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## ***APPENDIX A***

AMITY TOWNSHIP  
BERKS COUNTY, PENNSYLVANIA

APPLICATION FOR SEWER SYSTEM EXTENSION

NAME OF DEVELOPMENT: \_\_\_\_\_

LOCATION: \_\_\_\_\_

DATE OF APPLICATION: \_\_\_\_\_

APPLICANT'S NAME: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_

APPLICATIONS AND PERMITS:

PaDEP Permits \_\_\_\_\_  
Treatment Plant Capacity Acquired \_\_\_\_\_  
Planning Module Approval \_\_\_\_\_  
Right-of-Way Acquisition \_\_\_\_\_

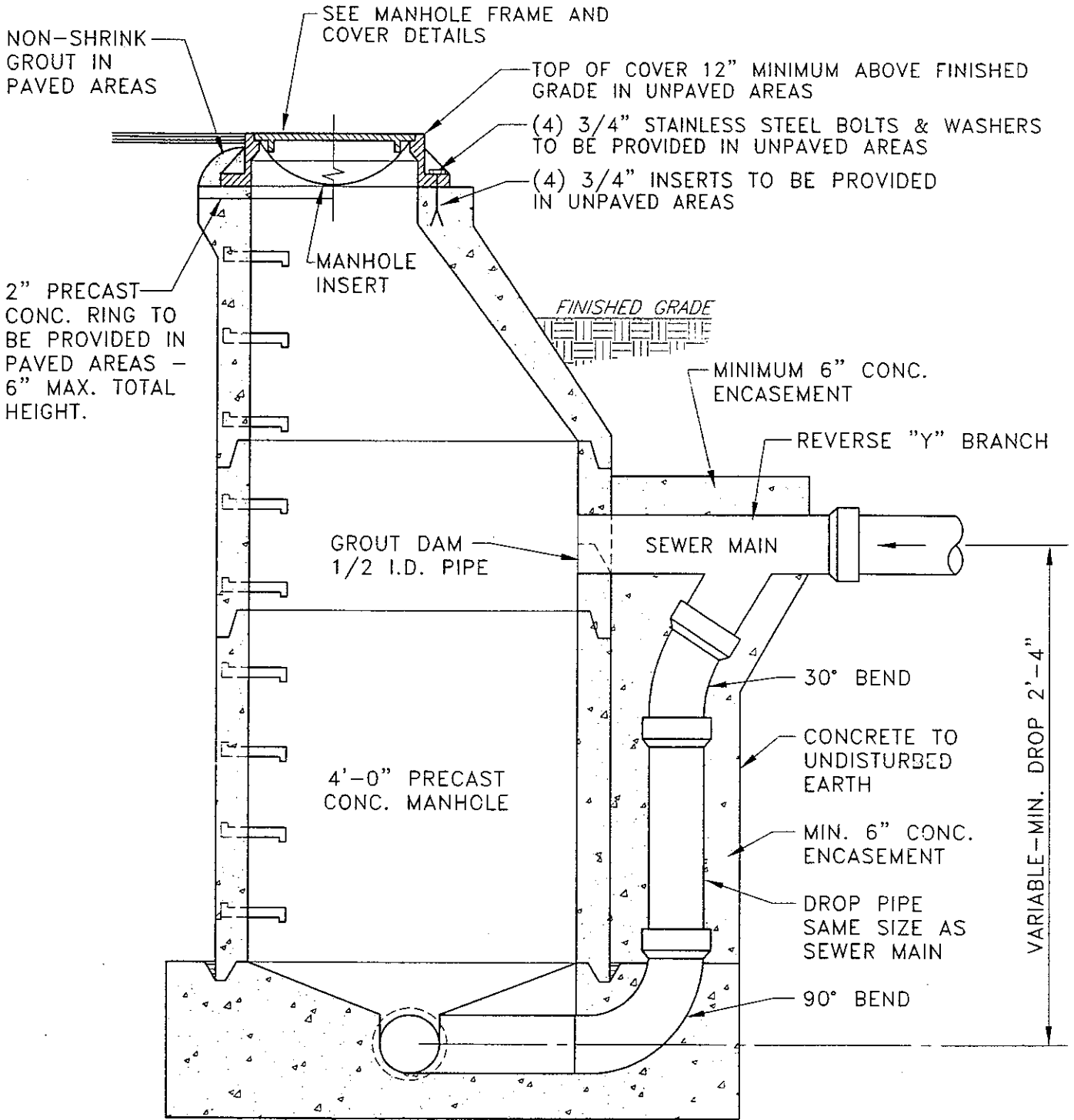
TYPE OF SYSTEM:

Low-Pressure Sewer System \_\_\_\_\_  
On-Lot Grinder Pump Stations \_\_\_\_\_  
Gravity Sewer System \_\_\_\_\_  
Pump Station and Force Main \_\_\_\_\_  
On-Lot Sewer System \_\_\_\_\_

SYSTEM SPECIFICS:

Total Number of Lots/Units \_\_\_\_\_  
Total Number of EDUs \_\_\_\_\_  
Total Length and Size of Gravity Sewer System \_\_\_\_\_  
Total Length of Low-Pressure Sewer System \_\_\_\_\_  
Total Length and Size of Force Main \_\_\_\_\_  
Estimate for Improvements \_\_\_\_\_  
Estimate for Inspection and Testing Fees \_\_\_\_\_





TYPICAL SECTION

NOTE:  
 WHERE MANHOLE IS LOCATED WITHIN THE 100-YEAR FLOODWAY BOUNDARY, PROVIDE WATERTIGHT MANHOLE FRAME AND COVER PER DETAILS.

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
 DOUGLASVILLE, PA 19518



400 Washington Street, Suite 602  
 Reading, Pennsylvania 19601  
 Tel 610.374.5285

**STANDARD DETAIL - SEWER SYSTEM**

**PRECAST MANHOLE DETAIL  
 WITH DROP CONNECTION**

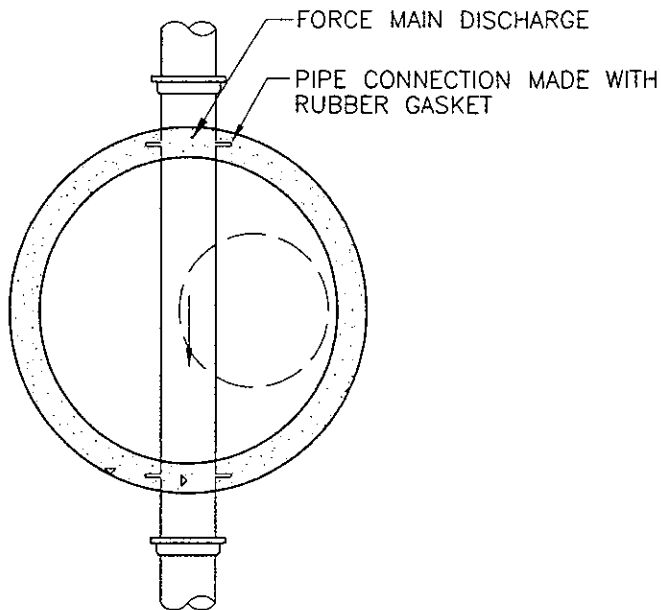
DATE: JUNE 2005

DETAIL: 2

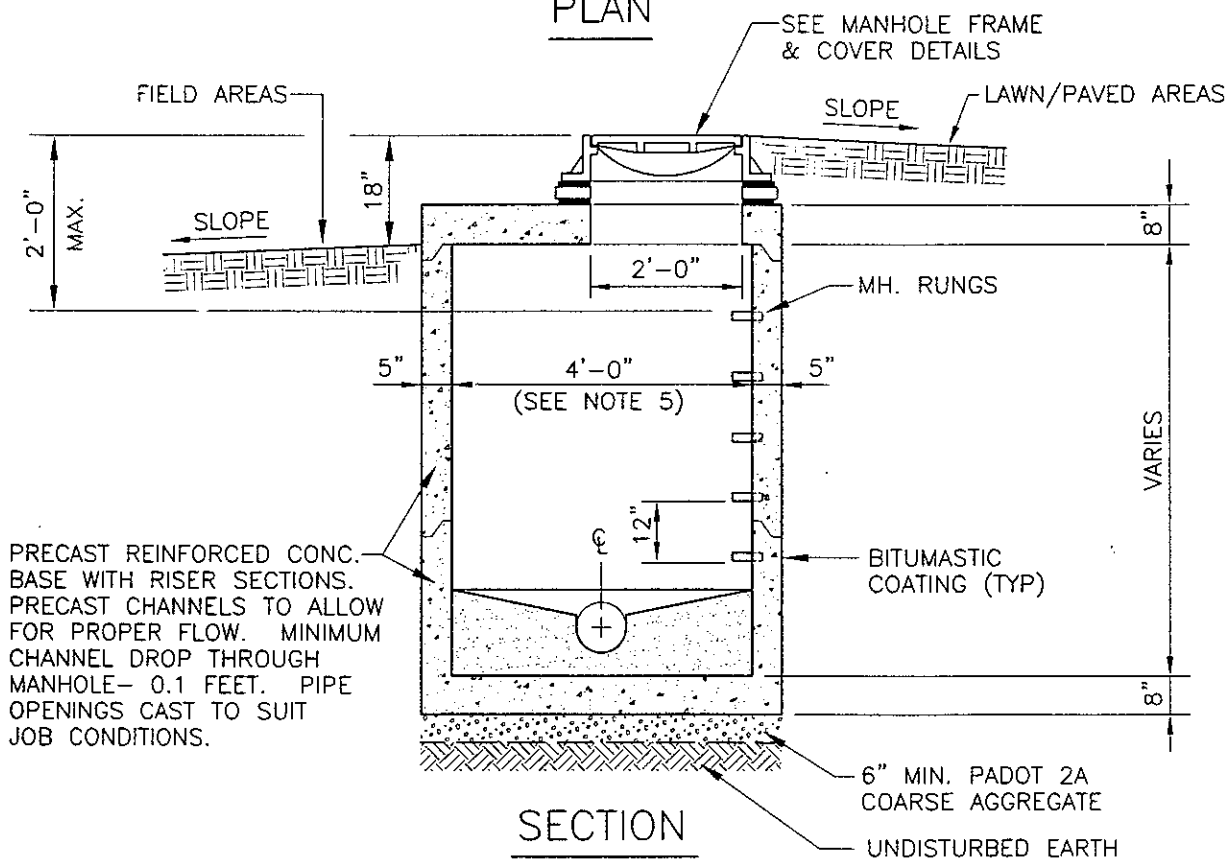
SD002.DWG

**NOTES:**

1. ADJUST TO GRADE WITH CONC. GRADE RINGS (MAX. VERT. ADJUST. 6"). SEE FRAME & COVER DETAILS.
2. MECHANICALLY VIBRATED PRECAST CONC. SHALL CONFORM TO A.S.T.M. C-478.
3. SEAL ALL JOINTS INSIDE & OUTSIDE WITH PREFORMED BUTYL RUBBER SEALING COMPOUND.
4. FILL ALL LIFTING HOLES WITH NON-SHRINK GROUT.
5. INSIDE DIAMETER DETERMINED BY PIPE SIZE & CONFIGURATION IN MANHOLE. SEE DETAIL 10.
6. WHERE MANHOLE IS LOCATED WITHIN 100-YEAR FLOODWAY BOUNDARY, PROVIDE WATERTIGHT MANHOLE FRAME AND COVER PER DETAILS.



**PLAN**



**SECTION**

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
 DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

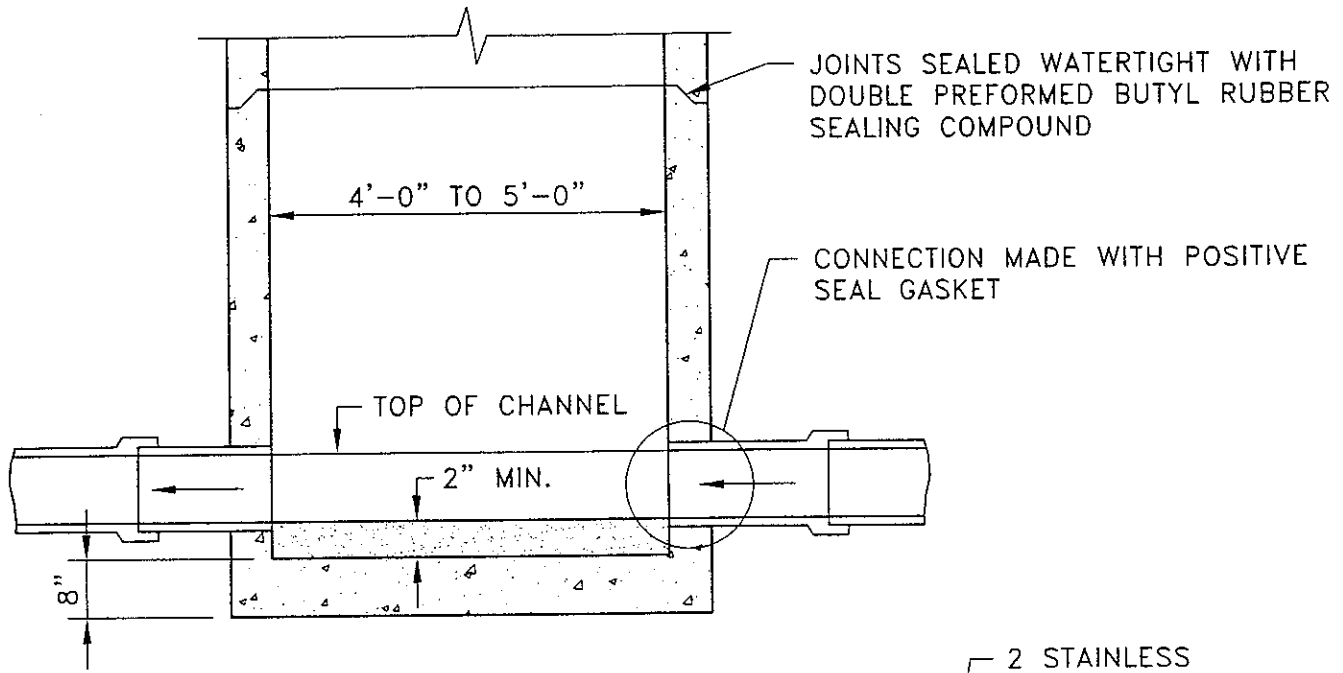


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 Tel 610.374.5285

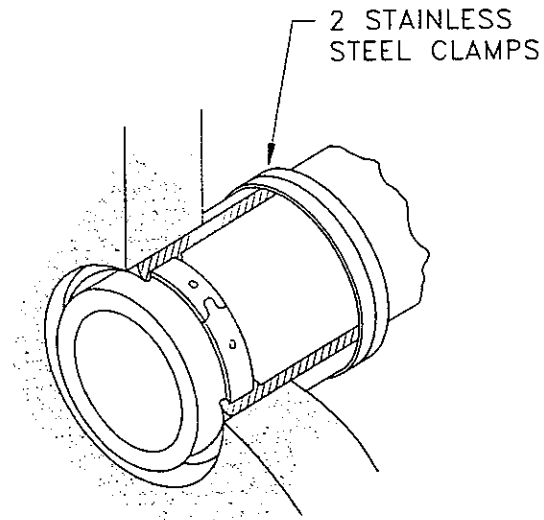
**PRECAST MANHOLE DETAIL  
 WITH FORCE MAIN DISCHARGE**

DATE: JUNE 2005

DETAIL: 3



SECTION A



EXPANDED VIEW OF POSITIVE SEAL GASKET

SECTION B

**AMITY TOWNSHIP**  
 2004 WEAVERTOWN ROAD  
 DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

**ARRO**  
 ARRO Consulting, Inc.

400 Washington Street, Suite 602  
 Reading, Pennsylvania 19601  
 Tel 610.374.5285

**MANHOLE WITH PRECAST BASE  
 AND POSITIVE SEAL GASKET**

DATE: JUNE 2005

DETAIL: 4

HEAVY DUTY CAST IRON  
FRAME AND COVER SUIT-  
ABLE FOR HS25 LOADING

2" RAISED LETTER  
(TYP)

(4) 7/8"  $\phi$  BOLT HOLES

CONCEALED PICK HOLE  
(2 REQD)

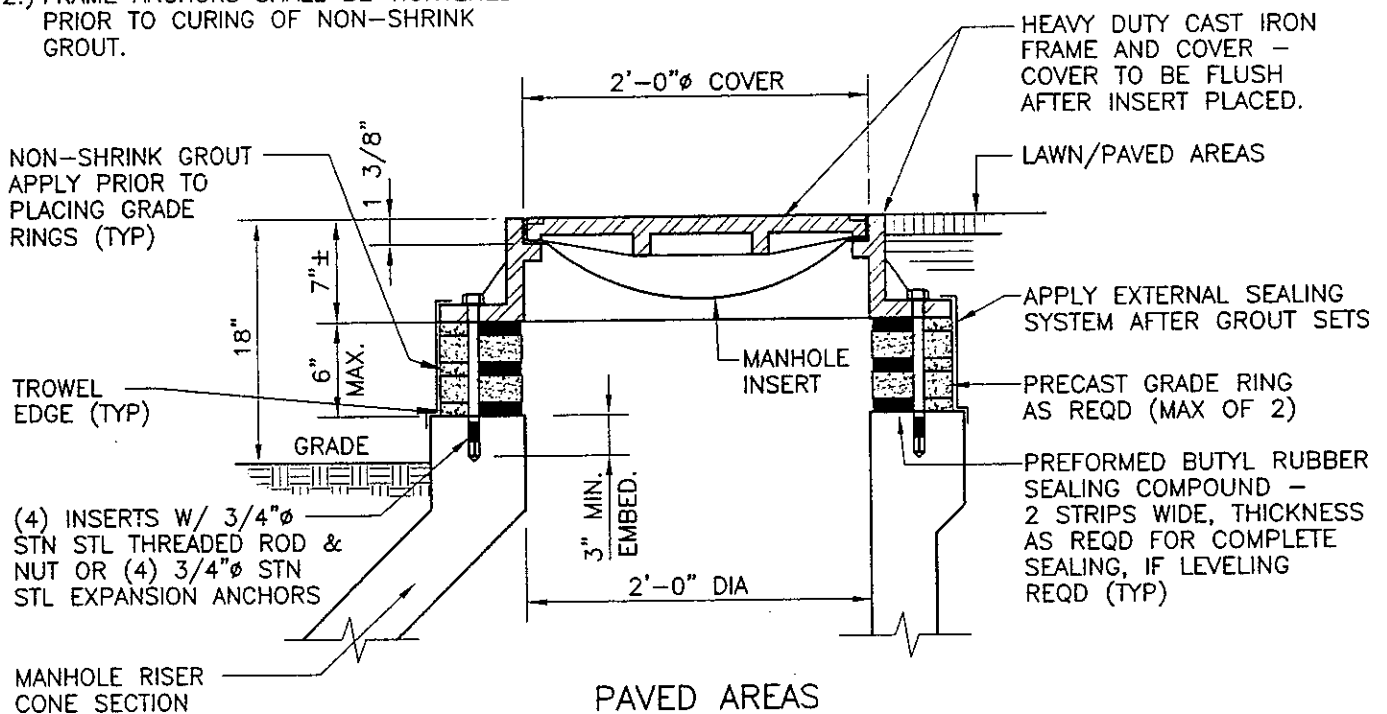
**SANITARY  
SEWER**

GUSSETS (MIN 6 REQD)

NOTES:

- 1.) ANCHOR BOLT HOLES SHALL BE DRILLED WITH A PERCUSSION OR ROTARY HAMMER DRILL UTILIZING A CARBIDE DRILL BIT. CORE DRILLING, OR ROTATIONAL ONLY DRILLING, OF ANY KIND, IS NOT ALLOWED.
- 2.) FRAME ANCHORS SHALL BE TIGHTENED PRIOR TO CURING OF NON-SHRINK GROUT.

COVER PATTERN



**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



400 Washington Street, Suite 602  
Reading, Pennsylvania 19601  
Tel 610.374.5285

**STANDARD MANHOLE FRAME & COVER  
WITH GRADE RINGS DETAIL**

DATE: JUNE 2005

DETAIL: 5

HEAVY DUTY CAST IRON  
FRAME AND COVER SUIT-  
ABLE FOR HS25 LOADING

2" RAISED LETTER  
(TYP)

CONCEALED PICK HOLE  
(2 REQD)

(4) 7/8"Ø BOLT HOLES

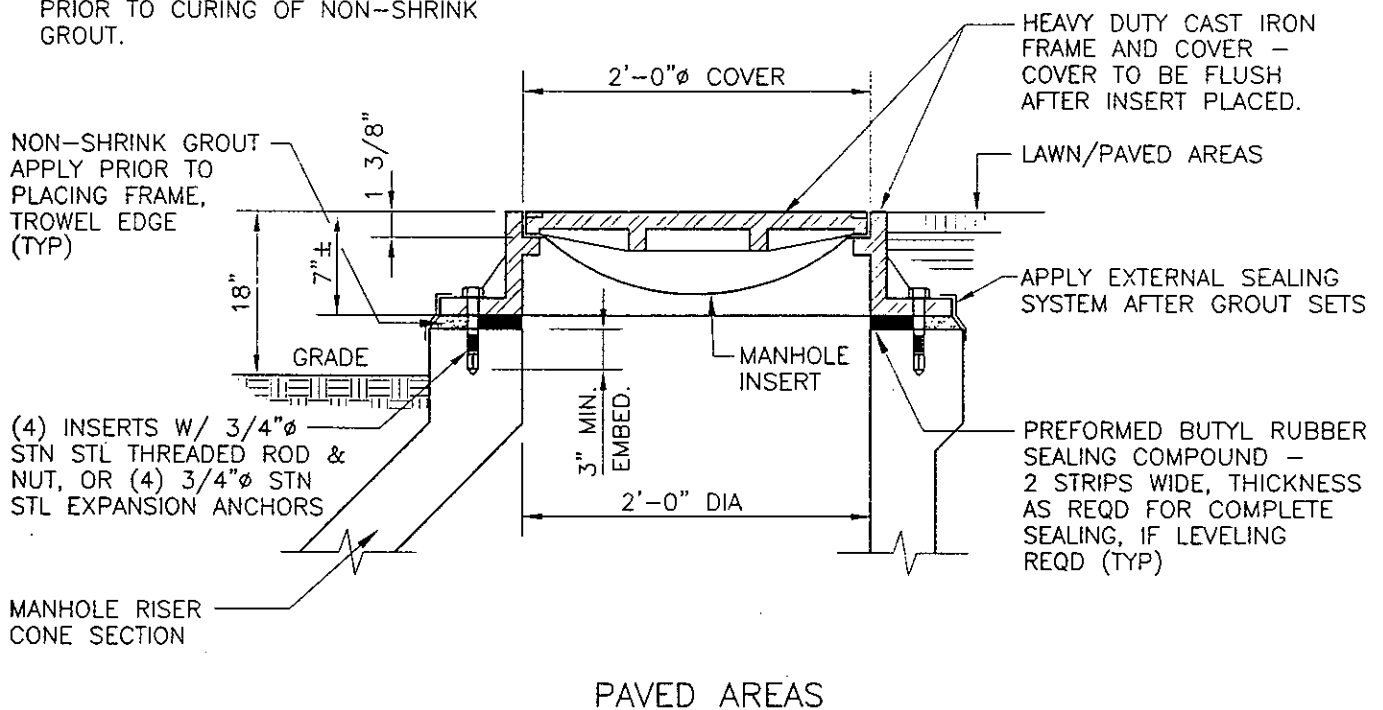
**SANITARY  
SEWER**

GUSSETS (MIN 6 REQD)

NOTES:

- 1.) ANCHOR BOLT HOLES SHALL BE DRILLED WITH A PERCUSSION OR ROTARY HAMMER DRILL UTILIZING A CARBIDE DRILL BIT. CORE DRILLING, OR ROTATIONAL ONLY DRILLING, OF ANY KIND, IS NOT ALLOWED.
- 2.) FRAME ANCHORS SHALL BE TIGHTENED PRIOR TO CURING OF NON-SHRINK GROUT.

COVER PATTERN



**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



400 Washington Street, Suite 602  
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**STANDARD MANHOLE FRAME & COVER  
WITHOUT GRADE RINGS DETAIL**

DATE: JUNE 2005

DETAIL: 6

HEAVY DUTY CAST IRON  
FRAME AND COVER,  
WATERTIGHT, SUITABLE  
FOR HS25 LOADING

2" RAISED LETTER  
(TYP)

CONCEALED PICK HOLE  
(2 REQD)

**SANITARY  
SEWER**

(4) 7/8"Ø BOLT HOLES

GUSSETS (MIN 6 REQD)

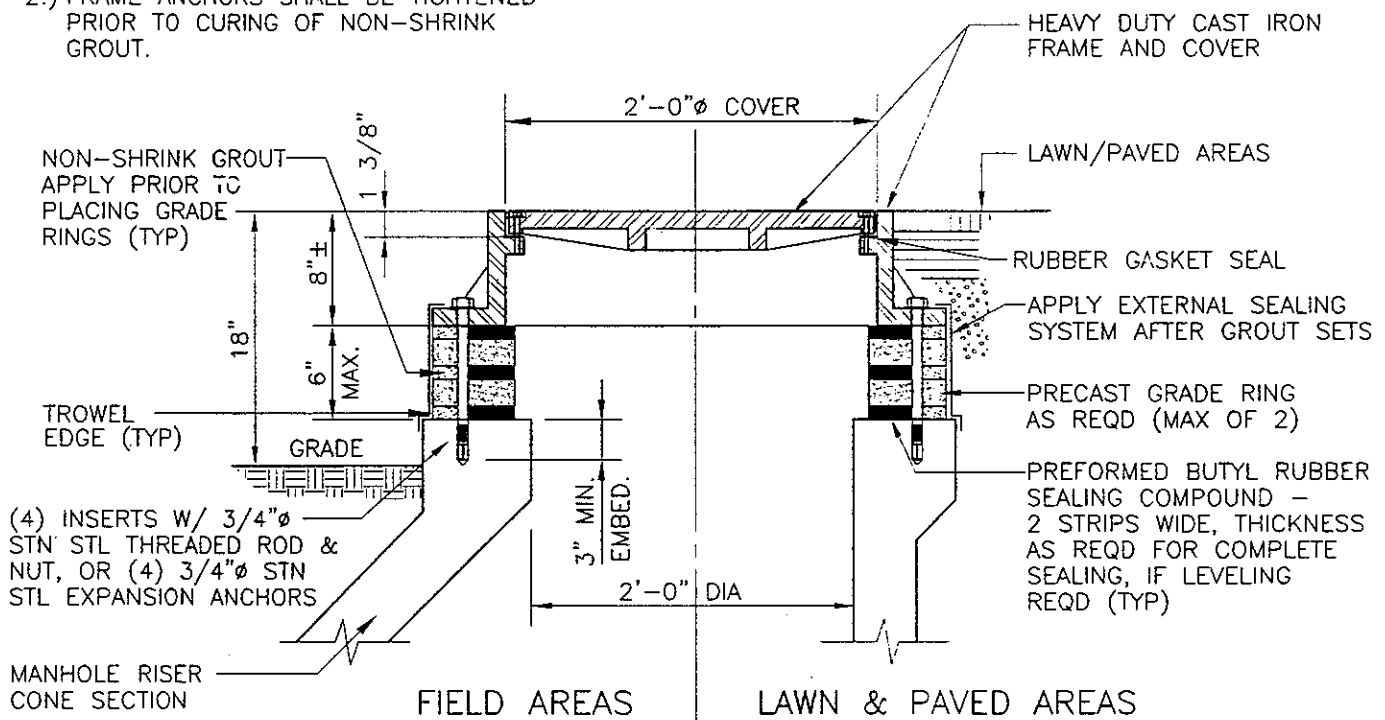
1/2" STAINLESS STEEL CAP  
SCREW WITH WASHER AND  
RUBBER GASKET (4 REQ'D.)

NOTES:

1.) ANCHOR BOLT HOLES SHALL BE  
DRILLED WITH A PERCUSSION OR  
ROTARY HAMMER DRILL UTILIZING  
A CARBIDE DRILL BIT. CORE  
DRILLING, OR ROTATIONAL ONLY  
DRILLING, OF ANY KIND, IS NOT  
ALLOWED.

COVER PATTERN

2.) FRAME ANCHORS SHALL BE TIGHTENED  
PRIOR TO CURING OF NON-SHRINK  
GROUT.



NOTE: PROVIDE WATERTIGHT MANHOLE FRAME & COVER IN SWALES, GUTTERS,  
FLOOD PRONE AREAS & ALL AREAS OUTSIDE OF ROADWAYS.

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
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**STANDARD DETAIL - SEWER SYSTEM**



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**WATERTIGHT MANHOLE FRAME & COVER  
WITH GRADE RINGS DETAIL**

DATE: JUNE 2005

DETAIL: 7

HEAVY DUTY CAST IRON  
FRAME AND COVER,  
WATERTIGHT, SUITABLE  
FOR HS25 LOADING

2" RAISED LETTER  
(TYP)

(4) 7/8"Ø BOLT HOLES

CONCEALED PICK HOLE  
(2 REQD)

**SANITARY  
SEWER**

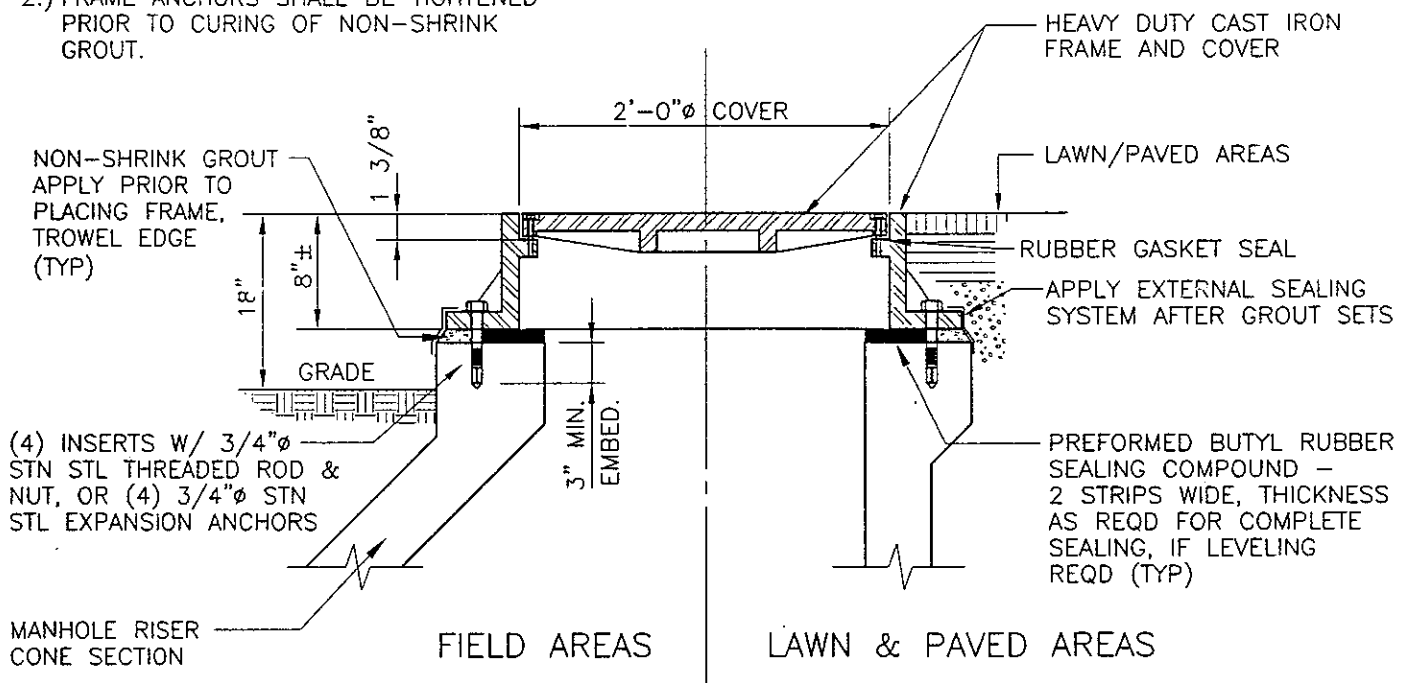
GUSSETS (MIN 6 REQD)

1/2" STAINLESS STEEL CAP  
SCREW WITH WASHER AND  
RUBBER GASKET (4 REQ'D.)

NOTES:

- 1.) ANCHOR BOLT HOLES SHALL BE DRILLED WITH A PERCUSSION OR ROTARY HAMMER DRILL UTILIZING A CARBIDE DRILL BIT. CORE DRILLING, OR ROTATIONAL ONLY DRILLING, OF ANY KIND, IS NOT ALLOWED.
- 2.) FRAME ANCHORS SHALL BE TIGHTENED PRIOR TO CURING OF NON-SHRINK GROUT.

COVER PATTERN



NOTE: PROVIDE WATERTIGHT MANHOLE FRAME & COVER IN SWALES, GUTTERS, FLOOD PRONE AREAS & ALL AREAS OUTSIDE OF ROADWAYS.

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



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Tel 610.374.5285

**WATERTIGHT MANHOLE FRAME & COVER  
WITHOUT GRADE RINGS DETAIL**

DATE: JUNE 2005

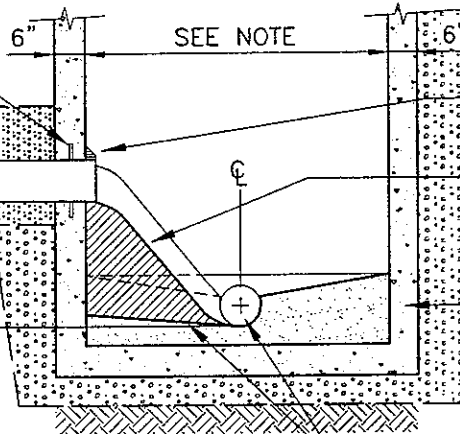
DETAIL: 8

PIPE CONNECTION MADE WITH RUBBER GASKET

PIPE BEDDING (TYP)

SEWER

INSIDE SPLASH WHEN GREATER THAN OR EQUAL TO 6" BUT LESS THAN OR EQUAL TO 2'-0"



NOTE: MANHOLE DIAMETER SHALL BE 4' WHEN SPLASH IS 6" TO 1'-0" AND 5' WHEN SPLASH IS 1'-0" TO 2'-0".

GROUT ALL PIPE PENETRATIONS AND PROVIDE TAPER OVER PIPE

SPLASH CHANNEL FORMED INTO PRECAST CHANNEL WITH NON-SHRINK GROUT

PRECAST REINFORCED CONCRETE BASE WITH RISER SECTIONS. SEE PRECAST MANHOLE DETAILS.

PRECAST CHANNELS TO ALLOW FOR PROPER FLOW. SEE PRECAST CHANNEL DETAILS.

### SECTION INSIDE SPLASH

PIPE CONNECTION MADE WITH RUBBER GASKET

FLEXIBLE PIPE COUPLING

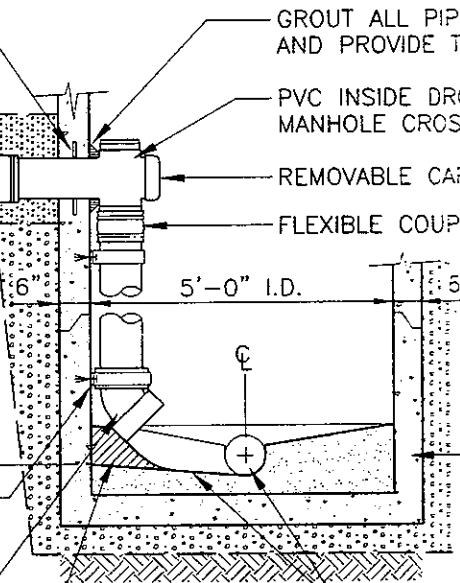
SEWER

INSIDE DROP WHEN GREATER THAN 2'-0"

2" WIDE x 1/16" THK STN STL STRAPS & STN STL ANCHORS W/ MAX EMBEDMENT OF 3" AT 18" MAX SPACINGS (TYP) - ALSO PROVIDE STRAP SPECIFICALLY FOR 45° BEND

45° PVC ELBOW

SPLASH CHANNEL FORMED INTO PRECAST CHANNEL WITH NON-SHRINK GROUT



GROUT ALL PIPE PENETRATIONS AND PROVIDE TAPER OVER PIPE

PVC INSIDE DROP MANHOLE CROSS

REMOVABLE CAP

FLEXIBLE COUPLING

PRECAST REINFORCED CONCRETE BASE WITH RISER SECTIONS. SEE PRECAST MANHOLE DETAILS.

PRECAST CHANNELS TO ALLOW FOR PROPER FLOW. SEE PRECAST CHANNEL DETAILS.

### SECTION INSIDE DROP

## AMITY TOWNSHIP

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

### STANDARD DETAIL - SEWER SYSTEM

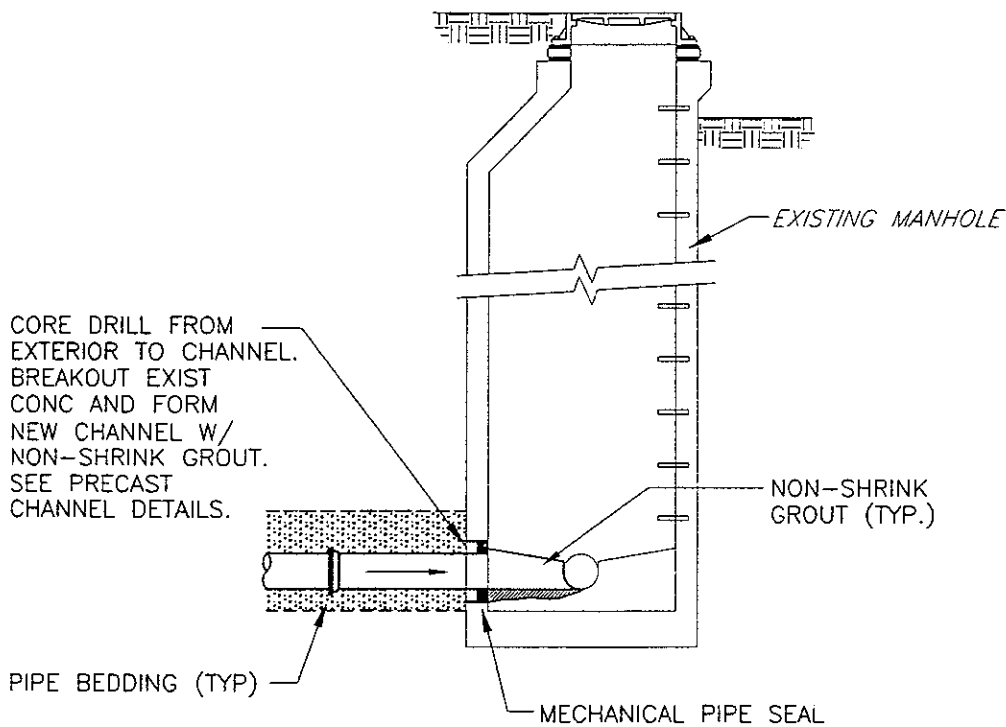


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Tel 610.374.5285

# INSIDE SPLASH/INSIDE DROP (8"-10") MANHOLE DETAILS

DATE: JUNE 2005

DETAIL: 10



SECTION

NOTE: CROWN ELEVATION OF NEW PIPE SHALL MATCH OR BE HIGHER THAN CROWN ELEVATION OF EXISTING OUTGOING PIPE.

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



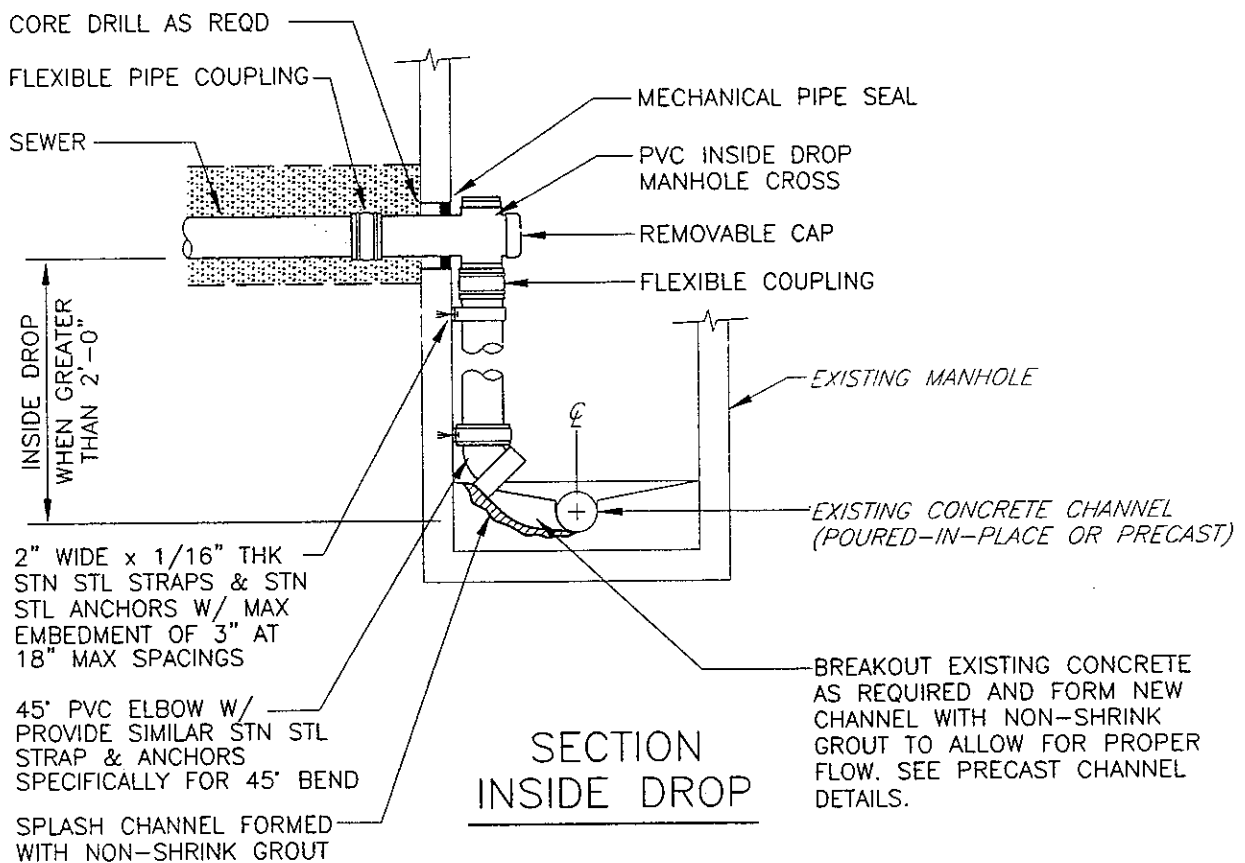
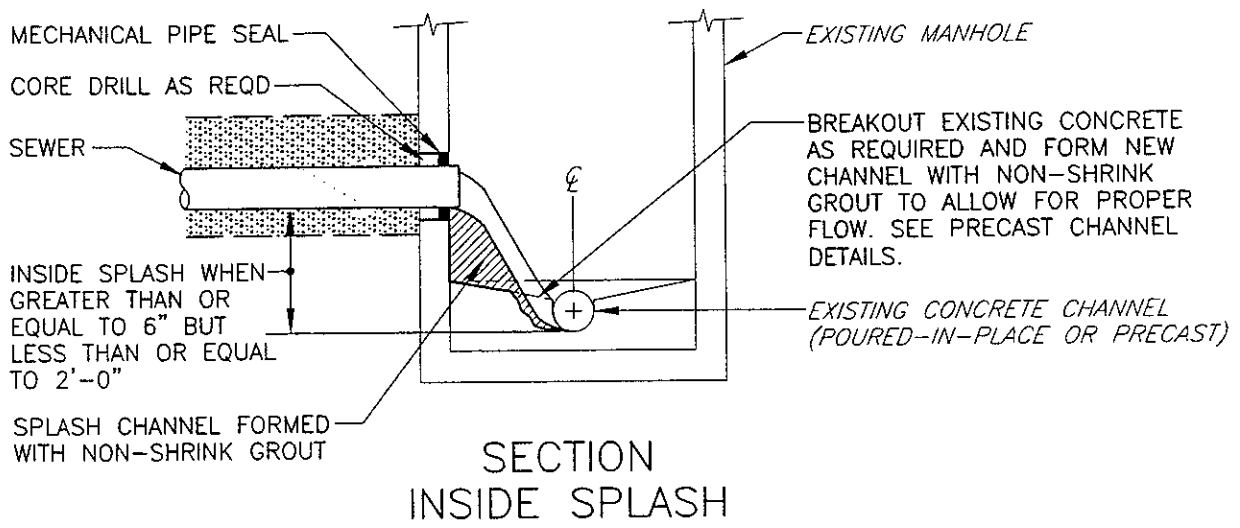
400 Washington Street, Suite 602  
Reading, Pennsylvania 19601  
Tel 610.374.5285

GRAVITY SEWER CONNECTION  
TO EXISTING MANHOLE DETAIL

DATE: JUNE 2005

DETAIL: 11

SD011.DWG



(\*) BY SPECIAL EXCEPTION ONLY, IN 4 FT DIA MANHOLES

**AMITY TOWNSHIP**  
2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

**ARRU**  
ARRU Consulting, Inc.

400 Washington Street, Suite 602  
Reading, Pennsylvania 19601  
Tel 610.374.5285

INSIDE SPLASH/DROP 8"-10" CONNECTION  
TO EXISTING MH (BY SPECIAL EXCEPTION\*)

DATE:

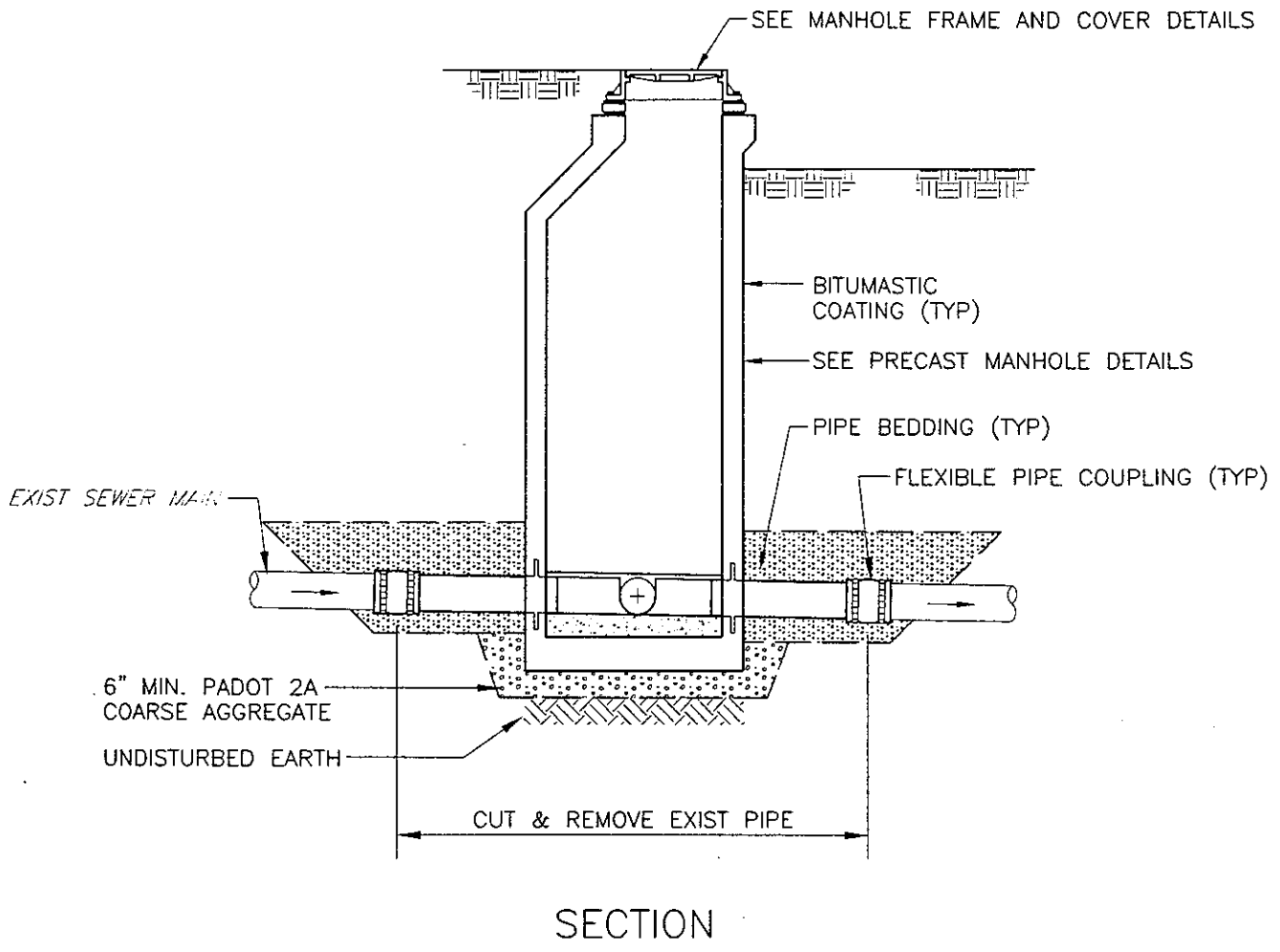
JUNE 2005

DETAIL:

12

**NOTES:**

1. INSTALL MANHOLE ON EXISTING SEWER MAIN AS FOLLOWS:
  - A. BYPASS FLOW
  - B. CUT EXISTING PIPE
  - C. INSTALL MANHOLE W/ PRECAST BASE, AS SHOWN ON DETAIL.
  
2. DOGHOUSE MANHOLES MAY BE USED ONLY BY SPECIAL EXCEPTION FROM THE AUTHORITY.



**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



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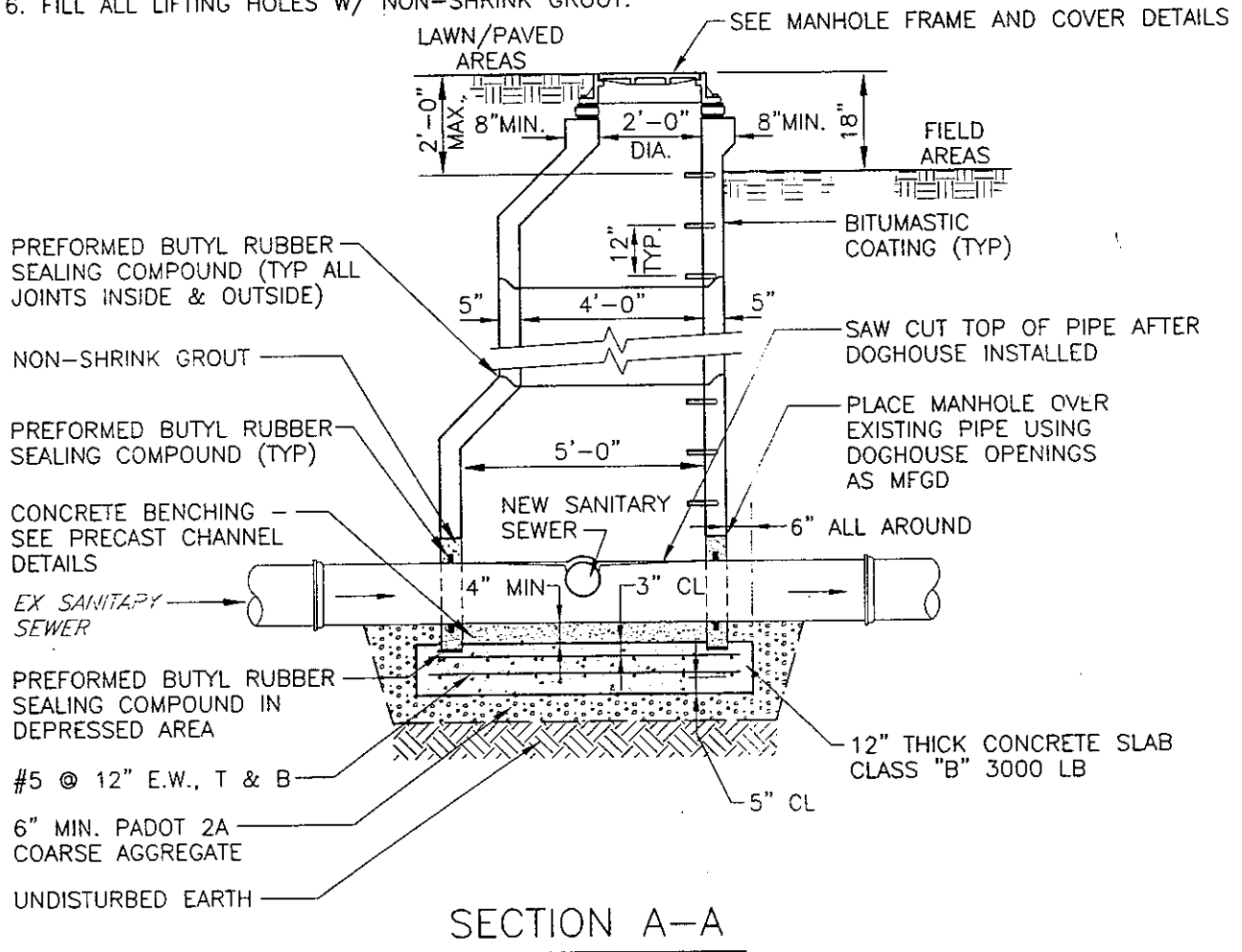
**NEW MANHOLE  
ON EXISTING MAIN DETAIL**

DATE: JUNE 2005

DETAIL: 13

**NOTES:**

1. INSTALL MANHOLES ON EXISTING LINES BY BYPASSING FLOW, CUTTING PIPE & INSTALLING MANHOLE WITH PRECAST BASE. DOGHOUSE MANHOLES, AS SHOWN IN THIS DETAIL, MAY BE USED ONLY BY SPECIAL EXCEPTION FROM THE AUTHORITY.
2. ADJUST TO GRADE WITH CONC GRADE RINGS (MAX. VERT. ADJUST. 6"). SEE MANHOLE FRAME & COVER DETAILS.
3. MECHANICALLY VIBRATED PRECAST CONC SHALL CONFORM TO A.S.T.M. SPEC. C-478.
4. IF INCOMING INVERT EXCEEDS OUTGOING INVERT BY GREATER THAN OR EQUAL TO 6", SEE INSIDE SPLASH/INSIDE DROP MANHOLE DETAILS.
5. FOR MANHOLES WHERE TOP OF RIM TO INVERT DISTANCE IS LESS THAN 5'-0", USE FLAT TOP MANHOLE IN LIEU OF CONE TOP.
6. FILL ALL LIFTING HOLES W/ NON-SHRINK GROUT.



**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



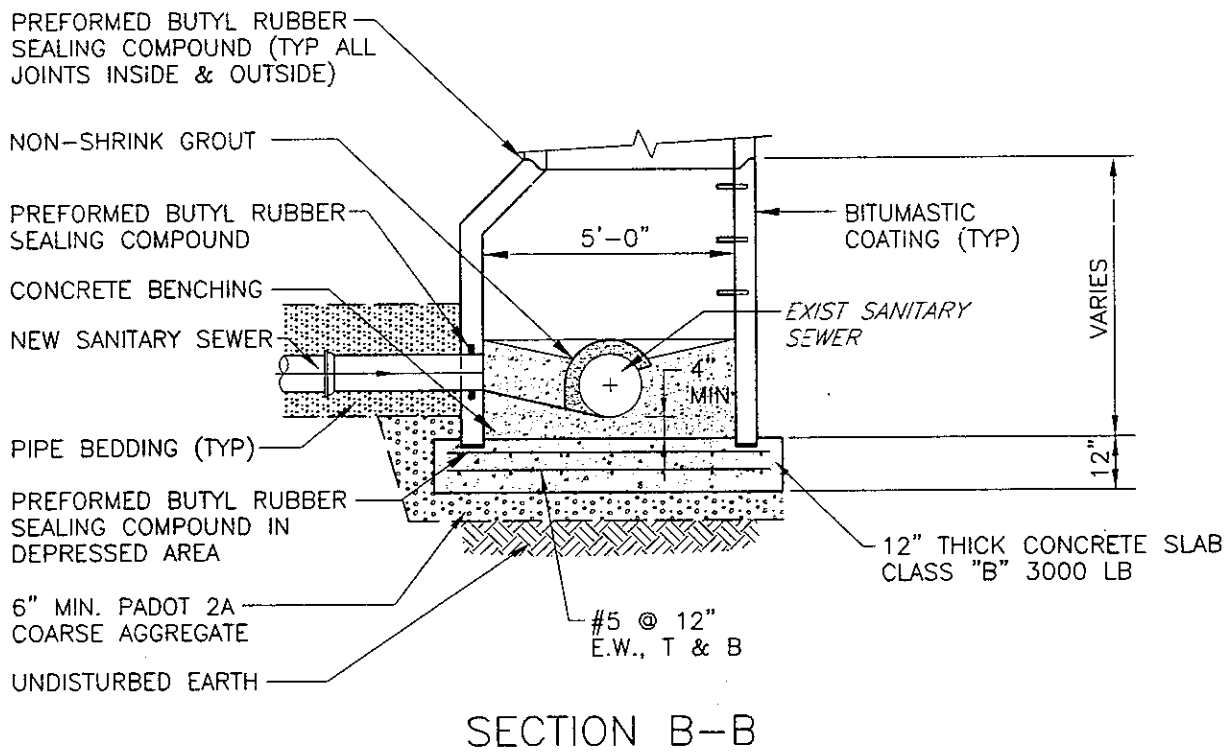
400 Washington Street, Suite 602  
Reading, Pennsylvania 19601  
Tel 610.374.5285

**PRECAST DOGHOUSE MANHOLE DETAIL  
(BY SPECIAL EXCEPTION ONLY)**

DATE: JUNE 2005  
DETAIL: 14A

**NOTES:**

1. INSTALL MANHOLES ON EXISTING LINES BY BYPASSING FLOW, CUTTING PIPE & INSTALLING MANHOLE WITH PRECAST BASE. DOGHOUSE MANHOLES, AS SHOWN IN THIS DETAIL, MAY BE USED ONLY BY SPECIAL EXCEPTION FROM THE AUTHORITY.
2. ADJUST TO GRADE WITH CONC GRADE RINGS (MAX. VERT. ADJUST. 6"). SEE MANHOLE FRAME & COVER DETAILS.
3. MECHANICALLY VIBRATED PRECAST CONC SHALL CONFORM TO A.S.T.M. SPEC. C-478.
4. IF INCOMING INVERT EXCEEDS OUTGOING INVERT BY GREATER THAN OR EQUAL TO 6", SEE INSIDE SPLASH/INSIDE DROP MANHOLE DETAILS.
5. FOR MANHOLES WHERE TOP OF RIM TO INVERT DISTANCE IS LESS THAN 5'-0", USE FLAT TOP MANHOLE IN LIEU OF CONE TOP.
6. FILL ALL LIFTING HOLES W/ NON-SHRINK GROUT.



**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

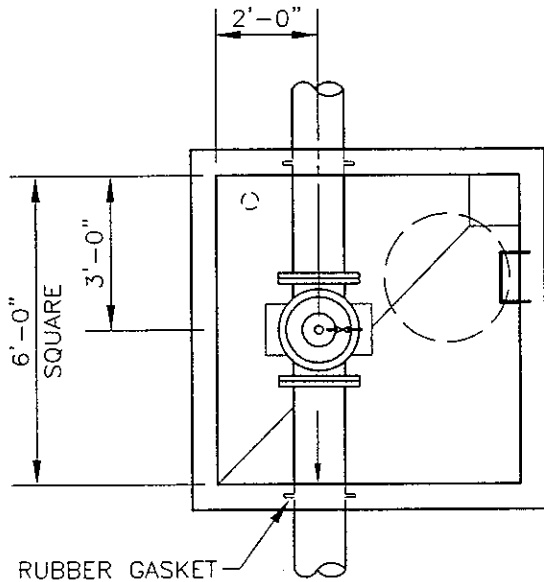
**STANDARD DETAIL - SEWER SYSTEM**



400 Washington Street, Suite 602  
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Tel 610.374.5285

**PRECAST DOGHOUSE BOTTOM DETAIL  
(BY SPECIAL EXCEPTION ONLY)**

DATE: JUNE 2005  
DETAIL: 14B

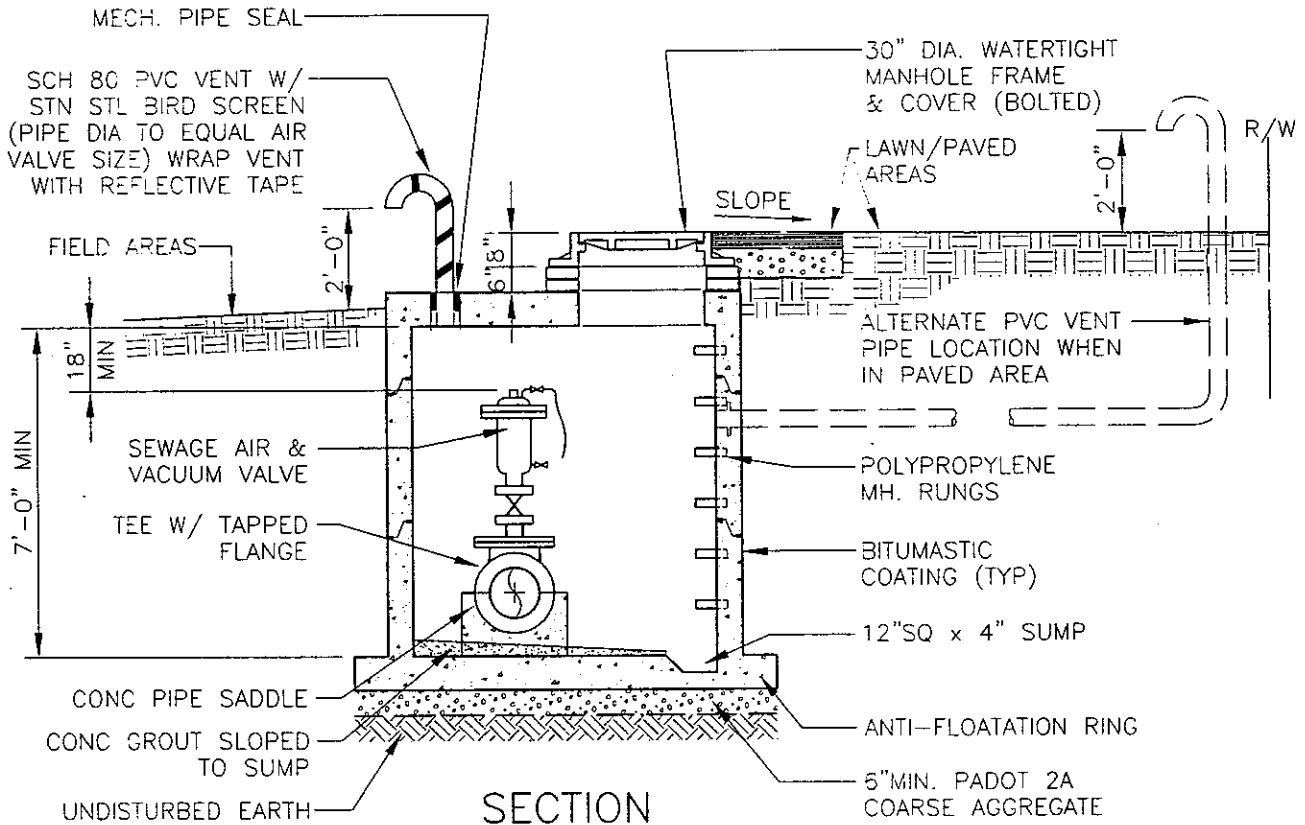


CAST-IN RUBBER GASKET  
TYP ALL PIPE PENETRATIONS

PLAN

NOTES:

1. ADJUST TO GRADE WITH CONC. GRADE RINGS (MAX. VERT. ADJUST. 6"). SEE FRAME & COVER DETAILS.
2. MECHANICALLY VIBRATED PRECAST CONC. SHALL CONFORM TO A.S.T.M. C-478.
3. SEAL ALL JOINTS INSIDE & OUTSIDE WITH PREFORMED BUTYL RUBBER SEALING COMPOUND.
4. FILL ALL LIFTING HOLES WITH NON-SHRINK GROUT.
5. ALL EXPOSED INTERIOR CONC SURFACES (I.E. FLOOR, SUMP, SADDLE) TO RECEIVE CORROSION RESISTANT EPOXY COATING.
6. WHERE VALVE VAULT IS LOCATED WITHIN THE 100-YEAR FLOOD BOUNDARY, THE TOP OF THE CONCRETE SLAB SHOULD BE A MINIMUM OF 6" ABOVE FLOODWAY.



SECTION

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

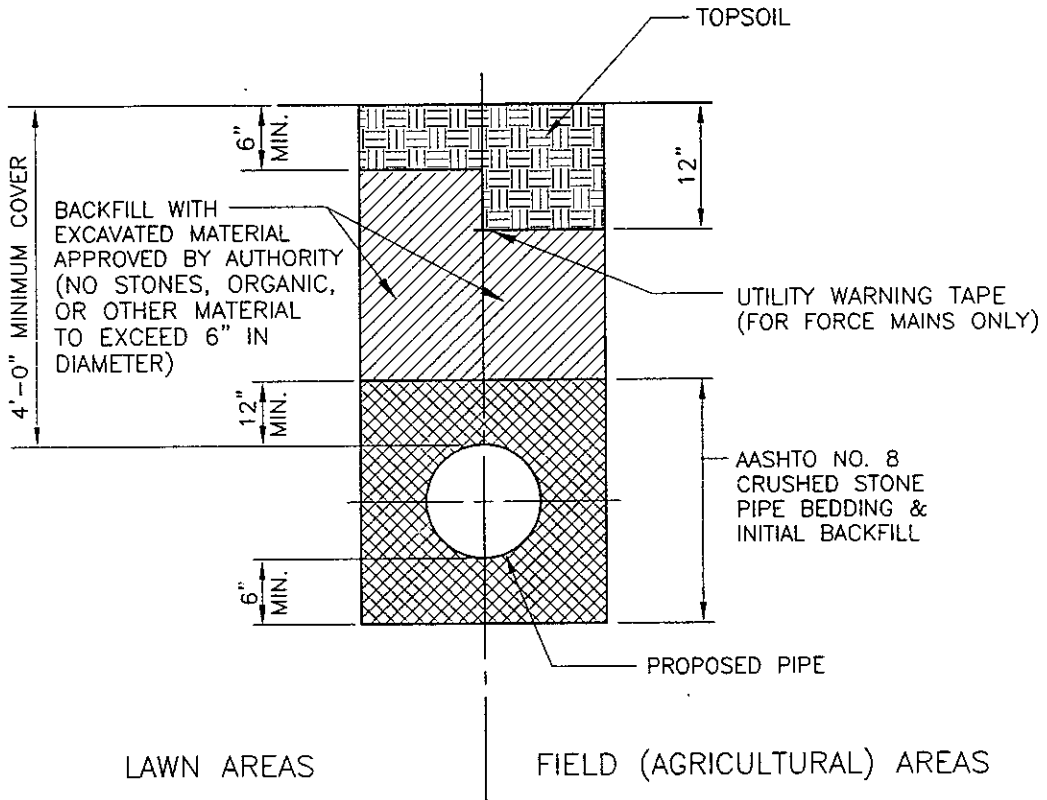
**AIR VALVE VAULT DETAIL  
(FORCE MAIN ONLY)**



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Tel 610.374.5285

DATE: JUNE 2005

DETAIL: 15



**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

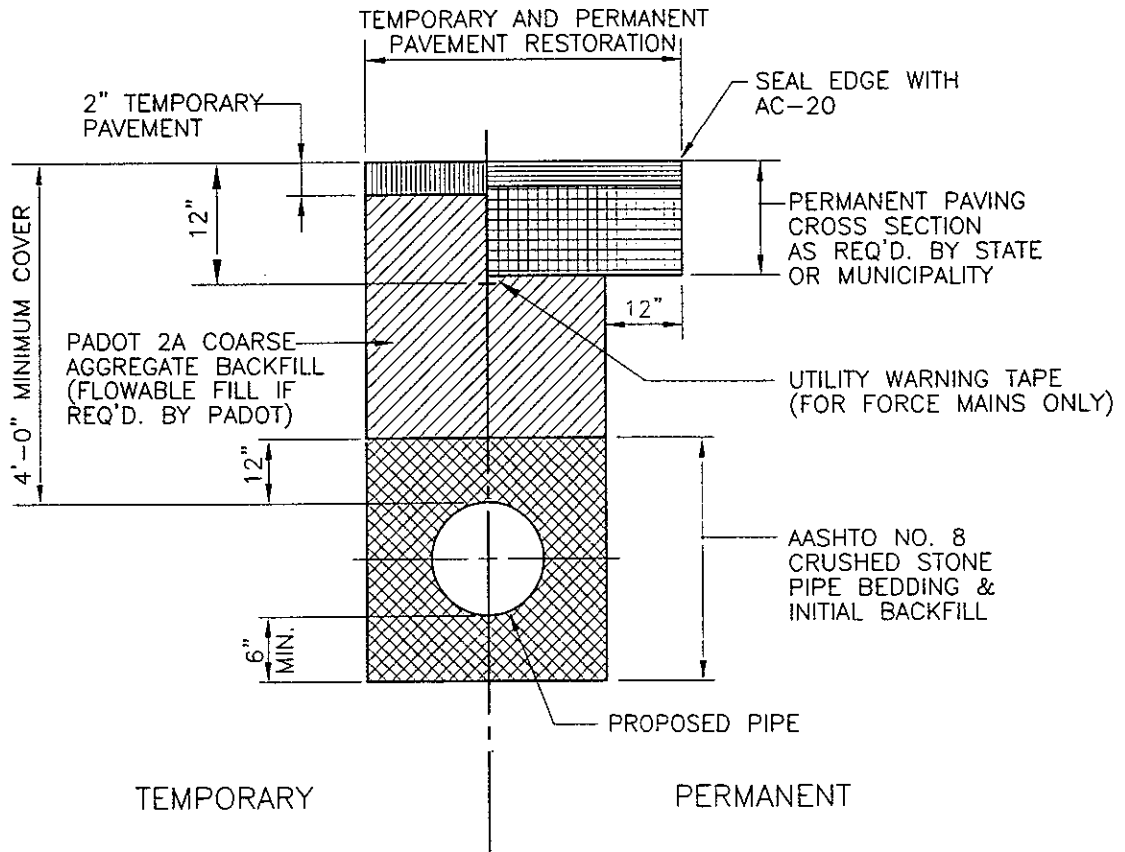


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TRENCH RESTORATION  
LAWN/FIELD AREAS

DATE: JUNE 2005

DETAIL: 16



(TYPICAL FOR STATE HIGHWAYS, BOROUGH & TOWNSHIP ROADS, SHOULDERS & DRIVEWAYS)

NOTE:  
ALL WORK ON STATE ROADS IS TO BE PERFORMED  
IN ACCORDANCE WITH PADOT PUBLICATION 408.

## AMITY TOWNSHIP

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

### STANDARD DETAIL - SEWER SYSTEM

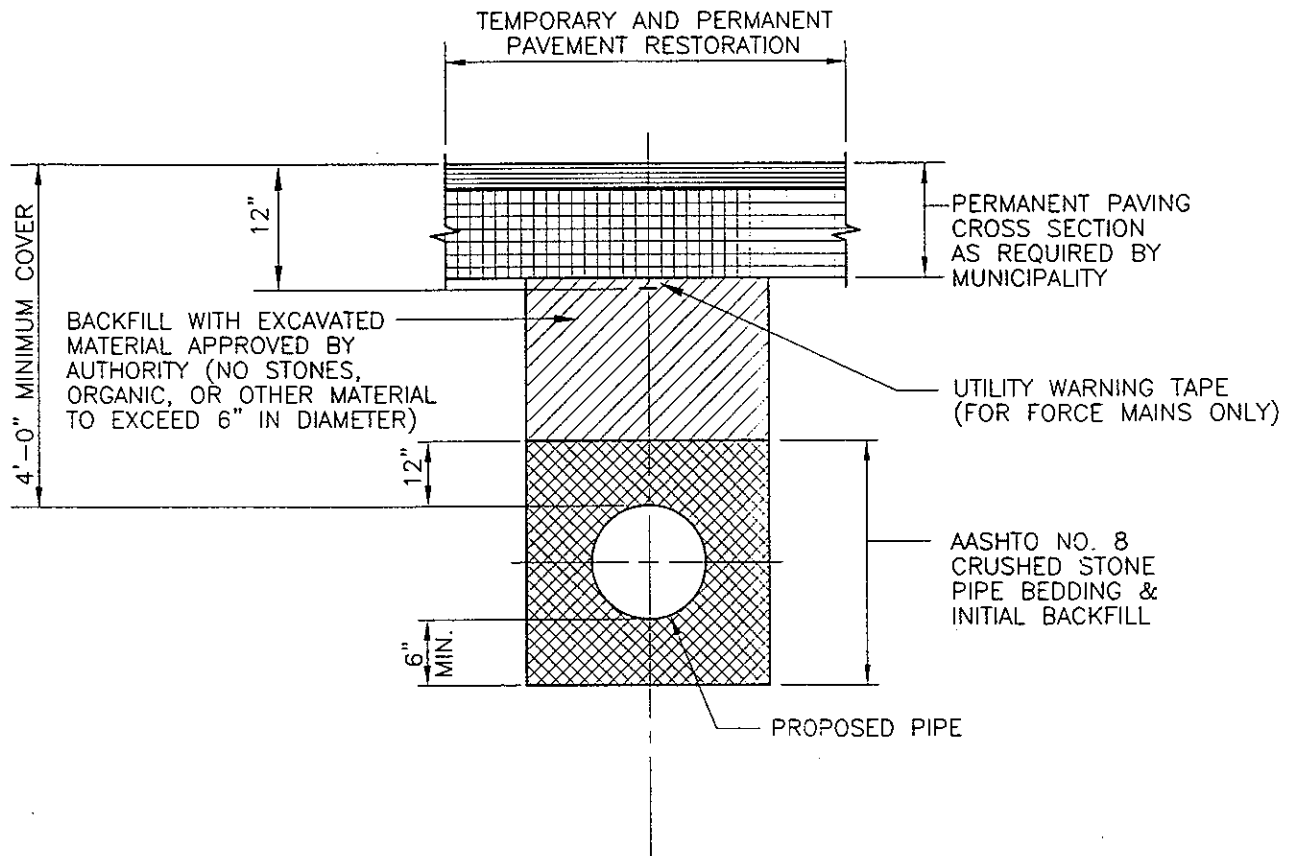


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TRENCH RESTORATION  
EXISTING PAVED AREAS

DATE: JUNE 2005

DETAIL: 17



**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

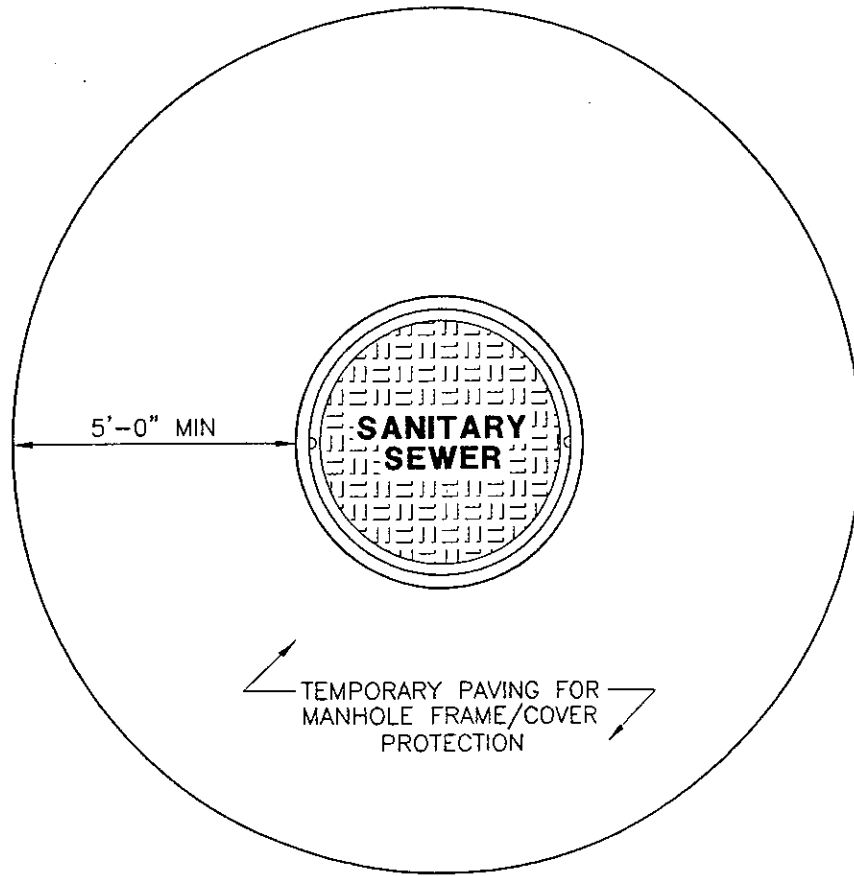


400 Washington Street, Suite 602  
Reading, Pennsylvania 19601  
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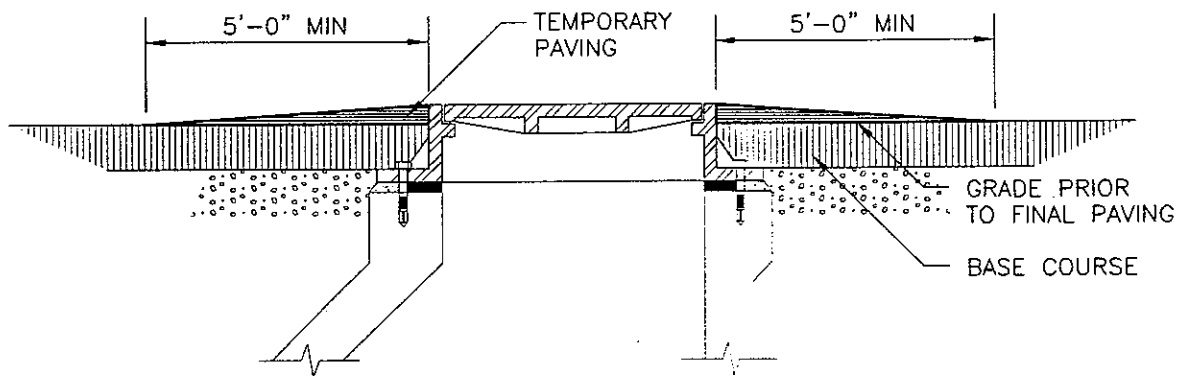
**TRENCH RESTORATION  
NEW ROADWAYS**

DATE: JUNE 2005

DETAIL: 18



PLAN



SECTION

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



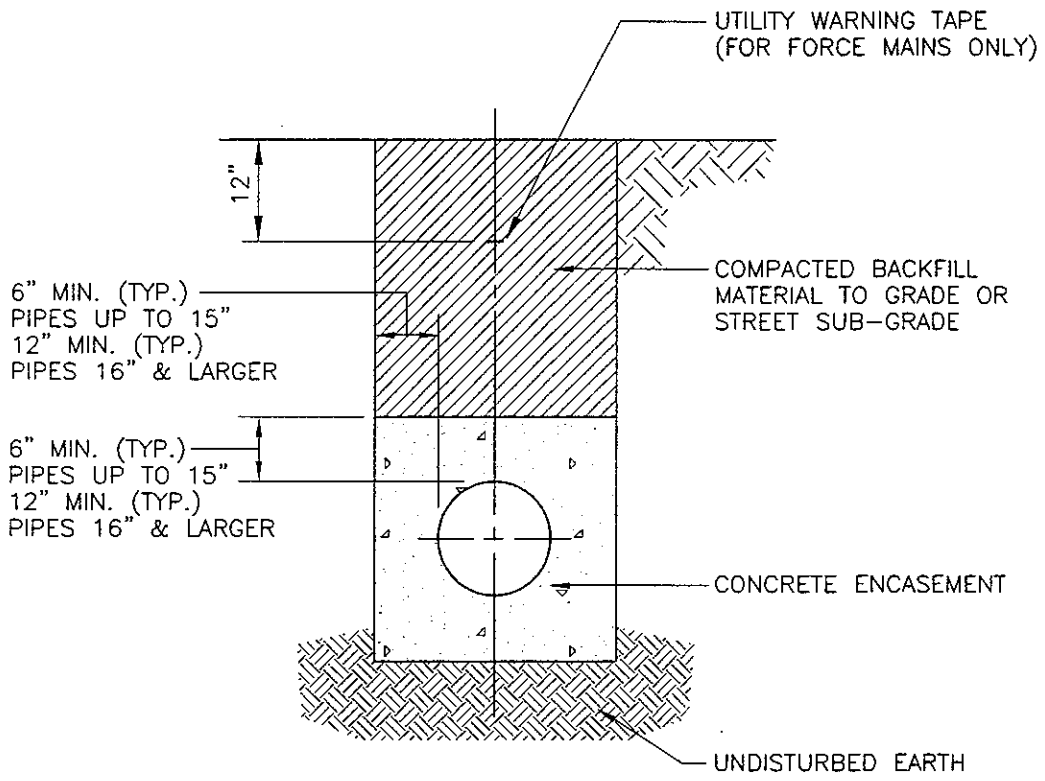
400 Washington Street, Suite 602  
Reading, Pennsylvania 19601  
Tel 610.374.5285

**MANHOLE FRAME & COVER PROTECTION  
DETAIL PRIOR TO FINAL PAVING**

DATE: JUNE 2002

DETAIL: 19

SS019.DWG



**AMITY TOWNSHIP**  
 2004 WEAVERTOWN ROAD  
 DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



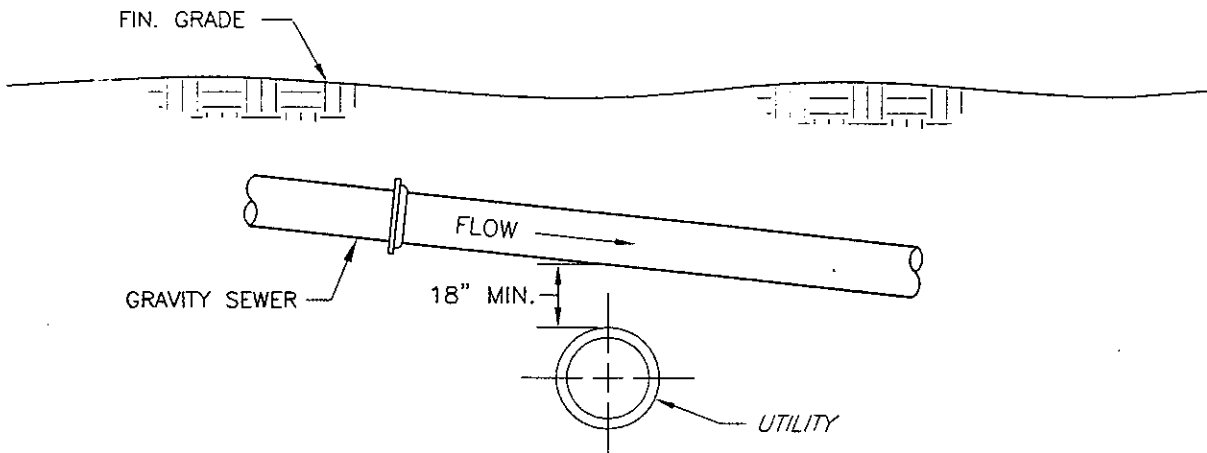
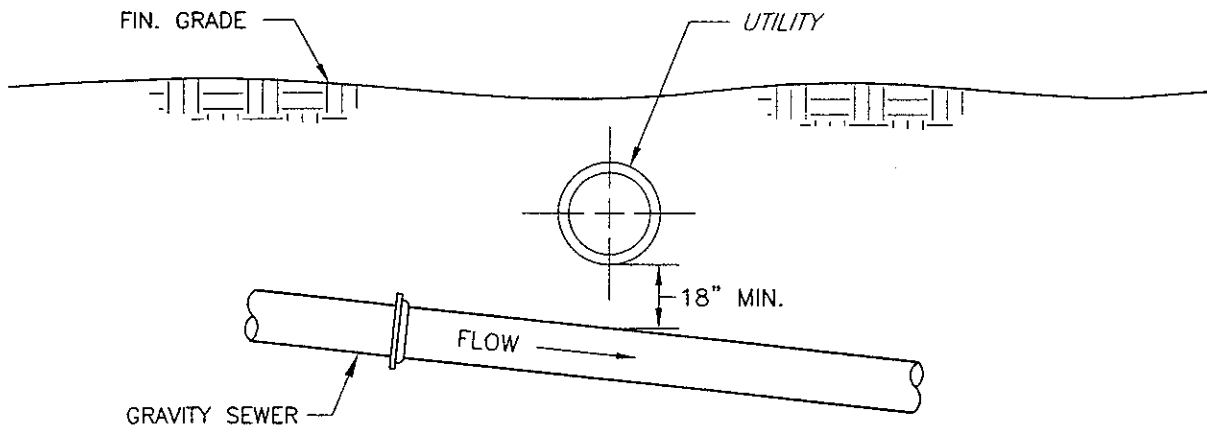
400 Washington Street, Suite 602  
 Reading, Pennsylvania 19601  
 Tel 610.374.5285

**CONCRETE ENCASEMENT DETAIL**

DATE: JUNE 2005

DETAIL: 20

SD020.DWG



NOTE: MAINTAIN SLOPE OF PROPOSED SEWER AT ALL CROSSINGS.

## AMITY TOWNSHIP

2004 WEAVERTOWN ROAD  
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### STANDARD DETAIL - SEWER SYSTEM



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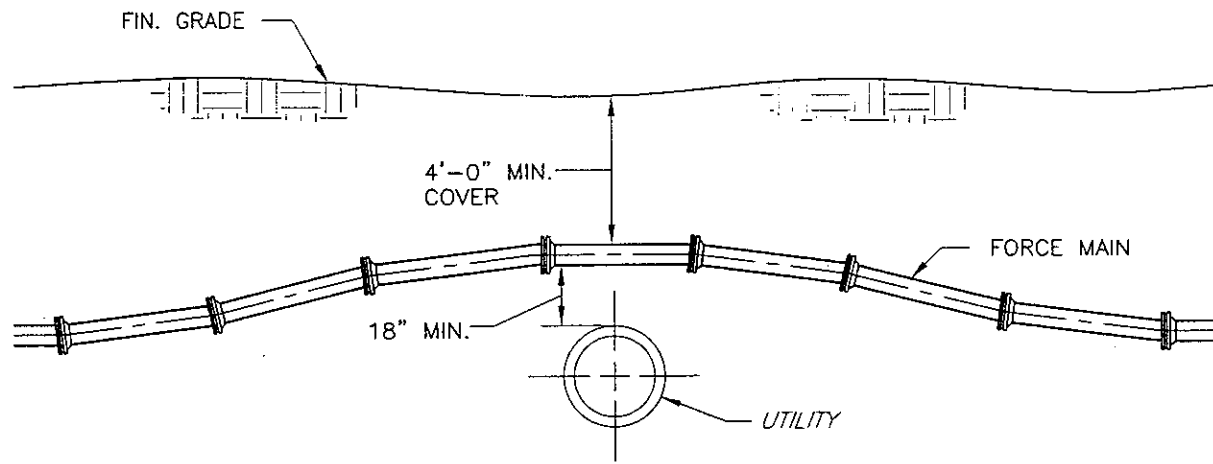
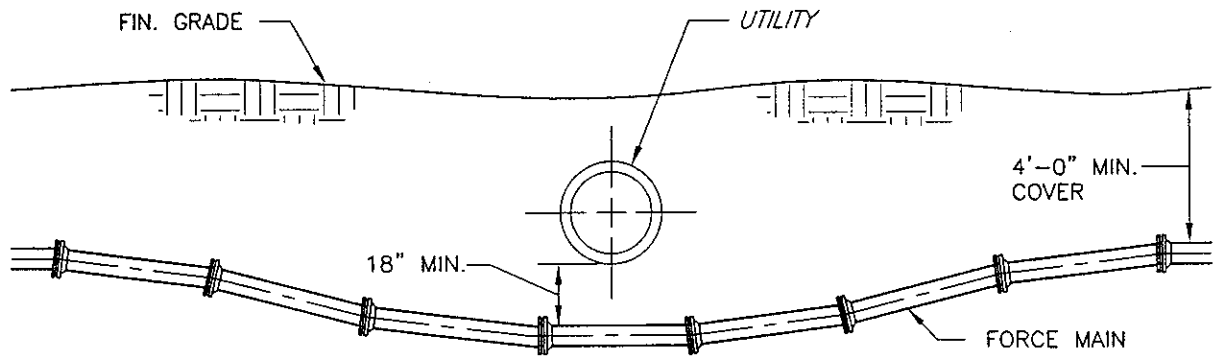
## GRAVITY SEWER CROSSING UTILITIES DETAIL

DATE:

JUNE 2005

DETAIL:

21



**AMITY TOWNSHIP**  
 2004 WEAVERTOWN ROAD  
 DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



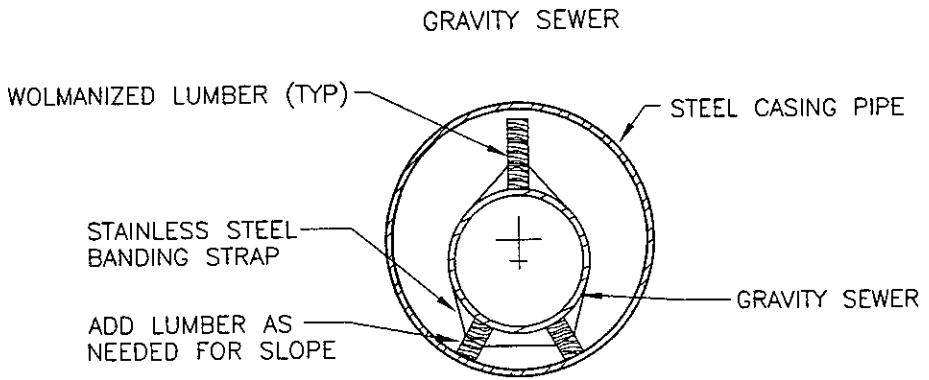
400 Washington Street, Suite 602  
 Reading, Pennsylvania 19601  
 Tel 610.374.5285

**FORCE MAIN CROSSING UTILITY DETAIL  
 (USING DEFLECTING JOINTS)**

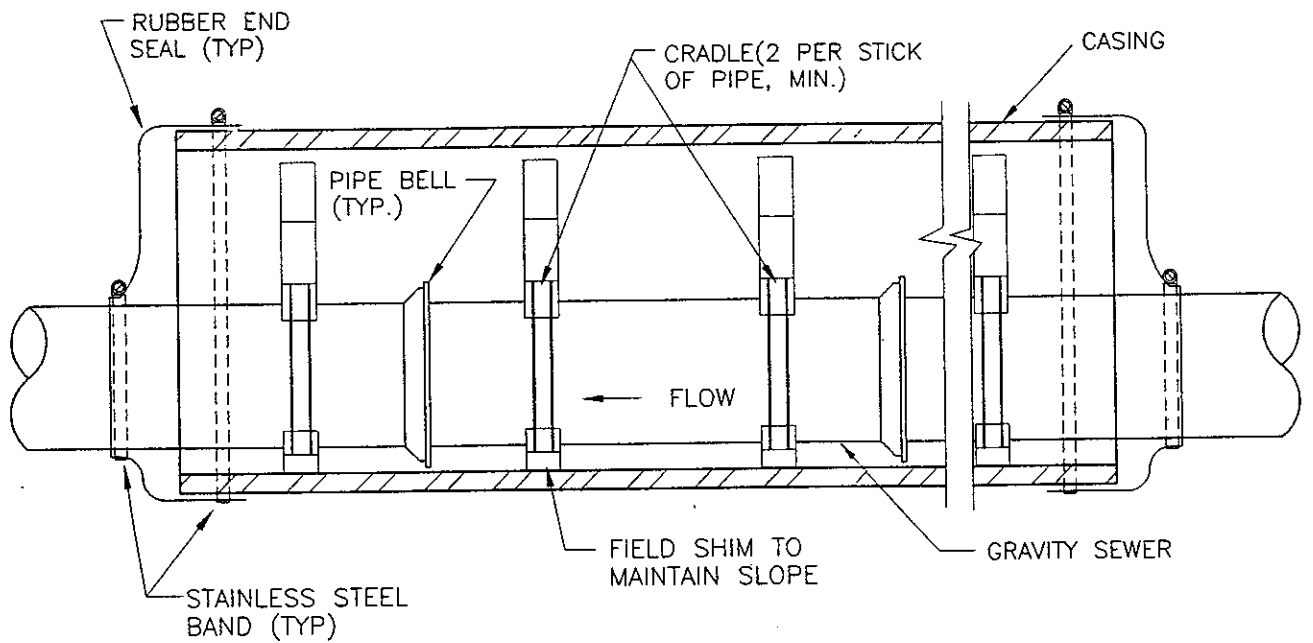
DATE: JUNE 2005  
 DETAIL: 22

SD022.DWG

NOTE:  
 FILL VOID BETWEEN CARRIER PIPE  
 AND CASING WITH CLEAN NATURAL  
 SAND, OR 1/4" STONE CHIPS



SECTION



ELEVATION

**AMITY TOWNSHIP**  
 2004 WEAVERTOWN ROAD  
 DOUGLASVILLE, PA 19518



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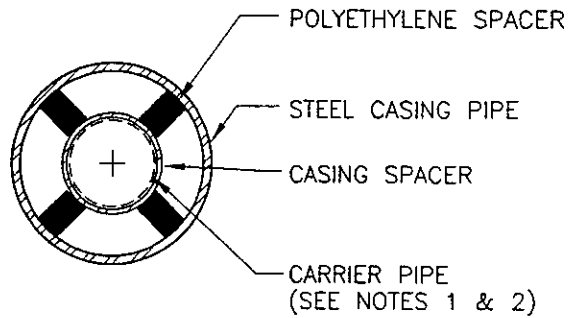
**STANDARD DETAIL - SEWER SYSTEM**

**CASING CRADLE DETAIL – GRAVITY SEWER  
 INSTALLATION VIA BORING/JACKING**

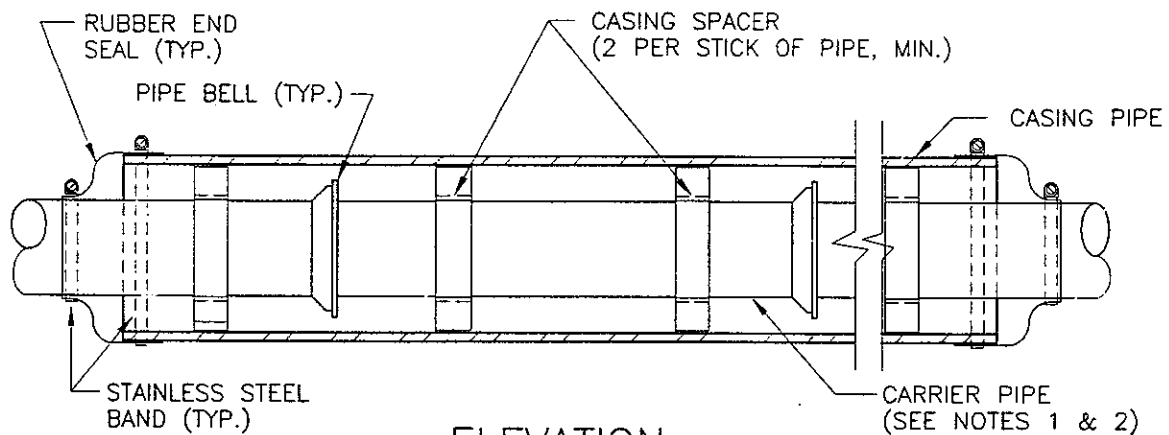
DATE: JUNE 2005

DETAIL: 23

SD023.DWG



SECTION



ELEVATION

NOTES:

- 1) FORCE MAIN PIPE SHALL BE RESTRAINED JOINT PIPE.
- 2) GRAVITY SEWER PERMITTED ONLY WHEN INSTALLATION IS BY OPEN CUT. OTHERWISE, SEE GRAVITY SEWER INSTALLATION VIA BORING/JACKING DETAIL.

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
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**STANDARD DETAIL - SEWER SYSTEM**

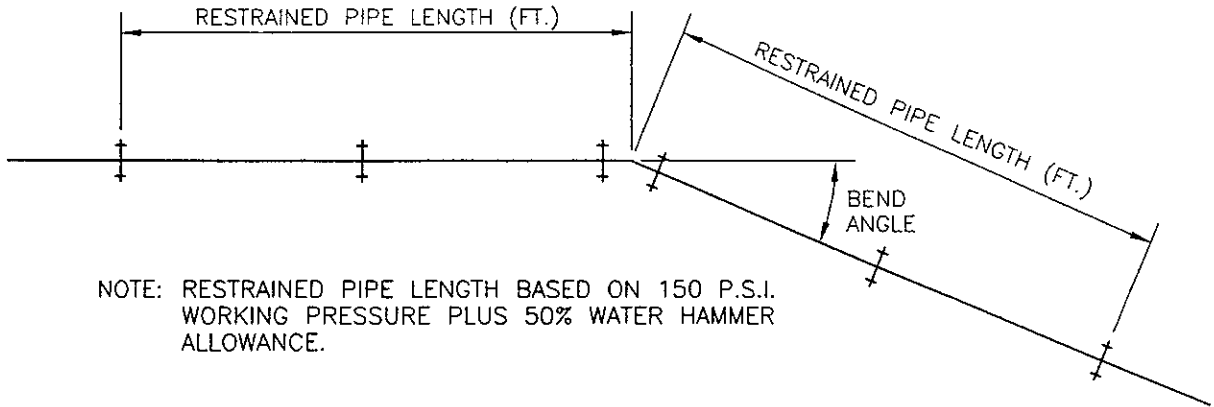


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**CASING CRADLE DETAIL  
(OPEN CUT OR FORCE MAIN)**

DATE:  
JUNE 2005

DETAIL:  
24



NOTE: RESTRAINED PIPE LENGTH BASED ON 150 P.S.I. WORKING PRESSURE PLUS 50% WATER HAMMER ALLOWANCE.

HORIZONTAL RESTRAINED PIPE LENGTH SCHEDULE (DUCTILE IRON PIPE)				
PIPE DIAMETER	HORIZONTAL ELBOW DEFLECTION ANGLE			
	90°	45°	22 1/2°	11 1/4°
4"	19'	8'	4'	2'
6"	27'	11'	7'	3'
8"	35'	14'	8'	4'
10"	42'	17'	8'	5'
12"	49'	20'	10'	5'

\* ADD 12% TO LENGTH IF PIPE IS POLYETHYLENE ENCASED.

VERTICAL RESTRAINED PIPE LENGTH SCHEDULE (DUCTILE IRON PIPE)			
PIPE DIAMETER	VERTICAL ELBOW DEFLECTION ANGLE		
	45°	22 1/2°	11 1/4°
4"	20'	10'	5'
6"	28'	14'	7'
8"	37'	18'	9'
10"	44'	21'	11'
12"	52'	25'	12'

\* ADD 12% TO LENGTH IF PIPE IS POLYETHYLENE ENCASED.

NOTE: FOR PIPE SIZES GREATER THAN 12", SUBMIT ENGINEERING CALCULATIONS TO VERIFY PROPOSED RESTRAINED PIPE LENGTHS.

## AMITY TOWNSHIP

2004 WEAVERTOWN ROAD  
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### STANDARD DETAIL - SEWER SYSTEM



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# RESTRAINED PIPE LENGTH SCHEDULE (DUCTILE IRON PIPE)

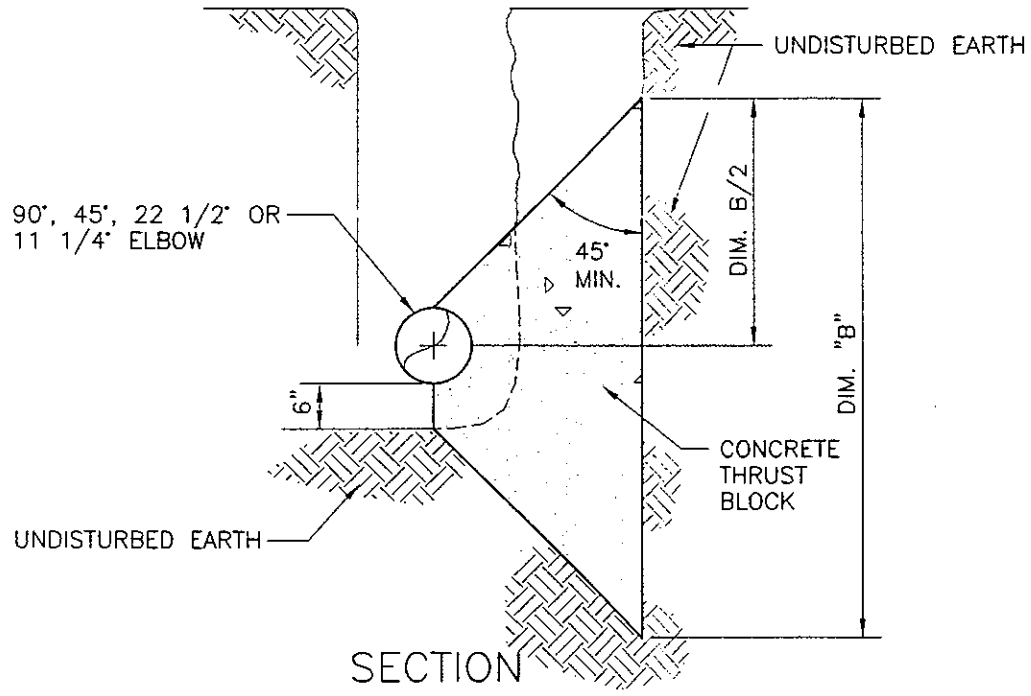
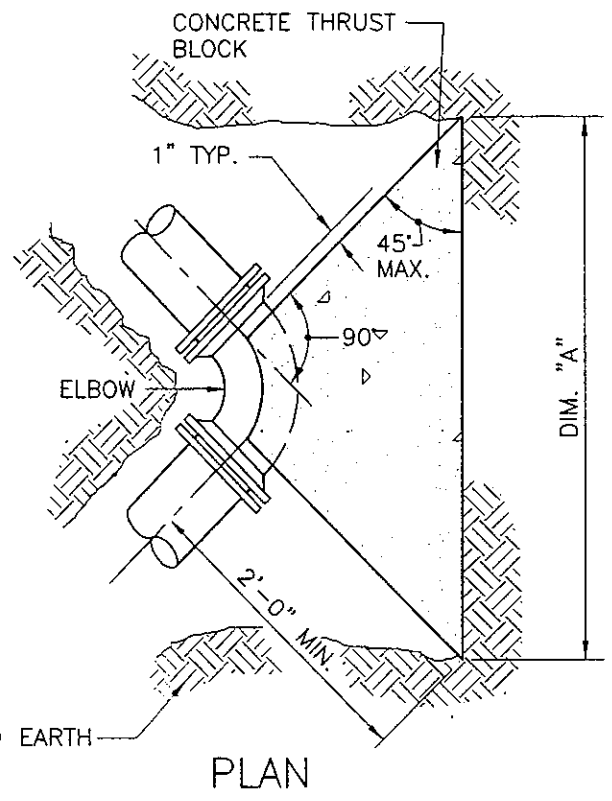
DATE: JUNE 2005

DETAIL: 25

THRUST BLOCK DIMENSION SCHEDULE - ELBOWS(*) (DUCTILE IRON PIPE)					
PIPE DIAM.	DIM.	ELBOW DEFLECTION ANGLE			
		11 1/4'	22 1/2'	45°	90°
4"	A	12"	18"	24"	24"
	B	12"	12"	12"	18"
6"	A	18"	24"	30"	42"
	B	12"	18"	24"	30"
8"	A	24"	24"	42"	60"
	B	12"	24"	30"	36"
12"	A	30"	42"	54"	90"
	B	24"	30"	36"	48"

(\*) THRUST BLOCK DESIGN BASED ON THE MINIMUM SOIL HORIZONTAL BEARING STRENGTH OF 3000 PSF AND 150 PSI WORKING PRESSURE PLUS 50% WATER HAMMER ALLOWANCE.

FOR PIPE SIZES GREATER THAN 12", SUBMIT ENGINEERING CALCULATIONS TO VERIFY PROPOSED THRUST BLOCK SIZES.



**AMITY TOWNSHIP**  
 2004 WEAVERTOWN ROAD  
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**STANDARD DETAIL - SEWER SYSTEM**



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**HORIZONTAL & VERTICAL UP RESTRAINT  
 THRUST BLOCKING DETAIL - ELBOWS (DIP)**

DATE: JUNE 2005

DETAIL: 26

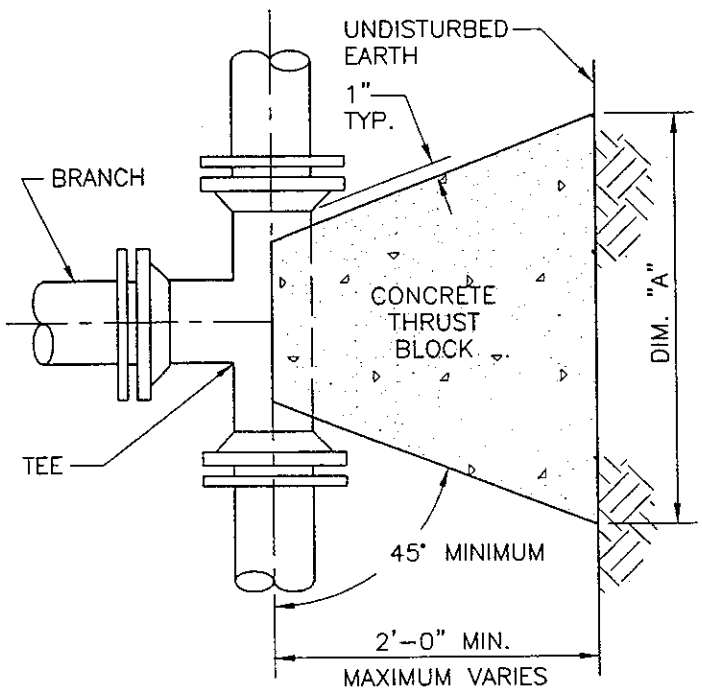
SD026.DWG

**THRUST BLOCK DIMENSION SCHEDULE - ELBOWS(\*)  
(DUCTILE IRON PIPE)**

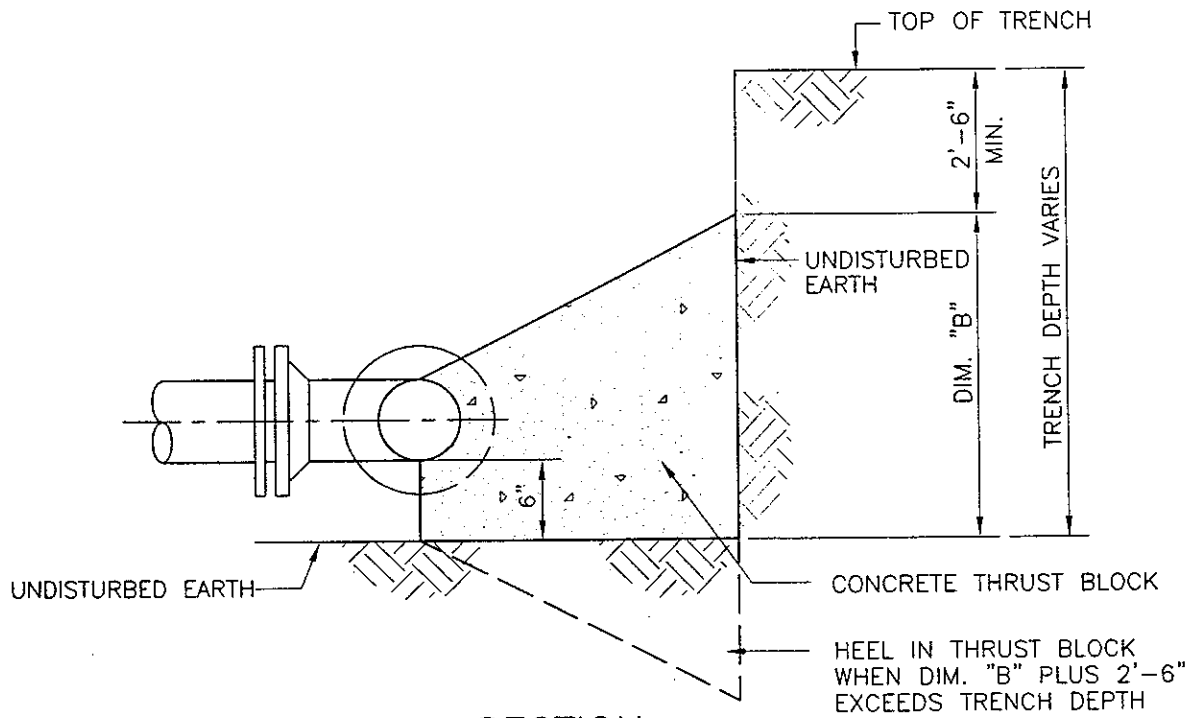
DIM.	BRANCH SIZE			
	4"	6"	8"	12"
A	36"	42"	60"	96"
B	18"	24"	30"	42"

(\*) THRUST BLOCK DESIGN BASED ON THE MINIMUM SOIL HORIZONTAL BEARING STRENGTH OF 3000 PSF AND 150 PSI WORKING PRESSURE PLUS 50% WATER HAMMER ALLOWANCE.

FOR PIPE SIZES GREATER THAN 12", SUBMIT ENGINEERING CALCULATIONS TO VERIFY PROPOSED THRUST BLOCK SIZES.



PLAN



SECTION

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



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DATE: JUNE 2002

DETAIL: 27

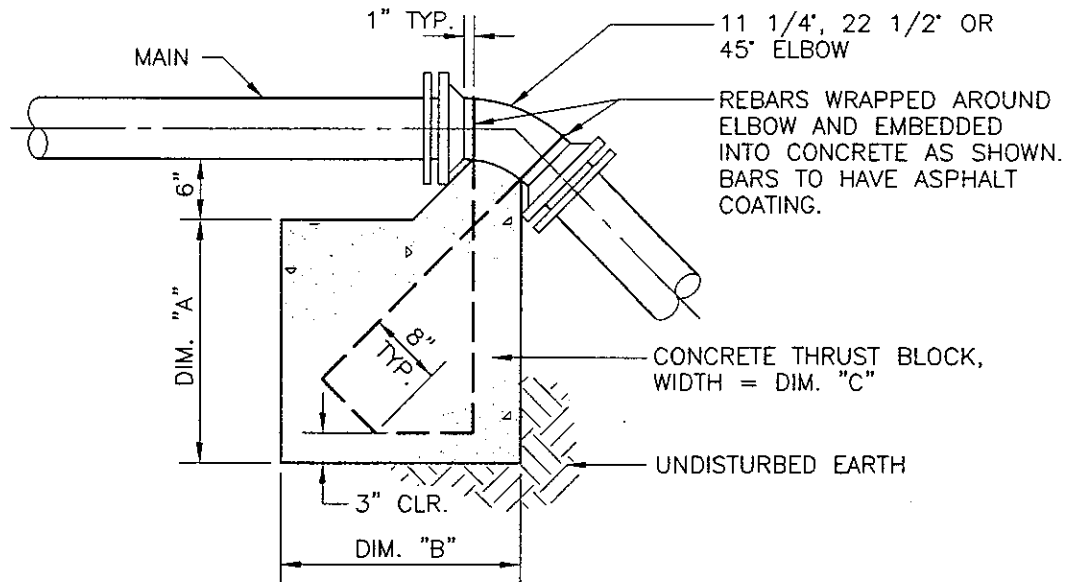
**HORIZONTAL RESTRAINT  
THRUST BLOCKING DETAIL - TEES (DIP)**

SS027.DWG

THRUST BLOCK DIMENSION SCHEDULE – VERTICAL ELBOWS(*) (DUCTILE IRON PIPE)									
DIM.	6"-11 1/4"	8"-11 1/4"	12"-11 1/4"	6"-22 1/2"	8"-22 1/2"	12"-22 1/2"	6"-45°	8"-45°	12"-45°
A	12"	18"	36"	18"	36"	54"	36"	48"	54"
B	18"	24"	36"	24"	36"	48"	36"	48"	54"
C	18"	24"	24"	24"	24"	30"	24"	30"	48"
REBAR	#4	#4	#6	#4	#4	#6	#4	#4	#6

(\*) THRUST BLOCK DESIGN BASED ON THE MINIMUM SOIL HORIZONTAL BEARING STRENGTH OF 3000 PSF AND 150 PSI WORKING PRESSURE PLUS 50% WATER HAMMER ALLOWANCE.

FOR PIPE SIZES GREATER THAN 12", SUBMIT ENGINEERING CALCULATIONS TO VERIFY PROPOSED THRUST BLOCK SIZES.



SECTION

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



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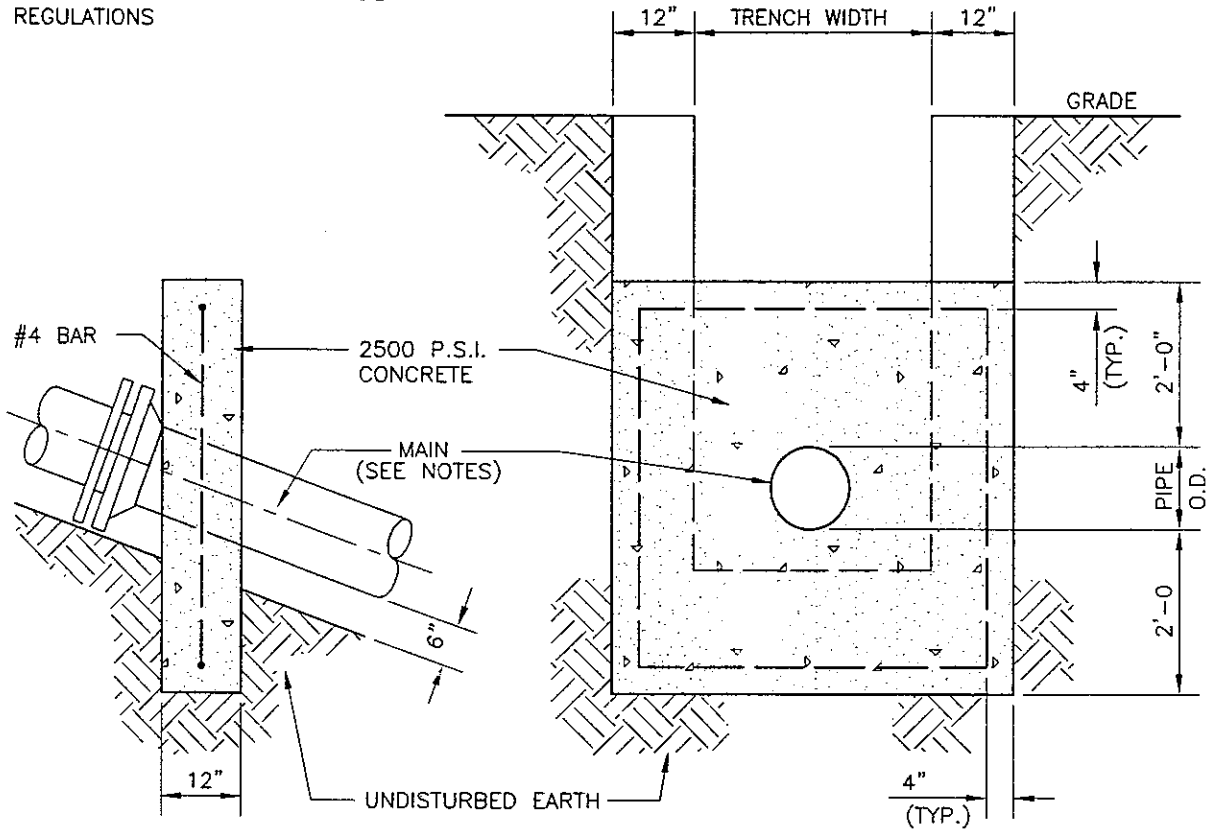
VERTICAL DOWN RESTRAINT  
THRUST BLOCKING DETAIL – ELBOWS (DIP)

DATE: JUNE 2005

DETAIL: 28

NOTES:

- 1) USE DUCTILE IRON PIPE AT ANCHOR LOCATIONS OR WRAP PVC PIPE WITH 1/2" THICK NEOPRENE AT ANCHOR
- 2) CENTERLINE TO CENTERLINE SPACINGS OF ANCHORS SHALL MEET PA DEP REGULATIONS



SIDE ELEVATION

FRONT ELEVATION

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

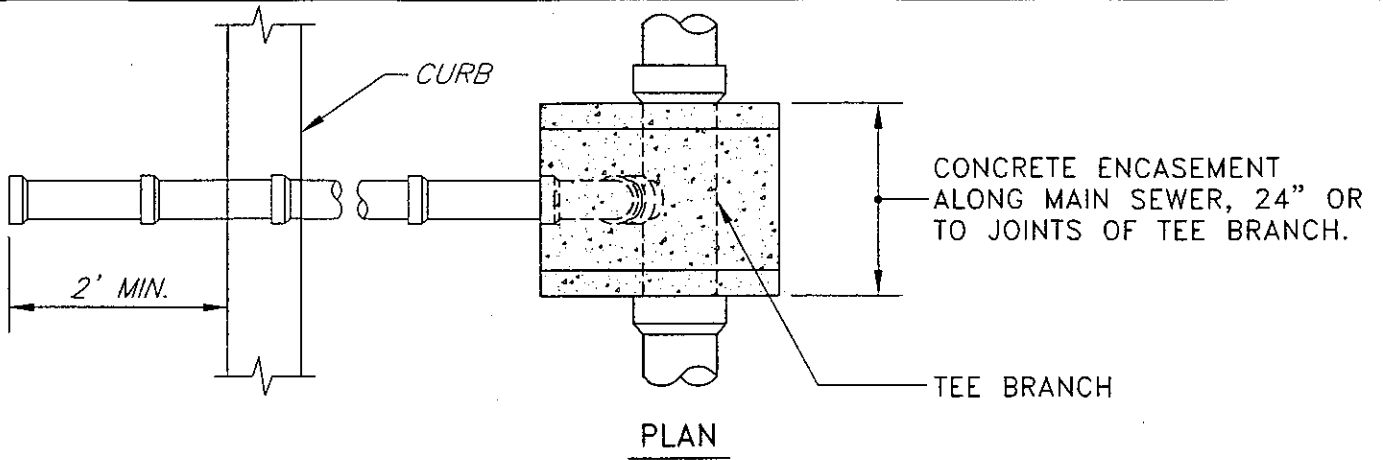


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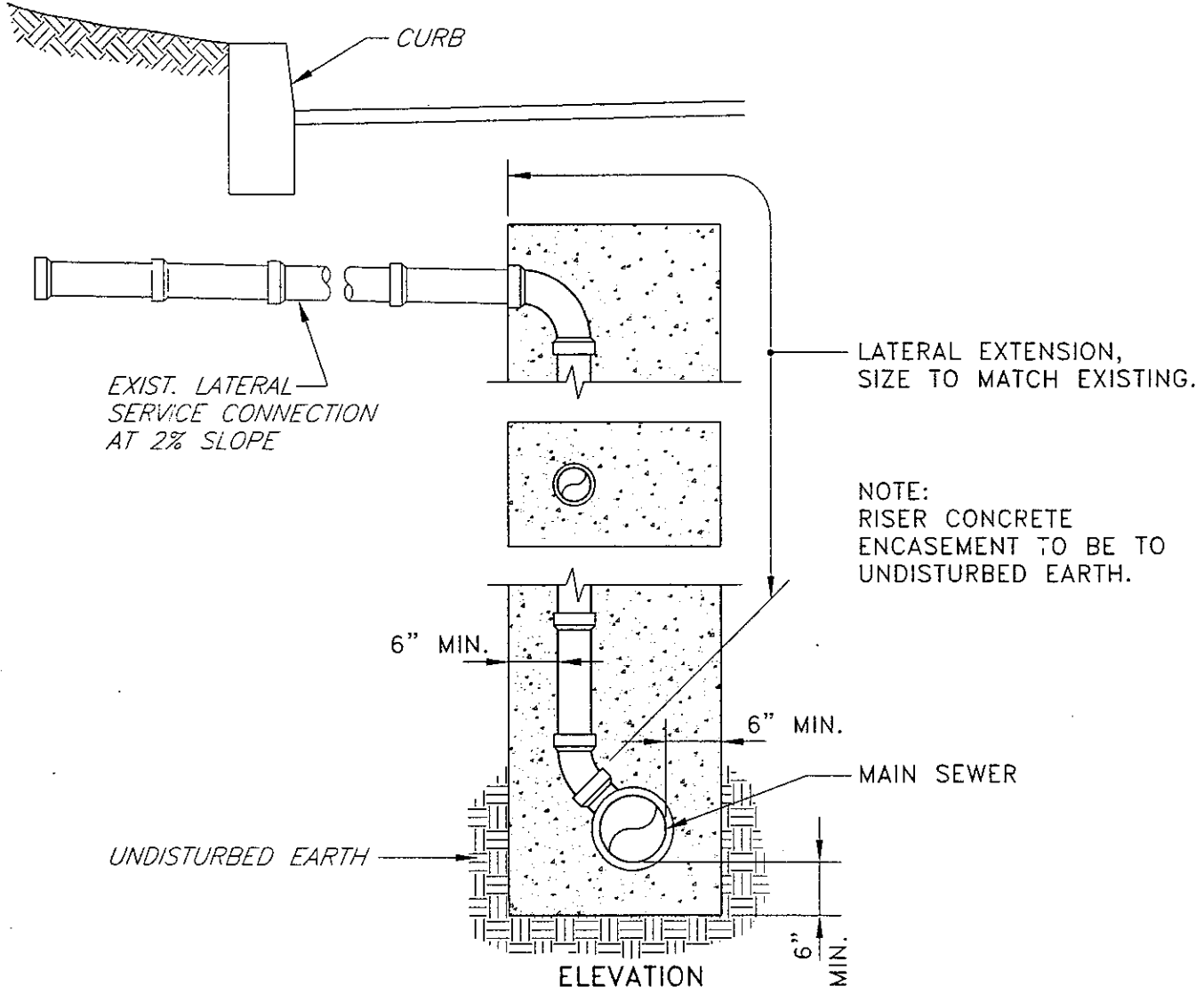
**CONCRETE ANCHOR DETAIL**

DATE: JUNE 2005

DETAIL: 29



PLAN



ELEVATION

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



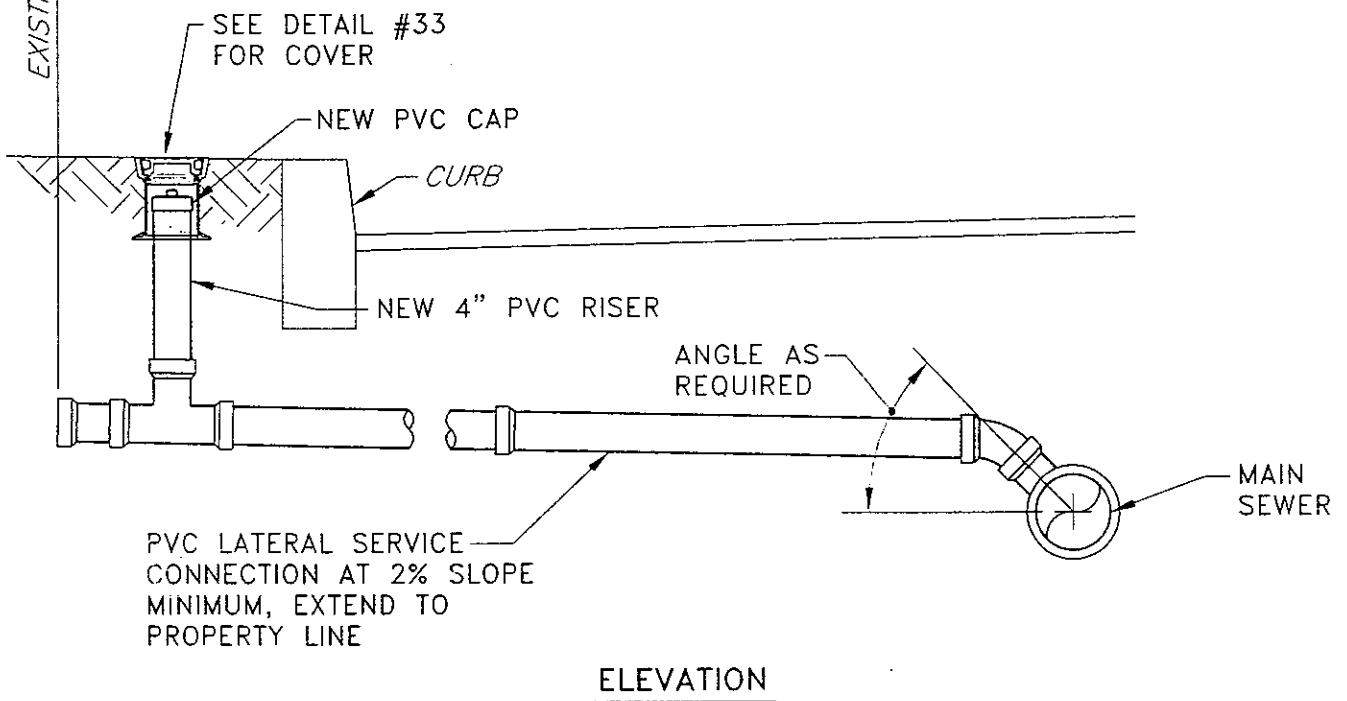
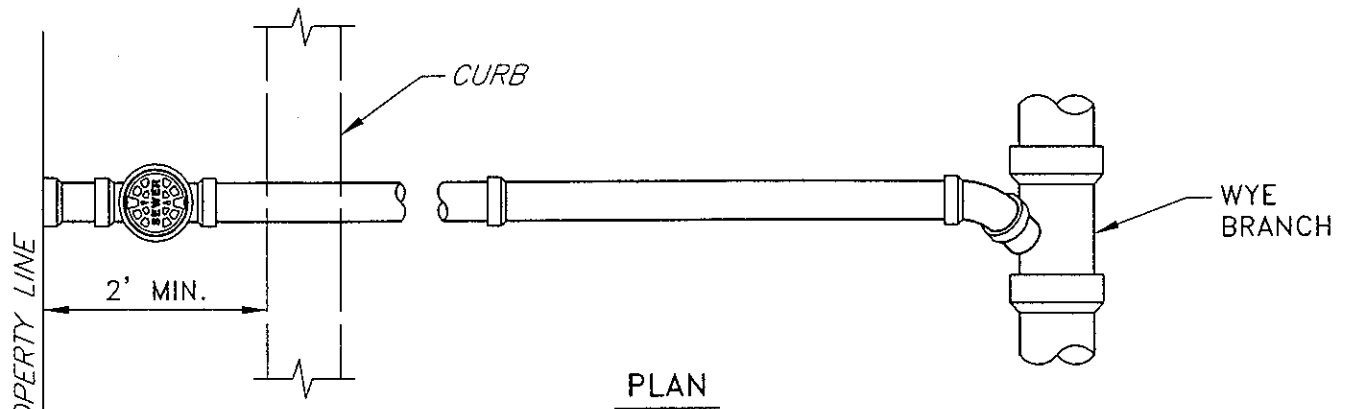
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**EXISTING LATERAL EXTENSION**

DATE: JUNE 2005

DETAIL: 30

SD030.DWG



- NOTES:
- 1) REPAIRS - LATERAL SIZE TO MATCH EXISTING HOUSE LATERAL.
  - 2) NEW CONSTRUCTION - 6" SERVICE LATERALS.
  - 3) PROVIDE CLEANOUTS EVERY 70' ON LATERALS.
  - 4) CONTRACTOR TO PROVIDE TREATED 2x4 OR MARKING TAPE TO GRADE TO LOCATE END OF LATERALS.

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 2004 WEAVERTOWN ROAD  
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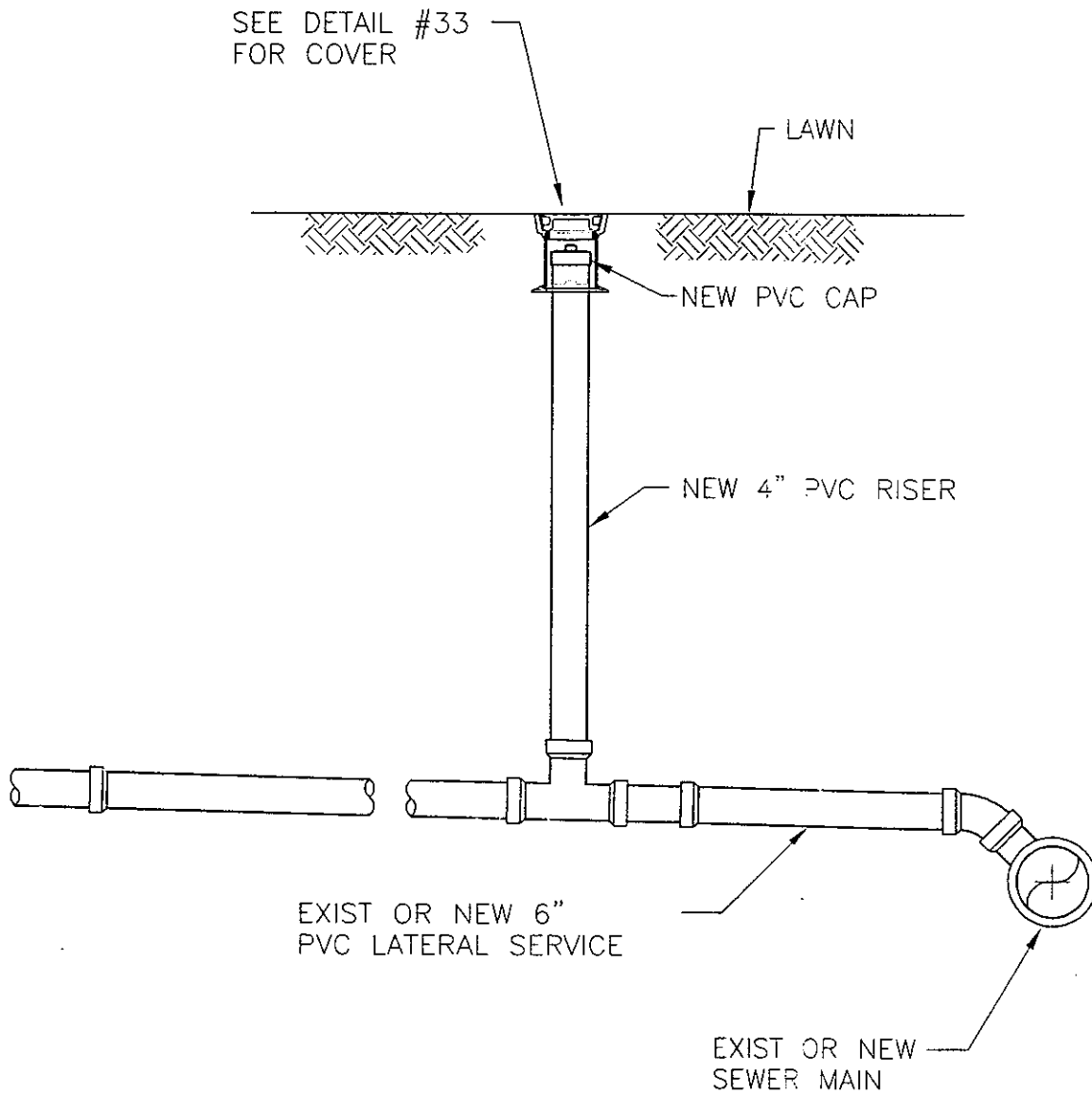
**STANDARD DETAIL - SEWER SYSTEM**

**ARRO**  
 ARRO Consulting, Inc.  
 400 Washington Street, Suite 602  
 Reading, Pennsylvania 19601  
 Tel 610.374.5285

**LATERAL DETAIL**

DATE: JUNE 2005  
 DETAIL: 31

SD031.DWG



**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



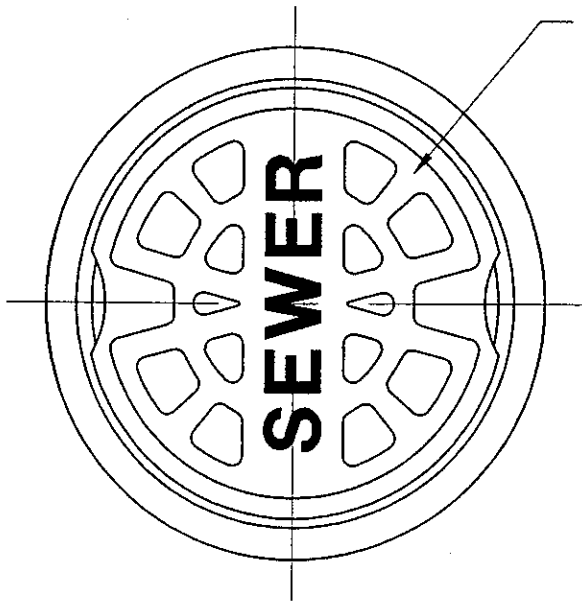
400 Washington Street, Suite 602  
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Tel 610.374.5285

INSPECTION / TEST TEE

DATE: JUNE 2005

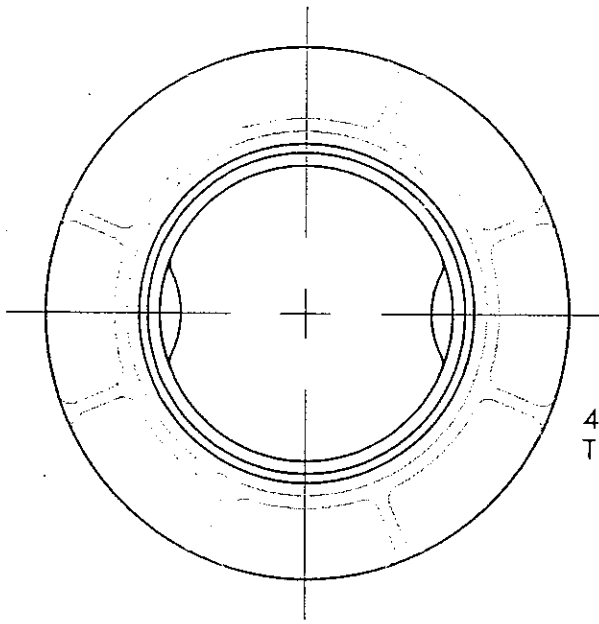
DETAIL: 32

COVER W/RISER BY  
GENECO, PART NO. CC4.

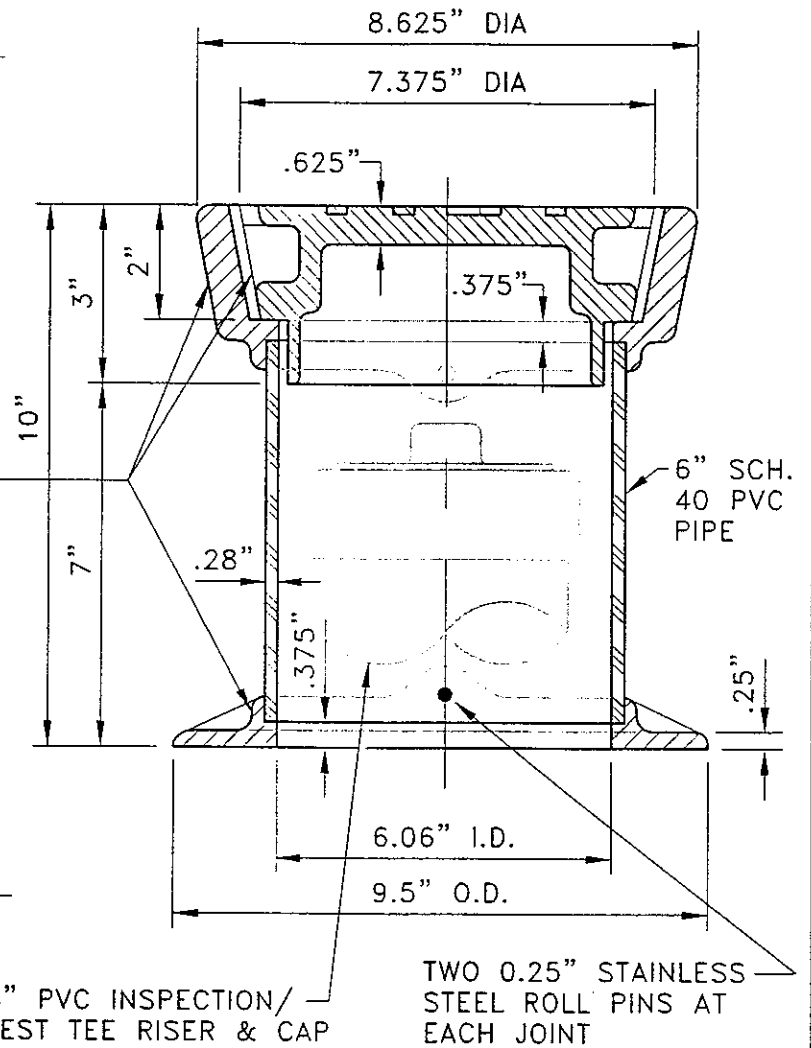


TOP VIEW

ASTM A-48 CLASS 25  
CAST IRON ASPHALT  
PAINT COATED



BOTTOM VIEW



**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

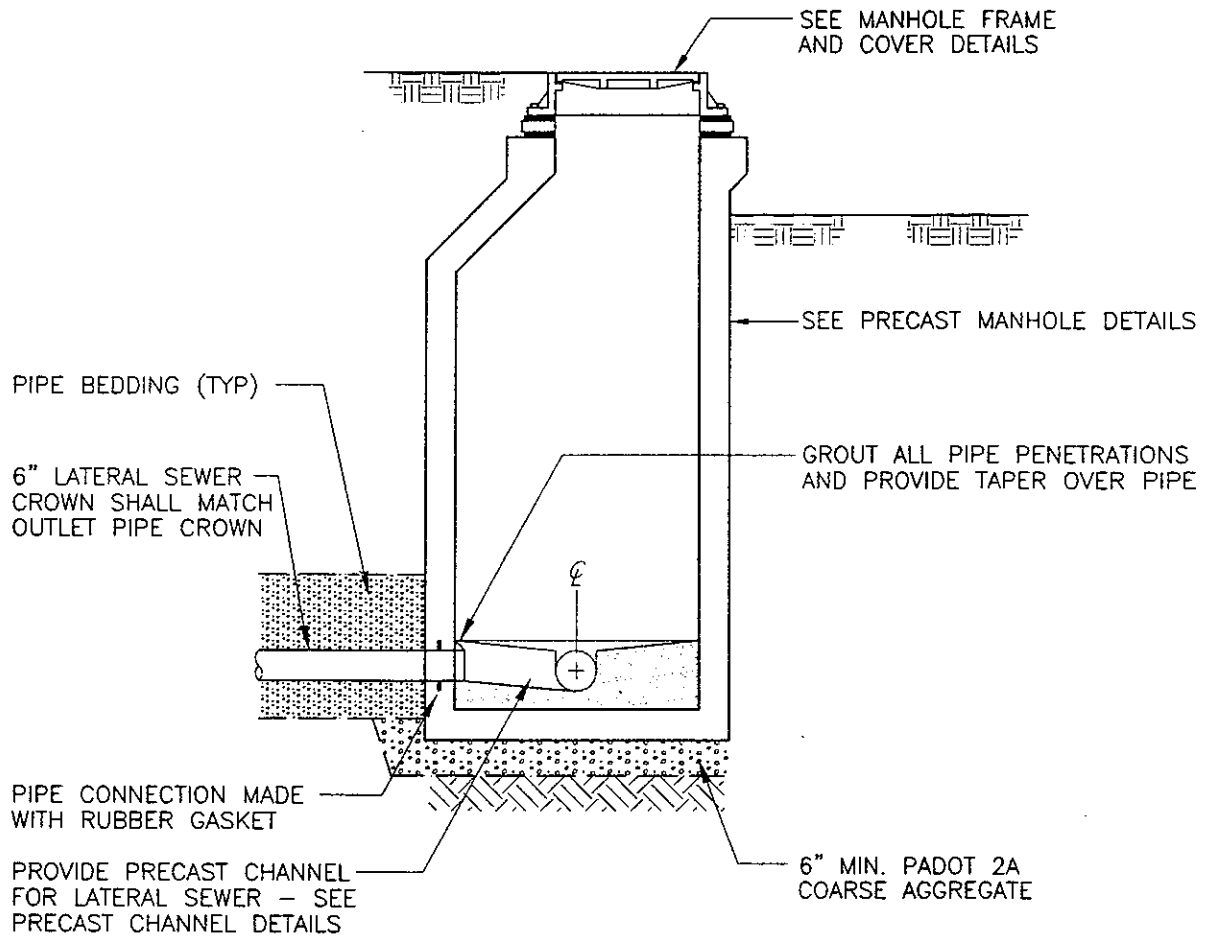


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**COVER FOR INSPECTION / TEST  
TEE IN TRAFFIC AREA**

DATE:  
JUNE 2005

DETAIL:  
33



**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

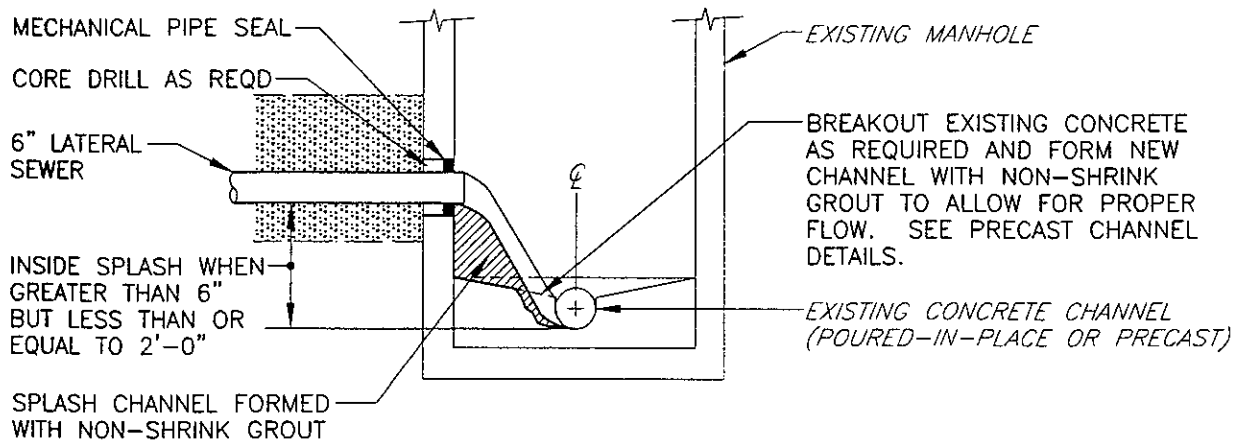


400 Washington Street, Suite 602  
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Tel 610.374.5285

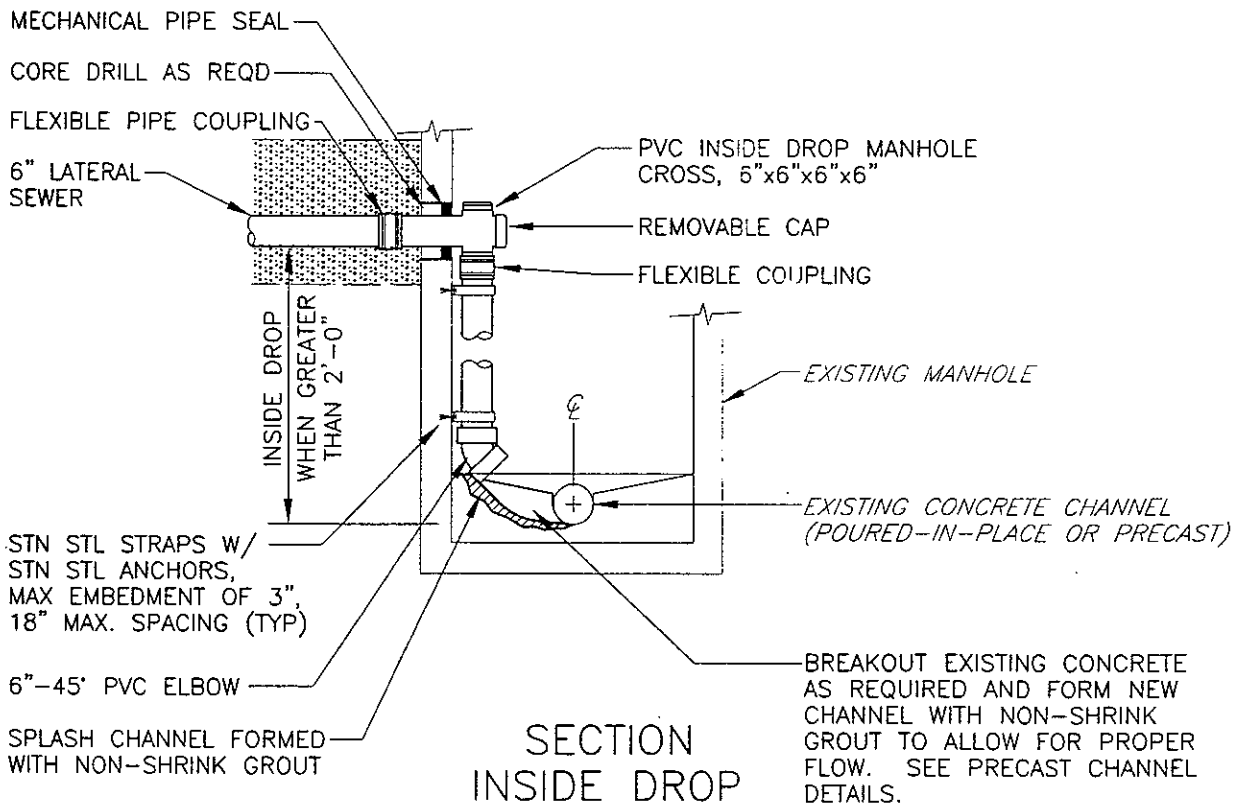
**6" LATERAL INTO NEW MANHOLE  
(BY SPECIAL EXCEPTION ONLY)**

DATE: JUNE 2005

DETAIL: 34



**SECTION  
INSIDE SPLASH**



**SECTION  
INSIDE DROP**

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



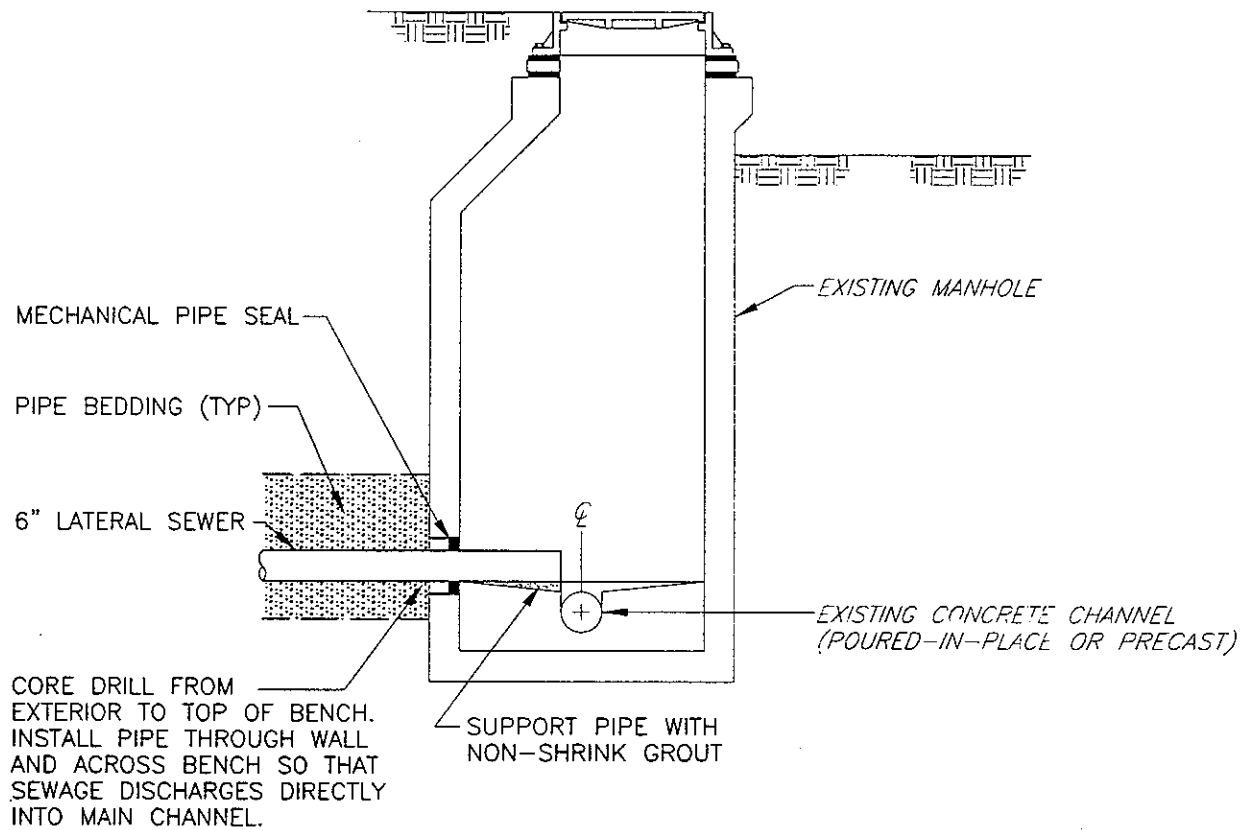
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DATE: JUNE 2005

DETAIL: 35

**INSIDE SPLASH/DROP - 6" LATERAL INTO  
EXIST. MH (BY SPECIAL EXCEPTION ONLY)**

SD035.DWG



## AMITY TOWNSHIP

2004 WEAVERTOWN ROAD  
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### STANDARD DETAIL - SEWER SYSTEM



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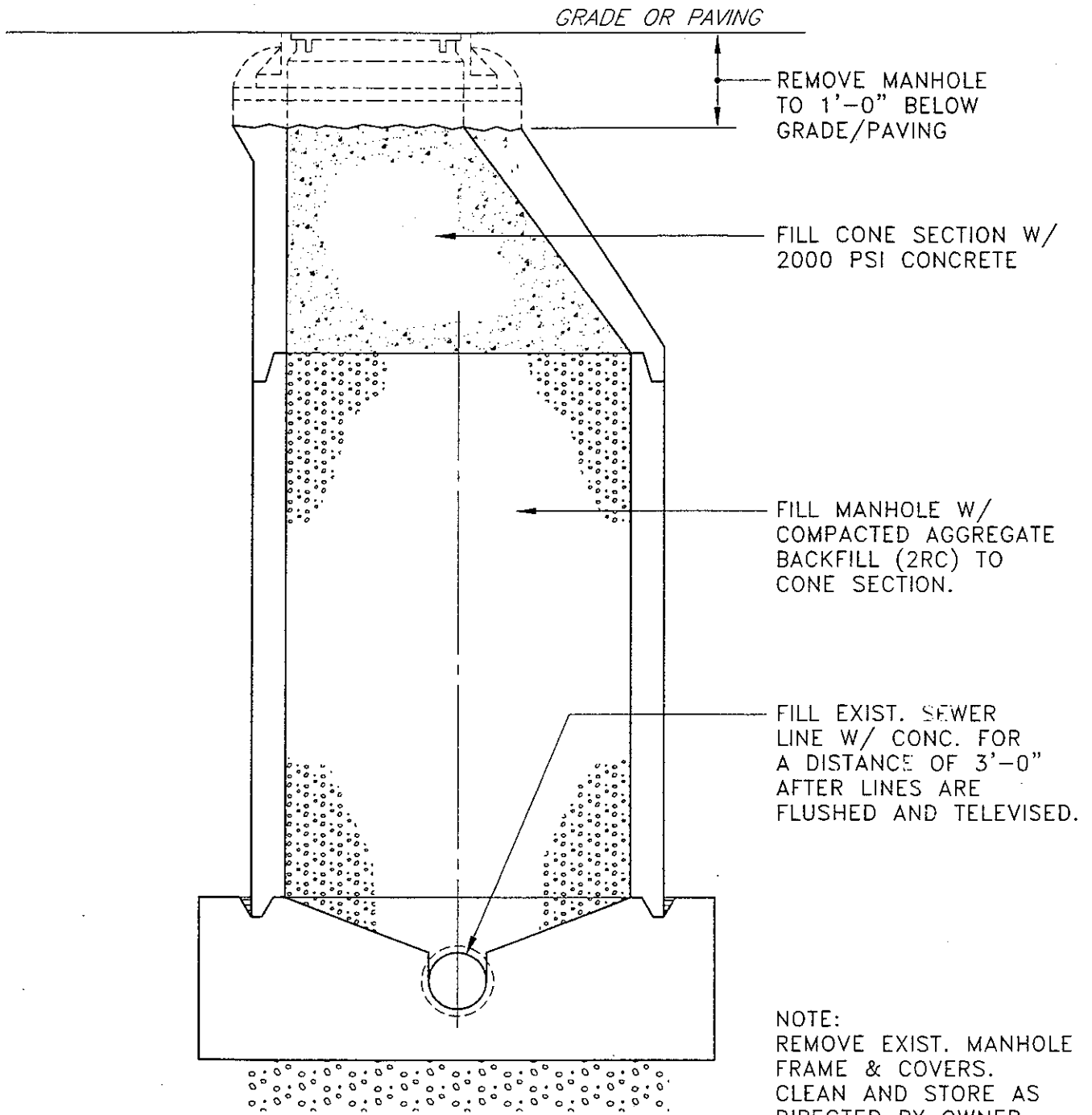
6" LATERAL INTO EXISTING MANHOLE  
(BY SPECIAL EXCEPTION ONLY)

DATE:

JUNE 2005

DETAIL:

36



TYPICAL SECTION

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

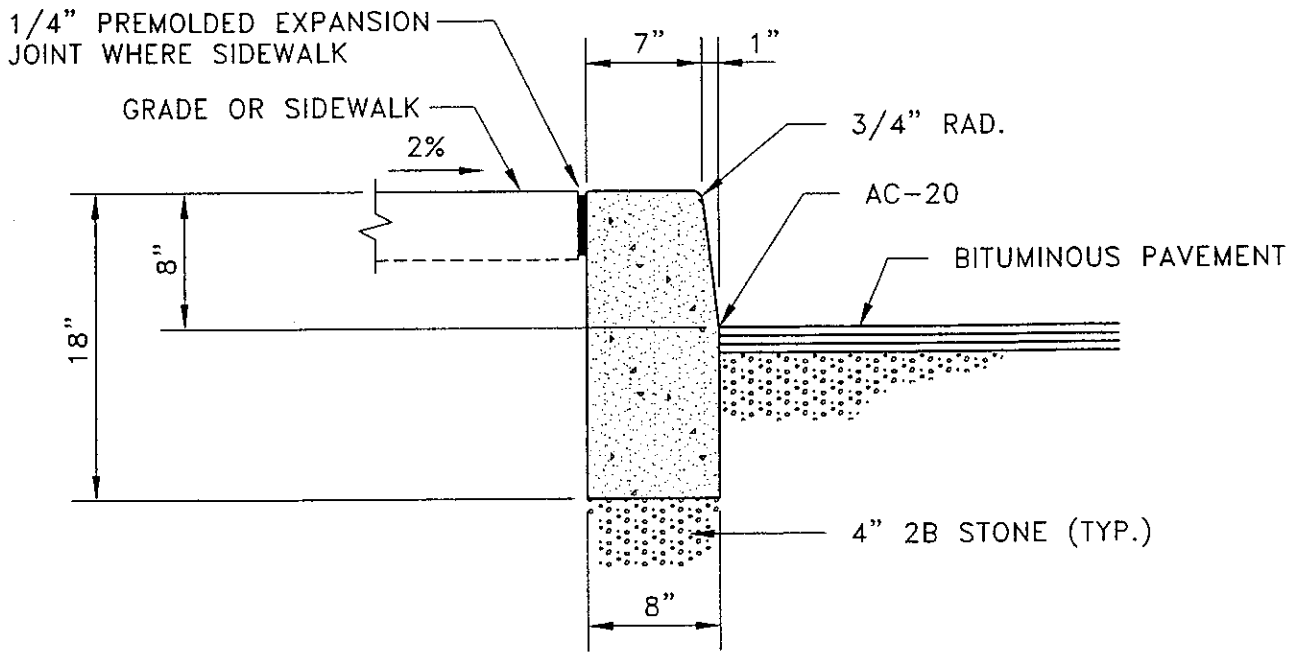


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Tel 610.374.5285

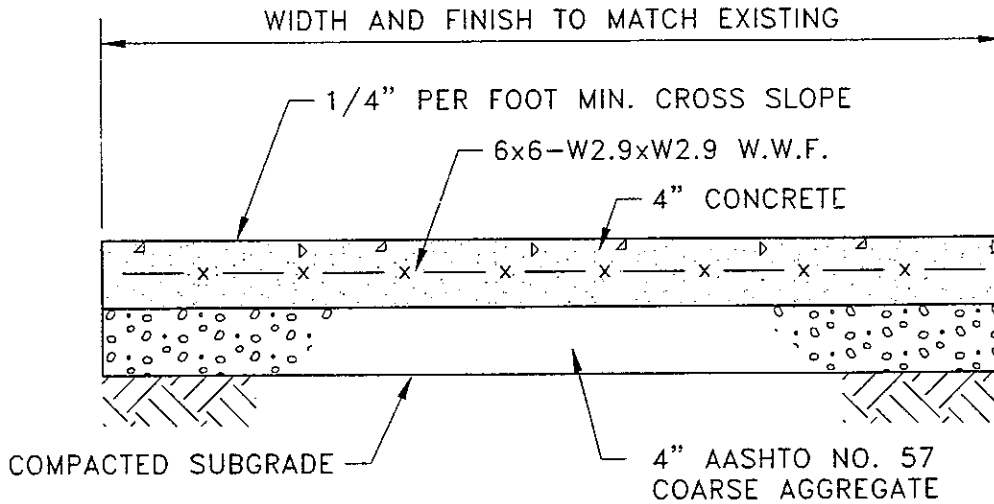
**MANHOLE ABANDONMENT DETAIL**

DATE: JUNE 2005

DETAIL: 37



**STANDARD STRAIGHT CURB DETAIL**



NOTE: PROVIDE 1/2" TOOLED CONTRACTION JOINTS AT MAXIMUM 4'-0" SPACING.  
 PROVIDE 1/2" EXPANSION JOINTS AT MAXIMUM 20'-0" SPACING.

**SIDEWALK DETAIL**

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
 DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



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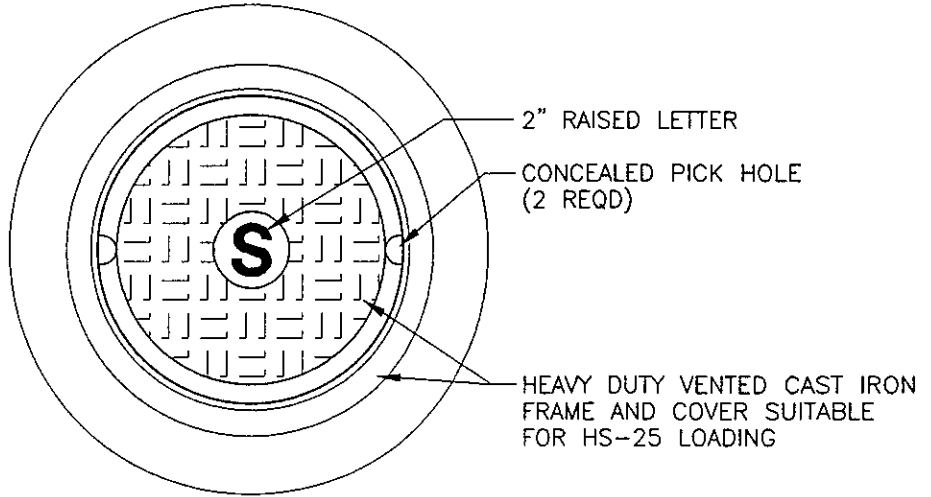
**CURB AND SIDEWALK DETAILS**

DATE: JUNE 2005

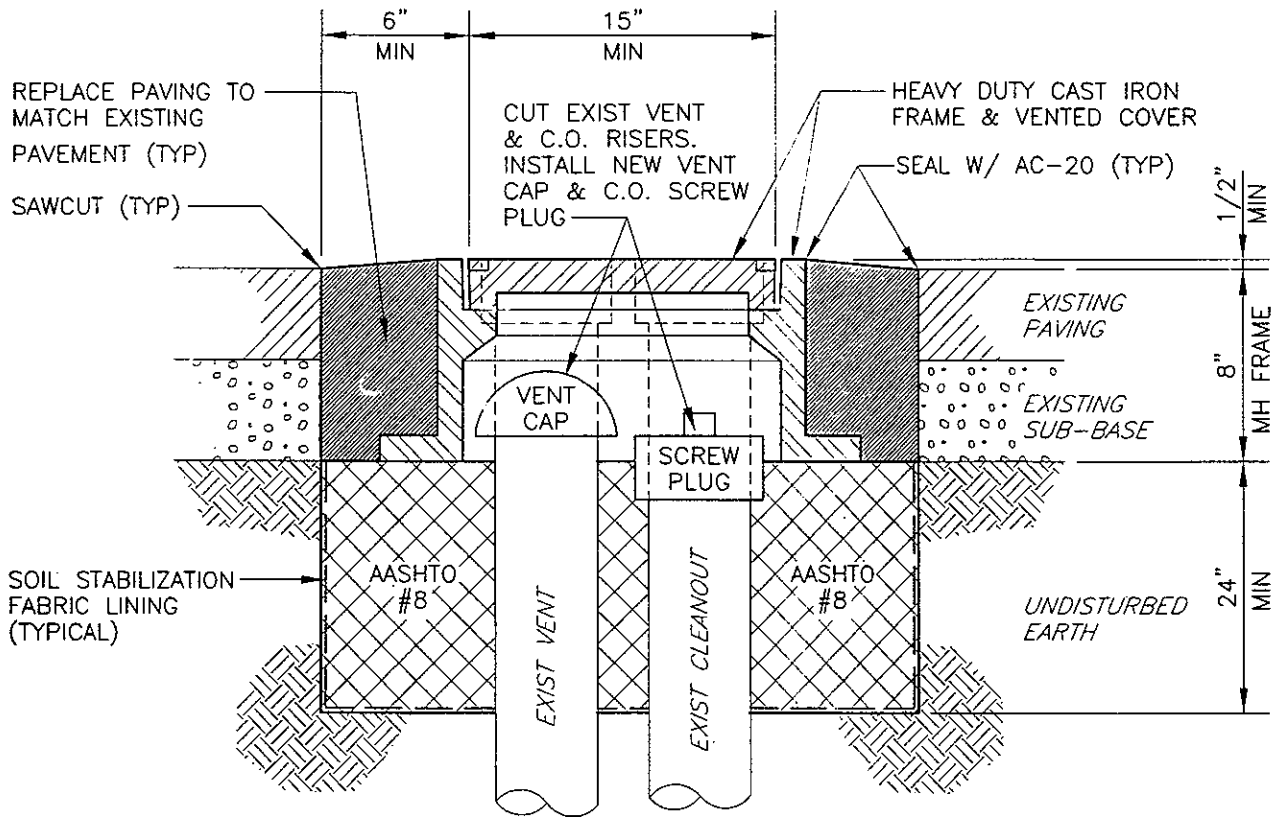
DETAIL: 38

NOTES:

1. THIS DETAIL PERTAINS ONLY TO EXISTING VENTS & CLEANOUTS.
2. VENT CAP SHOULD MATCH EXISTING VENT MATERIAL.
3. EACH DRAIN WILL BE TESTED FOR DRAINAGE.



COVER PATTERN



SECTION

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

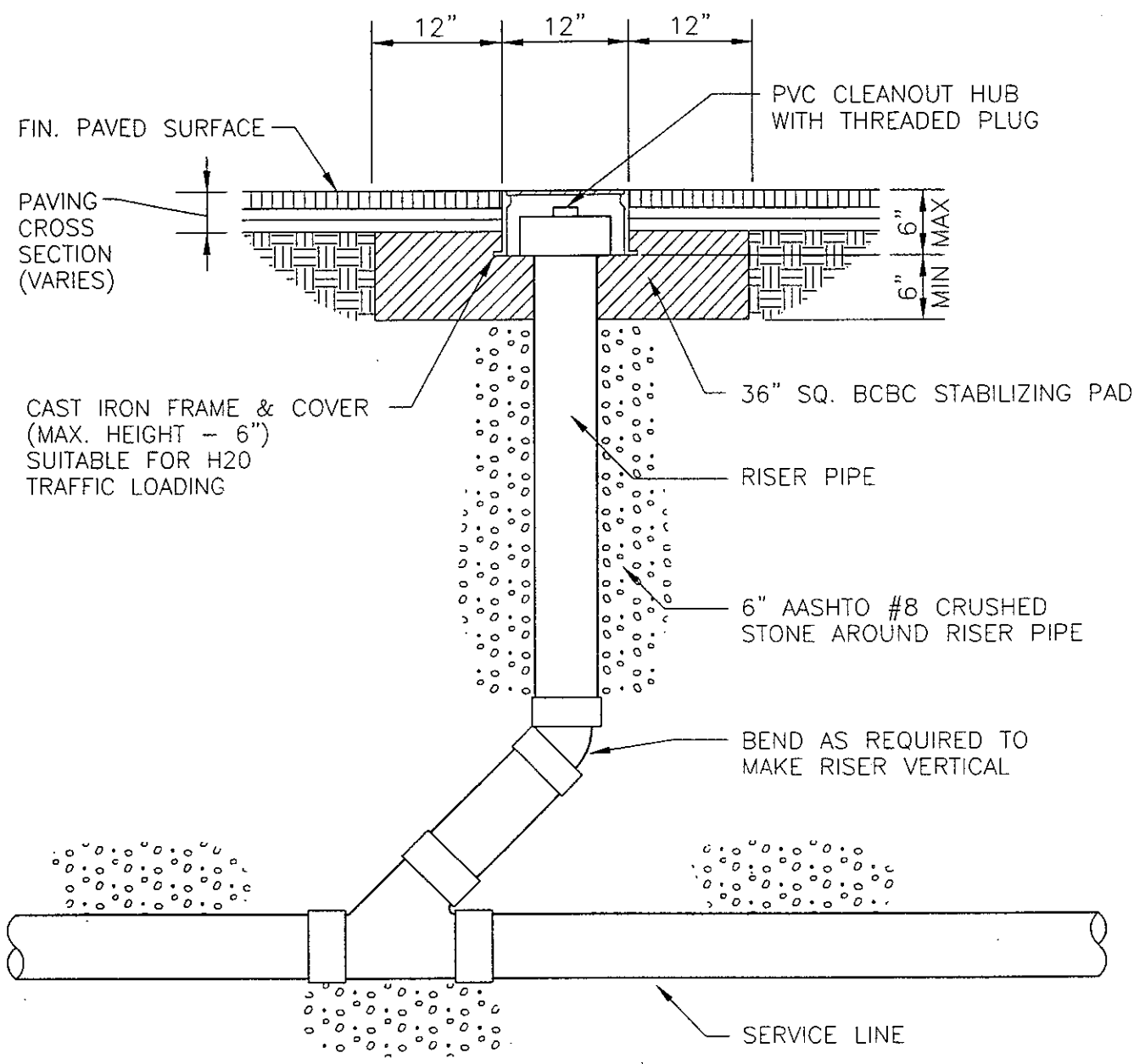


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**EXISTING VENTS AND CLEANOUTS  
IN PAVED AREAS DETAIL**

DATE: JUNE 2005

DETAIL: 39



**AMITY TOWNSHIP**  
 2004 WEAVERTOWN ROAD  
 DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



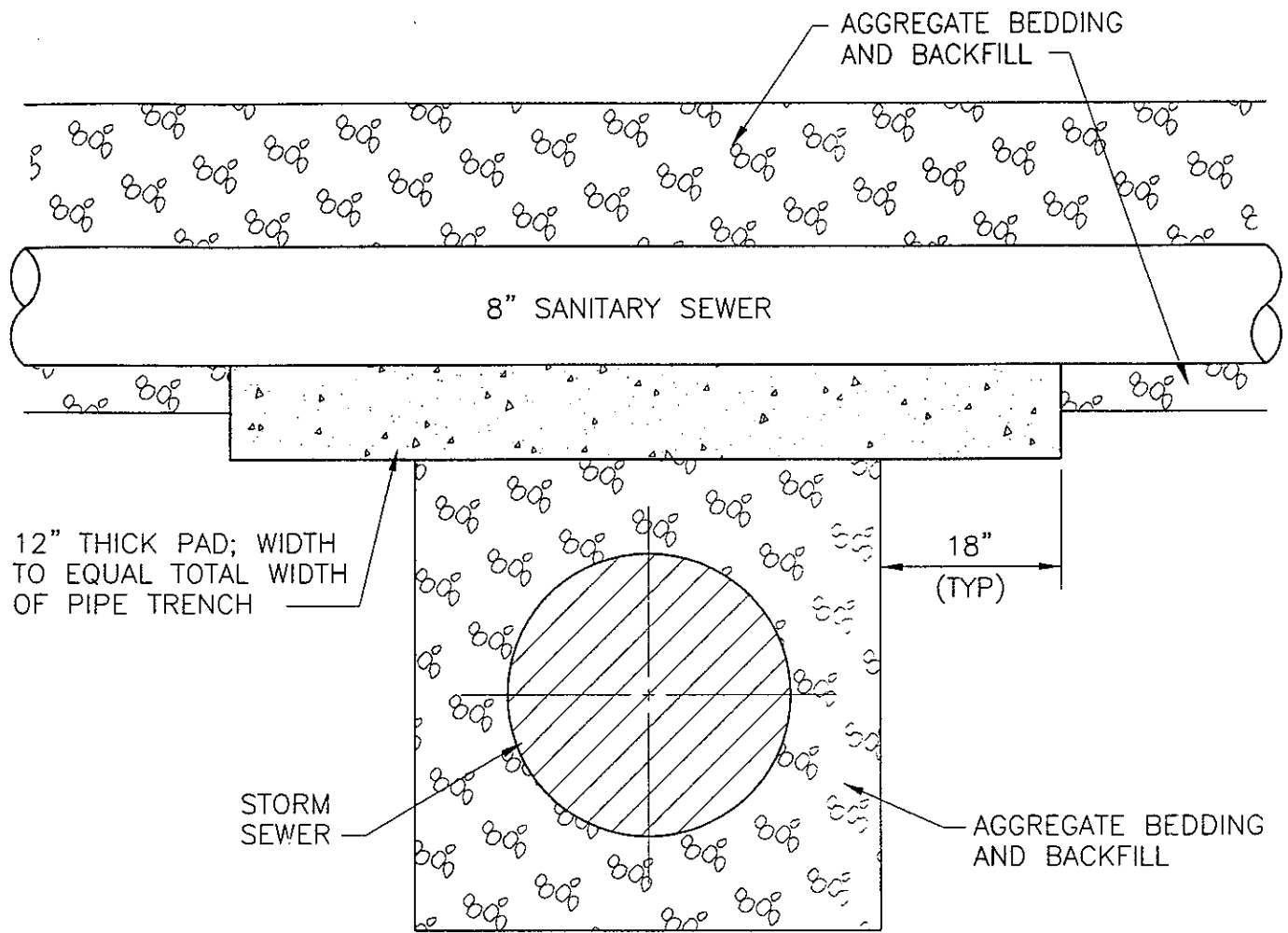
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**NEW CLEANOUT IN PAVED AREAS DETAIL  
 (BY SPECIAL EXCEPTION ONLY)**

DATE: JUNE 2005

DETAIL: 40

SD040.DWG



NOTE:  
 DETAIL IS SIMILAR FOR AREAS  
 WHERE STORM SEWER CROSSES  
 OVER SANITARY SEWER.

**AMITY TOWNSHIP**

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**STANDARD DETAIL - SEWER SYSTEM**

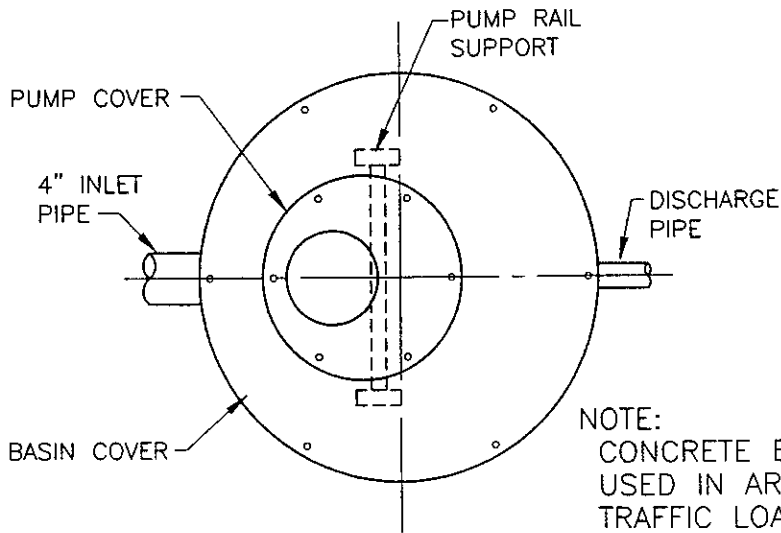


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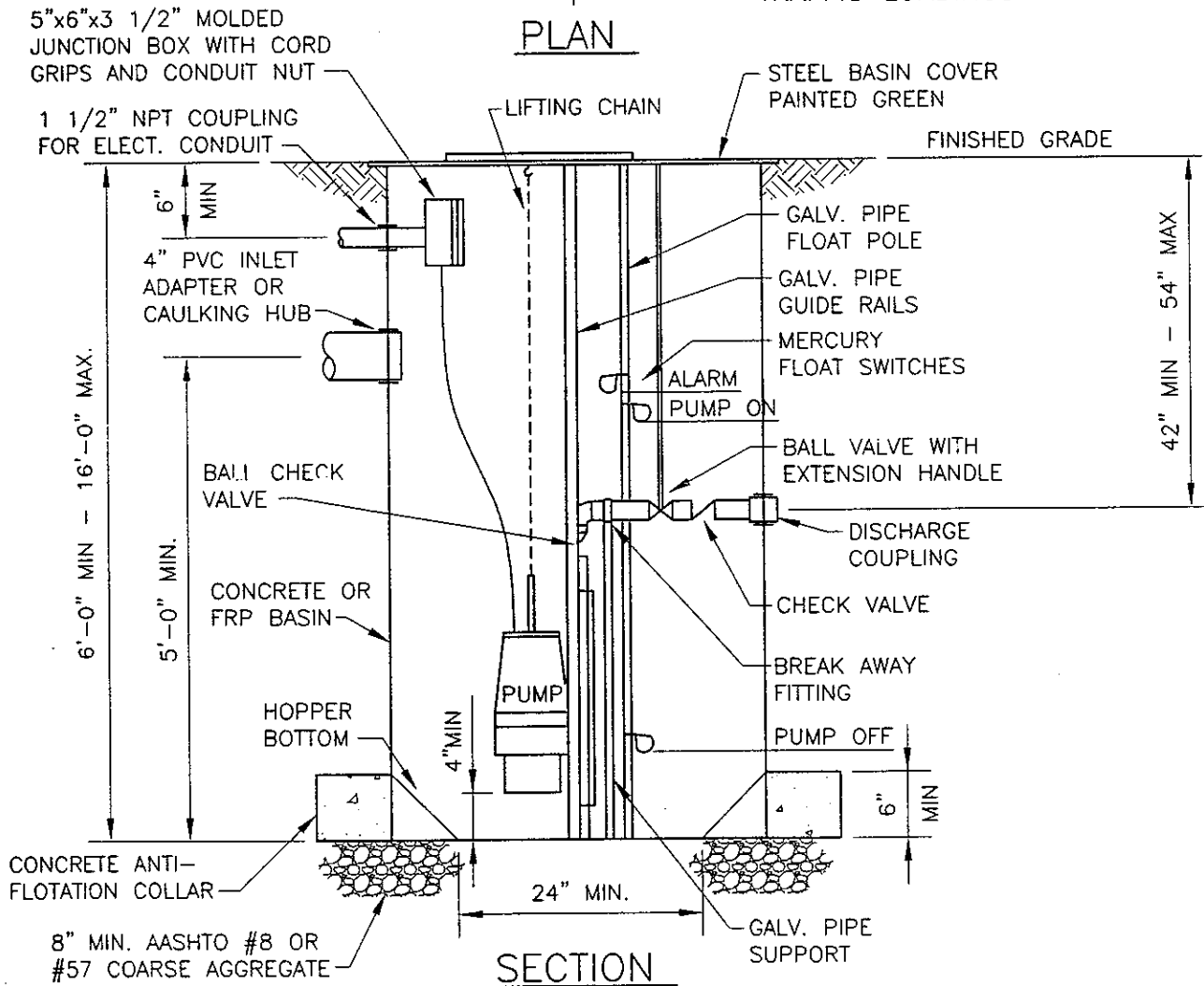
**PIPELINE CROSSING DETAIL  
 (STORM SEWER)**

DATE:  
 FEBRUARY 2005

DETAIL:  
 41



PLAN



SECTION

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

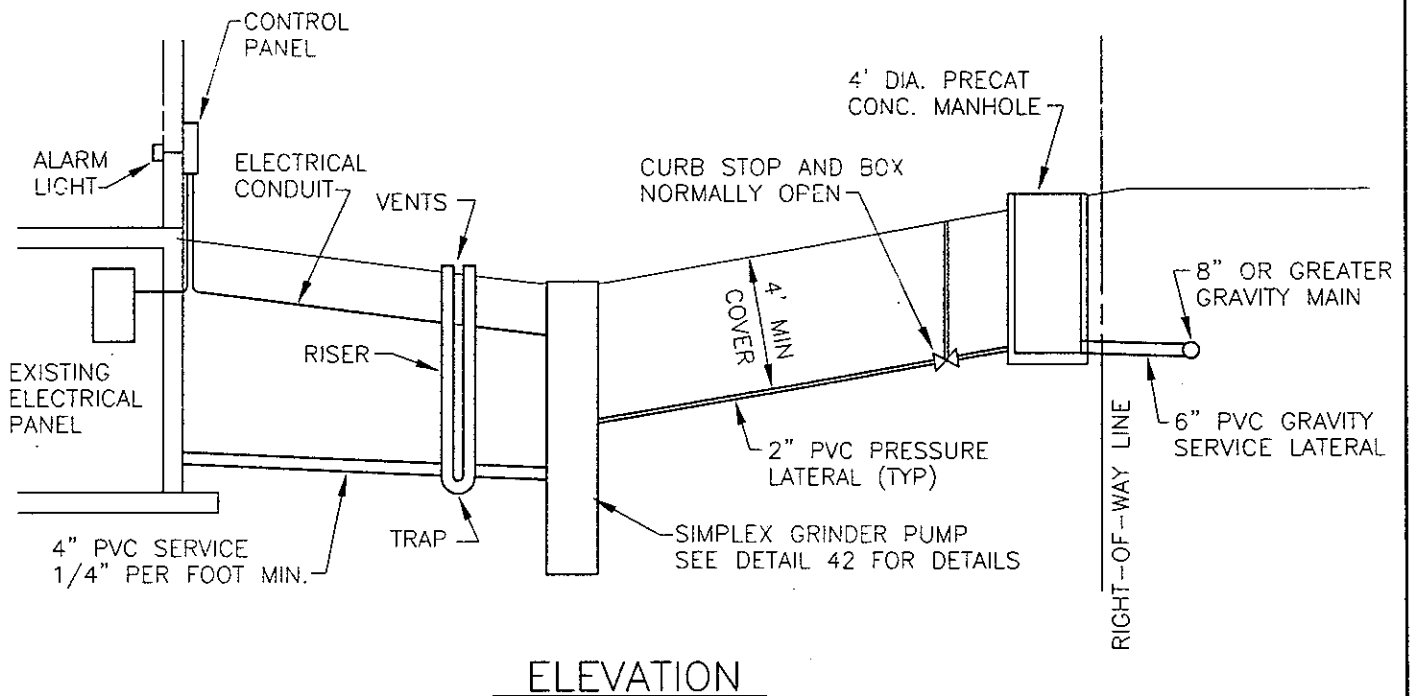
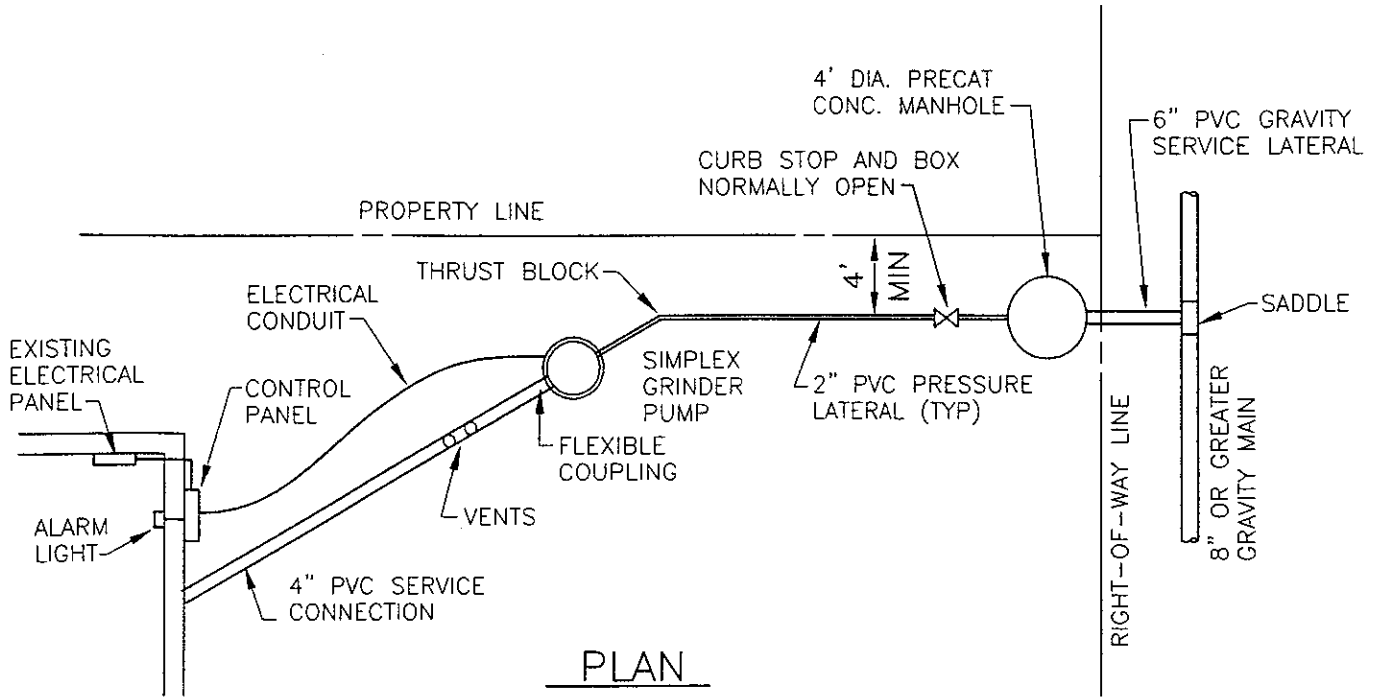


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**SIMPLEX GRINDER PUMP DETAIL**

DATE: JUNE 2005

DETAIL: 42



**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**



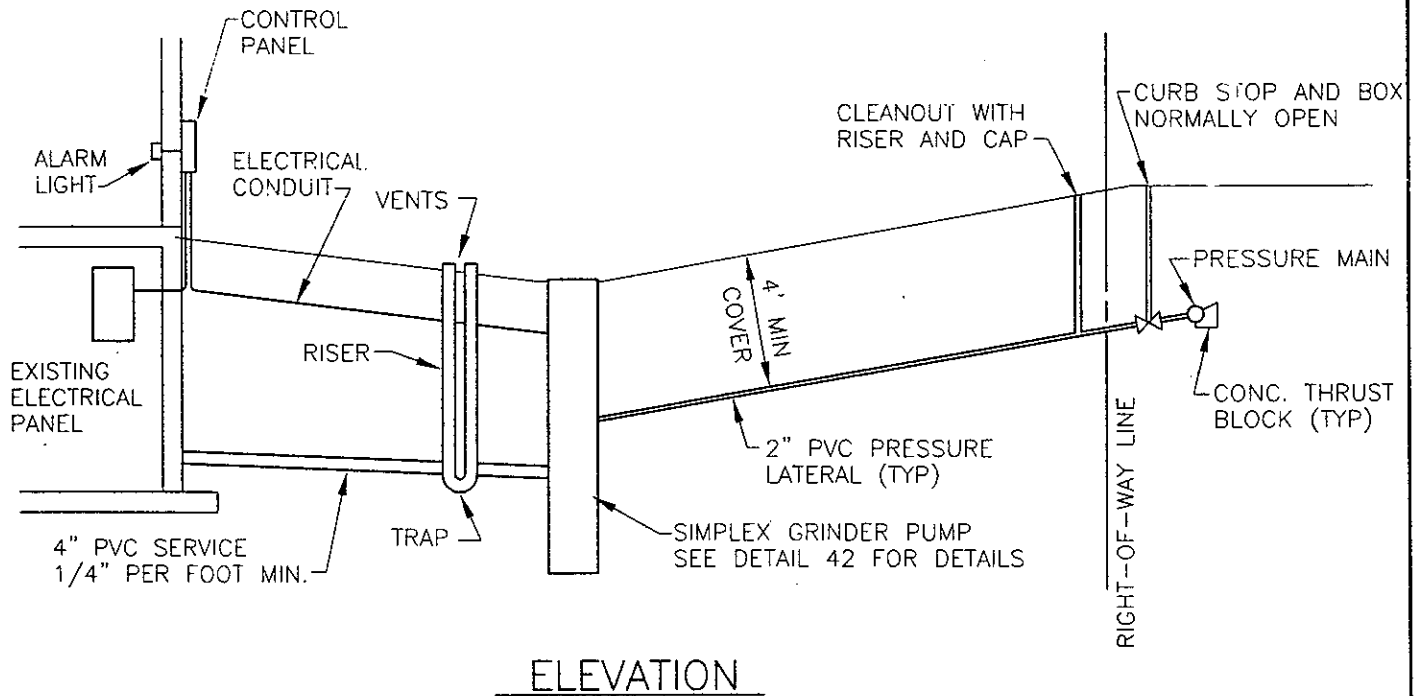
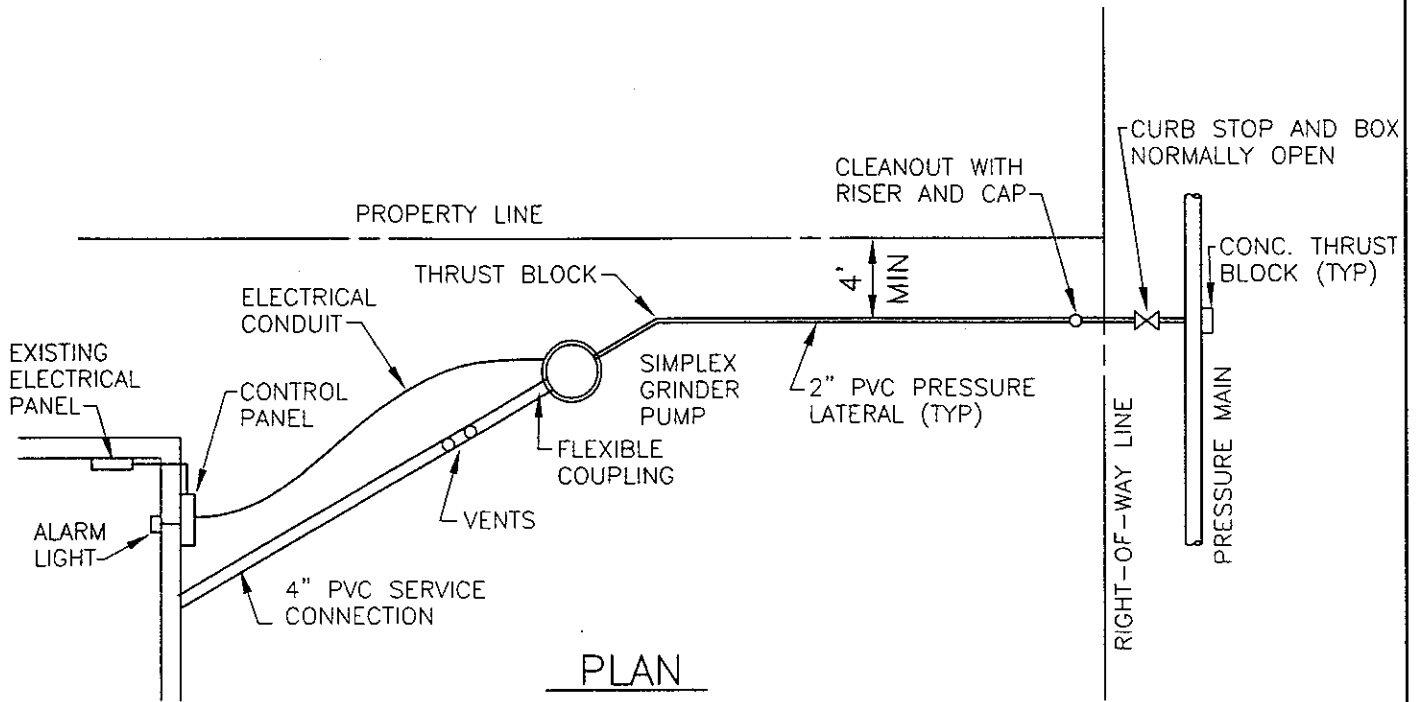
400 Washington Street, Suite 602  
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**PRESSURE LATERAL DETAIL  
DISCHARGE TO GRAVITY MAIN**

DATE: JUNE 2005

DETAIL: 43

SD043.DWG



**AMITY TOWNSHIP**

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DOUGLASVILLE, PA 19518

**STANDARD DETAIL - SEWER SYSTEM**

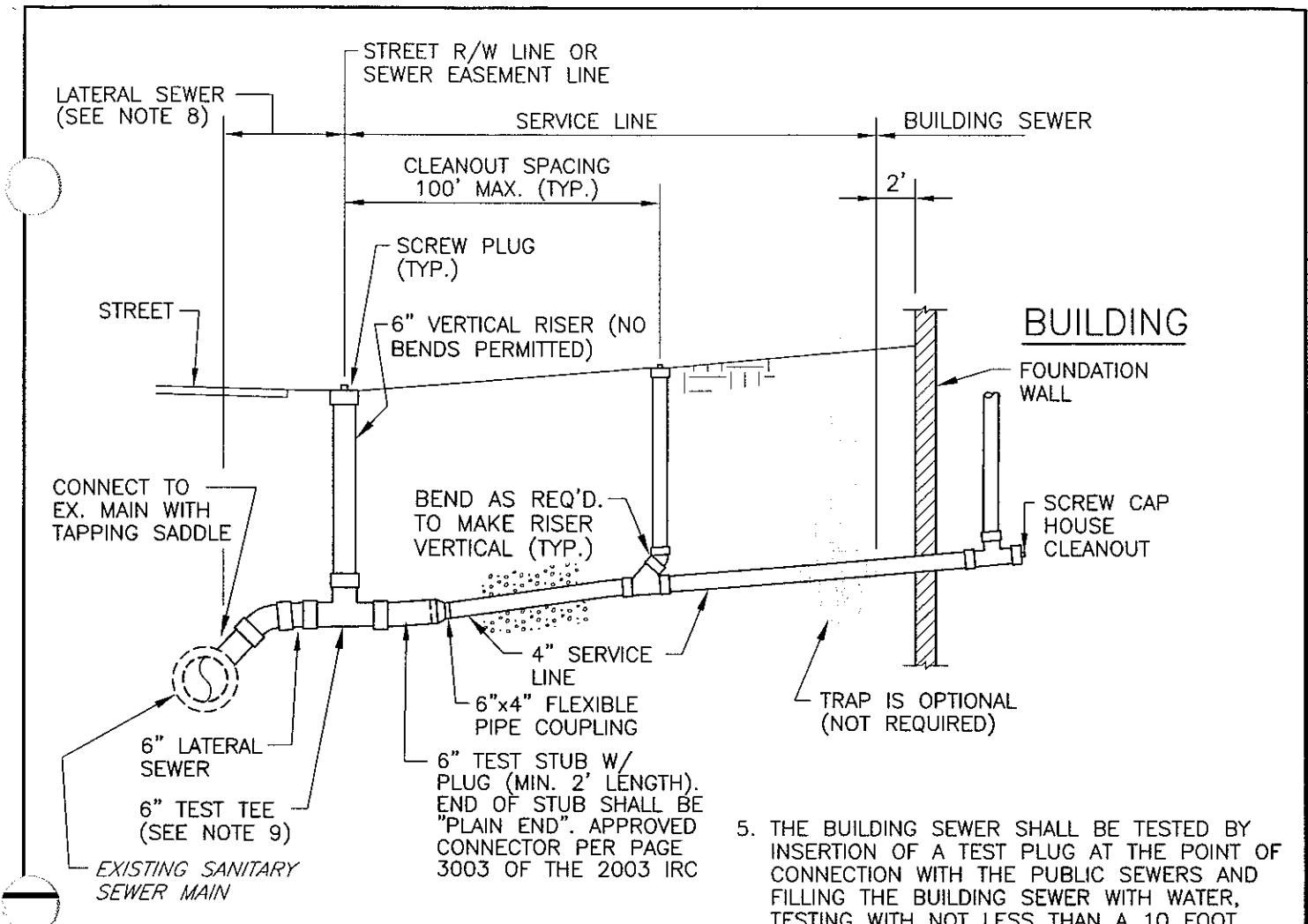


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**PRESSURE LATERAL DETAIL  
DISCHARGE TO PRESSURE MAIN**

DATE: JUNE 2005

DETAIL: 44



**NOTES:**

1. PROVIDE 6" OF AASHTO NO. 8 1B) STONE BELOW PIPE AND 12" ABOVE PIPE (TYPICAL ENTIRE LENGTH OF LATERAL)
2. MINIMUM SLOPE: 1/4"/FT (2%) FOR 2 1/2"Ø AND LESS, AND NOT LESS THAN 1/8"/FT (1%) FOR DIAMETER OS 3" OR MORE
3. MINIMUM DEPTH OF COVER : 3 FOOT
4. PIPE MATERIALS FOR SERVICE LINES:
  - A. PVC SDR 35
  - B. CAST IRON
  - C. MATERIAL MUST MEET REQUIREMENTS OF TABLE 3002.2 OF THE 2003 IRC

5. THE BUILDING SEWER SHALL BE TESTED BY INSERTION OF A TEST PLUG AT THE POINT OF CONNECTION WITH THE PUBLIC SEWERS AND FILLING THE BUILDING SEWER WITH WATER, TESTING WITH NOT LESS THAN A 10 FOOT HEAD OF WATER AND BE ABLE TO MAINTAIN SUCH PRESSURE FOR 15 MINUTES. TEST MUST BE PERFORMED PRIOR TO BACKFILL.
6. NO SEWER SERVICE LINE VENT CAPS SHALL BE INSTALLED WITHIN A 100-YEAR FLOOD PLAIN OR WITHIN FLOOD PRONE AREAS.
7. NO VENT CAPS OR CLEANOUTS SHALL BE INSTALLED IN DRIVEWAYS OR OTHER PAVED AREAS UNLESS SPECIFICALLY APPROVED.
8. THE LATERAL SEWER SHALL BE INSTALLED TO THE EDGE OF THE SEWER EASEMENT FOR SEWERS LOCATED IN AN EASEMENT OR TO THE STREET RIGHT-OF-WAY AS A MINIMUM, OR TO SUCH POINT, AS REQUIRED, TO CLEAR STREET SIDEWALKS AND UNDERGROUND UTILITIES.
9. SET 6" TEST TEE AT 1% SLOPE TO PERMIT VERTICAL RISER INSTALLATION WITH NO BENDS.

**AMITY TOWNSHIP**  
 2004 WEAVERTOWN ROAD  
 DOUGLASVILLE, PA 19518



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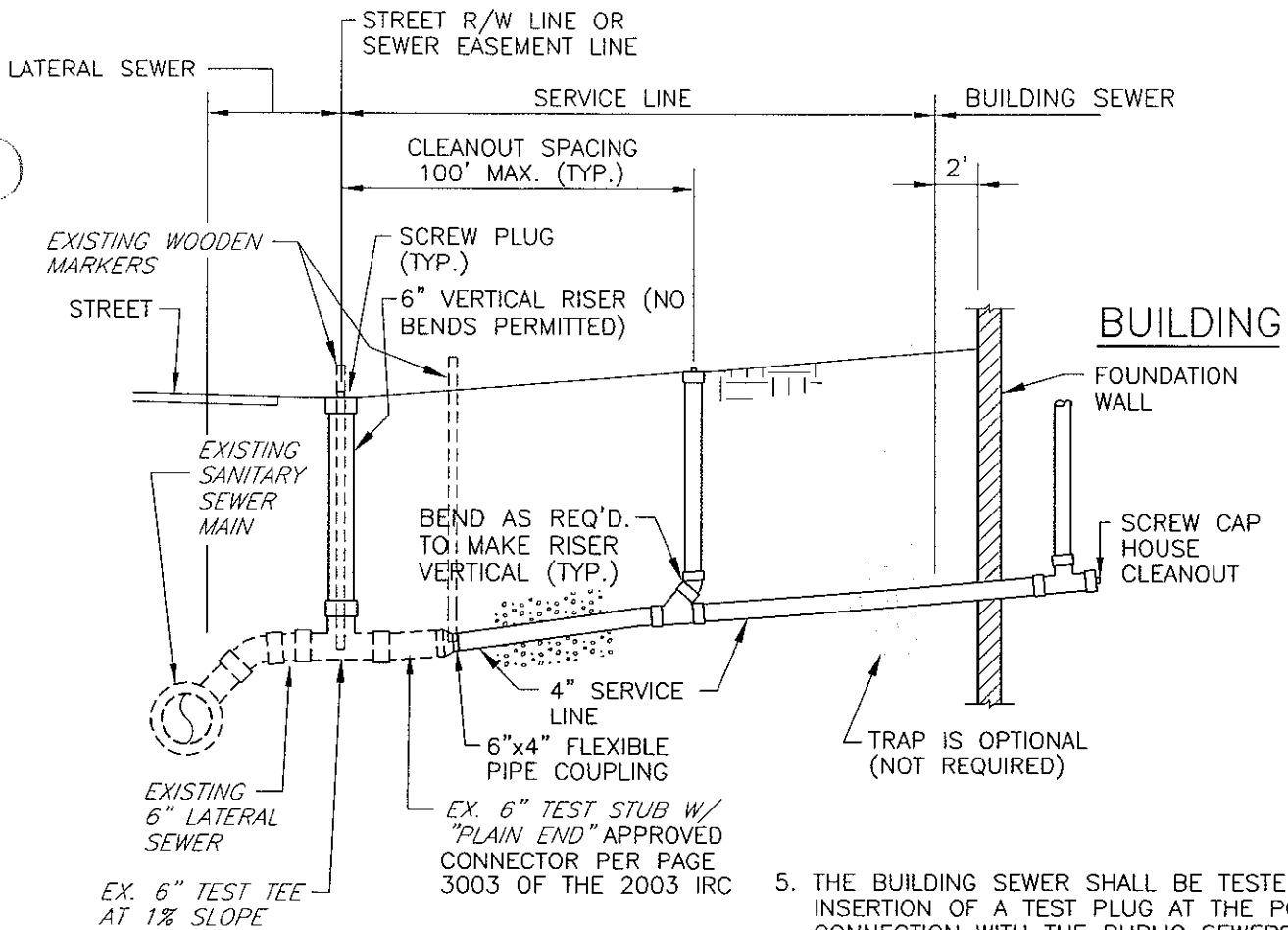
**STANDARD DETAIL - SEWER SYSTEM**

**SERVICE LATERAL AND HOUSE SERVICE CONNECTION TO EXISTING SEWER MAIN**

DATE: MARCH 2006

DETAIL: 45

SD045.DWG



**NOTES:**

1. PROVIDE 6" OF AASHTO NO. 8 1B) STONE BELOW PIPE AND 12" ABOVE PIPE (TYPICAL ENTIRE LENGTH OF LATERAL)
2. MINIMUM SLOPE: 1/4"/FT (2%) FOR 2 1/2"Ø AND LESS, AND NOT LESS THAN 1/8"/FT (1%) FOR DIAMETER OS 3" OR MORE
3. MINIMUM DEPTH OF COVER : 3 FOOT
4. PIPE MATERIALS FOR SERVICE LINES:
  - A. PVC SDR 35
  - B. CAST IRON
  - C. MATERIAL MUST MEET REQUIREMENTS OF TABLE 3002.2 OF THE 2003 IRC

5. THE BUILDING SEWER SHALL BE TESTED BY INSERTION OF A TEST PLUG AT THE POINT OF CONNECTION WITH THE PUBLIC SEWERS AND FILLING THE BUILDING SEWER WITH WATER, TESTING WITH NOT LESS THAN A 10 FOOT HEAD OF WATER AND BE ABLE TO MAINTAIN SUCH PRESSURE FOR 15 MINUTES. TEST MUST BE PERFORMED PRIOR TO BACKFILL.
6. NO SEWER SERVICE LINE VENT CAPS SHALL BE INSTALLED WITHIN A 100-YEAR FLOOD PLAIN OR WITHIN FLOOD PRONE AREAS.
7. NO VENT CAPS OR CLEANOUTS SHALL BE INSTALLED IN DRIVEWAYS OR OTHER PAVED AREAS UNLESS SPECIFICALLY APPROVED.
8. THE LATERAL SEWER SHALL BE INSTALLED TO THE EDGE OF THE SEWER EASEMENT FOR SEWERS LOCATED IN AN EASEMENT OR TO THE STREET RIGHT-OF-WAY AS A MINIMUM, OR TO SUCH POINT, AS REQUIRED, TO CLEAR STREET SIDEWALKS AND UNDERGROUND UTILITIES.
9. SET 6" TEST TEE AT 1% SLOPE TO PERMIT VERTICAL RISER INSTALLATION WITH NO BENDS.

**AMITY TOWNSHIP**

2004 WEAVERTOWN ROAD  
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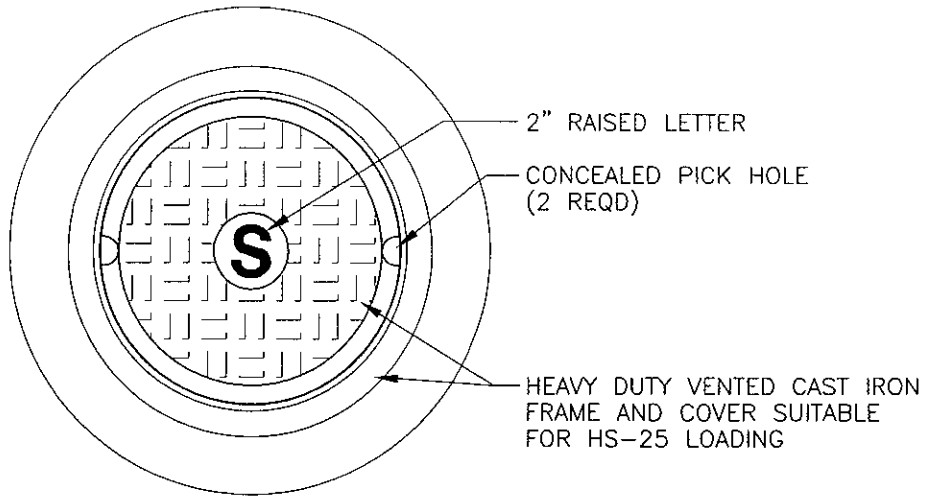
**HOUSE SERVICE CONNECTION  
TO EXISTING SERVICE LATERAL**

DATE:  
MARCH 2006

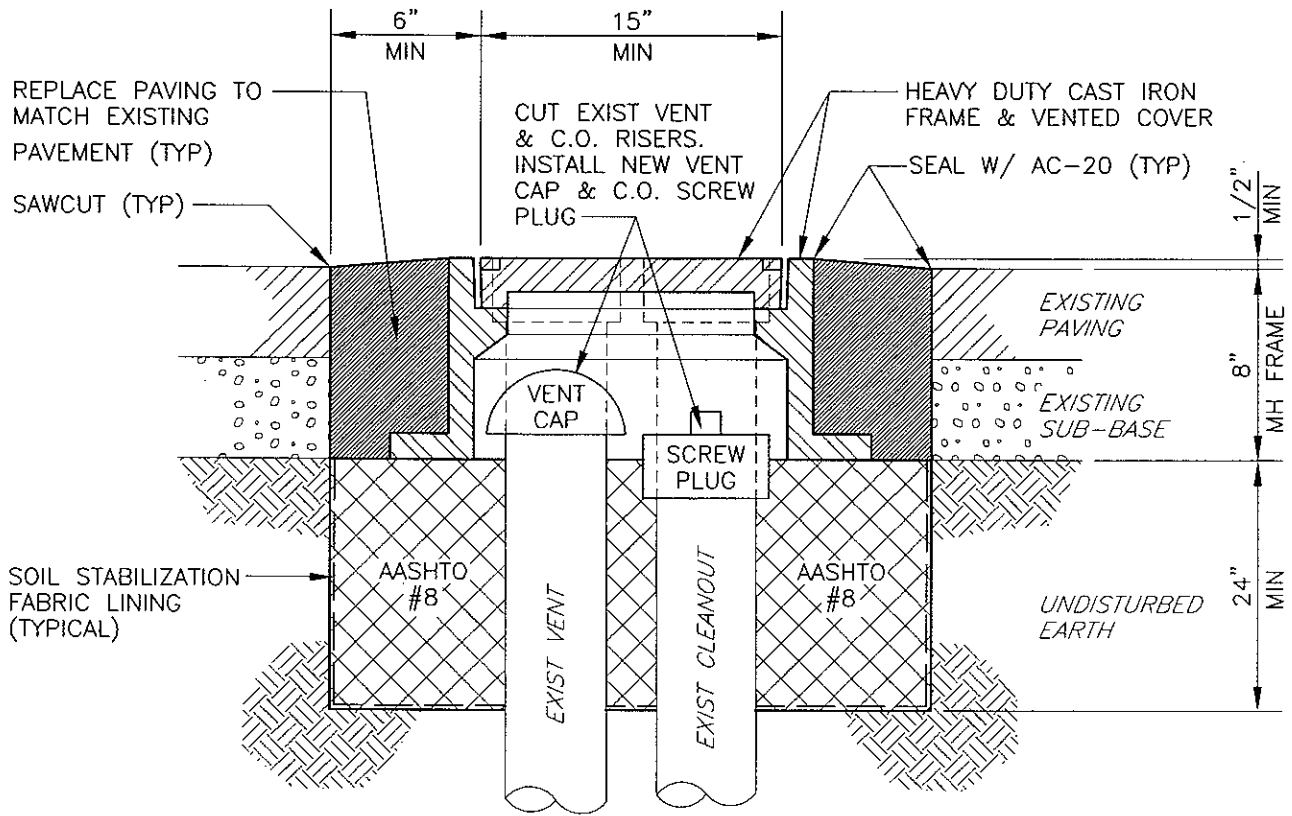
DETAIL:  
46

**NOTES:**

1. THIS DETAIL PERTAINS ONLY TO EXISTING VENTS & CLEANOUTS.
2. VENT CAP SHOULD MATCH EXISTING VENT MATERIAL.
3. EACH DRAIN WILL BE TESTED FOR DRAINAGE.



**COVER PATTERN**



**SECTION**

**AMITY TOWNSHIP**

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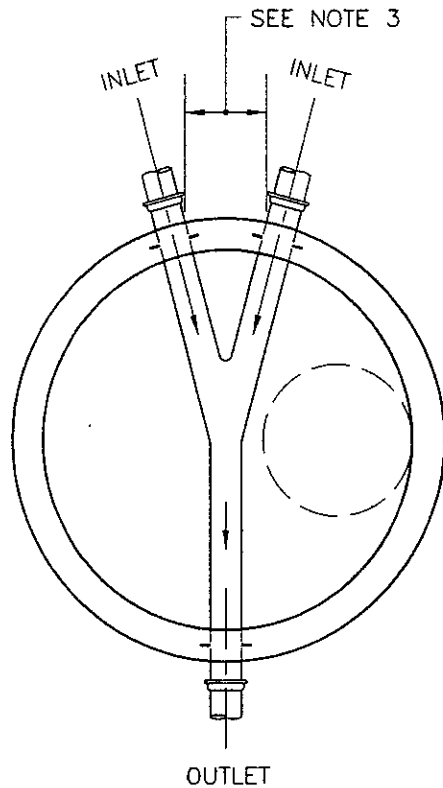
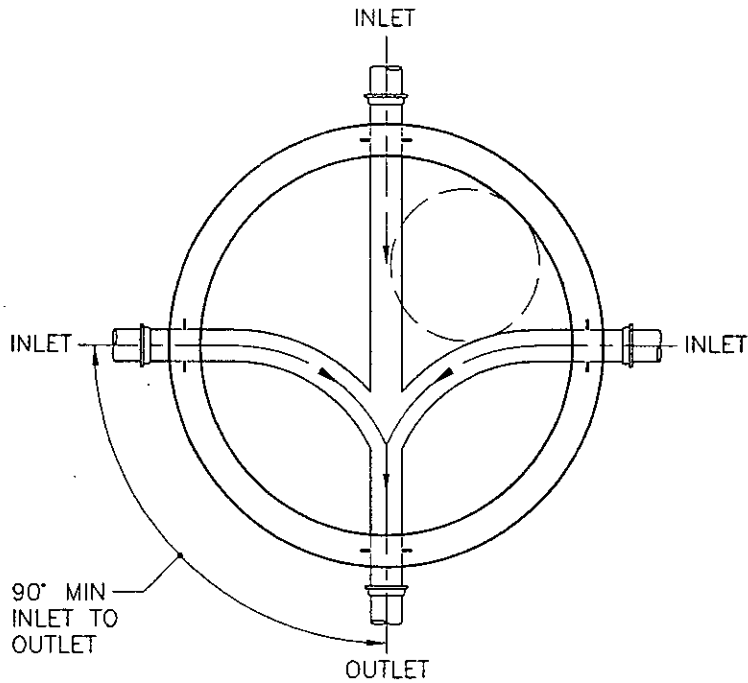
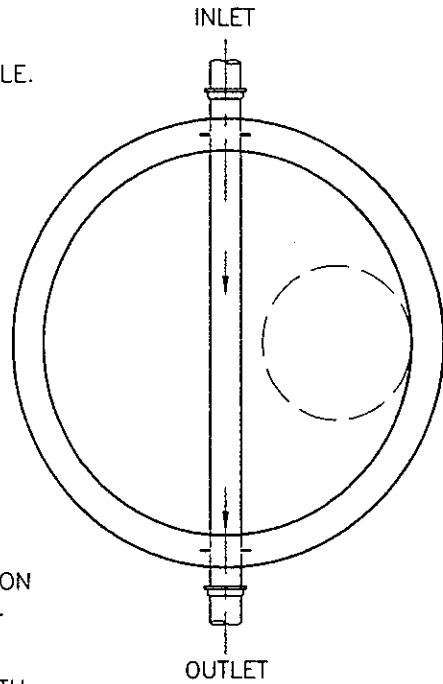
**EXISTING VENT & CLEANOUT  
IN PAVED AREA DETAIL**

DATE: MARCH 2006

DETAIL: 47

**NOTES:**

1. THREE INLET PIPES AND ONE OUTLET PIPE MAX INTO MANHOLE.
2. NO LATERALS INTO MANHOLES, EXCEPT BY SPECIAL EXCEPTION FROM THE AUTHORITY.
3. MINIMUM 12" SEPARATION FROM EDGE OF PIPE PENETRATION TO EDGE OF PIPE PENETRATION
4. MINIMUM CHANNEL DROP THROUGH MANHOLE:  
 STRAIGHT THROUGH - 0.1 FEET  
 BEND - 0.2 FEET
5. ALL CHANNELS SHALL BE PRECAST, UNLESS OTHERWISE SPECIFICALLY NOTED OR APPROVED.
6. THESE DETAILS APPLY TO PRECAST CHANNELS IN NEW MANHOLES, AND FIELD-FORMED CHANNELS IN EXISTING MANHOLES.
7. CHANNEL BENCH AT PIPE SHALL MATCH 3/4 CROWN ELEVATION OF PIPE AND RISE 1/2" PER FOOT TO THE MANHOLE WALLS.
8. CHANNELS SHALL MATCH THE CROSS-SECTIONAL DIMENSIONS OF THE PIPES ENTERING AND EXITING THE MANHOLE. SMOOTH TRANSITIONS SHALL BE PROVIDED BETWEEN CHANGES IN PIPE SIZE.



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**PRECAST CHANNEL DETAILS**

DATE: JUNE 2005

DETAIL: 9