KLEIN RD PH 2 RECONSTRUCTION
12” WATER LINE ADJUSTMENTS
(S. WALNUT AVE. TO F.M. 725)
FINAL DESIGN SUBMITTAL
VOLUME III

NEW BRAUNFELS UTILITIES
BOARD OF TRUSTEES

PRESIDENT
DR. JUDITH DYKES-HOFFMANN
VICE PRESIDENT
WAYNE PETERS
MAYOR/EX-OFFICIO
RUSTY BROCKMAN
TRUSTEE
JOHN HARRELL
TRUSTEE
YVETTE VILLANUEVA BARRERA

Sheet Index

C1 COVER SHEET
C2 GENERAL NOTES (SHEET 1 OF 4)
C3 GENERAL NOTES (SHEET 2 OF 4)
C4 GENERAL NOTES (SHEET 3 OF 4)
C5 GENERAL NOTES (SHEET 4 OF 4)
C6 PROJECT LAYOUT AND EROSION CONTROL PLAN
C7 WATER LINE 'A' PLAN & PROFILE (STA. 0+00 TO 1+25)
C8 WATER LINE 'A' PLAN & PROFILE (STA. 1+25 TO 4+25)
C9 WATER LINE 'A' PLAN & PROFILE (STA. 4+25 TO 7+25)
C10 WATER LINE 'A' PLAN & PROFILE (STA. 7+25 TO 10+80)
C11 WATER LINE 'B' PLAN & PROFILE (STA. 0+00 TO 1+30)
C12 TEMPORARY BYPASS LAYOUT
C13 DETAIL SHEET
C14 DETAIL SHEET
C15 DETAIL SHEET
C16 DETAIL SHEET
C17 DETAIL SHEET
C18 DETAIL SHEET

City of New Braunfels Notes:

1. 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.

2. If construction has not commenced within one (1) year of City approval for construction inspection, that approval is no longer valid.

3. Project is a Type 3 Development.

4. According to FEMA Firm Map No. 4618700115F, Effective Date 11/27/2007, the project partially lies within the 100 yr. flood plain and is shown on sheets C6 and C11.

5. This site does not lie in the Edwards Aquifer Jurisdictional Zone.

Location Map
June 2022

TxDOT Standard Details
T1 * TCP (1-1-18)
(For Temporary Bypass Connection)

The standard sheets specifically identified (*) above have been selected by me or under my responsible supervision as being applicable to this project.

John Joy, P.E. 8/24/22

Specification Adopted by the Texas Department of Transportation, June 1, 2014 and specification items shall govern on this project.
UTILITY COMPANY NOTIFICATION:

THE LOCATION AND DEPTH OF EXISTING UTILITIES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION, INCLUDING THOSE NOT SHOWN ON THE DRAWINGS.

CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES 48 HOURS PRIOR TO EXCAVATION:

DIG TESS (800) DIG TESS — (800) 344–8777
TEXAS ONE CALL (800) 547–5655
AT&T (210) 652–8449
TWITCHER CABLE (830) 630–3468
CENTERPOINT GAS (830) 643–6434
N.R.U. ELECTRIC (830) 608–8951
N.R.U. WATER AND SEWER (830) 608–8952

SPILL RESPONSE ACTION NOTIFICATION


GENERAL NOTES:

FOR UTILITY CONSTRUCTION, ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY NEW BRAUNFELS UTILITIES (NBU) AND COMPLY WITH THE CURRENT NBU DETAILS AND SPECIFICATIONS.

CONTRACTOR SHALL NOT PROCEED WITH ANY PIPE INSTALLATION WORK UNTIL THEY OBTAIN A COPY OF THE PLANS FROM ENGINEER AND NOTIFY NBW SYSTEMS ENGINEERING AT 830–630–9417 WITH AT LEAST TWO (2) WORKING DAYS (48 HOURS) NOTICE. WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED A NOTICE TO PROCEED WITH NEW BRAUNFELS UTILITIES SYSTEMS ENGINEERING WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.

CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNERS AND THE ENGINEER AND HIS EMPLOYEES, PARTNERS, OFFICERS, DIRECTORS, OR CONSULTANTS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPT FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE ENGINEER OR ENGINEER’s DIRECTORS, OFFICERS, EMPLOYEES, OR CONSULTANTS.

CONTRACTOR AND/OR CONTRACTOR’S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL ENGINEER, GEOTECHNICAL CONSULTANT, OR OTHER 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 SYSTEM, 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 MINIMAL 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 ACTIVITY OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CONTRACTOR TO CONTACT THE ENGINEER’S OFFICE (EOR) FOR ANY FIELD CHANGES. ANY REVISIONS OR CHANGES TO THE APPROVED CONSTRUCTION PLANS WILL REQUIRE ADDITIONAL APPROVAL BY NBU IN WRITING.

CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINALE OR BETTER CONDITION, ANY DAMAGES DONE TO EXISTING FENCES, CURBS, LANDSCAPING, STRUCTURES, DRIVEWAYS, AND EXISTING UTILITIES (NOT ADJUSTED ON PLANS). COST OF RESTORATIONS, IF ANY, SHALL BE THE CONTRACTOR’S ENTIRE EXPENSE.

THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION WORK AROUND TREES SHALL PROCEED WITH CAUTION.

CONTRACTOR SHALL PROVIDE ALL PERMITS AND LICENSES, PAY ALL CHARGES, FEES AND TAXES AND GIVE ALL NOTICES NECESSARY AND INCIDENTAL TO THE DUE AND LAWFUL PROCESSION OF THE WORK.

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.

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 FLOODPLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOODPLAIN DEVELOPMENT PERMITS.

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 313.4.

BARRICADES AND WARNING SIGNS SHALL CONFORM TO THE CURRENT “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. SIGNS PROVIDING CONTINUOUS TRAFFIC FLOW AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL DEVICES DURING CONSTRUCTION.

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

THE LOCATION OF UTILITIES, EITHER UNDERGROUND OR OVERHEAD, SHOWN WITHIN THE PROJECT WORK AREA ARE APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE BEGINNING CONSTRUCTION OPERATIONS.

OSHA REGULATIONS PROHIBIT OPERATIONS THAT WILL BRING PERSONS OR EQUIPMENT WITHIN 10 FEET OF AN ENERGIZED LIVE WIREWORKER AND/OR EQUIPMENT MUST 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 WORKED.

IT SHALL BE THE CONTRACTOR’S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION. UTILITY COMPANIES ARE ALSO PREVIOUSLY MENTIONED IN “UTILITY COMPANY NOTIFICATION”. CONTRACTOR SHALL CALL ONE CALL SYSTEM FOR WATER/WASTEWATER LOCATIONS.

DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.3(5), 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.

MATERIALS LARGER THAN 4 INCHES IN SIZE WILL BE CONSTRUCTED WITH AND NOT INCORPORATED INTO THE ROADWAY CONSTRUCTION SHALL BE REMOVED FROM THE RIGHT OF WAY AND DISPOSED OF IN A PROPER MANNER ACCEPTABLE TO THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR. THE CONTRACTOR SHALL MAINTAIN THE PROJECT WORK AREA IN A SATISFACTORY APPEARANCE AS SHOWN IN THE PLANS OR AS APPROVED BY THE ENGINEER.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE TRAFFIC CONTROL AND WILL BE RESPONSIBLE FOR FURNISHING ALL TRAFFIC MACHINERY, MATERIALS AND PERMITS NECESSARY TO PROVIDE ADEQUATE TRAFFIC CONTROL. THE CONTRACTOR SHALL PREVENT INTERFERENCE TO TRAFFIC SO AS TO PERMIT THE CONTINUOUS MOVEMENT OF 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 WORK DAY.

PRIOR TO ORDERING MATERIALS TO BE USED, CONTRACTOR SHALL PROVIDE THE ENGINEER WITH FOUR (4) COPIES OF THE SOURCE, TYPE, GRADE, 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 LISTS ITEMS:

A. WATER MAIN

WATER SETTING THE BACFALL WITHIN A STREET WILL NOT BE PERMITTED. WASTEWATER TRENCHES SUBJECT TO TRAFFIC SHALL CONFORM TO NBU CONNECTION AND CONSTRUCTION POLICY MANUAL.

WHERE THE MINIMUM 9 FOOT SEPARATION DISTANCE BETWEEN WASTEWATER LINES AND WATER LINES / MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF WASTEWATER LINES SHALL BE AT ITS OWN ACCORDANCE WITH TCEQ.

TEMPORARY EROSION CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

TIE IN (COMPLETE) (WATER MAIN) INCLUDES AS A NON SEPARATE PAY ITEM ALL HYDROSTATIC TESTING, BACTERIOLOGICAL TESTING, TEMPORARY BLOW OFFS, JUMPS, FLUSHING, AND FITTINGS (RESTRAINED) FOR VERTICAL ADJUSTMENTS. TIE IN (COMPLETE) (WATER MAIN) ALSO INCLUDES NOTIFICATION AND COORDINATION WITH CUSTOMERS AND NBU FOR ANY NBU APPROVED SERVICE INTERRUPTIONS, MANIPULATION OF EXISTING VALVES WILL ONLY BE DONE BY NBU OR BY CONTRACTOR UNDER THE DIRECTION OF NBU INSPECTIONS. NBU ASSUMES NO RESPONSIBILITY FOR WATER TIGHTNESS OF EXISTING VALVES.

ALL TRENCHING INSIDE CITY ROWS AND UTILITY EASEMENTS (FOR ALL WATER INSTALL TO INCLUDE WATER REMOVAL IF NEEDED) SHALL BE BACK FILL, COMPACTED AND TESTED AND TIE IN WITH NBU STANDARD SPECIFICATION UNLESS OTHERWISE SHOWN ON PLANS. TRENCHING, BACK FILL, COMPACTATION AND TESTING IS A NON SEPARATE PAY ITEM AND IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

TREE PROTECTION IS A NON SEPARATE PAY ITEM AND IS SUBSIDIARY TO PREPARING RIGHT--OF--WAY.

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 MOST CLOSELY RELATES.

PAYMENT FOR ALL STORM WATER POLLUTION PREVENTION PLAN ITEMS FOR THE WATERLINE ADJUSTMENTS SHALL BE INCLUDED WITH THE KLEIN ROAD RECONSTRUCTION PROJECT ITEMS, UNLESS OTHERWISE NOTED, DUE TO THIS BEING A J OINT BID/CONSTRUCTION PROJECT.

PAYMENT FOR ITEM 502 “BARRICADES, SIGNS AND TRAFFIC HANDLING” SHALL COVER ALL WORK ASSOCIATED WITH THE TEMPORARY BYPASS CONNECTION AND MAINTAINING ALL TRAFFIC CONTROL ITEMS INSTALLED FOR THE KLEIN ROAD RECONSTRUCTION PROJECT.
FINISHED FLOOR ELEVATIONS

The elevation of the lowest floor shall be at least 10 inches above the finished grade of the surrounding ground, which shall be sloped in a fashion so as to direct stormwater away from the structure. Properties adjacent to the new structure shall 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 slope preventing runoff from entering the garage.

SOILS TESTING

PROCTOR TESTS WILL 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 WILL BE DELIVERED TO THE CITY OF NEW BRAUNFFELS STREET INSPECTOR PRIOR TO ANY DENSITY TESTS.

ROADWAY

All roadway compaction tests shall be the responsibility of the developer's geotechnical engineer. Flexible base or full embankment material shall be placed in lift not to exceed eight inches (8") loose. The required density for the fill/embankment material shall meet the requirements of TxDOT Specification Item 132. The required density for the flexible base material shall meet the requirements of TxDOT 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. Compaction testing will be performed by the new Braunfels street inspector. At a minimum, tests shall be taken every 200 ft 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 certificate stating that the placement of flexible base, fill material, and subgrade shall be completed in accordance with the plans. All density testing results may be requested by the city of new Braunfels inspector.

ITEM 340

Asphaltic concrete pavement shall be the type of hot mix asphalt as defined in TxDOT standard specifications for current TxDOT standard specifications for construction of highways, street, and bridges.

The city of new Braunfels will not accept the use of recycled asphalt pavement (RAP) or recycled asphalt ##(fill in)## in asphalt mixtures for new roadways, any debris included within new asphalt pavements will result in asphalt removal and replacement from curb to curb for limits to be determined by the city of new Braunfels.

The asphaltic concrete pavement surface course shall be plant mixed, hot laid Type B meeting the specification requirements of TxDOT Item 340. The asphaltic concrete pavement courses shall be plant mixed, hot laid Type B meeting the specification requirements of TxDOT Item 340. The mixture shall be compacted to meet the requirements of TxDOT Item 340 and shall be compacted to be within 81% and 95 percent of the maximum theoretical density as determined by TxDOT test method TEx-227-F, place the mixture when the temperature is at or above 80°, complete all compaction operations before the pavement temperature drops below 160°. The asphalt cement content by percent of total mixture weight shall fall within a tolerance of ±0.5 percent from a specific mix design.

UTILITY TRENCH COMPACTION

(ADDED TO THE CONSTRUCTION PLANS ON ALL UTILITY PLAN SHEETS)

All utility trench compaction tests within the street pavement/sidewalk section shall be the responsibility of the developer. All fill material shall be placed in uniform lifts 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 the specifications and density values shown in TxDOT 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 ft 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 certificate 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 OUT TO CONSTRUCTION OF NEW RIGHT-OF-WAY CONSTRUCTION

(INDICATE THE 2 OPTIONS ON THE CONSTRUCTION PLANS)

1. Sawcut existing street and match to new construction.
2. Sawcut existing curb to tie into existing construction.
CONSTRUCTION STABILIZED ENTRANCE

SAWCUT CURB FOR CONSTRUCTION ENTRANCE.

STABILIZED CONSTRUCTION AREA SHALL BE CONSTRUCTED OF 3"x6" 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.

NOTE: TO BE PLACED ON ALL WW PLAN & DETAIL SHEETS

ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.

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

SIGNING AND PAVING MARKING PLAN NOTES

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

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

SEEDING AND ESTABLISHMENT OF VEGETATION WITHIN EARTHEN CHANNELED STORMWATER BASINS AND DISTURBED AREAS

SEEDING FOR THE PURPOSE OF ESTABLISHING VEGETATION WITHIN CONSTRUCTED EARTHEN CHANNELS, BASINS AND DISTURBED AREAS SHALL BE CONDUCTED IN ACCORDANCE WITH ITEM 164 (SEEDING FOR EROSION CONTROL OF TIXOTROPE STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAY STREETS AND STRUCTURES 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 (APRIL 1-NOV 30, CEREAL RYE AND SEED SPECIES SPECIFIED FOR THE SAN ANTONIO DISTRICT IN TABLE 3 MAY BE USED. COOL SEASON SEEDING APPLICATIONS, COOL SEASON SEED MIXES SHALL BE USED IN CONJUNCTION WITH SEED MIXES FOR THE SAN ANTONIO DISTRICT AS SPECIFIED IN TABLE 1 AND 2 UNDER ITEM 164.

IT MAY BE DEEMED NECESSARY TO INCORPORATE TOPSOIL AND SOIL AMENDMENTS (I.E. COMPOST/ FERTILIZER INTO EXISTING SOIL IN ORDER TO FACILITATE VEGETATION GROWTH. TOPSOIL, COMPOST AND FERTILIZER ADDITIONS SHALL BE CONDUCTED ACCORDING TO ITEMS 160, 161 AND 162 OF TIXOTROPE'S STANDARD SPECIFICATIONS MANUALLY, RESPECTIVELY.

AREAS REQUIRING PERMANENT VEGETATION (EARTHEN CHANNELS, PONDS, ETC.) ARE REQUIRED TO MEET TIXOTROPE SPECIFICATIONS FOR ITEM 160 TOPSOIL. TESTING PER TX-128-6 WILL BE REQUIRED AT THE CITY REQUEST.

WATERING MAY ALSO BE NECESSARY TO FACILITATE AND EXPEDITE THE SPROUTING AND GROWTH OF VEGETATION. ITEM 168 OF TIXOTROPE'S STANDARD SPECIFICATIONS MANUAL SHALL BE ADHERED TO FOR VEGETATIVE WATERING.

IF EXTENDED DROUGHT CONDITIONS EXIST THAT HINDER OR PROHIBIT THE GROWTH AND ESTABLISHMENT OF VEGETATION, THE CONTRACTOR / DEVELOPER SHALL PROVIDE A PLAN TO THE CITY OF NEW BRAUNFELS DESCRIBING THE MEASURES THAT WILL BE TAKEN TO STABILIZE EARTHEN DRAINAGE INFRASTRUCTURE UNTIL A TIME WHEN GROWING CONDITIONS BECOME MORE FAVORABLE.

CITY OF NEW BRAUNFELS NOTES:

1. 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.

2. ALL APPROPRIATE UTILITY DEPTHS SHOWN, OTHER THAN TEST HOLE INFORMATION SHOWN, ARE APPROXIMATE/_TYPICAL DEPTHS ONLY BASED ON INFORMATION PROVIDED BY RESPECTIVE UTILITY COMPANY, CONTRACTOR SHALL VERIFY BOTH HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITY MAINS AND SERVICES IT PERTAINS TO THE CONSTRUCTION HOLES.

3. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FOOT IN DEPTH IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. DEEP TRENCHES POSSE CONSTRUCTION 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.

CONSTRUCTION SEQUENCING:

1. PLACE ALL EROSION AND SEDIMENTATION CONTROLS PER THE EROSION CONTROL PLAN AND THE ASSOCIATED CITY OF NEW BRAUNFELS KLEIN RD. RECONSTRUCTION PROJECT.

2. CONSTRUCT WATER MAIN AND ASSOCIATED ITEMS.

3. FINAL STABILIZATION ITEMS IN ACCORDANCE WITH THE ASSOCIATED CITY OF NEW BRAUNFELS KLEIN RD. RECONSTRUCTION PROJECT.

4. AFTER 70% STABILIZATION OF THE DISTURBED AREAS IS ACHIEVED, THE CONTRACTOR SHALL REMOVE THE EROSION CONTROLS.

TRAFFIC CONTROL NOTE:

THE CONTRACTOR IS RESPONSIBLE FOR THE TRAFFIC CONTROL AND WILL BE RESPONSIBLE FOR FURNISHING ALL TRAFFIC CONTROL DEVICES, AND FLAUGERS. BARRIERS AND WARNING SIGNS SHALL CONFORM TO THE CURRENT "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.

TRENCH SAFETY NOTE:

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 MINIMAL 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.

EXISTING UTILITY INFORMATION NOTE:

THE LOCATION OF UTILITIES, EITHER UNDERGROUND OR OVERHEAD, ARE SHOWN IN APPROXIMATE LOCATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXACT LOCATION AND DEPTH(TOP UNDERGROUND) OF ALL UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY BE INCURRED BY THEIR FALLING OR IMPROPERLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER OF ANY DISAPPEARANCES 24 HOURS PRIOR COMMENCING WORKING.

NBV AS-BUILT REQUIREMENTS

NBV REQUIRE GPS POINTS FOR CERTAIN WATER, WASTEWATER AND ELECTRIC IMPROVEMENTS. SOME OF THIS INFORMATION DATA MUST BE PERFORMED DURING CONSTRUCTION, PRIOR TO BACKFILLING OPERATIONS. CONTRACTOR SHALL COORDINATE WITH NBV INSPECTOR TO VERIFY ANY ADDITIONAL ITEMS NOT SHOWN BELOW THAT NEED TO BE GPS LOCATED AND THE SURVEY/DELIVERY REQUIREMENTS REGARDING THIS INFORMATION.

GPS POINTS SHALL BE REQUIRED FROM THE DEVELOPER'S CONTRACTOR AND SHALL BE SUPPLIED TO THE ENGINEER ALONG WITH A MARKED PLAN IN HARD COPY AND DIGITAL FILE FOR THE CONTRACTOR TO USE. THE CONTRACTOR IS REQUIRED TO USE THESE GPS POINTS. THE WATER AND WASTEWATER GPS POINTS SHALL BE TO SURVEY GRADE. THE ELECTRIC GPS POINTS SHALL BE TO MAP GRADE.

WATER

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

WASTEWATER

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

ELECTRIC

TRANSFORMERS, BOTH ABOVE AND UNDERGROUND (FRONT LOCK) STREET LIGHTS

SEE NBV’S “CADGPS DELIVERABLES” ON NBV WEBSITE AT NBVTEXAS.COM FOR COMPLETE DETAILS AND REQUIREMENTS.
Erosion and Sedimentation Control Plan:

Prior to Construction:
1. Install silt fences for this sheet and associated Erosion Control items per Kleen Road Phase 2 SMPP layout, Phase 2 Step 1.
2. Maintain silt fences and associated erosion control items per Kleen Road Phase 2 SMPP layout, Phase 2 Step 2.
3. If any staging/storage/dumps are to be provided on a site determined by the contractor, they shall be enclosed with silt fence. It is anticipated that the excavated trench material will be hauled off by the contractor and replaced with material in accordance with the trench backfill details on sheet C1.

Final Erosion/Sedimentation Control:
1. All disturbed areas are to be stabilized in accordance with the associated city of new Brauneuls Kleen Rd. reconstruction project.
2. Per TOD requirements, disturbed areas on which construction activities have ceased (temporarily or permanently) shall be stabilized within 48 hours unless activity resumed within 21 days. Seeding does not constitute as stabilization.
3. Final stabilization items in association with the associated city of new Brauneuls Kleen Rd. reconstruction project.
4. After 72 hours stabilization of the disturbed areas is achieved, the contractor shall remove the erosion controls.

Construction Sequencing:
1. Place all erosion and sedimentation controls for this erosion control plan and the associated city of new Brauneuls Kleen Rd. reconstruction project.
2. Construct water main and associated items.
3. Final stabilization items in association with the associated city of new Brauneuls Kleen Rd. reconstruction project.
4. After 72 hours stabilization of the disturbed areas is achieved, the contractor shall remove the erosion controls.

Note:
- Payment for all storm water pollution prevention plan items for the waterline adjustments shall be included with the Kleen Road reconstruction project bid item, unless otherwise noted, due to being a joint bid/construction project.
- Payment for item 502 "Hanunder, signs and traffic handling" shall cover all work associated with the temporary bypass connection and maintaining all traffic control devices. Items installed for the Kleen Road reconstruction project.
TRENCH SAFETY NOTE:
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY 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 DEVELOP A TRENCH SAFETY PROGRAM AND 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, CODES, STANDARDS, CONTRACT 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.

NOTES:
1. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO FINAL STREET CONSTRUCTION.
2. NO VALVES, Hydrants, Cleanouts, ETC. SHALL BE CONSTRUCTED WITHIN CURB, SEAMARK, OR DRIVES.

UTILITY TRENCH COMPACTION
ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. ALL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") THICK. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING MACHINE TO MEET THE REQUIRED DENSITY EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM DENSITY TESTED FOR DENSITY AND WEIGHTED. ALL LAYERS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CONTRACTOR. ALL TESTS TO BE MADE IN TRENCHES ON A 20 FT. (MINIMUM) INT. A MINIMUM 3 TESTS SHALL BE TAKEN EVERY 100 LINEAL FT. OF eigenen Rd. EVERY SERVICE LINE UNTIL COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS WITH FREE ACCESS TO ALL TESTING DOCUMENTATION AND A CERTIFICATION STATEMENT THAT THE PLACEMENT OF ALL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUIRED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

WATER LINE "A"

PM

REVISIONS

DATE

TECHNICIAN: D.G. H.
JOB NO.: 210107
DATE: JUNE 2022
SHEET: C8
ENCASEMENT NOTE:
The space around the carrier pipe shall be supported at five-foot intervals with spacers and both ends sealed with cement grout or manufactured sealant.

WATER LINE "B"

30 L.F. ~ 24" ENCASEMENT PIPE
(PVC DR25, AWWA C900)
(SEE ENCASEMENT NOTE)

TRENCH SAFETY NOTE:
Contractor and/or Contractor's independently retained employee or structural design/Geo-technical/Safety/Equipment Consultant, if any, shall review these plans and specifications and the anticipated installation site(s) within the project work area in order to implement contractors trench excavation safety protection system. Protocols, procedures and safety equipment shall provide for adequate trench excavation safety protection that complies with all applicable OSHA and/or federal and state construction industry safety standards. 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.

NOTES:
1. All utilities to be constructed prior to final street construction.
2. All valves, hydrants, cleanouts etc. shall be constructed within curbs, sidewalks, or driveways.

UTILITY TRENCH COMPACTION:
All utility trench compaction tests within the street pavement/sidewalk section shall be the responsibility of the contractor's geotechnical engineer. Full material density compaction test shall be conducted at the rate of 12" thickness. Density test based on a 12" design density, as determined by the geotechnical engineer. Compaction equipment used to meet the 90% required shall be of the compacting equipment used to meet the 90% required. The compacting equipment shall be compacted to a minimum 90% density and tested for density and moisture content. The compaction equipment shall be tested and approved by the contractor's geotechnical engineer. Density test shall be performed by the City of New Braunfels Street Inspector. This test shall be performed on the final cut through the new pavement and final grade. The recommendation of thegeotechnical engineer shall be the final determination for the final cut through the new pavement and final grade. All density tests shall be performed by the City of New Braunfels Street Inspector. All density tests shall be performed by the City of New Braunfels Street Inspector.
TEMPORARY WATER LINE WITHIN CITY OF NEW BRAUNFELS R.O.W. FOR BYPASS CONNECTION—

THIS ITEM SHALL BE MEASURED BY LUMP SUM AND SHALL BE PAID AT
THE PRICE IN THE BID SCHEDULE. THIS ITEM SHALL INCLUDE
FURNISHING ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO
INSTALL TEMPORARY 4" DIAMETER ABOVE-GROUND PIPING AND FITTINGS,
PRESSURE TESTING, AND SITE RESTORATION NECESSARY TO PROVIDE A
BYPASS CONNECTION WITHIN THE CITY OF NEW BRAUNFELS RIGHT OF
WAY AS SHOWN ABOVE IN ACCORDANCE WITH THE LATEST NBW
SPECIFICATIONS AND DETAILS. THE TEMPORARY WATERLINE SHALL BE
COMPATIBLE WITH EXISTING NBW SYSTEM PIPING AND SHALL BE
CERTIFIED FOR A WORKING PRESSURE OF AT LEAST 150 PSI AND A
TEST PRESSURE OF AT LEAST 225 PSI. ALL OTHER ITEMS NECESSARY
FOR A COMPLETE AND WORKABLE INSTALLATION ARE INCLUDED IN THIS
PAY ITEM.
### Restraint Lengths for Horizontal Bends

<table>
<thead>
<tr>
<th>Pipe Size (Inch)</th>
<th>Bend Angle (Deg.)</th>
<th>Restrained Length in Feet When Test Pressure = 200 PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>90</td>
<td>40</td>
</tr>
<tr>
<td>12</td>
<td>45</td>
<td>17</td>
</tr>
<tr>
<td>12</td>
<td>22.5</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>11.25</td>
<td>4</td>
</tr>
</tbody>
</table>

### Restraint Lengths for Vertical Bends

<table>
<thead>
<tr>
<th>Pipe Size (Inch)</th>
<th>Bend Angle (Deg.)</th>
<th>Low Side Depth (Feet)</th>
<th>Upper Bend Restrained Length in Feet When Test Pressure = 200 PSI</th>
<th>Lower Bend Restrained Length in Feet When Test Pressure = 200 PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>45</td>
<td>5</td>
<td>46</td>
<td>14</td>
</tr>
<tr>
<td>12</td>
<td>22.5</td>
<td>5</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>12</td>
<td>11.25</td>
<td>5</td>
<td>11</td>
<td>4</td>
</tr>
</tbody>
</table>

### Restraint Lengths for Dead End/Inline Valves

<table>
<thead>
<tr>
<th>Pipe Size (Inch)</th>
<th>Restrained Length in Feet When Test Pressure = 200 PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>310</td>
</tr>
</tbody>
</table>

### Basis for Restraint Length Design

(Using EBAA Retract Length Calculator [V7.1.3])

- a. Safety Factor: 1.5 to 1
- b. Test Pressure: 200 psi
- c. Soil Type: CH(Granular) Inorganic clays of high plasticity
- d. Depth of Cover: 4.0 ft. (Used For Calcs./Tie-In Areas) (0.5' Typical Design Cover)
- e. Trench Type: 5
- f. Restrained length calculations are for PVC pipe.

### Notes

1. Steel posts which support the Silt Fence shall be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of 1'.

2. The toe of the Silt Fence shall be trenched in with a spade or mechanical trencher, so that the downslope face of the trench is flat and perpendicular to the line of flow. Where fence can not be trenched into the surface (e.g., Pavement), the fabric flap shall be weighted down with washed gravel on uphill side to prevent flow under fence.

3. The trench must be a minimum of 6 inches deep and 6 inches wide to allow for the Silt Fence fabric to be laid in the ground and backfilled with compacted material.

4. Silt Fence should be securely fastened to each steel support post or to Woven Wire, which is in turn attached to the Silt Fence post.

5. Inspection shall be made weekly or after each rainfall event and repair or replacement shall be made promptly as needed.

6. Silt Fence shall be removed when the site is completely stabilized so as not to block or impede storm flow or drainage.

7. Accumulated silt shall be removed when it reaches a depth of 6 inches. The silt shall be disposed of on an approved site and in such a manner that will not contribute to additional siltation.
SEE NBU DTL #232 AND #233

VALVE CASTING
RIN G AND LID

VALVE CASTING

VALVE STEM
EXTENSION
(SEE NOTE 4)

VALVE BOOT

MIN. 4'-
MAX. 3'-6" OF
PIPE O.D.

UNDISTURBED SOIL
OR COMPACTED
NATURAL GROUND
(TYP)

CONCRETE CRADLE,
MIN. 2000 P.S.I.,
CLASS B

NOTES:

1. WELD SOCKET 2½" X 2½" DEEP TO 1½" 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.

TYPICAL GATE VALVE

HP. 3 MIN.

水利学会の

消防用hydrant

连接器

消防hydrant

to be set plumb

CONCRETE CURB

THRUST BLOCKING
REQUIRED FOR PIPE
SIZE & SOIL
CONDITION

WEARING SURFACE

COMPACTED BASE

BURY DEPTH
4'-3"

SEE NOTE 4

6" DUCTILE IRON PIPE, 200 PSI

ALL JOINTS BETWEEN WATER MAIN AND HYDRANT SHALL BE RESTRRAINED (PLANGED, MEG-A-LUG OR APPROVED EQUAL)

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. 1½ FT. 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 3" AND EXTEND AT LEAST 12" ABOVE THE OUTLET. DO NOT BLOCK DRAIN HOLES.

5. WELD SOCKET 1½" X 2½" DEEP TO 1½" 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.
NOTE:
FOR USE ON LINE "A"
© TIE-IN LOCATION
(+STA. 10+33) AND LINE "B"

TYPICAL TRENCH WITH UNFINISHED SURFACE

NEW BRAUNFELS UTILITIES
WATER SYSTEMS ENGINEERING

UPLOADED: 4-30-03 DRAWN: Y. Shedd
N.T.B. SPE. F OF 1 COMMAND NO. 422

TRENCH BACKFILL DETAIL

NOTE:
IN AREAS OUTSIDE OF DRIVEWAYS OR STREET CROSSINGS, THE 3'/4" TO DUST BASE BACKFILL TO EXTEND TO TOP OF EXISTING SURFACE.

Pavement repair/trench backfill notes:
1. When done for forge, trench backfill shall be 3'/4" to dust base meeting TCTG specification item 24" flexible base, type A, grade 5.
2. 3'/4" to dust base shall be compacted to at least 90% of the maximum dry density determined by TCT-113-E, unless otherwise shown on the plans. Maximum moisture during compaction will be determined by TCT-117-E. If the moisture content of the material is in accordance with TCT-115-E or TCT-116-E during compaction, each and every lift will be used as the full 3'/4" to dust base fill. Nor shall the same as otherwise shown on the plans, except when part of the fill is 3'/4" to dust base.
3. 3'/4" to dust base shall be placed uniformly and compacted in no more than 12" loose lifts. Each compacted lift shall be density controlled per note 2 above.
4. All utility trench backfill compacted and is compacted to the various 3000 psi. All tests associated with geotechnical engineering or compaction testing is at the sole expense of the contractor.
5. Compaction tests shall be done at a depth of 100 feet of trench for each compacted lift. The requirement shall include but not be limited to the number of tests 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 the New Braunfels Utilities, City of New Braunfels, and the city of New Braunfels.

UNDISTURBED EARTH
PIECE O.D. 12" MIN.
PIECE O.D. >24" MAX.

FLEXIBLE BASE 3'/4" TO DUST
PIECE O.D. +12" MIN.
PIECE O.D. +24" MAX.

UNDISTURBED EARTH

EXISTING ASPHALTIC PAVEMENT

EXISTING BASE MATERIAL

CENTER PIPE IN TRENCH

BEDDING ENVELOPE
SEE SPECIFICATIONS

COMPACTED BACKFILL
SEE SPECIFICATIONS

DEPTH VARIATIONS
TO NATURAL GROUND

MULCH OR SOD

NATURAL GROUND

PMB PEW ET AL. INC.
CIVIL ENGINEERING & CONSULTING SERVICES
130 W. Main Street
Suite 100
New Braunfels, TX 78130
(830) 625-2503
(830) 625-2504

FIRM NO. E-9862

DETAIL SHEET FOR 12" WATER LINE ADJUSTMENTS

KLEIN ROAD RECONSTRUCTION
NOTES:

1. DEBRIS CAP SHALL BE INSTALLED AS CLOSE UNDER THE CAST IRON COVER WITHOUT INTERFERING WITH COVER OPERATION.

2. FLEXIBLE SKIRT SHALL BE TRIMMED TO PROVIDE A SMOOTH CONTACT WITH THE INTERIOR DIAMETER OF THE PIPE.

3. THE DEBRIS CAP SHALL BE MANUFACTURED BY SW SERVICES, INC., PHOENIX, ARIZONA OR EQUAL.

4. THE DEBRIS CAP SHALL BE COMPRISED OF A HOLLOW MEMBER HAVING A CYLINDRICAL OUTER SURFACE, A CLOSURE FOR ONE END AND THREE POINT RESILIENT CONTACT PADS Projecting FROM THE OUTER SURFACE. THE CAP SHALL HAVE A FLEXIBLE SKIRT PROVIDING AN OUTWARD SEAL PREVENTING DEBRIS FROM GETTING PAST THE CAP. THE CAP MUST WITHSTAND, WITHOUT SLIPPAGE, A MINIMUM VERTICAL FORCE OF 65 LBS AT A LOADING RATE OF 1.0 IN PER MINUTE. THE CAP SHALL BE MOLDED USING GENERAL ELECTRIC ABS #9HM 4500. THE CAP SHALL HAVE RETAINING PRONGS TO RETAIN A STANDOFF LOCATION COIL.
**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.**

**WATER VALVE BOX ADJUSTMENT TO GRADE WITH FULL DEPTH CONCRETE FOR EXISTING STREETS**

**ENCASMENT DETAIL WITH CASING SPACERS**

**PLAN VIEW**

- **CARRIER PIPE**
- **ENCASMENT PIPE**
- **CASING SPACER (TYP.)**
- **ENCASMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END.**
- **SPACING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRODUCT SPECIFICATIONS.**

**NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL.**

**45°**

**15M (#5) BARS @ MID-DEPTH OF CONCRETE-4 SIDES (TYP.)**

**3" CLEAR TYP.**

**9" TYP.**

**1-1/2" TYP.**

**CONCRETE PAVEMENT PATCH**

**CLASS "A" CONCRETE PAVING RING LID**

**EXISTING H.M.A.C.**

**EXISTING BASE**

**COLLAR CASTING**

**FLOWABLE BACKFILL SEE NOTES 1 AND 5**

**DEPTH VARIES EXIST. BASE**

**SAW CUT ALL AROUND**

**#5 BARS @ MID-DEPTH**

**CUT EXISTING RISER PIPE AND REPLACE WITH A NEW LENGTH OF PIPE AS REQUIRED TO RAISE COVER TO GRADE.**

**SEE NOTE 1**

**18"**

**CARRIER PIPE**

**ENCASMENT PIPE**

**CASING SPACER (TYP.)**

**ENCASMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END.**

**SPACING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRODUCT SPECIFICATIONS.**

**NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL.**

**PLAN VIEW**

- **CARRIER PIPE**
- **ENCASMENT PIPE**
- **CASING SPACER (TYP.)**
- **ENCASMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END.**
- **SPACING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRODUCT SPECIFICATIONS.**

**NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL.**

**PLAN VIEW**

- **CARRIER PIPE**
- **ENCASMENT PIPE**
- **CASING SPACER (TYP.)**
- **ENCASMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END.**
- **SPACING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRODUCT SPECIFICATIONS.**

**NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL.**

**PLAN VIEW**

- **CARRIER PIPE**
- **ENCASMENT PIPE**
- **CASING SPACER (TYP.)**
- **ENCASMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END.**
- **SPACING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRODUCT SPECIFICATIONS.**

**NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL.**

**PLAN VIEW**

- **CARRIER PIPE**
- **ENCASMENT PIPE**
- **CASING SPACER (TYP.)**
- **ENCASMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END.**
- **SPACING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRODUCT SPECIFICATIONS.**

**NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL.**

**PLAN VIEW**

- **CARRIER PIPE**
- **ENCASMENT PIPE**
- **CASING SPACER (TYP.)**
- **ENCASMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END.**
- **SPACING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRODUCT SPECIFICATIONS.**

**NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL.**

**PLAN VIEW**

- **CARRIER PIPE**
- **ENCASMENT PIPE**
- **CASING SPACER (TYP.)**
- **ENCASMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END.**
- **SPACING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRODUCT SPECIFICATIONS.**

**NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL.**

**PLAN VIEW**

- **CARRIER PIPE**
- **ENCASMENT PIPE**
- **CASING SPACER (TYP.)**
- **ENCASMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END.**
- **SPACING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRODUCT SPECIFICATIONS.**

**NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL.**

**PLAN VIEW**

- **CARRIER PIPE**
- **ENCASMENT PIPE**
- **CASING SPACER (TYP.)**
- **ENCASMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END.**
- **SPACING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRODUCT SPECIFICATIONS.**

**NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL.**
NOTES:

1. USE ONLY OPEN GRADED ROCK 4" to 9" DIAMETER FOR STREAM FLOW CONDITIONS. USE OPEN GRADED ROCK 3" to 6" DIAMETER FOR OTHER CONDITIONS.

2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1" OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE. ROCK BERMS IN CHANNEL APPLICATIONS SHALL BE ANCHORED FIRMLY INTO THE SUBSTRATE A MINIMUM OF 6" WITH T-POSTS OR WITH #5 OR #6 REBAR, WITH MAXIMUM SPACING APART OF 48" ON CENTER.

3. THE ROCK BERM SHALL BE INSPECTED WEEKLY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN SHEATING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASH-OUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

4. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 6", WHICHEVER IS LESS, THE BERM SHALL BE REMOVED AND DISPOSED OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SITURATION PROBLEM.

5. DAILY INSPECTION SHALL BE MADE ON SEVERE-SERVICE ROCK BERMS, SILT SHALL BE REMOVED WHEN ACCUMULATION REACHES 6".

6. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.