## Addendum

**201.12.b.1 Materials –** Add the following: Coarse aggregate (1-1/2") may also be added at the batch mix plant. Coarse aggregate is not to replace fine aggregate.

**Added 201.12.b.3 CLSM Maximum Depth** – The depth of flowable fill shall comply with the following:

a. If the distance from the top of the utility/pipe to the subgrade is five feet or less, the entire depth from subgrade to twelve (12) inches above the top of utility/pipe shall be flowable fill.

b. If the distance from the top of the utility/pipe to the subgrade is over five feet, the top four feet below subgrade shall be flowable fill. The remainder of the backfill may be overfill soil compacted per the specifications or flowable fill at the contractor's option.

**Added 201.12.b.4 Utility Crossings** – Where a utility is located above another utility or where two utilities cross, the bedding material shall be extended to properly bed the higher utility then the overfill soil and flowable fill placed per specifications.

**Added 201.12.b.5 Plates** – Flowable Fill requires a minimum of 24 hours to set. This will require trenches with flowable fill to be plated or barricaded trenches with traffic detoured in accordance with MUTCD standards. Maximum trench width requiring flowable fill is six (6) feet wide. See details 540.01 and 9A for maximum trench width.

When a backfilling operation of an excavation occurs in the traveled way, whether transverse or longitudinal, and the project cannot be properly completed within a standard work day as defined by section 12A of the City of Columbia Code of Ordinances, steel plate bridging with a non-skid surface and shoring will be required to preserve unobstructed traffic flow. In such cases, the following conditions shall apply:

a. Steel plates used for bridging must extend a minimum of 12" beyond the edges of the trench.
b. Steel plate bridging shall be installed to operate with minimum noise.
c. The trench shall be adequately shored, as mentioned in Section 201, to support the bridging and traffic loads.
d. Temporary paving with fine graded asphalt concrete shall be used to feather the edges of the plates, if plate installation is used.
e. Bridging shall be secured against displacement by using adjustable cleats, shims, or other devices.

Approach plate(s) and ending plate (if longitudinal placement) shall be attached to the roadway by a minimum of 2 dowels pre-drilled into the corners of the plate and drilled 2" into the pavement. Subsequent plates shall be butted to each other. Fine graded asphalt concrete shall be

compacted to form ramps, maximum slope 8.5% with a minimum 12” taper to cover all edges of the steel plates. When steel plates are removed, the dowel holes in the pavement shall be backfilled with either graded fines of asphalt concrete mix, concrete slurry or equivalent slurry that is satisfactory to the City of Columbia.

The contractor is responsible for maintenance of the steel plates, shoring, asphalt concrete ramps, and ensuring that they meet minimum specifications. Unless specifically noted in the special provisions, or approved by the City of Columbia, use of steel plate bridging should not exceed 4 consecutive working days in any given week. Backfilled excavations shall be covered with a minimum 3 inches temporary layer of cold asphalt concrete until permanent surface can be installed.

| Trench Width | Minimum Plate Thickness |
|---|---|
| 1’ | ½” |
| 2’ | ¾” |
| 3’ | 7/8” |
| 4’ | 1” |
| 5’ | 1.25” |
| 6’ | 1.25” |

**Added 201.12.b.6 <u>Emergency Situations</u>** – An urgent utility situation that takes place during non working hours as defined in the City of Columbia, Street, Storm and Sanitary Specifications 2012 edition, or occurring during a time when local concrete plants are not in operation.

Trench Backfill - work occurring during an emergency situation may be done using the following bedding material. Bedding material shall be crushed stone or crushed gravel conforming to the requirements of ASTM Standard C33, and having a gradation as follows:

| Sieve Size | % Passing |
|---|---|
| 5/8” | 90-100 |
| ½” | 75-100 |
| 3/8” | 30-75 |
| #4 | 5-25 |
| #8 | 3-6 |
| #30 | 2.5-5 |
| #200 | 1-2.5 |

During emergency situations the aforementioned bedding material may be used in placed of flowable fill as shown on detail 120.01of the City of Columbia, Street, Storm and Sanitary Specifications 2012 edition, and brought up in compacted six (6) inch lifts.

**Added 201.12.b.7 <u>Trenches wider than 6 feet</u> –** When excavation becomes wider than six (6) feet adhere to the following:

a. <u>Residential Streets</u>
    1. Concrete
        a. Minimum of two entire concrete panels are to be removed
        b. May close street (except in cul-de-sacs) or provide MUTCD compliant traffic control
        c. Excavate all subgrade within one (1) foot of existing panels to a minimum depth of eighteen (18) inches.
        d. Backfill to be brought up with compacted aggregate in six (6) inch lifts and tested per City of Columbia, Street, Storm and Sanitary Specifications 2012 edition OR flowable fill may be used.
        e. Four (4) inches of type 3 aggregate base is to be placed under the street
        f. Dowel Panels per City of Columbia, Street, Storm and Sanitary Specifications 2012 edition
    2. Asphalt
        a. Minimum size of replacement to be ten (10) foot by ten (10) foot square
        b. Two (2) foot minimum clearance to be left between edge of pavement replacement and leading edge of gutter.
        c. May close street (except in cul-de-sacs) or provide MUTCD compliant traffic control
        d. Excavate all subgrade within one (1) foot of existing pavement to a minimum depth of eighteen (18) inches.
        e. Backfill to be brought up with compacted aggregate in six (6) inch lifts and tested per City of Columbia, Street, Storm and Sanitary Specifications 2012 edition OR flowable fill may be used.
        f. Four (4) inches of type 3 aggregate base is to be placed under the street
        g. Pave per City of Columbia asphalt paving specifications

Arterials and Collector Streets – Will be handled on a case by case basis with City of Columbia Public Works Department.

**Added 201.12.b.8 <u>Required Testing</u> –** Testing shall follow section 201.11b of the City of Columbia, Street, Storm and Sanitary Specifications 2012 edition, except proof rolling shall not be required.

**222.2.1** – Delete the following: Only virgin materials shall be used in the surface course for new construction projects.

**229.13** – Delete the following: or (4) between October 1 and April 1 except when authorized by the Engineer. Placement within these dates will be permitted only when it is to the City's

advantage to do so. The Contractor shall conduct operations in such a manner that all base course asphaltic concrete is covered with surface course asphaltic concrete prior to November 1.

**231.6.1.** – Revise to the following: Premoulded Expansion Joints. Premoulded expansion joints shall be either polychloroprene elastomeric and conform to AASHTO M220 (ASTM D2628) or preformed expansion joint filler per AASHTO M213 (ASTM D1751). One (1) inch premoulded filler shall be installed as noted on the plans, and at all connections with existing concrete structures. Expansion joint materials shall be cut to the full depth of the pavement and integral curb cross section. The top of the expansion joint shall be scraped free of mortar. Expansion joints shall be installed at intervals not to exceed 500 feet whether shown on the drawings or not.

**260.2** – Add CMP to Right of Way (other than arterials, collectors, or cul-de-sacs) for Acceptable location.

**260.3.6** – Revise the table to the following (all gage's based on 2 2/3 x ½ corrugation):

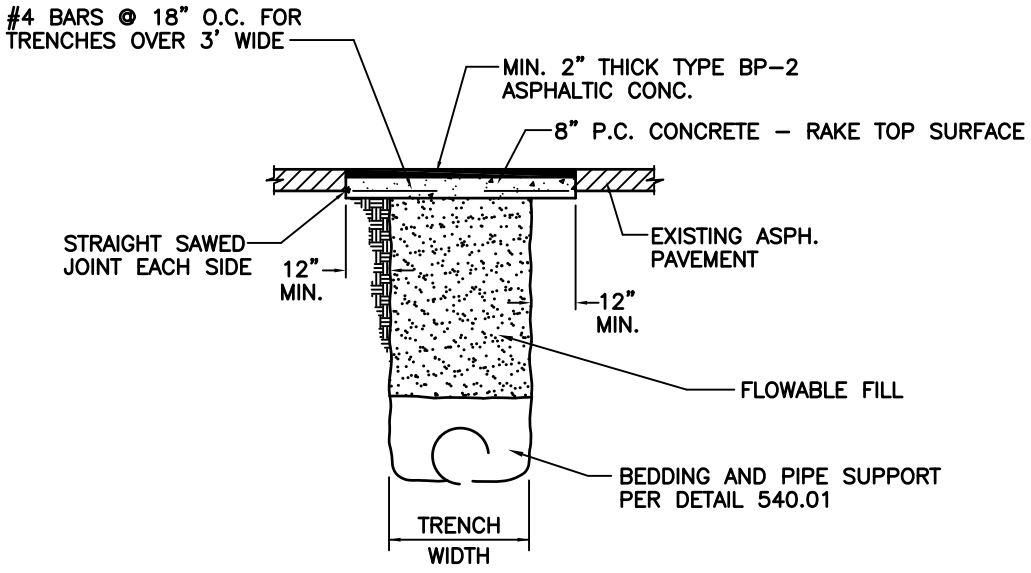
Circular Culvert Pipe

| Diameter | Gage | Diameter | Gage |
|---|---|---|---|
| 12" | 16 | 42" | 14 |
| 15" | 16 | 48" | 14 |
| 18" | 16 | 54" | 12 |
| 24" | 16 | 60" | 12 |
| 30" | 16 | 72" | 10 up to 16 feet |
| 36" | 16 | | |

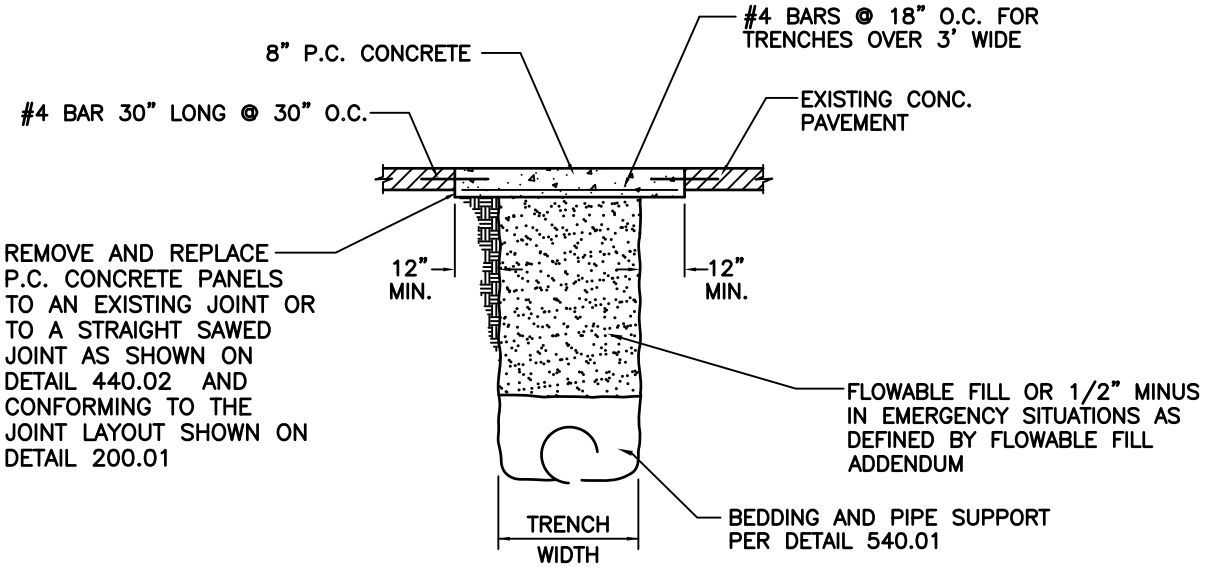
Arch Culvert Pipe

| Equivalent Diameter | Gage | Span | Rise |
|---|---|---|---|
| 15" | 16 | 18" | 11" |
| 18" | 16 | 22" | 13" |
| 21" | 16 | 25" | 16" |
| 24" | 14 | 29" | 18" |
| 30" | 14 | 36" | 22" |
| 36" | 14 | 43" | 27" |
| 42" | 12 | 50" | 31" |
| 48" | 12 | 58" | 36" |
| 54" | 12 | 65" | 40" |

**510.2** – Revise to the following: American ML-10-NCR or approved equal



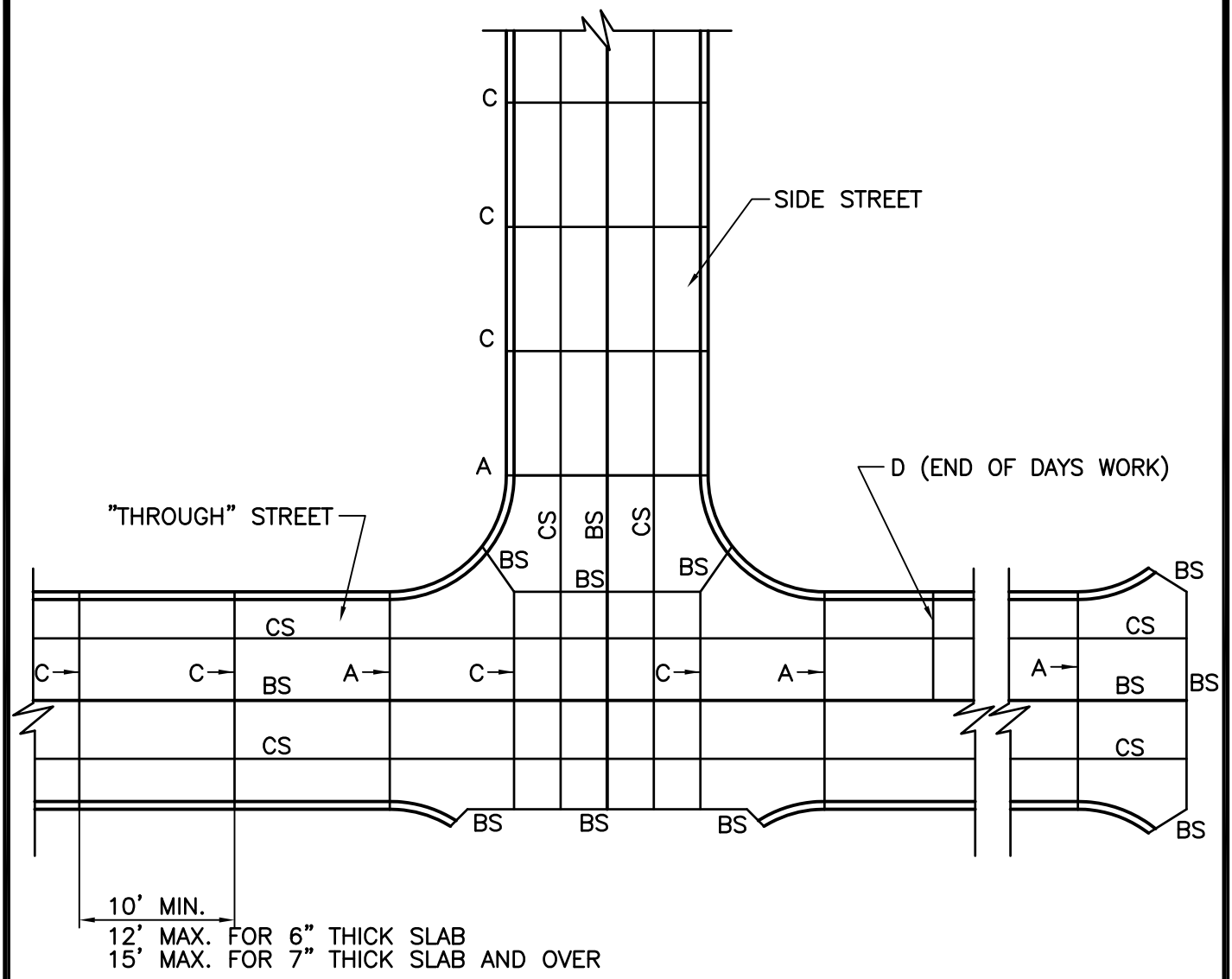

## EXISTING ASPHALTIC PAVEMENT




## EXISTING CONCRETE PAVEMENT

NOTES: CONCRETE SHALL BE CLASS AA
REINFORCING STEEL SHALL BE GRADE 60

| | | | |
|---|---|---|---|
| JDL 6/1/12<br>Approved Date<br>Revisions | City of Columbia<br>Public Works Department | PATCHING<br>Paved Streets | 120.01 |

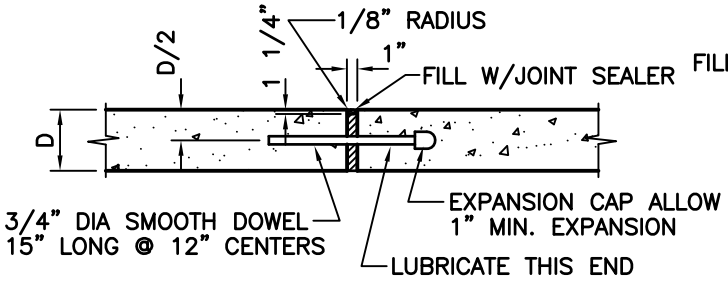



# JOINT LOCATION PLAN

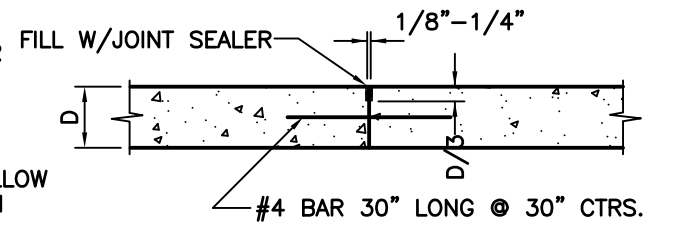
NOTE:

1. TRANSVERSE TYPE C JOINTS SHALL BE SAWED AS SOON AS CONCRETE CAN WITHSTAND RAVELING, JOINTS SHALL BE CLEANED AND FILLED WITH BITUMINOUS COMPOUND IMMEDIATELY FOLLOWING SAWING.
2. INSTALL TYPE A EXPANSION JOINTS AT INTERSECTIONS, AND AT STRUCTURES.
3. INSTALL TYPE A EXPANSION JOINTS AT PC & PT OF CURVES. WITH DEFLECTION ANGLE OF GREATER THAN 30°.
4. INSTALL TYPE A EXPANSION JOINT AT BULB OF CUL–DE–SAC.
5. INSTALL TYPE A EXPANSION JOINT AT 500' SPACING MAXIMUM.
6. USE TYPE D JOINT AT END OF DAYS WORK.

| | | | |
|---|---|---|---|
| JDL Approved 6/1/12 Date<br>Revisions | City of Columbia<br>Public Works Department | JOINT DETAILS<br>(P.C. Concrete Pavement) | 200.01A |

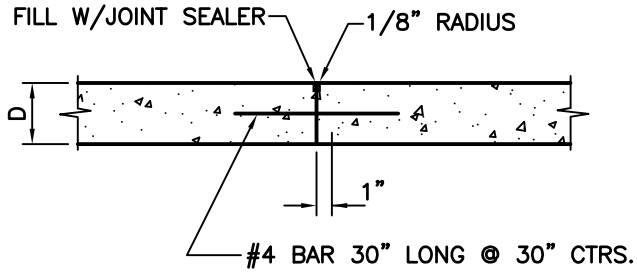



## TYPE A
## EXPANSION JOINT

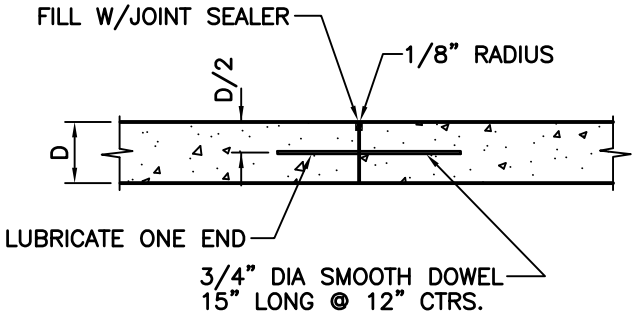



TYPE © – CONSTRUCTED WITHOUT TIE BAR
TYPE ©S – REQUIRES TIE BAR

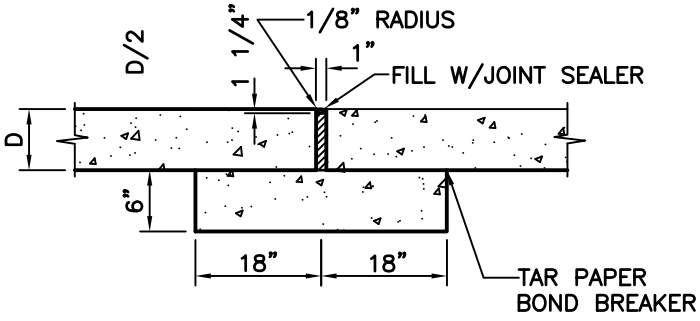
## TYPE C & CS
## SAWED




## TYPE BS
## KEYED CONSTRUCTION JOINT
(With Steel)

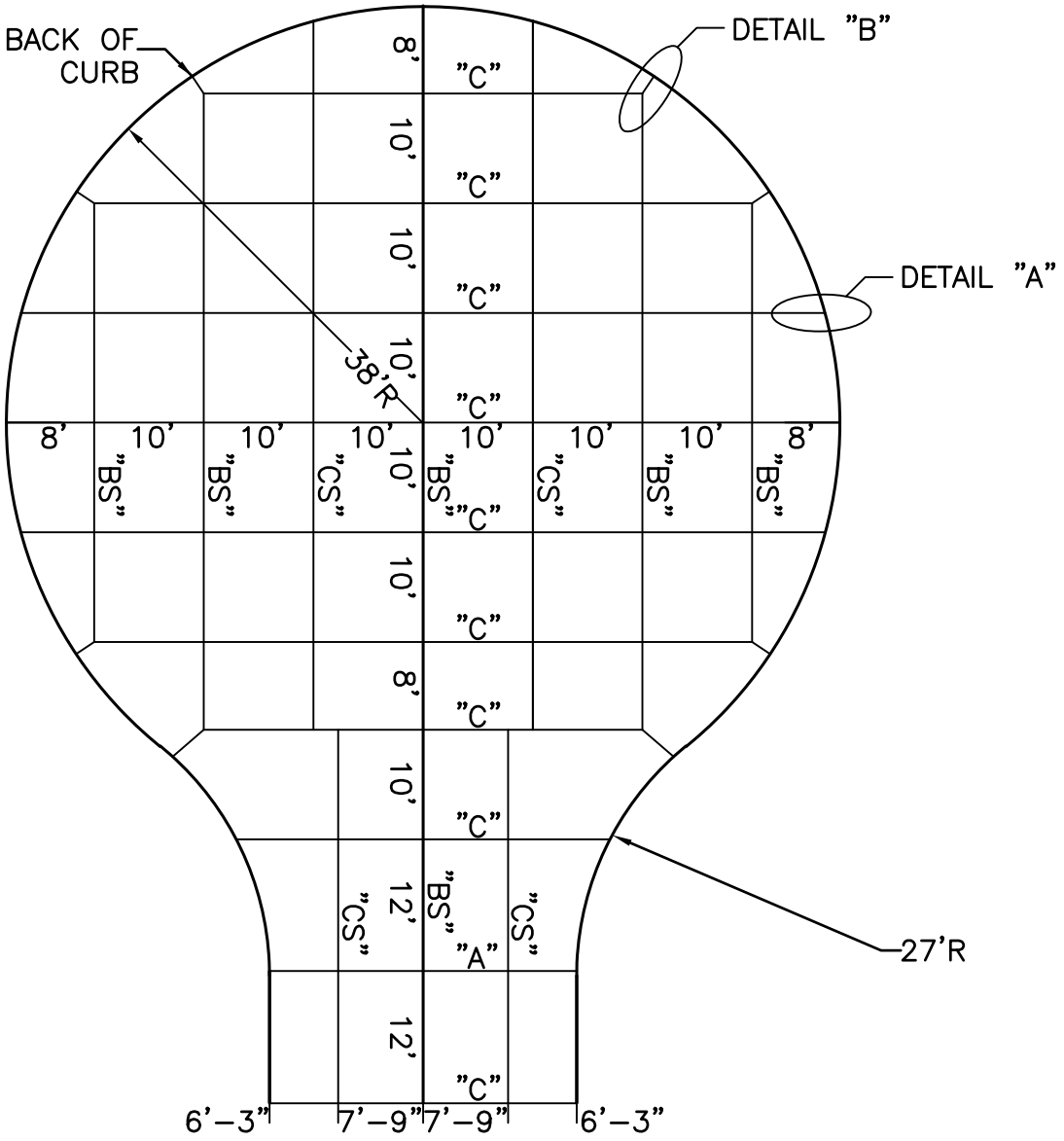


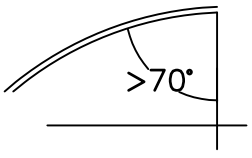

## TYPE D
## TRANSVERSE CONSTRUCTION JOINT



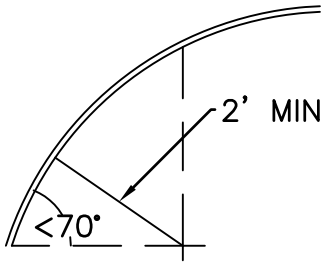

## TYPE A ALTERNATE
## CONCRETE SILL

| | | | |
|---|---|---|---|
| JDS Approved 6/1/12 Date<br>Revisions | City of Columbia<br>Public Works Department | JOINT DETAILS<br>(P.C. Concrete Pavement) | 200.01B |



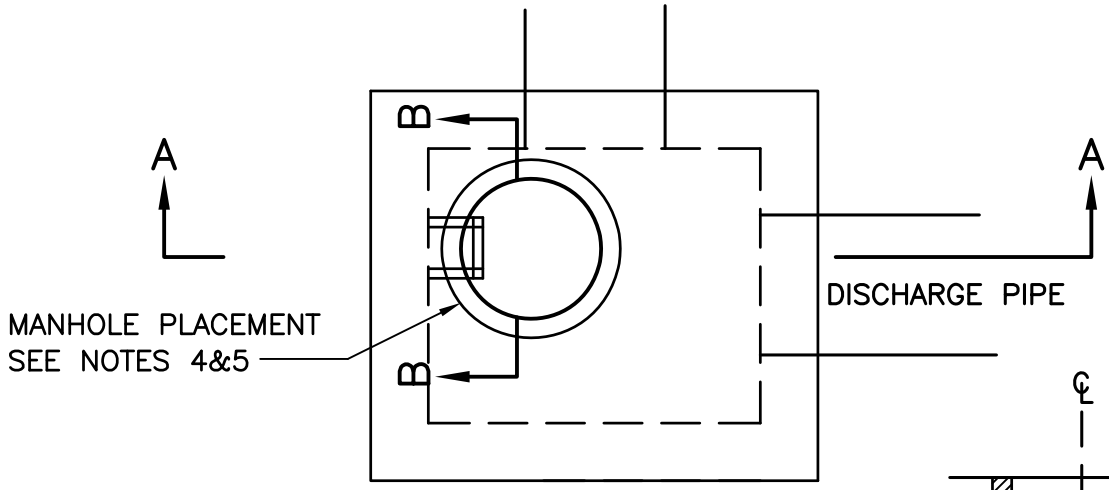




DETAIL "A"

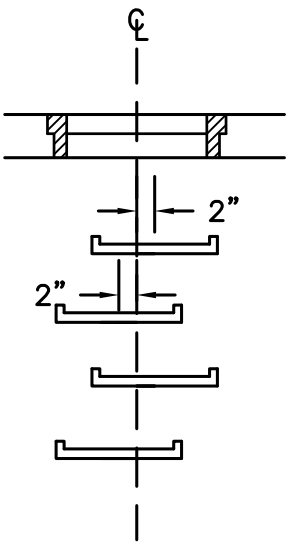



DETAIL "B"

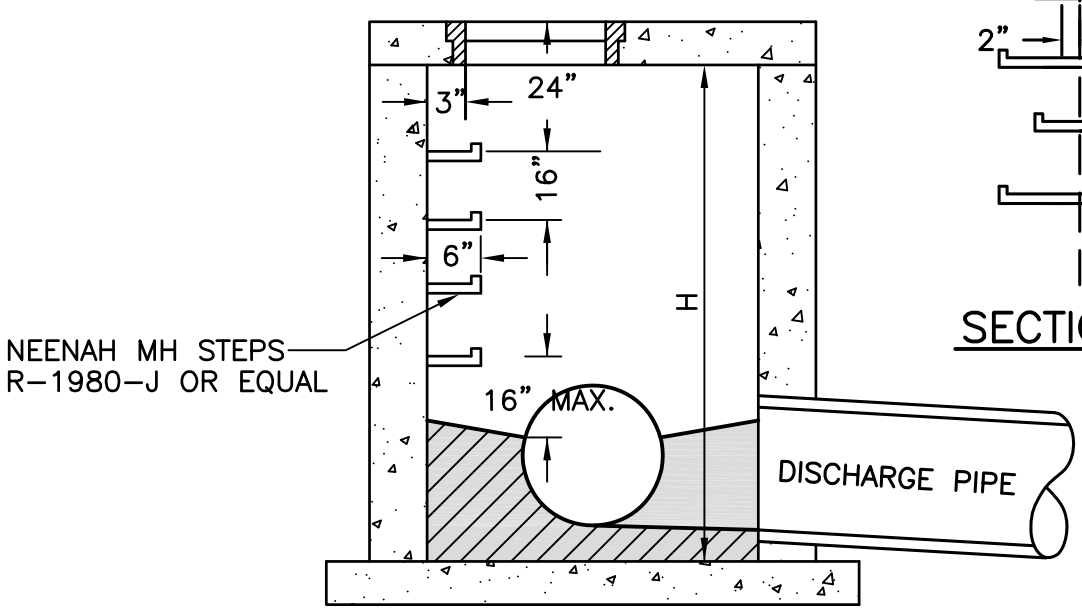
| | | | |
|---|---|---|---|
| JDS 6/1/12<br>Approved Date<br>Revisions | City of Columbia<br>Public Works Department | JOINTING DETAIL<br>Residential Cul-de-sac | 205.01 |




PLAN VIEW




SECTION B–B

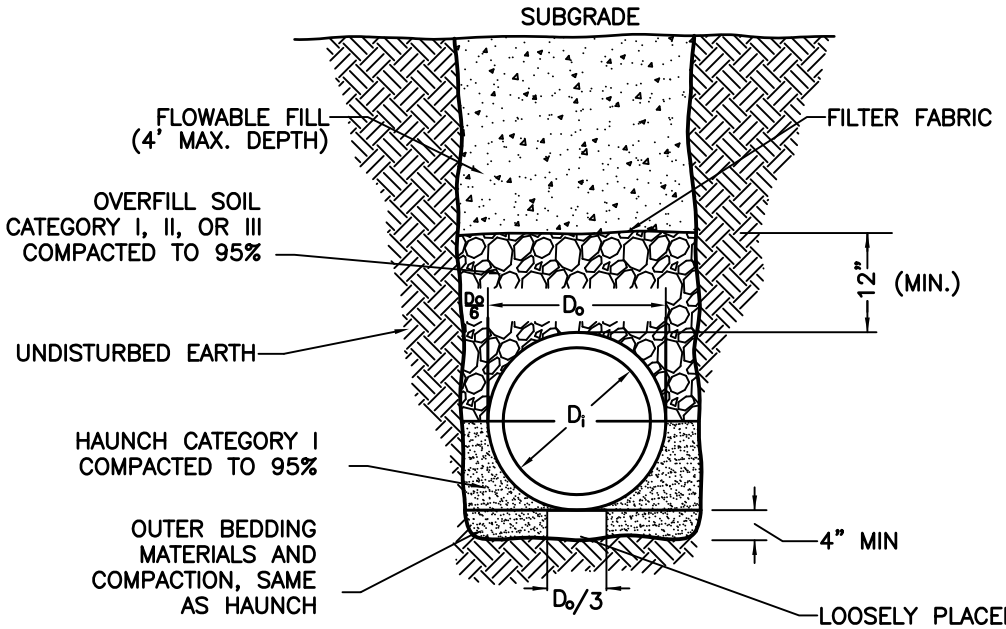



SECTION A–A

NOTES:

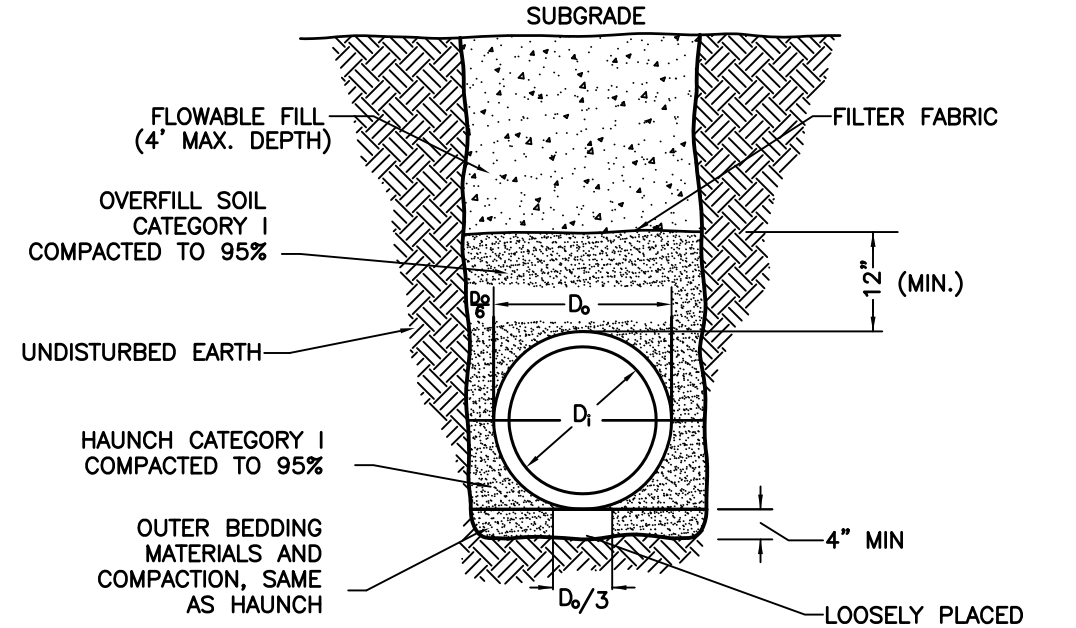
1. STEPS NOT REQUIRED WHERE H IS LESS THAN 4'.
2. CAST IRON STEPS STEPS SHALL BE AMERICAN ML–10–NCR OR EQUAL
3. STEPS SHALL BE PLACED ON VACANT WALL WHEN POSSIBLE
4. MANHOLE RING SHALL BE OFFSET TOWARD WALL WITH STEPS.
5. MANHOLE RING SHALL BE CENTERED ON CENTERLINE OF STEPS
6. STAGGER STEPS 2" EACH WAY FROM CENTERLINE OF MANHOLE RING.
7. TOP STEP 24" BELOW TOP OF SLAB
8. STEP SPACING TO BE 16", BOTTOM STEP TO BE NO HIGHER THAN 16" FROM INVERT.

| | | | |
|---|---|---|---|
| JDS Approved 6/1/12 Date<br>Revisions | City of Columbia<br>Public Works Department | DRAINAGE STRUCTURE STEPS | 500.01 |




## RIGID PIPE

| PIPE DIAMETER | PAYLINE/ MIN. TRENCH WIDTH | MAX. TRENCH WIDTH |
|---|---|---|
| 12"–36" | $D_o$+12" | $D_o$+24" |
| 42"–72" | $D_o$+($D_o$/3) | $D_o$+30" |
| 72"+ | $D_o$+($D_o$/3) | $D_o$+48" |




## FLEXIBLE PIPE

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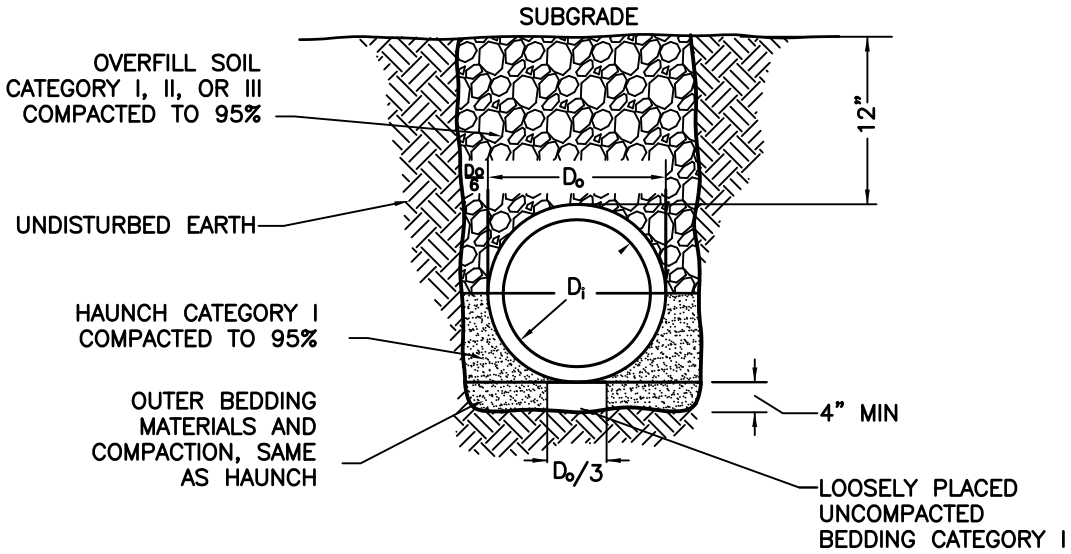
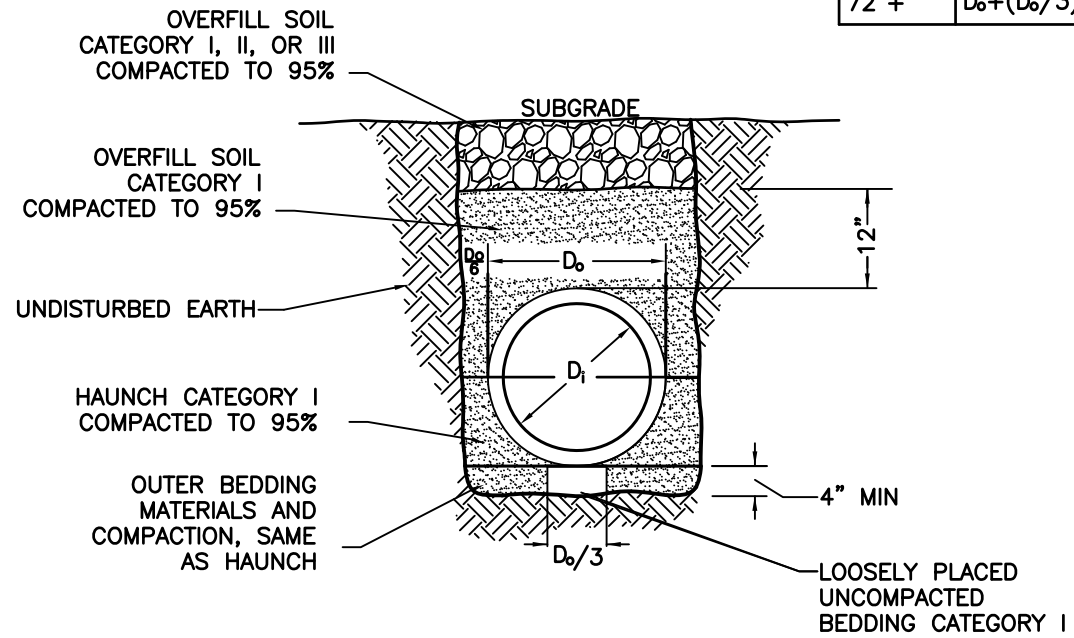
| JDG | 6/1/12 | City of Columbia Public Works Department | PIPE EMBEDMENT (In the Right of Way) | 540.01 |
| Approved | Date | | | |
| Revisions | | | | |




## RIGID PIPE

| PIPE DIAMETER | PAYLINE/ MIN. TRENCH WIDTH | MAX. TRENCH WIDTH |
|---|---|---|
| 12"–36" | Do+12" | Do+24" |
| 42"–72" | Do+(Do/3) | Do+30" |
| 72"+ | Do+(Do/3) | Do+48" |




## FLEXIBLE PIPE

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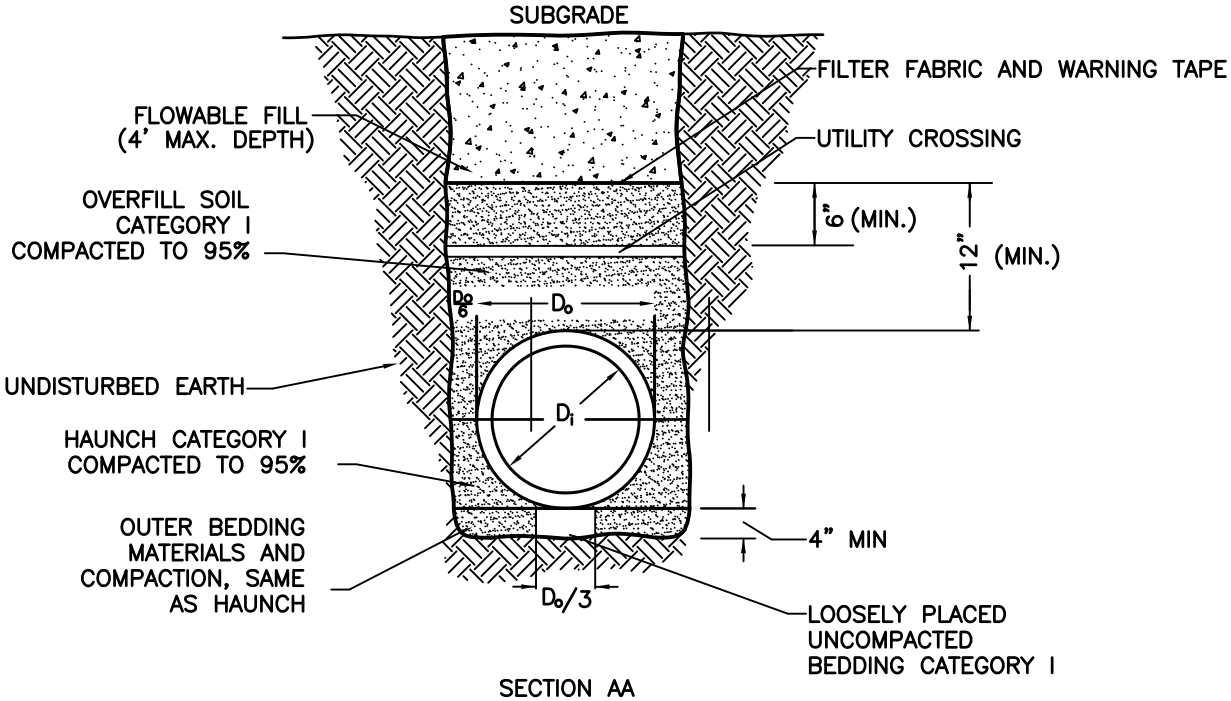
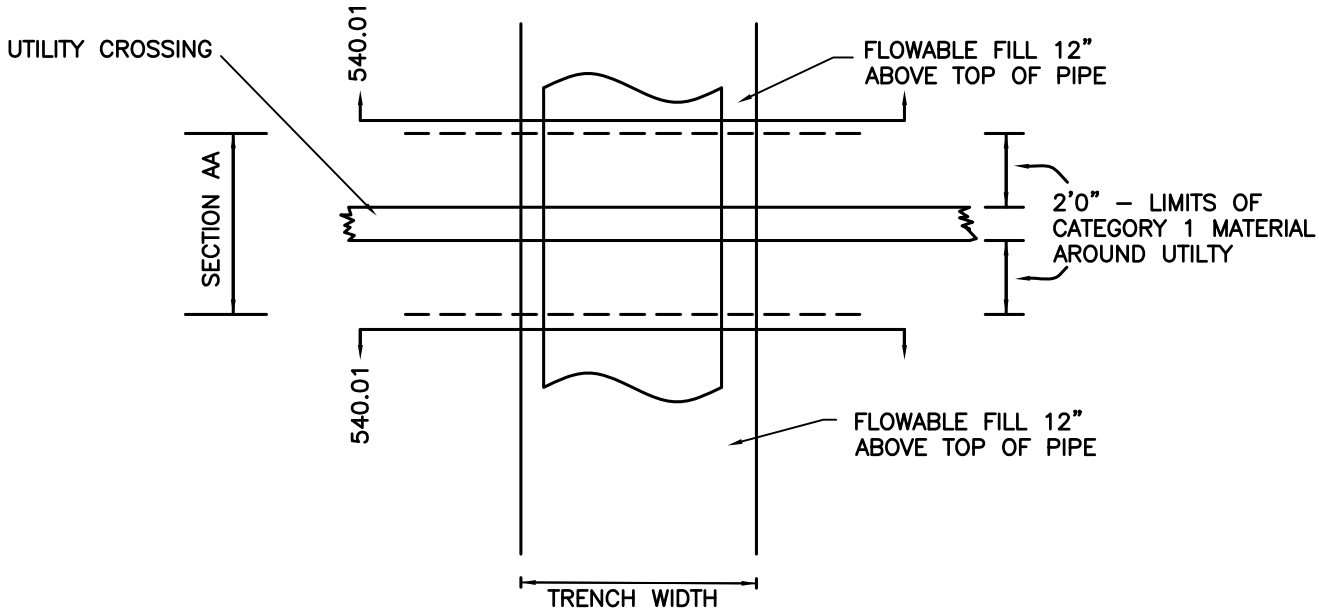
| JDS Approved 6/1/12 Date<br>Revisions | City of Columbia Public Works Department | PIPE EMBEDMENT (Out of the Right of Way) | 540.02 |




SECTION AA

| PIPE DIAMETER | PAYLINE/ MIN. TRENCH WIDTH | MAX. TRENCH WIDTH |
|---|---|---|
| 12"–36" | $D_o$+12" | $D_o$+24" |
| 42"–72" | $D_o$+($D_o$/3) | $D_o$+30" |
| 72"+ | $D_o$+($D_o$/3) | $D_o$+48" |



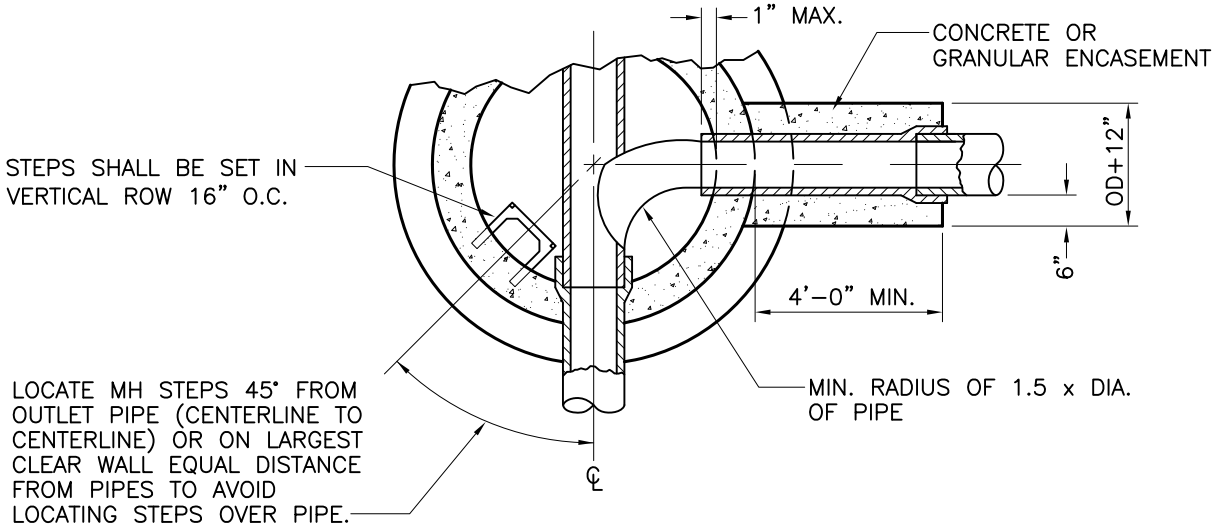

JDG
Approved
6/1/12
Date

Revisions

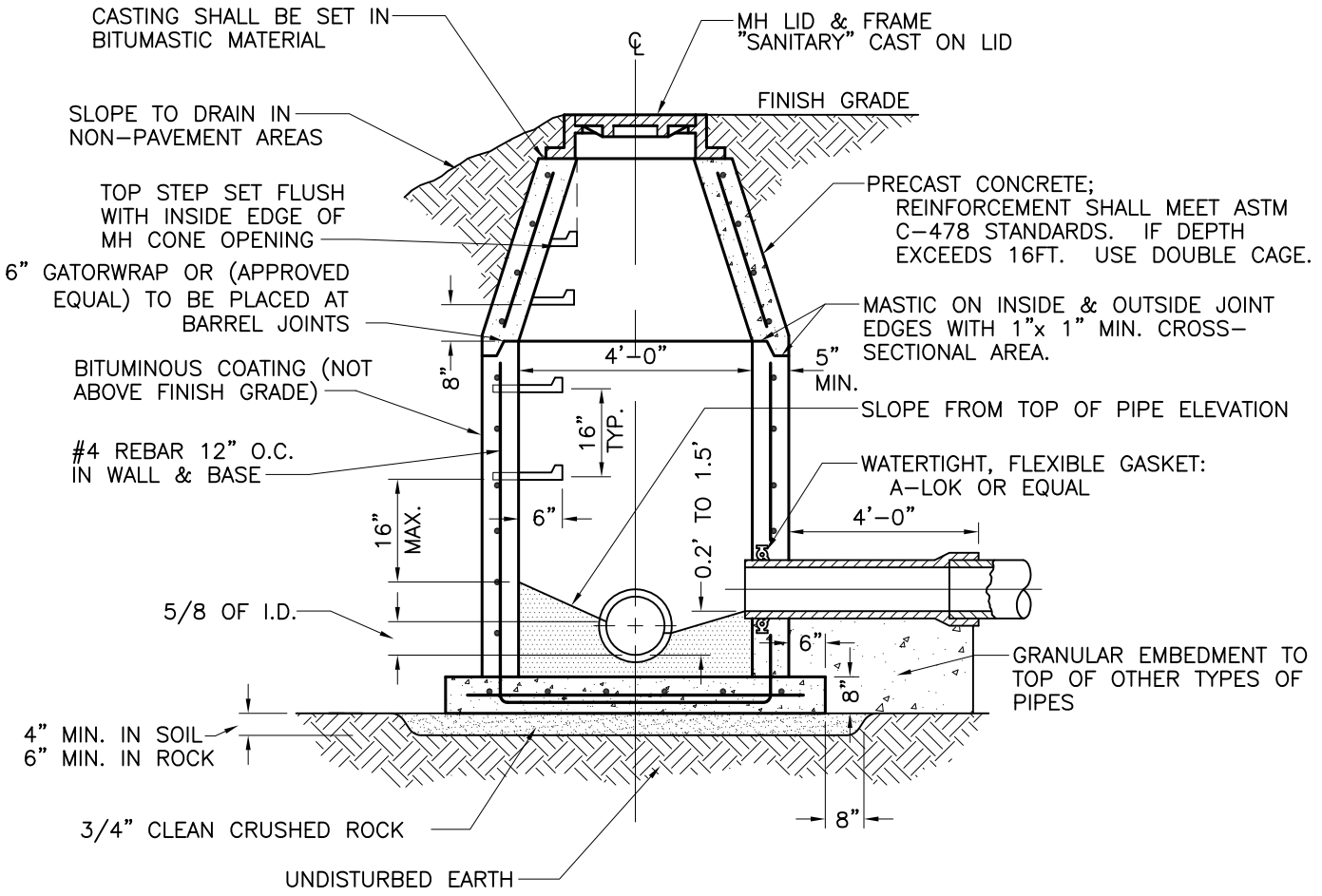
City of Columbia
Public Works Department

# UTILITY CROSSING
# (In the Right of Way)

541.01

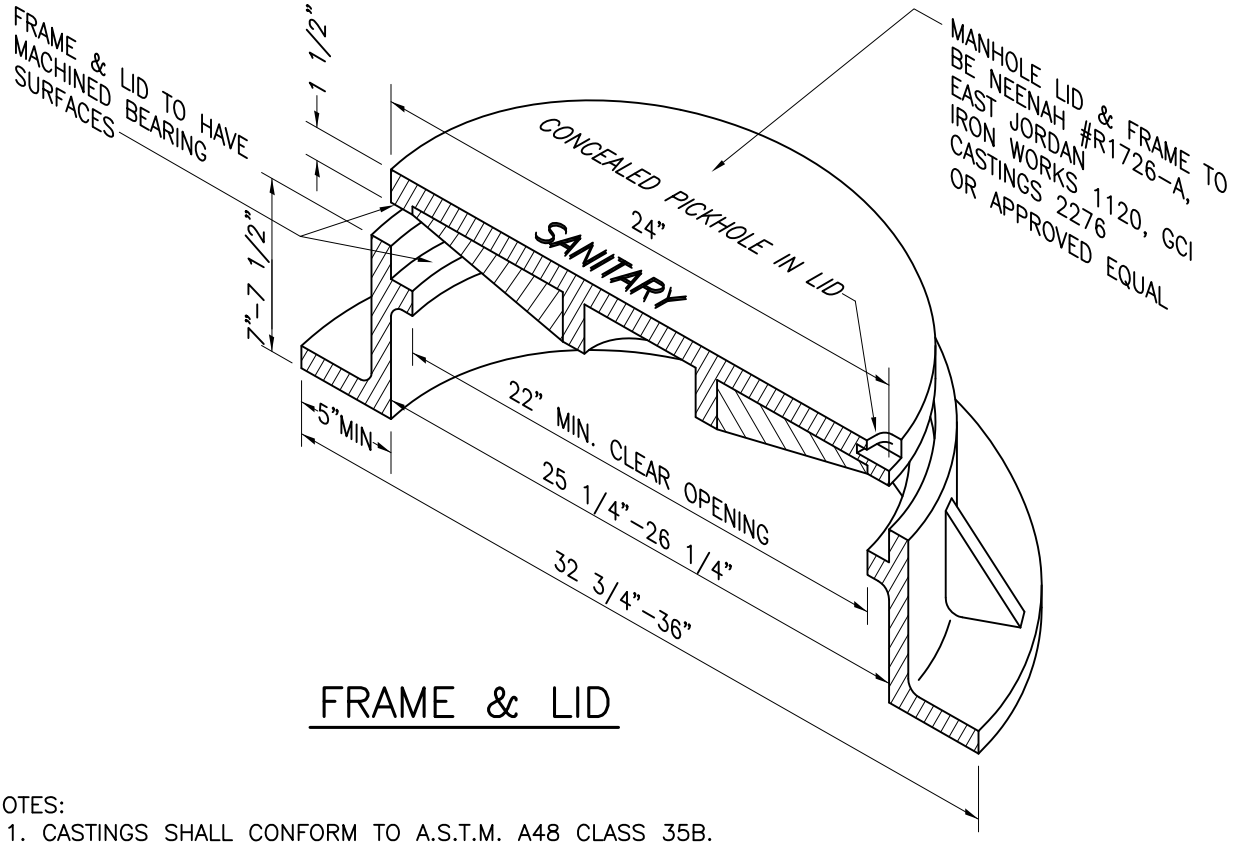



## HORIZONTAL SECTION




## VERTICAL SECTION

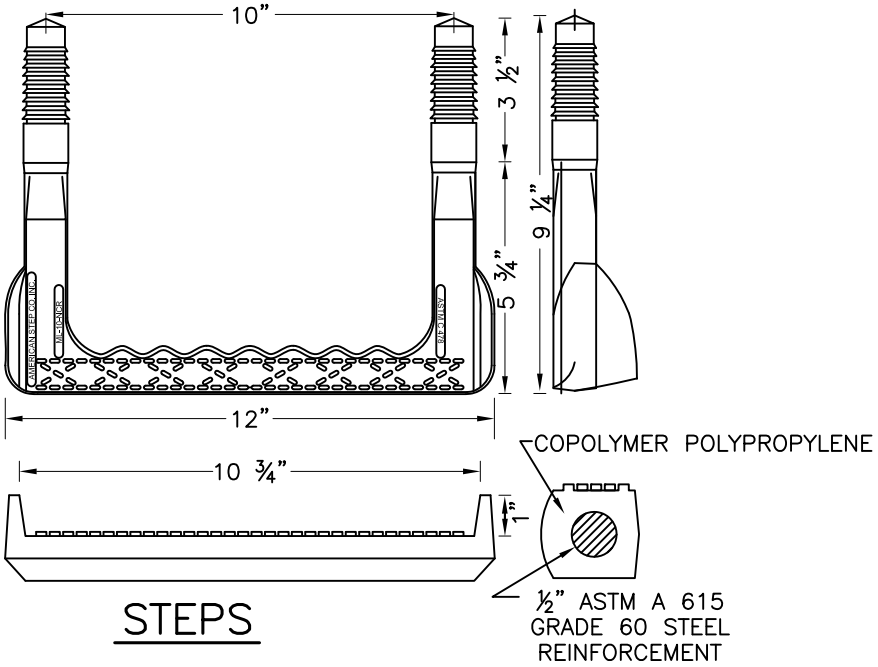
| | | | |
|---|---|---|---|
| Approved: JDL — Date: 6/1/12 | City of Columbia, Public Works Department | STANDARD MANHOLE | 1 |
| Revisions | | | |




## FRAME & LID

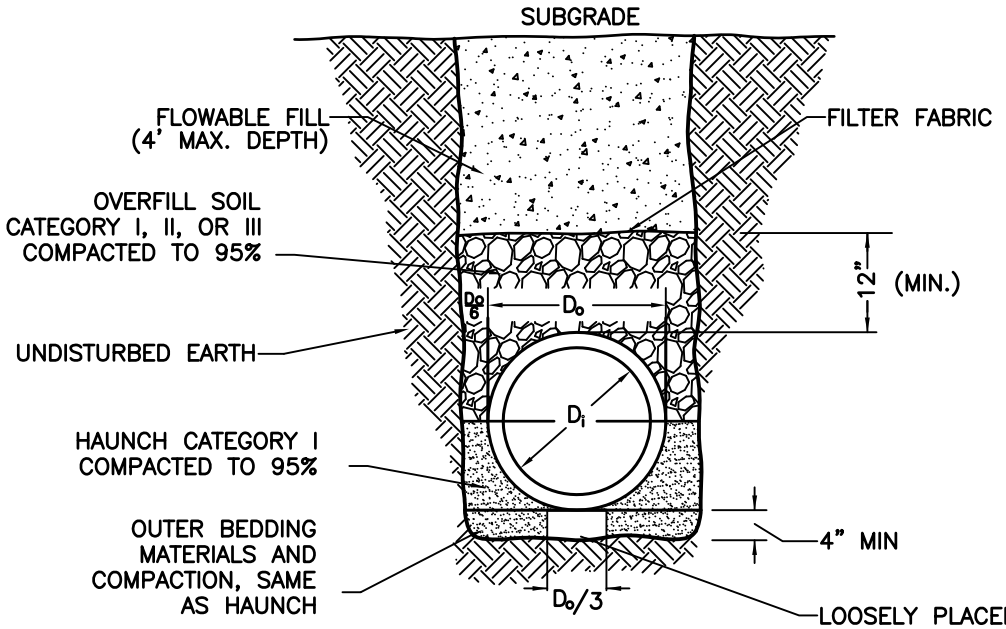
NOTES:

1. CASTINGS SHALL CONFORM TO A.S.T.M. A48 CLASS 35B.
2. LIDWEIGHT 135 lbs. MINIMUM. TOTAL MINIMUM WEIGHT OF 350 lbs.
3. WATERTIGHT LID AND FRAME TO BE NEENAH #R-1916-F, OR APPROVED EQUAL
4. MANHOLE STEP AMERICAN STEP ML-10-NCR OR APPROVED EQUAL
5. BOLT DOWN LIDS SHALL HAVE FRAMES BOLTED TO THE CONE SECTION



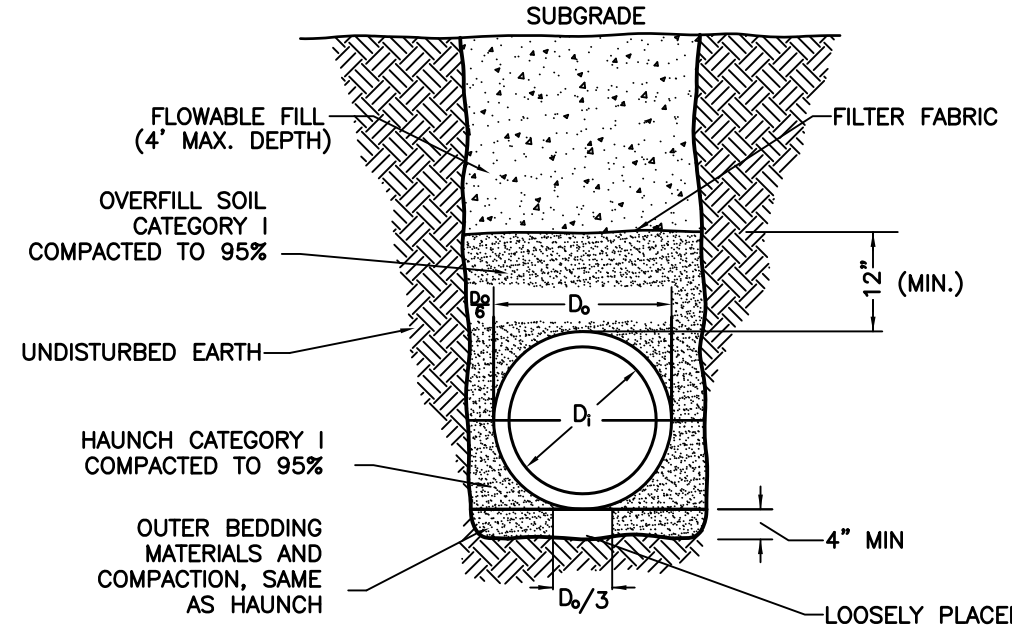

## STEPS

| | | | |
|---|---|---|---|
| JDL Approved 6/1/12 Date<br>Revisions | City of Columbia Public Works Department | MANHOLE CASTINGS (Frame, Lid & Steps) | 8 |




## RIGID PIPE

| PIPE DIAMETER | PAYLINE/ MIN. TRENCH WIDTH | MAX. TRENCH WIDTH |
|---|---|---|
| 12"–36" | Do+12" | Do+24" |
| 42"–72" | Do+(Do/3) | Do+30" |
| 72"+ | Do+(Do/3) | Do+48" |




## FLEXIBLE PIPE

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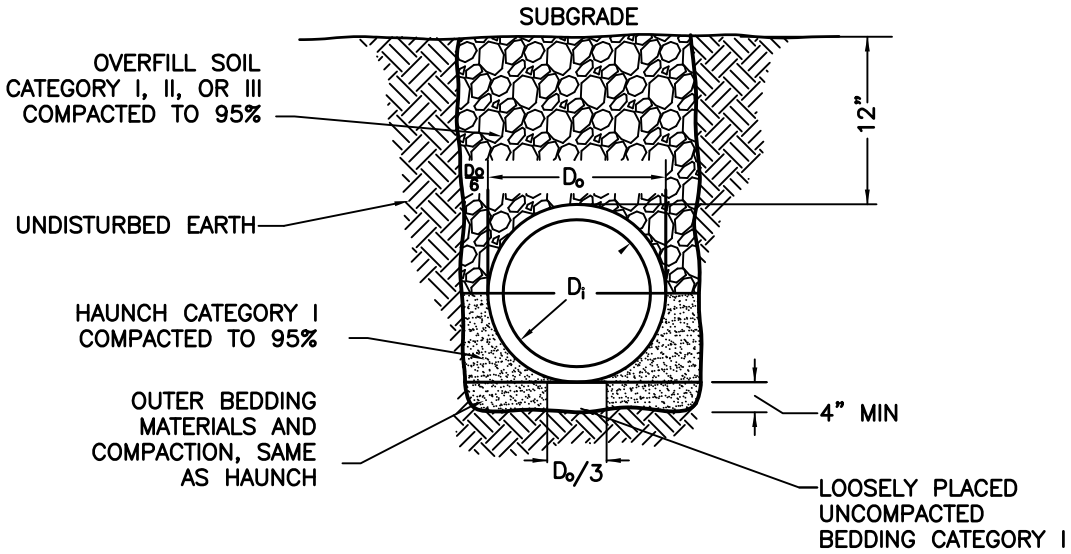
| JDG Approved | 6/1/12 Date | City of Columbia Public Works Department |
| Revisions | | |

# PIPE EMBEDMENT
# (In the Right of Way)

9A




## RIGID PIPE

| PIPE DIAMETER | PAYLINE/ MIN. TRENCH WIDTH | MAX. TRENCH WIDTH |
|---|---|---|
| 12"–36" | Do+12" | Do+24" |
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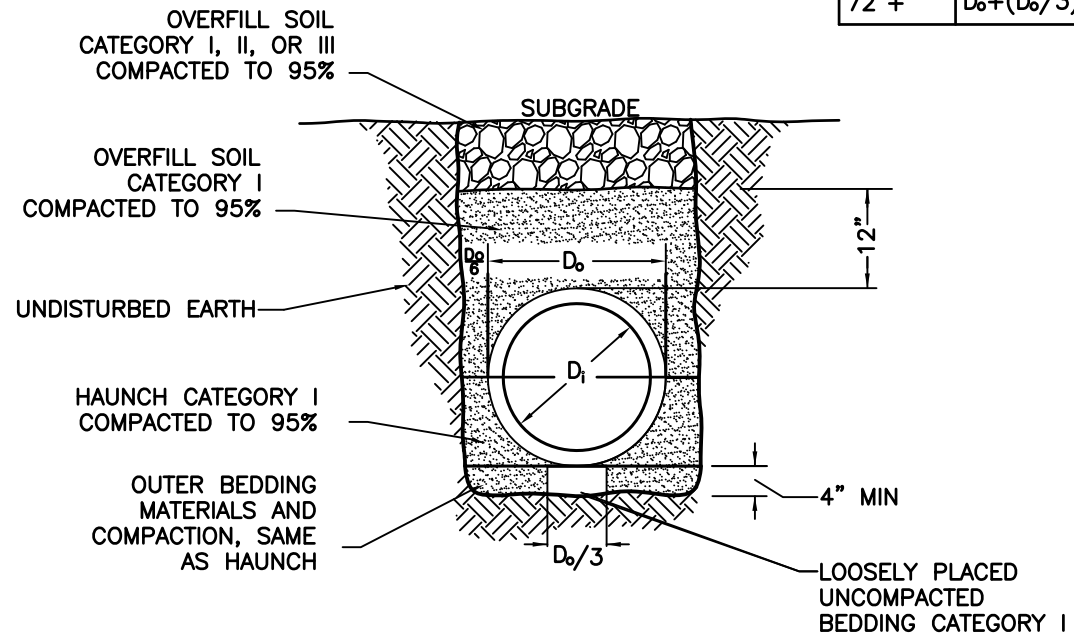


## FLEXIBLE PIPE

| | | | |
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| JDS Approved 6/1/12 Date<br>Revisions | City of Columbia Public Works Department | PIPE EMBEDMENT (Out of the Right of Way) | 9B |