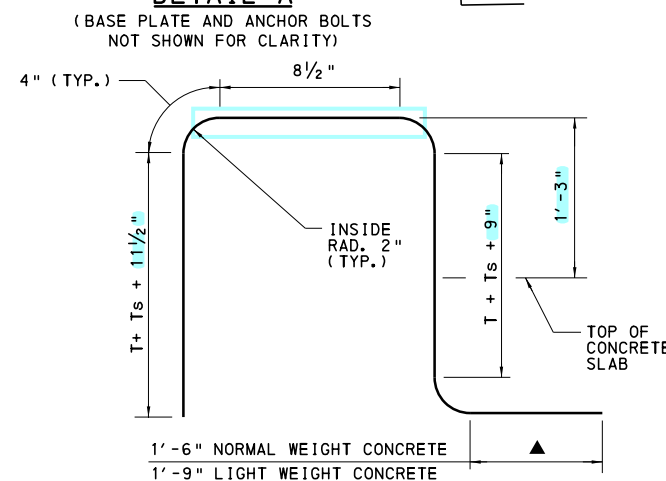
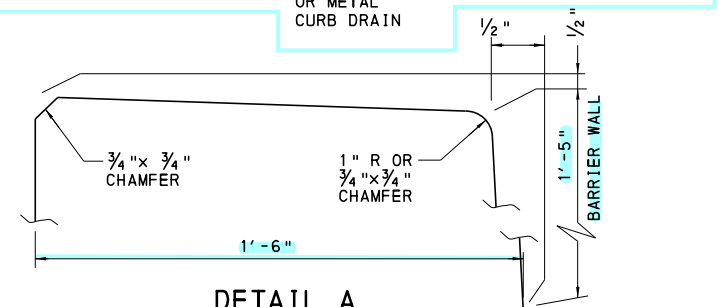
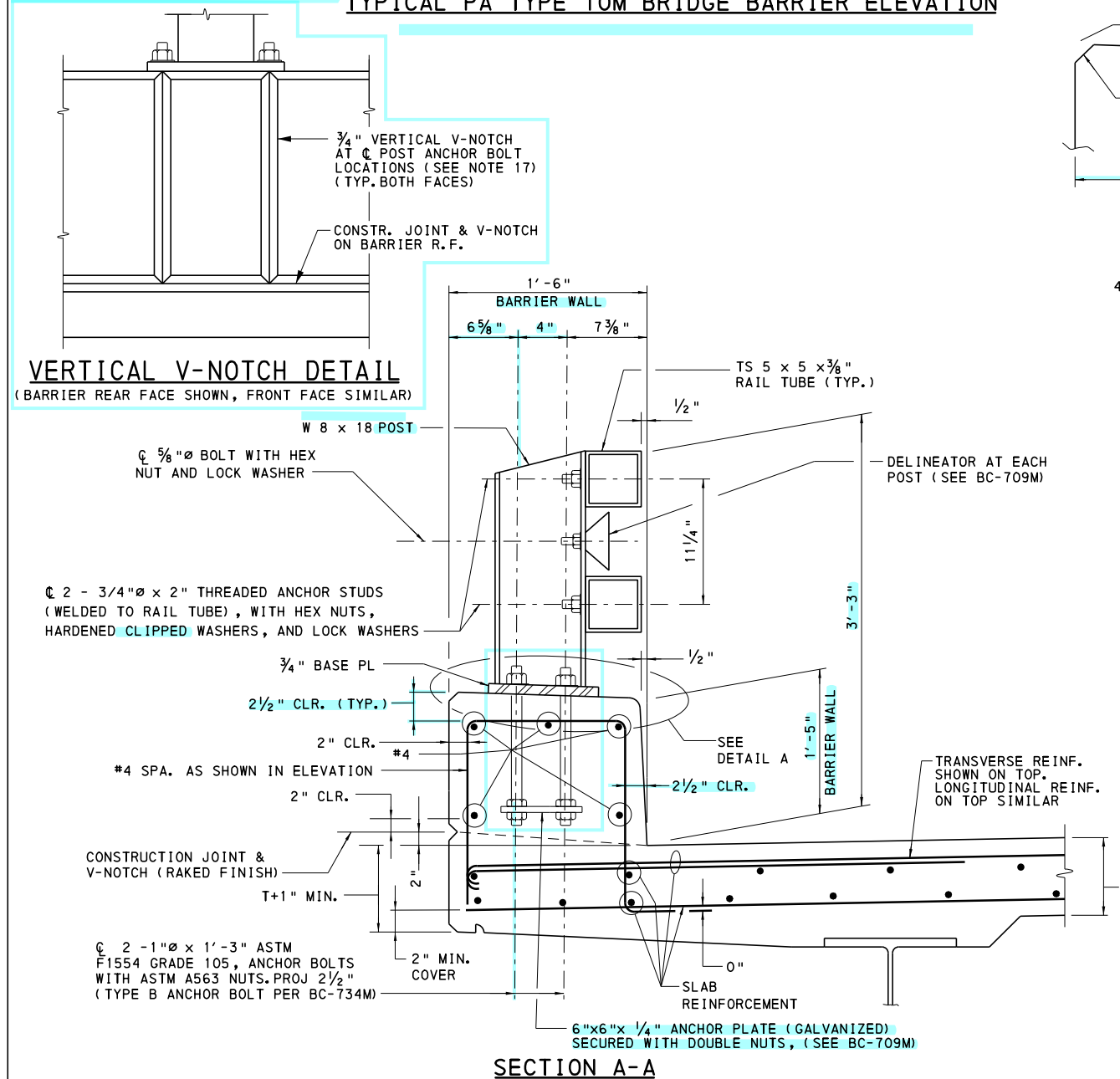
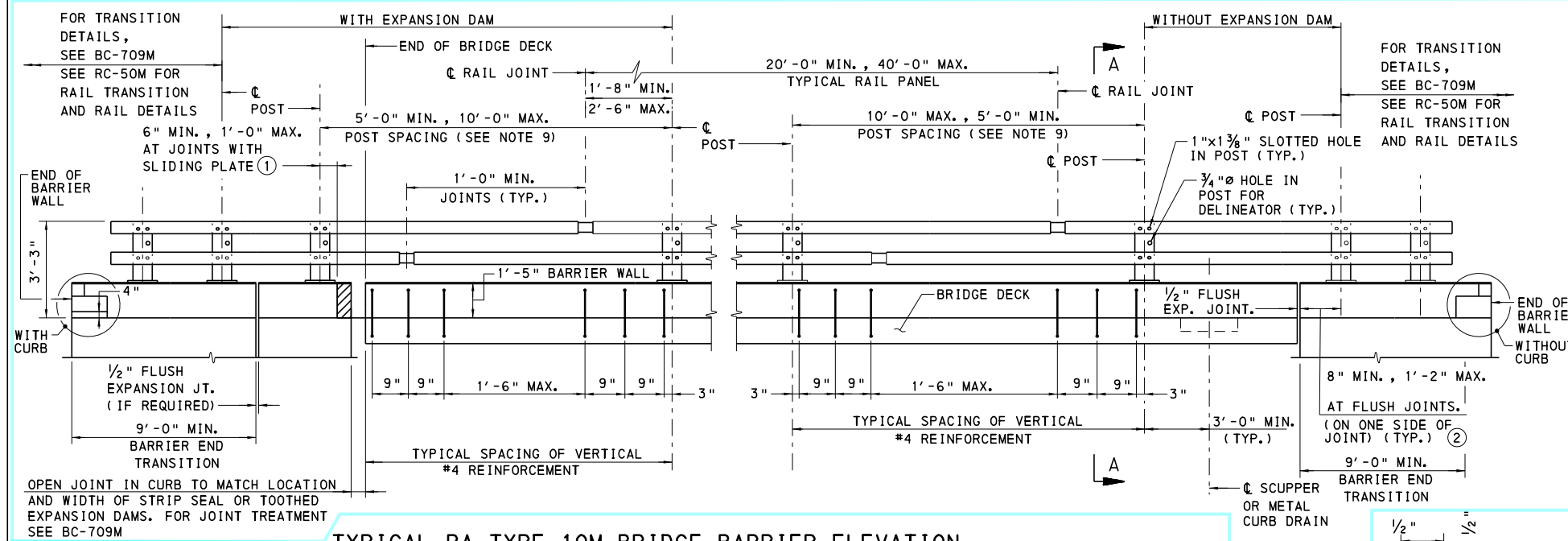




- NOTES:

1. THE PA TYPE 10M BRIDGE BARRIER IS DESIGNATED AS WASH TL-4.
2. PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH PUBLICATION 408.
3. LOCATE RAIL SPLICES AT EXPANSION JOINTS AND AT OTHER LOCATIONS WHERE NECESSARY. PROVIDE RAILS AS LONG AS PRACTICAL, WITH A MINIMUM OF THREE POSTS BETWEEN SPLICES, UNLESS OTHERWISE REQUIRED FOR EXPANSION.
4. PROVIDE RAIL TUBES CONTINUOUS OVER NOT LESS THAN TWO RAILING POSTS. NO WELDED BUTT SPLICES WILL BE ALLOWED IN THE RAIL TUBE SECTIONS.
5. USE $f'c = 3.5$ KSI CLASS AA CONCRETE FOR BARRIER WALL.
6. TIGHTEN ALL BOLTS THAT HAVE LOCK WASHERS TO SNUG CONDITION ONLY.
7. PLACE POST AND POST ANCHOR BOLTS NORMAL TO GRADE AND RAILS PARALLEL TO GRADE.
8. COAT ALL SURFACES OF THE BASE PLATE IN CONTACT WITH CONCRETE WITH CAULKING COMPOUND PRIOR TO ERECTION. AFTER ERECTION AND ALIGNMENT, SEAL OPENINGS BETWEEN THE METAL SURFACES AND THE CONCRETE WITH CAULKING COMPOUND AS SPECIFIED IN PUBLICATION 408, SECTION 705.8(b).
9. ONE OR MORE 10'-0" MAX. POST SPACINGS MAY BE REDUCED TO 5'-0" MIN. IN ORDER TO MAINTAIN APPROPRIATE SPACING DIMENSIONS FROM THE END OF THE RAIL, EXPANSION JOINTS AND DRAINAGE SCUPPERS.
10. DO NOT USE DEFLECTION JOINTS WITH PA TYPE 10M BRIDGE BARRIERS.
11. PROVIDE POST SPACINGS ON THE PLANS.
12. THE MAXIMUM JOINT MOVEMENT FOR THE PA TYPE 10M BRIDGE BARRIER IS 9".
13. FOR LOCATION OF DRAIN HOLES IN RAIL TUBES, SEE BC-709M.
14. PROVIDE RAILING JOINTS IN ALL RAILS IN THE BAY ABOVE AN EXPANSION DAM. SEE BC-709M, SHEET 1, FOR RAILING JOINT DETAILS.
15. FOR DEAD LOAD CALCULATIONS, THE WEIGHT OF THREE TYPES OF PA TYPE 10M BRIDGE BARRIER ARE AS FOLLOWS:

TYPICAL 10M	375 LB./FT.
SIDEWALK 10M	385 LB./FT.
ALT. SIDEWALK 10M	385 LB./FT.

(ALL CASES ASSUME 7'-6" POST SPACING)
16. FOR DETAILS OF THE PA TYPE 10M BRIDGE BARRIER ON SUBSTRUCTURE UNITS, SEE THE APPROPRIATE SUBSTRUCTURE DETAILS AND REINFORCEMENT IN BD-622M AND BD-624M. FOR DETAILS AT THE END OF BARRIER, SEE SHEETS 2 & 3.
17. PROVIDE VERTICAL V-NOTCHES ON BARRIER WALL FRONT AND REAR FACES AT ALL POST ANCHOR BOLT LOCATIONS. SEE DETAIL THIS SHEET.

- REINFORCEMENT BAR NOTES:

- ① Q POST TO EDGE OF RECESS IN CONCRETE (SHOWN)
OR Q POST TO EDGE OF FIXED END OF SLIDING PLATE.
- ② NO POST REQUIRED ADJACENT TO FLUSH JOINTS AT
WINGWALL IF POSTS LOCATED AT EXPANSION JOINT.

TS= THICKNESS OF SIDEWALK
UNDER BARRIER

T = THICKNESS OF SLAB
UNDER BARRIER

▲ WHEN THE DECK IS SLOPED AWAY FROM THE GUTTERLINE, SLOPE REINFORCEMENT LEG TO MATCH DECK CROSS-SLOPE. DESIGNER TO PROVIDE NECESSARY DIMENSIONS.

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STANDARD

PA TYPE 10M BRIDGE BARRIER

BD-601M	CONCRETE DECK SLAB
BD-621M	REINFORCED CONCRETE ABUTMENTS
BD-622M	R.C. ABUTMENTS WITH BACKWALL
BD-624M	R.C. ABUTMENTS WITHOUT BACKWALL
BD-632M	R.C. BOX CULVERT
BD-657M	I-BEAM AND BOX BEAM BRIDGES
BD-658M	SHEAR BLOCK DETAILS AT PIER - P/S CONCRETE I-BEAM AND BOX BEAM BRIDGES
BD-661M	BOX BEAM REINFORCEMENT DETAILS
BD-665M	CONTINUITY FOR LIVE LOAD DETAILS BOX BEAMS
BD-667M	INTEGRAL ABUTMENT
BC-701M	PROTECTIVE FENCE
BC-709M	PA TYPE 10M BRIDGE BARRIER
BC-711M	ALUMINUM PROTECTIVE BARRIER
BC-716M	ALUMINUM PEDESTRIAN RAILING
BC-734M	ANCHOR SYSTEMS
BC-736M	REINFORCEMENT BAR FABRICATION DETAILS
BC-767M	NEOPRENE STRIP SEAL DAM FOR PRESTRESSED CONCRETE & STEEL I-BEAM BRIDGES
BC-788M	TYPICAL WATERPROOFING AND EXPANSION DETAILS
RC-50M	GUIDE RAIL TO BRIDGE BARRIER TRANSITIONS
RC-51M	TYPE 31 STRONG POST GUIDE RAIL

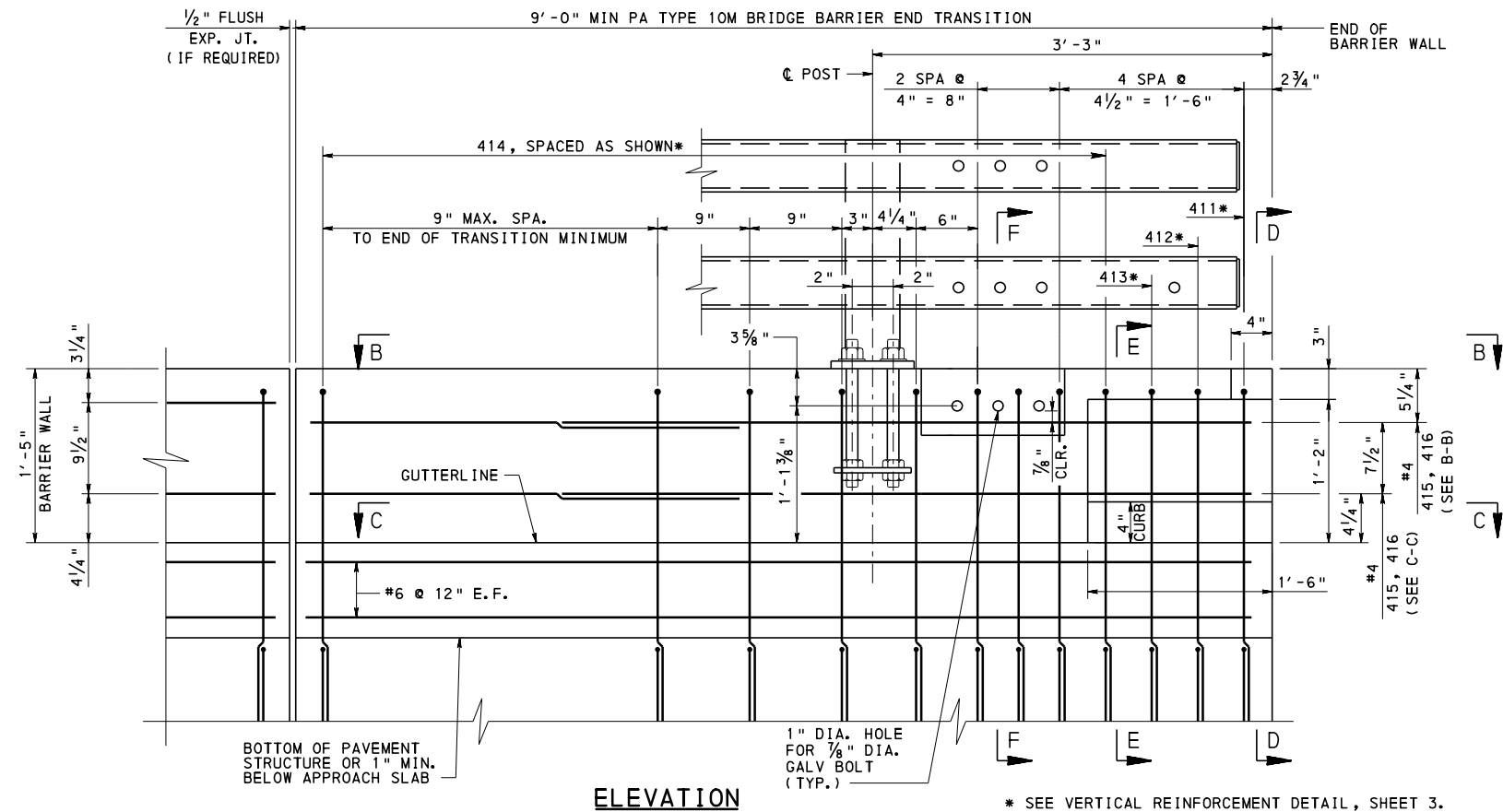
REFERENCE DRAWINGS

RECOMMENDED FEB. 19, 2021
Thomas P. Maciore
CHIEF BRIDGE ENGINEER

RECOMMENDED FEB. 19, 2021
Bruce B. Thompson
 DIRECTOR, BUR. OF PROJECT DELIVERY

SHEET 1 OF 9

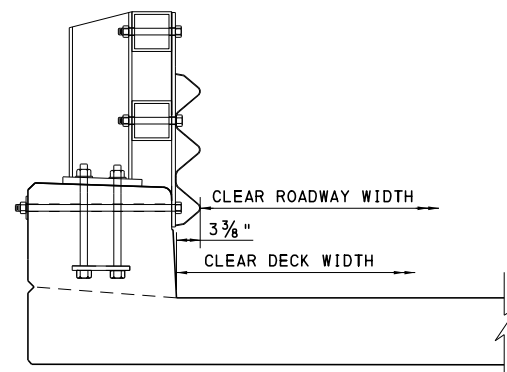
BD-617M



PA TYPE 10M BRIDGE END TRANSITION

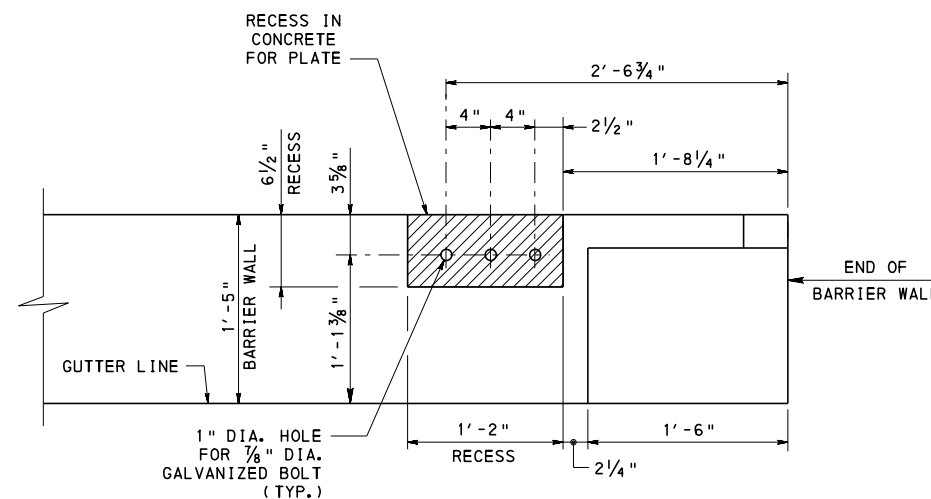
(WITH CURB SHOWN, WITHOUT CURB SIMILAR)
(GUIDE RAIL, CONNECTION PLATE ASSEMBLY AND BOLTS OMITTED FOR CLARITY)

* SEE VERTICAL REINFORCEMENT DETAIL, SHEET 3.
** REINFORCEMENT DETAILING SHOWN REPRESENTS A
CONDITION WHERE AN EXPANSION JOINT IS NOT PRESENT.



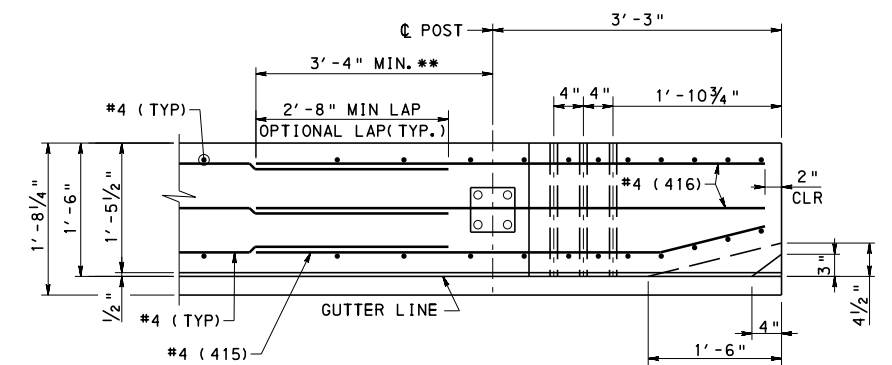
CLEAR ROADWAY WIDTH DETAIL

CLEAR DECK WIDTH INCLUDES CLEAR ROADWAY WIDTH
PLUS 3 3/8" ON BOTH SIDES AT THE BARRIER FOR
THE THRIE-BEAM TERMINAL CONNECTOR WIDTH.

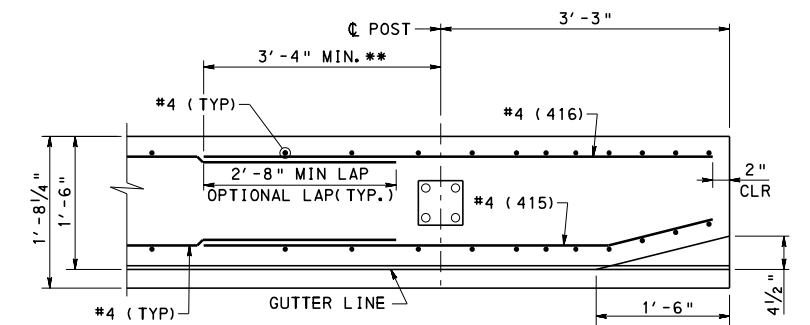


THRIE-BEAM GUIDE RAIL RECESS AND BOLT HOLE DETAIL

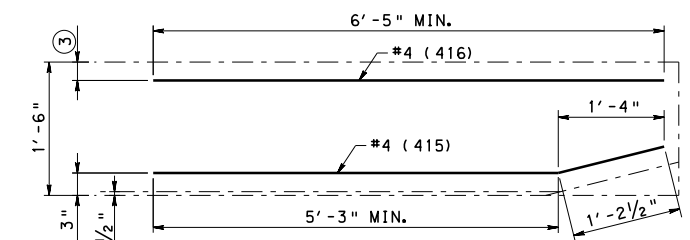
(WITHOUT CURB SHOWN, WITH CURB SIMILAR)



SECTION B-B



SECTION C-C



HORIZONTAL REINFORCEMENT

(SEE NOTE 2)

NOTES:

- FOR SECTION D-D, E-E AND F-F SEE SHEET 3.
- DIMENSION FROM FACE OF BARRIER TO BAR IS
MEASURED TO OUTSIDE FACE OF REINFORCEMENT BAR.
- FOR ADDITIONAL NOTES, SEE SHEET 1.

LEGEND:

- ③ 2 1/2" CLR. FOR SAFETY WING,
3/8" CLR. FOR U-WING.

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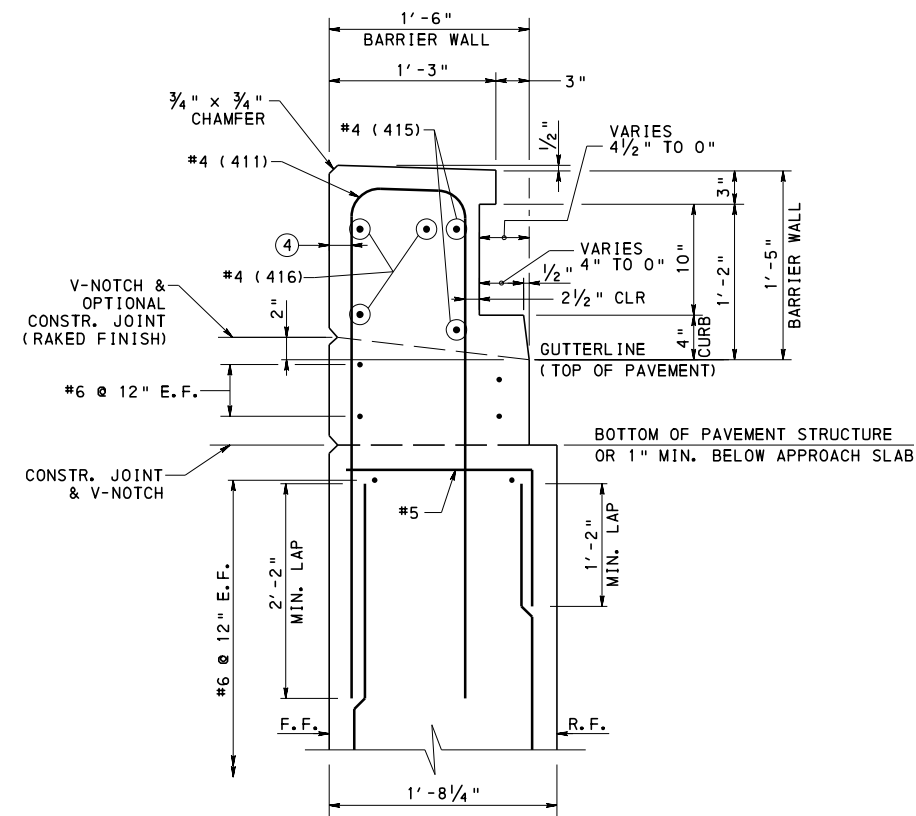
STANDARD

PA TYPE 10M BRIDGE BARRIER END OF BARRIER DETAILS - 1

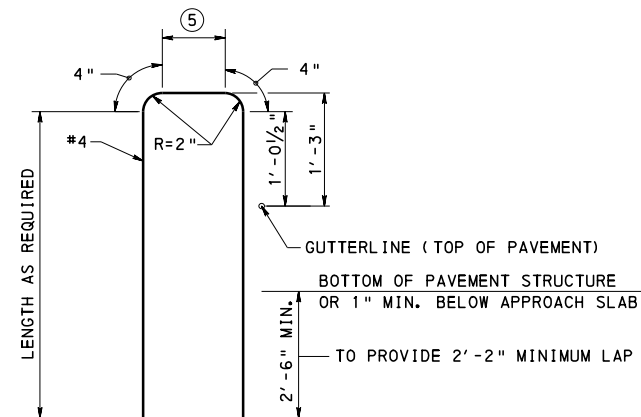
RECOMMENDED FEB. 19, 2021
Thomas P. Masiore
CHIEF BRIDGE ENGINEER

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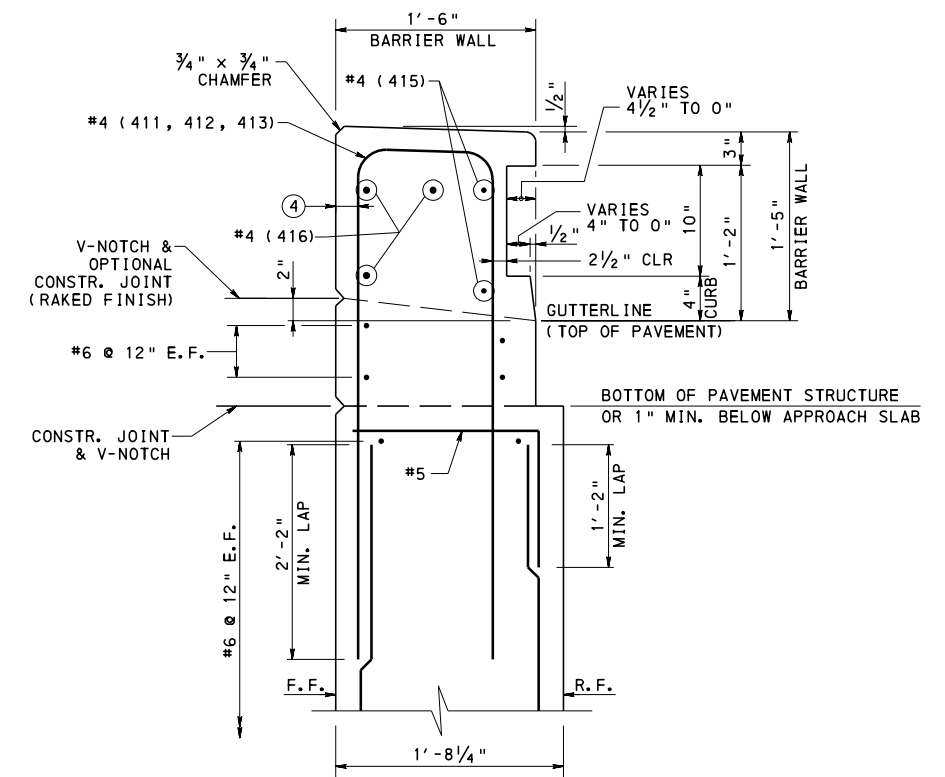
SHEET 2 OF 9
BD-617M



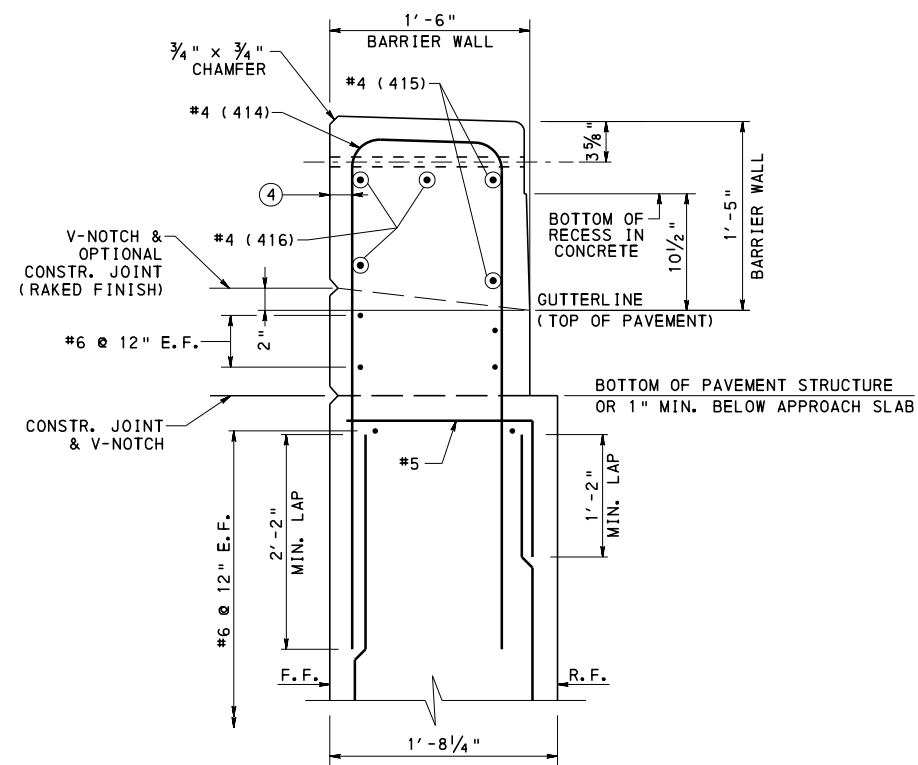
SECTION D-D (6)
(WITH CURB SHOWN, WITHOUT CURB SIMILAR)



VERTICAL REINFORCEMENT



SECTION E-E (6)
(WITH CURB SHOWN, WITHOUT CURB SIMILAR)



SECTION F-F (6)

LEGEND:

- ④ 2" CLR. FOR SAFETY WINGS,
2 5/8" CLR. FOR U-WINGS.
- ⑤ FOR SAFETY
WINGS:
4 3/4" (411)
5 3/4" (412)
6 7/8" (413)
8 1/2" (414)
- FOR U-WINGS:
4 1/8" (411)
5 1/8" (412)
6 1/4" (413)
7 7/8" (414)
- ⑥ REINFORCEMENT AND INFORMATION SHOWN
FOR SAFETY WINGS. REINFORCEMENT IN U-WING
BELOW 1'-6" WIDTH IS AS BY DESIGN.

NOTES:

1. FOR SECTION D-D, E-E AND F-F LOCATION, SEE SHEET 2.
2. FOR ADDITIONAL NOTES, SEE SHEET 1.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
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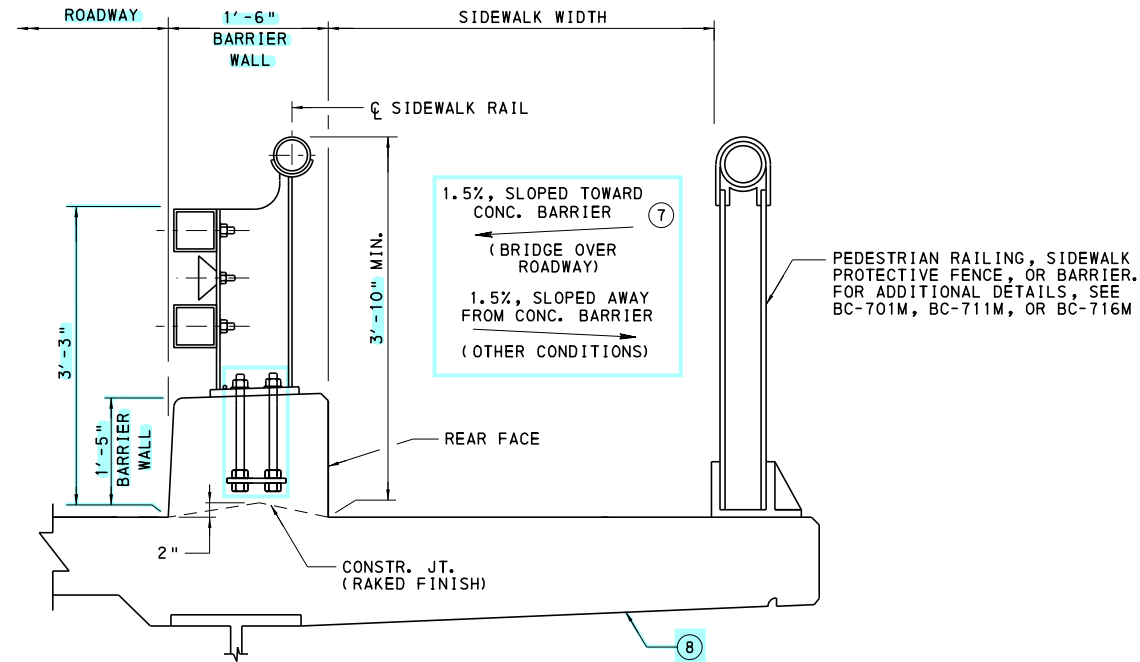
STANDARD

PA TYPE 10M BRIDGE BARRIER
END OF BARRIER DETAILS - 2

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SHEET 3 OF 9
BD-617M



TYPICAL SIDEWALK DETAIL

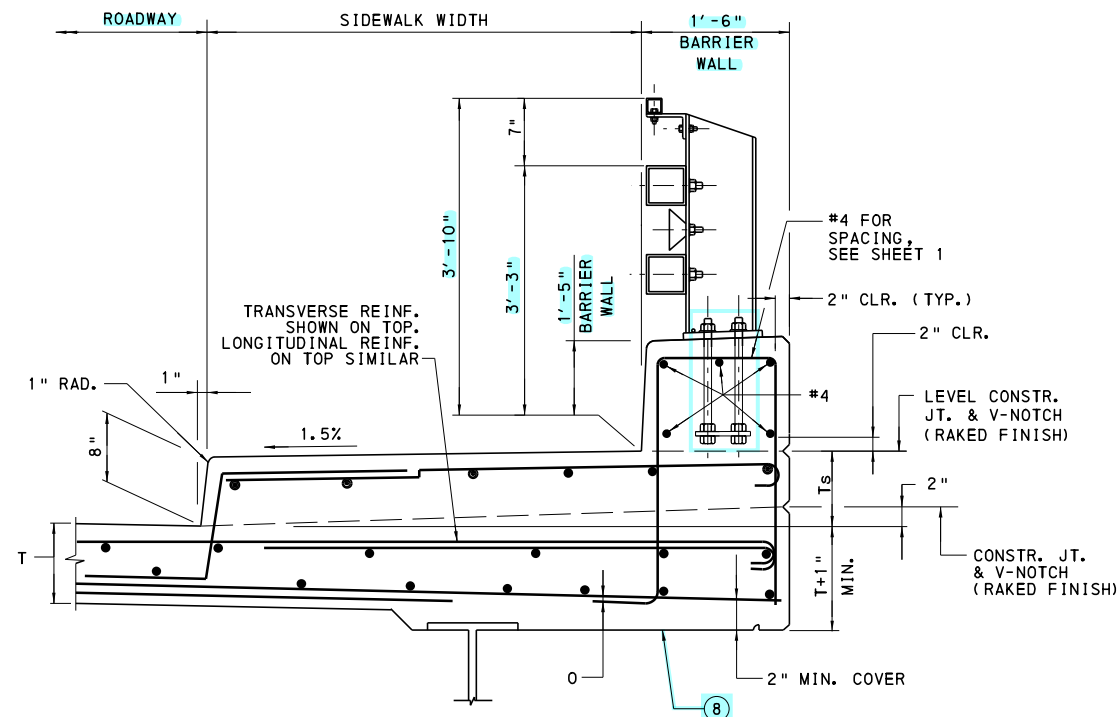
(FOR GEOMETRIC AND REINFORCEMENT DETAILS OF THE DECK SLAB, SEE BD-601M)

LEGEND:

- ⑦ DRAIN RUNOFF WITH CURB DRAINS THROUGH CONCRETE BARRIER OR WITH TYPE 2 SCUPPERS IN THE SIDEWALK SLAB. WHERE CURB DRAINS ARE USED, SET SIDEWALK ELEVATION AT REAR FACE OF BARRIER 1" ABOVE GUTTERLINE ELEVATION. THIS MAY RESULT IN INCREASED COVER FOR S2 AND S7 BARS. BEVEL DRAINS AS PER BC-751M.
- ⑧ UNDERSIDE OF DECK MAY BE CONSTRUCTED LEVEL.

NOTES:

- 1. FOR GEOMETRIC AND REINFORCEMENT DETAILS OF THE PA TYPE 10M BARRIER NOT SHOWN, SEE SHEET 1.
- 2. FOR ADDITIONAL NOTES, SEE SHEET 1.



ALTERNATE SIDEWALK DETAIL

(FOR GEOMETRIC AND REINFORCEMENT DETAILS OF THE SIDEWALK AND DECK SLAB, SEE BD-601M)

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DEPARTMENT OF TRANSPORTATION
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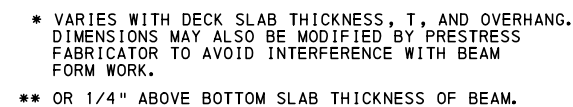
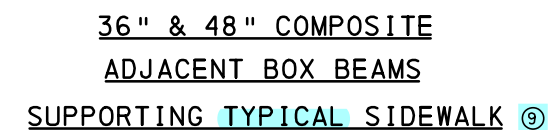
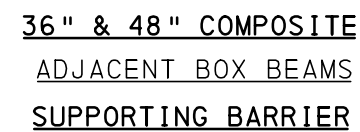
STANDARD

PA TYPE 10M BRIDGE BARRIER
SIDEWALK DETAILS

RECOMMENDED FEB. 19, 2021
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RECOMMENDED FEB. 19, 2021
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SHEET 4 OF 9
BD-617M



VERTICAL REINFORCEMENT



LEGEND:

- ⑦ DRAIN RUNOFF WITH CURB DRAINS THROUGH CONCRETE BARRIER OR WITH TYPE 2 SCUPPERS IN THE SIDEWALK SLAB. WHERE CURB DRAINS ARE USED, SET SIDEWALK ELEVATION AT REAR FACE OF BARRIER 1" ABOVE GUTTERLINE ELEVATION. THIS MAY RESULT IN INCREASED COVER FOR S2 AND S7 BARS. BEVEL DRAINS AS PER BC-751M.
- ⑨ USE ONLY WHEN ROADWAY AND SIDEWALK WIDTHS PERMIT THE HORIZONTAL LEGS OF THE BARRIER BAR TO BE EMBEDDED ENTIRELY WITHIN ONE BEAM. ROADWAY/SIDEWALK WIDTHS MAY NEED TO BE ADJUSTED TO ACCOMMODATE THIS CONDITION.
- ⑩ BEND AS REQUIRED TO ACCOMMODATE OVERHANG. SEE BC-736M.
- ⑪ INCREASE THICKNESS AS REQUIRED TO PROVIDE MINIMUM REQUIRED COVER FOR BRIDGES MADE CONTINUOUS FOR LIVE LOAD.

NOTES:

1. FOR GEOMETRIC AND REINFORCEMENT DETAILS OF THE PA TYPE 10M BARRIER NOT SHOWN, SEE SHEET 1.
2. FOR ADDITIONAL NOTES, SEE SHEET 1.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

STANDARD

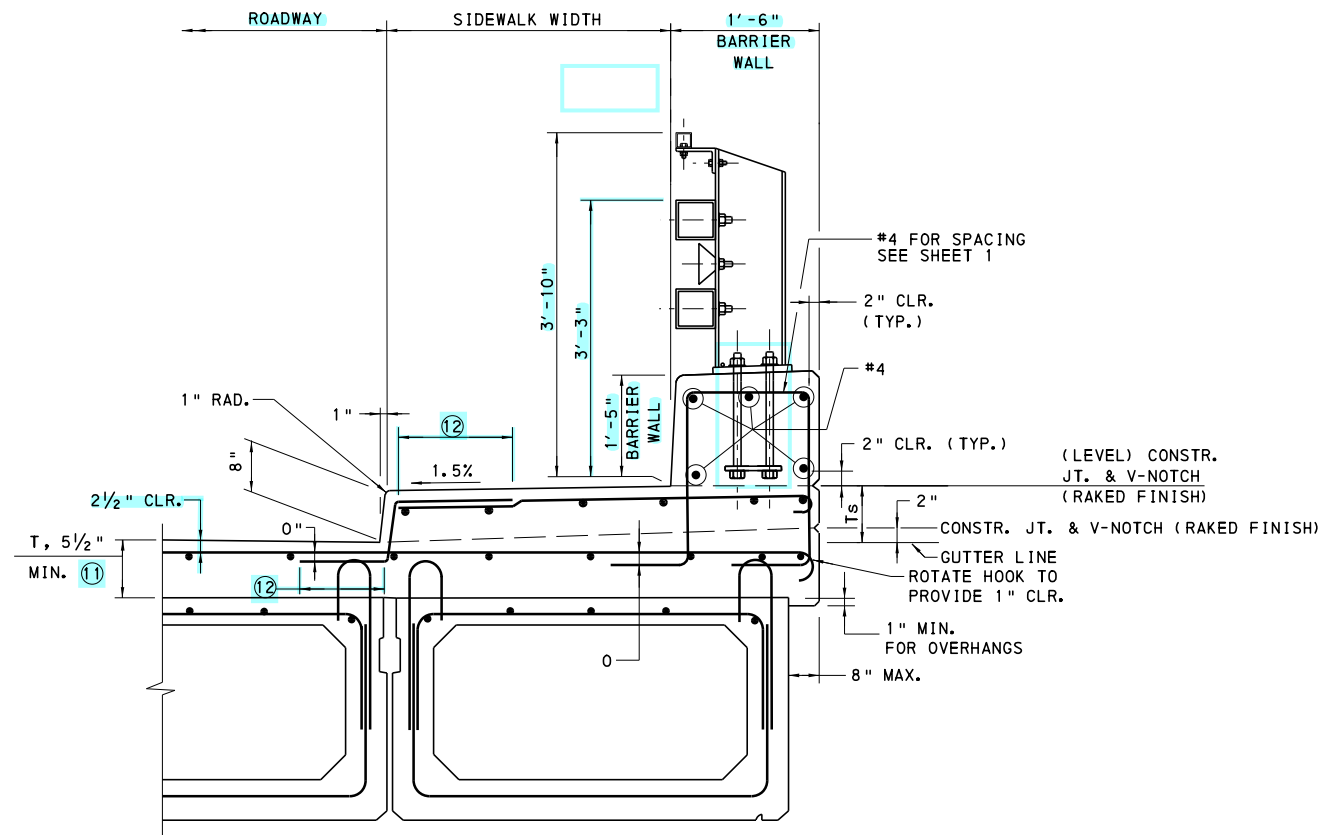
PA TYPE 10M BRIDGE BARRIER
ADJACENT BOX BEAM DETAILS - 1

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CHIEF BRIDGE ENGINEER

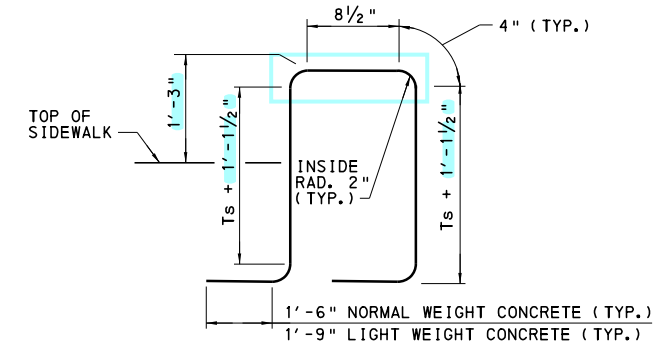
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SHEET 5 OF 9

BD-617M



**36" & 48" COMPOSITE
ADJACENT BOX BEAMS**
SUPPORTING ALTERNATE SIDEWALK
FOR GEOMETRIC AND REINFORCEMENT DETAILS
OF THE SIDEWALK, SEE BD-601M.



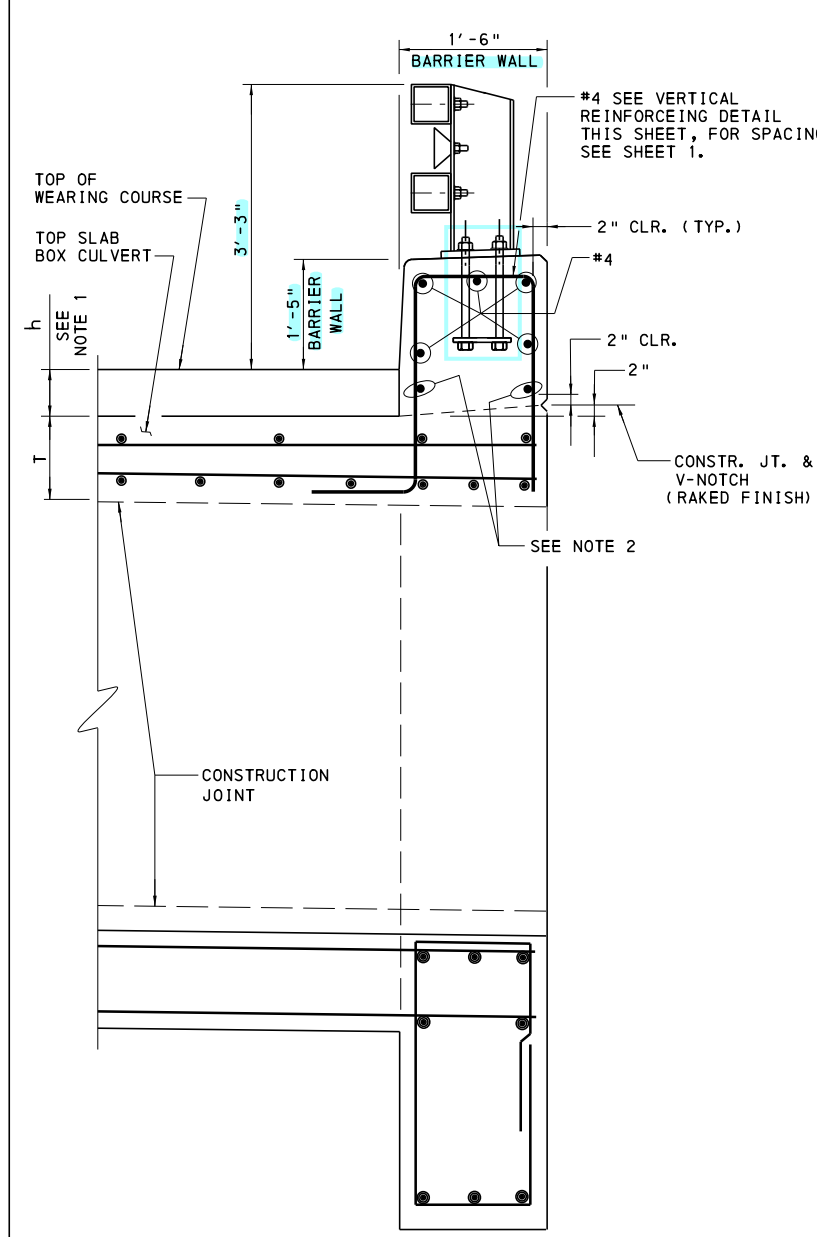
VERTICAL REINFORCEMENT
FOR REINFORCEMENT BAR NOTES, SEE SHEET 1

NOTES:

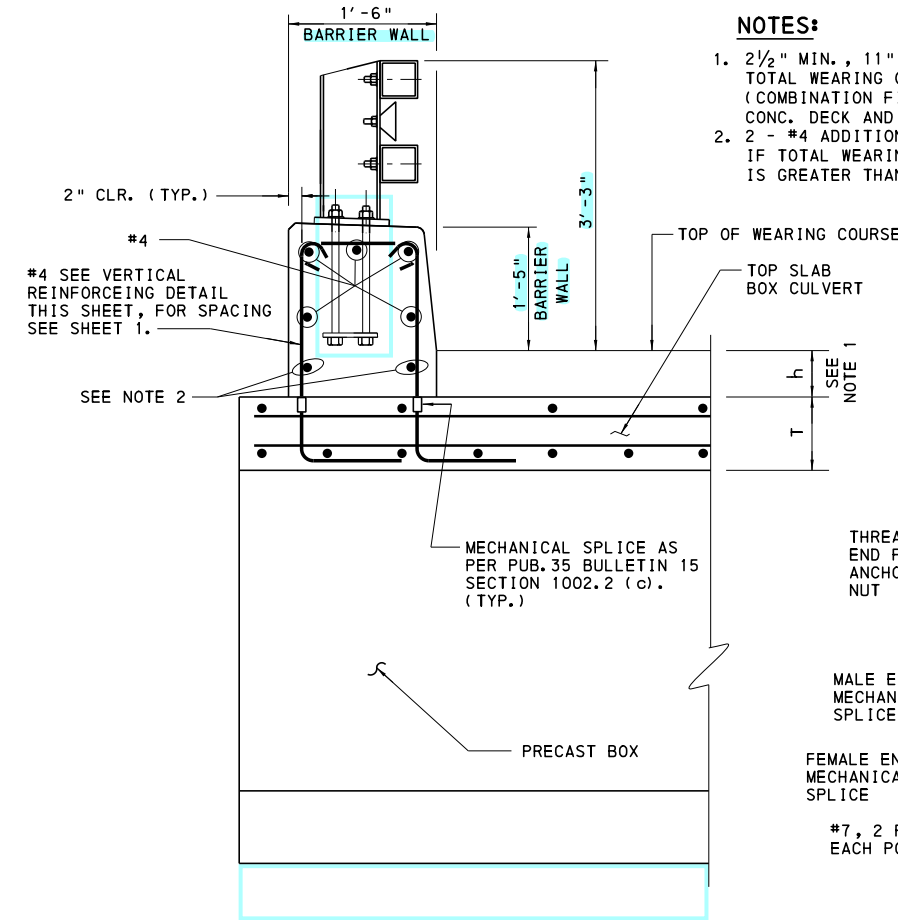
1. FOR GEOMETRIC AND REINFORCEMENT DETAILS OF THE PA TYPE 10M BARRIER NOT SHOWN, SEE SHEET 1.
2. FOR ADDITIONAL NOTES, SEE SHEET 1.

LEGEND:

- ① INCREASE THICKNESS AS REQUIRED TO PROVIDE MINIMUM REQUIRED COVER FOR BRIDGES MADE CONTINUOUS FOR LIVE LOAD.
- ⑫ FOR DIMENSIONS, SEE BD-601M, SHEET 4.

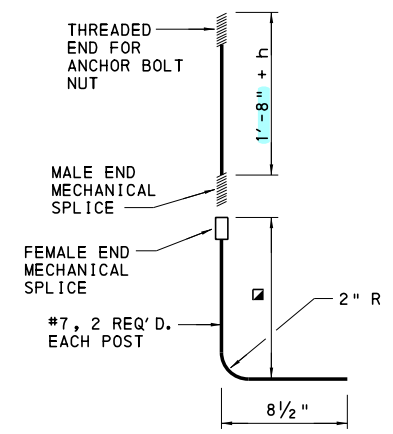


SECTION - C.I.P.



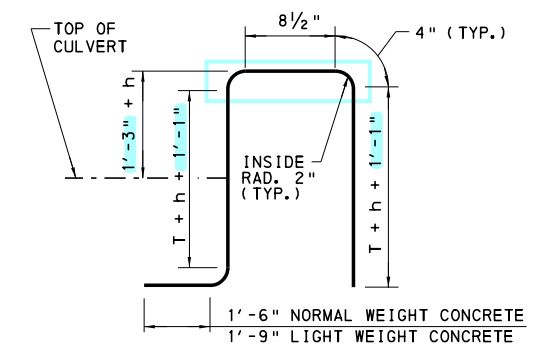
SECTION - PRECAST

- NOTES:**
1. 2 1/2" MIN., 11" MAX.
TOTAL WEARING COURSE THICKNESS (h)
(COMBINATION FILL OR 5" MIN. REINF.
CONC. DECK AND OVERLAY)
 2. 2 - #4 ADDITIONAL BARS REQUIRED
IF TOTAL WEARING COURSE THICKNESS (h)
IS GREATER THAN 6"

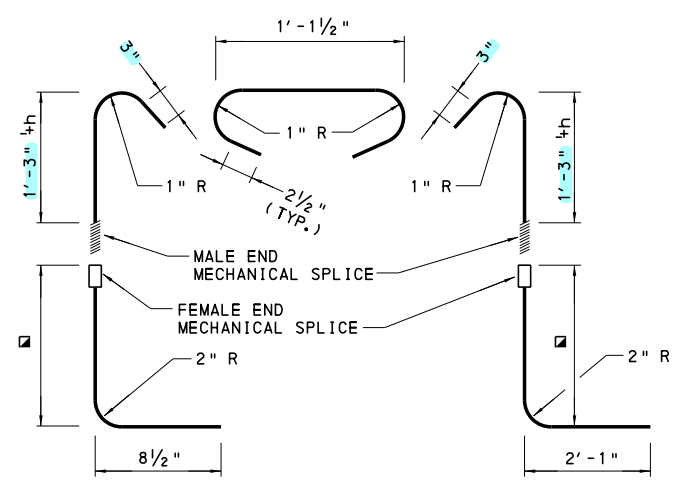


OPTIONAL
ANCHOR BOLT DETAIL

APPLIES TO PRECAST CULVERT ONLY



C.I.P. CULVERT



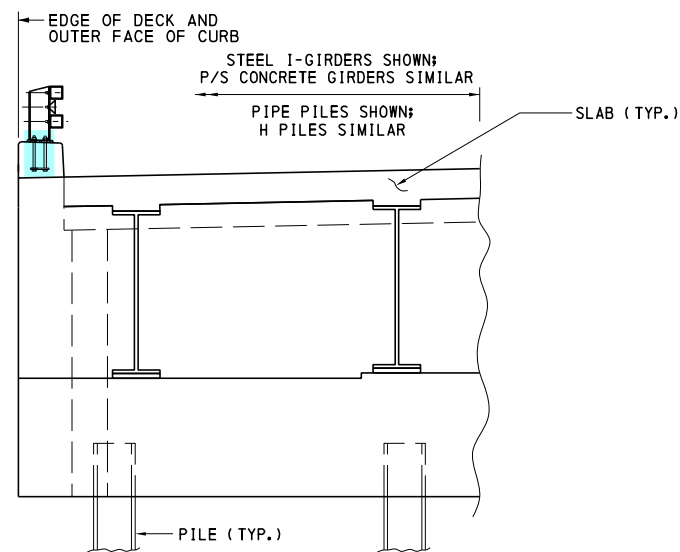
PRECAST CULVERT
VERTICAL REINFORCEMENT

- ALL VERTICAL REINFORCEMENT #4
- FOR T<10": T-2"
 - FOR T>10": 8" MIN.

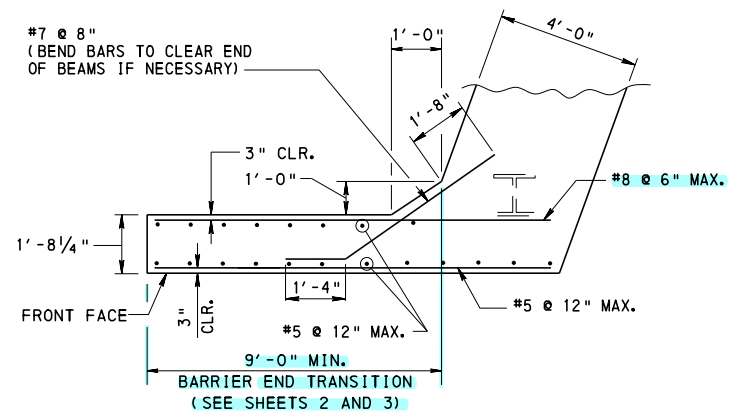
R.C. CULVERT AT GRADE

- NOTES:**
1. FOR R.C. CULVERT DETAILS, SEE BD-632M.
 2. FOR POST AND REINFORCEMENT BAR SPACING, SEE SHEET 1.
 3. FOR ADDITIONAL NOTES, SEE SHEET 1.

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY		
STANDARD		
PA TYPE 10M BRIDGE BARRIER BOX CULVERT DETAILS		
RECOMMENDED FEB. 19, 2021 <i>Thomas P. Mociore</i> CHIEF BRIDGE ENGINEER	RECOMMENDED FEB. 19, 2021 <i>Bruce S. Thompson</i> DIRECTOR, BUR. OF PROJECT DELIVERY	SHEET 7 OF 9 BD-617M

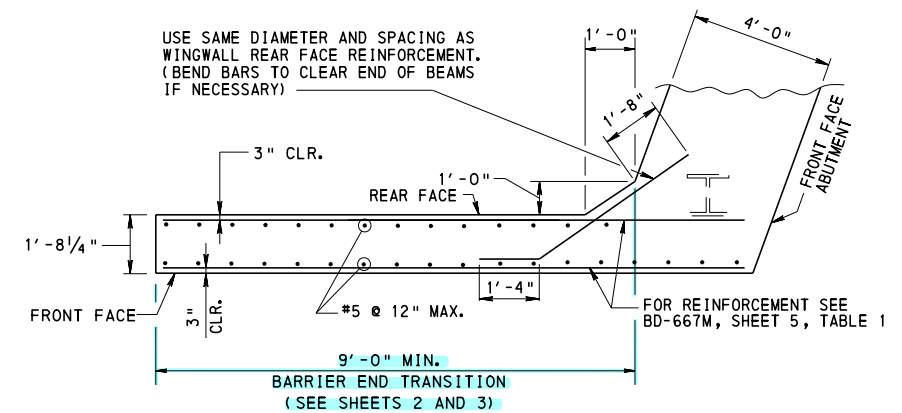


TYPICAL ELEVATION

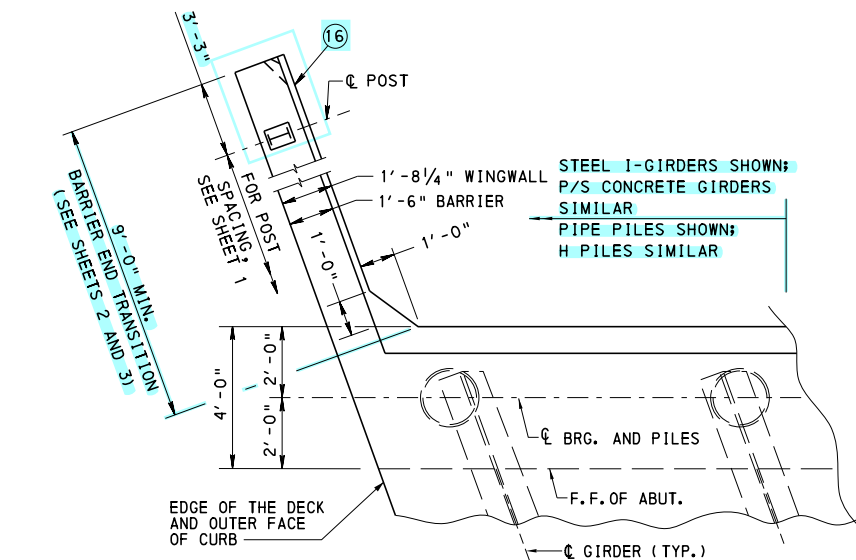


SECTION J-J

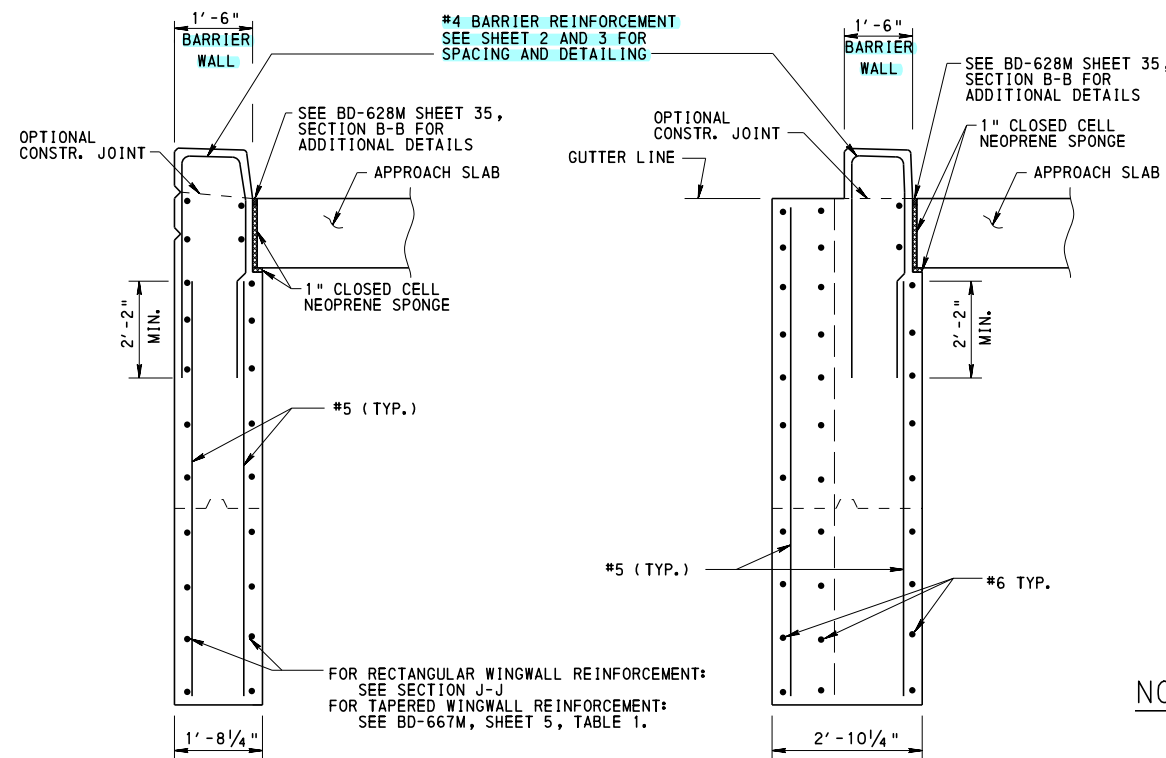
SEE BD-667M SHEET 5 FOR LOCATION OF SECTIONS J-J AND L-L.



SECTION L-L
(FOR REINFORCEMENT NOT SHOWN
SEE BD-667M, SHEET 4)



TYPICAL PLAN



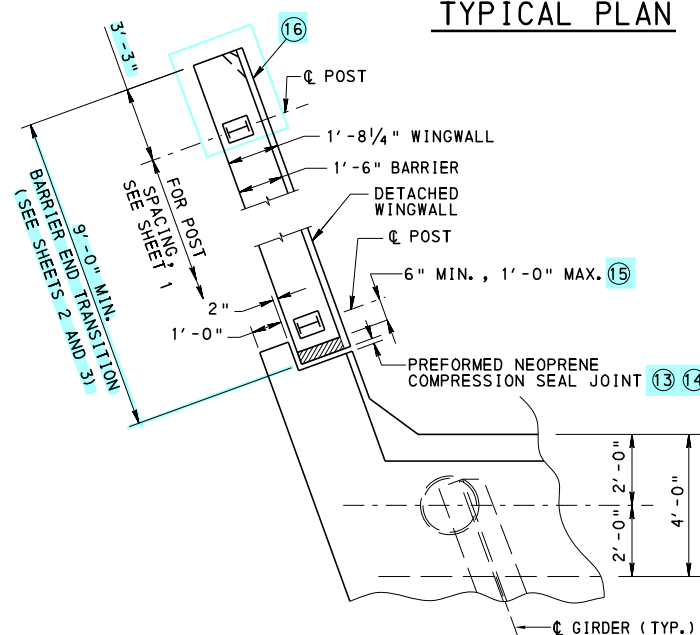
SECTION K-K

(RECTANGULAR OR TAPERED WING)

SECTION N-N

(DETACHED WING)

SEE BD-667M SHEET 5 FOR LOCATION OF SECTIONS K-K AND N-N.



DETACHED WINGWALL PLAN

(FOR DIMENSIONS AND CALL OUTS
NOT SHOWN, SEE TYPICAL PLAN)

LEGEND:

- ⑬ FOR DETAILS OF THE PREFORMED NEOPRENE COMPRESSION SEAL JOINT AND SLIDING PLATE, SEE BD-667M, SHEETS 5 AND 6.
- ⑭ FOR DETAILS OF THE BENT PLATE ON CONCRETE CURB, SEE BC-709M.
- ⑮ CL POST TO EDGE OF RECESS IN CONCRETE (SHOWN) OR CL POST TO EDGE OF FIXED END OF SLIDING PLATE.
- ⑯ SECTION SHOWN WITHOUT CURB, WITH CURB FOLLOW DETAILS ON SHEETS 2 AND 3.

NOTES:

- 1. SEE BD-667M FOR ALL OTHER INTEGRAL ABUTMENT DETAILS.
- 2. FOR ADDITIONAL NOTES, SEE SHEET 1.

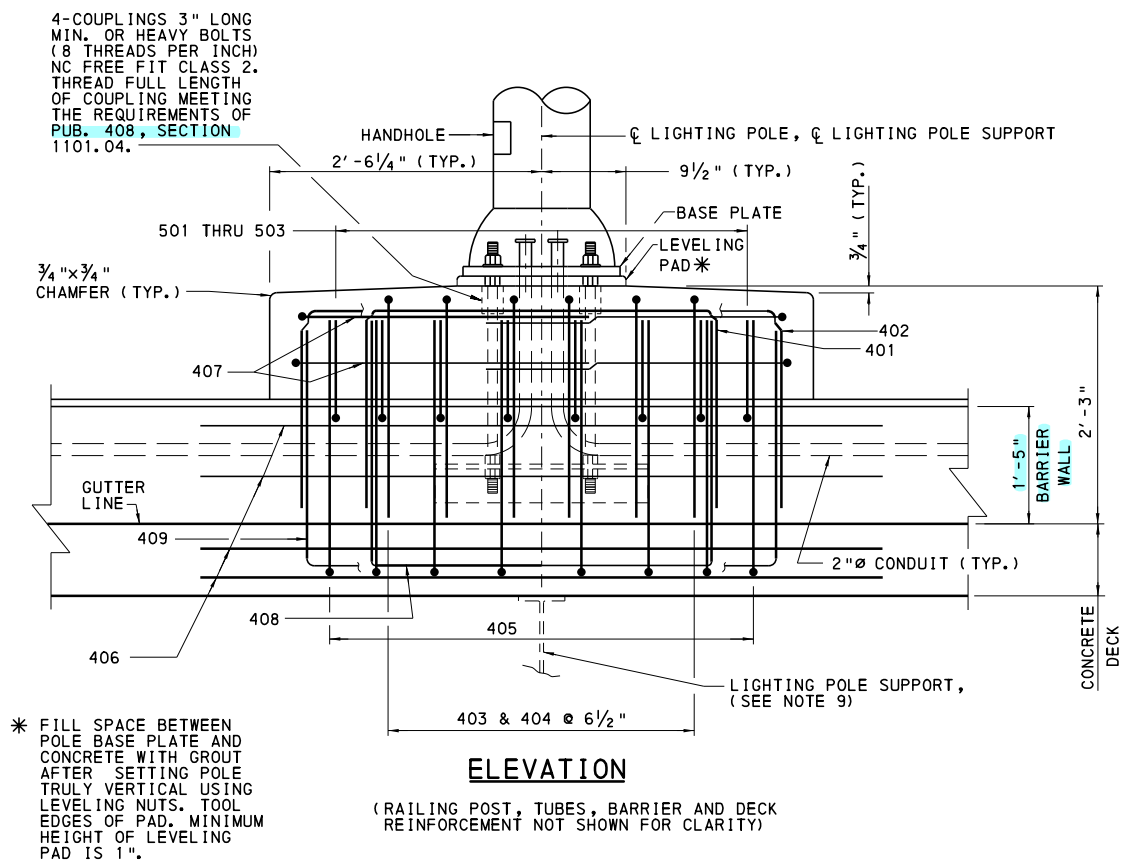
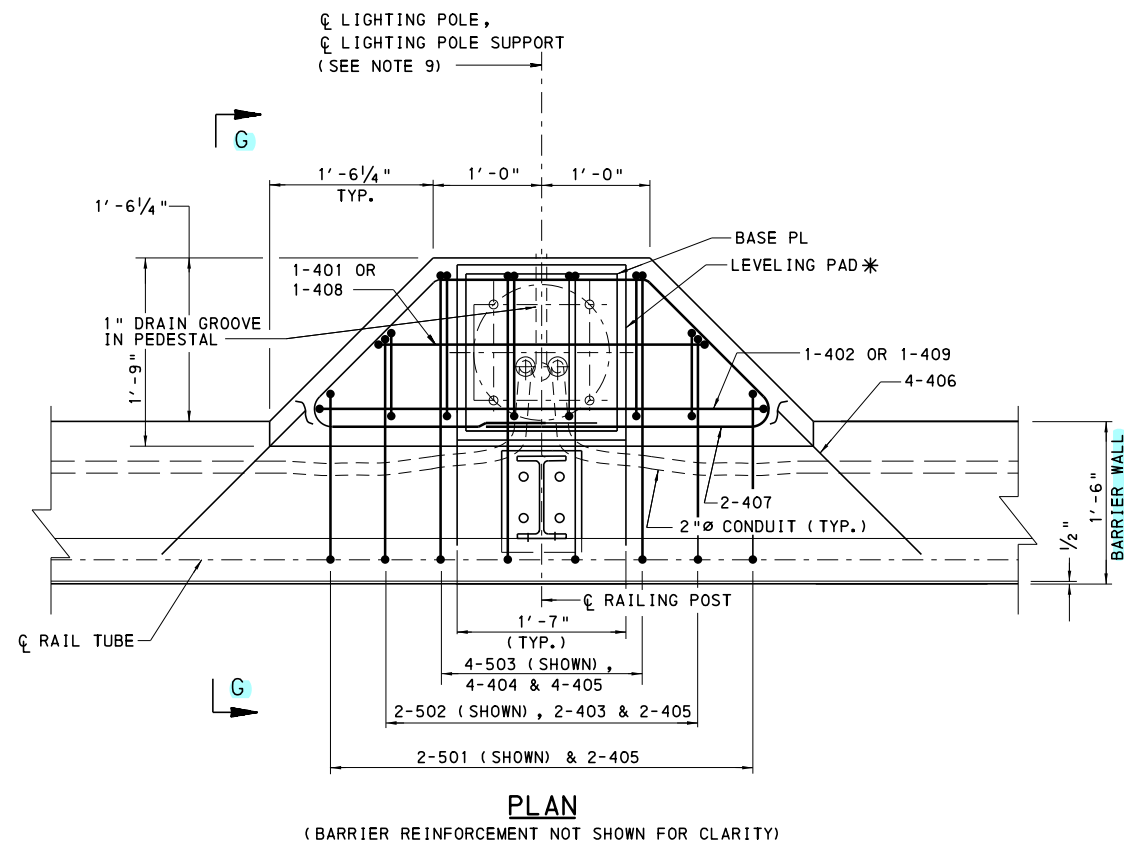
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STANDARD
PA TYPE 10M BRIDGE BARRIER
INTEGRAL ABUTMENT DETAILS

RECOMMENDED FEB. 19, 2021
Thomas P. Mociore
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RECOMMENDED FEB. 19, 2021
Brenda Thayer
DIRECTOR, BUREAU OF PROJECT DELIVERY

SHEET 8 OF 9
BD-617M

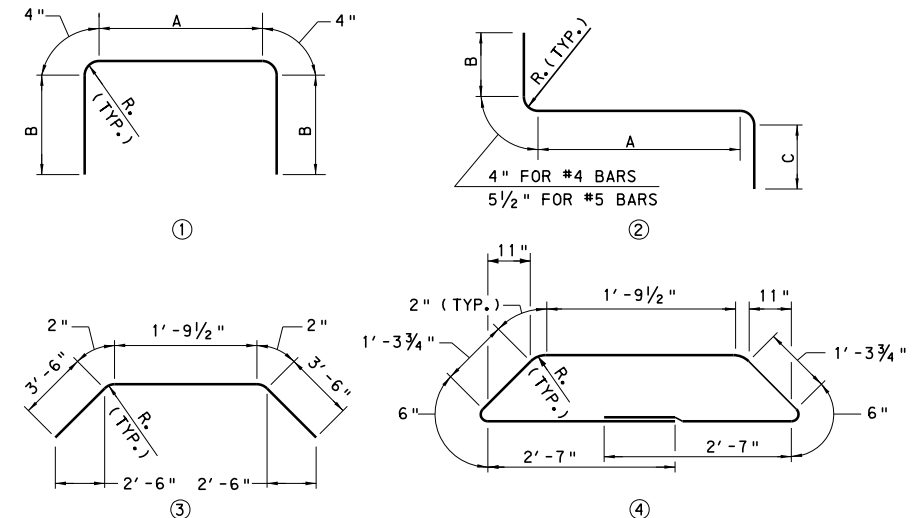


NOTES:

1. PROVIDE MATERIALS AND **PERFORM WORK** IN ACCORDANCE WITH PUBLICATION 408.
2. SET ANCHOR BOLTS ACCURATELY BY THE TEMPLATE FURNISHED BY THE MANUFACTURER, TO THE CORRECT ELEVATION AND ALIGNMENT AND SECURELY BRACE AGAINST DISPLACEMENT BEFORE THE SURROUNDING CONCRETE IS PLACED. ANCHOR BOLT DIAMETER AS REQUIRED BY LIGHTING POLE MANUFACTURER. (FOR FUTURE LIGHTING PROVISIONS, SEE CHART ON THIS SHEET.)
3. SEAL CONDUIT AND PROTECT THREADS FOR FUTURE LIGHTING INSTALLATIONS.
4. CONFORM ANCHOR MATERIALS TO 1101.4 PUB. 408.
5. SET LIGHTING POLES TRULY VERTICAL WITH BASES LEVEL USING LEVELING NUTS.
6. PROVIDE 2" CLEAR ON ALL REINFORCEMENT UNLESS NOTED.
7. PROVIDE A MINIMUM OF 2 1/2" CONCRETE COVER FOR CONDUIT.
8. FOR GEOMETRIC AND REINFORCEMENT DETAILS OF THE PA TYPE 10M BRIDGE BARRIER NOT SHOWN, SEE SHEET 1.
9. PREFERRED LOCATION FOR LIGHTING POLES IS AT PIERS AND ABUTMENTS. REFER TO BD-655M FOR ABUTMENT DETAILS AND BD-658M FOR PIER DETAILS TO HELP DEVELOP LIGHT POLE SUPPORT DETAIL. LIGHTING POLE SUPPORT, IF NEEDED, TO BE DESIGNED BY THE ENGINEER TO DISTRIBUTE LOAD TO BOTH FASCIA AND FIRST INTERIOR BEAM.
10. FOR LIGHTING POLE LOCATIONS WITHIN A SPAN, THE LUMINAIRE DEFLECTION MUST BE EVALUATED FOR DYNAMIC EFFECTS.

PROVISIONS FOR FUTURE LIGHTING		
MOUNTING HEIGHT	ANCHOR BOLT CIRCLE DIA.	ANCHOR BOLT DIAMETER
50'-0" MAX.	15"	1"

REINFORCEMENT TABLE							
MARK	SIZE	LENGTH	NUMBER	TYPE	A	B	C
401	4	6'-6"	1	1	2'-7"	1'-7 1/2"	-----
402	4	7'-5"	1	1	3'-6"	1'-7 1/2"	-----
403	4	4'-5"	2	1	5"	1'-8"	-----
404	4	4'-11"	4	1	11"	1'-8"	-----
405	4	5'-2 1/2"	8	2	2'-7 1/2"	2'-3"	0"
406	4	9'-1 1/2"	4	3	-----	-----	-----
407	4	10'-11"	2	4	-----	-----	-----
408	4	7'-9"	1	1	2'-7"	2'-3"	-----
409	4	8'-8"	1	1	3'-6"	2'-3"	-----
501	5	3'-6 1/2"	2	2	1'-0"	9"	10 1/2"
502	5	4'-0 1/2"	2	2	1'-6"	9"	10 1/2"
503	5	4'-6"	4	2	1'-11 1/2"	9"	10 1/2"



REINFORCEMENT DETAILS

REINFORCEMENT BAR NOTES

1. DIMENSIONS ALONG CURVED PORTIONS OF BAR ARE MEASURED ALONG THE OUTSIDE EDGE.
2. **EPOXY COAT ALL REINFORCEMENT STEEL IN ACCORDANCE WITH PUBLICATION 408, SECTION 709.1(c).**
3. RADIUS, R=2", FOR #4 BARS AND R=3" FOR #5 BARS, IS MEASURED TO THE INSIDE EDGE OF THE REINFORCEMENT BAR.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STANDARD
PA TYPE 10M BRIDGE BARRIER
LIGHTING POLE ANCHORAGE DETAILS

RECOMMENDED FEB. 19, 2021
Thomas P. Mociore
CHIEF BRIDGE ENGINEER

RECOMMENDED FEB. 19, 2021
Bruce S. Thompson
DIRECTOR, BUREAU OF PROJECT DELIVERY

SHEET 9 OF 9
BD-617M