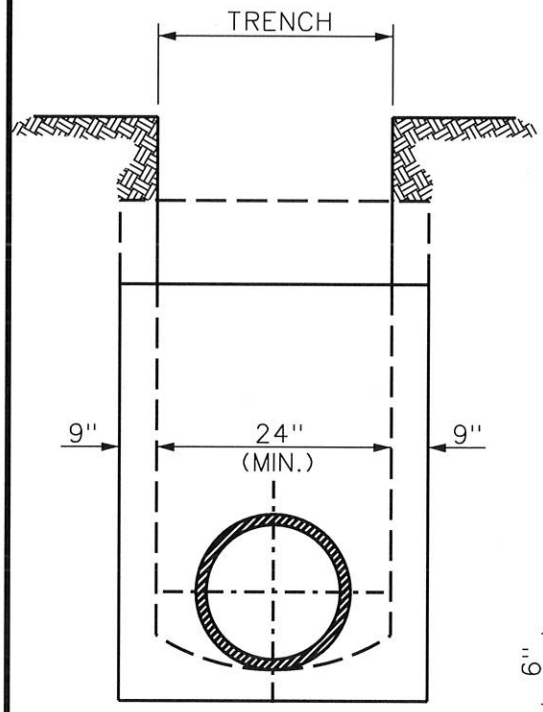
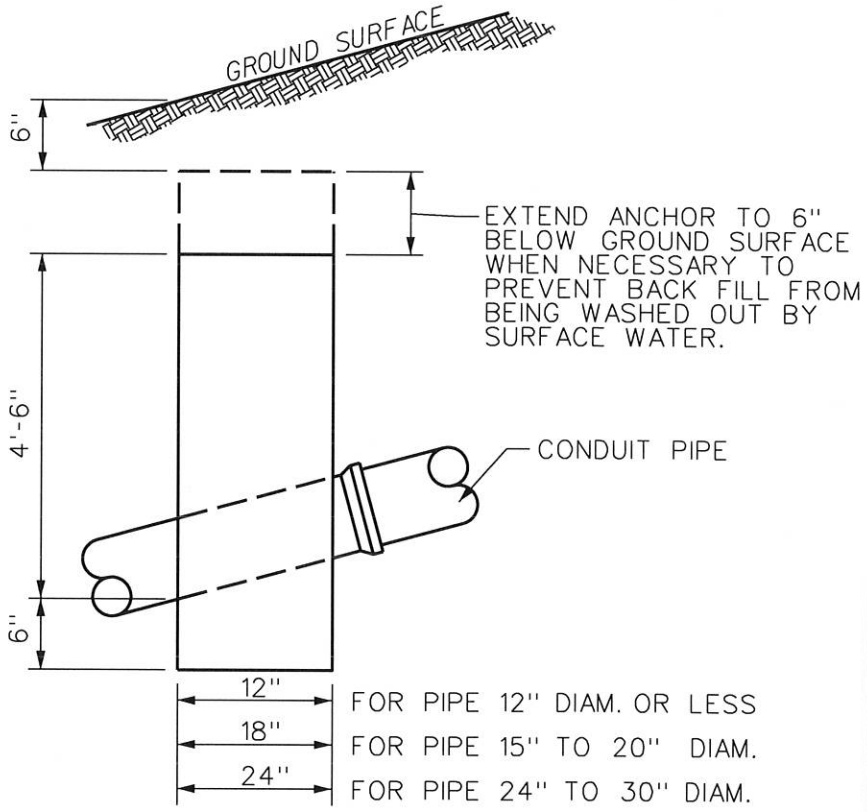
PGH2O Pittsburgh Water & Sewer Authority

APPENDIX K
PWSA WATER AND SEWER STANDARD DETAILS FOR PRIVATE CONSTRUCTION





CONCRETE ANCHORS FOR RIGID PIPE ON STEEP GRADES

NOTES:

1. PROVIDE NO ANCHORS ON GRADES LESS THAN 24%
2. PROVIDE ANCHORS 36' c/c ON GRADES BETWEEN 24% AND 34%
3. PROVIDE ANCHORS 24' c/c ON GRADES BETWEEN 34% AND 50%
4. PROVIDE ANCHORS 16' c/c ON GRADES BETWEEN 50% AND 70%
   FOR CONDITIONS OTHER THAN SHOWN HEREON, ANCHORS SHALL BE PROVIDED AS REQUIRED BY THE CONTRACT PLANS OR AS ORDERED IN THE FIELD BY THE DIRECTOR.

REVISIONS	
1. JLK 10-04-04	
2. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

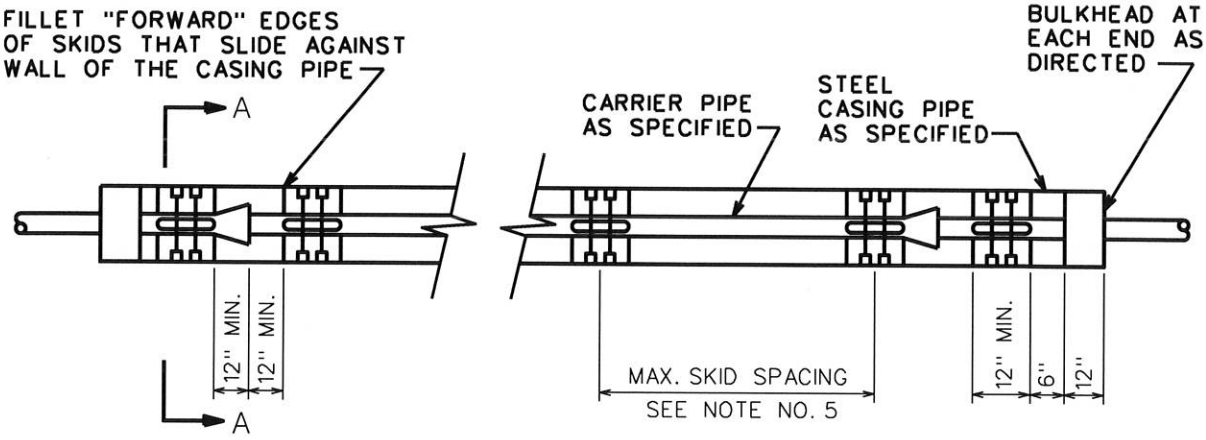
Concrete Anchor

Scale: N.T.S.

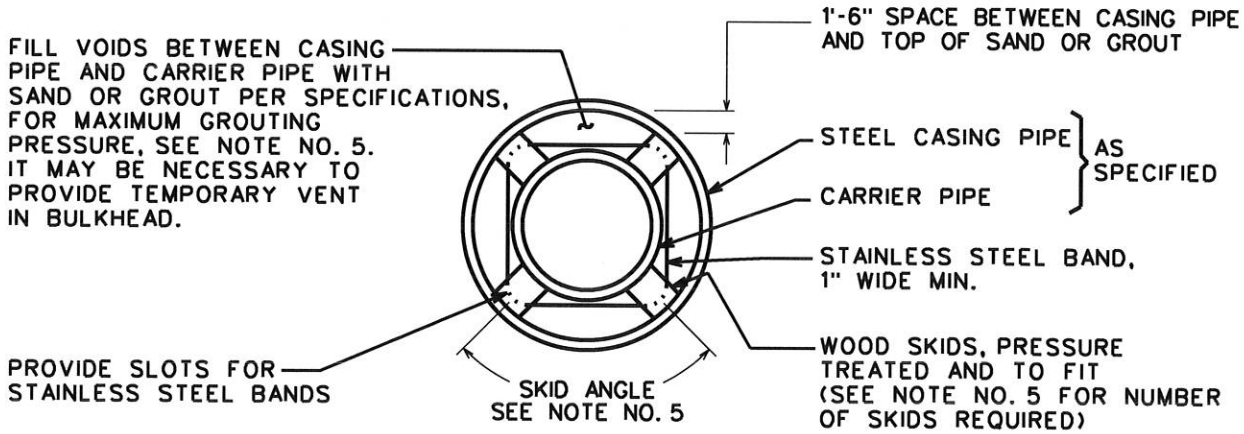
M:\pwsa\gis\det\Standards\stdanchor.det

Supplemental Detail Drawing: **ANCHOR**

2/24/2014



PLAN



SECTION A-A

NOTES:

1. ALL DIMENSIONS ARE TYPICAL/MINIMUM UNLESS OTHERWISE SPECIFIED.
2. SKIDS MAY BE CONTINUOUS.
3. INSTALL PIPE WITHIN CASING PIPE BY PUSHING OR PULLING. PROTECT ENDS OF PIPE AS PER MANUFACTURER'S RECOMMENDATION.
4. LUBRICATE BETWEEN WOOD SKIDS AND CASING PIPE USING FLAX SOAP OR DRILLING MUD. DO NOT USE PETROLEUM LUBRICANTS.
5. METHOD OF INSTALLATION, CASING PIPE SIZE, NUMBER AND SIZE OF SKIDS, SKID ANGLE, SKID SPACING AND GROUTING PRESSURE SHALL BE DETERMINED IN THE FIELD AS PER THE RECOMMENDATIONS OF THE MANUFACTURER SUPPLYING THE CARRIER PIPE, UNLESS OTHERWISE SPECIFIED.
6. STAINLESS STEEL CASING SPACERS MAY BE UTILIZED IN LIEU OF WOOD SKIDS. (SEE NOTE 5 IF APPLICABLE)

REVISIONS	
1. RDH 10-20-00	
2. LRC 1-31-14	

Approved by:

2/24/2014

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

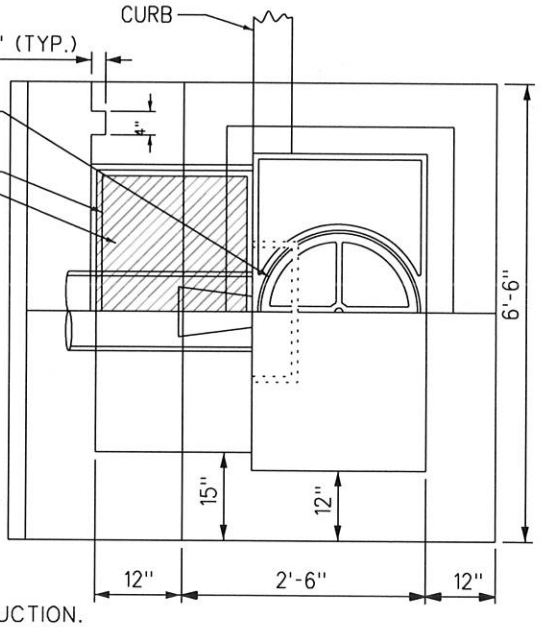
Pittsburgh Water and Sewer Authority

Carrier/Casing Pipe

Scale: N.T.S.

M:\pwsa\gis\det\Standards\stdcasingpipe.det

Supplemental Detail Drawing: **CP-1**



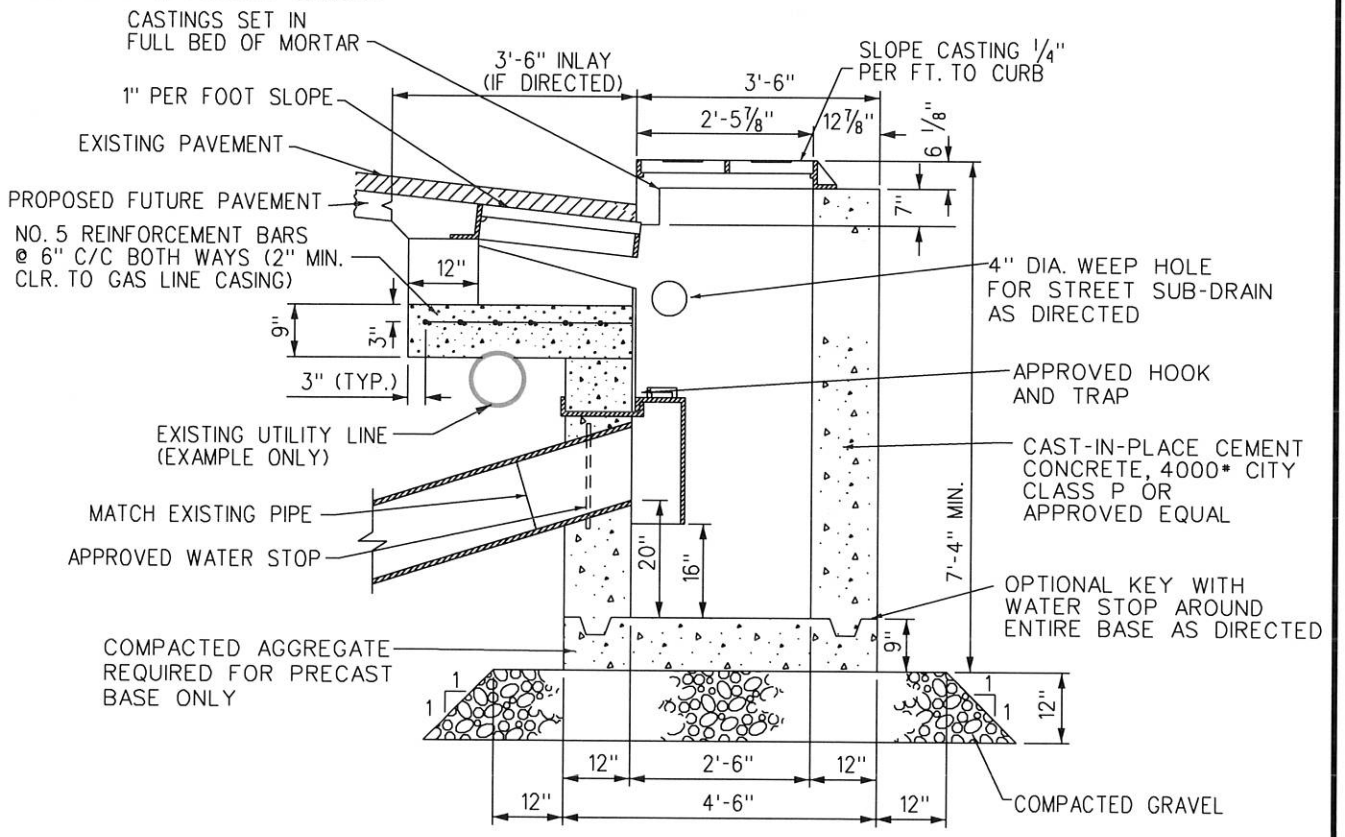
NOTES:

1. SEE SPECIFICATIONS FOR EXCAVATION, CONSTRUCTION, AND BACKFILLING WITH APPROVED AGGREGATE AND CEMENT MIXTURES.
2. CONCRETE FOR BASE SHALL BE 4000* CITY CLASS P. 12" THICK FOR PLAIN CEMENT, OR 8" THICK REINFORCED CEMENT FOR BASE AND WALLS. ALL REBARS ARE *6 VERTICAL BARS AT 12" C.C.
3. ALL OUTSIDE JOINTS TO BE STRUCK FLUSH.
4. CHAMFER ALL EXPOSED EDGES 1" MINIMUM.
5. PRECAST INLETS PERMITTED, BUT MUST BE SUBMITTED FOR APPROVAL BEFORE CONSTRUCTION.
6. CASTING NUMBERS ARE CITY OF PITTSBURGH/PWSA STANDARDS. HOOK PATTERN NO. 404; TRAP PATTERN NO.402-15 OR APPROVED EQUAL.
7. HOOD AND TRAP MUST BE SEALED TO CATCH BASIN WALL WITH APPROVED SEALER.

FRAME GRATE & CASTING SCHEDULE

HOOK *404
TRAP *402.15
FRAME - TYPE 75
GRATE - TYPE 71
CASTING - TYPE 48
CASTING - TYPE 47

SECTIONAL PLAN - STRAIGHT CURB



SECTIONAL ELEVATION

REVISIONS	
1. MSR 5-13-02	
2. MAC 6-04	
3. MAC 3-18-09	
4. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

CATCH BASIN TYPE 1 MODIFIED (Over Existing Utility)

Scale: N.T.S.

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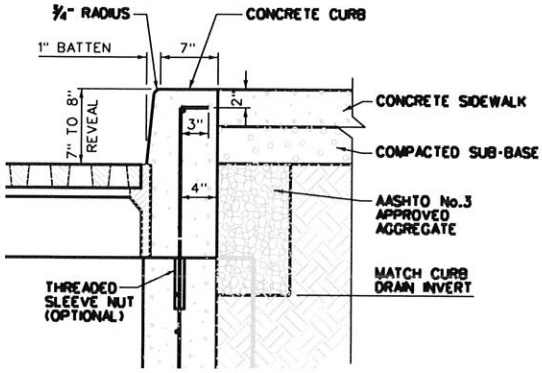
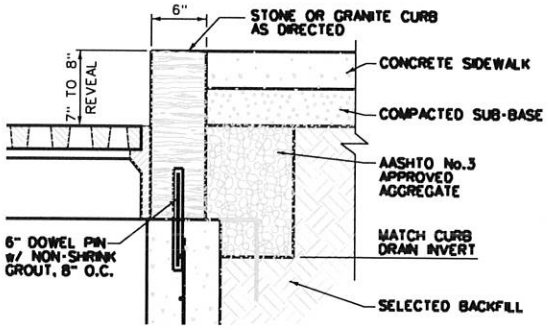
Supplemental Detail Drawing: CB1M

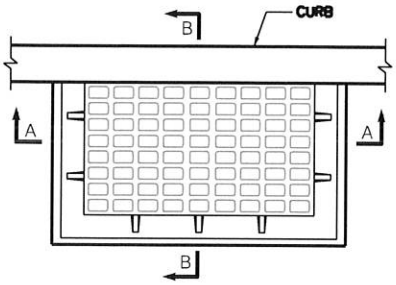
2/24/2014



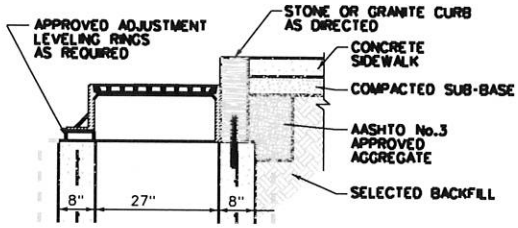
CONCRETE CURB DETAIL



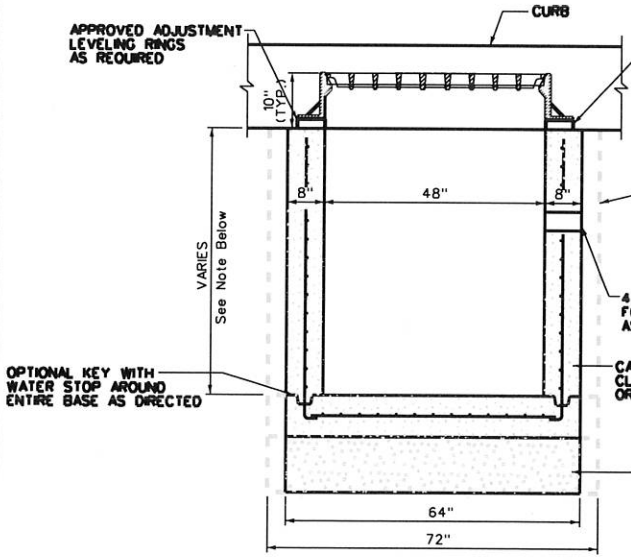
STONE CURB DETAIL



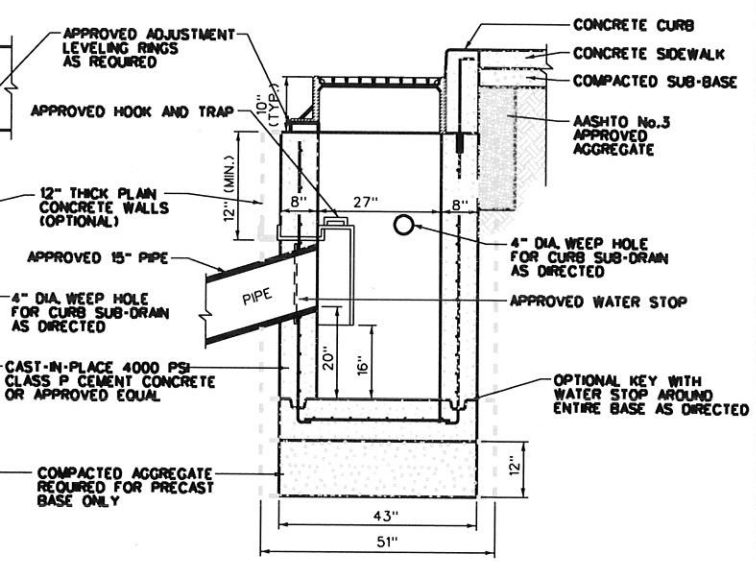
PLAN



SECTION B–B w/STONE CURB



SECTION A–A



SECTION B–B w/CONC. CURB

NOTES:

1. SEE SPECIFICATIONS FOR EXCAVATION, CONSTRUCTION, AND BACKFILLING WITH APPROVED AGGREGATE AND CEMENT MIXTURES.
2. CEMENT CONCRETE FOR CATCH BASIN WALL SHALL BE 4000 PSI CLASS P, 12" THICK PLAIN CONCRETE, OR 8" THICK REINFORCED CONCRETE FOR BASE AND WALLS. VERTICAL BARS FOR WALL No. 6 REBAR AT 6" O.C.; HORIZONTAL BARS FOR WALL AND/OR BASE SLAB No. 4 REBAR AT 12" O.C.
3. ALL OUTSIDE JOINTS TO BE STRUCK FLUSH.
4. CHAMFER ALL EXPOSED EDGES 1" MINIMUM.
5. PRECAST INLETS PERMITTED, BUT MUST BE SUBMITTED FOR PWSA APPROVAL BEFORE CONSTRUCTION.
6. CASTING NUMBERS ARE CITY OF PITTSBURGH/PWSA STANDARDS. HOOK PATTERN NO. 404; TRAP PATTERN NO.402-15 OR APPROVED EQUAL.
7. TYPICAL STORM INLET DEPTH IS 4' FROM BOX FLOOR TO TOP OF BOX WALL; TYPICAL CATCH BASIN DEPTH IS 6' FROM BOX FLOOR TO TOP OF BOX WALL.
8. HOOD AND TRAP MUST BE SEALED TO CATCH BASIN WALL AS DIRECTED.

R E V I S I O N S	
1. DWP 4-7-05	
2. MAC 3-18-09	
3. MAC 5-19-09	
4. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

3-FLANGE FRAME, TYPE 11 CATCH BASIN

Scale: N.T.S.

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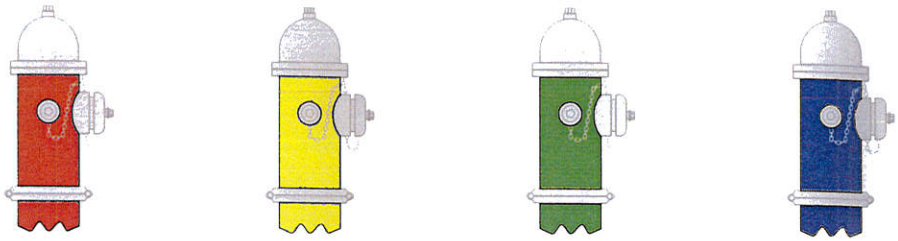
Supplemental Detail Drawing: **CB2005**

2/24/2014

BODY COLOR CODE BY MAIN SIZE



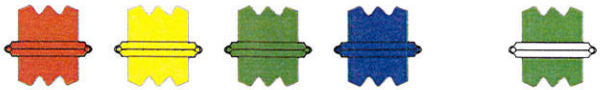
RED
MAINS 8" & SMALLER

YELLOW
MAINS 10" THRU 20"

GREEN
MAINS 24" & LARGER

DARK BLUE
WATERWORKS HYDRANT
NOT FOR FIRE USE

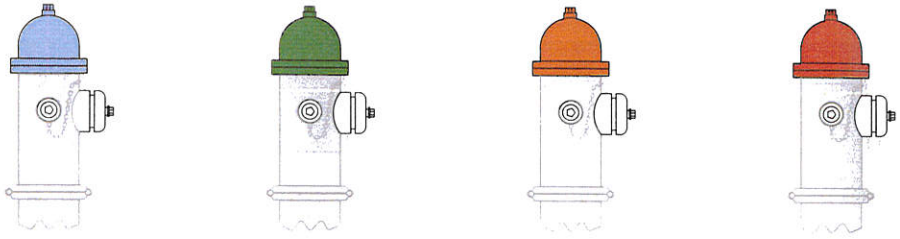
BREAKAWAY RING COLOR CODE
BY No. OF MAINS CONNECTED TO THE HYDRANT



SAME AS BODY COLOR
1 MAIN

COLOR WHITE
2 OR MORE MAINS

NEW BONNET COLORS WITH NFPA CODING - POTABLE WATER

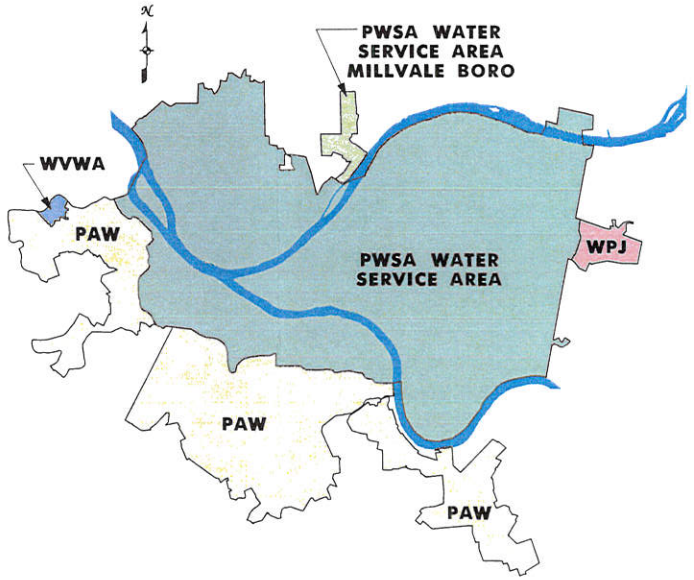


LIGHT BLUE
CLASS AA
1500 GPM OR MORE

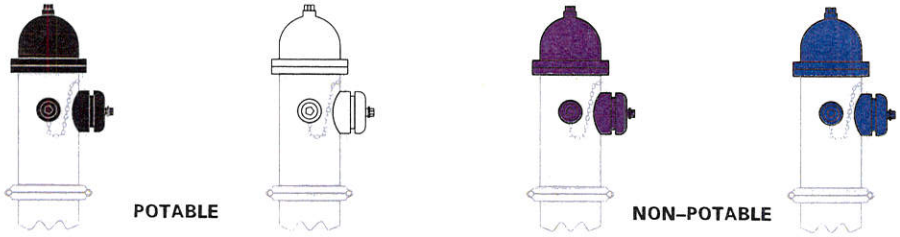
GREEN
CLASS A
1000–1499 GPM

ORANGE
CLASS B
500–999 GPM

RED
CLASS C
499 GPM OR LESS



ORIGINAL BONNET & CAP COLORS PRIOR TO CONVERSION TO NFPA CODING
POTABLE vs. NON-POTABLE WATER



POTABLE

BLACK

WHITE

NON-POTABLE

PURPLE

DARK BLUE

NOTE:
HYDRANT COLOR SCHEME IS CURRENTLY BEING CONVERTED TO THE NFPA CODING STANDARD. UPON COMPLETION, THE BLACK AND WHITE BONNETS WILL BE OBSOLETE.

REVISIONS		
1. DeP	4-05-01	
2. LRC	6-05-08	
3. LRC	7-24-08	
3. LRC	4-12-10	
Approved by:		

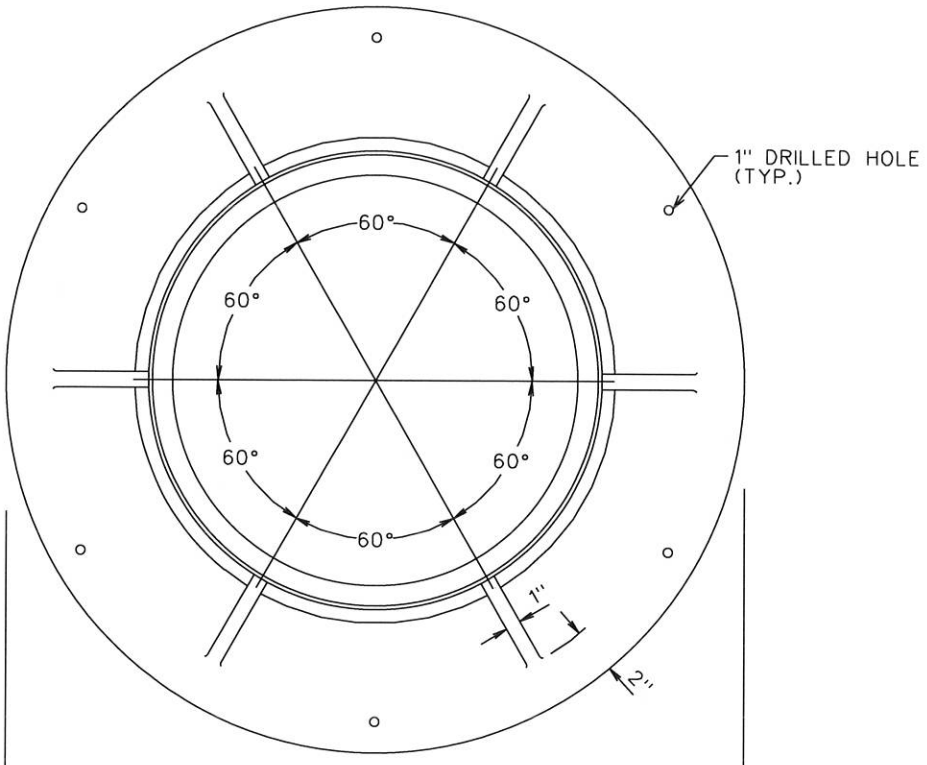
PWSA
Engineering & Construction Division

Pittsburgh Water and Sewer Authority
Standard Hydrant Color Codes

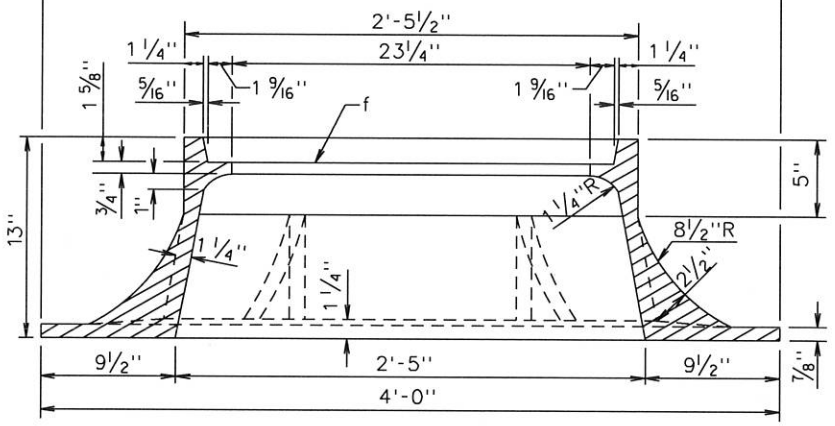
Scale N.T.S.

WS-HYD

M:\pwsa\gis\def\Standards\stdhydcolor.def



PLAN



SECTION

(FOR BRICK/BLOCKSTONE STREETS)
STANDARD WEIGHT 722 LB.

NOTES:

1. FRAMES AND COVERS MUST BE MACHINED TO INSURE GOOD BEARING AND PROPER FIT IN ANY POSITION.

2. CAST IRON SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS, ASTM DESIGNATION: A48 MIN. CLASS No. 30 GRADE MINIMUM STRENGTH.

R E V I S I O N S	
1. MAC 3-3-04	
2. MAC 3-2-05	
3. DWP 10-15-05	
4. LRC 1-31-14	
Approved by:	

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

MANHOLE FRAME CASTING (CITY OF PGH / PWSA No. 23)

Scale: N.T.S.

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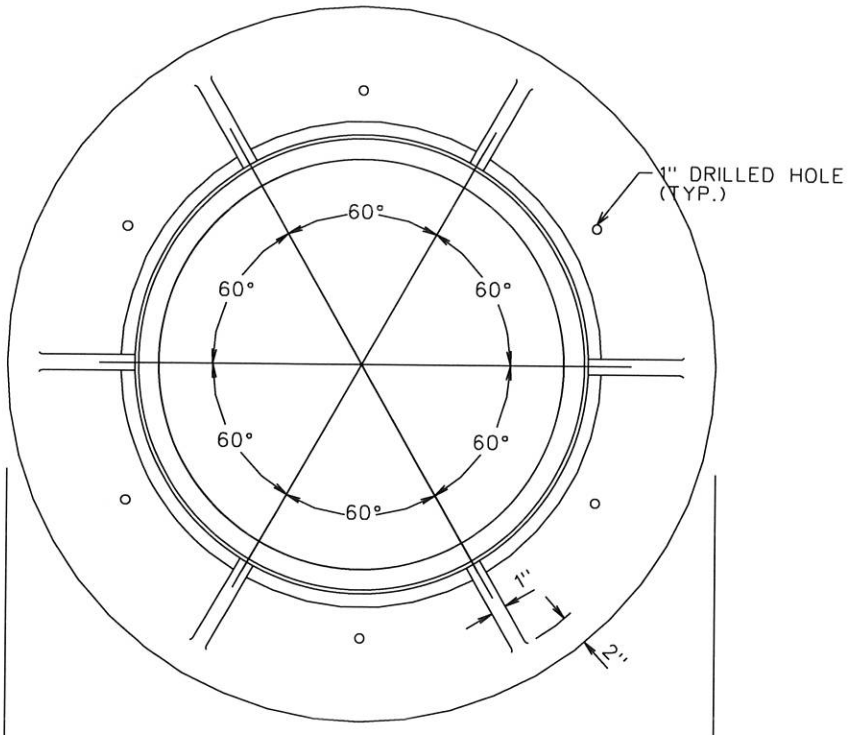
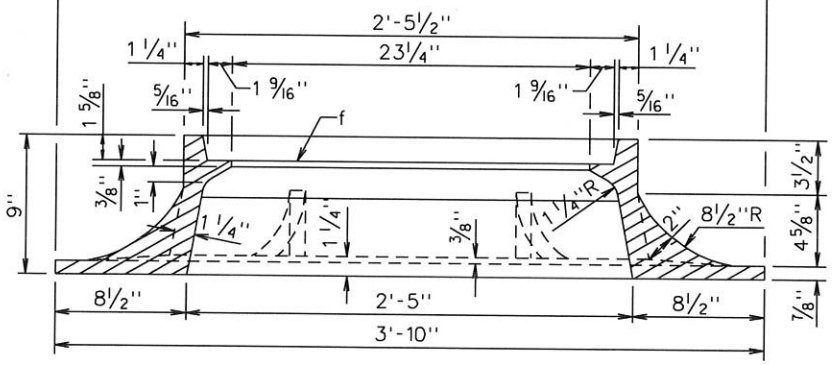
Supplemental Detail Drawing: **MFC23**

2/24/2014



PLAN



SECTION

NOTES:

1. FRAMES AND COVERS MUST BE MACHINED TO INSURE GOOD BEARING AND PROPER FIT IN ANY POSITION.

2. CAST IRON SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS, ASTM DESIGNATION: A48 MIN. CLASS No. 30 GRADE MINIMUM STRENGTH.

REVISIONS	
1. MSR 4-18-01	5. LRC 1-31-14
2. MAC 3-2-05	
3. DWP 10-15-05	
4. MAC 11-1-07	
Approved by:	

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

MANHOLE FRAME CASTING (CITY OF PGH / PWSA No. 26)

Scale: N.T.S.

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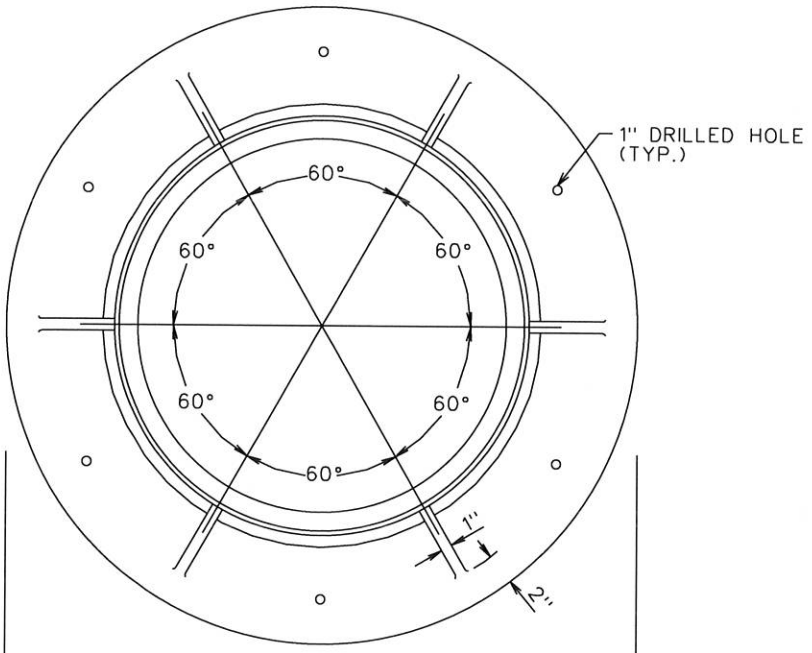
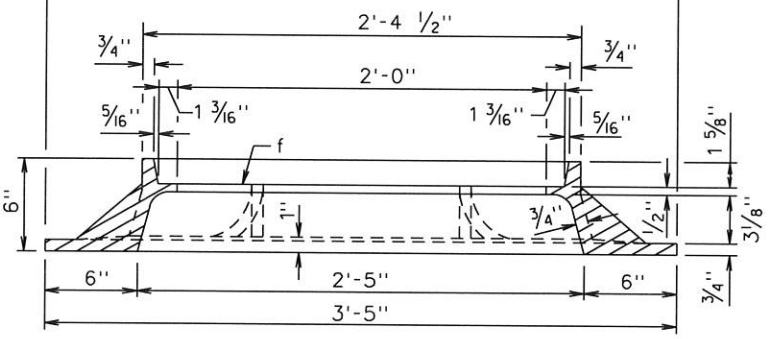
Supplemental Detail Drawing: MFC26

2/24/2014



PLAN



SECTION

NOTES:

1. FRAMES AND COVERS MUST BE MACHINED TO INSURE GOOD BEARING AND PROPER FIT IN ANY POSITION.

2. CAST IRON SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS, ASTM DESIGNATION: A48 MIN. CLASS No. 30 GRADE MINIMUM STRENGTH.

R E V I S I O N S	
1. MSR 4-18-01	5. LRC 1-31-14
2. MAC 3-2-05	
3. DWP 10-15-05	
4. MAC 11-1-07	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

MANHOLE FRAME CASTING (CITY OF PGH / PWSA No. 65)

Scale: N.T.S.

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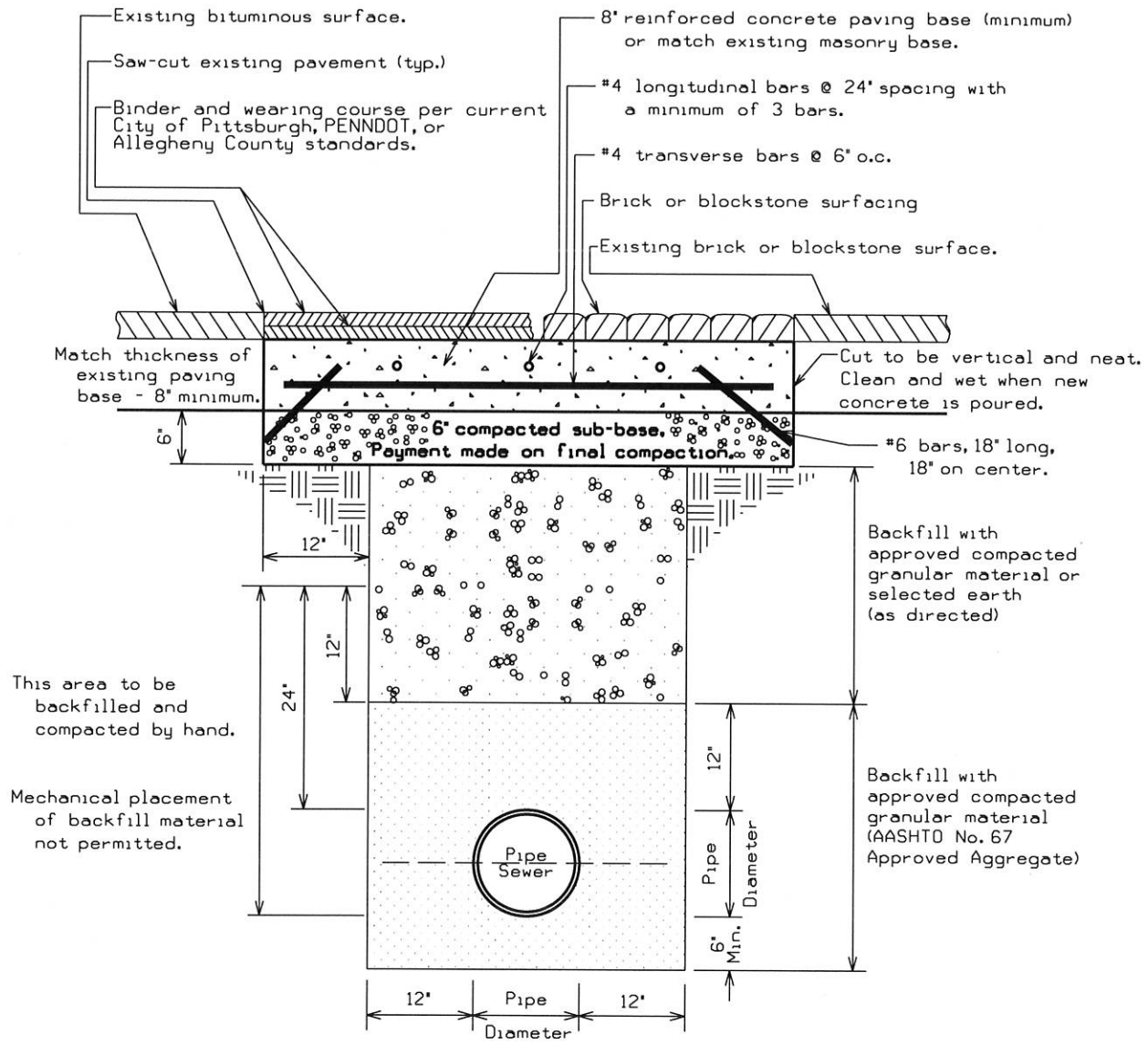
Supplemental Detail Drawing: **MFC65**

2/24/2014



NOTES:

1. All trench backfill material to be placed and mechanically compacted in 6" compacted layers.
2. Trench bedding may need to be modified in poor compaction areas.
3. Certain pipe materials and/or related trench materials may need to be substituted if contaminated soils are encountered.
4. Reinforcement shall be considered incidental to concrete paving base.
5. Paving material to match existing street surface and shall conform with requirements of owner.

ALTERNATIVE REINFORCEMENT METHOD: Wire Fabric reinforcement may be used. Smooth wire (W), deformed wire (D), or a combination of both may be used. The transverse wires may be above or below the longitudinal wires. Wire size shall be as per chart: →

Pav't. Depth	Min. Long. Wire Size	Pav't. Depth	Min. Long. Wire Size
8"	W5.5 or D5	11"	W7.5 or D7
9"	W6 or D5.5	12"	W8 or D7.5
10"	W7 or D6.5	13"	W9 or D8

REVISIONS	
1. MSR 4-18-01	
2. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

SEWER LINE TRENCH AND REPAVING

Scale: N.T.S.

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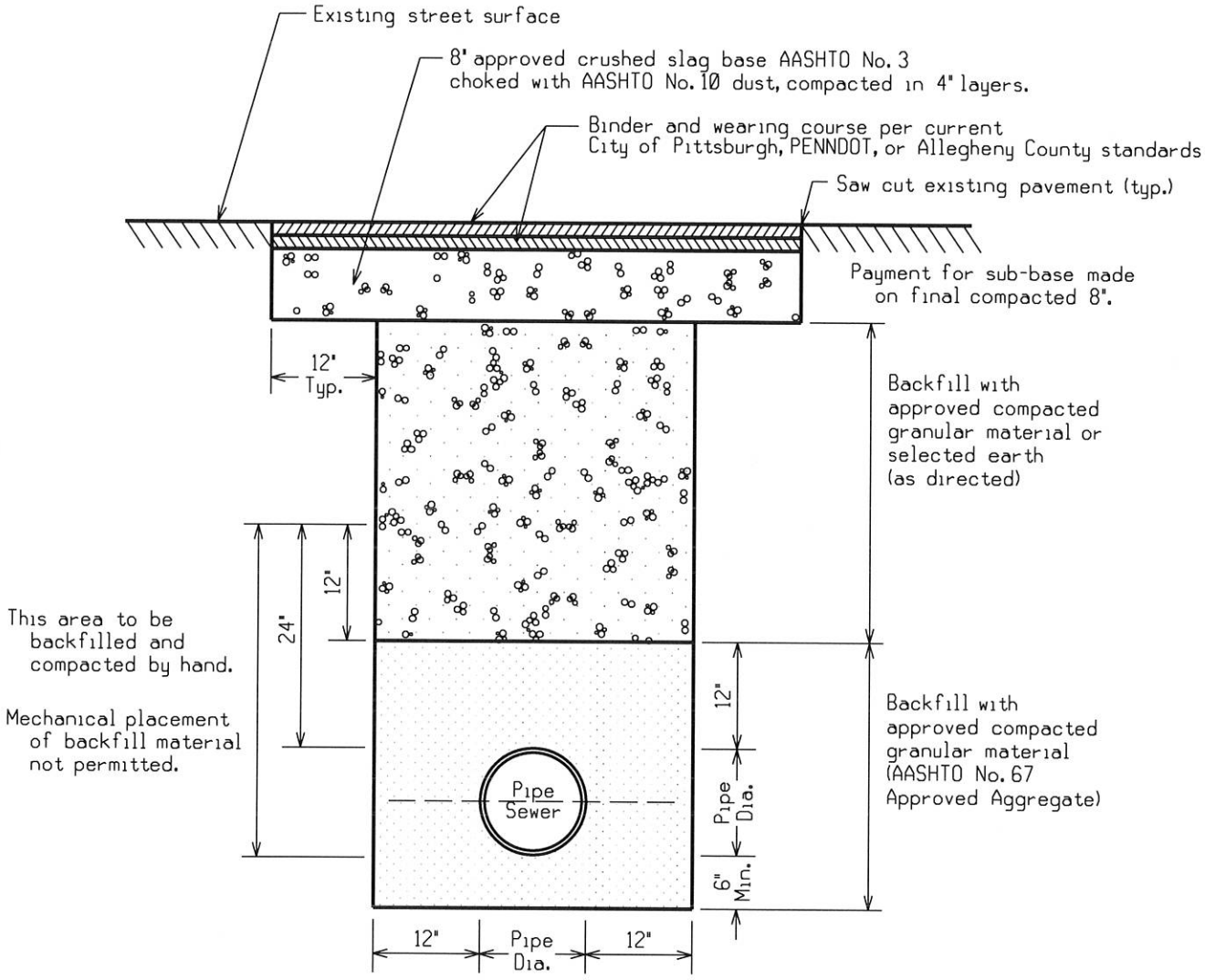
Supplemental Detail Drawing: SA-1

2/24/2014



NOTES

1. All trench backfill material to be placed and mechanically compacted in 6" compacted layers.
2. Trench bedding may need to be modified in poor compaction areas.
3. Certain pipe materials and/or related trench materials may need to be substituted if contaminated soils are encountered.

REVISIONS	
1. MSR 4-18-01	
2. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Sewer Line Trench And Repaving Unimproved Streets And Driveways

Scale: N.T.S.

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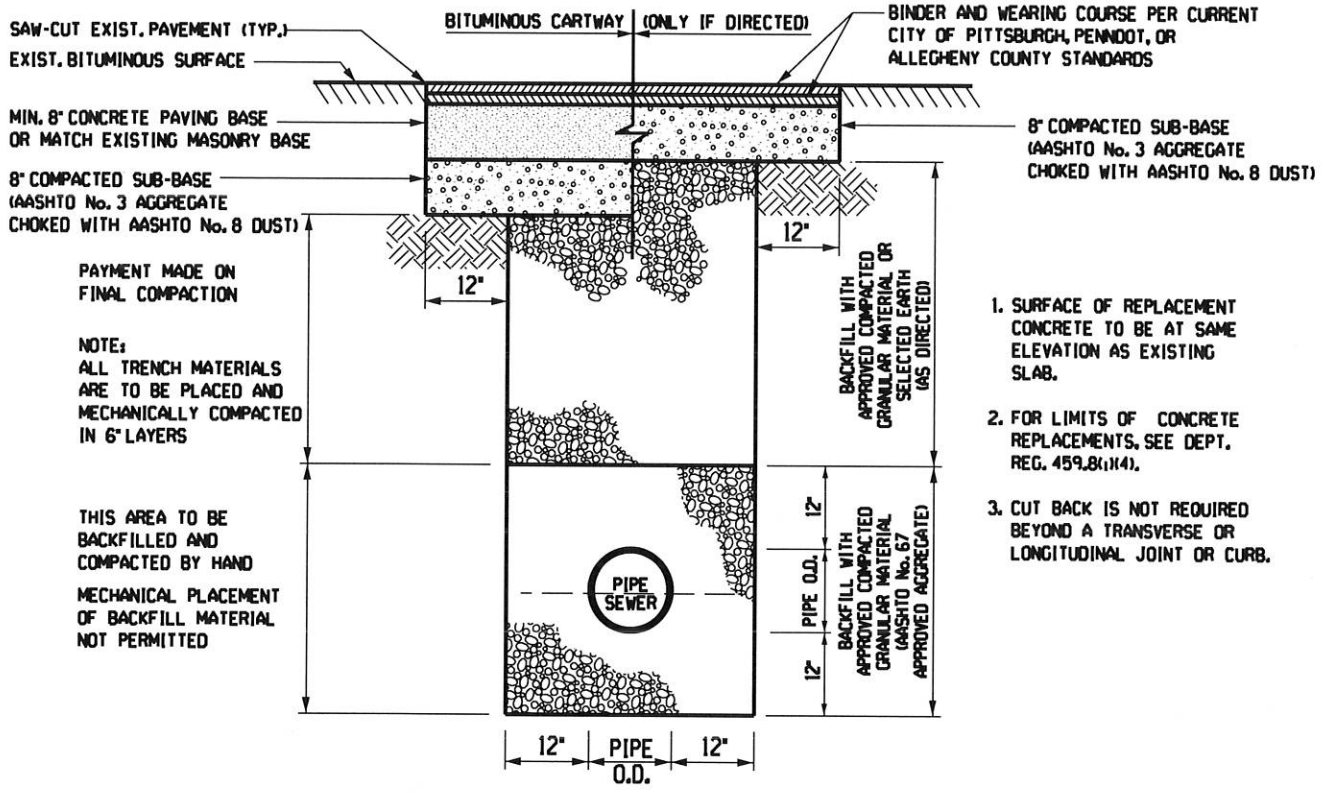
Supplemental Detail Drawing: **SA-1A**

2/24/2014



TRENCH DETAIL

SCALE: N.T.S.

REVISIONS	
1. MAC 3-1-04	
2. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

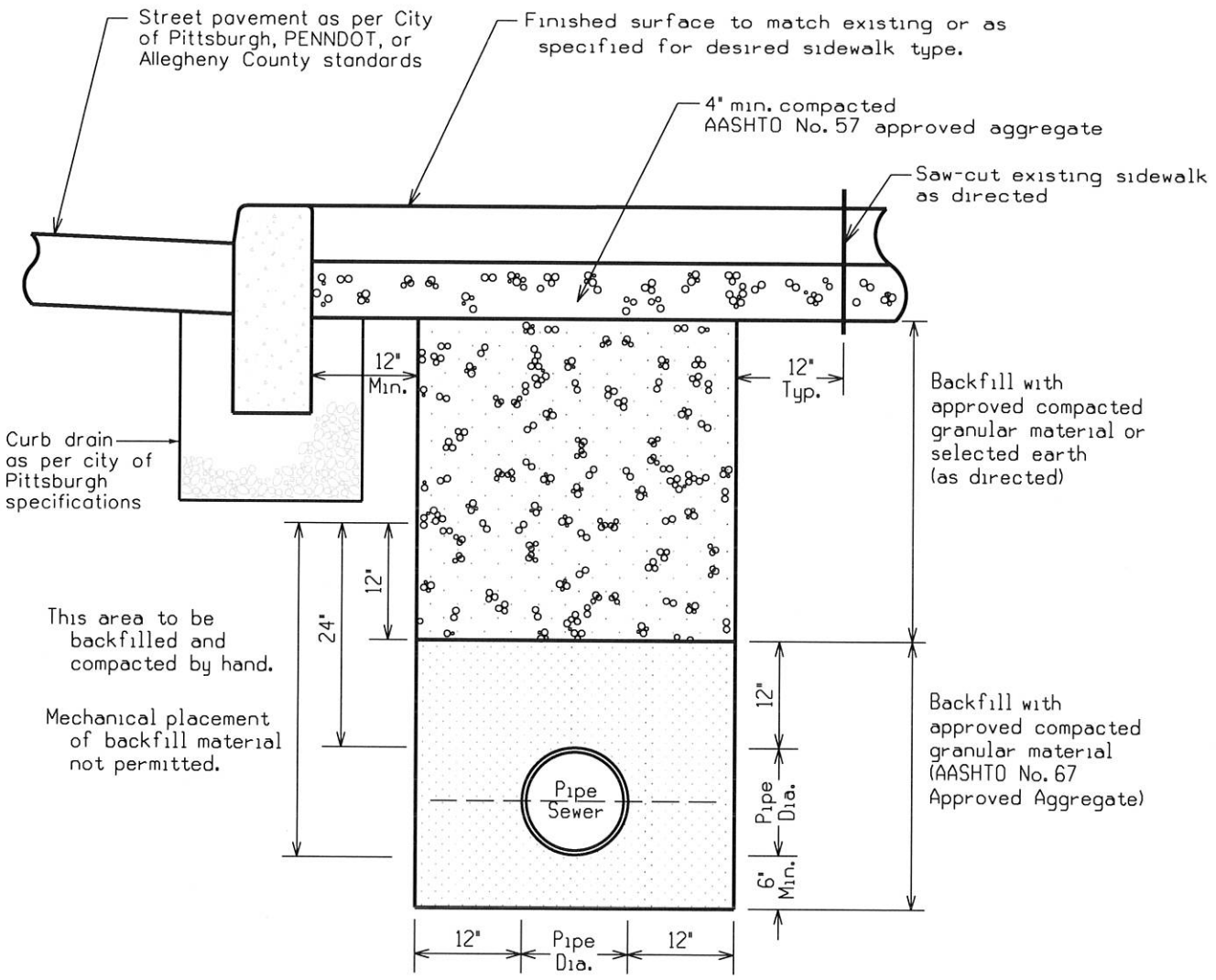
Sewer Line Trench

Scale: N.T.S.

M:\pwsa\gis\det\Standards\stdsalb.det

Supplemental Detail Drawing: **SA-1B**

2/24/2014



NOTES

1. All trench backfill material to be placed and mechanically compacted in 6" compacted layers.
2. Trench bedding may need to be modified in poor compaction areas.
3. Certain pipe materials and/or related trench materials may need to be substituted if contaminated soils are encountered.

REVISIONS	
1. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Sewer Line Trench In Sidewalk Area

Scale: N.T.S.

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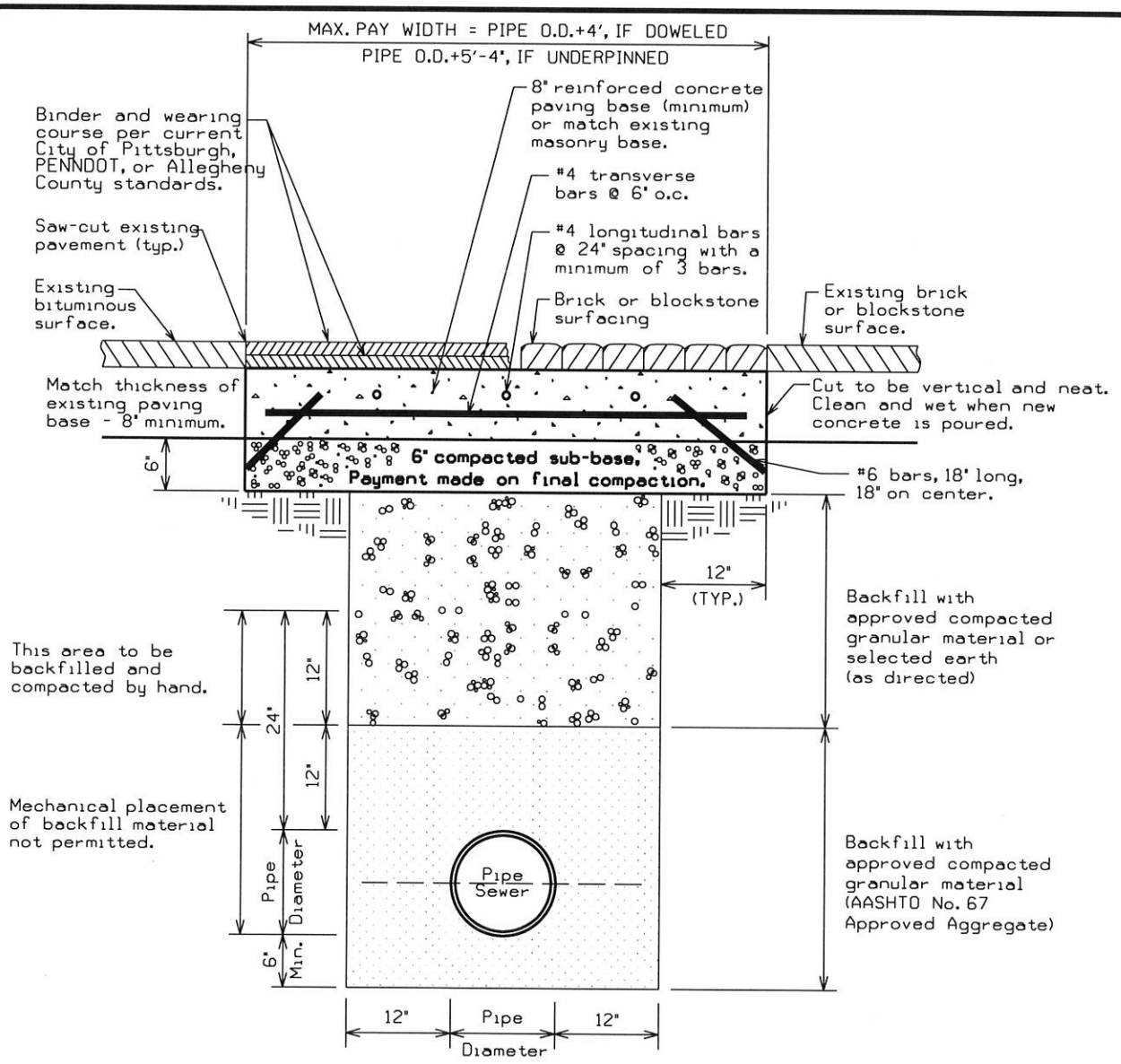
Supplemental Detail Drawing: **SA-1C**

2/24/2014



NOTES:

1. All trench backfill material to be placed and mechanically compacted in 6" compacted layers.
2. Trench bedding may need to be modified in poor compaction areas.
3. Certain pipe materials and/or related trench materials may need to be substituted if contaminated soils are encountered.
4. Reinforcement shall be considered incidental to concrete paving base.
5. Paving material to match existing street surface and shall conform with requirements of owner.

ALTERNATIVE REINFORCEMENT METHOD: Wire Fabric reinforcement may be used. Smooth wire (W), deformed wire (D), or a combination of both may be used. The transverse wires may be above or below the longitudinal wires. Wire size shall be as per chart: →

Pav't. Depth	Min. Long. Wire Size	Pav't. Depth	Min. Long. Wire Size
8"	W5.5 or D5	11"	W7.5 or D7
9"	W6 or D5.5	12"	W8 or D7.5
10"	W7 or D6.5	13"	W9 or D8

REVISIONS	
1. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Sewer Construction Excavation Limits And Trench Repaving

Scale: N.T.S.

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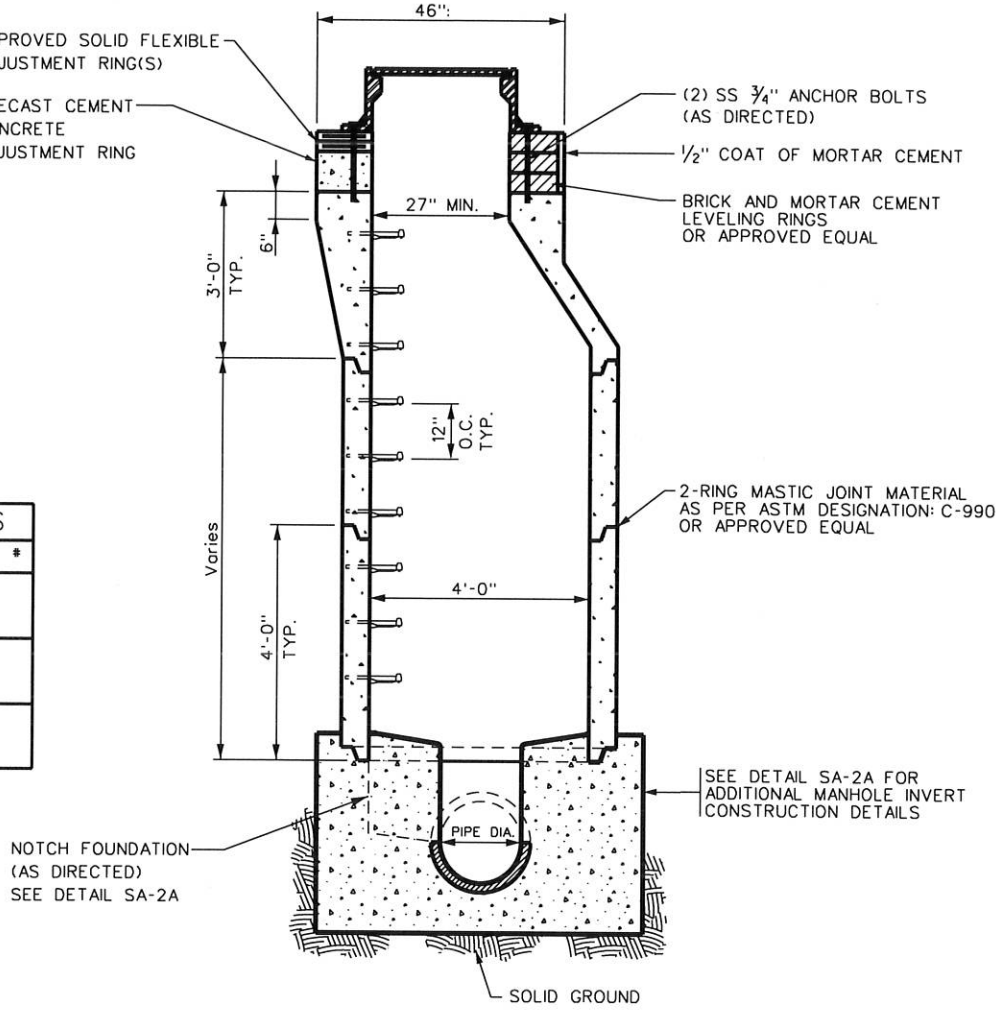
Supplemental Detail Drawing: **SA-1EXC**

2/24/2014



MANHOLE FRAME NUMBERS		
LOCATION	DEPTH	PATTERN #
SIDEWALKS & GRASS	6"	65
CONCRETE & BITUMINOUS STREETS	9"	26
BRICK & BLOCK STREETS	13"	23

NOTES:

1. PRECAST MANHOLE SECTIONS SHALL COMPLY WITH ASTM DESIGNATION C-478. LENGTHS MAY BE VARIED TO OBTAIN DESIRED DEPTH.

2. MANHOLE STEPS: ½" (13mm) DIA., GRADE 60, DEFORMED STEEL BAR (ASTM DESIGNATION A-615); COATED WITH POLYPROPYLENE PLASTIC (ASTM DESIGNATION D-2146, TYPE II CR. 49108). SEE DETAIL SA-2B FOR ADDITIONAL INFORMATION

3. UNLESS OTHERWISE SPECIFIED, ALL MANHOLE FRAMES SHALL BE PWSA PATTERN NUMBER AND SIZE SHOWN IN THE MANHOLE FRAMES CHART ABOVE.
MANHOLE COVERS SHALL BE CITY OF PITTSBURGH/PWSA PATTERN No. 25 OR 25V AS DIRECTED. COVERS SHALL BE LETTERED "PWSA SEWER" FOR COMBINATION AND/OR SANITARY SEWERS AND "PWSA STORM" FOR STORM ONLY SEWERS IN 2" HIGH LETTERING. MANHOLE FRAME SHALL BE ANCHORED IN PLACE AT THE TOP OF THE PRECAST MANHOLE WITH TWO (2) ¾" SS ANCHOR BOLTS. LEVELING OF CASTING SHALL BE SET TO FINISHED GRADE; MAX. 3/16" TOLERANCE PERMITTED FROM FINISHED SURFACE.

4. SANITARY SEWER MANHOLES MUST BE WATERPROOFED ON THE EXTERIOR WITH AN APPROVED ASPHALT EMULSION FOUNDATION COATING. MATERIALS AND APPLICATION SHALL BE IN ACCORDANCE WITH ASTM DESIGNATION D-1227.

REVISIONS	
1. DWP 4-2-01	5. MAC 5-16-06
2. MAC 6-04	6. LRC 1-31-14
3. MAC 3-2-05	
4. DWP 10-15-05	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

48" Diameter Manhole

Scale: N.T.S.

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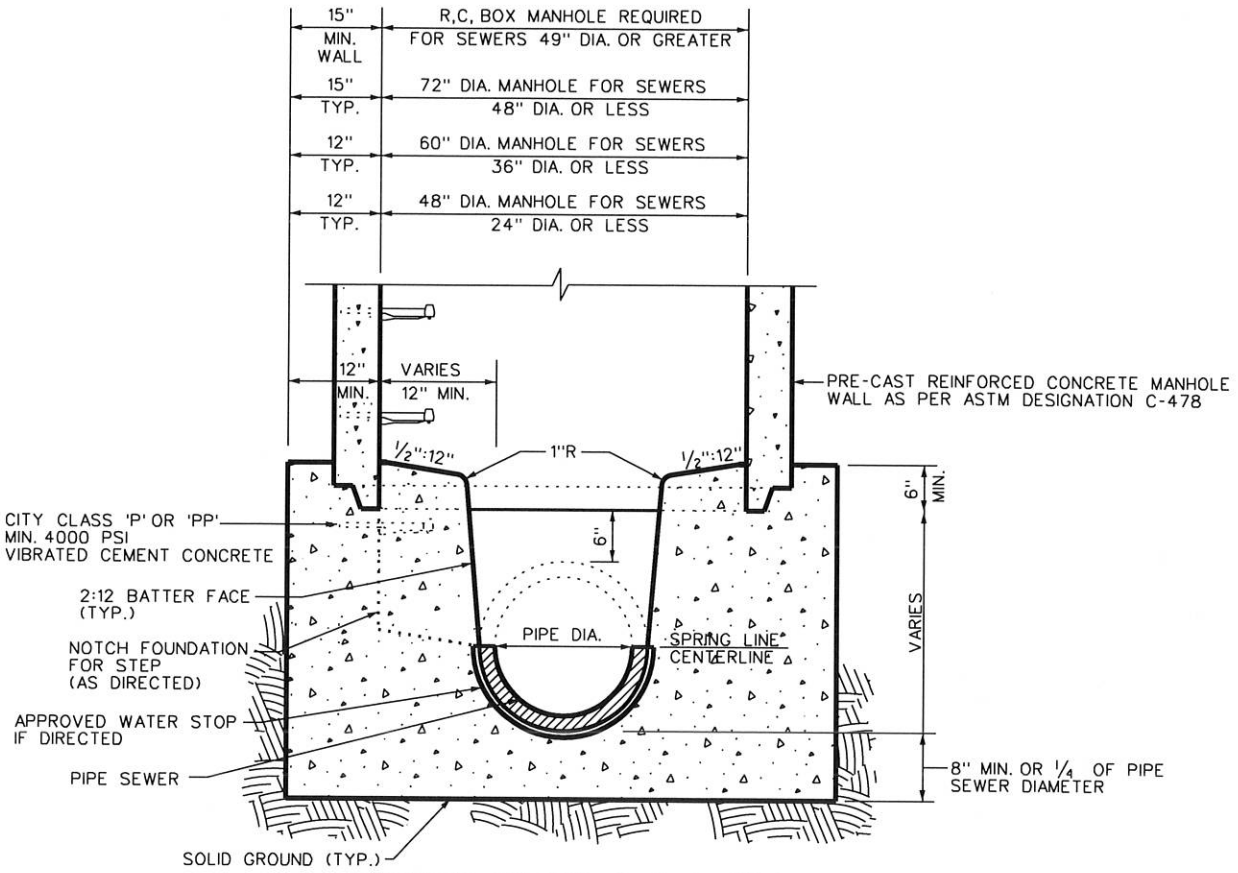
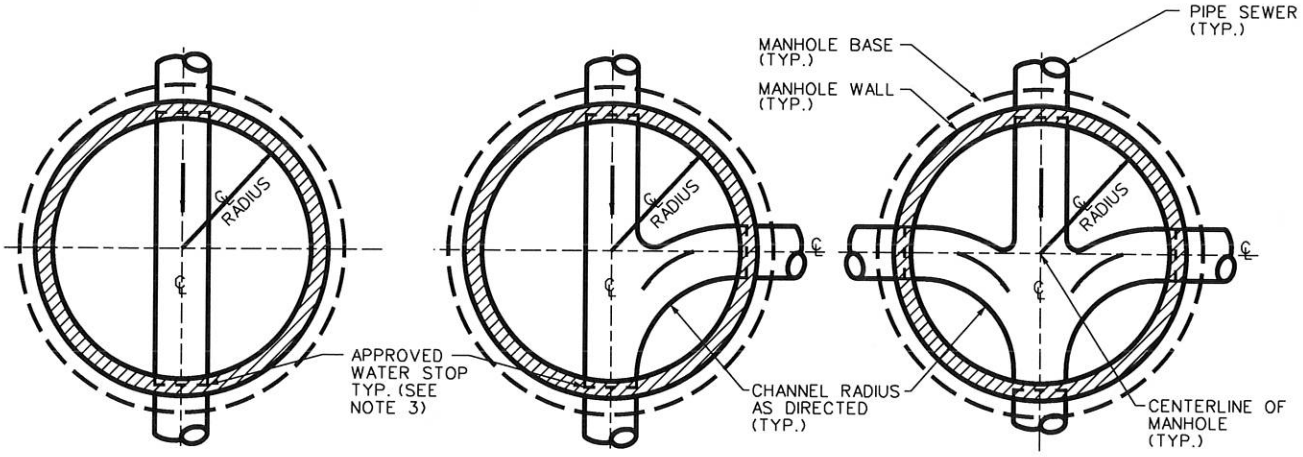
Supplemental Detail Drawing: SA-2

2/24/2014



SECTION OF MANHOLE INVERT



PLAN VIEW OF MANHOLE INVERT - SINGLE, TWO-WAY, THREE-WAY

NOTES:

1. ADDITIONAL AND/OR ALTERNATE PIPE SEWER LAYOUT CONNECTIONS WILL BE APPROVED AS DIRECTED.
2. REINFORCED CEMENT CONCRETE BOX MANHOLE MAY BE ORDERED FOR MULTIPLE CONNECTIONS OR SPECIAL CONDITIONS (AS DIRECTED).
3. ALL PLASTIC PIPE SEWERS OR CONNECTIONS MUST HAVE APPROVED WATER STOPS OR FLEXIBLE BOOT TYPE CONNECTIONS (AS DIRECTED).
4. APPROVED MANHOLE STEPS REQUIRED IN BASE, MUST BE PER ASTM DESIGNATION A615, C478, D4101 AND AASHTO-M-199. INSTALL MANHOLE STEPS AT 12" o.c. AND NOTCH FOUNDATION AS DIRECTED. PROPOSED STEPS SHALL NOT BE PLACED IN BARREL OF FLOW LINE.
5. CLASS A MANHOLES ARE 1 WAY WITH INVERT FORMED WITH SPLIT PIPE EMBEDDED IN CONCRETE. CLASS B MANHOLES ARE 2 OR 3 WAY WITH INVERT MOULDED IN CONCRETE BASE.

REVISIONS	
1. MSR 4-18-01	5. DWP 10-14-05
2. JLK 9-17-03	6. MAC 4-17-06
3. MAC 6-04	7. MAC 1-12-09
4. MAC 3-2-05	8. LRC 1-31-14

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Cast-In-Place Manhole Invert

Scale: N.T.S.

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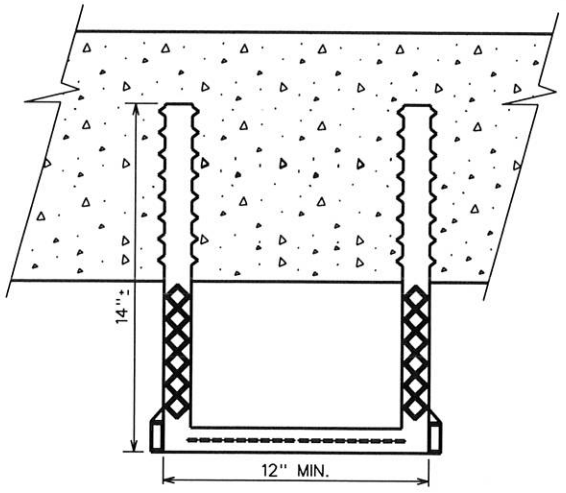
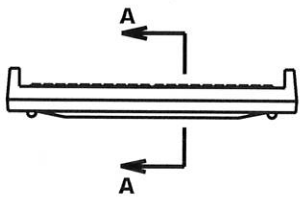
Supplemental Detail Drawing: SA-2A

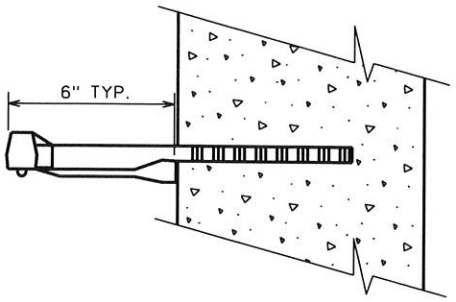
2/24/2014



TOP VIEW

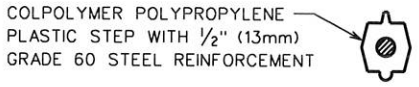


FRONT VIEW

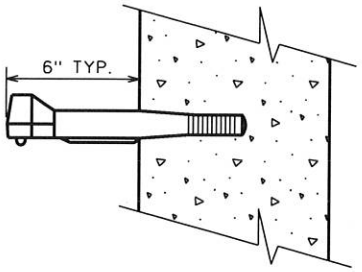


SIDE VIEW

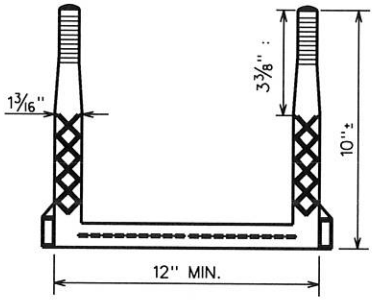
TYPE 1 CAST-IN-PLACE



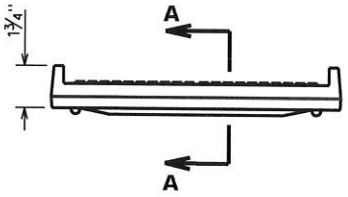
SECTION A-A



SIDE VIEW



TOP VIEW



FRONT VIEW

TYPE 2 PRE-DRILLED HOLE

NOTES:

1. TYPICAL STEPS, SPACING AND MATERIAL AS PER ASTM DESIGNATION C-478, AASHTO M-199.
2. PLASTIC SHALL BE A CO-POLYMER POLYPROPYLENE MEETING THE REQUIREMENTS OUTLINED IN ASTM DESIGNATION D-4101 UNDER TYPE II, GRADE 49108.
3. STEEL REINFORCING BAR SHALL BE A ½" (13mm) DEFORMED BAR, GRADE 60 AND CONFORMING TO THE REQUIREMENTS OF ASTM DESIGNATION A-615.
4. USE TYPE 1 FOR CAST-IN-PLACE VAULTS. USE TYPE 2 FOR NEW PRECAST MANHOLES OR WHEN ADDING STEPS TO EXISTING STRUCTURES.
5. ALL STEPS SHALL BE SET VERTICALLY AT 12" CENTER TO CENTER.

R E V I S I O N S	
1. MSR 4-18-01	5. MAC 4-21-06
2. MAC 6-04	6. LRC 1-31-14
3. MAC 3-2-05	
4. DWP 10-14-05	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Plastic Manhole Steps

Scale: N.T.S.

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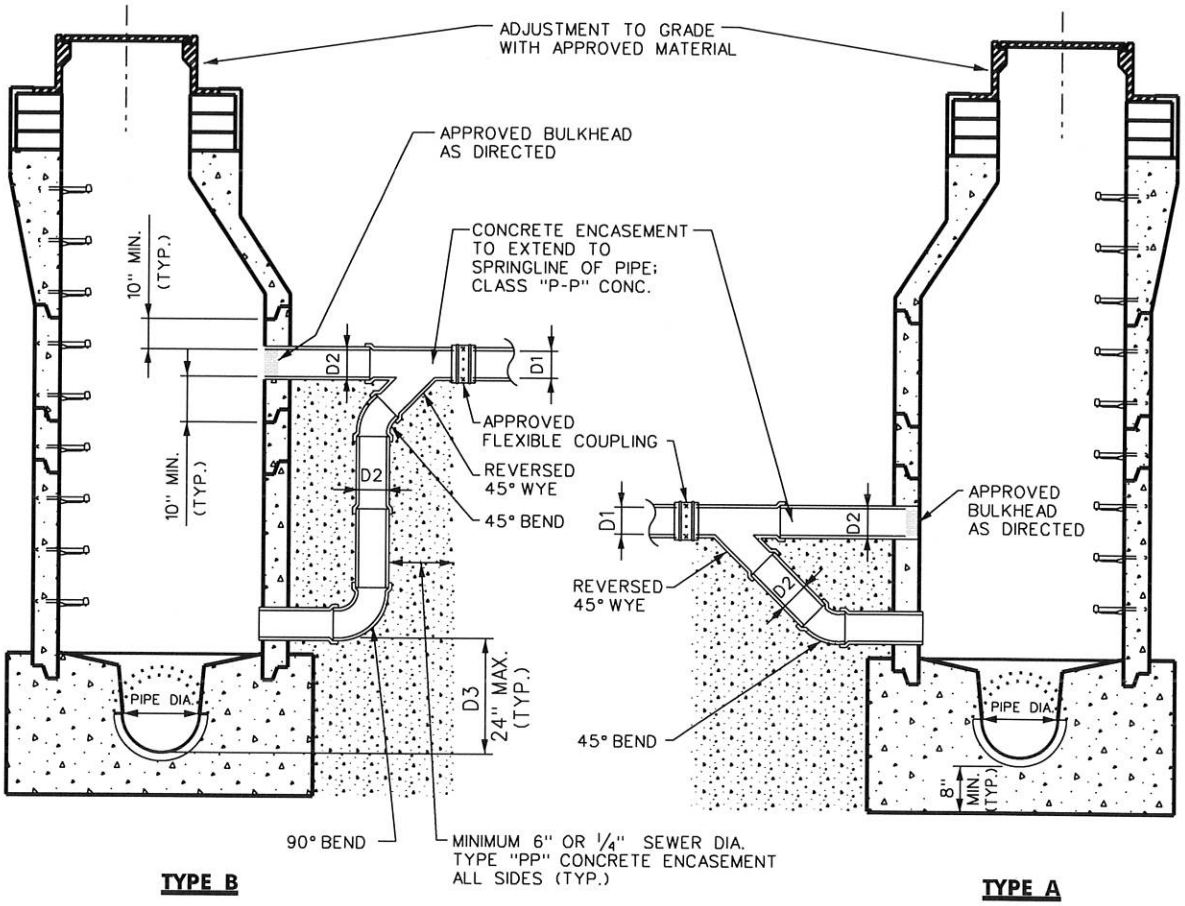
Supplemental Detail Drawing: **SA-2B**

2/24/2014



INLET SIZE (D1)	8"	10"	12"	14"	15"	16"	18"	24"
DROP SIZE (D2)	10"	12"	15"	15"	15"	16"	18"	24"

NOTES:

1. ALL PROVISIONS OF THE STANDARD MANHOLE DETAIL (SA-2, SA-2A, SA-10, OR SA-10A, AS APPROPRIATE) INCLUDING, BUT NOT LIMITED TO, APPLICABLE ASTM DESIGNATION STANDARDS, DIMENSIONS, AND MATERIALS, APPLY TO DROP MANHOLES.
2. ALL CEMENT ENCASED PIPE MUST BE RIGID PIPE ONLY (R.C., V.C., D.I., ETC.)
3. USE TYPE "P" CEMENT CONCRETE WHEN THE VERTICAL DROP BETWEEN THE INVERT OF THE PIPE AND MANHOLE IS GREATER THAN 3'-9".
4. SEE DETAIL SA-2A FOR ADDITIONAL MANHOLE INVERT CONSTRUCTION DETAILS.
5. PRECAST MANHOLE SECTIONS SHALL COMPLY WITH ASTM DESIGNATION C-478. LENGTHS MAY BE VARIED TO OBTAIN DESIRED DEPTH.

REVISIONS	
1. MSR 4-18-01	5. MAC 5-15-06
2. MAC 6-04	6. LRC 1-31-14
3. MAC 3-2-05	
4. DWP 10-14-05	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Outside Drop Manhole

Scale: N.T.S.

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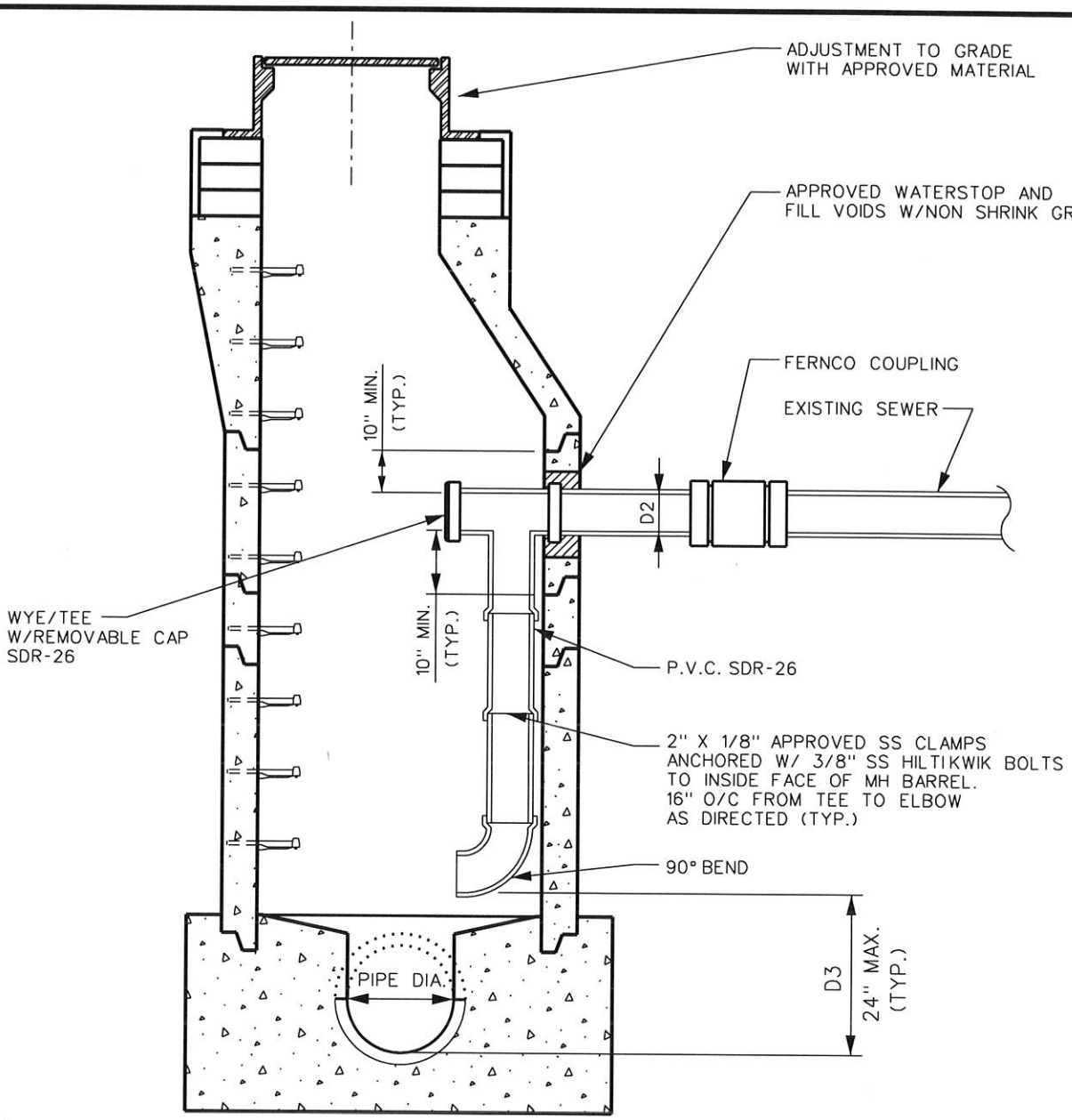
Supplemental Detail Drawing: SA-2C

2/24/2014



NOTES:

1. ALL PROVISIONS OF THE STANDARD MANHOLE DETAIL (SA-2, SA-2A, SA-10, OR SA-10A, AS APPROPRIATE) INCLUDING, BUT NOT LIMITED TO, APPLICABLE ASTM DESIGNATION STANDARDS, DIMENSIONS, AND MATERIALS, APPLY TO DROP MANHOLES.
2. ALL CEMENT ENCASED PIPE MUST BE RIGID PIPE ONLY (R.C., V.C., D.I., ETC.)
3. USE TYPE "P" CEMENT CONCRETE WHEN THE VERTICAL DROP BETWEEN THE INVERT OF THE PIPE AND MANHOLE IS GREATER THAN 3'-9".
4. SEE DETAIL SA-2A FOR ADDITIONAL MANHOLE INVERT CONSTRUCTION DETAILS.
5. PRECAST MANHOLE SECTIONS SHALL COMPLY WITH ASTM DESIGNATION C-478. LENGTHS MAY BE VARIED TO OBTAIN DESIRED DEPTH.

REVISIONS	
1. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Inside Drop Manhole

Scale: N.T.S.

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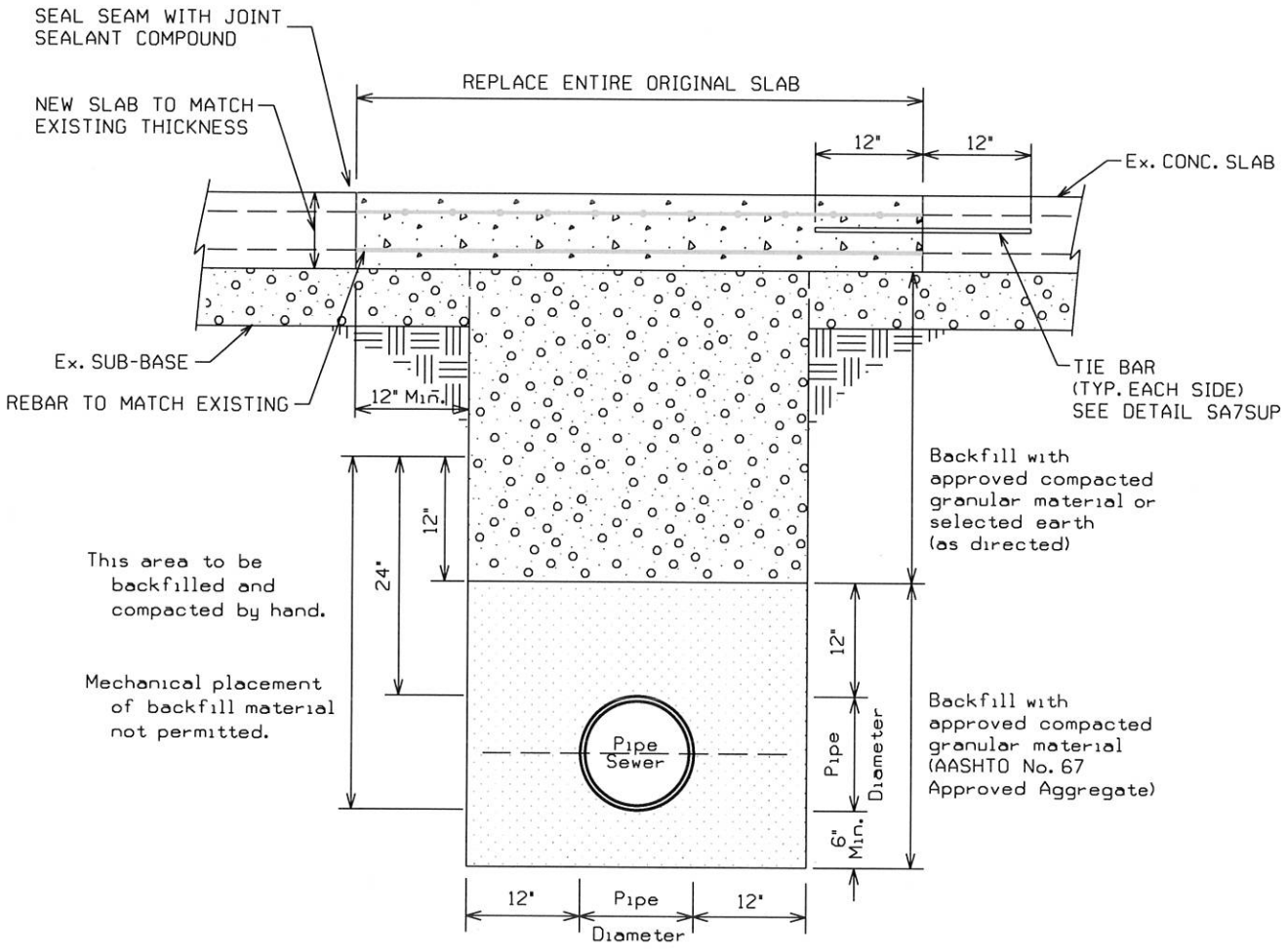
Supplemental Detail Drawing: **SA-2D**

2/24/2014



NOTES:

1. All trench backfill material to be placed and mechanically compacted in 6" compacted layers.
2. Trench bedding may need to be modified in poor compaction areas.
3. Certain pipe materials and/or related trench materials may need to be substituted if contaminated soils are encountered.
4. Reinforcement shall be considered incidental to concrete paving base.
5. Paving material to match existing street surface and shall conform with requirements of owner.

ALTERNATIVE REINFORCEMENT METHOD: Wire Fabric reinforcement may be used. Smooth wire (W), deformed wire (D), or a combination of both may be used. The transverse wires may be above or below the longitudinal wires. Wire size shall be as per chart: →

Pav't. Depth	Min. Long. Wire Size	Pav't. Depth	Min. Long. Wire Size
8"	W5.5 or D5	11"	W7.5 or D7
9"	W6 or D5.5	12"	W8 or D7.5
10"	W7 or D6.5	13"	W9 or D8

REVISIONS	
1. MSR 4-23-01	
2. RDH 6-14-06	
3. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

CONCRETE STREET TRENCH REPAVING FOR PIPE SEWER

Scale: N.T.S.

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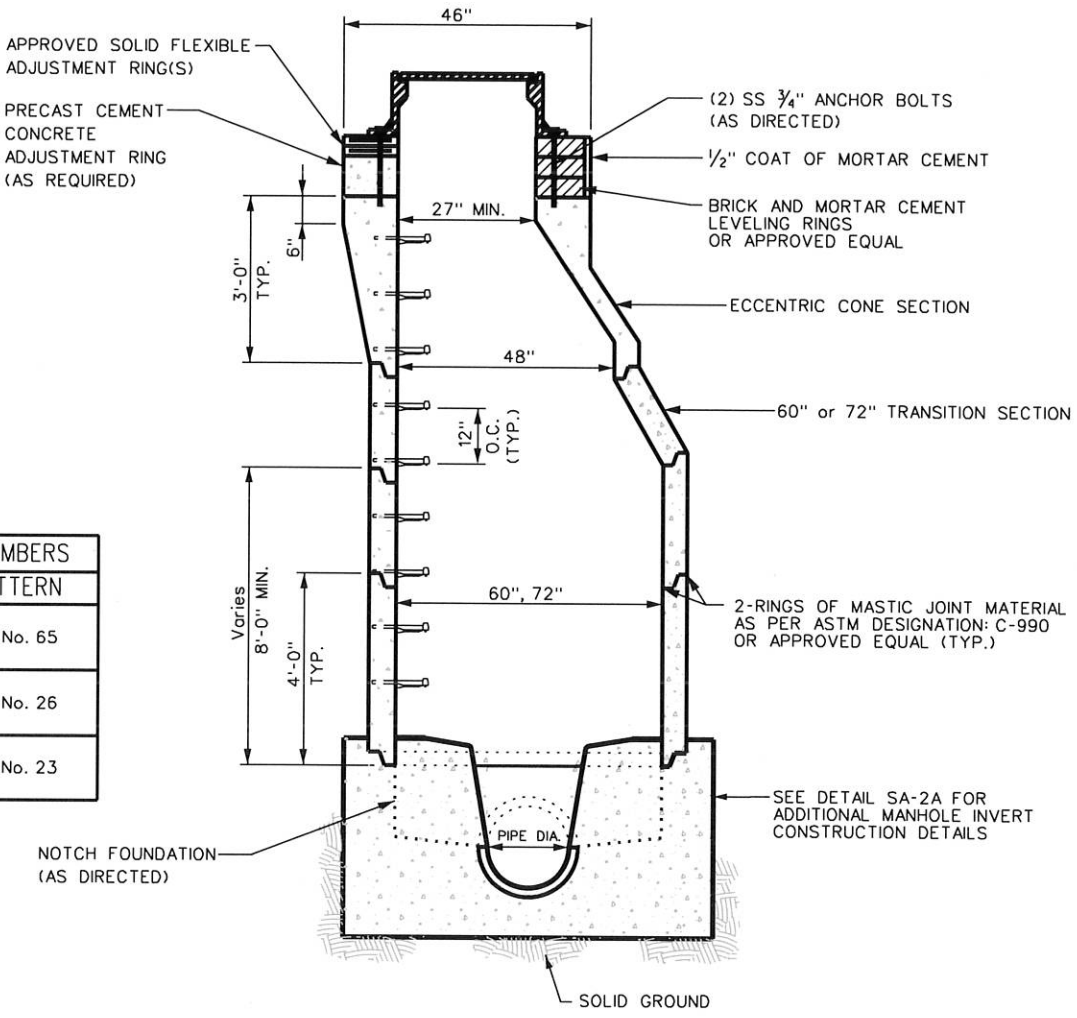
Supplemental Detail Drawing: SA-7

2/24/2014



MANHOLE FRAME NUMBERS		
LOCATION	DEPTH	PATTERN
SIDEWALKS & GRASS	6"	No. 65
CONCRETE & BITUMINOUS STREETS	9"	No. 26
BRICK & BLOCK STREETS	13"	No. 23

NOTES:

1. PRECAST MANHOLE SECTIONS SHALL COMPLY WITH ASTM DESIGNATION C-478. LENGTHS MAY BE VARIED TO OBTAIN DESIRED DEPTH.

2. MANHOLE STEPS: ½" (13mm) DIA., GRADE 60, DEFORMED STEEL BAR (ASTM DESIGNATION A-615); COATED WITH POLYPROPYLENE PLASTIC (ASTM DESIGNATION D-2146, TYPE II CR. 49108). SEE DETAIL SA-2B FOR ADDITIONAL INFORMATION

3. UNLESS OTHERWISE SPECIFIED, ALL MANHOLE FRAMES SHALL BE PWSA PATTERN NUMBER AND SIZE SHOWN IN THE MANHOLE FRAMES CHART ABOVE. MANHOLE COVERS SHALL BE CITY OF PITTSBURGH/PWSA PATTERN No. 25 OR 25V AS DIRECTED. COVERS SHALL BE LETTERED "PWSA SEWER" FOR COMBINATION AND/OR SANITARY SEWERS AND "PWSA STORM" FOR STORM ONLY SEWERS IN 2" HIGH LETTERING. MANHOLE FRAME SHALL BE ANCHORED IN PLACE AT THE TOP OF THE PRECAST MANHOLE WITH TWO (2) ¾" SS ANCHOR BOLTS. LEVELING OF CASTING SHALL BE SET TO FINISHED GRADE; MAX. 3/16" TOLERANCE PERMITTED FROM FINISHED SURFACE.

4. SANITARY SEWER MANHOLES MUST BE WATERPROOFED ON THE EXTERIOR WITH AN APPROVED ASPHALT EMULSION FOUNDATION COATING. MATERIALS AND APPLICATION SHALL BE IN ACCORDANCE WITH ASTM DESIGNATION D-1227.

REVISIONS	
1. MSR 4-18-01	5. DWP 10-15-05
2. RDH 4-29-02	6. MAC 4-17-06
3. RDH 6-04	7. LRC 1-31-14
4. MAC 3-2-05	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

60", 72" Diameter Precast Concrete Manhole

Scale: N.T.S.

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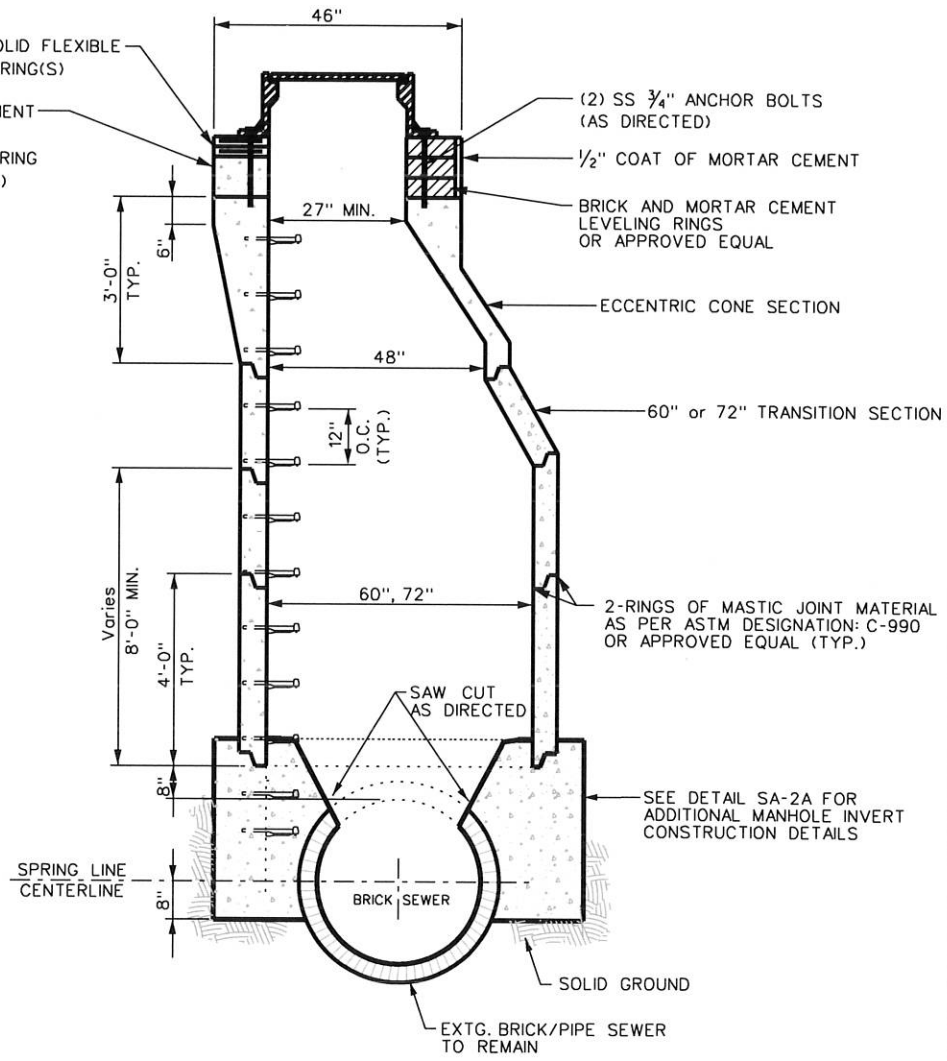
Supplemental Detail Drawing: SA-10

2/24/2014



MANHOLE FRAME NUMBERS		
LOCATION	DEPTH	PATTERN
SIDEWALKS & GRASS	6"	No. 65
CONCRETE & BITUMINOUS STREETS	9"	No. 26
BRICK & BLOCK STREETS	13"	No. 23

NOTES:

1. PRECAST MANHOLE SECTIONS SHALL COMPLY WITH ASTM DESIGNATION C-478. LENGTHS MAY BE VARIED TO OBTAIN DESIRED DEPTH.
2. MANHOLE STEPS: ½" (13mm) DIA., GRADE 60, DEFORMED STEEL BAR (ASTM DESIGNATION A-615); COATED WITH POLYPROPYLENE PLASTIC (ASTM DESIGNATION D-2146, TYPE II CR. 49108). SEE DETAIL SA-2B FOR ADDITIONAL INFORMATION.
3. UNLESS OTHERWISE SPECIFIED, ALL MANHOLE FRAMES SHALL BE PWSA PATTERN NUMBER AND SIZE SHOWN IN THE MANHOLE FRAMES CHART ABOVE. MANHOLE COVERS SHALL BE CITY OF PITTSBURGH/PWSA PATTERN No. 25 OR 25V AS DIRECTED. COVERS SHALL BE LETTERED "PWSA SEWER" FOR COMBINATION AND/OR SANITARY SEWERS AND "PWSA STORM" FOR STORM ONLY SEWERS IN 2" HIGH LETTERING. MANHOLE FRAME SHALL BE ANCHORED IN PLACE AT THE TOP OF THE PRECAST MANHOLE WITH TWO (2) ¾" SS ANCHOR BOLTS. LEVELING OF CASTING SHALL BE SET TO FINISHED GRADE; MAX. 3/16" TOLERANCE PERMITTED FROM FINISHED SURFACE.
4. SANITARY SEWER MANHOLES MUST BE WATERPROOFED ON THE EXTERIOR WITH AN APPROVED ASPHALT EMULSION FOUNDATION COATING. MATERIALS AND APPLICATION SHALL BE IN ACCORDANCE WITH ASTM DESIGNATION D-1227.

REVISIONS	
1. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority
60", 72" Diameter Precast Concrete Manhole Over Existing Brick Pipe Sewer

Scale: N.T.S.
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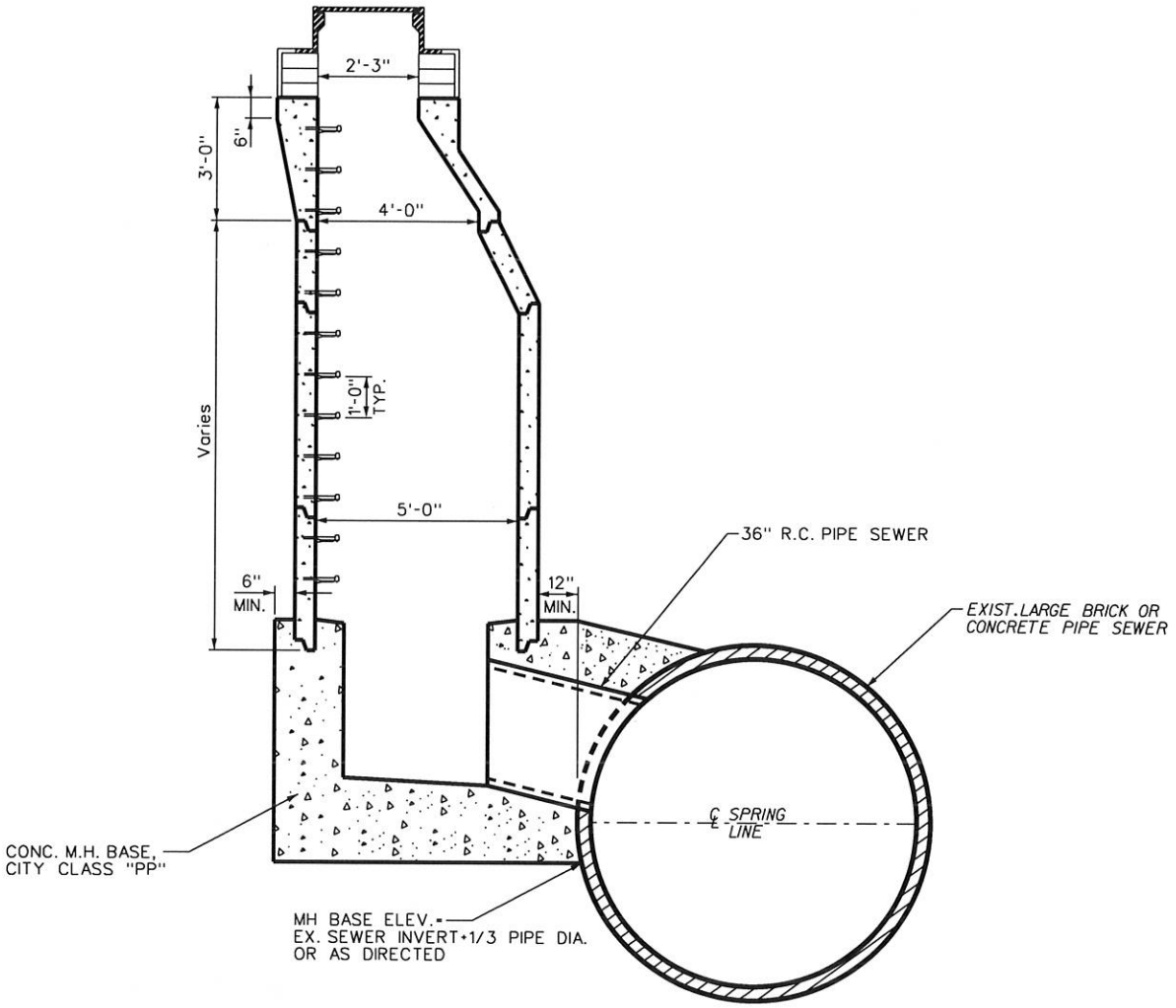
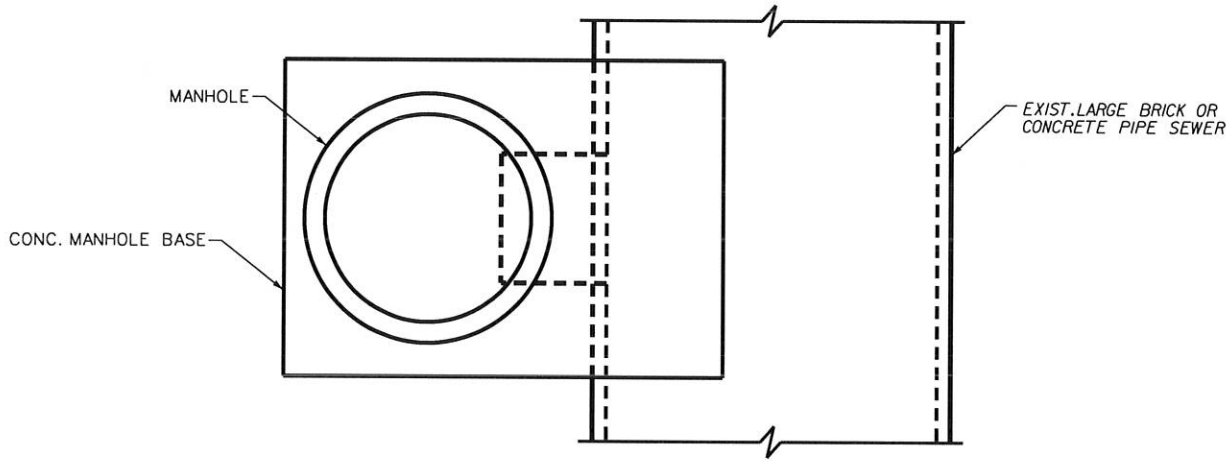
Supplemental Detail Drawing: **SA-10A**

2/24/2014



SECTION



PLAN

REVISIONS	
1. MAC 3-1-04	
2. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Manhole On Large Diameter Sewer Offset / Side Connection

Scale: N.T.S.

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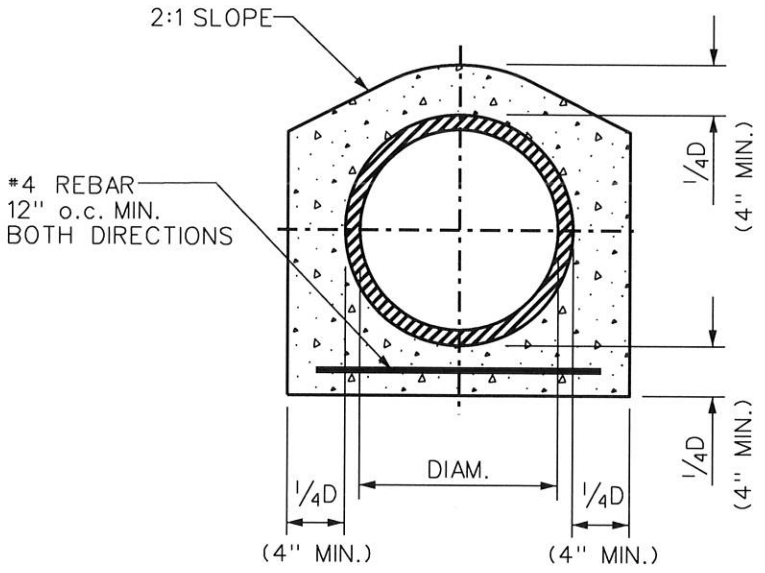
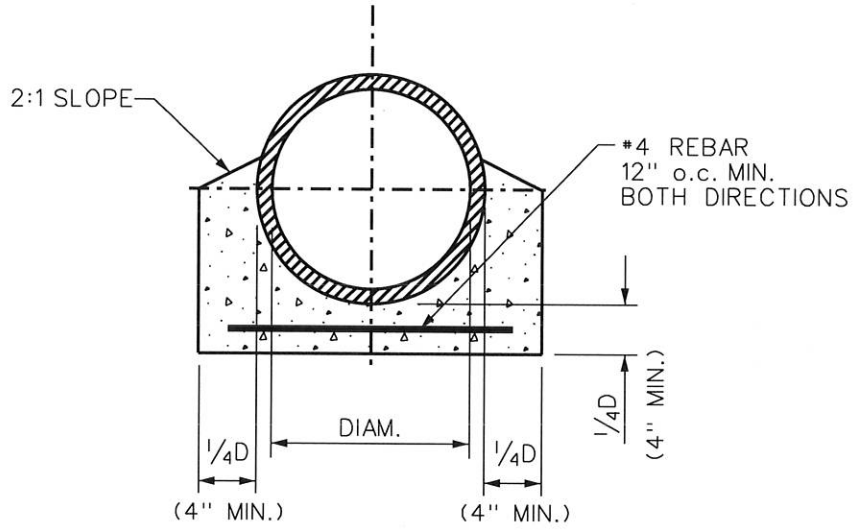
Supplemental Detail Drawing: **SA-10C**

2/24/2014



TYPE A CONCRETE ENCASEMENT REINFORCEMENT



TYPE B CONCRETE CRADLE REINFORCEMENT

NOTES:

1. CEMENT CONCRETE REINFORCEMENT SHALL BE MINIMUM 28 DAY, VIBRATED, 4000# AIR-ENTRAINED.
2. DETAILS SHOWN ARE FOR MINIMUM GENERAL CONDITIONS. SPECIFIC CERTAIN SOIL CONDITIONS MAY REQUIRE ADDITIONAL ENGINEERING REINFORCEMENT DESIGN.

REVISIONS	
1. MSR 4-18-01	5. LRC 1-31-14
2. JEK 2-20-03	
3. MAC 3-2-04	
4. JLK 10-28-04	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Concrete Reinforcement For Rigid Pipe

Scale: N.T.S.

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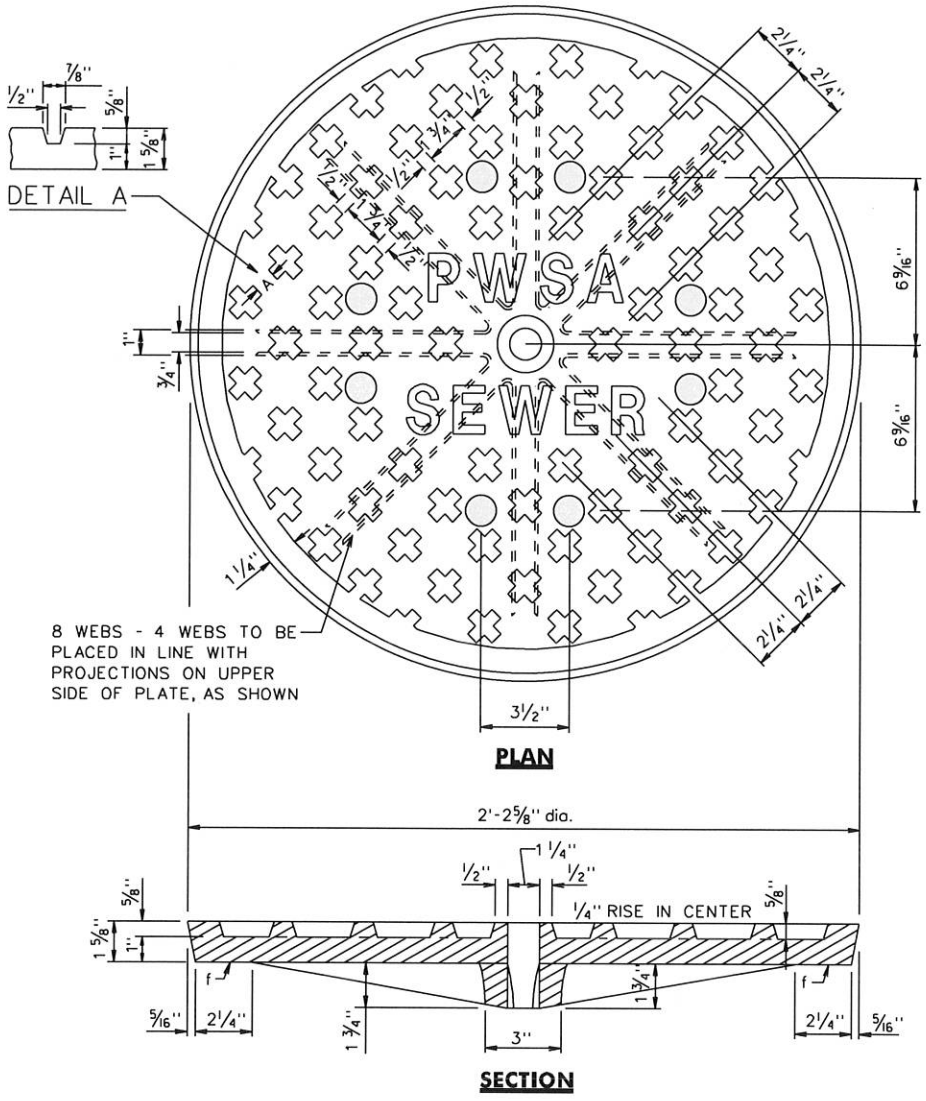
Supplemental Detail Drawing: SA-CE

2/24/2014



NOTES:

1. 2" HIGH LETTERING SHALL NOTE "PWSA" AND "SEWER" FOR ALL COMBINATION AND SANITARY SEWERS. FOR STORM ONLY SEWERS, CHANGE THE LABEL 'SEWER' TO 'STORM'.
2. FRAMES AND COVERS MUST BE MACHINED TO INSURE GOOD BEARING AND PROPER FIT IN ANY POSITION.
3. VENT HOLES IN LID REQUIRED FOR COMBINATION AND SANITARY SEWERS (AS DIRECTED). VENT HOLES IN LID FOR STORM SEWERS ARE OPTIONAL.
4. CAST IRON SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS, ASTM DESIGNATION: A48 CLASS No. 30 MINIMUM STRENGTH.

REVISIONS	
1. MSR 4-18-01	5. LRC 1-31-14
2. MAC 3-2-05	
3. DWP 10-20-05	
4. MAC 8-13-07	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Sewer Manhole Cover Casting

Scale: N.T.S.

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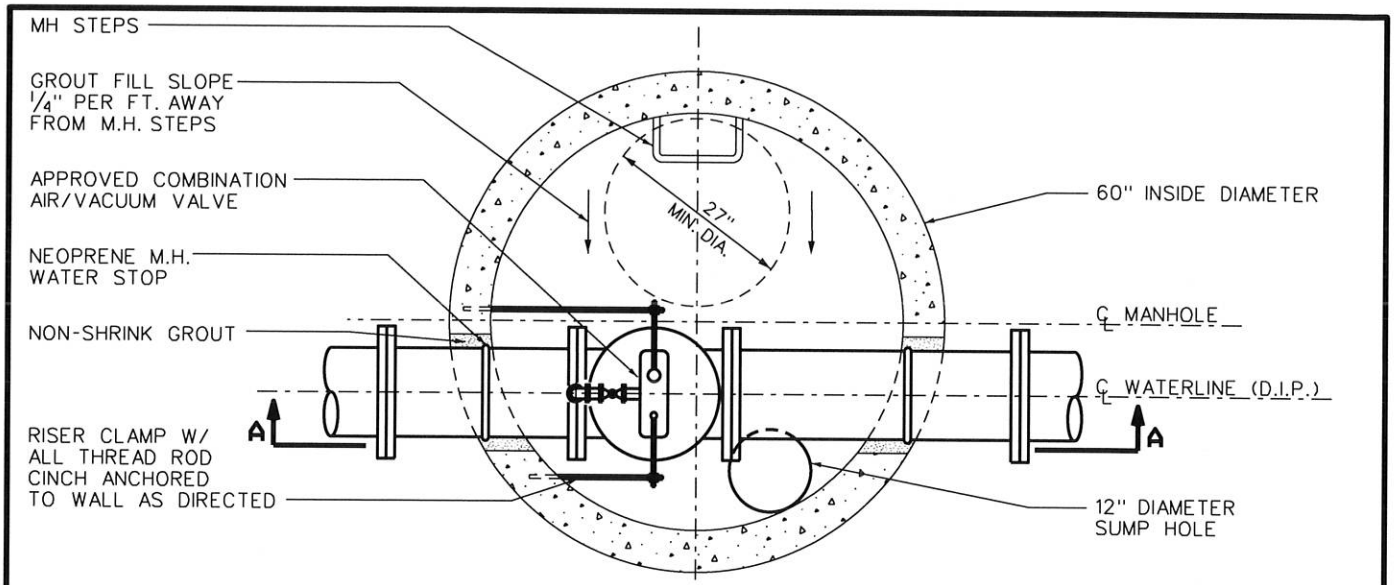
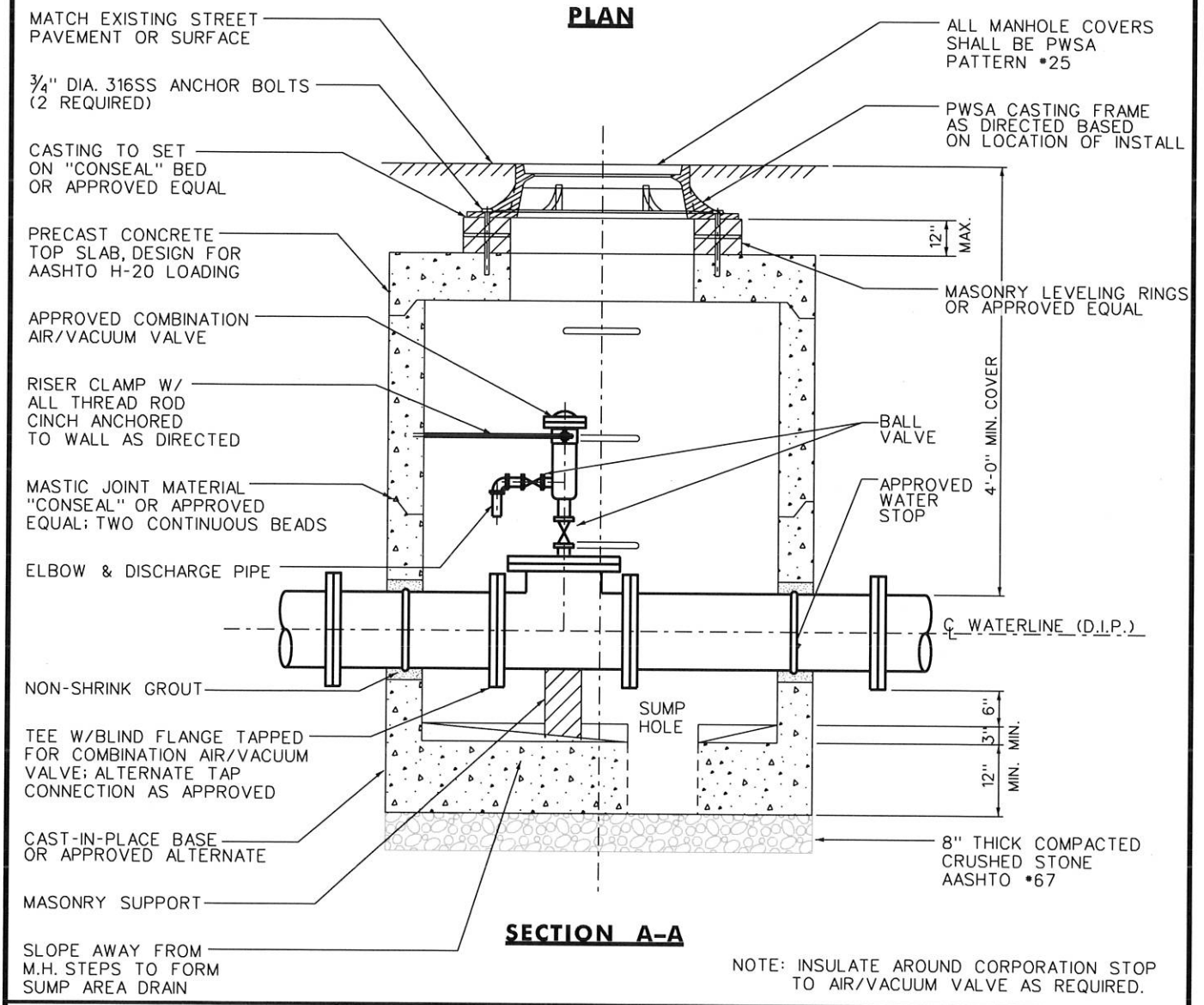
Supplemental Detail Drawing: SMHCOV

2/24/2014



PLAN



SECTION A-A

NOTE: INSULATE AROUND CORPORATION STOP TO AIR/VACUUM VALVE AS REQUIRED.

REVISIONS	
1. MSR 4-18-01	
2. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Waterline Combination Air / Vacuum Valve And Manhole

Scale: N.T.S.

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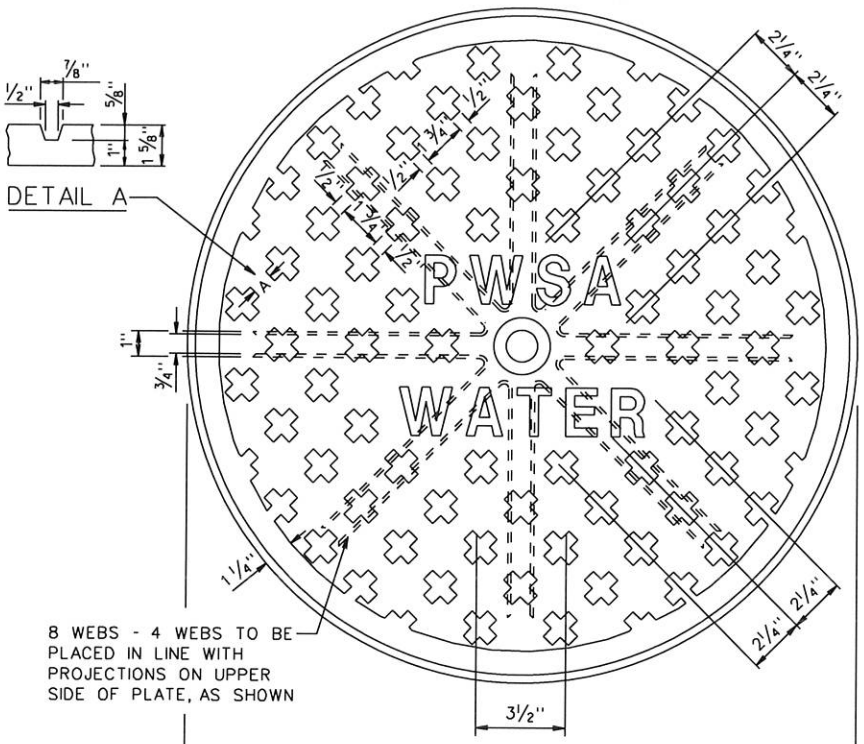
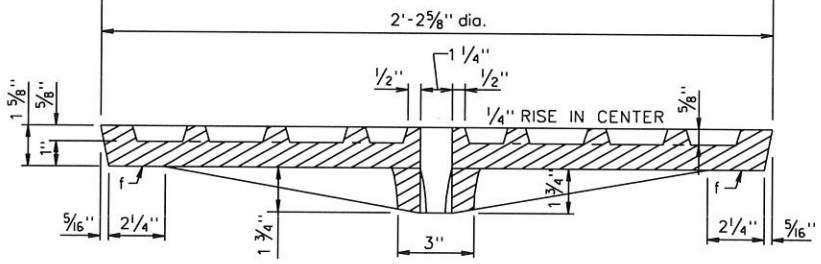
Supplemental Detail Drawing: **WAV-1**

2/24/2014



PLAN



SECTION

NOTES:

1. 2" LETTERING SHALL NOTE "PWSA" AND "WATER" (TYP.)
2. FRAMES AND COVERS MUST BE MACHINED TO INSURE GOOD BEARING AND PROPER FIT IN ANY POSITION.
3. CAST IRON SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS, ASTM DESIGNATION: A48 CLASS No. 30 MINIMUM STRENGTH.

REVISIONS	
1. MSR 4-18-01	5. LRC 1-31-14
2. MAC 3-2-05	
3. DWP 10-20-05	
4. MAC 8-14-07	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

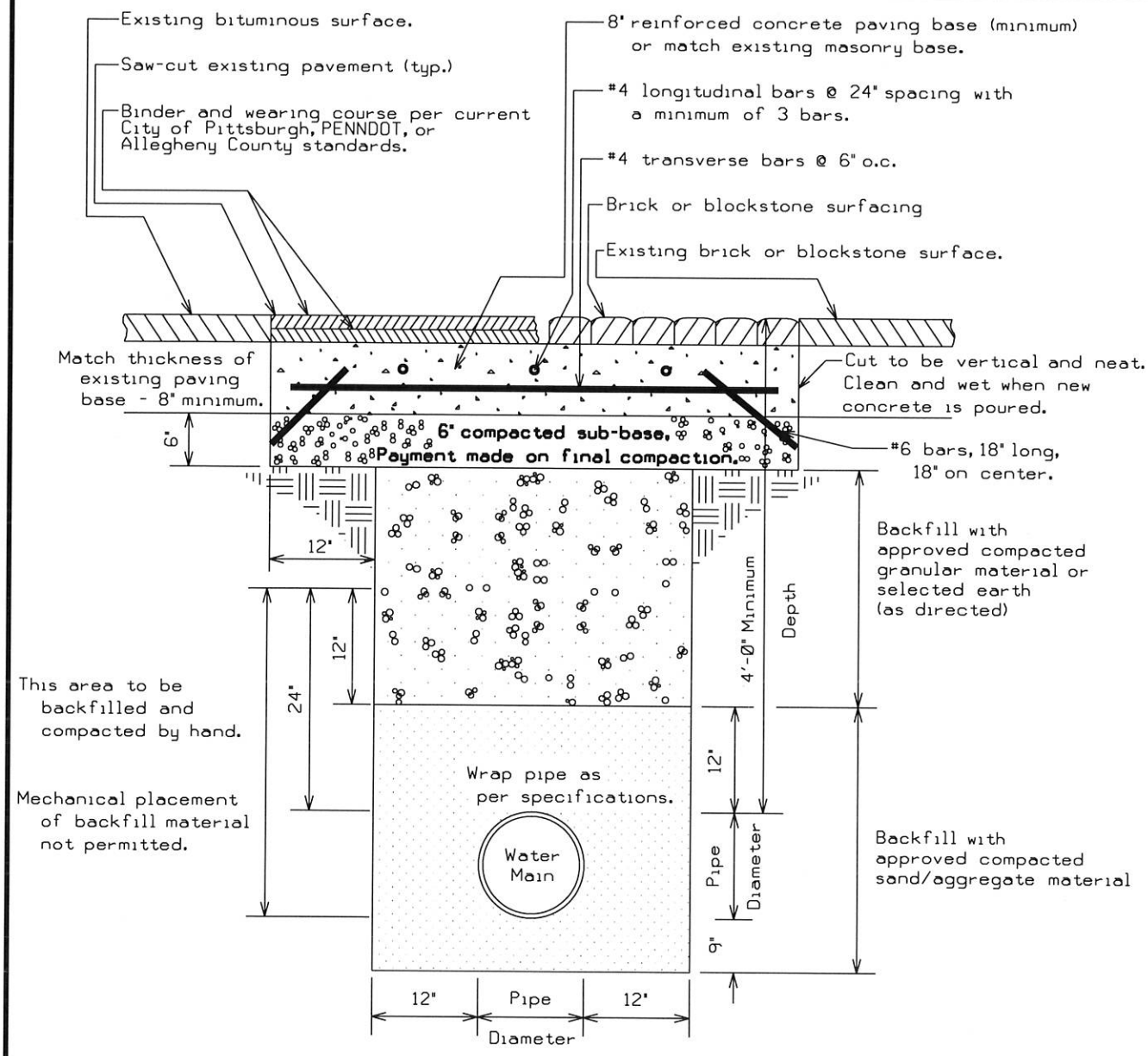
Water Manhole Cover Casting

Scale: N.T.S.

M:\pwsa\gis\det\Standards\stdwmhcov.det

Supplemental Detail Drawing: WMHCOV

2/24/2014



NOTES:

1. All trench backfill material to be placed and mechanically compacted in 6" compacted layers.
2. Trench bedding may need to be modified in poor compaction areas.
3. Certain pipe materials and/or related trench materials may need to be substituted if contaminated soils are encountered.
4. Reinforcement shall be considered incidental to concrete paving base.
5. Paving material to match existing street surface and shall conform with requirements of owner.

ALTERNATIVE REINFORCEMENT METHOD: Wire Fabric reinforcement may be used. Smooth wire (W), deformed wire (D), or a combination of both may be used. The transverse wires may be above or below the longitudinal wires. Wire size shall be as per chart:

Pav't. Depth	Min. Long. Wire Size	Pav't. Depth	Min. Long. Wire Size
8"	W5.5 or D5	11"	W7.5 or D7
9"	W6 or D5.5	12"	W8 or D7.5
10"	W7 or D6.5	13"	W9 or D8

REVISIONS	
1. MSR 4-18-01	
2. MAC 8-13-07	
3. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

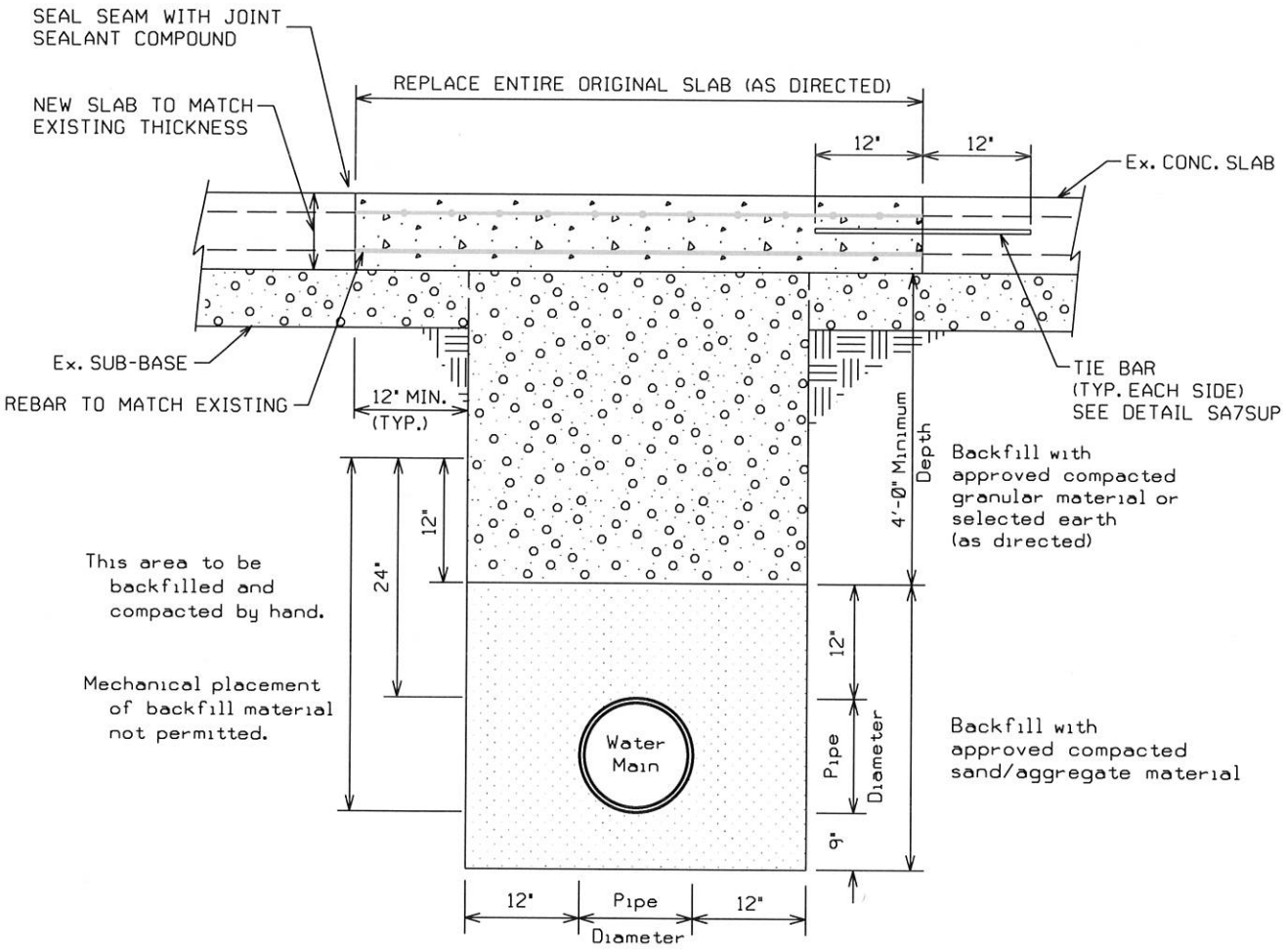
Water Line Trench And Repaving

Scale: N.T.S.

M:\pwsa\gis\det\Standards\stdwsl.det

Supplemental Detail Drawing: WS-1

2/24/2014



NOTES:

1. All trench backfill material to be placed and mechanically compacted in 6" compacted layers.
2. Trench bedding may need to be modified in poor compaction areas.
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9"	W6 or D5.5	12"	W8 or D7.5
10"	W7 or D6.5	13"	W9 or D8

REVISIONS	
1. MSR 4-23-01	
2. RDH 6-14-06	
3. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

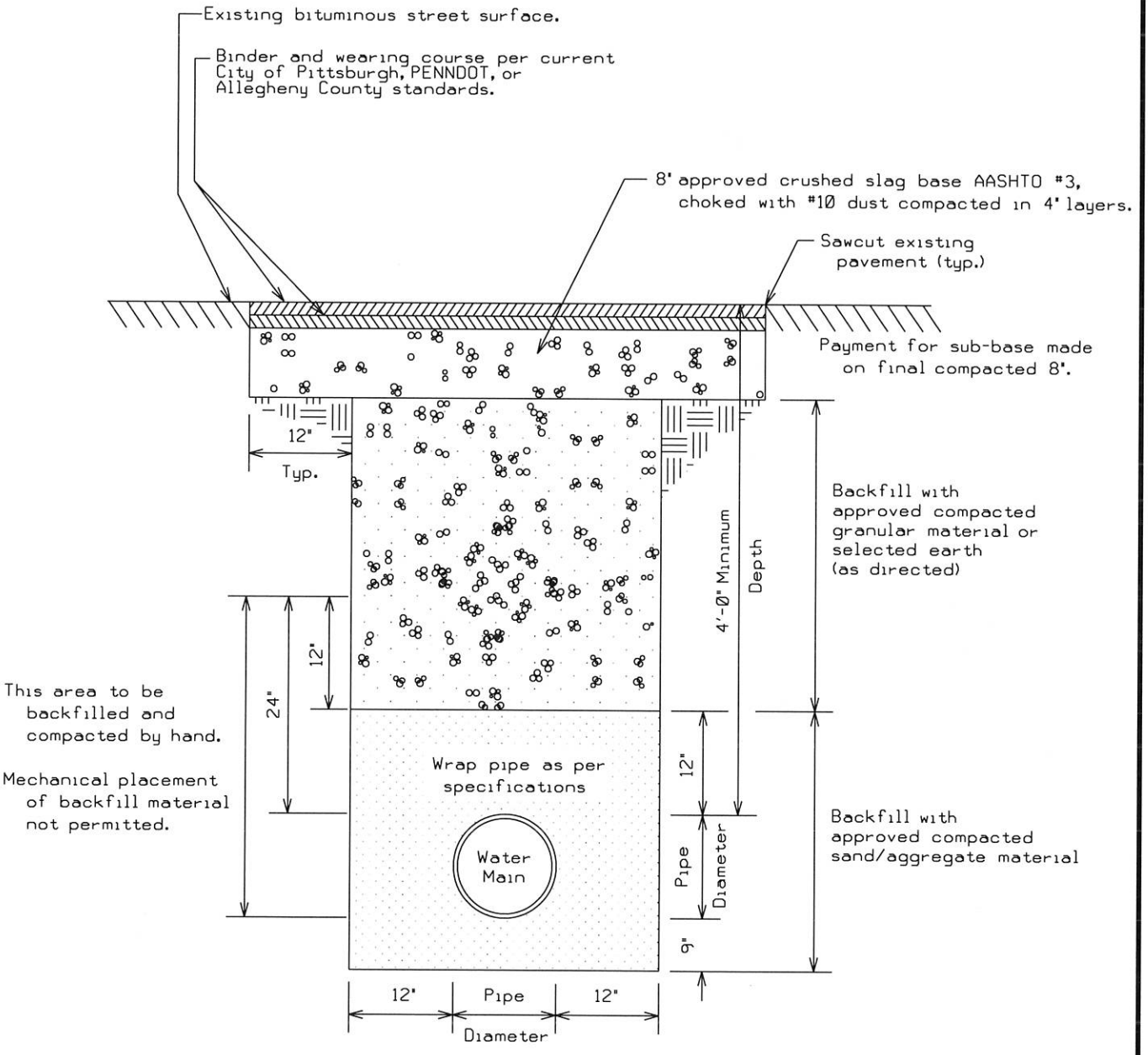
CONCRETE STREET TRENCH REPAVING FOR WATER MAIN

Scale: N.T.S.

M:\pwsa\gis\det\Standards\stdwsla.det

Supplemental Detail Drawing: WS-1A

2/24/2014



NOTES

1. All trench backfill material to be placed and mechanically compacted in 6" compacted layers.
2. Trench bedding may need to be modified in poor compaction areas.
3. Certain pipe materials and/or related trench materials may need to be substituted if contaminated soils are encountered.

REVISIONS	
1. MSR 4-23-01	
2. MAC 8-13-07	
3. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

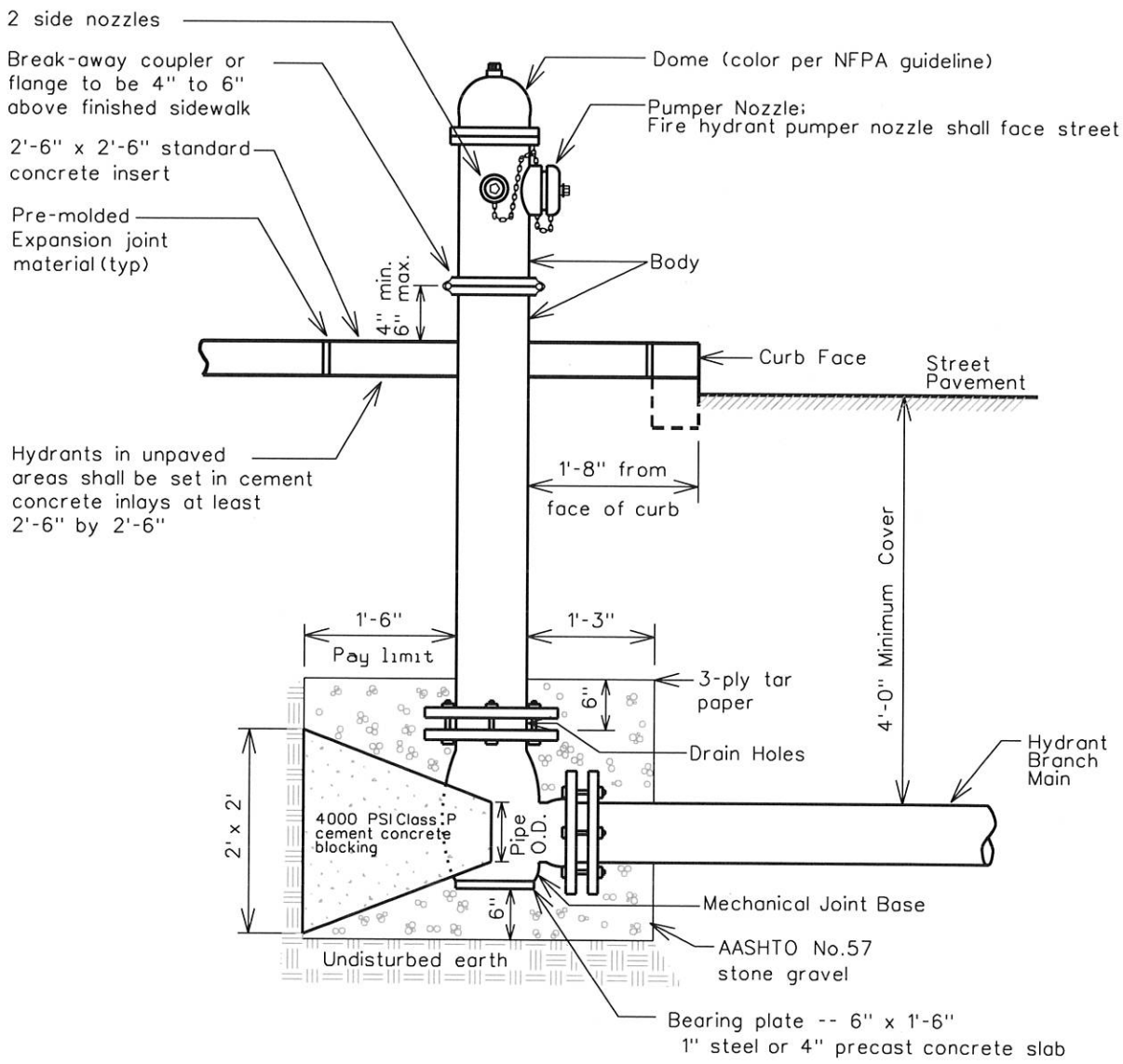
Water Line Trench And Bituminous Repaving

Scale: N.T.S.

M:\pwsa\gis\det\Standards\stdws2.det

Supplemental Detail Drawing: WS-2

2/24/2014



NOTE:

FOR HYDRANT PAINTING REQUIREMENTS, REFER TO STANDARD DETAIL WS-HYD.

REVISIONS		
1.	MSR	4-23-01
2.	MAC	8-13-07
3.	LRC	6-05-08
4.	LRC	1-31-14

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

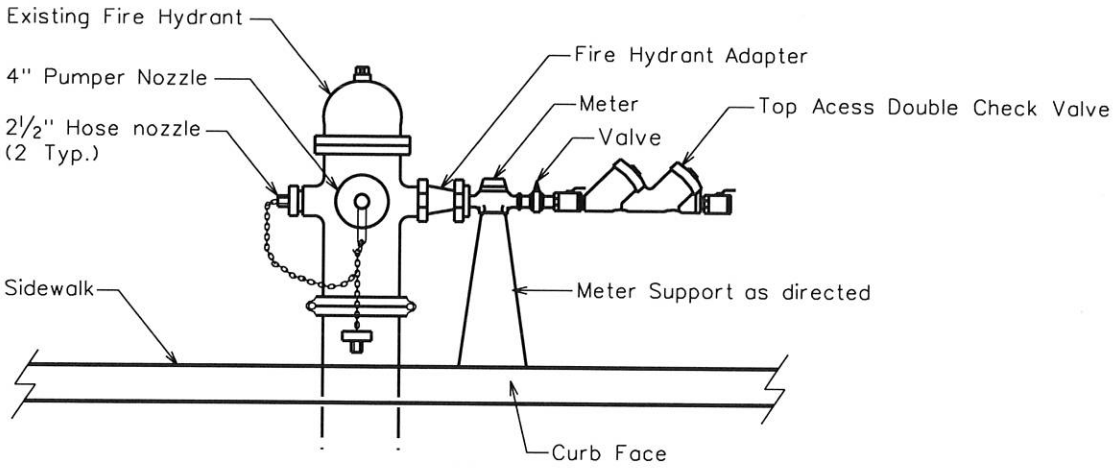
Fire Hydrant Installation

Scale: N.T.S.

M:\pwsa\gis\det\Standards\stdws4.det

Supplemental Detail Drawing: WS-4

2/24/2014



NOTES:

1. ANY DAMAGE CAUSED TO THE FIRE HYDRANT AND/OR METER IS THE RESPONSIBILITY OF THE CUSTOMER.
2. THE P.W.S.A. WILL SUPPLY THE FIRE HYDRANT ADAPTOR AND METER.
3. THE P.W.S.A. WILL INSTALL THE METER AND OPERATING VALVE.
4. THE CUSTOMER IS RESPONSIBLE FOR PROTECTING THE FIRE HYDRANT AND METER FROM VANDALISM AND COLD WEATHER.
5. THE METER MUST BE SUPPORTED AS APPROVED BY THE P.W.S.A.
6. THE CUSTOMER IS RESPONSIBLE FOR PURCHASING AND INSTALLING THE DOUBLE CHECK BACKFLOW PREVENTER.
7. ONLY P.W.S.A. IS PERMITTED TO OPERATE THE FIRE HYDRANT; WATER FLOW IS TO BE CONTROLLED BY THE INSTALLED VALVE.
9. THE CUSTOMER IS RESPONSIBLE FOR MAINTAINING A SAFE PEDESTRIAN ENVIRONMENT.
10. WHEN WORK IS COMPLETED, THE CUSTOMER MUST CONTACT P.W.S.A. AT 412-255-2429 TO SCHEDULE THE DISCONNECT AND REMOVAL OF APPURTENANCES. AT THIS TIME, A FINAL READING OF THE METER WILL BE MADE AND THE CUSTOMER WILL BE INVOICED FOR THE WATER USAGE.

I HAVE READ THE NOTES ABOVE AND UNDERSTAND MY RESPONSIBILITES.

SIGN HERE _____ **DATE** _____

PRINT HERE _____

REVISIONS	
1. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Fire Hydrant With Metered Installation

Scale: N.T.S.

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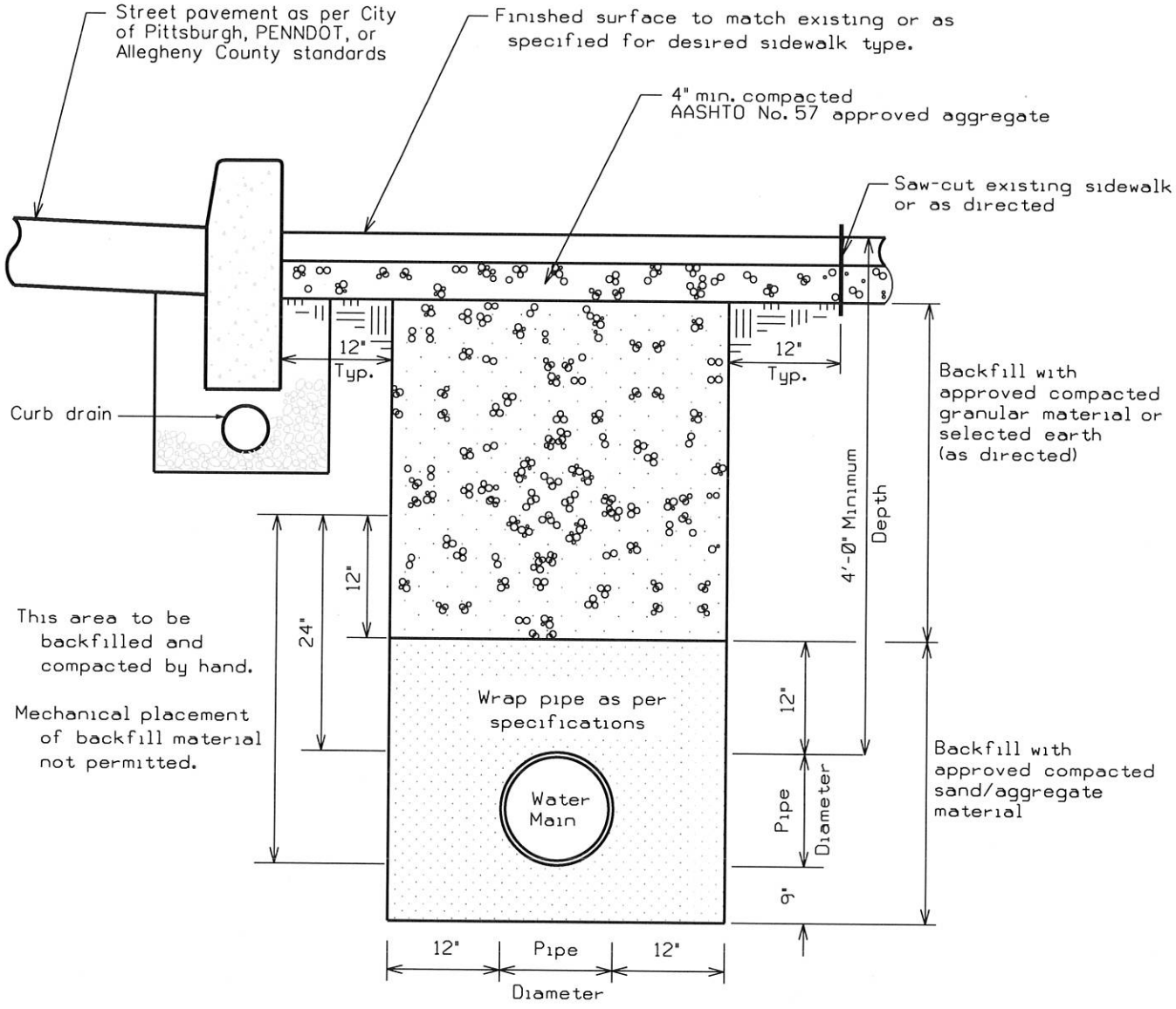
Supplemental Detail Drawing: **WS-4M**

2/24/2014



NOTES

1. All trench backfill material to be placed and mechanically compacted in 6" compacted layers.
2. Trench bedding may need to be modified in poor compaction areas.
3. Certain pipe materials and/or related trench materials may need to be substituted if contaminated soils are encountered.

REVISIONS	
1. MSR 4-23-01	
2. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

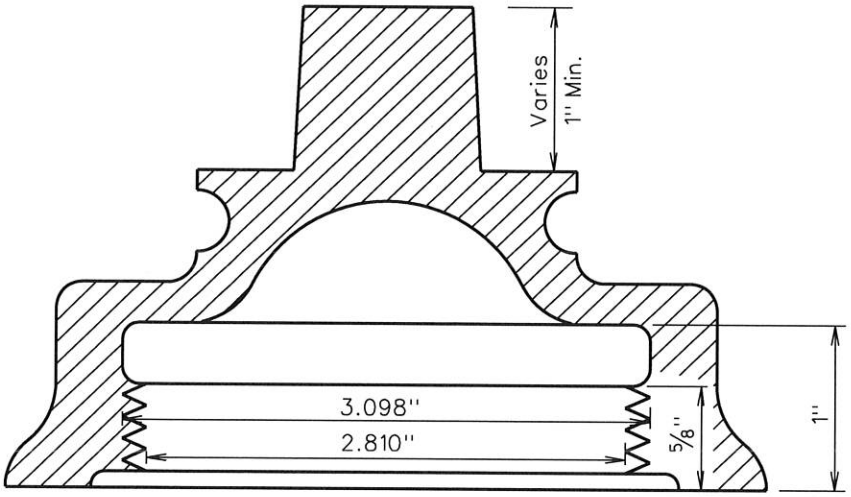
Water Line Trench In Sidewalk Area

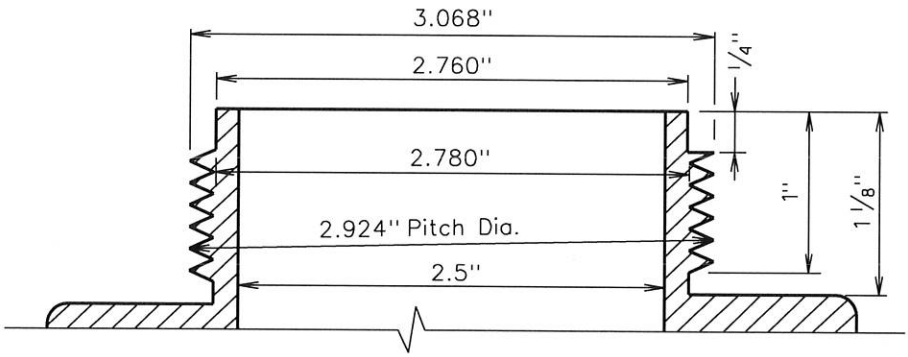
Scale: N.T.S.

M:\pwsa\gis\det\Standards\stdws7.det

Supplemental Detail Drawing: WS-7

2/24/2014





No. of Threads: 6
Style: 60 degree V

REVISIONS	
1. JEK 11-21-96	
2. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

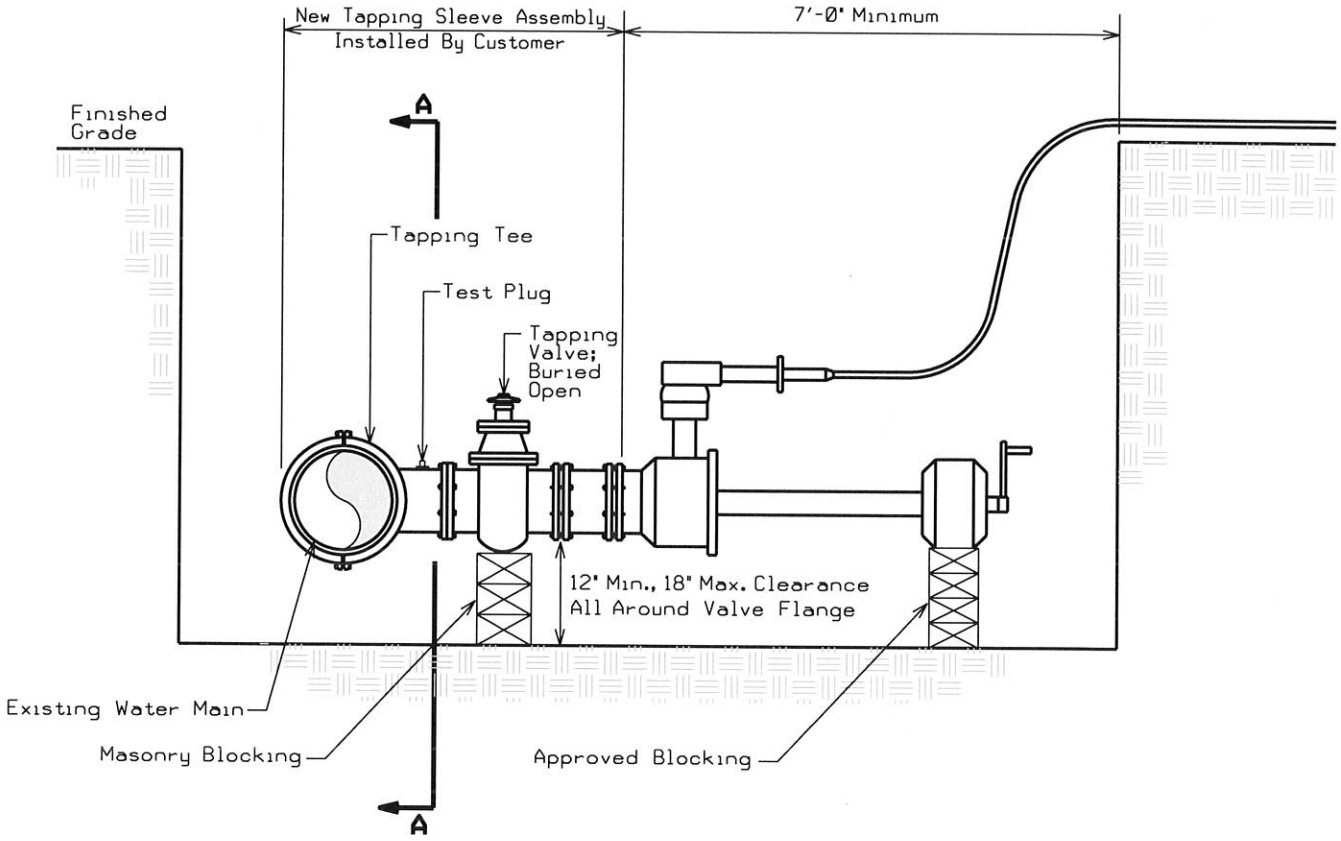
Thread Design For Hydrant Hose Nozzle

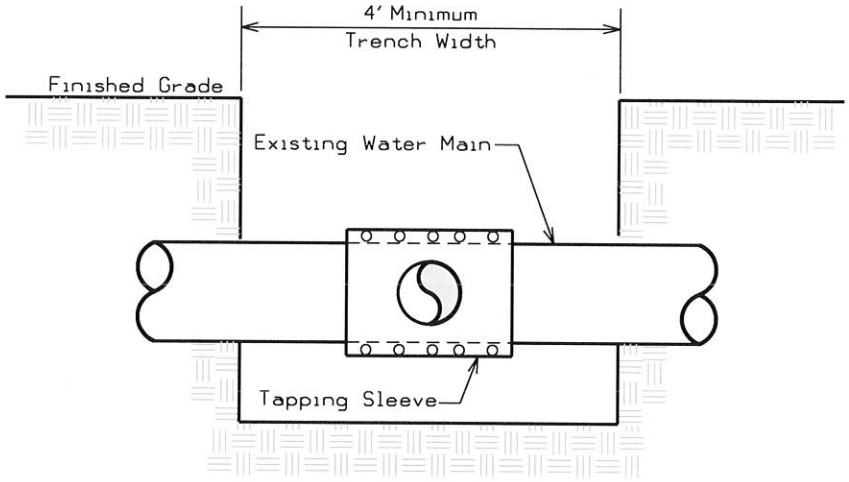
Scale: N.T.S.

M:\pwsa\gis\det\Standards\stdws8.det

Supplemental Detail Drawing: **WS-8**

2/24/2014





SECTION A-A

NOTES:

1. Tapping sleeve and tapping gate to be installed on water main by the contractor. PWSA will make the actual tap.
2. Tapping machine to be mounted and operated by PWSA.
3. Excavation and shoring required as per current OSHA standards.
4. Contractor must supply equipment to lower tapping machine in to trench.
5. All valves must be "right turn to open".

REVISIONS		
1.	MSR 4-23-01	
2.	MAC 8-15-01	
3.	MAC 8-13-07	
4.	LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Trench Requirements For 4" Through 12" Live Water Tap

Scale: N.T.S.

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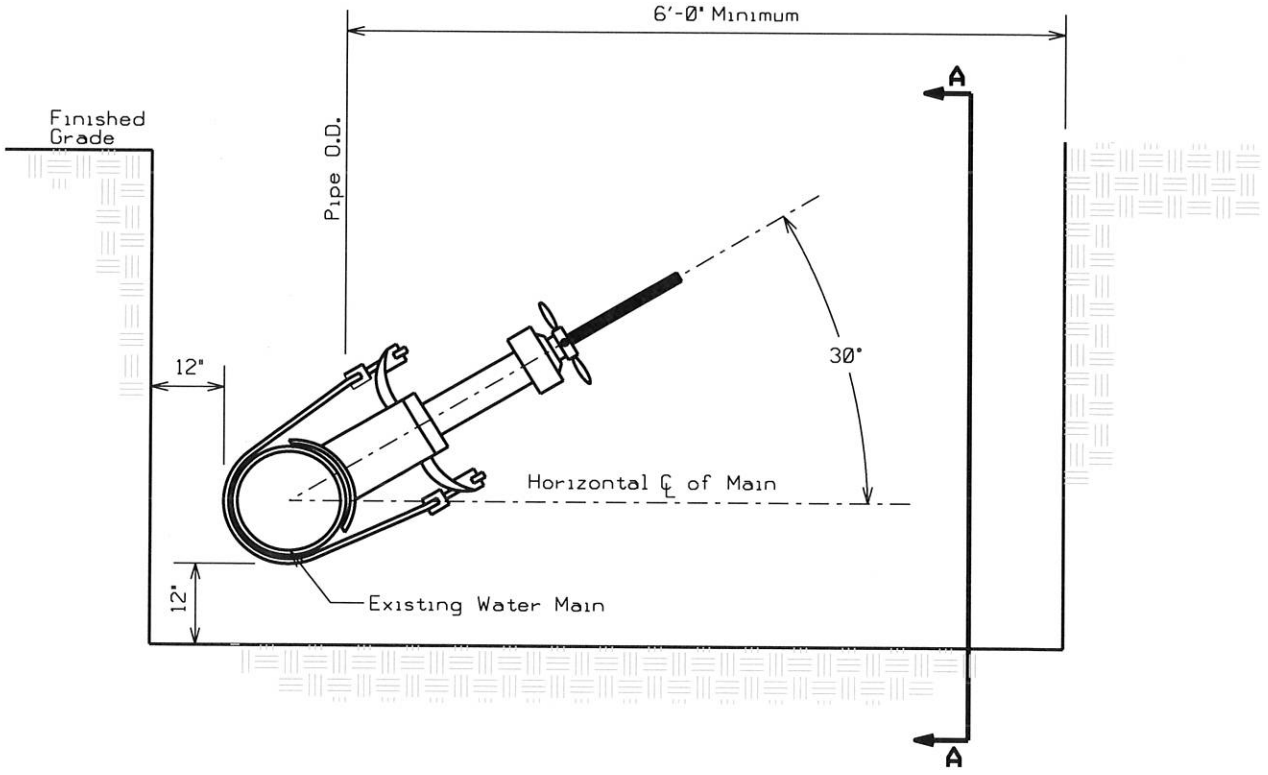
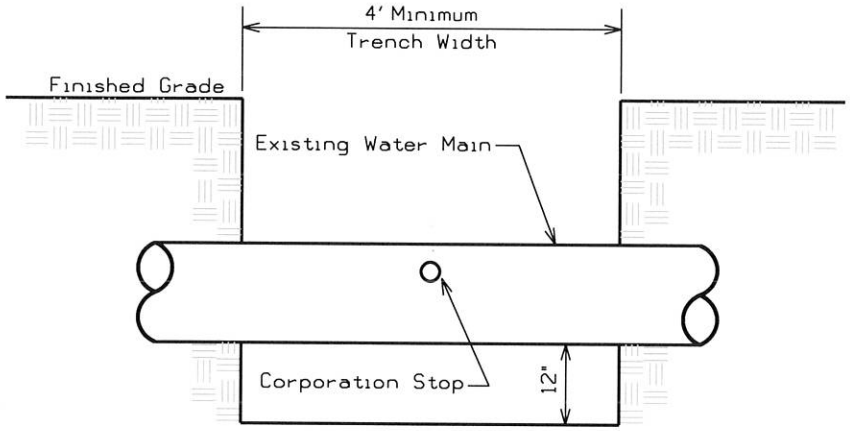
Supplemental Detail Drawing: WS-B

2/24/2014





SECTION A-A

NOTE:

1. PWSA will make the actual tap.
2. Excavation and shoring required as per current OSHA standards.

REVISIONS	
1. MSR 4-23-01	
2. MAC 8-13-07	
3. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Trench Requirements For 1", 1-1/2 " And 2" Water Service Tap

Scale: N.T.S.

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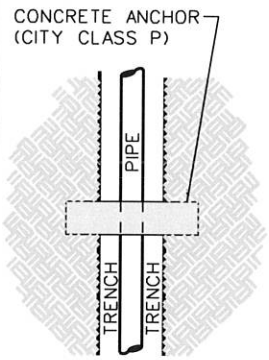
Supplemental Detail Drawing: **WS-C**

2/24/2014



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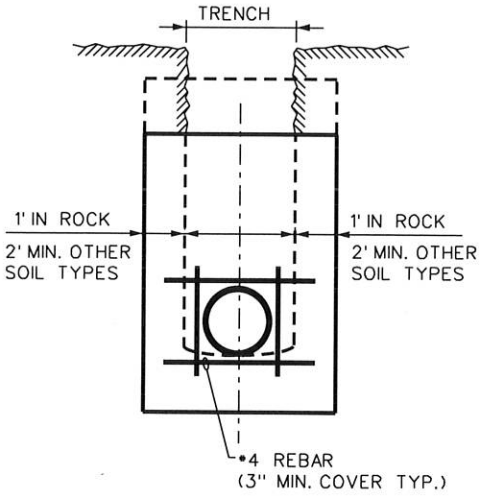

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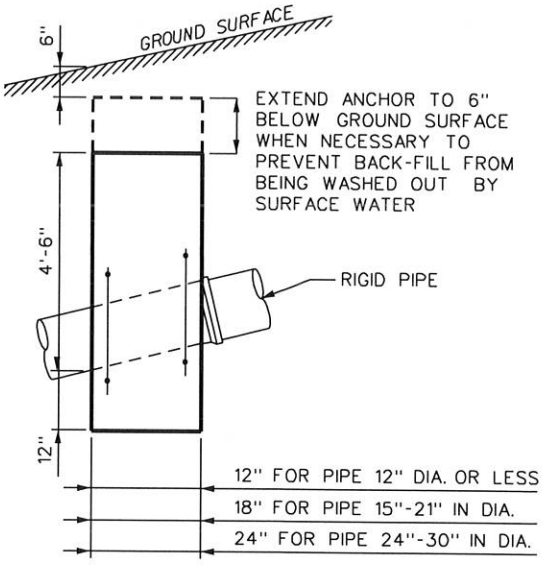
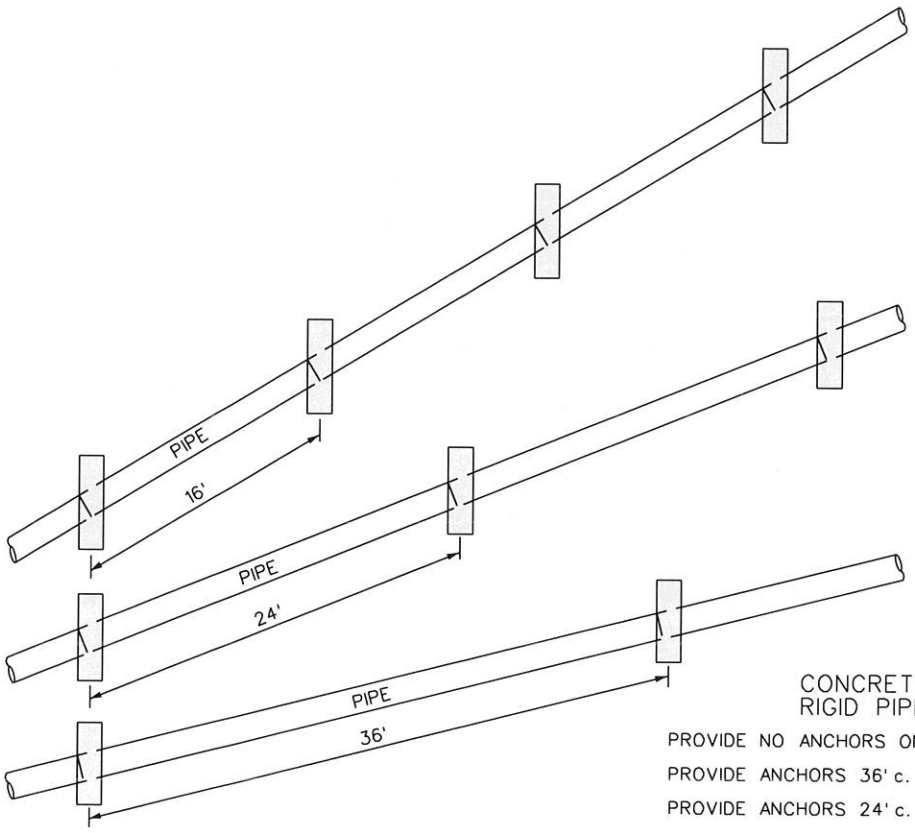


Profile

CONCRETE ANCHORS



CONCRETE ANCHORS FOR
RIGID PIPE ON STEEP GRADES:

PROVIDE NO ANCHORS ON GRADES LESS THAN 24%

PROVIDE ANCHORS 36' c. TO c. ON GRADES BETWEEN 24% AND 34%

PROVIDE ANCHORS 24' c. TO c. ON GRADES BETWEEN 34% AND 50%

PROVIDE ANCHORS 16' c. TO c. ON GRADES BETWEEN 50% AND 70%

FOR CONDITIONS OTHER THAN SHOWN HERE; ANCHORS SHALL BE PROVIDED AS REQUIRED BY THE CONTRACT PLANS OR AS ORDERED IN THE FIELD BY THE DIRECTOR.

REVISIONS	
1. JEK 2-6-03	
2. MAC 3-2-04	
3. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

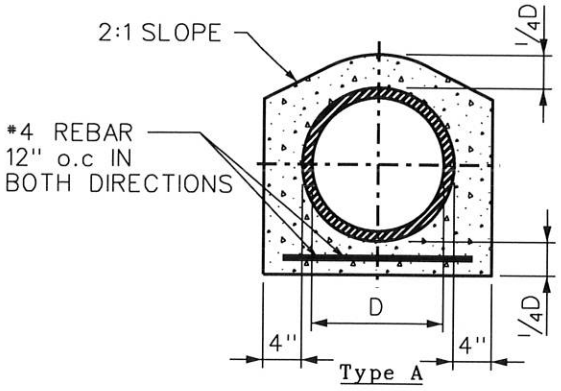
Concrete Anchor

Scale: N.T.S.

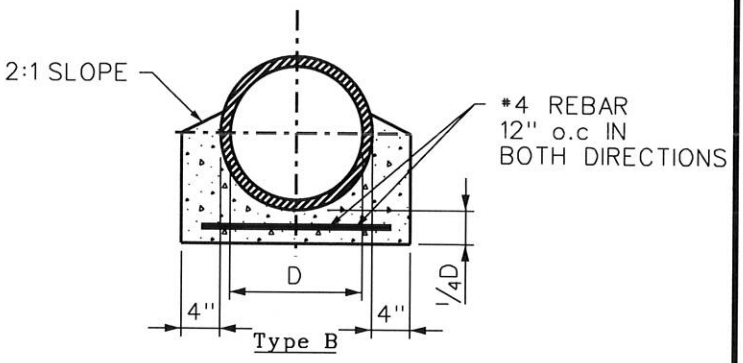
M:\pwsa\gis\det\Standards\stdwsca.det

Supplemental Detail Drawing: **WS-CA**

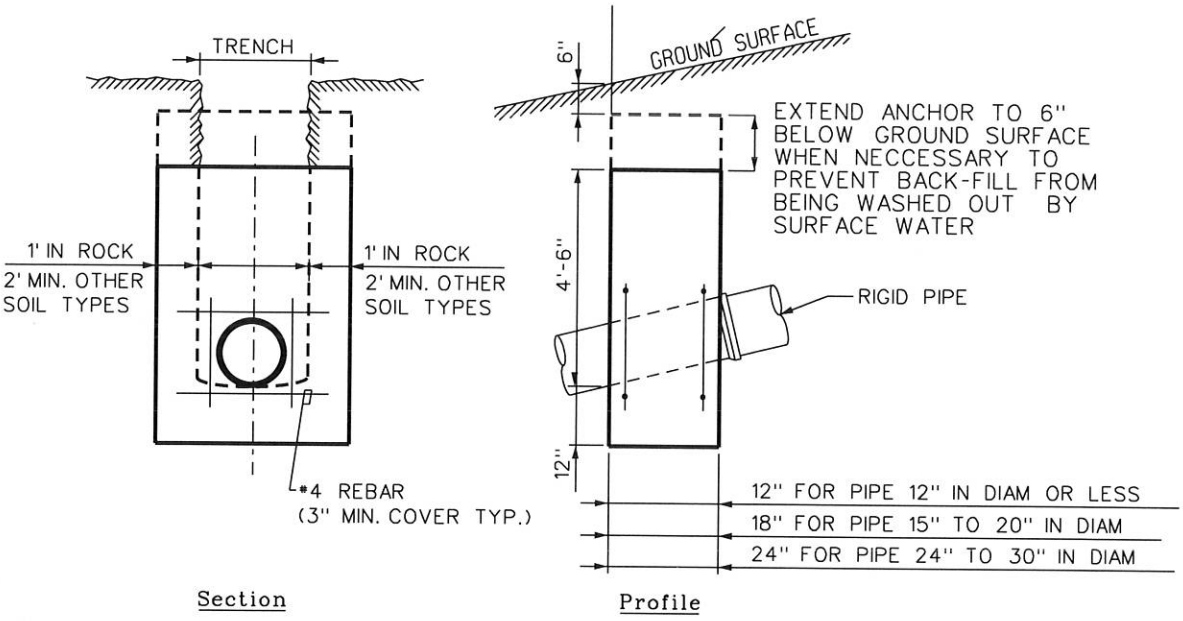
2/24/2014



CONCRETE ENCASEMENT REINFORCEMENT



CONCRETE CRADLE REINFORCEMENT



CONCRETE ANCHORS

CONCRETE ANCHORS FOR RIGID PIPE ON STEEP GRADES:

PROVIDE NO ANCHORS ON GRADES LESS THAN 24%

PROVIDE ANCHORS 36' c. TO c. ON GRADES BETWEEN 24% AND 34%

PROVIDE ANCHORS 24' c. TO c. ON GRADES BETWEEN 34% AND 50%

PROVIDE ANCHORS 16' c. TO c. ON GRADES BETWEEN 50% AND 70%

FOR CONDITIONS OTHER THAN SHOWN HERE; ANCHORS SHALL BE PROVIDED AS REQUIRED BY THE CONTRACT PLANS OR AS ORDERED IN THE FIELD BY THE DIRECTOR.

REVISIONS	
1. MSR 4-18-01	
2. JEK 2-20-03	
3. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Concrete Reinforcement For Rigid Pipe

Scale: N.T.S.

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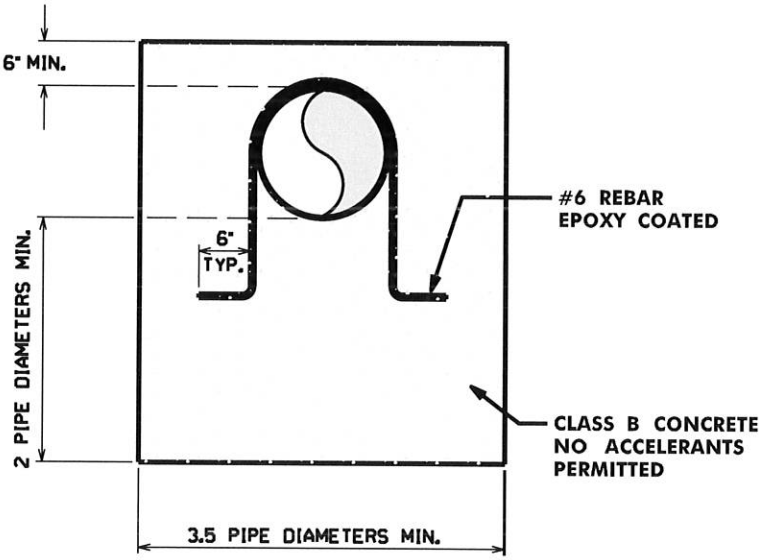
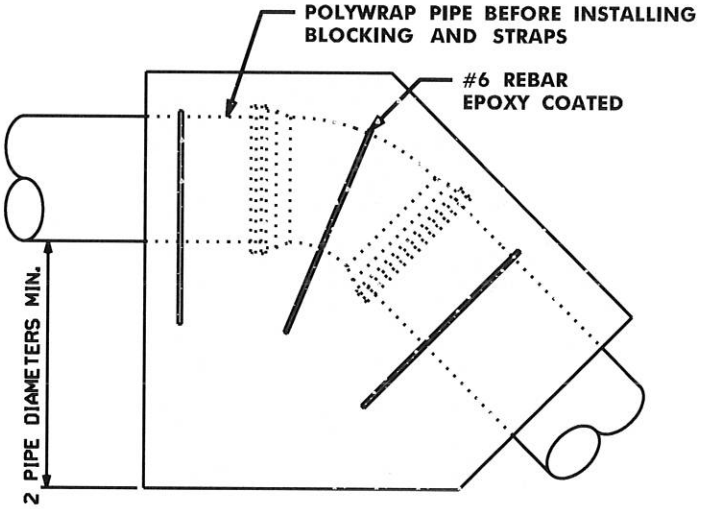
Supplemental Detail Drawing: **WS-CE**

2/24/2014



SECTION



LONGITUDINAL SECTION

NOTE:

1. THE DETAIL REPRESENTS THE APPROXIMATE BLOCKING CONFIGURATION AND ASSUMES SOLID SOIL AND PROPER BURIAL.
2. EXACT SHAPE AND SIZE TO BE DETERMINED IN THE FIELD.
3. POOR SOIL CONDITIONS WILL GREATLY INCREASE THE SIZE OF THE CONCRETE BLOCK.

REVISIONS	
1. JEK 2-20-03	
2. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Vertical Thrust Block For Small Pipe

Scale: N.T.S.

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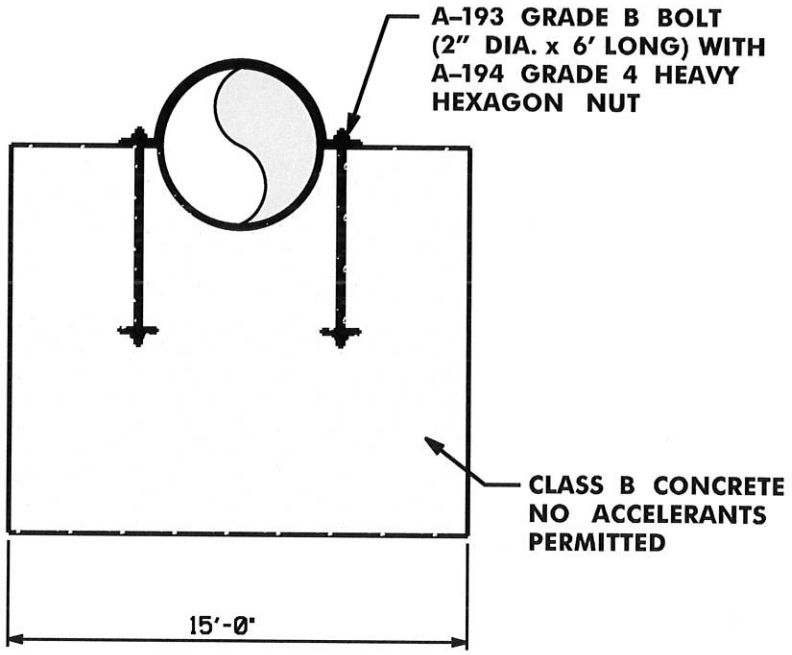
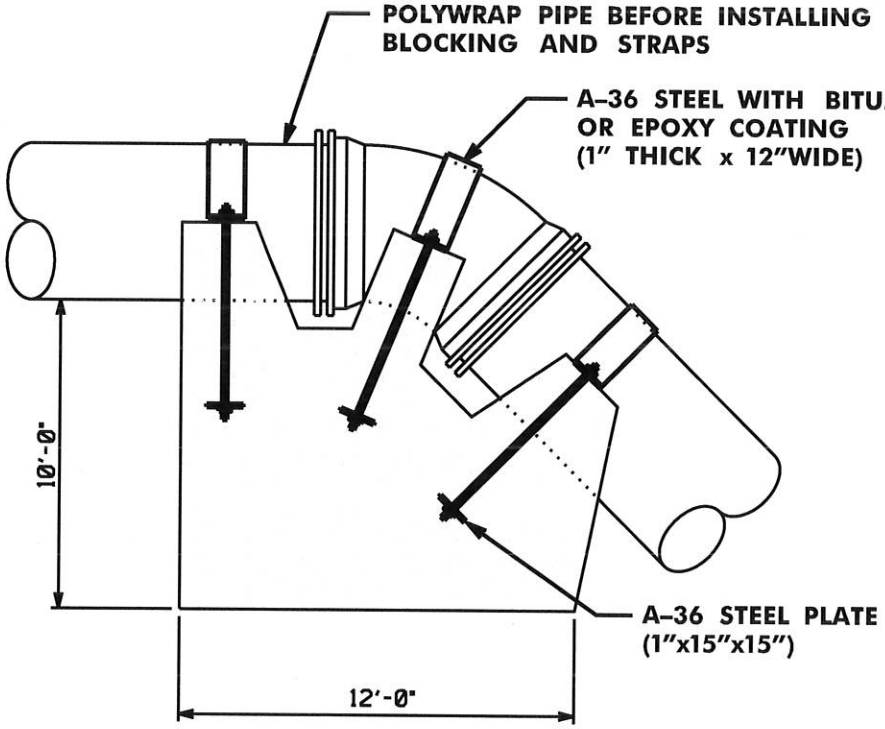
Supplemental Detail Drawing: **WS-VB**

2/24/2014



SECTION



LONGITUDINAL SECTION

NOTE:

1. THE DETAIL REPRESENTS THE APPROXIMATE BLOCKING CONFIGURATION AND ASSUMES SOLID SOIL AND PROPER BURIAL.
2. EXACT SHAPE AND SIZE TO BE DETERMINED IN THE FIELD.
3. POOR SOIL CONDITIONS WILL GREATLY INCREASE THE SIZE OF THE CONCRETE BLOCK.

REVISIONS	
1. JEK 2-20-03	
2. LRC 1-31-14	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

Vertical Thrust Block For Large Pipe

Scale: N.T.S.

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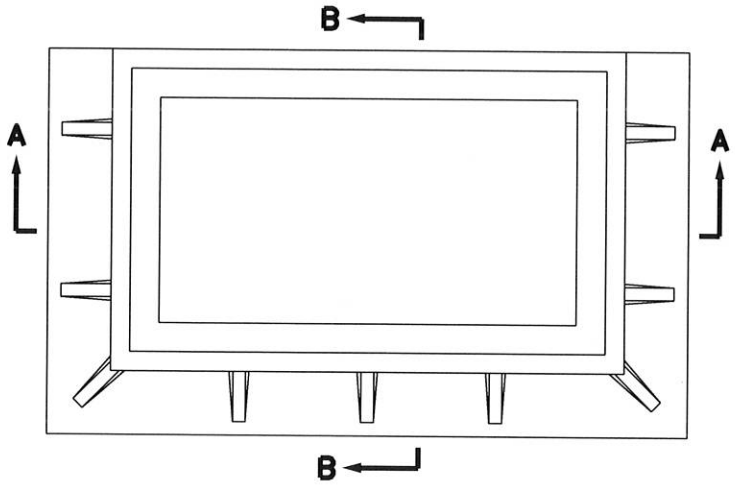
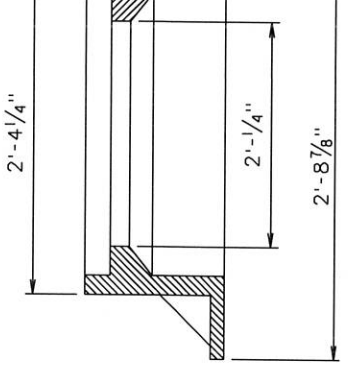
Supplemental Detail Drawing: **WS-VBL**

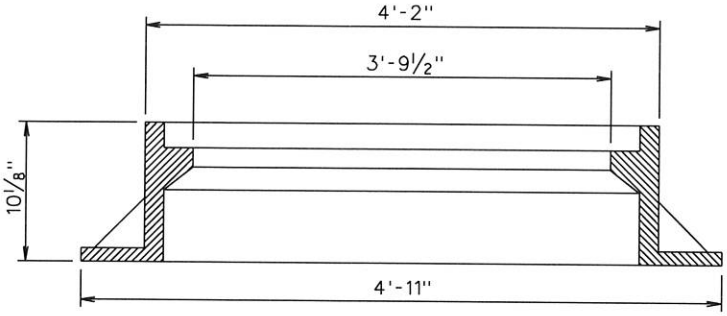
2/24/2014



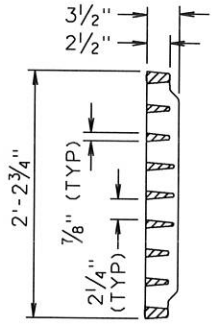
PLAN–FRAME



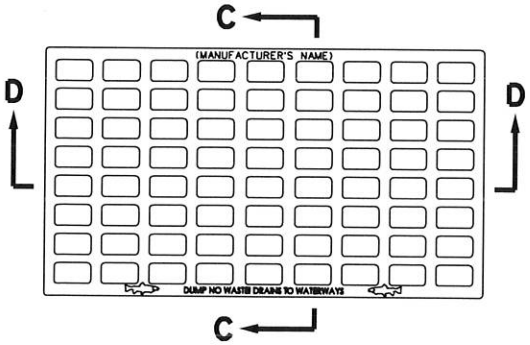
SECTION B–B



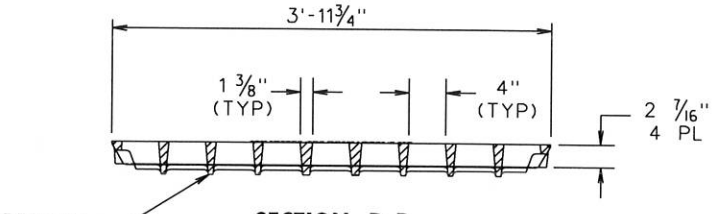
SECTION A–A



SECTION C–C



PLAN–GRATE



5355M8
ASTM A48 CL35B
MO/DAY/YR
00535571

SECTION D–D

REVISIONS	
1. JLK 9-16-03	
2. MAC 5-16-06	
3. RJM 6-18-10	

Approved by:

PWSA
THE PITTSBURGH WATER & SEWER AUTHORITY
Quality Water Quality Service
Engineering & Construction Division

Pittsburgh Water and Sewer Authority

INLET
3-FLANGE CAST IRON FRAME AND GRATE

Scale: N.T.S.

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Supplemental Detail Drawing: IFG

2/24/2014