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GENERAL NOTES

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS, OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED HEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE ACCORDING TO THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2020 EDITION.

THE DESIGN OF THIS STRUCTURE IS BASED ON 1.2 TIMES THE CURRENT AASHTO LRFD BRIDGE DESIGN, HL-93 LOADING. THE DESIGN TANDEM PORTION SHALL BE REPLACED BY A SINGLE 60 KIP AXLE LOAD BEFORE APPLICATION OF THE 1.2 FACTOR. THE RESULTING LOAD IS DESIGNATED HL-93 MOD. LIVE LOAD PLUS DYNAMIC LOAD ALLOWANCE DEFLECTION DOES NOT EXCEED 1/425 OF THE SPAN LENGTH.

THE PROPOSED IMPROVEMENTS COVERED BY THESE PLANS ARE IN ACCORDANCE WITH THE AASHTO: A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 2011.

ALL STEEL CONNECTIONS AND FASTENERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111 OR AASHTO M232.

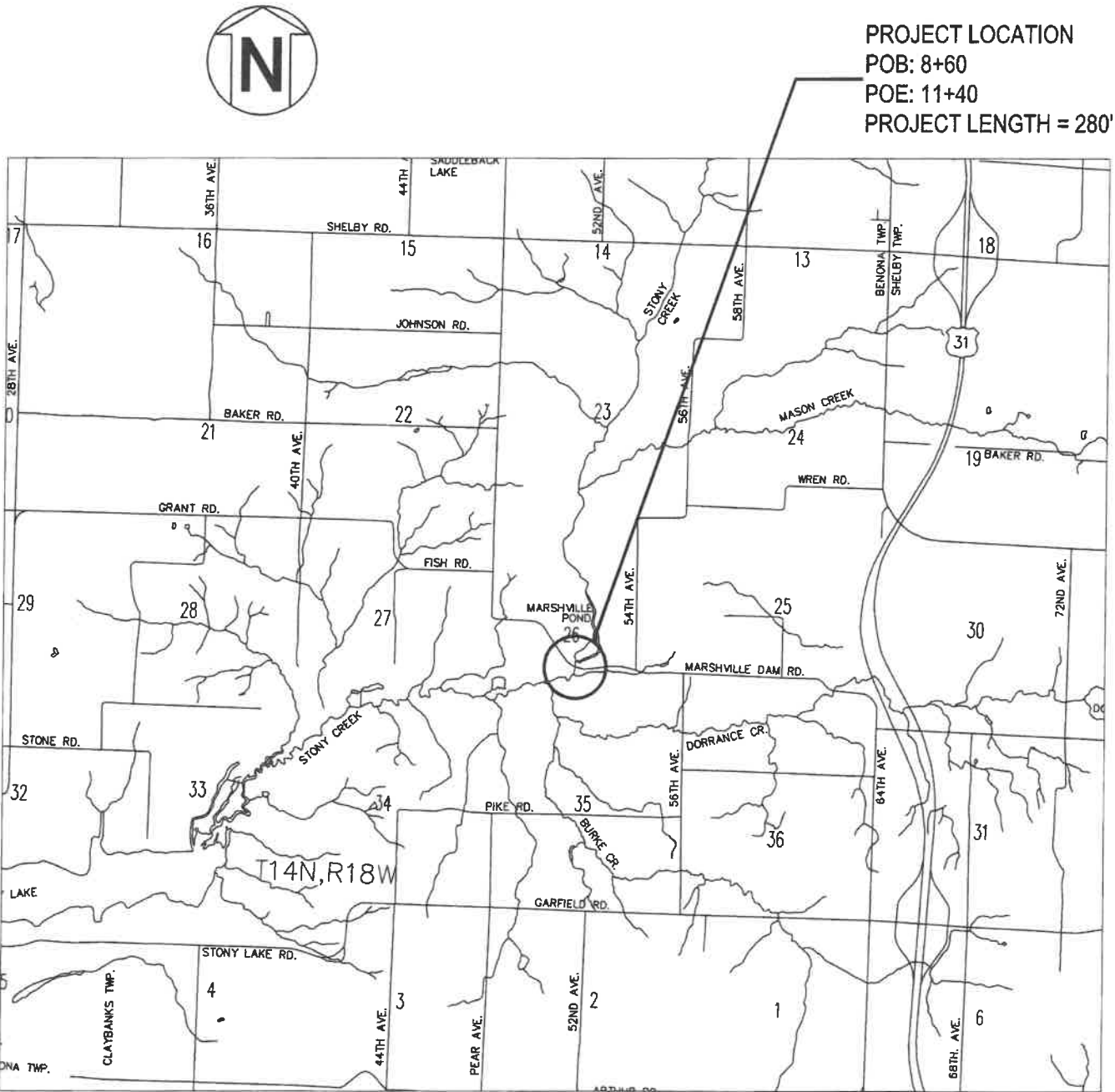
OCEANA COUNTY ROAD COMMISSION
IN CO-OPERATION WITH
WEST MICHIGAN SHORELINE REGIONAL DEVELOPMENT COMMISSION
AND
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
PLAN AND PROFILE OF PROPOSED
BRIDGE REPLACEMENT
MARSHVILLE DAM ROAD OVER STONY CREEK
SECTION 26, BENONA TOWNSHIP, T14N, R18W
STRUCTURE NUMBER: 8380

FOR THE PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, THE CONTRACTOR SHALL CONTACT MISS DIG SYSTEM, INC. BY PHONE AT 811 OR 800-482-7171 OR VIA THE WEB AT EITHER ELOCATE.MISSDIG.ORG FOR SINGLE ADDRESS OR RTE.MISSDIG.ORG, A MINIMUM OF 3 BUSINESS DAYS PRIOR TO EXCAVATING, EXCLUDING WEEKENDS AND HOLIDAYS. ALL "MISS DIG" PARTICIPATING MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.



DESIGN CRITERIA

DESIGN SPEED	55 MPH
POSTED SPEED	N/A
PRESENT ADT (2021)	359
PRESENT COM.	2%
DESIGN ADT (2041)	438
DESIGN COM.	2%
DESIGN LOADING	HL-93 MOD.
DEFLECTION	L/425



TECHNICAL ASSISTANCE IN THE DEVELOPMENT OF THIS PROJECT WAS PROVIDED BY THE FOLLOWING: CONSERVATION RESOURCE ALLIANCE, UNITED STATES FISH AND WILDLIFE SERVICE, MICHIGAN DEPARTMENT OF NATURAL RESOURCES, GREAT LAKES FISHERY TRUST, AND NATIONAL FISH AND WILDLIFE FOUNDATION.

CONTRACT FOR: BRIDGE REPLACEMENT AND RELATED APPROACH WORK

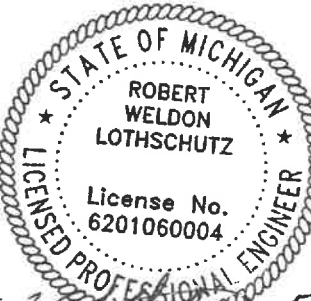
OCEANA COUNTY ROAD COMMISSION

[Signature] 5/22/23
MANAGER DATE

SCECO

SCOTT CIVIL ENGINEERING COMPANY
1345 MONROE AVENUE, SUITE 136
GRAND RAPIDS, MICHIGAN 49505

PREPARED UNDER THE SUPERVISION OF:

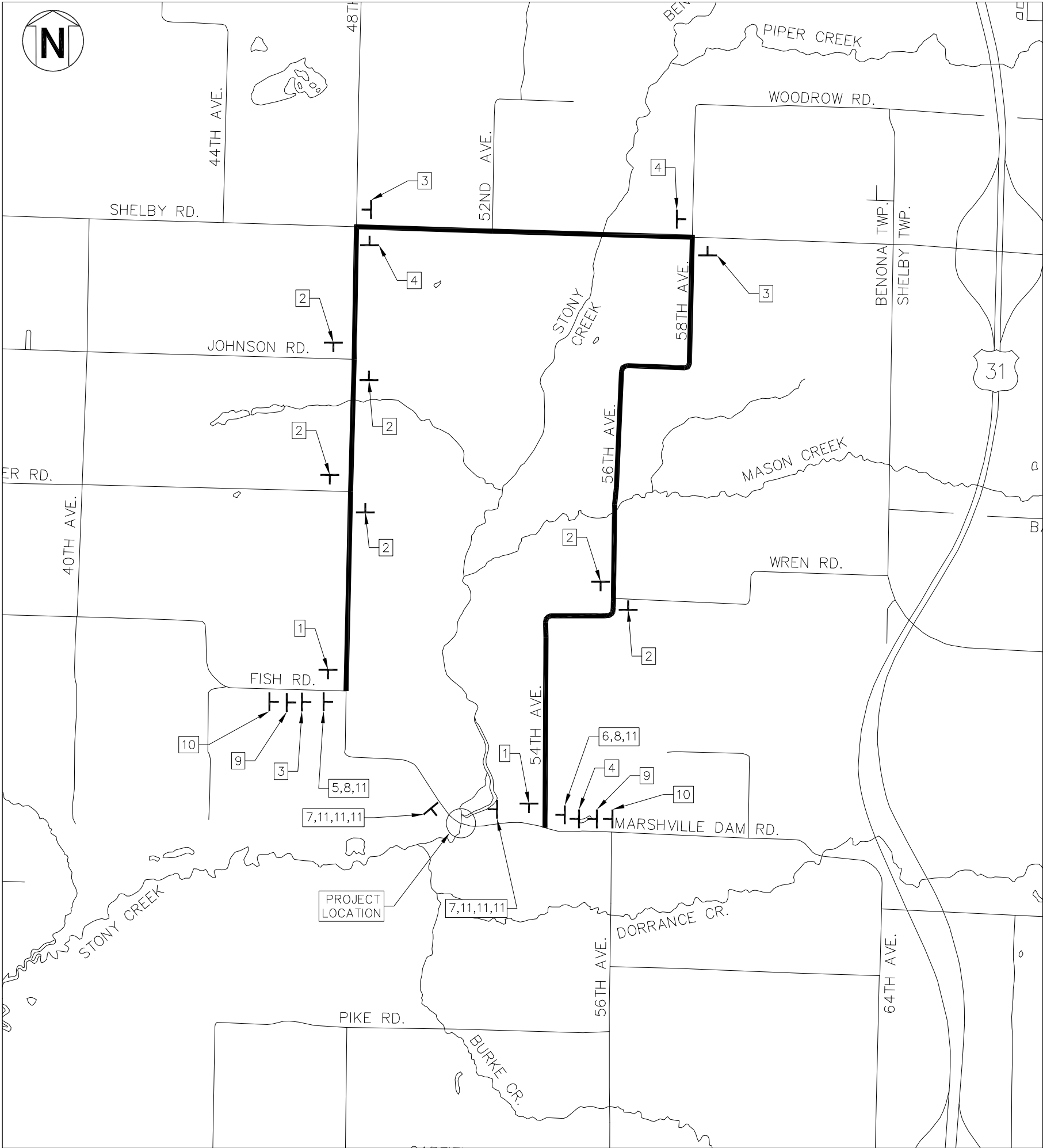


[Signature] 5/17/23
ROBERT W. LOTHSCUTZ, P.E.
REGISTERED PROFESSIONAL ENGINEER NO. 66004 DATE

STRUCTURE NO.: 8380

MARSHVILLE DAM ROAD OVER STONY CREEK





- NOTES:
1. ROAD COMMISSION TO FURNISH AND PLACE ALL SIGNS FOR DETOUR ROUTE AS INDICATED ON THIS SHEET OR AS DIRECTED BY THE ENGINEER.
 2. ROAD COMMISSION TO FURNISH AND PLACE TYPE III BARRICADES, HIGH INTENSITY, DOUBLE SIDED, LIGHTED, AS SHOWN ON THIS SHEET OR AS DIRECTED BY THE ENGINEER.
 3. ADDITIONAL TYPE III BARRICADES AND TYPE B TEMPORARY SIGNING MAY BE REQUIRED TO SUFFICIENTLY CONTROL AND DIRECT TRAFFIC, AS DIRECTED BY THE ENGINEER.
 4. ALL SIGNS SHALL HAVE BORDERS AS REQUIRED IN THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD), 2011.
 5. ALL SIGN POSTS MUST BE DRIVEN INTO THE GROUND AS SPECIFIED IN THE PROPOSAL.
 6. (2) PORTABLE CHANGEABLE MESSAGE BOARDS ARE INCLUDED TO BE PLACED AT LOCATIONS AS DIRECTED BY THE ENGINEER TWO WEEKS PRIOR TO THE START OF CONSTRUCTION.

SIGN DETAILS				
SIGN NO.	SIGN LEGEND	SIGN TYPE/SIZE	SIGN QUANTITY	PAY QUANTITY (SFT)
1		M4-8a 2' X 1.5'	2	6.0
2		M4-9 2.5' X 2'	6	30.0
3		M4-9(L) 2.5' X 2'	3	15.0
4		M4-9(R) 2.5' X 2'	3	15.0
5		M4-10(L) 4' X 1.5'	1	6.0
6		M4-10(R) 4' X 1.5'	1	6.0
7		R11-2 4' X 2.5'	2	20.0
8		R11-4 5' X 2.5'	2	25.0
9		W20-2 4' X 4'	2	32.0
10		W20-3 4' X 4'	2	32.0
11		TYPE III	8	-
SIGN, TYPE B, TEMP, PRISMATIC, FURN AND OPER TOTAL				187.0

TRAFFIC CONTROL QUANTITIES – ROAD COMMISSION ITEMS			
PAY ITEM NO.	ITEM OF WORK	UNIT	TOTAL
8120012	Barricade, Type III, High Intensity, Double Sided, Lighted, Furn	Ea	8
8120013	Barricade, Type III, High Intensity, Double Sided, Lighted, Oper	Ea	8
8120170	Minor Traf Devices	LSUM	1
8120252	Plastic Drum, Fluorescent, Furn	Ea	6
8120253	Plastic Drum, Fluorescent, Oper	Ea	6
8120330	Sign, Portable, Changeable Message, Furn	Ea	2
8120331	Sign, Portable, Changeable Message, Oper	Ea	2
8120350	Sign, Type B, Temp, Prismatic, Furn	Sft	187
8120351	Sign, Type B, Temp, Prismatic, Oper	Sft	187

OCEANA COUNTY
ROAD COMMISSION

DETOUR
MARSHVILLE DAM ROAD
OVER STONY CREEK

SCOTT CIVIL ENGINEERING COMPANY
GRAND RAPIDS, MICHIGAN

2
11

DRAWN

FCM

CHECKED

RWL

DATE

7/26/22

SN 8380

BENCHMARK #1 — ELEV. 610.59
CUT SPIKE IN EAST SIDE OF 14" POPLAR
STA. 8+36, 34.0' LT

BENCHMARK #2 — ELEV. 606.47
CUT SPIKE IN WEST SIDE OF 20" DECIDUOUS TREE
STA. 13+70, 30'± RT

EXISTING STRUCTURE NOTES:

EXISTING ROAD CROSSING CONSISTS OF (3) 65' LONG 78"Ø CMP CULVERTS RATED IN FAIR TO POOR CONDITION, WITH 5'± BETWEEN BARRELS AND 4.25'± COVER OVER BARRELS.

OLD BRIDGES PRESENT SOUTH OF THE EXISTING CROSSING COMPOSED OF JACK ARCH SUPERSTRUCTURE ON CONCRETE ABUTMENTS WITH STEEL PILES. WEST BRIDGE DECK IS 30' LONG BY 16.5' WIDE, EAST BRIDGE DECK IS 15' LONG BY 16' WIDE. BRIDGES ARE LOCATED ON OCEANA COUNTY PROPERTY.

GENERAL NOTES

THE WORK COVERED BY THESE PLANS INCLUDES: MAINTAINING TRAFFIC, REMOVAL OF THE EXISTING STRUCTURES, CONSTRUCTION OF THE PROPOSED BRIDGE, GUARDRAIL REPLACEMENT, SLOPE PROTECTION, SCOUR COUNTERMEASURES AND RIPRAP, AND APPROACH WORK TO THE LIMITS SHOWN.

DETOUR VEHICLE TRAFFIC OVER OTHER EXISTING ROADS.

IMPLEMENT MEASURES TO PREVENT DEBRIS FROM FALLING FROM THE STRUCTURE. IF DEBRIS FALLS INTO THE WATERWAY, REMOVE IT WITHIN 24 HOURS. SINCE DISTURBANCE OF THE WATERWAY BOTTOM MAY BE AS HARMFUL AS THE DEBRIS ITSELF, THE PREVENTATIVE MEASURES MUST BE EFFECTIVE.

THE CONTRIBUTING DRAINAGE AREA TO THIS CROSSING IS 21.5 SQUARE MILES. THE 1% AND 2% CHANCE FLOODS ARE ESTIMATED TO BE 650 CUBIC FEET PER SECOND (CFS) AND 500 CFS RESPECTIVELY, AS DETERMINED BY THE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY.

THE WATER LEVEL OF STONY CREEK IS SUBJECT TO CHANGE. MAKE A DETERMINATION OF WATER LEVELS THAT MAY EXIST DURING CONSTRUCTION.

DATUM REFERS TO NAVD 88 DATUM.

DO NOT ALLOW TEMPORARILY STORED EXCAVATED MATERIAL TO ERODE INTO THE WATERCOURSE.

REMOVAL NOTES:

EXISTING TREES MARKED FOR REMOVAL WILL BE CUT BY OCEANA COUNTY ROAD COMMISSION PRIOR TO THE START OF THE PROJECT.

"STRUCTURES, REM" INCLUDES REMOVAL OF THE THREE CMP CULVERTS UNDER THE ROADWAY AND REMOVAL OF THE TWO OLD BRIDGES SOUTH OF THE EXISTING CROSSING. REMOVE ALL COMPONENTS OF THE OLD WEST BRIDGE TO AN ELEVATION OF 590.00 OR LOWER. REMOVE ALL COMPONENTS OF THE OLD EAST BRIDGE TO AT LEAST 1' BELOW THE FINISHED GROUND SURFACE ELEVATION.

UTILITY NOTES:

NO UTILITIES WERE IDENTIFIED WITHIN THE PROJECT LIMITS. HOWEVER, THIS DOES NOT GUARANTEE THAT NO UTILITIES ARE PRESENT. LOCATE ALL ACTIVE UNDERGROUND UTILITIES PRIOR TO STARTING WORK AND CONDUCT OPERATIONS IN SUCH A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.

EXISTING TREES SHOWN ON PLAN			
8+25.5	34.1' LT	16" DECID.	
8+33.1	34.9' LT	12" DECID.	
8+36.3	34.1' LT	14" DECID.	
8+38.6	30.1' LT	12" DECID.	
9+24.8	33.6' RT	8" DECID.	
9+26.5	38.1' RT	18" DECID.	
9+43.1	32.6' RT	10" DECID.	
10+28.0	26.8' LT	16" DECID.	*
10+88.8	24.5' RT	24" DECID.	*
10+94.3	31.9' LT	8" DECID.	*
11+23.6	27.4' LT	8" DECID.	*
11+38.4	24.2' LT	6" DECID.	*
11+39.4	23.9' LT	6" DECID.	*

* INDICATES TREE TO BE REMOVED



SCALES:
1" = 30' HOR
1" = 3' VER

CIRCULAR CURVE #1
T = 207.56
R = 685.00
L = 403.07
E = 30.76
PI STA = 9+51.28
Δ = 33°42'52"
PC STA = 7+43.72
PT STA = 11+46.79

CONTROL POINT #3
X: 12576369.96
Y: 764192.73

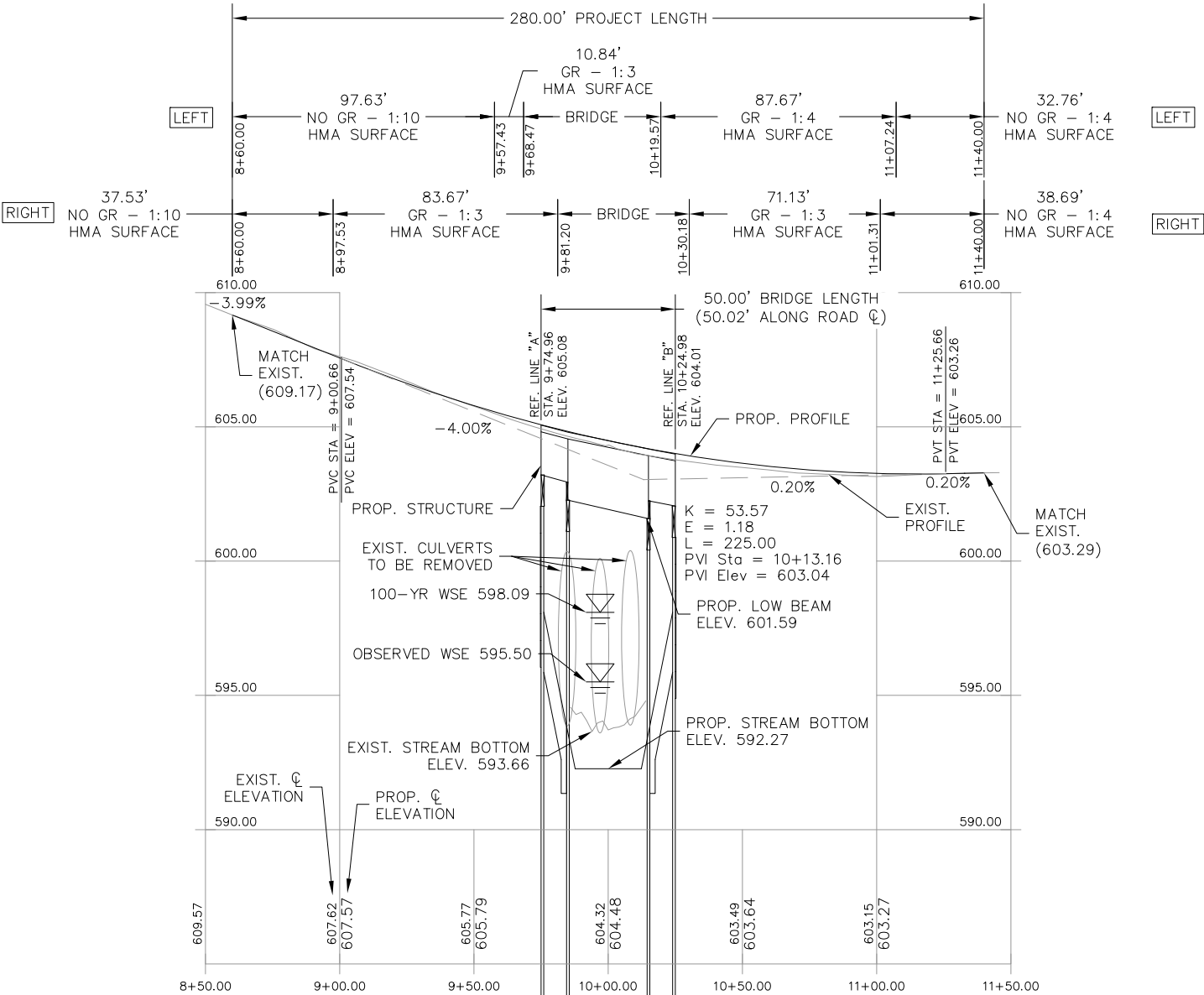
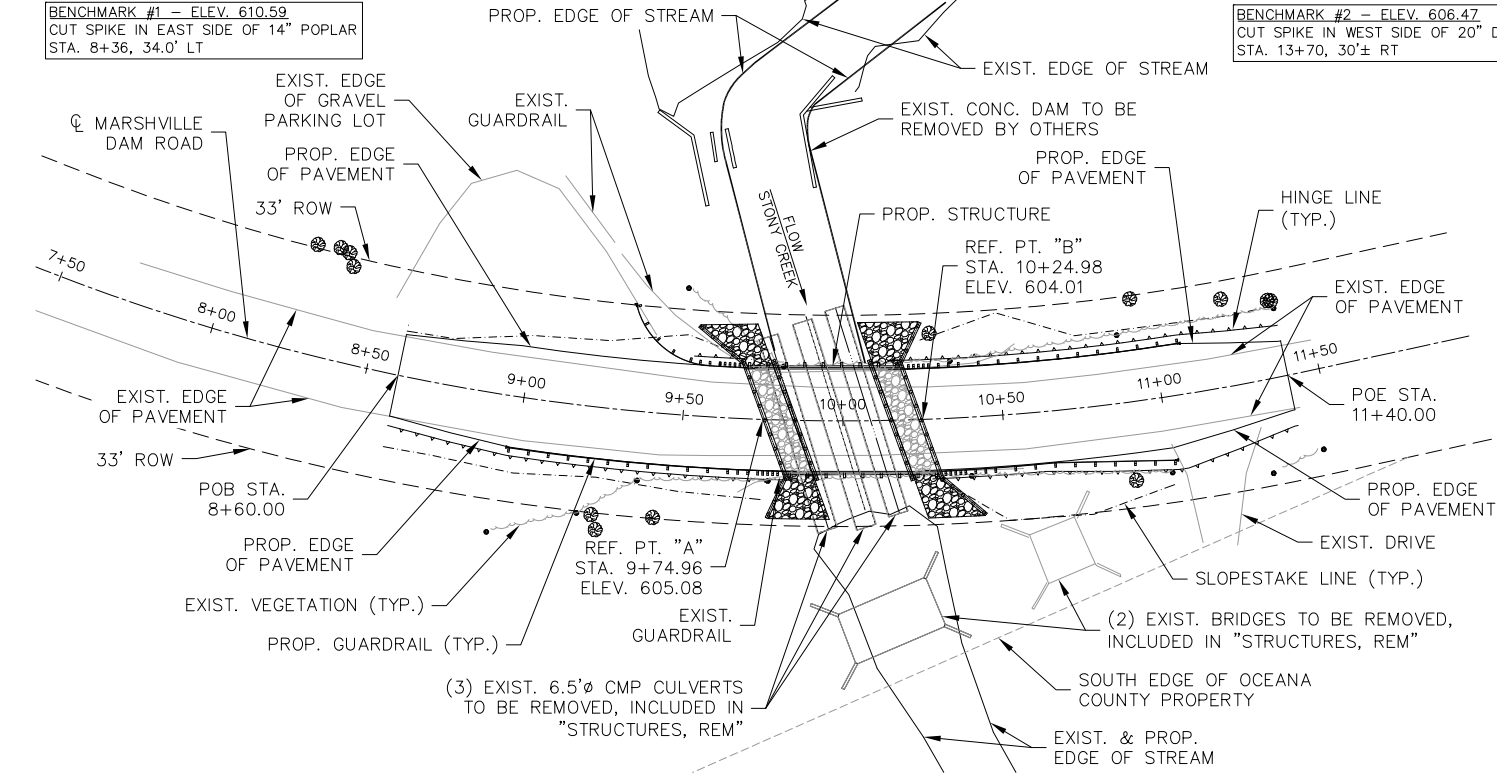
CONTROL POINT #2
STA: 8+39.58
OFFSET: 24.88' RT
X: 12576652.91
Y: 763842.26

POB
STA. 8+60.00
X: 12576684.40
Y: 763849.99

CONTROL POINT #4
X: 12577233.13
Y: 763722.96

CONTROL POINT #1
STA: 11+29.24
OFFSET: 19.31' RT
X: 12576924.05
Y: 763721.48

ALIGNMENT DIAGRAM



OCEANA COUNTY
ROAD COMMISSION

GENERAL PLAN OF SITE
MARSHVILLE DAM ROAD
OVER STONY CREEK

SCCO

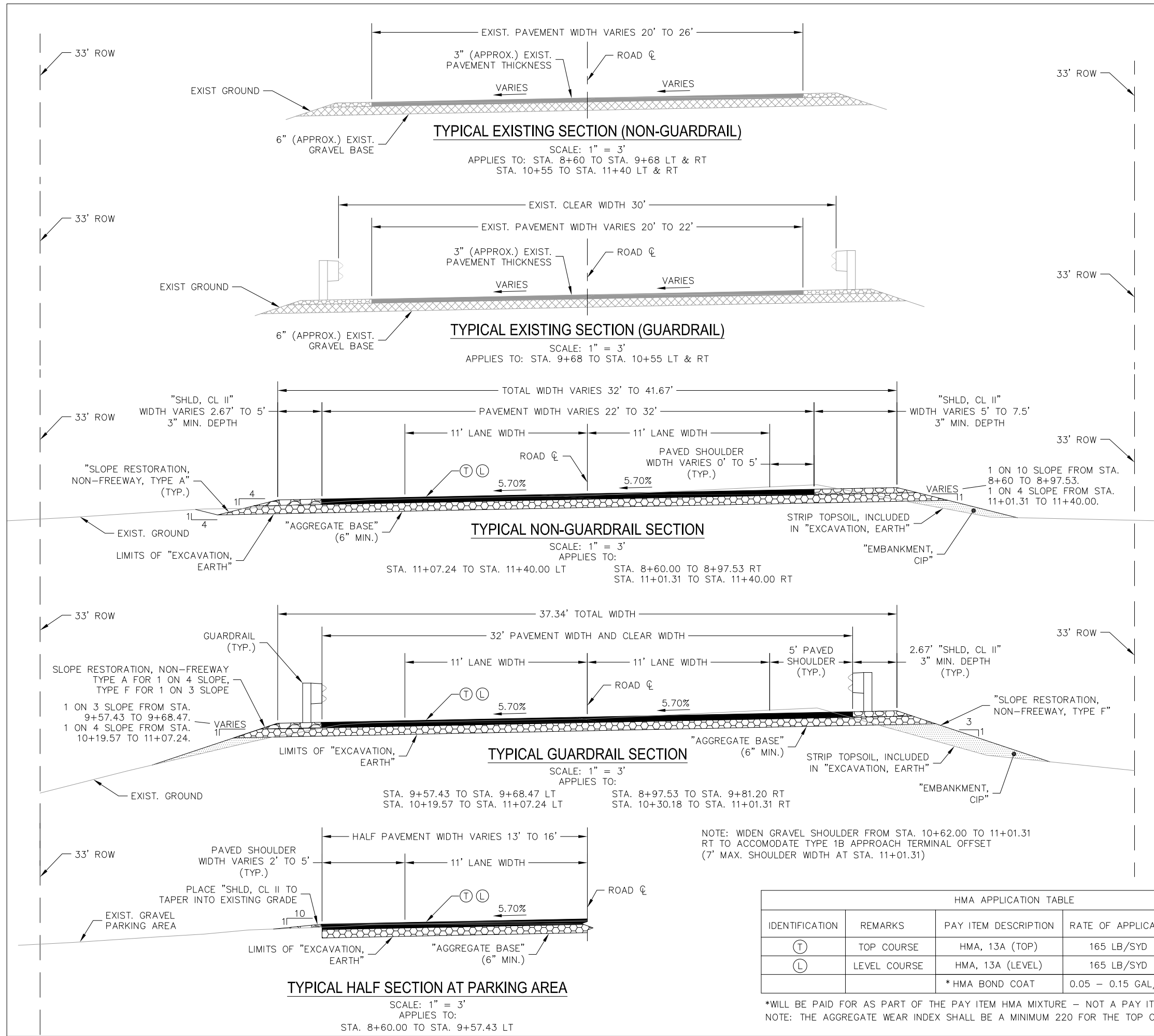
SCOTT CIVIL ENGINEERING COMPANY
GRAND RAPIDS, MICHIGAN

DRAWN FCM CHECKED RWL DATE 1/11/23

SN 8380

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NOTES:

CONSTRUCTION OF BUTT JOINTS AS INDICATED ON THE PLANS SHALL BE INCLUDED IN THE ITEM "HMA SURFACE, REM".

TRANSITION PAVEMENT CROSS SLOPE TO MATCH EXISTING AT POB AND POE, TRANSITION LENGTH TO BE DETERMINED BY THE ENGINEER.

AGGREGATE BASE IS TO BE 22A IN ACCORDANCE WITH SECTION 902 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

STRIP TOPSOIL, VEGETATION, AND GRAVEL IN ACCORDANCE WITH SECTION 205.03 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION PRIOR TO PLACEMENT OF EMBANKMENT. STRIPPING OF TOPSOIL AND GRAVEL WILL NOT BE PAID FOR SEPARATELY, BUT IS INCLUDED IN THE ITEM "EXCAVATION, EARTH". THE ENGINEER ESTIMATED THE STRIPPING QUANTITY USING A DEPTH OF 6".

USE SEED MIXTURE TGM ON ALL SLOPE RESTORATION.

APPROACH QUANTITIES – CONTRACTOR ITEMS			
PAY ITEM NO.	ITEM OF WORK	UNIT	TOTAL
1100001	Mobilization, Max	LSUM	1
5010005	HMA Surface, Rem	Syd	696
5010033	HMA, 13A	Ton	170
8110231	Pavt Mrkg, Waterborne, 4 inch, White	Ft	560
8110232	Pavt Mrkg, Waterborne, 4 inch, Yellow	Ft	560

APPROACH QUANTITIES – ROAD COMMISSION ITEMS			
PAY ITEM NO.	ITEM OF WORK	UNIT	TOTAL
1100001	Mobilization, Max	LSUM	1
2010001	Clearing	Acre	0.22
2020002	Tree, Rem, 19 inch to 36 inch	Ea	1
2020004	Tree, Rem, 6 inch to 18 inch	Ea	5
2040035	Guardrail, Rem	Ft	230
2050010	Embankment, CIP	Cyd	88
2050016	Excavation, Earth	Cyd	242
3020001	Aggregate Base	Ton	341
3070121	Shld, Cl II	Ton	36

HMA APPLICATION TABLE				
IDENTIFICATION	REMARKS	PAY ITEM DESCRIPTION	RATE OF APPLICATION	PERFORMANCE GRADE
(T)	TOP COURSE	HMA, 13A (TOP)	165 LB/SYD	58 – 28
(L)	LEVEL COURSE	HMA, 13A (LEVEL)	165 LB/SYD	58 – 28
		* HMA BOND COAT	0.05 – 0.15 GAL/SYD	

*WILL BE PAID FOR AS PART OF THE PAY ITEM HMA MIXTURE – NOT A PAY ITEM
NOTE: THE AGGREGATE WEAR INDEX SHALL BE A MINIMUM 220 FOR THE TOP COURSE

OCEANA COUNTY
ROAD COMMISSION

TYPICAL SECTIONS
MARSHVILLE DAM ROAD OVER
STONY CREEK

SCOTT CIVIL ENGINEERING COMPANY

GRAND RAPIDS, MICHIGAN

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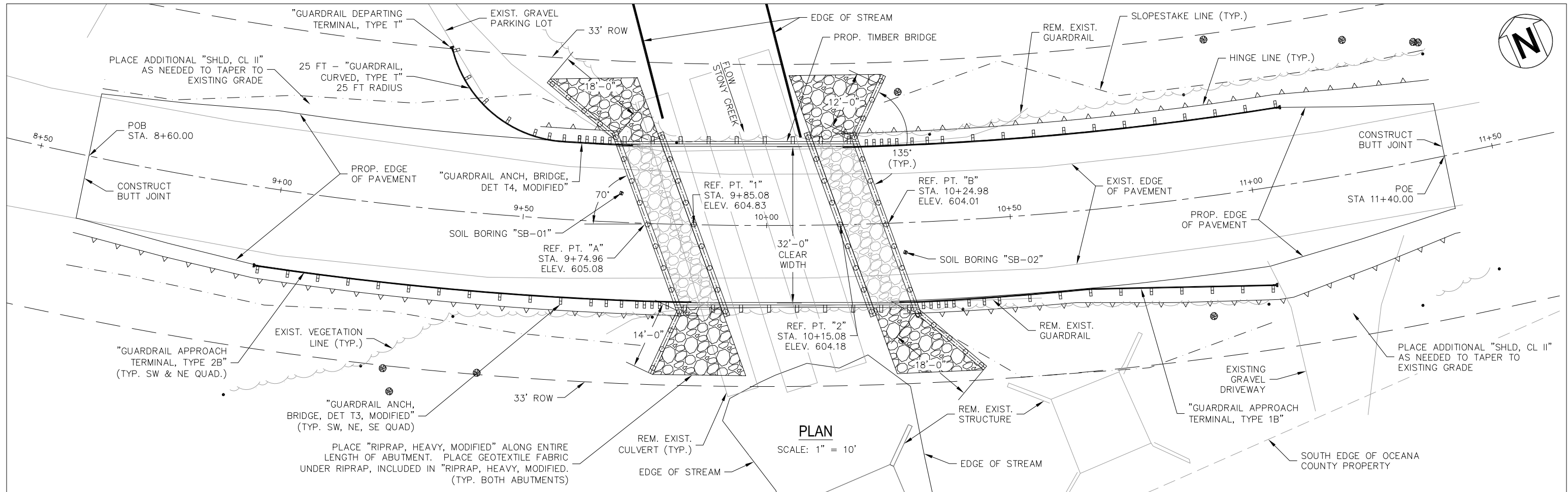
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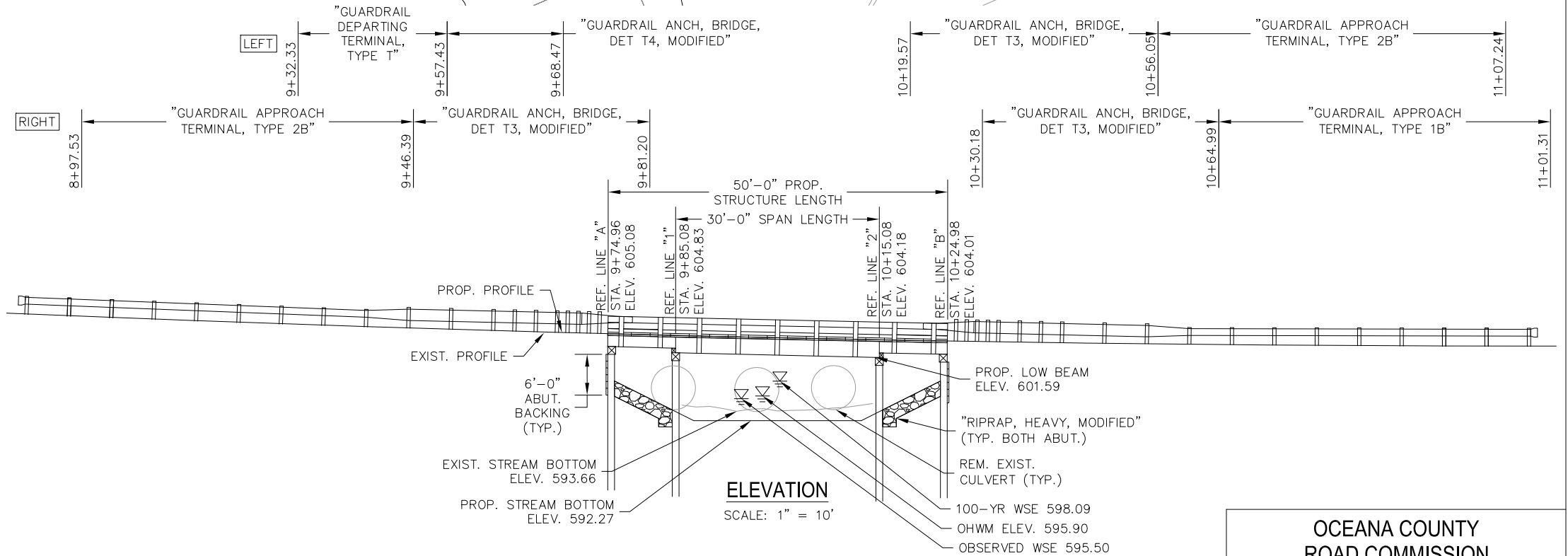


PLAN
SCALE: 1" = 10'

STRUCTURE QUANTITIES – CONTRACTOR ITEMS			
PAY ITEM NO.	ITEM OF WORK	UNIT	TOTAL
2040060	Structures, Rem	LSUM	1
7050002	Pile Driving Equipment, Furn	LSUM	1
7050011	Pile, Treated Timber, Driven	Ft	1350
7050015	Test Pile, Treated Timber	Ea	4
7097051	Timber Substructure, Erect	LSUM	1

STRUCTURE QUANTITIES – ROAD COMMISSION ITEMS			
PAY ITEM NO.	ITEM OF WORK	UNIT	TOTAL
2050015	Excavation, Channel	Cyd	715
2060002	Backfill, Structure, CIP	Cyd	343
2060010	Excavation, Fdn	Cyd	739
3080005	Geotextile, Separator	Syd	148
7050010	Pile, Treated Timber, Furn	Ft	1350
7097051	Structure, Timber, Furn	LSUM	1
7097051	Timber Superstructure, Erect	LSUM	1

GUARDRAIL QUANTITIES – CONTRACTOR ITEMS			
PAY ITEM NO.	ITEM OF WORK	UNIT	TOTAL
8070011	Guardrail, Curved, Type T	Ft	25
8070051	Guardrail Departing Terminal, Type T	Ea	1
8070080	Guardrail Reflector	Ea	8
8077050	Guardrail Anch, Bridge, Det T3, Modified	Ea	3
8077050	Guardrail Anch, Bridge, Det T4, Modified	Ea	1
8077050	Guardrail Approach Terminal, Type 1B	Ea	1
8077050	Guardrail Approach Terminal, Type 2B	Ea	2



ELEVATION
SCALE: 1" = 10'

STRUCTURE NOTES:

THE DESIGN OF THIS STRUCTURE IS BASED ON 1.2 TIMES THE CURRENT AASHTO LRFD BRIDGE DESIGN, HL-93 LOADING. THE DESIGN TANDEM PORTION SHALL BE REPLACED BY A SINGLE 60 KIP AXLE LOAD BEFORE APPLICATION OF THE THE 1.2 FACTOR. THE RESULTING LOAD IS DESIGNATED HL-93 MOD. LIVE LOAD PLUS DYNAMIC LOAD ALLOWANCE DEFLECTION DOES NOT EXCEED 1/800 OF THE SPAN LENGTH.

OCEANA COUNTY
ROAD COMMISSION

GENERAL PLAN OF STRUCTURE
MARSHVILLE DAM ROAD
OVER STONY CREEK

SCCO

SCOTT CIVIL ENGINEERING COMPANY

GRAND RAPIDS, MICHIGAN

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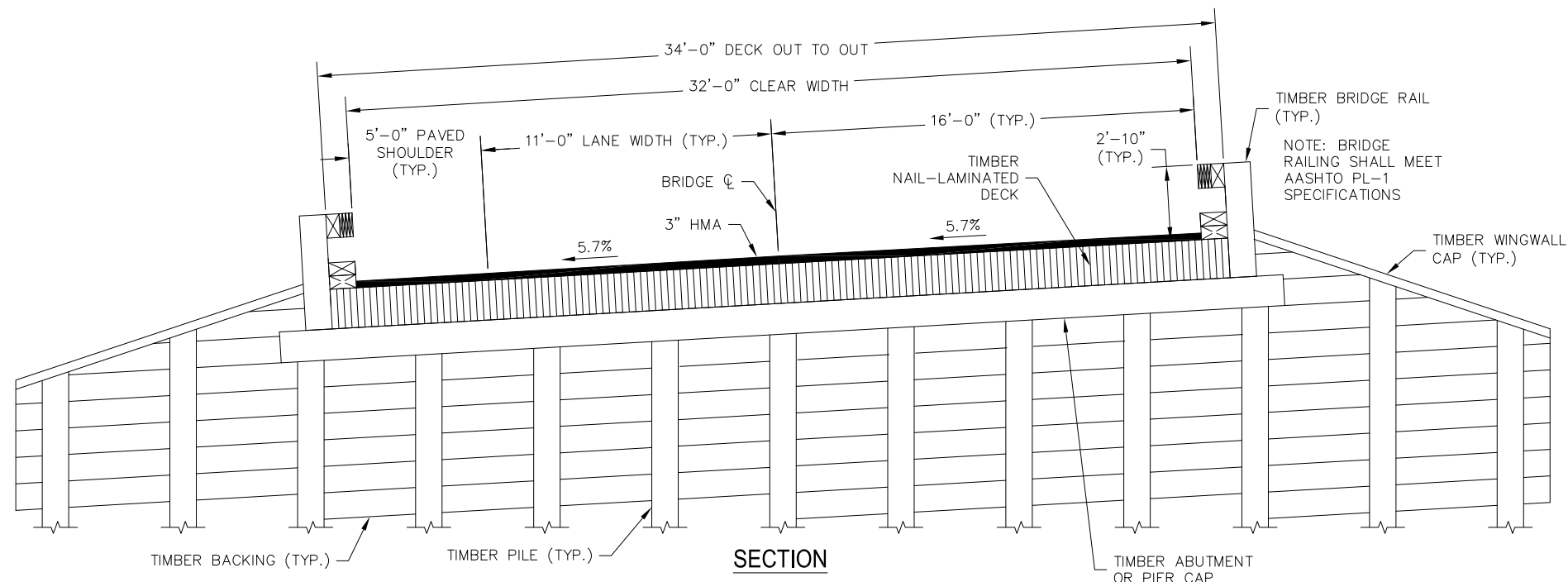
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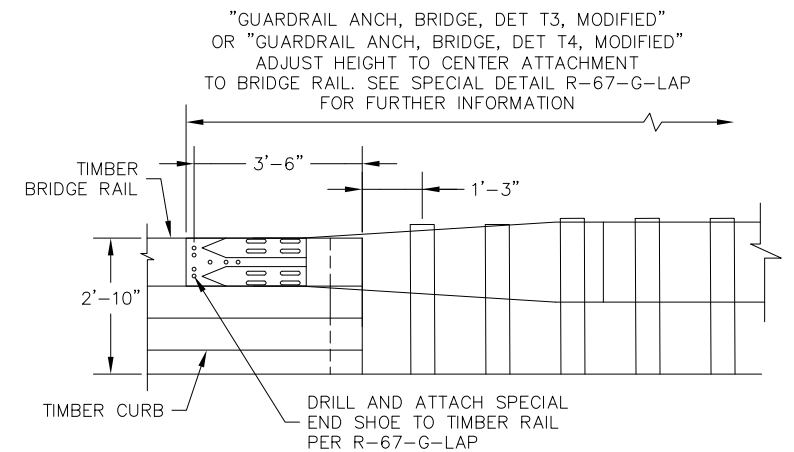
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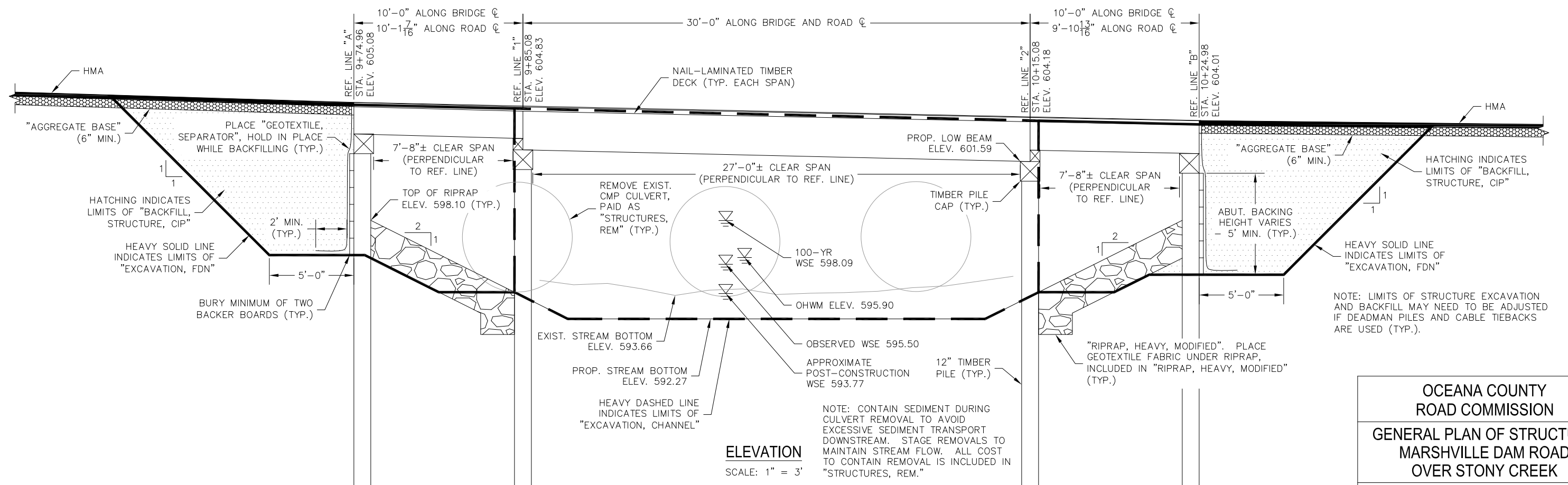
SECTION

SCALE: 1" = 3'

*HORIZONTAL DIMENSIONS ARE PERPENDICULAR TO ROAD CL



GUARDRAIL ATTACHMENT DETAIL

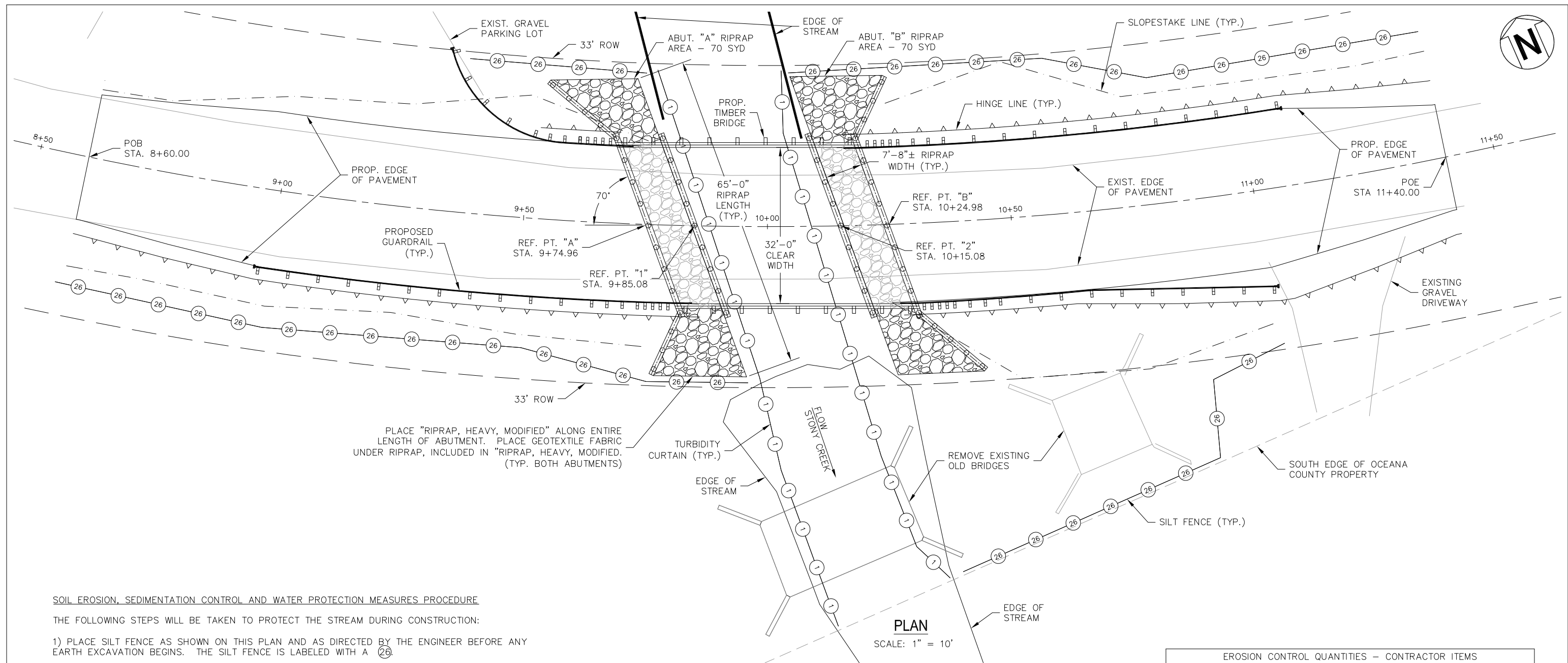


ELEVATION

SCALE: 1" = 3'

OCEANA COUNTY
ROAD COMMISSION
GENERAL PLAN OF STRUCTURE
MARSHVILLE DAM ROAD
OVER STONY CREEK

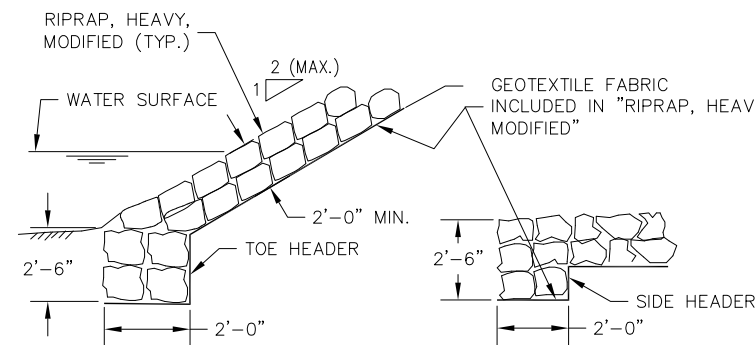
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SCOTT CIVIL ENGINEERING COMPANY					11
GRAND RAPIDS, MICHIGAN					
DRAWN	FCM	CHECKED	RWL	DATE	1/13/23
SN 8380					



SOIL EROSION, SEDIMENTATION CONTROL AND WATER PROTECTION MEASURES PROCEDURE

THE FOLLOWING STEPS WILL BE TAKEN TO PROTECT THE STREAM DURING CONSTRUCTION:

- 1) PLACE SILT FENCE AS SHOWN ON THIS PLAN AND AS DIRECTED BY THE ENGINEER BEFORE ANY EARTH EXCAVATION BEGINS. THE SILT FENCE IS LABELED WITH A (26).
- 2) PLACE TURBIDITY CURTAIN AS SHOWN ON THIS PLAN BEFORE ANY EARTH EXCAVATION BEGINS. THE TURBIDITY CURTAIN IS LABELED WITH A (1).
- 3) THE CONTRACTOR WILL PROPERLY CONTAIN THE EXISTING CULVERTS AND OLD BRIDGES DURING REMOVAL. PAYMENT SHALL BE INCLUDED IN "STRUCTURES, REM".
- 4) PLACE "RIPRAP, HEAVY, MODIFIED" AS SHOWN. PLACE GEOTEXTILE LINER ON SLOPES PRIOR TO PLACING "RIPRAP, HEAVY, MODIFIED". PAYMENT FOR GEOTEXTILE LINER SHALL BE INCLUDED IN PAYMENT FOR RIPRAP.
- 5) THE RIPRAP QUANTITY IS BASED ON THE LATERAL DIMENSIONS OF THE AREA TO BE PROTECTED, REGARDLESS OF THE NUMBER OF LAYERS REQUIRED. THE ESTIMATED WEIGHT OF HEAVY RIPRAP IS 190 TONS.
- 6) IMMEDIATELY AFTER THE CONSTRUCTION OF AN ABUTMENT IS COMPLETED, PLACE SLOPE PROTECTION AND SEEDING OR SODDING ON THE ADJACENT EMBANKMENT SLOPES.
- 7) SLOPES IMMEDIATELY ADJACENT TO THE STREAM OR OTHER WETLAND AREAS SHOULD HAVE SLOPE PROTECTION AND SEEDING OR SODDING PLACED IMMEDIATELY UPON COMPLETION OF WORK.
- 8) DO NOT ALLOW TEMPORARILY STORED EXCAVATED MATERIAL TO ERODE INTO THE WATERCOURSE.
- 9) THE ENGINEER WILL MONITOR THE TEMPORARY AND PERMANENT SESC MEASURES INSTALLED BY THE CONTRACTOR UNTIL THE SITE IS COMPLETELY STABILIZED, AT WHICH POINT THE TEMPORARY MEASURES SHALL BE REMOVED.



SLOPE PROTECTION HEADER DETAILS
INCLUDED IN "RIPRAP, HEAVY, MODIFIED"

EROSION CONTROL QUANTITIES – CONTRACTOR ITEMS			
PAY ITEM NO.	ITEM OF WORK	UNIT	TOTAL
2080044	Erosion Control, Turbidity Curtain, Shallow	Ft	241
8137011	Riprap, Heavy, Modified	Syd	140
8162001	Slope Restoration, Non-Freeway, Type A	Syd	180
8162006	Slope Restoration, Non-Freeway, Type F	Syd	210

EROSION CONTROL QUANTITIES – ROAD COMMISSION ITEMS			
PAY ITEM NO.	ITEM OF WORK	UNIT	TOTAL
2080036	Erosion Control, Silt Fence	Ft	402

OCEANA COUNTY
ROAD COMMISSION

EROSION CONTROL DETAILS
MARSHVILLE DAM ROAD
OVER STONY CREEK

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SCOTT CIVIL ENGINEERING COMPANY

GRAND RAPIDS, MICHIGAN

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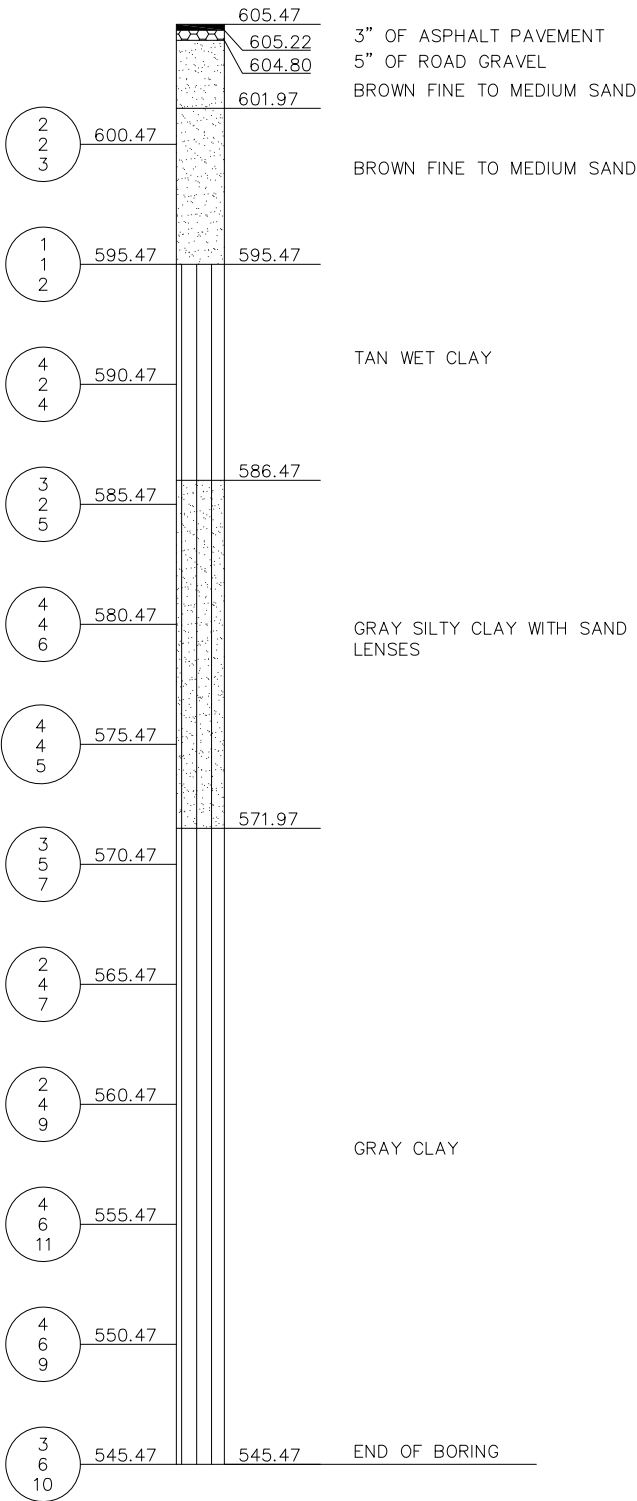
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SN 8380

SOIL BORING "SB-01"

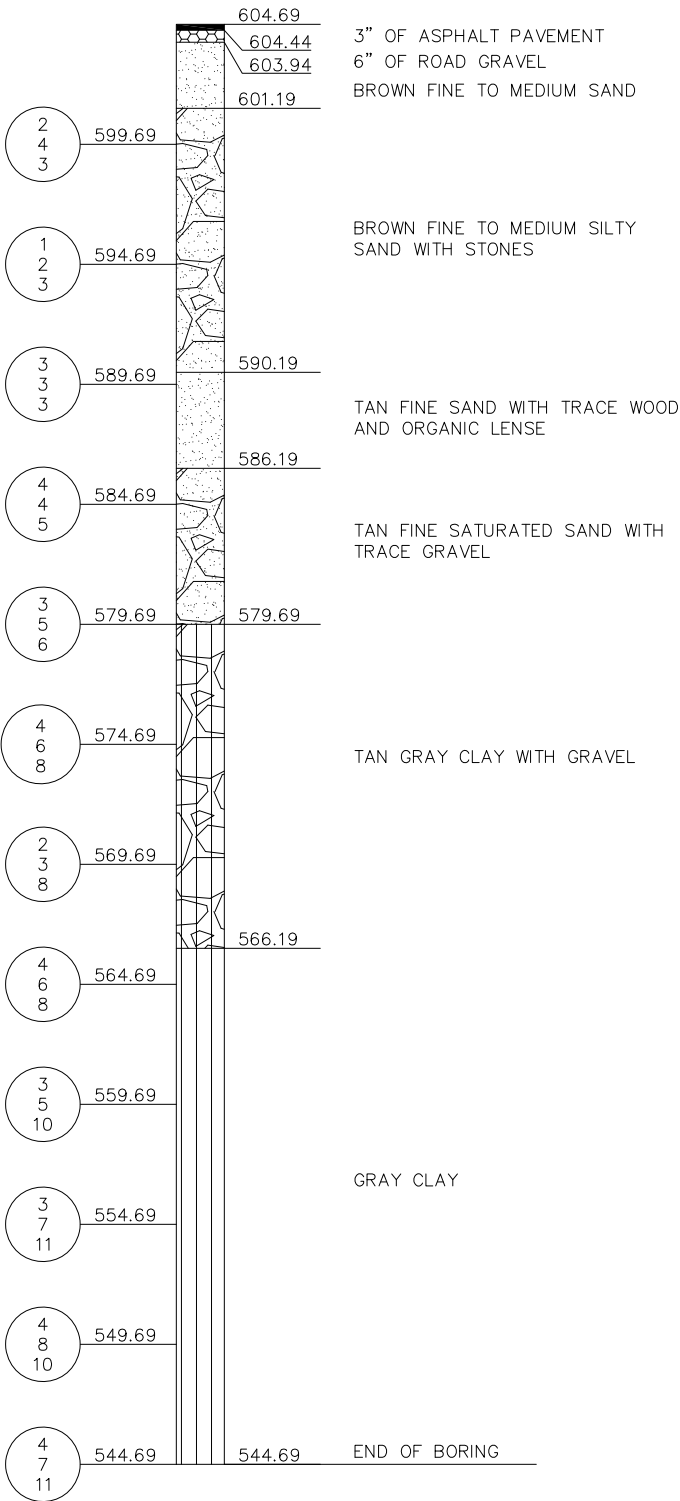
DATE OF BORING: 06/10/2022
LOCATION: STA. 9+70



GROUNDWATER INFORMATION:
DEPTH DURING DRILLING - 13 FEET

SOIL BORING "SB-02"

DATE OF BORING: 06/10/2022
LOCATION: STA. 10+28



GROUNDWATER INFORMATION:
DEPTH DURING DRILLING - 13 FEET

SOIL BORING NOTES

NUMBERS IN CIRCLES DENOTE NUMBER OF BLOWS REQUIRED TO DRIVE A 2" OUTSIDE DIAMETER SPLIT SPOON SAMPLER 3 SUCCESSIVE 6" INCREMENTS USING A 140# HAMMER FALLING 30".

BORINGS FOR SUBSURFACE SOIL CLASSIFICATIONS WERE MADE BY:

PEARSON DRILLING COMPANY
6100 W. BLUE RD.
LAKE CITY, MI 49651
PHONE: (231) 839-4444
FAX: (231) 839-3678

THE SOIL BORING LOGS REPRESENT POINT INFORMATION. PRESENTATION OF THE INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.

OCEANA COUNTY
ROAD COMMISSION

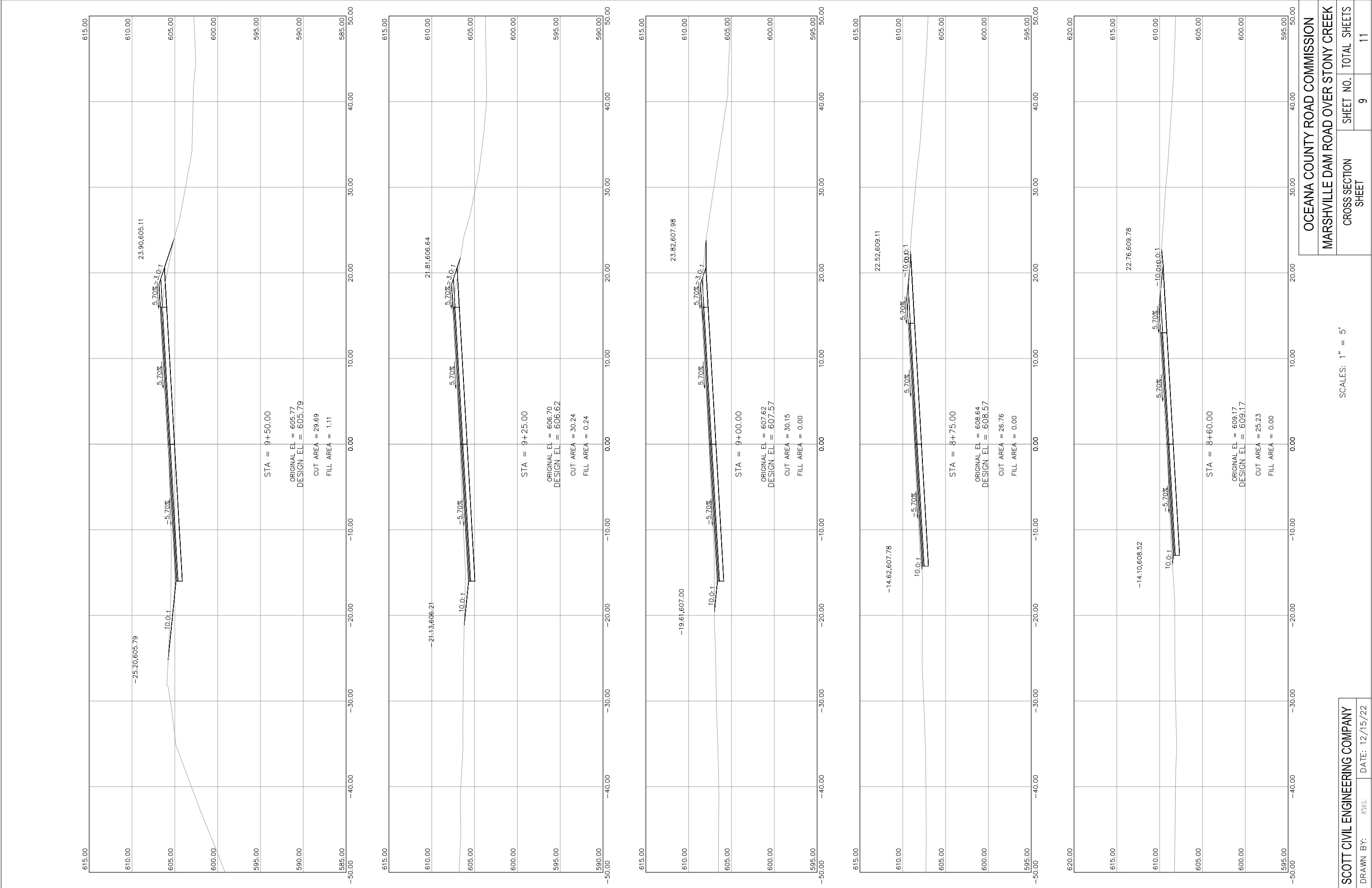
SOIL BORINGS
MARSHVILLE DAM ROAD OVER
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SCOTT CIVIL ENGINEERING COMPANY
GRAND RAPIDS, MICHIGAN

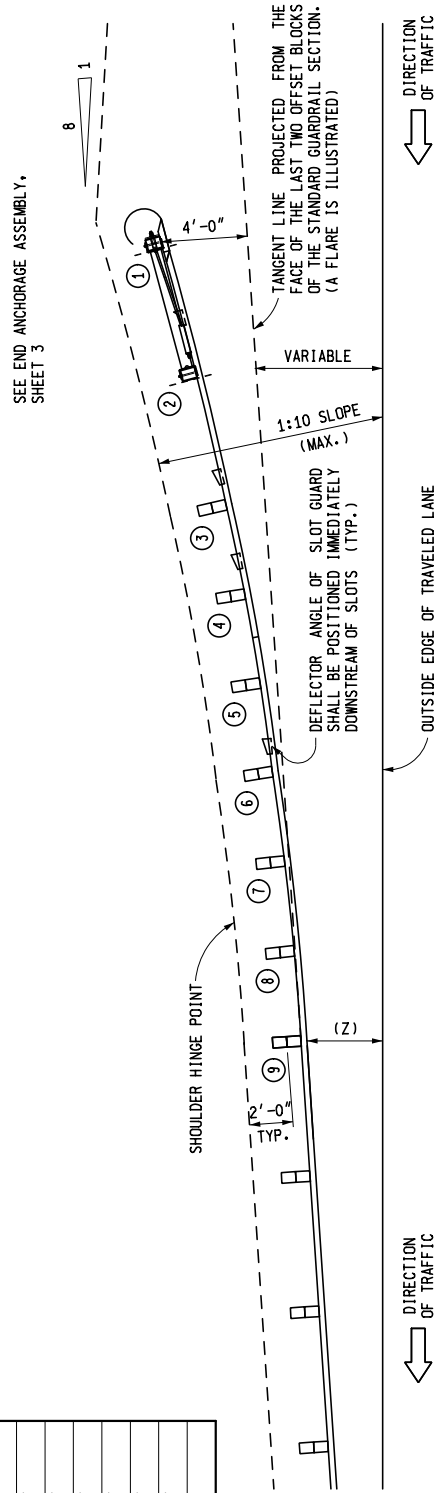
DRAWN *FCM* CHECKED *RWL* DATE 7/19/22

SN 8380



POST	** POST OFFSET DISTANCE (FROM TANGENT LINE TO CENTER OF POST)
1	52"
2	37 1/2"
3	33 1/4"
4	26 3/4"
5	21 1/2"
6	17 3/8"
7	14 3/8"
8	12 5/8"
9	12"

POSTS ARE TO BE SET APPROXIMATELY TANGENT TO THE
BEAM ELEMENT AT EACH POST LOCATION.
** FOR LAYOUT ON CURVES SEE DETAIL ON SHEET 14.

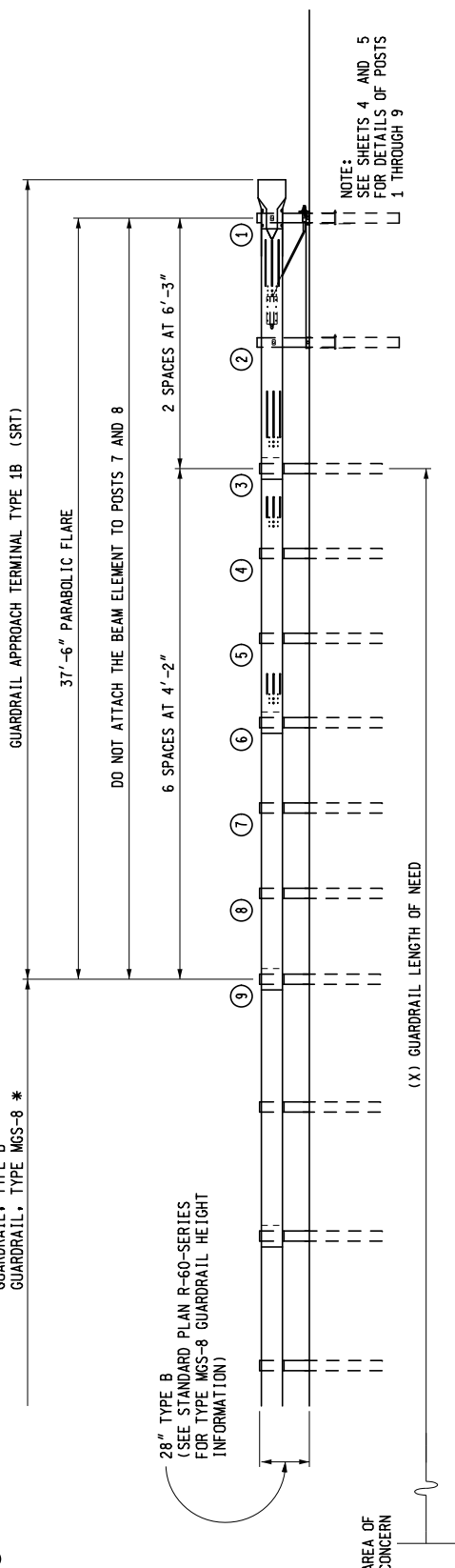


OPTION 1

(DETAILED ON SHEETS 1 THROUGH 7, 12 AND 13)

* SEE STANDARD PLAN R-60-SERIES FOR POST SPACING AND GUARDRAIL
LAYOUT TO TRANSITION FROM GUARDRAIL, TYPE MGS-8 TO GUARDRAIL
APPROACH TERMINAL TYPE 1B

GUARDRAIL, TYPE B
GUARDRAIL, TYPE MGS-8 *



ELEVATION
GUARDRAIL APPROACH TERMINAL TYPE 1B
"SRT"

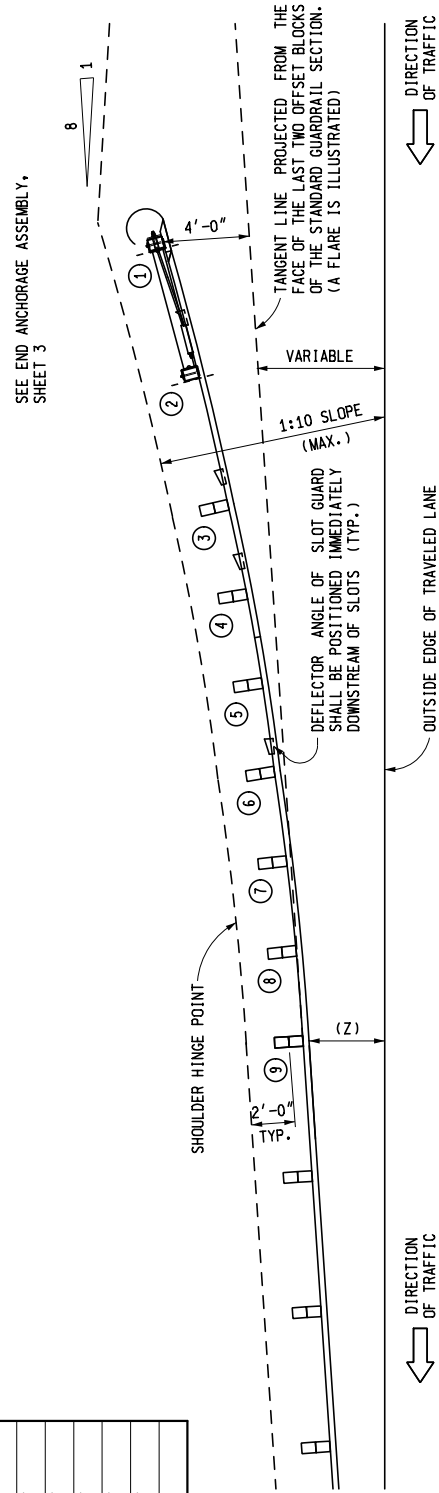
GUARDRAIL APPROACH
TERMINAL TYPES 1B & 1T
(SRT & FLEAT)

R-61-H-LAP

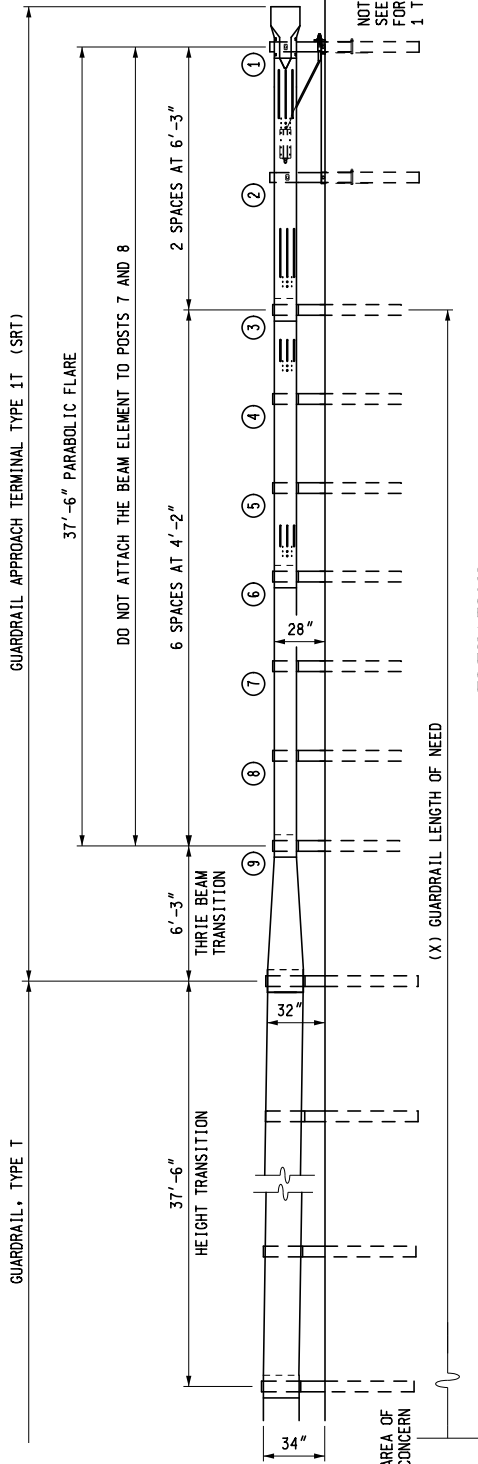
SHEET
1 OF 15

POST	** POST OFFSET DISTANCE (FROM TANGENT LINE TO CENTER OF POST)
1	52"
2	37 1/2"
3	33 1/4"
4	26 3/4"
5	21 1/2"
6	17 3/8"
7	14 3/8"
8	12 5/8"
9	12"

POSTS ARE TO BE SET APPROXIMATELY TANGENT TO THE
BEAM ELEMENT AT EACH POST LOCATION.
** FOR LAYOUT ON CURVES SEE DETAIL ON SHEET 14.



PLAN VIEW

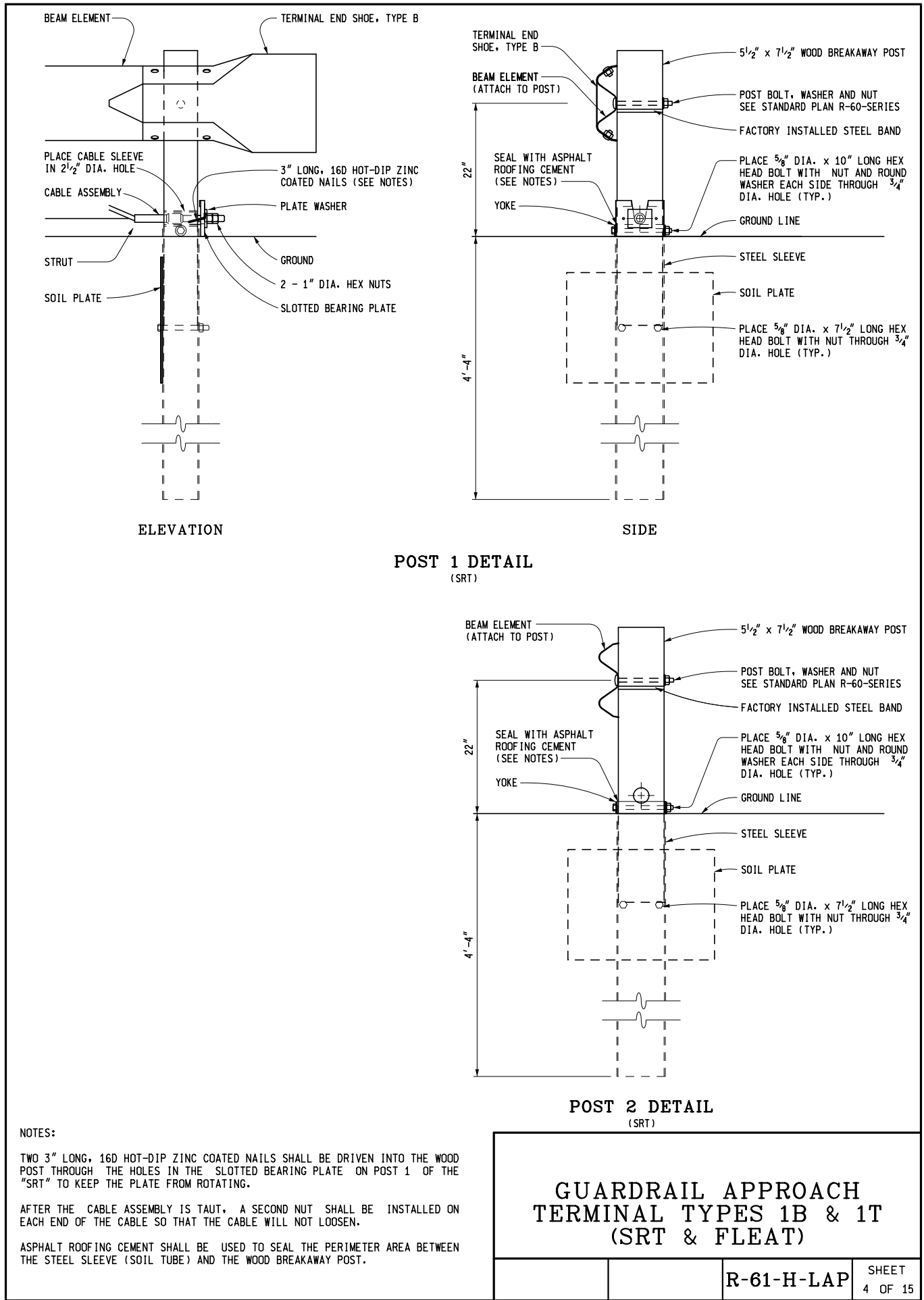
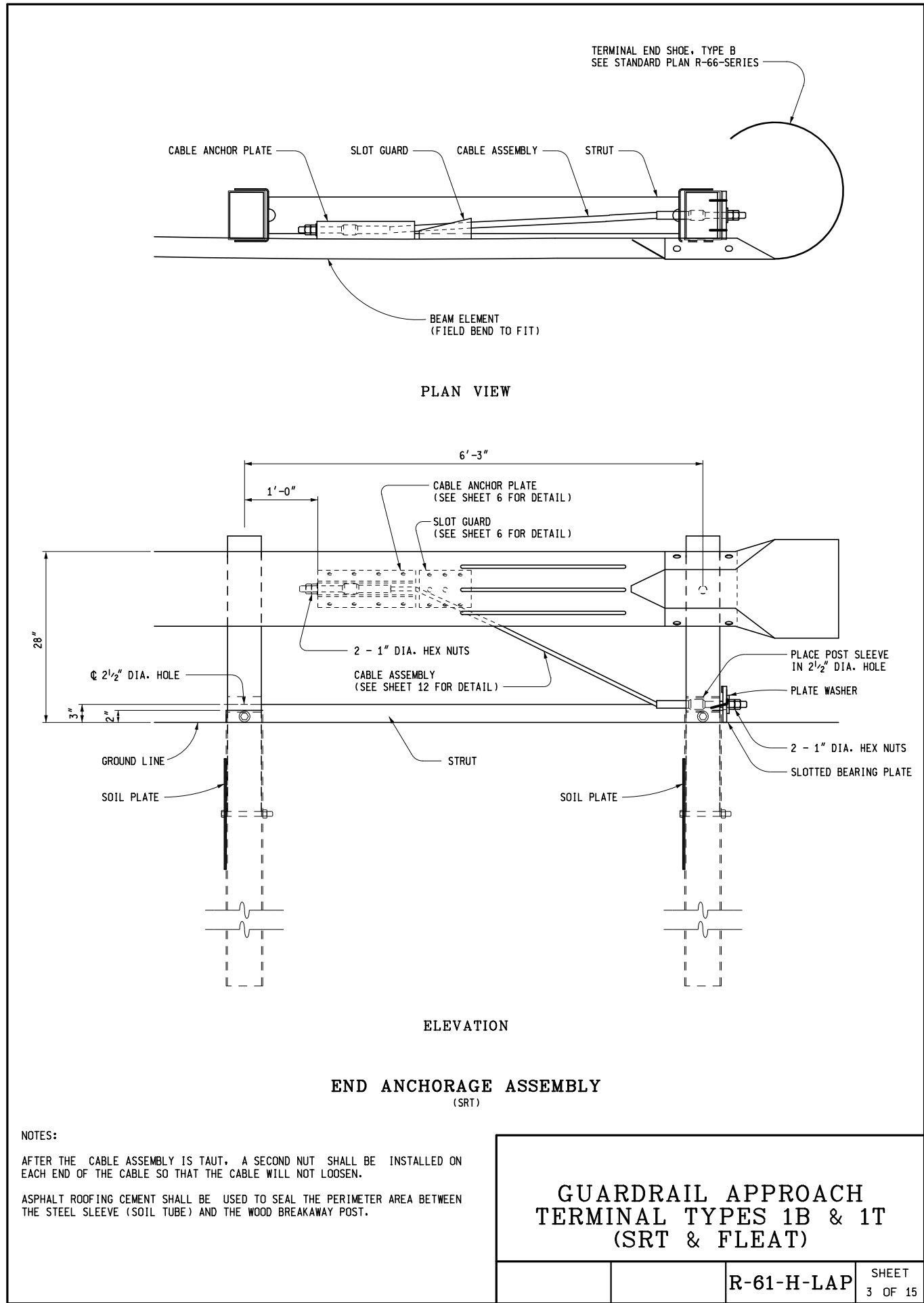


ELEVATION
GUARDRAIL APPROACH TERMINAL TYPE 1T
"SRT"

GUARDRAIL APPROACH
TERMINAL TYPES 1B & 1T
(SRT & FLEAT)

R-61-H-LAP

SHEET
2 OF 15



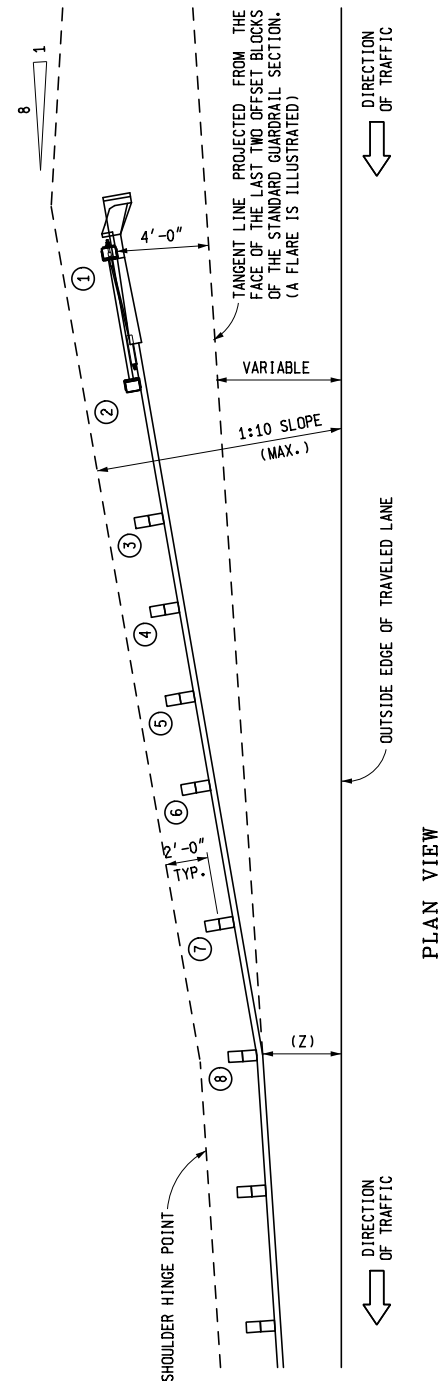


GUARDRAIL APPROACH TERMINAL TYPES 1B & 1T (SRT & FLEAT)

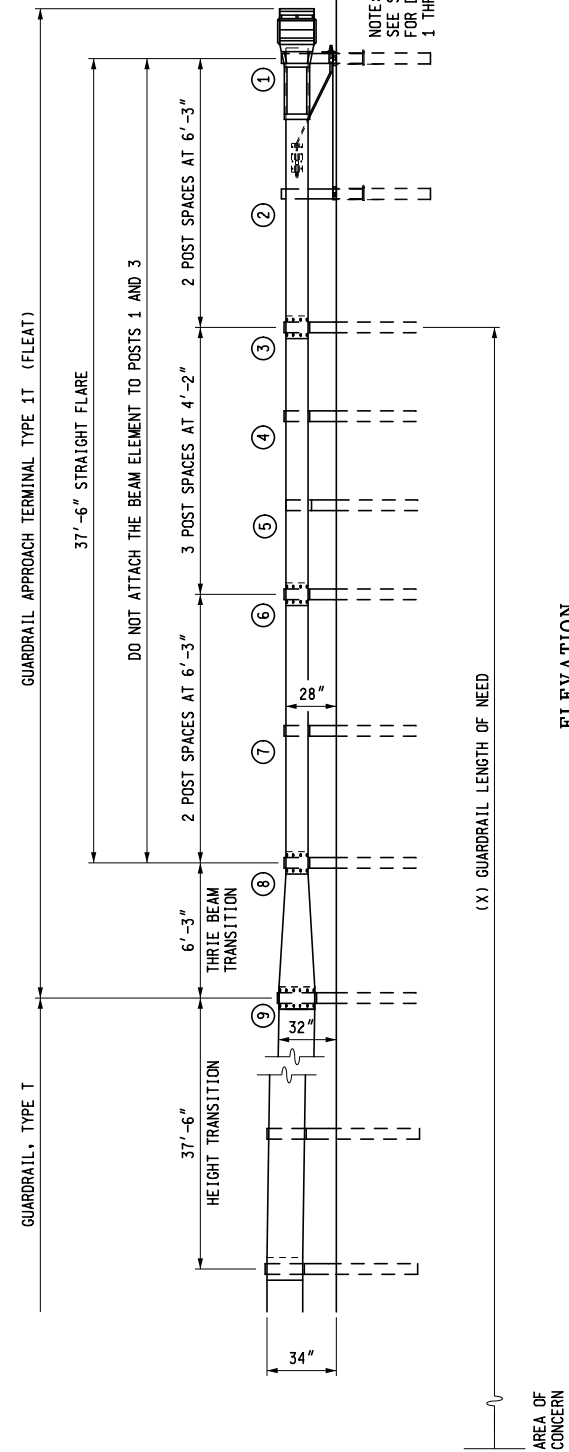


POST	** POST OFFSET DISTANCE (FROM TANGENT LINE TO CENTER OF POST)
1	52"
2	44"
3	44"
4	38 ¹¹ / ₁₆ "
5	33 ⁵ / ₁₆ "
6	28"
7	20"
8	12"

POSTS ARE TO BE SET APPROXIMATELY TANGENT TO THE BEAM ELEMENT AT EACH POST LOCATION.
 ** FOR LAYOUT ON CURVES SEE DETAIL ON SHEET 14.



PLAN VIEW



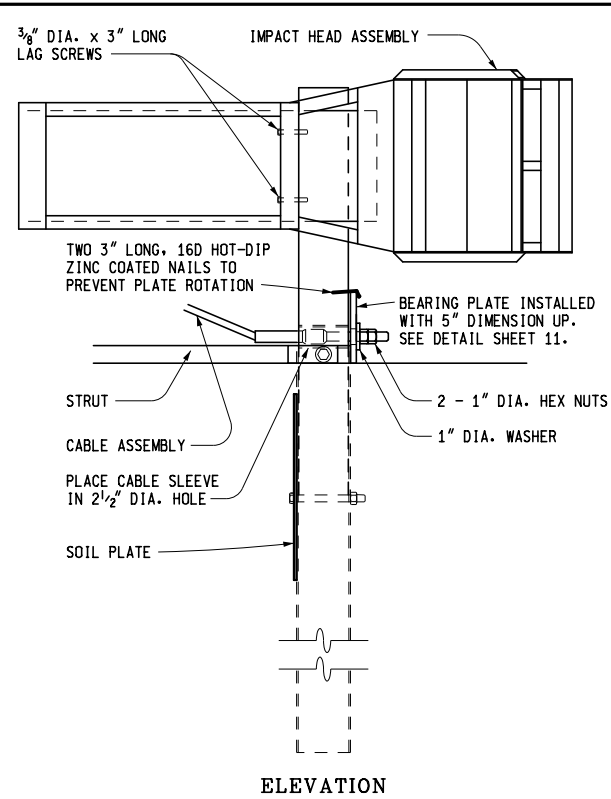
ELEVATION

GUARDRAIL APPROACH TERMINAL TYPE 1T
 "FLEAT"

GUARDRAIL APPROACH
 TERMINAL TYPES 1B & 1T
 (SRT & FLEAT)

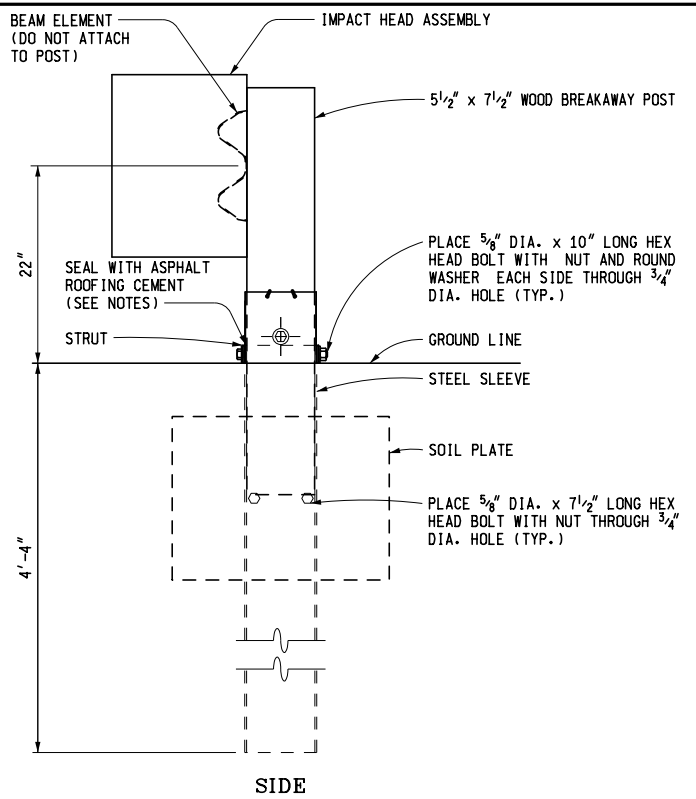
R-61-H-LAP

SHEET
 9 OF 15

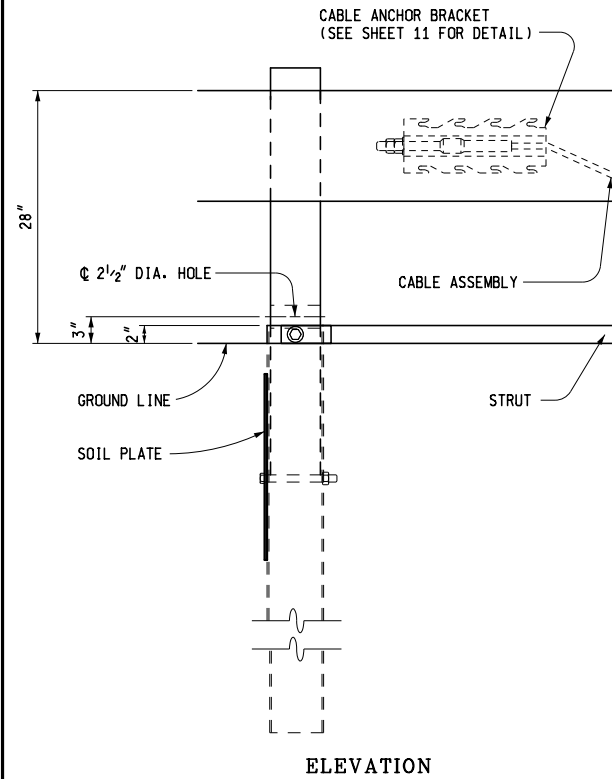


ELEVATION

POST 1 DETAIL
 (FLEAT)

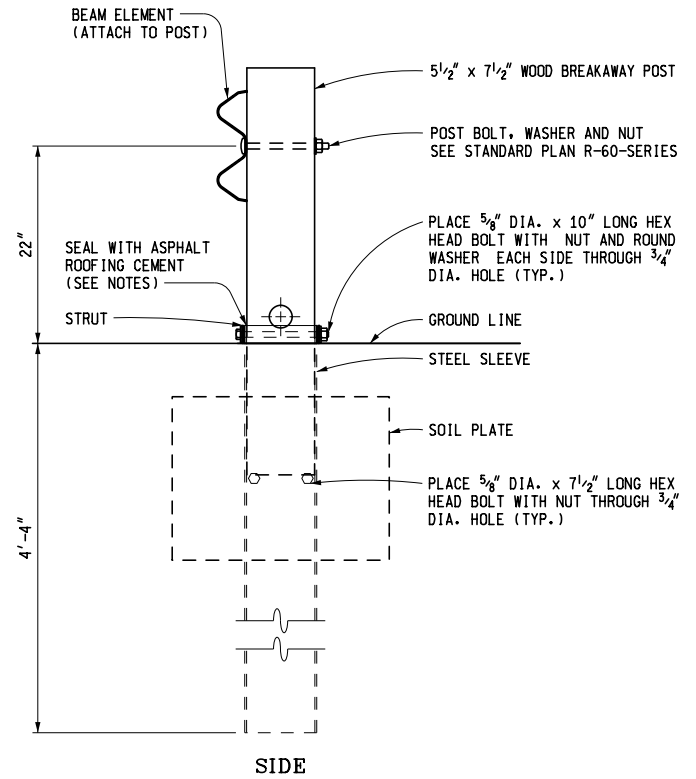


SIDE



ELEVATION

POST 2 DETAIL
 (FLEAT)



SIDE

NOTES:

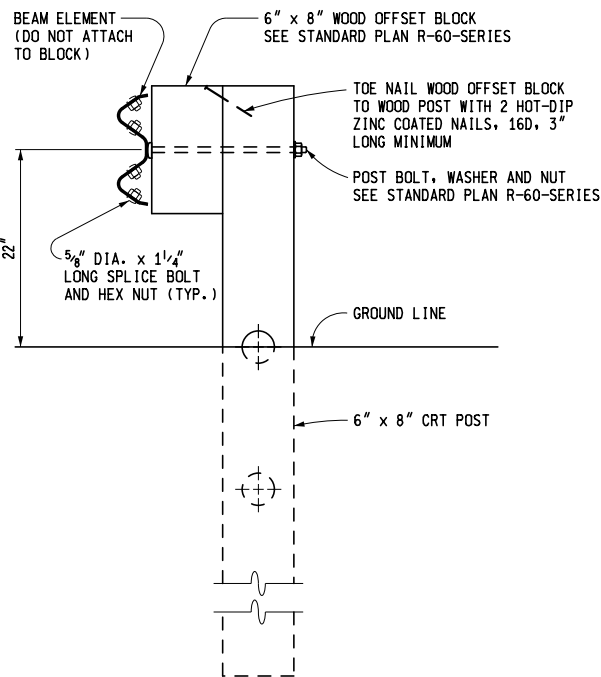
AFTER THE CABLE ASSEMBLY IS TAUT, A SECOND NUT SHALL BE INSTALLED ON EACH END OF THE CABLE SO THAT THE CABLE WILL NOT LOOSEN.

ASPHALT ROOFING CEMENT SHALL BE USED TO SEAL THE PERIMETER AREA BETWEEN THE STEEL SLEEVE (SOIL TUBE) AND THE WOOD BREAKAWAY POST.

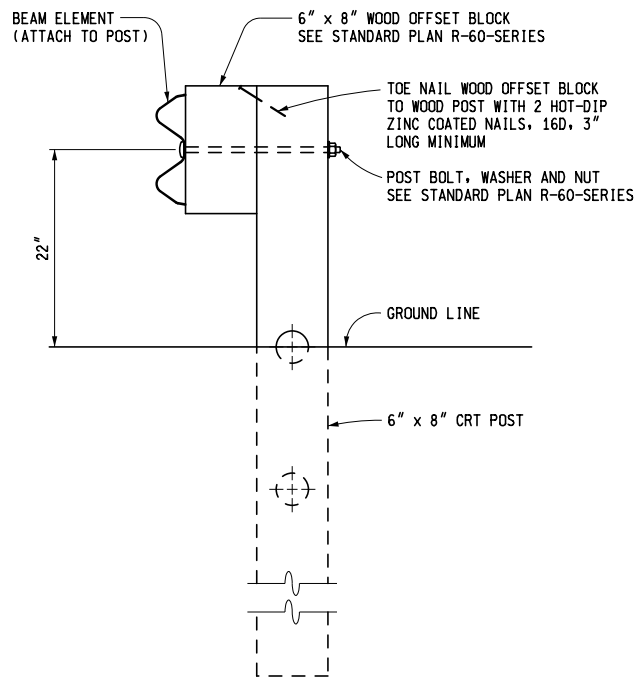
GUARDRAIL APPROACH
 TERMINAL TYPES 1B & 1T
 (SRT & FLEAT)

R-61-H-LAP

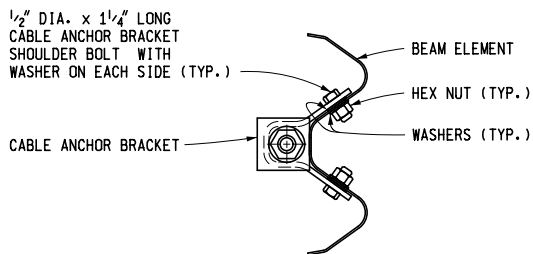
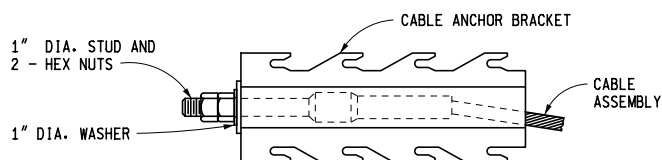
SHEET
 10 OF 15



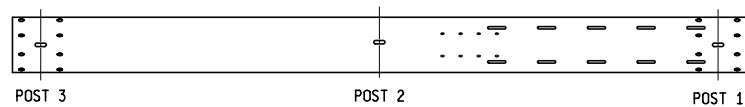
POST 3 DETAIL
(FLEAT)



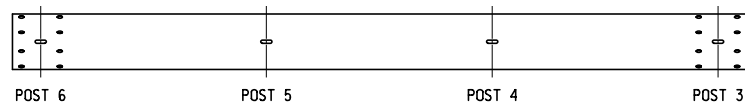
POST 4 THROUGH 7 DETAIL
(FLEAT)



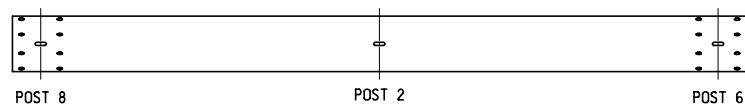
CABLE ANCHOR BRACKET DETAIL
(FLEAT)



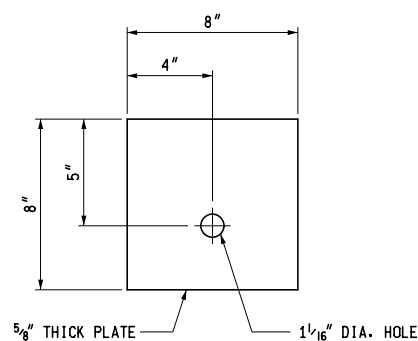
BEAM ELEMENT #1 (SLOTTED RAIL)
(POST 1 THROUGH 3)
(FLEAT)



BEAM ELEMENT #2 WITH 4 POST BOLT SLOTS
(POST 3 THROUGH 6)
(FLEAT)



BEAM ELEMENT #3 WITH 3 POST BOLT SLOTS
(POST 6 THROUGH 8)
(FLEAT)



BEARING PLATE
(FLEAT)

NOTES:

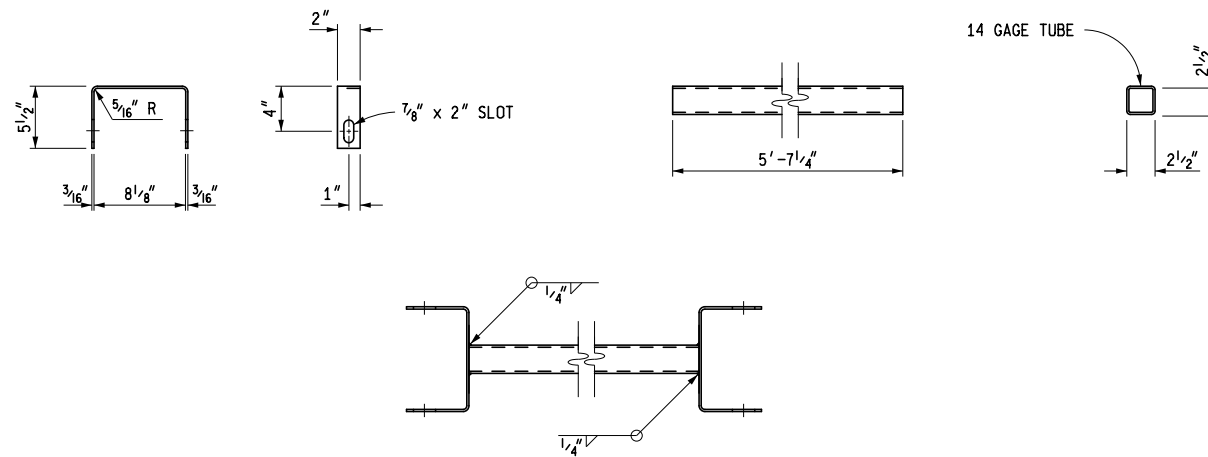
POST 8 IS A STANDARD LINE POST.

ALL "FLEAT" ITEMS ILLUSTRATED WITHOUT DIMENSIONS SHALL BE ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

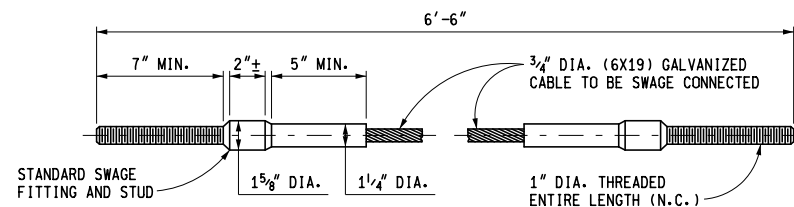
**GUARDRAIL APPROACH
TERMINAL TYPES 1B & 1T
(SRT & FLEAT)**

R-61-H-LAP

SHEET
11 OF 15



**ASSEMBLY DETAIL
STRUT DETAILS**
(FLEAT)

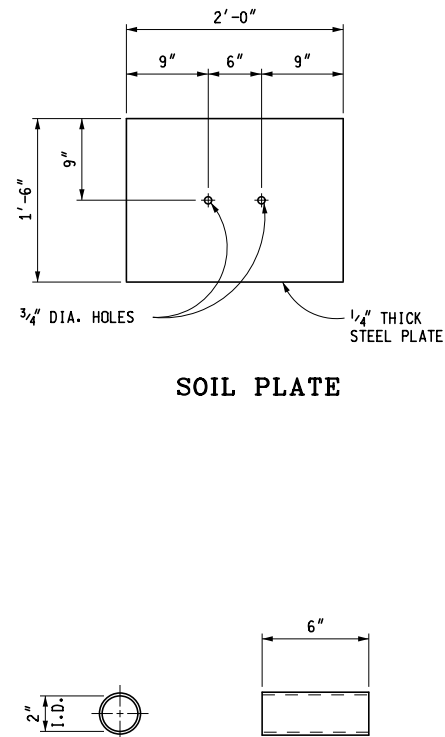
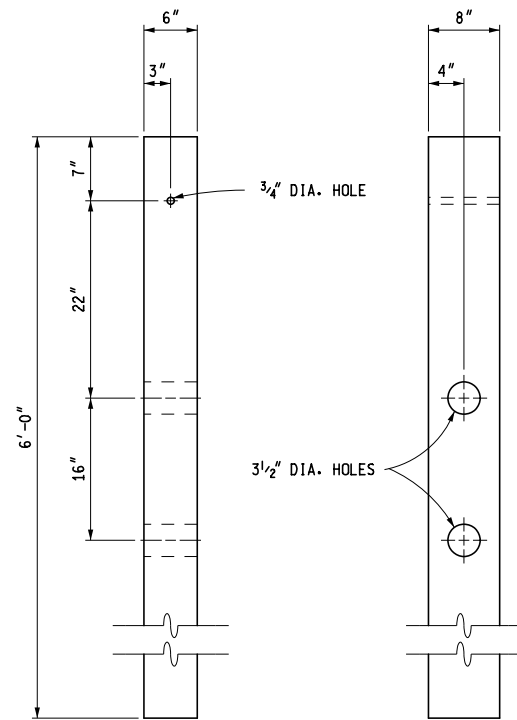
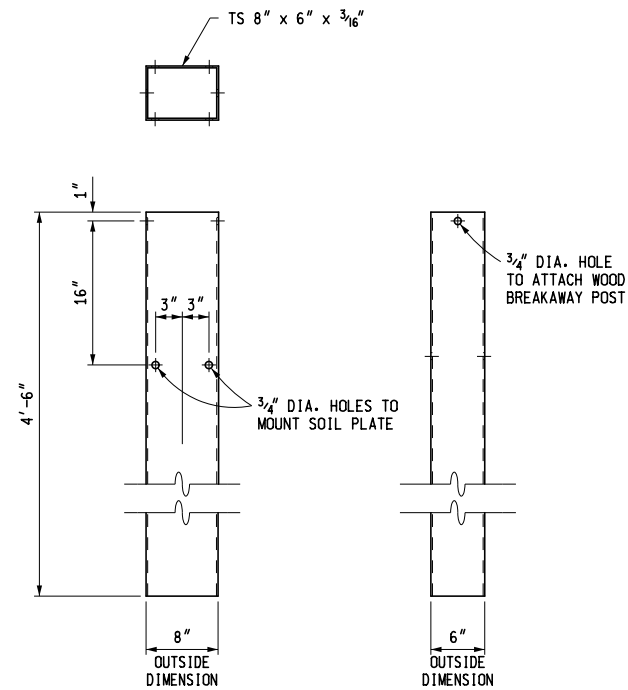
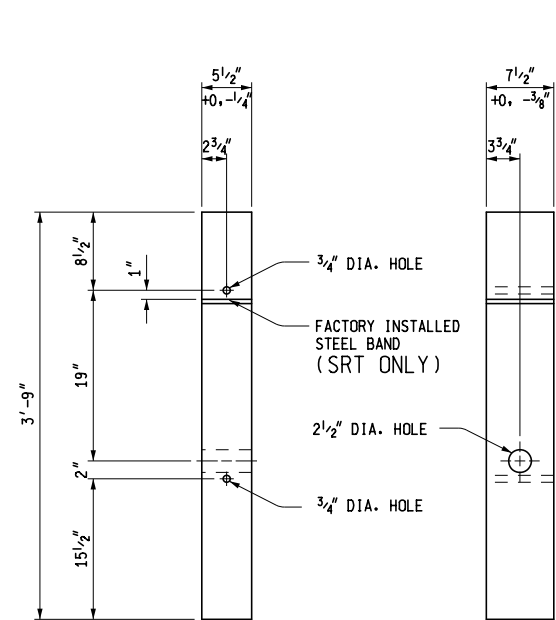


CABLE ASSEMBLY
(SRT AND FLEAT)

**GUARDRAIL APPROACH
TERMINAL TYPES 1B & 1T
(SRT & FLEAT)**

R-61-H-LAP

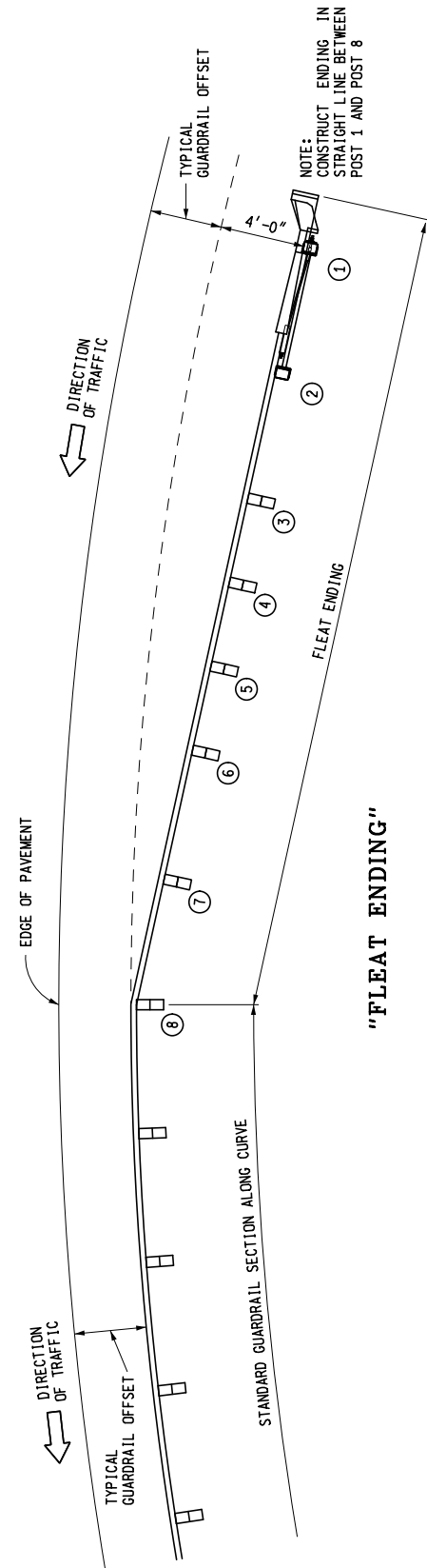
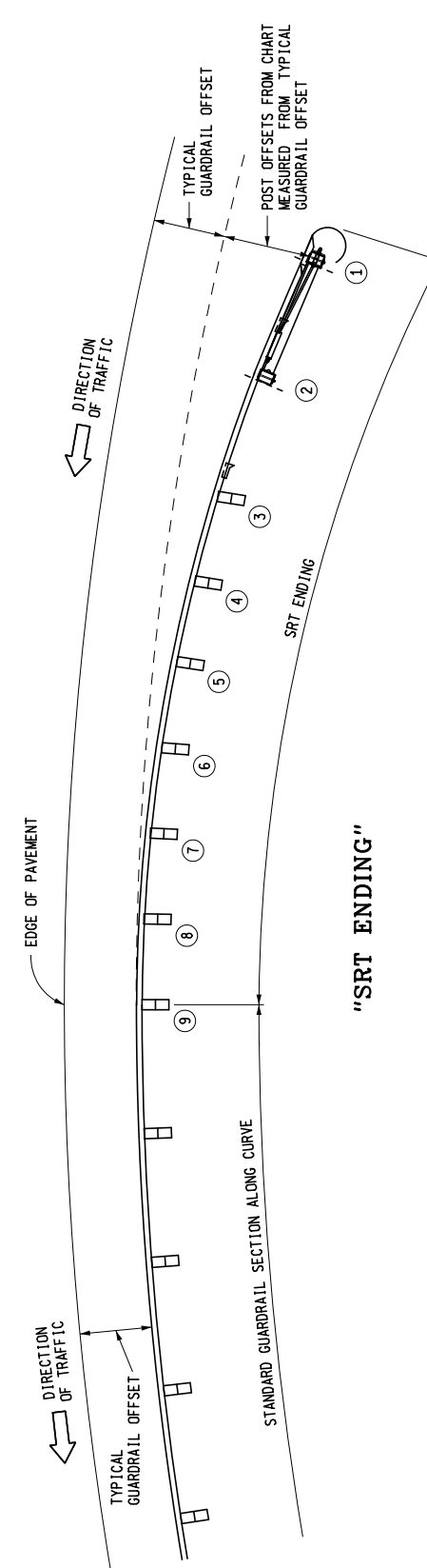
SHEET
12 OF 15



NOTES:
DETAILS ON THIS SHEET APPLY TO THE "SRT" AND "FLEAT" UNLESS OTHERWISE NOTED.

GUARDRAIL APPROACH TERMINAL TYPES 1B & 1T (SRT & FLEAT)

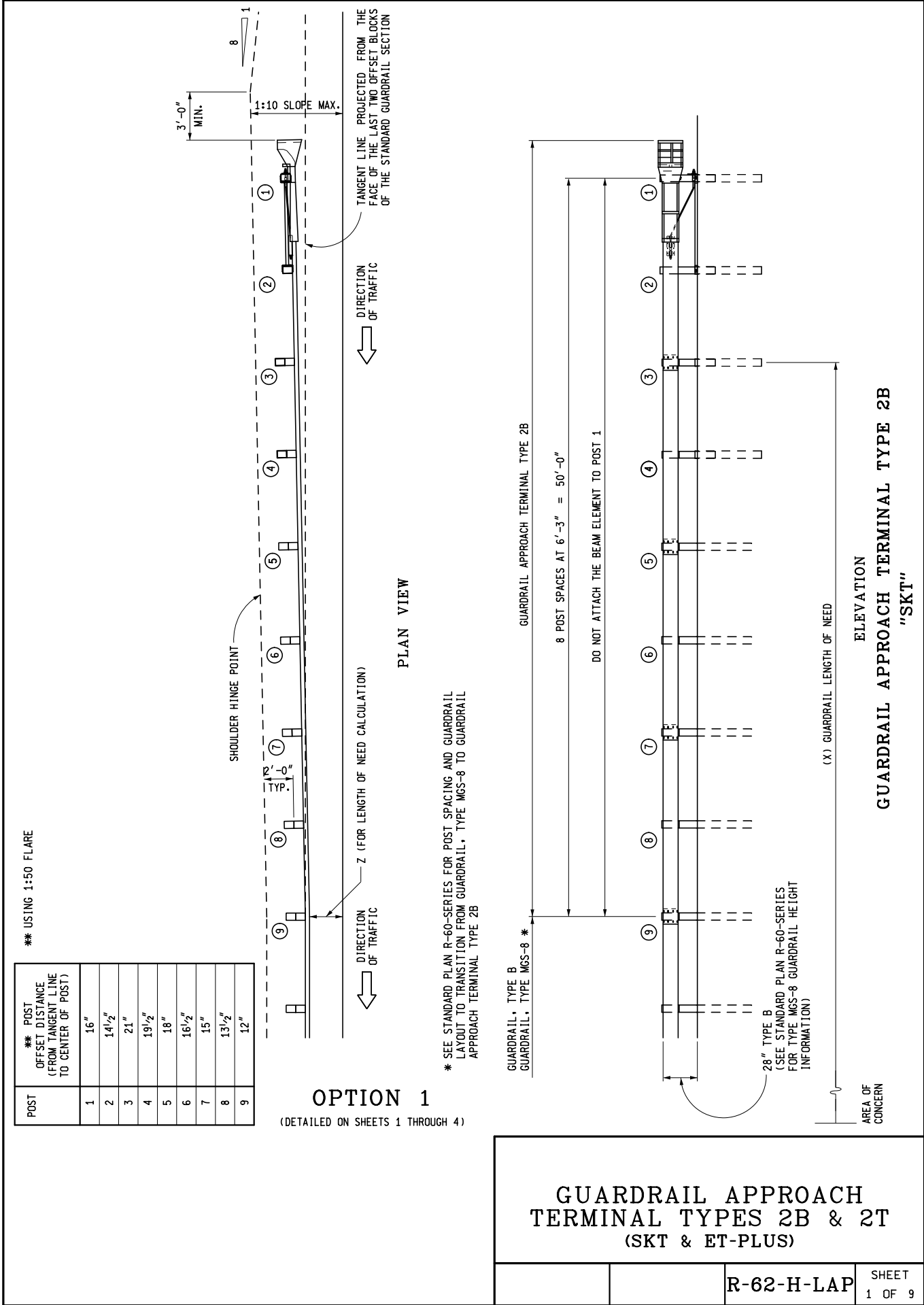
R-61-H-LAP SHEET 13 OF 15

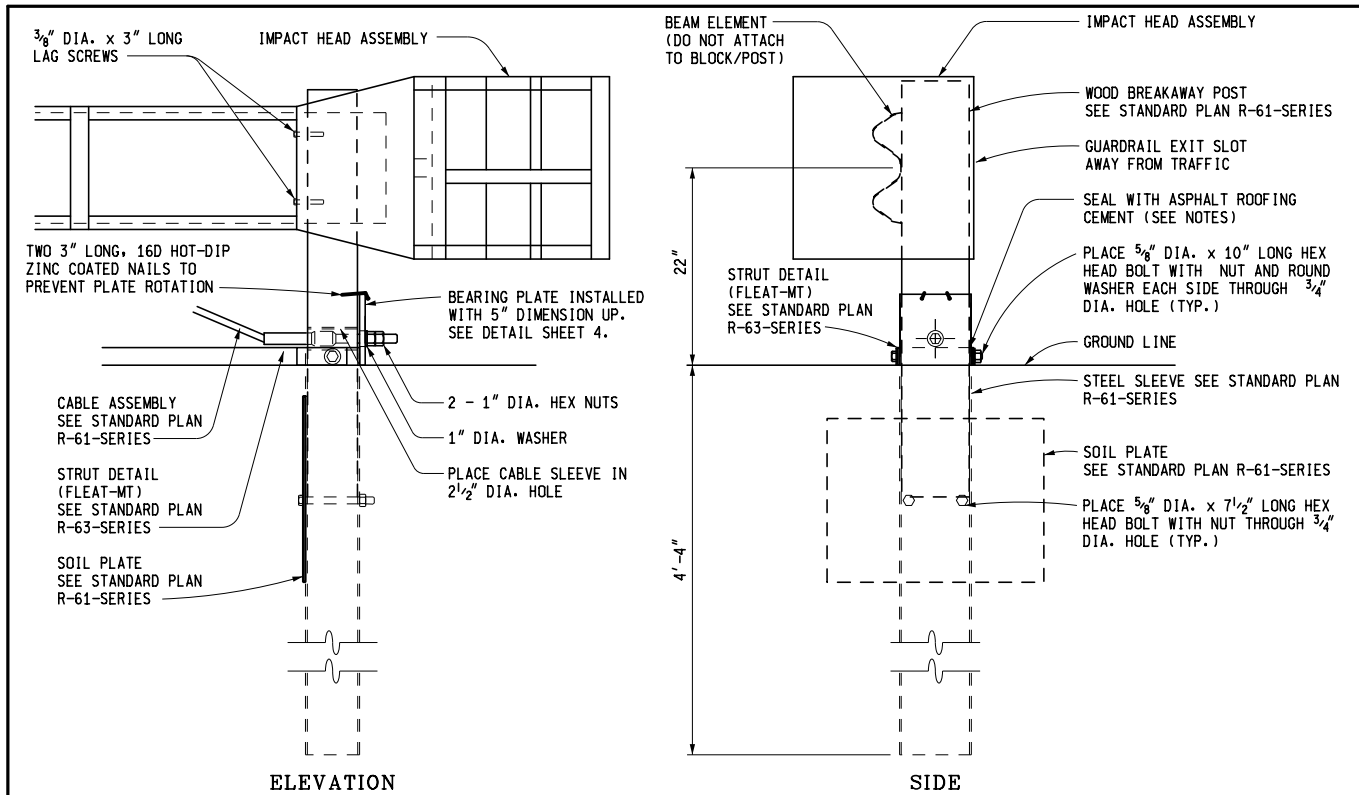


GUARDRAIL APPROACH TERMINAL TYPES 1B & 1T (SRT & FLEAT)

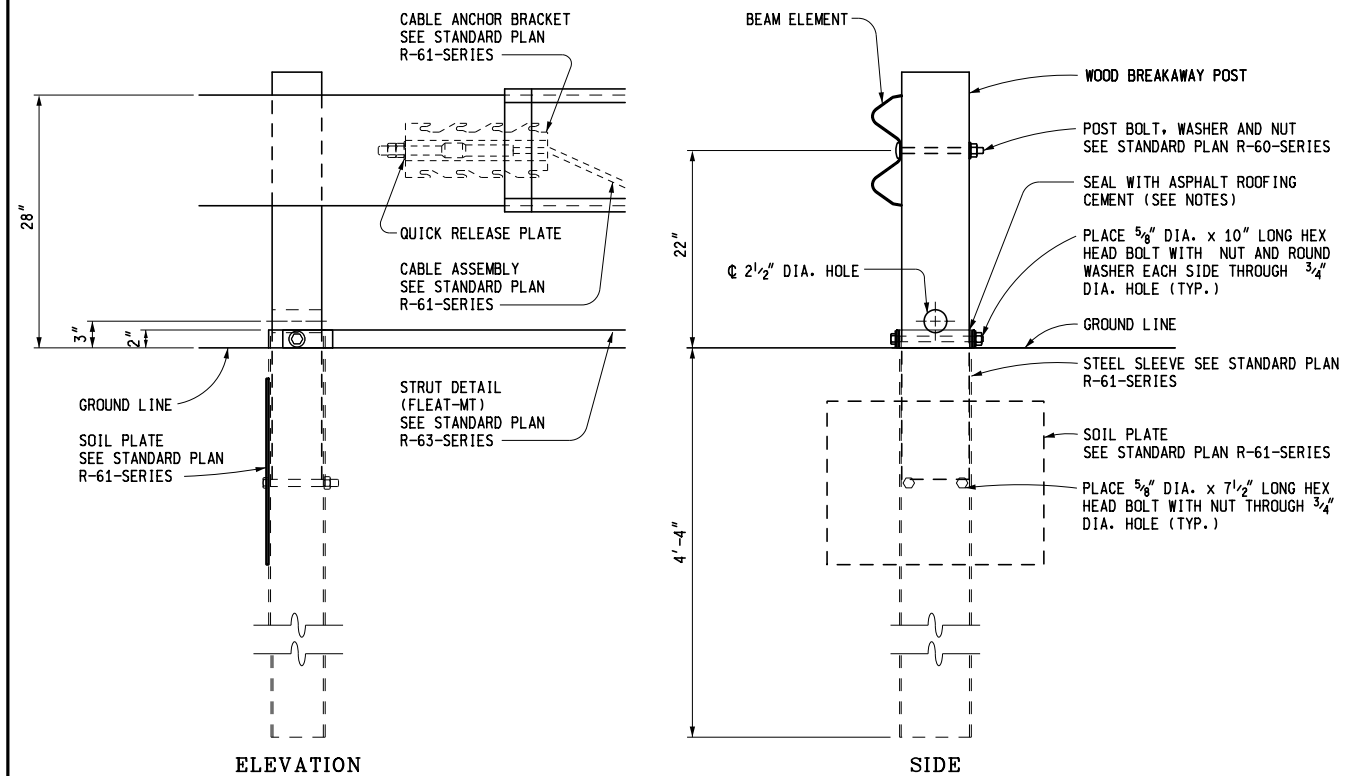
R-61-H-LAP SHEET 14 OF 15

LOCATION OF APPROACH GUARDRAIL ON CURVES





POST 1 DETAIL
(SKT)

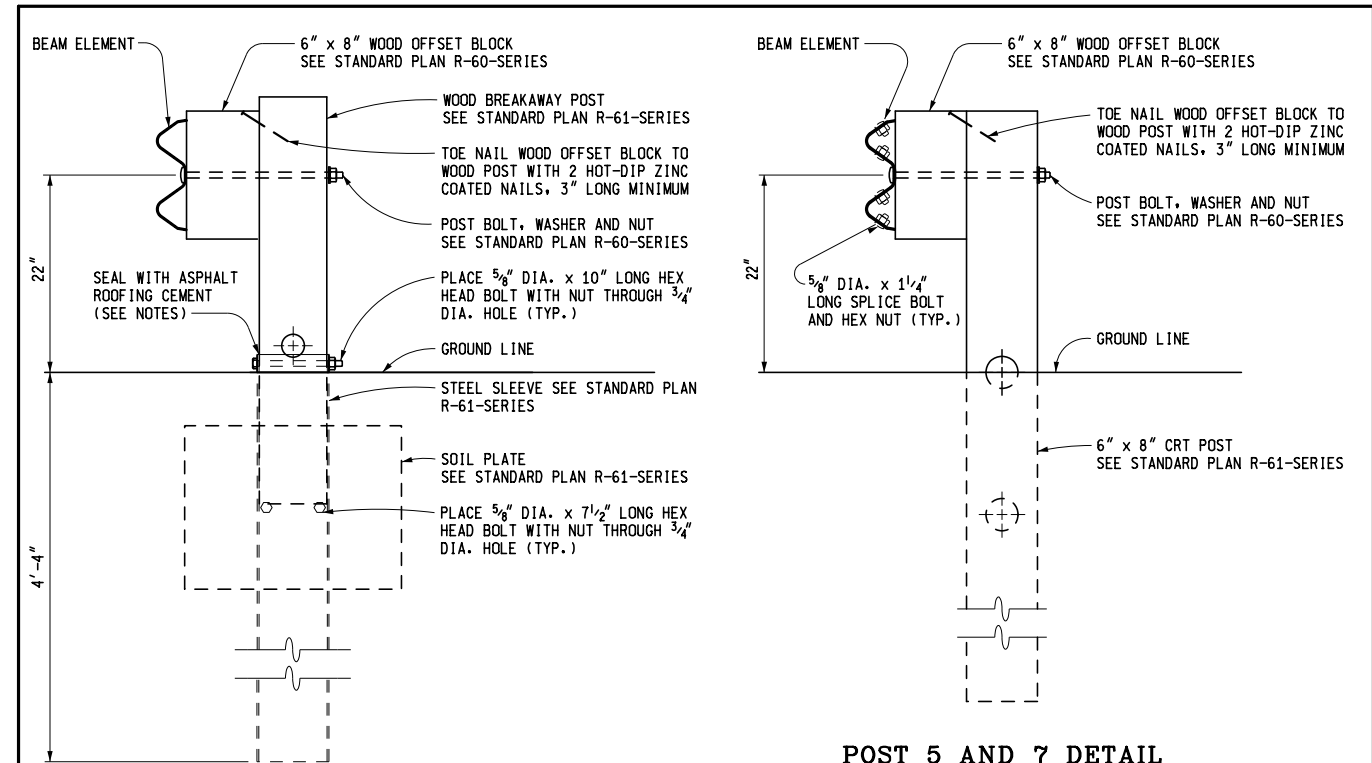


POST 2 DETAIL
(SKT)

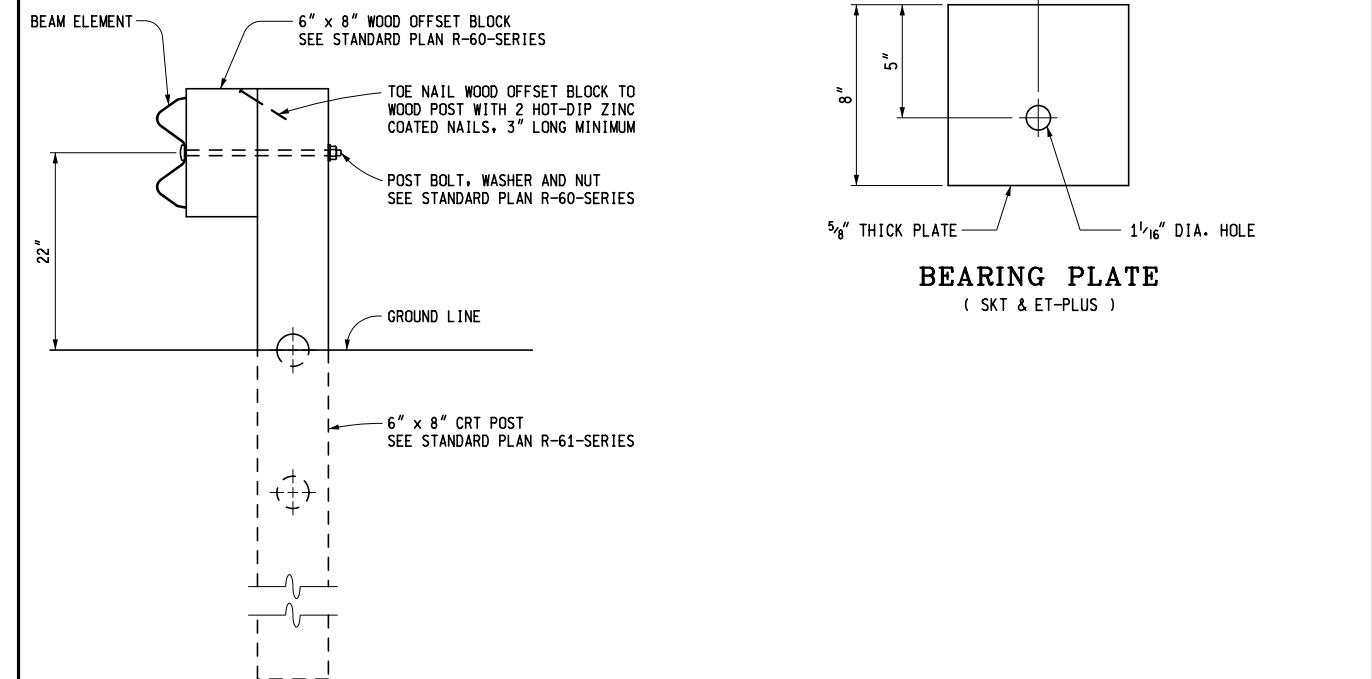
NOTE:
AFTER THE CABLE ASSEMBLY IS TAUT, A SECOND NUT SHALL BE INSTALLED ON EACH END OF THE CABLE SO THAT THE CABLE WILL NOT LOOSEN.
ASPHALT ROOFING CEMENT SHALL BE USED TO SEAL THE PERIMETER AREA BETWEEN THE STEEL SLEEVE (SOIL TUBE) AND THE WOOD BREAKAWAY POST.

**GUARDRAIL APPROACH
TERMINAL TYPES 2B & 2T
(SKT & ET-PLUS)**

R-62-H-LAP SHEET 3 OF 9



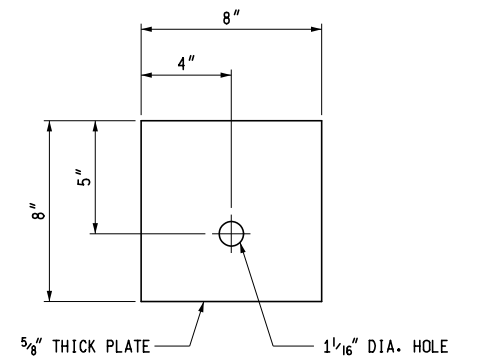
POST 3 AND 4 DETAIL
NOTE: BEAM ELEMENTS ARE SPliced TOGETHER AT POST 3
(SKT)



POST 6 AND 8 DETAIL
(SKT)

NOTE:
ASPHALT ROOFING CEMENT SHALL BE USED TO SEAL THE PERIMETER AREA BETWEEN THE STEEL SLEEVE (SOIL TUBE) AND THE WOOD BREAKAWAY POST.
THE SECOND, THIRD, AND FOURTH BEAM ELEMENTS ARE STANDARD RAIL. (POSTS 3 THROUGH 9)
POST 9 IS A STANDARD LINE POST.

POST 5 AND 7 DETAIL
(SKT)



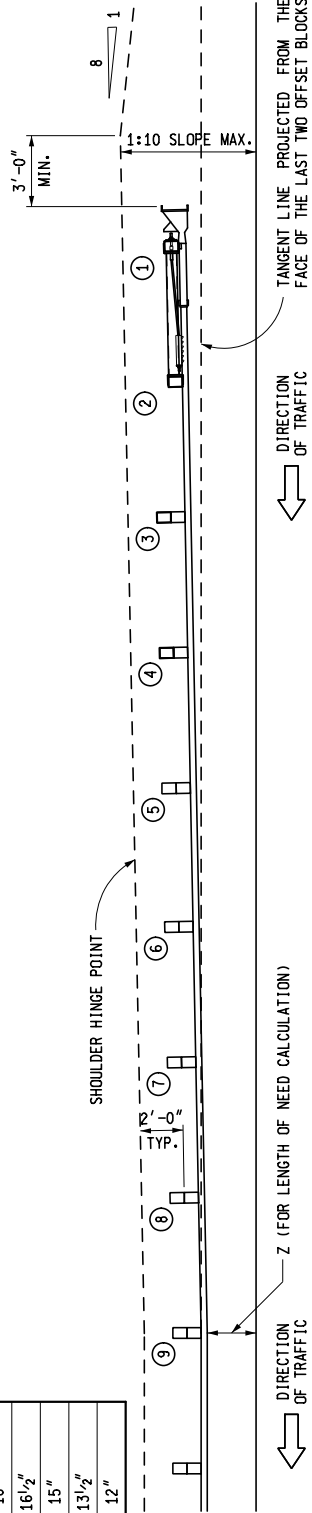
BEARING PLATE
(SKT & ET-PLUS)

**GUARDRAIL APPROACH
TERMINAL TYPES 2B & 2T
(SKT & ET-PLUS)**

R-62-H-LAP SHEET 4 OF 9

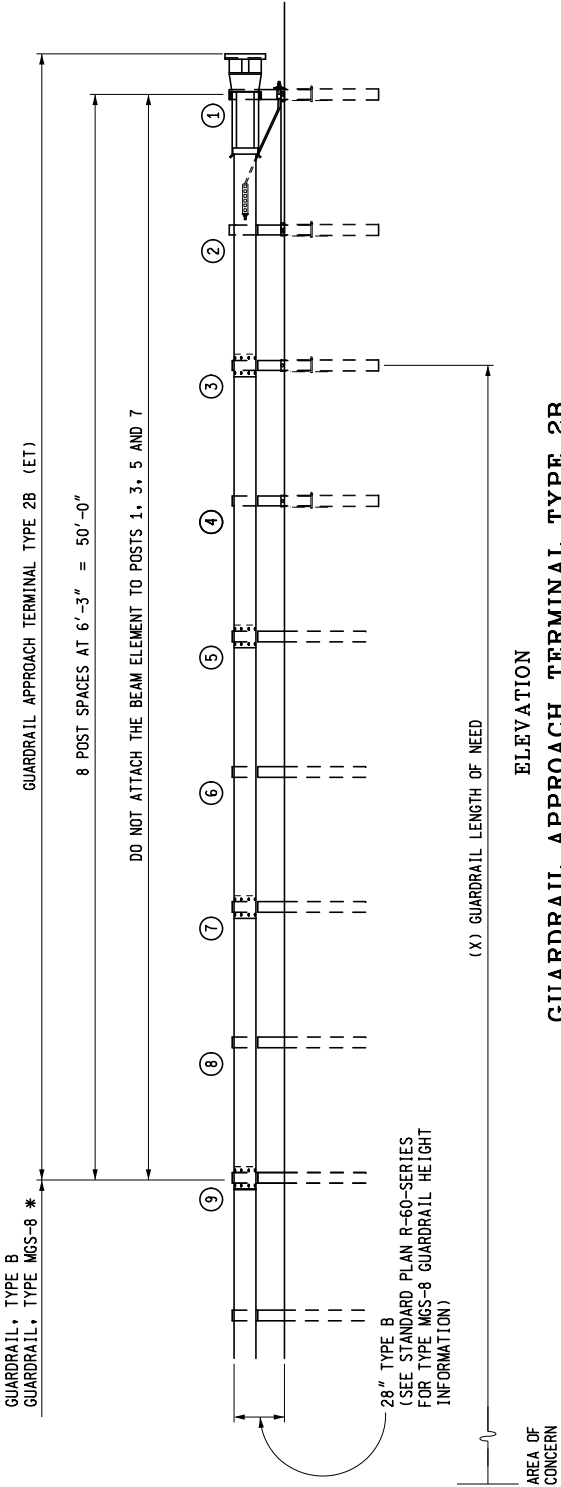
POST	** POST OFFSET DISTANCE (FROM TANGENT LINE TO CENTER OF POST)
1	16"
2	14½"
3	21"
4	19½"
5	18"
6	16½"
7	15"
8	13½"
9	12"

** USING 1:50 FLARE



OPTION 2
(DETAILED ON SHEETS 5 THROUGH 8 AND 9)

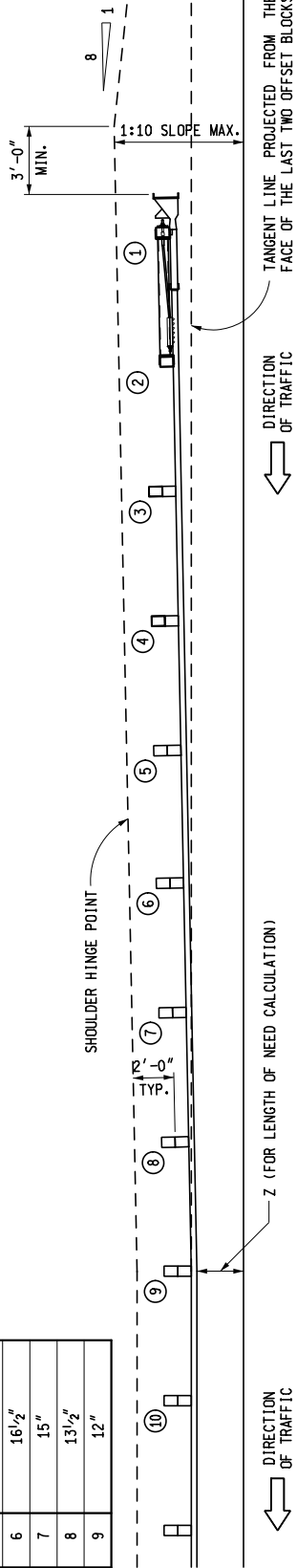
* SEE STANDARD PLAN R-60-SERIES FOR POST SPACING AND GUARDRAIL LAYOUT TO TRANSITION FROM GUARDRAIL, TYPE MGS-8 TO GUARDRAIL APPROACH TERMINAL TYPE 2B



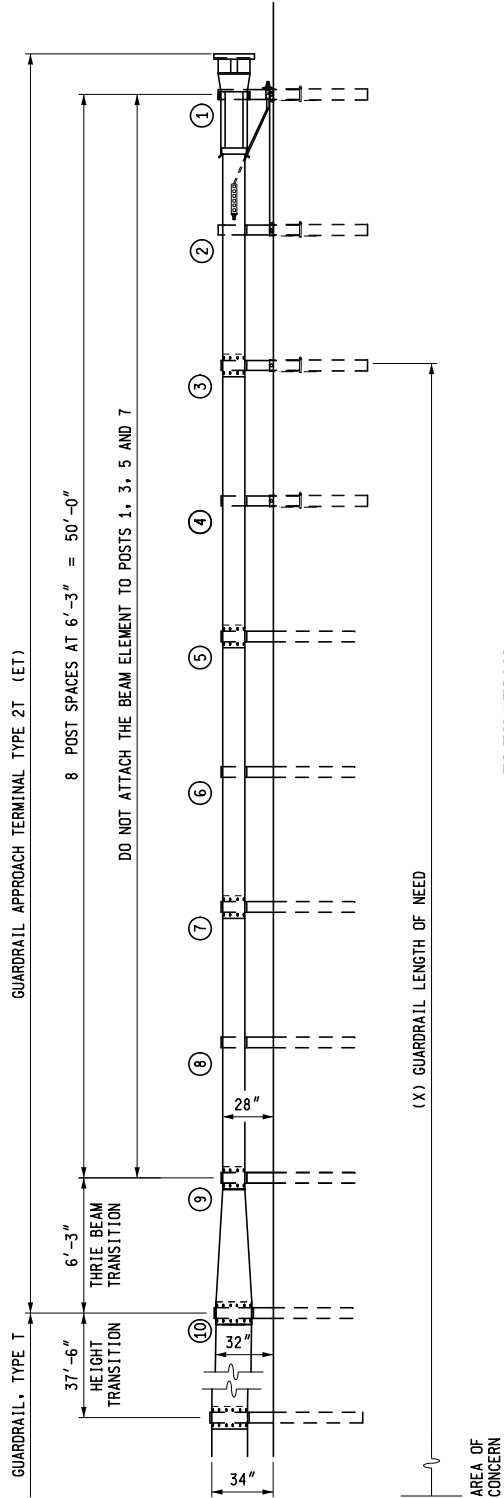
**GUARDRAIL APPROACH
TERMINAL TYPES 2B & 2T
(SKT & ET-PLUS)**

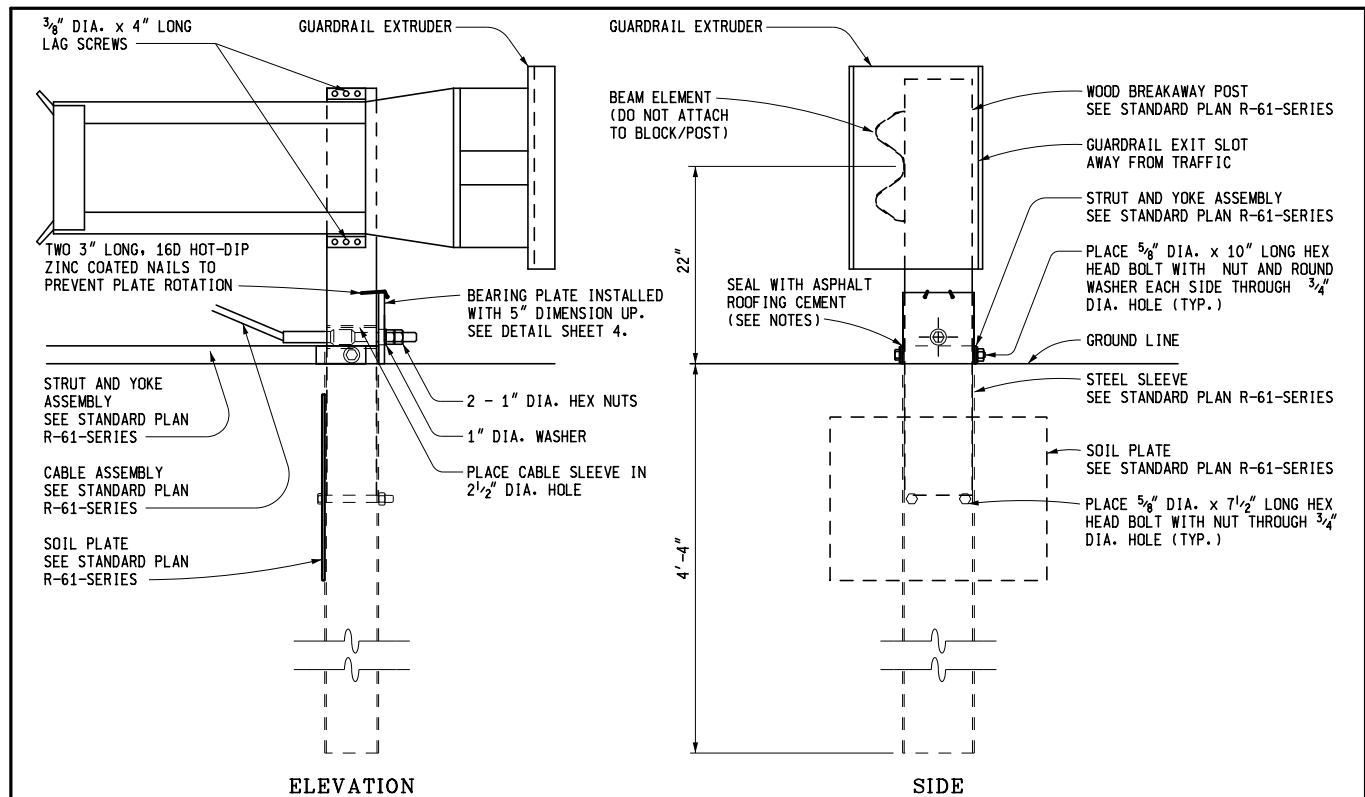
POST	** POST OFFSET DISTANCE (FROM TANGENT LINE TO CENTER OF POST)
1	16"
2	14½"
3	21"
4	19½"
5	18"
6	16½"
7	15"
8	13½"
9	12"

** USING 1:50 FLARE

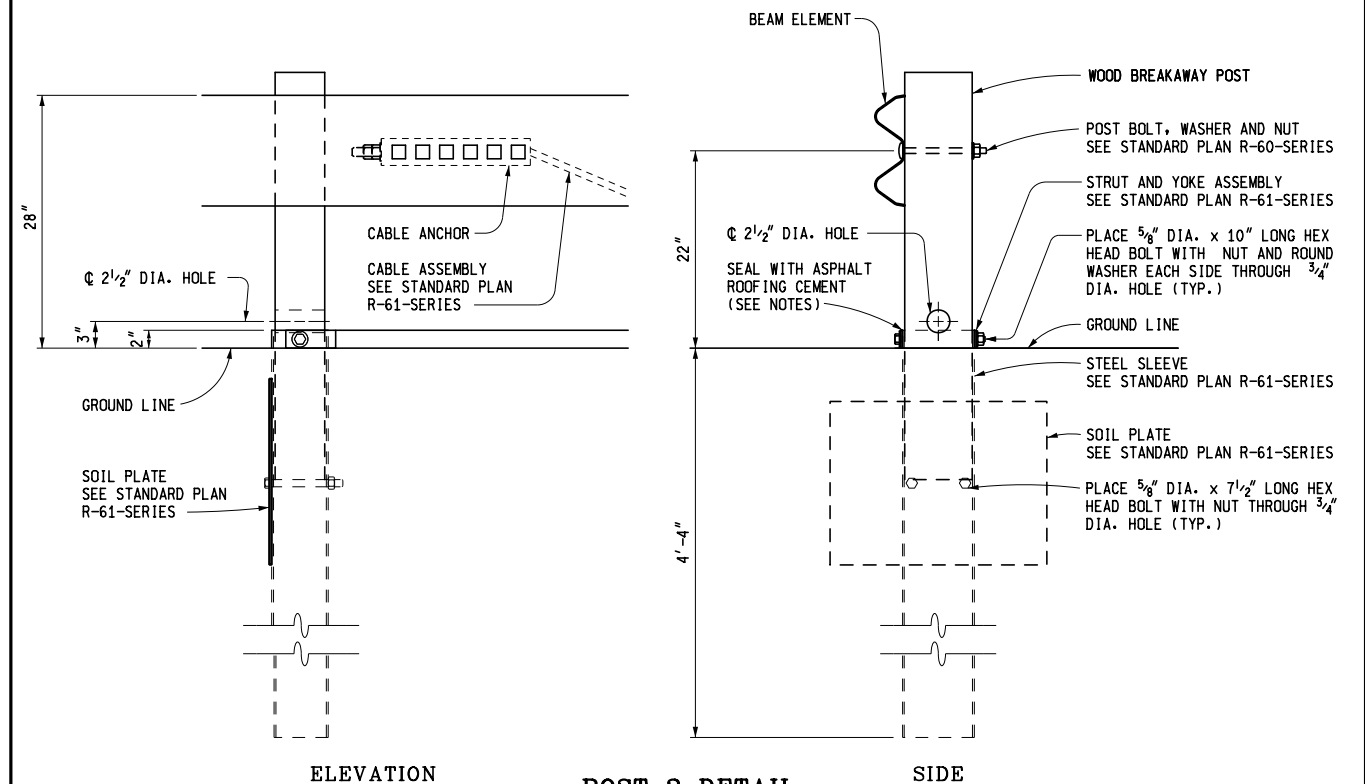


**GUARDRAIL APPROACH
TERMINAL TYPES 2B & 2T
(SKT & ET-PLUS)**





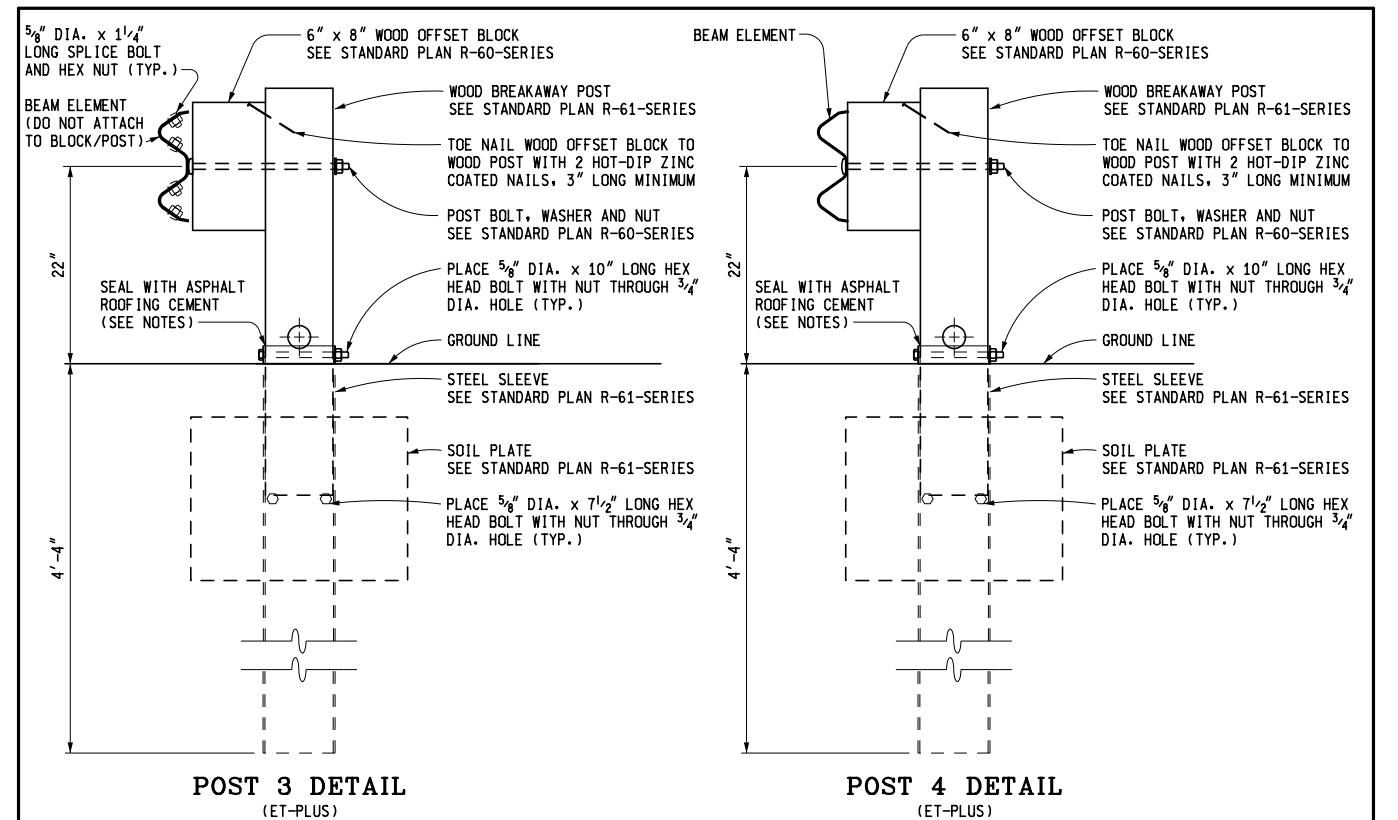
POST 1 DETAIL
(ET-PLUS)



POST 2 DETAIL
(ET-PLUS)

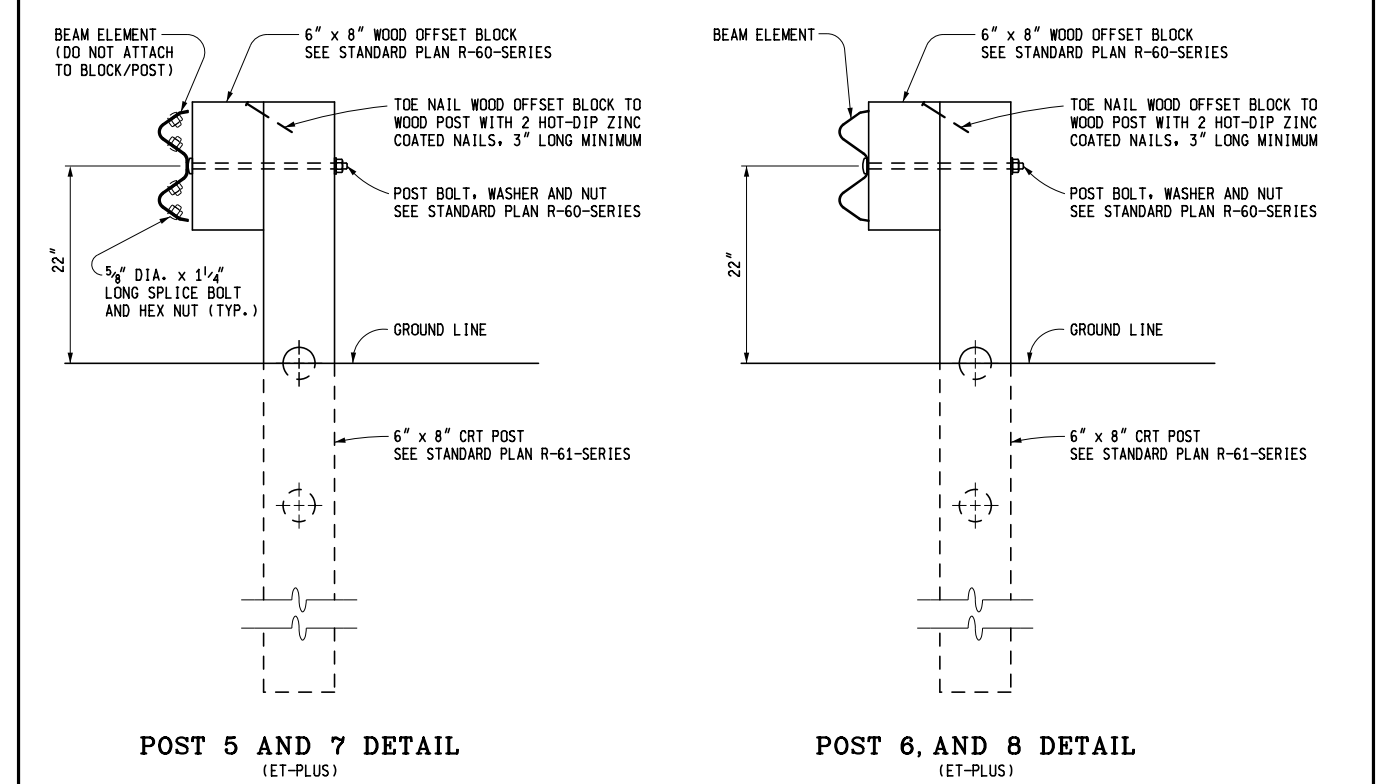
**GUARDRAIL APPROACH
TERMINAL TYPES 2B & 2T
(SKT & ET-PLUS)**

R-62-H-LAP SHEET
7 OF 9



POST 3 DETAIL
(ET-PLUS)

POST 4 DETAIL
(ET-PLUS)



POST 5 AND 7 DETAIL
(ET-PLUS)

POST 6, AND 8 DETAIL
(ET-PLUS)

NOTE: POST 9 IS A STANDARD LINE POST.

NOTE:

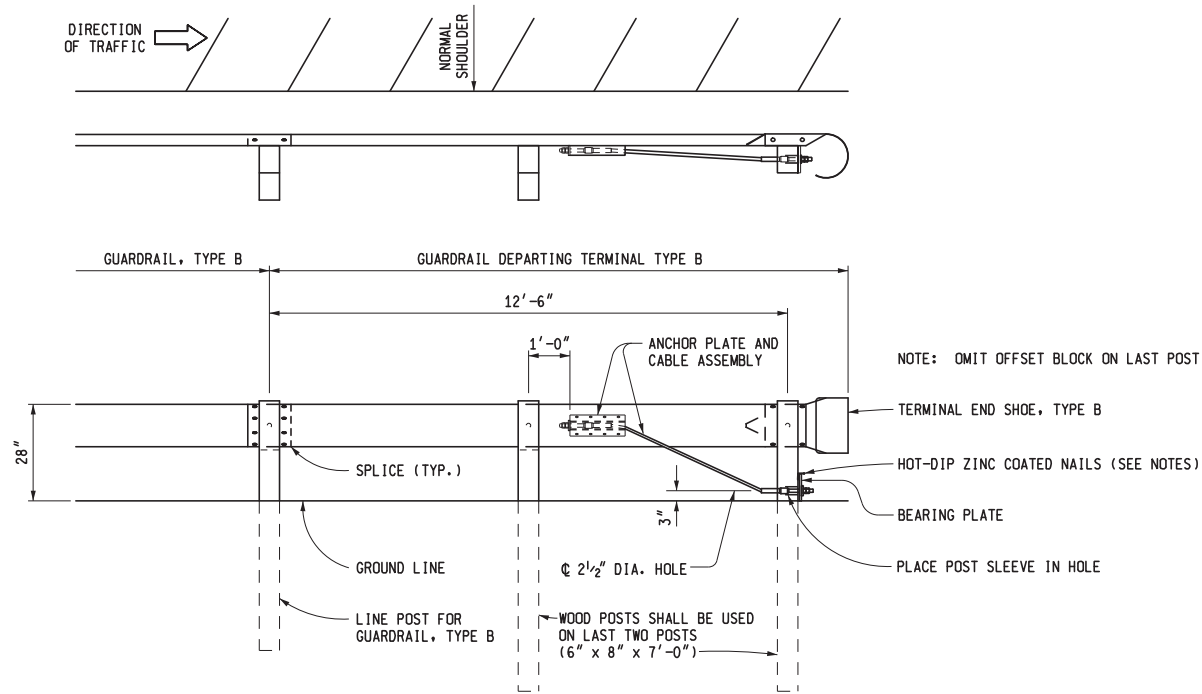
ASPHALT ROOFING CEMENT SHALL BE USED TO SEAL THE PERIMETER AREA BETWEEN THE STEEL SLEEVE (SOIL TUBE) AND THE WOOD BREAKAWAY POST.

THE SECOND, THIRD, AND FOURTH BEAM ELEMENTS ARE STANDARD RAIL. (POSTS 3 THROUGH 9)

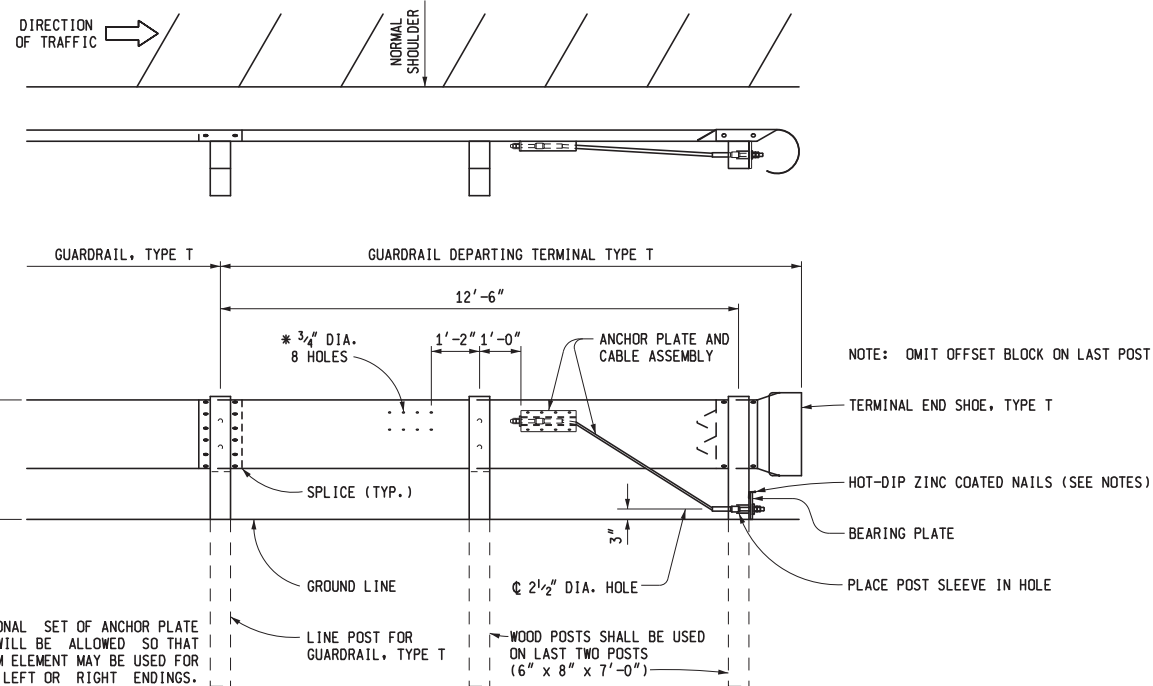
POST 9 IS A STANDARD LINE POST.

**GUARDRAIL APPROACH
TERMINAL TYPES 2B & 2T
(SKT & ET-PLUS)**

R-62-H-LAP SHEET
8 OF 9



GUARDRAIL DEPARTING TERMINAL TYPE B



* AN OPTIONAL SET OF ANCHOR PLATE HOLES WILL BE ALLOWED SO THAT THE BEAM ELEMENT MAY BE USED FOR EITHER LEFT OR RIGHT ENDINGS. ANCHOR PLATE SHALL BE PLACED ON UPPER CORRUGATION ONLY.

GUARDRAIL DEPARTING TERMINAL TYPE T



PREPARED BY
DESIGN DIVISION

DRAWN BY: B.L.T.

CHECKED BY: W.K.P.

DEPARTMENT DIRECTOR
Kirk T. Stuedle

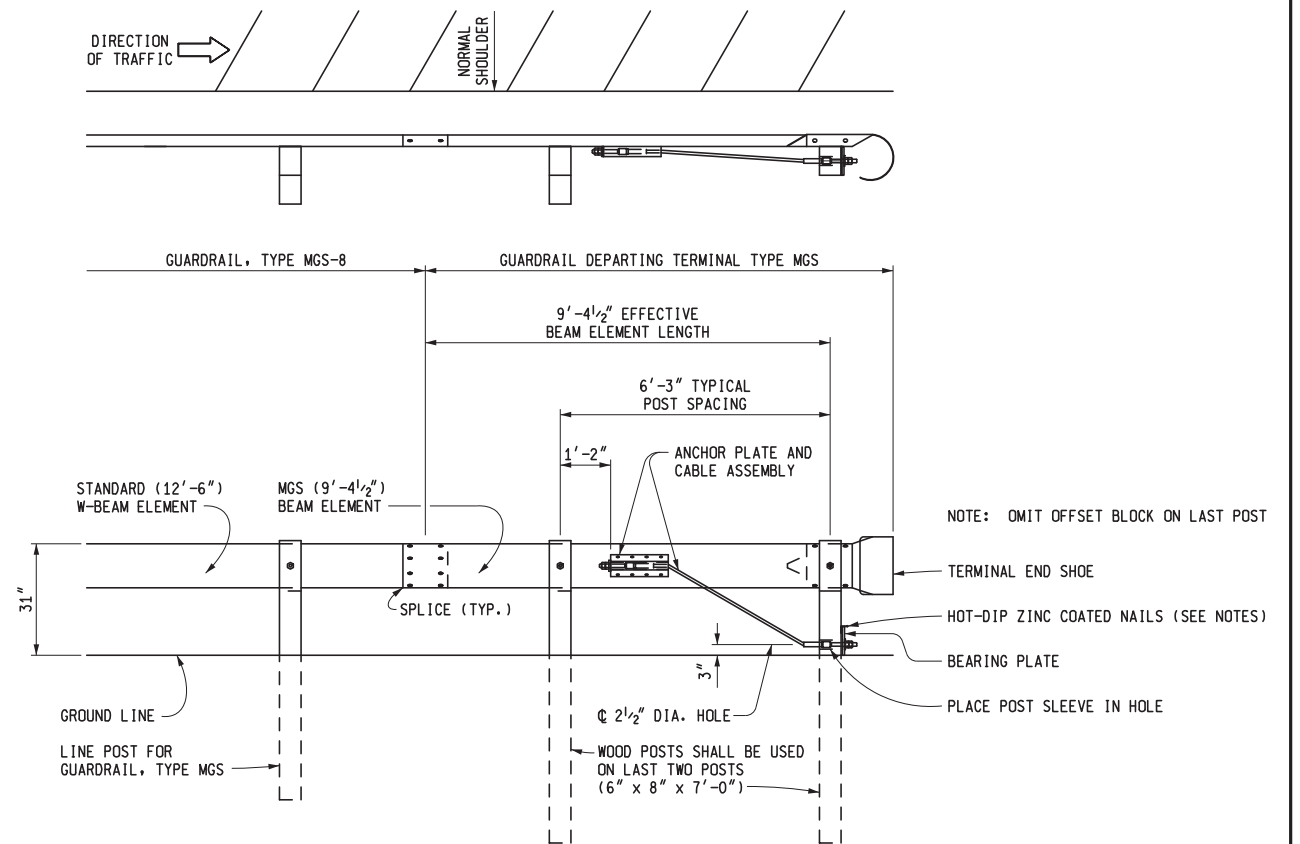
APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

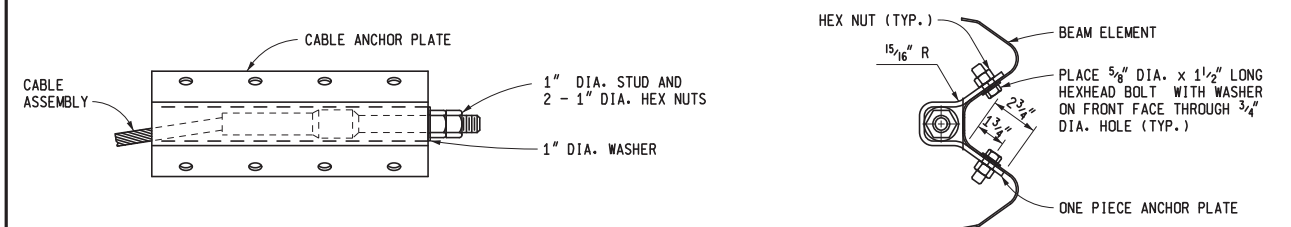
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

GUARDRAIL DEPARTING TERMINAL TYPES B, T, & MGS

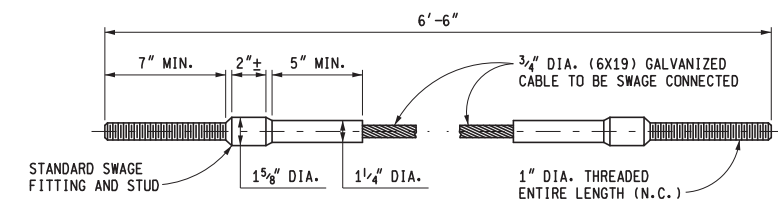
F.H.W.A. APPROVAL 9-28-2018 PLAN DATE R-66-E SHEET 1 OF 4



GUARDRAIL DEPARTING TERMINAL TYPE MGS



CABLE ANCHOR PLATE DETAILS



CABLE ASSEMBLY

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

GUARDRAIL DEPARTING TERMINAL TYPES B, T, & MGS

F.H.W.A. APPROVAL 9-28-2018 PLAN DATE R-66-E SHEET 2 OF 4

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE:

DATE:

DESIGN UNIT:

TSC:

CS:

JN:

DRAWING SHEET



GUARDRAIL DEPARTING TERMINAL TYPES B, T, & MGS

F.H.W.A. APPROVAL	9-28-2018 PLAN DATE	R-66-E	SHEET 3 OF 4
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TERMINAL END SHOE,
TYPE B OR TYPE MGS

NOTES:

ALL POSTS, OFFSET BLOCKS, BEAM ELEMENTS, AND HARDWARE (INCLUDING BOLTS, NUTS, AND WASHERS) SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATIONS AND TO THE CURRENT STANDARD PLAN R-60-SERIES, WHERE APPLICABLE, EXCEPT AS SPECIFIED ON THIS STANDARD.

ALL 1:10 SLOPES SHALL BE GRADED TO CLASS A SLOPE TOLERANCES.

FOR DETAILS OF GUARDRAIL PLACEMENT, SEE STANDARD PLAN R-59-SERIES.

AFTER THE CABLE ASSEMBLY HAS BEEN TIGHTENED, A SECOND NUT SHALL BE INSTALLED ON EACH END OF THE CABLE SO THAT THE CABLE WILL NOT LOOSEN.

TWO HOT-DIP ZINC COATED NAILS SHALL BE DRIVEN INTO THE WOOD POST AT THE TOP OF THE BEARING PLATE TO KEEP THE BEARING PLATE FROM ROTATING.

GUARDRAIL DEPARTING TERMINAL TYPES B, T, & MGS

<u> </u> F.H.W.A. APPROVAL	<u>9-28-2018</u> PLAN DATE	R-66-E	SHEET 4 OF 4
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AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



0 VERT. (FT)

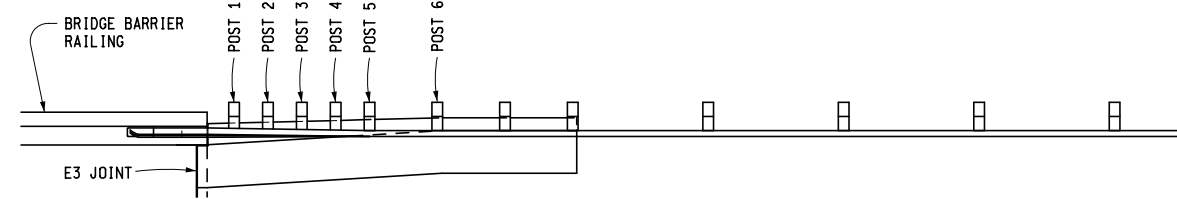
0 HORZ. (FT)

FILE:

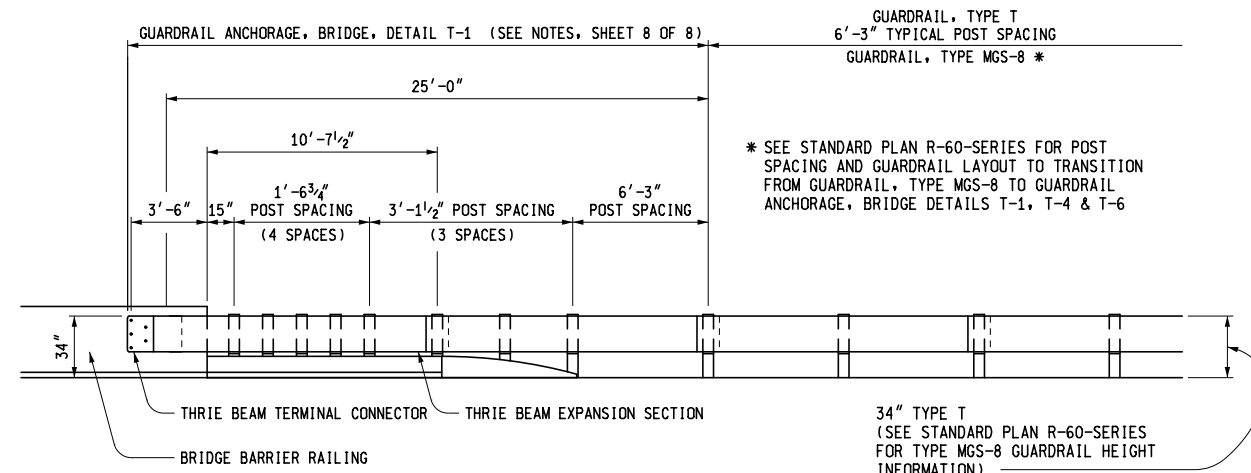
DATE:
DESIGN UNIT:
TSC:

	CS:
	JN:

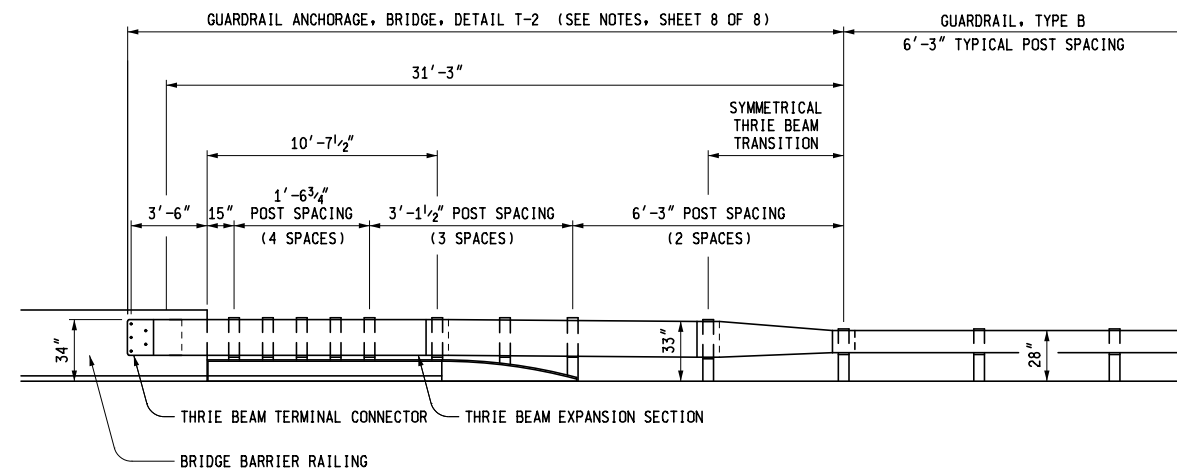
DRAWING	SHEET
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PLAN VIEW



ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE T & TYPE MGS-8)

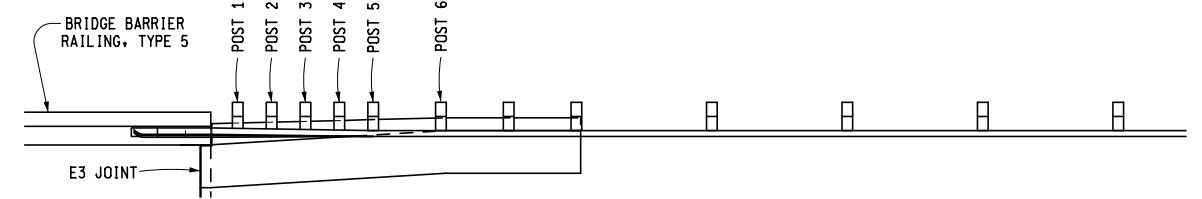


ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE B)

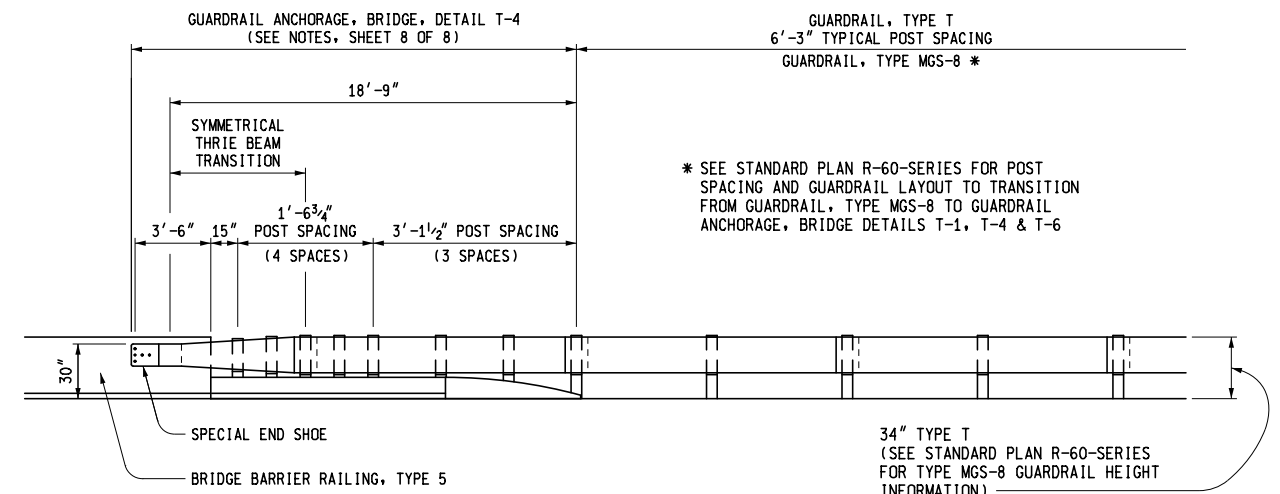
**DETAILS FOR CONNECTING GUARDRAIL TO
BRIDGE BARRIER RAILINGS, TYPE 4, 2-TUBE, 4-TUBE,
AESTHETIC PARAPET TUBE, OR 3 TUBE WITH PICKETS**
(WITHOUT EXPANSION AT BACKWALL)

**GUARDRAIL ANCHORAGE,
BRIDGE, DETAILS**

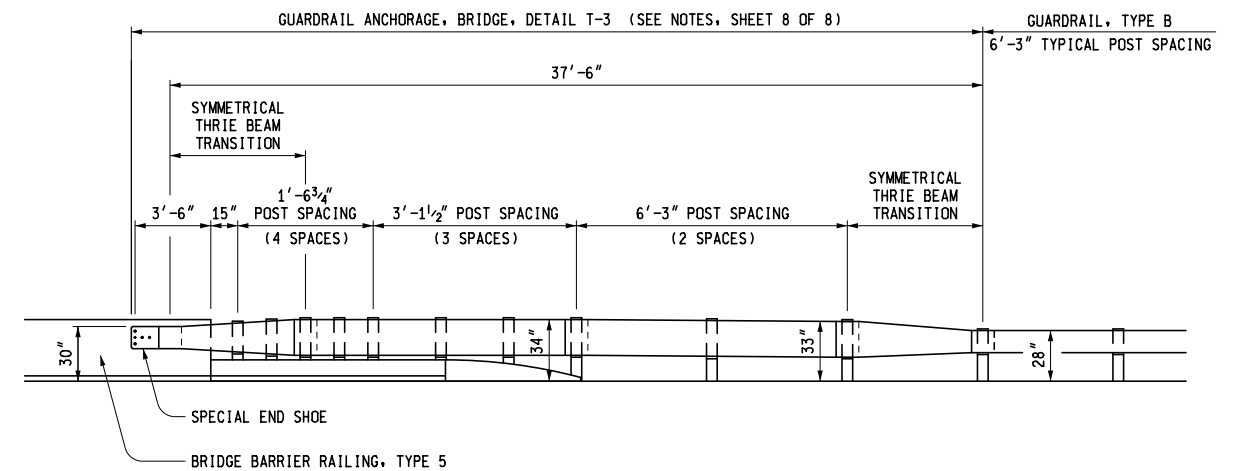
R-67-G-LAP SHEET
1 OF 8



PLAN VIEW



ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE T & TYPE MGS-8)

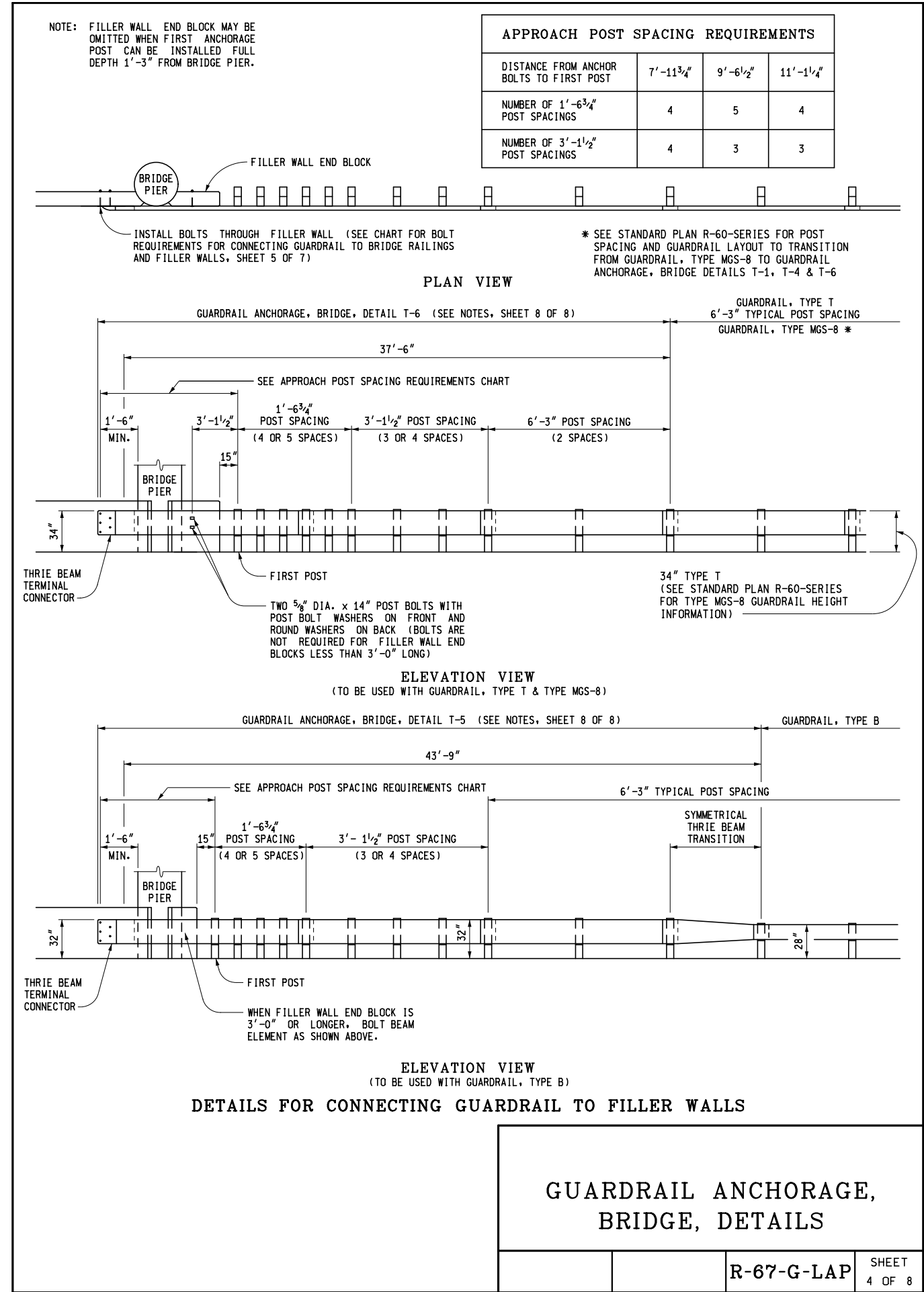
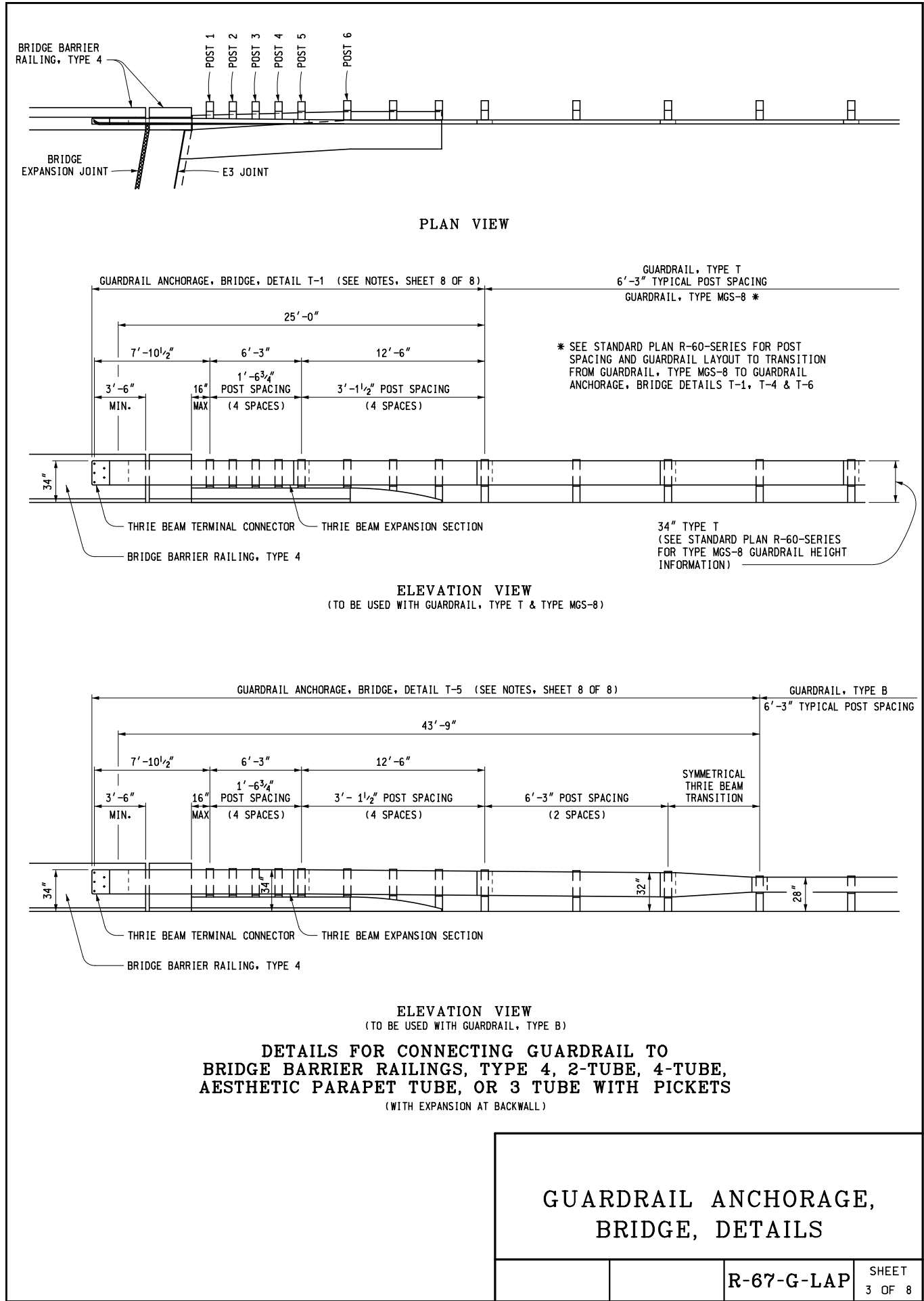


ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE B)

DETAILS FOR CONNECTING GUARDRAIL TO BRIDGE BARRIER RAILINGS, TYPE 5
(WITHOUT EXPANSION AT BACKWALL)

**GUARDRAIL ANCHORAGE,
BRIDGE, DETAILS**

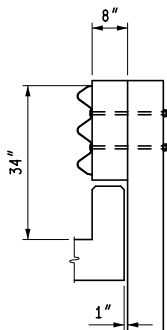
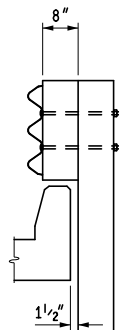
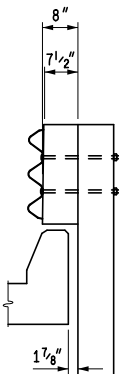
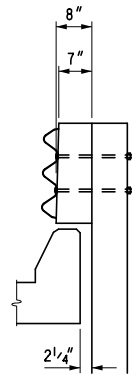
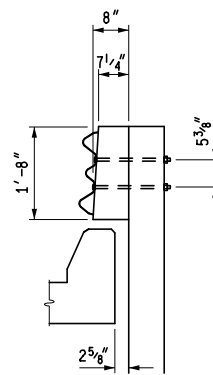
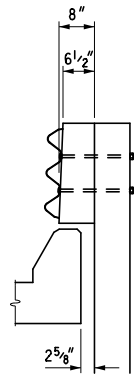
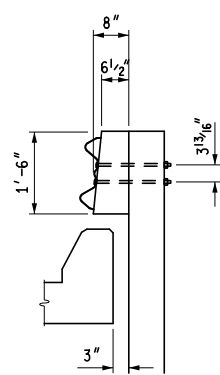
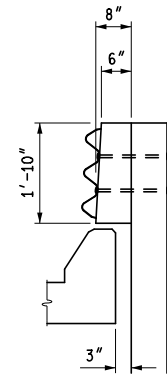
R-67-G-LAP SHEET
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34"

TOP OF SLAB
(ROADWAY)

Diagram illustrating the vertical dimensions for the parapet wall and curb. The parapet wall height is 34 inches. The curb height is 7 inches for 2 tubes and 9 inches for 4 tubes. The top of the slab is at the roadway level. The diagram also shows a variable dimension for the curb height.



BOLT REQUIREMENTS FOR CONNECTING GUARDRAIL TO BRIDGE RAILINGS & FILLER WALLS			
BRIDGE RAILING	BOLT LENGTH	MINIMUM THREAD LENGTH	NUMBER REQUIRED
TYPE 4	12 $\frac{1}{2}$ "	4"	5
TYPE 5	11 $\frac{1}{2}$ "	4"	4
2 TUBE	WALL THICKNESS + 2"	2"	5
4 TUBE	WALL THICKNESS + 2"	2"	5
3 TUBE WITH PICKETS	WALL THICKNESS + 2"	2"	5
AESTHETIC PARAPET	WALL THICKNESS + 2"	2"	5
** FILLER WALL	WALL THICKNESS + 2"	2"	5

SHORTER BOLT LENGTHS MAY BE USED PROVIDED THE BOLT EXTENDS $\frac{1}{4}$ " BEYOND THE NUT WHEN TIGHTENED.

SHORTER BOLT LENGTHS MAY BE USED PROVIDED THE BOLT EXTENDS $\frac{1}{4}$ " BEYOND THE NUT WHEN TIGHTENED.

**** THE USE OF 7/8" DIA. ADHESIVE ANCHORED BOLTS EMBEDDED 8" TO ATTACH GUARDRAIL TO FILLER WALLS WILL BE ALLOWED, INSTEAD OF BOLTING THROUGH THE FILLER WALL, IN THE FOLLOWING LOCATIONS:**

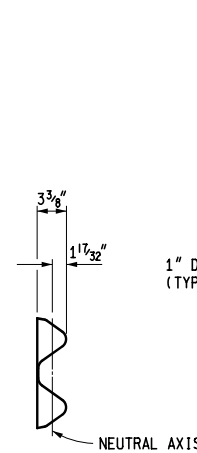
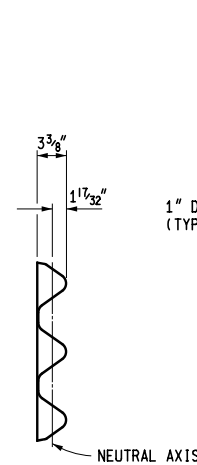
Technical drawing of a beam splice showing a cross-section and a side elevation.

Cross-section (Top View):

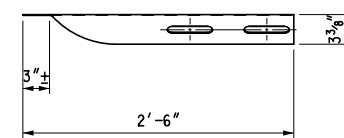
- Overall length: 12'-6"
- Slotted holes: $\frac{3}{4}" \times 3\frac{3}{4}"$ SLOTTED HOLES SPACED AT 1'-6 $\frac{3}{4}"$
- Splice width: 7"
- Splice height: 6 $\frac{1}{4}"$
- Splice offset: 1'-6 $\frac{3}{4}"$
- Splice hole: $2\frac{3}{32}" \times 5"$ SLOTTED HOLE (TYP.)
- Splice label: SAME CROSS SECTION AS THRIE BEAM ELEMENT
- Post bolt slots: $\frac{3}{4}" \times 2\frac{1}{2}"$ POST BOLT SLOTS
- Splice bolt slot: $2\frac{3}{32}" \times 1\frac{1}{8}"$ SPLICE BOLT SLOT (TYP.)
- Splice dimensions: 4" x 8 $\frac{1}{2}"$
- Splice dimensions: 4 $\frac{1}{4}"$ x 4 $\frac{1}{4}"$ x 2"

Side Elevation (Left View):

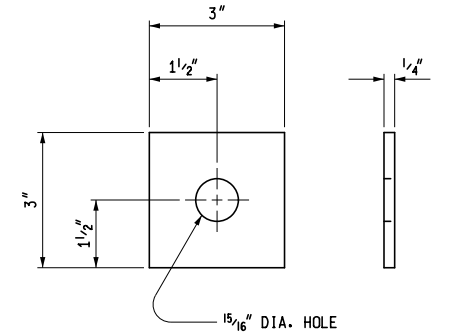
- Overall height: 1'-8" \pm 3/16"
- Neutral axis
- Offset: 1 $\frac{17}{32}"$
- Splice width: 3 $\frac{3}{8}"$



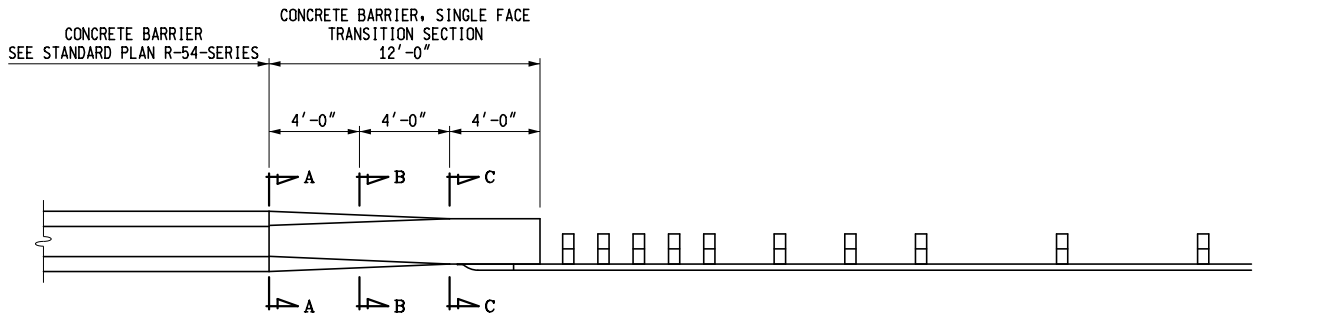
(DO NOT BURN) ADDITIONAL
A. HOLES WHEN NEEDED TO
STEEL REINFORCEMENT IN
RAILING _____ $3\frac{1}{2}'' \times 2\frac{1}{2}''$
POST BOLT SLOT
(OPTIONAL) _____ $\text{C} \quad 2\frac{3}{8}'' \times 5''$ SLOTS



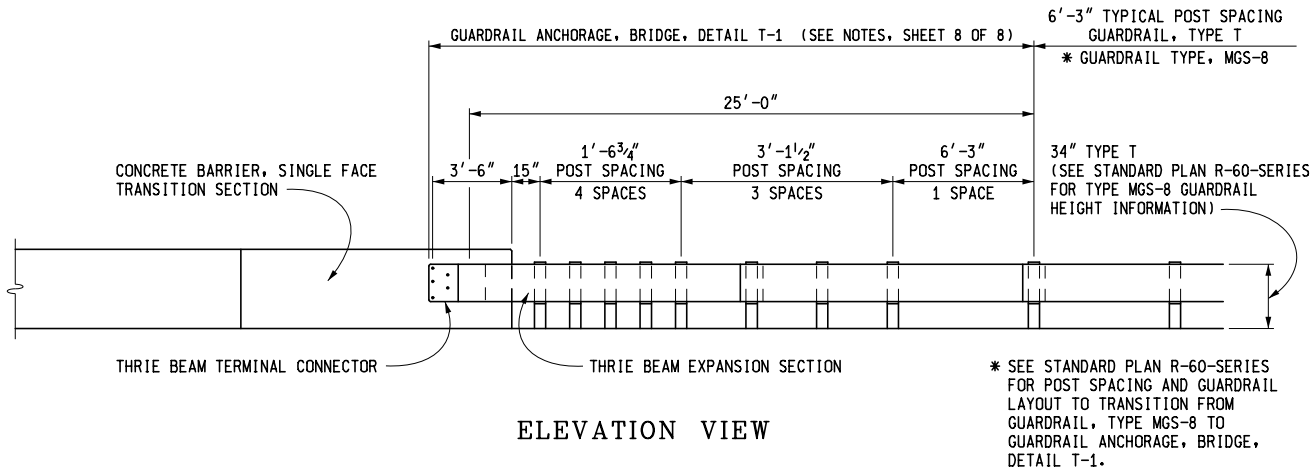
ROUND WASHER FOR
7/8" DIA. BOLTS



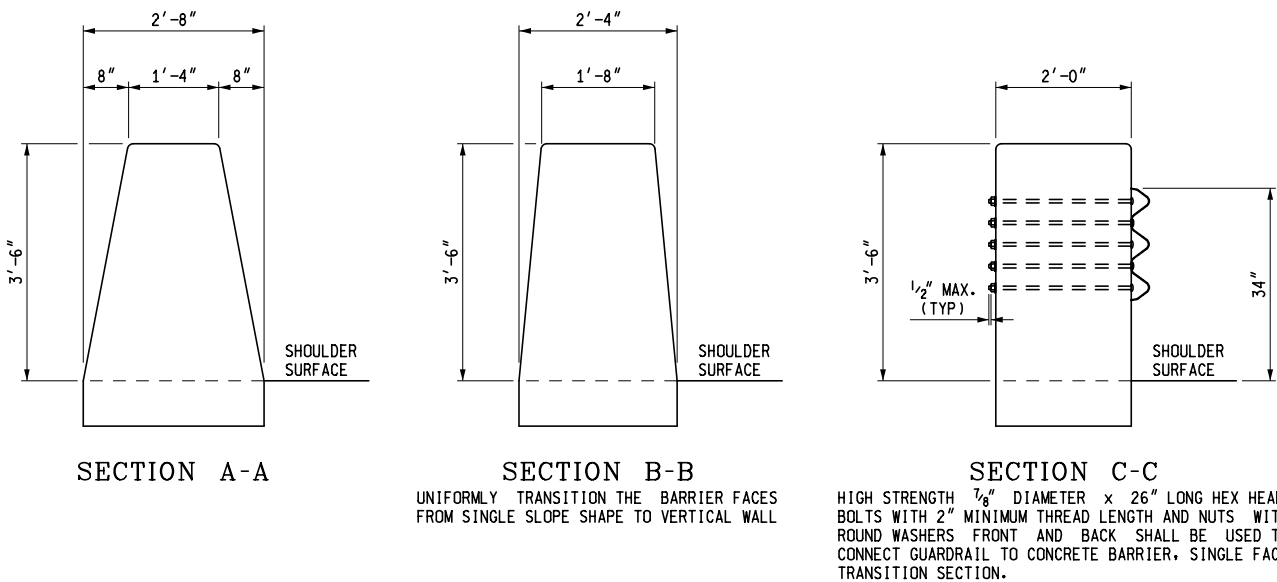
SQUARE WASHER FOR
7/8" DIA. BOLTS



PLAN VIEW



ELEVATION VIEW



SECTION A-A

SECTION B-B
UNIFORMLY TRANSITION THE BARRIER FACES
FROM SINGLE SLOPE SHAPE TO VERTICAL WALL

SECTION C-C
HIGH STRENGTH 1/8" DIAMETER x 26" LONG HEX HEAD
BOLTS WITH 2" MINIMUM THREAD LENGTH AND NUTS WITH
ROUND WASHERS FRONT AND BACK SHALL BE USED TO
CONNECT GUARDRAIL TO CONCRETE BARRIER, SINGLE FACE
TRANSITION SECTION.

DETAILS FOR CONNECTING GUARDRAIL TO CONCRETE BARRIER, SINGLE FACE

GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

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NOTES:

ALL POSTS, OFFSET BLOCKS, BEAM ELEMENTS, REFLECTORS, AND HARDWARE, (INCLUDING BOLTS, NUTS, AND WASHERS) SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATIONS AND TO THE CURRENT STANDARD PLAN R-60-SERIES, WHERE APPLICABLE, EXCEPT AS SPECIFIED ON THIS STANDARD.

ALL POSTS USED TO CONSTRUCT GUARDRAIL ANCHORAGE, BRIDGE SHALL BE 7'-0" LONG.

THE THRIE BEAM TERMINAL CONNECTOR AND SPECIAL END SHOE SHALL BE THE SAME MATERIAL AS ADJACENT RUN OF GUARDRAIL, EXCEPT THAT THEY SHALL NOT BE LIGHTER THAN 10 GAGE (0.138").

SECTIONS OF THE THRIE BEAM ELEMENT REQUIRED TO BE TWISTED FOR USE IN ANCHORAGE SHALL BE FIELD BENT.

GUARDRAIL BEAM ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC, EXCEPT FOR THE THRIE BEAM TERMINAL CONNECTOR WHICH MAY BE LAPPED IN EITHER DIRECTION.

STANDARD SPLICE BOLTS SHALL BE USED WHEN SPLICING THE THRIE BEAM TERMINAL CONNECTOR TO THE THRIE BEAM EXPANSION SECTION AND WHEN SPLICING THE SPECIAL END SHOE TO THE TRANSITION SECTION. THE SPLICE BOLT NUT SHALL BE INSTALLED FINGER-TIGHT AND SHALL FULLY ENGAGE THE SPLICE BOLT WITH A MINIMUM OF ONE THREAD EXTENDING BEYOND THE NUT. THIS SHALL BE FOLLOWED UP BY UPSETTING THE FIRST THREAD ON THE OUTSIDE OF THE NUT WITH A CENTER PUNCH OR COLD CHISEL, SO THAT IT WILL NOT LOOSEN.

SEE THE CURRENT STANDARD PLAN R-32-SERIES FOR APPROACH CURB AND GUTTER AND DOWNSPOUT HEADER.

GUARDRAIL ANCHORAGE, BRIDGE, DETAILS T-1, T-2, T-5, AND T-6 REQUIRE THAT THE THRIE BEAM TERMINAL CONNECTOR BE ATTACHED TO THE 2 3/8" x 5" LONG SLOTTED HOLES IN THE THRIE BEAM EXPANSION SECTION.

SEE APPROPRIATE PLANS TO DETERMINE WHETHER GUARDRAIL ANCHORAGE, BRIDGE SPANS A BRIDGE EXPANSION JOINT.

SEE THE CURRENT STANDARD PLAN R-55-SERIES FOR FILLER WALLS AND FILLER WALL END BLOCK.

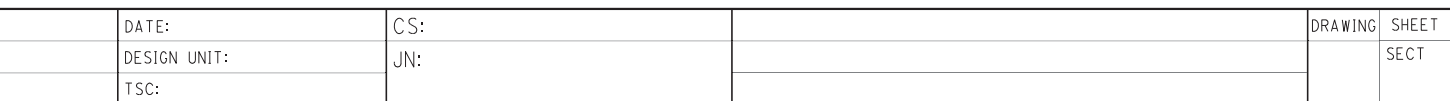
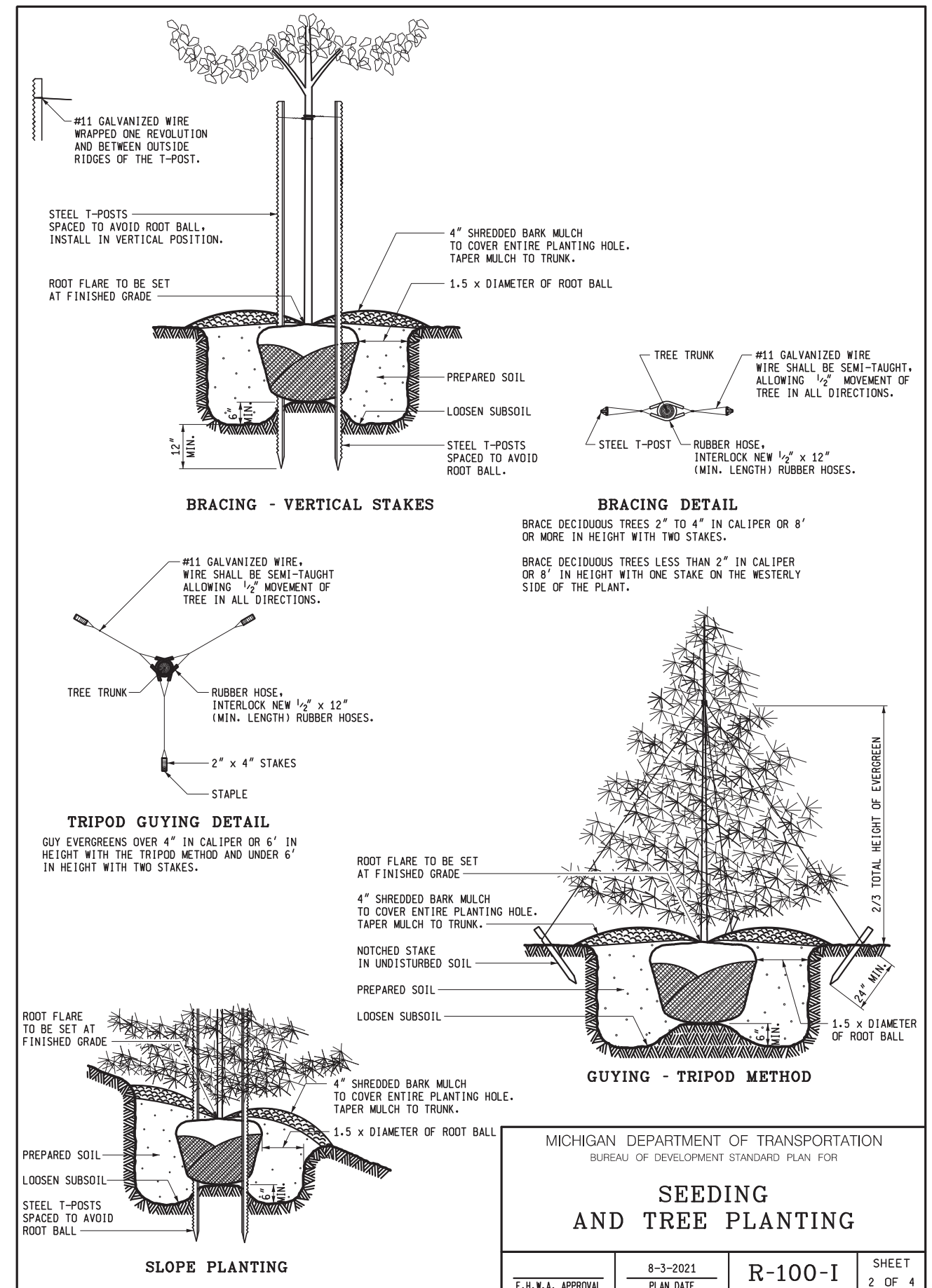
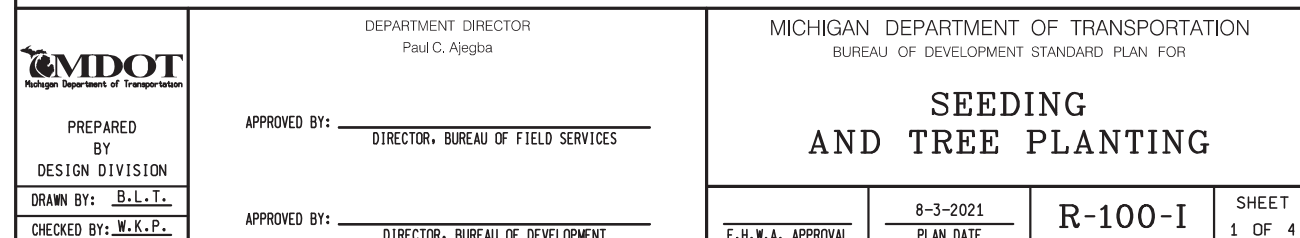
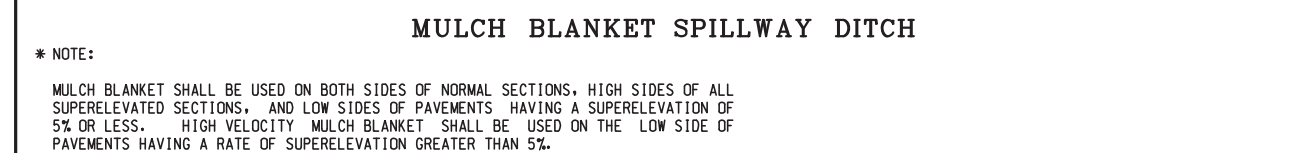
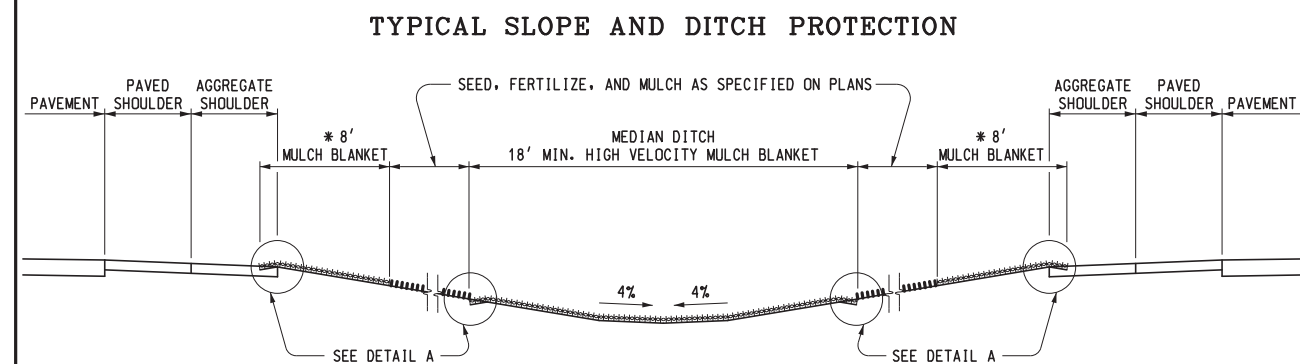
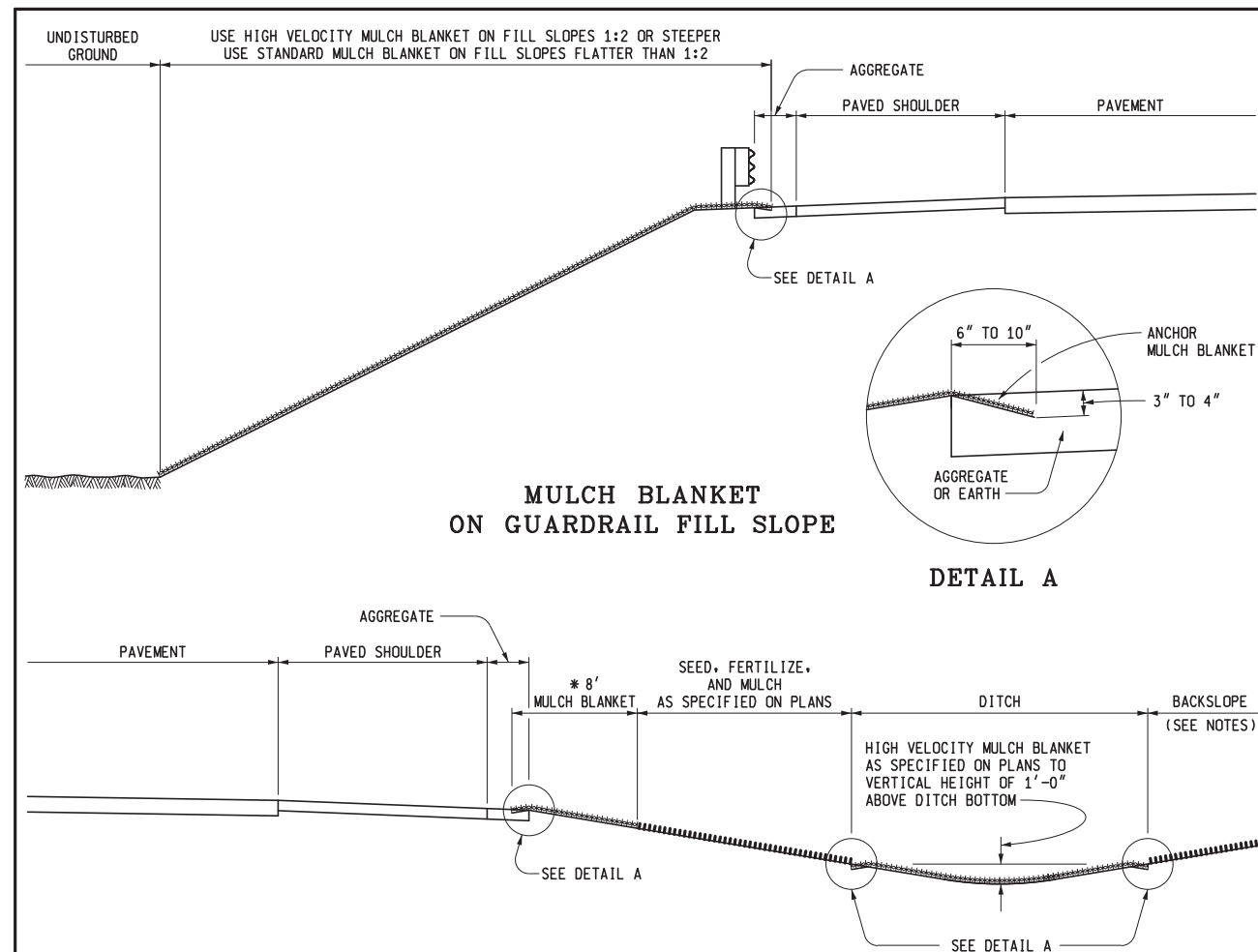
SEE STANDARD PLAN R-54-SERIES FOR "CONCRETE BARRIER, SINGLE FACE, TYPE --".

CONCRETE BARRIER, SINGLE FACE TRANSITION SECTION SHALL BE INCLUDED IN THE PAY ITEM "CONCRETE BARRIER, SINGLE FACE, TYPE --".

GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

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FIRST AND SECOND WATERING AND CULTIVATION SHALL INCLUDE SHRUB BEDS.

CUT 6" X 12" (MIN.) EDGING AROUND THE PERIMETER OF ALL SHRUB BEDS SHOWN ON THE PLANS. SPRAY A NON-PERSISTANT GLYPHOSATE HERBICIDE TO ENTIRE SHRUB BEDS PRIOR TO PLANTING AND BARK PLACEMENT.

SHRUB BEDS ARE TO BE PAID FOR BY THE PAY ITEM 'SITE PREPARATION'.

ALL PLANTS SHALL BE SET PLUMB AND HAVE THE BEST SIDE OF PLANT FACING THE MAIN VIEWING DIRECTION.

PLANTING NOTES:

ALL EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE - IMMEDIATELY.

LOOSEN SUBSOIL TO A DEPTH OF 4". LOOSEN EARTH ON SIDES OF PLANT POCKET TO BREAK ANY GLAZING CAUSED BY DIGGING.

FILL PREPARED SOIL TO 1/2 THE DEPTH OF THE ROOT BALL, PACK FIRMLY, AND PUDDLE WITH WATER.

BACKFILL WITH PREPARED SOIL WHICH, AFTER COMPACTION, IS FLUSH WITH SURROUNDING GROUND LEVEL.

COVER ENTIRE PLANT POCKET AREA WITH 4" MULCH. PRUNE AND BRACE AND GUY.

WHEN PLANTS ARE FURNISHED IN CONTAINERS, CONTAINERS SHALL BE COMPLETELY REMOVED AT THE TIME OF PLANTING.

TREE HEIGHTS ARE SHOWN BEFORE PRUNING. TREE PLANTING DEPTHS ARE SHOWN AFTER SETTLING.

TREES AND SHRUBS SHALL NOT BE PLANTED WITHIN 50' AND 30' RESPECTIVELY OF THE NEAREST EDGE OF METAL - EXCEPT WHERE INACCESSIBLE TO VEHICLES.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SEEDING
AND TREE PLANTING

F.H.W.A. APPROVAL

8-3-2021
PLAN DATE

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PLANTING BARE ROOT PLANT MATERIAL

REFER TO THE "SPECIAL PROVISIONS FOR BARE ROOT PLANTING" FOR SHIPPING, STORAGE AND HANDLING REQUIREMENTS.

MAINTAIN ROOT MOISTURE BY KEEPING ROOTS IMMERSED IN WATER PRIOR TO PLANTING.

ROOT PRUNE AS NECESSARY TO REMOVE ALL DAMAGED OR BROKEN ROOTS, AND AS REQUIRED BY THE DISTRICT FORESTER OR RESOURCE SPECIALIST.

DIG PLANTING HOLES AT LEAST 12" WIDE AND 12" DEEP TO ACCOMMODATE ROOT MASS.

SET PLANTS PLUMB WITH THE ROOTS SPREAD PUT IN A NATURAL POSITION AT A DEPTH EQUAL TO THE DEPTH AT THE NURSERY.

HOLD PLANT FIRMLY AND PUDDLE (NOT TAMP) THE BACKFILL AROUND THE ROOTS WITH WATER. SUFFICIENT WATER SHALL BE USED TO ENSURE SATURATION OF THE BACKFILL, BUT CARE SHOULD BE TAKEN NOT TO OVERWATER, CAUSING A FLOATING SOIL MASS THAT PREVENTS COMPACTION AND MAY RESULT IN AIR POCKETS ADJACENT TO THE ROOTS. BACKFILL SHOULD BE FLUSH WITH THE GROUND AFTER COMPACTION.

COVER ENTIRE PLANT POCKET AREA WITH 4" MULCH AS SHOWN.

SEEDING NOTES:

THIS STANDARD ILLUSTRATES THE TYPICAL USE OF SEEDING WITH MULCH, AS THESE ITEMS RELATE TO ROADWAY CONSTRUCTION. THE ACTUAL DESIGN AND MATERIALS USED TO CONSTRUCT THE COMPLETE SECTION, WHICH INCLUDES SEEDING WITH MULCHING, WILL BE ACCORDING TO THE PLANS AND CURRENT SPECIFICATIONS.

ITEMS CALLED FOR ON THIS STANDARD MAY ALSO BE USED DURING CONSTRUCTION AS AN EROSION CONTROL MEASURE. SEE STANDARD PLAN R-96-SERIES.

ALL DITCHES SHOULD HAVE HIGH VELOCITY MULCH BLANKET FOR EROSION CONTROL.

THE FIRST 8' BEHIND THE CURB OR SHOULDER IN URBAN MEDIAN AREAS WILL BE SEEDED, FERTILIZED, AND MULCHED WITH MULCH BLANKET. THE REMAINING AREAS WILL BE SEEDED, FERTILIZED, AND MULCHED WITH MULCH BLANKET OR STANDARD MULCH ANCHORED IN PLACE WITH A MULCH ADHESIVE OR WITH A MULCH NET.

ALL AREAS WHERE MULCH BLANKET IS CALLED FOR SHALL BE SEEDED, FERTILIZED, AND TOPSOILED AS SPECIFIED ON PLANS. NO MULCH OR ANCHORING MULCH IS REQUIRED WHERE MULCH BLANKET IS INSTALLED.

BACKSLOPE RESTORATION TREATMENT SHALL BE THE SAME AS THE FRONT SLOPE.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SEEDING
AND TREE PLANTING

F.H.W.A. APPROVAL

8-3-2021
PLAN DATE

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