1 WATER/SEWER DESIGN REVISED. 06/20/24

STEELWOOD TRAIL UNIT 4

NEW BRAUNFELS, TEXAS

CIVIL CONSTRUCTION PLANS

NBU NOTES:

1. THE ENGINEER OF RECORD ACKNOWLEDGES THAT ALL PROPOSED WATER OR WASTEWATER IMPROVEMENTS MUST COMPLY WITH TCEQ, CITY OF NEW BRAUNFELS, W&WW DESIGN CRITERIA, SOUND ENGINEERING JUDGEMENT, AND ANY OTHER GOVERNING ENTITY'S ORDINANCES OR CODES.
2. THE ENGINEER OF RECORD ACKNOWLEDGES THAT THE POINT OF DELIVERY FOR THE NBU WATER SYSTEM IS THE MAIN SIDE OF THE SERVICE/LEAD FROM THE CUSTOMER'S METER/BACKFLOW/EASEMENT EDGE. THE CUSTOMER IS RESPONSIBLE FOR DESIGN, CONSTRUCTION, OPERATION AND MAINTENANCE BEYOND THE POINT OF DELIVERY AND HAS SOLE CONTROL AND SUPERVISION OVER THE CUSTOMER'S INSTALLATION INCLUDING REVIEW, PERMITTING, AND COMPLIANCE WITH ALL CITY PLUMBING CODES OR OTHER APPLICABLE CODES.
3. ENGINEER OF RECORD ACKNOWLEDGES THAT THE POINT OF DELIVERY FOR AN NBU WASTEWATER SYSTEM IS THE MAIN SIDE OF THE SERVICE LATERAL FROM THE CUSTOMER'S CLEAN OUT OR PROPERTY LINE, WHICHEVER IS NEARER. THE CUSTOMER IS RESPONSIBLE FOR DESIGN, CONSTRUCTION, OPERATION AND MAINTENANCE BEYOND THE POINT OF DELIVERY AND HAS SOLE CONTROL AND SUPERVISION OVER THE CUSTOMER'S INSTALLATION INCLUDING REVIEW, PERMITTING AND COMPLIANCE WITH ALL CITY PLUMBING CODES AND OTHER CODES AS APPLICABLE.
4. WATER IS A PRECIOUS COMMODITY IN THE STATE OF TEXAS AND NEW BRAUNFELS UTILITIES (NBU) IS PASSIONATE ABOUT PROTECTING THE LOCAL RESOURCE. NBU'S CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ACQUIRING A FIRE HYDRANT METER SO THAT ALL WATER USED FOR CONSTRUCTION OR TESTING PURPOSES ARE PROPERLY ACCOUNTED FOR. NBU WILL NOT TOLERATE ANY WATER THEFT, REGARDLESS OF THE AMOUNT. IF WATER THEFT IS DISCOVERED THE CONTRACTOR SHALL BE SUBJECT TO MONETARY PENALTIES, CRIMINAL CHARGES, AND STOPPAGE OF ALL CONSTRUCTION ACTIVITIES RELATED TO THE PROJECT. COSTS ASSOCIATED WITH ANY WORK STOPPAGE RESULTING FROM WATER THEFT SHALL BE AT THE FULL EXPENSE OF THE CONTRACTOR.
5. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, NEW BRAUNFELS UTILITIES MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.
6. NEW MANHOLES MUST BE CONSTRUCTED OF OR LINED WITH CORROSION RESISTANT MATERIAL. WHERE NEW CONSTRUCTION CONNECTS TO AN EXISTING MANHOLE THAT IS NOT CONSTRUCTED OF A CORROSION RESISTANT MATERIAL, THE EXISTING MANHOLE MUST BE LINED WITH OR REPLACED WITH A CORROSION RESISTANT MATERIAL.

NBU AS-BUILT REQUIREMENTS:

PLEASE NOTE: NBU REQUIRES GPS POINTS FOR CERTAIN ELECTRIC, WATER, AND WASTEWATER ATTRIBUTES, SOME OF WHICH MUST BE TAKEN PRIOR TO BACKFILL DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH NBU INSPECTOR TO VERIFY ANY ADDITIONAL ITEMS NOT SHOWN BELOW THAT NEED TO BE GPS LOCATED AND THE SURVEY/DELIVERY REQUIREMENTS REGARDING THIS INFORMATION.

GPS POINTS SHALL BE REQUIRED FROM THE DEVELOPERS CONTRACTOR OR ENGINEER. A MINIMUM OF THREE COORDINATE POINTS FOR GEOREFERENCING SHALL BE REQUIRED. THE WATER AND WASTEWATER GPS POINTS SHALL BE TO SURVEY GRADE AND ELECTRIC GPS POINTS SHALL BE TO MAP GRADE. REFERENCE NBU'S WATER CONNECTION POLICY FOR ADDITIONAL CAD DELIVERABLE REQUIREMENTS. COORDINATE GPS REQUIREMENTS WITH NBU INSPECTOR.

WATER
VERTICAL BENDS AND EDGE OF STEEL CASING (IF APPLICABLE) PRIOR TO BACKFILL
HORIZONTAL BENDS PRIOR TO BACKFILL
TEES PRIOR TO BACKFILL
FITTINGS (REDUCERS AND COUPLINGS) PRIOR TO BACKFILL
FIRE HYDRANTS (TOP OF FLANGE)
VALVES
METERS (TOP CENTER OF BOX)
BLOW OFF ASSEMBLY
CORNER SLAB OF WATER TANK & GATE VALVE ON TANK

WASTEWATER
MANHOLES (AND INVERT DEPTH(S))
CLEANOUTS
CORNER SLAB OF LIFT STATION

ELECTRIC
POLES
TRANSFORMERS, BOTH ABOVE AND UNDERGROUND (FRONT LOCK)
PULL BOXES
STREET LIGHTS

SEE NBU'S "CAD/GPS DELIVERABLES" ON NBU WEBSITE AT NBUTEXAS.COM FOR COMPLETE DETAILS AND REQUIREMENTS.

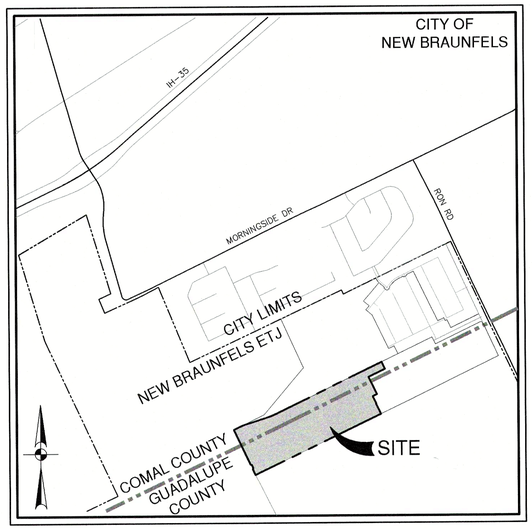
NOTES:

- TYPE 3 DEVELOPMENT.
- ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, THE CITY OF NEW BRAUNFELS MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER RECORD.
- IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE YEAR OF CITY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.
- THIS PROJECT IS NOT WITHIN THE EDWARDS AQUIFER JURISDICTIONAL ZONES.
- NO PORTION OF ANY LOT ON THIS PROJECT IS WITHIN AN INDICATED SPECIAL FLOOD HAZARD ZONE ACCORDING TO THE FEMA FIRM MAP NO. 48091C0445F EFFECTIVE DATE 9/2/2009 AND FEMA FIRM MAP NO. 48187C0095F EFFECTIVE DATE 11/2/2007.
- GAS UTILITIES ARE NOT INCLUDED IN THE CIVIL CONSTRUCTION PLANS. FINAL GAS UTILITY DESIGN SHALL BE APPROVED BY THE CITY FOR ANY WORK WITHIN THE PUBLIC RIGHT-OF-WAY.
- FOLLOWING PERMITS ARE REQUIRED PRIOR TO START OF CONSTRUCTION:
  1. CITY OF NEW BRAUNFELS PUBLIC INFRASTRUCTURE PERMIT
  2. NEW BRAUNFELS UTILITY APPROVAL

LEGAL DESCRIPTION:

BEING 44.396 ACRES OF LAND OUT OF A 148.80 ACRE TRACT RECORDED IN DOC. NO. 201906006911 OF THE OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, TEXAS OUT OF THE JOHN THOMPSON SURVEY NO. 21, ABSTRACT 608, COMAL COUNTY, TEXAS.

NBU NO. W-209398 / WW-209399



LOCATION MAP
NOT-TO-SCALE

PREPARED FOR:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216

JUNE 2022

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS I SAN ANTONIO I AUSTIN I HOUSTON I FT WORTH I DALLAS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

6-20-2024
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

SHEET INDEX

Sheet Description		Sheet No.
COVER SHEET		C0.00
CONSTRUCTION NOTES		C0.01
PLAT (1-3)		C0.02
PLAT (2-3)		C0.03
PLAT (3-3)		C0.04
OVERALL DRAINAGE PLAN - EXISTING CONDITIONS		C1.00
OVERALL DRAINAGE PLAN - ULTIMATE CONDITIONS		C1.01
DRAIN A - PLAN & PROFILE	STA. 1+00.00 TO 2+43.00	C1.02
DRAIN B - PLAN & PROFILE	STA. 1+00.00 TO 3+20.27	C1.03
DRAIN C - PLAN & PROFILE	STA. 1+00.00 TO 3+14.61	C1.04
DRAIN D - PLAN & PROFILE	STA. 0+90.00 TO 3+90.00	C1.05
DRAIN E - PLAN & PROFILE	STA. 1+00.00 TO 3+82.02	C1.06
DRAIN E2 - PLAN & PROFILE	STA. 1+00.00 TO 1+92.83	C1.07
DRAINAGE DETAILS		C1.10
DRAINAGE DETAILS		C1.11
DRAINAGE DETAILS		C1.12
DRAINAGE DETAILS		C1.13
CLEAR SKY VIEW & SECONDARY ACCESS - PLAN & PROFILE	SEE SHEET FOR STATIONING	C2.00
CORN FIELD LN - PLAN & PROFILE	STA. 1+40.00 TO 2+45.12	C2.01
FOGGY PASS DR - PLAN & PROFILE	STA. 1+50.00 TO 3+55.00	C2.02
MOON HILL RD - PLAN & PROFILE	STA. 11+65.35 TO 20+50.00	C2.03
MOON HILL RD - PLAN & PROFILE	STA. 20+50.00 TO 28+50.00	C2.04
MOON HILL RD - PLAN & PROFILE	STA. 28+50.00 TO 33+04.94	C2.05
WENTZ HILL DR - PLAN & PROFILE	STA. 8+68.00 TO 18+50.00	C2.06
WENTZ HILL DR - PLAN & PROFILE	STA. 18+50.00 TO 27+68.00	C2.07
S SOLMS RD - PLAN & PROFILE	STA. 25+59.39 TO 32+82.32	C2.08
TYPICAL STREET DETAILS		C2.10
TYPICAL STREET DETAILS		C2.11
TYPICAL STREET DETAILS		C2.12
OVERALL SIGNAGE PLAN		C3.00
OVERALL SIGNAGE PLAN		C3.01
TxDOT SIGN MOUNTED DETAILS		C3.10
TxDOT SIGN MOUNTED DETAILS		C3.11
TxDOT SIGN MOUNTED DETAILS		C3.12
OVERALL WATER DISTRIBUTION PLAN		C4.00
OVERALL WATER DISTRIBUTION PLAN		C4.01
12 INCH WATER MAIN W-05 - PLAN & PROFILE	STA. 25+89.51 TO 32+90.46	C4.02
WATER DISTRIBUTION DETAILS		C4.10
WATER DISTRIBUTION NOTES		C4.20
OVERALL SANITARY SEWER		C5.00
OVERALL SANITARY SEWER		C5.01
SANITARY SEWER LINE A - PLAN & PROFILE	STA. 9+55.00 TO 11+75.00	C5.02
SANITARY SEWER LINE B - PLAN & PROFILE	STA. 1+00.00 TO 10+50.00	C5.03
SANITARY SEWER LINE B - PLAN & PROFILE	STA. 10+50.00 TO 17+40.00	C5.04
SANITARY SEWER LINE C - PLAN & PROFILE	STA. 1+00.00 TO 9+50.00	C5.05
SANITARY SEWER LINE C - PLAN & PROFILE	STA. 9+50.00 TO 19+82.50	C5.06
SANITARY SEWER LINE D - PLAN & PROFILE	STA. 1+00.00 TO 9+07.86	C5.07
SANITARY SEWER LINE E - PLAN & PROFILE	STA. 1+00.00 TO 2+41.00	C5.08
SANITARY SEWER LINE F - PLAN & PROFILE	STA. 13+13.00 TO 20+04.43	C5.09
SANITARY SEWER DETAILS		C5.10
SANITARY SEWER DETAILS		C5.11
SANITARY SEWER NOTES		C5.20
OVERALL UTILITY PLAN		C6.00
OVERALL UTILITY PLAN		C6.01
OVERALL GRADING PLAN		C7.00
OVERALL GRADING PLAN		C7.01
STORMWATER POLLUTION PREVENTION PLAN		C8.00
STORMWATER POLLUTION PREVENTION DETAILS		C8.10

SHEET C0.00

FOR PERMIT

PD JOB NO. 30034-07 STEELWOOD TRAIL UNIT 4

Date: Jun 20, 2024, 9:49am User ID: Mkeuhle
File: N:\30034\07\Design\Civil\30034-07 dwg

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL. AERIAL IMAGERY PROVIDED BY GOOGLE© UNLESS OTHERWISE NOTED. Imagery © 2015,CAPCOG,Digital Globe,Texas Orthoimagery Program, USDA Farm Service Agency

CONSTRUCTION PLAN NOTES

Revised 03/2020

If construction has not commenced within one-year of City approval for construction inspection, that approval is no longer valid.

The most current editions of the City of San Antonio Standard Specifications and the Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges shall be followed for all construction except as amended by the City of New Braunfels Standard Details.

All responsibility for the adequacy of these plans remains with the engineer of record. In accepting these plans, the City of New Braunfels must rely upon the adequacy of the work of the engineer of record.

Prior to the start of construction, the contractor shall contact the City of New Braunfels to schedule a preconstruction meeting.

For Public Infrastructure Permit or Grading Permit Projects:

- For inspections, you must call before 12:00 p.m., 48 hours prior to your inspection request.
- Each inspection will be allotted 1 hour unless you request for more time.
- Once your request has been accepted, you will receive a call from the City of New Braunfels Inspector.

For Commercial Permit **(CP)** Projects:

- All inspections are to be called in at 830-221-4068 or,
- Faxed in at 830-608-2117 or,
- E-mailed at inspections@nbtexas.org.

It is the Contractor's responsibility to see that all temporary and permanent traffic control devices are properly installed and maintained in accordance with the plans and latest edition of the Texas Manual on Uniform Traffic Control Devices. If, in the opinion of the engineering representative and the construction inspector, the barricades and signs do not conform to established standards or are incorrectly placed or are insufficient in quantity to protect the general public, the construction inspector shall have the option to stop operations until such time as the conditions are corrected. If the need arises, additional temporary traffic control devices may be ordered by the Engineering representative at the Contractor's expense.

A TxDOT Type II B-B blue reflective raised pavement marker shall be installed in the center of the roadway adjacent to all fire hydrants. In locations where hydrants are situated on corners, blue reflective raised pavement markers shall be installed on both approaches which front the hydrant. The raised pavement marker shall meet TxDOT material, epoxy and adhesive specifications.

Groundwater
It shall be the responsibility of the developer, contractor, subcontractors, builders, Geo-technical engineer, and project engineer to immediately notify the Office of the City Engineer and project engineer if the presence of groundwater within the site is evident. Upon notification the project engineer shall respond with plan revisions for the mitigation of the groundwater issue. The City Engineer shall respond within two (2) business days upon receipt of the mitigation plan. All construction activity, impacted by the discovery of groundwater, shall be suspended until the City Engineer grants a written approval of the groundwater mitigation plan.

Record Drawings
As per Platting Ordinance Section 118-38m.: When all of the improvements are found to be constructed and completed in accordance with the approved plans and specifications and with the City's standards, and upon receipt of one set of "Record Drawing" plans, and a digital copy of all plans (PDF copy) the City Engineer shall accept such improvements for the City of New Braunfels, subject to the guaranty of material and workmanship provisions in this Section.

Construction Note
Contractor is responsible to ensure that erosion control measures and stormwater control sufficient to mitigate off site impacts are in place at all stages of construction.

Drainage Note
Drainage improvements sufficient to mitigate the impact of construction shall be installed prior to adding impervious cover.

Finished Floor Elevations
The elevation of the lowest floor shall be at least 10 inches above the finished grade of the surrounding ground, which shall be sloped in a fashion so as to direct stormwater away from the structure. Properties adjacent to stormwater conveyance structures must have floor slab elevation or bottom of floor joists a minimum of one foot above the 100-year water flow elevation in the structure. Driveways serving houses on the downhill side of the street shall have a properly sized cross swale preventing runoff from entering the garage.

Soils Testing
Proctors shall be sampled from on-site material (on-site is defined as limits of construction for this -plan set) and a copy of the proctor results shall be delivered to the City of New Braunfels Street Inspector prior to any density tests.

Roadway
All roadway compaction tests shall be the responsibility of the developer's Geotechnical Engineer. Flexible base or fill/embankment material shall be placed in uniform layers not to exceed eight inches (8") loose. The required density for the fill/embankment material shall meet the requirements of TxDOT's Specification Item 132. The required density for the flexible base material shall meet the requirements of TxDOT's Specification Item 247. Each layer of material, inclusive of subgrade, shall be compacted as specified and tested for density and moisture in accordance with Test Methods TEX-113-E, TEX-114-E, TEX-115-E. The number and location of required tests shall be determined by the Geotechnical Engineer and approved by the City of New Braunfels Street Inspector. At a minimum, tests shall be taken every 200 LF for each lift. Upon completion of testing, the Geotechnical Engineer will provide the City of New Braunfels Street Inspector with all testing documentation and a certification stating that the placement of flexible base, and fill material, and subgrade, has been completed in accordance with the plans. Additional density tests may be requested by the City of New Braunfels Inspector.

Item 340
Asphaltic concrete pavement shall be the type of hot mix asphalt as defined in TxDOT's standard specifications for current TxDOT Standard Specifications for Construction of Highways, Street and Bridges.

The City of New Braunfels will not accept the use of Recycled Asphalt Pavement (RAP) or Recycled Asphalt Shingles (RAS) in asphalt mixtures for new roadways. Any debris inclusions within new asphalt pavements will result in asphalt removal and replacement from curb to curb for limits to be determined by the City of New Braunfels.

The asphaltic concrete pavement surface course shall be plant mixed, hot laid type "D" meeting the specification requirements of TxDOT Item 340. The asphaltic concrete pavement sub-surface courses shall be plant mixed, hot laid type "B" meeting the specification requirements of TxDOT Item 340. The mixture shall be designed per the design requirements specified in TxDOT Item 340 and shall be compacted to between 91 and 95 percent of the maximum theoretical density as determined by TxDOT test method TEX-227-F. Place the mixture when the roadway surface temperature is at or above 60°F. Complete all compaction operations before the pavement temperature drops below 160°F. The asphalt cement content by percent of total mixture weight shall fall within a tolerance of ±0.5 percent from a specific mix design.

Utility Trench Compaction (added to the construction plans on All Utility Plan Sheets).
All utility trench compaction tests within the street pavement/sidewalk section shall be the responsibility of the developer's Geotechnical Engineer. Fill material shall be placed in uniform layers not to exceed twelve inches (12") loose. Determine the maximum lift thickness based on the ability of the compacting operation and equipment used to meet the required density. Each layer of material shall be compacted to a minimum 95% density and tested for density and moisture in accordance with Test Methods TEX-113-E, TEX-114-E, TEX-115-E. The number and location of required tests shall be determined by the Geotechnical Engineer and approved by the City of New Braunfels Street Inspector. At a minimum, tests shall be taken every 200 LF for each lift and every other service line. Upon completion of testing the Geotechnical Engineer shall provide the City of New Braunfels Street Inspector with all testing documentation and a certification stating that the placement of fill material has been completed in accordance with the plans. Additional density tests may be requested by the City of New Braunfels Inspector.

Curb Cut Due to Construction of New Right-Of-Way Construction
(Indicate the 2 Options on the construction plans).
1. Sawcut existing street and match to new construction.
2. Sawcut existing curb to tie into existing construction.

Construction Stabilized Entrance
Sawcut curb for construction entrance.

Stabilized construction area shall be constructed of 3"x5" rock to be placed a minimum length of 25-ft. and maintained so that construction debris does not fall within the city right-of-way. Right-of-way must be cleared from mud, rocks, etc. at all times.

(Notes to Be Placed on All WW Plan & Detail Sheets)
Ensure all driveway approaches are built in general accordance with A.D.A. specifications.

No valves, hydrants, etc. shall be constructed within curbs, sidewalks, or driveways.

Signing and Pavement Marking Plan Notes
The Contractor shall furnish and install all regulatory and warning signs, streets name signs and sign mounts in accordance with approved engineering plans. The City will inspect all signs at final inspection.

The Contractor shall install all pavement markings in accordance with approved engineering plans. The Contractor shall notify the City at least twenty-four (24 hours prior to the installation of all sealer and final markings. The City will inspect all markings at final application.

Seeding and Establishment of Vegetation within Earthen Channels, Stormwater Basins and Disturbed Areas
Seeding for the purpose of establishing vegetation within constructed earthen channels, basins and disturbed areas shall be conducted in accordance with Item 164 (Seeding for Erosion Control of TxDOT's Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges manual. Only seed types and mixes specified for the San Antonio District (District 15 in Tables 1 and 2 under Item 164 shall be utilized. During the Cool Season (Sept 1-Nov 30, Cereal Rye and seed species specified for the San Antonio District in Table 3 may be used. For Cool Season seeding applications, cool season seed mixes shall be used in conjunction with seed mixes for the San Antonio District as specified in Table 1 and 2 under Item 164.

It may be deemed necessary to incorporate topsoil and soil amendments (i.e. compost/ fertilizer into existing soil in order to facilitate vegetation growth. Topsoil, compost and fertilizer additions shall be conducted according to Items 160, 161 and 166 of TxDOT's Standard Specifications manual, respectively.

Areas requiring permanent vegetation (earthen channels, ponds, etc.) are required to meet TxDOT Specifications for Item 160 Topsoil. Testing per Tex-128-E will be required at the City's request.

Watering may also be necessary to facilitate and expedite the sprouting and growth of vegetation. Item 168 of TxDOT's Standard Specifications manual shall be adhered to for vegetative watering.

If extended drought conditions exist that hinder or prohibit the growth and establishment of vegetation, the contractor/ developer shall provide a plan to the City of New Braunfels describing the measures that will be taken to stabilize earthen drainage infrastructure until a time when growing conditions become more favorable.

PROPOSED CONSTRUCTION SEQUENCE

1. INSTALL TEMPORARY STORMWATER EROSION CONTROL MEASURES IN AFFECTED CONSTRUCTION AREAS AND STABILIZED CONSTRUCTION ENTRANCES/EXITS.
2. INSTALL TREE PRESERVATION MEASURES, IF REQUIRED.
3. EXCAVATE STREETS.
4. CONSTRUCT DRAINAGE.
5. CONSTRUCT WASTEWATER SYSTEM.
6. CONSTRUCT WATER SYSTEM.
7. CONSTRUCT SUBGRADE AND BASE FOR STREETS.
8. CONSTRUCT CURBS FOR STREETS.
9. CONSTRUCT ASPHALT PAVEMENT FOR STREETS.
10. ESTABLISH SITE STABILIZATION.
11. REMOVE ALL TEMPORARY STORMWATER EROSION CONTROL MEASURES.

NOTES

1. SOME ITEMS ABOVE WILL OCCUR SIMULTANEOUSLY OR MAY OCCUR OUT OF SEQUENCE INDICATED.
2. ALL SEQUENCES SUBJECT TO CHANGE.

CHANNEL MAINTENANCE PLAN

The following are guidelines for the overall maintenance of the channel system and drainage easement by the designated maintenance entity as defined by the executed drainage agreement. The designated maintenance entity will be responsible for the operation, maintenance, and repair of the system and easement to ensure that it operates as designed.

- *Inspections*. The channel should be inspected to assure proper operation at least 4 times annually. One of these inspections should occur during or immediately following wet weather.
- *Mowing*. The side slopes and bottom of the channel that are covered with grass must be mowed regularly to discourage woody growth and control weeds. Grass areas in and around the channel must be mowed at least four times annually to limit vegetation height to 12 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. When mowing is performed, a mulching mower should be used, or grass clippings should be caught and removed. Vegetation shall be maintained so as to match the intent of the original design of the channel and preserve the flow conveyance capacity. Any woody vegetation which becomes established shall be periodically removed or mulched to ground level. Any removal of brush which results in disturbance of established grades shall be repaired/re-graded and revegetated.
- *Debris, Litter, and Obstruction Removal*. Debris and litter may accumulate in the channel and/or near the drop structure and outfall and should be removed during regular mowing operations and inspections or after large rainfall events. Any other obstructions that impede flow as intended by the original design shall be removed in a timely manner.
- *Erosion Control*. The channel side slopes and embankment may periodically suffer from slumping and erosion. Regrading and re-establishment of vegetation may be required to correct the problems. Vegetation should be re-established to the original design standards. Inspection of sediment deposits along the length of the channel should occur during the stated intervals. All sediment deposits exceeding 12" in depth or which are preventing positive drainage should be removed from the channel at least once annually. All sediment should be removed and disposed of properly.

DRAINAGE MAINTENANCE PLAN

The storm drain pipe shall be checked for accumulation of silt, debris or other obstructions which could block flow. When silt deposits have accumulated to the point of reducing the drain capacity then the pipes can be flushed with a high-pressure water flushing process. Soil accumulations, vegetative overgrowth and other blockages should be cleared from the pipe discharge point. Erosion at the point of discharge shall be monitored. If erosion occurs, the addition of rock rubble to disperse the flow should be accomplished.

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
6-15-2022

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

CONSTRUCTION NOTES

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C0.01

FOR PERMIT

Date: Jun 15, 2022, 11:37am User ID: tmartin
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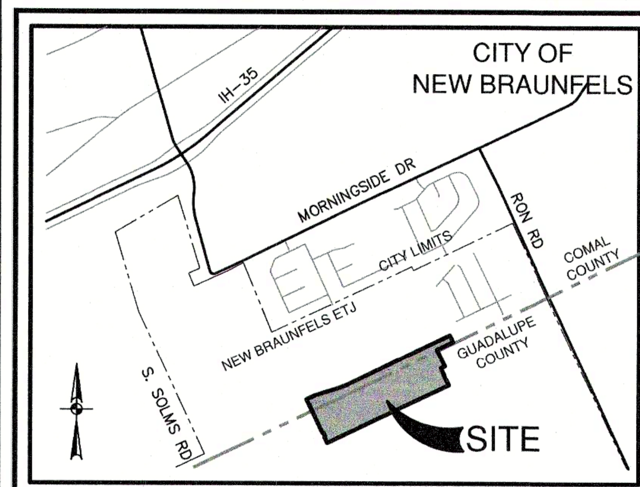

LOCATION MAP

NOT-TO-SCALE

SUBDIVISION PLAT
OF
STEELWOOD TRAIL UNIT 4

BEING 38.168 ACRES OF LAND COMPRISED OF A 34.959 ACRE PORTION OF A 148.80 ACRE TRACT CONVEYED UNTO SA GIVEN TO FLY, LLC BY DEED RECORDED IN DOC. NO. 201999003956, OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS; AND ALL OF A 3.209 ACRE TRACT CONVEYED UNTO SA GIVEN TO FLY, LLC. BY DEED RECORDED IN DOC. NO. 201906006911, SAID OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, OUT OF THE BENITO LOPEZ SURVEY NO. 261, ABSTRACT 214, GUADALUPE COUNTY, TEXAS; AND THE JOHN THOMPSON SURVEY NO. 21, ABSTRACT 608, COMAL COUNTY, TEXAS.

NBU NOTES:

1. MAINTENANCE OF DEDICATED UTILITY EASEMENTS IS THE RESPONSIBILITY OF THE PROPERTY OWNER. ANY USE OF AN EASEMENT, OR ANY PORTION OF IT, INCLUDING LANDSCAPING OF DRAINAGE FEATURES, IS SUBJECT TO AND SHALL NOT CONFLICT WITH THE TERMS AND CONDITIONS IN THE EASEMENT, MUST NOT ENDANGER OR INTERFERE WITH THE RIGHTS GRANTED BY THE EASEMENT TO NEW BRAUNFELS UTILITIES, ITS SUCCESSORS AND ASSIGNS, AND SHALL BE SUBJECT TO APPLICABLE PERMIT REQUIREMENTS OF THE CITY OF NEW BRAUNFELS OR ANY OTHER GOVERNING BODY. THE PROPERTY OWNER MUST OBTAIN, IN ADVANCE, WRITTEN AGREEMENT WITH THE UTILITIES TO UTILIZE THE EASEMENT, OR ANY PART OF IT.
2. UTILITIES WILL POSSESS A 5' WIDE SERVICE EASEMENT TO THE BUILDING STRUCTURE ALONG THE SERVICE LINE TO THE SERVICE ENTRANCE. THIS EASEMENT WILL VARY DEPENDING UPON LOCATION OF DWELLING AND SERVICE.
3. UTILITIES SHALL HAVE ACCESS TO THE METER LOCATIONS FROM THE FRONT YARD AND METER LOCATIONS SHALL NOT BE LOCATED WITHIN A FENCED AREA.
4. EACH LOT MUST HAVE ITS WATER AND SEWER SERVICE AT THE OWNER/DEVELOPER'S EXPENSE.
5. DO NOT COMBINE ANY NEW UTILITY EASEMENTS (UE) WITH DRAINAGE EASEMENTS (DE) OR MAKE CHANGES IN GRADE WITHIN THE UTILITY EASEMENTS (UE) WITHOUT WRITTEN APPROVAL FROM NEW BRAUNFELS UTILITIES.
6. NBU IS NOT RESPONSIBLE FOR LANDSCAPING OR IRRIGATION IN UE/LE.

SIDEWALK NOTES:

1. FOUR (4) FOOT WIDE SIDEWALKS WILL BE CONSTRUCTED BY THE HOME BUILDER PER CITY STANDARDS AT THE TIME OF BUILDING CONSTRUCTION ALONG:
- CLEAR SKY VIEW
- CORN FIELD LN
- FOGGY PASS DR
- MOON HILL RD
- WENTZ HILL DR
2. FOUR (4) FOOT WIDE SIDEWALKS WILL BE CONSTRUCTED BY THE DEVELOPER PER CITY STANDARDS AT THE TIME OF SUBDIVISION STREET CONSTRUCTION ALONG:
- FOGGY PASS DR- LOT 900 BLOCK 27.
- MOON HILL RD- LOT 900 BLOCK 26, LOT 900 BLOCK 27.
- WENTZ HILL DR- LOT 900 BLOCK 27.
3. SIX (6) FOOT WIDE SIDEWALKS WILL BE CONSTRUCTED BY THE DEVELOPER PER CITY STANDARDS AT THE TIME OF SUBDIVISION STREET CONSTRUCTION ALONG S. SOLMS ROAD
- S SOLMS RD

UTILITY PROVIDER NOTE:

THE PROPERTY WILL BE SERVED BY THE FOLLOWING:
NEW BRAUNFELS UTILITIES (WATER, SEWER, ELECTRIC)
AT&T (TELECOMMUNICATIONS)
SPECTRUM

SCHOOL DISTRICT NOTE:

REFERENCED PROPERTY LIES WITHIN THE COMAL INDEPENDENT SCHOOL DISTRICT.

COMMON SPACE NOTE:

LOT 900, BLOCK 26, AND LOT 900 BLOCK 27 ARE LANDSCAPE, PEDESTRIAN, & ACCESS LOTS.
ALL AFOREMENTIONED LOTS TO BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION OR PROPERTY OWNER AND NOT THE CITY OF NEW BRAUNFELS.

DRAINAGE EASEMENT NOTES:

1. DRAINAGE EASEMENTS SHALL "REMAIN FREE OF ALL OBSTRUCTIONS."
2. NO STRUCTURES, WALLS OR OTHER OBSTRUCTIONS OF ANY KIND SHALL BE PLACED WITHIN THE LIMITS OF DRAINAGE EASEMENTS SHOWN ON THIS PLAT. NO LANDSCAPING, FENCES, OR OTHER TYPE OF MODIFICATIONS WHICH ALTER THE CROSS SECTIONS OF THE DRAINAGE EASEMENTS OR DECREASES THE HYDRAULIC CAPACITY OF THE EASEMENT, AS APPROVED, SHALL BE ALLOWED WITHOUT THE APPROVAL OF THE CITY ENGINEER. THE CITY OF NEW BRAUNFELS SHALL HAVE THE RIGHT OF INGRESS AND EGRESS OVER GRANTORS ADJACENT PROPERTY TO REMOVE ANY OBSTRUCTIONS PLACED WITHIN THE LIMITS OF SAID DRAINAGE EASEMENTS AND TO MAKE ANY MODIFICATIONS OR IMPROVEMENTS WITHIN SAID DRAINAGE EASEMENTS.
3. MAINTENANCE OF DRAINAGE EASEMENTS DESIGNATED WITHIN A LOT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER.

FLOODPLAIN NOTE:

NO PORTION OF THIS SUBDIVISION IS LOCATED WITHIN ANY EXISTING SPECIAL FLOOD HAZARD ZONE A, 100-YEAR FLOOD BOUNDARY, AS DEFINED BY THE COMAL COUNTY, TEXAS COMMUNITY PANEL NUMBER 48091C0445F, EFFECTIVE DATE SEPTEMBER 02, 2009 AND BY THE GUADALUPE COUNTY, TEXAS COMMUNITY PANEL NUMBER 48187C0095F, EFFECTIVE DATE NOVEMBER 02, 2007 AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

PLAT NOTES:

1. THIS SUBDIVISION IS NOT WITHIN THE EDWARDS AQUIFER JURISDICTIONAL ZONES.
2. THIS SUBDIVISION IS WITHIN THE EXTRATERRITORIAL JURISDICTION OF THE CITY OF NEW BRAUNFELS, TEXAS.
3. FUTURE DEVELOPMENT IS SUBJECT TO CHAPTER 114 (STREETS, SIDEWALKS AND OTHER PUBLIC SPACES) OF THE NEW BRAUNFELS CODE OF ORDINANCES.
4. THE ELEVATION OF THE LOWEST FLOOR OF A STRUCTURE SHALL BE AT LEAST 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND, WHICH SHALL BE SLOPED IN A FASHION SO AS TO DIRECT STORMWATER AWAY FROM THE STRUCTURE. PROPERTIES ADJACENT TO STORMWATER CONVEYANCE STRUCTURES MUST HAVE A FLOOR SLAB ELEVATION OR BOTTOM OF FLOOR JOIST A MINIMUM OF ONE FOOT ABOVE THE 100-YEAR WATER FLOW ELEVATION IN THE STRUCTURE. DRIVEWAYS SERVING HOUSES ON THE DOWNHILL SIDE OF THE STREET SHALL HAVE A PROPERLY SIZED CROSS SWALE PREVENTING RUNOFF FROM ENTERING THE GARAGE AND SHALL PREVENT WATER FROM LEAVING THE STREET.
5. THIS SUBDIVISION IS SUBJECT TO THE 2006 CITY OF NEW BRAUNFELS PARK LAND DEDICATION AND DEVELOPMENT ORDINANCE (11/2017). THIS PLAT IS APPROVED FOR ONE (1) DWELLING UNIT PER BUILDABLE LOT WITH A MAXIMUM OF 213 LOTS WHERE FEES ARE DUE AT THE TIME OF RECORDATION. AT SUCH TIME THAT ADDITIONAL DWELLING UNITS ARE CONSTRUCTED; THE OWNER OF THE LOT SHALL CONTACT THE CITY AND COMPLY WITH THE ORDINANCE FOR EACH DWELLING UNIT.
6. THIS UNIT CONTAINS 213 BUILDABLE RESIDENTIAL LOTS.
7. ANY DRIVEWAY CONSTRUCTION ON COUNTY ROADS WITHIN THE UNINCORPORATED AREAS OF GUADALUPE COUNTY MUST BE PERMITTED BY THE GUADALUPE COUNTY ROAD DEPARTMENT.

LINE TABLE

LINE #	BEARING	LENGTH
L1	S64°07'05"W	72.00'
L2	S64°07'05"W	6.00'
L3	N13°12'54"W	26.11'
L4	S69°16'17"W	60.00'
L5	N25°52'55"W	203.60'
L6	N25°52'55"W	90.00'
L7	N25°52'55"W	90.00'
L8	S64°07'05"W	832.00'
L9	N64°07'05"E	832.00'
L10	N25°52'55"W	220.00'
L11	N64°07'05"E	754.00'
L12	N25°52'55"W	105.37'
L13	N25°52'55"W	105.10'
L14	N25°52'55"W	220.00'
L15	S64°07'05"W	5.00'
L16	N25°52'55"W	205.00'
L17	S25°20'43"E	50.42'
L18	S64°07'05"W	29.38'
L19	N25°52'55"W	48.67'

CURVE TABLE

CURVE #	RADIUS	DELTA	CHORD BEARING	CHORD	LENGTH
C1	1240.00'	8°26'42"	N68°20'25"E	182.60'	182.77'
C2	540.00'	7°30'48"	N16°58'18"W	70.76'	70.81'
C3	480.00'	4°36'30"	N23°01'58"W	38.60'	38.61'
C4	15.00'	82°06'01"	N66°23'13"W	19.70'	21.49'
C5	1360.00'	8°26'42"	N68°20'25"E	200.27'	200.45'
C6	15.00'	90°00'00"	N70°52'55"W	21.21'	23.56'
C7	15.00'	90°00'01"	N19°07'05"E	21.21'	23.56'
C8	15.00'	38°52'15"	N83°33'12"E	9.98'	10.18'
C9	50.00'	167°44'30"	S19°07'05"W	99.43'	146.38'
C10	15.00'	38°52'15"	N45°19'03"W	9.98'	10.18'
C11	15.00'	90°00'00"	N19°07'05"E	21.21'	23.56'
C12	15.00'	90°32'43"	S70°36'34"E	21.31'	23.70'
C13	15.00'	97°53'59"	S23°36'47"W	22.62'	25.63'
C14	15.00'	90°00'00"	S19°07'05"W	21.21'	23.56'
C15	15.00'	90°00'00"	S70°52'55"E	21.21'	23.56'
C16	15.00'	90°00'00"	S19°07'05"W	21.21'	23.56'
C17	15.00'	90°00'00"	S70°52'55"E	21.21'	23.56'
C18	15.00'	90°00'00"	S19°07'05"W	21.21'	23.56'
C19	15.00'	90°00'00"	N70°52'55"W	21.21'	23.56'
C20	15.00'	84°50'47"	S21°41'41"W	20.24'	22.21'
C21	25.00'	90°00'00"	S19°07'05"W	35.36'	39.27'
C22	15.00'	90°00'00"	N70°52'55"W	21.21'	23.56'
C23	15.00'	90°00'00"	N19°07'05"E	21.21'	23.56'
C24	15.00'	90°00'00"	S70°52'55"E	21.21'	23.56'

SURVEYOR'S NOTES:

1. MONUMENTS WERE FOUND OR SET AT EACH CORNER OF THE SURVEY BOUNDARY OF THE SUBDIVISION AS NOTED. MONUMENTS AND LOT MARKERS WILL BE SET WITH ½" IRON ROD WITH CAP MARKED "PAPE-DAWSON" OR MAG NAIL WITH DISK MARKED "PAPE-DAWSON" AFTER THE COMPLETION OF UTILITY INSTALLATION AND STREET CONSTRUCTION UNLESS NOTED OTHERWISE.
2. COORDINATES SHOWN ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 NAD83 (NA2011) EPOCH 2010.00 FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED FOR THE SOUTH CENTRAL ZONE DISPLAYED IN GRID VALUES DERIVED FROM THE NGS COOPERATIVE CORS NETWORK.
3. DIMENSIONS SHOWN ARE SURFACE. COMBINED SCALE FACTOR IS 0.99983
4. BEARINGS ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 NAD83 (NA2011) EPOCH 2010.00, FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED FOR THE SOUTH CENTRAL ZONE.

KNOW ALL MEN BY THESE PRESENTS

I, THE UNDERSIGNED ERIC J SNELL, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECTLY MADE UNDER MY SUPERVISION AND IN COMPLIANCE WITH CITY AND STATE SURVEY REGULATIONS AND LAWS AND MADE ON THE GROUND AND THAT THE CORNER MONUMENTS WERE PROPERLY PLACED UNDER MY SUPERVISION.

PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT.

ERIC J SNELL
REGISTERED PROFESSIONAL LAND SURVEYOR #6527
PAPE-DAWSON ENGINEERS, INC.
2000 NW LOOP 410
SAN ANTONIO, TEXAS 78213

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

STATE OF TEXAS
COUNTY OF BEXAR

I (WE), THE UNDERSIGNED OWNER(S) OF THE LAND SHOWN ON THIS PLAT, AND DESIGNATED HEREIN AS THE STEELWOOD TRAIL UNIT 4 SUBDIVISION TO THE CITY OF NEW BRAUNFELS, COUNTY OF COMAL AND GUADALUPE, TEXAS, AND WHOSE NAME IS SUBSCRIBED HERETO, DO HEREBY SUBDIVIDE SUCH PROPERTY AND DEDICATE TO THE USE OF THE PUBLIC ALL STREETS, ALLEYS, PARKS, DRAINS, EASEMENTS, AND PUBLIC PLACES THEREON SHOWN FOR THE PURPOSES AND CONSIDERATION THEREIN EXPRESSED.

OWNER/DEVELOPER: LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD
A TEXAS LIMITED PARTNERSHIP
BY: U.S. HOME LLC, CORPORATION,
A DELAWARE LLC, CORPORATION,
ITS GENERAL PARTNER
RICHARD MOTT, AUTHORIZED AGENT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216

STATE OF TEXAS
COUNTY OF BEXAR

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON THIS ________ DAY OF ____________________, 20______, BY ____________________.

NOTARY PUBLIC, STATE OF TEXAS
MY COMMISSION EXPIRES: ______________

CERTIFICATE OF APPROVAL

APPROVED THIS THE _______ DAY OF _______________, 20 _____, BY THE PLANNING COMMISSION OF THE CITY OF NEW BRAUNFELS, TEXAS.

PLANNING COMMISSION CHAIRPERSON

APPROVED FOR ACCEPTANCE

DATE — DIRECTOR OF PLANNING

DATE — CITY ENGINEER

DATE — NEW BRAUNFELS UTILITIES

STATE OF TEXAS
COUNTY OF COMAL

I, ________________________, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT WAS FILED FOR RECORD IN THE MAP AND PLAT RECORDS, DOC. # ____________________ OF COMAL COUNTY ON THE __________, DAY OF ______________, 20______ AT ___________M.
WITNESS MY HAND OFFICIAL SEAL, THIS THE
_________ DAY OF________________, 20_______.

COUNTY CLERK, COMAL, COUNTY, TEXAS

BY: ___________________________________, DEPUTY

STATE OF TEXAS
COUNTY OF GUADALUPE

I, ________________________, COUNTY CLERK OF GUADALUPE COUNTY, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT OF WRITING WITH ITS CERTIFICATE OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE, ON THE ________ DAY OF ______________________, A.D. 20_______ AT ________M. AND DULY RECORDED THE _________ DAY OF ______________________, A.D. 20________ AT ___________M. IN THE MAP AND PLAT RECORDS OF GUADALUPE COUNTY, TEXAS IN VOLUME ____________ PAGE ___________ IN TESTIMONY WHEREOF, WITNESS MY HAND AND OFFICIAL SEAL OF OFFICE, THIS _________ DAY OF______________________, A.D. 20_________.

COUNTY CLERK, GUADALUPE, COUNTY, TEXAS

BY: ___________________________________, DEPUTY

SHEET 1 OF 3

STEELWOOD TRAIL UNIT 4

Civil Job No. 30034-07; Survey Job No. 11451-21

Date: Jul 28, 2022, 1:03 PM - User ID: jmay
File: P:\300\34\07\Design\Civil\Plat\PL_30034-07.dwg

NO.	REVISION	DATE

8-12-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

PLAT (1-3)

NOTE
THE STEELWOOD TRAIL UNIT 4 PLAT HAS NOT YET BEEN SUBMITTED TO THE CITY OF NEW BRAUNFELS PLANNING COMMISSION FOR APPROVAL.

PLAT NO. ____________
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C0.02

Date: Aug 12, 2022, 11:27am User ID: jmay
File: P:\300\34\07\Design\Civil\PLAT-3003407.dwg

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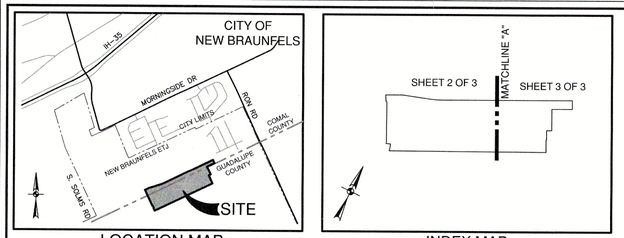
FOR PERMIT

SUBDIVISION PLAT OF STEELWOOD TRAIL UNIT 4

BEING 38.168 ACRES OF LAND COMPRISED OF A 34.959 ACRE PORTION OF A 148.80 ACRE TRACT CONVEYED UNTO SA GIVEN TO FLY, LLC BY DEED RECORDED IN DOC. NO. 201999003956, OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS; AND ALL OF A 3.209 ACRE TRACT CONVEYED UNTO SA GIVEN TO FLY, LLC. BY DEED RECORDED IN DOC. NO. 201906006911, SAID OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, OUT OF THE BENITO LOPEZ SURVEY NO. 261, ABSTRACT 214, GUADALUPE COUNTY, TEXAS; AND THE JOHN THOMPSON SURVEY NO. 21, ABSTRACT 608, COMAL COUNTY, TEXAS.



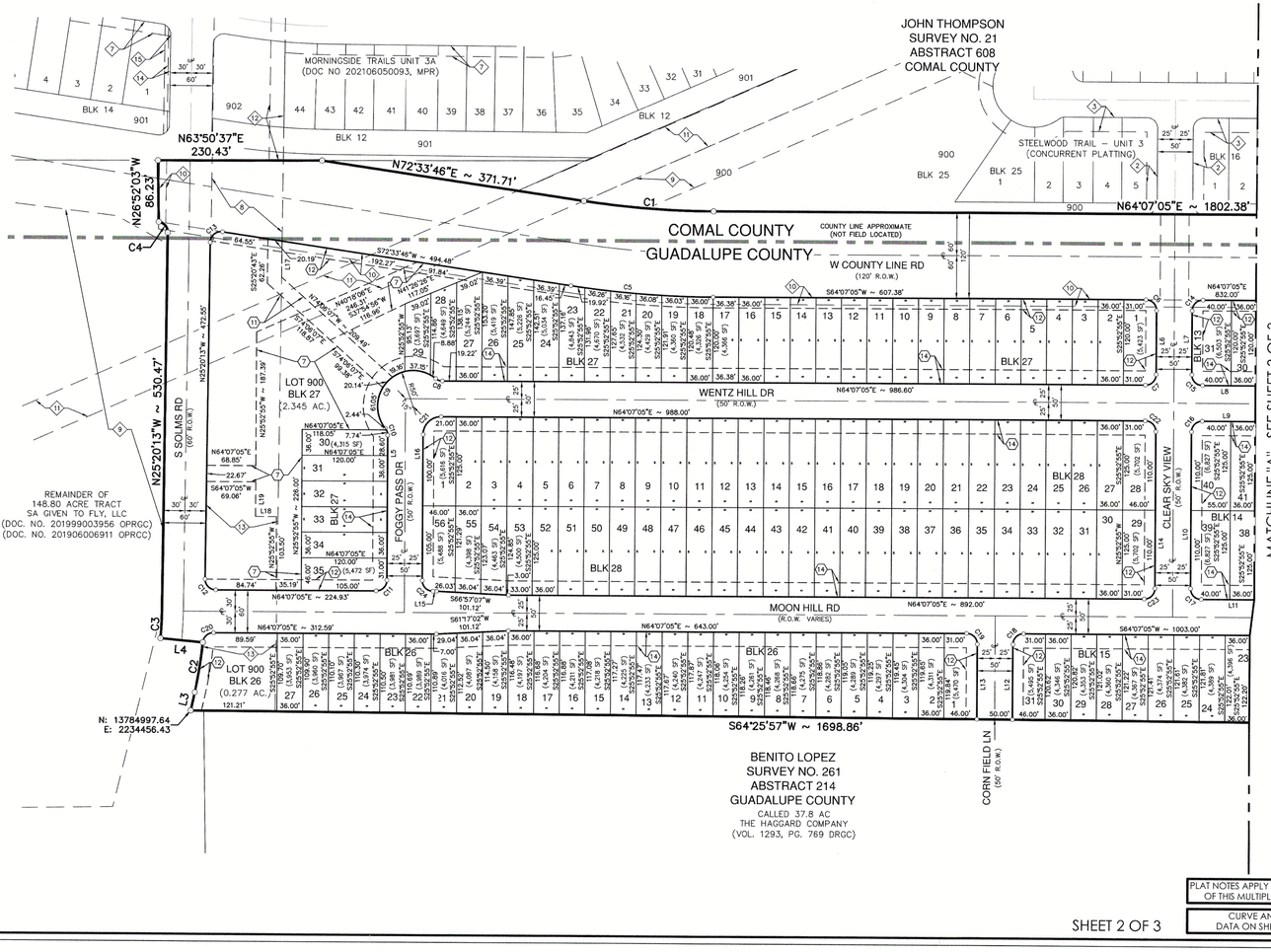
LOCATION MAP
NOT-TO-SCALE

INDEX MAP
SCALE: 1"= 1000'

SCALE: 1"= 100'
0' 100' 200' 300'

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 210.375.9000
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION #470

DATE OF PREPARATION: 7/28/2022



PLAT NOTES APPLY TO EVERY PAGE OF THIS MULTIPLE PAGE PLAT

CURVE AND LINE DATA ON SHEET 1 OF 3

SHEET 2 OF 3

NOTE
THE STEELWOOD TRAIL UNIT 4 PLAT HAS NOT YET BEEN SUBMITTED TO THE CITY OF NEW BRAUNFELS PLANNING COMMISSION FOR APPROVAL.

FOR PERMIT

NO.	REVISION	DATE

8-12-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5553
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
PLAT (2-3)

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C0.03

STEELWOOD TRAIL UNIT 4
Civil Job No. 30034-07; Survey Job No. 11451-21

Date: Aug 12, 2022, 11:27am User ID: jmay
File: K:\SAN\Civil\07 Design\Civil\PLAT-30034407.dwg

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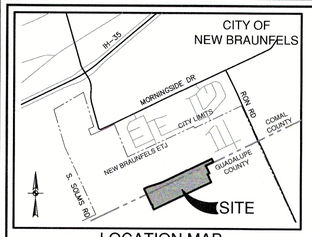
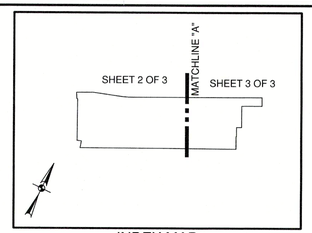
SUBDIVISION PLAT OF STEELWOOD TRAIL UNIT 4

BEING 38.168 ACRES OF LAND COMPRISED OF A 34.959 ACRE PORTION OF A 148.80 ACRE TRACT CONVEYED UNTO SA GIVEN TO FLY, LLC BY DEED RECORDED IN DOC. NO. 201999003956, OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS; AND ALL OF A 3.209 ACRE TRACT CONVEYED UNTO SA GIVEN TO FLY, LLC. BY DEED RECORDED IN DOC. NO. 201906006911, SAID OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, OUT OF THE BENITO LOPEZ SURVEY NO. 261, ABSTRACT 214, GUADALUPE COUNTY, TEXAS; AND THE JOHN THOMPSON SURVEY NO. 21, ABSTRACT 608, COMAL COUNTY, TEXAS.



LOCATION MAP
NOT-TO-SCALE



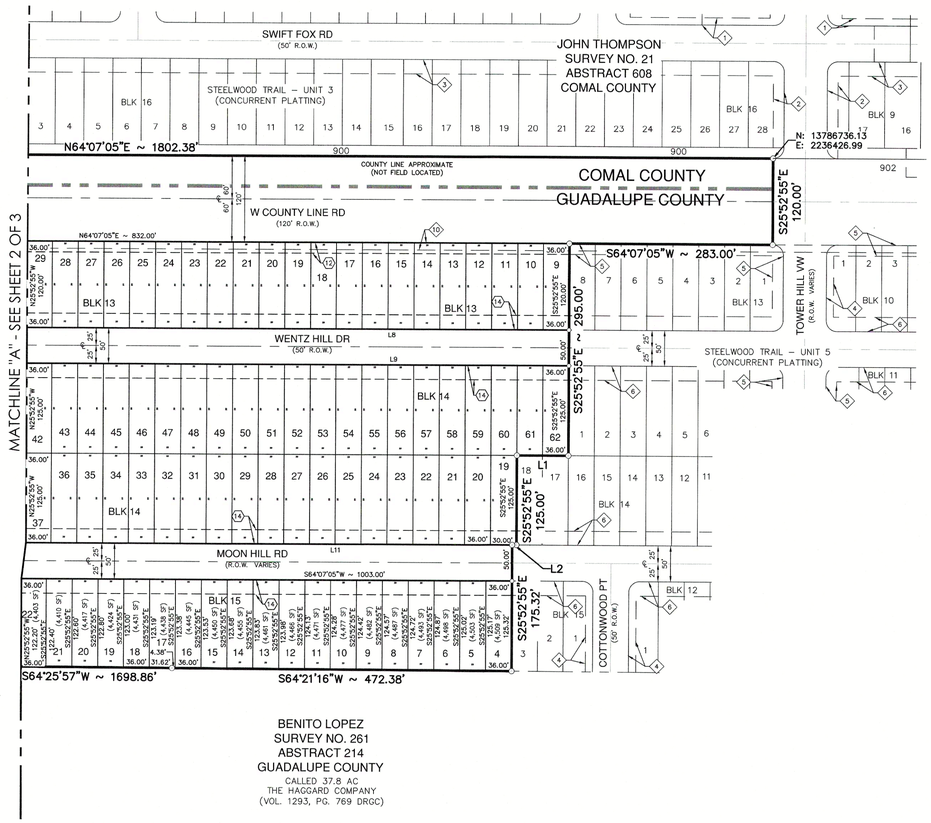
INDEX MAP
SCALE: 1"= 1000'

LEGEND

AC	ACRE(S)	VOL	VOLUME
BLK	BLOCK	PG	PAGE(S)
DOC	DOCUMENT NUMBER	ROW	RIGHT-OF-WAY
ETJ	EXTRATERRITORIAL JURISDICTION	"	REPETITIVE BEARING AND/OR DISTANCE
MPRGC	MAP AND PLAT RECORDS OF GUADALUPE COUNTY, TEXAS	● (SURVEYOR)	FOUND 1/2" IRON ROD (UNLESS NOTED OTHERWISE)
OPRGC	OFFICIAL PUBLIC RECORDS (OFFICIAL PUBLIC RECORDS OF REAL PROPERTY) OF GUADALUPE COUNTY, TEXAS	○	SET 1/2" IRON ROD (PD)
MPR	MAP AND PLAT RECORDS OF COMAL COUNTY, TEXAS	○	SET 1/2" IRON ROD (PD)-ROW
OPR	OFFICIAL PUBLIC RECORDS (OFFICIAL PUBLIC RECORDS OF REAL PROPERTY) OF COMAL COUNTY, TEXAS		

CITY OF NEW BRAUNFELS LIMITS
ORIGINAL SURVEY/COUNTY LINE
CENTERLINE

(7)	VARIABLE WIDTH DRAINAGE EASEMENT (1.033 AC)	(1)	15' UTILITY EASEMENT (DOC NO 202106050093, MPR)
(11)	20' SANITARY SEWER EASEMENT (0.124 AC)	(8)	NBU EASEMENT (VOL 582, PG. 559, OPR)
(12)	15' UTILITY EASEMENT	(9)	VARIABLE WIDTH DRAINAGE EASEMENT (DOC #_____, OPR)
(13)	20' UTILITY EASEMENT	(10)	10' GAS/FIBER UTILITY EASEMENT (DOC. 202199018340, OPR)
(1)	10' UTILITY EASEMENT STEELWOOD TRAIL UNIT 3 (CONCURRENT PLATTING)	(11)	50' GAS RIGHT-OF-WAY (VOL 97, PG. 400, DRCC)
(2)	15' UTILITY EASEMENT STEELWOOD TRAIL UNIT 3 (CONCURRENT PLATTING)	(12)	20' SANITARY SEWER EASEMENT (DOC # 202106021367, OPRCC)
(3)	20' UTILITY EASEMENT STEELWOOD TRAIL UNIT 3 (CONCURRENT PLATTING)	(13)	NBU EASEMENT (VOL.816, PG. 944 ORPGC)
(4)	10' UTILITY EASEMENT STEELWOOD TRAIL UNIT 5 (CONCURRENT PLATTING)	(14)	1' VEHICULAR NON-ACCESS EASEMENT MORNINGSIDE TRAILS UNIT 3A (DOC 202106050093, MPR)
(5)	15' UTILITY EASEMENT STEELWOOD TRAIL UNIT 5 (CONCURRENT PLATTING)	(15)	8' LANDSCAPE & IRRIGATION EASEMENT MORNINGSIDE TRAILS UNIT 3A (DOC 202106050093, MPR)
(6)	20' UTILITY EASEMENT STEELWOOD TRAIL UNIT 5 (CONCURRENT PLATTING)		



BENITO LOPEZ
SURVEY NO. 261
ABSTRACT 214
GUADALUPE COUNTY
CALLED 37.8 AC
THE HAGGARD COMPANY
(VOL. 1293, PG. 769 DRGC)

PLAT NOTES APPLY TO EVERY PAGE OF THIS MULTIPLE PAGE PLAT

CURVE AND LINE DATA ON SHEET 1 OF 3

SHEET 3 OF 3

SCALE: 1"= 100'
0' 100' 200' 300'

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 210.375.9000
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION #470

DATE OF PREPARATION: 7/28/2022

NO.	REVISION	DATE

8-12-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.2603
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288500

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
PLAT (3-3)

PLAT NO. _____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C0.04

NOTE
THE STEELWOOD TRAIL UNIT 4 PLAT HAS NOT YET BEEN SUBMITTED TO THE CITY OF NEW BRAUNFELS PLANNING COMMISSION FOR APPROVAL.

FOR PERMIT

STEELWOOD TRAIL UNIT 4
Civil Job No. 30034-07; Survey Job No. 11451-21

Date: Aug 12, 2022, 11:27am User ID: jmay
File: P:\300\SA\07\Design\Civil\PLAT-30034-07.dwg

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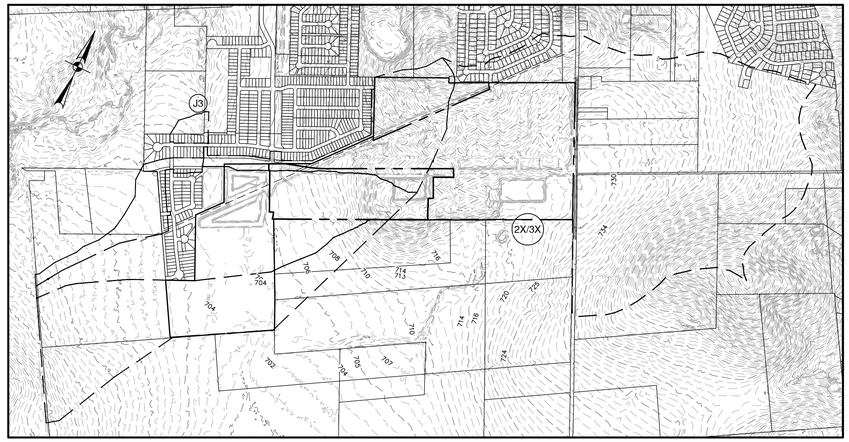
Calc Pt	Description	Drainage Area		Time of Conc.	Intensity	C	Discharge	Frequency
		Area ID	Acres	(minutes)	(in/hr)		Q (cfs)	(year)
1	Downstream Point	A	14.68	23	3.41	0.25	13	2
					4.99	0.30	22	10
					6.00	0.34	30	25
					7.64	0.41	46	100
9	Downstream Point	G	9.60	22	3.48	0.25	8	2
					5.10	0.30	15	10
					6.14	0.34	20	25
					7.82	0.41	31	100

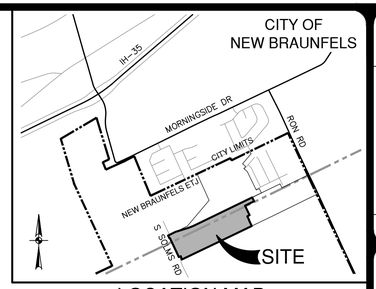
Flow Comparison Table*								
Calc Pt.	2-Year (cfs)		10-Year (cfs)		25-Year (cfs)		100-Year (cfs)	
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
J3	204	134	453	291	610	396	877	564
2X	324	150	760	291	1045	375	1557	456
3X	324	19	760	37	1045	47	1557	66

*Refrence Steelwood Trail - Unit 3 Stormwater Management Plan for J3 and Steelwood Trail - Unit 5 Stormwater Management Plan for 2X and 3X



OVERALL DRAINAGE

SCALE: 1"=1000'



LOCATION MAP

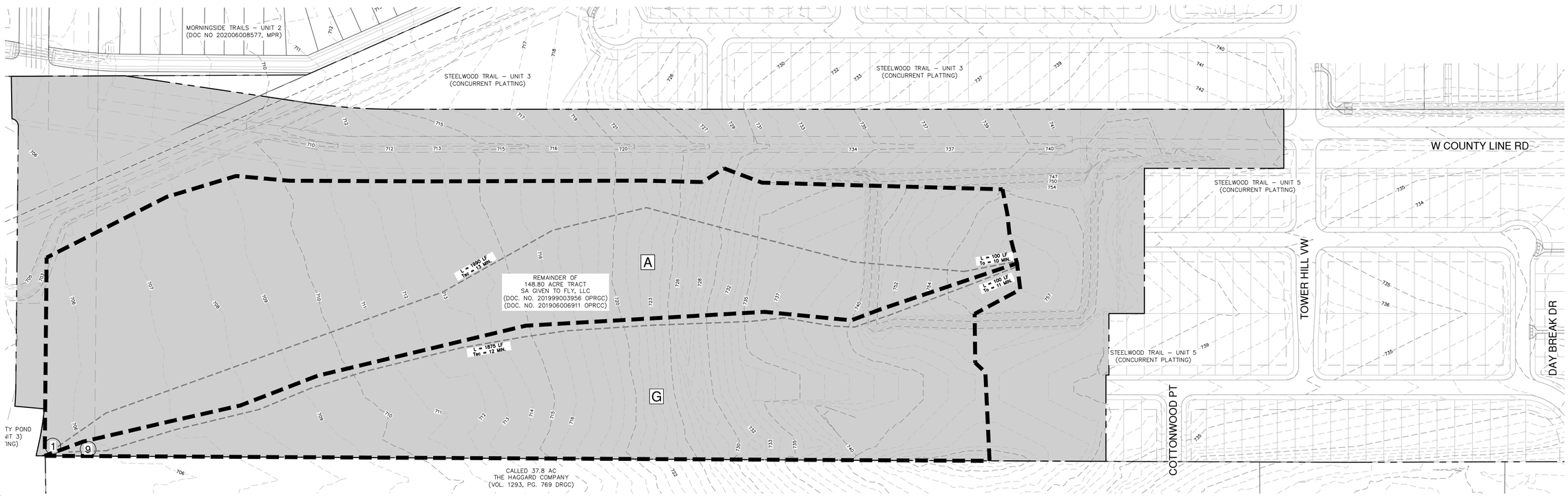
NOT-TO-SCALE

SCALE: 1"= 100'

0' 100' 200' 300'

MASTER DRAINAGE LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR (690)
- 100 YR FLOODPLAIN
- RUNOFF FLOW PATH
- DRAINAGE AREA BOUNDARY
- FHA LOT GRADING TYPE (A,B,C)
- PROPOSED DIRECTION OF FLOW
- DRAINAGE CALCULATION POINT (7)
- DRAINAGE AREA (A)
- PROJECT LIMITS



STEELWOOD TRAIL UNIT 4

NEW BRAUNFELS, TEXAS

OVERALL DRAINAGE PLAN - EXISTING CONDITIONS

NO.	REVISION	DATE

6-15-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN TM
SHEET C1.00

Date: Jun 15, 2022, 11:39am User ID: tmartin
File: P:\300\34\07\Design\Civil\SDOA-3003407.dwg

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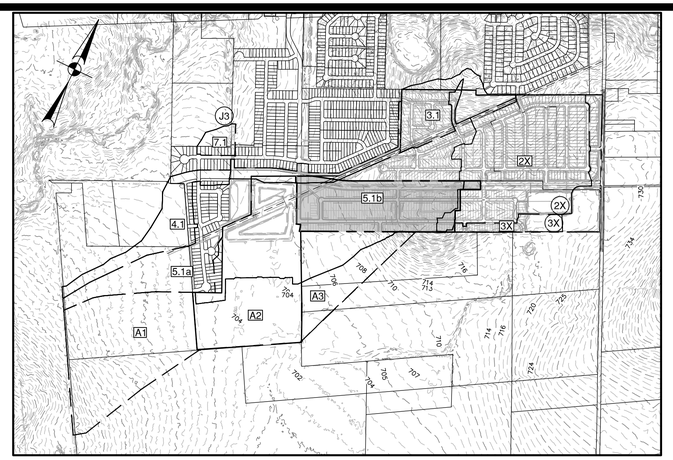
FOR PERMIT

Calc Pt	Description	Drainage Area ID	Drainage Area Acres	Time of Conc. (minutes)	Intensity (in/hr)	C	Discharge Q (cfs)	Frequency (year)
1	Drain "A'	A	12.83	14	4.39	0.59	33	2
					6.47	0.66	55	10
					7.82	0.71	71	25
					10.03	0.79	102	100
2	Drain "B"	B	8.82	13	4.54	0.60	24	2
					6.72	0.67	40	10
					8.13	0.71	51	25
					10.42	0.80	74	100
3	Drain "D"	C	2.57	10	5.05	0.25	3	2
					7.50	0.30	6	10
					9.12	0.34	8	25
					11.70	0.41	12	100
4	Drain "C"	C+D	23.84	17	3.97	0.53	50	2
					5.83	0.59	82	10
					7.02	0.64	107	25
					8.98	0.72	154	100
5	Drain "C"	A+C+D	36.67	17	3.97	0.60	87	2
					5.83	0.68	145	10
					7.02	0.72	185	25
					8.98	0.81	267	100
6	Drain "E"	A+B+C+D+E	46.70	18	3.86	0.60	108	2
					5.66	0.67	177	10
					6.81	0.72	229	25
					8.71	0.80	325	100
7	Drain "E-2"	F	1.12	10	5.05	0.51	3	2
					7.50	0.58	5	10
					9.12	0.62	6	25
					11.70	0.70	9	100
8	Drain "E" Downstream Pipe	A+B+C+D+E+F	47.82	18	3.86	0.60	111	2
					5.66	0.67	181	10
					6.81	0.71	231	25
					8.71	0.80	333	100
9	Downstream Point	H	0.86	10	5.05	0.53	2	2
					7.50	0.60	4	10
					9.12	0.64	5	25
					11.70	0.73	7	100

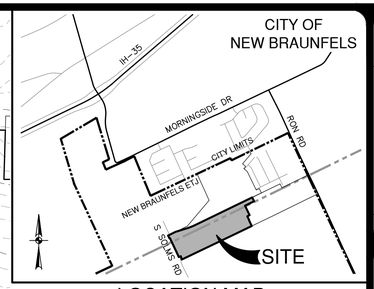
Flow Comparison Table*								
Calc Pt.	2-Year (cfs)		10-Year (cfs)		25-Year (cfs)		100-Year (cfs)	
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
J3	204	134	453	291	610	396	877	564
2X	324	150	760	291	1045	375	1557	456
3X	324	19	760	37	1045	47	1557	66

*Refrence Steelwood Trail - Unit 3 Stormwater Management Plan for J3 and Steelwood Trail - Unit 5 Stormwater Management Plan for 2X and 3X



OVERALL DRAINAGE

SCALE: 1"=1000'



LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 100' 0' 100' 200' 300'

MASTER DRAINAGE LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR — 690
- 100 YR FLOODPLAIN
- RUNOFF FLOW PATH
- DRAINAGE AREA BOUNDARY
- FHA LOT GRADING TYPE — A,B,C
- PROPOSED DIRECTION OF FLOW
- DRAINAGE CALCULATION POINT — 7
- DRAINAGE AREA — A
- PROJECT LIMITS

MORNINGSIDE TRAILS – UNIT 2 (DOC NO 202006008577, MPR)

STEELWOOD TRAIL – UNIT 3 (CONCURRENT PLATTING)

STEELWOOD TRAIL – UNIT 5 (CONCURRENT PLATTING)

WENTZ HILL DR

MOON HILL RD

FOGGY PASS DR

CLEAR SKY VIEW

TOWER HILL VW

COTTONWOOD PT

CORN FIELD LN

W COUNTY

DRAIN "A" (SEE SHEET C1.02)

DRAIN "B" (SEE SHEET C1.03)

DRAIN "C" (SEE SHEET C1.04)

DRAIN "D" (SEE SHEET C1.05)

DRAIN "E" (SEE SHEET C1.06)

DRAIN "E2" (SEE SHEET C1.07)

L = 2946 LF V = 6 FPS.

L = 685 LF V = 6 FPS.

L = 1725 LF V = 6 FPS.

L = 1800 LF V = 6 FPS.

L = 20 LF V = 6 FPS.

L = 80 LF V = 6 FPS.

L = 251 LF

L = 100 LF To = 9 MIN.

L = 80 LF To = 9 MIN.

L = 35 LF Tsc = 0.3 MIN.

REMAINDER OF 148.40 ACRE TRACT SA GIVEN TO FLY, LLC (DOC NO. 201999003956 OPRCC) (DOC NO. 201906006911 OPRCC)

PROPOSED WATER QUALITY POND (STEELWOOD TRAIL UNIT 3) (CONCURRENT PLATTING)

CALLED 37.8 AC THE HAGGARD COMPANY (VOL. 1293, PG. 769 DRGC)

STEELWOOD TRAIL UNIT 4

NEW BRAUNFELS, TEXAS

OVERALL DRAINAGE PLAN - ULTIMATE CONDITIONS

NO.	REVISION	DATE

6-15-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN TM
SHEET C1.01

Date: Jun 15, 2022, 11:40am User ID: tmartin
File: P:\300\34\07\Design\Civil\30OA-3003407.dwg

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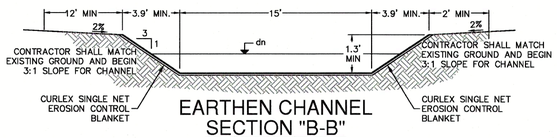
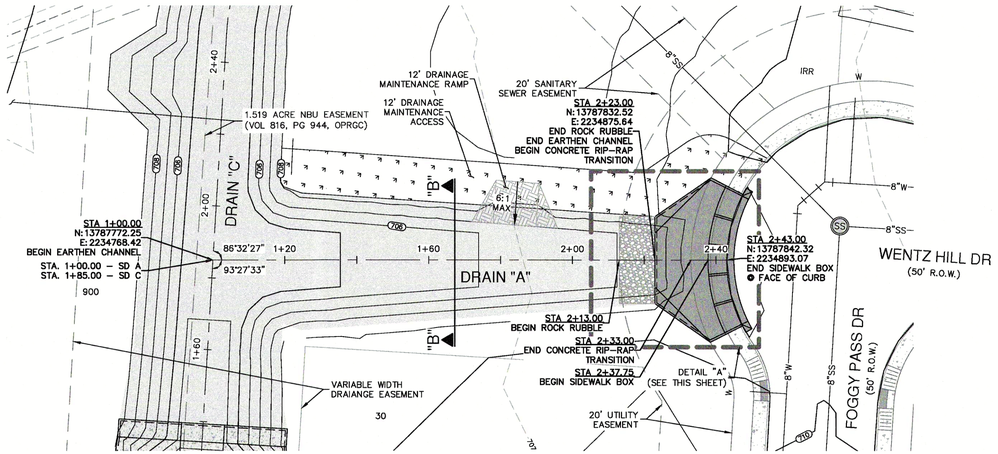
FOR PERMIT



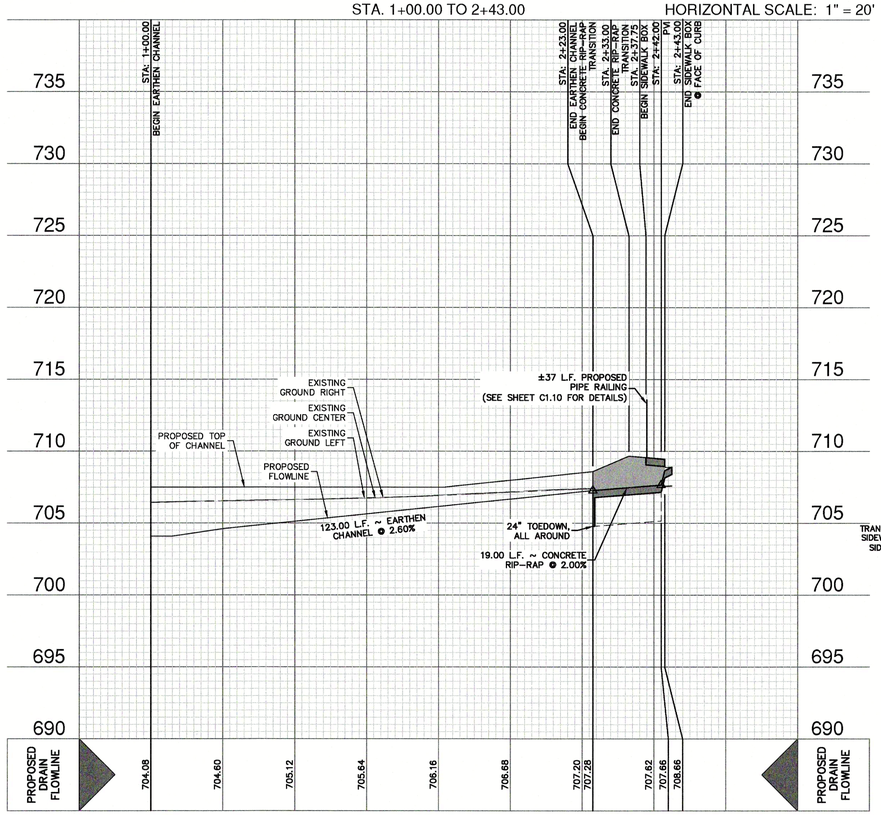
EARTHEN CHANNEL SECTION "B-B"

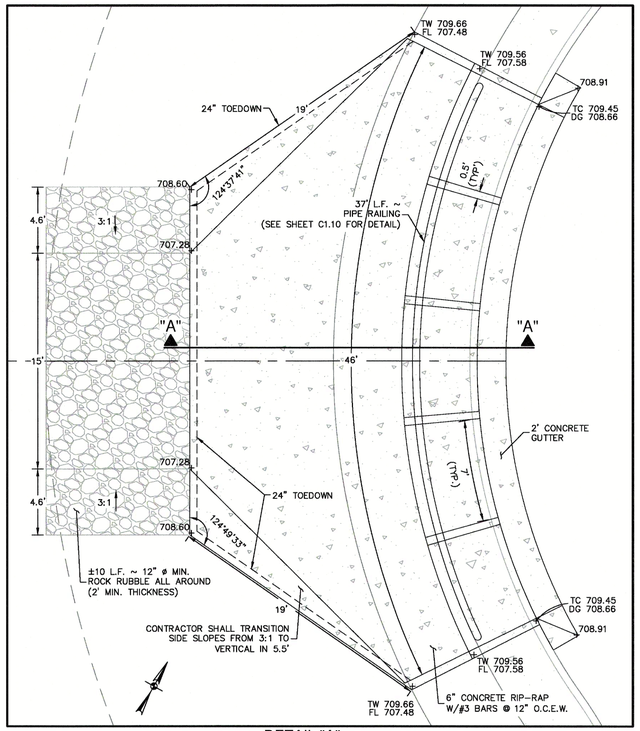
(STA. 1+00.00 – STA. 2+23.00)
NOT–TO–SCALE



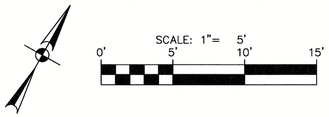
DRAIN "A"
STA. 1+00.00 TO 2+43.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'





DETAIL "A"
1" = 5'



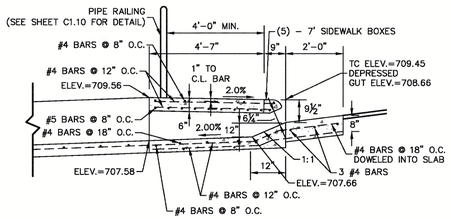
DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690 —
- PROPOSED CONTOUR 690
- EXISTING FIRE HYDRANT
- EXISTING WATER — W —
- EXISTING UNDERGROUND ELECTRIC — UGE —
- EXISTING GAS — G —
- EXISTING SEWER — SS — MANHOLE
- PROPOSED SEWER — SS —
- FIRE HYDRANT
- PROPOSED WATER — W —
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS
- DRAINAGE MAINTENANCE ACCESS

HYDRAULIC CALCULATIONS EARTH CHANNEL

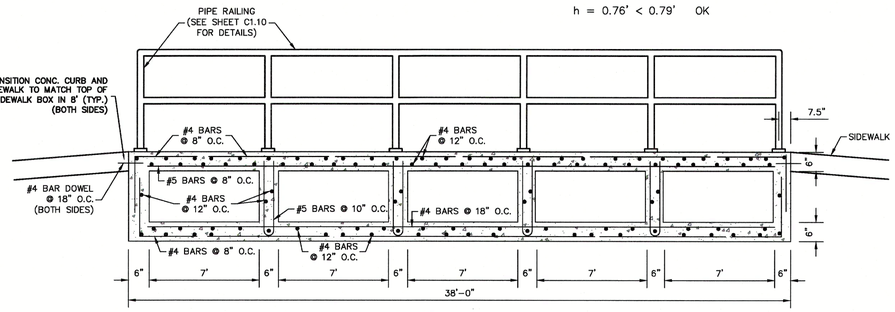
STA. 1+00.00 TO 2+23.00

Q_{25}	=	71 CFS
Bw	=	15 FT
n	=	0.035
S	=	2.60%
dn_{25}	=	0.78 FT
V_{25}	=	5.27 FPS
dn25+Fbrd.	=	1.28 FT
Q_2	=	33 CFS
V_2	=	4.03 FPS
Q_{100}	=	102 CFS
dn_{100}	=	0.96 FT
V_{100}	=	5.96 FPS



SECTION "A-A" SIDEWALK BOX DETAIL

NOT–TO–SCALE



SIDEWALK BOX DETAIL

NOT–TO–SCALE

HYDRAULIC CALCULATIONS – 35' SIDEWALK BOX

TOTAL Q_{25} = 71 CFS

Q_{25} = 71 CFS

$Q_{25} = CA\sqrt{2gh}$ (ORIFICE FLOW EQN.)

A = L(0.52), h = 0.54, g = 32.2, c = 0.70

$$L = \frac{71 \text{ CFS}}{(0.7)\ (0.52)\sqrt{2}\ (32.2)\ (0.54)}$$

L = 33.08' USE 35' FT.

CHECK WITH WEIR FORMULA

$$h = \left(\frac{Q}{(CL)}\right)^{2/3} = \left(\frac{71}{(3.087)(35)}\right)^{2/3} = 0.76 \text{ FT.}$$

h = 0.76' < 0.79' OK

WATER PONDING WIDTH

SEE STORMWATER REPORT FOR STREET CAPACITY CALCULATIONS (10YR SPREAD WIDTH CONTAINED WITHIN CURB)

DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE COMAL COUNTY WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.
7. ALL RCP SHALL BE AASHTO M170 CLASS III RCP.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NO.	REVISION	DATE

8–12–2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.3600
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM # 100288-00

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

DRAIN A - PLAN & PROFILE
STA. 1+00.00 TO 2+43.00

PLAT NO.
JOB NO. 30034–07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C1.02

FOR PERMIT

Date: Aug 12, 2022, 11:29am User ID: jmoy
File: P:\300\34\07\Design\Civil\SDA–30034O7.dwg

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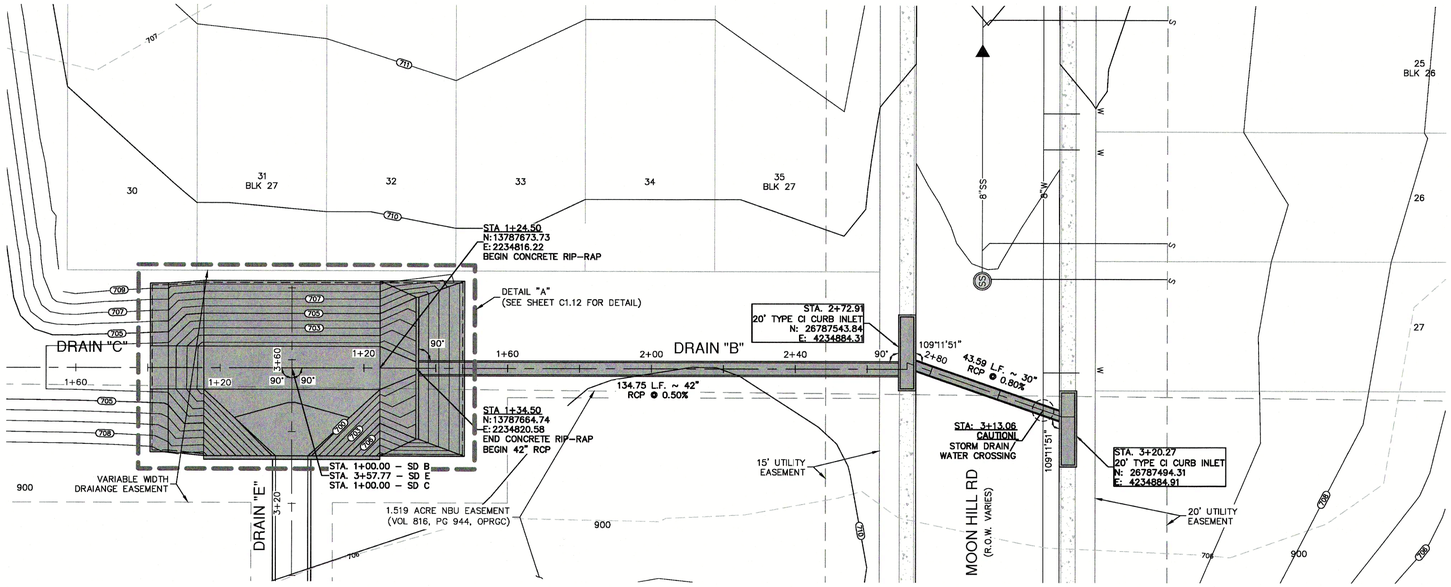


SCALE: 1"= 20' (0' 20' 40' 60')

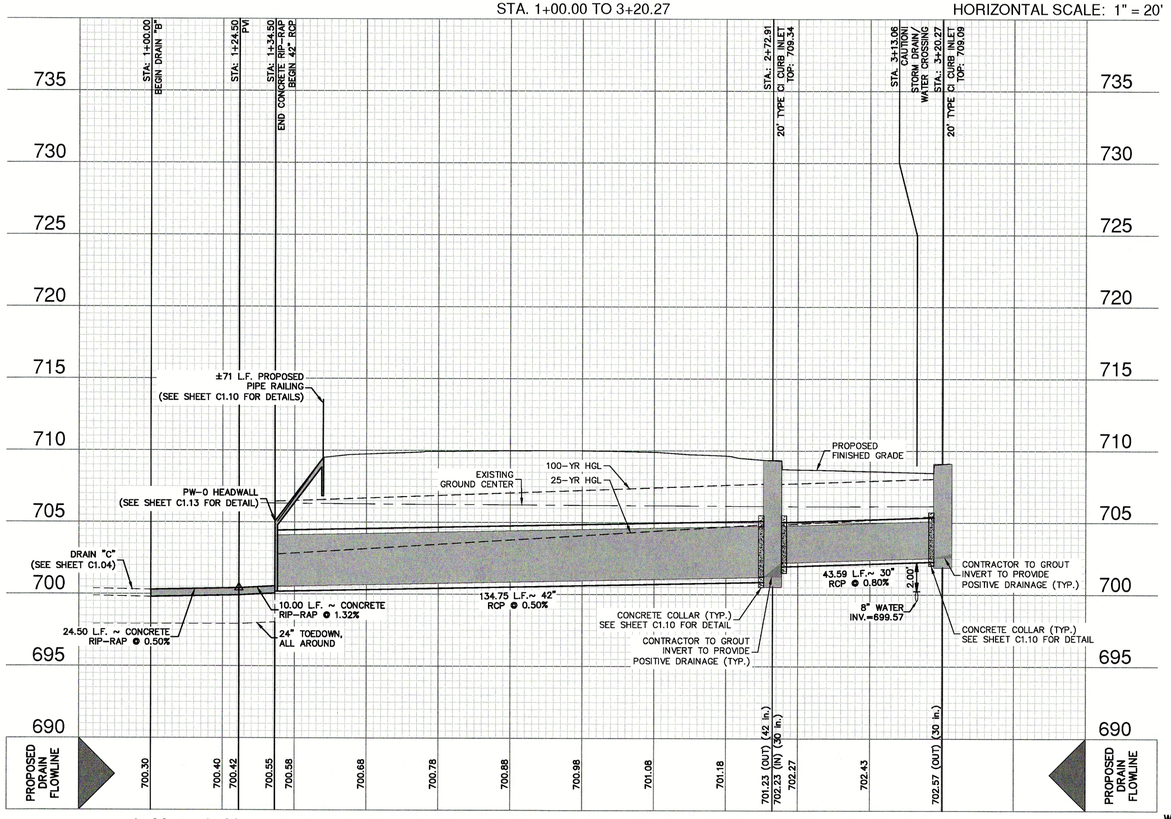
DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690 —
- PROPOSED CONTOUR — 690 —
- EXISTING FIRE HYDRANT
- EXISTING WATER — W —
- EXISTING UNDERGROUND ELECTRIC — UGE —
- EXISTING GAS — G —
- EXISTING SEWER — SS —
- PROPOSED SEWER — SS — MANHOLE
- PROPOSED WATER — W — FIRE HYDRANT
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS
- PROPOSED GAS — G —
- PROPOSED UNDERGROUND ELECTRIC — UGE —

HYDRAULIC CALCULATIONS STORM DRAIN STA. 1+34.50 TO 2+72.91	HYDRAULIC CALCULATIONS STORM DRAIN STA. 2+72.91 TO 3+20.27
Q25 = 51 CFS	Q25 = 25.5 CFS
S = 0.50%	S = 0.80%
Sf = 0.26%	Sf = 0.39%
V25 = 8.02 FPS	V25 = 5.20 FPS
n = 0.013	n = 0.013
D = 3.5'	D = 2.5'

DRAIN "B"
STA. 1+00.00 TO 3+20.27

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



HYDRAULIC CALCULATIONS – 20' CURB INLET

TOTAL Q_{25} = 51 CFS

Q_{25} = 25.5 CFS

$Q_{25} = CA\sqrt{2gh}$ (ORIFICE FLOW EQN.)

A = L(0.52), h = 0.54, g = 32.2, c = 0.70

$$L = \frac{25.5 \text{ CFS}}{(0.7)\ (0.52)\sqrt{2}\ (32.2)\ (0.54)}$$

L = 11.88' USE 20' FT.

CHECK WITH WEIR FORMULA

$$h = \left(\frac{Q}{(CL)}\right)^{2/3} = \left(\frac{25.5}{(3.087)(20)}\right)^{2/3} = 0.55 \text{ FT.}$$

h = 0.55' < 0.79' OK

DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE COMAL COUNTY WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.
7. ALL RCP SHALL BE AASHTO M170 CLASS III RCP.

TRENCH EXCAVATION SAFETY PROTECTION:

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CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

WATER PONDING WIDTH

SEE STORMWATER REPORT FOR STREET CAPACITY CALCULATIONS (10YR SPREAD WIDTH CONTAINED WITHIN CURB)

NO.	REVISION	DATE

8-12-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.625.2633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

DRAIN B - PLAN & PROFILE
STA. 1+00.00 TO 3+20.27

PLAT NO. _____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C1.03

FOR PERMIT

Date: Aug 12, 2022, 3:53pm User ID: jmoy
File: P:\300\34\07\Design\Civil\SBB-3003407.dwg

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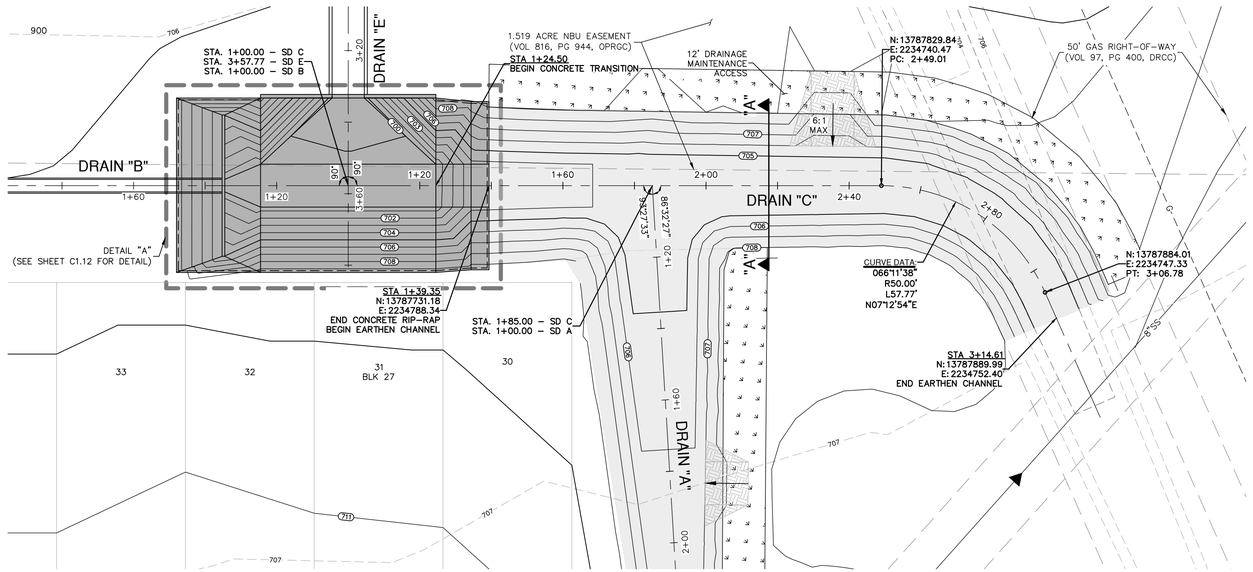
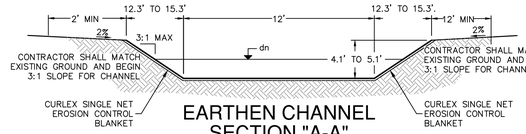




EARTHEN CHANNEL SECTION "A-A"

(STA. 1+39.35 – STA. 3+14.61)
NOT-TO-SCALE

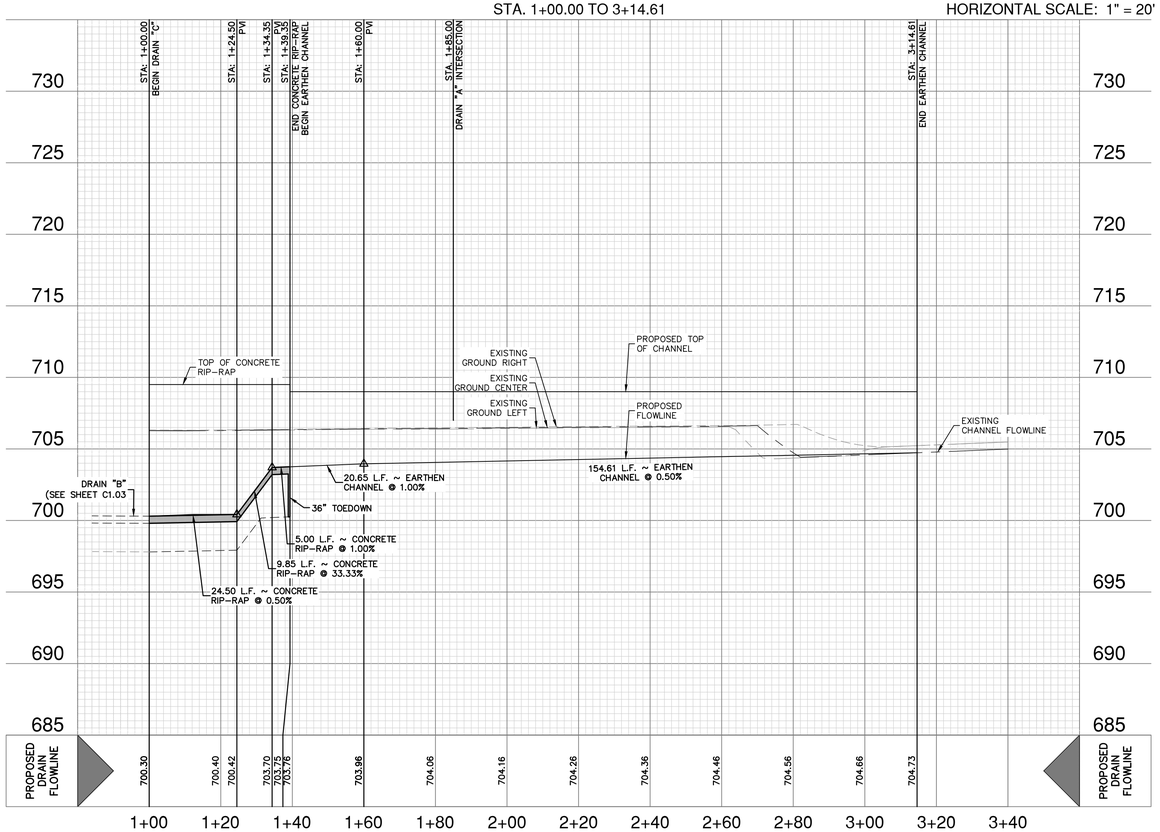
SCALE: 1"= 20'
0' 20' 40' 60'

DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690
- PROPOSED CONTOUR — 690
- EXISTING FIRE HYDRANT
- EXISTING WATER — W
- EXISTING UNDERGROUND ELECTRIC — UGE
- EXISTING GAS — G
- EXISTING SEWER — SS — MANHOLE
- PROPOSED SEWER — SS
- PROPOSED WATER — FIRE HYDRANT — W
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS
- PROPOSED GAS — G
- PROPOSED UNDERGROUND ELECTRIC — UGE

DRAIN "C"
STA. 1+00.00 TO 3+14.61

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



HYDRAULIC CALCULATIONS EARTH CHANNEL

STA. 1+39.35 TO 1+60.00

Q_{25}	=	185 CFS
Bw	=	12 FT
n	=	0.035
S	=	1.00%
dn_{25}	=	1.94 FT
V_{25}	=	5.37 FPS
dn25+Fbrd.=		2.44 FT
Q_2	=	87 CFS
V_2	=	4.28 FPS
Q_{100}	=	267 CFS
dn_{100} =		2.35 FT
V_{100}	=	5.97 FPS

HYDRAULIC CALCULATIONS EARTH CHANNEL

STA. 1+60.00 TO 1+85.00

Q_{25}	=	185 CFS
Bw	=	12 FT
n	=	0.035
S	=	0.50%
dn_{25}	=	2.32 FT
V_{25}	=	4.19 FPS
dn25+Fbrd.=		2.82 FT
Q_2	=	87 CFS
V_2	=	3.36 FPS
Q_{100}	=	267 CFS
dn_{100} =		2.81 FT
V_{100}	=	4.65 FPS

HYDRAULIC CALCULATIONS EARTH CHANNEL

STA. 1+85.00 TO 3+14.61

Q_{25}	=	107 CFS
Bw	=	12 FT
n	=	0.035
S	=	0.50%
dn_{25}	=	1.74 FT
V_{25}	=	3.55 FPS
dn25+Fbrd.=		2.24 FT
Q_2	=	50 CFS
V_2	=	2.83 FPS
Q_{100}	=	154 CFS
dn_{100} =		2.11 FT
V_{100}	=	3.98 FPS

DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
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3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
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6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.
7. ALL RCP SHALL BE AASHTO M170 CLASS III RCP.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!

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WATER PONDING WIDTH
SEE STORMWATER REPORT FOR STREET CAPACITY CALCULATIONS (10YR SPREAD WIDTH CONTAINED WITHIN CURB)

NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
6-15-2022

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5533
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

DRAIN C - PLAN & PROFILE
STA. 1+00.00 TO 3+14.61

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C1.04

FOR PERMIT

Date: Jun 15, 2022, 11:43am User ID: tmartin
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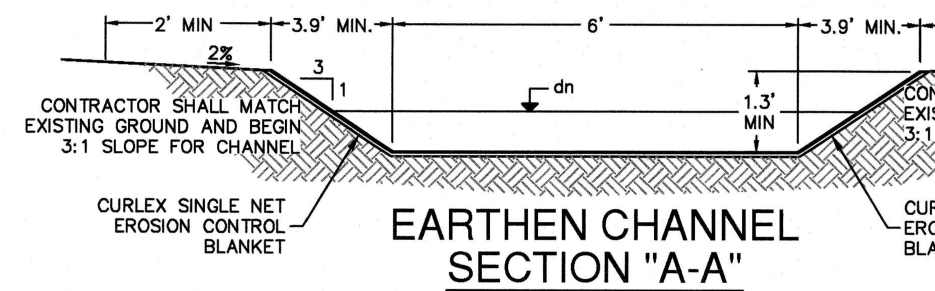
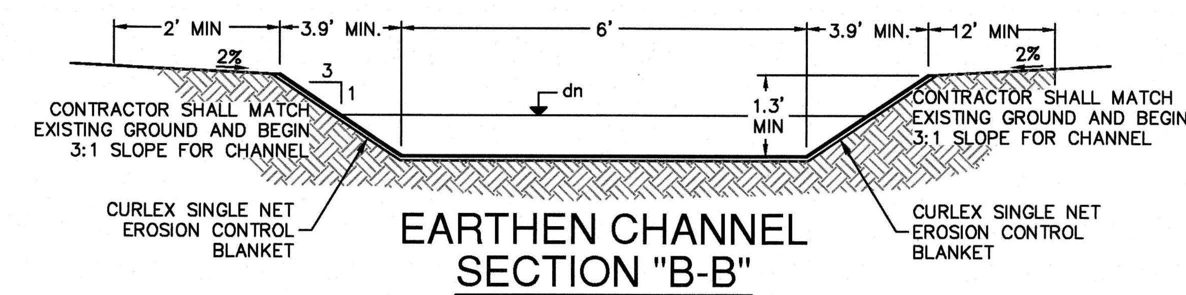


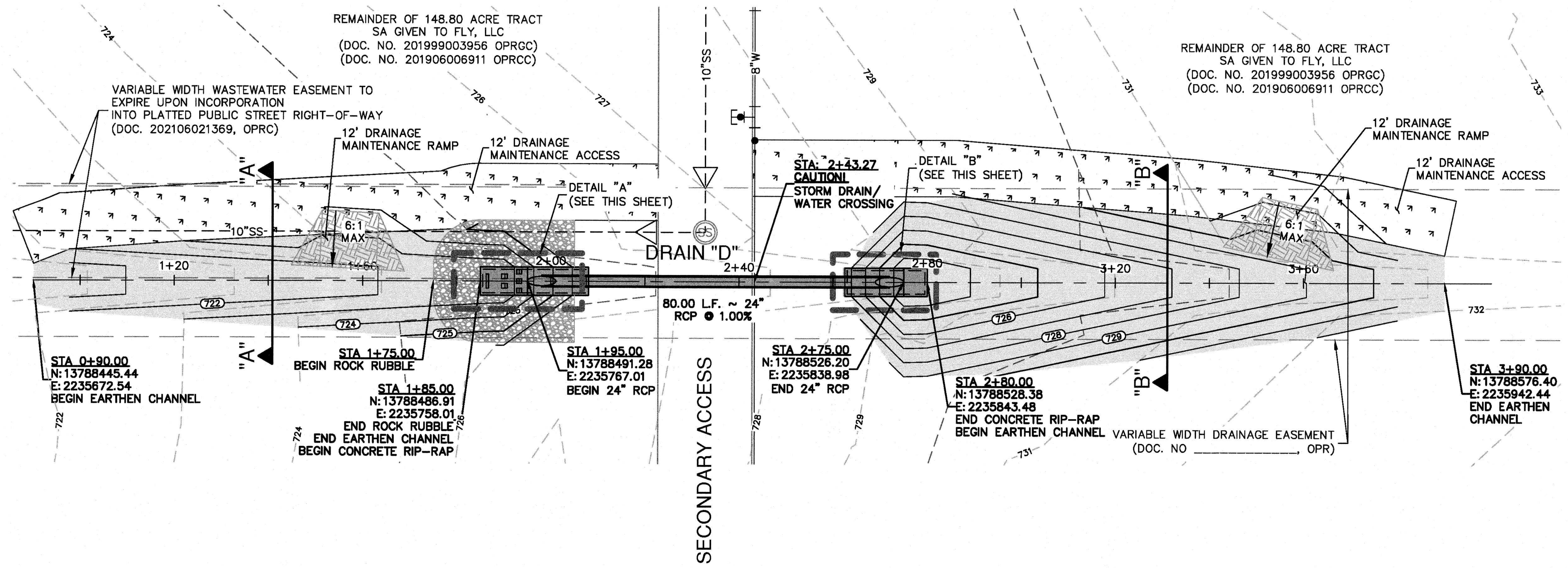
EARTHEN CHANNEL SECTION "A-A"

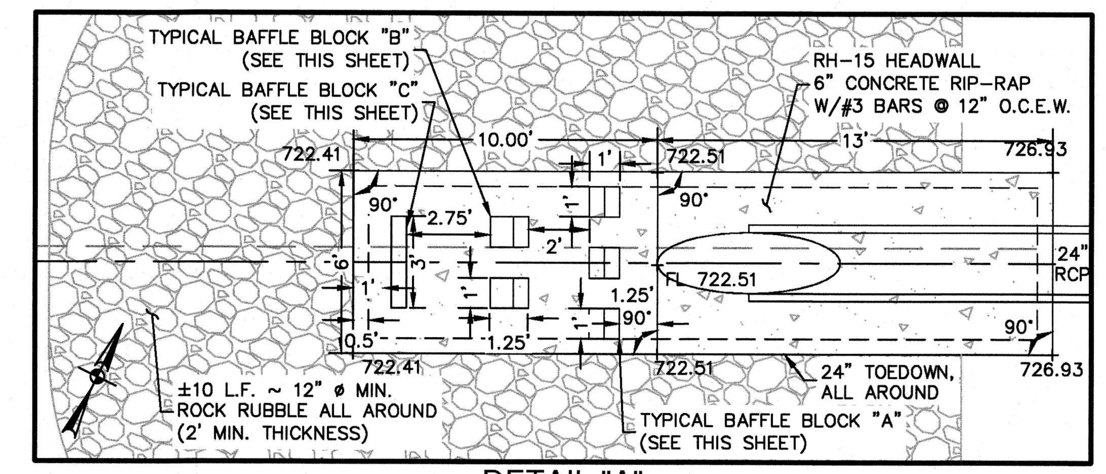
(STA. 1+00.00 – STA. 1+81.78)
NOT-TO-SCALE



EARTHEN CHANNEL SECTION "B-B"

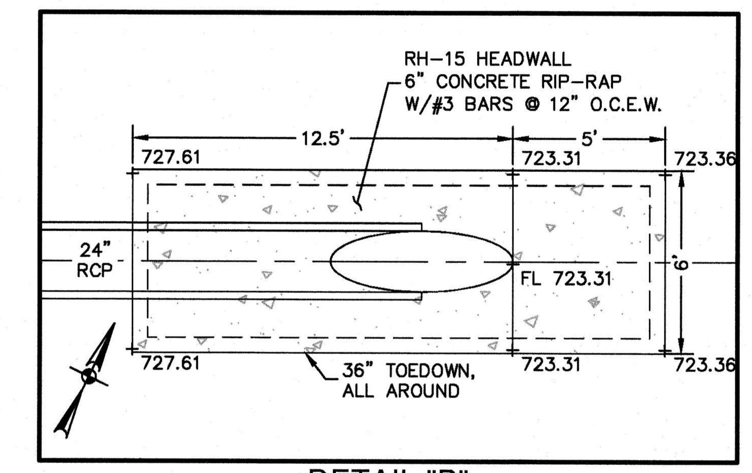
(STA. 2+79.72 – STA. 3+87.26)
NOT-TO-SCALE





DETAIL "A"

1" = 5'



DETAIL "B"

1" = 5'

SCALE: 1"= 20'

0' 20' 40' 60'

DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR (690)
- PROPOSED CONTOUR (690)
- EXISTING WATER (EXISTING FIRE HYDRANT)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS)
- PROPOSED SEWER (SS, MANHOLE)
- PROPOSED WATER (W, FIRE HYDRANT)
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS
- PROPOSED GAS (G)
- PROPOSED UNDERGROUND ELECTRIC (UGE)

HYDRAULIC CALCULATIONS STORM DRAIN "D"

STA. 1+95.00 TO 2+75.00

Q25	= 8 CFS
S	= 1.00%
Sf	= 0.13%
V25	= 6.60 FPS
n	= 0.013
D	= 2.0'
Q2	= 3 CFS
V2	= 5.02 FPS

HYDRAULIC CALCULATIONS EARTH CHANNEL

STA. 0+90.00 TO 1+85.00

Q_{25} =	8 CFS
Bw =	6 FT
n =	0.035
S =	1.87%
dn_{25} =	0.40 FT
V_{25} =	2.80 FPS
dn25+Fbrd.=	0.90 FT
Q_2 =	3 CFS
V_2 =	2.00 FPS
Q_{100} =	12 CFS
dn_{100} =	0.50 FT
V_{100} =	3.20 FPS

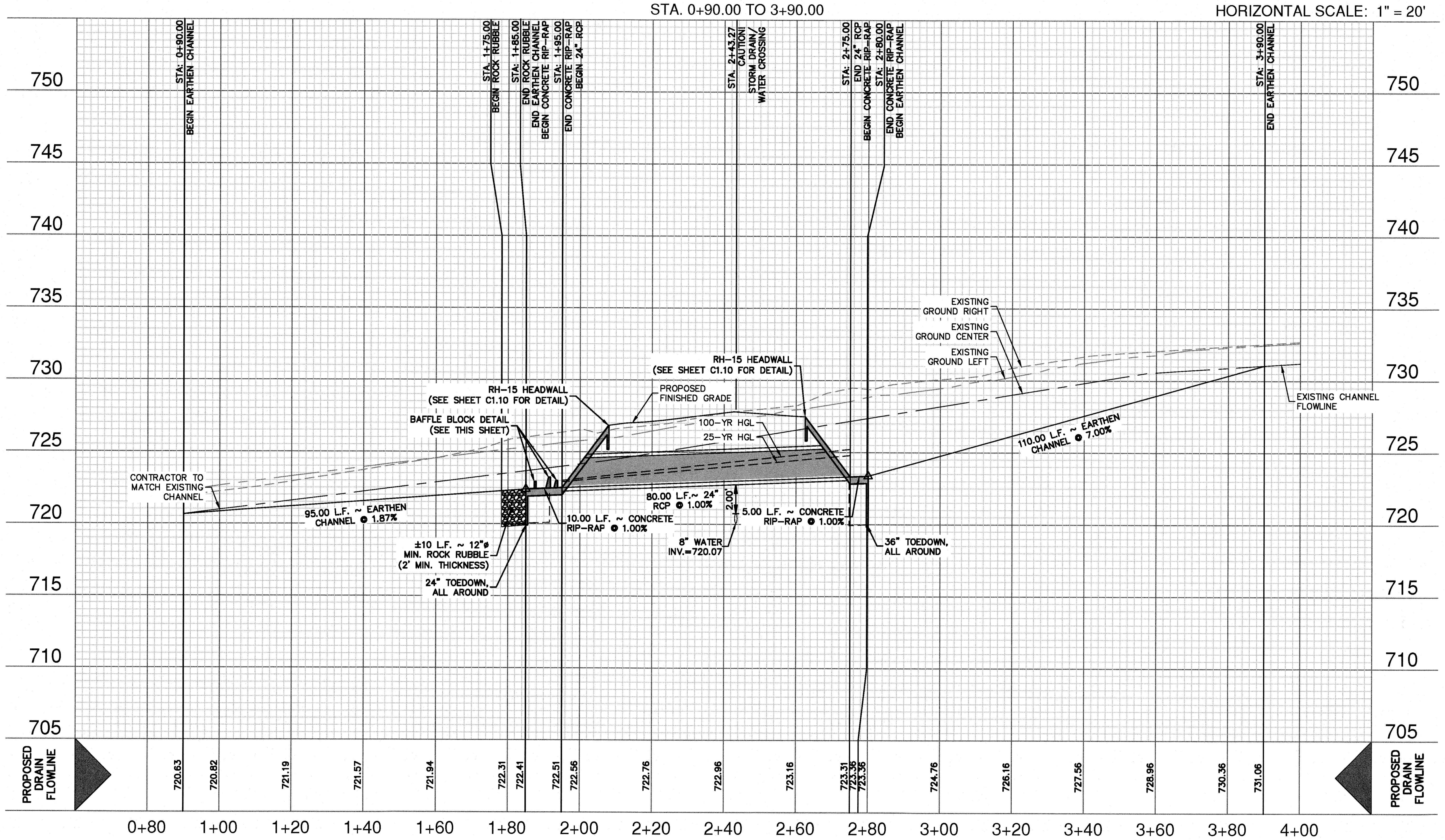
HYDRAULIC CALCULATIONS EARTH CHANNEL

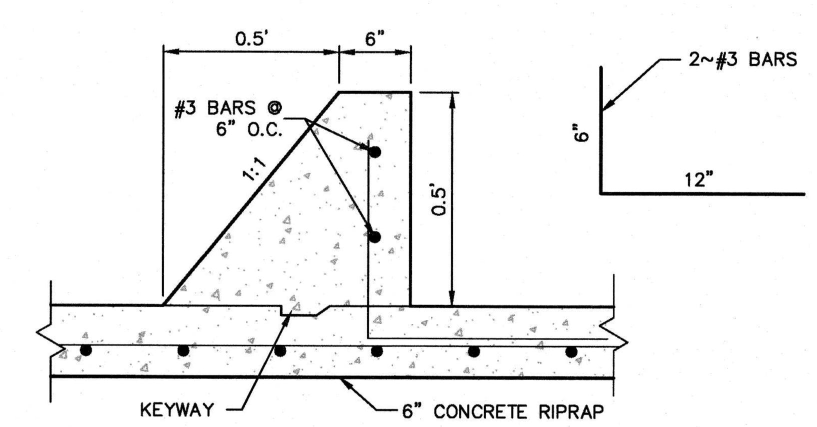
STA. 2+79.72 TO 3+87.26

Q_{25} =	8 CFS
Bw =	6 FT
n =	0.035
S =	7.00%
dn_{25} =	0.27 FT
V_{25} =	4.33 FPS
dn25+Fbrd.=	0.77 FT
Q_2 =	3 CFS
V_2 =	3.05 FPS
Q_{100} =	12 CFS
dn_{100} =	0.34 FT
V_{100} =	4.98 FPS

DRAIN "D"
STA. 0+90.00 TO 3+90.00

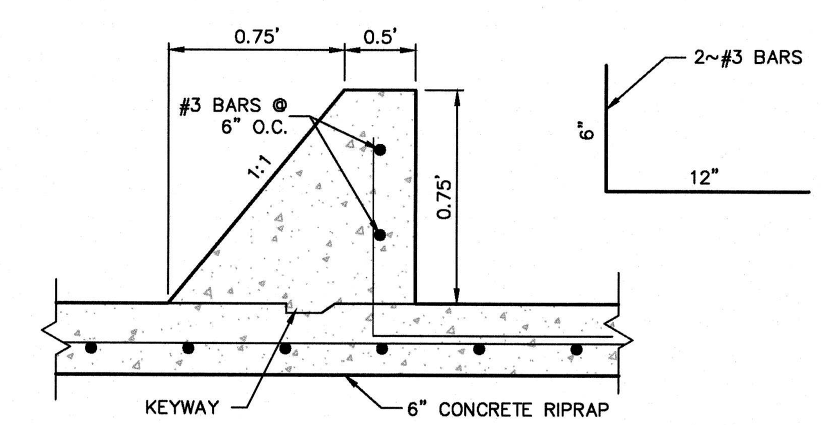
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'





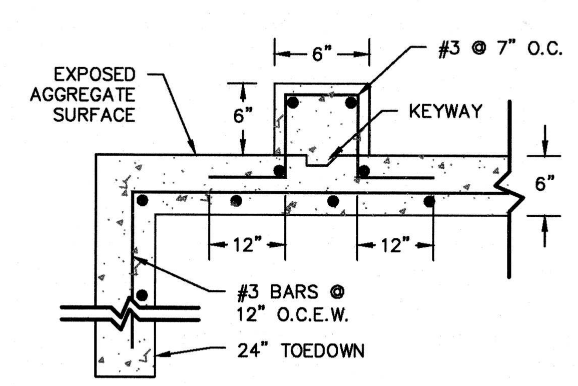
BAFFLE BLOCK "A" DETAIL

NOT TO SCALE



BAFFLE BLOCK "B" DETAIL

NOT TO SCALE



TYPICAL END SILL DETAIL "C" SECTION

NOT TO SCALE

WATER PONDING WIDTH

SEE STORMWATER REPORT FOR STREET CAPACITY CALCULATIONS (10YR SPREAD WIDTH CONTAINED WITHIN CURB)

DRAINAGE & GRADING NOTES:

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6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.
7. ALL RCP SHALL BE AASHTO M170 CLASS III RCP.

TRENCH EXCAVATION SAFETY PROTECTION:

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CAUTION!!

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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER
8-17-2022

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS I SAN ANTONIO I AUSTIN I HOUSTON I FT WORTH I DALLAS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4

NEW BRAUNFELS, TEXAS

DRAIN D - PLAN & PROFILE STA. 0+90.00 TO 3+90.00

PLAT NO. ______
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C1.05

FOR PERMIT

Date: Aug 22, 2022, 3:59pm User ID: tmartin
File: P:\300\34\07\Design\Civil\SDD-3003407.dwg

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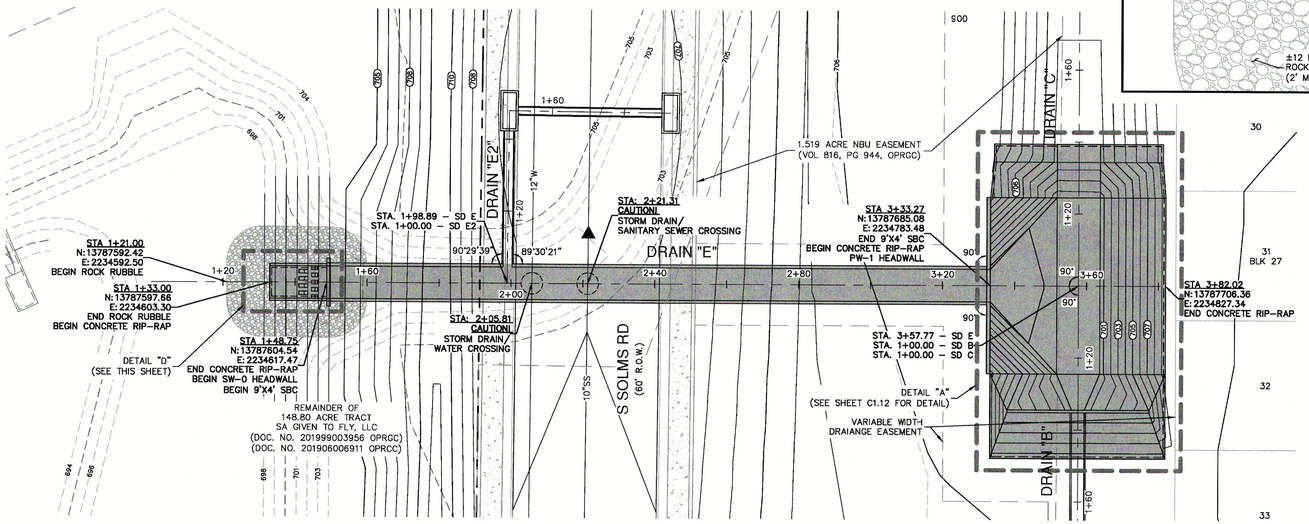
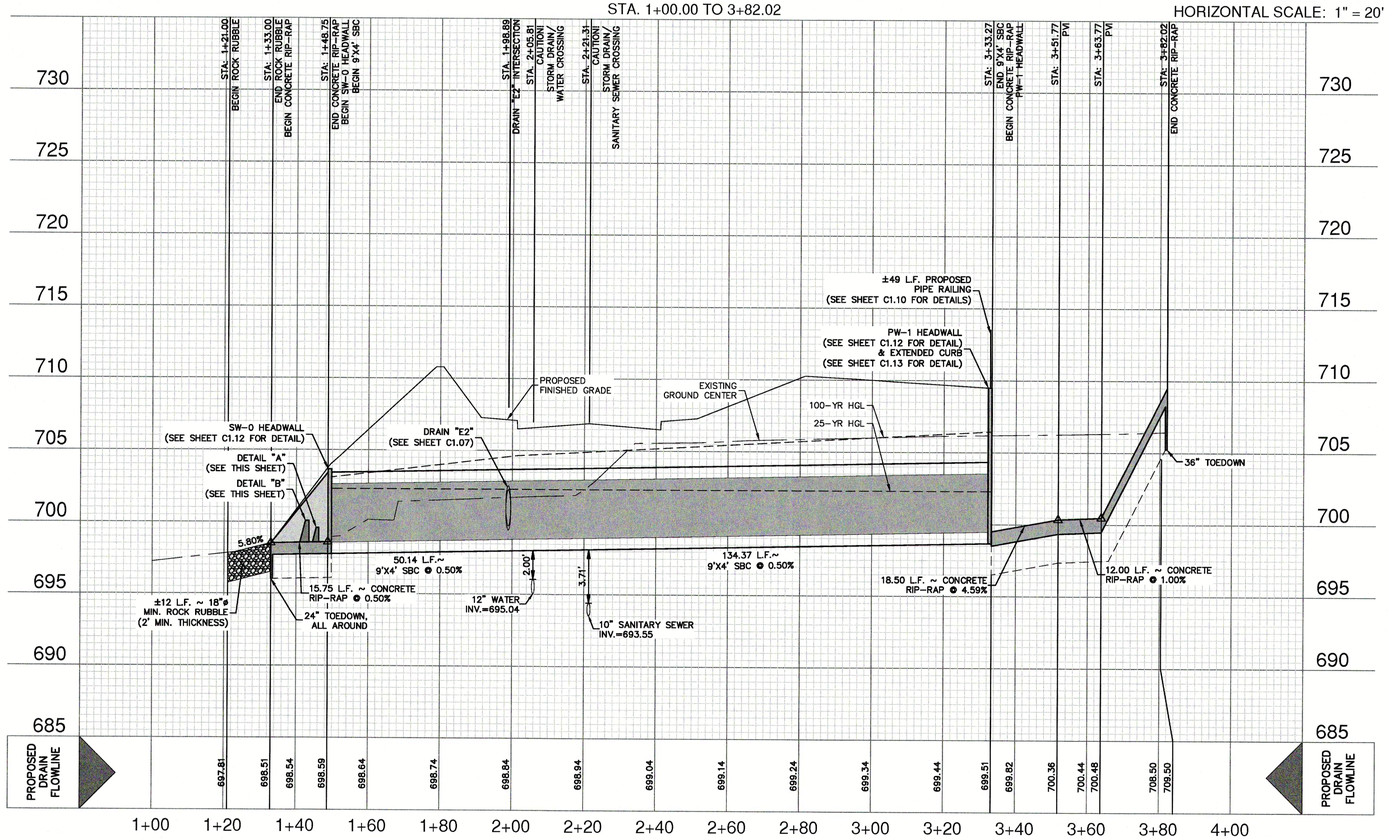
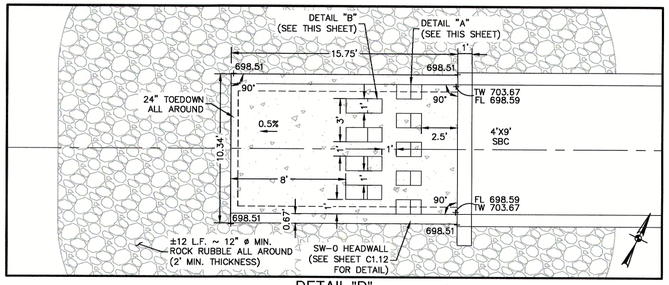


DRAIN "E"
STA. 1+00.00 TO 3+82.02

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'





DETAIL "D"
1" = 5'

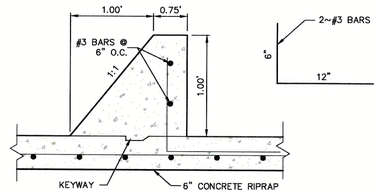
SCALE: 1"= 20' 0' 20' 40' 60'

DRAINAGE LEGEND

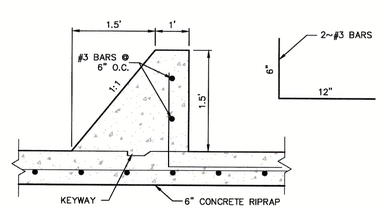
- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690 —
- PROPOSED CONTOUR — 690 —
- EXISTING WATER — EXISTING FIRE HYDRANT — W —
- EXISTING UNDERGROUND ELECTRIC — UGE —
- EXISTING GAS — G —
- EXISTING SEWER — SS — MANHOLE
- PROPOSED SEWER — SS —
- PROPOSED WATER — FIRE HYDRANT — W —
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW
- CURLEX SINGLE NET EROSION CONTROL BLANKETS
- PROPOSED GAS — G —
- PROPOSED UNDERGROUND ELECTRIC — UGE —

HYDRAULIC CALCULATIONS STORM DRAIN "E" STA. 1+48.75 TO 1+98.89	
Q25	= 231 CFS
S	= 0.50%
Sf	= 0.20%
V25	= 6.92 FPS
n	= 0.013
D	= 4.0'
Q2	= 111 CFS
V2	= 5.85 FPS

HYDRAULIC CALCULATIONS STORM DRAIN "E" STA. 1+98.89 TO 3+33.27	
Q25	= 229 CFS
S	= 0.50%
Sf	= 0.20%
V25	= 9.31 FPS
n	= 0.013
D	= 4.0'
Q2	= 108 CFS
V2	= 7.15 FPS



BAFFLE BLOCK "A" DETAIL
NOT TO SCALE



BAFFLE BLOCK "B" DETAIL
NOT TO SCALE

WATER PONDING WIDTH
SEE STORMWATER REPORT FOR STREET CAPACITY CALCULATIONS (10YR SPREAD WIDTH CONTAINED WITHIN CURB)

DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE COMAL COUNTY WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.
7. ALL RCP SHALL BE AASHTO M170 CLASS III RCP.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NO.	REVISION	DATE

8-12-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.035.5603
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288-00

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

DRAIN E - PLAN & PROFILE
STA. 1+00.00 TO 3+82.02

PLAT NO. _____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C1.06

FOR PERMIT

Date: Aug 12, 2022, 3:57pm User ID: jmay
File: P:\30034\04 CIVIL\07 Design\Civil\SDE-30034-07.dwg

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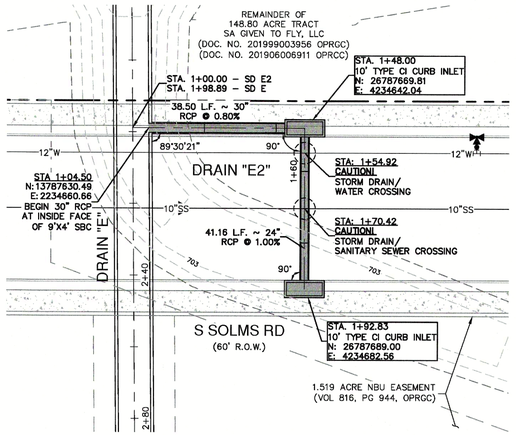
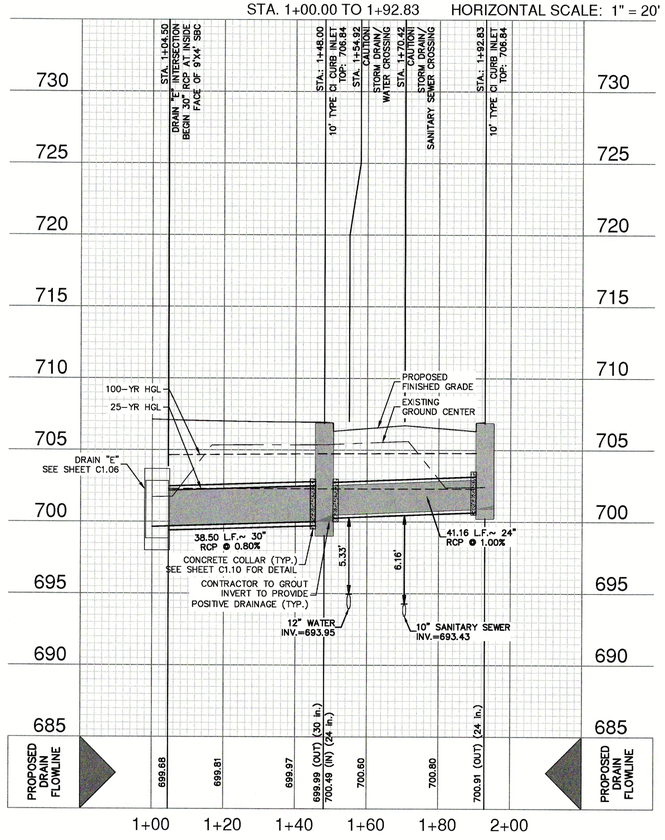


DRAIN "E2" VERTICAL SCALE: 1" = 5'
STA. 1+00.00 TO 1+92.83 HORIZONTAL SCALE: 1" = 20'



DRAINAGE LEGEND

PROJECT LIMITS

100 YR FLOODPLAIN

EXISTING CONTOUR 690

PROPOSED CONTOUR 690

EXISTING WATER (EXISTING FIRE HYDRANT) W

EXISTING UNDERGROUND ELECTRIC UGE

EXISTING GAS G

EXISTING SEWER SS (MANHOLE)

PROPOSED SEWER SS

PROPOSED WATER (FIRE HYDRANT) W

PROPOSED STORM DRAIN

EXISTING STORM DRAIN

FLOW ARROW

CURLEX SINGLE NET EROSION CONTROL BLANKETS

PROPOSED GAS G

PROPOSED UNDERGROUND ELECTRIC UGE

HYDRAULIC CALCULATIONS STORM DRAIN STA. 1+04.50 TO 1+48.00	HYDRAULIC CALCULATIONS STORM DRAIN STA. 1+48.00 TO 1+92.83
Q25 = 6.0 CFS	Q25 = 3.0 CFS
S = 0.80%	S = 1.00%
Sf = 0.02%	Sf = 0.02%
V25 = 1.50 FPS	V25 = 3.30 FPS
n = 0.013	n = 0.013
D = 2.5'	D = 2.0'

HYDRAULIC CALCULATIONS – 10' CURB INLET

TOTAL Q_{25} = 6 CFS

Q_{25} = 3.0 CFS

$Q_{25} = CA\sqrt{2gh}$ (ORIFICE FLOW EQN.)

A = L(0.52), h = 0.54, g = 32.2, c = 0.70

$$L = \frac{3.0 \text{ CFS}}{(0.7)\ (0.52)\sqrt{2}\ (32.2)\ (0.54)}$$

L = 1.40' USE 10' FT.

CHECK WITH WEIR FORMULA

$$h = \left(\frac{Q}{(CL)}\right)^{2/3} = \left(\frac{3.0}{(3.087)(10)}\right)^{2/3} = 0.21 \text{ FT.}$$

h = 0.21' < 0.79' OK

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WATER PONDING WIDTH

SEE STORMWATER REPORT FOR STREET CAPACITY CALCULATIONS (10YR SPREAD WIDTH CONTAINED WITHIN CURB)

NO.	REVISION	DATE

8-12-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5933
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

DRAIN E2 - PLAN & PROFILE
STA. 1+00.00 TO 1+92.83

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C1.07

FOR PERMIT

Date: Aug 12, 2022, 11:37am User ID: jmay
File: P:\3003\34\07\Design\Civil\SIE2-3003407.dwg
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American Excelsior Company® Earth Science Division

Proud Participant in NTPEP and Proud Member of: ASTM International Member, Erosion Control, IECA Member

Product Participant of: QDOR Performance Verified

CURLEX® EROSION CONTROL BLANKETS INSTALLATION GUIDELINES

Before installing Curlex blankets, the seedbed shall be inspected by the Owner's Representative to ensure it has been properly compacted and fine graded to remove any existing rills. It shall be free of obstructions, such as tree roots, projections such as stones, and other foreign objects. The contractor shall proceed when satisfactory conditions are present. After the area has been properly shaped, seeded, fertilized, and compacted, remove the Curlex protective cover. Next, locate the start of the roll, making sure the roll is facing toward the area to be covered, and then roll out the product. The product shall be rolled out flat, even, and smooth without stretching the material then anchored to the subgrade.

Slopes: It is recommended the blankets be installed vertically on the slope; however, on short slopes it may be more practical to install horizontally across the width of the application when agreed upon by the Engineer prior to installation. If more than one width is required, simply abut the edges of the vertically installed blankets together and secure them with a common row of staples. Overlapping adjacent sides of Curlex blankets is not required when installed vertically on slopes. Curlex blankets shall be trenched at the head of the slope if the blanket cannot be extended three feet over the slope crest or if overland flow is anticipated from upslope areas.

Channels: Curlex blankets shall be centered to offset a seam in the middle of the waterway. They shall be installed in the same direction as the water flow. The adjoining blankets shall be installed away from the center of channel and overlapped. Curlex blanket installation should continue up the side slopes three feet above the anticipated high water elevation. Flanks exposed to runoff, or sheet flow, must be protected by a check slot or trenched. Curlex blankets shall be trenched at the start of the channel. Curlex blankets shall be anchored using a staggered staple pattern at end of roll overlaps and end of roll terminations.

Disclaimer: Curlex is a system for erosion control and revegetation on slopes and channels. American Excelsior Company (AEC) believes that the information contained herein to be reliable and accurate for use in erosion control and re-vegetation applications. However, since physical conditions vary from job site to job site and even within a given job site, AEC makes no performance guarantees and assumes no obligation or liability for the reliability or accuracy of information contained herein for the results, safety, or suitability of using Curlex, or for damages occurring in connection with the installation of any erosion control product whether or not made by AEC or its affiliates, except as separately and specifically made in writing. These guidelines are subject to change without notice.

850 Avenue H East | Arlington, Texas 76011
Phone 1-800-777-SOIL | Fax 817-385-3585 | www.Curlex.com

W0315R1116

American Excelsior Company® Earth Science Division

Proud Participant in NTPEP and Proud Member of: ASTM International Member, Erosion Control, IECA Member

Product Participant of: QDOR Performance Verified

MATERIAL SPECIFICATIONS
CURLEX® I

Materials:

Great Lakes Aspen (naturally seed free)
Polypropylene Netting
Stitching Thread
QuickGRASS® (green excelsior – optional)

Typical Roll Sizes:

Width:	4.0 ft (1.2 m)	8.0 ft (2.4 m)	16.0 ft (4.9 m)
Length:	112.5 ft (34.29 m)	112.5 ft (34.29 m)	112.5 ft (34.29 m)
Area:	50.0 yd² (41.8 m²)	100.0 yd² (83.6 m²)	200.0 yd² (167.2 m²)
Weight:	36.5 lb (16.6 kg)	73.0 lb (33.1 kg)	146.0 lb (66.2 kg)

Description:

Curlex I erosion control blanket (ECB) is a natural, stitched excelsior blanket that provides a temporary organic cover to reduce erosion, protect seeds, enhance germination, and hasten re-vegetation. Curlex I is furnished in rolls with polyethylene wrapping to protect against the elements prior to installation, and may be ordered in Master-Paks of fifteen rolls banded together to minimize material handling requirements. Curlex I is also available as QuickGRASS (green pigment). Curlex I shall be manufactured in the U.S.A.

Curlex I has a design soil loss ratio (event-based RUSLE C factor) of .018 and is typically suitable for slopes up to 2H:1V. Curlex I is rated for channel flows up to 7.0 ft/s (2.1 m/s) and 1.75 lb/ft² (84 Pa) shear stress.

Physical Properties:

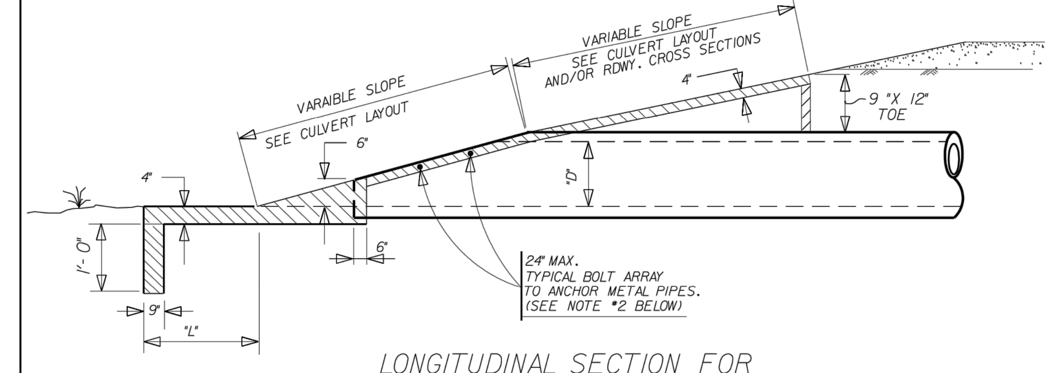
Fiber:	Great Lakes Aspen (naturally seed free) Curled, interlocking fibers with barbed edges
Fiber Size:	80% of fibers a minimum of 6 in (15.2 cm) long 0.038 in ± 0.008 in wide x 0.018 in ± 0.003 in thick (0.97 mm ± 0.20 mm wide x 0.46 mm ± 0.08 mm thick)
Weight[a]:	0.73 lb/yd² (0.40 kg/m²) ± 10% @ 22% Moisture
Thread Pattern:	No more than 4.0 in (10.2 cm) transverse stitch spacing
Net Material:	Polypropylene (green with oxo-biodegrader and UV degrader additives or white with UV degrader additive)
Net Openings:	1.0 in wide x 2.0 in long (25.4 mm wide x 50.8 mm long)
Net Configuration:	Top side only

[a] Weight is based on a dry fiber weight basis at time of manufacture. Baseline moisture content of Great Lakes Aspen excelsior is 22%.

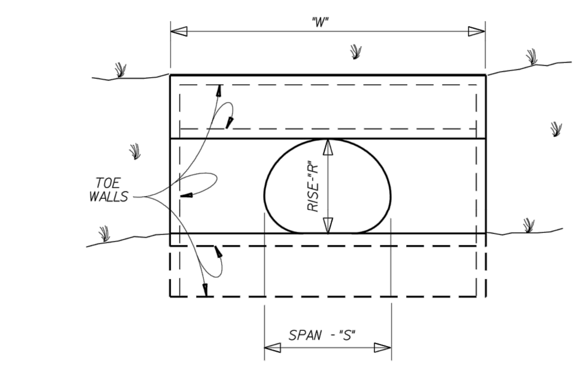
MADE IN THE U.S.A.

850 Avenue H East | Arlington, Texas 76011
Phone 1-800-777-SOIL | Fax 817-385-3585 | www.Curlex.com

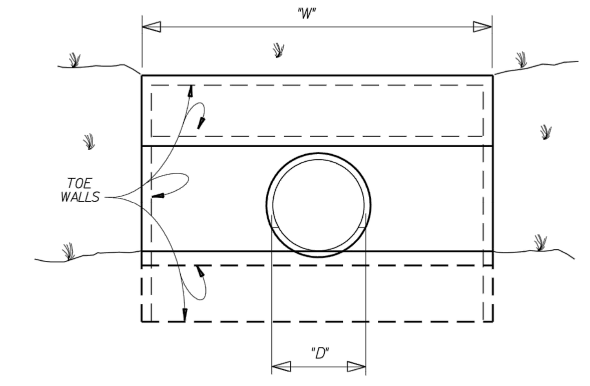
W0516R1116



LONGITUDINAL SECTION FOR CIRCULAR & ARCH PIPES



SINGLE C.M.P. ARCH PIPE CULVERT



SINGLE CIRCULAR PIPE CULVERT

(CMP or RCP)

DIMENSIONS FOR CIRCULAR (CMP and RCP) PIPE CULVERTS

"D" INSIDE DIA. of PIPE	"L"	"G"		"W"			
		CGM	RCP	SINGLE	DOUBLE	TRIPLE	QUADRUPLE
18"	2'- 0"	1'- 2"	0'- 9"	4'- 6"	7'- 2"	9'- 10"	12'- 6"
21"	2'- 6"	1'- 3"	0'- 10"	5'- 3"	8'- 4"	11'- 4"	13'- 4"
24"	3'- 0"	1'- 5"	0'- 11"	6'- 0"	9'- 5"	12'- 10"	16'- 3"
30"	4'- 0"	1'- 8"	1'- 1"	7'- 6"	11'- 8"	15'- 10"	20'- 0"
36"	5'- 0"	1'- 11"	1'- 3"	9'- 0"	13'-11"	18'- 10"	23'- 9"
42"	6'- 0"	2'- 2"	1'- 5"	10'- 6"	16'- 2"	21'- 10"	27'- 6"
48"	7'- 0"	2'- 5"	1'- 7"	12'- 0"	18'- 5"	24'- 10"	31'- 3"
54"	8'- 0"	2'- 10"	1'- 11"	13'-6"	20'- 10"	28'- 2"	35'- 6"
60"	9'- 0"	3'- 2"	2'- 0"	15'- 0"	23'- 2"	31'- 4"	39'- 6"

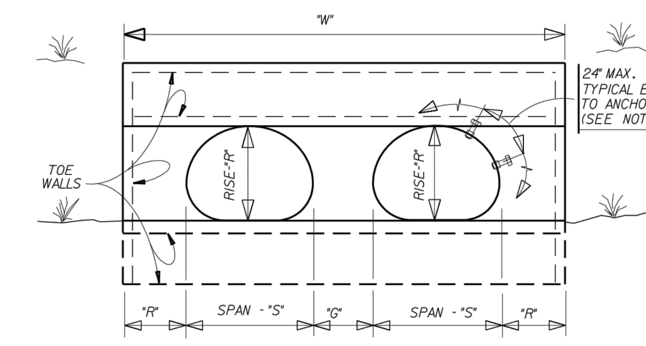
"G" IS MEASURED BETWEEN THE OUTER SURFACES OF THE PIPES.

DIMENSIONS FOR C.M.P. ARCH PIPE CULVERTS

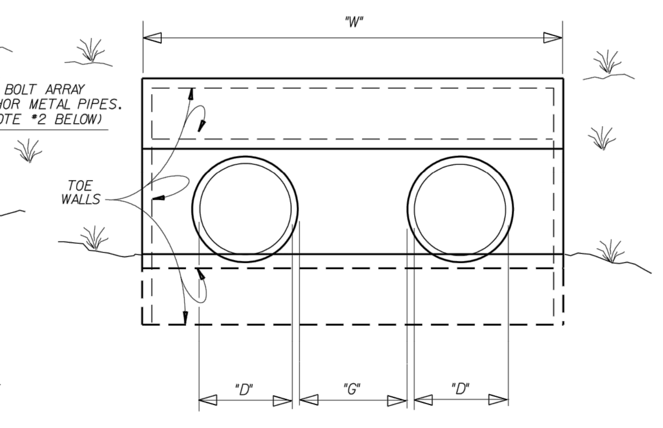
DESIGN SIZE	APPROX. ARCH DIM.		"L"	"G"	"W"			
	SPAN "S"	RISE "R"			SINGLE	DOUBLE	TRIPLE	QUADRUPLE
2	21"	15"	2'- 0"	1'- 2"	4'- 3"	7'- 2"	10'- 1"	13'- 0"
3	28"	20"	3'- 0"	1'- 5"	5'- 8"	9'- 5"	13'- 2"	16'- 11"
4	35"	24"	4'- 0"	1'- 8"	6'- 11"	11'- 6"	16'- 1"	20'- 8"
5	42"	29"	5'- 0"	1'- 11"	8'- 4"	13'- 9"	19'- 2"	24'- 7"
6	49"	33"	6'- 0"	2'- 2"	9'- 7"	15'- 10"	22'- 1"	28'- 4"
7	57"	38"	7'- 0"	2'- 5"	11'- 1"	18'- 3"	25'- 5"	32'- 7"
8	64"	43"	8'- 0"	2'- 10"	12'- 5"	20'- 8"	28'- 10"	37'- 0"
9	71"	47"	9'- 0"	3'- 2"	13'- 9"	22'- 10"	31'- 11"	41'- 0"

BASED ON 2-2/3" X 1/2" CORRUGATION
"G" IS MEASURED BETWEEN THE OUTER SURFACES OF THE PIPES.

/BRIDGE/STDS/DrH5hdwl.dgn



MULTIPLE C.M.P. ARCH PIPE CULVERT



MULTIPLE CIRCULAR PIPE CULVERT

(CMP or RCP)

NOTES:

1.) FOR RIPRAP QUANTITIES AND SLOPES, SEE CULVERT LAYOUT SHEET. CONCRETE SHALL BE CLASS B UNLESS OTHERWISE SHOWN IN THE PLANS.

2.) ALL METAL PIPES (CIRCULAR AND/OR ARCH) SHALL HAVE 5/8" X 6" GALVANIZED BOLTS WITH 2 HEX NUTS AT 24" CENTERS TO ANCHOR THE PIPE TO THE CONCRETE. THIS WORK WILL BE SUBSIDIARY TO THE RIPRAP HEADWALL.

3.) FOR CONCRETE ARCH PIPES, THE CMP ARCH PIPE CULVERT DIMENSIONS WILL HAVE TO BE ADJUSTED FOR THE PIPE WALL THICKNESS.

4.) FOR PIPES LARGER THAN SHOWN, USE THE CLEAR DISTANCE BETWEEN PIPES SHOWN IN ITEMS 460 AND/OR 464.

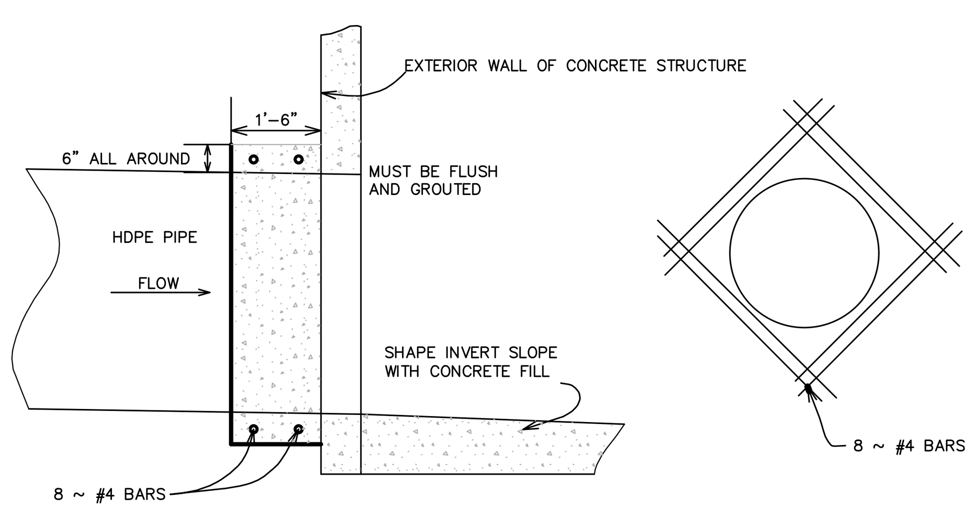
5.) IF THE SIDES OF THE HEADWALL IS ADJACENT TO A RIPRAP SLOPE AND IF THE TOP OF THE HEADWALL IS ADJACENT TO THE ROADWAY FOUNDATION OR RIPRAP SLOPE, THE SIDE AND TOP TOE WALLS MAY BE ELIMINATED IF APPROVED BY THE ENGINEER.

SAN ANTONIO DISTRICT STANDARD
RIPRAP HEADWALL

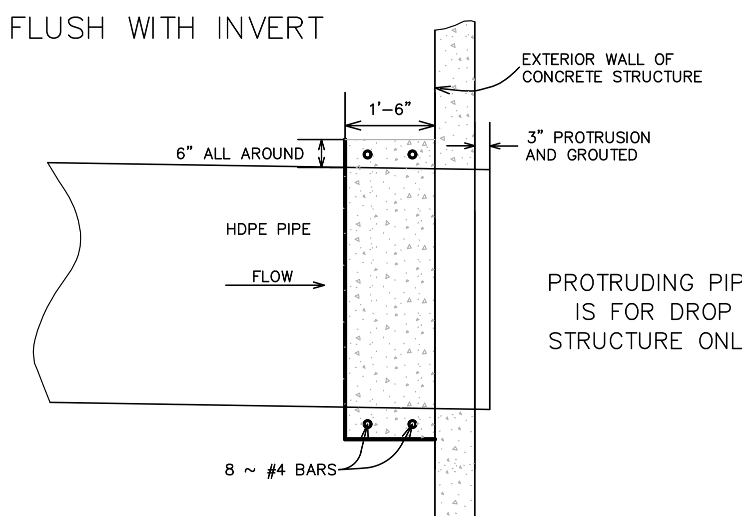
© 1998 Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6				
STATE	STATE DISTRICT	COUNTY		
TEXAS	SAT			
CONT.	SECT.	JOB	HIGHWAY NO.	

10/95



PIPE FLUSH WITH INVERT



PROTRUDING PIPE IS FOR DROP STRUCTURE ONLY

1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A," 3,000 P.S.I. AT 28 DAYS.

2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".

3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM. A–15. THE DEFORMATION SHALL CONFORM TO ASTM. A–305.

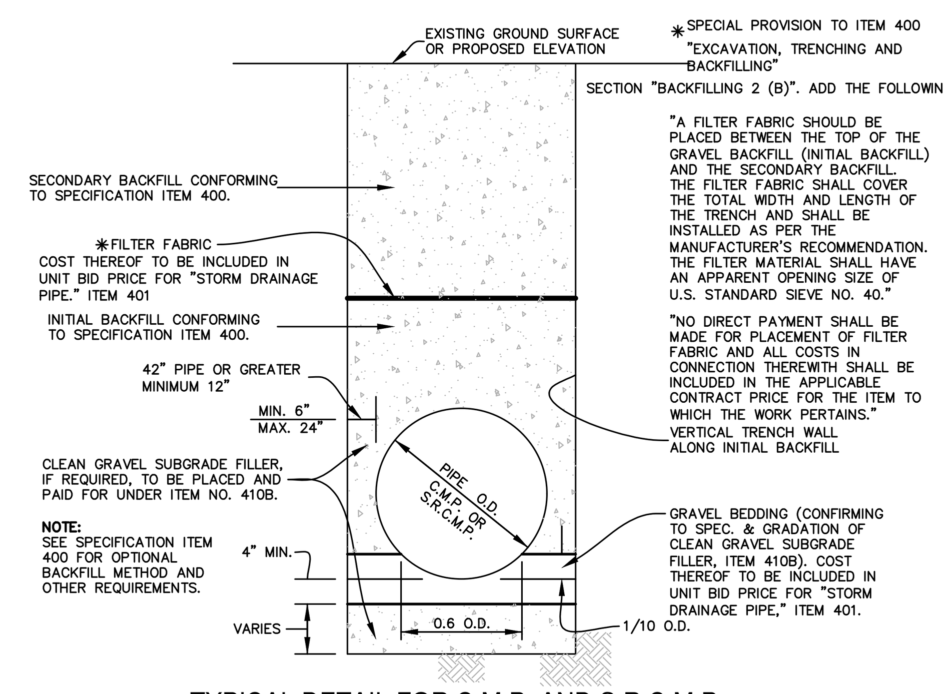
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.

5. ALL BARS INTERCEPTING MANHOLE OPENING AND REINFORCED CONCRETE PIPE SHALL BE FIELD–CUT.

6. WHERE LAPPING OF BARS IS REQUIRED, A MINIMUM LAP OF 33 DIAMETERS SHALL BE USED.

7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (3,000 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).

CONCRETE COLLAR DETAIL
NOT TO SCALE



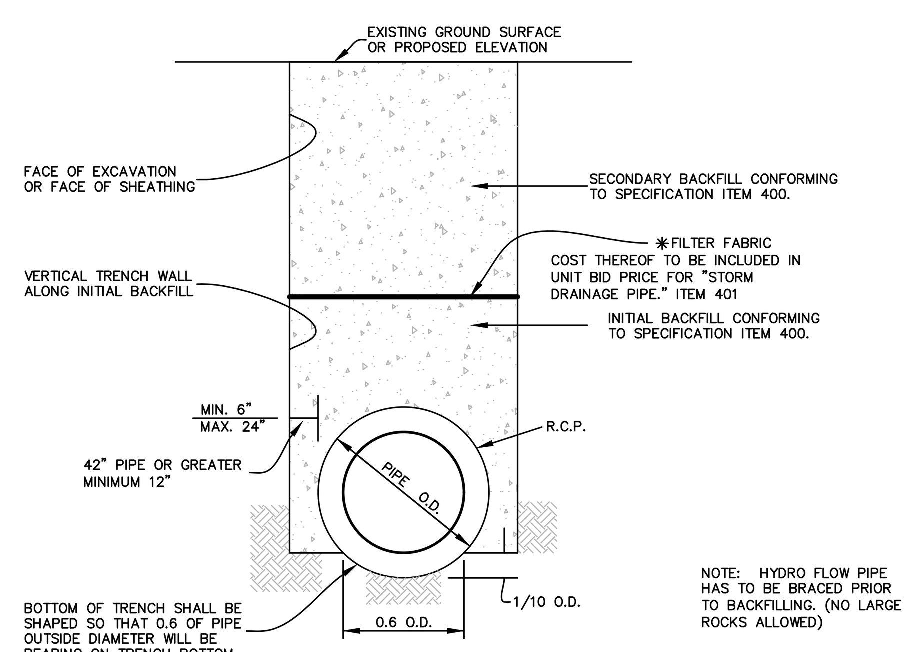
*SPECIAL PROVISION TO ITEM 400 "EXCAVATION, TRENCHING AND BACKFILLING"

SECTION "BACKFILLING 2 (B)". ADD THE FOLLOWING:

"A FILTER FABRIC SHOULD BE PLACED BETWEEN THE TOP OF THE GRAVEL BACKFILL (INITIAL BACKFILL) AND THE SECONDARY BACKFILL. THE FILTER FABRIC SHALL COVER THE TOTAL WIDTH AND LENGTH OF THE TRENCH AND SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATION. THE FILTER MATERIAL SHALL HAVE AN APPARENT OPENING SIZE OF U.S. STANDARD SIEVE NO. 40."

"NO DIRECT PAYMENT SHALL BE MADE FOR PLACEMENT OF FILTER FABRIC AND ALL COSTS IN CONNECTION THEREWITH SHALL BE INCLUDED IN THE APPLICABLE CONTRACT PRICE FOR THE ITEM TO WHICH THE WORK PERTAINS."

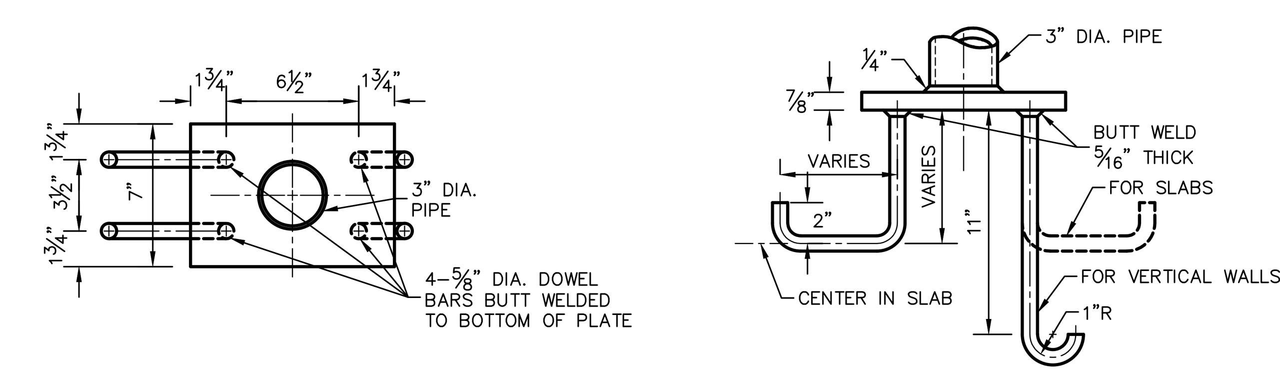
TYPICAL DETAIL FOR C.M.P. AND S.R.C.M.P.



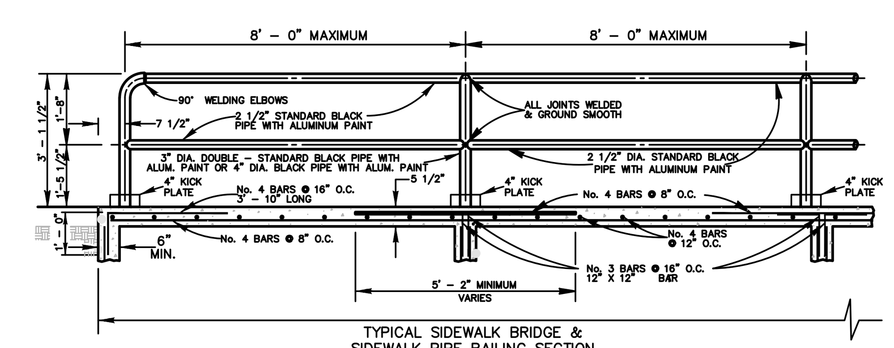
NOTE: HYDRO FLOW PIPE HAS TO BE BRACED PRIOR TO BACKFILLING. (NO LARGE ROCKS ALLOWED)

TYPICAL DETAIL

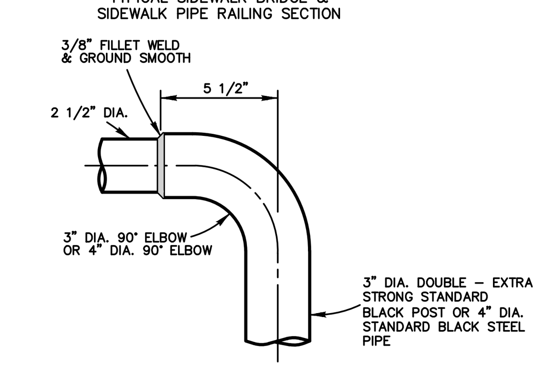
PIPE BEDDING AND BACKFILL DETAILS
NOT–TO–SCALE



PIPE ANCHORAGE DETAIL
NOT–TO–SCALE



TYPICAL SIDEWALK BRIDGE & SIDEWALK PIPE RAILING SECTION



DETAIL OF 90° WELDING ELBOWS

PIPE RAILING DETAIL
NOT–TO–SCALE

NO.	REVISION	DATE

6–15–2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
DRAINAGE DETAILS

PLAT NO.
JOB NO. 30034–07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C1.10

Date: Jun 15, 2022, 11:47am User ID: tmartin
File: P:\300\34\07\Design\Civil\SDDT-3003407.dwg

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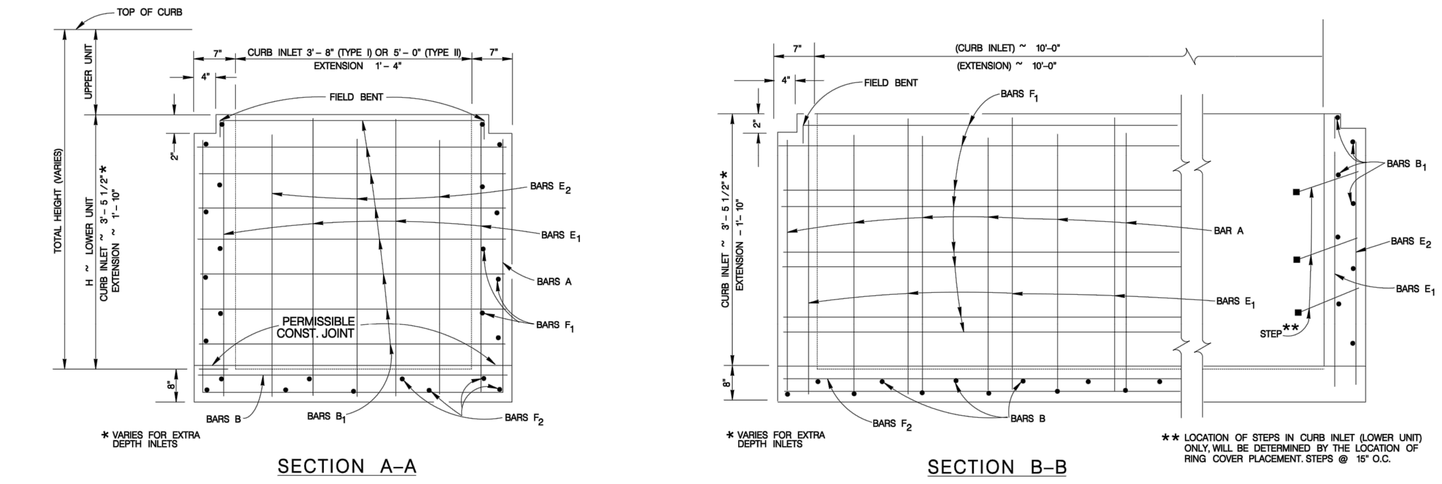
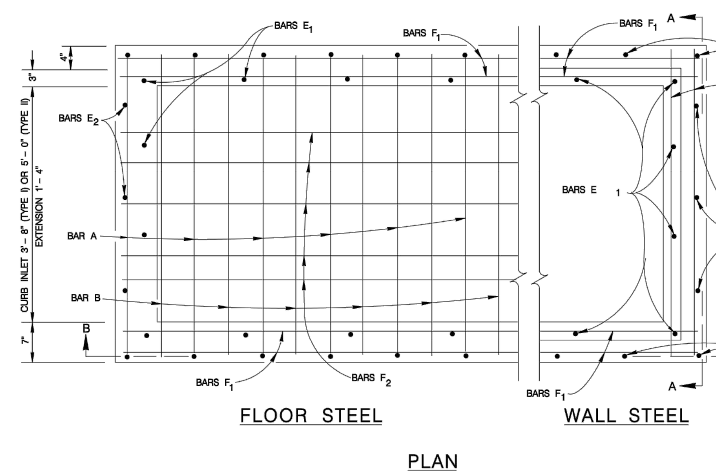
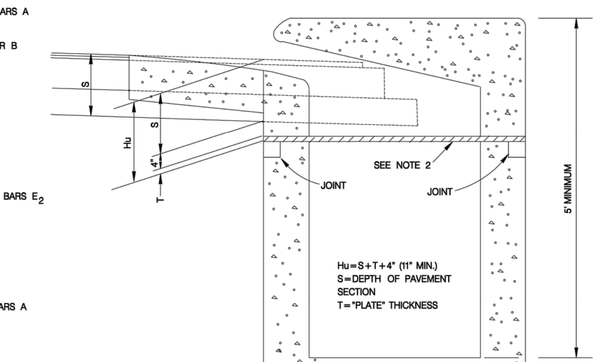


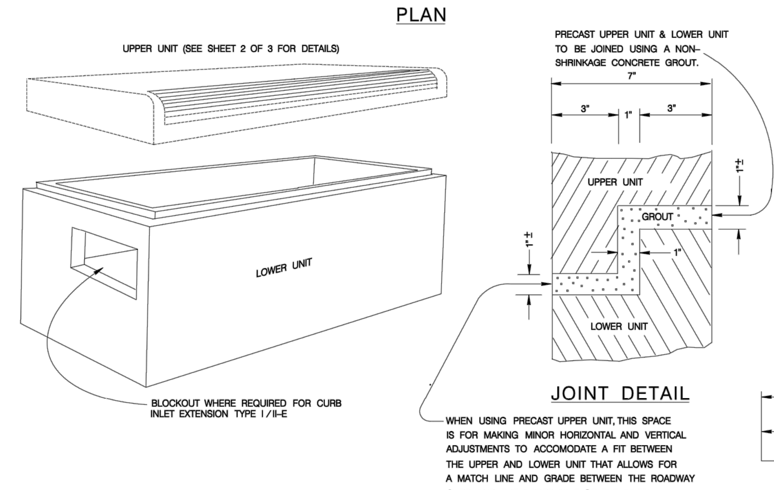


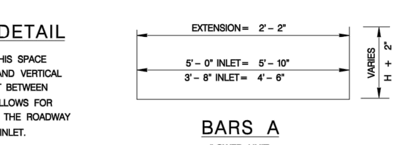


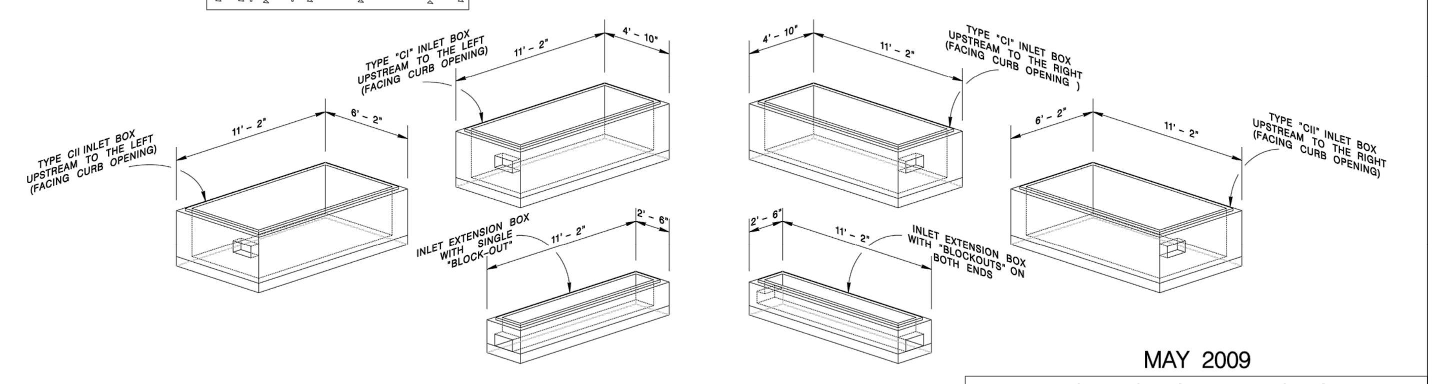
PHASE CONSTRUCTION

NOTES FOR PHASE CONSTRUCTION (WHEN DIRECTED BY THE ENGINEER):

1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "Hu" BELOW THE INLET AND EXTENSION GUTTER LINE ELEVATION.
2. CAP THE CURB INLET AND EXTENSION WITH A STEEL PLATE APPROVED BY THE ENGINEER AND CONSTRUCT THE ROADWAY OVER THE PLATE.
3. AFTER THE ROADWAY IS COMPLETED, BUT PRIOR TO THE FINAL HMAC OVERLAY, SAW CUT THE PAVEMENT, REMOVE THE PLATE AND COMPLETE THE UPPER PORTION OF THE CURB INLET AND /OR EXTENSION.







CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)

REINFORCING STEEL

LOWER UNIT 10' X 3'- 8" (TYPE I)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	4'-6"
B_1	VARIES	#4	12"	4'-6"
E_1	20	#4	18"±	VARIES
E_2	6	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'-10"
F_2	9	#4	—	10'-10"

LOWER UNIT 10' X 5'- 0" (TYPE II)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	5'-10"
B_1	VARIES	#4	12"	5'-10"
E_1	22	#4	18"±	VARIES
E_2	8	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'-10"
F_2	11	#4	—	10'-10"

GENERAL NOTES

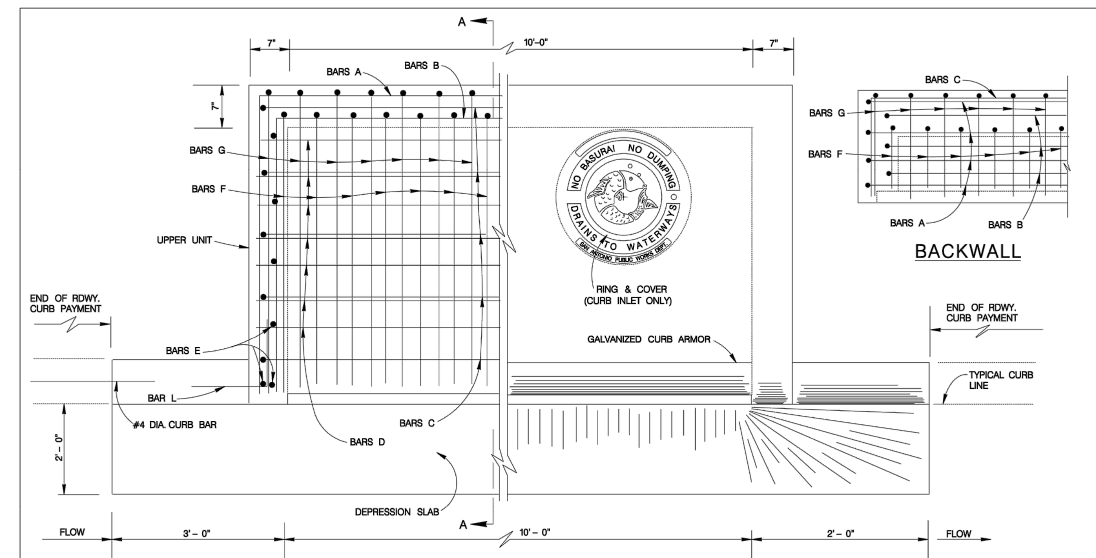
1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E (IL-C).
2. TYPE C-II INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN-LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
5. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2".
7. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
8. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3 /4".
9. DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
10. FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
11. ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
12. PAYMENT FOR ALL EXCAVATION, BACK-FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER, CURB ARMOR AND STEPS SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
13. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
14. GALVANIZED BOLTS, NUTS, WASHERS, PLATES AND GASKETS ARE SUBSIDIARY TO INLETS.
15. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE INLETS, WHEN USING PRECAST UNITS.
16. ALL BARS AT PIPE BLOCKOUT LOCATIONS SHALL BE CUT OR BEND.
17. ALL LOWER UNITS SHALL RECEIVE INVERT MORTAR SHAPING.
18. PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 3" BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SKEW OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".

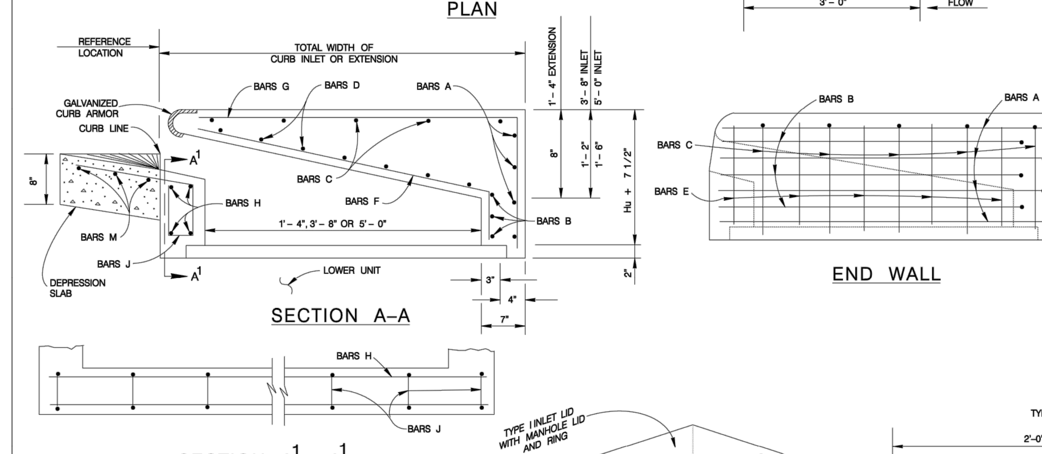
MAY 2009

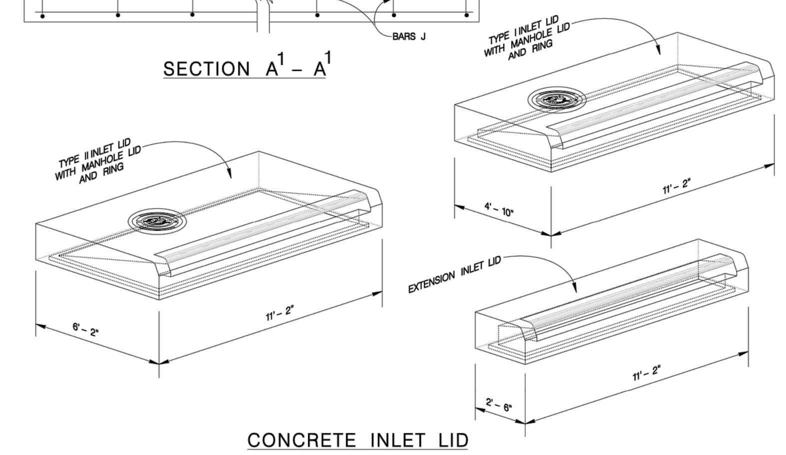
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 1 OF 3

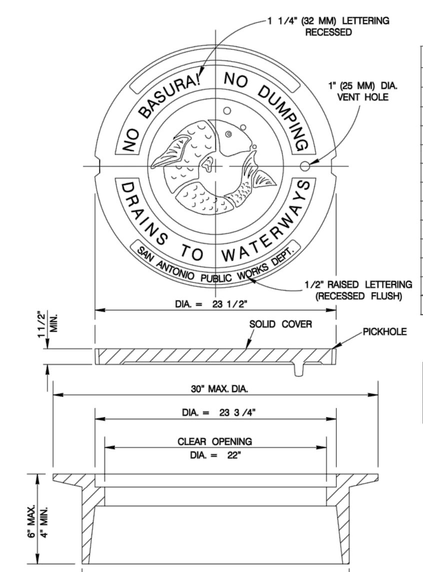
____% SUBMITTAL | PROJECT NO.:________ | DATE:________
DRWN. BY: V. VASQUEZ | DSGN. BY: L.E. MALTOS, P.E. | CHKD. BY: R.S. HOSSEINI, P.E. | SHEET NO.:____OF____







CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)



MANHOLE LID & RING DETAIL (ITEM 409)

NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.

SEE SHEET 1 OF 3 FOR GENERAL NOTES.

REINFORCING STEEL (FOR Hu=11")

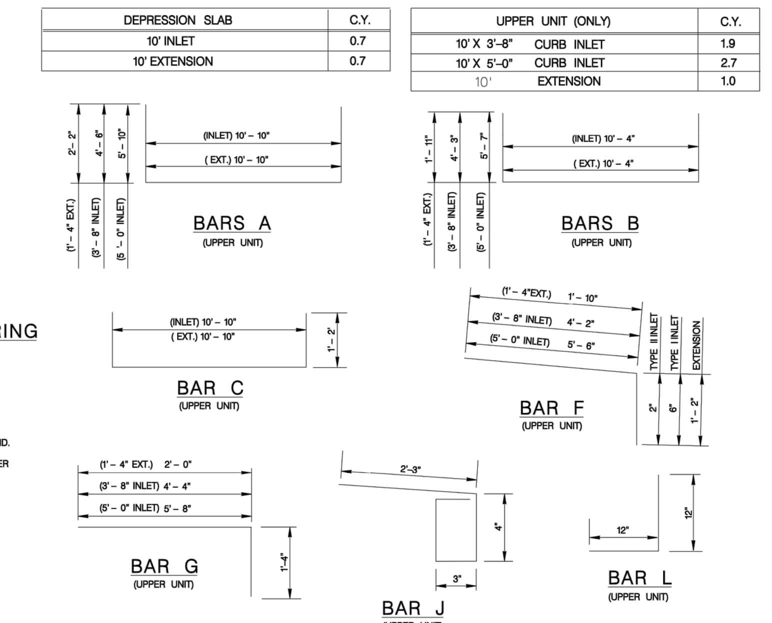
UPPER UNIT 10' X 3'-8" (TYPE I)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	19'-10"	53
B	3	#4	—	18'-10"	38
C	5	#4	11"	13'-2"	44
D	7	#4	6"	10'-10"	51
E	12	#4	11"	1'-2"	9
F	21	#6	6"	4'-8"	147
G	22	#6	6"	5'-8"	187
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					620 LBS.

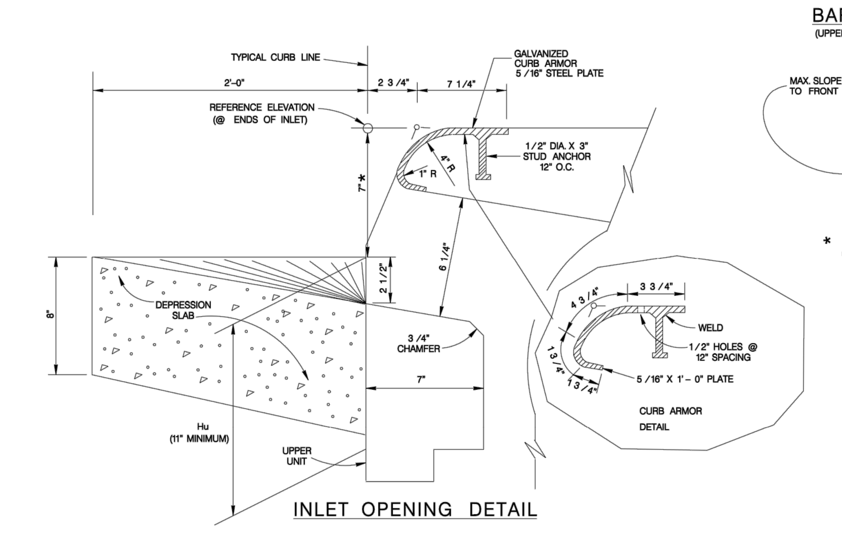
UPPER UNIT 10' X 5' (TYPE II)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	22'-6"	60
B	3	#4	—	21'-6"	43
C	7	#4	11"	13'-2"	62
D	11	#4	6"	10'-10"	80
E	16	#4	11"	1'-2"	13
F	21	#6	6"	5'-8"	179
G	22	#6	6"	7'-0"	231
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					759 LBS.

CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")

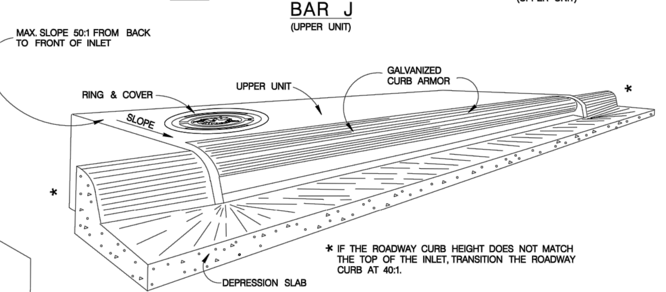
DEPRESSION SLAB	C.Y.
10' INLET	0.7
10' EXTENSION	0.7

UPPER UNIT (ONLY)		C.Y.
10' X 3'-8"	CURB INLET	1.9
10' X 5'-0"	CURB INLET	2.7
10'	EXTENSION	1.0





INLET OPENING DETAIL

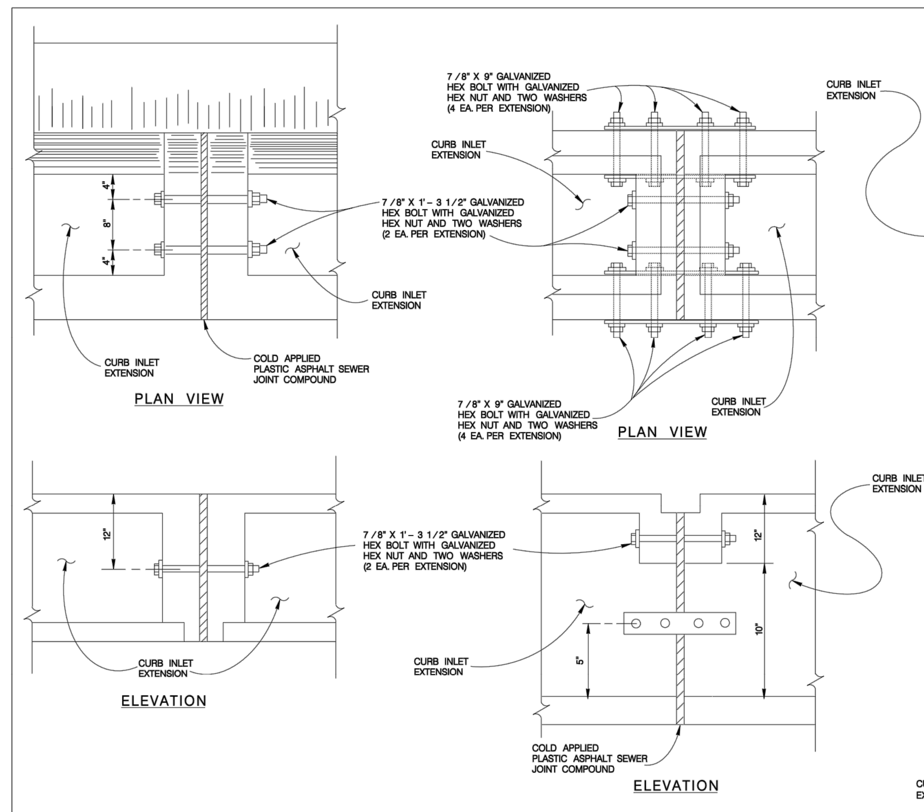


MAY 2009

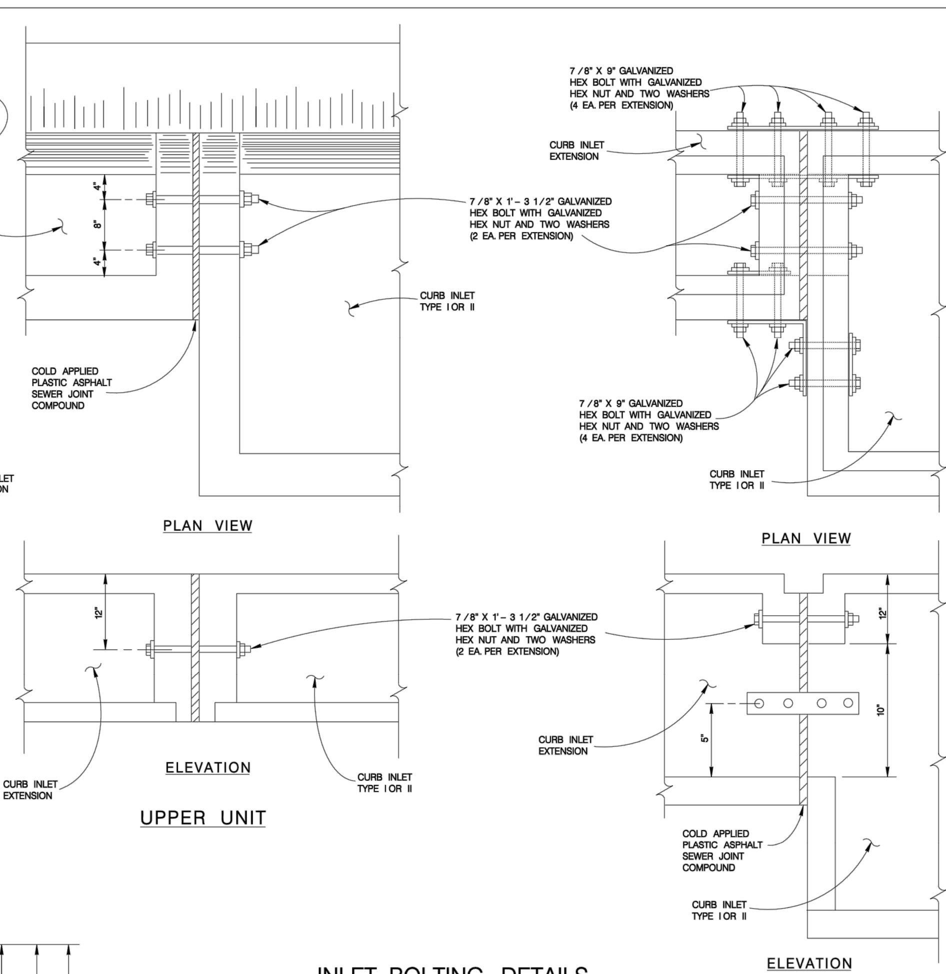
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 2 OF 3

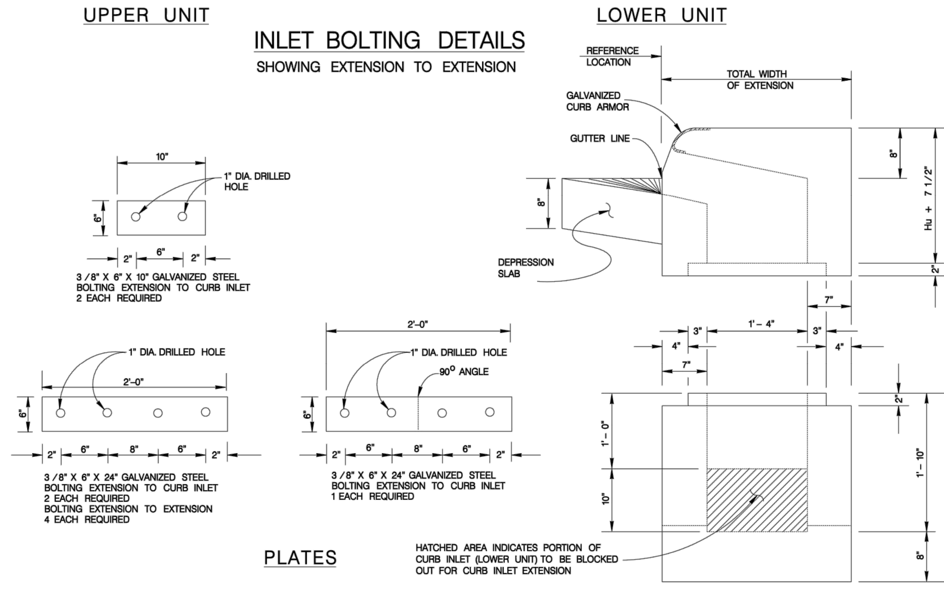
____% SUBMITTAL | PROJECT NO.:________ | DATE:________
DRWN. BY: V. VASQUEZ | DSGN. BY: L.E. MALTOS, P.E. | CHKD. BY: R.S. HOSSEINI, P.E. | SHEET NO.:____OF____



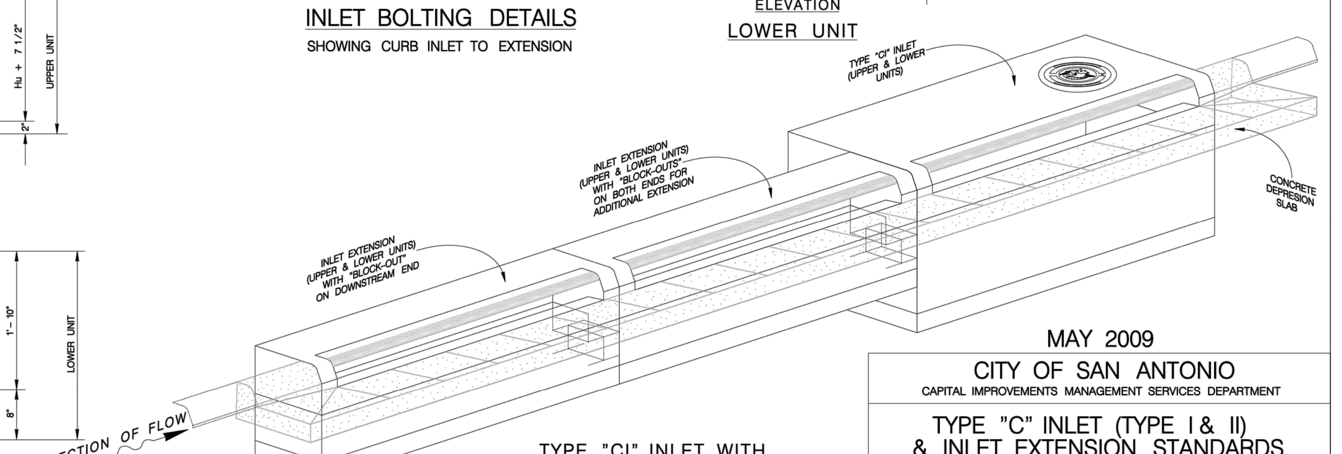
INLET BOLTING DETAILS
SHOWING EXTENSION TO EXTENSION



INLET BOLTING DETAILS
SHOWING CURB INLET TO EXTENSION



SECTION A-A CURB INLET EXTENSION TYPE E



TYPE "CI" INLET WITH INLET EXTENSION BOXES

UPPER UNIT EXTENSION (FOR Hu = 11")					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	15'- 2"	41
B	3	#4	—	14'- 2"	28
C	3	#4	11"	13'- 2"	26
D	3	#4	6"	10'- 10"	22
E	8	#4	11"	1 '- 2"	6
F	21	#6	6"	2'- 0"	63
G	22	#6	6"	3'- 4"	110
H	4	#4	—	10'- 10"	29
J	12	#4	12"	3'- 6"	28
L	4	#4	—	2'- 0"	5
M	3	#4	—	14'- 8"	29
REINFORCING STEEL				LBS.	387
CLASS "A" CONCRETE				C.Y.	1.0

LOWER UNIT EXTENSION					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	12	#4	12"	6'- 2"	49
B	11	#4	12"	2'- 2"	16
B_1	3	#4	12"	2'- 2"	4
E_1	18	#4	18" ±	2'- 3"	27
E_2	4	#4	18" ±	2'- 1"	6
F_1	16	#4	12" ±	10'- 10"	116
F_2	5	#4	—	10'- 10"	36
REINFORCING STEEL				LBS.	254
CLASS. "A" CONCRETE				C.Y.	1.4

GENERAL NOTES

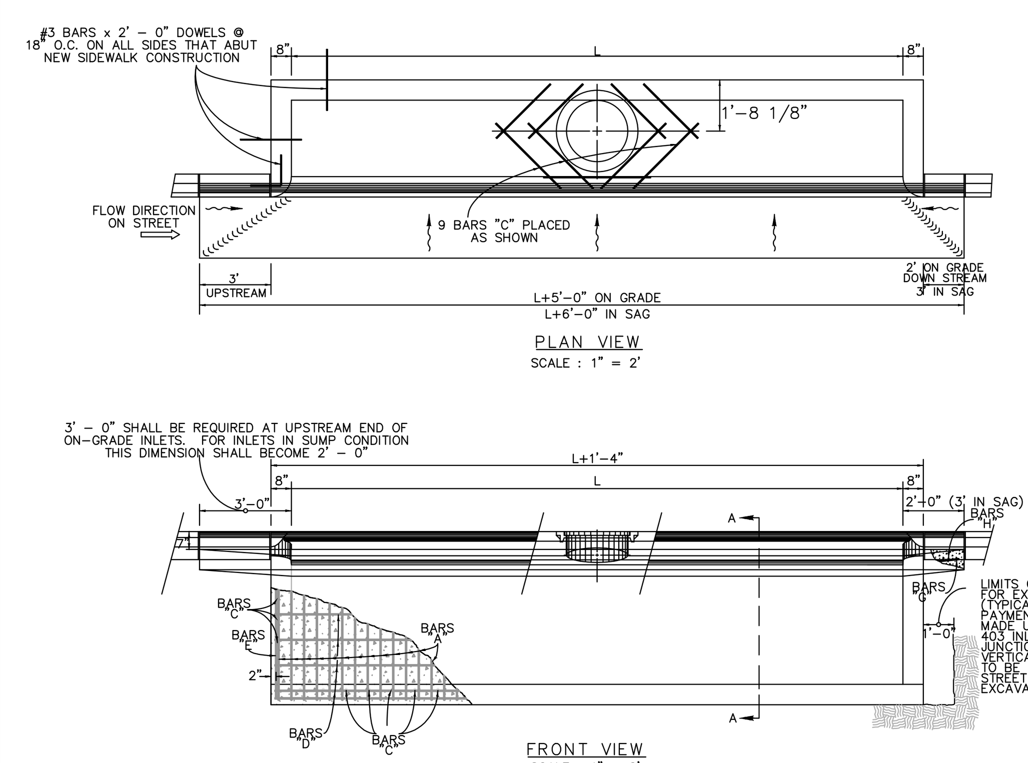
1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS THE EXTENSION(S) SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL, NOTES & VARIOUS OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET, REFER TO SHEETS 1 & 2.

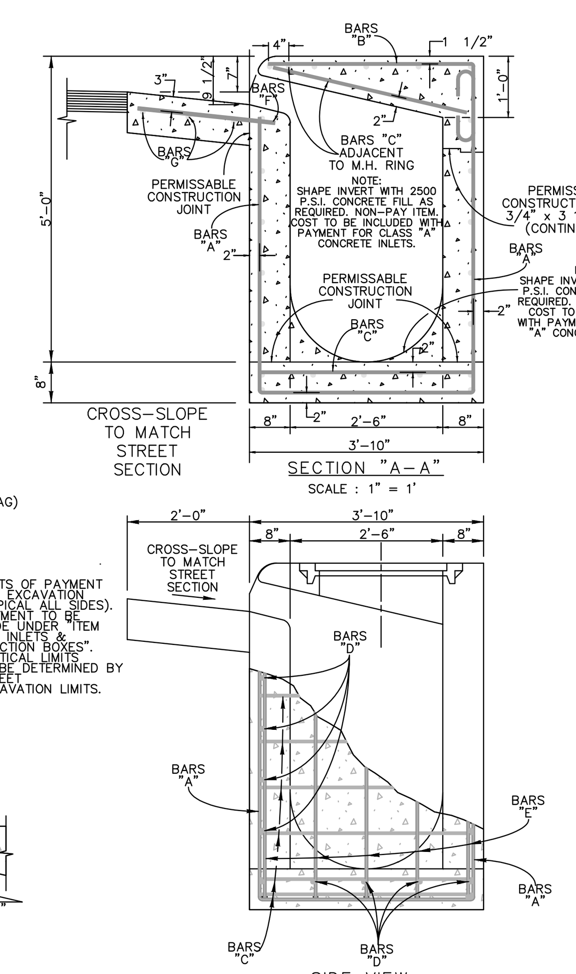
MAY 2009

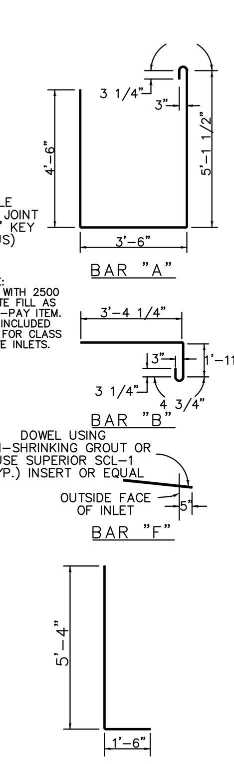
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 3 OF 3

____% SUBMITTAL | PROJECT NO.:________ | DATE:________
DRWN. BY: V. VASQUEZ | DSGN. BY: L.E. MALTOS, P.E. | CHKD. BY: R.S. HOSSEINI, P.E. | SHEET NO.:____OF____







L	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=5'-0"	A	15	4	5" O.C.	13'-9 1/2"	138
	B	15	4	5" O.C.	5'-1 3/4"	52
	C	30	4	9" O.C.	3'-6"	70
	D	22	4	10" O.C.	6'-1"	89
	E	10	4	10 1/2" O.C.	6'-10"	46
	F	6	5	12" O.C.	2'-3"	27
	G	3	4	12" O.C.	9'-8"	20
	H	5	5	12" O.C.	1'-8"	9

* CONCRETE TOTAL=3.53 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=438 LBS.

L	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=10'-0"	A	27	4	5" O.C.	13'-9 1/2"	249
	B	27	4	5" O.C.	5'-1 3/4"	93
	C	37	4	9" O.C.	3'-6"	87
	D	22	4	10" O.C.	11'-1"	163
	E	10	4	10 1/2" O.C.	6'-10"	46
	F	12	5	12" O.C.	2'-3"	27
	G	3	4	12" O.C.	14'-8"	30
	H	5	5	12" O.C.	1'-8"	9

* CONCRETE TOTAL=5.75 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=704 LBS.

L	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=15'-0"	A	39	4	5" O.C.	13'-9 1/2"	359
	B	39	4	5" O.C.	5'-1 3/4"	134
	C	43	4	9" O.C.	3'-6"	101
	D	22	4	10" O.C.	16'-1"	236
	E	10	4	10 1/2" O.C.	6'-10"	46
	F	17	5	12" O.C.	2'-3"	38
	G	3	4	12" O.C.	19'-8"	40
	H	5	5	12" O.C.	1'-8"	9

* CONCRETE TOTAL=7.97 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=963 LBS.

L	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=20'-0"	A	51	4	5" O.C.	13'-9 1/2"	470
	B	51	4	5" O.C.	5'-1 3/4"	175
	C	50	4	9" O.C.	3'-6"	117
	D	22	4	10" O.C.	21'-1"	310
	E	10	4	10 1/2" O.C.	6'-10"	46
	F	22	5	12" O.C.	2'-3"	50
	G	3	4	12" O.C.	24'-8"	50
	H	5	5	12" O.C.	1'-8"	9

* CONCRETE TOTAL=10.19 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=1227 LBS.

L	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=25'-0"	A	63	4	5" O.C.	13'-9 1/2"	580
	B	63	4	5" O.C.	5'-1 3/4"	217
	C	57	4	9" O.C.	3'-6"	133
	D	22	4	10" O.C.	26'-1"	383
	E	10	4	10 1/2" O.C.	6'-10"	46
	F	27	5	12" O.C.	2'-3"	61
	G	3	4	12" O.C.	24'-8"	60
	H	5	5	12" O.C.	1'-8"	9

* CONCRETE TOTAL=12.41 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=1489 LBS.

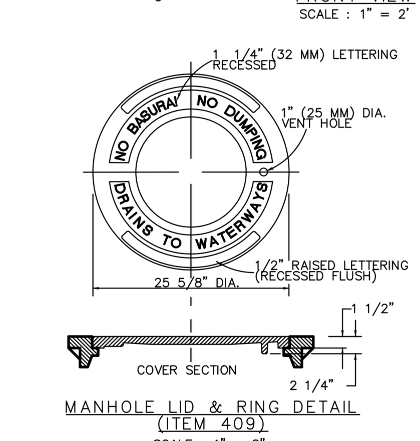
L	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=30'-0"	A	75	4	5" O.C.	13'-9 1/2"	691
	B	75	4	5" O.C.	5'-1 3/4"	258
	C	63	4	9" O.C.	3'-6"	147
	D	22	4	10" O.C.	31'-1"	457
	E	10	4	10 1/2" O.C.	6'-10"	46
	F	32	5	12" O.C.	2'-3"	72
	G	3	4	12" O.C.	34'-8"	70
	H	5	5	12" O.C.	1'-8"	9

* CONCRETE TOTAL=14.63 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=1750 LBS.

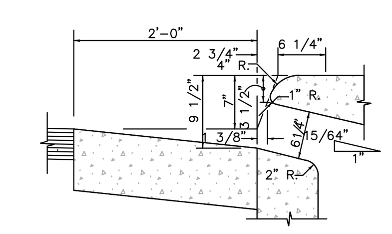
* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY MANHOLE AND REINFORCED CONC. PIPE.
* INCLUDES CONCRETE GUTTER FOR ON GRADE INLET. REDUCE BY .05 C.Y. FOR INLETS IN SUMP.

GENERAL NOTES

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER BARS.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED TO 3 / 4"
5. CONSTRUCTION JOINT SHOWN AT FLOWLINE MAY BE RAISED A MAXIMUM OF 6" AT THE CONTRACTOR'S DISCRETION. ADJUST LENGTH OF VERTICAL STEEL AS REQUIRED.
6. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
7. INVERT OF DROP INLET TO BE SHAPED WITH CONCRETE FILL TO AFFECT DRAINAGE TO OUTLET PIPE.
8. DELETE 4 "C" BARS FROM SCHEDULE QUANTITIES IF MANHOLE RING AND COVER ARE PLACED AT END OF INLET.
9. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
10. PAYMENT FOR ALL EXCAVATION, BACK FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".



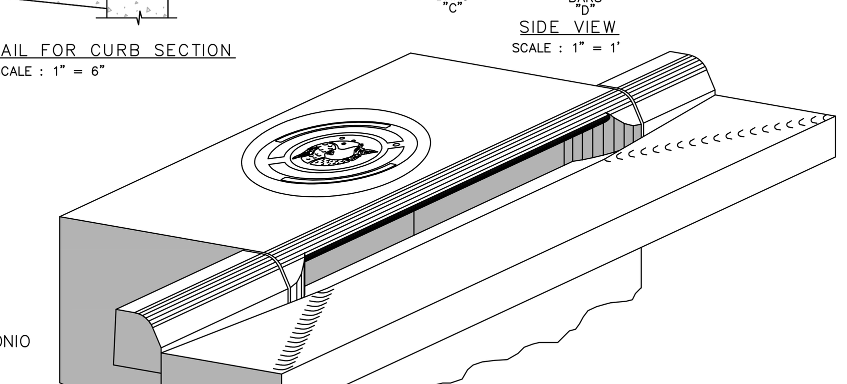
MANHOLE LID & RING DETAIL (ITEM 409)
SCALE : 1" = 8"



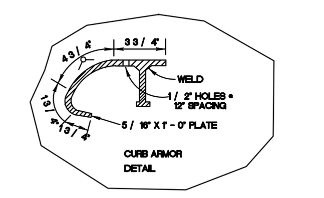
OPENING DETAIL FOR CURB SECTION
SCALE : 1" = 6"

NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.
6. MANHOLE SHOULD REFERENCE THE CITY OF CIBOLO.



ISOMETRIC VIEW



TYPE "C" INLET STANDARDS

NO.	REVISION	DATE

6-15-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS I SAN ANTONIO I AUSTIN I HOUSTON I FT WORTH I DALLAS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

DRAINAGE DETAILS

PLAT NO. ________
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C1.11

Date: Jun 15, 2022, 11:48am User ID: tmartin
File: P:\300\34\07\Design\Civil\SDDT-3003407.dwg

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FOR PERMIT

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

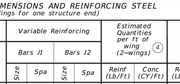
Maximum Wingwall Height Hw	Dimensions W	X	Y	Z	Variable Reinforcing Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per Ft of wing (2-wings) ④ Reinf (Lb/Ft)	Conc (CY/Ft)	Estimated Quantities per Ft of Toewall (1-toewall) Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-0"	6'-0"	2'-12"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING (2-wings)

Bar	Size	No.	Spa
D1	#6	–	1'-0"
D2	#6	–	1'-0"
E1	#4	–	1'-0"
F	#4	–	1'-0"
G	#6	–	8"
M1	#4	4	–
P	#4	–	1'-0"
V	#4	–	1'-0"

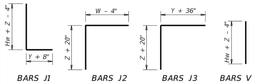
TABLE OF TOEWALL REINFORCING

Bar	Size	No.	Spa
J3	#4	–	1'-0"
M2	#4	2	–
E2	#4	–	1'-0"



BARS D1

BARS D2



BARS J1 BARS J2 BARS J3 BARS V

WING DIMENSION FORMULAS:
(All values are in Feet.)

Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW-1
= (Hw - 1') (SL) ÷ cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw - 0.5') (SL) ÷ cosine (θ) for Type PW-2 and Hw < 4'

For cast-in-place culverts:
Ltw = (IN) (S) ÷ (N + 1) (U)] ÷ cosine (θ)

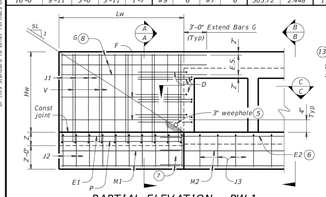
For precast culverts:
Ltw = (IN) (2 U + S) ÷ (N - 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (Z)(Hw)(Lw) for Type PW-1
= (Z)(Hw)(Lw) - 6 SF for Type PW-2 and Hw ≥ 4'
= (Z)(Hw)(Lw) - 1.5 SF for Type PW-2 and Hw < 4'

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio. (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

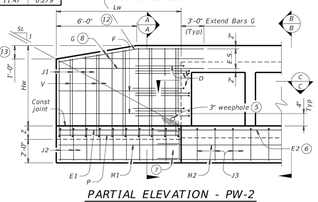
See applicable box culvert standard sheet for S, H, T, and U values.

1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew ~ 1"
   For 30° skew ~ 2"
   For 45° skew ~ 3"
4. Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

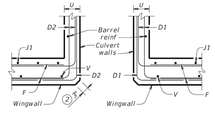
    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elswhere in the plans.
12. 3'-0" for Hw < 4'.
13. 6" for Hw < 4'.



PARTIAL ELEVATION - PW-1

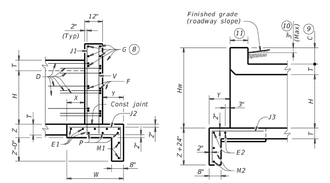


PARTIAL ELEVATION - PW-2



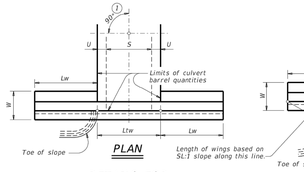
SECTION C-C - PW-1

SECTION C-C - PW-2

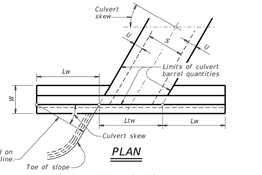


SECTION A-A
(Showing wing reinforcement.)

SECTION B-B
(Showing wing reinforcement.)



PLAN
DETAILS FOR NON-SKEWED BOX CULVERTS



PLAN
DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

DISCLAIMER:
The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS
WITH PARALLEL WINGS FOR BOX CULVERTS TYPES PW-1 AND PW-2

PW

FILE: pwsta01-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

DESIGNER NOTES:
Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall. Type PW-2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:
Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Maximum Wingwall Height Hw	Dimensions W	X	Y	Z	Variable Reinforcing Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per ft of wing length (2-wings) ③ Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING (2-wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-0"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:
(All values are in feet.)

Hw = H + T + C - 0.250'
Lw = (Hw - 0.333') (SL)

For cast-in-place culverts:
Ltw = (N) (S) ÷ (N + 1) (U)

For precast culverts:
Ltw = (N) (2U + S) ÷ (N + 1) (0.5)

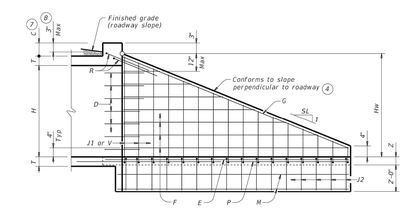
Total Wingwall Area (two wings ~ SF) = (Hw + 0.333) (Lw)

Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans

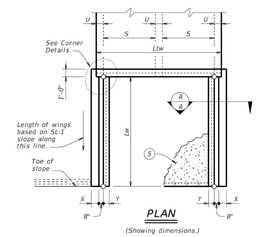
See applicable box culvert standard sheet for H, S, T, and U values.

1. Extend Bars P 3'-0" minimum into bottom slab of box culvert.
2. Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.
3. Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.
4. Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
5. When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
6. At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
7. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
8. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

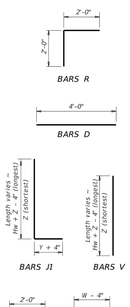
   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

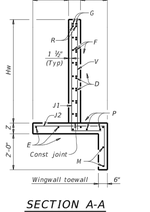


INSIDE ELEVATION
(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)

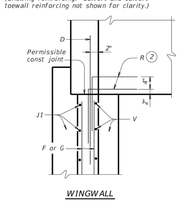


PLAN
(Showing dimensions.)

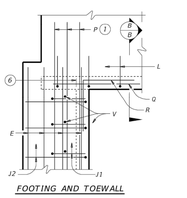




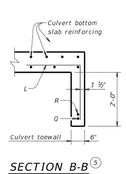
SECTION A-A



WINGWALL



FOOTING AND TOEWALL



SECTION B-B ⑤

CORNER DETAILS

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS
WITH STRAIGHT WINGS FOR 0° SKEW BOX CULVERTS

SW-0

FILE: sw-0ste-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
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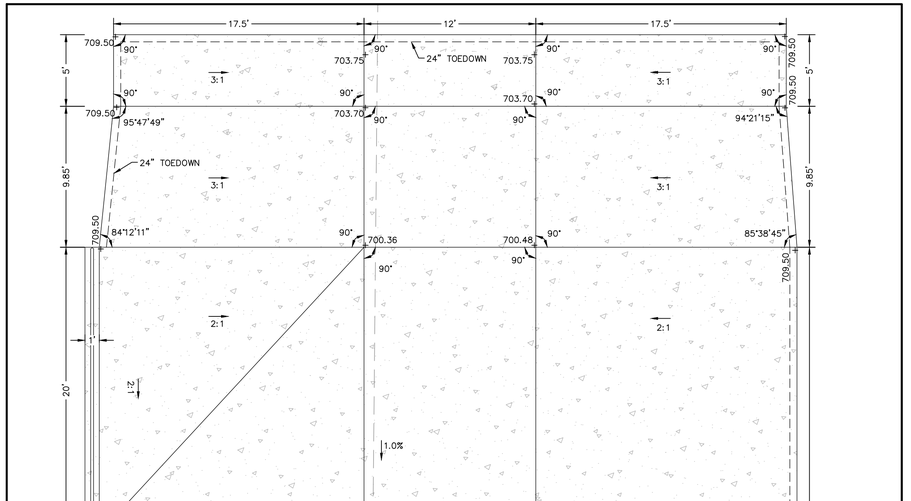
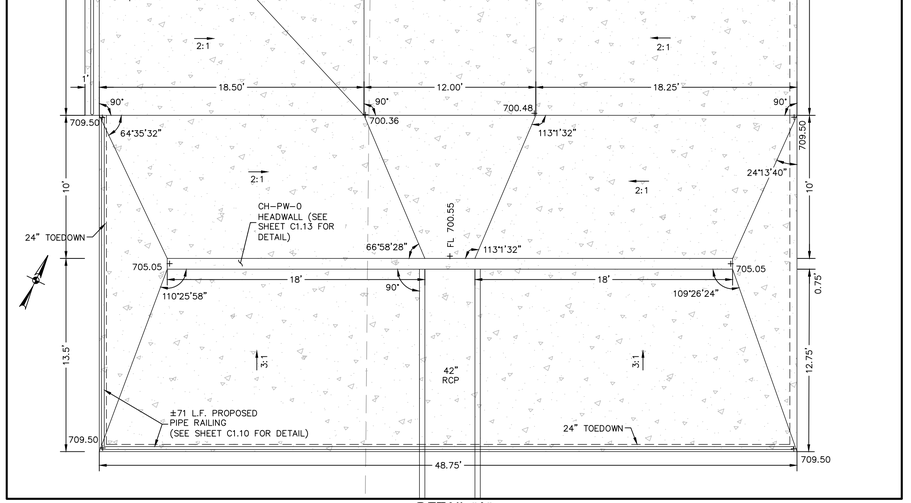


DETAIL "A"
1" = 5'



DETAIL "A"
1" = 5'

NO.	REVISION	DATE

6-15-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
DRAINAGE DETAILS

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C1.12

FOR PERMIT

Date: Jun 15, 2022, 11:48am User ID: tmartin
File: P:\300\34\07\Design\Civil\SD07-30034O7.dwg
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BOX DATA

S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	Fill Height (ft.)	M (Min) (in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	① Lift Weight (tons)
SECTION DIMENSIONS							REINFORCING (sq. in. / ft.) ②							
9	4	9	9	9	< 2	-	0.30	0.36	0.28	0.22	0.22	0.22	0.22	13.7
9	4	9	9	9	2 < 3	54	0.35	0.34	0.31	0.22	-	-	-	13.7
9	4	9	9	9	3 - 5	50	0.28	0.27	0.27	0.22	-	-	-	13.7
9	4	9	9	9	10	49	0.31	0.30	0.31	0.22	-	-	-	13.7
9	4	9	9	9	15	49	0.40	0.40	0.41	0.22	-	-	-	13.7
9	4	9	9	9	20	44	0.52	0.51	0.52	0.22	-	-	-	13.7
9	4	9	9	9	25	44	0.65	0.64	0.65	0.22	-	-	-	13.7
9	5	9	9	9	< 2	-	0.28	0.38	0.31	0.22	0.22	0.22	0.22	14.6
9	5	9	9	9	2 < 3	54	0.32	0.38	0.34	0.22	-	-	-	14.6
9	5	9	9	9	3 - 5	49	0.25	0.30	0.30	0.22	-	-	-	14.6
9	5	9	9	9	10	49	0.28	0.33	0.34	0.22	-	-	-	14.6
9	5	9	9	9	15	44	0.36	0.43	0.45	0.22	-	-	-	14.6
9	5	9	9	9	20	44	0.47	0.56	0.57	0.22	-	-	-	14.6
9	5	9	9	9	25	44	0.58	0.69	0.71	0.22	-	-	-	14.6
9	6	9	9	9	< 2	-	0.25	0.40	0.34	0.22	0.22	0.22	0.22	15.5
9	6	9	9	9	2 < 3	54	0.29	0.41	0.38	0.22	-	-	-	15.5
9	6	9	9	9	3 - 5	49	0.23	0.33	0.33	0.22	-	-	-	15.5
9	6	9	9	9	10	49	0.26	0.35	0.37	0.22	-	-	-	15.5
9	6	9	9	9	15	44	0.33	0.46	0.48	0.22	-	-	-	15.5
9	6	9	9	9	20	44	0.42	0.60	0.61	0.22	-	-	-	15.5
9	6	9	9	9	25	44	0.52	0.74	0.75	0.22	-	-	-	15.5
9	7	9	9	9	< 2	-	0.23	0.42	0.36	0.22	0.22	0.22	0.22	16.4
9	7	9	9	9	2 < 3	59	0.26	0.44	0.41	0.22	-	-	-	16.4
9	7	9	9	9	3 - 5	54	0.22	0.35	0.35	0.22	-	-	-	16.4
9	7	9	9	9	10	49	0.24	0.37	0.39	0.22	-	-	-	16.4
9	7	9	9	9	15	44	0.31	0.48	0.51	0.22	-	-	-	16.4
9	7	9	9	9	20	44	0.39	0.62	0.65	0.22	-	-	-	16.4
9	8	9	9	9	< 2	-	0.22	0.43	0.39	0.22	0.22	0.22	0.22	17.3
9	8	9	9	9	2 < 3	59	0.24	0.46	0.43	0.22	-	-	-	17.3
9	8	9	9	9	3 - 5	59	0.22	0.37	0.38	0.22	-	-	-	17.3
9	8	9	9	9	10	54	0.22	0.39	0.41	0.22	-	-	-	17.3
9	8	9	9	9	15	44	0.29	0.50	0.53	0.22	-	-	-	17.3
9	8	9	9	9	20	44	0.36	0.64	0.67	0.22	-	-	-	17.3
9	9	9	9	9	< 2	-	0.22	0.44	0.42	0.22	0.22	0.22	0.22	18.2
9	9	9	9	9	2 < 3	72	0.23	0.49	0.46	0.22	-	-	-	18.2
9	9	9	9	9	3 - 5	72	0.22	0.39	0.40	0.22	-	-	-	18.2
9	9	9	9	9	10	59	0.22	0.40	0.43	0.22	-	-	-	18.2
9	9	9	9	9	15	49	0.27	0.51	0.55	0.22	-	-	-	18.2
9	9	9	9	9	20	49	0.34	0.66	0.69	0.22	-	-	-	18.2

① For box length = 8'-0"

② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

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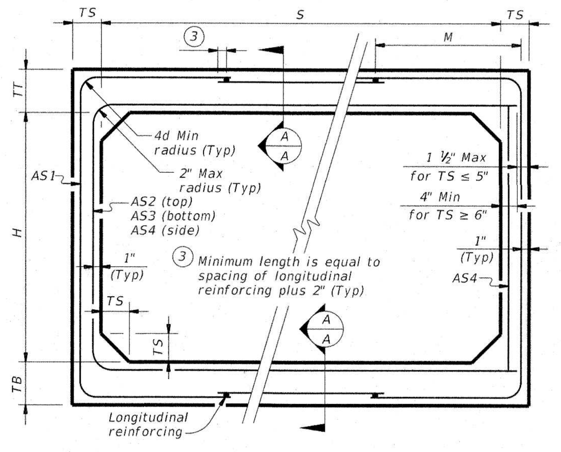
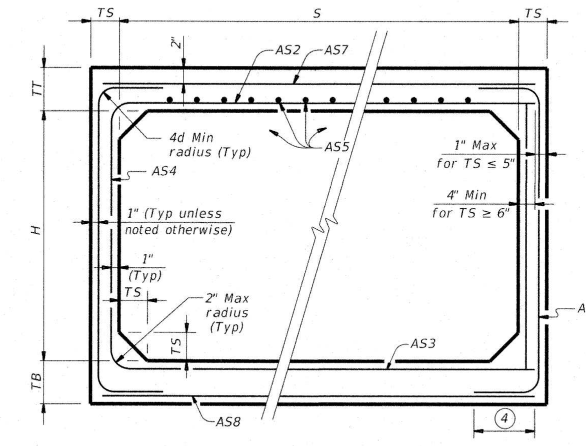


CORNER OPTION "A" CORNER OPTION "B"

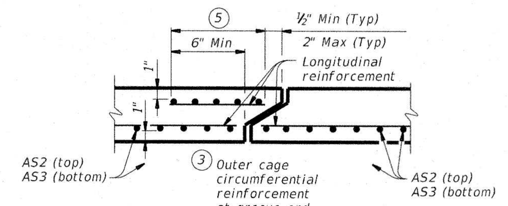
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

④ Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 9'-0" SPAN

SCP-9

FILE: scp09sts-20.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT
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TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL ⑤

Slope	Dia of Pipe (D)	Values for One Pipe: W	Reinf (Lbs) ①	Conc (CY) ②	Values To Be Added for Each Addt'l Pipe: W	Reinf (Lbs) ①	Conc (CY) ②
2:1	12"	9' - 0"	122	1.1	1' - 9"	15	0.2
	15"	10' - 3"	136	1.3	2' - 2"	16	0.2
	18"	11' - 6"	163	1.5	2' - 8"	19	0.3
	21"	12' - 9"	200	1.8	3' - 1"	31	0.4
	24"	14' - 0"	217	2.1	3' - 7"	34	0.4
	27"	15' - 3"	254	2.4	3' - 11"	37	0.5
	30"	16' - 6"	272	2.7	4' - 4"	40	0.6
	33"	17' - 9"	314	3.1	4' - 8"	43	0.6
	36"	19' - 0"	371	3.9	5' - 1"	46	0.8
	42"	21' - 6"	442	4.9	5' - 10"	52	1.0
	48"	25' - 0"	569	6.4	6' - 7"	59	1.3
	54"	27' - 6"	701	7.5	7' - 6"	82	1.6
	60"	30' - 0"	794	8.8	8' - 3"	90	1.8
	66"	32' - 6"	894	10.2	8' - 9"	96	2.0
	72"	35' - 0"	1,055	11.7	9' - 4"	103	2.3
3:1	12"	13' - 0"	175	1.6	1' - 9"	14	0.2
	15"	14' - 9"	193	1.9	2' - 2"	17	0.2
	18"	16' - 6"	228	2.2	2' - 8"	19	0.3
	21"	18' - 3"	299	2.6	3' - 1"	31	0.4
	24"	20' - 0"	323	3.0	3' - 7"	33	0.4
	27"	21' - 9"	371	3.5	3' - 11"	37	0.5
	30"	23' - 6"	415	4.0	4' - 4"	40	0.5
	33"	25' - 3"	469	4.6	4' - 8"	43	0.6
	36"	27' - 0"	556	5.7	5' - 1"	46	0.8
	42"	30' - 6"	675	7.1	5' - 10"	52	1.0
	48"	35' - 6"	837	9.2	6' - 7"	59	1.3
	54"	39' - 0"	1,015	11.0	7' - 6"	84	1.6
	60"	42' - 6"	1,171	12.9	8' - 3"	91	1.8
	66"	46' - 0"	1,298	14.9	8' - 9"	98	2.0
	72"	49' - 6"	1,561	17.1	9' - 4"	103	2.3
4:1	12"	17' - 0"	229	2.0	1' - 9"	15	0.2
	15"	19' - 3"	266	2.4	2' - 2"	17	0.2
	18"	21' - 6"	308	2.9	2' - 8"	19	0.3
	21"	23' - 9"	382	3.5	3' - 1"	31	0.3
	24"	26' - 0"	430	3.9	3' - 7"	34	0.4
	27"	28' - 3"	486	4.7	3' - 11"	37	0.5
	30"	30' - 6"	539	5.2	4' - 4"	40	0.6
	33"	32' - 9"	603	6.0	4' - 8"	42	0.6
	36"	35' - 0"	738	7.5	5' - 1"	47	0.8
	42"	39' - 6"	881	9.3	5' - 10"	52	1.0
	48"	46' - 0"	1,102	12.1	6' - 7"	61	1.3
	54"	50' - 6"	1,364	14.4	7' - 6"	84	1.6
	60"	55' - 0"	1,547	16.9	8' - 3"	91	1.8
	66"	59' - 6"	1,741	19.5	8' - 9"	98	2.0
	72"	64' - 0"	2,077	22.4	9' - 4"	102	2.3
6:1	12"	25' - 0"	336	3.0	1' - 9"	14	0.2
	15"	28' - 3"	384	3.6	2' - 2"	17	0.2
	18"	31' - 6"	452	4.2	2' - 8"	19	0.3
	21"	34' - 9"	581	5.1	3' - 1"	31	0.4
	24"	38' - 0"	644	5.8	3' - 7"	34	0.4
	27"	41' - 3"	737	6.9	3' - 11"	37	0.5
	30"	44' - 6"	807	7.7	4' - 4"	39	0.6
	33"	47' - 9"	912	8.9	4' - 8"	44	0.6
	36"	51' - 0"	1,108	11.0	5' - 1"	48	0.8
	42"	57' - 6"	1,318	13.7	5' - 10"	54	1.0
	48"	67' - 0"	1,682	17.9	6' - 7"	59	1.3
	54"	73' - 6"	2,072	21.3	7' - 6"	83	1.6
	60"	80' - 0"	2,351	24.9	8' - 3"	89	1.8
	66"	86' - 6"	2,643	28.9	8' - 9"	96	2.0
	72"	93' - 0"	3,121	33.1	9' - 4"	101	2.3

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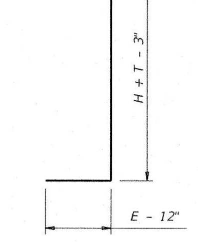
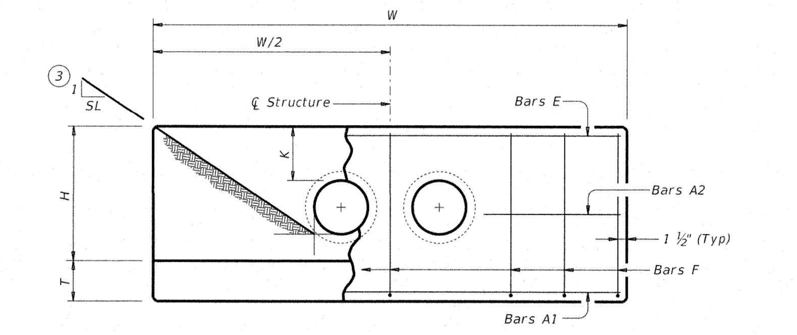
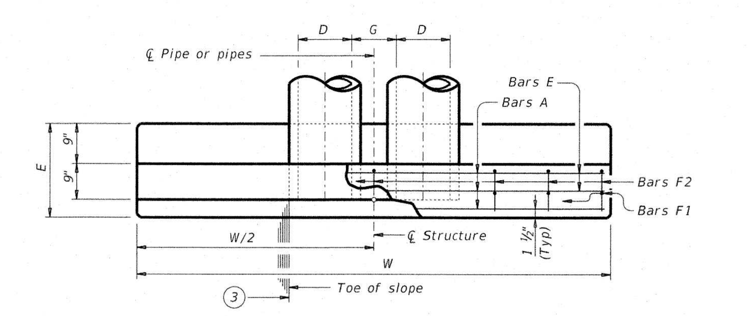


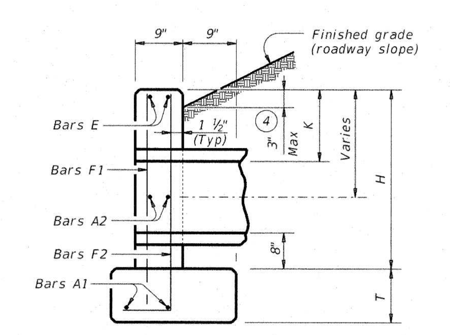
BARS F2



ELEVATION



PLAN OF NON-SKEWED PIPES



SECTION AT CENTER OF PIPE

① Total quantities include one 3'-1" lap for bars over 60' in length.

② Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

③ Indicated slope is perpendicular to centerline pipe or pipes.

④ For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

⑤ Dimensions shown are usual and maximum.

⑥ Quantities shown are for one structure end only (one headwall).

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K ⑤	H	T	E
12"	0' - 9"	1' - 0"	2' - 8"	0' - 9"	1' - 9"
15"	0' - 11"	1' - 0"	2' - 11"	0' - 9"	1' - 9"
18"	1' - 2"	1' - 0"	3' - 2"	0' - 9"	1' - 9"
21"	1' - 4"	1' - 0"	3' - 5"	0' - 9"	2' - 0"
24"	1' - 7"	1' - 0"	3' - 8"	0' - 9"	2' - 0"
27"	1' - 8"	1' - 0"	3' - 11"	0' - 9"	2' - 3"
30"	1' - 10"	1' - 0"	4' - 2"	0' - 9"	2' - 3"
33"	1' - 11"	1' - 0"	4' - 5"	0' - 9"	2' - 6"
36"	2' - 1"	1' - 0"	4' - 8"	1' - 0"	2' - 6"
42"	2' - 4"	1' - 0"	5' - 2"	1' - 0"	2' - 9"
48"	2' - 7"	1' - 3"	5' - 11"	1' - 0"	3' - 0"
54"	3' - 0"	1' - 3"	6' - 5"	1' - 0"	3' - 3"
60"	3' - 3"	1' - 3"	6' - 11"	1' - 0"	3' - 6"
66"	3' - 3"	1' - 3"	7' - 5"	1' - 0"	3' - 9"
72"	3' - 4"	1' - 3"	7' - 11"	1' - 0"	4' - 0"

TABLE OF REINFORCING STEEL ⑥

Bar	Size	Spa	No.
A1	#5	~	2
A2	#5	1' - 6"	~
E	#5	~	2
F	#5	1' - 0"	~

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation — Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

CH-PW-0

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FILE:

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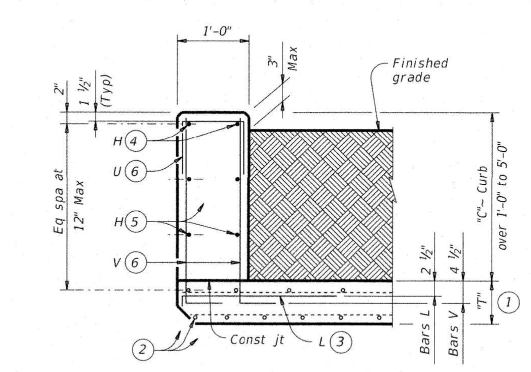
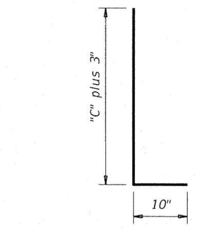
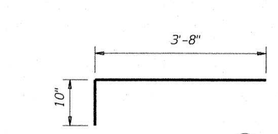


TYPICAL SECTION

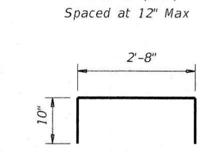
Used for curbs over 1'-0" to 5'-0"



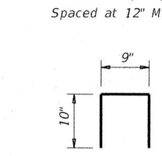
BARS V (#5) ⑥
Spaced at 12" Max



BARS L (#5) ③
Spaced at 12" Max



OPTIONAL BARS L (#5) ③⑦
Spaced at 12" Max



BARS U (#4) ⑥
Spaced at 12" Max

① "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 7" thick, see SCP-MD standard for additional details.

② Adjust normal culvert slab bars as necessary to clear obstructions.

③ Place bars L as shown. Tilt hook as necessary to maintain cover.

④ Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.

⑤ Additional bars H(#4) as required to maintain 12" Max spacing.

⑥ Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.

⑦ Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.

⑧ Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES ⑧

Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	8.9
1'-6"	0.056	14.3
2'-0"	0.074	15.4
2'-6"	0.093	17.7
3'-0"	0.111	18.8
3'-6"	0.130	21.2
4'-0"	0.148	22.2
4'-6"	0.167	24.6
5'-0"	0.185	25.6

CONSTRUCTION NOTES:
Adjust reinforcing steel as necessary to provide 1 ¼" cover.
For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class "C" concrete (f'c = 3,600 psi) minimum for curbs.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR1, PR2 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.
This Curb is considered as part of the Box Culvert for payment.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation — Bridge Division Standard

EXTENDED CURB DETAILS FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL

ECD

FILE: ecdstde1.dgn | DN: GAF | CK: TxDOT | DW: TxDOT | CK: GAF
©TxDOT February 2010 | CONT | SECT | JOB | HIGHWAY
REVISIONS: 03-16: General Notes added T631-CM. | DIST | COUNTY | SHEET NO.

DATE:
FILE:

NO.	REVISION	DATE

TODD W. BLACKMON — STATE OF TEXAS — 89208 — LICENSED PROFESSIONAL ENGINEER — 8-17-2022

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
DRAINAGE DETAILS

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C1.13

Date: Aug 22, 2022, 2:52pm User ID: tmartin
File: P:\300\34\07\Design\Civil\SDDT-3003407.dwg

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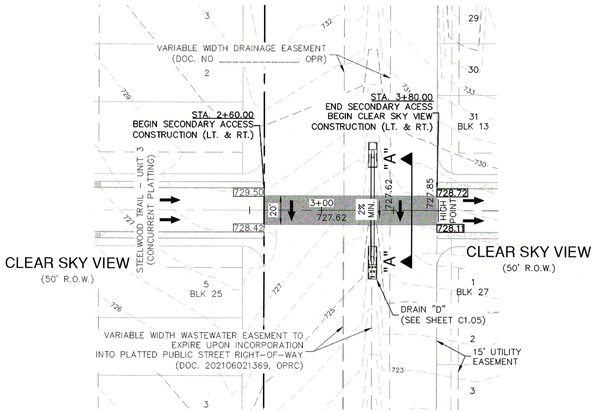
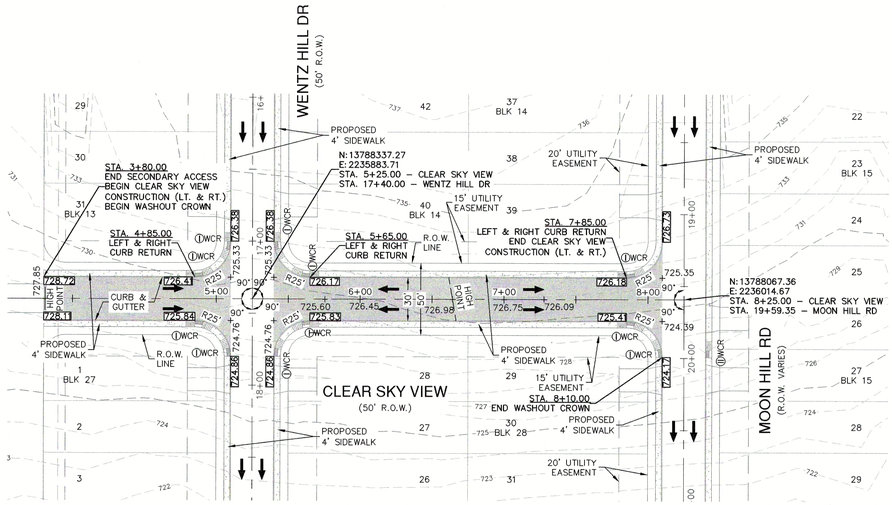
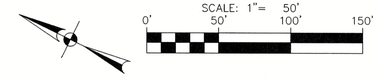
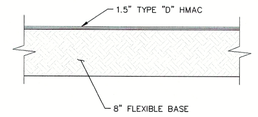






STREET LEGEND

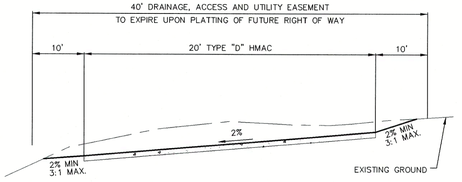
- PROJECT LIMITS
- EXISTING CONTOUR — 970 —
- CORRECTED EFFECTIVE 100 YR FLOOD PLAIN
- PROPOSED 100 YR FLOOD PLAIN
- WHEELCHAIR RAMP — ①WCR
- CENTERLINE — CL
- POINT OF CURVATURE — PC
- POINT OF TANGENCY — PT
- DRAINAGE FLOW ARROW
- TOP OF CURB SPOT ELEVATION — 857.30
- PAVEMENT ELEVATION — 857.00(P) ×
- WASHOUT CROWN SECTION
- SIDEWALK (SEE SHEETS C3.00 & C3.01 FOR DEVELOPER RESPONSIBILITY)
- DRIVEWAY



SECONDARY ACCESS
NOT-TO-SCALE

STREET NOTES:

1. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE-IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.

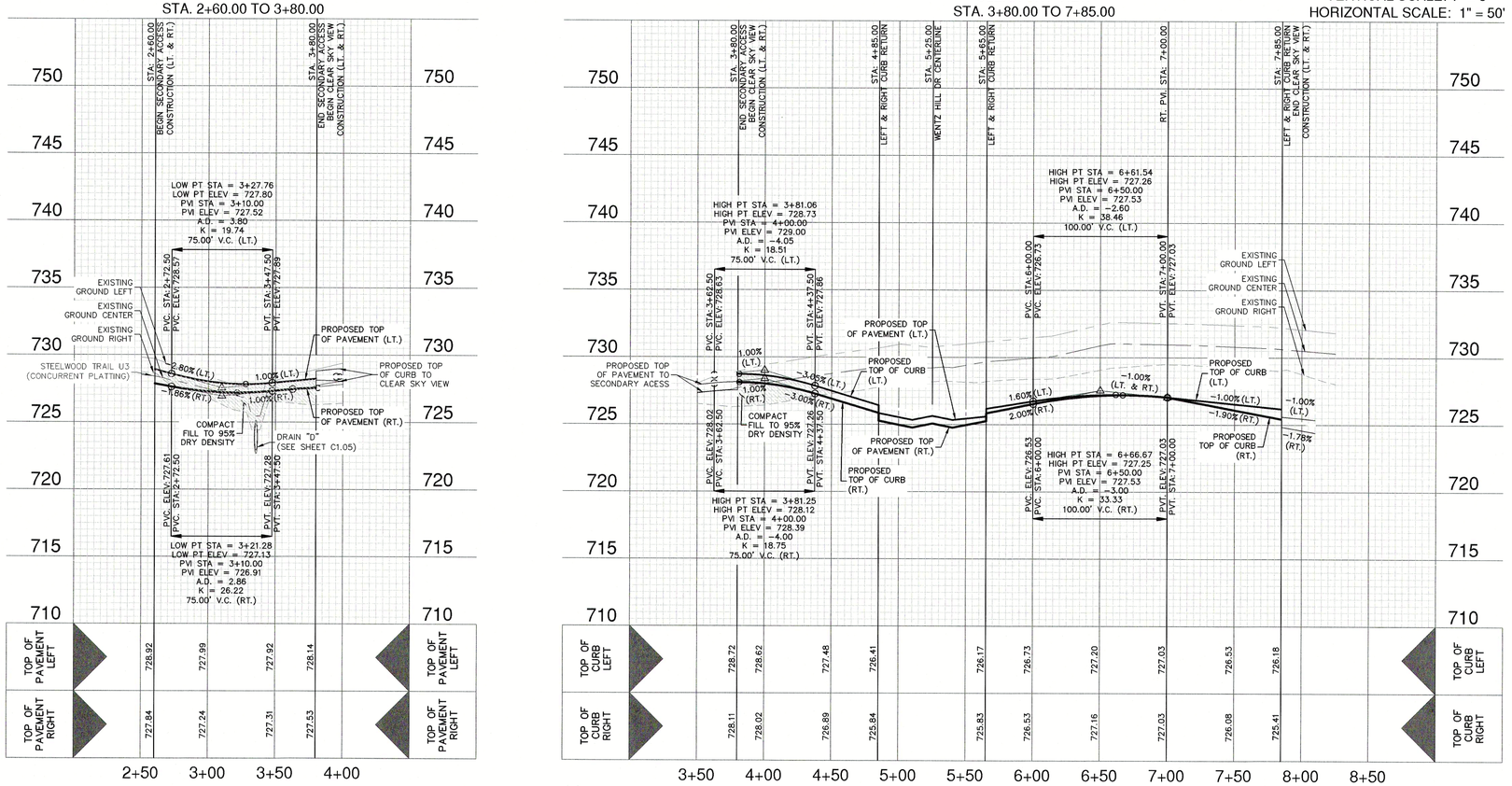


SECTION "A-A"
NOT-TO-SCALE

SECONDARY ACCESS
STA. 2+60.00 TO 3+80.00

CLEAR SKY VIEW
STA. 3+80.00 TO 7+85.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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3. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.

NO.	REVISION	DATE

6-12-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 8303223633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
CLEAR SKY VIEW & SECONDARY ACCESS - PLAN & PROFILE
SEE SHEET FOR STATIONING

PLAT NO. _____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C2.00

FOR PERMIT

Date: Aug 12, 2022, 11:38am User ID: jmoy
File: P:\300\34\07\Design\Civil\ST-3003407-CLEAR SKY VIEW.dwg
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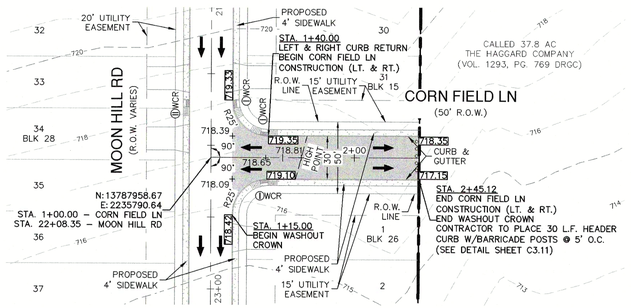

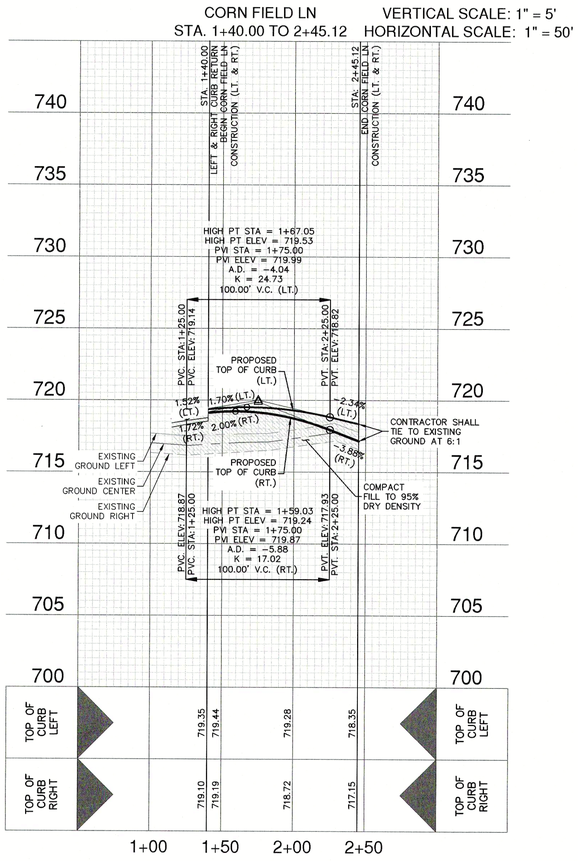

SCALE: 1"= 50'

0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
EXISTING CONTOUR	970
CORRECTED EFFECTIVE 100 YR FLOOD PLAIN	
PROPOSED 100 YR FLOOD PLAIN	
WHEELCHAIR RAMP	ⓘWCR
CENTERLINE	CL
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEETS C3.00 & C3.01 FOR DEVELOPER RESPONSIBILITY)	
DRIVEWAY	

STREET NOTES:

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NO.	REVISION	DATE

6-12-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 8308325633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288-00

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
CORN FIELD LN - PLAN & PROFILE
STA. 1+40.00 TO 2+45.12

PLAT NO. _____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C2.01

FOR PERMIT

Date: Aug 12, 2022, 11:39am User ID: jmay
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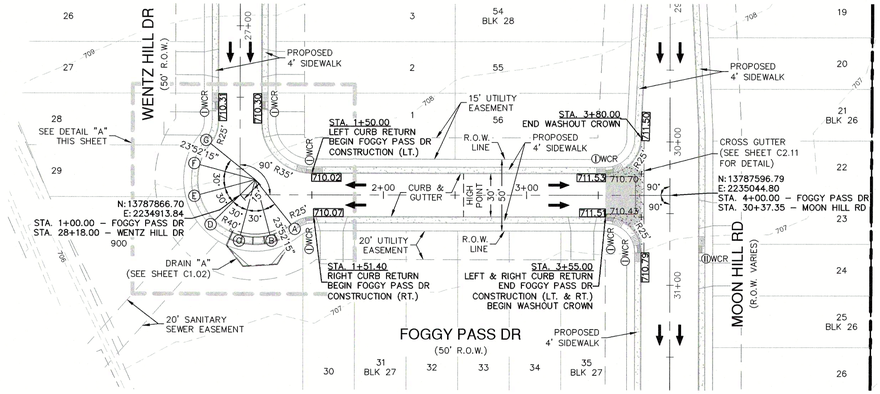
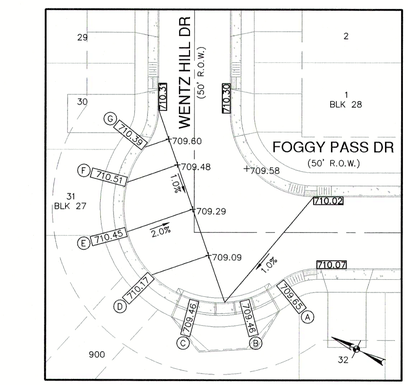
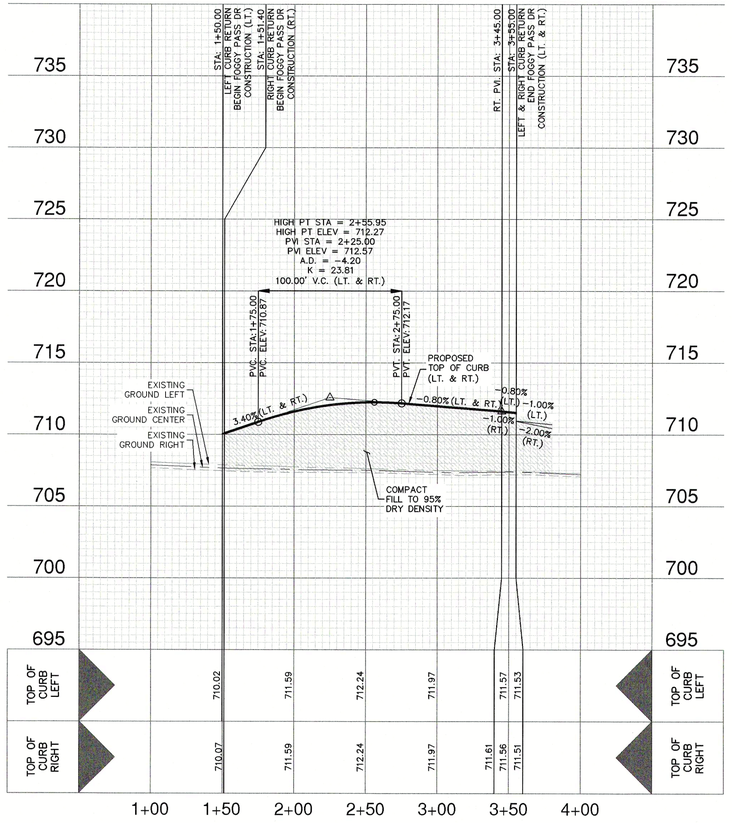




DETAIL "A"
SCALE: 1" = 30'



STREET LEGEND

PROJECT LIMITS	
EXISTING CONTOUR	970
CORRECTED EFFECTIVE 100 YR FLOOD PLAIN	
PROPOSED 100 YR FLOOD PLAIN	
WHEELCHAIR RAMP	ⓘWCR
CENTERLINE	CL
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEETS C3.00 & C3.01 FOR DEVELOPER RESPONSIBILITY)	
DRIVEWAY	

SCALE: 1"= 50' 0' 50' 100' 150'

STREET NOTES:

1. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE-IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
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FOR PERMIT

NO.	REVISION	DATE

8-12-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.2633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

FOGGY PASS DR - PLAN & PROFILE
STA. 1+50.00 TO 3+55.00

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C2.02

Date: Aug 12, 2022, 11:41am User ID: jmoy
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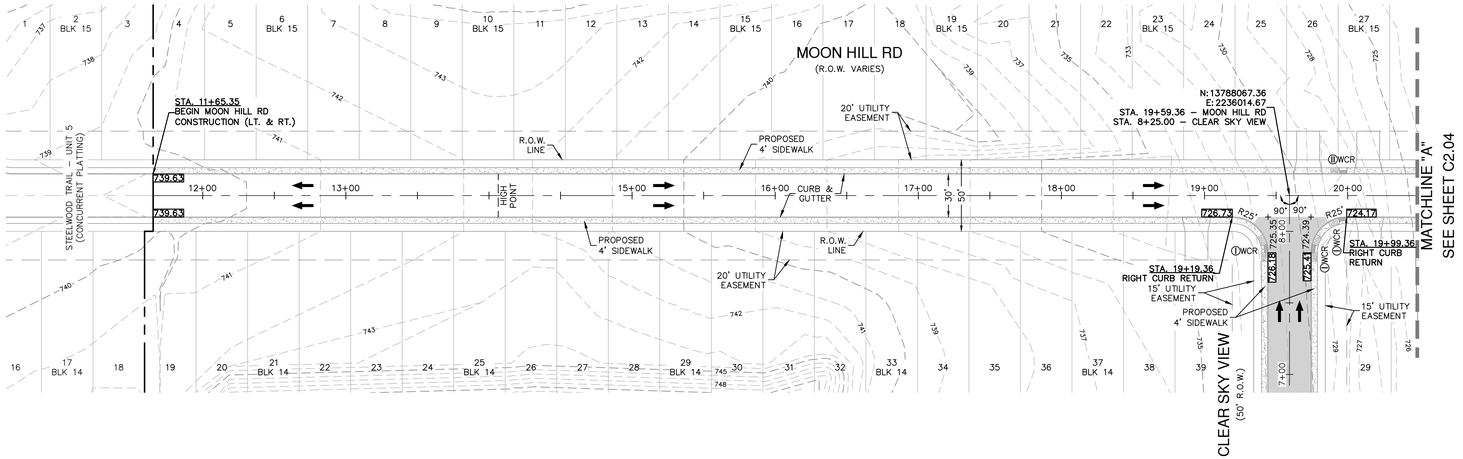
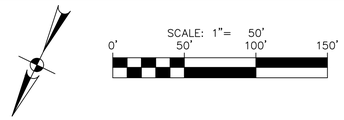


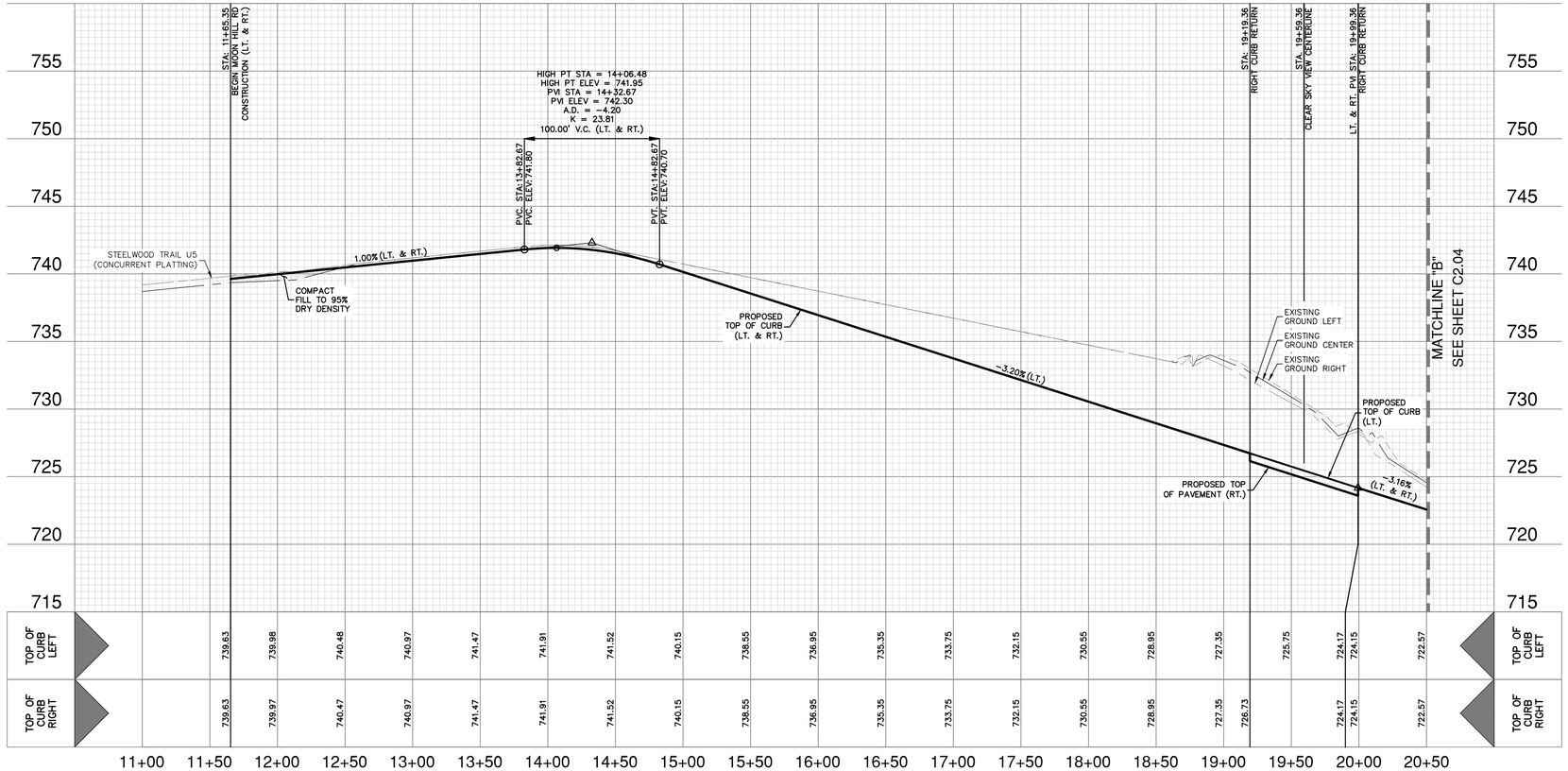


STREET LEGEND

PROJECT LIMITS	
EXISTING CONTOUR	970
CORRECTED EFFECTIVE 100 YR FLOOD PLAIN	
PROPOSED 100 YR FLOOD PLAIN	
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEETS C3.00 & C3.01 FOR DEVELOPER RESPONSIBILITY)	
DRIVEWAY	

MOON HILL RD
STA. 11+65.35 TO 20+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



STREET NOTES:

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NO.	REVISION	DATE

6–15–2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4

NEW BRAUNFELS, TEXAS

MOON HILL RD - PLAN & PROFILE
STA. 11+65.35 TO 20+50.00

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C2.03

FOR PERMIT

Date: Jun 15, 2022, 11:51am User ID: tmartin
File: P:\300\34\07\Design\Civil\ST-3003407-MOON HILL RD.dwg

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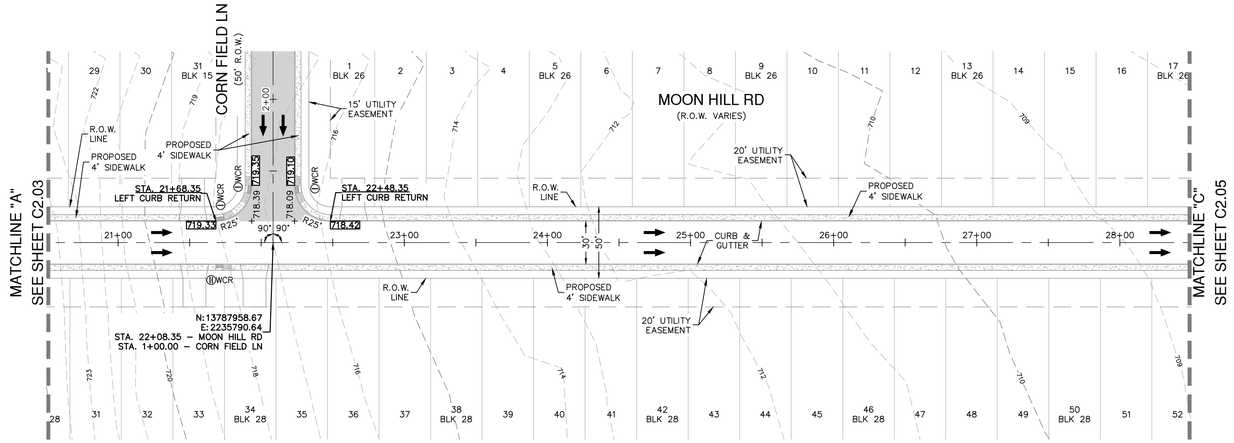

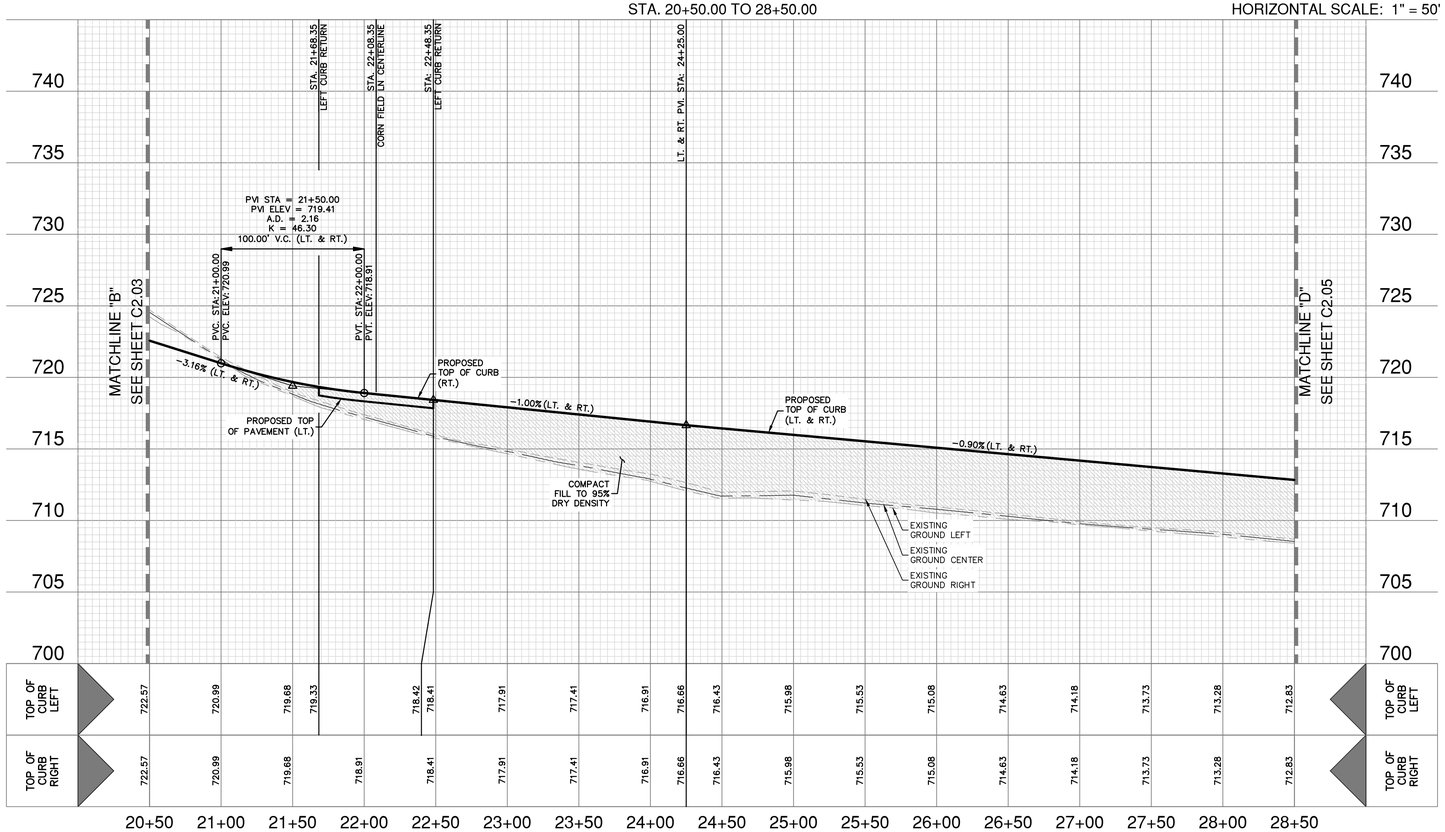

STREET LEGEND

PROJECT LIMITS	
EXISTING CONTOUR	970
CORRECTED EFFECTIVE 100 YR FLOOD PLAIN	
PROPOSED 100 YR FLOOD PLAIN	
WHEELCHAIR RAMP	ⓓWCR
CENTERLINE	CL
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEETS C3.00 & C3.01 FOR DEVELOPER RESPONSIBILITY)	
DRIVEWAY	

STREET NOTES:

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SCALE: 1"= 50'
0' 50' 100' 150'

NO.	REVISION	DATE

6–15–2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

MOON HILL RD - PLAN & PROFILE
STA. 20+50.00 TO 28+50.00

PLAT NO.
JOB NO. 30034–07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C2.04

FOR PERMIT

Date: Jun 15, 2022, 11:52am User ID: tmartin
File: P:\300\34\07\Design\Civil\ST–3003407–MOON HILL RD.dwg
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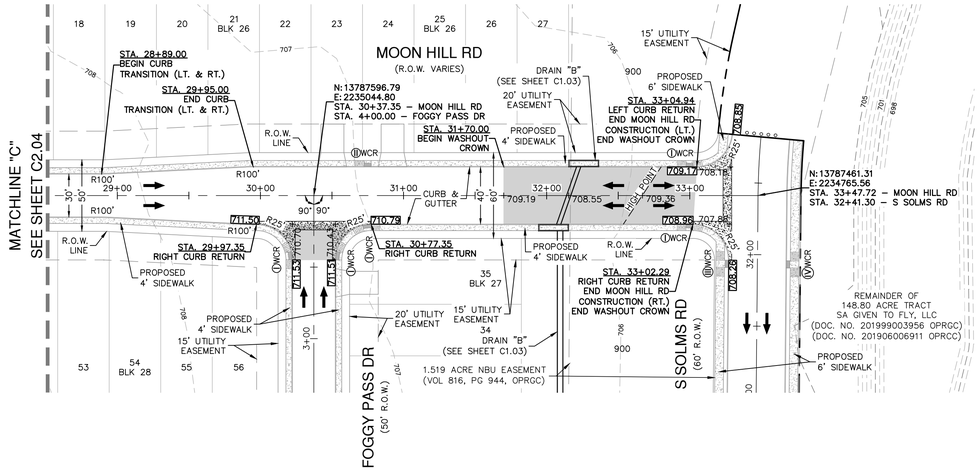

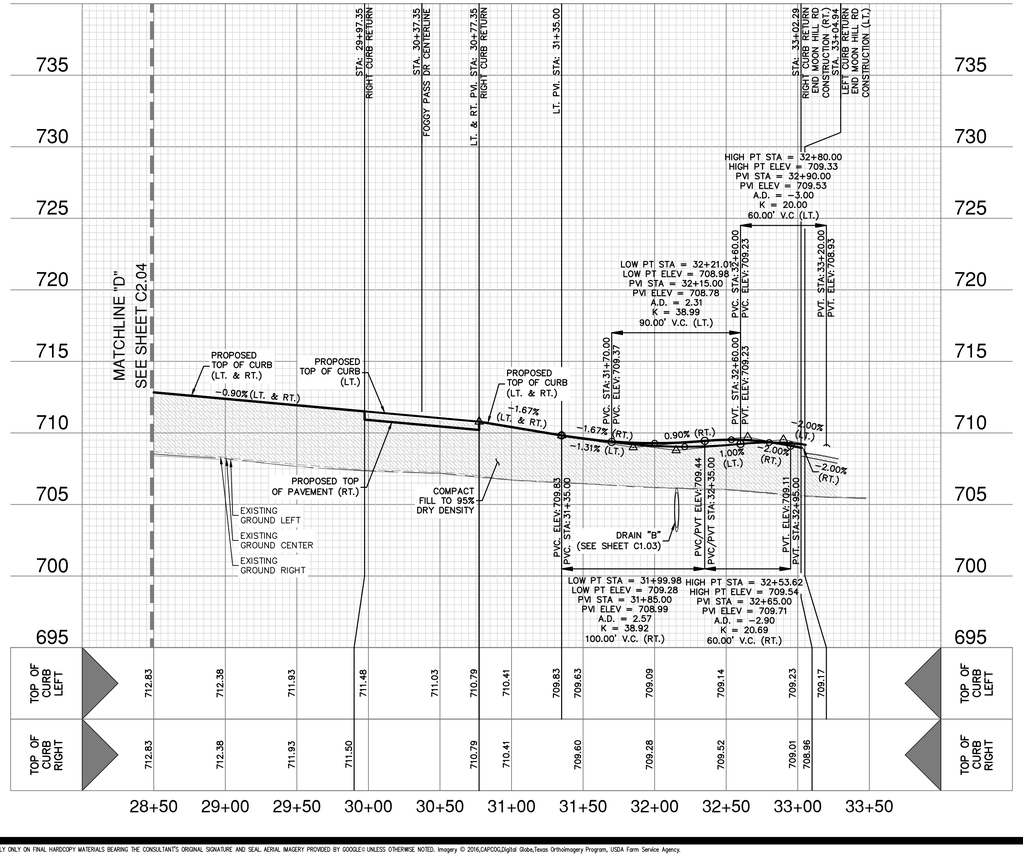

STREET LEGEND

PROJECT LIMITS	
EXISTING CONTOUR	970
CORRECTED EFFECTIVE 100 YR FLOOD PLAIN	
PROPOSED 100 YR FLOOD PLAIN	
WHEELCHAIR RAMP	ⓓWCR
CENTERLINE	CL
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEETS C3.00 & C3.01 FOR DEVELOPER RESPONSIBILITY)	
DRIVEWAY	

SCALE: 1"= 50'
0' 50' 100' 150'

NO. REVISION DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
6–15–2022

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5533
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

MOON HILL RD - PLAN & PROFILE
STA. 28+50.00 TO 33+04.94

STREET NOTES:

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PLAT NO.
JOB NO. 30034–07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C2.05

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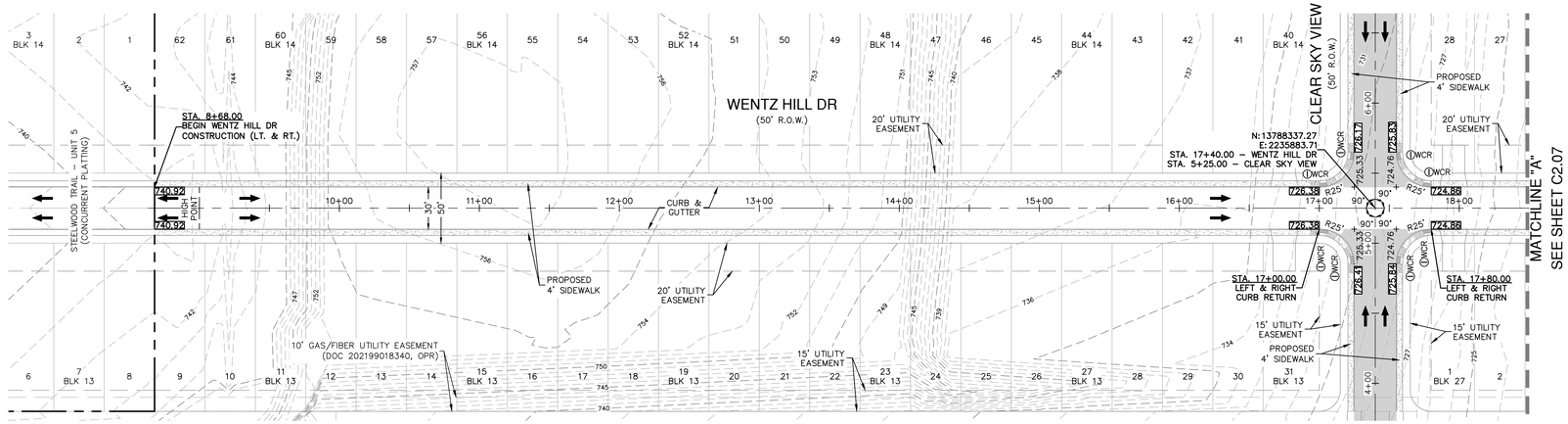
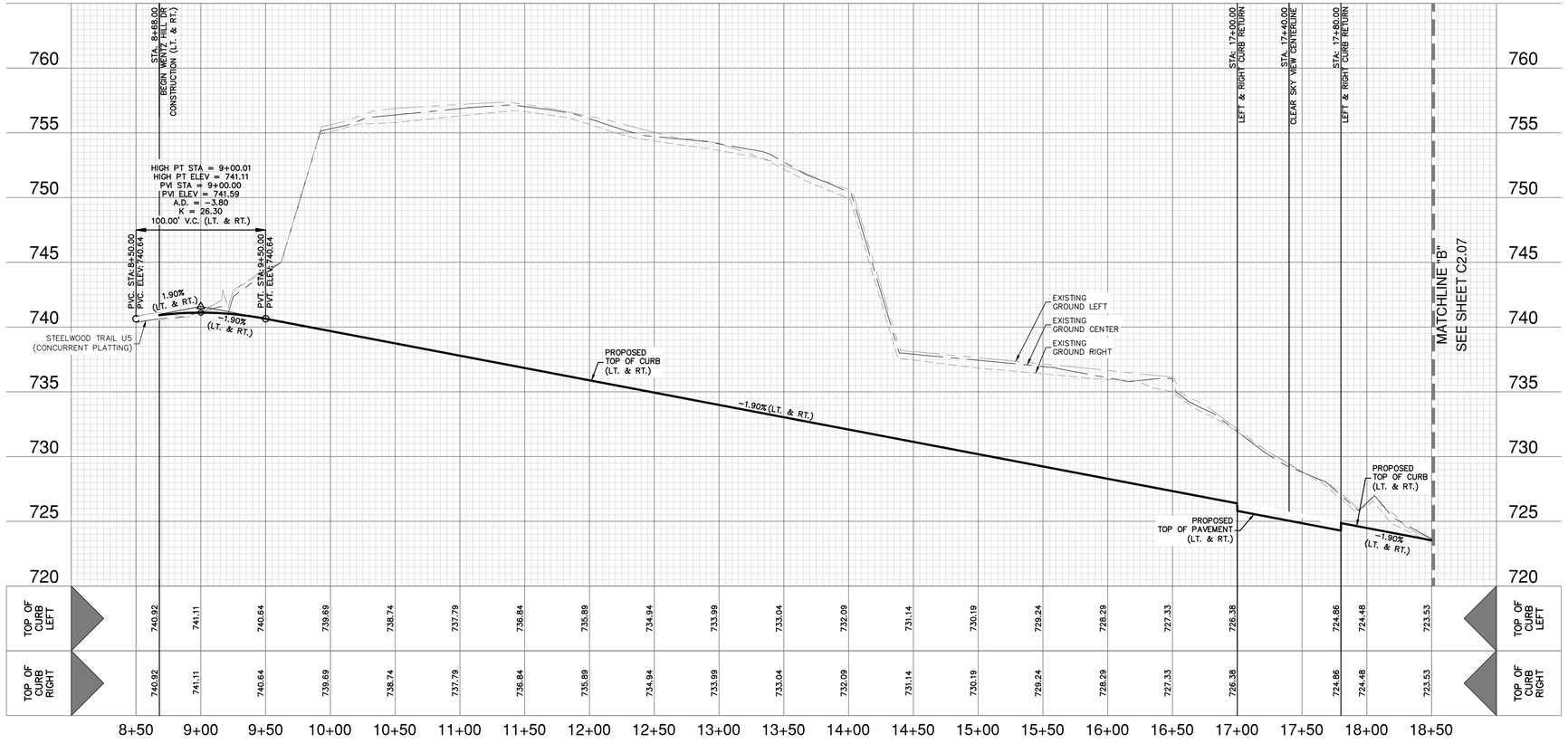


WENTZ HILL DR
STA. 8+68.00 TO 18+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



STREET LEGEND

PROJECT LIMITS	
EXISTING CONTOUR	970
CORRECTED EFFECTIVE 100 YR FLOOD PLAIN	
PROPOSED 100 YR FLOOD PLAIN	
WHEELCHAIR RAMP	WCR
CENTERLINE	CL
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEETS C3.00 & C3.01 FOR DEVELOPER RESPONSIBILITY)	
DRIVEWAY	

STREET NOTES:

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NO.	REVISION	DATE

6–15–2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
WENTZ HILL DR - PLAN & PROFILE
STA. 8+68.00 TO 18+50.00

PLAT NO.
JOB NO. 30034–07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C2.06

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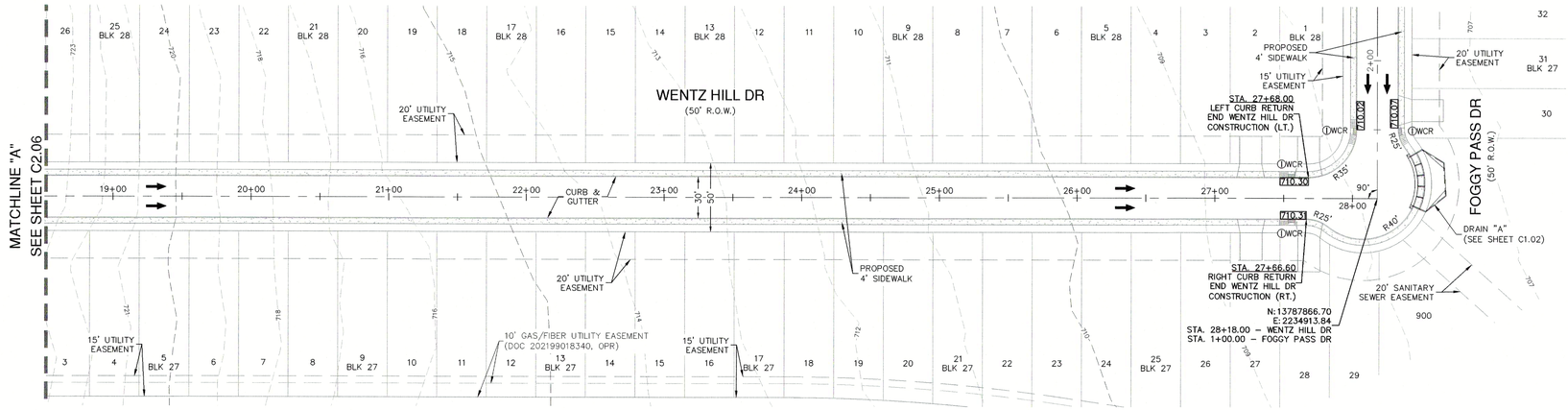
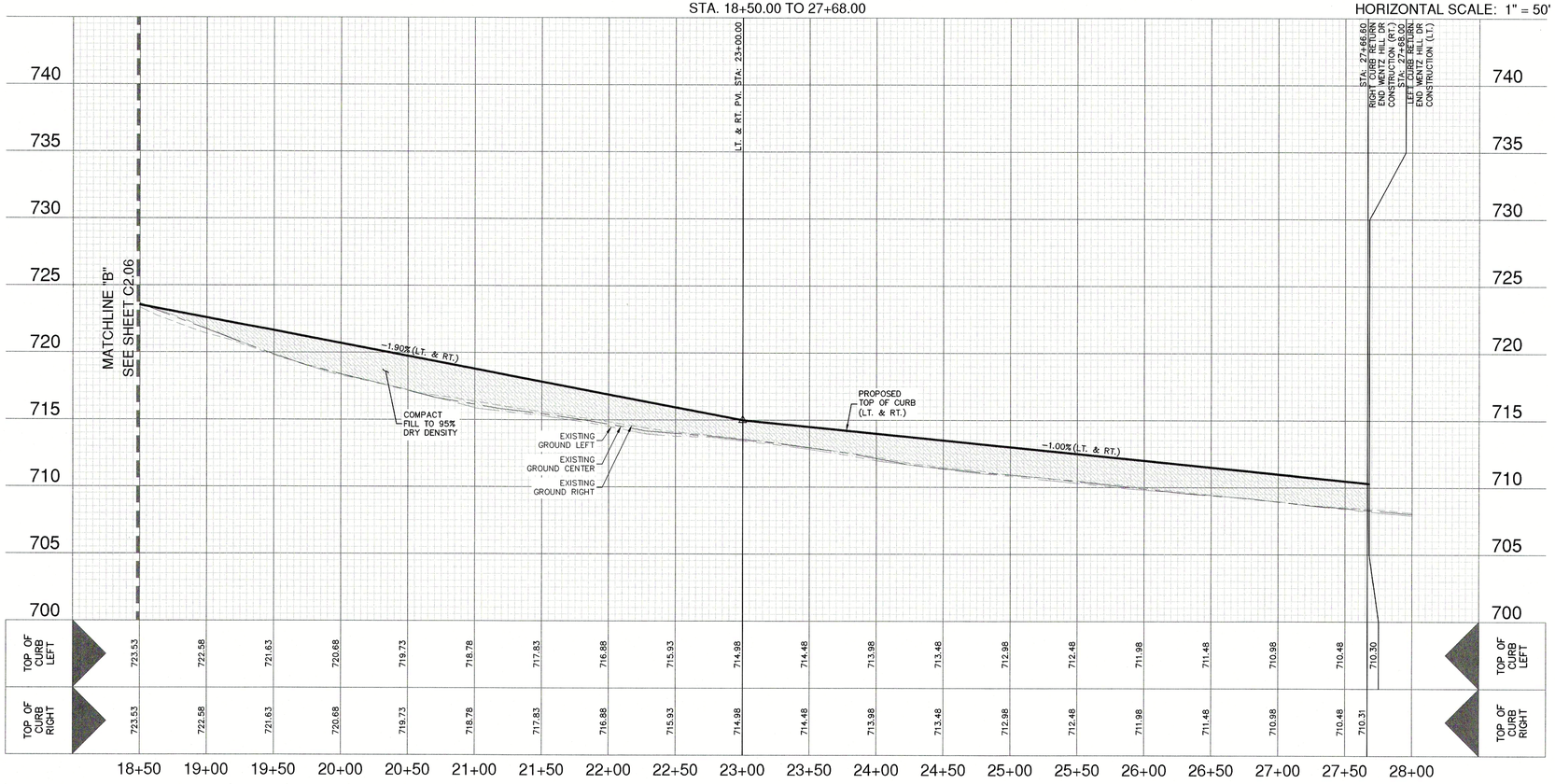


STREET LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR — 970
- CORRECTED EFFECTIVE 100 YR FLOOD PLAIN
- PROPOSED 100 YR FLOOD PLAIN
- WHEELCHAIR RAMP — ⓘWCR
- CENTERLINE — CL
- POINT OF CURVATURE — PC
- POINT OF TANGENCY — PT
- DRAINAGE FLOW ARROW
- TOP OF CURB SPOT ELEVATION — 857.30
- PAVEMENT ELEVATION — 857.00(P) ×
- WASHOUT CROWN SECTION
- SIDEWALK (SEE SHEETS C3.00 & C3.01 FOR DEVELOPER RESPONSIBILITY)
- DRIVEWAY

WENTZ HILL DR
STA. 18+50.00 TO 27+68.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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NO.	REVISION	DATE

8-12-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.3533
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

WENTZ HILL DR - PLAN & PROFILE
STA. 18+50.00 TO 27+68.00

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C2.07

FOR PERMIT

Date: Aug 12, 2022, 11:42am User ID: jmoy
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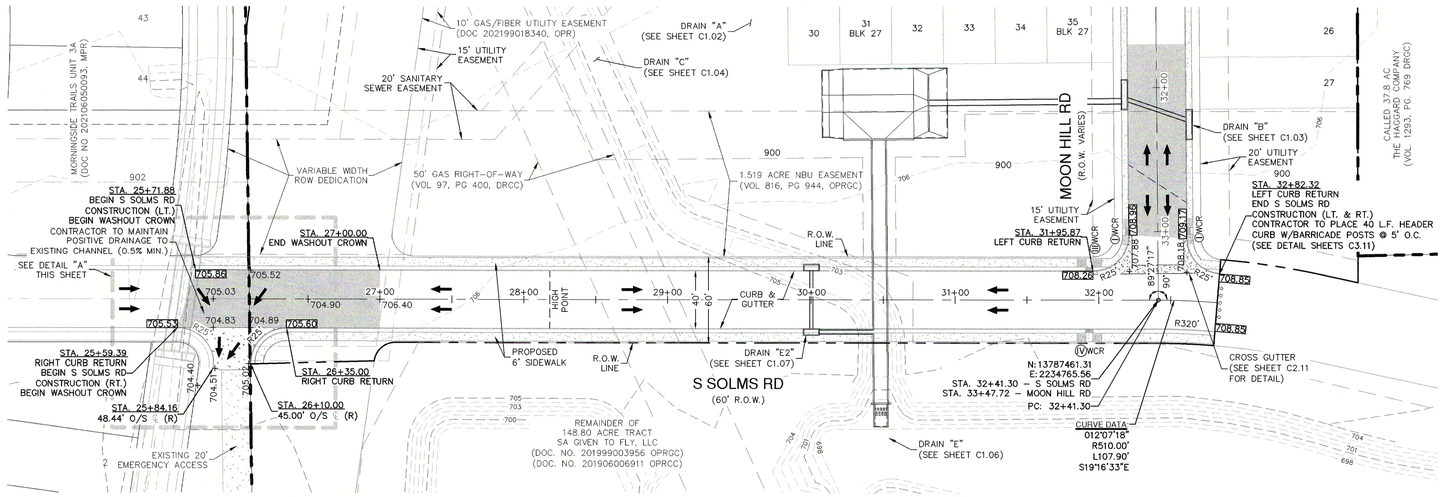


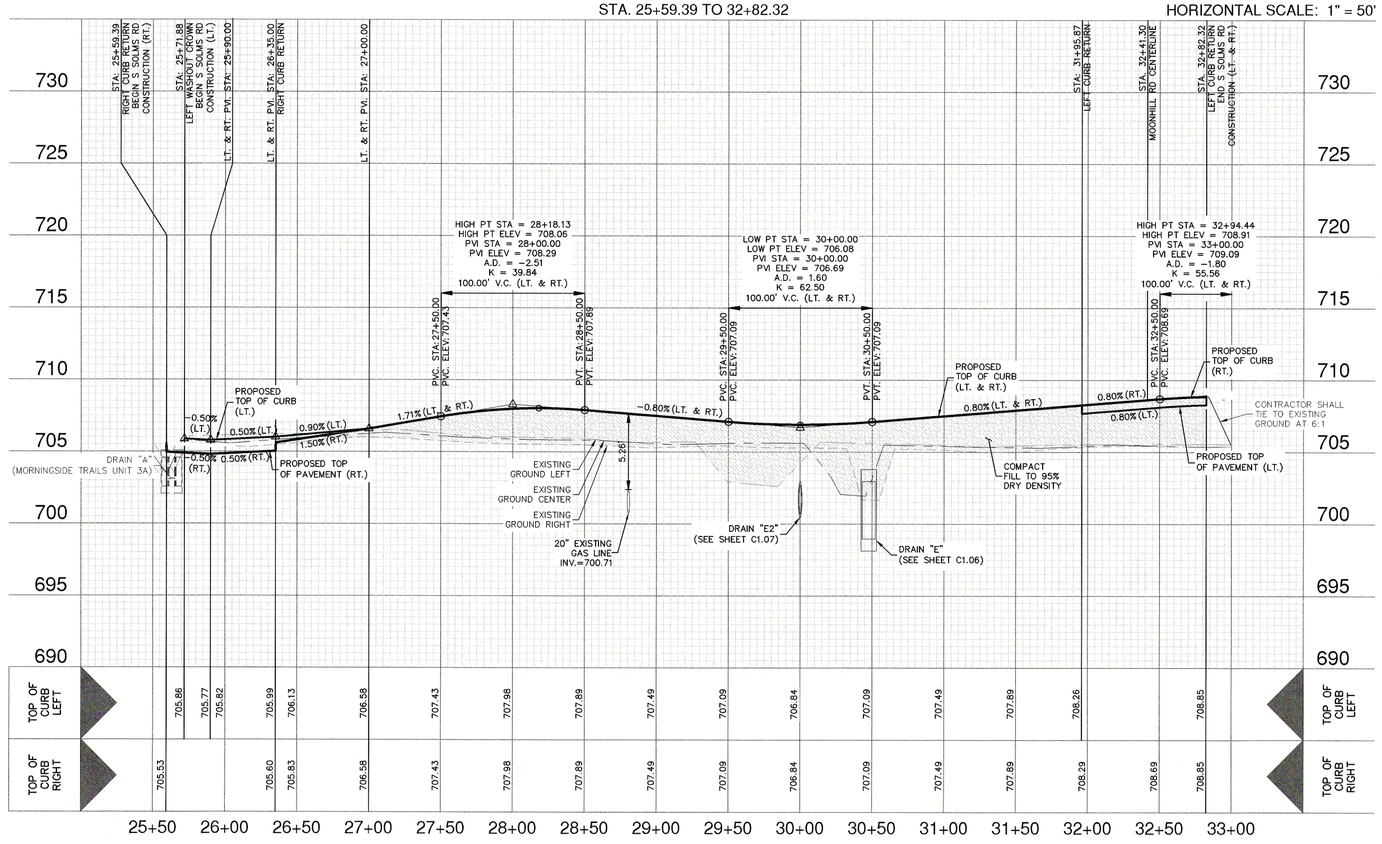
SCALE: 1"= 50'
0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
EXISTING CONTOUR	970
CORRECTED EFFECTIVE 100 YR FLOOD PLAIN	
PROPOSED 100 YR FLOOD PLAIN	
WHEELCHAIR RAMP	(T)WCR
CENTERLINE	CL
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (SEE SHEETS C3.00 & C3.01 FOR DEVELOPER RESPONSIBILITY)	
DRIVEWAY	

S SOLMS RD
STA. 25+59.39 TO 32+82.32

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'

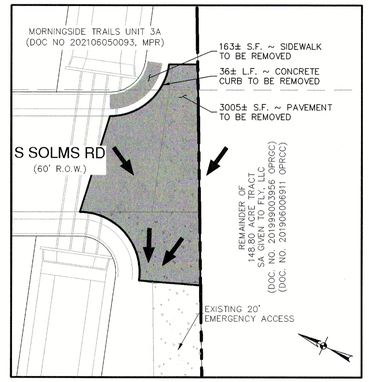


WARNING !!!

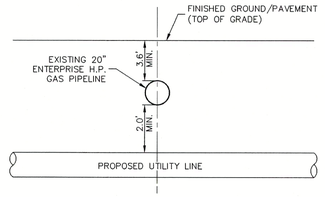
HIGH PRESSURE PIPELINE EVACUATION AND/OR CONSTRUCTION PROHIBITED WITHOUT WRITTEN PERMISSION FROM ENTERPRISE.

ADDITIONAL CONSTRUCTION NOTES:

1. PRIOR TO SITE MOBILIZATION, CONTRACTOR SHALL OBTAIN A FINAL EXECUTED COPY OF THE "ENTERPRISE TEXAS PIPELINE, LLC–ENCROACHMENT AGREEMENT."
2. AS PER "ENCROACHMENT AGREEMENT," CONTRACTOR SHALL PROVIDE 72–HOUR WRITTEN NOTICE PRIOR TO CROSSING OR WORKING WITHIN THE 50' ENTERPRISE PIPELINE EASEMENT.
3. LOCAL ENTERPRISE CONTACTS INCLUDE:
   – CHESTER BLAIR (210)240–1157 MOB.
   – JUSTIN THOMAS (210)827–7201 MOB.
   – SAN ANTONIO (210)528–2782 OFF.



DETAIL "A": S SOLMS RD DEMOLITION
SCALE: 1" = 30'



TYPICAL UTILITY/ ENTERPRISE GAS CROSSING DETAIL
NOT–TO–SCALE

STREET NOTES:

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NO.	REVISION	DATE

8–12–2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.625.2833
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

S SOLMS RD - PLAN & PROFILE
STA. 25+59.39 TO 32+82.32

PLAT NO.	
JOB NO.	30034–07
DATE	MAY 2022
DESIGNER	HF
CHECKED	HF
DRAWN	BH
SHEET	C2.08

FOR PERMIT

Date: Aug 12, 2022, 11:44am User ID: jmay
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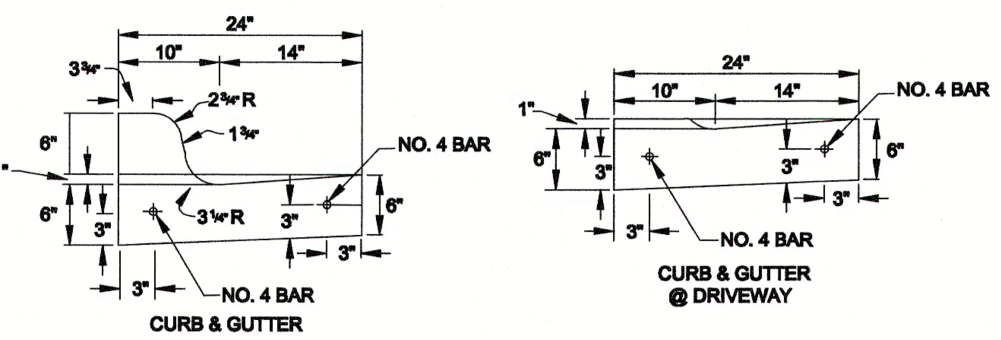
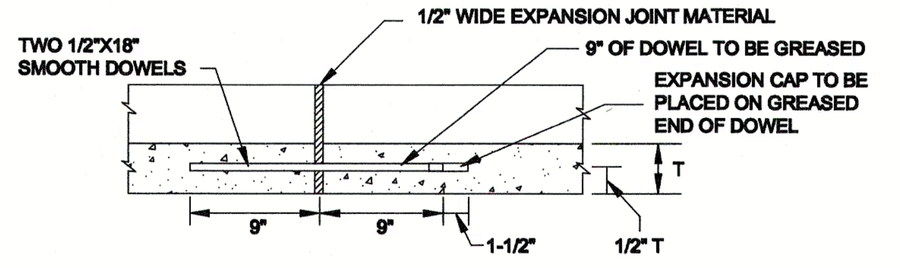
CURB AND GUTTER





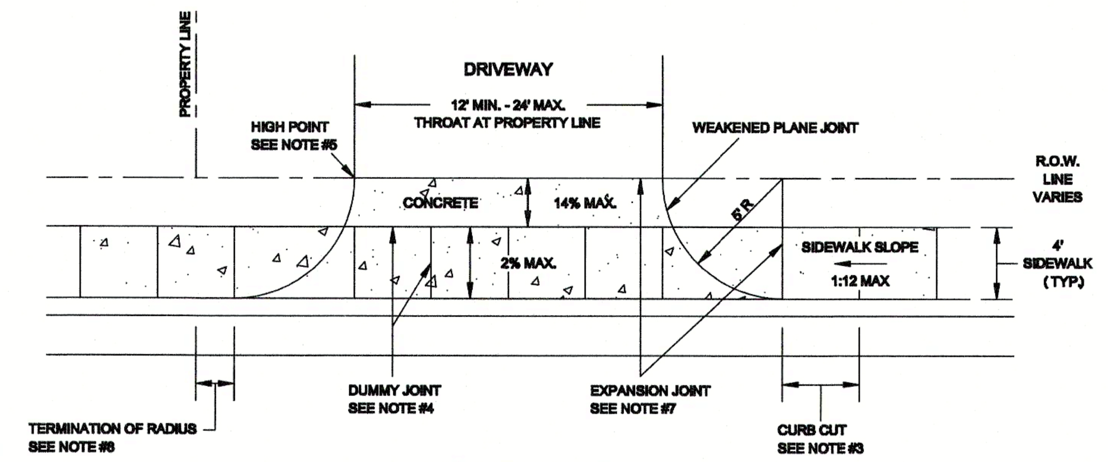
LONGITUDINAL SECTION THRU CURB AND GUTTER
SHOWING TYPICAL EXPANSION JOINT DETAILS.
REINFORCING STEEL SHALL NOT CROSS EXPANSION JOINTS.
STEEL SHALL BE TERMINATED 3" (+ OR -) 1" FROM FACE OF THE JOINT.

NOTES:

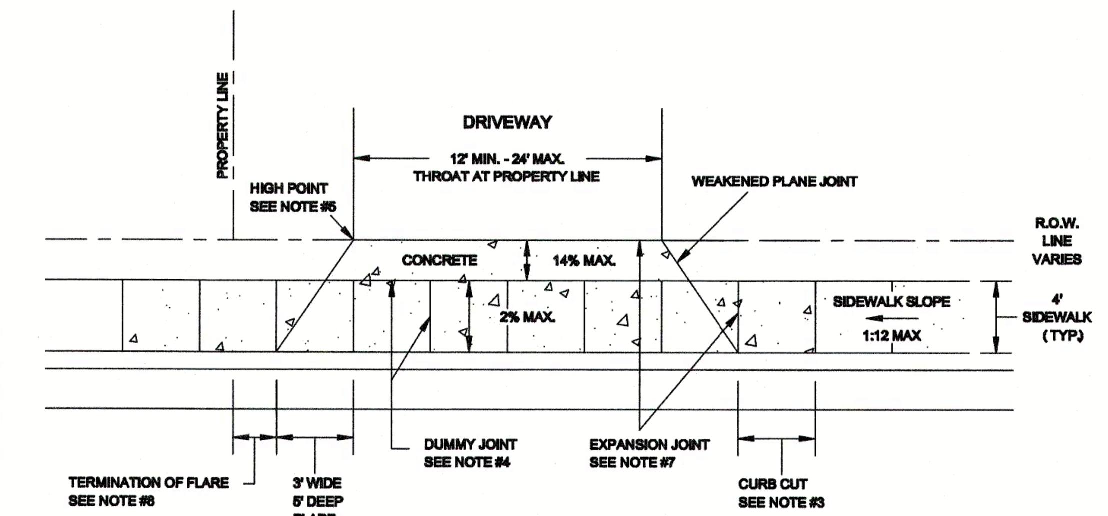
1. REINFORCING BARS SHALL BE LAPPED A MINIMUM OF 18".
2. CURB AND GUTTER SHALL HAVE FORMED TOOLED OR SAWED CONTRACTION JOINTS AT ± 10'. THE DEPTH OF THESE JOINTS SHALL BE SUFFICIENT TO ENSURE CRACKING AT THE JOINTS.
3. CURB OR CURB AND GUTTER SHALL HAVE EXPANSION JOINTS AT POINTS OF CURVATURE, AT INTERVALS NO GREATER THAN 100' AND AT ALL ADJACENT STRUCTURES.
4. UNLESS OTHERWISE SHOWN, TRANSITIONS BETWEEN CURBS OR CURBS AND GUTTER OF DIFFERING CROSS SECTION SHALL BE ACCOMPLISHED OVER A 10' LENGTH OR AS APPROVED BY THE CITY ENGINEER.
5. ALL CONCRETE TO BE CLASS "A" 3000 PSI CONCRETE.
6. ALL EXPOSED CONCRETE SURFACES TO BE BRUSHED SMOOTH AND UNIFORM.

DATE APPROVED: 7/08	DWG. NO: ST-013	SCALE: N.T.S.	City of New Braunfels — ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: Curb & Gutter			
P:\CURRENT NEW BRAUNFELS DETAILS\2008\			

DRIVEWAY APRON
(RESIDENTIAL - RADIAL/FLARED)



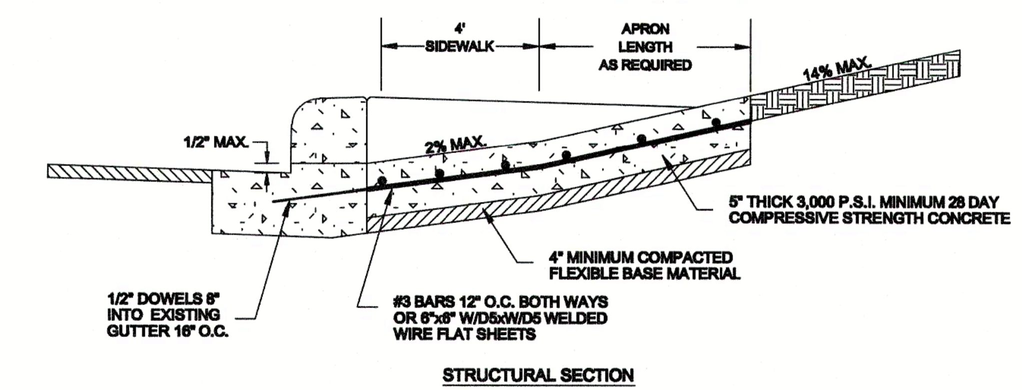
RADIUS PLAN VIEW



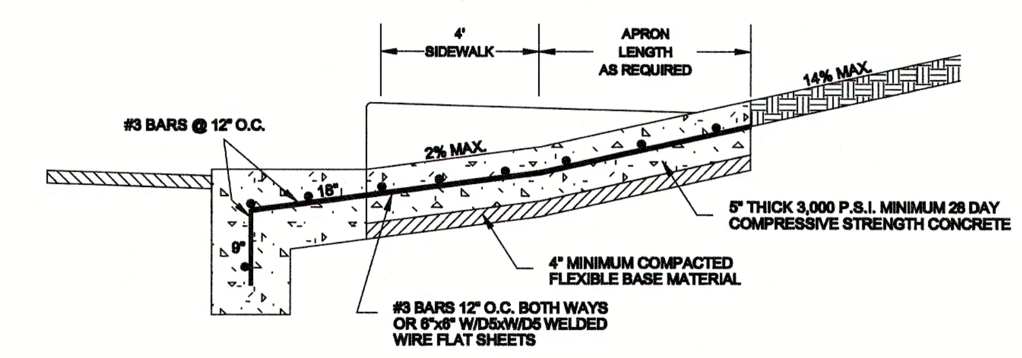
FLARE PLAN VIEW

DATE APPROVED: 7/08	DWG. NO: ST-014.1	SCALE: N.T.S.	City of New Braunfels — ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 2		
FILENAME: DRIVEWAY (Residential - Radial/Flared)			
P:\CURRENT NEW BRAUNFELS DETAILS\2008\			

DRIVEWAY APRON
(ONE OR TWO FAMILY RESIDENTIAL)



STRUCTURAL SECTION



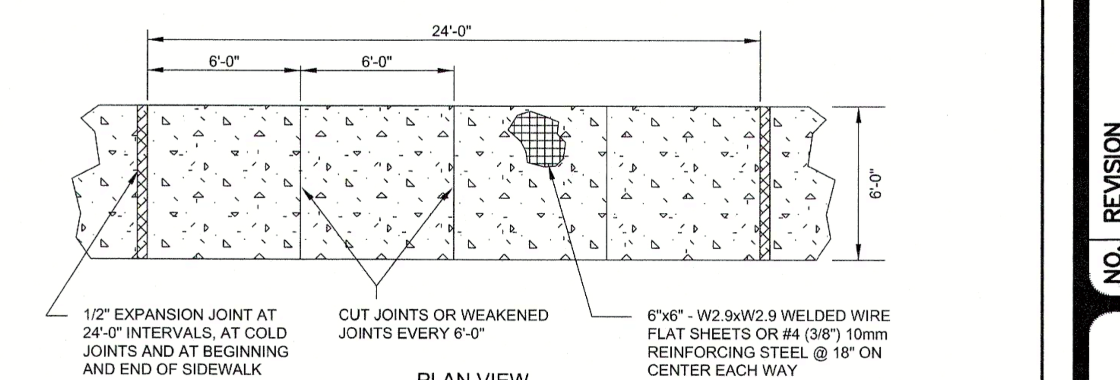
NO EXISTING CURB STRUCTURAL SECTION

NOTES:

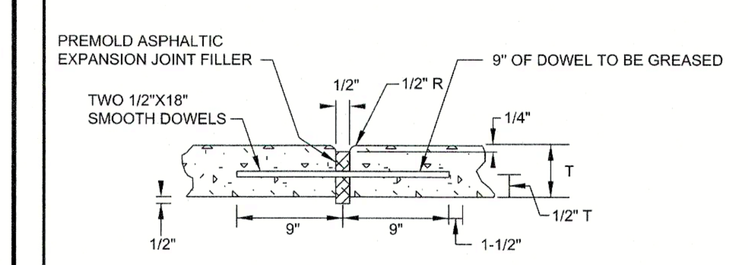
1. WHERE GUTTER DOES NOT EXIST DRIVEWAY APRON SHALL EXTEND TO EDGE OF ASPHALT AND SHALL HAVE A MINIMUM 6" WIDE 1' DEEP GRADE BEAM MONOLITHIC AND REINFORCED SIMILAR TO APRON.
2. PLACEMENT OF SIDEWALK SHOWN IS TYPICAL; HOWEVER, ALTERNATIVE SIDEWALK PLACEMENT COMMON TO DRIVEWAY APRON WILL BE CONSIDERED PROVIDED CROSS SLOPE OF SIDEWALK IS NO GREATER THAN 2%.
3. CURB CUT LENGTH NO GREATER THAN AS REQUIRED TO MATCH SLOPE OF ADJACENT SIDEWALK.
4. DUMMY JOINTS TO BE PROVIDED AT MINIMUM 4-FT. INTERVALS PERPENDICULAR TO THE CURB LINE WITHIN THE SIDEWALK AREA AND PARALLEL TO THE SIDEWALK AREA.
5. PROVIDE A MINIMUM 7" HIGH POINT. HIGH POINT HEIGHT SHALL BE MEASURED FROM THE GUTTER FLOW LINE TO THE DRIVEWAY APRON. NOTE HIGH POINT MAY OCCUR OUTSIDE OF ROW.
6. DRIVEWAY THROAT TRANSITION MAY OCCUR OUTSIDE OF ROW.
7. PROVIDE EXPANSION JOINTS AT ALL SIDEWALK AND DRIVEWAY THROAT JOINTS. EXPANSION JOINTS SHALL BE PLACED USING 1/2" ASPHALTIC MATERIAL WITH 1/2" DOWELS 16" O.C.
8. THE TANGENT POINT OF THE DRIVEWAY CURB RETURN AT THE PUBLIC ROADWAY LINE OR FLARE SHALL BE A MINIMUM DISTANCE OF 1' OFF THE PROPERTY PROJECTED PERPENDICULAR TO THE STREET CENTERLINE, EXCEPT SINGLE FAMILY OR ZERO LOT LINE LOTS. ON SINGLE FAMILY ZERO LOT LINE LOTS WHERE THE DRIVE IS ON THE ZERO LOT LINE, THE TANGENT POINT OR FLARE SHALL BE NO GREATER THAN 3' BEYOND THE ADJOINING PROPERTY LINE PROJECTED PERPENDICULAR TO THE STREET CENTERLINE.
9. ALL SIDEWALK AND DRIVEWAY CONSTRUCTION SHALL MEET A.D.A. SPECIFICATIONS.

DATE APPROVED: 7/08	DWG. NO: ST-014.2	SCALE: N.T.S.	City of New Braunfels — ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 2 OF 2		
FILENAME: DRIVEWAY (Residential - Radial/Flared)			
P:\CURRENT NEW BRAUNFELS DETAILS\2008\			

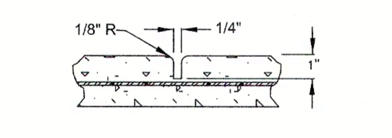
SIDEWALK
(COMMERCIAL - INDUSTRIAL)



PLAN VIEW

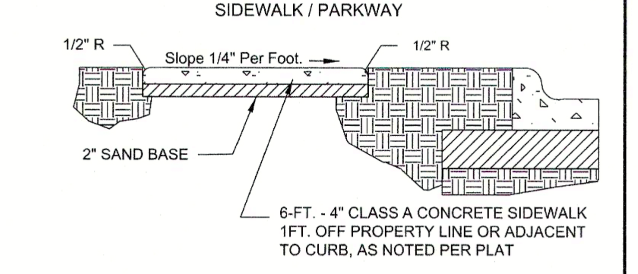


EXPANSION JOINT



WEAKENED PLANE JOINT

SIDEWALK / PARKWAY



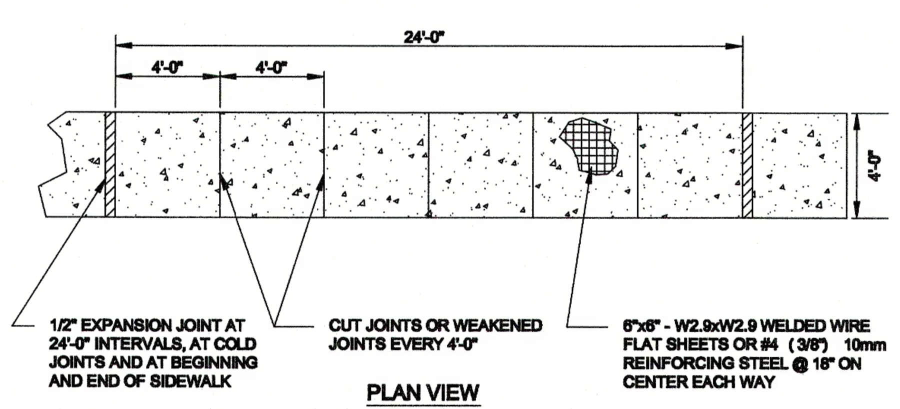
TYPICAL SECTION

NOTES:

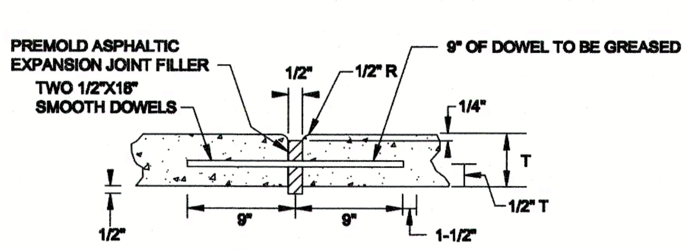
1. EXPANSION JOINTS ARE TO BE USED BETWEEN CONCRETE DRIVEWAY AND SIDEWALK.
2. SCORED JOINTS DENOTE SIDEWALK ACROSS THE DRIVEWAY AND ARE TO BE PLACED AT LEAST 1/3 rd. THROUGH THE SLAB THICKNESS.
3. ALL SIDEWALK AND DRIVEWAY CONSTRUCTION SHALL MEET A.D.A. SPECIFICATIONS.

DATE APPROVED: 07/2008	DWG. NO: ST-017	SCALE: N.T.S.	City of New Braunfels — ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: SIDEWALK (COMMERCIAL - INDUSTRIAL)			

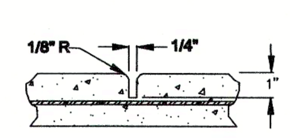
SIDEWALK
(RESIDENTIAL)



PLAN VIEW

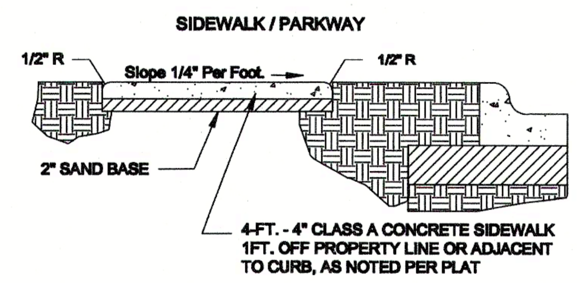


EXPANSION JOINT



WEAKENED PLANE JOINT

SIDEWALK / PARKWAY

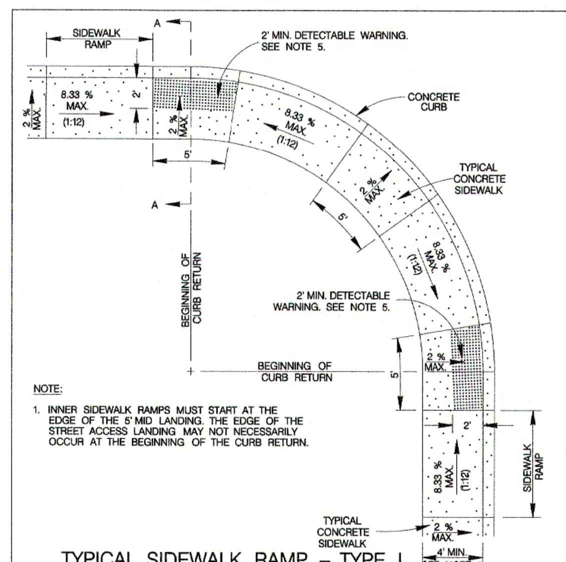


TYPICAL SECTION

NOTES:

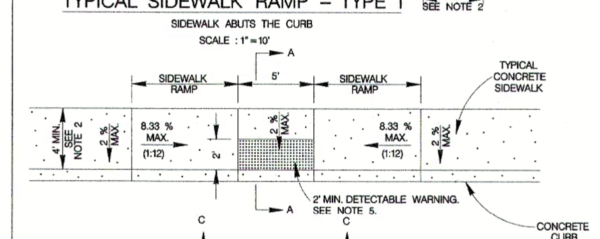
1. EXPANSION JOINTS ARE TO BE USED BETWEEN CONCRETE DRIVEWAY AND SIDEWALK.
2. SCORED JOINTS DENOTE SIDEWALK ACROSS THE DRIVEWAY AND ARE TO BE PLACED AT LEAST 1/3 rd. THROUGH THE SLAB THICKNESS.
3. ALL SIDEWALK AND DRIVEWAY CONSTRUCTION SHALL MEET A.D.A. SPECIFICATIONS.

DATE APPROVED: 7/08	DWG. NO: ST-016	SCALE: N.T.S.	City of New Braunfels — ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: SIDEWALK (Residential)			
P:\CURRENT NEW BRAUNFELS DETAILS\2008\			

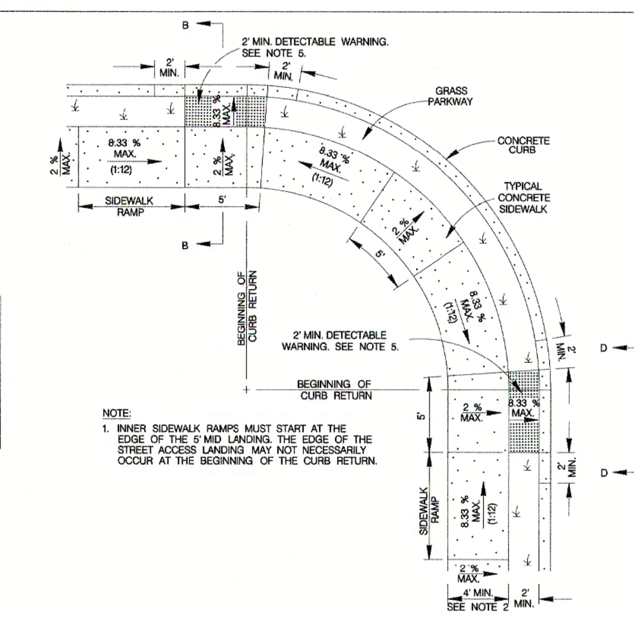


NOTE:
1. INNER SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5' MID LANDING. THE EDGE OF THE STREET ACCESS LANDING MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.

TYPICAL SIDEWALK RAMP - TYPE I
SIDEWALK ABUTS THE CURB
SCALE : 1" = 10'

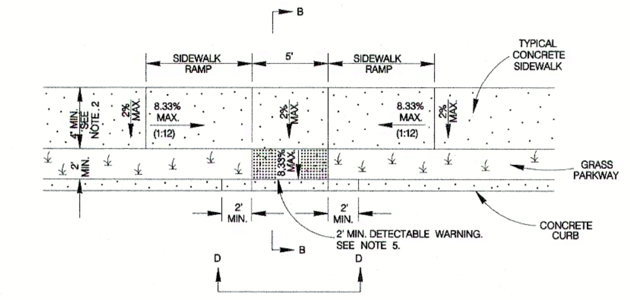


TYPICAL SIDEWALK RAMP - TYPE II
USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB
SCALE : 1" = 10'

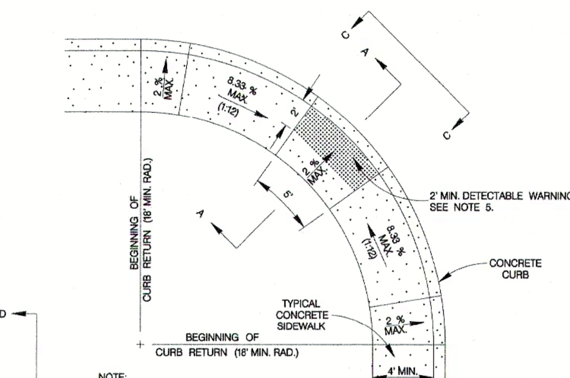


NOTE:
1. INNER SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5' MID LANDING. THE EDGE OF THE STREET ACCESS LANDING MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.

TYPICAL SIDEWALK RAMP - TYPE III
SIDEWALK SEPARATED FROM CURB
SCALE : 1" = 10'

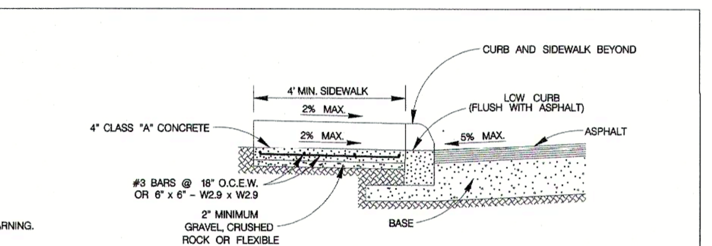


TYPICAL SIDEWALK RAMP - TYPE IV
USED AT TEE INTERSECTIONS WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE : 1" = 10'

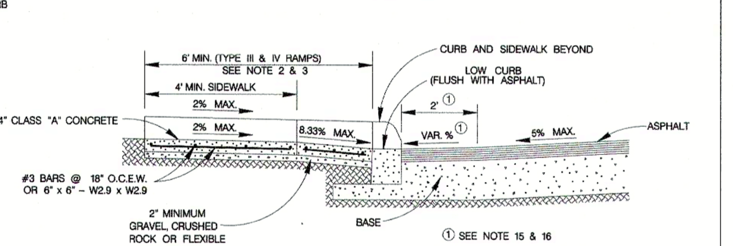


NOTE:
1. SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5' STREET ACCESS LANDING. THE TOP EDGE OF THE RAMP MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.
2. TYPE V RAMPS MUST HAVE 18' MIN. RADIUS.

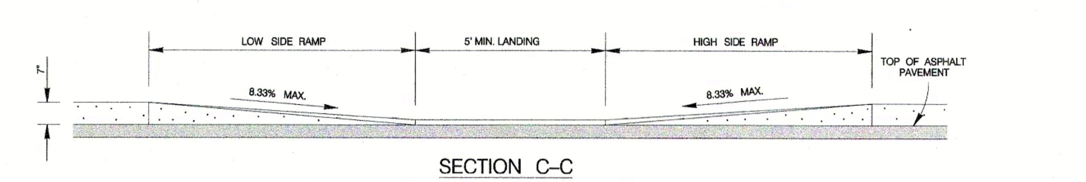
TYPICAL SIDEWALK RAMP - TYPE V
SIDEWALK ABUTS CURB
SCALE : 1" = 10'



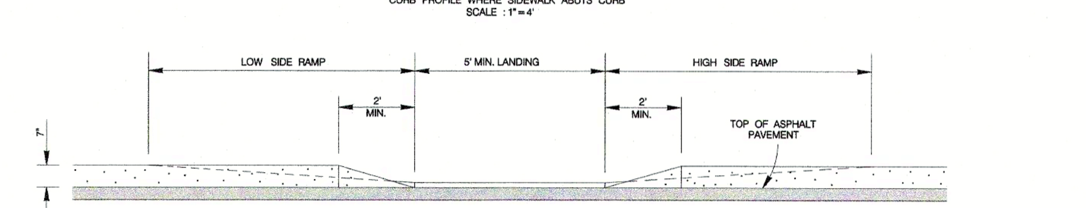
SECTION A-A
SCALE : 1" = 4'



SECTION B-B
SCALE : 1" = 4'



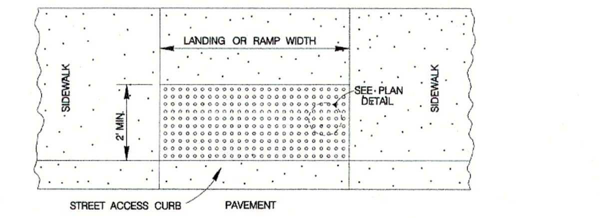
SECTION C-C
CURB PROFILE WHERE SIDEWALK ABUTS CURB
SCALE : 1" = 4'



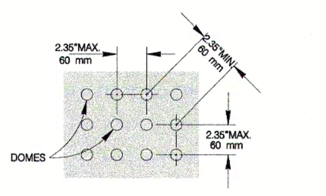
SECTION D-D
CURB PROFILE WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE : 1" = 4'

GENERAL NOTES

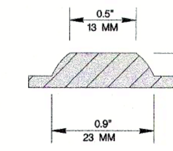
1. WHEN POSSIBLE SIDEWALKS SHOULD BE PLACED NEXT TO THE PROPERTY LINE, ALLOWING A MININMUM OF 1 FOOT BUFFER. DEVIATION OF THE PATHWAY FROM A STRAIGHT LINE IS ENCOURAGED TO AVOID TREES OR OTHER OBSTRUCTIONS.
2. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 2' FROM THE BACK OF CURB.
3. FOR OTHER THAN LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND SEPARATED A MINIMUM OF 2' FROM THE BACK OF CURB OR AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
4. SIDEWALK RAMP LENGTHS PRESENTED IN TABLE 1 ARE GUIDELINES ONLY. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE.
5. ALL CURB-RAMPS OR LANDINGS ABUTTING THE CROSSWALK SHALL HAVE A DETECTABLE WARNING 24 INCHES DEEP (IN THE DIRECTION OF PEDESTRIAN TRAVEL) AND EXTENDING THE FULL WIDTH OF THE CURB RAMP OR LANDING. THE DETECTABLE WARNING SHALL CONSIST OF RAISED TRUNCATED DOMES, ALIGNED IN A GRID PATTERN WITH A DIAMETER OF A NOMINAL 0.9 INCHES (23 MM), A HEIGHT OF NOMINAL 0.2 INCHES (5 MM) AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 INCHES (60 MM). THE DETECTABLE WARNING SURFACE SHALL BE A CAST-IN-PLACE TILE CONFORMING TO THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS OR PAVERS CONFORMING TO TXDOT STANDARD PED-05, PEDESTRIAN FACILITIES.
6. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE.
7. SIDEWALK RAMP TYPE V SHALL BE USED ONLY WHERE THERE IS SIGNIFICANT RESTRICTION WITHIN THE PARKWAY TO CONSTRUCT TYPE I OR TYPE III RAMPS.
8. CONSTRUCTION OF ALL WHEELCHAIR RAMPS TO BE INCLUDED UNDER ITEMS "500 - CONCRETE CURB, GUTTER, AND CONCRETE CURB AND GUTTER" AND /OR "502 - CONCRETE SIDEWALKS". RAMP SURFACE SHALL BE BRUSH FINISHED.
9. THESE DETAILS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS OF WHEELCHAIR RAMPS TO BE SHOWN ON CONSTRUCTION PLANS. CITY CONSTRUCTION INSPECTOR CAN ADJUST LOCATIONS FOR SAFETY OR UTILITY CLEARANCE.
10. SIDEWALKS LESS THAN 5 FEET IN WIDTH SHALL BE PROVIDED WITH A PASSING SPACE AT A MAXIMUM SPACING OF 200 FEET.
11. WHEELCHAIR RAMP SHALL BE CONSTRUCTED WITH 4" CLASS "A" CONCRETE AND 2" MINIMUM GRAVEL, CRUSHED ROCK OR FLEXIBLE BASE MATERIAL.
12. REINFORCING STEEL SHALL BE #3 BARS AT 18" O.C.E.W. OR 6" x 6" - W2.9 x W2.9 WIRE MESH.
13. SIDEWALK GRADES SHALL NOT EXCEED THE GRADE ESTABLISHED FOR THE ADJACENT ROADWAY, ANY SIDEWALK CONSTRUCTION THAT DEVIATES FROM THE NATURAL GRADE OF THE ROADWAY TO CREATE A GRADE STEEPER THAN THE EXISTING ROADWAY WILL REQUIRE RAMPS, HANDRAILS AND RESTING PLATFORMS TO BE CONSTRUCTED IN ACCORDANCE WITH ADA AND TAS STANDARDS.
14. SIDEWALK CROSS GRADE SHALL HAVE A MAXIMUM SLOPE OF 2%. LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
15. THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES SHALL BE LESS THAN 11%. THE CHANGE OF GRADE SHALL BE DEFINED AS THE ALGEBRAIC DIFFERENCE OF THE ADJACENT SURFACE SLOPES. IN THE CASE OF A STREET ACCESS RAMP DESIGNED AT THE 8.33% MAXIMUM SLOPE, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN 2.67% (I.E. 8.33-(-2.67)=11). IN ADDITION, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN OR EQUAL TO 5%.
16. IF THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES IS GREATER THAN OR EQUAL TO 11%, A LEVELING STRIP, 2 FEET IN LENGTH, SHALL BE PROVIDED TO TRANSITION THE ADJACENT SURFACES.
17. ADA COMPLIANCE IN ALTERATIONS INCLUDE ONLY THAT WORK WITHIN THE LIMITS, BOUNDARIES OR SCOPE OF A PLANNED PROJECT.



DETECTABLE WARNING SURFACE
SCALE : 1" = 4'

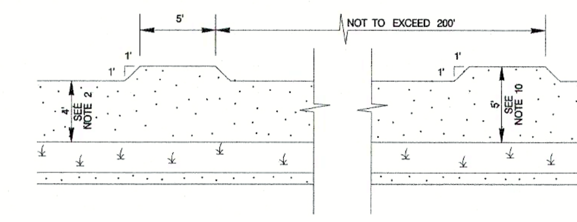


PLAN DETAIL
NO SCALE



DOME SECTION
NO SCALE

NOTE:
STAMPED CONCRETE TRUNCATED DOMES WILL NOT BE ALLOWED TO BE USED FOR DETECTABLE WARNING ON WHEELCHAIR RAMPS. CONTRACTOR MUST SUBMIT TRUNCATED DOME INFORMATION THAT IS TO BE USED ON WHEELCHAIR RAMPS TO THE PROJECT MANAGER FOR APPROVAL AT LEAST 30 DAYS PRIOR TO INSTALLATION.



SIDEWALK PASSING SPACE
SCALE : 1" = 10'

TABLE 1
(SEE NOTE 4)

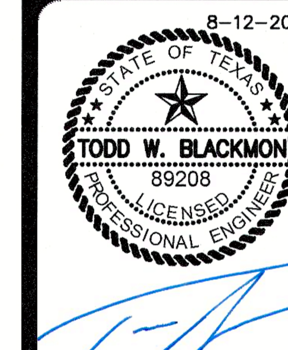
GUTTER SLOPE	SIDEWALK RAMP LENGTH (1:12) LOW SIDE	HIGH SIDE
1%	5'-6"	7'-2"
2%	5'-0"	8'-4"
3%	4'-6"	10'-0"
4%	4'-2"	12'-6"
5%	3'-10"	16'-8"

MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

WHEELCHAIR RAMP STANDARDS

___% SUBMITTAL PROJECT NO.:________ DATE:________
DRWN. BY: V. VASQUEZ DSGN. BY:________ CHKD. BY: R.S. HOSSEINI, P.E. SHEET NO.:___ OF___

NO.	REVISION	DATE



PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

TYPICAL STREET DETAILS

PLAT NO. ________
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C2.10

Date: Aug 12, 2022, 11:44am User ID: jmay
File: P:\300\34\07\Design\Civil\STDT-3003407.dwg

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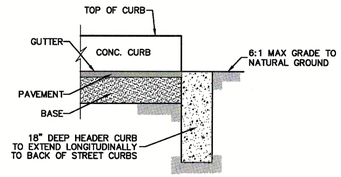
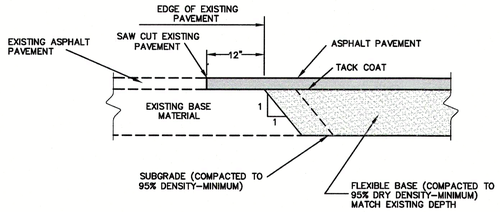
FOR PERMIT



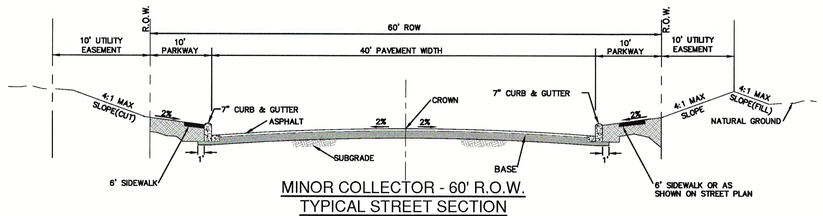
HEADER CURB

NOT TO SCALE



PAVEMENT JUNCTURE DETAIL

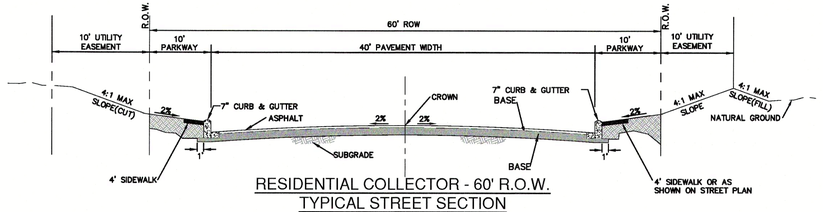
NOT TO SCALE



MINOR COLLECTOR - 60' R.O.W.
TYPICAL STREET SECTION

NOT-TO-SCALE

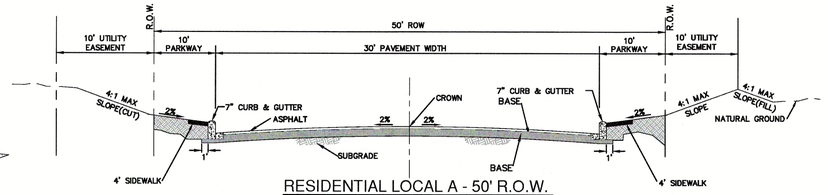
S SOLMS RD: STA. 25+59.39 TO 32+82.32



RESIDENTIAL COLLECTOR - 60' R.O.W.
TYPICAL STREET SECTION

NOT-TO-SCALE

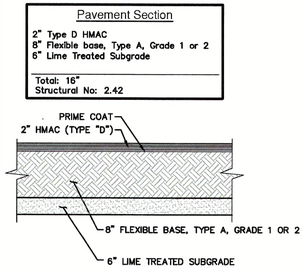
MOON HILL RD: STA. 28+89.00 TO 33+02.29



RESIDENTIAL LOCAL A - 50' R.O.W.
TYPICAL STREET SECTION

NOT-TO-SCALE

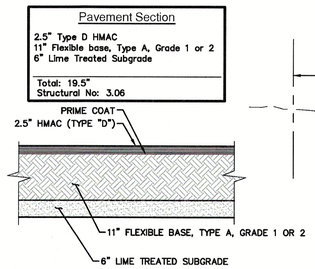
CLEAR SKY VIEW: SEE SHEET FOR STATIONING
CORN FIELD LN: STA. 1+40.00 TO 2+45.12
FOGGY PASS DR: STA. 1+50.00 TO 3+55.00
MOON HILL RD: STA. 11+65.35 TO 28+89.00
WENTZ HILL DR: STA. 8+68.00 TO 27+66.60



LOCAL TYPE "A"
(CLAY SUBGRADE)

NOT TO SCALE

CLEAR SKY VIEW: STA. 2+60.00 TO END
CORN FIELD LN: STA. 1+40.00 TO END
FOGGY PASS DR: STA. 1+50.00 TO END
MOON HILL RD: STA. 11+65.35 TO 28+89.00
WENTZ HILL DR: STA. 8+68.00 TO END



RESIDENTIAL / MINOR COLLECTOR
(CLAY SUBGRADE)

NOT TO SCALE

MOON HILL RD: STA. 29+95.00 TO END
S SOLMS RD: STA. 25+59.39 TO END

NOTES:

PAVEMENT DESIGN THICKNESS BASED ON GEOTECHNICAL REPORTS BY TTL, INC., PROJECT NO. 00220900622.00, DATED JUNE 7, 2022.

1. REFERENCE PROJECT GEOTECHNICAL REPORT, PROJECT SPECIFICATIONS AND CITY OF NEW BRAUNFELS SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND ALTERNATE PAVEMENT SECTIONS.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

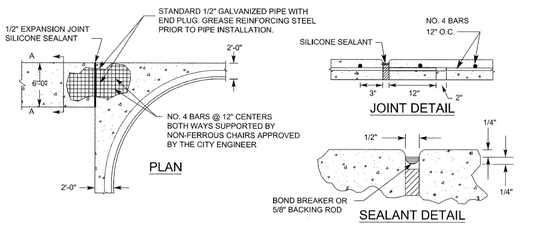
3. SUBGRADE SOILS SHALL BE TESTED FOR SOLUBLE SULFATE CONTENT PRIOR TO LIME TREATMENT.

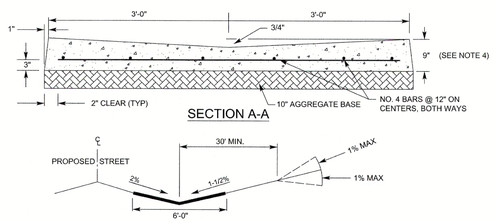
4. THE FOLLOWING IS AN EXCERPT FROM THE PROJECT GEOTECHNICAL REPORT BY TTL, INC. DATED JUNE 7, 2022, PROJECT NO. 00220900622.00.

"THE SUBGRADE SHALL BE TREATED WITH HYDRATE LIME IN ACCORDANCE WITH THE TxDOT ITEM 260. THE OPTIMUM HYDRATED LIME CONTENT SHOULD RESULT IN A SOIL-LIME MIXTURE WITH A pH OF AT LEAST 12.4 WHEN TESTED IN ACCORDANCE WITH ASTM C 977, APPENDIX X1."

"THE HYDRATED LIME SHOULD INITIALLY BE BLENDED WITH A MIXING DEVICE SUCH AS A PULVERMIXER. AFTER SUFFICIENT MOISTURE CONDITIONING, THE TREATED SOIL MIXTURE SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH THE STANDARD EFFORT (ASTM D 698) AT MOISTURE CONTENTS FROM OPTIMUM TO +4 PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT. IF THE IN-PLACE GRADATION REQUIREMENTS CAN BE ACHIEVED DURING INITIAL MIXING, THE REMIXING AFTER THE CURING PERIOD CAN BE ELIMINATED."

CROSS GUTTER



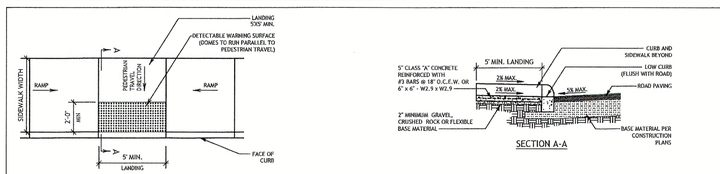


TYPICAL PROFILE AT LOCAL RESIDENTIAL STREET INTERSECTION

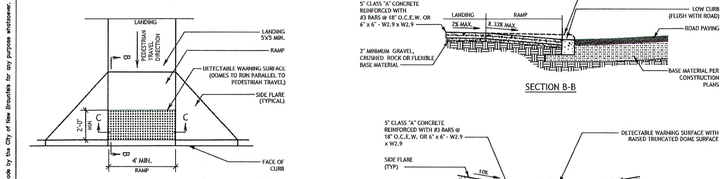
NOTES:

1. ALL CONCRETE SHALL BE CLASS "A" 3,000 PSI.
2. FINISHED ASPHALT CONCRETE SURFACE TO BE FLUSH WITH CROSS GUTTER LIP.
3. CONSTRUCTION OF CROSS GUTTER IS NOT ALLOWED ACROSS MAJOR COLLECTOR OR ARTERIAL STREETS.
4. ADJACENT SPANDREL SHALL BE 9" THICK CLASS "A" 3,000 PSI CONCRETE.

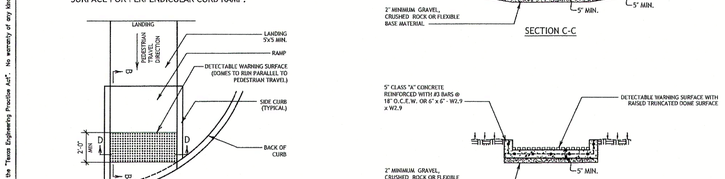
DATE APPROVED: 07/2008	DWG. NO: ST-020	SCALE: N.T.S.	City of New Braunfels ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: CROSS GUTTER			



TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING FOR PARALLEL CURB RAMP.

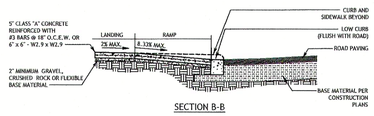


TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE FOR PERPENDICULAR CURB RAMP.

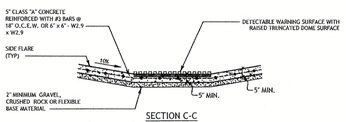


TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN FOR DIRECTIONAL CURB RAMP.

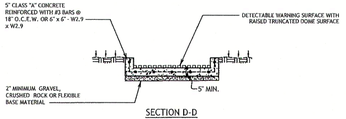
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

CURB RAMP 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 SIDEWALKS AS DIRECTED.
2. THESE DETAILS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS OF CURB RAMPS ARE TO BE SHOWN ON THE CONSTRUCTION PLANS. ALL ACCESSIBLE WALK WAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN THE AMERICANS WITH DISABILITIES ACT (ADA) AND TEXAS ACCESSIBILITY STANDARDS (TAS), CITY ENGINEER OR BUILDING OFFICIAL MAY ADJUST LOCATIONS FOR SAFETY OR UTILITY CLEARANCE.
3. THE MINIMUM STANDARD SIDEWALKS SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 118-49 OF THE NEW BRAUNFELS CODE OF ORDINANCES.
4. ALL LANDINGS WHERE REQUIRED SHALL BE 5'X 5' (60"X60") MINIMUM WITH A MAXIMUM 2% SLOPE IN ANY DIRECTION.
5. RAMP LENGTHS SHALL BE SUFFICIENT TO MAINTAIN A MAXIMUM SLOPE OF 8.33% (1V:12H). MAXIMUM ALLOWABLE CROSS SLOPE ON SIDEWALK AND CURB RAMP SURFACES IS 2% (1V:50H).
6. SIDEWALK GRADES SHALL NOT EXCEED THE GRADE ESTABLISHED FOR THE ADJACENT ROADWAY, ANY SIDEWALK CONSTRUCTION THAT DEVIATES FROM THE GRADE OF THE NATURAL GRADE OF THE ROADWAY TO CREATE A GRADE STEEPER THAN THE EXISTING ROADWAY WILL REQUIRE RAMPS, HANDRAILS, AND LANDINGS IN ACCORDANCE WITH CURRENT ADA AND TAS REQUIREMENTS.
7. PROVIDE FLARED RAMP SIDES WITH A MAXIMUM SLOPE OF 10% (1V:10H) MEASURED ALONG THE CURB LINE. CURB RETURNS MAY BE USED IN LIEU OF SIDE FLARES IN AREAS NOT NORMALLY WALKED ACROSS BY PEDESTRIANS, BECAUSE THE ADJACENT SURFACE IS VEGETATION OR OTHER NON-WALKING SURFACE OR WHERE THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
8. MANEUVERING SPACE AT THE BOTTOM OF CURB RAMPS SHALL BE A MINIMUM OF 4X 4' (48"X48") WHOLLY CONTAINED WITHIN THE CROSSWALK AND WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH.
9. 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 CITY ENGINEER OR BUILDING OFFICIAL.
10. EXISTING FEATURES THAT COMPLY WITH CURRENT TAS REQUIREMENTS MAY REMAIN IN PLACE UNLESS OTHERWISE SHOWN ON THE PLANS.
11. HANDRAILS ARE NOT REQUIRED ON CURB RAMPS. PROVIDE CURB RAMPS WHEREVER AN ACCESSIBLE ROUTE CROSSES (PENETRATES) A CURB.
12. SEPARATE CURB RAMP AND LANDINGS FROM ADJACENT SIDEWALK AND ANY OTHER ELEMENTS WITH PRE-MOLD OR ROARD JOINT OF 1/2" UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER OR BUILDING OFFICIAL.
13. PROVIDE A SMOOTH TRANSITION WHERE THE CURB RAMPS CONNECT TO THE STREET.
14. THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES SHALL BE LESS THAN 11%. THE CHANGE OF GRADE SHALL BE DEFINED AS THE ALGEBRAIC DIFFERENCE OF THE ADJACENT SURFACE SLOPES. IN THE CASE OF A STREET ACCESS RAMP DESIGNED AT THE 8.33% MAXIMUM SLOPE, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN 2.67% (I.E. 8.33% - 2.67%=11). IN ADDITION, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN OR EQUAL TO 5%.
15. IF THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES IS GREATER THAN OR EQUAL TO 11%, A LEVELING STRIP, 2 FEET IN LENGTH, SHALL BE PROVIDED TO TRANSITION THE ADJACENT SURFACES.
16. ADA RAMP SHALL BE CONSTRUCTED WITH 5" CLASS "A" CONCRETE WITH 2" MINIMUM GRAVEL,CRUSHED ROCK OR FLEXIBLE BASE MATERIAL. REINFORCING STEEL SHALL BE #3 BARS AT 18" O.C.E.W. OR 6"x6" - W2.9 X W2.9 WIRE MESH.
17. THE EXTENTS OF ADA COMPLIANCE IN ALTERATIONS SHALL BE WITHIN THE LIMITS, BOUNDARIES OR SCOPE OF A PLANNED PROJECT AND AS DETERMINED BY THE CITY BUILDING OFFICIAL.

DETECTABLE WARNING NOTES

1. CURB RAMPS OR LANDINGS ABUTTING THE CROSSWALK MUST HAVE A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES COMPLYING WITH SECTION 705 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. 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.
5. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS AT THE BACK OF CURB. ALIGN THE ROWS OF DOMES TO BE PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP RUN AND THE STREET. DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.
6. DETECTABLE WARNING MATERIALS MUST MEET TXDOT DEPARTMENTAL MATERIALS SPECIFICATION DMS 4350 AND BE LISTED ON THE MATERIAL PRODUCER LIST. INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
7. DETECTABLE WARNING PAVERS SHALL NOT BE PERMITTED WITHOUT THE APPROVAL BY THE PUBLIC WORKS DEPARTMENT.

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the City of New Braunfels for any purpose whatsoever.

City of New Braunfels
ENGINEERING DIVISION
550 LANDA STREET
NEW BRAUNFELS, TEXAS 78130
PHONE: 830 221 4020
FAX: 830 626 3600

CURB RAMP STANDARDS		
APPROVED DATE: 05/18/2017	DWG. NO.: ST-019	SCALE: AS NOTED
DRAWN BY: RC	CONTACT: GF	SHEET: 1 OF 1

NO.	REVISION	DATE

8-12-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT. WORTH | DALLAS
10172 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.625.8555
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM # 100288-00

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
TYPICAL STREET DETAILS

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C2.11

FOR PERMIT

Date: Aug 12, 2022, 3:58pm User ID: jmay
File: P:\300\34\07\Design\Civil\STD-20034077.dwg
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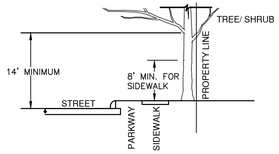
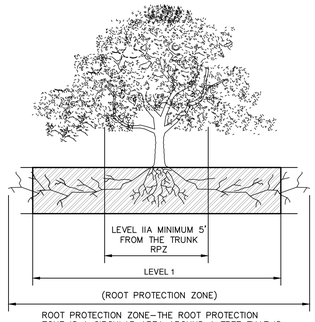


FIGURE NO. 2

A MINIMUM BRANCH CLEARANCE OF 14 FEET ABOVE STREET ELEVATION MUST BE MAINTAINED FROM THE PROPERTY LINE TO THE CURB LINE AS PRESCRIBED BY PROJECT MANAGER.

BRANCH CLEARANCE DETAIL

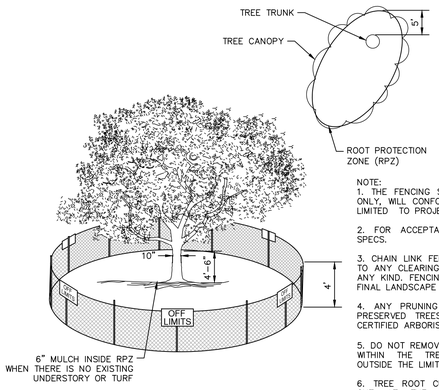
NOT TO SCALE



ROOT PROTECTION ZONE–THE ROOT PROTECTION ZONE IS A CIRCULAR AREA AROUND A TREE THAT IS BASED ON THE DIAMETER OF THE TREE. EACH 1 INCH DIAMETER OF THE TREE EQUALS 1 FOOT RADIUS FOR ROOT PROTECTION ZONE.

ELEVATION

NOT TO SCALE



NOTE:
1. THE FENCING SHOWN ABOVE IS DIAGRAMATIC ONLY, WILL CONFORM TO THE DRIP LINE AND IS LIMITED TO PROJECT BOUNDARY.

2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECS.

3. CHAIN LINK FENCE SHALL BE ERECTED PRIOR TO ANY CLEARING, GRUBBING OR SITE WORK OF ANY KIND. FENCING SHALL STAY ERECTED UNTIL FINAL LANDSCAPE OPERATIONS COMMENCE.

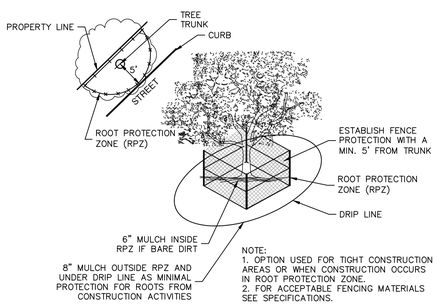
4. ANY PRUNING TO PROVIDE CLEARANCE TO PRESERVED TREES MUST BE APPROVED BY A CERTIFIED ARBORIST.

5. DO NOT REMOVE ANY TREES OVER 1" CALIPER WITHIN THE TREE PROTECTION FENCING OR OUTSIDE THE LIMITS OF CONSTRUCTION.

6. TREE ROOT CUTS SHALL BE MECHANICALLY CUT AT THE DIRECTION OF A CERTIFIED ARBORIST. CUTS SHALL BE CLEAN CUTS, WITHOUT PULLING OR TEARING.

TREE PROTECTION ZONE

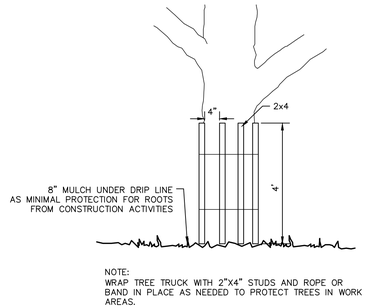
NOT TO SCALE



NOTE:
1. OPTION USED FOR TIGHT CONSTRUCTION AREAS OR WHEN CONSTRUCTION OCCURS IN ROOT PROTECTION ZONE.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

LEVEL II A FENCE PROTECTION

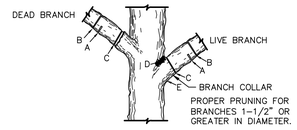
NOT TO SCALE



NOTE:
WRAP TREE TRUCK WITH 2"X4" STUDS AND ROPE OR BAND IN PLACE AS NEEDED TO PROTECT TREES IN WORK AREAS.

LEVEL II B FENCE PROTECTION

NOT TO SCALE



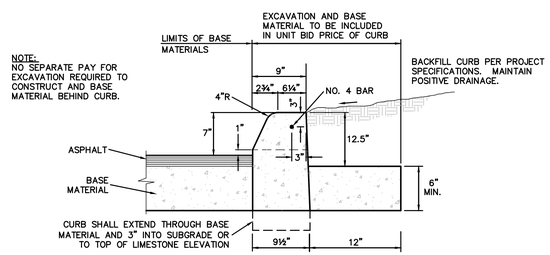
NOTE:
DO NOT CUT FROM D TO E.

A. FIRST CUT – TO PREVENT THE BARK FROM BEING PEELED WHEN THE BRANCH FALLS.
B. SECOND CUT – TO REDUCE THE WEIGHT OF BRANCH.
C. FINAL CUT – ALLOW FOR HEALING COLLAR BUT NO STUBS

FOR OAKS ONLY:
PAINT ALL WOUNDS OR CUTS WITH PRUNING PAINT WITHIN 20 MIN TO PREVENT THE SPREAD OF OAK WILT.

BRANCH PRUNING

NOT TO SCALE



NOTE:
NO SEPARATE PAY FOR EXCAVATION REQUIRED TO CONSTRUCT AND BASE MATERIAL BEHIND CURB.

STANDARD CURB DETAIL

NOT TO SCALE

NO.	REVISION	DATE

6–15–2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

TYPICAL STREET DETAILS

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C2.12

Date: Jun 15, 2022, 11:55am User ID: tmartin
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FOR PERMIT

SIGNAGE NOTES

1. UNDERGROUND UTILITIES EXIST WITHIN THE PROJECT. CONTRACTOR SHALL HAVE THE UTILITIES MARKED PRIOR TO INSTALLATION OF THE SIGN POST. SIGN LOCATIONS ILLUSTRATED ON THE PLANS ARE APPROXIMATE. CONTRACTOR SHALL LOCATE SIGNS TO AVOID UTILITIES. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES BEFORE COMMENCING WORK.
2. IN ACCORDANCE WITH THE UNDERGROUND FACILITY DAMAGE PREVENTION ACT THE TELEPHONE NUMBER FOR A UTILITY LOCATOR IS 1-800-545-6005. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE ARRANGEMENTS FOR UTILITY LOCATORS, AS NEEDED.
3. WHEN PREPARING HOLES FOR POSTS, CARE SHALL BE TAKEN SO AS NOT TO RUPTURE EXISTING DRAINAGE STRUCTURES, SPRINKLER SYSTEMS, TELECOMMUNICATIONS FACILITIES, ELECTRICAL CONDUITS AND PUBLIC UTILITIES.
4. ALL SIGNS SHALL COMPLY WITH THE SIGN DESIGNS PRESENTED IN STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS OR THE MILLENNIUM STANDARD HIGHWAY SIGN DESIGNS, IF A MILLENNIUM SIGN IS SPECIFIED ON THE PLANS.
5. SIGN LOCATIONS ILLUSTRATED ON THE PLANS ARE APPROXIMATE. SIGNS SHALL BE LOCATED IN THE FIELD TO PROVIDE APPROPRIATE FUNCTIONALITY. SIGN LOCATIONS SHALL COMPLY WITH GUIDELINES AND REQUIREMENTS PRESENTED IN THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
6. CONTRACTOR SHALL FURNISH AND MAINTAIN ALL TRAFFIC CONTROL DEVICES, LIGHTING, OR WARNING DEVICES REQUIRED TO COMPLETE THE WORK. ALL CONSTRUCTION SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
7. THREE (3) COPIES OF EQUIPMENT SUBMITTALS FOR ALL TRAFFIC SIGN COMPONENTS SHALL BE SENT TO THE ENGINEER. SUBMITTALS SHALL CONSIST OF THE APPROPRIATE COMBINATION OF CATALOG SHEETS, MATERIAL LISTS, MANUFACTURER'S BROCHURES, TECHNICAL BULLETINS, SPECIFICATIONS, DIAGRAMS, OR PRODUCT SAMPLES NECESSARY TO DESCRIBE A SYSTEM, PRODUCT, OR ITEM. SPECIFIC ITEM NUMBERS AND PRODUCT CODES WILL BE CLEARLY IDENTIFIED WHEN MULTIPLE PRODUCTS ARE LISTED ON THE SAME SHEET.
8. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL CONFORM TO APPLICABLE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION), TEXAS DOT STANDARD SPECIFICATIONS, CITY BUILDING CODE AND REGULATIONS AS WELL AS PROVISIONS APPLICABLE TO THE PROJECT AND AS OTHER SAFETY CODES AND INSPECTION REQUIREMENTS OF THE FIRE DEPARTMENT.
9. MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, UN-DEPRECIATED STOCK. ALL EQUIPMENT SHALL BE NEW, UNLESS NOTED OTHERWISE ON THE PLANS.
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HARDWARE FOR MOUNTING. ALL SIGNS WITH A WHITE BACKGROUND SHALL BE FABRICATED WITH ENGINEER GRADE REFLECTIVE SHEETING (TXDOT TYPE A). ALL SIGNS WITH NON-WHITE BACKGROUNDS SHALL BE FABRICATED WITH HIGH SPECIFIC INTENSITY REFLECTIVE SHEETING (ALL TYPE C TXDOT TSP-(4)-08).
11. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ORIGINAL CONDITION, OR BETTER, ANY DAMAGE DONE TO EXISTING BUILDINGS, RETAINING WALLS, UTILITIES, FENCES, PAVEMENT, CURBS OR DRIVEWAYS (NO SEPARATE PAY ITEM). CONTRACTOR SHALL RESTORE THE CONSTRUCTION AREA TO ORIGINAL CONDITION, OR BETTER, PRIOR TO FINAL INSPECTION.
12. ANY CONFLICT BETWEEN ANY DEFINITION, MATERIAL SPECIFICATION, CONSTRUCTION SPECIFICATION, MEASUREMENT AND PAYMENT PROCEDURE, ETC., SHOWN IN THIS PLAN SET AND ANY TEXAS DEPARTMENT OF TRANSPORTATION OR CITY OF NEW BRAUNFELS STANDARD SPECIFICATION SHALL BE RESOLVED ONLY BY THE ENGINEER AND THE ENGINEER'S DECISION SHALL BE FINAL AND BINDING.
13. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC AS PER TXDOT ITEM NO. 666.

INSTALLATION

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY AND WARNING SIGNS, STREET NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CITY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE CITY AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE CITY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

MOUNTING

THE WEDGE ANCHOR STEEL SYSTEM AND THIN-WALLED TUBING POST SHALL BE USED FOR SIGNS WITH UP TO 10 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) TRAFFIC STANDARDS SMD (GEN) - 08 AND SMD (TWT) - 08.

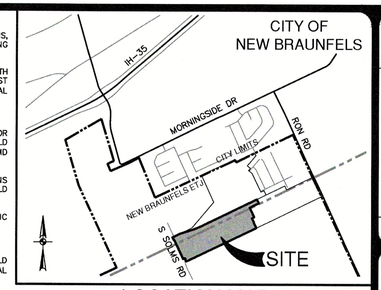
THE TRIANGULAR SLIP BASE SYSTEM AND 10 BWG TUBING POST SHALL BE USED FOR SIGNS THAT HAVE 10 TO 16 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS SMD (GEN) - 08 AND SMD (SLIP-1 - 3) - 08.

OBJECT MARKERS MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS O & OM (1 - 5) - 10.

MATERIALS

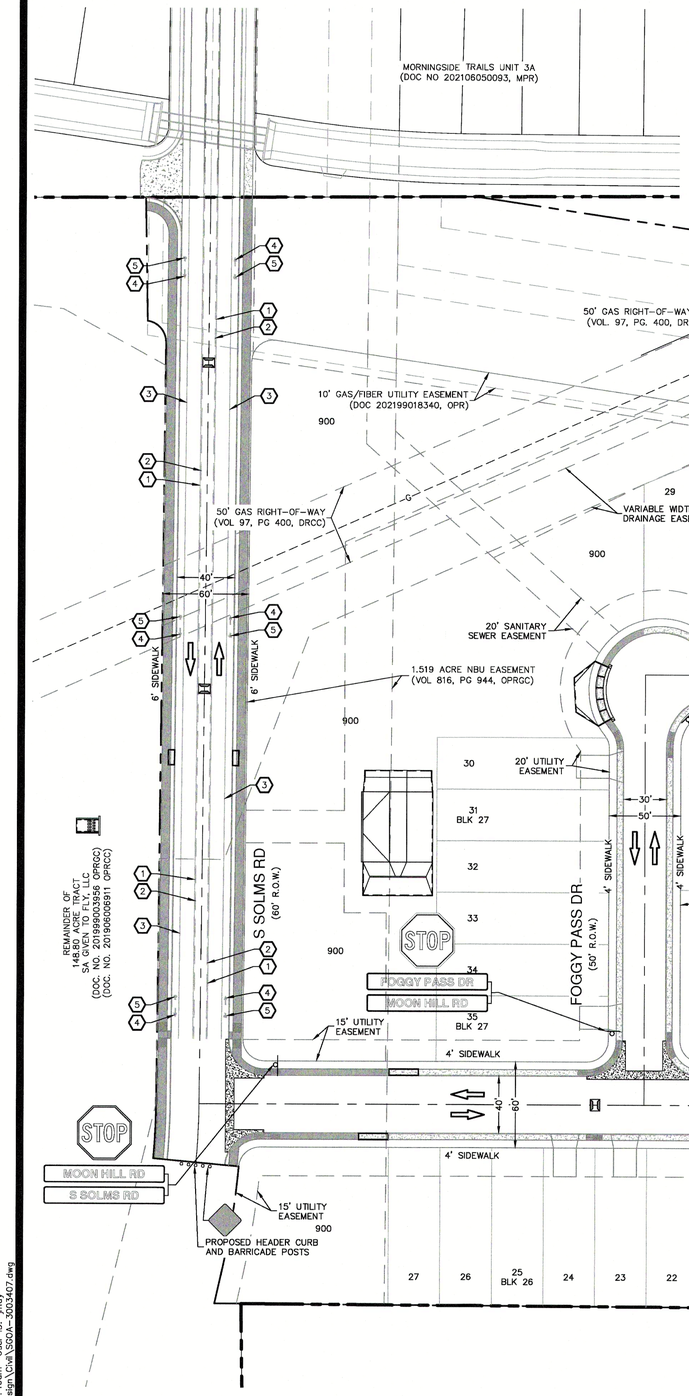
SIGN MATERIALS INCLUDING ALUMINUM SIGN BLANKS AND SIGN FACE MATERIALS SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS TSR (1 - 5) - 08 AND DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-7110 AND DMS-8300.

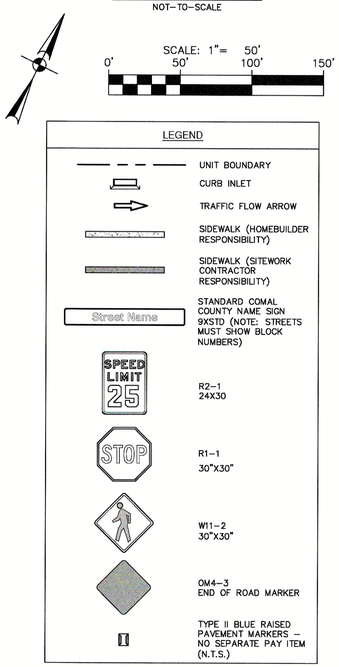
1. THE CITY OF NEW BRAUNFELS WILL INSPECT ALL SIGNS AT FINAL INSPECTION.



LOCATION MAP
NOT-TO-SCALE

SCALE: 1"= 50'
0' 50' 100' 150'





SIDEWALK NOTES:

1. FOUR (4) FOOT WIDE SIDEWALKS WILL BE CONSTRUCTED BY THE HOME BUILDER PER CITY STANDARDS AT THE TIME OF BUILDING CONSTRUCTION ALONG:
   a. CLEAR SKY VIEW
   b. CORN FIELD LN
   c. FOGGY PASS DR
   d. MOON HILL RD
   e. WENTZ HILL DR
2. FOUR (4) FOOT WIDE SIDEWALKS WILL BE CONSTRUCTED BY THE DEVELOPER PER CITY STANDARDS AT THE TIME OF SUBDIVISION STREET CONSTRUCTION ALONG:
   a. FOGGY PASS DR- LOT 900 BLOCK 27.
   b. MOON HILL RD- LOT 900 BLOCK 26, LOT 900 BLOCK 27.
   c. WENTZ HILL DR- LOT 900 BLOCK 27.
3. SIX (6) FOOT WIDE SIDEWALKS WILL BE CONSTRUCTED BY THE DEVELOPER PER CITY STANDARDS AT THE TIME OF SUBDIVISION STREET CONSTRUCTION ALONG COUNTY LINE RD
   a. S SOLMS RD

1. 4" SINGLE YELLOW SOLID THERMOPLASTIC LINES WITH TYPE I-C RPM'S ±1207 LF
2. 4" SINGLE YELLOW BROKEN THERMOPLASTIC LINES WITH TYPE I-C RPM'S ±1207 LF
3. 4" SINGLE WHITE SOLID THERMOPLASTIC LINE WITH TYPE I-C RPM'S ±1207 LF
4. STRAIGHT WHITE THERMOPLASTIC ARROW
5. BICYCLE LANE THERMOPLASTIC RIDER SYMBOL

DRIVEWAY NOTE:

DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

NO.	REVISION	DATE

8-12-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX, 78132 | 830.602.5603
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028500

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
OVERALL SIGNAGE PLAN

PLAT NO. _____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C3.00

FOR PERMIT

Date: Aug 12, 2022, 11:46am User ID: jmoy
File: P:\300\34\07\Design\Civil\SGDA-30034O7.dwg
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INSTALLATION

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY AND WARNING SIGNS, STREET NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CITY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE CITY AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE CITY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

MOUNTING

THE WEDGE ANCHOR STEEL SYSTEM AND THIN-WALLED TUBING POST SHALL BE USED FOR SIGNS WITH UP TO 10 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) TRAFFIC STANDARDS SMD (GEN) – 08 AND SMD (TWT) – 08.

THE TRIANGULAR SLIP BASE SYSTEM AND 10 BWG TUBING POST SHALL BE USED FOR SIGNS THAT HAVE 10 TO 16 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS SMD (GEN) – 08 AND SMD (SLIP–1 – 3) – 08.

OBJECT MARKERS MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS O & OM (1 – 5) – 10.

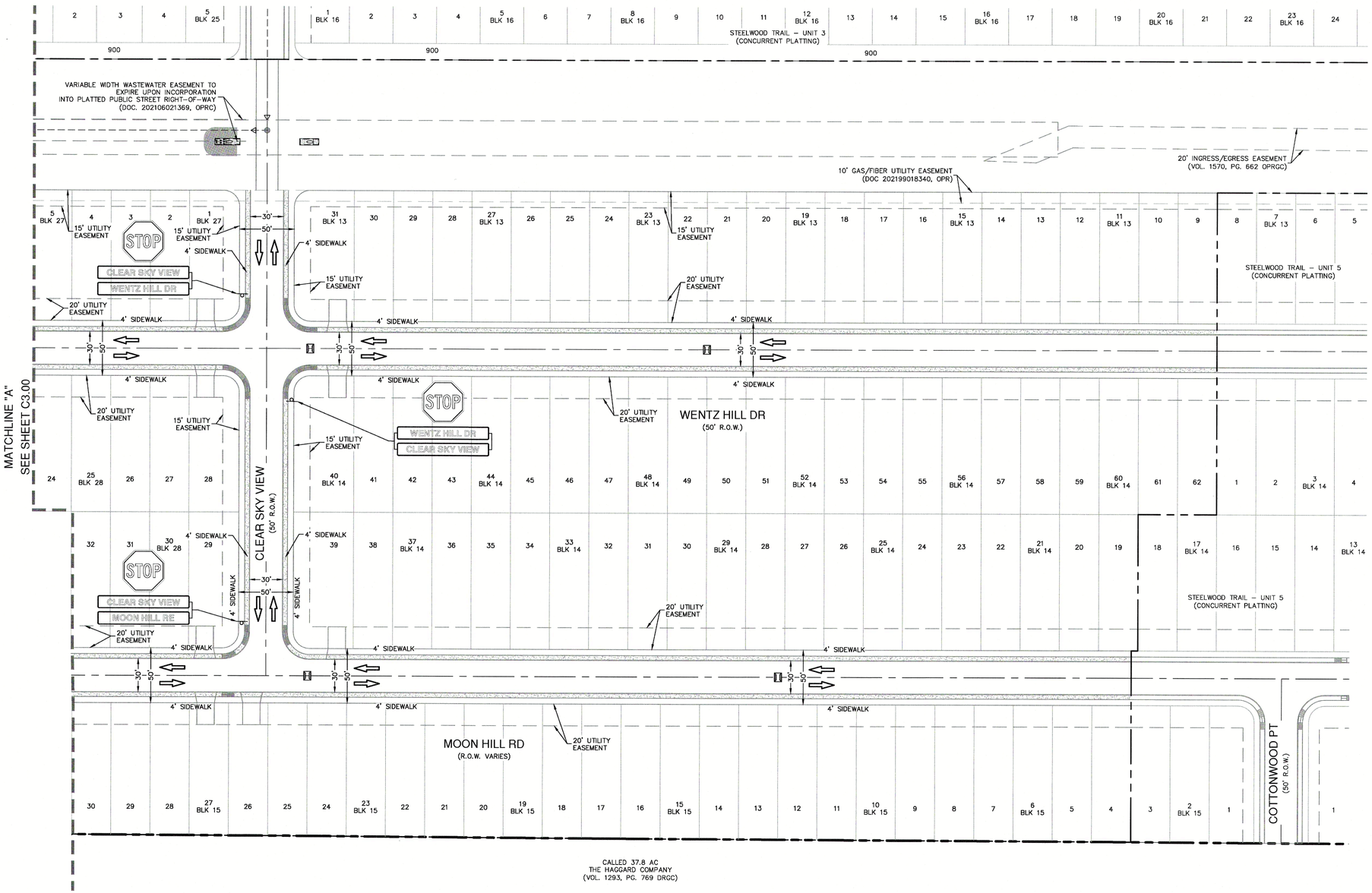
MATERIALS

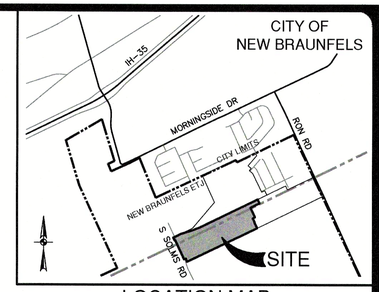
SIGN MATERIALS INCLUDING ALUMINUM SIGN BLANKS AND SIGN FACE MATERIALS SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS TSR (1 – 5) – 08 AND DEPARTMENTAL MATERIAL SPECIFICATIONS DMS–7110 AND DMS–8300.

1. THE CITY OF NEW BRAUNFELS WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

SIGNAGE NOTES

1. UNDERGROUND UTILITIES EXIST WITHIN THE PROJECT. CONTRACTOR SHALL HAVE THE UTILITIES MARKED PRIOR TO INSTALLATION OF THE SIGN POST. SIGN LOCATIONS ILLUSTRATED ON THE PLANS ARE APPROXIMATE. CONTRACTOR SHALL LOCATE SIGNS TO AVOID UTILITIES. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES BEFORE COMMENCING WORK.
2. IN ACCORDANCE WITH THE UNDERGROUND FACILITY DAMAGE PREVENTION ACT THE TELEPHONE NUMBER FOR A UTILITY LOCATOR IS 1–800–545–6005. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE ARRANGEMENTS FOR UTILITY LOCATORS, AS NEEDED.
3. WHEN PREPARING HOLES FOR POSTS, CARE SHALL BE TAKEN SO AS NOT TO RUPTURE EXISTING DRAINAGE STRUCTURES, SPRINKLER SYSTEMS, TELECOMMUNICATIONS FACILITIES, ELECTRICAL CONDUITS AND PUBLIC UTILITIES.
4. ALL SIGNS SHALL COMPLY WITH THE SIGN DESIGNS PRESENTED IN STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS OR THE MILLENNIUM STANDARD HIGHWAY SIGN DESIGNS, IF A MILLENNIUM SIGN IS SPECIFIED ON THE PLANS.
5. SIGN LOCATIONS ILLUSTRATED ON THE PLANS ARE APPROXIMATE. SIGNS SHALL BE LOCATED IN THE FIELD TO PROVIDE APPROPRIATE FUNCTIONALITY. SIGN LOCATIONS SHALL COMPLY WITH GUIDELINES AND REQUIREMENTS PRESENTED IN THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
6. CONTRACTOR SHALL FURNISH AND MAINTAIN ALL TRAFFIC CONTROL DEVICES, LIGHTING, OR WARNING DEVICES REQUIRED TO COMPLETE THE WORK. ALL CONSTRUCTION SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
7. THREE (3) COPIES OF EQUIPMENT SUBMITTALS FOR ALL TRAFFIC SIGN COMPONENTS SHALL BE SENT TO THE ENGINEER. SUBMITTALS SHALL CONSIST OF THE APPROPRIATE COMBINATION OF CATALOG SHEETS, MATERIAL LISTS, MANUFACTURER'S BROCHURES, TECHNICAL BULLETINS, SPECIFICATIONS, DIAGRAMS, OR PRODUCT SAMPLES NECESSARY TO DESCRIBE A SYSTEM, PRODUCT, OR ITEM. SPECIFIC ITEM NUMBERS AND PRODUCT CODES WILL BE CLEARLY IDENTIFIED WHEN MULTIPLE PRODUCTS ARE LISTED ON THE SAME SHEET.
8. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL CONFORM TO APPLICABLE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION), TEXAS DOT STANDARD SPECIFICATIONS, CITY BUILDING CODE AND REGULATIONS AS WELL AS PROVISIONS APPLICABLE TO THE PROJECT AND AS OTHER SAFETY CODES AND INSPECTION REQUIREMENTS OF THE FIRE DEPARTMENT.
9. MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, UN–DEPRECIATED STOCK. ALL EQUIPMENT SHALL BE NEW, UNLESS NOTED OTHERWISE ON THE PLANS.
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HARDWARE FOR MOUNTING. ALL SIGNS WITH A WHITE BACKGROUND SHALL BE FABRICATED WITH ENGINEER GRADE REFLECTIVE SHEETING (TXDOT TYPE A). ALL SIGNS WITH NON–WHITE BACKGROUNDS SHALL BE FABRICATED WITH HIGH SPECIFIC INTENSITY REFLECTIVE SHEETING (ALL TYPE C TXDOT TSP–(4)–08).
11. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ORIGINAL CONDITION, OR BETTER, ANY DAMAGE DONE TO EXISTING BUILDINGS, RETAINING WALLS, UTILITIES, FENCES, PAVEMENT, CURBS OR DRIVEWAYS (NO SEPARATE PAY ITEM). CONTRACTOR SHALL RESTORE THE CONSTRUCTION AREA TO ORIGINAL CONDITION, OR BETTER, PRIOR TO FINAL INSPECTION.
12. ANY CONFLICT BETWEEN ANY DEFINITION, MATERIAL SPECIFICATION, CONSTRUCTION SPECIFICATION, MEASUREMENT AND PAYMENT PROCEDURE, ETC., SHOWN IN THIS PLAN SET AND ANY TEXAS DEPARTMENT OF TRANSPORTATION OR CITY OF NEW BRAUNFELS STANDARD SPECIFICATION SHALL BE RESOLVED ONLY BY THE ENGINEER AND THE ENGINEER'S DECISION SHALL BE FINAL AND BINDING.
13. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC AS PER TXDOT ITEM NO. 666.





LOCATION MAP
NOT–TO–SCALE

SCALE: 1"= 50'
0' 50' 100' 150'

LEGEND

- UNIT BOUNDARY
- CURB INLET
- TRAFFIC FLOW ARROW
- SIDEWALK (HOMEBUILDER RESPONSIBILITY)
- SIDEWALK (SITEWORK CONTRACTOR RESPONSIBILITY)
- Street Name — STANDARD COMAL COUNTY NAME SIGN 9XSTD (NOTE: STREETS MUST SHOW BLOCK NUMBERS)
- SPEED LIMIT 25 — R2–1 24X30
- STOP — R1–1 30"X30"
- W11–2 30"X30"
- OM4–3 END OF ROAD MARKER
- TYPE II BLUE RAISED PAVEMENT MARKERS – NO SEPARATE PAY ITEM (N.T.S.)

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NO.	REVISION	DATE

8–12–2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.625.9393
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
OVERALL SIGNAGE PLAN

PLAT NO.
JOB NO. 30034–07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C3.01

FOR PERMIT

Date: Aug 12, 2022, 3:59pm User ID: jmoy
File: P:\3001\34\07\Design\Civil\SIGN–3003407.dwg
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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

- FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
- TWT = Thin-Walled Tubing (see SMD(TWT))
- 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
- S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

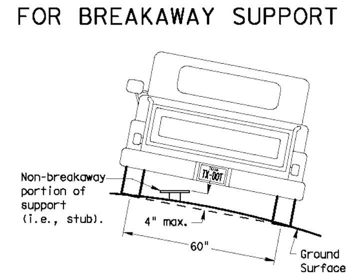
Anchor Type

- UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
- UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
- WS = Wedge Anchor Steel - (see SMD(TWT))
- WP = Wedge Anchor Plastic (see SMD(TWT))
- SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
- SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

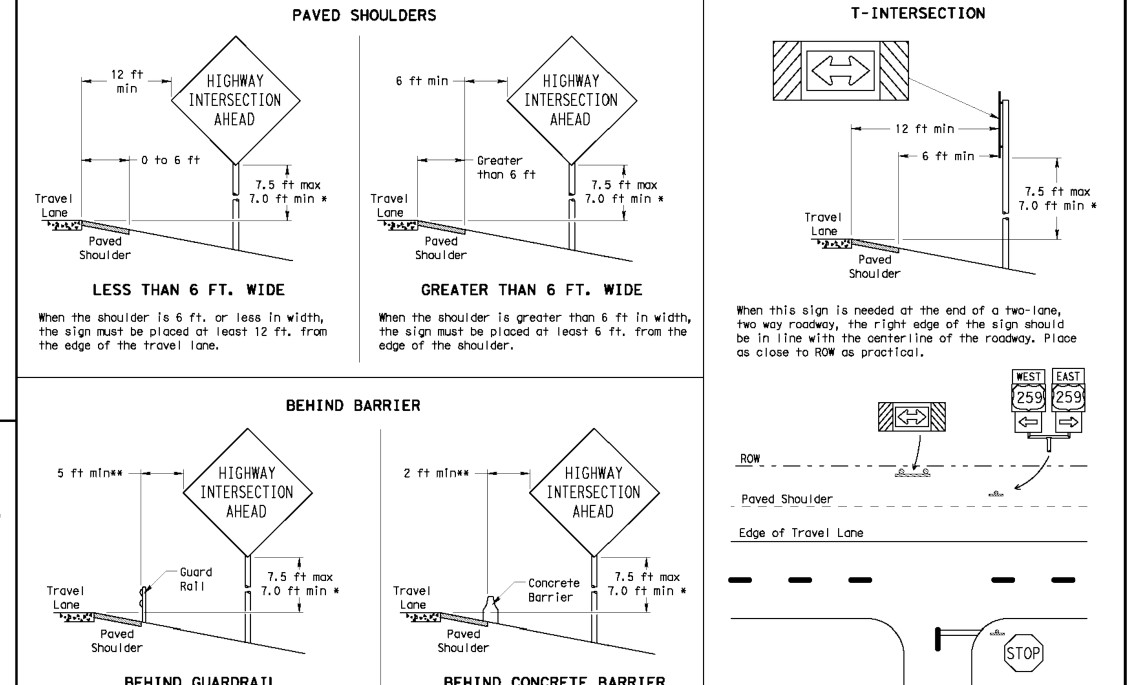
- P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
- T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
- U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
- IF REQUIRED
- 1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
- BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
- WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
- EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

SIGN LOCATION

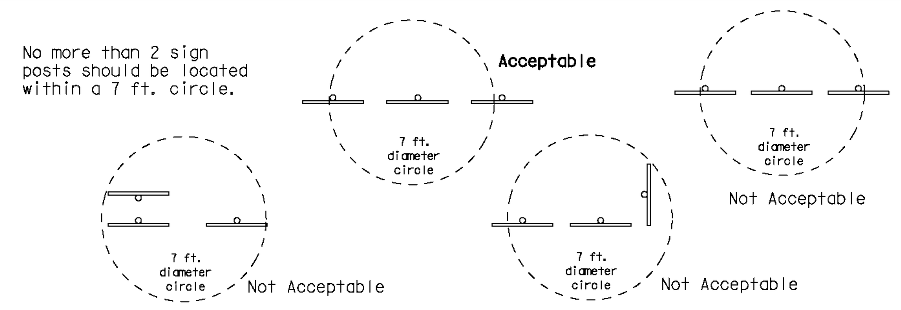


When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.

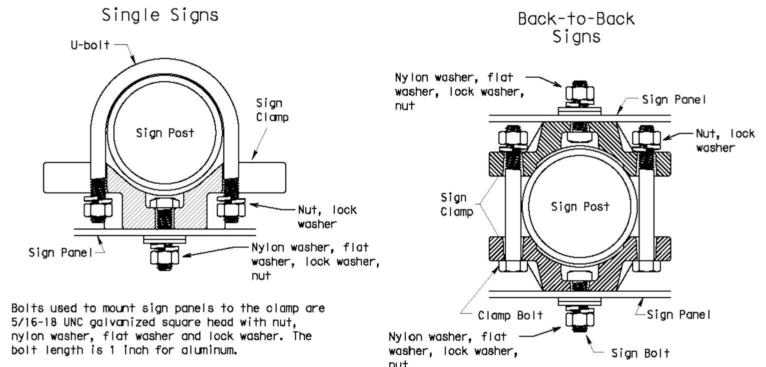
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.



TYPICAL SIGN ATTACHMENT DETAIL



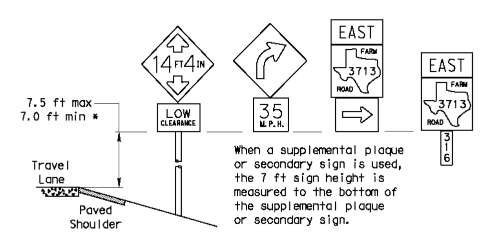
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

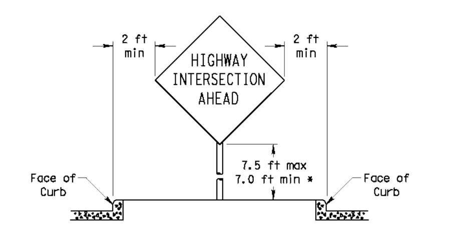
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



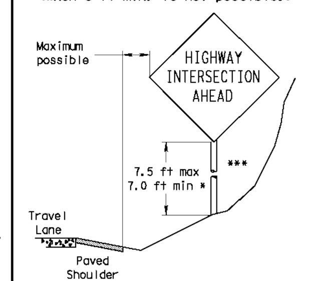
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm

Texas Department of Transportation — Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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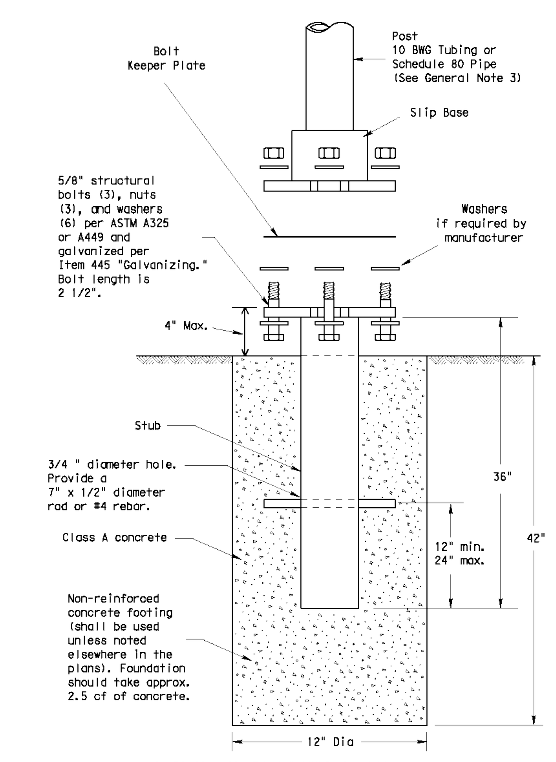
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   - 10 BWG Tubing (2.875" outside diameter)
     - 0.134" nominal wall thickness
     - Seamless or electric-resistance welded steel tubing or pipe
     - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
     - Other steels may be used if they meet the following:
       - 55,000 PSI minimum yield strength
       - 70,000 PSI minimum tensile strength
       - 20% minimum elongation in 2"
     - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
     - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
     - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   - Schedule 80 Pipe (2.875" outside diameter)
     - 0.276" nominal wall thickness
     - Steel tubing per ASTM A500 Gr C
     - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
       - 46,000 PSI minimum yield strength
       - 62,000 PSI minimum tensile strength
       - 21% minimum elongation in 2"
     - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
     - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
     - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

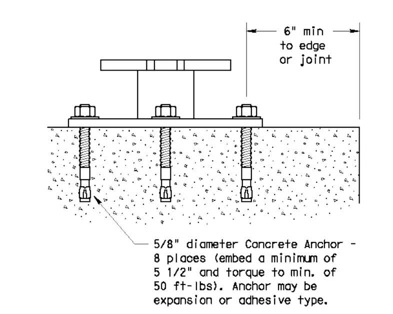
Foundation

1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support

1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation — Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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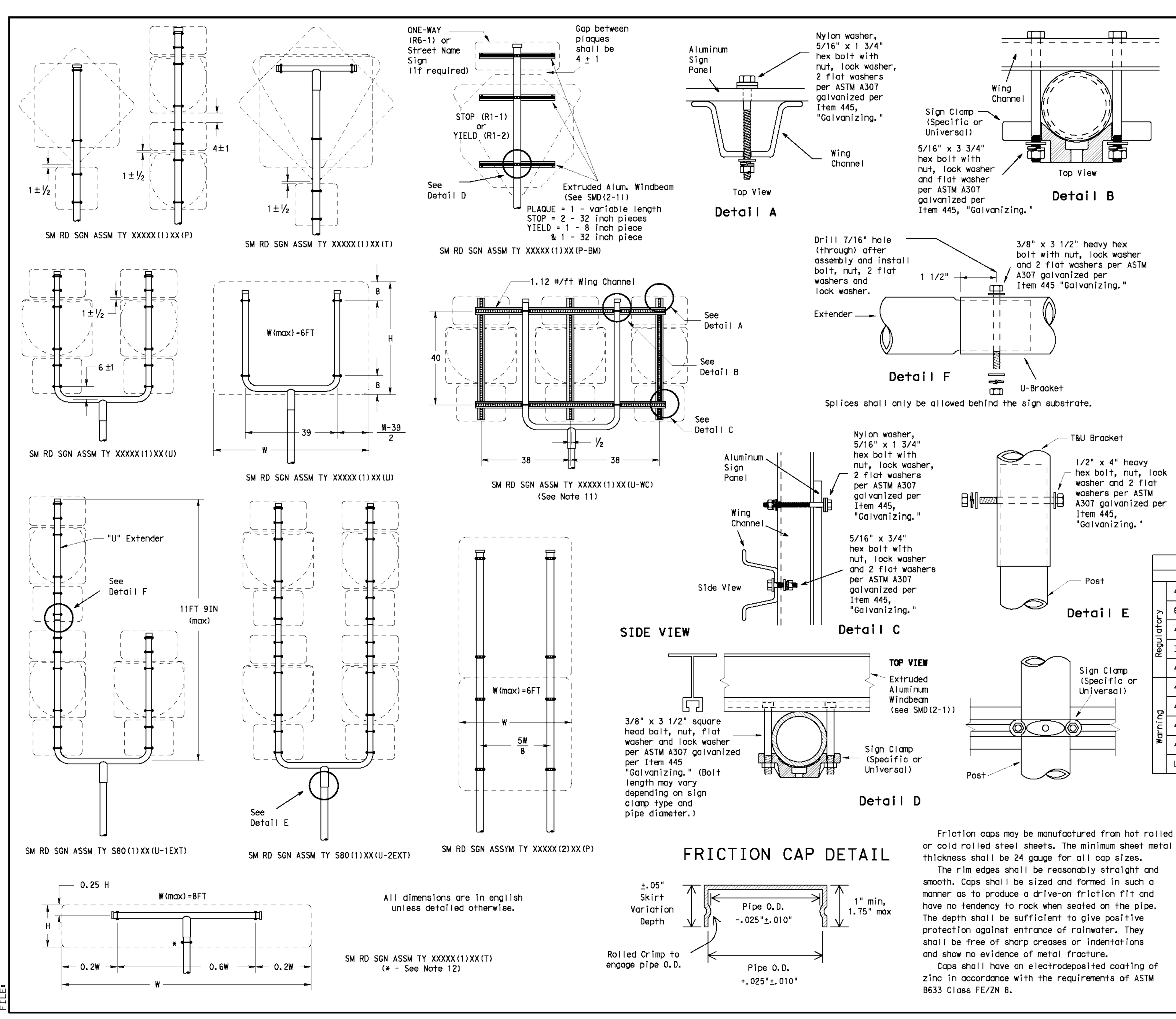

Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
Regulatory	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
Regulatory	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
Regulatory	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
Regulatory	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY S80(1)XX(T)
Warning	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
Warning	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
Warning	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation — Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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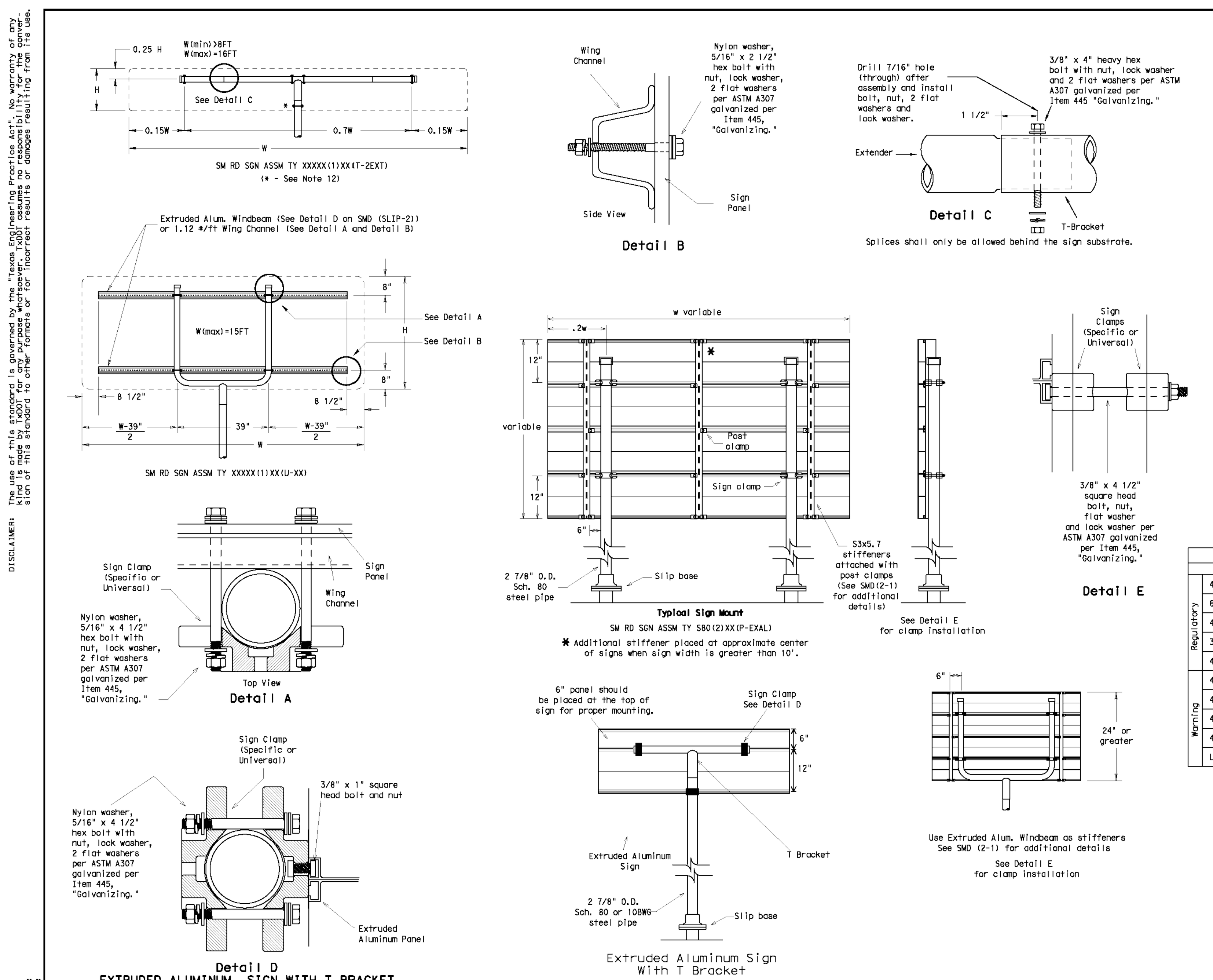

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3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
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8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
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11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
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Regulatory	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
Regulatory	48x60-inch signs	TY S80(1)XX(T)
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Warning	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
Warning	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation — Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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NO.	REVISION	DATE

6-15-2022 — STATE OF TEXAS — TODD W. BLACKMON — 89208 — LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS

NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
TXDOT SIGN MOUNTED DETAILS

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C3.10

FOR PERMIT

Date: Jun 15, 2022, 11:56am User ID: tmartin
File: P:\300\34\07\Design\Civil\SGDT-3003407.dwg

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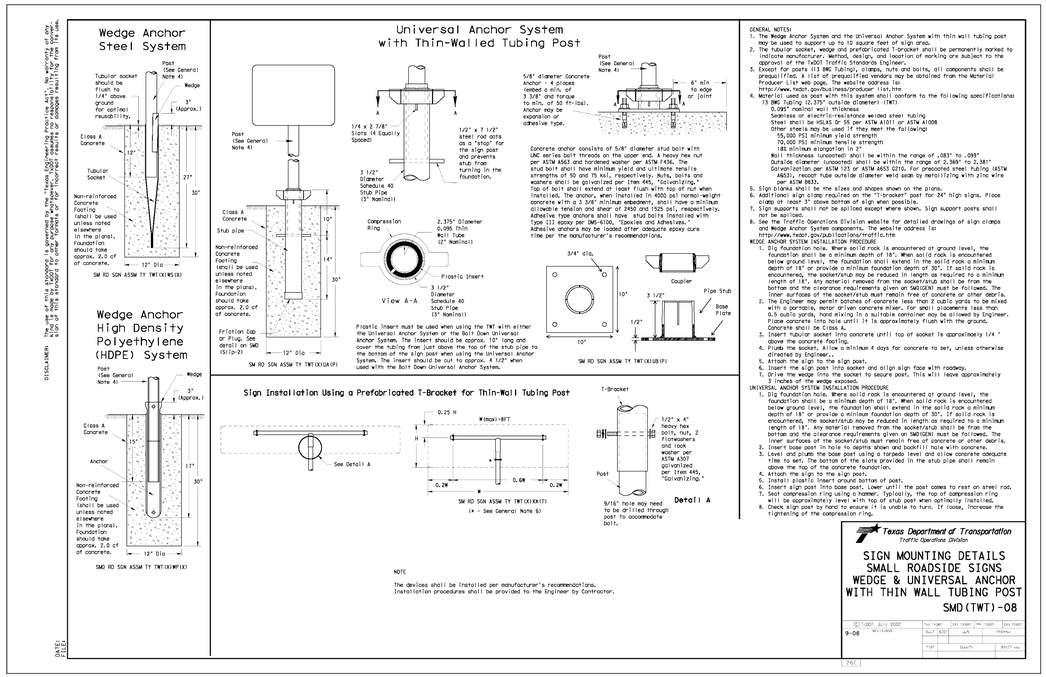
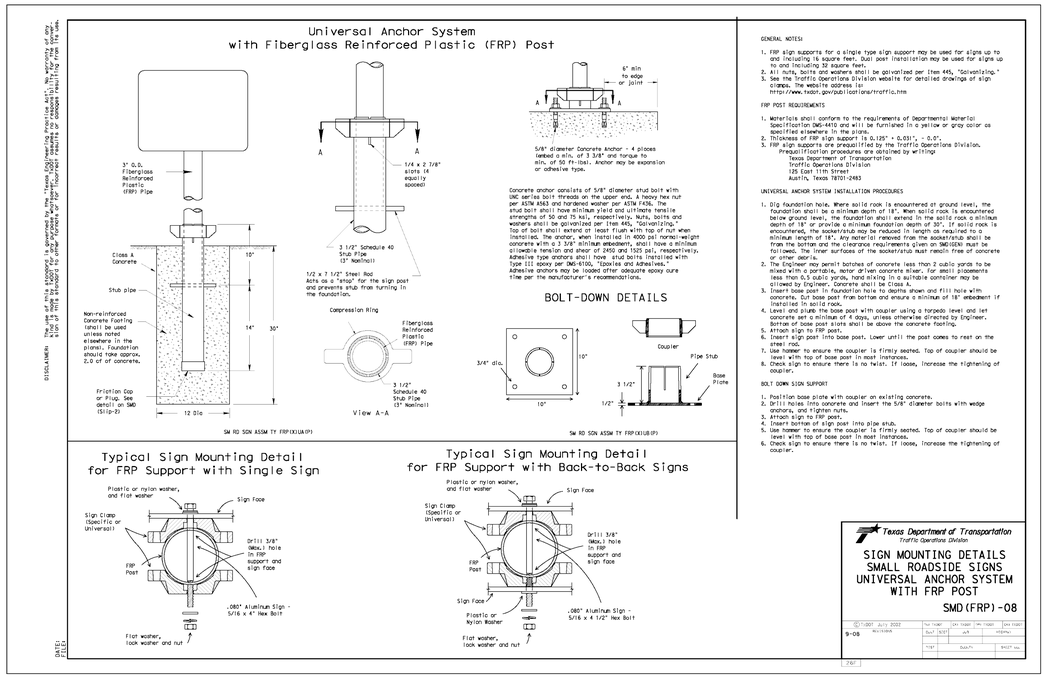
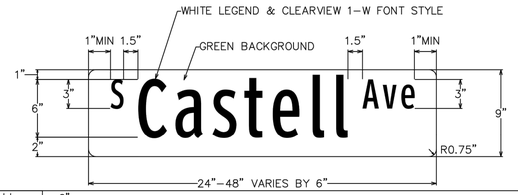




STREET SIGN DETAIL - GROUND MOUNT



Height	9"
Length	24" min 48" max 6" increments in length
Thickness	0.080"
Substrate	Flat aluminum sheeting with ¾" radius circular fillets at corners conforming to the requirements of ASTM B 209, Alloys 6061-T-6, or 5052-H38.
Sign Face Materials	Green film over High Intensity Prismatic sheeting
Legend	Legends shall be Clearview 1-W font style. Reduced spacing between the letters or words should not be used as a means of reducing the overall size of a street name sign unless approved by the City Traffic Engineer.
Color	White legend on green background

Notes:

1. Street name signs shall be double sided when center mounted on top of sign post. Only one street name sign should be installed on top of sign post with STOP or YIELD sign.
2. When two sets of street name signs are required (e.g. at "T" intersections), one double-sided street name sign shall be mounted on sign post. The sign assembly shall meet minimum height requirements as required in the Texas Manual on Uniform Traffic Control Devices (TMUTCD). When required, DEAD END (W14-1a) or NO OUTLET (W14-2a) signs shall also be mounted on the sign post.
3. Street name signs greater than 36" long and center mounted on top of sign post shall be mounted on post top bracket with 12" slot. All other street name signs center mounted on top of sign post shall be mounted on post top bracket with 5 ¼" slot.
4. Street name signs mounted on sign post shall be mounted with double-sided round pole brackets. Two holes should be punched in the center of the 9" street name sign blank 1" from edge of the blank with 7"spacing between holes.
5. The lettering for names of streets shall be composed of a combination of lower-case letters with initial upper-case letters. Acceptable abbreviations per TMUTCD may be used except for the street name itself.
6. Red background (red film over High Intensity Prismatic) should be used for private street name signs.

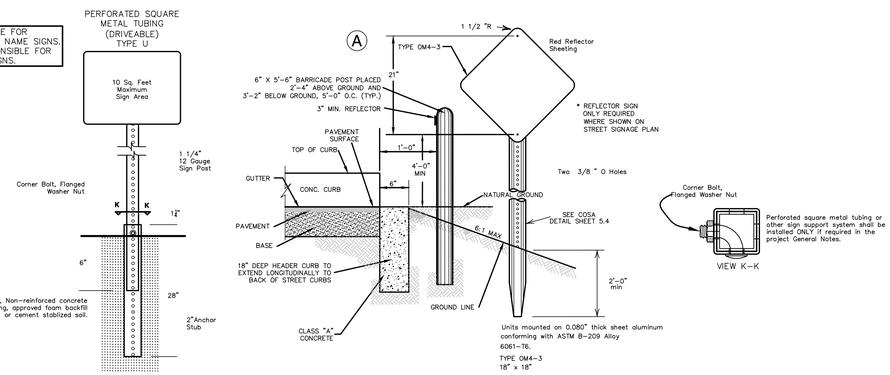
Street Sign Detail - Ground Mount		
ISSUE DATE: February 2013	DWG. NO: ST-024	SCALE: N.T.S.
DRAWN BY: RAS	CONTACT: GF	SHEET: 1 OF 1

City of New Braunfels

ENGINEERING DIVISION
424 S. CASTELL AVE.
NEW BRAUNFELS, TEXAS 78130
PHONE: 830 221 4020
FAX: 830 626 3600

P:\2010 ENGINEERING-AUTOCAD\DETAILS\NB-PUBLIC WORKS DETAILS\NB-UNAPPROVED DETAILS-2013\ST-2013.024 STREET SIGN DETAIL - GROUND MOUNT.DWG

NOTE: CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING STREET NAME SIGNS. CITY OF NEW BRAUNFELS IS RESPONSIBLE FOR REGULATORY SIGNS AND OTHER SIGNS.



BARRICADE POST AND HEADER CURB DETAIL

NOT TO SCALE

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

NO. REVISION DATE

6-15-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
TXDOT SIGN MOUNTED DETAILS

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C3.11

FOR PERMIT

Date: Jun 15, 2022, 11:56am User ID: tmartin
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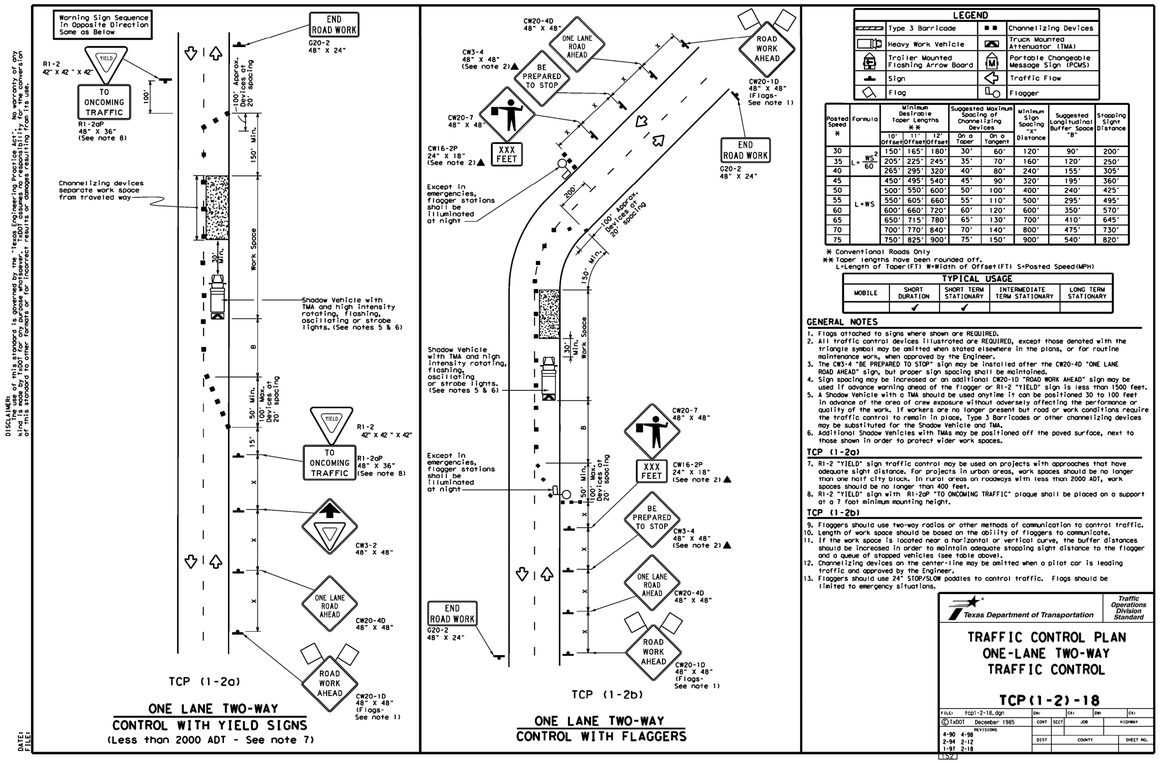

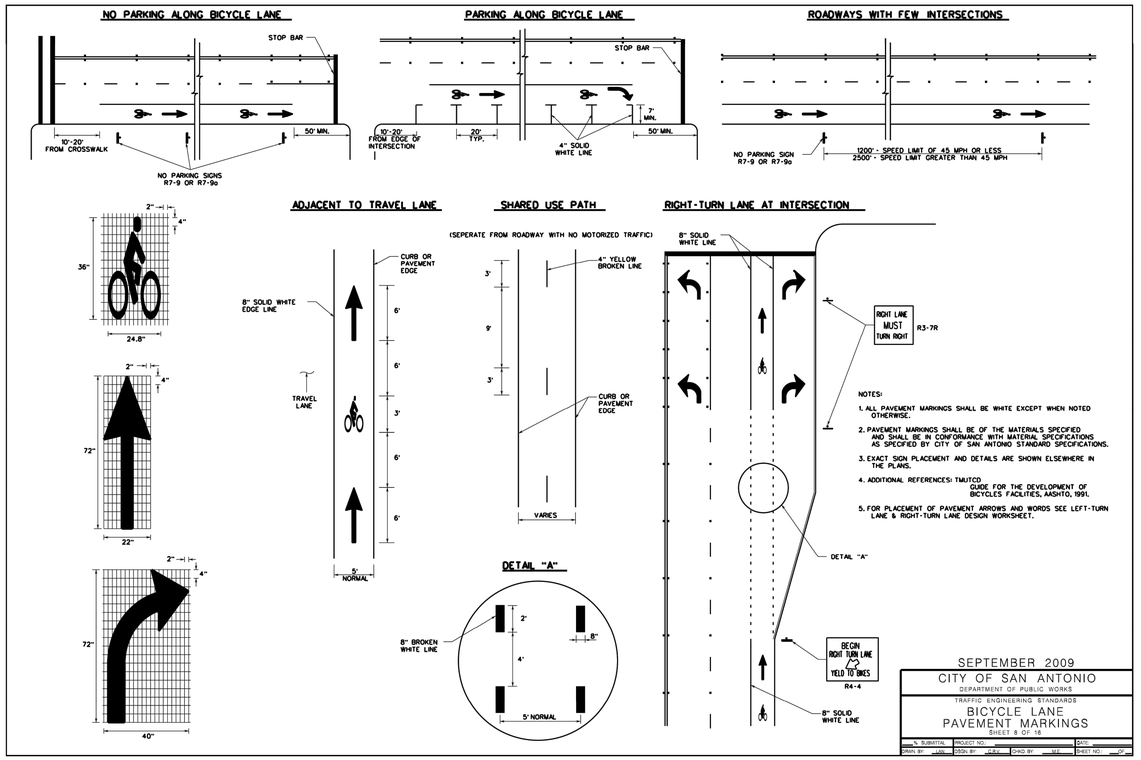

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STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
TXDOT SIGN MOUNTED DETAILS

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C3.12

Date: Jun 15, 2022, 11:57am User ID: tmartin
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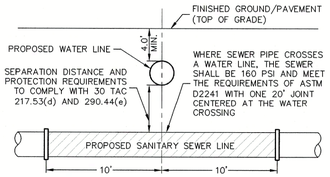
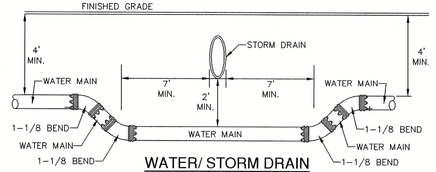


TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



WATER/ STORM DRAIN CROSSING DETAIL "A"

NOT-TO-SCALE

Pipe Restraint Length Calculations

Source: EBAA Iron, Restraint Length Calculator v 7.1.2

Assumptions:

Soil Type	Safety Factor	Trench Type	Depth of Bury	Test Pressure
CH	1.5 to 1.0	5	4 ft	200 psi

Minimum Restraint Lengths in Feet

	8" Waterline		12" Waterline	
	Main	Branch	Main	Branch
Horizontal Bends				
11.25 Degrees	3		4	
22.5 Degrees	6		8	
45 Degrees	12		17	
Misc. Fittings				
8"x6" Tee		59 (6" Branch)		
8"x8" Tee		78		
12"x6" Tee				59 (6" Branch)
12"x8" Tee		78	58	
Dead End/ Gate Valve	78		110	

Vertical Bends (assumes low side depth of 10)

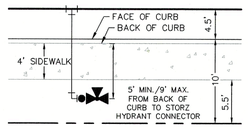
	High Side	Low Side	High Side	Low Side
11.25 Degrees	8	2	11	2
22.5 Degrees	16	3	22	4
45 Degrees	32	5	46	7

WARNING !!!

HIGH PRESSURE PIPELINE EVACUATION AND/OR CONSTRUCTION PROHIBITED WITHOUT WRITTEN PERMISSION FROM ENTERPRISE.

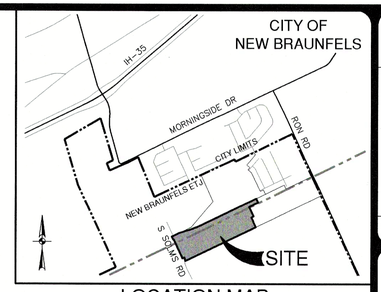
ADDITIONAL CONSTRUCTION NOTES:

1. PRIOR TO SITE MOBILIZATION, CONTRACTOR SHALL OBTAIN A FINAL EXECUTED COPY OF THE "ENTERPRISE TEXAS PIPELINE, LLC–ENCROACHMENT AGREEMENT."
2. AS PER "ENCROACHMENT AGREEMENT," CONTRACTOR SHALL PROVIDE 72–HOUR WRITTEN NOTICE PRIOR TO CROSSING OR WORKING WITHIN THE 50' ENTERPRISE PIPELINE EASEMENT.
3. LOCAL ENTERPRISE CONTACTS INCLUDE:
   - CHESTER BLAIR (210)240–1157 MOB.
   - JUSTIN THOMAS (210)827–7201 MOB.
   - SAN ANTONIO (210)528–2782 OFF.



FIRE HYDRANT DETAIL

NOT TO SCALE



LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 50'

0' 50' 100' 150'

WATER (NBU JOB NO. W-209398)

ITEM	UNIT	QUANTITY
12" WATER LINE	LF	701
8" WATER LINE	LF	5,176
1" SINGLE SERVICE & 5/8" METER	EA	213
LUEs	EA	219
FIRE HYDRANT	EA	12
1" IRRIGATION SERVICE & 3/4" METER	EA	4
6" Gate Valve	EA	12
8" Gate Valve	EA	18
12" Gate Valve	EA	1

WATER LEGEND

- PROJECT LIMITS
- EXISTING WATER (EXISTING FIRE HYDRANT)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS, MANHOLE)
- PROPOSED SEWER (SS)
- PROPOSED WATER (FIRE HYDRANT, W)
- PROPOSED 1" SINGLE SERVICE WITH 5/8" METER
- SINGLE IRRIGATION SERVICE (REF. PLAN VIEW FOR SIZE) (IRR)
- PRESSURE RELEASE VALVE (TO BE INSTALLED BY HOMEBUILDER)
- JOINT RESTRAINT
- PROPOSED STORM DRAIN
- PROPOSED GAS (G)
- PROPOSED UNDERGROUND ELECTRIC (UGE)

JOINT RESTRAINT NOTE:

CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING HARNESSES OR FIELD LOCK GASKETS AT ALL JOINTS WITHIN THE LENGTH SHOWN. CONTRACTOR SHALL INSURE THAT ALL TEES, BENDS, VALVES, ETC. HAVE A MINIMUM OF 5 FT OF PIPE WITH NO JOINTS ON EACH SIDE OF THE FITTING. JOINT RESTRAINTS AND RETAINER GLANDS SHALL BE CALCULATED BY THE DEVELOPER'S ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE JOINT RESTRAINTS WITH THE DEVELOPER'S ENGINEER.

CITY OF NEW BRAUNFELS NOTES

1. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
2. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5–FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
4. UTILITY TRENCH COMPACTION – ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX–113–E, TEX–114–E, TEX–115–E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

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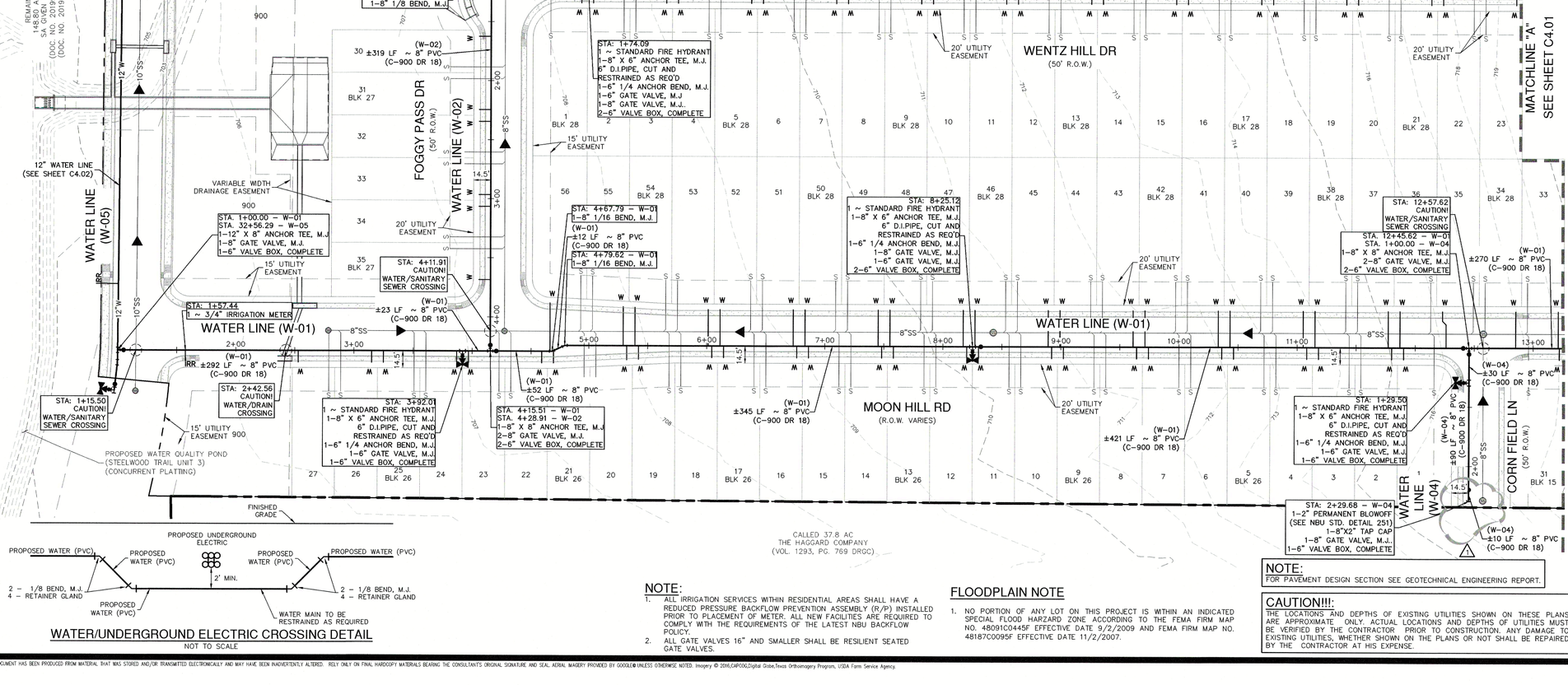

WATER/UNDERGROUND ELECTRIC CROSSING DETAIL

NOT TO SCALE

NOTE:

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2. ALL GATE VALVES 16" AND SMALLER SHALL BE RESILIENT SEATED GATE VALVES.

FLOODPLAIN NOTE

1. NO PORTION OF ANY LOT ON THIS PROJECT IS WITHIN AN INDICATED SPECIAL FLOOD HARZARD ZONE ACCORDING TO THE FEMA FIRM MAP NO. 48091C0445F EFFECTIVE DATE 9/2/2009 AND FEMA FIRM MAP NO. 48187C0095F EFFECTIVE DATE 11/2/2007.

NOTE:

FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!!:

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NO.	REVISION	DATE
1	WATER DESIGN REVISED.	06/20/24

6–20–2024

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5503
TEXAS ENGINEERING FIRM 470 | TEXAS SURVEYING FIRM # 100288-00

STEELWOOD TRAIL UNIT 4

NEW BRAUNFELS, TEXAS

OVERALL WATER DISTRIBUTION PLAN

PLAT NO.

JOB NO. 30034–07

DATE MAY 2022

DESIGNER HF

CHECKED HF DRAWN BH

SHEET C4.00

FOR PERMIT

Date: Jun 20, 2024, 9:49am User ID: MLauckie
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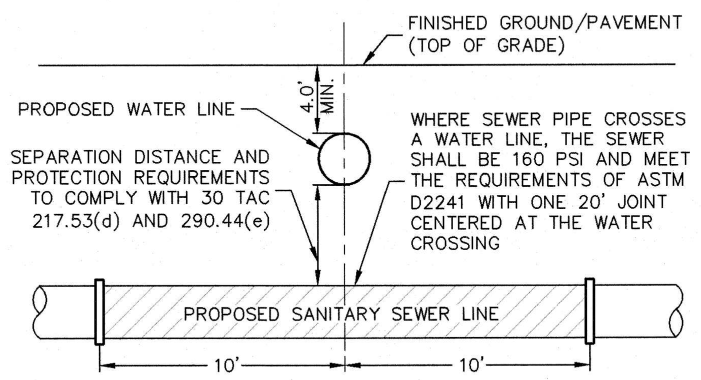

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

(1)
FOR CHLORINATION INJECTION
2 – 1" CORPORATION STOP, C.C.XI.P
1 – 1" COPPER TUBING, CUT AS REQUIRED
2 – 1" COMP. 1 1/4 COUPLING, CORP. STOP
2 – 1 1/4" THD. SOLID CAPS, THR.

8" VALVE SHALL REMAIN CLOSED UNTIL NEW MAINS HAVE BEEN DISINFECTED BY CONTRACTOR AND ACCEPTED BY NBU

CONTRACTOR SHALL TIE PROPOSED 8" MAIN TO EXISTING 8" PVC C-900 DR 18 MAIN AFTER DISINFECTION BY CONTRACTOR AND ACCEPTANCE BY NBU

2" TEMPORARY BLOWOFF ASSEMBLY

(2)
FOR CHLORINATION INJECTION
2 – 1" CORPORATION STOP, C.C.XI.P
1 – 1" COPPER TUBING, CUT AS REQUIRED
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2" TEMPORARY BLOWOFF ASSEMBLY

1 – 12" X 8" REDUCER, M.J.

Pipe Restraint Length Calculations

Source: EBAA Iron, Restraint Length Calculator v 7.1.2

Assumptions:

Soil Type	Safety Factor	Trench Type	Depth of Bury	Test Pressure
CH	1.5 to 1.0	5	4 ft	200 psi

Minimum Restraint Lengths in Feet

	8" Waterline		12" Waterline	
	Main	Branch	Main	Branch
Horizontal Bends				
11.25 Degrees	3		4	
22.5 Degrees	6		8	
45 Degrees	12		17	
Misc. Fittings				
8"x6" Tee		59 (6" Branch)		
8"x8" Tee		78		
12"x6" Tee				59 (6" Branch)
12"x8" Tee		78	58	
Dead End/ Gate Valve	78		110	

Vertical Bends (assumes low side depth of 10)	High Side	Low Side	High Side	Low Side
11.25 Degrees	8	2	11	2
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45 Degrees	32	5	46	7

WARNING !!!

HIGH PRESSURE PIPELINE EVACUATION AND/OR CONSTRUCTION PROHIBITED WITHOUT WRITTEN PERMISSION FROM ENTERPRISE.

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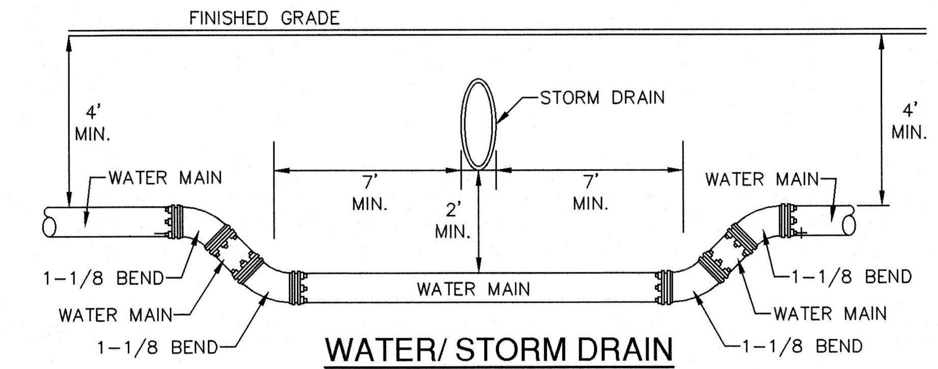
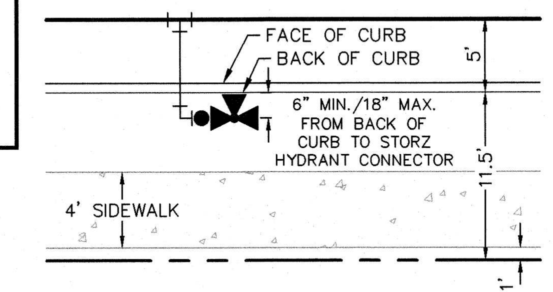


WATER/ STORM DRAIN CROSSING DETAIL "A"

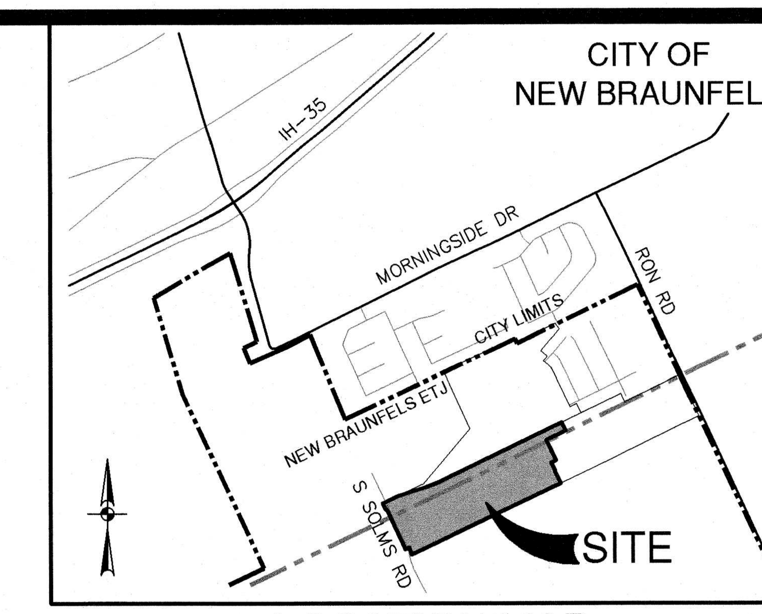
NOT-TO-SCALE



FIRE HYDRANT DETAIL

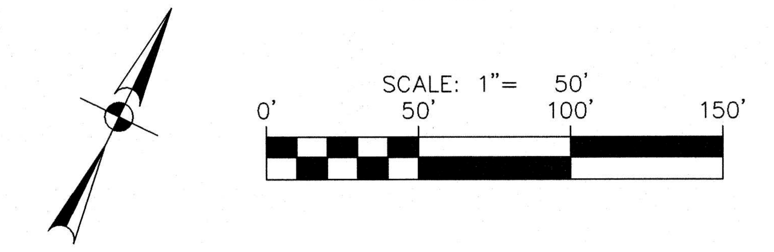
NOT TO SCALE

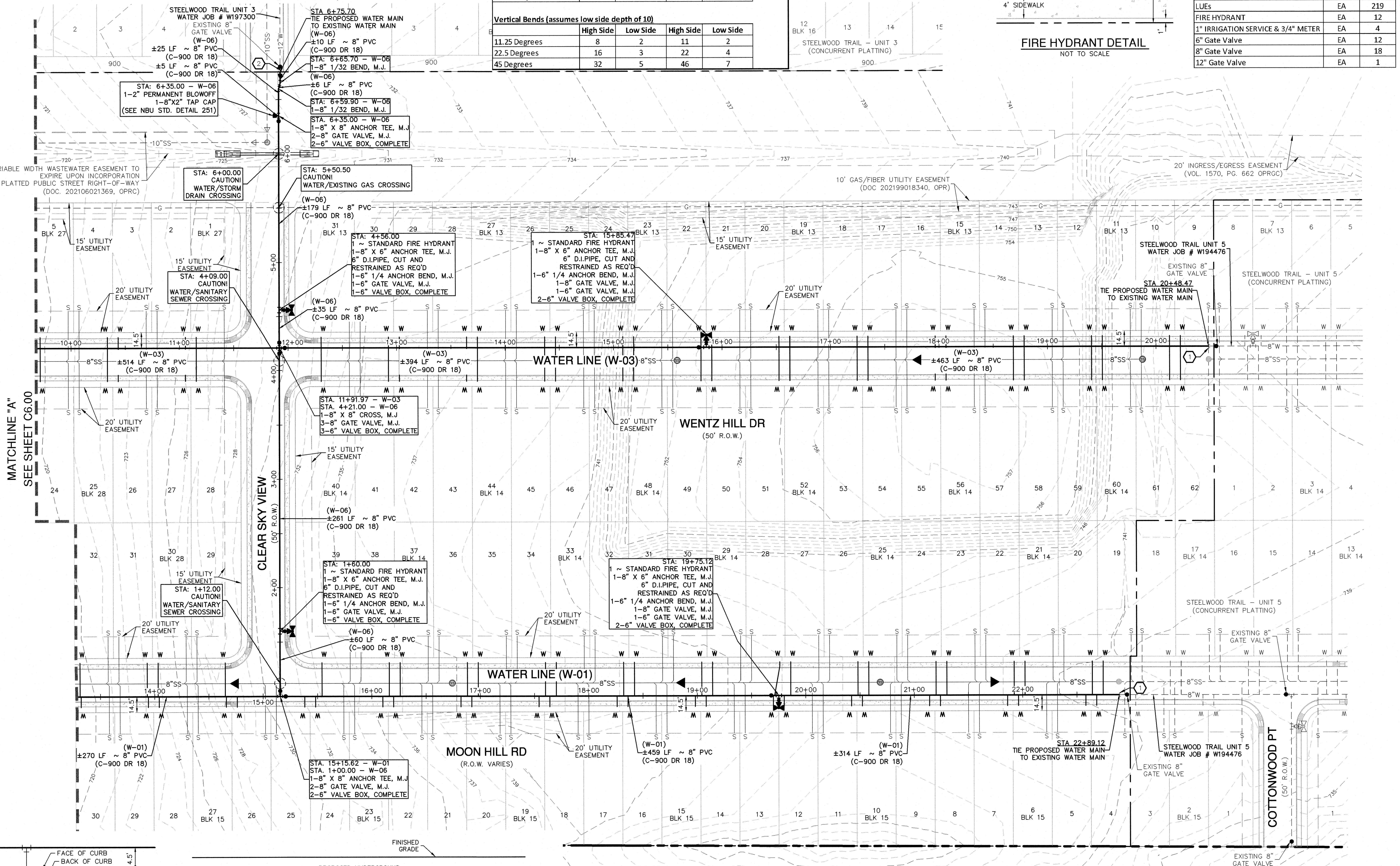
WATER (NBU JOB NO. W-209398)		
ITEM	UNIT	QUANTITY
12" WATER LINE	LF	701
8" WATER LINE	LF	5,181
1" SINGLE SERVICE & 5/8" METER	EA	213
LUEs	EA	219
FIRE HYDRANT	EA	12
1" IRRIGATION SERVICE & 3/4" METER	EA	4
6" Gate Valve	EA	12
8" Gate Valve	EA	18
12" Gate Valve	EA	1



LOCATION MAP

NOT-TO-SCALE





WATER LEGEND

PROJECT LIMITS	
EXISTING WATER	EXISTING FIRE HYDRANT —W—
EXISTING UNDERGROUND ELECTRIC	—UGE—
EXISTING GAS	—G—
EXISTING SEWER	—SS—
PROPOSED SEWER	—SS— MANHOLE
PROPOSED WATER	FIRE HYDRANT —W—
PROPOSED 1" SINGLE SERVICE WITH 5/8" METER	
SINGLE IRRIGATION SERVICE (REF. PLAN VIEW FOR SIZE)	IRR
PRESSURE RELEASE VALVE (TO BE INSTALLED BY HOMEBUILDER)	*
JOINT RESTRAINT	
PROPOSED STORM DRAIN	
PROPOSED GAS	—G—
PROPOSED UNDERGROUND ELECTRIC	—UGE—

JOINT RESTRAINT NOTE:

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4. UTILITY TRENCH COMPACTION – ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

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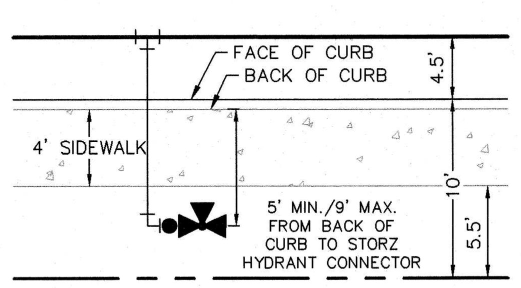
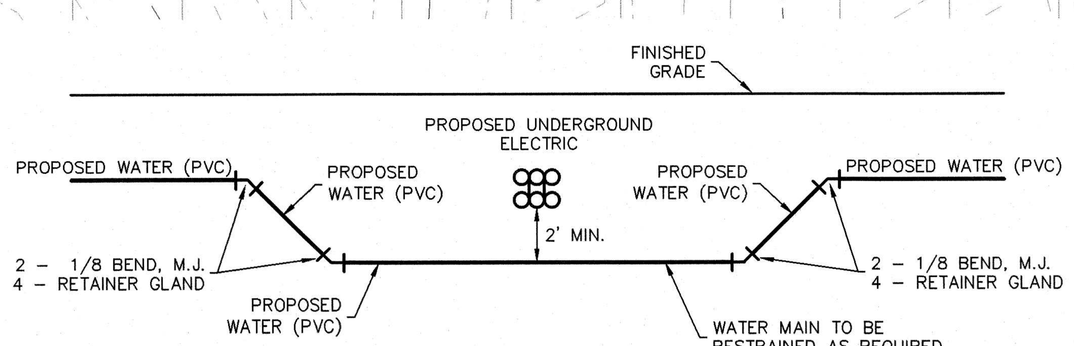


FIRE HYDRANT DETAIL

NOT TO SCALE



WATER/UNDERGROUND ELECTRIC CROSSING DETAIL

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NO.	REVISION	DATE

8-17-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS

NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4

NEW BRAUNFELS, TEXAS

OVERALL WATER DISTRIBUTION PLAN

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C4.01

Date: Aug 17, 2022, 4:56pm User ID: bhurkett
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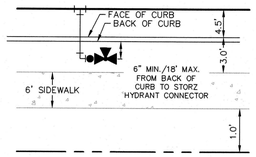

FIRE HYDRANT DETAIL
NOT TO SCALE

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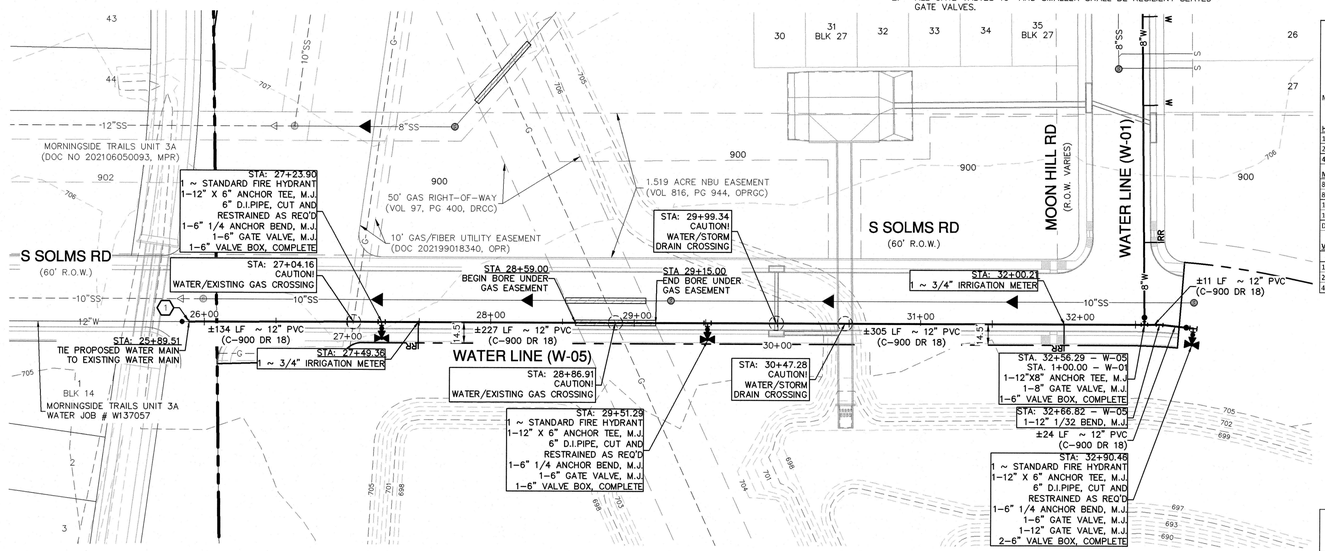

Pipe Restraint Length Calculations
Source: EBAA Iron, Restraint Length Calculator v 7.1.2

Assumptions:

Soil Type	Safety Factor	Trench Type	Depth of Bury	Test Pressure
CH	1.5 to 1.0	5	4 ft	200 psi

Minimum Restraint Lengths in Feet

	8" Waterline		12" Waterline	
	Main	Branch	Main	Branch
Horizontal Bends				
11.25 Degrees	3		4	
22.5 Degrees	6		8	
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Misc. Fittings				
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	High Side	Low Side	High Side	Low Side
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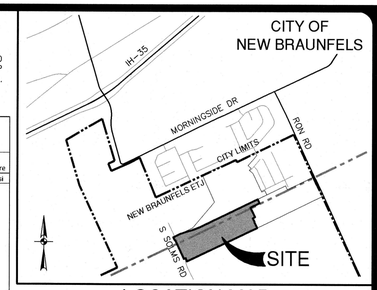

LOCATION MAP
NOT–TO–SCALE

SCALE: 1"= 50'
0' 50' 100' 150'

WATER LEGEND

- PROJECT LIMITS
- EXISTING FIRE HYDRANT
- EXISTING WATER — W —
- EXISTING UNDERGROUND ELECTRIC — UGE —
- EXISTING GAS — G —
- EXISTING SEWER — SS —
- PROPOSED SEWER — SS — MANHOLE
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- PROPOSED 1" SINGLE SERVICE WITH 5/8" METER
- SINGLE IRRIGATION SERVICE (REF. PLAN VIEW FOR SIZE) — IRR —
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4. UTILITY TRENCH COMPACTION – ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX–113–E, TEX–114–E, TEX–115–E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

CAUTION!!

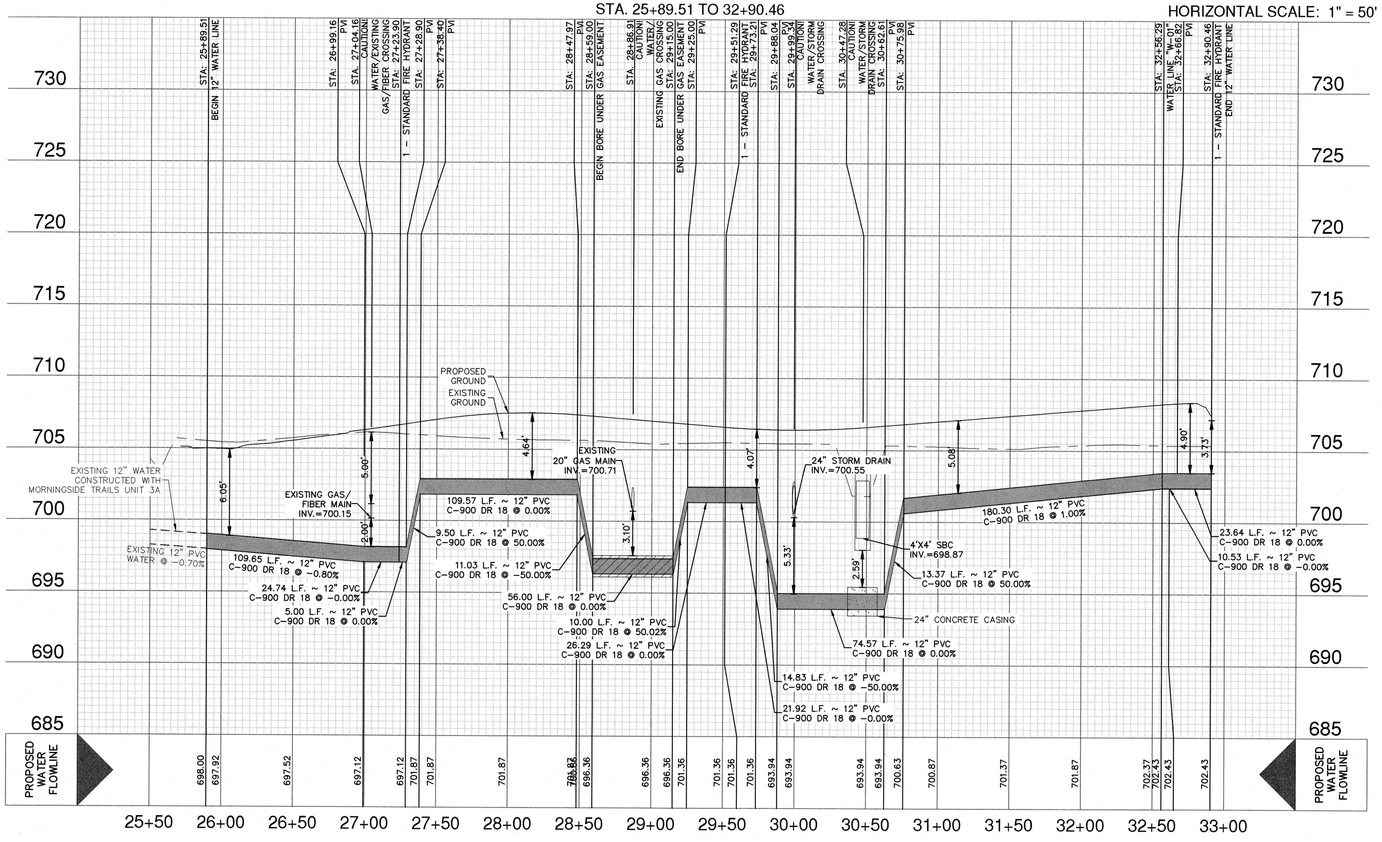
CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

12" WATER MAIN "W-05"
STA. 25+89.51 TO 32+90.46

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



FOR PERMIT

8–17–2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER

NO.	REVISION	DATE

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.625.5683
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288-00

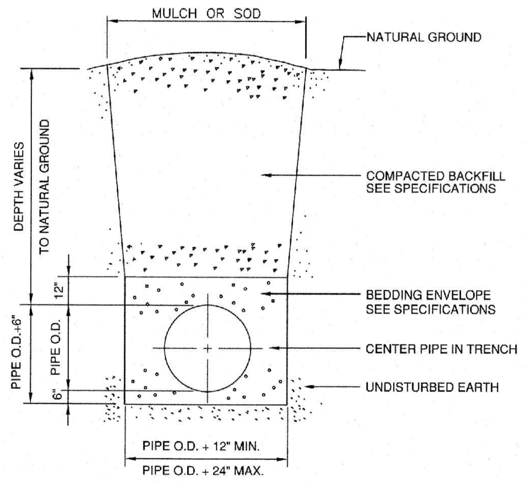
STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

12 INCH WATER MAIN W-05 - PLAN & PROFILE
STA. 25+89.51 TO 32+90.46

PLAT NO.
JOB NO. 30034–07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C4.02

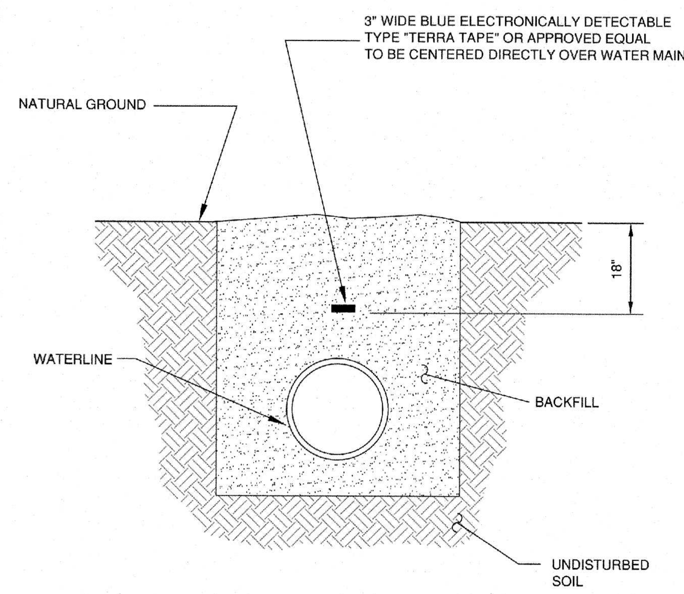
Date: Aug 19, 2022, 11:21am User ID: bhurkett
File: P:\3001\34\07\Design\Civil\W–01–3003407–12–INCH WATERLINE.dwg

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANTS ORIGINAL SIGNATURE AND SEAL. AERIAL IMAGERY PROVIDED BY GOOGLE© UNLESS OTHERWISE NOTED. Imagery © 2016,CAPCOG,Digital Globe,Texas Orthoimagery Program, USDA Farm Service Agency.



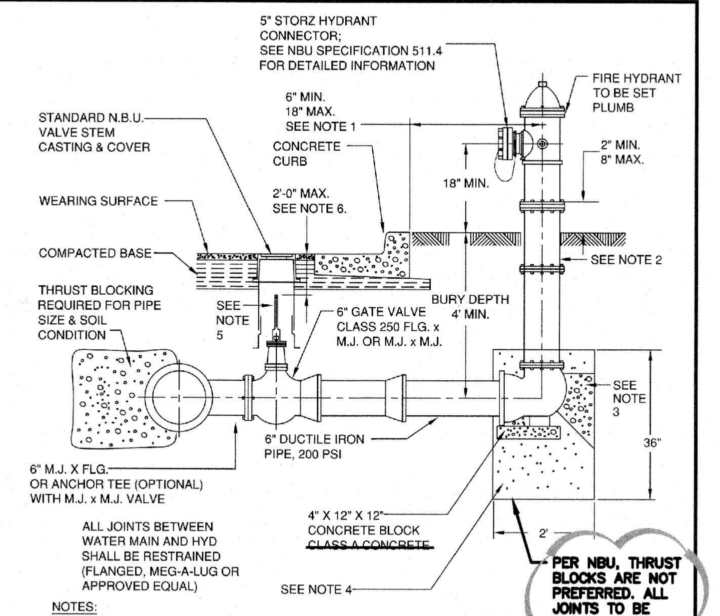
NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: H Shadrock | APPROVED BY: | STANDARD DRAWING: **TYPICAL TRENCH WITH UNFINISHED SURFACE** | UPDATED: 4-30-03 | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 422

WATER PIPE LAID IN TRENCH
(OUTSIDE OF PAVEMENT)



WATERLINE SURFACE IDENTIFICATION DETAIL
NOT TO SCALE

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: H Shadrock | APPROVED BY: | STANDARD DRAWING: **PLACEMENT OF INDUCTIVE TRACER DETECTION TAPE** | UPDATED: 5-23-03 | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 424



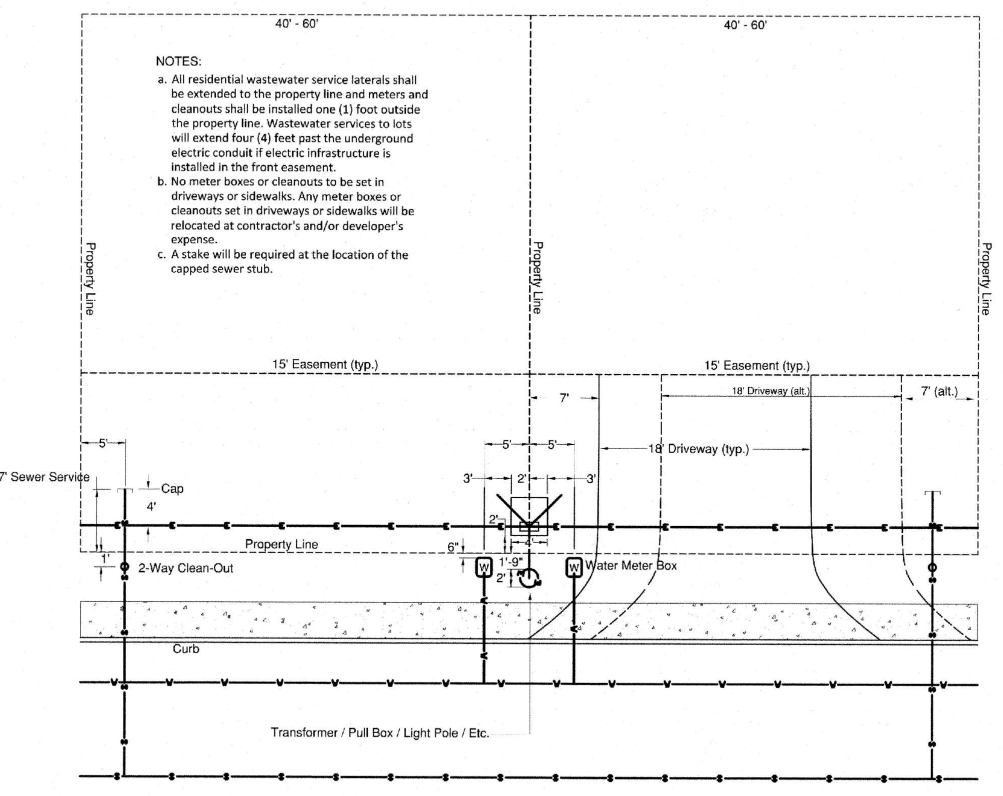
NOTES:

1. DIMENSIONS SHOWN ARE APPLICABLE IN SPACE BETWEEN CURB AND SIDEWALK. WHERE WALK ABUTS CURB, AND IN PUBLIC OR COMMERCIAL AREAS, DIMENSION FROM BACK OF CURB SHALL BE 3' TO 9'. HYDRANTS ARE NOT TO BE PLACED IN SIDEWALK AREAS. SEE NEW BRAUNFELS UTILITIES STANDARD SPECIFICATIONS FOR LOCATION OF HYDRANT.
2. FOR BURY DEPTHS GREATER THAN 5', ONE BARREL EXTENSION NOT EXCEEDING 2' LENGTH SHALL BE INSTALLED DIRECTLY BELOW THE FIRE HYDRANT.
3. ~~CONCRETE BLOCKING WITH A MIN. 1 1/2 FT² BEARING AREA. CLASS A CONCRETE. DO NOT BLOCK DRAIN HOLES.~~
4. CRUSHED STONE OR GRAVEL SHALL BE PLACED AROUND THE BOTTOM OF THE HYDRANT FOR A RADIUS OF AT LEAST 12" AND EXTEND AT LEAST 12" ABOVE THE OUTLET. DO NOT BLOCK DRAIN HOLES.
5. WELD SOCKET 2 1/2" X 2" DEEP TO 1" SCH. 40 ROUND STEM EXTENSION, FITTED ON OPERATING NUT, SCH. 80 FOR LENGTHS OVER 10'.
6. VALVE EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3' DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 18" AND 24" FROM FINISHED GRADE.

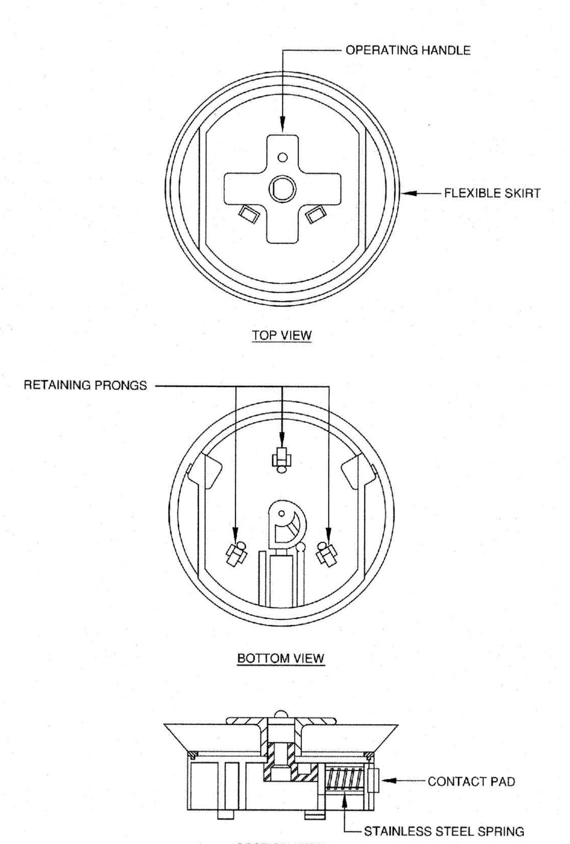
SEE DETAIL, SHEET C1.20 FOR FIRE HYDRANT LOCATION.

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: JD Amaro | APPROVED BY: | STANDARD DRAWING: **STANDARD FIRE HYDRANT INSTALLATION WITH 5" STORZ CONNECTOR** | DRAWING DATE: 4-10-03 | REVISION DATE: 5-22-12 | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 240

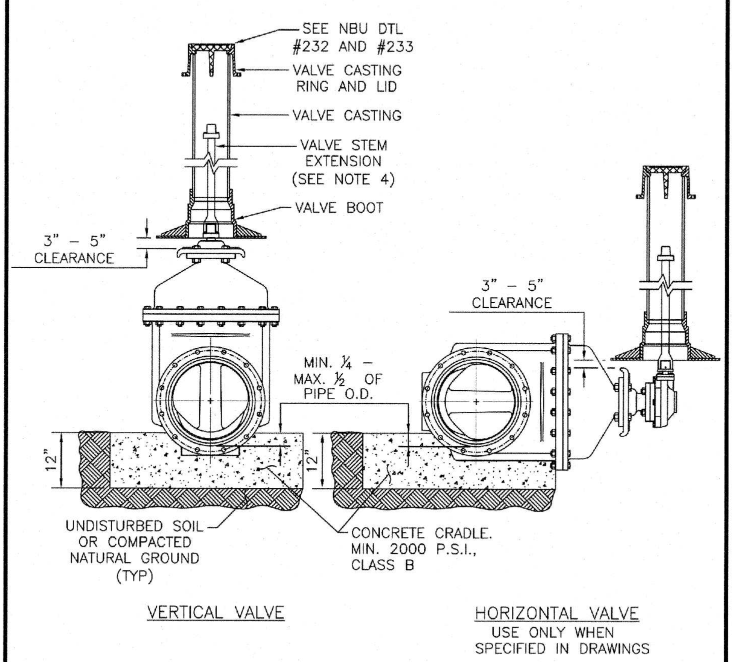
NOTES:
a. All residential wastewater service laterals shall be extended to the property line and meters and cleanouts shall be installed one (1) foot outside the property line. Wastewater services to lots will extend four (4) feet past the underground electric conduit if electric infrastructure is installed in the front easement.
b. No meter boxes or cleanouts to be set in driveways or sidewalks. Any meter boxes or cleanouts set in driveways or sidewalks will be relocated at contractor's and/or developer's expense.
c. A stake will be required at the location of the capped sewer stub.



NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: D. A. | APPROVED BY: N. P. | STANDARD DRAWING: NARROW LOT WATER & SEWER SERVICE ALIGNMENT SCENARIO | DATED: 12/20/18 | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 410

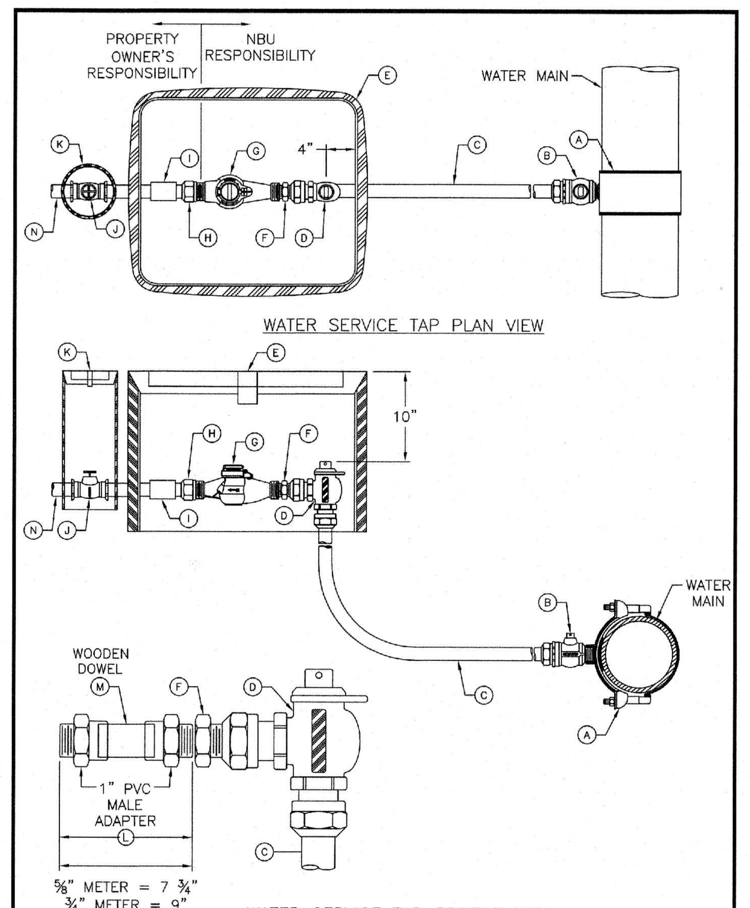


NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: JD Amaro | APPROVED BY: | STANDARD DRAWING: **DEBRIS CAP INSTALLATION** | UPDATED: 4-10-03 | SCALE: N.T.S. | SHEET: 1 OF 2 | DRAWING NO. 234



NOTES:
1. WELD SOCKET 2½" x 2" DEEP TO 1" SCH. 40 CARBON STEEL ROUND STEM EXTENSION, FITTED ON OPERATING NUT, [SCH. 80 FOR LENGTHS OVER 10'.]
2. VALVE CASTING SHALL BE 6" DI PIPE WITH BELL OR COLLAR CENTERED OVER VALVE BOOT.
3. NUT AT TOP OF VALVE EXTENSION ROD SHALL BE SQUARE 2" LONG WELDED TO TOP OF ROD.
4. VALVE STEM EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3' DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 12" AND 18" FROM FINISHED GRADE.
5. TRACER WIRE SHALL EXTEND TO TOP OF THE VALVE STEM EXTENSION AND BE CONNECTED WITH WIRE CAPS.

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **TYPICAL GATE VALVE** | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 230



NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **STANDARD INSTALLATION DETAIL FOR 5/8", 3/4" & 1" METER** | SCALE: N.T.S. | SHEET: 1 OF 2 | DRAWING NO. 202

MATERIALS LIST:

A. 1" SERVICE CLAMP
B. 1" CORPORATION STOP
C. 1" TYPE "K" COPPER WATER SERVICE PIPE
D. 1" X 1" ANGLE METER STOP
E. METER BOX AND LID – DFW PLASTICS #DFW1600X.12.1A2 (STANDARD)
METER BOX AND LID – DFW PLASTICS #DFW1219-10-3EA (INCIDENTAL TRAFFIC RATED)

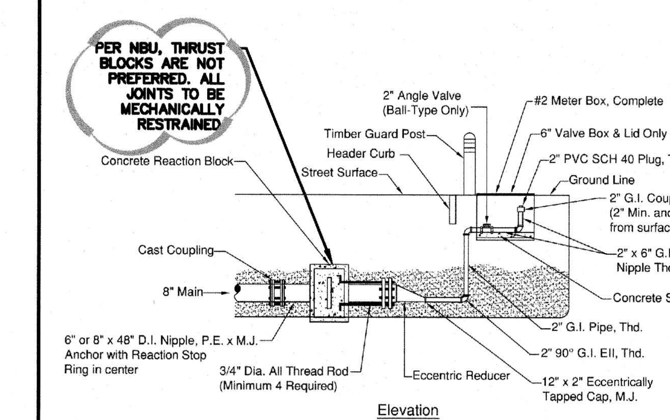
MATERIALS TO BE INSTALLED BY PLUMBER:

F. BRASS METER BUSHING – SIZE AS REQUIRED TO CONNECT ANGLE METER STOP TO METER. A 1" X 3/4" METER BUSHING IS REQUIRED AT THE ANGLE STOP FOR FOR ALL 5/8" AND 3/4" METERS.
G. WATER METER PURCHASED FROM NBU
H. BRASS WATER METER COUPLING MALE IPT x SWIVEL COUPLING NUT
I. SINGLE CHECK BACKFLOW DEVICE
J. PROPERTY OWNER'S CUT OFF VALVE – 1" BRASS GATE VALVE
K. PROPERTY OWNER'S CUT OFF VALVE BOX AND LID – NDS #D109-G
L. TEMPORARY METER SPACER (REQUIRED TO ASSURE METER WILL FIT APPROPRIATELY)
M. 1" WOODEN DOWEL (SHOW ADDRESS ON DOWEL USING WATERPROOF MARKER)
N. 1" PIPE MEETING CITY OF NEW BRAUNFELS PLUMBING CODE REQUIREMENTS

NOTES:

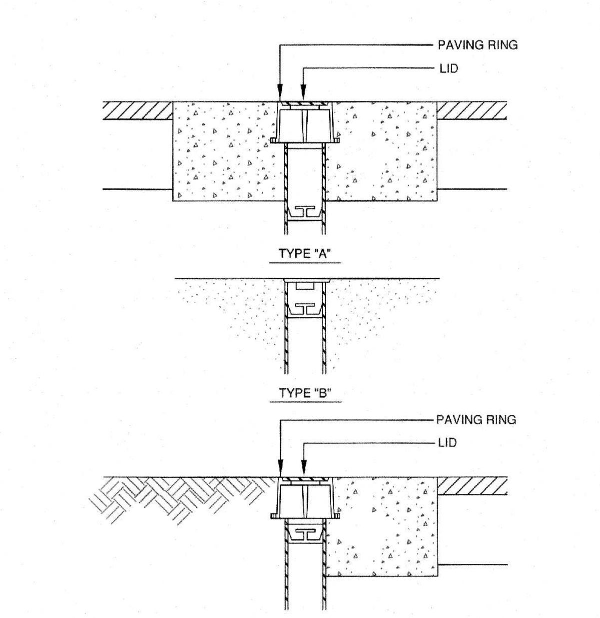
1. SERVICE PIPE SHALL BE COPPER TUBE SIZE. IT SHALL BE ANNEALED SEAMLESS TYPE "K" COPPER TUBING MEETING THE CURRENT ASTM B88 STANDARD WITH NO SWEAT OR SOLDERED JOINTS AND PLACED IN A STRAIGHT HORIZONTAL ALIGNMENT AND ALLOWED TO RELAX AND "SNAKE" LOOSELY IN THE TRENCH.
2. SERVICE SADDLE SHALL BE WRAPPED COMPLETELY WITH 8 MIL POLYETHYLENE FILM.
3. TOP OF BOXES SHOULD BE 2" ABOVE GROUND OR FLUSH WITH PAVEMENT SURFACE.
4. PIPING AND TUBING IN STREET RIGHT-OF-WAY SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY THE SPECIFICATIONS; BACKFILL ABOVE GRANULAR BEDDING AS REQUIRED BY SPECIFICATIONS.
5. BOX CONSISTENTLY SPACED 6"–12" BEHIND CURB OR 6" FROM PROPERTY LINE AND OUT OF VEHICULAR TRAFFIC AREA.
6. ANGLE STOP PLACED A MAXIMUM OF 4" FROM BACK OF BOX THAT FACES CURB. TOP OF ANGLE STOP SHOULD BE A MINIMUM OF 10" FROM THE TOP OF METER BOX.
7. METER SIZES TO BE SHOWN ON PLANS.
8. METER BOX CUT OUTS SHALL NOT EXCEED TWO TIMES THE PIPE DIAMETER.

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **STANDARD INSTALLATION DETAIL FOR 5/8", 3/4" & 1" METER** | SCALE: N.T.S. | SHEET: 2 OF 2 | DRAWING NO. 202



2" PERMANENT BLOW OFF ASSEMBLY
ON 8" P.V.C. OR D.I. MAINS
Not To Scale

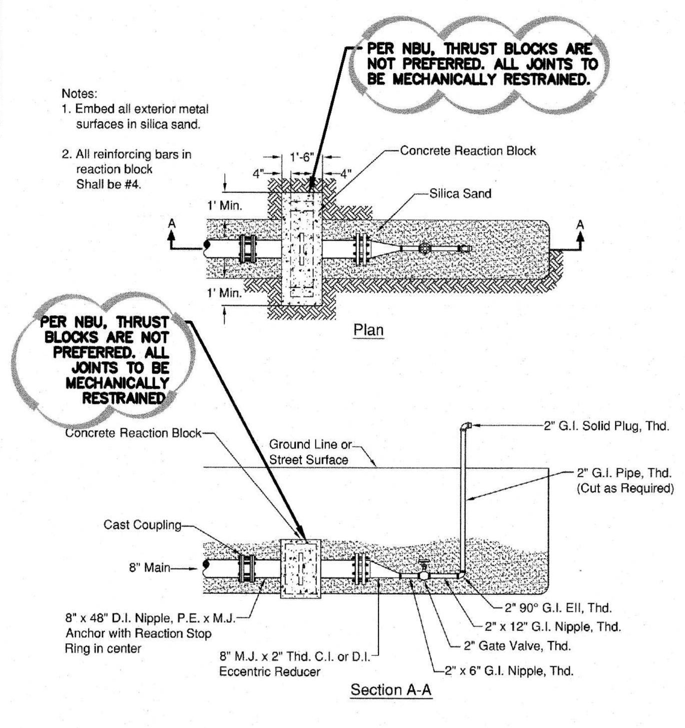
NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: JD Amaro | APPROVED BY: | STANDARD DRAWING: **2" PERMANENT BLOW OFF ASSEMBLY ON 8" P.V.C. OR D.I. MAINS** | UPDATED: 5-6-03 | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 251



NOTES:
1. DEBRIS CAP SHALL BE INSTALLED AS CLOSE UNDER THE CAST IRON COVER WITHOUT INTERFERING WITH COVER OPERATION.
2. FLEXIBLE SKIRT SHALL BE TRIMMED TO PROVIDE A SMOOTH CONTACT WITH THE INTERIOR DIAMETER OF THE PIPE.
3. THE DEBRIS CAP SHALL BE MANUFACTURED BY SW SERVICES, INC., PHOENIX, ARIZONA OR EQUAL.
4. THE DEBRIS CAP SHALL BE COMPRISED OF A HOLLOW MEMBER HAVING A CYLINDRICAL OUTER SURFACE, A CLOSURE FOR ONE END AND THREE POINT RESILIENT CONTACT PADS PROJECTING FROM THE OUTER SURFACE. THE CAP SHALL HAVE A FLEXIBLE SKIRT PROVIDING AN OUTWARD SEAL PREVENTING DEBRIS FROM GETTING PAST THE CAP. THE CAP MUST WITHSTAND, WITHOUT SLIPPAGE, A MINIMUM VERTICAL FORCE OF 50 lbs, AT A LOADING RATE OF 1.0 in PER MINUTE. THE CAP SHALL BE MOLDED USING GENERAL ELECTRIC ABS #HIM 4500. THE CAP SHALL HAVE RETAINING PRONGS TO RETAIN A STANDRAD LOCATION COIL.

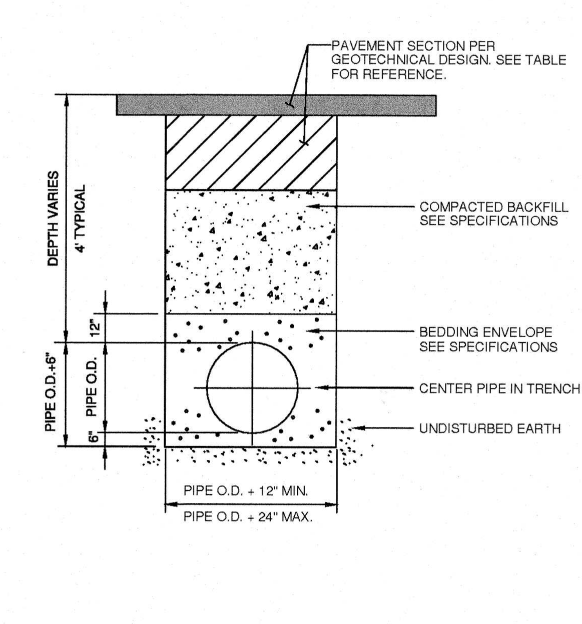
NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: JD Amaro | APPROVED BY: | STANDARD DRAWING: **DEBRIS CAP INSTALLATION** | UPDATED: 4-10-03 | SCALE: N.T.S. | SHEET: 2 OF 2 | DRAWING NO. 234

Notes:
1. Embed all exterior metal surfaces in silica sand.
2. All reinforcing bars in reaction block Shall be #4.



2" TEMPORARY BLOW OFF ASSEMBLY
ON 8" P.V.C. OR D.I. MAINS
Not To Scale

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: JD Amaro | APPROVED BY: | STANDARD DRAWING: **2" TEMPORARY BLOW OFF ASSEMBLY ON 8" P.V.C. OR D.I. MAINS** | UPDATED: 5-6-03 | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 252



DRAWN BY: | APPROVED BY: | STANDARD DRAWING: **TYPICAL TRENCH IN STREET** | UPDATED: | SCALE: N.T.S. | SHEET: | DRAWING NO.

PAVEMENT SECTIONS	
LOCAL "A"	RESIDENTIAL COLLECTOR
2" TYPE D HMAC	2.5" TYPE D HMAC
8" FLEXIBLE BASE, TYPE A, GRADE 1 OR 2	11" FLEXIBLE BASE, TYPE A, GRADE 1 OR 2
6" LIME TREATED SUBGRADE	6" LIME TREATED SUBGRADE
TOTAL = 16"	TOTAL = 19.5"

NOTES:

PER NBU WATER NOTES (DATED 5/16/19)
7. INITIAL BACKFILL OF WATER LINES SHALL BE MANUFACTURED SAND OR PEA GRAVEL AS PER NBU SYSTEMS CONNECTION & CONSTRUCTION POLICY.
8. SECONDARY BACKFILL OF WATER LINES SHALL GENERALLY CONSIST OF MATERIALS REMOVED FROM THE TRENCH AND SHALL BE FREE FROM BRUSH, DEBRIS AND TRASH, NO ROCKS OR STONES HAVING ANY DIMENSION LARGER THAN 6 INCHES AT THE LARGEST DIMENSION.

CITY OF NEW BRAUNFELS NOTES

1. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
2. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
4. UTILITY TRENCH COMPACTION – ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

FLOODPLAIN NOTE

1. NO PORTION OF ANY LOT ON THIS PROJECT IS WITHIN AN INDICATED SPECIAL FLOOD HARZARD ZONE ACCORDING TO THE FEMA FIRM MAP NO. 48091C0445F EFFECTIVE DATE 9/2/2009 AND FEMA FIRM MAP NO. 48187C0095F EFFECTIVE DATE 11/2/2007.

NO.	REVISION	DATE

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

WATER DISTRIBUTION DETAILS

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C4.10

Date: Aug 17, 2022, 4:57pm User ID: bhurkett
File: P:\300\34\07\Design\Civil\WTDT-3003407.dwg

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FOR PERMIT

General Notes:

1. All materials and construction procedures within the scope of the project shall be approved by New Braunfels Utilities and comply with the current "New Braunfels Utilities Water Systems Connection/Construction Policy".
2. Contractor shall not proceed with any pipe installation work until they obtain a copy of the plans from the Consultant or Engineer and notify NBU Water Systems Engineering at 830-608-8971 with at least two (2) working days (48 hours) notice. WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED A NOTICE TO PROCEED FROM NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
3. The Developer dedicates the water / wastewater mains upon completion by the Contractor and acceptance by the New Braunfels Utilities Water System. NBU will own and maintain said water / wastewater mains which are located within platted utility easements or public ROW of proposed developments. (As applicable).
4. Contractor agrees to assume sole and complete responsibility for job site conditions during the construction of the project, including safety of all persons and property. This requirement shall apply continuously and not be limited to normal working hours. The contractor shall defend, indemnify and hold the owners and the engineer and his employees, partners officers, directors, or consultants harmless from any and all liability, real or alleged, in connection with the performance of the work on this project, excepting from liability arising from sole negligence of the owner or engineer, engineer's directors, officers, employees, or consultants.
5. Contractor to contact the engineer-of-record (EOR) for any field changes. Any revisions or changes to the approved construction plans will require additional approval by NBU in writing.
6. Contractor and / or contractor's independently retained employee or safety consultant shall implement a trench safety program in accordance with OSHA standards governing the presence and activities of individuals working in and around trench excavation.
7. Contractor shall be responsible for restoring to its original or better condition, any damages done to existing fences, curbs, streets, driveways, landscaping and structures, and existing utilities (not adjusted on plans). Cost of Restorations, if any, shall be the contractor's entire expense.
8. The Contractor shall avoid cutting roots larger than one inch in diameter when excavating near existing trees. Excavation in vicinity of trees shall proceed with caution.
9. Contractor shall procure all permits and licenses, pay all charges, fees and taxes and give all notices necessary and incidental to the due and lawful prosecution of the work.

10. No extra payment shall be allowed for work called for on the plans but not included on the bid schedule. This incidental work will be required and shall be included under the pay item to which it relates.
11. Contractor is responsible for removal of all waste materials upon project completion. The contractor shall not permanently place any waste materials in the 100-year flood plain without first obtaining an approved flood plain development permit.
12. The contractor shall not place any materials on the recharge zone of the Edwards aquifer without an approved water pollution abatement plan from the TCEQ 31 TAC 313.4 and 31 TAC 313.9.
13. Barricades and warning signs shall conform to the "Texas manual on uniform traffic control devices" and shall be located to provide maximum protection to the public as well as construction personnel and equipment while providing continuous traffic flow at all times during construction. The contractor is responsible for maintaining all devices during construction.
14. Contractor is required to verify project elevations. The term "match existing" shall be understood to signify both horizontal and vertical alignment.
15. The location of utilities, either underground or overhead, shown within the right of way are approximate and shall be verified by the contractor before beginning construction operations.
16. OSHA regulations prohibit operations that will bring persons or equipment within 10 feet of an energized line. Where workmen and/or equipment have to work close to an energized electrical line, the contractor shall notify the electrical power company involved and make whatever adjustments necessary to ensure the safety of those workmen.
17. It shall be the contractor's responsibility to locate utility service lines as required for construction. Contractors shall call the One Call System for water/wastewater location.
18. Due to federal regulations Title 49, part 192 (8), Gas companies must maintain access to gas valves at all times. The contractor must protect and work around any gas valves that are in the project area.
19. The contractor is fully responsible for the traffic control and will be responsible for furnishing all traffic control devices, and flaggers. The construction methods shall be conducted to provide the least possible interference to traffic so as to permit the continuous movement of the traffic in one direction at all times. The contractor shall clean up and remove from the work area any loose material resulting from contract operations at the end of each workday.
20. Prior to ordering materials to be used in construction, contractor shall provide the engineer with four (4) copies of the source, type, gradation, material specification data and / or shop drawings, as applicable, to satisfy the requirements of the following items and all material items referred to in these listed items:
    a. Water mains and services
    b. Wastewater mains and services

21. Thrust blocks will not be allowed on the system without special approval. Joints will be restrained with restraining systems approved by NBU and restraint length shall be submitted to NBU at the time of plan submittal.
22. Water jetting the backfill within a street will not be permitted. Wastewater trenches subject to traffic shall conform to NBU Connection and Construction Policy Manual.
23. Where the minimum 9 foot separation distance between wastewater lines and water lines / mains cannot be maintained, the installation of wastewater lines shall be in strict accordance with 30 TAC 217.
24. Contractor and/or Contractor's independently retained employee or structural design/geotechnical/safety/equipment consultant, if any, shall review these plans and available geotechnical information and the anticipated installation site(s) within the project work area in order to implement Contractor's trench excavation safety protection systems, programs and/or procedures. The Contractor's implementation of the systems, programs and/or procedures shall provide for adequate trench excavation safety protection that complies with as a minimum, OSHA Standards for trench excavations. Specifically, Contractor and/or Contractor's independently retained employee or safety consultant shall implement a trench safety program in accordance with OSHA Standards governing the presence and activities of individuals working in and around trench excavation.
25. Utility Trench Compaction with street R.O.W.
    a. All utility trench compaction test within the street pavement section shall be the responsibility of the developer's Geo-technical engineer.
    b. Fill material shall be placed in uniform layers not to exceed twelve inches (12") loose.
    c. Each layer of material shall be compacted as specified and tested for density and moisture in accordance with Text Methods TEX-113-E, TEX-114-E, TEX-115-E.
    d. The number and location of required tests shall be determined by the Geo-technical Engineer and approved by the City of New Braunfels Street Inspector.
    e. Upon completion of testing the Geo-technical Engineer shall provide the City of New Braunfels Street inspector with all testing documentation and a certification stating that the placement of fill material has been completed in accordance with the plans.

WATER NOTES:

1. All water mains shall be AWWA C900 (class 150 or greater).
2. Water services shall be single 1" copper tubing.
3. Water line is to be constructed in accordance with the NBU Systems Connection & Construction Policy.
4. Water main shall have a minimum of 42 inches of cover, otherwise concrete encasement will be required.
5. Each unit in a duplex, triplex, fourplex, or condominium shall be provided with an individual water meter. A master meter can be considered for separate buildings, however, those buildings must be plumbed to allow separate meters for future consideration.
6. Contractor will keep the area on top of and around the water meter box free of all objects and debris.
7. Initial backfill of water lines shall be manufactured sand or pea gravel as per NBU Systems Connection & Construction Policy.
8. Secondary backfill of water lines shall generally consist of material removed from the trench and shall be free from brush, debris and trash or stones having any dimension larger than 6" inches at the largest dimension.
9. Hydrostatic testing is done from valve to valve.
10. No meter boxes to be set in driveways or sidewalks. Any meter boxes set in driveways or sidewalks will be relocated at contractor's and/or developer's expense.
11. Meter boxes must be set at the proposed grade. Any meter boxes that are not set at the final grade will be adjusted at contractor's and/or developer's expense.
12. Acceptable meter boxes are D13-BAMR and D15-BAMR. New residential lots are required to use the D15-BAMR meter boxes (double AMR).
    Commercial lots should choose which box applies to the domestic and/or irrigation meter layout.
13. Thrust blocks will not be allowed on the system without special approval. Joints will be restrained with restraining systems approved by NBU and restraint length shall be submitted to NBU at the time of plan submittal.
14. Contractor shall place tracer wire on top of the water mains. Tracer wire should run from valve to valve and exit at the valve box. The tracer wire should be attached to the top of the pipe using tape. Excess wire should be left within valve boxes to be placed within lid of cover.
15. Water quality shall be protected with appropriate backflow prevention assemblies installed on all irrigation systems, fire suppression systems and multi-unit complexes along with multi-level properties on the domestic meter containment. NBU can assist with the decision on appropriate backflow assemblies on a case by case basis. Contact NBU backflow prevention specialist for more details. Email questions to crossconnection@nbutexas.com
16. All backflow prevention assemblies shall be tested upon installation and report sent to NBU via the online tracking system, contact NBU backflow prevention specialist for more details. Email questions to crossconnection@nbutexas.com
17. All residential and commercial properties shall have a Customer Service Inspection certificate (CSI Inspection) completed upon completion of the building or home structure. Contact NBU backflow prevention specialist for more details. Email questions to crossconnection@nbutexas.com

FLOODPLAIN NOTE

1. NO PORTION OF ANY LOT ON THIS PROJECT IS WITHIN AN INDICATED SPECIAL FLOOD HARZARD ZONE ACCORDING TO THE FEMA FIRM MAP NO. 48091C0445F EFFECTIVE DATE 9/2/2009 AND FEMA FIRM MAP NO. 48187C0095F EFFECTIVE DATE 11/2/2007.

CITY OF NEW BRAUNFELS NOTES

1. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
2. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
4. UTILITY TRENCH COMPACTION – ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

NO.	REVISION	DATE

8-17-2022

STATE OF TEXAS
TODD W. BLACKMON
69208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.2603
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

WATER DISTRIBUTION NOTES

PLAT NO. _____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C4.20

FOR PERMIT

Date: Aug 17, 2022, 4:58pm User ID: bhurkett
File: P:\300\34\07\Design\Civil\WTNT-30034407.dwg

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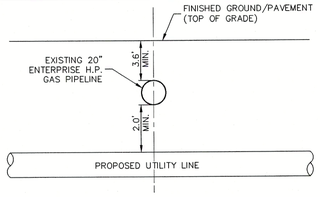


TYPICAL UTILITY/ ENTERPRISE GAS CROSSING DETAIL

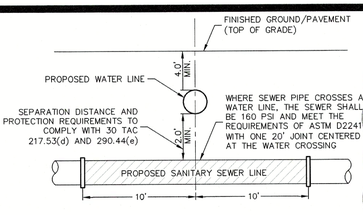
NOT-TO-SCALE

WARNING !!!

HIGH PRESSURE PIPELINE EVACUATION AND/OR CONSTRUCTION PROHIBITED WITHOUT WRITTEN PERMISSION FROM ENTERPRISE.

ADDITIONAL CONSTRUCTION NOTES:

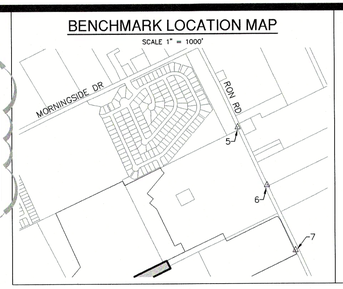
1. PRIOR TO SITE MOBILIZATION, CONTRACTOR SHALL OBTAIN A FINAL EXECUTED COPY OF THE "ENTERPRISE TEXAS PIPELINE, LLC–ENCROACHMENT AGREEMENT."
2. AS PER "ENCROACHMENT AGREEMENT," CONTRACTOR SHALL PROVIDE 72–HOUR WRITTEN NOTICE PRIOR TO CROSSING OR WORKING WITHIN THE 50' ENTERPRISE PIPELINE EASEMENT.
3. LOCAL ENTERPRISE CONTACTS INCLUDE:
   - CHESTER BLAIR (210)240–1157 MOB.
   - JUSTIN THOMAS (210)827–7201 MOB.
   - SAN ANTONIO (210)528–2782 OFF.



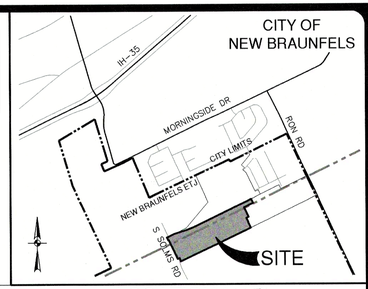
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

WASTEWATER (NBU JOB NO. WW-209399)		
ITEM	UNIT	QUANTITY
8" SANITARY SEWER PIPE	LF	4,691
10" SANITARY SEWER PIPE	LF	691
LUEs	EA	213
6" WASTEWATER SERVICE	EA	209
48" MANHOLES	EA	15
CAPS	EA	-



HORIZONTAL AND VERTICAL CONTROL POINTS				
Point #	Northing	Easting	Elevation	Full Description
5	13,790,938.63	2,237,803.08	739.28	SET I.R. REDCAP (TRAV)
6	13,790,126.56	2,238,209.12	729.52	SET I.R. REDCAP (TRAV)
7	13,789,219.89	2,238,601.76	727.47	SET I.R. REDCAP (TRAV)

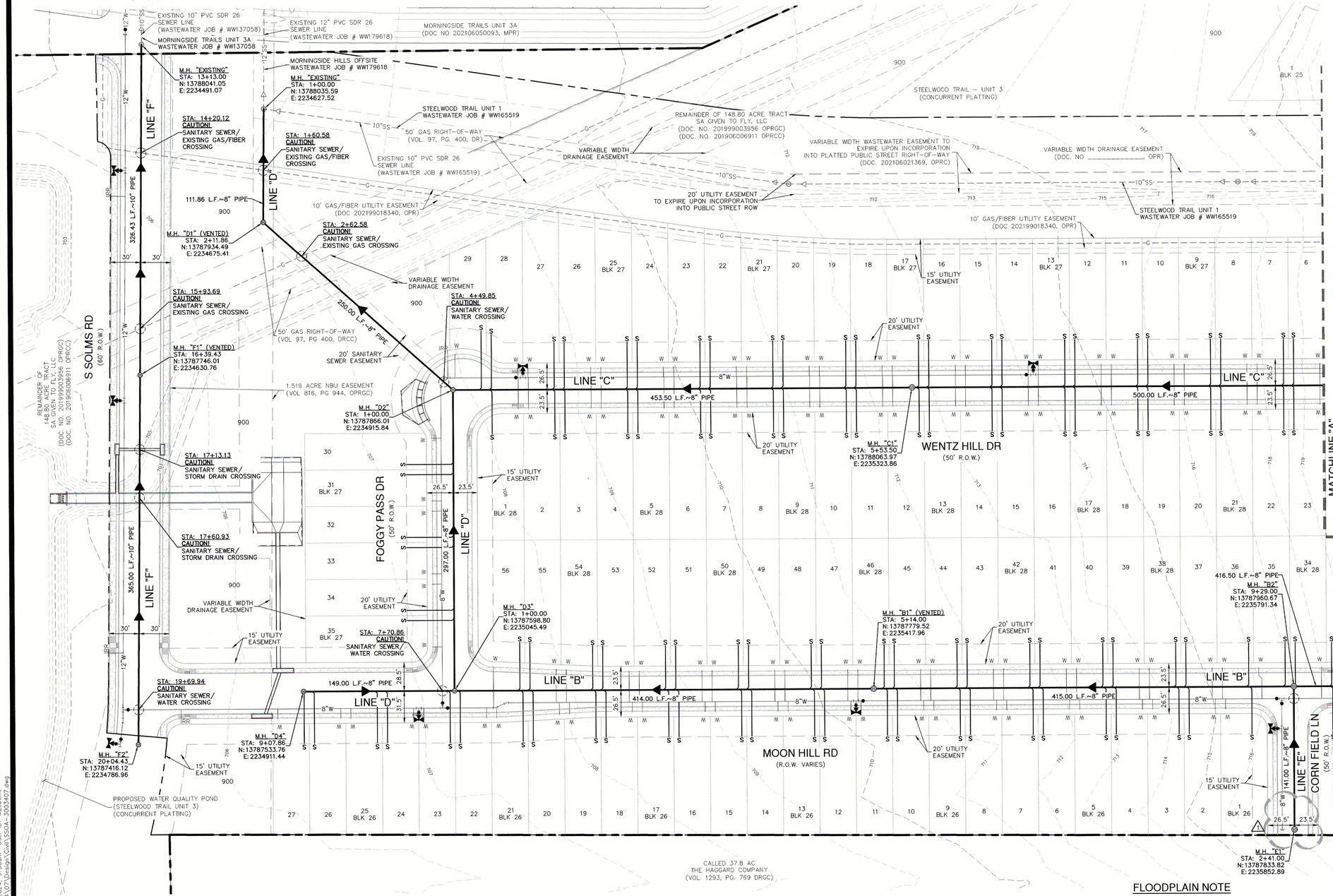


LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 50'

0' 50' 100' 150'



SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER (EXISTING FIRE HYDRANT)
- EXISTING UNDERGROUND ELECTRIC
- EXISTING GAS
- EXISTING SEWER
- PROPOSED SEWER (MANHOLE)
- PROPOSED WATER (FIRE HYDRANT)
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER (FF = XXXX.XX)
- PROPOSED STORM DRAIN
- PROPOSED GAS
- PROPOSED UNDERGROUND ELECTRIC

CONDUIT NOTES:

1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
2. CONDUITS SHALL BE PVC WITH MINIMUM BURY OF 30 INCHES. SCHEDULE 80 TO BE USED FOR CPS CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
3. ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CAPPED FOR FUTURE USE.

CITY OF NEW BRAUNFELS NOTES

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CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

FLOODPLAIN NOTE

1. NO PORTION OF ANY LOT ON THIS PROJECT IS WITHIN AN INDICATED SPECIAL FLOOD HARZARD ZONE ACCORDING TO THE FEMA FIRM MAP NO. 48091C0445F EFFECTIVE DATE 9/2/2009 AND FEMA FIRM MAP NO. 48187C0095F EFFECTIVE DATE 11/2/2007.

NO.	REVISION	DATE
1	SEWER DESIGN REVISED.	06/20/24

6–20–2024

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.625.2833
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4

NEW BRAUNFELS, TEXAS

OVERALL SANITARY SEWER

PLAT NO.	
JOB NO.	30034–07
DATE	MAY 2022
DESIGNER	HF
CHECKED	HF
DRAWN	BH
SHEET	C5.00

FOR PERMIT

Date: Jun 20, 2024, 9:50am User ID: MLeuckie
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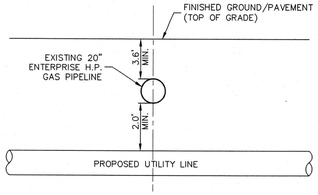

TYPICAL UTILITY/ ENTERPRISE GAS CROSSING DETAIL

NOT-TO-SCALE

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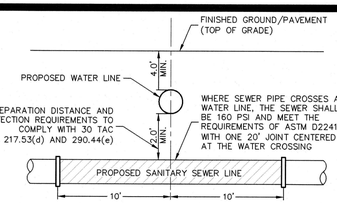

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

WASTEWATER (NBU JOB NO. WW-209399)		
ITEM	UNIT	QUANTITY
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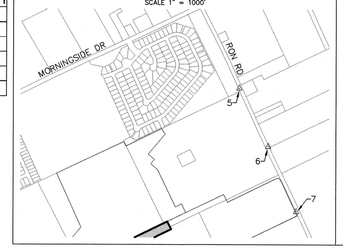
10" SANITARY SEWER PIPE	LF	691
LUEs	EA	213
6" WASTEWATER SERVICE	EA	209
48" MANHOLES	EA	15
CAPS	EA	-

BENCHMARK LOCATION MAP

SCALE 1" = 1000'



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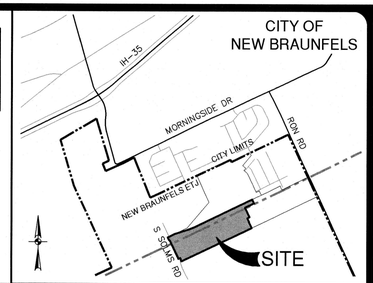
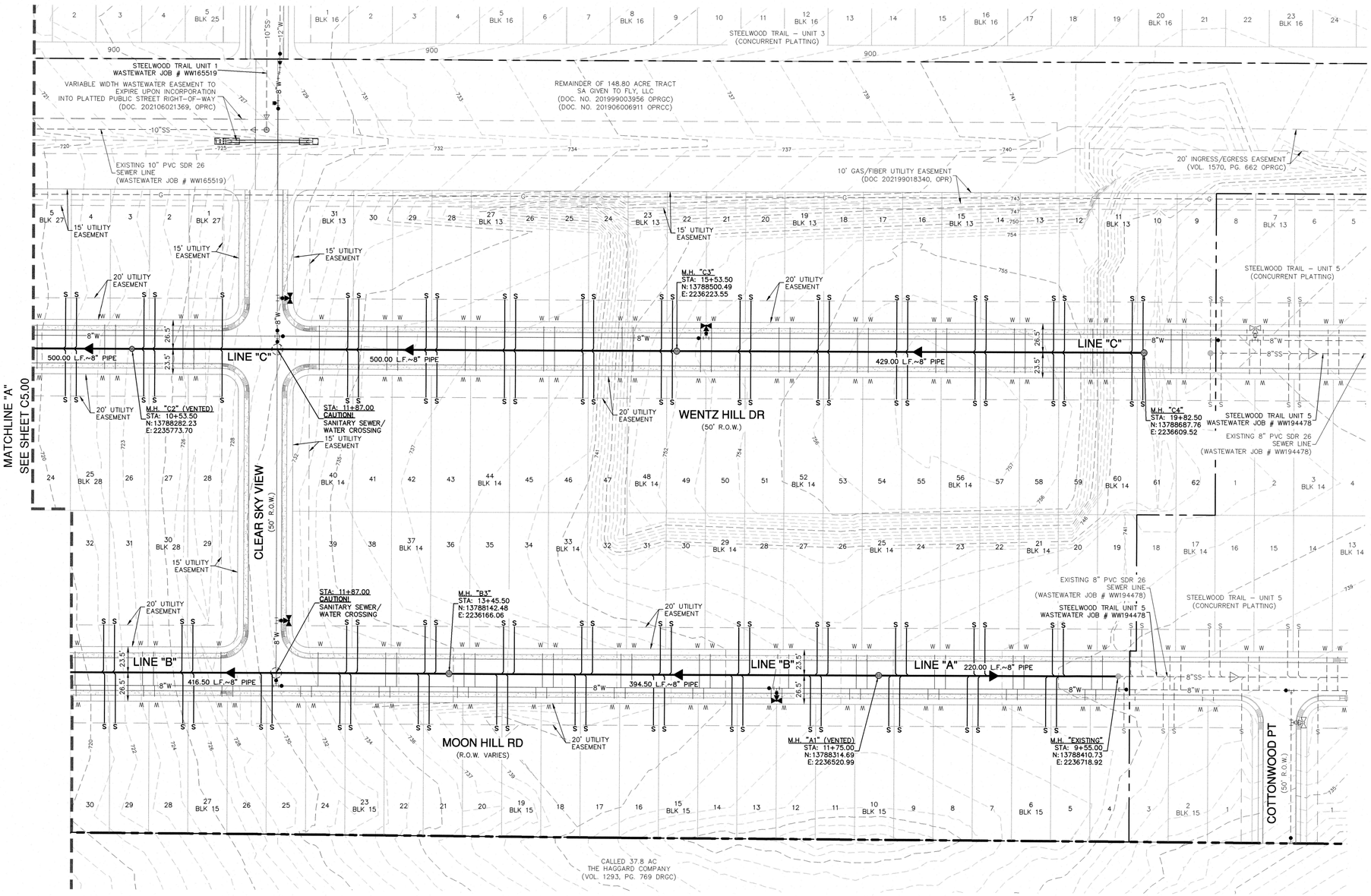


LOCATION MAP

NOT-TO-SCALE



SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER — EXISTING FIRE HYDRANT
- EXISTING UNDERGROUND ELECTRIC — UGE
- EXISTING GAS — G
- EXISTING SEWER — SS — MANHOLE
- PROPOSED SEWER — SS
- PROPOSED WATER — FIRE HYDRANT
- PROPOSED SEWER LATERAL — S
- FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
- PROPOSED STORM DRAIN
- PROPOSED GAS — G
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CONDUIT NOTES:

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CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

FLOODPLAIN NOTE

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NO.	REVISION	DATE

8–17–2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT. WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.3663
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
OVERALL SANITARY SEWER

PLAT NO. _____
JOB NO. 30034–07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.01

FOR PERMIT

Date: Aug 17, 2022, 4:59pm User ID: bhurkett
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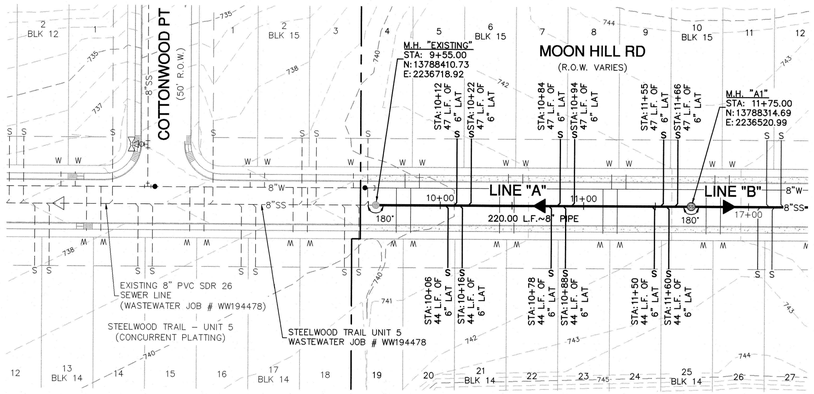

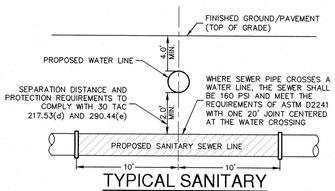

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

SCALE: 1"= 50'
0' 50' 100' 150'

SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER (EXISTING FIRE HYDRANT)
- EXISTING UNDERGROUND ELECTRIC
- EXISTING GAS
- EXISTING SEWER
- PROPOSED SEWER (MANHOLE)
- PROPOSED WATER (FIRE HYDRANT)
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER (FF = XXXX.XX)
- PROPOSED STORM DRAIN
- PROPOSED GAS
- PROPOSED UNDERGROUND ELECTRIC

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
2. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.20)
4. CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATIONS 2" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT. CONTRACTOR SHALL ENSURE THAT MANHOLES IN PAVED AREAS ARE SET TO MATCH TOP OF FINISHED GRADE.
5. ALL SEWER PIPES SHALL BE 8" PVC (SDR 26), UNLESS OTHERWISE NOTED.
6. CONTRACTOR IS TO VERIFY EXISTING INVERT OF SANITARY SEWER MAIN AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
7. CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. ANY FENCE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
8. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
9. SEE THIS SHEET FOR TYPICAL SANITARY SEWER/WATER CROSSING DETAIL.
10. IF A CONFLICT EXISTS BETWEEN THE VARIOUS SUBMITTED DOCUMENTS (ENGINEERING CALCULATIONS, PROJECTED SPECIFICATIONS, PROJECTED PLANS, ADDENDUMS, ETC.), THE FOLLOWING DOCUMENTS TAKE PRECEDENT: SPECIFICATIONS GOVERN OVER PLANS, SPECIAL CONDITIONS GOVERN OVER SPECIFICATIONS AND PLANS. ADDENDUMS TAKE PRECEDENCE OVER ALL.
11. LAST 20 L.F. OF 8" STUB-OUT SHALL BE CONSTRUCTED OF P.V.C. SDR 26 (160 P.S.I.) PRESSURE PIPE.
12. ALL SEWER PIPE LATERALS SHALL BE SDR 26 (CLASS 160) PVC PIPE AND SHALL HAVE A MINIMUM SLOPE OF 2%.
13. WASTEWATER LATERALS SHALL BE LAID WITH A MINIMUM OF 36 INCHES OF COVER.
14. NEW MANHOLES MUST BE CONSTRUCTED OF OR LINED WITH A CORROSION RESISTANT MATERIAL. WHERE NEW CONSTRUCTION CONNECTS TO AN EXISTING MANHOLE THAT IS NOT CONSTRUCTED OF A CORROSION RESISTANT MATERIAL, THE EXISTING MANHOLE MUST BE LINED WITH OR REPLACED WITH A CORROSION RESISTANT MATERIAL.
15. 48" MANHOLES ARE REQUIRED FOR ALL MAINS UP TO 18" IN DIAMETER.

FLOODPLAIN NOTE

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NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!

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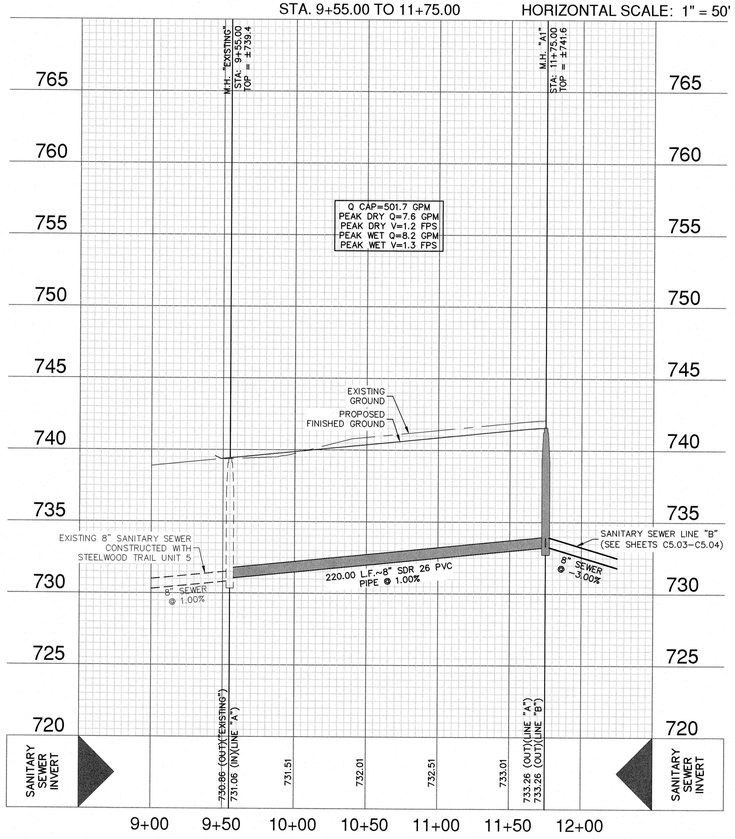
SANITARY SEWER LINE "A"
STA. 9+55.00 TO 11+75.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



NO.	REVISION	DATE

8-17-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.2603
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
SANITARY SEWER LINE A - PLAN & PROFILE
STA. 9+55.00 TO 11+75.00

PLAT NO. _____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.02

FOR PERMIT

Date: Aug 19, 2022, 11:25am User ID: bhurkett
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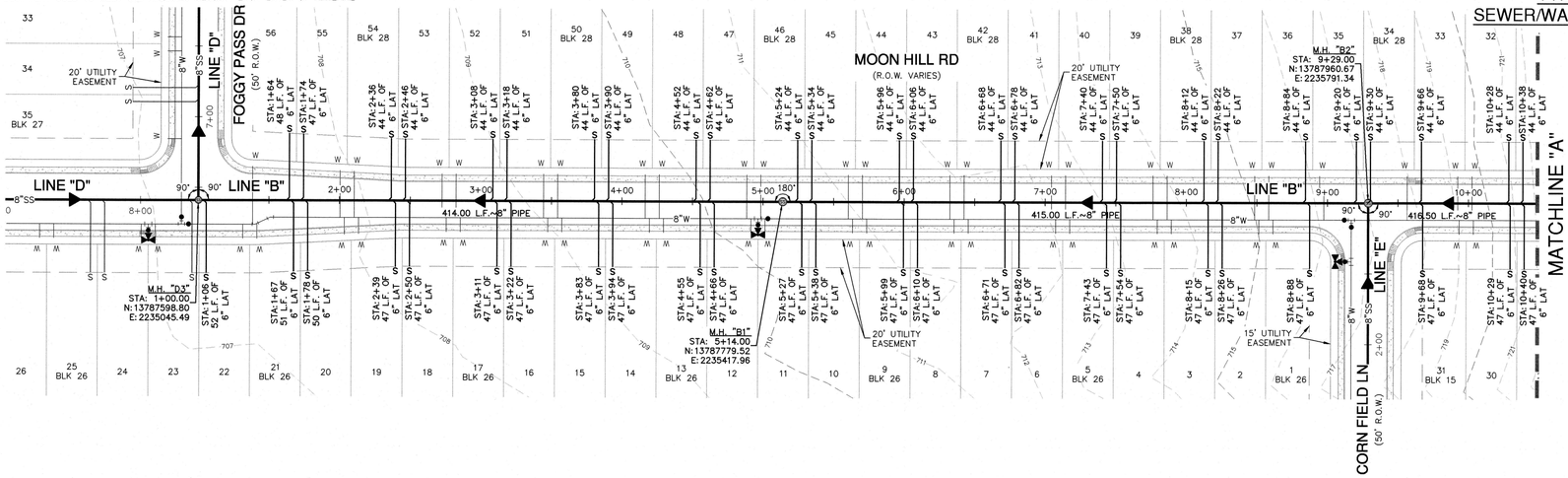

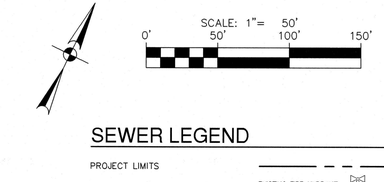

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NOT-TO-SCALE

SCALE: 1"= 50'
0' 50' 100' 150'

SEWER LEGEND

PROJECT LIMITS
EXISTING WATER (EXISTING FIRE HYDRANT)
EXISTING UNDERGROUND ELECTRIC (UGE)
EXISTING GAS (G)
EXISTING SEWER (SS, MANHOLE)
PROPOSED SEWER (SS, MANHOLE)
PROPOSED WATER (FIRE HYDRANT, W)
PROPOSED SEWER LATERAL (S)
FINISHED FLOOR ELEVATION FOR SEWER (FF = XXXX.XX)
PROPOSED STORM DRAIN
PROPOSED GAS (G)
PROPOSED UNDERGROUND ELECTRIC (UGE)

NOTES

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NOTE:
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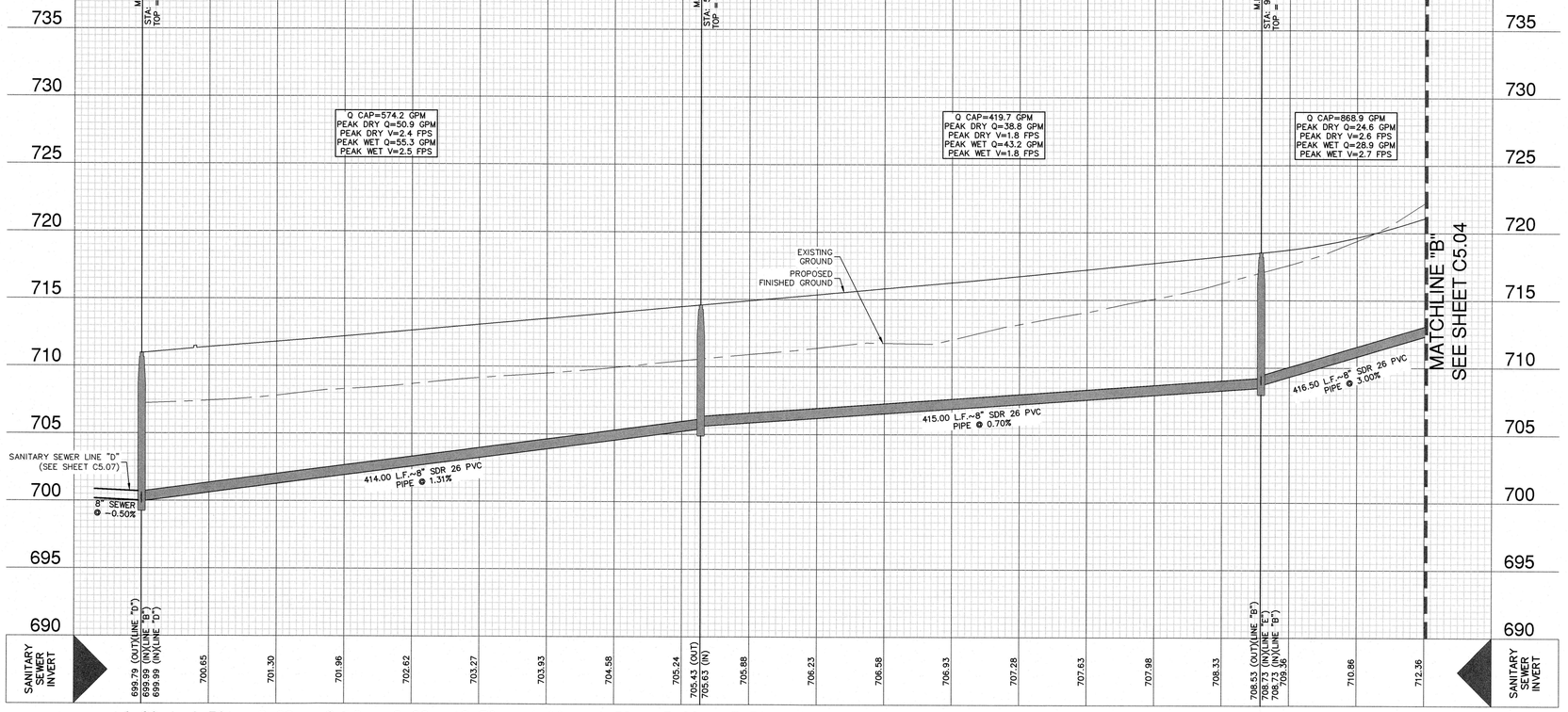
SANITARY SEWER LINE "B"
STA. 1+00.00 TO 10+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



NO.	REVISION	DATE

8-17-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE. 102 | NEW BRAUNFELS, TX 78132 | 830.625.9653
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

SANITARY SEWER LINE B - PLAN & PROFILE
STA. 1+00.00 TO 10+50.00

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.03

FOR PERMIT

Date: Aug 19, 2022, 11:26am User ID: bburkett
File: P:\300\34\07\Design\Civil\SSB-3003407.dwg
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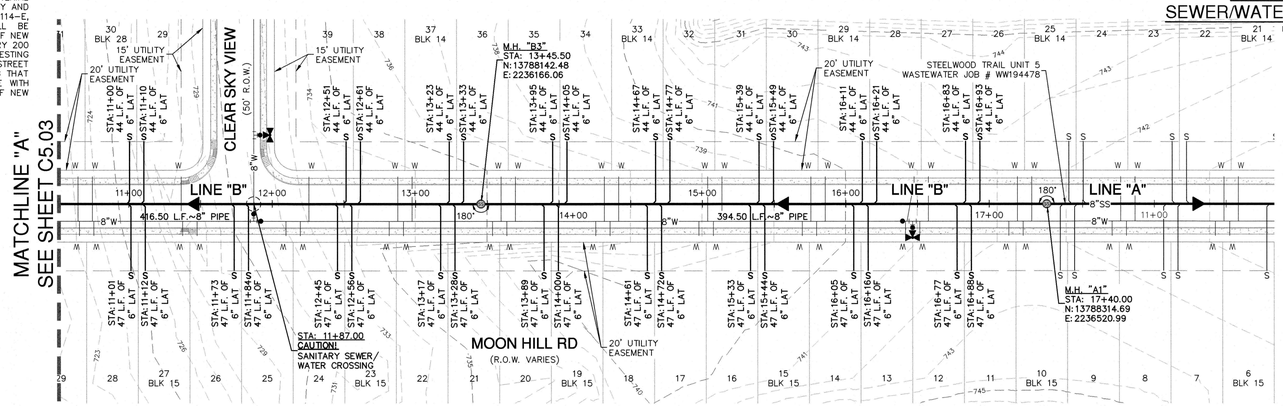
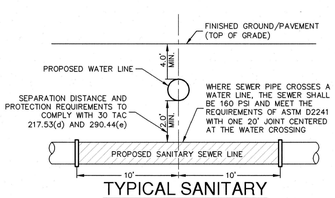


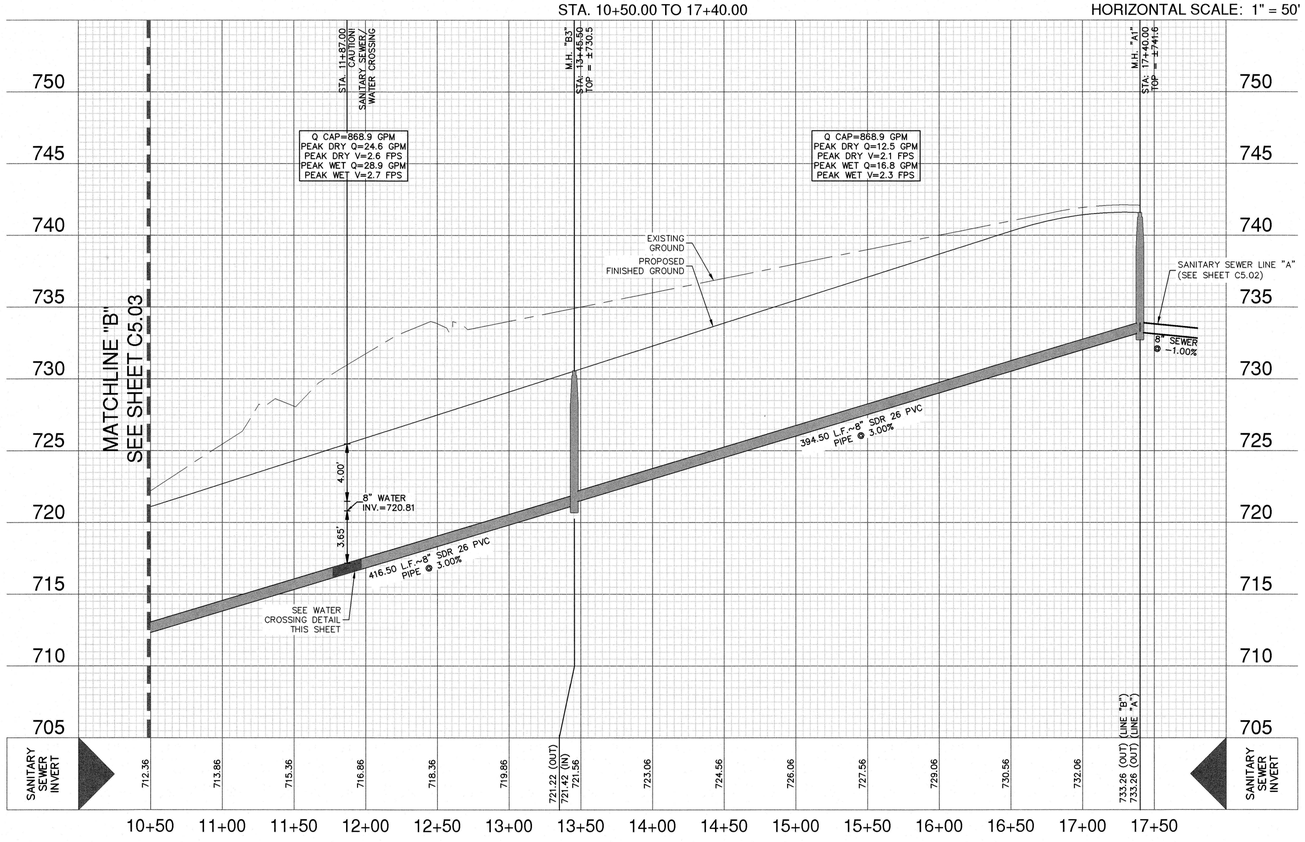


TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

SANITARY SEWER LINE "B"
STA. 10+50.00 TO 17+40.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER — W —
- EXISTING UNDERGROUND ELECTRIC — UGE —
- EXISTING GAS — G —
- EXISTING SEWER — SS —
- PROPOSED SEWER — SS — (MANHOLE)
- PROPOSED WATER — W — (FIRE HYDRANT)
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
- PROPOSED STORM DRAIN
- PROPOSED GAS — G —
- PROPOSED UNDERGROUND ELECTRIC — UGE —

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
2. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.20)
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9. SEE THIS SHEET FOR TYPICAL SANITARY SEWER/WATER CROSSING DETAIL.
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FLOODPLAIN NOTE

1. NO PORTION OF ANY LOT ON THIS PROJECT IS WITHIN AN INDICATED SPECIAL FLOOD HARZARD ZONE ACCORDING TO THE FEMA FIRM MAP NO. 48091C0445F EFFECTIVE DATE 9/2/2009 AND FEMA FIRM MAP NO. 48187C0095F EFFECTIVE DATE 11/2/2007.

NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!

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NO.	REVISION	DATE

8-17-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.3333
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288-00

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
SANITARY SEWER LINE B - PLAN & PROFILE
STA. 10+50.00 TO 17+40.00

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.04

FOR PERMIT

Date: Aug 19, 2022, 11:27am User ID: bhurkett
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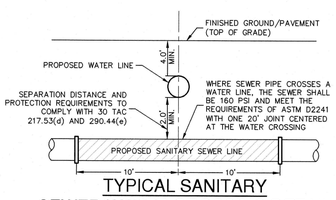
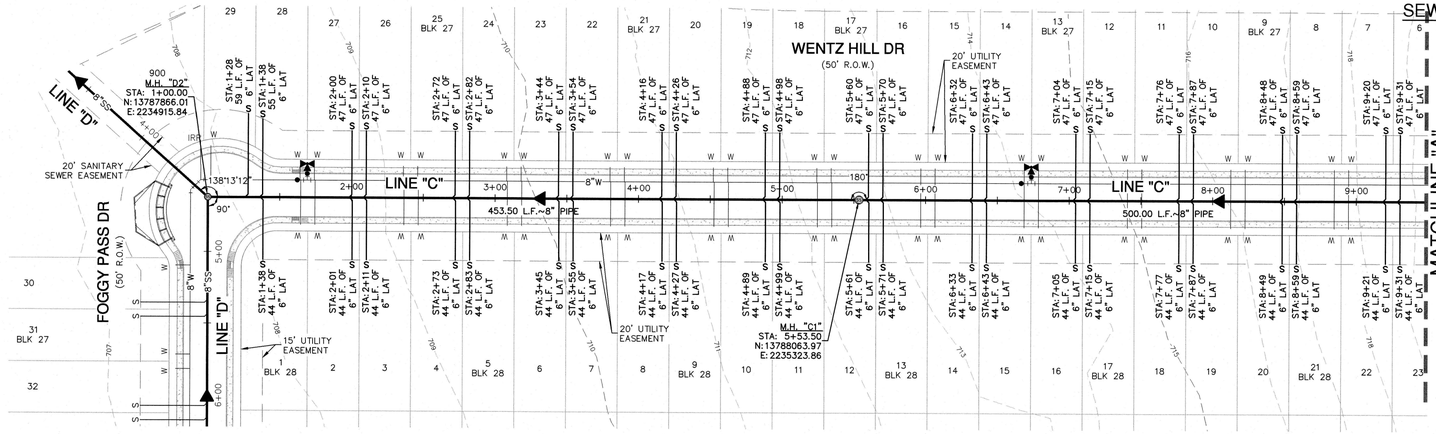


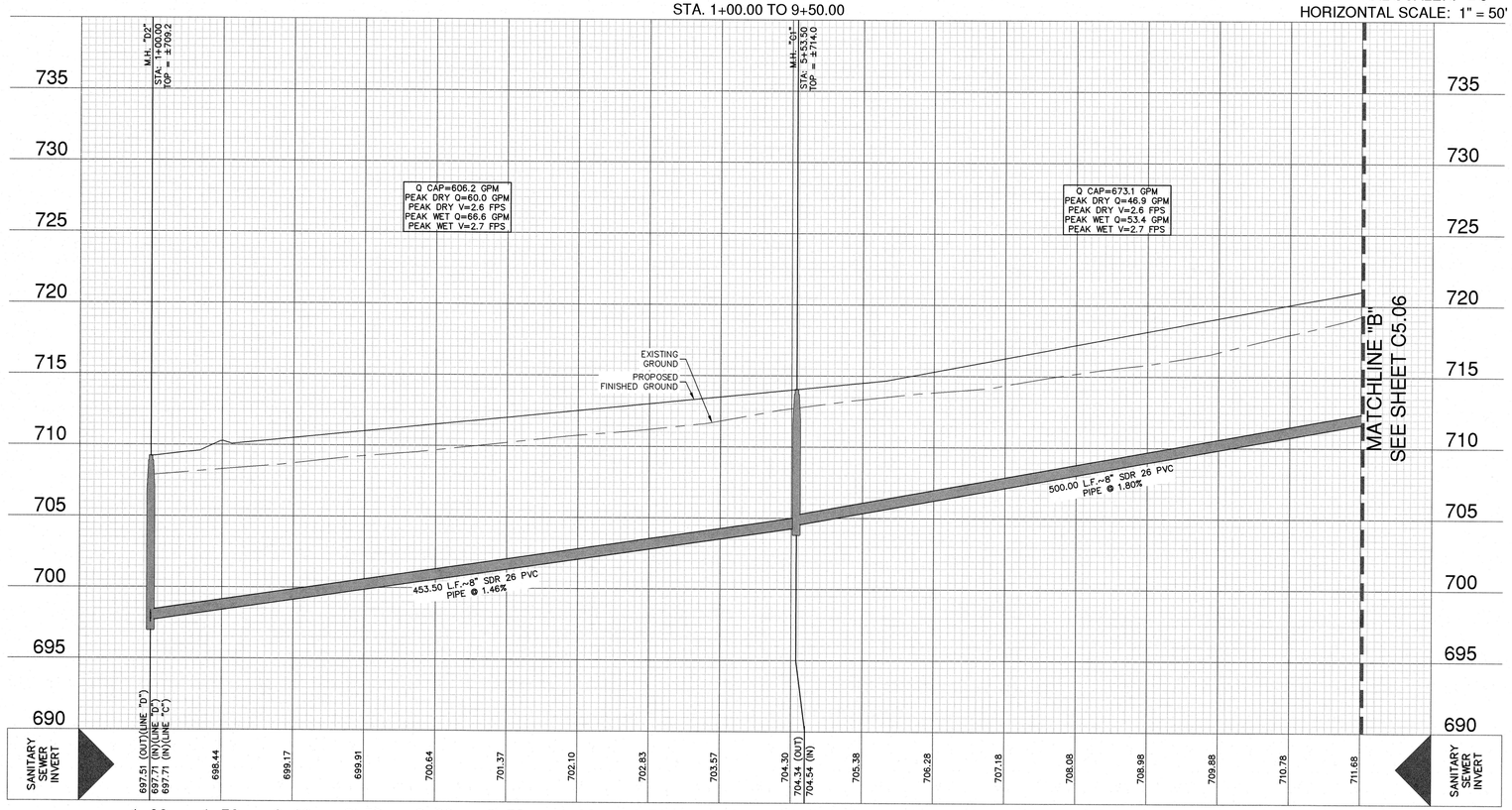
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



SANITARY SEWER LINE "C"
STA. 1+00.00 TO 9+50.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



SCALE: 1"= 50'

0' 50' 100' 150'

SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER (EXISTING FIRE HYDRANT)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS, MANHOLE)
- PROPOSED SEWER (SS)
- PROPOSED WATER (FIRE HYDRANT, W)
- PROPOSED SEWER LATERAL (S)
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NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
8-17-2022

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5933
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288-00

STEELWOOD TRAIL UNIT 4

NEW BRAUNFELS, TEXAS

SANITARY SEWER LINE C - PLAN & PROFILE
STA. 1+00.00 TO 9+50.00

PLAT NO. _____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.05

FOR PERMIT

Date: Aug 19, 2022, 11:29am User ID: bhurkett
File: P:\300\34\07\Design\Civil\SSC-3003407.dwg

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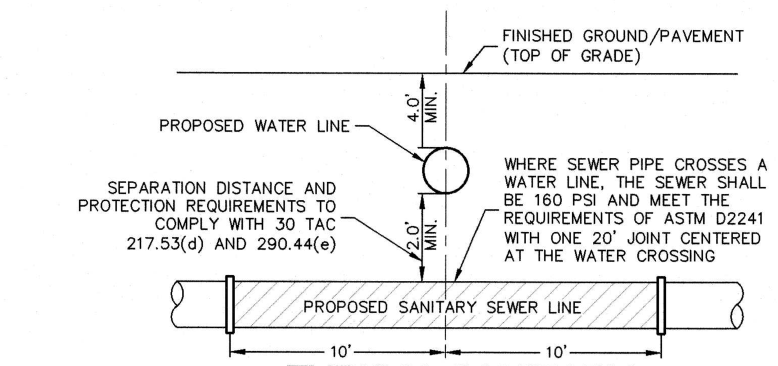

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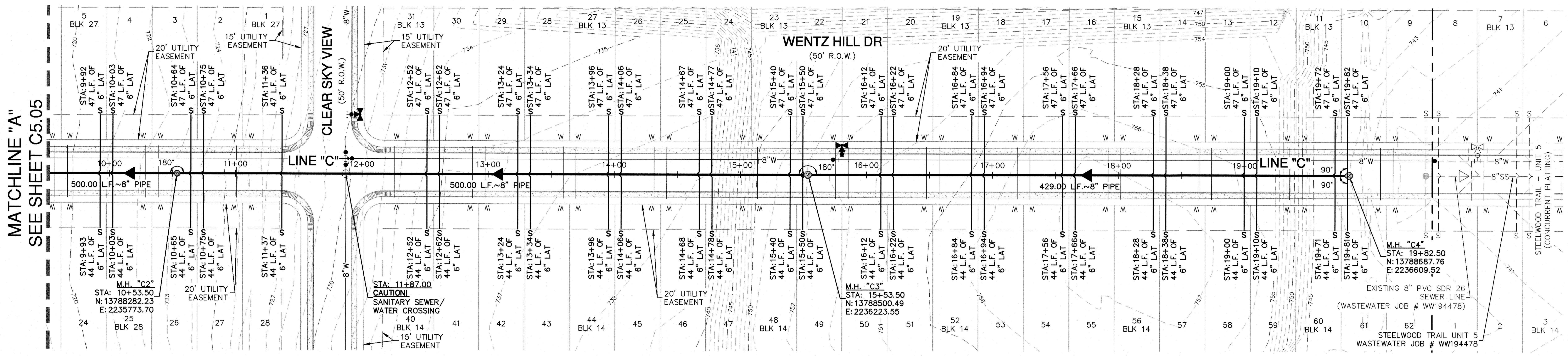
SCALE: 1"= 50'
0' 50' 100' 150'



SEWER LEGEND

PROJECT LIMITS	
EXISTING WATER	EXISTING FIRE HYDRANT, W
EXISTING UNDERGROUND ELECTRIC	UGE
EXISTING GAS	G
EXISTING SEWER	SS
PROPOSED SEWER	MANHOLE, SS
PROPOSED WATER	FIRE HYDRANT, W
PROPOSED SEWER LATERAL	S
FINISHED FLOOR ELEVATION FOR SEWER	FF = XXXX.XX
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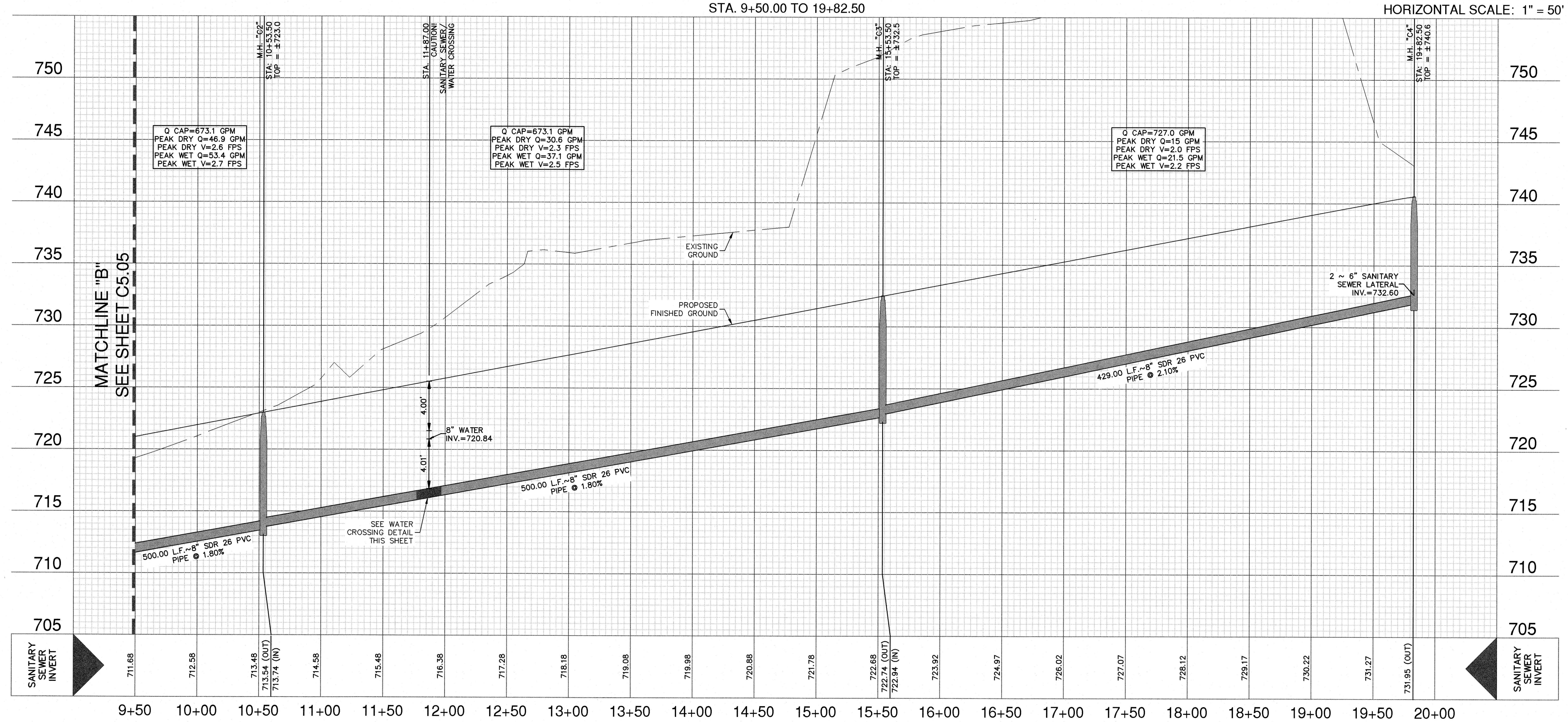
15. 48" MANHOLES ARE REQUIRED FOR ALL MAINS UP TO 18" IN DIAMETER.

SANITARY SEWER LINE "C"
STA. 9+50.00 TO 19+82.50

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



FLOODPLAIN NOTE

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NOTE:
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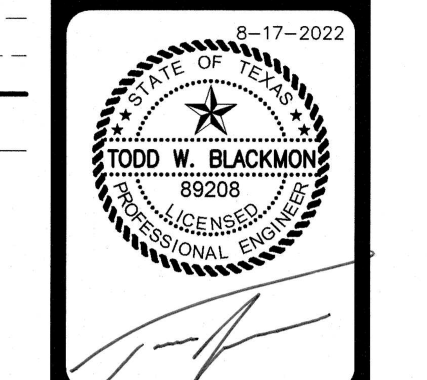
NO.	REVISION	DATE



PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

SANITARY SEWER LINE C - PLAN & PROFILE
STA. 9+50.00 TO 19+82.50

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.06

Date: Aug 19, 2022, 11:29am User ID: bhurkett
File: P:\300\34\07\Design\Civil\SSC-3003407.dwg

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FOR PERMIT

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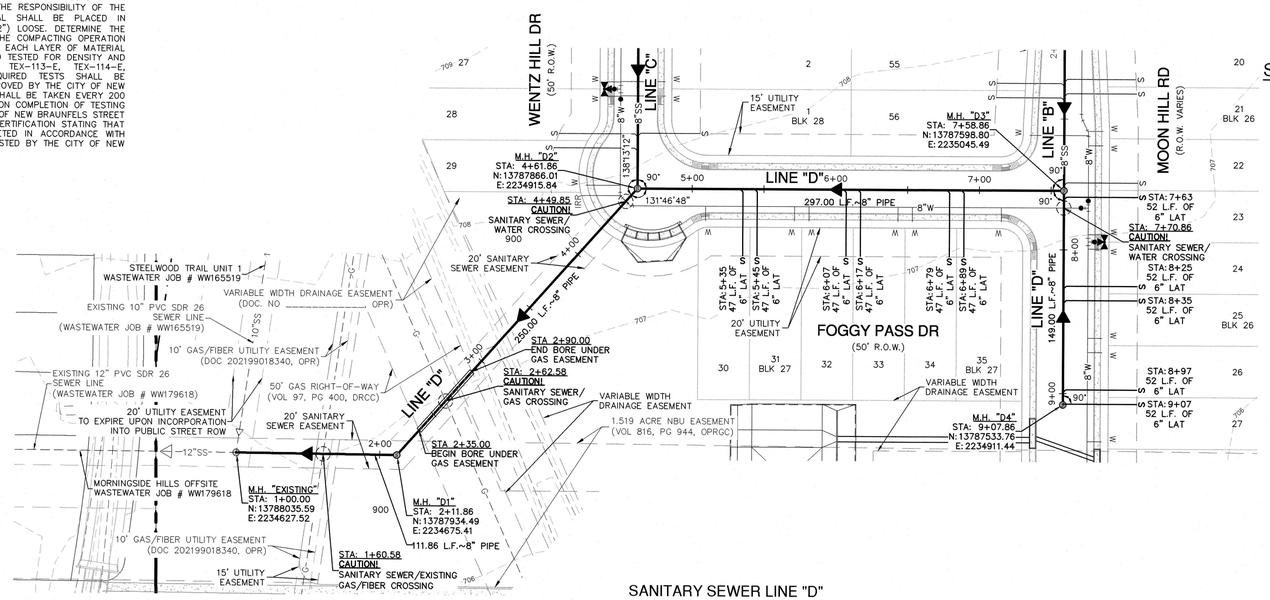

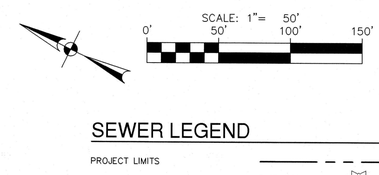

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

SCALE: 1"= 50'
0' 50' 100' 150'

SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER (EXISTING FIRE HYDRANT)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS, MANHOLE)
- PROPOSED SEWER (SS, MANHOLE)
- PROPOSED WATER (FIRE HYDRANT, W)
- PROPOSED SEWER LATERAL (S)
- FINISHED FLOOR ELEVATION FOR SEWER (FF = XXXX.XX)
- PROPOSED STORM DRAIN
- PROPOSED GAS (G)
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NOTES

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2. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.20)
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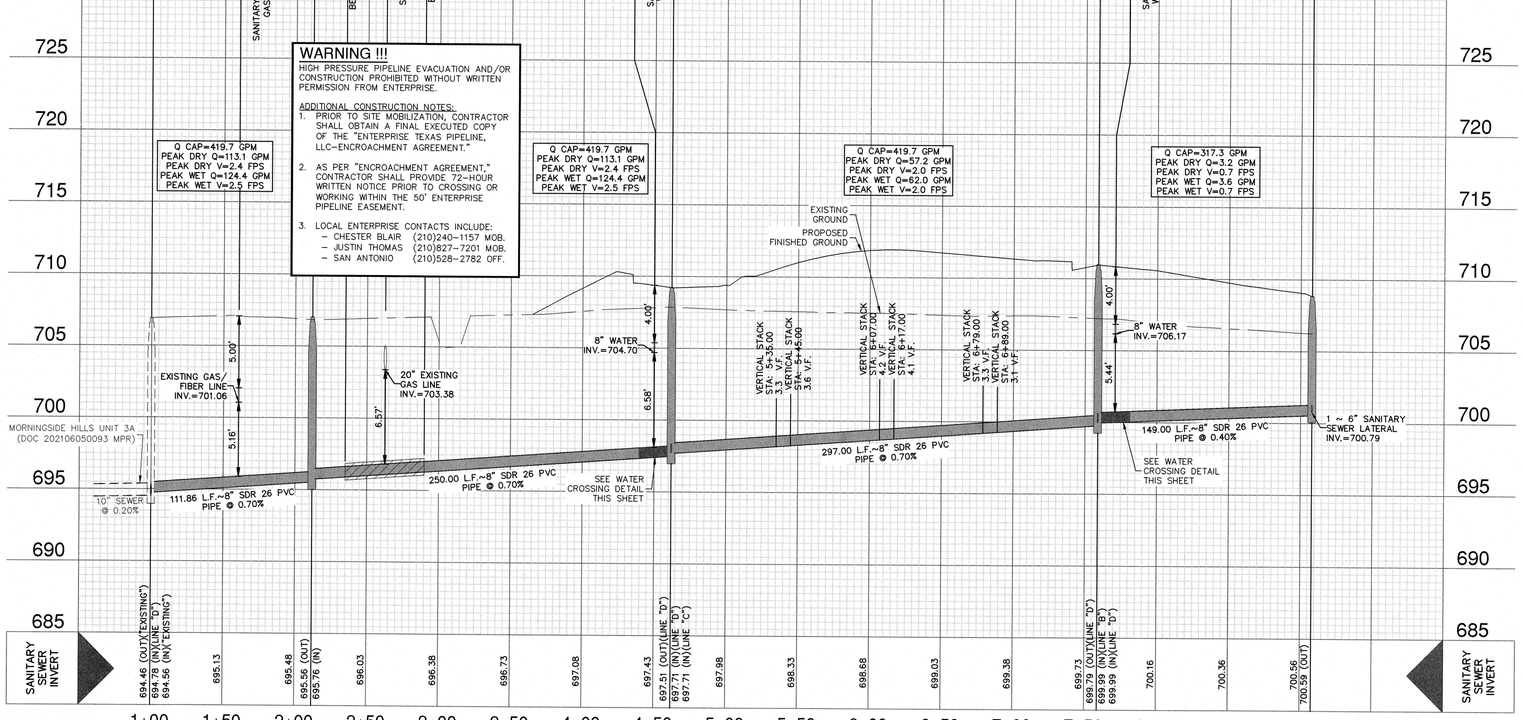
SANITARY SEWER LINE "D" STA. 1+00.00 TO 9+07.86

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



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FOR PERMIT

NO.	REVISION	DATE

8-17-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.3603
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
SANITARY SEWER LINE D - PLAN & PROFILE
STA. 1+00.00 TO 9+07.86

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.07

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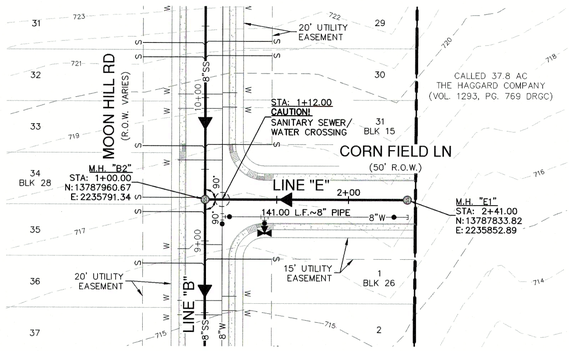

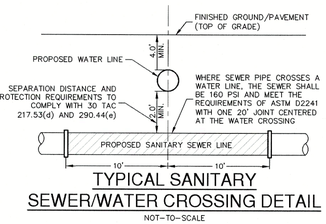

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SEWER LEGEND

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- EXISTING GAS (G)
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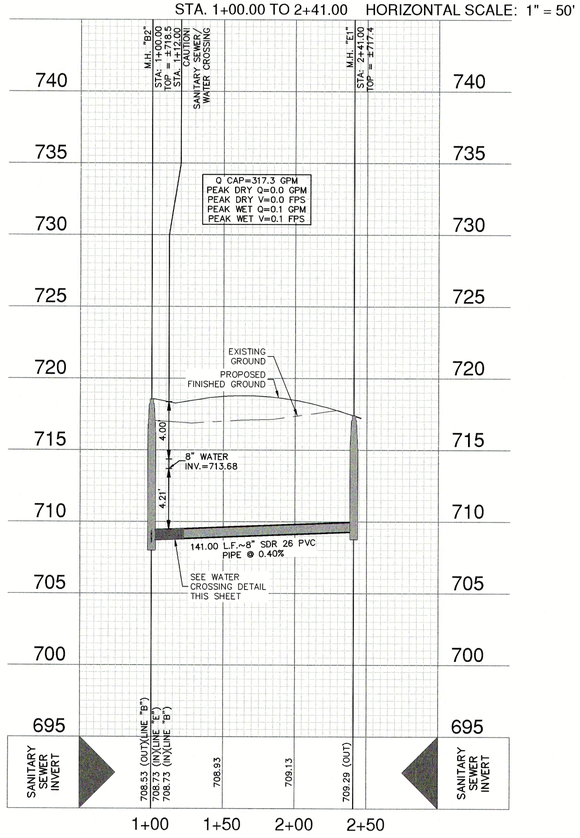
SANITARY SEWER LINE "E" VERTICAL SCALE: 1" = 5'
STA. 1+00.00 TO 2+41.00 HORIZONTAL SCALE: 1" = 50'



NO.	REVISION	DATE
1	SEWER VERSION REVISED.	06/20/24

6-20-2024

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.3663
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
SANITARY SEWER LINE E - PLAN & PROFILE
STA. 1+00.00 TO 2+41.00

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.08

Date: Jun 20, 2024, 9:51am User ID: MLeuckie
File: P:\30010\34107\Design\Civil\SSE-30034(7).dwg

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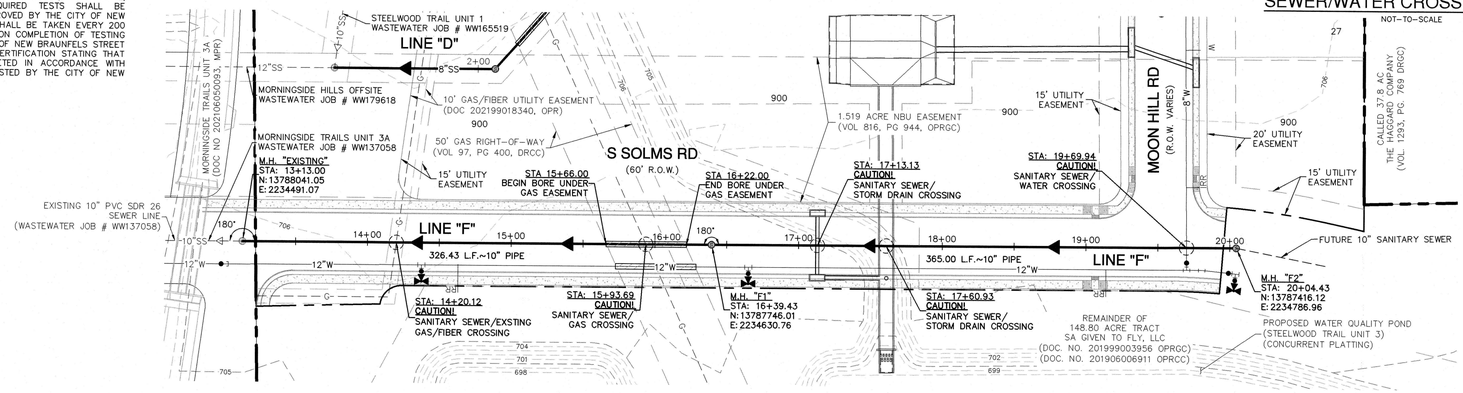
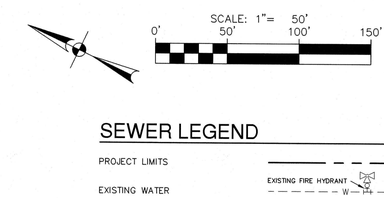
FOR PERMIT

CITY OF NEW BRAUNFELS NOTES

1. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
2. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
4. UTILITY TRENCH COMPACTION – ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.





TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

SCALE: 1"= 50'
0' 50' 100' 150'

SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER — W —
- EXISTING UNDERGROUND ELECTRIC — UGE —
- EXISTING GAS — G —
- EXISTING SEWER — SS — (MANHOLE S)
- PROPOSED SEWER — SS — (MANHOLE S)
- PROPOSED WATER — W — (FIRE HYDRANT W)
- PROPOSED SEWER LATERAL — S —
- FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
- PROPOSED STORM DRAIN
- PROPOSED GAS — G —
- PROPOSED UNDERGROUND ELECTRIC — UGE —

NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
2. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.20)
4. CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATIONS 2" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT. CONTRACTOR SHALL ENSURE THAT MANHOLES IN PAVED AREAS ARE SET TO MATCH TOP OF FINISHED GRADE.
5. ALL SEWER PIPES SHALL BE 8" PVC (SDR 26), UNLESS OTHERWISE NOTED.
6. CONTRACTOR IS TO VERIFY EXISTING INVERT OF SANITARY SEWER MAIN AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
7. CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. ANY FENCE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
8. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
9. SEE THIS SHEET FOR TYPICAL SANITARY SEWER/WATER CROSSING DETAIL.
10. IF A CONFLICT EXISTS BETWEEN THE VARIOUS SUBMITTED DOCUMENTS (ENGINEERING CALCULATIONS, PROJECTED SPECIFICATIONS, PROJECTED PLANS, ADDENDUMS, ETC.), THE FOLLOWING DOCUMENTS TAKE PRECEDENT: SPECIFICATIONS GOVERN OVER PLANS, SPECIAL CONDITIONS GOVERN OVER SPECIFICATIONS AND PLANS. ADDENDUMS TAKE PRECEDENCE OVER ALL.
11. LAST 20 L.F. OF 8" STUB-OUT SHALL BE CONSTRUCTED OF P.V.C. SDR 26 (160 P.S.I.) PRESSURE PIPE.
12. ALL SEWER PIPE LATERALS SHALL BE SDR 26 (CLASS 160) PVC PIPE AND SHALL HAVE A MINIMUM SLOPE OF 2%.
13. WASTEWATER LATERALS SHALL BE LAID WITH A MINIMUM OF 36 INCHES OF COVER.
14. NEW MANHOLES MUST BE CONSTRUCTED OF OR LINED WITH A CORROSION RESISTANT MATERIAL. WHERE NEW CONSTRUCTION CONNECTS TO AN EXISTING MANHOLE THAT IS NOT CONSTRUCTED OF A CORROSION RESISTANT MATERIAL, THE EXISTING MANHOLE MUST BE LINED WITH OR REPLACED WITH A CORROSION RESISTANT MATERIAL.
15. 48" MANHOLES ARE REQUIRED FOR ALL MAINS UP TO 18" IN DIAMETER.

FLOODPLAIN NOTE

1. NO PORTION OF ANY LOT ON THIS PROJECT IS WITHIN AN INDICATED SPECIAL FLOOD HARZARD ZONE ACCORDING TO THE FEMA FIRM MAP NO. 48091C0445F EFFECTIVE DATE 9/2/2009 AND FEMA FIRM MAP NO. 48187C0095F EFFECTIVE DATE 11/2/2007.

NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!

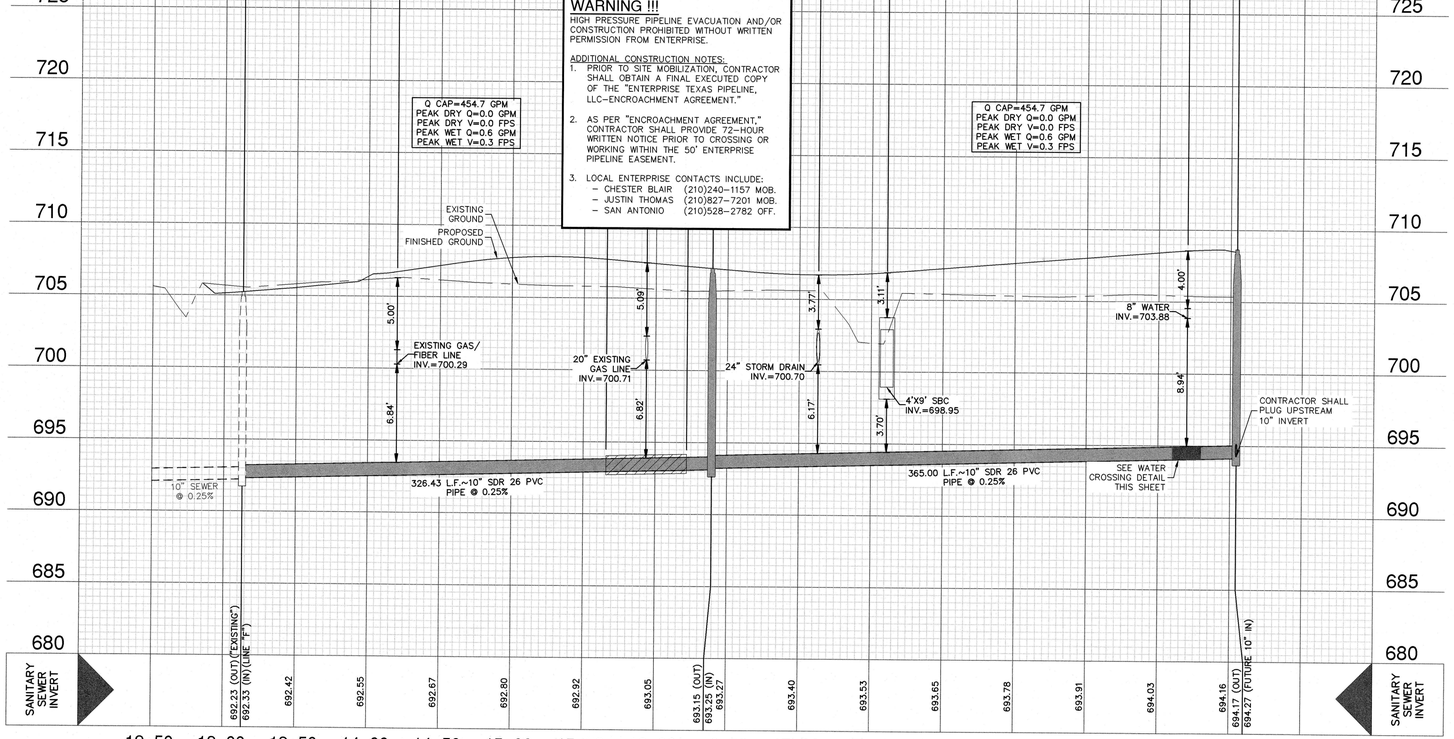
CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

SANITARY SEWER LINE "F"
STA. 13+13.00 TO 20+04.43

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



NO.	REVISION	DATE

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER
8-17-2022

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.3503
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

SANITARY SEWER LINE F - PLAN & PROFILE
STA. 13+13.00 TO 20+04.43

PLAT NO. ____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.09

FOR PERMIT

Date: Aug 19, 2022, 11:33am User ID: bhurkett
File: P:\300\34\07\Design\Civil\SSF-3003407.dwg

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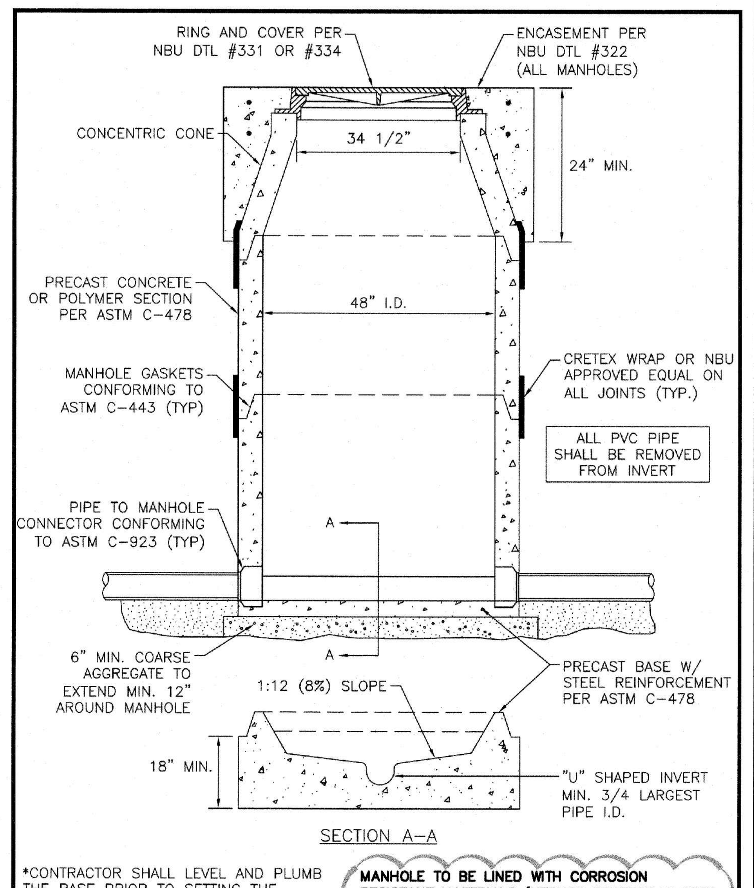
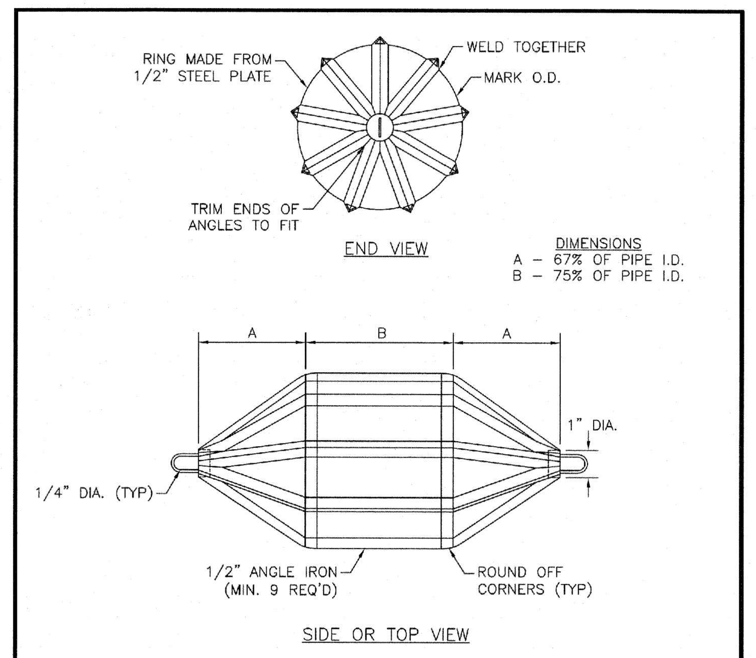


*CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.

MANHOLE TO BE LINED WITH CORROSION RESISTANT MATERIALS (KERNOS SEWERCOAT 2000 HS & PG; AND APM PERMACAST MS-10,000 CONSHIELD APPLIED IN A 1-INCH THICK LAYER)

NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **WASTEWATER MANHOLE ON PRECAST BASE** | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 328

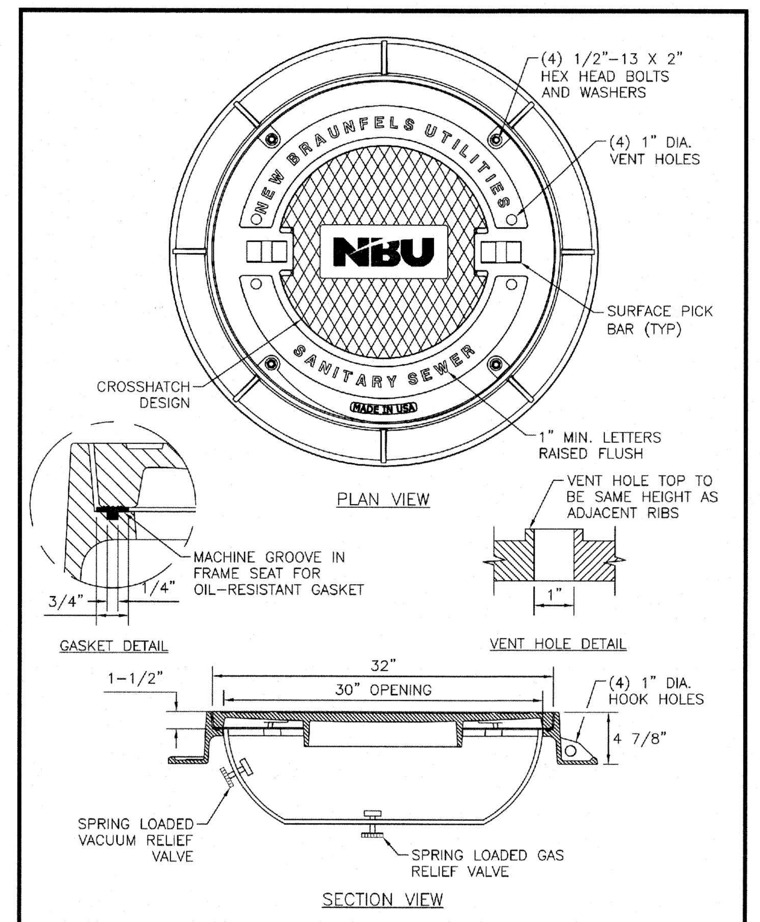


MANDREL REQUIREMENTS:

1. O.D. NOT LESS THAN 95% OF THE I.D. OF THE PIPE, AS SPECIFIED BY THE ASTM, AWWA, UNI-BELL OR ANSI.
2. ABLE TO WITHSTAND 200 PSI WITHOUT BEING DEFORMED.
3. ODD NUMBER OF RUNNERS OR LEGS.

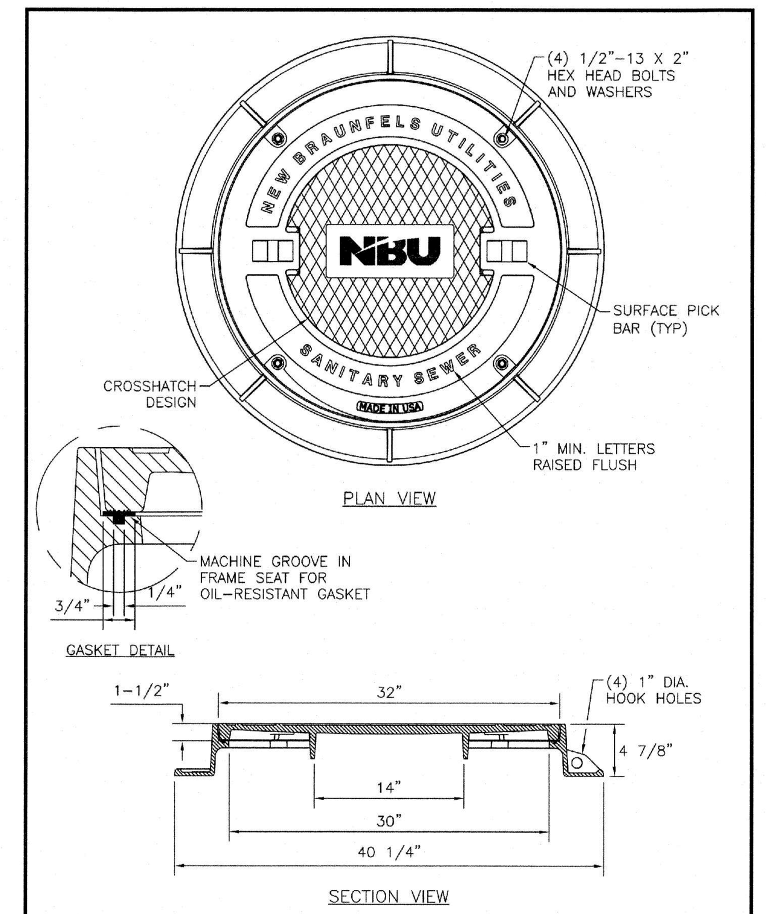
*THIS INFORMATION IS PROVIDED AS A REFERENCE. ALL DEFLECTION TESTING SHALL BE DONE IN ACCORDANCE WITH TCEQ CHAPTER 217.

NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **GO, NO GO DEFLECTION TESTING MANDREL** | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 350



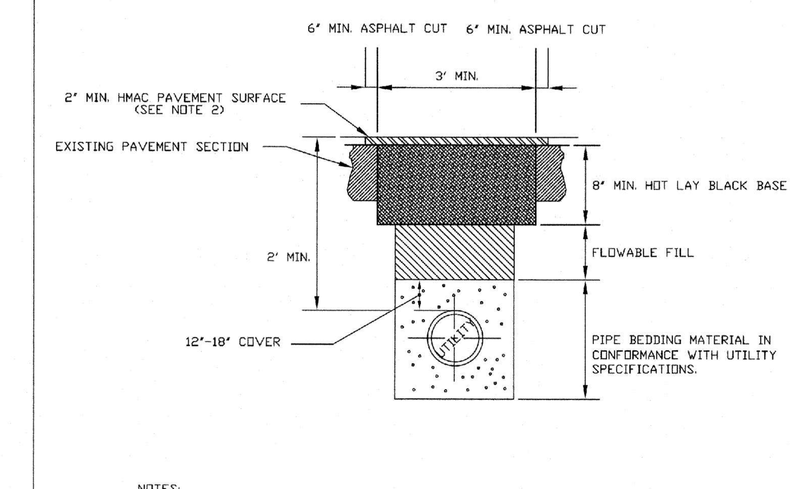
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B

NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **VENTED SANITARY SEWER MANHOLE COVER** | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 334



MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B

NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **SANITARY SEWER MANHOLE COVER** | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 331



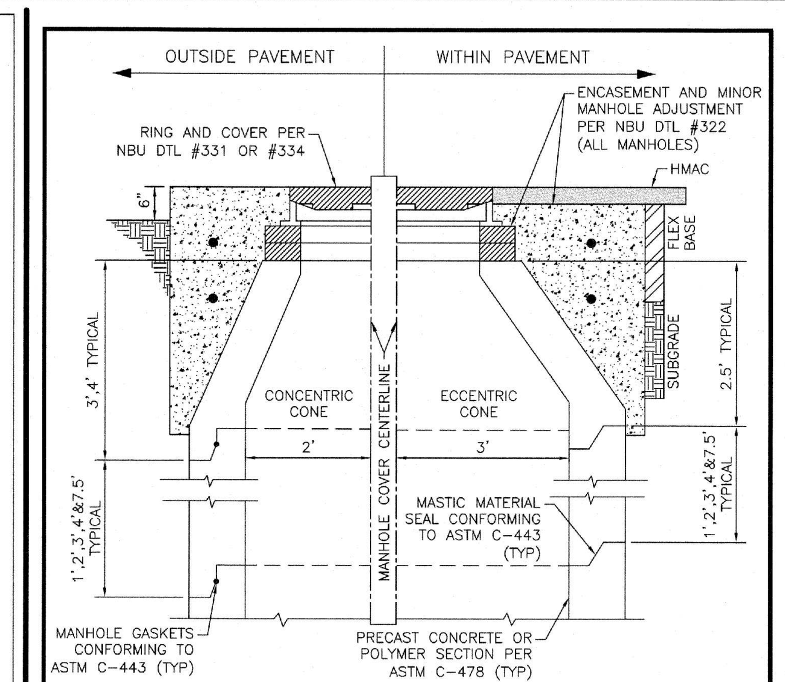
NOTES:

1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE AT A MINIMUM OF 12" WIDER THAN UNDISTURBED SIDES OF THE TRENCH SYMMETRICAL ABOUT THE CENTERLINE OF THE EXCAVATION.
2. REPLACEMENT HMAC SURFACE LAYER SHALL BE OF THE TYPE AND THICKNESS BASED ON FUNCTIONAL CLASSIFICATION.
   A) MIN. 2" HMAC TYPE 'D' FOR TRENCH REPAIRS IN LOCAL/RESIDENTIAL STREETS.
   B) MIN. 3" HMAC TYPE 'C' FOR TRENCH REPAIRS IN COLLECTOR/ARTERIAL STREETS.
3. DAMAGED PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED
4. PRIME AND TACK COAT ALL EXPOSED EDGES AND SURFACES.
5. HOT LAY BLACK BASE LAYED IN 8" LIFTS @ 95% COMPACTION.
6. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX AC OR TEMPORARY HMAC.
7. CALICHE OR EXISTING MATERIAL SHALL NOT BE USED TO BACKFILL THE UTILITY EXCAVATION.

TRENCH REPAIR DETAIL | CITY OF NEW BRAUNFELS ENGINEERING DIVISION, 424 S. CASTELL AVE. NEW BRAUNFELS, TEXAS 78130, PHONE: 830 221 4020, FAX: 830 626 3600
ISSUE DATE: APRIL 2015 | SCALE: N.T.S
DRAWN BY: AMF | CONTACT: GF

SANITARY SEWER PIPE LAID IN TRENCH (WITHIN PAVEMENT)

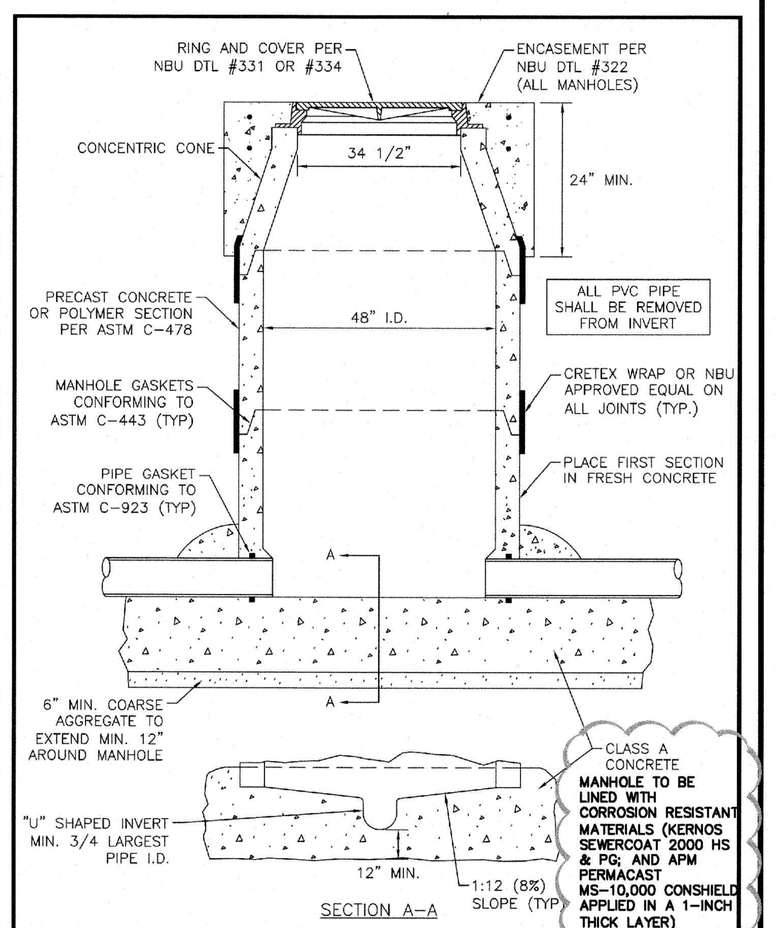
NOT TO SCALE



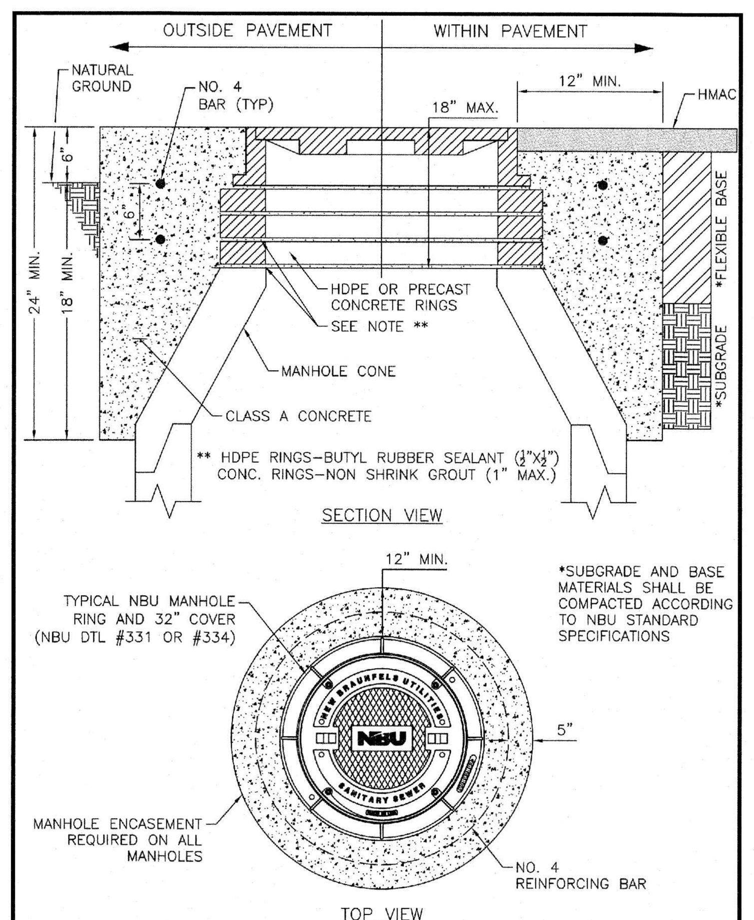
NOTES:

1. MANHOLE SECTIONS TEMPORARILY REMOVED FOR ROADWAY CONSTRUCTION MAY BE REUSED ONLY WITH THE WRITTEN APPROVAL OF THE INSPECTOR. GASKETS SHALL NOT BE REUSED.
2. ANY COMBINATION OF REMOVING THE CONCRETE RINGS, AND / OR THE MANHOLE CONE, AND/OR THE STRAIGHT RISER SECTION OF THE MANHOLE SHALL BE ACCEPTABLE TO TEMPORARILY LOWER THE MANHOLE GRADE FOR ROADWAY RECONSTRUCTION.
3. WHILE THE MANHOLE IS TEMPORARILY LOWERED, A SHEET OF STEEL SUITABLE TO SUPPORT ALL IMPOSED LOADS SHALL BE USED TO COVER THE OPENING. THE STEEL PLATE SHALL BE SET IN MORTAR TO PREVENT LEAKAGE.
4. SUBGRADE AND BASE MATERIALS SHALL BE COMPACTED TO 95% AND 100% DENSITIES, RESPECTIVELY, COMPACTION SHALL BE BY MECHANICAL TAMPING TO THE DENSITIES SPECIFIED.
5. MANHOLE SHALL BE SET SO RING AND COVER MATCH STREET SLOPE.

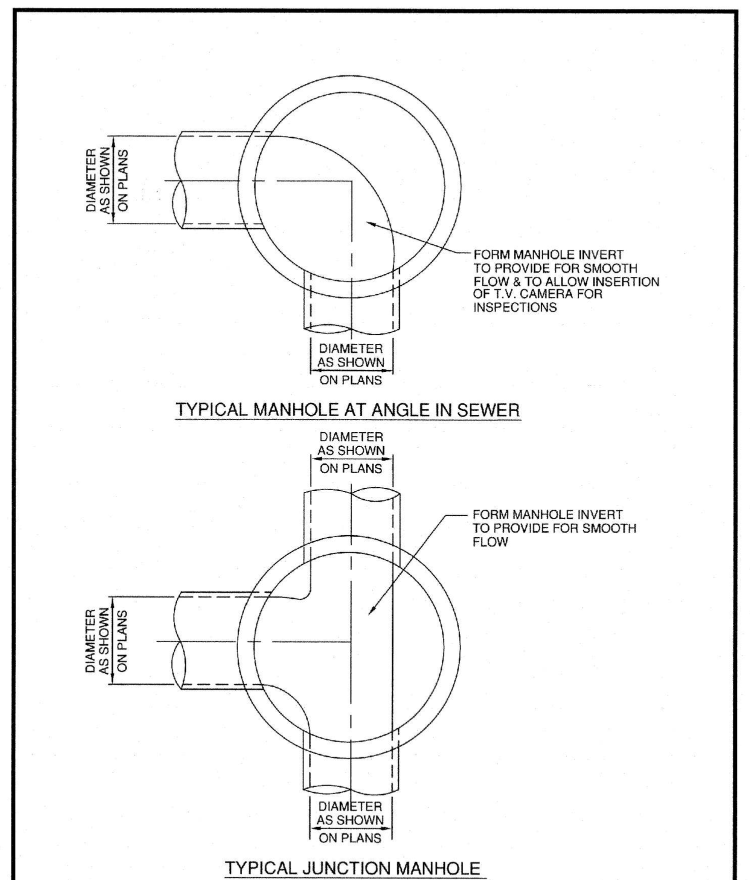
NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **MAJOR MANHOLE ADJUSTMENT** | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 321



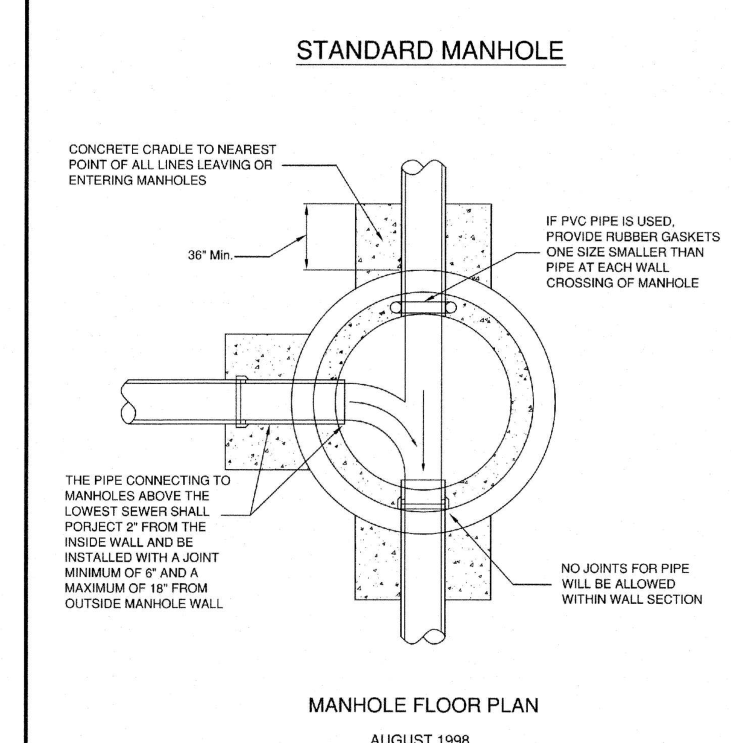
NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **WASTEWATER MANHOLE ON CAST IN PLACE FOUNDATION** | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 327



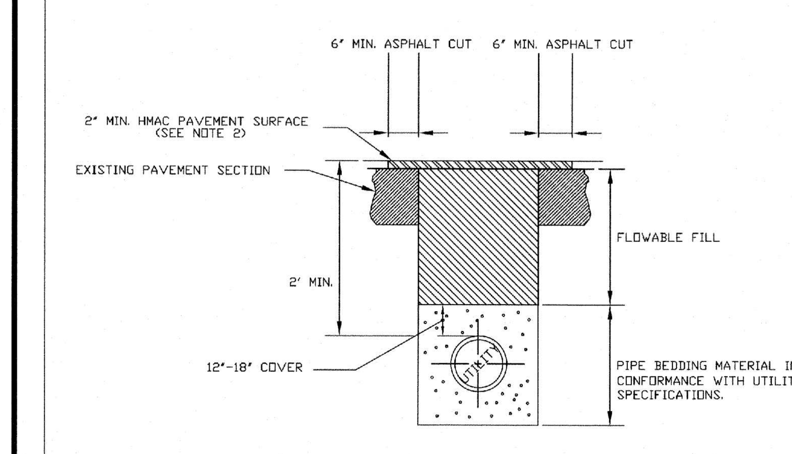
NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **NEW MANHOLE CONSTRUCTION AND MINOR MANHOLE ADJUSTMENT** | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 322



NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: JD Amaro | APPROVED BY: | STANDARD DRAWING: **MANHOLE INVERT PLAN** | UPDATED: 4-16-03 | SCALE: N.T.S. | SHEET: 1 OF 2 | DRAWING NO. 320



NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: H Shadrock | APPROVED BY: | STANDARD DRAWING: **STANDARD MANHOLE MANHOLE FLOOR PLAN** | UPDATED: 5-5-03 | SCALE: N.T.S. | SHEET: 2 OF 2 | DRAWING NO. 320



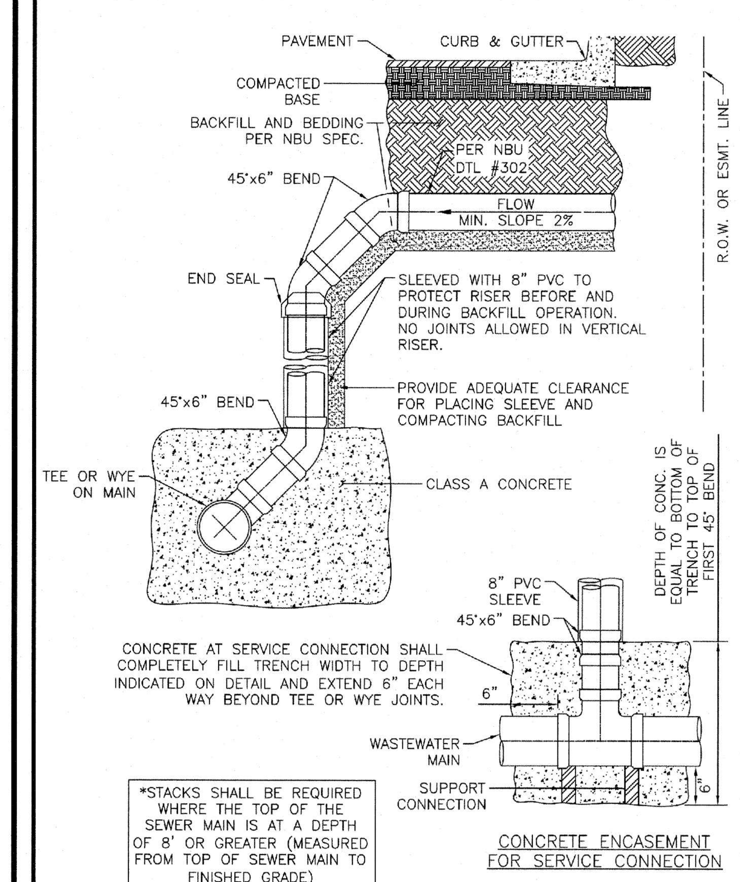
NOTES:

1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE AT A MINIMUM OF 12" WIDER THAN UNDISTURBED SIDES OF THE TRENCH SYMMETRICAL ABOUT THE CENTERLINE OF THE EXCAVATION.
2. REPLACEMENT HMAC SURFACE LAYER SHALL BE OF THE TYPE AND THICKNESS BASED ON FUNCTIONAL CLASSIFICATION.
   A) MIN. 2" HMAC TYPE 'D' FOR TRENCH REPAIRS IN LOCAL/RESIDENTIAL STREETS.
   B) MIN. 3" HMAC TYPE 'C' FOR TRENCH REPAIRS IN COLLECTOR/ARTERIAL STREETS.
3. DAMAGED PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED
4. PRIME AND TACK COAT ALL EXPOSED EDGES AND SURFACES.
5. HOT LAY BLACK BASE LAYED IN 8" LIFTS @ 95% COMPACTION.
6. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX AC OR TEMPORARY HMAC.
7. CALICHE OR EXISTING MATERIAL SHALL NOT BE USED TO BACKFILL THE UTILITY EXCAVATION.

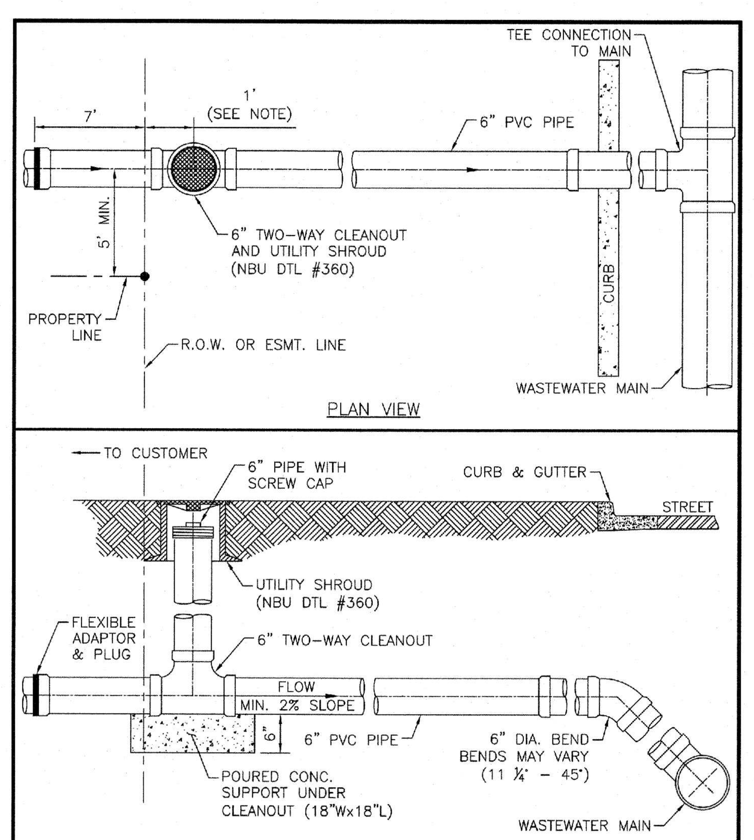
TRENCH REPAIR DETAIL FLOWABLE FILL | CITY OF NEW BRAUNFELS ENGINEERING DIVISION, 424 S. CASTELL AVE. NEW BRAUNFELS, TEXAS 78130, PHONE: 830 221 4020, FAX: 830 626 3600
ISSUE DATE: APRIL 2015 | SCALE: N.T.S
DRAWN BY: AMF | CONTACT: GF

SANITARY SEWER PIPE LAID IN TRENCH (WITHIN PAVEMENT)

NOT TO SCALE



NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **WASTEWATER DEEP SERVICE CONNECTION DETAIL** | SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO. 301



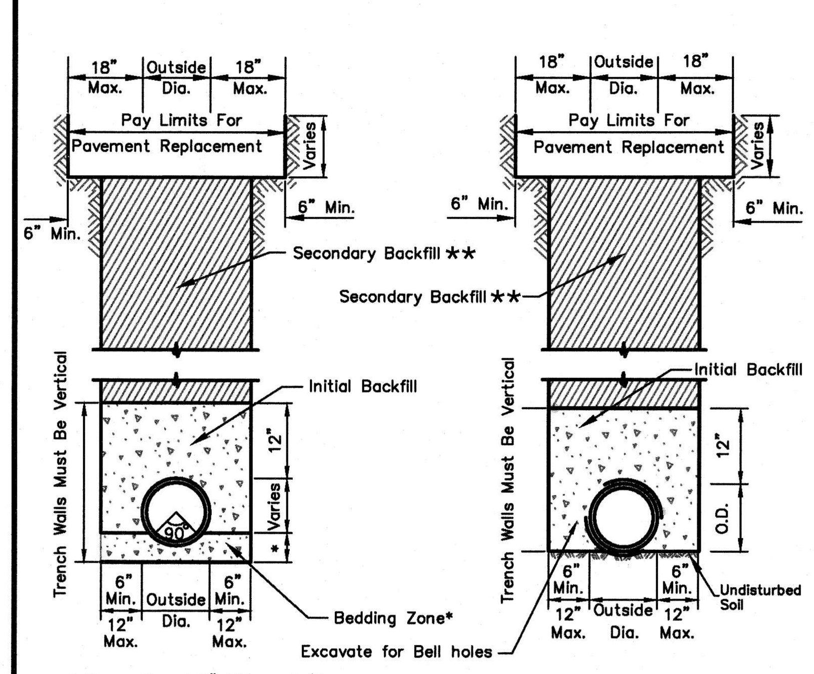
*CLEANOUT SHALL NOT BE PLACED WITHIN SIDEWALK OR DRIVEWAY. IF SIDEWALK EXISTS AT EDGE OF PROPERTY LINE, CLEANOUT CAN BE LOCATED UP TO 1' WITHIN PROPERTY. CONSISTENT PLACEMENT IS REQUIRED.

NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **SINGLE WASTEWATER SERVICE CONNECTION DETAIL** | SCALE: N.T.S. | SHEET: 1 OF 2 | DRAWING NO. 302

NOTES:

1. UTILITY CONTRACTOR, DURING SUBDIVISION CONSTRUCTION, SHALL INSTALL WASTEWATER CONNECTION TO MAIN, 6" STUB WITH 6" SERVICE BRANCH WITH 2-WAY CLEANOUT, CONCRETE SUPPORT (MIN. 18"Wx18"Lx6"H), RISER FOR CLEAN OUT (CAPPED), UTILITY SHROUD, 7' EXTENSION, AND PLUG. ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SHALL SLOPE DOWNWARD TO MAIN 2%, 1/4" PER FOOT, MINIMUM TO 45° MAXIMUM. DEPTH OF SERVICE STUB AT PROPERTY LINE WILL BE SHOWN ON PLANS BY ENGINEER OR DESIGNATED REPRESENTATIVE IF GREATER THAN 4', OTHERWISE, THE INSTALLED DEPTH WILL TYPICALLY BE 4' TO 6'. IF WASTEWATER SERVICE LINE TO MAIN REQUIRES DEFLECTION EXCEEDING 45°, REFER TO DETAIL DRAWING 301. ALL INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH INFORMATION SHOWN ON APPLICABLE STANDARD DRAWINGS AND WILL BE INSPECTED BY NBU CONSTRUCTION INSPECTION PERSONNEL.
2. CUSTOMER SHALL REMOVE PLUG, INSTALL 4" WASTEWATER LINE [EXTEND 4" PIPE 6" MINIMUM INTO 6" PIPE AND JOINT WITH FLEXIBLE ADAPTOR]. IF WASTEWATER WILL NOT SATISFACTORILY FLOW BY GRAVITY TO SEWER MAIN ADJACENT TO PROPERTY, PUMP EQUIPMENT MUST BE PROVIDED BY THE CUSTOMER AS PART OF CUSTOMER'S WASTEWATER SYSTEM.
3. CUSTOMER IS RESPONSIBLE FOR PIPING SYSTEM UNTIL WASTEWATER IS CONNECTED. ANY MISSING OR DAMAGED PARTS SHALL BE REINSTALLED BY CUSTOMER WHO SHALL GUARANTEE, FOR A PERIOD OF TWO (2) YEARS FROM DATE OF FINAL ACCEPTANCE, THAT CONNECTIONS TO NBU SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIALS. CUSTOMER ALSO HAS THE RESPONSIBILITY TO ASSURE THAT 2-WAY CLEANOUTS REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.
4. NBU ACTIVITY IS LIMITED TO INSPECTION OF CONNECTIONS TO NBU'S WASTEWATER SYSTEM. FOR MAINTENANCE PURPOSES, NBU'S RESPONSIBILITY ENDS AT THE CUSTOMER'S WASTEWATER CONNECTION TO THE 2-WAY CLEANOUT OR THE PROPERTY LINE, WHICHEVER IS CLOSER TO WASTEWATER MAIN.
5. PIPING IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY NBU STANDARD SPECIFICATION; MATERIALS SHALL BE AS SPECIFIED; BACKFILL ABOVE THE GRANULAR BEDDING. SERVICE LINES IN THESE AREAS SHALL HAVE A MINIMUM COVER BELOW FINAL STREET GRADE OF 42"; ANY EXCEPTION MUST BE SPECIFICALLY APPROVED BY THE ENGINEER.

NBU — NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING | DRAWN BY: A. Willard | APPROVED BY: A. Willard | DRAWING DATE: 8/17/21 | STANDARD DRAWING: **SINGLE WASTEWATER SERVICE CONNECTION DETAIL** | SCALE: N.T.S. | SHEET: 2 OF 2 | DRAWING NO. 302



* Sewer Gravel 6" Min. or 1/8 O.D. of the pipe, whichever is greater as directed by the Inspector

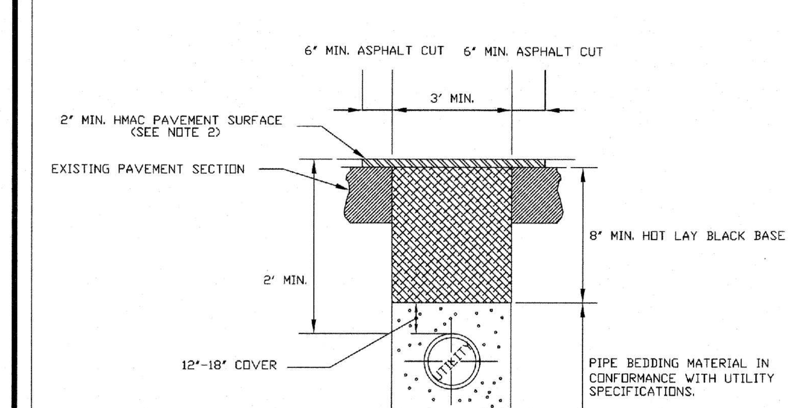
Pipe bedding of wastewater lines shall be manufactured sand or pea gravel as per NBU specifications.

1) RIGID PIPE – UNSTABLE OR UNACCEPTABLE CONDITIONS
FLEXIBLE PIPE – ALL CONDITIONS
2) RIGID PIPE – EXISTING STABLE BEDDING CONDITIONS

** SECONDARY BACKFILL OF WASTEWATER LINES SHALL MEET NBU AND CITY OF NEW BRAUNFELS SPECIFICATIONS AND SHALL GENERALLY CONSIST OF MATERIALS REMOVED FROM THE TRENCH AND SHALL BE FREE FROM BRUSH, DEBRIS AND TRASH, NO ROCKS OR STONES HAVING ANY DIMENSION LARGER THAN 6 INCHES AT THE LARGEST DIMENSION.

SANITARY SEWER PIPE LAID IN TRENCH (OUTSIDE OF PAVEMENT)

NOT TO SCALE



NOTES:

1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE AT A MINIMUM OF 12" WIDER THAN UNDISTURBED SIDES OF THE TRENCH SYMMETRICAL ABOUT THE CENTERLINE OF THE EXCAVATION.
2. REPLACEMENT HMAC SURFACE LAYER SHALL BE OF THE TYPE AND THICKNESS BASED ON FUNCTIONAL CLASSIFICATION.
   A) MIN. 2" HMAC TYPE 'D' FOR TRENCH REPAIRS IN LOCAL/RESIDENTIAL STREETS.
   B) MIN. 3" HMAC TYPE 'C' FOR TRENCH REPAIRS IN COLLECTOR/ARTERIAL STREETS.
3. DAMAGED PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED
4. PRIME AND TACK COAT ALL EXPOSED EDGES AND SURFACES.
5. HOT LAY BLACK BASE LAYED IN 8" LIFTS @ 95% COMPACTION.
6. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX AC OR TEMPORARY HMAC.
7. CALICHE OR EXISTING MATERIAL SHALL NOT BE USED TO BACKFILL THE UTILITY EXCAVATION
8. FOR EXCAVATIONS OF EXCESSIVE DEPTH, WIDTHS GREATER THAN 3' MAY BE REQUIRED TO ACHIEVE PROPER COMPACTION.

TRENCH REPAIR DETAIL BLACK BASE | CITY OF NEW BRAUNFELS ENGINEERING DIVISION, 424 S. CASTELL AVE. NEW BRAUNFELS, TEXAS 78130, PHONE: 830 221 4020, FAX: 830 626 3600
ISSUE DATE: APRIL 2015 | SCALE: N.T.S
DRAWN BY: AMF | CONTACT: GF

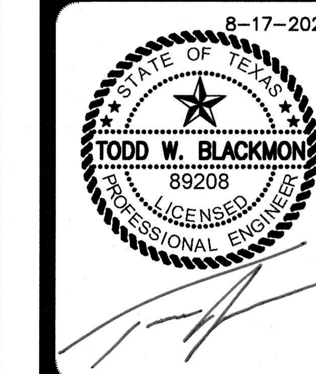
SANITARY SEWER PIPE LAID IN TRENCH (WITHIN PAVEMENT)

NOT TO SCALE

CITY OF NEW BRAUNFELS NOTES

1. UTILITY TRENCH COMPACTION – ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

NO.	REVISION	DATE



PAPE-DAWSON ENGINEERS
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1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
SANITARY SEWER DETAILS

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.10

FOR PERMIT

Date: Aug 17, 2022, 5:05pm User ID: bhurkett
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NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY	A. Willard
CHECKED BY	A. Willard
DATE	9/17/21

STANDARD DRAWING: **UTILITY SHROUD FOR SEWER CLEANOUT ASSEMBLY**

SCALE: N.T.S. | SHEET: 1 OF 1 | DRAWING NO.: 360

NO.	REVISION	DATE

8-17-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, SITE 102 | NEW BRAUNFELS, TX 78132 | 830.632.3653
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
SANITARY SEWER DETAILS

PLAT NO. _____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.11

FOR PERMIT

Date: Aug 17, 2022, 5:05pm User ID: bhurlett
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General Notes:

1. All materials and construction procedures within the scope of the project shall be approved by New Braunfels Utilities and comply with the current "New Braunfels Utilities Water Systems Connection/Construction Policy".
2. Contractor shall not proceed with any pipe installation work until they obtain a copy of the plans from the Consultant or Engineer and notify NBU Water Systems Engineering at 830-608-8971 with at least two (2) working days (48 hours) notice. WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED A NOTICE TO PROCEED FROM NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
3. The Developer dedicates the water / wastewater mains upon completion by the Contractor and acceptance by the New Braunfels Utilities Water System. NBU will own and maintain said water / wastewater mains which are located within platted utility easements or public ROW of proposed developments. (As applicable).
4. Contractor agrees to assume sole and complete responsibility for job site conditions during the construction of the project, including safety of all persons and property. This requirement shall apply continuously and not be limited to normal working hours. The contractor shall defend, indemnify and hold the owners and the engineer and his employees, partners officers, directors, or consultants harmless from any and all liability, real or alleged, in connection with the performance of the work on this project, excepting from liability arising from sole negligence of the owner or engineer, engineer's directors, officers, employees, or consultants.
5. Contractor to contact the engineer-of-record (EOR) for any field changes. Any revisions or changes to the approved construction plans will require additional approval by NBU in writing.
6. Contractor and / or contractor's independently retained employee or safety consultant shall implement a trench safety program in accordance with OSHA standards governing the presence and activities of individuals working in and around trench excavation.
7. Contractor shall be responsible for restoring to its original or better condition, any damages done to existing fences, curbs, streets, driveways, landscaping and structures, and existing utilities (not adjusted on plans). Cost of Restorations, if any, shall be the contractor's entire expense.
8. The Contractor shall avoid cutting roots larger than one inch in diameter when excavating near existing trees. Excavation in vicinity of trees shall proceed with caution.
9. Contractor shall procure all permits and licenses, pay all charges, fees and taxes and give all notices necessary and incidental to the due and lawful prosecution of the work.

10. No extra payment shall be allowed for work called for on the plans but not included on the bid schedule. This incidental work will be required and shall be included under the pay item to which it relates.
11. Contractor is responsible for removal of all waste materials upon project completion. The contractor shall not permanently place any waste materials in the 100-year flood plain without first obtaining an approved flood plain development permit.
12. The contractor shall not place any materials on the recharge zone of the Edwards aquifer without an approved water pollution abatement plan from the TCEQ 31 TAC 313.4 and 31 TAC 313.9.
13. Barricades and warning signs shall conform to the "Texas manual on uniform traffic control devices" and shall be located to provide maximum protection to the public as well as construction personnel and equipment while providing continuous traffic flow at all times during construction. The contractor is responsible for maintaining all devices during construction.
14. Contractor is required to verify project elevations. The term "match existing" shall be understood to signify both horizontal and vertical alignment.
15. The location of utilities, either underground or overhead, shown within the right of way are approximate and shall be verified by the contractor before beginning construction operations.
16. OSHA regulations prohibit operations that will bring persons or equipment within 10 feet of an energized linc. Where workmen and/or equipment have to work close to an energized electrical line, the contractor shall notify the electrical power company involved and make whatever adjustments necessary to ensure the safety of those workmen.
17. It shall be the contractor's responsibility to locate utility service lines as required for construction. Contractors shall call the One Call System for water/wastewater location.
18. Due to federal regulations Title 49, part 192 (8), Gas companies must maintain access to gas valves at all times. The contractor must protect and work around any gas valves that are in the project area.
19. The contractor is fully responsible for the traffic control and will be responsible for furnishing all traffic control devices, and flaggers. The construction methods shall be conducted to provide the least possible interference to traffic so as to permit the continuous movement of the traffic in one direction at all times. The contractor shall clean up and remove from the work area any loose material resulting from contract operations at the end of each workday.
20. Prior to ordering materials to be used in construction, contractor shall provide the engineer with four (4) copies of the source, type, gradation, material specification data and / or shop drawings, as applicable, to satisfy the requirements of the following items and all material items referred to in these listed items:
    a. Water mains and services
    b. Wastewater mains and services

21. Thrust blocks will not be allowed on the system without special approval. Joints will be restrained with restraining systems approved by NBU and restraint length shall be submitted to NBU at the time of plan submittal.
22. Water jetting the backfill within a street will not be permitted. Wastewater trenches subject to traffic shall conform to NBU Connection and Construction Policy Manual.
23. Where the minimum 9 foot separation distance between wastewater lines and water lines / mains cannot be maintained, the installation of wastewater lines shall be in strict accordance with 30 TAC 217.
24. Contractor and/or Contractor's independently retained employee or structural design/geotechnical/safety/equipment consultant, if any, shall review these plans and available geotechnical information and the anticipated installation site(s) within the project work area in order to implement Contractor's trench excavation safety protection systems, programs and/or procedures. The Contractor's implementation of the systems, programs and/or procedures shall provide for adequate trench excavation safety protection that complies with as a minimum, OSHA Standards for trench excavations. Specifically, Contractor and/or Contractor's independently retained employee or safety consultant shall implement a trench safety program in accordance with OSHA Standards governing the presence and activities of individuals working in and around trench excavation.
25. Utility Trench Compaction with street R.O.W.
    a. All utility trench compaction test within the street pavement section shall be the responsibility of the developer's Geo-technical engineer.
    b. Fill material shall be placed in uniform layers not to exceed twelve inches (12") loose.
    c. Each layer of material shall be compacted as specified and tested for density and moisture in accordance with Text Methods TEX-113-E, TEX-114-E, TEX-115-E.
    d. The number and location of required tests shall be determined by the Geo-technical Engineer and approved by the City of New Braunfels Street Inspector.
    e. Upon completion of testing the Geo-technical Engineer shall provide the City of New Braunfels Street inspector with all testing documentation and a certification stating that the placement of fill material has been completed in accordance with the plans.

WASTEWATER NOTES:

1. The contractor shall maintain service to existing wastewater system at all times during construction.
2. A minimum of 8" wastewater pipe and fittings (P.V.C. SDR-26, ASTM, D-3034, D-3212, F-477) are required on new installation.
3. All residential wastewater service laterals shall be extended to the property line and a cleanout shall be installed at the property line. Services to lots will extend four (4) feet past the underground electric conduit if electric is installed in the front easement. All sewer cleanouts that lead to NBU mains shall be installed with a protective utility shroud and pivoting marker pole during time of construction.
4. Pipe bedding of wastewater lines shall be manufactured sand or pea gravel as per NBU specifications.
5. Secondary backfill of wastewater lines shall generally consist of materials removed from the trench and shall be frec from brush, debris and trash, no rocks or stones having any dimension larger than 6 inches at the largest dimension.
6. All wastewater pipes shall have compression or mechanical joints as per 30 TAC §217.53 (c) (2).
7. For wastewater lines less than 24" in diameter, select initial backfill material shall be placed in two lifts.
    a. The first lift shall be spread uniformly and simultaneously on each side and under the shoulders of the pipe to the mid point or spring line of the pipe.
    b. The second lift shall be placed to a depth as shown on the pipe backfill detail. For pipes larger than 24", 12" maximum lifts shall be used.
8. All manholes must be water tight, either monolithic, cast-in-place concrete structures or prefabricated manholes specifically approved by NBU. The manholes shall have water-tight rings and covers. Wherever they are within the 100 year floodplain, the manhole covers shall be bolted. Every third manhole in sequence shall have an alternate means of venting. 30 TAC §213.5 (c) (3) (A) and 30 TAC §217.55 (o).
9. All manholes shall be constructed so that the top of the ring is two inches (2") above surrounding ground except when located in paved area. In paved areas, the manhole ring shall be flush with pavement.
10. All new manholes, unless approved by NBU Engineering, are to have covers with 32" openings.
11. Wastewater pipe connections to pre-cast manholes will be compression joints or mechanical "boot type" joint as approved by NBU.
12. Wastewater lines shall be tested from manhole to manhole.
13. In areas where a new wastewater manhole is to be constructed over an existing wastewater system, it shall be the contactor's responsibility to test the existing manholes before construction. After the proposed manhole(s) has been built, the contractor shall re-test the existing system to the satisfaction of the construction inspector. (no separate pay item).
14. Where the minimum 9 foot separation distance between wastewater lines and water lines / mains cannot be maintained, the installation of wastewater lines shall be in strict accordance with TCEQ. The wastewater line shall be constructed of cast iron, ductile iron or PVC meeting the ASTM specification for both pipes and joints of 150 psi and shall be in accordance with 30 TAC §217.53 (d) (3) (A) (i).
15. No testing will be performed prior to 30 days from complete installation of the wastewater lines. The following sequence will be strictly adhered to:
    a. Pull mandrel
    b. Perform Air test
    c. Cleaning of any debris
    d. Flushing of system
    e. TV Inspection (within 72 hours of flushing)
16. A minimum of 3 feet of cover is to be maintained over the wastewater main and laterals at subgrade, otherwise concrete encasement will be required.
17. Wastewater main connections made directly to existing manholes will require successful testing of the manhole in accordance with NBU Connection & Construction Policy Manual.
18. TCEQ and EPA require erosion and sedimentation control for construction of wastewater collection systems. Developer or authorized representative shall provide erosion and sedimentation control as notes on the project's plan and profile sheets. All temporary erosion and sedimentation controls shall be removed by the Contractor at final acceptance of the project by NBU Water Systems.
19. All manholes not within paved streets shall have locking concrete collar to secure ring and cover to manhole cone per NBU Detail drawing #329.
20. All manholes over the Edwards Aquifer Recharge Zone shall have locking concrete collar to secure ring and cover to manhole cone per NBU detail drawing #329.

CITY OF NEW BRAUNFELS NOTES

1. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
2. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
4. UTILITY TRENCH COMPACTION – ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

NO.	REVISION	DATE

8-17-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.3633
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS

SANITARY SEWER NOTES

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C5.20

FOR PERMIT

Date: Aug 17, 2022, 5:05pm User ID: bhurkett
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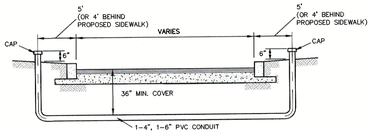
WATER (NBU JOB NO. W-209398)		
ITEM	UNIT	QUANTITY
12" WATER LINE	LF	701
8" WATER LINE	LF	5,176
1" SINGLE SERVICE & 5/8" METER	EA	213
LUEs	EA	219
FIRE HYDRANT	EA	12
1" IRRIGATION SERVICE & 3/4" METER	EA	4
6" Gate Valve	EA	12
8" Gate Valve	EA	18
12" Gate Valve	EA	1

WASTEWATER (NBU JOB NO. WW-209399)		
ITEM	UNIT	QUANTITY
8" SANITARY SEWER PIPE	LF	4,691
10" SANITARY SEWER PIPE	LF	691
LUEs	EA	213
6" WASTEWATER SERVICE	EA	209
48" MANHOLES	EA	15
CAPS	EA	-

CONDUIT NOTES:

1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
2. CONDUITS SHALL BE PVC WITH MINIMUM BURY OF 30 INCHES. SCHEDULE 80 TO BE USED FOR CPS CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
3. ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CAPPED FOR FUTURE USE.

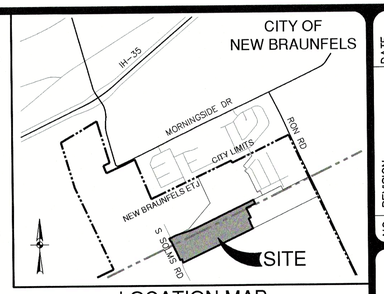


TYPICAL CONDUIT DETAIL

NOT TO SCALE

NOTE:

1. 1-4", 1-6" P.V.C. SCHEDULE 40 WILL BE REQUIRED FOR IRRIGATION UTILITIES CROSSING.



LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 50'
0' 50' 100' 150'

UTILITY LEGEND

- PROJECT LIMITS
- EXISTING WATER (EXISTING FIRE HYDRANT, W)
- EXISTING UNDERGROUND ELECTRIC (UGE)
- EXISTING GAS (G)
- EXISTING SEWER (SS, MANHOLE)
- PROPOSED SEWER (SS)
- PROPOSED WATER (FIRE HYDRANT, W)
- PROPOSED WYE & LATERAL (S, W)
- SINGLE WATER SERVICE
- STREET LIGHTS (SL)
- PROPOSED STORM DRAIN
- PROPOSED GAS (G)
- PROPOSED UNDERGROUND ELECTRIC (UGE)

CITY OF NEW BRAUNFELS NOTES

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2. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
4. UTILITY TRENCH COMPACTION – ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "TEXAS 811" A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

NO.	REVISION	DATE
1	WATER/SEWER DESIGN REVISED.	06/20/24

6-20-2024

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.2563
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
OVERALL UTILITY PLAN

PLAT NO.	
JOB NO.	30034-07
DATE	MAY 2022
DESIGNER	HF
CHECKED HF	DRAWN BH
SHEET	C6.00

FOR PERMIT

Date: Jun 20, 2024, 9:51am User ID: MLeuckie
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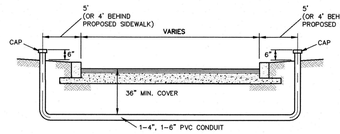
WATER (NBU JOB NO. W-209398)		
ITEM	UNIT	QUANTITY
12" WATER LINE	LF	701
8" WATER LINE	LF	5,181
1" SINGLE SERVICE & 5/8" METER	EA	213
LUEs	EA	219
FIRE HYDRANT	EA	12
1" IRRIGATION SERVICE & 3/4" METER	EA	4
6" Gate Valve	EA	12
8" Gate Valve	EA	18
12" Gate Valve	EA	1

WASTEWATER (NBU JOB NO. WW-209399)		
ITEM	UNIT	QUANTITY
8" SANITARY SEWER PIPE	LF	4,696
10" SANITARY SEWER PIPE	LF	691
LUEs	EA	213
6" WASTEWATER SERVICE	EA	209
48" MANHOLES	EA	15
CAPS	EA	-

CONDUIT NOTES:

1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
2. CONDUITS SHALL BE PVC WITH MINIMUM BURY OF 30 INCHES. SCHEDULE 80 TO BE USED FOR CPS CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
3. ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CAPPED FOR FUTURE USE.

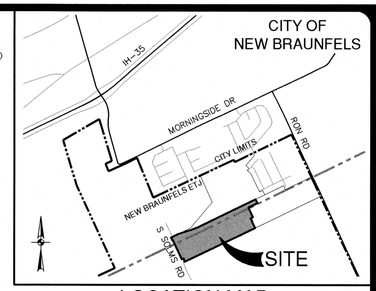


TYPICAL CONDUIT DETAIL

NOT TO SCALE

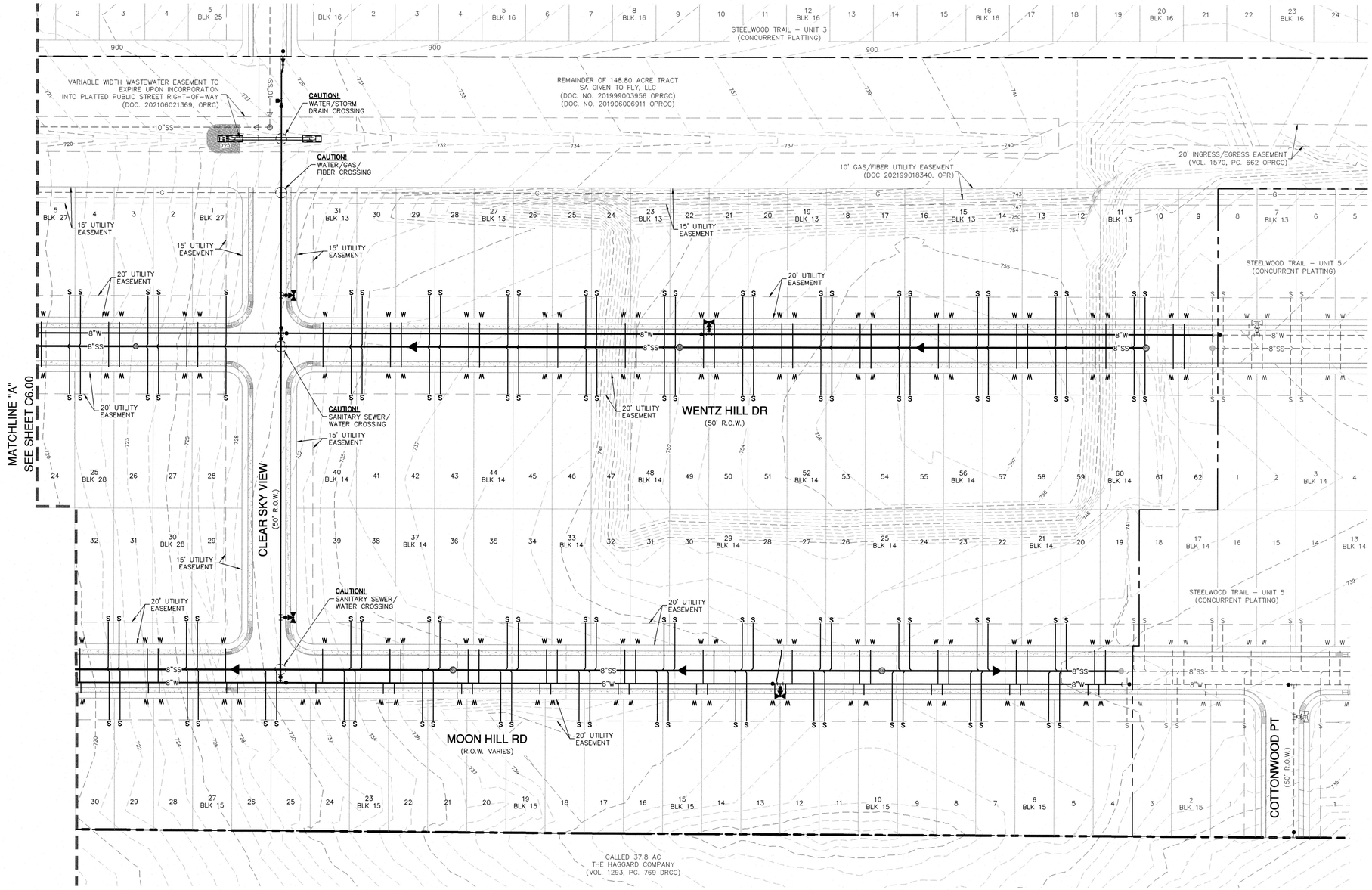
NOTE:

1 1-4", 1-6" P.V.C. SCHEDULE 40 WILL BE REQUIRED FOR IRRIGATION UTILITIES CROSSING.



LOCATION MAP

NOT-TO-SCALE



UTILITY LEGEND

- PROJECT LIMITS
- EXISTING FIRE HYDRANT
- EXISTING WATER — W —
- EXISTING UNDERGROUND ELECTRIC — UGE —
- EXISTING GAS — G —
- EXISTING SEWER — SS —
- PROPOSED SEWER — SS — MANHOLE
- PROPOSED WATER — W — FIRE HYDRANT
- PROPOSED WYE & LATERAL
- SINGLE WATER SERVICE
- STREET LIGHTS — SL
- PROPOSED STORM DRAIN
- PROPOSED GAS — G —
- PROPOSED UNDERGROUND ELECTRIC — UGE —

CITY OF NEW BRAUNFELS NOTES

1. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
2. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
3. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
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NO.	REVISION	DATE

8-17-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE. 102 | NEW BRAUNFELS, TX 78132 | 830.632.5933
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4

NEW BRAUNFELS, TEXAS

OVERALL UTILITY PLAN

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C6.01

FOR PERMIT

Date: Aug 19, 2022, 11:49am User ID: bhurkett
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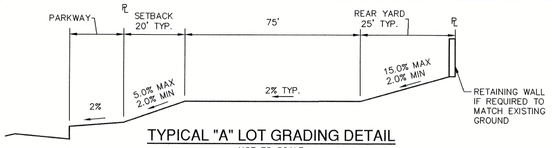
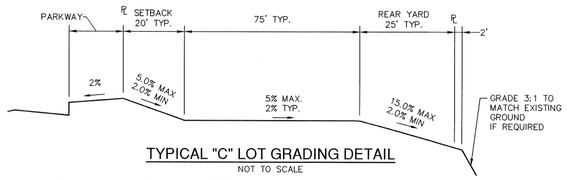


TYPICAL "A" LOT GRADING DETAIL

NOT TO SCALE



TYPICAL "C" LOT GRADING DETAIL

NOT TO SCALE

RESIDENTIAL GRADING NOTES:

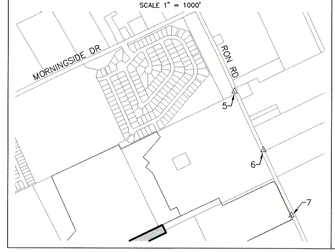
1. DRIVEWAYS MAY BE LOCATED ON EITHER SIDE OF THE LOT UNLESS OTHERWISE SHOWN ON THIS PLAN OR STREET PLANS.
2. REFERENCE GRADING NOTES AND GEOTECHNICAL ENGINEERING SPECIFICATIONS PROVIDED BY THE OWNER.
3. LOT GRADING PATTERNS (A, B, OR C) MUST BE FOLLOWED.
4. ALL LOTS SHALL BE GRADED SO THAT NO DRAINAGE SHALL BE ALLOWED TO FLOW ONTO ADJACENT SIDE LOTS.
5. BUILDER TO VERIFY INVERTS OF ALL SANITARY SEWER LATERALS WHEN ESTABLISHING THE APPROPRIATE FINISHED FLOOR
6. ELEVATIONS IN ORDER TO ENSURE ADEQUATE DRAINAGE OF HOUSE LATERALS.
7. EXISTING CONTOURS SHOWN ONSITE ARE FROM LIDAR TOPOGRAPHY & FIELD SURVEY.
8. GRADES, SLOPES, AND ELEVATIONS SHOWN ARE MASS GRADES ONLY. BUILDER SHALL BE RESPONSIBLE FOR CONSTRUCTION
9. OF SIDE YARD SWALES AND DETAILED GRADING AROUND EACH INDIVIDUAL HOUSE ENSURING POSITIVE DRAINAGE IN EACH CASE.

RETAINING WALL NOTE:

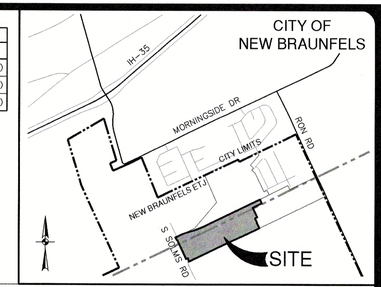
1. CONTRACTOR SHALL HIRE A STRUCTURAL ENGINEER FOR THE DESIGN AND PERMITTING OF RETAINING WALLS INCLUDED WITHIN THIS PROJECT.
2. RETAINING WALL STRUCTURAL ENGINEER IS RESPONSIBLE FOR GLOBAL STABILITY ANALYSIS AND PERMITTING.

BENCHMARK LOCATION MAP

SCALE 1" = 1000'

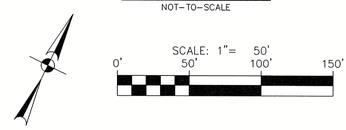


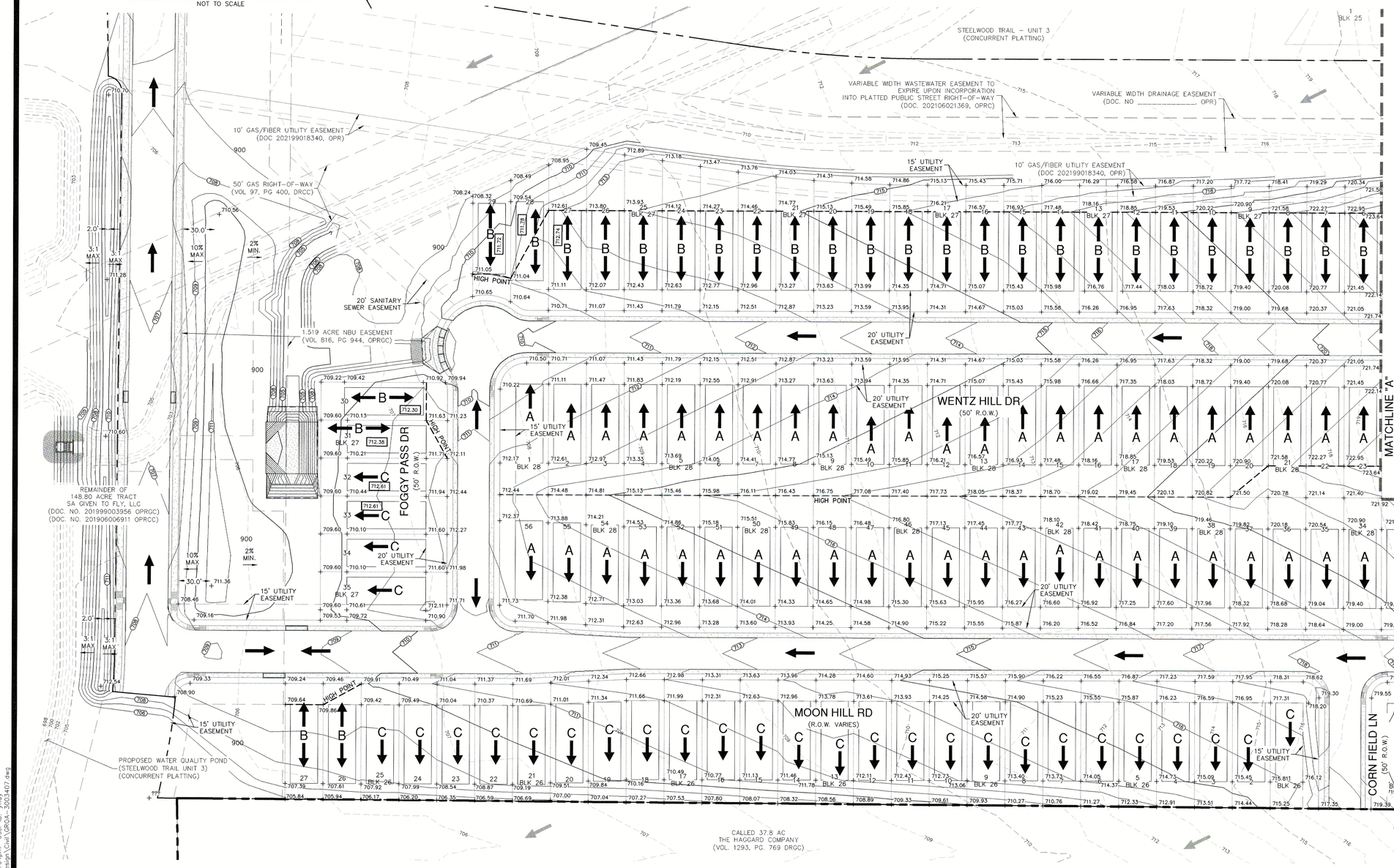
HORIZONTAL AND VERTICAL CONTROL POINTS				
Point #	Northing	Easting	Elevation	Full Description
5	13,790,938.63	2,237,803.08	739.28	SET I.R. REDCAP (TRAV)
6	13,790,126.56	2,238,209.12	729.52	SET I.R. REDCAP (TRAV)
7	13,789,219.89	2,238,601.76	727.47	SET I.R. REDCAP (TRAV)



LOCATION MAP

NOT-TO-SCALE





GRADING LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- 100 YR ULTIMATE DEVELOPMENT FLOODPLAIN
- EXISTING CONTOUR — 976
- PROPOSED CONTOUR — 970
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- TREES TO REMAIN
- RETAINING WALL
- MINIMUM FINISHED FLOOR ELEVATIONS BASED UPON MAXIMUM DRIVEWAY GRADING — 1234.56

GRADING NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE CITY, COUNTY AND TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).
2. SITE PREPARATION, GRADING, EXCAVATION AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AND SPECIFICATIONS.
3. ALL SELECT FILL MATERIAL PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.
4. ALL ELEVATIONS AND PROPOSED CONTOURS SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVING, BASE, GRASS, TOPSOIL, AND MULCH MUST BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.
5. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.
6. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE COMMENCEMENT OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
8. THE CONTRACTOR SHALL REMOVE TOP SOIL, GRASS, ROOTS, DEBRIS, ETC. AND DISPOSE OFF SITE THOSE MATERIALS NOT SUITABLE FOR EMBANKMENT AND TOPSOIL. CLEAN STRIPPINGS AND TOPSOIL MAY BE STOCKPILED ON SITE FOR REUSE IN A LOCATION SPECIFIED BY THE OWNER.
9. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE STABILIZATION. ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND TPDES/SWPPP REQUIREMENTS. REFERENCE THE LANDSCAPE ARCHITECT'S PLAN, IF APPLICABLE.
10. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS (USE OF SILT FENCES, ETC.) TO KEEP DRAINAGE AND SILT FROM WASHING ONTO ADJACENT PROPERTY, STREETS, OR DRAINAGE WAYS. CONTRACTOR SHALL IMMEDIATELY REMOVE SILT/DEBRIS WHICH WASHES OFFSITE OR INTO EXISTING STORM DRAIN SYSTEMS. (SEE SWPPP PLANS & TPDES BOOK).
11. THE CONTRACTOR SHALL OBTAIN GRADES SHOWN HEREON WITHIN +/– ONE-TENTH (0.10) FOOT.
12. IN PROPOSED PAVING AREAS, STREET DESIGN PLANS SHALL CONTROL. ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 1.0% UNLESS OTHERWISE SHOWN.
13. THE CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING SITE AND PROPOSED IMPROVEMENTS.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL, OR BETTER, CONDITION ANY DAMAGE DONE TO EXISTING TREES, BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, OR DRIVEWAYS (NO SEPARATE PAY ITEMS).
15. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN WORKING NEAR UTILITIES. GAS LINES, SEWER, OR EXISTING APPURTENANCES. PRIOR TO PERFORMING ANY EXCAVATION, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND ASSURE HIMSELF THAT ALL UTILITIES HAVE BEEN ADEQUATELY LOCATED AND IDENTIFIED. THE ENGINEER SHALL BE NOTIFIED IF ANY UTILITY CONFLICTS ARE DISCOVERED.
16. UTILITIES SHOWN ON THE PLANS ARE FROM INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION AND VERIFY SIZE, GRADE AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR, AT HIS OWN EXPENSE.
17. POSITIVE DRAINAGE SHALL BE MAINTAINED THROUGHOUT THE SCOPE OF THE PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.
18. FOR FILL PLACEMENT ON HILL SIDES OR STEEP SLOPE AREAS, THE CONTRACTOR SHALL REFERENCE THE PROJECT SPECIFICATIONS AND GEOTECHNICAL REPORT FOR SPECIAL INSTRUCTIONS REGARDING BENCHING.
19. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT-OF-WAY WITHOUT A PERMIT.
20. STRIPPING OF VEGETATION FROM PROJECT SITES SHALL BE PHASED SO AS TO EXPOSE THE MINIMUM AMOUNT OF AREA TO SOIL EROSION FOR THE SHORTEST POSSIBLE PERIOD OF TIME PER THE NEW BRAUNFELS DRAINAGE AND EROSION CONTROL DESIGN MANUAL SEC.12.2(N).

NO.	REVISION	DATE

8-12-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT. WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.625.8555
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
OVERALL GRADING PLAN

PLAT NO. _____
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C7.00

FOR PERMIT

Date: Aug 12, 2022, 4:04pm User ID: jmay
File: P:\30034-07\Design\Civil\GRDA_30034-07.dwg
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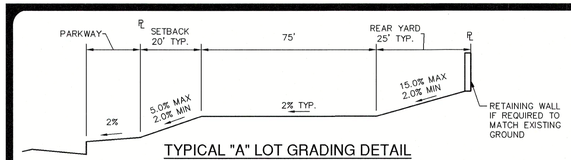
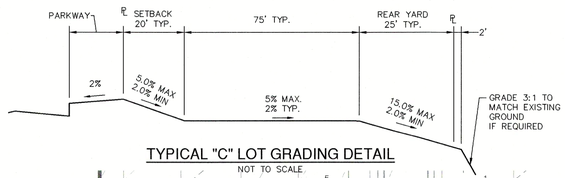


TYPICAL "A" LOT GRADING DETAIL

NOT TO SCALE



TYPICAL "C" LOT GRADING DETAIL

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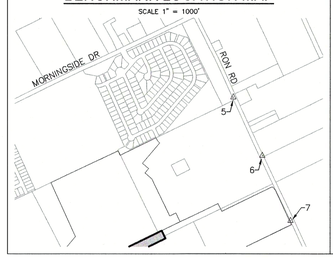
5. BUILDER TO VERIFY INVERTS OF ALL SANITARY SEWER LATERALS WHEN ESTABLISHING THE APPROPRIATE FINISHED FLOOR
6. ELEVATIONS IN ORDER TO ENSURE ADEQUATE DRAINAGE OF HOUSE LATERALS.
7. EXISTING CONTOURS SHOWN ONSITE ARE FROM LIDAR TOPOGRAPHY & FIELD SURVEY.
8. GRADES, SLOPES, AND ELEVATIONS SHOWN ARE MASS GRADES ONLY. BUILDER SHALL BE RESPONSIBLE FOR CONSTRUCTION
9. OF SIDE YARD SWALES AND DETAILED GRADING AROUND EACH INDIVIDUAL HOUSE ENSURING POSITIVE DRAINAGE IN EACH CASE.

RETAINING WALL NOTE:

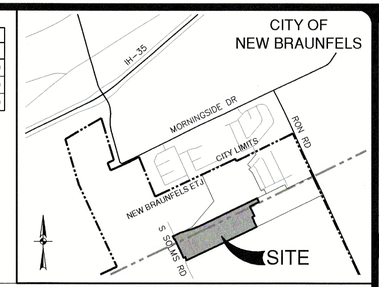
1. CONTRACTOR SHALL HIRE A STRUCTURAL ENGINEER FOR THE DESIGN AND PERMITTING OF RETAINING WALLS INCLUDED WITHIN THIS PROJECT.
2. RETAINING WALL STRUCTURAL ENGINEER IS RESPONSIBLE FOR GLOBAL STABILITY ANALYSIS AND PERMITTING.

BENCHMARK LOCATION MAP

SCALE 1" = 1000'

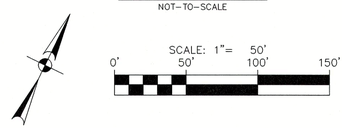


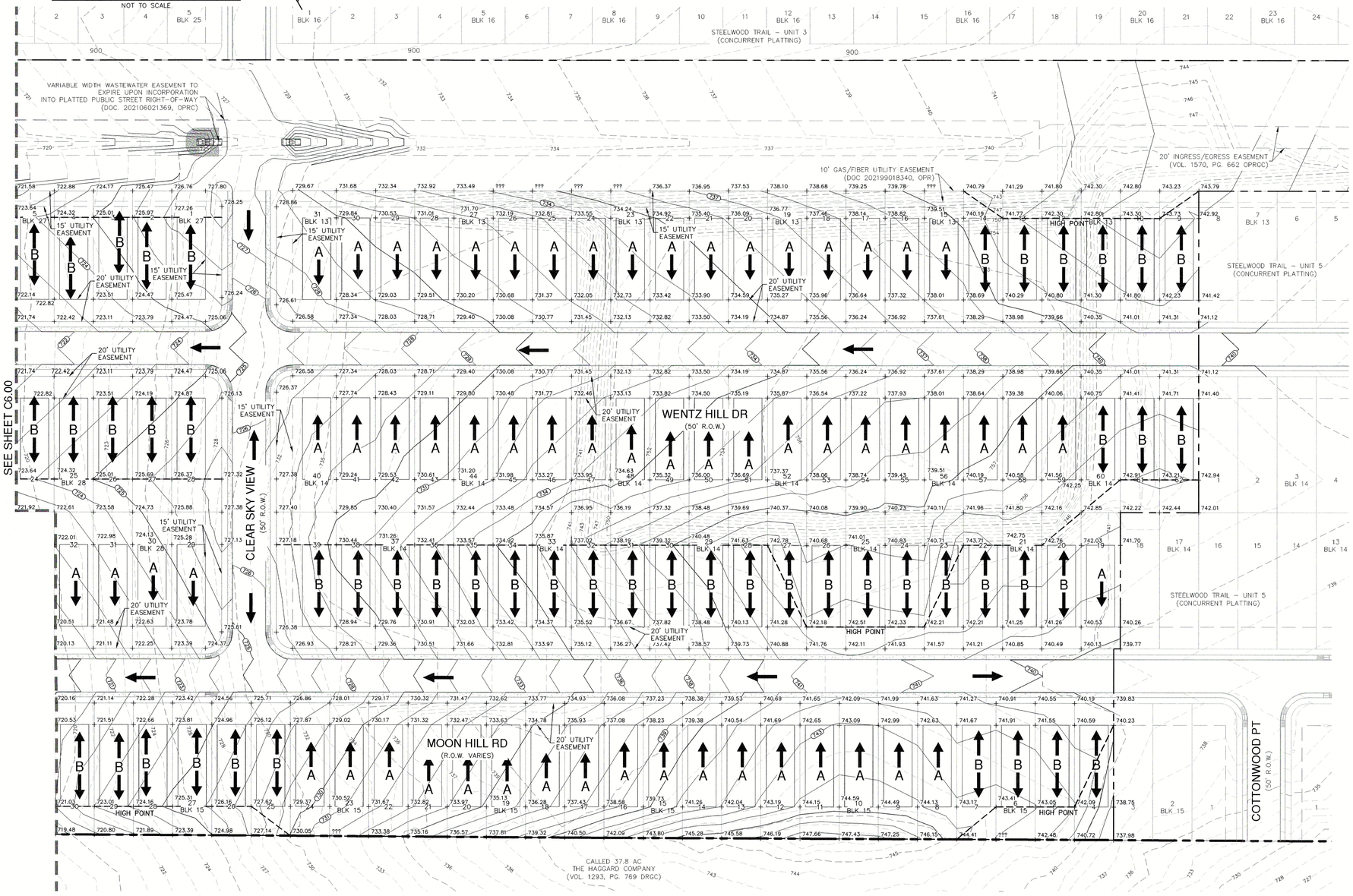
HORIZONTAL AND VERTICAL CONTROL POINTS				
Point #	Northing	Easting	Elevation	Full Description
5	13,790,938.63	2,237,803.08	739.28	SET I.R. REDCAP (TRAV)
6	13,790,126.56	2,238,209.12	729.52	SET I.R. REDCAP (TRAV)
7	13,789,219.89	2,238,601.76	727.47	SET I.R. REDCAP (TRAV)



LOCATION MAP

NOT-TO-SCALE





GRADING LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- 100 YR ULTIMATE DEVELOPMENT FLOODPLAIN
- EXISTING CONTOUR — 976
- PROPOSED CONTOUR — 970
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- TREES TO REMAIN
- RETAINING WALL
- MINIMUM FINISHED FLOOR ELEVATIONS BASED UPON MAXIMUM DRIVEWAY GRADING — 1234.56

GRADING NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE CITY, COUNTY AND TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).

2. SITE PREPARATION, GRADING, EXCAVATION AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AND SPECIFICATIONS.

3. ALL SELECT FILL MATERIAL PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.

4. ALL ELEVATIONS AND PROPOSED CONTOURS SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVING, BASE, GRASS, TOPSOIL, AND MULCH MUST BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.

5. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.

6. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE COMMENCEMENT OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.

8. THE CONTRACTOR SHALL REMOVE TOP SOIL, GRASS, ROOTS, DEBRIS, ETC. AND DISPOSE OFF SITE THOSE MATERIALS NOT SUITABLE FOR EMBANKMENT AND TOPSOIL. CLEAN STRIPPINGS AND TOPSOIL MAY BE STOCKPILED ON SITE FOR REUSE IN A LOCATION SPECIFIED BY THE OWNER.

9. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE STABILIZATION. ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND TPDES/SWPPP REQUIREMENTS. REFERENCE THE LANDSCAPE ARCHITECT'S PLAN, IF APPLICABLE.

10. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS (USE OF SILT FENCES, ETC.) TO KEEP DRAINAGE AND SILT FROM WASHING ONTO ADJACENT PROPERTY, STREETS, OR DRAINAGE WAYS. CONTRACTOR SHALL IMMEDIATELY REMOVE SILT/DEBRIS WHICH WASHES OFFSITE OR INTO EXISTING STORM DRAIN SYSTEMS. (SEE SWPPP PLANS & TPDES BOOK).

11. THE CONTRACTOR SHALL OBTAIN GRADES SHOWN HEREON WITHIN +/– ONE–TENTH (0.10) FOOT.

12. IN PROPOSED PAVING AREAS, STREET DESIGN PLANS SHALL CONTROL. ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 1.0% UNLESS OTHERWISE SHOWN.

13. THE CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING SITE AND PROPOSED IMPROVEMENTS.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL, OR BETTER, CONDITION ANY DAMAGE DONE TO EXISTING TREES, BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, OR DRIVEWAYS (NO SEPARATE PAY ITEMS).

15. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN WORKING NEAR UTILITIES, GAS LINES, SEWER, OR EXISTING APPURTENANCES. PRIOR TO PERFORMING ANY EXCAVATION, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND ASSURE HIMSELF THAT ALL UTILITIES HAVE BEEN ADEQUATELY LOCATED AND IDENTIFIED. THE ENGINEER SHALL BE NOTIFIED IF ANY UTILITY CONFLICTS ARE DISCOVERED.

16. UTILITIES SHOWN ON THE PLANS ARE FROM INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION AND VERIFY SIZE, GRADE AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR, AT HIS OWN EXPENSE.

17. POSITIVE DRAINAGE SHALL BE MAINTAINED THROUGHOUT THE SCOPE OF THE PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.

18. FOR FILL PLACEMENT ON HILL SIDES OR STEEP SLOPE AREAS, THE CONTRACTOR SHALL REFERENCE THE PROJECT SPECIFICATIONS AND GEOTECHNICAL REPORT FOR SPECIAL INSTRUCTIONS REGARDING BENCHING.

19. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT–OF–WAY WITHOUT A PERMIT.

20. STRIPPING OF VEGETATION FROM PROJECT SITES SHALL BE PHASED SO AS TO EXPOSE THE MINIMUM AMOUNT OF AREA TO SOIL EROSION FOR THE SHORTEST POSSIBLE PERIOD OF TIME PER THE NEW BRAUNFELS DRAINAGE AND EROSION CONTROL DESIGN MANUAL SEC.12.2(N).

NO.	REVISION	DATE

8–12–2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.3063
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
OVERALL GRADING PLAN

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C7.01

Date: Aug 12, 2022, 4:04pm User ID: jmoy
File: P:\300\34\07\Design\Civil\GR0A–300347.dwg

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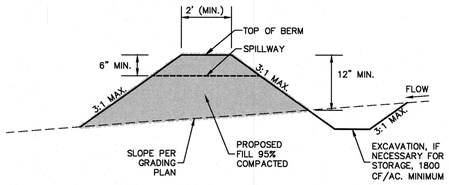
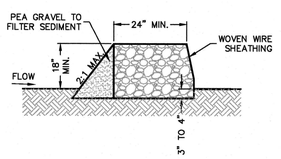
FOR PERMIT



EARTHEN BERM AND SPILLWAY

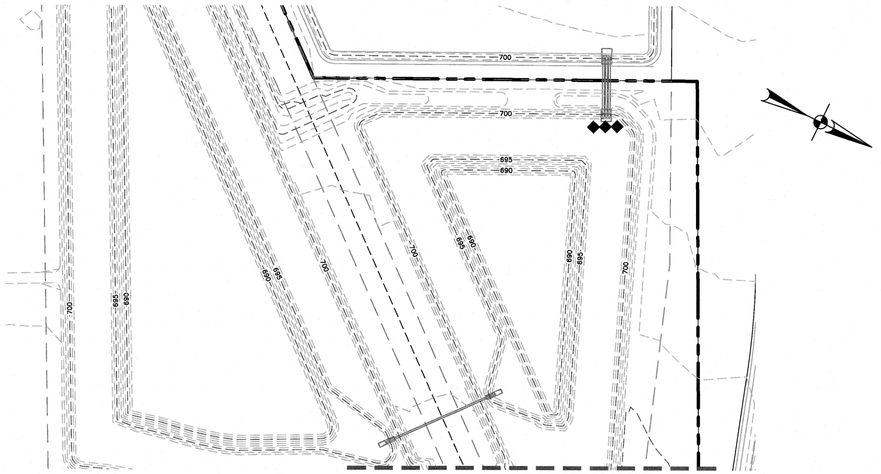
NOT TO SCALE

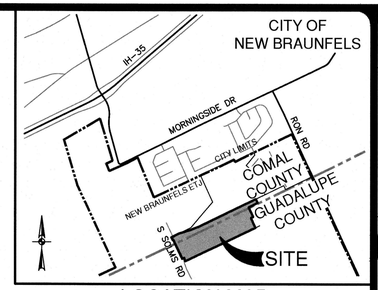
NOTE: EARTHEN BERMS ARE TO SPAN ACROSS PROPOSED STREET SECTION (APPROX. 30-FEET WIDE) FROM CURB TO CURB



ROCK BERM W/ PEA GRAVEL

NOT TO SCALE



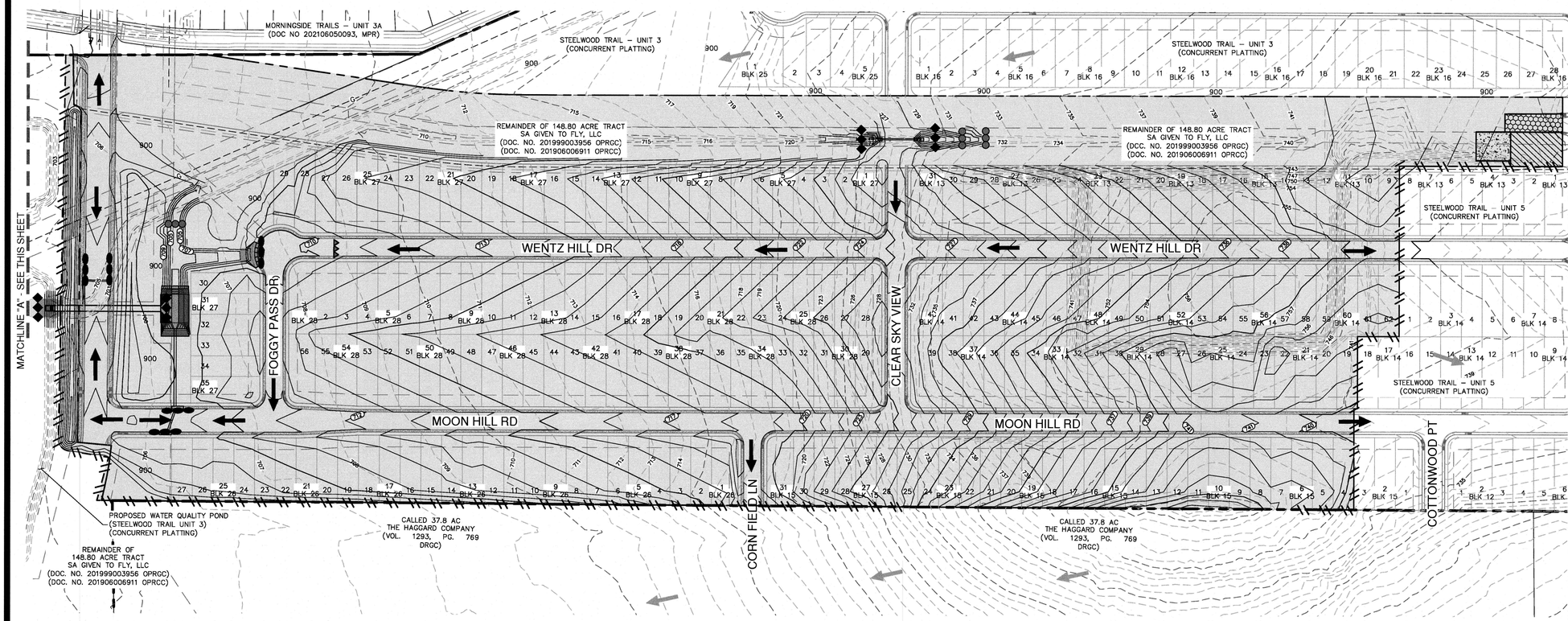


LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 100'

0' 100' 200' 300'



SWPPP LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR — 975
- PROPOSED CONTOUR — 970
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM
- GRAVEL FILTER BAGS
- GRATE INLET PROTECTION
- SEDIMENT CONTROL ROLLS
- LIMITS OF DISTURBED AREA
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)
- EARTHEN BERM W/POLYLINER AND SPILLWAY (BERMS ARE TO SPAN ACROSS PROPOSED STREET SECTION APPROX. 30-FEET WIDE FROM CURB TO CURB)
- GRAVEL BAG BERM (CAN BE REMOVED ONCE CHANNEL IS STABILIZED OR RIP-RAP IS IN PLACE)

GENERAL NOTES

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
2. CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO BE DETERMINED IN THE FIELD.
3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.
4. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.
5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.
6. FOR A COMPLETE LISTING OF TEMPORARY STORM WATER POLLUTION PREVENTION CONTROLS REFER TO THE TPDES STORM WATER POLLUTION PREVENTION PLAN.
7. STORM WATER POLLUTION PREVENTION STRUCTURES SHOULD BE CONSTRUCTED WITHIN THE SITE BOUNDARIES. SOME OF THESE FEATURES MAY BE SHOWN OUTSIDE THE SITE BOUNDARIES ON THIS PLAN FOR VISUAL CLARITY.
8. AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE 6 PROJECT SPECIFICATIONS.
9. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREAS.
10. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED IN ACCORDANCE WITH TPDES REQUIREMENTS.
11. UPON COMPLET[illegible] THE PROJECT, INCLUDING SITE STABILIZATION, AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES, PAYING SPECIAL ATTENTION TO ROCK BERMS IN DRAINAGE FEATURES.
12. WHERE VEGETATED FILTER STRIPS ARE INDICATED, CONTRACTOR SHALL VERIFY THAT SUFFICIENT VEGETATION EXISTS, OTHERWISE CONTRACTOR SHALL PLACE SILT FENCING IN LIEU OF VEGETATED FILTER STRIP.
13. SHADED AREA DENOTES LIMITS OF DISTURBED AREAS. OTHER AREAS WITHIN THE PROJECT LIMITS, WITH THE EXCEPTION OF A CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD, ARE NOT A PART OF THIS TPDES STORM WATER POLLUTION PREVENTION PLAN (SWP3) AND WILL NOT BE DISTURBED BY CIVIL CONSTRUCTION ACTIVITIES. HOUSE CONSTRUCTION ACTIVITIES WILL REQUIRE A SEPARATE STORM WATER POLLUTION PREVENTION PLAN.
14. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL COORDINATE PLACEMENT OF TEMPORARY BEST MANAGEMENT PRACTICES WITHIN TXDOT RIGHT-OF-WAY WITH TXDOT.
15. NBU WILL FUNCTION AS A SECONDARY OPERATOR ON THIS PROJECT AND WILL BE INSTALLING ELECTRIC UTILITIES FOR ON-SITE CONSTRUCTION AND OFF-SITE FEED TO THE PROJECT.
16. PER TPDES REQUIREMENTS, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.

SWP3 MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 1

FOR PERMIT

NO.	REVISION	DATE

9-26-2022

STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT. WORTH | DALLAS
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.693.5653
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4

NEW BRAUNFELS, TEXAS

STORMWATER POLLUTION PREVENTION PLAN

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C8.00

Date: Sep 26, 2022, 3:21pm User ID: tmartin
File: P:\300\34\07\Design\Civil\SWPPP-30034O7.dwg

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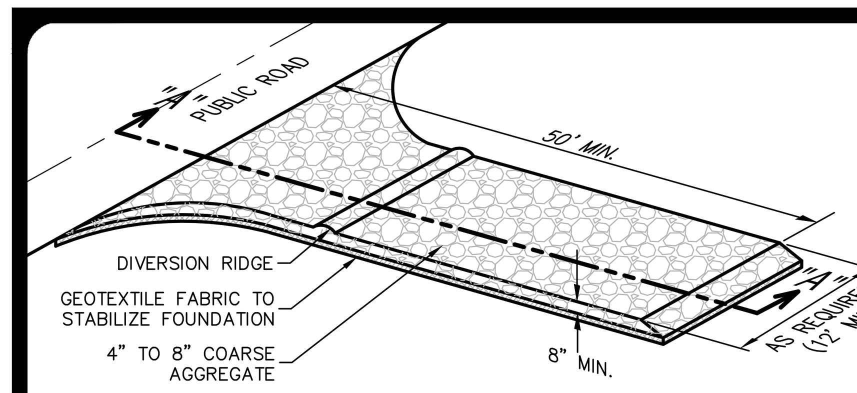
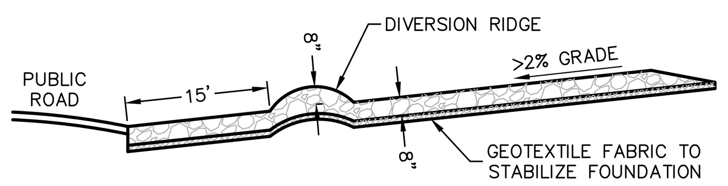


SCHEMATIC OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT



SECTION "A-A" OF A CONSTRUCTION ENTRANCE/EXIT

MATERIALS
1. THE AGGREGATE SHOULD CONSIST OF 4-INCH TO 8-INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.

2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8-INCHES.

3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD², A MULLEN BURST RATING OF 140 LB/IN², AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.

4. IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4-INCH DIAMETER WASHED STONE OR COMMERCIAL ROCK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

INSTALLATION
1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.

2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.

3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.

4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6-INCHES TO 8-INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.

5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.

6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.

7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.

8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

COMMON TROUBLE POINTS
1. INADEQUATE RUNOFF CONTROL-SEDIMENT WASHES ONTO PUBLIC ROAD.

2. STONE TOO SMALL OR GEOTEXTILE FABRIC ABSENT, RESULTS IN MUDDY CONDITION AS STONE IS PRESSED INTO SOIL.

3. PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC-EXTEND PAD BEYOND THE MINIMUM 50-FOOT LENGTH AS NECESSARY.

4. PAD NOT FLARED SUFFICIENTLY AT ROAD SURFACE, RESULTS IN MUD BEING TRACKED ON TO ROAD AND POSSIBLE DAMAGE TO ROAD.

5. UNSTABLE FOUNDATION - USE GEOTEXTILE FABRIC UNDER PAD AND/OR IMPROVE FOUNDATION DRAINAGE.

INSPECTION AND MAINTENANCE GUIDELINES
1. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

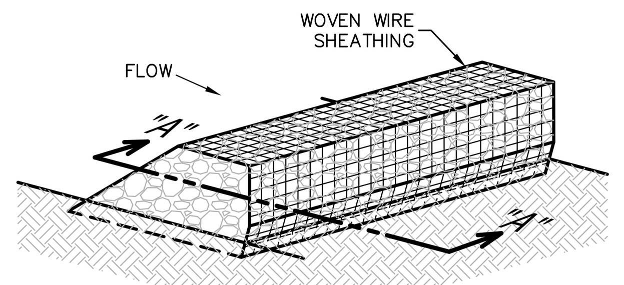
2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.

3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

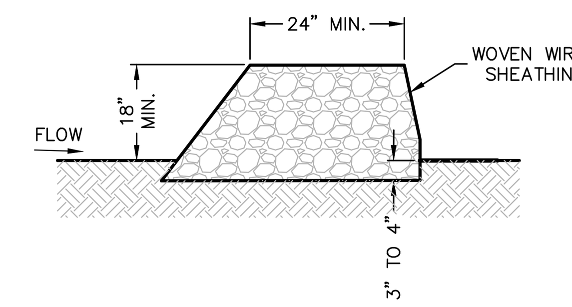
4. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL
NOT-TO-SCALE



ISOMETRIC PLAN VIEW



SECTION "A-A"

ROCK BERMS
THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT-LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

INSPECTION AND MAINTENANCE GUIDELINES
1. INSPECTION SHOULD BE MADE WEEKLY BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.

2. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.

3. REPAIR ANY LOOSE WIRE SHEATHING.

4. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.

5. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

6. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

MATERIALS
1. THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.

2. CLEAN, OPEN GRADED 3-INCH TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5-INCH TO 8-INCH DIAMETER ROCKS MAY BE USED.

INSTALLATION
1. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.

2. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.

3. PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM TO A HEIGHT NOT LESS THAN 18".

4. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.

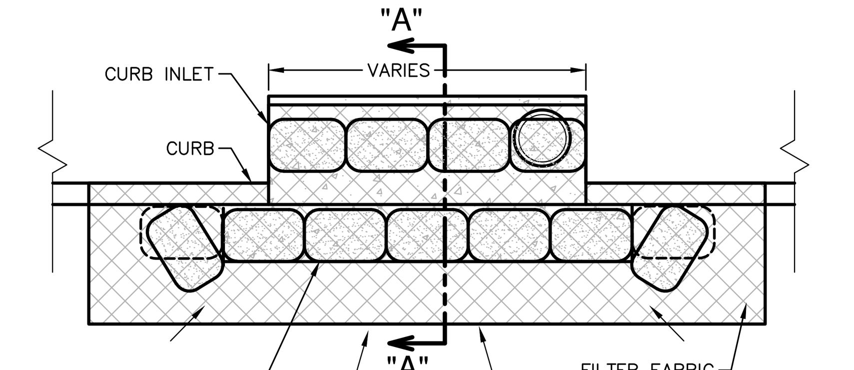
5. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.

6. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

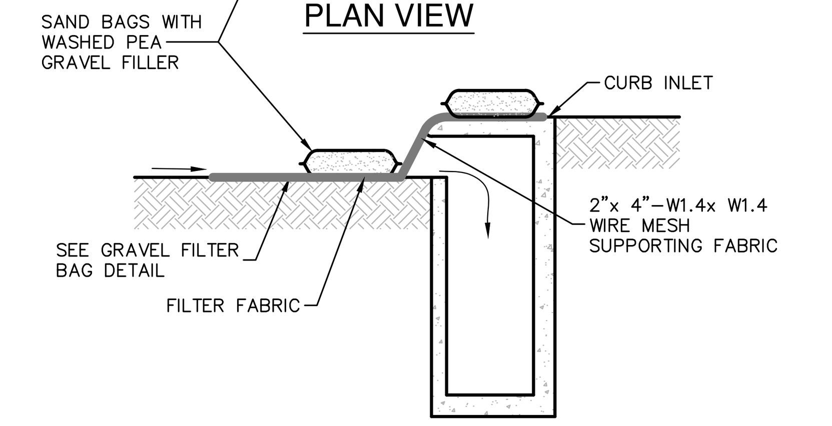
COMMON TROUBLE POINTS
1. INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM).

2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

ROCK BERM DETAIL
NOT-TO-SCALE



PLAN VIEW



SECTION "A-A"

GENERAL NOTES
1. CONTRACTOR TO INSTALL 2"x4"-W1.4xW1.4 WIRE MESH SUPPORTING FILTER FABRIC OVER THE INLET OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR WIRE TIES AT THIS LOCATION. SAND BAGS FILLED WITH WASHED PEA GRAVEL SHOULD BE PLACED ON TOP OF WIRE MESH ON TOP OF THE INLET AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SANDBAGS FILLED WITH WASHED PEA GRAVEL SHOULD ALSO BE PLACED ALONG THE GUTTER AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SAND BAGS TO BE STACKED TO FORM A CONTINUOUS BARRIER AROUND INLETS.

2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.

INSPECTION AND MAINTENANCE GUIDELINES
1. INSPECTION SHOULD BE MADE WEEKLY. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.

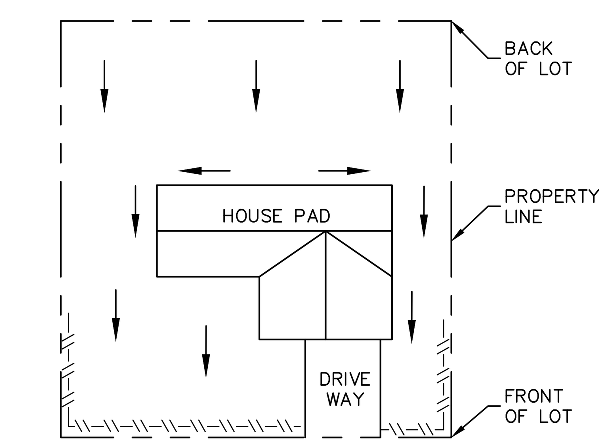
2. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

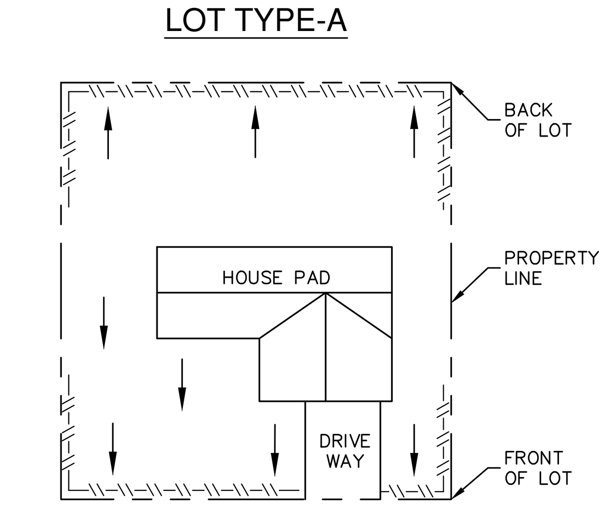
4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.

5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

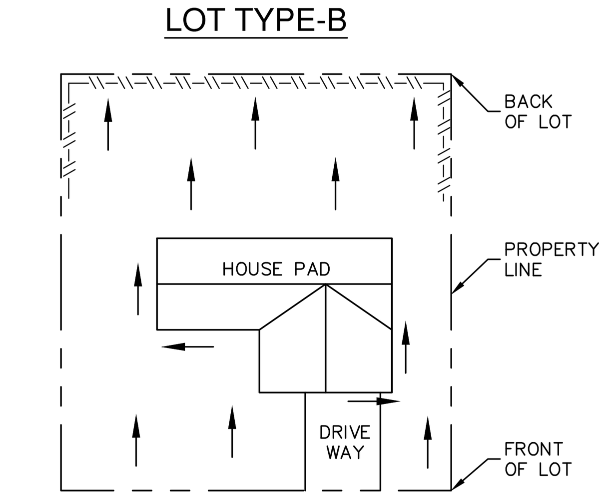
BAGGED GRAVEL CURB INLET PROTECTION DETAIL
NOT-TO-SCALE



LOT TYPE-A



LOT TYPE-B

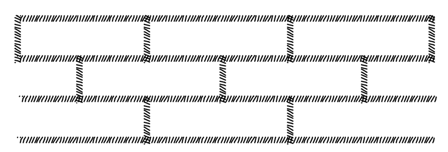


LOT TYPE-C

NOTE: SILT FENCE TO BE INSTALLED PER THESE DETAILS AND LOCATED ON THE DOWNGRADIENT SIDE OF EACH LOT LINE OR LIMITS OF CLEARING AS GENERALLY SHOWN ON THE OVERALL SITE PLAN.

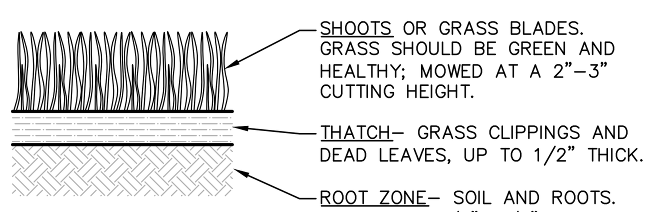
LEGEND
- —\\—\\—\\— SILT FENCE
- ← DRAINAGE FLOW

TYPICAL HOUSE LOT LAYOUTS
NOT-TO-SCALE



LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.

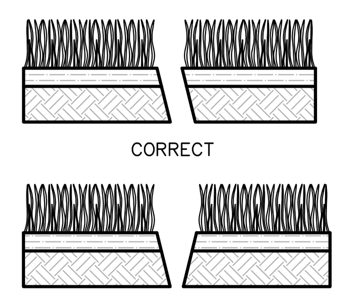
BUTTING - ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.



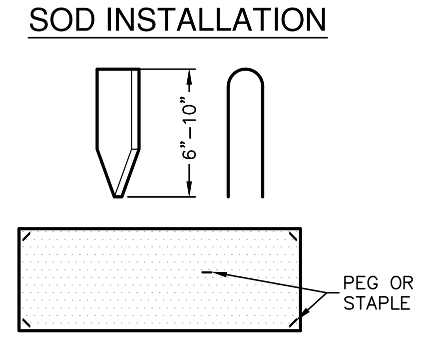
APPEARANCE OF GOOD SOD
NOTES:
1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

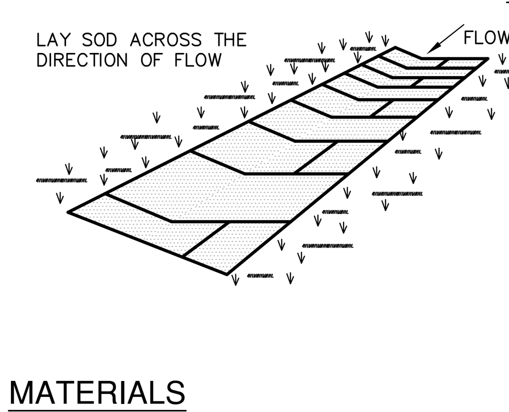
3. MOW WHEN THE SOD IS ESTABLISHED - IN 2-3 WEEKS. SET THE MOWER HIGH (2"-3").

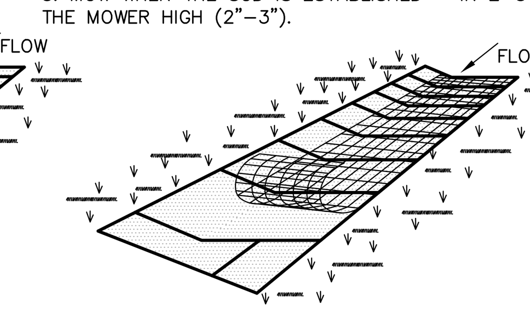


SOD INSTALLATION



USE PEGS OR STAPLES TO FASTEN SOD FIRMLY - AT THE ENDS OF STRIPS AND IN THE CENTER, OR EVERY 3-4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND.





IN CRITICAL AREAS, SECURE SOD WITH NETTING. USE STAPLES.

MATERIALS
1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" INCH (± 1/4" INCH) AT THE TIME OF CUTTING. THIS THICKNESS SHOULD EXCLUDE SHOOT GROWTH AND THATCH.

2. PIECES OF SOD SHOULD BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND LENGTH, WITH A MAXIMUM ALLOWABLE DEVIATION IN ANY DIMENSION OF 5%. TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.

3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.

4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

SITE PREPARATION
1. PRIOR TO SOIL PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.

2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS CAN BE MADE BY COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 3 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. ON SLOPING LAND, THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE CONTOUR.

INSTALLATION IN CHANNELS
1. SOD STRIPS IN WATERWAYS SHOULD BE LAID PERPENDICULAR TO THE DIRECTION OF FLOW. CARE SHOULD BE TAKEN TO BUTT ENDS OF STRIPS TIGHTLY (SEE FIGURE ABOVE).

2. AFTER ROLLING OR TAMPING, SOD SHOULD BE PEGGED OR STAPLED TO RESIST WASHOUT DURING THE ESTABLISHMENT PERIOD. MESH OR OTHER NETTING MAY BE PEGGED OVER THE SOD FOR EXTRA PROTECTION IN CRITICAL AREAS.

GENERAL INSTALLATION (VA. DEPT. OF CONSERVATION, 1992)
1. SOD SHOULD NOT BE CUT OR LAID IN EXCESSIVELY WET OR DRY WEATHER. SOD ALSO SHOULD NOT BE LAID ON SOIL SURFACES THAT ARE FROZEN.

2. DURING PERIODS OF HIGH TEMPERATURE, THE SOIL SHOULD BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD, TO COOL THE SOIL AND REDUCE ROOT BURNING AND DIEBACK.

3. THE FIRST ROW OF SOD SHOULD BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND BUTTING TIGHTLY AGAINST EACH OTHER. LATERAL JOINTS SHOULD BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. CARE SHOULD BE EXERCISED TO ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS (SEE FIGURE ABOVE).

4. ON SLOPES 3:1 OR GREATER, OR WHEREVER EROSION MAY BE A PROBLEM, SOD SHOULD BE LAID WITH STAGGERED JOINTS AND SECURED BY STAPLING OR OTHER APPROVED METHODS. SOD SHOULD BE INSTALLED WITH THE LENGTH PERPENDICULAR TO THE SLOPE (ON CONTOUR).

5. AS SODDING OF CLEARLY DEFINED AREAS IS COMPLETED, SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE FIRM CONTACT BETWEEN ROOTS AND SOIL.

6. AFTER ROLLING, SOD SHOULD BE IRRIGATED TO A DEPTH SUFFICIENT THAT THE UNDERSIDE OF THE SOD PAD AND THE SOIL 4 INCHES BELOW THE SOD IS THOROUGHLY WET.

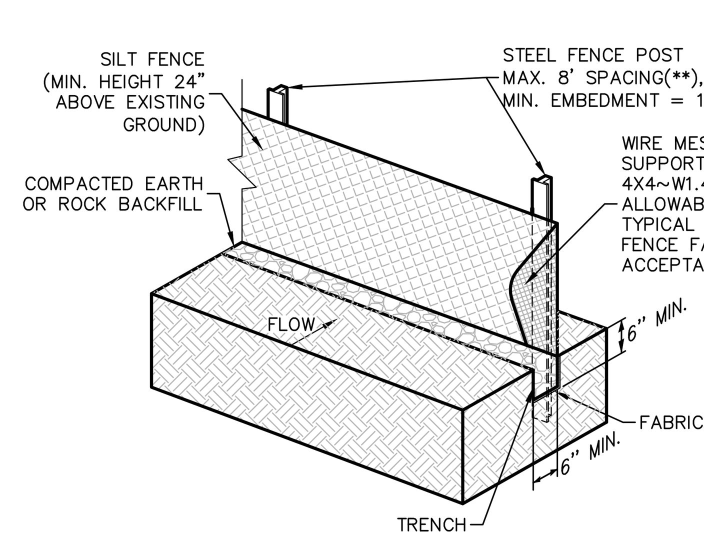
7. UNTIL SUCH TIME A GOOD ROOT SYSTEM BECOMES DEVELOPED, IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHOULD BE PERFORMED AS OFTEN AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF AT LEAST 4 INCHES.

8. THE FIRST MOWING SHOULD NOT BE ATTEMPTED UNTIL THE SOD IS FIRMLY ROOTED, USUALLY 2-3 WEEKS. NOT MORE THAN ONE THIRD OF THE GRASS LEAF SHOULD BE REMOVED AT ANY ONE CUTTING.

INSPECTION AND MAINTENANCE GUIDELINES
1. SOD SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE.

2. DAMAGE FROM STORMS OR NORMAL CONSTRUCTION ACTIVITIES SUCH AS TIRE RUTS OR DISTURBANCE OF SWALE STABILIZATION SHOULD BE REPAIRED AS SOON AS PRACTICAL.

SOD INSTALLATION DETAIL
NOT-TO-SCALE



ISOMETRIC PLAN VIEW

**STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1-FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET. (RG-348, SECTION 1.4.3)

SILT FENCE
A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER-BORN SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW.

SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

MATERIALS
1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN2, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NUMBER 30.

2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y-BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM WEIGHT 1.25 LB/FT, AND BRINDELL HARDNESS EXCEEDING 140.

3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

INSTALLATION
1. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POSTS MUST BE EMBEDDED A MINIMUM OF 1-FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.

2. LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.

3. THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

4. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

5. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

6. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

COMMON TROUBLE POINTS
1. FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE.

2. FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE).

3. FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES).

4. FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE).

INSPECTION AND MAINTENANCE GUIDELINES
1. INSPECT ALL FENCING WEEKLY.

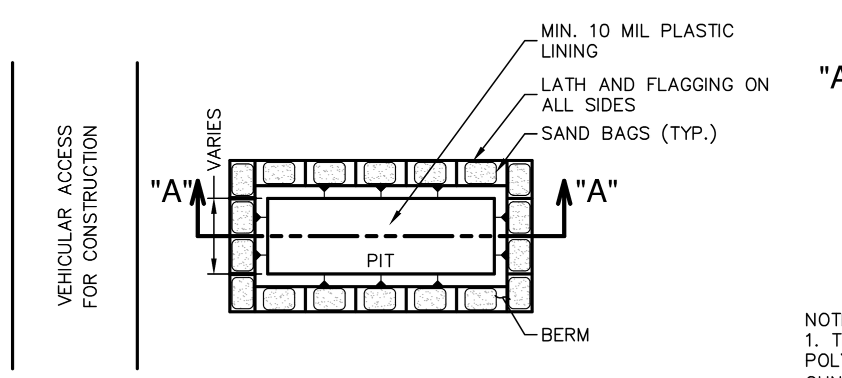
2. REMOVE SEDIMENT WHEN BUILDUP APPROACHES 6 INCHES, BUT NOT TO EXCEED 50% OF HEIGHT.

3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

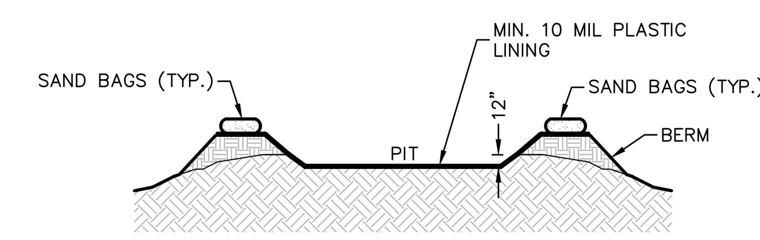
4. REPLACE OR REPAIR SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.

5. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

SILT FENCE DETAIL
NOT-TO-SCALE



PLAN VIEW



SECTION "A-A"

GENERAL NOTES
1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.

2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.

3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.

5. TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE CONSTRUCTED WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

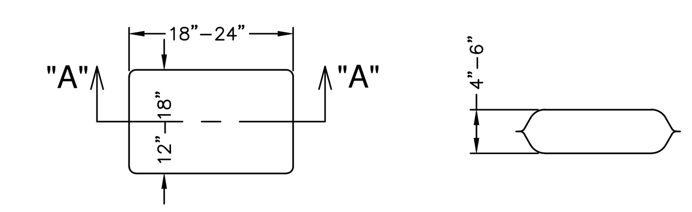
MATERIALS
PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

MAINTENANCE
1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.

2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.

3. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

CONCRETE TRUCK WASHOUT PIT DETAIL
NOT-TO-SCALE



PLAN VIEW

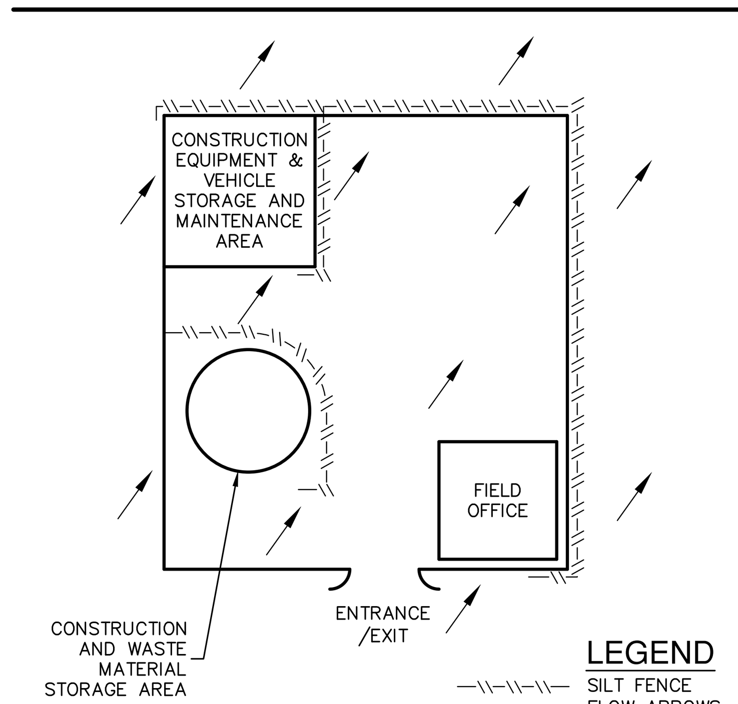
SECTION "A-A"

NOTES:
1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

2. THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM WASHED PEA GRAVEL TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).

3. SAND SHALL NOT BE USED TO FILL THE FILTER BAGS.

GRAVEL FILTER BAG DETAIL
NOT-TO-SCALE



LEGEND
- —\\—\\—\\— SILT FENCE
- ← FLOW ARROWS

CONSTRUCTION STAGING AREA
NOT-TO-SCALE

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 3
1 OF 2

NO.	REVISION	DATE

6-15-2022
STATE OF TEXAS
TODD W. BLACKMON
89208
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
NEW BRAUNFELS I SAN ANTONIO I AUSTIN I HOUSTON I FT WORTH I DALLAS
1672 INDEPENDENCE DR, STE 102 I NEW BRAUNFELS, TX 78132 I 830.632.5633
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

STEELWOOD TRAIL UNIT 4
NEW BRAUNFELS, TEXAS
STORMWATER POLLUTION PREVENTION DETAILS

PLAT NO.
JOB NO. 30034-07
DATE MAY 2022
DESIGNER HF
CHECKED HF DRAWN BH
SHEET C8.10

Date: Jun 15, 2022, 12:14pm User ID: tmartin
File: P:\300\34\07\Design\Civil\SWPPP-3003407-DT.dwg

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