NOTES:

- 1. A MAX. OF 4 AND A MIN. OF 2 THROAT RINGS SHALL BE USED AT EACH MANHOLE IN NEW OR EXISTING RIGHT-OF-WAY.
- 2. USE ADEKA SEALANT OR APPROVED EQUAL BETWEEN RING/COVER, ADJUSTMENT RINGS AND CHIMNEY OR CORBEL/CONE SECTION.
- 3. MANHOLE BASE THICKNESS AND FOUNDATION FROM FLOWLINE TO RIM AS FOLLOWS:

MANHOLE DEPTH (FT.) BASE THICKNESS

0-12____8" 12 AND OVER_____ 12"

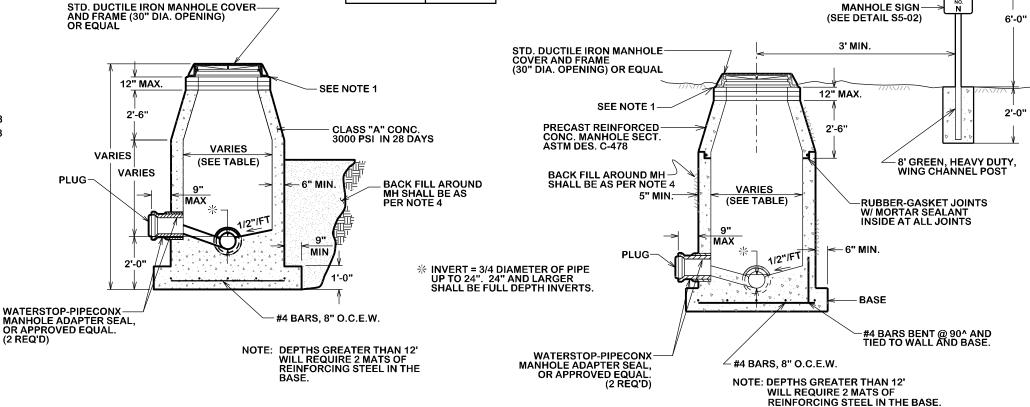
4. MANHOLE LOCATION AND COMPACTION AS FOLLOWS:

LOCATION COMPACTION REQUIREMENT

PAVEMENT_____ 98 % STANDARD PROCTOR - ASTM D 698 LANDSCAPE AREA _ _ _ 90 % STANDARD PROCTOR - ASTM D 698

- 5. NO RINGS ARE REQUIRED OUTSIDE OF STREET RIGHT-OF-WAY
- 6. IN FLOODPLAINS OR AREAS OF CONCENTRATED FLOW, THE CONE SHALL EXTEND 1 FOOT ABOVE THE BASE FLOOD ELEVATION OR A BOLT DOWN WATER-TIGHT RING AND COVER SHALL BE USED, **VENTED WHERE REQUIRED.**
- 7. WARNING SIGN ONLY TO BE PLACED WHERE SEWER CROSSES OPEN FIELDS.

| | MANHOLE DIA. | MAIN SIZE |
|-----------------------------|--------------|---------------|
| | 4 FT | <18in. |
| | 5 FT | ≥18in. <30in. |
| | 6 FT | ≥36in. |
| IANHOLE COVER—— OPENING) | | |



CAST IN PLACE MANHOLE

PRE-CAST MANHOLE

STANDARD MANHOLE

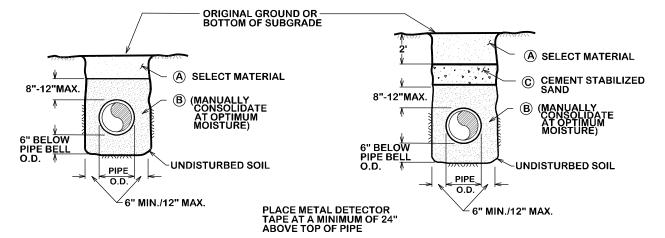
S1-00

- SEE NOTE 7

NOTES:

- 1. FOR BEDDING AND TRENCHING WITHIN ALL EXISTING PAVED AREAS, SEE DETAILS FOR OPEN CUT STREETS. (Details ST4-00, ST4-01, ST4-02). THIS NOTE DOES NOT APPLY TO STREETS BEING RECONSTRUCTED.
- 2. ALL BEDDING & INSTALLATION OF PVC PIPE SHALL BE IN ACCORDANCE TO ANSI/AWWA STANDARDS FOR PVC PIPE.
- 3. ALL BEDDING & INSTALLATION OF DUCTILE IRON PIPE SHALL BE IN ACCORDANCE TO ANSI/AWWA C150/A21.50.
- 4. COMPACTION SHALL BE ATTAINED BY MECHANICAL TAMPING.
- 5. ALL TRENCHES SHALL BE BACK FILLED AND TEMPORARY PAVING OR PLANKING PLACED AT THE END OF EACH WORKING DAY.
- (A) SELECT NATIVE MATERIAL MATERIAL EXCAVATED FROM THE DITCH, (WHICH IS FREE OF ROCKS, LUMPS, CLODS, OR DEBRIS LARGER THAN TWO (2) INCHES IN THE LARGEST DIMENSION), COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D698 (STANDARD) AT A MOISTURE CONTENT WITHIN OPTIMUM TO +4% OF OPTIMUM UNDER NON-STRUCTURAL AREAS (ie...YARDS, PASTURES, EASEMENTS) AND TO A MINIMUM OF 98% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D698 (STANDARD) AT A MOISTURE CONTENT WITHIN OPTIMUM TO +4% OF OPTIMUM UNDER NEW STREET AREAS AND STREETS TO BE RECONSTRUCTED.
- B GRANULAR MATERIAL MATERIAL SHALL BE BANK RUN RIVER SAND WHICH IS FREE OF DETRIMENTAL QUANTITIES OF CLAY, DEBRIS, OR ORGANIC MATERIAL AND WHICH, WHEN TESTED BY STANDARD LABORATORY METHODS, MEET THE FOLLOWING REQUIREMENTS: MAXIMUM LIQUID LIMIT 45 MAXIMUM PLASTICITY INDEX MAXIMUM PERCENT PASSING NO. 200 SIEVE MINIMUM PERCENT PASSING 3/4" SIEVE THE MATERIAL SHALL BE FREE FLOWING AND WHEN WET, SHALL NOT ADHERE TO FORM A BALL WHEN PRESSED IN THE HAND.
- © CEMENT STABILIZED SAND

(2 REQ'D)



NON-STRUCTURAL **AREAS**

AREAS TO BE PAVED OR STREETS TO BE RECONSTRUCTED

BEDDING AND TRENCH FOR DI PIPE & PVC PIPE

S1-01

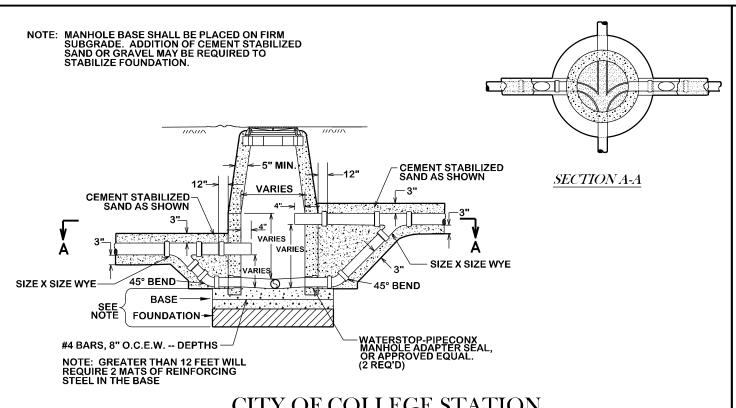
STANDARD SEWER DETAILS





DATE: 08-01-12 SCALE: N T S APPROVED: W.P.K. FIGURE:

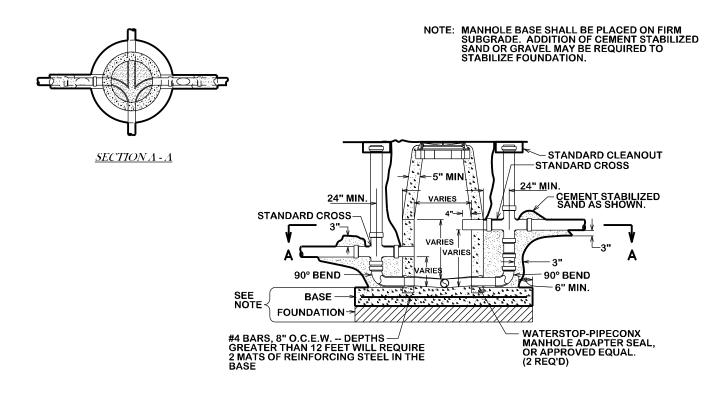
\$1 SHEET 1 OF 7



CITY OF COLLEGE STATION OUTSIDE DROP MANHOLE

ONLY ALLOWED FOR MAIN LINE CONNECTIONS
(6"AND LARGER)

S2-00



CITY OF BRAYN

OUTSIDE DROP MANHOLE

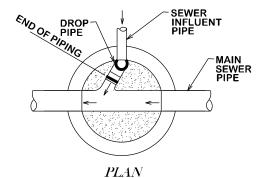
ONLY WHEN APPROVED BY CITY ENGINEER

NOTE:

MANHOLE BASE SHALL BE PLACED ON FIRM SUBGRADE. ADDITION OF CEMENT STABILIZED SAND OR GRAVEL MAY BE REQUIRED TO STABILIZE FOUNDATION.

IN EXISTING MANHOLE, PLACE PVC ELBOW ON BENCH, GROUT NEW BENCH TO SPRINGLINE AND TROWEL SMOOTH. FORM SMOOTH CHANNEL TO INVERT.

ALL NEW CONNECTION AT EXISTING MANHOLES SHALL BE BY CORING ONLY



STD. DUCTILE IRON-MANHOLE COVER AND FRAME (30" DIA. OPENING) OR EQUAL GRADE RINGS FOR ADJUSTMENT TO FINISH GRADE AS PER DETAIL 18"MAX 1111 PRECAST FLAT-TOP LID 30" **BACK FILL AROUND MH** VARIABLE (4' MIN.) SHALL BE AS PER DETAIL S1-02 - NOTE 4 THICKNESS (MIN) USE RAM-NECK GROUT-O-RING, OR APPROVED EQUAL IN JOINTS -PVC CROSS SEE PLAN OR PROFILE FOR PIPE SIZE, TYPE AND INVELEV -1-3/4" STAINLESS STEEL BANDS - 1/8" **PVC PIPE SIZE EQUAL TO** THICKNESS (TYP) W/
5/8" STAINLESS STEEL
BOLTS W/EXPANSION INCOMING PIPE SIZE 45° ELBOW (TURN W/FLOW & GROUT IN PLACE) ANCHORS (TYP) MATCH TOP OF ELBOW SOFFIT WITH TOP OF SOFFIT OF THE LARGEST PIPE IN MANHOLE #4 BARS, 8" O.C.E.W. NOTE: DEPTHS GREATER THAN 12' WILL REQUIRE 2 MATS OF REINFORCING STEEL IN THE BASE

STANDARD DROP MANHOLE

CITY OF BRYAN - DROP MANHOLE TO BE USED ON LINES UP TO 12" IN SIZE

CITY OF COLLEGE STATION - DROP MANHOLE TO BE USED ON LINES UP TO 4" IN SIZE CITY OF BRYAN
The Good Life, Texas Syle:

DRAWN BY: C.L.M.
DATE: 08-01-12
SCALE: N T S
APPROVED: W.P.K.

FIGURE:

\$2 SHEET 2 OF 7

S2-01

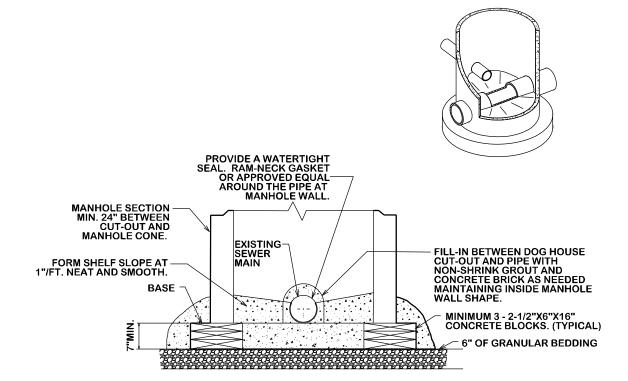
S2-02

BRYAN - COLLEGE STATION STANDARD SEWER DETAILS

City of College, Station

NOTES:

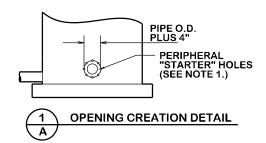
- 1. FLOW SHALL BE MAINTAINED DURING CONSTRUCTION.
- 2. THIS DETAIL TO BE USED WHEN A 6" OR LARGER LATERAL NECESSITATES CONSTRUCTION OF A NEW MANHOLE
- 3. FOR ADDITIONAL STANDARDS NOT SHOWN, SEE "STANDARD MANHOLE" DETAIL S1-02.
- 4. CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPORT OF EXISTING SEWER DURING INSTALLATION OF MANHOLE.
- 5. DOGHOUSE OPENING MAY ONLY BE USED WHEN PLACING A NEW MANHOLE OVER AN EXISTING LINE; OTHERWISE, THE OPENING MUST BE CAST. SIZE, LOCATION, AND ANGLE OF ENTRY SHALL BE AS REQUIRED BY THE PLANS.
- 6. EXCAVATE TRENCH TO MIN. 13" BELOW BOTTOM OF EXISTING PIPE, COMPACT SUBGRADE. PLACE AND COMPACT 6" OF GRANULAR BEDDING. MONOLITHIC POUR OF MIN. 7" DEPTH, 6 SACK TOPPING MIX TO BE PLACED INSIDE, UNDER, AND OUTSIDE MANHOLE BARREL FROM SURFACE OF BEDDING, AROUND CONCRETE BLOCK RISERS, TO A POINT APPROXIMATELY AT THE SPRING LINE OF THE EXIST. PIPE.
- 7. DURING THE SAME POUR, THE FINISH MANHOLE SHELF SHALL BE FORMED AND FINISHED AROUND THE BARREL AND EXISTING PIPE AS SHOWN.
- 8. AFTER CONCRETE SHELF HAS CURED, THE EXISTING PIPE SHALL BE SAW-CUT ON BOTH SIDES TO THE FINISHED SHELF GRADE AND REMOVED. THE EXISTING PIPE SHALL FORM THE TROUGH OF THE MANHOLE AS SHOWN. FILE CUT PIPE TO GIVE SMOOTH EDGES.

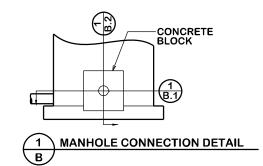


CITY OF COLLEGE STATION
GRAVITY SEWER DOGHOUSE MANHOLE

NOTE:

- 1. 1" DIA. "STARTER" HOLES SHALL BE DRILLED THROUGH WALL OF EXISTING MANHOLE SPACED 3" APART CENTER TO CENTER. AFTER "STARTER" HOLES HAVE BEEN INSTALLED AND APPROVED BY A CITY INSPECTOR, THE CONTRACTOR SHALL BEGIN REMOVING THE CONCRETE INSIDE THE PERIPHERAL "STARTER" HOLES. CONCRETE SHALL BE REMOVED WITH PNEUMATIC HAND TOOLS.
- 2. THE NUMBER OF REBAR DOWELS SHALL VARY WITH SIZE OF OPENING. REBAR SHALL NOT BE SPACED MORE THAN 12" CC.
- 3. WATERSTOP SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.
- 4. CONCRETE SHALL BE 3,000 P.S.I.





REMOVE INVERT AS REQUIRED AND NEW INVERT FOR NEW LINE. NEW INVERT SHALL HAVE SMOOTH TRANSITION INTO EXITING INVERT. REWORK EXISTING INVERT AS REQUIRED.

NON-SHRINK GROUT

SYNKO-FLEX PREFORMED PLASTIC ADHESIVE WATERSTOP, OR APPROVED EQUAL. (SEE NOTE 3.)

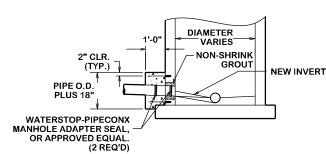
WATERSTOP - PIPECONX MANHOLE WALL 3". (SEE NOTE 2.)

PIPE O.D. PLUS 18"

REMOVE INVERT AS REQUIRED.

NON-SHRINK GROUT

SYNKO-FLEX PREFORMED PLASTIC ADHESIVE WATERSTOP, OR APPROVED EQUAL. (2 REQ'D)



1 CONNECTION DETAIL SECTION VIEW
B.1

1 CONNECTION DETAIL SECTION VIEW

STANDARD MANHOLE TIE-IN

Сиу от Солжее Ябупс

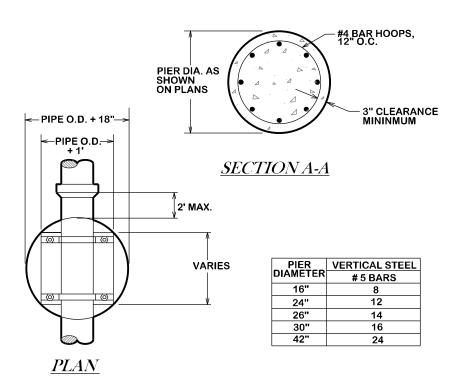
DRAWN BY:C.L.M.
DATE: 08-01-12
SCALE: N T S
APPROVED: W.P.K.

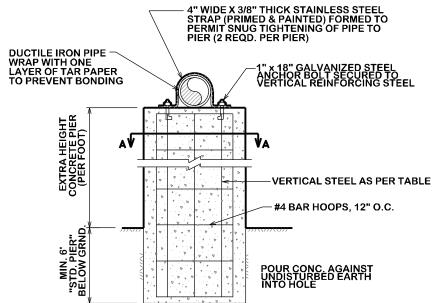
S3-01

FIGURE: \$3 SHEET 3 OF 7

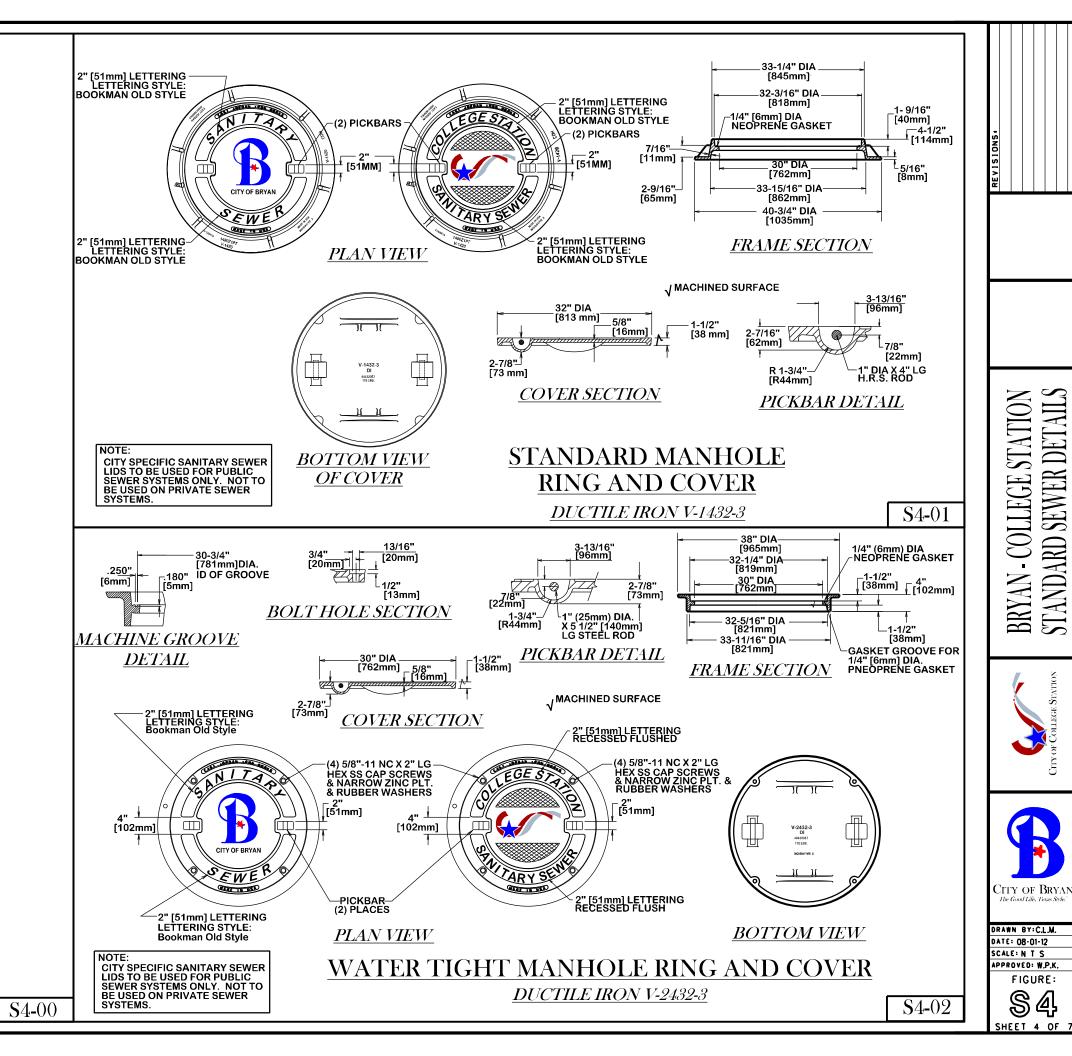


- 1. EACH PIER SHALL BE COMPLETED IN A SINGLE CONTINUOUS POUR.
- 2. CHAMFER EDGES 3/4".
- 3. CONTRACTOR SHALL CONSTRUCT CONCRETE PIER TO A MINIMUM DEPTH OF 6' OR TO A DEPTH WHERE A GOOD BEARING SOIL IS ENCOUNTERED.
- 4. ALL SHAFTS SHALL BE BORED VERTICALLY PLUMB WITHIN 2"TOLERANCE.
- 5. ALL INFORMATION SHOWN IS CITY MINIMUM. ALL PIERS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER.





TYPICAL CONCRETE DRILLED PIER FOR AERIAL SEWER

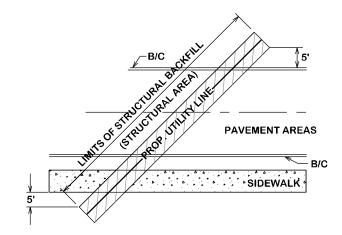


STANDARD SEWER DETAILS

COLLEGE

FIGURE:

\$4



STRUCTURAL BACKFILL AREA

S5-00

METER BOX OR STANDARD CLEAN-OUT BOOT 6" CLEAN OUT STACK DIP OR PVC FOR EARTH, SEE BEDDING AND TRENCH DETAIL CEMENT STABILIZED SAND AS SHOWN 2" CUSHION REQUIRED FOR ROCK, CONCRETE NOT LESS THAN 3" STANDARD CLEAN OUT FOR MAIN LINE

S5-01

ALL AREAS WHERE EXISTING VEGETATION AND GRASS COVER HAVE BEEN BARED

BY CONSTRUCTION SHALL BE ADEQUATELY BLOCK SODDED OR HYDROMULCHED AND WATERED UNTIL GROWTH IS ESTABLISDHED. IN DEVELOPED AREAS WHERE GRASS IS PRESENT, BLOCK SOD WILL BE REQUIRED. BARED AREAS SHALL BE

SEEDED OR SODDED WITHIN 14 CALENDAR DAYS OF LAST DISTURBANCE.

APPROVED EROSION CONTROL MEASURES MUST BE INSTALLED DURING THE ENTIRE TIME THAT EARTH HAS BEEN BARED BY CONSTRUCTION AND SHALL STAY IN PLACE UNTIL ACCEPTABLE VEGETATIVE GROWTH IS ESTABLISHED

AFTER CONSTRUCTION IS COMPLETE AND THEN REMOVED BY CONTRACTOR.

ALL EROSION CONTROL MEASURES SHOULD BE CLEANED OF SILT AFTER

ESTABLISHMENT OF VEGETATION MAY BE A WARRANTY ITEM.

GENERAL NOTES:

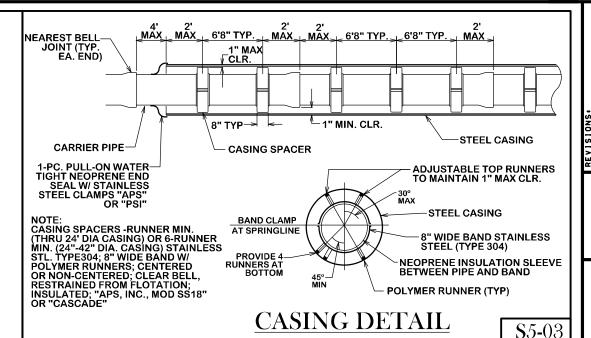
EVERY RAIN.

[∠] 45° BEND

NOTES: 1. FURNISH AS SHOWN ON PLANS AND/OR AT EACH MANHOLE WHERE **SEWER LINE CROSSES OPEN FIELDS** BLACK TEXT 2. SIGNS TO BE CONSTRUCTED FROM 20 GA. STEEL BAKED ON ENAMEL FINISH. FURNISH ONE SIGN AND ONE POST FOR EACH OPEN FIELD WARNING 10" UNDERGROUND SEWER AND AT OTHER LOCATIONS AS SHOWN ON THE PLANS. FURNISH CONTACT THE CITY **BEFORE EXCAVATING** SAME NUMBER OF REPLACEMENT SIGNS AS FOR EACH INSTALLED (OMITTING MANHOLE NUMBER YELLOW . BACKGROUND ON MANHOLE SIGN) (NOT A SEPARATE PAY ITEM) MANHOLE NO. 2" BLACK PRESSURE SENSITIVE NUMBERS TO BE ADDED AFTER N BASIC SIGN HAS BEEN PAINTED WHITE-BACKGROUND

SEWER WARNING AND MANHOLE IDENTIFICATION SIGN

S5-02



OPEN CUT
LIMIT

WIDTH OF PAVEMENT

WIDTH OF PAVEMENT

STEEL CASING
AS REQUIRED

CARRIER PIPE

2'-0"
MIN.

OPEN CUT
LIMIT

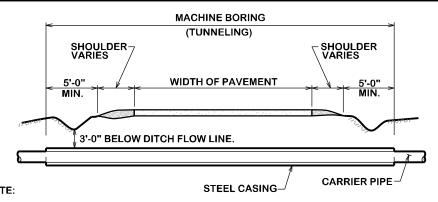
SIDEWALK MAY BE
OPEN CUT OR BORED
AS DIRECTED BY
THE ENGINEER

NOTE:

- 1. FOR MORE INFORMATION ON WATER AND SEWER LINE CROSSING SEE CITY STANDARD SPECIFICATION FOR WATER AND SEWER LINE CONSTRUCTION.
- 2. STEEL CASING SHALL BE AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS.
- 3. DRY BORING PREFERRED, WET BORING ALLOWED ONLY WHEN APPROVED BY THE CITY ENGINEER.

TYPICAL URBAN CITY STREET CROSSING

S5-04



- 1. FOR MORE INFORMATION ON WATER AND SEWER LINE CROSSING SEE CITY STANDARD SPECIFICATION FOR WATER AND SEWER LINE CONSTRUCTION.
- 2. STEEL CASING SHALL BE AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS.
- 3. DRY BORING IS REQUIRED.

TYPICAL RURAL STREET CROSSING

S5-05





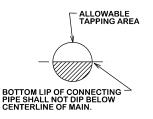
DRAWN BY:C.L.M.
DATE: 08-01-12
SCALE: N T S
APPROVED: W.P.K.

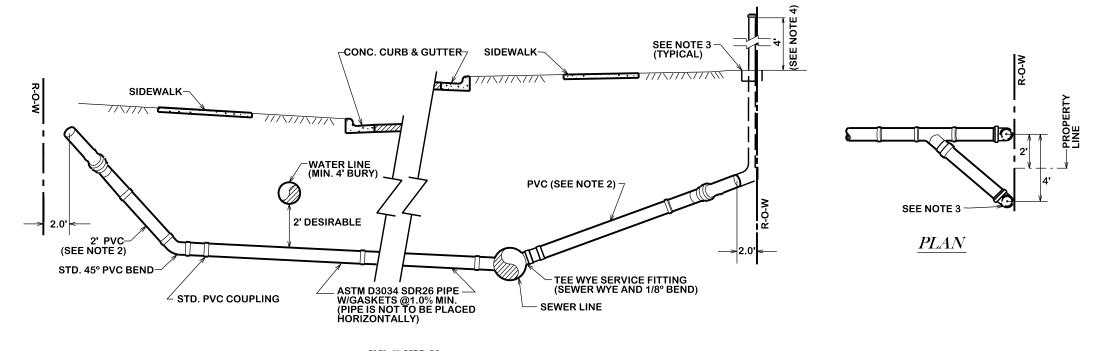
FIGURE:

SHEET 5 OF 7

NOTE

- 1. ALL MATERIAL SHALL BE ASTM D3034 SDR26 W/ GASKETS
- 2. ALL SERVICE CONNECTIONS & EXTENSIONS ARE TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION.
- 3. A CLEAN OUT IS REQUIRED AND WILL BE INSTALLED BY THE CONTRACTOR AT THE ROW FOR EACH SERVICE. CLEANOUT SHALL INCLUDE A BRASS PLUG.
- 4. CLEANOUTS SHALL BE EXTENDED 4 FEET ABOVE NATURAL GROUND. CLEANOUT CAP FITTING SHALL BE PLACED ON TOP.
- 5. LOT CORNERS SHALL BE MARKED WITH A LATH UNDER THE SUPERVISION OF A RPLS UPON COMPLETION OF CONSTRUCTION

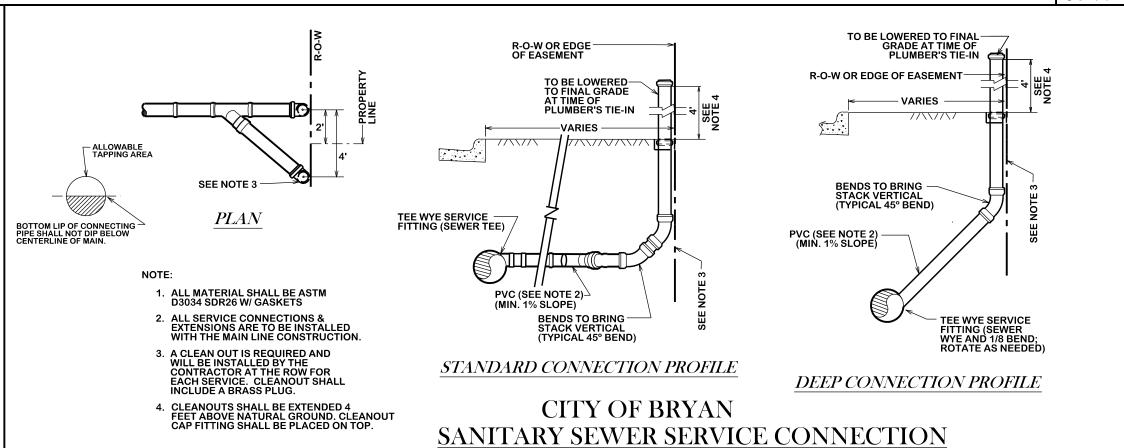




<u>PROFILE</u>

CITY OF BRYAN SEWER SERVICE LINE CROSSING

S6-00





BRYAN - COLLEGE STATION STANDARD SEWER DETAILS





DRAWN 8Y:C.L.M.
DATE: 08-01-12
SCALE: N T S
APPROVED: W.P.K.
FIGURE:

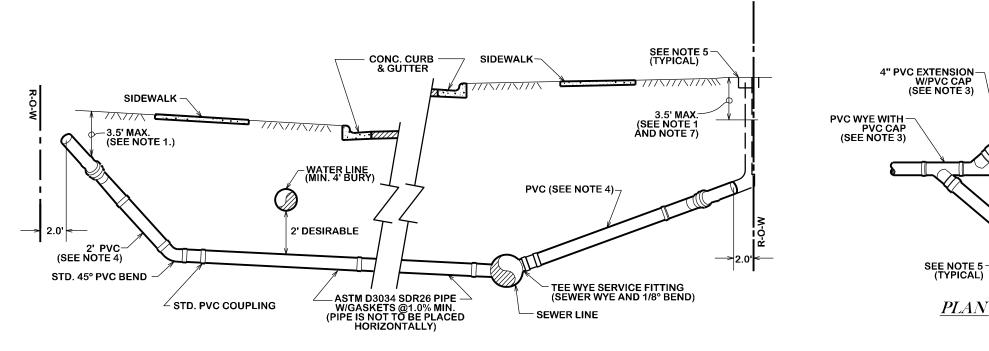
S6-01

SHEET 6 OF 7

NOTE:

- 1. WHERE DOUBLE WYE SERVICE ELEVATION IS LESS THAN 2'-7" BELOW PROPOSED BACK OFCURB, MIN. SLAB ELEV. MUST BE SET TO ALLOW SANITARY SEWER SERVICE.
- 2. MARK EACH SERVICE END WITH METAL "T" POST PAINTED GREEN.
- 3. ALL MATERIAL SHALL BE ASTM D3034 SDR26 W/ GASKETS
- 4. ALL SERVICE CONNECTIONS & EXTENSIONS ARE TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION.
- 5. A CLEAN OUT IS REQUIRED AND WILL BE INSTALLED BY THE PLUMBER AT THE ROW FOR EACH SERVICE.
- 6. LOT CORNERS SHALL BE MARKED WITH A LATH UNDER THE SUPERVISION OF A RPLS UPON COMPLETION OF CONSTRUCTION
- 7. WHEN SERVICE CONNECTION IS DEEP, CONTRACTOR MUST PLACE A VERTICAL STACK THAT SHALL BE BROUGHT WITHIN 3-1/2 FEET BELOW NATURAL GROUND.





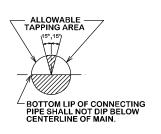
PROFILE

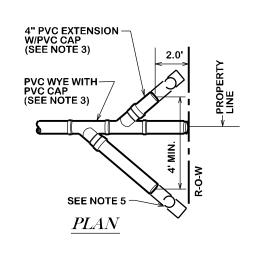
CITY OF COLLEGE STATION SEWER SERVICE LINE CROSSING

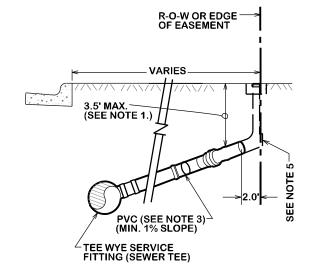
S7-00

NOTE:

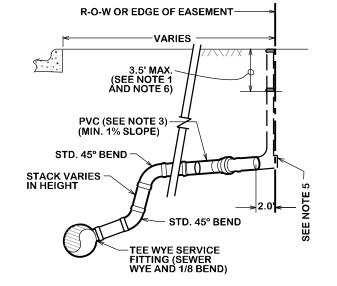
- 1. WHERE DOUBLE WYE SERVICE ELEVATION IS LESS THAN 2'-7" BELOW PROPOSED BACK OFCURB, MIN. SLAB ELEV. MUST BE SET TO ALLOW SANITARY SEWER SERVICE.
- 2. MARK EACH SERVICE END WITH METAL "T" POST PAINTED GREEN.
- 3. ALL MATERIAL SHALL BE ASTM D3034 SDR26 W/ GASKETS
- 4. ALL SERVICE CONNECTIONS & EXTENSIONS ARE TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION.
- 5. A CLEAN OUT IS REQUIRED AND WILL BE INSTALLED BY THE PLUMBER AT THE ROW FOR EACH SERVICE.
- 6. WHEN SERVICE CONNECTION IS DEEP, CONTRACTOR MUST PLACE A VERTICAL STACK THAT SHALL BE BROUGHT WITHIN 3-1/2 FEET BELOW NATURAL GROUND.







STANDARD CONNECTION PROFILE



DEEP CONNECTION PROFILE

CITY OF COLLEGE STATION

SANITARY SEWER SERVICE CONNECTION

REVISIONS.

BRYAN - COLLEGE STATION STANDARD SEWER DETAILS





DRAWN BY:C.L.M.
DATE: 08-01-12
SCALE: N T S
APPROVED: W.P.K.
FIGURE:

\$7 SHEET 7 OF 7

S7-01