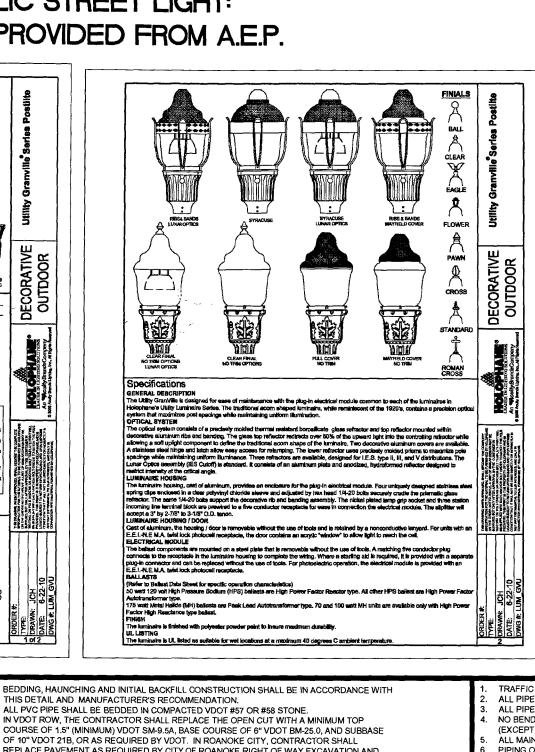
REQUIREMENTS

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL



SM-9.5A SURFACE

DEPTH VARIES

LOCATION OF TRACE WIRE WITH

TRACER WIRE NOT REQUIRED FOR

SEE DETAIL G-4

TYPICAL GRAVITY SANITARY SEWER

NON-DETECTABLE

WARNING TAPE.

24" ABOVE AND

AT A MINIMUM O

6" BELOW GRAD

BEDDING: FOR WATERLINES, INSTALL BEDDING STONE TO SPRING LINE OF PIPE AT A MINIMUM, OR PER MANUFACTURER'S RECOMMENDATION, FOR SEWER LINES, BEDDING SHALL BE MINIMUM 6" ABOVE PIPE.

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

BEDDING AND BACKFILL UNDER PAVEMENT AND IN RIGHT-OF-WAY

WIDTH OF TRENCH EXCAVATION ----

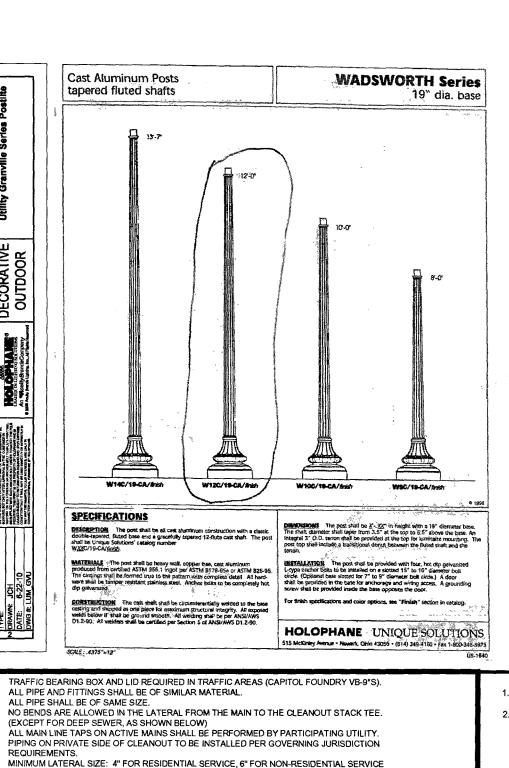
THICKNESS, TO BE

Contech Engineered Solutions LLC PO Box 960

Ashland, VA 23005

Phone: (513) 645-7000

www.ContechES.com



MINIMUM COVER FOR ALL SEWER LATERALS SHALL BE THREE (3') FEET.

ACCORDANCE WITH THIS DETAIL) WHEN MAINTENANCE OCCURS.

GRADE FINISHED GRADE -

--- SOLID GLUE CAP

MINIMUM GRADE

HORIZONTAL SECTION SHALL

EXTEND A MINIMUM OF 5' OR

AS DIRECTED BY THE

PROPERTY OWNER RESPONSIBLE FOR INSTALLING CLEANOUT ON PROPERTY LINE (IN

LOWEST SERVED FINISHED FLOOR ELEVATION SHALL BE A MINIMUM OF THREE FEET (3')

ABOVE THE TOP OF THE MAIN AT THE POINT WHERE THE SERVICE LATERAL CONNECTS TO

SDR 35 (MINIMUM 4" Ø)

40/SDR 35 4" MINIMUM

#57 OR EQUIVALENT

& SPIGOT BEND \_\_\_\_\_\_\_\_

45°MA

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

SANITARY SEWER LATERAL

45° OR 22.5° BELL

CLEAN OUT BOX AND LID

(SET TO FINISHED GRADE)

TEE NOT ACCEPTABLE

TEE, WYE, TEE/WYE OR

COMBINATION OF WYE & 45

SIZED AS REQUIRED

TO LATERAL

✓─ SDR 35

ASPHALT SURFACE LAYER, MIN. 2"

\_\_ D + 24" MN. \_\_\_ 4" MIN. -

2. PIPE BEDDING MATERIAL SHALL BE CRUSHER RUN (VDOT NO. 25 OR 26) OR OPEN GRADED AGGREGATE (VDOT NO. 57

4. OPTIONAL CONCRETE ENCASEMENT FOR POWER OR COMMUNICATION CONDUIT. PROVIDE A MINIMUM OF 4" CONCRETE COVER FROM ALL SIDES OF CONDUIT.

5. BACKFILL MATERIAL SHALL BE VDOT NO. 21A AGGREGATE, PLACED IN LOOSE LIFTS NOT EXCEEDING 6°, AND COMPACTED TO AT LEAST 95% MAXIMUM DRY DENSITY WITHIN 2 PERCENTAGE POINTS OF OPTIMUM MOISTURE (VTM-1) WITH THE USE OF MECHANICAL TAMPERS OR VIBRATORY ROLLERS. WATER COMPACTION IS NOT PERMITTED. TYPE I SELECT MATERIAL MAY BE USED AS BACKFILL UPON PRIOR APPROVAL BY THE CITY ENGINEER. MATERIAL CLASSIFICATION SHALL BE PERFORMED ON THE ACTUAL SOIL TO VERIFY THAT SOIL MEETS VDOT SPECIFICATIONS FOR TYPE I SELECT MATERIAL BY A QUALIFIED TESTING LABORATORY AND TEST RESULTS SHALL BE CERTIFIED BY A VIRGINIA REGISTERED PROFESSIONAL ENGINEER. DENSITY REQUIREMENS ARE THE SAME AS ABOVE, HOWEVER, MOISTURE CONTENT FOR SOILS MAY WITH WITHIN 20% OF OPTIMUM.

ALL TESTING SHALL BE PERFORMED AND CERTIFIED BY A GEOTECHNICAL ENGINEER OR A VDOT-CERTIFIED TECHNICIAN. RESULTS SHALL BE PROVIDED TO THE INSPECTOR WITHIN 24 HOURS OF TESTING COMPLETION. THE COST OF ALL TESTING IS THE RESPONSIBILITY OF THE PERMITTEE. FIELD DENSITY TESTING METHODS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO PERFORMING ANY TESTING.

6. ALL PAVEMENTS SHALL BE RESTORED TO MATCH DEPTHS OF EXISTING SURFACE, BASE, AND AGGREGATE LAYERS. THE ASPHALT SURFACE LAYER SHALL BE A MINIMUM OF 2" THICK AND EXTEND OVER UNDISTURBED BASE A MINIMUM OF 12" ON ALL SIDES. ALL PAVEMENT MATERIALS SHALL MEET VOOT REQUIREMENTS FOR SURFACE MIX (SM-9.5AL, SM-9.5A, OR SM-12.5D), BASE MIX (BM-25), AND STONE AGGREGATE (21A OR 21B). PLANT CERTIFICATION FOR EACH MIX INCORPORATED INTO THE WORK SHALL BE PROVIDED TO THE INSPECTOR. WHEN MATCHING NON-STANDARD MATERIALS, THE INSPECTOR SHALL DETERMINE AN ACCEPTABLE MATERIAL.

7. THE REPAIR SHALL BE RECTANGULAR AND SAW CUT IN STRAIGHT, UNIFORM LINES THAT ARE ALIGNED WITH THE STREET CENTERLINE. WHEN EDGES OF PAVEMENT HAVE BEEN UNDERMINED, PAVEMENT SHALL BE REMOVED TO A NEAT LINE 12" BEYOND THE UNDERMINED AREA. THE FINISHED PATCH SURFACE SHALL BE WITHIN 1/4 INCH AT ANY POINT ACROSS THE PATCH AS IT RELATES TO THE SURROUNDING STREET SURFACE.

UTILITY TRENCH REPAIR IN PAVEMENT

USING VDOT NO. 21A AGGREGATE

B. A FULL COVERAGE TACK COAT IS REQUIRED ON ALL SURFACES THAT WILL CONTACT THE NEW SURFACE LAYER.

OFFICE OF THE CITY ENGINEER - ROANOKE, VIRGINIA

1. ALL PAVEMENTS SHALL BE SAW CUT WITH NEAT, UNIFORM LINES PRIOR TO EXCAVATION.

S. MAXIMUM DEPTH OF PIPE BEDDING MATERIAL IF USING OPEN GRADED AGGREGATE FOR BEDDING.

68, 7, OR 8). ALTERNATE MATERIAL MUST BE APPROVED BY THE CITY ENGINEER.

NOTE 2 -

APPROVED Collinu

NOTES:

MIN. 1/10 D J

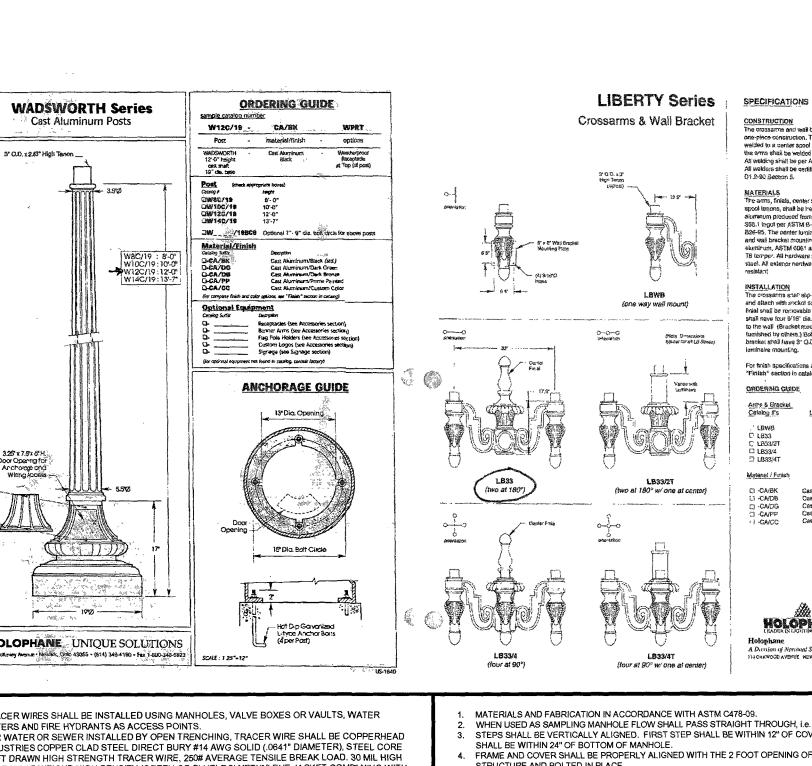
BITUMINOUS BASE

AGGREGATE

BASE

NOTE 5

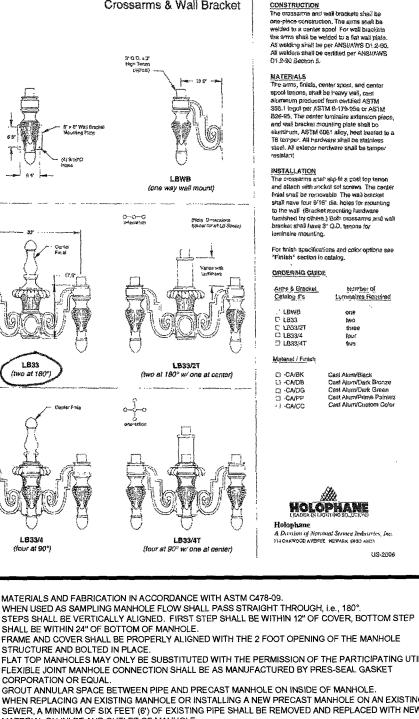
-NOTE 4



NOTE 1, 7, 8-

NOTE 2

MIN. 1/10 D -



BASE

NOTE 5

- D + 24" MIN. --

2. PIPE BEDDING MATERIAL SHALL BE CRUSHER RUN (VDOT NO. 25 OR 26) OR OPEN GRADED AGGREGATE (VDOT NO.

5. BACKFILL MATERIAL SHALL BE FLOWABLE FILL MEETING THE REQUIREMENTS OF VDOT SPECIAL PROVISION FOR FLOWABLE BACKFILL THE MATERIAL MUST BE PLANT-CERTIFIED TO PROVIDE A 28-DAY COMPRESSIVE STRENGTH BETWEEN 30 AND 200 PSI. A CERTIFICATE OF MIX DESIGN MUST BE SUBMITTED TO THE INSPECTOR PRIOR TO PLACING THE MATERIAL N THE TRENCH.

A MINIMUM OF FOUR 6x12 TEST CYLINDERS SHALL BE TAKEN EVERY 50 CY OF PLACEMENT. CYLINDERS SHALL BE TESTED BY A QUALIFIED TESTING LABORATORY FOR 28-DAY STRENGTH. RESULTS SHALL BE PROVIDED TO THE INSPECTOR WITHIN 24 HOURS OF TESTING COMPLETION. THE COST OF ALL TESTING IS THE RESPONSIBILITY OF THE PERMITTEE. IF THE REPORT INDICATES THE COMPRESSIVE STRENGTHS ARE NOT BETWEEN 30 AND 200 PSI, THE PERMITTEE WILL BE RESPONSIBLE FOR REMOVING AND REPLACING THE BACKFILL WITH ACCEPTABLE BACKFILL AND COMPLETING THE RESTORATION OF THE STREET AT NO COST TO THE CITY.

ALL PAVEMENTS SHALL BE RESTORED TO MATCH DEPTHS OF EXISTING SURFACE, BASE, AND AGGREGATE LAYERS.

THE ASPHALT SURFACE LAYER SHALL BE A MINIMUM OF 2" THICK AND EXTEND OVER UNDISTURBED BASE A MINIMUM OF 12" ON ALL SIDES. ALL PAVEMENT MATERIALS SHALL MEET VOOT REQUIREMENTS FOR SURFACE MIX (SM-9.5AL, SM-9.5A, OR SM-12.5D), BASE MIX (BM-25), AND STONE AGGREGATE (21A OR 21B). PLANT CERTIFICATION FOR EACH MIX INCORPORATED INTO THE WORK SHALL BE PROVIDED TO THE INSPECTOR. WHEN MATCHING NON-STANDARD MATERIALS, THE INSPECTOR SHALL DETERMINE AN ACCEPTABLE MATERIAL.

7. THE REPAIR SHALL BE RECTANGULAR AND SAW CUT IN STRAIGHT, UNIFORM LINES THAT ARE ALIGNED WITH THE STREET CENTERLINE. WHEN EDGES OF PAVEMENT HAVE BEEN UNDERMINED, PAVEMENT SHALL BE REMOVED TO A NEAT LINE 12" BEYOND THE UNDERMINED AREA. THE FINISHED PATCH SURFACE SHALL BE WITHIN 1/4 INCH AT ANY POINT ACROSS THE PATCH AS IT RELATES TO THE SURROUNDING STREET SURFACE.

8. A FULL COVERAGE TACK COAT IS REQUIRED ON ALL SURFACES THAT WILL CONTACT THE NEW SURFACE LAYER.

OFFICE OF THE CITY ENGINEER — ROANOKE, VIRGINIA

APPROVED

OTT BENNER

UTILITY TRENCH REPAIR IN PAVEMENT

4. OF

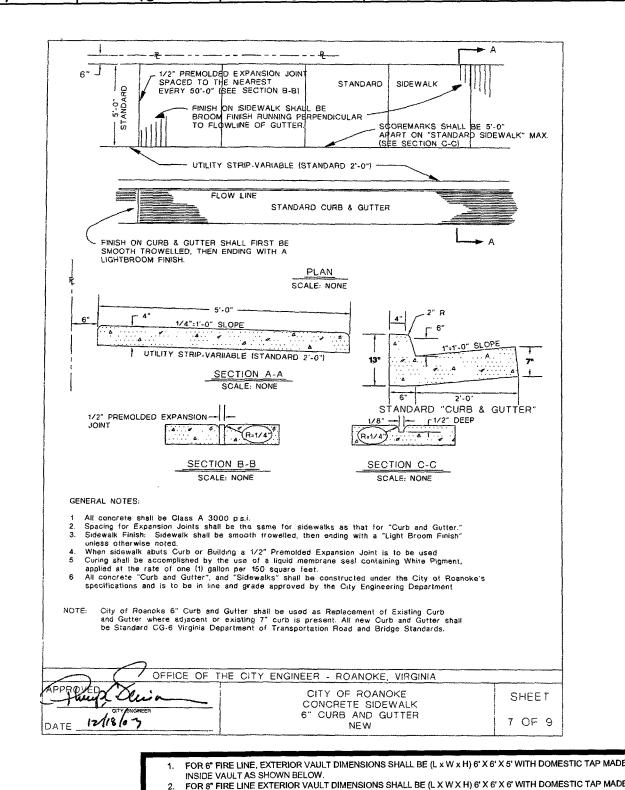
USING CONTROLLED DENSITY FILL

I. ALL PAVEMENTS SHALL BE SAW CUT WITH NEAT, UNIFORM LINES PRIOR TO EXCAVATION

57, 68, 7, OR 8). ALTERNATE MATERIAL MUST BE APPROVED BY THE CITY ENGINEER.

3. MAXIMUM DEPTH OF PIPE BEDDING MATERIAL IF USING OPEN GRADED AGGREGATE FOR BEDDING.

OPTIONAL CONCRETE ENCASEMENT FOR POWER OR COMMUNICATION CONDUIT. PROVIDE A MINIMUM OF 4"
CONCRETE COVER FROM ALL SIDES OF CONDUIT.



ISOLATION OF DOMESTIC METER.

ACCESS HATCH TO BE CENTERED OVER PIPING AND LADDER

> TAPPING SADDLE AND BALL VALVE

> > SMOOTH HOLE

WITH LINK SEAL -

DETECTOR CHECK

ALUM, ACCESS HATO

DOUBLE DOOR GUTTER-FRAME H20 RATED

CONCRETE

STANDARD MANHOLE COVER

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

LOCKING TARS) AND CHECK VALVE ON OUTLET.

OUTSIDE VAULT. BALL VALVE WITH LOCKING TABS SHALL BE PROVIDED INSIDE VAULT TO ALLOW FOR

DOMESTIC SHALL BE TYPE K COPPER WITH GRIP JOINT FITTINGS, BALL VALVE AT TAPPING SADDLE (WITH

"UNI FLANGE" ADAPTOR FLANGE, OR APPROVED EQUAL, OR FLANGED - PLAIN END PIPING REQUIRED FOR

VAULT TO BE INSTALLED ON MIN. 6" COMPACTED VDOT #57 STONE WITH FILTER FABRIC PLACED BETWEEN

BOTTOM OF VAULT AND STONE BEDDING. FILTER FABRIC TO EXTEND VERTICALLY A MINIMUM OF 6" ON AL

DOMESTIC METER -7

PLAN VIEW

CHECK VALVE -

(see notes

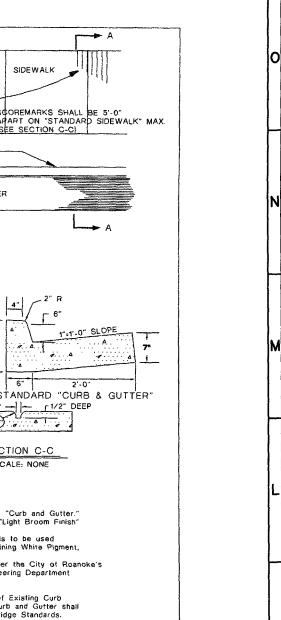
1 1/2" HATCH

WITH FLANGED END CONNECTIONS, BYPASS ASSEMBLY, AND ONE OS&Y GATE VALVE.

LOK-PAK METER Z

DOMESTIC METER TO BE SUPPLIED BY OWNER AND INSTALLED BY VENDOR.

SINGLE DETECTOR CHECK VALVE SHALL BE WILKINS 310 DALM , WATTS ES-SS07F - BP, OR APPROVED EQUA



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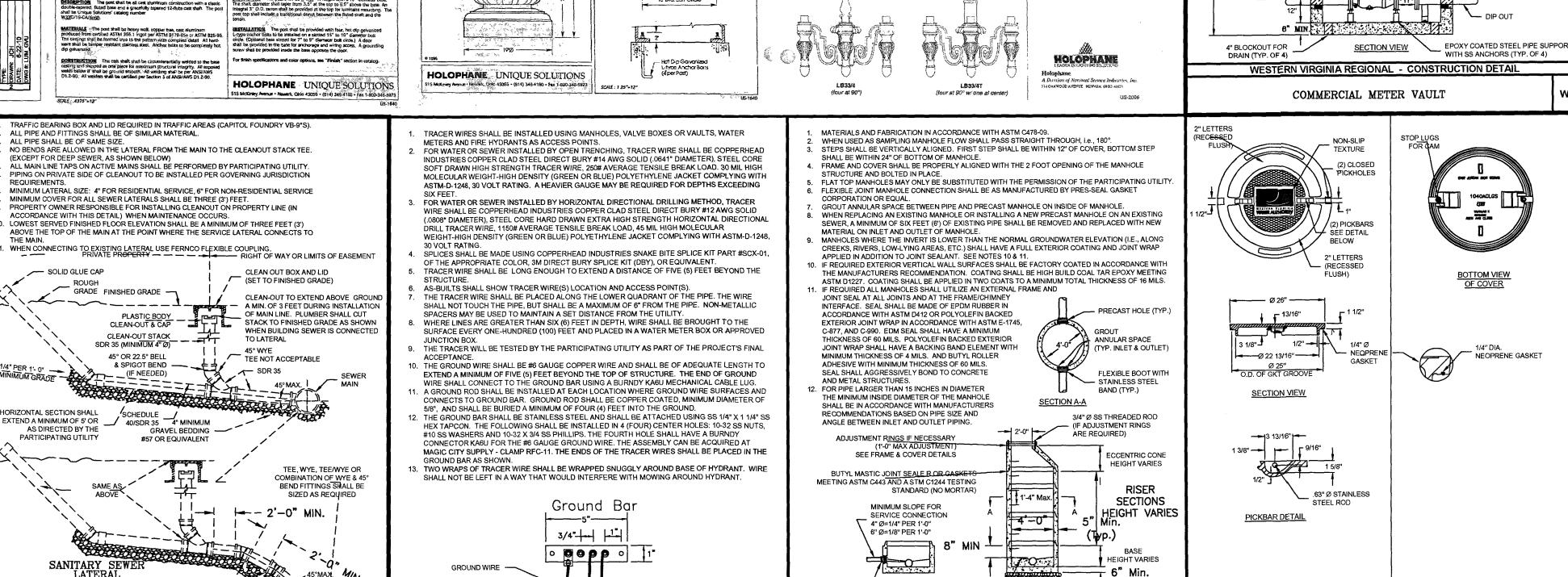
Roanoke, VA 24018 540-772-9580 FAX 540-772-8050

1 him CHRISTOPHER P. BURNS Lic. No.047338 4/6/2015

1/16/2015 1"=20' SCALE

**REVISIONS:** 2/6/2015 3/4/2015 3/30/2015 4/3/2015

SHEET NO.



WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

' STANDARD MANHOLE

FOR PIPE 15" OR SMALLER (FOR DEPTHS UP TO 15 FEET) STONE BASE (6" MIN. DEPTH)

WITH FLEXIBLE

OT & STAINLESS

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

STEEL BAND