SUP

APRIL 2018

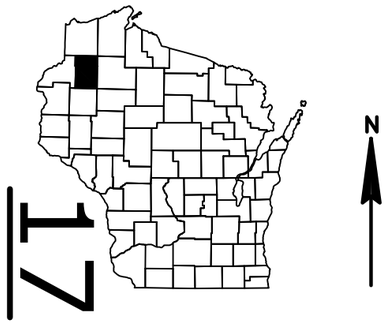
PROJECT ID: 1550-04-60

COUNTY: WASHBURN

ORDER OF SHEETS

Section No. 1 Title
Section No. 2 Typical Sections and Details
Section No. 3 Estimate of Quantities
Section No. 3 Miscellaneous Quantities
~~Section No. 4 Right of Way Plat~~
Section No. 5 Plan and Profile
Section No. 6 Standard Detail Drawings
~~Section No. 7 Sign Plates~~
~~Section No. 8 Structure Plans~~
~~Section No. 9 Computer Earthwork Data~~
Section No. 9 Cross Sections

TOTAL SHEETS = 74



17

N

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

CUMBERLAND - SPOONER

CTH B E. JUNCTION TO GREEN VALLEY ROAD

USH 63

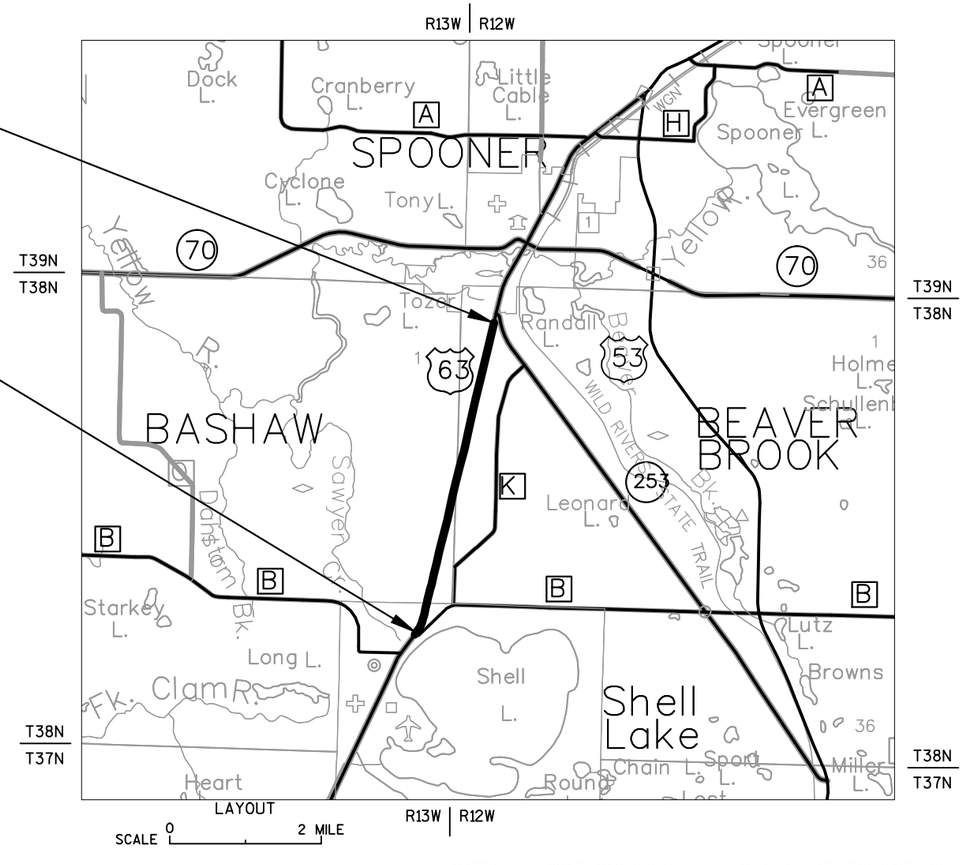
WASHBURN COUNTY

STATE PROJECT NUMBER
1550-04-60

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1550-04-60	———	———

END PROJECT 1550-04-60
STA. 703+00 USH 63
X: 738330.6474
Y: 561602.0803

BEGIN PROJECT 1550-04-60
STA. 483+83 USH 63
X: 733493.6844
Y: 540255.9017



TOTAL NET LENGTH OF CENTERLINE = 4.156

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, WASHBURN COUNTY, NAD83 (YEAR), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

DESIGN DESIGNATION

A.A.D.T.	2010	=	4500
A.A.D.T.	2017	=	5000
D.H.V.	2036	=	884
D.D.		=	61/39
T.		=	9.4%
DESIGN SPEED		=	35-55
ESALS		=	

CONVENTIONAL SYMBOLS

PLAN
- CORPORATE LIMITS
- PROPERTY LINE
- LOT LINE
- LIMITED HIGHWAY EASEMENT
- EXISTING RIGHT OF WAY
- PROPOSED OR NEW R/W LINE
- SLOPE INTERCEPT
- REFERENCE LINE
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS (CAUTION)
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE
- GRADE LINE
- ORIGINAL GROUND
- MARSH OR ROCK PROFILE (To be noted as such) (ROCK)
- SPECIAL DITCH (LABEL)
- GRADE ELEVATION (95.36)
- CULVERT (Profile View)

UTILITIES
- ELECTRIC (E)
- FIBER OPTIC (FO)
- GAS (G)
- SANITARY SEWER (SAN)
- STORM SEWER (SS)
- TELEPHONE (T)
- WATER (W)
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	WISDOT
Designer	TRAVIS JENSEN
Project Manager	PHILIP KEPPERS
Regional Examiner	TOU YANG
Regional Supervisor	DAVID OSTROWSKI

APPROVED FOR THE DEPARTMENT

DATE: 2/5/2018 Philip L. Keppers (Signature)

E

LIST OF STANDARD ABBREVIATIONS

ABUT.	ABUTMENT
AGG.	AGGREGATE
AH.	AHEAD
APPROX.	APPROXIMATE
A.E.W.	APRON ENDWALL
ASPH.	ASPHALTIC
A.D.T.	AVERAGE DAILY TRAFFIC
AZ.	AZIMUTH
BK.	BACK
BEG.	BEGIN
B.M.	BENCH MARK
C/L	CENTER LINE
CONC.	CONCRETE
CONST.	CONSTRUCTION
CO.	COUNTY
C.T.H.	COUNTY TRUNK HIGHWAY
X-SEC.	CROSS SECTION
CR.	CRUSHED
CFS	CUBIC FEET/SECOND
C.Y., CU. YD.	CUBIC YARD
CULV.	CULVERT
C.P.	CULVERT PIPE
D.O.T.	DEPARTMENT OF TRANSPORTATION
D.H.V.	DESIGN HOUR VOLUME
DIA.	DIAMETER
D.	DIRECTIONAL DISTRIBUTION
DISCH. OR DIS.	DISCHARGE
EA.	EACH
ELECT.	ELECTRIC
EL. OR ELEV.	ELEVATION
EMB.	EMBANKMENT
E.B.S.	EXCAVATION BELOW SUBGRADE
EXIST.	EXISTING
FERT.	FERTILIZE
F.E.	FIELD ENTRANCE
FIN.	FINISHED
FT.	FOOT
F.L.	FLOW LINE
GA.	GAUGE
HORIZ.	HORIZONTAL
CWT.	HUNDREDWEIGHT
INL.	INLET
LT.	LEFT
L.H.F.	LEFT-HAND FORWARD
LIN.	LINEAR
LIN. FT.	LINEAR FOOT
L.S.	LUMP SUM
MAX.	MAXIMUM
MI.	MILE
MISC.	MISCELLANEOUS
N.E.	NORTH EAST
N.W.	NORTH WEST
PAV'T	PAVEMENT
P.C.	POINT OF CURVATURE
P.I.	POINT OF INTERSECTION
P.T.	POINT OF TANGENCY
P.O.T.	POINT ON TANGENT
LB.	POUND
P.E.	PRIVATE ENTRANCE
PROJ.	PROJECT
R.	RANGE
REQ'D	REQUIRED
RT.	RIGHT
R.H.F.	RIGHT-HAND FORWARD
R/W	RIGHT OF WAY
RD.	ROAD
SHR.	SHRINKAGE
SL.	SLOPE
STD.	STANDARD
S.D.D.	STANDARD DETAIL DRAWINGS
S.T.H.	STATE TRUNK HIGHWAY
STA.	STATION
S.P.P.A.	STRUCTURAL PLATE PIPE ARCH
STRUCT.	STRUCTURE
SURF.	SURFACE
TEL.	TELEPHONE
TN.	TOWN
T.	TRUCKS (PERCENT OF)
UNCL.	UNCLASSIFIED
U.G.	UNDERGROUND
V.	VELOCITY OR DESIGN SPEED
V.C.	VERTICAL CURVE

UTILTIES

JEREMY SISKO
CENTURYLINK - COMMUNICATIONS LINE
1825 PIONEER AVE
RICE LAKE, WI 54868
(715) 234-5534
JEREMY.SISKO@CENTURYLINK.COM

THOMAS HAASE
CHARTER COMMUNICATIONS - COMMUNICATIONS LINE
2304 S. MAIN ST.
RICE LAKE, WI 54868
(715) 719-0564
TOM.HAASE@CHARTER.COM

STACEY HAUGEN
XCEL ENERGY - ELECTRICITY
2911 PIONEER AVE.
RICE LAKE, WI 54868
(715) 418-9710
STACEY.RAETHER@XCELENERGY.COM

MITCH BROWN
SHELL LAKE MUNICIAPL UTILITIES - WATER
P.O. BOX 520
SHELL LAKE, WI 54871-0520
Publicworks@shelllake.org

LEWIS KNAPP
WE ENERGIES - GAS/PETROLEUM
104 W. SOUTH STREET
RICE LAKE, WI 54868
(715) 234-9605 CELL: (715) 419-2196
LEWIS.KNAPP@WE-ENERGIES.COM

SCOTT DEVOE
BARRON ELECTRIC COOP. - ELECTRICITY
P.O. BOX 261
SPOONER, WI 54801
(715) 537-3171 office
(715) 418-1182 mobile
sdevoe@barronelectric.com

DENNIS RUSSETT
MOSAIC TELECOM - COMMUNICATIONS LINE
401 S. 1ST STREET
CAMERON, WI 54822
(715) 458-5378
CTCDENNIS@MOSAICTELECOM.COM

DIGGERS HOTLINE
Dial 811 or (800)242-8511
www.DiggersHotline.com

GENERAL NOTES

NO TREES OR SHRUBS ARE TO BE REMOVED WITHOUT APPROVAL OF THE ENGINEER.

DISTURBED AREAS WITHIN THE RIGHT OF WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, SHALL BE SALVAGE TOPSOILED, FERTILIZED, SEEDED, AND MULCHED AS DIRECTED BY THE ENGINEER.

A VERTICAL SAWCUT SHALL BE MADE THROUGH EXISTING PAVEMENTS AT REMOVAL LIMITS.

THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

* THE LOCATIONS AND STATIONING OF EXISTING BEAMGUARD SHOWN ON PLAN ARE APPROXIMATE. CONTRACTOR MUST HAVE ANY UTILITIES IN BEAMGUARD REPLACEMENT AREAS LOCATED PRIOR TO INSTALLATION OF NEW BEAMGUARD.

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS ARE APPROXIMATE AND MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS PERMITTED BY ENGINEER.

PROJECT CONTACTS

WI DEPARTMENT OF NATURAL RESOURCES
NW District Headquarters
ATTN: Shawn Haseleu
810 West Maple Street
Spooner, WI 54801
715-635-4228

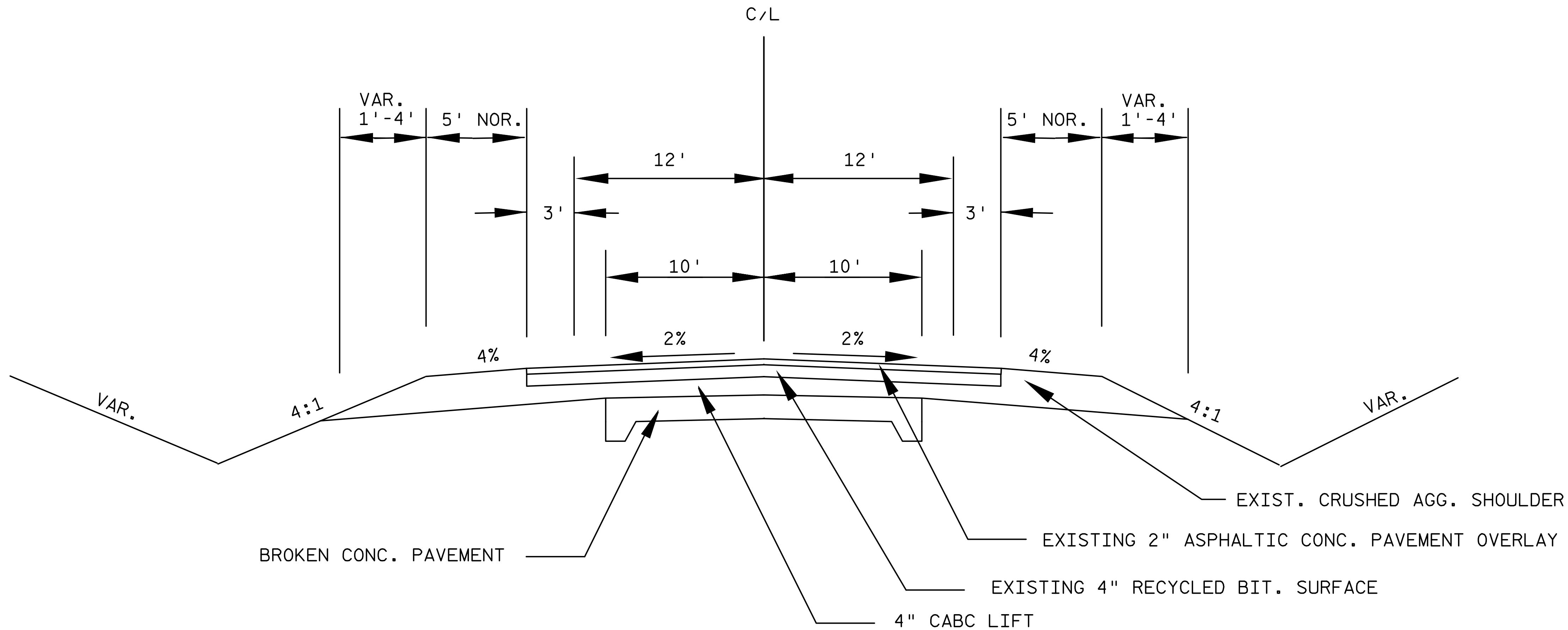
WI DEPARTMENT OF TRANSPORTATION
NW REGION - SUPERIOR
ATTN: TRAVIS JENSEN, PROJECT LEADER
1701 N 4TH STREET
SUPERIOR, WI 54880
715-395-3025

WI DEPARTMENT OF TRANSPORTATION
NW REGION - SUPERIOR
ATTN: PHIL KEPPERS, PROJECT MANAGER
1701 N 4TH STREET
SUPERIOR, WI 54880
715-395-3027

WASHBURN COUNTY HIGHWAY DEPARTMENT
ATTN: FRANK SCALZO, HIGHWAY COMMISSIONER
1600 COUNTY HIGHWAY H
SPOONER, WI 54801
715-635-4480

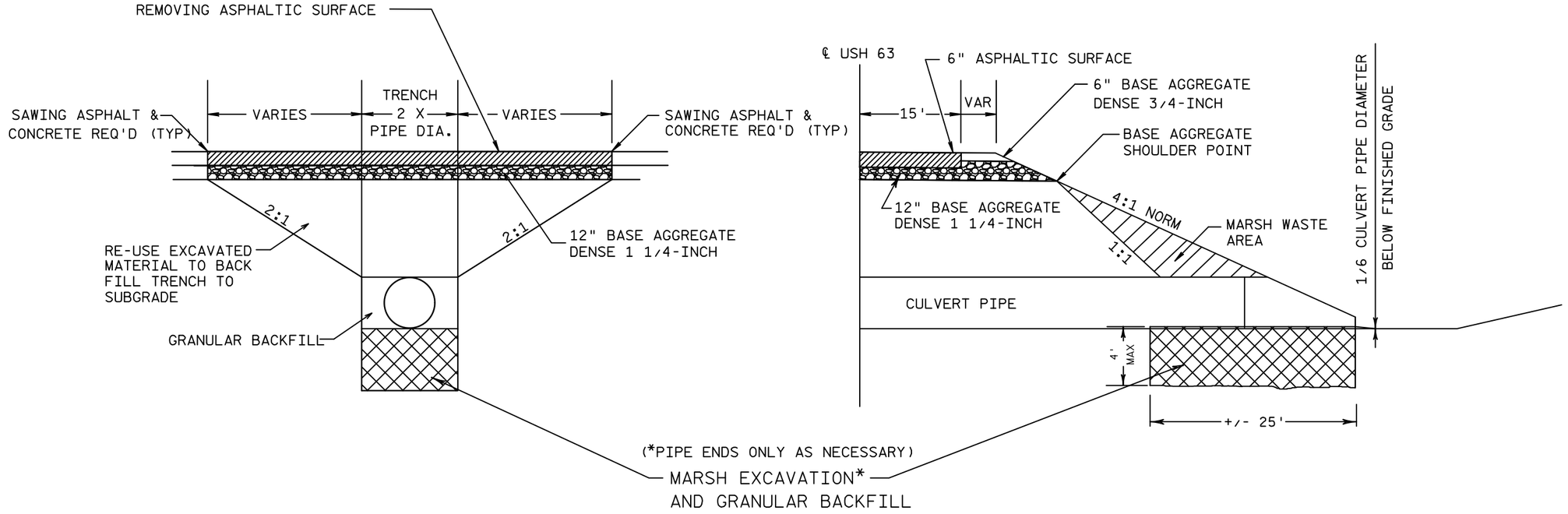
WISCONSIN GREAT NORTHERN RAILROAD
ATTN: GREG VREELAND
PO BOX 46
SPOONER, WI 54801
715-635-3200

2

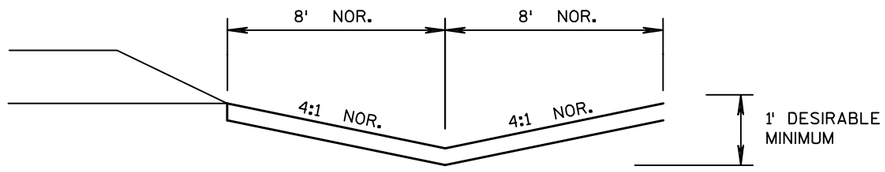


EXISTING TYPICAL SECTION

STA. 483+54 - 703+00

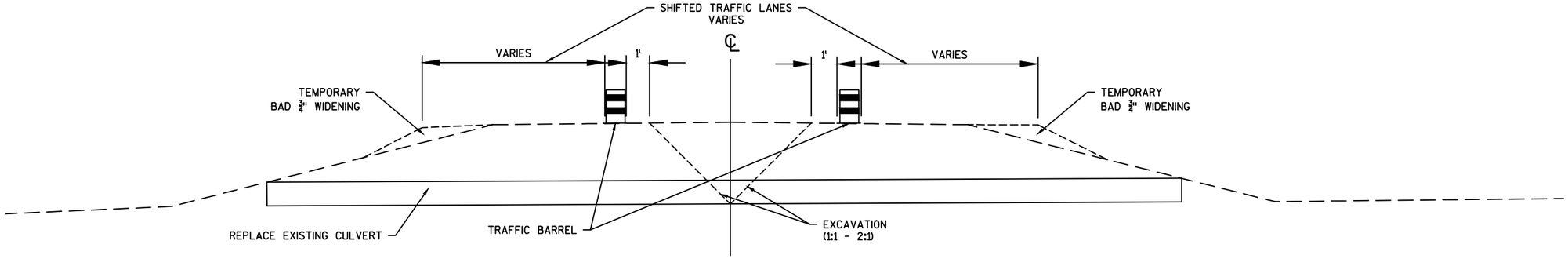


PIPE REPLACEMENT DETAIL

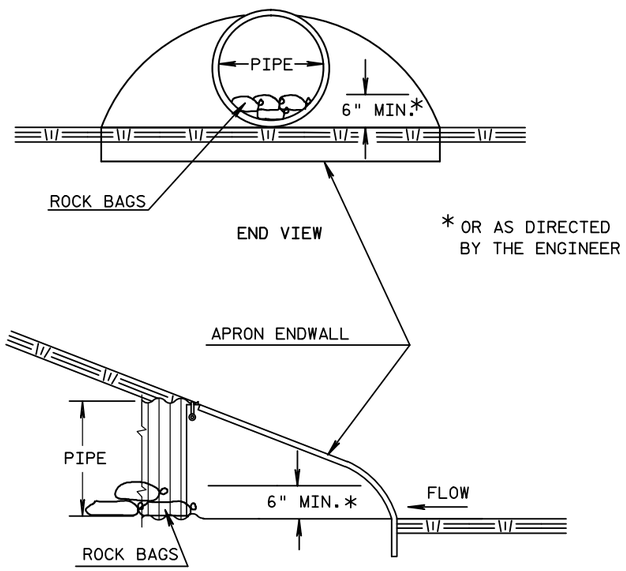


EROSION MAT DETAIL FOR DITCHES

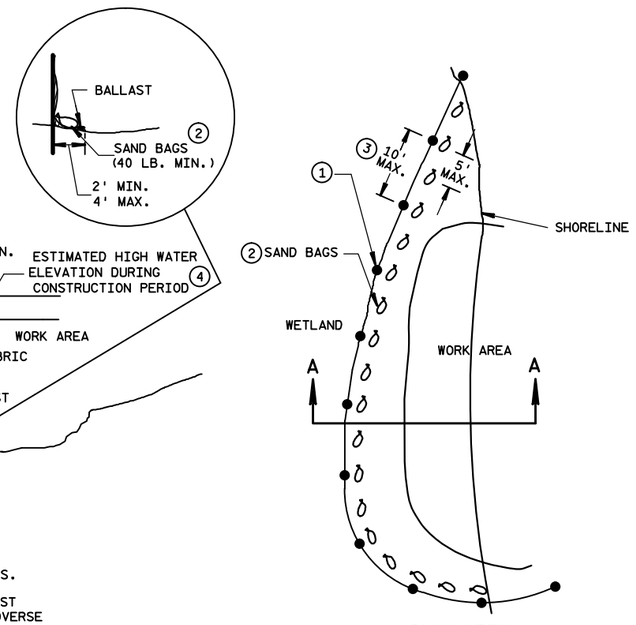
PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CONSTRUCTION DETAILS	SHEET 4 E



CULVERT REPLACEMENT STAGING DETAIL



CULVERT PIPE DITCH CHECK



NOTES:

① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.

② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS.

③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.

④ ELEVATION VALUE TO BE ESTABLISHED BY THE CONTRACTOR BASED ON THE TIME OF YEAR AND DURATION OF THE ACTIVITY.

TURBIDITY BARRIER DETAIL

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CONSTRUCTION DETAILS	SHEET 5 E

KEY

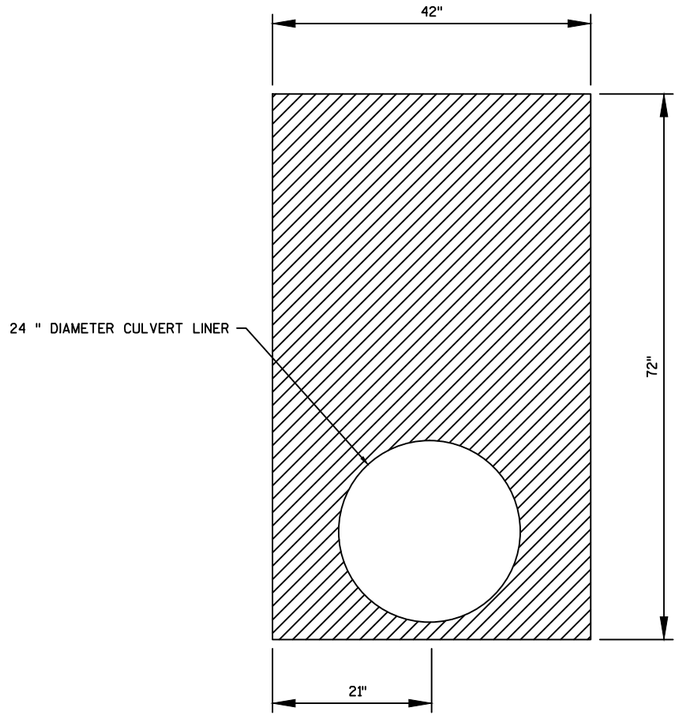
GROUT

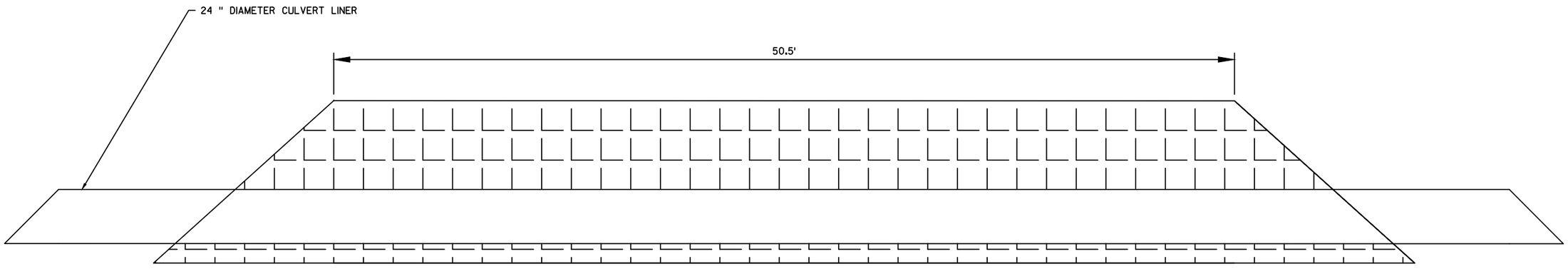
EXISTING CATTLE PASS

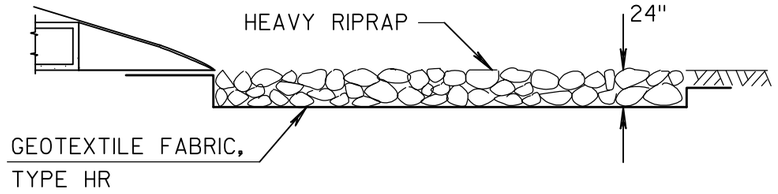
THE DIAGRAM IS A REPRESENTATION OF THE CATTLE PASS LOCATED AT STA. 578+65.

THE EXISTING CATTLE PASS NEEDS TO BE CLEANED BEFORE INSTALLING THE 24-INCH LINER OR PUMPING GROUT.

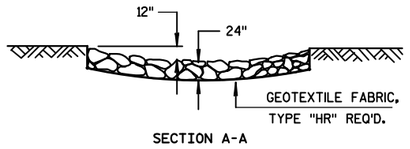
THE CULVERT LINER WILL BE CENTERED (WIDTH) IN THE EXISTING CATTLE PASS OR AS DESIGNATED BY THE ENGINEER AND GROUT PUMPED AROUND. THE GROUT CAN EITHER BE PUMPED IN LIFTS OR THE CULVERT LINER CAN BE ANCHORED DOWN TO KEEP THE LINER FROM MOVING DURING THE CONSTRUCTION PROCESS. FOR MORE DETAILS SEE SPV.0105.01.



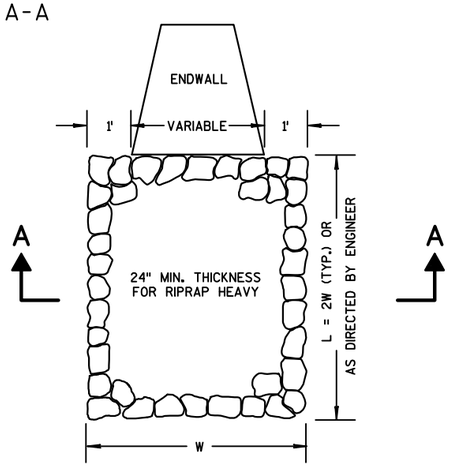




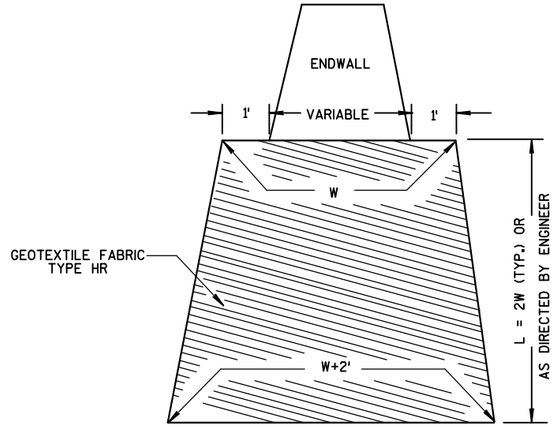
SECTION A-A



SECTION A-A



RIPRAP HEAVY TREATMENT AT CULVERTS



GEOTEXTILE FABRIC TREATMENT AT CULVERTS

RUNOFF COEFFICIENT TABLE

	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE:	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER
ROW CROPS	.08 .22	.16 .30	.22 .38	.12 .26	.20 .34	.27 .44	.15 .30	.24 .37	.33 .50	.19 .34	.28 .41	.38 .56
MEDIAN STRIP- TURF	.19 .24	.20 .26	.24 .30	.19 .25	.22 .28	.26 .33	.20 .26	.23 .30	.30 .37	.20 .27	.25 .32	.30 .40
SIDE SLOPE- TURF			.25 .32			.27 .34			.28 .36			.30 .38
PAVEMENT:												
ASPHALT	.70 - .95											
CONCRETE	.80 - .95											
BRICK	.70 - .80											
DRIVES, WALKS	.75 - .85											
ROOFS	.75 - .95											
GRAVEL ROADS, SHOULDERS	.40 - .60											

TOTAL PROJECT AREA = _____ ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = _____ACRES

2

THE TEMPORARY SETTLING BASIN SHALL BE COMPLETED PRIOR TO THE BEGINNING OF PUMPING OPERATIONS. CONTRACTOR SHALL PUMP WATER TO BASIN PRIOR TO DISCHARGE INTO ADJACENT WETLANDS, LAKES, OR STREAMS.

TEMPORARY SETTING BASINS SHALL BE PLACED IN A LOCATION NOT TO IMPEDE TRAFFIC FLOW OR AFFECT WETLANDS OR FLOOD PLAINS.

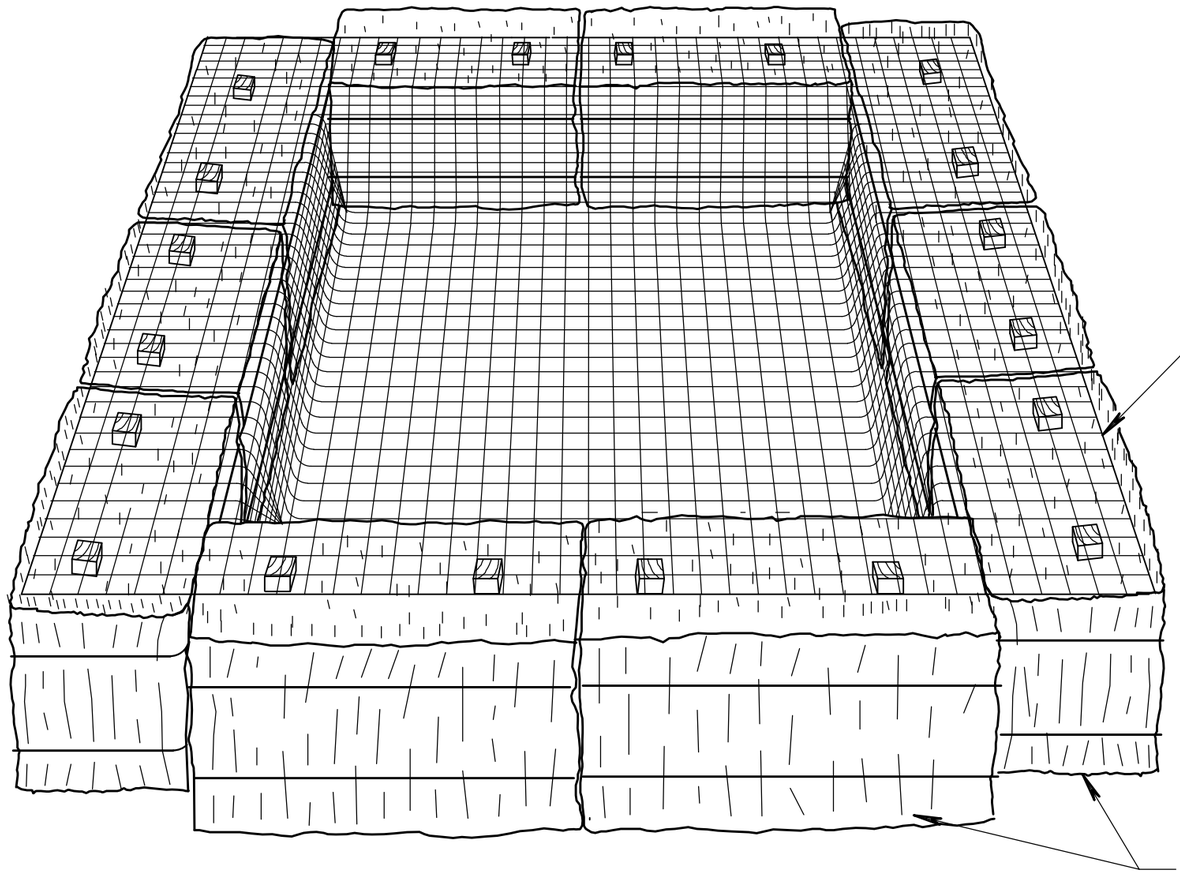
BASINS SHALL BE SIZED SO THAT THE TURBIDITY OF THE WATER LEAVING THE SETTLING BASIN DOES NOT EXCEED THE TURBIDITY OF THE RECEIVING WATERS OR CAUSE ANY DEPOSITION OF MATERIALS INTO ANY ADJACENT WETLAND OR FLOOD PLAIN.

MAINTAIN THE TEMPORARY SETTLING BASIN AS REQUIRED INCLUDING REMOVING AND DISPOSING OF SEDIMENT DEPOSITS. BASIN SHALL BE KEPT LESS THAN 10% FULL OF SEDIMENT. REMOVE AND REPLACE ANY PORTION OF THE SETTING BASIN NO LONGER FIT FOR USE, AS THE ENGINEER DIRECTS.

UPON COMPLETION OF THE WORK, REMOVE THE TEMPORARY SETTLING BASIN AND RETURN AREA TO PRE-CONSTRUCTION CONDITIONS. DISPOSE OF BALES, GEOTEXTILE FABRIC, AND SEDIMENTS OFF THE PROJECT SITE IN A MANNER ACCEPTABLE TO THE ENGINEER.

PAYMENT IS FULL COMPENSATION FOR FURNISHING, PLACING, MAINTAINING, AND REMOVING ALL MATERIALS NEEDED TO CONSTRUCT THE TEMPORARY SETTLING BASIN; AND FOR ALL FURNISHING ALL LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE CONTRACT WORK.

PAID FOR AS EROSION BALES AND GEOTEXTILE FABRIC TYPE DF.



TEMPORARY SETTLING BASIN

(SIZE TO BE DETERMINED IN FIELD AS INDICATED BELOW:)

STORAGE VOLUME (C.F.) = 16 X GPM (PUMP RATE)
EXAMPLE:
CONTRACTOR INDICATES PUMP CAPABLE OF 50 GPM
HEIGHT OF BALES = 1.5 FT.

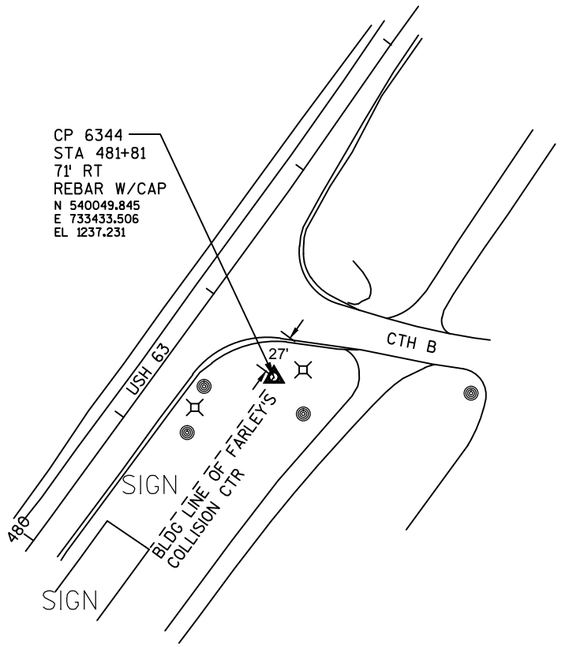
SOLUTION:
SV (C.F.) = 16 X 50
SV = 800 C.F.

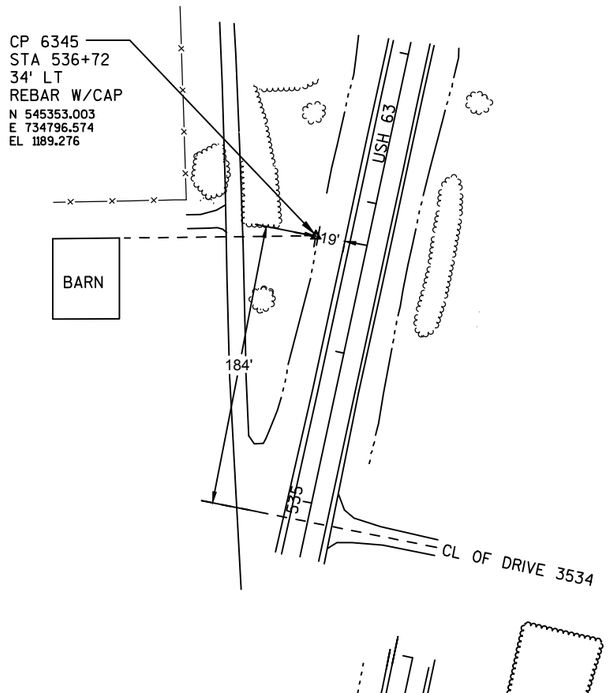
$$\frac{800\ C.F.}{1.5\ FT.} = 533\ S.F.$$

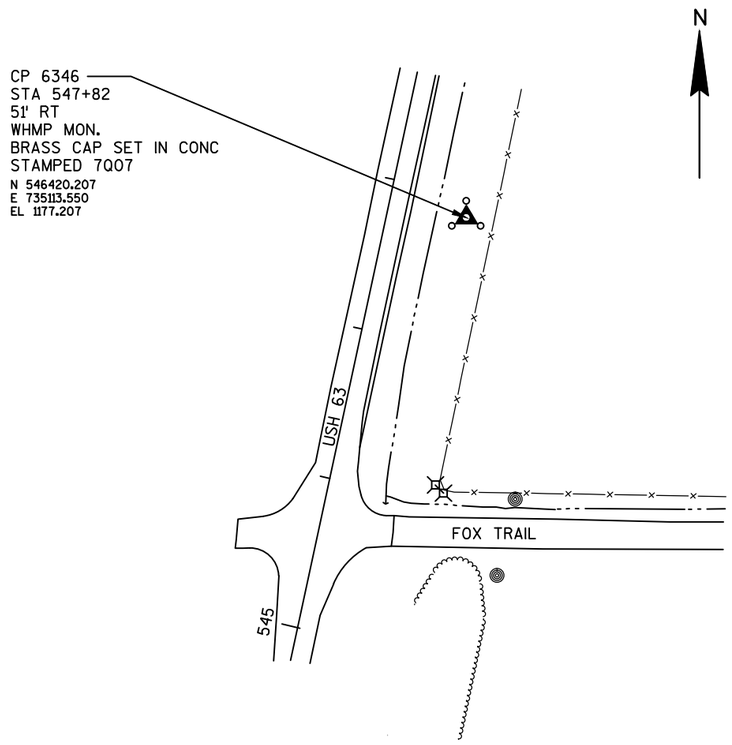
USE A 20 FT. X 27 FT. BASIN

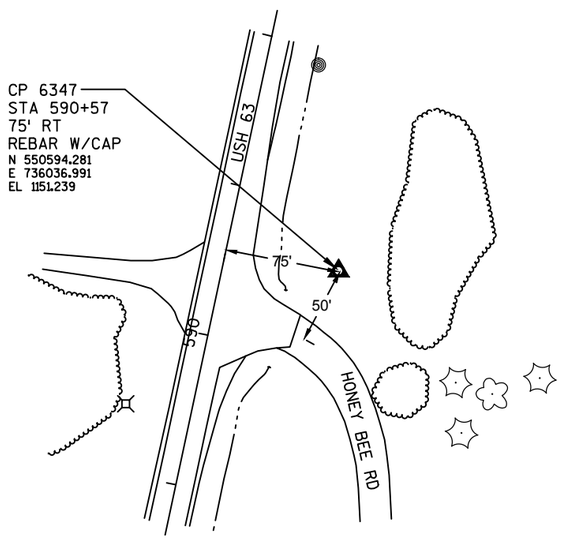
2

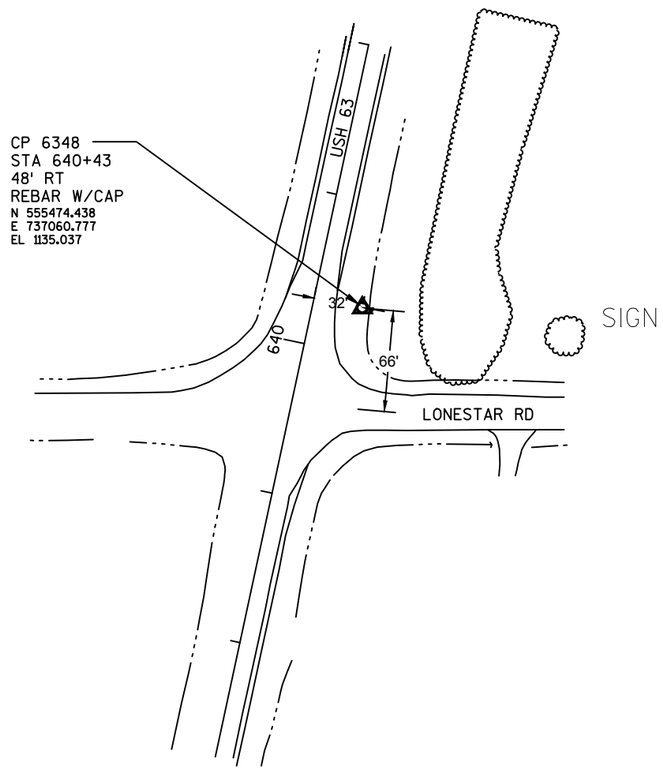
PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CONSTRUCTION DETAILS	SHEET 8 E

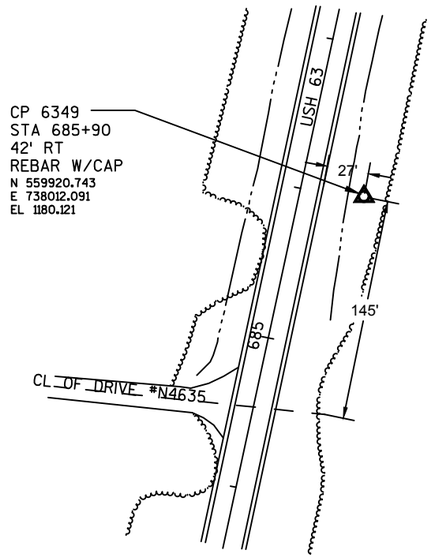












PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CONTROL POINT LOCATIONS	SHEET 9	E

2

H

B

2

31

48

36

31

36

31

6

1

1

6

Cr.

G

uples

48

S

MAX.
10'
WIDTH

W12-52
48"X48"

ROAD WORK
18 MILES AHEAD

G20-55
84"X24"

Cumberland

CRYSTAL
LAKE

63

P

T

Comstock

36

31

CUMBERLAND

36

31

PROJECT NO: 1550-04-60	HWY: 63	COUNTY: WASHBURN	EROSION CONTROL / TRAFFIC CONTROL	SHEET 10	E

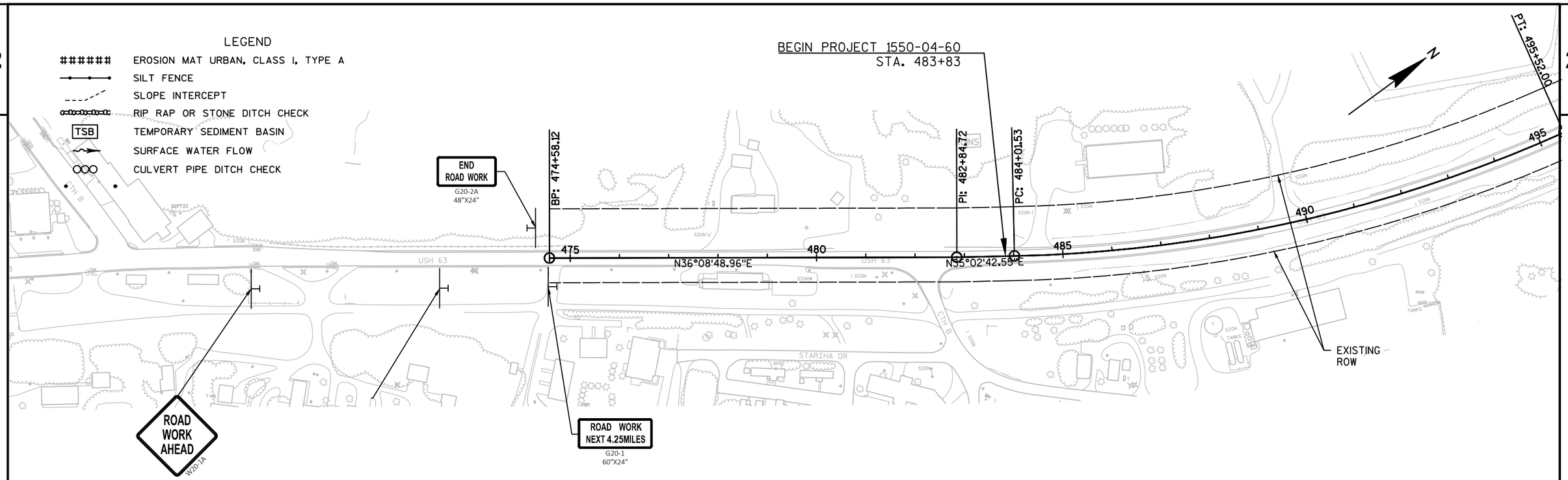
FILE NAME : N:\PDS\C3D\15500460\BASEDATA\OTHER\BARRON.DWG
LAYOUT NAME - Plan 1 IN 100 FT

PLOT DATE : 10/24/2017 7:05 AM PLOT BY : FINNEGAN, MITCHELL PLOT NAME : PLOT SCALE : 1 IN:100 FT

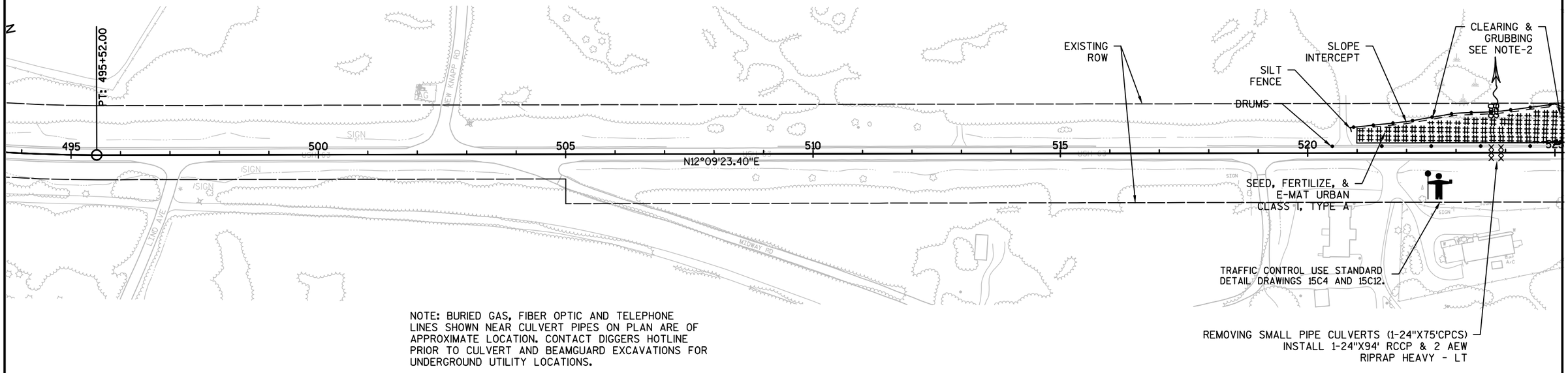
WISDOT/CADDS SHEET 42

LEGEND

- ###### EROSION MAT URBAN, CLASS I, TYPE A
- SILT FENCE
- SLOPE INTERCEPT
- RIP RAP OR STONE DITCH CHECK
- TSB TEMPORARY SEDIMENT BASIN
- SURFACE WATER FLOW
- CULVERT PIPE DITCH CHECK



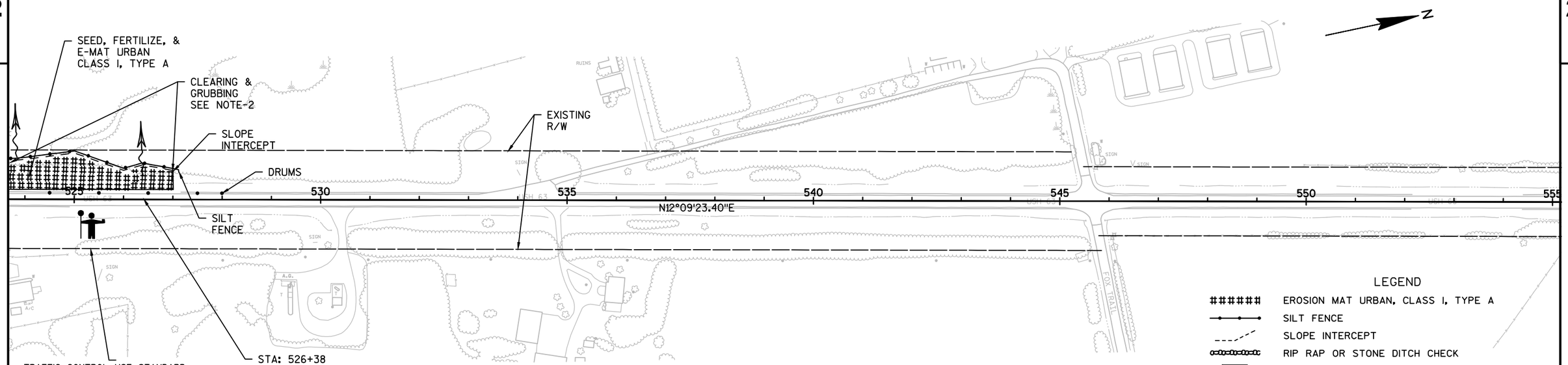
NOTE-2: CLEARING AND GRUBBING LIMITS SHALL BE 10' BEYOND SLOPE INTERCEPTS BUT SHALL NOT EXTEND BEYOND THE EXISTING R/W.



NOTE: BURIED GAS, FIBER OPTIC AND TELEPHONE LINES SHOWN NEAR CULVERT PIPES ON PLAN ARE OF APPROXIMATE LOCATION. CONTACT DIGGERS HOTLINE PRIOR TO CULVERT AND BEAMGUARD EXCAVATIONS FOR UNDERGROUND UTILITY LOCATIONS.

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	EROSION CONTROL / TRAFFIC CONTROL	SHEET 11	E

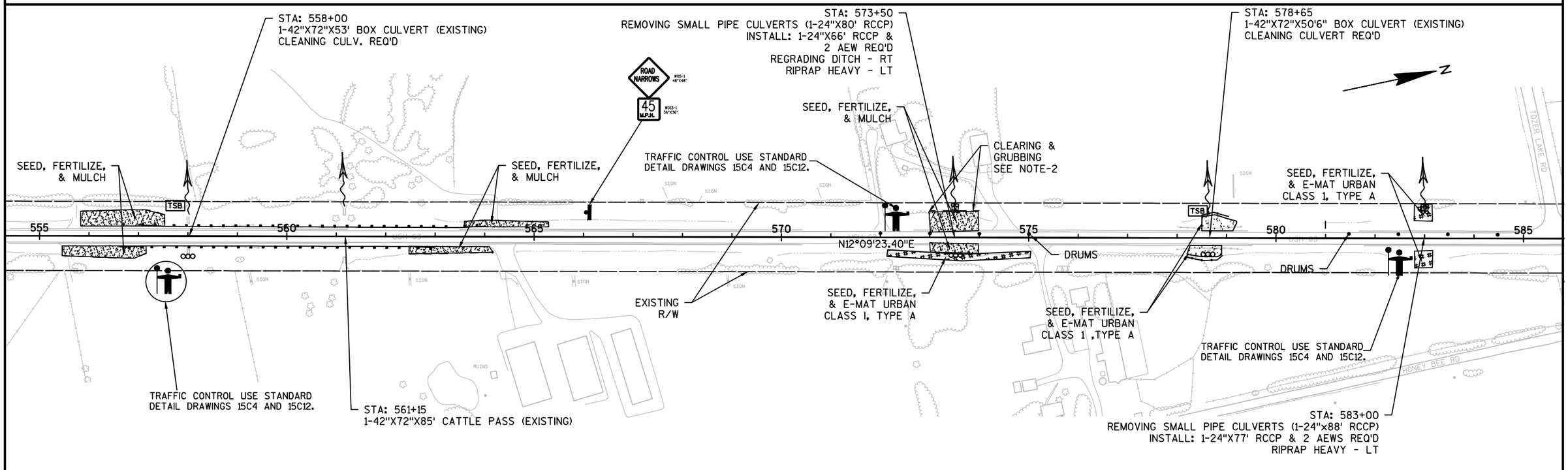
NOTE-2: CLEARING AND GRUBBING LIMITS SHALL BE 10' BEYOND SLOPE INTERCEPTS BUT SHALL NOT EXTEND BEYOND THE EXISTING R/W.



NOTE: BURIED GAS, FIBER OPTIC AND TELEPHONE LINES SHOWN NEAR CULVERT PIPES ON PLAN ARE OF APPROXIMATE LOCATION. CONTACT DIGGERS HOTLINE PRIOR TO CULVERT AND BEAMGUARD EXCAVATIONS FOR UNDERGROUND UTILITY LOCATIONS.

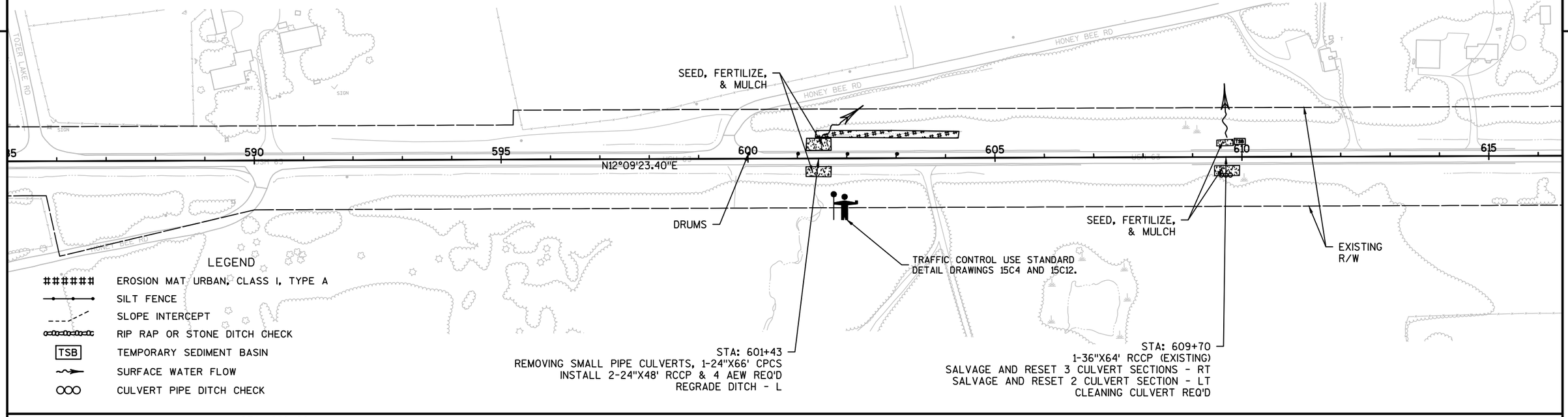
LEGEND

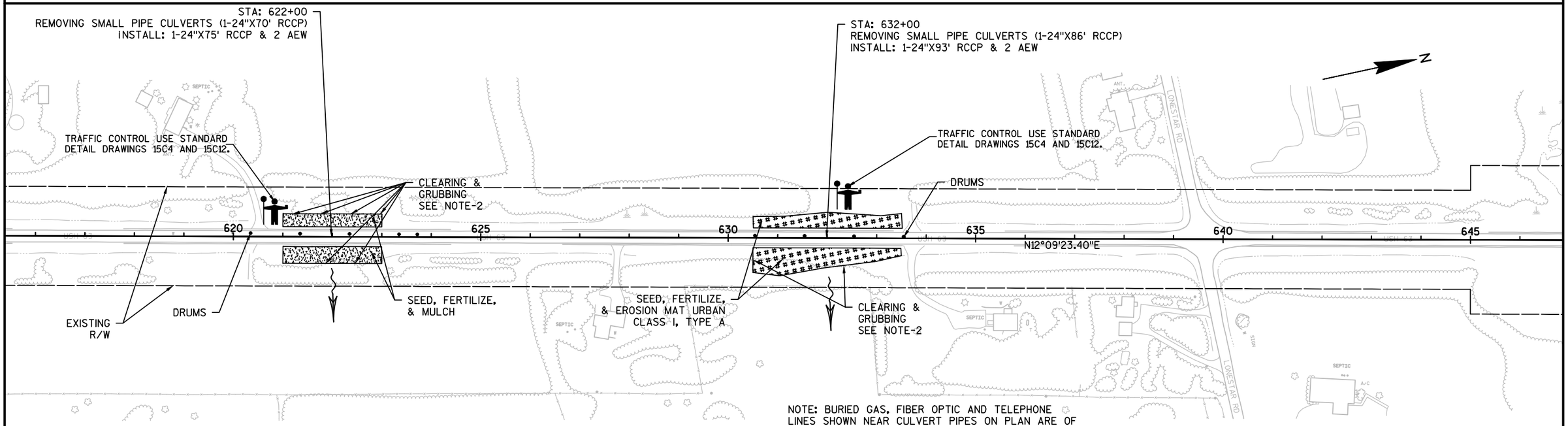
- ###### EROSION MAT URBAN, CLASS I, TYPE A
- SILT FENCE
- SLOPE INTERCEPT
- RIP RAP OR STONE DITCH CHECK
- TSB TEMPORARY SEDIMENT BASIN
- SURFACE WATER FLOW
- CULVERT PIPE DITCH CHECK



PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	EROSION CONTROL / TRAFFIC CONTROL	SHEET 12	E

NOTE-2: CLEARING AND GRUBBING LIMITS SHALL BE 10' BEYOND SLOPE INTERCEPTS BUT SHALL NOT EXTEND BEYOND THE EXISTING R/W.





NOTE: BURIED GAS, FIBER OPTIC AND TELEPHONE LINES SHOWN NEAR CULVERT PIPES ON PLAN ARE OF APPROXIMATE LOCATION. CONTACT DIGGERS HOTLINE PRIOR TO CULVERT AND BEAMGUARD EXCAVATIONS FOR UNDERGROUND UTILITY LOCATIONS.

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	EROSION CONTROL / TRAFFIC CONTROL	SHEET 13	E

2

NOTE-2: CLEARING AND GRUBBING LIMITS SHALL BE 10' BEYOND SLOPE INTERCEPTS BUT SHALL NOT EXTEND BEYOND THE EXISTING R/W.

STA: 654+25
1-36"X74' RCCP (EXISTING)

STA: 672+05
REMOVING SMALL PIPE CULVERTS, 1-24"X76' CMCP
INSTALL: 1-24"X73' RCCP & 2 AEW REQ'D

TRAFFIC CONTROL USE STANDARD DETAIL DRAWINGS 15C4 AND 15C12.

SEED, FERTILIZE, & MULCH

TURBIDITY BARRIER

WETLAND

650 655 660 665 670 675

N12°09'23.40"E

TSB

DRUMS

TRAFFIC CONTROL USE STANDARD DETAIL DRAWINGS 15C4 AND 15C12.

SEED, FERTILIZE, & MULCH

SEED, FERTILIZE, & MULCH

STA: 649+20
REMOVING SMALL PIPE CULVERTS, 1-24"X64' RCCP
INSTALL 1-24"X59' RCCP & 2 AEW

STA: 675+70
1-24"X70' RCCP (EXISTING)
SALVAGE AND RESET 3 CULVERT SECTIONS - RT
SALVAGE AND RESET 3 CULVERT SECTIONS - LT
CLEANING CULVERT REQ'D

LEGEND

######	EROSION MAT URBAN, CLASS I, TYPE A
	SILT FENCE
	SLOPE INTERCEPT
	RIP RAP OR STONE DITCH CHECK
TSB	TEMPORARY SEDIMENT BASIN
	SURFACE WATER FLOW
	CULVERT PIPE DITCH CHECK

STA: 691+60
1-24"X74' RCCP (EXISTING)
SALVAGE AND RESET 2 CULVERT SECTION - RT
SALVAGE AND RESET 3 CULVERT SECTIONS - LT
CLEANING CULVERT REQ'D

STA: 700+00
1-24"X62' RCCP (EXISTING)
SALVAGE AND RESET 1 CULVERT SECTION - LT & RT
CLEANING CULVERT REQ'D

TRAFFIC CONTROL USE STANDARD DETAIL DRAWINGS 15C4 AND 15C12.

TRAFFIC CONTROL USE STANDARD DETAIL DRAWINGS 15C4 AND 15C12.

DRUMS

TRAFFIC CONTROL USE STANDARD DETAIL DRAWINGS 15C4 AND 15C12.

680 685 690 695 700 705

N12°09'23.40"E

SEED, FERTILIZE, & MULCH

E-MAT URBAN CLASS I, TYPE A

SEED, FERTILIZE, & MULCH

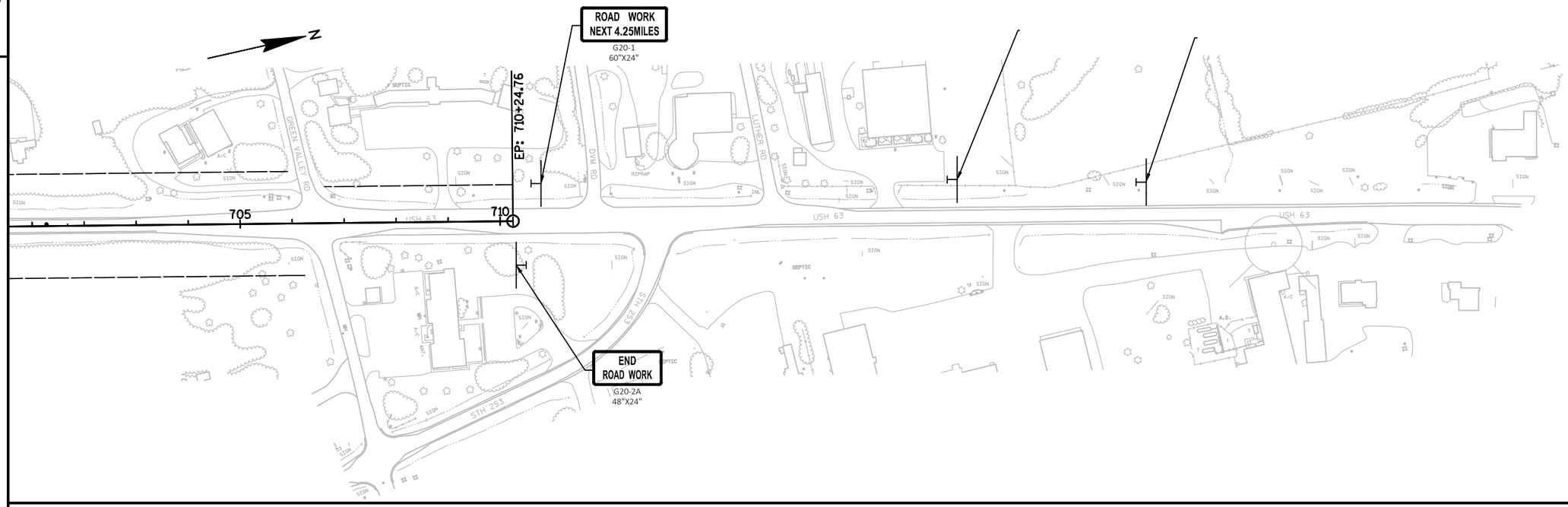
END PROJECT 1550-04-60
STA. 703+00

NOTE: BURIED GAS, FIBER OPTIC AND TELEPHONE LINES SHOWN NEAR CULVERT PIPES ON PLAN ARE OF APPROXIMATE LOCATION. CONTACT DIGGERS HOTLINE PRIOR TO CULVERT AND BEAMGUARD EXCAVATIONS FOR UNDERGROUND UTILITY LOCATIONS.

STA: 698+00
1-24"X116' RCCP (EXISTING)
SALVAGE AND RESET 3 CULVERT SECTIONS - LT & RT
CLEANING CULVERT REQ'D

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	EROSION CONTROL / TRAFFIC CONTROL	SHEET 14	E

2



PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	EROSION CONTROL / TRAFFIC CONTROL	SHEET 15	E

1550-04-60

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	9.000	9.000
0004	201.0205	Grubbing	STA	9.000	9.000
0006	203.0100	Removing Small Pipe Culverts	EACH	8.000	8.000
0008	204.0100	Removing Pavement	SY	1,124.000	1,124.000
0010	204.0110	Removing Asphaltic Surface	SY	1,687.000	1,687.000
0012	205.0400	Excavation Marsh	CY	45.000	45.000
0014	208.0100	Borrow	CY	5,802.000	5,802.000
0016	209.1100	Backfill Granular Grade 1	CY	157.000	157.000
0018	213.0100	Finishing Roadway (project) 01. 1550-04-60	EACH	1.000	1.000
0020	305.0110	Base Aggregate Dense 3/4-Inch	TON	827.000	827.000
0022	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,449.000	1,449.000
0024	465.0110	Asphaltic Surface Patching	TON	597.000	597.000
0026	520.8000	Concrete Collars for Pipe	EACH	8.000	8.000
0028	520.8700	Cleaning Culvert Pipes	EACH	7.000	7.000
0030	521.1024	Apron Endwalls for Culvert Pipe Steel 24-Inch	EACH	2.000	2.000
0032	522.0124	Culvert Pipe Reinforced Concrete Class III 24-Inch	LF	446.000	446.000
0034	522.0130	Culvert Pipe Reinforced Concrete Class III 30-Inch	LF	94.000	94.000
0036	522.0136	Culvert Pipe Reinforced Concrete Class III 36-Inch	LF	93.000	93.000
0038	522.1024	Apron Endwalls for Culvert Pipe Reinforced Concrete 24-Inch	EACH	14.000	14.000
0040	522.1030	Apron Endwalls for Culvert Pipe Reinforced Concrete 30-Inch	EACH	2.000	2.000
0042	522.1036	Apron Endwalls for Culvert Pipe Reinforced Concrete 36-Inch	EACH	2.000	2.000
0044	606.0300	Riprap Heavy	CY	9.000	9.000
0046	614.0920	Salvaged Rail	LF	808.000	808.000
0048	614.2310	MGS Guardrail 3 HS	LF	1,300.500	1,300.500
0050	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0052	618.0100	Maintenance And Repair of Haul Roads (project) 01.1550-04-60	EACH	1.000	1.000
0054	619.1000	Mobilization	EACH	1.000	1.000
0056	624.0100	Water	MGAL	35.000	35.000
0058	625.0500	Salvaged Topsoil	SY	9,824.000	9,824.000
0060	627.0200	Mulching	SY	4,673.000	4,673.000
0062	628.1104	Erosion Bales	EACH	112.000	112.000
0064	628.1504	Silt Fence	LF	847.000	847.000
0066	628.1520	Silt Fence Maintenance	LF	847.000	847.000
0068	628.1905	Mobilizations Erosion Control	EACH	6.000	6.000
0070	628.1910	Mobilizations Emergency Erosion Control	EACH	6.000	6.000
0072	628.2006	Erosion Mat Urban Class I Type A	SY	7,689.000	7,689.000
0074	628.6005	Turbidity Barriers	SY	33.000	33.000

1550-04-60

Line	Item	Item Description	Unit	Total	Qty
0076	628.7555	Culvert Pipe Checks	EACH	17.000	17.000
0078	629.0210	Fertilizer Type B	CWT	7.000	7.000
0080	630.0120	Seeding Mixture No. 20	LB	312.000	312.000
0082	633.5200	Markers Culvert End	EACH	34.000	34.000
0084	642.5001	Field Office Type B	EACH	1.000	1.000
0086	643.0300	Traffic Control Drums	DAY	2,324.000	2,324.000
0088	643.0310.S	Temporary Portable Rumble Strips	LS	1.000	1.000
0090	643.0900	Traffic Control Signs	DAY	1,586.000	1,586.000
0092	643.5000	Traffic Control	EACH	1.000	1.000
0094	645.0111	Geotextile Type DF Schedule A	SY	168.000	168.000
0096	645.0120	Geotextile Type HR	SY	18.000	18.000
0098	646.1020	Marking Line Epoxy 4-Inch	LF	1,788.000	1,788.000
0100	650.6000	Construction Staking Pipe Culverts	EACH	9.000	9.000
0102	650.9910	Construction Staking Supplemental Control (project) 01.1550-04-60	LS	1.000	1.000
0104	650.9920	Construction Staking Slope Stakes	LF	11,473.000	11,473.000
0106	690.0150	Sawing Asphalt	LF	480.000	480.000
0108	690.0250	Sawing Concrete	LF	320.000	320.000
0110	SPV.0060	Special 01. Salvage & Reset 2 Culvert Sections	EACH	2.000	2.000
0112	SPV.0060	Special 02. Salvage & Reset 3 Culvert Sections	EACH	6.000	6.000
0114	SPV.0090	Special 01. Regrading Ditch	LF	572.000	572.000
0116	SPV.0105	Special 01. Cattle Pass Liner 24-Inch	LS	1.000	1.000

CLEARING

STATION	TO	STATION	LOCATION	201.0105 STA
522+59	-	527+00	LEFT	4
573+00	-	574+00	LEFT	1
621+20	-	621+80	LEFT	1
622+00	-	622+50	RIGHT	1
622+50	-	623+00	LEFT	1
630+50		632+25	RIGHT	2
			TOTAL 0010	9

GRUBBING

STATION	TO	STATION	LOCATION	201.0205 STA
522+59	-	527+00	LEFT	4
573+00	-	574+00	LEFT	1
621+20	-	621+80	LEFT	1
622+00	-	622+50	RIGHT	1
622+50	-	623+00	LEFT	1
630+50		632+25	RIGHT	2
			TOTAL 0010	9

REMOVING SMALL PIPE CULVERTS

STATION	LOCATION	203.0100 EACH
523+80	ML	1
573+50	ML	1
583+00	ML	1
601+43	ML	1
622+00	ML	1
632+00	ML	1
649+20	ML	1
672+05	ML	1
	TOTAL 0010	8

REMOVING PAVEMENT

STATION	TO	STATION	LOCATION	204.0100 SY
523+33	-	524+27	ML	209
573+18	-	573+82	ML	142
582+53	-	583+47	ML	209
601+38	-	601+48	ML	22
648+82	-	649+58	ML	169
631+53	-	632+47	ML	209
649+10	-	649+30	ML	49
671+74	-	672+26	ML	116
			TOTAL 0010	1124

REMOVING ASPHALTIC SURFACE

STATION	TO	STATION	LOCATION	204.0110 SY
523+33	-	524+27	ML	313
573+18	-	573+82	ML	213
582+53	-	583+47	ML	313
601+38	-	601+48	ML	33
621+62	-	622+38	ML	253
631+53	-	632+47	ML	313
649+10	-	649+30	ML	73
671+74	-	672+26	ML	173
			TOTAL 0010	1687

EXCAVATION MARSH

STATION	LOCATION	205.0400 CY
573+50	ML	15
649+20	ML	15
672+05	ML	15
	TOTAL 0010	45.00

BORROW

CATEGORY	STATION	TO	STATION	LOCATION	208.0100 CY
0010	521+00	-	527+00	FORESLOPE - LT	3838
0010			556+66	BG - EAT -RT	91
0010			557+03	BG - EAT - LT	233
0010			562+97	BG - EAT - RT	7
0010			564+09	BG - EAT - LT	47
0010	573+00	-	574+00	CULVERT	43
0010	578+25		579+20	CULVERT	155
0010	621+00	-	623+00	CULVERT	208
0010	630+50	-	633+50	CULVERT	883
				TOTAL 0010	5802

BACKFILL GRANULAR GRADE 1

STATION	LOCATION	209.1100 CY	REMARKS
523+80	CULVERT	17	PIPE BEDDING
573+50	CULVERT	27	PIPE BEDDING & MARSH
583+00	CULVERT	14	PIPE BEDDING
601+43	CULVERT	12	PIPE BEDDING
622+00	CULVERT	13	PIPE BEDDING
632+00	CULVERT	17	PIPE BEDDING
649+20	CULVERT	28	PIPE BEDDING & MARSH
672+05	CULVERT	30	PIPE BEDDING & MARSH
		TOTAL 0010	157

3

FINISHING ROADWAY (PROJECT) 01. (155(

LOCATION	213.0100 EACH
	1
TOTAL 0010	1

BASE AGGREGATE DENSE 3/4-INCH

STATION	TO	STATION	LOCATION	305.0110 TON
523+30	-	524+30	SHOULDERS	52
523+30	-	524+30	TEMP WIDENING	70
573+18	-	573+82	SHOULDERS	36
573+10	-	573+90	TEMP WIDENING	27
582+53	-	583+47	SHOULDERS	52
582+50	-	583+50	TEMP WIDENING	144
601+38	-	601+48	SHOULDERS	6
601+38	-	601+48	TEMP WIDENING	10
621+62	-	622+38	SHOULDERS	42
621+60	-	622+40	TEMP WIDENING	27
631+53	-	632+47	SHOULDERS	52
631+50	-	632+50	TEMP WIDENING	133
649+10	-	649+30	SHOULDERS	12
648+80	-	649+60	TEMP WIDENING	53
671+74	-	672+26	SHOULDERS	29
671+55		672+55	TEMP WIDENING	61
UNDISTRIBUTED				20
			TOTAL 0010	827

BASE AGGREGATE DENSE 1 1/4-INCH

STATION	TO	STATION	LOCATION	305.0120 TON
523+30	-	524+30	PAVMT BASE	251
573+18	-	573+82	PAVMT BASE	171
582+53	-	583+47	PAVMT BASE	251
601+38	-	601+48	PAVMT BASE	27
621+62	-	622+38	PAVMT BASE	203
631+53	-	632+47	PAVMT BASE	251
649+10	-	649+30	PAVMT BASE	59
671+74	-	672+26	PAVMT BASE	139
UNDISTRIBUTED				100
			TOTAL 0010	1449

ASPHALTIC SURFACE PATCHING

STATION	TO	STATION	LOCATION	465.0110 TON
523+33	-	524+27	ML	105
573+18	-	573+82	ML	72
582+53	-	583+47	ML	105
601+38	-	601+48	ML	11
621+62	-	622+38	ML	85
631+53	-	632+47	ML	105
649+10	-	649+30	ML	25
671+74	-	672+26	ML	58
UNDISTRIBUTED				30
			TOTAL 0010	597

CONCRETE COLLARS FOR PIPE

STATION	LOCATION	520.8000 EACH
609+70	LT & RT	2
675+70	LT & RT	2
691+60	LT & RT	2
698+00	LT & RT	2
	TOTAL 0010	8

3

CATEGORY	STATION	TO	STATION	LOCATION	CLEANING CULVERT PIPES 520.8700 EACH	RIPRAP HEAVY 606.0300 CY	SALVAGED TOPSOIL 625.0500 SY	MULCHING 627.0200 SY	EROSION BALES 628.1104 EACH	EROSION MAT URBAN CLASS I TYPE A 628.2006 SY	CULVERT PIPE CHECKS 628.7555 EACH	FERTILIZER TYPE B 629.0210 CWT	SEEDING MIXTURE NO. 20 630.0120 LB
0010	521+00	-	527+00	FORESLOPE - LT		3	3419			3419		2.15	92.31
0010			556+66	BG - EAT -RT			417	417				0.26	11.25
0010			557+03	BG - EAT - LT			584	584				0.37	15.76
0010			558+00	CULVERT	1				14		3		
0010			561+15	CULVERT									
0010			562+97	BG - EAT - RT			245	245				0.15	6.62
0010			564+09	BG - EAT - LT			224	224				0.14	6.05
0010	573+00	-	574+00	CULVERT		3	644	644		516		0.41	17.38
0010	578+25		579+20	CULVERT	1		369		14	369	3	0.23	9.96
0010			583+00	CULVERT		3				274		0.17	7.39
0010			601+43	CULVERT				229		508		0.14	6.19
0010			609+70	CULVERT	1			157	14		2	0.10	4.24
0010	621+00	-	623+00	CULVERT			1222	1222				0.77	33.00
0010	630+50	-	633+50	CULVERT			2167			2167		1.37	58.50
0010			649+20	CULVERT				83				0.05	2.25
0010			654+25	CULVERT									
0010			672+05	CULVERT			333	333				0.21	9.00
0010			675+70	CULVERT	1			89	14		2	0.06	2.40
0010			691+60	CULVERT	1			133	14		2	0.08	3.60
0010			698+00	CULVERT	1				14	386	2	0.24	10.43
0010			700+00	CULVERT	1			212	14		2	0.13	5.72
				UNDISTRIBUTED			200	100	14	50	1	0.20	10.00
				TOTAL 0010	7	9	9824	4673	112	7689	17	7	312

APRON ENDWALLS FOR CULVERT PIPE STEEL 24-INCH

CATEGORY	STATION TO	STATION	LOCATION	521.1024 EACH
0010		578+65	LT & RT	2
			TOTAL 0010	2

CULVERT PIPE REINFORCED CONCRETE CLASS III 24-INCH

STATION	LOCATION	522.0124 LF
573+50	ML	66
583+00	ML	77
601+43	ML	96
622+00	ML	75
649+20	ML	59
672+05	ML	73
	TOTAL 0010	446

CULVERT PIPE REINFORCED CONCRETE CLASS III 30-INCH

STATION	LOCATION	522.0130 LF
523+80	ML	94
	TOTAL 0010	94

3

CULVERT PIPE REINFORCED CONCRETE CLASS III 36-INCH

STATION	LOCATION	522.0136 LF
632+00	ML	93
	TOTAL 0010	93

APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 24-INCH

STATION	LOCATION	522.1024 EACH
573+50	ML	2
583+00	ML	2
601+43	ML	4
622+00	ML	2
649+20	ML	2
672+05	ML	2
	TOTAL 0010	14

APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 30-INCH

STATION	LOCATION	522.1030 EACH
523+80	ML	2
	TOTAL 0010	2

APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 36-INCH

STATION	LOCATION	522.1036 EACH
632+00	ML	2
	TOTAL 0010	2

3

SALVAGED RAIL

CATEGORY	STATION	TO	STATION	LOCATION	614.0920 LF
0010	556+57	-	559+31	LT	274
0010	556+70	-	559+44	RT	274
0010	578+00	-	579+30	LT	130
0010	578+00	-	579+30	RT	130
				TOTAL 0010	808

MGS GUARDRAIL 3 HS

CATEGORY	STATION	TO	STATION	LOCATION	614.2310 LF
0010	557+43	-	563+56	LT	613.0
0010	557+15	-	562+50	RT	687.5
				TOTAL 0010	1300.5

3

MGS GUARDRAIL TERMINAL EAT

CATEGORY	STATION	TO	STATION	LOCATION	614.2610 EACH
0010	555+90	-	556+43	LT	1
0010	555+98	-	556+51	RT	1
0010	562+56	-	563+09	LT	1
0010	563+39	-	563+92	RT	1
				TOTAL 0010	4

MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT) 01. (1550-04-60)

LOCATION	618.0100 EACH
PROJECT	1
TOTAL 0010	1

SILT FENCE SUMMARY

CATEGORY	STATION	TO	STATION	LOCATION	SILT FENCE 628.1504 LF	SILT FENCE MAINTENANCE 628.1520 LF
0010	521+00		527+00	FORESLOPE - LT	612	612
0010	578+50		579+00	FORESLOPE - LT	55	55
0010	578+15		578+90	FORESLOPE - RT	80	80
0010				UNDISTRIBUTED	100	100
				TOTAL 0010	847	847

3

MOBILIZATIONS EROSION CONTROL

LOCATION	628.1905 EACH
PROJECT	6
TOTAL 0010	6

MOBILIZATIONS EMERGENCY EROSION CONTROL

LOCATION	628.1910 EACH
PROJECT	6
TOTAL 0010	6

3

MARKERS CULVERT END

STATION	LOCATION	633.5200 EACH
523+80	CULVERT END	2
558+00	CULVERT END	2
561+15	CULVERT END	2
573+50	CULVERT END	2
578+65	CULVERT END	2
583+00	CULVERT END	2
601+43	CULVERT END	2
609+70	CULVERT END	2
622+00	CULVERT END	2
632+00	CULVERT END	2
649+20	CULVERT END	2
654+25	CULVERT END	2
672+05	CULVERT END	2
675+70	CULVERT END	2
691+60	CULVERT END	2
698+00	CULVERT END	2
700+00	CULVERT END	2
TOTAL 0010		34

TURBIDITY BARRIERS

STATION	LOCATION	628.6005 SY
649+20	CULVERT ENDS	33
TOTAL 0010		33

FIELD OFFICE TYPE B

LOCATION	642.5001 EACH
PROJECT	1
TOTAL 0010	1

TRAFFIC CONTROL SUMMARY

STATION	TO	STATION	LOCATION	TRAFFIC CONTROL DRUMS 643.0300 DAY	TRAFFIC CONTROL SIGNS 643.0900 DAY	TRAFFIC CONTROL 643.5000 EACH	REMARKS
483+83		703+00	PROJECT			1	
483+83		703+00	PROJECT		1218		SDD 15C4
483+83		703+00	PROJECT	1740	348		SDD 15D28
521+00		527+00	SHOULDER - LEFT	160	20		NARROW SHOULDER, 45 MPH
523+30		524+30	CULVERT REPL.-TEMP WIDENING	20			
573+00		574+00	CULVERT REPL.-TEMP WIDENING	10			
573+00		574+00	SHOULDER - LEFT	14			
582+00		584+00	CULVERT REPL.-TEMP WIDENING	20			
601+23		601+63	CULVERT REPL.-TEMP WIDENING	10			
621+50		622+50	CULVERT REPL.-TEMP WIDENING	10			
631+50		632+50	CULVERT REPL.-TEMP WIDENING	20			
648+70		649+70	CULVERT REPL.-TEMP WIDENING	10			
671+55		672+55	CULVERT REPL.-TEMP WIDENING	10			
				300			UNDISTRIBUTED
			TOTAL 0010	2324	1586	1	

GEOTEXTILE FABRIC SUMMARY

CATEGORY	STATION TO	STATION	LOCATION	GEOTEXTILE TYPE DF SCHEDULE A 645.0111 SY	GEOTEXTILE TYPE HR 645.0120 SY
0010		523+80	CULVERT END		6
0010		558+00	CULVERT END	28	
0010		573+50	CULVERT END		6
0010		583+00	CULVERT END		6
0010		609+70	CULVERT END	28	
0010		675+70	CULVERT END	28	
0010		691+60	CULVERT END	28	
0010		698+00	CULVERT END	28	
0010		700+00	CULVERT END	28	
			TOTAL 0010	168	18

MARKING LINE EPOXY 4-INCH

CATEGORY	STATION	TO	STATION	LOCATION	646.1020 LF	REMARKS
0010	523+30	-	524+30	ML	225	200' WHITE, 25' YELLOW
0010	573+18		573+82	ML	256	128' WHITE, 128' YELLOW
0010	582+57		583+43	ML	280	172' WHITE, 107.5' YELLOW
0010	601+38	-	601+48	ML	23	20' WHITE, 3' YELLOW
0010	621+68		622+32	ML	256	128' WHITE, 128' YELLOW
0010	631+53		632+47	ML	376	188' WHITE, 188' YELLOW
0010	649+10	-	649+30	ML	65	40' WHITE, 45' YELLOW
0010	671+74	-	672+26	ML	208	104' WHITE, 104' YELLOW
0010	UNDISRTIBUTED				100	
				TOTAL 0010	1788	

CONSTRUCTION STAKING PIPE CULVERTS

CATEGORY	STATION	TO	STATION	LOCATION	650.6000 EACH
0010			523+80	CULVERT	1
0010			573+50	CULVERT	1
0010			575+65	CULVERT	1
0010			583+00	CULVERT	1
0010			601+43	CULVERT	1
0010			622+00	CULVERT	1
0010			632+00	CULVERT	1
0010			649+20	CULVERT	1
0010			672+05	CULVERT	1
				TOTAL 0010	9

CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) 01. (1550-04-60)

LOCATION	650.9910 LS
PROJECT	1
TOTAL 0010	1

CONSTRUCTION STAKING SLOPE STAKES

CATEGORY	STATION	TO	STATION	LOCATION	650.9920 LF
0010	521+00	-	527+00	FORESLOPE - LT	600
0010	555+46	-	656+29	GUARD RAIL - LT & RT	10083
0010	573+00	-	574+00	FORESLOPE - LT	100
0010	578+25		579+20	FORESLOPE - LT & RT	190
0010	621+00	-	623+00	FORESLOPE - LT & RT	200
0010	630+50	-	633+50	FORESLOPE - LT & RT	300
				TOTAL 0010	11473

SAWING ASPHALT

STATION	LOCATION	690.0150 LF
523+33	ML	30
524+27	ML	30
573+18	ML	30
573+82	ML	30
582+53	ML	30
583+47	ML	30
601+38	ML	30
601+48	ML	30
621+62	ML	30
622+38	ML	30
631+53	ML	30
632+47	ML	30
649+09	ML	30
649+31	ML	30
671+74	ML	30
672+26	ML	30
	TOTAL 0010	480

SAWING CONCRETE

STATION	LOCATION	690.0250 LF
523+33	ML	20
524+27	ML	20
573+18	ML	20
573+82	ML	20
582+53	ML	20
583+47	ML	20
601+38	ML	20
601+48	ML	20
621+62	ML	20
622+38	ML	20
631+53	ML	20
632+47	ML	20
649+09	ML	20
649+31	ML	20
671+74	ML	20
672+26	ML	20
	TOTAL 0010	320

SALVAGE AND RESET 2 CULVERT SECTIONS

STATION	LOCATION	SPV.0060.01 EACH
609+70	CULVERT END LT	1
691+60	CULVERT END RT	1
	TOTAL 0010	2

SALVAGE AND RESET 3 CULVERT SECTIONS

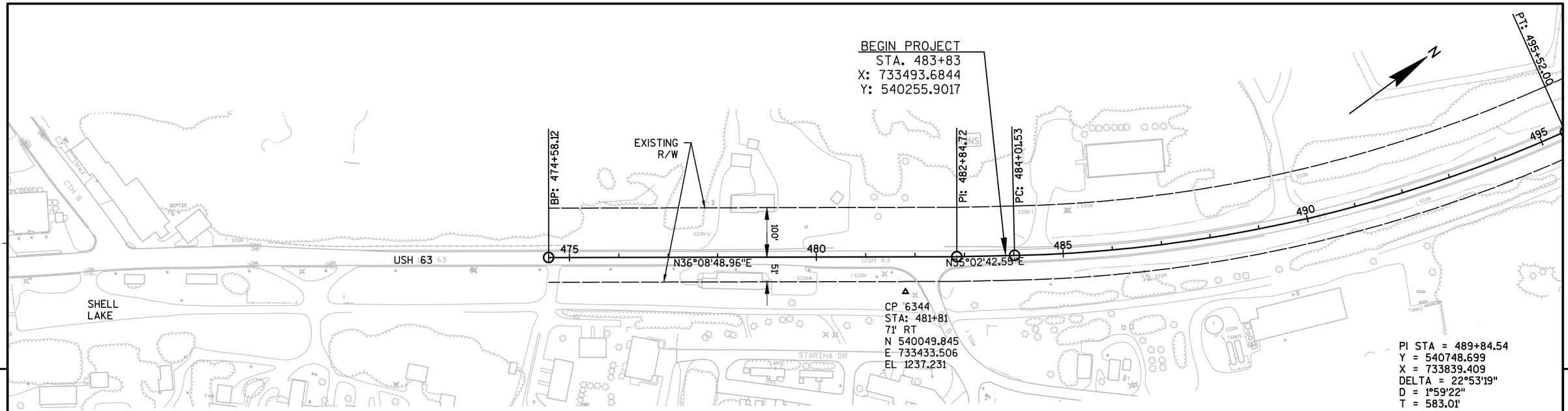
STATION	LOCATION	SPV.0060.02 EACH
609+70	CULVERT END RT	1
675+70	CULVERT END LT & RT	2
691+60	CULVERT END LT	1
698+00	CULVERT END LT & RT	2
	TOTAL 0010	6

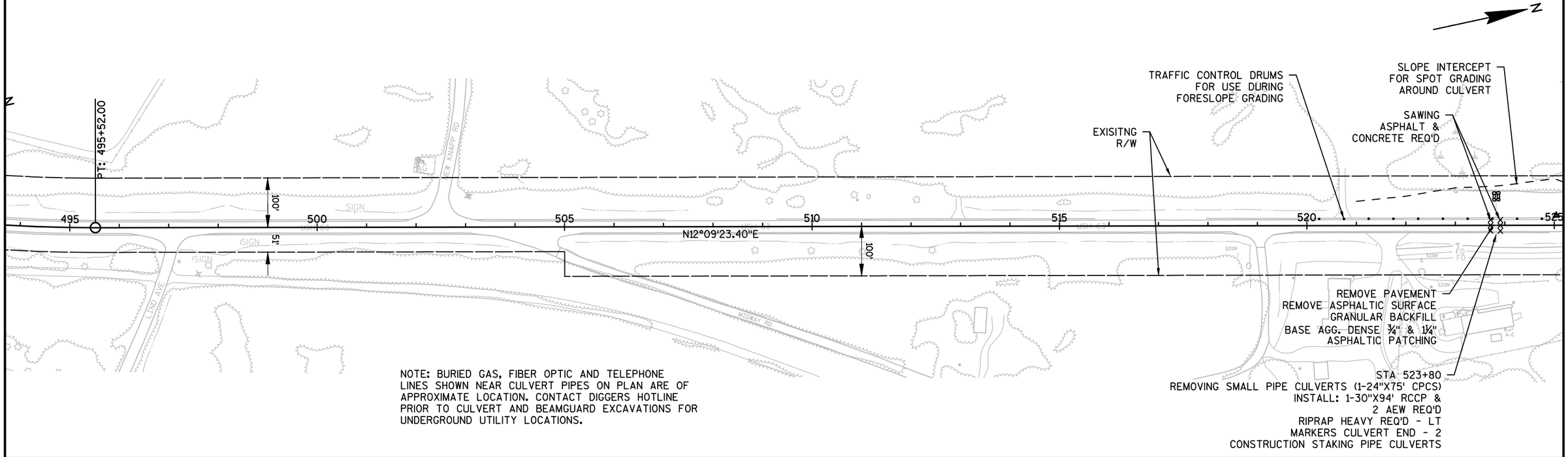
REGRADING DITCH

STATION	TO	STATION	LOCATION	SPV.0090.01 LF
572+16	-	575+00	DITCH - R	284
601+37	-	604+25	DITCH - L	288
			TOTAL 0010	572

CATTLE PASS 24" LINER

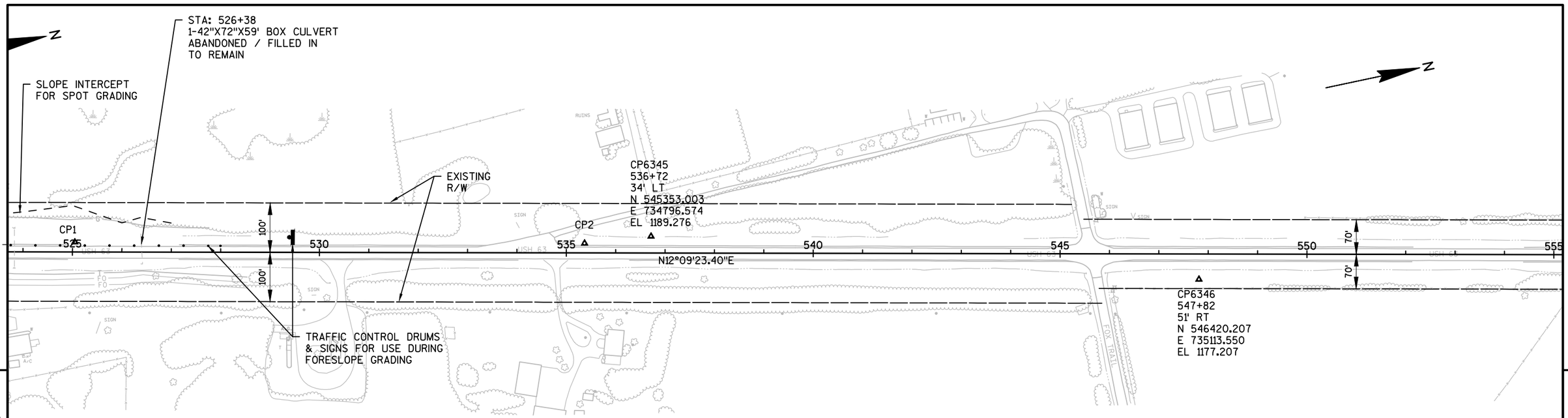
STATION	TO	STATION	LOCATION	SPV.0105 LS
578+65	-	578+65	RT & LT	1
			TOTAL 0010	1



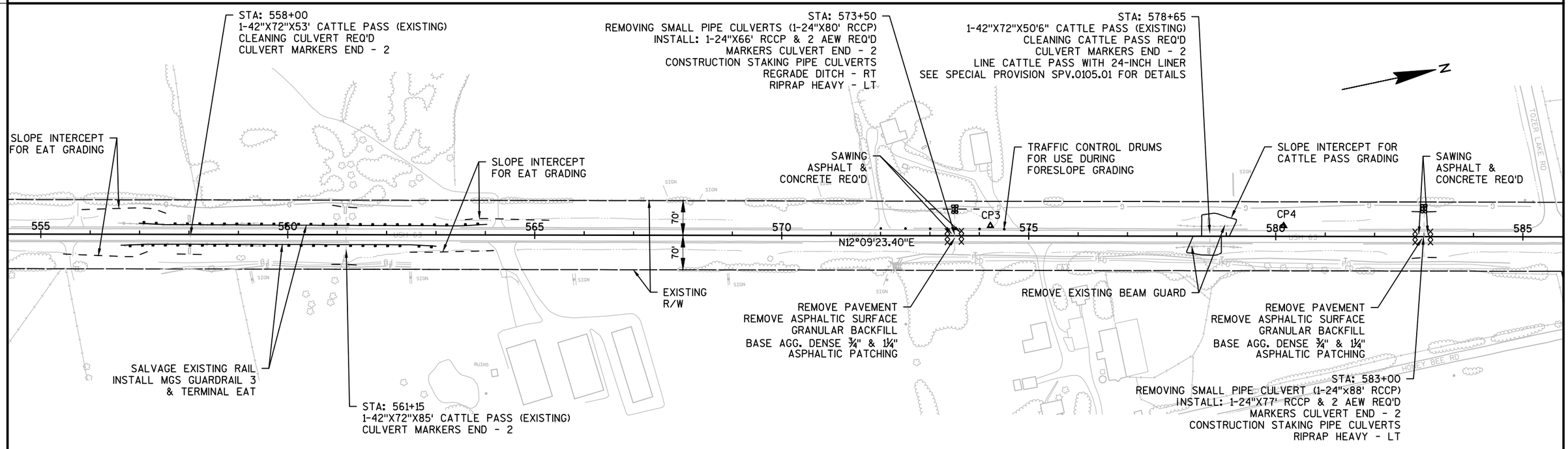


NOTE: BURIED GAS, FIBER OPTIC AND TELEPHONE LINES SHOWN NEAR CULVERT PIPES ON PLAN ARE OF APPROXIMATE LOCATION. CONTACT DIGGERS HOTLINE PRIOR TO CULVERT AND BEAMGUARD EXCAVATIONS FOR UNDERGROUND UTILITY LOCATIONS.

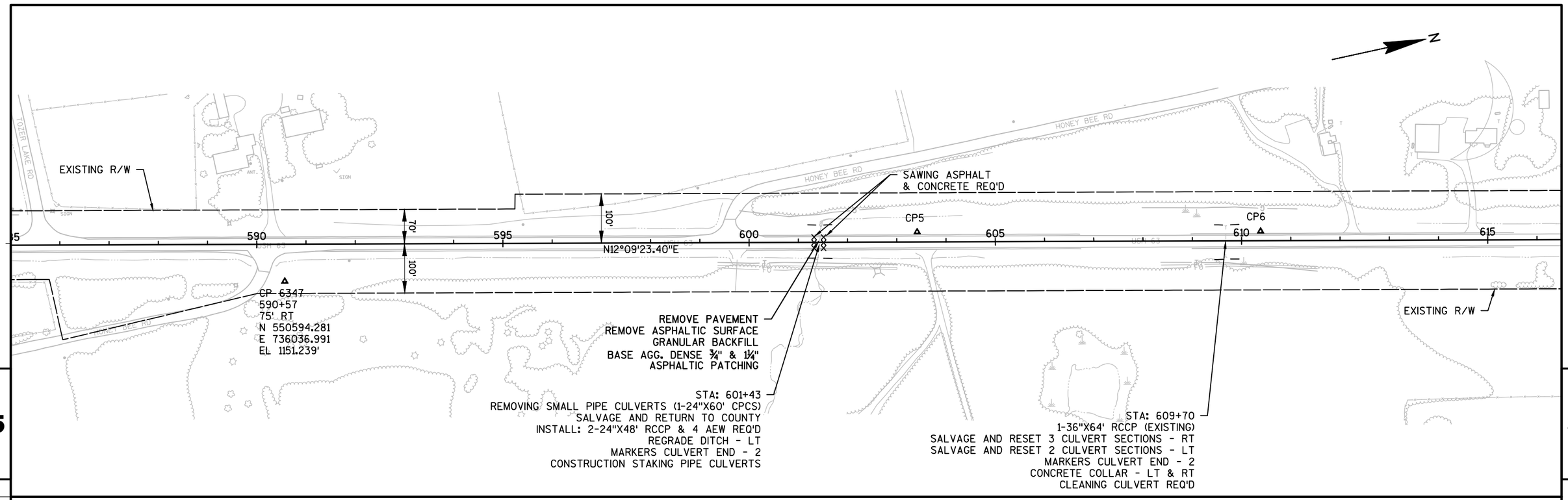
PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	DUAL PLAN	SHEET 27	E



NOTE: BURIED GAS, FIBER OPTIC AND TELEPHONE LINES SHOWN NEAR CULVERT PIPES ON PLAN ARE OF APPROXIMATE LOCATION. CONTACT DIGGERS HOTLINE PRIOR TO CULVERT AND BEAMGUARD EXCAVATIONS FOR UNDERGROUND UTILITY LOCATIONS.



PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	DUAL PLAN	SHEET 28	E



PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	DUAL PLAN	SHEET 29	E

STA: 654+25
EXISTING 36"X74' RCCP
EQUALIZER PIPE
MARKERS CULVERT END - 2

STA: 672+05
REMOVING SMALL PIPE CULVERTS (1-24"X76' CMCP)
INSTALL: 1-24"X73' RCCP & 2 AEW REQ'D
MARKERS CULVERT END - 2
CONSTRUCTION STAKING PIPE CULVERTS

WETLAND

SAWING ASPHALT
& CONCRETE REQ'D

EXISTING R/W

REMOVE PAVEMENT
REMOVE ASPHALTIC SURFACE
GRANULAR BACKFILL
BASE AGG. DENSE ¾" & 1¼"
ASPHALTIC PATCHING

SAWING ASPHALT
& CONCRETE REQ'D

150'
100'
100'
150'

650 655 660 665 670 675

CP10 CP9 CP15 CP17

N12°09'23.40"E

EXISTING R/W

REMOVE PAVEMENT
REMOVE ASPHALTIC SURFACE
GRANULAR BACKFILL
BASE AGG. DENSE ¾" & 1¼"
ASPHALTIC PATCHING

STA: 649+20
REMOVING SMALL PIPE CULVERTS, 1-24"X64' RCCP
INSTALL 1-24"X59' RCCP & 2 AEW
MARKERS CULVERT END - 2
CONSTRUCTION STAKING PIPE CULVERTS

STA: 675+70
1-24"X70' RCCP (EXISTING)
SALVAGE AND RESET 3 CULVERT SECTIONS - RT
SALVAGE AND RESET 3 CULVERT SECTION - LT
CONCRETE COLLAR - LT & RT
CLEANING CULVERT REQ'D
MARKERS CULVERT END - 2

5 5

STA: 691+60
1-24"X74' RCCP (EXISTING)
SALVAGE AND RESET 2 CULVERT SECTION - RT
SALVAGE AND RESET 3 CULVERT SECTIONS - LT
CONCRETE COLLAR - LT & RT
CLEANING CULVERT REQ'D
MARKERS CULVERT END - 2

STA: 700+00
1-24"X62' RCCP (EXISTING)
CLEANING CULVERT REQ'D
MARKERS CULVERT END - 2

100'
100'

680 685 690 695 700 705

CP11 CP12 CP13

N12°09'23.40"E

CP 6349
STA 685+90
42' RT
N 559920.743
E 738012.091
EL 1180.121'

END PROJECT 1550-04-60
STA. 703+00
X: 738330.6474
Y: 561602.0803

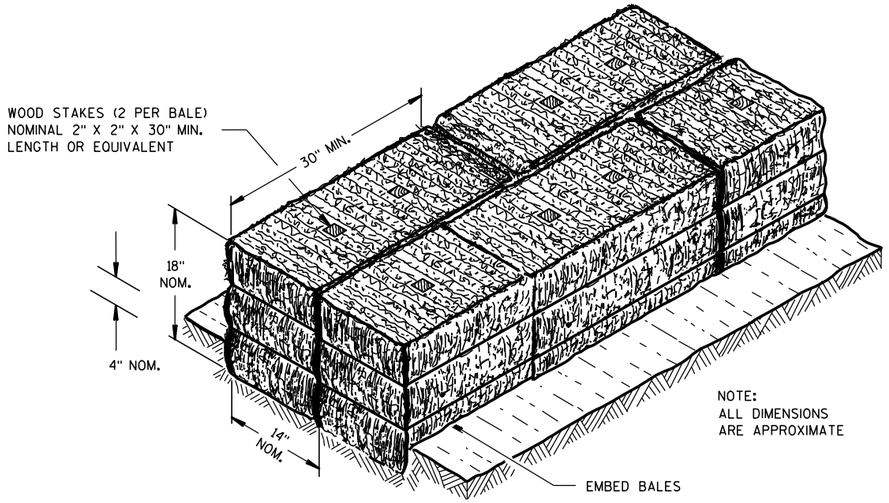
NOTE: BURIED GAS, FIBER OPTIC AND TELEPHONE LINES SHOWN NEAR CULVERT PIPES ON PLAN ARE OF APPROXIMATE LOCATION. CONTACT DIGGERS HOTLINE PRIOR TO CULVERT AND BEAMGUARD EXCAVATIONS FOR UNDERGROUND UTILITY LOCATIONS.

STA: 698+00
1-24"X116' RCCP (EXISTING)
SALVAGE AND RESET 3 CULVERT SECTIONS - LT & RT
CONCRETE COLLAR - LT & RT
CLEANING CULVERT REQ'D
MARKERS CULVERT END - 2

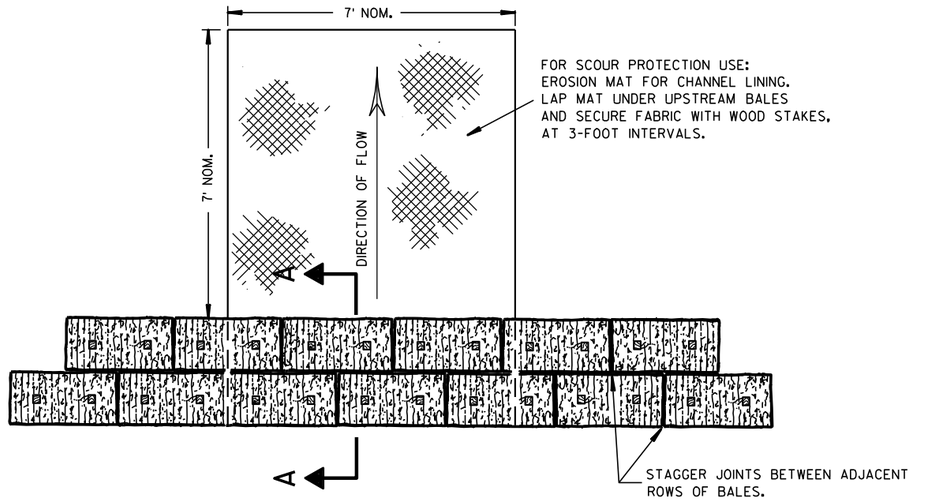
PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	DUAL PLAN	SHEET 30	E

Standard Detail Drawing List

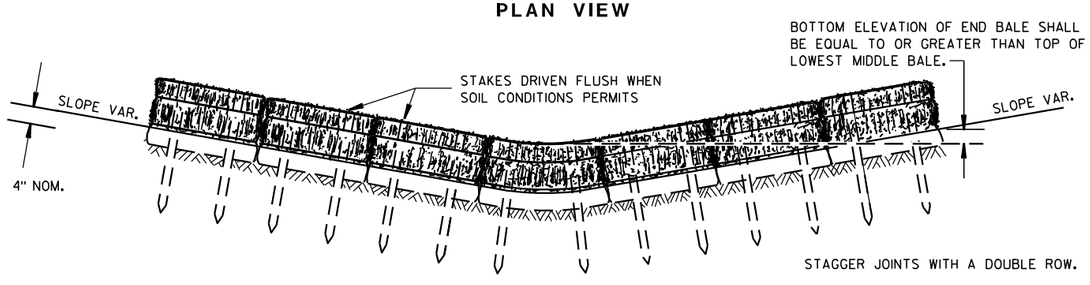
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
14B42-05A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-03A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-03B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-03C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C04-03	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C08-18A	LONGITUDINAL MARKING (MAINLINE)
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-06	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C19-04A	MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY
15D28-03	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS



SECTION A-A



PLAN VIEW



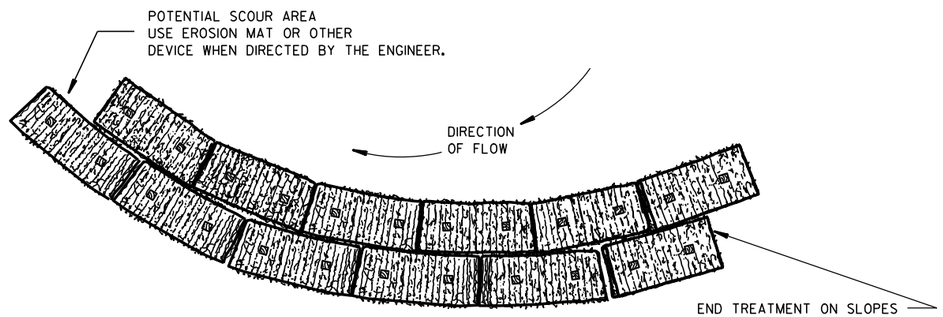
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

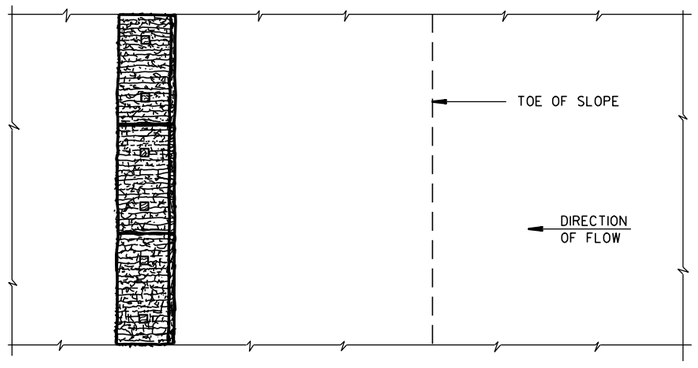
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

① TEMPORARY DITCH CHECKS EITHER EROSION BALES OR MANUFACTURED SHALL BE PAID FOR UNDER THE BID ITEM OF TEMPORARY DITCH CHECK. THE DEPARTMENT WILL NOT PAY FOR TEMPORARY DITCH CHECKS CONSTRUCTED OF A SINGLE ROW OF EROSION BALES.

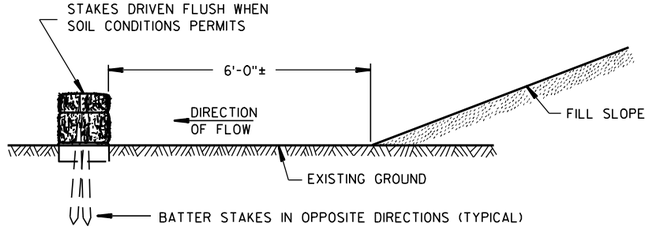


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

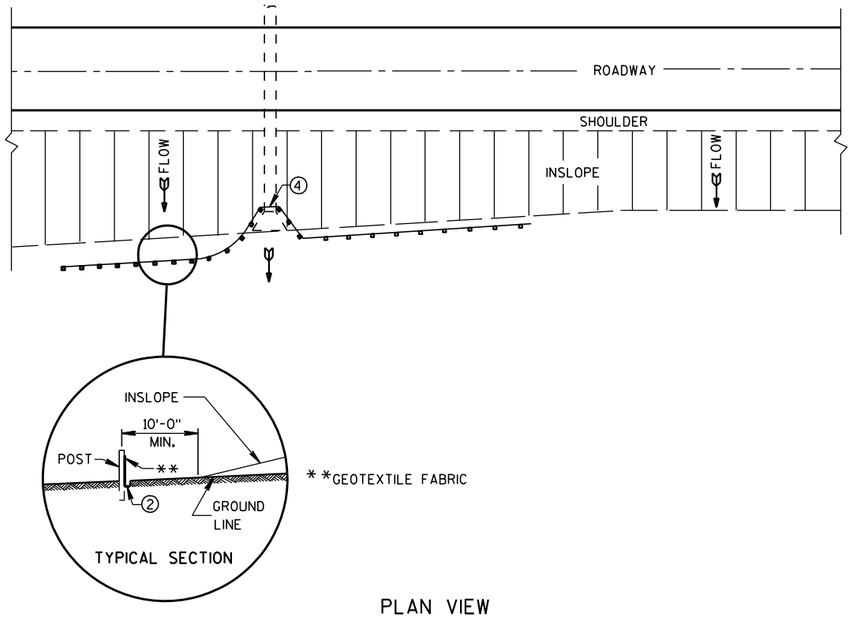
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02 — DATE

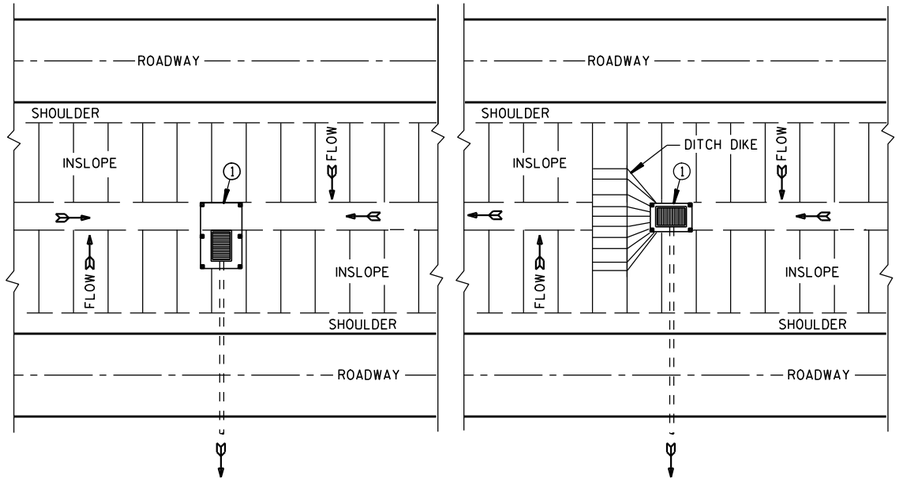
/S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



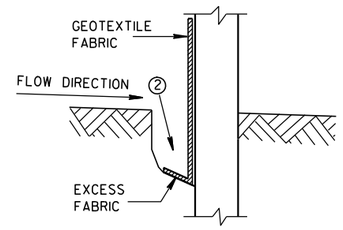
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

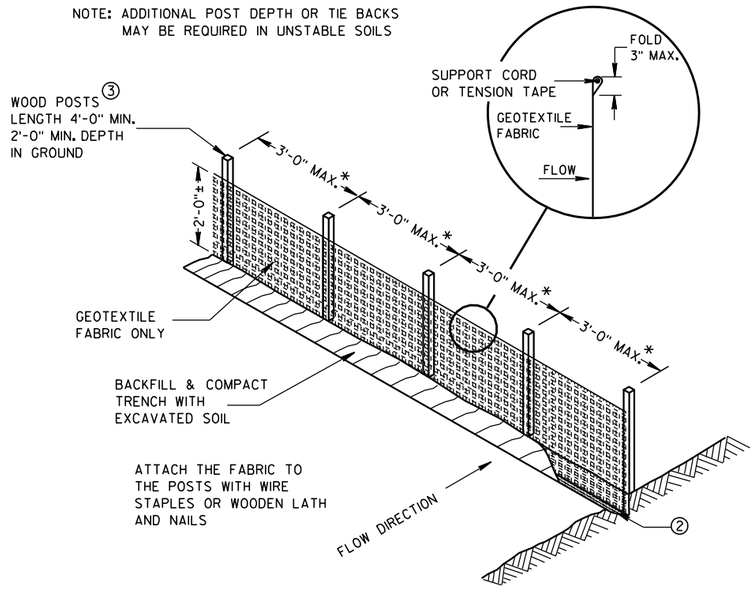
GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

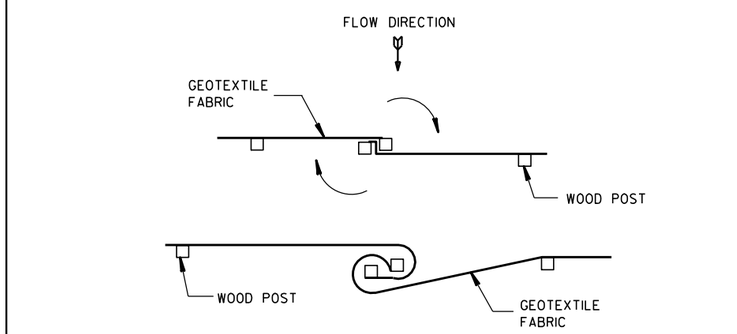
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL BE A MINIMUM SIZE OF 1⅛" X 1⅛" OF OAK OR HICKORY.
4. SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
5. CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



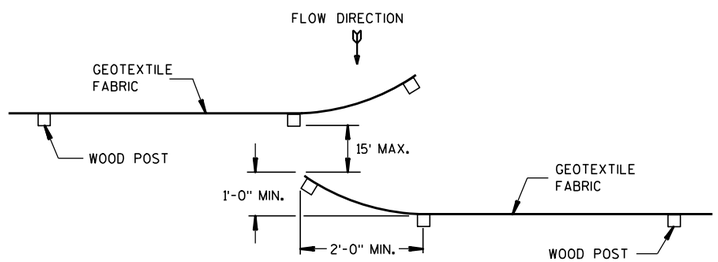
TRENCH DETAIL



SILT FENCE

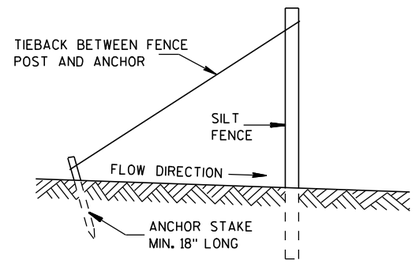


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

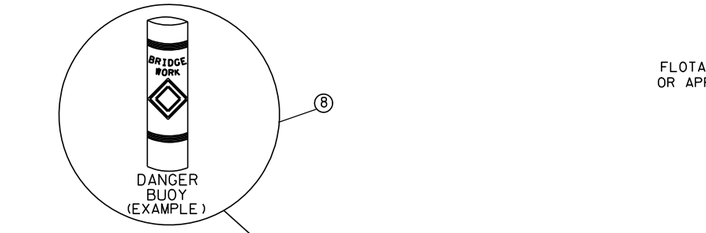
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

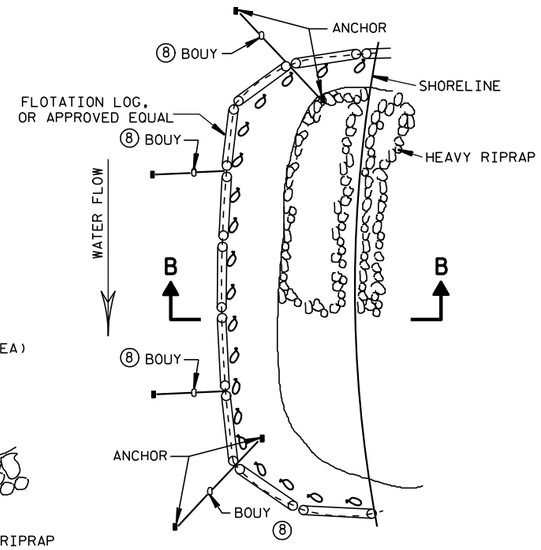
S.D.D. 8 E 9-6

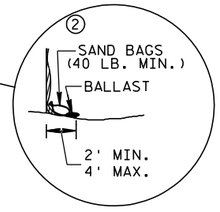
6

S.D.D. 8 E 9-6

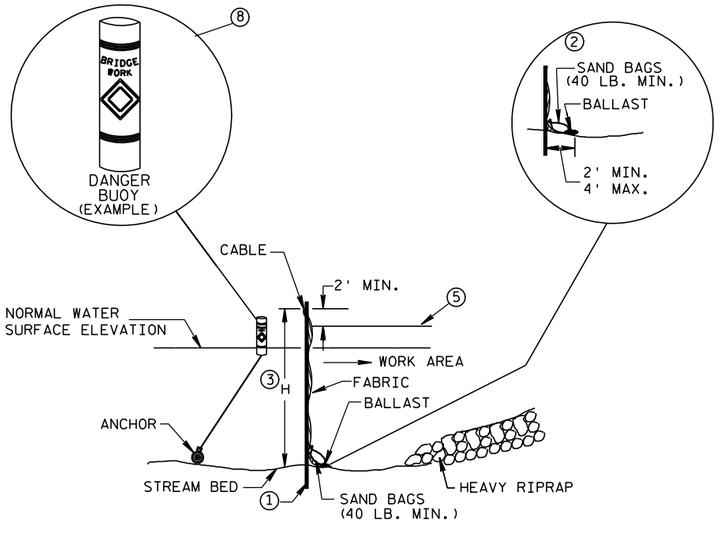


SECTION B-B

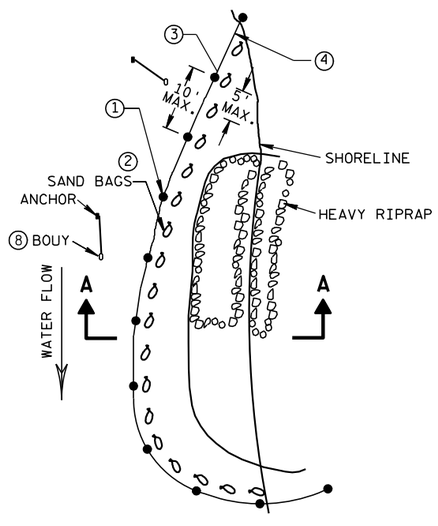




TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



SECTION A-A



PLAN VIEW

TURBIDITY BARRIER STANDARD POST INSTALLATION

TURBIDITY BARRIER PLACEMENT DETAILS

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

TURBIDITY BARRIER MAY BE REMOVED AT THE ENGINEERS DISCRETION, WHEN PERMANENT EROSION CONTROL MEASURES HAVE BEEN ESTABLISHED.

① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.

② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.

③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.

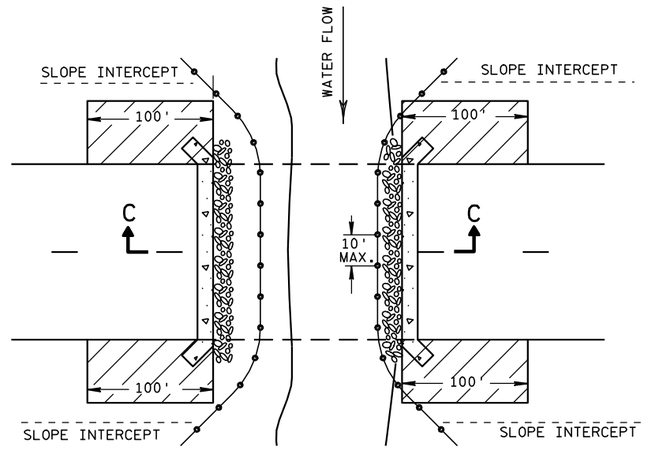
④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.

⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MIMIMUM BARRIER HEIGHT SHALL BE 2'GREATER THAN EITHER THE 02 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WICHEVER IS GREATER.

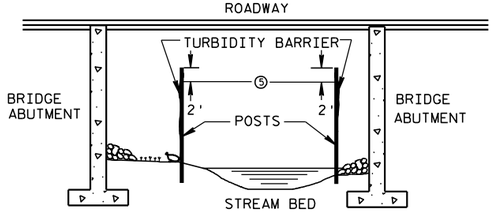
⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.

⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.

⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



PLAN VIEW



SECTION C-C

TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/04/02 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 E 11-2

6

S.D.D. 8 E 11-2

METAL APRON ENDWALLS

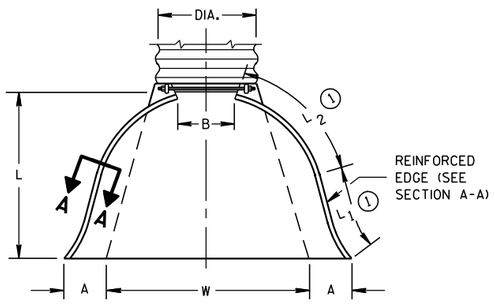
PIPE DIA. (IN.)	MIN. THICK. (Inches) STEEL	MIN. THICK. (Inches) ALUM.	DIMENSIONS (Inches) A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1	1 Pc.
21	.064	.060	9	12	6	36	18	29 5/8	42	2 1/2 to 1	1 Pc.
24	.064	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1	1 Pc.
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 1	1 Pc.
36	.079	.105	14	19	9	60	24	59 3/4	72	2 1/2 to 1	2 Pc.
42	.109	.105	16	22	11	69	24	75 5/8	84	2 1/2 to 1	2 Pc.
48	.109	.105	18	27	12	78	24	81	90	2 1/4 to 1	3 Pc.
54	.109	.105	18	30	12	84	30	85 1/2	102	2 1/4 to 1	3 Pc.
60	.109×	.105×	18	33	12	87	—	—	114	2 to 1	3 Pc.
66	.109×	.105×	18	36	12	87	—	—	120	2 to 1	3 Pc.
72	.109×	.105×	18	39	12	87	—	—	126	2 to 1	3 Pc.
78	.109×	.105×	18	42	12	87	—	—	132	1 1/2 to 1	3 Pc.
84	.109×	.105×	18	45	12	87	—	—	138	1 1/2 to 1	3 Pc.
90	.109×	.105×	18	37	12	87	—	—	144	1 1/2 to 1	3 Pc.
96	.109×	.105×	18	35	12	87	—	—	150	1 1/2 to 1	3 Pc.

× EXCEPT CENTER PANEL SEE GENERAL NOTES

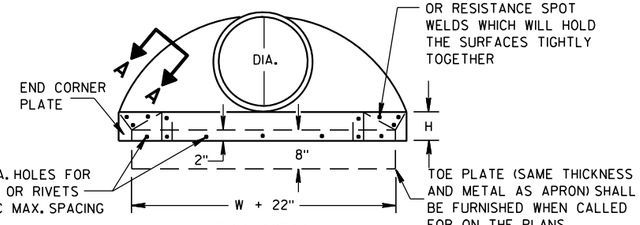
REINFORCED CONCRETE APRON ENDWALLS

PIPE DIA. (IN.)	DIMENSIONS (Inches) T	A	B	C	D	E	G	APPROX. SLOPE
12	2	4	24	48 7/8	72 1/8	24	2	3 to 1
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1
24	3	9 1/2	43 1/2	30	73 1/2	48	3	3 to 1
27	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	3 to 1
30	3 1/2	12	54	19 3/4	73 1/2	60	3 1/2	3 to 1
36	4	15	63	34 3/4	97 3/4	72	4	3 to 1
42	4 1/2	21	63	35	98	78	4 1/2	3 to 1
48	5	24	72	26	98	84	5	3 to 1
54	5 1/2	27	65	* 33 1/4 - ** 35	* 98 1/4 - ** 100	90	5 1/2	2 2/5 to 1
60	6	* 30 - ** 35	60	39	99	96	5	2 to 1
66	6 1/2	* 24 - ** 30	* 72 - ** 78	* 21 - ** 27	99	102	5 1/2	2 to 1
72	7	* 24 - ** 36	78	21	99	108	6	2 to 1
78	7 1/2	* 24 - ** 36	78	21	99	114	6 1/2	2 to 1
84	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2 to 1
90	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	1 1/2 to 1

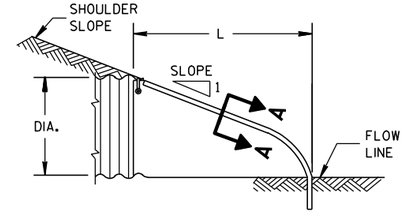
*MINIMUM
**MAXIMUM



PLAN VIEW

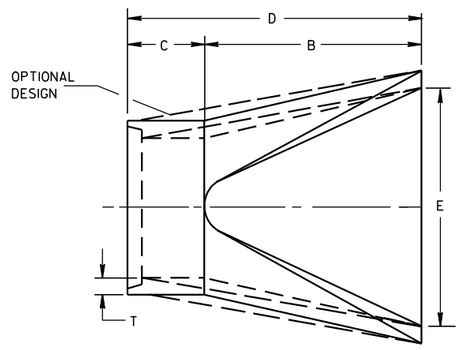


END VIEW

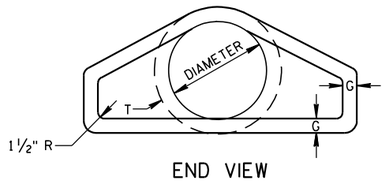


SIDE ELEVATION

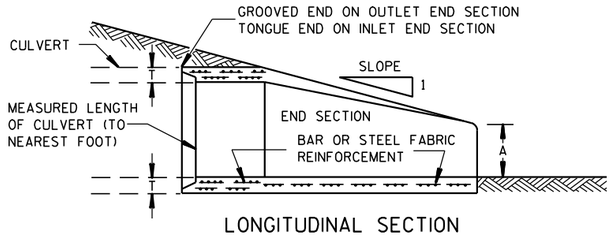
METAL ENDWALLS



PLAN

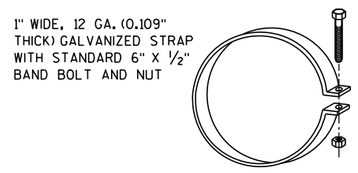


END VIEW



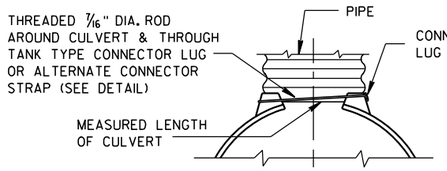
LONGITUDINAL SECTION

CONCRETE ENDWALLS

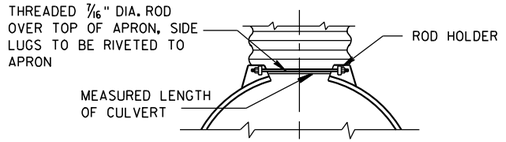


ALTERNATE FOR TYPE 1 CONNECTION

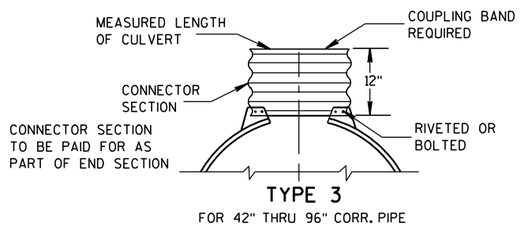
END SECTION CONNECTOR STRAP



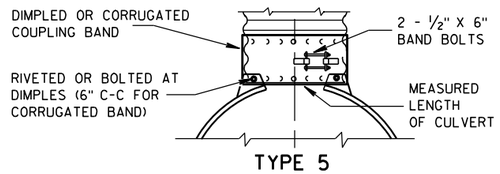
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

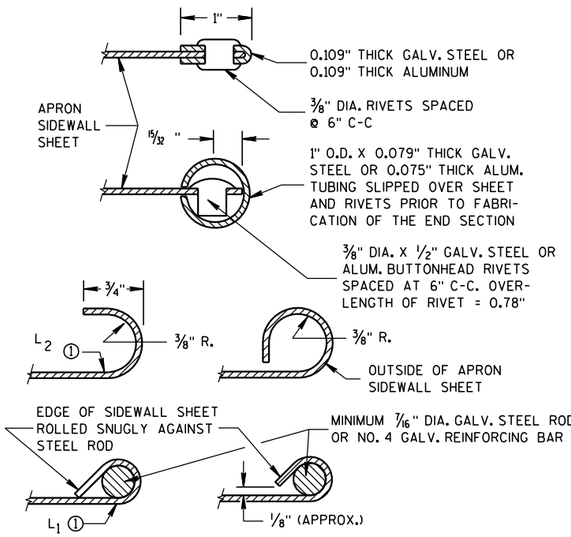
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5 AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO CIRCUMFERENTIAL CORRUGATIONS AT EACH END USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

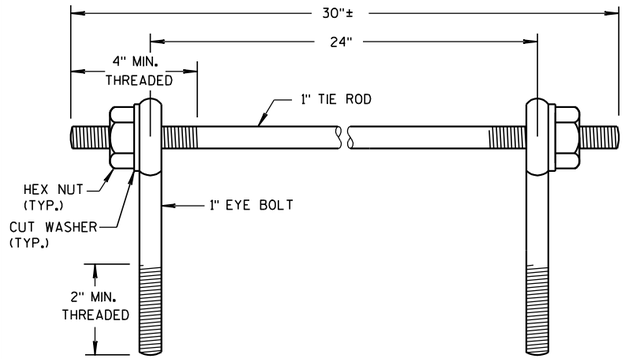
① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR CULVERT PIPE

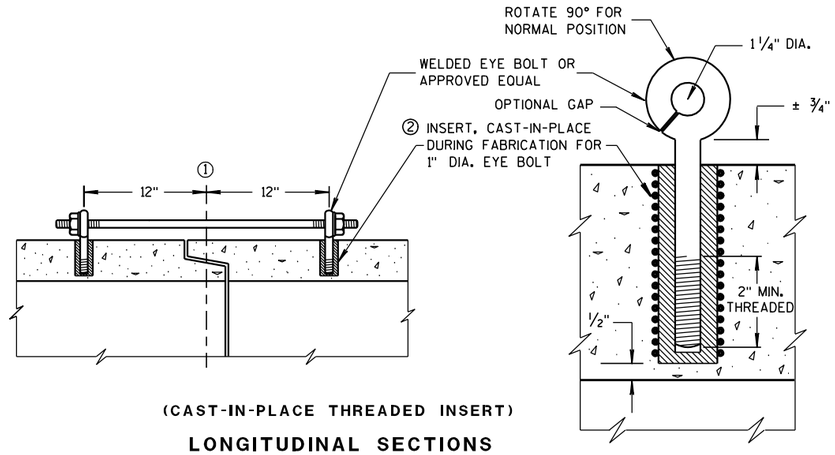
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/30/94 DATE
/S/ Rory L. Rhinesmith
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6
S.D.D. 8 F 1-11



EYE BOLTS AND TIE ROD



(CAST-IN-PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 1)

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT AND STORM SEWER PIPE SHALL BE TIED TOGETHER IN THE MANNER ILLUSTRATED BY THIS DETAIL AT LOCATIONS DESIGNATED IN THE STANDARD SPECIFICATIONS AND THE PLAN. THE CONTRACTOR MAY USE EITHER ALTERNATE 1, 2 OR 3 FOR DRAINAGE STRUCTURES. ONLY ALTERNATE 1 AND 3 MAY BE USED FOR CATTLE PASSES, UNLESS OTHERWISE STATED IN THE CONTRACT. THE MATERIALS, FABRICATION AND WORK NECESSARY TO TIE THE PIPE BY THIS DETAIL WILL BE CONSIDERED INCIDENTAL TO THE PIPE AND APRON ENDWALLS IF REQUIRED.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR JOINT TIES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

JOINT TIES TO BE HOT-DIP GALVANIZED PER ASTM A 153.

① ℄ OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.

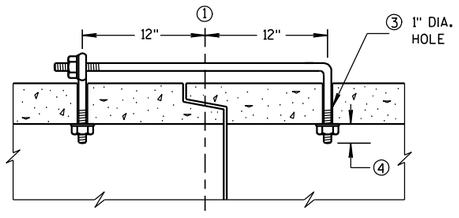
② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.

③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED 12 INCHES FROM ℄ OF TONGUE AND GROOVE.

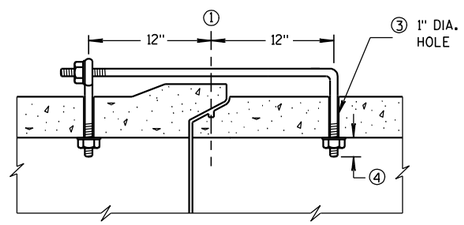
④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.

⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.

⑥ LENGTH ADEQUATE TO EXTEND TO WITHIN 1/2 INCH OF THE INNER SURFACE OF THE PIPE.



(TONGUE & GROOVE PIPE)

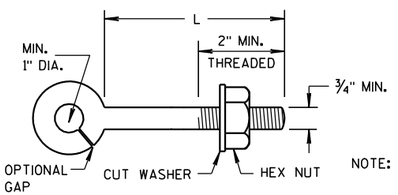


(MODIFIED BELL PIPE)

LONGITUDINAL SECTION

EYE BOLT DIMENSION TABLE

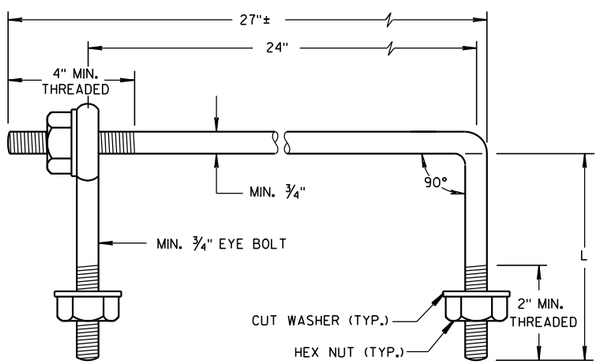
PIPE SIZE	L = LENGTH	
	TONGUE & GROOVE PIPE	MODIFIED BELL PIPE
18" TO 24"	4 1/2"	6 1/4"
30"	5"	7"
36"	5 1/2"	7"
42"	6"	
48"	6 1/2"	
60"	7 1/2"	
66"	8"	



NOTE:

EYE BOLT

NOTE: TWO EYE BOLTS MAY BE USED WITH A 30" LONG THREADED ROD IN LIEU OF THE 90° BENT TIE ROD.



EYE BOLT AND TIE ROD

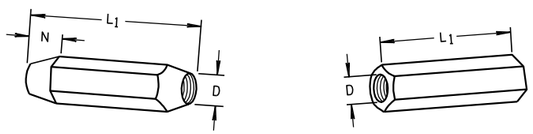
(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 2)

ADJUSTABLE TIE ROD TABLE

PIPE DIAMETER	TIE ROD DIAMETER	D	L_1	N
12-60	5/8	5/8	5	1/2
66-84	3/4	3/4	5	1/2
90-108	1	1	7	1 1/16

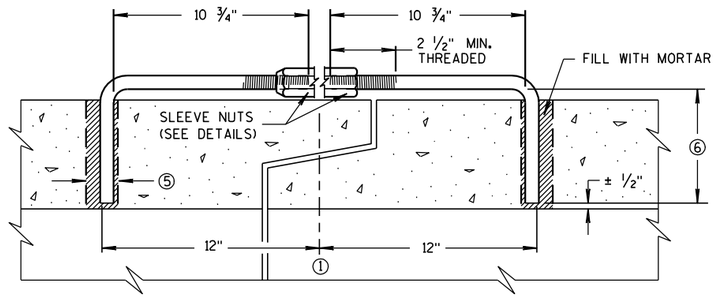
DIMENSIONS SHOWN ARE IN INCHES



TAPERED PLAIN

RIGHT AND LEFT THREADS

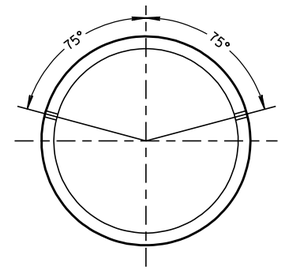
SLEEVE NUTS



LONGITUDINAL SECTION

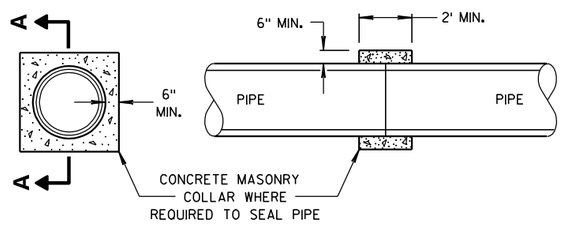
(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE)

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



PLACEMENT OF (2) CAST-IN-PLACE INSERTS OR HOLES DURING FABRICATION FOR PIPE SECTIONS REQUIRING TIE RODS

TRANSVERSE SECTION



SECTION A-A

CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/5/2012 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

6

S.D.D. 8 F 4-7

6

S.D.D. 8 F 4-7

① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

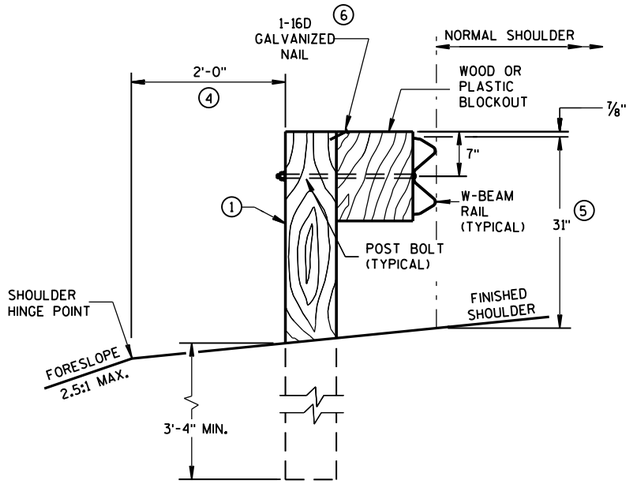
② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2½ INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.

④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).

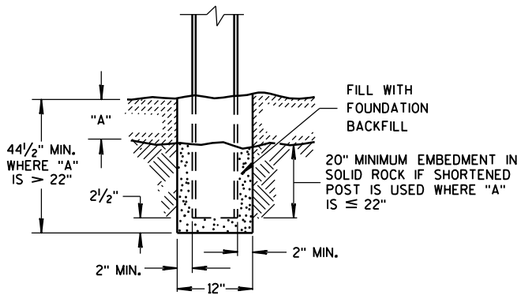
⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".

⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



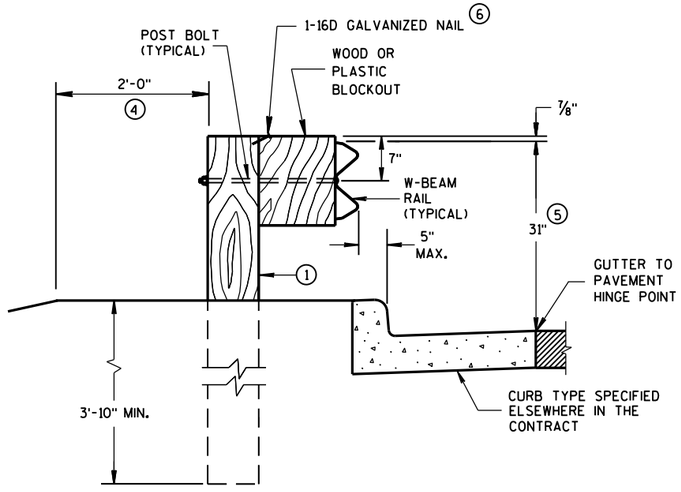
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



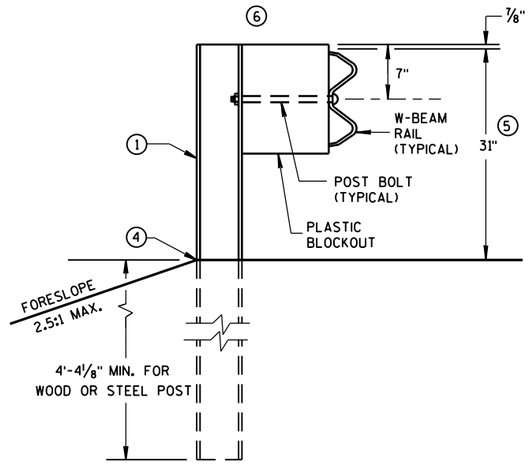
END VIEW

SETTING STEEL OR WOOD POST IN ROCK ③



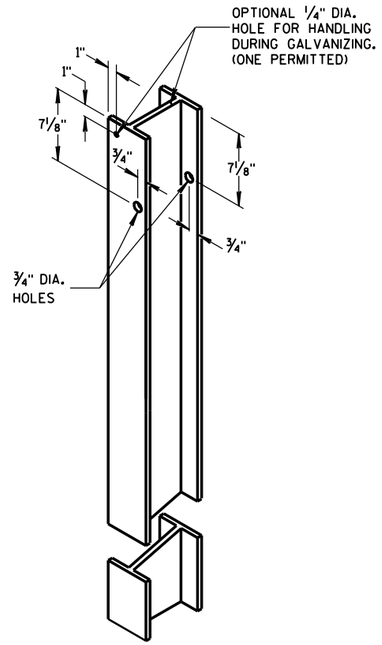
END VIEW

LOCATED ALONG A CURBED ROADWAY

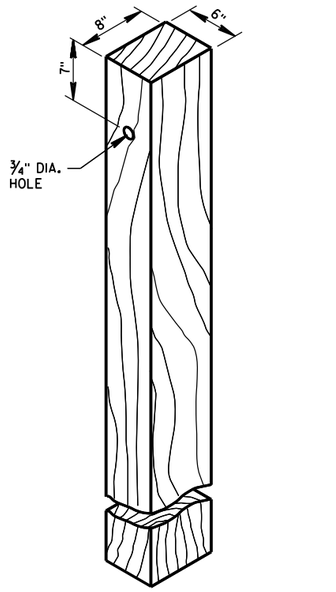


END VIEW

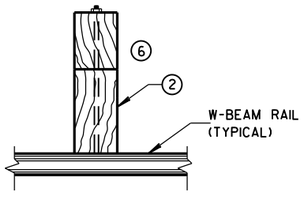
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



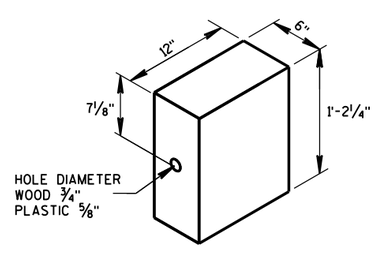
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) ①



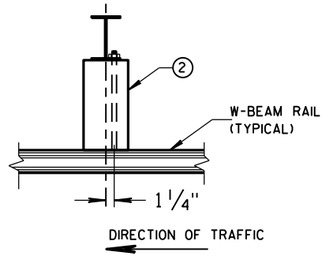
WOOD POST
(6" X 8") NOMINAL ①



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT ②

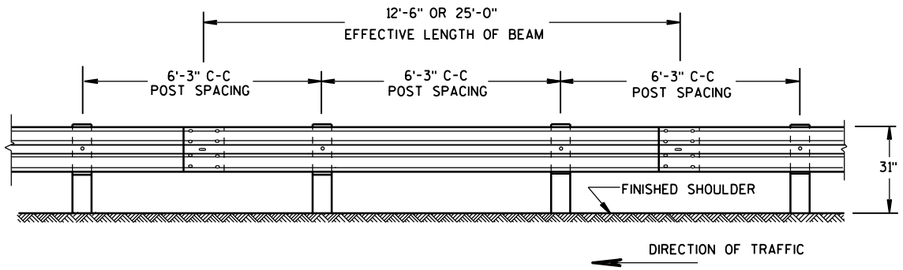


PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

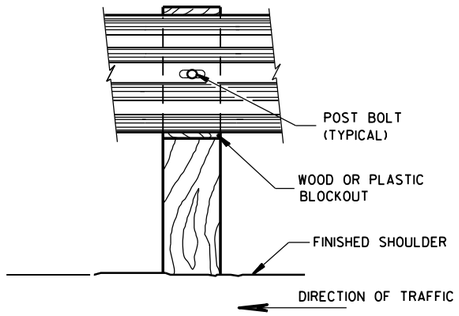
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6
S.D.D. 14 B 42-5a



FRONT VIEW

POST SPACING STANDARD INSTALLATION



FRONT VIEW AT WOOD POST

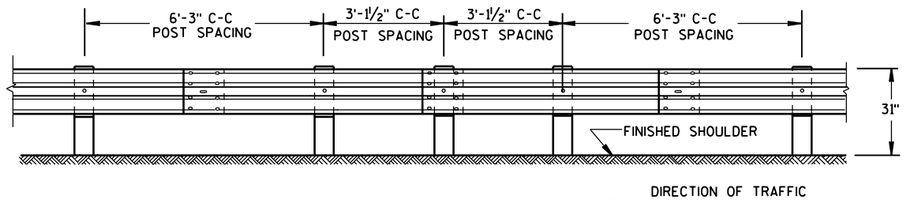
GENERAL NOTES

(8) DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.

(11) 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

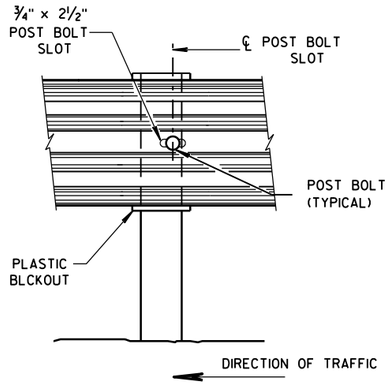
POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

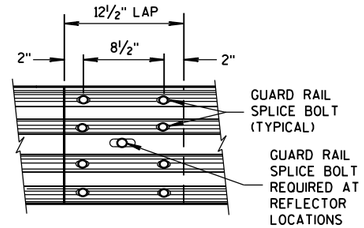


FRONT VIEW

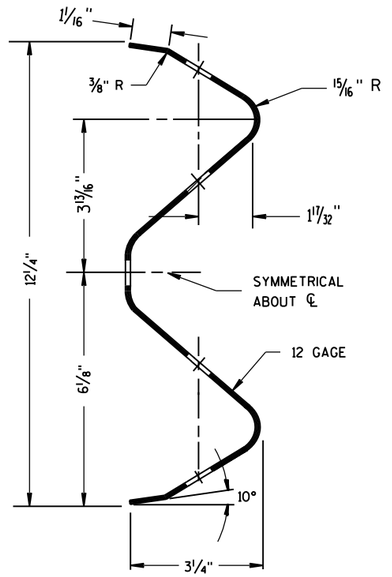
HALF POST SPACING (HS) AND HALF POST SPACING WITH LONGER POSTS (K)



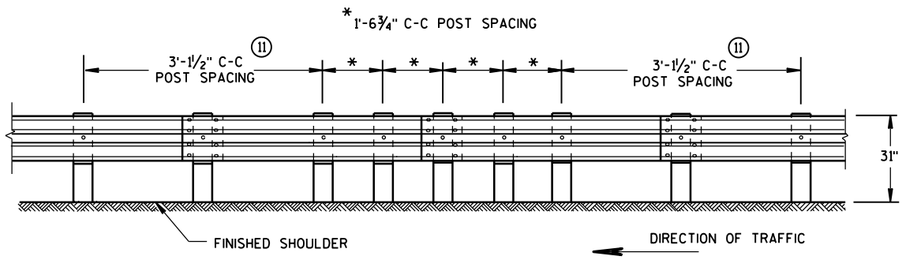
FRONT VIEW AT STEEL POST



FRONT VIEW
MID-SPAN BEAM SPLICE

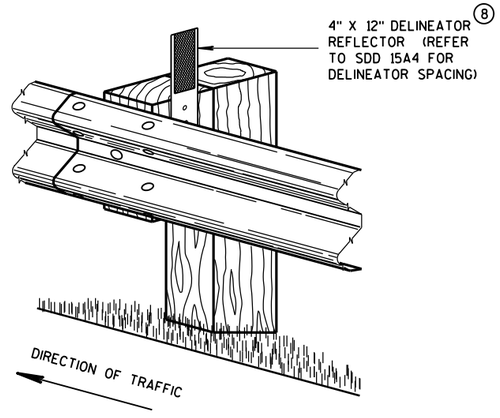


SECTION THRU W-BEAM RAIL



FRONT VIEW

QUARTER POST SPACING (QS)



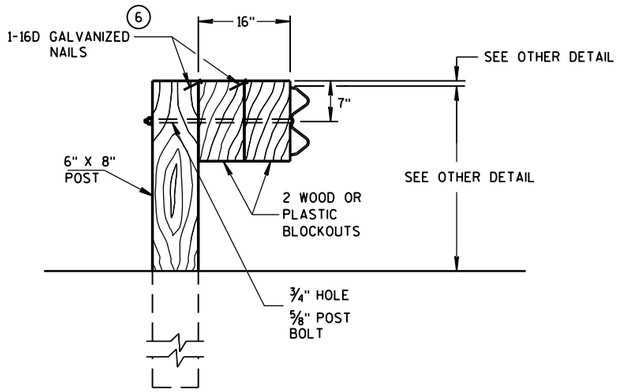
ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

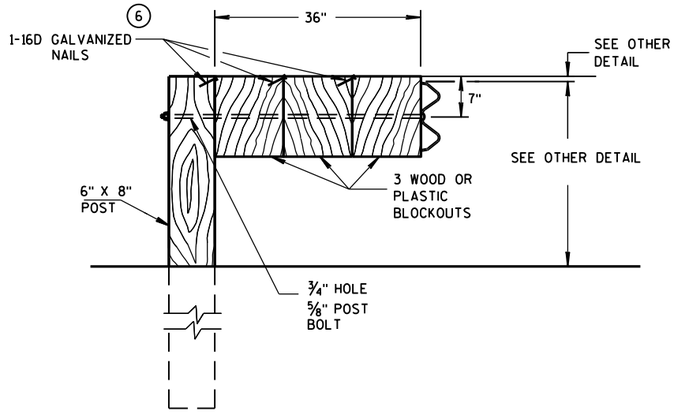
6

S.D.D. 14 B 42-5b



DETAIL FOR 16" BLOCKOUT DEPTH

IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

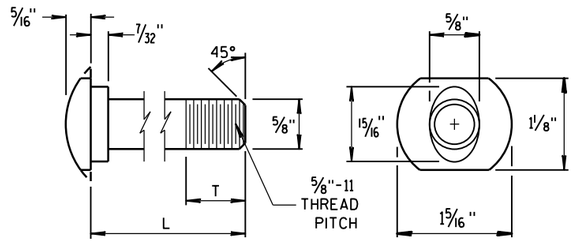


DETAIL FOR 36" BLOCKOUT DEPTH

NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

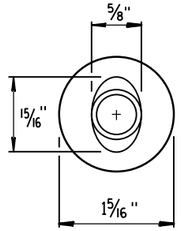
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

NOTE: 1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 1/16".
2. IF THE BOLT EXTENDS MORE THAN 1/4" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

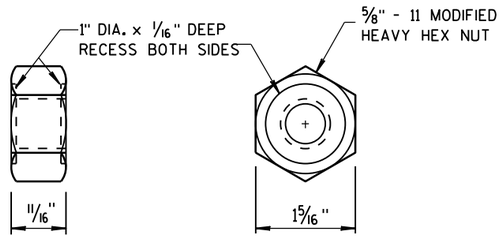


POST BOLT TABLE

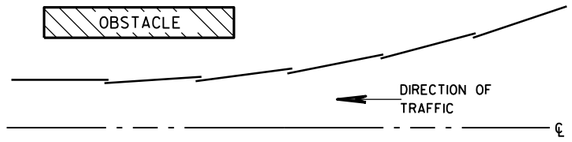
L	T (MIN.)
1¼"	1⅛"
2"	1¾"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

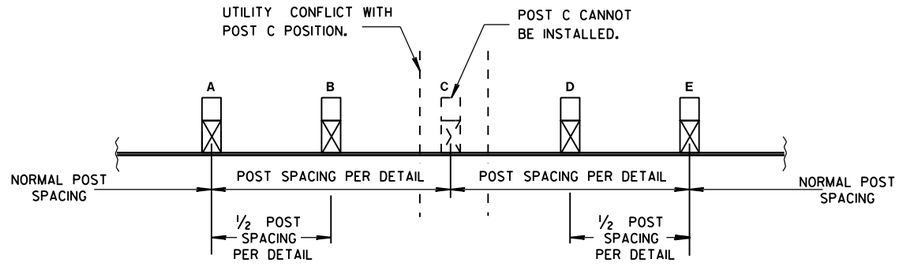


POST BOLT, SPLICE BOLT AND RECESS NUT

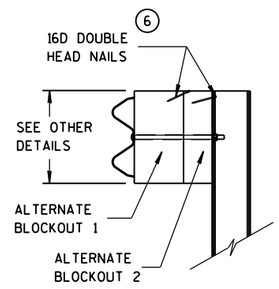


PLAN VIEW

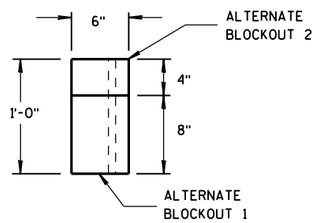
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

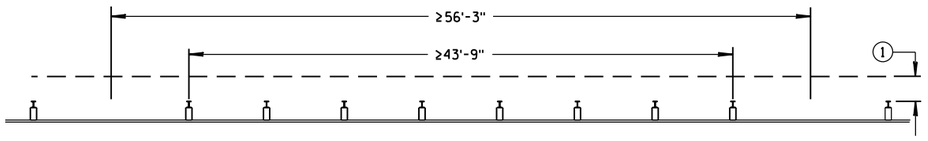
ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

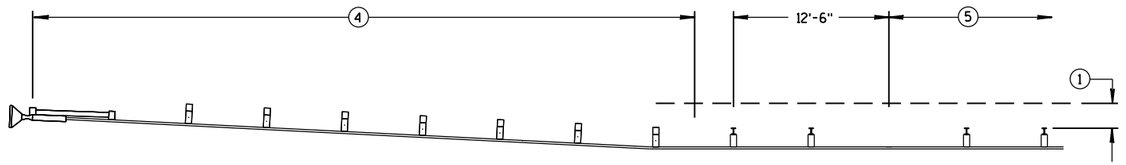
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

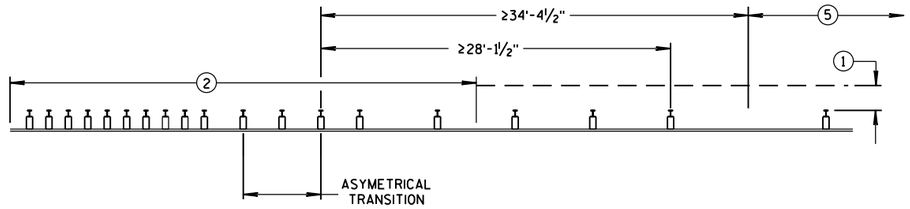
S.D.D. 14 B 42-5c



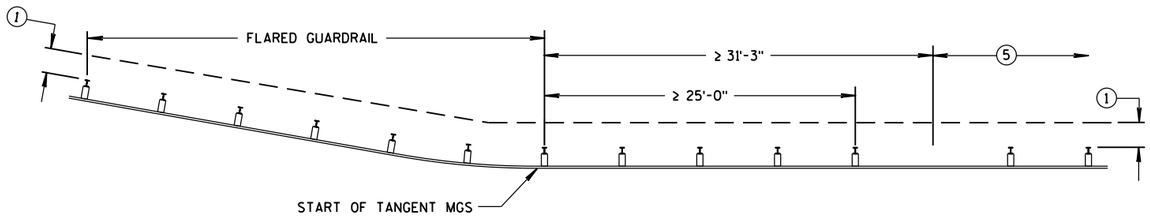
MISSING POST IN NORMAL BEAM GUARD RUN



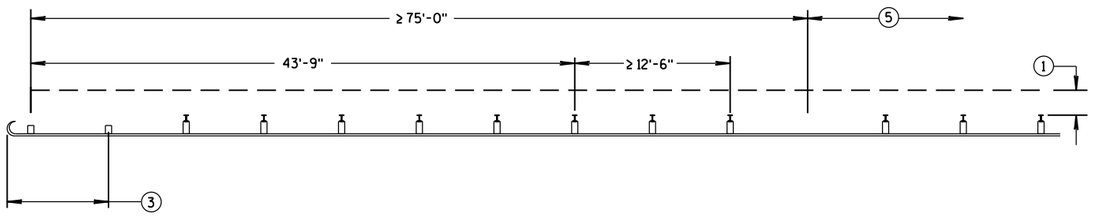
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



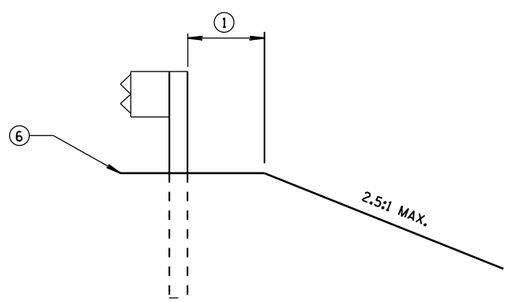
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR FLARED BEAM GUARD



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR TYPE 2 TERMINAL



CROSS SECTION VIEW

1. MINIMUM OF 2 FEET OF GRADING BEHIND POST.
2. SEE SDD 14B45 FOR MORE DETAILS.
3. SEE SDD 14B47 FOR MORE DETAILS.
4. SEE SDD 14B44 FOR MORE DETAILS.
5. SEE MISSING POST IN NORMAL BEAM GUARD RUN FOR DISTANCE TO NEXT MISSING POST AND AREA FOR WELL DRAINED, COMPACTED SOILS.
6. SEE PLAN FOR SHOULDER DESIGN.

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017
DATE
FHWA

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

6

S.D.D. 14 B 42-5d

6

S.D.D. 14 B 42-5d

GENERAL NOTES

(A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL), AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.

(B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.

(C) DIFFERENT MANUFACTURES REQUIRE DIFFERENT PERFORATED W-BEAM RAIL END PANELS. SEE MANUFACTURES INFORMATION.

(F) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER.

(H) HARDWARE VARIES BETWEEN DIFFERENT MANUFACTURES. SEE MANUFACTURE'S DRAWING FOR INFORMATION.

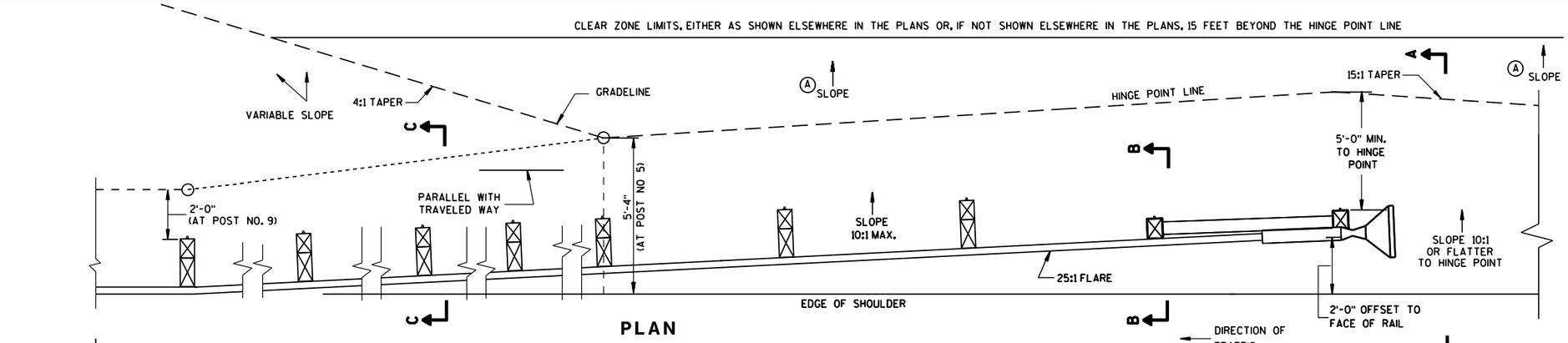
SEE SDD 14B42 FOR MORE INFORMATION.

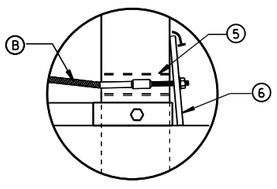
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

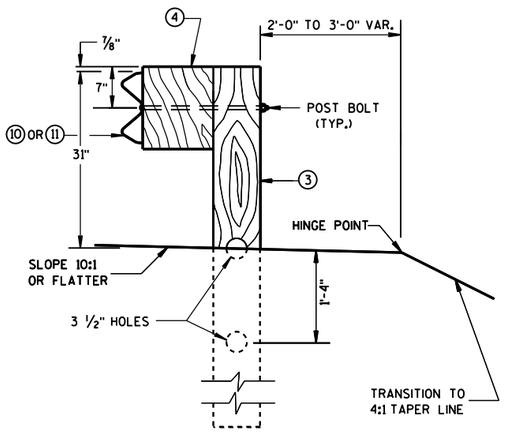
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

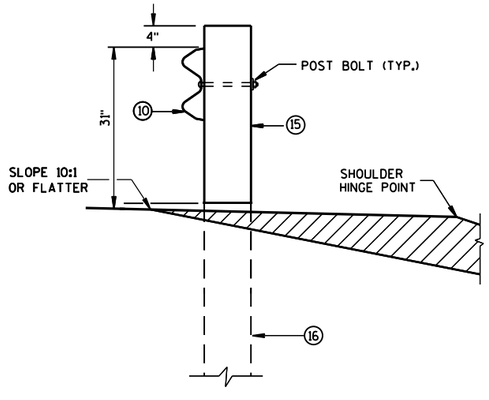
SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

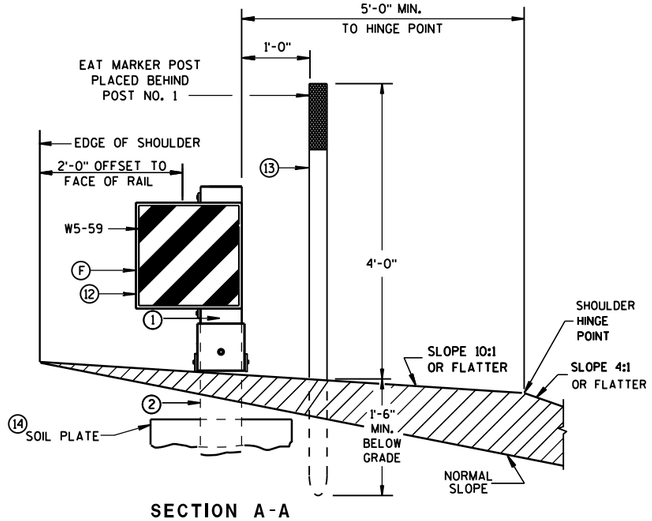
THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE.

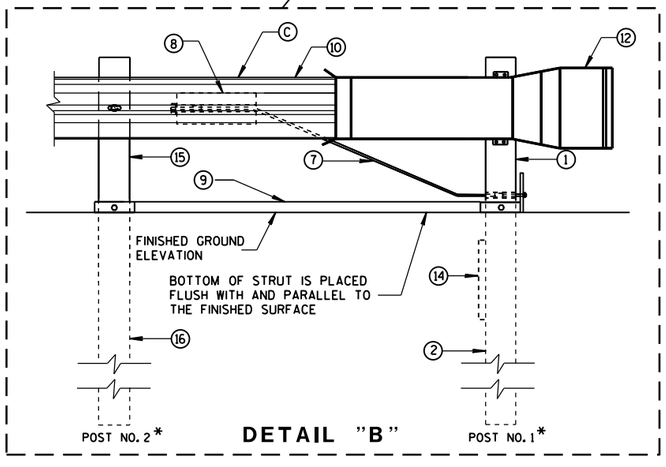












MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

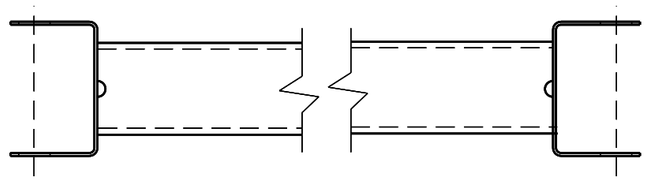
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

S.D.D. 14 B 44-3a

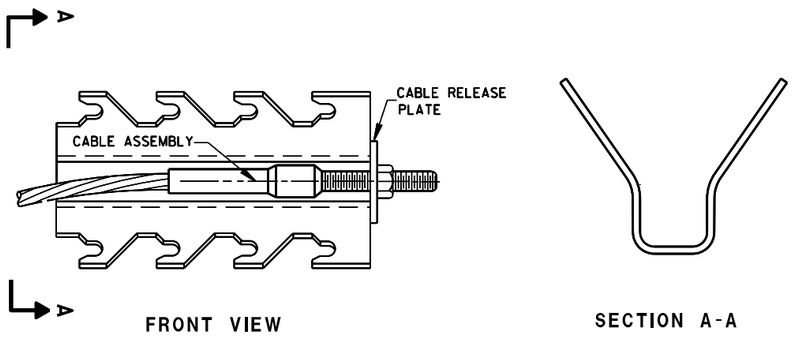
6

S.D.D. 14 B 44-3a



(9) (H)

GENERIC GROUND STRUT



FRONT VIEW

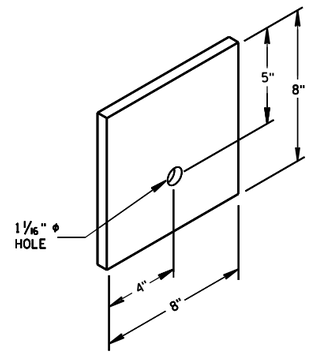
SECTION A-A

(8) (H)

GENERIC ANCHOR CABLE BOX

BILL OF MATERIALS

PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
(1)	UPPER POST NO. 1 6" X 6" TUBE
(2)	LOWER POST NO. 1
(3)	WOOD CRT
(4)	WOOD BLOCKOUT
(5)	PIPE SLEEVE
(6)	BEARING PLATE
(7)	BCT CABLE ASSEMBLY
(8)	ANCHOR CABLE BOX
(9)	GROUND STRUT
(10)	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
(11)	STANDARD W-BEAM RAIL. MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
(12)	IMPACT HEAD
(13)	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)
(14)	SOIL PLATE
(15)	UPPER POST NO. 2
(16)	LOWER POST NO. 2



(6)

BEARING PLATE

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

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S.D.D. 14 B 44-3b

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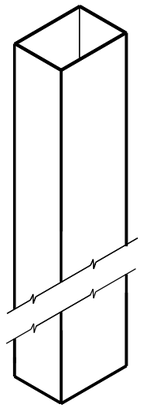
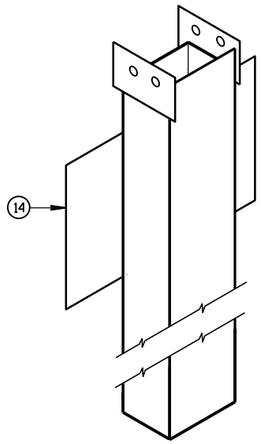
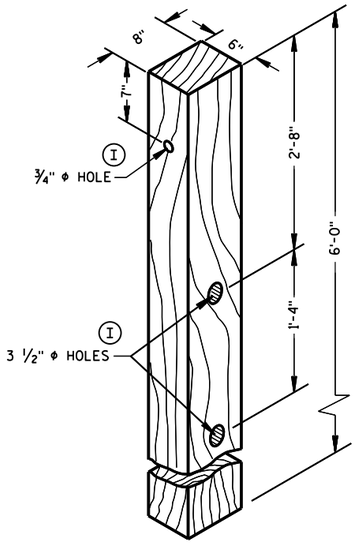
S.D.D. 14 B 44-3b



UPPER POST NO. 1 (1)

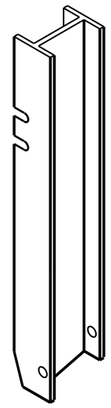


LOWER POST NO. 1 (2)

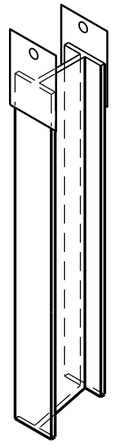


POSTS NUMBER 3-9

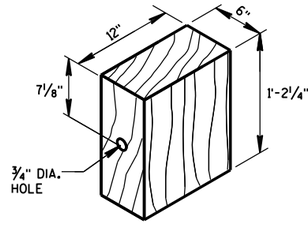
WOOD CRT POST (3)



UPPER POST NO. 2 (15)

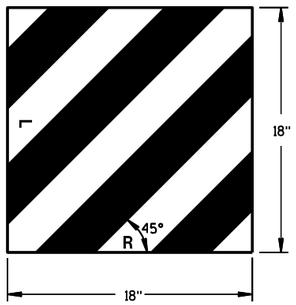


LOWER POST NO. 2 (16)



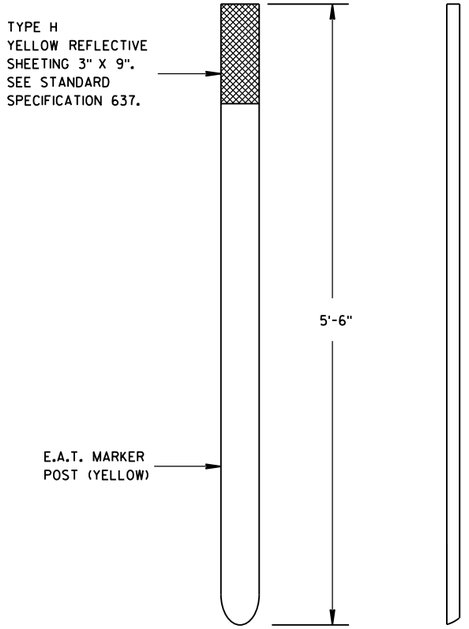
WOOD BLOCKOUT (4)

REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



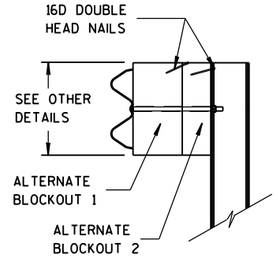
W5-59

REFLECTIVE SHEETING DETAIL (H)

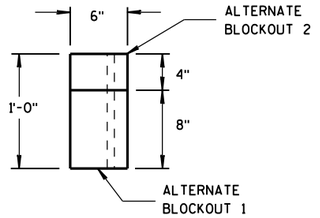


FRONT VIEW SIDE VIEW

E.A.T. MARKER POST (13)



SIDE VIEW



TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

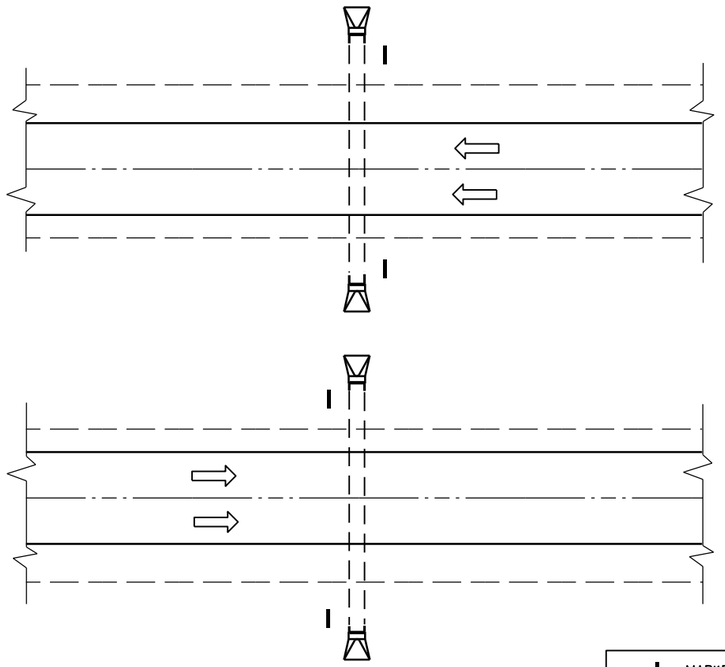
June 2017
DATE

/S/ Rodney Taylor
ROADWAY STANDARDS
UNIT SUPERVISOR

FHWA

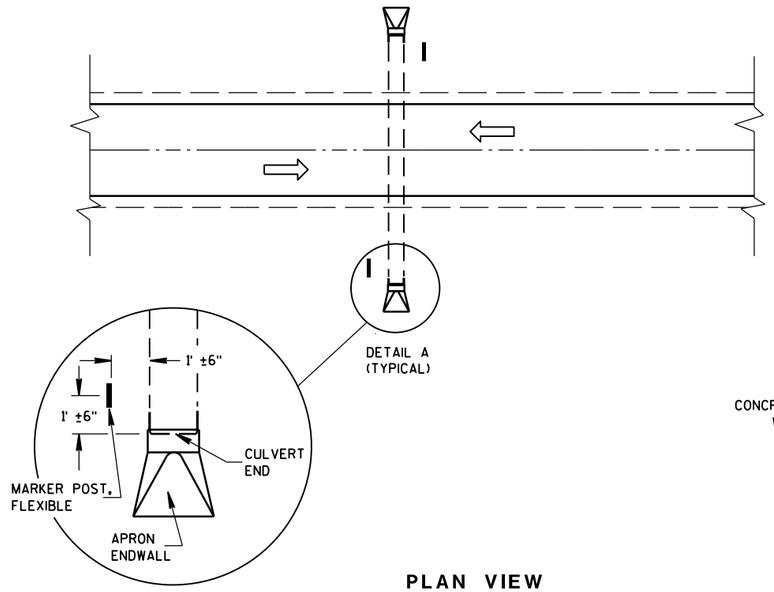
6

S.D.D. 14 B 44-3c



PLAN VIEW

DIVIDED HIGHWAY



DETAIL A
(TYPICAL)

PLAN VIEW

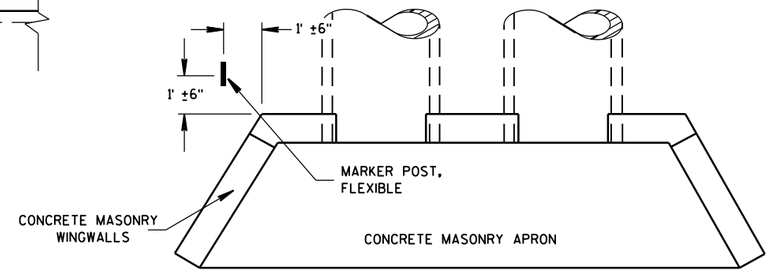
UNDIVIDED HIGHWAY

MARKER POST, FLEXIBLE

DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

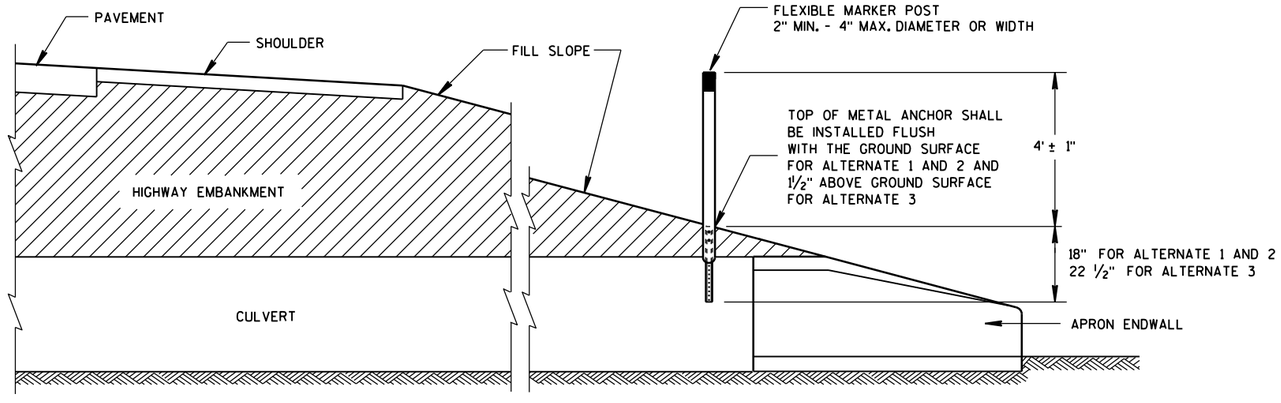
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.



PLAN VIEW

CONCRETE MASONRY ENDWALLS FOR CULVERT PIPE AND PIPE ARCH

FLEXIBLE MARKER POST LOCATION



CROSS SECTION

FLEXIBLE MARKER POST

FLEXIBLE MARKER POST FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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S.D.D. 15 A 3-2a

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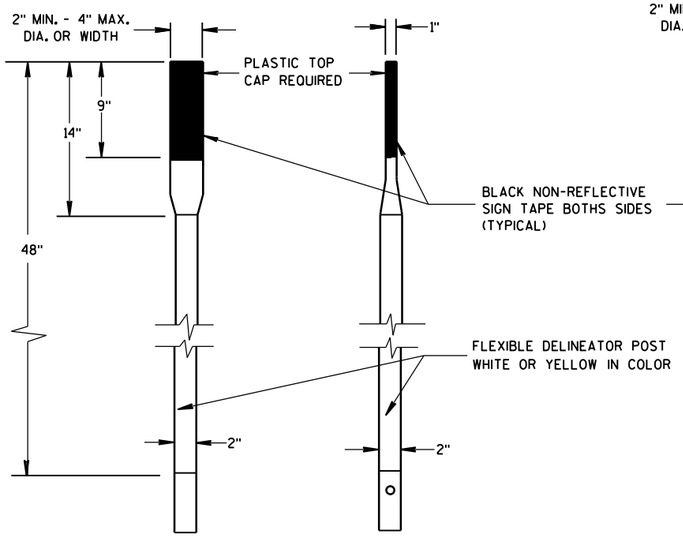
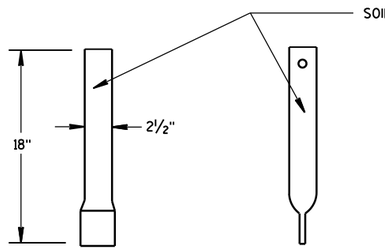
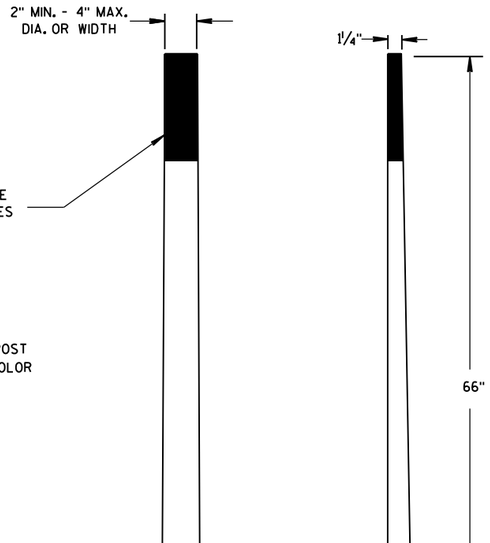
S.D.D. 15 A 3-2a





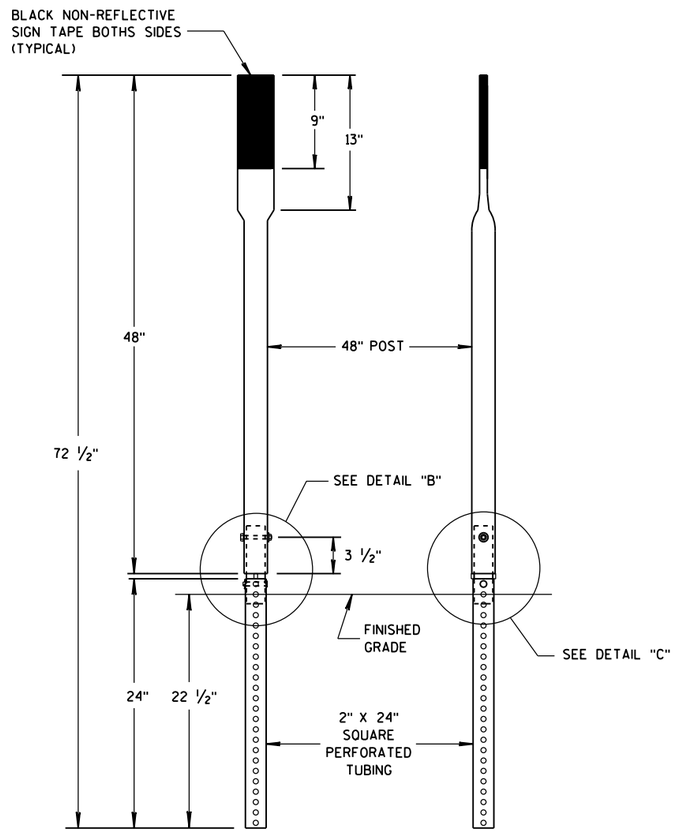
FRONT VIEW SIDE VIEW

ALTERNATE 1



FRONT VIEW SIDE VIEW

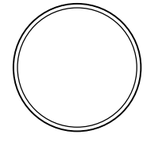
ALTERNATE 2



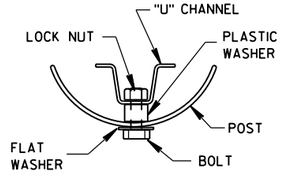
FRONT VIEW SIDE VIEW

ALTERNATE 3

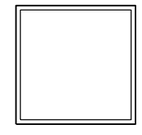
FLEXIBLE MARKER POSTS



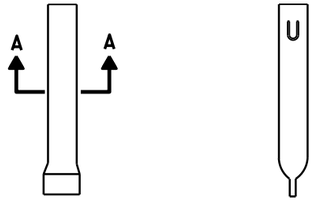
SECTION A-A



SECTION B-B

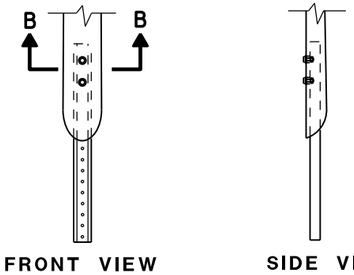


SECTION C-C



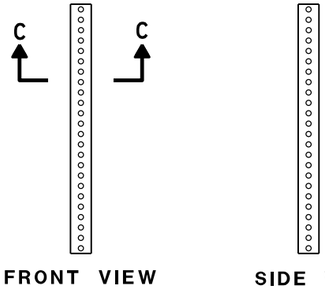
FRONT VIEW SIDE VIEW

ALTERNATE 1



FRONT VIEW SIDE VIEW

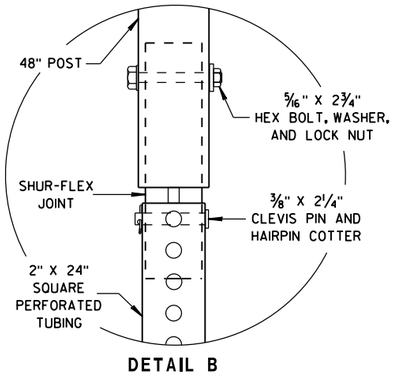
ALTERNATE 2



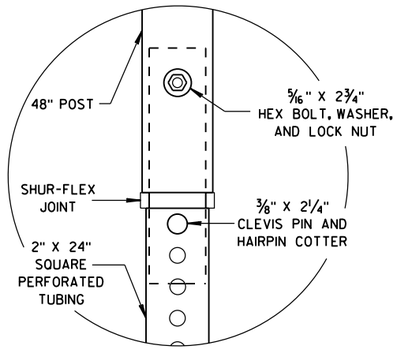
FRONT VIEW SIDE VIEW

ALTERNATE 3

FLEXIBLE MARKER POST ANCHORS



DETAIL B



DETAIL C

FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/1/2012 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

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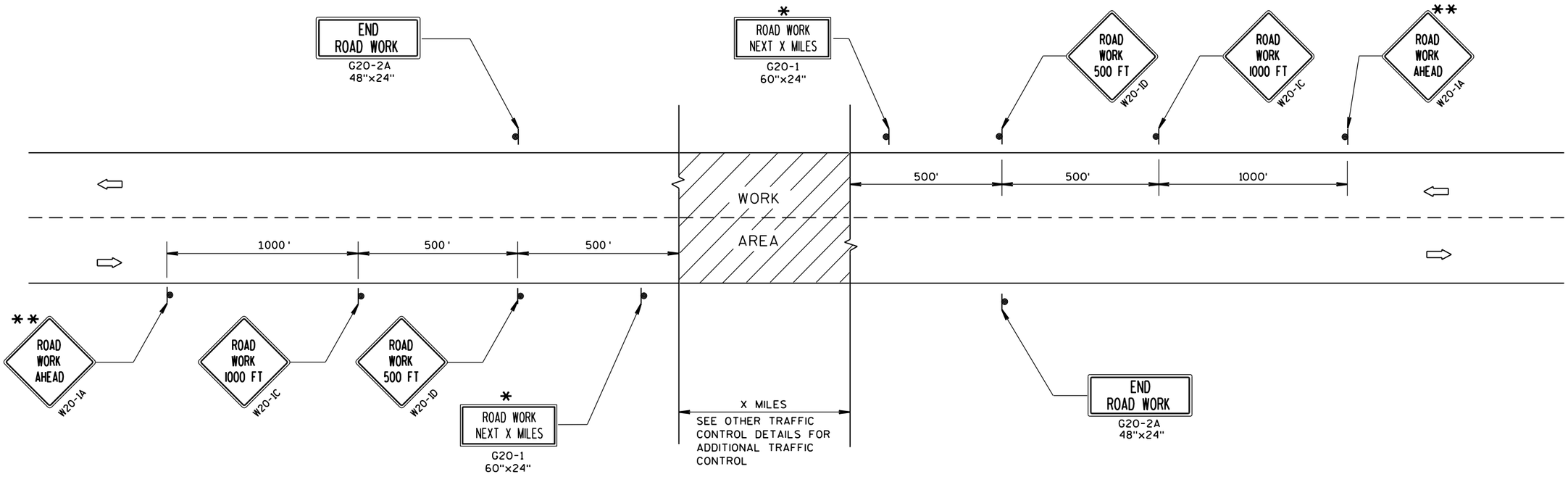
S.D.D. 15 A 3-2b



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL

GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

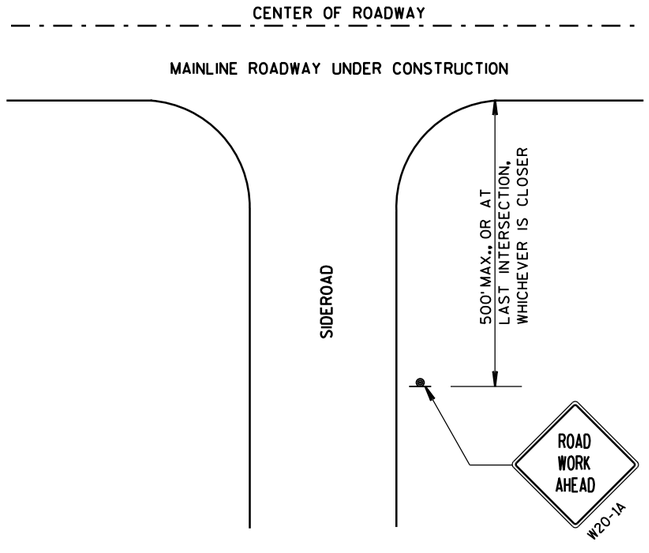
ALL SIGNS ARE 48"×48" UNLESS OTHERWISE NOTED.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

IF A "STOP" SIGN MUST BE REMOVED FOR A WORK OPERATION, A TEMPORARY "STOP" SIGN SHALL BE PLACED PRIOR TO THE SIGN REMOVAL, OR A FLAGGER SHALL BE PROVIDED UNTIL THE SIGN IS RE-ESTABLISHED.

* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS.

** PLACE ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.



LEGEND

- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept. 2015 — DATE

/S/ Peter Amakobe Atepe — STATEWIDE WORK ZONE SAFETY ENGINEER

FHWA

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S.D.D. 15 C 4-3

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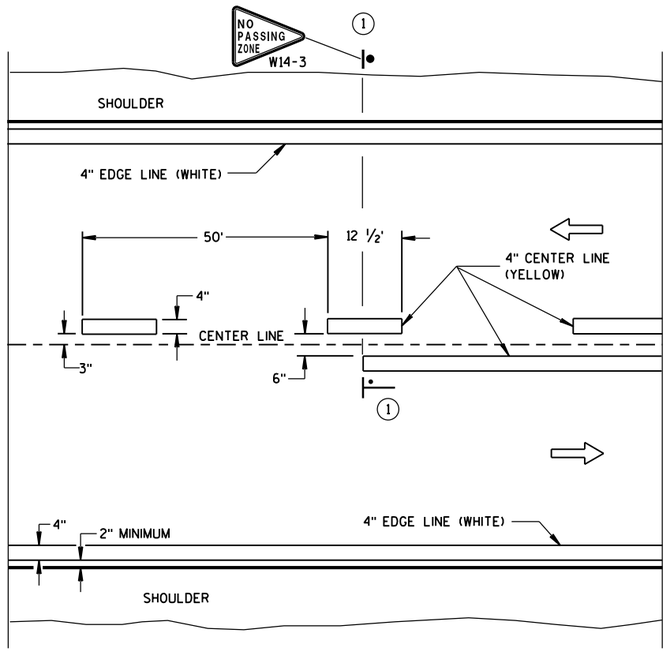
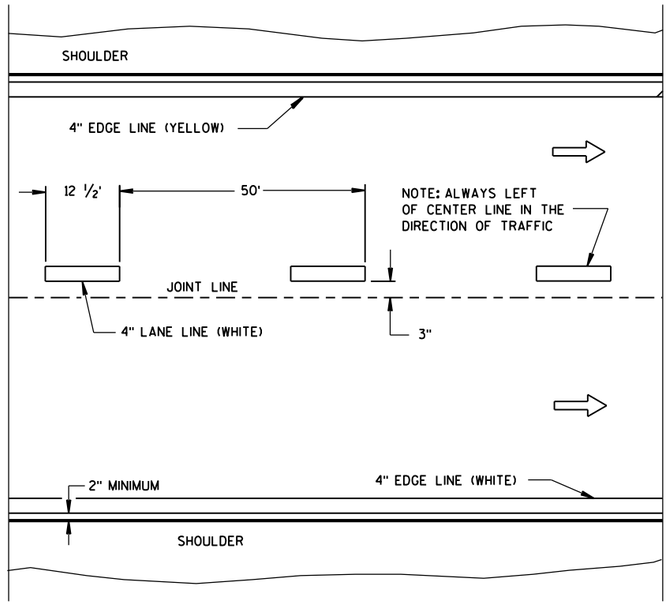
S.D.D. 15 C 4-3



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING

GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

(1) LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING.

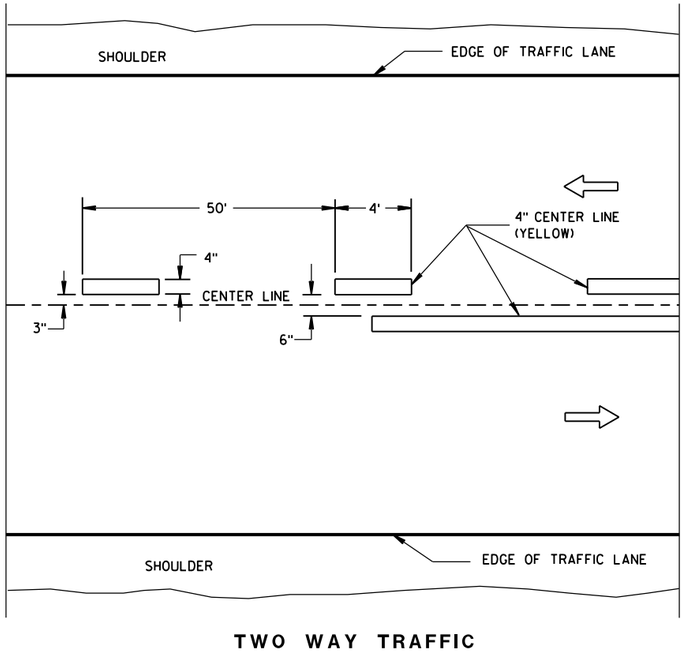
NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

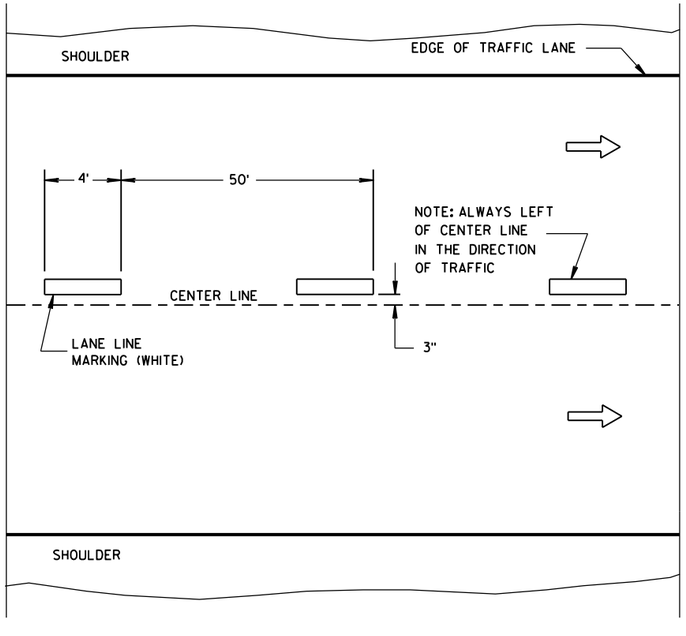
LEGEND

"T" MARKING

POST MOUNTED SIGN



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

LONGITUDINAL MARKING (MAINLINE)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
June 2017 (DATE)	/S/ Matthew R. Rauch (STATE SIGNING AND MARKING ENGINEER)
FHWA	

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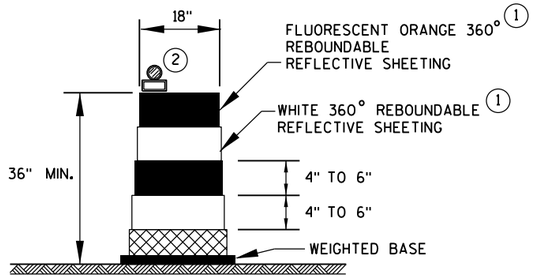
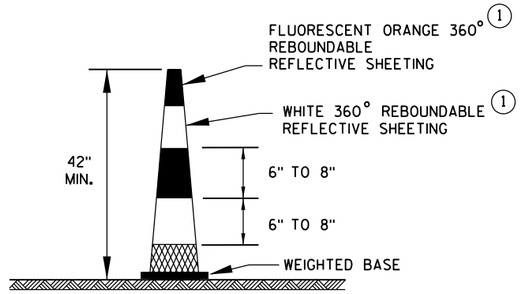
S.D.D. 15 C 8-18a



DRUM

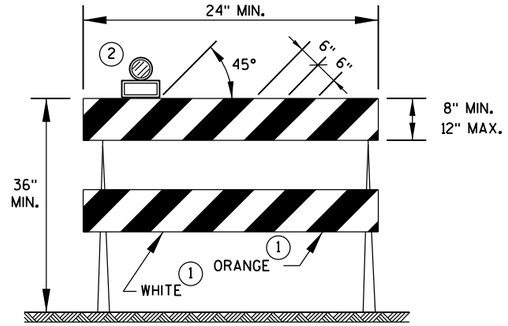


42" CONE

DO NOT USE IN TAPERS
1/2 SPACING OF DRUMS

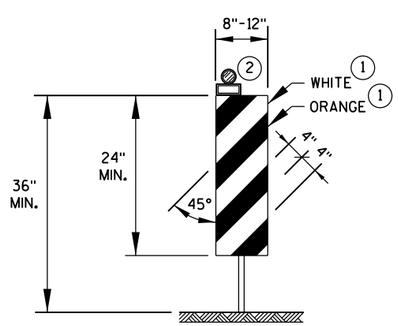
GENERAL NOTES

1. REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.
2. LOCATION OF WARNING LIGHTS WHEN SHOWN ON THE PLAN.



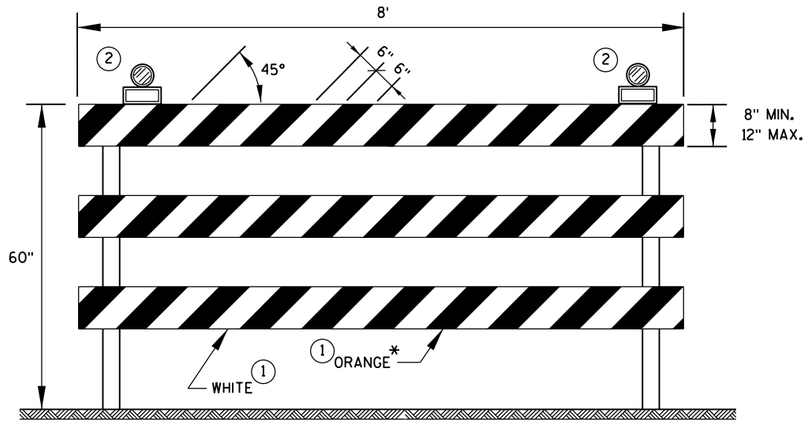
TYPE 2 BARRICADE

FOR RAILS LESS THAN 36" LONG, 4" WIDE STRIPES MAY BE USED. ALL STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.



VERTICAL PANEL

THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.



TYPE 3 BARRICADE

IF SIGN MOUNTED, DO NOT COVER MORE THAN 50% OF THE TOP TWO RAILS OR 33% OF THE TOTAL AREA OF THE THREE RAILS.

* IF USED FOR A PERMANENT APPLICATION, USE RED SHEETING.

CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENG
FHWA	

6

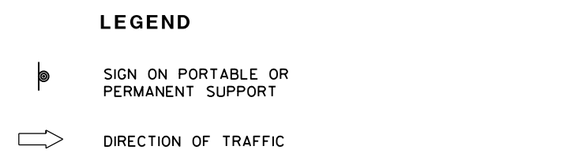
S.D.D. 15 C 11-7b

LEGEND

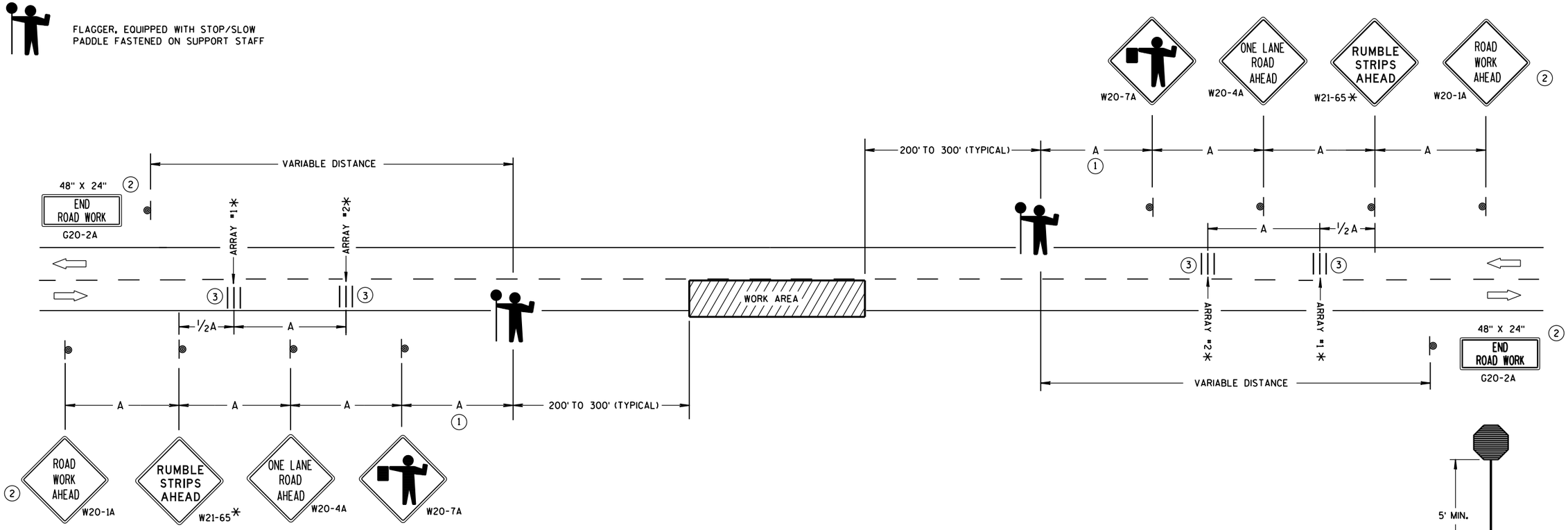
- SIGN ON PORTABLE OR PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA
- FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

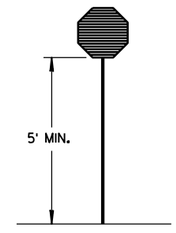
SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

SPEED LIMIT	SPACING A
25-35 MPH	200'
35-40 MPH	350'
45-55 MPH	500'



USE OF THE "BE PREPARED TO STOP" SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7A AND W20-4A SIGNS, USING SPACING A.





STOP/SLOW PADDLE ON SUPPORT STAFF

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

GENERAL NOTES

DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND DEVICES (AND THE LOCATION OF ALL FLAGGERS) SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

THE FIRST ADVANCE WARNING SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.

PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT, REMOVE TEMPORARY RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

* UTILIZE TEMPORARY RUMBLE STRIPS WHEN FLAGGING OPERATION IS ANTICIPATED TO BE STATIONARY IN EXCESS OF TWO HOURS.

(1) FOR A MOVING WORK OPERATION, SIGNING AND TEMPORARY RUMBLE STRIPS (IF USED) SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3,500 FOOT INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.

(2) SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

(3) EACH TEMPORARY RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.

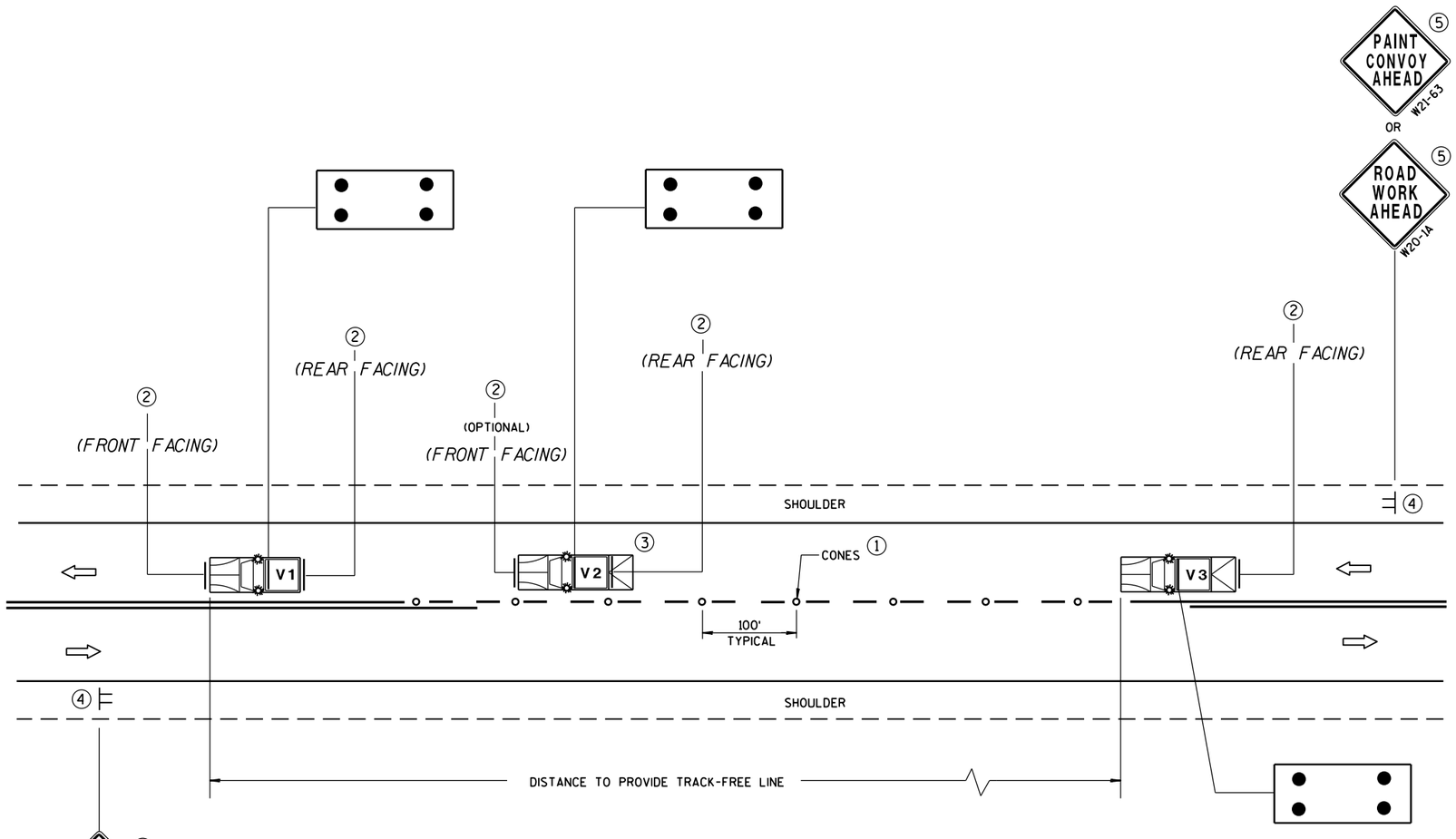
TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 — DATE
/S/ Andrew Heldtke — WORK ZONE ENG
FHWA

6

S.D.D. 15 C 12-6



MOVING PAVEMENT MARKING OPERATIONS
TWO-LANE TWO-WAY ROADWAY

GENERAL NOTES

ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.

VEHICLES SHALL BE EQUIPPED WITH REAR FACING TYPE B OR C FLASHING ARROW PANEL OPERATING IN CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE SPECIFIED.

IF SPEED LIMIT IS 40 MPH OR LESS STATIONARY SIGNS MAY BE OMITTED IF CONES ARE USED.

ALTERNATE SIGN MESSAGES, SUCH AS "PAINT CREW AHEAD" OR "ROAD PAINTING AHEAD" MAY BE USED.

DISTANCE BETWEEN VEHICLES MAY VARY ACCORDING TO TERRAIN, SIGHT DISTANCE, PAINT DRYING TIME, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.

THE WORK AND SHADOW VEHICLES SHOULD PULL OVER PERIODICALLY TO ALLOW TRAFFIC TO PASS.

THIS DRAWING SHALL BE USED FOR CENTERLINE OR EDGELINE MARKING.

WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR TURN THE STATIONARY WARNING SIGNS AWAY FROM TRAFFIC.

(1) CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

(2) USE STANDARD SIGN W21-64 WITH APPROPRIATE ARROW.

WET PAINT W21-64 OR WET PAINT W21-64

(3) OPTIONAL TRUCK-MOUNTED ATTENUATOR.

(4) SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES.

(5) IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1 OR W21-63 ARE NOT REQUIRED.

LEGEND

V1	LEAD VEHICLE
V2	SHADOW VEHICLE
V3	TRAIL VEHICLE WITH TMA
TMA	TRUCK-MOUNTED ATTENUATOR
	SIGN ON TEMPORARY SUPPORT
	DIRECTION OF TRAFFIC
	CONES
	FLASHING ARROW PANEL (CAUTION)

MOVING PAVEMENT MARKING OPERATION
TWO-LANE TWO-WAY ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2016 — DATE
/S/ Peter Amakobe Atepe — STATEWIDE WORK ZON SAFETY ENGINE
FHWA

6

S.D.D. 15 C 19-4a

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S.D.D. 15 C 19-4a

GENERAL NOTES

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY DISTRICT TRAFFIC UNIT.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT. G20-2A SIGNS MAY ALSO BE OMITTED IF DURATION OF WORK IS LESS THAN 7 CONTINUOUS DAYS AND NIGHTS.

CHANNELIZING DEVICES PLACED ADJACENT TO THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

TABLE A

SHOULDER TAPER LENGTH (FEET)					BUFFER SPACE (FEET)
S \ W	4	6	8	10	
30	20	30	40	50	200
35	30	45	55	70	250
40	40	55	75	90	305
45	60	90	120	150	360
50	70	100	135	170	425
55	75	110	150	185	495

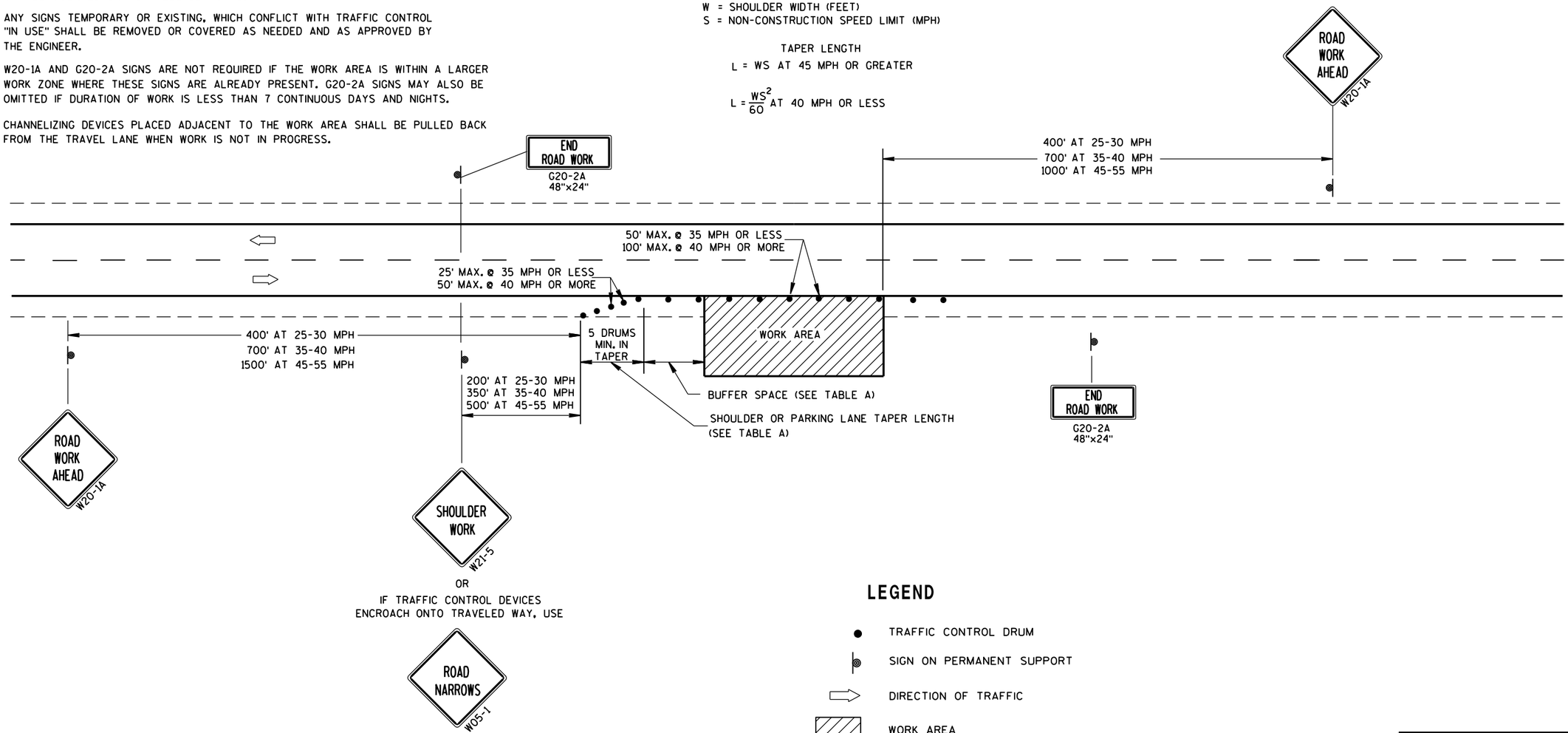
W = SHOULDER WIDTH (FEET)
S = NON-CONSTRUCTION SPEED LIMIT (MPH)

TAPER LENGTH

L = WS AT 45 MPH OR GREATER

$L = \frac{WS^2}{60}$ AT 40 MPH OR LESS

SHOULDER TAPER LENGTH = $\frac{1}{3}L$



LEGEND

- TRAFFIC CONTROL DRUM
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

July 14, 2015 — DATE

/S/ Peter Amakobe Atepe — STATEWIDE WORK ZO[illegible] SAFETY ENGI[illegible] FIC

FHWA

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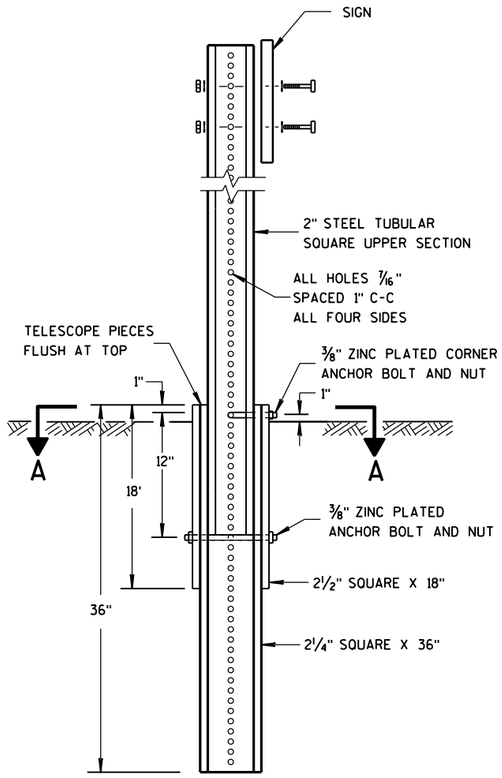
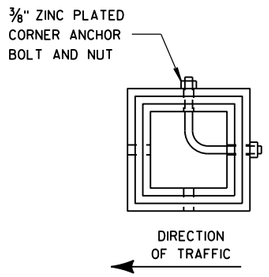
S.D.D. 15 D 28-3

6

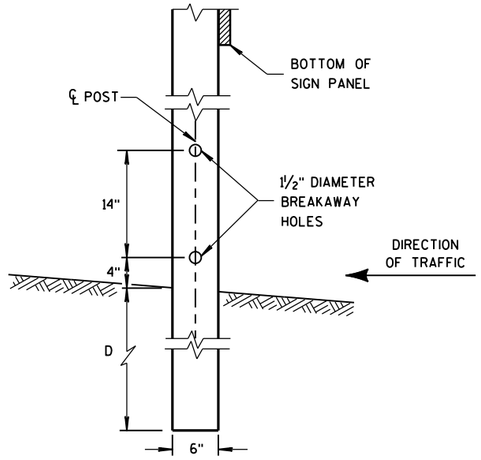
S.D.D. 15 D 28-3



DETAIL OF TUBULAR STEEL SIGN POST



SECTION A-A



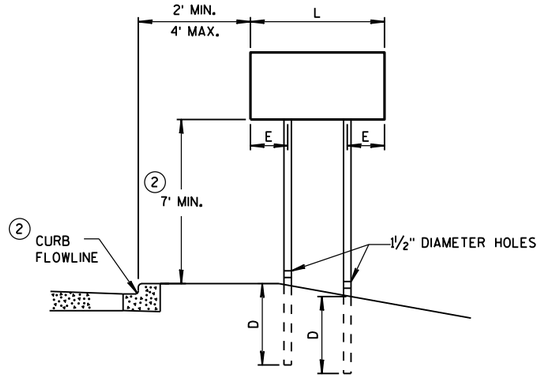
4"x6" WOOD POST MODIFICATION

GENERAL NOTES

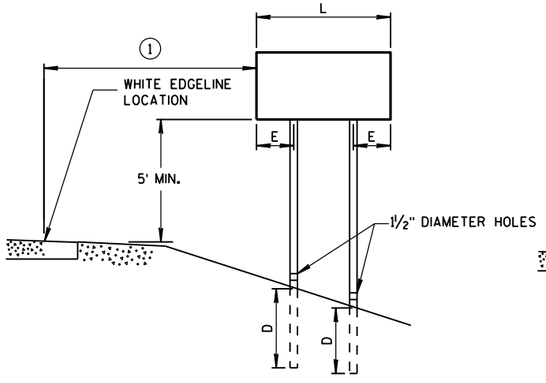
(1) 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.

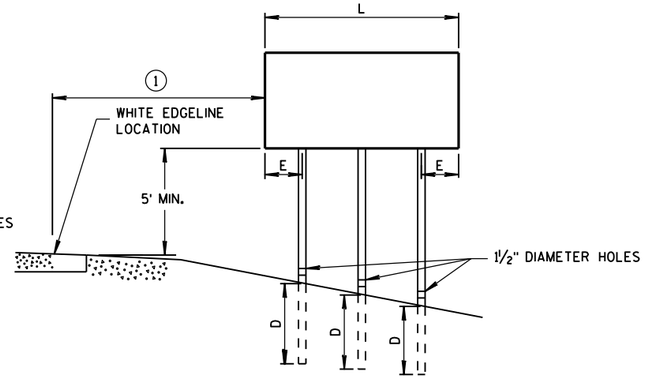
(2) THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK AND NO PARKING, VERTICAL CLEARANCE MAY BE REDUCED TO 5 FOOT MINIMUM. OFFSET OF SIGNS IS MEASURED FROM THE CURB FLOWLINE.

(3) FOR SIGNS REQUIRING 4 POSTS, SPACE INTERMEDIATE POSTS EVENLY.



URBAN AREA





RURAL AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

TUBULAR STEEL POSTS

AREA OF SIGN INSTALLATION (SQ. FT.)	NUMBER OF REQUIRED TUBULAR STEEL POSTS
9 OR LESS	1
GREATER THAN 9 LESS THAN OR EQUAL TO 18	2
GREATER THAN 18 LESS THAN OR EQUAL TO 27	3

SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).

SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED ON TUBULAR STEEL POSTS.

WOOD POST EMBEDMENT DEPTH

AREA OF SIGN INSTALLATION (SQ. FT.)	D (MIN)
20 OR LESS	4'
GREATER THAN 20	5'

4" X 6" WOOD POST

POST SPACING REQUIREMENTS		NUMBER OF WOOD POSTS REQUIRED
L	E	
48" OR LESS AND LESS THAN 20 SQ. FT.	-	1
LESS THAN 60"	12"	2
60" TO 120"	L/5	2
GREATER THAN 120" LESS THAN 168"	12"	3
168" AND GREATER	12"	4

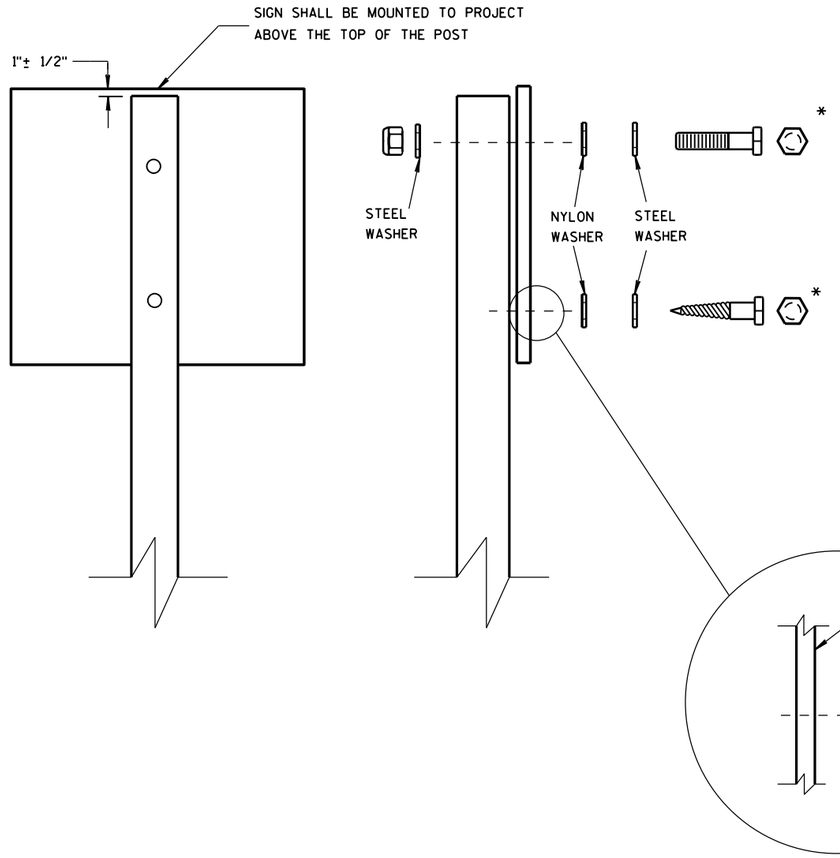
SEE NOTE (3)

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 15 D 38-2a



WASHER PLACEMENT WHEN SIGN HAS OTHER THAN TYPE H OR TYPE F FACE

NUTS, BOLTS AND LAGS USED FOR MOUNTING SIGNS SHALL HAVE HEXAGONAL HEADS AND SHALL BE EITHER:

A. HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: A 153, CLASS D, OR SC 3

B. ELECTRO-GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: B 633, TYPE III, SC 3

THREADS ON BOLTS AND NUTS SHALL BE MANUFACTURED WITH SUFFICIENT ALLOWANCE FOR THE CADMIUM PLATE OR GALVANIZED COATING TO PERMIT THE NUTS TO RUN FREELY ON THE BOLTS.

WOOD POSTS (4" x 4" or 4" x 6")

LAG SCREWS - 3/8" X 3"

MACHINE BOLTS - 5/16" X 6-1/2" OR 7" LENGTH W/ NUTS

SQUARE STEEL POSTS (2" x 2")

MACHINE BOLTS - 3/8" X 3-1/4" LENGTH W/ NUTS

RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

WASHERS (ALL POSTS) -

1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL

1-1/4" O.D. X 3/8" I.D. X .080 NYLON FOR ALL TYPE H SIGNS

* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

6

6

S.D.D. 15 D 38-2b

S.D.D. 15 D 38-2b

ATTACHMENT OF SIGNS TO POSTS

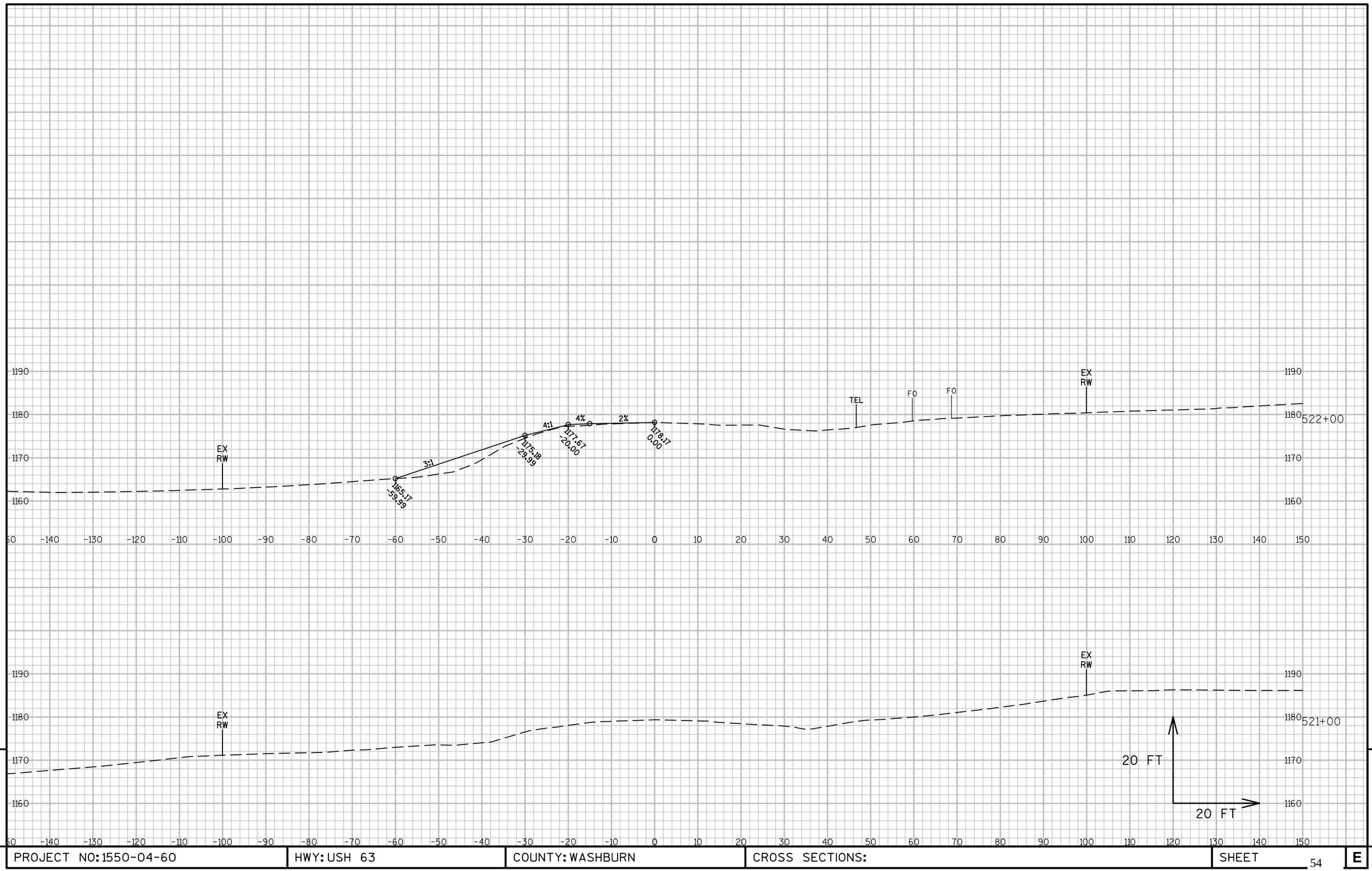
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June 2017
DATE

/S/ Andrew Heldtke
WORK ZONE ENG

FHWA



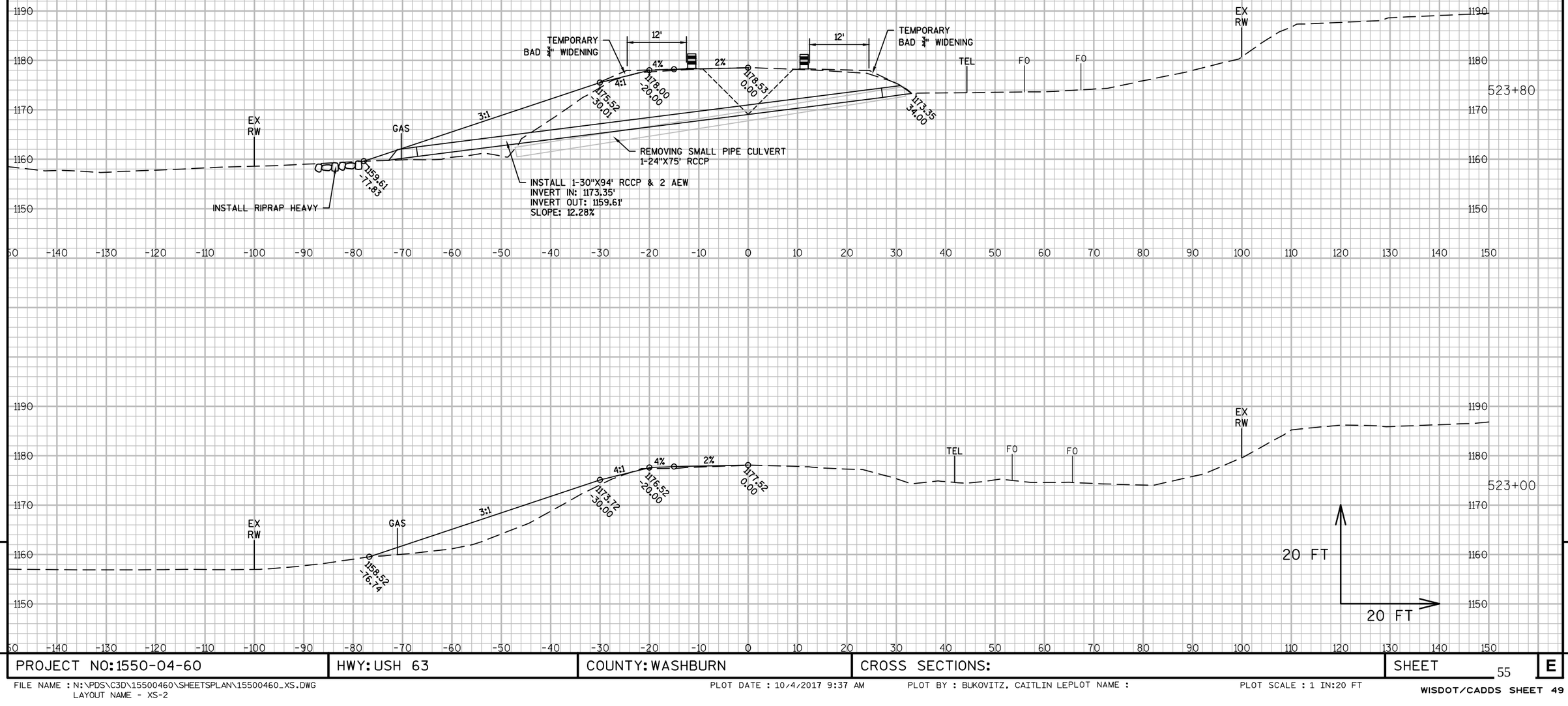
9

9

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 54	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-1

PLOT DATE : 10/4/2017 9:37 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT



9

9

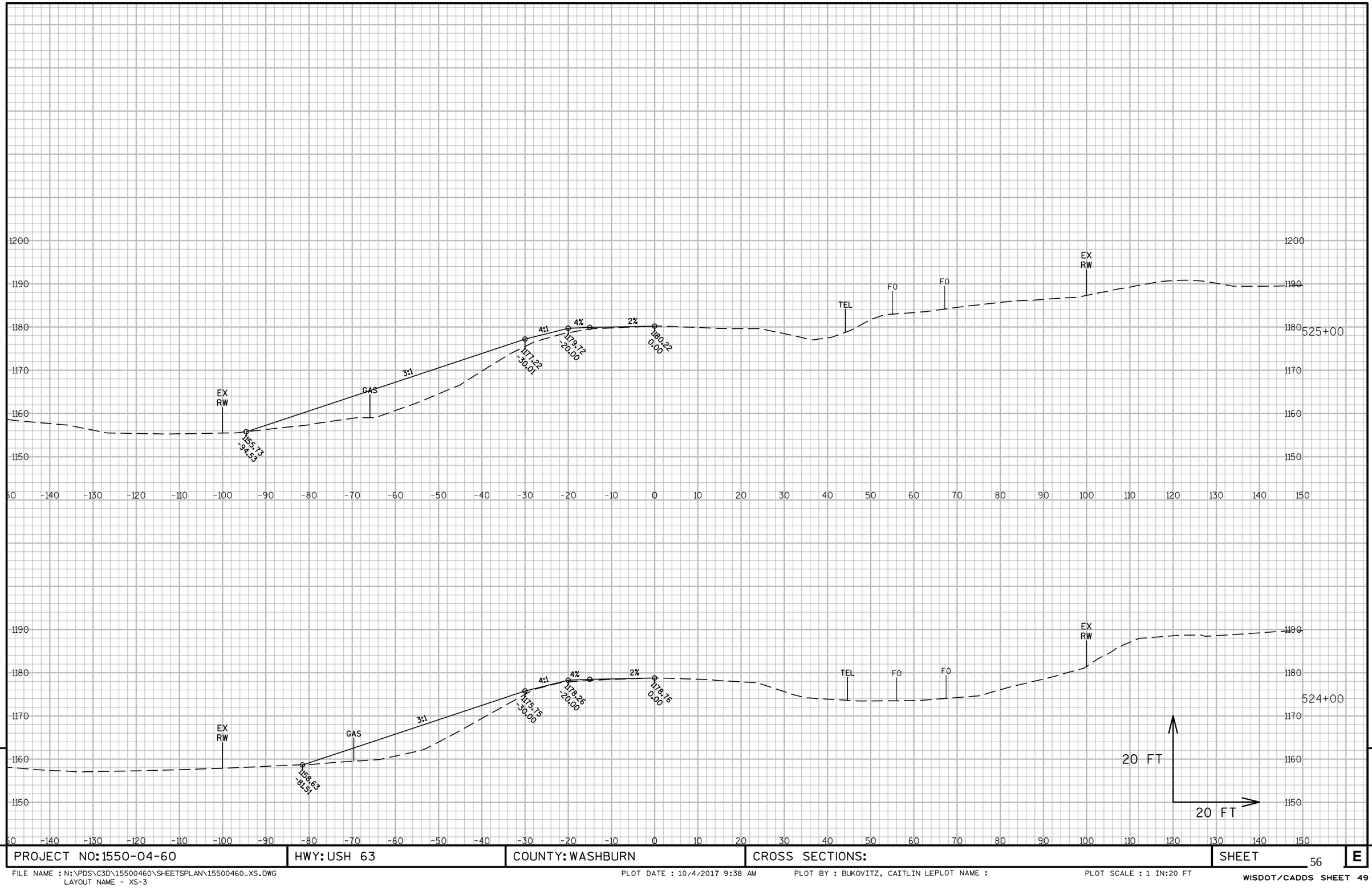
PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 55	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-2

PLOT DATE : 10/4/2017 9:37 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME :

PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49



9

9

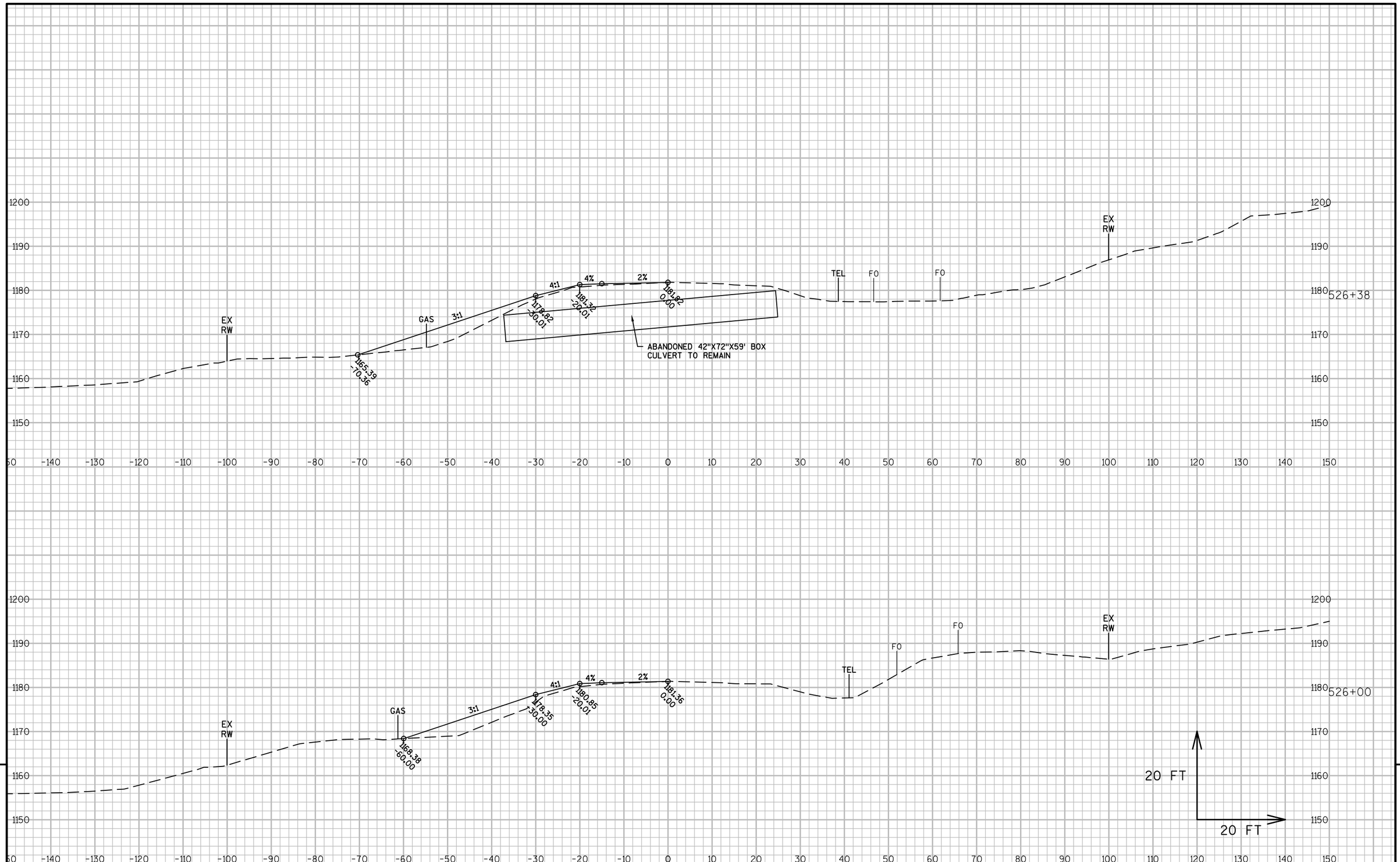
PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 56	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-3

PLOT DATE : 10/4/2017 9:38 AM

PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME :

PLOT SCALE : 1 IN:20 FT



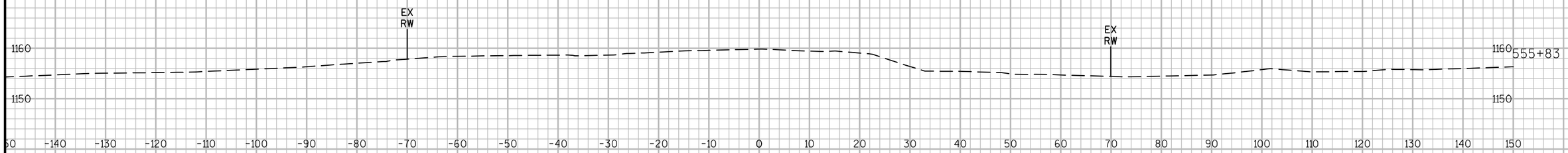
PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 57	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-4

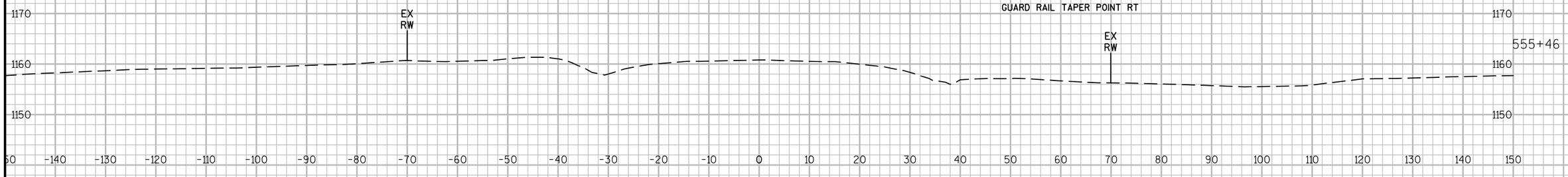
PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49

GUARD RAIL TAPER POINT LT



GUARD RAIL TAPER POINT RT



END INSLOPE FILL LT

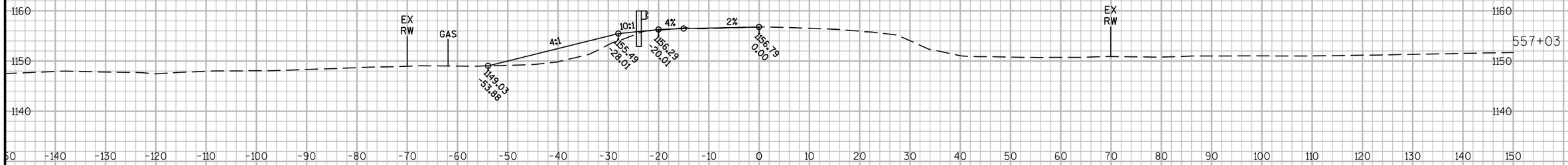
9 9

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 58	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-5

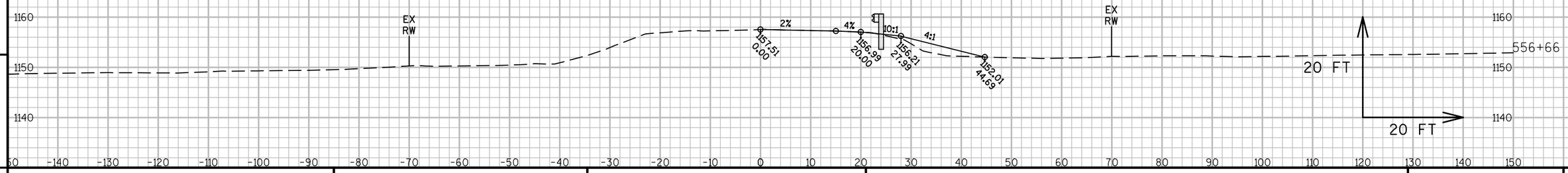
PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT

GUARD RAIL POST #1 LT



GUARD RAIL POST #5 RT

GUARD RAIL POST #1 RT

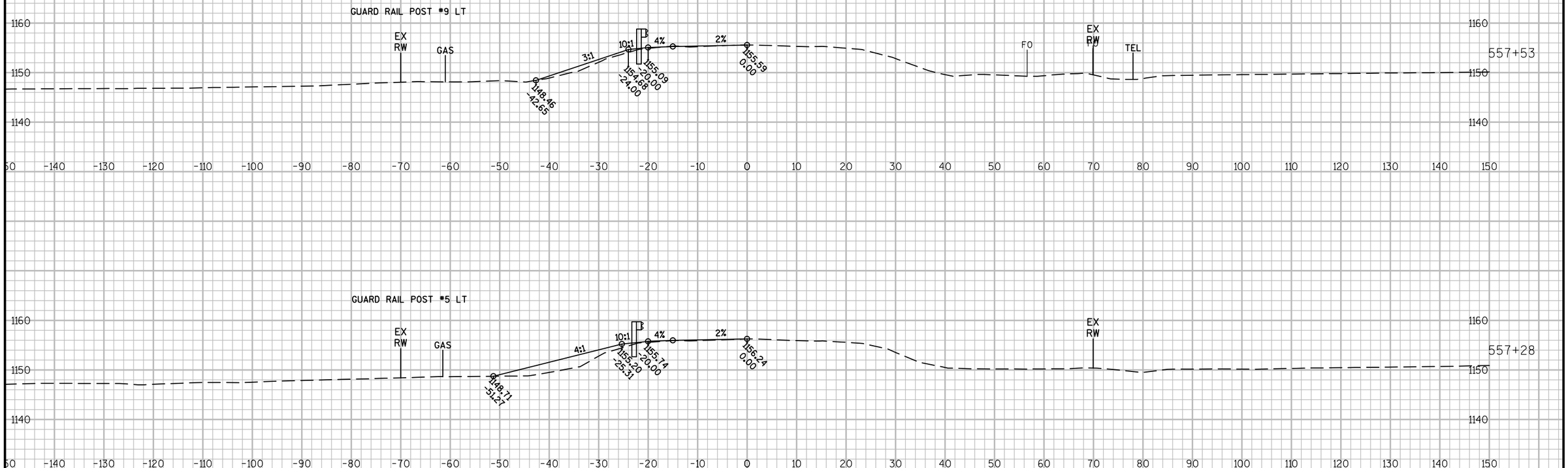


9 9

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 59	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-6

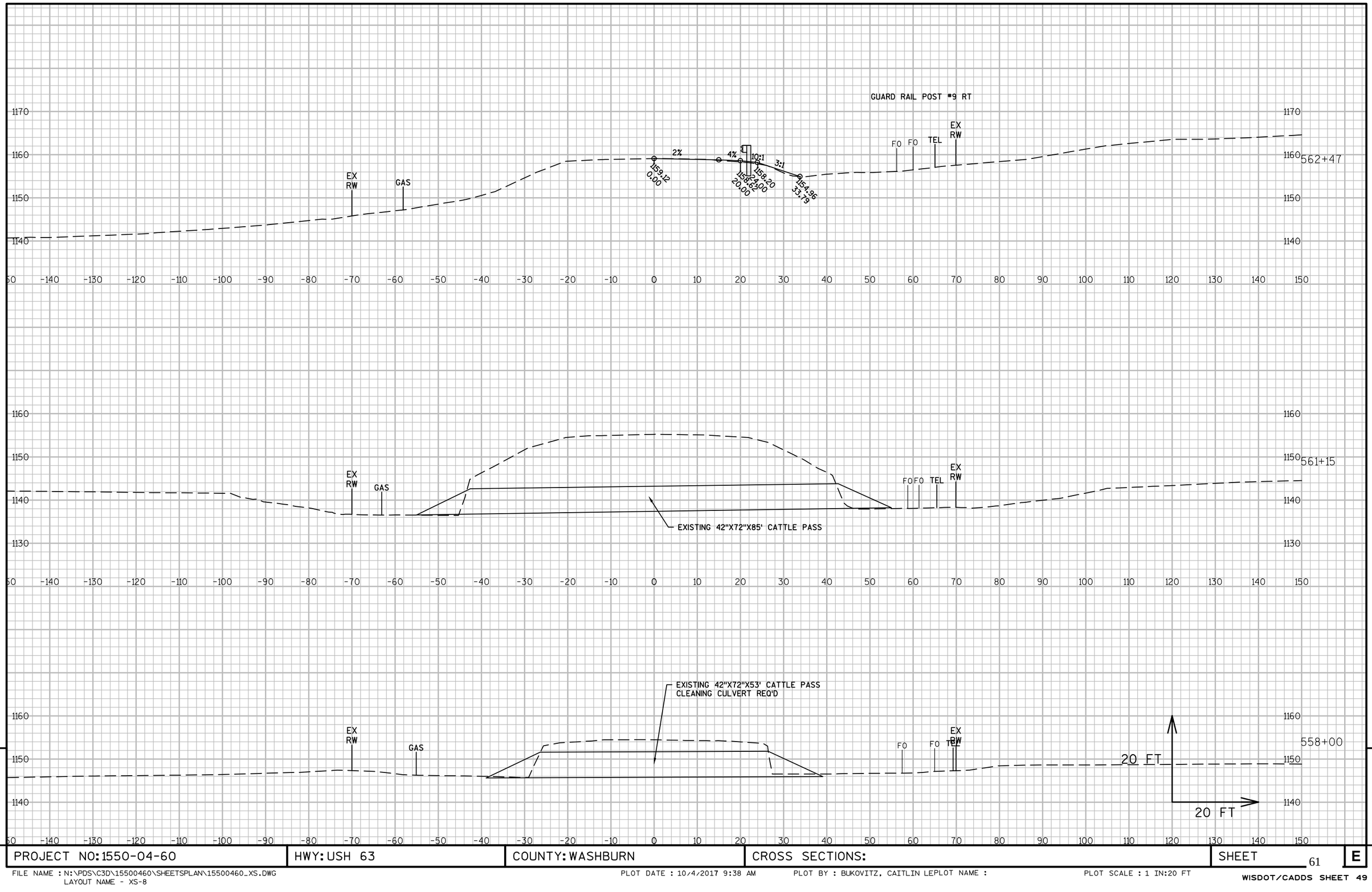
PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT



PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 60	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-7

PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT



9

9

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 61	E

GUARD RAIL POST *9 LT

EX RW

3:1 10:1 4% 2%

160.34 -30.40 | 162.45 -24.00 | 162.87 -20.00 | 163.37 0.00

EX RW

563+59

GUARD RAIL POST *1 RT

EX RW

EX RW

2% 4% 10:1 3:1

161.00 0.00 | 160.50 20.00 | 159.30 | 159.18 25.70 | 155.70 28.00

562+97

GUARD RAIL POST *5 RT

EX RW

EX RW

2% 4% 10:1 3:1

160.12 0.00 | 159.62 20.00 | 159.09 25.31 | 158.33 27.59

562+72

20 FT

20 FT

9

9

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 62	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-9

PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49

GUARD RAIL TAPER POINT RT

EX RW

564+17

GUARD RAIL POST #1 LT

EX RW

4:1 10:1 4% 2%

@162.64 -32.55

@163.80 -27.91

@163.59 -20.00

@165.09 0.00

564+09

GUARD RAIL POST #5 LT

EX RW

4:1 10:1 4% 2%

@161.45 -32.62

@163.26 -25.31

@163.79 -20.00

@164.29 0.00

563+84

20 FT

20 FT

1180 1170 1160 1150

-140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

9

9

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 63	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-10

PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT

REMOVING SMALL PIPE CULVERTS 1-24"X80' RCCP
INSTALL: 1-24"X66' RCCP & 2 AEW
INVERT IN: 1169.20'
INVERT OUT: 1165.02'
SLOPE: 5.10%
REGRADING DITCH RT REQ'D
RIPRAP HEAVY - LT

TEMPORARY BAD ¾" WIDENING
12'
12'
TEMPORARY BAD ¾" WIDENING
EX RW
GAS
4:1
RT2.87 -22.04
RT3.45 0.00
1169.20 28.33
1165.02 -53.50
TEL
FO
FO
EX RW
573+50

BEGIN INSLOPE FILL LT
EX RW
GAS
TEL
FO
FO
EX RW
573+00

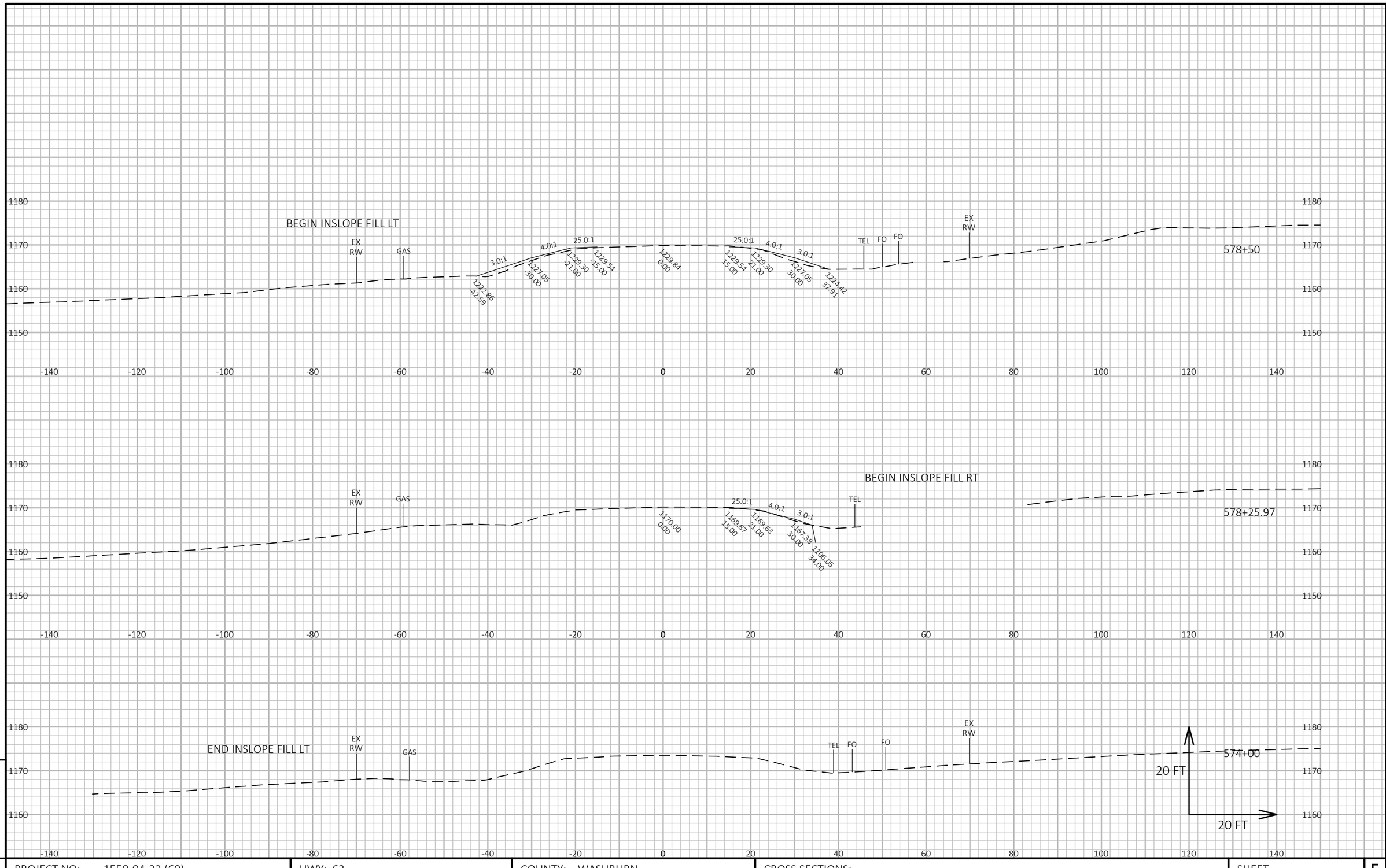
GUARD RAIL TAPER POINT LT
EX RW
EX RW
565+29
20 FT
20 FT

1180
1170
1160
-150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

9

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 64	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-11
PLOT DATE : 10/4/2017 9:38 AM
PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME :
PLOT SCALE : 1 IN:20 FT

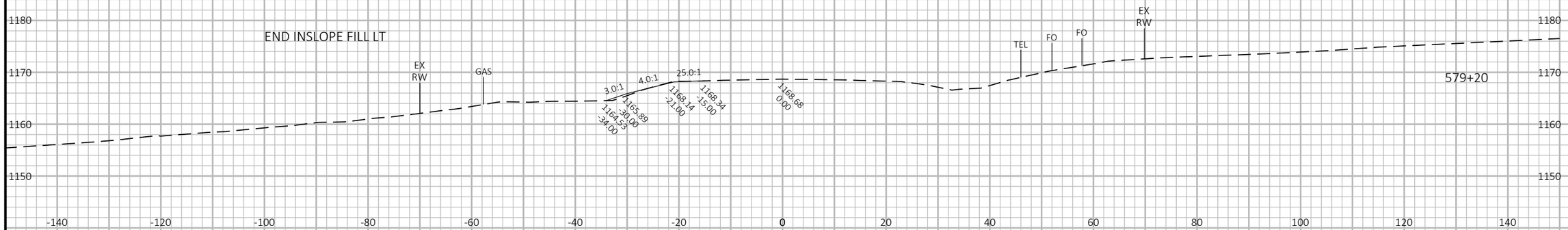


9

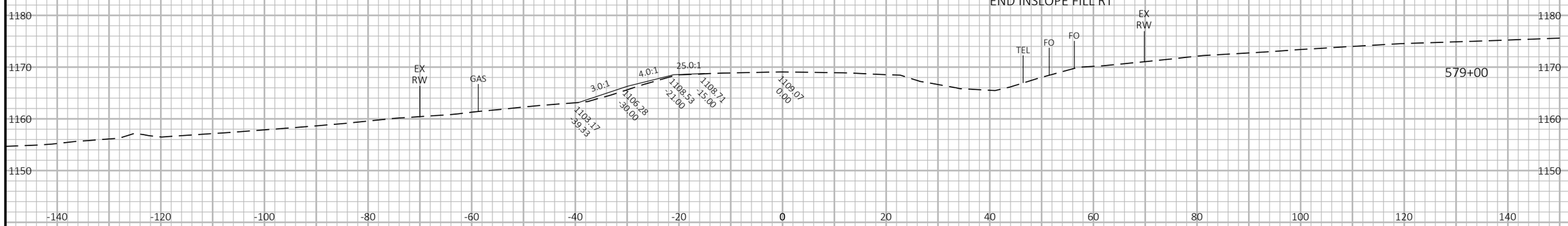
9

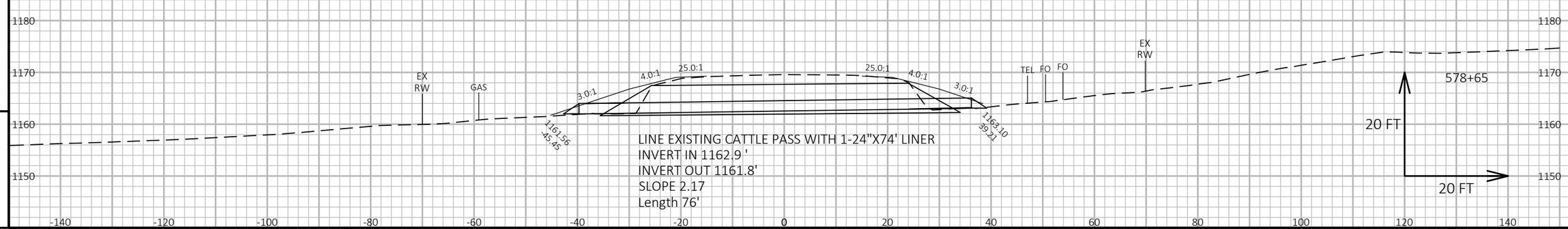
PROJECT NO: 1550-04-32 (60)	HWY: 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 65	E

END INSLOPE FILL LT



END INSLOPE FILL RT





LINE EXISTING CATTLE PASS WITH 1-24"X74' LINER
INVERT IN 1162.9 '
INVERT OUT 1161.8'
SLOPE 2.17
Length 76'

9

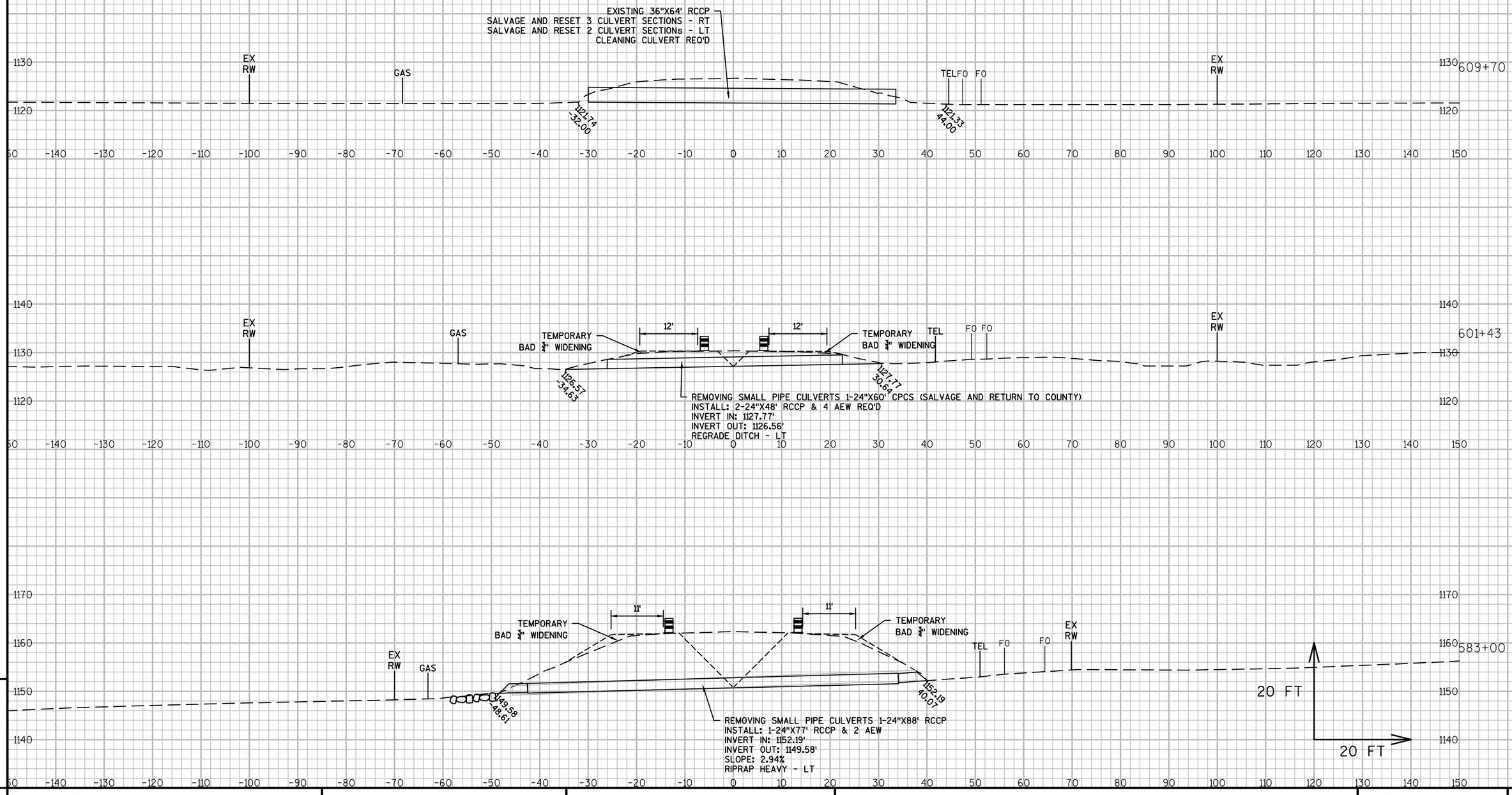
9

PROJECT NO: 1550-04-32 (60)	HWY: 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET	E

FILE NAME : N:\PDS\C3D\15500460\DESIGN\CORRIDORS\CATTLE PASS CORIDOR.DWG
LAYOUT NAME - Section Sheet - (2)

PLOT DATE : 10/4/2017 9:04 AM PLOT BY : FINNEGAN, MITCHELL PLOT NAME : PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT.

WISDOT/CADDS SHEET 49



9

9

PROJECT NO:1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 67	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-18

PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49

END INSLOPE FILL LT & RT

623+00

GAS

EX RW

622+00

TEMPORARY BAD ¾" WIDENING

12'

4%

2%

4:1

5:1

3:1

@144.35 -20.00

@144.85 -30.00

@138.24 -40.82

@144.85 0.00'

@144.35 20.00

@144.85 30.00

@135.46 49.07

REMOVING SMALL PIPE CULVERTS (1-24"X70' RCCP)
INSTALL: 1-24"X75' RCCP & 2 AEW
INVERT IN: 1138.24'
INVERT OUT: 1135.46'
SLOPE: 3.12%

BEGIN INSLOPE FILL LT & RT

621+00

20 FT

20 FT

1150

1140

1130

-140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

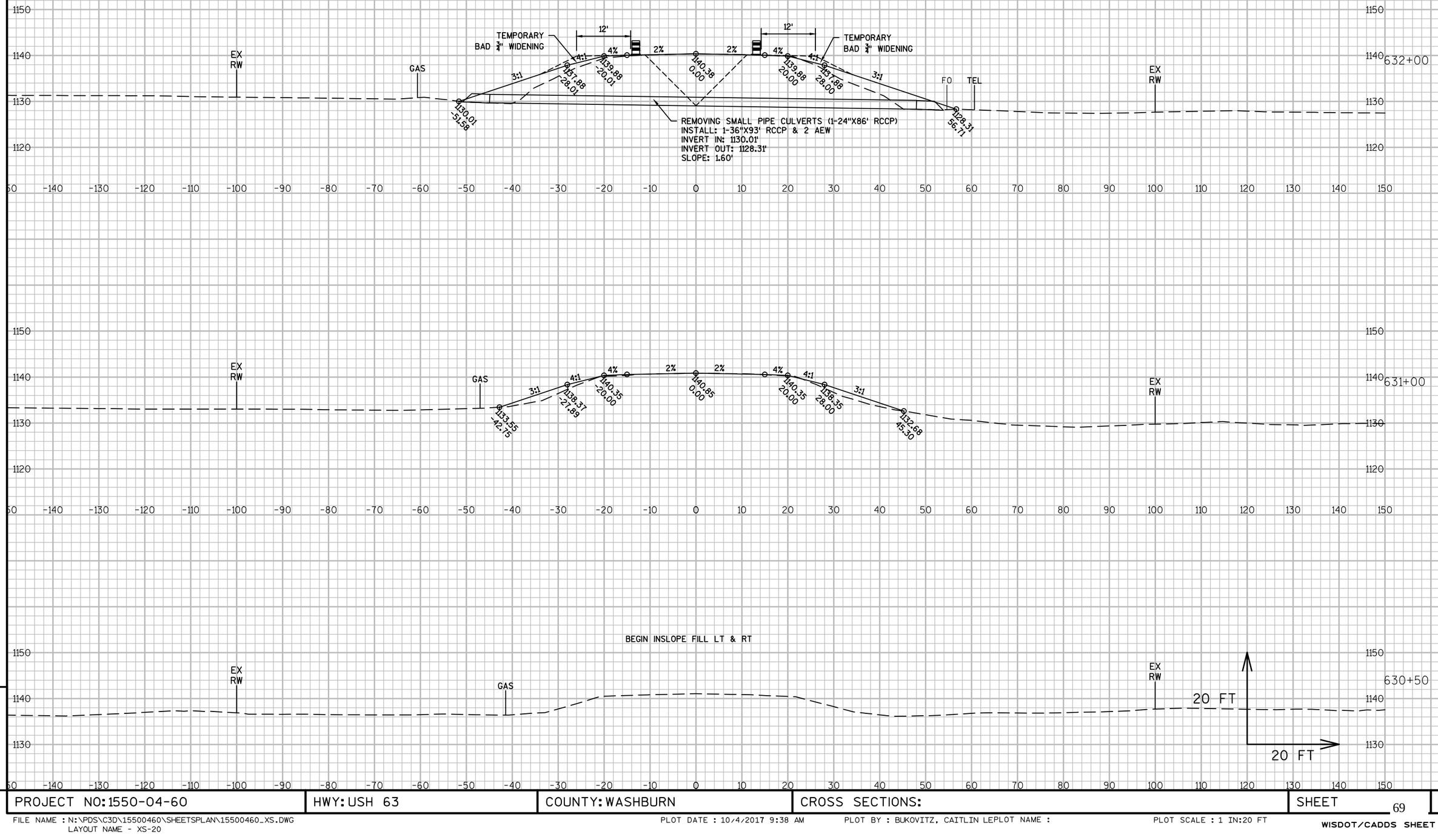
9

9

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 68	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-19

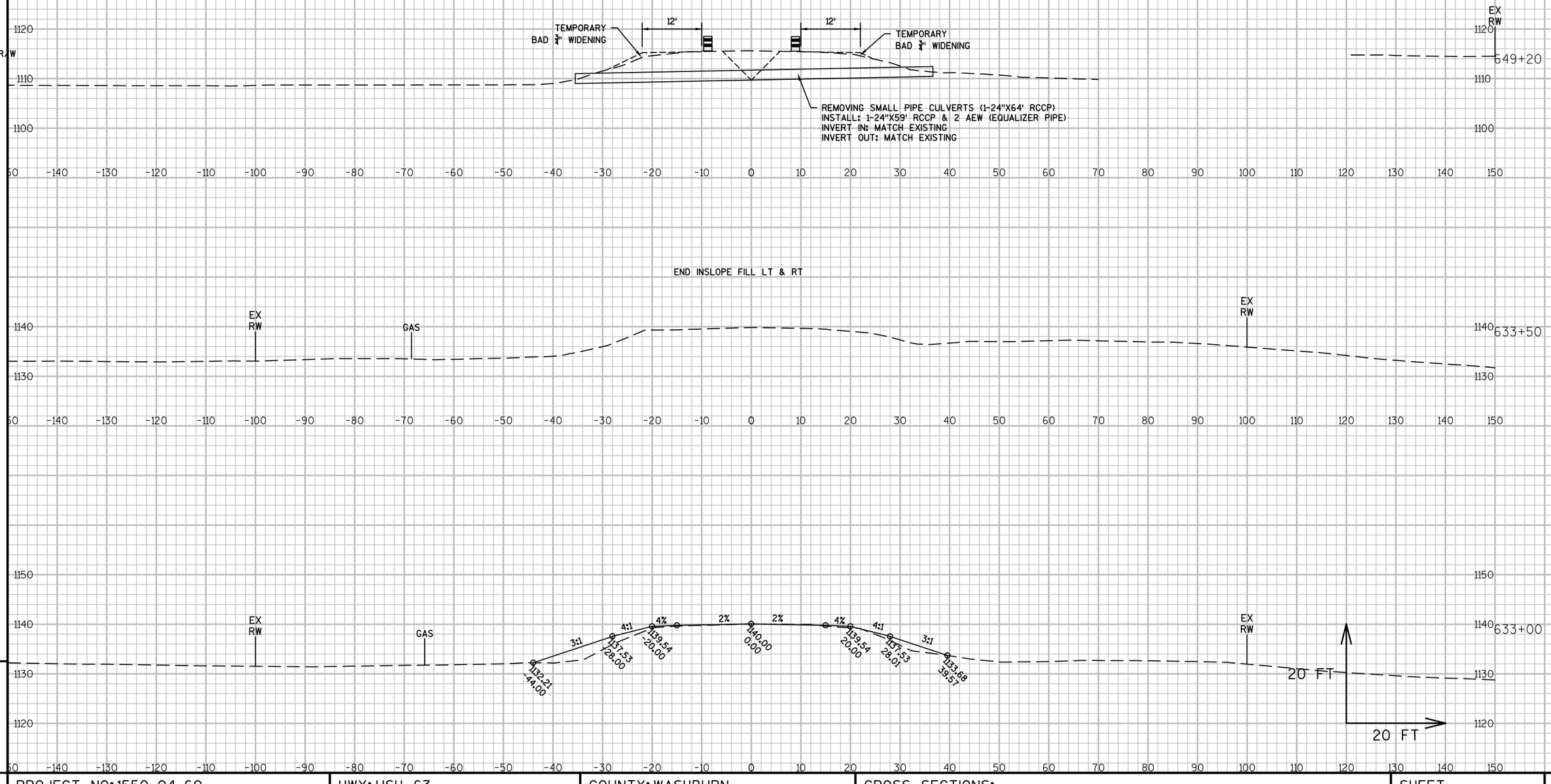
PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT



PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 69	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-20

PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT

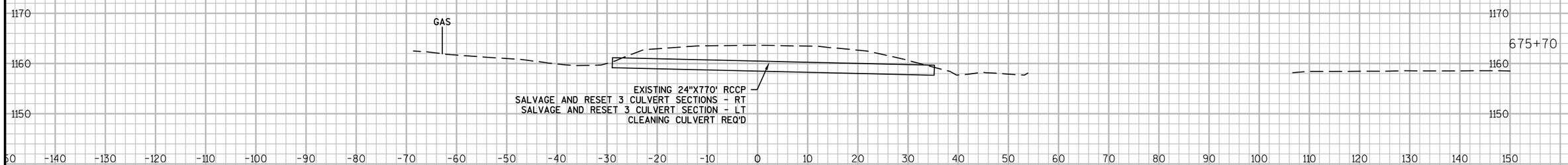


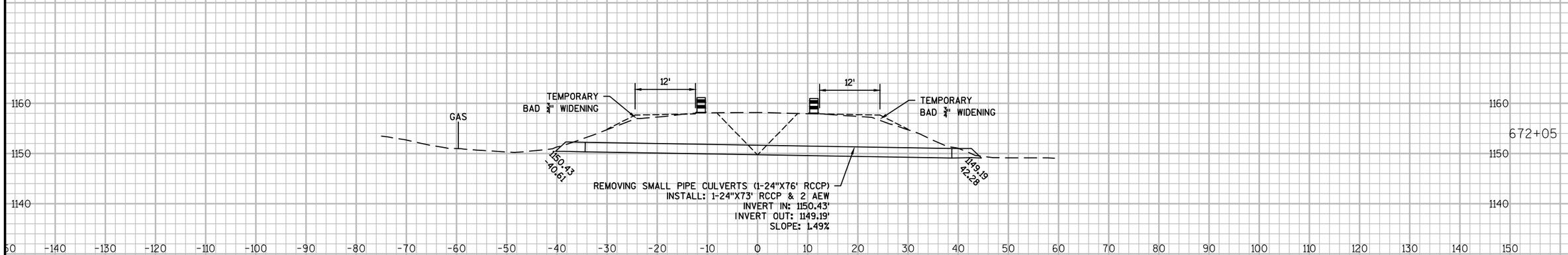
PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 70	E

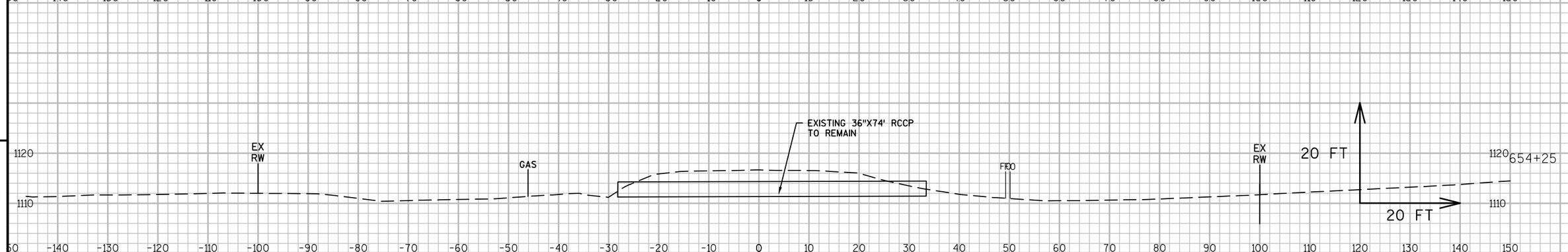
FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-21

PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME :

PLOT SCALE : 1 IN:20 FT







9

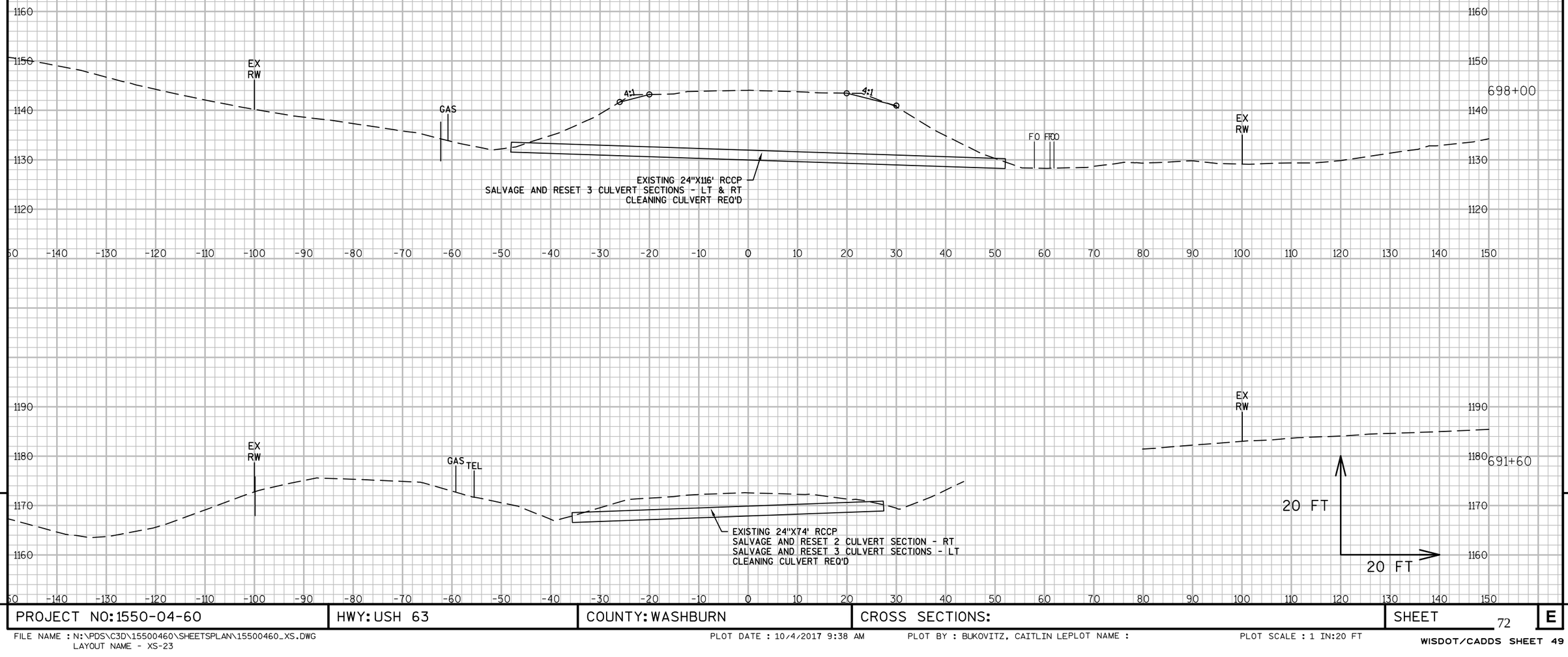
9

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 71	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-22

PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49



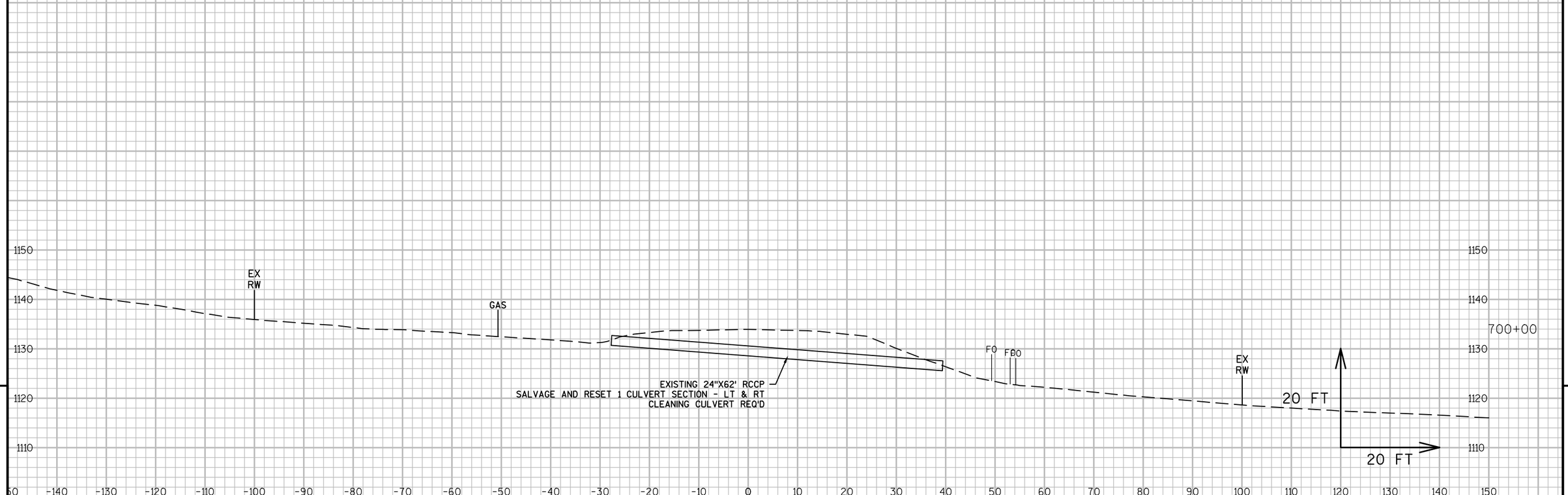
9

9

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 72	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-23

PLOT DATE : 10/4/2017 9:38 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT



9

9

PROJECT NO: 1550-04-60	HWY: USH 63	COUNTY: WASHBURN	CROSS SECTIONS:	SHEET 73	E

FILE NAME : N:\PDS\C3D\15500460\SHEETSPLAN\15500460_XS.DWG
LAYOUT NAME - XS-24

PLOT DATE : 10/4/2017 9:39 AM PLOT BY : BUKOVITZ, CAITLIN LEPLOT NAME : PLOT SCALE : 1 IN:20 FT

Wisconsin Department of Transportation

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