Site Plans for:

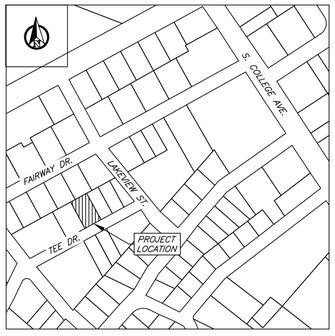
Tee Drive Duplex

Country Club Estates Phase 1

Block D, Lot 16R - 0.185 Acres ,

208 Tee Drive

Bryan, Brazos County, Texas 77801



VICINITY PLAN
N.T.S

Sheet List Table	
Sheet Number	*Sheet Title*
C1	Notes
C2	Site Plan
C3	Erosion & Sedimentation Control Plan
C4	PVMT & Grading Plan
C5	Post-Development Drainage Area Map
L1	Landscape Plan
S1	BCS Unified Sewer Details
S2	BCS Unified Sewer Details
W1	BCS Unified Water Details
W2	BCS Unified Water Details
ST	BCS Unified Street Details
SW	BCS Unified Sidewalk Details

OWNER/DEVELOPER:

Campus One Mile Properties, LLC
1551 Greens Prairie Road, Ste 101A
College Station, TX 77845

ENGINEER:

J4 Engineering

Firm # 9951
PO Box 5192
Bryan, Texas 77805
979-739-0567

811 Know what's **below.** **Call** before you dig.

Preliminary Plans Only
Not for Construction

This document is released for the purpose of interim review under the authority of Glenn Jones, P.E. 97600 on 28-Oct-26. It is not to be used for construction, bidding, or permitting purposes.

Released for Review

October 2026

J4E PROJECT No. 26-057

General Notes:

1. The contractor shall promptly notify the engineer of any discrepancies between these plans and other drawings of differing disciplines & specifications.

2. The contractor is specifically cautioned that the location and/or elevation of the existing utilities as shown on these plans is based on records of the various utility companies and, where possible, measurements taken in the field. The information is not to be relied upon as being exact or complete. It is the contractor's responsibility to avoid all existing utilities and repair any damaged lines, at his own expense, whether the utility is shown on these plans or not. The contractor shall notify the appropriate utility company 48 hours prior to any excavation. The contractor shall also notify the engineer if design changes need to be made in the field.

3. Contractor to verify all underground utilities in the field prior to construction.

4. It is the responsibility of the contractor to comply with all state and federal regulations regarding construction activities near energized over head power lines.

5. The contractor shall be responsible for the protection of all existing utilities or service lines that are crossed or exposed during construction operations. Where existing utilities or service lines are cut, broken, or damaged, the contractor shall repair or replace the utilities or service line with the same type of material and construction or better. This material and work shall be at the contractor's own expense.

6. During the execution of the work, the contractor shall maintain the project site in an orderly and acceptable manner as far as practical. The contractor shall clean and remove from the project area all surplus and discarded materials, temporary structures, and debris of any kind and shall leave the project site in a neat and orderly condition. All clean up will be done to the satisfaction of the engineer.

7. Contractor is responsible for OSHA established trench safety as described in the federal register 29 CFR Part 1926. a trench safety plan should be prepared and a "competent person" appointed prior to any and all excavating operations exceeding 5' depth. The plan is to be prepared and sealed by a registered texas professional engineer and shall be submitted to the City of College Station and consulting engineer prior to any excavation on the project.

8. A copy of the approved construction plans shall be kept on site at all times throughout the entire construction of the project. Contractor shall maintain a a set of redline drawings, recording as-built conditions during construction. These redline marked up drawings will be submitted to the design consultant who will make the changes on the original tracings, labeling each sheet in the set as "record drawings".

9. The contractor shall be responsible for safeguarding and protections all material and equipment stored on the jobsite. The contractor shall be responsible for the storage of materials in a safe and workmanlike manner to prevent injuries, during and after working hours, until project completion.

10. Contractor to store materials at location(s) approved by & coordinated with the owner. Equipment is to be stored overnight at locations so as not to block streets or drives. Materials are to be protected from damage by the elements.

11. Contractor shall saw cut remove and replace concrete pavement, and curb & gutter as required to construct proposed improvements.

12. It shall be the responsibility of the contractor to pay for and obtain all required permits and inspection approvals for all work shown.

13. Any adjacent property and right-of-way disturbed during construction will be returned to their existing condition or better. The contractor agrees to repair any damage to the public right-of-way in accordance with the standards of the applicable regulatory agency.

14. All exposed dirt surfaces shall be seeded, hydro-mulched, or sodded.

15. The contractor shall not create a dirt nuisance or safety hazard in any street or driveway. the pavement be cleaned daily.

16. Adequate drainage shall be maintained at all times during construction and any drainage ditch or structure disturbed during construction shall be restored to existing conditions or better.

17. The contractor shall coordinate all fence removal and replacement with the Owner.

18. The contractor shall protect all monuments, iron pins, and property corners during construction.

19. The contractor must provide construction staking from the information provided on the plans.

General Utility Note (Private & Public):

1. All excavation for underground utilities shall be made true to grade. Excavation shall be made a minimum of six inches below the required grade and provide a sand bed for the piping. Backfill over piping shall be made with earth or fill sand , free of debris, and shall be tamped by hand or mechanical means to the density of the adjacent undisturbed earth or to 95% standard proctor density (ASTM D698), which ever is greater. All trenching and excavation shall be done in strict accordance with current OSHA requirements and all other applicable safety codes and standards.

2. Minimum bury or cover specified is to be measured from finish grades. Where utility line extend under pavement, the bury or cover shall be measured from the bottom of the structure.

3. Utility installations in non-structural areas shall be bedded and initial backfill consistent with non-structural requirements. In structural areas (i.e. under foundations, pavement, walks, etc.) the utility shall be bedded and initial backfill with cement stabilized sand. Final backfill in these areas shall be compacted by mechanical tamping to structural compaction requirements.

4. Regardless of elevations shown for manhole rims, clean-out covers, or grates, these items shall be placed flush with the pavement elevations and slopes. Manholes and clean-outs not in pavement areas shall be set 3 inches above the finish grade.

5. Contractor shall uncover existing utilities at all "points of interest" to determine if conflicts exist before commencing and construction. Notify the engineer at once of any conflict.

6. The contractor shall coordinate all utility installation so that grade critical elements (i.e. storm drain, sanitary sewer, etc.) do not conflict with non-grade critical elements (i.e. electrical conduit, water services, etc.).

7. The contractor shall furnish all materials, equipment, and labor for excavation, boring, installation, and backfilling of utility lines and relates appurtenances, as shone on the plans.

8. The loading and unloading of all pipe and other accessories shall be in accordance with the manufacturer's recommended practices and shall, at all times, be performed with care to avoid any damage to the material. The contractor shall locate and provide the necessary storage areas for materials and equipment.

9. Contractor shall be responsible for coordinating all connections to public systems and installations with regulatory inspector.

10. This project shall be built by means of open cut except as noted on the drawings. Contractor to determine the locations of bore pits in the field subject to the inspector's approval.

11. Structural backfill will be required for all excavation within 5 feet of public roadway pavements or walks.

Private Utility Notes:

1. The contractor shall install the proposed private utility lines in accordance with local codes, latest national plumbing code, and all applicable state and local laws. Other private or public utilities shall be installed in accordance with the utility company's specifications. Should these drawings or specifications differ with other utility company's specifications, the stricter of the two shall apply.

2. It shall be the responsibility of the contractor to pay for and obtain all required permits and inspection approvals for all work shown.

3. The contractor shall coordinate all installations of service lines, conduits, meters, etc., with the appropriate utility company.

Water Line Notes (Public & Private):

1. All domestic water line pipe shall be constructed out of PVC (Sch 40). Public or fire water line pipe shall be constructed out of C900-DR14 and public services shall be copper.

Storm Sewer Notes (Private):

1. All 15 inch to 42 inch storm sewer pipe, shall be constructed out of reinforced concrete pipe (RCP), C443 ASTM C76, Class III except as noted.

2. All 6 inch to 12 inch storm sewer pipe, except as noted, shall be HDPE. SDR-35, ASTM D-3034, PVC pipe may be used in place of HDPE pipe.

3. Contractor shall provide a minimum of 12 inch clearance at storm sewer and water line crossings and a minimum of 6 inch clearance at storm sewer and sanitary sewer crossings.

4. Unless otherwise specified, the contractor shall install all storm sewer pipe in accordance with the trench detail contained in these construction drawings.

Demolition & Construction Notes:

1. Demolition of existing structures and improvements shall include all work contained on these plans, but shall not be limited to the items specially identified. Any materials to be demolished or cleared shall be completely removed and disposed of. This work will not only consist of above ground items, but underground elements as well, including but not limited to: tree roots, foundation systems, old pipes, etc. The contractor shall notify the engineer of any additional items that require demolition, not identified on these plans, prior to removal.

2. It shall be the responsibility of the contractor to stage and sequence all demolition work with utility companies to provide minimal interruption and inconvenience of utility services.

3. Demolished surplus material shall be legally disposed of off-site.

4. All pavement edges, bounding the construction area & matching with new construction, shall be neatly sw cut, unless gravel. Flexible pavement shall be saw cut a minimum of 24" beyond any proposed structures.

5. The contractor shall clear all right-of-ways and easements contained in these construction drawings.

6. The contractor shall field verify and locate all existing utilities on site prior to demolition.

7. The contractor shall perform demolition activities as noted and shown on these plans and as directed by the owner/ developer.

8. It shall be the responsibility of the contractor to obtain any permits and pay any fees required for demolition and disposal from the appropriate authorities.

9. The contractor shall install all erosion and sediment control devices prior to commencing demolition work.

10. The contractor is responsible for the protection of all utilities that are to remain in place.

11. The contractor shall take all precautions to avoid damage to any existing road surface.

12. All existing items that are to remain in place which are damaged during construction shall be restored to original condition, or better, at the sole expense of the contractor.

13. Should any existing utilities not shown or shown incorrectly on this plan be found on site, the contractor shall contact the engineer immediately to discuss any possible conflicts before proceeding with any work in that area.

14. An asbestos survey must be performed prior to the demolishing of any structures. The contractor shall adhere to the requirements set forth in the asbestos survey and report.

Dimensional Control Notes:

1. The contractor may obtain an electronic copy of these plans for construction purposes. The electronic file and information generated, by J4 Engineering (J4E), for this project is considered by j4e to be confidential. When issued, it's use is intended solely for the individual or enlity to which it is addressed. The material is intended for use by the recipient named, only, and permission is not granted to the recipient for distribution of these documents in any form or fashion. The recipient understands that this data is authorized "as is" without any warranty as to it performance, accuracy, freedom from error, or as to any results generated throughout its use. The recipient also understands and agrees that J4E, upon release of such data, is no longer responsible for their use or modification. The user and recipient of the electronic data accepts full responsibility and liability for any consequences arising out of their use.

2. All dimensions shown are to be used in conjunction with these plans for locating all improvements and shall be field verified by the contractor for workability prior to construction of improvements.

3. Unless otherwise shown, all dimensioning is to the back of curb or edge of pavement, which ever is applicable.

Grading Notes:

1. All unpaved areas shall be adequately graded to drain at a minimum of 1.00% slope, unless otherwise noted, so that no ponding occurs.

2. Unless otherwise specified, unpaved areas shall drain away from buildings so that the perimeter curb is a minimum 6" lower than the finished floor.

3. Finish grade adjacent to curbing or sidewalk shall be ½" below the top of concrete and 2" below in landscaping areas.

4. When top of curb elevations are shown, the curb height is 6" unless otherwise specified.

5. The contractor shall follow the general intent of the grading plans. Minor adjustments to the actual elevations shown on the grading plan may be required to match existing ground elevations and structures.

6. Adequate drainage shall be maintained at all times during construction and any drainage ditch or structure disturbed during construction shall be restored to existing conditions or better.

7. The approval of these plans is not an authorization to grade adjacent properties. When field conditions warrant off-site grading, permission must be obtained from the affected property owner(s). Any adjacent property and right-of-way disturbed during construction will be returned to there existing conditions or better.

Erosion Control Notes:

1. Erosion control measures shown in these plans shall be considered the very minimum required. It shall be the responsibility of the contractor to implement all other erosion control measures (diversion berms, drainage structures, swales, additional fencing, etc...) necessary to keep the existing improvements and developments from damage of any kind, during all phases of demolition and construction.

2. The site operator, or his representative established by a letter of delegation, shall make a visual inspection of all siltation controls and newly stabilized areas on a daily basis; especially after a rainfall to insure that all controls are maintained and properly functioning. Any damaged controls shall be repaired or replaced prior to the end of the work day, including re-seeding and mulching or re-sodding, if necessary.

3. All sediment trapping devices shall be installed as soon as practical after the area has been disturbed. All sediment trapping devices shall be cleaned when sediment level reaches 25% capacity. Sediment shall be disposed of by spreading on site or hauling away if not suitable for fill.

4. During construction, contractor shall maintain best management practice (bmp). Sediment fence. hay bale barriers, or other devices shall control all storm water leaving the site.

5. The contractor shall be responsible for establishing temporary erosion control measures as required for different phases of construction. Erosion control measures shown may need to be adjusted to handle increased or concentrated flows created by various stages of construction.

6. Phase II erosion control measure measures shall be implemented immediately after construction of their associated improvements. Inlet protection barriers shall be constructed with hay bales or silt fencing. Inlets located in pavements areas shall be protected with sand bags, replacing the hay bales or silt fencing once the pavement is in place. Erosion control measures shall be kept in place until upstream drainage areas are fully stabilized.

7.

8. The contractor is responsible for removing sediment control devices after the site has been seeded and/ or sodded, and ground cover has taken root.

9. The contractor shall take all necessary measures to ensure that all disturbed areas are stabilized. Designated areas shall be block sodded and all other areas disturbed due to construction shall be hydro-mulched seeded. These stabilized areas shall be sodded or seeded, fertilized, and watered to establish a solid ground cover within 30 days of completion or if activities cease for 14 days.

10. When hydro-mulching is required, contractor shall keep mulch moist after installation and until area shows growth.

11. Erosion control measures shall be implemented prior to any excavation or demolition work.

Sidewalk Construction

1. Sidewalks shall be doweled into and tie to any concrete structure adjacent to sidewalk (driveway, inlet box, curb) #4 x 12" bars @ 18" O.C.

2. ADA ramps shall be constructed per the ambulatory ramp details on the pavement plan shown in these plans. All ramps shall have a detectable warning surface for the full length of the ramp.

Paving Notes:

1. The pavement system shown was designed without the aid of a geotechnical investigation. Due to the plastic soils within this area, some differential movement may still occur due to seasonal soil moisture variations.

2. Sub-grade

   a. Existing trees, stumps, and large tree systems, shall be grubbed and removed. Vegetation shall be removed and the top 6 inches of top soil and sub-grade stripped from the areas to be covered by the proposed improvements.

   b. Paving areas shall be proof-rolled with a 20 ton roller and, if required at the time of construction, the contractor shall stabilize weak areas by over excavation and backfilling.

   c. Materials excavated on site, excluding the top 6 inches, may be used as fill material, under pavement areas only, if the material is free from trash, lumps, clods, organic substance, & other foreign matter.

   d. Fill material shall be placed in eight inch maximum loose lifts, with each lift wetted or dried to a moisture content range of 0% to +3% of the optimum moisture content and compacted to a uniform density of 95% of the maximum dry density as determined by ASTM D698.

   e. Compaction test, for fill, shall be verified by in-place density test for each lift. One in-place density test shall be performed for every 4,000 SF with a minimum of 3 tests being performed, per lift.

3. Asphalt

   a. All asphalt paving shall be hot-mix asphalt cement (HMAC), Type D P64-22, in accordance with TxDOT Item #340.

   b. No more than 20% RAP shall be used with HMAC mix design.

   c. Limestone base shall be prime coating with RC-250, MC-30, CRS-1P/2P, or approved equal in accordance with TxDOT Item #300 and Item #310.

4. Portland Cement Concrete

   a. All concrete, unless otherwise specified, shall have a minimum compressive strength of 3,500 psi at 28 days for pavement and 3,000 psi at 28days for non-pavement applications (ie. sidewalks, drainage flumes, and containment structures).

   b. All concrete shall be vibrated when placed and not raked a distance greater than 10 feet.

   c. Unless otherwise noted, joint spacing shall not exceed 15 feet in any direction to another joint or edge of pavement. Control joints shall be cut between 4 and 18 hours after placement of concrete and may be substituted with construction joints. If provided, the contractor shall follow the general intent of the joint plans shown.

   d. Expansion joints shall not exceed a maximum spacing of 45 feet and should not be placed through the middle of area inlets or junction boxes located in the pavement. All area inlets or junction boxes, located in pavement area, shall be installed with isolation joints between the structure and the pavement.

   e. All joints shall be sealed with Sonoborn Sonolastic SL-1, or an approved equal.

   f. Concrete shall not be placed if the air temperature is 50° F and falling or 95° F or higher. Concrete may be placed if the air temperature is 40° F and rising or less than 95° F.

5. Steel

   a. All reinforcing steel shall be deformed billed steel bar having a minimum yield strength of not less than 60 KSI conforming to ASTM A6115, Grade 60.

   b. All reinforcing steel shall be free from rust or other bond reducing agents.

   c. All splices in pavement and curbing steel shall be staggered and lapped 30 inches times the bar diameter or 12 inches, whichever is greater.

   d. Concrete coverage for the reinforcing steel shall comply with the ACI code, latest edition. The steel shall have a minimum 1 ½ inch clearance.

Gas Company Notes:

1. At all underground gas utility crossings, the contractor shall give the appropriate utility company a minimum of 72 hours notice so that their field representative may be present.

2. Eighteen (18) inch clearance shall be maintained between the proposed utility and the existing underground gas line. this clearance shall be measured form outside of pipe to outside of pipe, or sleeving, whichever is more conservative.

3. For excavation near the underground gas line(s), the contractor shall cover, or remove, the bucket teeth of the excavator. The final thirty-six (36) inches surrounding the gas line shall be excavated by hand digging.

Traffic Control Notes:

1. Contractor shall provide and install traffic control devices in conformance with part VI of the Texas Manual on Uniform Traffic Control Devices (Texas MUTCD, most recent edition with revisions) during construction.

2. Lane closure will not be allowed unless approved by the TxDOT, County, or BCS representative, as applicable.

3. The work shall be completed such that the roadway will be fully opened to traffic overnight. Overnight lane closures will not be permitted, unless otherwise approved by the applicable engineer.

4. Plastic drums shall be used for overnight delineation of off roadway work areas.

Legend

Line Types

- Existing Water Line, Size Noted (W-8)
- Proposed Water Line, Size Noted (W-6)
- Existing Water Service (W)
- Proposed Water Service (W)
- Existing Sanitary Sewer Line, Size Noted (S-8)
- Proposed Sanitary Sewer Line, Size Noted (S-8)
- Existing Sanitary Sewer Service (S)
- Proposed Sanitary Sewer Service (S)
- Existing Storm Sewer Piping (ST)
- Proposed Storm Sewer Piping (ST)
- Existing Natural Gas Line (GAS)
- Proposed Natural Gas Line (GAS)
- Existing Underground Electrical Line (UE)
- Proposed Underground Electrical Line (UE)
- Existing Aerial Electrical Line (AE)
- Proposed Aerial Electrical Line (AE)
- Existing Underground Telephone (T)
- Proposed Underground Telephone (T)
- Existing Contour, Elevation Noted
- Proposed Contour, Elevation Noted
- Existing Easement
- Silt Fence (SILT)
- Existing Chain Link Fence
- Proposed Chain Link Fence
- Existing Wire Fence (XXX)
- Existing Board Fence
- Proposed Board Fence

Symbols

- Hydrant
- Storm Grate Inlet
- Water Valve
- S.E.T.
- Water Manhole
- Sewer Manhole
- Water Meter
- Sewer Clean-Out
- Phone Pedestal
- Mail Box
- Sign
- Power Pole

Abbreviations

TP	Top of Pavement	ROW	Right of Way
TC	Top of Curb	W/	With
TG	Top of Ground	W/OUT	With Out
TW	Top of Walk	S.E.W.	Sloped End Treatment
TI	Top of Inlet	BM	Bench Mark
TR	Top of Wall	TBM	Temporary Bench Mark
FL	Flow Line	SY	Square Yard
EG	Existing Grade	LF	Linear Foot
PG	Proposed Grade	CO	Clean Out
TS	Top of Step	O.C.	On Center
Min	Minimum	O.C.E.W.	On Center Each Way
Max	Maximum	PSI	Pounds per Square Inch
N.T.S.	Not to Scale	PVC	Polyvinyl Chloride
PI	Point of Inflection	RCP	Reinforced Concrete Pipe
PT	Point of Tangency	PVMT	Pavement
PC	Point of Curvature	H	Horizontal
Sch	Schedule	V	Vertical

Notes

General Notes:

1. It is the intent of these plans to comply with all BCS guidelines, details, and specifications.

Preliminary Plans Only
Not for Construction

This document is released for the purpose of interim review under the authority of Glenn Jones, P.E. 97600 on 28-Oct-26. It is not to be used for construction, bidding, or permitting purposes.

Released for Review

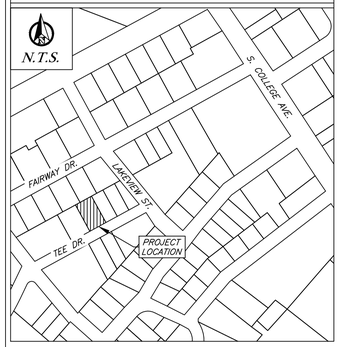
No.	Revision/Issue	Date

Firm Name and Address:
J4 Engineering
PO Box 5192 - Bryan, Texas - 77805
979-739-0567 www.J4Engineering.com
Firm# 9951

Project Name and Address:
Tee Drive Duplex
Country Club Estates Phase 1
Block D, Lot 1R - 0.185 Acres
208 Tee Drive
Bryan, Brazos County, Texas 77801

Date: October 2026	Sheet: C1
Scale: As Noted	
Drawn By: CB	

Vicinity Map



Site Specific Notes:

1. The owner of the property is Campus One Mile Properties, LLC. The subject property is Block D, Lot 16R of the County Club Estates Phase 1 Subdivision, located at 208 Tee Drive, Bryan, Brazos County, Texas 77801.
2. The proposed building is a 2.5–story, 2–unit building with 4 bedrooms per unit with fire sprinklers totalling 2,062 SF, FF=329.12' & Height=24'.
3. The subject property is zoned Residential 5000 District (RD–5).
4. Fire flow demand is 1,500 gpm. The existing hydrant on Tee Drive will provide the fire flow for this project.
5. No portion of this tract lies within a designated 100–yr floodplain according to the F.I.R.M. Maps Panel No. 48041C0215F, Revised Date, April 2, 2014
6. The developed area for this project is 0.130 acres (~5,663 SF).
7. One, 90 gal roll off can for each unit for solid waste service is proposed for this site.
8. All signage to be permitted separately in accordance with the sign ordinance.
9. All minimum building setbacks shall be in accordance with City of Bryan Ordinances.

Utility Notes:

1. Private water line and private sanitary sewer line construction shall be in accordance with the plumbing code. Cleanouts shall be installed per plumbing code.
2. Private water and sewer line service materials to be in accordance with plumbing code.
3. Contractor shall coordinate conduit and/or line installation for telecommunication providers for the site.
4. Depth of the existing water and sewer lines to be verified by the contractor.
5. Where electric facilities are installed, BTU has the right to install, operate, relocate, construct, reconstruct, add to, maintain, inspect, patrol, enlarge, repair, remove, and replace said facilities upon, over, under, and across the property included in the PUE, and the right of ingress and egress on the property adjacent to the PUE to access electric facilities,

Parking Analysis:

Proposed Improvements:

2 – 4 Bedroom Units

New Required Parking:

8... 1 Space per Bedroom

8... Total Required

Total Proposed Parking:

8... Straight in Parking

8... Total Provided

NOTICE!

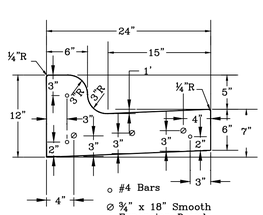
The contractor is specifically cautioned that the location and/or elevation of the existing utilities as shown on these plans is based on records of the various utility companies and, where possible, measurements taken in the field. The information is not to be relied upon as being exact or complete. It is the contractor's responsibility to avoid all existing utilities and repair any damaged lines, at his own expense, whether the utility is shown on these plans or not. The contractor shall notify the appropriate utility company 48 hours prior to any excavation.

Contact Information:

Texas One Call:	800–245–4545
Lone Star One Call:	800–669–8344
Texas Excavation Safety	800–344–8377
City of Bryan	979–209–5900
System (Digtess)	
Bryan Texas Utilities	979–821–5865
Atmos Energy	979–774–2506
Frontier	979–821–4300
Suddenlink	979–846–2229

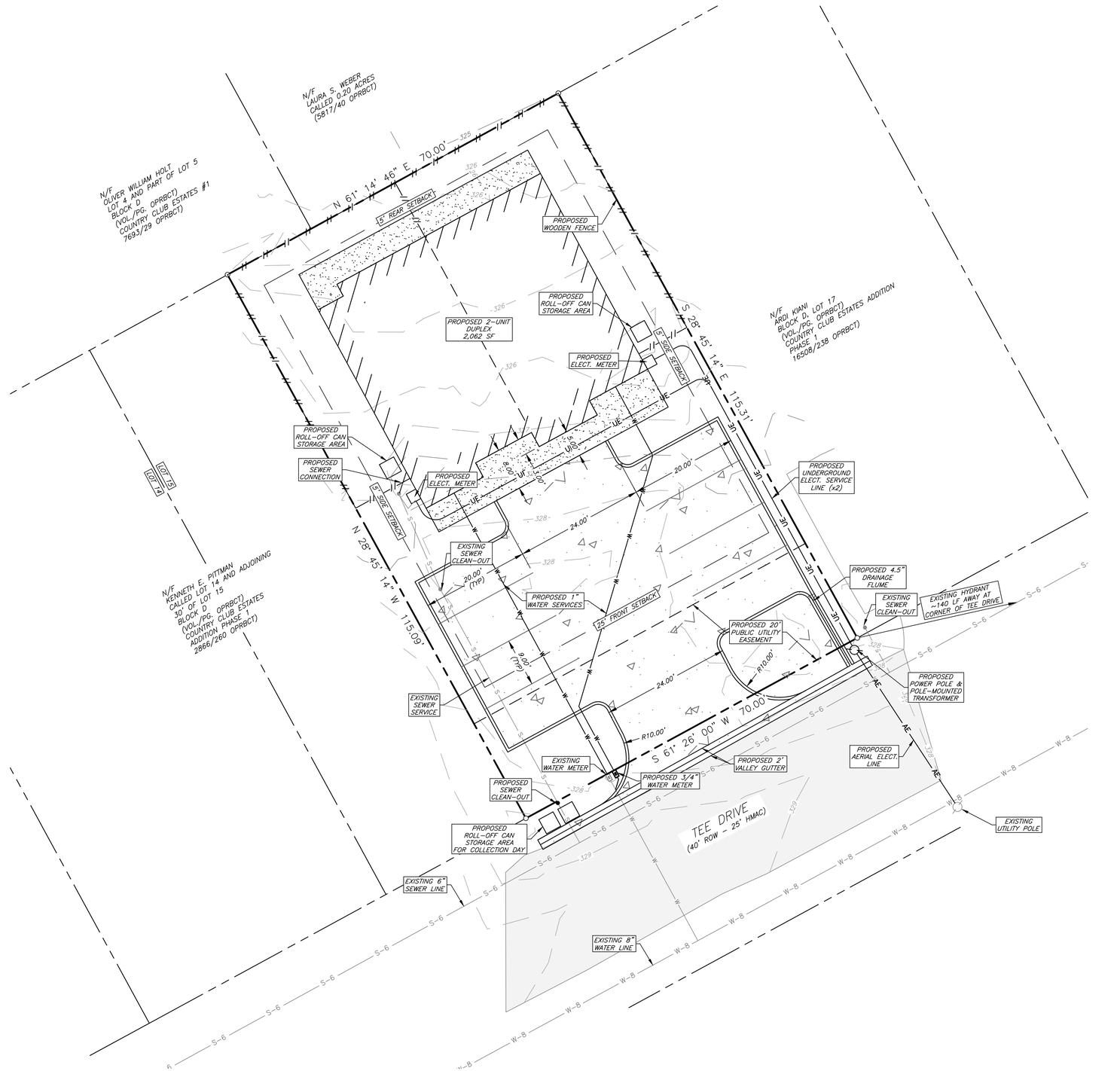
Construction Notes:

1. All concrete to be constructed with 3,500 psi (Min) – 28 day strength portland cement concrete.
2. All items to be removed during clearing and grubbing. Remove not only the above ground elements, but all underground elements as well. All excavated material shall become the property of the contractor unless otherwise directed by the Owner. All debris must be disposed of off site.
3. Prior to grading operations, contractor is to strip the first 6" of soil. Contractor shall proof roll the entire site and remove any unstable materials according to TxDOT Specifications. Select fill is to be used in replacing objectionable material.
4. Assure positive drainage across project site to the storm water structures.
5. Normal Domestic Wastewater is anticipated to be discharged from this development.
6. Potable Water Protection – All devices, appurtenances, appliances, and apparatus intended to serve some special function and that connects to the water supply system, shall be provided with protection against backflow and contamination of the water supply system. As noted in Texas Administrative code 30 TAC 290.47– Appendix F.
7. Irrigation System – Potable water supply must be protected by either an atmospheric or pressure vacuum breaker, or testable double check valve assembly, and installed per City Ordinance.
8. Each utility contractor is responsible for positioning and trenching of service lines. Mark all lines with utility tape. Utility contractors are responsible for coordinating with paving contractor in placement and installation of any necessary utility conduit prior to subgrade preparation. Lines requiring slope control are to be installed first. All other lines not requiring slope control or elevation shall be installed deepest first. Each contractor is responsible for knowing final determination of installation order.
9. Materials and methods for pavement markings shall conform to TxDOT Standard Specifications for Construction of Highways, Streets, and Bridges (current edition), with the following exceptions: 1) Type II marking materials need not be purchased from the Department, and 2) Glass beads may be omitted, but marking material shall be Type II paint–type material.
10. The Contractor shall be responsible for the containment and proper disposal of all liquid and solid waste associated with this project. The Contractor shall use all means necessary to prevent the occurrence of windblown litter from the project site.
11. Demolition/Constuction Waste – Site is required to provide containment for waste prior to and during demolition/construction. Solid waste roll off boxes and/or metal dumpsters shall be supplied by City to permitted contractor(s) only.
12. Contractor is responsible for field verifying existing and proposed grades prior to any construction and reporting any inconsistencies to the Owner.



Driveway Raised Curb Detail

N.T.S



10 5 0 10

Site Plan

General Notes:

1. The topography shown is from field survey data.
2. Refer to Final Plat for all lot dimensions and bearings.
3. All utilities shown are taken from the best available information based on construction utility documents obtained by J4 Engineering from City and Independent agencies and/or above ground field evidence. Shown positions may not represent as–built conditions.
4. The contractor shall be responsible for verifying the exact location of all existing underground utilities, whether shown on these plans or not. Notification of the utility companies 48 hours in advance of construction is required.
5. Contractor is responsible for field verifying existing and proposed grades prior to any construction and reporting any inconsistencies to the Owner.
6. All construction shall be in accordance with the current BCS Standard Specifications, Details, and Design Guidelines for Streets, and Drainage, unless otherwise noted.
7. It is the intent of these plans to comply with all BCS guidelines, details, & specifications.
8. See Sheet C1 – General Notes

Owner/Developer:
Campus One Mile Properties, LLC
1551 Greens Prairie Road, Ste 101A
College Station, TX 77845

Surveyor:
Tumlinson Land Surveying
104 Green Branch Court
Liberty Hill, TX 78642

Preliminary Plans Only Not for Construction

This document is released for the purpose of interim review under the authority of Glenn Jones, P.E. 97600 on 28-Oct-26. It is not to be used for construction, bidding, or permitting purposes.

Released for Review

No.	Revision/Issue	Date

Firm Name and Address:
J4 Engineering
PO Box 5192 - Bryan, Texas - 77805
979-739-0567 www.J4Engineering.com
Firm# 9951

Project Name and Address:

Tee Drive Duplex

Country Club Estates Phase 1
Block D, Lot 1R - 0.185 Acres
208 Tee Drive
Bryan, Brazos County, Texas 77801

Date: October 2026	Sheet: C2
Scale: As Noted	
Drawn By: CB	

J4 Engineering 10/28/2026 J4E Project #26–057 J:\2026\26–057 Tee Dr Duplex\Tee Dr Duplex–Site Plan.dwg

SWPPP Information:

Nature of Construction Activity:
Pavement, drainage, and utility improvements for a site development. Potential pollutants and sources – Sediment from excavations and equipment movements around the site.

Schedule of Events:
1. Install silt fencing.
2. Install stabilized construction exit.
3. Clear and grubb.
4. Install utilities and storm culverts.
5. Apply pavement.
6. Complete grading and install permanent seeding.
7. When all construction activity is completed the site is stabilized. Remove silt fence and re-seed any area disturbed during construction and assure a healthy ground cover.

Areas of Disturbance:
During the construction of the pavement, drainage, and utility improvements the area that will be disturbed includes the street right-of-ways and the water and sanitary sewer connections to existing lines.

Structural Controls:
Temporary stabilization ~ areas where construction activity temporarily ceases for at least 21 days will be stabilized with temporary seed no later than 14 days from the last construction activity in that area all proposed fill material will be seeded.

Silt fence and/or hay bales will be installed at all outfalls, areas where water runs off the site; inlets under construction will have silt fencing or hay bales placed around the perimeter of the inlet all constructed inlets will have sandbags placed in front of the throat to collect sediment but allow flow of water into the inlet.

Storm Water Management:
Storm water drainage will be controlled by storm pipes and a detention pond for the developed area. All areas affected by construction will be fine graded and have permanent seeding. The remainder of the area will remain in its natural state.

Offsite vehicle tracking:
A stabilized construction entrance will be provided to help reduce vehicle tracking of sediments. The paved street adjacent to the site entrance will be swept to remove any excess mud, dirt, or rock tracked from the site. Dump trucks hauling material from the construction site will be covered with a tarpaulin.

Certification of Compliance with State and Local Regulations:
This storm water pollution prevention plan reflects the city's requirements for storm water management, erosion, and sediment control. To ensure compliance, this plan was prepared in accordance with the cities drainage policy. There are no other applicable state or federal requirements for sediment and erosion site plans (or permits) or storm water management site plans (or permits).

Maintenance/Inspection Procedures:
These are the inspection and maintenance practices that will be used to maintain erosion and sediment controls:
- All control measures will be inspected at least once every 14 days and following any storm event of 0.5 inches or greater.
- All measures will be maintained in good working order; if a repair is necessary if will be initiated within 24 hours of the report.
- Built up sediment will be removed from silt fence when it has reached one-half the height of the fence.
- Silt fence will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.
- A maintenance inspection report will be made after each inspection. The inspection report form will be prepared by the site superintendent and filed for record.
- A site superintendent will be responsible for inspections, maintenance and repair activities, and filling out the inspection and maintenance report.

Non-Storm Water Discharges:
It is expected that the following non-storm water discharges will occur from the site during the construction period:

- Water from water line flushing

Site Description:

Project name and location:
Tee Drive Duplexes
208 Tee Drive, Bryan, TX 77801

Owner:
Haswell Park Properties, LLC
4215 FM 974, Bryan, TX 77808

The site is not located on Indian lands.

Latitude: 30° 38' 14.39"
Longitude: -96 21' 34.71"

MS4 operator name: City of Bryan, Texas
Receiving water body: Burton Creek Tributary D
Estimated area to be disturbed: 0.130 acres

The storm water pollution prevention plan shall be in compliance with state and local sediment and erosion plans.

Operator Requirements:
The operator shall submit a NOI to TCEQ and a copy to the operator and post a copy at the construction site in a location where it is readily available for viewing prior to commencing construction activities, and maintain the notice in that location until completion of the construction activity.

The operator shall provide a copy of the NOI to the operator of the municipal separate storm sewer system receiving the discharge, at least two (2) days prior to commencing construction activities.

The operator shall submit a NOT to TCEQ and a copy to the operator of the municipal storm sewer system once the final stabilization has been achieved and the temporary erosion controls have been removed.

Controls must be developed to limit, to the extent practicable, offsite transport of litter, construction debris and construction materials.

Operator Inspection Requirements:
The following records must be maintained and either attached to or referenced in the storm water plan:

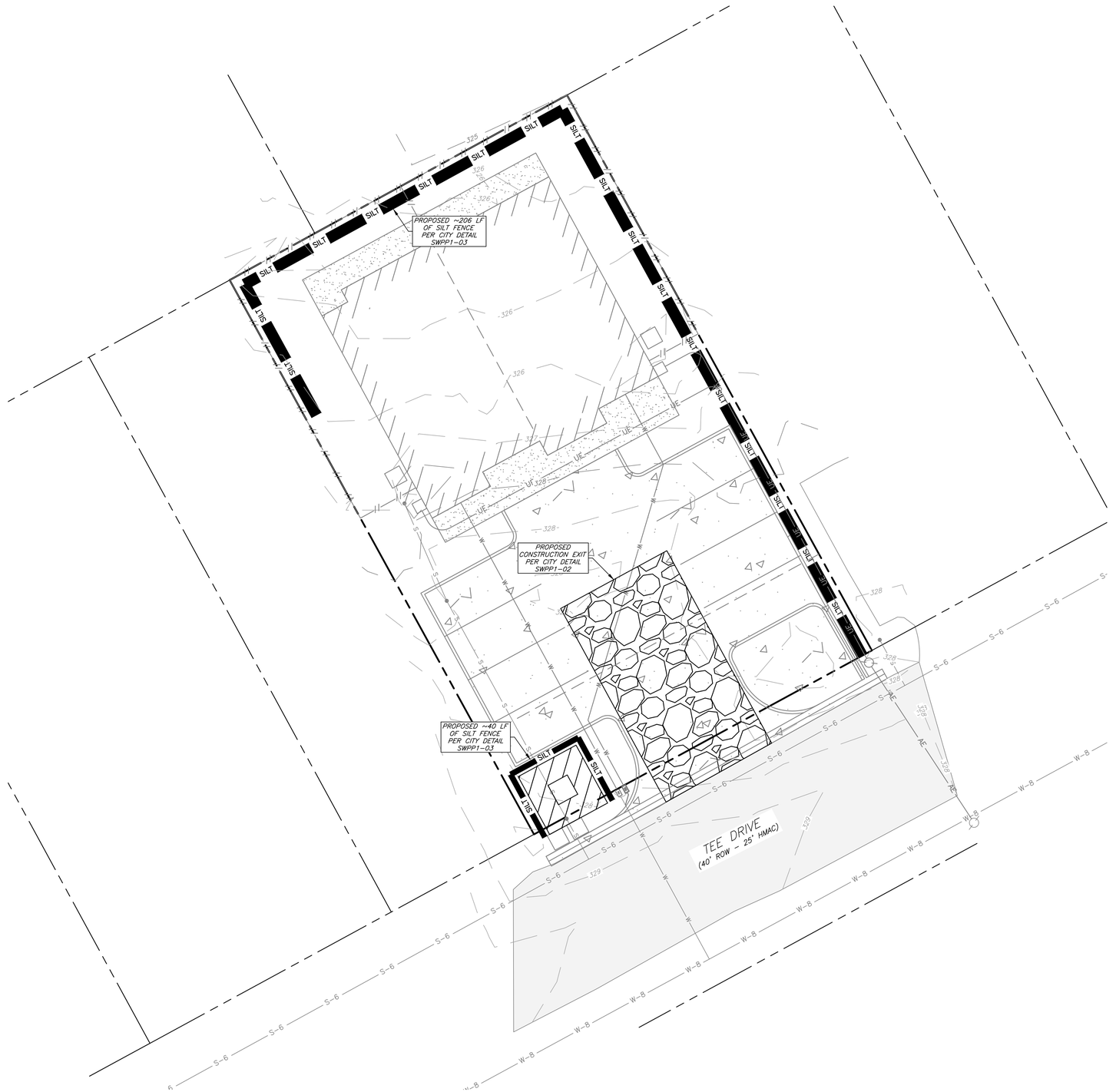
- The dates when major grading activities occur.
- The dates when construction activities temporarily or permanently cease on a portion of the site.
- The dates when stabilization measures are initiated.

A report summarizing the scope of the inspection, names and qualifications of personnel making the inspection, the dates of the inspection, and major observations must be made and retained with the storm water plan. Major observations should include:

- The locations of discharges of sediment or other pollutants form the site;
- Locations of BMP's that failed to operate as designed or proved inadequate for a particular location; and
- Locations where additional BMP's are needed.

Operator's Record Keeping:
The permittee must retain the following records for a minimum of 3 years from the date that a NOT is submitted:

- A copy of the storm water plan and
- All reports and actions required by this permit, including a copy of the construction site notice all data used to complete the NOI.



Erosion & Sedimentation Control Plan

General Notes:

1. Approved erosion control measures must be installed during the entire time that earth has been bared by construction.
2. It is the responsibility of the contractor to use what ever means necessary to minimize erosion and prevent sediment from leaving the project site.
3. The contractor is responsible for implementing, inspecting, and maintaining the erosion and sediment control devices.
6. Phase II erosion control measures shall be implemented immediately after construction of their associated improvements. Inlet protection barriers shall be constructed with sediment filter socks. Inlets located in pavements areas shall be protected with sediment filter socks. Erosion control measures shall be kept in place until upstream drainage areas are fully stabilized.
7. Construction exit is to be dressed with additional rock as needed and maintained so as to prevent construction traffic from tracking mud onto adjacent public streets.
8. Inspections shall be performed every 14 days and after every rainfall event of ½" or more. All erosion control devices shall be cleaned of silt (as needed) after every rain.
9. The contractor is responsible for complying with the TPDES General Permit No. TXR150000 requirements for construction sites.
10. All areas where existing vegetation and grass cover have been bared by construction shall be adequately hydromulched and watered until growth is established. All erosion control measures shall remain in place until acceptable vegetative growth is established after construction is complete and then removed by contractor.
11. It is the intent of these plans to comply with all City of College Station guidelines, details & specifications.
12. See Sheet C1 – General Notes

Preliminary Plans Only Not for Construction

This document is released for the purpose of interim review under the authority of Glenn Jones, P.E. 97600 on 28-Oct-26. It is not to be used for construction, bidding, or permitting purposes.

Released for Review

No.	Revision/Issue	Date

Firm Name and Address:
J4 Engineering
PO Box 5192 - Bryan, Texas - 77805
979-739-0567 www.J4Engineering.com
Firm# 9951

Project Name and Address:
Tee Drive Duplex
Country Club Estates Phase 1
Block D, Lot 1R - 0.185 Acres
208 Tee Drive
Bryan, Brazos County, Texas 77801

Date:	Sheet:
October 2026	C3
Scale: As Noted	
Drawn By: CB	

Paving Notes:

1. All concrete for pavement construction shall be to the minimum depth shown on the plans and shall have a minimum 28-day compressive strength of 3,500 PSI. The maximum percentage of fly ash replacement of Portland cement shall be 20 percent by weight.
2. Item 360 of the TxDOT "Standard Specifications for Construction and Maintenance of Highways. Street, & Bridges" shall be used as a technical specification for reinforced concrete pavement.
3. Subgrade shall be stabilized per the "Subgrade Stabilization Table."
4. The subgrade beneath the concrete sidewalks shall be compacted and "proof-rolled". any weak or soft areas identified by the "proof-rolling" shall be removed and replaced.
5. A sand leveling course under concrete pavement is NOT permitted.
6. Joint sealant material to be Sonneborn SL-1 or approved equal.
7. Curing compound shall be applied uniformly to the concrete after the surface finishing is complete at the rate recommended by the manufacturer. The curing compound shall meet the requirements of TxDOT Item 526.
8. Contractor shall provide engineer with a proposed pavement expansion and contraction joint plan prior to pavement construction.
9. See Sheet C1-General Notes.

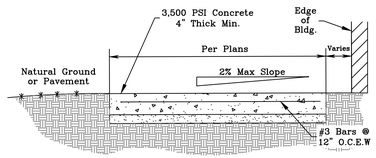
Subgrade Stabilization Table:

PI = Plasticity Index	LL = Liquid Limit
If PI >20 and LL <35, Then Lime Stabilize Subgrade	
If PI >15 and LL >36, Then Lime Stabilize Subgrade	
If PI <5, Then Cement Stabilize Subgrade	
Acceptable soils other than those defined by the limits above, do not require stabilization.	

PI	% Required	Material
<5	5%	Cement
<25	5%	Lime
26-33	6%	Lime
34-40	7%	Lime
>40	Determined by ASTM C977	Lime

Grading Notes:

1. Fill material used to achieve grade in areas to receive pavement or within the street right-of-way shall be compacted to at least 98% of the maximum dry density as determined by the standard proctor test, (ASTM D698), at a moisture content from optimum moisture content to 4% above the optimum moisture content. Areas outside of the street right-of-way shall be compacted to 95% of the maximum dry density.
2. The subgrade beneath the concrete sidewalks shall be compacted and "proof-rolled". Any weak or soft areas identified by the "proof-rolling" shall be removed and replaced.
3. ADA ramp slopes shall not exceed 1v:12h.
4. The topography shown is from field survey data.
5. Structural backfill for utility or storm drain trenches is required whenever the trench is within 5' of pavement or sidewalk.
6. The contractor shall follow the general intent of the grading plans. minor adjustments to the actual elevations shown on the grading plan may be required to match existing ground elevations and structures. the proposed contour lines shown are approximate only, the design grade spot elevations should be used for construction of the site work.
7. Refer to pavement plan for pavement construction details and notes.
8. The contractor shall salvage all topsoil and replace it on all disturbed areas. all parking lot islands and areas adjacent to parking and sidewalk areas shall receive 6" sandy loam topsoil prior to placement of grass sod or hydromulch.
9. The contractor shall field verify and locate all existing utilities on site prior to demolition.
10. The contractor shall install all erosion and sediment control devices, as shown, prior to commencing demolition work.
11. Should any existing utilities not shown or shown incorrectly on this plan be found on site, the contractor shall contact the design engineer immediately to discuss any possible conflicts before proceeding with any work in that area.

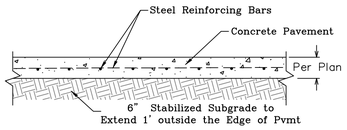


Note:

Install expansion joints at 40' (max) longitudinal spacing and install contraction joints spaced at a maximum interval equal to the sidewalks width.

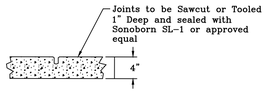
2. All Sidewals shall have a light broom finish.

Typical Sidewalk
N.T.S

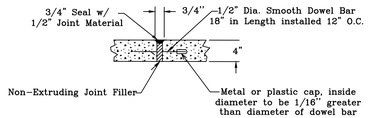


1. 6" Pavement - use #4 rebar @ 18" O.C.E.W.

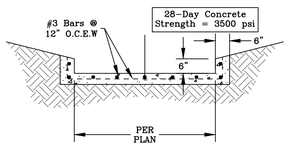
Typical Concrete Paving Section
N.T.S



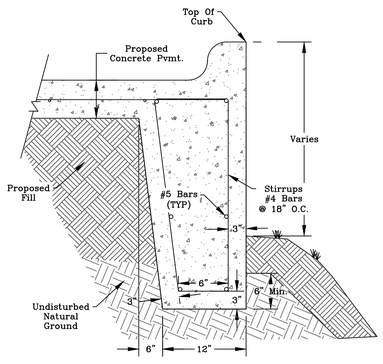
Contraction Joint Detail
N.T.S.



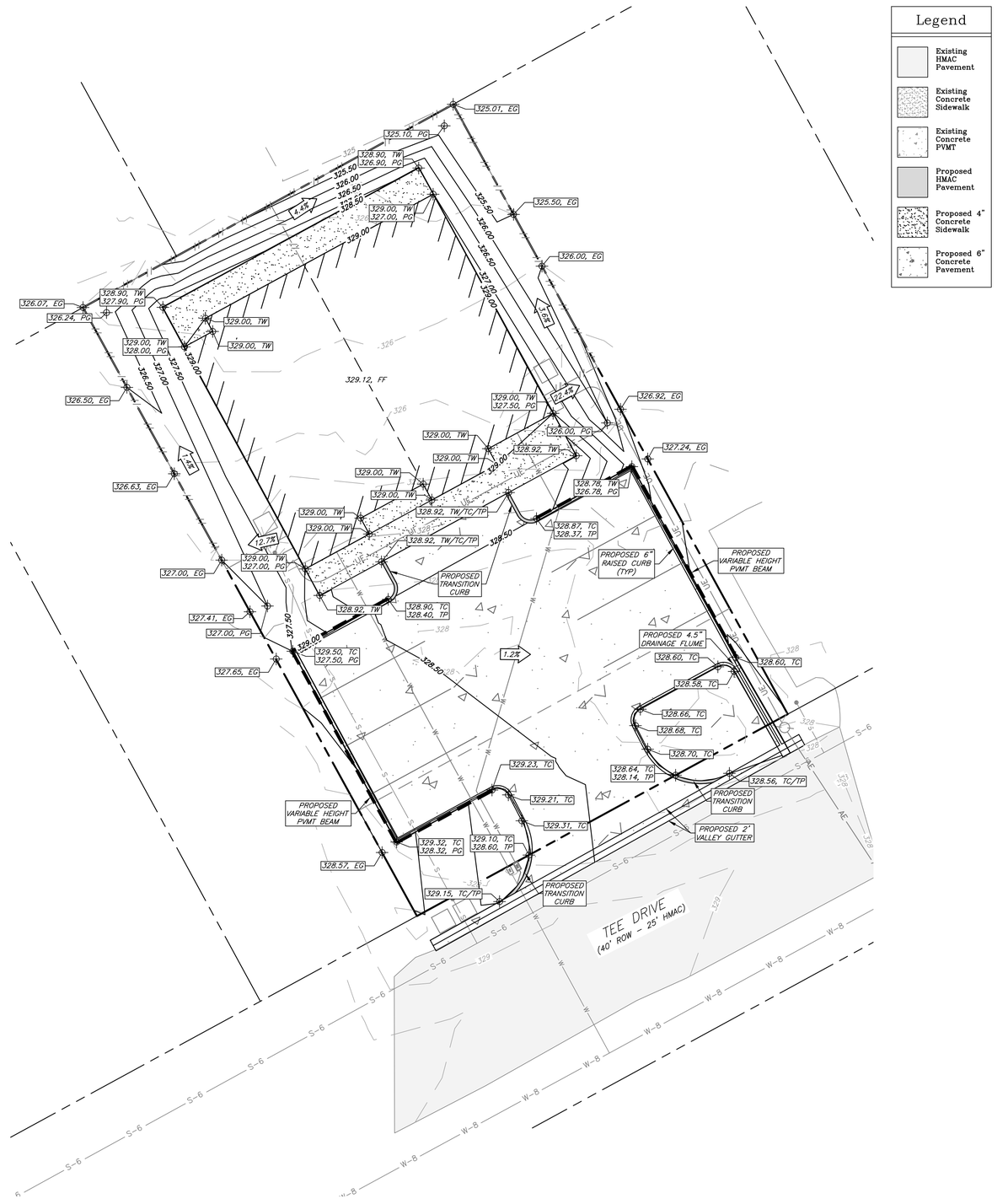
Expansion Joint Detail
N.T.S.



Typical Storm Flume Cross-Section
N.T.S



Pavement Beam Detail
N.T.S.



10 5 0 10

Legend

- Existing HMAC Pavement
- Existing Concrete Sidewalk
- Existing Concrete PVMT
- Proposed HMAC Pavement
- Proposed 4" Concrete Sidewalk
- Proposed 6" Concrete Pavement

PVMT & Grading Plan

General Notes:

1. The topography shown is from field survey data.
2. Refer to Final Plat for all lot dimensions and bearings.
3. All utilities shown are taken from the best available information based on construction utility documents obtained by J4 Engineering from City and Independent agencies and/or above ground field evidence. Shown positions may not represent as-built conditions.
4. The contractor shall be responsible for verifying the exact location of all existing underground utilities, whether shown on these plans or not. Notification of the utility companies 48 hours in advance of construction is required.
5. Contractor is responsible for field verifying existing and proposed grades prior to any construction and reporting any inconsistencies to the Owner.
6. All construction shall be in accordance with the current BCS Standard Specifications, Details, and Design Guidelines for Water, Sewer, Streets, and Drainage, unless otherwise noted.
7. The contractor shall be responsible for the containment and proper disposal of all liquid and solid waste associated with the project and shall use all means necessary to prevent the occurrence of wind blown litter.
8. It is the intent of these plans to comply with all BCS guidelines, specifications & details.
9. See Sheet C1 - General Notes

TC - Top of Curb
FL - Flow Line
TW - Top of Sidewalk
TP - Top of PVMT
EG - Existing Grade
PG - Proposed Grade

Preliminary Plans Only Not for Construction

This document is released for the purpose of interim review under the authority of Glenn Jones, P.E. 97600 on 28-Oct-26. It is not to be used for construction, bidding, or permitting purposes.

Released for Review

No.	Revision/Issue	Date

Firm Name and Address:

J4 Engineering

PO Box 5192 - Bryan, Texas - 77805
979-739-0567 www.J4Engineering.com
Firm# 9951

Project Name and Address:

Tee Drive Duplex

Country Club Estates Phase 1
Block D, Lot 1R - 0.185 Acres
208 Tee Drive
Bryan, Brazos County, Texas 77801

Date:	Sheet:
October 2026	C4
Scale: As Noted	
Drawn By: CB	

J4 Engineering 10/28/2026 J4E Project #26-057 J:\2026\26-057 Tee Dr Duplex\Tee Dr Duplex-Site Plan.dwg

Impervious Cover Percentage Calculation	
Building (SF)	2,062
Driveway/Parking (SF)	3,342
Total (SF)	5,404
Lot Area (SF)	8,059
Impervious Area (%)	67.00

Year Event	Subject Area	Description	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
2	Basin-01	28% Impervious	0.185	85.04	4.50	2.91	0.51	0 00:10:00
	DA-01	52% Impervious	0.103	89.36	4.50	3.33	0.32	0 00:10:00
	DA-02.A	100% Impervious	0.067	98.00	4.50	4.25	0.23	0 00:10:00
	DA-02.B	24% Impervious	0.015	84.32	4.50	2.42	0.03	0 00:10:00
5	Basin-01	28% Impervious	0.185	85.04	6.20	4.49	0.78	0 00:10:00
	DA-01	52% Impervious	0.103	89.36	6.20	4.97	0.46	0 00:10:00
	DA-02.A	100% Impervious	0.067	98.00	6.20	5.96	0.32	0 00:10:00
	DA-02.B	24% Impervious	0.015	84.32	6.20	4.06	0.05	0 00:10:00
10	Basin-01	28% Impervious	0.185	85.04	7.40	5.64	0.97	0 00:10:00
	DA-01	52% Impervious	0.103	89.36	7.40	6.14	0.57	0 00:10:00
	DA-02.A	100% Impervious	0.067	98.00	7.40	7.16	0.38	0 00:10:00
	DA-02.B	24% Impervious	0.015	84.32	7.40	5.30	0.07	0 00:10:00
25	Basin-01	28% Impervious	0.185	85.04	8.40	6.60	1.12	0 00:10:00
	DA-01	52% Impervious	0.103	89.36	8.40	7.12	0.65	0 00:10:00
	DA-02.A	100% Impervious	0.067	98.00	8.40	8.16	0.43	0 00:10:00
	DA-02.B	24% Impervious	0.015	84.32	8.40	6.34	0.08	0 00:10:00
50	Basin-01	28% Impervious	0.185	85.04	9.80	7.96	1.34	0 00:10:00
	DA-01	52% Impervious	0.103	89.36	9.80	8.50	0.77	0 00:10:00
	DA-02.A	100% Impervious	0.067	98.00	9.80	9.56	0.50	0 00:10:00
	DA-02.B	24% Impervious	0.015	84.32	9.80	7.76	0.09	0 00:10:00
100	Basin-01	28% Impervious	0.185	85.04	11.00	9.14	1.53	0 00:10:00
	DA-01	52% Impervious	0.103	89.36	11.00	9.69	0.87	0 00:10:00
	DA-02.A	100% Impervious	0.067	98.00	11.00	10.76	0.56	0 00:10:00
	DA-02.B	24% Impervious	0.015	84.32	11.00	8.93	0.10	0 00:10:00

Year Event	28 % Coverage (CFS)	67% Coverage Undetained (CFS)	Flume Flow (CFS)	Free Flow (CFS)	Total Site Flow (CFS)	Reduction (CFS)	Water Depth (Ft)
2	0.51	0.61	0.17	0.33	0.50	0.01	0.26
5	0.78	0.87	0.22	0.49	0.71	0.07	0.32
10	0.97	1.05	0.26	0.6	0.86	0.11	0.35
25	1.12	1.21	0.29	0.69	0.98	0.14	0.38
50	1.34	1.42	0.33	0.82	1.15	0.19	0.41
100	1.53	1.60	0.36	0.93	1.29	0.24	0.44

Weir Report

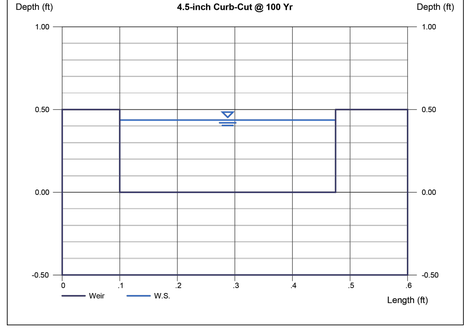
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Oct 27 2026

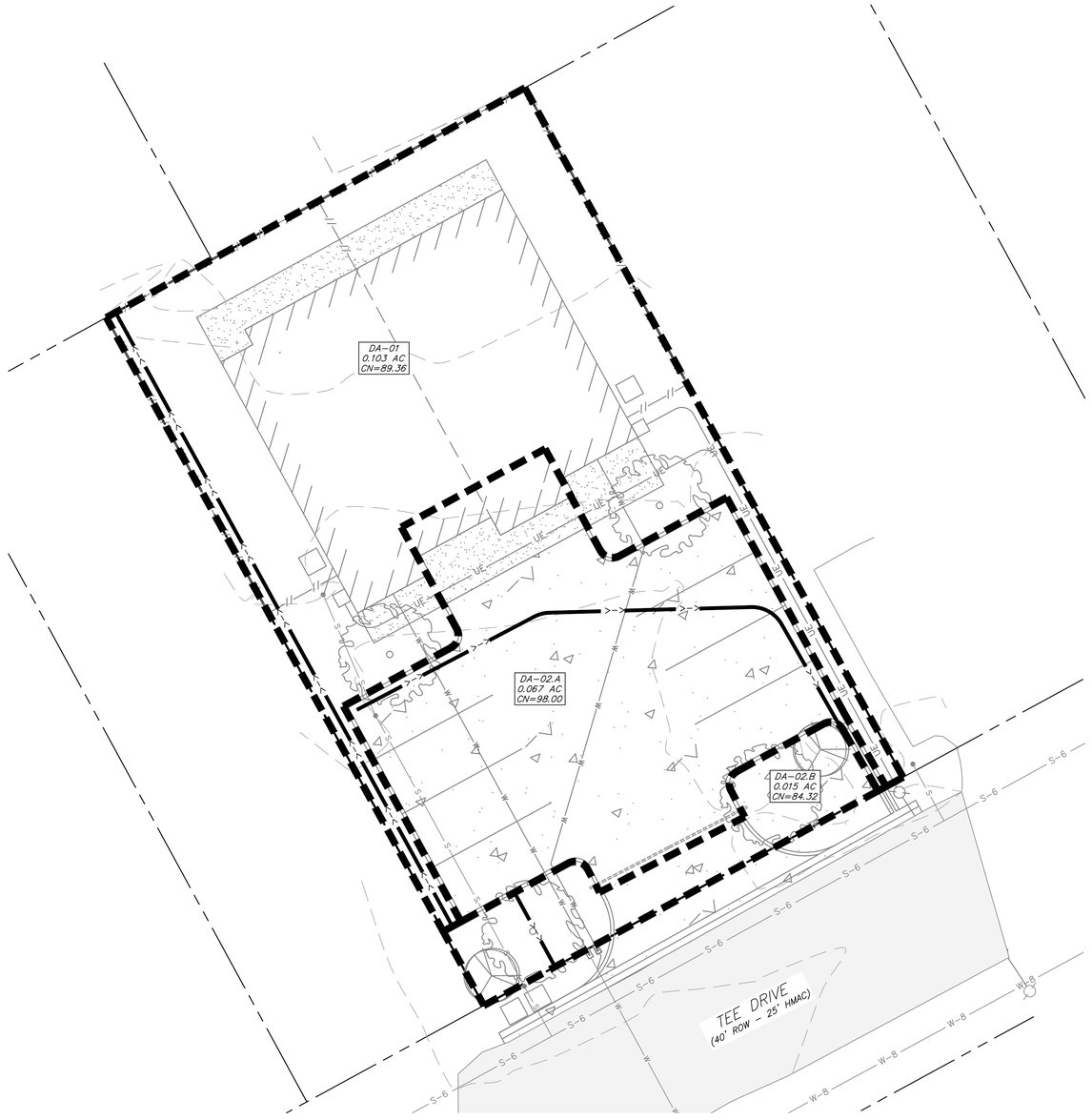
4.5-inch Curb-Cut @ 100 Yr

Rectangular Weir
Crest = Sharp
Bottom Length (ft) = 0.38
Total Depth (ft) = 0.50

Calculations
Weir Coeff. Cw = 3.33
Compute by: Known Q
Known Q (cfs) = 0.36

Highlighted
Depth (ft) = 0.44
Q (cfs) = 0.360
Area (sqft) = 0.16
Velocity (ft/s) = 2.20
Top Width (ft) = 0.38





Post-Development Drainage Area Map

General Notes:

1. It is the intent of these plans to comply with all BCS guidelines, details, & specifications.
2. See Sheet C1 – General Notes

Preliminary Plans Only Not for Construction

This document is released for the purpose of interim review under the authority of Glenn Jones, P.E. 97600 on 28-Oct-26. It is not to be used for construction, bidding, or permitting purposes.

Released for Review

No.	Revision/Issue	Date

Firm Name and Address:
J4 Engineering
PO Box 5192 - Bryan, Texas - 77805
979-739-0567 www.J4Engineering.com
Firm# 9951

Project Name and Address:
Tee Drive Duplex
Country Club Estates Phase 1
Block D, Lot 1R - 0.185 Acres
208 Tee Drive
Bryan, Brazos County, Texas 77801

Date:	Sheet:
October 2026	C5
Scale: As Noted	
Drawn By: CB	

J4 Engineering 10/28/2026 J4E Project #26-057 J:\2026\26-057 Tee Dr Duplex\Tee Drive-Drainage.dwg

Landscape Notes:

1. All trees shall be provided as container grown trees.
2. All landscaping plant material shall be guaranteed for a period of thirty days from the date of installation by contractor. After thirty days, the owner will be responsible for maintenance of all landscaping.
3. The property owner is responsible for regular weeding, mowing, fertilizing, and other maintenance of all plantings following acceptance from Contractor. The required landscaping must be maintained in a healthy, growing condition at all times.
4. Plant material shown here is represented at its mature size. Plantings to be installed will be significantly smaller than those shown and should not be expected to reach maturity for several years dependant on growing conditions.
5. Contractor is to seed all disturbed areas left unpaved and guarantee coverage of vegetation until establishment of grass. Grass type shall be Bermuda grass or Rye/Bermuda mixture.
6. All water meters, hydrants, valves, manholes, and cleanouts, on or adjacent to the property, must remain accessible during construction and upon the completion of necessary grading and landscaping.
7. "Cal." indicates caliper at 12" above the ground. Multi-trunk trees' caliper is measured with the single, largest cane.
8. Existing Trees used for landscape credit must have a minimum trunk diameter of four and one-half inches or larger and be in a healthy physical state. Should existing trees used for landscape credit die, they shall be replaced with new trees according to the requirements of section 62-429(a)(2)c. Existing trees with a trunk diameter less than four and one-half inches may be given the same landscape credit as that given newly planted trees with similar characteristics.
9. Replacement of dead landscaping shall occur within 90 days of notification. Replacement material must be of similar character as the dead landscaping. Failure to replace dead landscapeing as required by the zoning official or his/her designee, shall constitute a violation of this article subject to the general penalty provisions of City Code section 1-14.
10. To ensure the growth of trees in end islands, a minimum 24-inch soil depth and 250 cubic feet of appropriate planting medium is required per tree, with topsoil mounded to a center height.

Landscape Analysis:

Construction Activities:
Disturbed Area (Parking, Pavement, Sidewalk, Structures)

Net Total= 5,663 SF
(70.3% Impervious)

Requirements:

Disturbed Area
5,663 SF @ 15% = 850 SF
Net Total= 850 SF

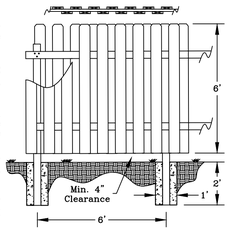
Provided:

Proposed Canopy Trees
4 @ 200 SF = 800 SF
Proposed Non-Canopy Trees
2 @ 100 SF = 200 SF
Net Total= 1,000 SF

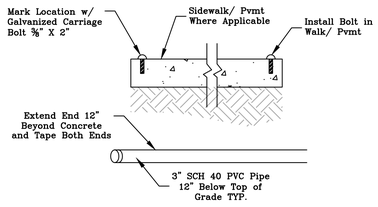
Symbol	Qty.	Common Name	Botanical Name	Size
	4	Cedar Elm	Ulmus crassifolia	>3" cal.
	2	Crepe Myrtle	Lagerstroemia indica	1½" cal.

Notes:

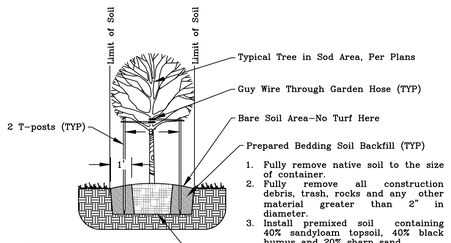
1. All lumber shall be weather resistant cedar or pressure treated.
2. Pickets are to be 1x6, dog-eared, fastened w/ 1 ½" galv. screws, min 2 per connection.
3. Pickets shall be installed in a staggardered board design where adjacent pickets are on opposite sides of the fence.
4. Rails are to be 2x4 fastened w/ 3" galv. screws, min. 3 per connection.
5. Post are to be 4x4, placed 6' O.C., & set in 3,000 PSI concrete.



Alternating Plank Screening Fence Detail
N.T.S



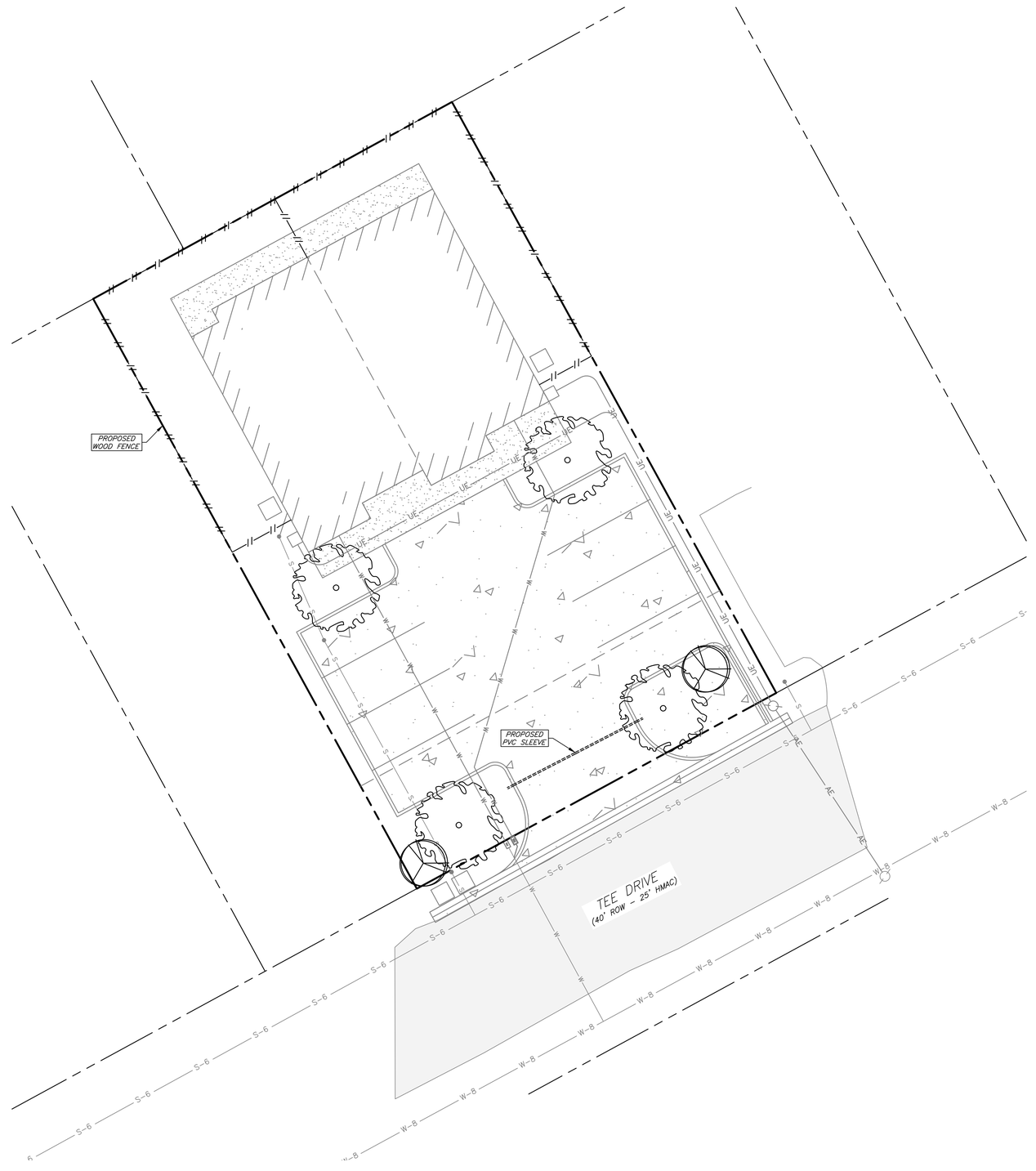
Typical PVC Sleeve
N.T.S



Notes:

1. Trees to be balled and burlapped or container grown
2. If container grown, remove container from tree before planting.
3. Top of root ball to be 3" higher than final grade.
4. Top of root ball to be exposed.
1. Fully remove native soil to the size of container.
2. Fully remove all construction debris, trash, rocks and any other material greater than 2" in diameter.
3. Install premixed soil containing 40% sandyloam topsoil, 40% black humus and 20% sharp sand.
4. Dig planting hole width 12" larger than rootball on all sides.
5. Scarify root ball.
6. Root flare shall be exposed.

Tree Staking & Planting
N.T.S



10 5 0 10

Landscape Plan

General Notes:

1. An irrigation system to service all new plantings will be installed by a certified installer prior to a certificate of occupancy being issued.
2. Irrigation system must be protected by either a pressure vacuum breaker, reduced pressure principle back flow device, or a double-check back flow device and installed as per city ordinance 2394.
3. All backflow devices must be installed and tested upon installation as per city ordinance 2394.
4. 100% coverage of groundcover, decorative paving, decorative rock(not loose)or a perennial grass is required in parking lot islands, swales and drainage areas, the parking lot setback, rights-of-way, and adjacent property disturbed during construction.
7. It is the intent of these plans to comply with all City of Bryan guidelines, specifications, & details.
8. See Sheet C1-General Notes.

No.	Revision/Issue	Date

Firm Name and Address:
J4 Engineering
PO Box 5192 - Bryan, Texas - 77805
979-739-0567 www.J4Engineering.com
Firm# 9951

Project Name and Address:
Tee Drive Duplex
Country Club Estates Phase 1
Block D, Lot 1R - 0.185 Acres
208 Tee Drive
Bryan, Brazos County, Texas 77801

Date: October 2026	Sheet: L1
Scale: As Noted	
Drawn By: CB	

J4 Engineering 10/28/2026 J4E Project #26-057 J:\2026\26-057 Tee Dr Duplex\Tee Dr Duplex-Site Plan.dwg

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 NP 1 SEALANT OR APPROVED EQUAL BETWEEN RING/COVER, ADJUSTMENT AND CHIMNEY OR CORBEL/CONE SECTION.
3. MANHOLE BASE THICKNESS AND FOUNDATION FROM FLOWLINE TO RIM AS FOLLOWS:

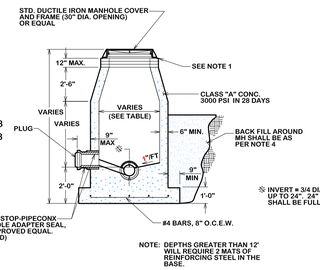
MANHOLE DEPTH (FT.)	BASE THICKNESS
0 - 12	8"
12 AND OVER	12"

4. MANHOLE LOCATION AND COMPACTION AS FOLLOWS:

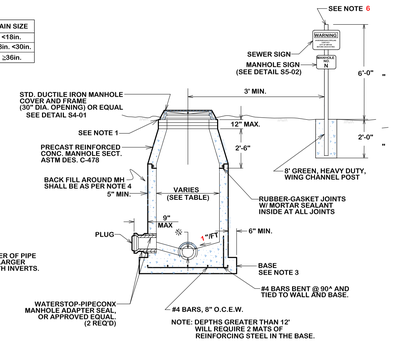
LOCATION	COMPACTION REQUIREMENT
PAVEMENT	98 % STANDARD PROCTOR - ASTM D 698
LANDSCAPE AREA	90 % STANDARD PROCTOR - ASTM D 698

5. 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.
6. 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.



CAST IN PLACE MANHOLE



PRE-CAST MANHOLE

STANDARD MANHOLE

S1-00

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.
6. EVERY 100 FEET PROVIDE A WATER STOP BLOCK COMPOSED OF CEMENT SAND OR IMPERVIOUS NATIVE MATERIAL DEPENDING ON EMBEDMENT. BLOCK SHALL BE 6 FEET IN LENGTH. NO BEDDING SAND IN THIS AREA.

Ⓐ 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)(OPTION 1) 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. (OPTION 2)

Ⓑ GRANULAR MATERIAL

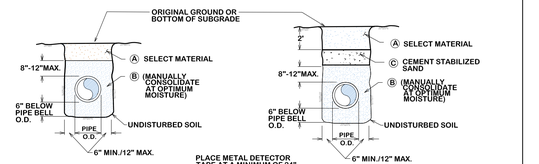
MATERIAL SHALL BE BANK RUN RIVER SAND WHICH IS FREE OF DETRIMENTAL QUANTITIES OF CLAY, DEBRIS, OR ORGANIC MATERIAL AND WHICH, WHEN TESTED BY STANDARD LABORATORY METHODS, MEET THE FOLLOWING REQUIREMENTS:

MAXIMUM LIQUID LIMIT	45
MAXIMUM PLASTICITY INDEX	15
MAXIMUM PERCENT PASSING NO. 200 SIEVE	35
MINIMUM PERCENT PASSING 3/4" SIEVE	100

THE MATERIAL SHALL BE FREE FLOWING AND WHEN WET, SHALL NOT ADHERE TO OR FORM A BALL WHEN PRESSED IN HAND.

Ⓒ CEMENT STABILIZED SAND

1-1/2" SACKS CEMENT/CY MINIMUM.
2 SACKS CEMENT/CY MINIMUM WHEN DISTANCE BETWEEN SANITARY LINES AND WATER LINES IS < 9FT



NON-STRUCTURAL AREAS

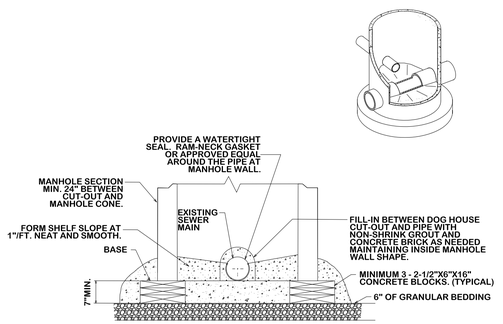
AREAS TO BE PAVED OR STREETS TO BE RECONSTRUCTED

BEDDING AND TRENCH FOR DI PIPE & PVC PIPE

S1-01

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, AND THE MANHOLE HAS BEEN VACUUM TESTED, THE EXISTING PIPE SHALL BE SAW CUT. ONLY AFTER CITY APPROVED, PASSING MANHOLE LEAKAGE TESTING. THE EXISTING PIPE SHALL FORM THE TROUGH OF THE MANHOLE AS SHOWN. FILE CUT PIPE TO GIVE SMOOTH EDGES.

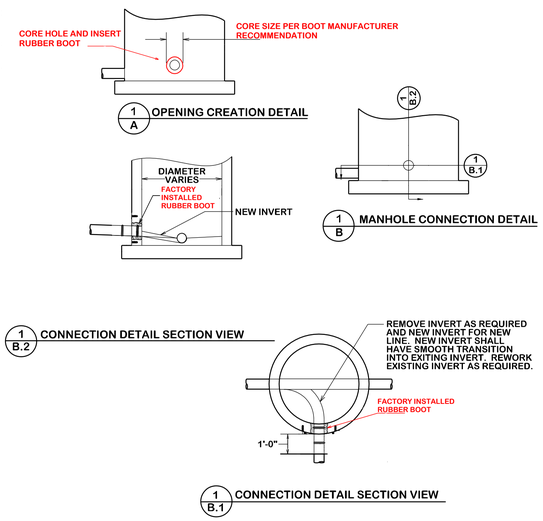


CITY OF COLLEGE STATION
GRAVITY SEWER DOGHOUSE MANHOLE

S3-00

NOTES:

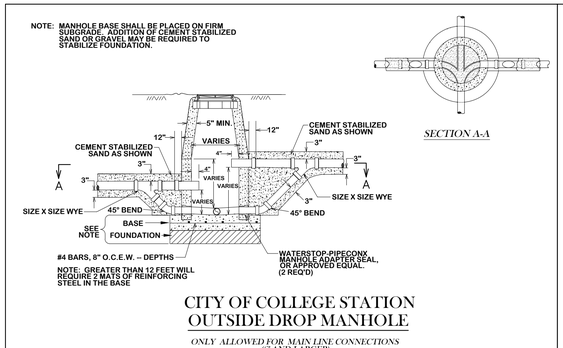
1. CONCRETE SHALL BE 3,000 P.S.I.



STANDARD MANHOLE TIE-IN

S3-01

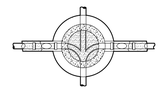
NOTE: MANHOLE BASE SHALL BE PLACED ON FIRM SUBGRADE. ADDITION OF CEMENT STABILIZED SAND OR GRAVEL MAY BE REQUIRED TO STABILIZE FOUNDATION.



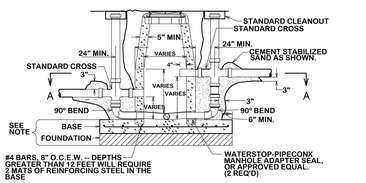
CITY OF COLLEGE STATION
OUTSIDE DROP MANHOLE

ONLY ALLOWED FOR MAIN LINE CONNECTIONS 60" AND LARGER

S2-00



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



CITY OF BRYAN
OUTSIDE DROP MANHOLE

ONLY WHEN APPROVED BY CITY ENGINEER

S2-01

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.

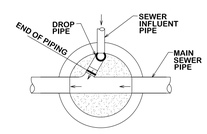
ALL NEW CONNECTION AT EXISTING MANHOLES SHALL BE BY CORING ONLY.

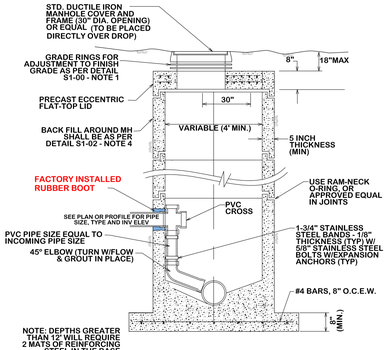
MANHOLE BOOTS SHALL BE SIZED SAME AS INCOMING PIPE.

CROSS MUST BE A MINIMUM 24" BELOW CONE SECTION.

5 FOOT DIAMETER MANHOLE WILL BE REQUIRED FOR DROPS 12" AND GREATER.

IF THERE ARE TWO DROPS INSIDE MANHOLE ON OPPOSING SIDES, THEN MANHOLE LID SHOULD BE CENTERED BETWEEN THE TWO DROPS.



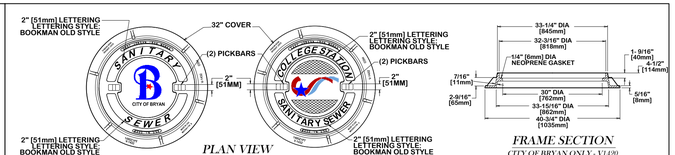


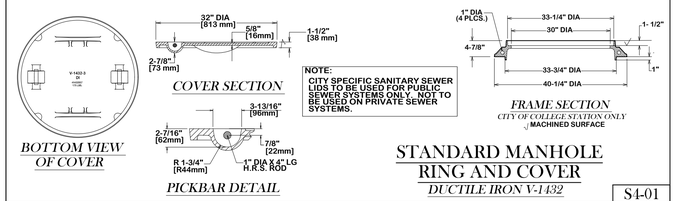
STANDARD DROP MANHOLE

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

S2-02

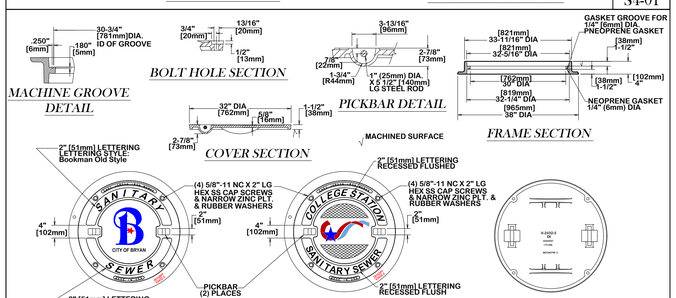




STANDARD MANHOLE RING AND COVER

DUCTILE IRON V-1432

S1-01



NOTE:
CITY SPECIFIC SANITARY SEWER LIDS TO BE USED FOR PUBLIC SEWER SYSTEMS ONLY. NOT TO BE USED ON PRIVATE SEWER SYSTEMS.

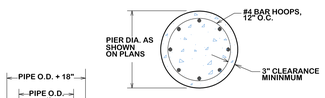
WATER TIGHT MANHOLE RING AND COVER

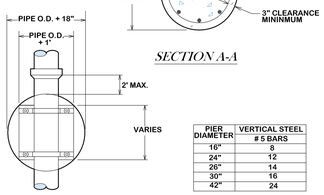
DUCTILE IRON V-2432-3

S4-02

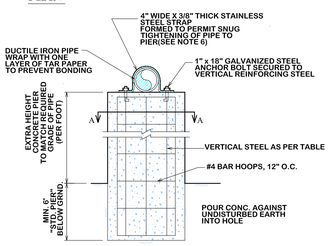
NOTES:

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.
6. NUMBER OF STRAPS DEPENDENT ON SIZE OF PIERS. MIN. 1 STRAP PER PIER.





PIER DIAMETER	VERTICAL STEEL # 5 BARS
18"	8
24"	12
26"	14
30"	16
42"	24



TYPICAL CONCRETE DRILLED PIER FOR AERIAL SEWER

S4-00

REVISIONS:
7/26/2022 – S4-01 FRAME

BRYAN - COLLEGE STATION STANDARD SEWER DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.

DRAWN BY: K.L.
DATE: APR 2024
SCALE: N T S
APPROVED: W. P. K.

S1
SHEET 1 OF 2

GENERAL NOTES:

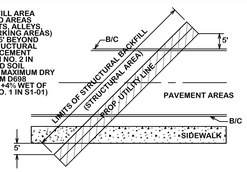
ALL AREAS WHERE EXISTING VEGETATION AND GRASS COVER HAVE BEEN BARED BY CONSTRUCTION SHALL BE ADEQUATELY BLOCK SODDED OR HYDROMULCHED AND WATERED UNTIL GROWTH IS ESTABLISHED. IN DEVELOPED AREAS WHERE GRASS IS PRESENT, BLOCK SOD WILL BE REQUIRED. BARED AREAS SHALL BE SEEDED OR SODDED WITHIN 14 CALENDAR 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 EVERY RAIN.

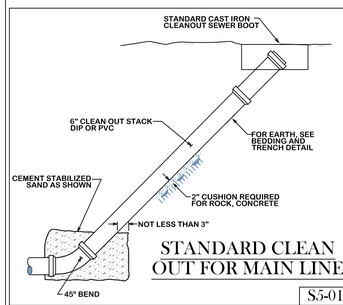
ESTABLISHMENT OF VEGETATION MAY BE A WARRANTY ITEM.

STRUCTURAL BACKFILL AREA INCLUDES ALL PAVED AREAS (SIDEWALKS, STREETS, ALLEYS, DRIVEWAYS AND PARKING AREAS) AND SHALL EXTEND 5' BEYOND THE CURB LINE. STRUCTURAL BACKFILL SHALL BE CEMENT STABILIZED (CEMENT NO. 2 IN 51-01) OR EXCAVATED SOIL COMPACTED TO A MINIMUM DRY DENSITY AS PER ASTM D-698 WITHIN OPTIMUM TO +4% WET OF OPTIMUM (OPTION NO. 1 IN S1-01)



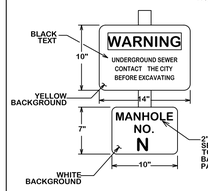
STRUCTURAL BACKFILL AREA

S5-00



STANDARD CLEAN OUT FOR MAIN LINE

S5-01



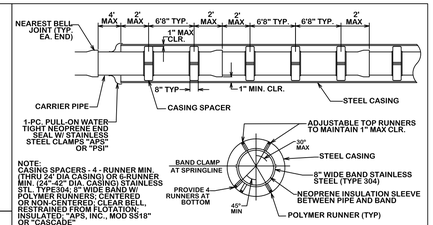
NOTES:

1. FURNISH AS SHOWN ON PLANS AND/OR AT EACH MANHOLE WHERE SEWER LINE CROSSES OPEN FIELDS.
2. SIGNS TO BE CONSTRUCTED FROM 20 GA. STEEL BAKED ON ENAMEL FINISH. FURNISH ONE SIGN AND ONE POST FOR EACH OPEN FIELD AND AT OTHER LOCATIONS AS SHOWN ON THE PLANS. FURNISH SAME NUMBER OF REPLACEMENT SIGNS AS FOR EACH INSTALLED (OMITTING MANHOLE NUMBER ON MANHOLE SIGN) (NOT A SEPARATE PAY ITEM)

2" BLACK PRESSURE SENSITIVE NUMBERS TO BE ADDED AFTER BASIC SIGN HAS BEEN PAINTED

SEWER WARNING AND MANHOLE IDENTIFICATION SIGN

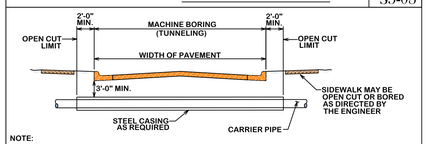
S5-02



NOTE:
CASING SPACERS - 4 - RUNNER MIN. (THRU 24' DIA CASING) OR 6-RUNNER MIN. (24"-42" DIA. CASING) STAINLESS STL. TYPE304; 8" WIDE BAND W/ POLYMER RUNNERS; CENTERED, OR NON-CENTERED, CLEAR BELL, RESTRAINED FROM FLOTATION; INSULATED; "APS, INC., MOD SS18" OR "CASCADE"

CASING DETAIL

S5-03

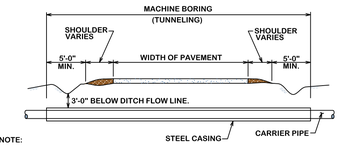


NOTE:

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



NOTE:

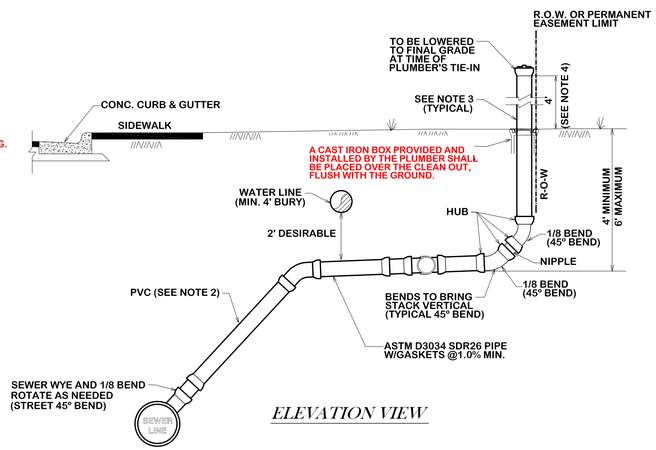
1. FOR MORE INFORMATION ON WATER AND SEWER LINE CROSSING SEE CITY STANDARD SPECIFICATION FOR WATER AND SEWER LINE CONSTRUCTION.
2. STEEL CASING SHALL BE AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS.
3. DRY BORING IS REQUIRED.

TYPICAL RURAL STREET CROSSING

S5-05

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 LONG AND SHORT SIDE 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. NEW CONSTRUCTION (TEMPORARY) USE GLUE CAP IN PLACE OF FEMALE ADAPTER AND BRASS PLUG.



ELEVATION VIEW

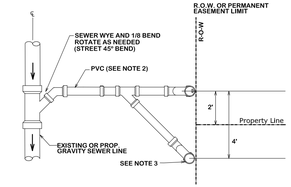
STANDARD SEWER SERVICE CONNECTION

NEW CONSTRUCTION ONLY

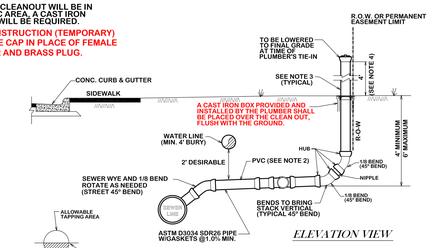
S8-00

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 LONG AND SHORT SIDE SERVICE CLEANOUT SHALL INCLUDE A BRASS PLUG. CLEANOUTS SHALL BE EXTENDED 4 FEET ABOVE NATURAL GROUND. CLEANOUT CAP FITTING SHALL BE PLACED ON TOP.
4. LOT CORNERS SHALL BE MARKED WITH A LATH UNDER THE SUPERVISION OF A RPLS UPON COMPLETION OF CONSTRUCTION
5. "STANDARD" SERVICE CONNECTIONS APPLY WHEN TRENCH IS LESS THAN 7' DEEP.
6. "DEEP" SERVICE CONNECTIONS APPLY WHEN TRENCH IS MORE THAN 7' DEEP.
7. SERVICE SHALL BE AS SHALLOW AS POSSIBLE AND STILL SERVICE LOT
8. WHERE A SINGLE SERVICE THAT SERVES A SINGLE RESIDENCE TAPS INTO A MANHOLE NEAR THE PROPERTY LINE OF THAT LOT A SEWER STACK SHALL NOT BE REQUIRED.
9. WHERE A CLEANOUT WILL BE IN A TRAFFIC AREA, A CAST IRON TOP HAT WILL BE REQUIRED.
10. NEW CONSTRUCTION (TEMPORARY) USE GLUE CAP IN PLACE OF FEMALE ADAPTER AND BRASS PLUG.



PLAN VIEW



ELEVATION VIEW

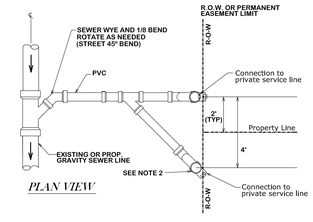
STANDARD SEWER SERVICE CONNECTION

NEW CONSTRUCTION ONLY

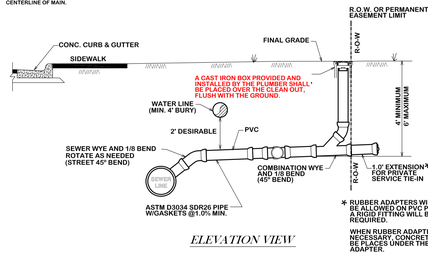
S6-00

NOTE:

1. ALL MATERIAL SHALL BE ASTM D3034 SDR26 W/ GASKETS
2. SERVICE SHALL BE AS SHALLOW AS POSSIBLE AND STILL SERVICE LOT
3. WHERE A SINGLE SERVICE THAT SERVES A SINGLE RESIDENCE TAPS INTO A MANHOLE NEAR THE PROPERTY LINE OF THAT LOT A SEWER STACK SHALL NOT BE REQUIRED.
4. WHERE A CLEANOUT WILL BE IN A TRAFFIC AREA, A CAST IRON TOP HAT WILL BE REQUIRED.
4. A CLEANOUT MUST BE INSTALLED ON EACH SERVICE RE-CONNECTION AT THE ROW LINE.



PLAN VIEW



ELEVATION VIEW

* RUBBER ADAPTERS WILL NOT BE ALLOWED ON PVC PIPE. A RIGID FITTING WILL BE REQUIRED.

WHEN RUBBER ADAPTER IS NECESSARY, CONCRETE MUST BE PLACED UNDER THE ADAPTER.

STANDARD SEWER SERVICE RE-CONNECTION

PLUMBER CONNECTION OR CIP RECONSTRUCTION

S6-01

REVISIONS:
S6-00 & S6-01 revised 10/26/2012.

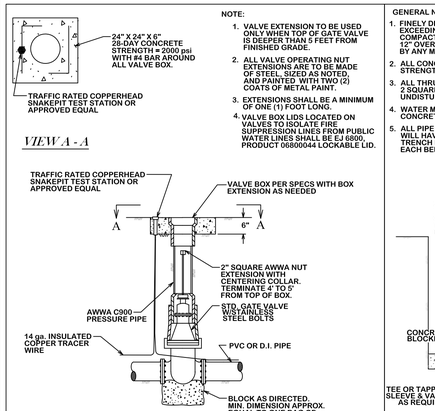
BRYAN - COLLEGE STATION STANDARD SEWER DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.

DRAWN BY: K.L.
DATE: APR 2024
SCALE: N T S
APPROVED: W. P. K.

S2
SHEET 2 OF 2

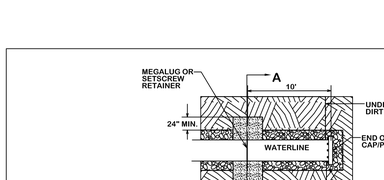


GATE VALVE & BOX

W1-00

NOTE:

1. VALVE EXTENSION TO BE USED ONLY WHEN TOP OF GATE VALVE IS DEEPER THAN 5 FEET FROM FINISHED GRADE.
2. ALL VALVE OPERATING NUT EXTENSIONS ARE TO BE MADE OF STEEL, SIZED AS NOTED, AND PAINTED WITH TWO (2) COATS OF METAL PAINT.
3. EXTENSIONS SHALL BE A MINIMUM OF ONE (1) FOOT LONG.
4. VALVE BOX LIDS LOCATED ON VALVES TO ISOLATE FIRE SUPPRESSION LINES FROM PUBLIC WATER LINES SHALL BE EJ 6800, PRODUCT 068000044 LOCKABLE LID.

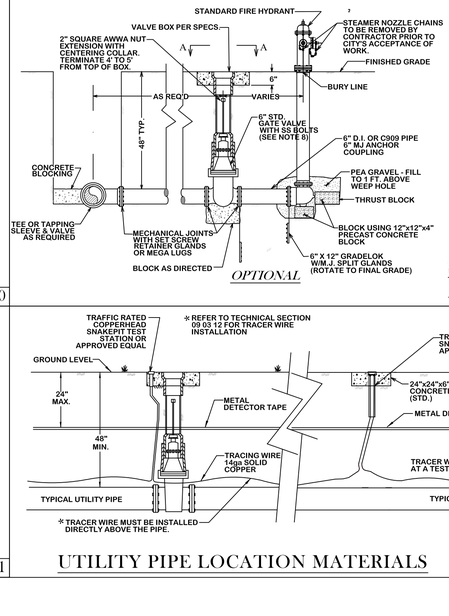


GATE VALVE EXTENSION

W1-01

GENERAL NOTES:

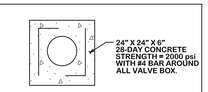
1. FINELY DIVIDED EARTH FREE OF ROCK, LUMPS AND CLODS EXCEEDING 6" SHALL BE PLACED BY HAND, AND COMPACTED AROUND THE CAST IRON PIPE TO A DEPTH OF 12" OVER THE TOP OF THE PIPE BEFORE BACKFILL IS BEGUN BY ANY MECHANICAL EQUIPMENT.
2. ALL CONCRETE BLOCKING SHALL BE - 28 DAY CONCRETE STRENGTH = 2000psi.
3. ALL THRUST BLOCKING SHALL PROVIDE A MINIMUM OF 2 SQUARE FEET OF BEARING AREA OF CONCRETE ON UNDISTURBED SOIL, OR AS DIRECTED BY THE ENGINEER.
4. WATER MAINS WILL NOT BE FULLY PRESSURIZED UNTIL CONCRETE HAS REACHED 7 DAY STRENGTH.
5. ALL PIPE WILL BE LAID SO AS THE ENTIRE BARRELL WILL HAVE FULL BEARING ON THE FINE GRADED TRENCH BOTTOM. BELL HOLES SHALL BE CUT FOR EACH BELL AND FIRE HYDRANT.
6. ALL FITTING SHALL BE MECHANICL JOINTS UNLESS OTHERWISE DIRECTED.
7. HYDRANTS SHALL BE LOCATED NO CLOSER THAN 3 FEET MEASURED FROM THE BACK OF CURB TO THE FACE OF THE STEAMER ON THE FIRE HYDRANT AND NO FURTHER THAN 15 FEET FROM BACK OF CURB
8. IF MAIN VALVE IS WITHIN 50 FEET OF FIRE HYDRANT THEN ASSEMBLY VALVE MAY BE OMITTED ON A DEAD END HYDRANT LEAD WITH NO ADDITIONAL CONNECTIONS.
9. HEIGHT OF FIRE HYDRANT MEASURED FROM THE STEAMER NOZZLE SHALL BE 18 TO 24 INCHES ABOVE NEAREST FINAL GRADE.
10. FIRE HYDRANTS SHALL COME EQUIPPED WITH STORZ QUARTER TURN PUMPER CONNECTIONS THAT ARE AN INTEGRAL PART OF THE FIRE HYDRANT, AND MUST BE FURNISHED BY THE MANUFACTURER, STORZ ADAPTERS WILL NOT BE ACCEPTED.

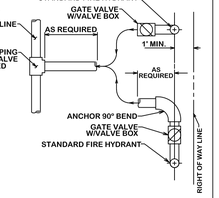


OPTIONAL

STANDARD FIRE HYDRANT ASSEMBLY

W1-02





FIRE HYDRANT LOCATION REALIGN AS NEEDED

UTILITY PIPE LOCATION MATERIALS

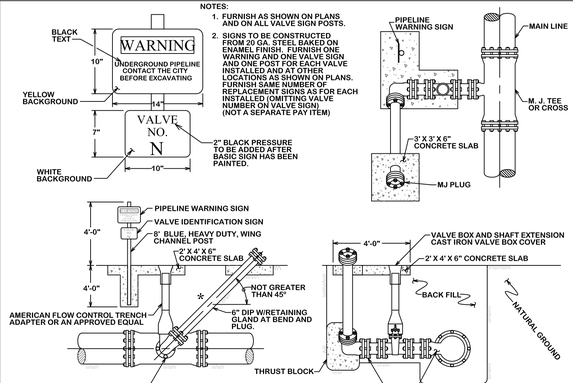
W1-03

END OF LINE BLOCKING

W3-00

NOTES:

1. FURNISH AS SHOWN ON PLANS AND ON ALL VALVE SIGN POSTS.
2. SIGNS TO BE CONSTRUCTED FROM 20 GA. STEEL BAKED ON ENAMEL FINISH. FURNISH ONE WARNING AND ONE VALVE SIGN AND ONE POST FOR EACH VALVE INSTALLED AND AT OTHER LOCATIONS AS SHOWN ON PLANS. FURNISH SAME NUMBER OF REPLACEMENT SIGNS AS FOR EACH INSTALLED (OMITTING VALVE NUMBER ON VALVE SIGN). (NOT A SEPARATE PAY ITEM)

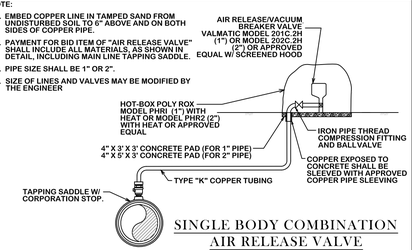


IN-LINE BLOW OFF ASSEMBLY

W3-01

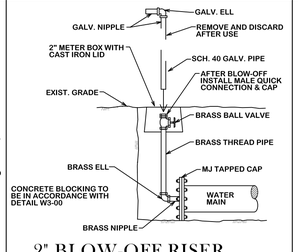
NOTE:

1. EMBED COPPER LINE IN TAMPED SAND FROM UNDISTURBED SOIL TO 6" ABOVE AND ON BOTH SIDES OF COPPER PIPE.
2. PAYMENT FOR BID ITEM OF "AIR RELEASE VALVE" SHALL INCLUDE ALL MATERIALS, AS SHOWN IN DETAIL, INCLUDING MAIN LINE TAPPING SADDLE.
3. PIPE SIZE SHALL BE 1" OR 2".
4. SIZE OF LINES AND VALVES MAY BE MODIFIED BY THE ENGINEER



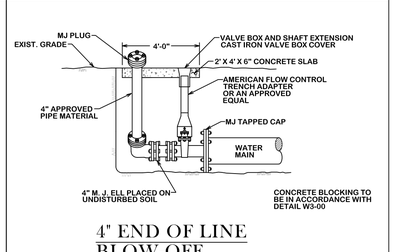
SINGLE BODY COMBINATION AIR RELEASE VALVE

W3-02



2" BLOW-OFF RISER

W3-03



4" END OF LINE BLOW-OFF

W3-04

THRUST BLOCK NOTES:

1. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 psi FOR 24" AND SMALLER INNER DIAMETER PIPE.
2. ALL BEARING SURFACES OF THRUST BLOCKS SHALL BE PLACED AGAINST UNDISTURBED EARTH OR ROCK.
3. CONCRETE FOR BLOCKING SHALL BE 2000 psi.
4. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.
5. WATER MAIN SHALL NOT BE PRESSURIZED UNTIL ALL CONCRETE BLOCKING HAS REACHED 1500 psi.

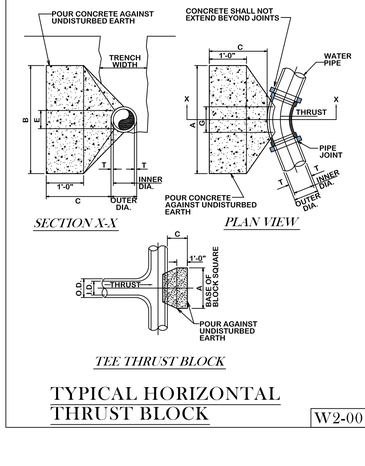
TEE SCHEDULE

ID (in)	THRUST (tons)	C (ft)	A (ft)	VOLUME (c.y.)
4,6,8	5.1	1.5	2.5	0.3
10,12	11.3	1.5	3.5	0.6

HORIZONTAL THRUST BLOCK SCHEDULE

BEND	SIZE	A (ft)	B (ft)	C (ft)	E (ft)	G (ft)	VOLUME (c.y.)
90°	6,8"	5.0	1.5	1.5	0.9	2.7	0.4
	10,12"	6.5	2.5	1.5	1.2	4.0	1.0
45°	6,8"	2.0	2.0	1.5	0.9	1.5	0.2
	10,12"	3.5	2.5	1.5	1.2	2.2	0.5
22.5°	6,8"	1.5	1.5	1.5	0.9	0.8	0.1
	10,12"	2.0	2.5	1.5	1.2	1.1	0.3
11.25°	6,8"	1.0	1.5	1.5	0.9	0.4	0.1
	10,12"	1.5	1.5	1.5	1.2	0.6	0.1

THRUST BLOCK DETAILS

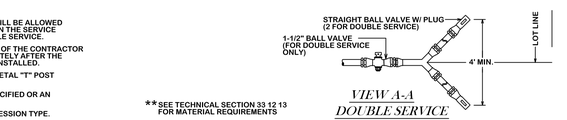


TYPICAL HORIZONTAL THRUST BLOCK

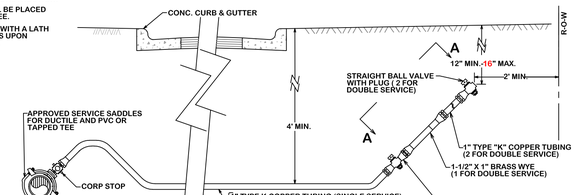
W2-00

NOTES:

1. NO SPLICES IN COPPER TUBING WILL BE ALLOWED FOR SINGLE SERVICE OR BETWEEN THE SERVICE SADDLE AND THE WYE FOR DOUBLE SERVICE.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PRESSURE TEST LINE IMMEDIATELY AFTER THE STREET CROSSINGS HAVE BEEN INSTALLED.
3. MARK EACH SERVICE END WITH METAL "T" POST PAINTED BLUE.
4. MATERIAL USED SHALL BE AS SPECIFIED OR AN APPROVED EQUAL.
5. ALL CONNECTIONS TO BE COMPRESSION TYPE.
6. ALL SERVICE WYES & EXTENSIONS ARE TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION.
7. METERS AND VALVE BOXES SHALL BE PLACED BY THE CITY UPON PAYMENT OF FEE.
8. LOT CORNERS SHALL BE MARKED WITH A LATH UNDER THE SUPERVISION F A RPLS UPON COMPLETION OF CONSTRUCTION.



** SEE TECHNICAL SECTION 33 12 13 FOR MATERIAL REQUIREMENTS

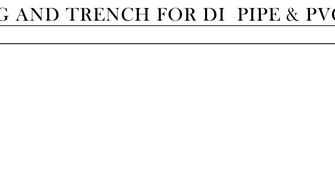


NEW WATER SERVICE

(SHORT AND LONG SIDE)

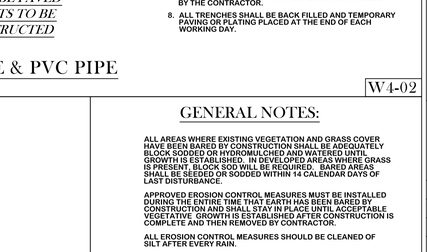
W2-01

STRUCTURAL BACKFILL AREA INCLUDES ALL PAVED AREAS (SIDEWALKS, STREETS, ALLEYS, DRIVEWAYS AND PARKING AREAS) AND SHALL EXTEND 5' BEYOND THE CURB LINE. STRUCTURAL BACKFILL SHALL BE CONSTRUCTED STD. (SEE DETAIL W4-02 - AR TASTO BE PAVED) OR EXCAVATED FLOWFILL (CTB) TO 90% MAXIMUM DRY DENSITY AS PER ASTM D698 WITHIN OPTIMUM TO +4% WET OF OPTIMUM (SEE DETAIL W4-02 - NON-STRUCTURAL AREAS)



STRUCTURAL BACKFILL AREA

W2-02



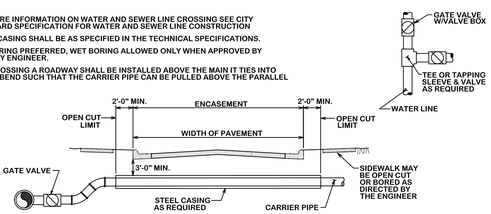
NOTE: CASING SPACERS 4-RUNNER MIN. (THRU 24" DIA CASING) OR 6-RUNNER MIN. (24"-42" DIA. CASING) STAINLESS STL. TYPE304; 5" WIDE BAND W/ POLYMER RUNNERS; CENTERED OR NON-CENTERED; CLEAR BELL, RESTRAINED FROM FLOTATION; INSULATED; "APS, INC., MOD SS18" OR "CASCADE"

CASING DETAIL

W2-03

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.
4. PIPE CROSSING A ROADWAY SHALL BE INSTALLED ABOVE THE MAIN IT TIES INTO WITH A BEND SUCH THAT THE CARRIER PIPE CAN BE PULLED ABOVE THE PARALLEL MAIN.

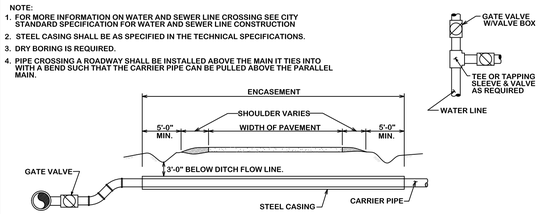


TYPICAL URBAN CITY STREET CROSSING

W4-00

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 IS REQUIRED.
4. PIPE CROSSING A ROADWAY SHALL BE INSTALLED ABOVE THE MAIN IT TIES INTO WITH A BEND SUCH THAT THE CARRIER PIPE CAN BE PULLED ABOVE THE PARALLEL MAIN.



TYPICAL RURAL STREET CROSSING

W4-01

Ⓐ SELECT 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.

Ⓑ GRANULAR MATERIAL

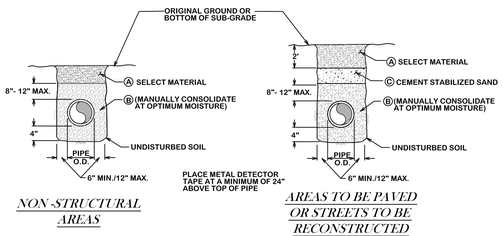
MATERIAL SHALL BE BANK RUN RIVER SAND WHICH IS FREE OF DETRIMENTAL QUANTITIES OF CLAY, DEBRIS, OR ORGANIC MATERIAL AND WHICH, WHEN TESTED BY STANDARD LABORATORY METHODS, MEET THE FOLLOWING REQUIREMENTS:

MAXIMUM LIQUID LIMIT	45
MAXIMUM PLASTICITY INDEX	15
MAXIMUM PERCENT PASSING NO. 200 SIEVE	35
MINIMUM PERCENT PASSING 3/4" SIEVE	100

THE MATERIAL SHALL BE FREE FLOWING AND WHEN WET, SHALL NOT ADHERE TO OR FORM A BALL WHEN PRESSED IN HAND.

Ⓒ CEMENT STABILIZED SAND

1-1/2" SACKS CEMENT/CY MINIMUM.
2 SACKS CEMENT/CY MINIMUM WHEN DISTANCE BETWEEN WATER LINES AND SANITARY LINES IS < 9FT



NOTES:

1. *FOR BEDDING AND TRENCHING WITHIN ALL EXISTING PAVED AREAS, STREETS OR TAILS FOW OPEN CUT STREETS. (Details ST4-00, ST4-01, ST4-02); THIS NOTE DOES NOT APPLY TO STREETS BEING RECONSTRUCTED.*
2. *EVERY 100 FEET PROVIDE A WATER STOP BLOCK COMPOSED OF CEMENT SAND OR NATIVE MATERIAL DEPENDING ON EMEDIMENT. BLOCK SHALL BE 6 FEET IN LENGTH. NO BEDDING SAND IN THIS AREA.*
3. ALL BEDDING & INSTALLATION OF PVC PIPE SHALL BE IN ACCORDANCE WITH ANSI/AWWA STANDARDS FOR PVC PIPE.
4. ALL BEDDING & INSTALLATION OF DUCTILE IRON PIPE SHALL BE IN ACCORDANCE WITH ANSI/AWWA C150/A21.50
5. COMPACTION SHALL BE ATTAINED BY MECHANICAL TAMPING.
6. RELATIVE COMPACTION SHALL BE TESTED IN THE PRESENCE OF THE CITY ENGINEER.
7. DUST RESULTING FROM THE CONTRACTOR'S PERFORMANCE OF THE WORK, EITHER INSIDE OR OUTSIDE THE RIGHT-OF-WAY, SHALL BE CONTROLLED BY THE CONTRACTOR.
8. ALL TRENCHES SHALL BE BACK FILLED AND TEMPORARY PAVING OR PLATING PLACED AT THE END OF EACH WORKING DAY.

BEDDING AND TRENCH FOR DI PIPE & PVC PIPE

W4-02

GENERAL NOTES:

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 ESTABLISHED. 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 EVERY RAIN.

ESTABLISHMENT OF VEGETATION MAY BE A WARRANTY ITEM.

REVISIONS:

BRYAN - COLLEGE STATION STANDARD DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.

DRAWN BY:

DATE:

SCALE: NTS

APPROVED:

W1

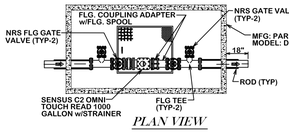
K.L.
APR 2024

W.P.K.

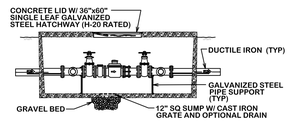
SPECIAL CONDITIONS

1. METER REGISTER SHALL BE NO DEEPER THAN 12 INCHES BELOW FINISHED GRADE.
2. FLOOR OF VAULT WILL BE A MINIMUM OF 6 INCHES FROM BOTTOM OF ANY PIPING APPARATUS OR METER WITHIN THE VAULT.
3. REINFORCED CONCRETE VAULT BASE (FLOOR) SHALL BE CONSTRUCTED USING A STANDARD FIVE SACK CONCRETE MIX AND REINFORCING COMPRISED OF #3 REBAR ON 12 INCH CENTERS WITH A MINIMUM BASE THICKNESS OF 6 INCHES.
4. SET SCREW RETAINER GLANDS SHALL BE INSTALLED AT EACH FITTING ON MECHANICAL JOINT PIPE.
5. VALVES SHALL MEET THE CITY SPECIFICATIONS FOR VALVES.
6. THERE SHALL BE NO PIPING UNDER THE FLOOR OF THE VAULT.

MODEL	SIZE	L1	W1	H1	WEIGHT LBS
DMC-CS3	3"	8'-8"	5'-0"	4'-6"	12,000
DMC-CS4	4"	8'-8"	5'-0"	4'-6"	12,000
DMC-CS6	6"	11'-0"	6'-0"	4'-9"	12,000



PLAN VIEW



ELEVATION VIEW

APPROVED 3" OR LARGER COMPOUND METERS, VAULTS, & MATERIALS

APPROVED METERS - SENSUS SRH (U. S. GALLONS)

APPROVED VAULTS - PARK DMC-BR PRE-CAST CONCRETE VAULT W/ ADEQUATE ACCESS AND VAULT DIMENSIONS FOR METER SELECTED

APPROVED MATERIALS - DUCTILE IRON PIPE WITH MECHANICAL JOINT. SET SCREW RETAINER GLANDS WILL BE BASED ON ALL M.J. FITTINGS.

ANY DEVIATIONS FROM THE ABOVE SPECIAL CONDITIONS OR APPROVED METERS, VAULTS OR MATERIALS MUST BE SUBMITTED TO THE DIVISION MANAGER, WATER SERVICES, 72 HOURS PRIOR TO ANTICIPATED DEVIATION.

CITY OF COLLEGE STATION
METER VAULT ASSEMBLY

W5-00

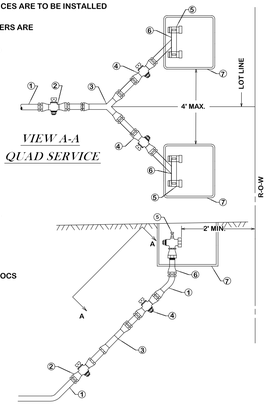
SPECIAL CONDITIONS

ALL CONNECTIONS SHALL BE PACK-JOINT COMPRESSION TYPE

ALL SERVICE EXTENSIONS/APPURTENANCES ARE TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION

A MAXIMUM OF FOUR – 0.75" WATER METERS ARE ALLOWED FOR THIS CONFIGURATION

MATERIAL USED SHALL BE AS SPECIFIED OR AN APPROVED EQUAL



VIEW A-A
QUAD SERVICE

① Service tubing: Type K copper - soft - 2"
② Ford Ball Valve - B44-777-NL- 2"
③ Ford "Y" Branch - Y44-274-NL- 2" x 1" x 1"
④ Ford Ball Valve - B44-444-NL- 1"
⑤ Ford Angle Stop KV13-332W-NL - .75" x .75" Meter Nut Swivel
⑥ Ford 'U' Branch - U48-43-NL
⑦ Dual Concrete Meter Box - Provided by COCS

CITY OF COLLEGE STATION
QUAD SERVICE CONNECTION

W5-01

NOTES:

① Service saddle, SS straps, CC threads Installed per manufacturer's recommendations. All main types: Smith Blair 317
② Corporation Stop: Ford FB 1000-4-Q - 1"
③ Service tubing: Type K copper - soft - 1"
④ Ford male adapter - C84-44-Q - 1"
⑤ Meter box valve: 5 = Ford Angle Stop - BA-11-444W - 1" 5A = Ford Straight Stop - B11-444W - 1"
⑥ Brass bushing IPS - 1" x 3/4"
⑦ Meter nipple - C38-23-2.5 - 3/4"
⑧ Meter box and lid: Old Castle/Christy meter box and lid: - B09 Utility Box - N09R Concrete Lid Marked "Water" with Flex-Net Sensus Probe Hole

PREFERRED METHOD

UPON CITY ENGINEER'S APPROVAL

CITY OF BRYAN
STRAIGHT OR ANGLE TAP-3/4"

W6-00

NOTES:

① Service saddle, SS straps, CC threads Installed per manufacturer's recommendations. All main types: Smith Blair 317
② Corporation Stop: Ford FB 1000-4-Q - 1"
③ Service tubing: Type K copper - soft - 1"
④ Ford male adapter - C84-44-Q - 1"
⑤ Meter box valve: 5 = Ford Angle Stop - BA-11-444W - 1" 5A = Ford Straight Stop - B11-444W - 1"
⑥ Meter nipple - C38-44-2-625 - 1"
⑦ Meter box and lid: Old Castle/Christy meter box and lid: - B12 Utility Box - N09R Concrete Lid Marked "Water" with Flex-Net Sensus Probe Hole

PREFERRED METHOD

UPON CITY ENGINEER'S APPROVAL

CITY OF BRYAN
STRAIGHT OR ANGLE TAP - 1"

W6-01

PREFERRED METHOD

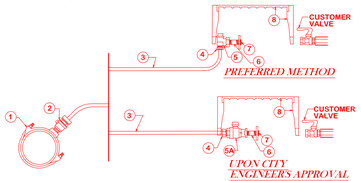
UPON CITY ENGINEER'S APPROVAL

CITY OF BRYAN
STRAIGHT OR ANGLE TAP-1-1/2"

W6-02

NOTES:

① Service saddle, SS straps, CC threads Installed per manufacturer's recommendations. All main types: Smith Blair 317
② Corporation Stop: Ford FB 1000-4-Q - 1"
③ Service tubing: Type K copper - soft - 1"
④ Brass nipple I.P.S. - 2"x3"
⑤ Meter Flange - CF31 - 77 - 2"
⑥ Meter box and lid: Old Castle/Christy meter box and lid: - B63 Utility Box - N09R Concrete Lid Marked "Water" with Flex-Net Sensus Probe Hole
⑦ Meter box valve: 5= Ford Angle Stop - BA -11-777W - 2" 5A = Ford Straight Stop - B11- 777W - 2"



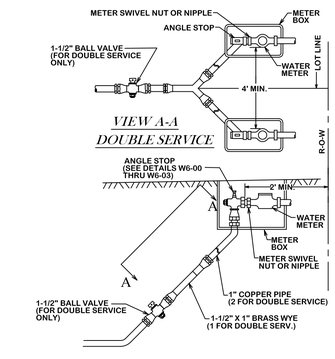
PREFERRED METHOD

UPON CITY ENGINEER'S APPROVAL

CITY OF BRYAN
STRAIGHT OR ANGLE TAP - 2"

W6-03

METER NUT SIZE	FORD PART NO.
3/4" x 2.5" Long	C38-23-2-5
3/4" x 3" Long	C38-23-3
3/4" x 12" Long	C38-23-12
1" x 2.625" Long	C38-44-2-625
1" x 8.5" Long	C38-44-8-5
1-1/2" Meter Nipple	C38-66-2-875
1-1/2" Meter Bushing	BBIM-66
2" Meter Nipple	C38-77
2" Meter Bushing	BBIM-77



VIEW A-A
DOUBLE SERVICE

CITY OF BRYAN
WATER SERVICE RECONNECTION

W6-04

NOTES:

① Service saddle and CC threads installed per manufacturer's recommendations. All main types: Ford S70/S90
② Corporation Stop: Ford FB 1000-4- 1"
③ Service tubing: Type K copper - soft - 1"
④ Meter box valve: 4 = Ford Angle Stop - BA13-343W - 1" 4A = Ford Straight Stop - B11-444W - 1"
⑤ Ball valve
⑥ Meter box and lid: Old Castle meter box, CI lid with Reader #36

PREFERRED METHOD

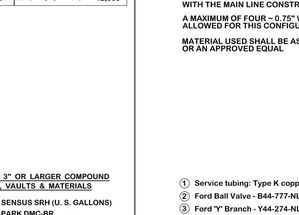
UPON CITY ENGINEERS APPROVAL

CITY OF COLLEGE STATION
STRAIGHT OR ANGLE TAP - 3/4"

W7-00

NOTES:

① Service saddle and CC threads installed per manufacturer's recommendations. All main types: Ford S70/S90
② Corporation Stop: Ford FB 1000-4- 1"
③ Service tubing: Type K copper - soft - 1"
④ Meter box valve: 4 = Ford Angle Stop - BA-43-444W - 1" 4A = Ford Straight Stop - B11-444W - 1"
⑤ Ball valve
⑥ Meter box and lid: Old Castle meter box, CI lid with Reader #36



PREFERRED METHOD

UPON CITY ENGINEERS APPROVAL

CITY OF COLLEGE STATION
STRAIGHT OR ANGLE TAP - 1"

W7-01

NOTES:

① Service saddle and CC threads installed per manufacturer's recommendations. All main types: Ford S70/S90
② Corporation Stop: Ford FB 1000-6- 1-1/2"
③ Service tubing: Type K copper - soft - 1-1/2"
④ Meter box valve: 4 = Ford Angle Stop - FV-43-666W - 1-1/2" 4A = Ford Straight Stop - B11-666W - 1-1/2"
⑤ Ball valve
⑥ Meter box and lid: Old Castle meter box, CI lid with Reader #65

PREFERRED METHOD

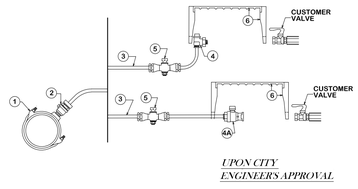
UPON CITY ENGINEERS APPROVAL

CITY OF COLLEGE STATION
STRAIGHT OR ANGLE TAP - 1-1/2"

W7-02

NOTES:

① Service saddle and CC threads installed per manufacturer's recommendations. All main types: Ford S70/S90
② Corporation Stop: Ford FB 1000-7 (cc thread) - 2"
③ Service tubing: Type K copper - soft - 2"
④ Meter box valve: 4 = Ford Angle Stop - FV-43-777W - 2" 4A = Ford Straight Stop - B11-777W - 2"
⑤ Ball valve
⑥ Meter box and lid: Old Castle meter box, CI lid with Reader #65



PREFERRED METHOD

UPON CITY ENGINEERS APPROVAL

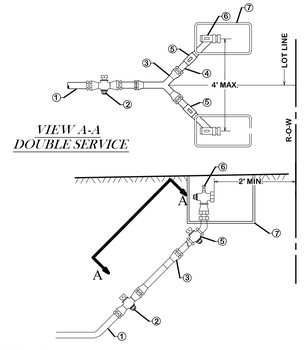
CITY OF COLLEGE STATION
STRAIGHT OR ANGLE TAP - 2"

W7-03

NOTES:

- ALL CONNECTIONS TO BE COMPRESSION TYPE.
- MATERIAL USED SHALL BE AS SPECIFIED OR AN APPROVED EQUAL.
- ALL SERVICE WYES & EXTENSIONS ARE TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION.

① Service Tubing: Type K Copper - cu - soft - 1.50"
② Ford Ball Valve - B44-666-NL- 1.50"
③ Ford 'Y' Branch - Y44-264-NL- 1.50" x 1" x 1"
④ Service Tubing: Type K Copper - soft - 1"
⑤ Ford Ball Valve - B44-444-NL - 1"
⑥ Ford Angle Stop KV43-332W-NL - 1" x 0.75 Meter Nut Swivel
⑦ Concrete Meter Box - Provided by COCS



VIEW A-A
DOUBLE SERVICE

CITY OF COLLEGE STATION
DOUBLE WATER SERVICE RECONNECTION

W7-04

REVISIONS:
7/1/2016 - Details W6-00 thru W6-04 Accepted for use by COB

BRYAN - COLLEGE STATION STANDARD WATER DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.

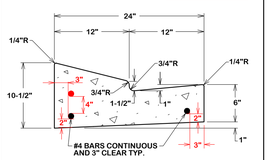
DRAWN BY:
DATE:
SCALE:
APPROVED:

W2

K.L.
APR 2024
N T S
W.P.K.

NOTE:
TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S AND P.C.'S. TYPE "B" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 10' APART.

28-DAY CONCRETE STRENGTH=3500 psi.

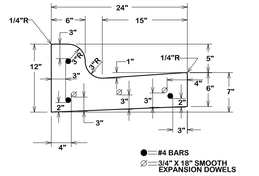


24" LAY DOWN GUTTER SECTION

ST1-00

NOTE:
TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S, AND P.C.'S. TYPE "E" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 10' APART.

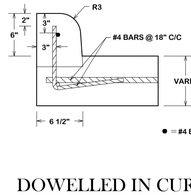
28-DAY CONCRETE STRENGTH=3500 psi.



TYPICAL COMBINED CURB & GUTTER SECTION

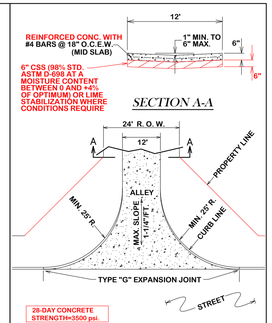
ST1-01

28-DAY CONCRETE STRENGTH=3500 psi.



DOWELLED IN CURBS DETAIL

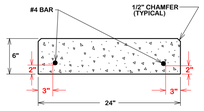
ST1-02



ALLEY PAVING

ST1-06

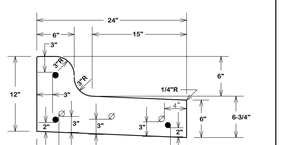
NOTE:
TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S, AND P.C.'S. TYPE "E" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 10' APART



TYPICAL RIBBON CURB

ST1-03

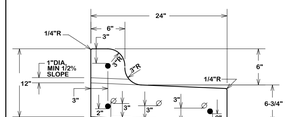
NOTE:
TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S, AND P.C.'S. TYPE "E" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 10' APART



TYPICAL COMBINED SPILL CURB

ST1-04

NOTE:
1. TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S, AND P.C.'S. TYPE "E" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 10' APART
2. PIPE EXTENDED 1"-2" FROM BOC TO BE COVERED WITH FABRIC AND TIED IN PLACE



TYPICAL WEEPHOLE CURB

ST1-05

GENERAL NOTES:

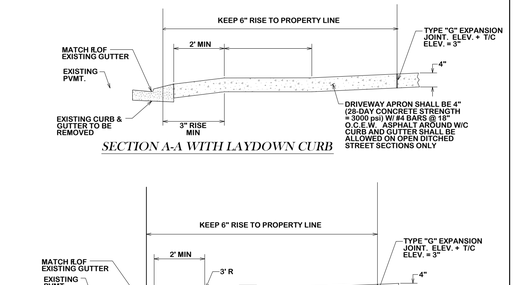
ALL AREAS WHERE EXISTING VEGETATION AND GRASS COVER HAVE BEEN BARED BY CONSTRUCTION SHALL BE ADEQUATELY BLOCK SODDED OR HYDROMULCHED AND WATERED UNTIL GROWTH IS ESTABLISHED. IN DEVELOPED AREAS WHERE GRASS IS PRESENT, BLOCK SOD WILL BE REQUIRED. BARED AREAS SHALL BE SEEDED OR SODDED WITHIN 14 CALENDAR 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 EVERY RAIN.

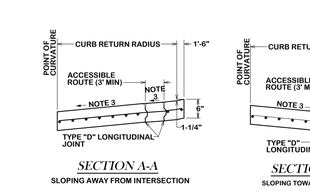
ALL TRAFFIC SIGNALS AND APPURTENANCES, AND ALL PAVEMENT MARKINGS AND MARKERS SHALL BE IN ACCORDANCE WITH TXDOT STANDARDS

REFER TO SPEC 31 17 23.23 (PAVEMENT MARKINGS) FOR ADDITIONAL LOCAL REQUIREMENTS.

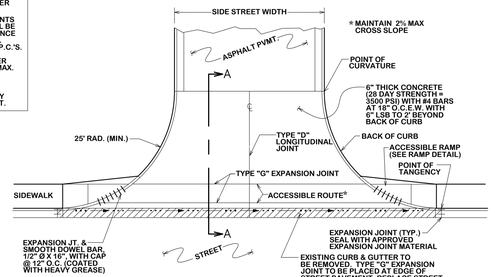


RESIDENTIAL DRIVEWAY

ST2-00



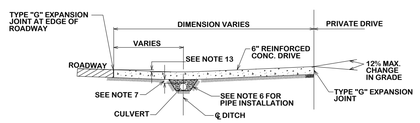
NOTES:
1. IF THERE IS A VALLEY GUTTER, THEN TRANSITION CROWN AT VALLEY GUTTER TO FULL CROWN IN 50'
2. TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAX. DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S & P.C.'S. TYPE "B" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAX. DISTANCE OF 10' APART.
3. 2% MAX SLOPE.
4. 5' MIN TRANSITION TO LAY DOWN CURB BEGIN AT P.T.



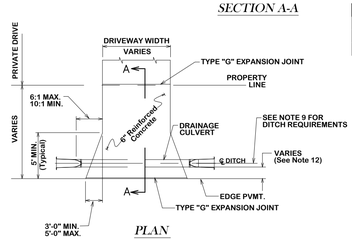
TYPICAL STREET CONCRETE APRON

ST2-01

NOTE:
1. LENGTH OF DRAINAGE PIPE FOR RESIDENTIAL DRIVES IS 30' MAX & 20' MIN.
2. ALL DRIVEWAY PIPES WITHIN THE RIGHT OF WAY MUST HAVE CONCRETE SAFETY END TREATMENTS (S.E.T.) (6:1 SLOPE) OR APPROVED EQUAL.
3. CULVERT DIAMETER TO BE APPROVED BY THE CITY ENGINEER. THE SIZE OF THE DRIVEWAY CULVERT SHALL BE A MINIMUM OF 18" IN DIAMETER AND DESIGNED FOR A 10-YEAR STORM EVENT AT MINIMUM. THE SLOPE OF THE PIPE SHALL BE A MINIMUM OF 0.5%.
4. CULVERT SHALL BE RCP OR HDPE, MEETING THE CITY'S SPECIFICATIONS FOR STORM PIPE. CMP IS NOT ALLOWED.
5. BELL AND SPIGOT GASKETED JOINTS OR MANUFACTURED COUPLING BANDS ARE REQUIRED WITH HDPE.
6. CEMENT STABILIZED SAND IS REQUIRED WITH HDPE.
7. THERE SHALL BE A MINIMUM OF 12" COVER FOR HDPE PIPE AND 6" COVER FOR RCP PIPE.
8. TOP OF CONCRETE DRIVE TO BE LEVEL WITH ROAD SURFACE.
9. DITCH SHALL BE CLEANED OUT BOTH UPSTREAM AND DOWNSTREAM. THE CULVERT SHALL MATCH THE DITCH SLOPE.
10. SLOPES TRANSVERSE TO THE PUBLIC STREET (e.g.: DRIVEWAY SIDE SLOPES SHOULD BE AS FLAT AS PRACTICAL. A SLOPE OF 1 VERTICAL TO 6 HORIZONTAL (1V:6H) OR FLATTER SHALL BE CONSTRUCTED WITH A MINIMUM SLOPE OF 2.5% BEING ALLOWED.
11. DRIVEWAY CULVERTS:
    A. SHALL BE PLACED AS FAR AWAY FROM THE PUBLIC ROADWAY AS POSSIBLE.
    B. SHALL BE CUT TO MATCH THE DRIVEWAY SLOPE.
    C. SHALL HAVE DELINEATORS PLACED AT EACH END FOR HAZARD IDENTIFICATION.
12. REFER TO THE CURRENT ADDITION OF THE AASHTO ROADSIDE DESIGN GUIDE FOR ADDITIONAL INFORMATION ON THE CONSTRUCTION OF THE DRIVEWAY AND THE PLACEMENT OF THE DRIVEWAY CULVERT TO ALLOW SUFFICIENT CLEAR ZONE AND FLARE RATES.
13. DRIVEWAY ELEVATION OVER THE CULVERT MUST BE A MINIMUM 4" BELOW ROAD SURFACE WHEN DIP AND MAXIMUM OF 12" ABOVE ROAD SURFACE IF A HUMP.

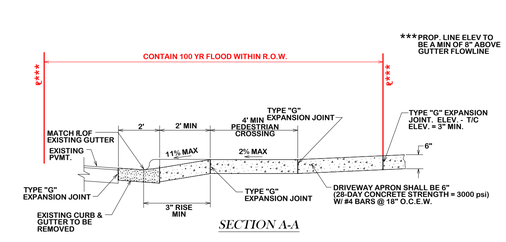


SPEED	SLOPE
< 40 MPH	3:1
45-50 MPH	4:1
≥ 55 MPH	6:1



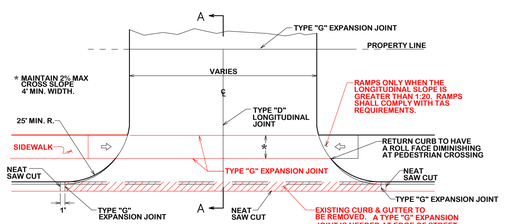
TYPICAL DRIVEWAY ENTRANCE WITH CULVERT

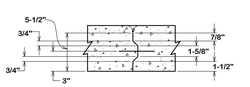
ST2-02



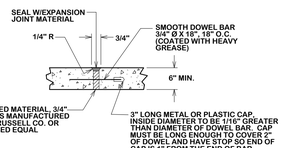
COMMERCIAL DRIVEWAY

ST2-03

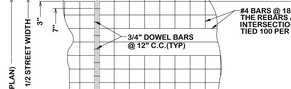




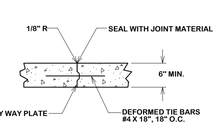
METAL KEY WAY PLATE



TYPE "G" EXPANSION & CONSTRUCTION JOINT

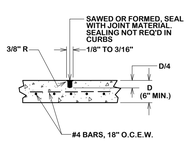


TYPICAL JOINT & REINFORCEMENT LAYOUT FOR CONCRETE PAVEMENT

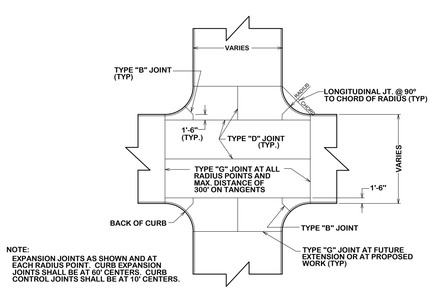


TYPE "D" LONGITUDINAL JOINT

LONGITUDINAL JOINTS SHALL BE REQUIRED ONLY ON THE CENTERLINE OF THE PAVEMENT & IN INTERSECTIONS AS DETAILED



TYPE "B" CONTRACTION JOINT



NOTE:
EXPANSION JOINTS AS SHOWN AND AT EACH RADIUS POINT. CURB EXPANSION JOINTS SHALL BE AT 60' CENTERS. CURB CONTROL JOINTS SHALL BE AT 10' CENTERS.

TYPICAL JOINT LAYOUT AT CONCRETE INTERSECTION

ST3-00

BRYAN - COLLEGE STATION STANDARD STREET DETAILS

REVISIONS:

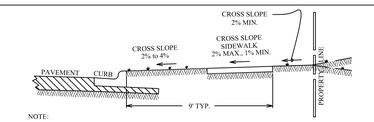
CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.

DRAWN BY: B.I.
DATE: 12/2020
SCALE: N T S
APPROVED: W. P. K.

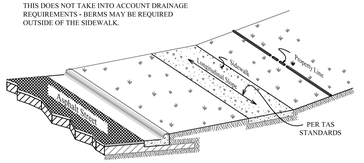
FIGURE:
ST1

SHEET 1 OF 2



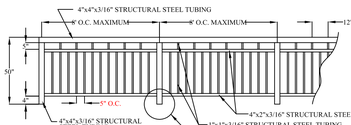
NOTE:

THIS DOES NOT TAKE INTO ACCOUNT DRAINAGE REQUIREMENTS - BERMS MAY BE REQUIRED OUTSIDE OF THE SIDEWALK.

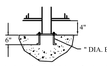


SIDEWALK SLOPE REQUIREMENTS

SW1-00



TYPICAL PEDESTRIAN GUARDRAIL



CONNECTION DETAIL

SW1-01

GENERAL NOTES:

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 ESTABLISHED. 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.

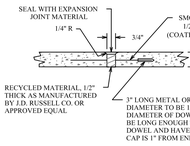
ALL EROSION CONTROL MEASURES SHOULD BE CLEANED OF SILT AFTER EVERY RAIN.

ALL TRAFFIC SIGNALS AND APPURTENANCES, AND ALL PAVEMENT MARKINGS AND MARKERS SHALL BE IN ACCORDANCE WITH TXDOT STANDARDS

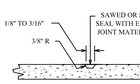
REFER TO SPEC 31 17 23.23 (PAVEMENT MARKINGS) FOR ADDITIONAL LOCAL REQUIREMENTS.

NOTES:

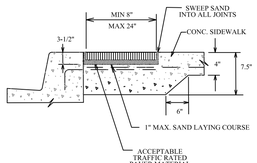
1. SIDEWALK PLACEMENT SHALL BE IN ACCORDANCE WITH B/CS UNIFIED DESIGN GUIDELINES.
2. FINISH: LIGHT BROOM FINISH. JOINTS TO BE TOOLED 1" DEEP AT AN INTERVAL EQUAL TO THE SIDEWALK WIDTH. EXPANSION JOINTS @ 40' O.C., CONTRACTION JOINTS @ 4' O.C.
3. DOWEL IN AND TIE TO ANY CONCRETE STRUCTURE ADJACENT TO SIDEWALK (DRIVEWAY, INLET BOX, CURB, JUNCTION BOX, ETC.) WITH #3 x 12" BARS @ 12" O.C. OR #4 x 12" BARS @ 18" O.C.
4. COMPACTION: COMPACTED SUBGRADE MATERIAL COMPACTED TO A DENSITY AT LEAST 98% OF MAXIMUM DRY DENSITY AS DETERMINED BY PROCTOR COMPACTION TEST ASTM D698 (STANDARD) AND SHALL BE 0-4% WET OF THE OPTIMUM MOISTURE CONTENT
5. A MINIMUM CLEAR PEDESTRIAN WIDTH AS DEFINED BY TAS AND ADA SHALL BE PROVIDED FOR ENTIRE LENGTH OF SIDEWALK.



SIDEWALK EXPANSION & CONSTRUCTION JOINT



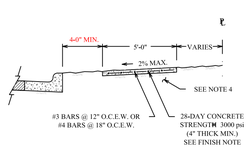
SIDEWALK CONTRACTION JOINT



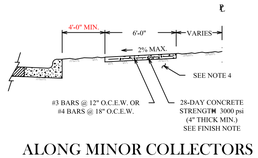
SIDEWALK PAVER SECTION

CONCRETE SIDEWALK

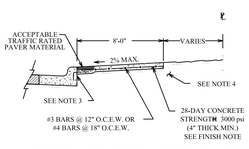
SW1-02



ALONG LOCAL STREETS

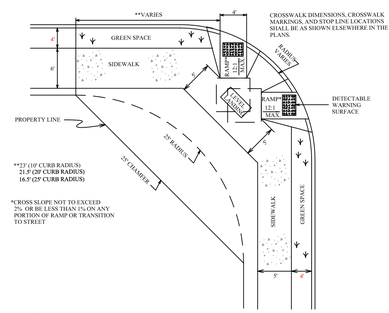


ALONG MINOR COLLECTORS AND LARGER



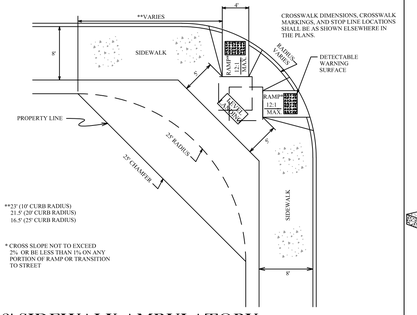
ALONG MINOR COLLECTORS AND LARGER

SW1-02



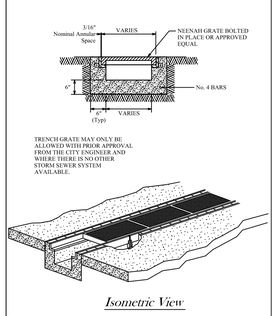
5'/6' SIDEWALK AMBULATORY RAMP AT STREET INTERSECTION

SW3-00



8' SIDEWALK AMBULATORY RAMP AT STREET INTERSECTION

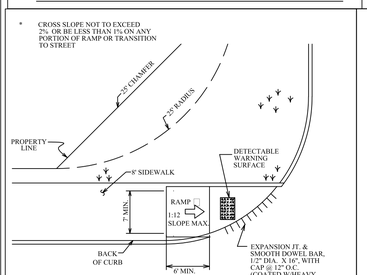
SW3-01



Isometric View

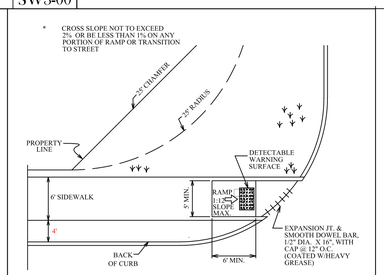
SIDEWALK DRAINAGE TRENCH GRATE

SW3-02



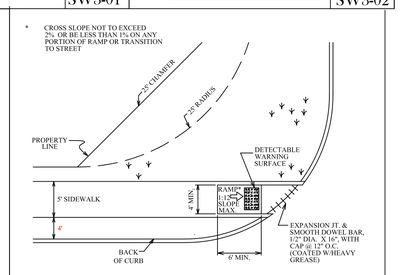
8' SIDEWALK AMBULATORY RAMP AT STREET INTERSECTION & DRIVES

SW3-03



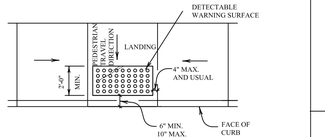
6' SIDEWALK AMBULATORY RAMP AT STREET INTERSECTION & DRIVES

SW3-04



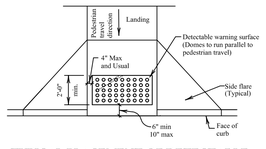
5' SIDEWALK AMBULATORY RAMP AT STREET INTERSECTION & DRIVES

SW3-05



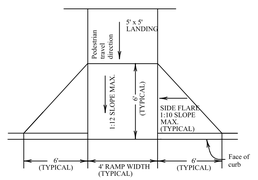
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE

SW2-00



TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN

SW2-01



TYPICAL AMBULATORY RAMP W/ FLARED WINGS

SW2-02

DETECTABLE WARNINGS GENERAL NOTES

1. CURB RAMPS MUST CONTAIN A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES COMPLYING WITH SECTION 4.29 OF THE TEXAS ACCESSIBILITY STANDARDS (TAS). THE SURFACE MUST CONTRAST VISUALLY WITH ADJOINING SURFACES, INCLUDING SIDE FLARES. FURNISH DARK BROWN OR DARK RED DETECTABLE WARNING SURFACE ADJACENT TO UNCOLORED CONCRETE, UNLESS SPECIFIED ELSEWHERE IN THE PLANS.
2. DETECTABLE WARNING SURFACES MUST BE SLIP RESISTANT AND NOT ALLOW WATER TO ACCUMULATE.
3. ALIGN TRUNCATED DOMES IN THE DIRECTION OF PEDESTRIAN TRAVEL WHEN ENTERING THE STREET.
4. SHADED AREAS ON SHEETS 3 AND 4 INDICATE THE APPROXIMATE LOCATION FOR THE DETECABLE WARNING SURFACE FOR EACH CURB RAMP TYPE.
5. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24" IN DEPTH IN THE DIRECTION OF PEDESTRIAN TRAVEL, AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR LANDING WHERE THE PEDESTRIAN ACCESS ROUTE ENTERS THE STREET.
6. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS A MINIMUM OF 6" AND A MAXIMUM OF 10" FROM THE EXTENSION OF THE FACE OF CURB. DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.
7. ACCEPTABLE PAVER MATERIAL SHALL BE CLAY, VITRIFIED POLYMER COMPOSITE, PRECAST POLYMER CONCRETE, AND CONCRETE.

SW2-GN00

CROSSWALKS GENERAL NOTES

1. CROSSWALK MARKINGS ARE IMPORTANT TRAFFIC CONTROL DEVICES AT CONTROLLED INTERSECTIONS. THESE DEVICES IDENTIFY THE APPROPRIATE LOCATION FOR PEDESTRIANS TO CROSS THE INTERSECTION AS WELL AS INFORMING DRIVERS WHERE PEDESTRIANS MAYBE PRESENT. NOT ALL LOCATIONS NEED THE CROSSWALKS MARKED; HOWEVER, TYPICALLY COLLECTOR AND ARTERIAL STREETS DO. AS STATED IN THE TMUTCD, AN ENGINEERING STUDY SHOULD BE PERFORMED BEFORE CROSSWALKS ARE INSTALLED AT LOCATIONS OTHER THAN CONTROLLED INTERSECTIONS.
2. THE CITY OF BRYAN'S PREFERENCE FOR MARKING CROSSWALKS IS THE LONGITUDINAL (OR "LADDER" STYLE). THE CITY OF COLLEGE STATION'S PREFERENCE IS THE TYPICAL "TRANSVERSE" STYLE; HOWEVER, IN THE NORTHGATE AREA, ADJACENT TO SCHOOL OR SCHOOL ZONES, AND OTHER HIGH PEDESTRIAN CROSSINGS, THE LONGITUDINAL (OR "LADDER" STYLE) IS PREFERRED. DEVIATION FROM THESE PREFERENCES WILL BE ALLOWED ONLY WITH THE APPROVAL OF THE CITY ENGINEER.
3. THE LONGITUDINAL "LADDER" STYLE MARKING SHALL BE 24" WIDE AND 8 FEET IN LENGTH, SPACED 48-INCHES APART, CONSIST OF 12-INCH WIDE, WHITE LONGITUDINAL LINES SPACED 24-INCHES APART. LONGITUDINALLY, THESE MARKINGS SHALL EXTEND 8 FEET. THE TRANSVERSE MARKINGS SHALL CONSIST OF TWO 12-INCH WIDE LINES SEPARATED BY 6 FEET OF UNMARKED PAVEMENT. ALL CROSSWALK PAVEMENT MARKINGS SHALL ALWAYS MEET TxDoT'S SPECIFICATION FOR TYPE I MARKINGS UNLESS OTHERWISE BE THERMOPLASTIC, UNLESS A DIFFERENT MATERIAL IS APPROVED BY THE CITY ENGINEER.
4. ADDITIONAL INFORMATION ABOUT CROSSWALK MARKINGS CAN BE FOUND IN THE TMUTCD.
5. CROSSWALKS WITH BRICK PAVERS, STAMPED ASPHALT, STAMPED CONCRETE, ETC., SHALL ALSO REQUIRE RETRO-REFLECTIVE, THERMOPLASTIC TRANSVERSE STRIPING.

SW2-GN01

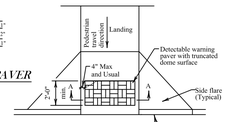
PEDESTRIAN FACILITIES GENERAL NOTES

1. ALL SLOPES ARE MAXIMUM ALLOWABLE. THE LEAST POSSIBLE SLOPE THAT WILL STILL DRAIN PROPERLY SHOULD BE USED. ADJUST CURB RAMP LENGTH OR GRADE OF APPROACH SIDEWALK AS DIRECTED.
2. LANDINGS SHALL BE A 5' X 5' MINIMUM WITH A MAXIMUM 2% SLOPE IN ANY DIRECTION.
3. MANEUVERING SPACE AT THE BOTTOM OF CURB RAMPS SHALL BE A MINIMUM OF 4' X 4' WHOLLY CONTAINED WITHIN THE CROSSWALK AND WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH.
4. MAXIMUM ALLOWABLE CROSS SLOPE ON SIDEWALK AND CURB RAMP IS 2%.
5. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP, EITHER BECAUSE THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR BECAUSE THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED. OTHERWISE, PROVIDE FLARED SIDES.
6. ADDITIONAL INFORMATION ON CURB RAMP LOCATION, DESIGN, LIGHT RELECTIVE VALUE AND TEXTURE MAY BE FOUND IN THE CURRENT EDITION OF THE TEXAS ACCESSIBILITY STANDARDS (TAS) AND 16 TAC 68.102.
7. TO SERVE AS A PEDESTRIAN REFUGE AREA, THE MEDIAN SHOULD BE A MINIMUM OF 5' WIDE. MEDIANS SHOULD BE DESIGNED TO PROVIDE ACCESSIBLE PASSAGE OVER OR THROUGH THEM.
8. CROSSWALK DIMENSIONS, CROSSWALK MARKINGS AND STOP BAR LOCATIONS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS. AT INTERSECTIONS WHERE CROSSWALK MARKINGS ARE NOT REQUIRED, CURB RAMPS SHALL BE ALIGNED WITH THEORETICAL CROSSWALKS, OR AS DIRECTED BY THE ENGINEER.
9. EXISTING FEATURES THAT COMPLY WITH TAS MAY REMAIN IN PLACE UNLESS OTHERWISE SHOWN ON THE PLANS.
10. HANDRAILS ARE NOT REQUIRED ON CURB RAMPS. PROVIDE CURB RAMPS WHEREVER ON ACCESSIBLE ROUTE CROSSES (PENETRATES) A CURB.
11. SEPARATE CURB RAMP AND LANDINGS FROM ADJACENT SIDEWALK AND ANY OTHER ELEMENTS WITH PREMOLD OR BOARD JOINT OF 3/4" UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
12. PROVIDE A SMOOTH TRANSITION WHERE THE CURB RAMPS CONNECT TO THE STREET.
13. FLARE SLOPE SHALL NOT EXCEED 10% MEASURED ALONG CURB LINE.

SW2-GN02



DETECTABLE WARNING PAVER

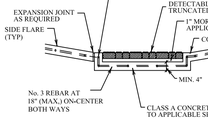


TRUNCATED DOME PATTERN CURB RAMP

GENERAL NOTES (PAVERS)

FURNISH DETECTABLE WARNING PAVER UNITS MEETING ALL REQUIREMENTS OF ASTM C-936, C-33. LAY IN A TWO BY TWO UNIT BASKET WEAVE PATTERN OR AS DIRECTED.

LAY FULL-SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25 PERCENT OF A FULL UNIT. CUT DETECTABLE WARNING PAVER UNITS USING A POWER SAW.



SECTION A-A

DETECTABLE WARNING PAVER

SW2-03

REVISIONS:

BRYAN - COLLEGE STATION STANDARD SIDEWALK DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.

DRAWN BY:	B.I.
DATE:	12/2020
SCALE:	NTS
APPROVED:	W. P. K.

FIGURE:

SW1

SHEET 1 OF 1