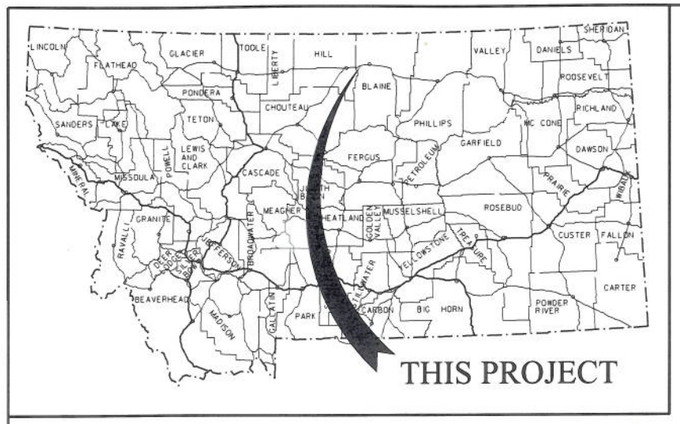
AWARD COPY



MONTANA DEPARTMENT OF TRANSPORTATION

PRESENT	2013	A.D.T. =	3,090
LETTING	2016	A.D.T. =	3,180
DESIGN	2036	A.D.T. =	3,880
		D.H.V. =	450
		TRUCKS =	13.3%
		V. =	70 MPH
		18 KIP ESAL'S =	199 DAILY
		GROWTH RATE =	1.0% ANNUALLY

FEDERAL AID PROJECT NHIP 1-7(44)393
GRADE, GRAVEL, PMBS, S&C. & STRUCTURES
LOHMAN - E & W
BLAINE COUNTY

LENGTH 10.4 MILES

PLANS MAY NOT REPRESENT ALL CURRENT DESIGN STANDARDS AND FONT CRITERIA.
REFER TO DESIGN MEMOS FOR CHANGES

SURFACING SOURCES - CONTRACTOR FURNISHED

Click here for a link to a checklist for Road Design plan preparation.

108+21 RT.
RIPRAP DRAIN CHUTE ONLY

109+10.89
BEG. CONN. TO PTW

153+22.74 (METRIC)
ON NH 1-6(63)386

109+30.89 BEG.
NHIP 1-7(44)393 =

127+54 RP 393.45 - DAVEY COULEE
34' X 19' BRIDGE IN PL.
STOCKPASS/DR.
REMOVE

261+76 RP 395.96 - CLEAR CREEK
29.6' X 59' BRIDGE IN PL.
REMOVE
NEW 42.8' X 93.8' BRIDGE SKEWED

319+41 RP 397.08 - CLEAR CREEK OVERFLOW
29.6' X 58' BRIDGE IN PL.
REMOVE

355+64 RP 397.77 - MILK RIVER BRIDGE
41.5' X 281.5' CONC. BRIDGE IN PL.
DO NOT DISTURB

505+59 RP 400.60 - FT. BELKNAP IRR. CANAL
29.6' X 21' BRIDGE IRR.CANAL IN PL.
REMOVE

568+59 RP 401.79 - REDROCK COULEE
WEST OVERFLOW
29.6' X 39' BRIDGE IN PL.
REMOVE
NEW 80.8 X 52.0' BRIDGE

594+61 RP 402.26 - REDROCK COULEE
29.6' X 59' BRIDGE IN PL.
REMOVE
NEW 66.8' X 93.8' BRIDGE SKEWED

617+41 RP 402.70 - REDROCK COULEE
EAST OVERFLOW
29.6' X 39' BRIDGE IN PL.
REMOVE
NEW 42.8' X 60.0' BRIDGE

656+65.00 END
NHIP 1-7(44)393 =
506+81.8 (ENG.)
ON FAP-66

657+57.00
END CONN. TO PTW

THIS CONTRACT
RP 393.1 TO RP 403.5

ASSOCIATED PROJECT AGREEMENT NUMBERS	
R / W	NH 1-7(37))393
I.C.	NH 1-7(58))393
P. E.	NH 1-7(43)393

MONTANA DEPARTMENT OF TRANSPORTATION

APPROVED : August 6 20 19

MICHAEL T. TOOLEY
DIRECTOR OF TRANSPORTATION

BY James A. Combs
HIGHWAYS ENGINEER

MONTANA JAMES A. COMBS 17536PE REGISTERED PROFESSIONAL ENGINEER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED :

DIVISION ADMINISTRATOR DATE

3 / 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdttl001.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS
		7/15/2019	REVIEWED BY JEANIA CERECK	8/22/2018	
		10:18:52 AM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	UPN 6281000

AWARD COPY

TABLE OF CONTENTS

Click here for a link to RDM Chapter 12 Plan Preparation

ROAD PLANS	SHEET NO.
TITLE SHEET	1
TABLE OF CONTENTS	2
NOTES	3-4
LINEAR & LEVEL DATA	5
CENTERLINE COORDINATE TABLE	5
CONTROL DIAGRAM & ABSTRACT	6-8
TYPICAL SECTIONS	9-20
SUMMARIES	21-33
SURFACING	21
ADDITIONAL SURFACING	22
RUMBLE STRIPS	22
COLD MILLING	22
PAVEMENT MARKINGS	22
GRADING	23
ADDITIONAL GRADING	23
TOPSOIL & SEEDING	24
EMBANKMENT FOUNDATION TREATMENT	24
BRIDGE END BACKFILL	24
GEOGRID TEST SECTION	24
DETOUR	24
REMOVE TREES	25
CULVERTS	26
CULVERTS (CONT.)	27
CULVERTS (CONT.)	28
APPROACH PIPE	29
CULVERT SUMMARY RECAP	30
EMBANKMENT PROTECTORS	30
MANHOLES	30
REMOVE STRUCTURE	30
MAILBOXES	30
GUARDRAIL	31
PERMANENT EROSION CONTROL	32
FENCING	33
HYDRAULIC DATA SUMMARY	34
DETAILS	35-84
EMB. FOUNDATION TREATMENT & EMB. PRECONSTRUCTION AND SPECIAL BORROW SUBBASE	35
30-YEAR BRIDGE END	36
COLD MILLING CONNECTION	36
GUARDRAIL WIDENING	36
SHARED USE PATH TYPICAL SECTION	36
SHARED USE PATH PLAN & PROFILE	37
LINED DITCH	38
EARTH DIKE	38
EMB. FOUNDATION TREATMENT & CONST. 389+50 TO 394+00 RT.	38
SPECIAL BACKFILL	39
MCS TURNOUT	39

ROAD PLANS (CONT.)	SHEET NO.
DETAILS	
DETOUR - DETAILS	40
DETOUR - DETAILS	41
DETOUR - CLEAR CREEK 261+76	42
DETOUR - REDROCK COULEE WEST OVERFLOW 568+59	43
DETOUR - REDROCK COULEE 594+61	44
DETOUR - REDROCK COULEE EAST OVERFLOW 617+51	45
DITCH PROFILES	46-51
STA. 126+14 IRRIGATION CROSSING	52
RCB DETAIL	53
CLEAR CREEK STA. 261+76 CHANNEL MODIFICATION	54
CLEAR CREEK STA. 261+76 CHANNEL MOD. CROSS SECTIONS	55
CLEAR CREEK STA. 261+76 RIPRAP LAYOUT	56
STA. 448+01 IRRIGATION SIPHON	57
BEDDING FOR DOUBLE PIPE CULVERTS	58
STA. 505+59 RCB LAYOUT WITH BENDS & IRR. CANAL LINER	59
REDROCK COULEE WEST OVERFLOW STA. 568+59 CHANNEL GRADING	60
REDROCK COULEE WEST OVERFLOW STA. 568+59 RIPRAP LAYOUT AND REDROCK COULEE EAST OVERFLOW STA. 617+40.50 RIPRAP LAYOUT	61
REDROCK COULEE STA. 594+61 CHANNEL MODIFICATION	62
REDROCK COULEE STA. 594+61 CHANNEL MOD. CROSS SECTIONS	63
REDROCK COULEE STA. 594+61 RIPRAP LAYOUT	64
REDROCK COULEE EAST OVERFLOW STA. STA. 617+40.50 CHANNEL GRADING	65
STA. 636+48.99 IRRIGATION CROSSING	66
RIPRAP REVEGETATION	67
CULVERT OUTLET RIPRAP	68
GEOMETRIC PLANS	69-84
PLAN & PROFILE	85-103
SIGNING PLANS	S1-S26
SIGNING & DELINEATION QUANTITIES	S1
SIGN ~~LOCATION AND~~ SPECIFICATIONS	S2-S5
DETAILS	S6-S16
PLANS	S17-S26
BRIDGE SHEETS	B1-B43
BRIDGE PLANS	B1-B43
STANDARD DRAWINGS	3 SHEETS
CROSS SECTIONS	
MAINLINE	1-438
DETOUR	
DETOUR - CLEAR CREEK 261+76	1-14
DETOUR - REDROCK COULEE WEST OVERFLOW 568+59	1-14
DETOUR - REDROCK COULEE 594+61	1-15
DETOUR - REDROCK COULEE EAST OVERFLOW 617+51	1-12

NOTES

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 - 3/4" AGG.	= 5.3% OF PL.MIX BIT.SURF. (PROJECT SPECIFIC)
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)
EMULSIFIED ASPHALT - TACK (CONCRETE SURFACES)	= 0.10 GAL. PER SQ.YARD (UNDILUTED)
EMULSIFIED ASPHALT - FOG SEAL (RUMBLE STRIPS)	= 0.10 GAL. PER SQ.YARD (UNDILUTED)
EMULSIFIED ASPHALT - FOG SEAL (SHARED USE PATH)	= 0.075 GAL. PER SQ.YARD
SEAL	= 0.42 GAL. PER SQ.YARD
COVER	= 25 LBS. PER SQ.YARD
CEMENT TREATED BASE (CTB)	= 3620 LBS. PER CUBIC YARD
CURING SEAL	= 0.2 GAL. PER SQ. YARD OF CTB
BLOTTER (CTB)	= 15 LBS. PER SQ. YARD

CLEARING AND GRUBBING

CLEAR AND GRUB TO CONSTRUCTION LIMITS. INCLUDE THE COST OF CLEARING AND GRUBBING IN THE UNIT PRICE BID FOR UNCLASSIFIED EXCAVATION. TREES WITH OVER 4" DIAMETER TRUNKS HAVE BEEN NOTED IN THE PLANS FOR INFORMATION ONLY - INCLUDE THE COST OF TREE REMOVAL IN THE UNIT PRICE BID FOR UNCLASSIFIED EXCAVATION.

MISC. TO BE MOVED OR REMOVED BY OTHERS

ALL PRIVATELY OWNED SIGNS TO BE REMOVED BY OWNER.

UTILITIES

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

DO NOT DISTURB

124+82.9	LT. & RT.	GAS (TRANSMISSION)
145+29	LT	POWER POLE (TRANSMISSION)
247+08	LT	POWER POLE (TRANSMISSION)
248+77	RT	POWER POLE (TRANSMISSION)
252+38	RT	POWER POLE (TRANSMISSION)
268+86	RT	POWER POLE (TRANSMISSION)
271+84	RT	POWER POLE (TRANSMISSION)
274+85	RT	POWER POLE (TRANSMISSION)
277+30	RT	POWER POLE (TRANSMISSION)
278+88	RT	POWER POLE (TRANSMISSION)
281+85	RT	POWER POLE (TRANSMISSION)
282+33	RT	POWER (GUY ANCHOR)
420+93	LT	POWER POLE (DISTRIBUTION)
570+29 (MAINLINE)/ 20+31.6 (DETOUR)	LT	POWER POLE (DISTRIBUTION)
634+08	RT	POWER POLE (DISTRIBUTION)
636+10	RT	POWER POLE (DISTRIBUTION)
636+42	RT	POWER POLE (DISTRIBUTION)

PUBLIC LAND SURVEY MONUMENTS

ALL MONUMENTS TO BE REMOVED AND RELOCATED OR RESET BY STATE FORCES.

WIM SITE

TRAFFIC DATA COLLECTION & ANALYSIS SECTION HAS A WIM SITE (W-116) LOCATED AT RP 392.34 ON N-1, A MILE WEST OF THE BEGINNING OF THE PROJECT (OUTSIDE THE PROJECT LIMITS). THERE IS EQUIPMENT LOCATED IN THE ROADBED AND IN THE ROW. CONTACT TEDD LITTLE AT 406-444-9417 WITH ANY QUESTIONS.

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.
QUANTITIES FOR ONE PUBLIC APPROACH:

AVERAGE LENGTH	= 108.4 linear feet
PLANT MIX BITUMINOUS SURF.	= 47.0 tons
CRUSHED AGGREGATE COURSE	= 80.2 cubic yards
ASPHALT CEMENT	= 2.5 tons
AGG. TREATMENT	= 348 sq. yards
EMULSIFIED ASPHALT TACK	= 18 gallons

PLANT MIX SURFACE ALL PUBLIC APPROACHES W/ TRUCK TURNING RADIUS TO R/W.
QUANTITIES FOR ONE PUBLIC APPROACH:

AVERAGE LENGTH	= 103.2 linear feet
PLANT MIX BITUMINOUS SURF.	= 70.5 tons
CRUSHED AGGREGATE COURSE	= 135.0 cubic yards
ASPHALT CEMENT	= 3.74 tons
AGG. TREATMENT	= 491 sq. yards
EMULSIFIED ASPHALT TACK	= 25 gallons

PLANT MIX SURFACE ALL PRIVATE APPROACHES TO R/W.
QUANTITIES FOR ONE PRIVATE APPROACH:

AVERAGE LENGTH	= 81.7 linear feet
PLANT MIX BITUMINOUS SURF.	= 34.7 tons
CRUSHED AGGREGATE COURSE	= 61.5 cubic yards
ASPHALT CEMENT	= 1.84 tons
AGG. TREATMENT	= 267 sq. yards
EMULSIFIED ASPHALT TACK	= 17 gallons

PLANT MIX SURFACE ALL PRIVATE APPROACHES W/ TRUCK TURNING RADIUS TO R/W.
QUANTITIES FOR ONE PRIVATE APPROACH:

AVERAGE LENGTH	= 139.3 linear feet
PLANT MIX BITUMINOUS SURF.	= 76.2 tons
CRUSHED AGGREGATE COURSE	= 135.5 cubic yards
ASPHALT CEMENT	= 4.04 tons
AGG. TREATMENT	= 274 sq. yards
EMULSIFIED ASPHALT TACK	= 14 gallons

PLANT MIX SURFACE ALL PRIVATE APPROACHES - 40' TOP WIDTH
QUANTITIES FOR ONE PRIVATE APPROACH:

AVERAGE LENGTH	= 25.0 linear feet
PLANT MIX BITUMINOUS SURF.	= 19.0 tons
CRUSHED AGGREGATE COURSE	= 35.0 cubic yards
ASPHALT CEMENT	= 1.02 tons
AGG. TREATMENT	= 159 sq. yards
EMULSIFIED ASPHALT TACK	= 8 gallons

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

AVERAGE LENGTH	= 100.0 linear feet
PLANT MIX BITUMINOUS SURF.	= 7.6 tons
CRUSHED AGGREGATE COURSE	= 74.3 cubic yards
ASPHALT CEMENT	= 0.40 tons
AGG. TREATMENT	= 58 sq. yards
EMULSIFIED ASPHALT TACK	= 3 gallons

QUANTITIES FOR ONE FARM FIELD/DITCH RIDER APPROACH:
14.0' FINISHED TOP WIDTH ON A 16.8' SUBGRADE WITH 5' RADII.

AVERAGE LENGTH	= 52.0 linear feet
PLANT MIX BITUMINOUS SURF.	= 3.0 tons
CRUSHED AGGREGATE COURSE	= 26.0 cubic yards
ASPHALT CEMENT	= 0.15 tons
AGG. TREATMENT	= 19 sq. yards
EMULSIFIED ASPHALT TACK	= 1 gallons

SALVAGE ITEMS

SALVAGE AND HAUL THE GUARDRAIL AND ALL NEWER SIGNS TO THE MDT HAVRE MAINTENANCE YARD. CONTACT THE HAVRE MAINTENANCE CHIEF AT 406-262-5504.

DITCH PROFILES

SEE DITCH PROFILE DETAILS FOR ADJUSTED DITCH DESIGN.

SOILS INFORMATION

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

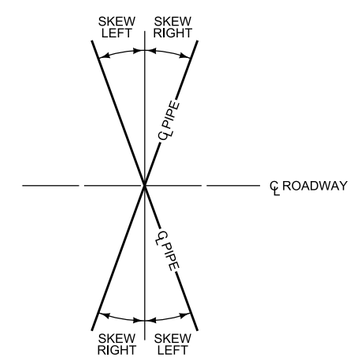
BORING NUMBER

(GEOTECHNICAL BORING)

MANHOLE AT APPROACH 636+91 LEFT

WARP APPROACH SURFACING AT 2% TO THE MANHOLE AT 636+34.99, 62.92' LEFT SO MANHOLE LID IS BLENDED WITH THE SURROUNDING TOPOGRAPHY.

SKEW DIAGRAM



NOTES

WETLAND DELINEATION

WETLAND DESIGNATION	STATION FROM	STATION TO	WETLAND AREA acres DELINEATED AREA	WETLAND AREA acres PERMANENT IMPACTED AREA	REMARKS
WL-1	102+10	112+65	0.617		LT. - NO IMPACTS
WL-2A #	137+12	148+08	5.132	1.061	RT.
WL-2B	140+34	150+18	0.656	0.004	LT.
WL-2C	150+63	154+02	0.086		LT. - NO IMPACTS
WL-2D	154+44	165+14	1.220	0.019	LT.
WL-3	154+13	155+75	0.085	0.085	RT.
WL-4	176+97	185+83	0.672		LT. - NO IMPACTS
WL-5	190+03	195+76	0.153		LT. - NO IMPACTS
WL-6	197+44	199+21	0.219	0.219	RT.
WL-7A	198+82	222+95	3.626	0.583	LT.
WL-7B	207+64	210+86	0.055	0.055	RT.
WL-7C	207+49	210+92	1.039	0.194	RT.
WL-7D	211+57	220+08	0.845	0.402	RT.
WL-8A #	260+35	261+39	0.013	0.008	RT.
WL-8B #	260+59	261+70	0.012	0.002	RT.
WL-8C #	262+00	262+21	0.005		LT.
WL-9	284+67	285+25	0.017	0.015	RT.
WL-9A	288+33	324+19	2.663	0.868	LT. & RT.
WL-9B #	290+43	299+55	3.750	0.734	RT.
WL-11A	325+03	331+15	0.127	0.127	RT. - DITCH
WL-11B	332+34	337+65	0.149	0.149	RT. - DITCH
WL-12	333+13	333+93	0.058		LT. - NO IMPACTS
WL-13	366+90	369+11	0.206		RT. - NO IMPACTS
WL-14 #	377+89	384+13	1.730		RT. - NO IMPACTS
WL-15 #	386+45	396+37	2.523	0.097	RT.
WL-16A #	380+05	394+18	0.123	0.002	LT.
WL-16B	391+68	393+66	0.052		LT. - NO IMPACTS
WL-16C	395+20	397+70	0.152	0.089	RT.
WL-16D	395+06	397+22	0.074	0.008	RT.
WL-16E	398+07	398+26	0.006	0.006	RT.
WL17A	407+28	420+87	0.624	0.370	RT.
WL-17B	421+18	454+52	0.639	0.037	RT.
WL-17C	454+94	478+11	0.250	0.015	RT.
WL-18	410+71	413+74	0.218	0.091	LT.
WL-19	478+32	481+75	0.301	0.228	LT.
WL-20	490+19	505+42	0.402	0.006	RT.
WL-21	495+43	505+17	0.643	0.263	LT.
WL-22A	505+30	505+52	0.003	0.002	LT.
WL-22B	505+39	505+61	0.006	0.004	LT.
WL-22C	505+58	506+23	0.003	0.003	RT.
WL-22D	505+67	506+30	0.004	0.004	RT.
WL-23	505+73	513+91	0.784	0.264	LT.
WL-24A	506+63	521+52	0.868	0.010	RT.
WL-24B	521+88	530+15	0.409	0.017	RT.
WL-24C	530+88	549+00	0.567	0.615	RT.
WL-24D	549+42	551+24	0.029	0.029	RT. - ROADSIDE DITCH
WL-24E	551+77	563+37	0.278	0.278	RT. - ROADSIDE DITCH
WL-24F	563+76	570+04	0.325	0.324	RT.
WL-24G	567+61	568+94	0.160	0.094	LT.
WL-24H	570+36	578+76	2.562	0.720	RT.
WL-24I	579+20	585+40	0.094	0.094	RT.
WL-25	541+44	545+15	0.186	0.028	LT. - ROADSIDE DITCH
WL-26	550+60	551+34	0.043	0.042	LT.
WL-27	561+53	563+64	0.139	0.082	LT.
WL-28	572+66	575+56	0.223	0.088	LT.
WL-29	577+29	578+61	0.041		LT. - NO IMPACTS
WL-30	589+40	590+67	0.091	0.034	LT.
WL-31A #	585+92	595+36	0.187	0.183	RT.
WL-31B #	593+89	594+25	0.005	0.005	LT.
WL-31C #	593+37	593+66	0.004		LT.
WL-31D #	593+64	594+46	0.010	0.004	LT.
WL-31E #	594+70	596+03	0.036	0.028	RT.
WL-32	601+25	602+13	0.038		LT. - NO IMPACTS
WL-33A #	602+84	603+62	0.476	0.275	RT.
WL-33B	607+91	608+73	0.070	0.038	RT.
WL-34	606+57	608+54	0.095		LT. - NO IMPACTS
WL-35A	609+16	613+12	0.087		RT. - NO IMPACTS
WL-35B	613+56	617+79	0.156	0.065	RT.
WL-36	609+48	617+68	0.447		RT. - NO IMPACTS
WL-37	615+91	616+97	0.037		LT. - NO IMPACTS
WL-38	618+43	621+81	0.133		LT. - NO IMPACTS
WL-39	623+35	624+87	0.052		LT. - NO IMPACTS
WL-40A	618+74	622+98	0.115	0.115	RT.
WL-40B	623+72	635+98	0.374	0.374	RT.
WL-40C	637+50	641+90	0.121	0.121	RT.
WL-40D	642+39	642+81	0.019	0.017	RT.
WL-41	631+88	635+96	0.117		LT. - NO IMPACTS
WL-42	638+67	646+18	0.852	0.157	LT.
WL-43	649+11	656+55	0.763		LT.
TOTAL			**40.15**	**9.85**	

AREA OF EXISTING WETLAND EXTENDS BEYOND PLAN LIMITS

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.

DELINEATED WETLAND AREAS

PERMANENT WETLAND IMPACTED AREAS

TEMPORARY WETLAND IMPACT AREAS

CENTERLINE COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
100+00.00	POT	1,573,981.611	1,978,865.393	
109+30.89	POT	1,574,633.681	1,979,529.743	BEGIN PROJECT
143+75.25	PC	1,577,046.385	1,981,987.883	
149+33.17	PI	1,577,437.199	1,982,386.057	
154+91.05	PT	1,577,819.031	1,982,792.852	
187+80.23	PC	1,580,070.086	1,985,191.078	
201+62.57	PI	1,581,016.135	1,986,198.977	
214+77.54	PT	1,581,310.099	1,987,549.702	
274+73.82	PI	1,582,585.244	1,993,408.827	ANGLE POINT
323+81.92	PC	1,583,634.283	1,998,203.512	
330+77.22	PI	1,583,782.893	1,998,882.740	
337+68.76	PT	1,583,807.587	1,999,577.598	
360+58.17	PC	1,583,888.894	2,001,865.558	
365+58.21	PI	1,583,906.653	2,002,365.282	
370+58.09	PT	1,583,946.147	2,002,863.760	
370+58.23	PC	1,583,946.158	2,002,863.898	
375+58.38	PI	1,583,985.660	2,003,362.487	
380+58.37	PT	1,584,003.418	2,003,862.323	
524+00.00	PI	1,584,512.620	2,018,194.909	ANGLE POINT
539+12.16	PI	1,584,553.120	2,019,706.527	ANGLE POINT
611+59.79	PC	1,584,810.448	2,026,949.589	
615+81.75	PI	1,584,825.430	2,027,371.281	
620+02.32	PT	1,584,781.244	2,027,790.919	
650+97.09	PI	1,584,457.170	2,030,868.676	ANGLE POINT
656+27.08	POT	1,584,397.074	2,031,395.248	
656+65.00	POT	1,584,392.774	2,031,432.924	END OF PROJECT
660+00.00	POT	1,584,354.788	2,031,765.763	

GPK NAME: JOB628.GPK CHAIN NAME: DGN1 PROFILE NAME: DGN1

DETOUR-261+76 COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
54+00.00	POT	1,582,144.234	1,991,382.443	
54+75.95	PC	1,582,160.386	1,991,456.659	
56+58.34	PI	1,582,199.172	1,991,634.874	
58+40.03	PT	1,582,264.390	1,991,805.202	
58+49.96	PC	1,582,267.940	1,991,814.475	
62+16.84	PI	1,582,399.131	1,992,157.101	
65+78.11	PT	1,582,422.196	1,992,523.258	
65+88.04	PC	1,582,422.820	1,992,533.169	
67+70.43	PI	1,582,434.286	1,992,715.195	
69+52.12	PT	1,582,473.072	1,992,893.410	
72+05.78	POT	1,582,527.015	1,993,141.271	

GPK NAME: JOB628.GPK CHAIN NAME: DTRCLEARCK PROFILE NAME: DTRCLEARCK

DETOUR-568+59 BRIDGE COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
7+11.54	POT	1,584,629.105	2,021,504.344	
9+15.56	PC	1,584,636.349	2,021,708.240	
11+09.06	PI	1,584,643.219	2,021,901.614	
13+01.72	PT	1,584,680.917	2,022,091.402	
13+11.33	PC	1,584,682.787	2,022,100.819	
17+00.87	PI	1,584,758.680	2,022,482.898	
20+83.70	PT	1,584,710.084	2,022,869.398	
20+92.43	PC	1,584,708.995	2,022,878.057	
22+86.46	PI	1,584,684.789	2,023,070.571	
24+79.65	PT	1,584,691.759	2,023,264.475	
26+82.06	POT	1,584,699.030	2,023,466.755	

GPK NAME: JOB628.GPK CHAIN NAME: DTRWESTRED PROFILE NAME: DTRWESTRED

DETOUR-594+61 BRIDGE COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
56+00.00	POT	1,584,732.014	2,024,390.956	
56+45.72	PC	1,584,733.633	2,024,436.643	
58+13.38	PI	1,584,739.568	2,024,604.203	
59+80.50	PT	1,584,768.695	2,024,769.317	
59+95.55	PC	1,584,771.310	2,024,784.139	
61+63.09	PI	1,584,800.415	2,024,949.127	
63+30.08	PT	1,584,806.363	2,025,116.557	
64+70.58	PC	1,584,811.351	2,025,256.967	
66+38.12	PI	1,584,817.300	2,025,424.397	
68+05.11	PT	1,584,799.977	2,025,591.034	
68+12.87	PC	1,584,799.175	2,025,598.750	
69+82.67	PI	1,584,781.617	2,025,767.637	
71+51.90	PT	1,584,787.964	2,025,937.315	
72+04.53	POT	1,584,789.931	2,025,989.912	

GPK NAME: JOB628.GPK CHAIN NAME: DTRREDROCK PROFILE NAME: DTREDROCK

LINEAR AND LEVEL DATA

LENGTH OF ROADWAY	2 LANE RURAL	37,234.40	ft
LENGTH OF BRIDGE	2 LANE RURAL	153.69	ft
LENGTH OF BRIDGE	2 LANE RURAL (NOT THIS CONTRACT)	279.81	ft
LENGTH OF ROADWAY	3 LANE RURAL	5,057.65	ft
LENGTH OF ROADWAY	4 LANE RURAL	11,862.86	ft
LENGTH OF BRIDGE	4 LANE RURAL	145.70	ft
TOTAL LENGTH OF	2 LANE RURAL	37,667.90	ft
TOTAL LENGTH OF	3 LANE RURAL	5,057.65	ft
TOTAL LENGTH OF	4 LANE RURAL	12,008.56	ft
TOTAL LENGTH OF	NHIP 1-7(44)393	54,734.11	ft

LEVEL DATA

BEARING SOURCE

GRID -- MONTANA COORDINATE SYSTEM NAD83-1992

LEVEL DATUM SOURCE

NAVD88 GNSS DERIVED ELEVATIONS USING GEOID 09
AND HOLDING NGS BMs 2440 HAVRE, D515, E515, F515, H515, K515 and S512.

DETOUR-617+51 BRIDGE COORDINATE TABLE

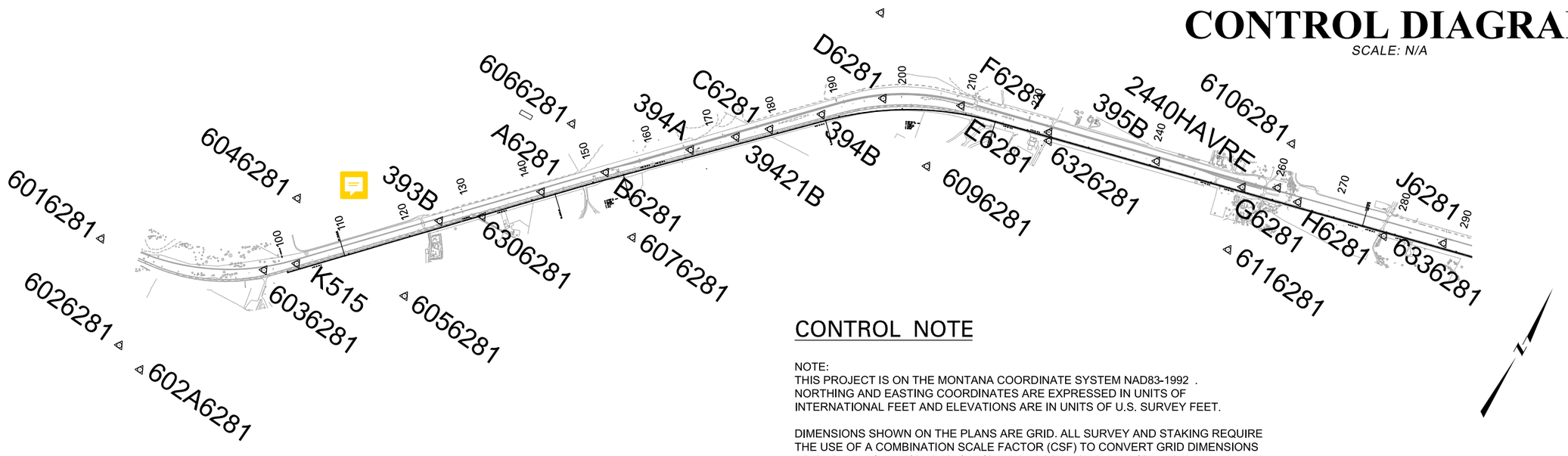
STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
79+36.88	POT	1,584,817.151	2,026,726.302	
80+51.78	PC	1,584,821.313	2,026,841.126	
81+64.70	PI	1,584,825.403	2,026,953.972	
82+77.45	PT	1,584,840.049	2,027,065.939	
82+85.70	PC	1,584,841.118	2,027,074.111	
86+92.09	PI	1,584,893.827	2,027,477.076	
90+90.89	PT	1,584,811.205	2,027,874.986	
90+99.07	PC	1,584,809.542	2,027,882.995	
92+07.39	PI	1,584,787.519	2,027,989.056	
93+15.56	PT	1,584,775.121	2,028,096.666	
95+30.06	POT	1,584,750.569	2,028,309.754	

GPK NAME: JOB628.GPK CHAIN NAME: DTREASTRED PROFILE NAME: DTREASTRED

AWARD COPY

CONTROL DIAGRAM

SCALE: N/A



CONTROL NOTE

NOTE:
THIS PROJECT IS ON THE MONTANA COORDINATE SYSTEM NAD83-1992 .
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 0.99965875.

CONTROL ABSTRACT

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
394A	1,578,663.704	1,983,538.733	2,448.24	*FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 394A-99. CAP IS 66.3' LT OF CL AT MP 394.147. WITNESS POST IS 3.0' NORTH.
393B	1,575,819.185	1,980,586.759	2,461.36	*FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 393B-99. CAP IS 67.3' LT OF CL STRIPE AT MP 393.366. WITNESS POST IS 3.0' NORTH.
394B	1,580,126.783	1,985,091.986	2,469.59	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 394B-99. CAP IS 70.5' NORTH OF CL AT MP 394.552. WITNESS POST IS 3.0' NORTH.
395B	1,581,958.613	1,990,080.354	2,442.76	*FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 395B-99. CAP IS 94.8' LT OF CL STRIPE AT MP 395.568. WITNESS POST IS 3.0' NORTH.
39421B	1,579,180.655	1,984,074.706	2,466.68	*FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 394-21B, 1989. CAP IS 70.9' LT OF CL AT MP 394.287. WITNESS POST IS 0.9' NORTH.
K515	1,574,167.316	1,978,923.891	2,464.99	FOUND NGS BM 2.5 FEET SW OF WITNESS POST. SEE NGS DATA SHEET.
A6281	1,576,975.391	1,981,784.374	2,446.31	SET STANDARD CONTROL CAP (2" AC) FLUSH WITH GROUND, STAMPED "A6281-2011". CAP IS 52.8' LT OF CL AT MP 393.697. WITNESS POST IS 3.0' NORTH. NEAR C393 ON PHOTO MAP.
B6281	1,577,723.040	1,982,528.657	2,448.48	SET STANDARD CONTROL CAP (2" AC) FLUSH WITH GROUND, STAMPED "B6281-2011". CAP IS 70.9' LT OF CL AT MP 393.897
C6281	1,579,538.542	1,984,483.823	2,447.65	SET STANDARD CONTROL CAP (2"AC) FLUSH WITH THE GROUND, STAMPED "C6281-2011". CAP IS 56.4' LT OF CL AT MP 394.391. WITNESS POST IS 3.0' NORTH. CAP IS 0.1 MILE NE OF B39421.
D6281	1,580,802.377	1,985,826.227	2,441.37	SET STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND, STAMPED D6281-2011". CAP IS 124.3' LT OF CL AT MP 394.736. WITNESS POST IS 3.0' NORTH.
E6281	1,581,280.621	1,986,964.004	2,439.69	SET STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND, STAMPED "E6281-2011". CAP IS 101.0' LT OF CL AT MP 394.964. WITNESS POST IS 3.0' NORTH.
F6281	1,581,562.654	1,988,371.792	2,441.53	SET STANDARD CONTROL CAP (2"AC) FLUSH WITH THE GROUND STAMPED "F6281-2011". CAP IS 72.2' LT OF CL AT MP 395.238. WITNESS POST IS 1.0' NORTH.
G6281	1,582,234.778	1,991,458.303	2,446.57	SET STANDARD CONTROL CAP (2"AC)FLUSH WITH GROUND STAMPED "G6281-2011". CAP IS 72.2' LT OF CL, 11.5' SE OF A POWER POLE, AT MP 395.835. WITNESS POST IS 3.0' NORTH.
H6281	1,582,441.692	1,992,341.886	2,445.42	SET STANDARD CONTROL CPA (2"AC) FLUSH WITH THE GROUND STAMPED "H6271-2011". CAP IS 86.1' LT OF CL AT MP 396.006. WITNESS POST IS 3.0' NORTH.
J6281	1,582,945.998	1,994,659.804	2,432.23	SET STANDARD CONTROL CAP (2" AC)FLUSH WITH THE GROUND STAMPED "J6281-2011". CAP IS 85.0' LT OF CL AT MP 396.455. WITNESS POST IS 3.0' NORTH.
6016281	1,573,066.013	1976029.725	2,445.72	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6016281-2011", AT MP 392.30 ON US 2,65' NORTH OF CL. N48 33/64 33'53.1" W109 33/64 28'08.2".

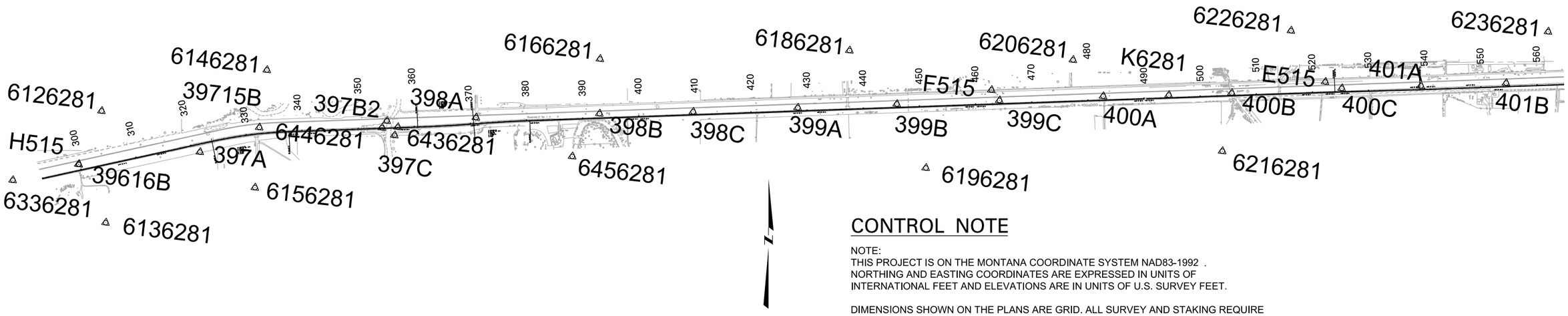
CONTROL ABSTRACT

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
6026281	1,571,725.320	1,977,070.872	2,630.79	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6026281-2011". HEAD SOUTH ON LANDFILL ROAD AT MP 392.82 ON US 2 0.19 MILES, TURN WEST ONTO TRAIL AND PROCEED 0.32 MILES TO TOP OF RIDGE AT INTERSECTION, CONTINUE FROM INTERSECTION 0.42 MILES ALONG TRAIL TO WEST.
602A6281	1,571,539.435	1,977,538.307	2,615.98	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "602A-2011". HEAD SOUTH ON LANDFILL ROAD AT MP 392.82 ON US 2 FOR 0.19 MILES, TURN WEST ONTO TRAIL AND PROCEED 0.32 MILES TO TOP OF RIDGE AT INTERSECTION, CONTINUE WEST FROM INTERSECTION 0.33 MILES ALONG TRAIL TO POINT.
6036281	1,573,837.783	1,978,518.513	2,454.63	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6036281-2011" AT MP 392.82 ON US 2, 96' NORTH OF CL.
6046281	1,575,081.478	1,978,450.600	2,448.55	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6046281-2011" AT MP 392.82 ON US 2, 0.25 MILES NORTH OF CL, EAST OF TOB OF MILK RIVER.
6056281	1,574,520.868	1,980,658.131	2,470.86	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6056281-2011". AT MP 393.34 ON US 2, TURN SOUTH ON FARM FIELD APPROACH, GO 0.1 MILE SOUTH, ENTER TRAIL THROUGH GATE AND PROCEED 0.1 MILE SOUTH, NEAR EDGE OF GRAVEL PIT. N
6066281	1,578,147.338	1,981,702.535	2,446.44	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6066281-2011", AT MP 393.81 ON US 2, 0.19 MILES NORTHWEST OF CL. "
6076281	1,577,019.542	1,983,380.440	2,529.38	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6076281-2011", AT MP 393.81 ON US 2, TURN SOUTH ON PRIVATE ROAD, GO 0.04 MILES TO FORK, FOLLOW LEFT ROAD EAST 0.18 MILES.
6096281	1,580,186.626	1,986,933.652	2,496.64	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6096281-2011", AT MP 395.00 ON US 2. TURN SOUTH AT LOHMAN MOTORSPORTS COMPLEX APPROACH, HEAD 0.20 MILES ON TRAIL.
6106281	1,583,202.875	1,991,823.605	2,439.48	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6106281-2011", AT MP 395.90 ON US 2, TURN NORTH ON PRIVATE APPROACH, HEAD 0.05 MILES, TURN EAST ALONG TRAIL 0.12 MILES.
6116281	1,581,261.656	1,991,723.689	2,447.63	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6116281-2011". AT MP 395.84 ON US 2, TURN SOUTH ON PRIVATE APPROACH AT LOHMAN, HEAD 0.08 MILES INTO FARM YARD, 500 FEET SOUTH FROM CENTER OF YARD NEAR SHOP.
6306281	1,576,196.762	1,981,149.004	2,458.42	FOUND PHOTO TARGET WITH 2" AC ON REBAR, STAMPED "6306281-2011". AT MP 393.507 ON US 2, CAP IS 62' SOUTH OF CL.
6326281	1,581,440.939	1,988,434.360	2,439.52	FOUND PHOTO TARGET WITH 2" AC ON REBAR, STAMPED "6326281-2011", AT MP 395.245 ON US 2, CAP IS 62.5' SOUTH OF CL.
6336281	1,582,606.029	1,993,779.642	2,435.36	FOUND PHOTO TARGET WITH 2" AC ON REBAR, STAMPED "6336281-2011". AT MP 396.280 ON US 2, CAP IS 60' SOUTH OF CL.

AWARD COPY

CONTROL DIAGRAM

SCALE: N/A



CONTROL NOTE

NOTE:
THIS PROJECT IS ON THE MONTANA COORDINATE SYSTEM NAD83-1992 .
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 0.99965875.

CONTROL ABSTRACT

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
397A	1,583,445.174	1,997,991.432	2,449.51	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 397A-99. CAP IS 139.8' SOUTH OF CL STRIPE AT MP 397.088. WITNESS POST IS 3' SOUTH.
398A	1,584,059.220	2,002,905.862	2,435.04	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 398A-99. CAP IS 88.3' NORTH OF CL STRIPE AT MP 398.043. WITNESS POST IS 3.0' NORTH.
399A	1,584,232.514	2,008,632.948	2,421.20	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 399A-99. CAP IS 60.0' NORTH OF CL STRIPE AT MP 399.097. WITNESS POST IS 3.0' NORTH.
400A	1,584,438.492	2,014,070.276	2,419.08	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 400A-99. CAP IS 73.2' LT OF CL STRIPE AT MP 400.164. WITNESS POST IS 3.0' NORTH.
401A	1,584,621.163	2,019,726.231	2,413.76	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 401A-99. CAP IS 54.8' LT OF CL STRIPE AT MP 401.238. WITNESS POST IS 3.0' NORTH.
398B	1,584,127.952	2,005,103.927	2,426.27	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 398B-99. CAP IS 79.7' LT OF CL STRIPE AT MP 398.360. WITNESS POST IS 3.0' NORTH.
399B	1,584,298.221	2,010,397.364	2,420.43	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 399B-99. CAP IS 63.0' LT OF CL STRIPE AT MP 399.431. WITNESS POST IS 3.0' NORTH.
400B	1,584,494.177	2,016,358.172	2,422.38	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 400B-99. CAP IS 47.6' LT OF CL STRIPE AT MP 400.600. WITNESS POST IS 3.0' NORTH.
401B	1,584,671.492	2,021,242.867	2,412.77	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 401B-99. CAP IS 51.2' LT OF CL STRIPE AT MP 401.526. WITNESS POST IS 3.0' NORTH.
397B2	1,583,998.988	2,001,319.162	2,429.84	FOUND STANDARD CONTROL CAP (2" AC) CAP STAMPED 397B2 2003. CAP IS AT MILE POST 397.731, 86.0' NORTH OF CL STRIPE.
39616B	1,583,224.714	1,995,835.236	2,431.39	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 396-16B, 1989. CAP IS 108.3' LT OF CL STRIPE AT MP 396.705. WITNESS POST IS 2.0' NORTH.
39715B	1,583,883.616	1,999,048.162	2,440.71	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 397-15B, 1989. CAP IS 78.7' LT OF CL STRIPE AT MP 397.302. WITNESS POST IS 2.6' NORTH.
397C	1,583,744.433	2,001,454.743	2,431.75	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 397C-99. CAP IS 176.2' RT OF CL STRIPE AT MP 397.757. WITNESS POST IS 3.0' SOUTH.
398C	1,584,161.307	2,006,770.046	2,421.83	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 398C-99. CAP IS 54.5' NORTH OF CL STRIPE AT MP 398.776. WITNESS POST IS 3.0' NORTH.
399C	1,584,363.558	2,012,223.505	2,420.20	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 399C-99. CAP IS 64.6' LT OF CL STRIPE AT MP 399.778. WITNESS POST IS 3.0' NORTH.
400C	1,584,578.666	2,018,318.069	2,414.24	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 400C-99. CAP IS 62.3' LT OF CL STRIPE AT MP 400.971. WITNESS POST IS 3.0' NORTH.

CONTROL ABSTRACT

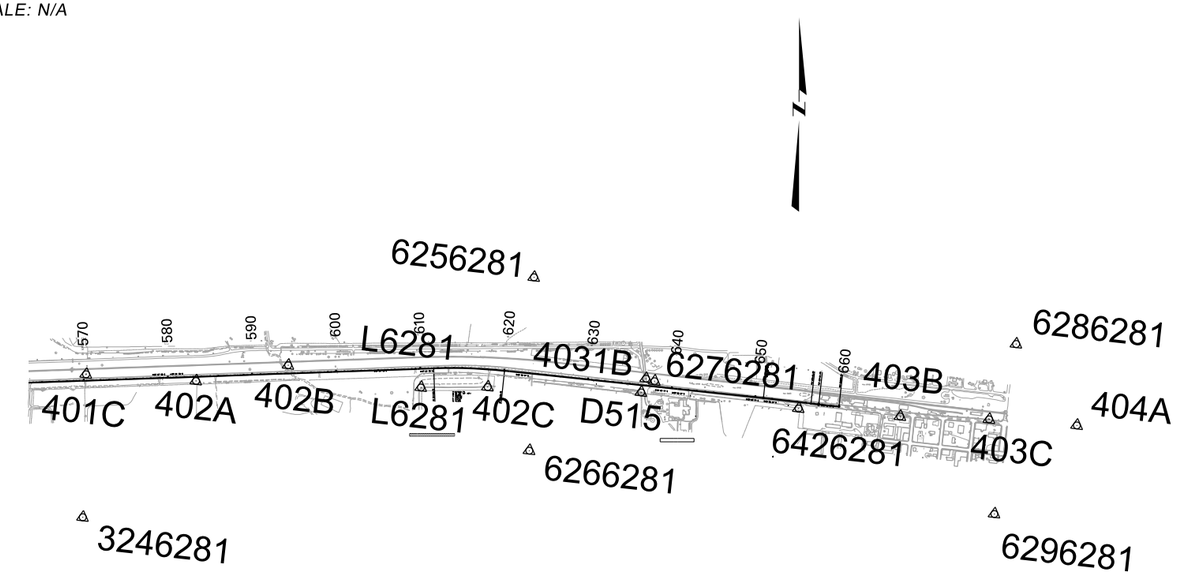
POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
E515	1,584,692.904	2,018,022.921	2,413.76	FOUND NGS BM 2 FEET WEST OF WITNESS POST. SEE NGS DATA SHEET.
F515	1,584,549.000	2,012,080.742	2,418.18	FOUND NGS BM, 2 FEET WEST OFWITNESS POST. SEE NGS DATA SHEET.
H515	1,583,229.487	1,995,830.845	2,430.60	FOUND NGS BM 1.5 FEET EAST OF WITNESS POST. SEE NGS DATA SHEET.
K6281	1,584,459.089	2,015,237.984	2,418.74	SET STANDARD CONTROL CAP (2"AC) FLUSH WITH THE GROUND STAMPED "K6281-2011". CAP IS 63.0' LT OF CL AT MP 400.384. WITNESS POST IS 3.0' NORTH.
6126281	1,584,175.616	1,996,240.618	2,431.20	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6126281-2011". AT MP 396.26 ON US 2, TURN NORTH, CROSS RAILROAD TRACKS, TURN EAST ONTO TRAIL, GO 0.5 MILES TO POINT. POINT LIES NORTH 0.13 MILES OF CL.
6136281	1,582,189.061	1,996,313.350	2,458.64	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6136281-2011". AT MP 396.68 ON US 2, TURN SOUTH ON ARROW LANE, HEAD SOUTH 0.04 MILES TO FORK IN ROAD, TAKE THE EAST FORK ON A PRIVATE DRIVE 0.15 MILES TO GRAY HOUSE, HEAD 360 FEET SOUTH.
6146281	1,584,904.328	1,999,183.259	2,430.39	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6146281-2011". AT MP 397.28 ON US 2, GO NORTH ACROSS RAILROAD TRACKS 0.23 MILE.
6156281	1,582,812.969	1,998,970.579	2,473.25	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6156281-2011". AT MP 397.28 ON US 2, TURN SOUTH ON LOGIE ROAD, CONTINUE 0.17 MILES. CAP IS 33' WEST OF CL.
6166281	1,585,100.625	2,005,112.948	2,424.23	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6166281-2011". AT MP 398.05 ON US 2, TURN NORTH ON YANTIC ROAD TO OLD HIGHWAY ROAD, THEN HEAD EAST 0.45 MILES TO THE CAP WHICH IS NORTH OF CL 0.16 MILES.
6186281	1,585,250.961	2,009,553.966	2,421.34	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6186281-2011". AT MP 399.26 ON US 2, TURN NORTH ACROSS RAILROAD TRACKS, HEAD NORTH ON CITY ROAD 0.18 MILES FROM TRACKS. CAP IS 40 FEET EAST OF CL.
6196281	1,583,162.570	2,010,912.983	2,423.96	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6196281-2011". AT MP 399.518 ON US 2, GO SOUTH 0.21 MILES.
6206281	1,585,083.309	2,013,533.5490	2,420.11	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6206281-2011". AT MP 399.26 ON US 2, TURN NORTH AND CROSS RR TRACKS, THEN TURN EAST AND FOLLOW OLD HIGHWAY ROAD 0.76 MILES. CAP IS NORTH 520' OF HWY CL.
6216281	1,583,461.092	2,016,190.289	2,421.05	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6216281-2011". AT MP 400.57 ON US 2 GO SOUTH FROM CL 0.18 MILES.
6226281	1,585,603.518	2,017,414.049	2,414.93	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6226281-2011". AT MP 400.76 ON US 2, TURN NORTH ON COAL MINE RD, PROCEED NORTH 0.21 MILES. CAP IS 45' WEST OF CL.
6236281	1,585,587.071	2,021,991.258	2,412.14	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6236281-2011". AT MP 400.76 ON US 2, TURN NORTH ON COAL MINE RD, THEN TURN EAST ON OLD HIGHWAY RD, PROCEED EAST 0.92 MILES. CAP IS 0.13 MILES NORTH OF CL.

CONTROL DIAGRAM

SCALE: N/A

CONTROL ABSTRACT

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
402A	1584660.531	2024125.061	2411.94	FOUND STANDARD CONTROL CAP (2" AC) STAMPED 402A-99. CAP IS 62.3' RT OF CL STRIPE AT MP 402.074. WITNESS POST IS 3.0' SOUTH.
404A	1584132.046	2034592.774	2408.40	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 404A-99. CAP IS 62.7' LT OF CL STRIPE AT MP 404.037. CAP IS 43.6' WEST OF UTILITY POLE AND 39.7' NORTH OF BACK OF CURB. WITNESS POST IS 3.0' NORTH.
402B	1584847.156	2025221.001	2415.44	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 402B-99. CAP IS 84.6' LT OF CL STRIPE AT MP 402.284. WITNESS POST IS 3.0' NORTH.
403B	1584237.837	2032492.974	2410.98	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 403B-99. CAP IS 35.1' RT OF CL STRIPE AT MP 403.675. WITNESS POST IS 3.0' SOUTH. CAP IS 10.8' SOUTH OF BACK OF CURB.
4031B	1584687.505	2029471.862	2415.76	FOUND NAIL 68.9' LT OF CL STRIPE AT MP 403.097. WITNESS POST IS 10.8' EAST. NAIL IS ON SHOULDER OF COUNTY ROAD GOING TO THE CEMETERY.
401C	1584739.508	2022819.065	2411.92	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 401C-99. CAP IS 63.0' LT OF CL STRIPE AT MP 401.826. WITNESS POST IS 3.0' NORTH.
402C	1584588.941	2027591.172	2418.53	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 402C-99. CAP IS 233.3' RT OF CL STRIPE AT MP 402.736. WITNESS POST IS 3.0' SOUTH. CAP IS LOCATED ON DIKE ROAD.
403C	1584203.446	2033549.914	2410.32	FOUND STANDARD CONTROL CAP (2" AC) FLUSH WITH THE GROUND STAMPED 403C-99. CAP IS 27.9' LT OF CL STRIPE AT MP 403.876. CAP IS 5.6' SOUTH OF UTILITY POLE AND 4.6' NORTH OF BACK OF CURB. WITNESS POST IS 3.0' NORTH.
D515	1584524.608	2029415.223	2412.89	FOUND NGS BM, CAP IS 1.5 FEET WEST OF WITNESS POST. SEE NGS DATA SHEET.
L6281	1584582.777	2026798.674	2417.70	SET STANDARD CONTROL CAP (2"AC) FLUSH WITH THE GROUND STAMPED "L6281-2011". CAP IS 236.9' RT OF CL AT MP 402.580. WITNESS POST IS 1.0' SOUTH.
3246281	1583041.158	2022779.748	2413.10	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "3246281-2011". AT MP 401.694 ON US 2, TURN SOUTH ON PRIVATE ROAD, PROCEED SOUTH 0.354 MILES. CAP IS 320' EAST OF CL ON PRIVATE ROAD. NOTE SHOULD HAVE BEEN STAMPED 6246281.
6256281	1585891.290	2028141.822	2412.61	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6256281-2011". AT MP 403.092 ON US 2, TURN NORTH ON JOHN STEPHENS RD AND CROSS RR TRACKS, PROCEED NORTH 0.22 MILES FROM RR TRACKS. CAP IS 0.24 MILES WEST OF CL ON PAVED ROAD.
6266281	1583832.126	2028085.633	2409.01	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6266281-2011". AT MP 402.824 ON US 2, TURN SOUTH ON APPROACH. CAP IS 0.18 MILES SOUTH.
6276281	1584657.200	2029574.086	2413.83	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6276281-2011". AT MP 403.112 ON US 2, CAP IS 45' NORTH OF CL.
6286281	1585098.856	2033871.458	2411.35	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6286281-2011". AT MP 403.910 ON US 2, TURN NORTH AND CROSS RR TRACKS AND PROCEED NORTH 0.16 MILES.
6296281	1583079.839	2033612.189	2427.65	FOUND PK NAIL FOR PHOTO POINT TARGET IN CHINOOK AT CL-CL INTERSECTION OF 4TH STREET & INDIANA.
6426281	1584334.155	2031285.445	2409.95	FOUND PHOTO POINT TARGET WITH 2" AC ON REBAR, STAMPED "6426281-2011". AT MP 403.443 ON US 2, CAP IS 77' SOUTH OF CL.



CONTROL NOTE

NOTE:
THIS PROJECT IS ON THE MONTANA COORDINATE SYSTEM NAD83-1992 .
NORTHING AND EASTING COORDINATES ARE EXPRESSED IN UNITS OF INTERNATIONAL FEET AND ELEVATIONS ARE IN UNITS OF U.S. SURVEY FEET.

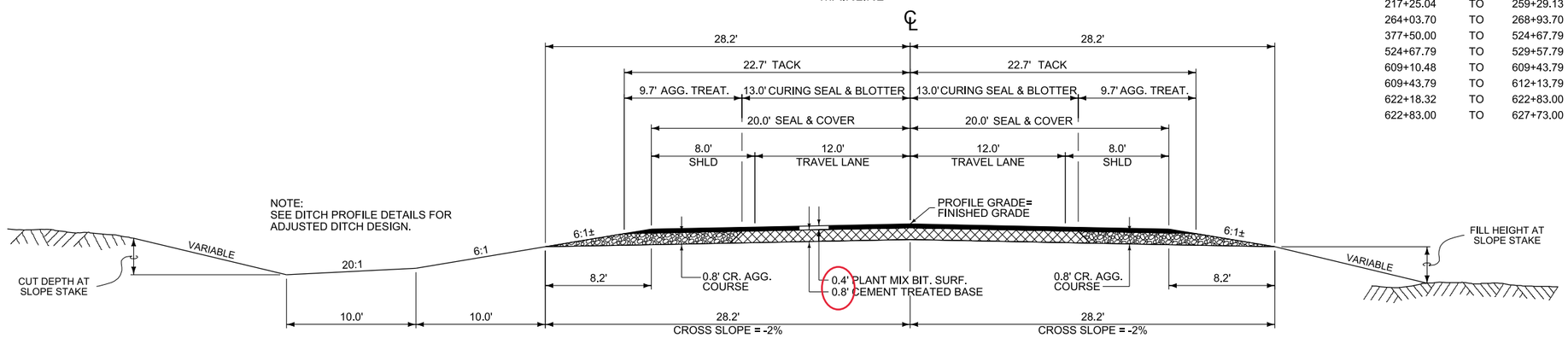
DIMENSIONS SHOWN ON THE PLANS ARE GRID. ALL SURVEY AND STAKING REQUIRE THE USE OF A COMBINATION SCALE FACTOR (CSF) TO CONVERT GRID DIMENSIONS TO GROUND DIMENSIONS (GRID DISTANCE / CSF = GROUND DISTANCE).
THE CSF FOR THIS PROJECT IS 0.99965875.

AWARD COPY

TYPICAL SECTION NO. 1

MAINLINE

109+30.89			BEGIN PROJECT
109+30.89	TO	148+87.65	
148+87.65	TO	157+27.65	TRANS. TYP. SECT. NO.1 TO NO.2
217+25.04	TO	259+29.13	THEN TO TYP. SECT. NO.5
264+03.70	TO	268+93.70	TRANS. TYP. SECT. NO.1 TO NO. 6
377+50.00	TO	524+67.79	
524+67.79	TO	529+57.79	TRANS. TO TYP. SECT. NO.1 TO NO.6
609+10.48	TO	609+43.79	
609+43.79	TO	612+13.79	TRANS. TYP. SECT. NO.1 TO NO.4
622+18.32	TO	622+83.00	
622+83.00	TO	627+73.00	TRANS. TYP. SECT. NO.1 TO NO.6



QUANTITIES

UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		17.08	21.44		19.28	square yards PER STATION		444	289	216	1009
cubic yards PER STATION		63.3	79.4		71.4	tons PER STATION	6.47	0.79	0.25		
tons PER STATION		122.0				gallons PER STATION					50
square yards PER STATION	444			289							

Ø BASED ON 2 APPLICATIONS

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

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

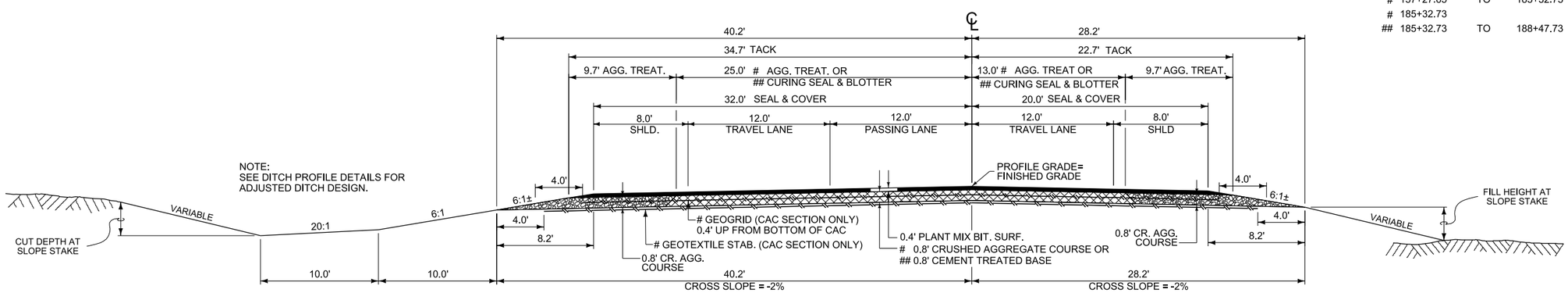
* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	2.5:1
15' - 20'	2.5:1
OVER 20'	2.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 2

MAINLINE

# 157+27.65	TO	185+32.73	(CAC WITH GEOGRID)
# 185+32.73			ONLY
## 185+32.73	TO	188+47.73	TRANS. TYP. SECT. NO. 2 TO NO. 3
			(CEMENT TREATED BASE)



QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL			
	COVER	PLANT MIX	CRUSHED AGG. COURSE		ASPHALT CEMENT	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		21.88	50.32	square yards PER STATION		578	638	1276
cubic yards PER STATION		81.0	186.4	tons PER STATION	8.27	1.03		
tons PER STATION		156.1		gallons PER STATION				64
square yards PER STATION	578							

CRUSHED AGGREGATE COURSE WITH GEOGRID & GEOTEXTILE
Ø BASED ON 2 APPLICATIONS

QUANTITIES

UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CRUSHED AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		21.88	31.04		19.28	square yards PER STATION		578	422	216	1276
cubic yards PER STATION		81.0	115.0		71.4	tons PER STATION	8.27	1.03	0.36		
tons PER STATION		156.1				gallons PER STATION					64
square yards PER STATION	578			422							

CEMENT TREATED BASE
Ø BASED ON 2 APPLICATIONS

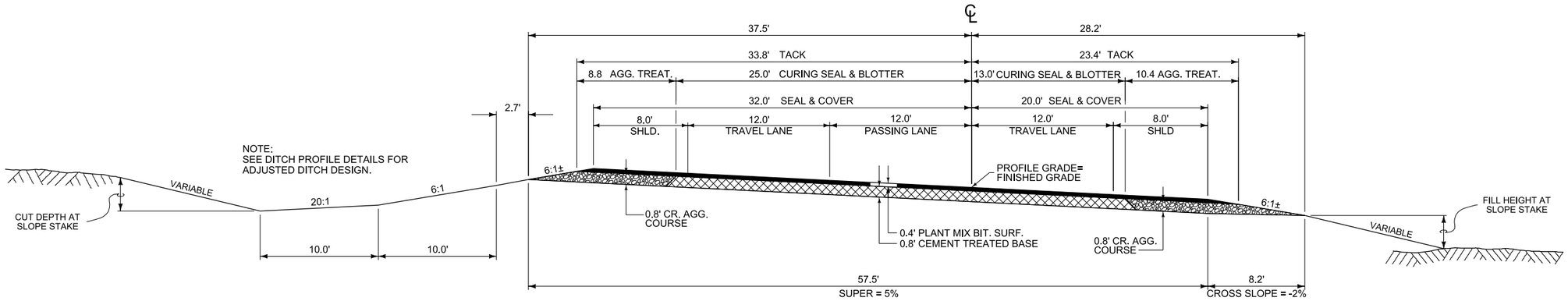
SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

AWARD COPY

TYPICAL SECTION NO. 3

MAINLINE

188+47.73	TO	207+85.30	
207+85.30	TO	210+85.30	TRANS. TO TYP. SECT. NO. 3 TO NO. 4



FOR QUANTITIES SEE TYPICAL SECTION NO. 2

SURFACING SECTION DESIGN BASED ON
THE TOP 2 FEET OF SUBGRADE HAVING
AN R-VALUE OF 15.

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

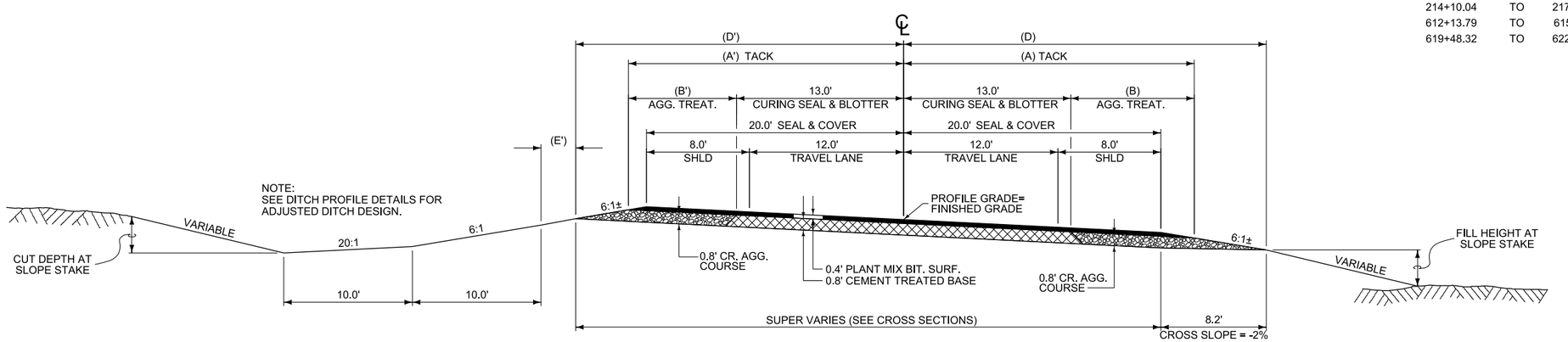
* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	2.5:1
15' - 20'	2.5:1
OVER 20'	2.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 4

MAINLINE

210+85.30	TO	214+10.04	(5% RT.)
214+10.04	TO	217+25.04	TRANS. TYP. SECT. NO. 4 TO NO.1
612+13.79	TO	615+10.51	(4% RT.) THEN TO TYP. SECT. NO. 20
619+48.32	TO	622+18.32	TRANS. TYP. SECT. NO.4 TO NO.1



FOR QUANTITIES SEE TYPICAL SECTION NO. 1

SUPER %	WIDTHS (ft)								
	A	B	C	D	A'	B'	C'	D'	E'
4%	23.2	10.2		28.2	21.9	8.9		25.8	2.4
5%	23.4	10.4		28.2	21.8	8.8		25.5	2.7

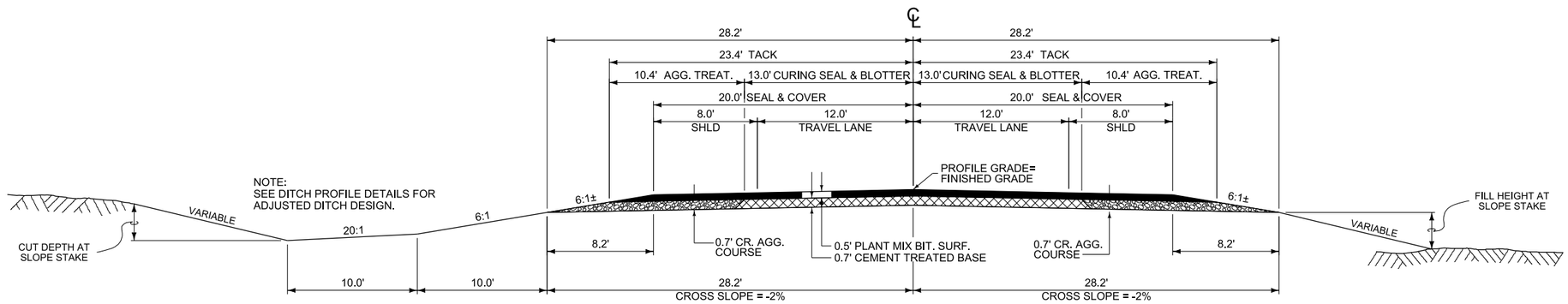
SURFACING SECTION DESIGN BASED ON
THE TOP 2 FEET OF SUBGRADE HAVING
AN R-VALUE OF 15.

AWARD COPY

TYPICAL SECTION NO. 5

MAINLINE

259+29.13	TO	261+29.13	BE
262+22.85 BE	TO	264+03.70	THEN TO TYP. SECT. NO.1



QUANTITIES

UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		21.70	18.69		17.43	square yards PER STATION		444	289	231	1560
cubic yards PER STATION		80.4	69.2		64.6	tons PER STATION	8.22	0.79	0.25		
tons PER STATION		155.0				gallons PER STATION					78
square yards PER STATION	444			289							

Ø BASED ON 3 APPLICATIONS

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

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

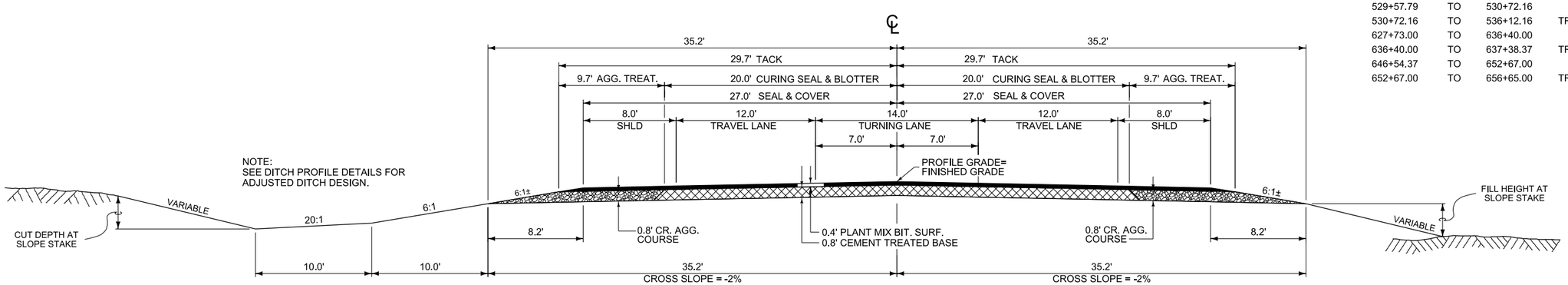
✱ BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	1.5:1

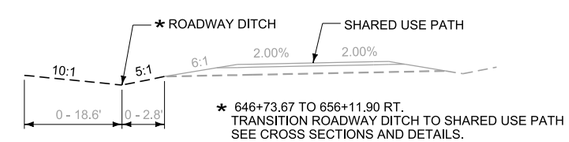
* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 6

MAINLINE

268+93.70	TO	278+50.76	
278+50.76	TO	283+90.76	TRANS. TYP. SECT. NO.6 TO NO.7
529+57.79	TO	530+72.16	
530+72.16	TO	536+12.16	TRANS. TYP. SECT. NO.6 TO NO.7
627+73.00	TO	636+40.00	
636+40.00	TO	637+38.37	TRANS. TYP. SECT. NO.6 TO NO.21
646+54.37	TO	652+67.00	
652+67.00	TO	656+65.00	TRANS. TYP. SECT. NO.6 TO NO.23





✱ 646+73.67 TO 656+11.90 RT.
TRANSITION ROADWAY DITCH TO SHARED USE PATH
SEE CROSS SECTIONS AND DETAILS.

QUANTITIES

UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		22.68	32.64		19.28	square yards PER STATION		600	444	216	1320
cubic yards PER STATION		84.0	120.9		71.4	tons PER STATION	8.58	1.07	0.38		
tons PER STATION		161.9				gallons PER STATION					66
square yards PER STATION	600			444							

Ø BASED ON 2 APPLICATIONS

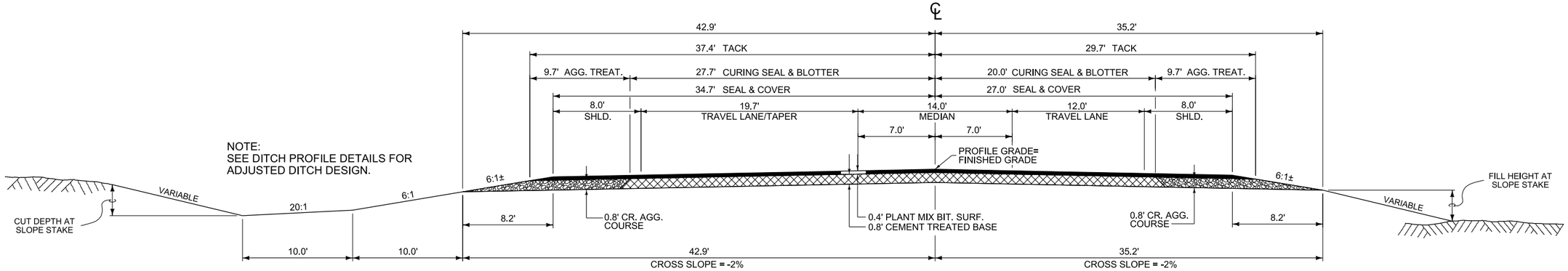
SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

AWARD COPY

TYPICAL SECTION NO. 7

MAINLINE

283+90.76			ONLY
283+90.76	TO	286+90.76	TRANS. TYP. SECT. NO. 7 TO NO. 8
536+12.16	TO	539+12.16	TRANS. TYP. SECT. NO. 7 TO NO. 8



QUANTITIES

UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		25.76	38.80		19.28	square yards PER STATION		686	530	216	1491
cubic yards PER STATION		95.4	143.7		71.4	tons PER STATION	9.75	1.22	0.45		
tons PER STATION		183.9				gallons PER STATION					75
square yards PER STATION	686			530							

Ø BASED ON 2 APPLICATIONS

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

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

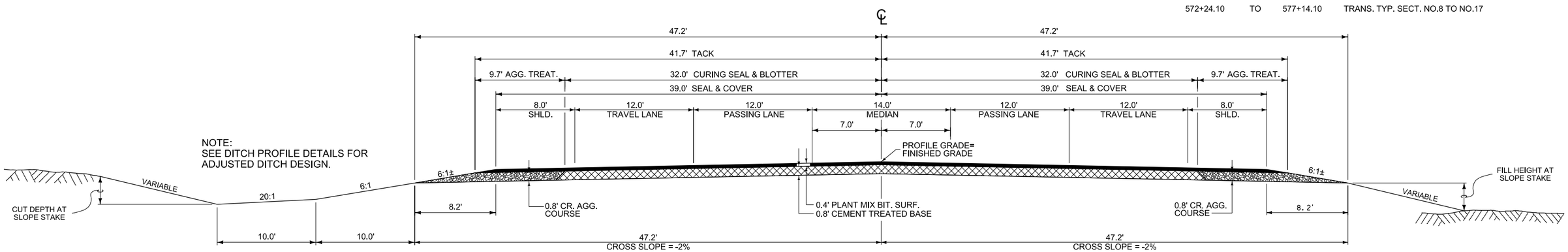
* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	2.5:1
15' - 20'	2.5:1
OVER 20'	2.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 8

MAINLINE

286+90.76	TO	321+97.42	
321+97.42	TO	324+22.42	TRANS. TYP. SECT. NO.8 TO NO.9
539+12.16	TO	566+33.01	THEN TO TYP. SECT. NO.16
570+84.99	TO	572+24.10	
572+24.10	TO	577+14.10	TRANS. TYP. SECT. NO.8 TO NO.17



QUANTITIES

UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		32.28	51.84		19.28	square yards PER STATION		867	711	216	1853
cubic yards PER STATION		119.6	192.0		71.4	tons PER STATION	12.22	1.55	0.60		
tons PER STATION		230.5				gallons PER STATION					93
square yards PER STATION	867			711							

Ø BASED ON 2 APPLICATIONS

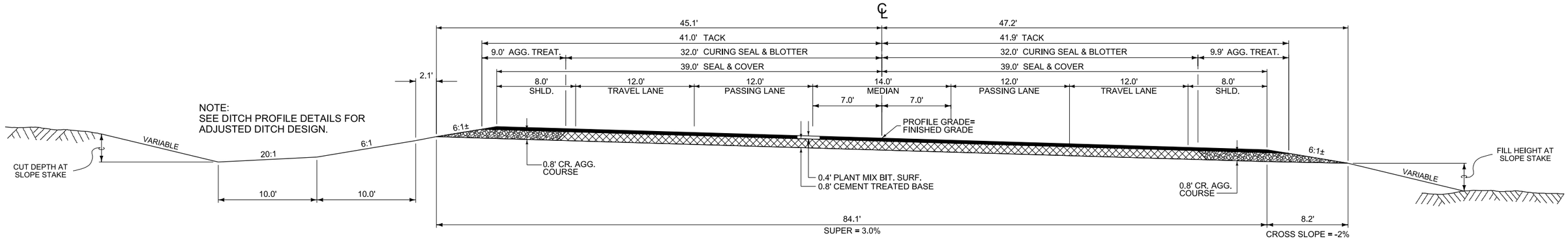
SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

AWARD COPY

TYPICAL SECTION NO. 9

MAINLINE

324+22.42 TO 327+00.00 THEN TO TYP. SECT. NO. 10



FOR QUANTITIES SEE TYPICAL SECTION NO. 8

SURFACING SECTION DESIGN BASED ON
THE TOP 2 FEET OF SUBGRADE HAVING
AN R-VALUE OF 15.

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

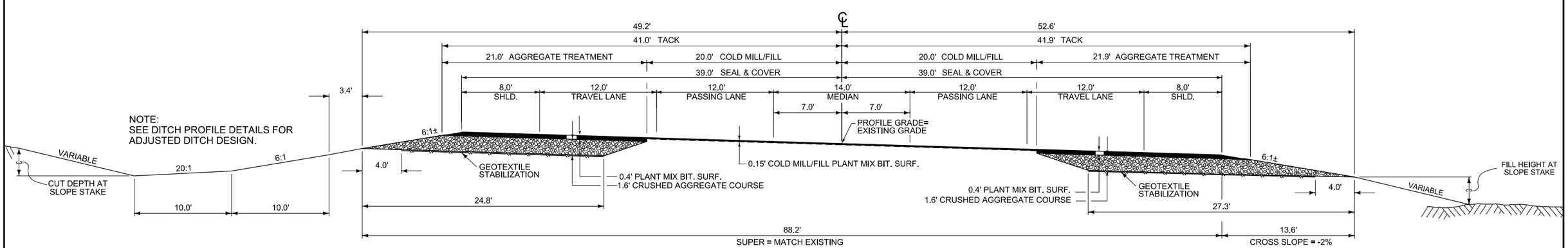
* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	2.5:1
15' - 20'	2.5:1
OVER 20'	2.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 10

MAINLINE

327+00.00 TO 337+28.26
337+28.26 TO 339+53.26 TRANS. TYP. SECT. NO.10 TO NO.11



FOR QUANTITIES SEE TYPICAL SECTION NO. 11

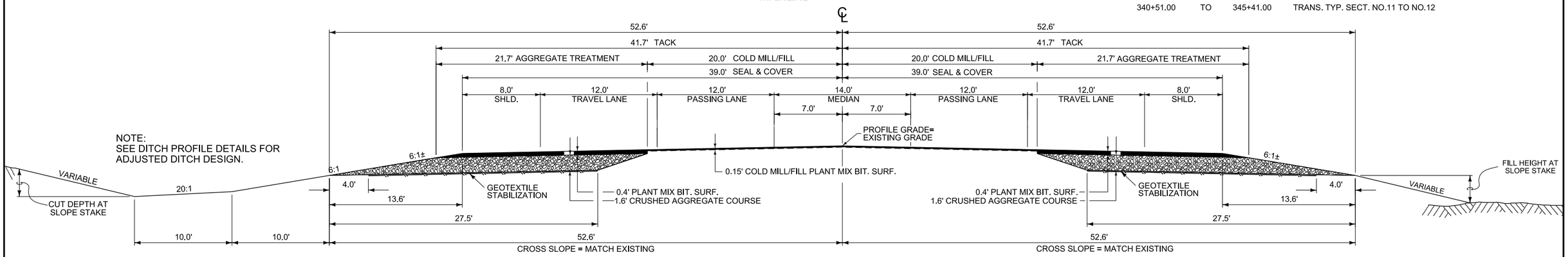
SURFACING SECTION DESIGN BASED ON
THE TOP 2 FEET OF SUBGRADE HAVING
AN R-VALUE OF 20.
SPECIAL BORROW SUBBASE
WITH GEOTEXTILE STABILIZATION
PROVIDED BELOW TYPICAL SECTION
SUBGRADE. SEE DETAIL.

AWARD COPY

TYPICAL SECTION NO. 11

MAINLINE

339+53.26 TO 340+51.00
340+51.00 TO 345+41.00 TRANS. TYP. SECT. NO.11 TO NO.12



NOTE:
SEE DITCH PROFILE DETAILS FOR ADJUSTED DITCH DESIGN.

QUANTITIES									
UNIT	AGGREGATE				UNIT	BITUMINOUS MATERIAL			
	COVER	PLANT MIX	CR. AGG. COURSE			ASPHALT CEMENT	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		22.32	78.72		square yards PER STATION		867	482	1409
cubic yards PER STATION		82.7	291.6		tons PER STATION	8.45	1.55		
tons PER STATION	867	159.4			gallons PER STATION				70
square yards PER STATION									

Ø BASED ON 2 APPLICATIONS IN WIDEN AREAS / 1 APPLICATION IN COLD MILL AREAS

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 20.

SPECIAL BORROW SUBBASE WITH GEOTEXTILE STABILIZATION PROVIDED BELOW TYPICAL SECTION SUBGRADE. SEE DETAIL.

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

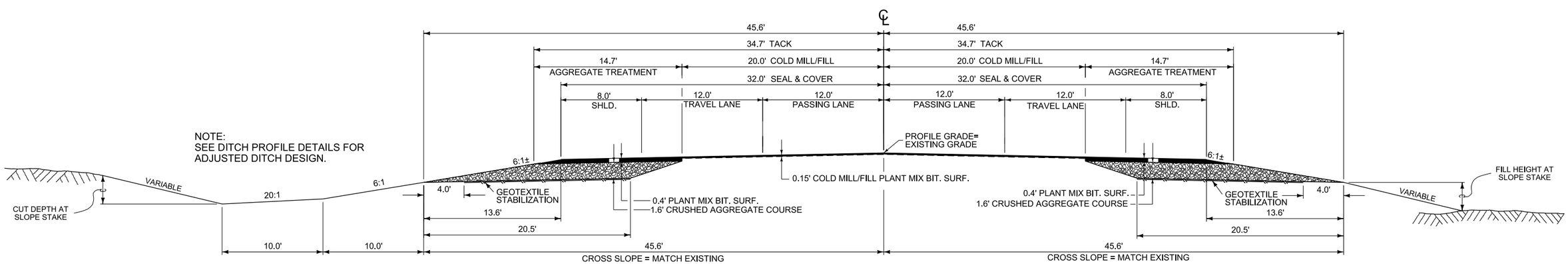
* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	2.5:1
15' - 20'	2.5:1
OVER 20'	2.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 12

MAINLINE

345+41.00 ONLY
345+41.00 TO 348+41.00 TRANS. TYP. SECT. NO.12 TO NO.13



NOTE:
SEE DITCH PROFILE DETAILS FOR ADJUSTED DITCH DESIGN.

QUANTITIES									
UNIT	AGGREGATE				UNIT	BITUMINOUS MATERIAL			
	COVER	PLANT MIX	CR. AGG. COURSE			ASPHALT CEMENT	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		16.72	56.32		square yards PER STATION		711	327	1098
cubic yards PER STATION		61.9	208.6		tons PER STATION	6.32	1.27		
tons PER STATION	711	119.3			gallons PER STATION				55
square yards PER STATION									

Ø BASED ON 2 APPLICATIONS IN WIDEN AREAS / 1 APPLICATION IN COLD MILL AREAS

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 20.

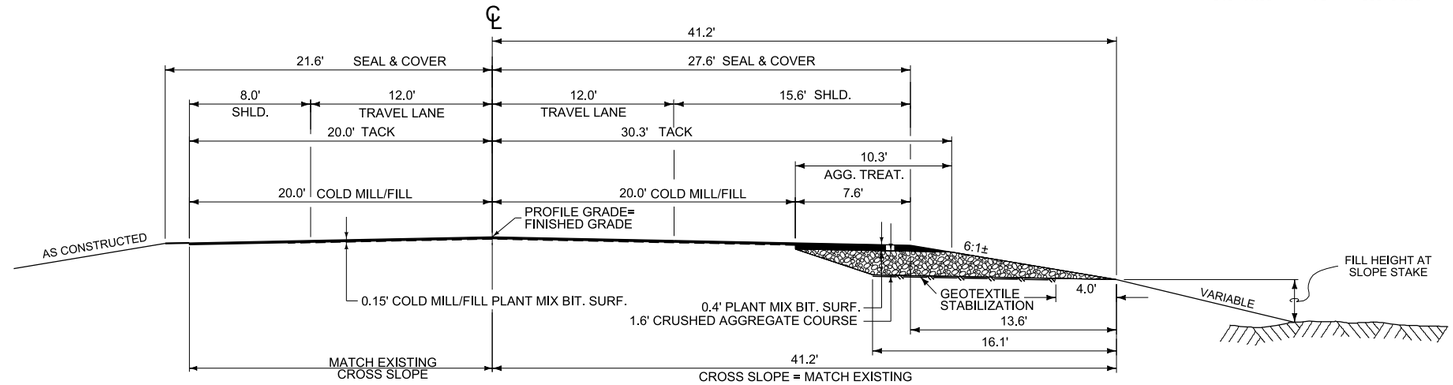
SPECIAL BORROW SUBBASE WITH GEOTEXTILE STABILIZATION PROVIDED BELOW TYPICAL SECTION SUBGRADE. SEE DETAIL.

AWARD COPY

TYPICAL SECTION NO. 13

MAINLINE

348+41.00 ONLY
348+41.00 TO 353+81.00 TRANS. TYP. SECT. NO. 13 TO 14



QUANTITIES									
UNIT	AGGREGATE				UNIT	BITUMINOUS MATERIAL			
	COVER	PLANT MIX	CR. AGG. COURSE			ASPHALT CEMENT	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		9.60	21.12		square yards PER STATION		547	114	673
cubic yards PER STATION		35.6	78.2		tons PER STATION	3.64	0.98		
tons PER STATION		68.6			gallons PER STATION				34
square yards PER STATION	547								

Ø BASED ON 2 APPLICATIONS IN WIDEN AREAS / 1 APPLICATION IN COLD MILL AREAS

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 20.
SPECIAL BORROW SUBBASE WITH GEOTEXTILE STABILIZATION PROVIDED BELOW TYPICAL SECTION SUBGRADE. SEE DETAIL.

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

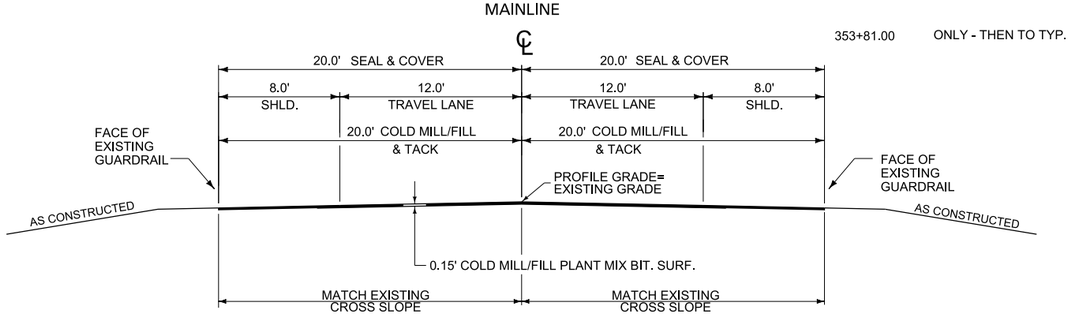
* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	2.5:1
15' - 20'	2.5:1
OVER 20'	2.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 14

MAINLINE

353+81.00 ONLY - THEN TO TYP. SECT. NO.14A

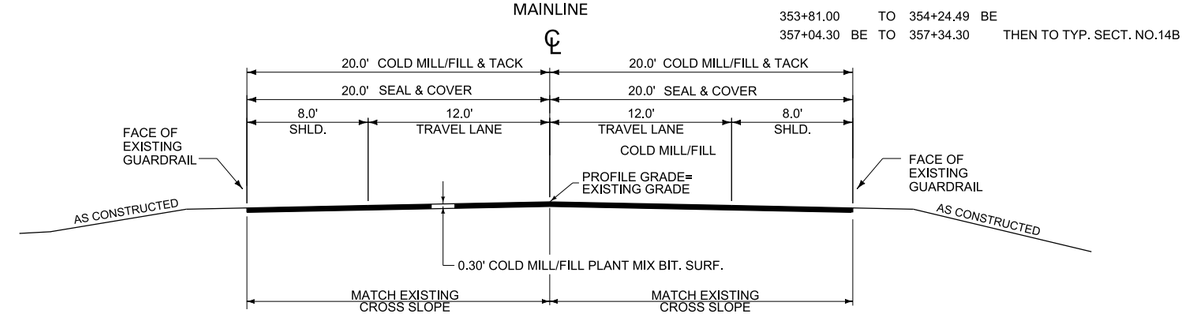


QUANTITIES						
UNIT	AGGREGATE		UNIT	BITUMINOUS MATERIAL		
	COVER	PLANT MIX		ASPHALT CEMENT	SEAL	EMULSIFIED ASPHALT TACK
AREA square feet		6.00	square yards PER STATION		444	444
cubic yards PER STATION		22.2	tons PER STATION	2.27	0.79	
tons PER STATION		42.8	gallons PER STATION			22
square yards PER STATION	444					

TYPICAL SECTION NO. 14A

MAINLINE

353+81.00 TO 354+24.49 BE
357+04.30 BE TO 357+34.30 THEN TO TYP. SECT. NO.14B



# QUANTITIES						
UNIT	AGGREGATE		UNIT	BITUMINOUS MATERIAL		
	COVER	PLANT MIX		ASPHALT CEMENT	SEAL	EMULSIFIED ASPHALT TACK Ø
AREA square feet		12.00	square yards PER STATION		444	889
cubic yards PER STATION		44.4	tons PER STATION	4.54	0.79	
tons PER STATION		85.6	gallons PER STATION			44
square yards PER STATION	444					

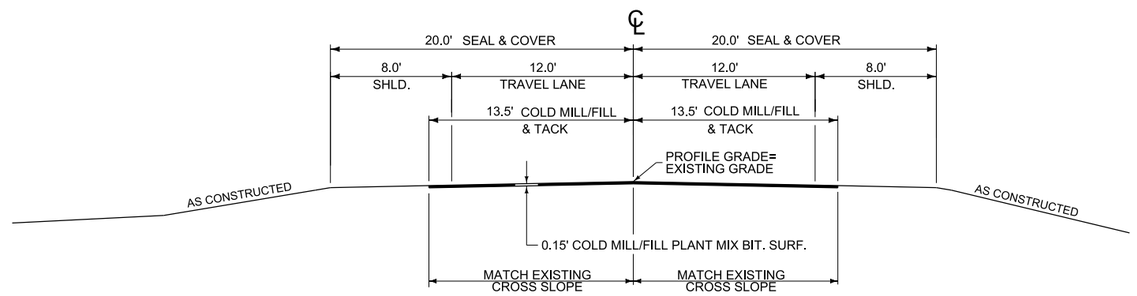
Ø BASED ON 2 APPLICATIONS

AWARD COPY

TYPICAL SECTION NO. 14B

MAINLINE

357+34.30 TO 377+50.00 THEN TO TYP. SECT. NO.1



QUANTITIES						
UNIT	AGGREGATE		UNIT	BITUMINOUS MATERIAL		
	COVER	PLANT MIX		ASPHALT CEMENT	SEAL	EMULSIFIED ASPHALT TACK
AREA square feet		4.05	square yards PER STATION		444	300
cubic yards PER STATION		15.0	tons PER STATION	1.53	0.79	
tons PER STATION		28.9	gallons PER STATION			15
square yards PER STATION	444					

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

* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	2.5:1
15' - 20'	2.5:1
OVER 20'	2.5:1

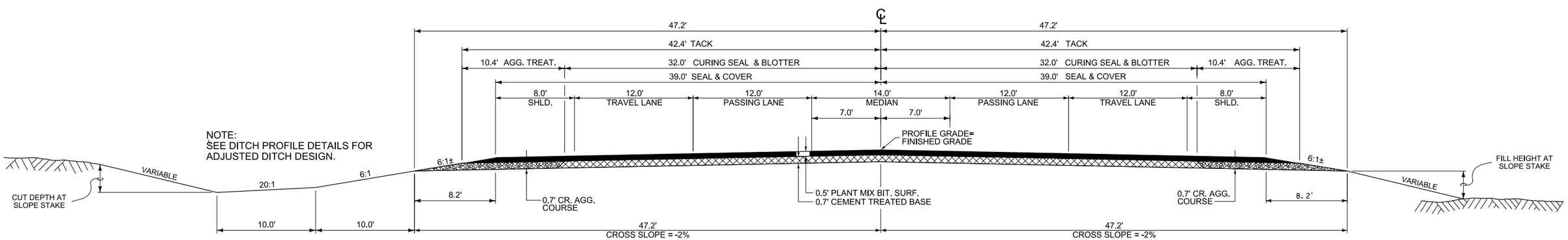
* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 16

MAINLINE

566+33.01 TO 568+33.01 BE
568+84.99 BE TO 570+84.99 THEN TO TYP. SECT. NO.8

NOTE:
SEE DITCH PROFILE DETAILS FOR ADJUSTED DITCH DESIGN.



QUANTITIES											
UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		40.70	45.29		17.43	square yards PER STATION		867	711	231	2827
cubic yards PER STATION		150.7	167.7		64.6	tons PER STATION	15.40	1.55	0.60		
tons PER STATION		290.5				gallons PER STATION					141
square yards PER STATION	867			711							

Ø BASED ON 3 APPLICATIONS

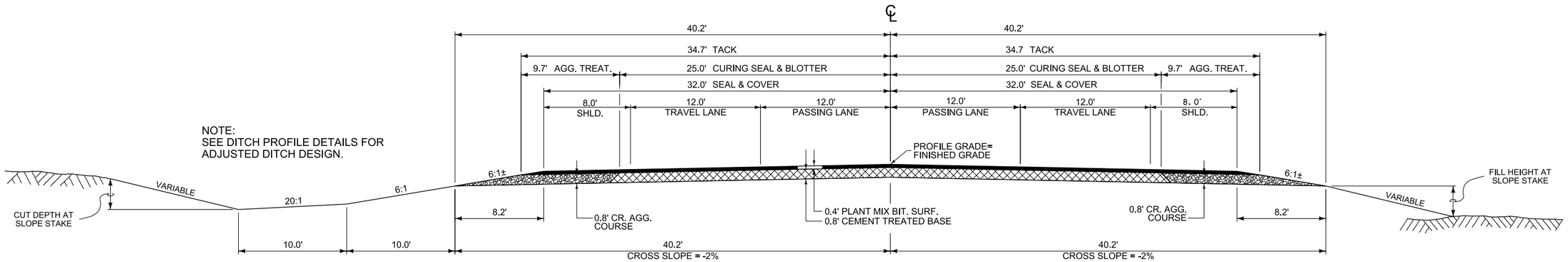
SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

AWARD COPY

TYPICAL SECTION NO. 17

MAINLINE

577+14.10	TO	592+14.14	THEN TO TYP. SECT. NO.18
597+07.86	TO	600+70.48	
600+70.48	TO	603+70.48	TRANS. TYP. SECT. NO. 17 TO NO.19



QUANTITIES											
UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		26.68	40.64		19.28	square yards PER STATION		711	556	216	1542
cubic yards PER STATION		98.8	150.5		71.4	tons PER STATION	10.09	1.27	0.47		
tons PER STATION		190.4				gallons PER STATION					77
square yards PER STATION	711			556							

Ø BASED ON 2 APPLICATIONS

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

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

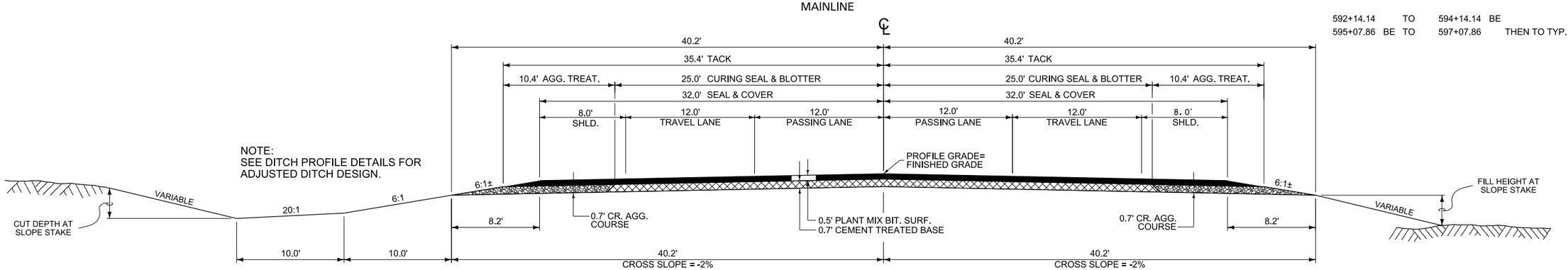
✱ BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	2.5:1
15' - 20'	2.5:1
OVER 20'	2.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 18

MAINLINE

592+14.14		TO	594+14.14	BE
595+07.86	BE	TO	597+07.86	THEN TO TYP. SECT. NO.17



QUANTITIES											
UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		33.70	35.49		17.43	square yards PER STATION		711	556	231	2360
cubic yards PER STATION		124.8	131.4		64.6	tons PER STATION	12.75	1.27	0.47		
tons PER STATION		240.6				gallons PER STATION					118
square yards PER STATION	711			556							

Ø BASED ON 3 APPLICATIONS

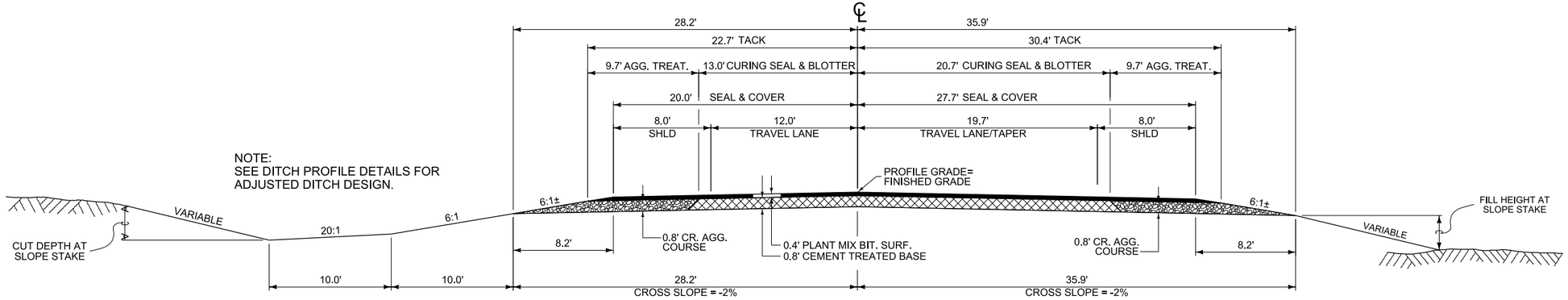
SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

AWARD COPY

TYPICAL SECTION NO. 19

MAINLINE

603+70.48 ONLY
603+70.48 TO 609+10.48 TRANS. TYP. SECT. NO. 19 TO NO.1



QUANTITIES											
UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		20.16	27.60		19.28	square yards PER STATION		530	374	216	1180
cubic yards PER STATION		74.7	102.2		71.4	tons PER STATION	7.63	0.95	0.32		
tons PER STATION		144.0				gallons PER STATION					59
square yards PER STATION	530			374							

Ø BASED ON 2 APPLICATIONS

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

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

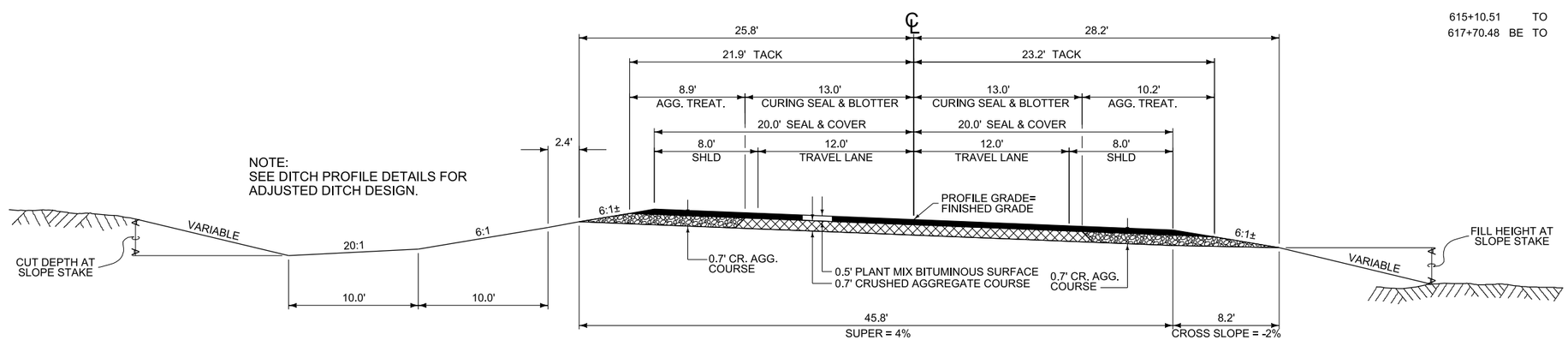
* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	2.5:1
15' - 20'	2.5:1
OVER 20'	2.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 20

MAINLINE

615+10.51 TO 617+10.51 BE
617+70.48 BE TO 619+48.32 THEN TO TYP. SECT. NO.4



FOR QUANTITIES SEE TYPICAL NO. 5

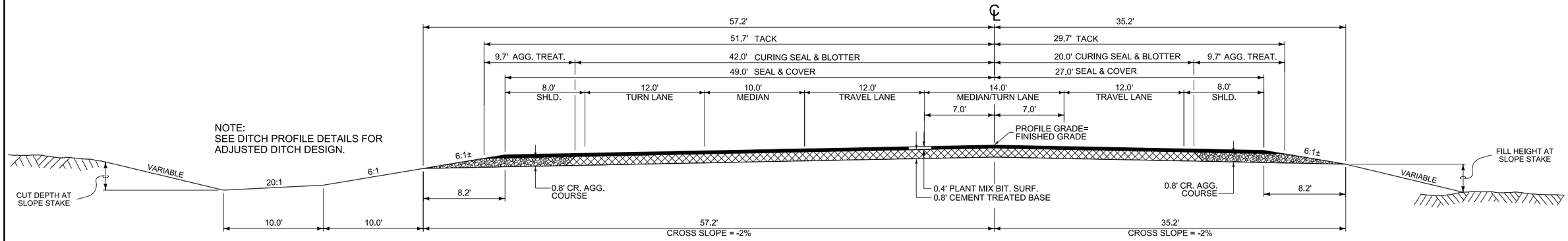
SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

AWARD COPY

TYPICAL SECTION NO. 21

MAINLINE

637+38.37 ONLY
637+38.37 TO 644+38.37 TRANS. TYP. SECT. NO.21 TO NO.22



QUANTITIES											
UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		31.48	50.24		19.28	square yards PER STATION		844	689	216	1809
cubic yards PER STATION		116.6	186.1		71.4	tons PER STATION	11.91	1.51	0.59		
tons PER STATION		224.7				gallons PER STATION					90
square yards PER STATION	844			689							

Ø BASED ON 2 APPLICATIONS

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

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

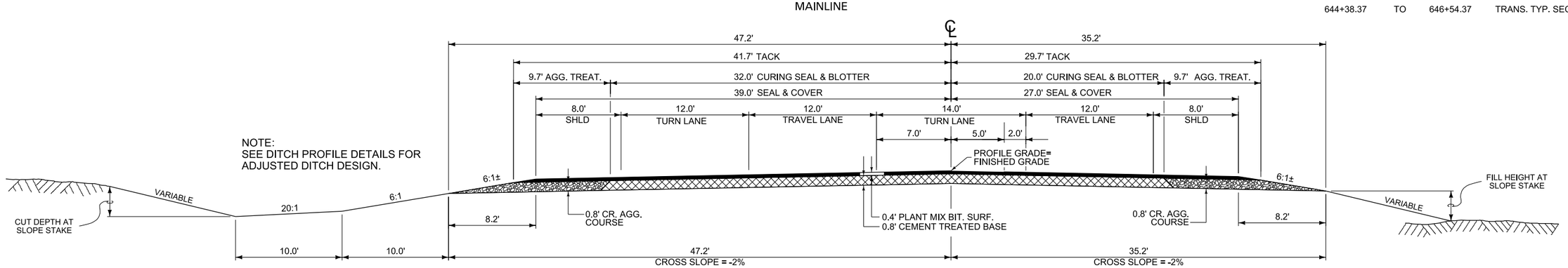
* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	2.5:1
15' - 20'	2.5:1
OVER 20'	2.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 22

MAINLINE

644+38.37 ONLY
644+38.37 TO 646+54.37 TRANS. TYP. SECT. NO.22 TO NO.6



QUANTITIES											
UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		27.48	42.24		19.28	square yards PER STATION		733	578	216	1587
cubic yards PER STATION		101.8	156.4		71.4	tons PER STATION	10.40	1.31	0.49		
tons PER STATION		196.2				gallons PER STATION					79
square yards PER STATION	733			578							

Ø BASED ON 2 APPLICATIONS

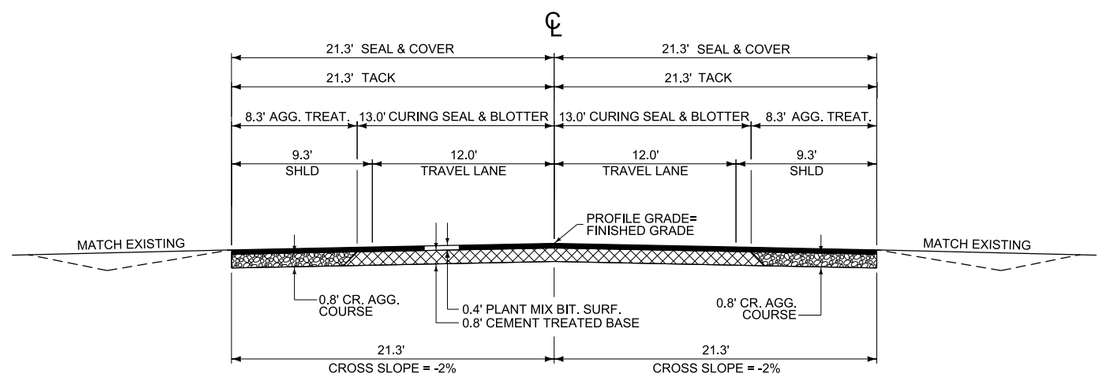
SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

AWARD COPY

TYPICAL SECTION NO. 23

MAINLINE

656+65.00 ONLY END OF PROJECT
THEN TO TYP. SECT. NO.24



QUANTITIES											
UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CEMENT TREATED BASE	BLOTTER	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	CURING SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK Ø
AREA square feet		17.04	21.44		12.64	square yards PER STATION		473	289	184	947
cubic yards PER STATION		63.1	79.4		46.8	tons PER STATION	6.44	0.84	0.25		
tons PER STATION		121.6				gallons PER STATION					47
square yards PER STATION	473			289							

Ø BASED ON 2 APPLICATIONS

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15.

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

* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	2.5:1
15' - 20'	2.5:1
OVER 20'	2.5:1

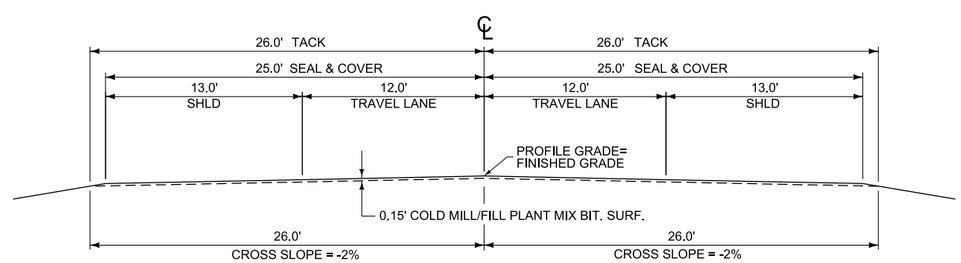
* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 24

MAINLINE – CONN. TO PTW

656+65.00 TO 656+85.00 COLD MILL CONNECTION
656+85.00 TO 657+57.00 CONNECTION TO PTW

PROVIDED FOR ADJUSTMENT OF PAVEMENT MARKINGS.



QUANTITIES						
UNIT	AGGREGATE		UNIT	BITUMINOUS MATERIAL		
	COVER	PLANT MIX		ASPHALT CEMENT	SEAL	EMULSIFIED ASPHALT TACK
AREA square feet		7.65	square yards PER STATION		556	578
cubic yards PER STATION		28.3	tons PER STATION	2.89	0.99	
tons PER STATION		54.5	gallons PER STATION			29
square yards PER STATION	556					

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdtyp004.dgn	DESIGNED BY	BETH POINTER	5/10/2016	ROAD PLANS
2		9/9/2019	REVIEWED BY	JEANIA CERECK	8/22/2018	BLAINE COUNTY
1		3:02:39 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	

LOHMAN - E & W		NHIP 1-7(44)393
CSF= 0.99965875	UPN 6281000	20

SUMMARY

SURFACING

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE square yards COVER TYPE 1	AGGREGATE square yards BLOTTER	AGGREGATE tons PLANT MIX BIT. SURF. GR. S - 3/4"	AGGREGATE cubic yards CEMENT TREATED BASE	AGGREGATE cubic yards CRUSHED AGG. COURSE	AGGREGATE cubic yards TRAFFIC GRAVEL	BITUMINUS MATERIAL tons ASPHALT CEMENT PG 70-28	BITUMINUS MATERIAL tons SEAL CHFRS-2P	BITUMINUS MATERIAL gallons CURING SEAL CRS-2	BITUMINUS MATERIAL gallons EMULSIFIED ASPHALT TACK	BITUMINUS MATERIAL gallons EMULSIFIED ASPHALT FOG SEAL	BITUMINUS MATERIAL square yards AGG. TREAT.	REMARKS
109+30.89	148+87.65	3,956.76	3,956.76					17,568	11,435	4,827	3,142	2,825		256.0	31.3	9.9	1978		8,547	TYP. SECTION NO.1
148+87.65	157+27.65	840.00	840.00					4,292	2,986	1,168	816	600		61.9	7.6	2.6	479		1,814	TRANS. TYP. SECTION NO.1 TO NO.2
157+27.65	185+32.73	2,805.08	2,805.08					16,213		4,379		5,229		232.0	28.9		1795		17,896	TYP. SECTION NO.2 (CAC WITH GEOGRID)
185+32.73	207+85.30	2,252.57	2,252.57					13,020	9,506	3,516	2,590	1,608		186.3	23.2	8.1	1442		4,866	TYP. SECTION NO.2
207+85.30	210+85.30	300.00	300.00					1,533	1,067	417	292	214		22.1	2.7	0.9	171		648	TRANS. TYP. SECTION NO.3 TO NO.4
210+85.30	259+29.13	4,843.83	4,843.83					21,507	13,999	5,909	3,846	3,458		313.4	38.3	12.1	2422		10,463	TYP. SECTION NO.1
259+29.13	261+29.13 BE	200.00	200.00					888	578	310	138	129		16.4	1.6	0.5	156		462	TYP. SECTION NO.5
261+29.13 BE	262+22.85 BE	93.72			93.72	CLEAR CREEK BRIDGE - TC														
262+22.85 BE	264+03.70	180.85	180.85					803	523	280	125	117		14.9	1.4	0.5	141		418	TYP. SECTION NO.5
264+03.70	268+93.70	490.00	490.00					2,558	1,796	696	491	350		36.9	4.6	1.5	284		1,058	TRANS. TYP. SECTION NO.1 TO NO.6
268+93.70	278+50.76	957.06	957.06					5,742	4,249	1,549	1,157	683		82.1	10.2	3.6	632		2,067	TYP. SECTION NO.6
278+50.76	283+90.76	540.00	540.00					3,472	2,630	934	714	386		49.5	6.2	2.2	381		1,166	TRANS. TYP. SECTION NO.6 TO NO.7
283+90.76	286+90.76	300.00	300.00					2,330	1,862	622	504	214		33.0	4.2	1.6	252		648	TRANS. TYP. SECTION NO.7 TO NO.8
286+90.76	327+00.00	4,009.24	4,009.24					34,760	28,506	9,241	7,698	2,863		489.9	62.1	24.1	3729		8,660	TYPICAL SECTION NO.8
327+00.00	340+51.00	1,351.00	1,351.00					11,713		2,153		3,940		114.2	20.9		946		6,512	TYPICAL SECTION NO.10
340+51.00	345+41.00	490.00	490.00					3,866		683		1,225		36.2	6.9		306		1,982	TRANS. TYP. SECTION NO.11 TO NO.12
345+41.00	348+41.00	300.00	300.00					1,887		282		430		14.9	3.4		134		662	TRANS. TYP. SECTION NO.12 TO NO.13
348+41.00	353+81.00	540.00	540.00					2,676		301		211		16.0	4.8		151		308	TRANS. TYP. SECTION NO.13 TO NO.14
353+81.00	354+24.49 BE	43.49	43.49					193		37				2.0	0.3		19			TYP. SECTION NO.14A
354+24.49 BE	357+04.30 BE	279.81			279.81	MILK RIVER BRIDGE - NTC														
357+04.30 BE	357+34.30	30.00	30.00					133		26				1.4	0.2		13			TYP. SECTION NO.14A
357+34.30	377+50.00	2,015.70	2,015.70					8,950		583				30.8	15.9		302			TYP. SECTION NO.14B
377+50.00	524+67.79	14,717.79	14,717.79					65,347	42,534	17,956	11,686	10,509		952.2	116.3	36.8	7359		31,790	TYP. SECTION NO.1
524+67.79	529+57.79	490.00	490.00					2,558	1,796	696	491	350		36.9	4.6	1.5	284		1,058	TRANS. TYP. SECTION NO.1 TO NO.6
529+57.79	530+72.16	114.37	114.37					686	508	185	138	82		9.8	1.2	0.4	75		247	TYP. SECTION NO.6
530+72.16	536+12.16	540.00	540.00					3,472	2,630	934	714	386		49.5	6.2	2.2	381		1,166	TRANS. TYP. SECTION NO.6 TO NO.7
536+12.16	539+12.16	300.00	300.00					2,330	1,862	622	504	214		33.0	4.2	1.6	252		648	TRANS. TYP. SECTION NO.7 TO NO.8
539+12.16	566+33.01	2,720.85	2,720.85					23,590	19,345	6,272	5,224	1,943		332.5	42.2	16.3	2530		5,877	TYP. SECTION NO.8
566+33.01	568+33.01 BE	200.00	200.00					1,734	1,422	581	335	129		30.8	3.1	1.2	282		462	TYP. SECTION NO.16
568+33.01 BE	568+84.99 BE	51.98			51.98	RED ROCK WEST OVERFLOW BRIDGE - TC														
568+84.99 BE	570+84.99	200.00	200.00					1,734	1,422	581	335	129		30.8	3.1	1.2	282		462	TYP. SECTION NO.16
570+84.99	572+24.10	139.11	139.11					1,206	989	321	267	99		17.0	2.2	0.8	129		300	TYP. SECTION NO.8
572+24.10	577+14.10	490.00	490.00					3,866	3,104	1,031	839	350		54.7	6.9	2.6	417		1,058	TRANS. TYP. SECTION NO.8 TO NO.17
577+14.10	592+14.14	1,500.04	1,500.04					10,665	8,340	3,233	2,114	1,020		171.3	19.1	7.1	1463		3,353	THEN TO TYP. SECTION NO.18
592+14.14	594+14.14 BE	200.00	200.00					1,422	1,112	481	263	129		25.5	2.5	0.9	236		462	TYP. SECTION NO.18
594+14.14 BE	595+07.86 BE	93.72			93.72	RED ROCK COULEE BRIDGE - TC														
595+07.86 BE	597+07.86	200.00	200.00					1,422	1,112	481	263	129		25.5	2.5	0.9	236		462	TYP. SECTION NO.18
597+07.86	600+70.48	362.62	362.62					2,578	2,016	690	546	259		36.6	4.6	1.7	279		783	TYP. SECTION NO.17
600+70.48	603+70.48	300.00	300.00					1,862	1,395	502	379	214		26.6	3.3	1.2	204		648	TRANS. TYP. SECTION NO.17 TO NO.19
603+70.48	609+10.48	540.00	540.00					2,630	1,790	718	490	386		38.1	4.7	1.5	294		1,166	TRANS. TYP. SECTION NO.19 TO NO.1
609+10.48	615+10.51	600.03	600.03					2,664	1,734	732	476	428		38.8	4.7	1.5	300		1,296	TYP. SECTION NO.1
615+10.51	617+10.51 BE	200.00	200.00					888	578	310	138	129		16.4	1.6	0.5	156		462	TYP. SECTION NO.20
617+10.51 BE	617+70.48 BE	59.97			59.97	RED ROCK EAST OVERFLOW BRIDGE - TC														
617+70.48 BE	619+48.32	177.84	177.84					790	514	276	123	115		14.6	1.4	0.4	139		411	TYP. SECTION NO.20
619+48.32	622+83.00	334.68	334.68					1,486	967	408	266	239		21.7	2.6	0.8	167		723	TYP. SECTION NO.1
622+83.00	627+73.00	490.00	490.00					2,558	1,796	696	491	350		36.9	4.6	1.5	284		1,058	TRANS. TYP. SECTION NO.1 TO NO.6
627+73.00	636+40.00	867.00	867.00					5,202	3,849	1,404	1,048	619		74.4	9.3	3.3	572		1,873	TYP. SECTION NO.6
636+40.00	637+38.37	98.37	98.37					710	557	190	151	70		10.1	1.3	0.5	77		212	TRANS. TYP. SECTION NO.6 TO NO.21
637+38.37	644+38.37	700.00	700.00					5,520	4,435	1,473	1,199	500		78.1	9.9	3.8	592		1,512	TRANS. TYP. SECTION NO.21 TO NO.22
644+38.37	646+54.37	216.00	216.00					1,440	1,104	387	299	154		20.5	2.6	0.9	157		467	TRANS. TYP. SECTION NO.22 TO NO.6
646+54.37	652+67.00	612.63	612.63					3,676	2,720	992	741	437		52.6	6.6	2.3	404		1,323	TYP. SECTION NO.6
652+67.00	656+65.00	398.00	398.00					2,135	1,459	564	399	235		29.9	3.8	1.3	225		796	TRANS. TYP. SECTION NO.6 TO NO.23
						ADDITIONAL SURFACING		3,729	~	2,244	~	4,906		119.0	87.7	~	933	103	14,518	
TOTAL		**54,734.11**	**54,154.91**	**~**	**579.20**		**1,160**	**312,004**	**190,227**	**82,873**	**51,432**	**48,992**	**9,731**	**4393.7**	**637.5**	**162.3**	**34,442**	**103**	**142,770**	

SUMMARY

ADDITIONAL SURFACING (INCLUDED IN SURFACING FRAME)

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE square yards COVER TYPE 1	AGGREGATE square yards BLOTTER	AGGREGATE tons PLANT MIX BIT. SURF. GR. S - 3/4"	AGGREGATE cubic yards CEMENT TREATED BASE	AGGREGATE cubic yards CRUSHED AGG. COURSE	AGGREGATE cubic yards TRAFFIC GRAVEL	BITUMINUS MATERIAL tons ASPHALT CEMENT PG 70-28	BITUMINUS MATERIAL tons SEAL CHFRS-2P	BITUMINUS MATERIAL tons CURING SEAL CRS-2	BITUMINUS MATERIAL gallons EMULSIFIED ASPHALT TACK	BITUMINUS MATERIAL gallons EMULSIFIED ASPHALT FOG SEAL	BITUMINUS MATERIAL square yards AGG. TREAT.	REMARKS
						12 - FARM FIELD APPROACHES				91		892		4.8			36		696	
						1 - FARM FIELD APPROACH				3		26		0.2			1		19	14' TOP WIDTH W/5' RADII
						24 - PRIVATE APPROACHES				833		1,476		44.2			408		6,408	
						3 - PRIVATE APPROACH				229		407		12.1			42		822	WITH TRUCK TURNING RADIUS
						1 - PRIVATE APPROACH				19		35		1.0			8		159	40' TOP WIDTH
						2 - PUBLIC APPROACHES				94		160		5.0			36		696	
						6 - PUBLIC APPROACHES				423		810		22.4			150		2,946	WITH TRUCK TURNING RADIUS
109+10.89	109+30.89	20.00	20.00			BEG. CONNECTION		89		9				0.5	0.2		5			42' WIDTH COLD MILL REPLACEMENT
181+40.00	185+60.00	420.00	420.00			MCS PULLOUT LT.		800		205		214		10.9	1.4		80		800	SEE DETAILS
568+33.01 BE	568+84.99 BE	51.98	51.98			RED ROCK WEST OVERFLOW BRIDGE		451		58				3.1	0.8		45			0.2' PMS OVERLAY
617+10.51 BE	617+70.48 BE	59.97	59.97			RED ROCK EAST OVERFLOW BRIDGE		266		34				1.8	0.5		26			0.2' PMS OVERLAY
656+65.00	656+85.00	20.00	20.00			END CONNECTION		111		11				0.6	0.2		6			52' WIDTH COLD MILL REPLACEMENT - TYPICAL SECT. NO.23
656+85.00	657+57.00	72.00	72.00			TRANSITION STRIPING		400							0.7					50' WIDTH SEAL & COVER - TYPICAL SECTION NO.23
						EMBANKMENT PROTECTORS		182		29				1.5	76.4				182	
						GUARDRAIL WIDENING						515								
43+46.59	56+34.68	1,288.09	1,288.09			SHARED USE PATH		1,430		206		371		10.9	7.5		90	103	1,790	MAINLINE 643+46.93 TO 656+31.31
SUBTOTAL		~	~	~	~		~	**3,729**	~	**2,244**	~	**4,906**	~	**119.0**	**87.7**	~	**933**	**103**	**14,518**	

Section lengths and hydrated lime should not be subtotaled in this frame

Click here for Misc. Paving Memo.

RUMBLE STRIP

STATION FROM	STATION TO	miles RUMBLESTRIPS INTER-MITTENT	miles RUMBLESTRIPS CENTERLINE TYPE 3	gals EMULSIFIED ASPHALT FOG SEAL ##	REMARKS
109+30.89	636+29.13	10.2		1,197	LT.
109+30.89	636+29.13	10.2		1,197	RT.
109+30.89	636+29.13		10.2	1,197	CENTERLINE
TOTAL		**20.4**	**10.2**	~	

FOR INFORMATION ONLY, INCLUDE IN THE COST OF RUMBLE STRIPS

COLD MILLING

STATION FROM	STATION TO	square yards COLD MILLING 0.15 ft	square yards COLD MILLING 0.30 ft	REMARKS
109+10.89	109+30.89	93		42' WIDTH
327+00.00	353+81.00	11,916		40' WIDTH
353+81.00	354+24.49 BE		193	40' WIDTH
357+04.30 BE	357+34.30		133	40' WIDTH
357+34.30	377+50.00	6,047		27' WIDTH
656+65.00	656+85.00	116		52' WIDTH
SUBTOTAL		18,172	326	
TOTAL		**18,498**		

SEE DETAILS

PAVEMENT MARKINGS

ITEM	UNIT	INTERIM APPLICA-TION #	FINAL APPLICA-TION	TOTAL
STRIPING - WHITE PAINT	gallon	870		870
STRIPING - YELLOW PAINT	gallon	599		599
WORDS & SYMBOLS - WHITE PAINT	gallon	76		76
WORDS & SYMBOLS - YELLOW PAINT	gallon	217		217
STRIPING - WHITE EPOXY	gallon		580	580
STRIPING - YELLOW EPOXY	gallon		399	399
WORDS & SYMBOLS - WHITE EPOXY	gallon		50	50
WORDS & SYMBOLS - YELLOW EPOXY	gallon		144	144
TEMPORARY STRIPING	mile			38.4
FINAL SWEEP AND BROOM	CRMI			15

BASED ON 2 APPLICATIONS.

SUMMARY

ADDITIONAL GRADING

STATION FROM	STATION TO	cubic yards INCL. IN ROADWAY UNCL. EXC.	cubic yards INCL. IN ROADWAY EMB.+	cubic yards UNCL. CHANNEL EXC. #	REMARKS
109+31	140+00		3,410		TOPSOIL REPLACEMENT
113+50	148+00		-10,980		EMBANKMENT FOUNDATION TREATMENT-SEE DETAIL
116+50			25		DITCH BLOCK RT.
117+50			10		TRANS. FILL OVER DR. LT.
117+50			10		TRANS. FILL OVER DR. RT.
122+53		10	115		FARM FIELD APP. LT.
123+02		15	100		PRIVATE APP. RT.
127+55			20		TRANS. FILL OVER DR. RT.
128+25			15		DITCH BLOCK RT.
128+50			20		DITCH BLOCK LT.
131+68		15	125		PRIVATE APP. RT.
140+00	170+00		5,695		TOPSOIL REPLACEMENT
145+15			10		TRANS. FILL OVER DR. LT.
145+15			10		TRANS. FILL OVER DR. RT.
148+50		10	325		PRIVATE APP. RT.
150+40		10	100		PRIVATE APP. LT.
152+00	156+00		-695		EMBANKMENT FOUNDATION TREATMENT-SEE DETAIL
154+07	154+73		25		EARTH DIKE RT.
154+25		30	60		PRIVATE APP. LT.
159+17	159+82		25		EARTH DIKE RT.
162+63	163+88		50		EARTH DIKE RT.
166+00	167+96		80		EARTH DIKE RT.
167+40		25	120		PRIVATE APP. LT.
169+03	169+68		50		EARTH DIKE RT.
170+00	200+00		5,951		TOPSOIL REPLACEMENT
171+47	172+86		55		EARTH DIKE RT.
176+00	179+00		-970		EMBANKMENT FOUNDATION TREATMENT-SEE DETAIL
188+48	193+00		-2,560		EMBANKMENT FOUNDATION TREATMENT-SEE DETAIL
197+00	210+50		-4,600		EMBANKMENT FOUNDATION TREATMENT-SEE DETAIL
200+00	230+00		4,425		TOPSOIL REPLACEMENT
201+09	201+66		20		EARTH DIKE RT.
202+00			10		DITCH BLOCK RT.
211+23		40	110		PRIVATE APP. RT.
222+92		35	160		PUBLIC APP. RT. W/TRUCK TURNING RADII
222+92		10	60		PRIVATE APP. RT. ACCESS OF PLAINSMAN TRAIL RD.
223+23		10	270		PRIVATE APP. LT.
230+00	260+00		3,035		TOPSOIL REPLACEMENT
250+65		10	245		PRIVATE APP. LT.
251+53		15	270		FARM FIELD APP. RT.
255+18		15	165		PUBLIC APP. RT.
255+18		10	190		PRIVATE APP. LT.
258+39		10	185		PRIVATE APP. RT.
258+48		15	160		PUBLIC APP. LT.
260+00	290+00		4,770		TOPSOIL REPLACEMENT
261+76			335		CLEAR CREEK CHANNEL MODIFICATION-SEE DETAIL
277+80		5	1,155		PUBLIC APP. LT. W/TRUCK TURNING RADII
277+80		15	210		PRIVATE APP. RT. - SKEWED
282+84		10	200		PRIVATE APP. RT.
285+50			45		DITCH BLOCK RT.
290+00	320+00		4,480		TOPSOIL REPLACEMENT
299+67		20	580		PRIVATE APP. RT.
300+00	320+50		-13,610		EMBANKMENT FOUNDATION TREATMENT-SEE DETAIL
313+70	316+50		110		EARTH DIKE RT.
320+00	350+00		4,675		TOPSOIL REPLACEMENT
320+20		25			OUTLET DITCH LT.
320+50		270	755		FARM FIELD APP. RT.
331+88		440	1,965		PUBLIC APP. RT. W/TRUCK TURNING RADII
350+00	380+00		170		TOPSOIL REPLACEMENT
351+30			740		PRIVATE APP. RT. - 95' TOP WIDTH
380+00	410+00		2,725		TOPSOIL REPLACEMENT
385+74		40	60		PRIVATE APP. RT. (JOINT)
397+90		15	360		PRIVATE APP. RT.
410+00	440+00		3,035		TOPSOIL REPLACEMENT

MATERIAL IS UNUSABLE FOR EMBANKMENT CONSTRUCTION

GRADING ɵ

STATION	cubic yards UNCL. EXC.	cubic yards UNCL. BORROW	cubic yards UNCL. CHANNEL EXC. #	cubic yards EMB.+	REMARKS
109+30.89					BEGIN PROJECT
	381,182	69,291		450,473	
656+65.00					END PROJECT
TOTAL	381,182	69,291	125	## 450,473	

MATERIAL IS UNUSABLE FOR EMBANKMENT CONSTRUCTION
FOR INFORMATION ONLY
ɵ FINAL QUANTITIES INCLUDE EMBANKMENT PRECONSTRUCTION (PRELOADING)

ADDITIONAL GRADING (CONT.)

STATION FROM	STATION TO	cubic yards INCL. IN ROADWAY UNCL. EXC.	cubic yards INCL. IN ROADWAY EMB.+	cubic yards UNCL. CHANNEL EXC. #	REMARKS
421+05		40	450		PRIVATE APP. RT.
437+15		5	325		FARM FIELD APP. RT.
437+25		25	200		PUBLIC APP. LT. W/TRUCK TURNING RADII
440+00	470+00		2,830		TOPSOIL REPLACEMENT
470+00	500+00		3,465		TOPSOIL REPLACEMENT
482+85		5	440		PRIVATE APP. RT.
500+00	530+00		3,335		TOPSOIL REPLACEMENT
505+59			40		TRANSITION FILL OVER BOX CULVERT LT. & RT.
505+59			75	125	CHANNEL MODIFICATION - SEE DETAIL
506+44		5	95		FARM FIELD APP. RT. (CANAL ACCESS) 14' WIDE W/5' RADII
514+11		5	385		PUBLIC APP. LT. W/TRUCK TURNING RADII
521+63		5	520		FARM FIELD APP. RT.
530+00	560+00		5,045		TOPSOIL REPLACEMENT
530+36		5	580		PRIVATE APP. RT.
530+55		5			GRADE TO DRAIN APP. DITCH RT.
544+04	544+51	40	15		RELOCATE IRR. DT. RT.
549+10		20	440		FARM FIELD APP. RT.
551+51		10	820		PRIVATE APP. RT.
560+00	590+00		5,450		TOPSOIL REPLACEMENT
563+50		10	815		PRIVATE APP. RT.
563+79		10			GRADE TO DRAIN APP. DITCH RT.
568+59			275		REDROCK COULEE WEST CHANNEL GRADING-SEE DETAIL
578+95		10	1,220		FARM FIELD APP. RT.
585+65		10	1,400		FARM FIELD APP. RT.
590+00	620+00		4,685		TOPSOIL REPLACEMENT
594+61			575		REDROCK COULEE CHANNEL MODIFICATION-SEE DETAIL
598+00		5	305		FARM FIELD APP. RT.
609+00		5	425		FARM FIELD APP. RT.
617+40.50			165		REDROCK COULEE EAST CHANNEL GRADING-SEE DETAIL
620+00	650+00		3,770		TOPSOIL REPLACEMENT
623+10		50	900		FARM FIELD APP. RT. (JOINT)
623+14			5		FARM FIELD APP. 150' RT.
634+60		10	265		PRIVATE APP. RT.
636+91		845	555		PUBLIC APP. LT. W/TRUCK TURNING RADII
637+04		10	530		PRIVATE APP. RT. W/TRUCK TURNING RADII
643+35		25	355		PRIVATE APP. RT. W/TRUCK TURNING RADII
650+00	656+65		355		TOPSOIL REPLACEMENT
656+35		35	5		PRIVATE APP. LT. (40' TOP WIDTH)
656+43		65	5		PRIVATE APP. RT.
TOTAL		~	~	125	

MATERIAL IS UNUSABLE FOR EMBANKMENT CONSTRUCTION

AWARD COPY

SUMMARY

TOPSOIL & SEEDING

STATION FROM	STATION TO	cubic yards: TOPSOIL SALVAGING & PLACING	acres: SEED NO. 1	SEED NO. 2	SEED NO.3	FERTILIZER NO. 1		CONDITION SEEDBED	MULCH COMPOST	REMARKS
109+30.89	140+00.00	2,728	6.4	1.1	2.0	6.4		8.4	1.1	
140+00.00	170+00.00	4,557	7.9	3.8	2.0	7.9		9.9	3.8	
170+00.00	200+00.00	4,761	11.6	2.9	2.0	11.6		13.6	2.9	
200+00.00	230+00.00	3,541	9.3	0.6	2.0	9.3		11.3	0.6	
230+00.00	260+00.00	2,430	5.2		2.0	5.2		7.2		
260+00.00	290+00.00	3,817	7.4	0.1	2.0	7.4		9.4	0.1	
290+00.00	320+00.00	3,584	8.7	0.8	2.0	8.7		10.7	0.8	
320+00.00	350+00.00	3,741	7.4	8.2	2.0	7.4		9.4	8.2	
350+00.00	380+00.00	135	1.4	0.1	2.0	1.4		3.4	0.1	
380+00.00	410+00.00	2,180	5.2	0.5	2.0	5.2		7.2	0.5	
410+00.00	440+00.00	2,429	5.4	0.3	2.0	5.4		7.4	0.3	
440+00.00	470+00.00	2,265	4.0	0.4	2.0	4.0		6.0	0.4	
470+00.00	500+00.00	2,770	5.9	0.2	2.0	5.9		7.9	0.2	
500+00.00	530+00.00	2,669	6.6	0.3	2.0	6.6		8.6	0.3	
530+00.00	560+00.00	4,034	7.6		2.0	7.6		9.6		
560+00.00	590+00.00	4,359	9.3	0.1	2.0	9.3		11.3	0.1	
590+00.00	620+00.00	3,748	7.7	0.4	2.0	7.7		9.7	0.4	
620+00.00	650+00.00	3,015	6.5	0.2	2.0	6.5		8.5	0.2	
650+00.00	656+65.00	286	1.1		0.5	1.1		1.6		
261+76.00		25								CLEAR CREEK CHANNEL MODIFICATION
568+59.00		24								REDROCK COULEE WEST OVERFLOW CHANNEL GRADING
594+61.00		62								REDROCK CHANNEL MODIFICATION
617+40.50		24								REDROCK COULEE EAST OVERFLOW CHANNEL GRADING
TOTAL		57,184	124.6	20.0	36.5	124.6		161.1	20.0	

GEOGRID TEST SECTION

STATION FROM	STATION TO	square yards: GEOTEXTILE STABILIZATION	GEOGRID BIAXIAL	REMARKS
157+27.65	185+32.73	16,830	16,830	SEE TYPICAL SECTION NO.2
TOTAL		16,830	16,830	

DETOUR

STATION FROM	STATION TO	lump sum: CONST., MAINTAIN & REMOVE DETOUR	REMARKS
54+75.95	70+62.50	0.30	CLEAR CREEK DETOUR - 261+76 MAINLINE
9+00.00	25+00.00	0.20	REDROCK COULEE WEST OVERFLOW
56+00.00	72+04.53	0.30	REDROCK COULEE
79+36.88	93+31.88	0.20	REDROCK COULEE EAST OVERFLOW
TOTAL		1.00	

EMBANKMENT FOUNDATION TREATMENT

STATION FROM	STATION TO	cubic yards: MISC. ITEMS -CUYD	EMB.+	SPECIAL BORROW - NEAT LINE	SPECIAL EMBANK - MENT (ROCK FILL)	square yards: GEOTEXTILE STAB.	EROSION CONTROL BLANKET SHORT TERM	REMARKS
113+50.00	148+00.00	8,783	##			17,368		2.16' A-1-a BRIDGING LIFT
152+00.00	156+00.00	556	##			1,230		2.16' A-1-a BRIDGING LIFT
176+00.00	179+00.00	776	##			1,743		2.16' A-1-a BRIDGING LIFT
188+48.00	193+00.00	2,048	##			3,958		2.16' A-1-a BRIDGING LIFT
197+00.00	210+50.00	3,680	##			6,799		2.16' A-1-a BRIDGING LIFT
300+00.00	320+50.00	10,888	##			20,522		2.16' A-1-a BRIDGING LIFT
327+00.00	353+81.00			8,753 Δ		11,440		2 FT. A-1-b SUB BASE
384+50.00	642+00.00			36,994 Δ		74,389		1 FT. A-1-b SUB BASE
389+50.00	394+00.00	2,034			1,119	806	850	A-1-a - OXBOW
TOTAL		28,765	~	45,747	1,119	138,255	850	

SEE DETAILS & SPECIAL PROVISIONS. WIDTH VARIES.
EMBANKMENT PRECONSTRUCTION (PRELOADING) QUANTITIES INCLUDED IN ROADWAY GRADING. SEE CROSS SECTIONS.
Δ SUB BASE PLACED DIRECTLY BELOW THE C.A.C. SEE DETAIL.
GEOTEXTILE STABILIZATION IS CALCULATED 4' FROM DAYLIGHT INTERSECTIONS.

BRIDGE END BACKFILL

STATION FROM	STATION TO	cubic yards: BRIDGE END BACKFILL TYPE 1	square yards: GEOTEXTILE STAB.	REMARKS
260+65.42	261+28.07	433	423	SKEW BRIDGE - STATION IS PAVING NOTCH
262+23.91	262+86.06	404	423	SKEW BRIDGE - STATION IS PAVING NOTCH
567+96.43	568+33.01 BE	396	334	
568+84.99 BE	569+21.57	396	334	
593+43.38	594+12.85	650	649	SKEW BRIDGE - STATION IS PAVING NOTCH
595+09.15	595+78.62	692	649	SKEW BRIDGE - STATION IS PAVING NOTCH
616+78.79	617+10.51 BE	175	199	
617+70.48 BE	618+02.20	171	199	
TOTAL		3,317	3,210	

SEE DETAIL 30-YEAR BRIDGE END

SUMMARY

REMOVE TREES

STATION	each REMOVE TREES	REMARKS
127+20	1	67' RT.
127+23	1	65' RT.
211+36	1	150' RT.
211+50	1	132' RT.
211+84	1	81' RT.
214+28	1	78' RT.
214+42	1	82' RT.
214+47	1	84' RT.
216+55	1	58' RT.
220+39	1	73' RT.
220+45	1	70' RT.
247+67	1	56' RT.
247+68	1	48' RT.
261+25	1	58' RT.
261+40	1	44' RT.
268+55	1	49' RT.
285+13	1	78' RT.
299+74	1	88' RT.
320+40	1	88' LT.
324+09	1	86' RT.
324+11	1	93' RT.
324+12	1	78' RT.
324+18	1	105' RT.
324+25	1	110' RT.
340+94	1	88' RT.
341+50	1	82' RT.
342+07	1	89' RT.
342+12	1	91' RT.
342+14	1	89' RT.
376+95	1	68' RT.
378+55	1	61' RT.
384+83	1	59' RT.
390+98	1	33' RT.
400+00	1	52' LT.
400+80	1	52' LT.
401+60	1	58' RT.
407+84	1	73' RT.
407+89	1	72' RT.
432+30	1	54' RT.
436+35	1	51' RT.
438+69	1	60' RT.
438+73	1	58' RT.
438+80	1	60' RT.
438+87	1	61' RT.
438+89	1	47' RT.
439+12	1	60' RT.
442+16	1	47' RT.
442+25	1	61' RT.
450+94	1	66' RT.
451+28	1	64' RT.
457+18	1	52' RT.
457+51	1	55' RT.
458+64	1	54' RT.
459+45	1	58' RT.
460+32	1	62' RT.
463+01	1	79' RT.
471+70	1	60' RT.
471+88	1	64' RT.
472+07	1	70' RT.
472+13	1	72' RT.

REMOVE TREES

STATION	each REMOVE TREES	REMARKS
472+17	1	66' RT.
477+06	1	66' RT.
477+10	1	64' RT.
477+17	1	66' RT.
477+19	1	61' RT.
477+27	1	75' RT.
477+37	1	72' RT.
477+67	1	48' RT.
478+88	1	59' RT.
479+03	1	59' RT.
479+66	1	74' RT.
479+78	1	78' RT.
479+83	1	78' RT.
480+81	1	70' RT.
480+89	1	69' RT.
480+98	1	68' RT.
481+13	1	66' RT.
481+21	1	63' RT.
481+27	1	64' RT.
481+35	1	68' RT.
481+36	1	87' RT.
481+38	1	75' RT.
482+33	1	87' RT.
487+83	1	70' RT.
487+86	1	72' RT.
487+91	1	75' RT.
487+96	1	71' RT.
487+97	1	78' RT.
488+97	1	77' RT.
488+98	1	68' RT.
489+59	1	72' RT.
490+67	1	84' RT.
491+05	1	56' RT.
491+26	1	77. RT.
491+36	1	75' RT.
491+77	1	76' RT.
491+84	1	75' RT.
508+44	1	71' LT.
528+91	1	86' RT.
541+51	1	78' LT.
543+21	1	79' RT.
543+22	1	115' RT.
543+53	1	74' RT.
543+61	1	88' RT.
543+81	1	120' RT.
544+05	1	77' RT.
544+12	1	76' RT.
544+85	1	120' RT.
545+58	1	61' RT.
545+69	1	58' RT.
546+97	1	55' RT.
547+67	1	75' RT.
547+70	1	76' RT.
548+56	1	91' RT.
548+91	1	91' RT.
548+98	1	94' RT.
549+82	1	93' RT.
552+00	1	119' RT.
572+44	1	85' RT.
575+84	1	80' RT.

REMOVE TREES

STATION	each REMOVE TREES	REMARKS
584+24	1	76' RT.
589+75	1	67' LT.
610+44	1	60' RT.
611+66	1	58' RT.
614+19	1	66' RT.
615+68	1	62' RT.
615+95	1	52' RT.
619+21	1	61' RT.
619+47	1	56' RT.
619+52	1	54' RT.
620+10	1	55' RT.
620+60	1	65' RT.
620+70	1	72' RT.
622+99	1	59' RT.
623+12	1	83' RT
626+00	1	48' RT.
627+84	1	60' RT.
637+92	1	50' RT.
638+00	1	50' RT.
642+74	1	60' RT.
642+84	1	67' RT.
643+36	1	75' RT.
643+37	1	73' RT.
643+57	1	75' RT.
643+72	1	79' RT.
643+97	1	66' RT.
644+07	1	61' RT.
644+10	1	66' RT.
644+21	1	72' RT.
644+53	1	78' RT.
644+93	1	85' RT.
644+95	1	68' RT.
644+97	1	85' RT.
645+10	1	80' RT.
645+26	1	80' RT.
645+30	1	80' RT.
645+50	1	76' RT.
645+64	1	80' RT.
645+73	1	77' RT.
646+06	1	72' RT.
646+09	1	80' RT.
646+12	1	71' RT.
646+37	1	77' RT.
646+61	1	90' RT.
646+70	1	85' RT.
646+94	1	83' RT.
647+04	1	77' RT.
648+86	1	85' RT.
648+93	1	86' RT.
TOTAL	**# 169**	

FOR INFORMATION ONLY. INCLUDE IN COST OF UNCL. EXC.
TREES WERE LOCATED IN FIELD AND DON'T NECESSARILY MATCH SYMBOLOGY ON PLANS.

AWARD COPY

SUMMARY

CULVERTS (INCLUDED IN CULVERT SUMMARY RECAP)

STATION	BASIC BID ITEMS: CULVERT PIPE in	linear feet: LENGTH OF PIPE	linear feet: REMOVE CULVERT	cubic yards: FILL & ABANDON PIPE	cubic yards: CONTROLLED LOW STRENGTH MATERIAL (CLSM)	cubic yards: FOUNDATION MATERIAL	cubic yards: BEDDING MATERIAL	cubic yards: GRANULAR BEDDING	cubic yards: SPECIAL BACKFILL	cubic yards: CLASS GENERAL CONCRETE	square yards: STABILIZATION GEOTEXTILE	PIPE OPTIONS in: STEEL - 2 2/3 x 1/2 CORR. CONCRETE ALUMINUM - 2 2/3 x 1/2 CORR.	CLASS OR THK.	COATING #	END SECTIONS: LEFT	END SECTIONS: RIGHT	cubic yards: FOUNDATION MATERIAL	cubic yards: BEDDING MATERIAL	cubic yards: GRANULAR BEDDING	cubic yards: SPECIAL BACKFILL	cubic yards: CLASS GENERAL CONCRETE	square yards: STABILIZATION GEOTEXTILE	linear feet: HEIGHT OF COVER	SKEW ANGLE	CULVERT IN PL. in x ft	REMARKS
114+24	24	22	3.4									24 CSP ~ ~	0.079	YES		RELAY FETS							4.2		24 x 102.3 CMP	REMOVE RT LENGTHEN RT RELAY FETS RT
117+50	30	94										30 CSP 24 RCP 30 CAP	0.079 CL 3 0.075	YES NONE NONE	FETS FETS FETS	FETS FETS FETS							2.6			DRAIN
126+14	12 IRR. 12 IRR.	189 133					36	68				12" C900-PVC CL. 165 12" PIP-PVC	CL. 165	NONE										24° LT		IRRIGATION SEE DETAIL
126+65			303.0																					48° LT	12 x 303.0 IRR	REMOVE
127+55	18' S X 4' R	102				132		87	623	10.4	563	~ 18' S X 4' R RCB ~		NONE	2:1 SLOPE	2:1 SLOPE	132		87	623	10.4	563	2.5		BRIDGE	DRAIN - DAVEY COULEE BOX CULVERT
128+63				13																				32° RT	30 x 72.0 CSP	IRRIGATION
145+15	78	102				64		101	538	4.2	312	~ 78 RCP ~	CL. 3	NONE	FETS	FETS	64		101	538	4.2	312	1.6			DRAIN CUTOFF WALLS LT. & RT.
145+21			63.6																						48 x 63.6 RCP	REMOVE
155+00	24	122	65.3									24 CSP 24 RCP 24 CAP	0.079 CL 3 0.075	YES NONE NONE	FETS FETS FETS	FETS FETS FETS							4.9		24 x 65.3 RCP	DRAIN
159+72			66.3																						24 x 66.3 RCP	REMOVE
164+00	30	116										30 CSP 30 RCP 30 CAP	0.079 CL 3 0.075	YES NONE NONE	FETS FETS FETS	FETS FETS FETS							3.3			DRAIN
165+06			57.3																						24 x 57.3 RCP	REMOVE
168+05			48.5																						24 x 48.5 RCP	REMOVE
172+24	24	108	61.4									24 CSP 24 RCP 24 CAP	0.079 CL 3 0.075	YES NONE NONE	FETS FETS FETS	FETS FETS FETS							3.5		24 x 61.4 RCP	DRAIN
177+00	24	134										24 CSP 24 RCP 24 CAP	0.079 CL 3 0.075	YES NONE NONE	FETS FETS FETS	FETS FETS FETS							4.9			DRAIN
177+04			65.1																						30 x 65.1 RCP	REMOVE
180+98			61.1																						24 x 61.1 RCP	REMOVE
189+73	42	194				78	##				368	~ 42 RCP ~	CL 3		FETS	FETS	78	##				368	7.6	18° RT		DRAIN
190+01			74.4																						36 x 74.4 RCP	REMOVE
191+98			70.6																						24 x 70.6 RCP	REMOVE
192+00	24	176										~ 24 RCP ~	CL 3	NO	FETS	FETS							7.3			DRAIN
201+36	24	130	61.7									~ 24 RCP ~	CL 3	NO	FETS	FETS							3.5		30 x 61.7 RCP	DRAIN
208+27	24	122	53.6									~ 24 RCP ~	CL 3	NO	FETS	FETS							3.2		48 x 53.6 RCP	DRAIN

COAT PIPE PER STANDARD SPEC. SEC. 709.05

NOT MEASURED FOR PAYMENT, INCLUDE IN COST OF CULVERT

SUMMARY

CULVERTS (CONT.) (INCLUDED IN CULVERT SUMMARY RECAP)

STATION	BASIC BID ITEMS											PIPE OPTIONS in			END SECTIONS		cubic yards					square yards	linear feet	SKEW ANGLE	CULVERT IN PL. in x ft	REMARKS
	CULVERT PIPE in	linear feet		cubic yards							square yards	STEEL - 2 2/3 x 1/2 CORR. CONCRETE ALUMINUM - 2 2/3 x 1/2 CORR.	CLASS OR THK.	COATING #			FOUNDATION MATERIAL	BEDDING MATERIAL	GRANULAR BEDDING	SPECIAL BACKFILL	CLASS GENERAL CONCRETE	STABILIZATION GEOTEXTILE	HEIGHT OF COVER			
		LENGTH OF PIPE	REMOVE CULVERT	FILL & ABANDON PIPE	CONTROLLED LOW STRENGTH MATERIAL (CLSM)	FOUNDATION MATERIAL	BEDDING MATERIAL	GRANULAR BEDDING	SPECIAL BACKFILL	CLASS GENERAL CONCRETE	STABILIZATION GEOTEXTILE				LEFT	RIGHT										
217+87	42	96				33			157		156	~ 42 RCP ~	CL 2	NONE	FETS	FETS	33			157		156	2.4			DRAIN
218+00	42	96				33			157		156	~ 42 RCP ~	CL 2	NONE	FETS	FETS	33			157		156	2.4			DRAIN
218+13	42	96				33			157		156	~ 42 RCP ~	CL 2	NONE	FETS	FETS	33			157		156	2.4			DRAIN
220+12			58.2																						36 x 58.2 RCP	REMOVE
222+93	51 1/8" x 31 5/16"	146				60	##		244		280	~ 51 1/8" x 31 5/16" RCPA ~	CL 3	NONE	FETS	FETS	60	##		244		280	3.3	41° LT		DRAIN
223+12			69.1																						30 x 69.1 RCP	REMOVE
252+00	24	104										~ 24 RCP ~	CL 3		FETS	FETS							4.2			DRAIN
257+98	24	130	110.4									24 CSP 24 RCP 24 CAP	0.079 CL 3 0.075	YES NONE NONE	FETS FETS FETS	FETS FETS FETS							6.1	13° RT	48 x 110.4 CSP IRR	DRAIN REMOVE IRRIGATION DR.
263+88				10																					24 x 84.4 CSP	
285+12	36	130	54.6			47					224	~ 36 RCP ~	CL 3	NONE	FETS	FETS	47					224	3.5		36 x 54.6 RCP	DRAIN
320+00	8' x 5'	158				116		77	976	9.1	516	~ 8' x 5' RCB ~		NONE	2:1 SLOPE	2:1 SLOPE	116		77	976	9.1	516	3.9	15° RT		DRAIN - SEE DETAIL CUTOFF WALL & EDGE PROTECTION LT. & RT.
324+13			107.2																						24 X 107.2 CSP	REMOVE
394+54	30 IRR	194	151.3									~ 30 RCP IRR. ~	CL 2	NONE	FETS	FETS							4.0	39° LT	30 x 151.3 CSP IRR	IRRIGATION
431+32			57.8																						30 X 57.8 RCP	IRRIGATION
431+34	36	2 x 96				61	##		257		293	~ 36 RCP ~	CL 2	NONE	FETS	FETS	61	##		257		293	2.6			DRAIN - DOUBLE
431+37			57.9																						30 x 57.9 RCP	REMOVE
448+01	18 SIPHON	148	142.5									~ 18 RCP SIPHON ~	CL 3	NONE	SQ.	SQ.							7.8		24 x 142.5 CSP IRR	IRRIGATION SIPHON CAP AND MARK PIPE END LT. & RT.
448+01	24	36										~ 24 RCP ~	CL 3	NONE	FETS	FETS							1.3			DRAIN 47' LT.
462+99			57.8																						48 x 57.8 RCP	REMOVE
463+06			57.8																						48 x 57.8 RCP	REMOVE
463+70	54	2 x 102			45			141	585	7.4		~ 54 RCP DBL. ~	CL 2	NONE	FETS	FETS			141	585	7.4		2.4			DRAIN - DOUBLE CUTOFF WALLS LT. & RT.
482+03	42	96	61.7						161			~ 42 RCP ~	CL 2	NONE	FETS	FETS				161			2.9		30 x 61.7 RCP	DRAIN

COAT PIPE PER STANDARD SPEC. SEC. 709.05

NOT MEASURED FOR PAYMENT, INCLUDE IN COST OF CULVERT

SUMMARY

CULVERTS (CONT.) (INCLUDED IN CULVERT SUMMARY RECAP)

STATION	BASIC BID ITEMS											PIPE OPTIONS in			END SECTIONS		cubic yards					square yards	linear feet	SKEW ANGLE	CULVERT IN PL. in x ft	REMARKS
	CULVERT PIPE in	linear feet		cubic yards							square yards	STEEL - 2 2/3 x 1/2 CORR. CONCRETE ALUMINUM - 2 2/3 x 1/2 CORR.	CLASS OR THK.	COATING #			FOUNDATION MATERIAL	BEDDING MATERIAL	GRANULAR BEDDING	SPECIAL BACKFILL	CLASS GENERAL CONCRETE	STABILIZATION GEOTEXTILE	HEIGHT OF COVER			
		LENGTH OF PIPE	REMOVE CULVERT	FILL & ABANDON PIPE	CONTROLLED LOW STRENGTH MATERIAL (CLSM)	FOUNDATION MATERIAL	BEDDING MATERIAL	GRANULAR BEDDING	SPECIAL BACKFILL	CLASS GENERAL CONCRETE	STABILIZATION GEOTEXTILE				LEFT	RIGHT										
503+02	48	104	58.7						253			~ 48 RCP ~	CL 2	NONE	FETS	FETS				253			3.2		30 x 58.7 RCP	DRAIN
505+59	14' x 6'	123				131		87	882	11.8	563	~ 14' x 6' RCB ~	CL.3	NONE	2:1 SLOPE	2:1 SLOPE	131		87	939	11.8	563	1.6	15° LT	BRIDGE	IRRIGATION RCB W/ BEND CUTOFF WALL & EDGE PROTECTION LT. & RT.
506+14	24 IRR	108	108.1							1.2		~ 24 RCP IRR. ~	CL 3	NONE	FETS	CONC IRR TRANS. B=D					1.2		1.5		18 x 108.1 CSP IRR	IRRIGATION 66' RT.
506+62				1																					12 x 24.5 CSP IRR.	FILL & ABANDON IRR. PIPE 86' RT
520+00	24	98										~ 24 RCP ~	CL. 3	NONE	FETS	FETS							3.4			DRAIN
521+45			57.2																						24 x 57.2 RCP	DRAIN
576+65			51.9																						12 x 51.9 CSP IRR	IRRIGATION WITH HEADGATE RT.
577+87			18.9																						10.8 X 18.9 CSP	IRRIGATION RT.
583+20			14.5																						12 X 14.5 CSP IRR	IRRIGATION RT.
583+39			14.3																						18 X 14.3' CSP IRR.	IRRIGATION WITH HEADGATE RT.
589+57			27.6																						15 X 27.6 CSP IRR.	IRRIGATION RT.
589+59			6.8																						18 X 6.8' CSP IRR.	IRRIGATION RT.
593+73			19.4																						15 X 19.4' CSP IRR.	IRRIGATION RT.
600+13			66.8																						24 x 66.8 RCP	DRAIN
636+27	36 IRR	60.4	215.9									~ 36 RCP IRR. ~	CL.2	NONE	SQ.	SQ.									36 x 262.3 RCP IRR	IRRIGATION
636+32																									18 x 40.8 CSP IRR.	IRRIGATION 105' RT. DO NOT DISTURB
636+49	18 IRR	161.6										~ 18 RCP IRR. ~	CL 3	NONE	SQ.	SQ.							6.0			IRRIGATION CONN. TO MH LT. & RT.
636+62	18 IRR	6.0										~ 18 RCP IRR. ~	CL 3	NONE		FETS										IRRIGATION 95' RT. CONN. TO MH
636+81			140.9																						24 x 140.9 CSP IRR.	IRRIGATION 61' RT.
637+04	18 IRR	74.4										~ 18 RCP IRR. ~	CL 3	NONE	SQ.	SQ.							1.6			IRRIGATION 95' RT.
637+12			65.0																						18 x 65.0 CSP IRR	IRRIGATION 93' RT.
TOTAL	~	~	**2,907.6**	**24**	**45**	**788**	**36**	**561**	**4,990**	**42.9**	**3,587**	~	~	~	~	~	~	~		~	~	~	~	~	~	

COAT PIPE PER STANDARD SPEC. SEC. 709.05

NOT MEASURED FOR PAYMENT, INCLUDE IN COST OF CULVERT

SUMMARY

APPROACH PIPE (INCLUDED IN CULVERT SUMMARY RECAP)

STATION	BASIC BID ITEMS					PIPE OPTIONS in						END SECTIONS		linear feet	SKEW ANGLE	CULVERT IN PL. in x ft	REMARKS
	CULVERT PIPE in	linear feet		cubic yard		CONCRETE - CLASS 2	CONCRETE - CLASS 3	CONCRETE - CLASS 4	STEEL - 2 2/3 x 1/2 CORR. 0.064 THK.	ALUMINIUM - 2 2/3 x 1/2 CORR. 0.060 THK.	CORRUGATED POLYETHYLENE PIPE			HEIGHT OF COVER			
		LENGTH OF PIPE	REMOVE CULVERT	GRANULAR BEDDING	CLASS GENERAL CONCRETE							LEFT	RIGHT				
122+53	18	46						18	18	18		FETS	FETS	1.7		18 x 42.8 CSP	LT
123+02	18	46	45.7				18		18	18		FETS	FETS	1.4		18 x 45.7 CSP	RT
131+28			78.4													15 x 78.4 CSP	RT
131+68	24	50					24		24	24		FETS	FETS	1.3			RT
148+50	18	66					18		18	18	18	FETS	FETS	3.0			RT
167+40	18	50					18		18	18		FETS	FETS	1.7			LT.
211+23	18	48	65.3				18		18	18		FETS	FETS	1.5		18 x 65.3 CSP	RT
223+17			50.7													15 x 50.7 RCP	LT
223+23	24	54					24		24	24	24	FETS	FETS	2.1			LT
250+63			42.5													15 x 42.5 RCP	LT.
250+65	18	50					18		18	18		FETS	FETS	1.7			LT
251+53	18	56	36.6				18		18	18	18	FETS	FETS	2.8		15 x 36.6 RCP	RT
255+18	18	56	39.1				18		18	18	18	FETS	FETS	2.2		15 x 39.1 RCP	LT
277+59	18	66					18		18	18	18	FETS	FETS	2.0			RT
277+67			38.6													15 x 38.6 RCP	RT
277+87			41.2													15 x 41.2 RCP	LT
277+98	24	82					24		24	24	24	FETS	FETS	4.6			LT
282+84	24	54	54.0				24		24	24	24	FETS	FETS	2.1		24 x 54 CSP	RT
299+67	88 x 54	50	24.7	44	4.2			88 x 54 RCPA				FETS	FETS	0.5		36 x 24.7 CSP	RT - CUTOFF WALLS LT. & RT.
320+50	24	76					24		24	24	24	FETS	FETS	4.9			RT
331+82			99.0													18 x 99 RCP	RT
331+88	24	84					24		24	24	24	FETS	FETS	3.8			RT
397+90	24	60	34.8				24					FETS	FETS	2.2		15 x 34.8 RCP	RT
421+05	24	72	39.7				24					FETS	FETS	4.3		15 x 39.7 RCP	RT
437+15	24	68					24					FETS	FETS	2.2			RT
437+25	24	64	88.0				24					FETS	FETS	1.3		15 x 88.0 RCP	LT
454+70			34.9													15 x 34.9 RCP	RT
482+85	24	62	35.5				24					FETS	FETS	2.9		15 x 35.5 RCP	RT
514+11	24	70	47.6				24					FETS	FETS	3.0		15 x 47.6 RCP	LT
521+63	24	62	38.6				24					FETS	FETS	3.4		12 x 38.6 RCP	RT
530+36	24	70	44.5				24					FETS	FETS	4.0		18 x 44.5 RCP	RT
549+10	24	70					24					FETS	FETS	4.2			RT
549+20			43.2													15 x 43.2 RCP	RT
551+51	24	78	48.1				24					FETS	FETS	5.1		24 x 48.1 RCP	RT
563+50	24	78					24					FETS	FETS	5.0			RT
563+56			41.4													15 x 41.4 RCP	RT
570+22			54.5													15 x 54.5 RCP	RT
578+95	48	76	51.9			48						FETS	FETS	4.5		15 x 51.9 RCP	RT
585+65	48	80	54.7			48						FETS	FETS	4.9		24 x 54.7 RCP	RT
613+31			50.5													24 x 50.5 RCP	RT
618+20																18 x 99.3 CSP	RT - WITH FLAP GATE RT. - DO NOT DISTURB
623+10	24	78					24					FETS	FETS	5.3			RT
623+38			82.9													24 x 82.9 CSP	RT
623+38			42.8													15 x 42.8 CSP IRR	RT
634+60	24	54	70.7				24					FETS	FETS	2.1		24 x 70.7 CSP	RT
636+81			140.9													24 x 140.9 CSP	RT
637+04	24	58					24					FETS	FETS	2.6			RT
642+16			48.1													36 x 48.1' CSP	RT
643+35	24	48					24					FETS	FETS	1.2			RT
643+35	18	44						18 IRR				FETS	FETS	1.0			RT - IRR
TOTAL	~	~	**1,709.1**	**44**	**4.2**	~	~	~	~	~	~	~	~	~	~	~	

SUMMARY

CULVERT SUMMARY RECAP

BASIC BID	linear feet		cubic yards							square yards
	NEW PIPE (TOTAL)	REMOVE CULVERT	FILL & ABANDON PIPE	CONTROLLED LOW STRENGTH MATERIAL (CLSM)	FOUNDATION MATERIAL	BEDDING MATERIAL	GRANULAR BEDDING	SPECIAL BACKFILL	CLASS GENERAL CONCRETE	STABILIZATION GEOTEXTILE
12" PIPE-PVC PRESS. WATER	189									
12" PIPE-PVC PRESS. SANITARY	133									
18"	484									
18" RCP IRRIGATION	286									
18" RCP SIPHON	148									
24"	894									
24" CSP	22									
24" RCP	1,658									
24" RCP IRRIGATION	108									
30"	210									
30" RCP IRRIGATION	194									
36" RCP	322									
36" RCP IRRIGATION	60.4									
42" RCP	578									
48" RCP	260									
51 1/8" x 31 5/16" RCPA	146									
54" RCP	204									
78" RCP	102									
88" X 54 RCPA	50									
8' x 5' RCB	158									
14' x 6' RCB	123									
18' x 4' RCB	102									
TOTAL	~	**4,616.7**	**24**	**45**	**788**	**36**	**605**	**4,990**	**47.1**	**3,587**

EMBANKMENT PROTECTORS

STATION		linear feet				cubic yards	SKEW ANGLE	REMARKS
		EMBANKMENT PROTECTOR # 18"		CONCRETE CURB		BANK PROTECTION		
FROM	TO	LEFT	RIGHT	LEFT	RIGHT	TYPE 3		
260+39.21	260+97.27				65.9			CLEAR CREEK - RT.
260+41.79			26			4.1		CLEAR CREEK - RT. - INCL. 22.5° BEND
260+91.49	261+40.00			54.8				CLEAR CREEK - LT.
261+30.33		28				4.8		CLEAR CREEK - LT. - INCL. 22.5° BEND
262+11.98	262+60.21				54.9			CLEAR CREEK - RT.
262+21.68			20			5.0		CLEAR CREEK - RT. - INCL. 22.5° BEND
262+54.71	263+03.27			55.2				CLEAR CREEK - LT.
263+00.58		24				5.3		CLEAR CREEK - LT. - INCL. 22.5° BEND
567+90.28	568+31.51			47.9				REDROCK COULEE WEST - LT.
567+90.28	568+31.51				47.9			REDROCK COULEE WEST - RT.
567+92.95		52				5.9		REDROCK COULEE WEST - LT. - INCL. 22.5° BEND
567+92.95			52			3.7		REDROCK COULEE WEST - RT. - INCL. 22.5° BEND
568+86.49	569+27.73			47.9				REDROCK COULEE WEST - LT.
568+86.49	569+27.73				47.9			REDROCK COULEE WEST - RT.
569+25.06		26				3.9		REDROCK COULEE WEST - LT. - INCL. 22.5° BEND
569+25.06			52			3.7		REDROCK COULEE WEST - RT. - INCL. 22.5° BEND
593+31.97	593+73.11			49.5				REDROCK COULEE - LT.
593+34.64		42				2.7		REDROCK COULEE - LT. - INCL. 22.5° BEND
593+97.72	594+44.60				49.5			REDROCK COULEE - RT.
593+99.31			68			4.2		REDROCK COULEE - RT. - INCL. 22.5° BEND
594+82.65	595+25.45			49.5				REDROCK COULEE - LT.
595+21.36		22				2.5		REDROCK COULEE - LT. - INCL. 22.5° BEND
595+49.06	596+87.60				146.4			REDROCK COULEE - RT.
596+84.98			36			3.6		REDROCK COULEE - RT. - INCL. 22.5° BEND
616+67.52	617+09.01				47.9			REDROCK COULEE EAST - RT.
617+06.17			32			3.2		REDROCK COULEE EAST - RT. - INCL. 22.5° BEND
617+71.98	618+13.44				47.9			REDROCK COULEE EAST - RT.
617+74.74			32			3.0		REDROCK COULEE EAST - RT. - INCL. 2 ~ 22.5° BEND
SUBTOTAL		**194**	**318**	**304.8**	**508.3**			
TOTAL		**512**		**813.1**		**55.6**	~	

CULVERT EXC. INCLUDED IN COST OF EMB. PROTECTOR

REMOVE STRUCTURE

STATION	lump sum REMOVE STRUCTURE	REMARKS
127+54	0.1	34' W X 19' L - DAVEY COULEE
261+76	0.2	29.5' W X 59' L - CLEAR CREEK
319+41	0.2	29.6' W X 58' L - CLEAR CREEK OVERFLOW
505+59	0.1	29.6' W X 21' L - FT. BELKNAP IRR. CANAL
568+59	0.1	29.6' W X 39' L - REDROCK WEST OVERFLOW
594+61	0.2	29.6' W X 59' L - REDROCK CREEK
617+40	0.1	29.6' W X 39' L - REDROCK EAST OVERFLOW
TOTAL	**1.0**	

MAILBOXES

STATION	each MAILBOXES	REMARKS
123+02	1	RT.
148+50	1	RT.
277+80	1	RT.
299+67	2	RT.
331+88	2	RT.
397+90	1	RT.
421+05	1	RT.
482+85	1	RT.
530+36	1	RT.
TOTAL	**11**	

MANHOLES

STATION	each MANHOLE TYPE 3		REMARKS
	48"	54"	
636+35		1	MH-1 62.92' LT.
636+70	1		MH-2 94.87' RT.
TOTAL	**1**	**1**	

SEE IRRIGATION CROSSING DETAIL

SUMMARY

GUARDRAIL																
STATION		linear feet								each						REMARKS
		REMOVE GUARDRAIL		RESET GUARDRAIL		MGS GUARDRAIL		MGS INTERSECTING ROADWAY TERMINAL SECTION		MASH W-BEAM TERMINAL SECTION		MASH THRIE BEAM BRIDGE APPROACH SECTION		TEMPORARY IMPACT ATTENUATOR	RESET TEMPORARY IMPACT ATTENUATOR	
FROM	TO	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT			
NEW GUARDRAIL																
258+51.77	260+97.27						200.0		37.5				1			8.0 FT RADIUS
260+30.63	261+40.00					37.5				1		1				
262+11.98	263+21.36						37.5				1		1			
262+54.71	264+76.59					150.0				1		1				
351+96.97	353+84.47				187.5											DO NOT DISTURB BRIDGE APPROACH SECTION
386+81.25	395+62.50						812.5				2					
565+97.24	568+31.61						162.5				1		1			
567+59.74	568+31.61									1		1				
568+86.39	569+58.27										1		1			
568+86.39	571+08.27					150.0				1		1				
591+79.99	594+39.36						187.5				1		1			
593+01.27	593+73.14									1		1				
594+82.64	597+42.02					187.5				1		1				
595+48.86	597+20.74						100.0				1		1			
609+14.51	617+09.01						725.0		75.0				1			32.0 FT RADIUS
615+99.95	617+09.22					37.5				1		1				
617+71.77	619+93.65					150.0				1		1				
617+71.98	620+81.36						237.5				1		1			
REMOVE GUARDRAIL																
119+73.90	122+38.88	303.6														
124+27.79	130+05.84		187.7													
124+90.21	130+80.82	262.6														
258+59.92	261+40.78		304.7													
260+90.38	261+71.11	80.8														
262+00.29	262+83.04		82.8													
262+32.13	264+73.55	241.4														
316+55.54	319+11.45		255.9													
318+30.30	319+11.27	81.0														
319+69.95	321+00.84	130.9														
319+70.22	320+77.27		107.1													
503+88.17	506+48.46	180.8														
504+67.70	506+48.57		260.4													
565+06.03	570+05.64	204.1														
567+56.76	569+60.82		528.7													
593+26.26	595+48.66	222.5														
593+55.08	597+26.55		371.5													
613+98.39	618+10.42		441.4													
616+36.01	618+39.65	205.0														
SUBTOTAL		1,912.7	2,540.2		187.5	712.5	2,462.5		112.5	8	8	8	8			
TOTAL		# 4,452.9		187.5		3,175.0		112.5		16.0		16.0		4	36	

SALVAGE EXISTING GUARDRAIL TO MDT HAVRE MAINTENANCE YARD

SUMMARY

PERMANENT EROSION CONTROL

STATION FROM	STATION TO	cubic yards: STREAMBED MATERIAL	cubic yards: RANDOM RIPRAP CL. I	cubic yards: RANDOM RIPRAP CL. II	square yards: RIPRAP REVEGE-TATION	square yards: GEOTEXTILE PERM. EROS. CNTRL. HIGH SURV. CLASS C	square yards: TURF. REIN. MAT NATURAL FIBER	square yards: EROSION CONTROL BLANKET HIGH PERFORM.	square yards: COIR EROSION CONTROL NET	square yards: GEOSYNTHETIC CLAY LINER	acre: REVEGETATION STREAMBANK	REMARKS
108+21.00				83.4		117						RIPRAP DRAIN CHUTE TY. 3 RT.
127+55.00				176.0	212	212						RIPRAP BASIN RT.
145+50.00			16.4			23						RIPRAP DRAIN CHUTE TY. 1 LT.
148+50.00			2.7			4						CULVERT OUTLET RIPRAP RT.
154+07.00	154+73.00							40				EARTH DIKE RT.
154+40.00				35.4		52						RIPRAP DRAIN CHUTE TY. 3 RT.
154+40.00	155+00.00							108				LINED DITCH RT.
155+00.00			5.1			8						CULVERT OUTLET RIPRAP LT.
159+17.00	159+82.00							40				EARTH DIKE RT.
159+49.00				36.2		53						RIPRAP DRAIN CHUTE TY. 3 RT.
159+49.00	166+45.00							1,076				LINED DITCH RT.
161+31.00			9.8				63					TRM DRAIN CHUTE TY. 3 RT.
162+63.00	163+88.00							81				EARTH DIKE RT.
163+18.00				40.3		58						RIPRAP DRAIN CHUTE TY. 3 RT.
164+00.00			8.0			12						CULVERT OUTLET RIPRAP LT.
166+00.00	167+96.00							127				EARTH DIKE RT.
166+45.00				43.6		63						RIPRAP DRAIN CHUTE TY. 3 RT.
169+03.00	169+68.00							80				EARTH DIKE RT.
169+35.00				61.5		87						RIPRAP DRAIN CHUTE TY. 3 RT.
171+47.00	172+86.00							88				EARTH DIKE RT.
172+24.00				37.1		54						RIPRAP DRAIN CHUTE TY. 3 RT.
172+24.00	174+50.00							365				LINED DITCH RT.
174+50.00			9.8				44					TRM DRAIN CHUTE TY. 3 RT.
177+00.00			5.1			8						CULVERT OUTLET RIPRAP LT.
177+00.00	182+50.00							1,444				LINED DITCH RT.
181+50.00			9.8				73					TRM DRAIN CHUTE TY. 3 RT.
182+50.00			9.8				58					TRM DRAIN CHUTE TY. 3 RT.
201+09.00	201+66.00							36				EARTH DIKE RT.
201+36.00				41.1		59						RIPRAP DRAIN CHUTE TY. 3 RT.
205+50.00	208+27.00							488				LINED DITCH RT.
261+76.00		83			315			344	344		0.03	CLEAR CREEK CHANNEL MODIFICATION
298+50.00	319+80.00							3,746				LINED DITCH RT.
305+25.00			9.8				41					TRM DRAIN CHUTE TY. 3 RT.
311+40.00			9.8				38					TRM DRAIN CHUTE TY. 3 RT.
313+70.00	316+50.00							182				EARTH DIKE RT.
314+95.00			36.3			49						RIPRAP DRAIN CHUTE TY. 1 RT.
318+40.00				38.1		55						RIPRAP DRAIN CHUTE TY. 3 RT.
320+20.00								67				OUTLET DITCH LT.
324+70.00			9.8				52					TRM DRAIN CHUTE TY. 3 RT.
505+59.00								74		189		IRRIGATION CHANNEL LINER
568+32.50	568+85.50			200.0	140	240						RIPRAP LINED DITCH RT.
568+59.00					92			213			0.04	REDROCK COULEE WEST OVERFLOW CHANNEL GRADING
576+20.00			18.9			22		50				DRAINAGE OUTLET CHANNEL & RIPRAP DRAIN CHUTE TY. 2 RT.
577+87.00			21.7			25		41				DRAINAGE OUTLET CHANNEL & RIPRAP DRAIN CHUTE TY. 2 RT.
583+37.00			20.6			24		39				DRAINAGE OUTLET CHANNEL & RIPRAP DRAIN CHUTE TY. 2 RT.
589+53.00			22.3			26		28				DRAINAGE OUTLET CHANNEL & RIPRAP DRAIN CHUTE TY. 2 RT.
593+73.00			22.3			26		23				DRAINAGE OUTLET CHANNEL & RIPRAP DRAIN CHUTE TY. 2 RT.
594+61.00		177			313			716	716		0.08	REDROCK CHANNEL MODIFICATION
617+40.50					92			191			0.04	REDROCK COULEE EAST OVERFLOW CHANNEL GRADING
TOTAL		**260**	**248.0**	**792.7**	**1,164**	**1,277**	**369**	**9,687**	**1,060**	**189**	**0.19**	

SEE DETAILS

SUMMARY

FENCING (RIGHT)

STATION		linear feet						each			linear feet		REMARKS
		FARM FENCE					TEMP. FENCE	FARM FENCE PANEL		DEADMAN	FARM GATE		
FROM	TO	TYPE F4M	TYPE F4W	TYPE F1W-32 WW	TYPE F2W-32 WW	TYPE F2W-39 WW		SINGLE	DOUBLE		TYPE G2	TYPE G3	
RIGHT													
107+00.00	122+75.86		1,600					9	1				
123+13.29	131+60.98		852					8					
127+00.00	128+00.00						180						
131+60.98	131+70.97				10			1					
131+70.97	131+94.97											24	
131+94.97	139+92.14				799			7					
139+92.14	148+25.50		833					5					
148+80.41	157+14.41		874					6					
157+14.41	180+23.05		2,333					7	3				
157+15.00	158+00.00						115						
164+50.00	165+50.00						130						
180+23.05	210+78.19	3,006						23					TIE TO EXISTING CROSS FENCE - 210+78.19
211+51.74	218+07.47	650						6					TIE TO EXISTING CROSS FENCE - 211+51.74
223+37.81	229+00.00						572						
223+41.21	251+19.57				2,780			6	5				
278+16.03	282+61.45				445			5					
282+61.45	282+76.00		15						1				
282+76.00	282+92.00										16		
282+92.00	283+54.85		63					3					
283+54.85	290+94.49				740			1	3				
311+05.61	320+41.39		940					11					
320+41.39	320+58.61											16	
320+58.61	324+52.79		394					7					
332+23.92	333+00.00						80						
332+24.76	353+85.64			2,169				15	1				TIE TO EXISTING CROSS FENCE - 337+02
353+85.64	354+00.69											16	
354+00.69	354+85.21			92				2	1				
355+95.00	356+56.00			61				2					
356+56.00	356+72.00										16		
356+72.00	369+08.97			1,301				7					
369+08.97	369+24.83										16		
369+24.83	372+53.93			454				6					
372+53.93	372+69.97										16		
372+69.97	379+67.00			695				4					TIE TO EXISTING CROSS FENCE - 378+33
394+76.00	395+45.00	35					67						
447+85.00	448+15.00					30	60						
530+40.19	543+43.30	1,314						10					
530+45.00	531+00.00						86						
543+43.30	549+02.00	559						3					
549+02.00	549+18.00										16		
549+18.00	551+43.18	225						4					
551+43.18	551+59.18										16		
551+59.18	556+69.59	510						3					
556+69.59	563+34.91	666						1	2				TIE TO EXISTING CROSS FENCE - 563+34.91
563+97.82	570+06.83	599						4					TIE TO EXISTING CROSS FENCE - 563+97.82
569+96.05	578+86.00	1,179						7					
578+86.00	579+04.00											18	
579+04.00	585+56.00	652						2					
585+56.00	585+74.00											18	
585+74.00	597+91.00	1,227						7					
597+91.00	598+09.00											18	
598+09.00	609+77.23	1,553						9					
618+91.90	623+11.18	456						6					
622+94.87	623+26.42	28						4			22		TIE TO EXISTING CROSS FENCE; GATE 150' RT
623+11.18	623+38.00										22		
623+38.00	634+45.87	1,110						6					
634+45.87	634+73.87											28	
634+73.87	636+45.53	173						3					
TOTAL		**13,942**	**7,904**	**4,772**	**4,774**	**30**	**1,290**	**210**	**17**	**12**	**140**	**138**	

AWARD COPY

HYDRAULIC DATA SUMMARY *

STATION	STREAM NAME (IF NAMED)	DRAINAGE AREA (mi.²)	SIZE / TYPE STRUCTURE (1)(1A)(4)	DESIGN FLOOD MAGNITUDE (cfs)	DESIGN FLOOD FREQUENCY (%)	DESIGN FLOOD H.W. ELEV. (ft.)	BASE FLOOD (1%) MAGNITUDE (cfs)	BASE FLOOD (1%) H.W. ELEV. (ft.)	OVERTOPPING FLOOD (2)(3) MAGNITUDE (cfs)	OVERTOPPING FLOOD (2)(3) APPROX. FREQUENCY (%)	OVERTOPPING FLOOD (2)(3) H.W. ELEV. (ft.)	REMARKS (FLOOD OF RECORD, Qp(max), etc.) (5)
117+50		0.16	30" CSP	38	2	2460.32	43	2460.65	48	0.5	2460.98	Qp(max), O.T. Road - 2461.95'
127+55	DAVEY COULEE	9.00	18' S x 4' R RCB	349	2	2461.47	477	2461.72	282	3.5	2461.10	Overtops Basin Divide and Flows to Sta.145+15
145+15		0.08	78" RCP	35	2	2451.52	112	2452.24	161	0.7	2452.30	Overtops Road
164+00		0.02	30" CSP	17	2	2449.21	19	2449.37	21	0.5	2449.49	Qp(max),O.T. Basin Divide at 170+00 Rt. - 2449.57'
189+73		0.13	42" RCP	67	2	2446.21	97	2447.38	77	1.6	2446.81	O.T. Basin Divide at 191+00 Rt.
218+00		0.70	3 - 42" RCP	172	2	2442.34	243	2443.58	306	0.5	2445.20	O.T. Road
222+93		0.41	51 1/8" x 31 5/16" RCPA	120	2	2441.75	173	2441.91	25	20	2441.30	Overtops App. @ 223+24 Rt. & Flows to Sta.220+12
261+76	CLEAR CREEK	135.60	50.8' BRIDGE	1038	2	2443.02	1356	2444.17	1596	0.8	2444.80	Overtops Basin Divide at Sta.263+52 Rt.
285+12 299+67 RT.		1.15	36" RCP 88" x 54" RCPA	191	2	2433.70	271	2434.75	211	1.8	2434.00	Overtops Approach and Flows to Sta.320+00
320+00		1.40	8' x 5' RCB	180	2	2432.13	257	2433.42	367	0.5	2435.54	Qp(max),O.T. Road at 305+00 - 2436.97'
371+23	MILK RIVER	~		9820	2	2427.25	12400	2428.15	~	~	~	Zone A Floodplain
420+80	MILK RIVER	~		9820	2	2424.30	12400	2424.98	~	~	~	Zone A Floodplain
431+34		0.18	Dbl. 36" RCP	76	2	2422.14	110	2423.37	134	0.6	2424.5	Overtops Approach at Sta.437+27 Lt.
476+85	MILK RIVER	~		9820	2	2421.20	12400	2421.97	~	~	~	Zone A Floodplain
463+70 482+03 503+02		0.15	Dbl. 54" RCP 42" RCP 48" RCP	70	2	2420.07	101	2420.15	131	0.5	2420.25	Qp(max), O.T. Irr. Canal @ 505+21 Lt. - 2420.90'
568+59	REDROCK COULEE WEST OVERFLOW	275.00	49' Bridge	793	2	2413.61	1053	2414.20	1502	0.2	2415.60	2-D ModelFlow Splits
594+14	MILK RIVER	~		9820	2	2413.51	12400	2413.93	~	~	~	Zone AE Floodplain - FIS CROSS SECTION O
594+61	REDROCK COULEE	275.00	54' Bridge	2424	2	2413.93	3053	2414.62	7256	0.2	2417.29	2-D ModelFlow Splits; Road O.T. @ 0.2%
617+41	REDROCK COULEE EAST OVERFLOW	275.00	56.8' Bridge	422	2	2413.11	519	2413.40	560	0.2	2414.80	2-D ModelFlow Splits

NOTES :

* H.W. ELEVATIONS SHOWN ARE BASED UPON PEAK FLOW ANALYSIS UNLESS NOTED IN REMARKS COLUMN.

(1) STRUCTURE SIZE OR TYPE AND RELATED HYDRAULIC DATA MAY NOT REFLECT CHANGES MADE DUE TO R/W OR OTHER CONSIDERATIONS (I.E., STOCKPASS ADDED, STRUCTURE SIZE OR TYPE CHANGED, ROAD GRADE CHANGED DURING CONSTRUCTION, ETC.)

(1A) BRIDGE LENGTH SHOWN EQUALS THE WATER SURFACE WIDTH IN THE OPENING AT THE DESIGN H.W. ELEVATION MEASURED NORMAL TO FLOW.

(2) OVERTOPPING IS DEFINED AS FLOW OVER THE ROAD, FLOW THROUGH A SIGNIFICANT RELIEF STRUCTURE OR FLOW OVER THE BASIN DIVIDE WHICHEVER IS LOWER.

(3) FOR THOSE CROSSINGS NOTED BY Qp(max) IN THE REMARKS COLUMN OVERTOPPING DOES NOT OCCUR AND THE FLOOD MAGNITUDE LISTED CORRESPONDS TO THE FLOOD OF SECTION 650.115 (a) (1) (ii) OF FEDERAL-AID POLICY GUIDE; SUBCHAPTER G, PART 650, SUBPART A (DEC. 1991)
THE FLOOD SPECIFIED IS SUBJECT TO STATE-OF-THE-ART CAPABILITY TO ESTIMATE THE EXCEEDANCE PROBABILITY.
(PIPES 0.5%; BRIDGE .2%)

(4) HIGH WATER ELEVATIONS MAY VARY SLIGHTLY DEPENDING UPON THE PIPE OPTION SELECTED.

(5) PROCEDURE MEMORANDUM NO.10, HYDRAULICS MANUAL CHAPTER 9 APPENDIX H.

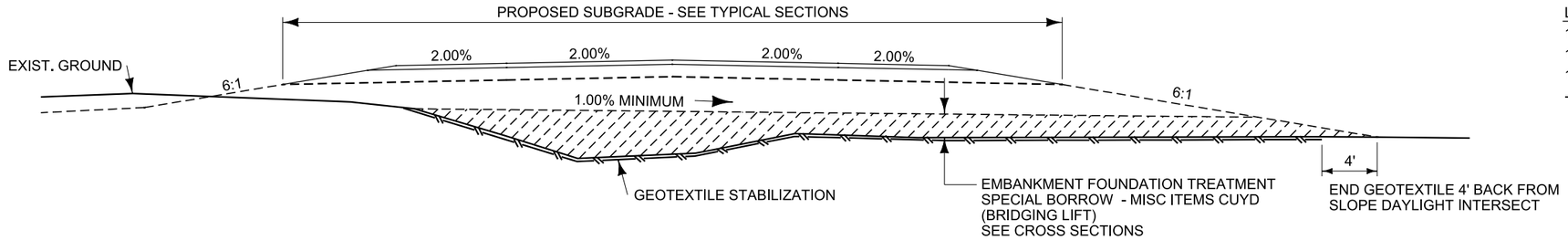
EXCEEDANCE PROBABILITIES

25 YEAR	4 % CHANCE
50 YEAR	2 % CHANCE
100 YEAR	1 % CHANCE
200 YEAR	.5% CHANCE
500 YEAR	.2% CHANCE

AWARD COPY

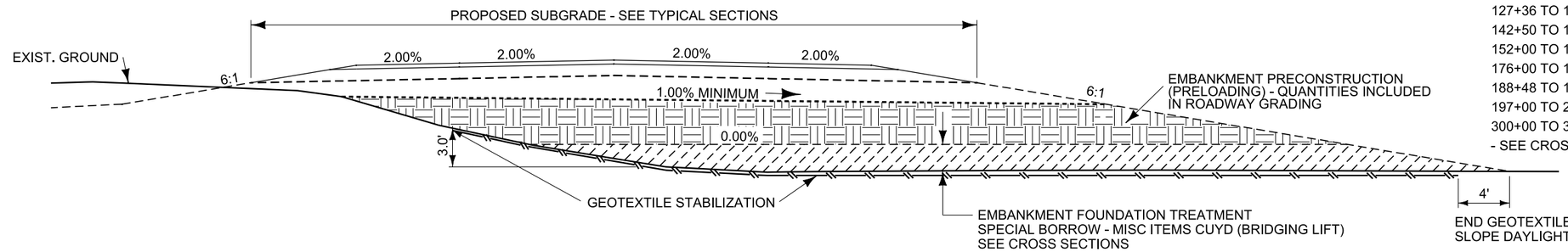
DETAIL

EMBANKMENT FOUNDATION TREATMENT



LOCATIONS
113+50 TO 114+50
123+50 TO 127+36
127+74 TO 142+50
- SEE CROSS SECTIONS

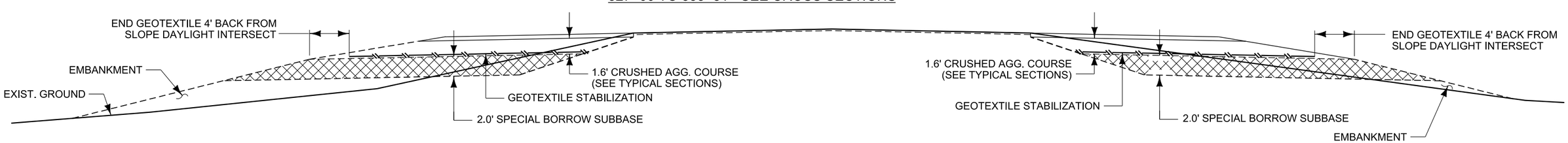
EMBANKMENT FOUNDATION TREATMENT AND EMBANKMENT PRECONSTRUCTION



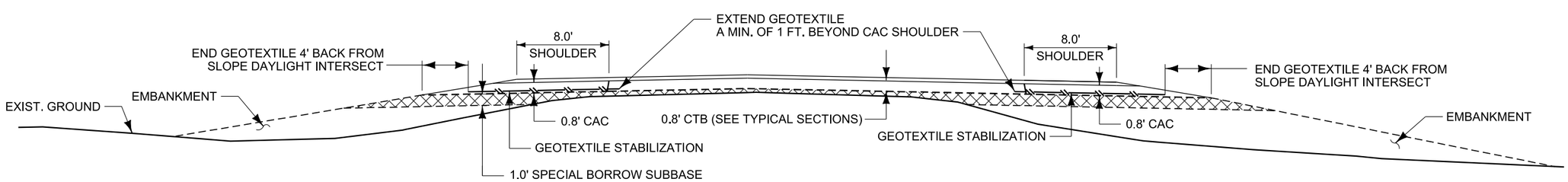
LOCATIONS
114+50 TO 123+50
127+36 TO 127+74
142+50 TO 148+00
152+00 TO 156+00
176+00 TO 179+00
188+48 TO 193+00
197+00 TO 210+50
300+00 TO 320+50
- SEE CROSS SECTIONS

SPECIAL BORROW SUBBASE

327+00 TO 353+81 - SEE CROSS SECTIONS



384+50 TO 642+00 - SEE CROSS SECTIONS



EMB. FOUNDATION TREATMENT & EMB. PRECONSTRUCTION AND SPECIAL BORROW SUBBASE DETAILS

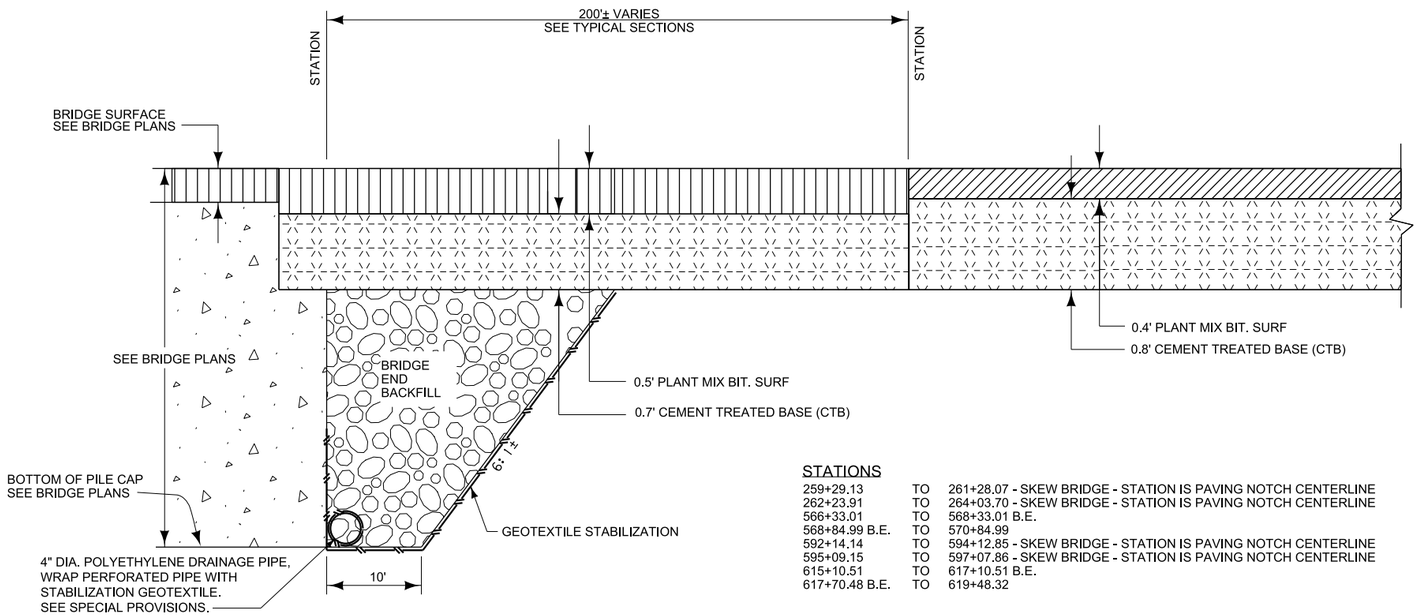
(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet004.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018			
1		3:05:56 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	35

AWARD COPY

DETAIL

30-YEAR BRIDGE END



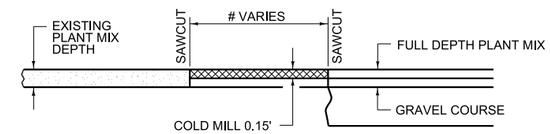
STATIONS

259+29.13	TO	261+28.07 - SKEW BRIDGE - STATION IS PAVING NOTCH CENTERLINE
262+23.91	TO	264+03.70 - SKEW BRIDGE - STATION IS PAVING NOTCH CENTERLINE
566+33.01	TO	568+33.01 B.E.
568+84.99 B.E.	TO	570+84.99
592+14.14	TO	594+12.85 - SKEW BRIDGE - STATION IS PAVING NOTCH CENTERLINE
595+09.15	TO	597+07.86 - SKEW BRIDGE - STATION IS PAVING NOTCH CENTERLINE
615+10.51	TO	617+10.51 B.E.
617+70.48 B.E.	TO	619+48.32

COLD MILLING CONNECTION

MAINLINE STATIONS

109+10.89 TO 109+30.89
327+00.00 TO 354+24.49 BE
357+04.30 BE TO 377+50.00
656+65.00 TO 656+85.00



ACTUAL COLD MILL DISTANCE AND DEPTH TO BE DETERMINED DURING CONSTRUCTION BY THE PROJECT MANAGER.

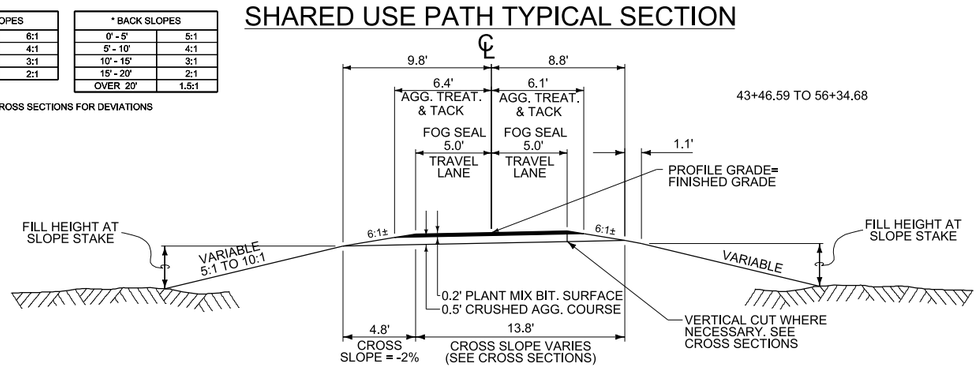
SHARED USE PATH TYPICAL SECTION

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

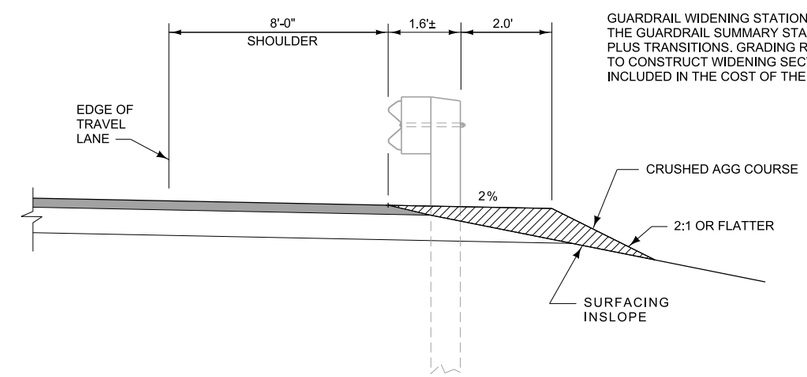
* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	1.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

43+46.59 TO 56+34.68



GUARDRAIL WIDENING



GUARDRAIL WIDENING STATIONS MATCH THE GUARDRAIL SUMMARY STATIONING PLUS TRANSITIONS. GRADING REQUIRED TO CONSTRUCT WIDENING SECTIONS IS INCLUDED IN THE COST OF THE SPECIFIC ITEMS.

QUANTITIES

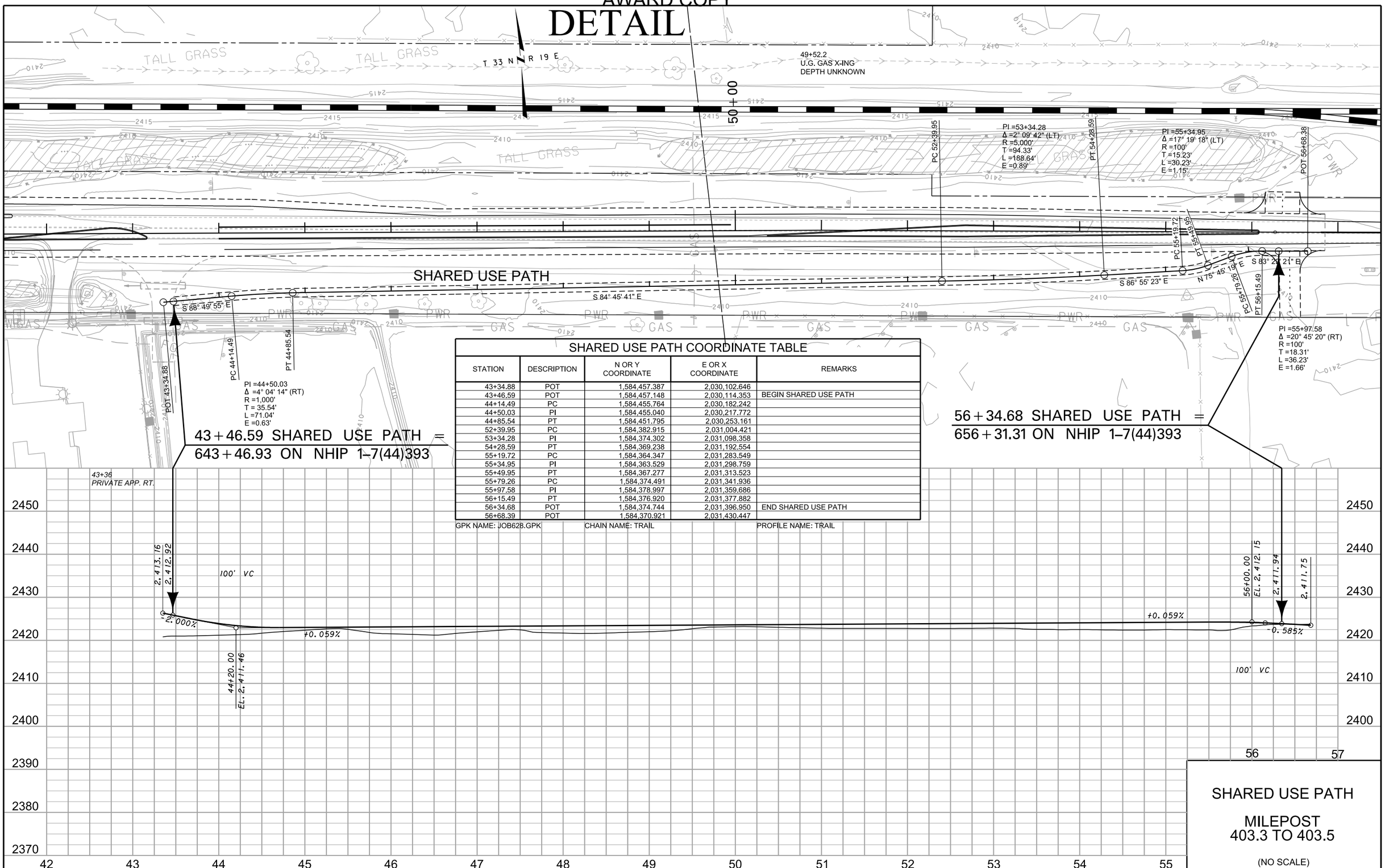
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	FOG SEAL	AGG. TREATMENT	EMULSIFIED ASPHALT TACK
AREA square feet		2.25	7.78	square yards PER STATION		111	111	139	139
cubic yards PER STATION		8.3	28.8	tons PER STATION	0.85	0.20			
tons PER STATION		16.0		gallons PER STATION			8		7
square yards PER STATION	111								

30-YEAR BRIDGE END, COLD MILLING CONN., GUARDRAIL WIDENING AND SHARED USE PATH TYPICAL SECTION

(NO SCALE)

AWARD COPY

DETAIL



43 + 46.59 SHARED USE PATH = 643 + 46.93 ON NHIP 1–7(44)393

56 + 34.68 SHARED USE PATH = 656 + 31.31 ON NHIP 1–7(44)393

SHARED USE PATH COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
43+34.88	POT	1,584,457.387	2,030,102.646	
43+46.59	POT	1,584,457.148	2,030,114.353	BEGIN SHARED USE PATH
44+14.49	PC	1,584,455.764	2,030,182.242	
44+50.03	PI	1,584,455.040	2,030,217.772	
44+85.54	PT	1,584,451.795	2,030,253.161	
52+39.95	PC	1,584,382.915	2,031,004.421	
53+34.28	PI	1,584,374.302	2,031,098.358	
54+28.59	PT	1,584,369.238	2,031,192.554	
55+19.72	PC	1,584,364.347	2,031,283.549	
55+34.95	PI	1,584,363.529	2,031,298.759	
55+49.95	PT	1,584,367.277	2,031,313.523	
55+79.26	PC	1,584,374.491	2,031,341.936	
55+97.58	PI	1,584,378.997	2,031,359.686	
56+15.49	PT	1,584,376.920	2,031,377.882	
56+34.68	POT	1,584,374.744	2,031,396.950	END SHARED USE PATH
56+68.39	POT	1,584,370.921	2,031,430.447	

GPK NAME: JOB628.GPK CHAIN NAME: TRAIL PROFILE NAME: TRAIL

SHARED USE PATH

MILEPOST 403.3 TO 403.5

(NO SCALE)

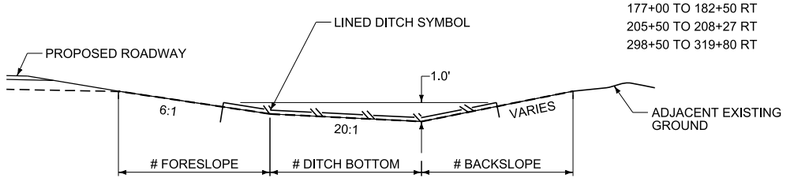
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet004.dgn	DESIGNED BY	BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY	JEANIA CERECK	8/22/2018			
1		3:06:17 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	37

AWARD COPY

DETAIL

LINED DITCH
PERMANENT EROSION CONTROL

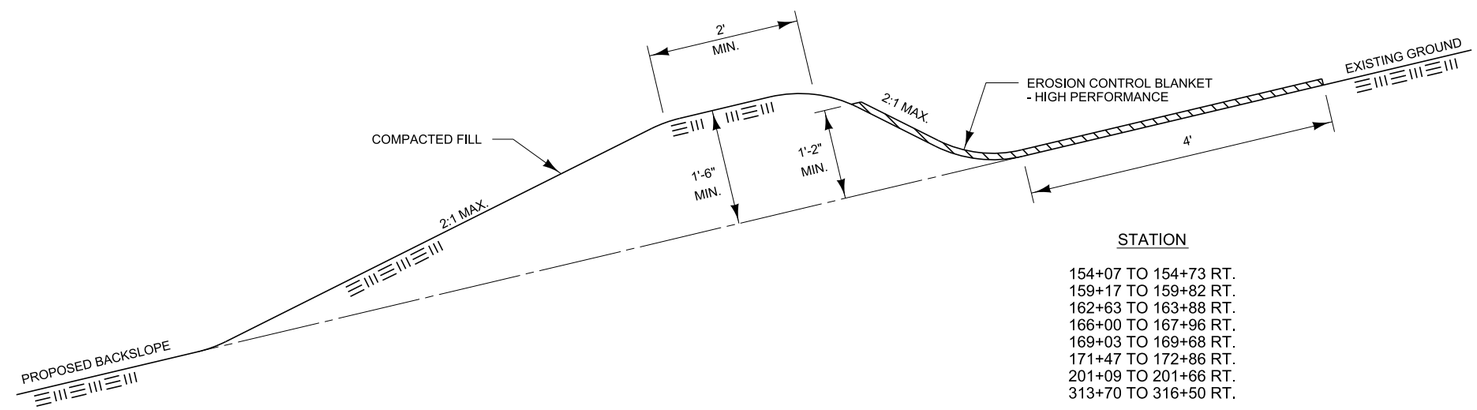
EROSION CONTROL BLANKET
154+40 TO 155+00 RT
159+49 TO 166+45 RT
172+24 TO 174+50 RT
177+00 TO 182+50 RT
205+50 TO 208+27 RT
298+50 TO 319+80 RT



WIDTH VARIES, SEE CROSS SECTIONS.

NOTE:
SEE PESC MANUAL.

EARTH DIKE



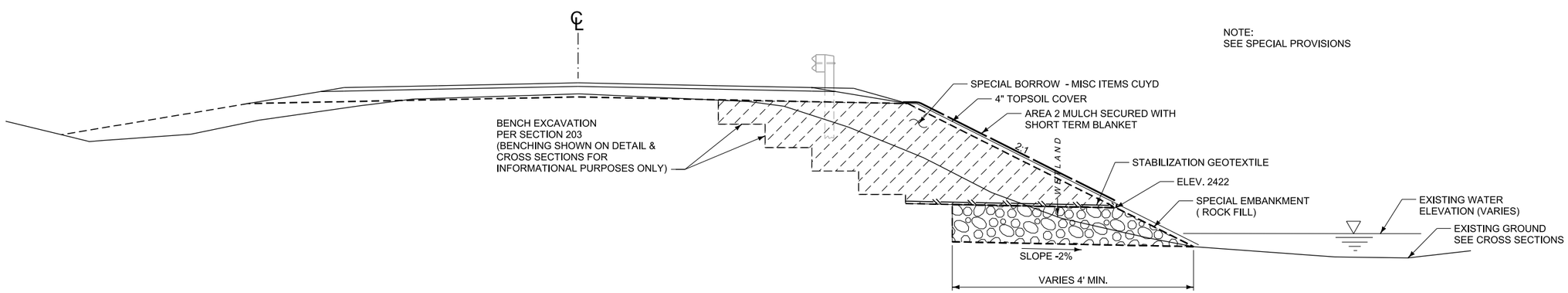
STATION

154+07 TO 154+73 RT.
159+17 TO 159+82 RT.
162+63 TO 163+88 RT.
166+00 TO 167+96 RT.
169+03 TO 169+68 RT.
171+47 TO 172+86 RT.
201+09 TO 201+66 RT.
313+70 TO 316+50 RT.

SEE CROSS SECTIONS

EMBANKMENT FOUNDATION TREATMENT & CONSTRUCTION
389+50 TO 394+00 RIGHT

NOTE:
SEE SPECIAL PROVISIONS



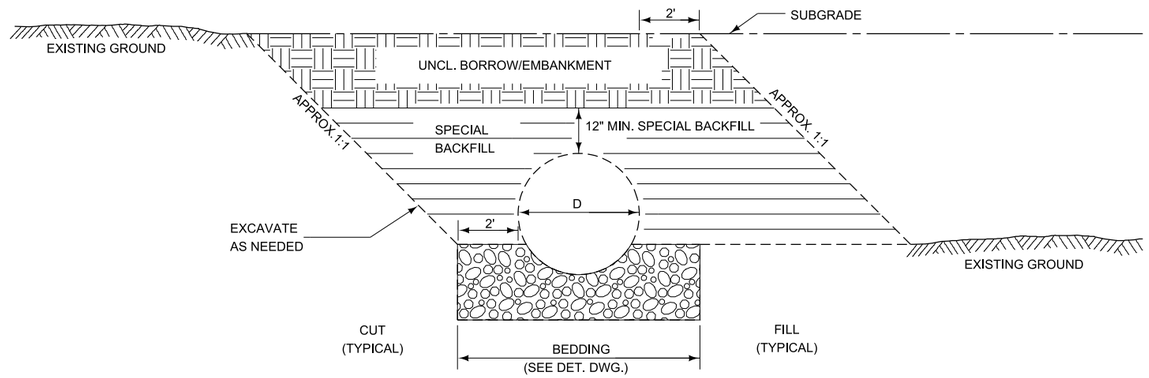
LINED DITCH,
EARTH DIKE AND
EMBANKMENT FOUNDATION
TREATMENT & CONSTRUCTION
389+50 TO 394+00 RT.
DETAILS

(NO SCALE)

AWARD COPY

DETAIL

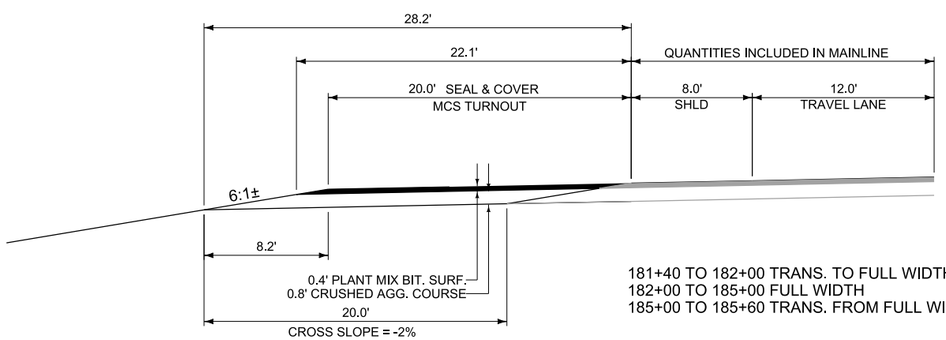
SPECIAL BACKFILL



CULVERT STA.	D	SPECIAL BACKFILL (C.Y.)
# 127+55	48	623
145+15	78	538
217+87	42	157
218+00	42	157
218+13	42	157
222+93	31 5/16	244
# 320+00	60	976
431+34	36	257
463+70	54	585
482+03	42	161
503+02	48	253
# 505+59	72	882

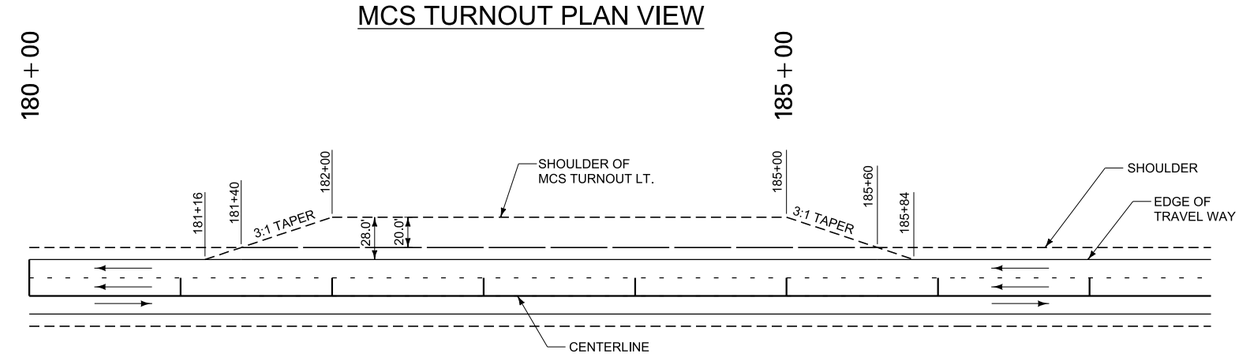
SEE RCB DETAIL FOR RCB SPECIAL BACKFILL GEOMETRY.

MCS TURNOUT TYPICAL SECTION



181+40 TO 182+00 TRANS. TO FULL WIDTH
182+00 TO 185+00 FULL WIDTH
185+00 TO 185+60 TRANS. FROM FULL WIDTH

MCS TURNOUT PLAN VIEW



QUANTITIES								
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL			
	COVER	PLANT MIX	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK #
AREA square feet		8.00	16.00	square yards PER STATION		222	222	444
cubic yards PER STATION		29.6	59.3	tons PER STATION	3.03	0.40		
tons PER STATION		57.1		gallons PER STATION				22
square yards PER STATION	222							

BASED ON 2 APPLICATIONS

SPECIAL BACKFILL
AND
MCS TURNOUT
DETAILS

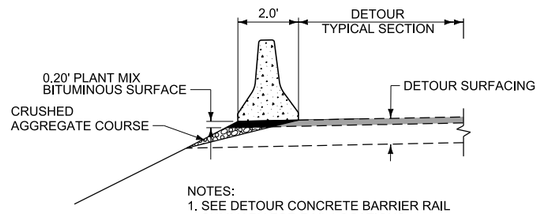
(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet004.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018			
1		3:06:38 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 UPN 6281000	39

AWARD COPY

DETAIL

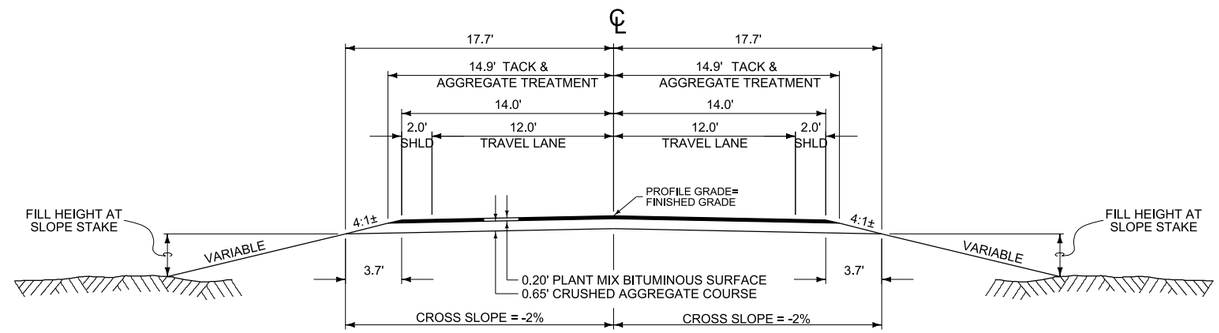
DETOUR GUARDRAIL WIDENING



NOTES:
1. SEE DETOUR CONCRETE BARRIER RAIL SUMMARY FOR RAIL LOCATIONS.
2. REVERSE DETAIL FOR RAIL ON THE RIGHT.
3. ANCHOR CONCRETE BARRIER RAIL PER DETAILED DRAWINGS.

DETOUR TYPICAL SECTION NO. 1

DETOUR



* FILL SLOPES	
0' - 10'	4:1
10' - 20'	3:1
20' - 30'	1.5:1
OVER 30'	1.5:1

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

* SEE CROSS SECTIONS FOR DEVIATIONS

QUANTITIES

UNIT	AGGREGATE		UNIT	BITUMINOUS MATERIAL		
	PLANT MIX	CR. AGG. COURSE		ASPHALT CEMENT	AGG. TREATMENT	EMULSIFIED ASPHALT TACK
AREA square feet	5.78	21.19	square yards PER STATION		331	331
cubic yards PER STATION	21.4	78.5	tons PER STATION	2.18		
tons PER STATION	41.2		gallons PER STATION			17

SUMMARY

DETOUR SURFACING

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE tons PLANT MIX BIT. SURF. GR. S - 3/4"	AGGREGATE cubic yards CRUSHED AGG. COURSE	BITUMINUS MATERIAL tons ASPHALT CEMENT PG 64-28	BITUMINUS MATERIAL gallons EMULSIFIED ASPHALT TACK	square yards AGG. TREAT.	REMARKS
54+75.95	70+62.50	1,586.55	1,586.55			CLEAR CREEK		654	1,245	34.6	270	5,251	
9+00.00	25+00.00	1,600.00	1,600.00			REDROCK COULEE WEST OVERFLOW		659	1,256	34.9	272	5,296	
56+00.00	72+04.53	1,604.53	1,604.53			REDROCK COULEE		661	1,260	35.0	273	5,311	
79+36.88	93+31.88	1,395.00	1,395.00			REDROCK COULEE EAST OVERFLOW		575	1,095	30.4	237	4,617	
						DETOUR GUARDRAIL WIDENING		86	372	4.6	9	146	SEE DETOUR CONC. BARRIER RAIL SUMMARY FOR RAIL LOCATIONS
TOTAL		**6,186.08**	**6,186.08**	~	~		**37**	**2,635**	**5,228**	**139.5**	**1061**	**20,621**	

 # FOR INFORMATION ONLY

DETOUR DETAILS

AWARD COPY

SUMMARY

DETOUR GRADING

STATION	cubic yards UNCL. EXC.	UNCL. BORROW	EMB.+	REMARKS
54+75.95				
	735	2,564	3,299	CLEAR CREEK DETOUR - MAINLINE BRIDGE 261+76
70+62.50				
9+00.00				
	864	8,134	8,998	REDROCK COULEE WEST OVERFLOW
25+00.00				
56+00.00				
	648	9,496	10,144	REDROCK COULEE
72+04.53				
79+36.88				
	834	6,824	7,658	REDROCK COULEE EAST OVERFLOW
93+31.88				
TOTAL	# 3,081	27,018	# 30,099	

FOR INFORMATION ONLY

DETOUR STRUCTURE

STATION	each TEMPORARY STRUCTURE	REMARKS
62+36	1	CLEAR CREEK
64+01	1	REDROCK COULEE
TOTAL	2	

FOR INFORMATION ONLY (QUANTITIES ARE BASED ON ASSUMPTION OF STRUCTURE)

PAVEMENT MARKINGS

ITEM	UNIT	INTERIM APPLICA-TION	FINAL APPLICA-TION	TOTAL
TEMPORARY STRIPING	mile			1.2

DETOUR CULVERT

STATION	linear feet CSP - 3" x 1" CORR.## 0.064 THK. 54"	60"	END SECTIONS LEFT	RIGHT	linear feet HEIGHT OF COVER	REMARKS
18+68		2 @ 62'	SQ	SQ	2.3	DBL. DRAIN - REDROCK COULEE WEST OVERFLOW
87+46	2 @ 50'		SQ	SQ	3.6	DBL. DRAIN - REDROCK COULEE EAST OVERFLOW
TOTAL	~	~	~	~	~	

FOR INFORMATION ONLY
5" x 1" CORR. ACCEPTABLE

DETOUR CONCRETE BARRIER RAIL

STATION FROM	TO	each CONCRETE BARRIER RAIL	TEMPORARY IMPACT ATTENUATOR	REMARKS
CLEAR CREEK BRIDGE - 261+76				
57+30.00	67+00.00	97	2	RT
58+70.00	67+10.00	84	2	LT
REDROCK COULEE WEST OVERFLOW				
10+00.00	24+00.00	140	2	LT
11+80.00	22+20.00	104	2	RT
RED ROCK COULEE				
57+00.00	71+00.00	140	2	LT
59+00.00	69+00.00	100	2	RT
REDROCK COULEE EAST OVERFLOW				
81+00.00	93+00.00	120	2	LT
83+00.00	90+50.00	75	2	RT
TOTAL		860	## 16	

FOR INFORMATION ONLY
RESET - SEE GUARDRAIL WIDENING SUMMARY.
SEE DETOUR GUARDRAIL WIDENING DETAIL.

DETOUR SEPARATION MATERIAL

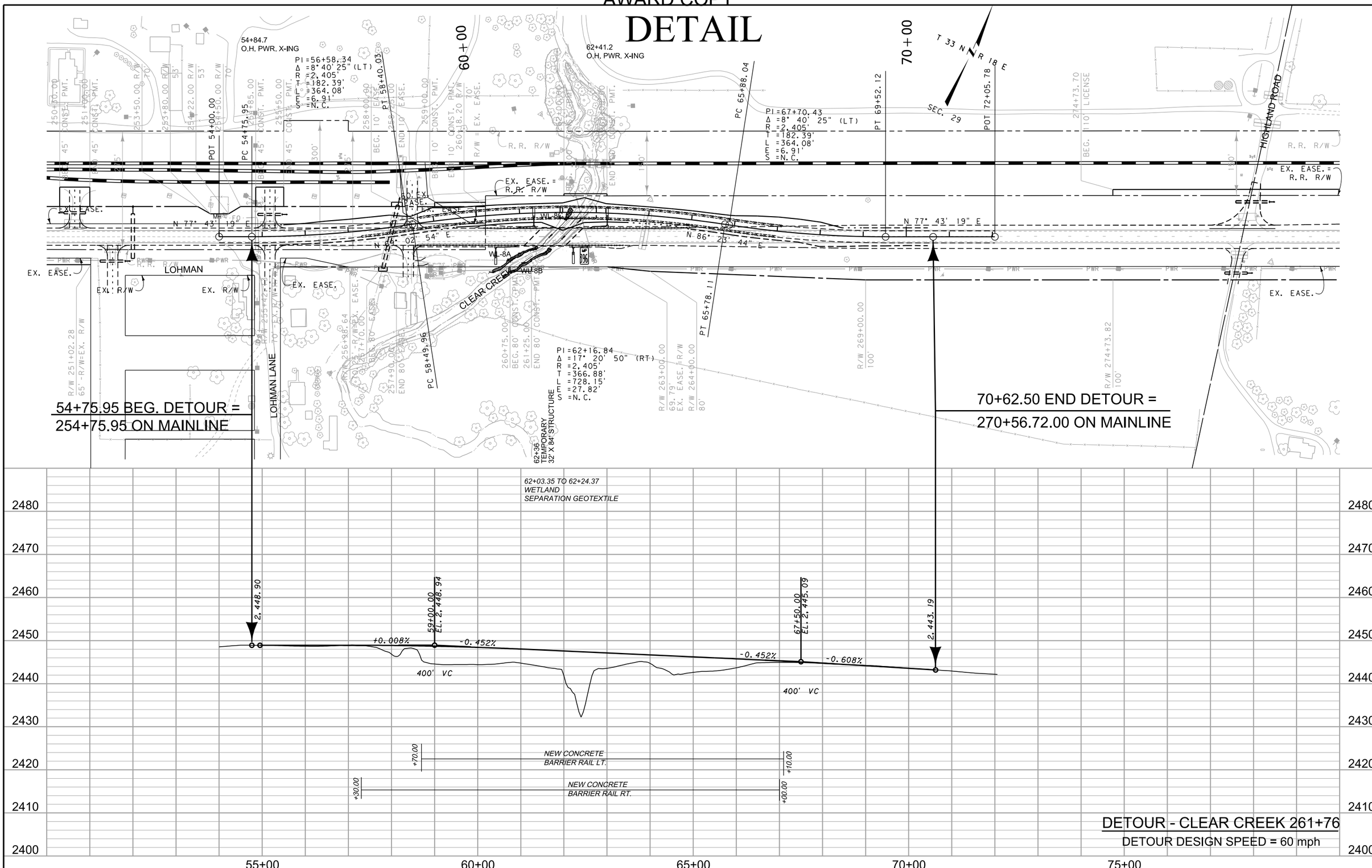
STATION FROM	TO	square yards SEPARATION MATERIAL	REMARKS
62+03.35	62+24.37	26	WETLAND - CLEAR CREEK
12+91.88	13+70.32	258	WETLAND - REDROCK COULEE WEST OVERFLOW
17+65.15	18+90.91	561	WETLAND - REDROCK COULEE WEST OVERFLOW
18+71.00		205	DOUBLE CULVERT - REDROCK COULEE WEST OVERFLOW
59+86.23	60+71.91	87	WETLAND - REDROCK COULEE
63+50.71	63+68.15	7	WETLAND - REDROCK COULEE
63+74.24	64+48.42	70	WETLAND - REDROCK COULEE
87+46.00		222	DOUBLE CULVERT - REDROCK COULEE EAST OVERFLOW
TOTAL		1436	

FOR INFORMATION ONLY

DETOUR DETAILS

AWARD COPY

DETAIL



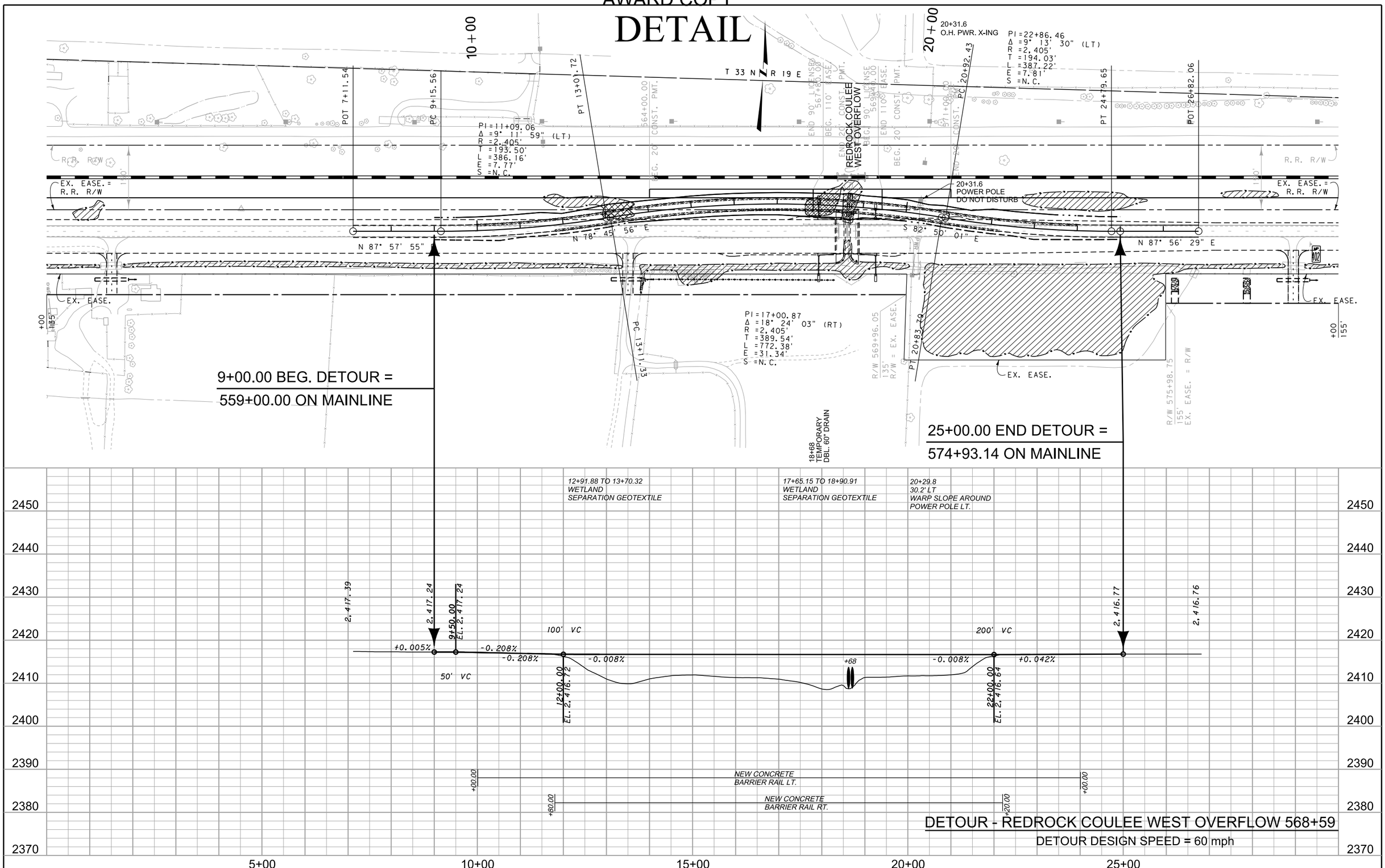
DETOUR - CLEAR CREEK 261+76

DETOUR DESIGN SPEED = 60 mph

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet003.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018			
1		3:07:11 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	42

AWARD COPY

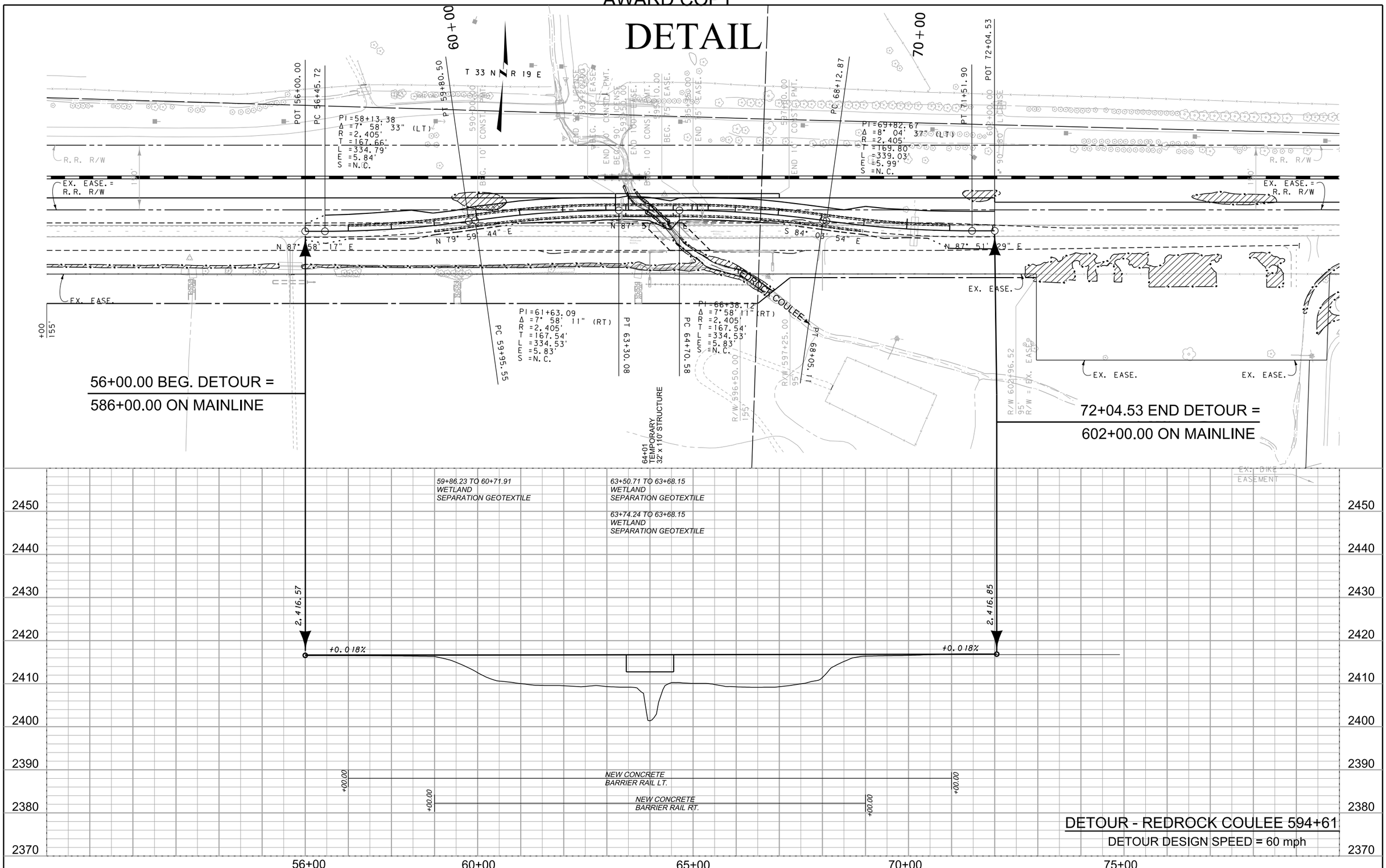
DETAIL



3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet002.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018			
1		3:07:32 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	43

AWARD COPY

DETAIL



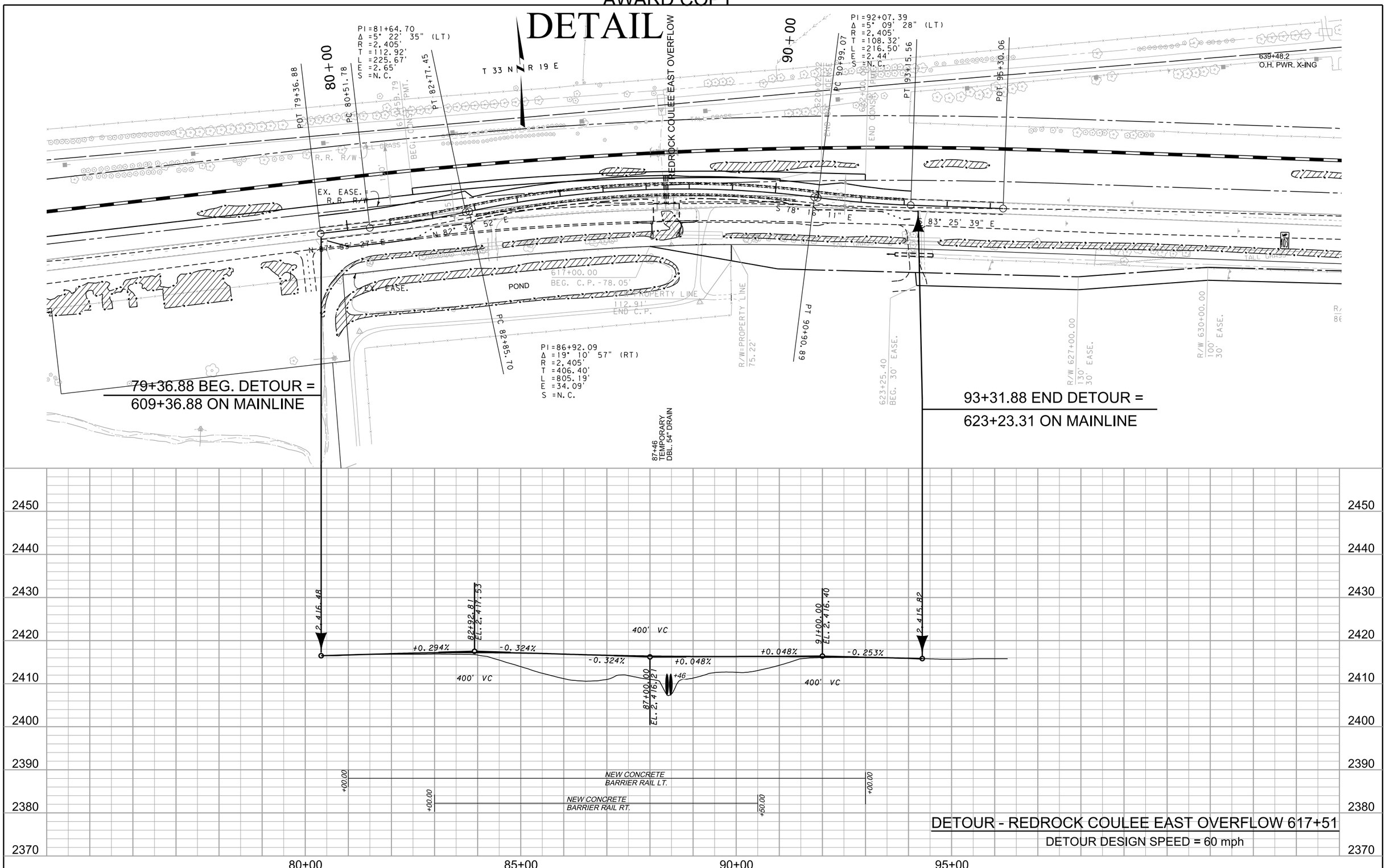
DETOUR - REDROCK COULEE 594+61

DETOUR DESIGN SPEED = 60 mph

3 / 2 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet002.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018			
		3:07:36 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	44

AWARD COPY

DETAIL

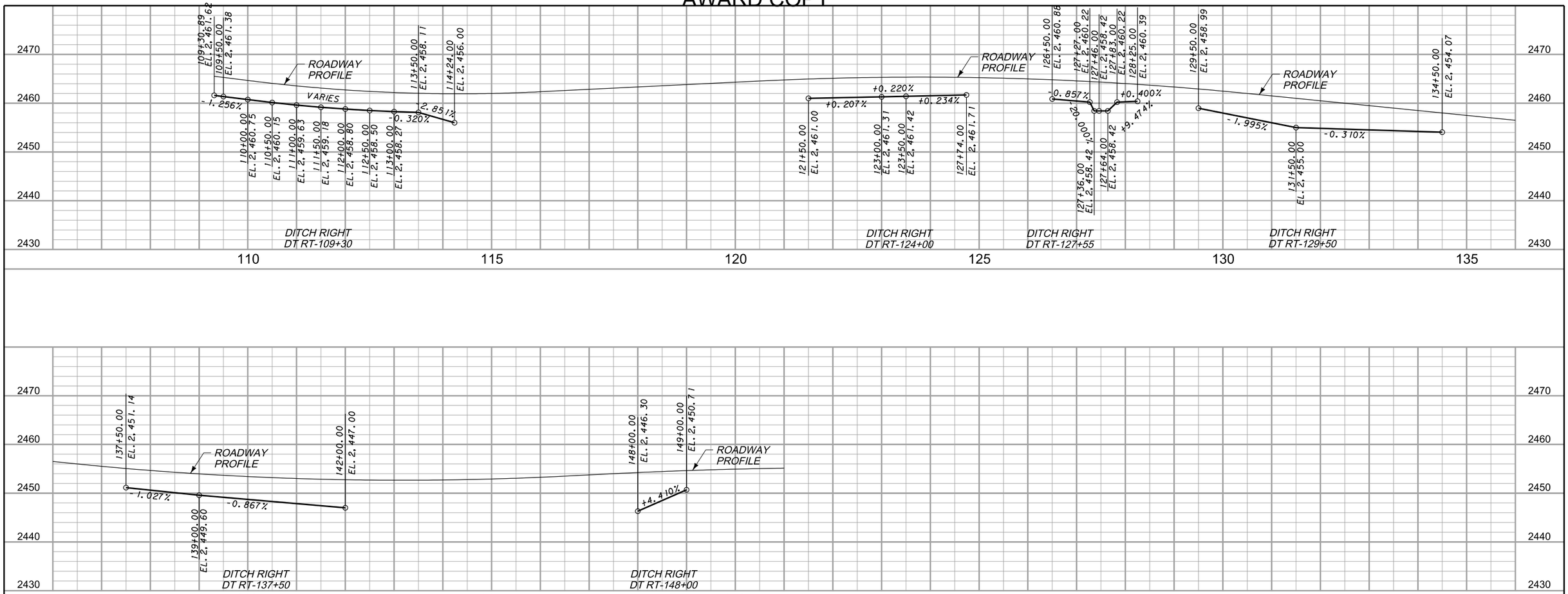


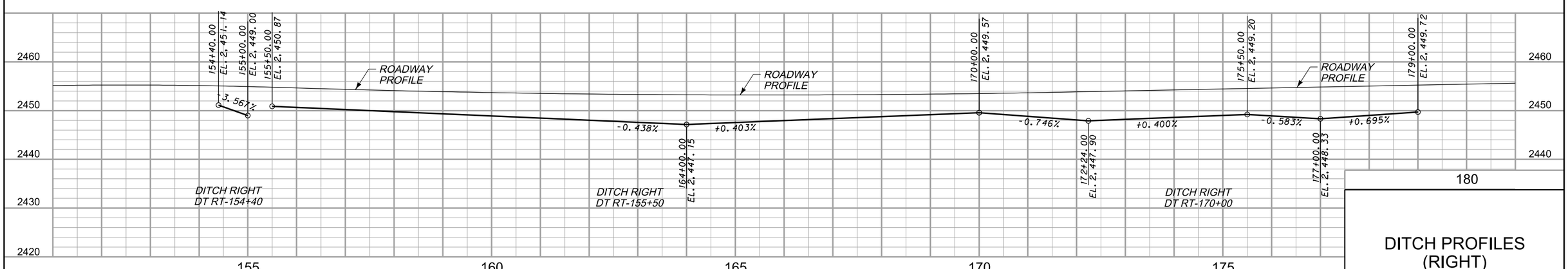
DETOUR - REDROCK COULEE EAST OVERFLOW 617+51

DETOUR DESIGN SPEED = 60 mph

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet002.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018			
1		3:07:40 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	45

AWARD COPY

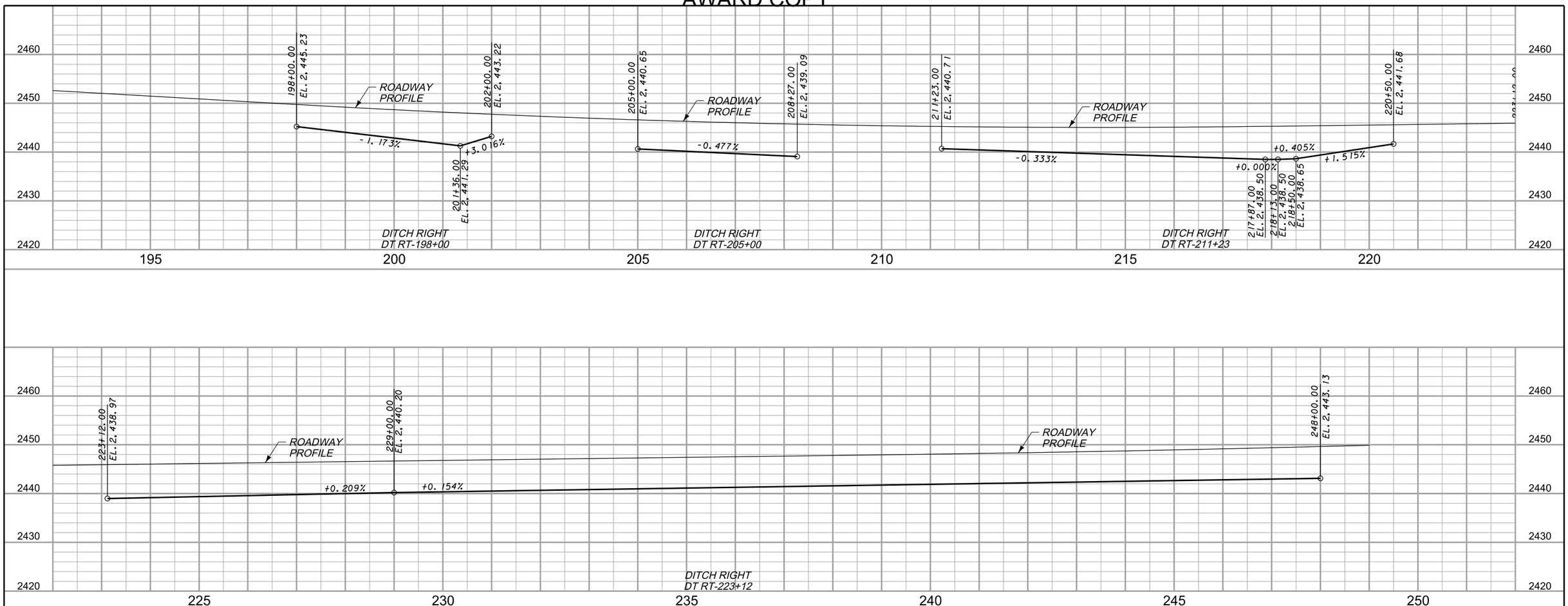




DITCH PROFILES (RIGHT)

3 / 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet005.dgn	DESIGNED BY BETH POINTER 5/10/2016	ROAD PLANS		LOHMAN - E & W	NHIP 1-7(44)393
		9/9/2019	REVIEWED BY JEANIA CERECK 8/22/2018				
		3:07:50 PM CPS - U2160	CHECKED BY JERRY SABOL 4/15/2019	BLAINE COUNTY		CSF= 0.99965875 393.1 TO 403.5 / UPN 6281000	46

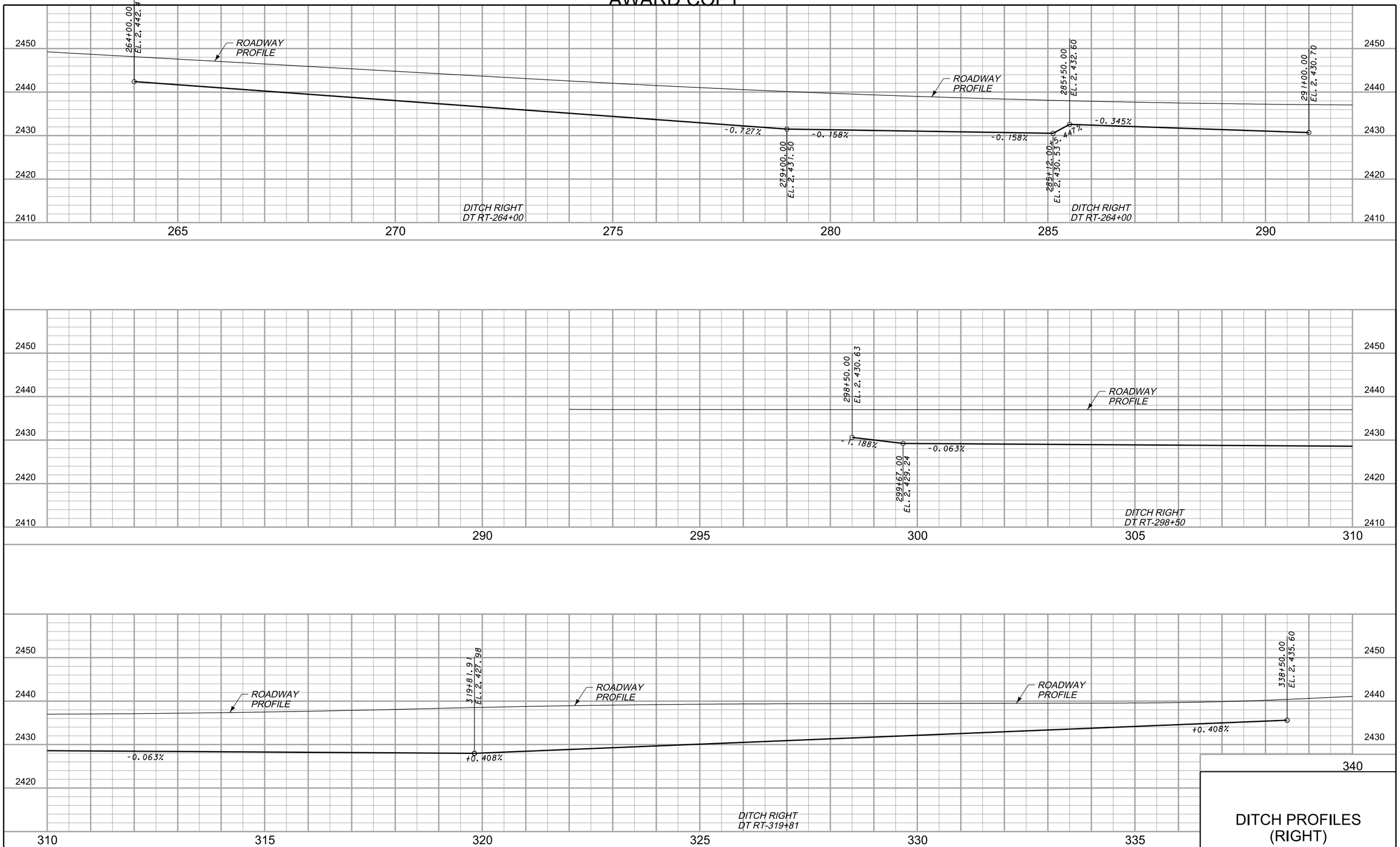
AWARD COPY



DITCH PROFILES
(RIGHT)

3 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet005.dgn	DESIGNED BY	BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
		9/9/2019	REVIEWED BY	JEANIA CERECK	8/22/2018			
		3:07:54 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 393.1 TO 403.5 / UPN 6281000	47

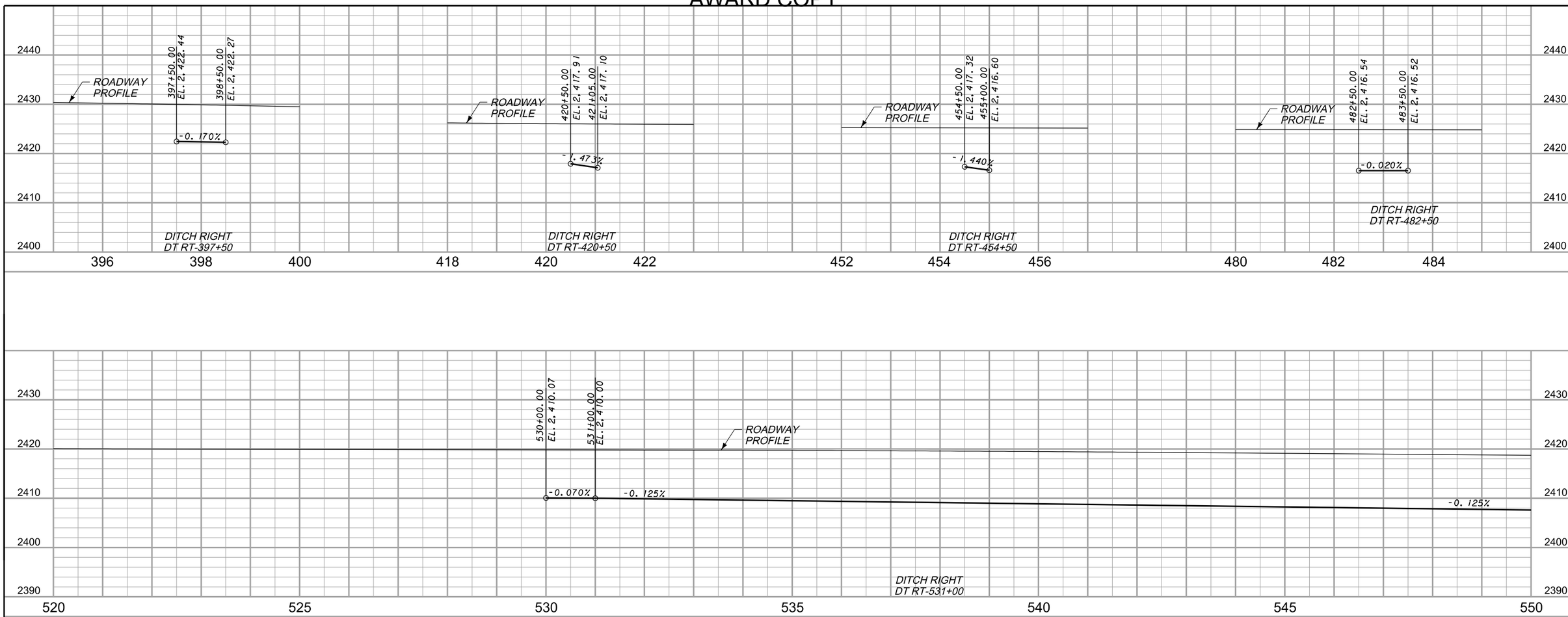
AWARD COPY

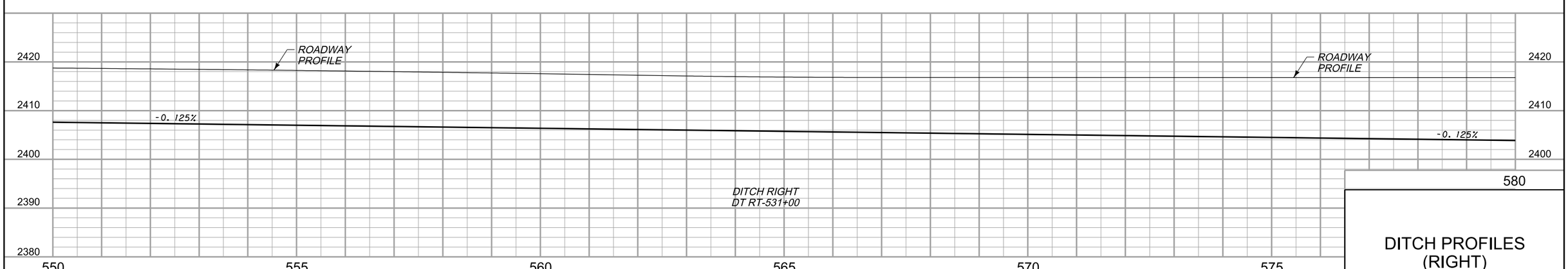


DITCH PROFILES (RIGHT)

2 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet005.dgn 9/9/2019 3:07:59 PM CPS - U2160	DESIGNED BY BETH POINTER 5/10/2016 REVIEWED BY JEANIA CERECK 8/22/2018 CHECKED BY JERRY SABOL 4/15/2019	ROAD PLANS BLAINE COUNTY	LOHMAN - E & W CSF= 0.99965875 393.1 TO 403.5	UPN 6281000	NHIP 1-7(44)393 48

AWARD COPY

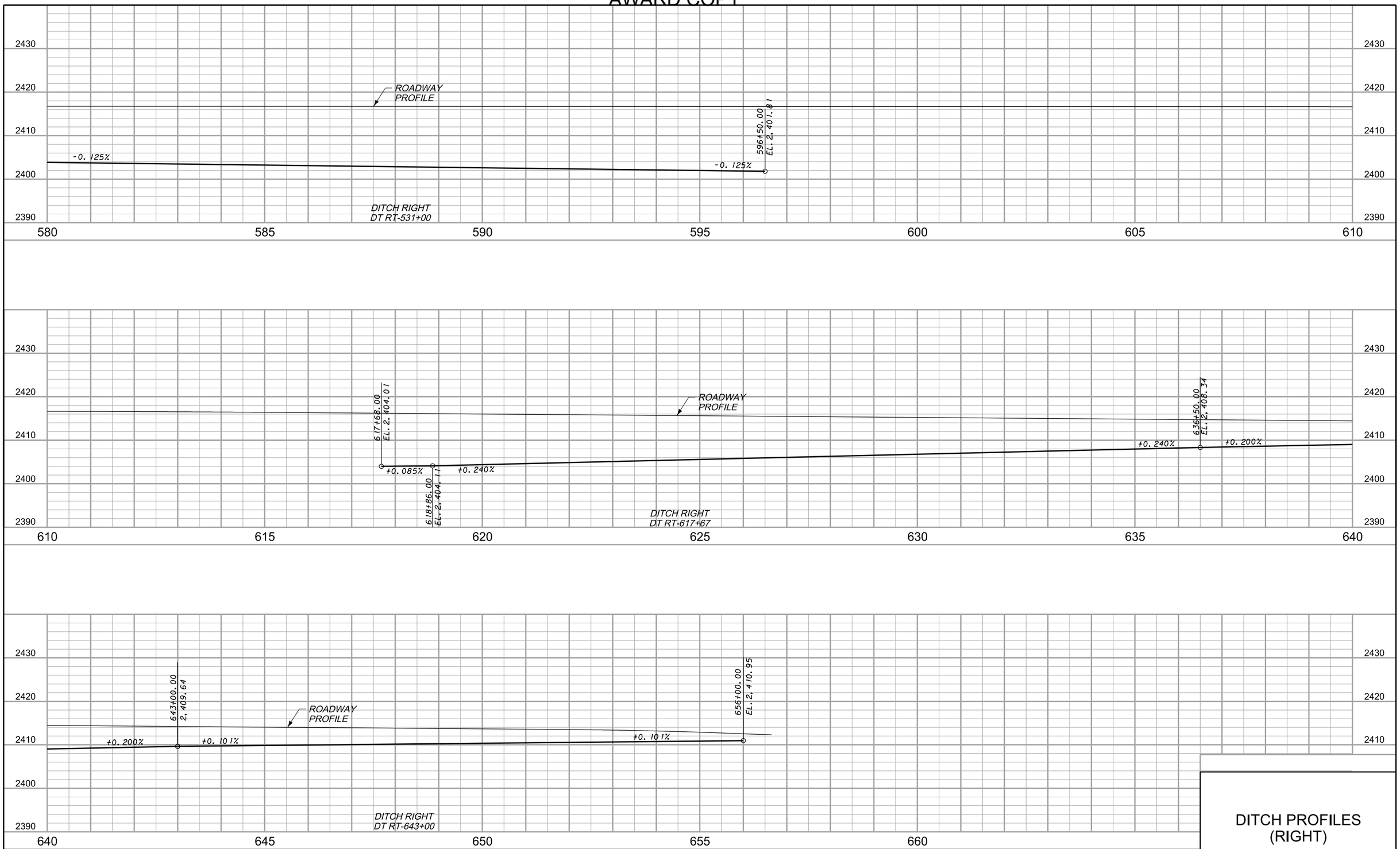




DITCH PROFILES (RIGHT)

3 / 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet006.dgn	DESIGNED BY BETH POINTER 5/10/2016	ROAD PLANS	LOHMAN - E & W		NHIP 1-7(44)393
		9/9/2019	REVIEWED BY JEANIA CERECK 8/22/2018				
		3:08:08 PM CPS - U2160	CHECKED BY JERRY SABOL 4/15/2019	BLAINE COUNTY	CSF= 0.99965875 393.1 TO 403.5	UPN 6281000	49

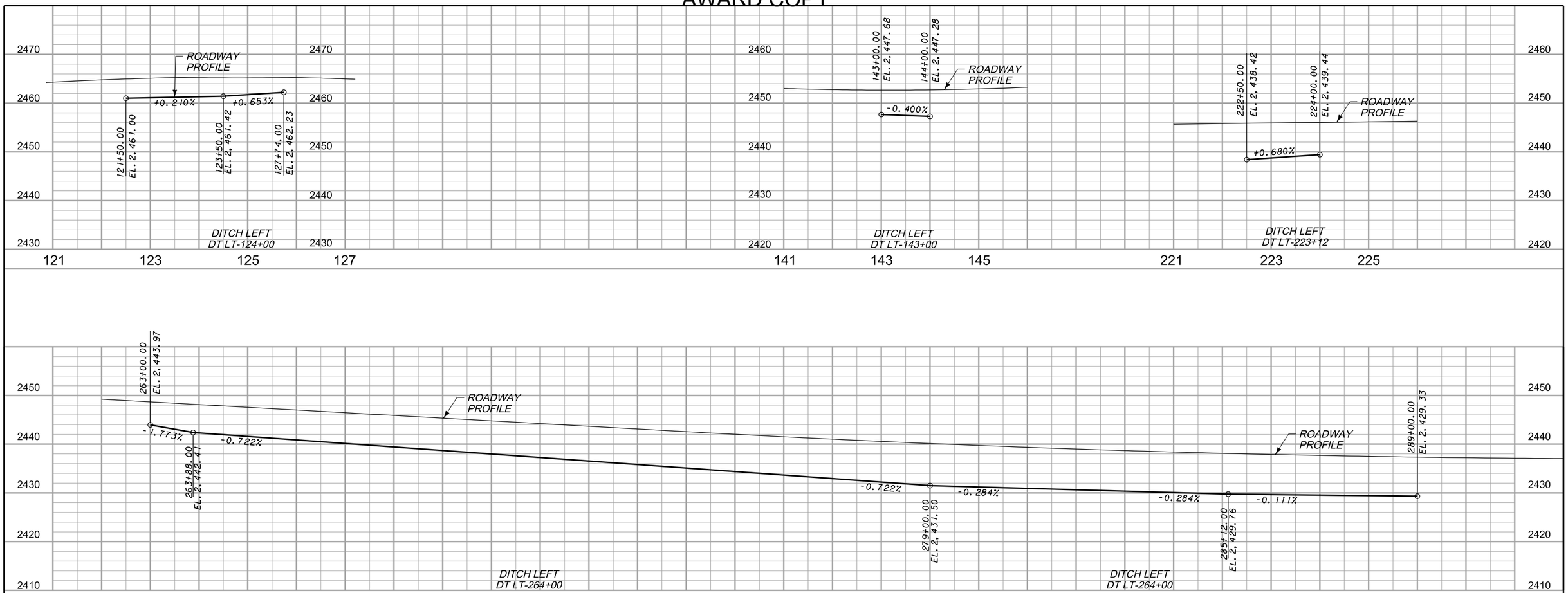
AWARD COPY



DITCH PROFILES (RIGHT)

3 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet006.dgn 9/9/2019 3:08:13 PM CPS - U2160	DESIGNED BY BETH POINTER 5/10/2016	ROAD PLANS		LOHMAN - E & W	NHIP 1-7(44)393
			REVIEWED BY JEANIA CERECK 8/22/2018				
			CHECKED BY JERRY SABOL 4/15/2019	BLAINE COUNTY		CSF= 0.99965875 393.1 TO 403.5 / UPN 6281000	50

AWARD COPY



DITCH PROFILES (LEFT)

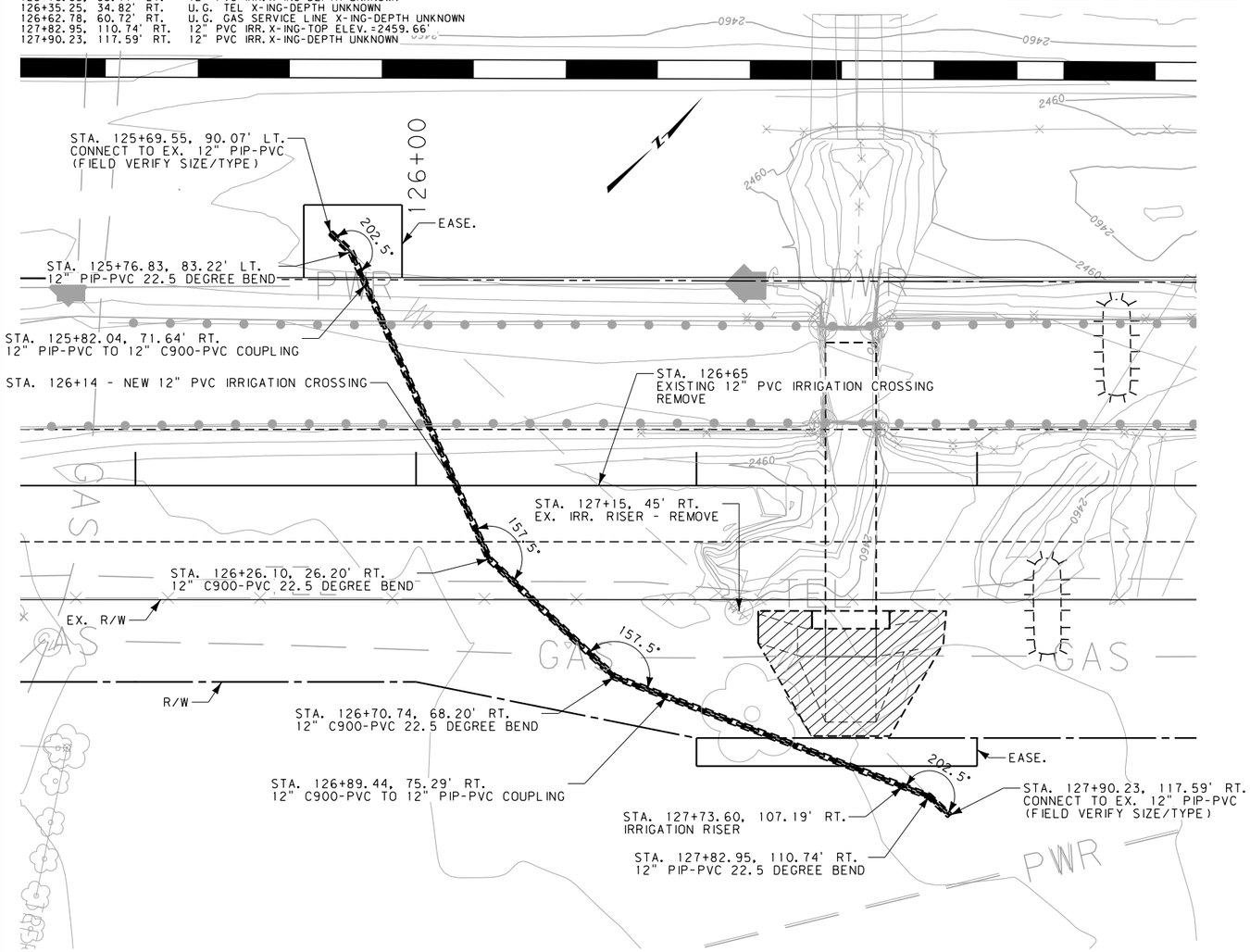
2 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddet006.dgn	DESIGNED BY	BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
		9/9/2019	REVIEWED BY	JEANIA CERECK	8/22/2018			
		3:08:17 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 393.1 TO 403.5 / UPN 6281000	51

AWARD COPY

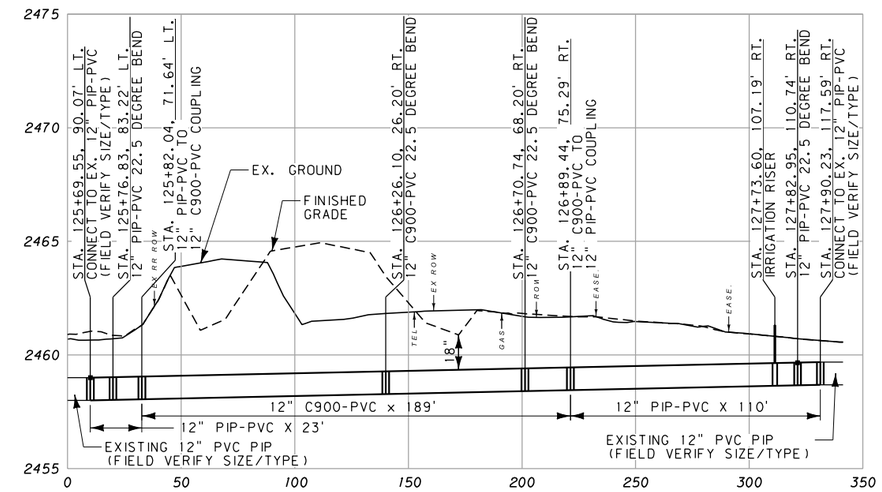
DETAIL

NEW IRRIGATION CROSSING - EXISTING UTILITY CROSSINGS

STA., OFFSET	EXISTING UTILITY
125+69.55, 90.07' LT.	12" PVC IRR. X-ING-TOP ELEV.=2459.00'
125+76.85, 83.17' LT.	12" PVC IRR. X-ING-DEPTH UNKNOWN
126+35.25, 34.82' RT.	U.G. TEL X-ING-DEPTH UNKNOWN
126+62.78, 60.72' RT.	U.G. GAS SERVICE LINE X-ING-DEPTH UNKNOWN
127+82.95, 110.74' RT.	12" PVC IRR. X-ING-TOP ELEV.=2459.66'
127+90.23, 117.59' RT.	12" PVC IRR. X-ING-DEPTH UNKNOWN



PLAN VIEW



PROPOSED IRRIGATION CROSSING PROFILE

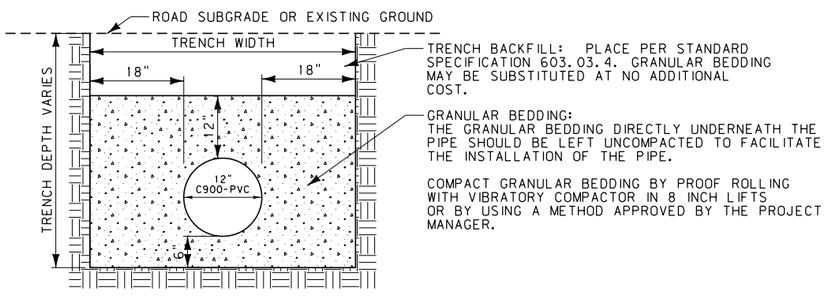
IRRIGATION CROSSING QUANTITIES#	
ITEM	QUANTITY
PIPE-PVC PRESS. 12" WATER (ft)①	189
PIPE-PVC PRESS. 12" SANITARY (ft)②	133
IRRIGATION RISER ③	1
12" C900-PVC TO 12" PIP-PVC COUPLING (each)	2
12" PIP-PVC COUPLING (each)	2
12" C900-PVC 22.5 DEGREE BEND (each)	2
12" PIP-PVC 22.5 DEGREE BEND (each)	2
GRANULAR BEDDING (cu. yd.)	68
BEDDING MATERIAL (cu. yd.)	36

#FOR INFORMATIONAL PURPOSES ONLY.

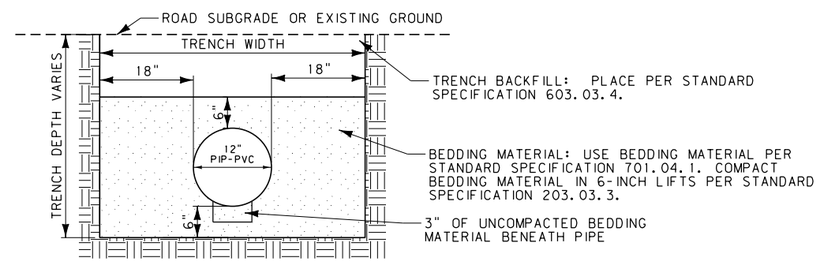
① 12" C900-PVC CL.165 (DR-25)

② 12" PIP-PVC

③ INCLUDE IRRIGATION RISER IN COST OF PIPE-PVC PRESS. 12" WATER



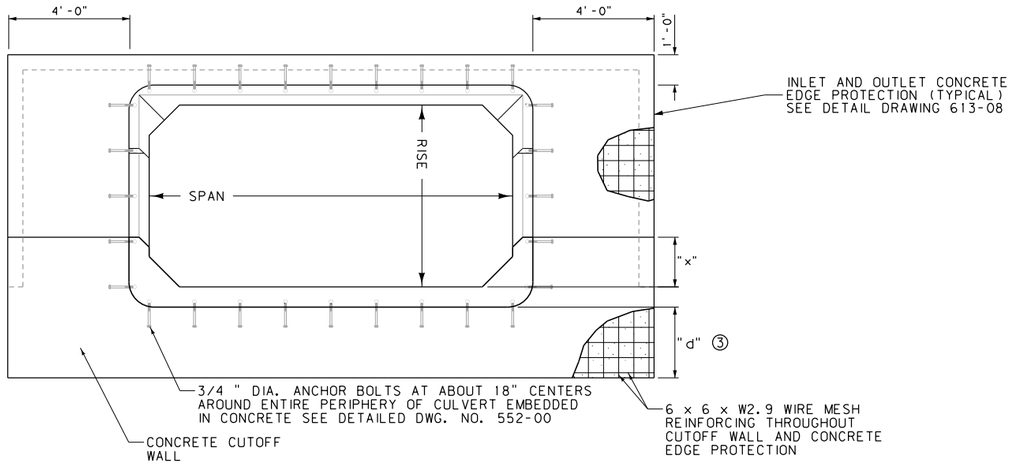
TRENCH/BEDDING DETAIL
FOR 12" C900-PVC



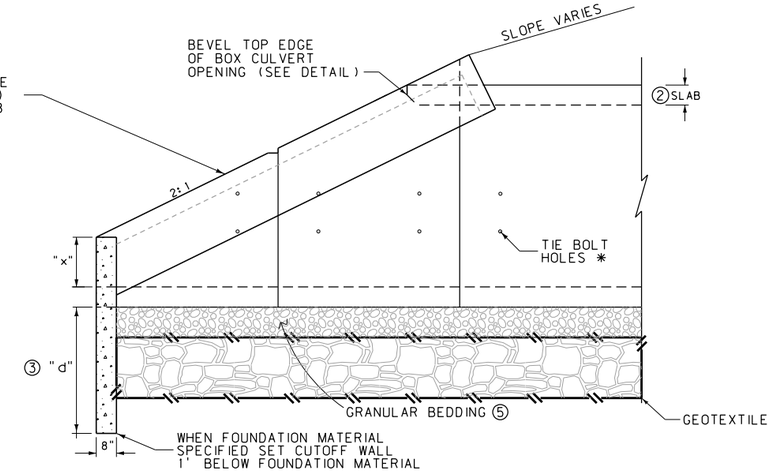
TRENCH/BEDDING DETAIL
FOR 12" PIP-PVC

STA. 126+14
IRRIGATION CROSSING DETAIL
NO SCALE

DETAIL

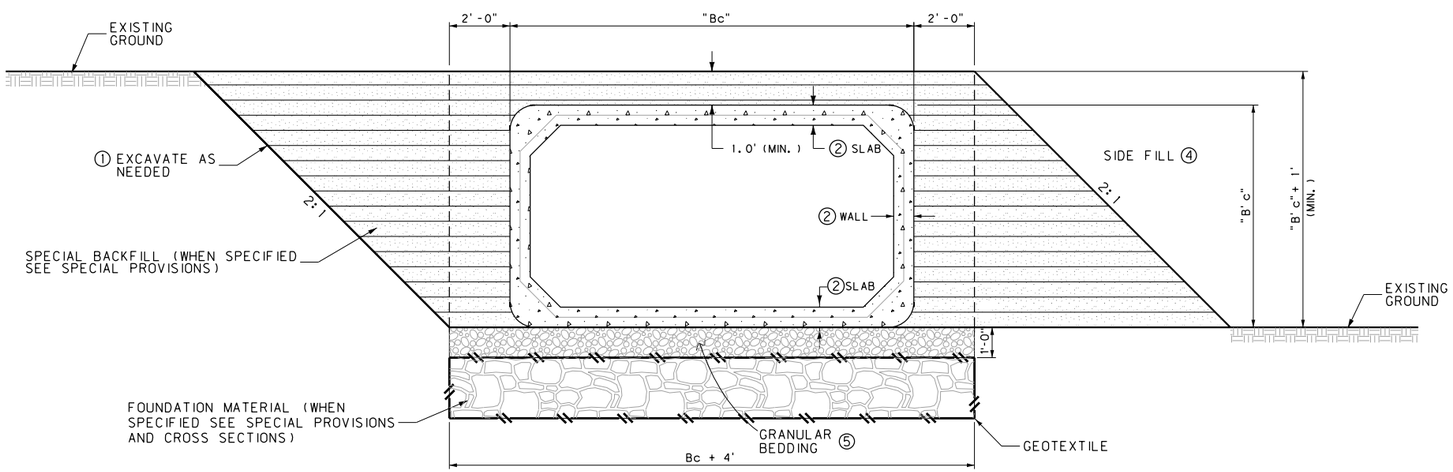


FRONT ELEVATION



✱ TIE BOLTS, LOCATE PER MANUFACTURER'S RECOMMENDATION

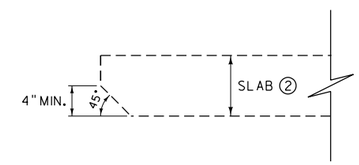
SIDE ELEVATION



EXCAVATION TYPICAL

BEDDING DETAIL

FILL TYPICAL



TOP BEVEL DETAIL

NOTES:

① 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. SPECIAL BACKFILL QUANTITY IS BASED ON 2:1 SLOPES.

② FOR ESTIMATING QUANTITIES ONLY. ACTUAL DIMENSION TO BE DETERMINED BY PRECAST MANUFACTURER.

③ WHEN FOUNDATION MATERIAL IS SPECIFIED, SET CUTOFF WALL 1 FOOT BELOW BOTTOM OF FOUNDATION MATERIAL.

④ COMPACT AND PLACE SIDE FILL PER SECTION 603 AND 203.

⑤ SEE SECTION 701.04 OF THE STANDARD SPECIFICATIONS FOR BEDDING MATERIAL REQUIREMENTS. THE CONTRACTOR HAS THE OPTION OF USING A SAND CUSHION ABOVE THE GRANULAR BEDDING TO FACILITATE JOINING OF THE BOX CULVERT SECTIONS.

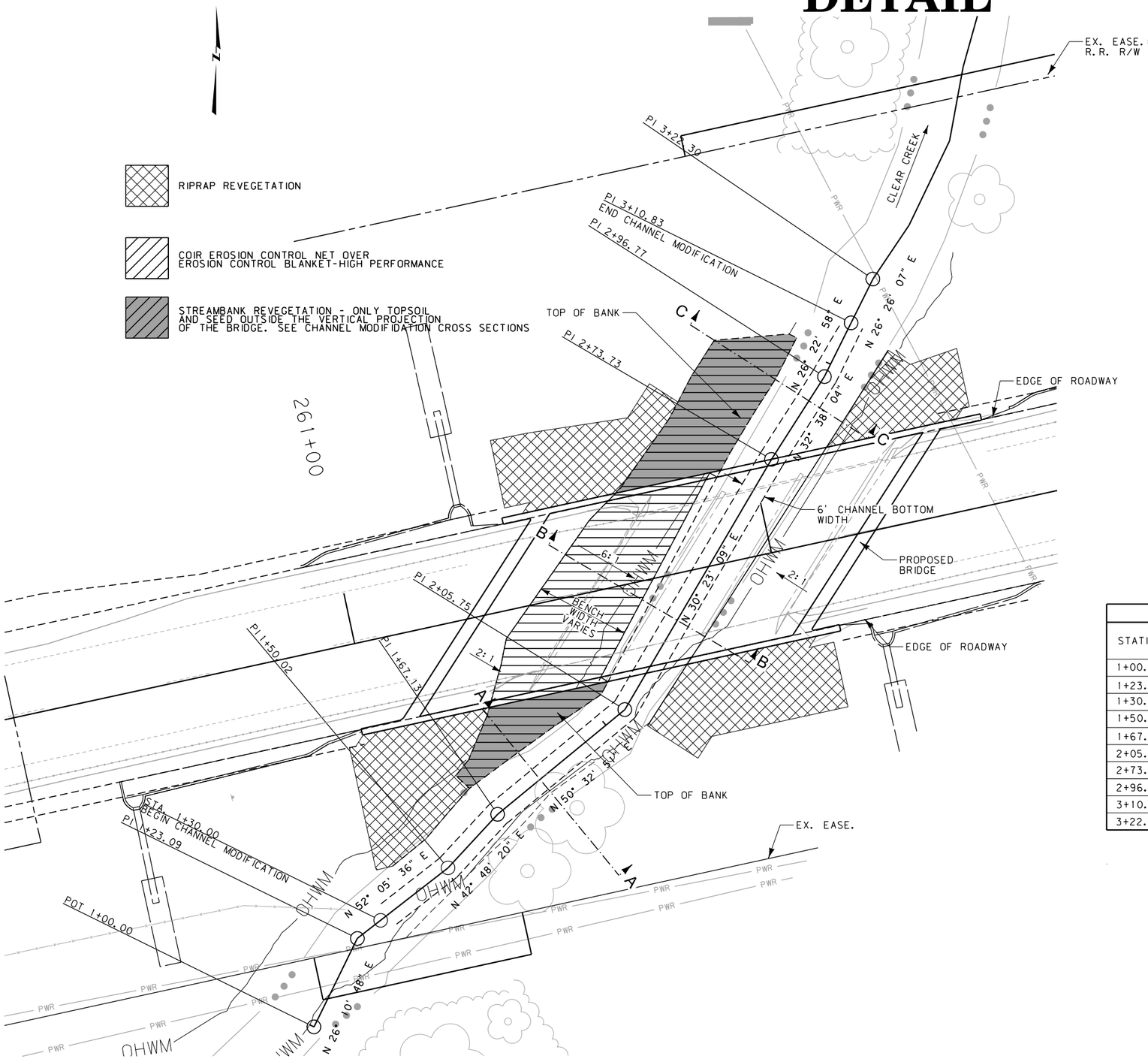
DIMENSIONS										
STATION	SPAN (ft.)	RISE (ft.)	LENGTH (ft.)	②WALL (in.)	②SLAB (in.)	"Bc" (ft.)	"x" (ft.)	"B'c" (ft.)	"d" (ft.)	COVER (ft.)
127+55	18	4	102	10	10	19.67	2.67	5.67	3.5	2.5
320+00	8	5	158	8	8	9.33	1.67	6.33	3.5	3.9
505+59*	14	6	123 ②	8	10	15.33	4.67	7.67	3.5	1.6

NOTE: INCLUDE REINFORCING MATERIAL, CUTOFF WALL, AND CONCRETE EDGE PROTECTION IN THE UNIT PRICE BID PER CUBIC YARD OF CLASS GENERAL CONCRETE.
INCLUDE ANCHOR BOLTS IN THE UNIT PRICE BID PER LINEAR FOOT OF CULVERT.
PROVIDE BOX CULVERTS MEETING ASTM C1577.
QUANTITIES ARE BASED ON THE DIMENSIONS IN THE TABLE.
✱ RCB LAYOUT INCLUDES BENDS. (SEE DETAIL)

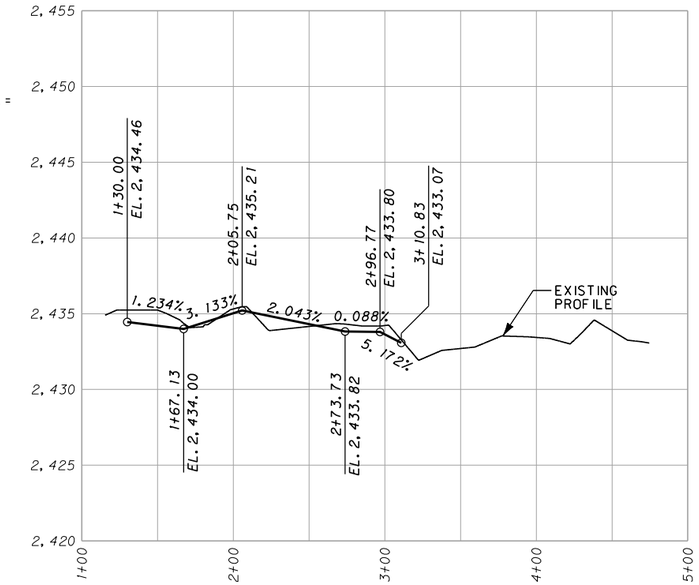
RCB DETAIL
NO SCALE

AWARD COPY

DETAIL



PLAN VIEW



PROPOSED CHANNEL PROFILE

CHANNEL MODIFICATION CENTERLINE COORDINATE TABLE				
STATION	N OR Y COORDINATE (FT)	E OR X COORDINATE (FT)	ELEVATION (FT)	DESCRIPTION
1+00.00	1,582,203.254	1,992,056.876		
1+23.09	1,582,223.971	1,992,067.061		
1+30.00	1,582,228.219	1,992,072.517	2434.46	BEGIN CHANNEL MODIFICATION
1+50.02	1,582,240.518	1,992,088.311	2434.21	
1+67.13	1,582,253.071	1,992,099.937	2434.00	
2+05.75	1,582,277.611	1,992,129.758	2435.21	
2+73.73	1,582,336.253	1,992,164.143	2433.82	
2+96.77	1,582,355.658	1,992,176.570	2433.80	
3+10.83	1,582,368.255	1,992,182.818	2433.07	END CHANNEL MODIFICATION
3+22.30	1,582,378.524	1,992,187.923		

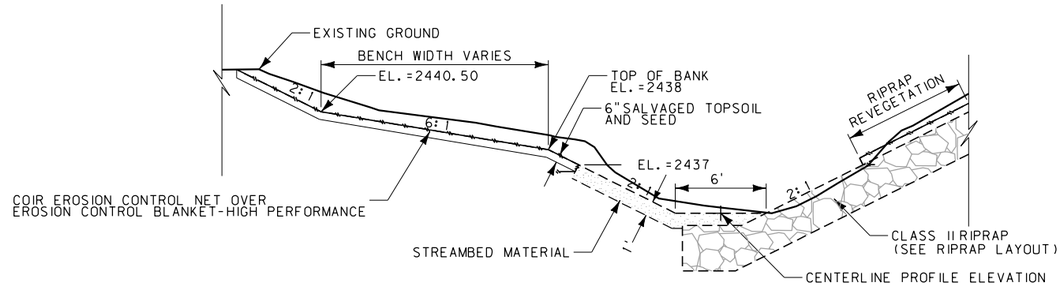
ESTIMATED CHANNEL MODIFICATION QUANTITIES	
ITEM	QUANTITY
RIPRAP REVEGETATION (sq. yd.)	315
SALVAGED TOPSOIL (cu. yd.)	25
COIR ERO. CONTROL NET (sq. yd.)	344
ERO. CONTROL BLANKET (sq. yd.)	344
STREAMBED MATERIAL (cu. yd.)	83
EMBANKMENT (cu. yd.)	266
STREAMBANK REVEGETATION (ac.)	0.03

SEE SUMMARY FRAMES

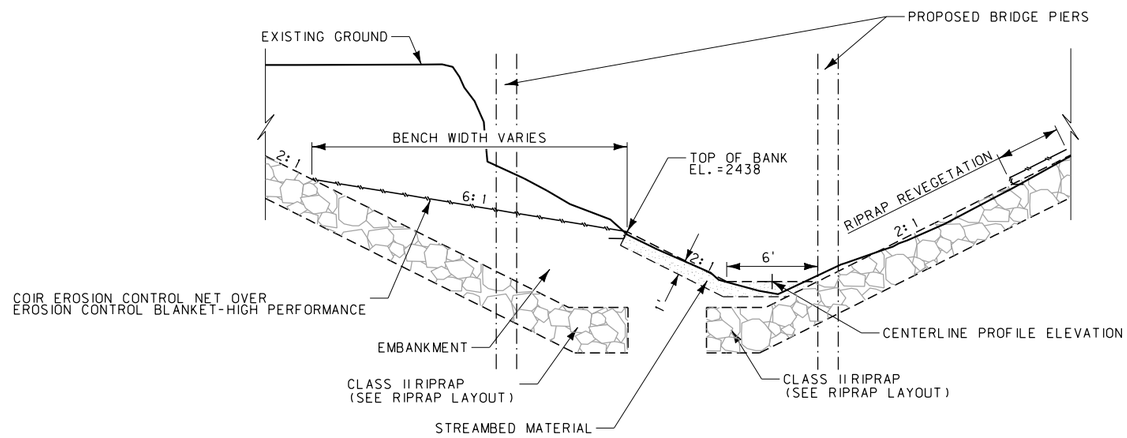
CLEAR CREEK
STA. 261+76
CHANNEL MODIFICATION
PLAN AND PROFILE
NO SCALE

AWARD COPY

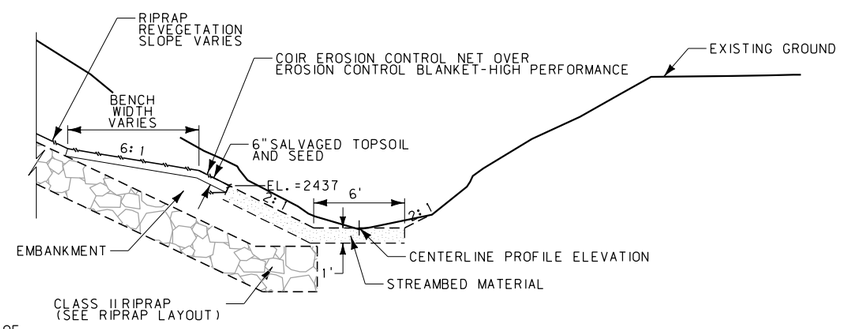
DETAIL



SECTION C-C



SECTION B-B



SECTION A-A

NOTES

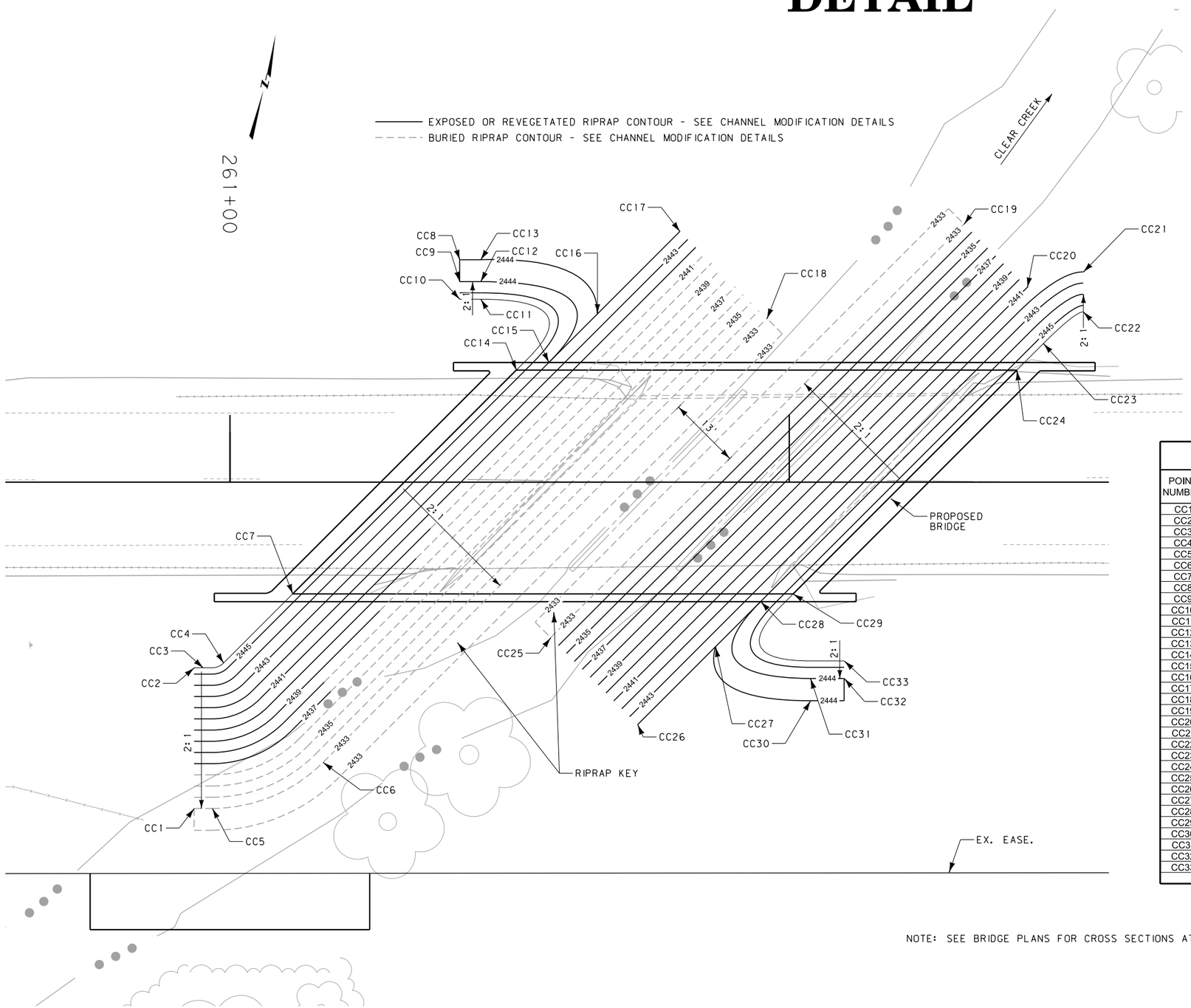
① ONLY TOPSOIL AND SEED OUTSIDE VERTICAL PROJECTION OF THE BRIDGE.

② FURNISH COIR EROSION CONTROL NET, COMPOSED OF 100% BRISTLE FIBER COIR, WITH A MINIMUM WEIGHT OF 20 OZ PER SQ. YARD, AND A MINIMUM DRY MD TENSILE STRENGTH OF 1500 LBS/FT.

③ INSTALL THE COIR NETTING AND EROSION CONTROL BLANKET USING MANUFACTURERS RECOMMENDATIONS FOR STREAM BANK APPLICATIONS OR AN ALTERNATIVE METHOD AS APPROVED BY THE PROJECT MANAGER. USE WOOD STAKES WITH A NOMINAL DIMENSION OF 2"X 1" AND A MINIMUM LENGTH OF 12" AS APPROVED BY THE PROJECT MANAGER. DRIVE STAKES THROUGH THE COIR NETTING INTO THE GROUND SO THAT THE TOP OF THE STAKE IS WITHIN 1" OF THE COIR NETTING SURFACE OR UNTIL REFUSAL. CUT OFF REFUSAL STAKES 1" ABOVE THE COIR NETTING SURFACE. MAXIMUM STAKE SPACING ON SEAMS AND EDGES IS 3 FEET. OVERLAP UPSTREAM BLANKET AND COIR NET OVER ADJACENT DOWNSTREAM SEGMENT.

CLEAR CREEK
STA. 261+76
CHANNEL MODIFICATION
CROSS SECTIONS
NO SCALE

DETAIL



CLEAR CREEK RIPRAP LAYOUT COORDINATE TABLE

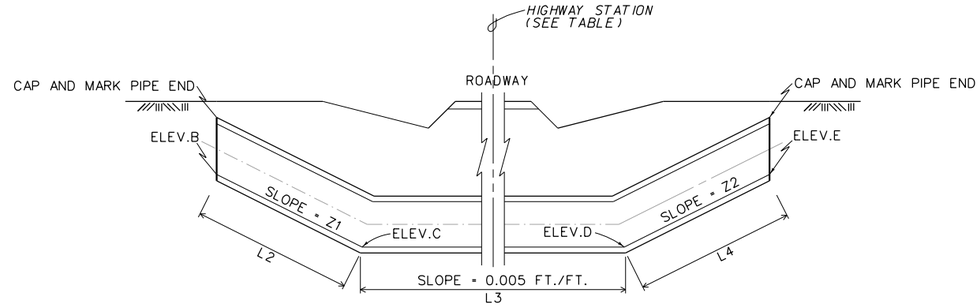
POINT NUMBER	N OR Y COORDINATE	E OR X COORDINATE	ELEVATION	REMARKS
CC1	1,582,234.734	1,992,072.598	2433.00	TOP OF RIPRAP KEY - INSIDE TOE
CC2	1,582,259.299	1,992,067.252	2445.57	TOP OF 2:1 RIPRAP SLOPE
CC3	1,582,259.989	1,992,070.422	2445.57	TOP OF 2:1 RIPRAP SLOPE - WARP TO PT. CC4
CC4	1,582,261.237	1,992,072.220	2445.57	TOP OF 2:1 RIPRAP SLOPE
CC5	1,582,235.424	1,992,075.769	2433.00	TOP OF RIPRAP KEY - INSIDE TOE - 28' RADIUS TO PT. CC6
CC6	1,582,247.674	1,992,093.387	2433.00	TOP OF RIPRAP KEY - INSIDE TOE
CC7	1,582,275.941	1,992,081.668	2445.57	TOP OF 2:1 RIPRAP SLOPE ALONG CAP
CC8	1,582,340.673	1,992,098.149	2444.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
CC9	1,582,336.852	1,992,098.981	2444.00	TOP OF RIPRAP KEY - INSIDE TOE
CC10	1,582,333.784	1,992,099.649	2445.57	TOP OF 2:1 RIPRAP SLOPE
CC11	1,582,334.582	1,992,103.318	2445.57	TOP OF 2:1 RIPRAP SLOPE - WARP TO PT. CC14
CC12	1,582,337.651	1,992,102.650	2444.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. CC15
CC13	1,582,341.471	1,992,101.818	2444.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. CC16
CC14	1,582,323.533	1,992,112.247	2445.57	TOP OF 2:1 RIPRAP SLOPE ALONG CAP
CC15	1,582,326.113	1,992,117.637	2444.00	TIE RIPRAP KEY TO 2:1 RIPRAP SLOPE
CC16	1,582,336.413	1,992,124.255	2444.00	TOP OF 2:1 RIPRAP SLOPE - END RIPRAP KEY
CC17	1,582,353.989	1,992,135.548	2444.00	TOP OF 2:1 RIPRAP SLOPE
CC18	1,582,342.096	1,992,154.057	2433.00	TOP OF RIPRAP KEY - INSIDE TOE
CC19	1,582,366.064	1,992,184.909	2433.00	TOP OF RIPRAP KEY - INSIDE TOE
CC20	1,582,357.415	1,992,198.370	2441.00	TOP OF RIPRAP ON 2:1 SLOPE
CC21	1,582,362.263	1,992,207.566	2442.00	BOTTOM OF RIPRAP SLOPE
CC22	1,582,355.286	1,992,209.084	2445.57	TOP OF 2:1 RIPRAP SLOPE - WARP TO PT. CC23
CC23	1,582,348.220	1,992,203.326	2445.57	TOP OF 2:1 RIPRAP SLOPE
CC24	1,582,342.563	1,992,199.691	2445.57	TOP OF 2:1 RIPRAP SLOPE ALONG CAP
CC25	1,582,278.123	1,992,128.405	2433.00	TOP OF RIPRAP KEY - INSIDE TOE
CC26	1,582,266.231	1,992,146.913	2444.00	TOP OF 2:1 RIPRAP SLOPE
CC27	1,582,282.786	1,992,157.550	2444.00	TOP OF 2:1 RIPRAP SLOPE - END RIPRAP KEY
CC28	1,582,292.392	1,992,163.722	2444.00	TIE RIPRAP KEY TO 2:1 RIPRAP SLOPE
CC29	1,582,294.972	1,992,169.113	2445.57	TOP OF 2:1 RIPRAP SLOPE ALONG CAP
CC30	1,582,276.979	1,992,176.184	2444.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. CC27
CC31	1,582,280.859	1,992,175.339	2444.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. CC28
CC32	1,582,282.146	1,992,181.251	2444.00	TOP OF RIPRAP KEY - INSIDE TOE
CC33	1,582,285.214	1,992,180.583	2445.57	TOP OF RIPRAP SLOPE - WARP TO PT. CC29

NOTE: SEE BRIDGE PLANS FOR CROSS SECTIONS AT END BENTS.

CLEAR CREEK
STA. 261+76
RIPRAP LAYOUT
NO SCALE

AWARD COPY

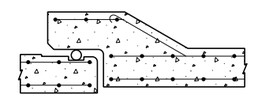
DETAIL



NOTE: PRE-CAST OR FIELD CAST BENDS AS SHOWN ON DETAILED DWG. NO. 603-26. CONSTRUCT WATERTIGHT JOINTS. GASKETS TO MEET THE REQUIREMENTS OF SUB-SECTION 603.03 OF STANDARD SPECIFICATIONS.

NOTE: MAXIMUM SLOPE FOR Z1 AND Z2 IS 2:1

NOTE: SEE CULVERT SUMMARY FOR ALLOWABLE OPTIONS

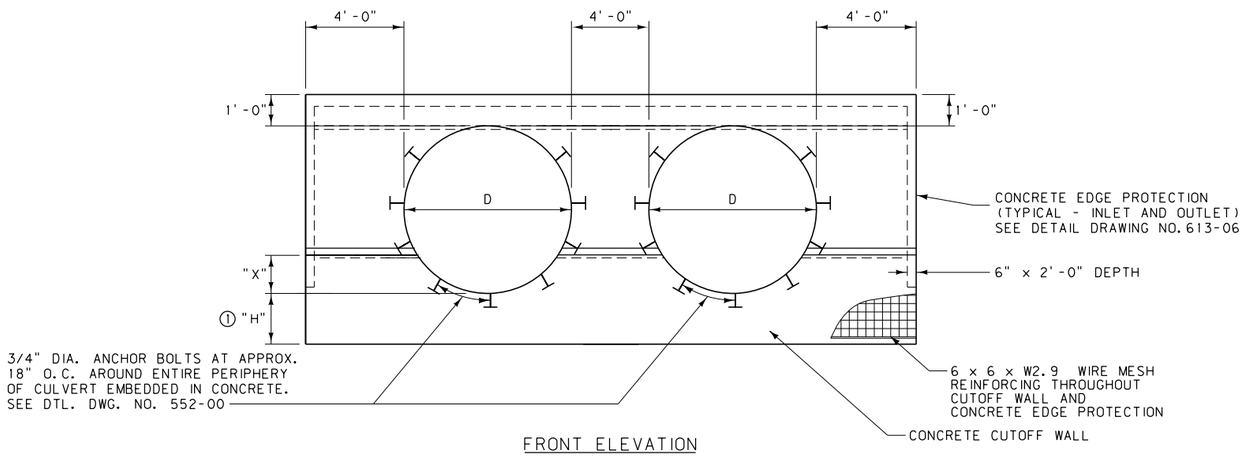


TYPE CX-4
RUBBER GASKET JOINT

HIGHWAY ℄ STATION	DIAMETER & TYPE	DIMENSIONS (ft)			INVERT ELEVATIONS			
		* L5 **	Z1	Z2	B	C	D	E
448+01	18" SIPHON	148	2:1	2:1	2419.66	2415.20	2414.56	2419.30

* L5= TOTAL PIPE LENGTH 0R L2+L3+L4
** QUANTITIES INCLUDED IN CULVERT SUMMARY ARE FOR ESTIMATING PURPOSES ONLY.

STA. 448+01
IRRIGATION SIPHON DETAIL
NO SCALE



FRONT ELEVATION

NOTES:

① 3'-0" MIN. OR 1'-0" BELOW BOTTOM OF FOUNDATION MATERIAL IF SPECIFIED.

② THE CONTRACTOR HAS THE OPTION OF USING A SAND CUSHION AS APPROVED BY THE PROJECT MANAGER TO FACILITATE CULVERT INSTALLATION. IF A SAND CUSHION IS USED, THAT MATERIAL WILL BE MEASURED AND PAID FOR AS GRANULAR BEDDING.

③ COMPACT AND PLACE SIDE FILL PER SECTION 603 AND 203.

④ FURNISH GRANULAR BEDDING AND FOUNDATION MATERIAL PER SECTION 701.

⑤ DIMENSION D THE INSIDE PIPE DIAMETER. DIMENSION T IS THE CORRUGATION DEPTH.

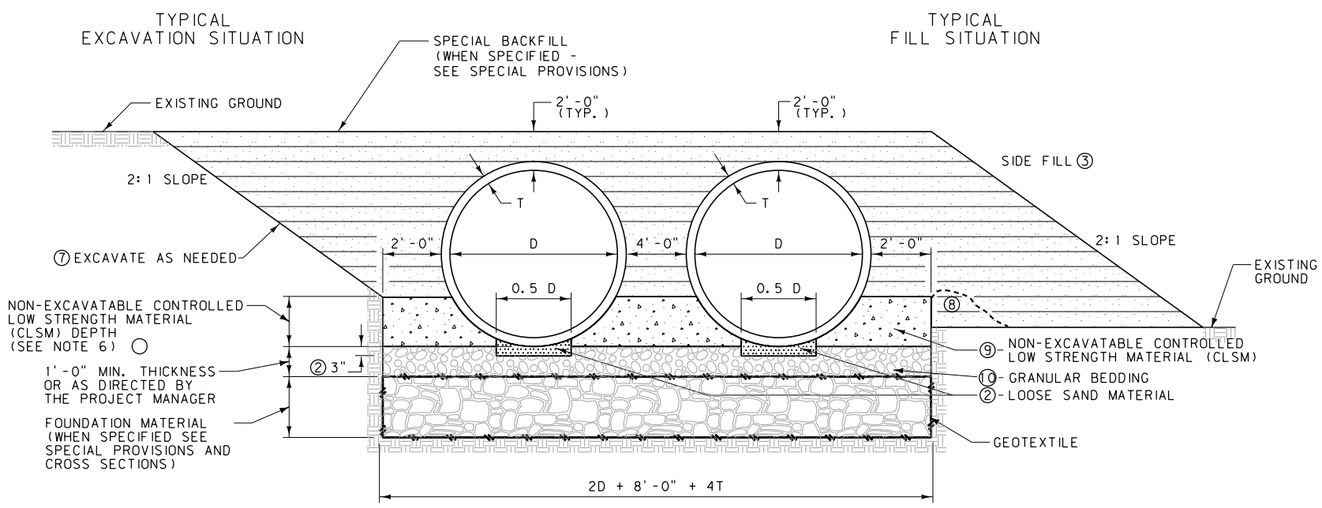
⑥ THE NON-EXCAVATABLE CONTROLLED LOW STRENGTH MATERIAL (CLSM) DEPTH FOR METAL PIPE IS "X" + T. SEE DETAIL DRAWING NO. 603-32 FOR "X" DIMENSIONS OF CIRCULAR METAL PIPES.

⑦ EXCAVATE A SUFFICIENT AMOUNT TO PROVIDE A SAFE WORKING ENVIRONMENT AND TO ALLOW ACIEVEMENT 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.

⑧ BUILD BERM WITH FILL MATERIAL AS NEEDED TO CONTAIN THE NON-EXCAVATABLE CONTROLLED LOW STRENGTH MATERIAL (CLSM) BEDDING TO THE PROPER DEPTH.

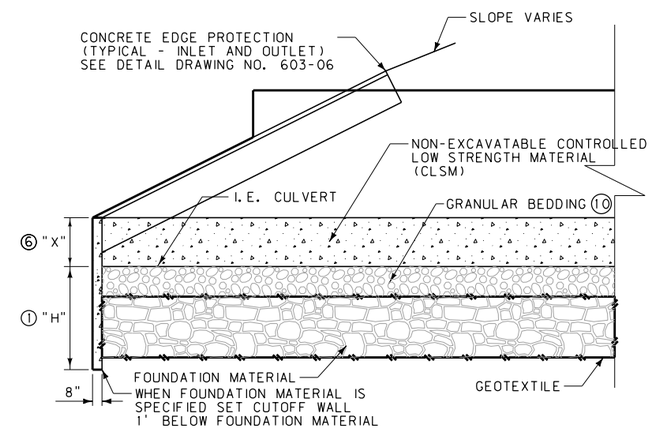
⑨ PLACE NON-EXCAVATABLE CONTROLLED LOW STRENGTH MATERIAL (CLSM) MEETING THE REQUIREMENTS OF SECTION 551 OF THE STANDARD SPECIFICATIONS.

⑩ COMPACT GRANULAR BEDDING BY PROOF ROLLING WITH A VIBRATORY COMPACTOR IN 12" LIFTS OR BY USING A METHOD APPROVED BY THE PROJECT MANAGER



BEDDING DETAILS

(CUTOFF WALLS AND EDGE PROT. OMITTED FOR CLARITY)



SIDE ELEVATION

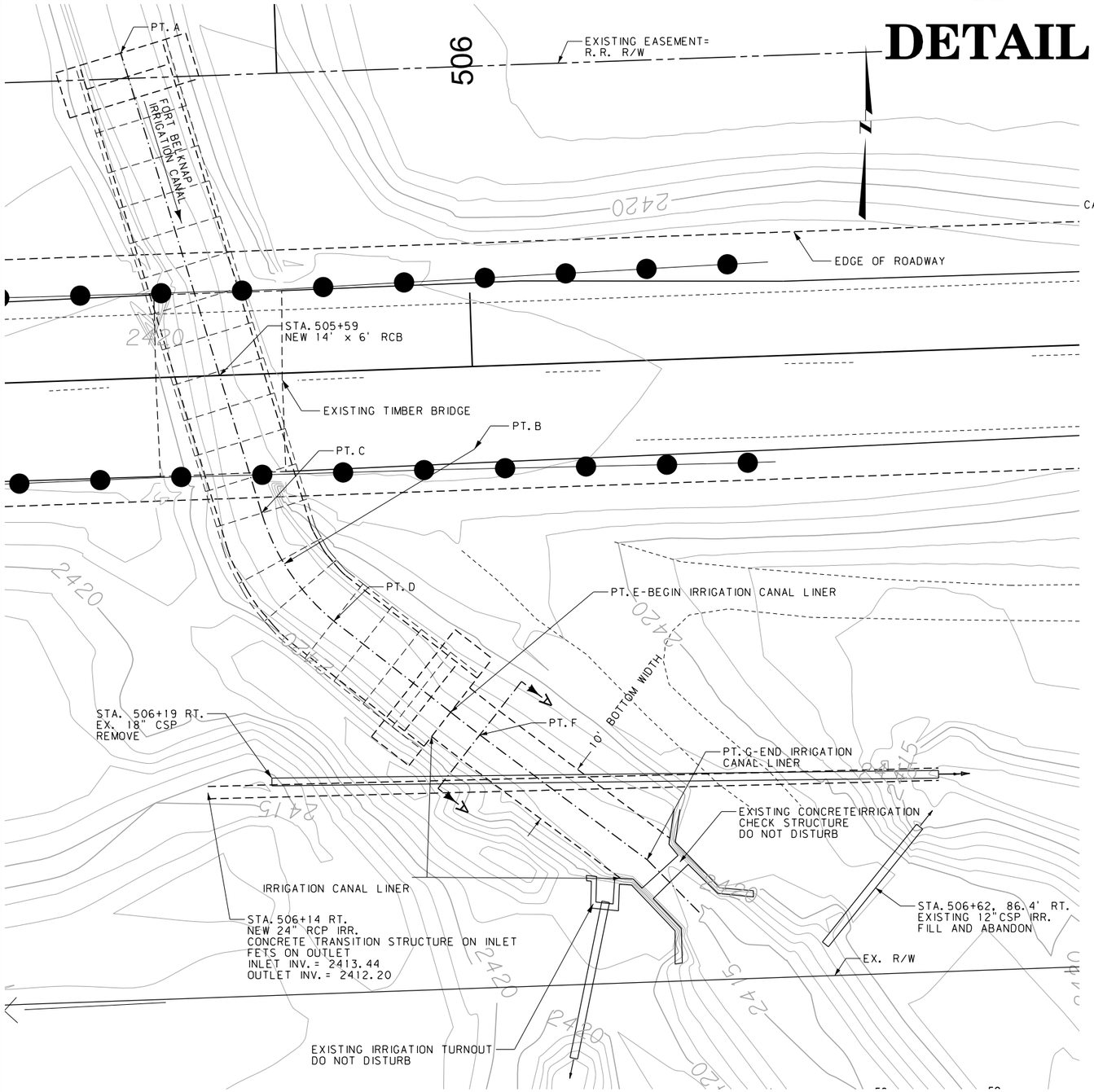
DIMENSIONS					
STATION	D (FT.)	LENGTH (FT.)	"T" (IN.)	"X" (FT.)	"H" (FT.)
463+70	4.5	102	5.5	1.125	4.0

NOTE: INCLUDE REINFORCING MATERIAL IN THE UNIT PRICE BID PER CUBIC YARD OF CLASS GENERAL CONCRETE.
INCLUDE ANCHOR BOLTS IN THE UNIT PRICE BID PER LINEAR FOOT OF CULVERT.
QUANTITIES ARE BASED ON THE DIMENSIONS IN THE TABLE.

DETAIL
BEDDING FOR DOUBLE
PIPE CULVERTS
NO SCALE

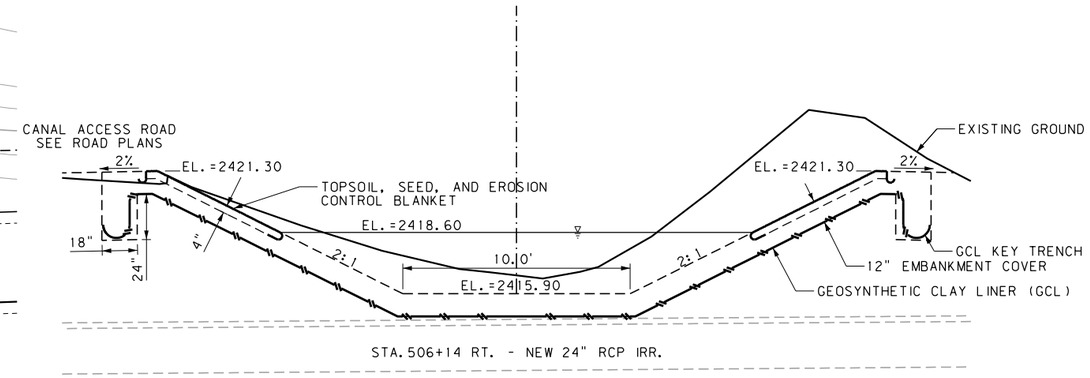
AWARD COPY

DETAIL



PLAN VIEW

SCALE: 1"=20'



SECTION A-A

IRRIGATION CANAL LINER - PT. E TO PT. G (40')

NOTE:

1. TIE GCL TO RCB AND EXISTING CONCRETE IRRIGATION CHECK STRUCTURE PER MANUFACTURERS RECOMMENDATIONS.
2. USE 6" LONG STAKES TO ANCHOR EROSION CONTROL BLANKET. DO NOT PUNCTURE GCL WITH STAKES.
3. VARY BOTTOM WIDTH AND SIDE SLOPES AS NEEDED TO TIE TO THE EXISTING CONCRETE IRRIGATION CHECK STRUCTURE AND IRRIGATION TURNOUT.

COORDINATE TABLE*

POINT	NORTHING (FT)	EASTING (FT)	INVERT ELEVATION	COMMMENT
A	1,584,499.050	2,016,339.050	INV. =2415.01	
B	1,584,435.308	2,016,396.381	N. A.	R=36' ±
C	1,584,424.961	2,016,361.900	INV. =2414.94	
D	1,584,407.437	2,016,373.594	INV. =2414.92	
E	1,584,392.673	2,016,392.673	INV. =2414.90, F.L. =2415.90	BEGIN IRRIGATION CANAL LINER
F	1,584,388.982	2,016,397.246	F.L. =2415.90	
G	1,584,368.754	2,016,424.370	F.L. =2415.90	END IRRIGATION CANAL LINER

* ACTUAL RCB ALIGNMENT AND BEND LAYOUT BETWEEN POINTS C & D TO BE DETERMINED BY PRECAST MANUFACTURER.

IRRIGATION CANAL LINER QUANTITIES

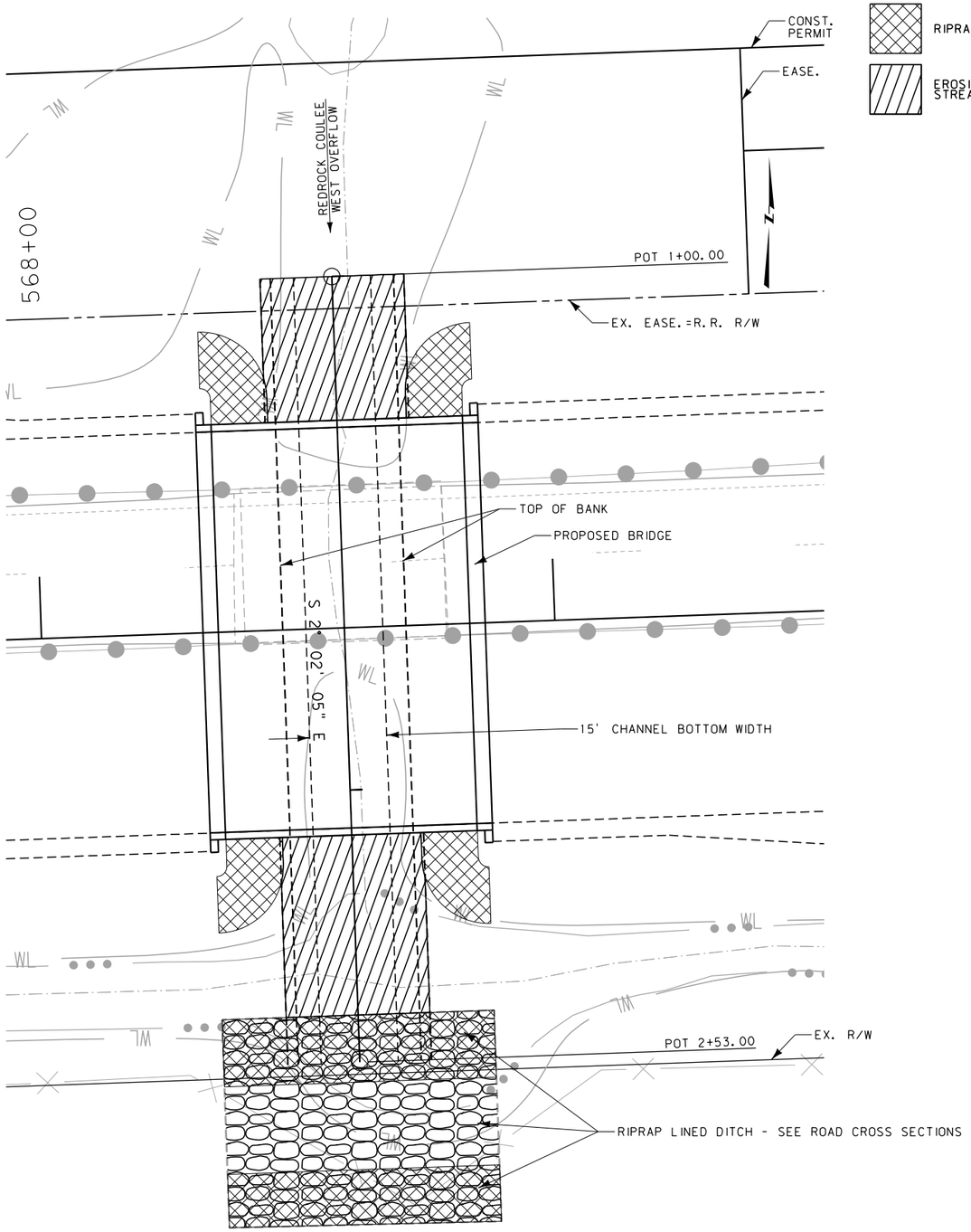
ITEM	QUANTITY (YD^2)	QUANTITY (YD^3)
UNCLASSIFIED CHANNEL EXC.		125
EMBANKMENT +		75
GEOSYNTHETIC CLAY LINER (GCL)	189	
EROSION CONTROL BLANKET	74	

SEE SUMMARY FRAMES

STA.505+59
RCB LAYOUT WITH BENDS
IRRIGATION CANAL LINER
NO SCALE

AWARD COPY

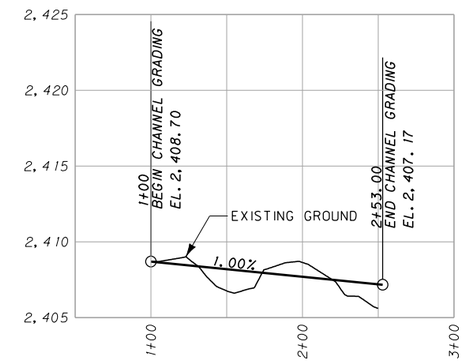
DETAIL



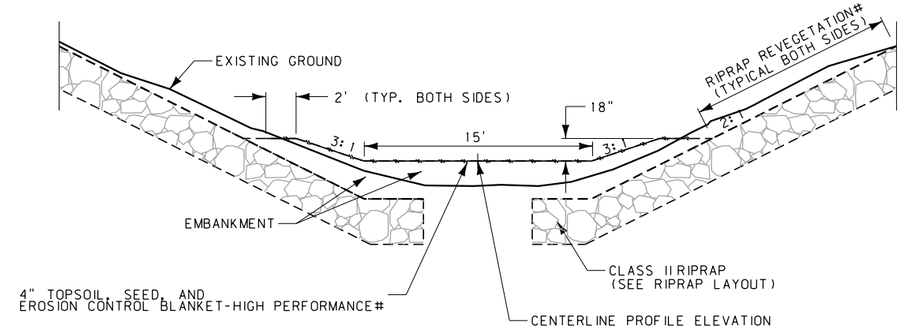
PLAN

RIPRAP REVEGETATION

EROSION CONTROL BLANKET-HIGH PERFORMANCE STREAMBANK REVEGETATION



PROPOSED CHANNEL PROFILE



EROSION CONTROL BLANKET, STREAMBANK REVEGETATION, AND RIPRAP REVEGETATION ONLY OUTSIDE VERTICAL PROJECTION OF THE BRIDGE - SEE PLAN VIEW FOR LIMITS

TYPICAL SECTION

CHANNEL GRADING CENTERLINE COORDINATE TABLE

STATION	N OR Y COORDINATE (FT)	E OR X COORDINATE (FT)	ELEVATION (FT)	DESCRIPTION
1+00.00	1,584,726.115	2,027,649.079	2408.70	BEGIN CHANNEL GRADING
2+53.00	1,584,573.212	2,027,654.512	2407.17	END CHANNEL GRADING

ESTIMATED CHANNEL GRADING QUANTITIES

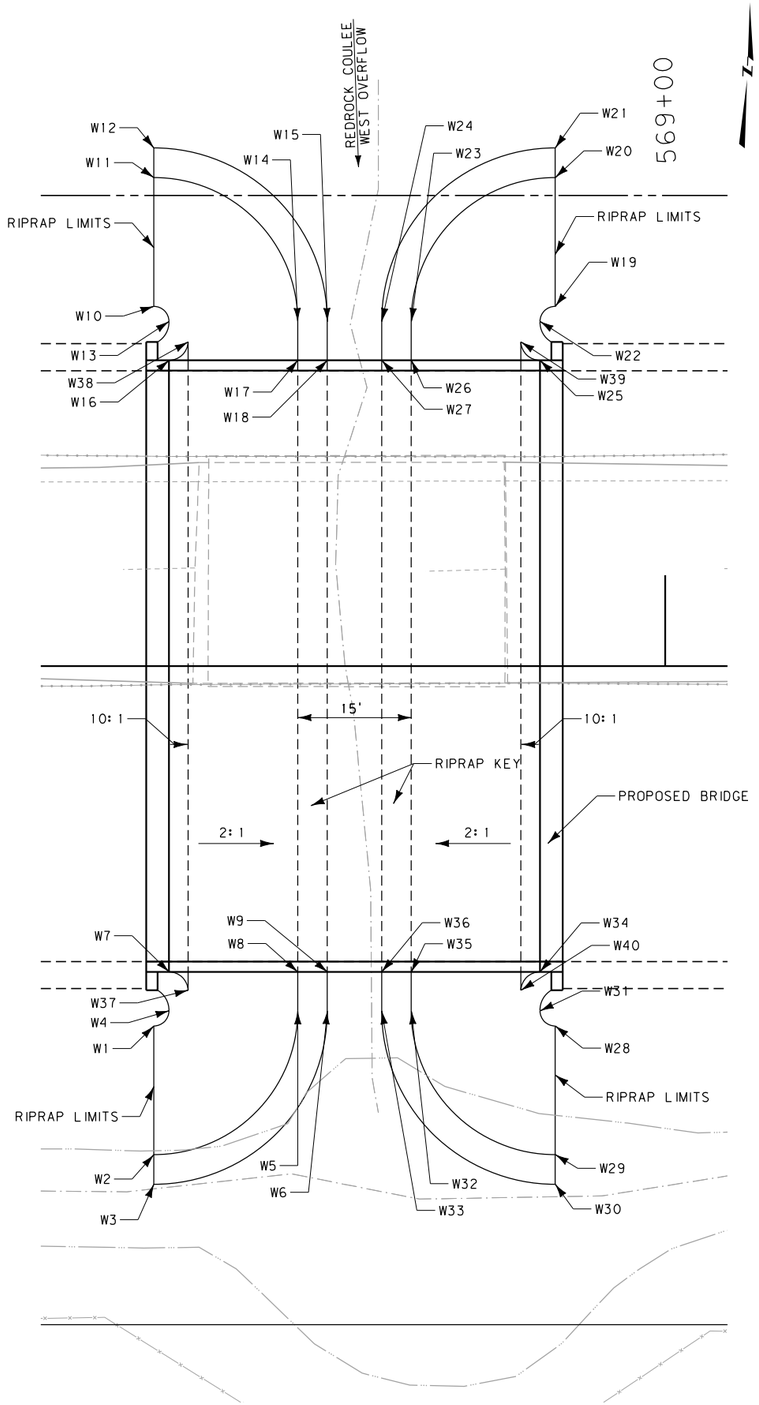
ITEM	QUANTITY
RIPRAP REVEGETATION (sq. yd.)	92
SALVAGED TOPSOIL (cu. yd.)	24
ERO. CONTROL BLANKET (sq. yd.)	213
EMBANKMENT +(cu. yd.)	275
STREAMBANK REVEGETATION (ac.)	0.04

SEE SUMMARY FRAMES

REDROCK COULEE
WEST OVERFLOW
STA. 568+59
CHANNEL GRADING
(NO SCALE)

AWARD COPY

DETAIL



REDROCK COULEE WEST OVERFLOW STA. 568+59

NOTE: SEE BRIDGE PLANS FOR CROSS SECTIONS AT END BENTS.

REDROCK COULEE WEST OVERFLOW RIPRAP LAYOUT COORDINATE TABLE

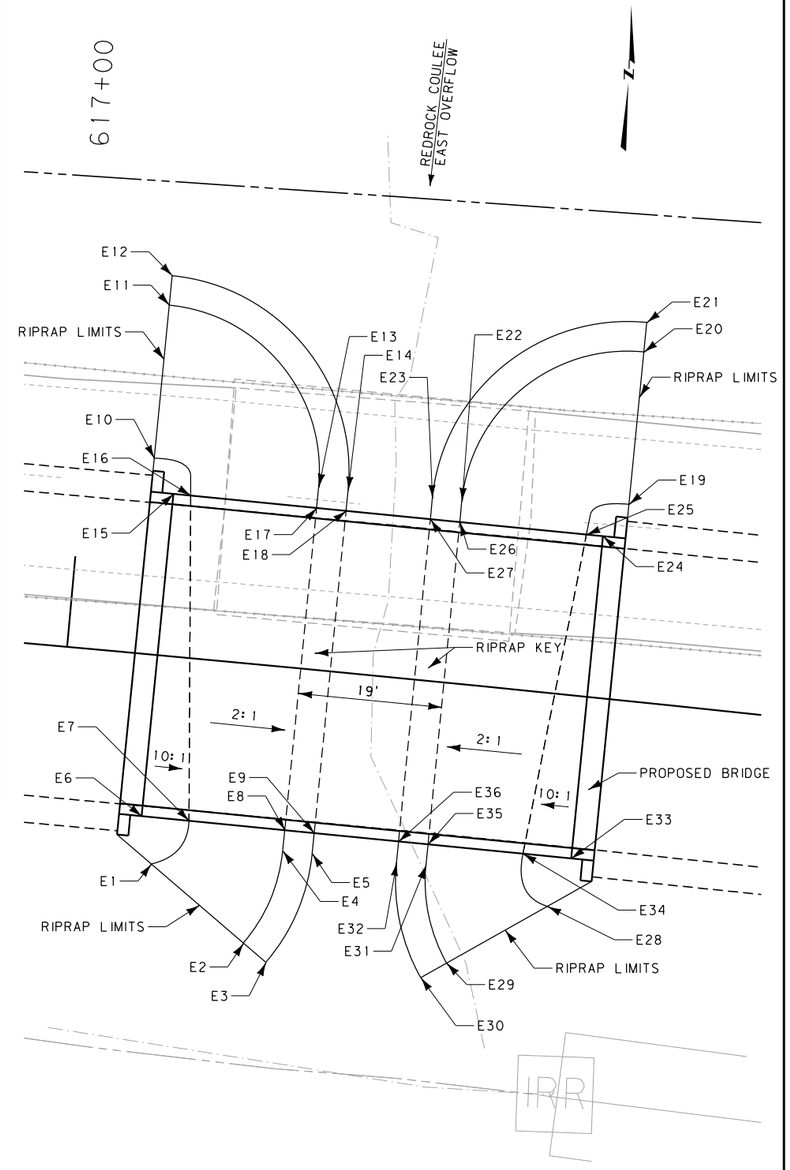
POINT NUMBER	N OR Y COORDINATE	E OR X COORDINATE	ELEVATION	REMARKS
W1	1,584,609.337	2,022,626.711	2414.50	TOP OF 2:1 RIPRAP SLOPE
W2	1,584,592.347	2,022,627.315	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
W3	1,584,588.440	2,022,627.454	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
W4	1,584,611.406	2,022,628.639	2414.50	TOP OF 2:1 RIPRAP SLOPE - WARP TO PT. W1
W5	1,584,612.010	2,022,645.628	2406.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. W2
W6	1,584,612.149	2,022,649.536	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. W3
W7	1,584,616.529	2,022,628.467	2413.49	TOP OF RIPRAP SLOPE ALONG CAP
W8	1,584,617.132	2,022,645.446	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
W9	1,584,617.271	2,022,649.354	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
W10	1,584,704.277	2,022,623.338	2414.50	TOP OF 2:1 RIPRAP SLOPE
W11	1,584,721.266	2,022,622.735	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
W12	1,584,725.174	2,022,622.596	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
W13	1,584,702.349	2,022,625.408	2414.50	TOP OF 2:1 RIPRAP SLOPE - WARP TO PT. W10
W14	1,584,702.953	2,022,642.397	2406.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. W11
W15	1,584,703.091	2,022,646.305	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. W12
W16	1,584,697.228	2,022,625.600	2413.49	TOP OF RIPRAP SLOPE ALONG CAP
W17	1,584,697.831	2,022,642.579	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
W18	1,584,697.970	2,022,646.487	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
W19	1,584,706.159	2,022,676.305	2414.50	TOP OF 2:1 RIPRAP SLOPE
W20	1,584,723.148	2,022,675.701	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
W21	1,584,727.055	2,022,675.563	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
W22	1,584,704.089	2,022,674.377	2414.50	TOP OF 2:1 RIPRAP SLOPE - WARP TO PT. W19
W23	1,584,703.485	2,022,657.388	2406.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. W20
W24	1,584,703.346	2,022,653.480	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. W21
W25	1,584,698.967	2,022,674.549	2413.49	TOP OF RIPRAP SLOPE ALONG CAP
W26	1,584,698.363	2,022,657.570	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
W27	1,584,698.225	2,022,653.662	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
W28	1,584,611.218	2,022,679.678	2414.50	TOP OF 2:1 RIPRAP SLOPE - WARP TO PT. W31
W29	1,584,594.229	2,022,680.282	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
W30	1,584,590.322	2,022,680.420	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
W31	1,584,613.146	2,022,677.608	2414.50	TOP OF 2:1 RIPRAP SLOPE
W32	1,584,612.543	2,022,660.619	2406.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. W29
W33	1,584,612.404	2,022,656.711	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. W30
W34	1,584,618.268	2,022,677.416	2413.49	TOP OF RIPRAP SLOPE ALONG CAP
W35	1,584,617.664	2,022,660.437	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
W36	1,584,617.526	2,022,656.529	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
W37	1,584,614.203	2,022,631.061	2413.24	TOP OF RIPRAP AT 10:1/2:1 SLOPE BREAK
W38	1,584,699.732	2,022,628.023	2413.24	TOP OF RIPRAP AT 10:1/2:1 SLOPE BREAK
W39	1,584,701.293	2,022,671.955	2413.24	TOP OF RIPRAP AT 10:1/2:1 SLOPE BREAK
W40	1,584,615.763	2,022,674.994	2413.24	TOP OF RIPRAP AT 10:1/2:1 SLOPE BREAK

NOTE: SEE BRIDGE PLANS FOR CROSS SECTIONS AT END BENTS.

REDROCK COULEE EAST OVERFLOW RIPRAP LAYOUT COORDINATE TABLE

POINT NUMBER	N OR Y COORDINATE	E OR X COORDINATE	ELEVATION	REMARKS
E1	1,584,777.054	2,027,501.722	2414.02	TOP OF 2:1 RIPRAP SLOPE
E2	1,584,767.049	2,027,514.254	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
E3	1,584,764.610	2,027,517.310	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
E4	1,584,779.385	2,027,519.015	2406.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. E2
E5	1,584,779.139	2,027,522.917	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. E3
E6	1,584,783.321	2,027,500.239	2412.98	TOP OF RIPRAP SLOPE ALONG CAP
E7	1,584,782.926	2,027,506.504	2412.35	TOP OF RIPRAP AT 10:1/2:1 SLOPE BREAK
E8	1,584,782.128	2,027,519.187	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
E9	1,584,781.882	2,027,523.089	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
E10	1,584,830.583	2,027,500.207	2416.09	TOP OF 2:1 RIPRAP SLOPE
E11	1,584,850.863	2,027,501.484	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
E12	1,584,854.765	2,027,501.729	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
E13	1,584,827.540	2,027,522.045	2406.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. E11
E14	1,584,827.294	2,027,525.947	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. E12
E15	1,584,825.986	2,027,502.924	2414.58	TOP OF RIPRAP SLOPE ALONG CAP
E16	1,584,825.843	2,027,505.200	2414.35	TOP OF RIPRAP AT 10:1/2:1 SLOPE BREAK
E17	1,584,824.794	2,027,521.872	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
E18	1,584,824.548	2,027,525.775	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
E19	1,584,826.727	2,027,563.061	2416.05	TOP OF 2:1 RIPRAP SLOPE
E20	1,584,846.904	2,027,564.331	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
E21	1,584,850.806	2,027,564.576	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
E22	1,584,826.343	2,027,541.007	2406.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. E20
E23	1,584,826.589	2,027,537.105	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. E21
E24	1,584,822.408	2,027,559.783	2414.62	TOP OF RIPRAP SLOPE ALONG CAP
E25	1,584,822.545	2,027,557.602	2414.40	TOP OF RIPRAP AT 10:1/2:1 SLOPE BREAK
E26	1,584,823.600	2,027,540.835	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
E27	1,584,823.846	2,027,536.932	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
E28	1,584,773.318	2,027,554.202	2413.65	TOP OF 2:1 RIPRAP SLOPE
E29	1,584,765.353	2,027,541.152	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
E30	1,584,763.316	2,027,537.815	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
E31	1,584,778.188	2,027,537.976	2406.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. E29
E32	1,584,778.434	2,027,534.074	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. E30
E33	1,584,779.742	2,027,557.098	2412.94	TOP OF RIPRAP SLOPE ALONG CAP
E34	1,584,780.143	2,027,550.723	2412.30	TOP OF RIPRAP AT 10:1/2:1 SLOPE BREAK
E35	1,584,780.934	2,027,538.149	2406.00	TOP OF RIPRAP KEY - INSIDE TOE
E36	1,584,781.180	2,027,534.247	2406.00	TOP OF RIPRAP KEY - OUTSIDE EDGE

NOTE: SEE BRIDGE PLANS FOR CROSS SECTIONS AT END BENTS.



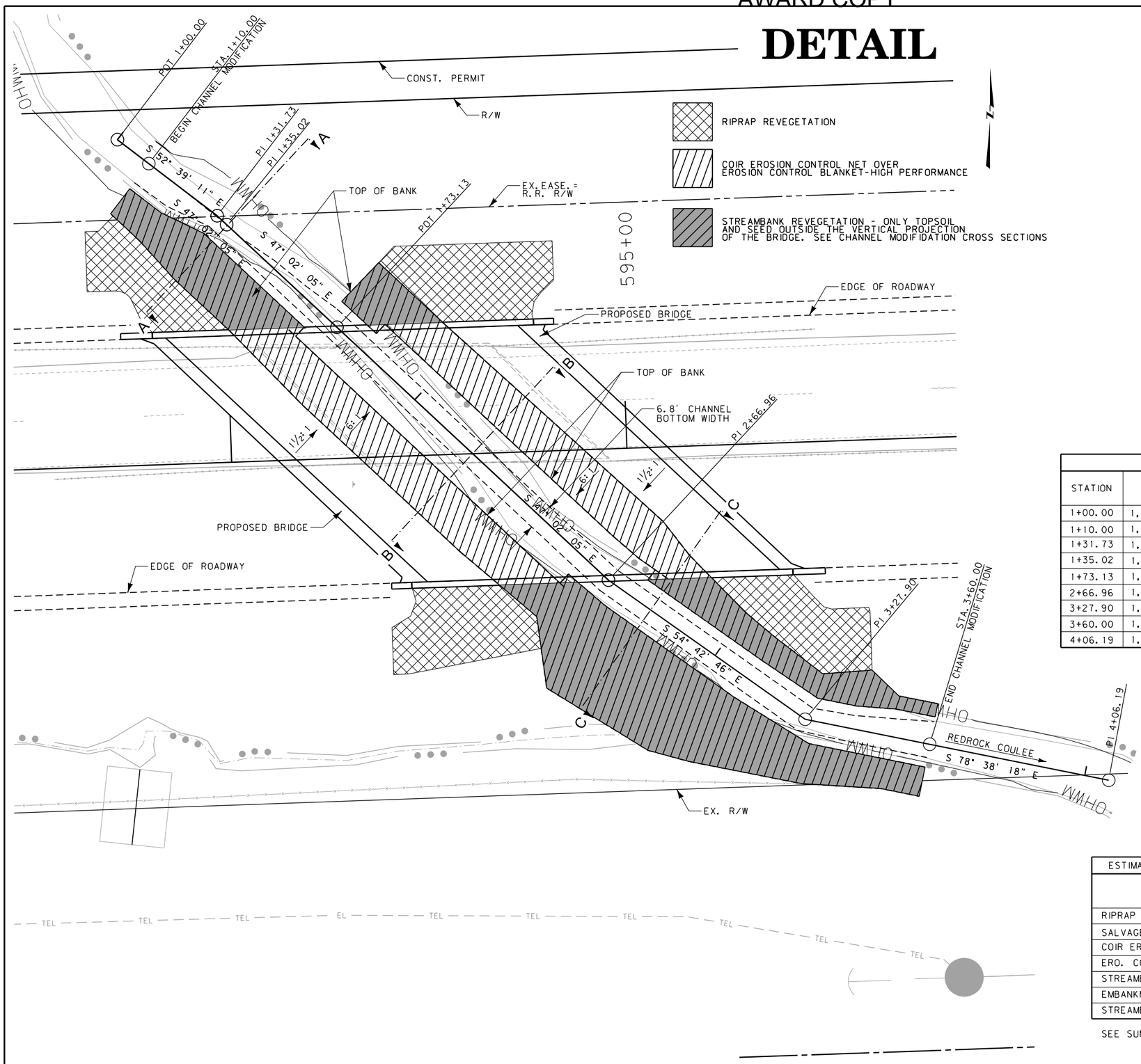
REDROCK COULEE EAST OVERFLOW STA. 617+40.50

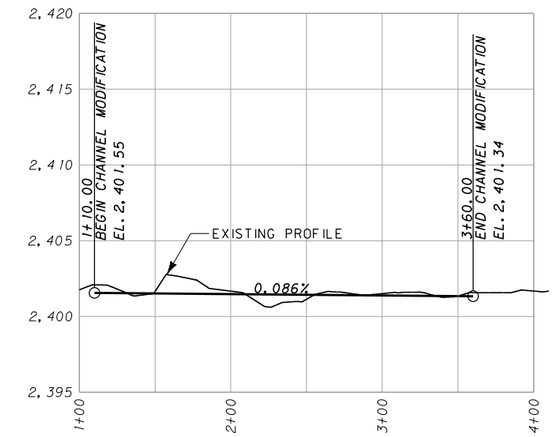
NOTE: SEE BRIDGE PLANS FOR CROSS SECTIONS AT END BENTS.

REDROCK COULEE
WEST OVERFLOW
STA. 568+59
RIPRAP LAYOUT
AND
REDROCK COULEE
EAST OVERFLOW
STA. 617+40.50
RIPRAP LAYOUT
(NO SCALE)

AWARD COPY

DETAIL





PROPOSED CHANNEL PROFILE

CHANNEL MODIFICATION CENTERLINE COORDINATE TABLE				
STATION	N OR Y COORDINATE (FT)	E OR X COORDINATE (FT)	ELEVATION (FT)	DESCRIPTION
1+00.00	1,584,829.579	2,025,162.012		
1+10.00	1,584,823.512	2,025,169.962	2401.55	BEGIN CHANNEL MODIFICATION
1+31.73	1,584,810.330	2,025,187.237	2401.53	
1+35.02	1,584,808.089	2,025,189.643	2401.53	
1+73.13	1,584,782.114	2,025,217.532	2401.50	
2+66.96	1,584,718.164	2,025,286.193	2401.42	
3+27.90	1,584,682.962	2,025,335.933	2401.36	BEGIN TRANSITION TO EXISTING CHANNEL
3+60.00	1,584,676.638	2,025,367.409	2401.34	END CHANNEL MODIFICATION
4+06.19	1,584,667.539	2,025,412.691	N.A.	

ESTIMATED CHANNEL MODIFICATION QUANTITIES	
ITEM	QUANTITY
RIPRAP REVEGETATION (sq. yd.)	313
SALVAGED TOPSOIL (cu. yd.)	62
COIR ERO. CONTROL NET (sq. yd.)	716
ERO. CONTROL BLANKET (sq. yd.)	716
STREAMBED MATERIAL (cu. yd.)	177
EMBANKMENT +(cu. yd.)	575
STREAMBANK REVEGETATION (ac.)	0.08

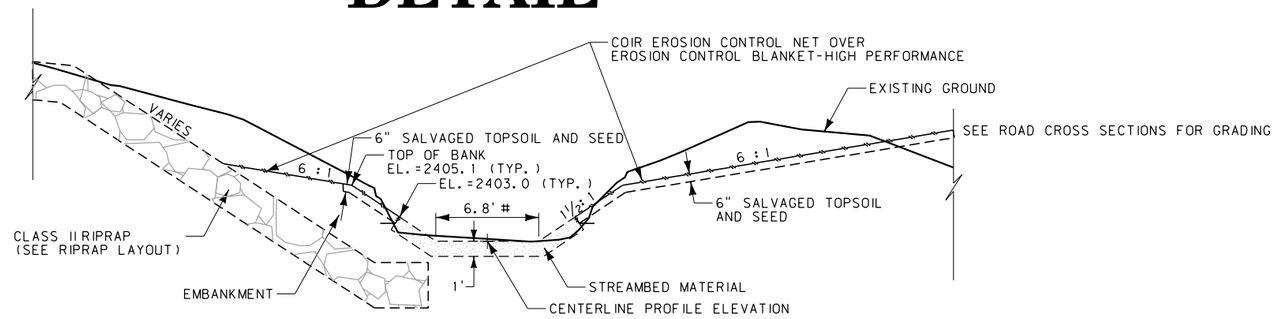
SEE SUMMARY FRAMES

REDROCK COULEE
STA. 594+61
CHANNEL MODIFICATION
PLAN AND PROFILE
NO SCALE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddethy2.dgn	DESIGNED BY K. MARCOUX	7-20-2016	HYDRAULICS PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY K. MARCOUX	7-20-2016			
1		3:10:26 PM CPS - U2160	CHECKED BY		BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	62

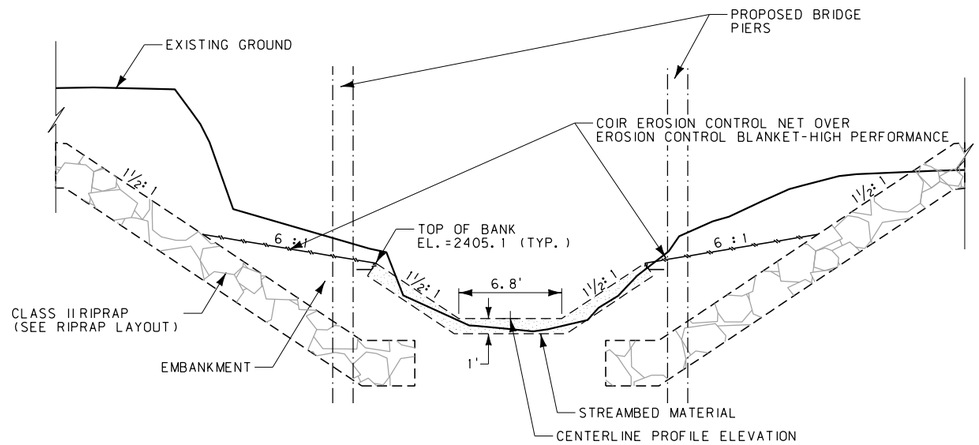
AWARD COPY

DETAIL

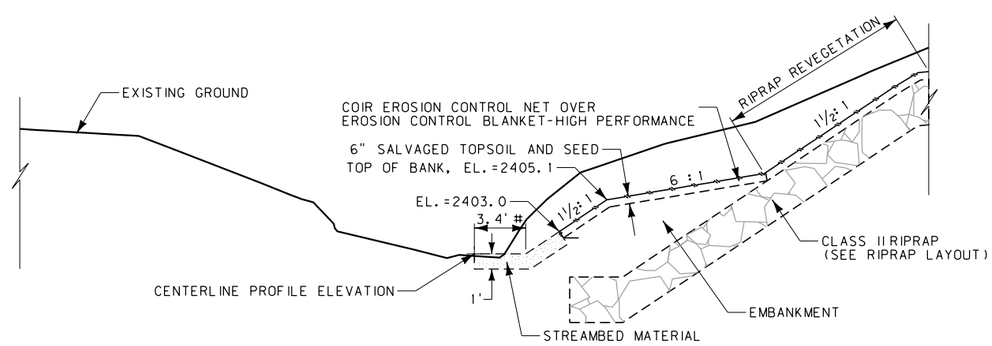


VARY WIDTH BETWEEN STA. 3+40 AND STA. 3+60 TO MATCH EXISITNG CHANNEL AT STA. 3+60.

SECTION C-C



SECTION B-B



VARY WIDTH BETWEEN STA. 1+10 AND STA. 1+31.73 TO TIE TO EXISTING STREAMBANK AT STA. 1+10.

SECTION A-A

NOTES

① ONLY TOPSOIL AND SEED OUTSIDE VERTICAL PROJECTION OF THE BRIDGE.

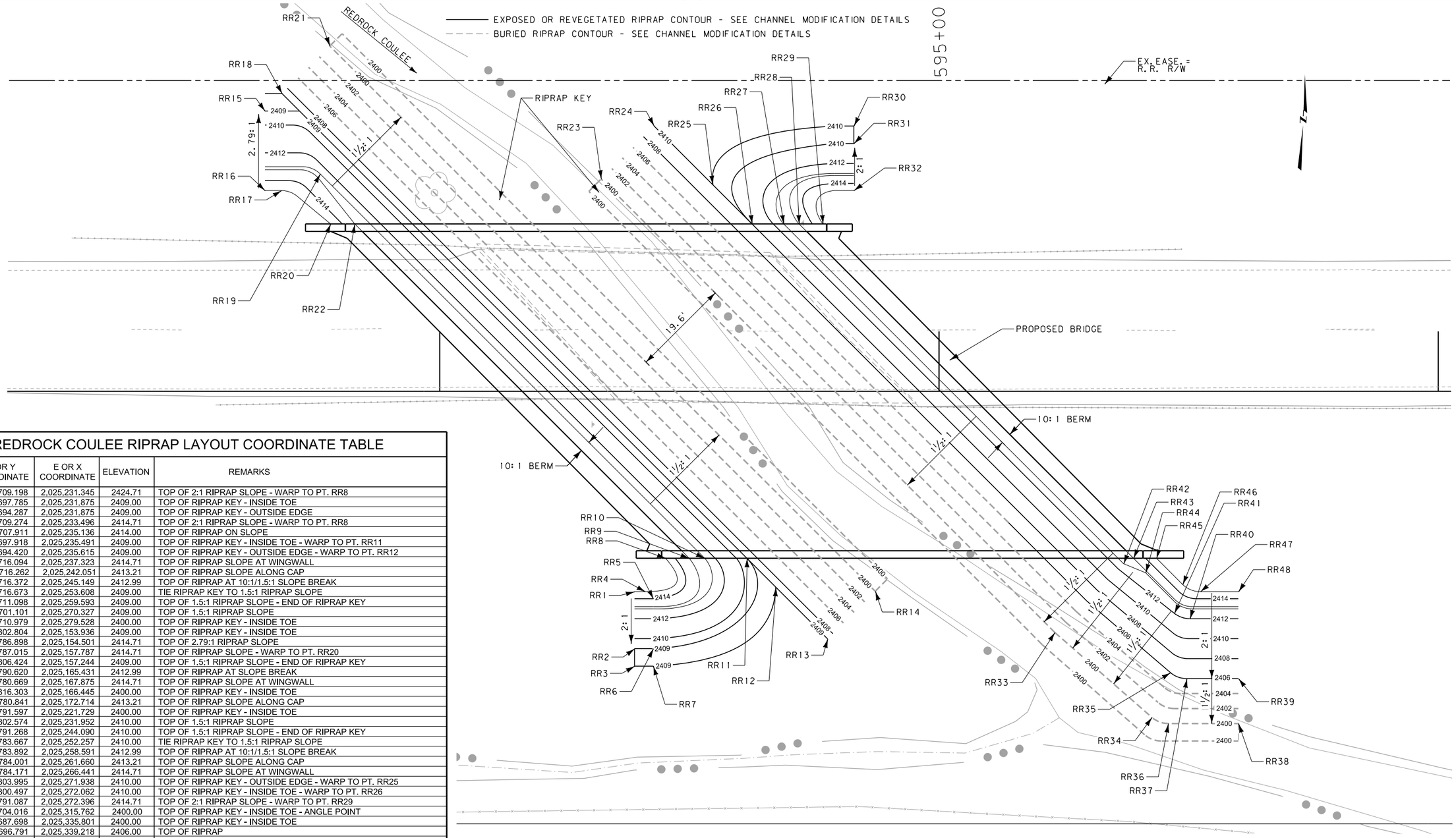
② FURNISH COIR EROSION CONTROL NET, COMPOSED OF 100% BRISTLE FIBER COIR, WITH A MINIMUM WEIGHT OF 20 OZ PER SQ. YD, AND A MINIMUM DRY MD TENSILE STRENGTH OF 1500 LBS/FT.

③ INSTALL THE COIR NETTING AND EROSION CONTROL BLANKET USING MANUFACTURERS RECOMMENDATIONS FOR STREAM BANK APPLICATIONS OR AN ALTERNATIVE METHOD AS APPROVED BY THE PROJECT MANAGER. USE WOOD STAKES WITH A NOMINAL DIMENSION OF 2"X 1" AND A MINIMUM LENGTH OF 12" AS APPROVED BY THE PROJECT MANAGER. DRIVE STAKES THROUGH THE COIR NETTING INTO THE GROUND SO THAT THE TOP OF THE STAKE IS WITHIN 1" OF THE COIR NETTING SURFACE OR UNTIL REFUSAL. CUT OFF REFUSAL STAKES 1" ABOVE THE COIR NETTING SURFACE. MAXIMUM STAKE SPACING ON SEAMS AND EDGES IS 3 FEET. OVERLAP UPSTREAM BLANKET AND COIR NET OVER ADJACENT DOWNSTREAM SEGMENT.

REDROCK COULEE
STA. 594+61
CHANNEL MODIFICATION
CROSS SECTIONS
NO SCALE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddethy2.dgn	DESIGNED BY K. MARCOUX	7-20-2016	HYDRAULICS PLANS		LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY K. MARCOUX	7-20-2016				
1		3:10:29 PM CPS - U2160	CHECKED BY		BLAINE COUNTY		CSF= 0.99965875 / UPN 6281000	63

AWARD COPY



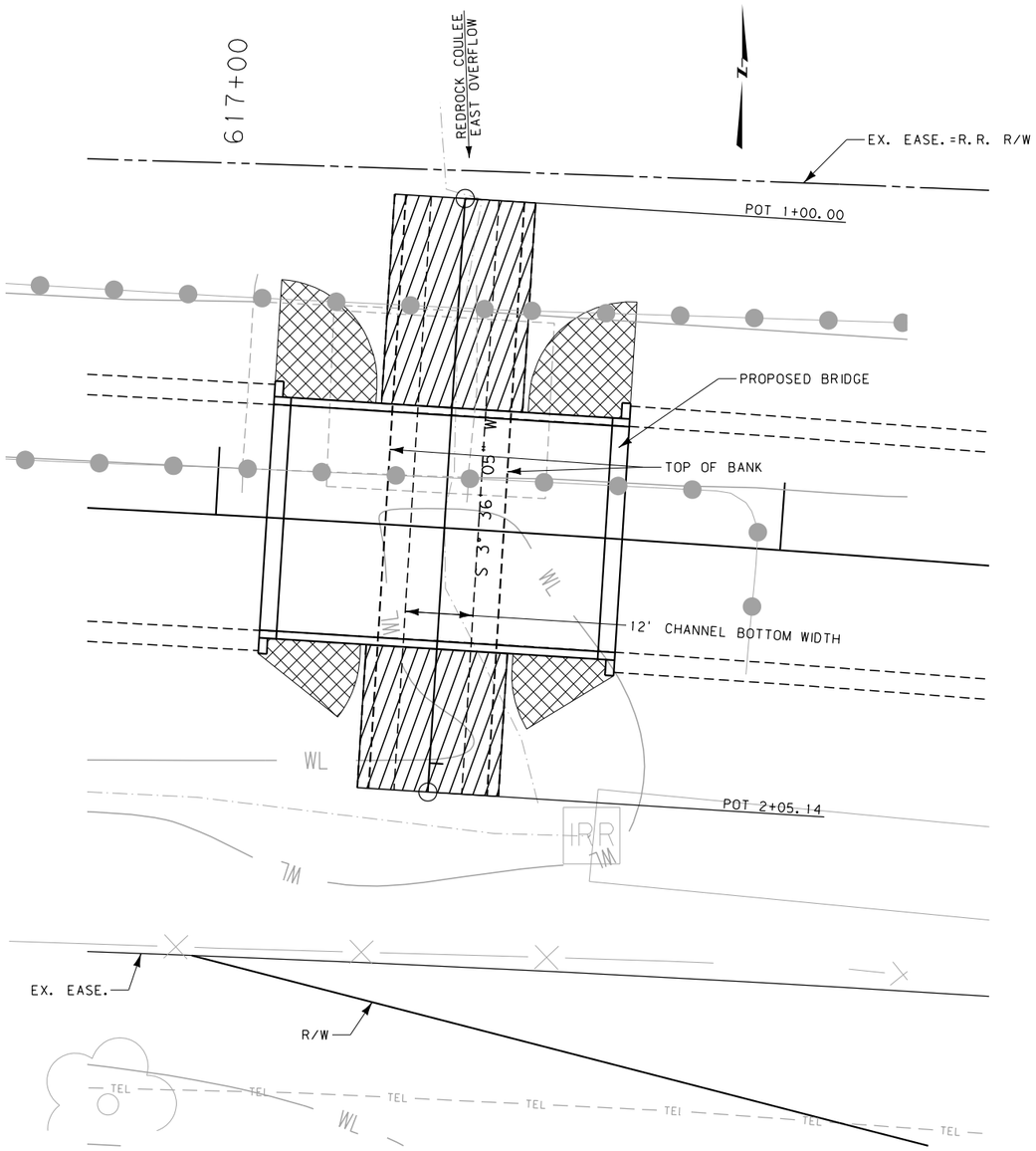
REDROCK COULEE RIPRAP LAYOUT COORDINATE TABLE

POINT NUMBER	N OR Y COORDINATE	E OR X COORDINATE	ELEVATION	REMARKS
RR1	1,584,709.198	2,025,231.345	2424.71	TOP OF 2:1 RIPRAP SLOPE - WARP TO PT. RR8
RR2	1,584,697.785	2,025,231.875	2409.00	TOP OF RIPRAP KEY - INSIDE TOE
RR3	1,584,694.287	2,025,231.875	2409.00	TOP OF RIPRAP KEY - OUTSIDE EDGE
RR4	1,584,709.274	2,025,233.496	2414.71	TOP OF 2:1 RIPRAP SLOPE - WARP TO PT. RR8
RR5	1,584,707.911	2,025,235.136	2414.00	TOP OF RIPRAP ON SLOPE
RR6	1,584,697.918	2,025,235.491	2409.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. RR11
RR7	1,584,694.420	2,025,235.615	2409.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. RR12
RR8	1,584,716.094	2,025,237.323	2414.71	TOP OF RIPRAP SLOPE AT WINGWALL
RR9	1,584,716.262	2,025,242.051	2413.21	TOP OF RIPRAP SLOPE ALONG CAP
RR10	1,584,716.372	2,025,245.149	2412.99	TOP OF RIPRAP AT 10:1/1.5:1 SLOPE BREAK
RR11	1,584,716.673	2,025,253.608	2409.00	TIE RIPRAP KEY TO 1.5:1 RIPRAP SLOPE
RR12	1,584,711.098	2,025,259.593	2409.00	TOP OF 1.5:1 RIPRAP SLOPE - END OF RIPRAP KEY
RR13	1,584,701.101	2,025,270.327	2409.00	TOP OF 1.5:1 RIPRAP SLOPE
RR14	1,584,710.979	2,025,279.528	2400.00	TOP OF RIPRAP KEY - INSIDE TOE
RR15	1,584,802.804	2,025,153.936	2409.00	TOP OF RIPRAP KEY - INSIDE TOE
RR16	1,584,786.898	2,025,154.501	2414.71	TOP OF 2.79:1 RIPRAP SLOPE
RR17	1,584,787.015	2,025,157.787	2414.71	TOP OF RIPRAP SLOPE - WARP TO PT. RR20
RR18	1,584,806.424	2,025,157.244	2409.00	TOP OF 1.5:1 RIPRAP SLOPE - END OF RIPRAP KEY
RR19	1,584,790.620	2,025,165.431	2412.99	TOP OF RIPRAP AT SLOPE BREAK
RR20	1,584,780.669	2,025,167.875	2414.71	TOP OF RIPRAP SLOPE AT WINGWALL
RR21	1,584,816.303	2,025,166.445	2400.00	TOP OF RIPRAP KEY - INSIDE TOE
RR22	1,584,780.841	2,025,172.714	2413.21	TOP OF RIPRAP SLOPE ALONG CAP
RR23	1,584,791.597	2,025,221.729	2400.00	TOP OF RIPRAP KEY - INSIDE TOE
RR24	1,584,802.574	2,025,231.952	2410.00	TOP OF 1.5:1 RIPRAP SLOPE
RR25	1,584,791.268	2,025,244.090	2410.00	TOP OF 1.5:1 RIPRAP SLOPE - END OF RIPRAP KEY
RR26	1,584,783.667	2,025,252.257	2410.00	TIE RIPRAP KEY TO 1.5:1 RIPRAP SLOPE
RR27	1,584,783.892	2,025,258.591	2412.99	TOP OF RIPRAP AT 10:1/1.5:1 SLOPE BREAK
RR28	1,584,784.001	2,025,261.660	2413.21	TOP OF RIPRAP SLOPE ALONG CAP
RR29	1,584,784.171	2,025,266.441	2414.71	TOP OF RIPRAP SLOPE AT WINGWALL
RR30	1,584,803.995	2,025,271.938	2410.00	TOP OF RIPRAP KEY - OUTSIDE EDGE - WARP TO PT. RR25
RR31	1,584,800.497	2,025,272.062	2410.00	TOP OF RIPRAP KEY - INSIDE TOE - WARP TO PT. RR26
RR32	1,584,791.087	2,025,272.396	2414.71	TOP OF 2:1 RIPRAP SLOPE - WARP TO PT. RR29
RR33	1,584,704.016	2,025,315.762	2400.00	TOP OF RIPRAP KEY - INSIDE TOE - ANGLE POINT
RR34	1,584,687.698	2,025,335.801	2400.00	TOP OF RIPRAP KEY - INSIDE TOE
RR35	1,584,696.791	2,025,339.218	2406.00	TOP OF RIPRAP
RR36	1,584,686.578	2,025,339.136	2400.00	TOP OF RIPRAP KEY - INSIDE TOE - 5' RADIUS TO RR34
RR37	1,584,695.704	2,025,342.512	2406.00	TOP OF RIPRAP AT 2:1/1.5:1 SLOPE BREAK - 5' RADIUS TO PT. RR35
RR38	1,584,687.077	2,025,353.170	2400.00	TOP OF RIPRAP KEY - INSIDE TOE
RR39	1,584,696.071	2,025,352.851	2406.00	TOP OF RIPRAP AT 2:1/1.5:1 SLOPE BREAK
RR40	1,584,707.718	2,025,342.706	2412.00	TOP OF RIPRAP - 5' RADIUS TO PT. RR40
RR41	1,584,708.690	2,025,339.563	2412.00	TOP OF RIPRAP ON 1.5:1 SLOPE
RR42	1,584,718.275	2,025,329.042	2412.99	TOP OF RIPRAP AT 10:1/1.5:1 SLOPE BREAK
RR43	1,584,719.422	2,025,330.996	2413.21	TOP OF RIPRAP SLOPE ALONG CAP
RR44	1,584,716.610	2,025,333.531	2412.99	TOP OF RIPRAP AT SLOPE BREAK
RR45	1,584,719.586	2,025,335.603	2414.71	TOP OF RIPRAP SLOPE AT WINGWALL
RR46	1,584,714.539	2,025,341.021	2414.71	TOP OF RIPRAP SLOPE
RR47	1,584,713.201	2,025,344.607	2414.71	TOP OF 2:1 RIPRAP SLOPE - 5' RADIUS TO PT. RR46
RR48	1,584,713.472	2,025,352.232	2414.71	TOP OF 2:1 RIPRAP SLOPE

NOTE: SEE BRIDGE PLANS FOR CROSS SECTIONS AT END BENTS.

REDROCK COULEE
STA. 594+61
RIPRAP LAYOUT
NO SCALE

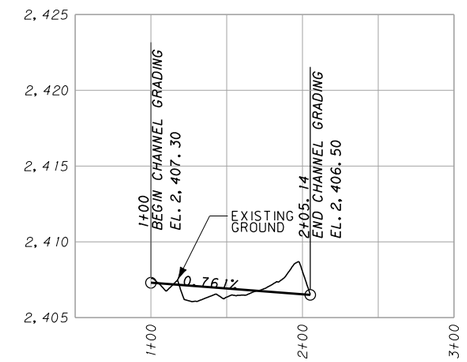
DETAIL



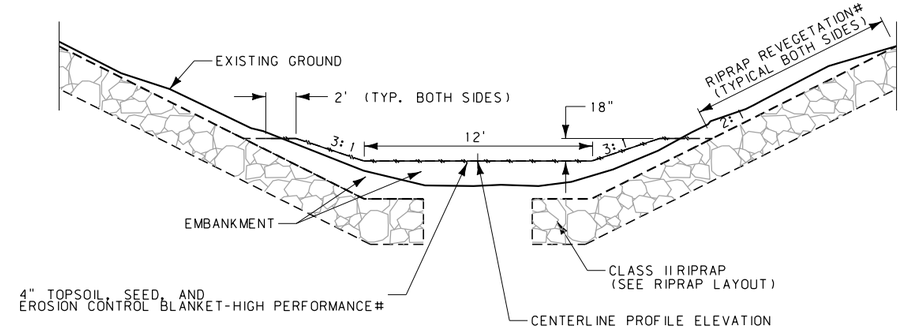
PLAN

RIPRAP REVEGETATION

EROSION CONTROL BLANKET-HIGH PERFORMANCE STREAMBANK REVEGETATION



PROPOSED CHANNEL PROFILE



EROSION CONTROL BLANKET, STREAMBANK REVEGETATION, AND RIPRAP REVEGETATION ONLY OUTSIDE VERTICAL PROJECTION OF THE BRIDGE - SEE PLAN VIEW FOR LIMITS

TYPICAL SECTION

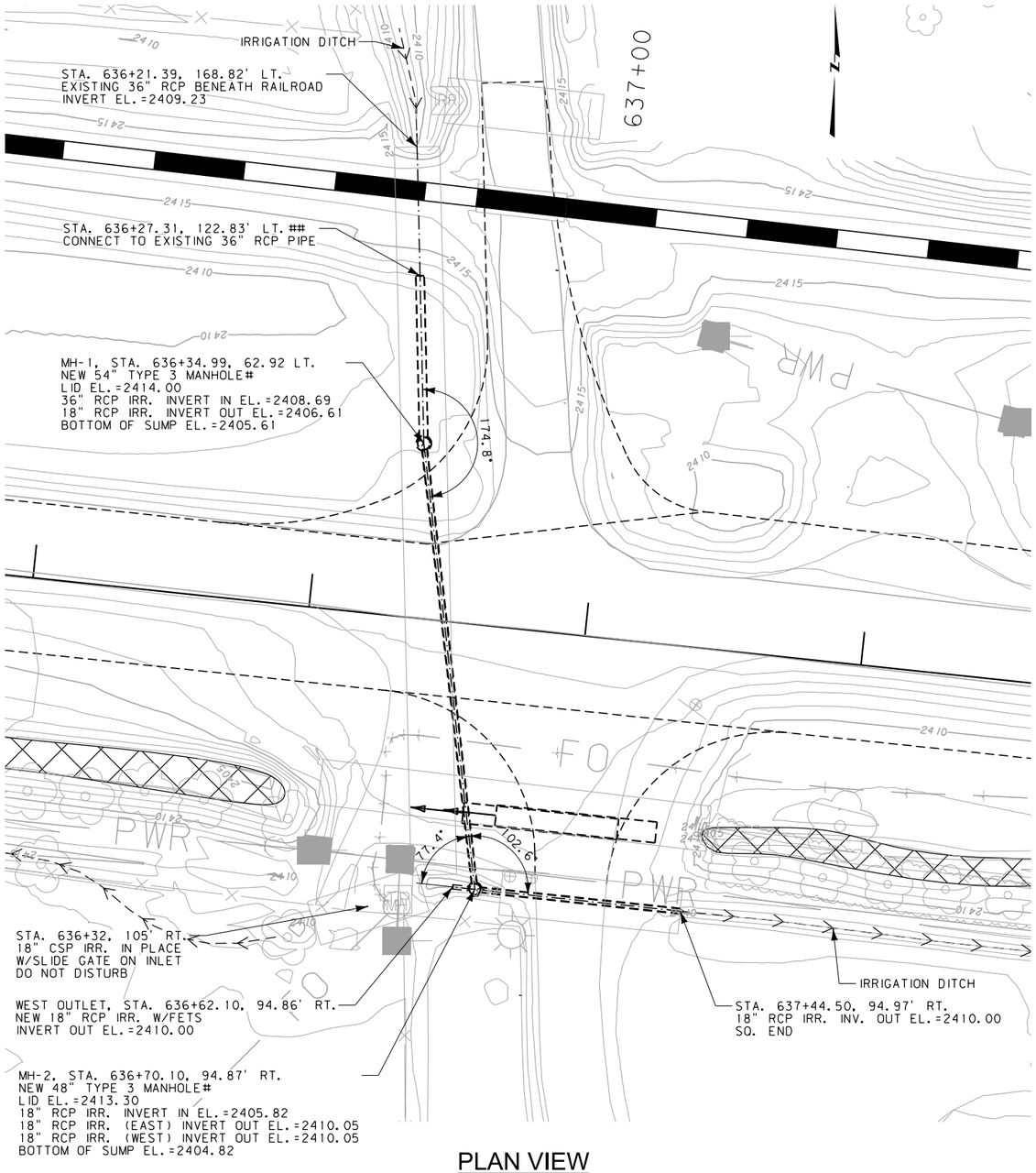
CHANNEL GRADING CENTERLINE COORDINATE TABLE				
STATION	N OR Y COORDINATE (FT)	E OR X COORDINATE (FT)	ELEVATION (FT)	DESCRIPTION
1+00.00	1,584,861.205	2,027,533.683	2407.30	BEGIN CHANNEL GRADING
2+05.14	1,584,736.273	2,027,527.079	2406.50	END CHANNEL GRADING

ESTIMATED CHANNEL GRADING QUANTITIES	
ITEM	QUANTITY
SALVAGED TOPSOIL (cu. yd.)	21
RIPRAP REVEGETATION (sq. yd.)	92
ERO. CONTROL BLANKET (sq. yd.)	191
EMBANKMENT +(cu. yd.)	165
STREAMBANK REVEGETATION (ac.)	0.04

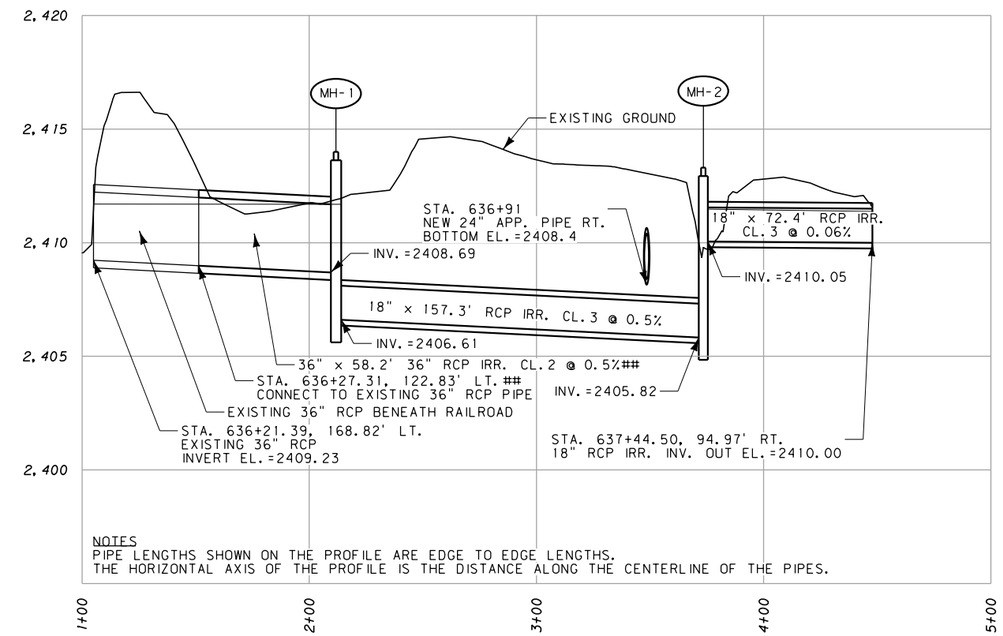
FOR INFORMATIONAL PURPOSES ONLY.

REDROCK COULEE
EAST OVERFLOW
STA. STA. 617+40.50
CHANNEL GRADING
(NO SCALE)

DETAIL



PLAN VIEW



PROPOSED IRRIGATION CROSSING PROFILE

IRRIGATION CROSSING QUANTITIES				
LOCATION	54" TYPE 3 MANHOLE # (each)	48" TYPE 3 MANHOLE # (each)	36" RCP IRR. CL. 2 (ft)	18" RCP IRR. CL. 3 (ft)
STA. 636+27.31, 122.83' LT. TO MH-1, STA. 636+34.99, 62.92' LT.			60.4##	
MH-1, STA. 636+34.99, 62.92' LT.	1			
MH-1, STA. 636+34.99, 62.92' LT. TO MH-2, STA. 636+70.10, 94.87' RT.				161.6
MH-2, STA. 636+70.10, 94.87' RT.		1		
MH-2, STA. 636+70.10, 94.87' RT. TO STA. 637+44.50, 94.97' RT.				74.4
MH-2, STA. 636+70.10, 94.87' RT. TO WEST OUTLET, STA. 636+62.10, 94.86' RT.				6.0

SEE SUMMARY FRAMES

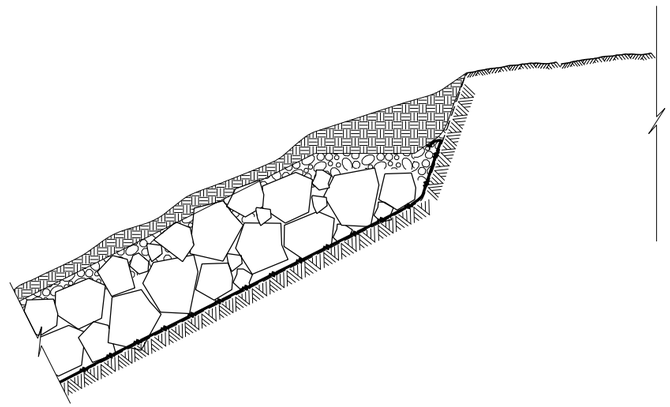
PROVIDE A GRATED MANHOLE LID WITH A MINIMUM 1.0 SQUARE FOOT OPEN AREA AND A MAXIMUM FRAME HEIGHT OF 4.5 INCHES. ROTATE LID TO WEST SIDE OF MANHOLE FOR MH-1 AND SOUTH SIDE OF MANHOLE FOR MH-2.

PIPE CONNECTION LOCATION SHOWN WAS ESTIMATED FROM AS-BUILTS. FIELD VERIFY PIPE LOCATION AND LENGTH REQUIRED PRIOR TO ORDERING PIPE.

STA. 636+48.99
IRRIGATION CROSSING DETAIL
NO SCALE

AWARD COPY

DETAIL



RIPRAP REVEGETATION TYPICAL

LEGEND

TOPSOIL WITH EROSION CONTROL BLANKET/MULCH COVER

RANDOM RIPRAP

GRANULAR BEDDING

EXISTING GROUND

PERMANENT EROSION CONTROL GEOTEXTILE

EXCAVATION

NOTES:

FILL RIPRAP VOIDS WITH GRANULAR BEDDING TO PROVIDE A UNIFORM SURFACE FOR THE PLACEMENT OF TOPSOIL, AS APPROVED BY THE PROJECT MANAGER.

PLACE TOPSOIL WITH A MINIMUM THICKNESS OF 6".

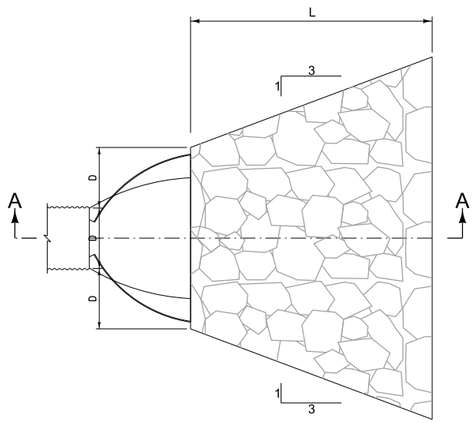
THIS DETAIL IS TO BE USED AS A VISUAL GUIDE FOR RIPRAP REVEGETATION. REFER TO THE PLAN SHEETS AND CROSS SECTIONS FOR SPECIFIC ELEVATIONS AND GEOMETRIC CONFIGURATION OF THE RIPRAP LAYOUT.

REFER TO THE SPECIAL PROVISIONS FOR PLANTING AND SEEDING SPECIFICATIONS.

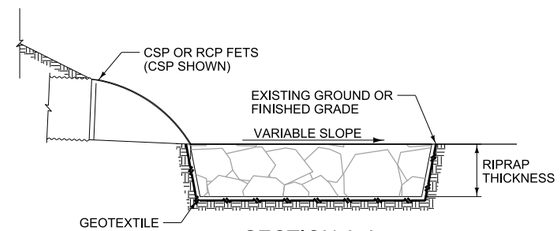
RIPRAP
REVEGETATION
DETAIL
NOT TO SCALE

AWARD COPY

DETAIL



PLAN VIEW
NO SCALE



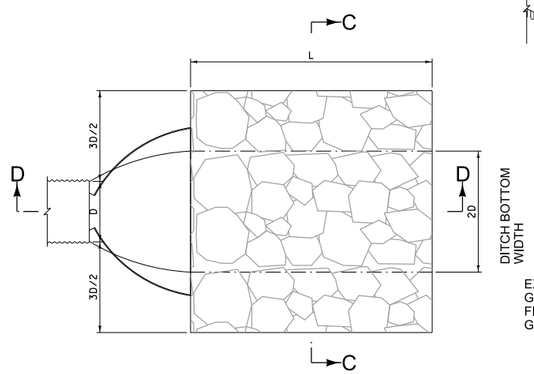
SECTION A-A
NO SCALE

CULVERT OUTLET RIPRAP WITHOUT DITCH

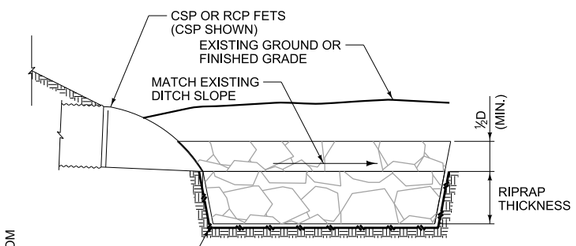
CULVERT OUTLET RIPRAP WITHOUT DITCH - DIMENSIONS AND ESTIMATED QUANTITIES

	CLASS I RIPRAP (2' THICK)			CLASS II RIPRAP (2.5' THICK)		
CULVERT DIA. OR SPAN D (in.)	LENGTH OF APRON L (ft.)	Class I Riprap (yd^3)	Geotextile (yd^2)	LENGTH OF APRON L (ft.)	Class II Riprap (yd^3)	Geotextile (yd^2)
12	4	1.3	2	6	2.8	3
18	6	2.9	4	9	6.3	8
21	7	3.9	6	11	9.1	11
22	8	4.8	7	11	9.3	11
24	8	5.1	8	12	11.1	13
26	9	6.3	10	13	13.0	16
28	10	7.7	11	14	15.1	18
28½	10	7.7	12	15	16.8	20
30	10	8.0	12	15	17.4	21
35	12	11.3	17	18	24.6	30
36	12	11.6	17	18	25.0	30
36¼	13	12.9	19	19	27.1	33
42	14	15.7	24	21	34.0	41
43¾	15	17.7	27	22	37.2	45
48	16	20.5	31	24	44.4	53
49	17	22.6	34	25	47.6	57
51⅛	18	25.0	38	26	51.6	62
53	18	25.7	39	27	55.6	67
57	19	29.0	43	29	64.2	77
58½	20	31.5	47	30	68.4	82

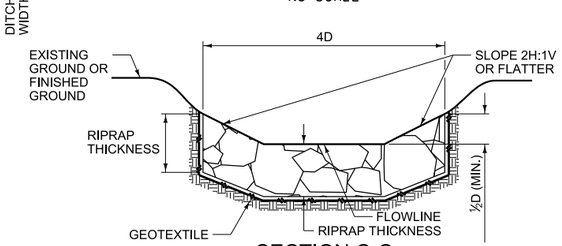
PERMANENT EROSION CONTROL GEOTEXTILE - HIGH SURVIVABILITY



PLAN VIEW
NO SCALE



SECTION D-D
NO SCALE



SECTION C-C
NO SCALE

CULVERT OUTLET RIPRAP WITH DITCH

CULVERT OUTLET RIPRAP WITH DITCH - DIMENSIONS AND ESTIMATED QUANTITIES

	CLASS I RIPRAP (2' THICK)			CLASS II RIPRAP (2.5' THICK)		
CULVERT DIA. OR SPAN D (in.)	LENGTH OF APRON L (ft.)	Class I Riprap (yd^3)	Geotextile (yd^2)	LENGTH OF APRON L (ft.)	Class II Riprap (yd^3)	Geotextile (yd^2)
12	4	1.2	2	6	2.2	3
18	6	2.7	4	9	5.0	6
21	7	3.6	6	11	7.1	9
22	8	4.3	7	11	7.5	9
24	8	4.7	8	12	8.9	11
26	9	5.8	9	13	10.4	13
28	10	6.9	11	14	12.1	15
28½	10	7.0	11	15	13.2	17
30	10	7.4	12	15	13.9	18
35	12	10.4	16	18	19.4	25
36	12	10.7	17	18	20.0	25
36¼	13	11.6	18	19	21.3	27
42	14	14.5	23	21	27.2	35
43¾	15	16.2	26	22	29.7	38
48	16	19.0	30	24	35.6	45
49	17	20.6	33	25	37.8	48
51⅛	18	22.7	36	26	41.0	52
53	18	23.6	37	27	44.2	56
57	19	26.7	42	29	51.0	65
58½	20	28.9	46	30	54.2	69

PERMANENT EROSION CONTROL GEOTEXTILE - HIGH SURVIVABILITY

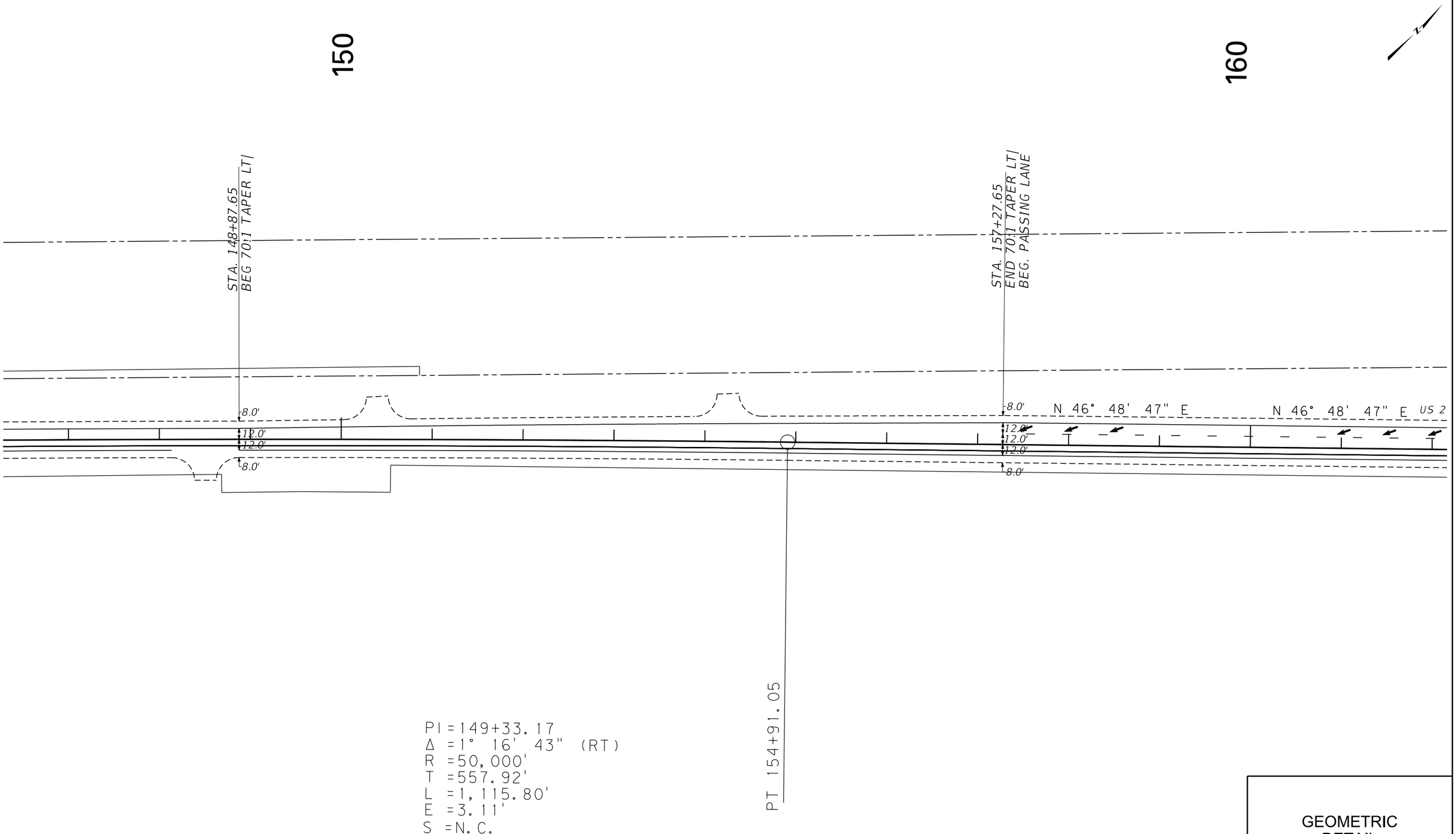
LOCATIONS

148+50 RIGHT - 18" APP. PIPE RT. - DITCH
155+00 LEFT - 24" DR. - NO DITCH
164+00 LEFT - 30" DR. - NO DITCH
177+00 LEFT - 24" DR. - NO DITCH

CULVERT OUTLET RIPRAP FOR CULVERTS WITH FETS (48" EQUIVALENT AND SMALLER)

(NO SCALE)

AWARD COPY

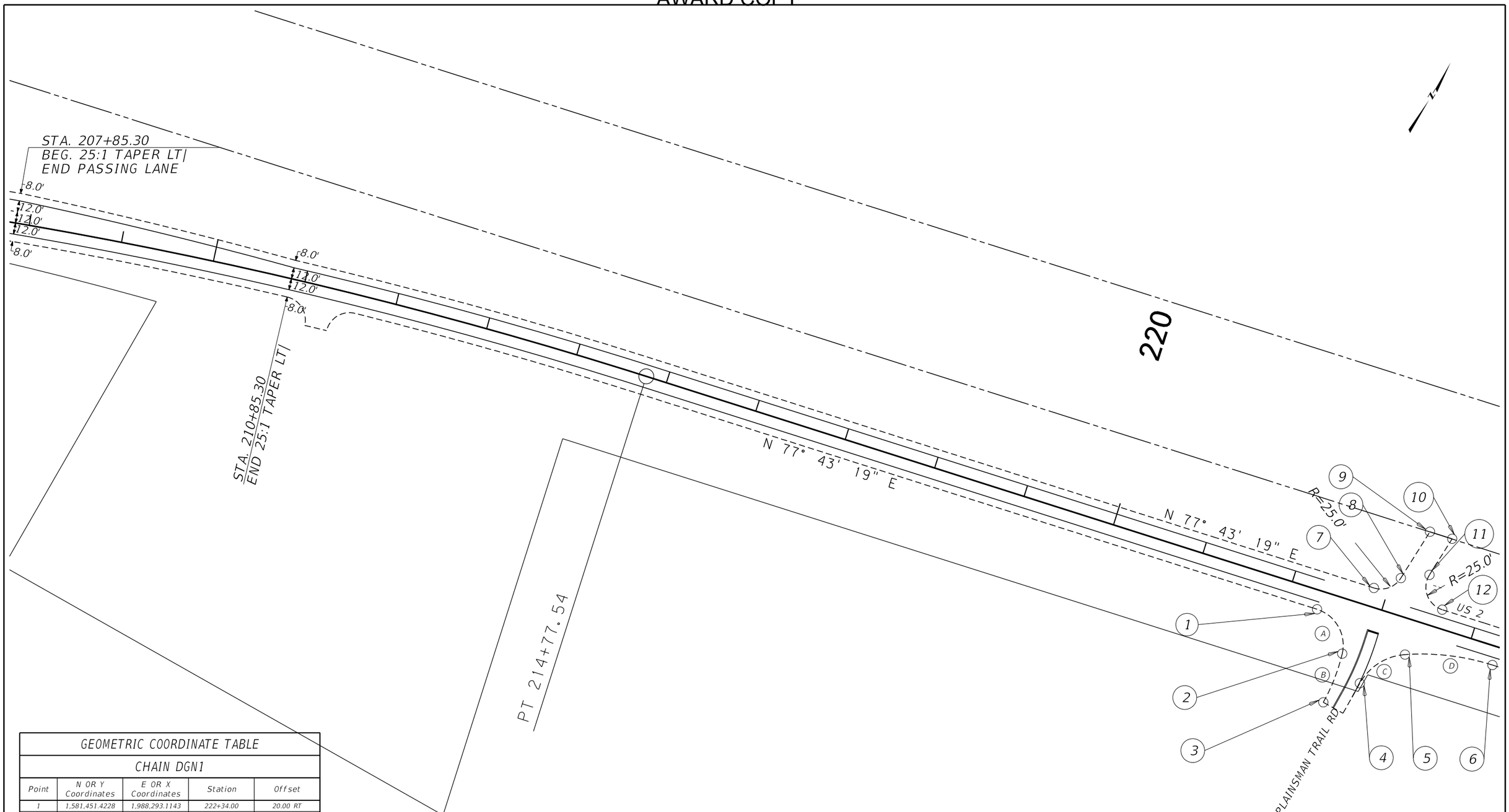


GEOMETRIC DETAIL

(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge1.dgn	DESIGNED BY	DANIEL TRUESDELL		ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY					
1		3:11:36 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 UPN 6281000	69

AWARD COPY



GEOMETRIC COORDINATE TABLE

CHAIN DGN1

Point	N OR Y Coordinates	E OR X Coordinates	Station	Offset
1	1,581,451.4228	1,988,293.1143	222+34.00	20.00 RT
2	1,581,423.7914	1,988,339.9456	222+73.89	56.96 RT
3	1,581,368.8126	1,988,348.3071	222+70.37	112.46 RT
4	1,581,405.8444	1,988,371.8847	223+01.28	81.29 RT
5	1,581,456.3298	1,988,398.4126	223+37.94	37.60 RT
6	1,581,493.1182	1,988,484.6993	224+30.07	20.00 RT
7	1,581,501.3114	1,988,334.2488	222+84.81	20.00 LT
8	1,581,524.7590	1,988,353.9131	223+09.01	38.73 LT
9	1,581,583.1139	1,988,356.2036	223+23.65	95.26 LT
10	1,581,588.3976	1,988,380.4295	223+48.45	95.27 LT
11	1,581,542.9763	1,988,378.6466	223+37.05	51.27 LT
12	1,581,517.5675	1,988,408.9438	223+61.25	20.00 LT

GEOMETRIC RADIUS CURVE DATA

CHAIN DGN1

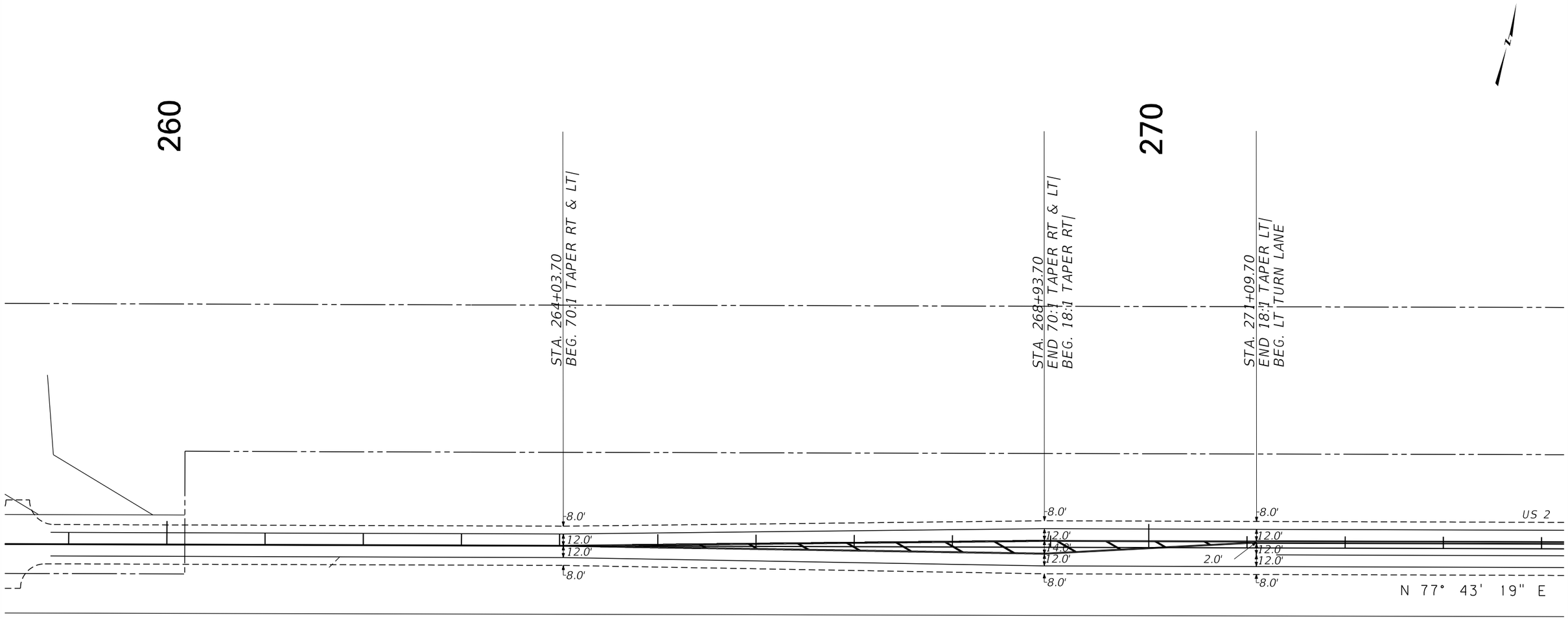
Curve	Delta	Radius	Length	Tangent	N OR Y Coordinates	E OR X Coordinates
A	85°38'20"	40.00 ft	59.79 ft	37.07 ft	1,581,412.3377	1,988,301.6205
B	15°58'59"	200.00 ft	55.79 ft	28.08 ft	1,581,366.5227	1,988,148.3202
C	56°45'7"	60.00 ft	59.43 ft	32.41 ft	1,581,406.5314	1,988,431.8807
D	21°37'33"	250.00 ft	94.36 ft	47.75 ft	1,581,248.8364	1,988,537.8633

GEOMETRIC DETAIL

(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge1.dgn	DESIGNED BY DANIEL TRUESDELL	ROAD PLANS	LOHMAN - E & W		NHIP 1-7(441)393
2		9/9/2019	REVIEWED BY				
1		3:11:40 PM CPS - U2160	CHECKED BY JERRY SABOL 4/15/2019	BLAINE COUNTY	CSF= 0.99965875	UPN 6281000	70

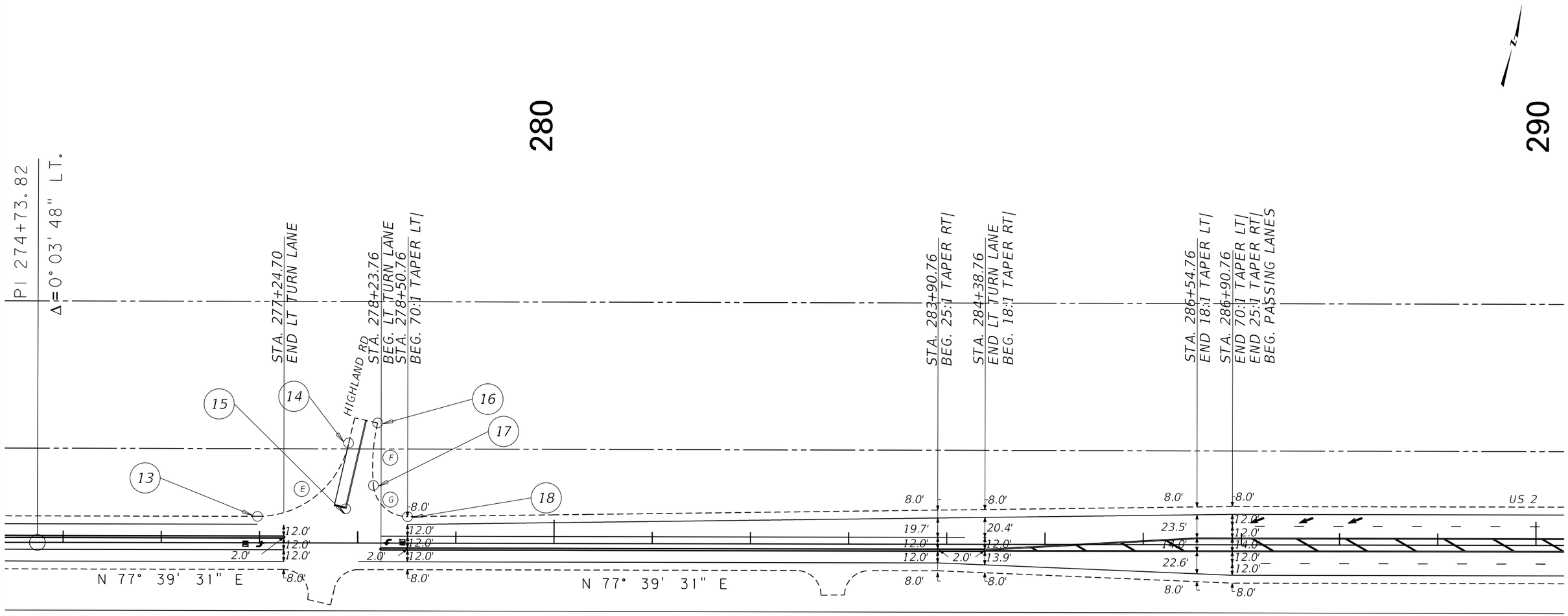
AWARD COPY



GEOMETRIC DETAIL

(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge1.dgn	DESIGNED BY	DANIEL TRUESDELL		ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY					
1		3:11:44 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 UPN 6281000	71



GEOMETRIC COORDINATE TABLE

CHAIN DGN1

Point	N OR Y Coordinates	E OR X Coordinates	Station	Offset
13	1,582,659.5228	1,993,621.9960	276+97.94	27.00 LT
14	1,582,751.3296	1,993,696.6858	277+90.52	100.72 LT
15	1,582,686.4154	1,993,708.0046	277+87.71	34.89 LT
16	1,582,778.7512	1,993,720.9752	278+20.11	122.32 LT
17	1,582,715.7145	1,993,730.4732	278+15.92	58.71 LT
18	1,582,692.1871	1,993,771.2899	278+50.76	27.00 LT

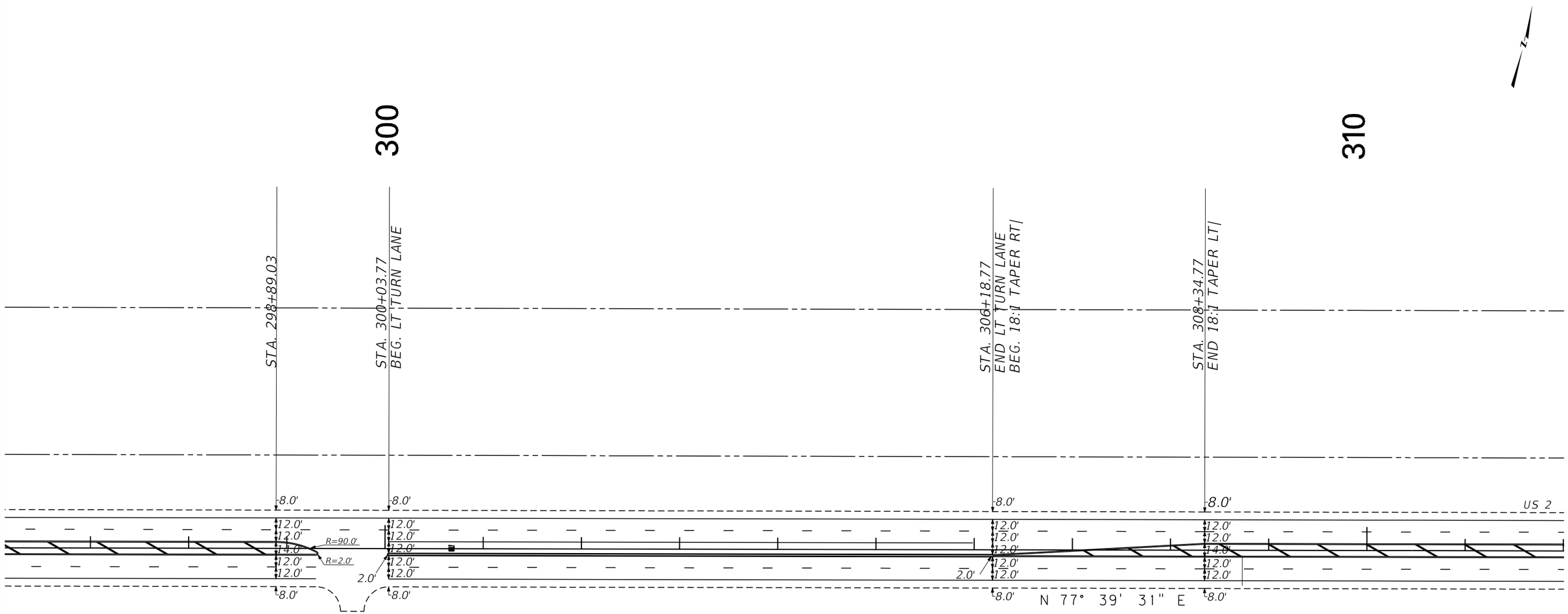
GEOMETRIC RADIUS CURVE DATA

CHAIN DGN1

Curve	Delta	Radius	Length	Tangent	N OR Y Coordinates	E OR X Coordinates
C	56°45'7"	60.00 ft	59.43 ft	32.41 ft	1,581,406.5314	1,988,431.8807
D	21°37'33"	250.00 ft	94.36 ft	47.75 ft	1,581,248.8364	1,988,537.8633
E	77°3'24"	95.00 ft	127.76 ft	75.64 ft	1,582,752.3274	1,993,601.6911

GEOMETRIC DETAIL

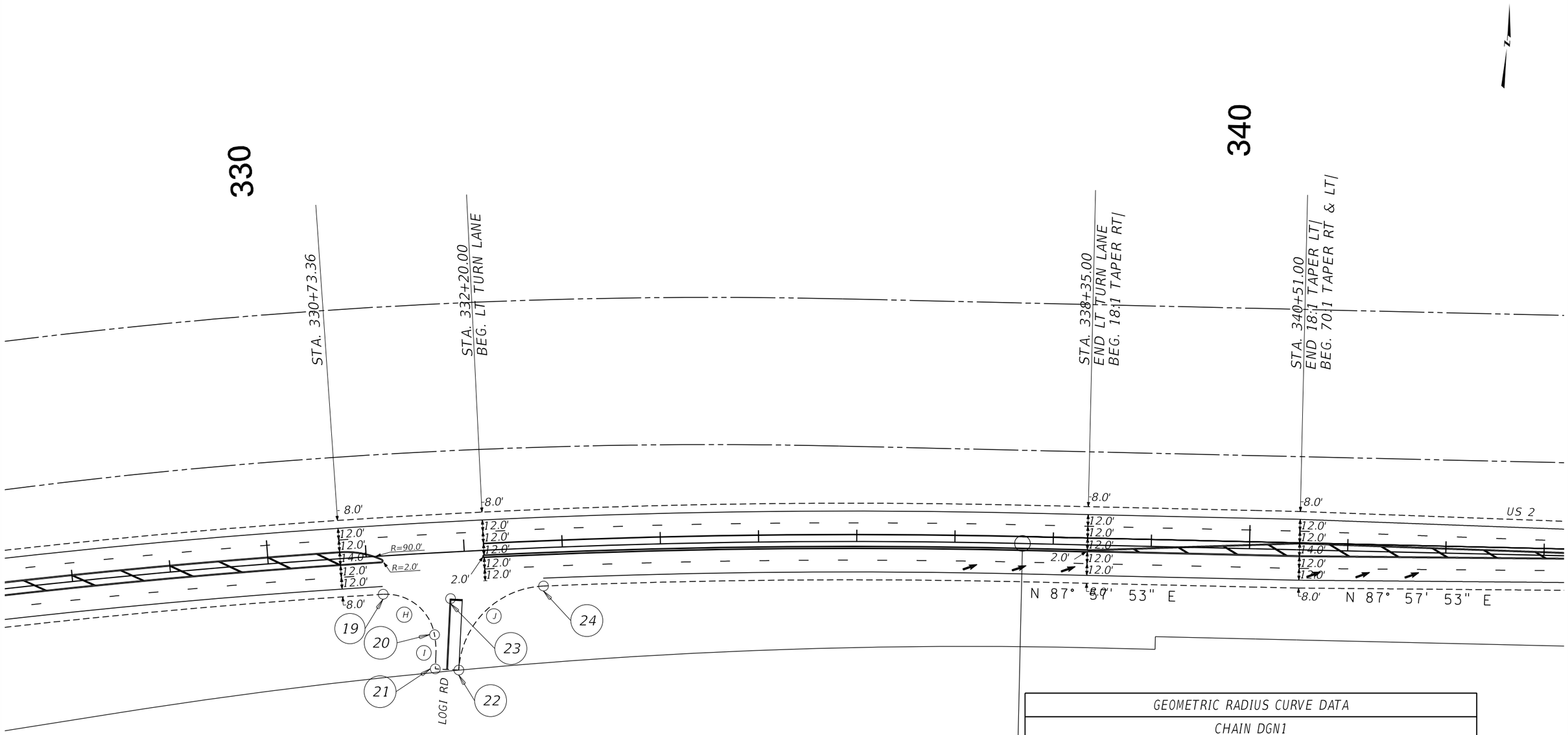
(NO SCALE)



GEOMETRIC DETAIL

(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge2.dgn	DESIGNED BY	DANIEL TRUESDELL		ROAD PLANS	LOHMAN - E & W	NHIP 1-7(441)393
2		9/9/2019	REVIEWED BY					
1		3:12:09 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 UPN 6281000	73



PI = 330+77.22
Δ = 10° 18' 22" (RT)
R = 7,710'
T = 695.30'
L = 1,386.84'
E = 31.29'
S = 3.00%

GEOMETRIC RADIUS CURVE DATA

CHAIN DGN1

Curve	Delta	Radius	Length	Tangent	N OR Y Coordinates	E OR X Coordinates
H	83°34'36"	50.00 ft	72.93 ft	44.69 ft	1,583,668.3451	1,998,936.6060
I	12°45'26"	100.00 ft	22.27 ft	11.18 ft	1,583,656.8411	1,998,887.9474
J	84°54'37"	90.00 ft	133.38 ft	82.34 ft	1,583,646.3234	1,999,102.0551

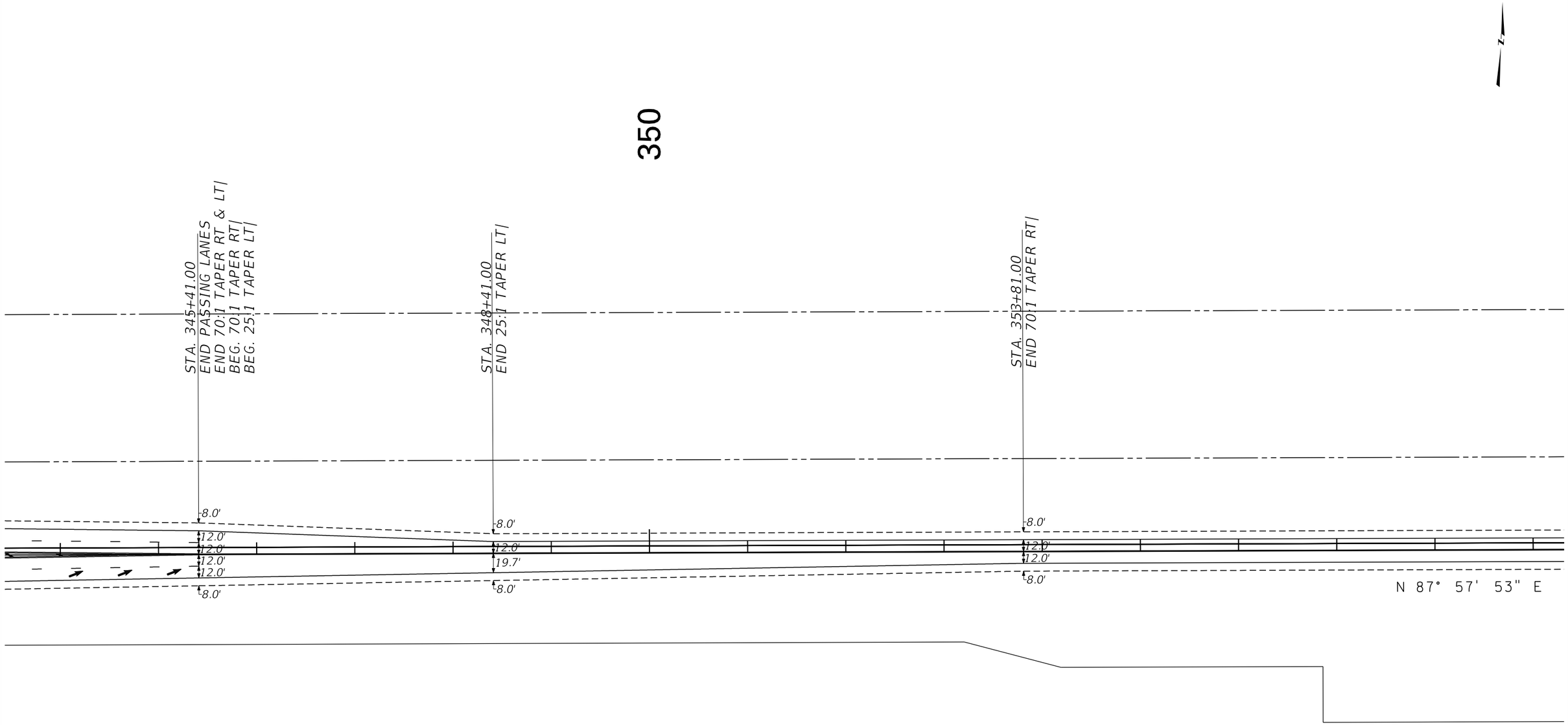
GEOMETRIC COORDINATE TABLE

CHAIN DGN1

Point	N OR Y Coordinates	E OR X Coordinates	Station	Offset
19	1,583,717.9853	1,998,930.6177	331+14.92	39.00 RT
20	1,583,679.8491	1,998,985.2646	331+65.14	83.26 RT
21	1,583,645.1993	1,998,988.0626	331+63.97	118.00 RT
22	1,583,645.4274	1,999,012.0595	331+88.21	120.47 RT
23	1,583,717.5580	1,998,999.3752	331+83.55	47.37 RT
24	1,583,735.8846	1,999,093.1788	332+79.30	39.00 RT

GEOMETRIC DETAIL

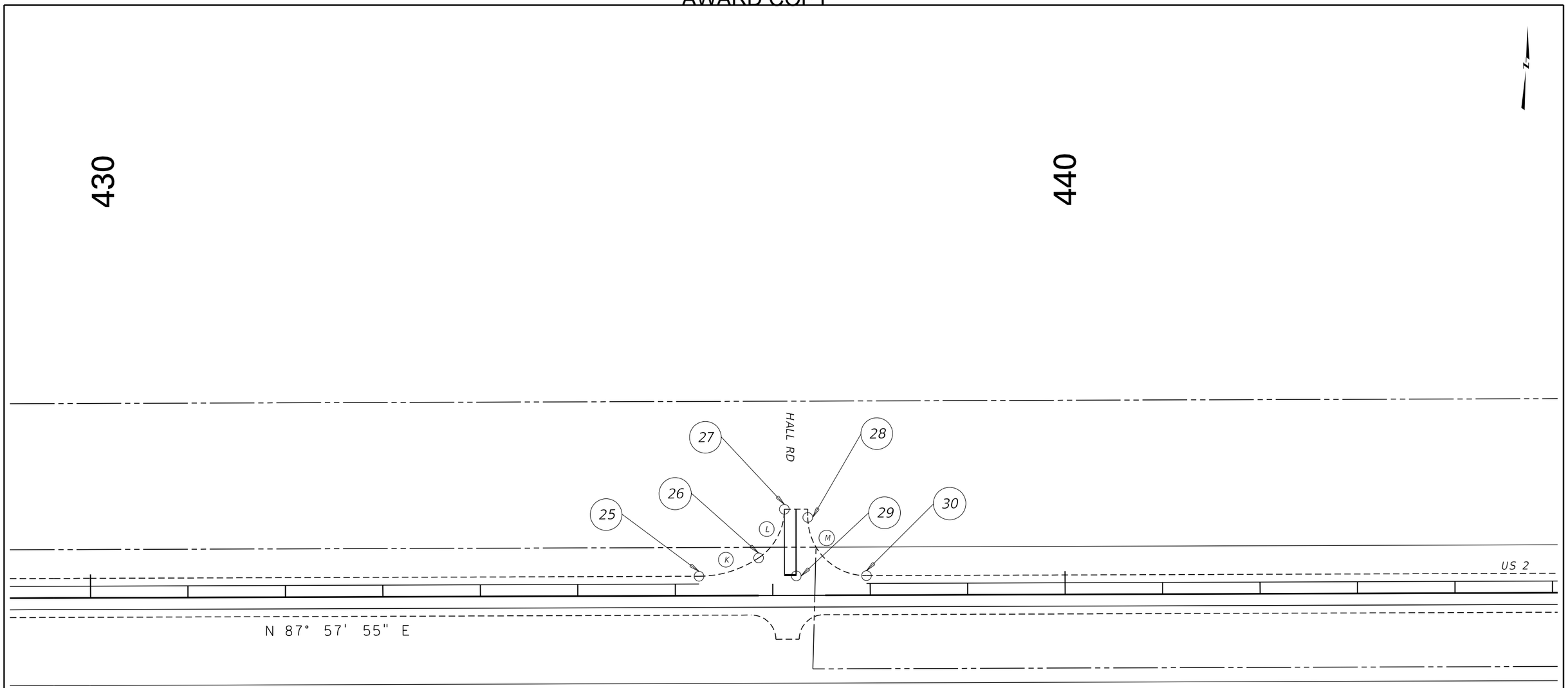
(NO SCALE)



GEOMETRIC DETAIL

(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge3.dgn	DESIGNED BY DANIEL TRUESDELL	ROAD PLANS	LOHMAN - E & W		NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY				
1		3:12:34 PM CPS - U2160	CHECKED BY	BLAINE COUNTY	CSF= 0.99965875	UPN 6281000	75

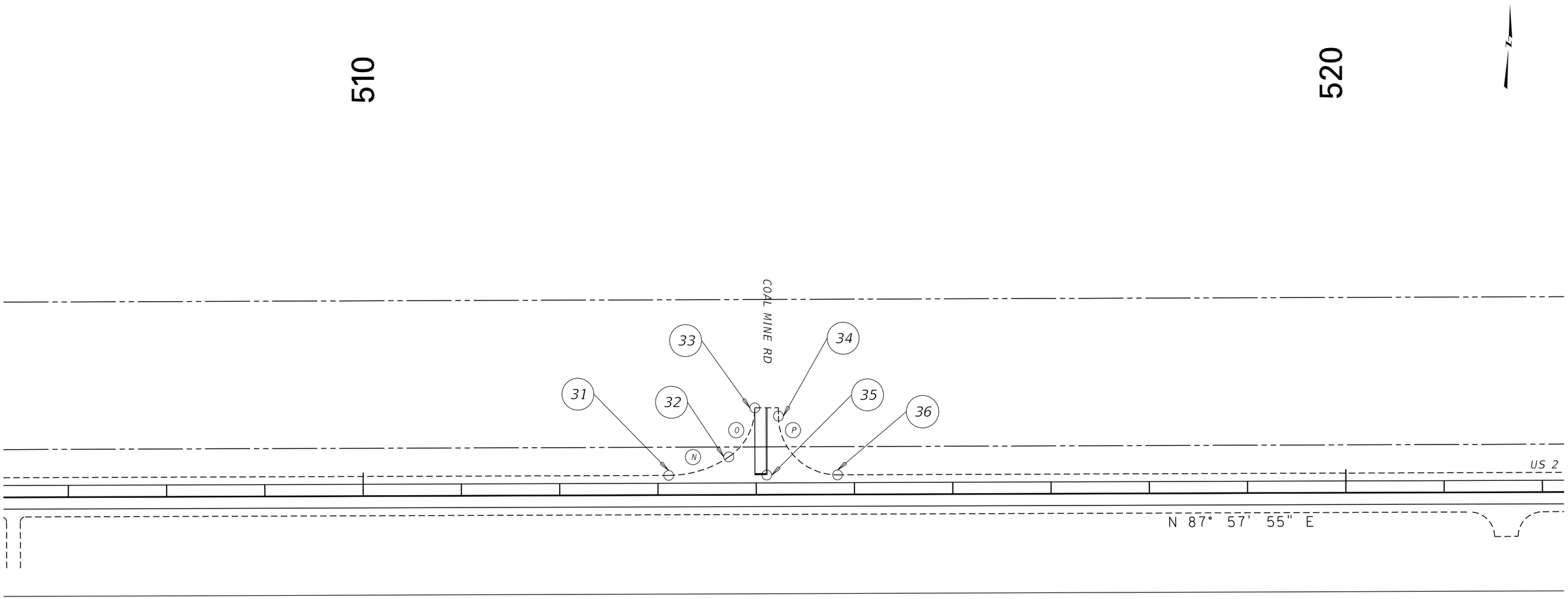


GEOMETRIC COORDINATE TABLE				
CHAIN DGN1				
Point	N OR Y Coordinates	E OR X Coordinates	Station	Offset
25	1,584,221.0274	2,009,424.1041	436+24.37	20.00 LT
26	1,584,241.8014	2,009,484.6276	436+85.60	38.61 LT
27	1,584,292.5626	2,009,509.4466	437+12.20	88.46 LT
28	1,584,284.9600	2,009,533.7319	437+36.20	80.00 LT
29	1,584,224.5718	2,009,523.8697	437+24.20	20.00 LT
30	1,584,227.1282	2,009,595.8243	437+96.20	20.00 LT

GEOMETRIC RADIUS CURVE DATA						
CHAIN DGN1						
Curve	Delta	Radius	Length	Tangent	N OR Y Coordinates	E OR X Coordinates
K	33°49'9"	110.00 ft	64.93 ft	33.44 ft	1,584,330.9580	2,009,420.1985
L	56°10'51"	60.00 ft	58.83 ft	32.02 ft	1,584,290.4323	2,009,449.4844
M	89°59'60"	60.00 ft	94.25 ft	60.00 ft	1,584,287.0903	2,009,593.6940

GEOMETRIC DETAIL

(NO SCALE)

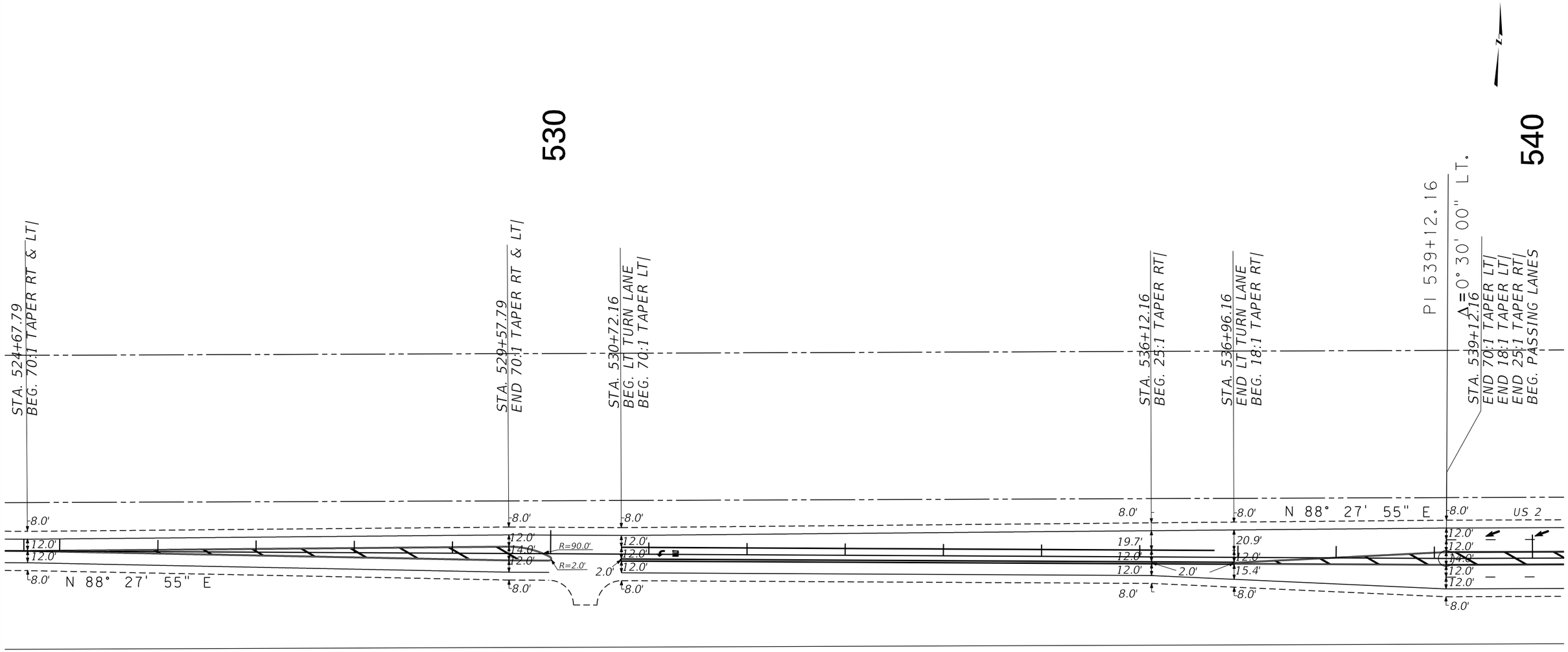


GEOMETRIC COORDINATE TABLE				
CHAIN DGN1				
Point	N OR Y Coordinates	E OR X Coordinates	Station	Offset
31	1,584,493.9409	2,017,105.8503	513+10.97	20.00 LT
32	1,584,514.7150	2,017,166.3738	513+72.19	38.61 LT
33	1,584,565.4761	2,017,191.1928	513+98.79	88.46 LT
34	1,584,557.8736	2,017,215.4781	514+22.79	80.00 LT
35	1,584,497.4853	2,017,205.6159	514+10.79	20.00 LT
36	1,584,500.0417	2,017,277.5706	514+82.79	20.00 LT

GEOMETRIC RADIUS CURVE DATA						
CHAIN DGN1						
Curve	Delta	Radius	Length	Tangent	N OR Y Coordinates	E OR X Coordinates
N	33°49'9"	110.00 ft	64.93 ft	33.44 ft	1,584,603.8715	2,017,101.9447
O	56°10'51"	60.00 ft	58.83 ft	32.02 ft	1,584,563.3458	2,017,131.2307
P	89°59'60"	60.00 ft	94.25 ft	60.00 ft	1,584,560.0039	2,017,275.4402

GEOMETRIC DETAIL

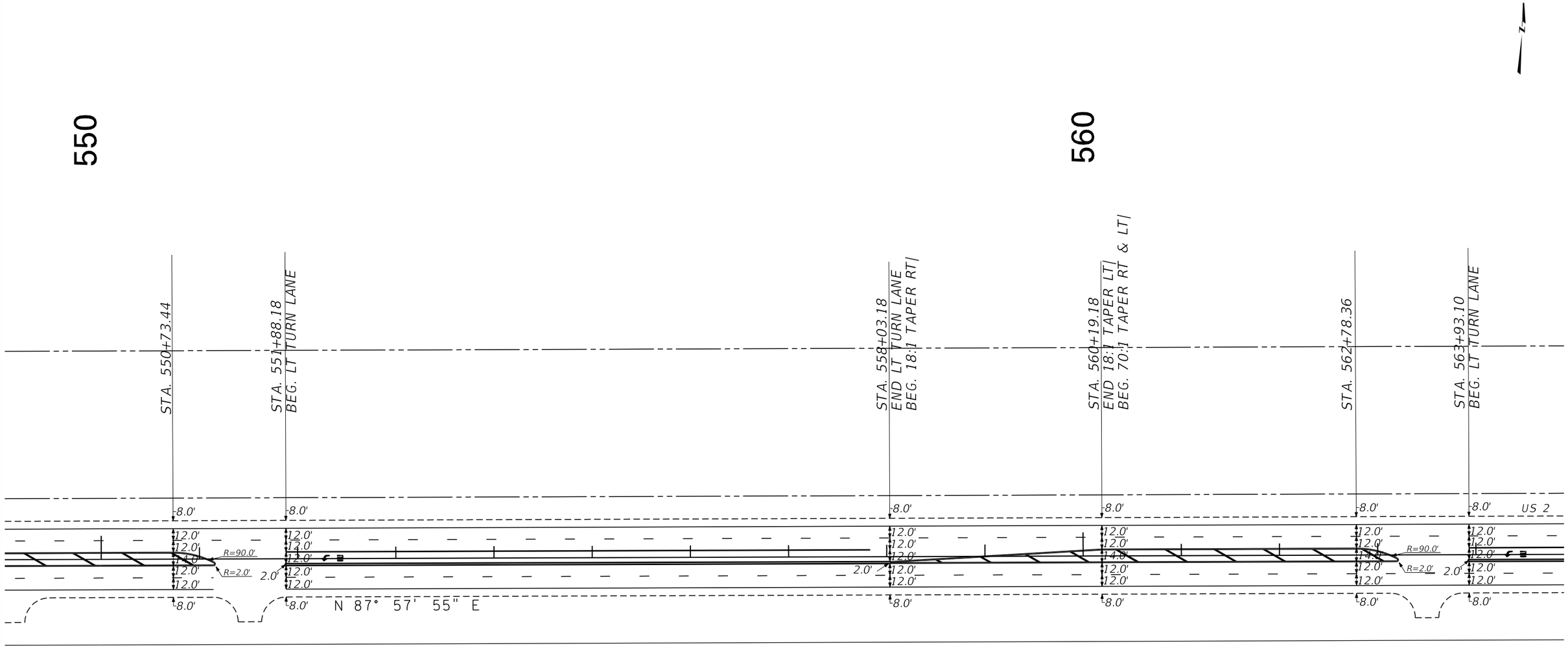
(NO SCALE)



GEOMETRIC DETAIL

(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge4.dgn	DESIGNED BY	DANIEL TRUESDELL		LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY		ROAD PLANS		
1		3:13:03 PM CPS - U2160	CHECKED BY	JERRY SABOL 4/15/2019	BLAINE COUNTY	CSF= 0.99965875 UPN 6281000	78

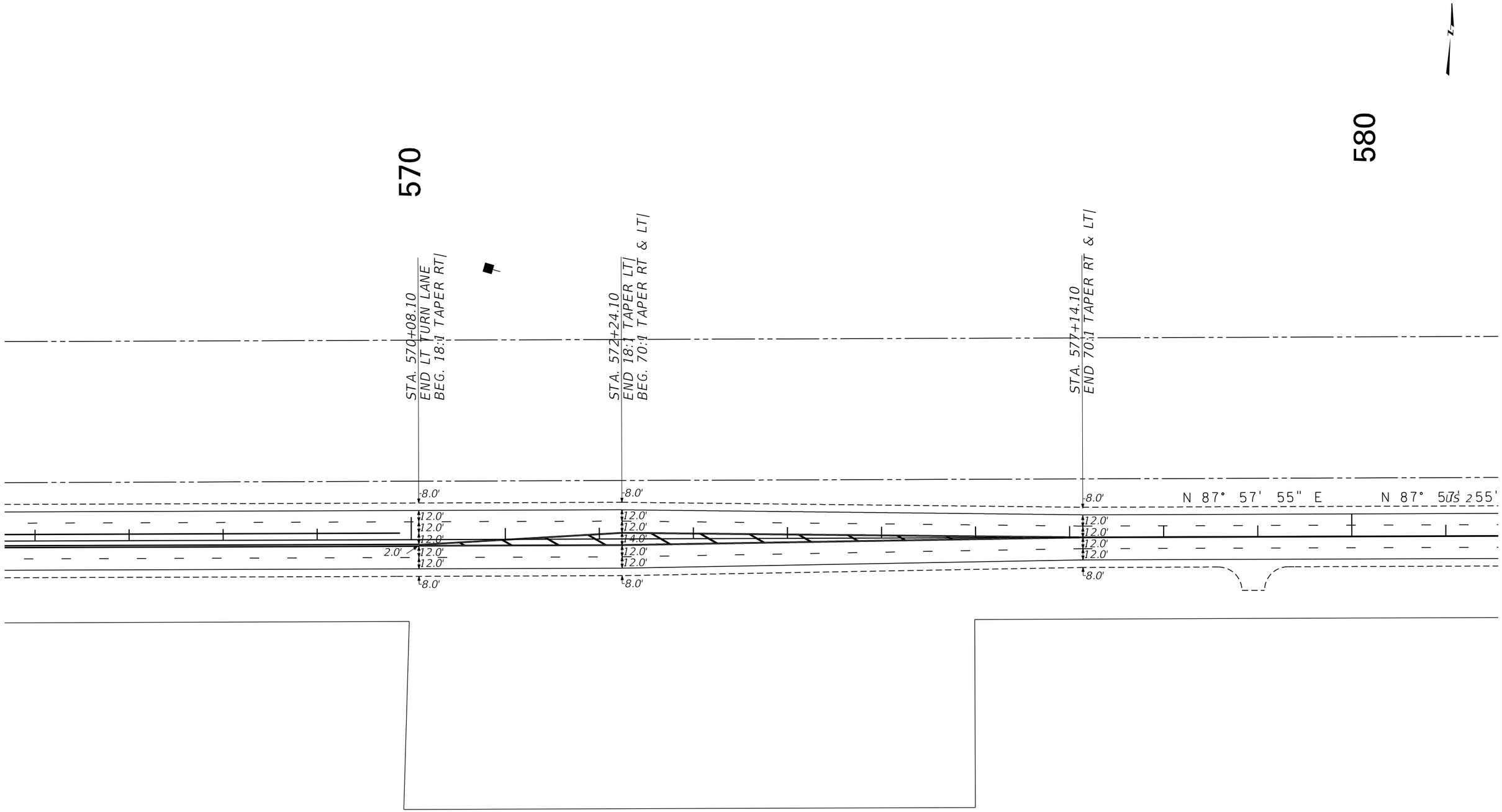


GEOMETRIC DETAIL

(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge4.dgn	DESIGNED BY DANIEL TRUESDELL	ROAD PLANS	LOHMAN - E & W		NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY				
1		3:13:07 PM CPS - U2160	CHECKED BY JERRY SABOL 4/15/2019	BLAINE COUNTY	CSF= 0.99965875	UPN 6281000	79

AWARD COPY

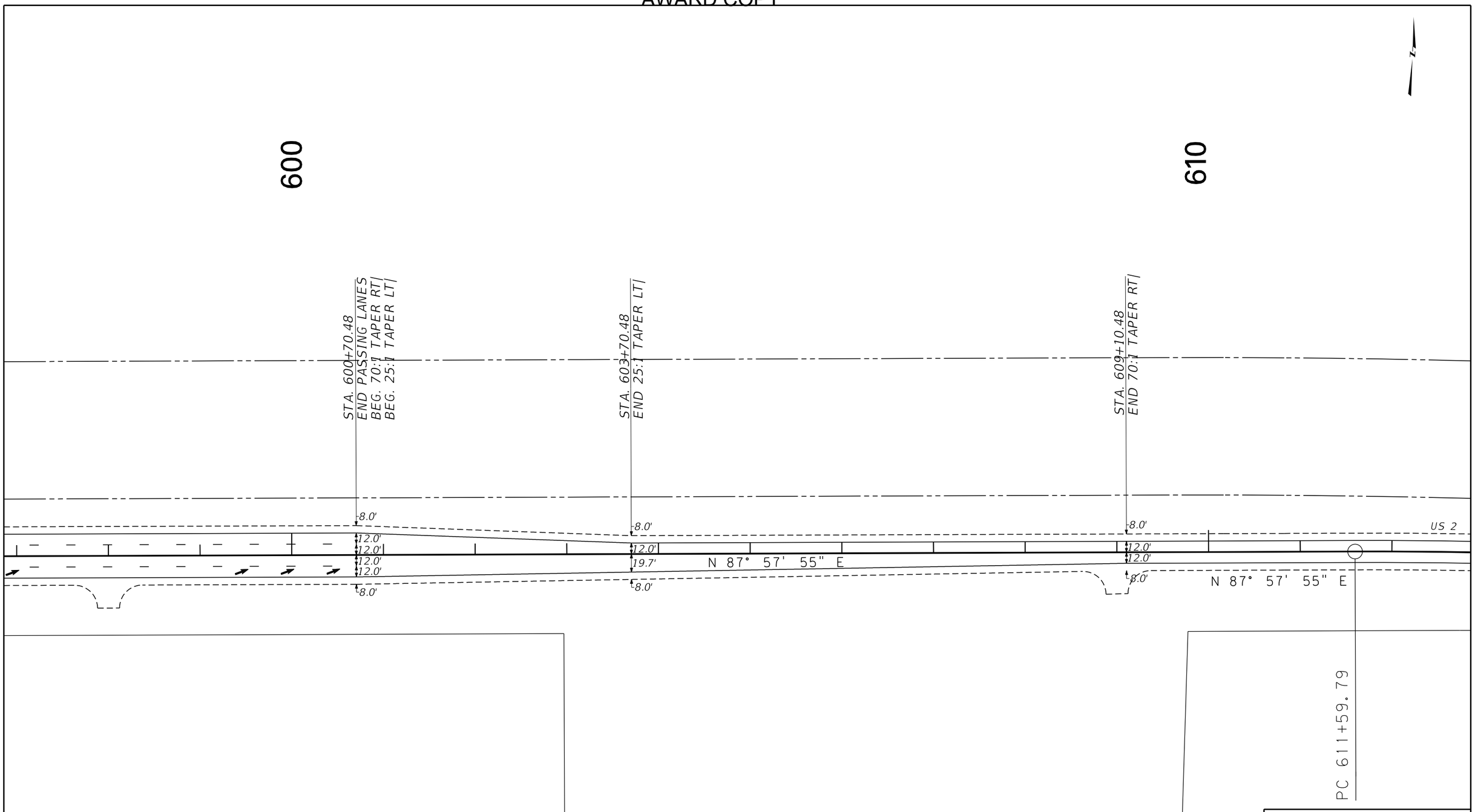


GEOMETRIC DETAIL

(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge4.dgn	DESIGNED BY	DANIEL TRUESDELL		ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY					
1		3:13:10 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	80

AWARD COPY

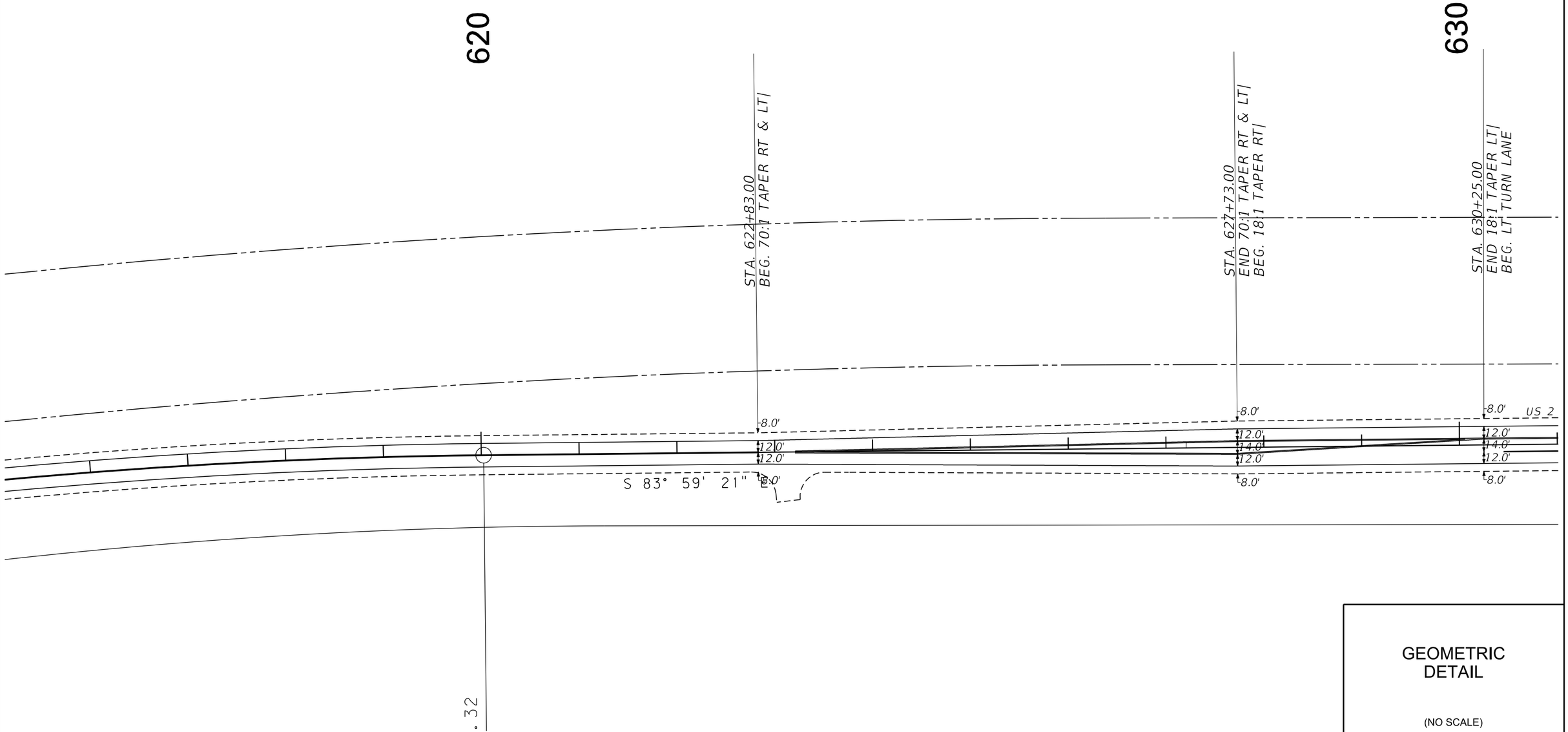


GEOMETRIC DETAIL

(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge5.dgn	DESIGNED BY	DANIEL TRUESDELL		ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY					
1		3:13:31 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 UPN 6281000	81

AWARD COPY



GEOMETRIC DETAIL

(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge5.dgn	DESIGNED BY	DANIEL TRUESDELL		LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY		ROAD PLANS		
1		3:13:35 PM CPS - U2160	CHECKED BY	JERRY SABOL 4/15/2019	BLAINE COUNTY	CSF= 0.99965875 UPN 6281000	82

AWARD COPY

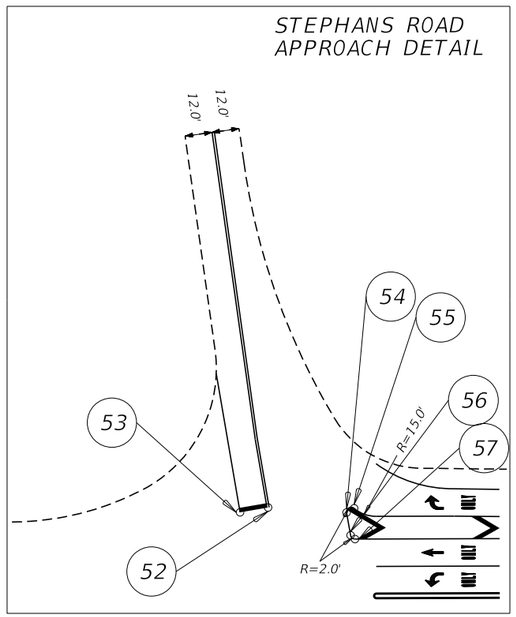
GEOMETRIC RADIUS CURVE DATA

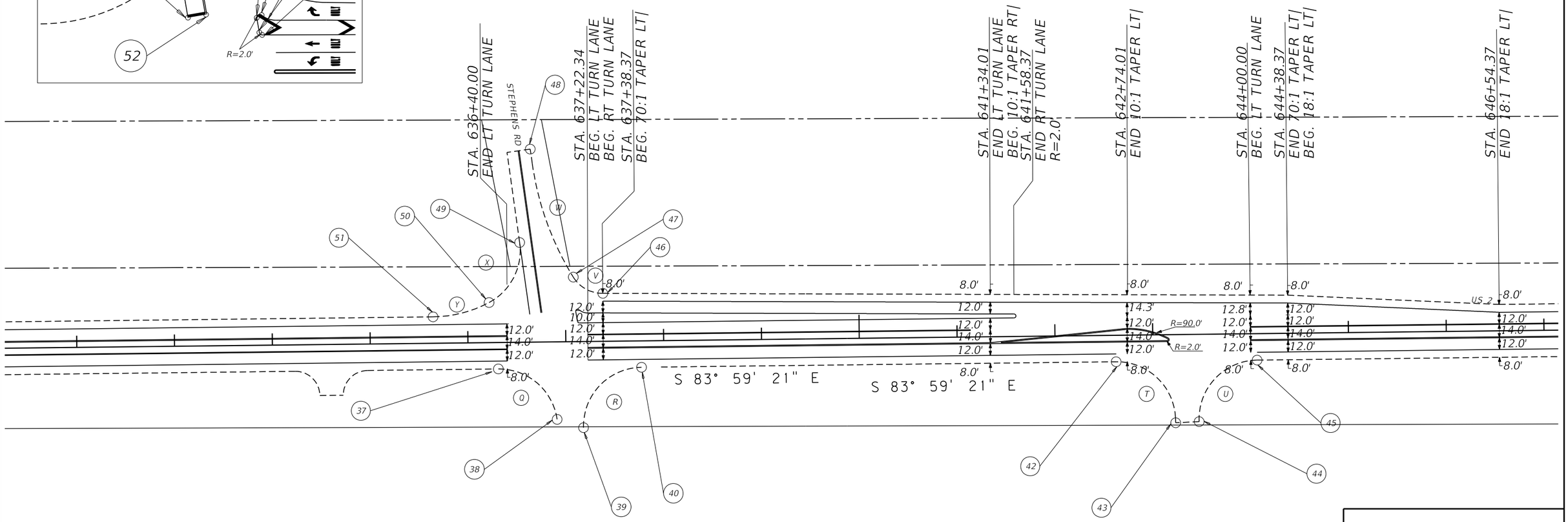
Curve	Delta	Radius	Length	Tangent	N OR Y Coordinates	E OR X Coordinates
Q	82°33'55"	60.00 ft	86.46 ft	52.68 ft	1,584,524.2050	2,029,401.2280
R	90°57'30"	60.00 ft	95.25 ft	61.01 ft	1,584,508.8700	2,029,546.8070
T	87°56'23"	60.00 ft	92.09 ft	57.88 ft	1,584,458.0662	2,030,029.3489
U	92°3'37"	60.00 ft	96.41 ft	62.20 ft	1,584,442.9773	2,030,172.6498
V	58°55'59"	35.00 ft	36.00 ft	19.78 ft	1,584,682.9884	2,029,526.2229
W	23°44'31"	300.00 ft	124.31 ft	63.06 ft	1,584,795.2170	2,029,766.2849
X	69°56'48"	60.00 ft	73.25 ft	41.97 ft	1,584,708.2778	2,029,384.1782
Y	27°22'9"	125.00 ft	59.71 ft	30.44 ft	1,584,768.8137	2,029,360.5053

GEOMETRIC COORDINATE TABLE

Point	N OR Y Coordinates	E OR X Coordinates	Station	Offset
37	1,584,583.875	2,029,407.511	636+30.69	27.00 RT
38	1,584,525.696	2,029,461.209	636+90.19	79.24 RT
39	1,584,514.160	2,029,487.040	637+17.09	88.00 RT
40	1,584,568.546	2,029,553.090	637+77.08	27.00 RT
42	1,584,517.736	2,030,035.632	642+62.29	27.00 RT
43	1,584,448.765	2,030,088.850	643+22.43	90.02 RT
44	1,584,447.111	2,030,112.792	643+46.42	89.16 RT
45	1,584,502.647	2,030,178.933	644+06.38	27.00 RT
46	1,584,648.181	2,029,522.558	637+38.37	49.00 LT
47	1,584,668.166	2,029,494.517	637+08.39	65.94 LT
48	1,584,803.161	2,029,466.024	636+65.92	197.21 LT
49	1,584,709.654	2,029,444.162	636+53.97	101.93 LT
50	1,584,652.399	2,029,406.030	636+22.04	40.99 LT
51	1,584,644.501	2,029,347.416	635+64.58	27.00 LT
52	1,584,635.778	2,029,457.860	636+75.33	29.89 LT
53	1,584,635.502	2,029,445.863	636+63.43	28.36 LT
54	1,584,632.941	2,029,492.902	637+10.48	30.74 LT
55	1,584,634.442	2,029,496.346	637+13.74	32.59 LT
56	1,584,622.783	2,029,493.522	637+12.16	20.70 LT
57	1,584,620.916	2,029,495.306	637+14.13	19.03 LT

640

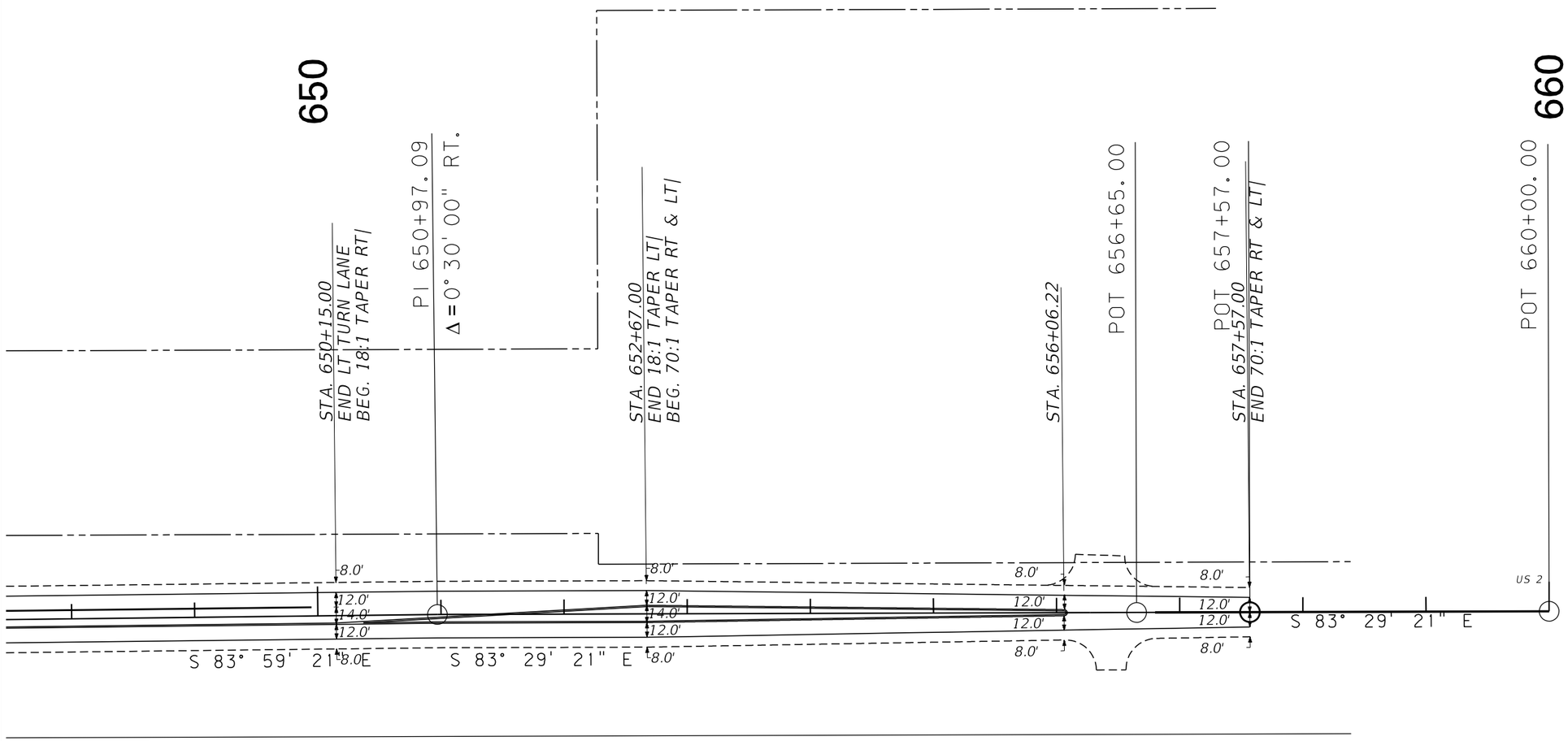




GEOMETRIC DETAIL

(NO SCALE)

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge5.dgn	DESIGNED BY DANIEL TRUESDELL		ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY				
1		3:13:39 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	83

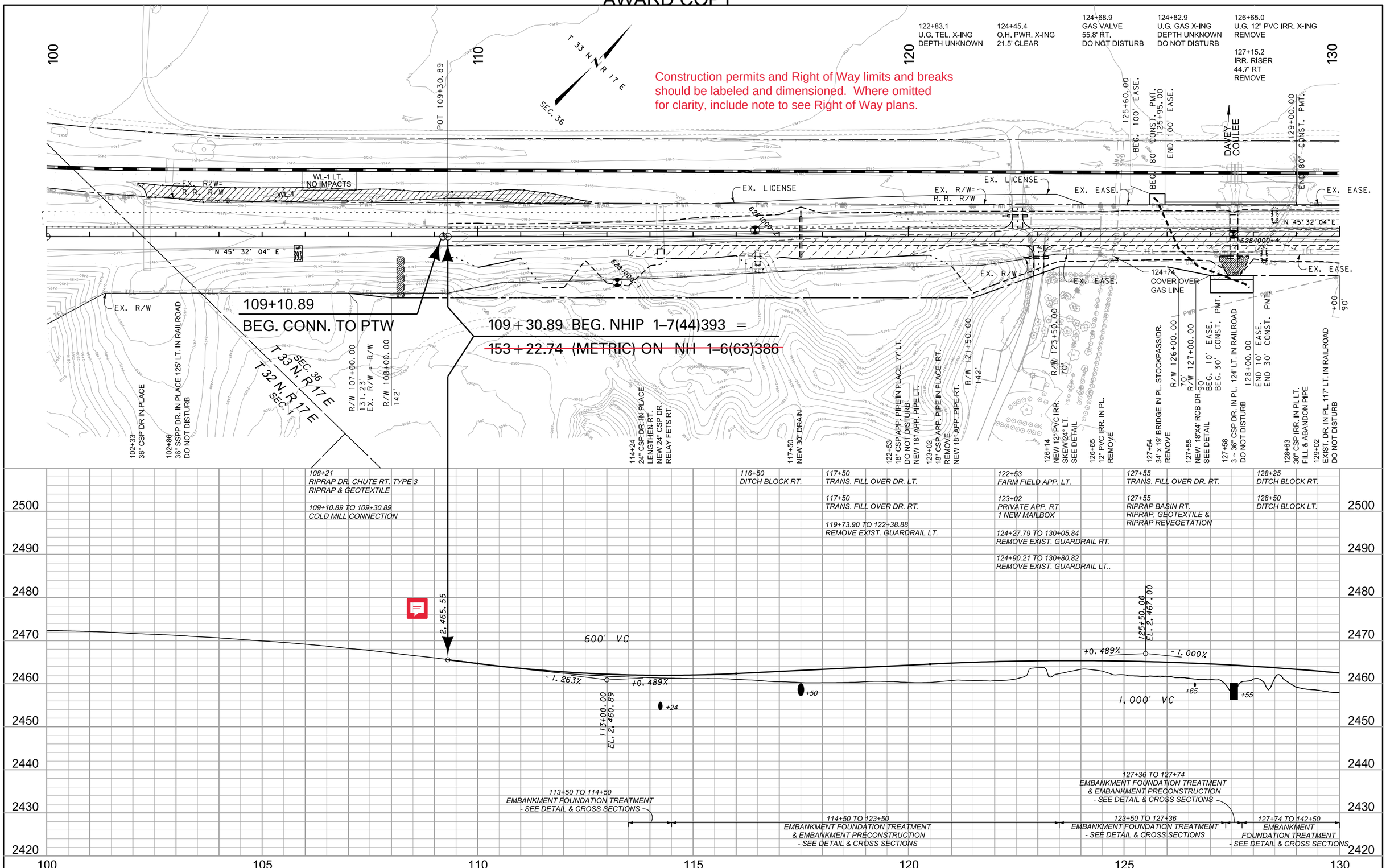


GEOMETRIC DETAIL

(NO SCALE)

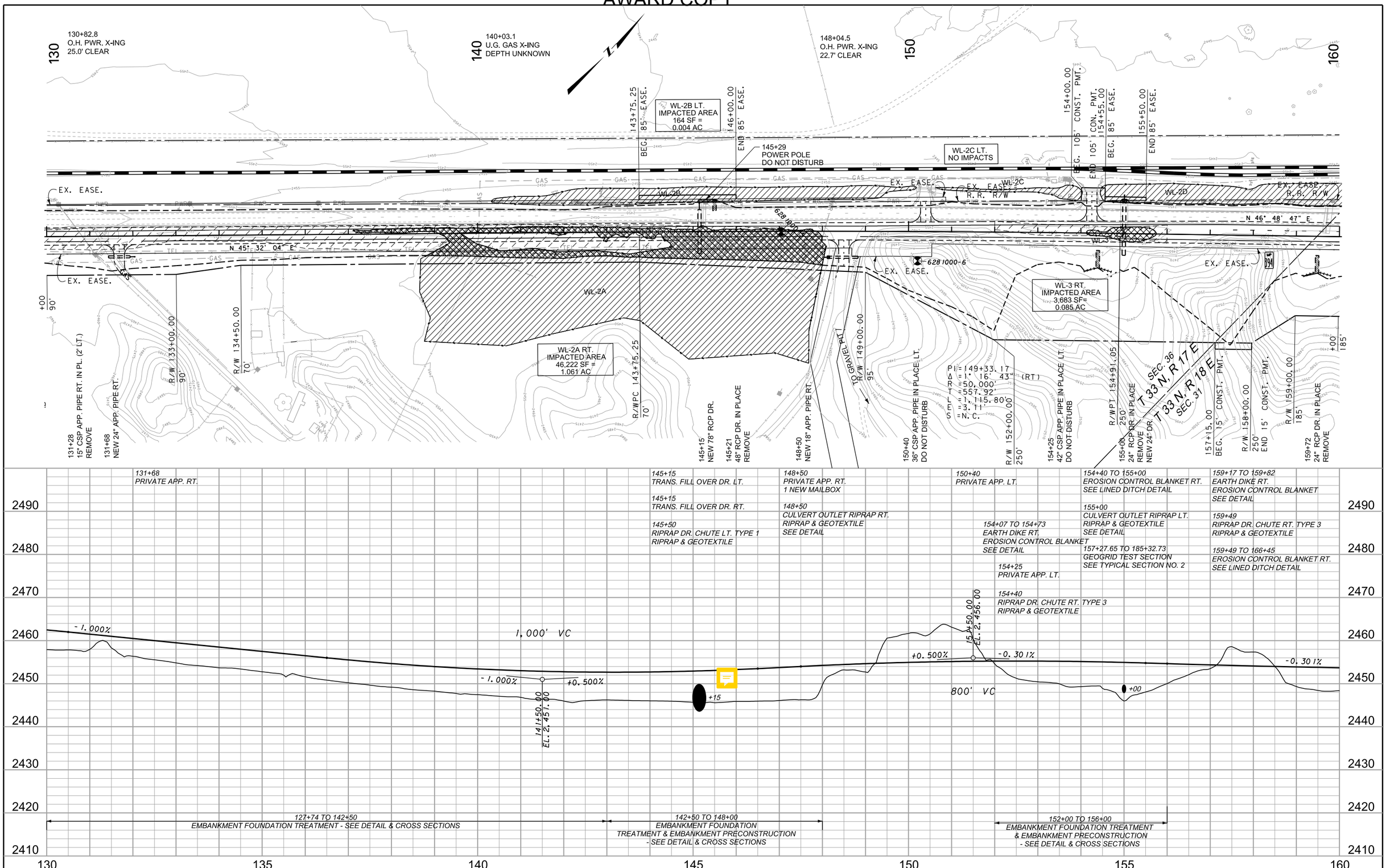
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rddetge6.dgn	DESIGNED BY	DANIEL TRUESDELL		ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY					
1		3:13:54 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 UPN 6281000	84

AWARD COPY



3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp001.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W / NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000
1		3:14:08 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019		85

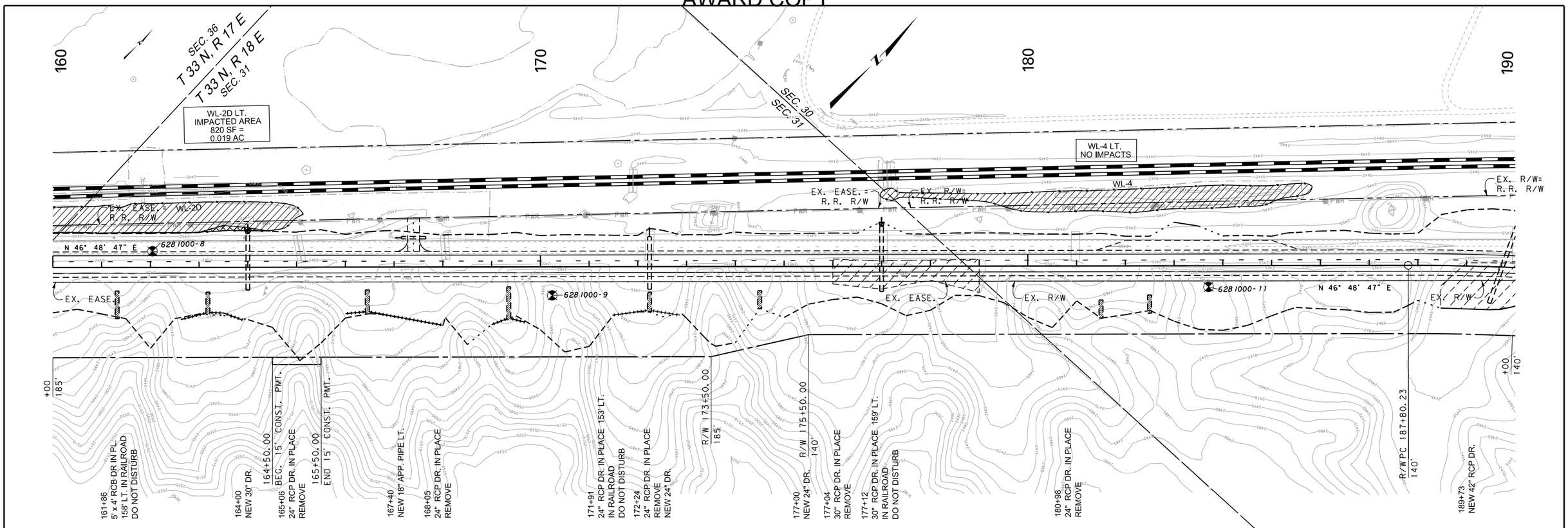
AWARD COPY



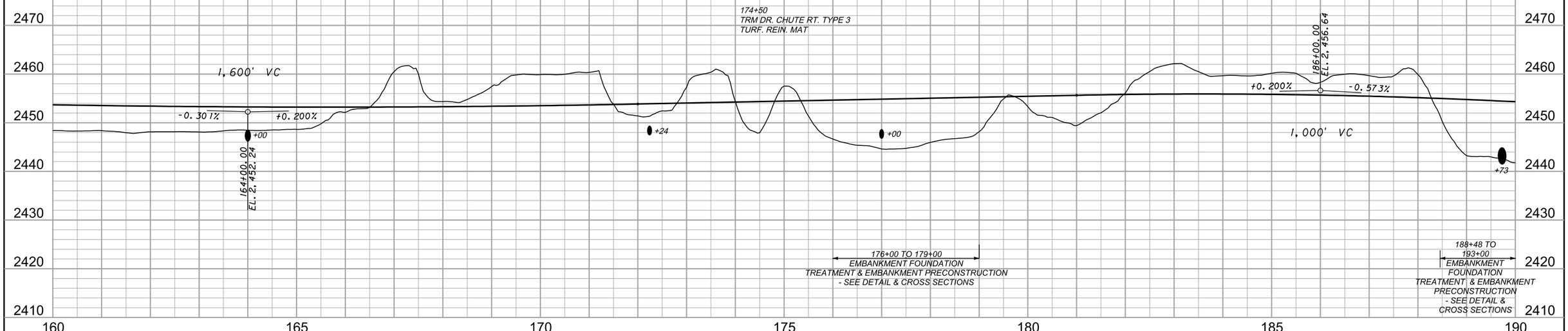
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp001.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018	BLAINE COUNTY
1		3:14:13 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	

LOHMAN - E & W		NHIP 1-7(44)393
CSF= 0.99965875	UPN 6281000	86

AWARD COPY

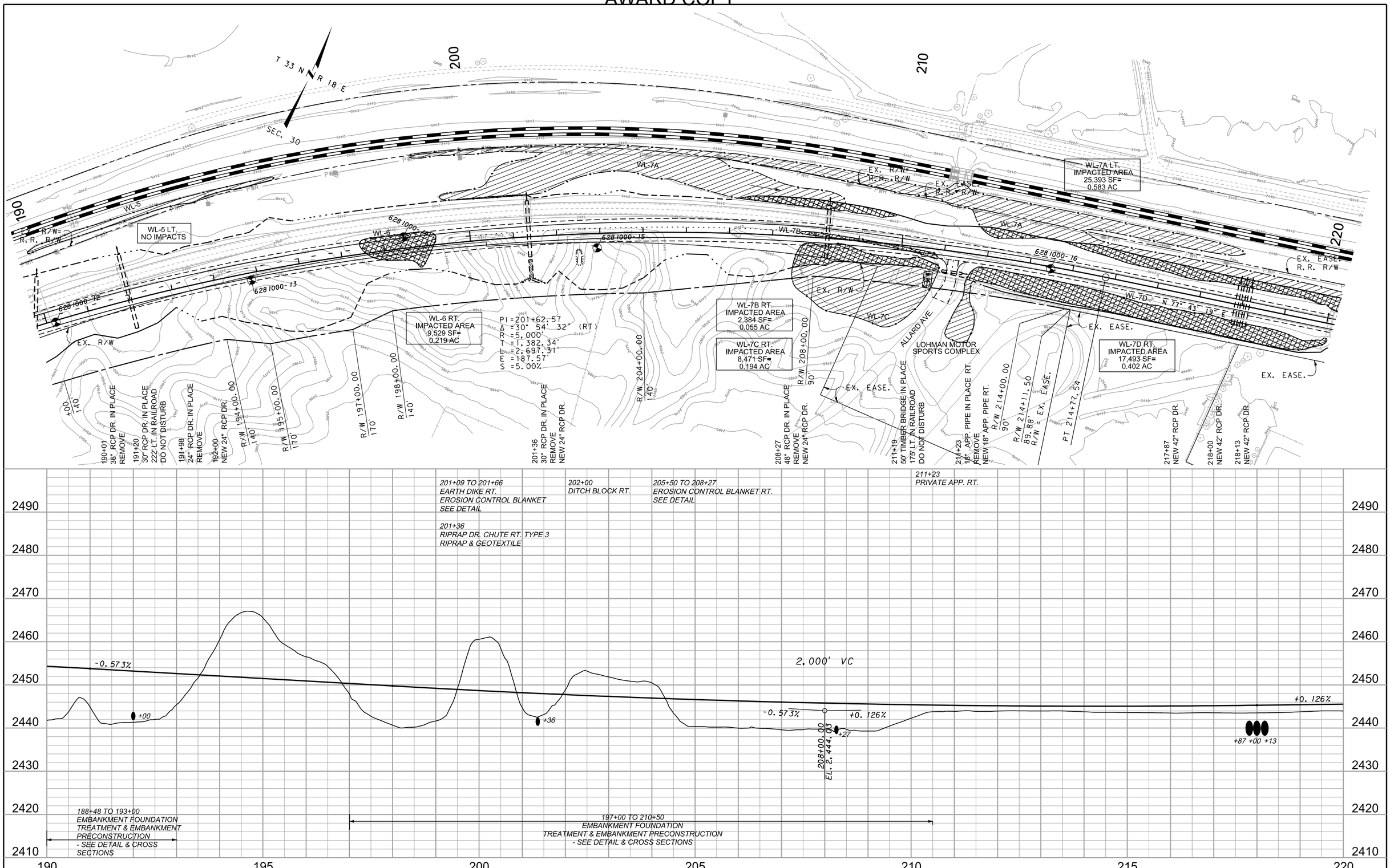


161+31	TRM DR. CHUTE RT. TYPE 3
	TURF. REIN. MAT
162+63 TO 163+88	EARTH DIKE RT.
	EROSION CONTROL BLANKET
	SEE DETAIL
163+18	RIPRAP DR. CHUTE RT. TYPE 3
	RIPRAP & GEOTEXTILE
164+00	CULVERT OUTLET RIPRAP LT.
	RIPRAP & GEOTEXTILE
	SEE DETAIL
166+00 TO 167+96	EARTH DIKE RT.
	EROSION CONTROL BLANKET
	SEE DETAIL
166+45	RIPRAP DR. CHUTE RT. TYPE 3
	RIPRAP & GEOTEXTILE
167+40	PRIVATE APP. LT.
169+03 TO 169+68	EARTH DIKE RT.
	EROSION CONTROL BLANKET
	SEE DETAIL
169+35	RIPRAP DR. CHUTE RT. TYPE 3
	RIPRAP & GEOTEXTILE
171+47 TO 172+86	EARTH DIKE RT.
	EROSION CONTROL BLANKET
	SEE DETAIL
172+24	RIPRAP DR. CHUTE RT. TYPE 3
	RIPRAP & GEOTEXTILE
172+24 TO 174+50	EROSION CONTROL BLANKET RT.
	SEE DETAIL
174+50	TRM DR. CHUTE RT. TYPE 3
	TURF. REIN. MAT
177+00	CULVERT OUTLET RIPRAP LT.
	RIPRAP & GEOTEXTILE
	SEE DETAIL
177+00 TO 182+50	EROSION CONTROL BLANKET RT.
	SEE LINED DITCH DETAIL
181+16 TO 185+84	MCS TURNOUT LT.
	SEE DETAIL
181+50	TRM DR. CHUTE RT. TYPE 3
	TURF. REIN. MAT
182+50	TRM DR. CHUTE RT. TYPE 3
	TURF. REIN. MAT



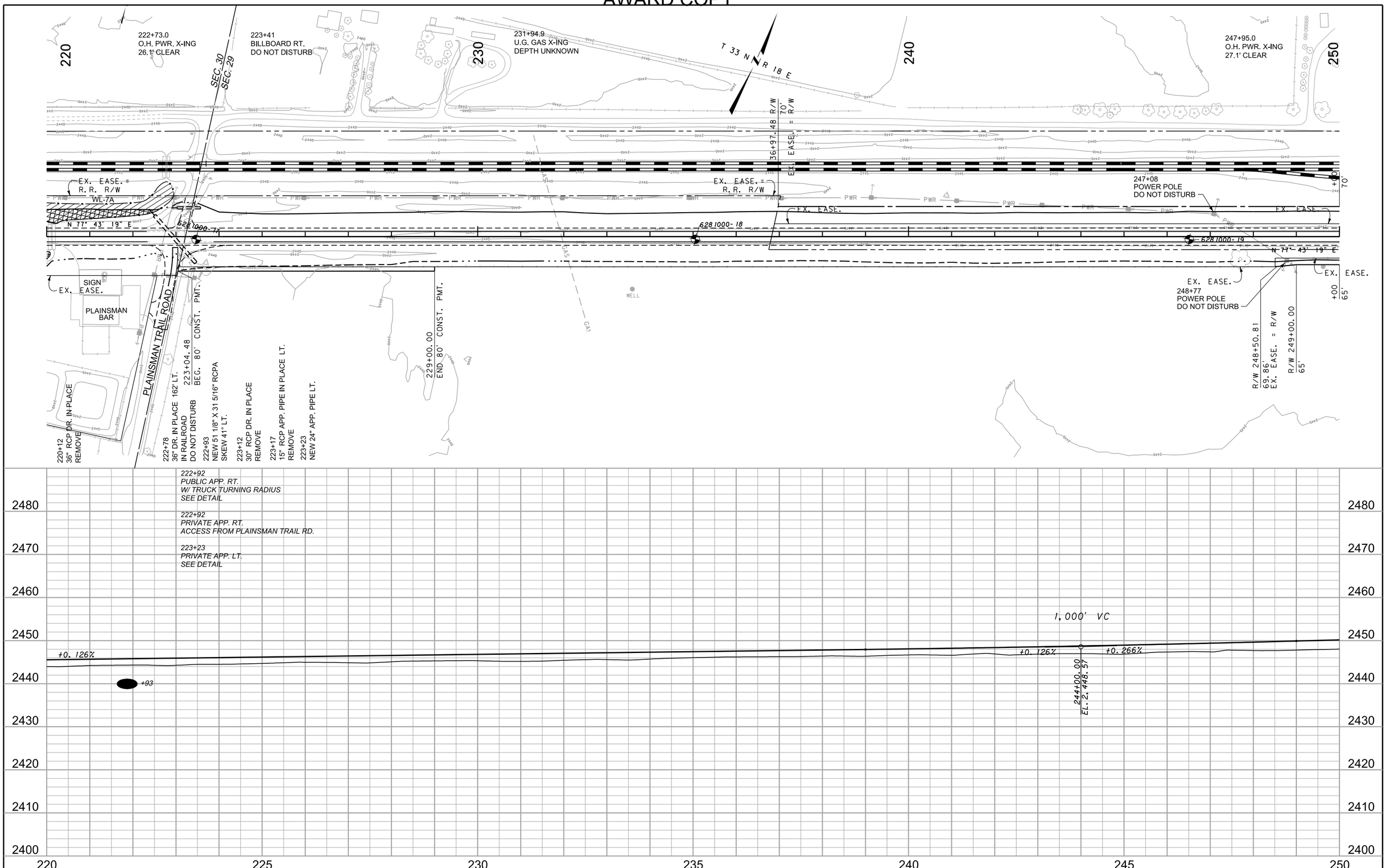
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp001.dgn	DESIGNED BY	BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W / NHIP 1-7(441)393
2		9/9/2019	REVIEWED BY	JEANIA CERECK	8/22/2018		
1		3:14:17 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000 / 87

AWARD COPY



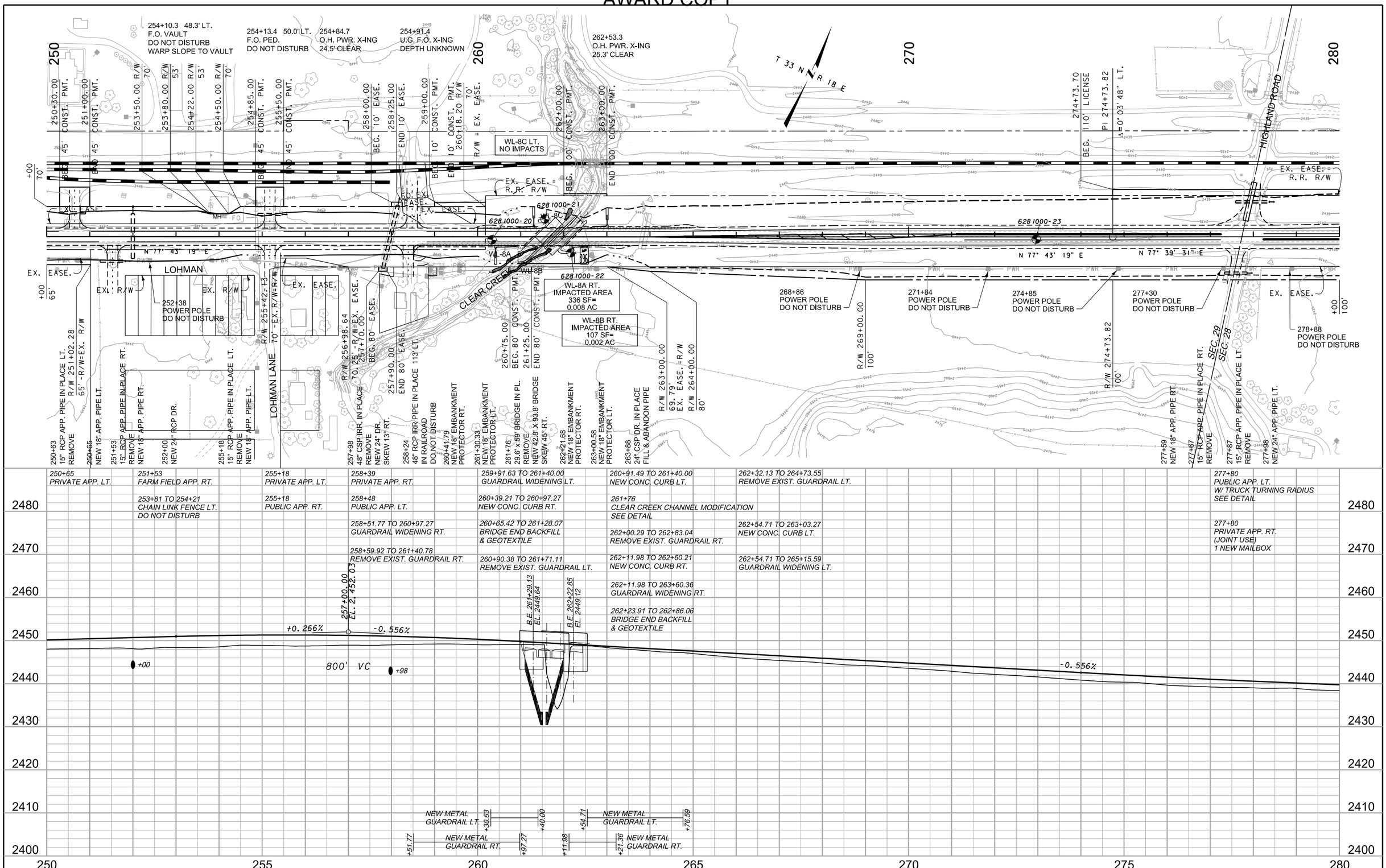
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp002.dgn	DESIGNED BY	BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY	JEANIA CERECK	8/22/2018			
1		3:14:32 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	88

AWARD COPY



3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp002.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018			
1		3:14:36 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	89

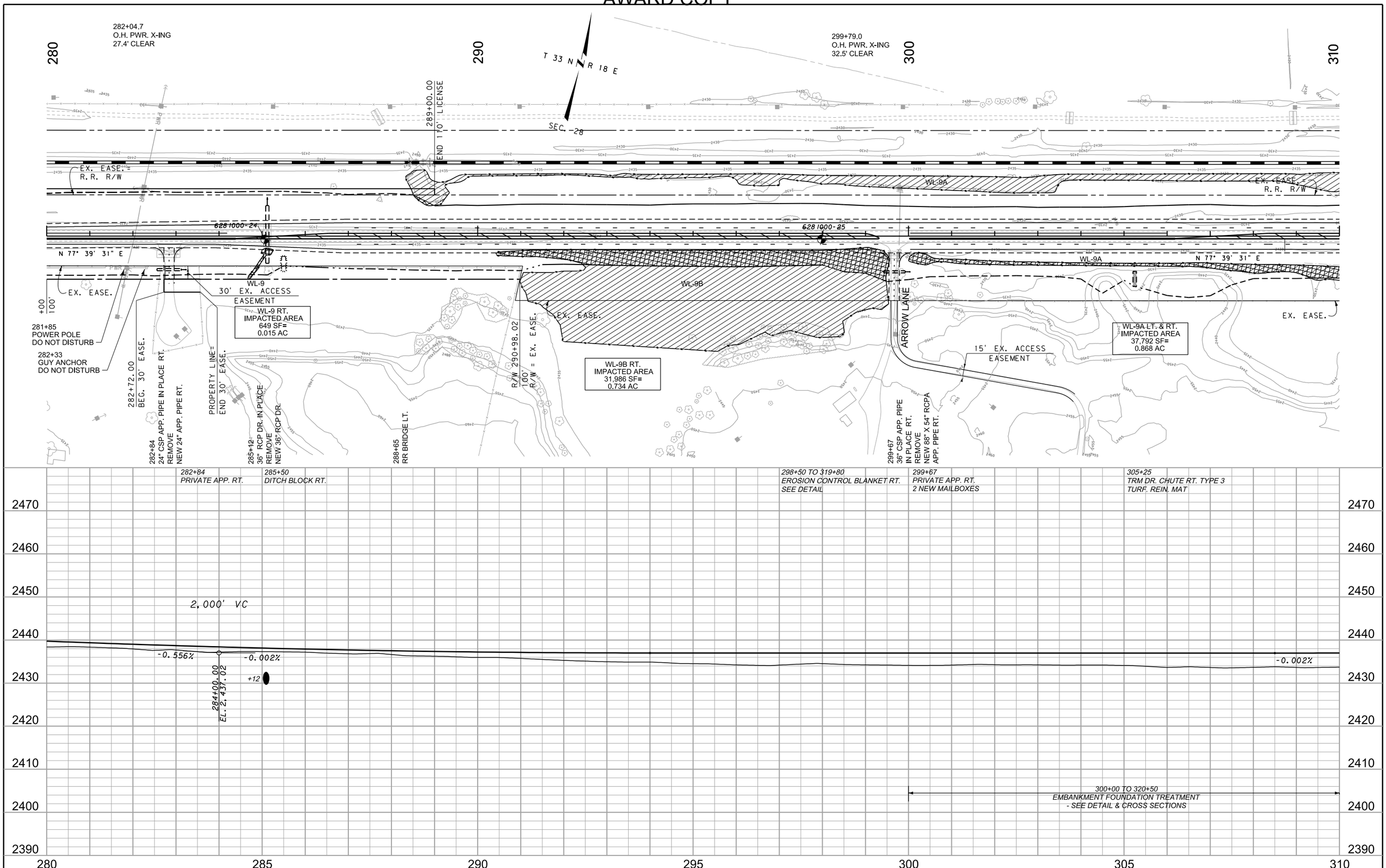
AWARD COPY



3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp002.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018	BLAINE COUNTY
1		3:14:40 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	

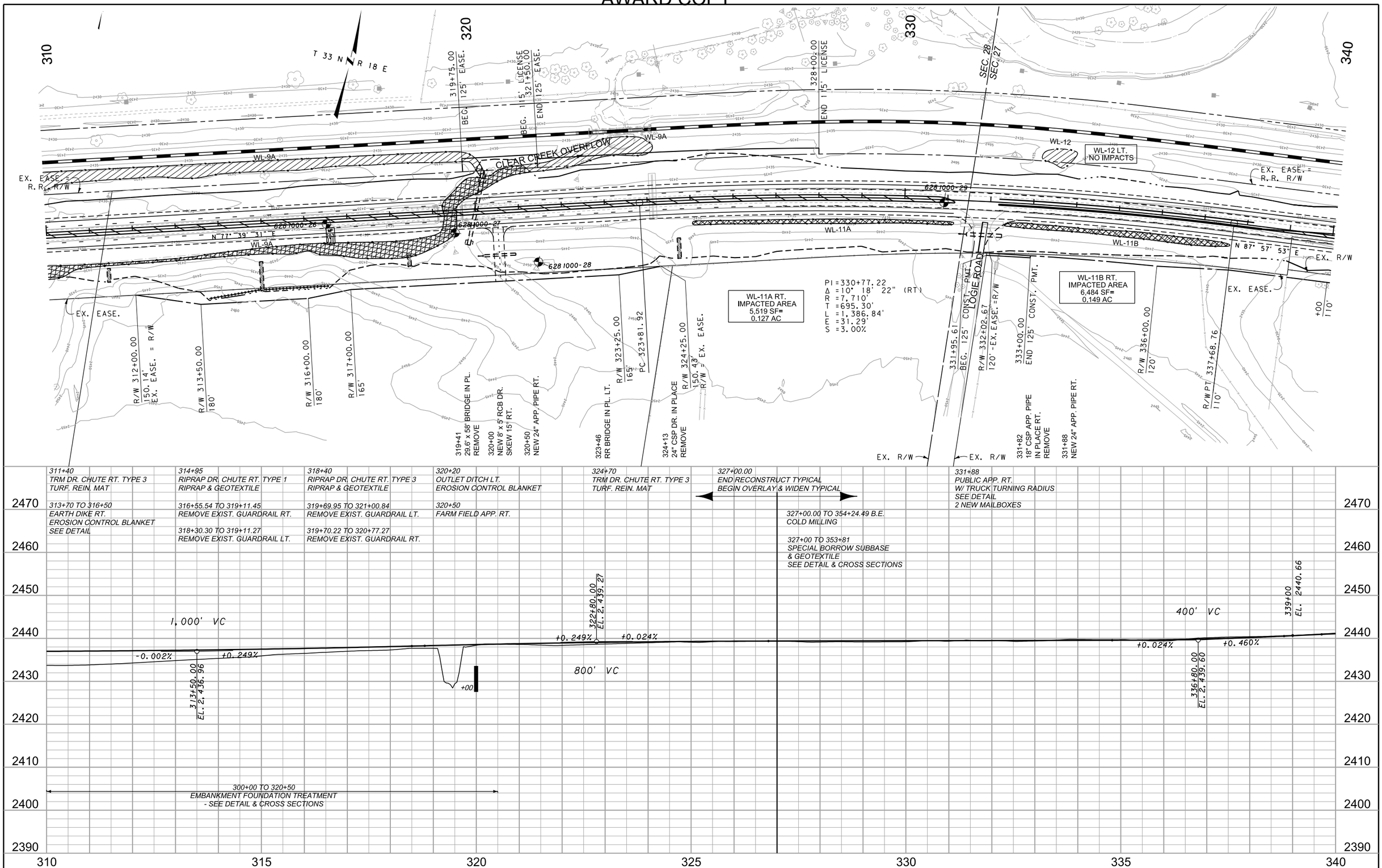
LOHMAN - E & W		NHIP 1-7(44)393
CSF= 0.99965875	UPN 6281000	90

AWARD COPY



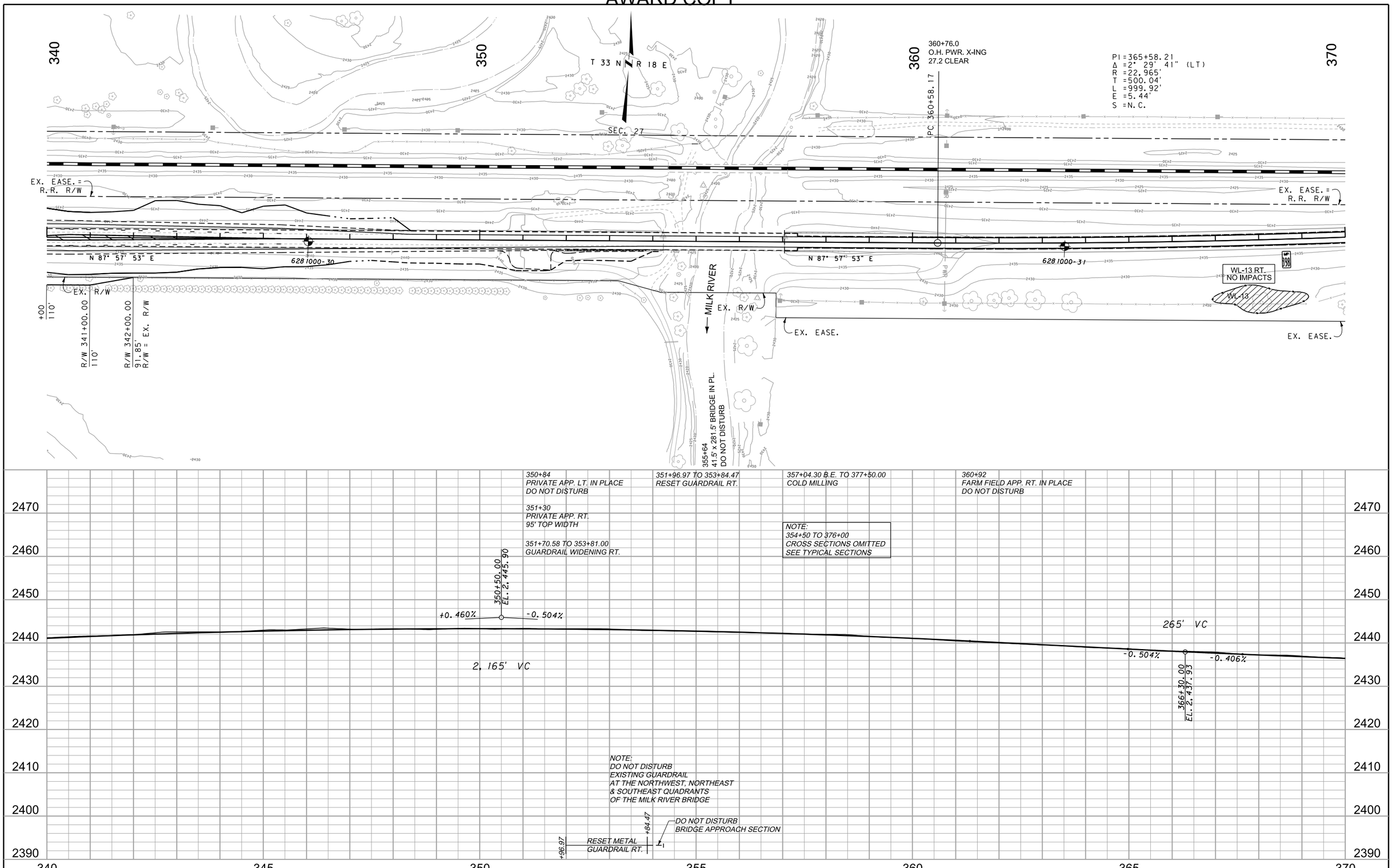
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp003.dgn	DESIGNED BY BETH POINTER 5/10/2016	ROAD PLANS		LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK 8/22/2018				
1		3:14:51 PM CPS - U2160	CHECKED BY JERRY SABOL 4/15/2019	BLAINE COUNTY		CSF= 0.99965875 UPN 6281000	91

AWARD COPY



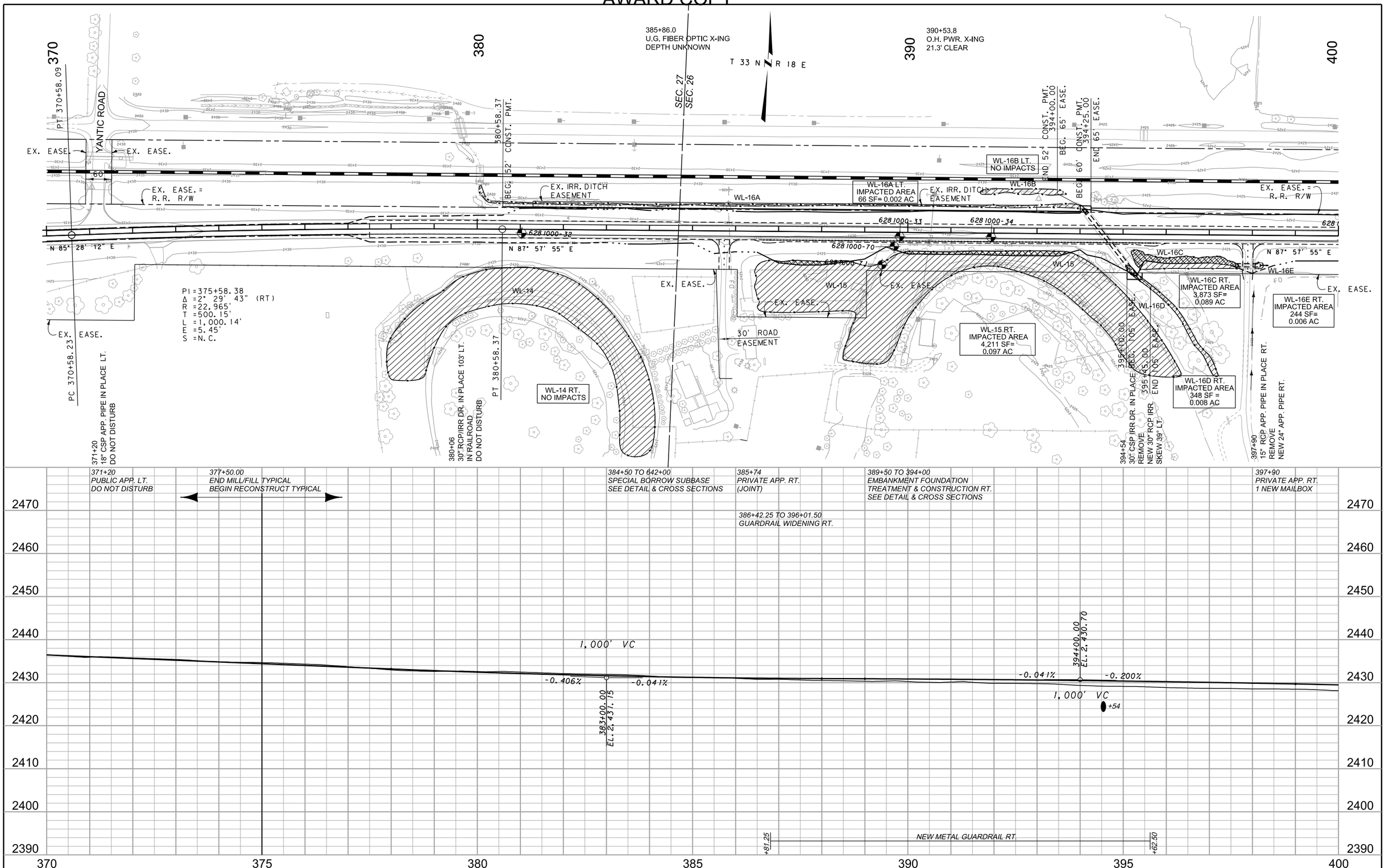
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp003.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018			
1		3:14:55 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	92

AWARD COPY



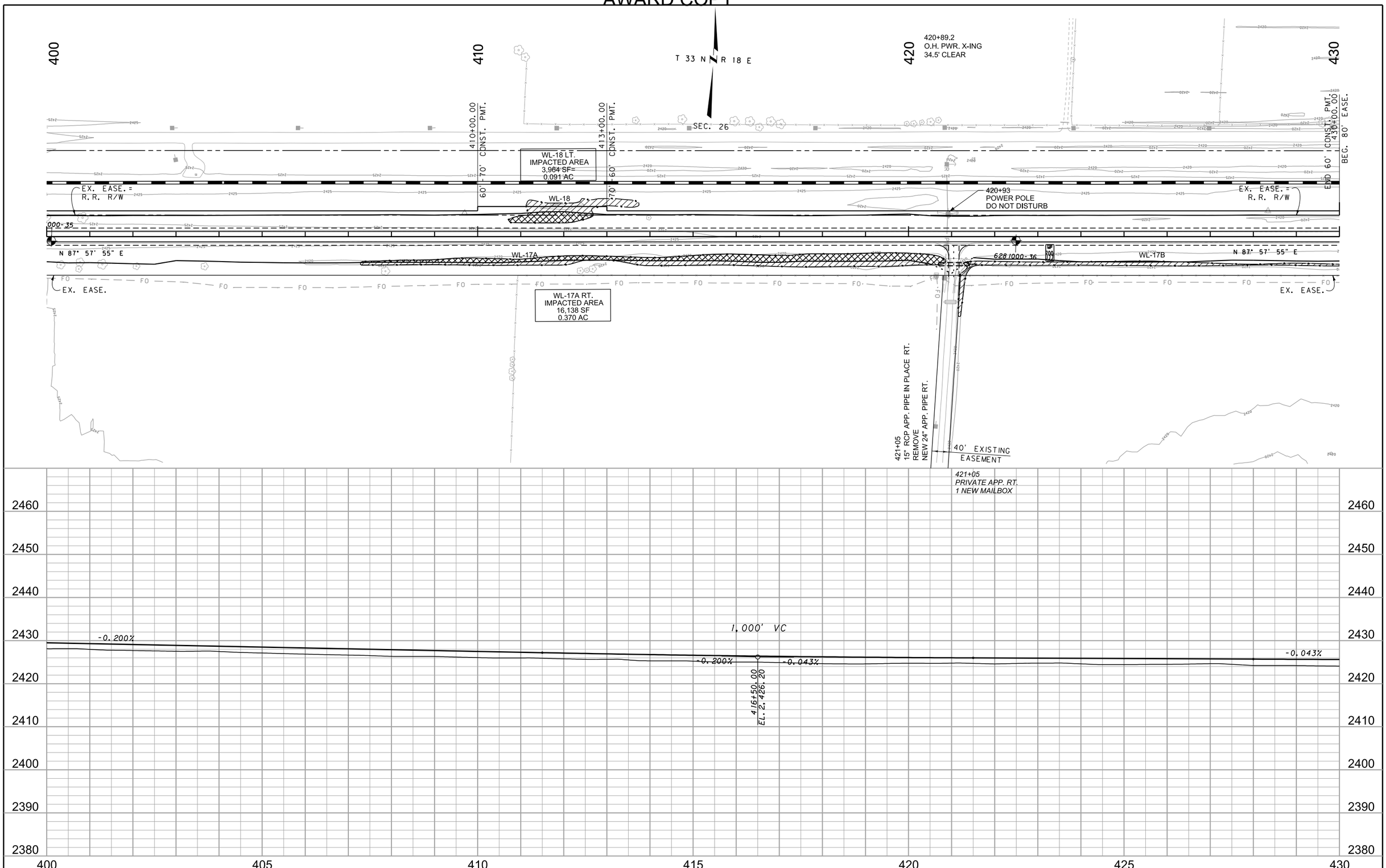
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp003.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018			
1		3:14:59 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	93

AWARD COPY



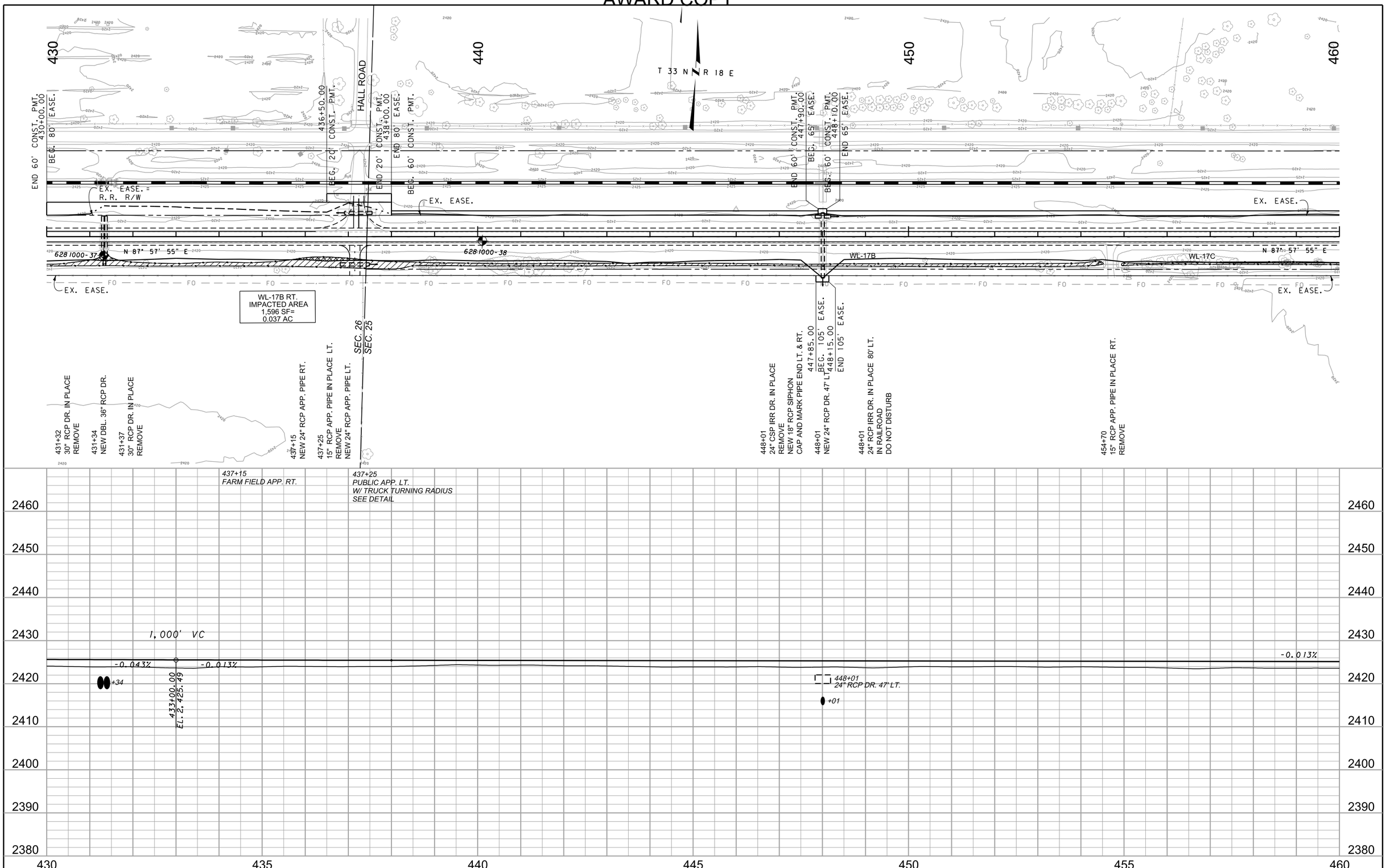
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp004.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018			
1		3:15:13 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 UPN 6281000	94

AWARD COPY



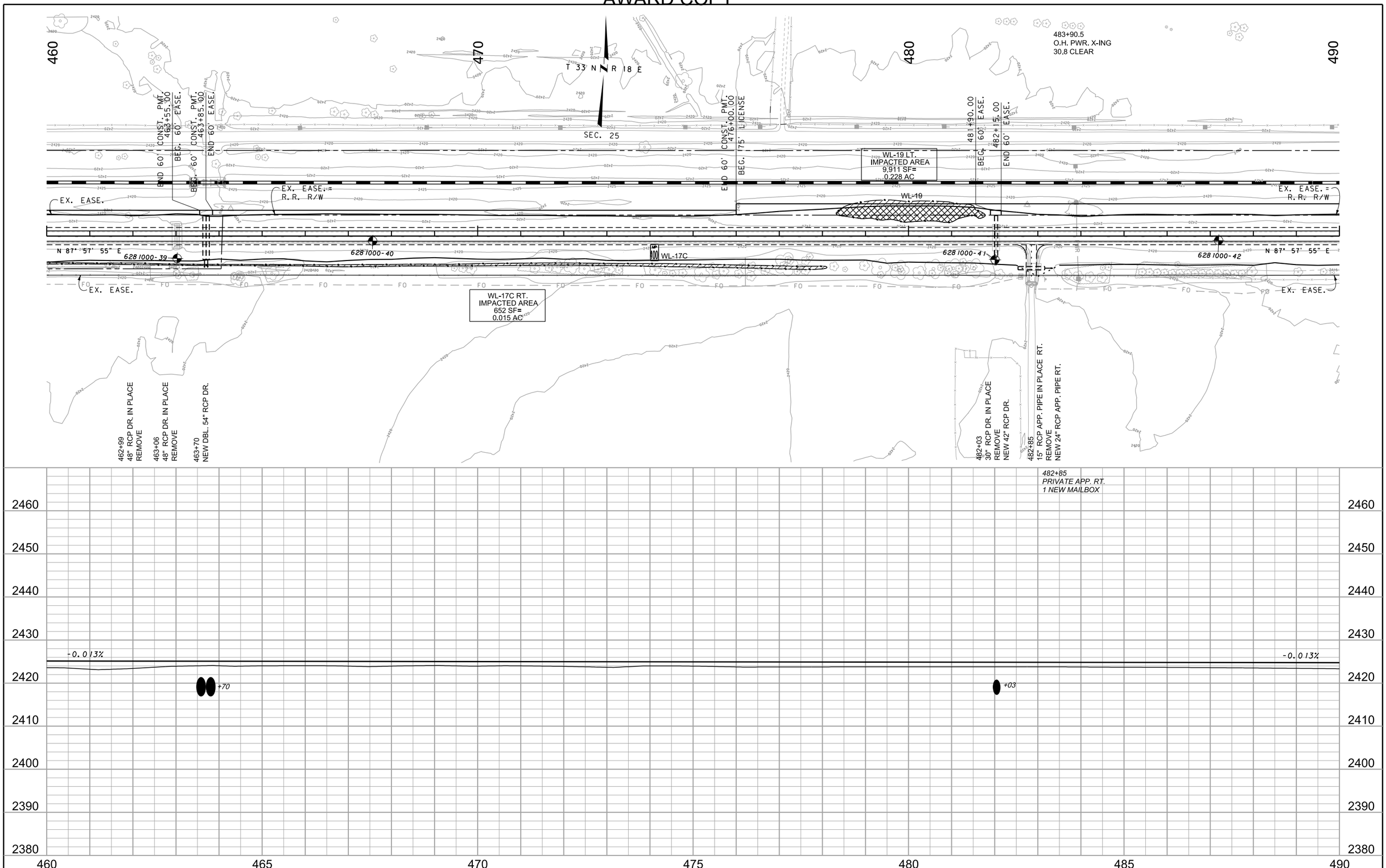
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp004.dgn	DESIGNED BY	BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W / NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY	JEANIA CERECK	8/22/2018		
1		3:15:18 PM CPS - U2160	CHECKED BY	JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000 / 95
					5/10/2016		

AWARD COPY



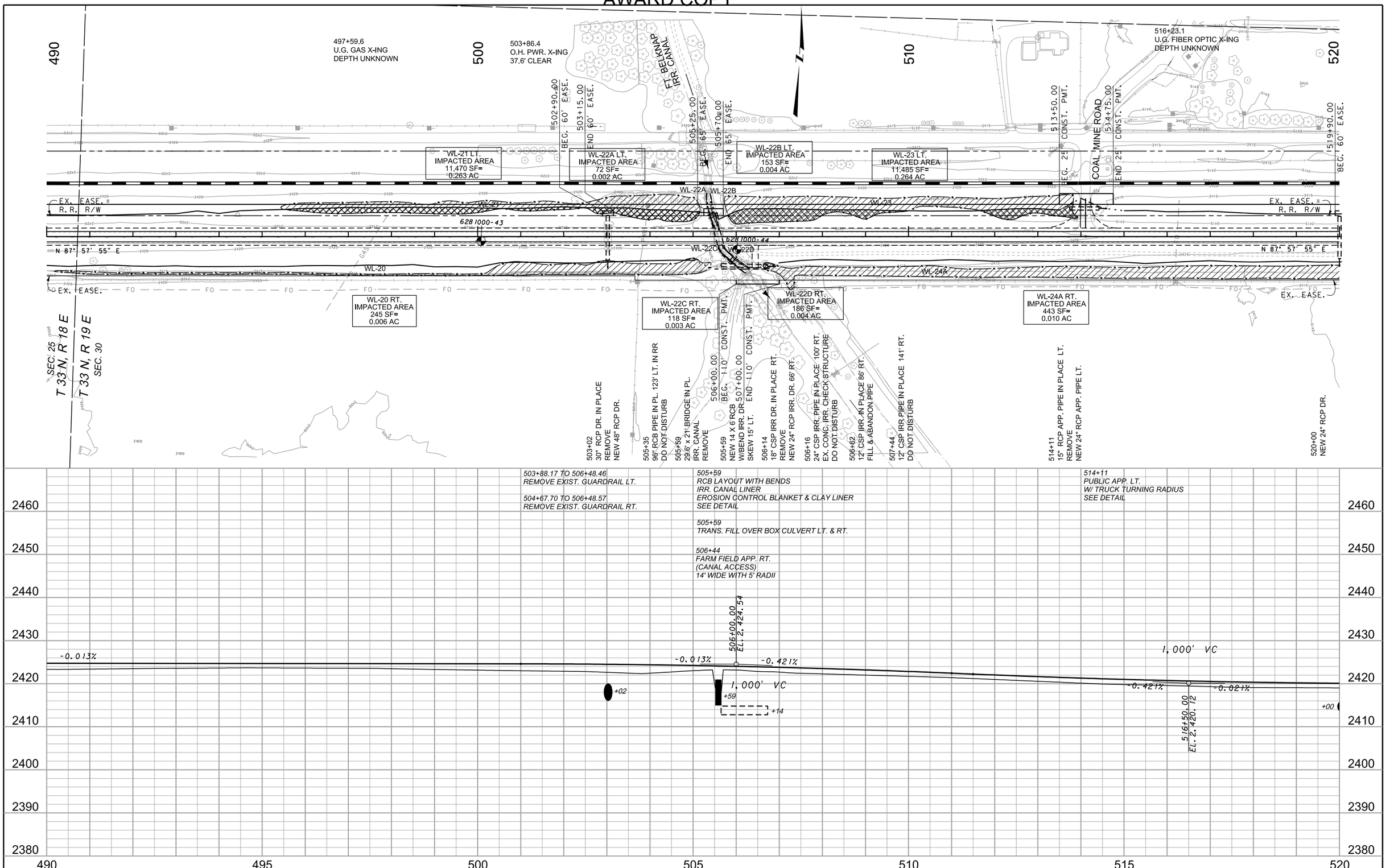
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp004.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W	NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018			
1		3:15:22 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000	96

AWARD COPY



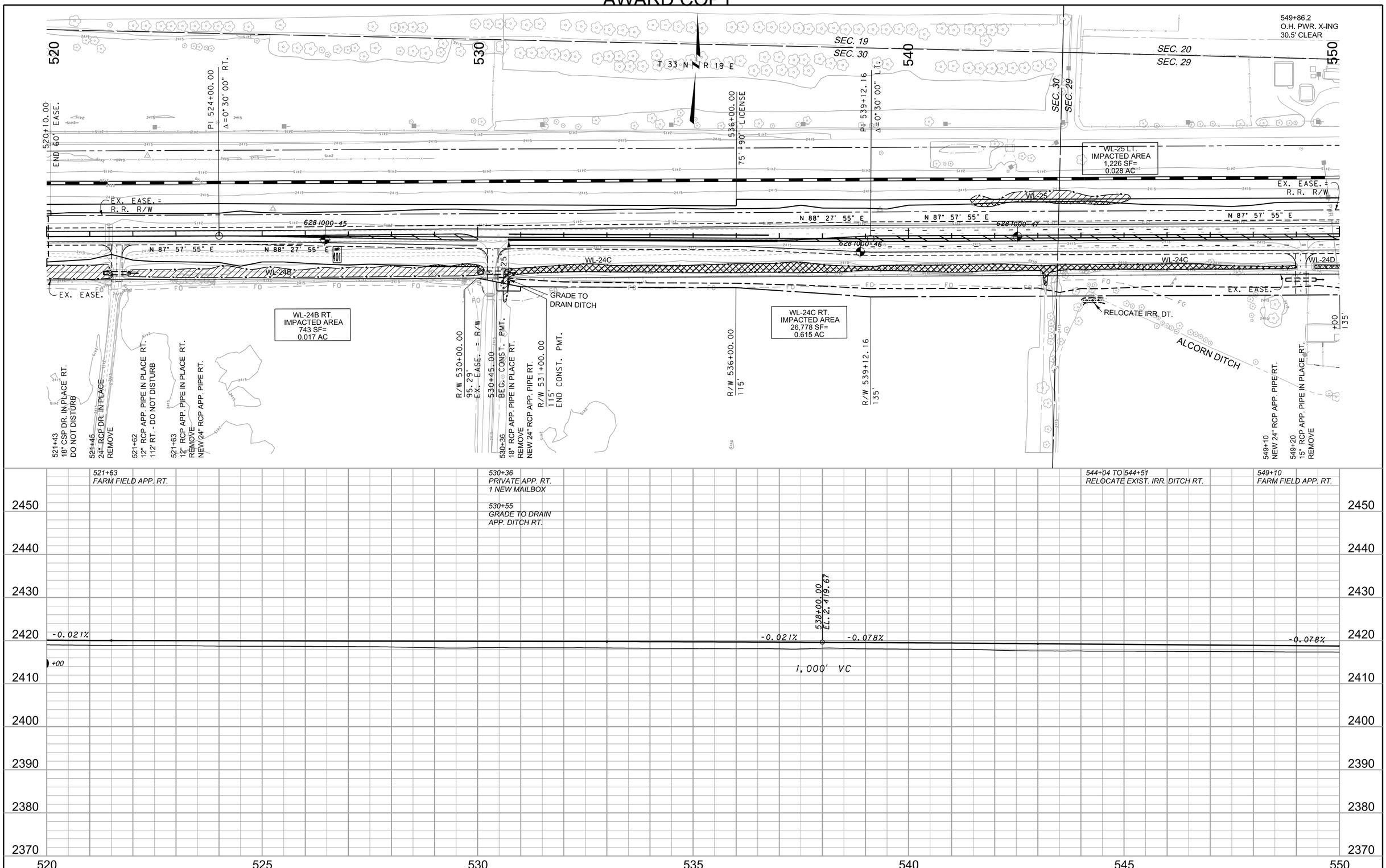
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp005.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W / NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018		
1		3:15:35 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000 / 97

AWARD COPY



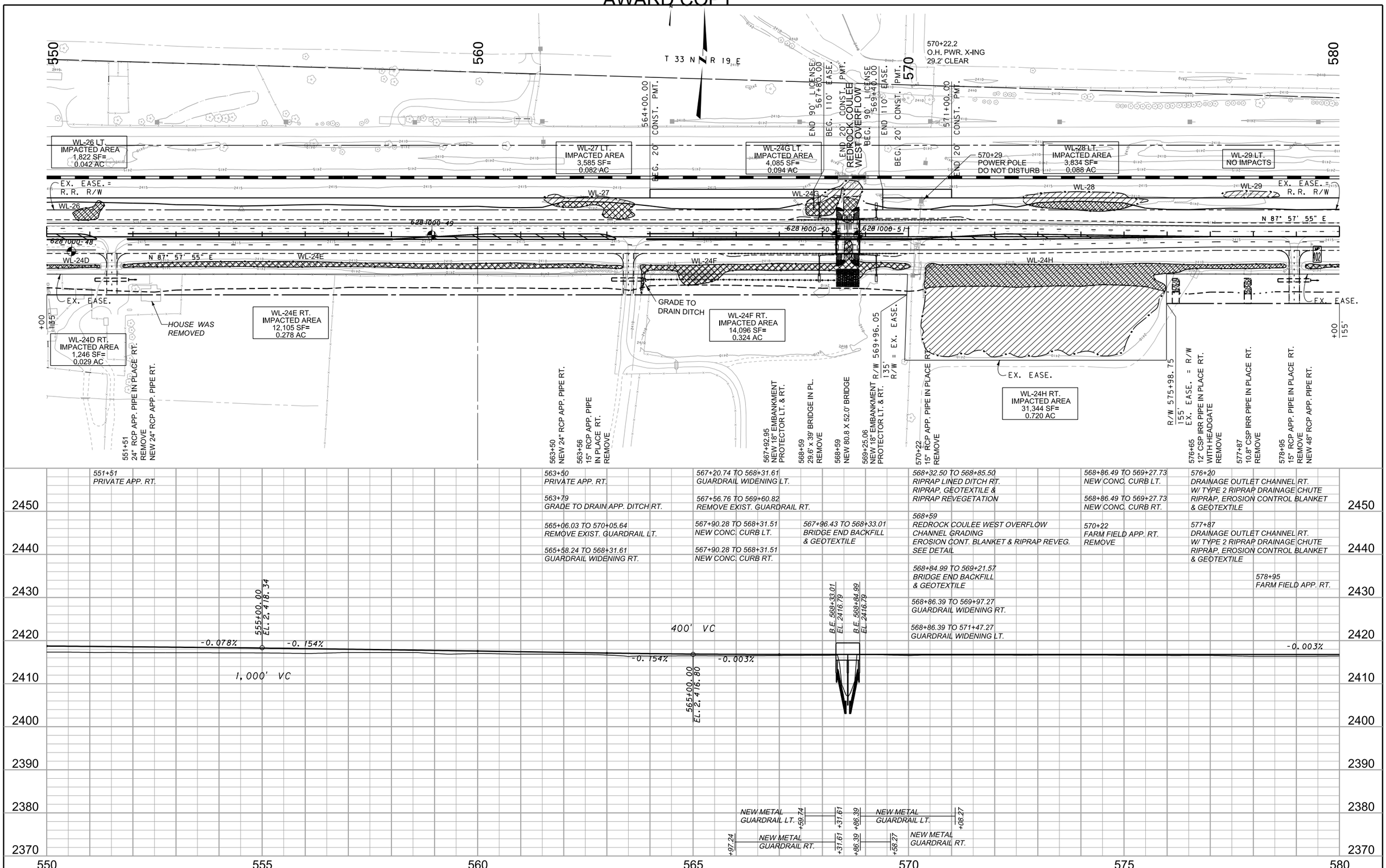
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp005.dgn	DESIGNED BY BETH POINTER 5/10/2016	ROAD PLANS	LOHMAN - E & W		NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK 8/22/2018	BLAINE COUNTY	CSF= 0.99965875	UPN 6281000	98
1		3:15:39 PM CPS - U2160	CHECKED BY JERRY SABOL 4/15/2019				

AWARD COPY



3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp005.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W / NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000 / 99
1		3:15:43 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019		

AWARD COPY



3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp006.dgn	DESIGNED BY BETH POINTER	5/10/2016
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018
1		3:16:02 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019

ROAD PLANS

BLAINE COUNTY

LOHMAN - E & W

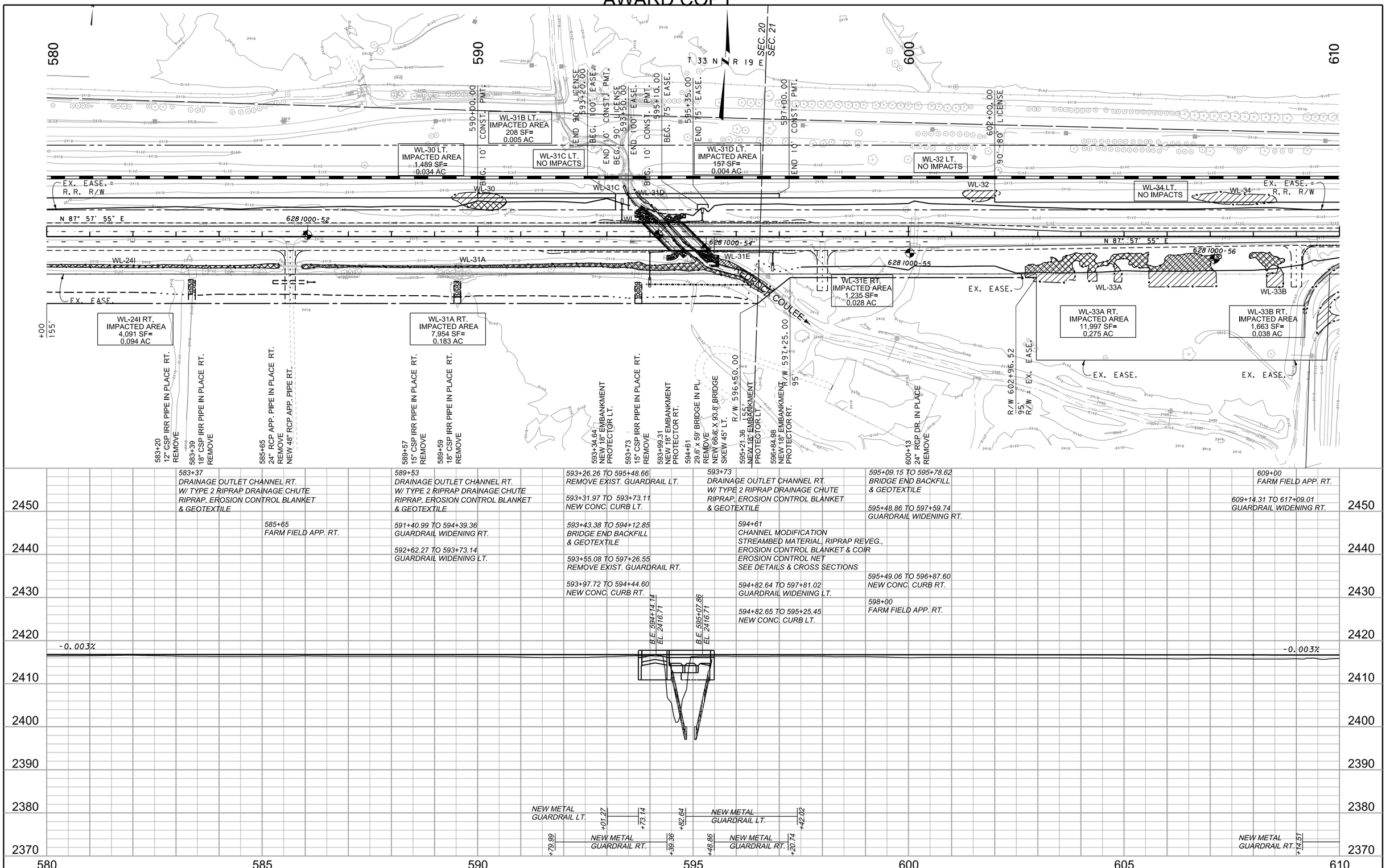
CSF= 0.99965875

UPN 6281000

NHIP 1-7(441)393

100

AWARD COPY

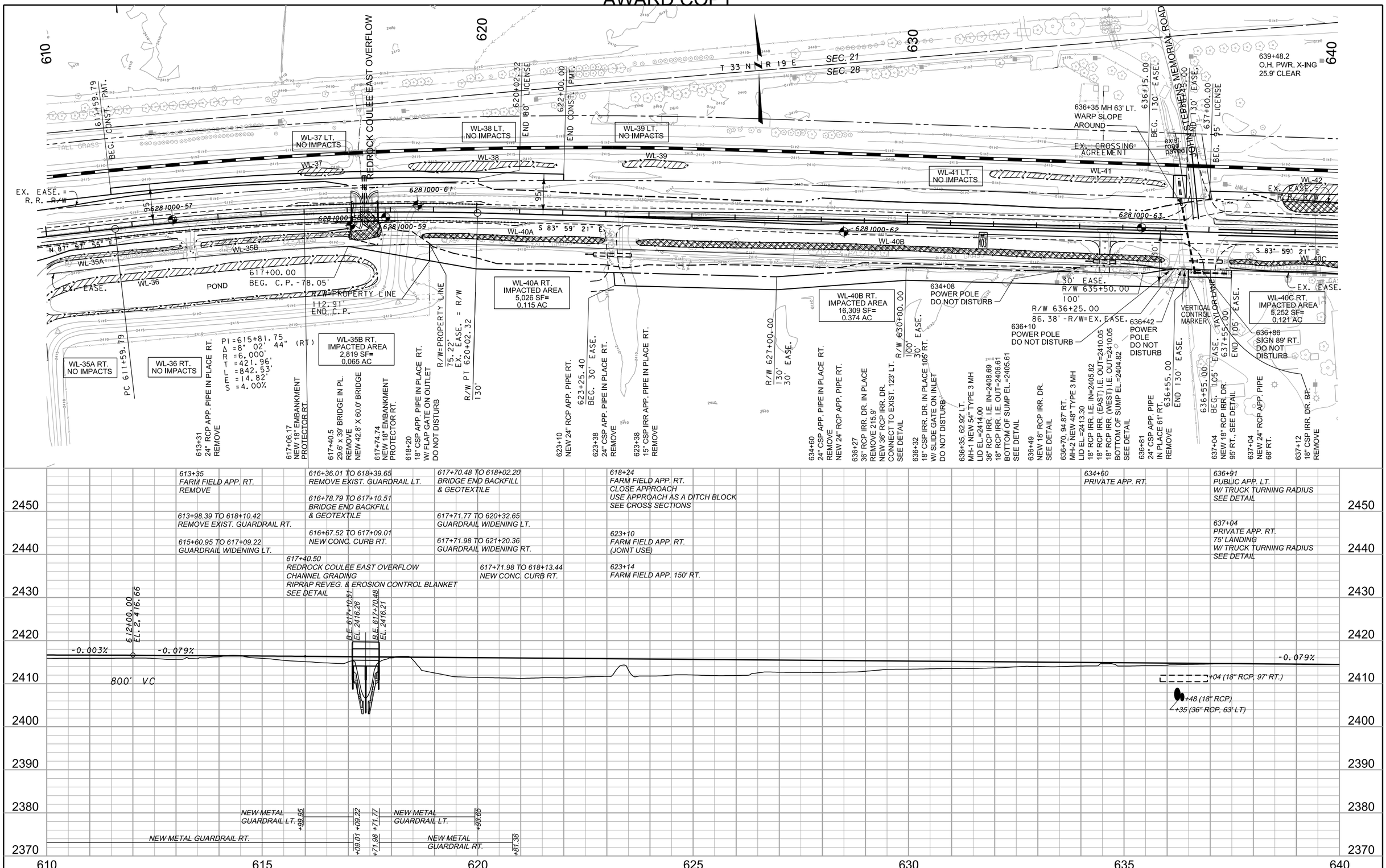


3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp006.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018	BLAINE COUNTY
1		3:16:06 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019	

LOHMAN - E & W | NHIP 1-7(44)393

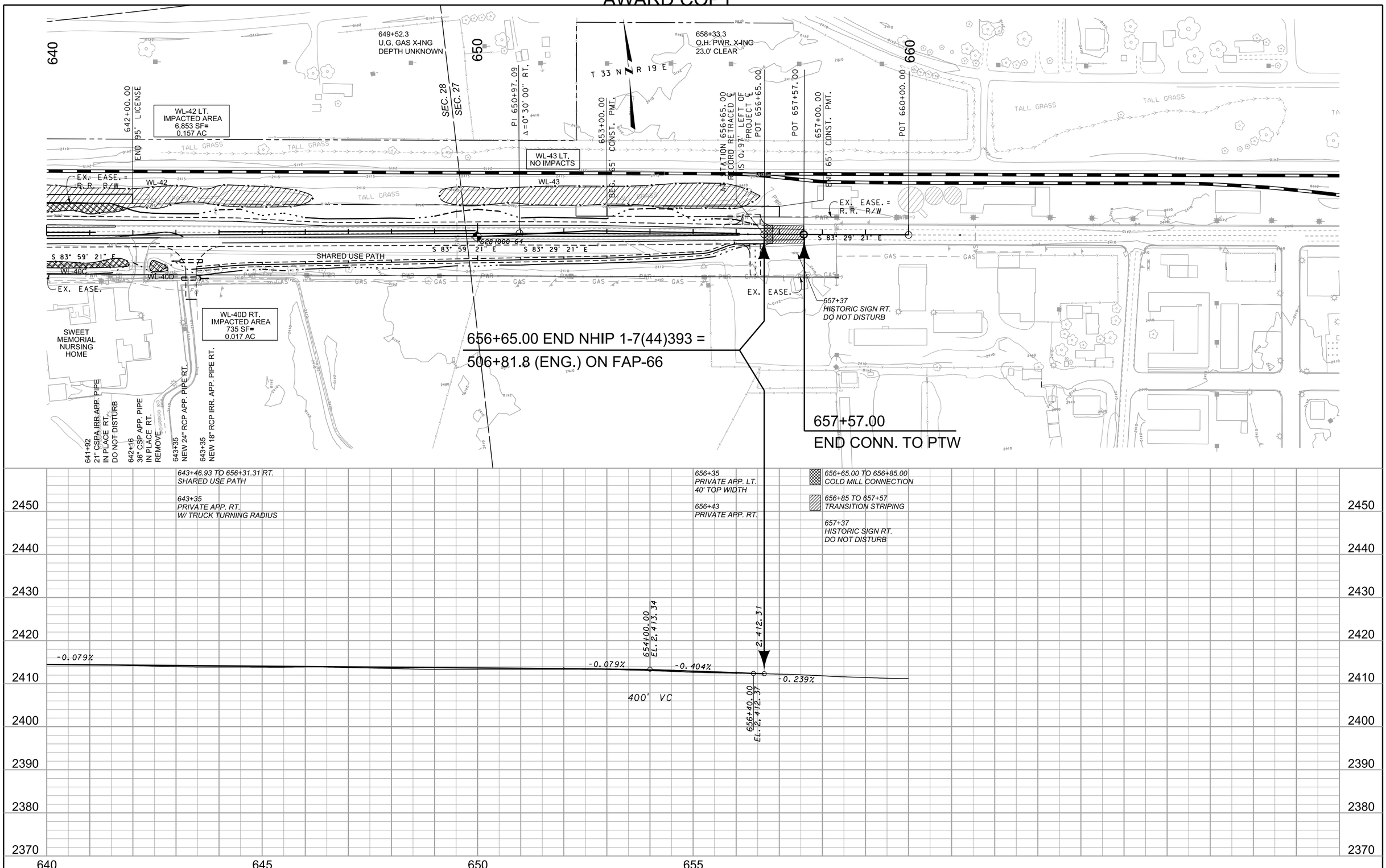
CSF= 0.99965875 | UPN 6281000 | 101

AWARD COPY



3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp006.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W / NHIP 1-7(441)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000
1		3:16:11 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019		102

AWARD COPY



3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\6281000rdplp007.dgn	DESIGNED BY BETH POINTER	5/10/2016	ROAD PLANS	LOHMAN - E & W / NHIP 1-7(44)393
2		9/9/2019	REVIEWED BY JEANIA CERECK	8/22/2018	BLAINE COUNTY	CSF= 0.99965875 / UPN 6281000
1		3:16:22 PM CPS - U2160	CHECKED BY JERRY SABOL	4/15/2019		103