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<tr>
<td>S40-1</td>
<td>STORM STRUCTURE NOTES</td>
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<tr>
<td>S40-2</td>
<td>PRECAST MANHOLE RISER</td>
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<td>S40-3</td>
<td>PRECAST MANHOLE RISER FOR BOX CULVERT</td>
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<td>S40-4</td>
<td>PRECAST STORM MANHOLE TYPE I</td>
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<td>PRECAST STORM MANHOLE TYPE III</td>
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<td>STORM BRICK MANHOLE TYPE I</td>
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<td>STORM BRICK MANHOLE TYPE II</td>
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<td>S40-10</td>
<td>TYPE II MANHOLE TOP SLAB</td>
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<td>S40-11</td>
<td>TYPE III MANHOLE TOP SLAB</td>
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<td>TYPE IV MANHOLE TOP SLAB</td>
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<td>TYPE II MANHOLE RISER INTERMEDIATE SLAB</td>
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<td>TYPE III MANHOLE RISER INTERMEDIATE SLAB</td>
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<td>TYPE IV MANHOLE RISER INTERMEDIATE SLAB</td>
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<td>S40-16</td>
<td>TYPE I AND II MANHOLE BASE AND WALL</td>
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<td>TYPE III MANHOLE BASE AND WALL</td>
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<td>TYPE IV MANHOLE BASE AND WALL</td>
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<td>CONCRETE CRADLE FOR PIPE/CONDUIT OR BOX CULVERT</td>
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<td>S40-20</td>
<td>BEDDING FOR PIPE/CONDUIT OR BOX CULVERT</td>
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<td>S40-21</td>
<td>MANHOLE RING AND COVER CASTING DETAIL</td>
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<td>ACCESS STRUCTURE CHANNELIZATION DETAIL</td>
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<td>TYPE I CATCH BASIN RISER INTERMEDIATE SLAB</td>
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<td>TYPE II CATCH BASIN RISER INTERMEDIATE SLAB</td>
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<td>S40-32</td>
<td>CATCH BASIN THRUST CONFIGURATION</td>
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<td>CATCH BASIN FLOW LINE TRANSITIONS</td>
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<td>CATCH BASIN AT GRANITE CURB TRANSITION</td>
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<td>S40-35</td>
<td>CATCH BASIN CONNECTION TO EXISTING OFFSET CONDUIT</td>
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<td>S40-36</td>
<td>CATCH BASIN GENERAL</td>
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<td>CAST-IN-PLACE PORTION OF TYPE I, II, III, IV, AND V CATCH BASINS PLAN</td>
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<td>S40-38</td>
<td>TYPE I THRU V TYPICAL CATCH BASIN SECTIONS</td>
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<td>TYPE I THRU V CATCH BASIN BASE AND WALL</td>
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<td>S40-40</td>
<td>CATCH BASIN COVER SLAB REINFORCING PLAN VIEW</td>
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<td>S40-41</td>
<td>CATCH BASIN COVER SLAB SECTIONS AND REINFORCING</td>
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<td>TYPE S-I CATCH BASIN</td>
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<td>TYPE S-I AND TYPE S-II SECTION VIEWS</td>
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<td>CURB INLET FILTER FOR EROSION CONTROL AT CATCH BASIN</td>
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<td>HAY BALES FOR EROSION CONTROL AT CATCH BASIN</td>
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<td>S40-47</td>
<td>TYPICAL WING ASSEMBLY</td>
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<td>TYPICAL WING SHELF SECTIONS</td>
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<td>WING COVER SLAB SECTIONS AND REINFORCING</td>
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<td>PRECAST GRATE INLET TYPE II</td>
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<td>REINFORCEMENT AND MISCELLANEOUS FOR TYPE I AND TYPE II GRATE INLETS</td>
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<td>S40-54</td>
<td>GRATE AND FRAME FOR TYPE I AND II INLETS</td>
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<td>REINFORCEMENT AND MISCELLANEOUS FOR TYPE III GRATE INLET</td>
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<td>GRATE AND FRAME FOR TYPE III GRATE INLET</td>
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<td>S40-60</td>
<td>FILTRATION SYSTEM NOTES</td>
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<td>FILTRATION SYSTEM COLLAR</td>
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<td>FILTRATION UNDERDRAIN CLEANOUT</td>
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<td>FILTRATION PIPE PERFORATIONS</td>
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<td>POND PARALLEL PIPE FILTRATION SYSTEM</td>
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<td>STAKED SILT BARRIER</td>
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<td>S40-71</td>
<td>FLOATING TURBIDITY BARRIER ELEVATIONS</td>
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<td>FLOATING TURBIDITY BARRIER NOTES</td>
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<td>TYPE H-I HEADSTRUCTURE</td>
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<td>TYPE H-III HEADSTRUCTURE</td>
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<td>S40-90</td>
<td>PRECAST STORM CONFLICT STRUCTURE</td>
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<td>S40-91</td>
<td>DETENTION AREA OUTFALL CONTROL STRUCTURE</td>
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<td>S40-92</td>
<td>PRECAST STRUCTURE JOINT ASSEMBLY AND STRUCTURE SEALING</td>
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<td>S40-93</td>
<td>CONCRETE SPLASH PAD</td>
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<td>CONDUIT JOINT WRAP</td>
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<td>S40-95</td>
<td>MASONRY BULKHEAD</td>
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<td>S40-96</td>
<td>STANDARD SLOPES FOR NEW LAKES OR PONDS AND CHANNEL EXCAVATIONS</td>
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</table>
NOTES FOR STORM STRUCTURES

1. ALL PIPE STUBS FROM STRUCTURES FOR FUTURE CONNECTIONS, SHALL BE INSTALLED WITH REMOVABLE WATERTIGHT PLUGS, PLACED FROM WITHIN THE STRUCTURE

2. FOR APPLICABLE RING AND COVER, SEE STANDARD DETAIL-MANHOLE RING AND COVER CASTING.

3. STORM STRUCTURES SHALL NOT HAVE OUTSIDE DROP CONNECTIONS.

4. PROVIDE MINIMUM 8" SOLID WALL BETWEEN ALL OPENINGS FOR PIPES. SEAL BETWEEN PIPE AND STRUCTURE WITH NON SHRINK GROUT.

5. ALL BRICK SHALL BE CONCRETE OR CLAY BRICK AND SHALL HAVE A MINIMUM 3/4" CEMENT PLASTER COATING ON ALL SURFACES.

6. BENCH SHALL SLOPE @ 1:12 MINIMUM.

7. PRECAST AND CAST-IN-PLACE MANHOLES, CATCH BASINS, AND GRATE INLETS ARE DESIGNED FOR A MAXIMUM DEPTH OF 12 FEET, STRUCTURES IN EXCESS OF 12 FEET, AS MEASURED FROM THE FINISHED GRADE TO THE INSIDE OF THE BASE SLAB, SHALL REQUIRE VERIFICATION OF THE STRUCTURAL DESIGN AND SPECIFIC MODIFICATIONS TO THE REINFORCING REQUIREMENTS FOR THE DEPTH REQUIRED.

8. PRIOR TO PRECASTING STRUCTURES THE PRECASTER SHALL SUBMIT SITE SPECIFIC INDIVIDUAL SHOP DRAWINGS FOR APPROVAL. SHOP DRAWINGS SUBMITTED FOR NON-STANDARD STRUCTURES OR STRUCTURES THAT DEVIATE FROM THE STANDARD DETAILS MUST BE DESIGNED AND CERTIFIED BY A REGISTERED FLORIDA PROFESSIONAL ENGINEER.

9. PRECAST MANHOLES SHALL CONSIST OF A LIMITED NUMBER OF SECTIONS, AS APPROVED BY THE ENGINEER.

10. ALL PRECAST STRUCTURES SHALL HAVE AN INTEGRAL FLOOR AND BASE RISER SECTION.

11. SEE STANDARD DETAIL-PRECAST STRUCTURE JOINT ASSEMBLY AND STRUCTURE SEALING.

12. ALL EXPOSED EDGES TO HAVE 3/4" CHAMFER.

13. ALL REINFORCING STEEL SHALL HAVE A MINIMUM 2" CONCRETE COVER, UNLESS NOTED ELSEWHERE.

14. ADDITIONAL REINFORCEMENT IS REQUIRED IN ALL TYPE CATCH BASIN WALLS, GRATE INLETS, AND TYPE II, III, IV, AND TYPE V MANHOLE WALLS WITH OPENINGS FOR PIPE OR CULVERT. THE VERTICAL AND HORIZONTAL WALL REINFORCEMENT DISPLACED DUE TO OPENINGS SHALL BE REPLACED WITH ADDITIONAL REINFORCEMENT BARS ABOVE, BELOW, AND ON BOTH SIDES OF OPENING, EQUAL IN AREA TO THOSE DISPLACED. REPLACEMENT REINFORCEMENT SHALL BE PLACED WITH 3" CLEARANCE TO THE EDGES OF OPENINGS.

CITY STANDARDS

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY of ST. PETERSBURG

STORM STRUCTURE NOTES

APPROVED BY: 
DATE: OCT. 2019
DWG. No. S40-1

SCALE: N.T.S.
BRICK COURSE WITH 3/4" PLASTER COATING

MANHOLE ACCESS—SEE STANDARD DETAIL-MANHOLE RING AND COVER CASTING (S40-21)

FINISHED GRADE

TOP SLAB—SEE STANDARD DETAIL-TYPE II MANHOLE TOP SLAB (S40-10)

WALL REINFORCEMENT—SEE STANDARD DETAIL-TYPE I AND II MANHOLE BASE AND WALL (S40-16)

WT-WALL THICKNESS—SEE STANDARD DETAIL-TYPE I AND II MANHOLE BASE AND WALL (S40-16)

MANHOLE RISER INTERMEDIATE SLAB—SEE STANDARD DETAIL-TYPE II (S40-13), TYPE III (S40-14), OR TYPE IV (S40-15) MANHOLE RISER INTERMEDIATE SLAB

NOTE:
1. GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).

CITY STANDARDS

PRECAST MANHOLE RISER DETAIL

APPROVED BY: 

DATE: OCT. 2019

DWG. No. S40- 2
MANHOLE ACCESS-SEE STANDARD DETAIL-MANHOLE RING AND COVER CASTING (S40-21)

FINISHED GRADE

TOP SLAB-SEE STANDARD DETAIL-TYPE II MANHOLE TOP SLAB (S40-10)

WALL REINFORCEMENT-SEE STANDARD DETAIL-TYPE I AND II MANHOLE BASE AND WALL (S40-16)

WT-WALL THICKNESS-SEE STANDARD DETAIL-TYPE I AND II MANHOLE BASE AND WALL (S40-16)

BOX CULVERT TOP SLAB

ADDITIONAL REINFORCING AS REQUIRED FOR RISER OVER BOX CULVERT, TYP.

NOTE:
1. GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).

CITY STANDARDS

PRECAST MANHOLE RISER FOR BOX CULVERT DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT CITY OF ST. PETERSBURG

APPROVED BY: 

DATE: OCT. 2019

DWG. No. S40- 3
FINISHED GRADE

BRICK COURSES WITH PLASTER COATING

3/4" ACCESS DIA.

22° MAX.

WALL REINFORCEMENT—SEE STANDARD DETAIL-TYPE I AND II MANHOLE BASE AND WALL (S40-16)

6" TO BACK OF BELL, TYP.

BENCH SLOPE

LATERAL STORM DRAIN

BASE SLAB—SEE STANDARD DETAIL-TYPE I AND II MANHOLE BASE AND WALL (S40-16)

COMPACTED SUBGRADE, OR 4" CONCRETE MAT, OR 6" COARSE AGGREGATE, AS ORDERED

MANHOLE ACCESS—SEE STANDARD DETAIL-MANHOLE RING AND COVER CASTING (S40-21)

WT—WALL THICKNESS—SEE STANDARD DETAIL-TYPE I AND II MANHOLE BASE AND WALL (S40-16)

DIAMETER INSIDE

6" MIN., WALL HEIGHT

D/2

NOTE:
FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).

SCHEDULE

RECOMMENDED MINIMUM DIAMETER MANHOLE DIMENSION

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<th>ERCP</th>
<th>DIA.</th>
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</tr>
<tr>
<td>30&quot;</td>
<td>19&quot;x30&quot;</td>
<td>5'</td>
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</table>

CITY STANDARDS

PRECAST STORM MANHOLE TYPE I DETAIL

APPROVED BY:

DIRECTOR

DATE: OCT. 2019

S40-4
FINISHED GRADE

TOP SLAB-SEE STANDARD DETAIL-TYPE II MANHOLE TOP SLAB (S40-10)

WT-WALL THICKNESS-SEE STANDARD DETAIL-TYPE I AND II MANHOLE BASE AND WALL (S40-16)

WALL REINFORCEMENT-SEE STANDARD DETAIL-TYPE I AND II MANHOLE BASE AND WALL (S40-16)

COMPACTED SUBGRADE, OR 4" CONCRETE MAT, OR 6" COARSE AGGREGATE, AS ORDERED

NON-SHRINK GROUT, TYP.

SCHEDULE

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<th>RECOMMENDED MINIMUM DIAMETER MANHOLE</th>
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<td>19&quot;x30&quot;</td>
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<tr>
<td>42&quot;</td>
<td>24&quot;x38&quot;</td>
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<td>38&quot;x60&quot;</td>
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NOTE:
FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).

CITY STANDARDS

PRECAST STORM MANHOLE
TYPE II DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY: [Signature]

DATE: OCT. 2019

DWG. NO. S40-5
FINISHED GRADE

TOP SLAB-SEE STANDARD DETAIL-TYPE III
MANHOLE TOP SLAB (540-11)

6" TO BACK OF BELL, TYP.

BENCH SLOPE

LATERAL STORM DRAIN

BASE SLAB-SEE STANDARD DETAIL-TYPE III
MANHOLE BASE AND WALL (540-17)

ANTI-FLOTATION LIP-SEE STANDARD DETAIL-TYPE III
MANHOLE BASE AND WALL (540-17)

PLAN VIEW

NON-SHRINK GROUT, TYP.

R=24" MIN

4" MINIMUM TYP.

TYPICAL SECTION VIEW

BENCH SLOPE

LATERAL STORM DRAIN

BASE SLAB-SEE STANDARD DETAIL-TYPE III
MANHOLE BASE AND WALL (540-17)

SCHEDULE

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NOTES:

1. MANHOLES LARGER THAN 16'x16' SHALL REQUIRE A SPECIAL DESIGN TO BE APPROVED BY THE ENGINEER.
2. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (540-1).
3. MULTIPLE PIPES ALLOWED. SPACING BETWEEN PIPES TO BE DETERMINED BY THE ENGINEER.
4. L=BOX LENGTH PARALLEL TO MAIN PIPE RUN, W=BOX WIDTH PERPENDICULAR TO MAIN PIPE RUN.

CITY STANDARDS

PRECAST STORM MANHOLE
TYPE III DETAIL

S40-6

PREV. BY DATE

CURRENT BY DATE

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

SCALE: N.T.S.

APPROVED BY:

DIRECTOR

DATE: OCT. 2019

DWG. No.
FINISHED GRADE

TOP SLAB-SEE STANDARD DETAIL-TYPE IV MANHOLE TOP SLAB (540-12)

MANHOLE ACCESS- SEE STANDARD DETAIL-MANHOLE RING AND COVER CASTING (540-21)

BRICK COURSES WITH 3/4" PLASTER COATING

WT-WALL THICKNESS-SEE STANDARD DETAIL-TYPE IV MANHOLE BASE AND WALL (540-18)

WALL REINFORCEMENT-SEE STANDARD DETAIL-TYPE III MANHOLE BASE AND WALL (540-17)

COMPACTED SUBGRADE, OR 4" CONCRETE MAT, OR 6" COARSE AGGREGATE, AS ORDERED

LATERAL STORM DRAIN

BASE SLAB-SEE STANDARD DETAIL-TYPE IV MANHOLE BASE AND WALL (540-18)

ANTI-FLOTATION UP-SEE STANDARD DETAIL-TYPE IV MANHOLE BASE AND WALL (540-18)

W-INSIDE

NON-SHRINK GROUT, TYP.

PLAN VIEW

FLOW

SCHEDULE

RECOMMENDED MINIMUM WIDTH(W) MANHOLE DIMENSION

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NOTES:
1. MANHOLES LARGER THAN 16'x16' SHALL REQUIRE A SPECIAL DESIGN TO BE APPROVED BY THE ENGINEER.
2. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (540-1).
3. MULTIPLE BOX CULVERTS ALLOWED. SPACING BETWEEN BOXES TO BE DETERMINED BY THE ENGINEER.
4. L=BOX LENGTH PARALLEL TO MAIN PIPE RUN, W=BOX WIDTH PERPENDICULAR TO MAIN PIPE RUN.
5. BOX CULVERT DIMENSIONS PER ASTM C 1433.

CITY STANDARDS

PRECAST STORM MANHOLE
TYPE IV DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY: Bryish Payman

DIRECTOR

DATE: OCT. 2019

DWG. No. S40-7
FINISHED GRADE

MANHOLE ACCESS - SEE STANDARD DETAIL - MANHOLE RING AND COVER CASTING (S40-21)

18" MAX. COVER UNDER PAVEMENT

BRICK COURSES WITH 3/4" PLASTER COATING

22° MAX.

8"-WT W/MAXIMUM COVER 12"-WT W/O MAXIMUM COVER

6" TO BACK OF BELL, TYP.

LATERAL STORM DRAIN

SEAL OPENINGS WITH NON-SHRINK GROUT

2" COVER

COMPACTED SUBGRADE, OR 4" CONCRETE MAT, OR 6" COARSE AGGREGATE, AS ORDERED

TYPICAL SECTION VIEW

PLAN VIEW

ANTI-FLOTATION LIP - SEE SCHEDULE BELOW

WT-WALL THICKNESS, SEE NOTATION ABOVE

SCHEDULE

<table>
<thead>
<tr>
<th>RECOMMENDED MAXIMUM PIPE</th>
<th>DIA. INSIDE</th>
<th>BASE DIA. 8&quot; WALL</th>
<th>BASE DIA. 12&quot; WALL</th>
<th>H MAX</th>
<th>BT MIN</th>
<th>ANTI-FLOAT. LIP</th>
<th>BASE REINFORCEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>24&quot;</td>
<td>4'</td>
<td>6'-4&quot;</td>
<td>7'-0&quot;</td>
<td>6'</td>
<td>8&quot;</td>
<td>6&quot;</td>
<td>#6 @ 12&quot; EW</td>
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<tr>
<td>30&quot;</td>
<td>5'</td>
<td>7'-4&quot;</td>
<td>8'-0&quot;</td>
<td>8'</td>
<td>8&quot;</td>
<td>6&quot;</td>
<td>#6 @ 9&quot; EW</td>
</tr>
<tr>
<td>42&quot;</td>
<td>6'</td>
<td>8'-4&quot;</td>
<td>9'-0&quot;</td>
<td>8'</td>
<td>8&quot;</td>
<td>6&quot;</td>
<td>#6 @ 9&quot; EW</td>
</tr>
<tr>
<td>42&quot;</td>
<td>6'</td>
<td>8'-4&quot;</td>
<td>9'-0&quot;</td>
<td>15&quot;</td>
<td>12&quot;</td>
<td>6&quot;</td>
<td>#6 @ 6&quot; EW</td>
</tr>
</tbody>
</table>

NOTES:
1. FOR GENERAL NOTES SEE, STANDARD DETAIL - STORM STRUCTURE NOTES (S40-1).
2. NO INLET PIPE SHALL BE INSTALLED IN THE CONE SECTION.

CITY STANDARDS

STORM BRICK MANHOLE
TYPE I DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

DATE: OCT. 2019

DWG. No. S40-8
FINISHED GRADE
MANHOLE ACCESS- SEE STANDARD DETAIL-MANHOLE RING AND COVER CASTING (S40-21)

18" MAX. COVER UNDER PAVEMENT
TOP SLAB-SEE STANDARD DETAIL-TYPE II MANHOLE TOP SLAB (S40-10)
3/4" PLASTER COATING
BASE REINFORCEMENT-SEE SCHEDULE BELOW
BT-BASE THICKNESS SEE SCHEDULE BELOW

DIA. INSIDE BASE DIA. 8" WALL BASE DIA. 12" WALL H MAX BT MIN ANTI-FLOAT. LIP BASE REINFORCEMENT
24" 4' 6'-4" 7'-0" 6' 8" 6" #6 @ 12" EW
30" 5' 7'-4" 8'-0" 8' 8" 6" #6 @ 9" EW
42" 6' 8'-4" 9'-0" 15' 12" 6" #6 @ 6" EW
42" 6' 8'-4" 9'-0" 15' 12" 6" #6 @ 6" EW

NOTE:
FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
Plan View

Typical Section View

Schedule

### Schedule

<table>
<thead>
<tr>
<th>Type</th>
<th>Diameter</th>
<th>WT Wall Thickness</th>
<th>Top Slab Thickness</th>
<th>Access Diameter</th>
<th>Main Reinforcement</th>
<th>Additional Reinforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRECAST</td>
<td>4'</td>
<td>6&quot;</td>
<td>8&quot;</td>
<td>24&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td></td>
<td>5'</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>32&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td></td>
<td>6'</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>32&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td></td>
<td>7'</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>32&quot;</td>
<td>#6 @ 10&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td></td>
<td>8'</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>32&quot;</td>
<td>#6 @ 10&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
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<tr>
<td>BRICK</td>
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<td>8&quot;</td>
<td>24&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
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<tr>
<td></td>
<td>5'</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>32&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td></td>
<td>6' (3)</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>32&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td></td>
<td>6' (3)</td>
<td>12&quot;</td>
<td>8&quot;</td>
<td>32&quot;</td>
<td>#6 @ 10&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
</tbody>
</table>

**Notes:**
1. For general notes, see standard detail-storm structure notes (S40-1).
2. Opening shall be centered in top slab, unless otherwise noted, or shown.
3. See brick manhole detail for other conditions.

### City Standards

**Type II Manhole Top Slab Detail**

**Engineering and Capital Improvement Department**

**City of St. Petersburg**

**Approved by:**

**Director**

**Date:** October 2019

**Dwg. No.:** S40-10
**CITY STANDARDS**

**TYPE III MANHOLE**
**TOP SLAB DETAIL**

**REVISIONS**

<table>
<thead>
<tr>
<th>BY</th>
<th>DATE</th>
</tr>
</thead>
</table>

**ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT**
**CITY OF ST. PETERSBURG**

**APPROVED BY:**

**DIRECTOR**

**DATE:** OCT. 2019

**DWG. No.:** S40-11

---

**TABLE: SCHEDULE**

<table>
<thead>
<tr>
<th>ONE WAY SLAB DESIGN</th>
<th>WIDTH INSIDE</th>
<th>LENGTH INSIDE</th>
<th>WT WALL THICKNESS</th>
<th>TOP SLAB THICKNESS</th>
<th>ACCESS DIAMETER</th>
<th>MAIN REINFORCEMENT</th>
<th>ADDITIONAL REINFORCEMENT</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>J REINF.</td>
<td>K REINF.</td>
</tr>
<tr>
<td>4' TO 16'</td>
<td>4'</td>
<td>8'</td>
<td>8'</td>
<td>24'</td>
<td>#6 @ 12&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>4' TO 16'</td>
<td>5'</td>
<td>8'</td>
<td>8'</td>
<td>32'</td>
<td>#6 @ 9&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>4' TO 16'</td>
<td>6'</td>
<td>8'</td>
<td>8'</td>
<td>32'</td>
<td>#6 @ 8&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>4' TO 16'</td>
<td>7'</td>
<td>8'</td>
<td>8'</td>
<td>32'</td>
<td>#6 @ 6&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>2-#8 @ 3&quot; OC</td>
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<table>
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<th>WIDTH INSIDE</th>
<th>LENGTH INSIDE</th>
<th>WT WALL THICKNESS</th>
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<th>MAIN REINFORCEMENT</th>
<th>ADDITIONAL REINFORCEMENT</th>
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<tr>
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<td></td>
<td></td>
<td>J REINF.</td>
<td>K REINF.</td>
</tr>
<tr>
<td>4'</td>
<td>4'</td>
<td>8'</td>
<td>8'</td>
<td>24'</td>
<td>#6 @ 12&quot; EW</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>5'</td>
<td>5'</td>
<td>8'</td>
<td>8'</td>
<td>32'</td>
<td>#6 @ 12&quot; EW</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>6'</td>
<td>6'</td>
<td>8'</td>
<td>8'</td>
<td>32'</td>
<td>#6 @ 12&quot; EW</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>7'</td>
<td>7'</td>
<td>8'</td>
<td>8'</td>
<td>32'</td>
<td>#6 @ 12&quot; EW</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>8'</td>
<td>8'</td>
<td>8'</td>
<td>10&quot;</td>
<td>32'</td>
<td>#6 @ 8&quot; EW</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>9'</td>
<td>9'</td>
<td>8'</td>
<td>10&quot;</td>
<td>32'</td>
<td>#6 @ 12&quot; EW</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>10'</td>
<td>10'</td>
<td>8'</td>
<td>10&quot;</td>
<td>32'</td>
<td>#6 @ 9 1/2&quot; EW</td>
<td>#6 @ 9 1/2&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
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<tr>
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<td>11'</td>
<td>8'</td>
<td>10&quot;</td>
<td>32'</td>
<td>#6 @ 8&quot; EW</td>
<td>#6 @ 8&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>12'</td>
<td>12'</td>
<td>8'</td>
<td>10&quot;</td>
<td>32'</td>
<td>#6 @ 7&quot; EW</td>
<td>#6 @ 8&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>13' (3)</td>
<td>13' (3)</td>
<td>10&quot;</td>
<td>12&quot;</td>
<td>32'</td>
<td>#6 @ 8&quot; EW</td>
<td>#6 @ 6&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
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<td>14' (3)</td>
<td>14' (3)</td>
<td>10&quot;</td>
<td>12&quot;</td>
<td>32'</td>
<td>#6 @ 6&quot; EW</td>
<td>#6 @ 8&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>15' (3)</td>
<td>15' (3)</td>
<td>12&quot;</td>
<td>12&quot;</td>
<td>32'</td>
<td>#6 @ 8&quot; EW</td>
<td>#6 @ 8&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
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<tr>
<td>16' (3)</td>
<td>16' (3)</td>
<td>12&quot;</td>
<td>12&quot;</td>
<td>32'</td>
<td>#6 @ 8&quot; EW</td>
<td>#6 @ 8&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
</tbody>
</table>

**NOTES:**

1. For general notes, see standard detail-storm structure notes (S40-1).
2. Opening shall be centered in top slab, unless otherwise noted, or shown.
3. Shall be cast-in-place when size exceeds 12' overall dimension.
4. For width and length combinations not shown, use reinforcement, wall, and top slab thickness for longer dimension for both.

---

**PLAN VIEW**

- **Main Reinforcing Bars—See Schedule Below**
- **Additional Reinforcing Bars—See Schedule Below**
- **Top Slab Thickness—See Schedule Below**
- **1-1/2" Typical**

**Typical Section View**

- **Main Reinforcing Bars or J and K Rein.**
- **3/4" Chamfer, Typical**
- **2" Cover**

**Scale: N.T.S.
### SCHEDULE

<table>
<thead>
<tr>
<th>W x L INSIDE</th>
<th>WT WALL THICKNESS</th>
<th>TOP SLAB THICKNESS</th>
<th>ACCESS DIAMETER</th>
<th>MAIN REINFORCEMENT</th>
<th>ADDITIONAL REINFORCEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>5'x5'</td>
<td>8&quot;</td>
<td>10&quot;</td>
<td>32&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>6'x6'</td>
<td>8&quot;</td>
<td>12&quot;</td>
<td>32&quot;</td>
<td>#7 @ 7&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>7'x7'</td>
<td>8&quot;</td>
<td>12&quot;</td>
<td>32&quot;</td>
<td>4-#8 @ 7&quot; OC</td>
<td>N/A</td>
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<tr>
<td>8'x8'</td>
<td>8&quot;</td>
<td>13&quot;</td>
<td>32&quot;</td>
<td>4-#8 @ 7&quot; OC</td>
<td>#6 @ 12&quot; OC, N/A</td>
</tr>
<tr>
<td>9'x9'</td>
<td>8&quot;</td>
<td>13&quot;</td>
<td>32&quot;</td>
<td>5-#8 @ 5&quot; OC</td>
<td>8-#8 @ 3&quot; OC, N/A</td>
</tr>
<tr>
<td>10'x10'</td>
<td>8&quot;</td>
<td>14&quot;</td>
<td>32&quot;</td>
<td>5-#8 @ 5&quot; OC</td>
<td>3-#6 @ 10&quot; OC, 2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>11'x11'</td>
<td>8&quot;</td>
<td>15&quot;</td>
<td>32&quot;</td>
<td>4-#9 @ 7&quot; OC</td>
<td>1-#8</td>
</tr>
<tr>
<td>12'x12'</td>
<td>8&quot;</td>
<td>15&quot;</td>
<td>32&quot;</td>
<td>5-#9 @ 5&quot; OC</td>
<td>5-#8 @ 5&quot; OC, 2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>13'x13' (3)</td>
<td>10&quot;</td>
<td>16&quot;</td>
<td>32&quot;</td>
<td>4-#10 @ 7&quot; OC</td>
<td>4-#9 @ 7&quot; OC, 2-#8 @ 3&quot; OC</td>
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<td>14'x14' (3)</td>
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<td>17&quot;</td>
<td>32&quot;</td>
<td>4-#10 @ 7&quot; OC</td>
<td>4-#9 @ 7&quot; OC, 2-#8 @ 3&quot; OC</td>
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<tr>
<td>15'x15' (3)</td>
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<td>17&quot;</td>
<td>32&quot;</td>
<td>5-#10 @ 5&quot; OC</td>
<td>5-#9 @ 5&quot; OC, 2-#8 @ 3&quot; OC</td>
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<tr>
<td>16'x16' (3)</td>
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<td>18&quot;</td>
<td>32&quot;</td>
<td>5-#10 @ 5&quot; OC</td>
<td>5-#9 @ 5&quot; OC, 2-#8 @ 3&quot; OC</td>
</tr>
</tbody>
</table>

### NOTES:

1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. OPENING SHALL BE CENTERED IN TOP SLAB, UNLESS OTHERWISE NOTED, OR SHOWN.
3. SHALL BE CAST-IN-PLACE WHEN SIZE EXCEEDS 12' OVERALL DIMENSION.
4. FOR WIDTH AND LENGTH COMBINATIONS NOT SHOWN, USE REINFORCEMENT, WALL, AND TOP SLAB THICKNESS FOR LONGER DIMENSION FOR BOTH.

### CITY STANDARDS

**TYPE IV MANHOLE**

**TOP SLAB DETAIL**

**ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT**

**CITY of ST. PETERSBURG**

**APPROVED BY:**  

**DIRECTOR**

**DATE:**  

**DWG. No.:** S40-12

**SCALE:** N.T.S.
ADDITIONAL REINF., SEE SCHEDULE BELOW

MAIN REINFORCING BARS-SEE SCHEDULE BELOW

PLAN VIEW

INTERMEDIATE SLAB THICKNESS-SEE SCHEDULE BELOW

1-1/2" TYPICAL

3/4" CHAMFER, TYPICAL

MAIN REINFORCING BARS

ADDITIONAL REINF.

TYPICAL SECTION VIEW

KEY WAY DETAIL

<table>
<thead>
<tr>
<th>DIAMETER</th>
<th>WT WALL THICKNESS</th>
<th>INTERMEDIATE SLAB THICKNESS</th>
<th>MAIN REINFORCEMENT</th>
<th>ADDITIONAL REINFORCEMENT</th>
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<tbody>
<tr>
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<td>8&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
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<tr>
<td>7'</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>#6 @ 10&quot; EW</td>
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<tr>
<td>8'</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>#6 @ 10&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
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</table>

NOTES:
1. FOR USE WITH MANHOLES DEEPER THAN 10', FROM RIM TO INVERT.
2. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
3. OPENING SHALL BE CENTERED IN TOP SLAB, UNLESS OTHERWISE NOTED, OR SHOWN.
4. NOT ALLOWED WITH BRICK MANHOLES.

CITY STANDARDS

TYPE II MANHOLE RISER
INTERMEDIATE SLAB DETAIL

APPROVED BY: [Signature]

DATE: OCT. 2019

DWG. No. S40-13
**Additional Reinforcement**
See schedule below

**Plan View**
Main Reinforcing Bars

**Intermediate Slab Thickness**
See schedule below

**Typical Section View**

**Schedule**

<table>
<thead>
<tr>
<th>W x L Inside</th>
<th>WT Wall Thickness</th>
<th>Intermediate Slab Thickness</th>
<th>Main Reinforcement</th>
<th>Additional Reinforcement</th>
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<tbody>
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<td>6'x6'</td>
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<td>#6 @ 12&quot; EW</td>
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<tr>
<td>7'x7'</td>
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<td>#6 @ 12&quot; EW</td>
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<td>8'x8'</td>
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<td>10&quot;</td>
<td>#6 @ 12&quot; EW</td>
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<td>9'x9'</td>
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<td>#6 @ 12&quot; EW</td>
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<td>10'x10'</td>
<td>8&quot;</td>
<td>10&quot;</td>
<td>#6 @ 9 1/2&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
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<tr>
<td>11'x11'</td>
<td>8&quot;</td>
<td>10&quot;</td>
<td>#6 @ 8&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>12'x12'</td>
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<td>10&quot;</td>
<td>#6 @ 7&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>13'x13' (3)</td>
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<td>12&quot;</td>
<td>#6 @ 8&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>14'x14' (3)</td>
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<td>12&quot;</td>
<td>#6 @ 6&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
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<td>15'x15' (3)</td>
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<td>2-#8 @ 3&quot; OC</td>
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<tr>
<td>16'x16' (3)</td>
<td>10&quot;</td>
<td>12&quot;</td>
<td>#7 @ 7&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
</tbody>
</table>

**Notes**:
1. For use with manholes deeper than 10', from rim to invert.
2. For general notes, see standard detail: storm structure notes (S40-1).
3. Shall be cast-in-place when size exceeds 12' overall dimension.
4. Opening shall be centered in top slab, unless otherwise noted, or shown.
5. For width and length combinations not shown, use reinforcement, wall, and intermediate slab thickness for longer dimension for both.

**City Standards**

**Type III Manhole Riser**
**Intermediate Slab Detail**

**Approval By**: ____________
**Date**: Oct. 2019

**Engineering and Capital Improvement Department**
**City of St. Petersburg**

**Scale**: N.T.S.

**DWG. No.**: S40-14
## Additional Reinforcing Bars

See Schedule Below

## Main Reinforcing Bars

See Schedule Below

---

### Schedule

<table>
<thead>
<tr>
<th>W x L Inside</th>
<th>WT Wall Thickness</th>
<th>Intrmd. Slab Thickness</th>
<th>D Reinforcement</th>
<th>E Reinforcement</th>
<th>F Reinforcement</th>
<th>Additional Reinforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>6'x6'</td>
<td>8&quot;</td>
<td>12&quot;</td>
<td>4-#7 @ 7&quot; OC</td>
<td>#6 @ 12&quot; OC</td>
<td>N/A</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>7'x7'</td>
<td>8&quot;</td>
<td>12&quot;</td>
<td>4-#8 @ 7&quot; OC</td>
<td>#6 @ 12&quot; OC</td>
<td>N/A</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>8'x8'</td>
<td>8&quot;</td>
<td>13&quot;</td>
<td>5-#8 @ 5&quot; OC</td>
<td>#6 @ 12&quot; OC</td>
<td>N/A</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>9'x9'</td>
<td>8&quot;</td>
<td>13&quot;</td>
<td>5-#8 @ 5&quot; OC</td>
<td>#6 @ 9 1/2&quot; OC</td>
<td>3-#6 @ 10&quot; OC</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>10'x10'</td>
<td>8&quot;</td>
<td>14&quot;</td>
<td>5-#8 @ 5&quot; OC</td>
<td>#6 @ 8&quot; OC</td>
<td>1-#8</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>11'x11'</td>
<td>8&quot;</td>
<td>14&quot;</td>
<td>4-#9 @ 7&quot; OC</td>
<td>#6 @ 7&quot; OC</td>
<td>5-#8 @ 5&quot; OC</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>12'x12'</td>
<td>8&quot;</td>
<td>15&quot;</td>
<td>5-#9 @ 5&quot; OC</td>
<td>#6 @ 7&quot; OC</td>
<td>5-#8 @ 5&quot; OC</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>13'x13' (3)</td>
<td>10&quot;</td>
<td>16&quot;</td>
<td>4-#10 @ 7&quot; OC</td>
<td>#6 @ 8&quot; OC</td>
<td>4-#9 @ 7&quot; OC</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>14'x14' (3)</td>
<td>10&quot;</td>
<td>17&quot;</td>
<td>4-#10 @ 7&quot; OC</td>
<td>#6 @ 6&quot; OC</td>
<td>3-#9 @ 10&quot; OC</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>15'x15' (3)</td>
<td>10&quot;</td>
<td>17&quot;</td>
<td>5-#10 @ 5&quot; OC</td>
<td>#7 @ 8&quot; OC</td>
<td>5-#9 @ 5&quot; OC</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>16'x16' (3)</td>
<td>10&quot;</td>
<td>18&quot;</td>
<td>5-#10 @ 5&quot; OC</td>
<td>#7 @ 7&quot; OC</td>
<td>5-#9 @ 5&quot; OC</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
</tbody>
</table>

### Notes:

1. For use with manholes deeper than 10', from rim to invert.
2. For general notes, see standard detail-storm structure notes (S40-1).
3. Shall be cast-in-place when size exceeds 12' overall dimension.
4. Opening shall be centered in top slab, unless otherwise noted, or shown.
5. For width and length combinations not shown, use reinforcement, wall, and intermediate slab thickness for longer dimension for both.

---

### City Standards

**Type IV Manhole Riser**

**Intermediate Slab Detail**

**Approved By:**

**Date:** Oct. 2019

**Director**

**DWG. No.:** S40-15
**PLAN VIEW**

**TYPICAL SECTION**

**SCHEDULE**

<table>
<thead>
<tr>
<th>DIAMETER INSIDE</th>
<th>BASE DIAMETER</th>
<th>WT WALL THICKNESS</th>
<th>WALL REINFORCEMENT</th>
<th>BASE SLAB THICKNESS</th>
<th>BASE SLAB REINFORCEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>5'-0&quot;</td>
<td>6&quot;</td>
<td>#4 @ 12&quot; EW</td>
<td>8&quot;</td>
<td>#6 @ 12&quot; EW</td>
</tr>
<tr>
<td>5' (3)</td>
<td>6'-4&quot;</td>
<td>8&quot;</td>
<td>#4 @ 12&quot; EW</td>
<td>8&quot;</td>
<td>#6 @ 12&quot; EW</td>
</tr>
<tr>
<td>6&quot;</td>
<td>7'-4&quot;</td>
<td>8&quot;</td>
<td>#4 @ 12&quot; EW</td>
<td>8&quot;</td>
<td>#6 @ 12&quot; EW</td>
</tr>
<tr>
<td>7&quot;</td>
<td>8'-4&quot;</td>
<td>8&quot;</td>
<td>#4 @ 12&quot; EW</td>
<td>8&quot;</td>
<td>#6 @ 10&quot; EW</td>
</tr>
<tr>
<td>8&quot;</td>
<td>9'-4&quot;</td>
<td>8&quot;</td>
<td>#4 @ 12&quot; EW</td>
<td>10&quot;</td>
<td>#6 @ 10&quot; EW</td>
</tr>
</tbody>
</table>

**NOTES:**
1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. OPTIONAL WALL REINFORCEMENT MAY BE WELDED WIRE AS PER ASTM C-478 OR ASTM C-76, CLASS III, B WALL, WITH WHERE THE REINFORCEMENT CAGE IN THE CENTER 1/3 OF THE WALL.
3. MAXIMUM SIZE ALLOWED FOR TYPE I MANHOLE. 6', 7', AND 8' DIAMETER SHALL BE TYPE II MANHOLE.
4. ADD 2 #4 REINFORCING BARS AT 3" CENTERS AT THE TOP AND SIDES OF ALL WALL OPENINGS.

**CITY STANDARDS**

**TYPE I AND II MANHOLE BASE AND WALL DETAIL**

**ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT**

**CITY of ST. PETERSBURG**

**APPROVED BY:**

**DIRECTOR**

**DATE:** OCT. 2019

**DWG. No.:** S40-16

**SCALE:** N.T.S.
WALL REINFORCEMENT - SEE SCHEDULE BELOW

WT-WALL THICKNESS - SEE SCHEDULE BELOW

WALL REINFORCEMENT - 2"

CONCRETE COVER

ANTI-FLOTATION LIP - TYPICAL
ALL SIDES, SEE SCHEDULE BELOW

---

BASE SLAB THICKNESS - SEE SCHEDULE BELOW

---

NOTES:
1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. FOR MANHOLES NOT LISTED, USE REINFORCEMENT, WALL, AND BASE SLAB THICKNESS FOR
LONGER DIMENSION.
3. SHALL BE CAST-IN-PLACE WHEN SIZE EXCEEDS 12' OVERALL DIMENSION.

---

CITY STANDARDS

TYPE III MANHOLE
BASE AND WALL DETAIL

ENGINEERING AND CAPITAL
IMPROVEMENT DEPARTMENT
CITY of ST. PETERSBURG

APPROVED BY:

DIRECTOR

DATE: OCT. 2019

DWG. No. S40-17
SCHEDULE

<table>
<thead>
<tr>
<th>W OR L INSIDE</th>
<th>WT WALL THICKNESS</th>
<th>WALL REINFORCEMENT</th>
<th>BASE SLAB THICKNESS</th>
<th>BASE SLAB REINFORCEMENT</th>
<th>ANTI-FLOAT LIP</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>HORIZONTAL</td>
<td>VERTICAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5'x5'</td>
<td>8&quot;</td>
<td>#4 @ 12&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>8&quot;</td>
<td></td>
</tr>
<tr>
<td>6'x6'</td>
<td>8&quot;</td>
<td>#4 @ 11&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>8&quot;</td>
<td></td>
</tr>
<tr>
<td>7'x7'</td>
<td>8&quot;</td>
<td>#4 @ 8&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>8&quot;</td>
<td></td>
</tr>
<tr>
<td>8'x8'</td>
<td>8&quot;</td>
<td>#4 @ 6&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>10&quot;</td>
<td></td>
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<tr>
<td>9'x9'</td>
<td>8&quot;</td>
<td>#4 @ 5&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>10&quot;</td>
<td></td>
</tr>
<tr>
<td>10'x10'</td>
<td>8&quot;</td>
<td>#4 @ 4&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>10&quot;</td>
<td></td>
</tr>
<tr>
<td>11'x11'</td>
<td>8&quot;</td>
<td>#5 @ 5&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>10&quot;</td>
<td></td>
</tr>
<tr>
<td>12'x12'</td>
<td>8&quot;</td>
<td>#5 @ 4&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>10&quot;</td>
<td></td>
</tr>
<tr>
<td>13'x13' (2)</td>
<td>10&quot;</td>
<td>#6 @ 7&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>12&quot;</td>
<td></td>
</tr>
<tr>
<td>14'x14' (2)</td>
<td>10&quot;</td>
<td>#6 @ 6&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>12&quot;</td>
<td></td>
</tr>
<tr>
<td>15'x15' (2)</td>
<td>10&quot;</td>
<td>#6 @ 5&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>12&quot;</td>
<td></td>
</tr>
<tr>
<td>16'x16' (2)</td>
<td>10&quot;</td>
<td>#6 @ 4 1/2&quot; OC</td>
<td>#4 @ 12&quot; OC</td>
<td>12&quot;</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:
1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. FOR MANHOLES NOT LISTED, USE REINFORCEMENT, WALL, AND BASE SLAB THICKNESS FOR LONGER DIMENSION.
3. SHALL BE CAST-IN-PLACE WHEN SIZE EXCEEDS 12' OVERALL DIMENSION.

CITY STANDARDS

TYPE IV MANHOLE BASE AND WALL DETAIL

APPROVED BY:

DIRECTOR

DATE: OCT. 2019

DWG. No.

S40-18
FINISHED GRADE

SHEETING, TYPICAL

SEE NOTE 1

PRESSURE PIPE, STORM DRAIN, OR OTHER PIPE/CONDUIT

TRENCH WIDTH

TRENCH BACK SLOPE, TYPICAL

UNDISTURBED SOIL

1/4 OD OF PIPE/CONDUIT

MIN. CRADLE THICKNESS

MIN. BASE THICKNESS, SEE SCHEDULE BELOW

TYPICAL SECTION VIEW

SCHEDULE

<table>
<thead>
<tr>
<th>PRESSURE PIPE</th>
<th>X</th>
<th>MIN. BASE</th>
<th>STORM DRAIN RCP, ERCP, B/C</th>
<th>X</th>
<th>MIN. BASE</th>
<th>OTHER PIPE/ CONDUIT</th>
<th>X</th>
<th>MIN. BASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>12&quot;</td>
<td>3&quot;</td>
<td>UP TO 18&quot;</td>
<td>12&quot;</td>
<td>3&quot;</td>
<td>UP TO 5&quot;</td>
<td>(3)</td>
<td>3&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>12&quot;</td>
<td>3&quot;</td>
<td>21&quot; TO 36&quot;</td>
<td>12&quot;</td>
<td>4&quot;</td>
<td>6&quot; TO 18&quot;</td>
<td>12&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>12&quot;</td>
<td>3&quot;</td>
<td>42&quot; TO 72&quot;</td>
<td>12&quot;</td>
<td>5&quot;</td>
<td>21&quot; TO 36&quot;</td>
<td>12&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
<td>12&quot;</td>
<td>3&quot;</td>
<td>BEYOND 72&quot;</td>
<td>(3)</td>
<td>6&quot;</td>
<td>42&quot; TO 72&quot;</td>
<td>(3)</td>
<td>5&quot;</td>
</tr>
<tr>
<td>16&quot;</td>
<td>12&quot;</td>
<td>3&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES:
1. CONCRETE SHALL BE POURED AGAINST UNDISTURBED SOIL OR SHEETING. THEREFORE, REMOVE SHEETING BEFORE POURING CONCRETE OR LEAVE A PORTION OF SHEETING, UP TO TOP OF PIPE, IN PLACE.
2. DIMENSION X SHALL BE BASED ON TRENCH WIDTH AS REQUIRED.
3. FOR PIPES/CONDUITS LESS THAN 5" OD, DITCH WIDTH MAY BE REDUCED TO THE WIDTH OF THE MECHANICAL TAMPER IF BACKFILLED WITH DRY 15:1 SAND/CEMENT MIX, OR OTHER APPROVED MATERIAL, TO 4" ABOVE PIPE/CONDUIT.

CITY STANDARDS

CONCRETE CRADLE FOR PIPE/CONDUIT OR BOX CULVERT DETAIL

REVISIONS

BY DATE

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT CITY of ST. PETERSBURG

APPROVED BY:

DIRECTOR

DATE: OCT. 2019

DWG. No. S40-19
### Schedule View

**Stage No.** | **Materials**
---|---
1 | **Bedsding:** Where directed, replace existing material with 4” to 6” of granular material. The granular material may be any of the following: clean native sand, concrete sand, gravel, or reclaimed concrete. See note 1, below. Box culverts shall have mandatory stone bedding per specifications.
2 | **Pipe Bedding/Haunching:** Native sand in 6” lifts. Where directed, replace existing material with clean construction sand, or gravel. See note 2, below.
3 | **Trench Backfill:** Native sand in 6” lifts. Where directed, replace existing material with clean construction sand.
4 | **Paved Roadways, Paved Driveways, and Paved Alleys in 6” Lifts**
5 | **Unpaved Roadways, Unpaved Driveways, Unpaved Alleys, and Sidewalks in 6” Lifts**

**Surface Restoration:** As shown below. Also see Notes below for other standard detail references.

#### Pressure Pipe

<table>
<thead>
<tr>
<th>Stage No.</th>
<th>Schedule View</th>
<th>Storm Drain-RCP, ERCP, B/C</th>
<th>Other Pipe/Conduit</th>
</tr>
</thead>
<tbody>
<tr>
<td>4”</td>
<td>12”</td>
<td>Up to 18”</td>
<td>12”</td>
</tr>
<tr>
<td>6”</td>
<td>12”</td>
<td>21” to 36”</td>
<td>18”</td>
</tr>
<tr>
<td>8”</td>
<td>12”</td>
<td>42” to 72”</td>
<td>24”</td>
</tr>
<tr>
<td>12”</td>
<td>12”</td>
<td>Beyond 72”</td>
<td>(2) or (3)</td>
</tr>
<tr>
<td>16”</td>
<td>12”</td>
<td></td>
<td>42” to 72”</td>
</tr>
</tbody>
</table>

**Surface Restorations:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Alley or D/W</th>
<th>Std Duty Rdwy</th>
<th>Hyv Duty Rdwy</th>
<th>Brick Rdwy</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Surface Paving Min. Thickness</td>
<td>1” Asphalt</td>
<td>2.50” Asphalt</td>
<td>2.50” Asphalt</td>
<td>Roadway Brick</td>
</tr>
<tr>
<td>B</td>
<td>Surface Cover Min. Thickness</td>
<td>6” Shell</td>
<td>6” Shell</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>T</td>
<td>Base Material Min. Thickness</td>
<td>Shell-9” Rclm. Conc. 10.5”</td>
<td>Shell-12” Rclm. Conc. 14”</td>
<td>Shell-16” Rclm. Conc. 19”</td>
<td>1” Sand Over 12” Shell Base</td>
</tr>
<tr>
<td>D</td>
<td>Cover Min. Depth</td>
<td>Press. pipe-36” All other pipe-30”</td>
<td>Press. pipe-36” All other pipe-30”</td>
<td>Press. pipe-36” All other pipe-36”</td>
<td>Press. pipe-36” All other pipe-30”</td>
</tr>
</tbody>
</table>

**Notes:**

1. All bedding types require an impermeable groundwater barrier at 100’ intervals along the trench length.
2. Gravel or reclaimed concrete should not contact ductile iron or polyvinyl pipe or conduit.
3. For paved surfaces see standard detail-flexible pavement restoration (S20-11).
4. For unpaved surfaces see standard detail-right-of-way restoration (S20-17).

### City Standards

**Bedding for Pipe/Conduit or Box Culvert Detail**

**Revisions**

<table>
<thead>
<tr>
<th>By</th>
<th>Date</th>
</tr>
</thead>
</table>

**Approved By:**

**Date:** Oct. 2019

**DWG No.:** S40-20
NOTES:
1. RING AND COVER TYPES, LISTED ABOVE, ARE MANUFACTURED BY U.S. FOUNDRY AND MANUFACTURING CORPORATION OR APPROVED EQUAL.
2. ALL SURFACES OF THE RING AND COVER WHICH CONTACT EACH OTHER SHALL BE MACHINED.
3. MANHOLE RING AND COVER CASTING APPLICATIONS AS FOLLOWS:
   STORM DRAINS:
   TYPE A-FOR MANHOLES WITH PIPES UP TO 24" DIAMETER OR EQUAL, UNLESS OTHERWISE SHOWN.
   TYPE B-FOR MANHOLES WITH PIPES 27" DIAMETER AND RELIGIOUS AND LARGER, CONFLICT STRUCTURES, AND BOX CULVERTS.
   TYPE C-FOR CATCH BASIN ACCESS, EXCEPT TYPE S-1 AND TYPE S-II, ALL PIPE SIZES.
   TYPE D-FOR MANHOLES WITH TOP OF TOP SLAB AT FINISHED GRADE, ALL PIPE SIZES, CATCH BASIN ACCESS, ALL PIPE SIZES, AND TYPE S-1 AND TYPE S-II, ALL PIPE SIZES.
   SANITARY SEWERS: REFER TO S30-22 FOR MANHOLE COVER DETAIL
   TYPE B-FOR MANHOLES WITH PIPES 21" DIAMETER AND LARGER.
   TYPE B-FOR SEWAGE AIR/VACUUM VALVE MANHOLE.
   TYPE E-FOR MANHOLES WITH PIPES UP TO 18" DIAMETER.

CITY STANDARDS

MANHOLE RING AND COVER CASTING DETAIL

REVISIONS

BY DATE

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY: 

DIRECTOR

DATE: OCT. 2019

DWG. No. S40-21
CITY STANDARDS

ACCESS STRUCTURE CHANNELIZATION DETAIL

REVISIONS

BY DATE

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

DATE: OCT. 2019

S40-22

NOTES:
1. SMOOTH FLOW CHANNELS COMPOSED OF CONCRETE, OR BRICK AND MORTAR SHALL BE CONSTRUCTED IN THE BOTTOMS OF ALL STRUCTURES AS SHOWN.
2. WT=WALL THICKNESS OF STRUCTURE, D=DIAMETER OF ROUND PIPE, AND R=RISE OF ELLIPTICAL PIPE OR BOX CULVERT.

SCALE: N.T.S.
ADDITIONAL REINFORCING BARS, SEE SCHEDULE BELOW

INSIDE FACE OF BASIN TO BE FLUSH WITH INSIDE FACE OF STRUCTURE

PLAN VIEW

ADDITIONAL REINF.
3/4" CHAMFER, TYPICAL

INTERMEDIATE SLAB THICKNESS
SEE SCHEDULE BELOW

1-1/2" TYPICAL

TYPICAL SECTION VIEW

SCHEDULE

<table>
<thead>
<tr>
<th>W x L INSIDE</th>
<th>WT WALL THICKNESS</th>
<th>INTRMD. SLAB THICKNESS</th>
<th>MAIN REINFORCEMENT</th>
<th>ADDITIONAL REINFORCEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'x4'</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>5'x5'</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>6'x6'</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>7'x7'</td>
<td>8&quot;</td>
<td>10&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>8'x8'</td>
<td>8&quot;</td>
<td>10&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>9'x9'</td>
<td>8&quot;</td>
<td>10&quot;</td>
<td>#6 @ 12&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>10'x10'</td>
<td>8&quot;</td>
<td>10&quot;</td>
<td>#6 @ 9 1/2&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>11'x11'</td>
<td>8&quot;</td>
<td>10&quot;</td>
<td>#6 @ 8&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>12'x12'</td>
<td>8&quot;</td>
<td>10&quot;</td>
<td>#6 @ 7&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>13'x13' (2)</td>
<td>10&quot;</td>
<td>12&quot;</td>
<td>#6 @ 8&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>14'x14' (2)</td>
<td>10&quot;</td>
<td>12&quot;</td>
<td>#6 @ 6&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>15'x15' (2)</td>
<td>10&quot;</td>
<td>12&quot;</td>
<td>#7 @ 8&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
<tr>
<td>16'x16' (2)</td>
<td>10&quot;</td>
<td>12&quot;</td>
<td>#7 @ 7&quot; EW</td>
<td>2-#8 @ 3&quot; OC</td>
</tr>
</tbody>
</table>

NOTES:
1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STRUCTURE NOTES (S40-1).
2. SHALL BE CAST-IN-PLACE WHEN SIZE EXCEEDS 12' OVERALL DIMENSION.
3. FOR WIDTH AND LENGTH COMBINATIONS NOT SHOWN, USE REINFORCEMENT, WALL, AND INTERMEDIATE SLAB THICKNESS FOR LONGER DIMENSION FOR BOTH.

CITY STANDARDS

TYPE I CATCH BASIN RISER INTERMEDIATE SLAB DETAIL
(FOR TYPE III MANHOLE)

ENGINEERING AND CAPITAL
IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

DIRECTOR

DATE: OCT. 2019

DWG. No. S40-30
ADDITIONAL REINFORCING BARS, 
SEE SCHEDULE BELOW

INSIDE FACE OF BASIN TO BE FLUSH WITH 
INSIDE FACE OF STRUCTURE

ADDITIONAL REINF.
3/4" CHAMFER, TYPICAL

INTERMEDIATE SLAB THICKNESS:
SEE SCHEDULE BELOW

1-1/2" TYPICAL

W或L-INSIDE

2" COVER

MAIN REINFORCING BARS

PROPOSED CB WALL
6x6-W2.9xW2.9

INSIDE FACE OF STRUCTURE
3-1/4"
2-1/4"
1"
4-1/4"

8" WT
10" WT

W x L
INSIDE

W WALL
THICKNESS

INTRMD.
SLAB
THICKNESS

MAIN
REINFORCEMENT

ADDITIONAL
REINFORCEMENT

4'x4'
8"
8"
#6 @ 12" EW
2-#8 @ 3" OC

5'x5'
8"
8"
#6 @ 12" EW
2-#8 @ 3" OC

6'x6'
8"
8"
#6 @ 12" EW
2-#8 @ 3" OC

7'x7'
8"
8"
#6 @ 12" EW
2-#8 @ 3" OC

8'x8'
8"
10"
#6 @ 12" EW
2-#8 @ 3" OC

9'x9'
8"
10"
#6 @ 12" EW
2-#8 @ 3" OC

10'x10'
8"
10"
#6 @ 9 1/2" EW
2-#8 @ 3" OC

11'x11'
8"
10"
#6 @ 8" EW
2-#8 @ 3" OC

12'x12'
8"
10"
#6 @ 7" EW
2-#8 @ 3" OC

13'x13' (2)
10"
12"
#6 @ 8" EW
2-#8 @ 3" OC

14'x14' (2)
10"
12"
#6 @ 6" EW
2-#8 @ 3" OC

15'x15' (2)
10"
12"
#7 @ 8" EW
2-#8 @ 3" OC

16'x16' (2)
10"
12"
#7 @ 7" EW
2-#8 @ 3" OC

NOTES:
1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. SHALL BE CAST-IN-PLACE WHEN SIZE EXCEEDS 12' OVERALL DIMENSION.
3. FOR WIDTH AND LENGTH COMBINATIONS NOT SHOWN, USE REINFORCEMENT, WALL, AND INTERMEDIATE SLAB THICKNESS FOR LONGER DIMENSION FOR BOTH.

CITY STANDARDS

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY of ST. PETERSBURG

APPROVED BY: 
DIRECTOR 

DATE:  
OCT. 2019

DWG. No.  
S40-31
CATCH BASIN SLAB OR
WING COVER SLAB

THROAT INVERT

5' THROAT

PAVEMENT WARPAGE AT BASIN AND WINGS,
SEE STANDARD DETAIL-CATCH BASIN FLOW
LINE TRANSITIONS

TYPICAL PAVEMENT SLOPE

TYPICAL CURB BOTTOM

2 #4 REINFORCEMENT BARS, FOR THE LIMITS OF THE
PAVEMENT FLOWLINE WARPAGE

WARP CURB AT BASIN AND WING, SEE
STANDARD DETAIL-CATCH BASIN FLOW LINE
TRANSITIONS (S40-33)

TYPE "A" CURB

CENTERLINE OF CURB

FLOW LINE

TYPICAL CURB BOTTOM

2 #4 REINFORCEMENT BARS, FOR THE LIMITS OF THE
PAVEMENT FLOWLINE WARPAGE

WARP CURB AT BASIN AND WING, SEE
STANDARD DETAIL-CATCH BASIN FLOW LINE
TRANSITIONS (S40-33)

TYPE "B" CURB

CATCH BASIN SLAB OR
WING COVER SLAB

THROAT INVERT

5' THROAT

2 #4 REINFORCEMENT BARS, FOR THE LIMITS OF THE
PAVEMENT FLOWLINE WARPAGE

WARP CURB AT BASIN AND WING, SEE
STANDARD DETAIL-CATCH BASIN FLOW LINE
TRANSITIONS (S40-33)

TYPE "D" CURB

NOTE:
1. BOC=BACK OF CURB.

CITY STANDARDS

CATCH BASIN THROAT
CONFIGURATION DETAIL

ENGINEERING AND CAPITAL
IMPROVEMENT DEPARTMENT
CITY of ST. PETERSBURG

APPROVED BY:

DATE: OCT. 2019
DWG. No. S40-32

SCALE: N.T.S.
NOTE:
* RESIDENTIAL ROADWAYS ONLY. NOT ALLOWABLE FOR MAJOR AND/OR SECONDARY ARTERIAL ROADWAY(S) UNLESS CLEAR LANE WIDTH OF 10’ OR MORE.

CITY STANDARDS

CATCH BASIN FLOW LINE TRANSITIONS DETAIL

REVISIONS

<table>
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<th>DATE</th>
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ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

DIRECTOR

DATE: OCT. 2019

DWG. No. S40-33
CAST IN PLACE TYPE "A" CURB AND THROAT

GRANITE CURB

OMIT RADIAL FLOW INDUCTOR FROM CATCH BASINS WITH WINGS

PLAN

6" RADI, TYPICAL
GRANITE CURB

TYPE I

TYPE II OR I-M

SECTION A-A

PREFORMED BITUMINOUS JOINT SEALING COMPOUND BETWEEN BASIN COVER SLAB, WING COVER SLAB, AND WALL

COMPACTED SUBGRADE, OR 4" CONCRETE MAT, OR 6" COARSE AGGREGATE, AS ORDERED

NOTES:
1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. SEE STANDARD DETAIL-CATCH BASIN FLOWLINE TRANSITIONS (S40-33).
3. FOR PLAN OF CROSS SECTIONS, SEE STANDARD DETAIL-CATCH BASIN GENERAL (S40-36).
4. FOR WING AND COVER SECTIONS, SEE STANDARD DETAIL-TYPICAL WING SHELF SECTIONS (S40-48).
5. SLOPE BASIN AND WING COVER 1/4" TO 1/2" PER FOOT. COVER TO MATCH SLOPE IF IN SIDEWALK.
**CITY STANDARDS**

**OCT. 2019**

4" SPILLWAY, SLOPE BOTTOM AS SHOWN

CAST-IN-PLACE OR BRICK CATCH BASIN RISER, TYP.

#4 BARS-16"x16" @ 6" OC., OMIT WITH BRICK

OUTFALL PIPE, SEE SCHEDULE

#4 BARS @ 6" OC-EW., MAX.

NON-SHRINK GROUT, TYP.

CORE DRILL EX. CONDUIT MIN. 1" TO 1-1/2" MAX. LARGER THAN OUTFALL PIPE

OUTFALL PIPE TO BE FLUSH WITH INSIDE OF EX. CONDUIT

ALL REINFORCEMENT TO HAVE 2" OF COVER

**TYPICAL SECTION VIEW**

EXISTING CONDUIT

CAST-IN-PLACE OR BRICK CATCH BASIN RISER, TYP.

#4 BARS-16"x16" @ 6" OC., OMIT WITH BRICK

OUTFALL PIPE, SEE SCHEDULE

CONDUIT OVERT

EXISTING CONDUIT

CAST-IN-PLACE OR BRICK CATCH BASIN RISER, TYP.

#4 BARS-16"x16" @ 6" OC., OMIT WITH BRICK

OUTFALL PIPE, SEE SCHEDULE

4" SPILLWAY, SLOPE BOTTOM AS SHOWN

FOUNDATION CAN BE ROTATED AROUND EX. CONDUIT AS REQUIRED. MAINTAIN PROPER CATCH BASIN CURB ALIGNMENT

**TYPICAL SECTION VIEW**

EXISTING CONDUIT

CAST-IN-PLACE OR BRICK CATCH BASIN RISER, TYP.

#4 BARS-16"x16" @ 6" OC., OMIT WITH BRICK

OUTFALL PIPE, SEE SCHEDULE

4" SPILLWAY, SLOPE BOTTOM AS SHOWN

**SCHEDULE**

<table>
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<tr>
<th>EXISTING CONDUIT</th>
<th>WIDTH @ 2'-8&quot;</th>
<th>WIDTH @ 3'-0&quot;</th>
<th>WIDTH @ 3'-6&quot;</th>
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<th>WIDTH @ 4'-6&quot;</th>
<th>WIDTH @ 5'-0&quot;</th>
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<td>12&quot; TO 27&quot;</td>
<td>15&quot;</td>
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<td>60&quot;</td>
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<td>15&quot; TO 33&quot;</td>
<td>15&quot; TO 33&quot;</td>
<td>15&quot; TO 33&quot;</td>
<td>15&quot; TO 33&quot;</td>
</tr>
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<td>66&quot;</td>
<td>15&quot; TO 36&quot;</td>
<td>15&quot; TO 36&quot;</td>
<td>15&quot; TO 36&quot;</td>
<td>15&quot; TO 36&quot;</td>
<td>15&quot; TO 36&quot;</td>
<td>15&quot; TO 36&quot;</td>
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</tr>
<tr>
<td>BOX CULVERT</td>
<td>15&quot; TO 18&quot;</td>
<td>15&quot; TO 18&quot;</td>
<td>15&quot; TO 18&quot;</td>
<td>15&quot; TO 18&quot;</td>
<td>15&quot; TO 18&quot;</td>
<td>15&quot; TO 18&quot;</td>
</tr>
</tbody>
</table>

**NOTE:**

THIS APPLICATION IS ALLOWED ONLY WHEN THE EXISTING CONDUIT HAS 5' OR LESS COVER AND/OR WHEN A STANDARD CATCH BASIN WILL BE IN CONFLICT WITH AN EXISTING UTILITY.

---

**CITY STANDARDS**

**CATCH BASIN CONNECTION TO EXISTING OFFSET CONDUIT DETAIL**

**REVISIONS**

<table>
<thead>
<tr>
<th>BY</th>
<th>DATE</th>
</tr>
</thead>
</table>

**APPROVED BY:**

[Signature]

**DATE:** OCT. 2019

**SCALE:** N.T.S.

**ENG. & CAP. IMP. DEPT.**

**CITY OF ST. PETERSBURG**

**DIRECTOR**

**DWG. No.: S40-35**
NOTES:
1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. ALL BASIN AND WING COVERS SHALL BE REMOVABLE. EDGES AND SEAMS SHALL NOT BE GROUTED.
3. ACCESS OPENING SHALL BE REQUIRED AT EACH CATCH BASIN STRUCTURE. STRUCTURES WITH MULTIPLE
   COVERS, ACCESS OPENING SHALL BE ALIGNED WITH CENTER LINE OF THE LARGEST PIPE IN STRUCTURE.
4. PRE-CAST CATCH BASINS, UPPER 24" SHALL BE CAST IN PLACE.
5. SEE STANDARD DETAIL-TYPE I THRU V TYPICAL CATCH BASIN SECTIONS (S40-38).
7. SEE STANDARD DETAIL-CATCH BASIN COVER SLAB REINFORCING PLAN VIEW (S40-40).
8. SEE STANDARD DETAIL-CATCH BASIN COVER SLAB SECTIONS AND REINFORCING (S40-41).
9. SEE STANDARD DETAIL-TYPICAL WING ASSEMBLY (S40-47).
10. SEE STANDARD DETAIL-TYPICAL WING SHELF SECTIONS (S40-48).
11. SEE STANDARD DETAIL-WING COVER SLAB SECTIONS AND REINFORCING (S40-49).
12. SEE STANDARD DETAIL-CATCH BASIN THROAT CONFIGURATION (S40-32).
13. REFERENCE POINT=INTERFACE BETWEEN WING COVER AND WING SHELF AT THE FACE.
14. ACCESS MANHOLE RING AND COVER SHALL BE CONSTRUCTED IN EVERY OTHER RECTANGULAR TOP SLAB.

CITY STANDARDS

CATCH BASIN
GENERAL DETAIL

ENGINEERING AND CAPITAL
IMPROVEMENT DEPARTMENT
CITY of ST. PETERSBURG

APPROVED BY:

DIRECTOR

DATE: OCT. 2019

DWG. No. S40-36
NOTES:
2. FOR SECTION VIEWS: C-C, D-D, AND E-E, SEE STANDARD DETAIL-TYPICAL WING SHELF SECTIONS (S40-48).

CITY STANDARDS

CAST-IN-PLACE PORTION OF TYPE I, II, III, IV, AND V CATCH BASINS PLAN DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

SCALE: N.T.S.

APPROVED BY:

DIRECTOR

DATE: OCT. 2019
DWG. No. S40-37
NOTES:
1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. FOR SIZES AND REINFORCING, SEE STANDARD DETAIL-TYPE I THRU V CATCH BASIN BASE AND WALL (S40-39).
3. SEE STANDARD DETAIL-CATCH BASIN FLOW LINE TRANSITIONS (S40-33).
4. FOR PLAN OF CROSS SECTIONS, SEE STANDARD DETAIL-CATCH BASIN GENERAL (S40-36).
5. FOR WING COVER SECTIONS-SEE STANDARD DETAIL-WING COVER SLAB SECTIONS AND REINFORCING (S40-49).
6. FOR WING SHELF SECTIONS-SEE STANDARD DETAIL-TYPICAL WING SHELF SECTIONS (S40-48).
7. SLOPE BASIN AND WING COVER 1/4" TO 1/2" PER FOOT. COVERS TO MATCH SLOPE IF IN SIDEWALK.

CITY STANDARDS

TYPE I THRU V
TYPICAL CATCH BASIN
SECTIONS DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

DATE: OCT. 2019

DWG. No. S40-38

SCALE: N.T.S.

DIRECTOR
NOTES:
1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. PROVIDE 2" CLEARANCE FROM CONCRETE FACE TO REINFORCEMENT IN ALL LOCATIONS.

CITY STANDARDS

TYPE I THRU V
CATCH BASIN
BASE AND WALL DETAIL

REVISIONS

BY DATE

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

DATE: OCT. 2019

DWG. No. S40-39
**COVER SLAB W/STORM MANHOLE**

**COVER SLAB W/O MANHOLE**

**SCHEDULE**

<table>
<thead>
<tr>
<th>CATCH BASIN TYPE</th>
<th>COVER SLAB QUANTITY AND WIDTH</th>
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</thead>
<tbody>
<tr>
<td>TYPE I</td>
<td>1 @ 4'-10&quot;</td>
</tr>
<tr>
<td>TYPE I-M</td>
<td>1 @ 4'-6&quot;</td>
</tr>
<tr>
<td>TYPE I-M2</td>
<td>1 @ 4'-2&quot;</td>
</tr>
<tr>
<td>TYPE II</td>
<td>2 @ 4'-6&quot;</td>
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<td>TYPE II-M</td>
<td>1 @ 4'-6&quot;, 1 @ 4'-2&quot;</td>
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<tr>
<td>TYPE II-M2</td>
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<tr>
<td>TYPE III</td>
<td>2 @ 4'-6&quot;, 1 @ 4'-2&quot;</td>
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<td>TYPE IV</td>
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<tr>
<td>TYPE IV-M</td>
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<td>TYPE IV-M2</td>
<td>4 @ 4'-2&quot;</td>
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<tr>
<td>TYPE V</td>
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<tr>
<td>TYPE V-M</td>
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</tr>
<tr>
<td>TYPE V-M2</td>
<td>5 @ 4'-2&quot;</td>
</tr>
</tbody>
</table>

**NOTES:**

1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. ACCESS SHALL BE TYPE C. SEE STANDARD DETAIL-MANHOLE RING AND COVER CASTING (S40-21).
3. REINFORCEMENT SHOWN IS FOR STANDARD SIZES SHOWN. MAINTAIN REINFORCEMENT SIZE, SPACING, AND ADD ADDITIONAL BARS FOR MODIFIED STRUCTURES.
4. FOR REINFORCEMENT PLACEMENT AND SECTION VIEWS F-F, G-G, SEE STANDARD DETAIL-CATCH BASIN COVER SLAB SECTIONS AND REINFORCING (S40-41).
5. NOSING IS ASSEMBLED FROM 3" 4.1 W/ END CLOSURES OF 1/4" PLATE, GRIND ALL EDGES. NOSING ASSEMBLY SHALL BE GALVANIZED AFTER FABRICATION.
6. NOSING SHALL BE USED WHERE SHOWN ON THE PLANS OR WHEN BASIN IS IN CURB RADII.

---

**CITY STANDARDS**

**CATCH BASIN COVER SLAB REINFORCING PLAN VIEW DETAIL**

**ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT CITY OF ST. PETERSBURG**

**APPROVED BY:**

**DIRECTOR**

**DATE:** OCT. 2019

**DWG. No:** S40-40


**NOTES:**

1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. REINFORCEMENT SHOWN IS FOR STANDARD SIZES SHOWN. MAINTAIN REINFORCEMENT SIZE AND SPACING, AND ADD ADDITIONAL BARS FOR MODIFIED STRUCTURES.
3. FOR PLAN VIEWS, SEE STANDARD DETAIL-CATCH BASIN COVER SLAB REINFORCING PLAN VIEW (S40-40).

**CITY STANDARDS**

<table>
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<th>REVISIONS</th>
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<tr>
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<tr>
<td>Engineer and Capital Improvement Department, City of St. Petersburg</td>
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<tr>
<td>Approved by: [Signature]</td>
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<td>Scale: N.T.S.</td>
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</tbody>
</table>

CATCH BASIN COVER SLAB SECTIONS AND REINFORCING DETAIL

DATE: OCT. 2019

DWG. No. S40-41
NOTE:
FOR NOTES AND SECTION VIEWS B-B AND C-C, SEE STANDARD DETAIL-TYPE S-I AND TYPE S-II
SECTION VIEWS (S40-44)

ADDITIONAL REINF.- 2-#8 @ 3" OC, TYP.
ADDITIONAL #5 BAR IN TOP OF TOP SLAB

FLOW
1-1/2" BEVEL
6" SUPPORT POST
WITH 2-#5 REBAR

OUTER EDGE OF CASTING
SEE NOTE 4

TYPICAL PLAN VIEW

LIMITS OF PAVEMENT WARPAGE-TYPE A CURB ONLY,
SEE STANDARD DETAIL-CATCH BASIN FLOW LINE
TRANSITIONS (S40-33)

SECTION A-A
TOP SLAB REINFORCEMENT-2 MATS-\#5 @ 6" OC/EW STAGGER MATS AS SHOWN WITH 2" CONCRETE COVER, TYP.

WALL REINFORCEMENT- 
\#5 @ 12" OC-HORIZ., \#4 @ 12" OC-VERT., WITH 2" CONCRETE COVER

BASE SLAB REINFORCEMENT- 
\#5 @ 9" OC WITH 2" CONCRETE COVER

WING WALL REINFORCEMENT- 
\#5 @ 6" OC WITH 2" CONCRETE COVER (FROM TOP)

SECTION B-B

SECTION C-C

NOSING REINFORCEMENT-SHALL BE \#5 BAR IN THE SAME PLACEMENT AS SHOWN ON CITY STANDARD-CATCH BASIN COVER SLAB SECTIONS AND REINFORCING (S40-41)

SUPPORT POST- 6" PVC, SCH. 40 MIN., WITH 2-\#5 BAR, HOOKED AS SHOWN, FILL POST WITH CONCRETE

2-\#5 BAR, CONTINUOUS, TYPICAL

THROAT REINFORCEMENT-\#5 @ 6' OC/EW, TYP. WITH 2" CONCRETE COVER

WARP PAVEMENT AT BASIN AND WING THROAT

PAVEMENT FLOW LINE

INVERT

TYPE A CURB

THROAT

24"

6"

6-3/8"

24"

6"

TYPE B CURB

THROAT INVERT

TYPE D CURB

NOTES:
1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. FOR PLAN VIEW-SEE STANDARD DETAIL-TYPE S-I OR TYPE S-II CATCH BASIN (S40-42 & S40-43).
3. SEE STANDARD DETAIL-CATCH BASIN FLOW LINE TRANSITIONS (S40-33).
4. OUTLET PIPE-MAXIMUM SIZES: RCP @ 54", ERCP @ 34"x53", AND BC @ 4'-0" SPAN.
5. SLOPE TOP OF BASIN AND WING 1/4" TO 1/2" PER FOOT TO MATCH SLOPE OF EXISTING SIDEWALK.

CITY STANDARDS

TYPE S-I AND TYPE S-II
SECTION VIEWS DETAIL

REVISIONS

BY

DATE

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY of ST. PETERSBURG

APPROVED BY:

DATE: OCT. 2019

DWG. No.

SCALE: N.T.S.

DIRECTOR

S40-44
**NOTES:**

1. CURB INLET FILTERS SHALL BE INSTALLED AT ALL EXISTING CATCH BASINS AND GRATE INLETS THAT ARE WITHIN THE CONSTRUCTION AREA AND THOSE TO WHICH STORMWATER MAY FLOW TO, OFF SITE OF THE CONSTRUCTION AREA.
2. CURB INLET FILTERS SHALL REMAIN IN PLACE UNTIL ALL RESODDED AREA'S ARE ESTABLISHED WITH VEGETATION.
3. CURB FILTER INLETS SHALL BE INSPECTED ON A DAILY BASES, AND ANY SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN A PROPER MANNER.
4. CURB FILTER INLETS SHALL BE REPLACED IF THEY HAVE CUTS OR SLITS, ABRASIONS AND PLACEMENT. THOSE THAT ARE DAMAGED SHALL BE REPLACED, AND THOSE MISPLACED SHALL BE REINSTALLED IN THE PROPER LOCATION, AS SHOWN ABOVE.

**CITY STANDARDS**

**REVISIONS**

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**CURB INLET FILTER FOR EROSION CONTROL AT CATCH BASIN DETAIL**

**ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT**

**CITY of ST. PETERSBURG**

**APPROVED BY:**

**DIRECTOR**

**DATE:** OCT. 2019

**DWG. No.** S40-45
NOTE:
1. ALL HAY BALES SHALL BE MAINTAINED TO ALLOW WATER TO FILTER THROUGH TO THE CATCH BASIN, REPLACE HAY BALES AS NEED WHEN FILTRATION IS NO LONGER FUNCTIONAL.
2. ALL HAY BALES IN AREA'S THAT CAN NOT BE STAKED ARE TO BE TIED TO THOSE THAT CAN BE STAKED.
3. USE TIE WIRE, TOP AND BOTTOM, OF EACH HAY BALE TO TIE BALES TOGETHER.

CITY STANDARDS

HAY BALES FOR EROSION CONTROL AT CATCH BASIN DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY of ST. PETERSBURG

APPROVED BY: 

DIRECTOR

SCALE: N.T.S.

REVISIONS

BY DATE

DATE: OCT. 2019

DWG. No. S40-46
Notes:
1. For general notes, see standard detail-storm structure notes (S40-1).
2. See standard details-catch basin flow line transitions (S40-33) and catch basin throat configuration (S40-32).
3. Compensate for basin cover and wing, pitch, and slope as required.
4. Slope catch basin cover slab and wing cover slab 1/4" to 1/2" per foot. Covers to match slope if in sidewalk.
5. Reference point = interface between wing cover and wing shelf at the face.

City Standards

Typical Wing Assembly Detail

Approved by:
Director

Date: Oct. 2019

DWG. No. S40-47
BASIN COVER WING COVER THROAT INVERT TOP OF CURB

SECTION C-C

1-1/2" BEVEL

SEE NOTE 6

REINF.-#4 @ 6" OC/EW, PLACE IN MIDDLE OF SLAB AND WALLS

SECTION D-D

1" TO 2", SEE NOTE 4

WING COVER

THROAT INVERT

TOP OF CURB

REINF.-#4 @ 6" OC/EW, PLACE IN MIDDLE OF SLAB AND WALLS

SECTION E-E

1" TO 2", SEE NOTE 4

WING COVER

THROAT INVERT

TOP OF CURB

REINF.-#4 @ 6" OC/EW, PLACE IN MIDDLE OF SLAB AND WALLS

NOTES:

1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. SEE STANDARD DETAILS-CATCH BASIN FLOW LINE TRANSITIONS (S40-33) AND CATCH BASIN THROAT CONFIGURATION (S40-32).
3. FOR SECTION PLAN VIEW, SEE STANDARD DETAIL-CATCH BASIN GENERAL (S40-36).
4. COMPENSATE FOR BASIN COVER AND WING, PITCH, AND SLOPE AS REQUIRED.
5. SLOPE BASIN AND WING COVER 1/4" TO 1/2" PER FOOT. COVERS TO MATCH SLOPE IF IN SIDEWALK.
6. REFERENCE POINT=INTERFACE BETWEEN WING COVER AND WING SHELF AT THE FACE.

CITY STANDARDS

TYPICAL WING SHELF

SECTIONS DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

DIRECTOR

DATE: OCT. 2019

DWG. No. S40-48

SCALE: N.T.S.
BOTTOM REINFORCEMENT - #7 E/W

TOP REINFORCEMENT - #4 E/W

TYPICAL SECTION C-C

TYPICAL SECTION E-E

TYPICAL SECTION E-E

TYPICAL SECTION C-C

NOTES:
1. FOR GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. NOSING SHALL BE USED WHERE SHOWN ON THE PLANS OR WHEN BASIN IS IN CURB RADII.
3. REINFORCEMENT SHOWN IS FOR STANDARD SIZES SHOWN. MAINTAIN REINFORCEMENT SIZE, AND SPACING, AND ADD ADDITIONAL BARS FOR MODIFIED STRUCTURES.

CITY STANDARDS

WING COVER SLAB SECTIONS AND REINFORCING DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

DATE: OCT. 2019

DWG. No. S40-49
NOTES:
1. GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. FOR BOND BEAM, REINFORCING STEEL SIZES AND PLACEMENT, AND COLLAR CURB REQUIREMENTS, SEE
   STANDARD DETAIL-REINFORCEMENT AND MISCELLANEOUS FOR TYPE I AND II INLETS (S40-53).
3. FOR GRATE AND FRAME REQUIREMENTS, SEE STANDARD DETAIL-GRATE AND FRAME FOR TYPE I AND II
   INLETS (S40-54).
4. INLET TO BE CONSTRUCTED ON COMPACTED SUBGRADE, 4" CONCRETE MAT, OR 6" COURSE AGGREGATE,
   AS ORDERED.
NOTES:
1. GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. FOR BOND BEAM, REINFORCING STEEL SIZES AND PLACEMENT, AND COLLAR CURB REQUIREMENTS, SEE STANDARD DETAIL-REINFORCEMENT AND MISCELLANEOUS FOR TYPE I AND TYPE II GRATE INLETS (S40-53).
3. FOR GRATE AND FRAME REQUIREMENTS, SEE STANDARD DETAIL-GRATE AND FRAME FOR TYPE I AND II INLETS (S40-54).
4. INLET TO BE CONSTRUCTED ON COMPACTED SUBGRADE, 4" CONCRETE MAT, OR 6" COURSE AGGREGATE, AS ORDERED.
5. FOR WALL PENETRATION SEALING, SEE STANDARD DETAIL-PRECAST STRUCTURE JOINT ASSEMBLY AND STRUCTURE SEALING (S40-92).

CITY STANDARDS

PRECAST GRATE INLET
TYPE I DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:
DATE: OCT. 2019
DWG. No. S40-51

SCALE: N.T.S.
DIRECTOR

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H:\Acadetails
NOTES:
1. GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (540-1).
2. FOR BOND BEAM, REINFORCING STEEL SIZES AND PLACEMENT, AND COLLAR CURB
   REQUIREMENTS, SEE STANDARD DETAIL-REINFORCEMENT AND MISCELLANEOUS FOR TYPE I AND
   TYPE II GRATE INLETS (540-53).
3. FOR GRATE AND FRAME REQUIREMENTS, SEE STANDARD DETAIL-GRATE AND FRAME FOR TYPE I
   AND II INLETS (540-54).
4. INLET TO BE CONSTRUCTED ON COMPACTED SUBGRADE, 4" CONCRETE MAT, OR 6" COURSE
   AGGREGATE, AS ORDERED.
5. FOR WALL PENETRATION SEALING, SEE STANDARD DETAIL-PRECAST STRUCTURE JOINT AND
   STRUCTURE SEALING (540-92).

CITY STANDARDS

PRECAST GRATE INLET
TYPE II DETAIL

ENGINEERING AND CAPITAL
IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

DIRECTOR

DATE: OCT. 2019
DWG. No. S40-52
**Typical Plan Views**

**Typical Section Views**

**Schedule**

<table>
<thead>
<tr>
<th>Inlet Type</th>
<th>Width Inside</th>
<th>Length Inside</th>
<th>Wall Thickness</th>
<th>Wall Reinforcement</th>
<th>Slab Thickness</th>
<th>Slab Reinforcement</th>
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<tr>
<td>Brick-I</td>
<td>2'-0&quot;</td>
<td>2'-9&quot;</td>
<td>8&quot;</td>
<td>N/A</td>
<td>8&quot;</td>
<td>#6 @ 9&quot; EW</td>
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<tr>
<td>Precast-I</td>
<td>2'-0&quot;</td>
<td>2'-9&quot;</td>
<td>8&quot;</td>
<td>#4 @ 10&quot; EW</td>
<td>8&quot;</td>
<td>#4 @ 9&quot; EW</td>
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<tr>
<td>Precast-II</td>
<td>3'-0&quot;</td>
<td>4'-2&quot;</td>
<td>8&quot;</td>
<td>#4 @ 10&quot; EW</td>
<td>8&quot;</td>
<td>#4 @ 12&quot; EW</td>
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**Notes:**
1. Final 18" minimum, shall be cast-in-place.
2. Provide 2" clearance from concrete face to reinforcement, or as indicated.

**City Standards**

**Reinforcement and Miscellaneous for Type I and Type II Grate Inlets Detail**

**Revisions**

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**Approved By:**

[Signature]

**Director:**

[Signature]

**Date:** Oct. 2019

**DWG. No.:** S40-53
BRICK AND PRECAST TYPE I INLET
MODIFIED USF 6611 GRATE

PRECAST TYPE II INLET
MODIFIED USF 6616 GRATE

NOTES:
1. RETICULINE GRATES SHALL BE BICYCLE SAFE, HAVE A H-20 RATING AND SHALL BE MANUFACTURED BY U.S. FOUNDRY AND MANUFACTURING CORPORATION OR APPROVED EQUAL.
2. RETICULINE GRATE, BASE FRAME, AND STUDS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

CITY STANDARDS

GRATE AND FRAME FOR TYPE I AND II INLETS DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY: 
DIRECTOR

DATE: OCT. 2019

DWG. No. S40-54
NOTES:
1. GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. FOR REINFORCING STEEL SIZES AND PLACEMENT AND COLLAR CURB REQUIREMENTS, SEE STANDARD DETAIL-REINFORCEMENT AND MISCELLANEOUS FOR TYPE III GRATE INLET (S40-56).
3. FOR GRATE AND FRAME REQUIREMENTS, SEE STANDARD DETAIL-GRATE AND FRAME FOR TYPE III GRATE INLET (S40-57).
4. INLET TO BE CONSTRUCTED ON COMPACTED SUBGRADE, 4" CONCRETE MAT, OR 6" COURSE AGGREGATE, AS ORDERED.
5. FOR WALL PENETRATION SEALING, SEE STANDARD DETAIL-PRECAST STRUCTURE JOINT AND STRUCTURE SEALING (S40-92), SHOWING FILTER FABRIC AT PIPE/STRUCTURE INTERFACE.

CITY STANDARDS

PRECAST GRATE INLET TYPE III DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY: ___________________________ DATE: OCT. 2019
DIRECTOR

SCALE: N.T.S.

S40-55
NOTES:
1. GENERAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).
2. PROVIDE 2" CLEARANCE FROM CONCRETE FACE TO REINFORCEMENT, OR AS INDICATED.
3. CIPL = CAST-IN-PLACE.

CITY STANDARDS

REINFORCEMENT AND MISCELLANEOUS FOR TYPE III GRATE INLET DETAIL

Approved by:

DATE: OCT. 2019
DWG. No. S40-56
### Reticuline Bar

1-1/4" x 3/16"

### Rivet, Typical

5" x 3-1/2" x 5/16" Angle, All Sides

### Intermediate Bar

1-1/2" X 1/4"

### Notch Bar, Typical

1/2" Expansion Joint Material

**NOTES:**

1. Reticuline Grates are 5" steel decking as described above, weighing 630 lbs and shall be bicycle safe, have a H-20 rating and shall be manufactured by the U.S. Foundry and Manufacturing Corporation or approved equal.

2. Reticuline grate assembly shall be hot dipped galvanized after fabrication.

---

**CITY STANDARDS**

**GRATE AND FRAME FOR TYPE III GRATE INLET DETAIL**

**ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT**

**CITY OF ST. PETERSBURG**

**APPROVED BY:**

**DIRECTOR**

**DATE:** OCT. 2019

**DWG. No.:** S40-57
FILTER MEDIA SPECIFICATIONS

FINE FILTER AGGREGATE FOR STORMWATER FILTRATION SYSTEMS AS REQUIRED BY SWFWMD SHALL BE WASHED MATERIAL, i.e., CLEAN CREEK GRAVELS, AND SILICA SAND; OR MIXTURES THEREOF WITH LESS THAN 1-PERCENT SILT, CLAY, AND ORGANIC MATTER.

1. THE FILTRATION MEDIA MUST HAVE A UNIFORMITY COEFFICIENT BETWEEN 1.5 AND 2.0, AND AN EFFECTIVE GRAIN SIZE OF 0.40 TO 0.55 MILLIMETERS.

2. THE VERTICAL PERMEABILITY RATE (K) SHALL BE AT LEAST 130-FEET PER DAY WHEN COMPACTED TO 98 PERCENT OF MAXIMUM DENSITY BY AASHTO T 180.

COURSE AGGREGATE SPECIFICATIONS

1. COARSE AGGREGATE SHALL BE GRAVEL OR STONE MEETING THE REQUIREMENTS OF THE FDOT-SSRBC, SECTIONS 901.

2. THE GRADATION SHALL MEET SECTION 901, SIZE NO. 7 OR 89 STONE, UNLESS OTHERWISE SPECIFIED.

3. SAND OR LIMEROCK WILL NOT BE AN ACCEPTABLE COURSE AGGREGATE.

CITY STANDARDS

FILTRATION SYSTEM NOTES

REVISIONS

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ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY: [Signature]
DIRECTOR

DATE: OCT. 2019
DWG. NO. S40-60

SCALE: N.T.S.
EMBANKMENT SLOPE AT 3:1

EMBANKMENT SLOPE AT 4:1

EMBANKMENT SLOPE AT 5:1

NOTE: ATTACH SCREEN TO COLLAR W/ 1/4" x 1" FLAT WASHER AND 1/4" x 2" ANCHOR BOLT W/ LEAD ANCHOR AT EACH CORNER 1" FROM EDGE OF SCREEN.

CITY STANDARDS

FILTRATION SYSTEM
COLLAR DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY of ST. PETERSBURG

APPROVED BY: [Signature]
DIRECTOR

DATE: OCT. 2019
DWG. No. S40-61
CAST IRON FRAME AND COVER
U.S. FOUNDARY #USF 7621, OR
EQUAL LABEL LID: STORM DRAIN

FINISHED GRADE

16" DIA. X 8" CONCRETE COLLAR
(3000 psi CONCRETE)

PVC CLEAN OUT PLUG
PVC PIPE
PVC 11 1/4 BEND

PLUG AT END OF LINE ONLY

6" DIA. NON-PERFORATED PVC PIPE
6" PVC WYE
COURSE AGGREGATE, PER SPECIFICATIONS, TYP.
6" DIA. PERFORATED PVC PIPE

CITY STANDARDS

FILTRATION UNDERDRAIN
CLEANOUT DETAIL

ENGINEERING AND CAPITAL
IMPROVEMENT DEPARTMENT
CITY of ST. PETERSBURG

APPROVED BY:
DATE: OCT. 2019

S40-62
NOTES:
1. 6" PVC PIPES SHALL BE PARALLEL AND ORIENTED SUCH THAT PERFORATED SIDES FACE EACH OTHER.
2. ARRANGEMENT OF THE 3/8" PERFORATIONS (AS SHOWN ABOVE) SHALL BE REPEATED ALONG THE PIPE LENGTH.
3. PERFORATIONS MUST BE DRILLED BY THE CONTRACTOR AS SHOWN, EACH VERTICAL ROW REQUIRES 9 PERFORATIONS EACH. VERTICAL ROWS ARE AT 3" O.C. FOR THE FULL LENGTH OF THE FILTRATION PIPE.
CITY STANDARDS

OCT. 2019

S40-64

COURSE AGGREGATE, PER SPECIFICATIONS, TYP.

MIRAFI 140N SOCK, OR EQUAL

6" PERFORATED PVC OUTFALL PIPE

30 MIL PVC LINER, OR EQUAL

T.O.B. ELEVATION

2'-0"

12" MIN. LAP

FILTER MEDIA, PER SPECIFICATIONS

12" MIN. LAP

DATA SCHEDULE

T.O.B. ELEV. ___.*

25 YEAR STORAGE ELEV. ___.*

TOP TREATMENT STORAGE ELEV. ___.*

SEASONAL HIGH WATER ELEV. ___.*

BOTTOM ELEV. ___.*

6" OUTFALL PIPE ELEV. ___.*

6" RECHARGE PIPE ELEV. ___.*

X = ___ " RUN*

* PER APPLICATION

CITY STANDARDS

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

POND PARALLEL PIPE FILTRATION SYSTEM DETAIL

APPROVED BY:

DIRECTOR

DATE: OCT. 2019

DWG. No. S40-64
NOTES:
1. POST; 2"x2" WOOD, P.T. OR 2-1/2"Ø STEEL AT 6' CENTERS, MAXIMUM.
2. GEOTEXTILE: GRAB TENSILE AT 90 LBS, TRAPEZOIDAL TEAR AT 35 LBS., MULLEN BURST AT 180 PSI.
3. GEOTEXTILE MATERIAL SHALL BE BURIED IN THE GROUND A MINIMUM OF 12" AND BACK FILLED.
4. ALSO SEE FDOT INDEX 199, "GEOTEXTILE CRITERIA", EROSION CLASS.
5. OPTIONAL POST POSITION REQUIRED WHEN SLOPE IS GREATER THAN 1:2.
CLOSED CELL SOLID PLASTIC FOAM FLOTATION (6" DIA. EQUIV.) (12 LBS./FT. BUOYANCY)

18 OZ. NYLON RENFORCED PVC FABRIC (300 PSI TEST) WITH LACING GROMMETS

5/8" POLYPRO ROPE (600 LBS. BREAKING STRENGTH)

1/4" GALVANIZED CHAIN

PANEl I=5' STD. (SINGLE PANEL FOR DEPTHS OF 5' OR LESS)
PANEl II=5' STD. (ADDITIONAL PANEL FOR DEPTHS > 5')

1/4" GALVANIZED CHAIN

TYPE I BARRIER

5/8" VINYL SHEATHED "EAW" STEEL CABLE WITH GALVANIZED CONNECTORS (9800 LBS. BREAKING STRENGTH) (TOOL FREE DISCONNECT)

CLOSED CELL SOLID PLASTIC FOAM FLOTATION (8" DIA. EQUIV.) (17 LBS./FT. BUOYANCY)

SLOTTED PVC CONNECTOR PIPE (METAL COLLAR REINFORCED)

STRESS PLATE

5/16" GALVANIZED CHAIN

PANEl I=5' STD. (SINGLE PANEL FOR DEPTHS OF 5' OR LESS)
PANEl II=5' STD. (ADDITIONAL PANEL FOR DEPTHS > 5')

5/16" GALVANIZED CHAIN

TYPE II BARRIER

NOTE:
SEE STANDARD DETAIL-FLOATING TURBIDITY BARRIER NOTES FOR ADDITIONAL INFORMATION. (S40-72)

CITY STANDARDS

FLOATING TURBIDITY BARRIER ELEVATIONS DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:
DIRECTOR

DATE: OCT. 2019
DWG. No. S40-71
NOTES:
1. SEE STANDARD DETAIL-FLOATING TURBIDITY BARRIER ELEVATIONS (S40-71) FOR ADDITIONAL VIEWS AND CONDITIONS.
2. CURTAIN TO REACH THE BOTTOM UP TO DEPTHS OF 10'. 2 PANELS ARE TO BE USED FOR DEPTHS GREATER THAN 10' UNLESS SPECIAL DEPTH CURTAINS SPECIFICALLY ARE CALLED FOR IN THE PLANS OR AS DIRECTED BY THE ENGINEER.
3. COMPONENTS OF TYPES I AND TYPES II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND/OR TYPE II SHALL BE AS APPROVED BY THE ENGINEER.
4. TURBIDITY BARRIERS SHALL BE USED IN ALL PERMANENT BODIES OF WATER REGARDLESS OF WATER DEPTH.
5. NUMBER AND SPACING OF ANCHORS DEPENDENT ON CURRENT VELOCITIES.
6. DEPLOYMENT OF BARRIER AROUND PILE LOCATIONS MAY VERY TO ACCOMMODATE CONSTRUCTION OPERATIONS.
7. NAVIGATION MAY REQUIRE SEGMENTING BARRIER DURING CONSTRUCTION ACTIVITIES.
8. FOR ADDITIONAL INFORMATION, SEE SECTION 104 OF THE FDOT/SSRBC SPECIFICATIONS.

CITY STANDARDS

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

DIRECTOR

SCALE: N.T.S.

DATE: OCT. 2019
DWG. No. S40-72
NOTES:
1. ALL EXPOSED EDGES TO HAVE 3/4" CHAMFER.
2. SHEET PILING MINIMUM REQUIREMENTS: SECTION MODULUS=8.6 CI/FT OF WALL, THICKNESS=0.25 IN.,
   LENGTH=10 FT., EMBEDMENT=3 IN., Z OR ARCH SHAPE.
3. ALL REINFORCEMENT: #5 @ 9" ON CENTER EACH WAY WITH 2" CONCRETE COVER MINIMUM, 3" CONCRETE
   COVER WHEN CAST AGAINST SOIL.
4. #5 DOWEL WITH 3' x 3' LEGS @ 9" OC WHEN PIPE SIZE EXCEEDS 42" DIAMETER. CONTINUE DOWELS IN THE
   SIDE WALLS UNTIL WALL HEIGHT IS 3'-2". ALSO 1-#5 BAR, HORIZONTALLY AT TOP OF ROW.

CITY STANDARDS

ENGINEERING AND CAPITAL
IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

SCALE: N.T.S.

TYPE H-I
HEADSTRUCTURE DETAIL

APPROVED BY:

DIRECTOR

DATE:
OCT. 2019

DWG No.
S40-80
SLOPE SPILLWAY @ 1/2" PER FOOT

FINISHED GRADE

6-#5 AS SHOWN WITH #4 HOOP @ 9" OC
SLOPE TO MATCH EMBANKMENT

FINISHED GRADE

ADDITIONAL #5 BAR
3" COVER

FINISHED GRADE

COMPACTED SUBGRADE, 4" CONCRETE MAT OR 6" COURSE AGGREGATE, AS ORDERED

NOTES:

1. ALL EXPOSED EDGES TO HAVE 3/4" CHAMFER.

2. SHEET PILING MINIMUM REQUIREMENTS: SECTION MODULUS=8.6 CI/FT OF WALL, THICKNESS=0.25 IN., LENGTH=10 FT., EMBEDMENT=3 IN., Z OR ARCH SHAPE.

3. ALL REINFORCEMENT: #5 @ 9" ON CENTER EACH WAY WITH 2" CONCRETE COVER MINIMUM, 3" CONCRETE COVER WHEN CAST AGAINST SOIL.

4. #5 DOWEL WITH 3' x 3' LEGS @ 9" OC WHEN PIPE SIZE EXCEEDS 42" DIAMETER. CONTINUE DOWELS IN THE SIDE WALLS UNTIL WALL HEIGHT IS 3'-2". ALSO 1-#5 BAR, HORIZONTALLY AT TOP OF ROW.

CITY STANDARDS

TYPE H-II
HEADSTRUCTURE DETAIL

APPROVED BY: [Signature]

DATE: OCT. 2019

DWG. No. S40-81
NOTES:
1. ALL EXPOSED EDGES TO HAVE 3/4" CHAMFER.
2. SHEET PILING MINIMUM REQUIREMENTS: SECTION MODULUS=8.6 CI/FT OF WALL, THICKNESS=0.25 IN.,
   LENGTH=10 FT., EMBEDMENT=3 IN., Z OR ARCH SHAPE.
3. ALL REINFORCEMENT: #5 @ 9" ON CENTER EACH WAY WITH 2" CONCRETE COVER MINIMUM, 3" CONCRETE
   COVER WHEN CAST AGAINST SOIL.
4. #5 DOWEL WITH 3' x 3' LEGS @ 9" OC WHEN PIPE SIZE EXCEEDS 42" DIAMETER. CONTINUE DOWELS IN THE
   SIDE WALLS UNTIL WALL HEIGHT IS 3'-2". ALSO 1-#5 BAR, HORIZONTALLY AT TOP OF ROW.

CITY STANDARDS

ENGINEERING AND CAPITAL
IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

SCALE: N.T.S.

TYPE H-III
HEADSTRUCTURE DETAIL

APPROVED BY:  
DIRECTOR

DATE: OCT. 2019

S40-82
CITY STANDARDS

REVISIONS

BY DATE

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY of ST. PETERSBURG

SCALE: N.T.S.

PRECAST STORM CONFLICT STRUCTURE DETAIL
(TYPE III MH)

APPROVED BY: Brijesh Prayag

DATE: OCT. 2019

DWG. No. S40-90
NOTE:
1. SEE STANDARD DETAIL- PRECAST GRATE INLET FOR OTHER CONSTRUCTION REQUIREMENTS.
2. OIL SKIMMER CAN BE CONSTRUCTED FROM THE FOLLOWING OPTIONS: FIBERGLASS, HDPE, OR PVC.
3. OMIT ANCHOR STUD AT CONTROL SLOT AREAS.

CITY STANDARDS

DETENTION AREA OUTFALL
CONTROL STRUCTURE DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

DIRECTOR

DATE: OCT. 2019

SCALE: N.T.S.

DWG. No. S40-91

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NOTES:
1. JOINTS SHALL CONFORM TO ASTM C443.
2. A LAYER OF PREFORMED JOINT SEALING COMPOUND SUCH AS "RAM-NEK" SHALL BE INSTALLED AT ALL PRECAST STRUCTURE JOINTS AND STRUCTURE TOP AND CATCH BASIN LID PEDESTALS PRIOR TO ASSEMBLY.
3. FILTER FABRIC SHALL BE MIRAFI 140-N, OR APPROVED EQUAL. FILTER FABRIC IS TO BE PLACED IN A BEDDING OF BITUMINOUS MASTIC AND APPLIED AS PER FDOT DESIGN STANDARDS INDEX NO. 201.
4. FOR ADDITIONAL NOTES, SEE STANDARD DETAIL-STORM STRUCTURE NOTES (S40-1).

CITY STANDARDS

PRECAST STRUCTURE JOINT ASSEMBLY AND STRUCTURE SEaling DETAIL

PREPARED BY: 

DIRECTOR: 

DATE: OCT. 2019 

DWG. No. S40-92
PROPOSED SAND CEMENT RIP RAP FOR EROSION PROTECTION

SECTION A-A

NOTES:
1. ALL EXPOSED EDGES TO HAVE 3/4" CHAMFER.
2. ALL REINFORCING STEEL SHALL HAVE 2" CONCRETE COVER MINIMUM.

CITY STANDARDS

CONCRETE SPLASH PAD DETAIL

ENGINEERING AND CAPITAL IMPROVEMENT DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY: [Signature]

DATE: OCT. 2019

DWG. No. S40-93
NOTES:
1. ALL CONDUITS SHALL HAVE AN INTERNAL JOINT GASKET CONFORMING TO ONE OF THE FOLLOWING:
   - ROUND PIPE: RUBBER GASKET, OR APPROVED EQUAL.
   - ELLIPTICAL PIPE: COLD ADHESIVE PREFORMED PLASTIC GASKET OR RUBBER GASKET, OR APPROVED EQUAL(S).
   - BOX CULVERT: RUBBER, PLASTIC, OR PREFORMED BITUMINOUS JOINT SEALING MATERIAL "RAM-NEK", OR APPROVED EQUAL.
2. THE CONTRACTOR SHALL CHOOSE FROM THE MATERIALS LISTED BELOW FOR EXTERNAL WRAP OF EACH CONDUIT JOINT, EXCEPT THE EXTERNAL SEALING BAND AND FILTER FABRIC WRAP SHALL BE MANDATORY FOR BOX CULVERTS.
   A. EXTERNAL JOINT SEALING BAND(S) SHALL BE AS LISTED BELOW:
      - ROUND PIPE WITH A BELL TYPE JOINT SHALL BE MAR MAC WRAP (*), OR APPROVED EQUAL. MINIMUM 14" WIDE BAND, MINIMUM OF 2 BANDS PER JOINT.
      - ROUND PIPE, ELLIPTICAL PIPE, AND BOX CULVERT SHALL BE MAR MAC WRAP (*) EXTERNAL PIPE SEALING BAND, OR APPROVED EQUAL. MINIMUM 13" WIDE BAND, CENTERED ON JOINT.
      * DISTRIBUTED BY THE MAR MAC CONSTRUCTION PRODUCTS COMPANY.
   B. FILTER FABRIC SHALL BE TYPE D-3 PER DOT SSRC Section 985, OR APPROVED EQUAL, CENTERED ON JOINT. FILTER FABRIC SHALL BE SECURED BY STRAPS OR OTHER METHOD APPROVED BY THE MANUFACTURER.
3. ALL TONGUE AND GROOVE, AND BELL AND SPIGOT SURFACES ADJACENT TO THE INTERNAL JOINT GASKET(S) SHALL HAVE LUBRICANT APPLIED AS PER GASKET MANUFACTURES RECOMMENDATIONS.
SAW CUT AT TERMINAL LIMIT

EXISTING GRAVITY PIPE

1/2" PLASTER COVER

8" WALL FOR PIPES 12" THRU 30", ALSO EQUIVLENT SIZE ELIPPTICAL PIPES

12" WALL FOR PIPES 36" THRU 54", ALSO EQUIVLENT SIZE ELIPPTICAL PIPES

RUNNING BOND: 2 PER PIPES 12" THRU 30" TYP.
RUNNING BOND: 4 PER PIPES 36" THRU 54" TYP.

TYPICAL SECTION VIEW

NOTE:
BRICK, MOTAR, AND PLASTER FOR BULKHEAD SHALL CONFORM TO THE TECHNICAL SPECIFICATIONS.
6' CHAINLINK FENCE REQUIRED, WHEN SLOPES ARE GREATER THAN ALLOWED, OR WHEN DIRECTED.

MIN 15' MAINTENANCE ACCESS AREA

EX. GROUND

1'   4'   1'

VARRIES

TYPICAL LAKE SECTION VIEW

NOTES:
1. SLOPES FOR LAKES, DETENTION PONDS AND RETENTION PONDS SHALL CONFORM TO CITY CODE: 16.40.140.4.4.(C).

MIN 15' MAINTENANCE ACCESS AREA

EX. GROUND

1'   2'

VARRIES

SEE NOTE 1

TYPICAL CHANNEL SECTION VIEW

NOTES:
1. CHANNELS SHALL HAVE A SIDE SLOPE OF 2:1 MAX.
2. THE CHANNEL SLOPE SHALL NOT EXCEED THE SATURATED ANGLE OF REPOSE FROM THE GEOTECHNICAL REPORT.