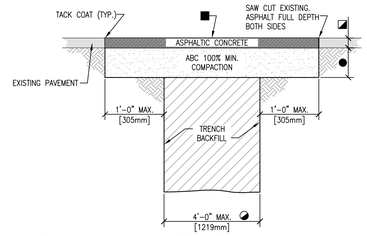
GENERAL NOTES (FOR ALL TRENCH PATCH)

1. MATERIAL AND COMPACTION REQUIREMENTS FOR PIPE BEDDING/SHADING SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE APPLICABLE UTILITY PIPE.
2. TRENCH BACKFILL SHALL COMMENCE 1 FOOT [305mm] ABOVE THE TOP OF PIPE AND SHALL BE PER SECTION **31 20 00**.
3. BACKFILL COMPACTION REQUIREMENTS SHALL BE PER SECTION **31 20 00**.
4. THE 1 FOOT [305mm] TRENCH "SHOULDER" AREAS SHALL BE DELETED FOR TYPE 2 TRENCHES.
5. ABC SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION **32 12 16**.
6. PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION **33 40 00**.
7. ASPHALTIC TACK MATERIAL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION **32 12 16**.
8. ASPHALTIC CONCRETE SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION **32 12 16** FOR THE TYPE SPECIFIED.
9. BITUMINOUS SURFACE TREATMENT (CHIP SEAL) SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION **33 40 00** FOR THE TYPE SPECIFIED.
10. LOAD TRANSFER DOWELS FOR JOINTS TRANSVERSE TO THE ROADWAY CENTERLINE SHALL BE SMOOTH STEEL DOWELS IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION **32 05 23** DOWELS SHALL BE SIZED AND SPACED AS FOLLOWS:

PCCP THICKNESS	DOWEL SIZE	DOWEL LENGTH	DOWEL SPACING
6" [150mm]	#5 [No. 16]	12" [305mm]	18" [455mm]
7" [180mm]	#6 [No. 19]	15" [380mm]	15" [380mm]
8" [180mm]	#8 [No. 19]	15" [380mm]	12" [305mm]
10" [180mm]	#10 [No. 19]	15" [380mm]	12" [305mm]

11. DEFORMED TIE BARS SHALL BE USED IN TRENCH PATCHES LONGITUDINAL TO THE ROADWAY CENTERLINE WHEN THE TRENCH LENGTH IS GREATER THAN 50 FEET [15240mm]. TIE BARS SHALL BE 24 INCHES [610mm] LONG, DEFORMED #4 [No. 13] BARS FOR PCCP LESS THAN 8 INCHES [205mm] THICK AND #5 [No. 16] BARS IF 8 INCHES [205mm] THICK OR MORE. TIE BARS SHALL BE PLACED 30 INCHES [760mm] CENTER-TO-CENTER.
12. HOLES SHALL BE DRILLED 1 FOOT [305mm] INTO THE EXISTING SLAB FOR TIE BARS AND 7 INCHES [180mm] FOR DOWELS. HOLES SHALL BE OF A DIAMETER SUFFICIENT TO ACCOMMODATE THE TIE BAR ANCHORAGE OR DOWEL CAP. TIE BARS SHALL BE ANCHORED WITH AN APPROVED HIGH VISCOSITY EPOXY.
13. IF THE CONCRETE SLAB REMAINING NEXT TO A LONGITUDINAL OR TRANSVERSE JOINT IS LESS THAN 6 FEET [1829mm] AT ITS NARROWEST WIDTH, REMOVE AND REPLACE THE EXISTING CONCRETE TO THE JOINT.

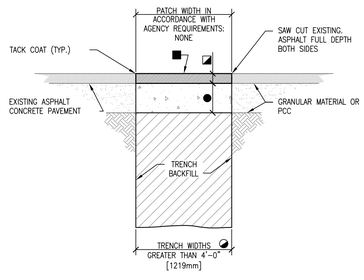
B1 UTILITY TRENCH PATCH NOTES
SCALE: NONE — VA CAD DETAIL #: SD321216-04



- FOR TRENCH WIDTHS EXCEEDING 4' [1219mm] REFER TO VA STANDARD DETAIL 32 12 16-02 "TYPE 2 UTILITY TRENCH PATCH". FOR TRENCH WHERE PORTLAND CEMENT CONCRETE (PCC) PAVEMENT EXISTS, REFER TO 32 12 16-03 "TYPE 3 UTILITY TRENCH PATCH".
- 2" [50mm] MINIMUM OR THICKNESS OF EXISTING PAVEMENT WHICHEVER IS GREATER.
- BITUMINOUS SURFACE TREATMENT (CHIPSEAL) REQUIRED ONLY FOR LONGITUDINAL TRENCHES WITH WIDTHS GREATER THAN 6' [1829mm].
- 4" [100mm] MINIMUM ABC OR THICKNESS OF EXISTING GRANULAR BASE COURSE MATERIALS (E.G. ABC & SELECT MATERIAL) WHICHEVER IS GREATER.

REFER TO VA STANDARD DETAIL 32 12 16-04 "UTILITY TRENCH PAVEMENT PATCH NOTES" FOR ADDITIONAL INFORMATION.

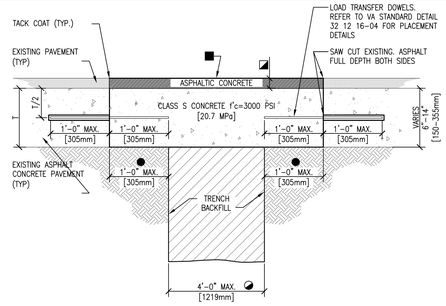
B2 TYPE 1 UTILITY TRENCH PATCH
SCALE: NONE — VA CAD DETAIL #: SD321216-01



- FOR TRENCH WIDTHS 4' [1219mm] OR LESS REFER TO VA STANDARD DETAIL 32 12 16-01 "TYPE 1 UTILITY TRENCH PATCH". FOR TRENCH WHERE PORTLAND CEMENT CONCRETE (PCC) PAVEMENT EXISTS, REFER TO 32 12 16-03 "TYPE 3 UTILITY TRENCH PATCH".
- 2" [50mm] MINIMUM OR THICKNESS OF EXISTING PAVEMENT WHICHEVER IS GREATER.
- BITUMINOUS SURFACE TREATMENT (CHIPSEAL) REQUIRED ONLY FOR LONGITUDINAL TRENCHES WITH WIDTHS GREATER THAN 6' [1829mm].
- 4" [100mm] MINIMUM ABC OR THICKNESS OF EXISTING GRANULAR BASE COURSE MATERIALS (E.G. ABC & SELECT MATERIAL) WHICHEVER IS GREATER. PORTLAND CEMENT CONCRETE (PCC) THICKNESS EQUAL TO EXISTING.

REFER TO VA STANDARD DETAIL 32 12 16-04 "UTILITY TRENCH PAVEMENT PATCH NOTES" FOR ADDITIONAL INFORMATION.

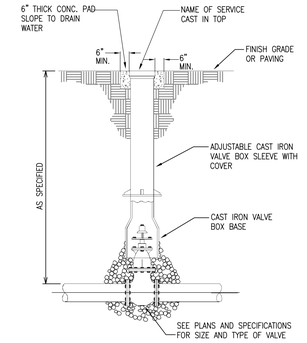
B3 TYPE 2 UTILITY TRENCH PATCH
SCALE: NONE — VA CAD DETAIL #: SD321216-02



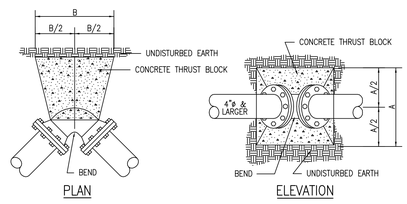
- FOR TRENCH WIDTHS EXCEEDING 4' [1219mm] DELETE LOAD TRANSFER DOWELS.
- 2" [50mm] MINIMUM OR THICKNESS OF EXISTING PAVEMENT WHICHEVER IS GREATER.
- BITUMINOUS SURFACE TREATMENT (CHIPSEAL) REQUIRED ONLY FOR LONGITUDINAL TRENCHES WITH WIDTHS GREATER THAN 6' [1829mm].
- REFER TO NOTE 13.ON VA STANDARD DETAIL 32 12 16-04 "UTILITY TRENCH PAVEMENT PATCH NOTES".

REFER TO VA STANDARD DETAIL 32 12 16-04 "UTILITY TRENCH PAVEMENT PATCH NOTES" FOR ADDITIONAL INFORMATION.

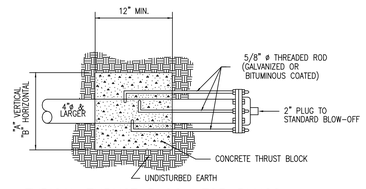
B4 TYPE 3 UTILITY TRENCH PATCH
SCALE: NONE — VA CAD DETAIL #: SD321216-03



B5 GATE VALVE
SCALE: NONE



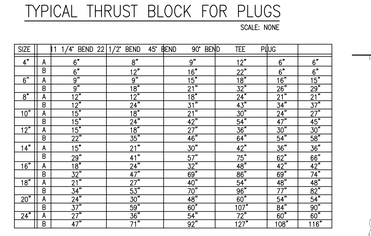
TYPICAL THRUST BLOCK FOR BENDS
SCALE: NONE



TYPICAL THRUST BLOCK FOR PLUGS
SCALE: NONE

SIZE		11 1/4° BEND 22	1/2° BEND	45° BEND	90° BEND	TEE	PLUG
4"	A	6"	6"	9"	12"	6"	6"
	B	6"	12"	16"	22"	6"	6"
6"	A	9"	9"	15"	18"	16"	15"
	B	9"	18"	21"	32"	26"	29"
8"	A	12"	12"	18"	24"	21"	21"
	B	12"	24"	31"	43"	34"	37"
10"	A	15"	18"	21"	30"	24"	27"
	B	15"	24"	42"	54"	47"	45"
12"	A	15"	18"	27"	36"	30"	30"
	B	22"	35"	46"	64"	54"	58"
14"	A	15"	21"	30"	42"	36"	36"
	B	29"	41"	57"	75"	62"	66"
16"	A	18"	24"	33"	48"	42"	42"
	B	32"	47"	69"	86"	69"	74"
18"	A	21"	27"	40"	54"	48"	48"
	B	34"	53"	70"	96"	77"	82"
20"	A	24"	30"	48"	60"	54"	54"
	B	37"	59"	60"	107"	84"	90"
24"	A	27"	36"	54"	72"	60"	60"
	B	47"	71"	92"	127"	108"	116"

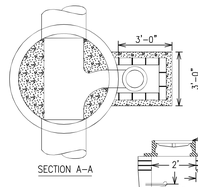
NOTES:
1. CARE SHALL BE TAKEN WHEN POURING THRUST BLOCKS TO KEEP THE FITTING BOLTS FREE FROM CONCRETE.
2. THRUST BLOCK DESIGN BASED ON SOIL COMPRESSIVE STRENGTH OF 2000 P.S.F.
3. DIMENSIONS MAY BE FIELD ADJUSTED BY THE ENGINEER TO SUIT VARYING SOIL CONDITIONS.

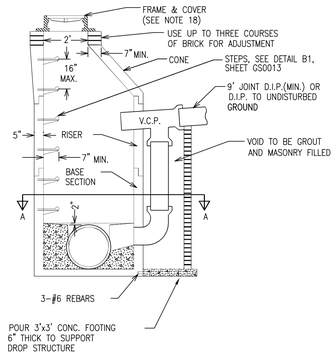


TYPICAL THRUST BLOCK FOR TEES
SCALE: NONE

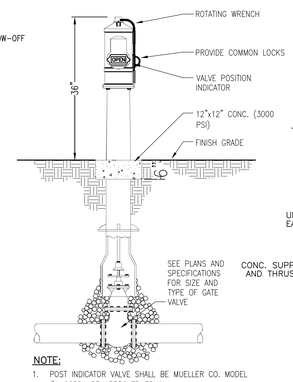
D6 THRUST BLOCK
SCALE: NONE

NOTES:
1. MANHOLE TO CONFORM TO ASTM C478, EXCEPT AS MODIFIED BELOW.
2. CARE MUST BE TAKEN TO FORM A SMOOTH FINISHED TROUGH FROM ENTRANCE PIPES TO EXIT PIPE, AND IN CURVED MANHOLES THE TROUGH MUST BE A SMOOTH CIRCULAR ARC TANGENT TO THE INSIDE WALLS OF THE PIPES AT THEIR ENDS.
3. PROTECTIVE WALL FOR OUTSIDE DROP SHALL BE A MINIMUM OF 4" MASONARY.
4. THE SLOPE OF THE OUTSIDE DROP SHALL BE 1/4 " PER FOOT.
5. WALL REINFORCING TO BE A MINIMUM OF 0.12 SQ. IN. PER LINEAL FOOT. TONGUE AND GROOVE OF JOINTS SHALL HAVE REINFORCING EQUAL IN AREA TO MINIMUM OF WALL SECTION.
6. ALL JOINTS SHALL CONFORM TO ASTM C443.
7. ALL MANHOLES OVER 3'-6" IN DEPTH SHALL BE PROVIDED WITH STEPS 1'-4" ON CENTERS. TOP SHALL BE LABELED "SANITARY SEWER".
8. ALL PIPE OPENINGS TO BE NO GREATER THAN O.D. OF PIPE AND ADDITIONALLY REINFORCED WITH A MINIMUM OF 0.20 SQ. IN. OF STEEL AT 90 DEGREES. PIPE TO BE CENTERED IN OPENINGS. ADDITIONAL REINFORCING NOT REQUIRED FOR CORED OPENINGS.
9. ALL SURFACES SHALL BE SMOOTH EVEN TEXTURED WITH A MINIMUM OF HONEYCOMB, FINS AND OTHER IMPERFECTIONS.
10. RAMSET MASONARY TIES EVERY 12 INCHES.
11. ALL CONCRETE TO BE 3000 P.S.I.
12. FOOTING FOR DROP MAY BE POURED AS PART OF THE MANHOLE BASE SLAB OR FIELD POURED AND TIED TO MANHOLE BASE WITH THREE EQUALLY SPACED #6 REBARS DOWELED INTO MANHOLE BASE 2" FROM TOP OF SLAB. GROUT INTO 8" DEEP HOLES WITH EXPANSION GROUT.
13. INVERTS IN 5' DIAMETER MANHOLES TO BE OVER WIDEST SHELF.
14. STEPS IN 5' DIAMETER MANHOLES TO BE OVER WIDEST SHELF.
15. OUTSIDE DROP SHALL NOT ENTER MANHOLE IN CONE SECTION.
16. LIFTING HOLES SHALL BE PLUGGED FROM OUTSIDE PRIOR TO BACKFILLING.
17. STRAIGHT WALL OF MANHOLE TO BE LOCATED OVER INFLUENT PIPE OR OVER WIDEST SHELF.
18. FOR FRAME AND COVER USE DEWEY BROS. INC. MODEL #MH-RCR-2010 OR APPROVED EQUAL. TOP SHALL BE LABELED "SANITARY SEWER".



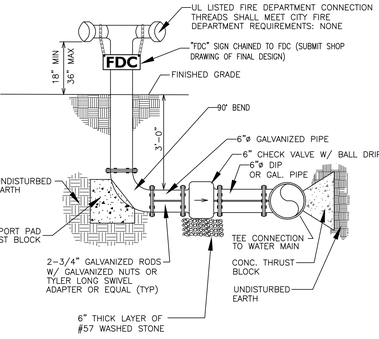


F11 OUTSIDE DROP SANITARY SEWER MANHOLE
SCALE: NONE

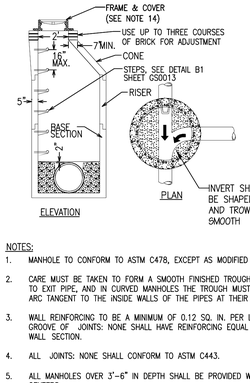


NOTE:
1. POST INDICATOR VALVE SHALL BE MUELLER CO. MODEL #A-20804 OR APPROVED EQUAL.
2. MONITORED BY FIRE ALARM.
3. POST INDICATOR VALVE SHALL HAVE A SUPERVISORY SWITCH ANNUNCIATE TO FIRE PANEL

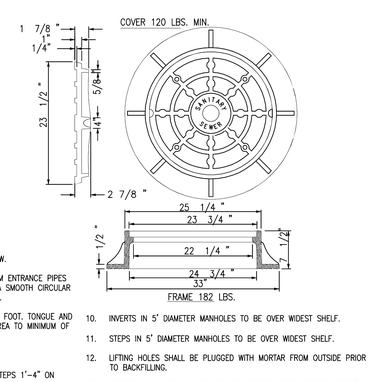
D7 POST INDICATOR VALVE
SCALE: NONE



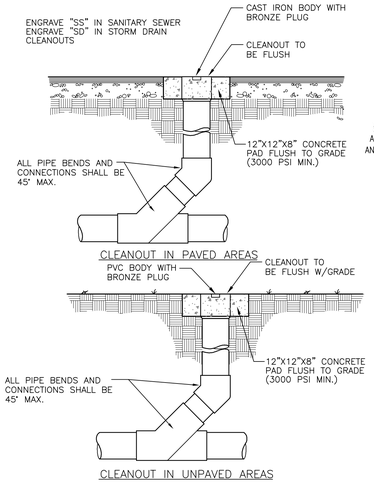
D8 FIRE DEPARTMENT CONNECTION
SCALE: NONE



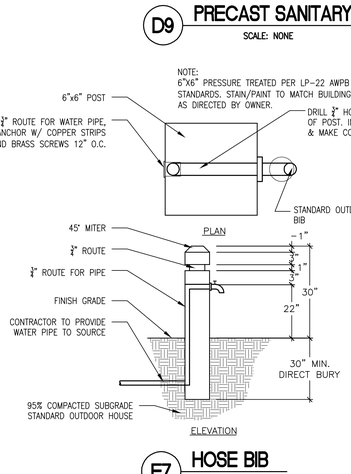
NOTES:
1. MANHOLE TO CONFORM TO ASTM C478, EXCEPT AS MODIFIED BELOW.
2. CARE MUST BE TAKEN TO FORM A SMOOTH FINISHED TROUGH FROM ENTRANCE PIPES TO EXIT PIPE, AND IN CURVED MANHOLES THE TROUGH MUST BE A SMOOTH CIRCULAR ARC TANGENT TO THE INSIDE WALLS OF THE PIPES AT THEIR ENDS.
3. WALL REINFORCING TO BE A MINIMUM OF 0.12 SQ. IN. PER LINEAL FOOT. TONGUE AND GROOVE OF JOINTS: NONE SHALL HAVE REINFORCING EQUAL IN AREA TO MINIMUM OF WALL SECTION.
4. ALL JOINTS: NONE SHALL CONFORM TO ASTM C443.
5. ALL MANHOLES OVER 3'-6" IN DEPTH SHALL BE PROVIDED WITH STEPS 1'-4" ON CENTERS.
6. ALL PIPE OPENINGS TO BE NO GREATER THAN O.D. OF PIPE AND ADDITIONALLY REINFORCED. WITH A MINIMUM OF 0.20 SQ. IN. OF STEEL AT 90 DEGREES. PIPE TO BE CENTERED IN OPENINGS. ADDITIONAL REINFORCING NOT REQUIRED FOR CORED OPENINGS.
7. ALL SURFACES SHALL BE SMOOTH EVEN TEXTURED WITH A MINIMUM OF HONEYCOMB, FINS AND OTHER IMPERFECTIONS.
8. RAMSET MASONRY TIES EVERY 12 INCHES.
9. ALL CONCRETE TO BE 3000 P.S.I.
10. INVERTS IN 5' DIAMETER MANHOLES TO BE OVER WIDEST SHELF.
11. STEPS IN 5' DIAMETER MANHOLES TO BE OVER WIDEST SHELF.
12. LIFTING HOLES SHALL BE PLUGGED WITH MORTAR FROM OUTSIDE PRIOR TO BACKFILLING.
13. STRAIGHT WALL OF MANHOLE TO BE LOCATED OVER INFLUENT PIPE OR OVER WIDEST SHELF.
14. FOR FRAME AND COVER USE DEWEY BROS. INC. MODEL #MH-RCR-2010 OR APPROVED EQUAL. COVER SHALL BE LABELED "SANITARY SEWER".



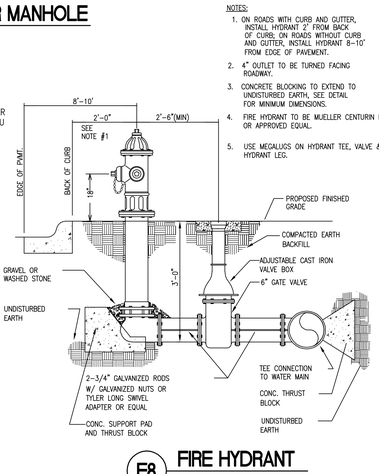
D9 PRECAST SANITARY SEWER MANHOLE
SCALE: NONE



D10 CLEANOUT
SCALE: NONE



F7 HOSE BIB
SCALE: NONE



NOTES:
1. ON ROADS WITH CURB AND GUTTER, INSTALL HYDRANT 2' FROM BACK OF CURB; ON ROADS WITHOUT CURB AND GUTTER, INSTALL HYDRANT 8-10' FROM EDGE OF PAVEMENT.
2. 4" OUTLET TO BE TURNED FACING ROADWAY.
3. CONCRETE BLOCKING TO EXTEND TO UNDISTURBED EARTH, SEE DETAIL FOR MINIMUM DIMENSIONS.
4. FIRE HYDRANT TO BE MUELLER CENTURIN II OR APPROVED EQUAL.
5. USE MEGALUGS ON HYDRANT TEE, VALVE & HYDRANT LEG.

F8 FIRE HYDRANT
SCALE: NONE

100% CONSTRUCTION DOCUMENTS

REVISION NO.	REVISION DESCRIPTION		
Revisions		By	Date

Department of Veterans Affairs
William Jennings Bryan Dorn
VA Medical Center
6439 Garners Ferry Road
Columbia, SC 29209

SEAL — NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 27355 MARCUS J. KING 4/30/12

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Design & Management Solutions for the Built Environment
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HSH PROJECT # 11015

Recommended Approvals:	
1. MEDICAL DIRECTOR	6. OPERATIONS SERVICE LINE MANAGER
2. ASSOCIATE DIRECTOR	7. INFECTION CONTROL MANAGER
3. CHIEF OF STAFF	8. SAFETY MANAGER
4. ASSOC. DIRECTOR	9. GENERAL ENGINEER
5. SERVICE LINE MGRS.	10. COTR

Drawing Title: UTILITY DETAILS
Project Title: REPLACE BOILER PLANT/ COGEN/CHP
Date: April 30, 2012
Project Number: 544-11-101
★ BUILDING IS FULLY SPRINKLERED ★
Drawn | Building Number: 21 | AutoCAD File Name
Checked | Reviewed | Const. Contract No.
DRAWING No.: GS0010
Veterans Affairs