ENGINEERING POLICY BALLOT

Effective: April 1, 2024

Level 2

Level two revisions require the approval of the **Assistant Chief Engineer** and the **Federal Highway Administration** only. The **Senior Management Team** is encouraged to review the content and provide comment to the appropriate director. For all other parties, these revisions are posted for information only.

ENGINEERING POLICY BALLOT

Effective: April 1, 2024

Issue 1: Application and Payment Changes for TMA Use

Approval: **Level 2 – Assistant Chief Engineer**

Sponsor: Brandi Baldwin – CM, Kenny Voss – DE

Summary: This clarifies stationary TMAs will become a new lump sum bid item with applicable new TMA JSP. Mobile operation TMAs will be incidental to the bid items that utilize such methods to get a task done.

Fiscal Impact: There is no anticipated fiscal impact associated with this revision.

Publication: Missouri Standard Specification: Sec. 612
Job Special Provision: JSP-23-04
Engineering Policy Guide: 616.8
Bid Items

Issue 2: 38-inch Two-Tube Rail and Transition - Steel Barrier Alternate for Bridges

Approval: **Level 2 – Assistant Chief Engineer**

Sponsor: Darren Kemna – BR

Summary: Provide a MASH TL-4 steel barrier alternate for bridges. Creating MO Std Plans 606.61 and Bridge Standard Drawings TTR04 & 05. Adding standard notes to EPG 751.50.

Fiscal Impact: There is likely a material cost increase versus the current NCHRP 350 two tube rail due to height of rail, but overall cost is not expected to increase considerably.

Publication: Missouri Standard Plan: 606.61(new)
Bridge Standard Drawings: TTR04, TTR05
Engineering Policy Guide: 751.50
Bid Items

Issue 3: LPA EPG Changes for Consultant Solicitation & Selection Process

Approval: **Level 2 – Assistant Chief Engineer**

Sponsor: Ashley Buechter – DE

Summary: This increases the oncall max to $200,000, adds the requirement of contacting a minimum of 3 firms with documented conversations, and adds an Independent Cost Estimate requirement.

Fiscal Impact: There is no anticipated fiscal impact associated with this revision.

Publication: Engineering Policy Guide: 136.4.2

SECTION 612

IMPACT ATTENUATORS

612.1 Description. This work shall consist of furnishing, installing, operating, maintaining, cleaning, relocating, replacing and removing impact attenuators as shown on the plans or as directed by the engineer in accordance with the manufacturer's recommendations.

612.2 Material. All material shall be in accordance with Division 1000, Material Details, and specifically as shown below. Rock salt shall meet the satisfaction of the engineer.

Item	Section
Sand	1005
Retroreflective Sheeting	1042
Temporary Traffic Control Devices	1063

612.3 Safety Requirements. All impact attenuators shall be manufactured specifically for traffic control purposes and shall be in accordance with the MUTCD and any applicable safety and design codes. Non MASH 2016 impact attenuators manufactured prior to January 1, 2023 may be used until January 1, 2030. All impact attenuators manufactured after January 1, 2023 shall meet MASH 2016 Test Level 3 crash test requirements. The contractor shall submit the manufacturer's certification that units supplied comply with crash test requirements of NCHRP 350, Test Level 3 or MASH 2016 Test Level 3.

612.4 Construction Requirements.

612.4.1 Truck ~~or Trailer~~ Mounted Attenuator. A truck mounted attenuator~~ or trailer~~ mounted attenuator (TMA) shall be used for all moving operations conducted under traffic and as specified in the contract. Each TMA shall consist of an impact attenuator unit, a support vehicle, and a truck-mounted ~~or trailer mounted~~ flashing arrow panel. Trailer mounted attenuators, with support vehicle and mounted flashing arrow panel, may be used in lieu of truck mounted attenuators. Any damaged TMA shall be removed from service and either repaired or replaced to the satisfaction of the engineer.

612.4.2 Impact Attenuator Array (Sand Barrels). Location, and relocation of the impact attenuator arrays shall be as shown on the plans or as directed by the engineer.

612.4.2.1 Sand shall be measured and placed in accordance with the manufacturer's recommendations and weights shown for each module. Sand shall have a maximum moisture content of five percent at the time of installation. Rock salt shall be five percent of the required weight in each module, and shall be uniformly dispersed in the sand.

612.4.2.2 A decal designed as a Type I object marker with ~~MoDOT~~ fluorescent orange retroreflective sheeting or a Type 3 object marker with ~~MoDOT Type 3~~ yellow sheeting shall be applied to the lead module facing traffic for arrays located 12 feet or less from the edge of the traveled way.

612.4.2.3 Damaged or deficient modules shall be replaced by the contractor in accordance with Sec 616.4.

612.4.2.4 When no longer needed, modules and sand shall be removed and shall remain the property of the contractor.

612.5 Basis of Payment.

612.5.1 ~~The accepted quantity of t~~No payment will be made for truck ~~or trailer~~ mounted attenuators (TMAs) used in mobile operations or for any TMAs designated as ~~-~~optional. ~~All costs for TMAs used in mobile operations will be paid at the contract unit price. . Truck or trailer mounted attenuators~~TMAs required for stationary ~~operations~~work activities will be paid as specified in the contract.

612.5.2 Impact attenuator arrays (sand barrels), will be paid for at the contract unit price for each impact attenuator array per the manufacturer's recommendations for the posted speed limit. Relocation of impact attenuator arrays will be paid for at the contract unit price included in the contract.

612.5.2.1 Furnishing and installing replacement sand barrels will be paid for at the contract unit price per each sand barrel. Final payment for this item will be based on the actual number of modules replaced.

616.8 Typical Applications (MUTCD 6H)

616.8.1 Temporary Traffic Control for Contract Plan Sheet Development

Each work zone is different and requires different temporary traffic control (TTC) plans. For contract plan sheets, MUTCD (2009) Chapter 6H~~,~~ provides the typical applications (TAs) to develop TTC plans and for in-field modifications as directed by the engineer. TAs should be altered, when needed, to fit the conditions of the specific work zone. See EPG 237 for additional plan sheet guidance.

References to work vehicle or shadow vehicle made in the MUTCD will be considered incidental and should be ~~left off~~indicated as such on the TTC plans.

When optional items are referenced in the MUTCD, the contractor may, at their discretion, utilize the items as incidental~~,. unless they have been added to~~ When the TTC plans indicate one or more of these items as ~~a requirement~~required, ~~and~~ applicable pay items will apply and will be included. Field adjustments, as determined by the engineer, may be necessary to add needed ~~will result in adding the~~ pay items via a change order. When use of a Truck Mounted Attenuator (TMA) is deemed necessary for one or more stationary work activities, this will be indicated on the TTC plans, Truck Mounted Attenuator (TMA) for Stationary Work Activities JSP will be included in the contract, and the Truck Mounted Attenuator pay item will be provided.

TMAs required for mobile operations, such as striping, are considered incidental per Sec 612.5.

Truck Mounted Attenuator (TMA) for Stationary Activities JSP-23-04

1.0 Description. Provide and maintain Truck Mounted Attenuators (TMA) in accordance with Sec 612 and as specified herein.

2.0 Construction Requirements. Truck Mounted Attenuators (TMA) shall be used for the work activities indicated in the plans or specified herein.

2.1 (insert title of Work Activity 1) – (Drafter Note: This section should clearly explain the intended use of the TMAs for the project. Identified by the physical work location and type of operation as appropriate. Bidders should be able to understand when and where TMAs are to be used for the project to be able to appropriately bid. Examples include:

(a) All work at the intersection at station 100+00
(b) All box culvert extension work within the project limits
(c) Box culvert extension at station 200+00)

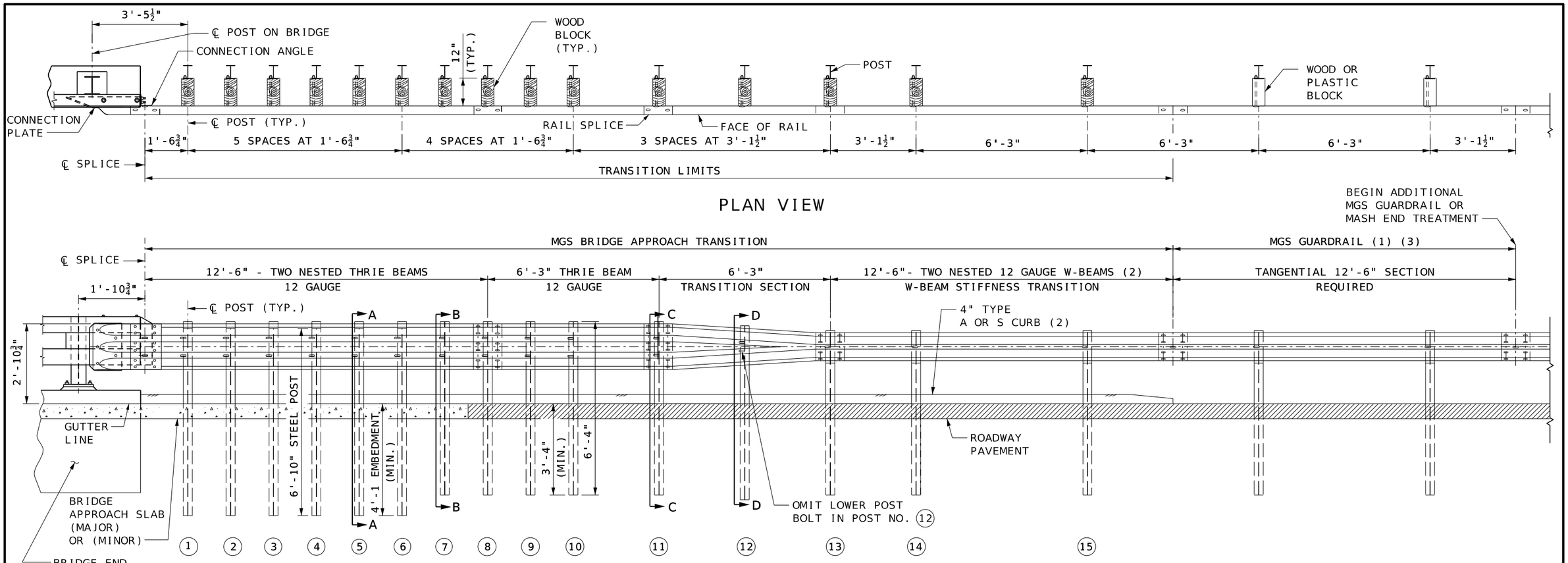
2.2 (insert title of Work Activity 2) – (Drafter Note: Add as many scenarios that will require a stationary TMA as necessary.)

3.0 Method of Measurement. No measurement will be made for Truck Mounted Attenuators (TMA).

4.0 Basis of Payment. Delete Sec 612.5.1 and substitute with the following:

612.5.1 No payment will be made for truck mounted attenuators (TMAs) used in mobile operations or for any TMAs designated as optional.

612.5.1.1 Payment for TMAs required for stationary work activities will be paid for per lump sum. The lump sum payment includes all work activities that require a TMA, regardless of the number of deployments, relocations, or length of time utilized. No payment will be made for repair or replacement of damaged TMAs.



BRIDGE APPROACH TRANSITION (EXTENDED CURB)(2)

GENERAL NOTES:

MGS GUARDRAIL SHALL BE TANGENTIAL WITH BRIDGE APPROACH TRANSITION FOR 12'-6" BEYOND THE TWO NESTED W-BEAM STIFFNESS TRANSITION AND 25'-0" BEYOND THRIE BEAM TRANSITION SECTION.

AT THE CONTRACTORS OPTION, A SINGLE 18'-9" PIECE OF THRIE BEAM MAY BE SUBSTITUTED FOR ONE OF THE 12'-6" PANELS AND THE 6'-3" SECTION AS SHOWN.

FOR PROTECTIVE COATING AND MATERIAL REQUIREMENTS, SEE SEC 1040 OF THE STANDARD SPECIFICATIONS.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

USE 5/8" BUTTON-HEAD OVAL SHOULDER BOLTS WITH HEX NUTS AT ALL SLOTS (THICKNESS OF HEX NUTS = 3/8" MIN.).

THE CONNECTION PLATE AND ANGLE SHALL BE FABRICATED FROM ASTM A709 GRADE 50 STEEL AND GALVANIZED.

ALL LAP SPLICES, INCLUDING END SHOES, SHALL BE MADE IN THE DIRECTION OF TRAFFIC.

THE COST OF FURNISHING, FABRICATING AND INSTALLING BRIDGE APPROACH TRANSITION (EXTENDED CURB), COMPLETE IN PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH.

THE CONTRACTOR MAY, AT THEIR OPTION, FURNISH EQUIVALENT SECTIONS FABRICATED FROM MATERIAL MEETING AND IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A769 GRADE 36 OR 40. THE SECTIONS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH REQUIREMENTS OF AASHTO M 111.

(1) PLACE THE FIRST POST OF THE MGS 6'-3" PAST THE LAST POST OF THE BRIDGE APPROACH TRANSITION TO KEEP POSTS OFFSET FROM THE RAIL SPLICES.

(2) WHERE CURB EXTENDS UPSTREAM OF POST NO. (11) FOR DRAINAGE PURPOSES, A STIFFNESS TRANSITION CONSISTING OF AN EXTRA 12'-6" BEAM OF 12 GAUGE W-BEAM MUST BE NESTED PRIOR TO THE TRANSITION SECTION (UPSTREAM OF POST NO. (13)). THE CURB SHALL BE EXTENDED TO THE END OF THE 12'-6" 12 GAUGE W-BEAM STIFFNESS TRANSITION SEE STD. PLAN 609.40 FOR DETAILS. WHEN CURBS DO NOT EXTEND UPSTREAM OF POST NO. (11), PAY FOR A BRIDGE APPROACH TRANSITION (REGULAR CURB/NO CURB). FOR DETAILS OF BRIDGE APPROACH TRANSITION (REGULAR CURB/NO CURB), SEE SHEET 2 OF 3.

(3) THE ADDITIONAL REQUIRED MGS GUARDRAIL IS INCLUDED IN THE TOTAL LENGTH OF NEED AND SHALL BE PAID FOR AS A GUARDRAIL PAY ITEM.

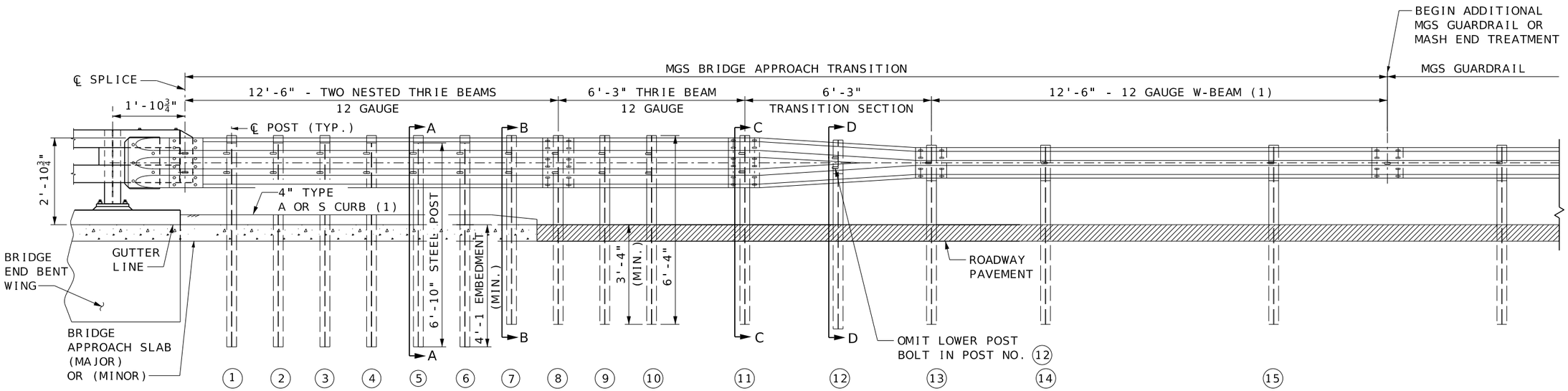
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

MIDWEST GUARDRAIL SYSTEM (MGS)
38-INCH TWO-TUBE RAIL TRANSITIONS

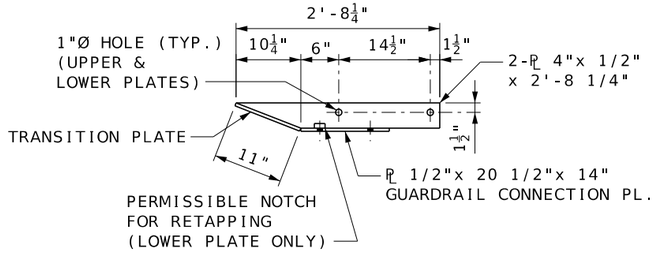
DATE EFFECTIVE: xx/xx/2023
DATE PREPARED: 12/12/2023

606.61

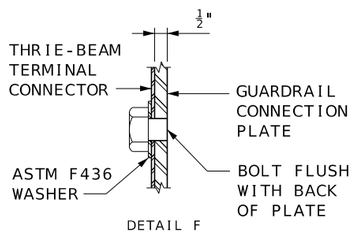
SHEET NO. 1 OF 3



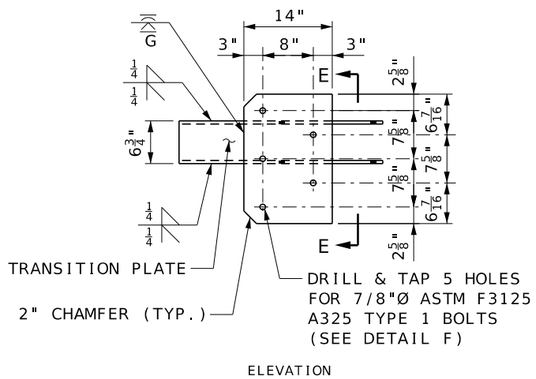
BRIDGE APPROACH TRANSITION (WITH REGULAR LENGTH CURB OR NO CURB)(1)



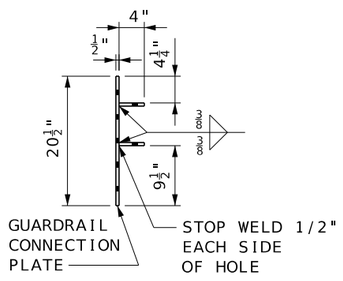
PLAN



DETAIL F

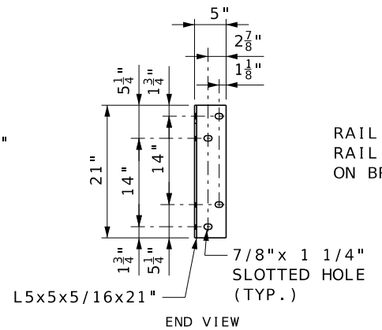


ELEVATION

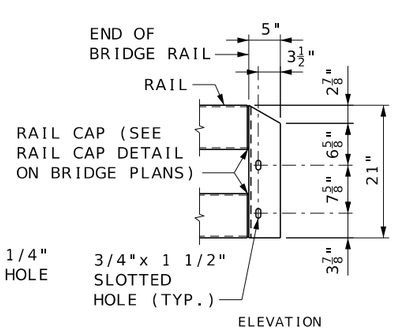


SECTION E-E

GUARDRAIL CONNECTION PLATE



END VIEW



ELEVATION

CONNECTION ANGLE

GENERAL NOTES:
SEE SHEET 1 FOR ADDITIONAL NOTES NOT INCLUDED ON THIS SHEET.

THE COST OF FURNISHING, FABRICATING AND INSTALLING BRIDGE APPROACH TRANSITION (REGULAR/NO CURB), COMPLETE IN PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH.

(1) WHERE CURB EXTENDS UPSTREAM OF POST NO. (11) FOR DRAINAGE PURPOSES, A STIFFNESS TRANSITION CONSISTING OF AN EXTRA 12'-6" BEAM OF 12 GAUGE W-BEAM MUST BE NESTED PRIOR TO THE TRANSITION SECTION (UPSTREAM OF POST NO. (13)). THE CURB SHALL BE EXTENDED TO THE END OF THE 12'-6" 12 GAUGE W-BEAM STIFFNESS TRANSITION SEE STD. PLAN 609.40 FOR DETAILS. IF CURB EXTENDS BEYOND POST NO. (11), PAY FOR A BRIDGE APPROACH TRANSITION (EXTENDED CURB).

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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MIDWEST GUARDRAIL SYSTEM (MGS) 38-INCH TWO-TUBE RAIL TRANSITIONS

DATE EFFECTIVE: xx/xx/2023
DATE PREPARED: 12/12/2023

606.61

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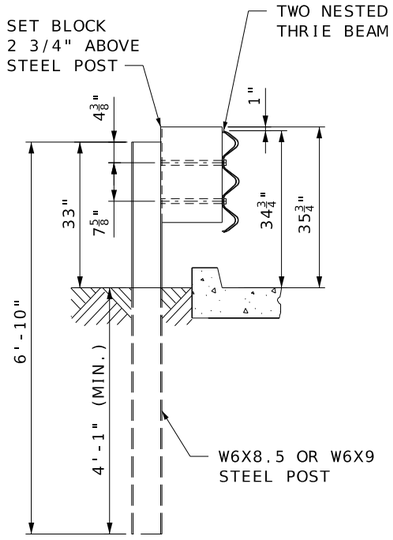
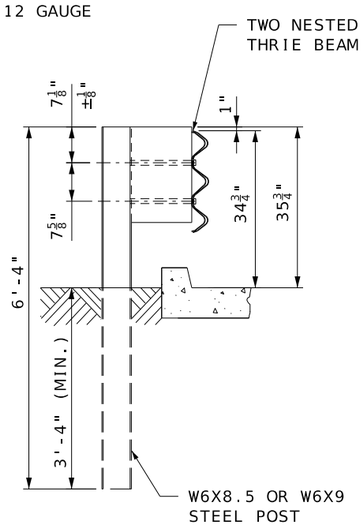
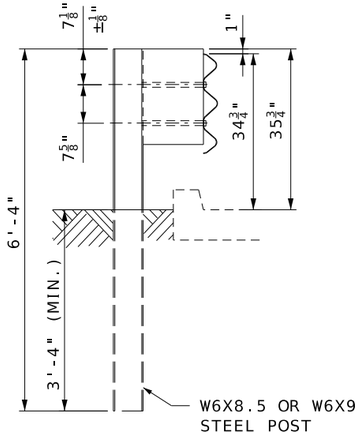


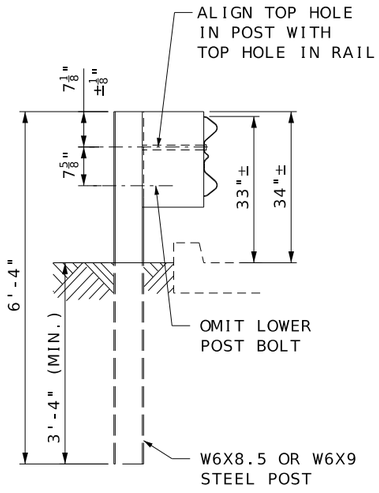
SECTION A-A



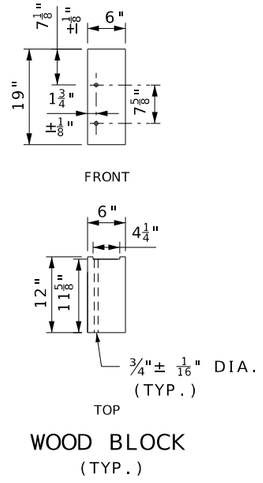
SECTION B-B



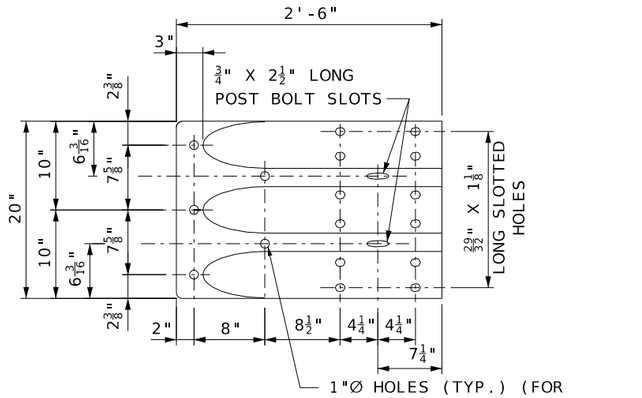
SECTION C-C



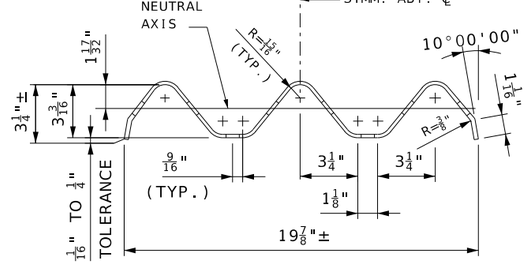
SECTION D-D



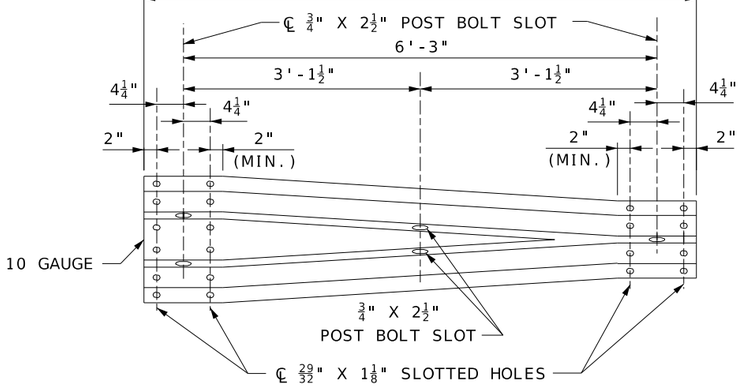
WOOD BLOCK
(TYP.)



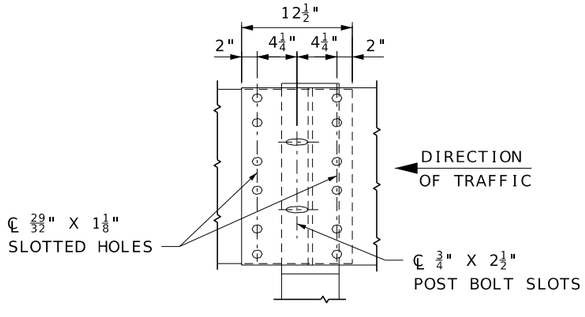
TERMINAL CONNECTOR
(10 GAUGE OR 12 GAUGE)



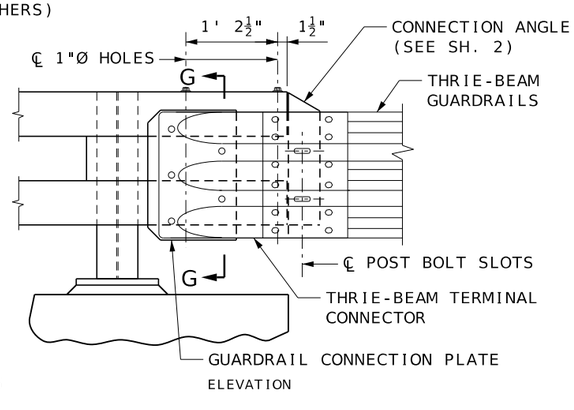
SECTION THROUGH THRIE BEAM RAIL



TRANSITION SECTION

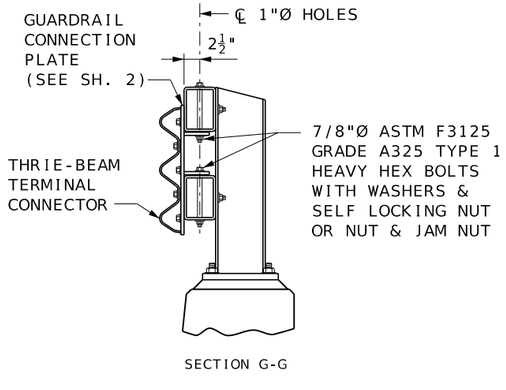


THRIE BEAM RAIL SPLICE AT POST



ELEVATION

TRANSITION CONNECTION



SECTION G-G

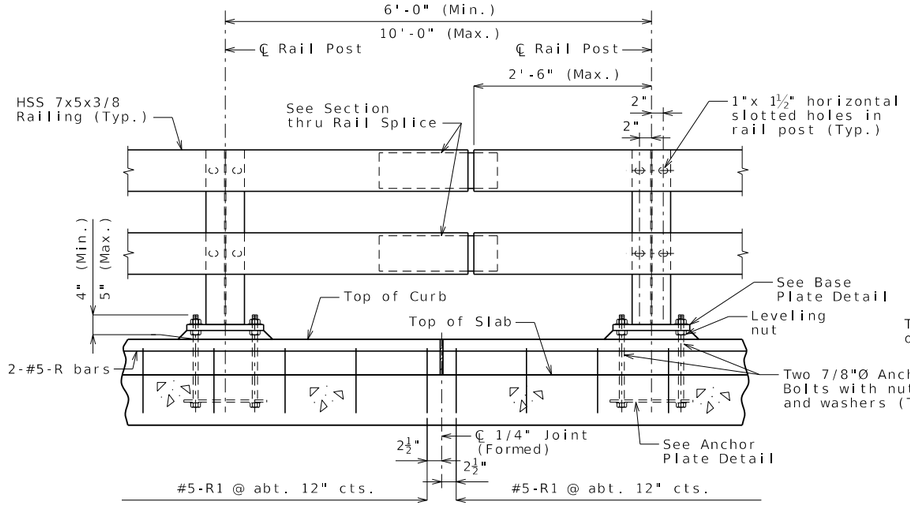
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

MIDWEST GUARDRAIL SYSTEM (MGS) 38-INCH TWO-TUBE RAIL TRANSITIONS

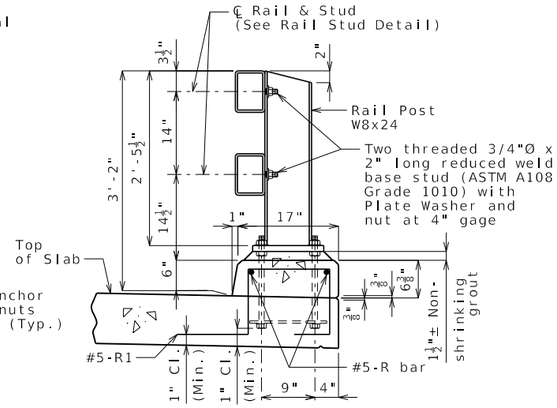
DATE EFFECTIVE: xx/xx/2023
DATE PREPARED: 12/12/2023

606.61

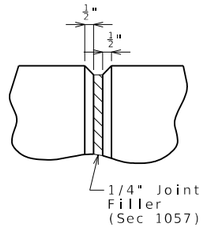
SHEET NO. 3 OF 3



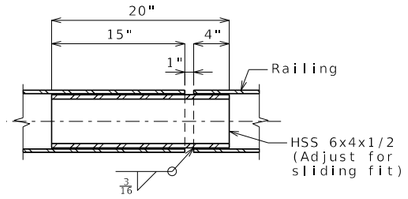
PART ELEVATION OF CURB & RAIL



TYPICAL SECTION



PART ELEVATION
AT FORMED JOINT



SECTION THRU RAIL SPLICE

(@ 50' maximum intervals)

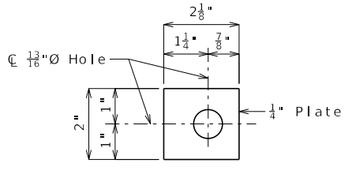
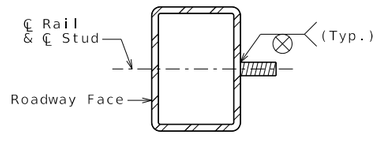
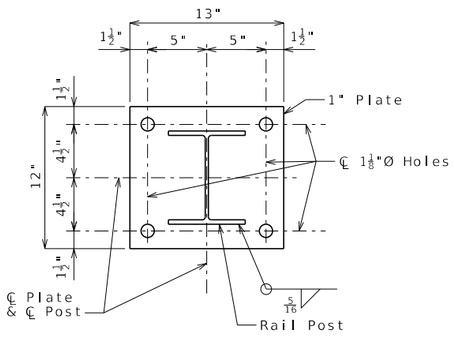


PLATE WASHER
DETAIL

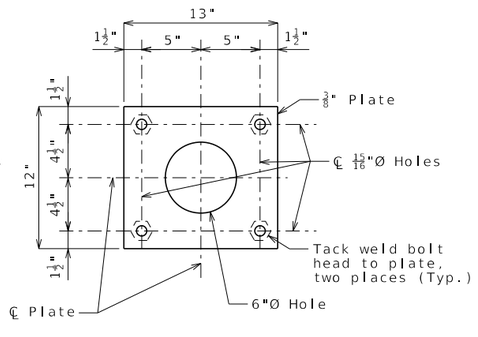
Note: Position washer to
completely cover slotted hole.



RAIL STUD DETAIL



BASE PLATE DETAIL



ANCHOR PLATE DETAIL

Note: Work this sheet with Sheet No. .

Bridge Rail Notes:

Rail posts shall be set perpendicular to roadway profile grade, vertically in cross section and aligned in accordance with Sec 713, except that the rail posts shall be aligned by the use of 6 1/2 x 6 1/2-inch shims such that the post deviates not more than 1/2 inch from true horizontal alignment after final adjustment. The shims shall be placed between the post and the rail. The thickness of the shims shall be determined by the contractor and verified by the engineer before ordering material for this work.

Rail posts shall be set plumb and aligned in accordance with Sec 713.

Payment for furnishing all materials and labor necessary to install bridge rail, complete in place, will be considered completely covered by the contract unit price for Bridge Rail (Two Tube Structural Steel) per linear foot.

Guardrail delineators shall be attached to the top of the guardrail post using galvanized anchorage as shown on Missouri Standard Plan 606.50 and in accordance with Sec 606. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Guardrail delineators will be considered completely covered by the contract unit price for Bridge Rail (Two Tube Structural Steel).

HSS = Hollow Structural Section

Dimensions of bridge rails are measured horizontally.

Bridge rails will be measured to the nearest linear foot for each structure measured from end of wing to end of wing.

Fabrication of structural steel shall be in accordance with Sec 1080.

Hollow structural sections shall be in accordance with ASTM A500 Grade B Structural Steel Tubing and shall meet the longitudinal CVN requirements of 15 ft-lbs at 0° F, see Sec 1080 for reporting.

All other steel shapes and plates shall be in accordance with ASTM A709 Grade 50.

All anchor bolts shall be ASTM A449 Type 1 with ASTM A563 Grade DH heavy hex nuts and ASTM F436 hardened washers.

All anchor bolts, studs, nuts, and washers shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.

All posts, railing, rail splices, and plates shall be galvanized after shop fabrication in accordance with AASHTO M 111 and ASTM A385. Galvanized rail shall not be painted.

All field drilled holes shall be coated with an approved zinc rich paint before erection.

Provide railing expansion joints at 50 foot maximum intervals. Railing shall be continuous over two posts minimum. Railing expansion joints are required in rail sections that span bridge expansion joints.

Use grout with a minimum 24-hour f'c of 3000 psi in single placement.

Curb Notes:

Top of curb shall be built parallel to grade and curb joints (except at end bents) normal to grade.

All exposed edges of curb shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

Minimum lap for longitudinal R-bars is 2'-5".

The cross-sectional area of curb above the slab = 0.75 sq. ft.

Concrete in the curb shall be Class B-2.

The curb shall be cured by application of Type 1-D Liquid Membrane-Forming Curing Compound in accordance with Sec 1055 and sealed in accordance with Sec 703. The contractor shall remove all curing compound in accordance with the manufacturer's recommendations before the concrete sealer is applied.

Measurement of the curb is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Concrete Curb (Bridge Rail) per linear foot.

DATE PREPARED 12/1/2023
ROUTE
STATE MO
DISTRICT
SHEET NO. 004
COUNTY
JOB NO.
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

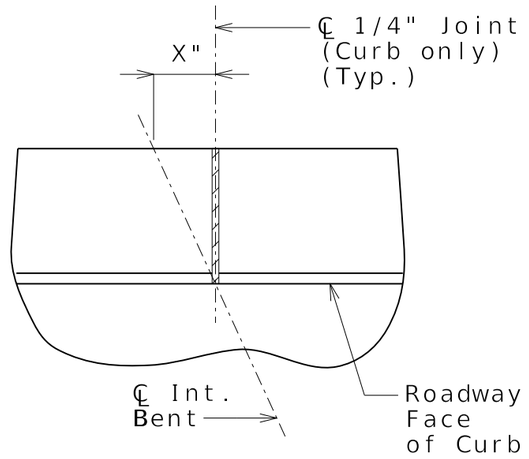
38-INCH TWO-TUBE RAIL

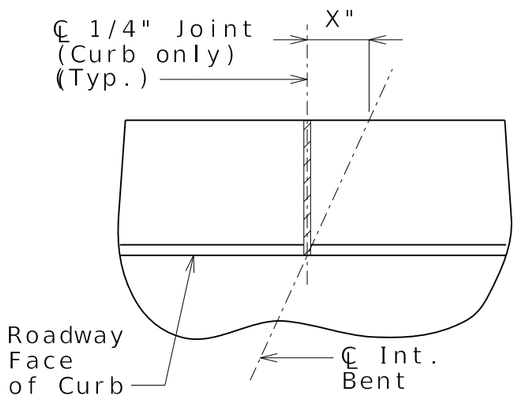
Detailed
Checked

Note: This drawing is not to scale. Follow dimensions.

Sheet No. of

TTR04 38inTwoTube Alternate Details Sh. 1 of 1

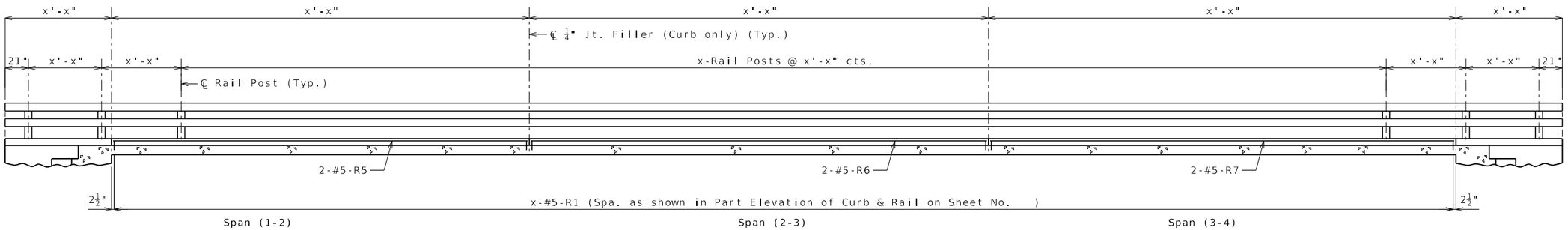




PART PLAN SHOWING JOINT LOCATION

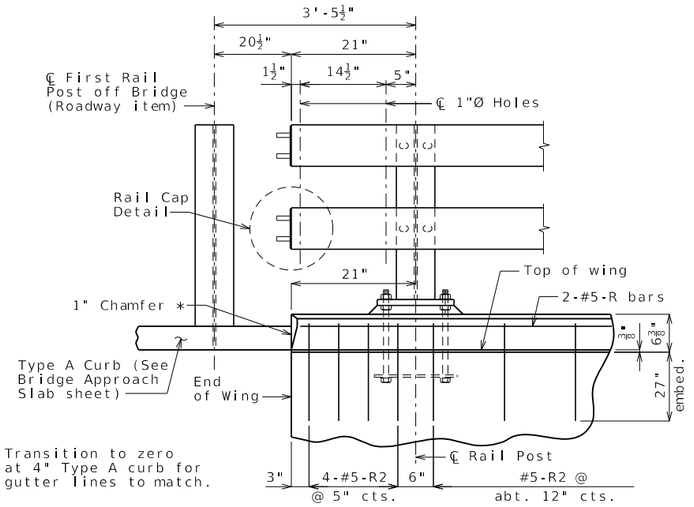
(For skewed structures only)

Modify Elevation below as necessary. Elevation shown is scaled down 0.25 from full size.



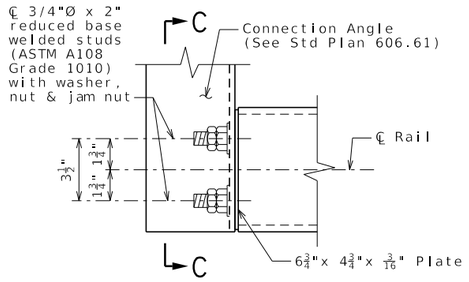
ELEVATION OF LEFT CURB AND RAIL

(Right curb and rail similar by 180° rotation.)
Longitudinal dimensions are horizontal.

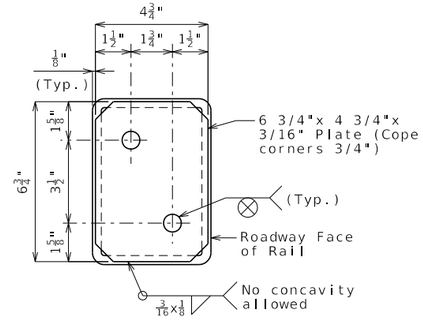


PART ELEVATION SHOWING END OF RAIL ON WING

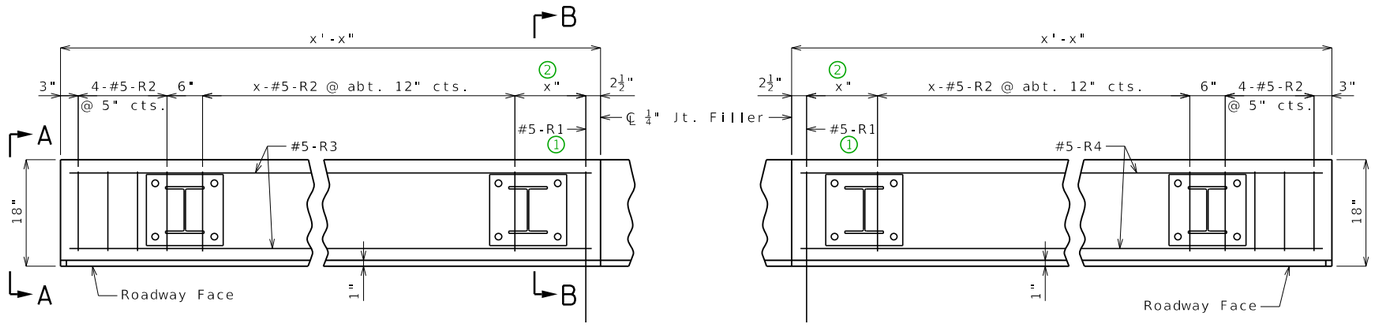
Bridge Approach Transition not shown for clarity (Roadway item)



RAIL CAP DETAIL

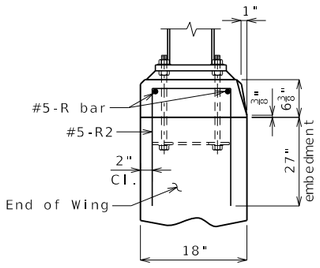


SECTION C-C (RAIL CAP)

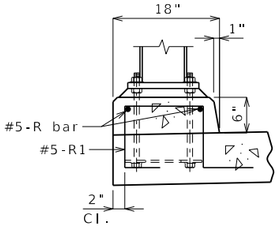


PART PLAN OF LEFT CURB AT END BENTS SHOWING REINFORCEMENT

Right curb similar. Rail not shown for clarity.



ELEVATION A-A



SECTION B-B

Note: Work this sheet with Sheet No. .

38-INCH TWO-TUBE RAIL

Detailed
Checked

Note: This drawing is not to scale. Follow dimensions. Sheet No. of

DATE PREPARED 12/1/2023
ROUTE STATE MO
DISTRICT SHEET NO. 005
COUNTY
JOB NO.
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

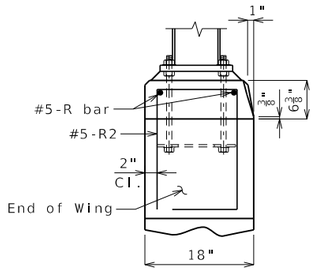
TTR05_38inTwoTube.dgn 8:02:38 AM 12/1/2023

TTR05 Guidance & Alternate Details

Standard Drawing Guidance (Do not show on plans)

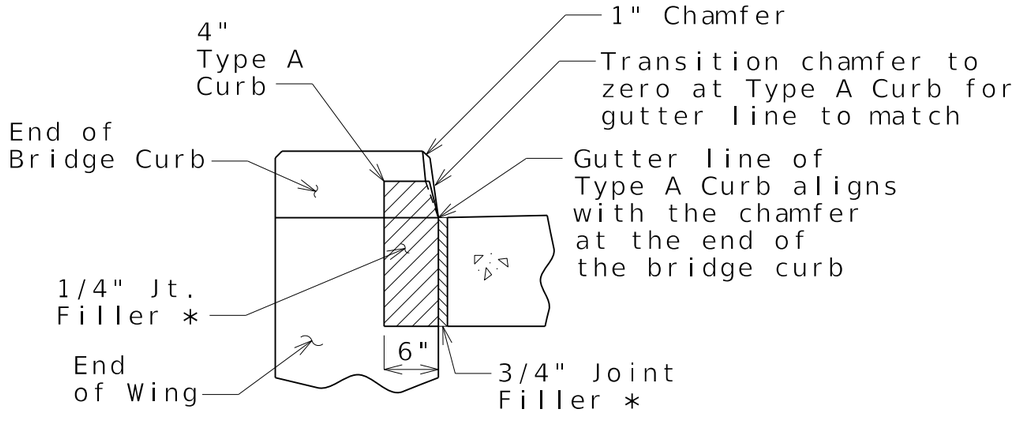
① Large skews may require additional R1 bars.

② 6" min., 12" max. to avoid anchor bolts by 1½" min.



ELEVATION A-A

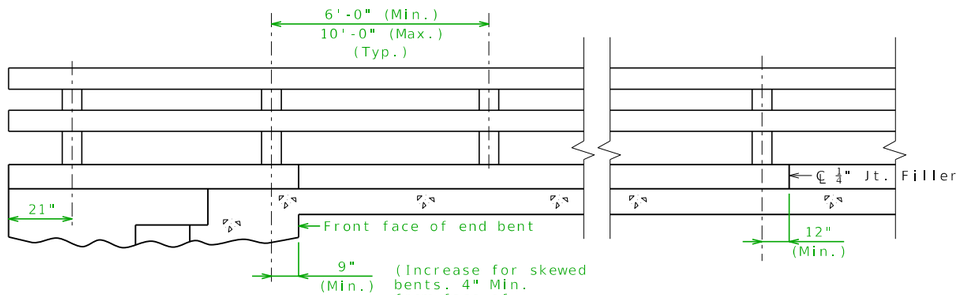
Use for shallow superstructure where 27" embedment is not possible. (Shape 6 with E=12")



SECTION BETWEEN CURBS

Copy and paste this detail to Bridge Approach Slab sheet to replace Section Between Curb and Barrier. This detail is scaled to match the scale of the MAJOR Bridge Approach Slab sheets.

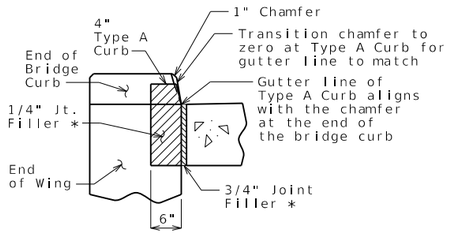
Post spacing guidance:



AT END BENT

AT INT. BENT

(1/4" joint at ℄ Bent only)



SECTION BETWEEN CURBS

Copy and paste this detail to Bridge Approach Slab sheet to replace Section Between Curb and Barrier. This detail is scaled to match the scale of the MINOR Bridge Approach Slab sheet.

H9. Thrie Beam and Other Rail Types (Notes for Bridge Standard Drawings)

Place in General Notes on the rail sheet unless otherwise specified.

(H9.1a) Use for all W-Beam, Thrie Beam, Two Tube and Single Tube (Low Profile) Structural Steel Guardrails without cap rail. (See Guardrail Delineation.) **Reference to Standard Plan 606.00 or 606.50 will work.** (See Note H10.7.1 Guidance for using Part Note for Delineation Sheeting Requirements.)

Guardrail delineators shall be attached to the top of the guardrail post using galvanized anchorage as shown on Missouri Standard Plan 606.00 606.50 and in accordance with Sec 606. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Guardrail delineators will be considered completely covered by the contract unit price for Bridge Guardrail (W-Beam) Bridge Guardrail (Thrie Beam) Bridge Rail (Two Tube Structural Steel) Low Profile Metal Bridge Rail (Single Tube).

(H9.1b) Use for all W-Beam and Thrie Beam Guardrails with cap rail except for temporary bridges. (See Guardrail Delineation.) (See Note H10.7.1 Guidance for using Part Note for Delineation Sheeting Requirements.)

Guardrail delineators shall be attached to the top of the guardrail and shall similarly use the delineator details of Missouri Standard Plan 617.10, except that the delineator body shall be attached to the top of the cap rail using galvanized anchorage as shown on Missouri Standard Plan 606.00. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Guardrail delineators will be considered completely covered by the contract unit price for Bridge Guardrail (W-Beam), Bridge Guardrail (Thrie Beam).

(H9.1c) Use for temporary bridges. (See Note H10.7.1 Guidance for using Part Note for Delineation Sheeting Requirements.)

Guardrail delineators shall be attached to the top of the bridge guardrail and shall similarly use the delineator details of Missouri Standard Plan 617.10, except that the delineator body shall be attached to the top of the cap rail using galvanized anchorage as shown on Missouri Standard Plan 606.00. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Cost of supplying and installing new delineators will be considered completely covered by other pay items. Delineators shall be stored with bridge guardrail after use.

Use following three notes for all W-Beam and Thrie Beam Guardrails with cap rail.

(H9.2)

Panel lengths of channel members shall be attached continuously to a minimum of four posts and a maximum of six posts (except at end bents).

(H9.3) Include reinforcement with new bridges except double-tees and temporary bridges. Include elastomeric material when a base plate is used except for temporary bridges. Use "other items" for temporary bridges.

All bolts, nuts, washers, and plates, and reinforcement and elastomeric material will be considered completely covered by the contract unit price for Bridge Guardrail (W-Beam) Bridge Guardrail (Thrie Beam) other items.

(H9.4) Use underlined part for temporary bridges.

All steel connecting bolts and fasteners for posts and railing, and all anchor bolts, nuts, washers and plates shall be galvanized after fabrication except for bottom plate. Protective coating and material requirement of steel railing shall be in accordance with Sec 1040.

(H9.5) Use post instead of blockout for temporary bridges. For 38-inch two tube rails use the larger shims.

Rail posts shall be set perpendicular to roadway profile grade, vertically in cross section and aligned in accordance with Sec 713 except that the rail posts shall be aligned by the use of 3 x 1 3/4-inch 6 1/2 x 6 ½-inch shims such that the post deviates not more than 1/2 inch from true horizontal alignment after final adjustment. The shims shall be placed between the blockout post and the thrie beam rail. The thickness of the shims shall be determined by the contractor and verified by the engineer before ordering material for this work.

(H9.6.1) Use ~~only~~ when a base plate is bearing on concrete~~used~~ except for temporary bridges.

Rail posts shall be seated on 1/16-inch elastomeric pads having the same dimensions as the post base plate. Such pads may be any elastomeric material, plain or fibered, having hardness (durometer) of 50 or above, as certified by the manufacturer. Additional pads or half pads may be used in shimming for alignment. Post heights shown will increase by the thickness of the pad.

(H9.6.2) Use note for base plates set on grout pads (38-inch Two Tube Rail).

Rail posts shall be set plumb and aligned in accordance with Sec 713.

Use H9.7 thru H9.19 for Thrie Beam Guardrail only.

(H9.7)

At the expansion slots in the thrie beam rails and channels, the bolts shall be tightened and backed off one-half turn and the threads shall be burred.

(H9.8) Use post instead of blockout for temporary bridges.

At the thrie beam connection to blockout post on wings, the bolts shall be tightened and backed off one-half turn and the threads shall be burred.

(H9.9)

Minimum length of thrie beam sections is equal to one post space.

(H9.10)

A 5/8-inch diameter button-head, oval shoulder bolt with a minimum 3/8-inch thick hex nut shall be used at all slots.

(H9.11)

Thrie beam guardrail on the bridge shall be 12-gauge steel.

(H9.12) Use top plates instead of cap rail angles for temporary bridges.

Posts, cap rail angles, top plates, base bent post plates, blockouts, channels and channel splice plates shall be fabricated from ASTM A709 Grade 36 steel and galvanized.

(H9.13) Use for placement or replacement of end treatment with thrie beam rail.

Cost for providing holes for new guardrail attachment will be considered completely covered by the contract unit price for other items.

(H9.15) Use post instead of blockout for temporary bridges.

Flat washers 3 x 1 3/4 x 3/16-inch minimum shall be used at all post bolts between the bolt head and beam. The washers shall be rectangular in shape with an 11/16 x 1-inch slot, or when necessary of such design as to fit the contour of the beam. Rectangular washers 3 x 1 3/4 x 5/8-inch shall be used between the blockout post and the thrie beam rail.

(H9.16)

Special drilling of the thrie beam may be required at the splices. All drilling details shall be shown on the shop drawings.

(H9.17)

Fabrication of structural steel shall be in accordance with Sec 1080.

(H9.18) Do not use for prestressed double-tee or temporary bridges.

Expansion splices in the thrie beam rail shall be made at either the first or second post on either side of the joint and on structure at bridge ends. When the splice is made at the second post, an expansion slot shall be provided in the thrie beam rail for connection to the first post to allow for movement.

(H9.19) Do not use for prestressed double-tee or temporary bridges.

In addition to the expansion provisions at the expansion joints, expansion splices in the thrie beam rail and the channel shall be provided at other locations so that the maximum length without expansion provisions does not exceed 200 feet.

Do not use Notes H9.20 thru H9.29 for temporary bridges.

(H9.20) Use for prestressed double-tee bridges.

Expansion splices in the thrie beam rail and the channel shall be provided at locations so that the maximum length without expansion provisions does not exceed 200 feet.

(H9.21)

Shim plates 6 x 6 x 1/16-inch may be used between the top of the post and the channel member as required for vertical alignment.

(H9.22) Place near Part Section at Rail Post.

See slab sheet for rail post spacing.

(H9.23)

See Missouri Standard Plan 606.00 for details not shown.

(H9.24) Place near detail of bent bolt used for new bridges except double tees.

Bolt shall not be bent in slab depths greater than 14 inches, use 12 inches straight embedment.

(H9.25) Place near details of shim plates used for horizontal alignment of State System 3.

Shim plates 6 x 3 x 1/16-inch may be used between the W6x20 post and 1/2-inch bent plate connection as required for horizontal alignment.

(H9.26) Place in General Notes and near details of shim plates used for horizontal alignment.

Shim plates shall be galvanized after fabrication.

(H9.27) Place near details of shim plates used for horizontal alignment of State System 4.

Shim plates 6 x 6 x 1/16-inch may be used between the W6x20 post and 6 x 6 x 3/8-inch plate. Shim plates 6 x 3 1/2 x 1/16-inch may be used between the W6x20 post and 1/2-inch bent plate connection as required for horizontal alignment.

(H9.28) Place near detail specifying bar support at bent plates.

Bar supports shall be Beam Bolsters (BB-ref. CRSI) and shall be galvanized. See Sec 706.

~~Remaining notes are only~~Use H9.31 thru H9.38 **for temporary bridges except for Note H9.32 which is also used for rehabilitation of existing bridges and Note H9.34 which is used for all bridge types.**

(H9.31)

If Type A guardrail is not attached to ends of the temporary structure, flared ends shall be required. The existing thrie beam rails shall be modified to accept flared ends. Cost for furnishing and installing flared ends will be considered completely covered by the contract unit price for other items.

(H9.32)

Contractor shall verify all dimensions in field before ordering materials.

(H9.33) Place near Part Section at Rail Post.

See preceding sheet for rail post spacing.

(H9.34) Place in General Notes or near Elevation of Thrie Beam Rail.

At bridge ends for head to head traffic, guardrail shall be used at all four corners and for single directional traffic, guardrail shall be used at entrance ends only unless required at the exit.

(H9.35) Place near any detail specifying the bottom plate of the rail posts.

Bottom plate shall be fabricated from ASTM A709 Grade 50W steel and welded to two 5" floor bars. Bottom plate shall not be galvanized.

(H9.36) Place near any detail specifying both the bottom and base plate of the rail posts.

The size of the base and bottom plate may be increased depending on which grid option is used.

(H9.37) Place near any detail specifying the welding of post to base plate of the rail posts.

Optional welding of the post to the base plate, in lieu of the weld shown, is a 5/16" fillet weld all around, including the edges of the post flanges.

(H9.38) Place near any detail specifying the semi-circular notches of the rail posts.

Semi-circular notches centered on the axis of the post web ends may be made to facilitate galvanizing.

Guardrail delineators shall be attached to the top of the bridge guardrail and shall similarly use the delineator details of Missouri Standard Plan 617.10, except that the delineator body shall be attached to the top of the cap rail using galvanized anchorage as shown on Missouri Standard Plan 606.00. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Cost of supplying and installing new delineators will be considered completely covered by other pay items. Delineators shall be stored with bridge guardrail after use.

38-inch Two Tube Rail (Also use H9.1a, H9.5, H9.6.2)

(H9.40)

Payment for furnishing all materials and labor necessary to install bridge rail[DMB1][DK2], complete in place, will be considered completely covered by the contract unit price for Bridge Rail (Two Tube Structural Steel) per linear foot.

(H9.41)

HSS = Hollow Structural Section

(H9.42)

Dimensions of bridge rails are measured horizontally.

(H9.43)

Bridge rails will be measured to the nearest linear foot for each structure measured from end of wing to end of wing.

(H9.44)

Fabrication of structural steel shall be in accordance with Sec 1080.

(H9.45)

Hollow structural sections shall be in accordance with ASTM A500 Grade B Structural Steel Tubing and shall meet the longitudinal CVN requirements of 15 ft-lbs at 0° F, see Sec 1080 for reporting.

(H9.46)

All other steel shapes and plates shall be in accordance with ASTM A709 Grade 50.

(H9.47)

All anchor bolts shall be ASTM A449 Type 1 with ASTM A563 Grade DH heavy hex nuts and ASTM F436 hardened washers.

(H9.48)

All anchor bolts, studs, nuts, and washers shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.

(H9.49)

All posts, railing, rail splices and plates shall be galvanized after shop fabrication in accordance with AASHTO M 111 and ASTM A385. Galvanized rail shall not be painted.

~~[DMB3]~~[DK4]**(H9.50)**

All field drilled holes shall be coated with an approved zinc rich paint before erection.

(H9.51)

Provide railing expansion joints at 50 foot maximum intervals. Railing shall be continuous over two posts minimum. Railing expansion joints are required in rail sections that span bridge expansion joints.

(H9.52)

Use grout with a minimum 24-hour f'c of 3000 psi in single placement.

Concrete Curb for Two Tube Rail

(H9.60)

Top of curb shall be built parallel to grade and curb joints (except at end bents) normal to grade.

(H9.61)

All exposed edges of curb shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

(H9.62)

Minimum lap for longitudinal R-bars is 2'-5".

(H9.63)

The cross-sectional area of curb above the slab = 0.75 sq. ft.

(H9.64)

Concrete in the curb shall be Class B-2[DK5][DK6].

(H9.65)

The curb shall be cured by application of Type 1-D Liquid Membrane-Forming Curing Compound in accordance with Sec 1055 and sealed in accordance with Sec 703. The contractor shall remove all curing compound in accordance with the manufacturer's recommendations before the concrete sealer is applied.

(H9.66)

Measurement of the curb is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.

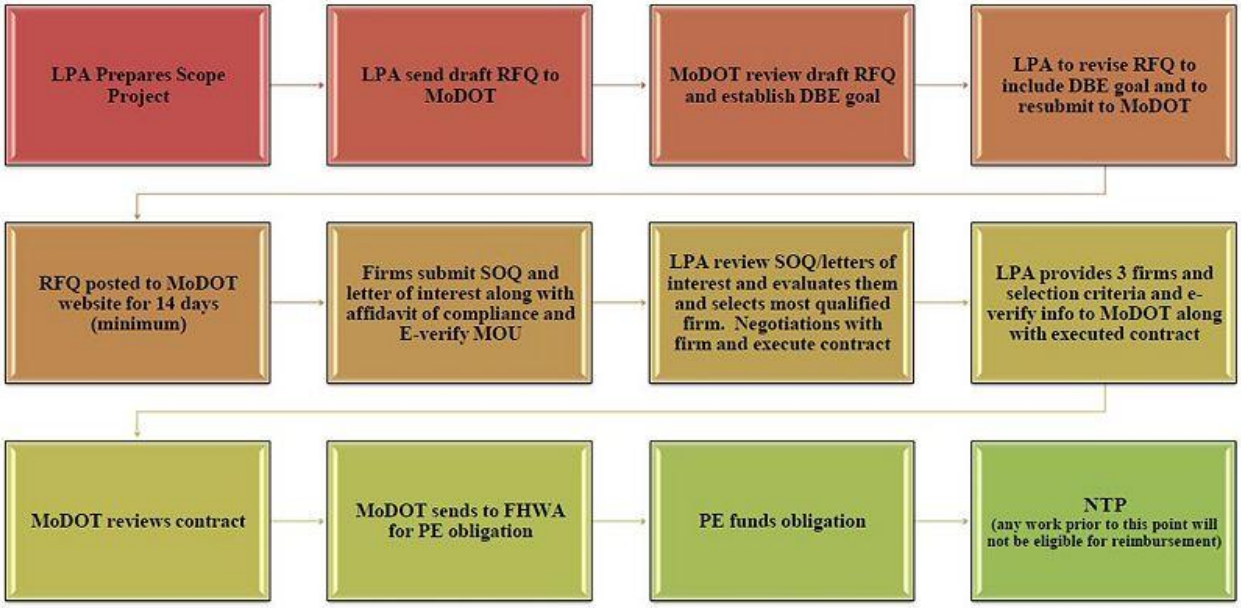
(H9.67)

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Concrete Curb (Bridge Rail) per linear foot.

136.4.2 Solicitation & Selection Process

When an LPA needs consultant services, specific processes for soliciting and selecting a consultant must be followed. LPA's must use Qualifications Based Selection (QBS) for the procurement of engineering and design related services. This is mandated by both the Federal and State law. See EPG 136.4.1.2 and EPG 136.4.1.3 for the applicable laws. If an LPA does not follow the solicitation and selection process, federal funds could be jeopardized.

136.4.2.1 Qualification Based Selection (QBS) Flowchart



A step-by-step process for following the QBS process is outlined below.

136.4.2.2 Step 1 – Scope of Services

The LPA should determine a project specific scope of services. Sample scopes of service can be found on the last sheet of Fig. 136.4.7. These samples can be used in the Request for Qualifications (RFQ) form. Keep in mind that the Engineering Services Contract (ESC) cannot contain any scope that was not listed in the Advertisement/RFQ, so it is important to develop the scope of services for the RFQ that will cover all necessary work items for the project. For instance, if the LPA wishes for the consultant to design the plans and perform construction inspection, the RFQ needs to spell out both of those items, otherwise the LPA will have to post another RFQ to cover the work items not covered in the original RFQ. A scope of services must still be developed if the LPA is going to utilize the LPA On-Call Consultant List. This scope will then be negotiated with the selected consultant. The scope should not be determined by the consultant; it must be developed by the LPA prior to contract negotiation. If the LPA is going to use an on-call consultant go to EPG 136.4.2.4.3 in Step 3.

In general, the RFQ scopes should be broadly written but the scope of services contained in the ~~Engineering Services Contract~~ESC should be detailed to mitigate the risk to ~~cover~~ both the LPA and the consultant.

In addition to the scope of services, the LPA shall also develop an Independent Cost Estimate (ICE) in compliance with 23 code of Federal Regulations (CFR) Part 172.7(a)(1)(v)(B) to serve as the basis for the negotiation of the contract. The ICE is a work hour estimate used to have an idea of the level of work required to perform tasks in the scope of services and will serve as the basis for

the negotiation of the contract. It is recommended that the person(s) who develops the ICE is involved with negotiations between the LPA and consultant.

To develop both the scope of services and ICE, the LPA can use other resources as necessary, such as looking at past projects, reaching out to other LPAs, respective planning partners and/or MoDOT District Representative[AMB1]. In addition, this template could be used as a starting point for the ICE. Keep in mind, a consultant is not to be used to create either document[AMB2].

136.4.2.3 Step 2 - Creating an RFQ Document

An LPA must create an RFQ to solicit professional services. MoDOT provides a solicitation form, or an LPA may use its own solicitation with prior approval. Fig. 136.4.7 provides a sample solicitation/RFQ form.

"How To" PowerPoint Tutorial

How to Complete the RFQ and Get it Advertised

If the LPA wishes not to use the sample solicitation they may do so provided that that solicitation contains the following:

- a statement requiring the consultant to submit a Statement of Qualifications (SOQ) along with the letter of interest
- a statement saying the DBE firms must be listed in the MRCC directory to be considered
- the selection rating criteria along with the weighted values/points associated with each selection criteria
- DBE goal (Disadvantaged Business Enterprise (DBE) requirements are also covered in EPG 146 Disadvantaged Business Enterprise (DBE))
- Detailed Scope of Consultant Services needed
- Deadline date when the letters of interest are to be submitted
- Contact information
- A statement indicating where to get a copy of any preliminary project documents, if applicable.

Each RFQ must include a consultant selection criteria with the weighted percentages of each category. RsMO 8.289 lists the criteria that should be used. MoDOT's sample solicitation includes these criteria, with the exception of proximity/familiarity. This criteria has been eliminated because the criteria is unclear and often misused. An LPA may use alternate criteria with rating values only with prior MoDOT approval. **Each RFQ must be submitted to MoDOT and reviewed for a DBE Goal prior to advertisement.**

136.4.2.4 Step 3 - Advertising the RFQ Solicitation

Each solicitation must be advertised or the LPA can choose to ~~utilize~~ use the LPA On-Call Consultant List as described in EPG 136.4.2.4.3. MoDOT suggests LPAs use the sample solicitation

form from the EPG, however, an LPA may also use an alternative advertising plan with prior MoDOT approval. The RFQ must be advertised at least one time allowing a minimum of 14 calendar days prior to the due date, but it may be advertised multiple times if desired.

In addition, each RFQ must be reviewed by MoDOT's External Civil Rights group for Disadvantage Business Enterprise (DBE) opportunities. Submit requests for a DBE goal to: DBEConsultGoal@modot.mo.gov. The request must include a work breakdown with the percentage of each anticipated work scope. Figure 136.4.20, Estimated Breakdown of Work on Engineering Consultant Contracts, shall be used to ensure all items are covered. MoDOT will notify the LPA, so that the DBE goal can be inserted into the RFQ. Possible activities that offer opportunities for DBE firms include but are not limited to surveying, plan sheet development, design, geotech services and borings. Only firms listed in the MRCC Directory are eligible to meet DBE goals. If the DBE goal is not met, the consultant must document that a Good Faith Effort was made to meet the DBE goal. Disadvantaged Business Enterprise (DBE) requirements are also covered in EPG 146 Disadvantaged Business Enterprise (DBE).

136.4.2.4.1 Advertising on MoDOT's Site

The sample RFQ solicitation form (Fig 136.4.7) should be filled out and submitted to the appropriate MoDOT district representative. When advertising on MoDOT's website, the LPA can choose to also advertise in a newspaper, but it is not required.

136.4.2.4.2 Advertising Using an Alternative Method

An LPA does not have to advertise on the MoDOT website, and when an LPA wishes to use another method to advertise the consultant solicitation, the LPA must submit a written request with an advertising plan to MoDOT. This request to advertise using an alternative method must be approved by MoDOT and FHWA prior to advertising the RFQ. The plan must comply with state and federal laws and include:

- Advertisement in a major newspaper of general circulation
- Plan to disseminate information to organizations qualified to do specified work. These organizations may include professional societies and recognized DBE organizations.

136.4.2.4.3 Using the LPA On-Call Consultant List

The LPA On-Call Consultant List is~~was~~ created through a ~~qualifications based~~ selection process that is~~.~~ ~~The process i~~was administered by MoDOT and quality assurance ~~was~~ provided by Missouri ACEC and Missouri FHWA. MoDOT, together with Missouri's Local Program Advisory Panel, manage~~d~~ the consultant review and selections. ~~The on-call selection option was created to streamline the project delivery process for local agencies., h~~However tThis process of selection is not mandatory and the ~~standard qualifications based~~QBS selection process outlined in Steps 1--3 above can be used at any time.

The LPA must first write the scope of services they need the consultant to perform and the LPA must develop an Independent Cost Estimate (ICE) in compliance with 23 code of Federal Regulations (CFR) Part 172.7(a)(1)(v)(B) to assist with determining whether engineering costs are ~~is~~ estimated to be less than $200,000, and therefore eligible for the on-call list. Refer to 136.4.2.2 for additional information regarding the scope of services and the ICE.

If the consultant contract is estimated to be less than $~~100~~200,000 and fits any of the on-call categories listed below, the LPA may select a firm from the LPA On-Call Consultant List for consideration without

advertisement. Keep in mind, if the engineering costs are estimated to be close to the $200,000 contract maximum, the LPA should consider using the RFQ solicitation process to procure services as the $200,000 contract maximum will not be exceeded via supplemental agreement regardless of whether the supplemental agreement is federally participating and therefore any cost of $200,000 is at the responsibility of the LPA if the RFQ process is not used.

In addition, ~~T~~the ~~only after the~~ LPA must have~~has had~~ discussions with at least 3 firms of consideration to determine their qualifications to perform the work identified in the scope. These discussions and evaluation of qualifications shall be documented. During these initial discussions, cost shall not be discussed. ~~With that being said, the LPA must first write the scope they need the consultant to perform and develop an estimate for this work in order to determine whether this engineering contract would be less than $100,000 and eligible for the on-call list.~~ The LPA must submit their ICE and selection documentation to their MoDOT District LPA Contact for concurrence prior to entering into negotiations with the selected firm from the On-Call List.

If the LPA is hiring a consultant to design and inspect a project, the consultant MUST be on both the appropriate design category AND in the Construction Inspection category to be eligible for the entire project. The LPA can however hire different consultants to perform the design and inspection if desired. If separate engineering contracts are used for PE & CE, the total of both contracts must be under $~~100~~200,000 to utilize the on-call list for both phases. If the total work is more than $~~100~~200,000 for PE & CE combined, but one or both phases are individually under $~~100~~200,000, the LPA can use the on-call list for one phase~~,~~ and complete the RFQ process for the other contract. Example: (PE = $187,000 and CE estimated to be $41,000), the LPA can use the on-call list for PE, but then must go out to RFQ for CE. If using this process, the LPA can proceed on to Step 6 Consultant Contract Negotiations after this step is completed.

LPA On-Call Consultant Categories and Category Descriptions

- **Structures.** This category of work is defined as the production of competently engineered structural plans. The work generally includes plans production, detailing, hydraulic studies, geotechnical work, survey, cost comparisons, environmental clearances, right of way and may include other work related to bridge design.
- **Construction Inspection.** This category of work is defined as managing, documenting and inspecting projects associated with the construction of a new and/or modified existing facility. The work may involve the identification and resolution of issues relating to materials, work, progress, change orders and disputes. It may also include geotechnical work, sampling and testing, attending construction related meetings and reviewing shop drawings, but may also include other work related to construction inspection.
- **Roadway.** This category of work is defined as the production of competently engineered highway plans and related design studies. The work generally includes widening, resurfacing, pavement reconstruction, utility design and coordination, right of way, environmental clearance, traffic signals and lighting, general lighting, surveying, sidewalks and trails (as part of

a roadway design contract), and parking lot design but may include other work as related to roadway design.

- **Trails & Sidewalks.** This category of work is defined as the production of competently engineered trail and pedestrian use facilities, environmental clearance, right of way, signal and lighting, landscaping and beautification but may include other work as related to trail and sidewalk design. Landscape Architects will be eligible for consideration in this category.
- **Traffic Engineering and TEAP.** Traffic Engineering in this category is defined as design of improvements intended to relieve traffic problems, such as signalization, signing, lighting and pavement markings. Traffic Engineering Assistance Program (TEAP) in this category is defined as studies that may include corridor safety and/or operational analysis, intersection(s) safety and/or operational analysis, speed limit review, sign inventory, pedestrian/bike route analysis, parking issues, and other traffic studies.
- **Environmental.** This category of work is defined as the preparation of Categorical Exclusion, Environmental Assessment, and Environmental Impact Statement documents, and re-evaluations of documents in compliance with all requirements of the National Environmental Policy Act (NEPA) under FHWA procedures. Additionally, this category of work will include performance of field surveys for wetlands, streams, hazardous waste, and other specialties. It will require specialized species surveys, habitat assessments, and analysis to support a determination of impact to listed species and protected resources, including reports of those surveys. Other work will include floodplain, farmland, socioeconomic impacts, noise analysis, which will consist of, but is not limited to noise monitoring, modeling, and the preparation of noise reports.
- **Historic Preservation.** This category of work is defined as providing compliance with Section 106 of the National Historic Preservation Act, which requires conducting background investigations, Phase I surveys, Phase II National Register evaluations, Phase III adverse effects mitigation (e.g. archeological data recovery, documentation of historic bridges and buildings etc.), and other various tasks as related to cultural resources.
- **Multimodal Planning / Systems and Facilities Design.** This category of work is for:
  - Rail planning, feasibility studies, and general grant writing.
  - Rail network planning and design (Freight and Passenger Rail) - Capacity analysis of existing or proposed rail lines. Identifications of improvements to increase capacity. Identification and evaluation of factors affecting rail and connection to other modes of transportation. Design of rail infrastructure and passenger rail facilities. Grant writing and grant administration. Firms should indicate if they specialize in a subset of this category.
  - Port infrastructure design including docks, warehousing, and bulk storage structures.
  - Public port grant writing and port administration.

136.4.2.4.3.1 Selecting a Consultant from the LPA On-Call Consultant List

The LPA should choose the most qualified consultant for their project from the appropriate category(s) on the LPA On-Call Consultant list. LPAs ~~are encouraged to~~shall consider at least 3 firms for each project when reviewing the LPA On-Call Consultant List ~~for consideration, however this is not mandatory~~. This includes having discussions with each firm, evaluating each firms qualifications to perform the work identified in the scope, and then documenting the selection of the most qualified firm. Cost shall not be part of these initial discussions. ~~-~~It is recommended that the LPA consider the following when reviewing ~~a~~ firms:

1. What is the current workload at the firm and can they meet the LPA's expected schedule?

2. Who, at the firm, will be the project manager for the project?

3. Can the firm provide examples of past similar to work?

4. Contact your surrounding LPAs for feedback on consultant usage.

~~It is also recommended that t~~The LPA should also review the firms' information found on the on-call list. This information can be accessed by simply selecting the firm's name. The LPA will have access to review such things as employees of the firm, past projects, general firm experience etc. ~~It is also recommended that LPAs try different firms to compare quality of work and to keep the market competitive.~~ [AMB3]Keep in mind that price is not part of selecting firms from the on-call list rather the firms are chosen based upon quality.

136.4.2.4.3.2 LPA Consideration of DBE for On-Call Contracts

All LPA On-Call Consultant contracts will be reviewed individually to establish a DBE goal. Strong consideration of DBE firms as prime and sub-consultants must be taken into account when selecting a consultant team. DBE sub-consultant firms can be found by visiting the MRCC Directory and DBE prime consultant firms are highlighted on the LPA On-Call Consultant list. If the On-Call Consultant selected by the LPA cannot meet the established DBE goal, the consultant must document the Good Faith Efforts made to achieve that DBE goal. Good Faith Effort examples are found in Fig. 136.4.1, Engineering Services Contract (Attachment E, Section 7). DBE requirements are also covered in EPG 146 Disadvantaged Business Enterprise (DBE).

136.4.2.4.3.3 Engineering Services Contract (ESC) Execution Process

1. Once the scope of work is defined, the LPA must obtain a DBE Goal by sending the appropriate project information (including scope, county, estimated construction cost, estimated consultant cost, and potential subcontracting opportunities) to the appropriate MoDOT District LPA Contact. The District LPA Contact is to submit the information to MoDOT External Civil Rights (ECR) for review at DBEConsultGoal@modot.mo.gov. The scope for each On-Call Consultant Engineering Services Contract (ESC) must be submitted to MoDOT and reviewed for a DBE Goal prior to selecting the On-Call Consultant. The DBE goal shall be included in the ESC. (DBE requirements are also covered in EPG 146 Disadvantaged Business Enterprise (DBE).) All consultant contracts that utilize federal funds must be reviewed by ECR, regardless of the dollar amount of the contract.

2. If the prime consultant or any sub-consultants are DBE firms, the DBE section of the ESC must be filled out. If the prime or subs are not DBE firms, the DBE section can be left blank.

3. The LPA will submit the unexecuted ESC to MoDOT for review. If the selected On-Call Consultant determines that the DBE goal cannot be met then the LPA shall submit the consultant's Good Faith Effort documentation for review. See Fig. 136.4.14 to view a checklist that MoDOT will use when

reviewing the consultant contract. The LPA should also use this checklist prior to submitting to MoDOT to ensure the contract is complete.

4. The LPA will send the ESC to the consultant for execution.

5. After MoDOT has reviewed the consultant contract and has found it to be reasonable, MoDOT will request authorization of funds from FHWA for Preliminary Engineering (PE). FHWA will obligate the funds and MoDOT will notify the LPA that the funds have been obligated and give the Notice to Proceed (NTP). No work shall begin until the PE funds have been obligated by FHWA and MoDOT has given the LPA notice to proceed. Any funds spent prior to PE Obligation will not be reimbursable.

> **Note:** The LPA **MUST** wait for federal funds obligation before issuing the NTP to the consultant. The MoDOT District LPA Contact will send an email notification to the LPA indicating the obligation.

6. The LPA distributes copies of the executed agreement to the appropriate MoDOT District LPA Contact; electronic notifications are required.

7. The LPA will send the NTP letter to the consultant AFTER federal funds are obligated

136.4.2.4.3.4 Consultant Evaluations for On-Call Services

The LPAs must evaluate each firm that they have chosen to use from the LPA On-Call list at the completion of the project. The LPA will not be able to utilize the LPA On-Call Consultant List if they have not evaluated the prior consultant. Fig. 136.4.19 LPA On-Call Consultant Evaluation must be filled out and submitted to the district contact. Fig. 136.4.19 must be filled out and signed by the LPA and the consultant and then submitted to the district contact. See EPG 136.4.3.3 for standard consultant contract evaluations. MoDOT will then review the evaluations and these evaluations will be used to aid in scoring consultants in the future when the on-call list is re-created, normally every 3 years.

136.4.2.5 Step 4 - Response to the RFQ

Interested firms who wish to respond to the RFQ can submit a letter of interest. If the firm has no experience with the LPA process, they must submit a Statement of Qualifications (SOQ), also. The SOQ can be in the form of a brochure or other format which outlines the qualification of the firm's employees and recent past experience in similar work. (See Missouri Revised State Statue Chapter 8 Section 8.289.) A firm MUST be prequalified to perform work. MoDOT's Approved Consultant Prequalification List contains all the information to determine whether or not firms are prequalified.

136.4.2.6 Step 5 - Selection of Consultant

When the RFQ expires, the LPA evaluates the letters of interest or statement of qualifications and determines whether or not the firms are prequalified. MoDOT's Approved Consultant Prequalification List contains all the information to determine whether or not firms are prequalified. If the LPA determines a firm is not prequalified or determines a firm should be disqualified for other reasons, then prior to rating any firms the LPA shall submit the firm name and reason for disqualification to MoDOT for concurrence. The LPA rates all firms based on the criteria that was outlined in the RFQ. Price quotations shall not be requested or used for consideration prior to selecting a firm. Price can only be determined AFTER the consultant is selected.

MoDOT/FHWA can attend the selection/rating meeting and provide guidance on the selection process but cannot give opinions on selection of the firm. RsMO 8.289 (except proximity/familiarity) and Fig. 136.4.2 Consultant Selection Criteria Guidance and Rating Sheet must be used in the rating and selection of the consultant.

According to federal and state law, the LPA must rate a minimum of 3 firms and then select the firm best qualified to perform the work, based on the rating criteria outlined in the RFQ, and not based on price quotations. It is preferred, however, to rate as many firms as necessary (6 to 8 firms) to provide for more competition and quality. It is not necessary for the LPA to interview the firms, but should be considered. When less than three responses are received, it is suggested that the RFQ be re-advertised at least once. If the LPA still receives less than three responses, the LPA must then determine whether or not this is a suitable number of responses based on the nature and size of the project. The LPA should also consider whether there was some aspect of the RFQ that was overly restrictive or otherwise had an adverse impact on the completion of the project. If the LPA still wants to move forward, then they should document that the RFQ requirements were not restrictive, it was adequately publicized and that the one or two firms who responded were capable of performing the tasks outlined for the project. It is desired that more than one person in the LPA rate/score the consultants.

Each individual shall rate the firms independently. It is required that each of the evaluators write how they determined the scores for each consultant at the bottom of the score sheet. It is suggested that all independent scores be added together and averaged on a combined score sheet. These documents must be submitted to the MoDOT district representative along with all the individual score sheets. Scores that reflect little or no thought or scores that appear skewed towards the winning consultant may result in the loss of federal funds. The red flags in scoring include but are not limited to:

- Same scores for each consultant in a particular category except for the winning consultant,
- 100% scores in every category for the winning consultant or
- No documentation (written text) to show how the scores were determined.

Consultant Presentations and Interviews

The majority of projects do not require interviews or presentations and the selection team may select by scoring the consultants and choosing the top ranked firm. Specific conditions that allow the selection to take place without interviews or presentations are as follows:

- The scope and cost of the contract is considered to be minor or routine in nature.
- The district or division is very familiar with the qualifications and capabilities of all the short-listed firms from previous services or presentations and believes presentations or interviews will not increase knowledge of the short-listed firms.
- The need for an accelerated selection process due to the critical nature of the contract.

If interviews and/or presentations are required, the selection team will first rate all the consultants based on the rating criteria published in the solicitation using Fig. 136.4.2 and as outlined above under Rating/Scoring the Consultants. Then the selection team will select the top 3-5 highest scoring firms and place them on a short list for further evaluation during presentations and/or interviews.

Refer to 134.2.2.5 for details regarding presentations and interviews.

136.4.2.7 Step 6 - Consultant Contract Negotiations

Price is negotiated after a consultant is selected and notified and the previously developed ICE should serve as the basis for the negotiation of the contract. This is the only time in the selection process when price can be considered. Fig. 136.4.6 lists a number of common Unallowable Costs

that are ineligible federal reimbursement. **Additional scope beyond what was advertised in the RFQ cannot be negotiated into the contract.**

The selected firm will need to use the overhead rate that was approved by MoDOT in that firms prequalification process with MoDOT. If the firm elects to voluntarily reduce their overhead rate the following language must be incorporated into the contract:

“The Company has voluntarily reduced its overhead rate to ___%. This rate will be used on all billings. Upon completion of these services outlined under this Agreement the final payment for these items will be based on accounting records of the Consultant incurred during the period of the Agreement. The LPA reserves the right to require the actual audited overhead rates be used if those rates are less than the voluntarily reduced rate noted previously.”

For expectations on consultant inspection and administration, see EPG 136.11.12 Construction Administration.

136.4.2.8 Step 7 - Consultant Contract Submittal to MoDOT

The contract format illustrated in Fig. 136.4.1 is required, unless the LPA gets prior approval from MoDOT to deviate from this contract form. The LPA must submit the unexecuted contract to MoDOT for review and approval along with the cover letter found in Fig. 136.4.9. For a complete list of items required to be submitted along with the consultant contract, see Fig. 136.4.11. Also see Fig. 136.4.14 to view a checklist that MoDOT will use when reviewing the consultant contract. The LPA should also use this checklist prior to submitting to MoDOT to ensure the contract is complete.

136.4.2.9 MoDOT Review of Consultant Contract

Per the Federal Acquisition Regulation (FAR), a price reasonableness review must be performed prior to contract execution. Each consultant contract will be reviewed by MoDOT staff for reasonableness in man-hours, wage rates, overhead rates, direct costs, etc. Any item found to be unreasonable as compared to industry/consultant history and current trends will need to be corrected prior to contract execution. Common items include, but are not limited to, math errors, contract language and costs that do not match exhibits, exclusion of an audit clause, large fluctuation in wage rates from expected amounts or previous rates, and/or overhead rates that are different from information MoDOT has on file. Fig. 136.4.14, Checklist for reviewing Consultant Contracts includes helpful hints for conducting a price-reasonableness review and common errors found.

No work shall begin until the PE funds have been obligated by FHWA and MoDOT has given the LPA notice to proceed. Any funds spent prior to PE Obligation will not be reimbursable.