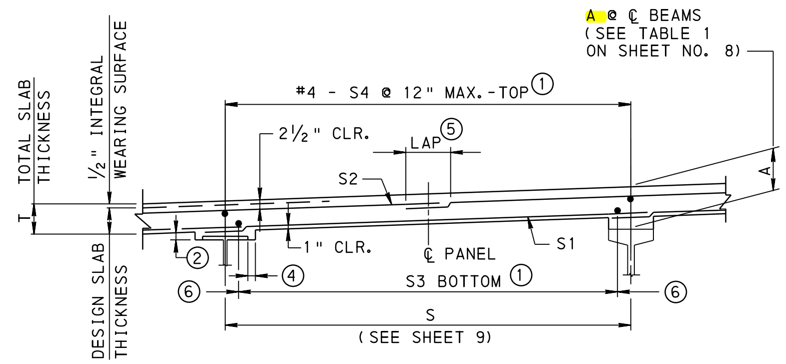
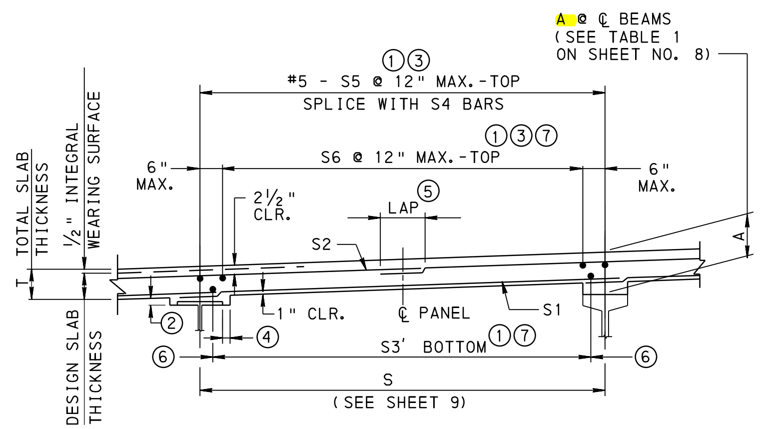


TYPICAL SLAB PANEL 1

SIMPLE AND CONTINUOUS
COMPOSITE POSITIVE MOMENT REGIONS



TYPICAL SLAB PANEL 2

CONTINUOUS COMPOSITE
NEGATIVE MOMENT REGIONS

LEGEND:

① SPACE BARS S3, S3′, S4, S5 AND S6 SYMMETRICALLY ABOUT THE PANEL CENTERLINE.

② PROVIDE HAUNCH TO COMPENSATE FOR IRREGULARITIES IN CAMBER. SEE TABLE 1, SHEET 8 FOR MINIMUM HAUNCH REQUIREMENTS.

③ FOR PRESTRESSED CONCRETE BRIDGES MADE CONTINUOUS, DESIGN S5 AND S6 BARS IN ACCORDANCE WITH DM-4 ARTICLE D5.14.1.4.

④ USE BEAM HAUNCH DETAILS SHOWN WITH REMOVABLE DECK FORMS. FACE OF HAUNCH IS VERTICAL WHEN PERMANENT METAL DECK FORMS ARE USED IN PLACING THE DECK. BEAM HAUNCH DETAIL SHALL CONFORM TO STANDARD DRAWING BC-732M.

⑤ DECK SLAB LAP SPLICE LENGTH: NORMAL WEIGHT CONCRETE: 2′-7" #5 BARS
3′-1" #6 BARS
LIGHTWEIGHT CONCRETE: 3′-5" #5 BARS
4′-1" #6 BARS

⑥ BEGIN S3 AND S3′ BARS AT LOCATION OF DESIGN SECTION FOR NEGATIVE MOMENT, SEE SHEET 8. S3 AND S3′ BARS DO NOT NEED TO BE PLACED OVER THE BEAM FOR SPREAD BOX BEAM BRIDGE.

⑦ SPLICES SHOULD BE OUTSIDE OF NEGATIVE MOMENT AREA IF POSSIBLE, IF NOT, CENTER. BAR LENGTH ON CENTER OF NEGATIVE MOMENT AREA. STAGGER SPLICES AS PER BD-660M.

RC-65M	CONCRETE MOUNTABLE CURBS
BD-609M	PA STRUCTURE MOUNTED GUIDE RAIL
BD-656M	TYP. LONGITUDINAL SECTIONS I-BEAM AND BOX BEAM BRIDGES
BD-660M	DECK SLAB AND STEEL REINFORCEMENT PLACEMENT
BD-661M	BOX BEAM REINFORCEMENT DETAILS
BD-662M	I-BEAM AND PA BULB-TEE BEAM REINFORCEMENT DETAILS
BD-679M	STRUCTURE MOUNTED SOUND BARRIER WALLS
BC-701M	PROTECTIVE FENCE
BC-711M	ALUMINUM PROTECTIVE BARRIER
BC-716M	ALUMINUM PEDESTRIAN RAILING
BC-718M	ALTERNATE RAILING DETAILS
BC-719M	BRIDGE DECK TEMPORARY BARRIERS
BC-720M	ALUMINUM OR STEEL BRIDGE HAND RAILING
BC-732M	PERMANENT METAL DECK FORMS
BC-734M	ANCHOR SYSTEMS
BC-739M	BRIDGE BARRIER TO GUIDE RAIL TRANSITION
BC-751M	BRIDGE DRAINAGE
BC-752M	CONCRETE DECK SLAB DETAILS
BC-762M	TOOTH EXPANSION DAM
BC-767M	NEOPRENE STRIP SEAL DAM
BC-775M	MISCELLANEOUS PRESTRESS DETAILS
BC-779M	STRUCTURE MOUNTED SOUND BARRIER WALLS
BC-788M	TYPICAL WATERPROOFING AND EXPANSION DETAILS

REFERENCE DRAWINGS

NOTES:

1. DESIGN SPECIFICATIONS:
   - AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND COMMENTARY
   - PENNDOT DESIGN MANUAL PART 4
2. MATERIAL STRENGTH:
   - REINFORCEMENT STEEL fy = 60 KSI
   - CONCRETE f'_c = 4 KSI (CLASS AAAP CONCRETE) FOR DECK SLABS AND f'_c = 3.5 KSI (CLASS AA CONCRETE) FOR BARRIERS AND SIDEWALKS.
   - MODULAR RATIO (E_S/E_C) N = 8
3. DEAD LOAD:
   - NORMAL WEIGHT CONCRETE = 150 LB./FT^3
   - LIGHTWEIGHT CONCRETE = 115 LB./FT^3
   - PERMANENT METAL DECK FORMS = 15 LB./FT^2
   - FUTURE WEARING SURFACE = 30 LB./FT^2
4. DESIGN CONTROLS:
   - CONCRETE COVER: DECK TOTAL TOP COVER = 2½"
     DECK BOTTOM COVER = 1"
     BARRIER = 2"
     SIDEWALK TOP COVER = 2½"
     ALTERNATE SIDEWALK DETAIL BARRIER = 2"
   - MIN. CLEAR DISTANCE BETWEEN REINFORCEMENT MATS = 2", EXCEPT AS PERMITTED IN ALTERNATE CONTINUITY REINF. DETAIL, SHEET 8.
   - BAR SIZE: MAXIMUM BAR SIZE : #6, EXCEPT FOR BARS DESIGNED TO MEET ③
     MINIMUM BAR SIZE:
     S1, S2, S5, AND S6 BARS : #5
     S4, S3, S3′, AND S7 BARS : #4
   - BAR SPACINGS: MAXIMUM SPACING = 12" SLAB
     12" BARRIER
     MINIMUM SPACING = 5½"
     SPACING INCREMENTS = ½"
   - THE TOP ½" OF THE SLAB IS CONSIDERED TO BE AN INTEGRAL WEARING SURFACE.
   - DECK THICKNESS: MINIMUM THICKNESS INCLUDING ½" INTEGRAL WEARING SURFACE = ((DISTANCE BETWEEN DESIGN SECTIONS FOR NEGATIVE MOMENT + 120") / 30 + ½") ≥ 8", THICKNESS INCREMENTS = ½"
   - Z FACTOR FOR CRACK CONTROL = 130 KIPS/IN.
5. USE ONLY FUSION BONDED EPOXY COATED REINFORCEMENT IN ACCORDANCE WITH PUBLICATION 408, SECTION 709.
6. FOR ALL BARRIER REINFORCEMENT AND FOR HOOKED OR BENT BARS IN THE DECK SLAB, DO NOT USE RAIL STEEL (A 996). SEE DESIGN MANUAL PART 4, SECTION D 5.4.3.1.
7. DESIGN TABLES ARE VALID FOR NORMAL WEIGHT CONCRETE DECKS. FOR LIGHTWEIGHT CONCRETE DECKS, INCREASE THE LENGTH L LISTED IN REINFORCEMENT TABLES ON SHEET 9, BY 13".
8. DETAIL ALL BARS ON THE CONTRACT DRAWINGS.
9. ALL DETAILS SHOWN ALSO APPLY TO P/S I-BEAMS, PA BULB-TEE AND P/S SPREAD BOX BEAMS EXCEPT AS NOTED.
10. FOR HAUNCH DETAILS, SEE SHEET 8.
11. FOR SKEW ANGLES 75° AND MORE, PLACE TRANSVERSE REINFORCEMENT IN DECK SLAB PARALLEL TO CENTERLINE OF BEARINGS.
12. SEE BC-767M AND BD-656M FOR ADDITIONAL REINFORCEMENT AT END OF DECK.
13. FOR TRANSITION OF LONGITUDINAL REINFORCEMENT FROM POSITIVE MOMENT AREA TO NEGATIVE MOMENT AREA, USE AASHTO ARTICLES 5.14.1.4 AND 6.10.1.7 AS MODIFIED BY DESIGN MANUAL PART 4, SECTIONS D5.14.1.4 AND D6.10.1.7.
14. DESIGN IS BASED ON DECKS SUPPORTED ON 3 OR MORE BEAMS.
15. THE STRENGTH DESIGN OF THE OVERHANG IS BASED ON THE ASSUMPTION THAT THE ENTIRE OVERHANG HAS A MINIMUM THICKNESS OF T + 1". THE BEAM HAUNCH MAY BE CONSIDERED AS EFFECTIVE IN CONTRIBUTING TO THIS THICKNESS FOR THE OVERHANG DESIGN ONLY.
16. THE TYPICAL BARRIER AND DECK SLABS, INCLUDING OVERHANGS, ARE DESIGNED TO RESIST A VEHICULAR COLLISION FORCE AT TEST LEVEL 5. THE SPLIT GLARE SCREEN MEDIAN BARRIERS, 32" ALTERNATE SIDEWALK DETAIL, THE ALTERNATE SPLIT MEDIAN BARRIER, ALTERNATE BARRIER, MEDIAN BARRIER AND THE GLARE SCREEN MEDIAN BARRIER ARE DESIGNED TO RESIST VEHICULAR COLLISION AT TEST LEVEL 4.
17. DECK DESIGN TABLES ARE BASED ON THE EQUIVALENT STRIP METHOD AS PER AASHTO, ARTICLE 4.6.2.1.
18. FACTORED MOMENT = 1.25 (SLAB AND BARRIER MOMENT) + 1.5 (FWS MOMENT) + 1.75 (1+IM/100)(L.L. MOMENT)
19. DYNAMIC LOAD ALLOWANCE (IM) = 50%
20. SEE TABLES ON SHEET 9 FOR VALUES OF S, T, S1, S2, S3, S3′, S6, S7, So, AND L.
21. FOR DECK SLAB AND BARRIER DETAILS AND REINFORCEMENT FOR ADJACENT PRESTRESSED CONCRETE BOX BEAMS, SEE BD-660M AND BD-661M.
22. WHEN A TRAFFIC BARRIER IS MOUNTED ON THE DECK BETWEEN TWO GIRDERS, PROVIDE TOP AND BOTTOM REINFORCEMENT AREA IN THE DECK IN THE BAY WHERE THE BARRIER EXISTS, AT LEAST EQUAL TO THE OVERHANG TOP REINFORCEMENT AREA AS SHOWN ON SHEET 9.
23. DRAWINGS ARE NOT TO SCALE.
24. FOR BARRIER REINFORCEMENT DETAILS, SEE SHEETS 6 AND 7.
25. OVERHANG LENGTH MUST NOT EXCEED THE REQUIREMENTS OF DESIGN MANUAL PART 4, SECTION D9.7.1.5.1P.
26. THE SLAB REINFORCEMENT SHOWN ON SHEET 9 IS APPLICABLE FOR THE BARRIERS SHOWN ON SHEET 2, 3 AND 4, THE PA HT, TYPE 10M AND CONCRETE VERTICAL WALL BRIDGE BARRIERS AND BARRIERS WITH FENCES AND HANDRAILS. REDESIGN OF THE DECK IS REQUIRED WHEN OTHER ATTACHMENTS SUCH AS LIGHT POLES AND SIGN STRUCTURES ARE USED. SEE NOTE 27 FOR MODIFICATIONS REQUIRED WHEN SOUND BARRIERS ARE USED.
27. CONCRETE SOUND BARRIER SHOWN ON BC-779M AND BD-679M MAY BE MOUNTED ON THE TOP OF BARRIER AS DETAILED ON SHEET 4. STANDARD REINFORCEMENT MAY BE USED AS FOLLOWS:

    LIMITATIONS
    - HEIGHT OF SOUND BARRIER (ABOVE TOP OF BARRIER) ≤ 10′
    - WEIGHT OF SOUND BARRIER PLUS THE WEIGHT OF BARRIER AND DECK SLAB IN EXCESS OF THE TYPICAL BARRIER ≤ 600 LB. PER FOOT OF LENGTH

    DECK DESIGN PROCEDURE
    - USING THE TABLES AND NOTES ON SHEET 9, ESTABLISH STANDARD DECK THICKNESS, REINFORCEMENT AND THE DESIGNATED MAXIMUM ALLOWANCE OVERHANG LENGTH BASED ON THE BEAM SPACING, S
    - INCREASE THE DESIGNATED DECK THICKNESS BY ½", AND USE THIS THICKNESS ACROSS FULL WIDTH OF BRIDGE
    - DECREASE THE DESIGNATED MAXIMUM ALLOWABLE OVERHANG LENGTH, So, BY 7"
    - INCREASE THE LENGTH OF S7 BARS BY 9"

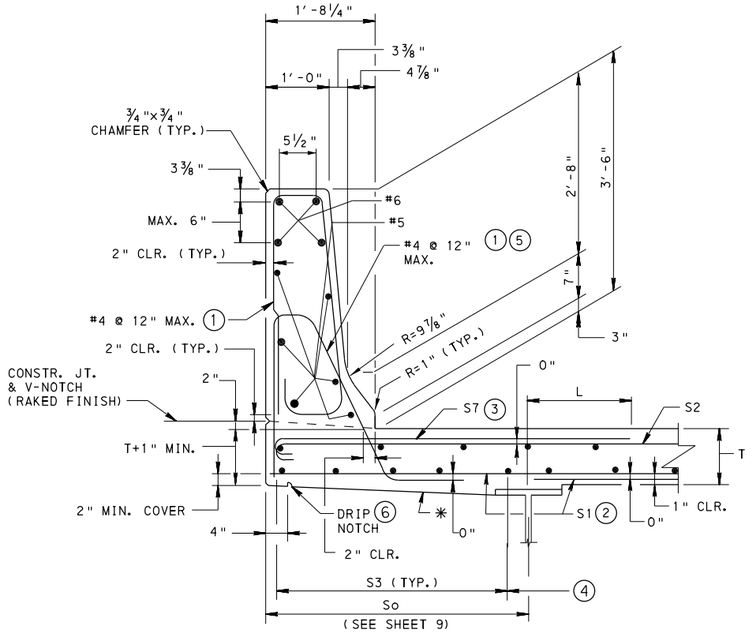
    WHERE CONDITIONS EXCEED THE ABOVE LIMITATIONS, PERFORM SPECIAL DECK DESIGN.
28. FOR DEAD LOAD CALCULATIONS, THE WEIGHT OF BARRIERS/DIVISORS SHOWN ON BD-601M ARE AS FOLLOWS:
    TYPICAL CONCRETE BARRIER 650 LB./FT
    ALTERNATE CONCRETE BARRIER 520 LB./FT
    SPLIT CONCRETE GLARE SCREEN MEDIAN BARRIER 750 LB./FT
    ALTERNATE SPLIT CONCRETE MEDIAN BARRIER 520 LB./FT
    CONCRETE MEDIAN BARRIER 700 LB./FT
    CONCRETE GLARE SCREEN MEDIAN BARRIER 960 LB./FT
    SPLIT CONCRETE DIVISOR TYPE A 130 LB./FT, TYPE B 140 LB./FT
    CONCRETE DIVISOR TYPE A 260 LB./FT, TYPE B 280 LB./FT
    ALTERNATE SIDEWALK, VERTICAL WALL BARRIER (WITHOUT RAILING) 530 LB./FT

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

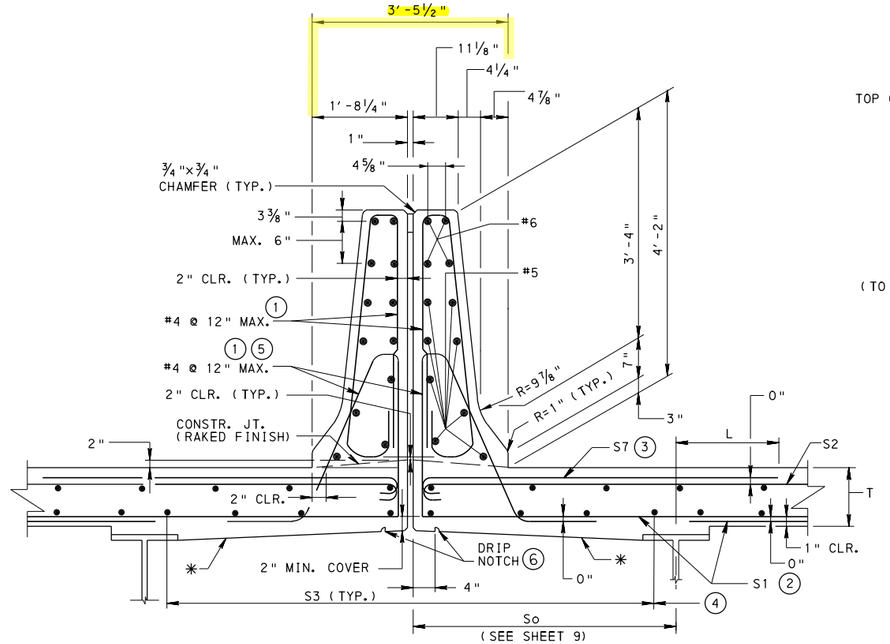
STANDARD CONCRETE DECK SLAB DESIGN & DETAILS FOR BEAM BRIDGES

RECOMMENDED AUG. 31, 2012 Thomas P. Macioce
CHIEF BRIDGE ENGINEER

RECOMMENDED AUG. 31, 2012 R. [signature]
ACTING DIR., BUR. OF PROJECT DELIVERY

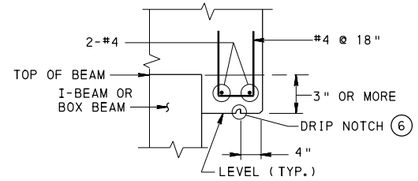


TYPICAL CONCRETE BARRIER DETAIL



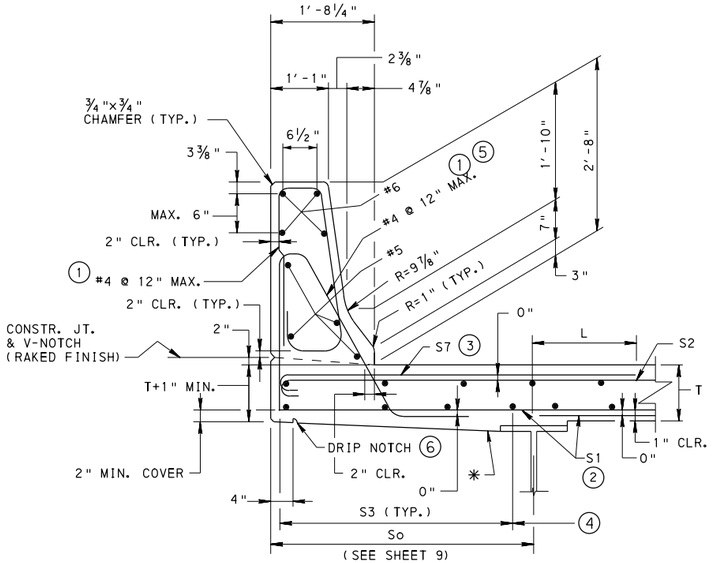
SPLIT CONCRETE GLARE SCREEN MEDIAN BARRIER DETAIL

(SEE BC-788M FOR OPEN JOINT DETAIL)
TO BE USED WHEN CONCRETE GLARE SCREEN IS SPECIFIED IN APPROACH ROADWAY.

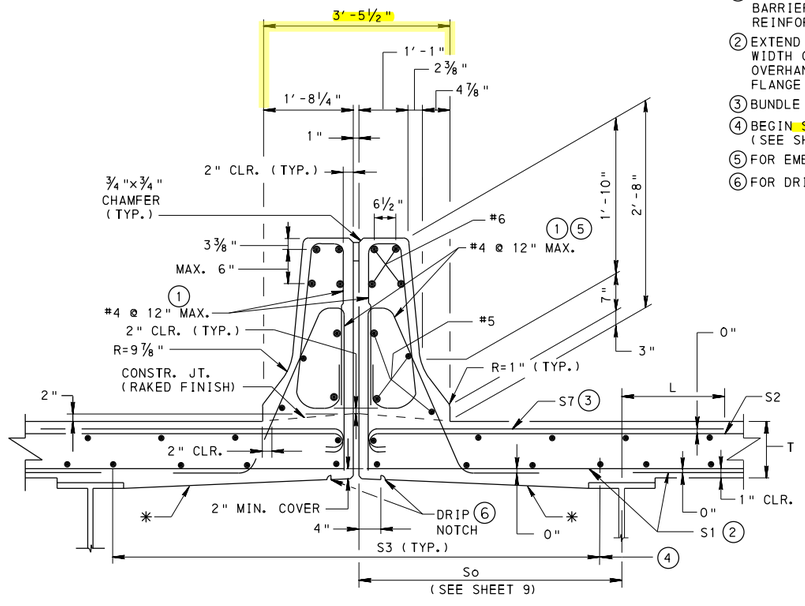


TYPICAL OVERHANG REINFORCEMENT

(TO BE USED WHEN THE OVERHANG IS 3" OR MORE IN DEPTH)



ALTERNATE CONCRETE BARRIER DETAIL



ALTERNATE SPLIT CONCRETE MEDIAN BARRIER DETAIL

(SEE BC-788M FOR OPEN JOINT DETAIL)
TO BE USED WHEN CONCRETE MEDIAN BARRIER IS SPECIFIED IN APPROACH ROADWAY.

* UNDERSIDE OF DECK SLAB MAY BE CONSTRUCTED LEVEL.

LEGEND:

(1) WITHIN 10′ ON BOTH SIDES OF AN EXPANSION JOINT IN THE BARRIER AND AT THE END OF THE BRIDGE BARRIER, REDUCE SPACING OF REINFORCEMENT BARS TO HALF THE SHOWN SPACING.

(2) EXTEND ONE HALF OF THE S1, BOTTOM TRANSVERSE BARS, ACROSS THE FULL WIDTH OF THE OVERHANG. THE ALTERNATE BARS WHICH DO NOT EXTEND INTO THE OVERHANG SHALL EXTEND 6" MINIMUM BEYOND THE INTERIOR EDGE OF THE FLANGE OF THE FASCIA BEAM.

(3) BUNDLE THE BARS LISTED AS S7 IN THE REINFORCEMENT TABLES TO EACH S2 BAR.

(4) BEGIN S3 AND S3′ BARS AT LOCATION OF DESIGN SECTION FOR NEGATIVE MOMENT. (SEE SHEET 8 FOR LOCATIONS)

(5) FOR EMBEDMENT INTO THE CONCRETE BARRIER, SEE SHEET 6.

(6) FOR DRIP NOTCH DETAILS, SEE BC-775M.

NOTES:

1. FOR ADDITIONAL NOTES, SEE SHEET 1.
2. BARRIER LAP SPLICE LENGTH: 3′-7" #5 BARS
   4′-4" #6 BARS

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
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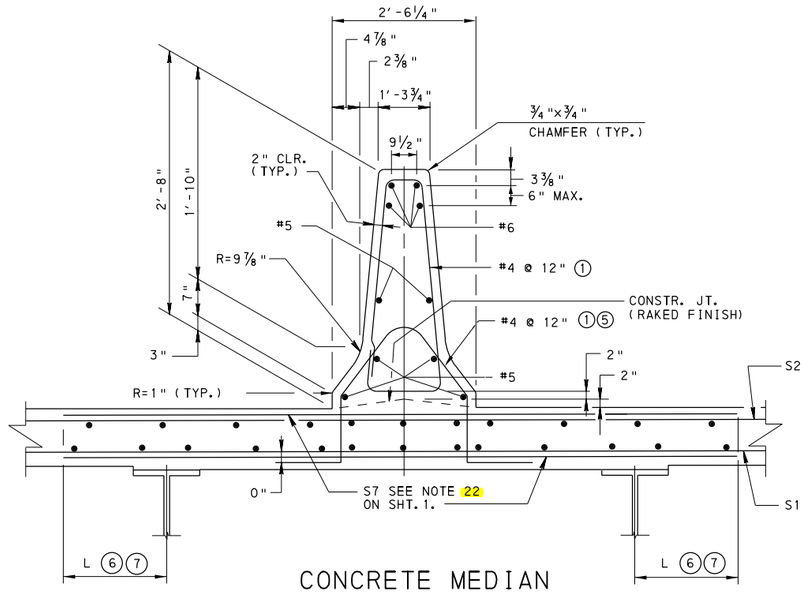
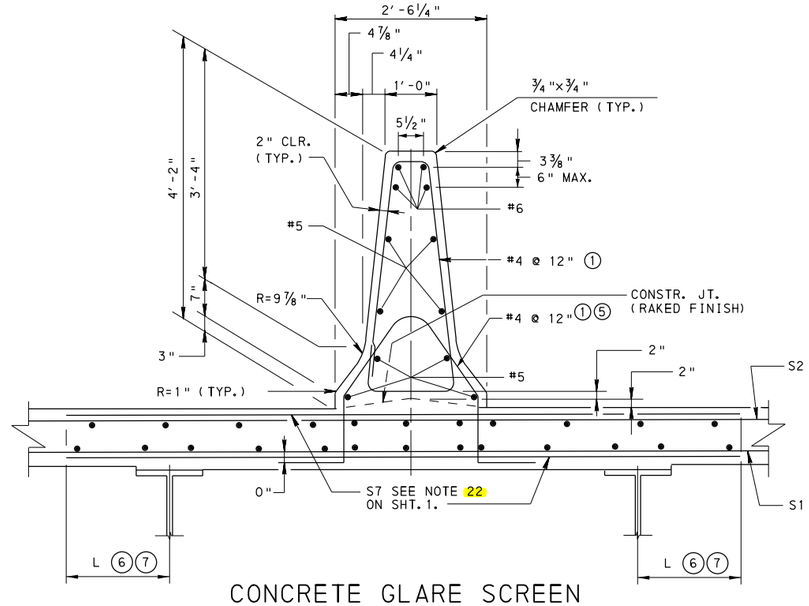
STANDARD CONCRETE DECK SLAB DESIGN & DETAILS FOR BEAM BRIDGES

RECOMMENDED AUG. 31, 2012	RECOMMENDED AUG. 31, 2012	SHEET 2 OF 10
Thomas P. Macioce	R. Wade Willey	BD-601M
CHIEF BRIDGE ENGINEER	ACTING DIR., BUR. OF PROJECT DELIVERY	



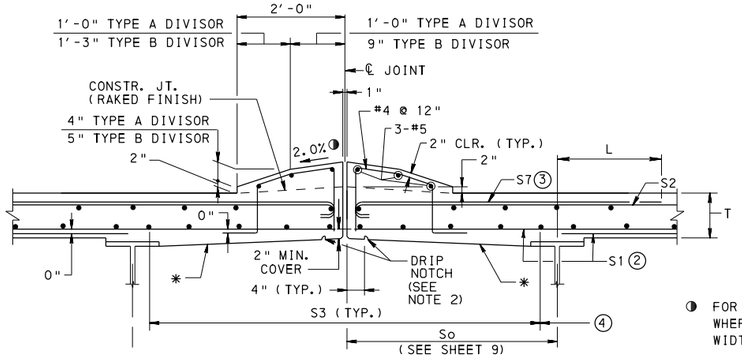
CONCRETE MEDIAN BARRIER DETAIL

- FOR DECK SLAB REINFORCEMENT, SEE TYPICAL SLAB PANEL DETAILS, SHT. 1.
- TO BE USED ONLY FOR BRIDGES WITHOUT LONGITUDINAL JOINTS AND WHEN CONCRETE MEDIAN BARRIER IS SPECIFIED IN APPROACH ROADWAY.



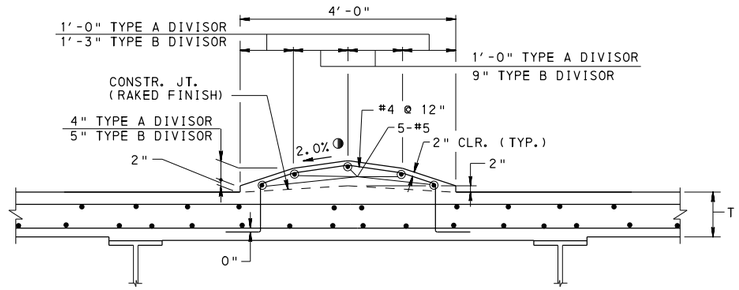
CONCRETE GLARE SCREEN MEDIAN BARRIER DETAIL

- FOR DECK SLAB REINFORCEMENT, SEE TYPICAL SLAB PANEL DETAILS, SHT. 1.
- TO BE USED ONLY FOR BRIDGES WITHOUT LONGITUDINAL JOINTS AND WHEN CONCRETE GLARE SCREEN IS SPECIFIED IN APPROACH ROADWAY.



SPLIT CONCRETE DIVISOR DETAIL

- FOR DECK SLAB REINFORCEMENT, SEE TYPICAL SLAB PANEL DETAILS, SHEET 1.
- SEE BC-788M FOR OPEN JOINT DETAIL
- NOT FOR USE AS A MEDIAN BARRIER, SEE RC-65M.



CONCRETE DIVISOR DETAIL

- FOR DECK SLAB REINFORCEMENT, SEE TYPICAL SLAB PANEL DETAILS, SHEET 1.
- TO BE USED ONLY FOR BRIDGES WITHOUT LONGITUDINAL JOINTS.
- NOT FOR USE AS A MEDIAN BARRIER, SEE RC-65M.

◑ FOR TYPE A AND B DIVISORS, SET CROSS SLOPE AT 2.0%. WHERE WIDER THAN SHOWN DIVISORS ARE USED, PROVIDE WIDTH AND SET CROSS SLOPE BETWEEN 1.0% AND 2.0%.

✱ UNDERSIDE OF DECK SLAB MAY BE CONSTRUCTED LEVEL.

LEGEND:

① WITHIN 10′ ON BOTH SIDES OF AN EXPANSION JOINT IN THE BARRIER AND AT THE END OF THE BRIDGE BARRIER, REDUCE SPACING OF REINFORCEMENT BARS TO HALF THE SHOWN SPACING.

② EXTEND ONE HALF OF THE S1, BOTTOM TRANSVERSE BARS, ACROSS THE FULL WIDTH OF THE OVERHANG. THE ALTERNATE BARS WHICH DO NOT EXTEND INTO THE OVERHANG SHALL EXTEND 6" MINIMUM BEYOND THE INTERIOR EDGE OF THE FLANGE OF THE FASCIA BEAM.

③ BUNDLE THE BARS LISTED AS S7 IN THE REINFORCEMENT TABLES TO EACH S2 BAR.

④ BEGIN S3 AND S3′ BARS AT LOCATION OF DESIGN SECTION FOR NEGATIVE MOMENT. (SEE SHEET 8 FOR LOCATIONS)

⑤ FOR EMBEDMENT INTO THE CONCRETE BARRIER, SEE SHEET 6.

⑥ IF THE BARRIER IS POSITIONED DIRECTLY ABOVE A GIRDER THE S7 BAR, IF REQUIRED MUST EXTEND THE DISTANCE "L" BEYOND THE ADJACENT BEAMS ON EACH SIDE.

⑦ DECK SLAB LAP SPLICE LENGTH: NORMAL WEIGHT CONCRETE: 2′-7" #5 BARS
3′-1" #6 BARS
LIGHTWEIGHT CONCRETE: 3′-5" #5 BARS
4′-1" #6 BARS

NOTES:

1. FOR ADDITIONAL NOTES, SEE SHEET 1.
2. FOR DRIP NOTCH DETAILS, SEE BC-775M.
3. BARRIER LAP SPLICE LENGTH: 3′-7" #5 BARS
   4′-4" #6 BARS

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
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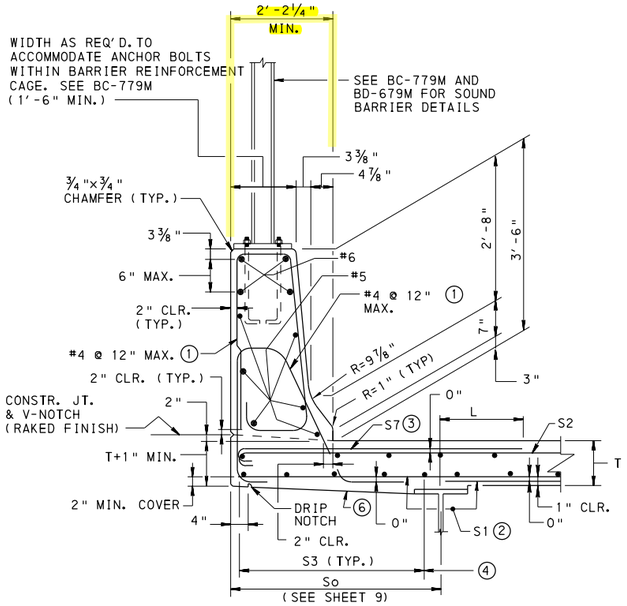
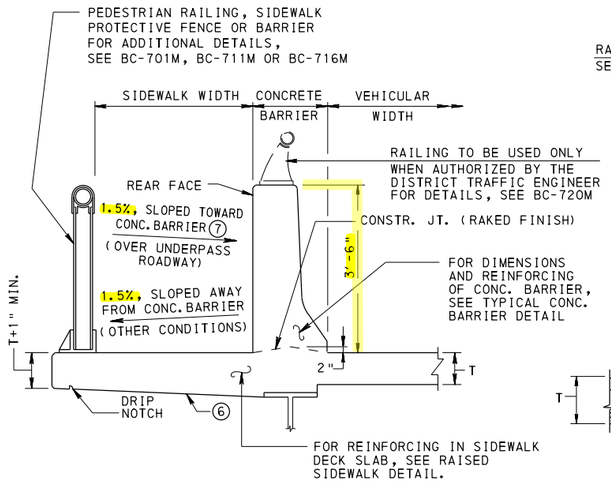
STANDARD CONCRETE DECK SLAB DESIGN & DETAILS FOR BEAM BRIDGES

RECOMMENDED AUG. 31, 2012	RECOMMENDED AUG. 31, 2012	SHEET 3 OF 10
Thomas P. Macioce CHIEF BRIDGE ENGINEER	R. Wayne Willey ACTING DIR, BDR. OF PROJECT DELIVERY	BD-601M

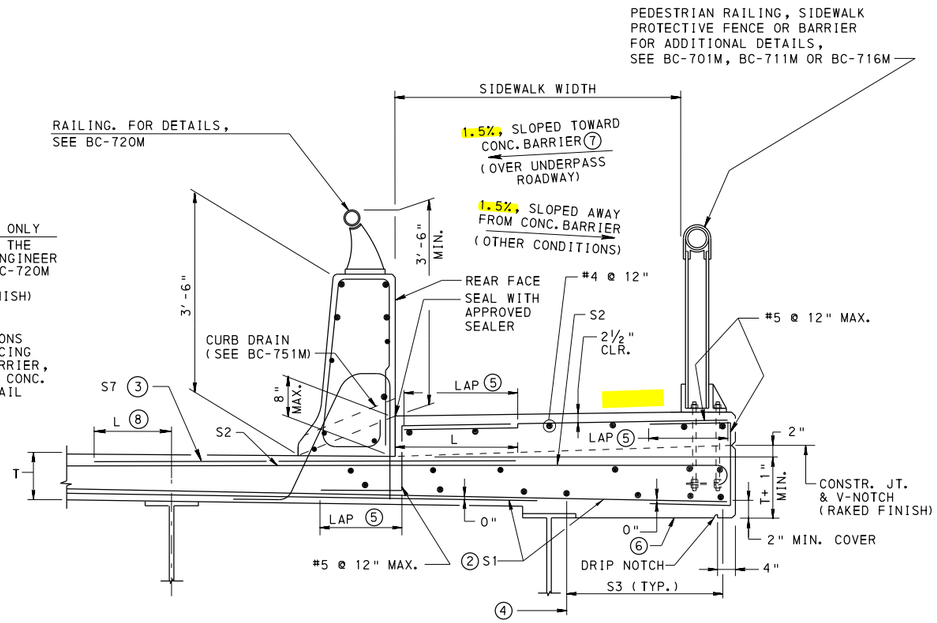


CONCRETE BARRIER WITH STRUCTURE MOUNTED SOUND BARRIER DETAIL

DETAILS SIMILAR FOR PROTECTIVE FENCE, PROTECTIVE BARRIER AND RAILINGS. SEE THE APPROPRIATE BC-STANDARD FOR THE BARRIER TOP WIDTH.



INTEGRAL SIDEWALK DETAIL



RAISED SIDEWALK DETAIL

(SEE SHEET 2 FOR TYPICAL OR ALTERNATE BARRIER REINFORCEMENT)

NOTE:
ALTERNATE BARRIER REQUIRES ALTERNATE RAILING, BC-718M

PROTECTED SIDEWALKS

REQUIRED FOR BRIDGES WITH A POSTED VEHICULAR SPEED GREATER THAN 45 MPH OR A STRUCTURE LENGTH LONGER THAN 200 FEET, UNLESS WAIVED BY THE DEPARTMENT (SEE DM-4 DC2.3.2.2.2).

LEGEND:

① WITHIN 10' ON BOTH SIDES OF AN EXPANSION JOINT IN THE BARRIER AND AT THE END OF THE BRIDGE BARRIER, REDUCE SPACING OF REINFORCEMENT BARS TO HALF THE SHOWN SPACING.

② EXTEND ONE HALF OF THE S1, BOTTOM TRANSVERSE BARS, ACROSS THE FULL WIDTH OF THE OVERHANG. THE ALTERNATE BARS WHICH DO NOT EXTEND INTO THE OVERHANG SHALL EXTEND 6" MINIMUM BEYOND THE INTERIOR EDGE OF THE FLANGE OF THE FASCIA BEAM.

③ BUNDLE THE BARS LISTED AS S7 IN THE REINFORCEMENT TABLES TO EACH S2 BAR.

④ BEGIN S3 AND S3' BARS AT LOCATION OF DESIGN SECTION FOR NEGATIVE MOMENT. (SEE SHEET 8 FOR LOCATIONS)

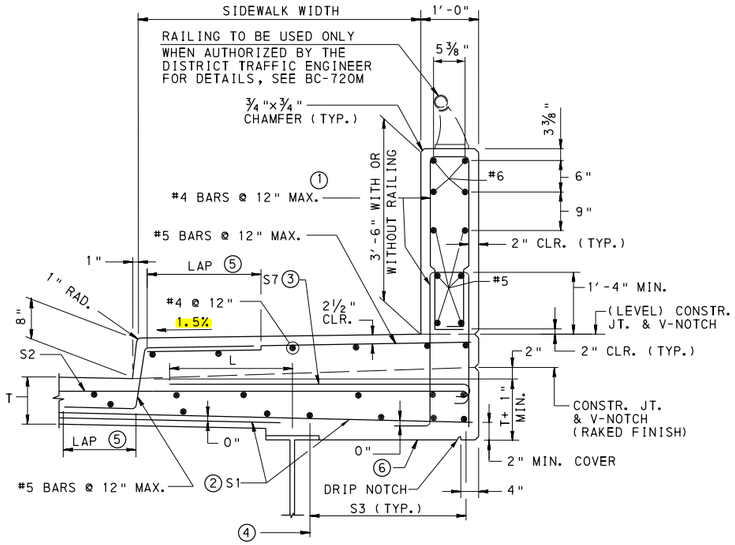
⑤ DECK SLAB LAP SPLICE LENGTH:

NORMAL WEIGHT CONCRETE:	2'-7"	#5 BARS
	3'-1"	#6 BARS
LIGHTWEIGHT CONCRETE:	3'-5"	#5 BARS
	4'-1"	#6 BARS

⑥ UNDERSIDE OF DECK SLAB MAY BE CONSTRUCTED LEVEL

⑦ DRAIN RUNOFF WITH CURB DRAINS THROUGH CONC. BARRIER OR WITH TYPE 2 SCUPPERS IN 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 & S7 BARS. BEVEL DRAINS AS PER BC-751M.

⑧ IF THE BARRIER IS POSITIONED DIRECTLY ABOVE A GIRDER THE S7 BAR IF REQUIRED MUST EXTEND A DISTANCE "L" BEYOND THE ADJACENT BEAMS ON EACH SIDE.



ALTERNATE SIDEWALK DETAIL

PERMITTED FOR BRIDGES WITH A POSTED VEHICULAR SPEED LESS THAN OR EQUAL TO 45 MPH AND A STRUCTURE LENGTH LESS THAN OR EQUAL TO 200 FEET (SEE DM-4 DC2.3.2.2.2).

NOTES:

1. FOR ADDITIONAL NOTES, SEE SHEET 1.
2. FOR DRIP NOTCH DETAILS, SEE BC-775M.
3. BARRIER LAP SPLICE LENGTH: 3'-7" #5 BARS, 4'-4" #6 BARS

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
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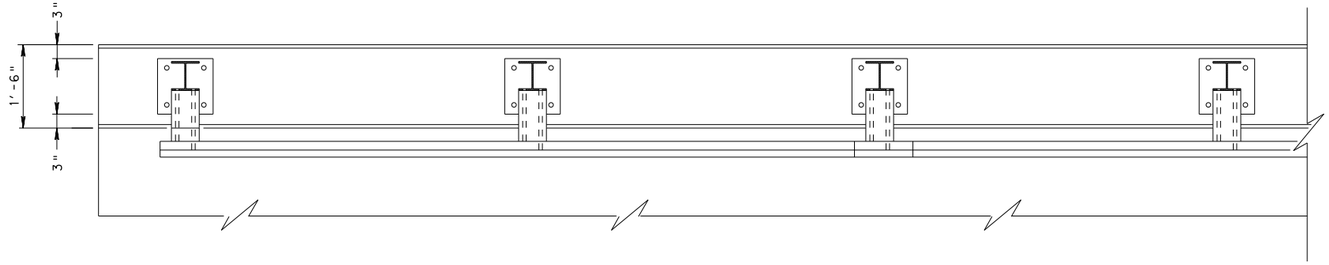
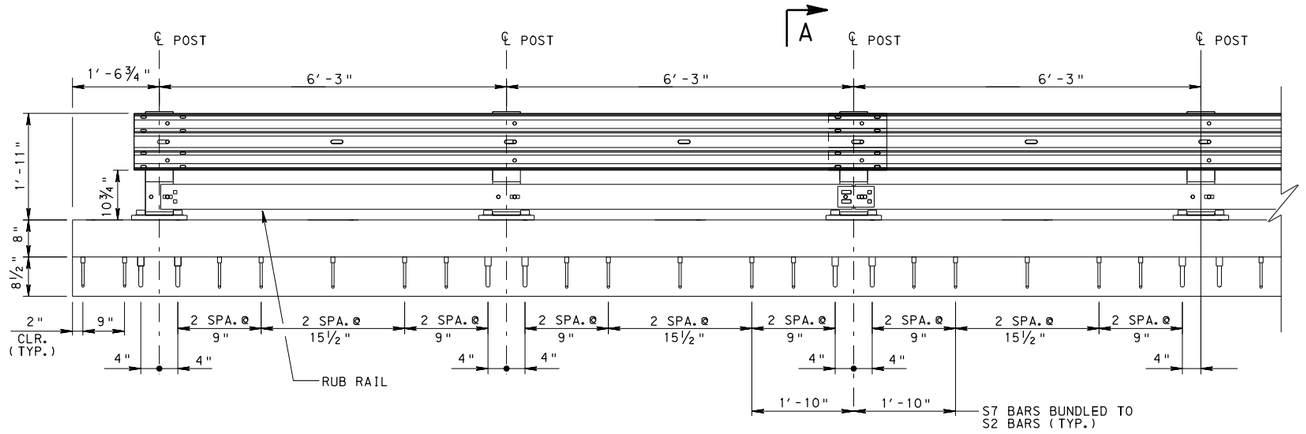
STANDARD CONCRETE DECK SLAB DESIGN & DETAILS FOR BEAM BRIDGES

RECOMMENDED AUG. 31, 2012 Thomas P. Macioce CHIEF BRIDGE ENGINEER	RECOMMENDED AUG. 31, 2012 B Dye Willey ACTING DIR., BUR. OF PROJECT DELIVERY	SHEET 4 OF 10 BD-601M

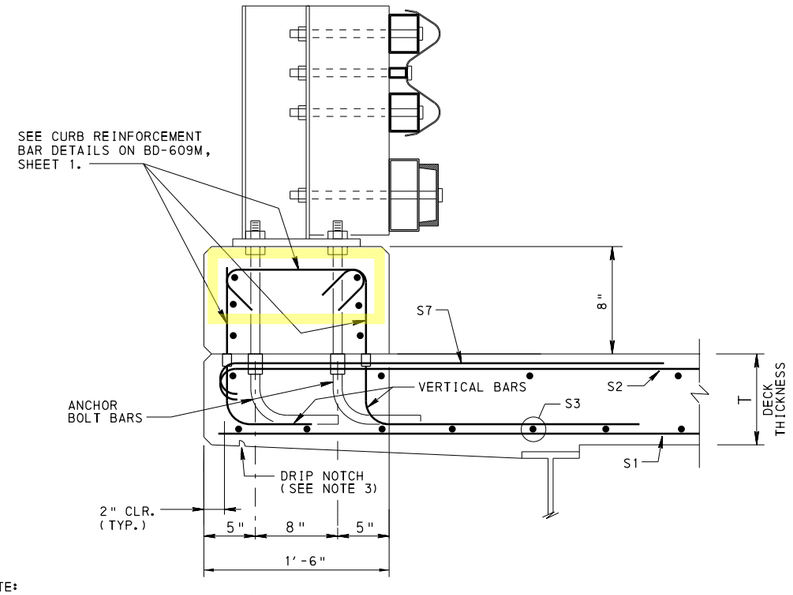


PLAN



ELEVATION

FOR SLAB AND OVERHANG REINFORCEMENT
SEE SHT. 9, TABLES 1 THRU 4.



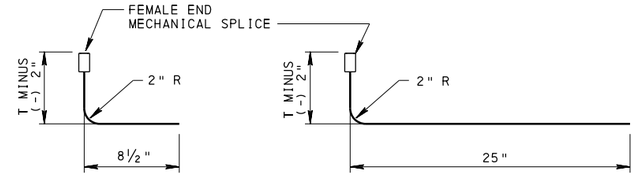
NOTE:
PRIOR TO CONSTRUCTING CURB AND DECK, ANCHOR BOLTS SHALL BE INSTALLED WITH EITHER A TEMPLATE OR ACTUAL POST W/BASEPLATE INSTALLED TO ENSURE PROPER ANCHOR BOLT ALIGNMENT & PLACEMENT

SECTION A-A

CURB REINFORCEMENT SHOWN FOR CLARITY

NOTES:

1. MODIFIED STRUCTURE MOUNTED GUIDE RAIL BARRIER GRANTED TL3 DESIGNATION BY FHWA.
2. FOR PA STRUCTURE MOUNTED GUIDE RAIL DETAILS SEE BD-609M.
3. FOR DRIP NOTCH DETAILS, SEE BC-775M.

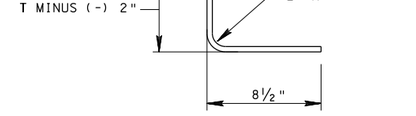


VERTICAL REINFORCEMENT

ALL VERTICAL REINFORCEMENT #4

REINFORCEMENT BAR DETAILS

MECHANICAL SPLICE AS PER BULLETIN 15



ANCHOR BOLT BAR DETAIL

MECHANICAL SPLICE AS PER BULLETIN 15

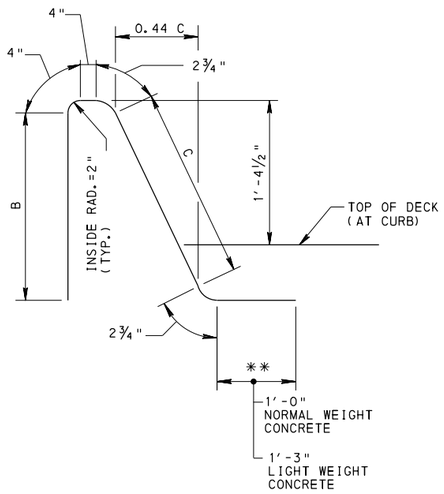
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STANDARD CONCRETE DECK SLAB PA STRUCTURE MOUNTED GUIDE RAIL FOR BEAM BRIDGES

RECOMMENDED AUG. 31, 2012
Thomas P. Macioce
CHIEF BRIDGE ENGINEER

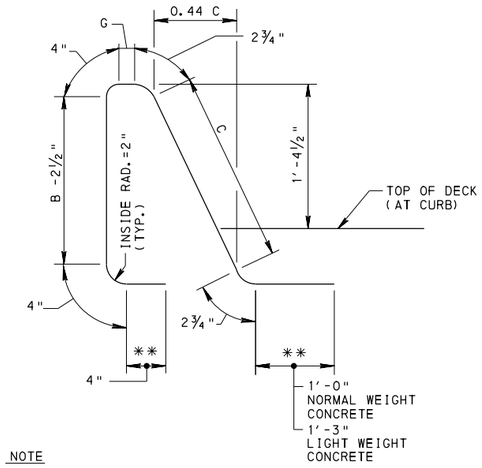
RECOMMENDED AUG. 31, 2012
R. Lyle Willey
ACTING DIR., BUR. OF PROJECT DELIVERY

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



BARRIERS, SPILT GLARE SCREEN AND SPLIT MEDIAN BARRIERS

(FOR DIMENSIONS "B" AND "C", SEE TABLE 1)

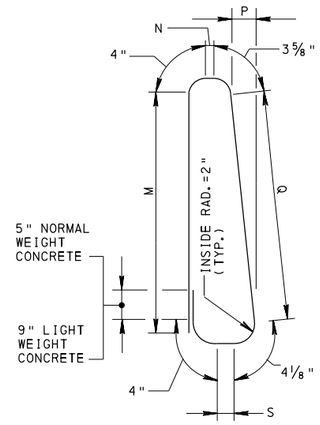


NOTE

DIMENSION G TO BE DETERMINED BY THE DESIGNER

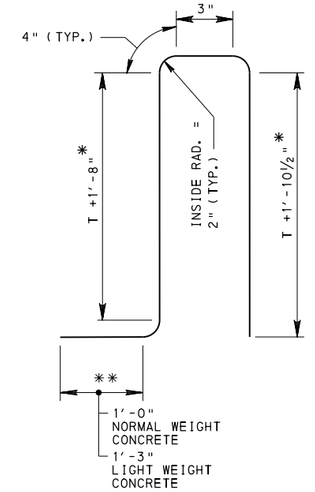
BARRIERS WITH SOUND BARRIERS AND ALUMINUM PROTECTIVE BARRIER

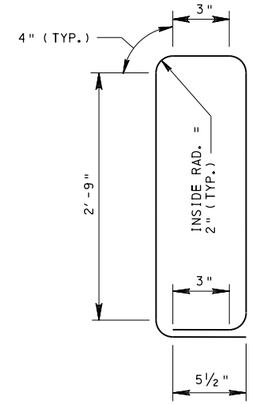
(FOR DIMENSIONS "B" AND "C", SEE TABLE 1)



BARRIERS, SPLIT GLARE SCREEN AND SPLIT MEDIAN BARRIER

(FOR DIMENSIONS M, N, P, Q AND S, SEE TABLE 2)
(DETERMINE DIMENSIONS N AND S FOR BARRIER WITH SOUND BARRIER)





ALTERNATE SIDEWALK

* DETAILED FOR SIDEWALK WIDTHS OF 8'-0" AND LESS

TABLE 1

B AND C DIMENSIONS		
T	BARRIERS, SPLIT MEDIAN AND SPLIT GLARE SCREEN MEDIAN BARRIERS	
	B	C
8.0"	1'-9"	1'-11"
8.5"	1'-9½"	1'-11½"
9.0"	1'-10"	2'-0"
9.5"	1'-10½"	2'-0½"
10.0"	1'-11"	2'-1¼"
10.5"	1'-11½"	2'-1¾"
11.0"	2'-0"	2'-2¼"
11.5"	2'-0½"	2'-2¾"

TABLE 2

M, N, P, Q AND S DIMENSIONS					
	M	N	P	Q	S
TYPICAL BARRIER	2'-9½"	3⅜"	3⅜"	2'-7¾"	6¾"
ALTERNATE BARRIER AND SPLIT MEDIAN BARRIER	1'-11½"	4½"	2¼"	1'-9¾"	6¾"
SPLIT GLARE SCREEN MEDIAN BARRIER	3'-5½"	2½"	4⅛"	3'-3¾"	6¾"

REINFORCEMENT DETAILS

REINFORCEMENT BAR NOTES

1. REINFORCEMENT BAR DIMENSIONS ARE OUT TO OUT OF BAR.
2. DIMENSIONS ALONG CURVED PORTIONS OF BAR ARE MEASURED ALONG THE OUTSIDE EDGE.

NOTES:

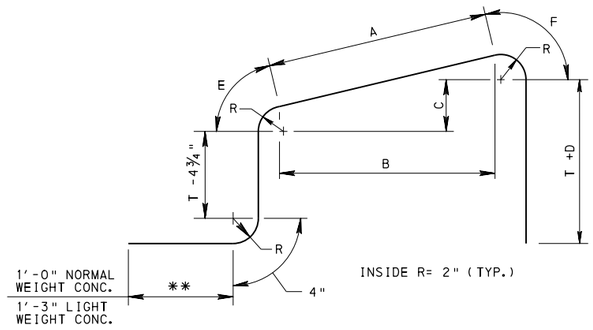
FOR NOTES, SEE SHEET 1.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STANDARD CONCRETE DECK SLAB DESIGN & DETAILS FOR BEAM BRIDGES

RECOMMENDED AUG. 31, 2012
Thomas P. Macioce
CHIEF BRIDGE ENGINEER

RECOMMENDED AUG. 31, 2012
R. Wayne Wilder
ACTING DIR, BUR. OF PROJECT DELIVERY

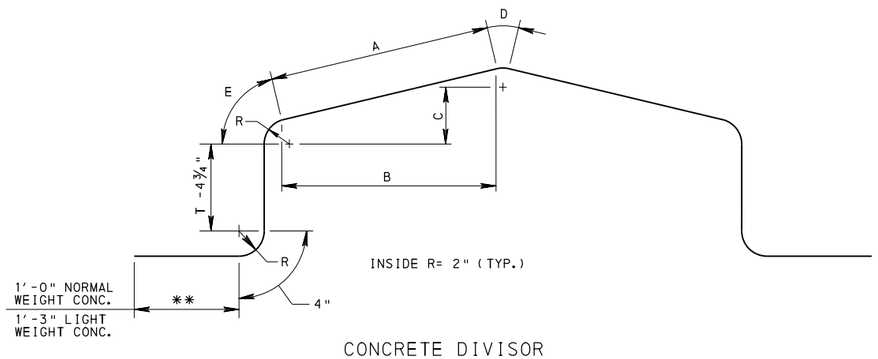


SPLIT CONCRETE DIVISOR

(FOR DIMENSIONS A, B, C, D, E AND F, SEE TABLE 3)

TABLE 3						
A, B, C, D, E AND F DIMENSIONS						
SPLIT DIVISORS	A	B	C	D	E	F
TYPE A	15¼"	15"	3"	⅝"	3½"	4¼"
TYPE B	15¾"	15¼"	4¼"	1½"	3¼"	4½"

(WHERE WIDER THAN SHOWN DIVISIORS ARE USED, PROVIDE WIDTH AND A, B, C AND D DIMENSIONS)



CONCRETE DIVISOR

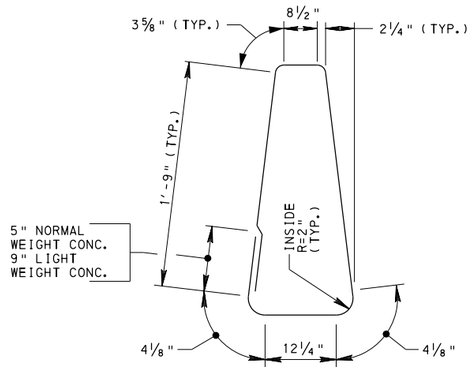
(FOR DIMENSIONS A, B, C, D, AND E, SEE TABLE 4)

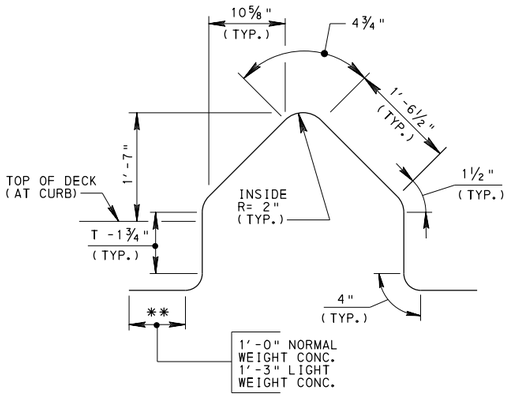
TABLE 4					
A, B, C, D, AND E DIMENSIONS					
DIVISORS	A	B	C	D	E
TYPE A	19¾"	19½"	4¼"	½"	3½"
TYPE B	20¼"	20"	5¼"	½"	3⅜"

(WHERE WIDER THAN SHOWN DIVISIORS ARE USED, PROVIDE WIDTH AND A, B, AND C DIMENSIONS)

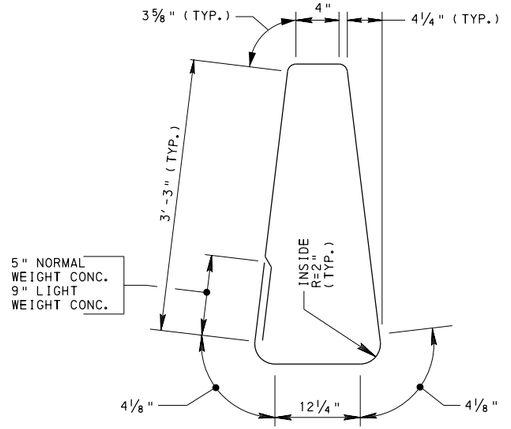
REINFORCEMENT DETAILS

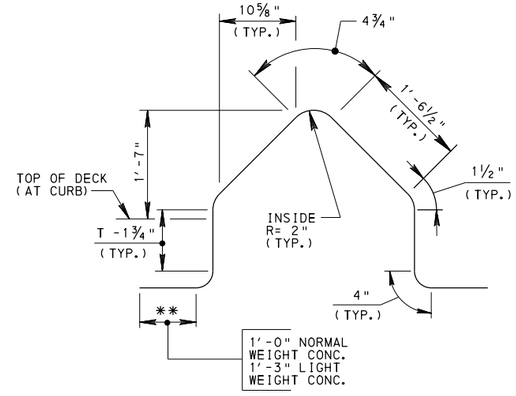
** WHEN THE DECK IS SLOPED AWAY FROM THE GUTTERLINE SLOPE LEG TO MATCH DECK CROSS-SLOPE. DESIGNER TO PROVIDE NECESSARY DIMENSIONS.





MEDIAN BARRIER





GLARE SCREEN MEDIAN BARRIER

NOTES:

FOR NOTES, SEE SHEET 1.

REINFORCEMENT BAR NOTES

1. REINFORCEMENT BAR DIMENSIONS ARE OUT TO OUT OF BAR.
2. DIMENSIONS ALONG CURVED PORTIONS OF BAR ARE MEASURED ALONG THE OUTSIDE EDGE.

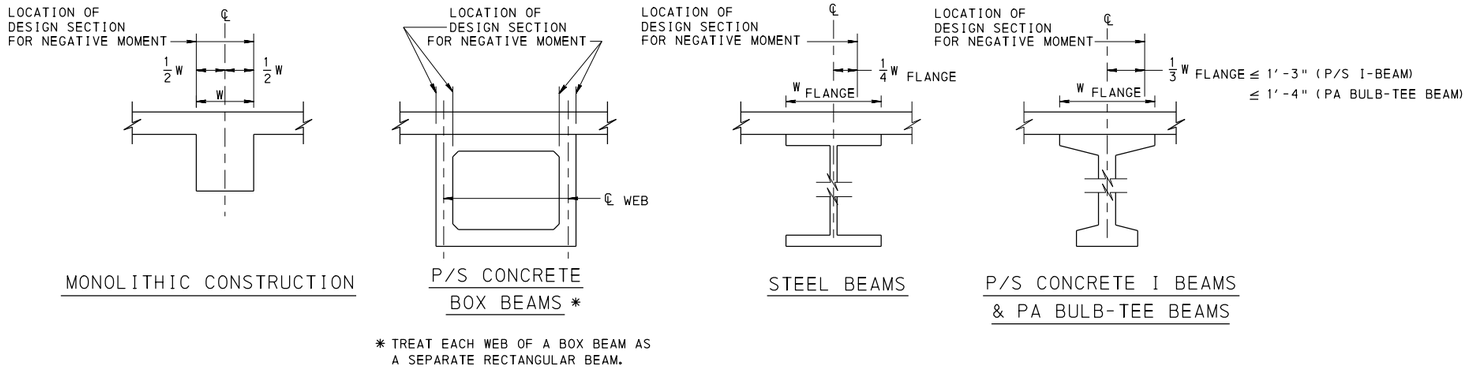
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STANDARD CONCRETE DECK SLAB DESIGN & DETAILS FOR BEAM BRIDGES

RECOMMENDED AUG. 31, 2012
Thomas P. Macioce
CHIEF BRIDGE ENGINEER

RECOMMENDED AUG. 31, 2012
ACTING DIR, BUR. OF PROJECT DELIVERY

BD-601M



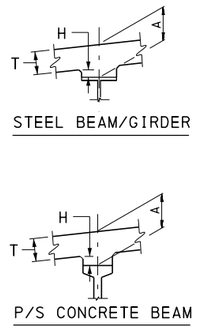
* TREAT EACH WEB OF A BOX BEAM AS A SEPARATE RECTANGULAR BEAM.

TABLE 1: MINIMUM HAUNCH THICKNESSES

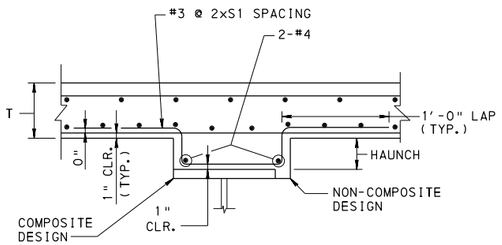
STEEL I-BEAMS AND PLATE GIRDERS	
PLAN CAMBER	H
UP TO 1½"	½"
OVER 1½" TO 3"	¾"
OVER 3"	1"

P/S CONC. I-BEAMS, PA BULB-TEE AND SPREAD BOX BEAMS	
PLAN CAMBER	H
ALL	½"

1. "T" IS THE DECK THICKNESS AS INDICATED ON SHEETS 1, 2, 3 AND 4.
2. PROVIDE THE SPECIFIED MINIMUM HAUNCH THICKNESSES ALONG THE FULL LENGTH OF BEAMS, INCLUDING SPLICE PLATE REGIONS OF STEEL BEAM BRIDGES.
3. "A" IS THE DIMENSION FROM TOP OF DECK TO TOP OF BEAM AT THE CENTERLINE OF BEAM. INCLUDE THE FOLLOWING WHEN DETERMINING DIMENSION "A":
   - DECK THICKNESS, "T"
   - MINIMUM HAUNCH THICKNESS, "H"
   - EFFECT OF DECK CROSS SLOPE

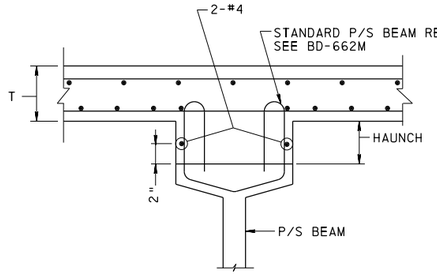


LOCATION OF DESIGN SECTION FOR NEGATIVE MOMENT IN DECK SLABS



STEEL BEAMS

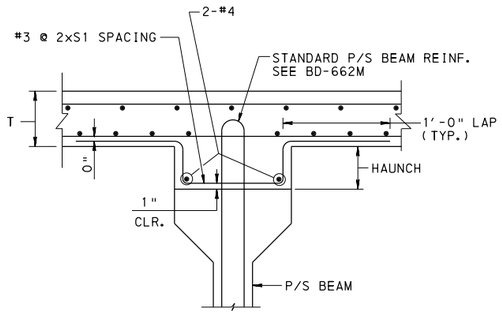
PROVIDE WHEN HAUNCH THICKNESS IS 3" OR GREATER ANYWHERE ACROSS WIDTH OF HAUNCH



AASHTO TYPE P/S CONC. I-BEAM

(P/S SPREAD BOX BEAM SIMILAR)

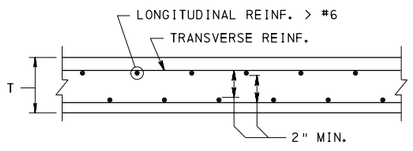
PROVIDE WHEN HAUNCH THICKNESS IS 5" OR GREATER ANYWHERE ACROSS WIDTH OF HAUNCH



P/S CONC. PA I-BEAM & PA BULB-TEE BEAMS

PROVIDE WHEN HAUNCH THICKNESS IS 3" OR GREATER ANYWHERE ACROSS WIDTH OF HAUNCH

HAUNCH REINFORCEMENT DETAILS



AVOID INCREASE IN DECK SLAB THICKNESS IF LONGITUDINAL REBARS CAN BE STAGGERED TO MAINTAIN 2" MIN. BETWEEN THE REBAR MATS.

ALTERNATE CONTINUITY REINFORCEMENT DETAIL

INSTRUCTIONS FOR DETAILING HAUNCH REINFORCEMENT ON CONSTRUCTION PLANS

1. DETAIL HAUNCH REINFORCEMENT ON THE REINFORCEMENT BAR SCHEDULE.
2. SHOW HAUNCH REINFORCEMENT DETAILS ON THE CONSTRUCTION PLANS.
3. SHOW THE LIMITS OF HAUNCH REINFORCEMENT ALONG THE LENGTH OF EACH BEAM/GIRDER ON THE SLAB PLAN OR ON ANOTHER APPROPRIATE DETAIL.
4. INCLUDE ONE OF THE FOLLOWING NOTES ON THE PLANS:

WHEN HAUNCH REINFORCEMENT IS REQUIRED

"THE HAUNCH REINFORCEMENT QUANITY SHOWN ON THE REINFORCEMENT BAR SCHEDULE PROVIDES THE AMOUNT NECESSARY TO COVER THE LIMITS SHOWN ON SHEET **. PROVIDE ADDITIONAL HAUNCH REINFORCEMENT IN OTHER REGIONS ALONG THE LENGTH OF THE BEAM WHERE ACTUAL HAUNCHES EXCEED THE THICKNESSES SPECIFIED IN BC-752M."

** PROVIDE APPROPRIATE SHEET NUMBER(S).

WHEN HAUNCH REINFORCEMENT IS NOT REQUIRED BASED ON COMPUTED BEAM CAMBERS

"BEAM HAUNCH REINFORCEMENT WAS NOT DETERMINED TO BE REQUIRED FOR THE COMPUTED BEAM CAMBERS. HOWEVER, PROVIDE HAUNCH REINFORCEMENT IN ACCORDANCE WITH BC-752M WHERE IRREGULAR BEAM CAMBERS OR OTHER CONSTRUCTION CONDITIONS PROVIDE ACTUAL HAUNCHES THAT EXCEED THE THICKNESSES SPECIFIED IN BC-752M."

NOTES:

FOR NOTES, SEE SHEET 1.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STANDARD CONCRETE DECK SLAB DESIGN & DETAILS FOR BEAM BRIDGES

RECOMMENDED AUG. 31, 2012	RECOMMENDED AUG. 31, 2012	SHEET 8 OF 10
Thomas P. Macioce	R. Wade Willey	BD-601M
CHIEF BRIDGE ENGINEER	ACTING DIR, BUR. OF PROJECT DELIVERY	

TABLE 1: DISTANCE FROM DESIGN SECTION FOR NEGATIVE MOMENT TO CENTERLINE OF BEAM = 0 IN.

USE FOR:
* PRECAST PRESTRESSED SPREAD BOX BEAMS
* PLANK BEAMS
* STEEL I-BEAMS WITH TOP FLANGE WIDTH < 12"

S	T(in.)	S1	S2	S3	S3'	S6	S7+	So	L	NOTES
4'-3"	8	#5 @9-1/2	#5 @11-1/2	#4 @9	#4 @6	#5	1 #6	2'-8"	3'-1"	
4'-7"	8	#5 @9-1/2	#5 @10	#4 @9	#4 @6	#5	1 #5	2'-10"	3'-1"	
4'-11"	8	#5 @9	#5 @9	#4 @9	#4 @6	#5	1 #5	3'-1"	2'-10"	
5'-2"	8	#5 @9	#5 @8	#4 @9	#4 @6	#5	1 #4	3'-3"	2'-10"	
5'-6"	8	#5 @9	#5 @7-1/2	#4 @8-1/2	#4 @6	#5	1 #4	3'-5"	2'-10"	
5'-10"	8	#5 @9	#5 @7	#4 @8-1/2	#4 @6	#5	1 #4	3'-8"	2'-5"	
6'-2"	8	#5 @8-1/2	#5 @6-1/2	#4 @8	#4 @6	#5	1 #4	3'-10"	2'-6"	
6'-6"	8	#5 @8	#5 @6	#4 @7-1/2	#4 @6	#5	1 #4	4'-1"	2'-4"	
6'-10"	8	#5 @8	#5 @5-1/2	#4 @7-1/2	#4 @6	#5	1 #4	4'-3"	2'-3"	
7'-2"	8	#5 @7-1/2	#5 @5-1/2	#5 @11	#5 @6	#5	1 #4	4'-5"	2'-3"	
7'-6"	8	#5 @7	#5 @5-1/2	#5 @11	#5 @6	#5	1 #4	4'-5"	2'-3"	
7'-10"	8	#5 @7	#6 @7	#5 @10	#5 @6	#5	---	3'-9"	---	B,C
8'-2"	8	#5 @7	#6 @7	#5 @10	#5 @6	#5	---	3'-9"	---	B,C
8'-6"	8	#5 @7	#6 @7	#5 @10	#5 @6	#5	---	3'-9"	---	B,C
8'-10"	8	#5 @6-1/2	#6 @6-1/2	#5 @9-1/2	#5 @6	#5	---	3'-10"	---	B,C
9'-2"	8-1/2	#5 @6-1/2	#6 @7	#5 @9-1/2	#5 @6	#6	---	3'-11"	---	B,C
9'-6"	8-1/2	#5 @6-1/2	#6 @7	#5 @9-1/2	#5 @6	#6	---	3'-11"	---	B,C
9'-10"	8-1/2	#5 @6	#6 @6-1/2	#5 @9	#5 @6	#6	---	4'-0"	---	B,C
10'-2"	9	#5 @6-1/2	#6 @6-1/2	#5 @9-1/2	#5 @6	#6	---	4'-3"	---	B,C
10'-5"	9	#5 @6	#6 @6	#5 @9	#5 @6	#6	---	4'-5"	---	B,C
10'-9"	9	#5 @6	#6 @6	#5 @9	#5 @6	#6	---	4'-5"	---	B,C
11'-1"	9-1/2	#5 @6	#6 @6	#5 @9	#5 @6	#6	---	4'-7"	---	B,C
11'-5"	9-1/2	#5 @6	#6 @5-1/2	#5 @9	#5 @6	#6	---	4'-10"	---	B,C
11'-9"	9-1/2	#5 @6	#6 @5-1/2	#5 @9-1/2	#5 @6	#6	---	4'-10"	---	B,C
12'-1"	9-1/2	#5 @6	#6 @5-1/2	#5 @9-1/2	#5 @6	#6	---	4'-10"	---	B,C
12'-5"	10	#5 @6	#6 @5-1/2	#5 @9-1/2	#5 @6	#6	---	5'-2"	---	B,C
12'-9"	10	#5 @6	#6 @5-1/2	#5 @10	#5 @6	#6	---	5'-2"	---	B,C
13'-1"	10-1/2	#5 @6	#6 @5-1/2	#5 @10	#5 @6	#6	---	5'-5"	---	B,C
13'-5"	10-1/2	#5 @6	#6 @5-1/2	#5 @10	#5 @6	#6	---	5'-5"	---	B,C
13'-9"	11	#5 @6	#6 @5-1/2	#5 @10-1/2	#5 @6	#6	---	5'-8"	---	B,C
14'-1"	11-1/2	#5 @6-1/2	#6 @5-1/2	#5 @11	#5 @6	#6	---	6'-0"	---	
14'-5"	11-1/2	#5 @6	#6 @5-1/2	#5 @10-1/2	#5 @6	#6	---	6'-0"	---	
14'-9"	11-1/2	#5 @6-1/2	#6 @5-1/2	#5 @11	#5 @6	#6	---	6'-0"	---	
15'-1"	11-1/2	#5 @6	#6 @5-1/2	#5 @11	#5 @6	#6	---	6'-0"	---	

TABLE 2: DISTANCE FROM DESIGN SECTION FOR NEGATIVE MOMENT TO CENTERLINE OF BEAM = 3 IN.

USE FOR:
* PRECAST PRESTRESSED I-BEAMS WITH TOP FLANGE WIDTH < 18"
* STEEL I-BEAMS WHEN: 12" ≤ TOP FLANGE WIDTH < 24"

S	T(in.)	S1	S2	S3	S3'	S6	S7+	So	L	NOTES
4'-3"	8	#5 @9-1/2	#5 @11-1/2	#4 @9	#4 @6	#5	1 #6	2'-8"	3'-0"	
4'-7"	8	#5 @9-1/2	#5 @11	#4 @9	#4 @6	#5	1 #6	2'-10"	3'-2"	
4'-11"	8	#5 @9	#5 @10	#4 @9	#4 @6	#5	1 #5	3'-1"	2'-10"	
5'-2"	8	#5 @9	#5 @9	#4 @9	#4 @6	#5	1 #5	3'-3"	2'-11"	
5'-6"	8	#5 @9	#5 @8-1/2	#4 @8-1/2	#4 @6	#5	1 #4	3'-5"	3'-0"	
5'-10"	8	#5 @9	#5 @8	#4 @8-1/2	#4 @6	#5	1 #4	3'-8"	2'-9"	
6'-2"	8	#5 @8-1/2	#5 @7-1/2	#4 @8	#4 @6	#5	1 #4	3'-10"	2'-8"	
6'-6"	8	#5 @8	#5 @7	#4 @7-1/2	#4 @6	#5	1 #4	4'-1"	2'-8"	
6'-10"	8	#5 @8	#5 @7	#4 @7-1/2	#4 @6	#5	1 #4	4'-2"	2'-8"	A,C
7'-2"	8	#5 @7-1/2	#5 @6-1/2	#5 @11	#5 @6	#5	1 #4	4'-4"	2'-6"	A,C
7'-6"	8	#5 @7	#5 @6	#5 @11	#5 @6	#5	1 #4	4'-6"	2'-6"	A,C
7'-10"	8	#5 @7	#5 @5-1/2	#5 @10	#5 @6	#5	1 #4	4'-8"	2'-6"	A,C
8'-2"	8	#5 @7	#5 @5-1/2	#5 @10	#5 @6	#5	1 #4	4'-8"	2'-6"	A,C
8'-6"	8	#5 @7	#5 @5-1/2	#5 @10	#5 @6	#5	1 #4	4'-8"	2'-6"	A,C
8'-10"	8	#5 @6-1/2	#5 @5-1/2	#5 @9-1/2	#5 @6	#5	1 #4	4'-8"	2'-4"	A,C
9'-2"	8	#5 @6	#5 @5-1/2	#5 @9	#5 @6	#5	1 #4	4'-8"	2'-4"	A,C
9'-6"	8-1/2	#5 @6-1/2	#5 @5-1/2	#5 @9-1/2	#5 @6	#6	---	4'-0"	---	B,C
9'-10"	8-1/2	#5 @6	#5 @5-1/2	#5 @9	#5 @6	#6	---	4'-0"	---	B,C
10'-2"	8-1/2	#5 @6	#6 @7	#5 @9	#5 @6	#6	---	4'-2"	---	B,C
10'-5"	9	#5 @6	#6 @7	#5 @9	#5 @6	#6	---	4'-4"	---	B,C
10'-9"	9	#5 @6	#6 @6-1/2	#5 @9	#5 @6	#6	---	4'-6"	---	B,C
11'-1"	9	#5 @5-1/2	#6 @6	#5 @8-1/2	#5 @6	#6	---	4'-8"	---	B,C
11'-5"	9-1/2	#5 @6	#6 @6-1/2	#5 @9	#5 @6	#6	---	4'-8"	---	B,C
11'-9"	9-1/2	#5 @6	#6 @6	#5 @9	#5 @6	#6	---	4'-11"	---	B,C
12'-1"	9-1/2	#5 @5-1/2	#6 @5-1/2	#5 @9	#5 @6	#6	---	5'-2"	---	B,C
12'-5"	9-1/2	#5 @6	#6 @5-1/2	#5 @9-1/2	#5 @6	#6	---	5'-2"	---	B,C
12'-9"	9-1/2	#5 @5-1/2	#6 @5-1/2	#5 @9	#5 @6	#6	---	5'-2"	---	B,C
13'-1"	9-1/2	#5 @5-1/2	#6 @5-1/2	#5 @9	#5 @6	#6	---	5'-2"	---	B,C
13'-5"	10	#5 @5-1/2	#6 @5-1/2	#5 @9	#5 @6	#6	---	5'-6"	---	B,C
13'-9"	10-1/2	#5 @6	#6 @5-1/2	#5 @10	#5 @6	#6	---	5'-9"	---	B,C
14'-1"	10-1/2	#5 @5-1/2	#6 @5-1/2	#5 @9-1/2	#5 @6	#6	---	5'-9"	---	B,C
14'-5"	11	#5 @6	#6 @5-1/2	#5 @10-1/2	#5 @6	#6	---	6'-0"	---	
14'-9"	11	#5 @5-1/2	#6 @5-1/2	#5 @9-1/2	#5 @6	#6	---	6'-0"	---	
15'-1"	11-1/2	#5 @6	#6 @5-1/2	#5 @10-1/2	#5 @6	#6	---	6'-0"	---	

TABLE 3: DISTANCE FROM DESIGN SECTION FOR NEGATIVE MOMENT TO CENTERLINE OF BEAM = 6 IN.

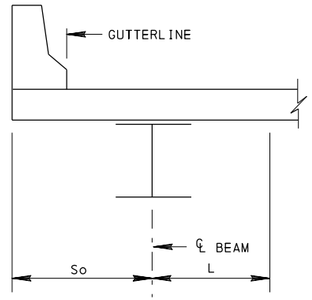
USE FOR:
* PRECAST PRESTRESSED I-BEAMS WHEN: 18" < TOP FLANGE WIDTH < 36"
* STEEL I-BEAMS WHEN: 24" ≤ TOP FLANGE WIDTH < 48"

S	T(in.)	S1	S2	S3	S3'	S6	S7+	So	L	NOTES
4'-3"	8	#5 @9-1/2	#5 @11-1/2	#4 @9	#4 @6	#5	1 #6	2'-8"	3'-3"	
4'-7"	8	#5 @9-1/2	#5 @11-1/2	#4 @9	#4 @6	#5	1 #6	2'-10"	3'-3"	
4'-11"	8	#5 @9	#5 @11-1/2	#4 @9	#4 @6	#5	1 #6	3'-1"	3'-4"	
5'-2"	8	#5 @9	#5 @11	#4 @9	#4 @6	#5	1 #6	3'-3"	3'-6"	
5'-6"	8	#5 @9	#5 @10	#4 @8-1/2	#4 @6	#5	1 #5	3'-5"	3'-2"	
5'-10"	8	#5 @9	#5 @9	#4 @8-1/2	#4 @6	#5	1 #5	3'-8"	3'-2"	
6'-2"	8	#5 @8-1/2	#5 @9	#4 @8	#4 @6	#5	1 #5	3'-10"	3'-2"	
6'-6"	8	#5 @8	#5 @8-1/2	#4 @7-1/2	#4 @6	#5	1 #4	4'-0"	3'-1"	
6'-10"	8	#5 @8	#5 @8	#4 @7-1/2	#4 @6	#5	1 #4	4'-2"	3'-0"	
7'-2"	8	#5 @7-1/2	#5 @7-1/2	#5 @11	#5 @6	#5	1 #4	4'-3"	3'-0"	A,C
7'-6"	8	#5 @7	#5 @7	#5 @11	#5 @6	#5	1 #4	4'-5"	3'-0"	A,C
7'-10"	8	#5 @7	#5 @7	#5 @10	#5 @6	#5	1 #4	4'-5"	3'-0"	A,C
8'-2"	8	#5 @7	#5 @7	#5 @10	#5 @6	#5	1 #4	4'-5"	2'-11"	A,C
8'-6"	8	#5 @7	#5 @6-1/2	#5 @10	#5 @6	#5	1 #4	4'-7"	2'-9"	A,C
8'-10"	8	#5 @6-1/2	#5 @6-1/2	#5 @9-1/2	#5 @6	#5	1 #4	4'-7"	2'-11"	A,C
9'-2"	8	#5 @6	#5 @6	#5 @9	#5 @6	#5	1 #4	4'-10"	2'-9"	A,C
9'-6"	8	#5 @6	#5 @5-1/2	#5 @9	#5 @6	#5	1 #4	5'-0"	2'-9"	A,C
9'-10"	8	#5 @5-1/2	#5 @5-1/2	#5 @8-1/2	#5 @6	#5	1 #4	5'-0"	2'-9"	A,C
10'-2"	8-1/2	#5 @6	#5 @5-1/2	#5 @9	#5 @6	#6	---	4'-3"	---	B,C
10'-5"	8-1/2	#5 @5-1/2	#5 @5-1/2	#5 @8-1/2	#5 @6	#6	---	4'-3"	---	B,C
10'-9"	8-1/2	#5 @5-1/2	#6 @7	#5 @8-1/2	#5 @6	#6	---	4'-5"	---	B,C
11'-1"	9	#5 @5-1/2	#6 @7	#5 @8-1/2	#5 @6	#6	---	4'-7"	---	B,C
11'-5"	9	#5 @5-1/2	#6 @6-1/2	#5 @8-1/2	#5 @6	#6	---	4'-9"	---	B,C
11'-9"	9	#5 @5-1/2	#6 @6-1/2	#5 @8-1/2	#5 @6	#6	---	4'-9"	---	B,C
12'-1"	9-1/2	#5 @5-1/2	#6 @6	#5 @8-1/2	#5 @6	#6	---	5'-3"	---	B,C
12'-5"	9-1/2	#5 @5-1/2	#6 @5-1/2	#5 @9	#5 @6	#6	---	5'-6"	---	B,C
12'-9"	9-1/2	#5 @5-1/2	#6 @5-1/2	#5 @8	#5 @6	#6	---	5'-6"	---	B,C
13'-1"	9-1/2	#5 @5-1/2	#6 @5-1/2	#5 @9	#5 @6	#6	---	5'-6"	---	B,C
13'-5"	9-1/2	#5 @5-1/2	#6 @5-1/2	#5 @8-1/2	#5 @6	#6	---	5'-6"	---	B,C
13'-9"	9-1/2	#5 @5-1/2	#6 @5-1/2	#5 @8-1/2	#5 @6	#6	---	5'-6"	---	B,C
14'-1"	10	#5 @5-1/2	#6 @5-1/2	#5 @9	#5 @6	#6	---	5'-10"	---	B,C
14'-5"	10	#5 @5-1/2	#6 @5-1/2	#5 @9	#5 @6	#6	---	5'-10"	---	B,C
14'-9"	10-1/2	#5 @5-1/2	#6 @5-1/2	#5 @9	#5 @6	#6	---	6'-0"	---	
15'-1"	10-1/2	#5 @5-1/2	#6 @5-1/2	#5 @9	#5 @6	#6	---	6'-0"	---	

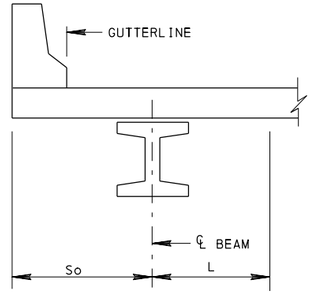
TABLE 4: DISTANCE FROM DESIGN SECTION FOR NEGATIVE MOMENT TO CENTERLINE OF BEAM = 12 IN.

USE FOR:
* PRECAST PRESTRESSED PA BULB-TEE AND I-BEAMS WITH TOP FLANGE WIDTH ≥ 36"
* STEEL I-BEAMS OR STEEL CLOSED BOXES WITH TOP FLANGE WIDTH ≥ 48"

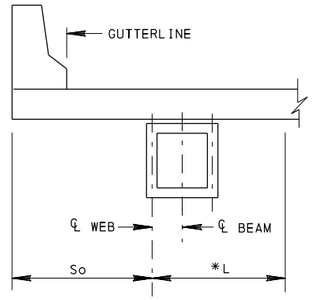
S	T(in.)	S1	S2	S3	S3'	S6	S7+	So	L	NOTES
4'-3"	8	#5 @9-1/2	#5 @11-1/2	#4 @9	#4 @6	#5	1#6	2'-8"	3'-9"	
4'-7"	8	#5 @9-1/2	#5 @11-1/2	#4 @9	#4 @6	#5	1#6	2'-10"	3'-9"	
4'-11"	8	#5 @9	#5 @11-1/2	#4 @9	#4 @6	#5	1#6	3'-1"	3'-9"	
5'-2"	8	#5 @9	#5 @11-1/2	#4 @9	#4 @6	#5	1#6	3'-3"	3'-9"	
5'-6"	8	#5 @9	#5 @11-1/2	#4 @8-1/2	#4 @6	#5	1#6	3'-5"	3'-9"	
5'-10"	8	#5 @9	#5 @11-1/2	#4 @8-1/2	#4 @6	#5	1#6	3'-8"	3'-10"	
6'-2"	8	#5 @8-1/2	#5 @11-1/2	#4 @8	#4 @6	#5	1#6	3'-10"	3'-11"	
6'-6"	8	#5 @8	#5 @11-1/2	#4 @7-1/2	#4 @6	#5	1#6	4'-1"	4'-1"	
6'-10"	8	#5 @8	#5 @8	#4 @7-1/2	#4 @6	#5	1#6	4'-3"	4'-0"	
7'-2"	8	#5 @7-1/2	#5 @7-1/2	#5 @11	#5 @6	#5	1#6	4'-6"	4'-0"	
7'-6"	8	#5 @7	#5 @7	#5 @10	#5 @6	#5	1#5	4'-8"	3'-10"	
7'-10"	8	#5 @7	#5 @7	#5 @9-1/2	#5 @6	#5	1#5	4'-10"	3'-10"	
8'-2"	8	#5 @7	#5 @7	#5 @9	#5 @6	#5	1#5	4'-11"	3'-10"	
8'-6"	8	#5 @7	#5 @7	#5 @9	#5 @6	#5	1#5	4'-11"	3'-10"	
8'-10"	8	#5 @6-1/2	#5 @8-1/2	#5 @9-1/2	#5 @6	#5	1#4	4'-8"	3'-9"	
9'-2"	8	#5 @6	#5 @8	#5 @9	#5 @6	#5	1#4	4'-10"	3'-8"	
9'-6"	8	#5 @6	#5 @7-1/2	#5 @9	#5 @6	#5	1#4	4'-11"	3'-5"	A,C
9'-10"	8	#5 @5-1/2	#5 @7	#5 @8-1/2	#5 @6	#5	1#4	5'-1"	3'-5"	A,C
10'-2"	8	#5 @5-1/2	#5 @7	#5 @8-1/2	#5 @6	#5	1#4	5'-1"	3'-4"	A,C
10'-5"	8	#5 @5-1/2	#5 @6-1/2	#5 @7-1/2	#5 @6	#5	1#4	5'-4"	4'-0"	A,C
10'-9"	8	#5 @5-1/2	#5 @6	#5 @7-1/2	#5 @6	#5	1#4	5'-6"	4'-0"	A,C
11'-1"	8-1/2	#5 @5-1/2	#5 @6	#5 @7-1/2	#5 @6	#6	1#4	5'-10"	4'-0"	A,C
11'-5"	8-1/2	#5 @5-1/2	#5 @5-1/2	#5 @7-1/2	#5 @6	#6	---	4'-10"	---	B,C
11'-9"	8-1/2	#5 @5-1/2	#5 @5-1/2	#5 @7-1/2	#5 @6	#6	---	4'-10"	---	B,C
12'-1"	9	#5 @5-1/2	#5 @5-1/2	#5 @7-1/2	#5 @6	#6	---	5'-0"	---	B,C
12'-5"	9	#5 @5-1/2	#6 @7	#5 @7-1/2	#5 @6	#6	---	5'-3"	---	B,C
12'-9"	9	#6 @7	#6 @7	#5 @7	#5 @6	#6	---	5'-3"	---	B,C
13'-1"	9-1/2	#5 @5-1/2	#6 @7	#5 @8	#5 @6	#6	---	5'-5"	---	B,C
13'-5"	9-1/2	#5 @5-1/2	#6 @6-1/2	#5 @8	#5 @6	#6	---	5'-8"	---	B,C
13'-9"	9-1/2	#6 @7	#6 @6	#5 @7	#5 @6	#6	---	5'-10"	---	B,C
14'-1"	9-1/2	#5 @5-1/2	#6 @6	#5 @8-1/2	#5 @6	#6	---	5'-10"	---	B,C
14'-5"	9-1/2	#6 @7	#6 @6	#5 @7-1/2	#5 @6	#6	---	5'-10"	---	B,C
14'-9"	9-1/2	#6 @7	#6 @5-1/2	#5 @7-1/2	#5 @6	#6	---	6'-0"	---	
15'-1"	10	#6 @7	#6 @6	#5 @7-1/2	#5 @6	#6	---	6'-0"	---	



STEEL I-BEAM



P/S I-BEAM AND PA BULB-TEE



BOX BEAM

* FOR BOX BEAMS WITH CENTERLINE WEB WITHIN BARRIER WIDTH, "L" IS MEASURED FROM GUTTERLINE.

DEFINITION OF So (OVERHANG LENGTH)

NOTES:

(A) THE OVERHANG LENGTH, So, SHOWN MAY BE INCREASED BY UP TO 5 INCHES IF #5 S7 BARS REPLACE THE #4 S7 BARS SHOWN. THE LENGTH "L" SHALL BE TAKEN NO LESS THAN 4'-3".

(B) THE OVERHANG LENGTH, So, SHOWN MAY BE INCREASED BY UP TO 8 INCHES IF #4 S7 BARS ARE BUNDLED TO EACH S2 BAR SHOWN. THE OVERHANG LENGTH, So, SHOWN MAY BE INCREASED BY UP TO 13 INCHES IF #5 S7 BARS ARE BUNDLED TO EACH S2 BAR SHOWN. THE LENGTH "L" SHALL BE TAKEN NO LESS THAN 4'-3".

(C) WHEN THE LENGTH OF THE OVERHANG IS INCREASED IN ACCORDANCE WITH NOTE (A) OR (B) ABOVE, THE INCREASED OVERHANG LENGTH SHALL NOT EXCEED THE LIMITS STATED IN DESIGN MANUAL PART 4, SECTION D9.7.1.5.1P.

+ FOR BRIDGES WITH TOTAL WIDTH NO MORE THAN 36', THE S7 BARS MAY BE ELIMINATED IF THE FOLLOWING CONDITIONS ARE SATISFIED:
- THE OVERHANG LENGTH, So, DOES NOT EXCEED THE SMALLER OF:
  - THE LIMIT DETERMINED IN NOTE "C" ABOVE
  - 3'-9" FOR OVERHANGS SUPPORTING BARRIERS OR 3'-8" FOR OVERHANGS SUPPORTING SPLIT MEDIAN BARRIERS
- S2 BARS SHOWN IN THE TABLES ARE REPLACED WITH:
  #6 @ 7" FOR 8" THICK DECKS
  #6 @ 7½" FOR 8½" THICK DECKS

DESIGN NOTES:

1. BEAM SPACING, "S"
   - ALL EXCEPT SPREAD BOX BEAMS:
     S = MAXIMUM BEAM SPACING, CENTERLINE TO CENTERLINE OF ADJACENT BEAMS
   - SPREAD BOX BEAMS:
     S = (MAXIMUM BEAM SPACING - 2'-7") [36" WIDE BEAMS]
     S = (MAXIMUM BEAM SPACING - 3'-7") [48" WIDE BEAMS]
   - WHERE S <4'-3", USE S = 4'-3"
2. "T" = TOTAL SLAB THICKNESS, INCLUDES ½" INTEGRAL WEARING SURFACE.
3. OVERHANG LENGTH, "So"
   - FOR DEFINITION OF "So", SEE DETAILS THIS SHEET.
   - THE So VALUES SHOWN IN THE TABLES INDICATE THE MAXIMUM ALLOWABLE OVERHANG LENGTHS UTILIZING THE SPECIFIED REINFORCEMENT.
   - FOR SPLIT MEDIAN BARRIERS, REDUCE THE So VALUES LISTED IN THE TABLES BY 1".
   - SEE NOTES 26, 27 AND 28 ON SHEET 1 FOR ADDITIONAL LIMITATIONS.
4. FOR LOCATION OF REINFORCEMENT BARS, SEE SHEETS 1, 2, 3 AND 4. FOR LOCATION OF DIMENSION "L", SEE SHEETS 2, 3 AND 4.
5. FOR OTHER BEAMS NOT LISTED UNDER THE HEADING OF THE TABLES ABOVE, DETERMINE THE DISTANCE FROM THE DESIGN SECTION FOR NEGATIVE MOMENT TO THE CENTERLINE OF BEAM USING THE SKETCHES ON SHEET 8. USE THE REINFORCEMENT TABLE WHICH CAPTION SHOWS A DISTANCE FROM THE DESIGN SECTION FOR NEGATIVE MOMENT TO THE CENTERLINE OF BEAMS EQUAL TO OR SMALLER THAN THE CALCULATED DISTANCE.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

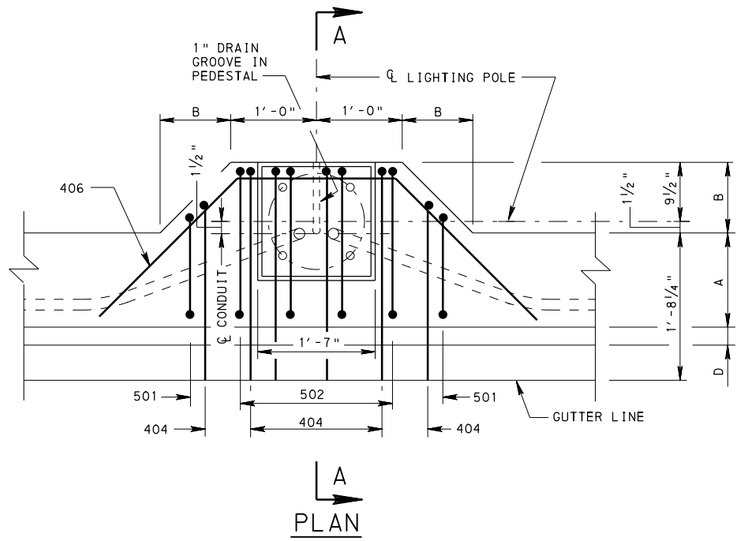
STANDARD CONCRETE DECK SLAB DESIGN & DETAILS FOR BEAM BRIDGES

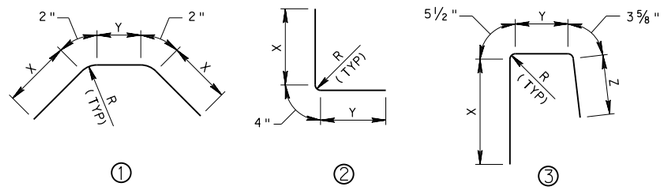
RECOMMENDED AUG. 31, 2012
Thomas P. Macioce
CHIEF BRIDGE ENGINEER

RECOMMENDED AUG. 31, 2012
R. Lee Willey
ACTING DIR, BUR. OF PROJECT DELIVERY

SHEET 9 OF 10

BD-601M





REINFORCEMENT TABLE

MARK	SIZE	LENGTH TYPICAL	LENGTH ALTERNATE	NUMBER	TYPE	X TYPICAL	X ALTERNATE	Y	Z
404	4	8'-2"	7'-4"	6	②	3'-10"	3'-0"	4'-0"	----
406	4	5'-11"	5'-11"	7	①	2'-0"	2'-0"	1'-7"	----
501	5	5'-3⅝"	4'-7⅝"	2	③	2'-8"	2'-0"	4½"	1'-6"
502	5	5'-10⅝"	5'-2⅝"	4	③	2'-8"	2'-0"	11½"	1'-6"

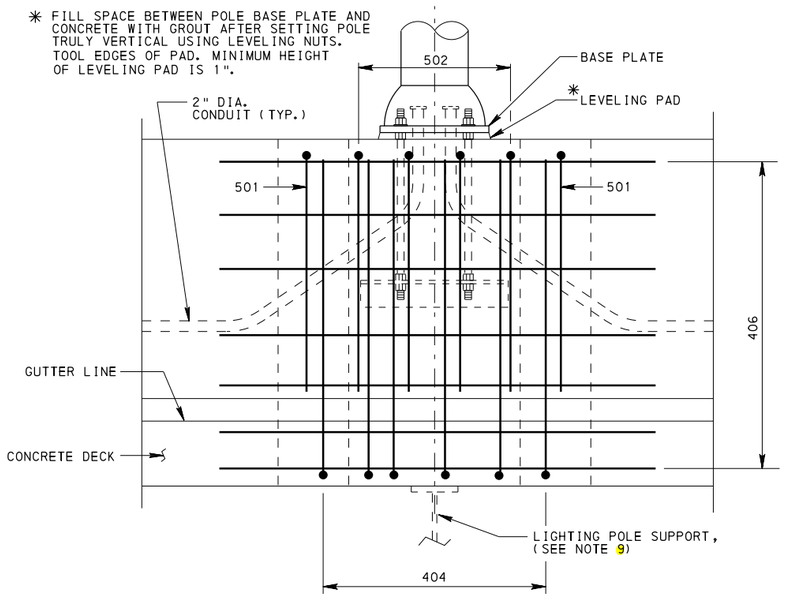
REINFORCEMENT DETAILS

REINFORCEMENT BAR NOTES

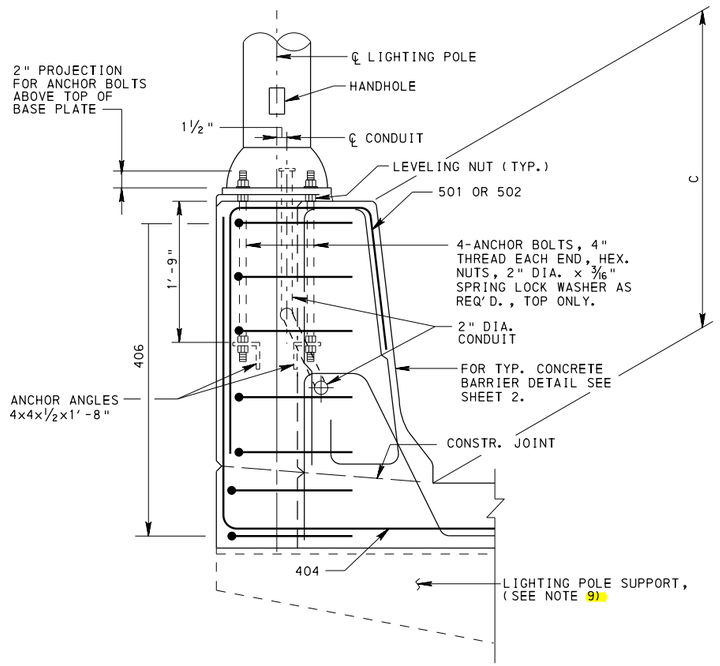
1. DIMENSIONS ALONG CURVED PORTIONS OF BAR ARE MEASURED ALONG THE OUTSIDE EDGE.
2. EPOXY COAT ALL REINFORCEMENT STEEL IN ACCORDANCE WITH PUBLICATION 408, SECTION 709.1(c).
3. RADIUS, R= 2", FOR #4 BARS AND R= 3", FOR #5 BARS, IS MEASURED TO THE INSIDE EDGE OF THE REINFORCEMENT BAR.

NOTES:

1. PROVIDE MATERIALS AND WORKMANSHIP 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 EXCEPT DO NOT GALVANIZE ANCHOR ANGLES.
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 2½" CONCRETE COVER FOR CONDUIT.
8. FOR GEOMETRIC AND REINFORCEMENT DETAILS OF THE BARRIER NOT SHOWN, SEE SHEET 2.
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.



ELEVATION



SECTION A-A

BARRIER TYPE	"A"	"B"	"C"	"D"
TYPICAL	1'-0"	11"	3'-6"	3⅜"
ALTERNATE	1'-1"	10"	2'-8"	2⅜"

PROVISIONS FOR FUTURE LIGHTING

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

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STANDARD CONCRETE DECK SLAB LIGHTING POLE ANCHORAGE DETAILS FOR BEAM BRIDGES

RECOMMENDED AUG. 31, 2012
Thomas P. Macioce
CHIEF BRIDGE ENGINEER

RECOMMENDED AUG. 31, 2012
R. Wayne Willey
ACTING DIR, BUR. OF PROJECT DELIVERY

SHEET 10 OF 10

BD-601M