
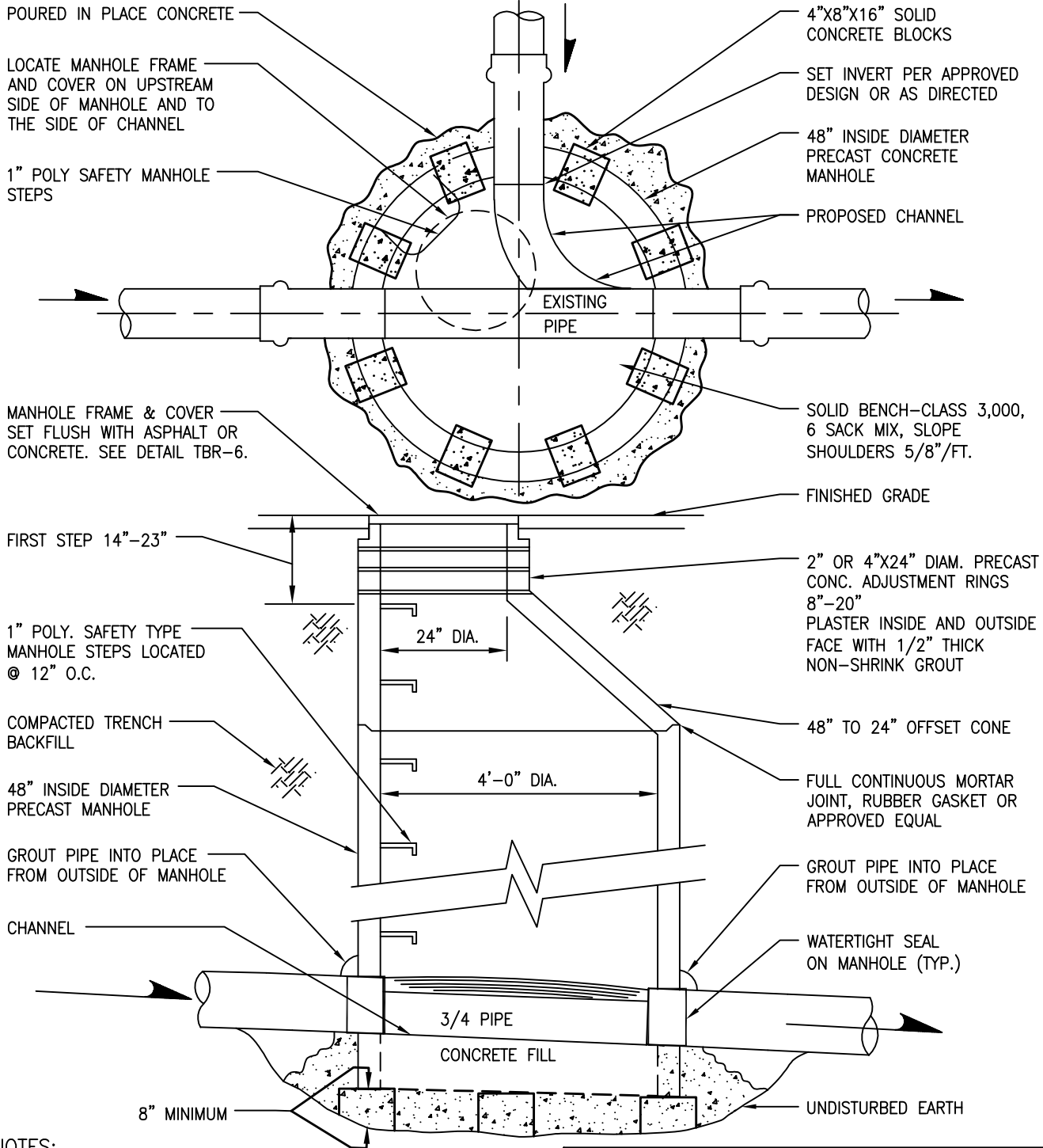


**NOTES:**

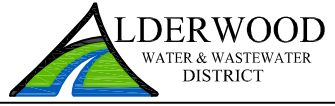
1. MANHOLES SHALL BE WATER TIGHT. GROUT PICK HOLES INSIDE AND OUT.
2. SURFACE RESTORATION IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND LOCAL REGULATORY AUTHORITY.
3. IN NON PAVED AREAS INSTALL 6 FT. DIAMETER CONCRETE PAD 6 INCHES THICK AROUND FRAME AND COVER. UNLESS OTHERWISE DIRECTED BY THE DISTRICT.

 <p><b>ALDERWOOD</b> WATER &amp; WASTEWATER DISTRICT</p>	
<p><b>STANDARD PRECAST MANHOLE</b></p>	
DATE: 11-2015	DWG. S-3
<p>APPROVED BY: <u>DLH</u> DISTRICT ENGINEER</p>	



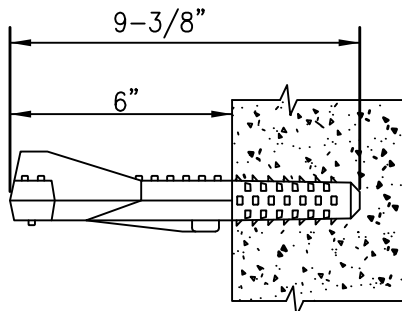
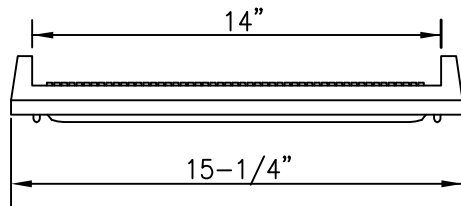
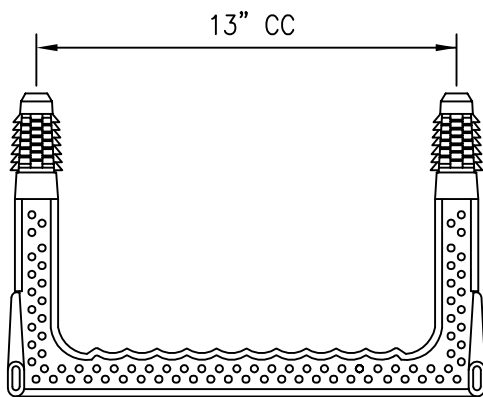
**NOTES:**

1. MANHOLES SHALL BE WATER TIGHT. GROUT PICK HOLES INSIDE AND OUT.
2. SURFACE RESTORATION IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND LOCAL REGULATORY AUTHORITY.
3. IN NON PAVED AREAS INSTALL 6 FT. DIAMETER CONCRETE PAD 6 INCHES THICK AROUND FRAME AND COVER. UNLESS OTHERWISE DIRECTED BY THE DISTRICT.
4. TOP OF EXISTING PIPE SHALL BE CUT AND REMOVED ONLY AFTER NEW PIPE IS TESTED AND CCTV'D.



**SADDLE MANHOLE**

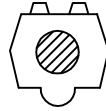
DATE: 11-2015	DWG. S-3A
APPROVED BY: <u>DLH</u> DISTRICT ENGINEER	



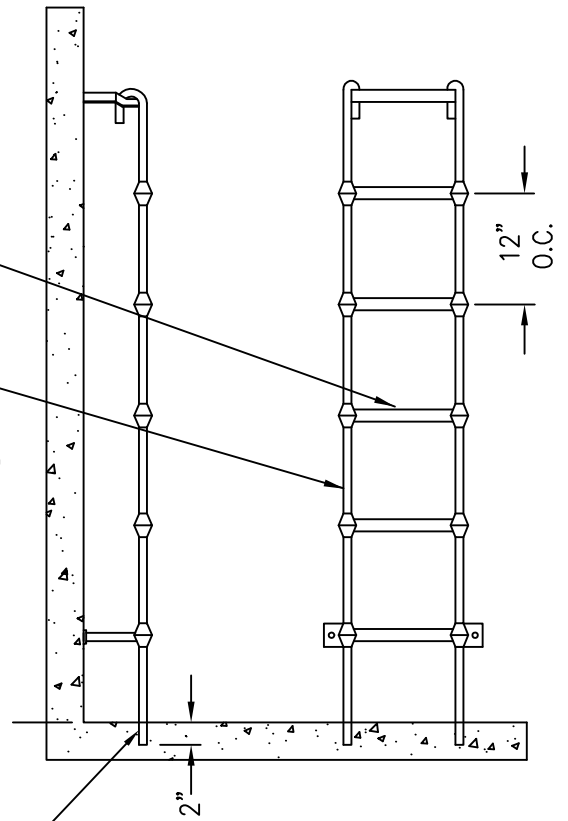
POLYPROPYLENE STEP, LANE NO. P-14938 OR EQUAL

**POLYPROPYLENE**  
**MANHOLE STEPS**

RUNG  
1/2" GRADE 60



RAIL  
9/16" ROUND BAR



PROVIDE 2" MINIMUM PENETRATION INTO MANHOLE BASE. PROVIDE MEANS TO SECURELY ANCHOR INTO MANHOLE BASE AND BOLT LADDER TO SIDE OF MANHOLE

LADDER SHALL CONFORM TO COPOLYMER POLYPROPYLENE ASTM D-4101 1/2" GRADE 60 REINFORCING BAR A-615 9/16" COLD DRAWN BAR C-1018

**POLYPROPYLENE LADDER**



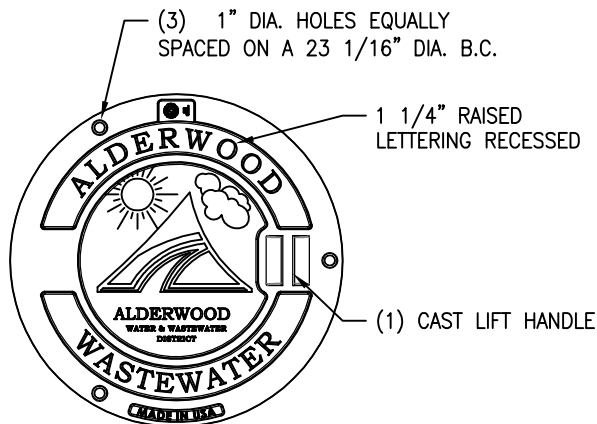
**LDERWOOD**  
WATER & WASTEWATER  
DISTRICT

**POLYPROPYLENE LADDER  
AND MANHOLE STEPS**

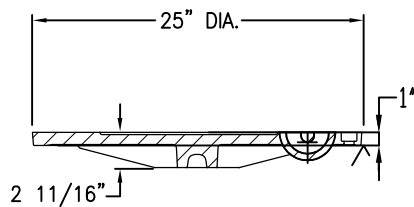
DATE: 11-2015

DWG. S-4

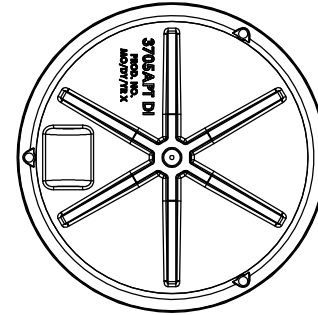
APPROVED BY: DLH  
DISTRICT ENGINEER



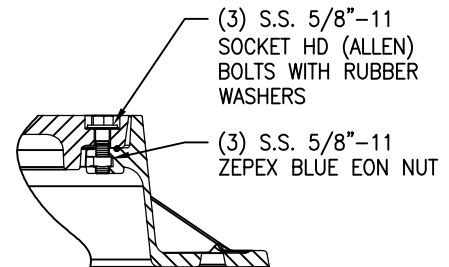
**PLAN VIEW**



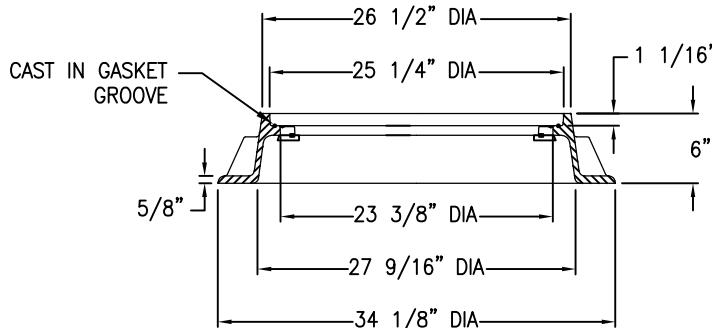
**COVER SECTION**



**BOTTOM VIEW**



**BOLT DETAIL**



**FRAME SECTION**

**NOTES**

1. MATERIALS ARE DUCTILE IRON COVER ASTM A536, AND GRAY IRON IRON FRAME ASTM A48 CL35B PRODUCT# 3715ZPT.
2. MANUFACTURED IN THE USA BY EAST JORDAN IRON WORKS MANUFACTURING CO. HEAVY DUTY MANHOLE ASSEMBLY (H20 AND HS20 LOADINGS) OR APPROVED EQUAL.
3. MANHOLES LOCATED WITHIN NON-PAVED AREAS SHALL REQUIRE THE INSTALLATION OF GREEN FIBERGLASS MARKER POSTS 5' IN LENGTH WITH DECAL STATING "CAUTION SEWER PIPELINE". THE BURIED END SHALL BE "BARBED" OR AN ANCHOR KIT SHALL BE USED. INSTALL A CONCRETE COLLAR 6' DIAMETER 6" THICK UNLESS OTHERWISE DIRECTED BY THE DISTRICT.
4. 3/4" STRIP OF CONSEAL CD-101 MANHOLE RING AND COVER SEALANT REQUIRED BETWEEN COVER AND FRAME WHERE MANHOLE IS SUSCEPTIBLE TO INUNDATION OR THERE IS THE POTENTIAL FOR EXCESSIVE ODORS OR AS DIRECTED BY THE DISTRICT.
5. IN SIDEWALKS, RAMPS OR CROSSWALKS USE LID COMPLIANT TO AMERICANS WITH DISABILITIES ACT REQUIREMENTS.
6. SEE DETAIL TBR-6 FOR ADJUSTMENT DETAILS.

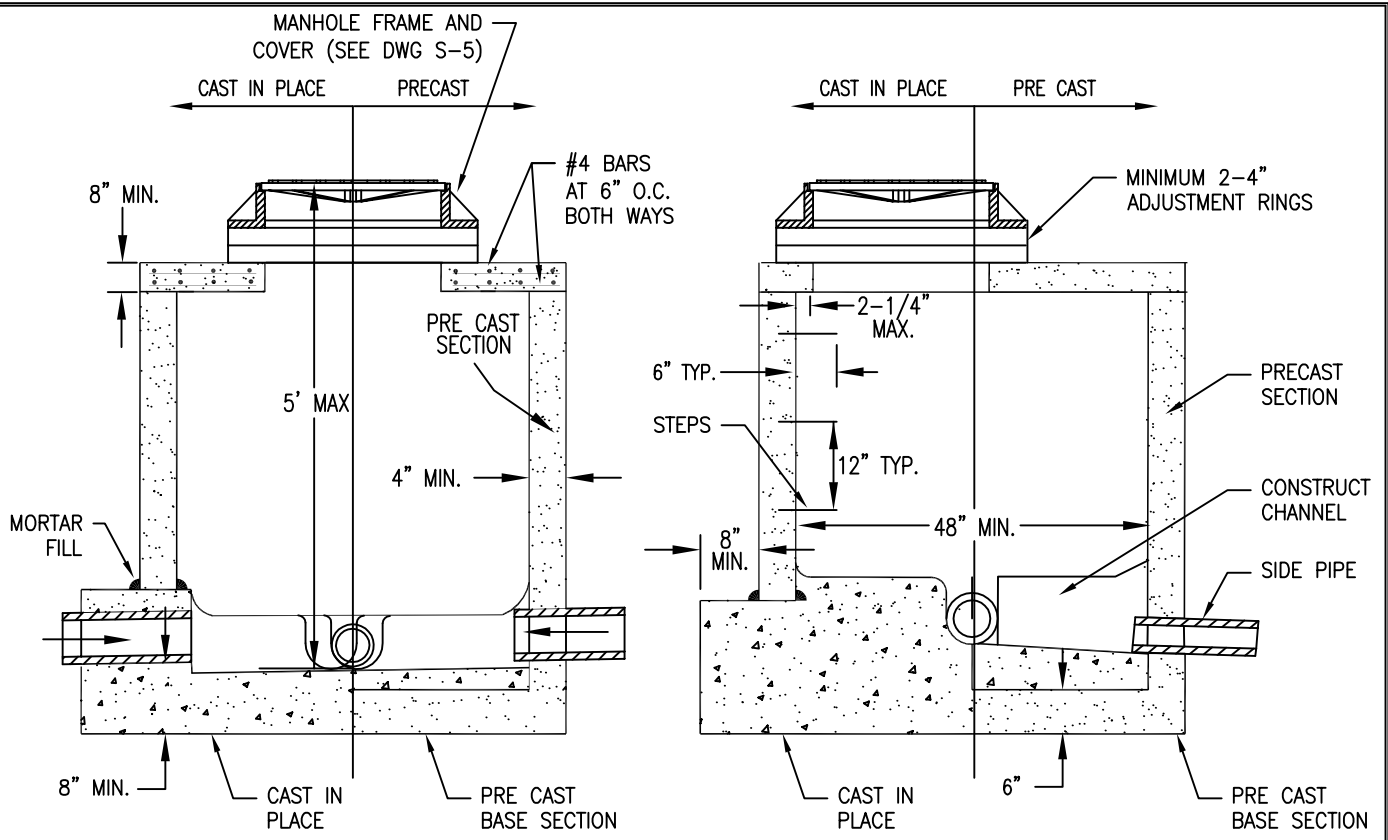


**MANHOLE FRAME AND COVER**

DATE: 11-2015

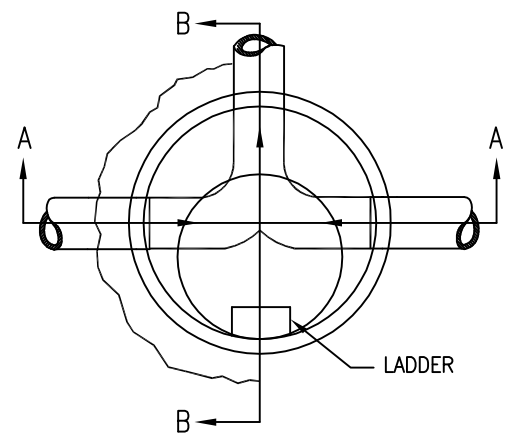
DWG. S-5

APPROVED BY: DLH  
DISTRICT ENGINEER




SECTION A-A

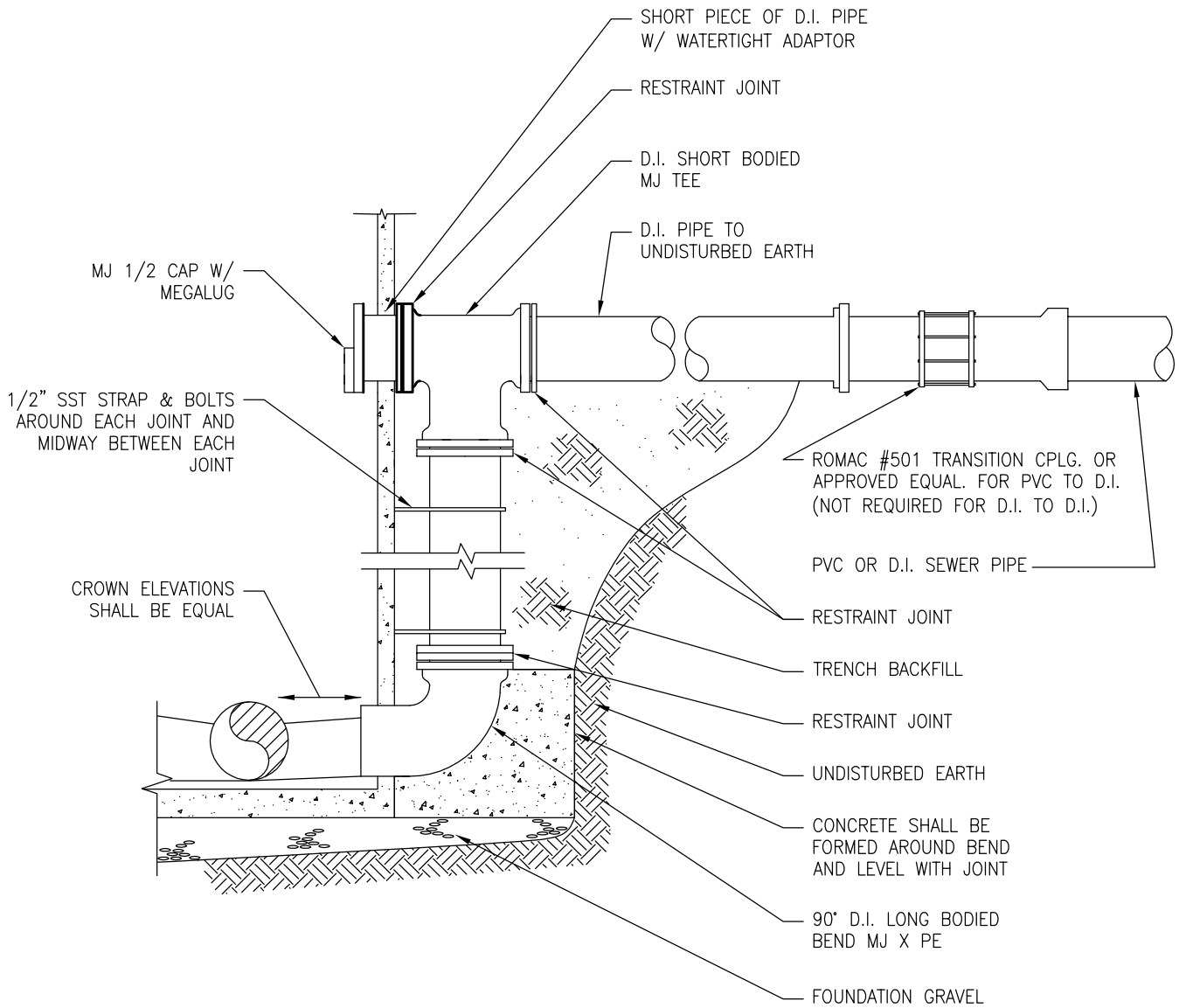
SECTION B-B



**NOTES:**

1. ONLY USED WITH SPECIAL WRITTEN APPROVAL FROM THE DISTRICT.
2. PRE CAST MANHOLE SECTION AND FLAT SLAB COVER SHALL CONFORM TO WSDOT STD DWG B-23C.
3. ALL MANHOLE JOINTS SHALL BE GROUTED WITH NON-SHRINK GROUT TO INSURE A WATER TIGHT SEAL AND THE INTERIOR SHALL BE TRAWLED TO A BROOM FINISH.
4. ALL CHANNELIZATION OF MANHOLE BASES SHALL BE COVERED BY A RIGID MATERIAL DURING CONSTRUCTION OF ROAD SURFACES TO PREVENT FOREIGN MATERIALS FROM ENTERING SYSTEM.
5. WHEN CONSTRUCTING MANHOLE OVER AN EXISTING MAIN, SUPPORT PIPE(S) AND MANHOLE SECTION WITH CONCRETE BLOCK AND POUR BASE AS SHOWN. REMOVE TOP 1/2 OF MAIN PIPE AND FORM SIDE CHANNEL(S) AS REQUIRED.

 <b>ALDERWOOD</b> WATER & WASTEWATER DISTRICT	
<b>SHALLOW MANHOLE</b> UNDER 5' INVERT TO COVER	
DATE: 11-2015	DWG. S-6
APPROVED BY: <u>DLH</u> DISTRICT ENGINEER	



NOTE:

1. ALL D.I. JOINTS TO BE RESTRAINED WITH MEGALUG TYPE DEVICES OR APPROVED EQUAL.
2. ALL D.I. PIPE AND FITTINGS TO BE EPOXY LINED.
3. ENTIRE MANHOLE INTERIOR TO BE COATED WITH RAVEN 400 OR EQUAL, UNLESS APPROVED OTHERWISE BY THE DISTRICT.



**DROP MANHOLE CONNECTION**

DATE: 05-2017

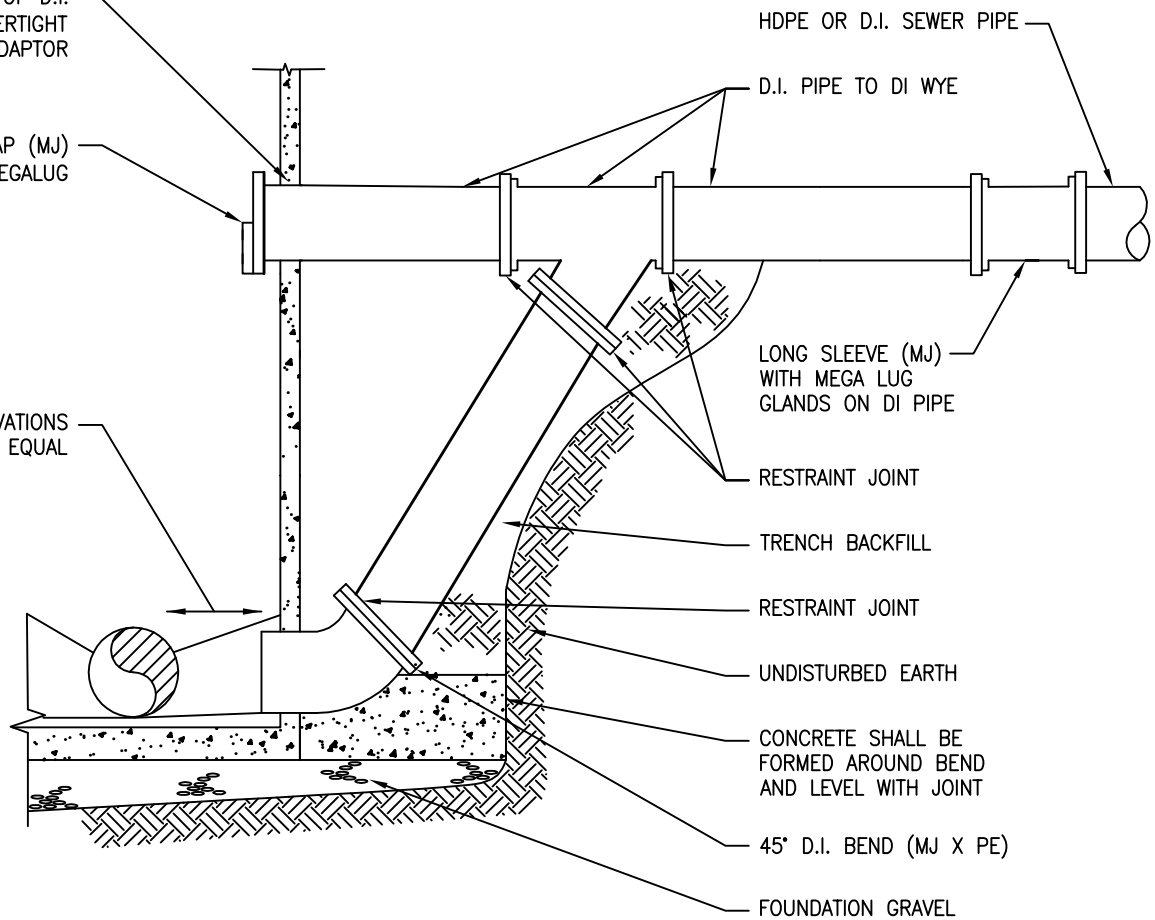
DWG. S-8

APPROVED BY: DLH  
DISTRICT ENGINEER

SHORT PIECE OF D.I.  
PIPE W/ WATERTIGHT  
ADAPTOR

1/2 CAP (MJ)  
W/ MEGALUG

CROWN ELEVATIONS  
SHALL BE EQUAL



NOTES:

1. ALL D.I. JOINTS TO BE RESTRAINED WITH MEGALUG TYPE DEVICES OR APPROVED EQUAL.
2. ALL D.I. PIPE AND FITTINGS TO BE CERAMIC EPOXY LINED.
3. ENTIRE MANHOLE INTERIOR TO BE COATED WITH RAVEN 400 OR EQUAL.



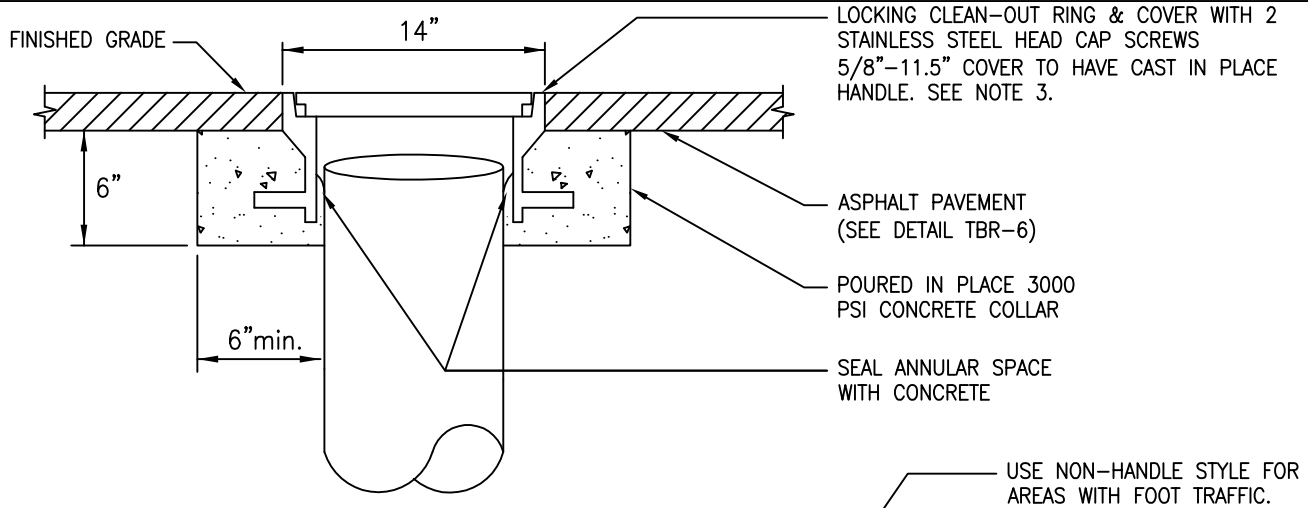
**FORCE MAIN DROP MANHOLE  
CONNECTION**

DATE: 11-2015

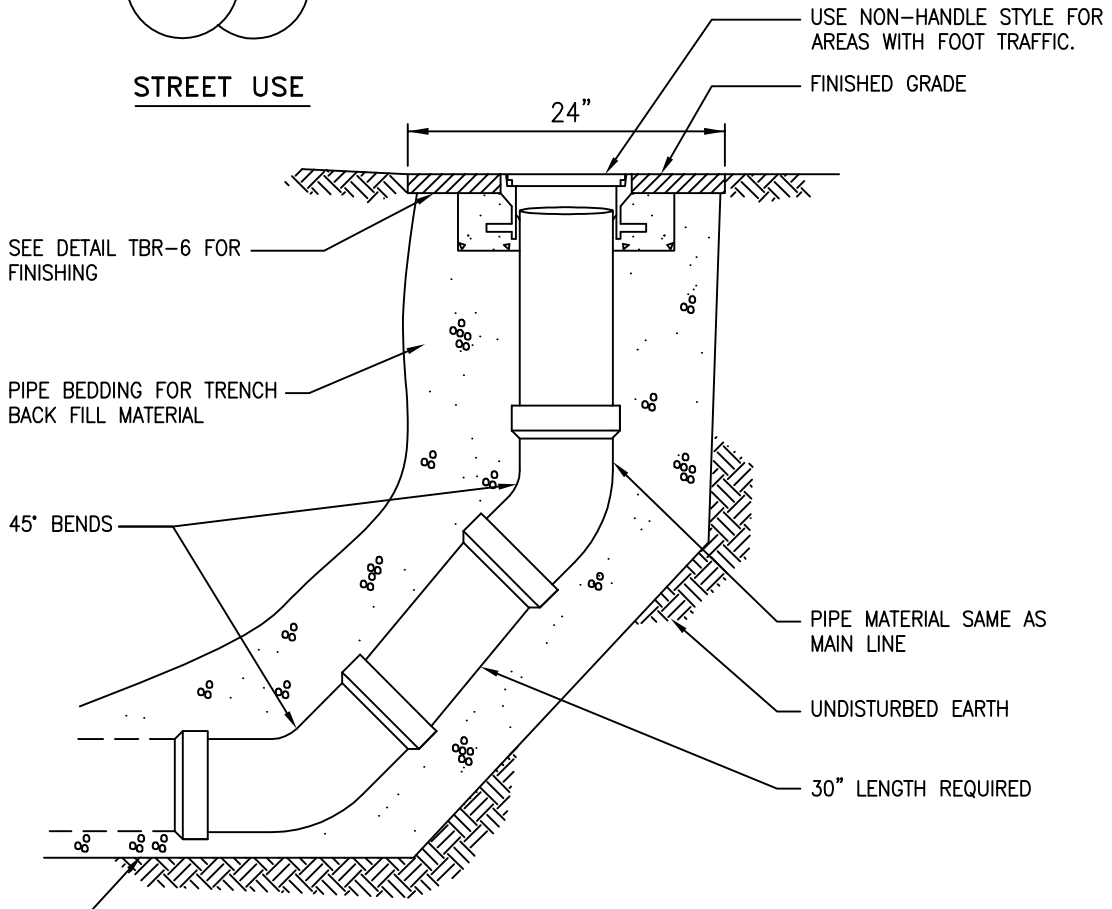
DWG. S-8A

APPROVED BY: \_\_\_\_\_ DLH \_\_\_\_\_  
DISTRICT ENGINEER

NTS




**STREET USE**



**EASEMENT USE**

**NOTES:**

1. RESTORATION SHALL BE IN ACCORDANCE WITH DETAIL TBR-6.
2. TRENCH BACKFILL SHALL BE COMPACTED AND TESTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND LOCAL REGULATORY REQUIREMENTS.
3. RING AND COVER SHALL BE EJIW MFG. CO. MODEL NO. 00366107.

 <b>LDERWOOD</b> WATER & WASTEWATER DISTRICT	
<b>LAMPHOLE / CLEANOUT</b>	
DATE: 11-2015	DWG. S-9
APPROVED BY: <u>DLH</u> DISTRICT ENGINEER	



WRAP METALLIC MARKER TAPE AROUND SERVICE MARKER BOARD. 4 WRAPS MINIMUM. RUN UP BOARD TO SURFACE. MIN 4 WRAPS AT TOP ALSO.

INSTALL BURIED METALLIC MARKER TAPE 3' ABOVE PIPE. TAPE SHOULD READ "CAUTION BURIED SEWER BELOW". CARLTON IND., BLACKBURN MFG. CO. OR EQUAL.

6" SEWER LATERAL SHALL BE THE SAME MATERIAL AS THE MAIN LINE (PVC, EPOXY LINED D.I., C900 OR HDPE)

6" TEE ON SEWER MAIN

SEWER MAIN

FINISHED GRADE

PROPERTY LINE  
PERMANENT EASEMENT LINE

2" X 4" BOARD SERVICE MARKER

4' MIN.

6' MINIMUM  
VARIES

3'

APPROVED WATERTIGHT PLUG ON CAP WITH "SEWER" IN BLACK PERMANENT MARKER

MINIMUM SLOPE 2% OR 0.02 FT./FT.

45 DEGREES (100%) MAXIMUM SLOPE FOR PVC (2% MINIMUM SLOPE)

CONCRETE POURED IN PLACE FOR SEWER LATERAL OVER 15% SLOPE

1'

**NOTES:**

1. 2" X 4" BOARD – LENGTH AS REQUIRED IN EVEN FOOT INCREMENTS. PAINT TOP 4' ABOVE GROUND WITH WHITE PAINT. STENCIL IN BLOCK LETTERS THE WORD "SEWER" & TOTAL LENGTH OF THE 2" X 4" BOARD. LETTERING TO BE 3" IN HEIGHT. TOP OF 2" X 4" SHALL BE 4' ABOVE GROUND LEVEL.
2. FOR DUCTILE IRON PIPE IN RIGHT-OF-WAY & EASEMENTS, USE RESTRAINING DEVICE AS SPECIFIED BY THE DISTRICT.
3. PROVIDE DISTANCE IN FEET FROM TEE TO DOWNSTREAM MANHOLE TO THE DISTRICT.



**SEWER LATERAL  
NEW CONSTRUCTION**

DATE: 11-2015

DWG. S-10

APPROVED BY: DLH  
DISTRICT ENGINEER

WRAP METALLIC MARKER TAPE AROUND SERVICE MARKER BOARD. 4 WRAPS MINIMUM. RUN UP BOARD TO SURFACE. MIN 4 WRAPS AT TOP ALSO.

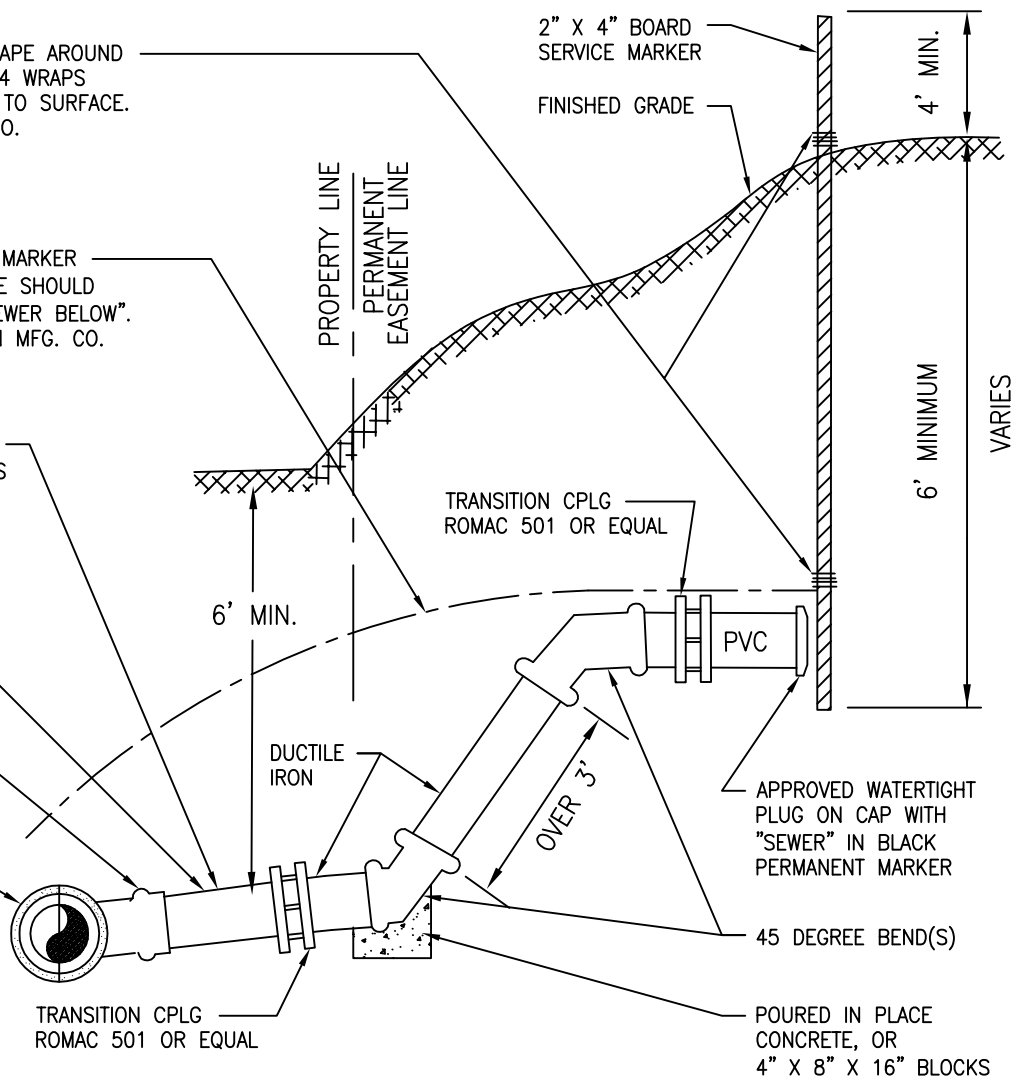
INSTALL BURIED METALLIC MARKER TAPE 3' ABOVE PIPE. TAPE SHOULD READ "CAUTION BURIED SEWER BELOW". CARLTON IND., BLACKBURN MFG. CO. OR EQUAL.

6" SEWER LATERAL SHALL BE THE SAME MATERIAL AS THE MAIN LINE (PVC, EPOXY LINED D.I., C900 OR HDPE)

MINIMUM SLOPE 0.02 FT./FT.

6" TEE ON SEWER MAIN


SEWER MAIN



**NOTES:**

1. 2" X 4" BOARD – LENGTH AS REQUIRED IN EVEN FOOT INCREMENTS. PAINT TOP 5' WITH WHITE PAINT. STENCIL IN BLOCK LETTERS THE WORD "SEWER" & TOTAL LENGTH OF THE 2" X 4" BOARD. LETTERING TO BE 3" IN HEIGHT. TOP OF 2" X 4" SHALL BE 4' ABOVE GROUND LEVEL.
2. IF SLOPE OF PIPE IS OVER 45 DEGREES, AND LENGTH BETWEEN VERTICAL BENDS IS GREATER THAN 3 FEET, TRANSITION TO DUCTILE IRON USING APPROVED GASKETED TRANSITION COUPLINGS.
3. FOR DUCTILE IRON PIPE IN RIGHT-OF-WAY & EASEMENTS, USE RESTRAINING DEVICE AS SPECIFIED BY THE DISTRICT.
4. NO VERTICAL BENDS IN THE RIGHT-OF-WAY OR EASEMENTS.
5. PROVIDE DISTANCE IN FEET FROM TEE TO DOWNSTREAM MANHOLE TO THE DISTRICT.

6. ALTERNATE SEWER LATERAL IS INTENDED FOR THOSE SPECIAL CASES WHERE THE LOCATION AND GRADE OF THE STRUCTURE DOES NOT PROVIDE FOR A NORMAL SEWER INSTALLATION AND SHALL REQUIRE APPROVAL BY THE DISTRICT PRIOR TO INSTALLATION.

	
<b>ALTERNATE SEWER LATERAL NEW CONSTRUCTION</b>	
DATE: 11-2015	DWG. S-10A
APPROVED BY: <u>DLH</u> DISTRICT ENGINEER	

SEE DETAIL TBR-6 FOR SURFACE RESTORATION

EXISTING GROUND

INSTALL BURIED METALLIC MARKER TAPE 3' ABOVE PIPE. TAPE SHOULD READ "CAUTION BURIED SEWER BELOW". CARLTON IND., BLACKBURN MFG. CO. OR EQUAL.

ROTATE BEND TO ACHIEVE MIN. 2% SLOPE

22 1/2 DEGREE DI BEND TO TRANSITION TO PVC

6" SEWER LATERAL PIPE MAINTAIN DUCTILE IRON PIPE TO PROPERTY OR EASEMENT LINE. TRANSITION TO PVC AT THAT POINT (SEE SIDE SEWER DETAIL)

6" DUCTILE IRON SEWER WYE

ROTATE BEND TO ACHIEVE MIN. 2% SLOPE

PIPE BEDDING FOR TRENCH BACKFILL

15' MIN.

6" DUCTILE IRON SEWER PIPE A.W.W.A. C 151 CLASS 50

8" MJ X 6" MJ EPOXY LINED D.I. TEE

DUCTILE IRON SEWER PIPE AS SPECIFIED

UNDISTURBED EARTH

TRENCH WIDTH IN ACCORDANCE WITH TRENCH SECTION DETAIL

**NOTES:**

1. USED ONLY IN EASEMENTS WITH APPROVAL FROM DISTRICT.
2. TRENCH BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND LOCAL REGULATORY REQUIREMENTS.
3. SIDE SEWERS TO BE INSTALLED IN ACCORDANCE WITH STANDARD SIDE SEWER DETAIL.
4. ALL PIPE FITTINGS TO BE RESTRAINED JOINT.
5. ALL PIPE FITTINGS TO BE EPOXY LINED.



**STANDING SEWER LATERAL  
NEW CONSTRUCTION**

DATE: 11-2015

DWG. S-10B

APPROVED BY: DLH

DISTRICT ENGINEER

WRAP METALLIC MARKER TAPE AROUND SERVICE MARKER BOARD. 4 WRAPS MINIMUM. RUN UP BOARD TO SURFACE. MIN 4 WRAPS AT TOP ALSO.

INSTALL BURIED METALLIC MARKER TAPE 3' ABOVE PIPE. TAPE SHOULD READ "CAUTION BURIED SEWER BELOW". CARLTON IND., BLACKBURN MFG. CO. OR EQUAL.

6" SEWER LATERAL PIPE MATERIAL SHALL MATCH THE MAIN LINE (EXCEPT CONCRETE) PVC, EPOXY LINED DI, C900 OR HDPE AS SPECIFIED BY DISTRICT.

6" TAPPING TEE/SADDLE ON SEWER MAIN SEE NOTE 4

SEWER MAIN

FINISHED GRADE

PROPERTY LINE  
PERMANENT EASEMENT LINE

2" X 4" BOARD SERVICE MARKER

4'-0"

6'-0" MINIMUM  
VARIES

APPROVED WATERTIGHT PLUG ON CAP WITH "SEWER" IN BLACK PERMANENT MARKER

MINIMUM SLOPE 2%

45 DEGREES (100%) MAXIMUM SLOPE FOR PVC 2 % MINIMUM SLOPE

CONCRETE POURED IN PLACE FOR TAPPED SIDE SEWER OVER 15% SLOPE

1'-0"

**NOTES:**

1. 2" X 4" BOARD – LENGTH AS REQUIRED IN EVEN FOOT INCREMENTS. PAINT TOP 5' WITH WHITE PAINT. STENCIL IN BLOCK LETTERS THE WORD "SEWER" & TOTAL LENGTH OF THE 2" X 4" BOARD. LETTERING TO BE 3" IN HEIGHT. TOP OF 2" X 4" SHALL BE 4' ABOVE GROUND LEVEL.
2. CONTRACTOR TO PROVIDE ALL MATERIALS, TRAFFIC CONTROL, PERMITS, FLAGGING, SHORING AND MISCELLANEOUS WORK TO TAP THE MAIN AND INSTALL THE SIDE SERVICE.
3. FOR DUCTILE IRON PIPE IN RIGHT- OF-WAY & EASEMENTS, USE RESTRAINING DEVICE AS SPECIFIED BY THE DISTRICT.
4. FOR TAPS ON:  
DI USE SST ROMAC, SMITH BLAIR, OR FORD TAPPING TEE. PVC OR CONCRETE, USE ROMAC CB TEE W/SST CLAMP, HDPE CONSULT THE DISTRICT.
5. PROVIDE DISTANCE IN FEET FROM TEE/SADDLE TO DOWNSTREAM MANHOLE TO THE DISTRICT.

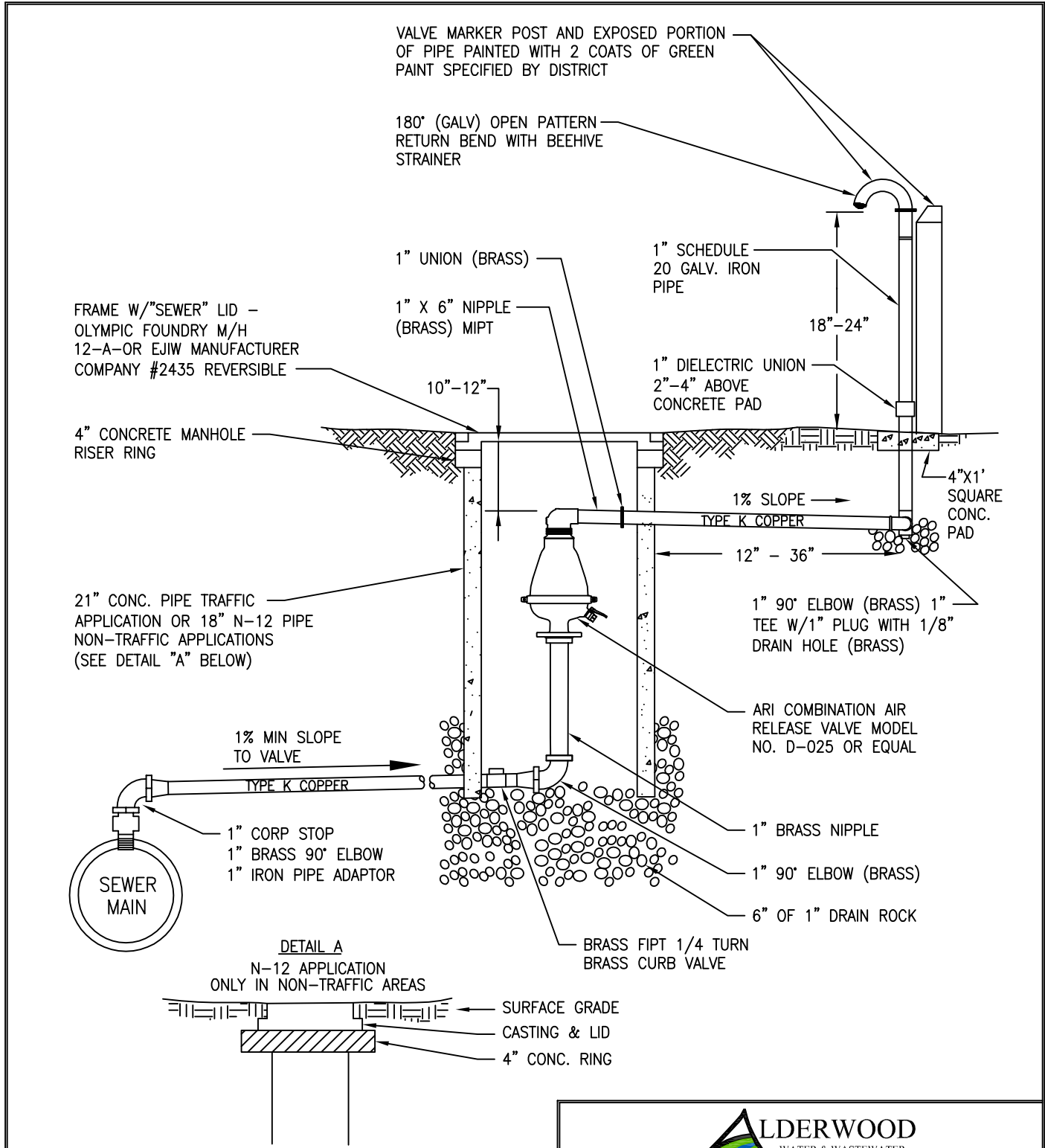


**SEWER LATERAL  
EXISTING MAINS**

DATE: 11-2015


DWG. S-11

APPROVED BY: DLH  
DISTRICT ENGINEER

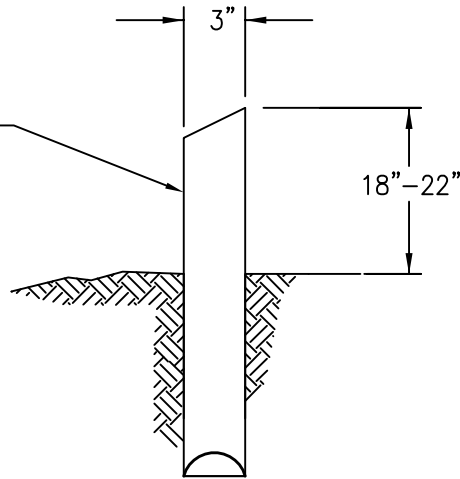


**NOTES:**

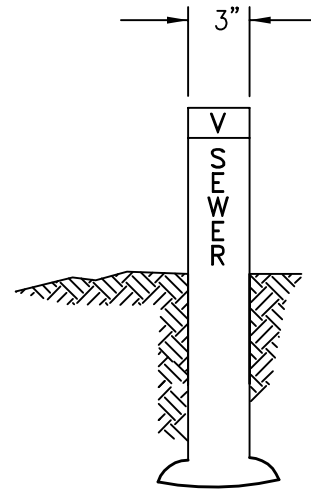
1. INSTALL AT HIGH POINTS IN THE WATER MAIN. LOCATIONS AS DIRECTED BY THE DISTRICT.
2. LOCATE AIR RELEASE DISCHARGE PIPE NEAR PROPERTY LINE OR AS DIRECTED BY THE DISTRICT.
3. LENGTH OF 1" TYPE K COPPER AS DIRECTED BY THE DISTRICT.

 <p><b>ALDERWOOD</b> WATER &amp; WASTEWATER DISTRICT</p>	
<p><b>1" WASTEWATER COMBINATION AIR AND VACUUM RELEASE VALVE</b></p>	
DATE: 11-2015	DWG. S-12
<p>APPROVED BY: <u>DLH</u> DISTRICT ENGINEER</p>	

REINFORCED CONCRETE MARKER  
POST STAMPED WITH "V" AND  
DISTANCE TO VALVE TO THE  
NEAREST FOOT STENCILLED WITH  
WHITE 2" NUMERALS



SIDE



FRONT

VALVE MARKER POST

NOTES:

1. INSTALL AT ALL VALVES NOT LOCATED WITHIN PAVED AREA.
2. THE LETTER V AND THE WORD SEWER SHALL BE CAST IN THE FACE OF THE MARKER FACING THE VALVE WITH THE DISTANCE TO THE VALVE PAINTED ON THE MARKER WITH WHITE ENAMEL PAINT.
3. PAINT THE ABOVE GROUND PORTION WITH 2 COATS OF GREEN PAINT SPECIFIED BY DISTRICT.
4. MARKERS SHALL BE DIRECT BURY.
5. 66" CARSONITE, HANSON TRI-FLEX, OR EQUAL MAY BE USED UPON APPROVAL BY THE DISTRICT.



**ALDERWOOD**  
WATER & WASTEWATER  
DISTRICT

**SEWER VALVE MARKER POST**

DATE: 11-2015

DWG. S-13

APPROVED BY: DLH  
DISTRICT ENGINEER