TYPE 1 JOINT DETAIL

2" (50 mm) TEMPORARY DRAINAGE OPENING

CAST-IN-PLACE CONCRETE FLOW CHANNEL (TYP.)

FORM AND POUR CONCRETE TO SUPPORT FRAMES

TOP UNIT CUTTER FLOW LINE

2" (50 mm) TEMPORARY DRAINAGE OPENING

TYPE 1 JOINT (TYP.)

SECTION A-A

TYPE 3 JOINT DETAIL

CAST-IN-PLACE CONCRETE FLOW CHANNEL (TYP.)

TOP UNIT (CAST IN PLACE)

TYPE 1 JOINT

COVER SLAB (PRE-CAST)

INLET BOX (PRE-CAST)

SECTION B-B

DIMENSIONS WILL VARY

JOINT SEALANT AS PER SPECIFICATIONS

ONLY BETWEEN 2 PRECAST UNITS

PLAN

COVER SLAB

BOX WALL
NOTE: LENGTH OF #4 REBAR SHALL BE THE OUTSIDE OF THE DRAINAGE INLET BOX PLUS 2'-9".
72" (1830) x 72" (1830) INLET

72" (1830) x 48" (1220) INLET

72" (1830) x 24" (610) INLET

SECTION B-B
FOR TYPE B TOP UNITS

SECTION B-B
FOR TYPES A, C, D, & E TOP UNITS

SECTION A-A

S502 BENDING DIAGRAM
S502 is not required to be one continuous bar. If more than one bar is used, there must be a 12" (3000) over 4" between bars.

NOTES:
1. relocate encroaching reinforcing bars when using types A & E top units.
2. cover slabs are to be precast and must be sized to fit inlet box dimensions.
3. all bars are to be 4 spliced @ 6" (1500) unless noted otherwise.
4. reinforcement shall be 0.1 in²/ft² and 1% horizontal reinforcement per foot in both directions.
5. minimum bar cover = 1 1/2" (38).

DELAWARE DEPARTMENT OF TRANSPORTATION

DOUBLE INLET COVER SLAB DETAILS

STANDARD NO. D-6 (2016)
SHT. 6 OF 9

APPROVED

12/28/2010

SIGNATURE ON FILE

12/27/2010

SIGNATURE ON FILE

12/23/2010

SIGNATURE ON FILE
NOTE: SEE DETAIL D-5, SHEET 3 OF 9 FOR INLET TOP UNIT APPLICATIONS.

NOTE: REFER TO PREVIOUS SHEETS FOR REINFORCING REQUIREMENTS

* - SEE OPTIONAL PIPE OPENING DETAIL ON STANDARD NO. D-4, SHEET 1 OF 1
NOTES:
1. REFER TO PREVIOUS SHEETS FOR REINFORCEMENT REQUIREMENTS.
2. THE HEIGHT OF THE INLET IS LIMITED TO 4" (100) MAXIMUM. THEREFORE, SYMMETRIC STEPS WILL NOT BE REQUIRED AND SHOULD NOT BE INSTALLED ON THIS INLET.
3. REFER TO DETAIL D-5, SHEET 3 OF 9 FOR INLET TOP UNIT APPLICATION.
PLAN VIEW

SECTION A-A

OPENING SIZE AND LOCATION MAY VARY TO ACCOMMODATE PIPE SIZE AND ORIENTATION

SEE NOTE 7

SECTION B-B

CAST-IN-PLACE BOTTOM

SECTION VIEW

CAST-IN-PLACE BOTTOM

SECTION VIEW

ISOMETRIC VIEW

SEE NOTE 4

NOTES:
1. SEE DETAIL D-4, SHEET 1 OF 1 FOR BOX DETAILS AND NOTES.
2. ALL REINFORCEMENT SHALL HAVE A MINIMUM COVER OF 1 1/2 (138) UNLESS NOTED OTHERWISE.
3. PIPE SHALL BE SUPPORTED ON BOTH ENDS DURING THE CONSTRUCTION OF THE BASE.
4. VERTICAL WALL REINFORCEMENT SHALL COMPLY WITH A.S.T.M. A615, 0.02 IN/FT IN EACH DIRECTION VERTICALLY AND HORIZONTALLY.
5. DOGHOUSE OPENING SHALL BE FILLED WITH HIGH STRENGTH, NON-SHRINK GROUT MIXED WITH COARSE AGGREGATE IN A 1:1 RATIO BY WEIGHT.
6. THE TOP OF THE DOGHOUSE OPENING SHALL, IN NO CIRCUMSTANCES, BE LESS THAN 4" (100) FROM THE TOP OF THE BOX.
7. DOGHOUSE OPENING WIDTH SHALL BE BETWEEN 2" (75) AND 4" (100) LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE AND SHALL NOT ENCODACH ON THE ADJACENT WALL.
8. EXISTING PIPE IS TO EITHER BE COMPLETELY REMOVED BY SAWCUTTING AS CLOSE TO THE INSIDE BOX WALL AS POSSIBLE, OR BY REMOVING THE TOP PORTION OF THE PIPE AND USING THE REMAINING PIPE SECTION AS THE BOTTOM OF THE FLOW CHANNEL, AS SHOWN IN SECTION B-B.
ROUND MANHOLE ASSEMBLY

NOTE: ROUND MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199.
NOTE: TOP UNIT IS TO BE CAST IN PLACE TO GRADE AS SPECIFIED ON PLAN SHEETS OR AS DIRECTED BY ENGINEER.

SECTION A-A

SECTION B-B

SECTION C-C

TOP UNIT

FRAME

COVER

DELTAHORE
DEPARTMENT OF TRANSPORTATION

MANHOLE DETAILS

STANDARD NO. D-6 (2001) SHT. 3 OF 4 APPROVED RECOMMENDED

05/2/2001
1. COVER SLABS SHALL BE PRE-CAST.
2. ALL BARS SHALL BE #5 (#16) SPACED AT 6" (150) UNLESS NOTED OTHERWISE.
3. MINIMUM BAR COVER = 1" (38).

- DIMENSIONS TO MATCH OUTSIDE TO OUTSIDE DIMENSIONS OF BOX.
PLAN

SECTION A-A


JUNCTION BOX ASSEMBLY

SECTION B-B

- Cover slab (pre-cast)

INLET BOX (precast or cast-in-place); see standard no. D-4, sheet 1 of 4 for details.

CAST-IN-PLACE CONCRETE FLOW CHANNEL (TYP.)

LENGTH

TYPE 3 JOINT (TYP.)

SEE NOTE 5 ON DETAIL D-4, SHEET 1 OF 4.

6-1/2" (160)

BOX WALL

6-1/2" (160)

COVER SLAB

6-1/2" (160)

TYPE 3 JOINT DETAIL

DELWARE
DEPARTMENT OF TRANSPORTATION

JUNCTION BOX DETAILS

STANDARD NO. D-7 (2009)

SHT. 1 OF 2

APPROVED

SIGNATURE ON FILE 01/10/2010

RECOMMENDED

SIGNATURE ON FILE 01/14/2010

10/20/2009
JUNCTION BOX COVER SLAB DETAILS

NOTES:
1. COVER SLABS ARE TO BE PRE-CAST.
2. ALL BARS ARE TO BE #5 (#16) SPACED @ 12" (305) UNLESS NOTED OTHERWISE.
3. MINIMUM BAR COVER = 1 1/2" (38).
4. DIMENSIONS TO MATCH OUTSIDE TO OUTSIDE DIMENSIONS OF BOX.

SECTION A-A

SECTION B-B

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JUNCTION BOX DETAILS

STANDARD NO. D-7 (2007) SHT. 2 OF 2

APPROVED

RECOMMENDED

08/01/2007

10/23/67
NOTE:
1. USE CLASS C BEDDING UNLESS OTHERWISE INDICATED.
2. FOR CLASS A BEDDING, WEED PIPE IN CONCRETE 6" (152) FOR PIPES SMALLER THAN 24" (610) AND 10" (250) FOR PIPES 24" (610) TO 60" (1525), AND FOR PIPES LARGER THAN 60" (1525) SEE PROJECT DETAILS.
NOTES:

0. THE PERFORATED PIPE UNDERDRAIN SHALL BE LOCATED AS SHOWN ON THE TYPICAL SECTIONS OF THE CONSTRUCTION PLANS.

1. GEOTEXTILE FILTER FABRIC SHALL BE PLACED ENTIRELY OVER THE TOP OF UNDERDRAIN TRENCH AND LAPPED AS SHOWN.

2. SLOPE OF UNDERDRAINS SHALL MATCH ROADWAY GRADE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

3. OUTLET PIPE CONFIGURATIONS SHALL USE 45 DEGREE ELBOWS OR SHALL USE STRAIGHT PIPE WITH A MINIMUM RADIUS OF 3' (1.8M) TO DIRECT UNDERDRAIN PIPE INTO SIDE OF DRAINAGE INLET OR TO POSITIVE GRADE. PIPE SHALL ALSO BE NON-PERFORATED AND HAVE A SMOOTH INTERIOR.

4. RODENT SCREEN SHALL STRIKELY FIT THE PROVIDED SLOT WITH THE SCREEN UP FITTING TIGHT TO THE BOTTOM FLOW LINE.

5. A 4'-1200 C.F.M. FLEXIBLE DELINATOR SHALL BE FURNISHED AND INSTALLED AT THE DIRECTION OF THE ENGINEER TO MARK THE LOCATION OF THE CONCRETE HEADWALL.

6. WHEN TWO LINES OF PIPE UNDERDRAIN DRAIN TO A LOW POINT, EACH PIPE MUST HAVE ITS OWN OUTLET.

7. PERFORATED PIPE UNDERDRAIN SHALL BE PLACED UNDER GUARDRAIL, IN ORDER TO AVOID PUNCTURING.
CONCRETE PLUG

DIA METER IN SIDE DRAINAGE PIPES WITH CONCRETE AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL FURNISH MATERIAL AND PLUG ABANDONED DRAINAGE PIPES WITH CONCRETE AS DIRECTED BY THE ENGINEER.

NOTE:

THE CONTRACTOR SHALL FURNISH MATERIAL AND PLUG ABANDONED DRAINAGE PIPES WITH CONCRETE AS DIRECTED BY THE ENGINEER.