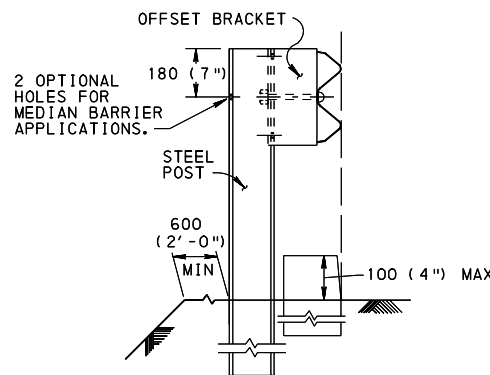
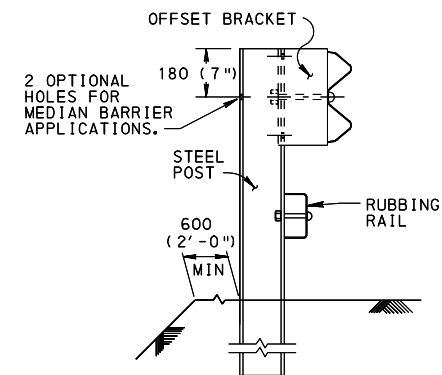


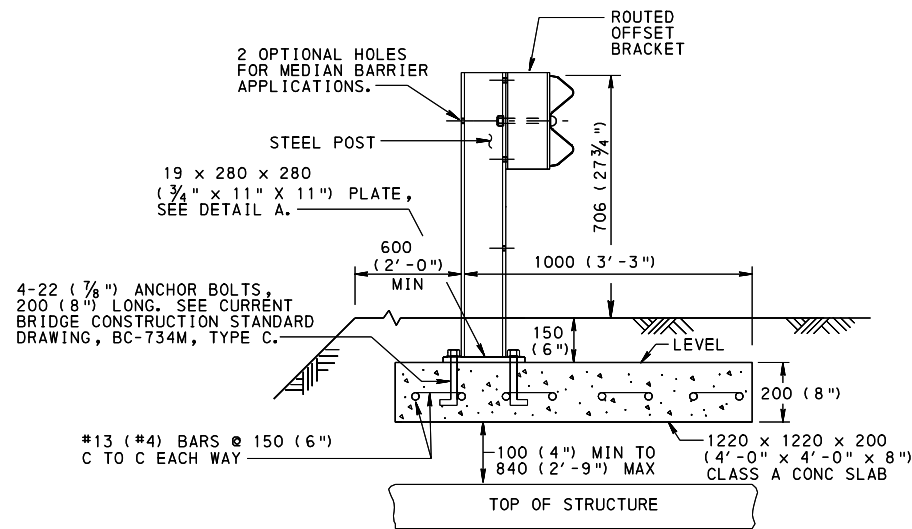
W150 x 13.5 (W6 x 8.5 or 9.0) POST DETAILS



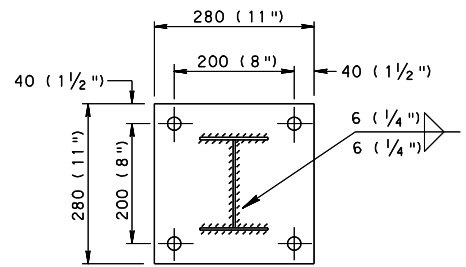
GUIDE RAIL WITH CURB



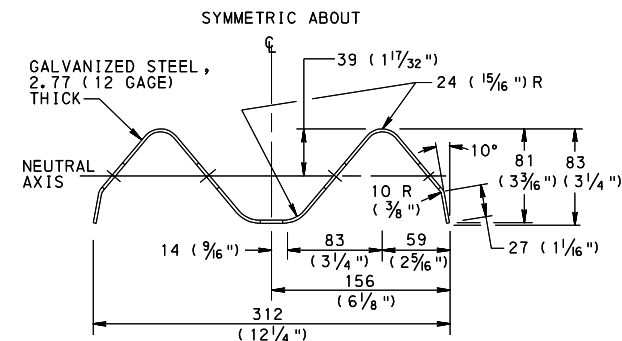
GUIDE RAIL WITH RUBBING RAIL



STEEL POSTS OVER UNDERGROUND STRUCTURES



DETAIL A



RAIL ELEMENT SECTION B-B

FOR SPLICE BOLT AND POST BOLT DETAILS, SEE SHEET 2.

NOTES

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 620.
2. PROVIDE STEEL I-BEAM W150 x 13.5 (W6" x 8.5) POSTS WITH ROUTED WOOD, PLASTIC OR COMPOSITE OFFSET BRACKETS LISTED IN BULLETIN 15.
3. FOR INSTALLATION OF GUIDE RAIL OVER UNDERGROUND STRUCTURES, THE CONCRETE, REINFORCEMENT BARS AND HARDWARE ARE INCIDENTAL TO THE GUIDE RAIL PAY ITEM.
4. PROVIDE RUBBING RAIL WHEN THE HEIGHT OF STRONG POST GUIDE RAIL IS OVER 710 (28") IN TRANSITION AREAS TO EXISTING GUIDE RAIL.
5. ATTACH W-BEAM RAIL ELEMENTS TO EACH POST. SPLICE RAIL ELEMENTS ONLY AT POSTS AND LAP IN THE DIRECTION OF TRAFFIC.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. U.S. CUSTOMARY UNITS IN () PARENTHESES.
7. INSTALL GUIDE RAIL DELINEATORS IN ACCORDANCE WITH TC-8604.
8. FOR STRONG POST MEDIAN BARRIER APPLICATIONS, THE INSTALLATION IS A MIRROR IMAGE ON EACH SIDE OF THE POST.
9. BURNING OF POSTS OR RAIL ELEMENT FOR HOLES IS NOT PERMITTED.
10. WHEN THE 600 (2'-0") MINIMUM CLEARANCE FROM THE REAR FACE OF THE GUIDE RAIL POST TO THE FILL SLOPE BREAK CANNOT BE MAINTAINED, PROVIDE STRONG POSTS THAT ARE A MINIMUM OF 300 (1'-0") LONGER.

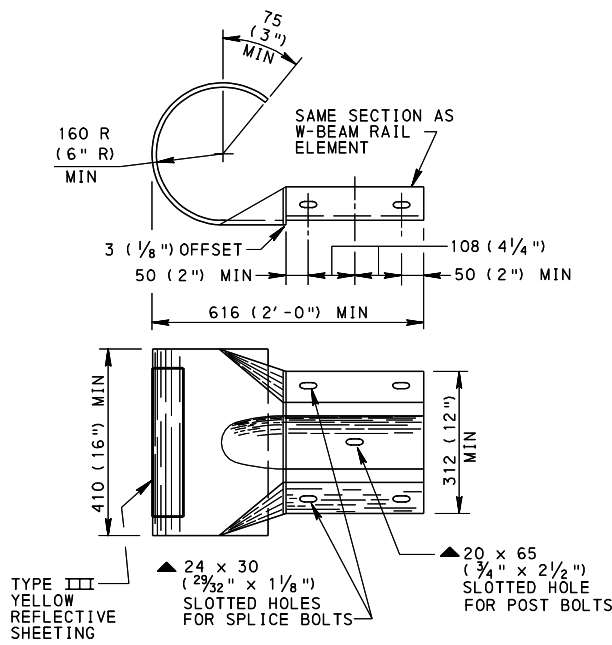
NOTE: EITHER ALL METRIC OR ALL ENGLISH VALUES MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

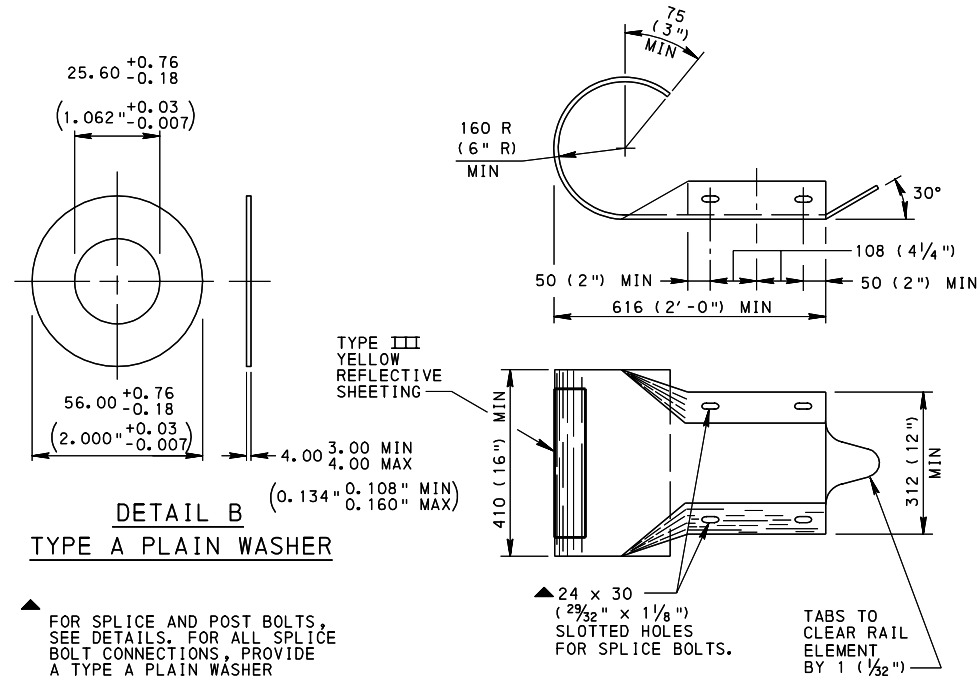
TYPE 2 STRONG POST
GUIDE RAIL

RC-50M	GUIDE RAIL TRANSITION AT END OF STRUCTURE
BC-734M	STANDARD ANCHOR SYSTEMS
BC-739M	BRIDGE BARRIER TO GUIDE RAIL TRANSITION
REFERENCE DRAWINGS	

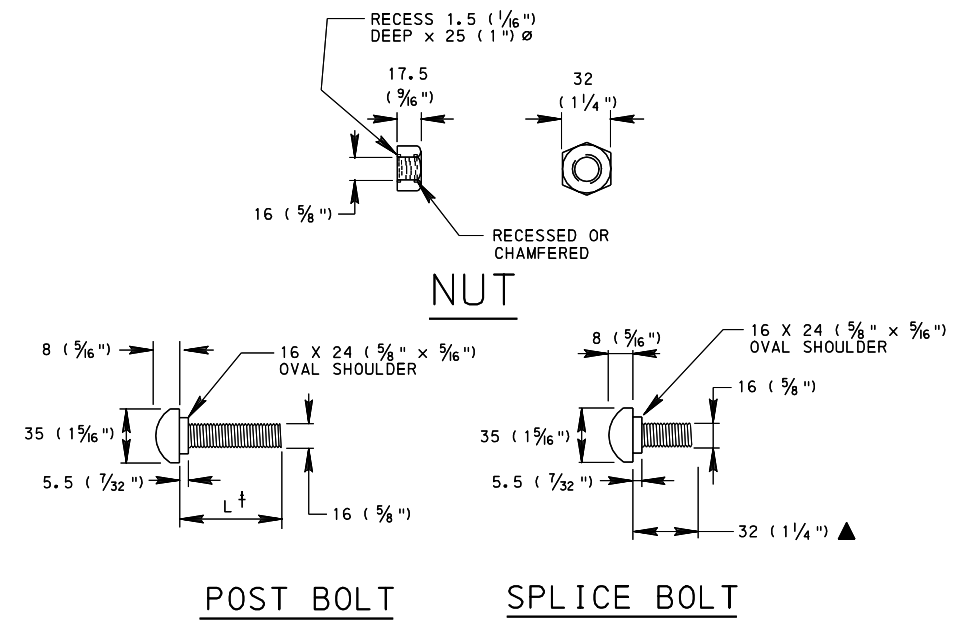
RECOMMENDED JUN. 1, 2010 <i>R. Spick</i> CHIEF, HWY. QA DIVISION	RECOMMENDED JUN. 1, 2010 <i>Sam Thompson</i> DIRECTOR, BUREAU OF DESIGN	SHT 1 OF 1 RC-52M
--	---	----------------------



TERMINAL TO BE PLACED ON BACK OF RAIL ELEMENT



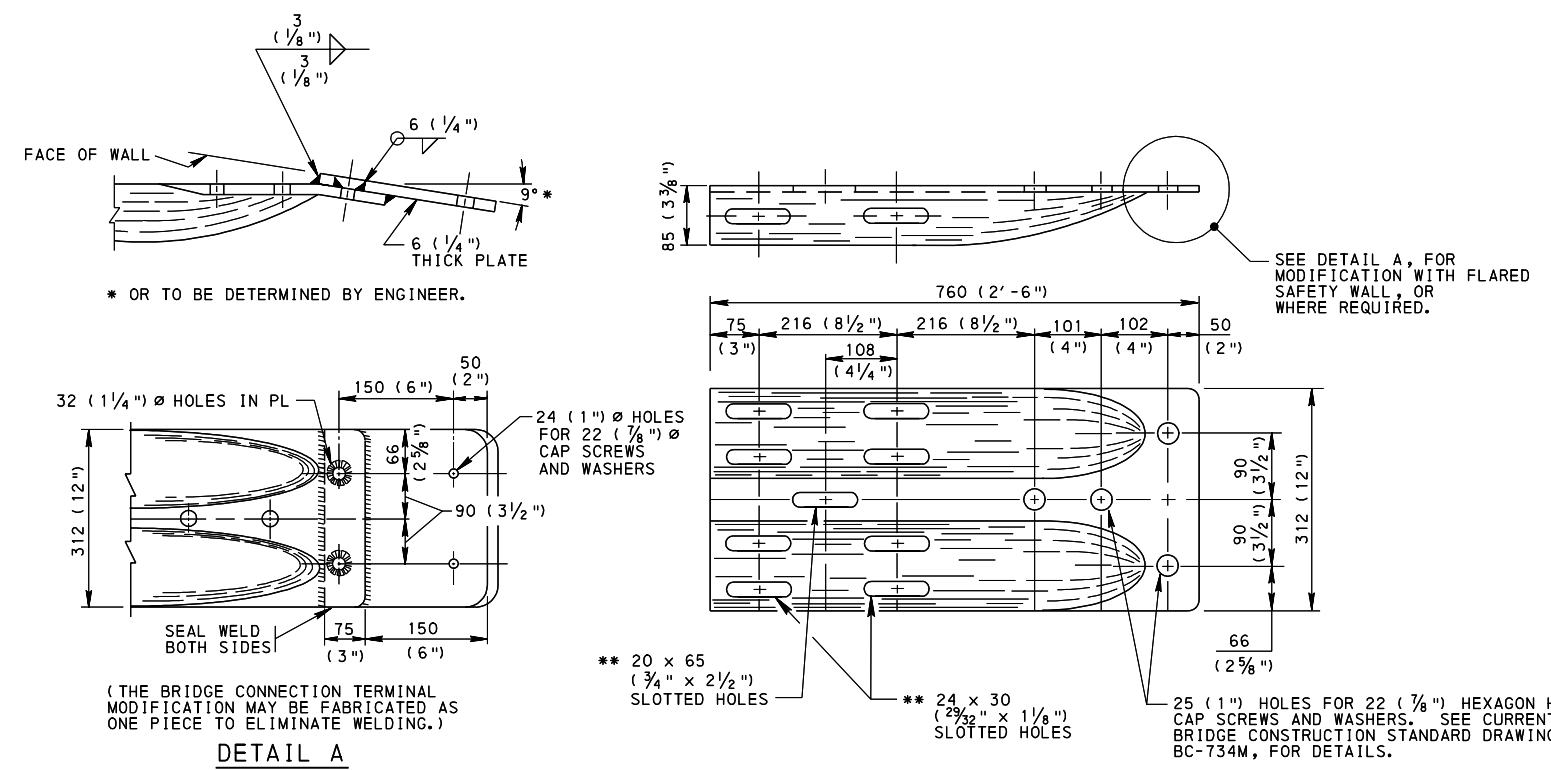
TERMINAL TO BE PLACED ON FACE OF RAIL ELEMENT



† USE L = 115 (4 1/2") FOR ALL RUBBING RAIL TO GUIDE RAIL POST CONNECTIONS AND USE L = 255 (10") FOR ALL W-BEAM RAIL ELEMENT TO GUIDE RAIL POST AND ROUTED OFFSET BRACKET CONNECTIONS.

▲ FOR FOUR (4) PANEL NESTED RAIL ELEMENT USE 54 (2 1/8") SPLICE BOLT.

ALTERNATE TERMINAL SECTIONS



(THE BRIDGE CONNECTION TERMINAL MODIFICATION MAY BE FABRICATED AS ONE PIECE TO ELIMINATE WELDING.)

** PROVIDE SPLICE BOLTS WITH A LOCK NUT OR DOUBLE NUT AND TIGHTEN ONLY TO A POINT THAT ALLOWS GUIDE RAIL TO BE FREE TO MOVE. CENTER SPLICE BOLTS IN THE SLOTTED HOLES.

TERMINAL SECTION BRIDGE CONNECTION

NOTES

1. USE SPLICE BOLTS TO DEVELOP THE DESIGN STRENGTH OF THE RAIL ELEMENT.
2. PROVIDE TERMINAL SECTION BRIDGE CONNECTION, WITH WELDED PLATE FOR SAFETY, AS AN INCIDENTAL ITEM.
3. USE SLOTTED ROUND-HEADED BOLTS TO PROVIDE FOR WRENCH OR SCREWDRIVER.

NOTE: EITHER ALL METRIC OR ALL ENGLISH VALUES MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

TYPE 2 STRONG POST
GUIDE RAIL

RECOMMENDED JUN. 1, 2010 <i>R. H. ...</i> CHIEF, HWY. QA DIVISION	RECOMMENDED JUN. 1, 2010 <i>...</i> DIRECTOR, BUREAU OF DESIGN	SHT 2 OF 7 RC-52M
---	--	----------------------

ROTATING BRACKET

 1905 (6'-3") 1905 (6'-3")

 W150 X 13.5 (W6 x 9) POST

POSITIONING OF ROTATING BRACKET

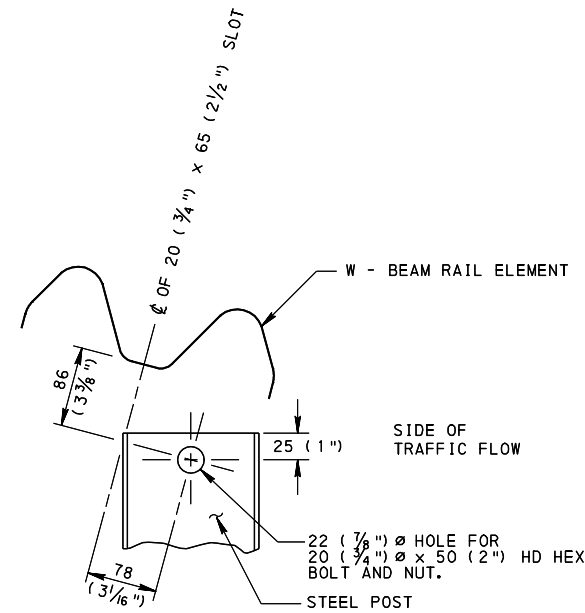
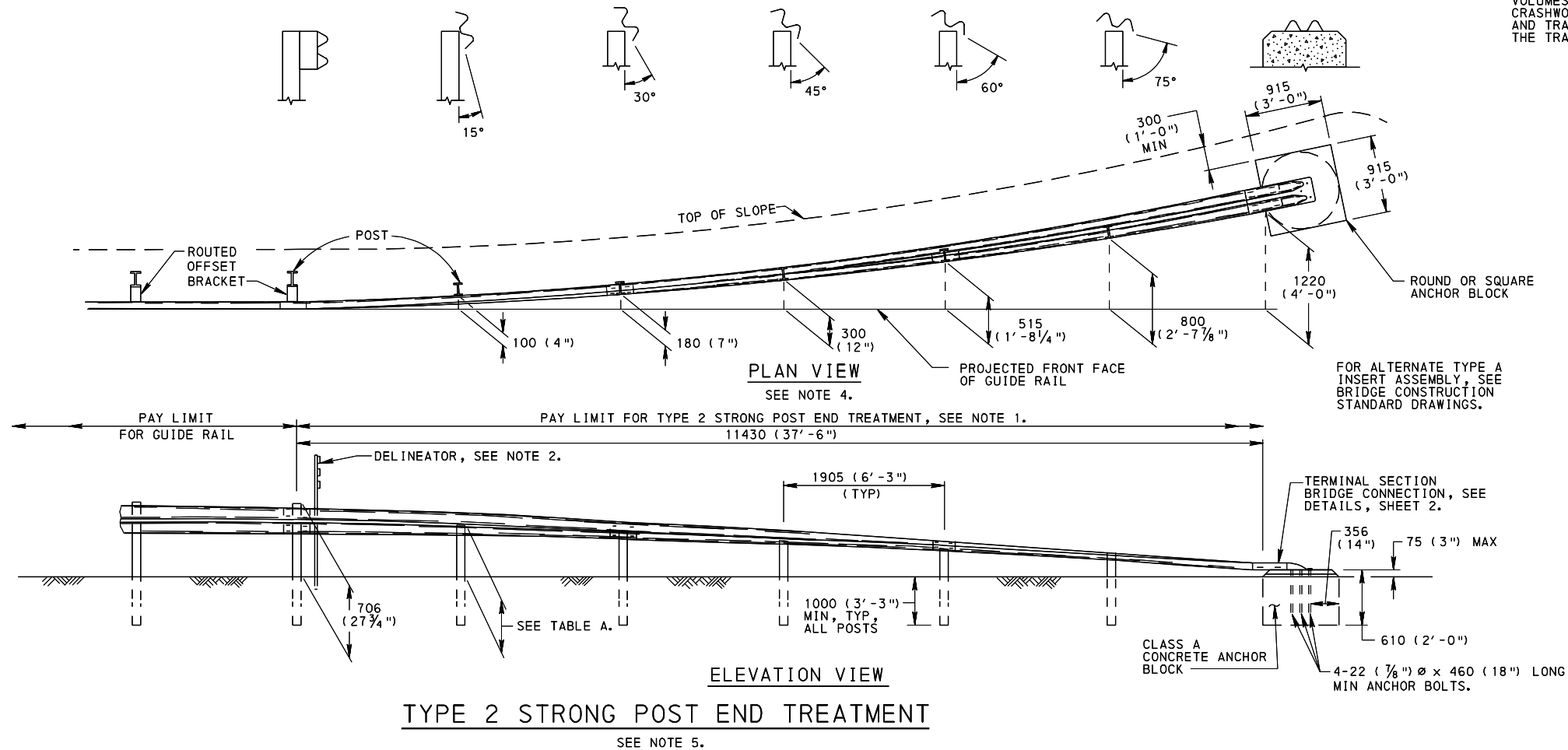


TABLE A

HEIGHT OF POST	430 (17")	370 (14 1/2")	300 (11 3/4")	215 (8 1/2")	115 (4 1/2")
ROTATION ANGLES	15°	30°	45°	60°	75°

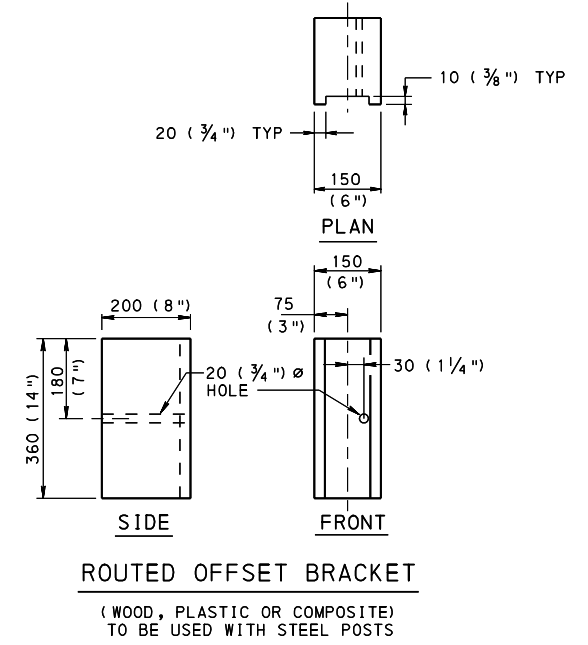
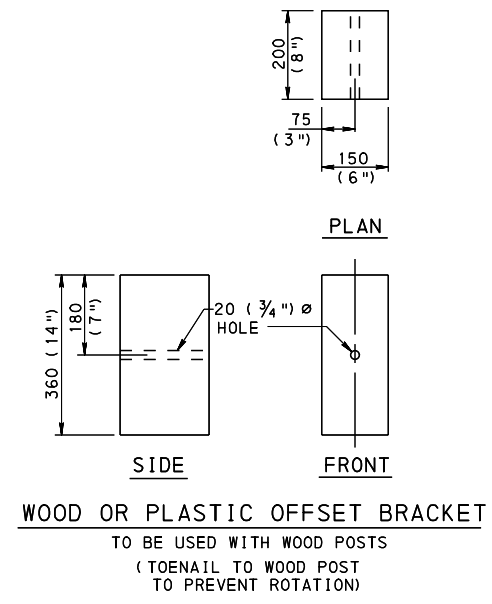
- NOTES**
- PAYMENT FOR TYPE 2 STRONG POST END TREATMENT INCLUDES 11430 (37'-6") OF SLOPING RAIL, TERMINAL SECTION, HARDWARE, EXCAVATION AND CONCRETE.
 - INSTALL DELINEATOR ASSEMBLIES UNDER SEPARATE PAY ITEM OR CONTRACT. FOR ADDITIONAL DETAILS, SEE TRAFFIC STANDARD TC-8604.
 - ONLY THE NECESSARY DIMENSIONS, FOR UNIFORMITY AND INTERCHANGEABILITY OF ROTATING BRACKETS, ARE INDICATED. PROVIDE ROTATING BRACKETS SUPPLIED BY A MANUFACTURER AS LISTED IN BULLETIN 15.
 - MEASURE OFFSETS FROM THE PROJECTED FRONT FACE OF THE GUIDE RAIL TO THE FRONT FACE OF THE POST.
 - TYPE 2 STRONG POST END TREATMENTS CAN NOT BE USED TO TERMINATE THE APPROACH END OF a) ANY GUIDE RAIL ON THE NHS, or b) ANY GUIDE RAIL ON NON-NHS HIGH-SPEED, HIGH-VOLUME ROUTES. USE CRASHWORTHY END TREATMENTS ON ALL NHS ROUTES AND ON NON-NHS ROADWAYS WITH TREATMENTS ON ALL NHS ROUTES AND ON NON-NHS ROADWAYS WITH 70 km/h (45 mph) POSTED SPEED LIMIT & ABOVE AND WITH CURRENT TRAFFIC VOLUMES 4000 VEHICLES PER DAY & ABOVE. ON 2-LANE ROADWAYS WHERE CRASHWORTHY END TREATMENTS ARE REQUIRED, USE ON BOTH THE APPROACH AND TRAILING ENDS. TYPE 2 STRONG POST END TREATMENTS MAY BE USED ON THE TRAILING END OF GUIDE RAIL FOR HIGH SPEED NHS DIVIDED ROADWAYS.



NOTE: EITHER ALL METRIC OR ALL ENGLISH VALUES MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.

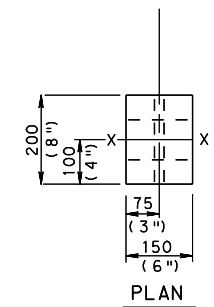
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF DESIGN

TYPE 2 STRONG POST
GUIDE RAIL
END TREATMENTS

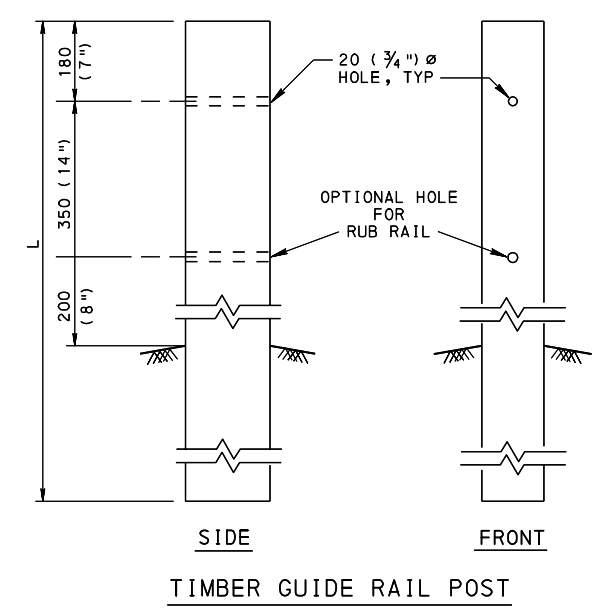
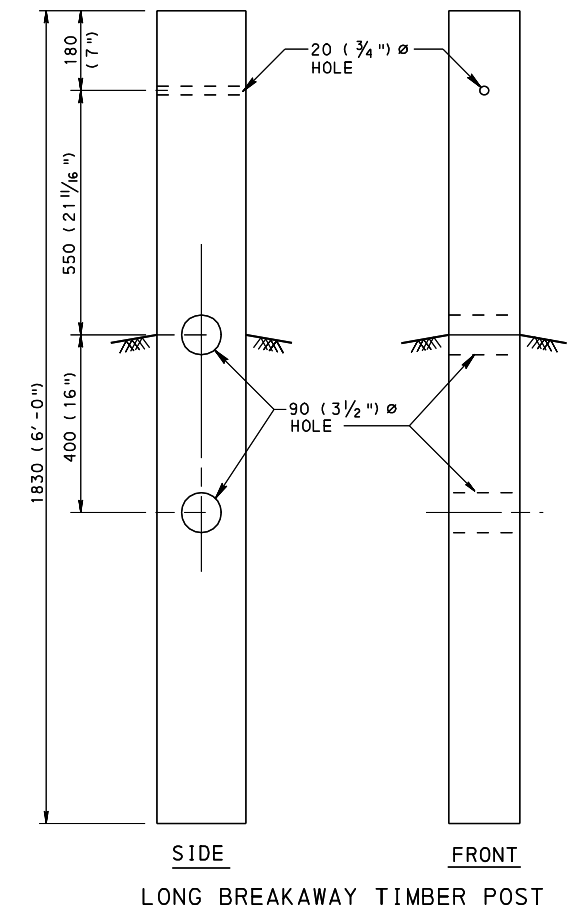
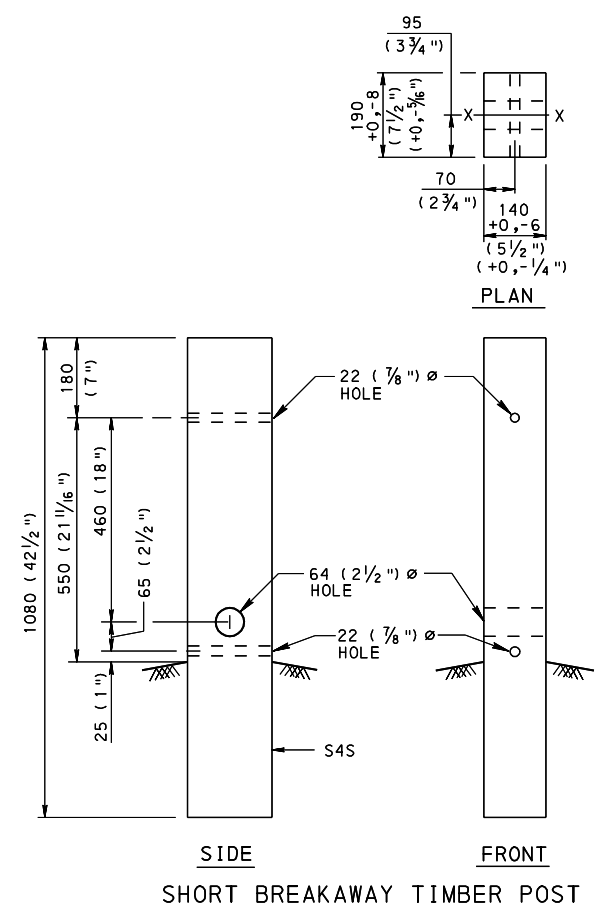
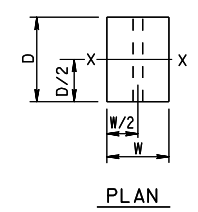


NOTES

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408.
2. WOOD POSTS ARE TO BE USED FOR END TREATMENTS AND SPECIAL CONDITIONS ON A CASE BY CASE BASIS. THEY ARE NOT TO BE USED AS ALTERNATES TO STEEL POSTS FOR GUIDE RAIL.



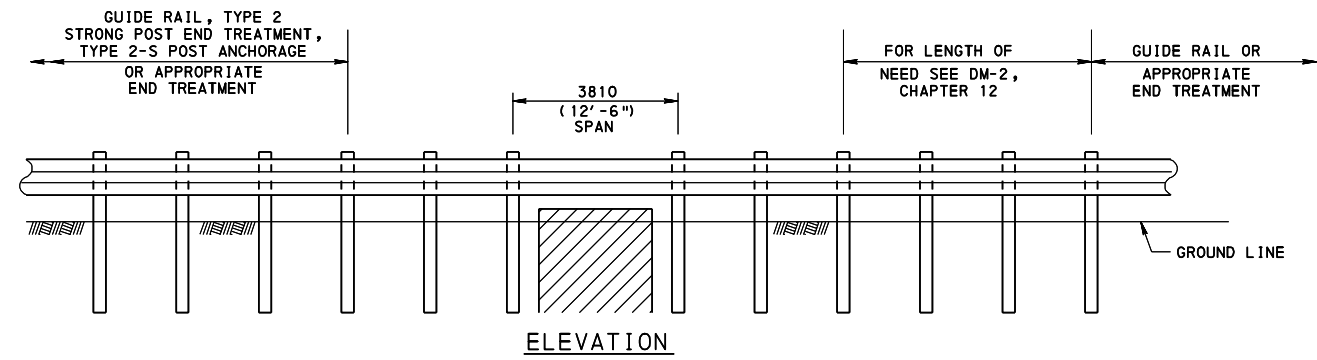
L	W	D
1625 (5'-4")	150 (6")	200 (8")
1830 (6'-0")	150 (6")	200 (8")
1980 (6'-6")	150 (6")	200 (8")
2060 (6'-9")	150 (6")	200 (8")



NOTE: EITHER ALL METRIC OR ALL ENGLISH VALUES MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

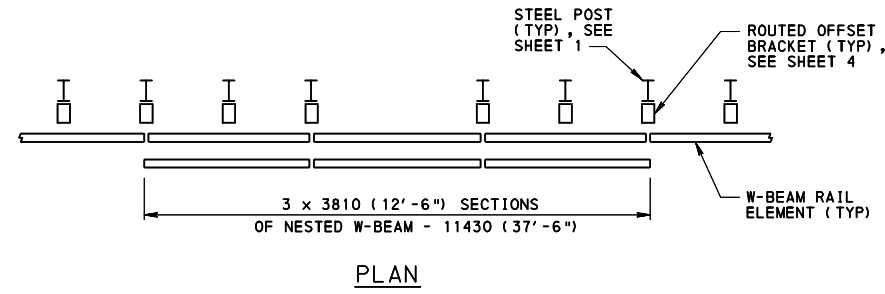
TYPE 2 STRONG POST
GUIDE RAIL
POSTS AND OFFSET BRACKETS



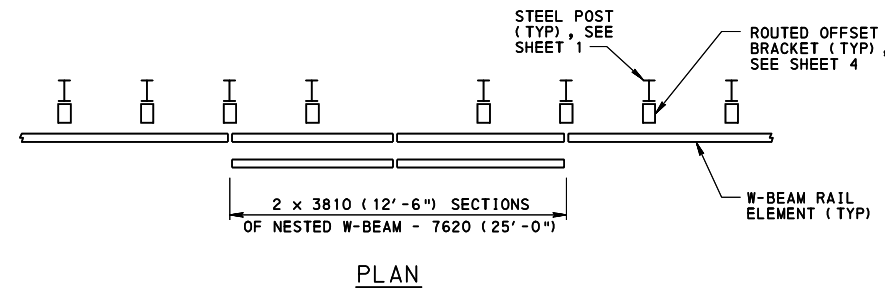
**3810 (12'-6") SPAN NESTED W-BEAM (TYPE 2-S) GUIDE RAIL
ACROSS LOW-FILL CULVERTS AND SMALL STRUCTURES**

NOTES

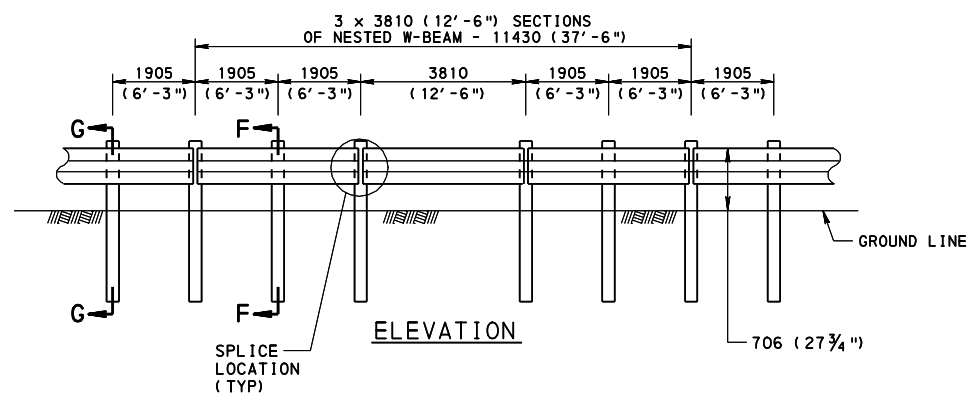
1. PLACE TOP W-BEAM RAIL ELEMENT IN NESTED SECTION SO THAT SPLICE LOCATIONS ARE ALIGNED.
2. CUTTING OF W-BEAM RAIL ELEMENT IS NOT PERMITTED.
3. FOR THE 3810 (12'-6") SPAN, A MINIMUM UNOBSTRUCTED DISTANCE OF 900 (3'-0") MUST BE PROVIDED BEHIND THE REAR FACE OF THE GUIDE RAIL POST TO THE FRONT FACE OF THE OBSTRUCTION.
4. FOR NESTED RAIL ELEMENT SPLICES (FOUR PANELS THICK), USE 5/8 (2 1/8") SPLICE BOLT. FOR SPLICE BOLT DETAILS, SEE SHEET 2.
5. NESTED SECTIONS, INCLUDING ALL RAIL ELEMENT AND ANCILLARY HARDWARE, ARE PAID FOR AT THE CONTRACT UNIT PRICE PER METER (LINEAR FOOT) OF TYPE 2-S GUIDE RAIL.
6. PROVIDE A MINIMUM OF 60900 (200') OF STRONG POST GUIDE RAIL (1 SECTION OF W-BEAM RAIL ELEMENT) BETWEEN NESTED (2 SECTIONS OF W-BEAM RAIL ELEMENT) RUNS.



PLAN



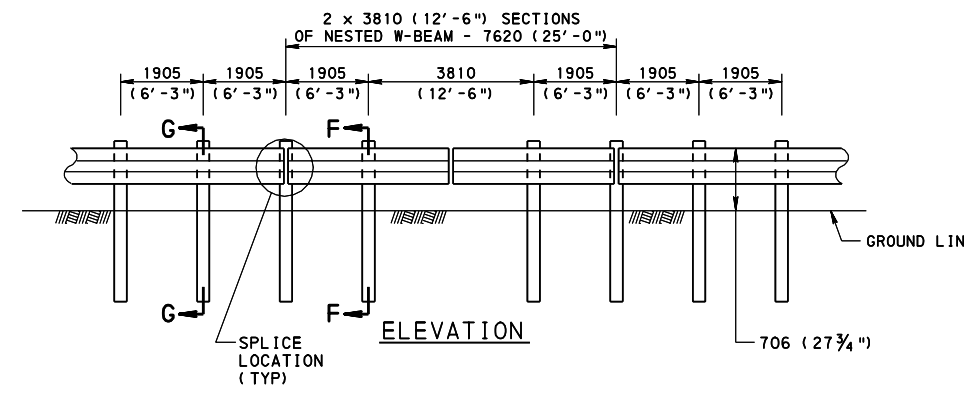
PLAN



ELEVATION

CASE 1

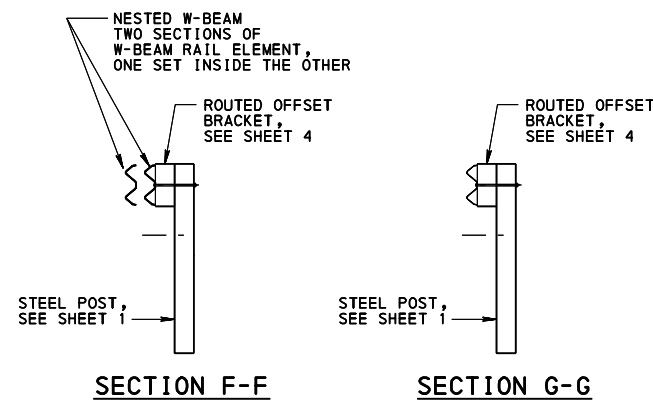
3 NESTED PANELS



ELEVATION

CASE 2

2 NESTED PANELS



SECTION F-F

SECTION G-G



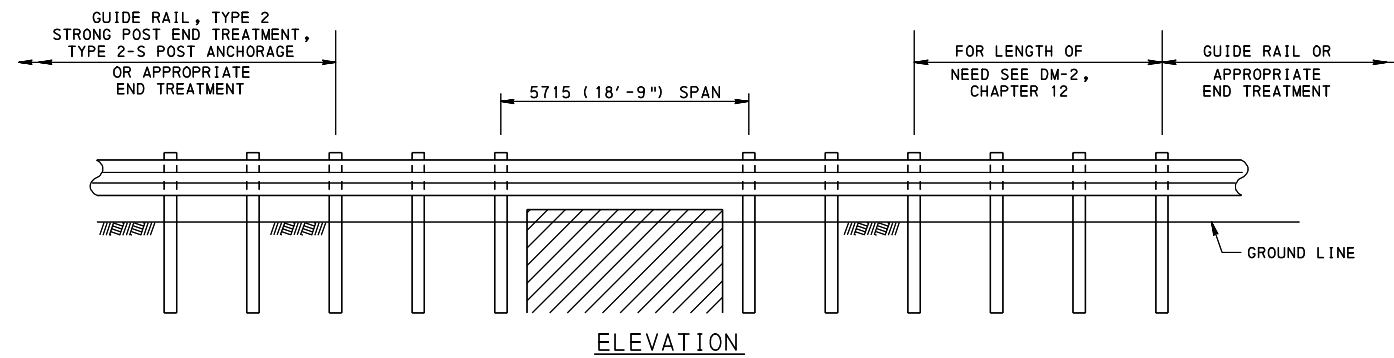
**TYPICAL NESTED PANEL
MID-SPAN SPLICE**

NOTE: EITHER ALL METRIC OR ALL ENGLISH VALUES MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN**

**TYPE 2 STRONG POST
GUIDE RAIL
ACROSS CULVERTS AND SMALL STRUCTURES
3810 (12'-6") SPAN**

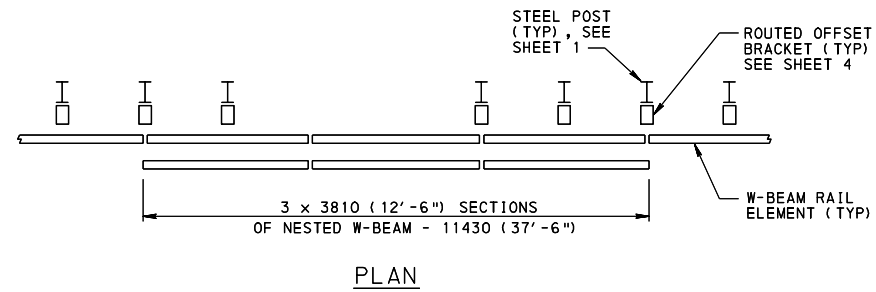
RECOMMENDED JUN. 1, 2010 <i>R. Hochstetler</i> CHIEF, HWY. QA DIVISION	RECOMMENDED JUN. 1, 2010 <i>David Thompson</i> DIRECTOR, BUREAU OF DESIGN	SHT 5 OF 7 RC-52M
--	---	-----------------------------



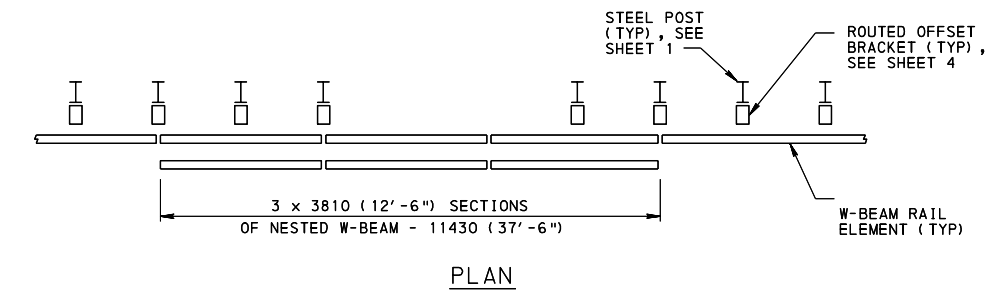
**5715 (18'-9") SPAN NESTED W-BEAM (TYPE 2-S) GUIDE RAIL
ACROSS LOW-FILL CULVERTS AND SMALL STRUCTURES**

NOTES

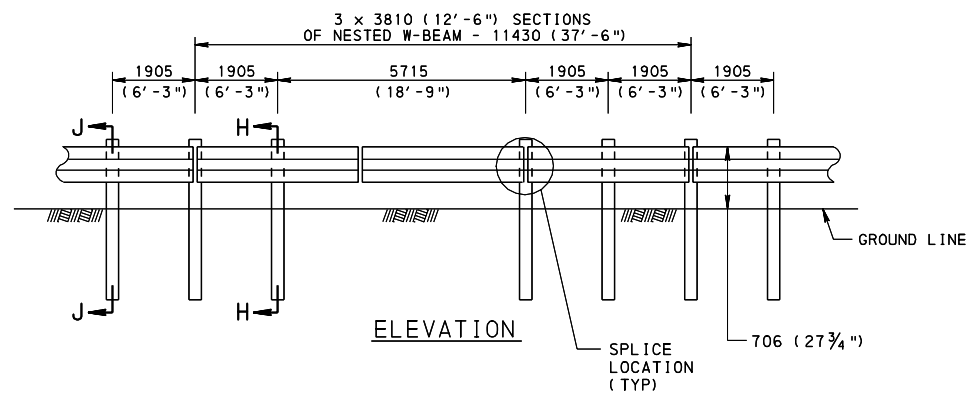
1. PLACE TOP W-BEAM RAIL ELEMENT IN NESTED SECTION SO THAT SPLICE LOCATIONS ARE ALIGNED.
2. CUTTING OF W-BEAM RAIL ELEMENT IS NOT PERMITTED.
3. FOR THE 5715 (18'-9") SPAN, A MINIMUM UNOBSTRUCTED DISTANCE OF 1050 (3'-6") MUST BE PROVIDED BEHIND THE REAR FACE OF THE GUIDE RAIL POST TO THE FRONT FACE OF THE OBSTRUCTION.
4. FOR NESTED RAIL ELEMENT SPLICES (FOUR PANELS THICK), USE 54 (2 1/8") SPLICE BOLT. FOR SPLICE BOLT DETAILS, SEE SHEET 2.
5. NESTED SECTIONS, INCLUDING ALL RAIL ELEMENT AND ANCILLARY HARDWARE, ARE PAID FOR AT THE CONTRACT UNIT PRICE PER METER (LINEAR FOOT) OF TYPE 2-S GUIDE RAIL.
6. PROVIDE A MINIMUM OF 60900 (200') OF STRONG POST GUIDE RAIL (1 SECTION OF W-BEAM RAIL ELEMENT) BETWEEN NESTED (2 SECTIONS OF W-BEAM RAIL ELEMENT) RUNS.



PLAN

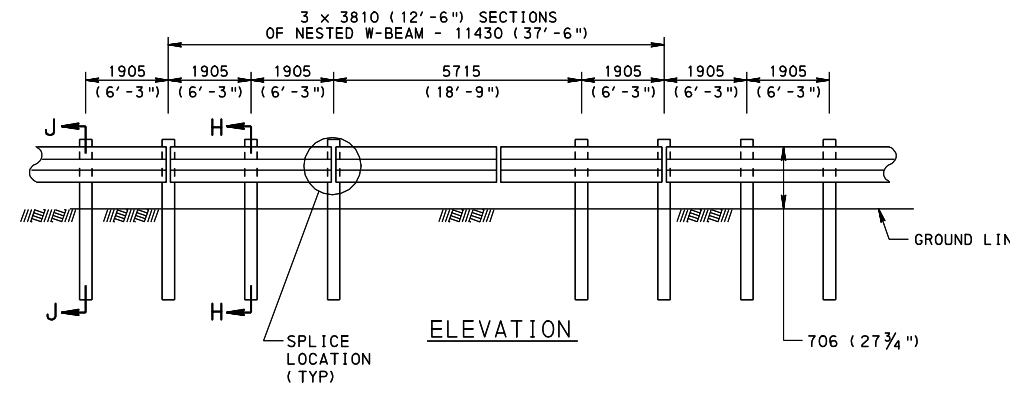


PLAN



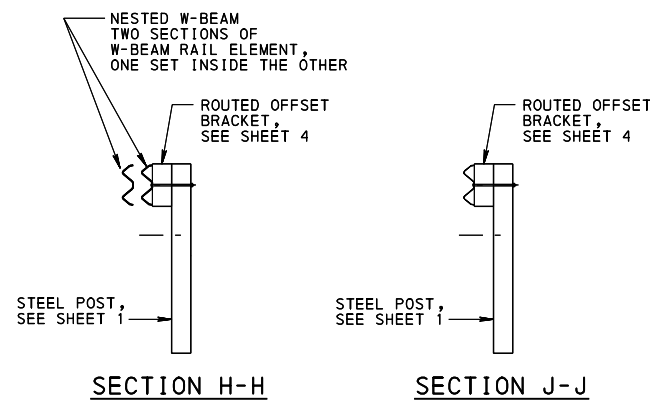
CASE 1

SPLICE LOCATIONS



CASE 2

SPLICE LOCATIONS



SECTION H-H

SECTION J-J

NOTE: EITHER ALL METRIC OR ALL ENGLISH VALUES MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.

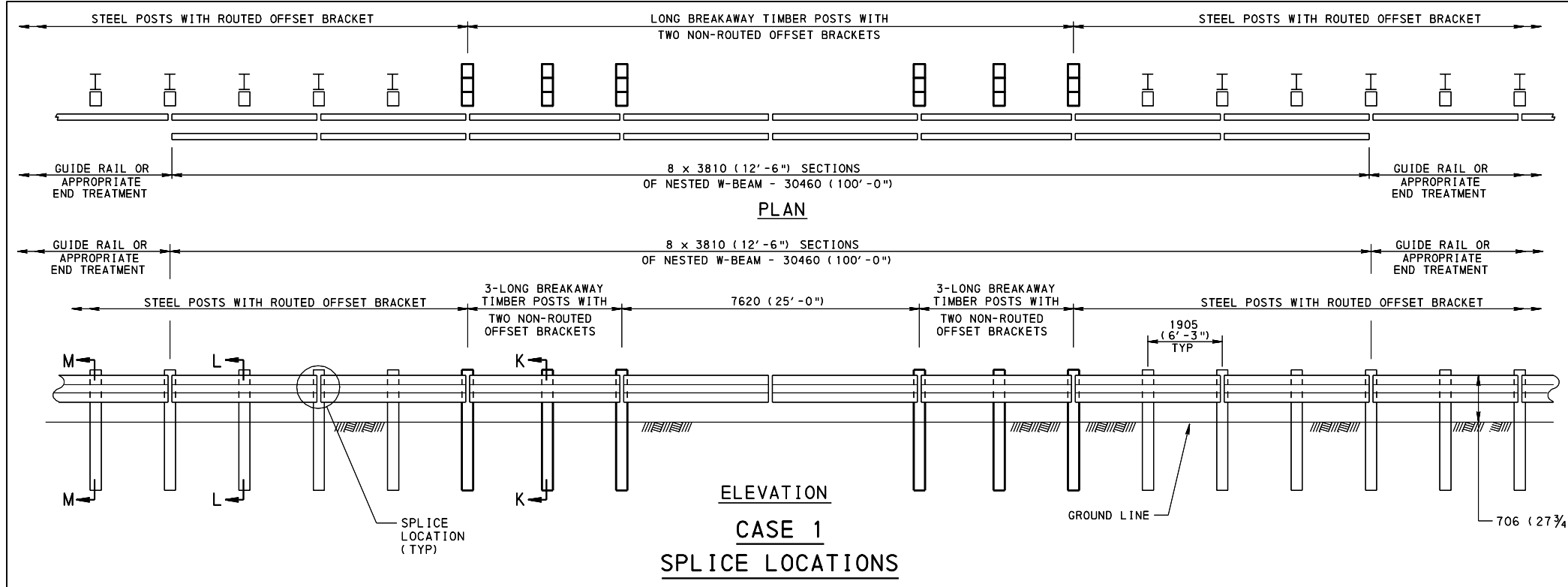
**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN**

**TYPE 2 STRONG POST
GUIDE RAIL
ACROSS CULVERTS AND SMALL STRUCTURES
5715 (18'-9") SPAN**

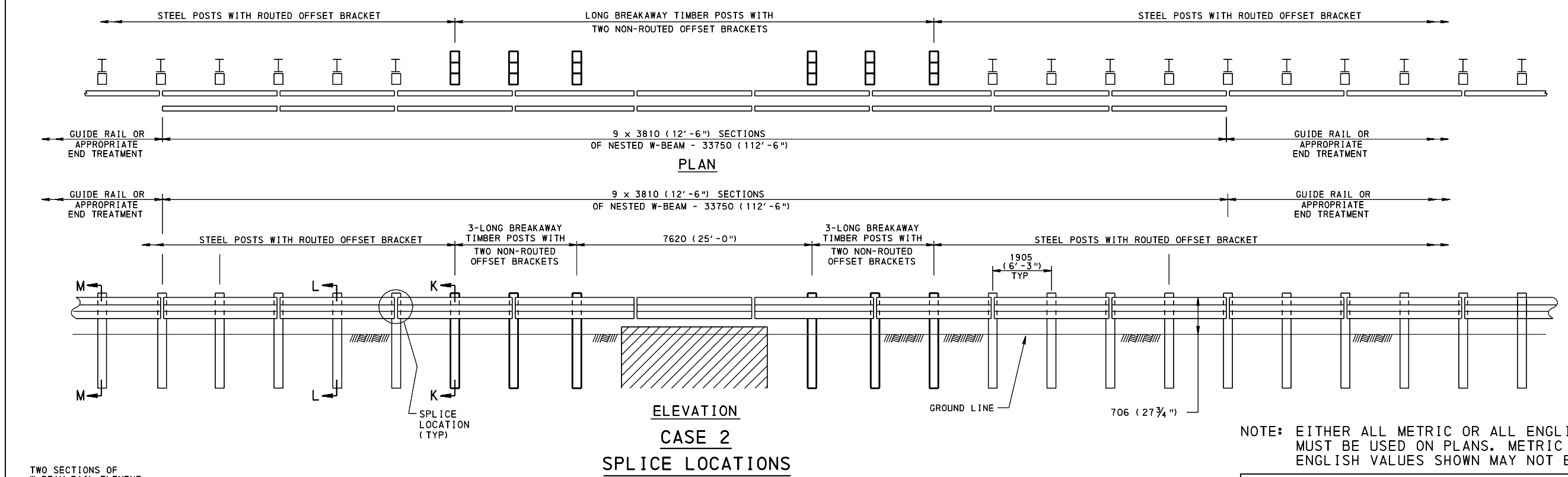
RECOMMENDED JUN. 1, 2010
R. Hochstetler
CHIEF, HWY. QA DIVISION

RECOMMENDED JUN. 1, 2010
David Thompson
DIRECTOR, BUREAU OF DESIGN

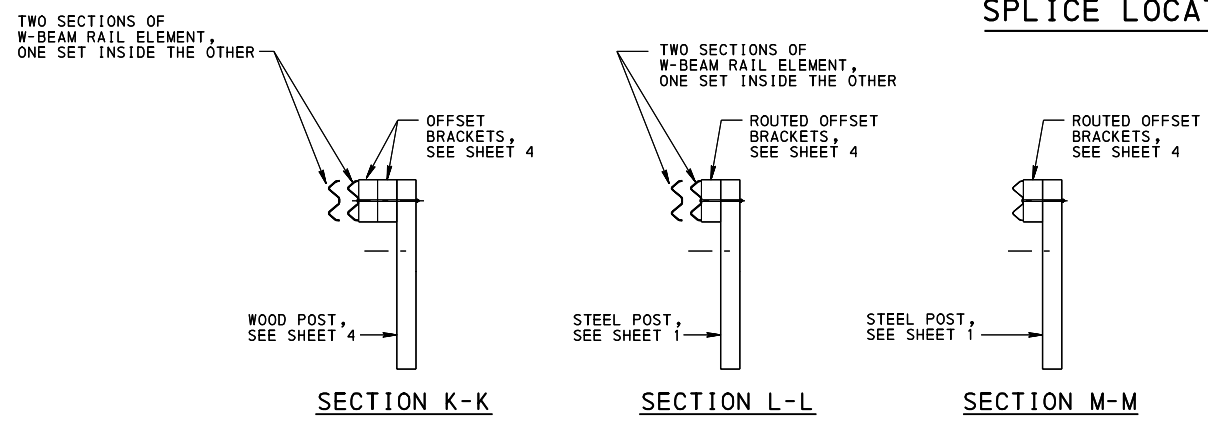
SHT 6 OF 7
RC-52M



- NOTES**
1. PLACE TOP W-BEAM RAIL ELEMENT IN NESTED SECTION SO THAT SPLICE LOCATIONS ARE ALIGNED.
 2. CUTTING OF W-BEAM RAIL ELEMENT IS NOT PERMITTED.
 3. FOR THE 7620 (25'-0") SPAN, A MINIMUM UNOBSTRUCTED DISTANCE OF 1500 (5'-0") MUST BE PROVIDED BEHIND THE REAR FACE OF THE GUIDE RAIL POST TO THE FRONT FACE OF THE OBSTRUCTION.
 4. FOR NESTED RAIL ELEMENT SPLICES (FOUR PANELS THICK), USE 54 (2 1/8") SPLICE BOLT. FOR SPLICE BOLT DETAILS, SEE SHEET 2.
 5. NESTED SECTIONS, INCLUDING ALL RAIL ELEMENT AND ANCILLARY HARDWARE, ARE PAID FOR AT THE CONTRACT UNIT PRICE PER METER (LINEAR FOOT) OF TYPE 2-S GUIDE RAIL.
 6. PROVIDE A MINIMUM OF 60900 (200') OF STRONG POST GUIDE RAIL (1 SECTION OF W-BEAM RAIL ELEMENT) BETWEEN NESTED (2 SECTIONS OF W-BEAM RAIL ELEMENT) RUNS.
 7. ONE 7620 (25'-0") W-BEAM PANEL SECTION IS AN EQUIVALENT FOR TWO 3810 (12'-6") W-BEAM PANEL SECTIONS.



NOTE: EITHER ALL METRIC OR ALL ENGLISH VALUES MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

TYPE 2 STRONG POST
GUIDE RAIL
ACROSS CULVERTS AND SMALL STRUCTURES
7620 (25'-0") SPAN

RECOMMENDED JUN. 1, 2010 <i>R. Hochstetler</i> CHIEF, HWY. QA DIVISION	RECOMMENDED JUN. 1, 2010 <i>David Thompson</i> DIRECTOR, BUREAU OF DESIGN	SHT 7 OF 7 RC-52M
--	---	----------------------