TRANSMITTAL LETTER


INFORMATION AND SPECIAL INSTRUCTIONS:
Incorporate the attached revisions into the September 1995 Metric Edition of the Standards for Roadway Construction. These revisions should be adopted as soon as practical on all new and existing designs without affecting any letting schedules. PS&E submissions to Central Office after should include these revisions.
The following represents a listing of the major changes or addition to each standard drawing. Only revised sheets are listed. Remaining sheets of the same standard show new dates only.

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<td>Previous 1 of 1. Changed title block to add sheet 2 of 2.</td>
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<td>RC-31M (1 of 1)</td>
<td>Revised note 2 and added note 5.</td>
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<td>Revised note 1 and added note 8.</td>
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<td>RC-58M (1 of 6)</td>
<td>Revised notes 2 and combined notes 4 and 9.</td>
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<td>RC-59M (1, 2 &amp; 3 of 5)</td>
<td>Revised notes 10 and 11 relative to tapers and suitable lifting devices.</td>
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<td>RC-57M (3 of 5)</td>
<td>Revised note 2 and added reinforcement notes in Section A-A.</td>
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<td>Added &quot;CAST-IN-PLACE AND PRECAST&quot; to the title block.</td>
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<td>Revised notes 2 and 9</td>
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<td>Revised note 1.</td>
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<td>RC-8M (1 of 6)</td>
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<td>Revised the reinforcement note in Section B-B.</td>
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<td>Revised details in Section D-D</td>
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<tr>
<td>CANCEL THE FOLLOWING:</td>
<td>Deleted the reference to octagonal poles.</td>
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<tr>
<td>Index Sheet</td>
<td>Added a note requiring that truss arm aluminum poles meet the silhouette requirement of steel poles.</td>
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<td>RC-59M</td>
<td>Added 120/240 volt as a typical supply voltage.</td>
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<tr>
<td>RC-82M</td>
<td>Clarified that a split bolt connector can be used to connect the neutral to the ground in pole bases.</td>
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APPROVED FOR ISSUANCE BY:
By: Michael M. Ryan, P.E.
Deputy Secretary for Highway Administration

Bradley L. Mallory
Secretary of Transportation
# INDEX OF STANDARDS FOR ROADWAY CONSTRUCTION

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# Change #7 February 18, 2000

September 1995 Edition
TYPICAL CROSS SECTIONS - ABUTMENTS ON FILL

TYPICAL CROSS SECTIONS - ABUTMENTS IN CUT

BACKFILL & EMBANKMENT CONSTRUCTION AT STRUCTURES

FOUNDATION PREPARATION FOR RC BOX AND ARCH CULVERTS ON FINE GRAIN SOIL ONLY

NOTES:
1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUB 408M. PLACE BACKFILL AND EMBANKMENT IN ACCORDANCE WITH THIS STANDARD DRAWING UNLESS OTHERWISE SHOWN ON THE STRUCTURE DRAWINGS.
2. USE ONLY R-3 ROCK LINING, MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTION 850.2(0); AASHTO NO. 1, 3, 5 OR 57 COARSE AGGREGATES, MEETING AT LEAST THE TYPE C QUALITY REQUIREMENTS IN PUBLICATION 408M, SECTION 703.2, TABLE B; OR TYPE OGS COARSE AGGREGATE, MEETING AT LEAST THE QUALITY REQUIREMENTS OF PUBLICATION 408M, SECTION 703.2, TABLE B. MEASURE AND PAY STRUCTURE BACKFILL AS SELECTED BORROW EXCAVATION - STRUCTURE BACKFILL. TREAT BACKFILL AT RETAINING WALLS AND WINGWALLS FOR CULVERTS THE SAME AS FLARED ABUTMENT WINGWALLS.
3. TREAT BACKFILL LIMITS AT RETAINING WALLS AND WINGWALLS FOR CULVERTS THE SAME AS FLARED ABUTMENT WINGWALLS.
4. TREAT BACKFILL CONSTRUCTION AT RC BOX CULVERTS WITH THE TOP SLAB AT ROADWAY GRADE THE SAME AS ABUTMENTS.
5. TREAT BACKFILL CONSTRUCTION AT CULVERTS, WHERE THE TOP OF THE CULVERT IS NEAR SUBGRADE, AS SHOWN ON THE STRUCTURE DRAWINGS OR AS DIRECTED BY THE ENGINEER.
6. PLACE STRUCTURE BACKFILL AND ADJOINING EMBANKMENT SIMULTANEOUSLY UNLESS OTHERWISE PERMITTED BY THE ENGINEER.
7. REPLACE MATERIAL REMOVED BEYOND THE SPECIFIED LIMITS OF CLASS 1, 2 OR 3 EXCAVATION WITH STRUCTURE BACKFILL. STRUCTURE BACKFILL MATERIAL REMOVED OR STRUCTURE BACKFILL PLACED BEYOND THE SPECIFIED LIMITS IS CONSIDERED INCIDENTAL TO THE SELECTED BORROW EXCAVATION - STRUCTURE BACKFILL AND WILL NOT BE PAID FOR SEPARATELY.
8. REFER TO STRUCTURE DRAWINGS FOR DRAINAGE DETAILS, WEEP HOLES, ETC.
9. INDICATE STRUCTURE BACKFILL QUANTITIES ON THE STRUCTURE DRAWINGS.
10. ALL DIMENSIONS ARE IN MILLIMETERS (MM) EXCEPT AS NOTED.
GENERAL NOTES

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUB 408/2000. PLACE BACKFILL AND EMBANKMENT IN ACCORDANCE WITH THIS STANDARD DRAWING UNLESS OTHERWISE SHOWN ON THE STRUCTURE DRAWINGS.

2. USE ONLY R-3 ROCK LINING, MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTION 850.2(2); AASHTO NO. 1, 3, 5 OR 57 FOR TYPICAL BOX CULVERTS. BACKFILL OTHER THAN BOX CULVERTS, SUCH AS TUNNELS, SHALL MEET THE REQUIREMENTS OF PUBLICATION 408M, SECTION 850.2(3). CONSIDER ROUTING OF STRUCTURAL BUNKER TO MATCH EXISTING EMBANKMENT SUBGRADE.

3. PLACED STRUCTURE BACKFILL DARKER THAN THE DESIGN EXCAVATION BACKFILL. SEE NOTES 11 & 12 THIS SHEET.

4. KEEP THE DIFFERENCE BETWEEN THE DATA HEIGHT AT BOTH ENDS OF BRIDGE BELOW 300 MM (12") AT ALL TIMES DURING BACKFILLING.

5. REPLACE MATERIAL REMOVED BEYOND THE SPECIFIED LIMITS OF CLASS 1, 2, OR 3 EXCAVATION WITH STRUCTURE BACKFILL. SEE NOTES 11 & 12 THIS SHEET.

6. PLACE STRUCTURE BACKFILL AND ADJOINING EMBANKMENT SIMULTANEOUSLY UNLESS OTHERWISE PERMITTED BY THE ENGINEER.

7. PLACE BACKFILL WITHIN 600 MM (24") FROM THE REAR FACE OF THE ABUTMENT AND THE WINGWALL IN LIFTS OF 100 MM (4""). COMPACT EACH LAYER WITH TWO PASSES OF A WALK-BEHIND VIBRATORY PLATE SOIL COMPACTOR.

8. REFER TO STRUCTURE DRAWINGS FOR DRAINAGE DETAILS, WEEP HOLES, ETC.

9. INDICATE STRUCTURE BACKFILL QUANTITIES ON THE STRUCTURE DRAWINGS.

10. ALL DIMENSIONS ARE GIVEN IN MILLIMETERS UNLESS OTHERWISE NOTED.

U.S. CUSTOMARY UNITS IN PARENTHESES.

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

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
ROBERT M. MCKINNEN
DIRECTOR, BUREAU OF DESIGN

BACKFILL AT STRUCTURES
NOTES

1. CONSTRUCT IN ACCORDANCE WITH THIS STANDARD DRAWING OR AS INDICATED ON THE STRUCTURE DRAWINGS.

2. THE TYPE E JOINT DOES NOT APPLY WHEN APPROACH SLAB IS CONSTRUCTED IN CONJUNCTION WITH A PAVEMENT RELIEF JOINT OR WITH A FLEXIBLE PAVEMENT, SEE RC-24M.

3. WHEN CONSTRUCTION INVOLVES MORE THAN 2 LANES, CONNECT ADDITIONAL LANES TO STANDARD 2 LANE BRIDGE APPROACH SLAB USING TYPE L CONSTRUCTION JOINTS, AS SHOWN ON RC-24M, SHEET 2 OF 4.

4. INSTALL NEOPRENE COMPRESSION SEALS TO A UNIFORM DEPTH WITH TOP OF THE SEAL NOT LESS THAN 6 NOR MORE THAN 10 BELOW THE LEVEL OF THE PAVEMENT SURFACE. MAKE THE TOP EDGES OF THE CONTACT SURFACES ON BOTH SIDE OF THE SEAL AT THE SAME ELEVATION.

5. DETERMINE "d" BY ADDING 20 TO THE MAXIMUM COMPRESSED HEIGHT OF THE NEOPRENE COMPRESSION SEAL. (SEE MANUFACTURER'S INFORMATION.)

6. CONSTRUCT THE BRIDGE APPROACH SLAB AFTER THE BRIDGE DECK IS CONSTRUCTED.

7. PROVIDE REINFORCEMENT BARS, EPOXY COATED IN ACCORDANCE WITH PUBLICATION 408M, SECTION 709.

8. ALL DIMENSIONS ARE IN MILLIMETERS (1 mm) EXCEPT AS NOTED.
535 TO 1220 DEEP ADJACENT COMPOSITE BOX BEAMS WITH 280 DEEP APPROACH SLAB NOTCH

430 DEEP ADJACENT COMPOSITE BOX BEAMS WITH 230 DEEP APPROACH SLAB NOTCH

320 MINIMUM
100 WIN SLAB

230 MINIMUM
100 WIN SLAB

PRESTRESSED BOX BEAM (430 DEEP AND OVER)

PREMOLDED EXPANSION JOINT FILLER

#25 MINIMUM CLEARANCE

FOR joint DETAILS, SEE SHEET 1 OF 2.

TILT HOOK TO MAINTAIN PROPER CLEARANCE.

BOND-BREAKER, 2-PLY BIT. PAPER

125 MIN

410 APPROACH SLAB

END OF BEAM

1410 APPROACH SLAB

END OF BEAM

75 MINIMUM, SEE NOTE 3.

NOTES

1. WHEN MAKING CONSTRUCTION CHANGES IN THE FIELD, THIS DRAWING IS TO SERVE AS A GUIDE FOR MODIFYING NOTCH DETAILS SHOWN ON P & V STANDARD DRAWINGS FOR ACCOMMODATING THE STANDARD 410 BRIDGE APPROACH SLAB.

2. AT BEAM ENDS, BURN OFF REINFORCEMENT PROTRUDING INTO APPROACH SLAB NOTCH.

3. INCREASE IN FIELD, PROVIDING OVERHANG, IF REQUIRED.

4. PROVIDE REINFORCEMENT BARS, EPOXY COATED, IN ACCORDANCE WITH PUBLICATION 408M, SECTION 709.

5. ALL DIMENSIONS ARE IN MILLIMETERS (MM) EXCEPT AS NOTED.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

BRIDGE APPROACH SLAB

1-BEAMS

SHEET 1 OF 3

REVISIONS

DATE

SIGNATURES

PREPARED BY

REVISED BY

REVISION OF

PRINTED BY
PLAN

ELEVATION

APPROACH SLAB - INTEGRAL ABUTMENTS

NOTES:
1. TROWEL SMOOTH AND PLACE 2 LAYERS OF 0.1 mm (4 MIL.) POLYETHYLENE SHEETING AS BOND BREAKER.
2. ORIENT THE EDGE OF THE APPROACH SLAB PARALLEL TO THE INTEGRAL ABUTMENT FOR BRIDGE SKEWS LESS THAN 80.5 DEGREES (1:6 (6:1)) SLOPE TO THE PERPENDICULAR TO THE DIRECTION OF TRAFFIC. FOR LARGER BRIDGE SKEWS, ORIENT THE EDGE OF THE APPROACH SLAB AT A SLOPE OF 1:6 (6:1) TO THE PERPENDICULAR TO THE DIRECTION OF TRAFFIC.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BRIDGE APPROACH SLAB

REFERENCE DRAWINGS

BC-767M

RECOMMENDED FOR PRESTRESSED CONCRETE AND STEEL I-BEAM BRIDGES

RC-23M
**NOTES:**

1. PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTION 706 AND 709.

2. THIS STANDARDS DEPICTS THE SHAPE AND DIMENSIONS REQUIRED FOR UNIFORMITY AND COMPATIBILITY, DEPENDS ON STOREY INDICATED IN BUREAU 1015. FOR DEVIATIONS OR MODIFICATIONS TO THE STANDARDS, SUBMIT SHOP DRAWINGS FOR APPROVAL.

3. PROVIDE JOIN SEALANT MATERIAL ALONG BASE SECTION. PROVIDE JOINT SEALANT MATERIAL ALONG INTERFACE BETWEEN WING AND HEADWALL SECTION AND BASE SECTION. PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH PUBLICATION 408, SECTION 710.

4. PROVIDE NON-SHRINK EPOXY GROUT THROUGHOUT THE CONTACT SURFACE. PROVIDE JOINT SEALANT MATERIAL ALONG INTERFACE BETWEEN WING AND HEADWALL SECTION AND BASE SECTION. PROVIDE JOINT SEALANT MATERIAL ALONG INTERFACE BETWEEN WING AND HEADWALL SECTION AND BASE SECTION. PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH PUBLICATION 408, SECTION 710.

5. PROVIDE MORTAR BED OF 2" PLACED ON TOP OF THE SUBBASE.

6. PROVIDE IMPERVIOUS MATERIAL FOR LEVELING PURPOSES, WHEN REQUIRED.

7. PROVIDE SHARP EDGE ONLY WHERE SPECIFIED FOR INSTALLATION ALONG INTERSECTIONS AND INTERFACES. PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH PUBLICATION 408, SECTION 710.

8. PROVIDE MORTAR BED OF 2" PLACED ON TOP OF THE SUBBASE.

9. PROVIDE MORTAR BED OF 2" PLACED ON TOP OF THE SUBBASE.

10. PROVIDE MORTAR BED OF 2" PLACED ON TOP OF THE SUBBASE.
CONSTRUCTION REQUIREMENTS:

A. Construct in accordance with Publication 408M, Sections 408.20, 408.21 and 408.24 and as modified herein.

B. Minimum concrete class:
   - CAST-IN-PLACE CLASS AA
   - PRECAST

C. Provide steel reinforcement in accordance with Publication 408M, Section 408.20. Provide minimum yield strength of 40 ksi.

D. Clear cover for steel:
   - WELD CAST-IN-PLACE 50 PRECAST 40
   - FOOTINGS CAST-IN-PLACE 60 (TOP BARS) 50 (SIDE BARS)
   - PRECAST 50 (TOP BARS) 40 (BOTTOM BARS)
   - SLABS CAST-IN-PLACE 50 (TOP & BOTTOM BARS)

E. Dimensions are in millimeters (except as noted).

TYPES OF INLET SHOWN:

- **TYPE C INLET**: Designated for installation in Shoulder/Shoulder Areas.
- **TYPE M INLET**: Designated for installation in Non-Mountable Curbs.
- **TYPE S INLET**: Designated for installation in Shoulder/Shoulder Areas.

THE SELECTION OF COMPONENTS TO ACHIEVE A SPECIFIED INLET ASSEMBLY IS THE CONTRACTOR'S RESPONSIBILITY.

USE PRECAST CONCRETE OR STEEL GRADE ADJUSTMENT RINGS WHEN REQUIRED. (REHABILITATION PROJECTS)

ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT AS NOTED.

PROVIDE DEEP HOLEs ON INLET BOXES WHEN REQUIRED.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

INLETS
INLET ASSEMBLIES

SHEET 10 OF 10 FOR STANDARD INLET BOXES (CAST-IN-PLACE).

SHEET 10 OF 10 FOR TYPE M INLET.

SHEET 10 OF 10 FOR TYPE C INLET.

SHEET 10 OF 10 FOR TYPE S INLET.

SHEET 10 OF 10 FOR TYPE M INLET.
NOTES
1. THIS SHEET DEPICTS THE SHAPE AND DIMENSIONS REQUIRED FOR UNIFORMITY AND COMPATIBILITY. PERMIT ONLY TOP UNITS SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15.
2. CAST-IN-PLACE TOP UNITS MAY BE MONOLITHIC WITH THE INLET BOX.
3. PROVIDE ANGLES EMBEDDED IN THE CONCRETE AS A BEARING AREA FOR THE GRATE FOR ALL TOP UNITS WHICH SEAT THE GRATE DIRECTLY WITHIN THE UNIT.
4. PLACE A TYPE W INLET ADJACENT TO THE BACK EDGE OF THE CURB, FLUSH WITH THE PAVEMENT SURFACE, WHEN REQUIRED WITHIN A CONCRETE MOUNTABLE CURB SECTION.
5. DOWEL TYPE C INLET TOP UNITS WITH 2-NO. 25 X 300 DOWEL BARS AND PLACE PREMOLDED EXPANSION JOINT FILLER 6 WIDE WHEN CONNECTING TO ADJACENT CURB SECTIONS.
7. ALL DIMENSIONS ARE IN MILLIMETERS (INCHES EXCEPT AS NOTED.
8. TAPERS MAY BE PROVIDED ON INSIDE VERTICAL FACES OF PRECAST INLET TOPS TO FACILITATE FORM STRIPPING. HOWEVER, BOTTOM DIMENSIONS MUST NOT BE REDUCED.
SEE TYPICAL CORNER DETAILS

SECTION A-A

SECTION B-B

NOTES

1. THIS SHEET DEPICTS THE DIMENSIONS REQUIRED FOR UNIFORMITY AND INTERCHANGEABILITY. IT DOES NOT INCLUDE DETAILS REQUIRED FOR FABRICATION OR MANUFACTURING. PERFECT GRATES CAPTURED BY A MANUFACTURER LISTED IN BULLETIN 15 REQUIRE A SHOP DRAWING TO BE SUBMITTED TO THE BUREAU OF CONSTRUCTION MATERIALS AND TESTING DIVISION FOR REVIEW AND APPROVAL.

2. WELD STRUCTURAL STEEL GRATES IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408M, SECTION 1105.03.

3. PROVIDE TRANSVERSE BARS MEETING THE REQUIREMENTS OF PUBLICATION 408M.

4. PROVIDE BICYCLE-SAFE, STRUCTURAL STEEL OR CAST IRON VANE GRATES FOR INSTALLATION WHERE BICYCLE TRAFFIC IS ANTICIPATED, SUCH AS CURVED ROADS IN URBAN AREAS OR ROADS AND ROADS OR HAVING BIKE LINES. ALTERNATE BICYCLE-SAFE GRATE DESIGNS SHALL REQUIRE A SHOP DRAWING SUBMISSION, AS SPECIFIED IN NOTE 1, AND SHALL CONFORM TO THE DIMENSIONAL REQUIREMENTS FOR PROPER INSTALLATION WITH THE CURRENT CONCRETE TOP UNITS.

5. FABRICATE SLOTS BY BURNING, DRILLING, SHEARING OR PUNCHING, WITH THE BOTTOM OF ALL BURNED OR DRILLED SLOTS CONFORMING TO THE SHAPE OF THE ROD.

6. PROVIDE STRUCTURAL STEEL GRATES WITH THE GRATE SPACERS LOCATED FLUSH ALONG THE TOP SURFACE OF THE GRATE.

7. ALL DIMENSIONS ARE IN MILLIMETERS (MM) EXCEPT AS NOTED.

92 C TO C TRANSVERSE BEARING BAR

SHT OF RC-34M

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

INLET GRATES

DETAIL D

FOR SLOT FABRICATION SEE NOTE 5

DETAIL E

BAR & ROD SPACING DETAIL

SECT DETAIL D
1. THIS SHEET DEPICTS THE DIMENSIONS REQUIRED FOR UNIFORMITY AND INTERCHANGEABILITY. IT DOES NOT INCLUDE DETAILS REQUIRED FOR FABRICATION OR MANUFACTURING. PERMIT ONLY GRATES SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15. FOR A BULLETIN 15 LISTING, SUBMIT AN 841 x 594 REPRODUCIBLE SHOP DRAWING TO THE BUREAU OF CONSTRUCTION AND MATERIALS, MATERIALS AND TESTING DIVISION FOR REVIEW AND APPROVAL.

2. PROVIDE BICYCLE-SAFE, STRUCTURAL STEEL OR CAST IRON VANE GRATES FOR INSTALLATION WHERE BICYCLE TRAFFIC IS ANTICIPATED, SUCH AS CURBED ROADWAYS IN URBAN AREAS OR ROADWAYS SPECIFICALLY DESIGNATED AS BIKE PATHS OR HAVING BIKE LINES. ALTERNATE BICYCLE-SAFE GRATE DESIGN SHALL REQUIRE A SHOP DRAWING SUBMISSION, AS SPECIFIED IN NOTE 1, AND SHALL CONFORM TO THE DIMENSIONAL REQUIREMENTS FOR PROPER INSTALLATION WITH THE CURRENT CONCRETE TOP UNITS.

3. CAST IRON GRATES MAY BE USED AS ALTERNATES TO STRUCTURAL STEEL GRATES PROVIDED THEY ARE SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15 AND APPROVED FOR HS25 LOADINGS. CAST IRON GRATES MAY NOT BE USED OUTSIDE OF THE TRAVEL LANES AT THE EDGE OF OUTSIDE SHOULDER, SIZED, SIDE MEDIAN SMALLE AND INFIELD AREAS.

4. ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT AS NOTED.
1. PROVIDE MATERIALS AND CONSTRUCTION IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408M, SECTIONS 605, 606 AND 714. PERMIT ONLY GRATES AND GRADE ADJUSTMENT SYSTEMS SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15 FOR A BULLETIN 15 LISTING, SUBMIT AN 841 x 594 REPRODUCIBLE SHOP DRAWING TO THE MATERIALS AND TESTING DIVISION, BUREAU OF CONSTRUCTION AND MATERIALS FOR REVIEW AND APPROVAL.

2. INSTALL VANE GRATES WITH CURVE VANES FACING THE DIRECTION OF FLOW.

3. GRADE ADJUSTMENT RINGS:
   A. CUSTOM FABRICATE EACH ADJUSTMENT RING FROM MEASUREMENTS PROVIDED WITH EACH ORDER.
   B. MANUFACTURE BAR STOCK AND RETAINER CLIP FROM U.S. MADE CARBON STEEL MEETING OR EXCEEDING THE MINIMUM REQUIREMENTS OF ASTM A-36M AND AASHTO TABLE 10.32.1A.
   C. REQUIRE FULL CIRCUMFERENTIAL WELDS ON BOTH TOP AND BOTTOM RINGS. MAKE THE INNER WELD A BEVEL GROOVE WELD AROUND EDGES AND PROPER SEATING OF GRATE AND MAKE THE OUTER WELD A FILLET WELD.
   D. PROVIDE AN ADJUSTMENT RING WHICH IS FLUSH WITH COVER AND DOES NOT ALLOW EXCESSIVE MOVEMENT.

4. PROVIDE A RADIUS OF 3 (TYPICAL) FOR ALL FILLETS AND ROUNDS, UNLESS NOTED.

5. ATTACH STEEL GRADE ADJUSTMENT RINGS RIGIDLY TO THE FRAME AND SET PRECAST CONCRETE GRADE ADJUSTMENT RINGS ON A MORTAR BED.

6. CAST IRON GRATES MAY BE USED AS ALTERNATES TO STRUCTURAL STEEL GRATES PROVIDED THEY ARE SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15 AND APPROVED FOR HS25 LOADING.

7. ALL DIMENSIONS ARE IN MILLIMETERS (EXCEPT AS NOTED).
1. THIS SHEET DEPICTS THE DIMENSIONS REQUIRED FOR UNIFORMITY AND INTERCHANGEABILITY. IT DOES NOT INCLUDE DETAILS REQUIRED FOR FABRICATION OR MANUFACTURING. PERMIT ONLY FRAMES SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15. FOR A BULLETIN 15 LISTING, SUBMIT AN 8.5 X 11 REPRODUCIBLE SHOP DRAWING TO THE MATERIALS AND TESTING DIVISION, BUREAU OF CONSTRUCTION AND MATERIALS FOR REVIEW AND APPROVAL.

2. PROVIDE EITHER GRAY, MALLEABLE OR DUCTILE IRON CASTINGS OR STRUCTURAL STEEL FRAMES.

3. WELD STRUCTURAL STEEL FRAMES IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 406M, SECTION 1105.03.

4. ALL DIMENSIONS ARE IN MILLIMETERS (INCHES) EXCEPT AS NOTED.
NOTES

1. CONSTRUCT INLET BOXES IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION FORM, SECTION 605.

2. PROVIDE INLET BOXES WITH 150 X 150 STANDARD OPENING TO ACCOMMODATE THE STANDARD TOP COMPONENTS.

3. FOR CAST-IN-PLACE OR PRECAST CONSTRUCTION, PROVIDE INLET WALLS 150 THICK, UNLESS OTHERWISE INDICATED.

4. INLETS THAT EXCEED THE MAXIMUM HEIGHT SHOWN SHALL REQUIRE SPECIAL DETAILS AND DESIGN FOR THE INLET WALLS AND BASE. CONSTRUCT INLETS THAT EXCEED 1500 IN HEIGHT WITH STEPS SIMILAR TO MANHOLES. SEE SHEET 6.

5. PROVIDE INLET BOXES WITH 610 0, 1150 STANDARD OPENING TO ACCOMMODATE THE STANDARD TOP COMPONENTS.

6. PLACE NO. 13 REINFORCEMENT BARS, MINIMUM 300 LONG, SPACED AT 300 C TO C AS DOCKS BETWEEN THE INLET BASE AND WALLS WHEN CONCRETE WALLS AND INLET BASE ARE NOT CONSTRUCTED MONOLITHICALLY. THE DOWELS MAY BE ELIMINATED IF AN ALTERNATE JOINT IS CONSTRUCTED AS SHOWN IN DETAILS A & B.

7. FOR CAST-IN-PLACE CONSTRUCTION, WHEN THE BASE IS CONSTRUCTED MONOLITHICALLY WITH THE VERTICAL WALLS, PROVIDE 75 MINIMUM FROM THE BOTTOM OF THE INLET BASE TO SHAPE THE BOTTOM.

8. FOR PIPE DIAMETERS LARGER THAN 1200 RCP OR 1350 CMP USE A MODIFIED INLET BOX. SEE SHEET 9.

9. FOR INLETS OTHER THAN AS SHOWN ON THE STANDARDS, PROVIDE REINFORCEMENT BASED ON FHWA 93 LOADING AND IN ACCORDANCE WITH PUBLICATION 408M.

10. CONSTRUCTION JOINTS AND KEYS MAY BE CONSTRUCTED UPWARDS OR DOWNWARDS. CLEAN JOINTS AND KEYS THOROUGHLY BEFORE PLACING NEXT CONCRETE SEGMENT.

11. ALL DIMENSIONS ARE IN MILLI- METERS EXCEPT AS NOTED.

12. FOR SUBBASE, SEE NOTE 6 ON SHEET 5.

13. WHEN NECESSARY, THE BLOCKOUT MAY BE REMOVED UP TO 25 mm (1") OF EACH WALL AT 300/900 LOCATIONS FOR RE PIPE CONNECTIONS.
1. **Construct Inlet Boxes in Accordance with the Requirements of Publication 408M, Section 714.**

2. **Permit Only Precast Inlet Boxes Supplied by a Manufacturer Listed in Bulletin 408M, Vol. 8, Class A or Class C for Precast Boxes.**

3. **Provide Standard Inlet Boxes and Cover Adjustment Slabs with a 470 x 750 Opening to Accommodate Standard Top Components.**

4. **For Inlets that Deviate from the Standard Gnut, Special Details and Design for the Inlet Walls and Base to the Bureau of Construction for Review and Approval. Construct Inlets that Exceed 720 in Height with Steps Similar to Manholes 1500 in.**

5. **For Inlets Greater Than 1500 in Height as Shown on the Standards, Provide Reinforcement Based on PCC, 93 Loading and in Accordance with Publication 408M.**

6. **Provide Cover Adjustment Slabs in Accordance with the Requirements of Publication 408M, Section 350.2, and Components of Inlet Boxes in Accordance with Publica- tion 408M, Section 714.**

7. **Provide Standard Inlet Boxes and Cover Adjustment Slabs with a 470 x 750 Opening to Accommodate Standard Top Components.**

8. **Provide Construction Joints as Required for Inlet Boxes That Are Not Monolithic.**

9. **Provide Suitable Lifting Devices for Handling and Installation.**

10. **Provide Suitable Lifting Devices for Handling and Installation.**

11. **Provide Suitable Lifting Devices for Handling and Installation.**
1. Construct in accordance with the requirements of Publication KHN, Section 603 and Section 715.

2. Provide inlets with a minimum height to be the grade elevation.

3. When the required height exceeds 2750, show special details and design for the inlet walls and base.

4. Provide inlets with a minimum height of 508 measured from the top surface of the top unit to the inside top of the pipe when the top unit and either a modified type I or type II inlet box are constructed monolithically.

5. Provide a minimum height of 508 measured from the top surface of the top unit to the inside top of the pipe when the top unit and either a modified type I or type II inlet box are constructed monolithically.

6. Permit only precast modified inlet boxes supplied by a manufacturer listed in Bulletin 15.

7. All dimensions are in millimeters (mm) except as noted.

### COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

INLETS
MODIFIED INLET BOXES
(CAST-IN-PLACE AND PRECAST)

### NOTES

1. Construct in accordance with the requirements of Publication KHN, Section 603 and Section 715.

2. Provide inlets with a minimum height to be the grade elevation.

3. When the required height exceeds 2750, show special details and design for the inlet walls and base.

4. Provide inlets with a minimum height of 508 measured from the top surface of the top unit to the inside top of the pipe when the top unit and either a modified type I or type II inlet box are constructed monolithically.

5. Provide a minimum height of 508 measured from the top surface of the top unit to the inside top of the pipe when the top unit and either a modified type I or type II inlet box are constructed monolithically.

6. Permit only precast modified inlet boxes supplied by a manufacturer listed in Bulletin 15.

7. All dimensions are in millimeters (mm) except as noted.

### PIPE OPENING DETAILS

#### STANDARD HOLES

- **50** WR 24.1 x WR 24.1
- **100** WR 24.1 x WR 24.1

- **50** WR 60.3 x WR 60.3
- **100** WR 60.3 x WR 60.3

- **50** WR 102 x WR 102
- **100** WR 102 x WR 102

- **016** WR 102 x WR 42.1
- **100** WR 102 x WR 42.1

#### HOLE CLEARANCES

- **25** MAX.
- **25** MIN.

- **100** MIN.
- **50** MIN.

### COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

INLETS
MODIFIED INLET BOXES
(CAST-IN-PLACE AND PRECAST)

### NOTES

1. Construct in accordance with the requirements of Publication KHN, Section 603 and Section 715.

2. Provide inlets with a minimum height to be the grade elevation.

3. When the required height exceeds 2750, show special details and design for the inlet walls and base.

4. Provide inlets with a minimum height of 508 measured from the top surface of the top unit to the inside top of the pipe when the top unit and either a modified type I or type II inlet box are constructed monolithically.

5. Provide a minimum height of 508 measured from the top surface of the top unit to the inside top of the pipe when the top unit and either a modified type I or type II inlet box are constructed monolithically.

6. Permit only precast modified inlet boxes supplied by a manufacturer listed in Bulletin 15.

7. All dimensions are in millimeters (mm) except as noted.

### PIPE OPENING DETAILS

#### STANDARD HOLES

- **50** WR 24.1 x WR 24.1
- **100** WR 24.1 x WR 24.1

- **50** WR 60.3 x WR 60.3
- **100** WR 60.3 x WR 60.3

- **50** WR 102 x WR 102
- **100** WR 102 x WR 102

- **016** WR 102 x WR 42.1
- **100** WR 102 x WR 42.1

#### HOLE CLEARANCES

- **25** MAX.
- **25** MIN.

- **100** MIN.
- **50** MIN.

### COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

INLETS
MODIFIED INLET BOXES
(CAST-IN-PLACE AND PRECAST)

### NOTES

1. Construct in accordance with the requirements of Publication KHN, Section 603 and Section 715.

2. Provide inlets with a minimum height to be the grade elevation.

3. When the required height exceeds 2750, show special details and design for the inlet walls and base.

4. Provide inlets with a minimum height of 508 measured from the top surface of the top unit to the inside top of the pipe when the top unit and either a modified type I or type II inlet box are constructed monolithically.

5. Provide a minimum height of 508 measured from the top surface of the top unit to the inside top of the pipe when the top unit and either a modified type I or type II inlet box are constructed monolithically.

6. Permit only precast modified inlet boxes supplied by a manufacturer listed in Bulletin 15.

7. All dimensions are in millimeters (mm) except as noted.

### PIPE OPENING DETAILS

#### STANDARD HOLES

- **50** WR 24.1 x WR 24.1
- **100** WR 24.1 x WR 24.1

- **50** WR 60.3 x WR 60.3
- **100** WR 60.3 x WR 60.3

- **50** WR 102 x WR 102
- **100** WR 102 x WR 102

- **016** WR 102 x WR 42.1
- **100** WR 102 x WR 42.1

#### HOLE CLEARANCES

- **25** MAX.
- **25** MIN.

- **100** MIN.
- **50** MIN.

### COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

INLETS
MODIFIED INLET BOXES
(CAST-IN-PLACE AND PRECAST)

### NOTES

1. Construct in accordance with the requirements of Publication KHN, Section 603 and Section 715.

2. Provide inlets with a minimum height to be the grade elevation.

3. When the required height exceeds 2750, show special details and design for the inlet walls and base.

4. Provide inlets with a minimum height of 508 measured from the top surface of the top unit to the inside top of the pipe when the top unit and either a modified type I or type II inlet box are constructed monolithically.

5. Provide a minimum height of 508 measured from the top surface of the top unit to the inside top of the pipe when the top unit and either a modified type I or type II inlet box are constructed monolithically.

6. Permit only precast modified inlet boxes supplied by a manufacturer listed in Bulletin 15.

7. All dimensions are in millimeters (mm) except as noted.

### PIPE OPENING DETAILS

#### STANDARD HOLES

- **50** WR 24.1 x WR 24.1
- **100** WR 24.1 x WR 24.1

- **50** WR 60.3 x WR 60.3
- **100** WR 60.3 x WR 60.3

- **50** WR 102 x WR 102
- **100** WR 102 x WR 102

- **016** WR 102 x WR 42.1
- **100** WR 102 x WR 42.1

#### HOLE CLEARANCES

- **25** MAX.
- **25** MIN.

- **100** MIN.
- **50** MIN.
NOTES
1. CONSTRUCT IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408M, SECTION 605.
2. THIS SHEET DEPicts THE DIMENSIONS REQUIRED FOR UNIFORMITY AND INTERCHANGEABILITY, PERMIT ONLY GRATES SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15.
3. WELD STRUCTURAL STEEL GRATES IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408M, SECTION 105.03(a).
4. PROVIDE ANGLES EMBEDDED IN THE CONCRETE AS A BEARING AREA FOR THE GRATES FOR TYPE D-H INLETS WHICH SEAT THE GRATES DIRECTLY WITHIN THE UNIT.
5. FOR PIPE LOCATION AND MAXIMUM ALLOWABLE SIZES, SEE SHEET 8.
6. ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT AS NOTED.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN
INLETS
TYPE D-H INLET (CAST-IN-PLACE AND PRECAST)

RC-34M  
DISCLAIMER: THIS INFORMATION IS FOR GENERAL GUIDANCE ONLY. IT SHOULD NOT BE USED AS THE SOLE SOURCE OF INFORMATION FOR DESIGN OR CONSTRUCTION. IT IS NOT RECOMMENDED FOR USE IN ANY LEGAL PROCEEDINGS. THIS INFORMATION IS SUBJECT TO CHANGE AND SHOULD BE CONFIRMED WITH THE MOST CURRENT ISSUE OF THE APPROPRIATE PUBLICATION. THIS INFORMATION IS NOT INTENDED TO REPLACE THE REQUIREMENTS OF THE PUBLICATIONS REFERENCES HEREIN.
NOTE 1: USE ONLY WITH MAIN REINFORCEMENT SHOWN FOR CLARITY.

NOTE 2: SEE DETAIL "B" FOR COVER SEE SHEET 1 OF 5.

NOTE 3: PROVIDE ADDITIONAL BARS AS REQUIRED BY DESIGN WHEN OPENING IN WALL IS PRESENT (Typical). PROVIDE THE SAME REINFORCEMENT ON THE OUTSIDE FACE.

NOTE 4: AS A MINIMUM, PROVIDE NO. 13 BARS AT 300 CENTERS, TOP AND BOTTOM OF SLAB IN THE OPPOSITE DIRECTION.

NOTE 5: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT AS NOTED.

NOTE 6: PROVIDE ADDITIONAL BARS AS REQUIRED BY DESIGN WHEN OPENING IN WALL IS PRESENT (Typical).

NOTE 7: FOR CONSTRUCTION REQUIREMENTS SEE NOTE 1, SHEET 1 OF 5.

FOR DESIGN REQUIREMENTS SEE NOTE 1, SHEET 5 OF 5.

NOTE 8: PROVIDE ADDITIONAL BARS AS REQUIRED BY DESIGN WHEN OPENING IN WALL IS PRESENT (Typical).

NOTE 9: FOR CONSTRUCTION REQUIREMENTS SEE NOTE 1, SHEET 1 OF 5.

FOR DESIGN REQUIREMENTS SEE NOTE 1, SHEET 5 OF 5.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

STANDARD MANHOLES
MODIFIED
CAST-IN-PLACE MANHOLES

DEPICTED: MODIFIED MANHOLE
FOR HOLES GREATER THAN 152 TO 300 DIAMETER
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
SHEET A, IS 8.3

STANDARD MANHOLES
COVERS, FRAMES AND
ADJUSTMENT RISERS
PUBLISHED: MAR 19, 2000
REPRODUCED: MAR 19, 2000
SHEET A, IS 8.3

NOTES
1. PROVIDE MANHOLE FRAMES AND COVERS MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTION 605.2, DESIGN MANHOLE FRAMES AND GRADE ADJUSTMENT RINGS FOR PHL 93 LIVE LOAD. IF MANHOLES ARE NOT IN OR ADJACENT TO ROADWAY, DESIGN FOR ALL POSSIBLE LIVE LOADS AS APPROVED BY THE DEPARTMENT.

2. PROVIDE MANHOLE FRAMES, COVERS AND GRADE ADJUSTMENT RISERS SUPPLIED BY A MANUFACTURER AS LISTED IN BULLETIN 15. FOR A BULLETIN 15 LISTING, SUBMIT AN 841 x 594 REPRODUCIBLE SHOP DRAWING TO THE BUREAU OF CONSTRUCTION AND MATERIALS, MATERIALS AND TESTING DIVISION FOR REVIEW.

3. PROVIDE A GASKET SEALING SYSTEM CONSISTING OF A DOVETAIL GROOVE AND CONTINUOUS GASKET, AS INDICATED IN DETAIL A, TO PREVENT INFLOW THROUGH THE BEARING SURFACES, OF SURFACE RUNOFF WATER INTO THE MANHOLE SYSTEM, WHEN SPECIFIED. PROVIDE A ONE PIECE SELF-SEAL POLYISOPRENE ROUND GASKET, 40 DUROMETER GLUED IN PLACE. PROVIDE TWO 12" LIFT HOLES AT 180° TO FACILITATE COVER REMOVAL FOR SELF-SEALING MANHOLE COVER.

4. PROVIDE ONE LIFT HOLE TO FACILITATE COVER REMOVAL FOR NON-SEALING MANHOLE COVER.

5. FRAME AND GRADE ADJUSTMENT RISERS TO HAVE A MINIMUM BEARING SEAT OF 25 FOR COVER.

6. LOCATE TOP OF FRAME OR ADJUSTMENT RISER 3 INCHES BELOW THE TOP OF ROADWAY SURFACE.

7. PROVIDE GRADE ADJUSTMENT RISERS MEETING THE REQUIREMENTS OF PUBLICATION 408M SPECIFICATIONS, SECTION 606, AND AS MODIFIED HEREIN:
   A. CUSTOM FABRICATE EACH ADJUSTMENT RISER FROM MANUFACTURED BAR STOCK AND MACHINE TO THE SPECIFIED SHAPE, SIZE AND FINISH, THEN ATTACH TO TOP OF MANHOLE FRAME RIGIDLY.
   B. MANUFACTURE BAR STOCK AND MACHINE TO THE SPECIFIED SHAPE, SIZE AND FINISH, THEN ATTACH TO TOP OF MANHOLE FRAME RIGIDLY.
   C. REQUIRE A POURING TEMPORARY MAINTENANCE BASE AT THE TOP OF EACH ADJUSTMENT RISER.
   D. REQUIRE THE MINIMUM WIDTH OF BOTTOM TO TOP BAR STOCK 23".
   E. PROVIDE AN ADJUSTMENT RISER THAT IS CAPABLE OF BEING ADJUSTED FOR MULTIPLE ADJUSTMENTS.
   F. PROVIDE AN ADJUSTMENT RISER WHICH IS FLUSH WITH COVER AND DOES NOT ALLOW EXCESSIVE MOVEMENT.

8. ATTACH FRAME AND/OR PRECAST CONCRETE GRADE RINGS RIGIDLY TO TOP OF MANHOLE. USE 3-M14 THREADED STUDS WITH HEX HEAD NUTS TO ATTACH TO FRAME AND/OR RINGS. SPACE HOLES AT 16" DIA HOLE THROUGH FRAME AND/OR RINGS. EMBED STUDS 102 MINIMUM INTO MANHOLE. GROUT STUDS INTO MANHOLE.

9. SET THE BASE OF THE FRAME AND/OR PRECAST CONCRETE GRADE RINGS IN A BED OF CEMENT MORTAR.

10. ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT AS NOTED.
1. DESIGN REQUIREMENTS:


B. ASTM C478M-90, STANDARD SPECIFICATIONS FOR PRECAST CONCRETE MANHOLE SECTIONS.

C. CALCULATE FOUNDATION BEARING PRESSURES BY SERVICE LOAD METHODS. DESIGN ALL OTHER PORTIONS OF THE MANHOLES BY LOAD FACTOR METHODS.

D. THE SAFE BEARING PRESSURE IS NOT TO EXCEED THE EXISTING STATE OF STRESS OR 0.15 MPa, WHICHEVER IS GREATER.

E. DESIGN THE MANHOLE FOR:

- ACCELERATION DUE TO GRAVITY, \( g = 9.81 \, \text{m/s}^2 \)
- DENSITY OF EARTH, \( \rho = 1920 \, \text{kg/m}^3 \)
- ANGLE OF INTERNAL FRICTION = 33°

\[
\text{Dry at Rest Earth Pressure} = K_0 \rho \gamma = 0.001(9.81 \times 1920) = 15.2 \, \text{MPa}
\]

\[
\text{Saturated at Rest Earth Pressure} = K_0 \rho \gamma = 0.001(9.81 \times 1920 + 9.81) = 14.3 \, \text{MPa}
\]

F. PROVIDE AT LEAST MINIMUM REINFORCEMENT FOR SHRINKAGE AND TEMPERATURE AT ALL CONCRETE FACES WHERE REINFORCEMENT IS NOT REQUIRED BY DESIGN.

G. FOR CONSTRUCTION REQUIREMENTS SEE NOTE 1, SHEET 1 OF 5.

2. VERTICAL STEEL:

A. DETERMINE SERVICE MOMENTS AND AXIAL THRUSTS USING FIGURE 2 AND FIGURE 3.

B. DESIGN HOOP REINFORCEMENT SHOWN IN SECTION A-A, TO CARRY THE MOMENT AND AXIAL THRUST.

C. CHECK CRACK CONTROL UNDER SERVICE LOAD.

\[
F_s - Y_d c x 2 d a t x b < 172 \, \text{MN/m}
\]

NO. OF BARS

D. THIS PROCEDURE IS REQUIRED ONLY WHEN A SIGNIFICANT LOADING EXISTS ON ONE SIDE OF THE MANHOLE AND LIMITED SUPPORT IS PROVIDED ON THE OTHER.

E. DETERMINE MINIMUM AND MAXIMUM VERTICAL LOAD APPLIED TO MANHOLE AT DEPTH \( H \),

F. DETERMINE OVERTURNING MOMENT FROM UNBALANCED EARTH PRESSURE.

G. DETERMINE DIMENSIONS OF DESIGN SECTION TO CARRY MOMENT AS SHOWN IN FIGURE 1.

3. HOOP STEEL:

A. DETERMINE SERVICE MOMENTS AND AXIAL THRUSTS USING FIGURE 2 AND FIGURE 3.

B. DESIGN HOOP REINFORCEMENT SHOWN IN SECTION A-A, TO CARRY THE MOMENT AND AXIAL THRUST.

C. CHECK CRACK CONTROL UNDER SERVICE LOAD.

\[
F_s - Y_d c x 2 d a t x b < 172 \, \text{MN/m}
\]

NO. OF BARS

4. FOOTING DESIGN:

A. DETERMINE FOOTING SIZE.

\[
P = D L + L L + P E
\]

- DL = DEAD LOAD OF MANHOLE
- LL = PHL 93 WHEEL LOAD (NO IMPACT)
- EP = EARTH LOAD ON OVERHANG

B. DESIGN FOOTING TO CARRY MOMENT (BOTH MAXIMUM NEGATIVE AND POSITIVE) AND SHEAR DUE TO RESULTANT PRESSURE AS SHOWN IN FIGURE 4 AND APPLIED LOADS.

C. CHECK CRACK CONTROL UNDER SERVICE LOAD.

\[
F_s - Y_d c x 2 d a t x b < 172 \, \text{MN/m}
\]

NO. OF BARS

5. ALL DIMENSIONS ARE IN MILLIMETERS (MM) EXCEPT AS NOTED.
NOTES
1. PROVIDE CONCRETE MEDIAN BARRIER MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTION 623.
2. PROVIDE PRECAST CONCRETE BARRIER SUPPLIED BY A MANUFACTURER AS LISTED IN BULLETIN 15. FOR DEVIATIONS OR MODIFICATIONS FROM THE STANDARD, SUBMIT SHOP DRAWINGS FOR DESIGN AND APPROVAL.
3. FOR CAST-IN-PLACE OR SLIP-FORM CONSTRUCTION, USE PREMOULDED JOINT MATERIAL AT ALL CONSTRUCTION JOINTS.
4. CONCRETE MEDIAN BARRIER CONSTRUCTION ON EXISTING PAVEMENT REQUIRES SPECIAL DETAILS TO BE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. FOR PERMANENT AND TEMPORARY BARRIER INSTALLATIONS, PLACE DELINEATORS AT A MAXIMUM LONGITUDINAL SPACING OF 25 m FOR TANGENT SECTIONS AND 20 m FOR CURVE SECTIONS WITH A HORIZONTAL RADIUS LESS THAN 700 m.
6. WARNING LIGHTS MAY BE PROVIDED IN LIEU OF TOP OR SIDE-MOUNT DELINEATORS ON BARRIERS USED TEMPORARILY. INSTALL AT A MAXIMUM SPACING OF 24 m AND LOCATE AT L/2 ON THE DESIGNATED BARRIER SECTION. ONLY THE FIRST TWO LIGHTS AT THE START OF THE BARRIER MAY BE YELLOW TYPE 'A' FLASHING LIGHTS. PROVIDE YELLOW TYPE 'C' STEADY BURN LIGHTS FOR ALL OTHER WARNING LIGHTS.
7. ROUND OR CHAMFER HORIZONTAL EDGES WITH A RADIUS OF 25 EXCEPT AS SHOWN.
8. PROVIDE PRECAST CONCRETE MEDIAN BARRIER FOR USE AS TEMPORARY (MPT) AND IN PERMANENT INSTALLATIONS. FOR TEMPORARY INSTALLATIONS, EMBEDMENT IS NOT REQUIRED.
9. ALL DIMENSIONS ARE IN MILLIMETERS (EXCEPT AS NOTED).
A TYPICAL END TRANSITION MAY BE USED FOR PERMANENT BARRIER INSTALLATIONS ONLY WHEN THE LAST BARRIER SECTION IS LOCATED OUTSIDE THE REQUIRED CLEAR ZONE, AS DETERMINED IN PUBLICATION 13M, DESIGN MANUAL, PART 2, CHAPTER 12.

A 2011 SLOPED END TRANSITION IS ACCEPTABLE FOR PERMANENT INSTALLATIONS WHERE THE LEGAL SPEED LIMIT IS 60 KM/H OR LESS. OTHERWISE, USE AN IMPACT ATTENUATING DEVICE DESIGNED TO ABSORB THE ENERGY OF AN IMPACTING VEHICLE IN THE WEIGHT RANGE OF 820 KGS TO 2000 KGS AT THE SPECIFIED DESIGN SPEED, WITH A MAXIMUM AVERAGE DECELERATION FORCE OF 8.5 G'S AND A MAXIMUM PEAK DECELERATION FORCE OF 15 G'S. WHEN CONCRETE BARRIER IS TERMINATED AT THE END OF PARALLEL RAMPS OR INTERSECTIONS, A 2.1 M END TRANSITION MAY BE USED WHERE THE LEGAL SPEED IS 60 KM/H OR LESS. FOR BARRIER INSTALLATIONS, AN IMPACT ATTENUATING DEVICE IS NOT REQUIRED IF ANY OF THE FOLLOWING CONDITIONS ARE SATISFIED:

2. THE BARRIER IS EXTENDED AT THE PROPER FLARE RATE UNTIL THE END OF THE BARRIER SYSTEM CAN BE BURIED IN A CUT SECTION.
3. THE BARRIER IS EXTENDED AT THE PROPER FLARE RATE UNTIL THE END OF THE BARRIER SYSTEM IS PROPERLY CONNECTED OR OVERLAPPED WITH EXISTING GUIDE RAIL.
4. PROVIDE REINFORCEMENT STEEL MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTION 709 WITH A MINIMUM CONCRETE COVER OF 40.
5. ROUND OR CHAMFER HORIZONTAL EDGES WITH A RADIUS OF 25 EXCEPT AS SHOWN.
6. ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT AS NOTED.

REFER TO TABLE 1, SHEET 3, FOR FLARE RATE REQUIREMENTS.
NOTES
1. PROVIDE PLATES, 8 x 180 x 685, MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTION 1105.02, GALVANIZE PLATES AS SPECIFIED IN PUBLICATION 408M, SECTION 1105.02.

2. PROVIDE VERTICAL, RECTANGLE, STANDARD ALUMINUM, PRESSURE SENSITIVE CLEARANCE MARKERS, W16-2R AND/OR W16-2L, FABRICATED FROM CLASS II SHEETING MATERIAL, FOR DELINEATION OF IMPACT ATTENUATING DEVICES AS PRESENTED IN DETAIL A. ATTACH MARKERS DIRECTLY TO THE LEADING END OF IMPACT ATTENUATING DEVICES. ON INERTIAL BARRIERS (SAND BARRELS), PROVIDE SENSITIVE SHEETING, WITHOUT RIGID BACKING, DIRECTLY TO BARRIER FRONT OR NOSE SECTION. DO NOT POST-MOUNT MARKERS IN FRONT OF IMPACT ATTENUATING DEVICES. MARKERS ARE PROVIDED IN TWO SIZES: 305 x 914 AND 457 x 914. WHEN ONE MARKER IS REQUIRED, USE 457 x 914. WHEN TWO MARKERS ARE REQUIRED SIDE BY SIDE, USE 305 x 914. PROVIDE COLOR FOR CLEARANCE MARKERS AS FOLLOWS:
   (A) MESSAGE + BLACK STRIPES (NON-REFLECTORIZED)
   (B) FIELD 1: YELLOW (REFLECTORIZED)
   (C) FIELD 2: ORANGE (REFLECTORIZED), CONSTRUCTION ZONES

3. ALL DIMENSIONS ARE IN MILLIMETERS (MM) EXCEPT AS NOTED.

TYPICAL INLET PLACEMENT AT CONCRETE MEDIAN BARRIER

TABLE I
FLARE RATES FOR BARRIER DESIGN

<table>
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<th>SPEED LIMIT (MPH)</th>
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

CONCRETE MEDIAN BARRIER
F-SHAPE

RECOMMENDED FEB. 19, 2000
RECOMMENDED MAR. 18, 2000
SET 3 OF 3

GORE AREA STEEL PLATE, SEE NOTE I.

TYPICAL INLET PLACEMENT AT CONCRETE MEDIAN BARRIER

DELINEATION OF IMPACT ATTENUATING DEVICES
**NOTES**

1. PROVIDE REINFORCEMENT MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTION 709.
2. ROUND OR CHAMFER HORIZONTAL EDGES WITH A RADIUS OF 25 EXCEPT AS SHOWN.
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED.

**COMMONWEALTH OF PENNSYLVANIA**
**DEPARTMENT OF TRANSPORTATION**
**BUREAU OF DESIGN**
**CONCRETE MEDIAN BARRIER**
**F-SHAPE**

**TYPICAL 810 TO 1070 TRANSITION CONSTRUCTION**
1. PROVIDE REINFORCEMENT MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTION 709 WITH A MINIMUM CONCRETE COVER OF 40.

2. ROUND OR CHAMFER HORIZONTAL EDGES WITH A RADIUS OF 25 EXCEPT AS SHOWN.

3. ALL DIMENSIONS ARE IN MILLIMETERS (MM) EXCEPT AS NOTED.
NOTES

1. PROVIDE SINGLE FACE CONCRETE BARRIER MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTION 623.

2. PROVIDE PRECAST SINGLE FACE CONCRETE BARRIERS SUPPLIED BY A MANUFACTURER AS LISTED IN BULLETIN 15. MODIFICATIONS OR DEVIATIONS FROM THE STANDARD REQUIRE THE SUBMISSION OF SHOP DRAWINGS FOR REVIEW.

3. PROVIDE BARRIER-MOUNT OR REFLECTOR UNIT DELINEATORS, AS INDICATED ON RC-57M.

4. PROVIDE REINFORCEMENT FOR SINGLE FACE CONCRETE BARRIER AS INDICATED ON SHEET 3.

5. PROVIDE END TRANSITIONS OR IMPACT ATTENUATING DEVICES AS INDICATED ON RC-57M.

6. ROUND OR CHAMFER HORIZONTAL EDGES WITH A RADIUS OF 25 EXCEPT AS SHOWN.

7. ALL DIMENSIONS ARE IN MILLIMETERS (MM) EXCEPT AS NOTED.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
CAST-IN-PLACE AND PRECAST

TYPICAL PRECAST OR CAST-IN-PLACE SINGLE FACE CONCRETE BARRIER
NOTES

1. PROVIDE PLATES MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTION 1105.02,2. PROVIDE PLATES AS SPECIFIED IN PUBLICATION 408M, SECTION 1105.02. ALTERNATIVE CONNECTIONS MAY BE USED AS APPROVED BY THE BUREAU OF DESIGN.

2. WHERE single face concrete barrier is specified for use as a retaining wall and drainage treatment is necessary, construct a prefabricated fabric filter drain as indicated and in accordance with Publication 408M, SECTION 605. If the height or slope is increased, provide overturning moment computations with the construction plans.

3. ROUND OR CHAMFER HORIZONTAL EDGES WITH A RADIUS OF 25 EXCEPT AS SHOWN.

4. ALL DIMENSIONS ARE IN MILLIMETERS (IN.) EXCEPT AS NOTED.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER

SECTIONS

SLOT DETAIL
PERMISSIBLE TAPER
SLOTTED PLATE CONNECTION

TYPICAL ROUGH ROCK TREATMENT

TYPICAL DRAINAGE TREATMENT
SEE NOTE 2.

SEE NOTE 1.
TYPICAL REINFORCEMENT DETAILS FOR 1040 BARRIER

NOTES
1. PROVIDE SLOTS OR OTHER ACCEPTABLE DEVICES FOR HANDLING, INSTALLING AND REMOVING PRECAST CONCRETE BARRIERS, AS SPECIFIED IN PUBLICATION 408M, SECTION H105-09.
2. ROUND OR CHAMFER HORIZONTAL EDGES WITH A RADIUS OF 25 EXCEPT AS NOTED.
3. ALL DIMENSIONS ARE IN MILLIMETERS (IN MILL) EXCEPT AS NOTED.

LEGEND
© PROVIDE REINFORCEMENT MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTION 709 WITH A MINIMUM CONCRETE COVER OF 40, KEEP WIRE FABRIC OR BAR LIMITS AT THE MINIMUM FOR PRECAST BARRIER WITH PLATE CONNECTIONS.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER

SHT 2 OF 6

RC-58M
FOR FLARE RATES SEE TABLE 1.

TYPICAL NONCONTINUOUS SINGLE-FACE BARRIER TREATMENT AT PIERS

TYPICAL TREATMENT WHEN CONTINUOUS GUIDE RAIL IS REQUIRED

NOTES

1. PROVIDE SINGLE FACE CONCRETE BARRIER AND GUIDE RAIL MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTIONS 620 AND 623.

2. THE TREATMENTS SHOWN ARE FOR FOUR-LANE DIVIDED HIGHWAYS. USE THE APPROACH END TREATMENT ON BOTH SIDES OF THE OBSTRUCTION ON TUNNEL FACILITIES WITH TWO WAY TRAFFIC.

3. IF THE PREFERRED TREATMENT IS TO TERMINATE THE CONCRETE BARRIER WITHIN THE CLEAR ZONE, BURY IT INTO THE SAND OR WOOD DEVICES.

4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED.

TYPICAL NONCONTINUOUS SINGLE-FACE BARRIER TREATMENT AT PIERS

TYPICAL TREATMENT WHEN CONTINUOUS GUIDE RAIL IS REQUIRED

FLARE TREATMENT. SEE TABLE 1.

TYPICAL TREATMENT WHEN CONTINUOUS GUIDE RAIL IS REQUIRED

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

PLAN VIEW

SEE TRAILING END GUIDE RAIL CONNECTION.

CONTINUOUS GUIDE RAIL WITH SINGLE FACE BARRIER AT PIER

IF ADEQUATE REFLECTION DISTANCE IS PROVIDED (TABLE 1, RC-54M) BETWEEN THE BACK OF THE GUIDE RAIL POST AND FRONT OF OBSTRUCTION, DO NOT USE CONCRETE BARRIER. CONTINUE THE GUIDE RAIL.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

TABLE 1
FLARE RATES FOR BARRIER DESIGN

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<th>DESIGN SPEED</th>
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

PLAN VIEW

SEE TRAILING END GUIDE RAIL CONNECTION.

CONTINUOUS GUIDE RAIL WITH SINGLE FACE BARRIER AT PIER

IF ADEQUATE REFLECTION DISTANCE IS PROVIDED (TABLE 1, RC-54M) BETWEEN THE BACK OF THE GUIDE RAIL POST AND FRONT OF OBSTRUCTION, DO NOT USE CONCRETE BARRIER. CONTINUE THE GUIDE RAIL.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

PLAN VIEW

SEE TRAILING END GUIDE RAIL CONNECTION.

CONTINUOUS GUIDE RAIL WITH SINGLE FACE BARRIER AT PIER

IF ADEQUATE REFLECTION DISTANCE IS PROVIDED (TABLE 1, RC-54M) BETWEEN THE BACK OF THE GUIDE RAIL POST AND FRONT OF OBSTRUCTION, DO NOT USE CONCRETE BARRIER. CONTINUE THE GUIDE RAIL.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

PLAN VIEW

SEE TRAILING END GUIDE RAIL CONNECTION.

CONTINUOUS GUIDE RAIL WITH SINGLE FACE BARRIER AT PIER

IF ADEQUATE REFLECTION DISTANCE IS PROVIDED (TABLE 1, RC-54M) BETWEEN THE BACK OF THE GUIDE RAIL POST AND FRONT OF OBSTRUCTION, DO NOT USE CONCRETE BARRIER. CONTINUE THE GUIDE RAIL.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

PLAN VIEW

SEE TRAILING END GUIDE RAIL CONNECTION.

CONTINUOUS GUIDE RAIL WITH SINGLE FACE BARRIER AT PIER

IF ADEQUATE REFLECTION DISTANCE IS PROVIDED (TABLE 1, RC-54M) BETWEEN THE BACK OF THE GUIDE RAIL POST AND FRONT OF OBSTRUCTION, DO NOT USE CONCRETE BARRIER. CONTINUE THE GUIDE RAIL.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

PLAN VIEW

SEE TRAILING END GUIDE RAIL CONNECTION.

CONTINUOUS GUIDE RAIL WITH SINGLE FACE BARRIER AT PIER

IF ADEQUATE REFLECTION DISTANCE IS PROVIDED (TABLE 1, RC-54M) BETWEEN THE BACK OF THE GUIDE RAIL POST AND FRONT OF OBSTRUCTION, DO NOT USE CONCRETE BARRIER. CONTINUE THE GUIDE RAIL.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

SINGLE FACE CONCRETE BARRIER
PLACEMENT AT SHOULDER PIERS

PLAN VIEW

SEE TRAILING END GUIDE RAIL CONNECTION.

CONTINUOUS GUIDE RAIL WITH SINGLE FACE BARRIER AT PIER

IF ADEQUATE REFLECTION DISTANCE IS PROVIDED (TABLE 1, RC-54M) BETWEEN THE BACK OF THE GUIDE RAIL POST AND FRONT OF OBSTRUCTION, DO NOT USE CONCRETE BARRIER. CONTINUE THE GUIDE RAIL.
TYPICAL ALTERNATE BARRIER TREATMENT AT PIERS

NOTES

1. REFER TO BRIDGE STANDARD DRAWINGS (BD-601M) FOR DETAILS OF CONCRETE MEDIAN BARRIER ACROSS STRUCTURES.

2. THE CONCRETE TRANSITIONS AND BARRIER TAPERS AT PIERS ARE INCIDENTAL TO THE MEDIAN BARRIER.

3. CAST ADDITIONAL HOLES IN THE TAPERED END SECTIONS MEETING THE REQUIREMENTS PRESENTED IN SECTION D-D.

4. PROVIDE NO. 57 COARSE AGGREGATE THAT MEETS THE REQUIREMENTS OF PUBLICATION 408M, SECTION 703.2. ALTERNATE SUITABLE GRANULAR MATERIAL MAY BE USED AS FILLER MATERIAL.

5. TO PREVENT INTRUSION OF COARSE AGGREGATE INTO WEEP HOLES, USE WIRE MESH SCREENING, GEOTEXTILES OR OTHER SUITABLE MATERIAL.

6. ROUND OR CHAMFER HORIZONTAL EDGES WITH A RADIUS OF 25 EXCEPT AS SHOWN.

7. ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT AS NOTED.
SINGLE FACE CONCRETE BARRIER

SECTION A-A

SECTION B-B

SECTION C-C

TYPICAL EARTH MOUND FOR BURYING CONCRETE BARRIER

TABLE 2
FLARE RATES
FOR BARRIER DESIGN

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NOTES
1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408M.
2. ALL MATERIALS NECESSARY TO CONSTRUCT EARTH MOUNDS ARE IN ACCORDANCE WITH APPLICABLE SECTIONS OF PUBLICATION 408M.
3. EARTH MOUNDS MAY BE USED TO BURY CONCRETE BARRIER ON HIGHWAYS WITH POSTED SPEEDS LESS THAN 80 km/h (50 mph) AND WITH SCREENING OR VARIATIONS OF EARTH MOUNDS CONSTRUCTED OUTSIDE THE CLEAR ZONE AS DETERMINED IN PUBL. 13M, DESIGN MANUAL, PART 2, CHAPTER 12.
4. ALL DIMENSIONS ARE IN MILLIMETERS (MM) EXCEPT AS NOTED.
CONCRETE GLARE SCREEN

ELEVATION VIEW

TYPICAL CAST-IN-PLACE OR SLIP-FORM CONSTRUCTION

NOTE:
1. PROVIDE CONCRETE GLARE SCREEN MEETING THE REQUIREMENTS OF PUBLICATION 408M, SECTIONS 622 AND 714.
2. FOR INSTALLATION OF GLARE SCREEN ON TOP OF EXISTING CONCRETE MEDIAN BARRIER, PROVIDE PLASTIC PADDLES OR MODULAR SYSTEMS SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15.
3. FOR PRECAST BARRIERS, PROVIDE SLOTTED PLATE CONNECTIONS AS INDICATED BY RC-57M, SHEET 3.
4. PROVIDE PRECAST CONCRETE GLARE SCREEN SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15. MODIFICATION OR DEVIATION FROM THE STANDARDS REQUIRED THE SUBMISSION OF SUCH CHARTERS FOR APPROVAL.
5. PROVIDE PRECAST CONCRETE GLARE SCREEN FOR USE AS TEMPORARY barrier or in permanent installations. FOR TEMPORARY INSTALLATIONS, EMBEDMENT IS NOT REQUIRED.
6. EPOXY COATED REINFORCEMENT IS NOT REQUIRED WHEN PRECAST CONCRETE GLARE SCREEN IS TO BE USED IN TEMPORARY INSTALLATIONS ONLY, IN ACCORDANCE WITH SECTION 627, AND IDENTIFIED AS SUCH, AS SPECIFIED IN SECTION 104.60.01.
7. ROUND OR CHAMFER HORIZONTAL EDGES WITH A RADIUS OF 25 EXCEPT AS SHOWN.
8. ALL DIMENSIONS ARE IN MILLIMETERS (MM) EXCEPT AS SHOWN.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

RECOMMENDED: FEB 19, 2000
REVIEWED: FEB 19, 2000

RC-59M

CONCRETE GLARE SCREEN
F-SHAPE
CAST-IN-PLACE AND PRECAST
NECESSITY FOR GLARE SCREEN IS DEPENDENT ON GEOMETRICS.

SEE TABLE 1.

FOR ADDITIONAL DETAILS FOR TYPICAL BARRIER TREATMENT AT PIERS, SEE RC-58M, SHEET 5.

TYPICAL TREATMENT AT PIERS.

PIER WIDTH

SEE TABLE 1.

CONCRETE GLARE SCREEN

20 EXPANSION JOINT MATERIAL

TYPICAL TREATMENT AT PIERS.

VARIABLE WIDTH

SECTION D-D

SECTION E-E

CONCRETE GLARE SCREEN

VARIABLE WIDTH

CONCRETE GLARE SCREEN

SECTION F-F

TABLE 1

FLARE RATES FOR BARRIER DESIGN

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<td>20 x 1</td>
<td>15 x 1</td>
</tr>
<tr>
<td>110</td>
<td>20 x 1</td>
<td>15 x 1</td>
</tr>
<tr>
<td>100</td>
<td>18 x 1</td>
<td>14 x 1</td>
</tr>
<tr>
<td>90</td>
<td>16 x 1</td>
<td>12 x 1</td>
</tr>
<tr>
<td>80</td>
<td>14 x 1</td>
<td>11 x 1</td>
</tr>
<tr>
<td>70</td>
<td>12 x 1</td>
<td>10 x 1</td>
</tr>
<tr>
<td>60</td>
<td>10 x 1</td>
<td>8 x 1</td>
</tr>
<tr>
<td>50</td>
<td>8 x 1</td>
<td>7 x 1</td>
</tr>
</tbody>
</table>

NOTES

1. PROVIDE BARRIER-MOUNT DELINEATORS, WHEN INDICATED, AS SPECIFIED ON RC-57M, SHEET 1.
2. ALL DIMENSIONS ARE IN MILLIMETERS (IN) EXCEPT AS NOTED.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

CONCRETE GLARE SCREEN
F-SHAPE

RECOMMENDED FEB. 14, 2002
RECOMMENDED FEB. 18, 2002
SHT. 2 OF 2

RC-59M
**NOTE**

1. PROVIDE MATERIALS AND CONSTRUCT AS SPECIFIED IN PUBLICATION 408M, SECTIONS 100 AND 110.

2. USE JB-11 AND JB-12 JUNCTION IN SHOULDER OR OTHER LOCATION SUBJECT TO VEHICULAR LOADS.

3. PROVIDE PRECAST CONCRETE JUNCTION BOXES SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15. 

4. PROVIDE POSITIVE DRAINAGE (15-50 NONMETAL) FOR PRECAST BOXES, TO PREVENT CHIPPING.

5. PROVIDE MICRORAIL (15-50 NONMETAL) FOR PRECAST BOXES, TO PREVENT CHIPPING.

6. FOR THE LOCATION, SIZE AND NUMBER OF CONDUITS REQUIRED FOR EACH JUNCTION BOX, SEE THE LIGHTING PLANS.

7. IN SIDEWALK AREAS, CONSTRUCT TOP OF JUNCTION BOX TO CONFORM TO SIDEWALK SLOPE. WHEN INSTALLED IN THE RECOVERY AREA, PROVIDE A MAXIMUM OF 100 TO THE TOP OF THE JUNCTION BOX, TO ALLOW FOR EASIER EXCAVATION.

8. THE CONDUIT LOCATIONS SHOWN REPRESENT NORMAL POSITIONS. FOR CAST-IN-PLACE OR PRECAST CONSTRUCTION, WHEN THE BOX OR CONDUIT LOCATIONS ARE INDICATED ON THE SAME VERTICAL FACE, PROVIDE ADDITIONAL CONDUITS, WHERE REQUIRED, TO CONFORM TO THE CENTERLINE OF THE BOX, AS INDICATED IN DETAIL A.

9. PROVIDE microrail (15-50 NONMETAL) FOR PRECAST BOXES, TO PREVENT CHIPPING.

10. PROVIDE STRUCTURAL STEEL CONFORMING TO ASTM-A36/A36M. PROVIDE ALUMINUM CONFORMING TO ASTM-B221 ALLOY 6061-T6.

11. PROVIDE MICRORAIL (15-50 NONMETAL) FOR PRECAST BOXES, TO PREVENT CHIPPING.

12. PROVIDE PRECAST CONCRETE JUNCTION BOXES SUPPLIED BY MANUFACTURER LISTED IN BULLETIN 15.

13. PROVIDE MICRORAIL (15-50 NONMETAL) FOR PRECAST BOXES, TO PREVENT CHIPPING.

14. PROVIDE Microrail (15-50 NONMETAL) FOR PRECAST BOXES, TO PREVENT CHIPPING.
THRU BOLT REQ'D FOR CHAMFER INSIDE OF UPPER SECTION AND OUTSIDE OF LOWER SECTION FOR CABLE INSULATION.

HANQHOLE SECTION C-C

SINGLE MEMBER ARM

TYPE A

TAPERED SHAFT 12 IN.

ARt.l LENGTH "L" ARt.l LENGTH "L"

TAPERED STEEL

GRIND SMOOTH THE LONGITUDINAL MULTISECTIONAL POLES WELD BEADS OF SECTION ANO OUTSIDE OF MALE MATING SECTION, PROVIDE INSIDE OF OUTER, I

MIN "L" MAX "L"

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PHOTOELECTRIC CONTROL DEVICE (PLUG-IN TWIST LOCK TYPE)

1. LOCATE THE ALTERNATE TRENCH AT MIDDLE OF SHOULDERS.

LOCATE THE ALTERNATE TRENCH

EXOTHERMIC WELD OR BRONZE CONNECTOR

THOROUGHLY.

1.7 m, COMPACT BACKFILL

TYPE "LB" CONDUIT FITTING , CLAMP CONDUIT TO POLE

GUY WIRE.

SECONDARY POWER FROM LOCAL UTILITY COMPANY 120/240 V OR 240/480 V,

CLASS A WOOD POLE ATEO

CONTROL CONTACTOR

PHOTOELECTRIC CELL (PLUG-IN TYPE)

SELECTOR SWITCH

DISTRIBUTION BREAKERS (10 000 AIC)

CONTROL CABLE

15 A, SP BREAKER

LIGHTNING ARRESTER

SP-SINGLE POLE

OP-DUAL POLE

NOTE: ITEMS (2), (3) AND (4) ARE NOT REQUIRED IF EACH LUMINAIRES HAS PHOTOELECTRIC CONTROL ELEMENT.