BY	dzuelke			

DOWL



3	<b>MDT</b> MONTANA DEPARTMENT OF TRANSPORTATION ...8914000\RD\8914000RDP	DESIGNED BY		ROAD PLANS	SF 149 S OF STEVENSVLL SFTY IMP	HSIP 269-1(50)12
2		7/16/2020	REVIEWED BY	RAVALLI COUNTY	UPN 8914000	SHEET 27
		2:39:12 PM	dzuelke	CHECKED BY		

DOWL



3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	...8914000\RD\8914000RDP	DESIGNED BY		ROAD PLANS	SF 149 S OF STEVENSVLL SFTY IMP	HSIP 269-1(50)12
1		7/16/2020	REVIEWED BY		RAVALLI COUNTY	UPN 8914000	SHEET 28
		2:39:14 PM	CHECKED BY	dzuelke			



**APPROACHES**  
 722+66 LT. - PRIVATE APPROACH  
 722+66 RT. - FARM FIELD APPROACH  
 730+86 RT. - PRIVATE APPROACH  
 732+06 RT. - PRIVATE APPROACH  
 732+88 LT. - PRIVATE APPROACH  
 736+08 LT. - PUBLIC APPROACH  
 736+08 RT. - PUBLIC APPROACH  
 740+74 LT. - FARM FIELD APPROACH  
 742+72 LT. - PRIVATE APPROACH  
 743+58 LT. - PRIVATE APPROACH  
 749+13 RT. - FARM FIELD APPROACH

**MAILBOX TURNOUTS**  
 729+29 TO 733+54 RT. - 1 MAILBOX  
 730+99 TO 735+01 LT. - 1 MAILBOX

**GUARDRAIL**  
 723+50 TO 728+00 LT.  
 726+89 TO 730+71 RT.

**FENCING**  
 723+28 TO 730+82 LT.  
 723+22 TO 731+84 RT.  
 732+25 TO 735+50 RT.  
 736+52 TO 740+63 LT.  
 744+66 TO 763+41 LT.

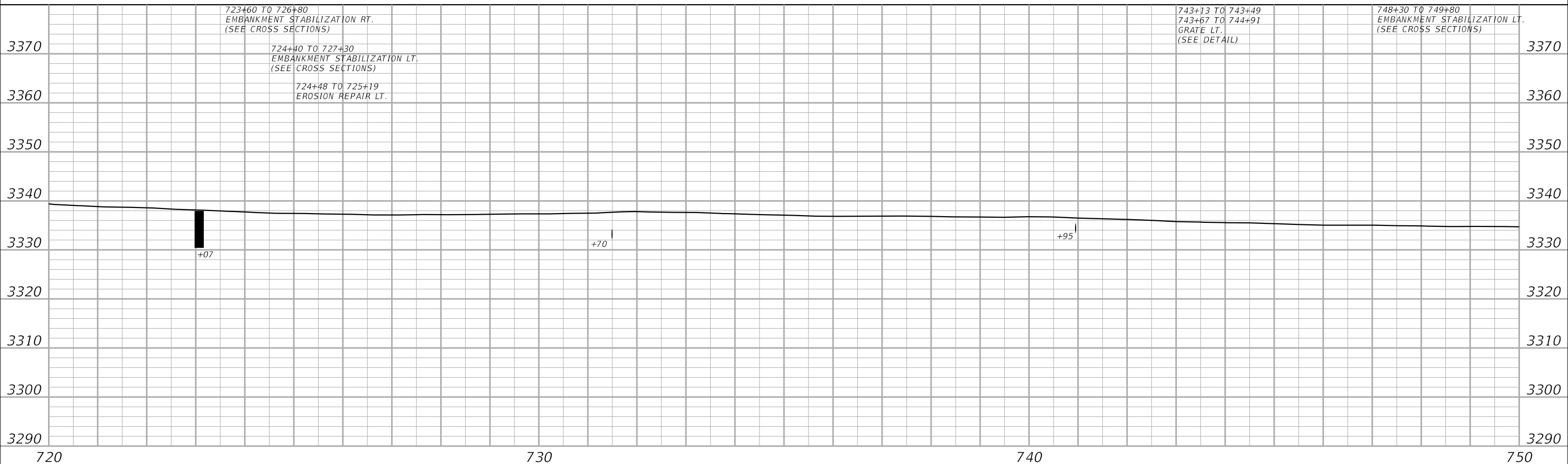
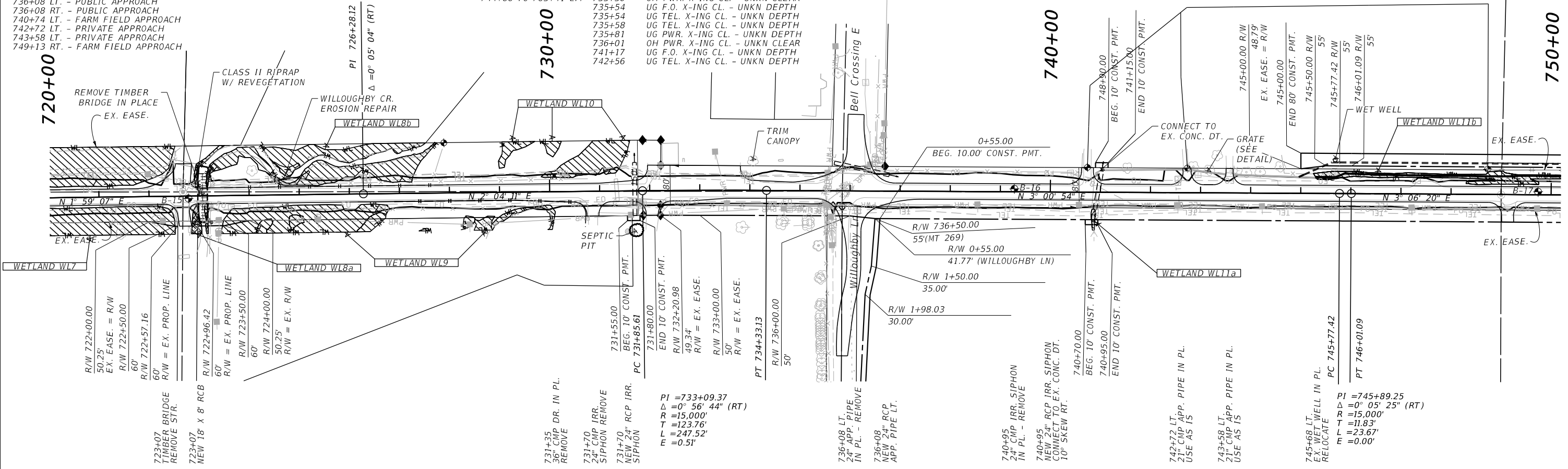
**UTILITY CROSSINGS**  
 722+82 UG TEL. X-ING CL. - UNKN DEPTH  
 731+92 OH PWR. X-ING CL. - UNKN CLEAR  
 733+49 OH PWR. X-ING CL. - UNKN CLEAR  
 735+50 UG TEL. X-ING CL. - UNKN DEPTH  
 735+50 OH PWR. X-ING CL. - UNKN CLEAR  
 735+54 UG F.O. X-ING CL. - UNKN DEPTH  
 735+54 UG TEL. X-ING CL. - UNKN DEPTH  
 735+58 UG TEL. X-ING CL. - UNKN DEPTH  
 735+81 UG PWR. X-ING CL. - UNKN DEPTH  
 736+01 OH PWR. X-ING CL. - UNKN CLEAR  
 741+17 UG F.O. X-ING CL. - UNKN DEPTH  
 742+56 UG TEL. X-ING CL. - UNKN DEPTH

**RIPRAP**  
 724+42 TO 725+19 LT.

**DO NOT DISTURB**  
 731+75 RT. - SEPTIC PIT

**MAILBOX**  
 721+74 LT.  
 731+68 RT.  
 734+05 LT.  
 743+06 LT.

**DITCHES**  
 745+05 TO 761+88 LT. - TYPE "A" FIELD DITCH



720	730	740	750
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- APPROACHES**
- 756+96 LT. - FARM FIELD APPROACH
  - 762+54 RT. - FARM FIELD APPROACH
  - 765+48 LT. - PRIVATE APPROACH
  - 767+02 RT. - FARM FIELD APPROACH
  - 767+03 LT. - FARM FIELD APPROACH
  - 768+48 LT. - PUBLIC APPROACH
  - 770+89 LT. - PRIVATE APPROACH
  - 774+63 LT. - PRIVATE APPROACH
  - 775+36 RT. - PRIVATE APPROACH
  - 778+95 LT. - FARM FIELD APPROACH
  - 778+95 RT. - FARM FIELD APPROACH

- UTILITY CROSSINGS**
- 756+25 OH PWR. X-ING CL. - UNKN CLEAR
  - 762+46 OH PWR. X-ING CL. - UNKN CLEAR
  - 765+53 OH PWR. X-ING CL. - UNKN CLEAR
  - 770+23 OH PWR. X-ING CL. - UNKN CLEAR
  - 773+81 UG TEL. X-ING CL. - UNKN DEPTH
  - 774+72 OH PWR. X-ING CL. - UNKN CLEAR

- TREE REMOVAL**
- 768+05 - LT.
  - 774+45 - LT. (2)
  - 774+88 - LT. (2)
  - 775+43 - LT.
  - 775+63 - LT.

- DITCHES**
- 775+77 TO 777+21 LT. - TYPE "A" FIELD DITCH

- FENCING**
- 765+69 TO 768+29 LT.
  - 771+18 TO 772+61 LT.
  - 777+23 TO 801+39 LT.

- MAILBOXES**
- 770+51 LT.
  - 775+02 LT.
  - 775+79 RT.

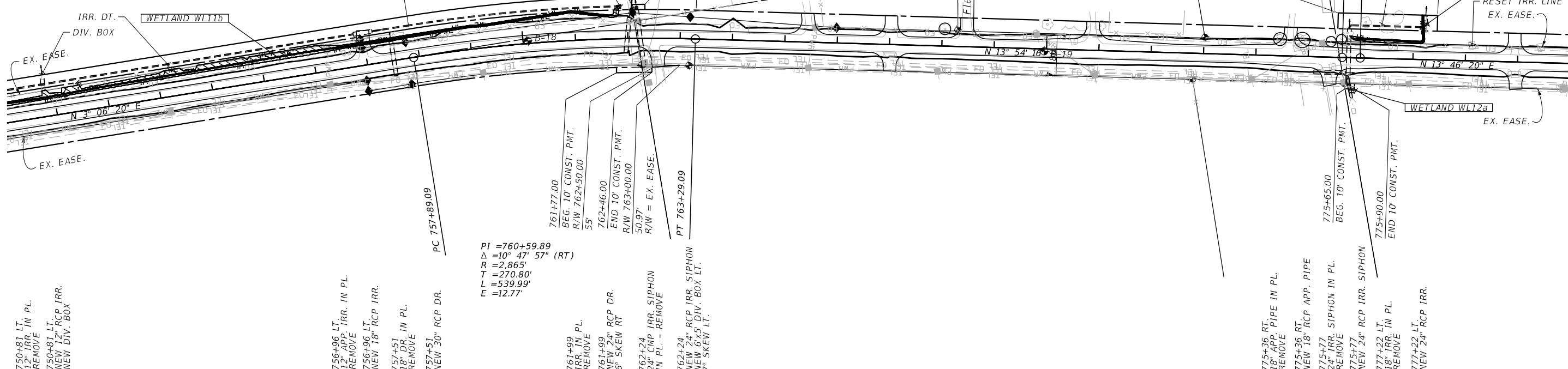
- MAILBOX TURNOUTS**
- 769+59 TO 772+25 LT. - 1 MAILBOX
  - 773+36 TO 776+22 LT. - 1 MAILBOX
  - 773+82 TO 776+70 RT. - 1 MAILBOX

750+00

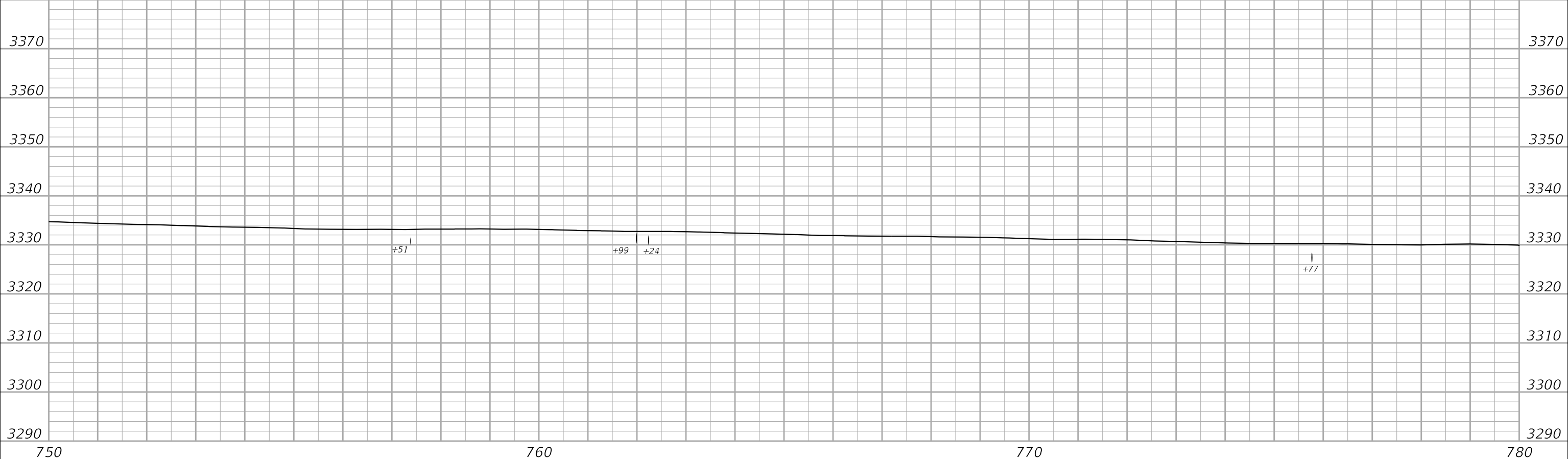
760+00

770+00

780+00



DOWL



3	<b>MDT</b> MONTANA DEPARTMENT OF TRANSPORTATION 7/16/2020 2:39:17 PM dzuлке	DESIGNED BY		ROAD PLANS	SF 149 S OF STEVENSVLL SFTY IMP	HSIP 269-1(50)12
2		REVIEWED BY		RAVALLI COUNTY	UPN 8914000	SHEET 30
		CHECKED BY				

780+00

APPROACHES  
789+02 RT. - PUBLIC APPROACH  
801+57 LT. - FARM FIELD APPROACH  
801+73 RT. - FARM FIELD APPROACH

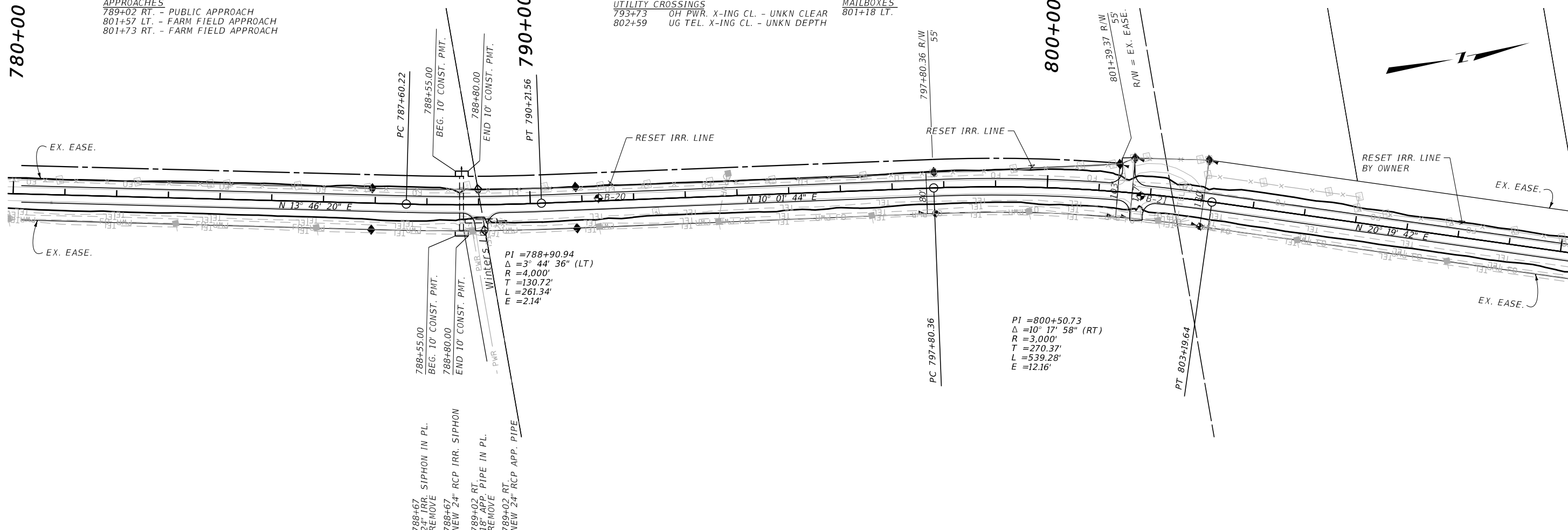
790+00

UTILITY CROSSINGS  
793+73 OH PWR. X-ING CL. - UNKN CLEAR  
802+59 UG TEL. X-ING CL. - UNKN DEPTH

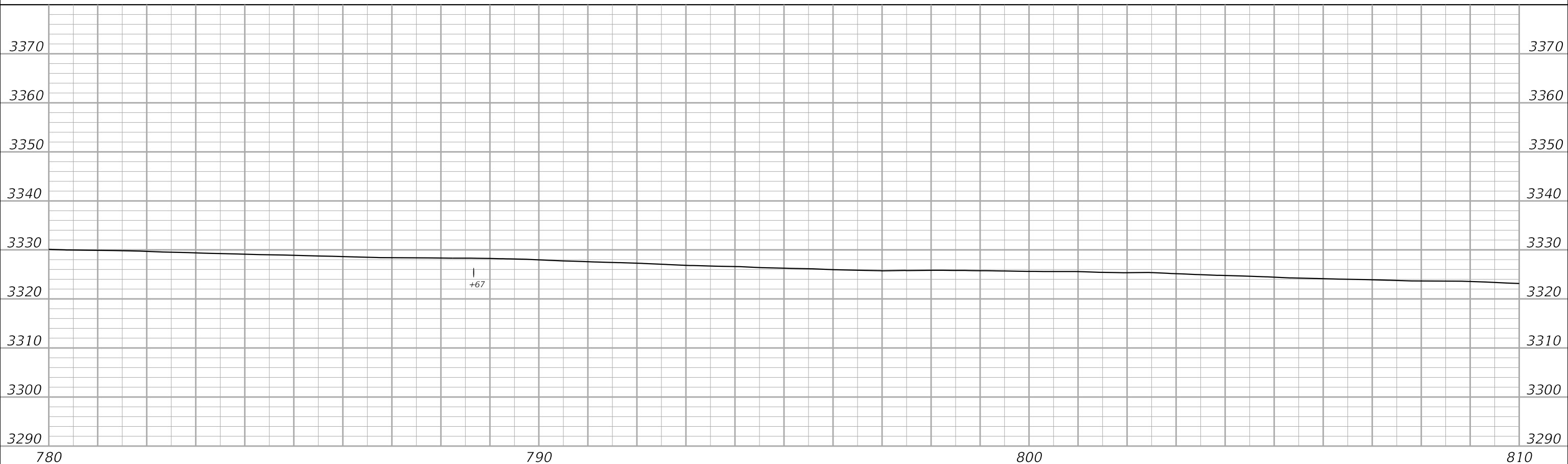
MAILBOXES  
801+18 LT.

800+00

810+00



DOWL



3	MONTANA DEPARTMENT OF TRANSPORTATION ...8914000\RD\8914000RDP\	DESIGNED BY		ROAD PLANS	SF 149 S OF STEVENS VLL SFTY IMP	HSIP 269-1(50)12			
1		7/16/2020	REVIEWED BY				RAVALLI COUNTY	UPN 8914000	SHEET 31
		2:39:19 PM	dzuelke				CHECKED BY		

810+00

**APPROACHES**  
 810+57 LT. - PRIVATE APPROACH  
 814+58 LT. - FARM FIELD APPROACH  
 815+83 LT. - PRIVATE APPROACH  
 816+56 RT. - PRIVATE APPROACH  
 816+89 LT. - PRIVATE APPROACH  
 817+86 RT. - FARM FIELD APPROACH  
 825+45 RT. - FARM FIELD APPROACH  
 837+03 LT. - FARM FIELD APPROACH  
 837+03 RT. - FARM FIELD APPROACH

**MAILBOX TURNOUTS**  
 815+61 TO 818+47 LT. - 2 MAILBOXES

**TREE REMOVAL**  
 823+82 RT. (2)

**FENCING**  
 806+00 TO 814+46 LT.  
 817+86 TO 857+97 LT.

**DO NOT DISTURB**  
 837+25 LT. - OXBOW BENCH SITE

**UTILITY CROSSINGS**  
 816+07 OH PWR. X-ING CL. - UNKN CLEAR  
 816+11 UG TEL. X-ING CL. - UNKN DEPTH  
 825+00 TO 869+00 RT. (2) UG TEL.  
 832+70 RT. PWR. POLE

**GUARDRAIL**  
 829+95 TO 836+18 LT.

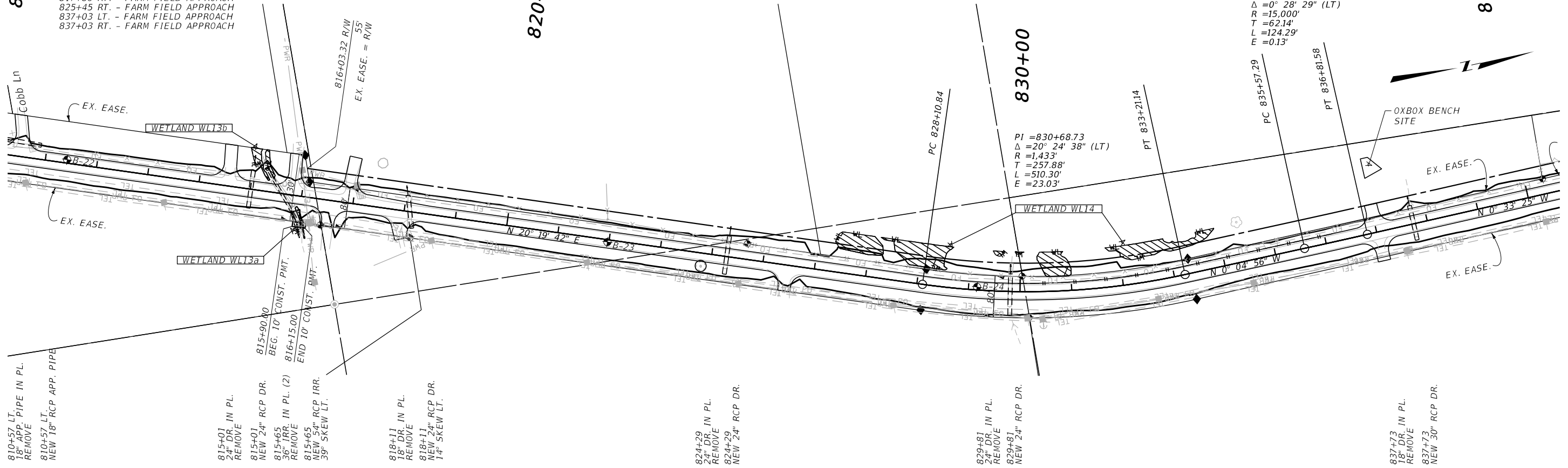
**MAILBOXES**  
 810+90 LT.  
 817+27 LT. (2)

840+00

PI = 836+19.43  
 $\Delta = 0^\circ 28' 29''$  (LT)  
 R = 15,000'  
 T = 62.14'  
 L = 124.29'  
 E = 0.13'

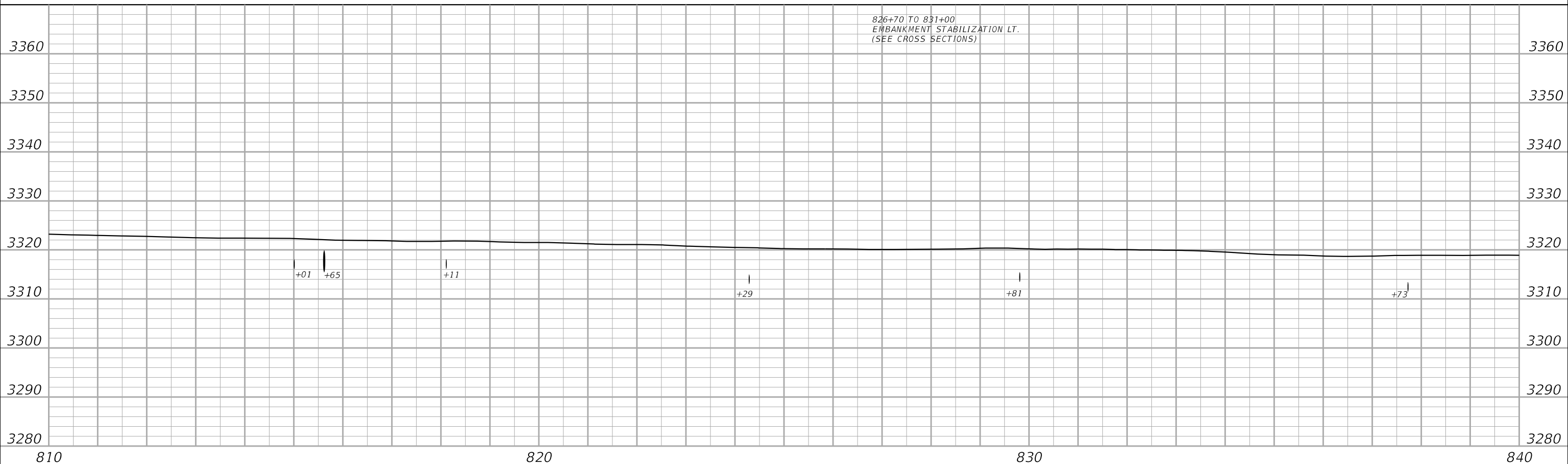
830+00

PI = 830+68.73  
 $\Delta = 20^\circ 24' 38''$  (LT)  
 R = 1,433'  
 T = 257.88'  
 L = 510.30'  
 E = 23.03'



810+57 LT. 18" APP. PIPE IN PL. REMOVE  
 810+57 LT. NEW 18" RCP APP. PIPE  
 815+01 24" DR. IN PL. REMOVE  
 815+01 NEW 24" RCP DR.  
 815+65 36" TOR. IN PL. (2) REMOVE  
 815+65 NEW 54" RCP IRR. 39" SKEW LT.  
 818+11 18" DR. IN PL. REMOVE  
 818+11 NEW 24" RCP DR. 14" SKEW LT.  
 824+29 24" DR. IN PL. REMOVE  
 824+29 NEW 24" RCP DR.  
 829+81 24" DR. IN PL. REMOVE  
 829+81 NEW 24" RCP DR.  
 837+73 18" DR. IN PL. REMOVE  
 837+73 NEW 30" RCP DR.

DOWL



810	820	830	840
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840+00

TREE REMOVAL  
852+41 LT.

APPROACHES  
843+22 RT. - PUBLIC APPROACH  
843+27 LT. - PRIVATE APPROACH  
849+99 LT. - PRIVATE APPROACH  
851+76 RT. - FARM FIELD APPROACH  
853+74 RT. - PRIVATE APPROACH  
863+15 LT. - FARM FIELD APPROACH  
863+38 RT. - FARM FIELD APPROACH  
865+56 RT. - PRIVATE APPROACH  
867+08 LT. - PRIVATE APPROACH  
869+40 LT. - PRIVATE APPROACH  
869+72 RT. - FARM FIELD APPROACH

850+00

PI = 850+45.97  
Δ = 0° 10' 09" (LT)  
R = 15,000'  
T = 22.16'  
L = 44.31'  
E = 0.02'

FENCING  
847+86 TO 857+96 RT.  
853+90 TO 858+97 RT.  
859+08 TO 860+38 LT.  
863+32 TO 866+85 LT.  
863+69 TO 865+36 RT.  
865+73 TO 869+56 RT.  
867+28 TO 878+45 LT.  
869+88 TO 870+97 RT.

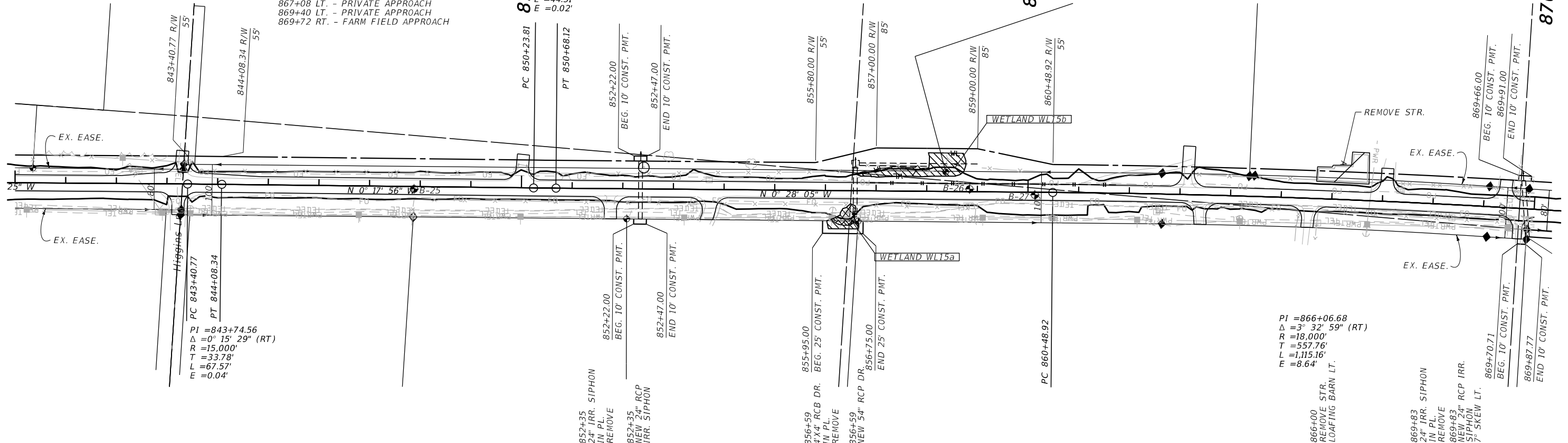
GUARDRAIL  
856+80 TO 861+74 LT.

860+00

UTILITY CROSSINGS  
842+50 OH PWR. X-ING CL. - UNKN CLEAR  
843+21 UG TEL. X-ING CL. - UNKN DEPTH  
866+75 OH PWR. X-ING CL. - UNKN CLEAR  
869+51 UG TEL. X-ING CL. - UNKN DEPTH

MAILBOX TURNOUTS  
842+11 TO 844+84 LT. - 1 MAILBOX

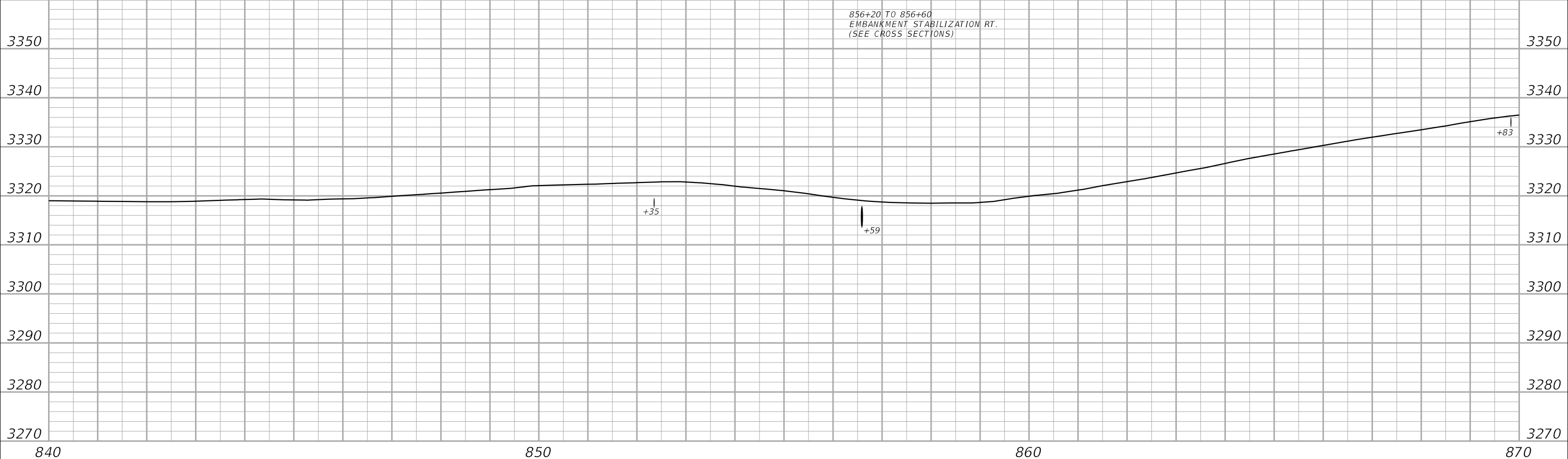
MAILBOXES  
842+83 LT.  
853+70 LT.  
867+45 LT. (2)



PI = 843+74.56  
Δ = 0° 15' 29" (RT)  
R = 15,000'  
T = 33.78'  
L = 67.57'  
E = 0.04'

PI = 866+06.68  
Δ = 3° 32' 59" (RT)  
R = 18,000'  
T = 557.76'  
L = 1,115.16'  
E = 8.64'

DOWL



3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	...8914000\RD\8914000RDP	DESIGNED BY	ROAD PLANS	SF 149 S OF STEVENS VLL SFTY IMP	HSIP 269-1(50)12
2		7/16/2020	REVIEWED BY	RAVALLI COUNTY	UPN 8914000	SHEET 33
		2:39:22 PM	CHECKED BY			

DOWL

