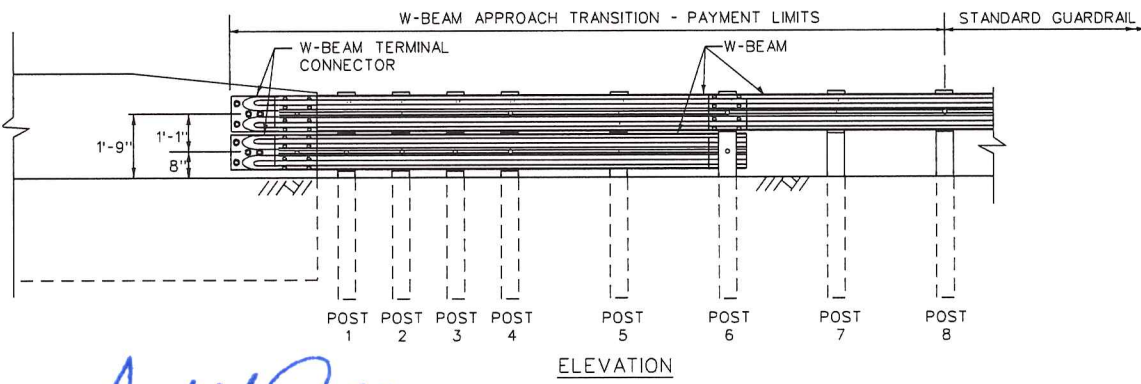
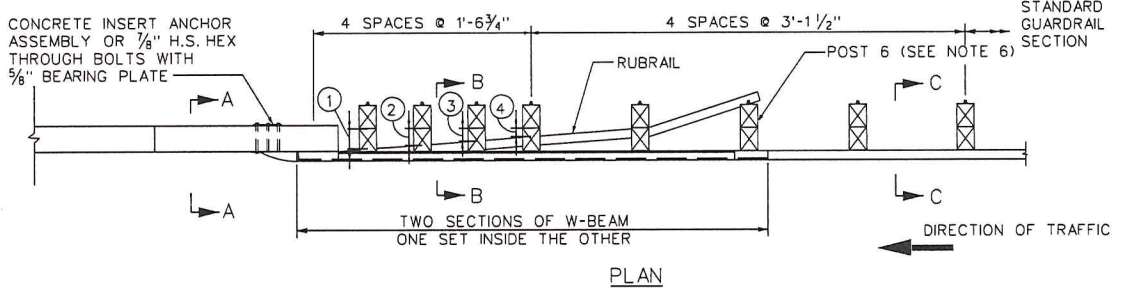


BOTTOM BEAM WOOD BLOCKS
1'-2" x 6"

POST	THICKNESS
①	7"
②	6"
③	4½"
④	3"

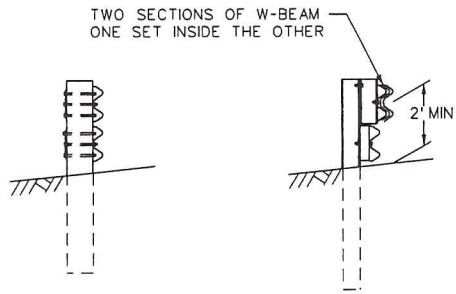
- NOTES:
- THIS GUARDRAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL CONCRETE SHAPE AND SHOULD NOT BE CONNECTED DIRECTLY TO A CONCRETE SAFETY SHAPE. CONCRETE SAFETY SHAPE BARRIERS SHOULD BE TRANSITIONED TO A VERTICAL SHAPE AT THE GUARDRAIL CONNECTION.
 - BRIDGE BARRIER ENDS AND BRIDGE PARAPETS SHALL BE OF ADEQUATE STRENGTH TO ACCEPT FULL IMPACT LOADING.
 - STANDARD BARRIER HARDWARE HAS BEEN USED TO DEVELOP THIS GUARDRAIL TRANSITION. SEE THE CURRENT EDITION OF "A GUIDE TO STANDARDIZED BARRIER RAIL HARDWARE", AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.
 - THE RUBRAIL SHALL BE SHOP BENT IN THE LAST 3 FEET TO FACILITATE INSTALLATION.
 - BOTTOM WOOD BLOCKS, LOCATED ON POSTS 1, 2, 3, AND 4, ARE ATTACHED WITH 5/8" CARRIAGE BOLTS CENTER DRILLED AND SECURED.
 - POSTS 1, 2, 3, 4, AND 6 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKS AND/OR LOWER BEAM.



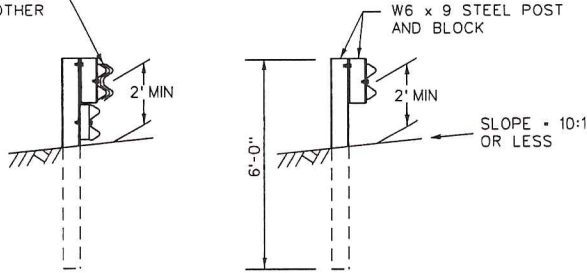
ISSUED: 8/2015
 REVISION APPROVAL
 RECOMMENDED: *Adil Rijaz*
 PROJECT MANAGER
 APPROVED: *Muhammed Khalid*
 CHIEF ENGINEER

W-BEAM APPROACH TRANSITION
 VERTICAL CONCRETE BARRIER END
 W-BEAM WITH RUBRAIL -
 WOOD POSTS

d. DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION
 DWG. NO. 603.16



SECTION A-A

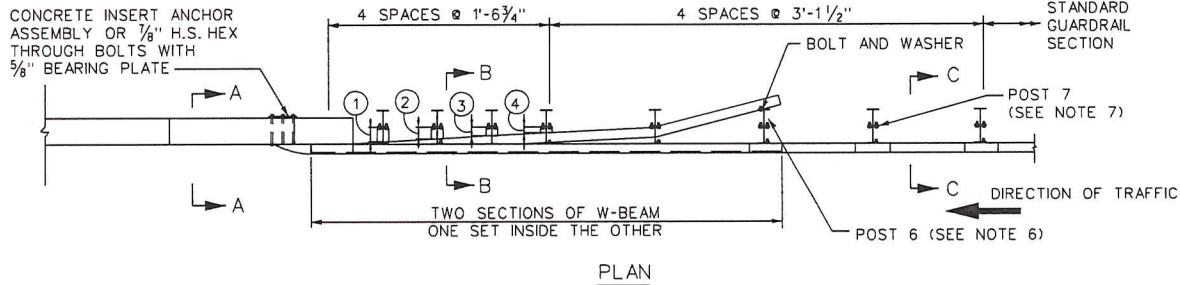


SECTION B-B

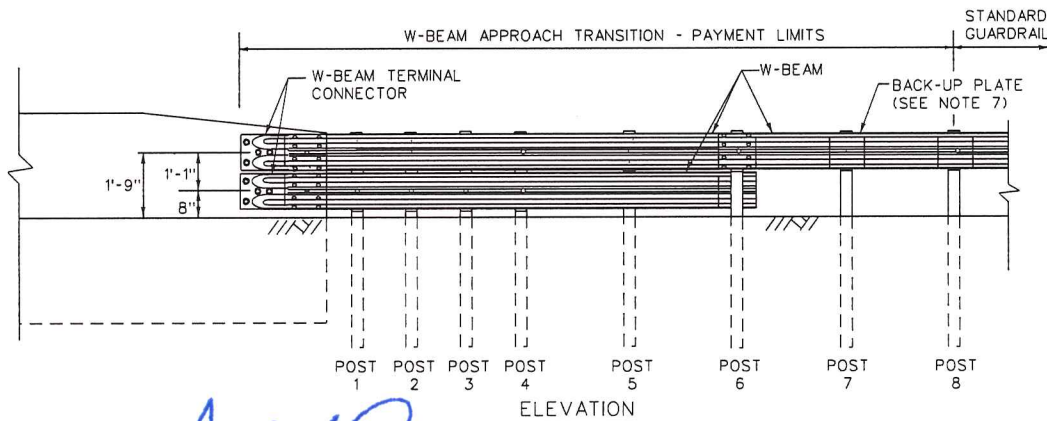
SECTION C-C

BOTTOM BEAM WOOD BLOCKS
1'-2" x 4 1/2"

POST	THICKNESS
①	5"
②	4"
③	3"
④	2"



PLAN



ELEVATION

NOTES:

1. THIS GUARDRAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL CONCRETE SHAPE AND SHOULD NOT BE CONNECTED DIRECTLY TO A CONCRETE SAFETY SHAPE. CONCRETE SAFETY BARRIERS SHALL BE TRANSITIONED TO A VERTICAL SHAPE AT THE GUARDRAIL CONNECTION.
2. BRIDGE BARRIER ENDS AND BRIDGE PARAPETS SHALL BE OF ADEQUATE STRENGTH TO ACCEPT FULL IMPACT LOADING.
3. STANDARD BARRIER HARDWARE HAS BEEN USED TO DEVELOP THIS GUARDRAIL TRANSITION. SEE THE CURRENT EDITION OF "A GUIDE TO STANDARDIZED BARRIER RAIL HARDWARE", AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.
4. BOTTOM BEAM BLOCKS ARE OFFSET DRILLED TO SIT SQUARELY ON THE POST FLANGE. BLOCKS ARE ATTACHED WITH 5/8" CARRIAGE BOLTS.
5. THE RUBRAIL SHALL BE SHOP BENT IN THE LAST 3 FEET TO FACILITATE INSTALLATION.
6. POSTS 1, 2, 3, 4, AND 6 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKS AND/OR LOWER BEAM.
7. AT POST 7 BACK-UP PLATE BOLTED TO BLOCK ONLY.

ISSUED: 8/2015

REVISION APPROVAL

RECOMMENDED: *Adil Rijaz*
PROJECT MANAGER

APPROVED: *Muhammed Khalid*
CHIEF ENGINEER

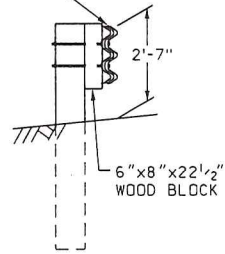
W-BEAM APPROACH TRANSITION
VERTICAL CONCRETE BARRIER END
W-BEAM WITH RUBRAIL -
STEEL POSTS

d.

DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

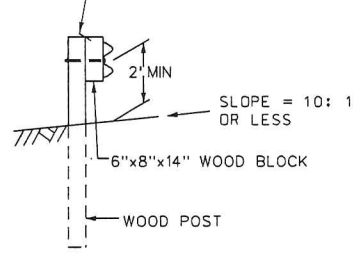
DWG. NO. 603.17

TWO SECTIONS OF THRIE BEAM
ONE SET INSIDE THE OTHER



SECTION A-A

SECURE BLOCK FROM ROTATION WITH
10D GALVANIZED NAIL

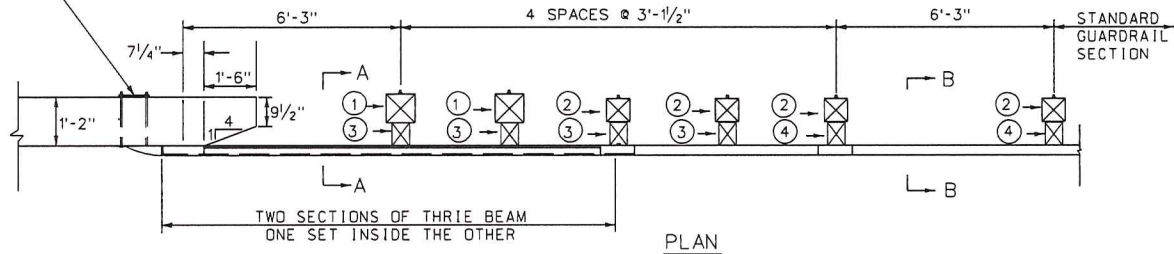


SECTION B-B

NOTES:

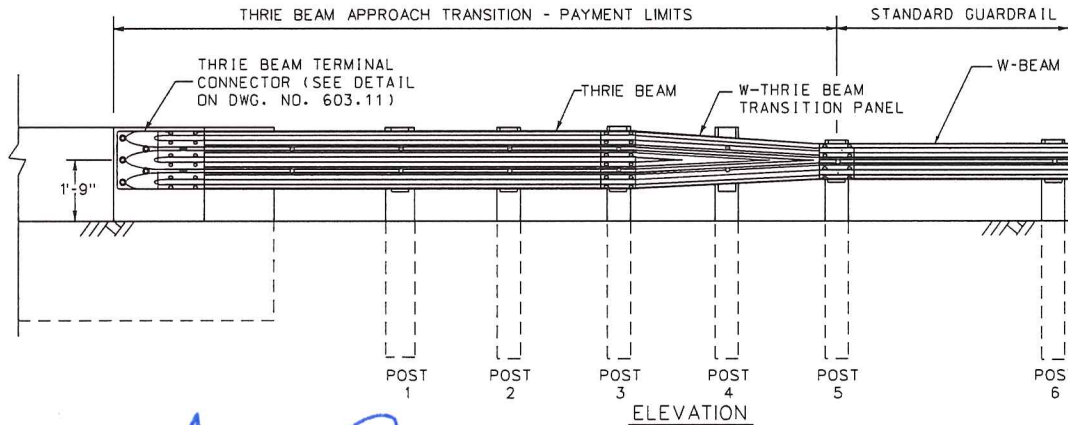
1. THIS GUARDRAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A TAPERED CONCRETE BARRIER END SHAPE AS SHOWN.
2. BRIDGE BARRIER ENDS AND BRIDGE PARAPETS SHALL BE OF ADEQUATE STRENGTH TO ACCEPT FULL IMPACT LOADING.
3. STANDARD BARRIER HARDWARE HAS BEEN USED TO DEVELOP THIS GUARDRAIL TRANSITION. SEE THE CURRENT EDITION OF "A GUIDE TO STANDARDIZED HIGHWAY BARRIER RAIL HARDWARE", AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.

7/8" H.S. HEX THROUGH BOLTS
WITH 5/8" BEARING PLATE (SEE
DETAIL ON DWG. NO. 603.13)



POST AND BLOCK DIMENSIONS

①	10" x 10" x 6'-0"
②	8" x 8" x 6'-0"
③	6" x 8" x 22 1/2"
④	6" x 8" x 14"



ISSUED: 8/2015

RECOMMENDED:

Adil Rijaz
PROJECT MANAGER

REVISION APPROVAL

APPROVED:

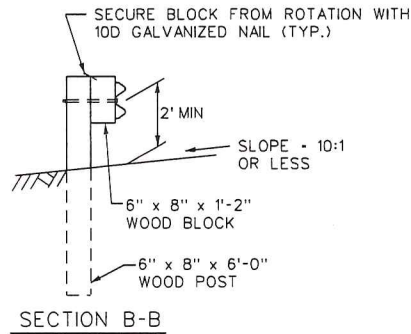
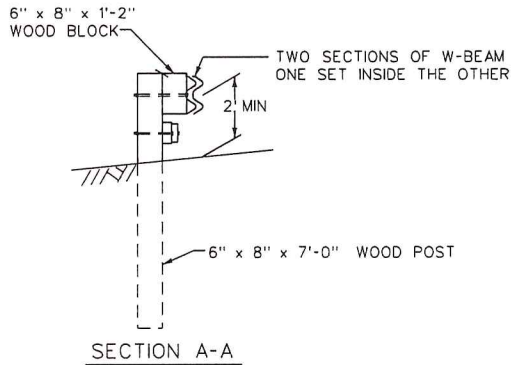
Muhammed Khalid
CHIEF ENGINEER

THRIE BEAM APPROACH
TRANSITION
TAPERED CONCRETE BARRIER END
THRIE BEAM - WOOD POSTS

d.

DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 603.18

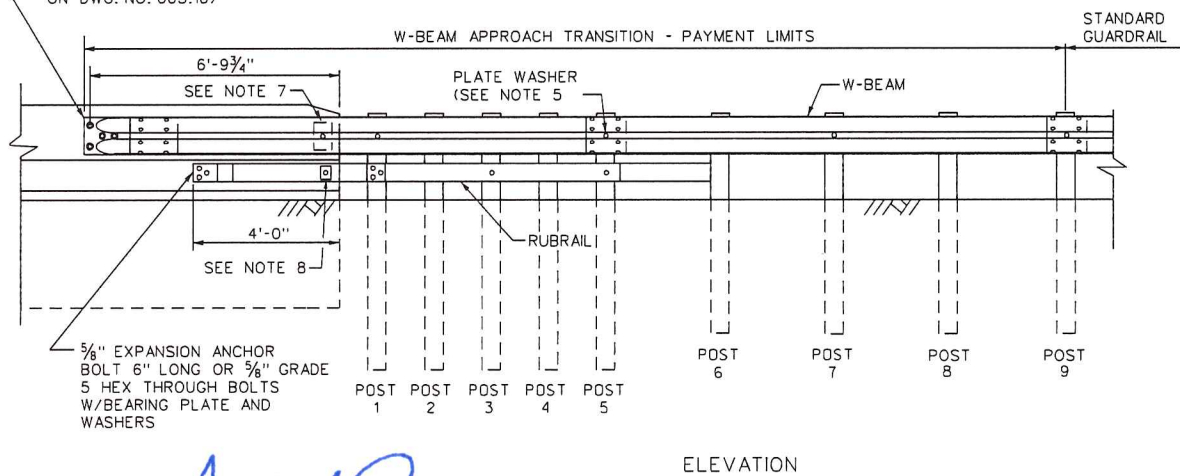
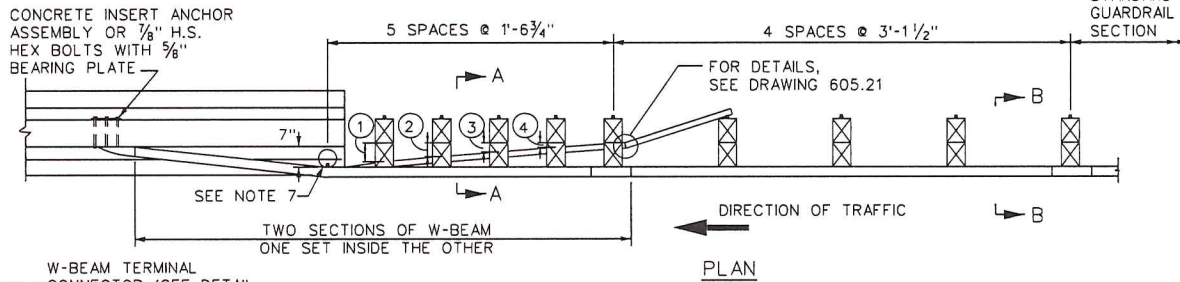


RUBRAIL WOOD BLOCKS
7" x 6"

POST	THICKNESS
①	6/4"
②	4 5/8"
③	3 1/8"
④	1 1/2"

NOTES:

1. THIS GUARDRAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A CONCRETE SAFETY SHAPE.
2. BRIDGE BARRIER ENDS AND BRIDGE PARAPETS SHALL BE OF ADEQUATE STRENGTH TO ACCEPT FULL IMPACT LOADING.
3. STANDARD BARRIER HARDWARE HAS BEEN USED TO DEVELOP THIS GUARDRAIL TRANSITION. SEE THE CURRENT EDITION OF "A GUIDE TO STANDARDIZED HIGHWAY BARRIER RAIL HARDWARE", AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.
4. RUBRAIL WOOD BLOCKS, LOCATED ON POSTS 1 THROUGH 4, ARE CENTER DRILLED AND SECURED WITH 5/8" CARRIAGE BOLTS.
5. POSTS 1 THROUGH 6 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKS AND/OR LOWER RUBRAIL.
6. W-BEAM IS NOT BOLTED TO POSTS AND BLOCKS AT POSTS 2, 3, 4, 6 AND 8. BLOCKS ARE BOLTED DIRECTLY TO POSTS. BOLTED AT POST 5.
7. STEEL SPACER TUBE, SCHEDULE 40 GALVANIZED PIPE, 6" (I.D.) x 9", AND ATTACHED BY A 5/8" CARRIAGE BOLT AND RECTANGULAR PLATE WASHER.
8. SEE DRAWING 603.21 FOR DETAILS. BLOCK IS ATTACHED BY A 3/8" X 3" BOLT.

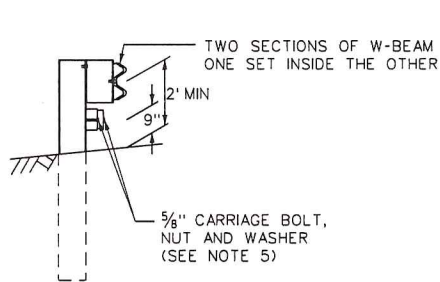


ISSUED: 8/2015	RECOMMENDED: <i>Adil Riaz</i>
REVISION	APPROVAL
	PROJECT MANAGER
	APPROVED: <i>Muhammed Kholid</i>
	CHIEF ENGINEER

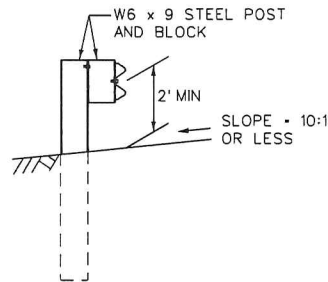
**W-BEAM APPROACH TRANSITION
CONNECTION TO SAFETY SHAPE
WOOD POST WITH RUBRAIL**

d. DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 603.19



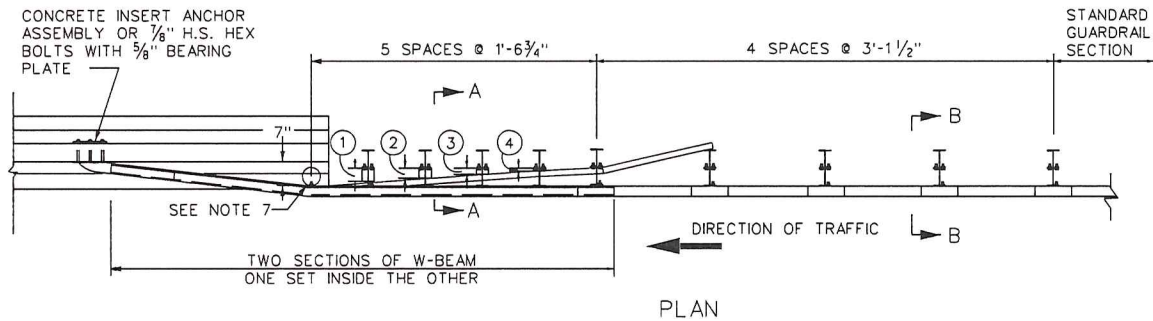
SECTION A-A



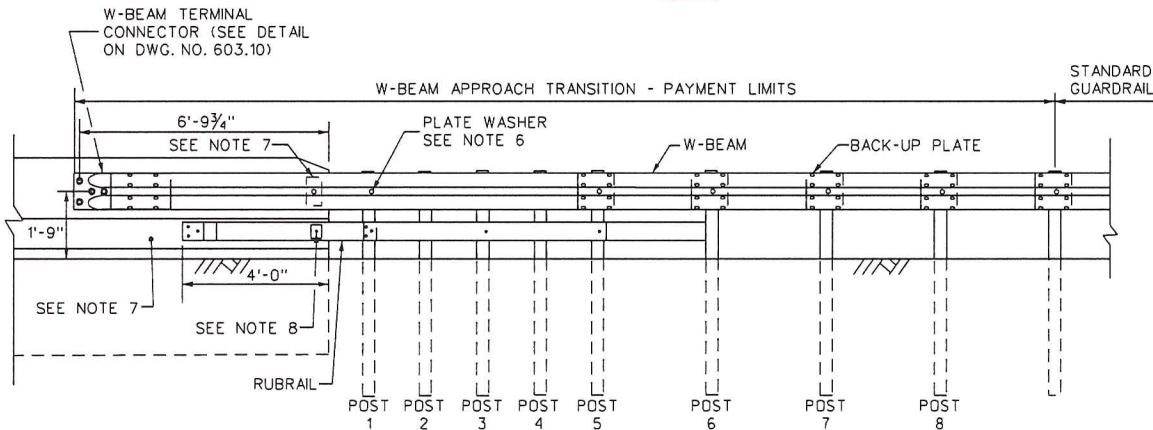
SECTION B-B

RUBRAIL WOOD BLOCKS
7" x 4"

POST	THICKNESS
①	4 1/4"
②	3 1/4"
③	2"
④	1"



PLAN



ELEVATION

NOTES:

1. THIS GUARDRAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A CONCRETE SAFETY SHAPE.
2. BRIDGE BARRIER ENDS AND BRIDGE PARAPETS SHALL BE OF ADEQUATE STRENGTH TO ACCEPT FULL IMPACT LOADING.
3. STANDARD BARRIER HARDWARE HAS BEEN USED TO DEVELOP THIS GUARDRAIL TRANSITION. SEE THE CURRENT EDITION OF "A GUIDE TO STANDARDIZED HIGHWAY BARRIER RAIL HARDWARE", AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.
4. POSTS 1-6 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKS AND/OR RUBRAIL.
5. RUBRAIL WOOD BLOCKS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH 5/8" CARRIAGE BOLTS TO POSTS 2 AND 4; RUBRAIL AND POSTS AT POSTS 1, 3 AND 5.
6. W-BEAM IS NOT BOLTED TO POSTS AT POSTS 2 THROUGH 4 AND POSTS 6 AND 8. BOLTED AT POST 1.
7. STEEL SPACER TUBE, SCHEDULE 40 GALVANIZED PIPE, 6" (I.D.) x 9", AND ATTACHED BY A 3/8" CARRIAGE BOLT AND RECTANGULAR PLATE WASHER.
8. SEE DWG. NO. 603.21 FOR DETAILS. BLOCK IS ATTACHED BY 3/8" X 3" BOLT.

ISSUED:	8/2015
REVISION	APPROVAL

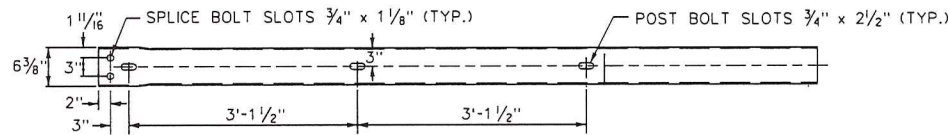
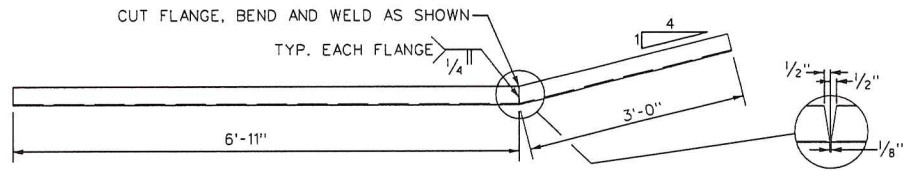
RECOMMENDED: *Adil Rijaz*
PROJECT MANAGER

APPROVED: *Muhammed Khalid*
CHIEF ENGINEER

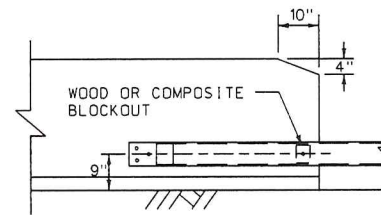
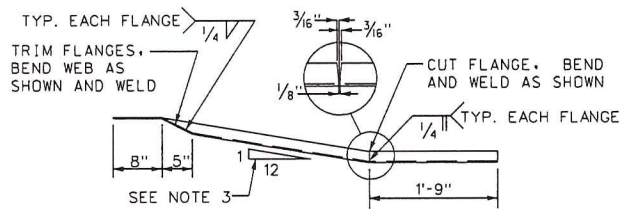
W-BEAM APPROACH TRANSITION
CONNECTION TO SAFETY SHAPE
STEEL POST WITH RUBRAIL

d. DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

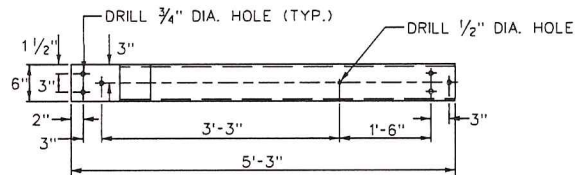
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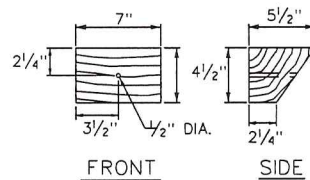
BENT PLATE RUBRAIL (MODIFIED) DETAIL



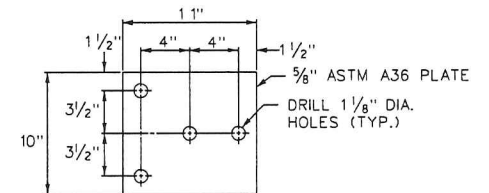
RUBRAIL ATTACHMENT TO SAFETY SHAPE



C6X8.2 RUBRAIL DETAIL



WOOD OR COMPOSITE BLOCKOUT FOR RUBRAIL DETAIL



BEARING PLATE DETAIL

NOTES:

- STANDARD BARRIER HARDWARE HAS BEEN USED TO DEVELOP THIS GUARDRAIL TRANSITION. SEE THE CURRENT EDITION OF "A GUIDE TO STANDARDIZED HIGHWAY BARRIER RAIL HARDWARE", AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.
- SEE FIGURES DWG. NO. 603.19 AND DWG. NO. 603.20 FOR MORE INFORMATION.
- THE RUBRAIL END MUST BE ATTACHED FLUSH WITH SLOPED TOE OF THE SAFETY SHAPE. INSTALLATION CAN BE GREATLY SIMPLIFIED BY FABRICATING OR SHOP TWISTING THE RUBRAIL END (MODIFIED) TO BE CONSISTENT WITH THE SLOPE OF SAFETY SHAPE. RUBRAIL ENDS TWISTED BOTH CLOCKWISE AND COUNTERCLOCKWISE MAY BE REQUIRED IN MOST SITUATIONS.
- THE RUBRAIL END ATTACHMENT TO THE CONCRETE SAFETY SHAPE REQUIRES THREE CLOSELY DRILLED HOLES. APPROPRIATE EPOXY BOLT ANCHORS SHALL BE USED TO REDUCE THE RISK OF SPLITTING THE CONCRETE.

ISSUED: 8/2015

REVISION APPROVAL

RECOMMENDED:

APPROVED:

PROJECT MANAGER

CHIEF ENGINEER

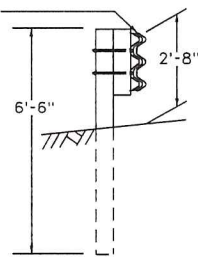
W-BEAM APPROACH TRANSITION
CONNECTION TO SAFETY SHAPE
RUBRAIL DETAILS

d.

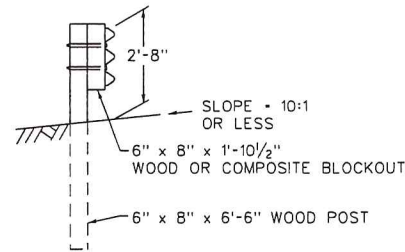
DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 603.21

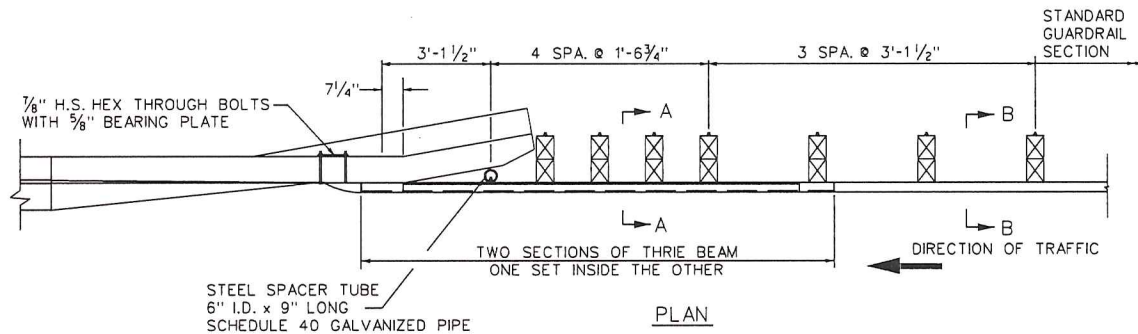
TWO SECTIONS OF THRIE BEAM
ONE SET INSIDE THE OTHER



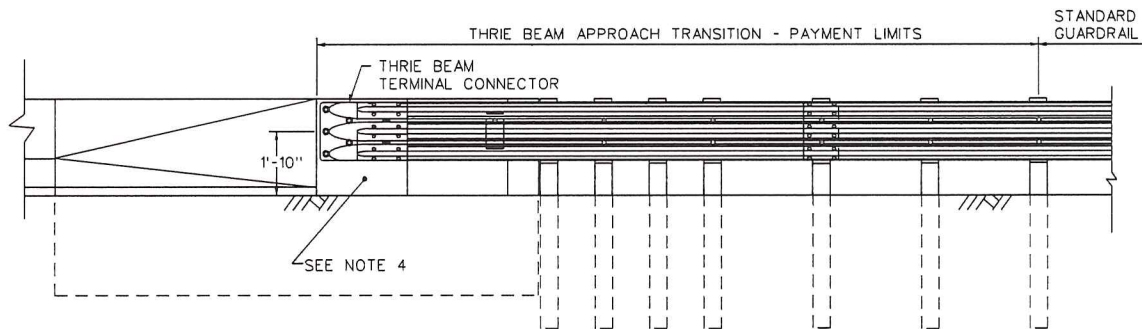
SECTION A-A



SECTION B-B



PLAN



ELEVATION

NOTES:

1. THIS GUARDRAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL FLARED BACK CONCRETE SHAPE AND SHOULD NOT BE CONNECTED DIRECTLY TO A CONCRETE SAFETY SHAPE. CONCRETE SAFETY SHAPE BARRIERS SHALL BE TRANSITIONED TO A VERTICAL SHAPE AT THE GUARDRAIL CONNECTION.
2. STANDARD BARRIER HARDWARE HAS BEEN USED TO DEVELOP THIS GUARDRAIL TRANSITION. SEE THE CURRENT EDITION OF "A GUIDE TO STANDARDIZED HIGHWAY BARRIER RAIL HARDWARE", AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.
3. THE STEEL SPACER TUBE IS CONNECTED ONLY TO THE GUARDRAIL BEAM. BLOCK-OUTS MADE OF WOOD AND STEEL ARE NOT RECOMMENDED IN THIS TRANSITION.
4. FOR DETAILS OF THE CONCRETE SHAPE TRANSITION, SEE DWG. NO. 603.25.

ISSUED: 8/2015

REVISION APPROVAL

RECOMMENDED: *Adil Riaz*
PROJECT MANAGER

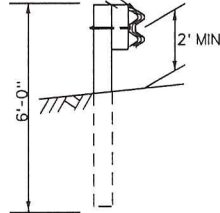
APPROVED: *Muhammed Kholid*
CHIEF ENGINEER

THRIE BEAM APPROACH TRANSITION
VERTICAL FLARED BACK CONCRETE
BARRIER END
THRIE BEAM - WOOD POSTS

d. DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

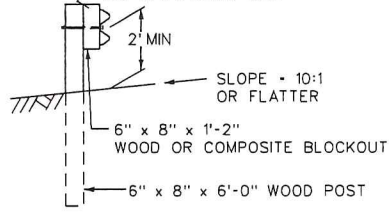
DWG. NO. 603.22

TWO SECTIONS OF W-BEAM
ONE SET INSIDE THE OTHER



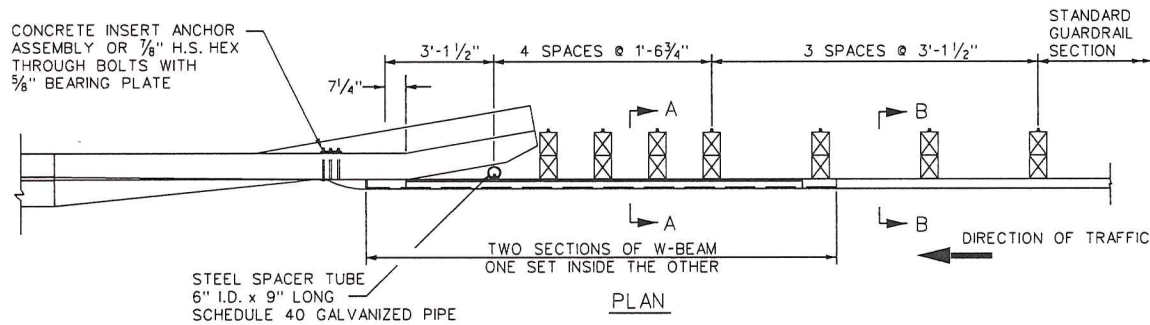
SECTION A-A

SECURE BLOCK FROM ROTATION WITH
10D GALVANIZED NAIL

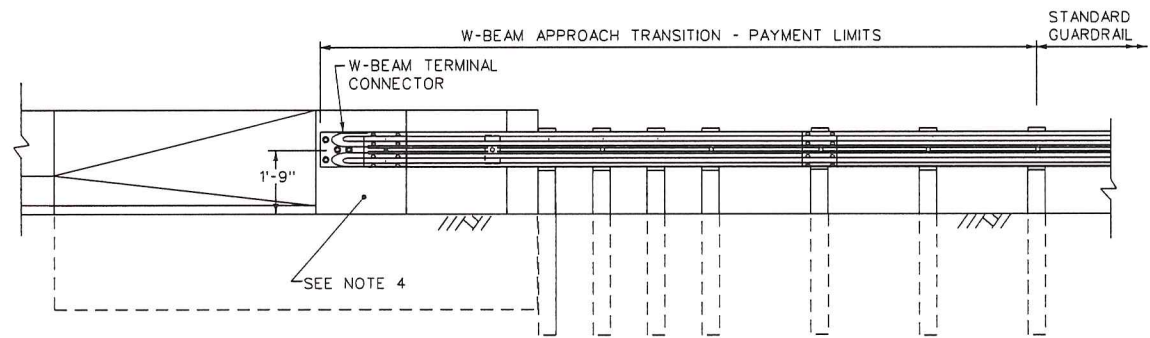


SECTION B-B

CONCRETE INSERT ANCHOR
ASSEMBLY OR 7/8" H.S. HEX
THROUGH BOLTS WITH
5/8" BEARING PLATE



PLAN



ELEVATION

NOTES:

1. THIS GUARDRAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL FLARED BACK CONCRETE SHAPE AND SHOULD NOT BE CONNECTED DIRECTLY TO A CONCRETE SAFETY SHAPE. CONCRETE SAFETY SHAPE BARRIERS SHOULD BE TRANSITIONED TO A VERTICAL SHAPE AT THE GUIDERAIL CONNECTION.
2. STANDARD BARRIER HARDWARE HAS BEEN USED TO DEVELOP THIS GUARDRAIL TRANSITION. SEE THE CURRENT EDITION OF "A GUIDE TO STANDARDIZED HIGHWAY BARRIER RAIL HARDWARE", AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.
3. THE STEEL SPACER TUBE IS CONNECTED ONLY TO THE GUARDRAIL BEAM. BLOCK-OUTS MADE OF WOOD AND STEEL ARE NOT RECOMMENDED IN THIS TRANSITION.
4. FOR DETAILS OF CONCRETE SHAPE TRANSITION, SEE DWG. NO. 603.25.

ISSUED:	8/2015
REVISION	APPROVAL

RECOMMENDED:
Adil Raza
PROJECT MANAGER

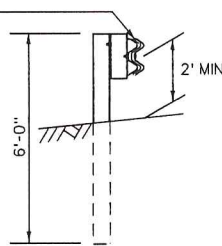
APPROVED:
Muhammed Khalid
CHIEF ENGINEER

W-BEAM APPROACH TRANSITION
VERTICAL FLARED BACK CONCRETE BARRIER
END W-BEAM - WOOD POSTS

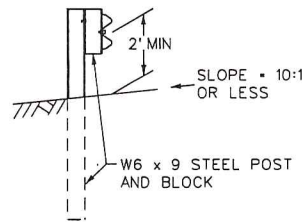
d. DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 603.23

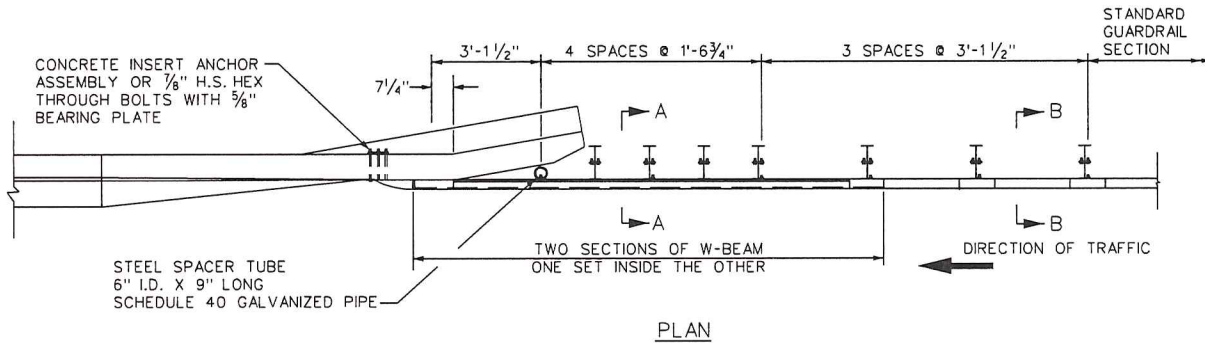
TWO SECTIONS OF W-BEAM
ONE SET INSIDE THE OTHER



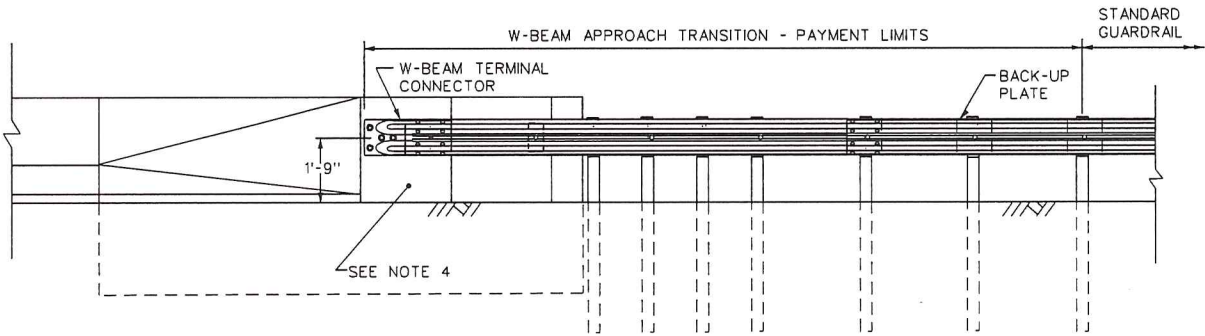
SECTION A-A



SECTION B-B



PLAN



ELEVATION

NOTES:

1. THIS GUARDRAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL FLARED BACK CONCRETE SHAPE AND SHOULD NOT BE CONNECTED DIRECTLY TO A CONCRETE SAFETY SHAPE. CONCRETE SAFETY SHAPE BARRIERS SHOULD BE TRANSITIONED TO A VERTICAL SHAPE AT THE GUARDRAIL CONNECTION.
2. STANDARD BARRIER HARDWARE HAS BEEN USED TO DEVELOP THIS GUARDRAIL TRANSITION. SEE THE CURRENT EDITION OF "A GUIDE TO STANDARDIZED HIGHWAY BARRIER RAIL HARDWARE", AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.
3. THE STEEL SPACER TUBE IS CONNECTED ONLY TO THE GUARDRAIL BEAM. BLOCK-OUTS MADE OF WOOD AND STEEL ARE NOT RECOMMENDED IN THIS TRANSITION.
4. FOR DETAILS OF CONCRETE SHAPE TRANSITION, SEE DWG. NO. 603.25.

ISSUED:	8/2015
REVISION	APPROVAL

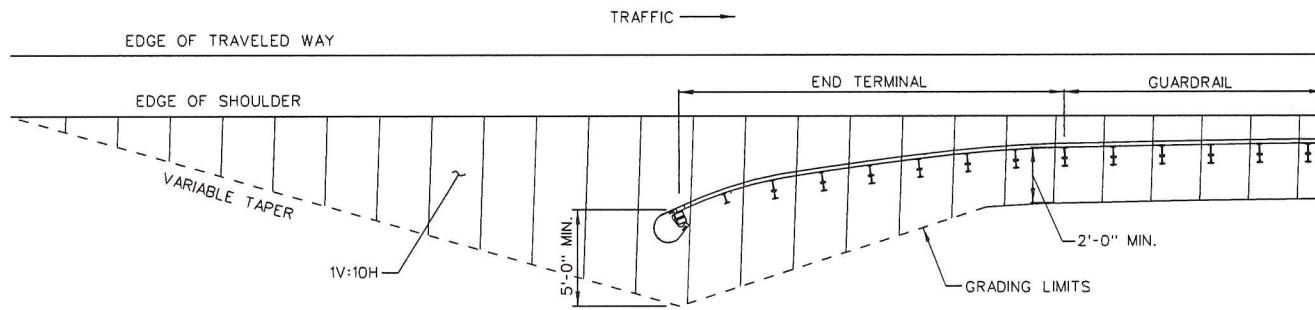
RECOMMENDED: *Adil Riaz*
PROJECT MANAGER

APPROVED: *Muhammed Khelid*
CHIEF ENGINEER

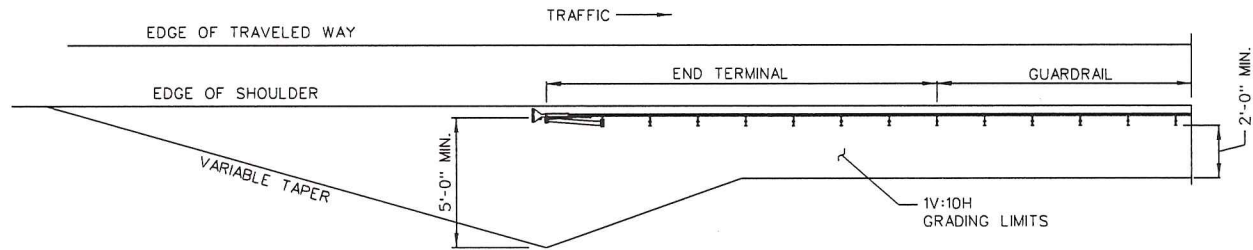
W-BEAM APPROACH TRANSITION
VERTICAL FLARED BACK CONCRETE
BARRIER END
W-BEAM - STEEL POSTS

d. DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

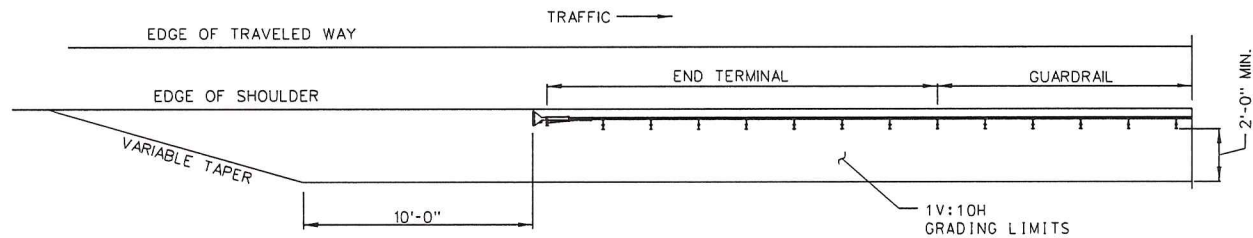
DWG. NO. 603.24



GRADING FOR FLARED GUARDRAIL END TREATMENT



PREFERRED GRADING



ALTERNATIVE GRADING

GRADING FOR NON-FLARED GUARDRAIL END TREATMENT

ISSUED: 8/2015

REVISION APPROVAL

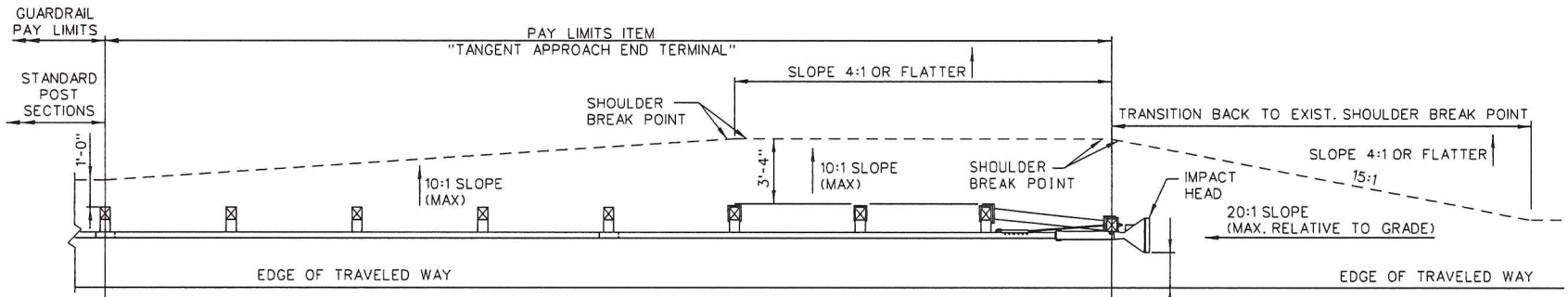
RECOMMENDED: *Adil Riaz*
PROJECT MANAGER

APPROVED: *Muhammed Kholid*
CHIEF ENGINEER

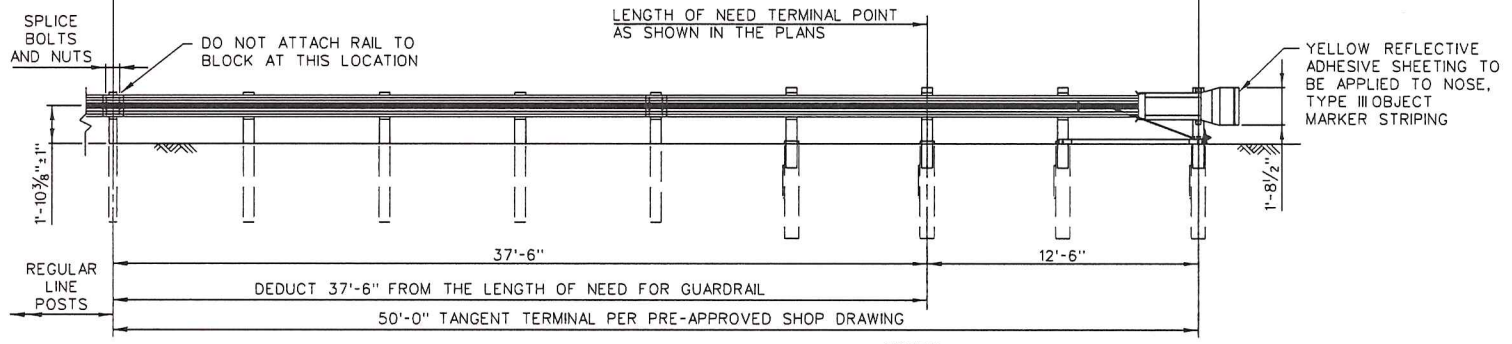
GUARDRAIL APPROACH END TREATMENT GRADING

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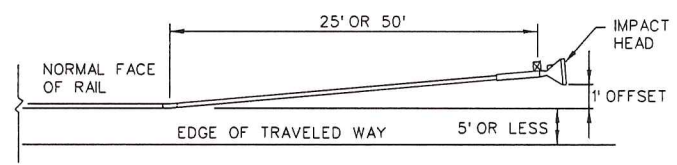
DWG. NO. 603.26



PLAN



ELEVATION



FLARE DETAIL

NOTES:

1. SEE PRE-APPROVED SHOP DRAWINGS FOR DETAILS OF TANGENT APPROACH END TERMINAL. SHOP DRAWINGS SHALL INCLUDE NCHRP REPORT 350, TL-3 CERTIFICATION.
2. ALL MATERIALS USED SHALL MEET THE APPLICABLE REQUIREMENTS OF SECTION 813 OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND STRUCTURES.
3. THE WOOD BLOCK SHALL BE NAILED TO THE POST WITH A GALVANIZED STEEL 10D COMMON NAIL. THE NAILS ARE TO BE DRIVEN INTO THE CENTER OF THE TOP OR BOTTOM OF THE BLOCK.
4. THE TANGENT APPROACH END TERMINAL INSTALLATION SHALL MAINTAIN A 4' MINIMUM OFFSET FROM THE EDGE OF THE IMPACT HEAD TO THE EDGE OF THE TRAVELED WAY. FOR NARROW EXISTING SHOULDERS THAT HAVE AN OFFSET OF 5' OR LESS FROM THE FACE OF THE RAIL ELEMENT TO THE EDGE OF THE TRAVELED WAY, THE RAIL AND TERMINAL MAY BE FLARED FROM THE NORMAL FACE OF RAIL. THE FLARED OFFSET DISTANCE SHALL BE 1' AT A TAPER RATE OF 25:1, FOR A TOTAL FLARE LENGTH 25', OR A TAPER RATE OF 50:1, FOR A TOTAL FLARE LENGTH OF 50' (SEE FLARE DETAIL).
5. W-BEAM RAIL ELEMENT PANEL LENGTHS SHALL BE 25' LONG. SHORTER LENGTHS SHALL NOT BE USED.
6. THE COST OF FURNISHING AND INSTALLING THE TANGENT APPROACH END TERMINAL, COMPLETE WITH ALL MISCELLANEOUS HARDWARE AND PARTS AS DETAILED ON THE PRE-APPROVED SHOP DRAWINGS, IS TO BE INCLUDED IN THE UNIT PRICE FOR "TANGENT APPROACH END TERMINAL".
7. YELLOW RETROREFLECTIVE TYPE III SHEETING SHALL COVER THE ENTIRE NOSE OF THOSE TERMINALS WITH A FLAT IMPACT HEAD. THOSE TERMINALS WITH A ROUNDED IMPACT HEAD SHALL BE COVERED WITH A 1'-0" x 3'-0" YELLOW RETROREFLECTIVE TYPE III SHEETING.

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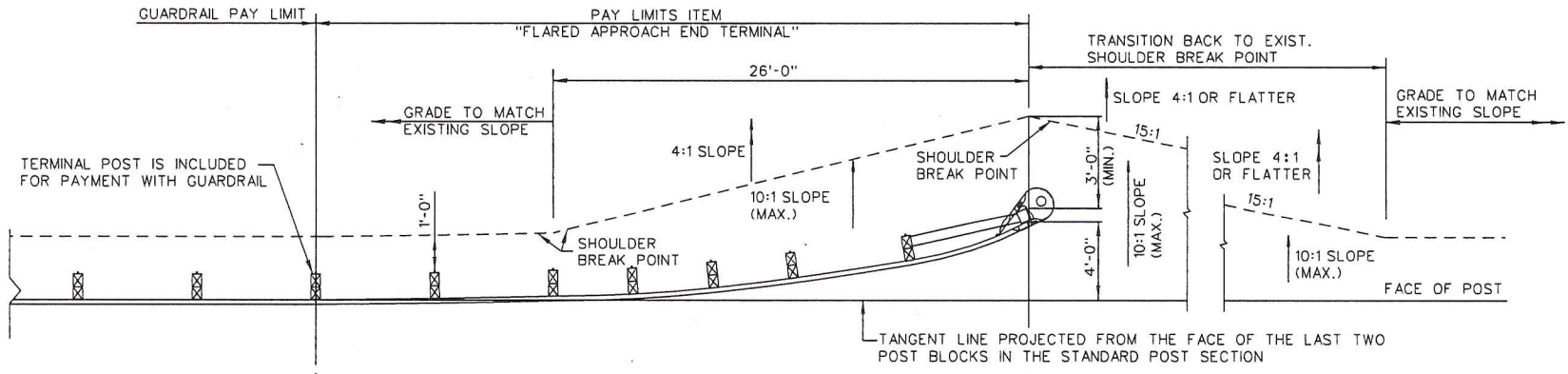
RECOMMENDED: *Adil Raza*
PROJECT MANAGER

APPROVED: *Muhammed Khalid*
CHIEF ENGINEER

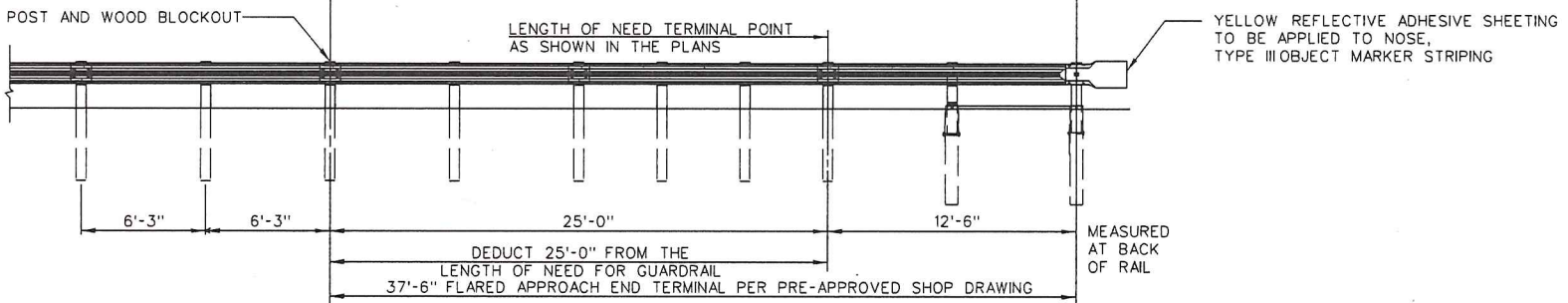
TANGENT APPROACH END TERMINAL

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DEPARTMENT OF TRANSPORTATION

DWG. NO. 603.27



PLAN



ELEVATION

NOTES:

1. SEE PRE-APPROVED SHOP DRAWINGS FOR DETAILS OF FLARED APPROACH END TERMINAL (PARABOLIC LAYOUT). SHOP DRAWING SHALL INCLUDE NCHRP REPORT 350, TL-3 CERTIFICATION.
2. ALL MATERIALS USED SHALL MEET THE APPLICABLE REQUIREMENTS OF SECTION 813 OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND STRUCTURES.
3. THE POST OFFSET DIMENSIONS ARE GIVEN TO THE CENTER OF THE TRAFFIC FACE OF THE BLOCKOUTS; EXCEPT AT THE FIRST POST, WHERE THE DIMENSION IS TO THE CENTER OF THE TRAFFIC FACE OF THE POST. OFFSET POINTS ARE TO BE LOCATED BY MEASUREMENTS AT THE BACK OF RAIL EQUAL TO THE NOMINAL POST SPACINGS SHOWN ON PRE-APPROVED SHOP DRAWINGS. POSTS ARE TO BE SET APPROXIMATELY RADIAL TO THE RAILING AT EACH LOCATION.
4. WHEN A WOOD BLOCK IS USED ADJACENT TO A WOOD POST, THE BLOCK SHALL BE NAILED TO THE POST WITH A GALVANIZED STEEL 10D COMMON NAIL. THE NAIL IS TO BE DRIVEN INTO THE CENTER OF THE TOP OR BOTTOM OF THE BLOCK.
5. THE COST OF FURNISHING AND INSTALLING THE FLARED APPROACH END TERMINAL, COMPLETE WITH ALL MISCELLANEOUS HARDWARE AND PARTS AS DETAILED ON THE PRE-APPROVED SHOP DRAWINGS, IS TO BE INCLUDED IN THE UNIT PRICE FOR "FLARED APPROACH END TERMINAL".
6. YELLOW RETROREFLECTIVE TYPE III SHEETING SHALL COVER THE ENTIRE NOSE OF THOSE TERMINALS WITH A FLAT IMPACT HEAD. THOSE TERMINALS WITH A ROUNDED IMPACT HEAD SHALL BE COVERED WITH A 1'-0" x 3'-0" YELLOW RETROREFLECTIVE TYPE III SHEETING.

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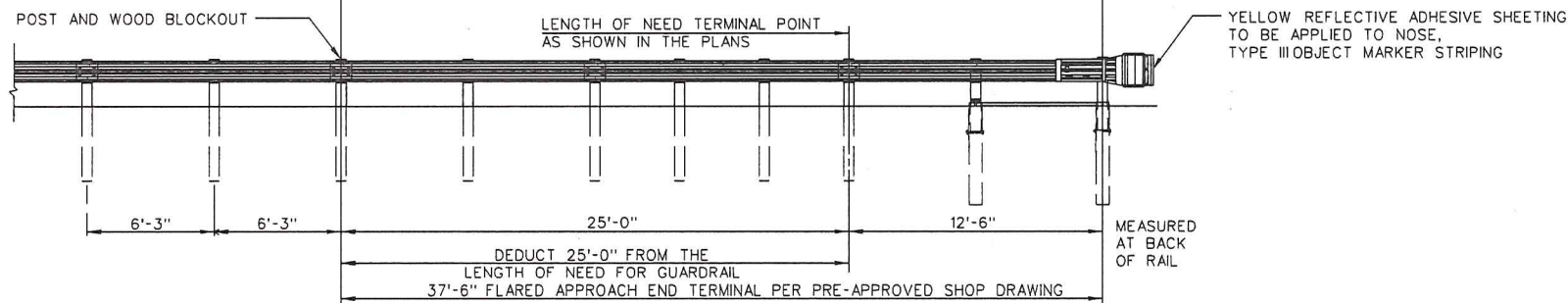
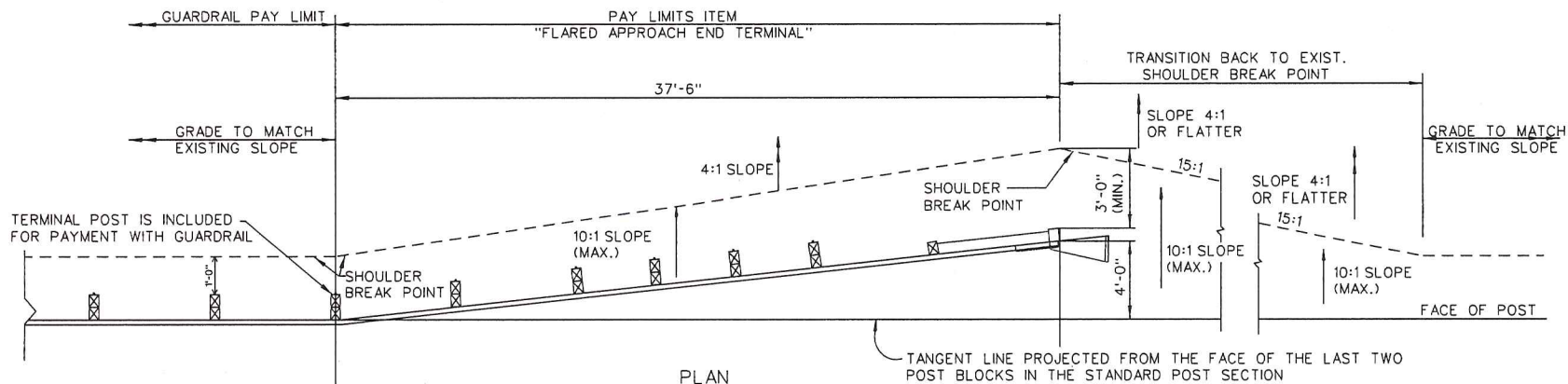
RECOMMENDED: *Adil Raza*
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APPROVED: *Muhammed Kholid*
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FLARED APPROACH END TERMINAL
PARABOLIC LAYOUT

d. DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 603.28



NOTES:

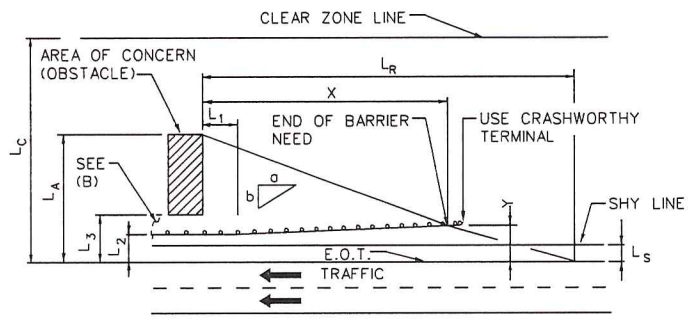
1. SEE PRE-APPROVED SHOP DRAWINGS FOR DETAILS OF FLARED APPROACH END TERMINAL (STRAIGHT LAYOUT). SHOP DRAWING SHALL INCLUDE NCHRP REPORT 350, TL-3 CERTIFICATION.
2. ALL MATERIALS USED SHALL MEET THE APPLICABLE REQUIREMENTS OF SECTION 813 OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND STRUCTURES.
3. THE POST OFFSET DIMENSIONS ARE GIVEN TO THE CENTER OF THE TRAFFIC FACE OF THE BLOCKOUTS; EXCEPT AT THE FIRST POST, WHERE THE DIMENSION IS TO THE CENTER OF THE TRAFFIC FACE OF THE POST. OFFSET POINTS ARE TO BE LOCATED BY MEASUREMENTS AT THE BACK OF RAIL EQUAL TO THE NOMINAL POST SPACINGS SHOWN ON PRE-APPROVED SHOP DRAWINGS. POSTS ARE TO BE SET APPROXIMATELY RADIAL TO THE RAILING AT EACH LOCATION.
4. WHEN A WOOD BLOCK IS USED ADJACENT TO A WOOD POST, THE BLOCK SHALL BE NAILED TO THE POST WITH A GALVANIZED STEEL 10D COMMON NAIL. THE NAIL IS TO BE DRIVEN INTO THE CENTER OF THE TOP OR BOTTOM OF THE BLOCK.
5. THE COST OF FURNISHING AND INSTALLING THE FLARED APPROACH END TERMINAL, COMPLETE WITH ALL MISCELLANEOUS HARDWARE AND PARTS AS DETAILED ON THE PRE-APPROVED SHOP DRAWINGS, IS TO BE INCLUDED IN THE UNIT PRICE FOR "FLARED APPROACH END TERMINAL".
6. YELLOW RETROREFLECTIVE TYPE III SHEETING SHALL COVER THE ENTIRE NOSE OF THOSE TERMINALS WITH A FLAT IMPACT HEAD. THOSE TERMINALS WITH A ROUNDED IMPACT HEAD SHALL BE COVERED WITH A 1'-0" x 3'-0" YELLOW RETROREFLECTIVE TYPE III SHEETING.

ISSUED: 8/2015	RECOMMENDED: <i>Adil Raj</i>
REVISION	APPROVAL
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	APPROVED: <i>Muhammed Kholid</i>
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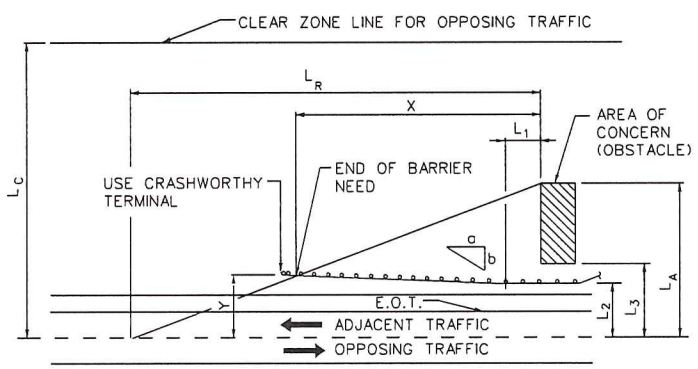
**FLARED APPROACH END TERMINAL
STRAIGHT LAYOUT**

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DEPARTMENT OF TRANSPORTATION

DWG. NO. 603.29



(A)
APPROACH BARRIER LAYOUT VARIABLES



(B)
APPROACH BARRIER LAYOUT FOR OPPOSING TRAFFIC

DESIGN SPEED (MPH)	DESIGN TRAFFIC VOLUME (ADT)				SHY LINE OFFSET L_s (FT)	FLARE RATE (a:b) BEYOND SHY LINE x_x	FLARE RATE (a:b) BEYOND SHY LINE x_x
	OVER 6000	2000-6000	800-2000	UNDER 800			
70	475	445	395	360	10.0	15:1	20:1
60	425	400	345	330	8.0	14:1	18:1
55	360	345	315	280	8.0	12:1	16:1
50	330	300	260	245	7.0	11:1	14:1
45	260	245	215	200	6.0	10:1	12:1
40	230	200	180	165	5.0	9:1	10:1
30	165	165	150	130	4.0	7:1	8:1

* VALUES ARE FOR RIGID BARRIER SYSTEM.
 ** VALUES ARE FOR YIELDING BARRIER (2' DYNAMIC DEFLECTION) SYSTEM.

DESIGN PARAMETERS FOR ROADSIDE BARRIER LAYOUT

NOMENCLATURE

- L_c CLEAR ZONE (FIG. 3.1b AASHTO, "ROADSIDE DESIGN GUIDE", CURRENT EDITION.)
- L_a DISTANCE FROM E.O.T. TO FAR EDGE OF OBSTACLE (AREA OF CONCERN)
- L_r RUNOUT LENGTH OF BARRIER (SEE TABLE ABOVE)
- L_s SHY LINE OFFSET
- X LENGTH OF NEED (LOFN) - SEE PLANS
- Y LATERAL OFFSET TO BEGINNING OF LOFN
- L_1 UPSTREAM TANGENT SECTION (TABLE III-E-1 AASHTO, "GUIDE FOR SELECTING, LOCATING AND DESIGNING TRAFFIC BARRIERS AND PLANS")
- L_2 DISTANCE FROM E.O.T. (OR CENTERLINE) TO TANGENT SECTION OF BARRIER
- L_3 AS MEASURED
- E.O.T. EDGE OF THROUGH TRAVELED WAY

NOTES:

1. REFERENCES ARE AASHTO "GUIDE FOR SELECTING, LOCATING AND DESIGNING TRAFFIC BARRIERS", CURRENT EDITION, AND "ROADSIDE DESIGN GUIDE", CURRENT EDITION.
2. ALTHOUGH THE DRAWING SHOWS STRAIGHT LINE BARRIER ON THE FLARE, A PARABOLIC LAYOUT SHOULD BE INSTALLED IN ACCORDANCE WITH FHWA TECHNICAL ADVISORY T5040.23 (1984).
3. UPSTREAM FLARE NOT REQUIRED ON A DIVIDED HIGHWAY. END ANCHORAGE WILL BE REQUIRED.
4. CRASHWORTHY TERMINALS MAY BE STEEL OR WOOD POST.

ISSUED: 8/2015	RECOMMENDED: <i>Adil Riaz</i>
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BARRIER LAYOUT

d. DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. 603.30