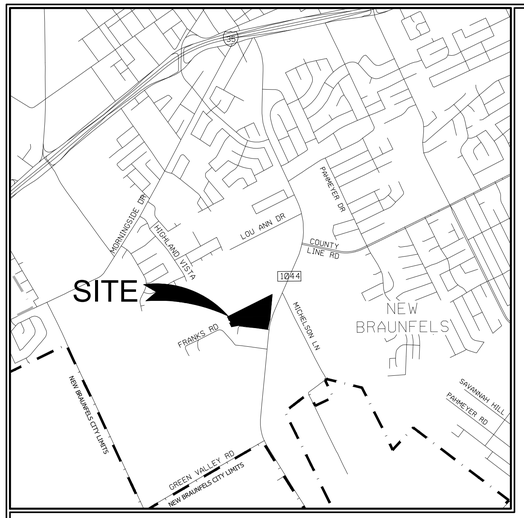
HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

STREETS, DRAINAGE, WATER AND SANITARY SEWER IMPROVEMENTS



LOCATION MAP
SCALE: 1" = 2,000'

PLEASE NOTE: NBU REQUIRES GPS POINTS FOR CERTAIN ELECTRIC, WATER AND WASTEWATER ATTRIBUTES, SOME OF WHICH MUST BE TAKEN PRIOR TO BACKFILL DURING CONSTRUCTION.

GPS POINTS SHALL BE REQUIRED FROM THE DEVELOPER'S CONTRACTOR. A MINIMUM OF THREE COORDINATE POINTS FOR GEOREFERENCING SHALL BE REQUIRED. THE WATER AND WASTEWATER GPS POINTS SHALL BE TO SURVEY GRADE. THE ELECTRIC GPS POINTS SHALL BE TO MAP GRADE.

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 WATER TANK

WASTEWATER
MANHOLES
CLEANOUTS
CORNER SLAB OF LIFT STATION

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

COORDINATE GPS REQUIREMENTS WITH NBU INSPECTOR

PROJECT BENCHMARKS

RE-LEVELING JULY 21, 2018

TBM 1742 : ALUMINUM DISC
ELEV: 700.15

TBM 1668 : ALUMINUM DISC
ELEV: 696.71

LEGAL DESCRIPTION

BEING 17.056 ACRE OF LAND SITUATED IN THE WILLIAM H PATE SURVEY NO. 22, ABSTRACT NO. 259, GUADALUPE COUNTY, TEXAS AND BEING OUT OF A 38.095 ACRE TRACT OF LAND AS DESCRIBED IN VOLUME 2773, PAGE 98 OF THE OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS.

GENERAL NOTES:

1. IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE-YEAR OF CITY OF NEW BRAUNFELS AND NEW BRAUNFELS UTILITIES (NBU) APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.
2. 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.
3. NO PORTION OF THE PROJECT IS LOCATED WITHIN THE EXISTING SPECIAL FLOOD HAZARD ZONE A, 100-YEAR FLOOD BOUNDARY, AS DEFINED BY THE COMAL COUNTY, TEXAS MAP NUMBER 48187C0445F AND 48187C0095F, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, EFFECTIVE DATE NOVEMBER 2, 2007.
4. THIS PROJECT IS LOCATED WITHIN THE CITY OF NEW BRAUNFELS AND IS NOT LOCATED WITHIN ANY EDWARDS AQUIFER ZONES
5. THIS PROJECT IS A RESIDENTIAL SUBDIVISION, DEVELOPMENT TYPE 3.
6. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR SHALL CONTACT THE CITY OF NEW BRAUNFELS (CONB) AND NEW BRAUNFELS UTILITIES (NBU) TO SET A PRE-CONSTRUCTION MEETING. A 48-HOUR ADVANCED NOTIFICATION IS REQUIRED.
   - 6.1. ALL CONB INSPECTIONS ARE TO BE CALLED IN AT 830-221-4068 (PHONE)
   - 6.2. FAXED IN AT 830-608-2117 (FAX)
   - 6.3. EMAILED AT inspections@nbtexas.com (EMAIL).
   - 6.4. NBU INSPECTIONS ARE TO BE CALLED AT 830-608-8971
7. 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 FOLLOWED FOR ALL CONSTRUCTION EXCEPT AS AMENDED BY THE CITY OF NEW BRAUNFELS STANDARD DETAILS.
8. GAS UTILITIES ARE NOT INCLUDED IN THE CIVIL CONSTRUCTION PLANS. FINAL GAS UTILITY DESIGN SHALL BE APPROVED BY THE CITY FOR ANY WORK WITHIN PUBLIC RIGHT-OF-WAY.

NOTE TO CONTRACTOR:

BY THE ACT OF SUBMITTING A BID FOR THIS PROPOSED CONTRACT, THE BIDDER WARRANTS THAT THE BIDDER, AND ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS HE INTENDS TO USE HAVE CAREFULLY AND THOROUGHLY REVIEWED THE DRAWINGS, SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS AND HAVE FOUND THEM COMPLETE AND FREE FROM ANY AMBIGUITIES AND SUFFICIENT FOR THE PURPOSE INTENDED. THE BIDDER FURTHER WARRANTS THAT TO THE BEST OF HIS OR HIS SUBCONTRACTORS' AND MATERIAL SUPPLIERS' KNOWLEDGE, ALL MATERIALS AND PRODUCTS SPECIFIED OR INDICATED HEREIN ARE ACCEPTABLE FOR ALL APPLICABLE CODES AND AUTHORITIES.

THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS HAS BEEN BASED UPON RECORD INFORMATION ONLY AND MAY NOT MATCH LOCATIONS AND/OR DEPTHS AS CONSTRUCTED. THE CONTRACTOR SHALL CONTACT EACH OF THE INDIVIDUAL UTILITIES FOR ASSISTANCE IN DETERMINING EXISTING UTILITY LOCATIONS AND DEPTHS PRIOR TO BEGINNING ANY CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL UTILITY CROSSINGS PRIOR TO BEGINNING ANY CONSTRUCTION.

DESIGN SPEED = 30 MPH

DIRT DEALERS XII

3619 PAESENO'S PKWY, SUITE 304
SAN ANTONIO, TEXAS 78231
SUBMITTAL DATE: 05-13-2021

Lift Station Electrical Plans Sheet List Table	
Sheet Number	Sheet Title
1	ELECTRICAL ABBREVIATIONS, LEGENDS, AND GENERAL NOTES
2	ELECTRICAL SITE PLAN
3	ELECTRICAL ONE-LINE DIAGRAM
4	ELECTRICAL CONTROL DIAGRAMS SHEET 1
5	ELECTRICAL CONTROL DIAGRAMS SHEET 2
6	ELECTRICAL CONTROL DIAGRAMS SHEET 3
7	ELECTRICAL DETAILS SHEET 1
8	ELECTRICAL DETAILS SHEET 2
9	ELECTRICAL DETAILS SHEET 3
10	GENERATOR DETAILS

HIGHLAND GARDENS UNIT 2	
SHEET NUMBER	SHEET TITLE
0	COVER
1	GENERAL NOTES
2	SUBDIVISION PLAT
3	SUBDIVISION PLAT
4	DRAINAGE AREA MAP - EXISTING
5	DRAINAGE AREA MAP - PROPOSED
6	DRAINAGE AREA MAP - PROPOSED - SCS
7	EROSION CONTROL PLAN
8	EROSION CONTROL PLAN DETAILS
9	GRADING PLAN
10	STORM DRAIN A
11	CHANNEL A4
12	DRAINAGE DETAILS I
13	DRAINAGE DETAILS II
14	DETENTION POND PLAN & NOTES
15	DETENTION POND STRUCTURE DETAILS
16	DETENTION POND CROSS-SECTIONS
17	STREET PLAN & PROFILE GARLAND WAY
18	STREET PLAN & PROFILE CLOVERLEAF & ARALIA LN
19	STREET PLAN & PROFILE STARGAZER
20	STREET SECTIONS AND DETAILS
21	STREET SECTIONS AND DETAILS II
22	TRAFFIC SIGNAGE & SIDEWALK PLAN
23	TRAFFIC SIGNAGE & SIDEWALK DETAILS
24	OVERALL UTILITY PLAN
25	OVERALL SANITARY SEWER PLAN
26	SANITARY SEWER LINE A STA 10+00 TO 21+00
27	SANITARY SEWER LINE A STA 21+00 TO END
28	SANITARY SEWER LINE B STA 10+00 TO 17+00
29	SANITARY SEWER LINE B STA 17+00 TO END
30	SANITARY SEWER LINE C
31	SANITARY SEWER LINE D, E AND H
32	SANITARY SEWER DETAILS
33	SANITARY SEWER DETAILS II
34	SANITARY SEWER DETAILS III
35	WATER DISTRIBUTION PLAN I
36	WATER DISTRIBUTION PLAN II
37	WATER DETAILS
38	WATER DETAILS II
39	FORCE MAIN PLAN & PROFILE BEGIN TO STA 16+00
40	FORCE MAIN PLAN & PROFILE STA 16+00 TO END
41	LIFT STATION SITE PLAN
42	LIFT STATION DETAILS I
43	LIFT STATION DETAILS II
44	LIFT STATION DETAILS III
45	LIFT STATION DETAILS IV

FM 1044 TXDOT SHEETS	
SHEET NUMBER	SHEET TITLE
T1	TXDOT PAVEMENT & STRIPING PLAN
T2	TxDOT DRIVEWAY CULVERT PLAN & PROFILE
T3	TXDOT DETAILS I
T4	TXDOT DETAILS II
T5	TXDOT DETAILS III
T6	TXDOT DETAILS IV
T7	TXDOT DETAILS V
T8	TXDOT DETAILS VI
T9	TXDOT DETAILS VII
T10	TXDOT DETAILS VIII
T11	TXDOT DETAILS IX

PREPARED BY:

MOELLER & ASSOCIATES
Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.ma-tx.com
TBPE FIRM F-13351

SUBMITTED BY:

JAMES INGALLS, P.E. #107416
MOELLER & ASSOCIATES
TBPE FIRM #F-13351
2021 W SH46, STE 105
NEW BRAUNFELS, TX 78132

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
1-6-22

NO	DATE	ISSUES AND REVISIONS
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	05-13-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

HIGHLAND GARDENS UNIT 2
PERMIT SET

Drawing Name: N:\Projects\CE0001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\0 COVER.dwg User: Jamesingalls Jan 07, 2022 - 3:13pm

CITY OF NEW BRAUNFELS – CONSTRUCTION NOTES – REV 3–2020

1. IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE–YEAR OF CITY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.

2. 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.

3. 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.

4. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE CITY OF NEW BRAUNFELS TO SCHEDULE A PRECONSTRUCTION MEETING.

   FOR PUBLIC INFRASTRUCTURE PERMIT (SC) OR SITE PREP PERMIT (SD) PROJECTS:

   4.1 FOR INSPECTIONS, YOU MUST CALL BEFORE 12:00 P.M., 48 HOURS PRIOR TO YOUR INSPECTION REQUEST.

   4.2 EACH INSPECTION WILL BE ALLOTTED 1 HOUR UNLESS YOU REQUEST FOR MORE TIME.

   4.3 ONCE YOUR REQUEST HAS BEEN ACCEPTED, YOU WILL RECEIVE A CALL FROM THE CITY OF NEW BRAUNFELS INSPECTOR.

   FOR COMMERCIAL PERMIT (CP) PROJECTS:

   4.4 ALL INSPECTIONS ARE TO BE CALLED IN AT 830–221–4068 OR,

   4.5 FAXED IN AT 830–608–2117 OR,

   4.6 E–MAILED AT INSPECTIONS@NBTEXAS.ORG.

5. 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.

6. 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

7. 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

8. 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

9. ENGINEER OF RECORD 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

10. DRAINAGE IMPROVEMENTS SUFFICIENT TO MITIGATE THE IMPACT OF CONSTRUCTION SHALL BE INSTALLED PRIOR TO ADDING IMPERVIOUS COVER.

FINISHED FLOOR ELEVATIONS

11. 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

12. 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

13. 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

14. 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.

15. 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.

16. 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 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).

17. 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

18. CURB CUTS SHALL BE THE FOLLOWING METHODS AND INDICATED ON THE PLANS IN DETAIL WHERE APPLICABLE.

    18.1 SAWCUT EXISTING STREET AND MATCH TO NEW CONSTRUCTION.

    18.2 SAWCUT EXISTING CURB TO TIE INTO EXISTING CONSTRUCTION.

CONSTRUCTION STABILIZED ENTRANCE

19. SAWCUT CURB FOR CONSTRUCTION ENTRANCE.

20. 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.

SIGNING AND PAVEMENT MARKING PLAN NOTES

21. 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.

22. THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS.

23. 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

1. 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.

2. 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.

3. 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.

4. 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.

5. IF EXTENDED DROUGHT CONDITIONS EXIST THAT HINDER OR PROHIBIT THE GROWTH AND ESTABLISHMENT OF VEGETATION, THE CONTRACT/ 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.

NEW BRAUNFELS UTILITIES – GENERAL NOTES – REV 4–2020

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, CONSULTANTS, 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 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.

6. 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.

7. 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.

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

13. CONTRACTOR IS REQUIRED TO VERIFY PROJECT ELEVATIONS. THE TERM "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY BOTH HORIZONTAL AND VERTICAL ALIGNMENT.

14. 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.

15. 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.

16. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION. UTILITY COMPANIES ARE ALSO PREVIOUSLY MENTIONED IN "UTILITY COMPACTION NOTIFICATION".

17. 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.

18. 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.

19. 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:

    19.1. WATER MAINS AND SERVICES

    19.2. SEWER MAINS AND SERVICES

20. NO METER BOXES TO BE SET IN DRIVEWAYS. ANY METER BOXES IN DRIVEWAYS WILL BE RELOCCATED AT CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.

21. WHERE THE MINIMUM 9 FOOT SEPARATION DISTANCE BETWEEN WASTEWATER LINES AND WATER LINES / MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF SEWER LINES SHALL BE IN STRICT ACCORDANCE WITH TCEQ.

22. 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.

23. 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 GEOTECHNICAL 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

24. 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 NBU'S 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.

NBU WATER NOTES – REV 5/16/2019

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 COMMERCIES ALONG WITH MULTI–LEVEL PROPERTIES ON 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 CROSSCONECCTION@NBUTEXAS.COM.

NBU WASTEWATER NOTES – REV 3/2/2020

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 W

PRELIMINARY PLAT ESTABLISHING

HIGHLAND GARDENS SUBDIVISION UNIT 2

BEING 17.056 ACRE OF LAND SITUATED IN THE WILLIAM H PATE SURVEY NO. 22, ABSTRACT NO. 259, GUADALUPE COUNTY, TEXAS AND BEING OUT OF A 38.095 ACRE TRACT OF LAND AS DESCRIBED IN VOLUME 2773, PAGE 98 OF THE OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS.

TXDOT NOTES:

1. FOR RESIDENTIAL DEVELOPMENT DIRECTLY ADJACENT TO STATE RIGHT-OF-WAY, THE DEVELOPER SHALL BE RESPONSIBLE FOR ADEQUATE SETBACK AND/OR SOUND ABATEMENT MEASURES FOR FUTURE NOISE MITIGATION.
2. OWNER/DEVELOPER IS RESPONSIBLE FOR PREVENTING ANY ADVERSE IMPACT TO THE EXISTING DRAINAGE SYSTEM WITHIN THE HIGHWAY RIGHT-OF-WAY.
3. MAXIMUM ACCESS POINTS TO STATE HIGHWAY FROM THIS PROPERTY WILL BE REGULATED AS DIRECTED BY TXDOT'S, "ACCESS MANAGEMENT MANUAL". THE PROPERTY IS ELIGIBLE FOR MAXIMUM COMBINED TOTAL OF 1 (ONE) ACCESS POINT, BASED ON AN OVERALL PLATTED HIGHWAY FRONTAGE OF APPROXIMATELY 292.77 FEET. WHERE TOPOGRAPHY OR OTHER EXISTING CONDITIONS MAKE IT INAPPROPRIATE OR NOT FEASIBLE TO CONFORM TO THE CONNECTION SPACING INTERVALS, THE LOCATION OF REASONABLE ACCESS WILL BE DETERMINED WITH CONSIDERATION GIVEN TO TOPOGRAPHY, ESTABLISHED PROPERTY OWNERSHIPS, UNIQUE PHYSICAL LIMITATIONS, AND/OR PHYSICAL DESIGN CONSTRAINTS. THE SELECTED LOCATION SHOULD SERVE AS MANY PROPERTIES AND INTERESTS AS POSSIBLE TO REDUCE THE NEED FOR ADDITIONAL DIRECT ACCESS TO THE HIGHWAY. IN SELECTING LOCATIONS FOR FULL MOVEMENT INTERSECTIONS, PREFERENCE WILL BE GIVEN TO PUBLIC ROADWAYS THAT ARE ON LOCAL THOROUGHFARE PLANS.
4. IF SIDEWALKS ARE REQUIRED BY APPROPRIATE CITY ORDINANCE, A SIDEWALK PERMIT MUST BE APPROVED BY TXDOT, PRIOR TO CONSTRUCTION WITHIN STATE RIGHT-OF-WAY. LOCATIONS OF SIDEWALKS WITHIN STATE RIGHT-OF-WAY SHALL BE AS DIRECTED BY TXDOT.
5. ANY TRAFFIC CONTROL MEASURE (LEFT TURN LANE, RIGHT TURN LANE, SIGNAL, ETC.) FOR ANY ACCESS FRONTING A STATE MAINTAINED ROADWAY SHALL BE THE RESPONSIBILITY OF THE DEVELOPER/OWNER.

NOTES:

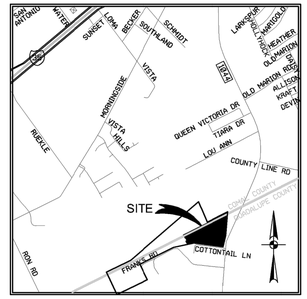
1. ALL LOTS WITHIN THE SUBDIVISION WILL BE PROVIDED WATER AND SEWER BY GREEN VALLEY SPECIAL UTILITY DISTRICT (GVSUD). NEW BRAUNFELS UTILITIES SHALL SERVICE ELECTRIC TO BLOCK 1 LOTS 20, 21 AND 22, BLOCK 3 LOT 23, AND BLOCK 5 LOTS 16 AND 17. ALL OTHER LOTS SHALL BE SERVED ELECTRIC BY GVEC.
2. ALL STREETS ARE PROPOSED TO BE OF A LOCAL TYPE FUNCTIONAL CLASSIFICATION WITH 50 FOOT RIGHT-OF-WAYS UNLESS NOTED OTHERWISE. GARLAND WAY IS A MINOR COLLECTOR AND HAS A 60 FOOT RIGHT-OF-WAY.
3. SIDEWALK NOTES:
   - 3.1. FOUR (4) FOOT WIDE SIDEWALKS WILL BE CONSTRUCTED BY THE HOME BUILDER AT THE BACK OF CURB PER CITY STANDARDS AT THE TIME OF BUILDING CONSTRUCTION, UNLESS OTHERWISE NOTED ON THE PLAT, ALONG:
     - -STARGAZER, CLOVERLEAF, GARLAND WAY, ARALIA LN
   - 3.2. FOUR (4) FOOT WIDE SIDEWALKS WILL BE CONSTRUCTED BY THE DEVELOPER AT THE BACK OF CURB PER CITY STANDARDS AT THE TIME OF SUBDIVISION STREET CONSTRUCTION ALONG:
     - -GARLAND WAY – 901, BLOCK 4; LOT 902, BLOCK 6; LOT 902, BLOCK 1
     - -STARGAZER – LOT 900 BLOCK 1; LOT 901, BLOCK 4; LOT 901 BLOCK 1
     - -CLOVERLEAF – LOT 901 BLOCK 1; LOT 901 BLOCK 4; LOT 903, BLOCK 1; LOT 902, BLOCK 6
4. LOT 900 BLOCK 1, LOT 901 BLOCK 1 AND LOT 901 BLOCK 4 ARE DRAINAGE LOTS AND ARE NON-BUILDABLE LOTS. LOT 902 BLOCK 1, LOT 902 BLOCK 6 ARE OPEN SPACE AND ARE NON-BUILDABLE LOTS. THESE LOTS WILL BE OWNED AND MAINTAINED BY THE PROPERTY OWNER'S ASSOCIATION, THEIR SUCCESSOR'S OR ASSIGNS, AND SHALL NOT BE THE RESPONSIBILITY OF THE CITY OF NEW BRAUNFELS OR GUADALUPE COUNTY. LOT 903 BLOCK 1 IS A UTILITY LOT AND IS PROPOSED TO BE USED AS A LIFT STATION AND WILL BE MAINTAINED BY NBU.
5. THE SUBDIVISION IS WITHIN THE COMAL INDEPENDENT SCHOOL DISTRICT.
6. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE IN GRID BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM 1983. DISTANCES SHOWN HEREON ARE SURFACE USING COMBINED SCALE FACTOR OF 1.00015.
7. MONUMENTS WERE FOUND OR SET AT EACH CORNER OF THE SURVEY BOUNDARY OF THE SUBDIVISION. MONUMENTS AND MARKERS WILL BE SET WITH 1/2" IRON PIN WITH PLASTIC CAP STAMPED "DAM #5348 PROP. COR." IMMEDIATELY AFTER COMPLETION OF UTILITY INSTALLATION AND STREET CONSTRUCTION UNLESS NOTED OTHERWISE.
8. HIGHLAND GARDENS SUBDIVISION UNIT 2, DOES FALL WITHIN THE CITY LIMITS OF THE CITY OF NEW BRAUNFELS.
9. THE PROPOSED USE OF THE SUBDIVISION IS FOR SINGLE FAMILY RESIDENTIAL.
10. HIGHLAND GARDENS SUBDIVISION UNIT 2, ESTABLISHING A TOTAL OF 66 LOTS, WITH 60 BEING BUILDABLE.
11. THIS SUBDIVISION IS SUBJECT TO THE 2006 CITY OF NEW BRAUNFELS PARK LAND AND DEDICATION AND DEVELOPMENT ORDINANCE. THIS PLAT IS APPROVED FOR ONE DWELLING UNIT PER BUILDABLE LOT WITH A MAXIMUM OF 60 BUILDABLE LOTS. 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.
12. NO STRUCTURES, WALLS OR OTHER OBSTRUCTIONS OF ANY KIND SHALL BE PLACED WITHIN THE LIMITS OF THE 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 AND GUADALUPE COUNTY 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.
13. 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 A 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 AND SHALL PREVENT WATER FROM LEAVING THE STREET.
14. NO STRUCTURES IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO A PUBLIC WATER AND SEWER SYSTEM WHICH HAS BEEN APPROVED BY NEW BRAUNFELS UTILITIES.
15. MAINTENANCE OF DRAINAGE EASEMENT DESIGNATED WITHIN A LOT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNERS ASSOCIATION.
16. NO PORTION OF THE SUBDIVISION IS LOCATED WITHIN THE EXISTING SPECIAL FLOOD HAZARD ZONE A, 100-YEAR FLOOD BOUNDARY, AS DEFINED BY THE GUADALUPE COUNTY, TEXAS COMMUNITY PANEL NUMBER 48187C0095F, REVISED NOVEMBER 02, 2007 AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
17. EACH LOT OWNER SHALL BE RESPONSIBLE FOR VERIFYING THE DEPTH OF THE SEWER SERVICE STUB OUT AND DETERMINING THE MINIMUM SERVICEABLE FINISH FLOOR ELEVATION.
18. FUTURE DEVELOPMENT IS SUBJECT TO CHAPTER 114 (STREETS, SIDEWALKS, AND OTHER PUBLIC SPACES) OF THE NEW BRAUNFELS CODE OF ORDINANCES.
19. NO PORTION OF THIS PROPERTY IS WITHIN THE EDWARDS AQUIFER RECHARGE ZONE.
20. PERMANENT WATER QUALITY CONTROLS ARE REQUIRED FOR THIS SUBDIVISION PLAT IN ACCORDANCE WITH THE CITY OF NEW BRAUNFELS DRAINAGE AND EROSION CONTROL DESIGN MANUAL.
21. 5' CONTOURS ARE SOURCED FROM THE CITY OF NEW BRAUNFELS LIDAR GIS DATABASE AND ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM 1988.
22. ALL RESIDENTIAL LOTS MEET THE MINIMUM SQUARE FOOTAGE AS DEFINED IN THE HIGHLAND GARDENS PLANNED DEVELOPMENT DISTRICT STANDARDS.

NEW BRAUNFELS UTILITIES 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 OR 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 OWN WATER AND SEWER SERVICE AT THE OWNER'S/DEVELOPER'S EXPENSE.
5. DO NOT COMBINE ANY NEW UTILITY EASEMENTS (U.E.) WITH DRAINAGE EASEMENTS (D.E.) OR MAKE CHANGES IN GRADE WITHIN THE UTILITY EASEMENTS (U.E.) WITHOUT WRITTEN APPROVAL FROM NEW BRAUNFELS UTILITIES.

GUADALUPE VALLEY ELECTRIC COOPERATIVE NOTES:

1. GVEC TO HAVE A 5' WIDE EASEMENT ON ALL ROAD CROSSINGS IN WHICH ELECTRIC OR COMMUNICATION LINES ARE LOCATED.
2. GVEC WILL POSSESS A 5-FOOT WIDE EASEMENT TO THE SERVICE METER LOCATION. EASEMENT TO FOLLOW SERVICE LINE AND WILL VARY DEPENDING ON LOCATION OF BUILDING OR STRUCTURE.
3. GVEC SHALL HAVE ACCESS TO METER LOCATIONS FROM THE FRONT YARD WITH THE LOCATION NOT BEING WITHIN A FENCED AREA.
4. ALL UTILITY EASEMENTS ARE FOR THE CONSTRUCTION, MAINTENANCE (INCLUDING BUT NOT LIMITED TO REMOVAL OF TREES AND OTHER OBSTRUCTIONS), READING OF METERS, AND REPAIR OF ALL OVERHEAD AND UNDERGROUND UTILITIES.

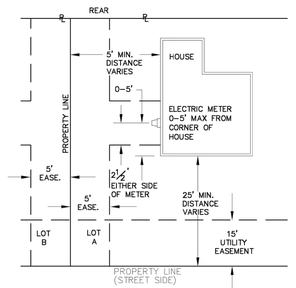


LOCATION MAP

SCALE: 1"=2,000'

NOTE: G.V.E.C. WILL MAINTAIN 5' EASEMENT FOR SERVICE ENTRANCE TO DWELLING. THIS EASEMENT WILL VARY DEPENDING UPON LOCATION OF DWELLING.

G.V.E.C. SHALL HAVE ACCESS TO THE METER LOCATIONS FROM THE FRONT YARDS WITH THE METER LOCATIONS NOT BEING LOCATED WITHIN A FENCED AREA.



TYPICAL EASEMENT ON INTERIOR PROPERTY LINE

STATE OF TEXAS
COUNTY OF GUADALUPE

"I, THE UNDERSIGNED OWNER OF THE LAND SHOWN ON THIS PLAT, AND DESIGNATED HEREIN AS THE HIGHLAND GARDENS SUBDIVISION, UNIT 2 SUBDIVISION TO THE CITY OF NEW BRAUNFELS, COUNTY OF GUADALUPE, TEXAS, AND WHOSE NAME IS SUBSCRIBED HERETO, DO HEREBY SUBDIVIDE SUCH PROPERTY AND DEDICATE TO THE USE OF THE PUBLIC ALL STREETS, DRAINS, EASEMENTS, AND PUBLIC PLACES THEREON SHOWN FOR THE PURPOSES AND CONSIDERATION THEREIN EXPRESSED."

_____,
OWNER:
DIRT DEALERS XII
C/O JOHN SCANIO
18618 TUSCANY STONE #210
SAN ANTONIO TX, 78258

STATE OF TEXAS
COUNTY OF COMAL

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON THIS ___DAY OF_____20___,

BY _____,

_____,
NOTARY PUBLIC, STATE OF TEXAS
MY COMMISSION EXPIRES: _____.

KNOW ALL MEN BY THESE PRESENTS:

I, THE UNDERSIGNED, DREW A. MAWYER, 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.

_____
DREW A. MAWYER
REGISTERED PROFESSIONAL LAND SURVEYOR NO. 5348
D.A. MAWYER LAND SURVEYING
5151 W. SH46
NEW BRAUNFELS, TEXAS 78132
FIRM #10191500

MOELLER & ASSOCIATES Engineering Solutions
2021 SH 46W, Ste. 105
New Braunfels, TX 78132
ph: (830) 358-7127
www.ma-tx.com TBPE FIRM F-13351

LEGEND:

P.O.B.		= POINT OF BEGINNING
B.L.		= BUILDING SETBACK LINE
D.L.		= DRAINAGE LOT
U.E.		= UTILITY EASEMENT
R.O.W.		= RIGHT-OF-WAY
O.S.		= OPEN SPACE LOT
		= PAGE MATCH LINE
	○	= 1/2" IRON PIN SET
	●	= IRON PIN FOUND
	⊡	= TXDOT MONUMENT FOUND

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

_____
CHAIRMAN

APPROVED FOR ACCEPTANCE

_____ _____
DATE PLANNING DIRECTOR

_____ _____
DATE CITY ENGINEER

_____ _____
DATE NEW BRAUNFELS UTILITIES

STATE OF TEXAS
COUNTY OF GUADALUPE

I, _____ COUNTY CLERK OF SAID 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 THE _____ DAY OF _____, A.D. 20___.

COUNTY CLERK, GUADALUPE COUNTY, TEXAS

_____
DEPUTY

PREPARED: December 13, 2019

PAGE 1 OF 2

PRELIMINARY PLAT WAS APPROVED ON 6/4/19

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

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
8-3-21

NO	DATE	ISSUES AND REVISIONS
	12-02-2020	UPDATED PER CONB COMMENTS
	03-23-2021	UPDATED PER NBU COMMENTS
	05-13-2021	UPDATED PER TXDOT COMMENTS
	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS

MOELLER & ASSOCIATES Engineering Solutions
2021 W. SH46, STE. 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.ma-tx.com
TBPE FIRM F-13351

SUBDIVISION PLAT

HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 2 OF 45

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Drawing Name: N:\Projects\GTA001 Highland Gardens Ut and Ut2\Civil\Construction Drawings\Unit 2\2_SUBDIVISION PLAT.dwg User: BrittanyBenoit Aug 05, 2021 - 10:15am
Drawing Name: N:\Projects\GTA001 Highland Gardens Ut and Ut2\Planning\Platting\Unit 2\GTA001B HIGHLAND GARDENS UNIT 2 PLAT.dwg User: jamesingalls Dec 13, 2019 - 10:07am

PRELIMINARY PLAT ESTABLISHING

HIGHLAND GARDENS SUBDIVISION UNIT 2

BEING 17.056 ACRE OF LAND SITUATED IN THE WILLIAM H PATE SURVEY NO. 22, ABSTRACT NO. 259, GUADALUPE COUNTY, TEXAS AND BEING OUT OF A 38.095 ACRE TRACT OF LAND AS DESCRIBED IN VOLUME 2773, PAGE 98 OF THE OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS.

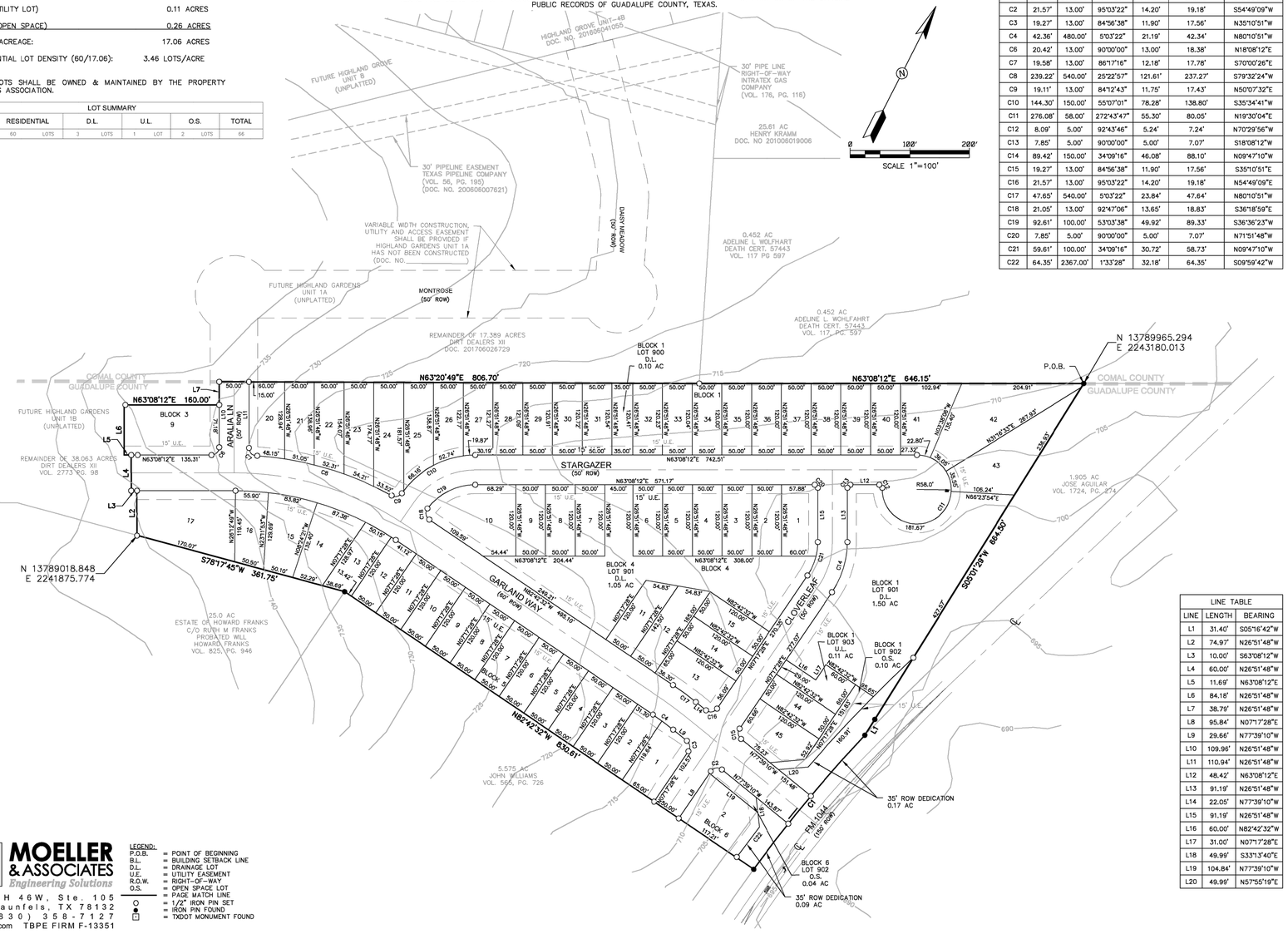
ACREAGE SUMMARY (APPROX.)

RESIDENTIAL LOTS AND STREETS	14.04 ACRES
*D.L. (DRAINAGE LOT)	2.65 ACRES
U.L. (UTILITY LOT)	0.11 ACRES
*O.S. (OPEN SPACE)	0.26 ACRES
TOTAL ACREAGE:	17.06 ACRES
RESIDENTIAL LOT DENSITY (60/17.06):	3.46 LOTS/ACRE

*ALL LOTS SHALL BE OWNED & MAINTAINED BY THE PROPERTY OWNERS ASSOCIATION.

LOT SUMMARY

UNIT	RESIDENTIAL	D.L.	U.L.	O.S.	TOTAL
UNIT 2	60 LOTS	3 LOTS	1 LOT	2 LOTS	66



CURVE TABLE						
CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD LENGTH	CHORD BEARING
C1	292.77'	2332.00'	7°11'36"	146.58'	292.58'	S12°50'29"W
C2	21.57'	13.00'	95°03'22"	14.20'	19.18'	S54°49'09"W
C3	19.27'	13.00'	84°56'38"	11.90'	17.56'	N35°10'51"W
C4	42.36'	480.00'	5°03'22"	21.19'	42.34'	N80°10'51"W
C6	20.42'	13.00'	90°00'00"	13.00'	18.38'	N18°08'12"E
C7	19.58'	13.00'	86°17'16"	12.18'	17.78'	S70°00'26"E
C8	239.22'	540.00'	25°22'57"	121.61'	237.27'	S79°32'24"W
C9	19.11'	13.00'	84°12'43"	11.75'	17.43'	N50°07'32"E
C10	144.30'	150.00'	55°07'01"	78.28'	138.80'	S35°34'41"W
C11	276.08'	58.00'	272°43'47"	55.30'	80.05'	N19°30'04"E
C12	8.09'	5.00'	92°43'46"	5.24'	7.24'	N70°29'56"W
C13	7.85'	5.00'	90°00'00"	5.00'	7.07'	S18°08'12"W
C14	89.42'	150.00'	34°09'16"	46.08'	88.10'	N09°47'10"W
C15	19.27'	13.00'	84°56'38"	11.90'	17.56'	S35°10'51"E
C16	21.57'	13.00'	95°03'22"	14.20'	19.18'	N54°49'09"E
C17	47.65'	540.00'	5°03'22"	23.84'	47.64'	N80°10'51"W
C18	21.05'	13.00'	92°47'06"	13.65'	18.83'	S36°18'59"E
C19	92.61'	100.00'	53°03'38"	49.92'	89.33'	S36°36'23"W
C20	7.85'	5.00'	90°00'00"	5.00'	7.07'	N71°51'48"W
C21	59.61'	100.00'	34°09'16"	30.72'	58.73'	N09°47'10"W
C22	64.35'	2367.00'	1°33'28"	32.18'	64.35'	S09°59'42"W

LINE TABLE		
LINE	LENGTH	BEARING
L1	31.40'	S05°16'42"W
L2	74.97'	N26°51'48"W
L3	10.00'	S63°08'12"W
L4	60.00'	N26°51'48"W
L5	11.69'	N63°08'12"E
L6	84.18'	N26°51'48"W
L7	38.79'	N26°51'48"W
L8	95.84'	N07°17'28"E
L9	29.66'	N77°39'10"W
L10	109.96'	N26°51'48"W
L11	110.94'	N26°51'48"W
L12	48.42'	N63°08'12"E
L13	91.19'	N26°51'48"W
L14	22.05'	N77°39'10"W
L15	91.19'	N26°51'48"W
L16	60.00'	N82°42'32"W
L17	31.00'	N07°17'28"E
L18	49.99'	S33°13'40"E
L19	104.84'	N77°39'10"W
L20	49.99'	N57°55'19"E

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2021 SH 46W, Ste. 105
New Braunfels, TX 78132
ph: (830) 358-7127
www.ma-tx.com TBPE FIRM F-13351

LEGEND:
P.O.B. = POINT OF BEGINNING
B.L. = BUILDING SETBACK LINE
D.L. = DRAINAGE LOT
U.E. = UTILITY EASEMENT
R.O.W. = RIGHT-OF-WAY
O.S. = OPEN SPACE LOT
= PAGE MATCH LINE
○ = 1/2" IRON PIN SET
● = IRON PIN FOUND
⊡ = TXDOT MONUMENT FOUND

PREPARED: December 13, 2019

PAGE 2 OF 2

PRELIMINARY PLAT WAS APPROVED ON 6/4/19

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STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
7-8-21

NO	DATE	ISSUES AND REVISIONS
	12-02-2020	UPDATED PER CONB COMMENTS
	03-23-2021	UPDATED PER NBU COMMENTS
	05-13-2021	UPDATED PER TXDOT COMMENTS
	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS

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TBPE FIRM F-13351

SUBDIVISION PLAT

HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

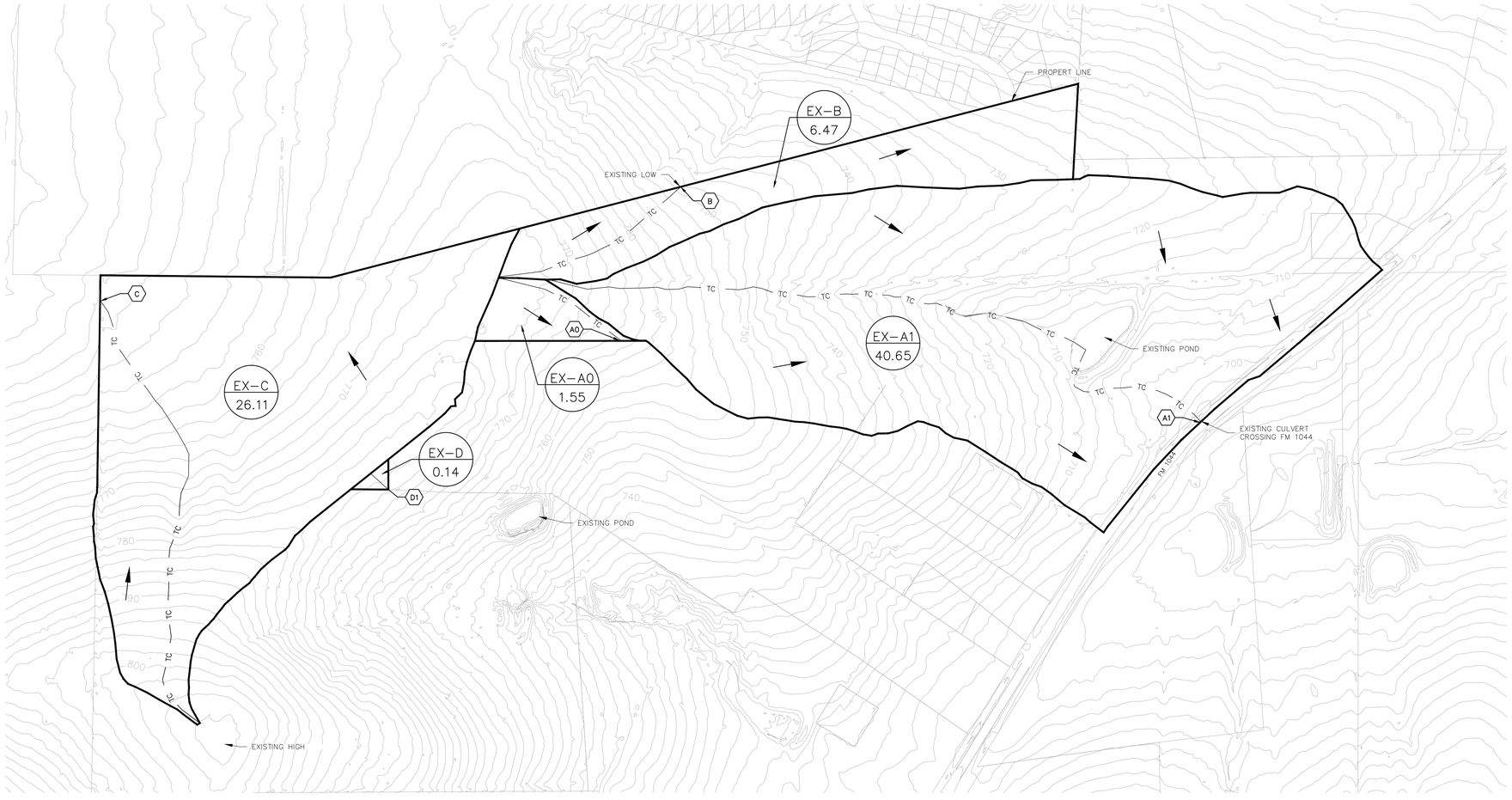
SHEET 3 OF 45

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Drawing Name: N:\Projects\CEN001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\3_SUBDIVISION_PLAT.dwg User: jamesingalls Dec 13, 2019 - 10:05am
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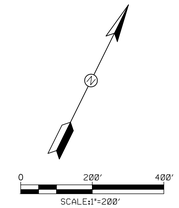
Highland Gardens U1 & U2 - Existing Conditions Hydrology SCS Calculations										
Point	AREA ID	Area (ac)	CN	T_c (min)	Q_2 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{50} (cfs)	Q_{100} (cfs)	Location
A0	EX-A0	1.56	74	20	0.46	2.22	3.79	4.90	6.17	Offsite Flow
A1	EX-A1	40.33	73	34	8.49	42.56	73.44	95.69	121.16	Existing Culvert Crossing FM 1044

*NOTE: AREA B ACCOUNTED FOR IN HIGHLAND GROVE DETENTION, UNIT 4A. AREA C AND D TO BE ANALYZED WITH FUTURE UNITS OF HIGHLAND GARDENS SUBDIVISION.



EXISTING CONDITIONS

SCALE: 1"=200'



LEGEND

- LIMITS OF DRAINAGE AREA
- TC — TC — TIME OF CONCENTRATION
- 900 — EXISTING CONTOURS
- FLOW ARROWS
- A / 9.0 — DRAINAGE BASIN LABEL / BASIN AREA (AC)
- A1 / 2.0 — SUB-DRAINAGE AREA LABEL / SUB-DRAINAGE AREA (AC)
- A1 — INLET LABEL
- A1 — ANALYSIS POINT LABEL

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608-8971
SPECTRUM CABLE	1-800-892-4357
CENTERPOINT GAS	(800) 427-7142
AT&T	(830) 303-1333
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY 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.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTORS 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 EXCAVATIONS.

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

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
5-13-21

NO	DATE	ISSUES AND REVISIONS
	12-02-2020	UPDATED PER CONB COMMENTS
	03-23-2021	UPDATED PER NBU COMMENTS
	05-13-2021	UPDATED PER TXDOT COMMENTS

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2021 W SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
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DRAINAGE AREA MAP - EXISTING

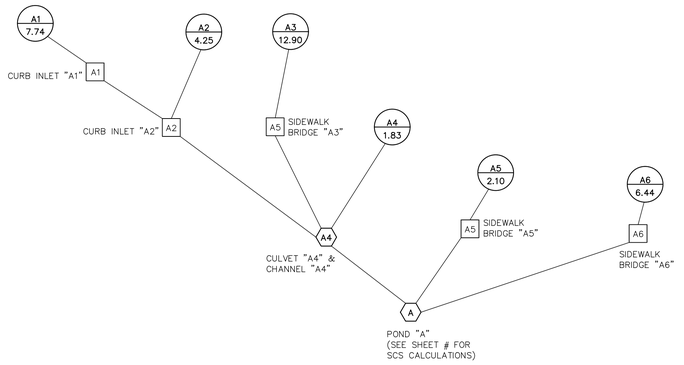
HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 4 OF 45

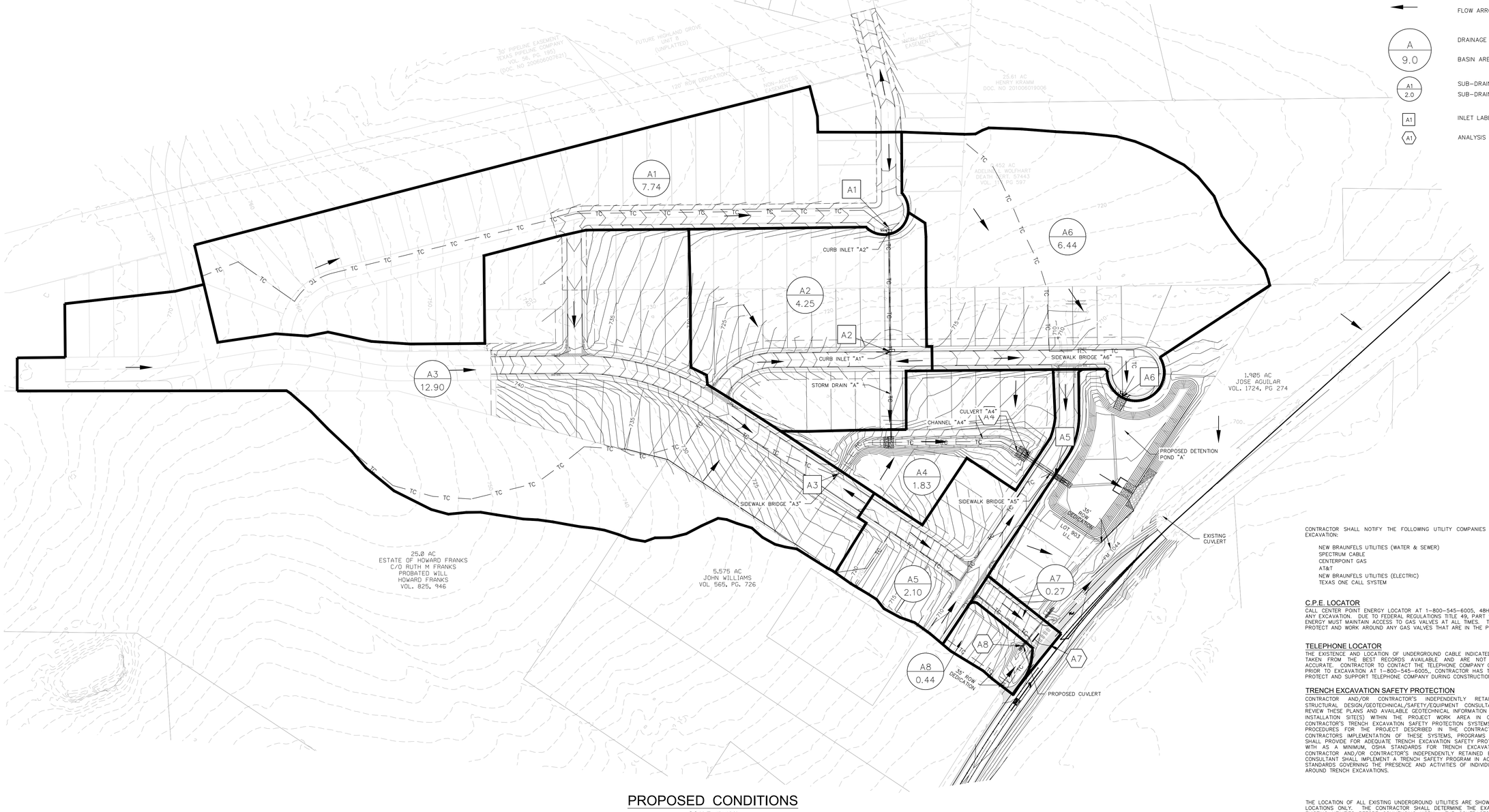
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Drawing Name: N:\Projects\CN001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\4 DRAINAGE AREA MAP - EXISTING.dwg User: BrittonyBassett May 14, 2021 - 11:51am



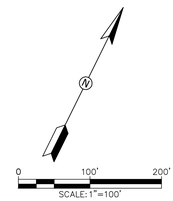
Highland Gardens - Proposed Conditions Hydrology Calculations

Point	AREA ID	Area (ac)	C_2	C_5	C_{10}	C_{25}	C_{50}	C_{100}	T_c (min)	I_2 (in/hr)	I_5 (in/hr)	I_{10} (in/hr)	I_{25} (in/hr)	I_{50} (in/hr)	I_{100} (in/hr)	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{50} (cfs)	Q_{100} (cfs)	Location
A1	A1	7.74	0.56	0.60	0.63	0.67	0.71	0.75	31	2.80	3.67	4.34	5.26	6.03	6.90	12.16	16.95	21.22	27.39	33.02	40.21	Montrose Curb Inlet & Storm Drain Line A
A2	A2	4.25	0.55	0.59	0.62	0.66	0.70	0.75	32	2.74	3.59	4.25	5.15	5.91	6.76	6.45	9.00	11.28	14.57	17.57	21.41	Stargazer Curb Inlet
A3	A3	12.90	0.57	0.61	0.64	0.69	0.72	0.77	32	2.74	3.59	4.25	5.16	5.91	6.76	20.24	28.23	35.33	45.61	54.97	66.90	Garland Way Sidewalk Bridge & Channel A4
A4	A1+A2+A3+A4	26.72	0.56	0.59	0.63	0.67	0.71	0.75	34	2.64	3.47	4.11	4.99	5.72	6.54	39.44	55.17	69.11	89.34	107.76	131.27	Channel A4
A5	A5	2.10	0.56	0.60	0.63	0.67	0.71	0.76	19	3.69	4.78	5.65	6.81	7.80	8.92	4.37	6.00	7.52	9.65	11.62	14.16	Cloverleaf Sidewalk Bridge
A6	A6	6.44	0.44	0.48	0.51	0.54	0.58	0.62	30	2.84	3.72	4.39	5.33	6.10	6.98	8.12	11.41	14.40	18.62	22.59	27.75	Stargazer Sidewalk Bridge @ Cul-de-sac
A7	A7	0.27	0.73	0.77	0.81	0.86	0.90	0.95	10	4.92	6.34	7.56	9.07	10.41	11.94	0.97	1.32	1.65	2.11	2.53	3.06	Driveway to FM 1044
A8	A8	0.44	0.46	0.49	0.53	0.56	0.59	0.64	10	4.91	6.32	7.53	9.04	10.38	11.90	0.99	1.37	1.74	2.23	2.71	3.33	TxDOT Culvert



PROPOSED CONDITIONS

SCALE: 1"=100'



LEGEND

- LIMITS OF DRAINAGE AREA
- LIMITS OF SUB-DRAINAGE AREA
- TC —— TC —— TIME OF CONCENTRATION
- 900 EXISTING CONTOURS
- FLOW ARROWS
- A / 9.0 — DRAINAGE BASIN LABEL / BASIN AREA (AC)
- A1 / 2.0 — SUB-DRAINAGE AREA LABEL / SUB-DRAINAGE AREA (AC)
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811 Know what's below. Call before you dig.

STATE OF TEXAS — JAMES INGALLS — 107416 — LICENSED PROFESSIONAL ENGINEER — 5-13-21

NO	DATE	ISSUES AND REVISIONS
	12-02-2020	UPDATED PER CONB COMMENTS
	03-23-2021	UPDATED PER NBU COMMENTS
	05-13-2021	UPDATED PER TXDOT COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

DRAINAGE AREA MAP - PROPOSED

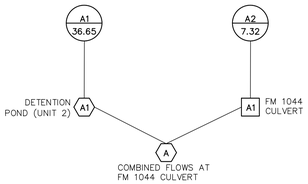
HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 5 OF 45

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Drawing Name: N:\Projects\CONDO\ Highland Gardens U2 and U2\Civil\Construction Drawings\Unit 2\5 DRAINAGE AREA MAP - PROPOSED.dwg User: BritnayBryant May 14, 2021 - 11:52am



Highland Gardens U1 & U2 - Proposed Conditions Hydrology SCS Calculations										
Point	AREA ID	Area (ac)	CN	T_c (min)	Q_2 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{50} (cfs)	Q_{100} (cfs)	Location
A1	PRO-A1	36.49	75	29	10.02	45.54	77.23	99.74	125.37	Unit 2 Proposed Detention Pond
Detained Flow					2.88	25.82	49.51	66.70	86.00	Detention Pond Outlet
A2	PRO-A2	6.99	89	29	5.67	14.48	21.08	25.53	30.47	Unit 2 Undetained Flow
A	PRO-A	43.49	Combined Flow		7.28	34.75	63.86	84.58	108.07	Existing Culvert Crossing FM 1044

*NOTE: AREA B ACCOUNTED FOR IN HIGHLAND GROVE DETENTION, UNIT 4A. AREA C TO BE DETAINED AND DESIGNED WITH FUTURE UNITS OF HIGHLAND GARDENS SUBDIVISION.

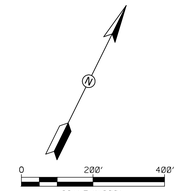
Comparison Table			
	Existing Q	10% REDUCTION	Proposed Q
2YR	8.49	7.64	7.28
10YR	42.56	38.30	34.75
25YR	73.44	66.10	63.86
50YR	95.69	86.12	84.58
100YR	121.16	109.04	108.07

*NOTE: BASED ON PDD HIGHLAND GARDENS REQUIRES A 10% REDUCTION IN RUNOFF.



PROPOSED CONDITIONS

SCALE: 1"=200'



LEGEND

- LIMITS OF DRAINAGE AREA
- LIMITS OF SUB-DRAINAGE AREA
- TC — TC — TIME OF CONCENTRATION
- EXISTING CONTOURS
- FLOW ARROWS
- A / 9.0 — DRAINAGE BASIN LABEL / BASIN AREA (AC)
- A1 / 2.0 — SUB-DRAINAGE AREA LABEL / SUB-DRAINAGE AREA (AC)
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- A1 — ANALYSIS POINT LABEL

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STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
5-13-21

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CCMB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

DRAINAGE AREA MAP - PROPOSED SCS

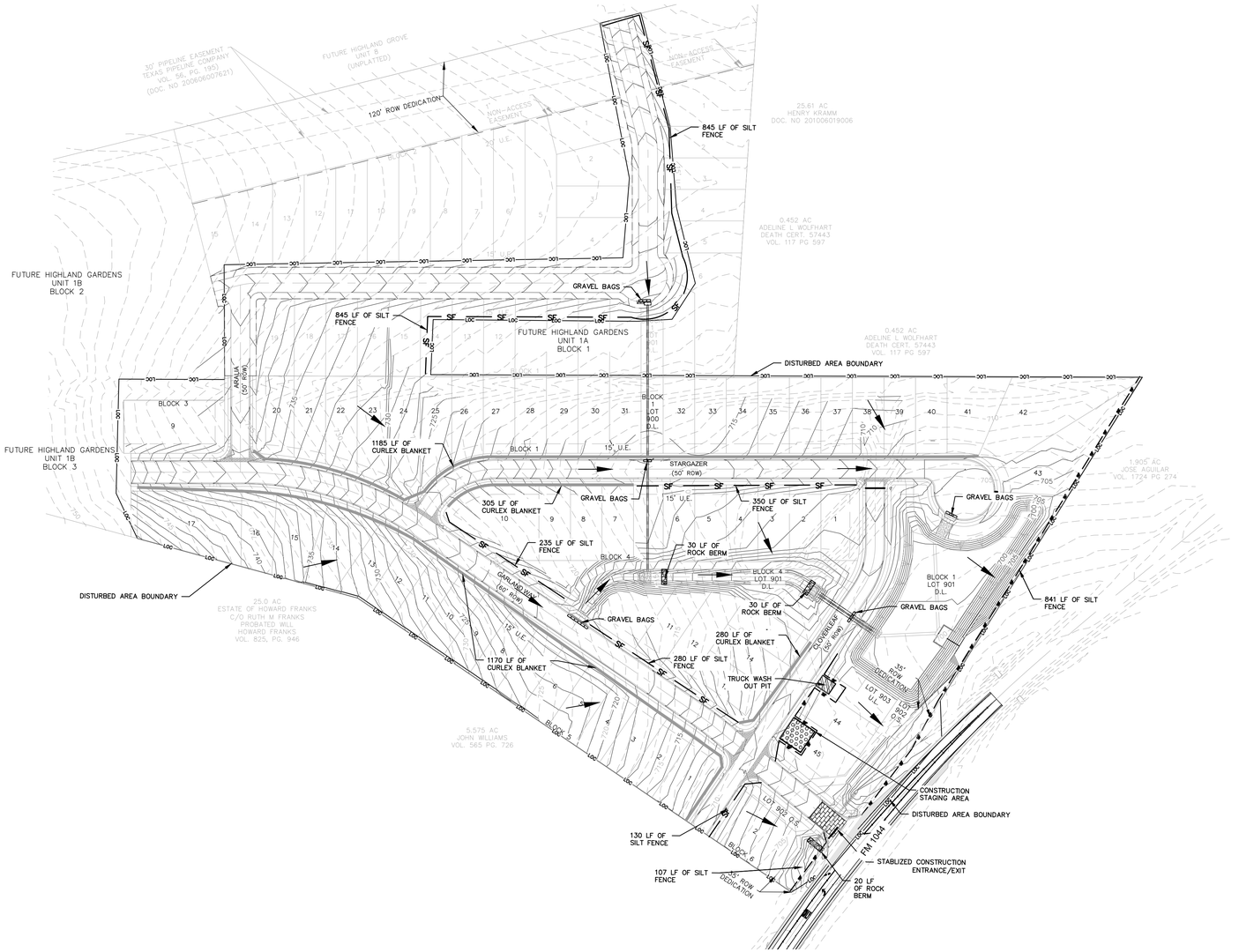
HIGHLAND GARDENS UNIT 2

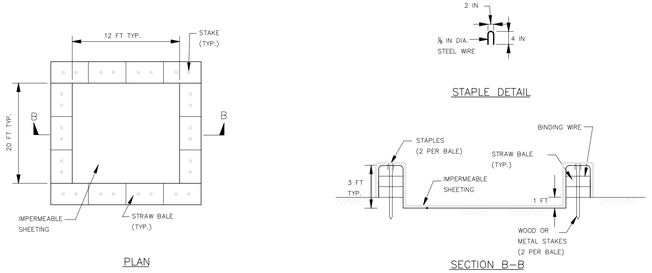
NEW BRAUNFELS, TEXAS

SHEET 6 OF 45

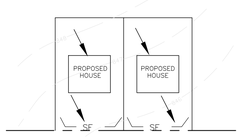
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Drawing Name: N:\Projects\CIVIL\01 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\6 DRAINAGE AREA MAP - PROPOSED SCS.dwg User: BrittanyReinert May 14, 2021 - 11:52am



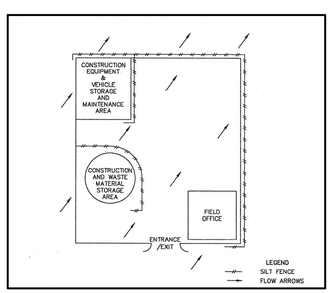


TYPICAL CONCRETE TRUCK WASHOUT PIT

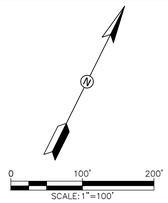


TYPICAL SILT FENCE AT RESIDENTIAL LOT

NOTE:
RESIDENTIAL LOT CONSTRUCTION MUST MEET THE REQUIREMENTS OF THIS WPAP AS WELL AS WITH LOCAL, STATE, AND FEDERAL REGULATIONS. TEMPORARY BMPS MUST BE IN PLACE PRIOR TO ANY RESIDENTIAL LOTS CONSTRUCTION.



TYPICAL CONSTRUCTION STAGING AREA



LEGEND

- SF — SILT FENCE
- BOUNDARY OF DISTURBED AREA
- 900 — EXISTING CONTOURS
- 900 — PROPOSED CONTOURS
- EDGE OF PAVEMENT
- FLOW ARROWS
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING WATER METER
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING TREE
- STABLIZED CONSTRUCTION ENTRANCE/EXIT
- TRUCK WASH OUT PIT
- CONSTRUCTION STAGING AREA
- ROCK BERM
- GRAVEL FILTER BAGS
- CURLEX BLANKET

SEQUENCE OF CONSTRUCTION:

1. OBTAIN CITY APPROVED SITE PREPARATION PLANS, AND TPDES PERMIT (NOT A COPY OF THE TPDES APPLICATION TO TCEQ), IF APPLICABLE.
2. INSTALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS.
3. BEGIN DEMOLITION ACTIVITIES, IF APPLICABLE.
4. BEGIN SITE CLEARING AND GRADING.
5. RESTORE AND REVEGETATE ALL DISTURBED AREAS NOT UNDER IMPERMEABLE IMPROVEMENTS.
6. COMPLETE ANY REMAINING "PUNCH LIST" ITEMS.
7. CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROLS AFTER PERMANENT STABILIZATION IS AT LEAST 70% EVENLY ESTABLISHED. RYE IS NOT ACCEPTED.

EROSION CONTROL 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 IN THE SWPPP DOCUMENTS 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. 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.
7. 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 PROJECT SPECIFICATIONS.
8. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UP-GRADIENT AREAS.
9. 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.
10. UPON COMPLETION OF 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.
11. 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).
12. 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.

RESIDENTIAL LOT STABILIZATION

1. CURELX BLANKET (I) (4' MIN WIDTH) OR ENGINEER APPROVED EQUAL
2. CURLEX MUST BE INSTALLED PER MANUFACTURER SPECIFICATIONS.
3. MAX SLOPE FOR CURLEX (I) < 2H : 1V

SOIL STABILIZATION NOTE

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.

SUBSTANTIAL GRADING IS PROPOSED WITH THIS UNIT. PER THE NEW BRAUNFELS DRAINAGE AND EROSION CONTROL DESIGN MANUAL SEC. 13.2(N), 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 TIME.

HYDRAULIC MULCH

MATERIALS:

HYDRAULIC MULCHES: WOOD FIBER MULCH CAN BE APPLIED ALONE OR AS A COMPONENT OF HYDRAULIC MATRICES. WOOD FIBER APPLIED ALONE IS TYPICALLY APPLIED AT THE RATE OF 2,000 TO 4,000 LB/ACRE. WOOD FIBER MULCH IS MANUFACTURED FROM WOOD OR WOOD WASTE FROM LUMBER MILLS OR FROM URBAN SOURCES.

HYDRAULIC MATRICES: HYDRAULIC MATRICES INCLUDE A MIXTURE OF WOOD FIBER AND ACRYLIC POLYMER OR OTHER TACKIFIER AS BINDER. APPLY AS A LIQUID SLURRY USING A HYDRAULIC APPLICATION MACHINE (I.E., HYDRO SEEDER) AT THE FOLLOWING MINIMUM RATES, OR AS SPECIFIED BY THE MANUFACTURER TO ACHIEVE COMPLETE COVERAGE OF THE TARGET AREA: 2,000 TO 4,000 LB/ACRE WOOD FIBER MULCH, AND 5 TO 10% (BY WEIGHT) OF TACKIFIER (ACRYLIC COPOLYMER, GUAR, PSYLLIUM, ETC.)

BONDED FIBER MATRIX: BONDED FIBER MATRIX (BFM) IS A HYDRAULICALLY APPLIED SYSTEM OF FIBERS AND ADHESIVES THAT UPON DRYING FORMS AN EROSION RESISTANT BLANKET THAT PROMOTES VEGETATION, AND PREVENTS SOIL EROSION. BFMS ARE TYPICALLY APPLIED AT RATES FROM 3,000 LB/ACRE TO 4,000 LB/ACRE BASED ON THE MANUFACTURER'S RECOMMENDATION. A BIODEGRADABLE BFM IS COMPOSED OF MATERIALS THAT ARE 100% BIODEGRADABLE. THE BINDER IN THE BFM SHOULD ALSO BE BIODEGRADABLE AND SHOULD NOT DISSOLVE OR DISPERSE UPON RE-WETTING. TYPICALLY, BIODEGRADABLE BFMS SHOULD NOT BE APPLIED IMMEDIATELY BEFORE, DURING OR IMMEDIATELY AFTER RAINFALL IF THE SOIL IS SATURATED. DEPENDING ON THE PRODUCT, BFMS TYPICALLY REQUIRE 12 TO 24 HOURS TO DRY AND BECOME EFFECTIVE.

INSTALLATION:

1. PRIOR TO APPLICATION, ROUGHEN EMBANKMENT AND FILL AREAS BY ROLLING WITH A CRIMPING OR PUNCHING TYPE ROLLER OR BY TRACK WALKING. TRACK WALKING SHALL ONLY BE USED WHERE OTHER METHODS ARE IMPRACTICAL.
2. TO BE EFFECTIVE, HYDRAULIC MATRICES REQUIRE 24 HOURS TO DRY BEFORE RAINFALL OCCURS.
3. AVOID MULCH OVER SPRAY ONTO ROADS, SIDEWALKS, DRAINAGE CHANNELS, EXISTING VEGETATION, ETC.
4. 4" OF TOP SOIL SHALL BE PLACED.

INSPECTION AND MAINTENANCE GUIDELINES:

1. MULCHED AREAS SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE.
2. AREAS DAMAGED BY STORMS OR NORMAL CONSTRUCTION ACTIVITIES SHOULD BE REGRADED AND HYDRAULIC MULCH REAPPLIED AS SOON AS PRACTICAL.

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608-8971
SPECTRUM CABLE	1-800-892-4357
CENTERPOINT GAS	(800) 427-7142
AT&T	(830) 303-1333
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY 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.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTORS 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 EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

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

STATE OF TEXAS — JAMES INGALLS — 107416 — LICENSED PROFESSIONAL ENGINEER — 11-11-20

NO	DATE	ISSUES AND REVISIONS

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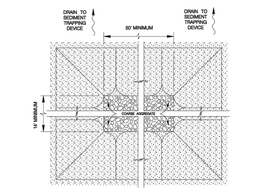
EROSION CONTROL PLAN

HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

SHEET 7 OF 45

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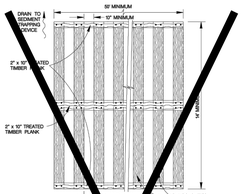
Drawing Name: N:\Projects\X20000 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\7 EROSION CONTROL PLAN.dwg User: SteveGarcia Nov 12, 2020 - 11:26am



GENERAL NOTES

1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS,BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE,BITUMINOUS CONCRETE,PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

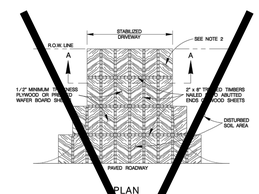
CONSTRUCTION EXIT – TYPE 1



GENERAL NOTES

1. THE LENGTH OF THE TYPE 2 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS,BUT NOT LESS THAN 50'.
2. THE TREATED TIMBER PLANKS SHALL BE ATTACHED TO THE RAILROAD TIES WITH 1-1/2" x 6" MIN. LAG BOLTS. OTHER FASTENERS MAY BE USED AS APPROVED BY THE ENGINEER.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN.,AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE,BITUMINOUS CONCRETE,PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
6. THE CONSTRUCTION EXIT SHOULD BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
7. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

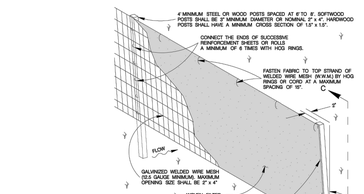
CONSTRUCTION EXIT – TYPE 2

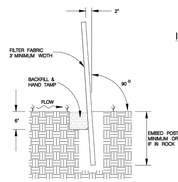


GENERAL NOTES

1. THE LENGTH OF THE TYPE 3 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. THE TYPE 3 CONSTRUCTION EXIT MAY BE CONSTRUCTED FROM OPEN GRADED CRUSHED STONE WITH A SIZE OF 2 TO 4 INCHES SPREAD A MINIMUM OF 4 INCHES THICK TO THE LIMITS SHOWN ON THE PLANS.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN.,AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT – TYPE 3





SEDIMENT CONTROL FENCE USAGE GUIDELINES

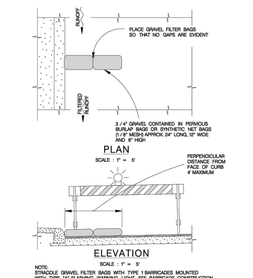
A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUN-OFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 100 GPM /FT SQUARED. SEDIMENT CONTROL FENCE IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA LARGER THAN 0.2 ACRES.

GENERAL NOTES

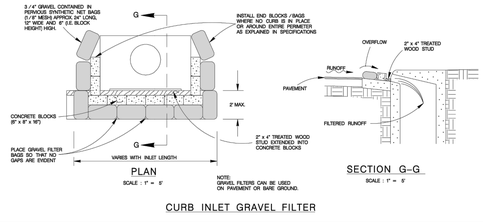
1. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

TEMPORARY SEDIMENT CONTROL FENCE



NOTE:
STRADDLE GRAVEL FILTER BAGS WITH TYPE I BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER,FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

GRAVEL FILTER BAGS



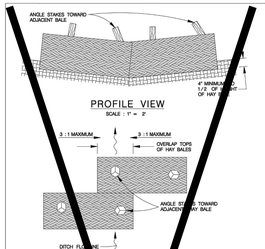
CURB INLET GRAVEL FILTER

JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1

% SUBMITTAL PROJECT NO.: DATE:
DRAWN BY: V. VASQUEZ DSGN BY: CHKD. BY: SHEET NO.: OF



BALED HAY USAGE GUIDELINES

A BALED HAY INSTALLATION MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A TWO YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE THRU RATE OF FLOW IN GPM/SQUARE FOOT OF CROSS SECTIONAL AREA. BALED HAY MAY BE USED AT THE FOLLOWING LOCATIONS:

1. WHERE THE FLOW APPROACHING THE BALED HAY FLOWS OVER DISTURBED SOIL FOR LESS THAN 100' AND THE SLOPE OF THE DISTURBED SOIL EQUAL TO 10 % THE LENGTH OF SLOPE UPSTREAM OF THE BALED HAY SHOULD BE LESS THAN 50'.
2. WHERE THE INSTALLATION WILL BE REQUIRED FOR LESS THAN THREE MONTHS.
3. WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 1/2 ACRE.

FOR BALED HAY INSTALLATIONS IN SMALL DITCHES,THE FOLLOWING ADDITIONAL CONDITIONAL CONSIDERATIONS APPLY:

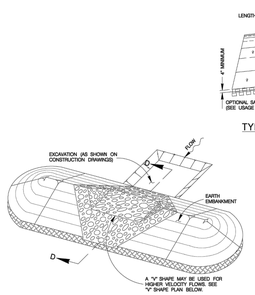
1. THE DITCH SIDESLOPES SHOULD BE GRADED AS FLAT AS POSSIBLE TO MAXIMIZE THE DRAINAGE FLOW RATE THRU THE HAY.
2. THE DITCH SHOULD BE GRADED LARGE ENOUGH TO CONTAIN THE CONCENTRATED DRAINAGE FLOW WHEN SEDIMENT HAS FILLED TO THE TOP OF THE BALED HAY.

BALES SHOULD BE REPLACED USUALLY EVERY 2 MONTHS OR MORE OFTEN DURING WET WEATHER WHEN LOSS OF STRUCTURAL INTEGRITY IS ACCELERATED.

GENERAL NOTES

1. HAY BALES SHALL BE A MINIMUM OF 30" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS.
2. HAY BALES SHALL BE BOUND BY EITHER WIRE OR NYLON OR POLYPROPYLENE STRING. HAY BALES SHALL BE COMPOSED ENTIRELY OF VEGETABLE MATTER.
3. HAY BALES SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4" AND, WHERE POSSIBLE, LONG-HALF THE HEIGHT OF THE BALE.
4. HAY BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES. THE BALES SHALL BE PLACED WITH BINDINGS PARALLEL TO THE GROUND.
5. HAY BALES SHALL BE SECURELY ANCHORED IN PLACE WITH 3 / 8" DIA.REBAR OR 2" x 2" WOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE SHALL BE ANGLED TOWARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

BALED HAY FOR EROSION CONTROL



ROCK FILTER DAMS

ROCK FILTER DAM USAGE GUIDELINES

ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF AND /OR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 40 GPM /FT SQUARED OF CROSS SECTIONAL AREA. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.

TYPE 1 (36" HIGH, WITH NO WIRE MESH):

TYPE 1 MAY BE USED AT THE TOE OF SLOPES,AROUND INLETS,IN SMALL DITCHES AND AT DIKE OR SWALE OUTLETS. THIS TYPE OF DAM IS RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA OF 5 ACRES OR LESS. TYPE 1 MAY NOT BE USED IN CONCENTRATED HIGH VELOCITY FLOWS (APPROXIMATELY 8 FT./SEC. OR MORE) IN WHICH AGGREGATE WASH OUT MAY OCCUR. SANDBAGS MAY BE USED AT THE EMBEDDED FOUNDATION (4" DEEP TRENCH) OF THE DAM FOR ADDITIONAL EFFICIENCY OF LOW FLOWS IF CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

TYPE 2 (36" HIGH, WITH WIRE MESH):

TYPE 2 MAY BE USED IN DITCHES AND AT DIKE OR SWALE OUTLETS.

TYPE 3 (36" HIGH, WITH WIRE MESH):

TYPE 3 MAY BE USED IN STREAM FLOW AND SHOULD BE SECURED TO THE STREAM BED.

TYPE 4 (SACK GABIONS):

TYPE 4 MAY BE USED IN DITCHES AND SMALLER CHANNELS TO FORM AN EROSION CONTROL DAM.

GENERAL NOTES

1. IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER,FILTER DAMS SHOULD BE PLACED ACROSS THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED UPSTREAM AND / OR DOWNSTREAM AT DRAINAGE STRUCTURES,AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
2. MATERIALS (AGGREGATE,WIRE MESH,SANDBAGS,ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL.
3. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE STORM WATER POLLUTION PREVENTION PLANS.
4. SIDE SLOPES SHOULD BE 2 : 1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDE SLOPES OF 6 : 1 OR FLATTER.
5. MANTAIN A MINIMUM OF 7 BETWEEN TOP OF ROCK FILTER DAM WEIR AND TOP OF EMBANKMENT FOR FILTER DAMS AT SEDIMENT TRAPS.
6. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" INTO THE EXISTING GROUND.
7. THE SEDIMENT TRAP FOR PONDING OF SEDIMENT LADEN RUNOFF SHALL BE OF THE DIMENSIONS SHOWN ON THE PLANS.
8. ROCK FILTER DAM TYPES 2 & 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL OPENINGS.THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT AND SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO THE DOWNSTREAM SIDE. FOR DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. IN STREAM USE,THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.
9. SACK GABIONS SHOULD BE STAKED DOWN WITH 3 /4" DIA.REBAR STAKES.
10. FLOW OUTLET SHOULD BE ONTO A STABILIZED AREA (VEGETATION, ROCK, ETC.).
11. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 2

% SUBMITTAL PROJECT NO.: DATE:
DRAWN BY: V. VASQUEZ DSGN BY: CHKD. BY: SHEET NO.: OF

Drawing Name: N:\Projects\XD0001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\5 EROSION CONTROL PLAN DETAILS.dwg User: StevenGarcia Nov 12, 2020 - 11:26am

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JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
11-11-20

NO	DATE	ISSUES AND REVISIONS

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PH: 830-358-7127 www.mo-tx.com
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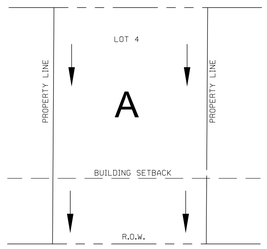
EROSION CONTROL PLAN DETAILS

HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

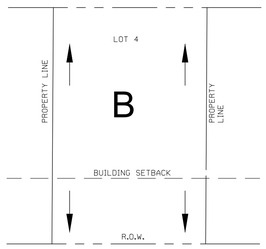
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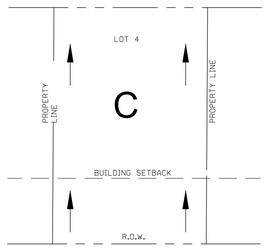
TYPE A LOT GRADING

RUNOFF FLOW TO FRONT OF LOT



TYPE B LOT GRADING

RUNOFF FLOW TO FRONT AND REAR OF LOT



TYPE C LOT GRADING

RUNOFF FLOW TO REAR OF LOT

GENERAL SPECIFICATIONS FOR SITE PREPARATION

GENERAL DESCRIPTION
THIS ITEM SHALL CONSIST OF ALL CLEARING AND PREPARATION OF LAND TOO BE FILLED, FILLING OF THE LAND, SPREADING, COMPACTION TESTING AND INSPECTION OF THE FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING OF THE CUT AND FILL AREAS TO CONFORM WITH THE LINES, GRADES AND SLOPES AS SHOWN ON THE APPROVED PLANS.

SCARIFYING THE AREA TO BE FILLED
ALL ORGANIC MATTER SHALL BE REMOVED FROM THE SURFACE UPON WHICH THE FILL MATERIAL
IS TO BE PLACED, AND SURFACE SHALL BE DISKED OR SCARIFIED TO A MINIMUM DEPTH OF SIX INCHES (6"). ALL SURFACE RUTS OR OTHER UNEVEN FEATURES WLL BE LEVELED PRIOR TO FIELD DENSITY TESTING.

COMPACTING THE AREA TO BE FILLED
FOLLOWING THE CLEARING AND DISKING OR SCARIFYING OF THE FILL AREA, IT SHALL BE BLADED UNTIL IT IS UNIFORM AND FREE FROM LARGE CLODS. THE AREA SHALL BE BROUGHT TO ADEQUATE MOISTURE CONTENT AND COMPACTED (TYPICALLY) TO NOT LESS THAN NINETY PERCENT (90%) OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT ASTM D 1557 COMPACTION PROCEDURE, OR 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH THE THD–TEX–113–E COMPACTION PROCEDURE. ALL AREAS EXCEEDING (6") SIX INCHES IN DEPTH, MUST MEET WITH FHA/HUD HANDBOOK 4140.30 SPECIFICATIONS FOR LAND DEVELOPMENTS ON CONTROLLED EARTHWORK, DATASHEET 79G.

FILL MATERIALS
THE MATERIALS USED SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES, SUCH AS TREES, BRUSH AND RUBBISH.

DEPTH AND MIXING OF FILL LAYERS
THE SELECTED FILL MATERIAL SHALL BE PLACED IN LEVEL, UNIFORM LAYERS WHICH, WHEN COMPACTED, SHALL HAVE A DENSITY CONFORMING TO THE STIPULATED ABOVE. EACH LAYER SHALL BE THOROUGHLY MIXED DURING THE SPREADING TO ENSURE UNIFORMITY OF MATERIAL IN EACH LAYER. COMPACTED LAYER THICKNESS MAY VARY DEPENDING ON THE COMPACTION EQUIPMENT OF THE DEMONSTRATED CAPABILITY.

ROCK
WHEN FILL MATERIAL INCLUDES ROCK, THE MAXIMUM ROCK SIZE SHALL BE AS APPROVED BY THE GEOTECHNICAL ENGINEER. NO LARGE ROCKS SHALL BE ALLOWED TO NEST AND ALL VOIDS MUST BE FILLED WITH SMALL STONES OR SOIL AND ADEQUATELY COMPACTED.

COMPACTION OF FILL LAYER
COMPACTION EQUIPMENT SHALL BE CAPABLE OF COMPACTING THE FILL TO THE SPECIFIED DENSITY. COMPACTION SHALL BE ACCOMPLISHED WHILE THE FILL MATERIAL IS AT OR NEAR THE APPROPRIATE MOISTURE CONTENT. COMPACTION OF EACH LAYER SHALL BE CONTINUOUS OVER THE ENTIRE STRUCTURAL AREA (BENEATH PROPOSED STRUCTURES).

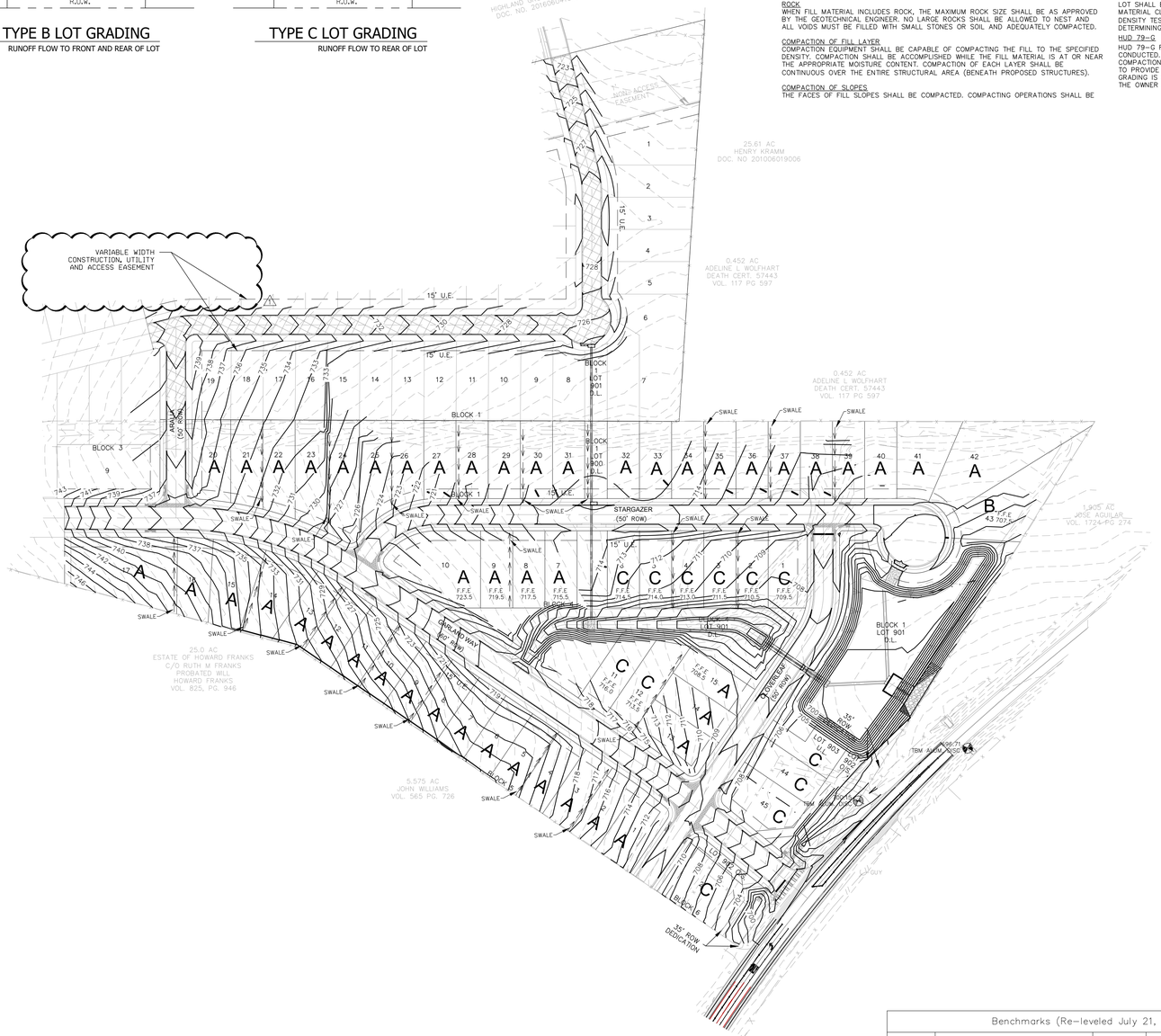
COMPACTION OF SLOPES
THE FACES OF FILL SLOPES SHALL BE COMPACTED. COMPACTING OPERATIONS SHALL BE CONTINUED UNTIL THE SLOPE FACES ARE STABLE BUT NOT TOO DENSE FOR PLANTING ON THE SLOPES. COMPACTION OF THE SLOPE FACE MAY BE DONE PROGRESSIVELY IN INCREMENTS OF THREE TO FIVE FEET (3' TO 5') IN FILL HEIGHT AS THIS FILL PROGRESSES OR AFTER THE FILL HAS BEEN BROUGHT TO ITS TOTAL HEIGHT.

DENSITY TEST
FIELD DENSITY TESTS SHALL BE PERFORMED ON ALL LAYERS OF FILL WHEN THE FILL IS BEING PLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE MAXIMUM FILL HEIGHT BETWEEN DENSITY TESTING SHALL BE TWELVE INCHES (12"). ALL TESTING SHALL BE REQUESTED BY THE CONTRACTOR TO MEET THE CONTRACTOR'S CONSTRUCTION SCHEDULE. NOTIFICATION BY THE CONTRACTOR TO CONDUCT TESTS SHALL BE AT LEAST THE DAY BEFORE. THIS NOTIFICATION SHALL INCLUDE THE FILL AREA LOCATION (LOT AND BLOCK), THE LIFT OR HEIGHT OF FILL AND APPROXIMATE DESIRED TIME OF TESTING. WHEN THESE TESTS INDICATE THAT THE DENSITY OF ANY LAYER OF FILL OR PORTION THEREOF IS BELOW THE REQUIRED DENSITY, THE PARTICULAR LAYER OR PORTION SHALL BE REWORKED AND RETESTED AT THE EXPENSE OF THE CONTRACTOR UNLESS THE CONTRACTOR CAN SHOW EVIDENCE THAT CIRCUMSTANCES BEYOND HIS CONTROL REQUIRED THE RETESTING. GENERALLY, THE SPECIFIC TESTING WILL BE AS FOLLOWS AND CONDUCTED BY A GEOTECHNICAL ENGINEER OR STAFF.

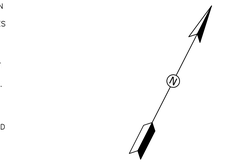
1. THE LAND TO BE FILLED (PREPARED SUBGRADE) SHALL BE PREPARED AND TESTED AT A FREQUENCY AS DETERMINED BY THE GEOTECHNICAL ENGINEER.
2. THE FIRST LIFT OF COMPACTED FILL (GENERALLY 8–12 IN.) SHALL BE TESTED AS DETERMINED BY THE GEOTECHNICAL ENGINEER. ANY AREAS SUPPORTING THE PROPOSED STRUCTURES REQUIRING FILL SHALL BE TESTED FOR DENSITY COMPLIANCE.
3. FILL AREAS SHALL BE TESTED AT A MAXIMUM OF EACH TWELVE INCHES (12") OF FILL.
4. TEST RESULTS WILL BE PROVIDED BY THE FIELD TECHNICIAN TO THE CONTRACTOR WHEN POSSIBLE; HOWEVER, ALL TEST RESULTS ARE TO BE REVIEWED BY THE GEOTECHNICAL ENGINEER FOR COMPLIANCE. THE ENGINEER WILL NOTIFY THE CONTRACTOR OF ALL TEST RESULTS.

CUT/FILL LOTS
AREAS INVOLVING CUT ON THE PORTION AND FILL ON ANOTHER PORTION OF A SPECIFIC LOT SHALL BE PREPARED TO A MINIMUM DEPTH OF 6 IN., AND WILL BE THE SAME MATERIAL CLASSIFICATION AT THE SAME COMPACTION AND MOISTURE CONTENT. FIELD DENSITY TESTS SHALL BE REQUIRED ON EACH CUT/FILL LOT FOR THE PURPOSE OF DETERMINING UNIFORMITY OF THE AREA SUPPORTING THE PROPOSED STRUCTURES.

HUD 79–G
HUD 79–G REQUIREMENT FOR FILL MATERIAL OF 6 INCHES AND MORE WILL BE CONDUCTED. ALL CUT AREAS WILL ALSO MEET THE REQUIREMENTS FOR HUD 79–G COMPACTION TESTING. IN ADDITION, CONTRACTOR MUST RETAIN A GEOTECHNICAL ENGINEER TO PROVIDE VERIFICATION OF ALL AREAS WHICH DO NOT REQUIRE HUD 79–G. AFTER SITE GRADING IS COMPLETED, CONTRACTOR TO RETAIN GEOTECHNICAL ENGINEER TO PROVIDE THE OWNER A 79–G LETTER.



Benchmarks (Re–leveled July 21, 2018)				
Point #	Description	Elevation	Northing	Easting
1668	TBM – ALUM. DISC ON CONC. HEADWALL	696.71	13789422.7617	2243233.2374
1742	TBM – ALUM. DISC.	700.15	13789272.8179	2243118.3806



LEGEND

- PROPOSED CONTOUR
- EXISTING CONTOUR
- DRAINAGE FLOW ARROW
- GRADE BREAK/SWALE
- TEMP. EMERGENCY ACCESS BASE

GRADING NOTES:

1. 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).
2. GRADING SHOWN ON THIS GRADING PLAN IS FOR MASS GRADING PURPOSES ONLY. FINAL GRADING AROUND HOMES, SETTING FINISHED FLOOR ELEVATIONS, ETC. WILL BE DONE AS PART OF EACH BUILDING PERMIT PROCESSED FOR THE INDIVIDUAL HOMES.
3. IN ALL FILL AREAS, LOOSE OR ORGANIC MATTER SHALL BE STRIPPED AND REMOVED FROM THE SITE UPON WHICH THE FILL IS TO BE PLACED AND THE AREA SHALL BE BROUGHT TO THE PROPER GRADE GRADE WITH ADEQUATE MOISTURE CONTENT AND COMPACTED TO NOT LESS THAN 90% DENSITY.
4. CONTRACTOR TO INSURE THAT ALL LOTS FILLED WILL HAVE POSITIVE DRAINAGE TO PREVENT ANY PONDING OF WATER AND PROVIDE A MINIMUM FINAL GRADE OF 1.2% WITHIN THE LOT.
5. CONTRACTOR TO CONTACT OWNER PRIOR TO ANY LOT FILLING TO DETERMINE IF TREES WITHIN THE FILL AREA CAN BE SAVED.
6. ALL LARGE ROCKS 10" OR LARGER SHALL BE KEPT OUT OF THE FILL SITE UNLESS INSTRUCTED BY THE OWNER TO PLACE SUCH ROCKS ON THE SITE.
7. CONTRACTOR TO ENSURE POSITIVE DRAINAGE FOR ALL GRADING WITHIN LIMITS OF PROJECT.
8. FINISHED FLOOR ELEVATION FOR HOMES WILL BE A MINIMUM OF 12" ABOVE THE TOP OF CURB FRONTING THE LOT, AND ON C LOTS' DRIVEWAY SWALE FLOWLINE WILL BE A MINIMUM OF 6" BELOW THE FINISHED FLOOR OF THE HOUSE.

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STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
11-11-20

NO	DATE	ISSUES AND REVISIONS
1	4-22-2020	REVISED PER COMM'TS

MOELLER & ASSOCIATES Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX 78132
PH: 830–358–7127 www.mo–tx.com
TBPE FIRM F-13351

GRADING PLAN

HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 9 OF 45

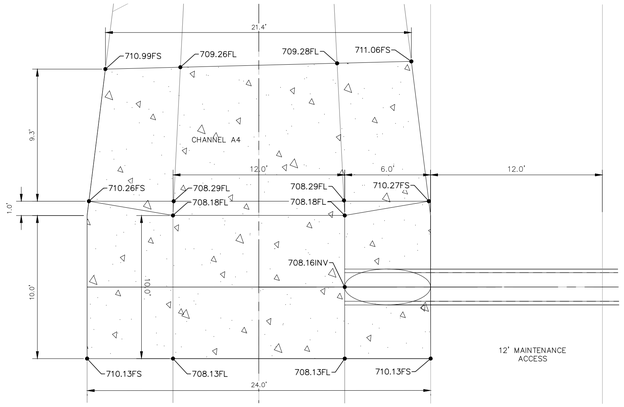
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Drawing Name: N:\Projects\125000 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\9 GRADING PLAN.dwg User: StevenGarcia Nov 12, 2020 – 11:18am

STORM DRAIN A					
NAME	V (ft/s)	UPSTREAM 2-YR HGL	GUTTER ELEV	DIFF	2-YR velocity > 2.5 fps?
PIPE A1	3.97				
INLET A1		709.6	712.6	2.9	✓
PIPE A1	10.97				
INLET A2		719.0	724.6	5.6	✓

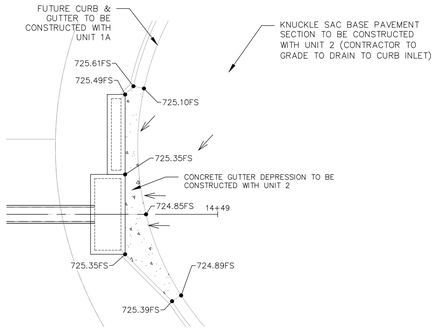
STORM DRAIN A					
NAME	V (ft/s)	UPSTREAM 25-YR HGL	GUTTER ELEV	DIFF	25-YR HGL 2' Below Gutter?
PIPE A1	4.64				
INLET A1		710.4	712.6	2.2	✓
PIPE A1	13.45				
INLET A2		719.8	724.6	4.8	✓

STORM DRAIN A					
NAME	V (ft/s)	UPSTREAM 100-YR HGL	GUTTER ELEV	DIFF	100-YR HGL 2' Below Ground?
PIPE A1	6.82				
INLET A1		711.3	712.6	1.24	✓
PIPE A1	12.73				
INLET A2		721.2	724.6	3.4	✓



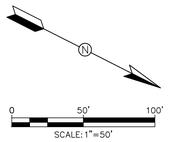
DOWNSTREAM CONCRETE RIPRAP DETAIL

SCALE: 1" = 5'



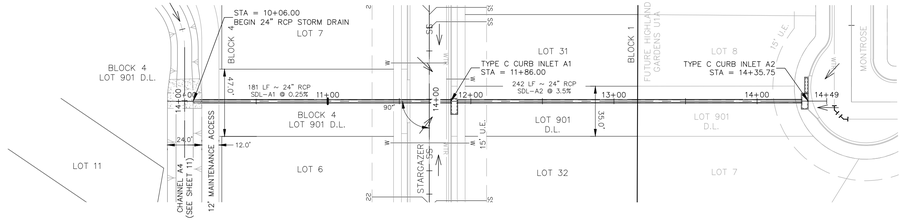
INLET A2 CONCRETE DEPRESSION DETAIL

SCALE: 1" = 10'

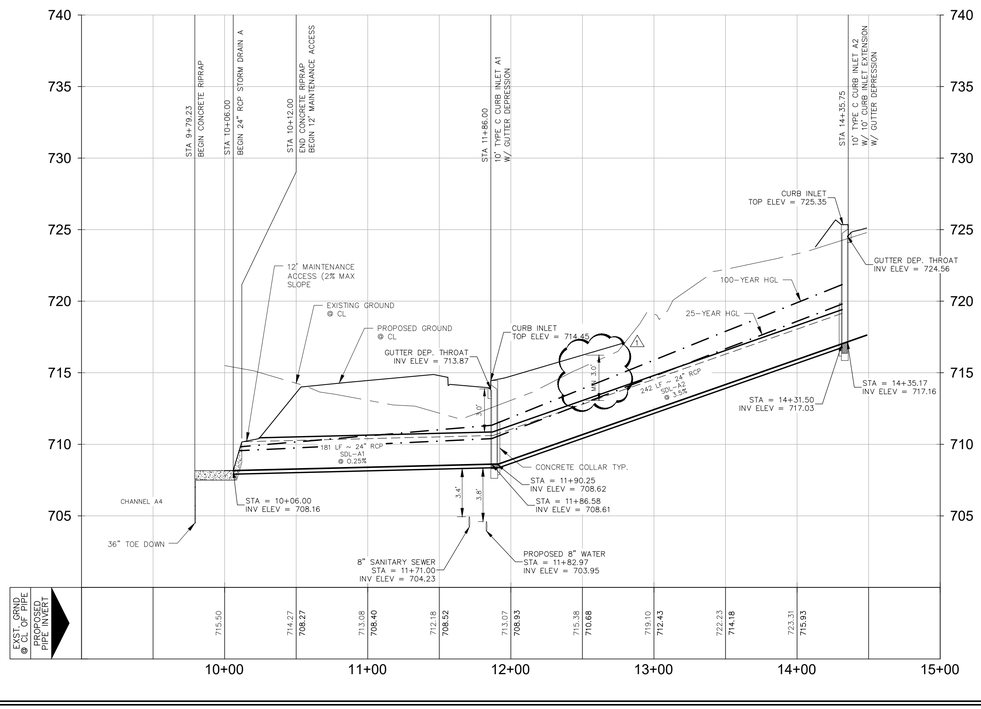


LEGEND

- COMPACTED FILL
- CONCRETE
- ROCK RIP-RAP
- CHANNEL CENTERLINE



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



CHANNEL NOTES:
CONSTRUCTION SPECIFICATION – TOP SOIL

1. VEGETATION OF POND BOTTOM – THE WORK CONSISTS OF PLACEMENT OF TOP SOIL ON NEW EARTH EMBANKMENTS, OTHER EARTHFILLS, AND EARTH BACKFILLS REQUIRED BY THE DRAWINGS.

2. MATERIAL – THE TOPSOIL SHALL BE FERTILE SOIL, CONSISTING PRIMARILY OF CLAY AND CLAYEY MATERIALS, WITH A PLASTICITY INDEX GREATER THAN 15, AND SHALL BE FREE OF LARGE ORGANIC OR ROCK MATERIAL.

3. APPLICATION – TOPSOIL SHALL BE PLACED AT GRADES INDICATED ON THE PLANS AND ROLLED TO REDUCE EROSION. PERIODIC INSPECTION ARE REQUIRED AND ADDITIONAL TOPSOIL ADDED AS NEEDED UNTIL VEGETATION HAS ESTABLISHED

CONSTRUCTION SPECIFICATION – VEGETATION

1. VEGETATION OF EMBANKMENT – THE WORK CONSISTS OF ESTABLISHING VEGETATION ON NEW EARTH EMBANKMENTS, OTHER EARTHFILLS, AND EARTH BACKFILLS REQUIRED BY THE DRAWINGS.

2. MATERIAL – VEGETATION SHALL CONSIST OF "NATIVE SUN TURF GRASS" AS SUPPLIED BY NATIVE AMERICAN SEED IN JUNCTION, TX, CONSISTING OF 34% BLUE GRAMA AND 64% BUFFALO GRASS, OR ENGINEER APPROVED EQUAL. SEED MIXTURE SHALL CONSIST OF A PURE LIVE SEED OF 90-95%

3. APPLICATION – THE SEED MIXTURE SHALL BE INSTALLED PER DISTRIBUTORS RECOMMENDATIONS AT A RATE OF 1 LB PER 400 SQFT. SEED MIXTURE SHALL BE WATERED AS REQUIRED UNTIL VEGETATION IS ESTABLISHED.

DRAINAGE INFRASTRUCTURE MAINTENANCE AND MONITORING GUIDELINES

- ACCESS – DRIVE OVER TOP OF CURB FOR MOWING AND MAINTENANCE OF DETENTION POND.

CHANNEL A2 – ACCESSED FROM STARGAZER, DRIVING OVER TOP OF CURB TO LOT 901, BLOCK 4.

CHANNEL A4 – ACCESSED FROM GARLAND WAY AND CLOVERLEAF, DRIVING OVER TOP OF CURB TO LOT 901, BLOCK 4.

- SEASONAL MOWING AND LAWN CARE – IF THE CHANNEL IS MADE UP OF TURF GRASS, IT SHOULD BE MOWED AS NEEDED TO LIMIT VEGETATION HEIGHT TO 18 INCHES, USING A MULCHING MOWER (OR REMOVAL OF CLIPPINGS). IF NATIVE GRASSES ARE USED, THE CHANNEL MAY REQUIRE LESS FREQUENT MOWING, BUT A MINIMUM OF TWICE ANNUALLY. REGULAR MOWING SHOULD ALSO INCLUDE WEED CONTROL PRACTICES. HOWEVER HERBICIDE USE SHOULD BE KEPT TO A MINIMUM. HEALTHY GRASS CAN BE MAINTAINED WITHOUT USING FERTILIZERS BECAUSE RUNOFF USUALLY CONTAINS SUFFICIENT NUTRIENTS. IRRIGATION OF THE SITE CAN HELP ASSURE A DENSE AND HEALTHY VEGETATIVE COVER.

- INSPECTION – INSPECT CHANNEL AT LEAST TWCE ANNUALLY FOR EROSION OR DAMAGE TO VEGETATION; HOWEVER, ADDITIONAL INSPECTION AFTER PERIODS OF HEAVY RUNOFF IS MOST DESIRABLE. MORE FREQUENT INSPECTIONS OF THE GRASS COVER DURING THE FIRST FEW YEARS AFTER ESTABLISHMENT WILL HELP TO DETERMINE IF ANY PROBLEMS ARE DEVELOPING, AND TO PLAN FOR LONG-TERM RESTORATIVE MAINTENANCE NEEDS. BARE SPOTS AND AREAS OF EROSION IDENTIFIED DURING SEMI-ANNUAL INSPECTIONS MUST BE REPLANTED AND RESTORED TO MEET SPECIFICATIONS.

- DEBRIS AND LITTER REMOVAL – THE CHANNEL AND CULVERTS SHOULD BE KEPT FREE OF OBSTRUCTIONS TO REDUCE FLOATABLES BEING FLUSHED DOWNSTREAM, AND FOR AESTHETIC REASONS. THE NEED FOR THIS PRACTICE IS DETERMINED THROUGH PERIODIC INSPECTION, BUT SHOULD BE PERFORMED NO LESS THAN 2 TIMES PER YEAR.

- SEDIMENT REMOVAL – SEDIMENT MAY ACCUMULATE WITHIN THE CHANNEL, PREVENTING UNIFORM OVERLAND FLOW. SEDIMENT SHOULD BE LIMITED TO HEIGHT OF 6 INCHES OR AT MINIMUM, REMOVED AT LEAST TWICE A YEAR.

STORM DRAIN AND CULVERT MAINTENANCE

- INSPECT INLETS, JUNCTION STRUCTURES, OUTLETS AND CHANNELS THROUGH PERIODIC INSPECTION BUT NO LESS THAN EVERY 6 MONTHS TO CLEAR STRUCTURES OF OBSTRUCTIONS, DEBRIS AND STRUCTURAL INTEGRITY.

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)
(830) 608-8971
SPECTRUM CABLE
1-800-892-4357
CENTERPOINT GAS
(800) 427-7142
AT&T
(830) 303-1333
NEW BRAUNFELS UTILITIES (ELECTRIC)
(830)-629-8400
TEXAS ONE CALL SYSTEM
811

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY 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.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTORS 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 EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

Know what's below. Call before you dig.

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
11-11-20

NO	DATE	ISSUES AND REVISIONS
1	4-22-2020	REVISED PER CONS COMMENTS
2	12-2-2020	REVISED PER COND COMMENTS

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PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

STORM DRAIN A

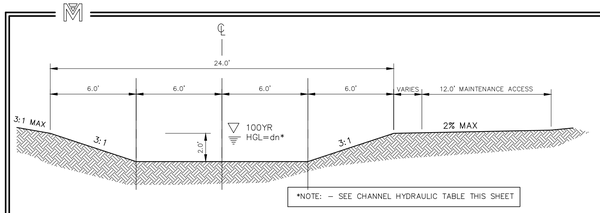
HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

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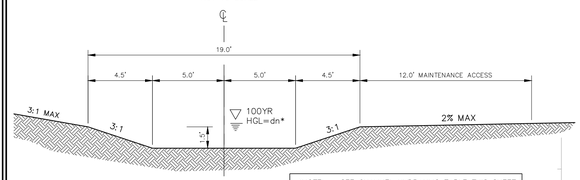
Drawing Name: N:\Projects\07K001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\U2 STORM DRAIN A.dwg User: BrittanyBrickert Dec 02, 2020 - 5:19pm



*NOTE: – SEE CHANNEL HYDRAULIC TABLE THIS SHEET

SECTION A4.1 - A4.1

NOT TO SCALE



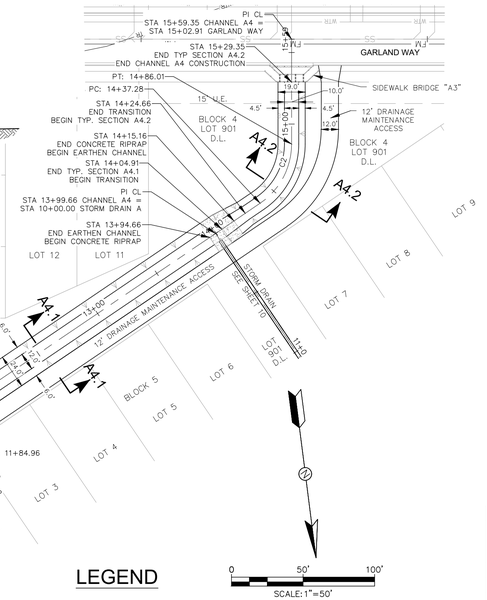
*NOTE: – SEE CHANNEL HYDRAULIC TABLE THIS SHEET

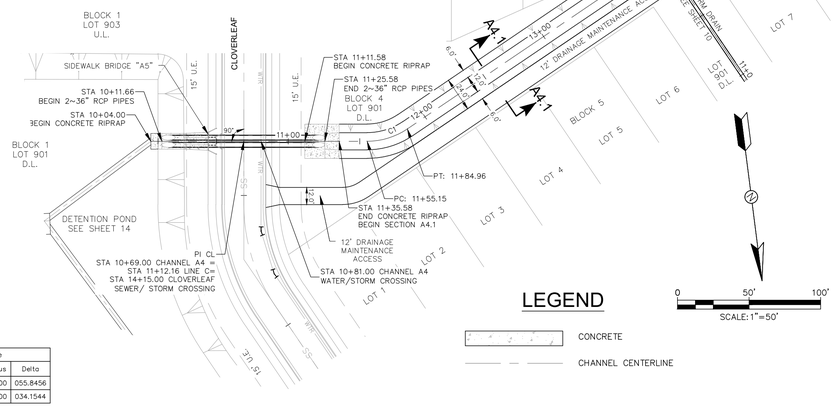
SECTION A4.2 - A4.2

NOT TO SCALE

CHANNEL "A4.1" HYDRAULICS

Q_2 (CFS)	S (%)	n	V_2 (FT/S)	dn (FT)	Tw (FT)	ΔH (FT)	REQUIRED DEPTH (dr) (FT)	DEPTH PROVIDED (D) (FT)
39.44	1.50	0.04	3.48	0.79	16.74	0.13	0.92	2.00
Q_{25} (CFS)	S (%)	n	V_{100} (FT/S)	dn (FT)	Tw (FT)	ΔH (FT)	REQUIRED DEPTH (dr) (FT)	DEPTH PROVIDED (D) (FT)
89.34	1.50	0.04	4.52	1.25	19.52	0.25	1.50	2.00
Q_{100} (CFS)	S (%)	n	V_{100} (FT/S)	dn (FT)	Tw (FT)	ΔH (FT)	REQUIRED DEPTH (dr) (FT)	DEPTH PROVIDED (D) (FT)
131.27	1.50	0.04	5.09	1.55	21.29	0.34	1.89	2.00





Curve Table			
Curve #	Length	Radius	Delta
C2	48.734	50.000	055.8456
C1	29.805	50.000	034.1544

LEGEND

CONCRETE

CHANNEL CENTERLINE

0 50' 100'

SCALE: 1"=50'

CHANNEL "A4.2" HYDRAULICS

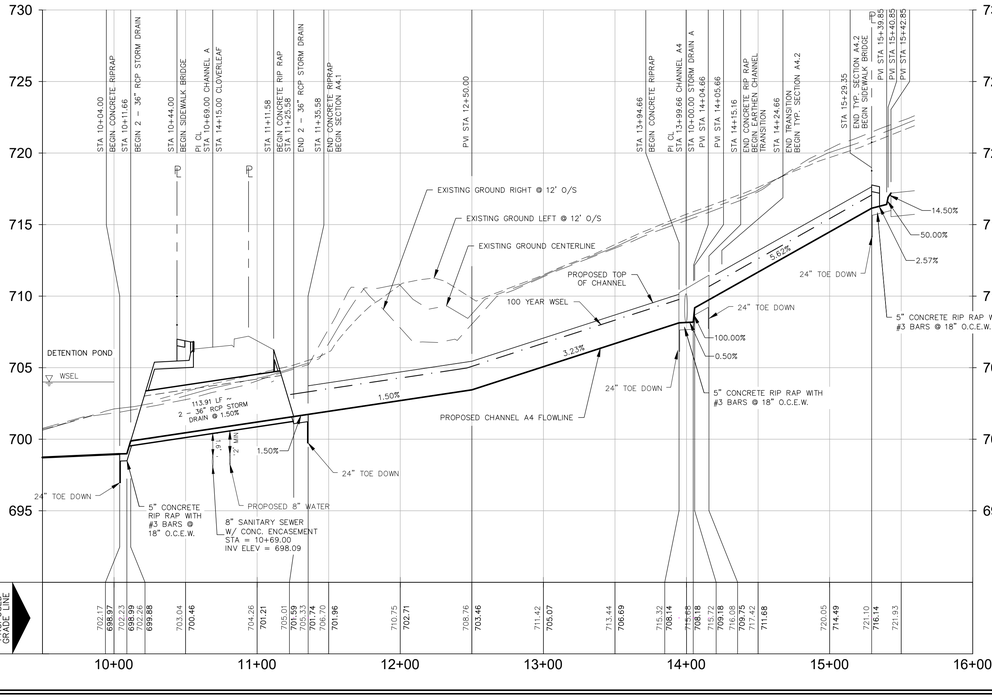
Q_2 (CFS)	S (%)	n	V_2 (FT/S)	dn (FT)	Tw (FT)	ΔH (FT)	REQUIRED DEPTH (dr) (FT)	DEPTH PROVIDED (D) (FT)
20.24	5.62	0.04	4.47	0.40	12.42	0.15	0.55	1.50
Q_{25} (CFS)	S (%)	n	V_{100} (FT/S)	dn (FT)	Tw (FT)	ΔH (FT)	REQUIRED DEPTH (dr) (FT)	DEPTH PROVIDED (D) (FT)
45.61	5.62	0.04	5.90	0.65	13.88	0.30	0.95	1.50
Q_{100} (CFS)	S (%)	n	V_{100} (FT/S)	dn (FT)	Tw (FT)	ΔH (FT)	REQUIRED DEPTH (dr) (FT)	DEPTH PROVIDED (D) (FT)
66.90	5.62	0.04	6.69	0.81	14.83	0.41	1.22	1.50

CULVERT A4 - CLOVERLEAF

STORM EVENT	CULVERT SIZE	H.W. ELEV	CULVERT Q (CFS)	CULVERT V (FT/S)	WEIR Q (CFS)	TOTAL Q (CFS)
25-YEAR	2 ~ 36" RCP	705.00	89.34	11.45	0.00	89.34
50-YEAR		705.47	107.76	11.94	0.00	107.76
100-YEAR		706.15	131.27	12.48	0.00	131.27

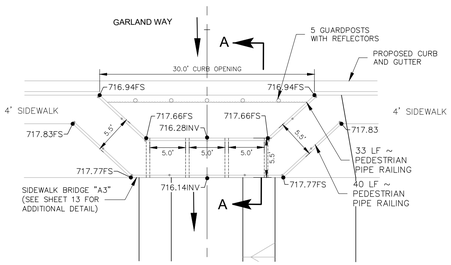
SCALE:
HORIZONTAL 1" = 50'
VERTICAL 1" = 5'

CHANNEL A4



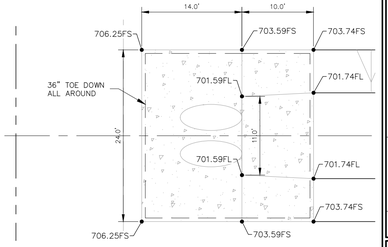
SIDEWALK BRIDGE "A3" SUMMARY

STORM EVENT	CULVERT SIZE	H.W. ELEV	CULVERT Q (CFS)	CULVERT V (FT/S)	WEIR Q (CFS)	TOTAL Q (CFS)
10-YEAR	3 - 5' X 1'	717.19	35.33	5.70	0.00	35.33
100-YEAR		717.78	65.85	6.73	1.08	66.93



SIDEWALK BRIDGE "A3" DETAIL

SCALE: 1" = 10'

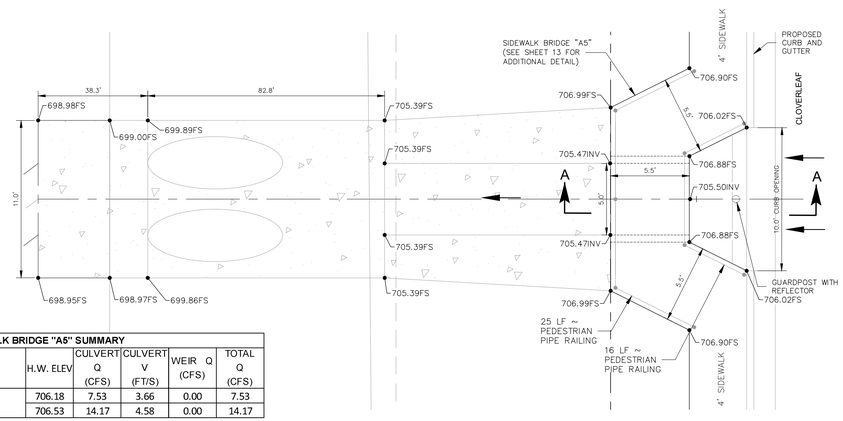


UPSTREAM CONCRETE RIPRAP DETAIL

SCALE: 1" = 10'

SIDEWALK BRIDGE "A5" SUMMARY

STORM EVENT	CULVERT SIZE	H.W. ELEV	CULVERT Q (CFS)	CULVERT V (FT/S)	WEIR Q (CFS)	TOTAL Q (CFS)
10-YEAR	1 - 5' X 1'	706.18	7.53	3.66	0.00	7.53
100-YEAR		706.53	14.17	4.58	0.00	14.17



SIDEWALK BRIDGE "A5" & DOWNSTREAM RIPRAP DETAIL

SCALE: 1" = 5'

CHANNEL NOTES:
CONSTRUCTION SPECIFICATION – TOP SOIL

1. VEGETATION OF POND BOTTOM – THE WORK CONSISTS OF PLACEMENT OF TOP SOIL ON NEW EARTH EMBANKMENTS, OTHER EARTHFILLS, AND EARTH BACKFILLS REQUIRED BY THE DRAWINGS.

2. MATERIAL – THE TOPSOIL SHALL BE FERTILE SOIL, CONSISTING PRIMARILY OF CLAY AND CLAYEY MATERIALS, WITH A PLASTICITY INDEX GREATER THAN 15, AND SHALL BE FREE OF LARGE ORGANIC OR ROCK MATERIAL.

3. APPLICATION – TOPSOIL SHALL BE PLACED AT GRADES INDICATED ON THE PLANS AND ROLLED TO REDUCE EROSION. PERIODIC INSPECTION ARE REQUIRED AND ADDITIONAL TOPSOIL ADDED AS NEEDED UNTIL VEGETATION HAS ESTABLISHED

CONSTRUCTION SPECIFICATION – VEGETATION

1. VEGETATION OF EMBANKMENT – THE WORK CONSISTS OF ESTABLISHING VEGETATION ON NEW EARTH EMBANKMENTS, OTHER EARTHFILLS, AND EARTH BACKFILLS REQUIRED BY THE DRAWINGS.

2. MATERIAL – VEGETATION SHALL CONSIST OF "NATIVE SUN TURF GRASS" AS SUPPLIED BY NATIVE AMERICAN SEED IN JUNCTION, TX, CONSISTING OF 34% BLUE GRAMA AND 64% BUFFALO GRASS, OR ENGINEER APPROVED EQUAL. SEED MIXTURE SHALL CONSIST OF A PURE LIVE SEED OF 90~95%

3. APPLICATION – THE SEED MIXTURE SHALL BE INSTALLED PER DISTRIBUTORS RECOMMENDATIONS AT A RATE OF 1 LB PER 400 SQFT. SEED MIXTURE SHALL BE WATERED AS REQUIRED UNTIL VEGETATION IS ESTABLISHED.

DRAINAGE INFRASTRUCTURE MAINTENANCE AND MONITORING GUIDELINES

- ACCESS – DRIVE OVER TOP OF CURB FOR MOWING AND MAINTENANCE OF DETENTION POND.

CHANNEL A2 – ACCESSED FROM STARGAZER, DRIVING OVER TOP OF CURB TO LOT 901, BLOCK 4.

CHANNEL A4 – ACCESSED FROM GARLAND WAY AND CLOVERLEAF, DRIVING OVER TOP OF CURB TO LOT 901, BLOCK 4.

- SEASONAL MOWING AND LAWN CARE – IF THE CHANNEL IS MADE UP OF TURF GRASS, IT SHOULD BE MOWED AS NEEDED TO LIMIT VEGETATION HEIGHT TO 18 INCHES, USING A MULCHING MOWER (OR REMOVAL OF CLIPPINGS). IF NATIVE GRASSES ARE USED, THE CHANNEL MAY REQUIRE LESS FREQUENT MOWING, BUT A MINIMUM OF TWICE ANNUALLY. REGULAR MOWING SHOULD ALSO INCLUDE WEED CONTROL PRACTICES, HOWEVER HERBICIDE USE SHOULD BE KEPT TO A MINIMUM. HEALTHY GRASS CAN BE MAINTAINED WITHOUT USING FERTILIZERS BECAUSE RUNOFF USUALLY CONTAINS SUFFICIENT NUTRIENTS. IRRIGATION OF THE SITE CAN HELP ASSURE A DENSE AND HEALTHY VEGETATIVE COVER.

- INSPECTION – INSPECT CHANNEL AT LEAST TWICE ANNUALLY FOR EROSION OR DAMAGE TO VEGETATION; HOWEVER, ADDITIONAL INSPECTION AFTER PERIODS OF HEAVY RUNOFF IS MOST DESIRABLE. MORE FREQUENT INSPECTIONS OF THE GRASS COVER DURING THE FIRST FEW YEARS AFTER ESTABLISHMENT WILL HELP TO DETERMINE IF ANY PROBLEMS ARE DEVELOPING, AND TO PLAN FOR LONG-TERM RESTORATIVE MAINTENANCE NEEDS. BARE SPOTS AND AREAS OF EROSION IDENTIFIED DURING SEMI-ANNUAL INSPECTIONS MUST BE REPLANTED AND RESTORED TO MEET SPECIFICATIONS.

- DEBRIS AND LITTER REMOVAL – THE CHANNEL AND CULVERTS SHOULD BE KEPT FREE OF OBSTRUCTIONS TO REDUCE FLOATABLES BEING FLUSHED DOWNSTREAM, AND FOR AESTHETIC REASONS. THE NEED FOR THIS PRACTICE IS DETERMINED THROUGH PERIODIC INSPECTION, BUT SHOULD BE PERFORMED NO LESS THAN 2 TIMES PER YEAR.

- SEDIMENT REMOVAL – SEDIMENT MAY ACCUMULATE WITHIN THE CHANNEL, PREVENTING UNIFORM OVERLAND FLOW. SEDIMENT SHOULD BE LIMITED TO HEIGHT OF 6 INCHES OR AT MINIMUM, REMOVED AT LEAST TWICE A YEAR.

STORM DRAIN AND CULVERT MAINTENANCE

- INSPECT INLETS, JUNCTION STRUCTURES, OUTLETS AND CHANNELS THROUGH PERIODIC INSPECTION BUT NO LESS THAN EVERY 6 MONTHS TO CLEAR STRUCTURES OF OBSTRUCTIONS, DEBRIS AND STRUCTURAL INTEGRITY.

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608-8971
SPECTRUM CABLE	1-800-892-4357
CENTERPOINT GAS	(800) 427-7142
AT&T	(830) 303-1333
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY 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.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTORS 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 EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

Know what's below. Call before you dig.

STATE OF TEXAS JAMES INGALLS 107416 LICENSED PROFESSIONAL ENGINEER 12-6-22

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W. SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

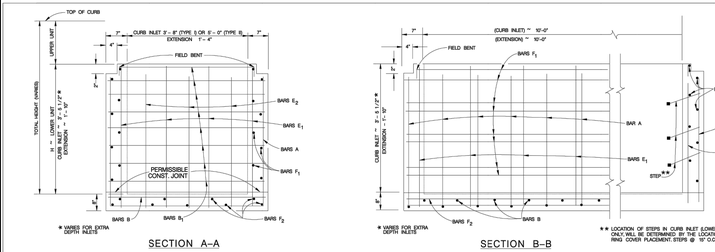
CHANNEL A4

HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

SHEET 11 OF 45

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Drawing Name: N:\Projects\120000 Highland Gardens Ut and Ut2\Civil\Construction Drawings\Unit 2\11 CHANNEL A4.dwg User: BritonJBehart Feb 16, 2022 - 1:50pm



SECTION A–A

SECTION B–B

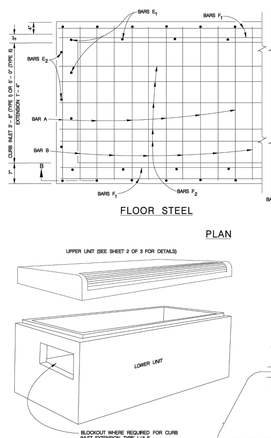
REINFORCING STEEL

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	16" ±	VARIES
E_2	8	#4	16" ±	VARIES
F_1	VARIES	#4	12"±	VARIES
F_2	9	#4	—	10'-10"

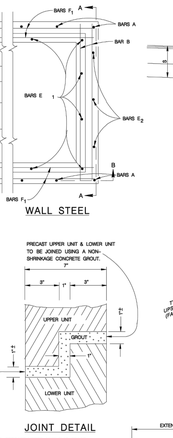
LOWER UNIT 10' X 5'- 0" (TYPE II)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	6'-10"
B_1	VARIES	#4	12"	6'-10"
E_1	22	#4	16" ±	VARIES
E_2	8	#4	16" ±	VARIES
F_1	VARIES	#4	12"±	VARIES
F_2	11	#4	—	10'-10"

GENERAL NOTES

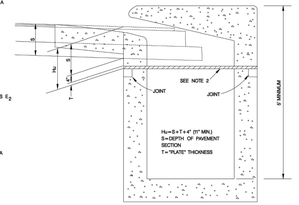
1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E (L-C).
2. TYPE C-4 INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN-LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE 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 ASTM 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 SLOPE OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".



FLOOR STEEL



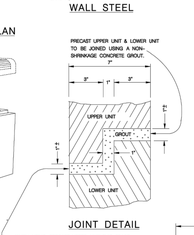
WALL STEEL



PHASE CONSTRUCTION

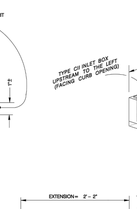
NOTES FOR PHASE CONSTRUCTION (WHEN DIRECTED BY THE ENGINEER):

1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "1/4" 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.

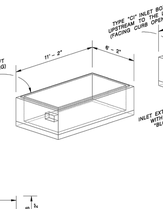


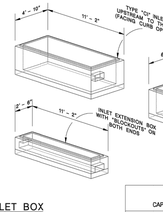
JOINT DETAIL

WHEN USING PRECAST UPPER UNIT, THIS SPACE IS FOR MAKING MINOR HORIZONTAL AND VERTICAL ADJUSTMENTS TO ACCOMODATE A FIT BETWEEN THE UPPER AND LOWER UNIT THAT ALLOWS FOR A MATCH LINE AND GRADE BETWEEN THE ROADWAY CURB AND THE UPPER UNIT OF THE INLET.



BARS A
(LOWER UNIT)





CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)

REINFORCING STEEL (FOR Hu = 11")

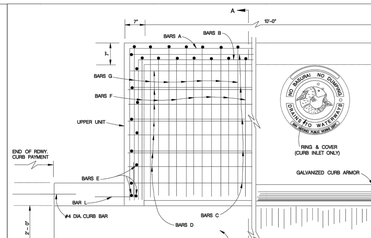
UPPER UNIT 10' X 3'-8" (TYPE I)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	10'-10"	33
B	3	#4	—	10'-10"	33
C	5	#4	11"	13'-2"	44
D	7	#4	6"	10'-10"	51
E	12	#4	11"	1'-7"	9
F	21	#6	6"	4'-6"	147
G	22	#6	6"	5'-8"	197
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	3'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					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'-4"	43
C	7	#4	11"	13'-2"	62
D	11	#4	6"	10'-10"	80
E	18	#4	11"	1'-7"	13
F	21	#6	6"	5'-8"	179
G	22	#6	6"	7'-0"	229
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	3'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					759 LBS.

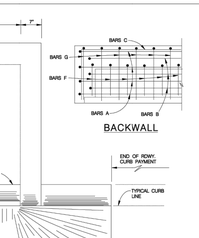
CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")

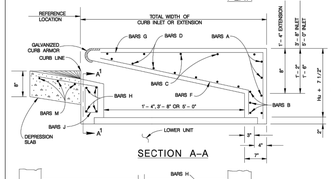
DEPRESSION SLAB	C.Y.
10' INLET	0.7
10' EXTENSION	0.7

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

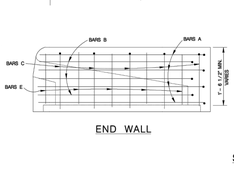


PLAN

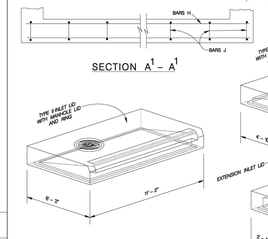




SECTION A–A

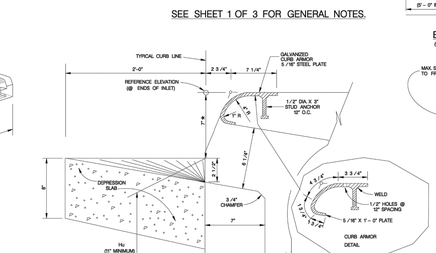


END WALL

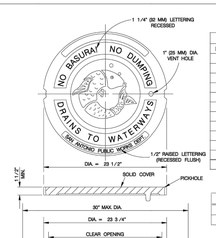


SECTION A1 - A1

CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)



INLET OPENING DETAIL

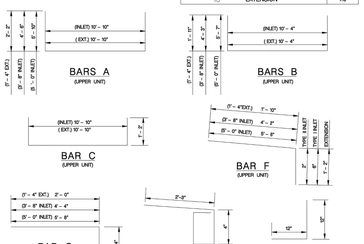


MANHOLE LID & RING DETAIL (ITEM 409)

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.



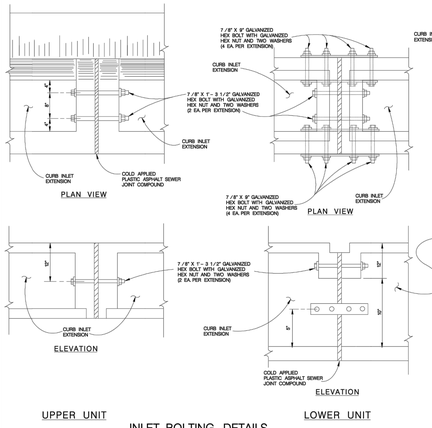


GENERAL NOTES

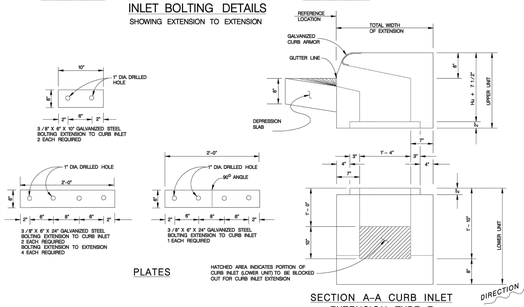
1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS THE EXTENSION(S) SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL, NOTES & VARIOUS OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET REFER TO SHEETS 1 & 2.

UPPER UNIT EXTENSION (FOR Hu = 11")					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	10' - 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' - 7"	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

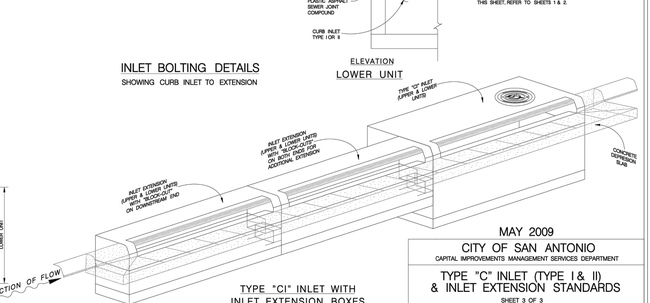
LOWER UNIT EXTENSION					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	12	#4	12"	5' - 2"	49
B	11	#4	12"	2' - 2"	16
B_1	3	#4	12"	2' - 2"	4
E_1	18	#4	16" ±	2' - 3"	27
E_2	4	#4	16" ±	2' - 1"	6
F_1	16	#4	12" ±	10' - 10"	116
F_2	5	#4	—	10' - 10"	36
REINFORCING STEEL				LBS.	254
CLASS. "A" CONCRETE				C.Y.	1.4



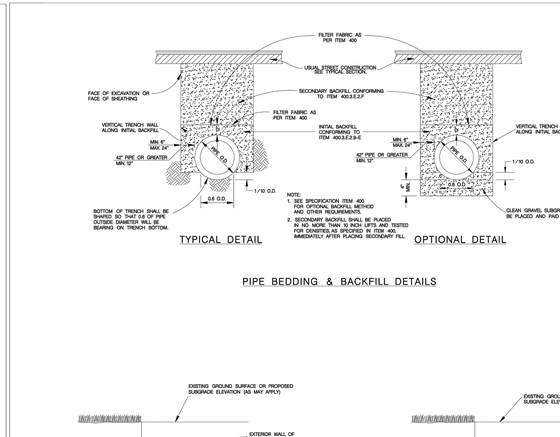
INLET BOLTING DETAILS
SHOWING EXTENSION TO EXTENSION



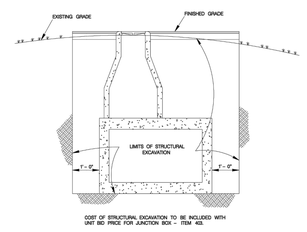
INLET BOLTING DETAILS
SHOWING CURB INLET TO EXTENSION



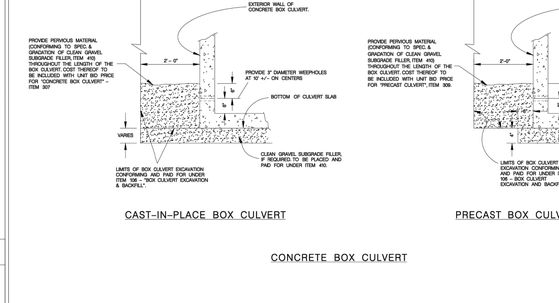
TYPE "CI" INLET WITH INLET EXTENSION BOXES



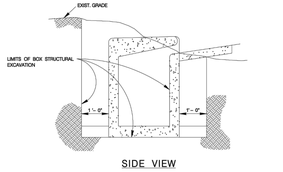
PIPE BEDDING & BACKFILL DETAILS



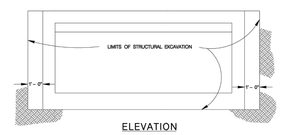
STRUCTURAL EXCAVATION AT JUNCTION BOXES
NO SCALE



CONCRETE BOX CULVERT



SIDE VIEW



ELEVATION

STRUCTURAL EXCAVATIONS AT DRAINAGE INLETS
NO SCALE

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:
DRAWN BY: V. VASQUEZ | DSGN. BY: L.E. MALTOS, P.E. | CHKD. BY: R.S. HOSSEINI, P.E. | SHEET NO.: | OF

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:
DRAWN BY: V. VASQUEZ | DSGN. BY: L.E. MALTOS, P.E. | CHKD. BY: R.S. HOSSEINI, P.E. | SHEET NO.: | OF

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:
DRAWN BY: V. VASQUEZ | DSGN. BY: L.E. MALTOS, P.E. | CHKD. BY: R.S. HOSSEINI, P.E. | SHEET NO.: | OF

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS

_% SUBMITTAL | PROJECT NO.: | DATE:
DRAWN BY: | DSGN. BY: | CHKD. BY: | SHEET NO.: | OF

Know what's below. Call before you dig.

STATE OF TEXAS — JAMES INGALLS — 107416 — LICENSED PROFESSIONAL ENGINEER — 11-11-20

NO	DATE	ISSUES AND REVISIONS

MOELLER & ASSOCIATES Engineering Solutions
2021 W. SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.me-tx.com
TBPE FIRM F-13351

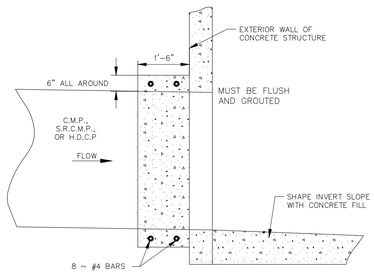
DRAINAGE DETAILS I

HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

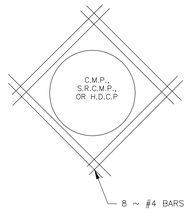
SHEET 12 OF 45

Drawing Name: N:\Projects\CX0001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\U2 DRAINAGE DETAILS.dwg User: SteveGarcia Nov 12, 2020 - 11:55am

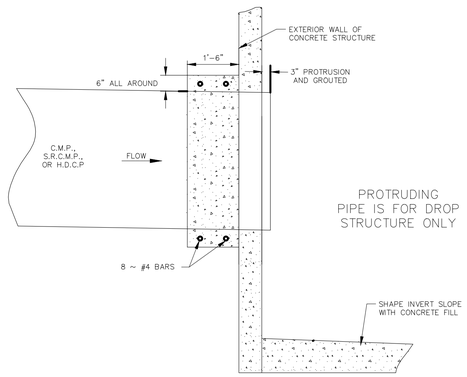
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PIPE FLUSH WITH INVERT



CONCRETE COLLAR DETAIL



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).

		ELEVATION			
STREET		A	B	C	D
GARLAND WAY	SIDEWALK BRIDGE "A3"	717.66	716.28	716.14	717.77
CLOVERLEAF	SIDEWALK BRIDGE "A5"	706.88	705.50	705.47	706.99
STARGAZER	SIDEWALK BRIDGE "A6"	705.55	704.17	704.14	705.66

NOTE:
1. ALLOW FOR REFLECTOR BUTTONS ON BARRICADE POST. USE ONE 3 / 4" BUTTON PER POST.

2. POST SHALL RECEIVE TWO COATS OF ALUMINUM PAINT.

SECTION A-A ELEVATED SIDEWALK

NOT TO SCALE

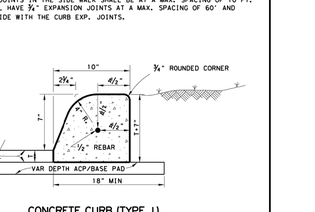
NOTES:
1. ALL WELDS SHALL BE GROUNDED SMOOTH.

2. HANDRAIL SHALL BE PRIMED W/RED OXIDE AND PAINTED W/(2) COATS OF AN EXTERIOR RATED LATEX ENAMEL. COLOR TO BE DETERMINED BY OWNER.

3. ALL EXPOSED CONCRETE EDGES TO BE CHAMFERED ¾".

TYPICAL SIDEWALK BRIDGE & SIDEWALK PIPE RAILING SECTION



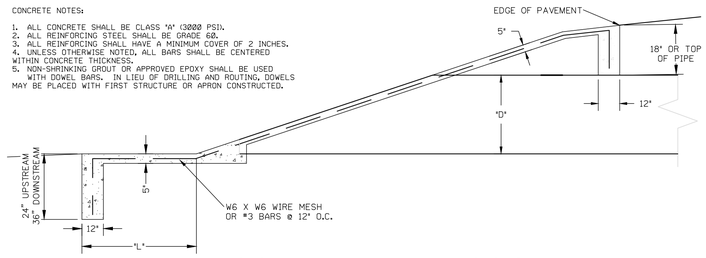


PIPE ANCHORAGE DETAILS

NOT TO SCALE

CONCRETE NOTES:

1. ALL CONCRETE SHALL BE CLASS 'A' (3000 PSI).
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. ALL REINFORCING SHALL HAVE A MINIMUM COVER OF 2 INCHES.
4. UNLESS OTHERWISE NOTED, ALL BARS SHALL BE CENTERED WITHIN CONCRETE THICKNESS.
5. NON-SHRINKING GROUT OR APPROVED EPOXY SHALL BE USED WITH DOWEL BARS. IN LIEU OF DRILLING AND ROUTING, DOWELS MAY BE PLACED WITH FIRST STRUCTURE OR APRON CONSTRUCTED.



LONGITUDINAL RIPRAP HEADWALL SECTION

NOT TO SCALE

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STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
11-11-20

MOELLER & ASSOCIATES Engineering Solutions
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PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

NO	DATE	ISSUES AND REVISIONS

DRAINAGE DETAILS II

HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 13 OF 45

Drawing Name: N:\Projects\CX0001 Highland Gardens Ut and U2\Civil\Construction Drawings\Unit 2\13 DRAINAGE DETAILS II.dwg User: StevenGarcia Nov 12, 2020 - 11:35am

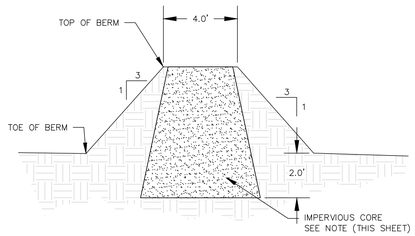
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IMPERVIOUS CORE COMPACTION NOTE

COMPACTED CLAY CORE TO BE PLACED A MINIMUM OF 2' BELOW EXISTING GRADE ALONG THE ENTIRE LENGTH OF THE BERM. MATERIAL TO HAVE A PI OF 30 OR GREATER, MINIMUM COMPACTED DRY DENSITY OF 90% AND GROUND CONTENT NO MORE THAN 5% BY WEIGHT LARGER THAN NO.4 SIEVE.



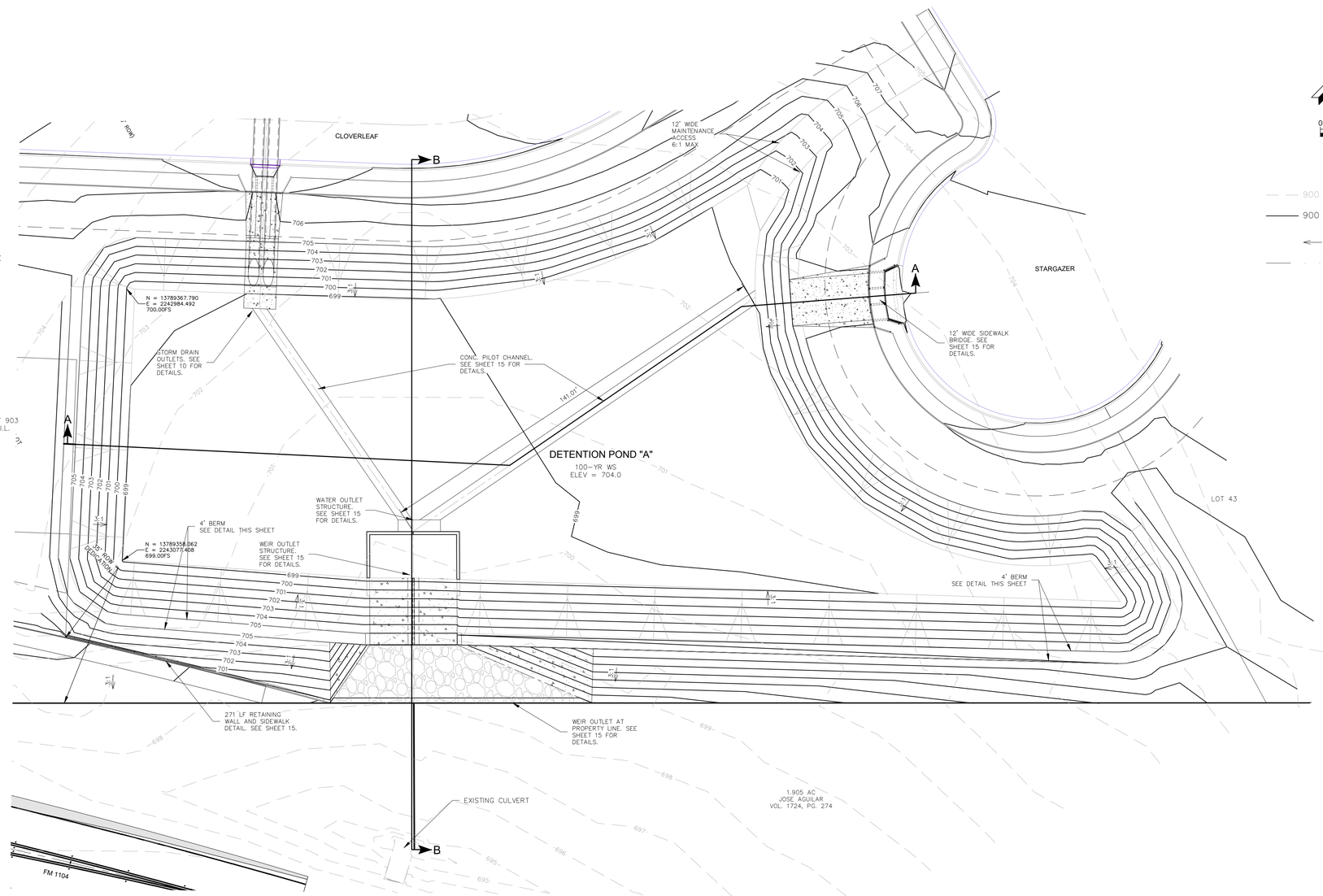
FILL BERM SECTION (TYP)

Scale: NTS

NOTE: IMPERVIOUS CLAY BERM CORE AND CLAY LINER SHOWN ARE TO BE CONSIDERED SUBSIDIARY TO POND EXCAVATION. (NO SEPARATE PAY ITEM)

DETENTION POND MAINTENANCE AND MONITORING PROCEDURES

1. INSPECTIONS. BMP FACILITIES MUST BE INSPECTED AT LEAST TWICE A YEAR (ONCE DURING OR IMMEDIATELY FOLLOWING WET WEATHER) TO EVALUATE FACILITY OPERATION. DURING EACH INSPECTION, EROSION AREAS INSIDE AND DOWNSTREAM OF THE BMP MUST BE IDENTIFIED AND REPAIRED OR REVEGETATED IMMEDIATELY. WITH EACH INSPECTION, ANY DAMAGE TO THE STRUCTURAL ELEMENTS OF THE SYSTEM (PIPES, CONCRETE DRAINAGE STRUCTURES, RETAINING WALLS, ETC.) MUST BE IDENTIFIED AND REPAIRED IMMEDIATELY. CRACKS, VOIDS AND UNDERMINING SHOULD BE PATCHED/FILLED TO PREVENT ADDITIONAL STRUCTURAL DAMAGE. TREES AND ROOT SYSTEMS SHOULD BE REMOVED TO PREVENT GROWTH IN CRACKS AND JOINTS THAT CAN CAUSE STRUCTURAL DAMAGE.
2. SEDIMENT REMOVAL. REMOVE SEDIMENT FROM THE INLET STRUCTURE AND SEDIMENTATION CHAMBER WHEN SEDIMENT BUILDUP REACHES A DEPTH OF 6 INCHES OR WHEN THE PROPER FUNCTIONING OF INLET AND OUTLET STRUCTURES IS IMPAIRED. SEDIMENT SHOULD BE CLEARED FROM THE INLET STRUCTURE AT LEAST EVERY YEAR AND FROM THE SEDIMENTATION BASIN AT LEAST EVERY 5 YEARS.
3. MEDIA REPLACEMENT. MAINTENANCE OF THE FILTER MEDIA IS NECESSARY WHEN THE DRAWDOWN TIME EXCEEDS 48 HOURS. WHEN THIS OCCURS, THE UPPER LAYER OF SAND SHOULD BE REMOVED AND REPLACED WITH NEW MATERIAL MEETING THE ORIGINAL SPECIFICATIONS. ANY DISCOLORED SAND SHOULD ALSO BE REMOVED AND REPLACED. IN FILTERS THAT HAVE BEEN REGULARLY MAINTAINED, THIS SHOULD BE LIMITED TO THE TOP 2 TO 3 INCHES.
4. DEBRIS AND LITTER REMOVAL. DEBRIS AND LITTER WILL ACCUMULATE NEAR THE SEDIMENTATION BASIN OUTLET DEVICE AND SHOULD BE REMOVED DURING REGULAR MOWING OPERATIONS AND INSPECTIONS. PARTICULAR ATTENTION SHOULD BE PAID TO FLOATING DEBRIS THAT CAN EVENTUALLY CLOG THE CONTROL DEVICE OR RISER.
5. FILTER UNDERDRAIN. CLEAN UNDERDRAIN PIPING NETWORK TO REMOVE ANY SEDIMENT BUILDUP AS NEEDED TO MAINTAIN DESIGN DRAWDOWN TIME.
6. MOWING. GRASS AREAS IN AND AROUND SAND FILTERS MUST BE MOWED AT LEAST TWICE ANNUALLY TO LIMIT VEGETATION HEIGHT TO 18 INCHES. MORE FREQUENT MOWING TO MAINTAIN AESTHETIC APPEAL MAY BE NECESSARY IN LANDSCAPED AREAS. VEGETATION ON THE POND EMBANKMENTS SHOULD BE MOWED AS APPROPRIATE TO PREVENT THE ESTABLISHMENT OF WOODY VEGETATION.



0 20' 40'

SCALE: 1"=20'

LEGEND

- 900 — EXISTING CONTOUR
- 900 — PROPOSED CONTOUR
- DRAINAGE FLOW ARROW
- GRADE BREAK/SWALE

DETENTION POND NOTES

EARTHFILL

1. SCOPE
THE WORK CONSISTS OF THE CONSTRUCTION OF EARTH EMBANKMENTS, OTHER EARTHFILLS, AND EARTH BACKFILLS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS.

EARTHFILL IS COMPOSED OF NATURAL EARTH MATERIALS THAT CAN BE PLACED AND COMPACTED BY CONSTRUCTION EQUIPMENT OPERATED IN A CONVENTIONAL MANNER.

EARTH BACKFILL IS COMPOSED OF NATURAL EARTH MATERIAL PLACED AND COMPACTED IN CONFINED SPACES OR ADJACENT TO STRUCTURES (INCLUDING PIPES) BY HAND TAMPING, MANUALLY DIRECTED POWER TAMPERS OR VIBRATING PLATES, OR THEIR EQUIVALENT.

2. MATERIAL
FILL MATERIALS SHALL CONTAIN NO FROZEN SOIL, SOD, BRUSH, ROOTS, OR OTHER PERISHABLE MATERIAL. UNLESS OTHERWISE NOTED ON THE PLANS, ROCK PARTICLES LARGER THAN 6" SHALL BE REMOVED PRIOR TO COMPACTION OF THE FILL.

THE TYPES OF MATERIAL USED IN THE VARIOUS FILLS SHALL BE AS LISTED AND DESCRIBED IN THE SPECIFICATIONS AND DRAWINGS.

3. FOUNDATION PREPARATION
FOUNDATIONS FOR EARTHFILL SHALL BE STRIPPED TO REMOVE VEGETATION AND OTHER UNSUITABLE MATERIAL OR SHALL BE EXCAVATED AS SPECIFIED.

EXCEPT AS OTHERWISE SPECIFIED, EARTH FOUNDATION SURFACES SHALL BE GRADED TO REMOVE SURFACE IRREGULARITIES AND SHALL BE SCARIFIED PARALLEL TO THE AXIS OF THE FILL OR OTHERWISE ACCEPTABLY SCORED AND LOOSENED TO A MINIMUM DEPTH OF 2 INCHES. THE MOISTURE CONTENT OF THE LOOSENED MATERIAL SHALL BE CONTROLLED AS SPECIFIED FOR THE EARTHFILL, AND THE SURFACE MATERIAL OF THE FOUNDATION SHALL BE COMPACTED AND BONDED WITH THE FIRST LAYER OF EARTHFILL AS SPECIFIED OR SUBSEQUENT LAYERS OF EARTHFILL.

EARTH ABUTMENT SURFACES SHALL BE FREE OF LOOSE, UNCOMPACTED EARTH IN EXCESS OF 2 INCHES IN DEPTH NORMAL TO THE SLOPE AND SHALL BE AT SUCH A MOISTURE CONTENT THAT THE EARTHFILL CAN BE COMPACTED AGAINST THEM TO PRODUCE A GOOD BOND BETWEEN THE FILL AND THE ABUTMENTS.

ROCK FOUNDATION AND ABUTMENT SURFACES SHALL BE CLEARED OF ALL LOOSE MATERIAL BY HAND OR OTHER EFFECTIVE MEANS AND SHALL BE FREE OF STANDING WATER WHEN FILL IS PLACED UPON THEM. OCCASIONAL ROCK OUTCROPS IN EARTH FOUNDATIONS FOR EARTHFILL, EXCEPT IN DAMS AND OTHER STRUCTURES DESIGNED TO RESTRAIN THE MOVEMENT OF WATER, SHALL NOT REQUIRE SPECIAL TREATMENT IF THEY DO NOT INTERFERE WITH COMPACTION OF THE FOUNDATION AND INITIAL LAYERS OF THE FILL OR THE BOND BETWEEN THE FOUNDATION AND THE FILL.

FOUNDATION AND ABUTMENT SURFACES SHALL BE NO STEEPER THAN ONE HORIZONTAL TO ONE VERTICAL UNLESS OTHERWISE SPECIFIED. TEST PITS OR OTHER CAVITIES SHALL BE FILLED WITH COMPACTED EARTHFILL CONFORMING TO THE SPECIFICATIONS FOR THE EARTHFILL TO BE PLACED UPON THE FOUNDATION.

4. PLACEMENT
EARTHFILL SHALL BE PLACED IN APPROXIMATELY HORIZONTAL LAYERS. THE THICKNESS OF EACH LAYER BEFORE COMPACTION SHALL NOT EXCEED THE MAXIMUM THICKNESS SPECIFIED AS SHOWN ON THE DRAWINGS. MATERIALS PLACED BY DUMPING IN PILES OR WINDOWS SHALL BE SPREAD UNIFORMLY TO NOT MORE THAN THE SPECIFIED THICKNESS BEFORE BEING COMPACTED.

HAND COMPACTED EARTH BACKFILL SHALL BE PLACED IN LAYERS WHOSE THICKNESS BEFORE COMPACTION DOES NOT EXCEED THE MAXIMUM THICKNESS SPECIFIED FOR LAYERS OF EARTH BACKFILL COMPACTED BY MANUALLY DIRECTED POWER TAMPERS.

EARTH BACKFILL SHALL BE PLACED IN A MANNER THAT PREVENTS DAMAGE TO THE STRUCTURES AND ALLOWS THE STRUCTURES TO ASSUME THE LOADS FROM THE EARTH BACKFILL GRADUALLY AND UNIFORMLY. THE HEIGHT OF THE EARTH BACKFILL ADJACENT TO A STRUCTURE SHALL BE INCREASED AT APPROXIMATELY THE SAME RATE ON ALL SIDES OF THE STRUCTURE.

EARTHFILL AND EARTH BACKFILL IN DAMS, LEVEES, AND OTHER STRUCTURES DESIGNED TO RESTRAIN THE MOVEMENT OF WATER SHALL BE PLACED TO MEET THE FOLLOWING ADDITIONAL REQUIREMENTS:

(a) THE DISTRIBUTION OF MATERIALS THROUGHOUT EACH ZONE SHALL BE ESSENTIALLY UNIFORM, AND THE EARTHFILL SHALL BE FREE FROM LENSES, POCKETS, STREAKS, OR LAYERS OF MATERIAL DIFFERING SUBSTANTIALLY IN TEXTURE, MOISTURE CONTENT, OR GRADATION FROM THE SURROUNDING MATERIAL. ZONE EARTHFILLS SHALL BE CONSTRUCTED CONCURRENTLY UNLESS OTHERWISE SPECIFIED.
(b) IF THE SURFACE OF ANY LAYER BECOMES TOO HARD AND SMOOTH FOR PROPER BOND WITH THE SUCCEEDING LAYER, IT SHALL BE SCARIFIED PARALLEL TO THE AXIS OF THE FILL TO A DEPTH OF NOT LESS THAN 2 INCHES BEFORE THE NEXT LAYER IS PLACED.
(c) THE TOP SURFACE OF EMBANKMENTS SHALL BE MAINTAINED APPROXIMATELY LEVEL DURING CONSTRUCTION WITH TWO EXCEPTIONS: A CROWN OR CROSS-SLOPE OF ABOUT 2 PERCENT SHALL BE MAINTAINED TO ENSURE EFFECTIVE DRAINAGE, OR AS OTHERWISE SPECIFIED FOR DRAINFILL OR SECTIONAL ZONES.
(d) DAM EMBANKMENTS SHALL BE CONSTRUCTED IN CONTINUOUS LAYERS FROM ABUTMENT TO ABUTMENT EXCEPT WHERE OPENINGS TO FACILITATE CONSTRUCTION OR TO ALLOW THE PASSAGE OF STREAM FLOW DURING CONSTRUCTION ARE SPECIFICALLY AUTHORIZED IN THE CONTRACT.
(e) EMBANKMENTS BUILT AT DIFFERENT LEVELS AS DESCRIBED UNDER (C) OR (D) ABOVE SHALL BE CONSTRUCTED SO THAT THE SLOPE OF THE BONDING SURFACES BETWEEN EMBANKMENT IN PLACE AND EMBANKMENT TO BE PLACED IS NOT STEEPER THAN 3 FEET HORIZONTAL TO 1 FOOT VERTICAL. THE BONDING SURFACE OF THE EMBANKMENT IN PLACE SHALL BE STRIPPED OF ALL MATERIAL NOT MEETING THE REQUIREMENTS OF THIS SPECIFICATION AND SHALL BE SCARIFIED, MOISTENED, AND RECOMPACTED WHEN THE NEW EARTHFILL IS PLACED AGAINST IT. THIS ENSURES A GOOD BOND WITH THE NEW EARTHFILL AND OBTAINS THE SPECIFIED MOISTURE CONTENT AND DENSITY AT THE CONTACT OF THE INPLACE AND NEW EARTHFILLS.

(f) THE FILL MATERIAL SHALL BE FREE OF ORGANIC MATTER AND OTHER OBJECTIONABLE MATERIAL. PLACING AND SPREADING OF FILL SHALL BEGIN ON THE LOWEST PART OF THE WORKING AREA AND CONTINUE IN HORIZONTAL LAYERS OF APPROXIMATE UNIFORM THICKNESS, NOT EXCEEDING 9 INCHES BEFORE COMPACTION. WHERE THE BORROW YIELDS MATERIALS OF VARYING TEXTURE AND GRADATION, THE MORE IMPERVIOUS MATERIAL SHALL BE PLACED TOWARD THE WATERSIDE OF THE BERM. THE CONSTRUCTION EQUIPMENT SHALL BE OPERATED OVER THE AREA OF EACH LAYER IN A MANNER TO BREAK UP LARGE CLODS AND OBTAIN COMPACTION.

5. CONTROL OF MOISTURE CONTENT
DURING PLACEMENT AND COMPACTION OF EARTHFILL AND EARTH BACKFILL, THE MOISTURE CONTENT OF THE MATERIAL BEING PLACED SHALL BE MAINTAINED WITHIN THE SPECIFIED RANGE.

THE APPLICATION OF WATER TO THE EARTHFILL MATERIAL SHALL BE ACCOMPLISHED AT THE BORROW AREAS INSOFAR AS PRACTICABLE. WATER MAY BE APPLIED BY SPRINKLING THE MATERIAL AFTER PLACEMENT ON THE EARTHFILL, IF NECESSARY. UNIFORM MOISTURE DISTRIBUTION SHALL BE OBTAINED BY DISKING.

MATERIAL THAT IS TOO WET WHEN DEPOSITED ON THE EARTHFILL SHALL EITHER BE REMOVED OR BE DRIED TO THE SPECIFIED MOISTURE CONTENT PRIOR TO COMPACTION.

IF THE TOP SURFACE OF THE PRECEDING LAYER OF COMPACTED EARTHFILL OR A FOUNDATION OR ABUTMENT SURFACE IN THE ZONE OF CONTACT WITH THE EARTHFILL BECOMES TOO DRY TO PERMIT SUITABLE BOND, IT SHALL EITHER BE REMOVED OR SCARIFIED AND MOISTENED BY SPRINKLING TO AN ACCEPTABLE MOISTURE CONTENT BEFORE PLACEMENT OF THE NEXT LAYER OF EARTHFILL.

6. COMPACTION
EARTHFILL - EARTHFILL SHALL BE COMPACTED ACCORDING TO THE FOLLOWING REQUIREMENTS FOR THE CLASS OF COMPACTION SPECIFIED:

CLASS A COMPACTION - EACH LAYER OF EARTHFILL SHALL BE COMPACTED AS NECESSARY TO PROVIDE THE DENSITY OF THE EARTHFILL MATRIX NOT LESS THAN THE MINIMUM DENSITY SPECIFIED ON THE DRAWINGS. THE EARTHFILL MATRIX IS DEFINED AS THE PORTION OF THE EARTHFILL MATERIAL FINER THAN THE MAXIMUM PARTICLE SIZE USED IN THE COMPACTION TEST METHOD SPECIFIED.

7. REWORKING OR REMOVAL AND REPLACEMENT OF DEFECTIVE EARTHFILL
EARTHFILL PLACED AT DENSITIES LOWER THAN THE SPECIFIED MINIMUM DENSITY OR AT MOISTURE CONTENTS OUTSIDE THE SPECIFIED ACCEPTABLE RANGE OF MOISTURE CONTENT OR OTHERWISE NOT CONFORMING TO THE REQUIREMENTS OF THE SPECIFICATIONS SHALL BE REWORKED TO MEET THE REQUIREMENTS OR REMOVED AND REPLACED BY ACCEPTABLE EARTHFILL. THE REPLACEMENT EARTHFILL AND THE FOUNDATION, ABUTMENT, AND EARTHFILL SURFACES UPON WHICH IT IS PLACED SHALL CONFORM TO ALL REQUIREMENTS OF THIS SPECIFICATION FOR FOUNDATION PREPARATION, APPROVAL, PLACEMENT, MOISTURE CONTROL, AND COMPACTION.

8. TESTING
DURING THE COURSE OF THE WORK, THE CONTRACTOR WILL PERFORM QUALITY CONTROL TEST REQUIRED TO IDENTIFY MATERIAL; DETERMINE COMPACTION CHARACTERISTICS; DETERMINE MOISTURE CONTENT; AND DETERMINE DENSITY OF THE EARTHFILL IN PLACE. TESTS PERFORMED WILL BE SUBMITTED TO THE ENGINEER OF RECORD TO VERIFY THAT THE EARTHFILLS CONFORM TO CONTRACT REQUIREMENTS OF THE SPECIFICATIONS.

DENSITIES OF EARTHFILL REQUIRING CLASS A COMPACTION WILL BE DETERMINED IN ACCORDANCE WITH ASTM D 698, D 1556, D 2167, D 2922, OR D 2937 EXCEPT THAT THE VOLUME AND MOIST WEIGHT OF INCLUDED ROCK PARTICLES LARGER THAN THOSE USED IN THE COMPACTION TEST METHOD SPECIFIED FOR THE TYPE OF FILL WILL BE DETERMINED AND DEDUCTED FROM THE VOLUME AND MOIST WEIGHT OF THE TOTAL SAMPLE BEFORE COMPUTATION OF DENSITY OR, IF USING THE NUCLEAR GAUGE, ADDED TO THE SPECIFIED DENSITY TO BRING IT TO THE MEASURE OF EQUIVALENT COMPOSITION FOR COMPARISON (SEE ASTM D 4718). THE DENSITY SO COMPUTED IS USED TO DETERMINE THE PERCENT COMPACTION OF THE EARTHFILL MATRIX. UNLESS OTHERWISE SPECIFIED, MOISTURE CONTENT IS DETERMINED BY ONE OF THE FOLLOWING METHODS: ASTM D 2216, D 3017, D 4643, D 4944, OR D 4959.

EXTENDED DETENTION POND NOTES

CONSTRUCTION SPECIFICATION - TOP SOIL

1. VEGETATION OF POND BOTTOM - THE WORK CONSISTS OF PLACEMENT OF TOP SOIL ON NEW EARTH EMBANKMENTS, OTHER EARTHFILLS, AND EARTH BACKFILLS REQUIRED BY THE DRAWINGS.

2. MATERIAL - THE TOPSOIL SHALL BE FERTILE SOIL, CONSISTING PRIMARILY OF CLAY AND CLAYEY MATERIALS, WITH A PLASTICITY INDEX GREATER THAN 15, AND SHALL BE FREE OF LARGE ORGANIC OR ROCK MATERIAL.

3. APPLICATION - TOPSOIL SHALL BE PLACED AT GRADES INDICATED ON THE PLANS AND ROLLED TO REDUCE EROSION. PERIODIC INSPECTION ARE REQUIRED AND ADDITIONAL TOPSOIL ADDED AS NEEDED UNTIL VEGETATION HAS ESTABLISHED

CONSTRUCTION SPECIFICATION - VEGETATION

1. VEGETATION OF EMBANKMENT - THE WORK CONSISTS OF ESTABLISHING VEGETATION ON NEW EARTH EMBANKMENTS, OTHER EARTHFILLS, AND EARTH BACKFILLS REQUIRED BY THE DRAWINGS.

2. MATERIAL - VEGETATION SHALL CONSIST OF "NATIVE SUN TURF GRASS" AS SUPPLIED BY NATIVE AMERICAN SEED IN JUNCTION, TX, CONSISTING OF 34% BLUE GRAMA AND 64% BUFFALO GRASS, OR ENGINEER APPROVED EQUAL. SEED MIXTURE SHALL CONSIST OF A PURE LIVE SEED OF 90-95%

3. APPLICATION - THE SEED MIXTURE SHALL BE INSTALLED PER DISTRIBUTORS RECOMMENDATIONS AT A RATE OF 1 LB PER 400 SQFT. SEED MIXTURE SHALL BE WATERED AS REQUIRED UNTIL VEGETATION IS ESTABLISHED.

EXTENDED DETENTION POND MAINTENANCE AND MONITORING GUIDELINES

- ACCESS - DRIVE OVER TOP OF CURB FOR MOWING AND MAINTENANCE OF DETENTION POND.
- SEASONAL MOWING AND LAWN CARE - IF THE DETENTION POND IS MADE UP OF TURF GRASS, IT SHOULD BE MOWED AS NEEDED TO LIMIT VEGETATION HEIGHT TO 18 INCHES, USING A MULCHING MOWER (OR REMOVAL OF CLIPPINGS). IF NATIVE GRASSES ARE USED, THE POND MAY REQUIRE LESS FREQUENT MOWING, BUT A MINIMUM OF TWICE ANNUALLY. REGULAR MOWING SHOULD ALSO INCLUDE WEED CONTROL PRACTICES, HOWEVER HERBICIDE USE SHOULD BE KEPT TO A MINIMUM. HEALTHY GRASS CAN BE MAINTAINED WITHOUT USING FERTILIZERS BECAUSE RUNOFF USUALLY CONTAINS SUFFICIENT NUTRIENTS. IRRIGATION OF THE SITE CAN HELP ASSURE A DENSE AND HEALTHY VEGETATIVE COVER.
- INSPECTION - INSPECT DETENTION POND AT LEAST TWICE ANNUALLY FOR EROSION OR DAMAGE TO VEGETATION; HOWEVER, ADDITIONAL INSPECTION AFTER PERIODS OF HEAVY RUNOFF IS MOST DESIRABLE TO EVALUATE FACILITY FUNCTION. SPECIFICALLY, THE EXTENDED DETENTION CONTROL DEVICE (PERFORATED 3" PVC, SET IN GRAVEL AND PROTECTED WITH FILTER FABRIC) SHOULD BE REGULARLY INSPECTED FOR EVIDENCE OF CLOGGING. IF THE DESIGN DRAWDOWN TIMES ARE EXCEEDED BY MORE THAN 24 HOURS, THEN REPAIRS SHOULD BE SCHEDULED IMMEDIATELY. MORE FREQUENT INSPECTIONS OF THE GRASS COVER DURING THE FIRST FEW YEARS AFTER ESTABLISHMENT WILL HELP TO DETERMINE IF ANY PROBLEMS ARE DEVELOPING, AND TO PLAN FOR LONG-TERM RESTORATIVE MAINTENANCE NEEDS. BARE SPOTS AND AREAS OF EROSION IDENTIFIED DURING SEMI-ANNUAL INSPECTIONS MUST BE REPLANTED AND RESTORED TO MEET SPECIFICATIONS.
- DEBRIS AND LITTER REMOVAL - THE DETENTION POND SHOULD BE KEPT FREE OF OBSTRUCTIONS TO REDUCE FLOATABLES BEING FLUSHED DOWNSTREAM, AND FOR AESTHETIC REASONS. THE NEED FOR THIS PRACTICE IS DETERMINED THROUGH PERIODIC INSPECTION, BUT SHOULD BE PERFORMED NO LESS THAN 2 TIMES PER YEAR.
- SEDIMENT REMOVAL - EXTENDED DETENTION BASINS WILL ACCUMULATE QUANTITIES OF SEDIMENT OVER TIME. ACCUMULATED SEDIMENT NEEDS TO BE REMOVED WHEN SEDIMENT BUILDUP FILLS 20% OF THE VOLUME OF THE BASIN OR AT LEAST EVERY 10 YEARS.

IMPERVIOUS CORE COMPACTION NOTE:
COMPACTED CLAY CORE TO BE PLACED A MINIMUM OF 2' BELOW EXISTING GRADE ALONG THE ENTIRE LENGTH OF THE BERM. MATERIAL TO HAVE A PI OF 30 OR GREATER, MINIMUM COMPACTED DRY DENSITY OF 90% AND GROUND CONTENT NO MORE THAN 5% BY WEIGHT LARGER THAN NO.4 SIEVE.

DETENTION POND NOTES:
CONSTRUCTION SPECIFICATION - TOP SOIL

1. VEGETATION OF POND BOTTOM - THE WORK CONSISTS OF PLACEMENT OF TOP SOIL ON NEW EARTH EMBANKMENTS, OTHER EARTHFILLS, AND EARTH BACKFILLS REQUIRED BY THE DRAWINGS.

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DRAINAGE INFRASTRUCTURE MAINTENANCE AND MONITORING GUIDELINES

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- DEBRIS AND LITTER REMOVAL - THE DETENTION POND SHOULD BE KEPT FREE OF OBSTRUCTIONS TO REDUCE FLOATABLES BEING FLUSHED DOWNSTREAM, AND FOR AESTHETIC REASONS. THE NEED FOR THIS PRACTICE IS DETERMINED THROUGH PERIODIC INSPECTION, BUT SHOULD BE PERFORMED NO LESS THAN 2 TIMES PER YEAR.
- SEDIMENT REMOVAL - SEDIMENT MAY ACCUMULATE WITHIN THE DETENTION POND, PREVENTING UNIFORM OVERLAND FLOW. SEE ATTACHED EXHIBIT FOR SEDIMENT MARKER LOCATION NEAR THE POND OUTFALL. SEDIMENT IS TO BE REMOVED WHEN THE ACCUMULATED

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DETENTION POND PLAN & NOTES

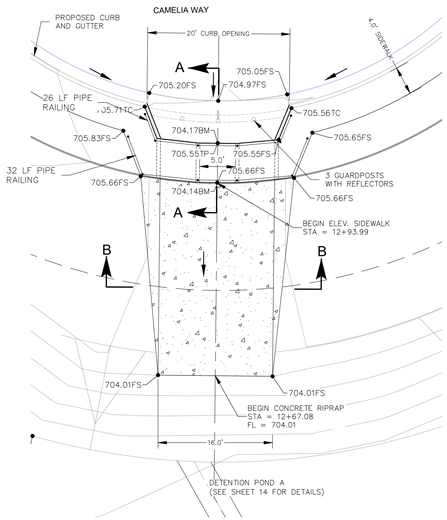
HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

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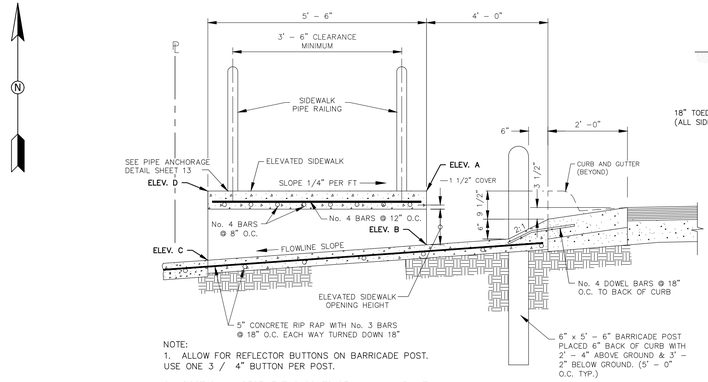
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SIDEWALK BRIDGE "A6" DETAIL

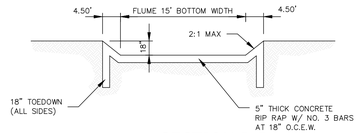
SCALE: 1" = 10'



NOTE:
1. ALLOW FOR REFLECTOR BUTTONS ON BARRICADE POST. USE ONE 3 / 4" BUTTON PER POST.
2. POST SHALL RECEIVE TWO COATS OF ALUMINUM PAINT.

SECTION A-A ELEVATED SIDEWALK

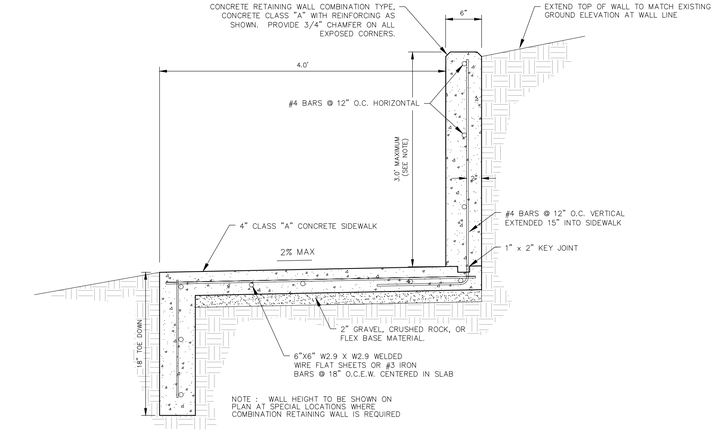
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SECTION B-B

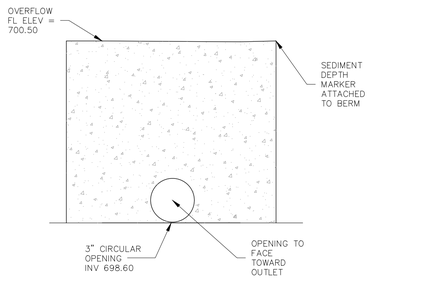
SCALE: NTS

SIDEWALK BRIDGE "A6" SUMMARY						
STORM EVENT	CULVERT SIZE	H.W. ELEV	CULVERT Q (CFS)	CULVERT V (FT/S)	WEIR Q (CFS)	TOTAL Q (CFS)
10-YEAR	3 - 5' X 1'	704.67	14.41	3.14	0.00	14.41
100-YEAR		704.95	27.77	3.94	0.00	27.77



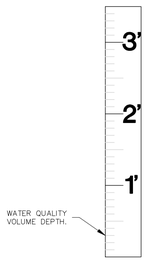
SECTION W-W
CONCRETE RETAINING WALL - COMBINATION TYPE

NOT TO SCALE



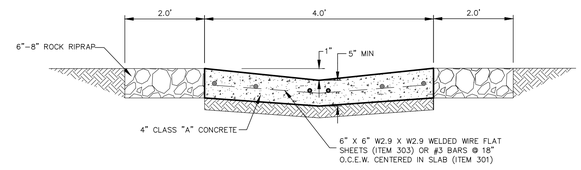
WATER QUALITY OUTLET DETAIL

NOT TO SCALE



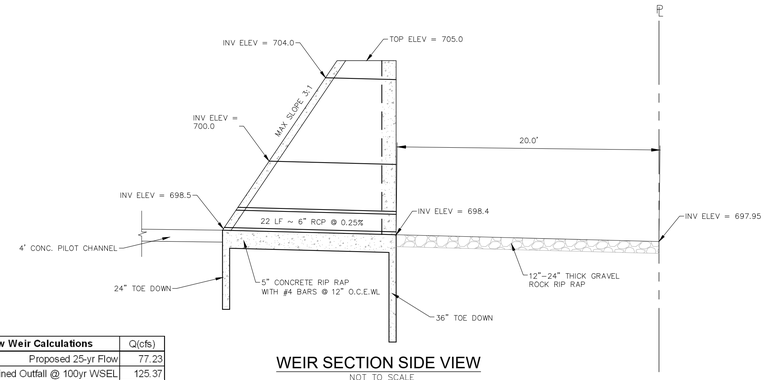
SEDIMENT DEPTH MARKER

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PILOT CHANNEL DETAIL

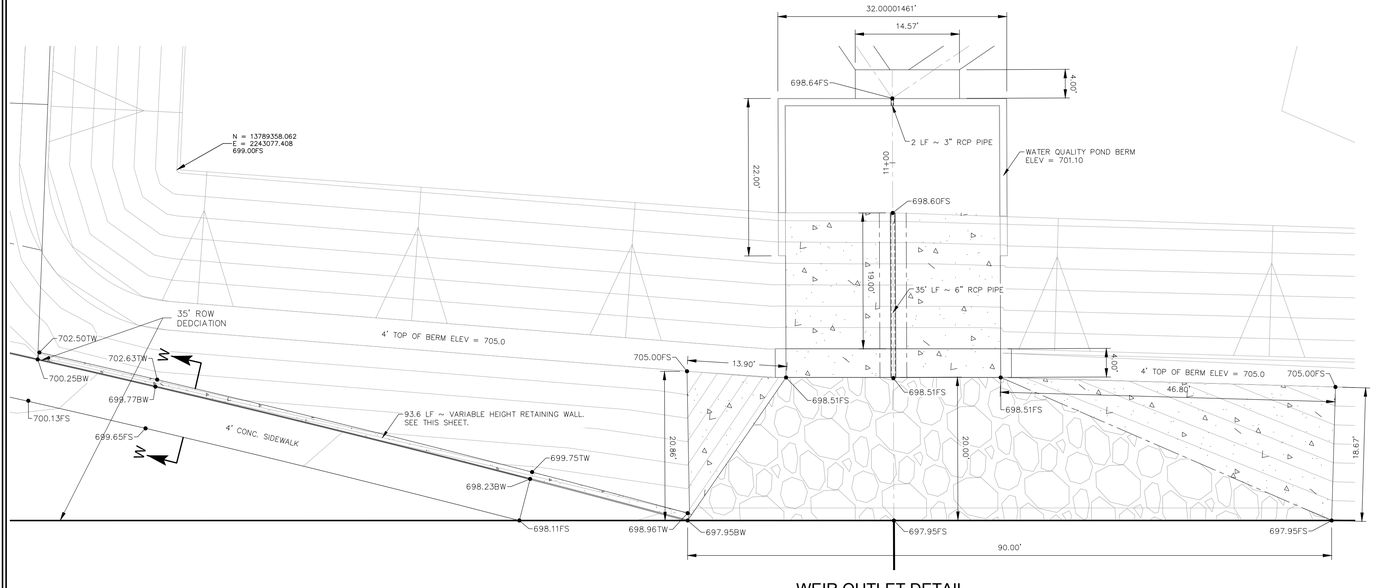
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WEIR SECTION SIDE VIEW

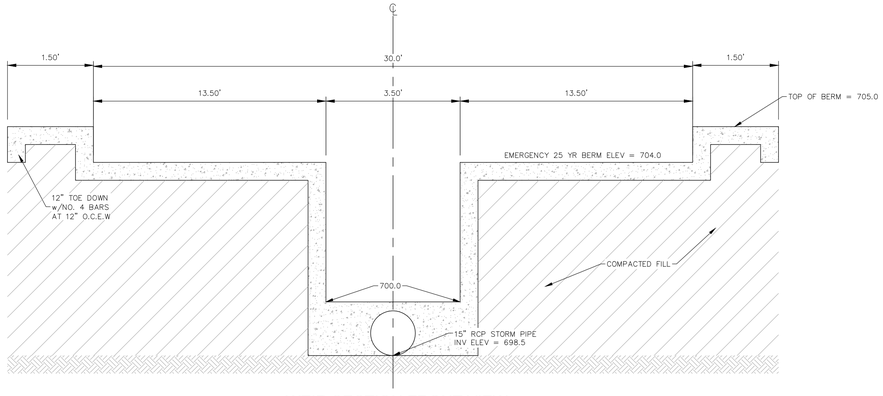
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Overflow Weir Calculations	Q(cfs)
Proposed 25-yr Flow	77.23
Detained Outfall @ 100yr WSEL	125.37
Total Outfall Flow to Top of Berm	188.09
Flow Release Above 100yr WSEL	78.90



WEIR OUTLET DETAIL

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WEIR SECTION FRONT VIEW

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HIGHLAND GARDENS UNIT 2

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DETENTION POND STRUCTURE DETAILS

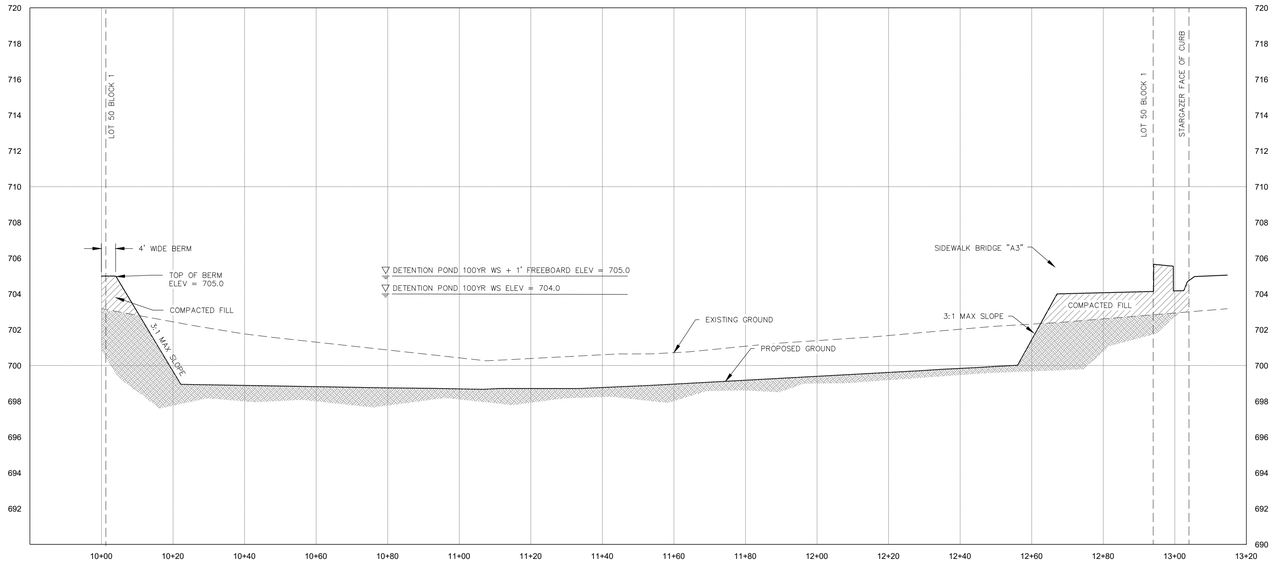
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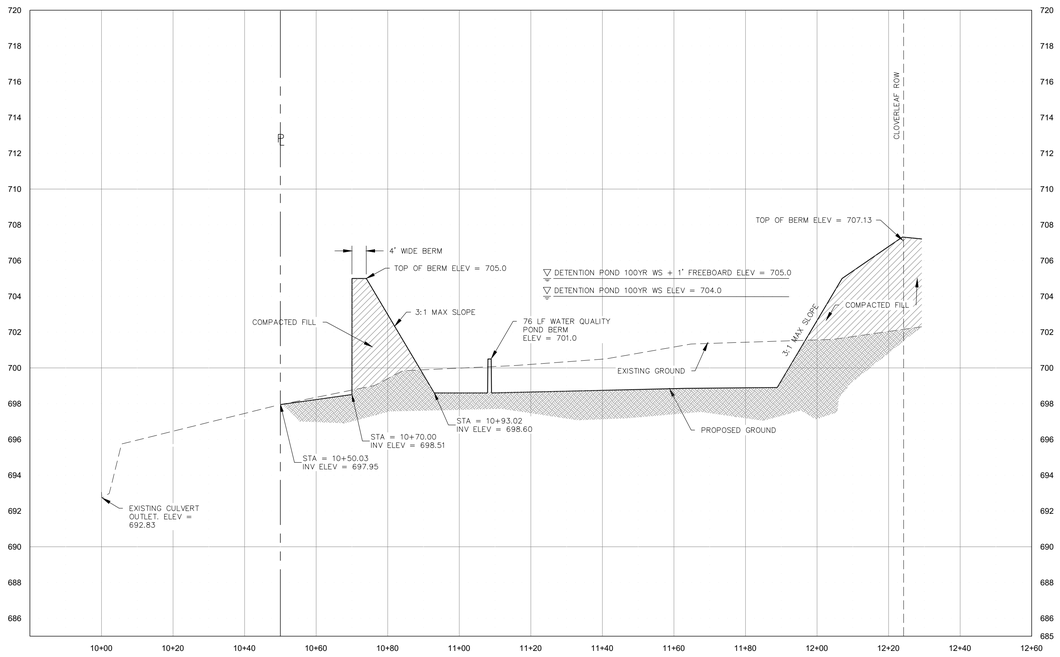
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SEE SHEET 14 - DETENTION POND PLAN & NOTES FOR SECTION MARKER LOCATIONS

DET POND CROSS SECTION A



DET POND CROSS SECTION B



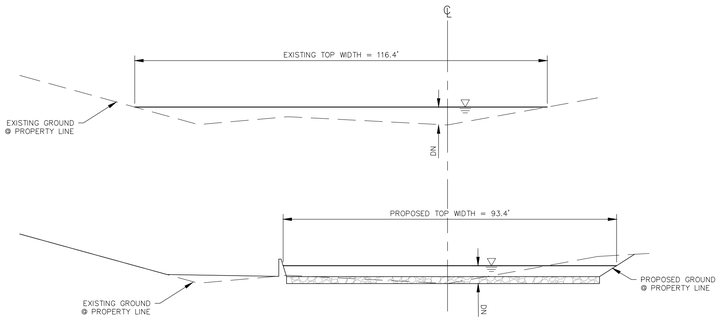
SCALE
HORIZONTAL: 1" = 20'
VERTICAL: 1" = 2'

Existing/Proposed Comparison Table		
Storm Event	EX A Q (CFS)	PRO A Q (CFS)
2	8.5	7.3
10	42.6	34.8
25	73.4	63.9
50	95.7	84.6
100	121.2	108.1

Detention Pond Storage Summary	
Stage (ft)	Area (sf)
0.0	0
0.5	29,035
1.5	31,902
2.5	34,909
3.5	38,008
4.5	41,192
5.5	44,458
6.5	47,810

Detention Pond Hydraulics				
Storm Event	Q (CFS)	V (FT/S)	Time to Empty (hrs)	Water Surface Elevation
2	2.9	2.34	19.4	669.7
10	25.8	3.99	21.5	701.5
25	49.5	4.76	22.6	702.6
50	66.7	5.22	23.3	703.3
100	86.0	5.63	24.0	704.0

Water Quality Summary Table - Units 1A, 1B, and 2			
Ex Imp Cover (SF)	Pro Imp Cover (Streets) (SF)	Pro Imp Cover (Rooftops and Conc) (SF)	Imp Cover Increase (SF)
745	267,975	436,500	703,730
		Water Quality Volume Required (CF)	29,322
		Water Quality Volume Required (CF) + 20%	35,187
		WQ Basin Width	70
		WQ Basin Length Required (Inlet to Outlet)	140
		WQ Basin Length Provided (Inlet to Outlet)	141
		Water Quality Volume Provided (CF)	35,200
		Flow to Empty WQV in 24 hr	0.41 cfs
		3" Circular Opening	0.26 cfs



PROPERTY LINE CROSS SECTION

NOT TO SCALE

*NOTE: – PLEASE SEE PROPERTY LINE ANALYSIS EXHIBIT AS ATTACHMENT J OF THE HIGHLAND GARDENS UNIT 2 DRAINAGE REPORT FOR CALCULATION, PLAN AND PROFILE.

Property Line Analysis Summary					
AREA	Q_{100} (cfs)	S (%)	n	V_{100} (ft/s)	dn (in)
EXIST	121.16	4.50	0.050	3.07	0.51
PRO	108.07	2.80	0.035	3.41	0.35

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DETENTION POND CROSS-SECTIONS

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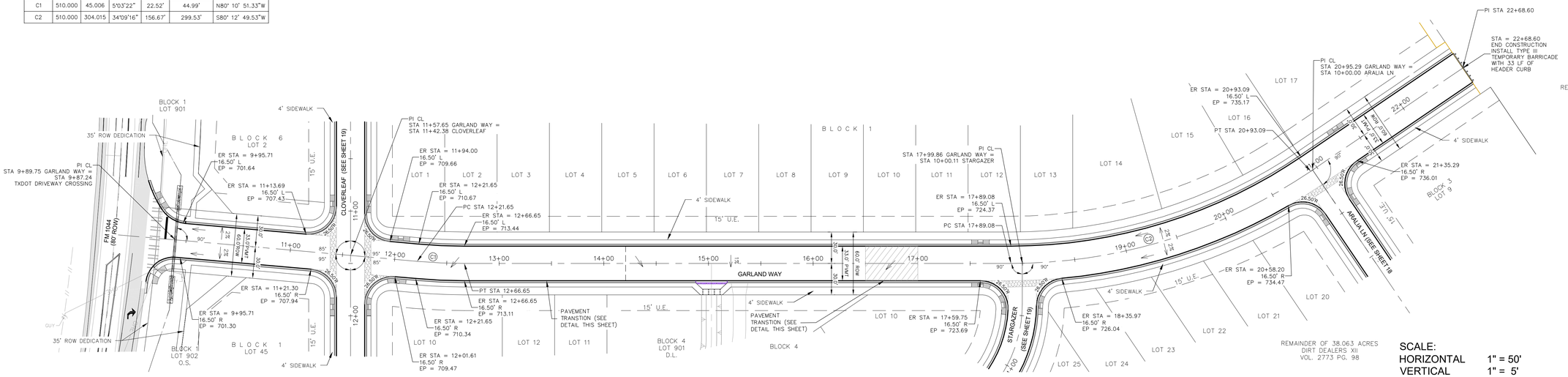
CONSTRUCTION NOTES:

1. DIMENSIONS SHOWN ARE TYPICALLY TO EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED. SEE STREET SECTIONS AND CURB DETAILS FOR ADDITIONAL DETAIL.
2. SEE SHEET 20 FOR STREET SECTIONS AND DETAILS.
3. SEE SHEET 22 FOR STREET SIGNAGE.
4. SEE SHEET 21 FOR SIDEWALK RAMP DETAILS.
5. SIDEWALKS AND SIDEWALK RAMPS SHOWN SHALL BE CONSTRUCTED WITH STREET CONSTRUCTION.
6. ALL CURB & GUTTER IS CATCH CURB UNLESS OTHERWISE NOTED.
7. ALL RAMPS AND ANY SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH STREET CONSTRUCTION.

Curve Table						
Curve #	Radius	Length	Delta	Tangent	Chord Length	Chord Direction
C1	510.000	45.006	5°03'22"	22.52'	44.99'	N80° 10' 51.33"W
C2	510.000	304.015	34°09'16"	156.67'	299.53'	S80° 12' 49.53"W

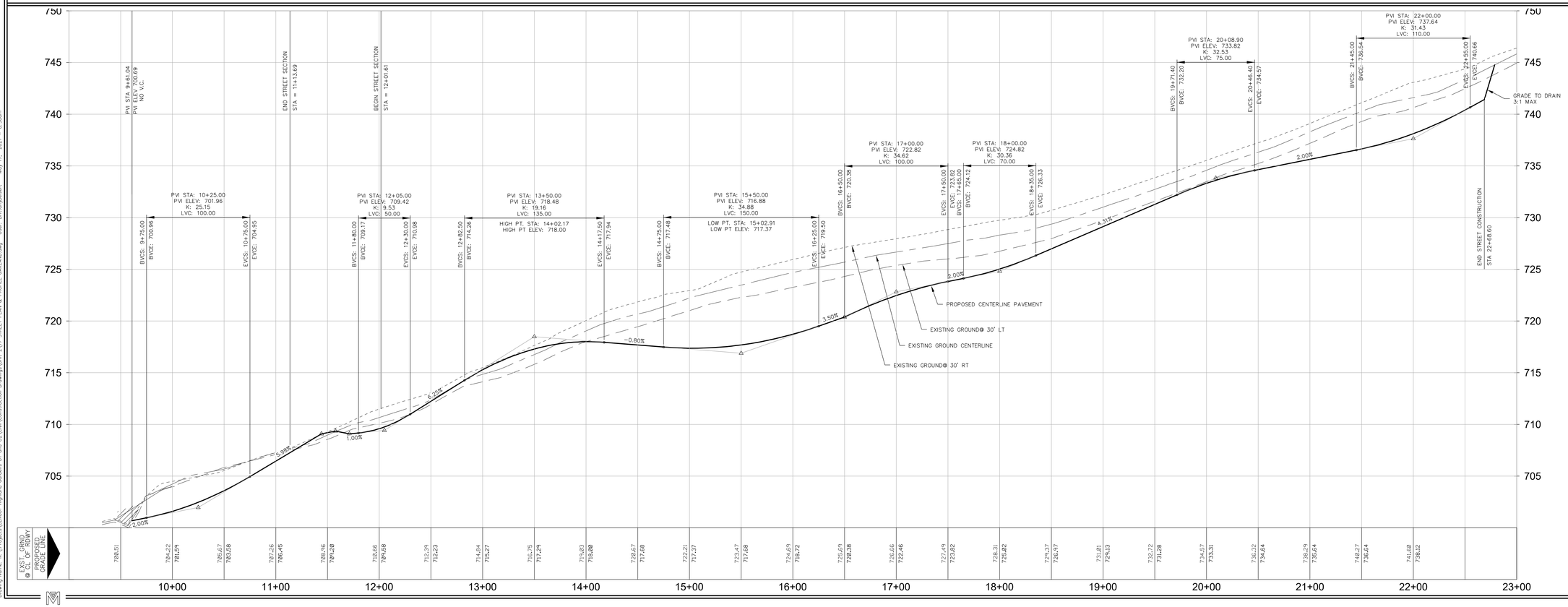
LEGEND

- VERTICAL PAVEMENT TRANSITION (WASHOUT CROWN)
- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
- NEW SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT
- VALLEY GUTTER



GARLAND WAY

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



GARLAND WAY

Know what's below. Call before you dig.

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JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
5-13-21

ISSUES AND REVISIONS

NO	DATE	
	12-02-2020	UPDATED PER CONB COMMENTS
	03-23-2021	UPDATED PER NBU COMMENTS
	05-13-2021	UPDATED PER TXDOT COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W. SH-46, STE. 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

STREET PLAN & PROFILE
GARLAND WAY

HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

SHEET 17 OF 45

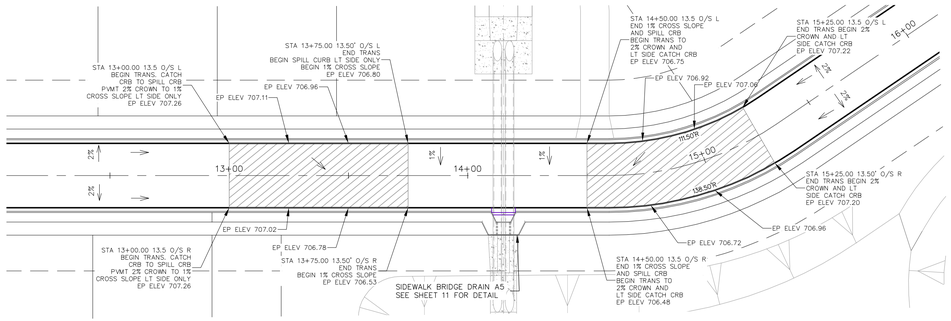
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Drawing Name: N:\Projects\CEN001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\17 STREET PLAN & PROFILE GARLAND.dwg User: BrittanyBennett May 17, 2021 - 8:58am

CONSTRUCTION NOTES:

1. DIMENSIONS SHOWN ARE TYPICALLY TO EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED. SEE STREET SECTIONS AND CURB DETAILS FOR ADDITIONAL DETAIL.
2. SEE SHEET 20 FOR STREET SECTIONS AND DETAILS.
3. SEE SHEET 22 FOR STREET SIGNAGE.
4. SEE SHEET 21 FOR SIDEWALK RAMP DETAILS.
5. SIDEWALKS AND SIDEWALK RAMPS SHOWN SHALL BE CONSTRUCTED WITH STREET CONSTRUCTION.
6. ALL CURB & GUTTER IS CATCH CURB UNLESS OTHERWISE NOTED.
7. ALL RAMPS AND ANY SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH STREET CONSTRUCTION.

Curve Table						
Curve #	Radius	Length	Delta	Tangent	Chord Length	Chord Direction
C1	125.000	74.513	34°09'16"	38.40'	73.42'	N09° 47' 10.47"W

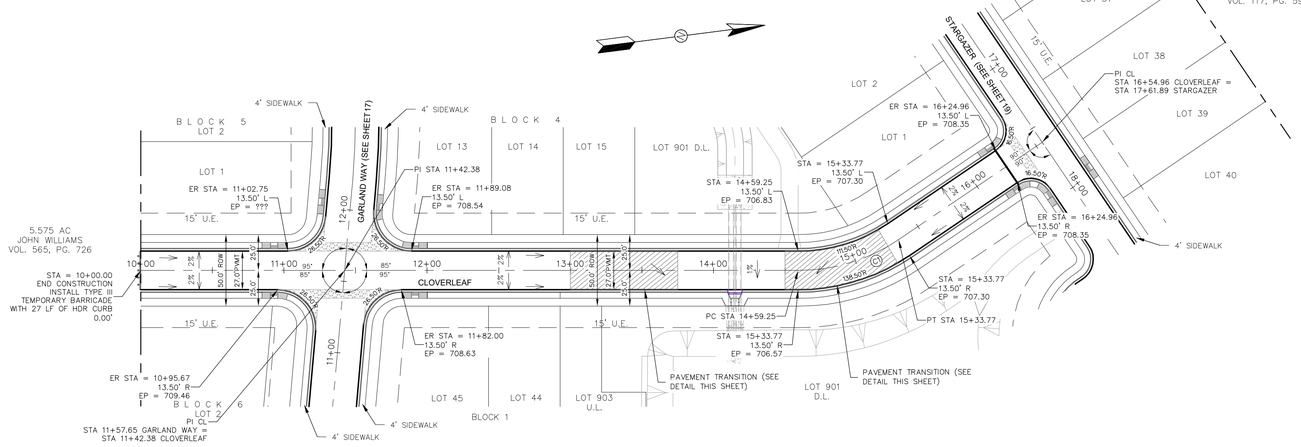


TRANSITION PAVEMENT DETAIL

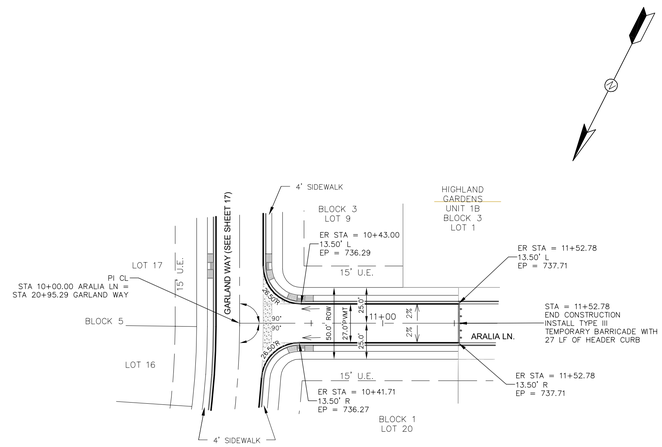
SCALE: 1"= 30'

LEGEND

- VERTICAL PAVEMENT TRANSITION (WASHOUT CROWN)
- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
- NEW SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT
- VALLEY GUTTER

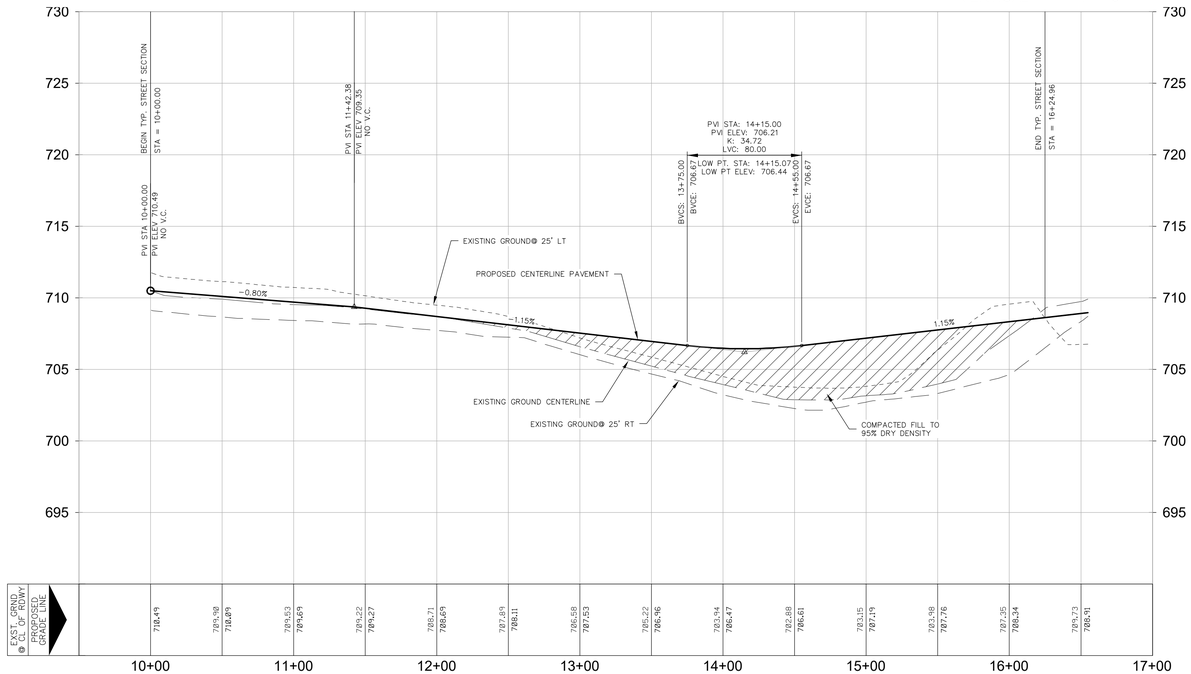


CLOVERLEAF

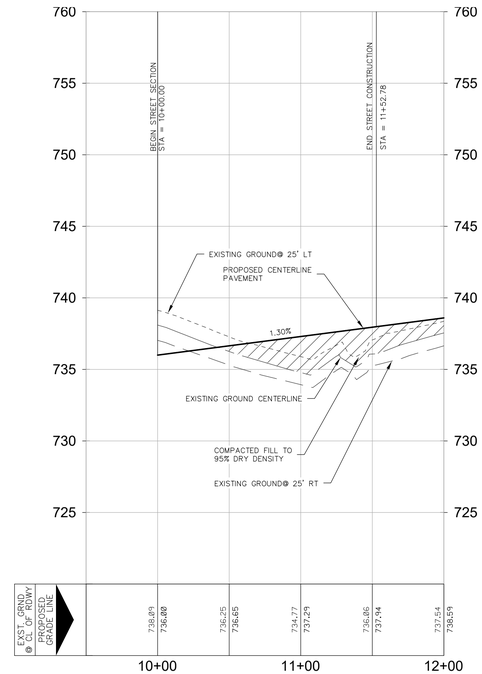


ARALIA LN

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



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



ARALIA LN

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JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
5-13-21

NO	DATE	ISSUES AND REVISIONS
	12-02-2020	UPDATED PER CONB COMMENTS
	03-23-2021	UPDATED PER NBU COMMENTS
	05-13-2021	UPDATED PER TXDOT COMMENTS

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STREET PLAN & PROFILE
CLOVERLEAF & ARALIA LN

HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 18 OF 45

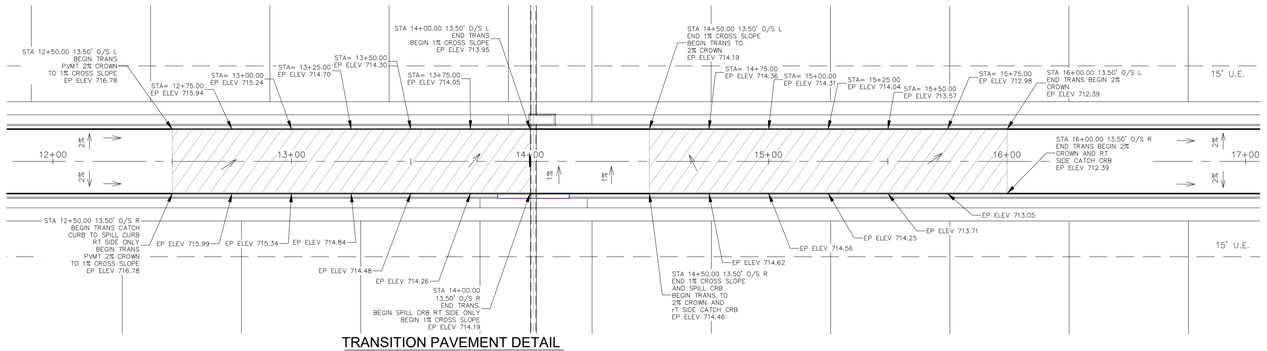
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Drawing Name: N:\Projects\CN001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\18 STREET PLAN & PROFILE CLOVERLEAF & ARALIA LN.dwg User: BrittanyBennett May 17, 2021 - 8:37am

CONSTRUCTION NOTES:

1. DIMENSIONS SHOWN ARE TYPICALLY TO EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED. SEE STREET SECTIONS AND CURB DETAILS FOR ADDITIONAL DETAIL.
2. SEE SHEET 20 FOR STREET SECTIONS AND DETAILS.
3. SEE SHEET 22 FOR STREET SIGNAGE.
4. SEE SHEET 21 FOR SIDEWALK RAMP DETAILS.
5. SIDEWALKS AND SIDEWALK RAMPS SHOWN SHALL BE CONSTRUCTED WITH STREET CONSTRUCTION.
6. ALL CURB & GUTTER IS CATCH CURB UNLESS OTHERWISE NOTED.
7. ALL RAMPS AND ANY SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH STREET CONSTRUCTION.

Curve Table						
Curve #	Radius	Length	Delta	Tangent	Chord Length	Chord Direction
C1	125.000	121.836	55°50'44"	66.25'	117.07'	N35° 12' 49.53"E



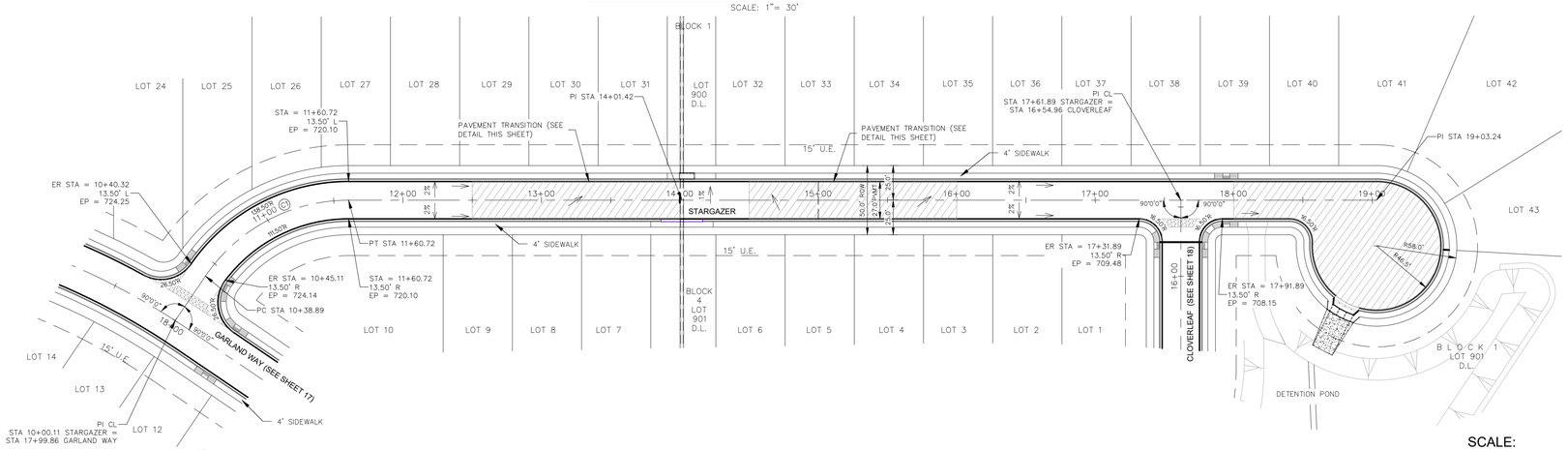
TRANSITION PAVEMENT DETAIL

SCALE: 1"= 30'

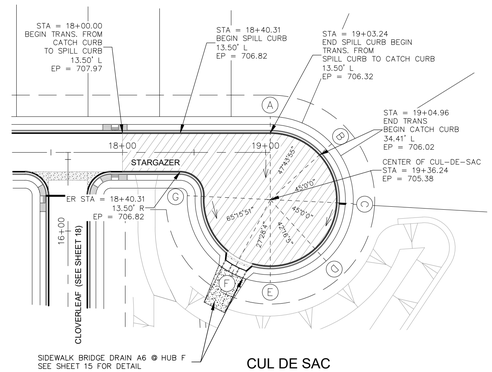
LEGEND

- VERTICAL PAVEMENT TRANSITION (WASHOUT CROWN)
- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
- NEW SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT
- VALLEY GUTTER

CUL DE SAC HUB ELEV	
HUB	EP
A	706.32
B	706.02
C	705.72
D	705.43
E	704.15
F – Low	704.98
G	706.21

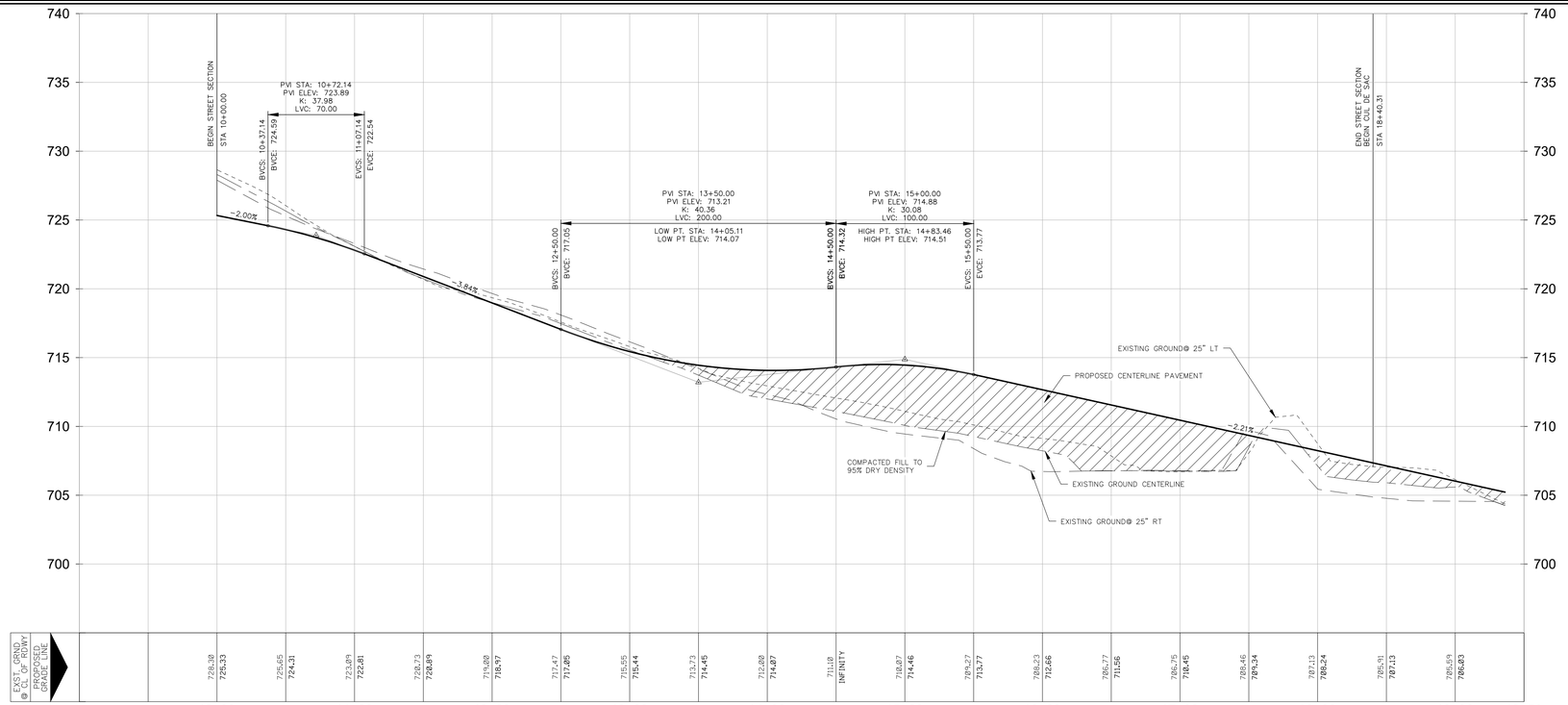


STARGAZER



CUL DE SAC

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



STREET PLAN & PROFILE
STARGAZER

HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 19 OF 45

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

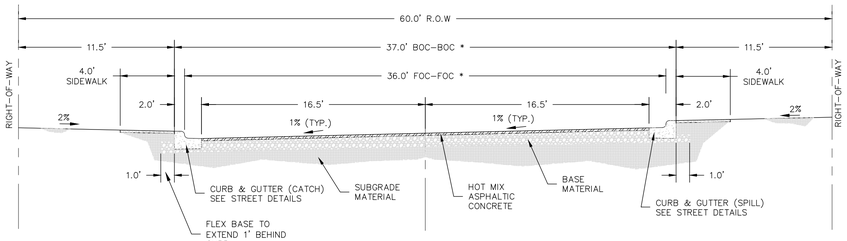
STATE OF TEXAS JAMES INGALLS 107416 LICENSED PROFESSIONAL ENGINEER 11-11-20

NO	DATE	ISSUES AND REVISIONS

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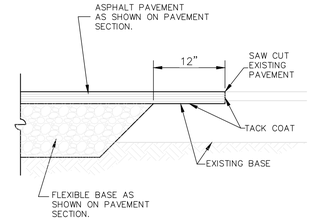
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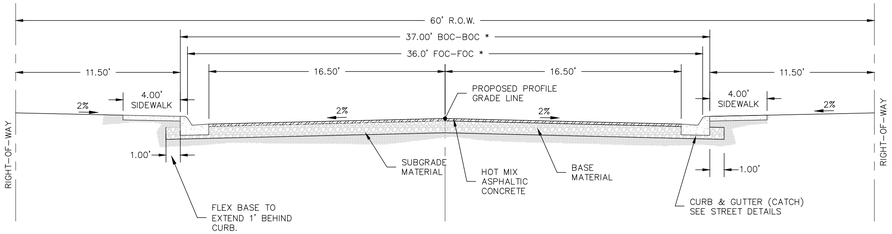
CROSS SLOPE SECTION 60' R.O.W.

Scale: 1" = 5'



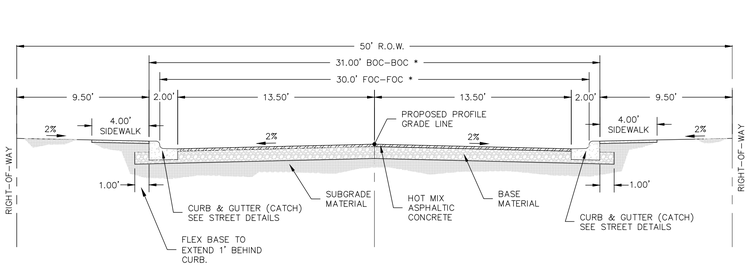
NEW PAVEMENT TO EXISTING

SCALE: NTS



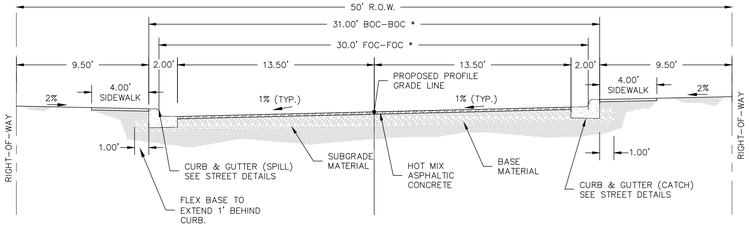
CROWN SECTION 60' R.O.W.

Scale: 1" = 5'



CROWN SECTION 50' R.O.W.

Scale: 1" = 5'



CROSS SLOPE SECTION 50' R.O.W.

Scale: 1" = 5'

TYPICAL STREET CROSS SECTIONS

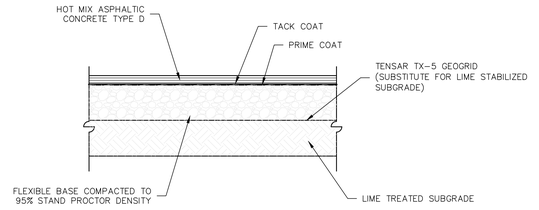
*FOC – FACE OF CURB
*BOC– BACK OF CURB

STREET SECTION NOTES:

1. ALL CONCRETE CURBING SHALL BE CONCRETE CURB AND GUTTER, (I.E. CATCH OR SPILL) UNLESS OTHERWISE SPECIFIED ON THE PLANS (I.E. RIBBON CURB)
2. CROSS SLOPE VARIES WITHIN VERTICAL TRANSITIONS. THE TYPICAL CROSS SLOPE SHALL BE 1% UNLESS OTHERWISE SPECIFIED ON PLANS.
3. BASE MATERIAL SHALL EXTEND 12" BEHIND BACK OF CURB.
4. SEE GRADING PLAN FOR LOT GRADING BEYOND RIGHT OF WAY LINE.

PAVEMENT SECTION NOTES:

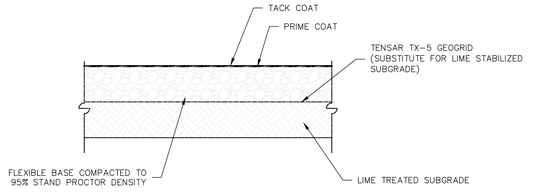
1. TYPICAL PAVEMENT SECTION SHALL BE USED ON ALL STREETS.
2. ALL PAVEMENT CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE TO THE GEOTECHNICAL ENGINEERING STUDY FOR THE "PROPOSED HIGHLAND GARDENS SUBDIVISION ROADWAYS UNITS 1, 2 AND 3"
   PREPARED BY: ROCK ENGINEERING AND TESTING LABORATORY
   RETL PROJECT NO.: G218116
   DATED: FEBRUARY 27, 2018.
3. THE CONTRACTOR SHALL ENGAGE A GEOTECHNICAL ENGINEERING FIRM TO OBSERVE AND EVALUATE THE SUBGRADE MATERIAL AND DETERMINE THE LIMITS OF THE APPROPRIATE MINIMUM PAVEMENT SECTION REQUIRED.



TYPICAL PAVEMENT SECTION - LOCAL TYPE A

Scale: NTS

NOTE: PAVEMENT SECTION MEETS THE MINIMUM REQUIREMENTS AS PER CITY OF NEW BRAUNFELS



TEMPORARY TURN AROUND SECTION

Scale: NTS

Pavement Constituent	Layer Coefficient (α)
Lime Treated Subgrade	0.08
New Crushed Limestone Base (TxDOT Item 247 Type A, Grade 1-2)	0.14
Type D HMAC	0.44

The recommended hot mixed asphaltic concrete (HMAC) pavement sections are provided in the following tables:

"ONE AND TWO FAMILY RESIDENTIAL" (Required AASHTO 18-KIP ESAL = 58,000)				
Hot Mix Asphaltic Concrete	2"	2"	2"	2"
Crushed Limestone Base Material (TxDOT Item 247 Type A; Gr. 2)	10"	6"	7"	6"
TENSAR Geogrid	–	TX-5	–	TX-130S
Lime Treated Subgrade	–	---	6"	6"
Moisture Conditioned Subgrade	6"	6"	---	---
Calculated AASHTO 18-kip ESAL	58,000	99,000	69,000	192,000

"RESIDENTIAL COLLECTOR" (Required AASHTO 18-KIP ESAL = 279,000)				
Hot Mix Asphaltic Concrete	2"	2"	2"	2"
Crushed Limestone Base Material (TxDOT Item 247 Type A; Gr. 2)	14.5"	9"	11.5"	8"
TENSAR Geogrid	–	TX-5	–	TX-130S
Lime Treated Subgrade	–	---	6"	6"
Moisture Conditioned Subgrade	6"	6"	---	---
Calculated AASHTO 18-kip ESAL	279,000	327,000	319,000	371,000

Moisture Conditioned Subgrade

After all surface organics and deleterious materials have been removed and the desired subgrade elevation has been achieved, the upper 6-inches of exposed subgrade soils should be compacted to a minimum density of 95-percent of the maximum dry unit weight of the subgrade soils as determined by TEX 114E and at or above the optimum moisture content. Any fill required to achieve the final subgrade elevation shall be placed in maximum 8-inch loose lifts and compacted as specified above.

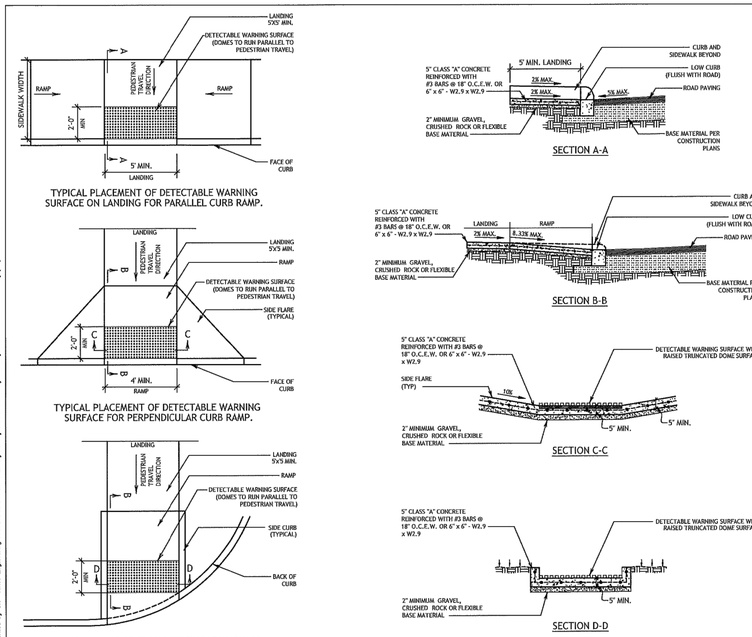
NOTE:

1. RESIDENTIAL LOCAL PAVEMENT SECTION LIMITS
   –ALL STREETS

   CONTRACTOR TO REFERENCE GEOTECHNICAL ENGINEERING STUDY FOR THE "PROPOSED HIGHLAND GARDENS SUBDIVISION ROADWAYS UNITS 1, 2 AND 3."

   ACCORDING TO THE GEOTECHNICAL ENGINEERING STUDY FOR THE "PROPOSED HIGHLAND GARDENS SUBDIVISION ROADWAYS UNITS 1, 2 AND 3"
   PREPARED BY: ROCK ENGINEERING AND TESTING LABORATORY
   RETL PROJECT NO.: G218116
   DATED FEBRUARY 27, 2018.

   THE SUBGRADE SOILS SHALL BE TESTED AT TIME OF CONSTRUCTION TO DETERMINE THE LIME REQUIREMENT TO ACHIEVE A PH VALUE OF 12.4 OR GREATER.
3. SUBGRADE SOILS SHOULD BE TESTED FOR SOLUBLE SULFATE CONTENT PRIOR TO TREATMENT.



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 4'X 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 BOARD 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

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STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
11-11-20

NO	DATE	ISSUES AND REVISIONS

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2021 W SH46, STE 105, NEW BRAUNFELS, TX 78132
PH: 830-358-7127 www.mta-tx.com
TBPE FIRM F-13351

STREET SECTIONS AND DETAILS

HIGHLAND GARDENS UNIT 2

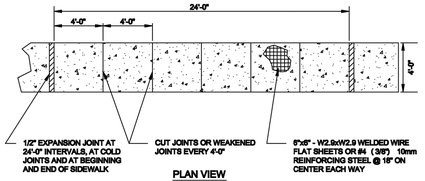
NEW BRAUNFELS, TEXAS

SHEET 20 OF 45

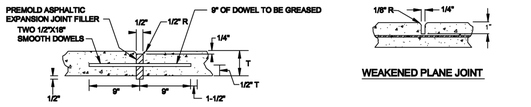
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Drawing Name: N:\Projects\GN001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\00 STREET SECTIONS AND DETAILS.dwg User: StevenGarcia Nov 12, 2020 - 11:48am

SIDEWALK
(RESIDENTIAL)

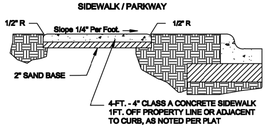


PLAN VIEW



EXPANSION JOINT

WEAKENED PLANE JOINT



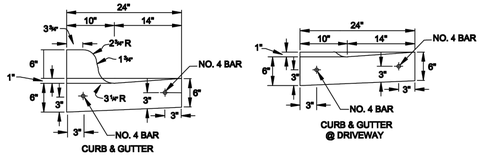
TYPICAL SECTION

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.	ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: SIDEWALK (Residential)			
P:\CURRENT NEW BRAUNFELS DETAILS\2009\			

CURB AND GUTTER



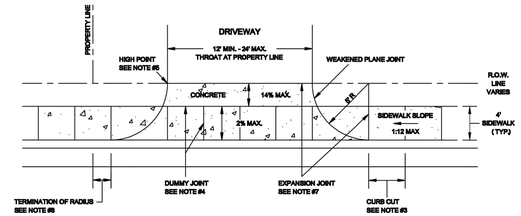
LONGITUDINAL SECTION THRU CURB AND GUTTER SHOWING TYPICAL EXPANSION JOINT DETAILS. REINFORCING STEEL SHALL NOT CROSS EXPANSION JOINTS. STEEL SHALL BE TERMINATED 3" (+ OR -) 1" FROM FACE OF THE JOINT.

NOTES:

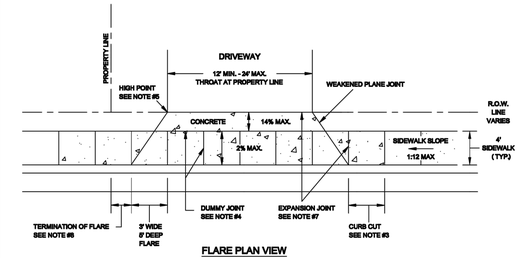
1. REINFORCING BARS SHALL BE LAPPED A MINIMUM OF 18".
2. CURB AND GUTTER SHALL HAVE FORMED TOOLED OR SAWED CONTRACTION JOINTS AT ± 10'. THE DEPTH OF THESE JOINTS SHALL BE SUFFICIENT TO ENSURE CRACKING AT THE JOINTS.
3. CURB OR CURB AND GUTTER SHALL HAVE EXPANSION JOINTS AT POINTS OF CURVATURE, AT INTERVALS 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.	ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: Curb & Gutter			
P:\CURRENT NEW BRAUNFELS DETAILS\2009\			

DRIVEWAY APRON
(RESIDENTIAL - RADIAL/FLARED)



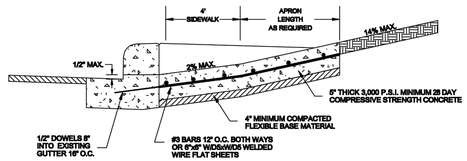
RADIUS PLAN VIEW



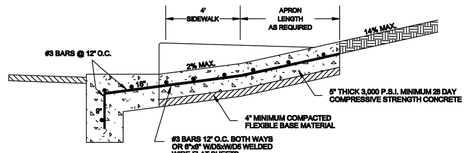
FLARE PLAN VIEW

DATE APPROVED: 7/08	DWG. NO: ST-014.1	SCALE: N.T.S.	ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 2		
FILENAME: DRIVEWAY (Residential - Radial/Flared)			
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DRIVEWAY APRON
(ONE OR TWO FAMILY RESIDENTIAL)



STRUCTURAL SECTION

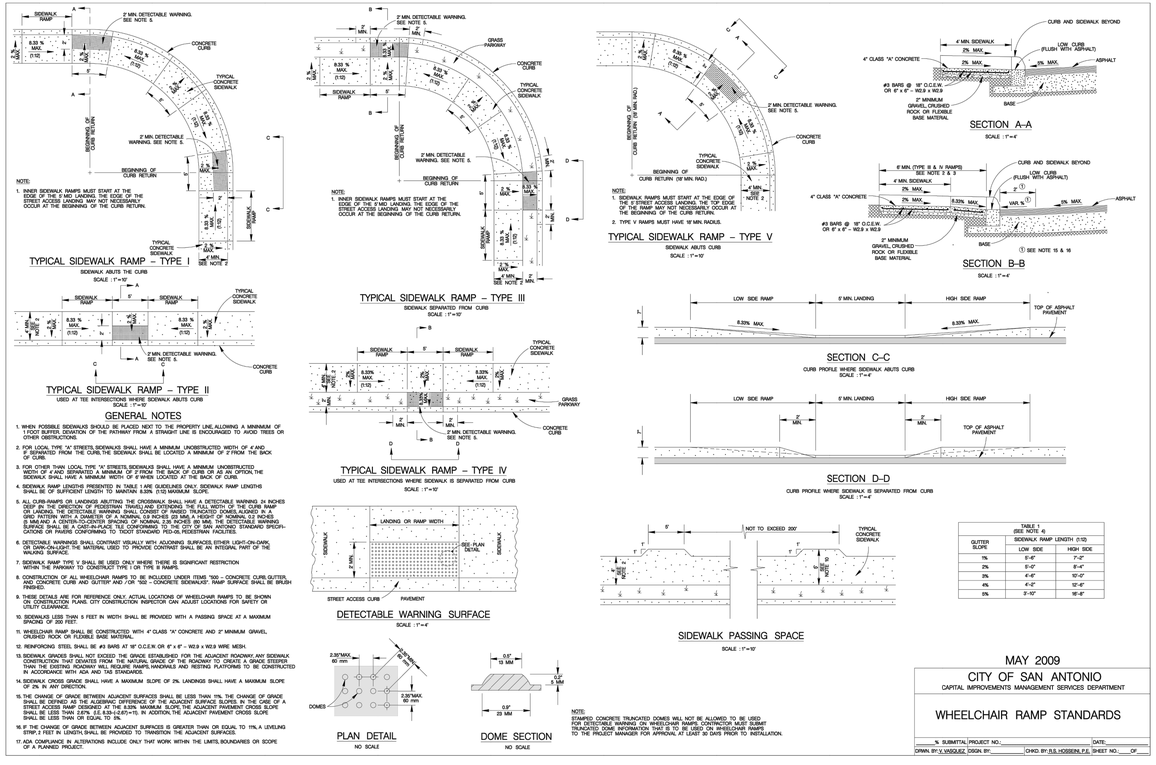


NO EXISTING CURB STRUCTURAL SECTION

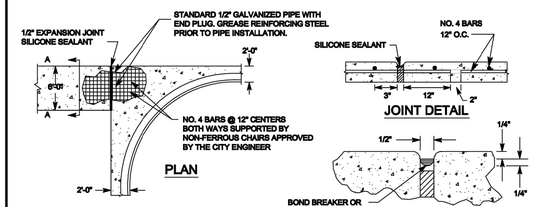
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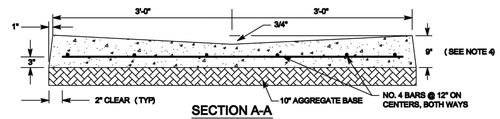
1. WHERE GUTTER DOES NOT EXIST DRIVEWAY APRON SHALL EXTEND TO EDGE OF ASPHALT AND SHALL HAVE A MINIMUM 6" WIDE 1' DEEP GRADE BEAM MONOLITHIC AND REINFORCED SIMILAR TO APRON.
2. PLACEMENT OF SIDEWALK SHOWN IS TYPICAL; HOWEVER, ALTERNATIVE SIDEWALK PLACEMENT COMMON TO DRIVEWAY APRON WILL BE CONSIDERED 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 18" 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.

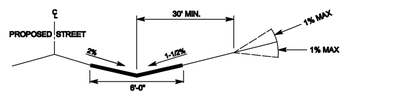
DATE APPROVED: 7/08	DWG. NO: ST-014.2	SCALE: N.T.S.	ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 2 OF 2		
FILENAME: DRIVEWAY (Residential - Radial/Flared)			
P:\CURRENT NEW BRAUNFELS DETAILS\2009\			



CROSS GUTTER







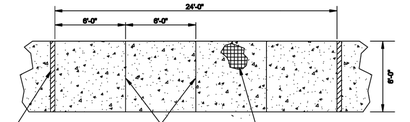
TYPICAL PROFILE AT LOCAL RESIDENTIAL STREET INTERSECTION

NOTES:

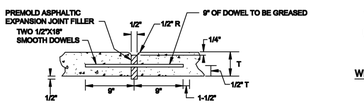
1. ALL CONCRETE SHALL BE CLASS "A" 3,000 PSI.
2. FINISHED ASPHALT CONCRETE SURFACE TO BE FLUSH WITH CROSS GUTTER LIP.
3. CONSTRUCTION OF CROSS GUTTER IS NOT ALLOWED ACROSS MAJOR COLLECTOR OR ARTERIAL STREETS.
4. ADJACENT SPANDREL SHALL BE 9" THICK CLASS "A" 3,000 PSI CONCRETE.

DATE APPROVED: 7/08	DWG. NO: ST-020	SCALE: N.T.S.	ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: CROSS GUTTER			
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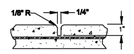
SIDEWALK
(COMMERCIAL - INDUSTRIAL)



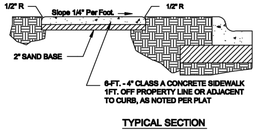
PLAN VIEW



EXPANSION JOINT



WEAKENED PLANE JOINT



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-017	SCALE: N.T.S.	ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: SIDEWALK (Commercial-Industrial)			
P:\CURRENT NEW BRAUNFELS DETAILS\2009\			

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JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
11-11-20

NO	DATE	ISSUES AND REVISIONS

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2021 W. SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

STREET SECTIONS AND DETAILS II

HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

SHEET 21 OF 45

Drawing Name: N:\Projects\CK0001 Highland Gardens Ut and U2\Civil\Construction Drawings\Unit 2\ST STREET SECTIONS AND DETAILS.dwg User: SteveGarcia Nov 12, 2020 - 11:49am

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LEGEND

4' SIDEWALK TO BE INSTALLED BY THE DEVELOPER AT THE TIME OF STREET CONSTRUCTION (REMAINING SIDEWALK SHOWN TO BE CONSTRUCTED BY THE HOME BUILDER AT THE TIME OF BUILDING CONSTRUCTION)

N

0 50' 100'

SCALE:1"=50'

HIGHLAND GARDENS UNIT 1A

STOP
R1-1
ARALIA LN
GARLAND WAY

INSTALL CONCRETE HEADER CURB (SEE DETAIL THIS SHEET)

ARALIA LN (50' ROW)

ADA RAMP TYP I

ADA RAMP TYP II

STOP
R1-1
STARGAZER
GARLAND WAY

STARGAZER (50' ROW)

16 SQ YD PROPOSED SIDEWALK

20 SQ YD PROPOSED SIDEWALK

125 SQ YD PROPOSED SIDEWALK

SPEED LIMIT 30
R2-1

STOP
R1-1
CLOVERLEAF
GARLAND WAY

GARLAND WAY (60' ROW)

CLOVERLEAF (50' ROW)

69 SQ YD PROPOSED SIDEWALK

153 SQ YD PROPOSED SIDEWALK

102 SQ YD PROPOSED SIDEWALK

PROPOSED SIDEWALK BRIDGE. SEE SHEET 15 FOR DETAILS.

STOP
R1-1
CLOVERLEAF
STARGAZER

224 SQ YD PROPOSED SIDEWALK

STOP
R1-1
GARLAND WAY
CLOVERLEAF

STOP
R1-1
GARLAND WAY
CLOVERLEAF

165 SQ YD PROPOSED SIDEWALK

INSTALL CONCRETE HEADER CURB AND END OF ROADWAY MARKER (SEE DETAIL THIS SHEET)

INSTALL CONCRETE HEADER CURB AND END OF ROADWAY MARKER (SEE DETAIL THIS SHEET)

FOR TYPE I AND TYPE II SHEELCHAIR RAMP STANDARDS PLEASE SEE DETAIL ON SHEET 23.

FM 1044 (80' ROW)

STOP
R1-1
GARLAND WAY
FM 1044

6' SIDEWALK

ALL PROPOSED SIDEWALKS ARE 4' IN WIDTH UNLESS NOTED OTHERWISE,SIDEWALKS ARE 6' IN WIDTH IN TXDOT ROW.

NOTE:
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.

ALL RAMPS AND ANY PROPOSED SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH THE STREET CONSTRUCTION.

BLOCK 3 BLOCK 1 BLOCK 4 BLOCK 6

LOT 901 D.L. BLOCK 1

LOT 900 D.L. BLOCK 1

LOT 902 D.S. BLOCK 4

LOT 903 U.L. BLOCK 1

LOT 902 P.S. BLOCK 1

15' U.E.

35' ROW DEDICATION

0.452 AC
ADELINE L. WOLFHART
DEATH CERT. 57443
VOL. 117 PG. 597

25.0 AC
ESTATE OF HOWARD FRANKS
C/O RUTH M. FRANKS
PROBATED WILL
HOWARD FRANKS
VOL. 825, PG. 946

5.575 AC
JOHN WILLIAMS
VOL. 565 PG. 726

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

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
11-11-20

NO	DATE	ISSUES AND REVISIONS
1	4-22-2020	REVISED PER COMB COMMENTS

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PH: 830-358-7127 www.mo-tx.com
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TRAFFIC SIGNAGE & SIDEWALK PLAN

HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 22 OF 45

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Drawing Name: N:\Projects\CE\001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\22 TRAFFIC SIGNAGE & SIDEWALK PLAN.dwg User: StevenGarcia Nov 12, 2020 - 11:49am

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE	3" : 1⅛" : 4"	4" : 1⅛" : 4"	6" : ⅛" : 12"	3½" : ⅛" : 12"
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (fix). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE	4" : 6" : 4"	3" : 4" : 4"	4" : 6" Max : 4"	3" : 4" Max : 4"
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	FLX	WC	FLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE	18" : 18"	4" : 4" : 4" : 4" : 12" Max	6" : 12"	3" : 12"	12" : 35" : 6" : 45°	12" : 35"	12" : 35"	18" : 18"
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_1 or C_1 Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{11} or C_{11} Sheeting			Red -Type B_1 or C_1 Sheeting
POST TYPE	TWT	WC	WC	FLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Minimum 9 square inches of reflective sheeting surface area.		

CHEVRONS

DEVICE: W1-8

SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE
1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. The Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTIONAL LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE: W1-6

SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXX)XXX(XX)

- NUMBER OF REFLECTORS: S = Single; D = Double
- COLOR OF REFLECTORS: W = White; Y = Yellow; R = Red
- REFLECTOR UNIT SIZE: 1 or 2
- TYPE OF POST OR DELINEATOR: WC = Wing Channel Post; FLX = Flexible Post; BRF = Barrier Reflector
- TYPE OF MOUNT: GND = Embedded (drivable or set in concrete); CTB = Concrete Barrier Mount; GF1 or GF2 = Guard Fence Attachment; SRF = Surface Mount
- DIRECTION: If Required; B1 = Bi-Directional; BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXX)XXX(XX)

- TYPE OF OBJECT MARKER: 1, 2, 3, or 4
- NUMBER OF REFLECTORS OR DIRECTION: X = 3-Size 2 reflector units (Type 2 only); Y = 1-Size 3 reflector unit (Type 2 only); Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only); L = Left Side (Type 3 Object Marker only); R = Right Side (Type 3 Object Marker only); C = Center (Type 3 Object Marker only)
- TYPE OF POST: WC = Wing Channel Post; FLX = Flexible Post; TWT = Thin Walled Tubing
- TYPE OF MOUNT: GND = Embedded (drivable); SRF = Surface Mount; WAS = Wedge Anchor Steel; WAP = Wedge Anchor Plastic
- DIRECTION: If Required; B1 = Bi-Directional

DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

NOTE:
Delineator and object marker backplates and sign substrates shall be 0.080" Aluminum Sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation — Traffic Operations Division Standard

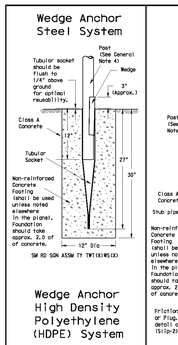
DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION
D & OM(1)-15

FILE: dom1-15.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10				

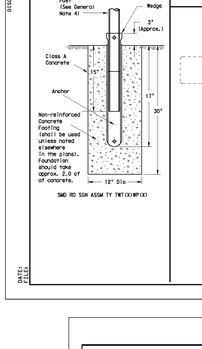
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DATED
DATED

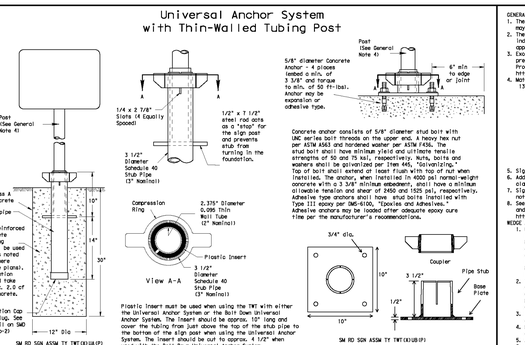
Wedge Anchor Steel System



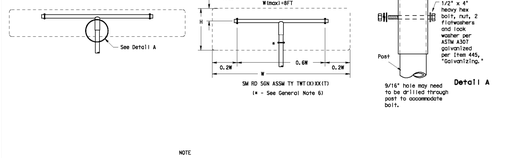
Wedge Anchor High Density Polyethylene (HDPE) System



Universal Anchor System with Thin-Walled Tubing Post



Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



NOTE
The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:
1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer, Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts 113 BWG tubing, clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer_list.htm
4. Material used on post with this system shall conform to the following specifications: 13 BWG (0.095" Nominal) Thickness (TWT)
   0.080" Minimum Thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS GP 65 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the followings
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.368" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), random tube outside diameter weld seams may be identified with blue wire per ASTM B633.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamps required on the "T-bracket" post for 24" high signs. Place additional clamp 6" above bottom of sign when possible.
7. Sign supports shall not be painted except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE
1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN)-08 must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, mixer driven concrete mixer, for small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximately 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE
1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN)-08 must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Insert the sign post into socket and align sign face with roadway.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Align sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation — Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST
SMD(TWT)-08

©TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08 REVISIONS	Dist	Dist	JOB	HIGHWAY
	COUNTY			SHEET NO.
	DISTRICT			SHEET NO.

256

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 ½" 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: 830.626.5000

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

SIGN REQUIREMENTS

1. TRAFFIC SIGNS SHALL BE USED IN ACCORDANCE WITH THE LATEST REVISION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND WHERE JUSTIFIED BY ENGINEERING JUDGMENT OR STUDY. TRAFFIC SIGNS INCLUDE REGULATOR SIGNS, WARNING SIGNS, STREET NAME SIGNS AND OBJECT MARKERS.
2. ALL SIGNS SHALL BE SHOWN IN THE ENGINEERING PLANS FOR REVIEW AND APPROVAL AS PART OF THE PLAN AND PROFILE SHEET OR SEPARATE SIGNING AND PAVEMENT MARKING LAYOUT SHEET. THE ENGINEERING PLANS SHALL INCLUDE SIGN LOCATION, NAME, DESIGNATION AND SIZE. SIGN STANDARDS SHALL BE INCLUDED IN THE ENGINEERING PLANS.

INSTALLATION

1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY, WARNING AND STREET NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS.

MOUNTING

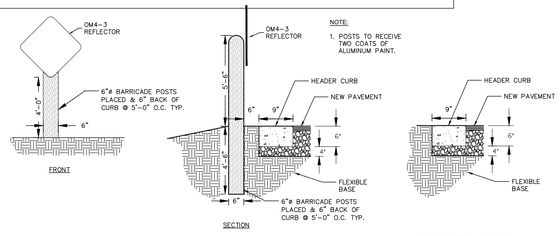
1. THE WEDGE ANCHOR STEEL SYSTEM AND THIN-WALLED TUBING POST SHALL BE USED FOR SIGNS WITH UP TO 10 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) TRAFFIC STANDARDS SMD(GEN)-08 AND SMD(TWT)-08.
2. THE TRIANGULAR SLIP BASE SYSTEM AND 10 BWG TUBING POST SHALL BE USED FOR SIGNS THAT HAVE 10 TO 18 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS SMD(GEN)-08 AND SMD(SLIP-1-3)-08.
3. OBJECT MARKERS MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS D&OM(1-5)-10.

MATERIALS

1. SIGN MATERIALS INCLUDING ALUMINUM SING BLANKS AND SIGN FACE MATERIALS SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS TSR(1-5)-08 AND DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-7110 AND DMS-8300.
2. THE CITY OF NEW BRAUNFELS WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

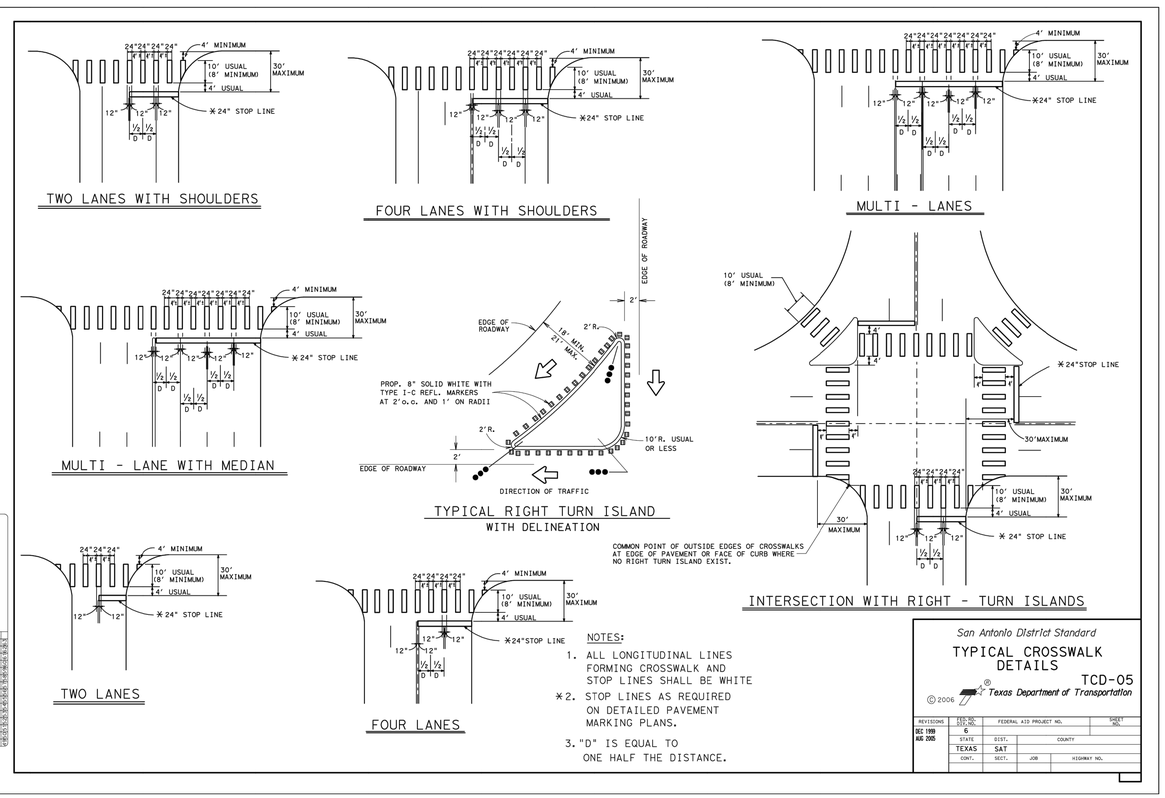
PAVEMENT MARKING REQUIREMENTS

1. PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE WITH THE LATEST REVISION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND WHERE JUSTIFIED BY ENGINEERING JUDGMENT OR STUDY.
2. ALL PAVEMENT MARKINGS SHALL BE SHOWN IN THE ENGINEERING PLANS FOR REVIEW AND APPROVAL AS PART OF THE PLAN AND PROFILE SHEET OR SEPARATE SIGNING AND PAVEMENT MARKING LAYOUT SHEET. DESIGN, MATERIALS AND INSTALLATION SHOULD FOLLOW TXDOT TRAFFIC STANDARDS PM(1-4)-12. CITY OF SAN ANTONIO TRAFFIC ENGINEERING STANDARDS FOR PAVEMENT MARKINGS DESIGNATING TRAFFIC LANES, LANE USAGE AND LANE REGULATIONS AND PEDESTRIAN/BICYCLIST ACCOMMODATIONS MAY BE USED FOR ADDITIONAL STANDARD DESIGN DETAILS. MARKING STANDARDS SHALL BE INCLUDED IN THE ENGINEERING PLANS.
3. ALL PAVEMENT MARKINGS SHALL BE TYPE I HOT APPLIED THERMOPLASTIC AND MEET TXDOT DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-8200.
4. THE CONTRACTOR SHALL NOTIFY THE CITY OF NEW BRAUNFELS AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE CONTRACTOR MAY BE RESPONSIBLE FOR PLACING SPOT TABS BEFORE MARKING APPLICATION. THE CITY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.



END OF ROADWAY MARKER
Scale: NTS

HEADER CURB
Scale: NTS



NOTES:
1. ALL LONGITUDINAL LINES FORMING CROSSWALK AND STOP LINES SHALL BE WHITE
*2. STOP LINES AS REQUIRED ON DETAILED PAVEMENT MARKING PLANS.
3. "D" IS EQUAL TO ONE HALF THE DISTANCE.

San Antonio District Standard

TYPICAL CROSSWALK DETAILS
TCD-05

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REVISIONS	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
DEC 1999	6			
AUG 2005	STATE	DIST.	COUNTY	
	TEXAS	SAT		
	CONT.	SECT.	JOB	HIGHWAY NO.

ALL PROPOSED SIDEWALKS ARE 4' IN WIDTH UNLESS NOTED OTHERWISE.

NOTE:
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.

ALL RAMPS AND ANY PROPOSED SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH THE STREET CONSTRUCTION.

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

STATE OF TEXAS — JAMES INGALLS — 107416 — LICENSED PROFESSIONAL ENGINEER — 11-17-20

NO	DATE	ISSUES AND REVISIONS

MOELLER & ASSOCIATES Engineering Solutions
2021 W. SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

TRAFFIC SIGNAGE & SIDEWALK DETAILS

HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

SHEET 23 OF 45

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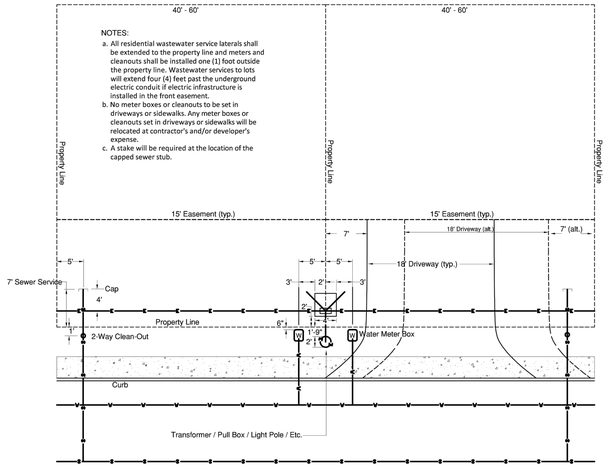
Drawing Name: N:\Projects\074001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\23 TRAFFIC SIGNAGE & SIDEWALK DETAILS.dwg User: SteveGarcia Nov 12, 2020 - 11:47am

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

DRAWN BY: D. A.
APPROVED BY: N. P.
DATE: 12/20/18
SCALE: N.T.S.
SHEET: 1 OF 1
DRAWING NO: 410

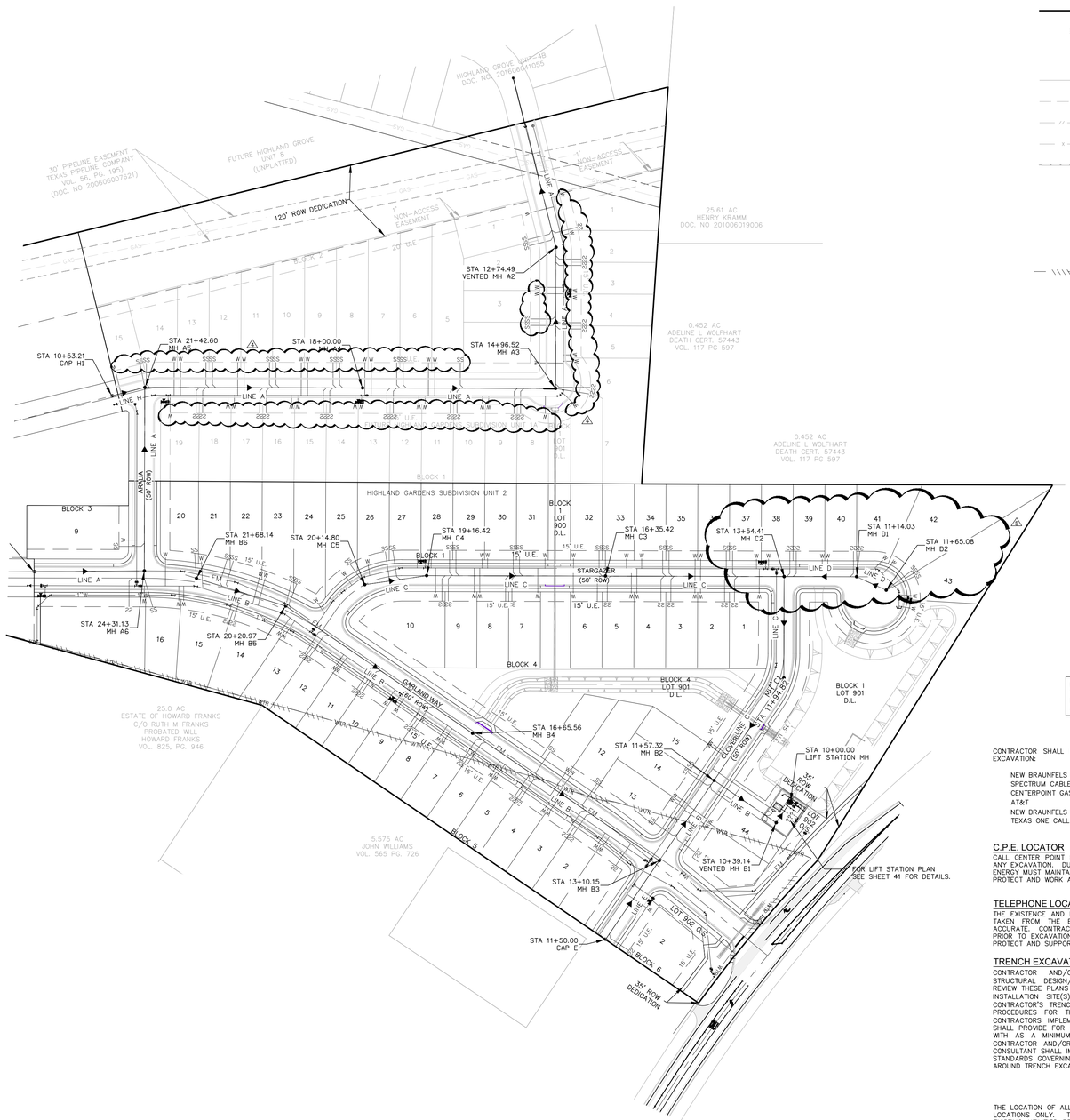
STANDARD DRAWING

NARROW LOT WATER & SEWER SERVICE ALIGNMENT SCENARIO

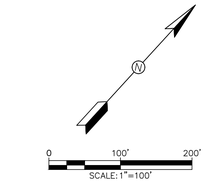


SERVICE LOCATIONS SHOWN ARE APPROXIMATE, CONTRACTOR TO REFERENCE NBU DWG #410 THIS SHEET FOR SERVICE LOCATIONS. CONTRACTOR TO MAINTAIN ALL REQUIRED SEPARATION BETWEEN WATER, SEWER AND ELECTRIC FACILITIES.

NOTE: NBU SHALL SERVICE ELECTRIC TO BLOCK 1 LOTS 20, 21 AND 22, BLOCK 3 LOT 23, AND BLOCK 5 LOT 16 & 17. ALL OTHER LOTS SHALL BE SERVED ELECTRIC BY GVEC.



FOR LIFT STATION PLAN SEE SHEET 41 FOR DETAILS.



LEGEND

- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
- NEW SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT
- EXISTING OVERHEAD ELECTRIC
- EXISTING 8" SANITARY SEWER
- EXISTING WOOD FENCE
- EXISTING BARBWIRE FENCE
- EXISTING TRAFFIC GUARDRAIL
- EXISTING SIGN
- EXISTING SANITARY SEWER MANHOLE
- EXISTING UTILITY POLE
- EXISTING GUY
- ABANDON EXISTING WATER

PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING 8" SANITARY SEWER MAIN AND REPORT ANY DISCREPANCIES TO ENGINEER

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608-8971
SPECTRUM CABLE	1-800-892-4357
CENTERPOINT GAS	(800) 427-7142
AT&T	(830) 303-1333
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY 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.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005., CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTORS 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 EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WLL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

CONSTRUCTION NOTES:

1. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN 10FT HORIZONTAL AND 12IN VERTICAL (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).

2. WHERE 10FT HORIZONTAL AND 12IN VERTICAL SEPARATION FROM WATER AND SEWER LINES CROSSING CANNOT BE MAINTAINED, THE NEW WATER LINE SHALL BE ABOVE THE SEWER LINE AS SHOWN ON THE WATER/SEWER LINE CROSSING DETAIL. AT NO TIME SHALL A WATER LINE OR WATER SERVICE BE PLACED UNDER A SEWER LINE OR SEWER SERVICE.

3. WHERE A NEW POTABLE WATERLINE CROSSES AN EXISTING, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. IF THE EXISTING WASTEWATER MAIN OR LATERAL SHOWS SIGNS OF LEAKING, IT SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE RATED PIPE.

4. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.

5. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN 10FT HORIZONTAL AND 12' VERTICAL OF ANY WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.

6. METER BOXES MUST BE SET AT PROPOSED FINISHED GRADE. ANY METER BOXES THAT ARE NOT SET AT THE FINAL GRADE WILL BE ADJUSTED BY THE CONTRACTOR AT NO ADDITIONAL COSTS.

7. ALL UTILITIES SHALL BE CONSTRUCTED PRIOR TO STREETS.

8. NO VALVES, FIRE HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS OR DRIVEWAYS.

9. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. 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 GEO- TECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. 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.
10.

11. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. 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.

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

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
12-6-22

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

OVERALL UTILITY PLAN

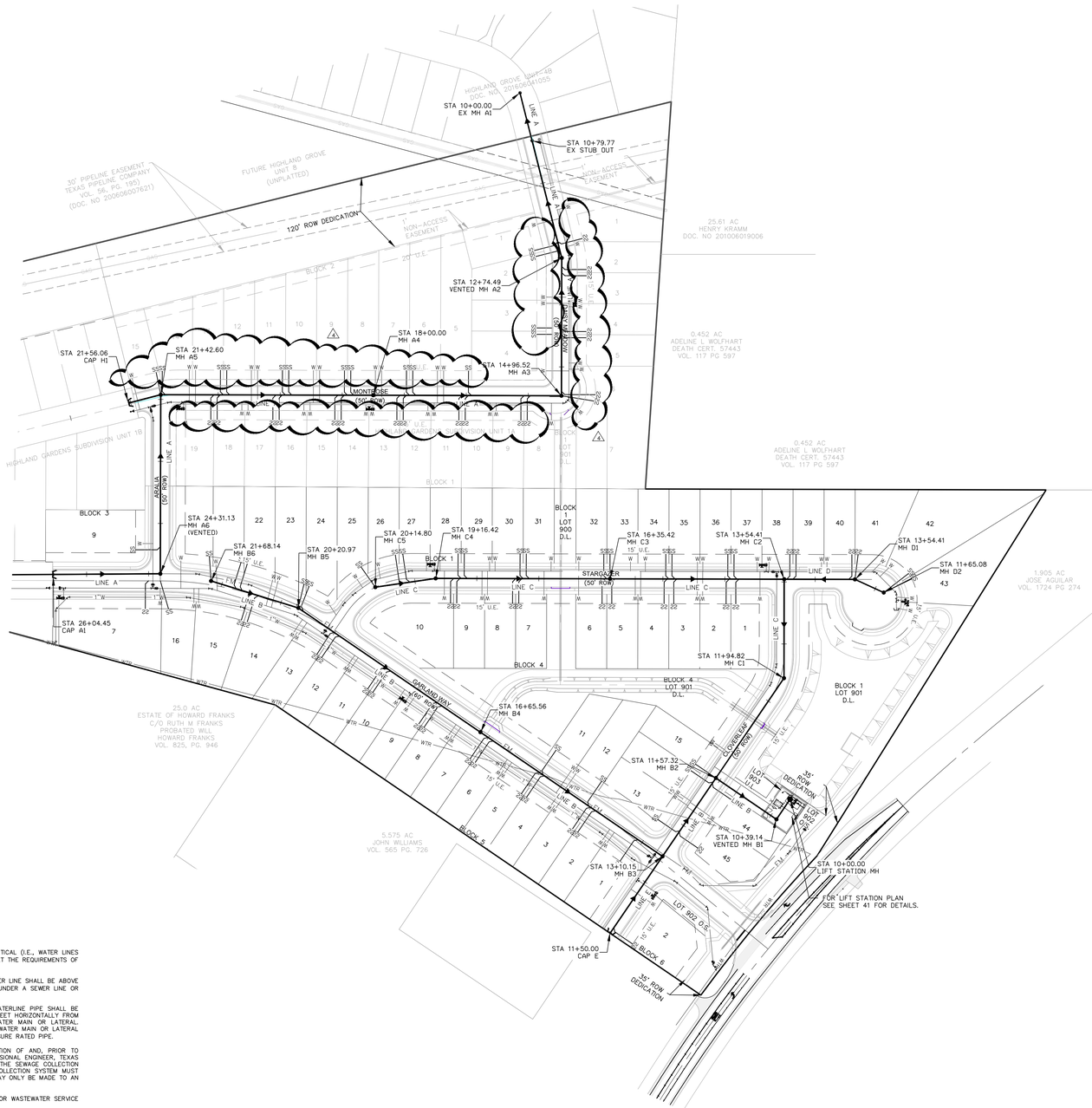
HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 24 OF 45

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Drawing Name: N:\Projects\12600\Highland Gardens UI and U2\Civil\Construction Drawings\Unit 2\C34 OVERALL UTILITY PLAN.dwg User: Jamesingalls Jan 10, 2022 - 2:30pm



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

HIGHLAND GARDENS UNIT 2	
ITEM	QTY.
SANITARY SEWER MAIN (8" PVC SDR-26)	3970 LF
SANITARY SEWER SERVICE	94 EA.
SANITARY SEWER PLUG	2 EA.
STANDARD MANHOLE	18 EA.

PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING 8" SANITARY SEWER MAIN AND REPORT ANY DISCREPANCIES TO ENGINEER

CONSTRUCTION NOTES:

1. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN 10FT HORIZONTAL AND 12IN VERTICAL (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).

2. WHERE 10FT HORIZONTAL AND 12IN VERTICAL SEPARATION FROM WATER AND SEWER LINES CROSSING CANNOT BE MAINTAINED, THE NEW WATER LINE SHALL BE ABOVE THE SEWER LINE AS SHOWN ON THE WATER/SEWER LINE CROSSING DETAIL. AT NO TIME SHALL A WATER LINE OR WATER SERVICE BE PLACED UNDER A SEWER LINE OR SEWER SERVICE.

3. WHERE A NEW POTABLE WATERLINE CROSSES AN EXISTING, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. IF THE EXISTING WASTEWATER MAIN OR LATERAL SHOWS SIGNS OF LEAKING, IT SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE RATED PIPE.

4. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.

5. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN 10FT HORIZONTAL AND 12' VERTICAL OF ANY WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.

6. METER BOXES MUST BE SET AT PROPOSED FINISHED GRADE. ANY METER BOXES THAT ARE NOT SET AT THE FINAL GRADE WILL BE ADJUSTED BY THE CONTRACTOR AT NO ADDITIONAL COSTS.

7. ALL UTILITIES SHALL BE CONSTRUCTED PRIOR TO STREETS.

8. NO VALVES, FIRE HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS OR DRIVEWAYS.

9. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. 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 GEO- TECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. 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.
10.

11. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. 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.

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608-8971
SPECTRUM CABLE	1-800-892-4357
CENTERPOINT GAS	(800) 427-7142
AT&T	(830) 303-1333
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY 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.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTORS 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 EXCAVATIONS.

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

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
1-6-22

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

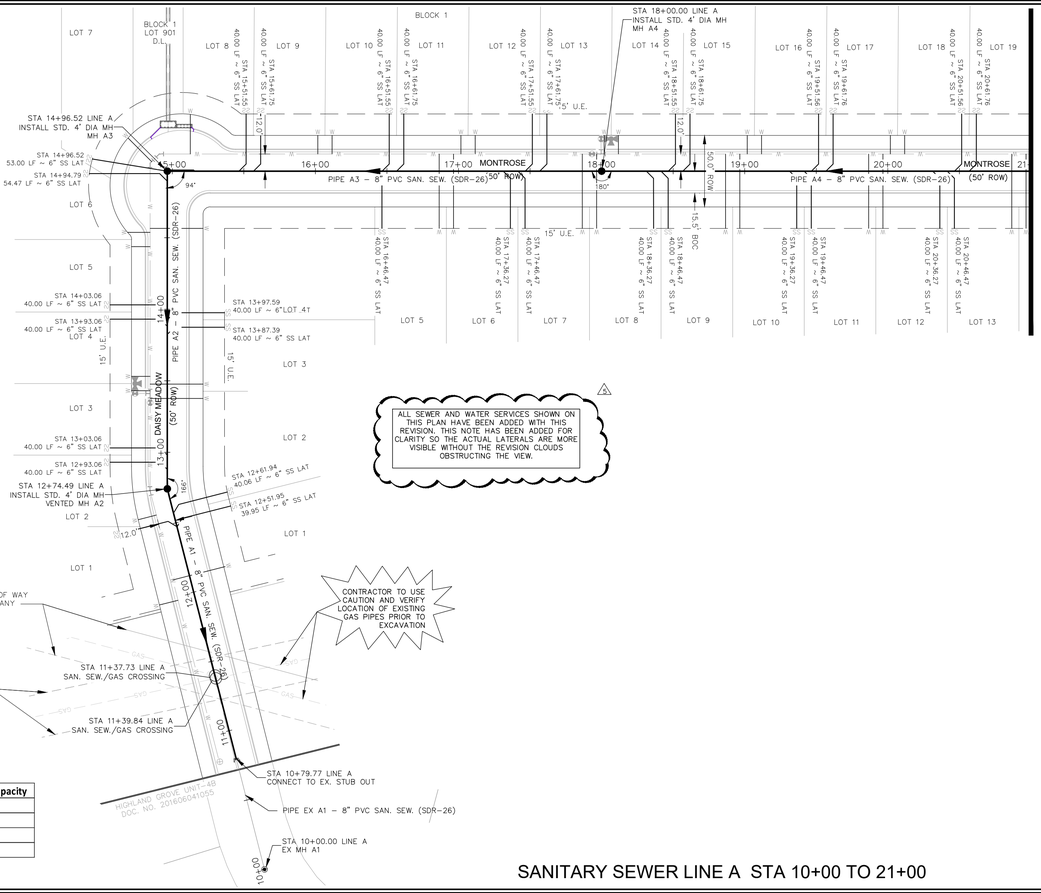
OVERALL SANITARY SEWER PLAN

HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

SHEET 25 OF 45

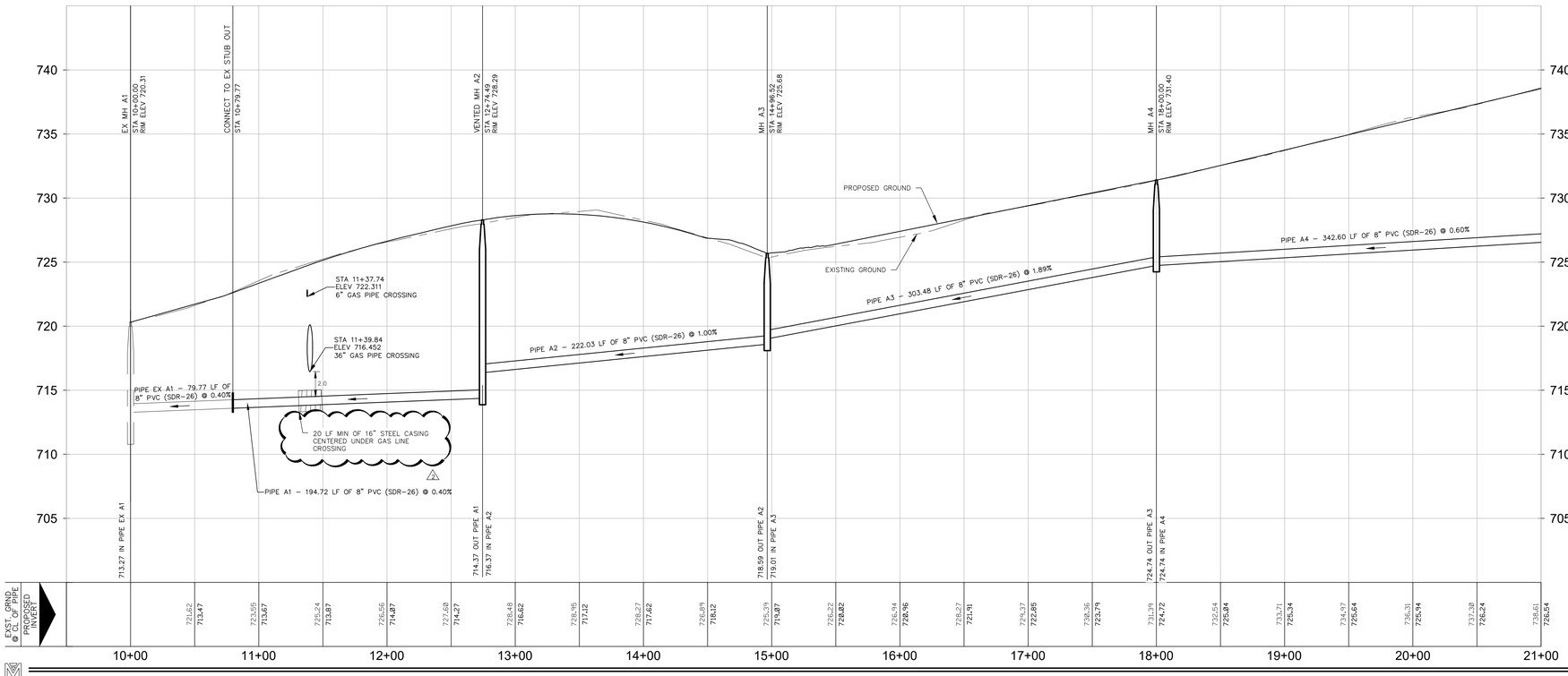
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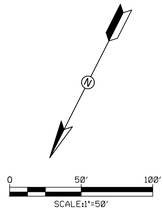
Drawing Name: N:\Projects\12X001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\2D\ OVERALL SANITARY SEWER PLAN.dwg User: jamesingalls Jan 10, 2022 - 2:31pm



Pipe Segment	Length (ft)	Pipe Dia (in)	Slope (%)	LUE	Peak Wet Flow (gpm)	Pipe Capacity (gpm)	PWF V(fps)	PWF depth (in)	Sufficient Capacity
Pipe SSL-A1	194.72	8	0.40	116	72.5	343	1.7	2.5	YES
Pipe SSL-A2	222.03	8	1.00	116	72.5	542	2.4	1.98	YES
Pipe SSL-A3	303.48	8	1.89	116	72.5	745	3.0	1.69	YES
Pipe SSL-A4	342.60	8	0.60	116	72.5	420	2.0	2.25	YES

SANITARY SEWER LINE A STA 10+00 TO 21+00





LEGEND

- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
- NEW SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT

CONSTRUCTION NOTES:

1. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).
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SCALE:
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VERTICAL 1" = 5'

PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING 8" SANITARY SEWER MAIN AND REPORT ANY DISCREPANCIES TO ENGINEER

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SPECTRUM CABLE	1-800-892-4357
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TEXAS ONE CALL SYSTEM	811

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Know what's below. Call before you dig.

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
4-21-22

NO	DATE	ISSUES AND REVISIONS
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W. SH-46, STE. 105, NEW BRAUNFELS, TX. 78132
PH: 830-387-7127 www.mo-tx.com
TBPE FIRM F-13351

SANITARY SEWER LINE A
STA 10+00 TO 21+00

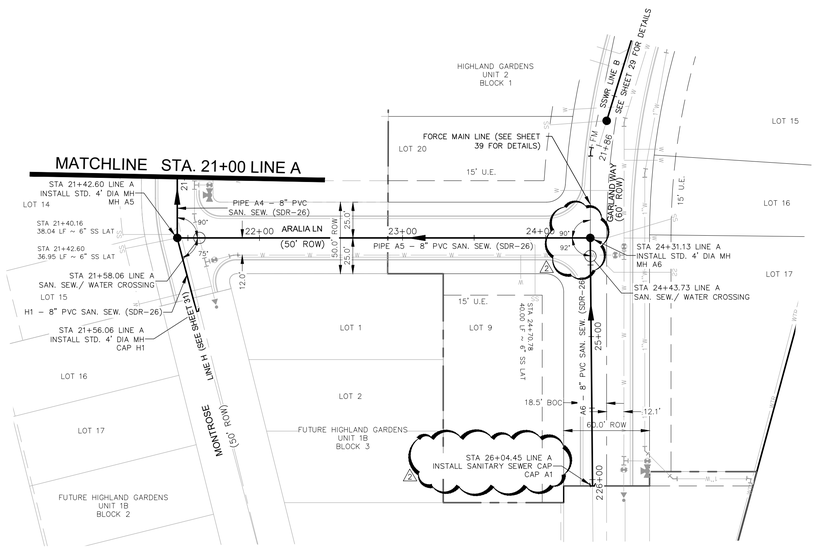
HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

SHEET
26
OF 45

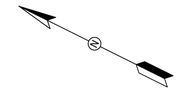
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Drawing Name: N:\Projects\CN001 Highland Gardens Ut and Ut2\Civil\Construction Drawings\Unit 2\05 SANITARY SEWER LINE A STA 10+00 TO 21+00.dwg User: jamesingalls Jan 07, 2022 - 3:23pm

Pipe Segment	Length (ft)	Pipe Dia (in)	Slope (%)	LUE	Peak Wet Flow (gpm)	Pipe Capacity (gpm)	PWF V(fps)	PWF depth (in)	Sufficient Capacity
Pipe SSL-A5	300.00	8	0.75	116	72.5	470	2.2	2.12	YES
Pipe SSL-A6	173.31	8	3.00	116	72.5	939	3.6	1.50	YES



SANITARY SEWER LINE A STA 21+00 TO END



0 50' 100'

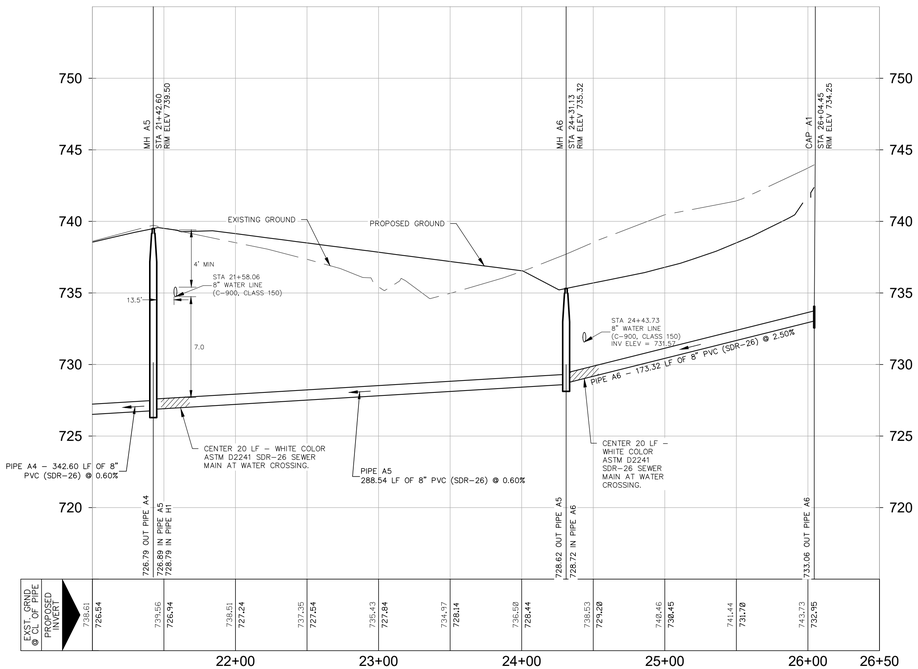
SCALE:1"=50'

LEGEND

- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
- NEW SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT

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STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
1-26-22

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MOELLER & ASSOCIATES Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX 78132
PH: 830-387-7127 www.mla-tx.com
TBPE FIRM F-13351

SANITARY SEWER LINE A STA 21+00 TO END

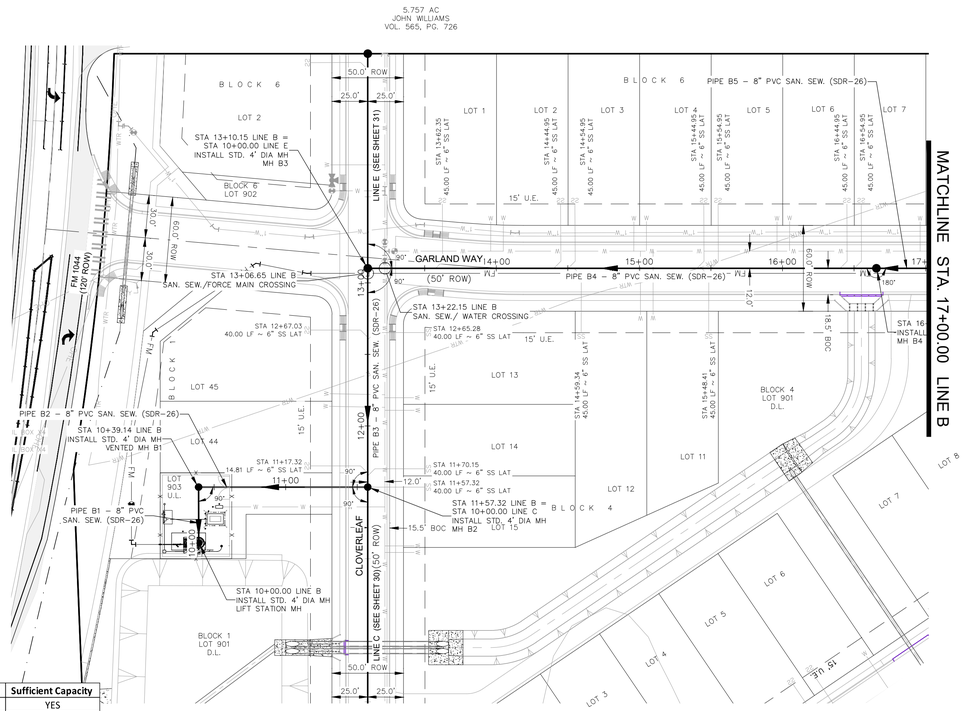
HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 27 OF 45

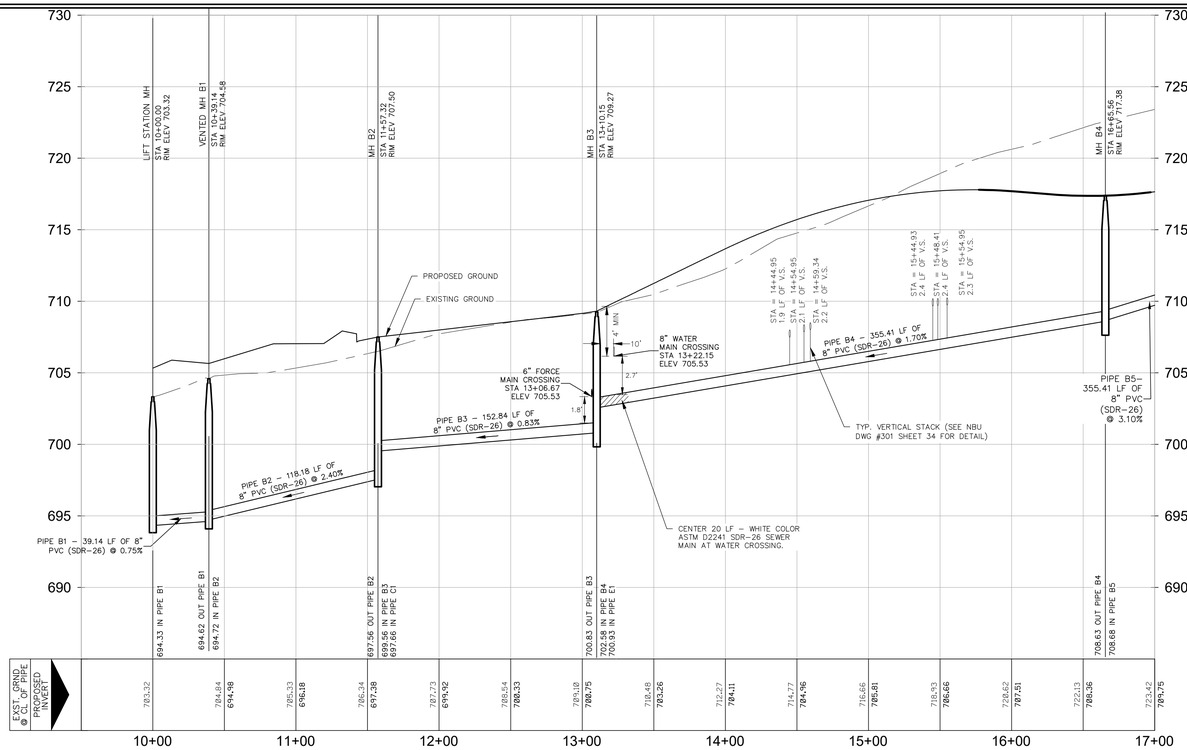
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Drawing Name: N:\Projects\CN001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\27 SANITARY SEWER LINE A STA 21+00 TO END.dwg User: jamesingalls Jan 10, 2022 - 2:34pm



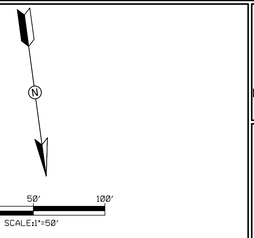
Pipe Segment	Length (ft)	Pipe Dia (in)	Slope (%)	LUE	Peak Wet Flow (gpm)	Pipe Capacity (gpm)	PWF V(fps)	PWF depth (in)	Sufficient Capacity
Pipe SSL-B1	39.14	8	0.75	116	72.5	470	2.2	2.12	YES
Pipe SSL-B2	118.18	8	2.40	116	72.5	840	3.3	1.59	YES
Pipe SSL-B3	152.84	8	0.77	116	72.5	476	2.2	2.11	YES
Pipe SSL-B4	355.41	8	1.70	116	72.5	707	2.9	1.73	YES

SANITARY SEWER LINE B STA 10+00 TO 17+00



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VERTICAL 1" = 5'

PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING 8" SANITARY SEWER MAIN AND REPORT ANY DISCREPANCIES TO ENGINEER



LEGEND

- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
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- NEW FIRE HYDRANT

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3. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.

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7. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.

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NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608-8971
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CENTERPOINT GAS	(800) 427-7142
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NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

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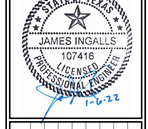
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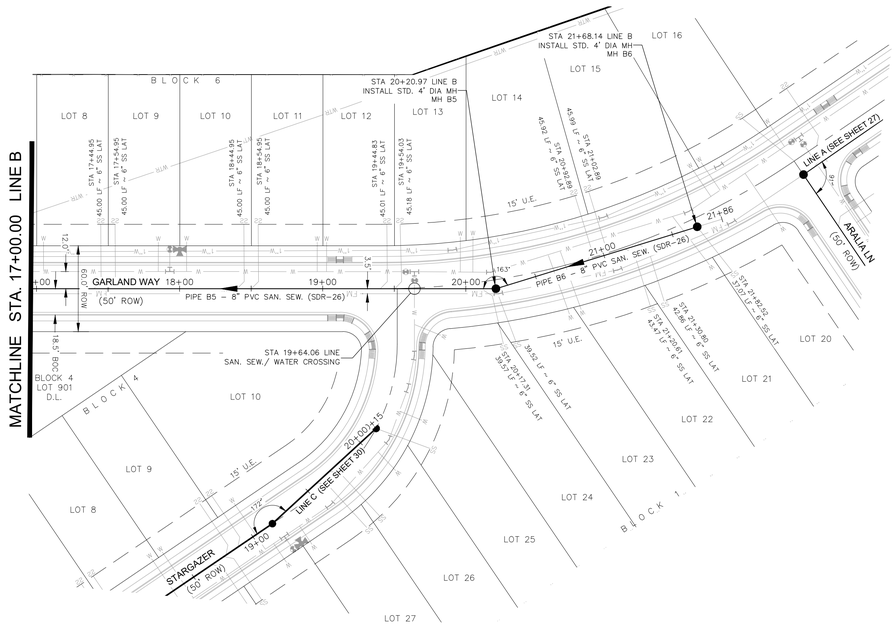
SANITARY SEWER LINE B
STA 10+00 TO 17+00

HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

SHEET
28
OF 45

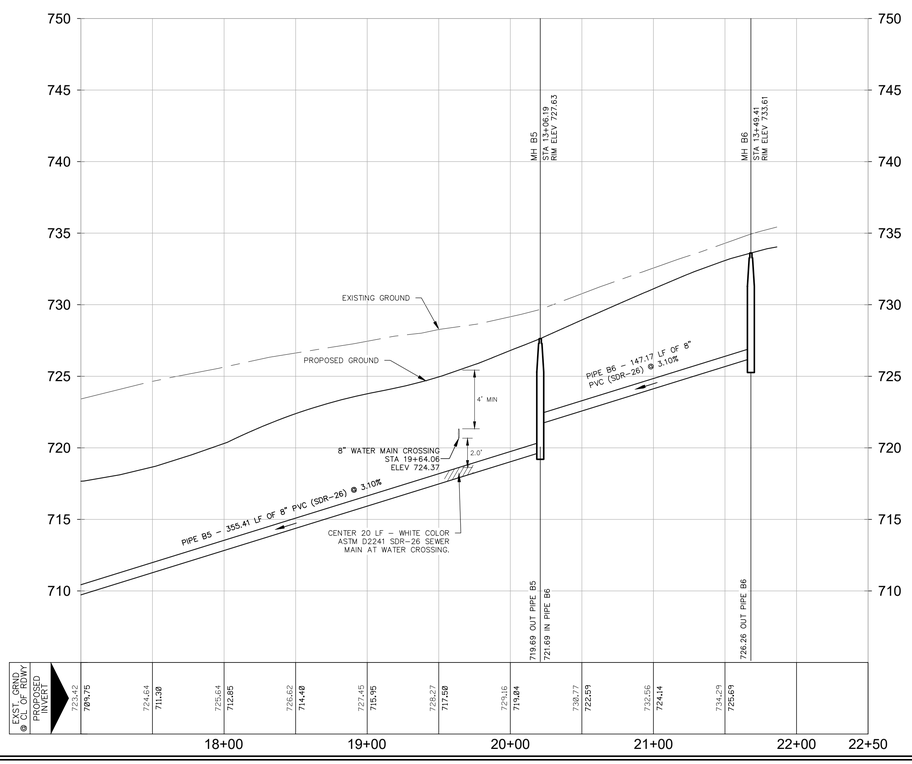
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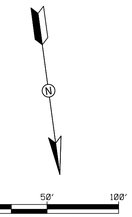
Drawing Name: N:\Projects\CN001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\GR SANITARY SEWER LINE B STA 10+00 TO 17+00.dwg User: jonesingalls Jan 07, 2022 - 3:27pm



Pipe Segment	Length (ft)	Pipe Dia (in)	Slope (%)	LUE	Peak Wet Flow (gpm)	Pipe Capacity (gpm)	PWF V(fps)	PWF depth (in)	Sufficient Capacity
Pipe SSL-B5	355.41	8	3.10	116	72.5	955	3.6	1.49	YES
Pipe SSL-B6	147.17	8	3.10	116	72.5	955	3.6	1.49	YES

SANITARY SEWER LINE B STA 17+00 TO END





LEGEND

- NEW SANITARY SEWER
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STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
12-6-22

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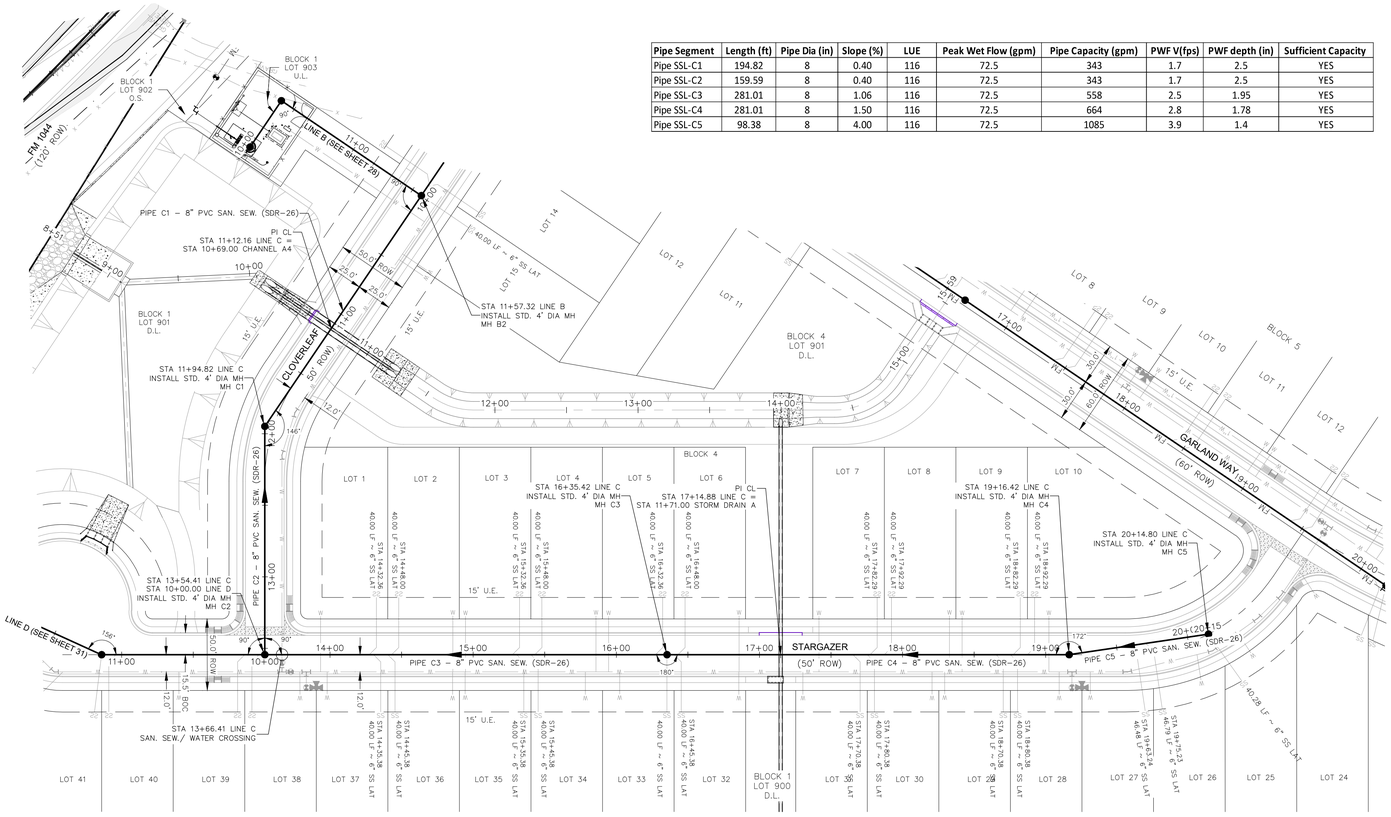
HIGHLAND GARDENS UNIT 2
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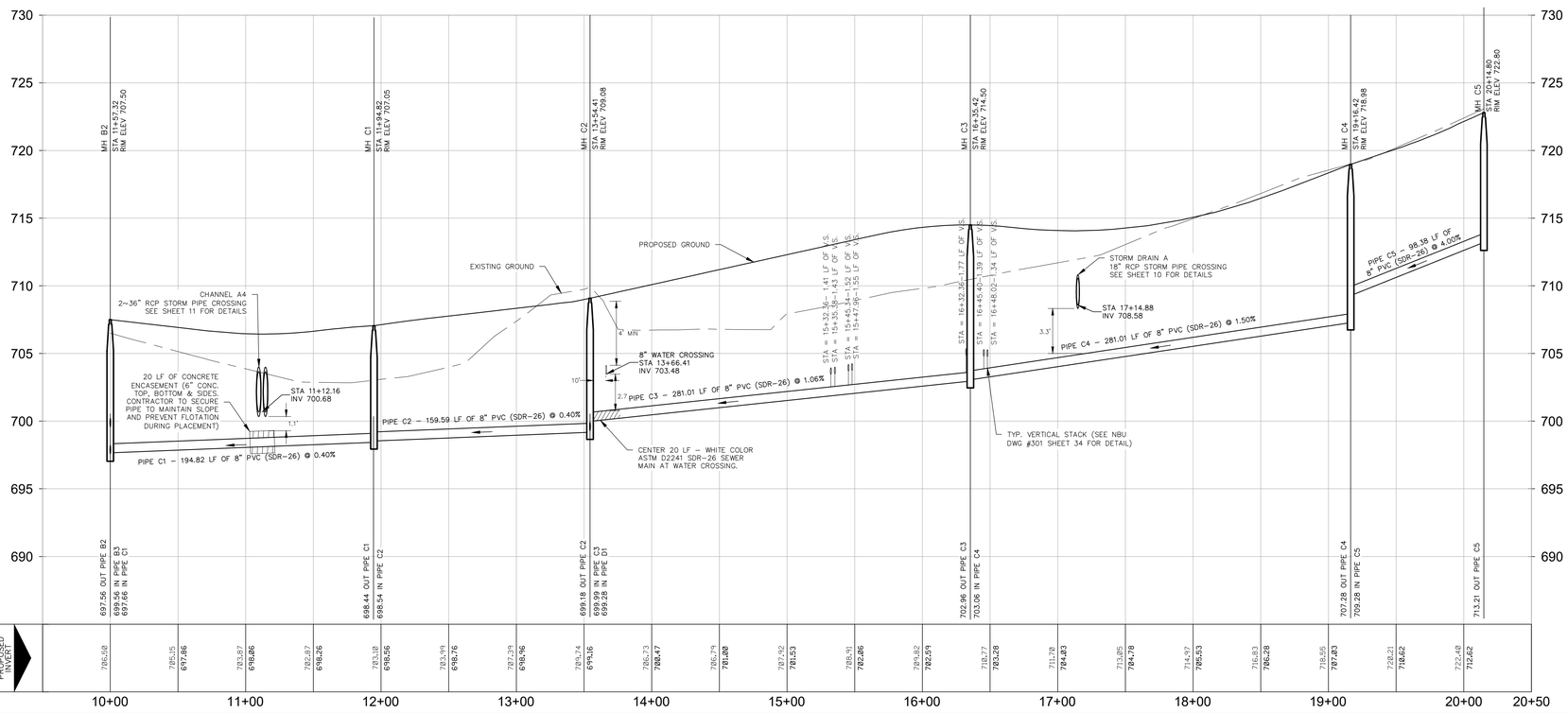
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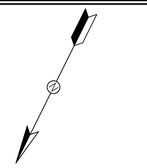
Drawing Name: N:\Projects\12N001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\29 SANITARY SEWER LINE B STA 17+00 TO END.dwg User: jamesingalls Jan 07, 2022 - 3:29pm

Pipe Segment	Length (ft)	Pipe Dia (in)	Slope (%)	LUE	Peak Wet Flow (gpm)	Pipe Capacity (gpm)	PWF V(fps)	PWF depth (in)	Sufficient Capacity
Pipe SSL-C1	194.82	8	0.40	116	72.5	343	1.7	2.5	YES
Pipe SSL-C2	159.59	8	0.40	116	72.5	343	1.7	2.5	YES
Pipe SSL-C3	281.01	8	1.06	116	72.5	558	2.5	1.95	YES
Pipe SSL-C4	281.01	8	1.50	116	72.5	664	2.8	1.78	YES
Pipe SSL-C5	98.38	8	4.00	116	72.5	1085	3.9	1.4	YES



SANITARY SEWER LINE C





LEGEND

- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
- NEW SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT

CONSTRUCTION NOTES:

1. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).

2. WHERE A NEW POTABLE WATERLINE CROSSES AN EXISTING, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL WHENEVER POSSIBLE. THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. IF THE EXISTING WASTEWATER MAIN OR LATERAL SHOWS SIGNS OF LEAKING, IT SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE RATED PIPE.

3. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.

4. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER MAIN, WASTEWATER LATERAL OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.

5. METER BOXES MUST BE SET AT PROPOSED FINISHED GRADE. ANY METER BOXES THAT ARE NOT SET AT THE FINAL GRADE WILL BE ADJUSTED BY THE CONTRACTOR AT NO ADDITIONAL COSTS.

6. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.

7. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.

8. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO–TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. 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 100LF FOR EACH LIFT. 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.

9. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5–FEET IN DEPTH LOCATED IN PUBLIC RIGHT–OF–WAY OR EASEMENTS. 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.

10. ALL WASTEWATER LINES AND MANHOLES WITH A DEPTH GREATER THAN 15 FEET MUST HAVE AN NBU INSPECTOR PRESENT DURING INSTALLATION. IF THE INSPECTOR IS NOT PRESENT, THE LINE AND OR MANHOLE IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE."

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

PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING 8" SANITARY SEWER MAIN AND REPORT ANY DISCREPANCIES TO ENGINEER

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608–8971
SPECTRUM CABLE	1–800–892–4357
CENTERPOINT GAS	(800) 427–7142
AT&T	(830) 303–1333
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)–629–8400
TEXAS ONE CALL SYSTEM	811

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1–800–545–6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY 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.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1–800–545–6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTORS 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 EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24–HOURS PRIOR TO COMMENCING CONSTRUCTION.

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

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
7-6-22

NO	DATE	ISSUES AND REVISIONS
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830–387–7127 www.mo–tx.com
TBPE FIRM F-13351

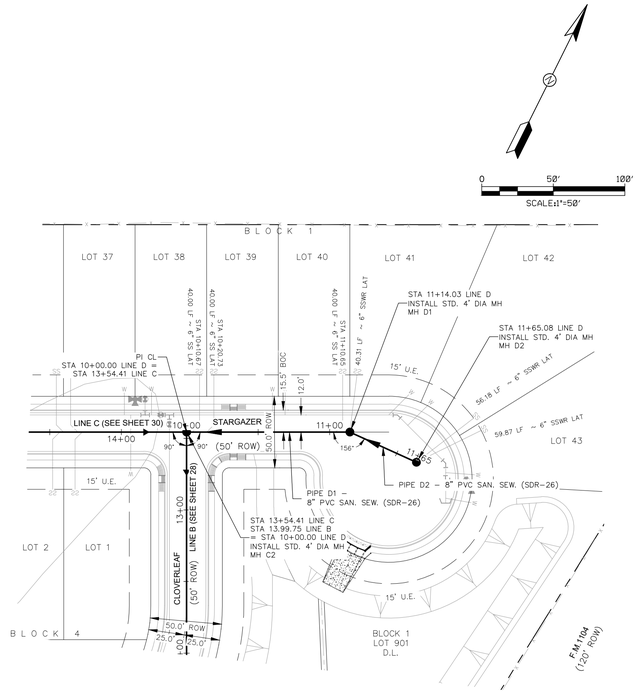
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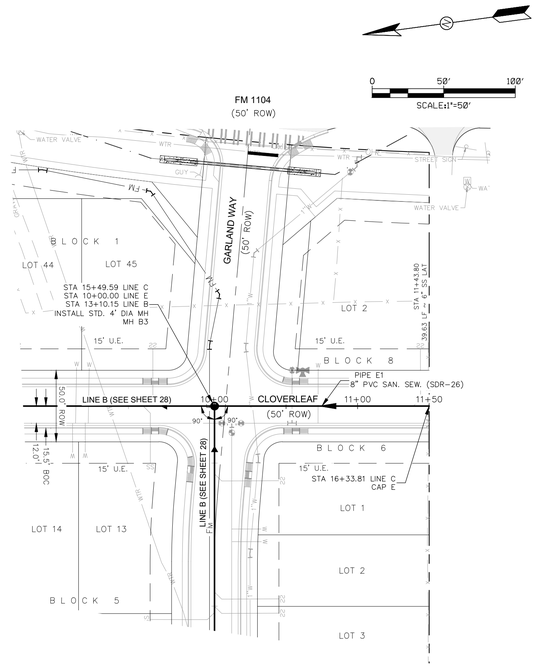
HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

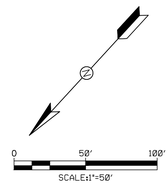
SHEET 30 OF 45

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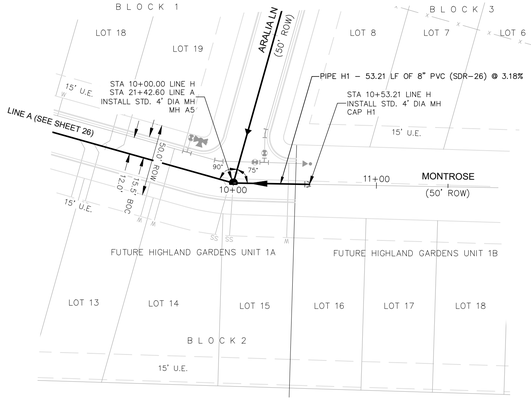






LEGEND

- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
- NEW SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT



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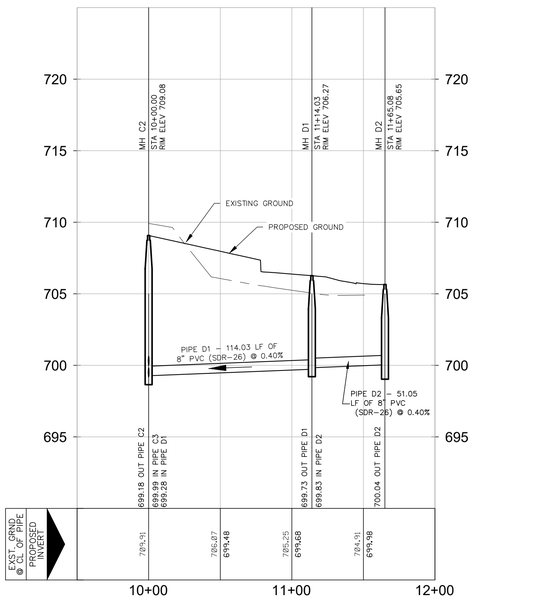
PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING 8" SANITARY SEWER MAIN AND REPORT ANY DISCREPANCIES TO ENGINEER

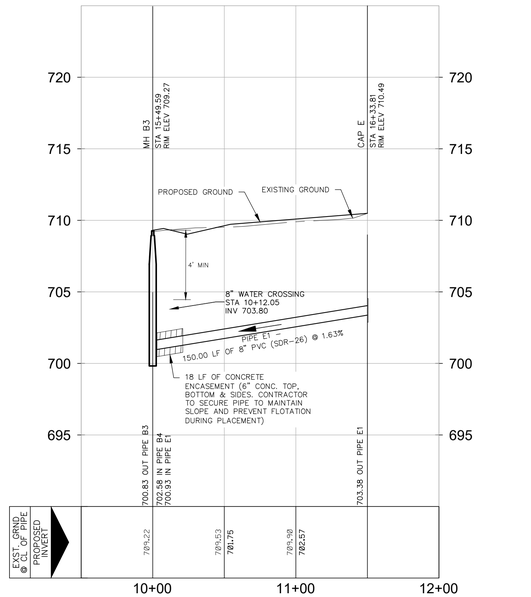
Pipe Segment	Length (ft)	Pipe Dia (in)	Slope (%)	LUE	Peak Wet Flow (gpm)	Pipe Capacity (gpm)	PWF V(fps)	PWF depth (in)	Sufficient Capacity
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Pipe SSL-E1	150.00	8	1.63	116	72.5	692	2.9	1.75	YES
Pipe SSL-H1	53.46	8	3.46	116	72.5	1009	3.7	1.45	YES

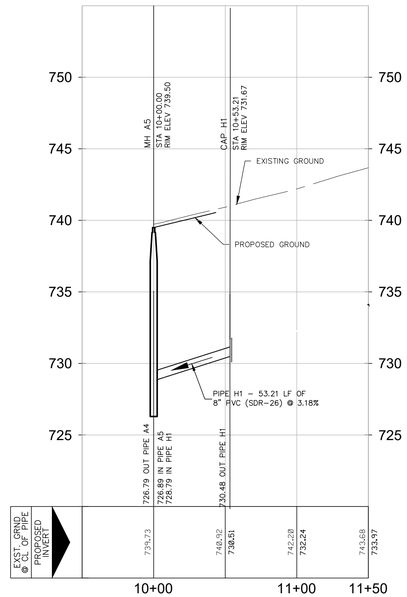
SANITARY SEWER LINE D

SANITARY SEWER LINE E

SANITARY SEWER LINE H







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NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608-8971
SPECTRUM CABLE	1-800-892-4357
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NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

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Know what's below. Call before you dig.

JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
12-6-22

NO	DATE	ISSUES AND REVISIONS
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
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4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

SANITARY SEWER LINE D, E AND H

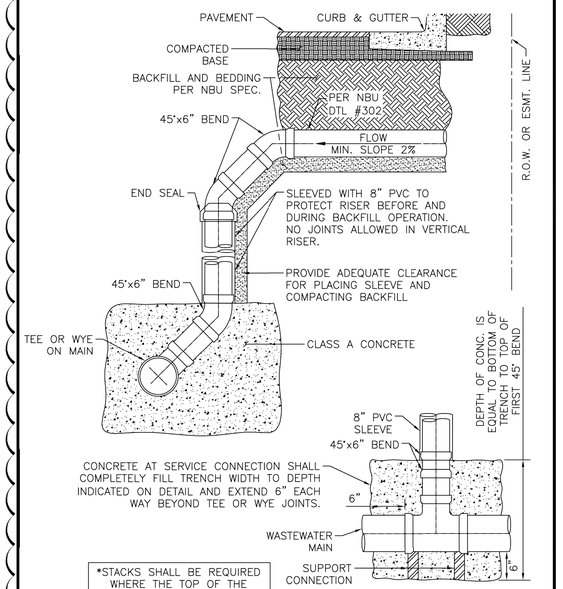
HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 31 OF 45

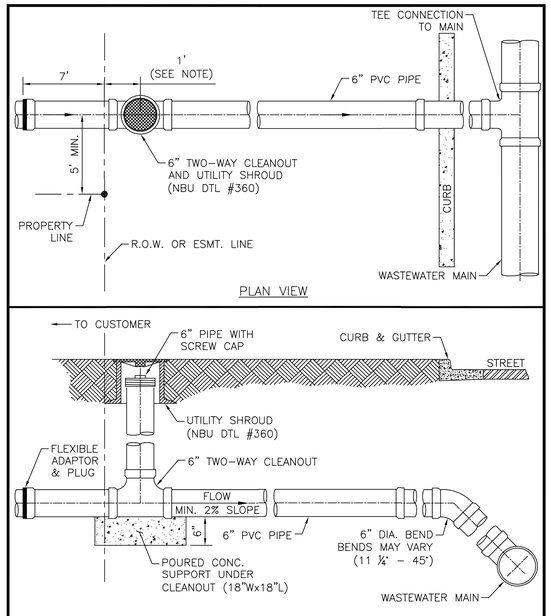
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CONCRETE ENCASEMENT FOR SERVICE CONNECTION

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



PLAN VIEW

PROFILE VIEW

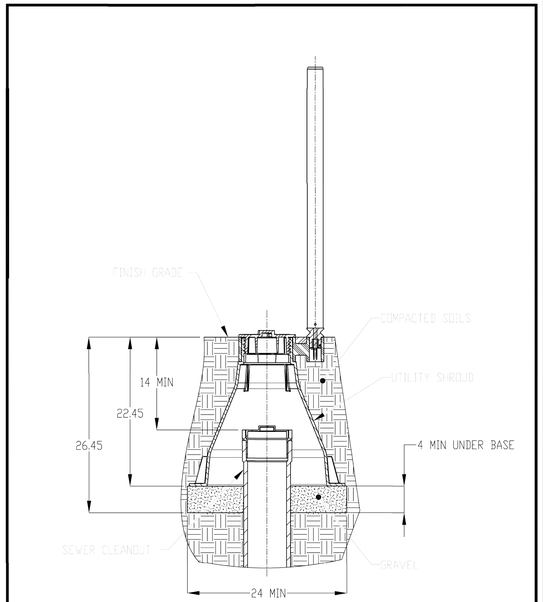
*CLEANOUT SHALL NOT BE PLACED WITHIN SIDEWALK OR DRIVEWAY. IF SIDEWALK EXISTS AT EDGE OF PROPERTY LINE, CLEANOUT CAN BE LOCATED UP TO 1' WITHIN PROPERTY. CONSISTENT PLACEMENT IS REQUIRED.

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

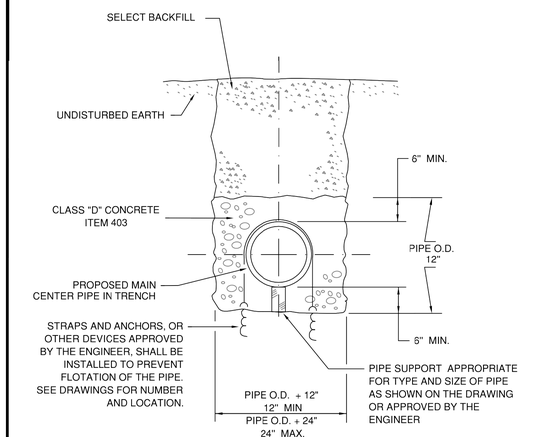
NOTES:

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.

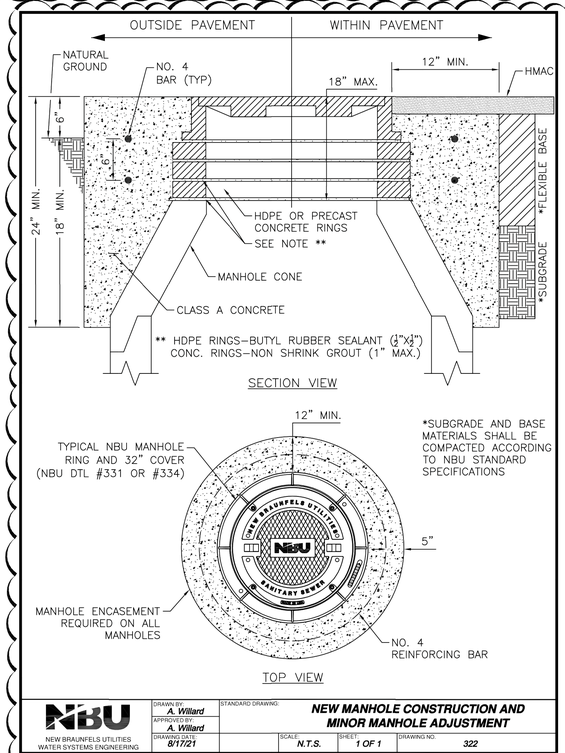
NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: A. Willard	APPROVED BY: A. Willard	DRAWING DATE: 8/17/21	STANDARD DRAWING: SINGLE WASTEWATER SERVICE CONNECTION DETAIL	SCALE: N.T.S.	SHEET: 2 OF 2	DRAWING NO. 302



NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: C Cooper	APPROVED BY:	DRAWING DATE: 2-11-20	STANDARD DRAWING: UTILITY SHROUD FOR SEWER CLEANOUT ASSEMBLY	REVISION DATE:	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 360



NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: JD Amaro	APPROVED BY:	UPDATED: 4-16-03	STANDARD DRAWING: CONCRETE ENCASEMENT	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO. 310



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

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608–8971
SPECTRUM CABLE	1–800–892–4357
CENTERPOINT GAS	(800) 427–7142
AT&T	(830) 303–1333
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)–629–8400
TEXAS ONE CALL SYSTEM	811

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1–800–545–6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY 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.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1–800–545–6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTORS 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 EXCAVATIONS.

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

STATE OF TEXAS JAMES INGALLS 107416 LICENSED PROFESSIONAL ENGINEER 12-6-22

NO	DATE	ISSUES AND REVISIONS
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

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2021 W. SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

HIGHLAND GARDENS UNIT 2

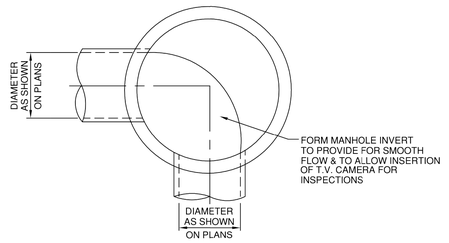
NEW BRAUNFELS, TEXAS

SANITARY SEWER DETAILS

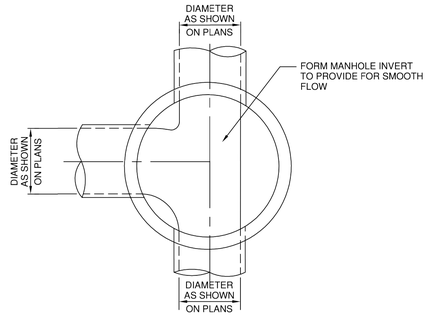
SHEET 32 OF 45

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Drawing Name: N:\Projects\X26001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\32 SANITARY SEWER DETAILS.dwg User: MadisonSimon Jan 06, 2022 - 6:25pm



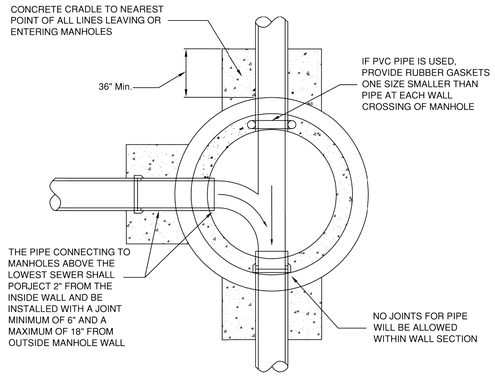
TYPICAL MANHOLE AT ANGLE IN SEWER



TYPICAL JUNCTION MANHOLE

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

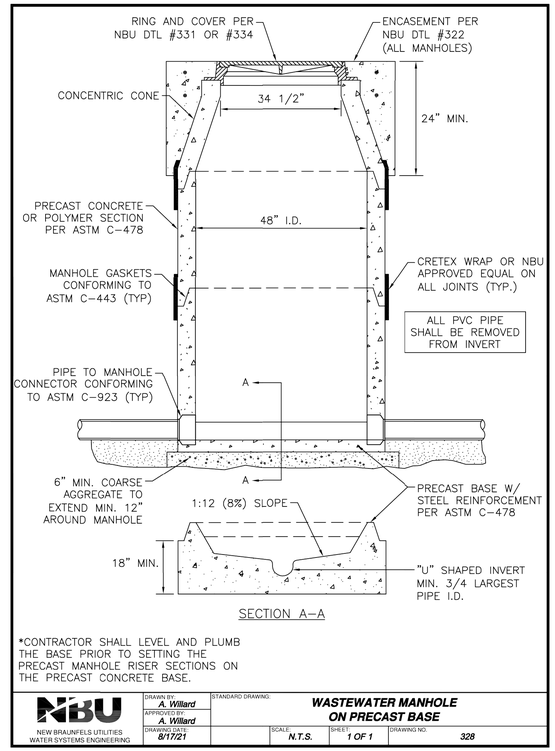
STANDARD MANHOLE



MANHOLE FLOOR PLAN

AUGUST 1998

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

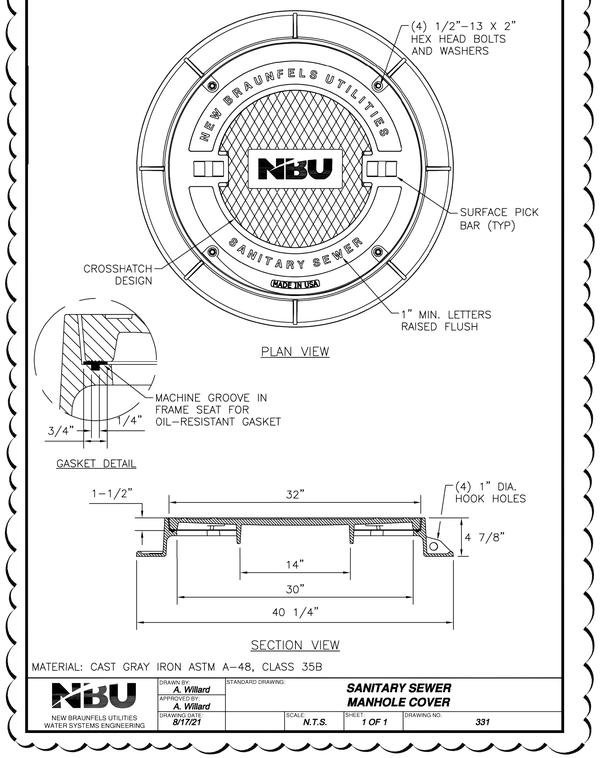


SECTION A-A

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

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

5



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

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

5

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608-8971
SPECTRUM CABLE	1-800-892-4357
CENTERPOINT GAS	(800) 427-7142
AT&T	(830) 303-1333
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

C.P.E. LOCATOR

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TELEPHONE LOCATOR

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

STATE OF TEXAS — JAMES INGALLS — 107416 — LICENSED PROFESSIONAL ENGINEER — 12-6-22

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
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5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W. SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.ma-tx.com
TBPE FIRM F-13351

SANITARY SEWER DETAILS II

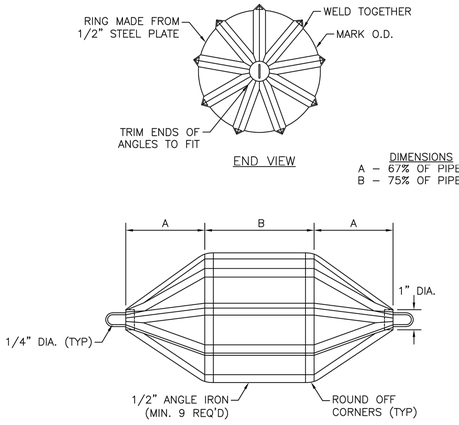
HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 33 OF 45

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Drawing Name: N:\Projects\CEN001 Highland Gardens UT and U2\Civil\Construction Drawings\Unit 2\33 SANITARY SEWER DETAILS II.dwg User: MadisonSimon Jan 06, 2022 - 6:28pm



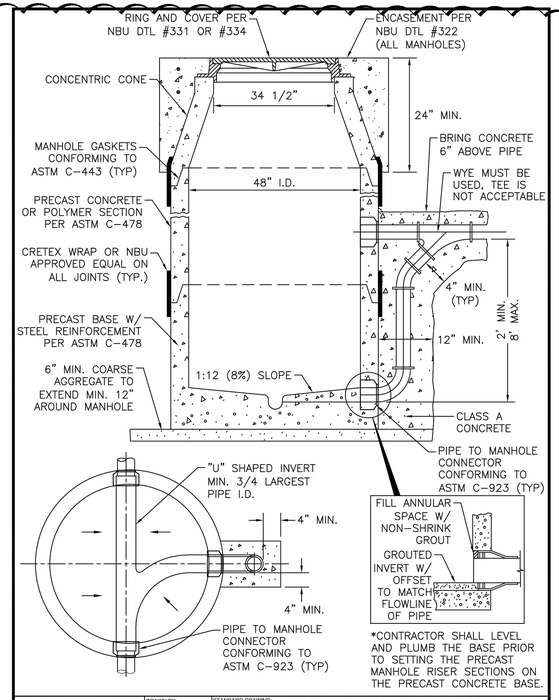
MANDREL REQUIREMENTS:

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.

NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING

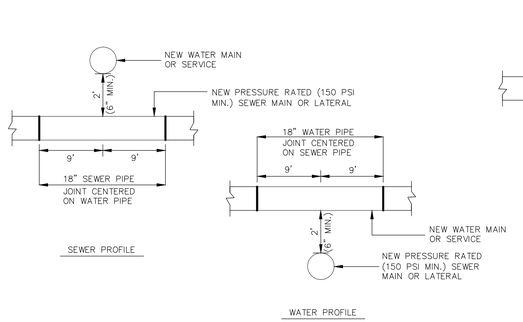
DRAWN BY: A. Willard	STANDARD DRAWING: GO, NO GO DEFLECTION TESTING MANDREL	
APPROVED BY: A. Willard		
DRAWING DATE: 8/17/21	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 350



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

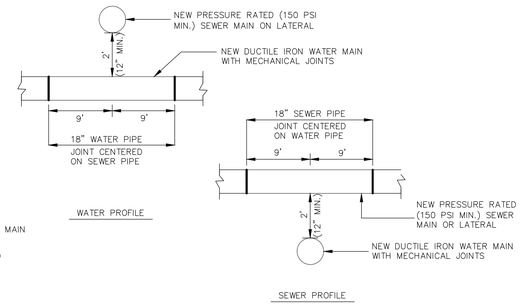
NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING

DRAWN BY: A. Willard	STANDARD DRAWING: WASTEWATER MANHOLE W/ DROP INLET ON PRECAST BASE	
APPROVED BY: A. Willard		
DRAWING DATE: 8/17/21	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 325



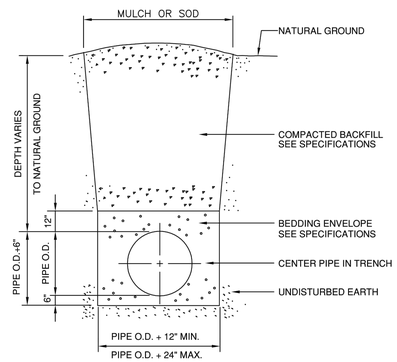
NEW WATER OVER NEW SEWER CROSSING DETAIL

Scale: NTS



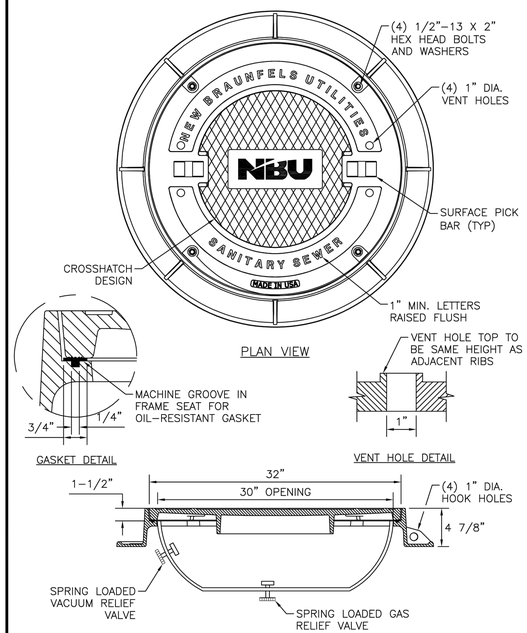
NEW SEWER OVER NEW WATER CROSSING DETAIL

Scale: NTS



NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING

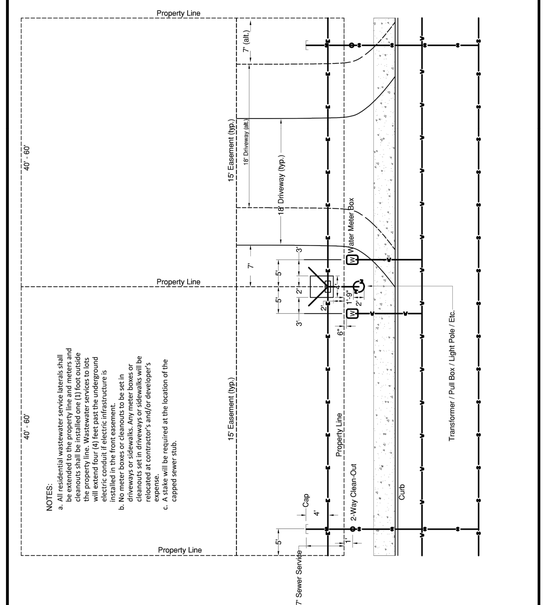
DRAWN BY: H Shadrock	STANDARD DRAWING: TYPICAL TRENCH WITH UNFINISHED SURFACE	
APPROVED BY:		
UPDATED: 4-30-03	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 422



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

NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING

DRAWN BY: A. Willard	STANDARD DRAWING: VENTED SANITARY SEWER MANHOLE COVER	
APPROVED BY: A. Willard		
DRAWING DATE: 8/17/21	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 334



NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING

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

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608–8971
SPECTRUM CABLE	1–800–892–4357
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TEXAS ONE CALL SYSTEM	811

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HIGHLAND GARDENS UNIT 2

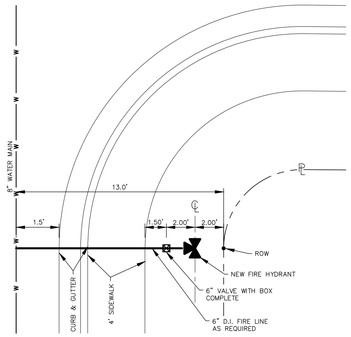
SANITARY SEWER DETAILS III

NEW BRAUNFELS, TEXAS

SHEET 34 OF 45

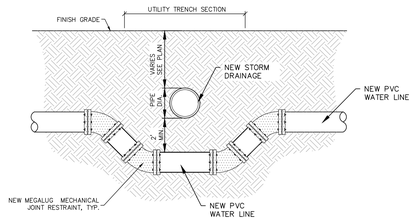
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Drawing Name: N:\Projects\GTX0001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\34 SANITARY SEWER DETAILS II.dwg User: jamesingalls Jan 07, 2022 - 3:33pm



FIRE HYDRANT LOCATION DETAIL

SCALE: 1" = 5'



NOTES:
1. MECHANICAL JOINTS SHALL CONFORM TO THE AWWA C-600 INSTALLATION PROCEDURES.
2. REFERENCE THE SPECIFICATIONS FOR MECHANICALLY RESTRAINED JOINTS FOR ADDITIONAL INFORMATION.
3. RECOMPACT ALL PIPE BEDDING AROUND NEW AND EXISTING PIPES AND REPAIR OR RECONSTRUCT FINISH GRADE MATERIAL.

WATER LINE / STORM DRAINAGE CROSSING DETAIL

(NOT TO SCALE)

△1

HIGHLAND GARDENS UNIT 2	
ITEM	QTY.
WATER MAIN (1" PVC SCH80)	1362 LF
WATER MAIN (8" PVC C-900)	4394 LF
DOMESTIC WATER SERVICES	94 EA.
IRRIGATION SERVICES	2 EA.
LIFT STATION SERVICE	1 EA.
WATER METERS	96 EA.
FIRE HYDRANTS	9 EA.
FIRE LINES	90 LF

△2

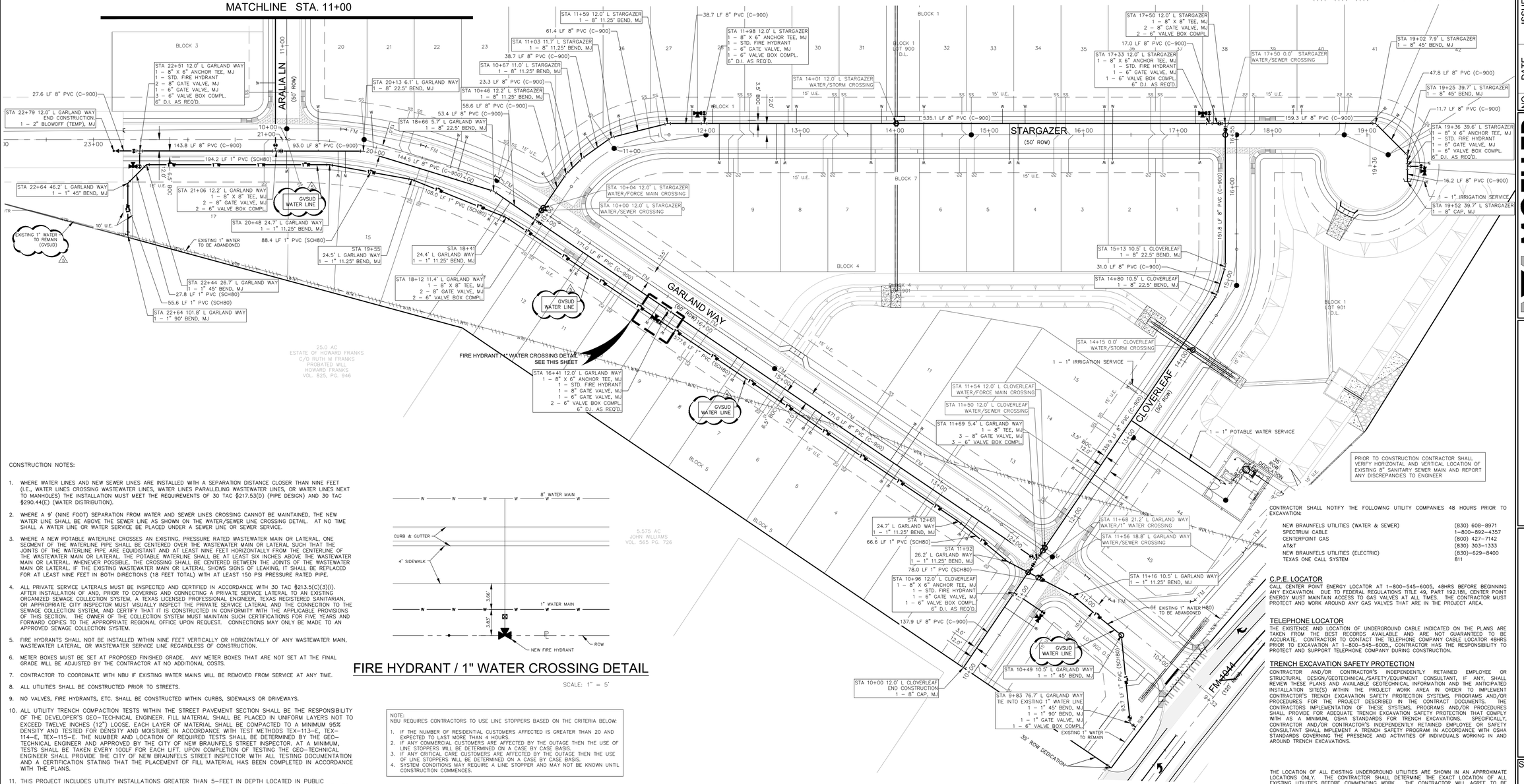
GVSUD WATER MAIN NOTE:
1. 1" WATER MAIN RUNNING ALONG THE SOUTH SIDE OF GARLAND WAY IS A GVSUD WATER MAIN, AND IS PLACED WITHIN THE UTILITY EASEMENT ADJACENT TO THE RIGHT OF WAY.

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

LEGEND

- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
- NEW SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT
- EXISTING OVERHEAD ELECTRIC
- EXISTING 8" SANITARY SEWER
- EXISTING WOOD FENCE
- EXISTING BARBWIRE FENCE
- EXISTING TRAFFIC GUARDRAIL
- EXISTING SIGN
- EXISTING SANITARY SEWER MANHOLE
- EXISTING UTILITY POLE
- EXISTING GUY
- ABANDON EXISTING WATER

MATCHLINE STA. 11+00



PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING 8" SANITARY SEWER MAIN AND REPORT ANY DISCREPANCIES TO ENGINEER

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608-8971
SPECTRUM CABLE	1-800-892-4357
CENTERPOINT GAS	(800) 427-7142
AT&T	(830) 303-1333
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

C.P.E. LOCATOR

CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY 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.

TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST DATA AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTORS 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 EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

CONSTRUCTION NOTES:

1. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).
2. WHERE A 9' (NINE FOOT) SEPARATION FROM WATER AND SEWER LINES CROSSING CANNOT BE MAINTAINED, THE NEW WATER LINE SHALL BE ABOVE THE SEWER LINE AS SHOWN ON THE WATER/SEWER LINE CROSSING DETAIL. AT NO TIME SHALL A WATER LINE OR WATER SERVICE BE PLACED UNDER A SEWER LINE OR SEWER SERVICE.
3. WHERE A NEW POTABLE WATERLINE CROSSES AN EXISTING, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. IF THE EXISTING WASTEWATER MAIN OR LATERAL SHOWS SIGNS OF LEAKING, IT SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE RATED PIPE.
4. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.
5. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.
6. METER BOXES MUST BE SET AT PROPOSED FINISHED GRADE. ANY METER BOXES THAT ARE NOT SET AT THE FINAL GRADE WILL BE ADJUSTED BY THE CONTRACTOR AT NO ADDITIONAL COSTS.
7. CONTRACTOR TO COORDINATE WITH NBU IF EXISTING WATER MAINS WILL BE REMOVED FROM SERVICE AT ANY TIME.
8. ALL UTILITIES SHALL BE CONSTRUCTED PRIOR TO STREETS.
9. NO VALVES, FIRE HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS OR DRIVEWAYS.
10. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. 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 GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. 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.
11. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. 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.

FIRE HYDRANT / 1" WATER CROSSING DETAIL

SCALE: 1" = 5'

NOTE:
NBU REQUIRES CONTRACTORS TO USE LINE STOPPERS BASED ON THE CRITERIA BELOW:

1. IF THE NUMBER OF RESIDENTIAL CUSTOMERS AFFECTED IS GREATER THAN 20 AND EXPECTED TO LAST MORE THAN 4 HOURS.
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3. IF ANY CRITICAL CARE CUSTOMERS ARE AFFECTED BY THE OUTAGE THEN THE USE OF LINE STOPPERS WILL BE DETERMINED ON A CASE BY CASE BASIS.
4. SYSTEM CONDITIONS MAY REQUIRE A LINE STOPPER AND MAY NOT BE KNOWN UNTIL CONSTRUCTION COMMENCES.

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

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
1-6-22

NO	DATE	ISSUES AND REVISIONS
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

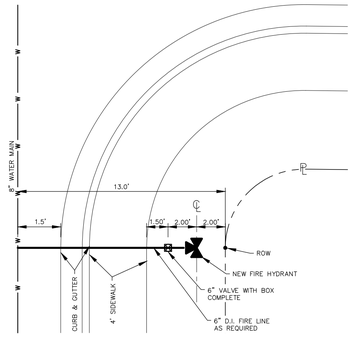
WATER DISTRIBUTION PLAN I

HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

SHEET 35 OF 45

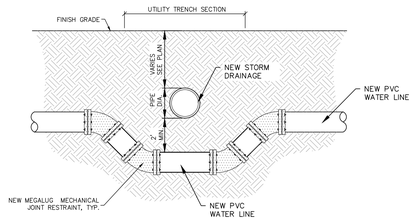
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Drawing Name: N:\Projects\GTX\001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\35 WATER DISTRIBUTION PLAN I.dwg User: jamesingalls Jan 11, 2022 - 4:45pm



FIRE HYDRANT LOCATION DETAIL

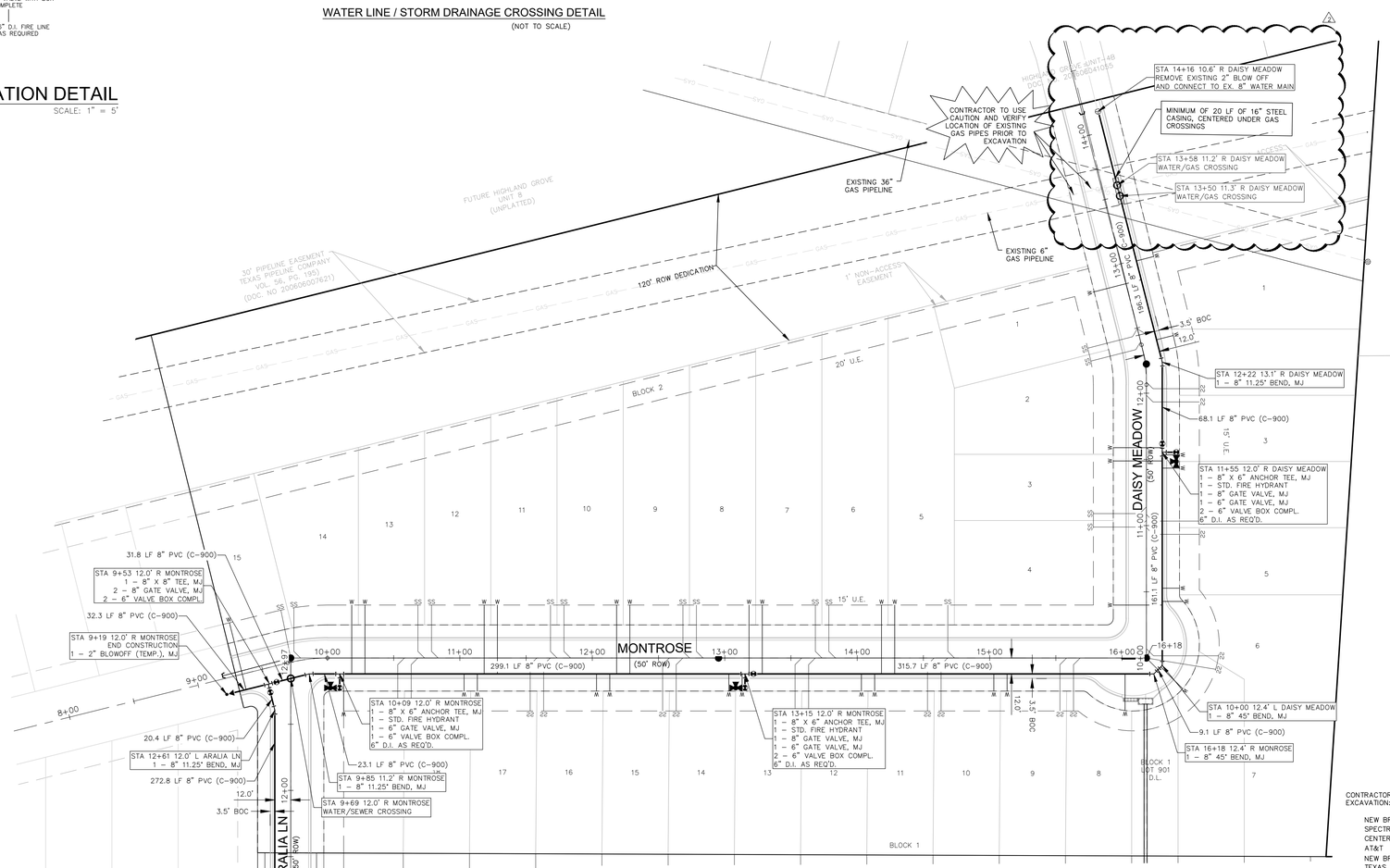
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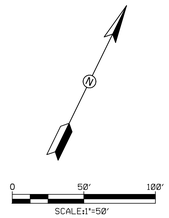
(NOT TO SCALE)



MATCHLINE STA. 11+00

SEE SHEET 35

ALL SEWER AND WATER SERVICES SHOWN ON THIS PLAN HAVE BEEN ADDED WITH THIS REVISION. THIS NOTE HAS BEEN ADDED FOR CLARITY SO THE ACTUAL LATERALS ARE MORE VISIBLE WITHOUT THE REVISION CLOUDS OBSTRUCTING THE VIEW.



LEGEND

- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
- NEW SINGLE METERED WATER SERVICE
- NEW FIRE HYDRANT
- EXISTING OVERHEAD ELECTRIC
- EXISTING 8" SANITARY SEWER
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- EXISTING BARBWIRE FENCE
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811 Know what's below. Call before you dig.

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
4-21-22

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

WATER DISTRIBUTION PLAN II

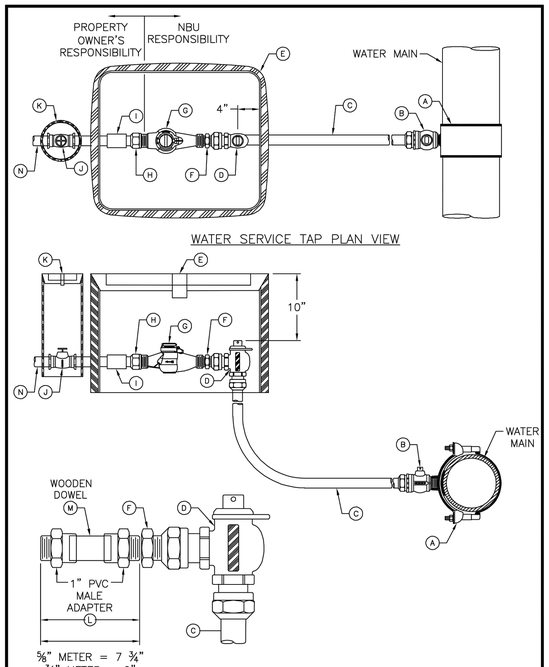
HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 36 OF 45

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Drawing Name: N:\Projects\12X001 Highland Gardens U1 and U2\Cad\Construction Drawings\Unit 2\SR WATER DISTRIBUTION PLAN II.dwg User: jamesingalls Jan 10, 2022 - 2:37pm



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:

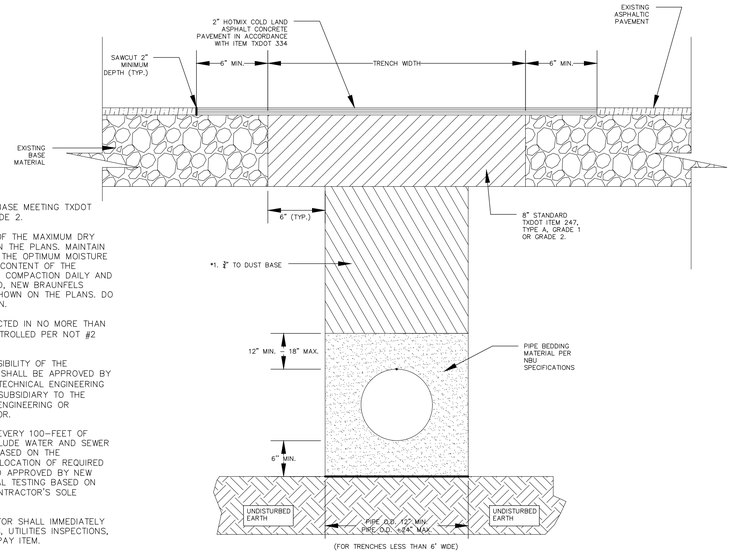
F. BRASS METER BUSHING – SIZE AS REQUIRED TO CONNECT ANGLE METER STOP TO METER. A 1" X 3/4" METER BUSHING IS REQUIRED AT THE ANGLE STOP FOR FOR ALL 5/8" AND 3/4" METERS.
G. WATER METER PURCHASED FROM NBU
H. BRASS WATER METER COUPLING MALE IPT x SWIVEL COUPLING NUT
I. SINGLE CHECK BACKFLOW DEVICE
J. PROPERTY 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



PAVEMENT REPAIR/ TRENCH BACKFILL
N.T.S.

PAVEMENT REPAIR/TRENCH BACKFILL NOTES:
1. WITHIN CONB ROW, TRENCH BACKFILL SHALL BE 3/4" TO DUST BASE MEETING TXDOT SPECIFICATION ITEM 247 FLEXIBLE BASE, TYPE A, GRADE 1 OR GRADE 2.

2. 3/4" TO DUST BASE SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY DETERMINED BY TEX-113-E, UNLESS OTHERWISE SHOWN ON THE PLANS. MAINTAIN MOISTURE DURING COMPACTION WITHIN ±2 PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY TEX-113-E. MEASURE THE MOISTURE CONTENT OF THE MATERIAL IN ACCORDANCE WITH TEX-115-E OR TEX-103-E DURING COMPACTION DAILY AND REPORT THE RESULTS THE SAME DAY TO THE ENGINEER OF RECORD, NEW BRAUNFELS UTILITIES, AND THE CITY OF NEW BRAUNFELS UNLESS OTHERWISE SHOWN ON THE PLANS. DO NOT ACHIEVE DENSITY BY DRYING THE MATERIAL AFTER COMPACTION.

3. 3/4" TO DUST BASE SHALL BE PLACED UNIFORMLY AND COMPACTED IN NO MORE THAN 12" LOOSE LIFTS. EACH COMPACTED LAYER SHALL BE DENSITY CONTROLLED PER NOT #2 ABOVE.

4. ALL UTILITY TRENCH COMPACTION TESTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER. (GEOTECHNICAL ENGINEER SHALL BE APPROVED BY NEW BRAUNFELS UTILITIES AND THE CITY OF NEW BRAUNFELS) GEOTECHNICAL ENGINEERING AND COMPACTION TESTING IS A "NO SEPARATE PAY ITEM" AND IS SUBSIDIARY TO THE VARIOUS BID ITEMS. ALL COSTS ASSOCIATED WITH GEOTECHNICAL ENGINEERING OR COMPACTION TESTING IS AT THE SOLE EXPENSE OF THE CONTRACTOR.

5. COMPACTION TESTS SHALL BE DONE AT A MINIMUM OF 1-TEST EVERY 100-FEET OF TRENCH PER EACH COMPACTED LIFT. THIS REQUIREMENT SHALL INCLUDE WATER AND SEWER SERVICES. THE NUMBER OF TEST REQUIRED SHALL BE INCREASED BASED ON THE CONTRACTOR'S GEOTECHNICAL ENGINEER'S RECOMMENDATION. THE LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY NEW BRAUNFELS UTILITIES AND THE CITY OF NEW BRAUNFELS. ADDITIONAL TESTING BASED ON GEOTECHNICAL ENGINEER'S RECOMMENDATION SHALL BE AT THE CONTRACTOR'S SOLE EXPENSE.

6. UPON COMPLETION OF THE COMPACTION TESTING, THE CONTRACTOR SHALL IMMEDIATELY SEND THE RESULTS TO THE ENGINEER OF RECORD, NEW BRAUNFELS, UTILITIES INSPECTIONS, AND THE CITY OF NEW BRAUNFELS INSPECTIONS. NON SEPARATE PAY ITEM.

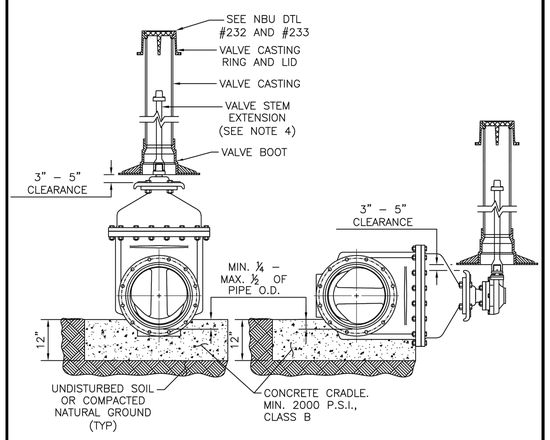
7. IF AT ANY TIME A TEST FAILS, THE CONTRACTOR SHALL AT A MINIMUM AND AT HIS SOLE EXPENSE, REMOVE THAT LAYER OF BACKFILL TO 50-FEET FROM EITHER SIDE OF THE FAILED TEST LOCATION. THE CONTRACTOR, AT HIS SOLE EXPENSE SHALL PROVIDE 2-ADDITIONAL TESTS AT THE REPLACED LOCATION WHERE THE INITIAL TEST FAILED AND AT 1 LOCATION POINT, RANDOMLY SELECTED OR AS INDICATED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER. THE RESULTS SHALL BE IMMEDIATELY SENT TO THE ENGINEER OF RECORD, NEW BRAUNFELS UTILITIES INSPECTIONS, AND THE CITY OF NEW BRAUNFELS INSPECTIONS.

8. CONTAINED WITH EACH COMPACTION TESTING REPORT, THE CONTRACTOR SHALL PROVIDE CERTIFICATION FROM THE GEOTECHNICAL ENGINEER THAT THE PLACEMENT OF TRENCH BACKFILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THESE PLANS.

RESTRAINED LENGTH FOR PVC PIPE

PIPE INSIDE DIA.	HORIZONTAL BENDS				VERTICAL BENDS						DEAD END/ INLINE VALVES
					UPPER			LOWER			
	90°	45°	22.5°	11.25°	45°	22.5°	11.25°	45°	22.5°	11.25°	
8"	30	12	6	3	32	15	8	11	5	3	77
12"	43	18	8	4	45	22	11	16	7	4	109

NOTES:
LENGTHS SHOWN ABOVE WERE COMPUTED BASED ON THE FOLLOWING VALUES:
a. SAFETY FACTOR = 1.5 TO 1
b. TEST PRESSURE = 200 psi
c. SOIL DESIGNATION - INORGANIC CLAY OF HIGH PLASTICITY
d. DEPTH OF COVER - 4 feet (TYPICAL AND UPPER BEND)
e. DEPTH OF COVER - 5 feet (LOWER BEND)



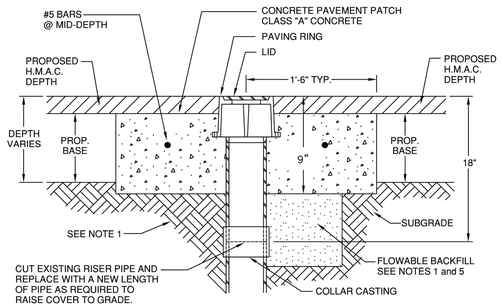
VERTICAL VALVE

HORIZONTAL VALVE
USE ONLY WHEN SPECIFIED IN DRAWINGS

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.

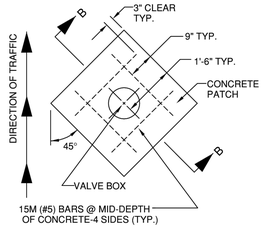
NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

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



SECTION B-B

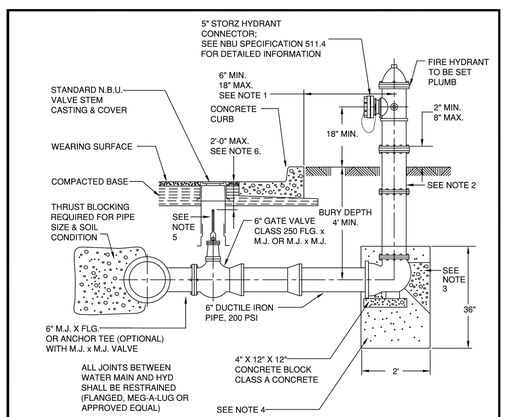
NOTES:
1. SUBGRADE SHALL BE COMPACTED AS PER SPECIFICATIONS.
2. VALVE CASTINGS SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE BASE OF THE VALVE.
4. REMOVE EXISTING RISER PIPE DOWN 18" AND REPLACE TO THE NEW ELEVATION USING NEW PIPE AND A COLLAR CASTING.
5. WHERE CAST IRON CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" DEEP, CONTRACTOR MAY ELECT TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL TO THE UNDERSIDE OF THE CONCRETE PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
6. REINFORCING STEEL SHALL MEET SPECIFICATIONS.



PLAN VIEW

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY: JD Amaro	APPROVED BY:	UPDATED: 4-10-03	STANDARD DRAWING: **WATER VALVE BOX ADJUSTMENT TO GRADE WITH CONCRETE AND HMAC FOR NEW STREETS**	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 233



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 FT^2 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.

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

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

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608-8971
SPECTRUM CABLE	1-800-892-4357
CENTERPOINT GAS	(800) 427-7142
AT&T	(830) 303-1333
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

C.P.E. LOCATOR
CALL CENTER POINT ENERGY LOCATOR AT 1-800-545-6005, 48HRS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CENTER POINT ENERGY 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.

TELEPHONE LOCATOR
THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

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 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTORS 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 EXCAVATIONS.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24-HOURS PRIOR TO COMMENCING CONSTRUCTION.

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

STATE OF TEXAS — JAMES INGALLS — 107416 — LICENSED PROFESSIONAL ENGINEER — 12-2-22

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

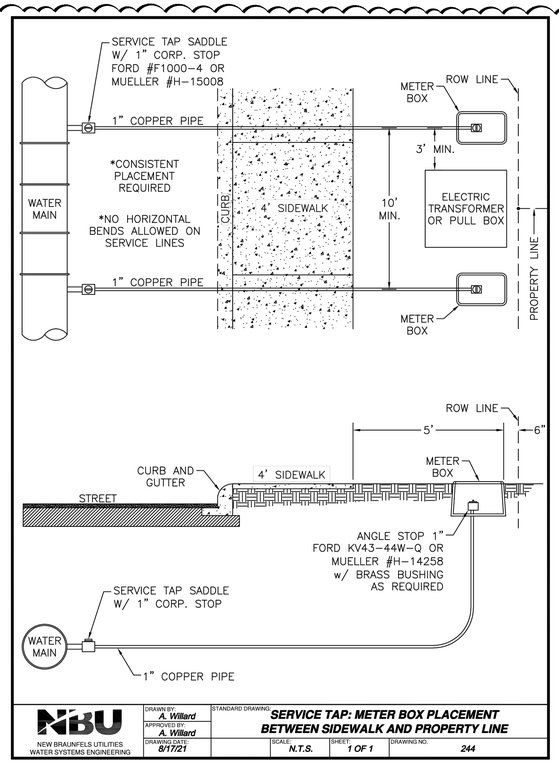
WATER DETAILS

HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

SHEET 37 OF 45

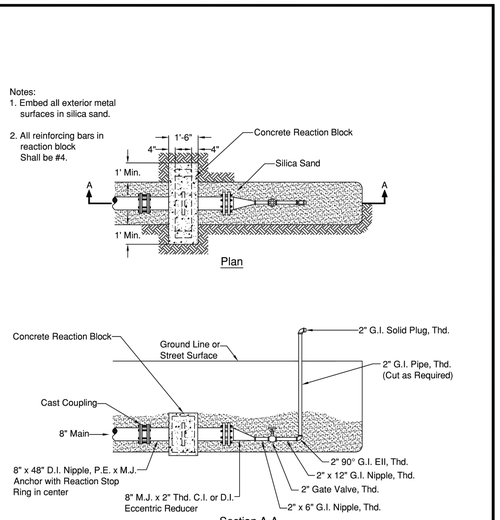
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Drawing Name: N:\Projects\Q70001 Highland Gardens U1 and U2\Civil Construction Drawings\Unit 2\37 WATER DETAILS.dwg User: jamesingalls Jan 07, 2022 - 3:46pm



NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

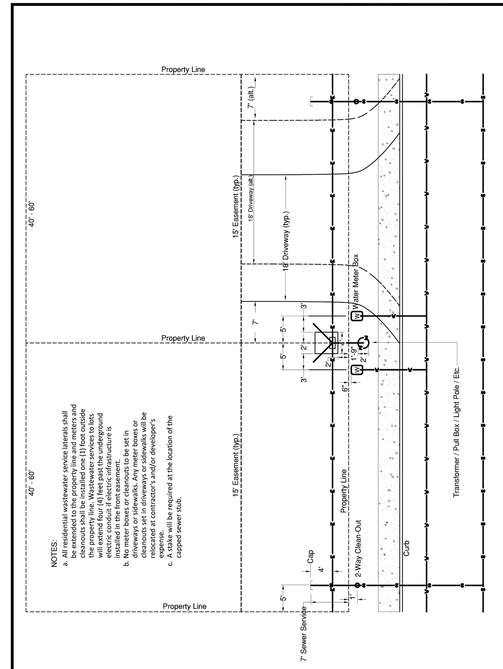
DRAWN BY: A. Willard	STANDARD DRAWING: SERVICE TAP: METER BOX PLACEMENT BETWEEN SIDEWALK AND PROPERTY LINE			
APPROVED BY: A. Willard				
DRAWING DATE: 8/17/21	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 244	



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

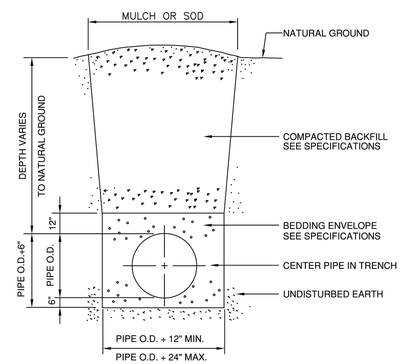
NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

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



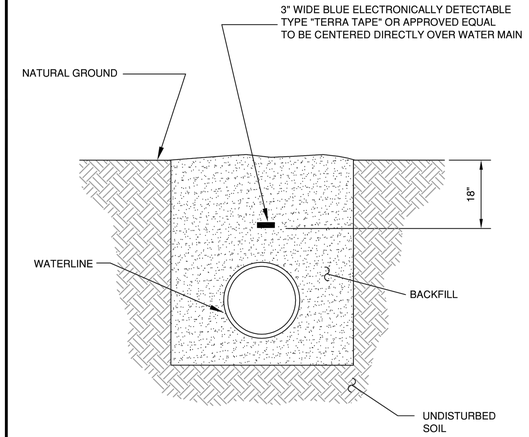
NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

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



NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

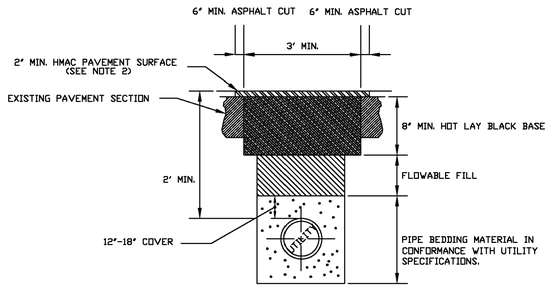
DRAWN BY: H Shadrock	STANDARD DRAWING: TYPICAL TRENCH WITH UNFINISHED SURFACE			
APPROVED BY:				
UPDATED: 4-30-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 422	



WATERLINE SURFACE IDENTIFICATION DETAIL
NOT TO SCALE

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY: H Shadrock	STANDARD DRAWING: PLACEMENT OF INDUCTIVE TRACER DETECTION TAPE			
APPROVED BY:				
UPDATED: 5-23-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 424	



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
ISSUE DATE: APRIL 2015	SCALE: N.T.S
DRAWN BY: AMF	CONTACT: GF

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

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION:

NEW BRAUNFELS UTILITIES (WATER & SEWER)	(830) 608-8971
SPECTRUM CABLE	1-800-892-4357
CENTERPOINT GAS	(800) 427-7142
AT&T	(830) 303-1333
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

C.P.E. LOCATOR

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

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED
PROFESSIONAL ENGINEER
4-21-21

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W. SH46, STE 105, NEW BRAUNFELS, TX. 78132
PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

WATER DETAILS II

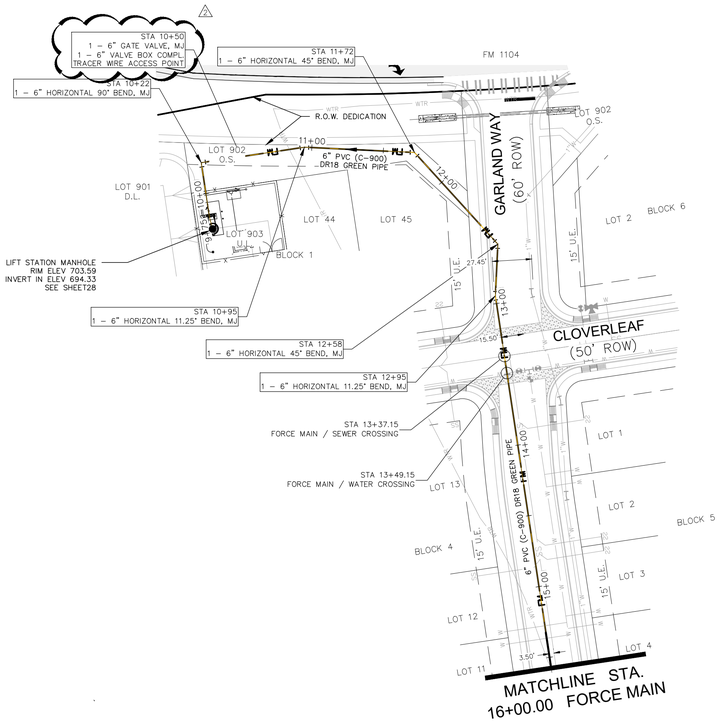
HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

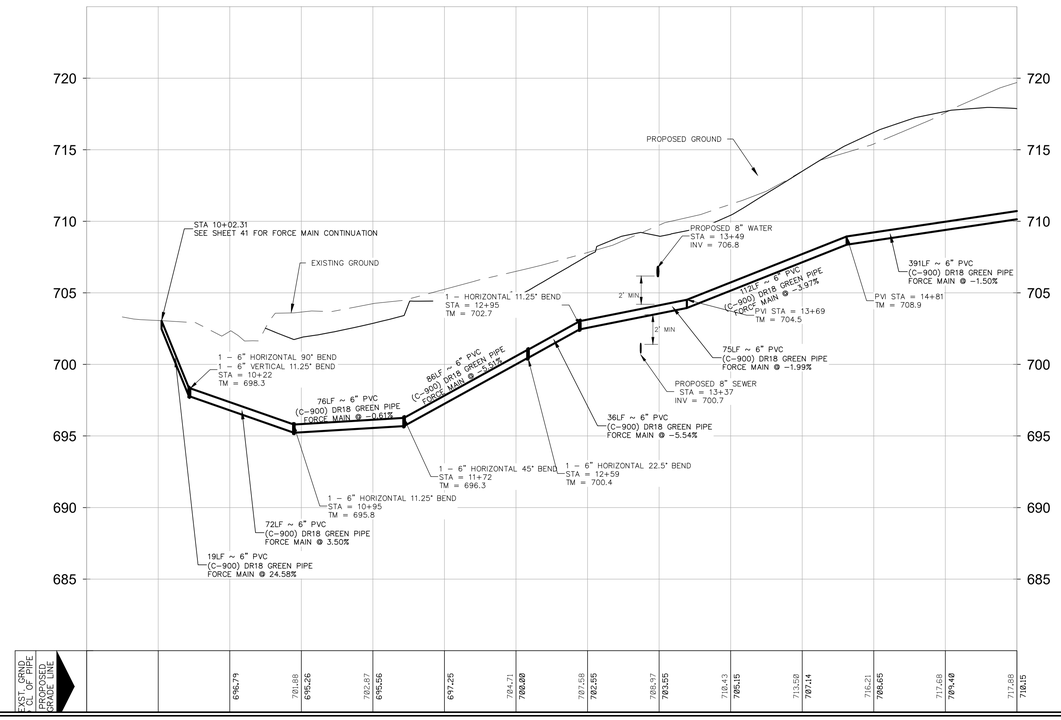
SHEET 38 OF 45

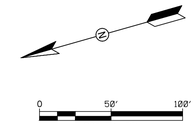
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Drawing Name: N:\Projects\CN001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\SR WATER DETAILS II.dwg User: jamesingalls Jan 07, 2022 - 3:46pm

HIGHLAND GARDENS UNIT 2	
ITEM	QTY.
6" FORCE MAIN	1276 LF







LEGEND

- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
- NEW DOUBLE METERED DUAL WATER SERVICE
- NEW FIRE HYDRANT

CONSTRUCTION NOTES:

1. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).

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3. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.

4. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.

5. METER BOXES MUST BE SET AT PROPOSED FINISHED GRADE. ANY METER BOXES THAT ARE NOT SET AT THE FINAL GRADE WILL BE ADJUSTED BY THE CONTRACTOR AT NO ADDITIONAL COSTS.

6. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.

7. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.

8. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. 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 100LF FOR EACH LIFT. 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.

9. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. 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.

SCALE:
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VERTICAL 1" = 5'

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TEXAS ONE CALL SYSTEM	811

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TELEPHONE LOCATOR

THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48HRS PRIOR TO EXCAVATION AT 1-800-545-6005,. CONTRACTOR HAS THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY DURING CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

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

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
1-6-22

NO	DATE	ISSUES AND REVISIONS
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

MOELLER & ASSOCIATES Engineering Solutions
2021 W. SH46, STE. 105, NEW BRAUNFELS, TX. 78132
PH: 830-387-7127 www.mo-tx.com
TBPE FIRM F-13351

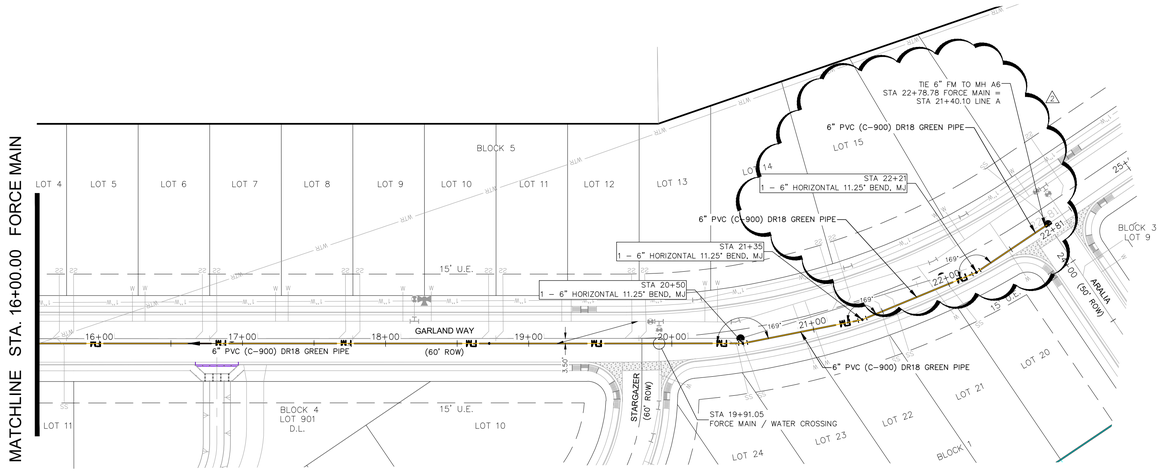
FORCE MAIN PLAN & PROFILE BEGIN TO STA 16+00

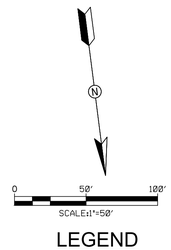
HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

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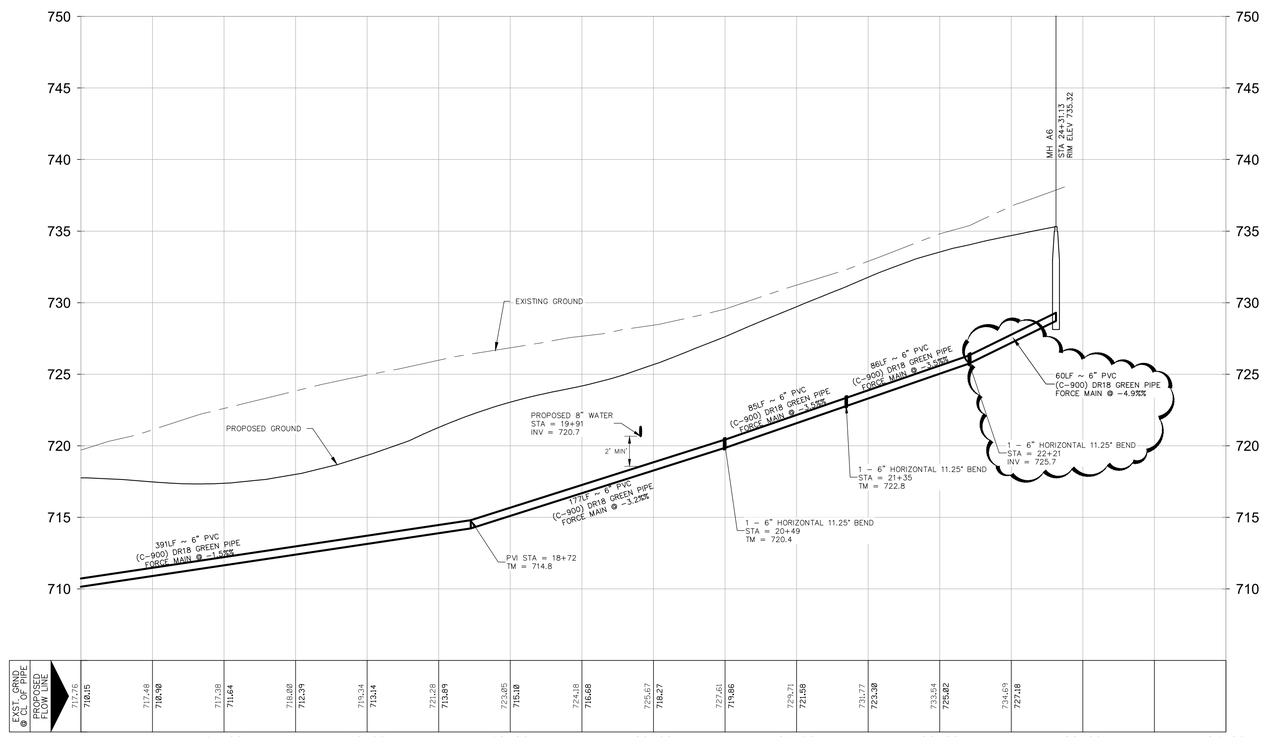
LEGEND

- NEW SANITARY SEWER
- NEW MANHOLE
- NEW SEWER LATERAL
- NEW WATER SERVICE
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10. ALL WASTEWATER LINES AND MANHOLES WITH A DEPTH GREATER THAN 15 FEET MUST HAVE AN NBU INSPECTOR PRESENT DURING INSTALLATION. IF THE INSPECTOR IS NOT PRESENT, THE LINE AND OR MANHOLE IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

FORCE MAIN STA 16+00 TO END



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

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SPECTRUM CABLE	1-800-892-4357
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NEW BRAUNFELS UTILITIES (ELECTRIC)	(830)-629-8400
TEXAS ONE CALL SYSTEM	811

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TELEPHONE LOCATOR

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

STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
7-26-22

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
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2021 W SH46, STE 105, NEW BRAUNFELS, TX. 78132
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TBPE FIRM F-13351

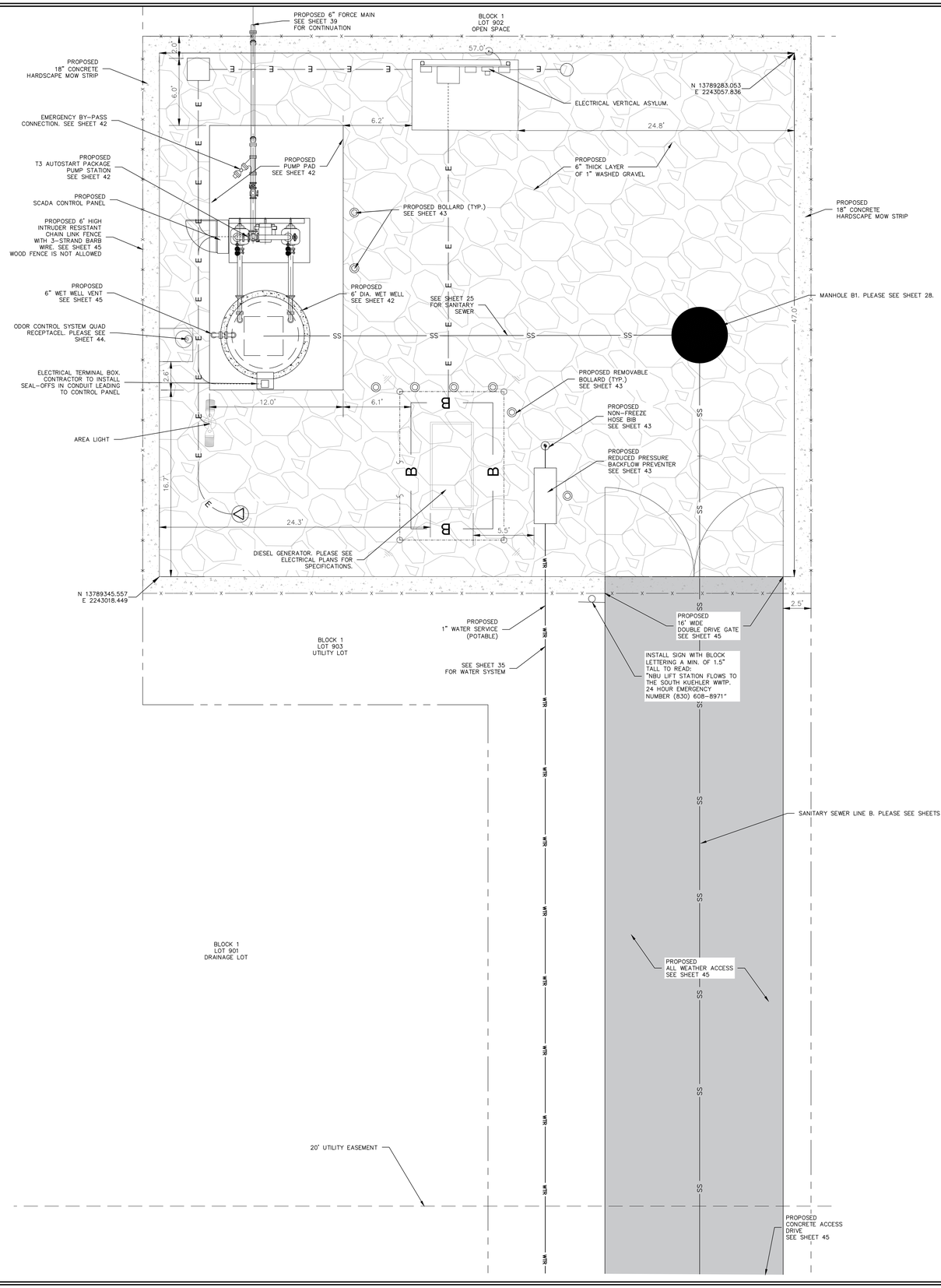
FORCE MAIN PLAN & PROFILE STA 16+00 TO END

HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET
40
45

Drawing Name: N:\Projects\CN001 Highland Gardens U1 and U2\Civil\Construction Drawings\Unit 2\40 FORCE MAIN PLAN & PROFILE STA 16+00 TO END.dwg User: jamesingalls Jan 07, 2022 - 3:53pm



0 5' 10'
SCALE: 1"=5'

NOTES:
1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL VERIFY.
3. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SEATING POSITION.
4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
5. THE UNDERSIDE OF THE WET WELL HATCH SHALL HAVE THE FOLLOWING STENCILED IN RED PAINT: "WARNING! CONFINED SPACE ENTRY."

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Know what's below. Call before you dig.

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JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
1-6-22

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
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PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

LIFT STATION SITE PLAN

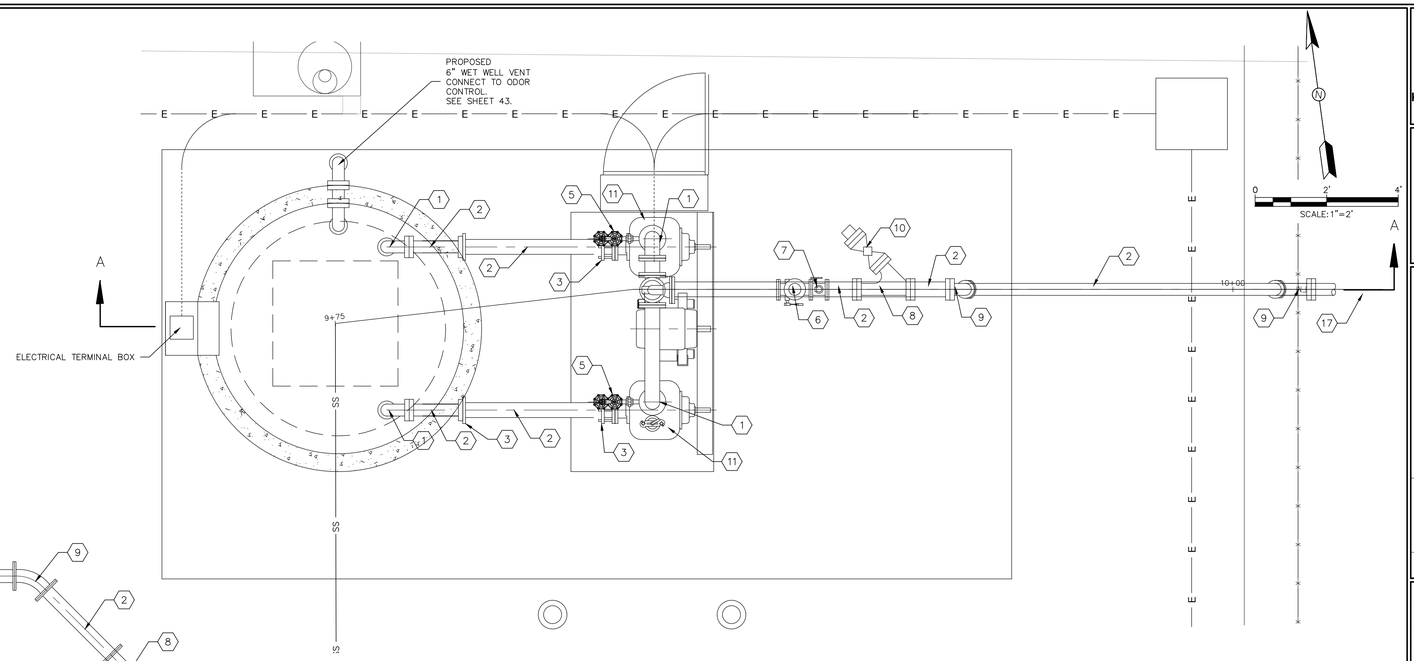
HIGHLAND GARDENS UNIT 2
NEW BRAUNFELS, TEXAS

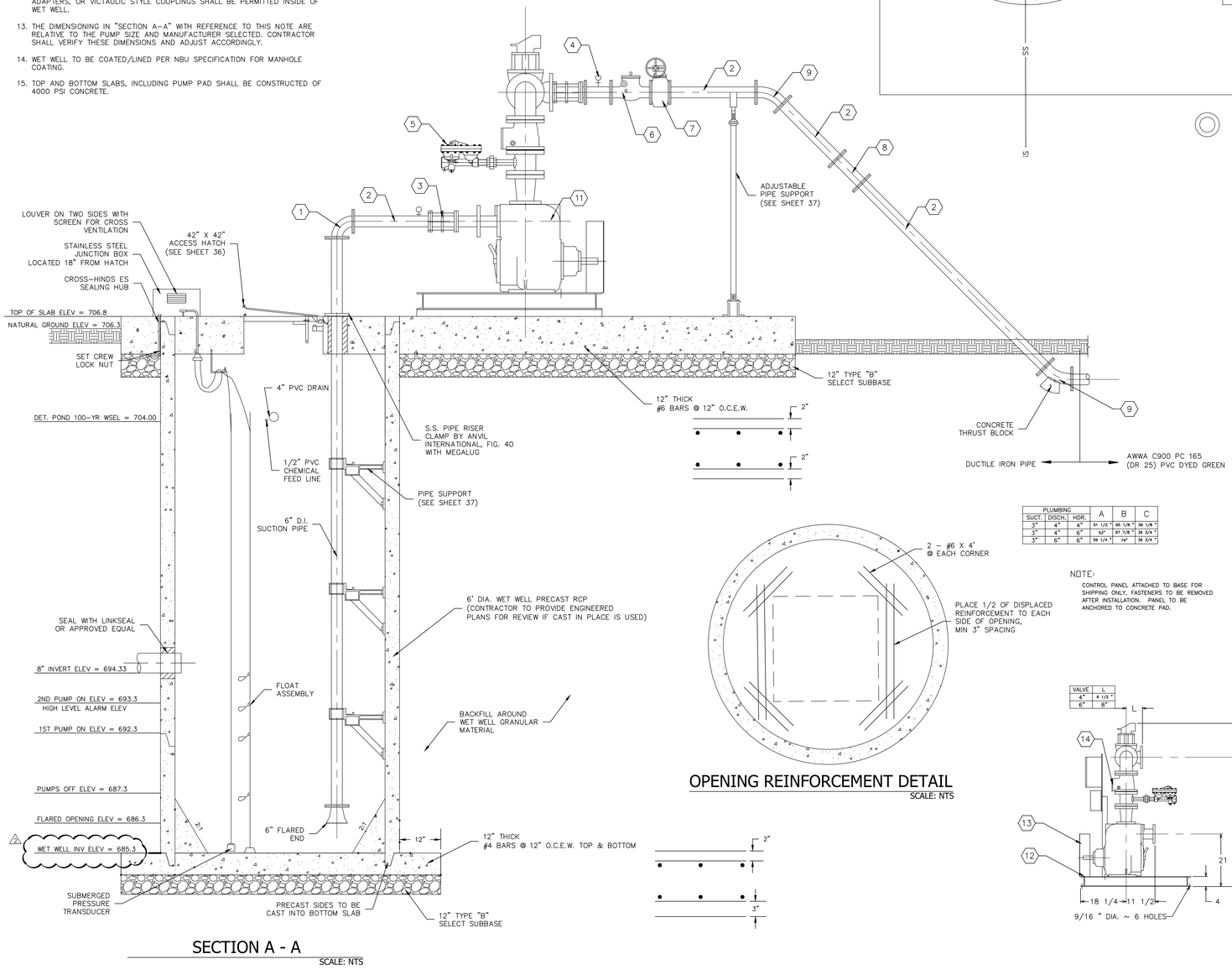
SHEET 41 OF 45

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Drawing Name: N:\Projects\X25001 Highland Gardens UI and UI\Civil\Construction Drawings\Unit 2\41 LIFT STATION SITE PLAN.dwg User: jamesingalls Jan 07, 2022 - 3:55pm

NOTES:
1. SEE DETAILS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
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4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
5. THE UNDERSIDE OF THE WET WELL HATCH SHALL HAVE THE FOLLOWING STENCILED IN RED PAINT:"WARNING! CONFINED SPACE ENTRY."
6. DIMENSIONS AND DETAILS ARE SHOWN FOR THE MIN. SIZE AND DEPTH REQUIREMENTS FOR THE WET WELL, PUMP PLACEMENT PIPE, AND APPURTENANCES AS WELL AS FOR BIDDING PURPOSES. CONTRACTOR SHALL PROVIDE A DETAILED SHOP DRAWING SUBMITTAL FOR THE STRUCTURE (WALLS, BOTTOM SLAB, AND TOP) WITH DESIGN CALCULATIONS, SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS FOR THE SELECTED METHOD OF CONSTRUCTION TO BE REVIEWED AND APPROVED BY THE ENGINEER. THE SUBMITTED STRUCTURAL DESIGN SHALL ADDRESS ALL REQUIREMENTS TO ALLOW FOR ALL POSSIBLE LOADS AND STRESSES PLACED ON THE STRUCTURE DURING CONSTRUCTION AND AFTER PLACED IN OPERATION AND TO MEET THE GEOTECHNICAL CONDITIONS.
7. CONTRACTOR SHALL BACKFILL AREA AROUND WET WELL WITH CEMENT STABILIZED SAND, SEE SPECIFICATIONS.
8. IF WET WELL IS CONSTRUCTED BY CAISSON METHOD, INJECT GROUT TO FILL ANNULAR VOID AROUND WET WELL.
9. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE WET WELL HATCHES PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
10. PUMP ANCHOR BOLTS ARE TO BE ADHESIVE TYPE, AND EMBEDDED IN CONCRETE SLAB. CONTRACTOR TO SUBMIT DESIGN OF PUMP ANCHOR BOLTS AND PATTERN, INCLUDING CALCULATIONS.
11. CONTRACTOR TO PROVIDE ADHESIVE ANCHORS IN LIEU OF WEDGE ANCHORS FOR ALL SUBMERGED CONDITIONS AND SUBMIT DESIGN OF ANCHOR BOLTS.
12. ALL PIPING IN THE WET WELL SHALL BE FLANGED, NO FLANGED COUPLING ADAPTERS, OR VICTAULIC STYLE COUPLINGS SHALL BE PERMITTED INSIDE OF WET WELL.
13. THE DIMENSIONING IN "SECTION A-A" WITH REFERENCE TO THIS NOTE ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL VERIFY THESE DIMENSIONS AND ADJUST ACCORDINGLY.
14. WET WELL TO BE COATED/LINED PER NBU SPECIFICATION FOR MANHOLE COATING.
15. TOP AND BOTTOM SLABS, INCLUDING PUMP PAD SHALL BE CONSTRUCTED OF 4000 PSI CONCRETE.
16. ALL HARDWARE WITHIN WET WELL SHALL BE 316 STAINLESS STEEL.
17. PUMPS SHALL BE NON-CLOG, SELF-PRIMING PUMPS CAPABLE OF HANDLING RAW WASTEWATER AND CAPABLE OF PASSING 3" DIAMETER SOLIDS AT A MINIMUM.
18. DUAL LEVEL INDICATING SYSTEM SHALL INCLUDE SUBMERGED PRESSURE TRANSDUCER AND BACK-UP FLOATING LEVEL ASSEMBLY.
19. THE ACCESS COVERS SHALL BE A MINIMUM OF 42" X 42" AND SHALL BE ABLE TO BE PADLOCKED. AN ALUMINUM SAFETY GRATE SHALL BE INSTALLED ON WET WELL OPENING.
20. A 316 STAINLESS STEEL FLOAT MOUNTING ASSEMBLY SHALL BE PROVIDED. THE FLOATS SHALL BE MOUNTED AWAY FROM THE WET WELL INLET, ANY CONTROL WIRING, AND THE PUMP'S SUCTION, TO MINIMIZE DISTURBANCE BECAUSE OF TURBULENCE, LEVEL SETTINGS SHOWN ON THIS SHEET. FLOATS SHALL BE SUSPENDED FROM FLOAT MOUNTING ASSEMBLY WITH KELLUM GRIPS AND SHALL BE TIED TO A STAINLESS STEEL CHAIN AND ANCHOR ASSEMBLY.
21. PUMP/MOTOR DATA: 275 GPM @ 36 FT T.D.H., 5 HP, 60HZ, 1385 RPM.
22. PUMP SHALL BE GORMAN RUPP MODEL T3A-B-4, IMPELLER 11046 (PUMP CURVE T3A-B-4)
23. PACKAGE PUMP STATION TO BE AUTO-START, COORDINATE WITH GORMAN RUPP REPRESENTATIVE ON ITEMS INCLUDED IN PACKAGE SYSTEM.
24. ALL STATIONARY PIPING USED IN THE LIFT STATION SHALL BE LINED DUCTILE IRON OR 300 SERIES STAINLESS STEEL. ALL HARDWARE MUST BE 316 STAINLESS STEEL.
25. ALL DISCHARGE LINES SHALL HAVE ADEQUATE THRUST SUPPORT MEMBERS AT EACH FITTING. WHERE POSSIBLE, LONG RADIUS 90 DEG BENDS SHALL BE USED.
26. THE DISCHARGE LINE SHALL BE FITTED WITH A CHECK VALVE AND A ECCENTRIC PLUG VALVE.
27. AUDIO VISUAL ALARM SYSTEM SHALL TRANSMIT ALL ALARM CONDITIONS TO CELL PHONE BASED AUTO-DIALER FOR CONTINUOUS MONITORING. REFERENCE PACKAGE PUMP STATION SPECIFICATION FOR DETAILS.



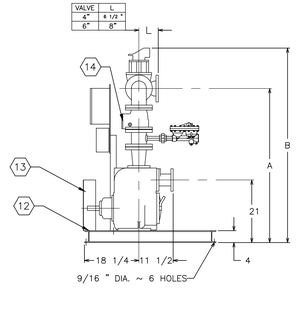


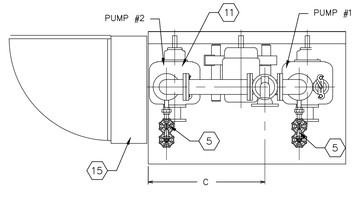
SECTION A - A
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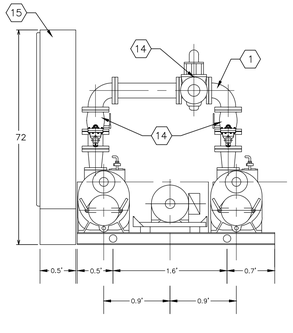
OPENING REINFORCEMENT DETAIL
SCALE: NTS

PLUMBING SUCT.	DISCH.	HDR.	A	B	C
3"	4"	4"	51 1/2 "	65 1/8 "	39 1/8 "
3"	4"	6"	53"	67 7/8 "	36 3/4 "
3"	6"	6"	59 1/4 "	74"	36 3/4 "

NOTE:
CONTROL PANEL ATTACHED TO BASE FOR SHIPPING ONLY, FASTENERS TO BE REMOVED AFTER INSTALLATION. PANEL TO BE ANCHORED TO CONCRETE PAD.







PIPE AND FITTING SCHEDULE

ITEM	NOTE
1	6" X 90° ELBOW, DI
2	6" SPOOL, DI
3	6" DRESSER DISMANTLING JOINT, DI
4	PRESSURE GAUGE, (TYP.)
5	AIR RELEASE VALVE
6	6" EXTERNAL ARM SWING CHECK VALVE
7	6" PLUG VALVE (TYP.)
8	6" FLOW THROUGH WYE, DI
9	6" X 45° BEND, DI
10	6" EMERGENCY PUMP OUT & FULL BORE PIG ACCESS
11	PUMP
12	PUMP & MOTOR BASE ASSEMBLY
13	BELT GUARD ASSEMBLY
14	DISCHARGE CHECK VALVE
15	CONTROL PANEL
16	DISCHARGE PLUG VALVE
17	6" PVC (C-900) DR-18 GREEN PIPE
18	EXHAUST SILENCER
19	MOTOR

PUMP NOTES:
LOW FLOAT LEVEL SHALL BE AT TOP OF MOTORS.

CONNECTION BETWEEN PUMP DISCHARGE FLANGE & DISCHARGE PIPE FLANGE SHALL BE A MACHINED METAL TO METAL WATER TIGHT CONTACT.

NO PORTION OF THE PUMP SHALL BE IN CONTACT WITH THE FLOOR.

SEE STATION OPERATION TABLES, THIS SHEET

PHASE 1 STATION OPERATION TABLES

PUMP CONTROL LEVELS	
WATER LEVEL ELEVATION	ACTION
693.3	BACKUP FLOAT – HIGH LEVEL ALARM & ALL PUMPS ON
692.3	PRIMARY TRANSDUCER – PUMP ON
687.3	BACKUP FLOAT – LOW LEVEL ALARM & ALL PUMPS OFF
PUMPS AND WET WELL LEVEL SHALL BE MONITORED VIA SCADA. REFERENCE NBU DESIGN GUIDELINES MANUAL FOR ADDITIONAL REQUIREMENTS, CONTROLS, ALARMS, ETC. (SEE NOTE E).	

FULL DEVELOPMENT STATION OPERATION TABLES

PUMP CONTROL LEVELS	
WATER LEVEL ELEVATION	ACTION
693.3	BACKUP FLOAT – HIGH LEVEL ALARM & ALL PUMPS ON
692.3	PRIMARY TRANSDUCER – PUMP ON
687.3	BACKUP FLOAT – LOW LEVEL ALARM & ALL PUMPS OFF
PUMPS AND WET WELL LEVEL SHALL BE MONITORED VIA SCADA. REFERENCE NBU DESIGN GUIDELINES MANUAL FOR ADDITIONAL REQUIREMENTS, CONTROLS, ALARMS, ETC. (SEE NOTE E).	

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STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
7-2-22

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS
5	01-06-2022	UPDATED PER NBU COMMENTS

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LIFT STATION DETAILS I

HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 42 OF 45

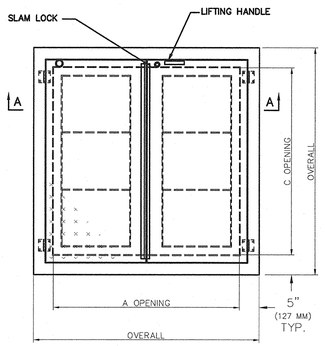
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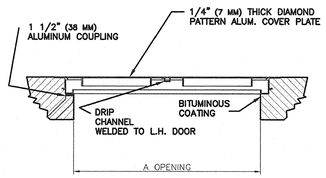
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HATCH TO INCLUDE:

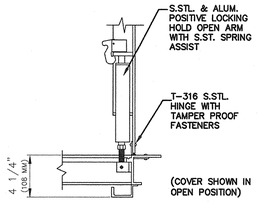
- AUTO-LOCK T-316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T-316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- T-316 STAINLESS STEEL SLAM LOCK WITH REMOVABLE KEY
- STAINLESS STEEL COMPRESSION SPRING ASSIST
- BUILT-IN NEOPRENE CUSHION/GASKET
- NON-OZONE DEPLETING BITUMINOUS COATING
- DOUBLE LEAF CONSTRUCTION
- 300 LBS. PER SQ. FT. LOAD RATING (1464 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM CHANNEL FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE
- RETRO GATE FALL PROTECTION

STANDARD SIZES				
QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
	W2C4242	42 (1067)	42 (1067)	119 (54)
	W2C4842	48 (1219)	42 (1067)	130 (59)
	W2C4848	48 (1219)	48 (1219)	142 (64)
	W2C5442	54 (1372)	42 (1067)	141 (64)
	W2C5448	54 (1372)	48 (1219)	154 (70)
	W2C5454	54 (1372)	54 (1372)	166 (75)
	W2C6030	60 (1524)	30 (762)	122 (55)
	W2C6036	60 (1524)	36 (914)	135 (61)
	W2C6042	60 (1524)	42 (1067)	151 (68)
	W2C6048	60 (1524)	48 (1219)	165 (75)
	W2C6054	60 (1524)	54 (1372)	179 (81)
	W2C6060	60 (1524)	60 (1524)	195 (88)
	W2C6636	66 (1676)	36 (914)	145 (66)
	W2C6648	66 (1676)	48 (1219)	177 (80)
	W2C7236	72 (1829)	36 (914)	154 (70)
	W2C7242	72 (1829)	42 (1067)	173 (78)
	W2C7248	72 (1829)	48 (1219)	188 (85)
	W2C7254	72 (1829)	54 (1372)	204 (92)
	W2C7260	72 (1829)	60 (1524)	222 (101)





SECTION A-A



DETAIL

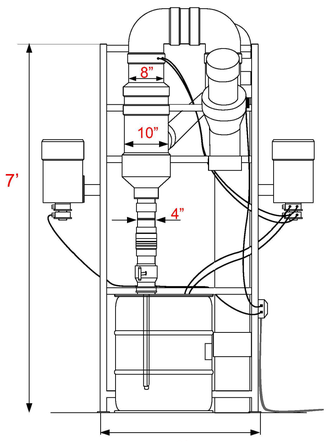
HATCH DETAIL

Scale: N.T.S.

NOTES:

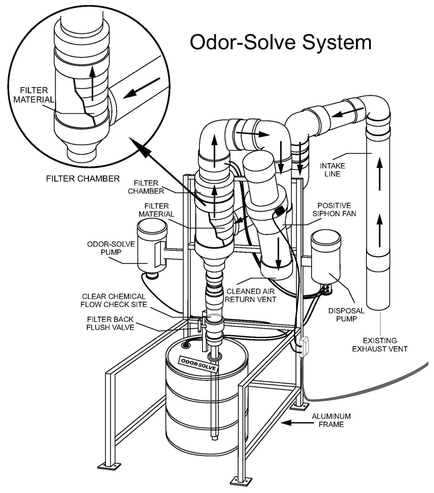
1. CONTRACTOR TO INSTALL ODOR CONTROL 170 SERIES FIXED OUTPUT 170 GPD UP TO 25 PSI

Odor-Solve System



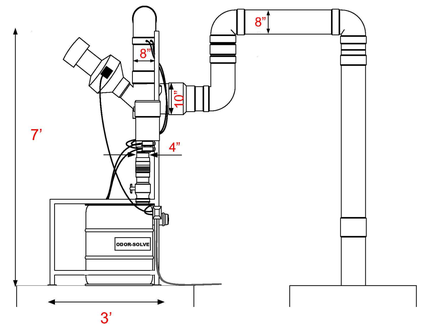
FRONT VIEW

Odor-Solve System

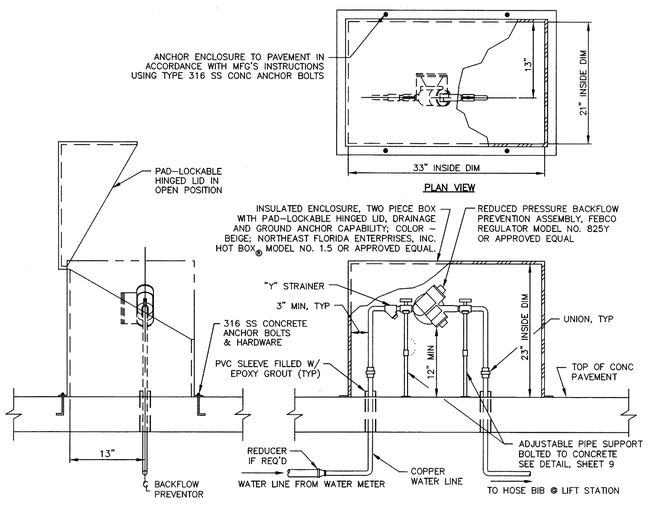


ISO VIEW

Odor-Solve System

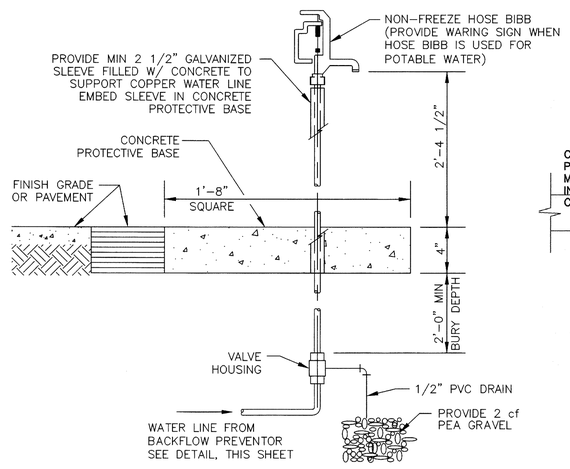


SIDE VIEW



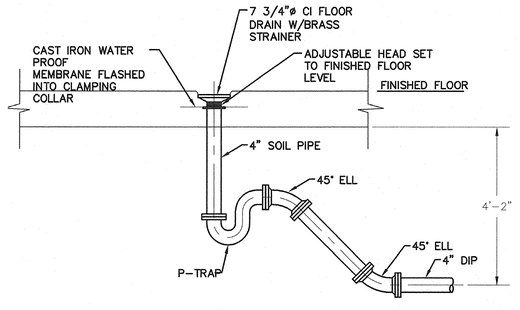
REDUCED PRESSURE BACKFLOW PREVENTER

Scale: N.T.S.



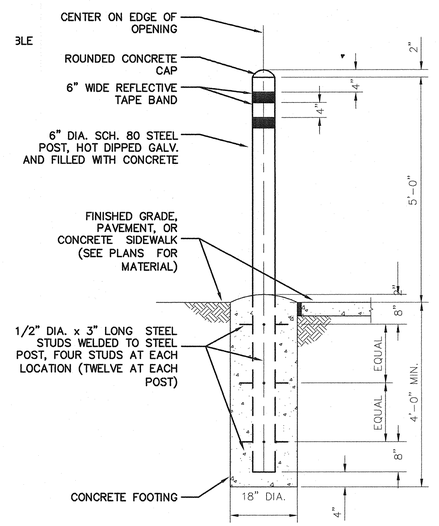
NON-FREEZE HOSE BIB DETAIL

Scale: N.T.S.



FLOOR DRAIN AND P-TRAP

Scale: N.T.S.



BOLLARD DETAIL

Scale: N.T.S.

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ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
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LIFT STATION DETAILS II

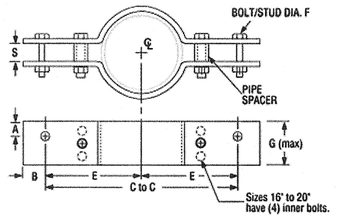
HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 43 OF 45

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Drawing Name: N:\Projects\CE0001 Highland Gardens LIT and LS\Civil\Construction Drawings\Unit 2\X43 LIFT STATION DETAILS II.dwg User: BritnayBassett Aug 05, 2021 - 10:25am



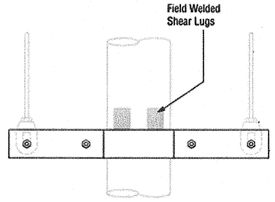
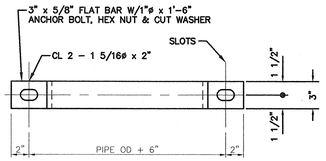


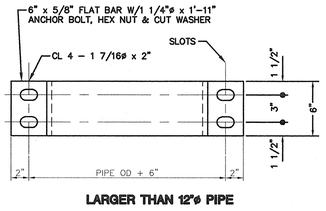
FIG. 40: LOADS (LBS) • WEIGHT (LBS) • DIMENSIONS (IN)													
Pipe Size	Max Load		C-C	E	F (max)	G (max)	S	A (CS)	A (alloy) (SS)	B (max)	Maximum Weight Each		
	Rigid Assembly	Spring Assembly									CS	SS	Alloy
2	900	1,800	18	9	½	2½	¾	1¼	⅛	2	18	15	18
2½			20	10							20	20	20
3	1,500	3,000			⅝	3	1	1½	1⅛		30	25	30
4	2,200	4,400	22	11	¾		1¼				40	40	44
5						4		2			45	40	45
6	3,000	6,000	24	12	⅞		1½	⅞	1¼		60	60	73
8			27	13½		5					82	82	82
10	5,500	11,000	30	15	1¼	6	2¼	1¼	1⅜	3	157	157	157
12	7,800	15,600	32	16	1½	7	2½	1⅜	1⅛		216	202	250
14			34	17					1⅜		228	228	263
16	9,000	18,000	36	18		6		1½	2		314	277	315
18			39	19½		7					338	338	377
20	13,500	27,000	42	21	2	8	3½	2⅝	2⅝	4¼	525	525	580
24			45	22½							621	565	681

PIPE RISER CLAMP

Scale: N.T.S.



12"ø PIPE & SMALLER

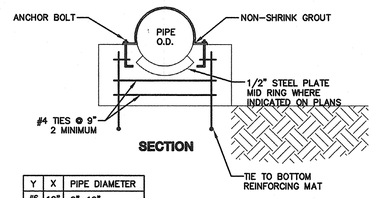


LARGER THAN 12"ø PIPE

NOTE: 1. HOT DIP GALV STRAP AFTER FABRICATION

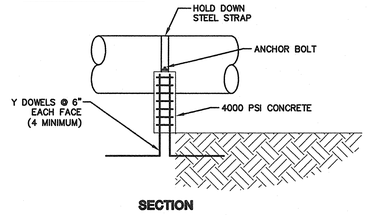
PIPE HOLD DOWN STRAP

Scale: N.T.S.



SECTION

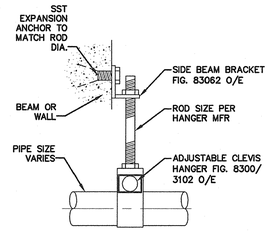
Y	X	PIPE DIAMETER
#6	12"	2"–12"
#8	18"	16" & LARGER



SECTION

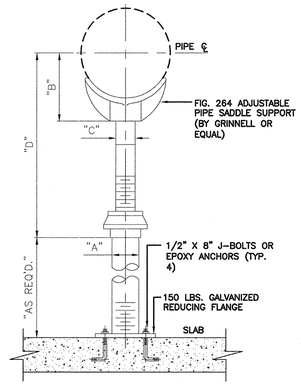
CONCRETE PIPE SUPPORT

Scale: N.T.S.



PIPE SUPPORT

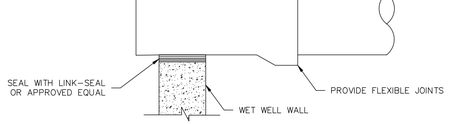
Scale: N.T.S.



PIPE SIZE	WGT APPROX. LBS EACH		A	B	C	D	
	COMPLETE	SADDLE ONLY				MINIMUM	MAXIMUM
2 1/2	9.0	4.8	2 1/2	3 1/2	1 1/2	8	13
3	9.2	5.0	2 /12	3 3/4	1 1/2	8 1/4	13 1/4
3 1/2	9.4	5.2	2 1/2	4	1 1/2	8 1/2	13 1/2
4	15.0	7.6	3	4 1/4	2 1/2	9 1/4	14
5	16.7	8.3	3	4 7/8	2 1/2	10	14 3/4
6	17.7	10.3	3	5 1/2	2 1/2	10 1/2	15 1/4
8	20.2	12.8	3	6 7/8	2 1/2	11 3/4	16 1/2
10	25.2	17.8	3	8 1/2	2 1/2	13 1/2	18 1/4
12	29.0	21.6	3	9 15/16	2 1/2	15	19 3/4
14	40.2	38.0	4	10 15/16	3	16 1/4	20 3/4
16	53.2	42.0	4	12 3/8	3	17 3/4	22 1/4
18	70.8	51.0	6	13 7/8	3 1/2	19 1/2	24
20	104.8	85.0	6	15 3/8	3 1/2	21	25 1/2
24	137.0	110.0	6	17 15/16	4	23 3/4	28 1/2
30	170.0	150.0	6	21 5/16	4	27	31 1/2
32	181.0	161.1	6	22 1/2	4	28 1/8	32 3/4
36	249.0	229.0	6	24 1/4	4	30 1/4	34 3/4

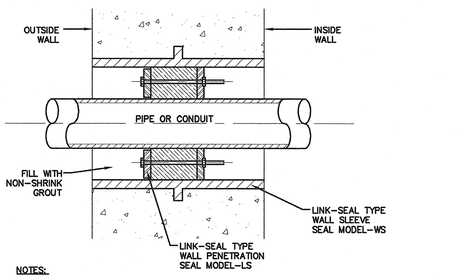
ADJUSTABLE PIPE SUPPORT

Scale: N.T.S.



INFLUENT SEWER PENETRATION DETAIL

Scale: N.T.S.

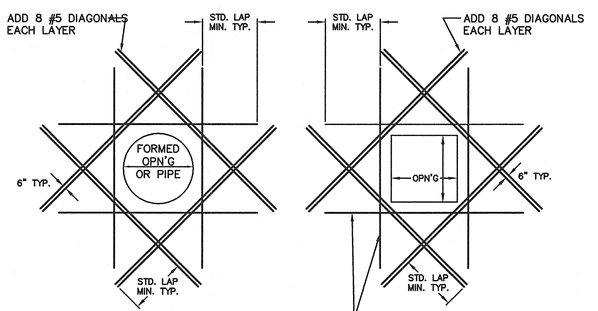


NOTES:

1. INSIDE DIAMETER OF EACH WALL OPENING SHALL BE OF THE SIZE RECOMMENDED BY MANUFACTURER TO FIT THE PIPE OR CONDUIT AND THE WALL SEAL ASSEMBLY TO ASSURE WATER–TIGHT JOINT.
2. PIPE TO WALL PENETRATION CLOSURES SHALL BE OF THE MODULAR MECHANICAL TYPE, CONSISTING OF INTERLOCKING SYNTHETIC RUBBER LINKS SHAPED TO FILL THE ANNULAR SPACE BETWEEN THE PIPE AND WALL OPENING. A PRESSURE PLATE SHALL BE PROVIDED UNDER EACH BOLT HEAD AND NUT, WITH THE SEAL CONSTRUCTED TO PROVIDE ELECTRICAL INSULATION BETWEEN PIPE AND WALL.
3. WALL SEAL ASSEMBLY SHALL BE "LINK SEAL" AS MFG. BY THUNDERLINE CORP., WAYNE, MICHIGAN OR EQUAL.
4. PROVIDE ESCUTCHEONS IN FINISHED SPACES.
5. WALL SEAL ASSEMBLY MAY BE OMITTED AND THE ENTIRE ANNULAR SPACE BETWEEN THE PIPE AND WALL SHALL BE FILLED WITH GROUT WHERE PIPES PENETRATE EXISTING WALLS.

WALL PENETRATIONS

Scale: N.T.S.

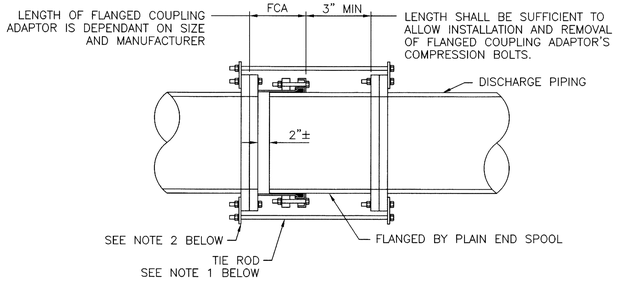


NOTE:
SPREAD AND/OR CUT REINFORCING AT OPENINGS. SPREAD BARS NO MORE THAN ONE–HALF TYPICAL BAR SPACE.

ADD EXTRA REINFORCING EQUAL TO REINFORCING CUT (APPROX. SAME SIZE BARS AS CUT REINFORCING AND IN THE SAME PLANE)
PLUS (1) #5 EA. FACE OF OPENING.

PENETRATION REINFORCING

Scale: N.T.S.



NOTES:

1. PROVIDE A NUMBER OF TIE RODS EQUAL TO 1/2 THE NUMBER OF FLANGE BOLTS. EVENLY SPACE INSTALLATION OF TIE RODS. DIAMETER OF TIE RODS TO BE EQUAL TO THE DIAMETER OF FLANGE BOLTS. LENGTH OF TIE RODS TO BE DETERMINED BY CONTRACTOR BASED ON SIZE AND MANUFACTURER OF FLANGED COUPLING ADAPTOR AND FINAL LENGTH OF SPOOL PIECE.
2. PROVIDE 316 SS TAB FOR ATTACHMENT OF TIE RODS. SIZE TO BE DETERMINED BY CONTRACTOR.
3. CONTRACTOR TO SUBMIT DETAILS DURING SHOP DRAWING SUBMISSION.
4. ALL HARDWARE SHALL BE 316 STAINLESS STEEL. TIE RODS SHOULD BE THREADED.
5. THIS RESTRAINT DOES NOT REPLACE THRUST BLOCKS TO BE PROVIDED AT OTHER LOCATIONS.

FLANGED COUPLING ADAPTOR RESTRAINT

Scale: N.T.S.

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STATE OF TEXAS — JAMES INGALLS — 107416 — LICENSED PROFESSIONAL ENGINEER — 8-3-21

ISSUES AND REVISIONS

NO	DATE	
1	12-02-2020	UPDATED PER CONB COMMENTS
2	03-23-2021	UPDATED PER NBU COMMENTS
3	05-13-2021	UPDATED PER TXDOT COMMENTS
4	08-03-2021	UPDATED UNIT 1A UTILITY CONNECTIONS

MOELLER & ASSOCIATES Engineering Solutions
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PH: 830-358-7127 www.mo-tx.com
TBPE FIRM F-13351

HIGHLAND GARDENS UNIT 2

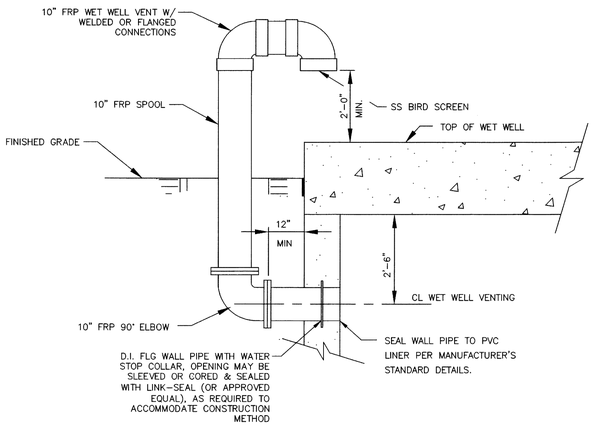
NEW BRAUNFELS, TEXAS

LIFT STATION DETAILS III

SHEET 44 OF 45

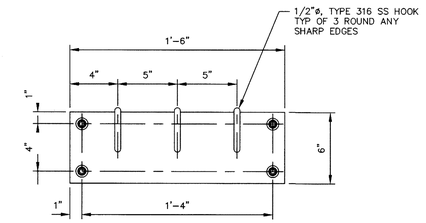
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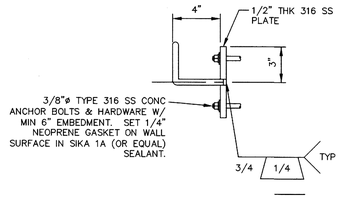
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HIGH PROFILE WET WELL VENT

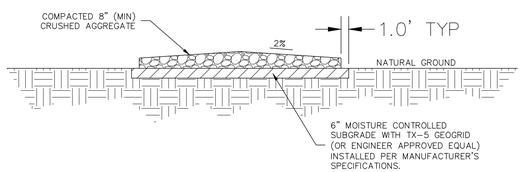
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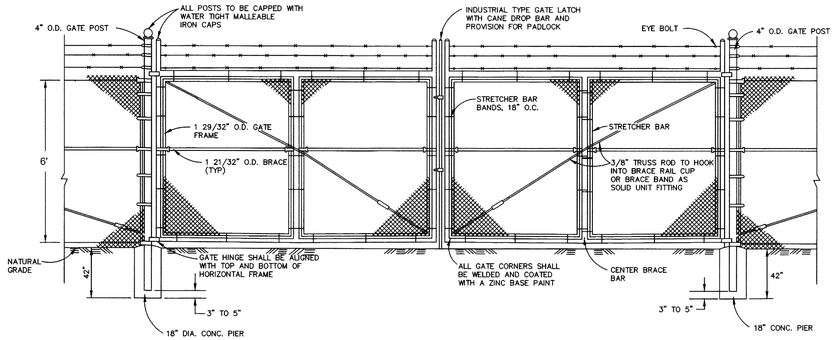
CABLE HOLDER ASSEMBLY

Scale: N.T.S.



ALL WEATHER ACCESS ROAD

Scale: N.T.S.



16FT DOUBLE DRIVE GATE

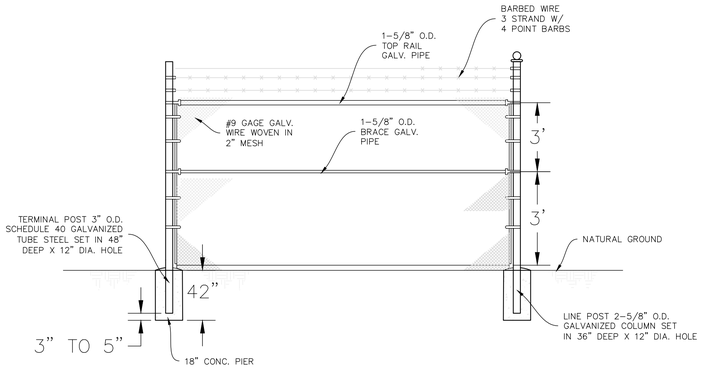
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WET WELL TOP SLAB CONCRETE SECTION

Scale: N.T.S.

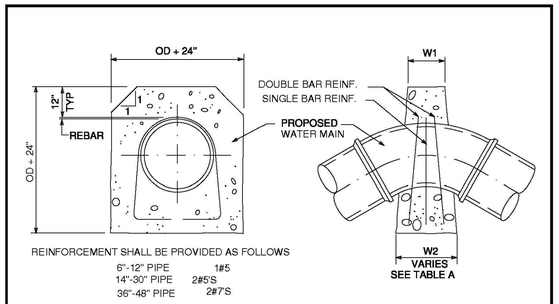
NOTE:

1. CONTRACTOR TO OBTAIN A COPY OF THE FINAL GEOTECHNICAL STUDY FOR THIS PROJECT PRIOR TO CONSTRUCTION OF THE PAVEMENT.



CHAIN LINK FENCE

Scale: N.T.S.



REINFORCEMENT SHALL BE PROVIDED AS FOLLOWS

6"-12" PIPE	1#5
14"-30" PIPE	2#5'S
36"-48" PIPE	2#7'S

VERTICAL DOWN BEND

TABLE A
UPWARD THRUST GRAVITY BLOCKS

PIPE DIA.	MIN. TOP WIDTH W1	ANGLE (degrees)	BOTTOM WIDTH-W2 (in)
6"	6"	0-5	NOTE 2
		5-15	24
		15-25	48
		► 25	NOTE 1
8"	6"	0-5	NOTE 2
		5-9	30
		9-15	36
		► 15	NOTE 1
12"	6"	0-5	NOTE 2
		5-15	48
		► 15	NOTE 1
16"	12"	0-5	NOTE 2
		5-10	60
		10-15	96
		► 15	NOTE 1
24" THRU 36" DIA.		► 5.0	NOTE 1
42" THRU 48" DIA.		► 3.0	NOTE 1

NOTES:

1- FOR ANGLES GREATER THAN THOSE INDICATED RESTRAINED JOINTS SHALL BE INSTALLED

2- FOR JOINT DEFLECTIONS LESS THAN 5 DEGREES, NO HORIZONTAL OR VERTICAL THRUST RESTRAINT IS REQUIRED FOR PIPES LESS THAN 42" IN DIAMETER.

THRUST BLOCK DESIGN AS FOLLOWS

A. PRESSURE OF 150 P.S.I. (ACTUAL IF HIGHER) + 50 % SURGE ALLOWANCE

B. MAXIMUM SOIL BEARING SEE TABLE BELOW

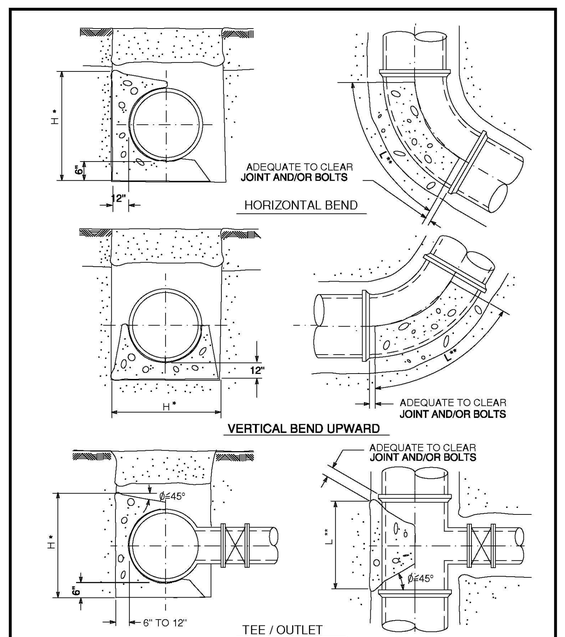
SOIL TYPES	PRESSURE
LOOSE OR SPONGY SOIL	1500 Lb/Sq.Ft.
UNDISTURBED SOIL, CALICHE	2000 Lb/Sq.Ft.
LIMESTONE ROCK	4000 Lb/Sq.Ft.

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

DRAWN BY: JD Amaro
APPROVED BY:

STANDARD DRAWING: **CONCRETE THRUST BLOCKING**

UPDATED: 4-16-03 | SCALE: N.T.S. | SHEET: 1 OF 2 | DRAWING NO. 221



* THE DIMENSION FOR "H" MUST BE GREATER THAN DIAMETER OF THE PIPE
** LENGTH "L" ALONG THE BEND MUST BE GREATER THAN "H" AND LESS THAN 2 TIMES "H"

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

DRAWN BY: JD Amaro
APPROVED BY:

STANDARD DRAWING: **CONCRETE THRUST BLOCKING**

UPDATED: 4-16-03 | SCALE: N.T.S. | SHEET: 2 OF 2 | DRAWING NO. 221

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STATE OF TEXAS
JAMES INGALLS
107416
LICENSED PROFESSIONAL ENGINEER
7-8-21

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LIFT STATION DETAILS IV

HIGHLAND GARDENS UNIT 2

NEW BRAUNFELS, TEXAS

SHEET 45 OF 45

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