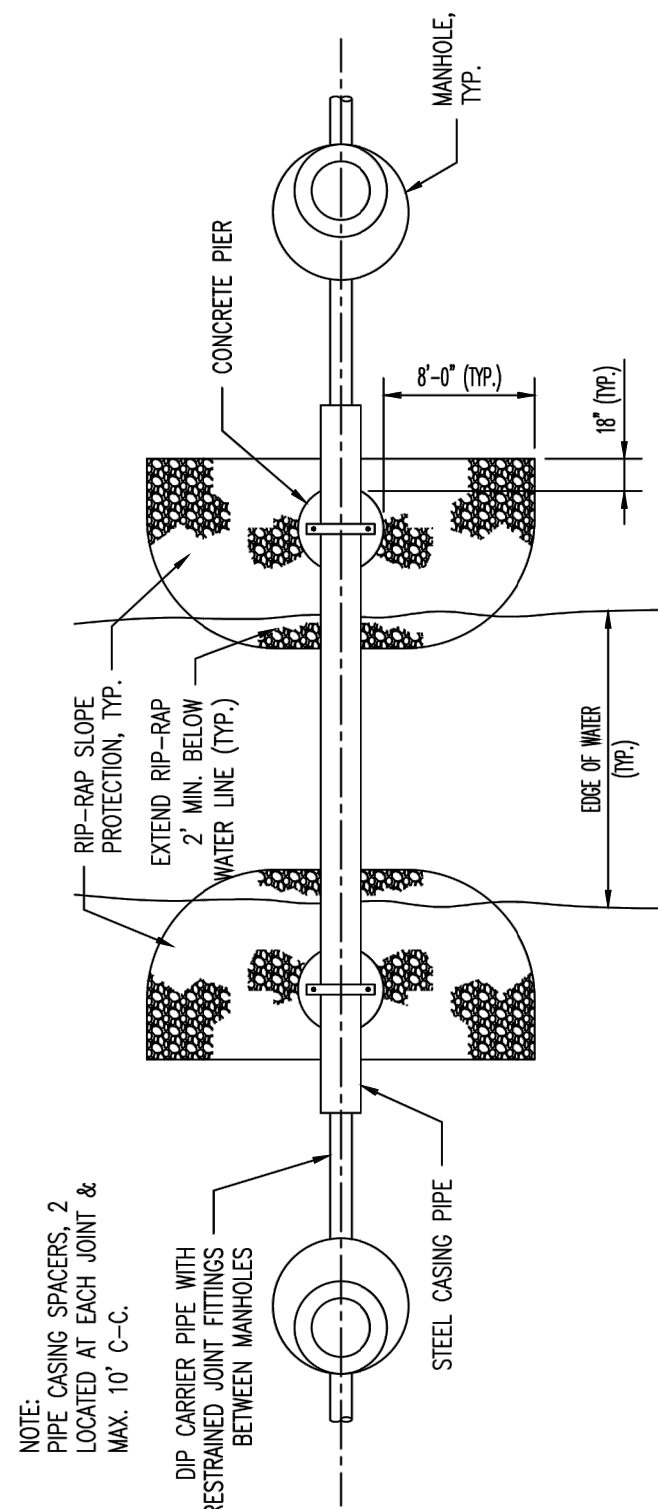


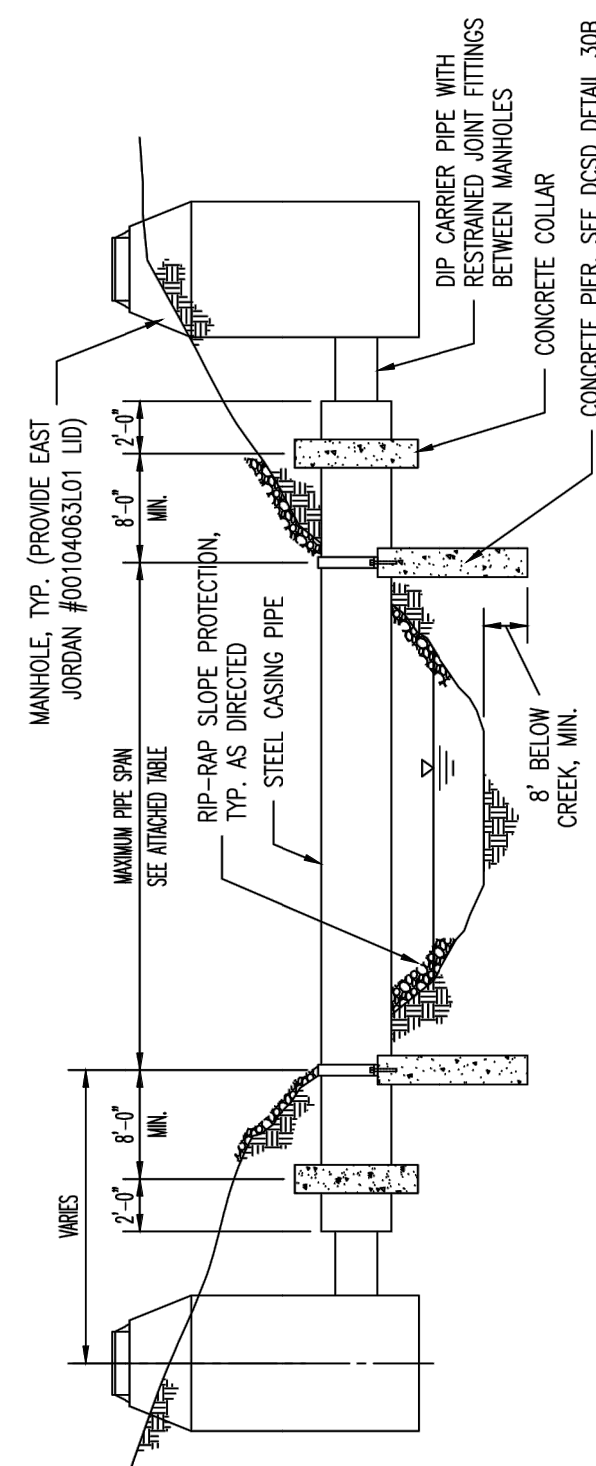
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| ISSUE | DATE / REMARKS                   |
|-------|----------------------------------|
| 1     | 5-22-2020 Initial Submittal      |
| 2     | 7-14-2020 City Comment Revisions |
| 3     | 6-13-2020 City Comment Revisions |
| 4     | 9-01-2020 City Comment Revisions |
| 5     | 12-02-2020 City Approval         |



## Duckett Creek Sanitary District

ARIEL CROSSING TYPICAL PLAN  
Dwn By: MSM App By: KA Detail No. 30A  
Ckd By: Date: JULY 2016

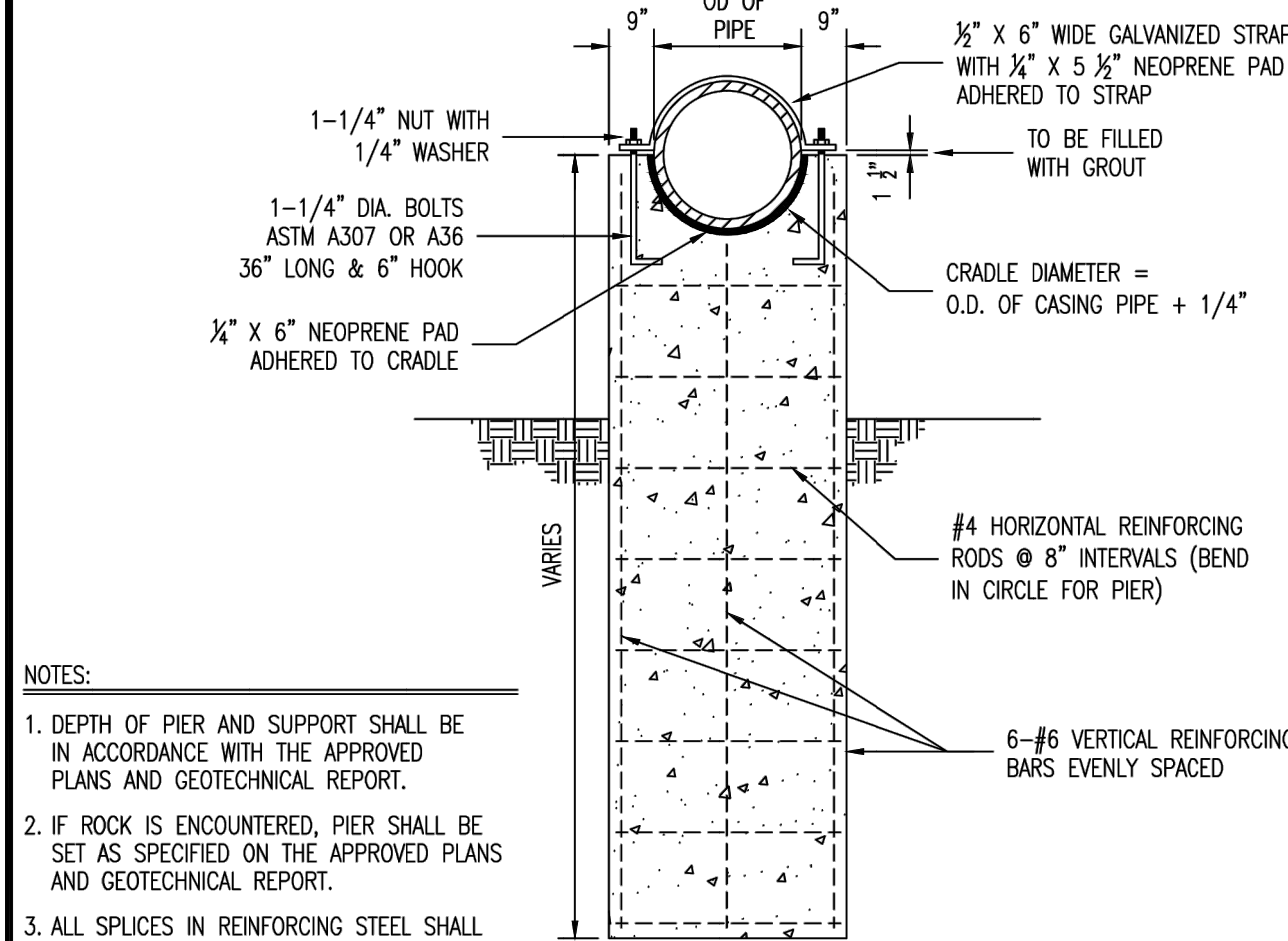


## Duckett Creek Sanitary District

ARIEL CROSSING TYPICAL PROFILE  
Dwn By: MSM App By: KA Detail No. 30B  
Ckd By: Date: OCT. 2016

- NOTES:
1. STEEL PIPE SHALL BE EITHER SPIRAL WELDED OR SMOOTH WALL SEAMLESS WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI.
  2. DUCTILE IRON PIPE SHALL BE SUPPORTED WITH TWO CASING SPACERS AT EVERY JOINT WITHIN THE CASING PIPE BE RESTRAINED.
  3. EXPOSED AREAS SHALL NOT REMAIN UNPROTECTED FOR MORE THAN SEVEN (7) DAYS FOR THE PROTECTION OF THE STREAM.

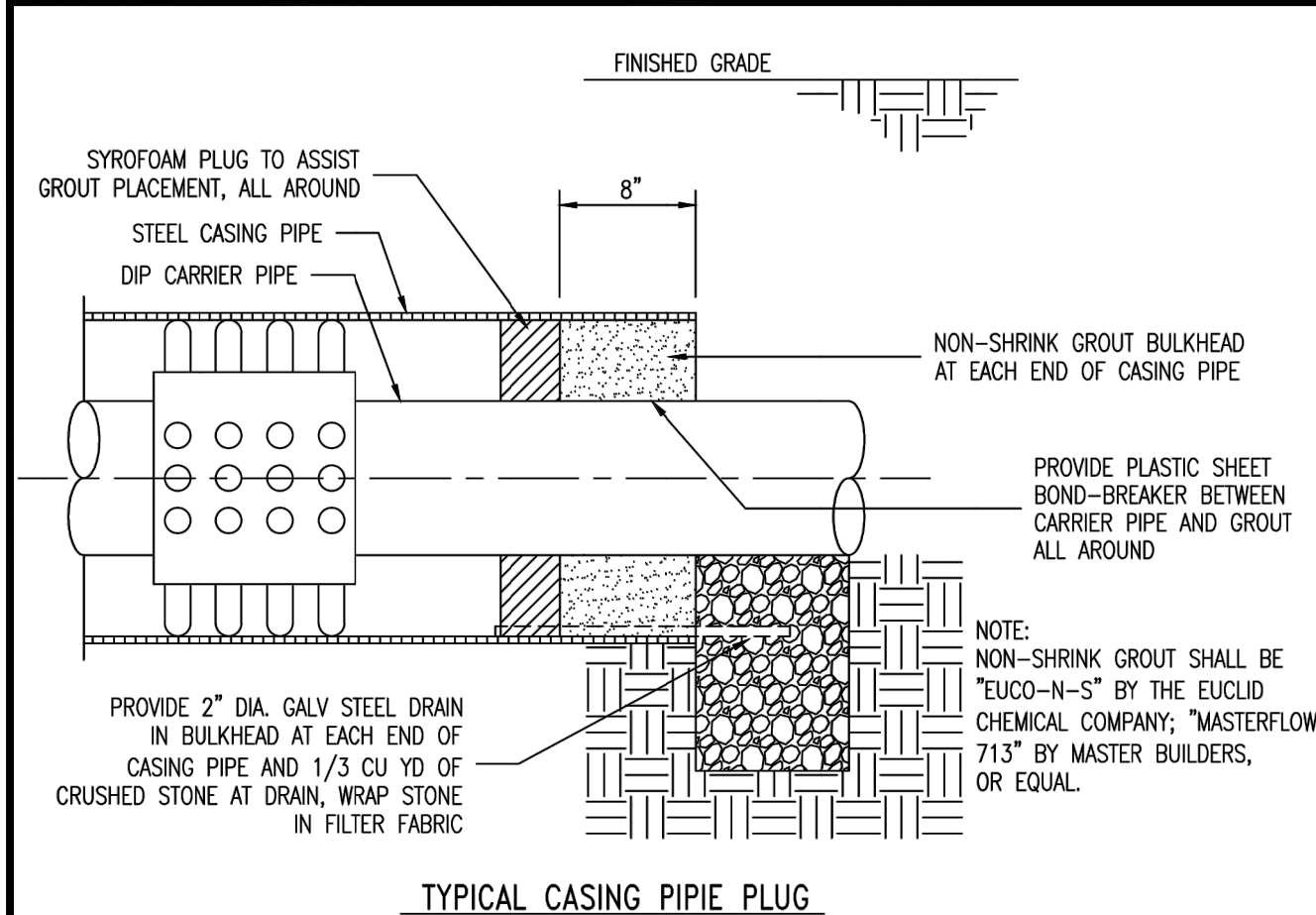
| CARRIER PIPE DIAMETER (IN.) | CASING PIPE DIAMETER (IN.) | MINIMUM COVER (IN.) | MINIMUM CARRIER WALL THICKNESS (IN.) | ALLOWABLE SPAN (FT.) |
|-----------------------------|----------------------------|---------------------|--------------------------------------|----------------------|
| 8                           | 16                         | 0.2500              | 0.3125                               | 45                   |
| 10                          | 18                         | 0.3125              | 0.3125                               | 50                   |
| 12                          | 20                         | 0.3125              | 0.3125                               | 55                   |
| 14                          | 24                         | 0.3125              | 0.3125                               | 55                   |
| 16                          | 26                         | 0.3750              | 0.3750                               | 60                   |
| 18                          | 30                         | 0.3750              | 0.3750                               | 60                   |
| 20                          | 32                         | 0.3750              | 0.4375                               | 65                   |
| 24                          | 36                         | 0.4375              | 0.4375                               | 65                   |
| 30                          | 42                         | 0.4375              | 0.4375                               | 65                   |



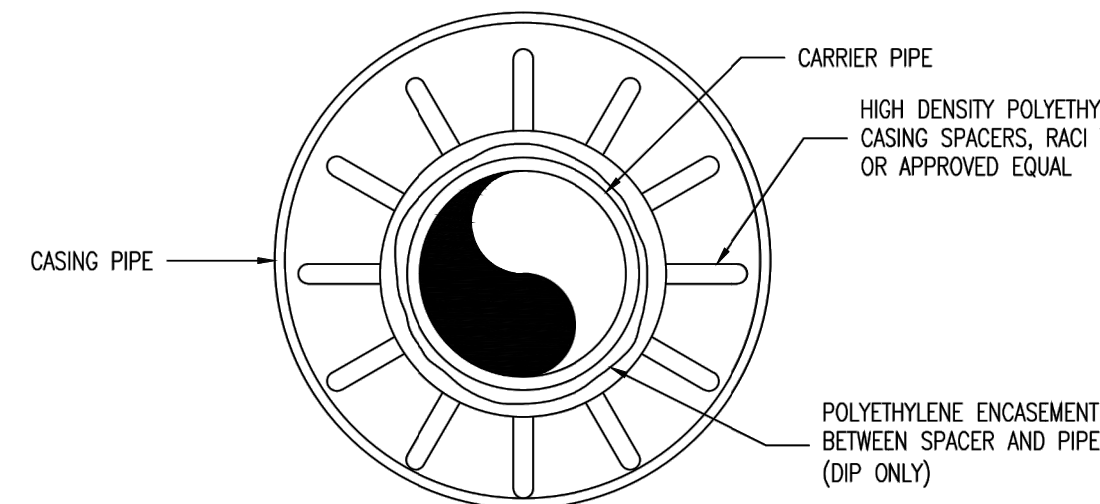
- NOTES:
1. DEPTH OF PIER AND SUPPORT SHALL BE IN ACCORDANCE WITH THE APPROVED PLANS AND GEOTECHNICAL REPORT.
  2. IF ROCK IS ENCOUNTERED, PIER SHALL BE SET AS SPECIFIED ON THE APPROVED PLANS AND GEOTECHNICAL REPORT.
  3. ALL SPLICES IN REINFORCING STEEL SHALL BE 30 X BAR DIAMETER IN LENGTH MINIMUM.
  4. MINIMUM COVER OVER PRIMARY REINFORCING SHALL BE 2".
  5. CONCRETE ULTIMATE COMPRESSIVE STRENGTH OF 3,000 PSI MINIMUM.
  6. REINFORCING STEEL SHALL BE GRADE 60.

## Duckett Creek Sanitary District

AERIAL PIPE CROSSING CONCRETE PIER DETAIL  
Dwn By: MSM App By: KA Detail No. 30C  
Ckd By: Date: JULY 2016



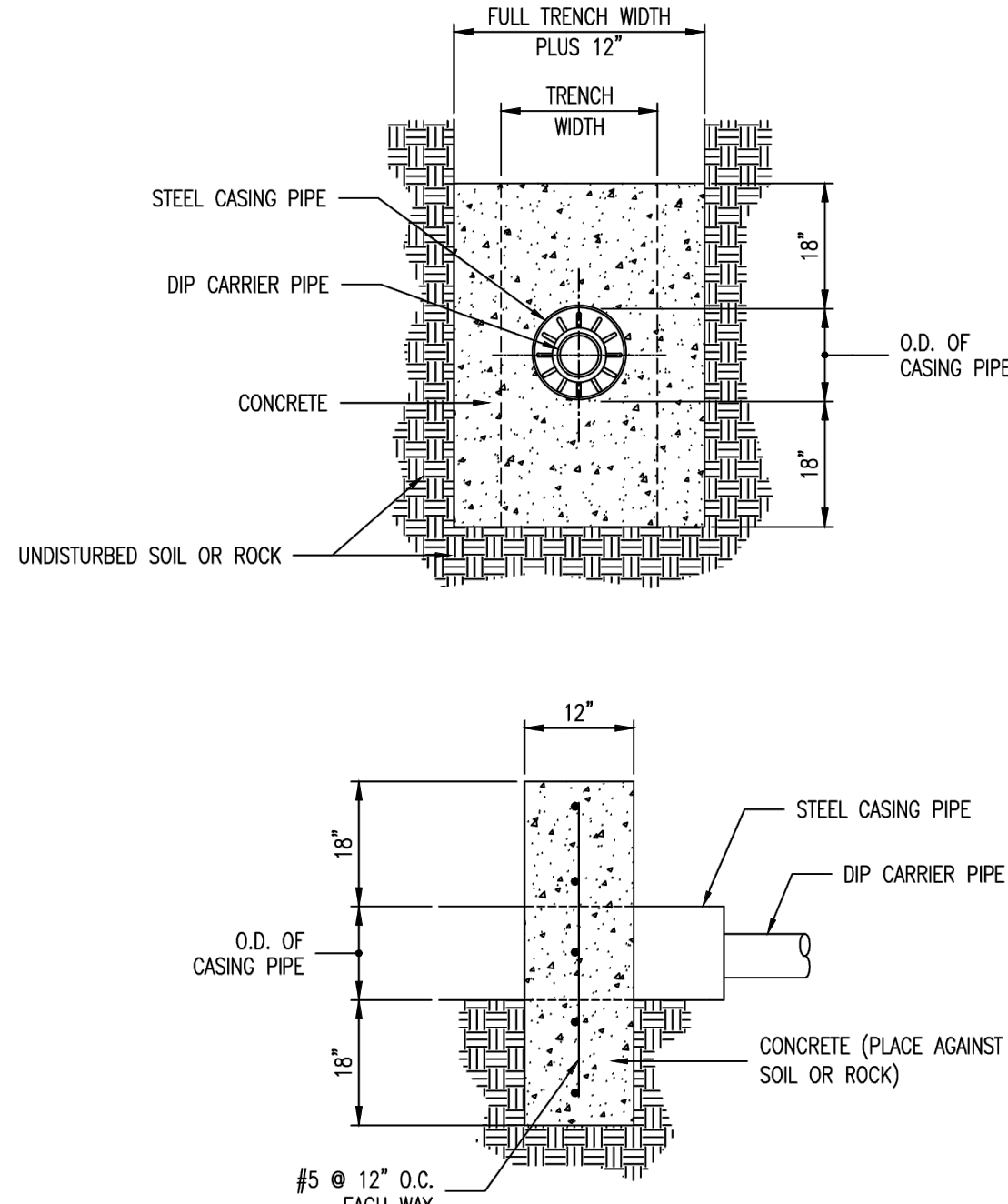
TYPICAL CASING PIPE PLUG



PIPE ALIGNMENT GUIDE

## Duckett Creek Sanitary District

AERIAL PIPE CROSSING CASING PIPE DETAILS  
Dwn By: MSM App By: KA Detail No. 30D  
Ckd By: Date: JULY 2016



SIDE ELEVATION

## Duckett Creek Sanitary District

AERIAL CROSSING CONCRETE COLLAR DETAIL  
Dwn By: MSM App By: KA Detail No. 30E  
Ckd By: Date: JULY 2016

### LINK-SEAL® MODULAR SEALS INSTALLATION INSTRUCTIONS

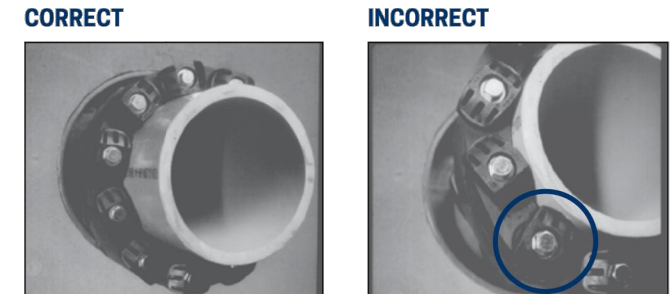


1. Center the pipe, cable or conduit in wall opening or casing. Make sure the pipe will be adequately supported on both ends. LINK-SEAL® modular seals are not intended to support the weight of the pipe.
2. Loosen rear pressure plate with nut just enough so links move freely. Connect both ends of belt around the pipe.
3. Check to be sure all bolt heads are facing the installer. Extra slack or sag is normal. Do not remove links if extra slack exists.
4. Slide belt assembly into annular space. For larger size belts, start inserting LINK-SEAL® modular seal assembly at the 6 o'clock position and work both sides up toward the 12 o'clock position in the annular space.
5. LS-200 through LS-315 Using a hand socket or off-set wrench ONLY, start at 12 o'clock. Do not tighten any bolt more than 4 turns at a time. Continue in a clockwise manner until links have been uniformly compressed. (Approx. 2 or 3 rotations)
- 6a LS-325 through LS-650 Using a hand socket or off-set wrench ONLY, start at 12 o'clock. Do not tighten any bolt more than 4 turns at a time. Continue in a clockwise manner until links have been uniformly compressed. (Approx. 2 or 3 rotations)
6. Make 2 or 3 more passes at 4 turns per bolt MAXIMUM, tightening all bolts clockwise until all sealing elements "bulge" around all pressure plates. On type 316 stainless steel bolts, hand tighten ONLY without power tool.
7. If the seal doesn't appear to be correct using the instructions provided, call GPT at 1-800-423-2410.

**Installation Notes:** The LINK-SEAL® modular seal bolt heads are usually recessed below the wall opening or the edge of casing pipe and therefore a socket or offset wrench must be used.

#### LINK-SEAL® Modular Seal - Do's

1. Make sure pipe is centered.
2. Install the belt with the pressure plates evenly spaced.
3. Install the exact number of links indicated in sizing charts.
4. Check to make sure pipe is supported properly during backfill operations. NOTE: LINK-SEAL® modular seals are not intended to support the weight of the pipe.
5. Make sure seal assembly and pipe surfaces are free from dirt.
6. For tight fits, use non-polluting liquid detergent to assist installation.



If the seal doesn't appear to be correct using the techniques provided, Call GPT at 1-800-423-2410.

**ALWAYS WEAR PPE WHEN USING LINK-SEAL® MODULAR SEALS**

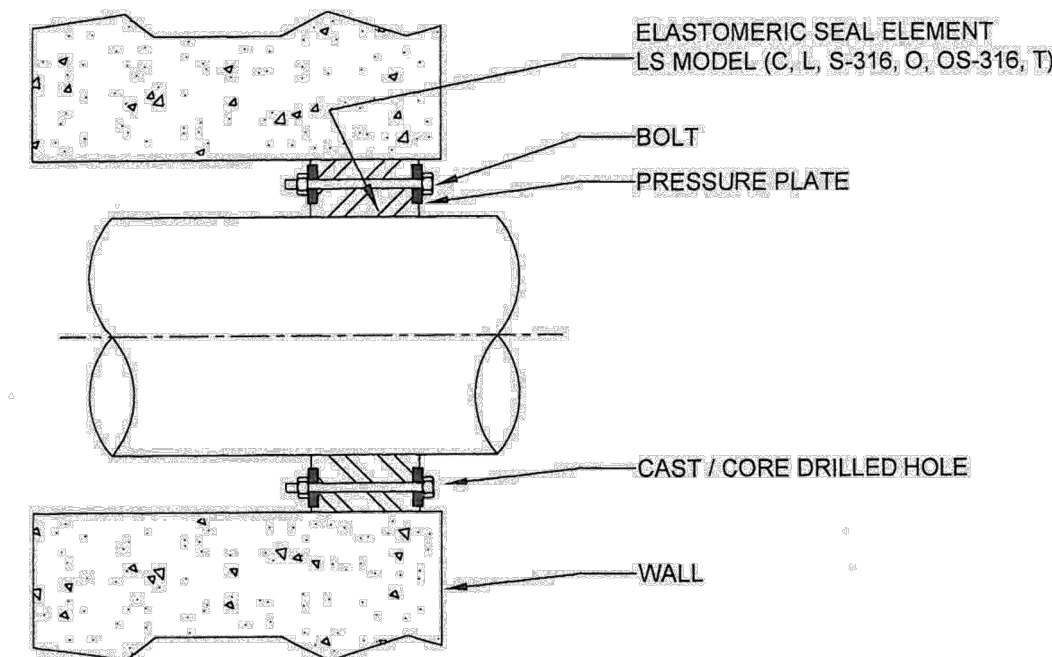
#### LINK-SEAL® Modular Seal - Don'ts

1. Don't install the belt with the pressure plates aimed in irregular directions (Staggered).
2. Don't install LINK-SEAL® modular seals where weld-beads or other irregular surfaces exist without consideration of the sealing requirements.
3. Don't torque each bolt completely before moving on to the next.
4. Don't use high speed power tools (450 rpm or more).
5. Do not use power tools on LINK-SEAL® modular seal 316 stainless steel bolts.
6. Don't use grease installing LINK-SEAL® modular seals.

**Hand Tools:** Review provided chart below. (Tools not provided.) Tools can be purchased from hardware store, auto parts store, or home improvement store.

| LINK-SEAL® Model               | Tool Size/Type Req. | Bolt Head Type |
|--------------------------------|---------------------|----------------|
| LS-200, LS-275                 | 4mm, Allen          |                |
| LS-300, LS-315                 | 6mm, Allen          |                |
| LS-325, LS-340, LS-360         | 13mm, Hex           |                |
| LS-400, LS-410, LS-425, LS-475 | 17mm, Hex           |                |
| LS-500, LS-525, LS-575         | 19mm, Hex           |                |
| LS-615                         | 30mm, Hex           |                |
| LS-650                         | 19mm, Hex           |                |

LINK-SEAL® MODULAR SEALS WITH CAST OR CORE DRILLED WALL OPENING  
MANUFACTURED BY PIPELINE SEAL & INSULATOR, INC.  
HOUSTON, TEXAS, U.S.A. TEL: 800-423-2410 E-MAIL: INFO@PSIPSI.COM



| LS Model                        | Seal Element        | Bolts/Nuts                                       | Pressure Plate           |
|---------------------------------|---------------------|--------------------------------------------------|--------------------------|
| C                               | EPDM (Black)        | Zinc Dichromate/Organic Coated Carbon Steel Bolt | Reinforced Nylon Polymer |
| L                               | EPDM (Blue)         | Zinc Dichromate/Organic Coated Carbon Steel Bolt | Reinforced Nylon Polymer |
| N                               | Nitrile             | Zinc Dichromate/Organic Coated Carbon Steel Bolt | Reinforced Nylon Polymer |
| S                               | Silicone            | Zinc Dichromate/Organic Coated Carbon Steel Bolt | Steel Zinc Dichromate    |
| C/L/O/S-316 (see model options) | 316 Stainless Steel |                                                  | Reinforced Nylon Polymer |

| Sleeve Model | Description         | Material |
|--------------|---------------------|----------|
| CS           | Century-Line Sleeve | HDPE     |
| WS           | Steel Wall Sleeve   | Steel    |

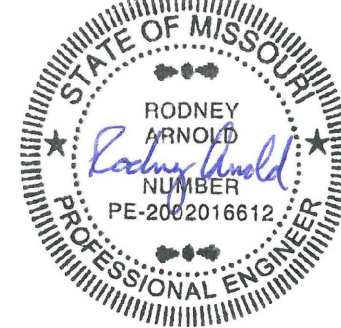
For more Material Property Information, see literature at [www.linkseal.com](http://www.linkseal.com)

PROJECT TITLE

SHADY CREEK  
ADDITION

OFFALLON, MISSOURI

THE **STERLING** CO.  
ENGINEERS & SURVEYORS  
5055 New Baumgartner Road  
St. Louis, Missouri 63129  
Ph 314-487-0440 Fax 314-487-8944  
[www.sterling-eng-sur.com](http://www.sterling-eng-sur.com)  
Corporate Certificate of Authority #001348



Date: 12/02/2020  
RODNEY ARNOLD  
LICENSE # PE-2002016612  
Professional Engineer

Lombardo Homes of St. Louis, LLC  
2299 Technology Drive, Suite 150  
O'Fallon, Missouri 63368  
Ph. (636) 265-2710  
Fax (636) 695-3195  
[www.lombardohomesstlouis.com](http://www.lombardohomesstlouis.com)

SANITARY SEWER DETAILS

P+Z No. P&Z NO  
City No.  
Date: 12/02/2020  
Job No. 14-12-405

Page No.

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