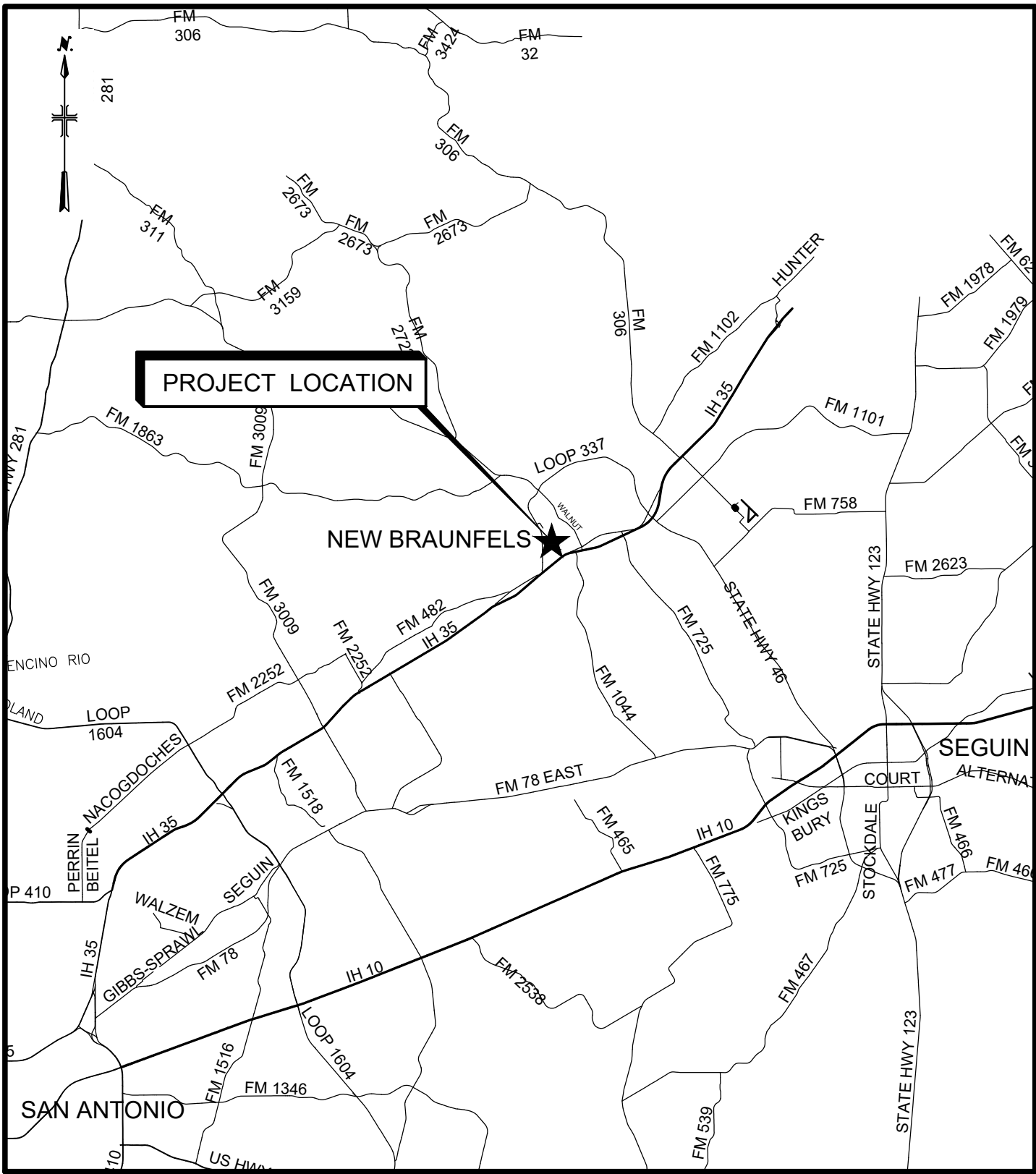


BERGFELD AVENUE IN-PIPE STORMWATER FILTRATION SYSTEM

TCEQ CLEAN WATER ACT SECTION 319(H)
NONPOINT SOURCE GRANT CONTRACT NO. 582-19-90207
FOR CONSTRUCTION
JULY 2024



VICINITY MAP
N.T.S.



LOCATION MAP
1" = 400'

PROJECT IS LOCATED IN FEMA FIRM MAP NO. 48091C0435F IN ZONE
AE (SEPT 2009), OUTSIDE OF FLOODWAY AREAS AND WITHIN THE
EDWARDS AQUIFER RECHARGE ZONE.

THE FOLLOWING CODES WILL BE USED FOR THE FINAL DESIGN OF THIS PROJECT:

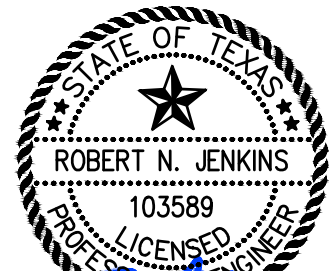
- 2024 CITY OF NEW BRAUNFELS CODE OF ORDINANCES
- 2020 CITY OF NEW BRAUNFELS DRAINAGE AND EROSION CONTROL MANUAL
- 2014 TEXAS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS AND BRIDGES.
- 2024 NEW BRAUNFELS UTILITIES WATER CONNECTION POLICY STANDARD DETAILS.
- 2021 INTERNATIONAL BUILDING CODE



TRANSPORTATION & CAPITAL IMPROVEMENTS
550 LANDA ST.
NEW BRAUNFELS, TX 78130
830-221-4000



11103 WEST AVE, SUITE 113
SAN ANTONIO, TX 78213
TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM
REGISTRATION NUMBER F-533



7/22/2024

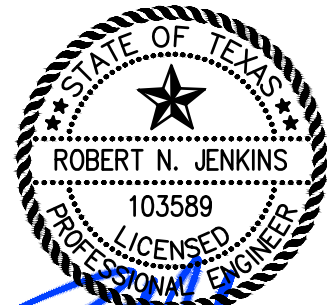
[illegible]

	1	2	3	4	5	6
	CITY OF NEW BRAUNFELS GENERAL NOTES					
E	GENERAL					
	<div><div><div>1. ALL WORK SHALL CONFORM TO THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES, NOVEMBER 2014, AND THE CITY OF NEW BRAUNFELS DETAILS AND STANDARDS.</div><div>2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.</div><div>3. THE CONTRACTOR SHALL ALWAYS MAINTAIN A COPY OF THE LATEST CONTRACT CONSTRUCTION PLANS AND SPECIFICATIONS ON-SITE.</div><div>4. THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND INSPECTIONS REQUIRED TO COMPLETE THE WORK (NO SEPARATE PAY ITEM).</div><div>5. THE CONTRACTOR SHALL PROVIDE AN EMERGENCY TELEPHONE NUMBER FOR EVENINGS, WEEKENDS, AND HOLIDAYS BEFORE CONSTRUCTION. THE CONTRACTOR SHALL RESPOND TO THE CITY WITHIN TWO HOURS OF THE INITIAL CONTACT.</div><div>6. THE CONTRACTOR'S PERSONNEL, INCLUDING SUBCONTRACTORS, SHALL ALWAYS WEAR IDENTIFYING CLOTHING OR HATS ON-SITE.</div><div>7. THE CONTRACTOR SHALL FIELD VERIFY AND PROTECT ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL COMPLY WITH TEXAS EXCAVATION LAWS, CONTACT TEXAS-811 72 HOURS BEFORE ANY WORK IN THE AREA, AND MAINTAIN CURRENT LOCATES THROUGHOUT THE PROJECT. THE CONTRACTOR SHALL COORDINATE ALL WORK INDIVIDUALLY WITH ADJACENT UTILITIES IN THE AREA, INCLUDING BUT NOT LIMITED TO: CENTERPOINT ENERGY (GAS), NBU ELECTRIC, NBU WATER, AT&T COMMUNICATIONS, SPECTRUM CABLE, CITY PUBLIC WORKS DEPARTMENT, CITY FIRE DEPARTMENT, AND TXDOT.</div><div>8. THE CONTRACTOR SHALL PRESERVE ALL SURVEY MONUMENTS AND SITE MARKINGS PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING REQUIRED FOR THE SUCCESSFUL COMPLETION OF THE PROJECT.</div><div>9. THE CONTRACTOR SHALL VERIFY PROJECT ELEVATIONS. THE TERM "MATCH EXISTING" SHALL SIGNIFY BOTH HORIZONTAL AND VERTICAL ALIGNMENT.</div><div>10. THE CONTRACTOR SHALL PREPARE A CONSTRUCTION PHASING PLAN DETAILING LIMITS OF CONSTRUCTION FOR EACH PHASE. THE PHASING PLAN SHALL BE SUBMITTED TO THE CITY FOR APPROVAL PRIOR TO CONSTRUCTION. THE CONTRACTOR WILL NOT BE ALLOWED TO WORK OUT OF PHASE UNLESS WRITTEN APPROVAL HAS BEEN OBTAINED FROM THE CITY FOR THE PHASE CHANGE. THE PHASING PLAN SHALL INCLUDE TRAFFIC CONTROL AND HAUL ROUTES.</div><div>11. THE CONTRACTOR IS RESPONSIBLE FOR ALL SUBSIDIARY WORK AND THE MEANS AND METHODS NECESSARY TO COMPLETE THE PROJECT.</div><div>12. THE CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE CITY AND DESIGN ENGINEER OF DISCREPANCIES BETWEEN THE CONSTRUCTION PLANS AND SPECIFICATIONS. THE MORE STRINGENT REQUIREMENTS SHALL GOVERN UNLESS OTHERWISE DIRECTED IN WRITING BY THE CITY.</div><div>13. THE CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE CITY AND DESIGN ENGINEER OF DISCREPANCIES BETWEEN THE SITE CONDITIONS AND THE CONSTRUCTION PLANS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.</div></div></div>					
	SITE:					
D	<div><div><div>1. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING THE SECURITY AND SAFETY OF ALL PERSONS AND PROPERTY; THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.</div><div>2. THE CONTRACTOR SHALL KEEP ALL AREAS WITHIN AND ADJACENT TO CONSTRUCTION AREAS FREE FROM OVERGROWN VEGETATION AND ALL CONSTRUCTION DEBRIS AND BE SAFE FOR PEDESTRIAN AND VEHICLE TRAFFIC BEFORE, DURING, AND AFTER CONSTRUCTION.</div><div>3. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES REGARDING DUST, DIRT, AND EROSION CONTROL. CONTRACTOR MAY BE RESPONSIBLE FOR ADDITIONAL MITIGATION UPON REQUEST OF OWNER. THE STREET PAVEMENT DRIVEWAYS, SIDEWALKS, AND WALKWAYS WITHIN AND ADJACENT TO THE PROJECT SHALL BE SWEEPED FREE OF MUD AND ALL DEBRIS REMOVED FROM THE WORK AREA DAILY.</div><div>4. THE CONTRACTOR SHALL INSTALL AND MAINTAIN THE PROJECT SIGN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS.</div><div>5. THE CONTRACTOR SHALL REMOVE, PROTECT, RELOCATE, OR REINSTALL ITEMS REQUESTED BY THE CITY AS DIRECTED BY THE OWNER.</div><div>6. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY THE CONTRACTOR OUTSIDE OF THE DESIGNATED WORK AREA. ANY EXISTING OFF-SITE IMPROVEMENTS THAT ARE DAMAGED OR UNDERCUT BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER AND APPROVED BY THE CITY THE EXISTING IMPROVEMENTS AT THE CONTRACTOR'S EXPENSE (NO SEPARATE PAY ITEM).</div><div>7. THE CONTRACTOR SHALL REMOVE ALL WASTE MATERIALS. THE CITY SHALL APPROVE THE LOCATION FOR THE DISPOSAL OF CONSTRUCTION MATERIALS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIAL IN THE 100-YEAR FLOOD PLAIN. NO WASTE MATERIALS SHALL BE PLACED IN EXISTING LOWS THAT WILL BLOCK OR ALTER FLOW LIMITS OF EXISTING OR NATURAL DRAINAGE.</div><div>8. DRAINAGE IMPROVEMENTS SUFFICIENT TO MITIGATE THE IMPACT OF CONSTRUCTION SHALL BE INSTALLED PRIOR TO ADDING IMPERVIOUS COVER. ALL DRAINAGE IMPROVEMENTS SHALL BEGIN AT THE OUTFALL TO ENSURE POSITIVE DRAINAGE THROUGHOUT CONSTRUCTION.</div><div>9. THE CONTRACTOR SHALL MAINTAIN A SAFE, DRIVABLE SURFACE FREE FROM POTHOLES, RUTTING, AND HAZARDOUS CONDITIONS THROUGHOUT THE PROJECT.</div></div></div>					
	EROSION CONTROL:					
C	<div><div><div>1. THE CONTRACTOR SHALL DEVELOP AND IMPLEMENT A STORMWATER POLLUTION PREVENTION PLAN (SW3P) AND SUBMIT IT TO THE CITY PRIOR TO CONSTRUCTION. THE SW3P SHALL INCLUDE ALL DISTURBED AREAS BY THE CONSTRUCTION, INCLUDING BORROW, STAGING, AND STORAGE AREAS. THE SW3P WITH REQUIRED INSPECTION REPORTS MUST BE KEPT UP TO DATE AND KEPT ON THE CONSTRUCTION SITE AT ALL TIMES. THE CONTRACTOR SHALL PREPARE A NOTICE OF INTENT (NOI) AND SECURE A PERMIT FROM TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) FOR LARGE CONSTRUCTION SITES OF 5 OR MORE ACRES OF DISTURBED AREA WITH A COPY OF THE NOI AND THE REQUIRED CONSTRUCTION SITE NOTICE POSTED AT THE CONSTRUCTION ENTRANCE IN CLEAR VIEW OF THE PUBLIC DURING THE CONSTRUCTION. FOR LARGE CONSTRUCTION SITES, AFTER THE SITE IS 70% OR GREATER STABILIZED SO THAT THERE IS NO FURTHER DANGER OF EROSION AND SEDIMENTATION POLLUTION FROM THE SITE DISTURBED AREAS, THE CONTRACTOR MUST PREPARE AND SUBMIT A NOTICE OF TERMINATION (NOT) TO TCEQ. A COPY OF THE NOI AND NOT MUST BE SUBMITTED TO THE CITY FOR EACH PROJECT. SEE TCEQ REGULATIONS FOR SW3P REQUIREMENTS.</div></div></div>					
	TRAFFIC:					
B	<div><div><div>1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL TRAFFIC CONTROL DEVICES AND BARRICADES ARE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TSMUTCD).</div><div>2. THESE NOTES DO NOT, IN AND OF THEMSELVES, CONSTITUTE A TRAFFIC CONTROL PLAN. IN THE EVENT THAT THESE PLANS DO NOT INCLUDE TRAFFIC CONTROL, OR THAT THE CONTRACTOR WISHES TO VARY FROM TRAFFIC CONTROL INCLUDED WITH THE CONSTRUCTION PLANS, THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE CITY INSPECTOR AND ENGINEERING REPRESENTATIVE WILL ONLY BE RESPONSIBLE TO INSPECT THE TRAFFIC CONTROL DEVICES AND BARRICADES, IF, IN THE OPINION OF THE CITY INSPECTOR OR ENGINEERING REPRESENTATIVE, THE TRAFFIC CONTROL DEVICES DO NOT CONFORM TO ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUANTITY TO PROTECT THE GENERAL PUBLIC. THE CITY INSPECTOR SHALL HAVE THE OPTION TO STOP CONSTRUCTION OPERATIONS AT NO EXPENSE TO THE CITY UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED BY THE CONTRACTOR.</div><div>3. THE CONTRACTOR SHALL NOTIFY THE CITY IMMEDIATELY IF THERE IS ANY CONFLICT BETWEEN THE TSMUTCD AND TRAFFIC CONTROL REQUIREMENTS WITHIN THE CONTRACT DOCUMENTS.</div><div>4. IF THE NEED ARISES, THE CITY INSPECTOR OR ENGINEERING REPRESENTATIVE MAY REQUIRE THE RELOCATION AND ADDITIONAL TRAFFIC CONTROL DEVICES AND BARRICADES AT THE CONTRACTOR'S EXPENSE.</div><div>5. THE CONTRACTOR SHALL NOTIFY TXDOT, COUNTY, ADJACENT CITY, AND PRIVATE OWNER PRIOR TO WORKING AT THEIR OWNED OR MAINTAINED ROADWAY AND INTERSECTION.</div><div>6. FOR ALL ROAD CLOSURE REQUESTS, THE CONTRACTOR SHALL SUBMIT AND OBTAIN CITY APPROVAL OF A TRAFFIC CONTROL PLAN AND WORK SCHEDULE AT LEAST TWO (2) WEEKS PRIOR TO COMMENCING WORK ASSOCIATED WITH THE ROAD CLOSURE.</div><div>7. WORK AROUND SCHOOLS SHALL BE SCHEDULED TO MINIMIZE IMPACTS TO THE SCHOOL. STREETS AND ACCESS SHALL NOT BE CLOSED DURING THE TIME STUDENTS ARE BEING DROPPED OFF AND PICKED UP FROM SCHOOL. WORK WITHIN A SCHOOL ZONE CAN ONLY OCCUR BETWEEN THE HOURS OF 9 AM AND 3 PM AS APPROVED BY THE CITY.</div><div>8. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE DELIVERY OF MAIL BY THE U.S. POSTAL SERVICE, AND COLLECTION OF SOLID WASTE AND RECYCLING, WHETHER PUBLIC OR PRIVATE.</div><div>9. THE CONTRACTOR SHALL ALWAYS MAINTAIN ACCESS TO ALL COMMERCIAL AND RESIDENTIAL DRIVEWAYS. THE CONTRACTOR SHALL PROVIDE A 48-HOUR MINIMUM NOTICE TO PROPERTY OWNERS AND THE CITY BEFORE ANY DRIVEWAY ACCESS MODIFICATION.</div><div>10. DURING ASPHALT OVERLAY, THE CONTRACTOR SHALL ALLOW RESIDENT TRAFFIC ACCESS TO THE STREET WITH PROPER GUIDANCE, DIRECTION, FLAGGER AND TRAFFIC CONTROL AND ONLY AT SUCH TIME THAT DAMAGE WILL NOT OCCUR TO THE NEW ASPHALT OVERLAY OR TO THE VEHICLES.</div><div>11. THE CONTRACTOR SHALL KEEP ALL TRAFFIC CONTROL DEVICES, BARRICADES, AND REFLECTIVE MARKINGS FREE FROM DUST AND DEBRIS. THE CONTRACTOR SHALL CLEAN THE DEVICES MONTHLY AND AT THE DIRECTION OF THE CITY.</div></div></div>					
	UTILITIES:					
A	<div><div><div>1. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS ARE TAKEN FROM AVAILABLE RECORDS AND ARE NOT GUARANTEED. THE LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE ONLY AND SHALL BE INVESTIGATED AND VERIFIED BY THE CONTRACTOR BEFORE STARTING WORK. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE TO AND FOR THE MAINTENANCE AND PROTECTION OF THE EXISTING UTILITIES WHETHER SHOWN OR NOTED ON THE PLANS, INCLUDING BUT NOT LIMITED TO EXISTING WATER, SANITARY SEWER, GAS, STORM SEWERS, ELECTRIC AND TELECOMMUNICATION LINES, AND SERVICES.</div><div>2. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES THREE (3) WEEKS MINIMUM IN ADVANCE OF ALL WORK ACTIVITIES.</div></div></div>					



ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533

SEALS:



CITY OF
NEW BRAUNFELS



TRANSPORTATION & CAPITAL IMPROVEMENTS

BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS

NO.	DATE	ISSUED FOR	BY

STATUS:

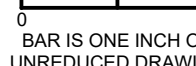
FOR CONSTRUCTION

ARCADIS PROJECT NO.:	30193770
DATE:	JULY 2024
DESIGNED BY:	C.MARTIN
DRAWN BY:	N.CANDELAS
CHECKED BY:	R.JENKINS

SHEET TITLE:

GENERAL

CITY OF NEW
BRAUNFELS
GENERAL NOTES

SCALE: AS SHOWN  BAR IS ONE INCH ON UNREDUCED DRAWING

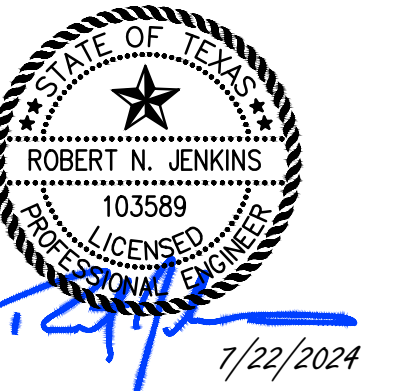
DRAWING NO.: G-03

SHEET NO.: 3 OF 25



ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533

SEALS:

CITY OF
NEW BRAUNFELS

BERGFELD AVENUE
N-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS

[illegible]

STATUS:

FOR CONSTRUCTION

ARCADIS	
PROJECT NO.:	30193770
DATE:	JULY 2024
DESIGNED BY:	C.MARTIN
DRAWN BY:	N.CANDELAS
CHECKED BY:	

SHEET TITLE:

GENERAL

SUMMARY OF QUANTITIES

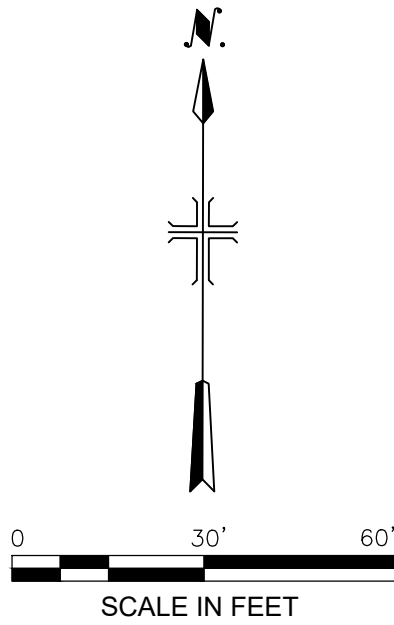
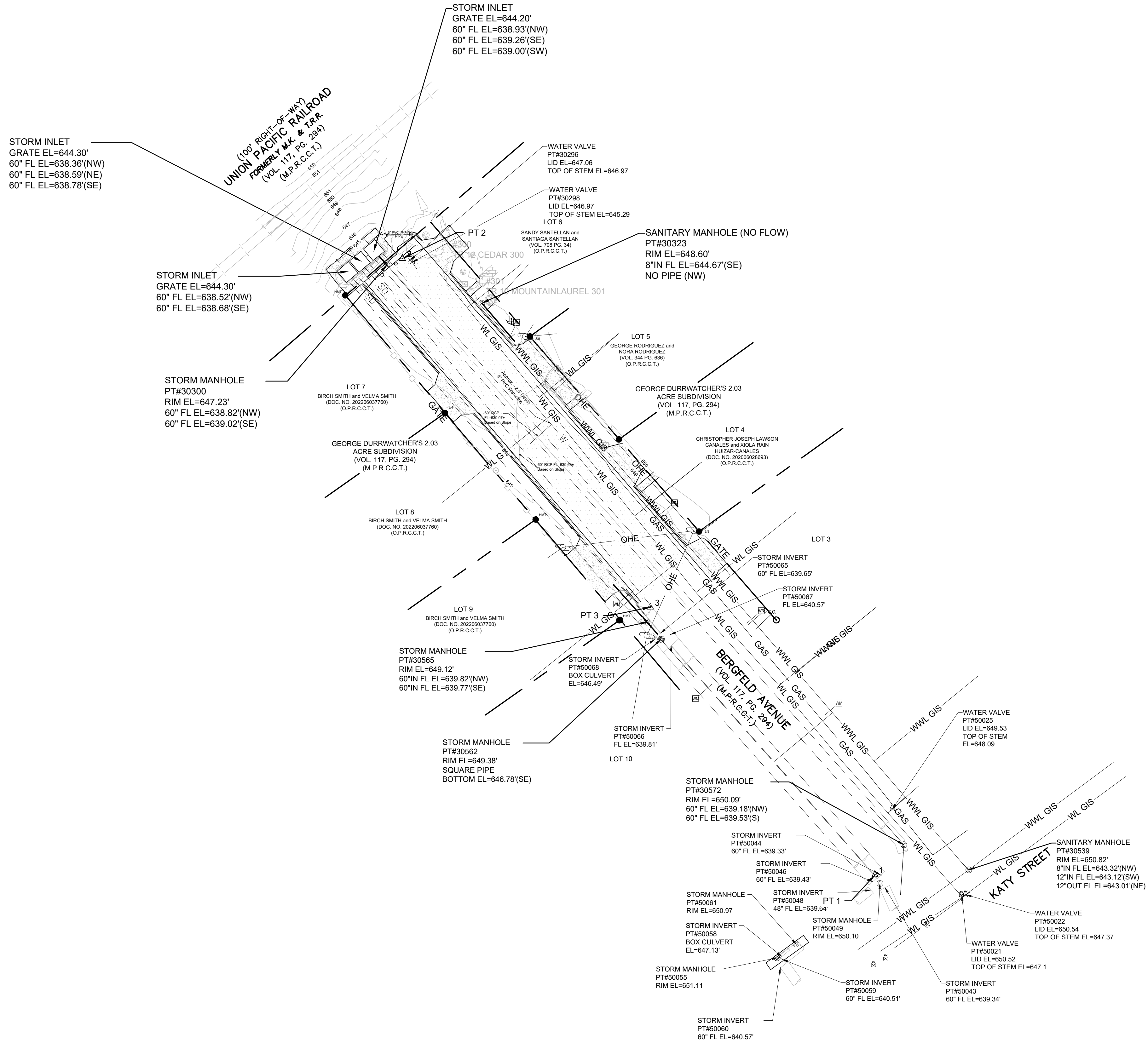
SCALE: AS SHOWN 1
BAR IS ONE INCH ON UNREDUCED DRAWING

DRAWING NO.: G-05

SHEET NO.: 5 OF 25

Material Quantity Table

Material Quantity Table			
Item #	Description	Qty.	Units
1	Mobilization	1	LS
2	Pavement Demolition (TxDOT Items 105)	170	SY
	Pipe Demolition 60" Stormwater (TxDOT Items 100)	14	LF
	Pipe Demolition 4" Waterline (TxDOT Items 100)	41	LF
	Site Hauling of Spoils (TxDOT Items 100)	52	CY
3	Constuction Perimeter Fence (TxDOT Items 506)	211	LF
	Curb Inlet Sediment Control Device (TxDOT Items 506)	51	LF
	Temporary Barricades Type III (TxDOT Items 510)	2	EA
	Temporary Traffic Barrels (TxDOT Items 510)	14	EA
	Detour Signs (TxDOT Items 508)	2	EA
4	4" PVC Water Line Realignment (NBU Items 510)	50	LF
	4" 45 Degree Bend, DI (NBU Items 510)	4	EA
	Tracer Wire (NBU Items 510)	50	LF
5	Haul off Spoils (TxDOT Items 400)	213	CY
	Weir Flow Diversion Structure Concrete	1	CY
	Junction Box Structure (TxDOT Items 400)	2	EA
	Water Quality Vault	1	EA
	Flowable Fill (TxDOT Items 400)	255	CY
	Concrete Riser (TxDOT Items 400)	2	EA
	4" PVC Excavation (TxDOT Items 400)	13	CY
	4" Bedding (TxDOT Items 400)	1	BCY
	4" PVC Backfill (TxDOT Items 400)	12	CY
	12" DI Trench (TxDOT Items 400)	7	CY
	12" DI Bedding (TxDOT Items 400)	1	BCY
	12" DI Backfill (TxDOT Items 400)	5	CY
	Junction Box Excavation (TxDOT Items 400)	99	CY
	Junction Box Backfill (TxDOT Items 400)	73	CY
	WQ Vault Excavation (TxDOT Items 400)	57	CY
	WQ Vault Backfill (TxDOT Items 400)	43	CY
	12" DI Stormwater Pipe (NBU Items 510)	21	LF
	12" 90 Degree Bend, DI (NBU Items 510)	2	EA
	Water Quality Internals	1	LS
	Water Quality Replacement Internals	1	EA
	Grout with Waterstop (NBU Items 510)	1	LS
	Red Valve CheckMate Ultra Flex In-Line Check Valve or engineered approved equal	1	EA
	Trench Excavation Protection (TxDOT Items 400)	71	LF
6	Asphalt Paving, 3" surface course, 8" treated base course (TxDOT Items 300)	170	SY
	Asphalt Prime Coat (TxDOT Items 300)	170	SY
	Asphalt Tack Coat (TxDOT Items 300)	170	SY
	Asphalt Flexbase (TxDOT Items 247)	234	CY
	Proof Rolling (TxDOT Items 300)	1	LS



- GENERAL NOTES:**
- ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED UPON THE TEXAS COORDINATE SYSTEM OF 1983, TEXAS SOUTH CENTRAL ZONE 4204, NORTH AMERICAN DATUM OF 1983(NA2011) EPOCH 2010.00. ALL COORDINATES SHOWN HEREON ARE AT STATE PLANE GRID.
 - STATE PLANE GRID TO SURFACE SCALED ADJUSTMENT FACTOR: 1.000144942845384 (RECIPROCAL=0.99985507816).
 - THIS MAP WAS PREPARED FROM FIELD DATA OBTAINED ON OCTOBER 10TH, 2023 AND APRIL 17, 19, 22-23, 2024. PERFORMED BY BASELINE CORPORATION. DATA IS AVAILABLE BY REQUEST.
 - ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), GEOID 12B.
 - SOME FEATURES SHOWN ON THIS SURVEY MAY BE OUT OF SCALE FOR CLARITY.

- UTILITY NOTES:**
- LOCATIONS OF UNDERGROUND UTILITIES/STRUCTURES MAY VARY FROM LOCATIONS HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. NO EXCAVATIONS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITIES/STRUCTURES. BEFORE EXCAVATION, PLEASE CONTACT THE APPROPRIATE AGENCIES FOR VERIFICATION OF UTILITY TYPE AND FOR FIELD LOCATION.

FLOOD NOTE:
BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS IN ZONE "X", AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, BY F.E.M.A. FLOOD INSURANCE RATE MAP, MAP NUMBER 48091C0445 F, COMAL COUNTY, TEXAS, WHICH BEARS AN EFFECTIVE DATE OF SEPT. 2, 2009.

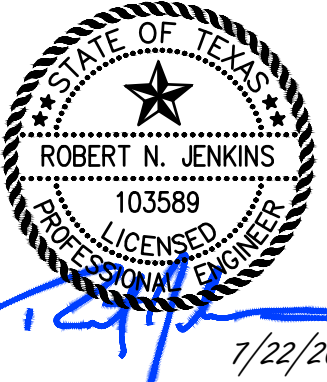
TREE TABLE				
TREE TAG	NORTHING (GRID)	EASTING (GRID)	SIZE (INCHES)	TREE DESCRIPTION
300	13798379.06	2238954.14	12	CEDAR
301	13798360.92	2238972.64	10	MOUNTAIN LAUREL

PROJECT CONTROL (Grid Coordinates)				
Point #	Northing	Easting	Elevation	Description
1	13798061.83	2239176.83	649.97	CP MAG NAIL SET
2	13798367.49	2238942.51	647.13	CP MAG NAIL SET
3	13798194.52	2239065.46	648.54	CP MAG NAIL SET



ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533

SEALS:



CITY OF
NEW BRAUNFELS



BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS			
NO.	DATE	ISSUED FOR	BY

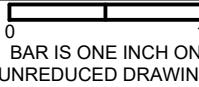
STATUS:
FOR CONSTRUCTION

ARCADIS PROJECT NO.:	30193770
DATE:	JULY 2024
DESIGNED BY:	C.MARTIN
DRAWN BY:	N.CANDELAS
CHECKED BY:	R.JENKINS

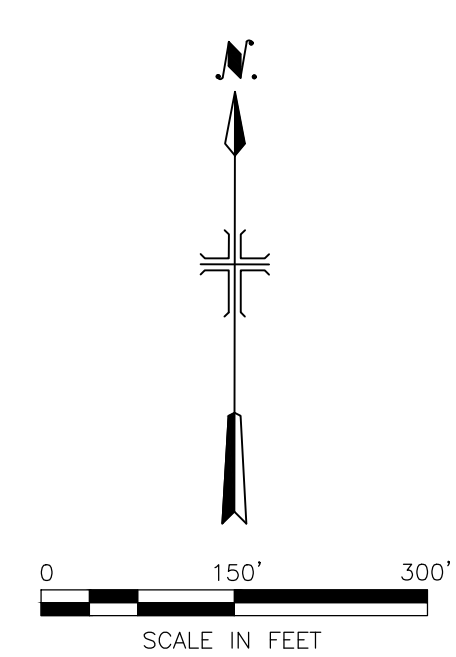
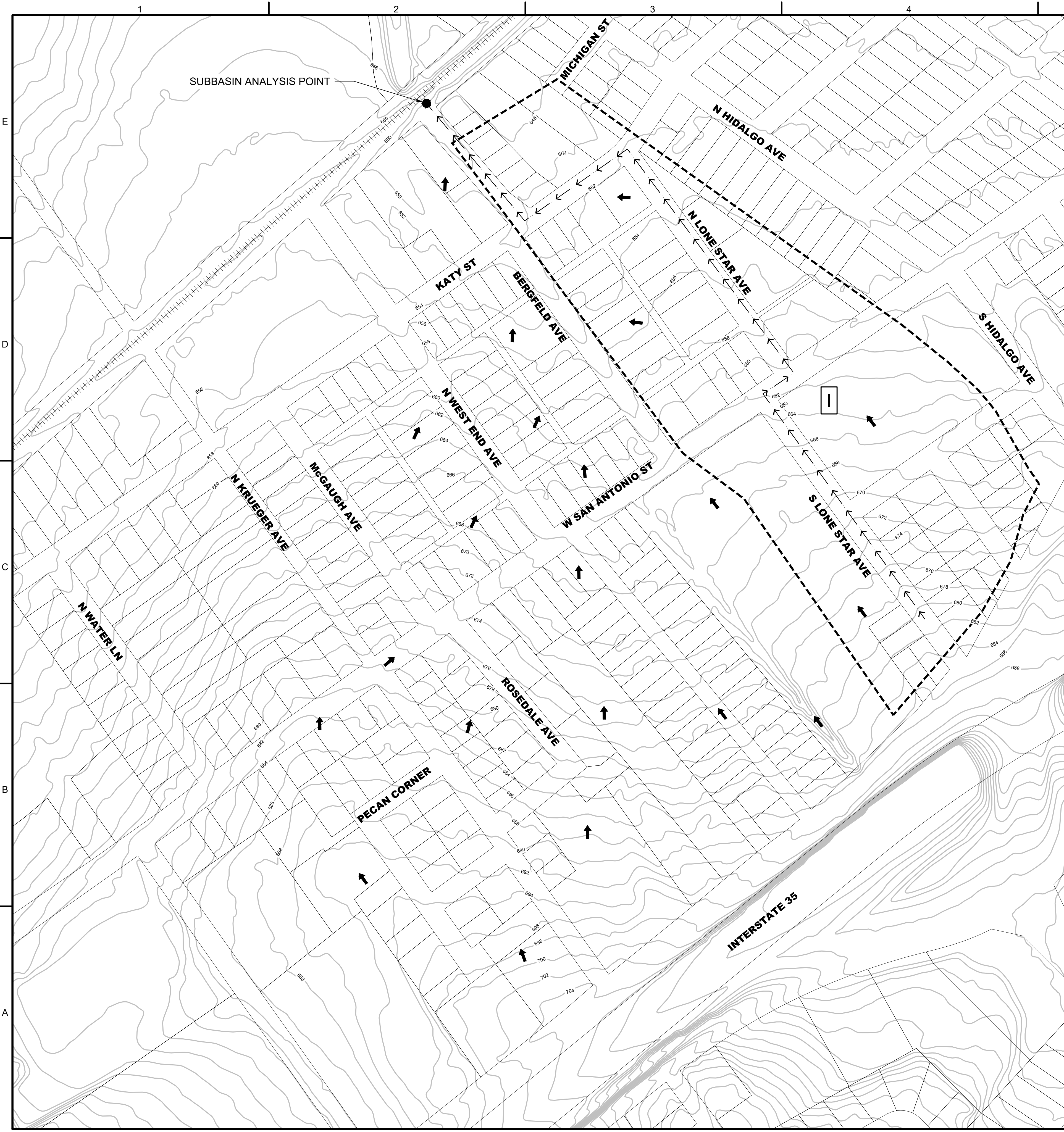
SHEET TITLE:
GENERAL

EXISTING CONDITIONS &
SURVEY CONTROL
PLAN

SCALE:
AS SHOWN



DRAWING NO.: G-06
SHEET NO.: 6 OF 25




- LEGEND:**
- FLOW DIRECTION
 - ...→... TIME OF CONCENTRATION FLOW PATH
 - WATERSHED BOUNDARY LINE
 - SUBBASIN ANALYSIS POINT

- NOTES:**
- WATERSHEDS WERE DEVELOPED FROM ANALYSIS AT THE DOWNSTREAM POINT AT LEAST 3,000 FT DOWNSTREAM FROM THE PROPERTY BOUNDARY AS REQUIRED BY THE CITY OF NEW BRAUNFELS DRAINAGE AND EROSION CONTROL MANUAL.
 - THE PROJECT AREA IS LOCATED OUTSIDE OF THE 100-YR FLOODPLAIN AS SHOWN IN FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) PANEL 48091C0435F EFFECTIVE SEPTEMBER 2009.

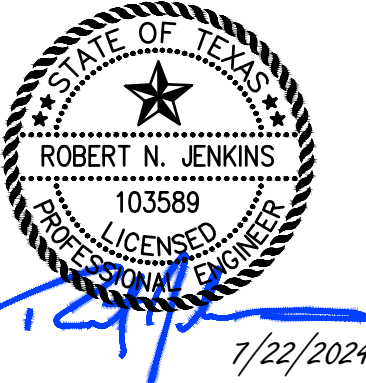
Watershed	Time of Concentration (min)	CN	2-year Discharge (Q2) (ft3/s)	5-year Discharge (Q5) (ft3/s)	10-year Discharge (Q10) (ft3/s)	25-year Discharge (Q25) (ft3/s)	100-year Discharge (Q100) (ft3/s)
Pre-Construction							
I	27.49	91.9	70.63	99.70	124.46	147.75	189.67
Post-Construction							
I	27.49	91.9	69.03	98.30	123.16	146.51	188.39
Ultimate Conditions							
I	27.49	91.9	69.03	98.30	123.16	146.51	188.39

Watershed	2-year Normal Depth (ft)	10-year Normal Depth (ft)	25-year Normal Depth (ft)	100-year Normal Depth (ft)
Pre-Construction				
I	1.77	2.14	2.68	3.15
Post-Construction				
I	1.84	2.30	3.04	3.70




ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533

SEALS:



7/22/2024

CITY OF
NEW BRAUNFELS



TRANSPORTATION & CAPITAL IMPROVEMENTS

BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS

NO.	DATE	ISSUED FOR	BY

STATUS:
FOR CONSTRUCTION

ARCADIS
PROJECT NO.: 30193770

DATE: JULY 2024

DESIGNED BY: C.MARTIN

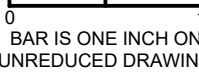
DRAWN BY: N.CANDELAS

CHECKED BY:

SHEET TITLE:
GENERAL

DRAINAGE AREAS
AND CALCULATION
POINTS

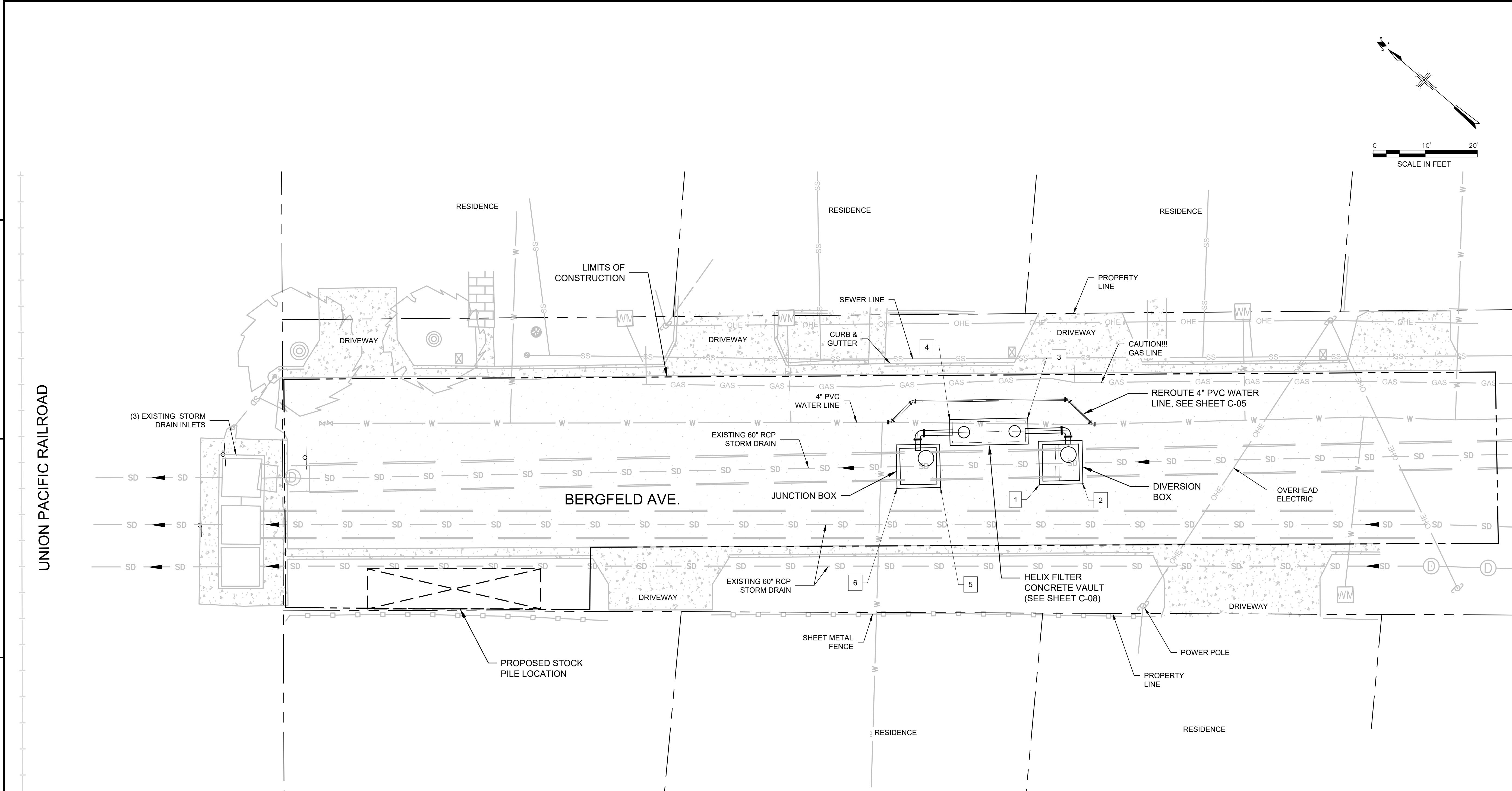
SCALE:
AS SHOWN



BAR IS ONE INCH ON
UNREDUCED DRAWING

DRAWING NO.: G-07

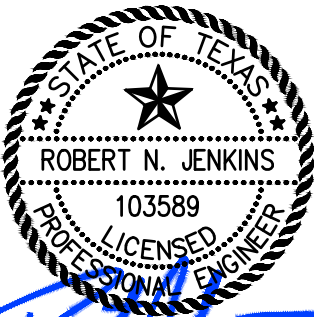
SHEET NO.: 7 OF 25



ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533

SEALS:

SEALS:



CITY OF
NEW BRAUNFELS



BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS			
NO.	DATE	ISSUED FOR	BY

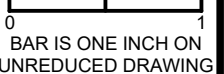
STATUS:
FOR CONSTRUCTION

ARCADIS
PROJECT NO.: 30193770
DATE: JULY 2024
DESIGNED BY: C.MARTIN
DRAWN BY: N.CANDELAS
CHECKED BY: R.JENKINS

SHEET TITLE:
CIVIL

PROPOSED PROJECT
LAYOUT AND DIMENSION
CONTROL PLAN

SCALE:
AS SHOWN



DRAWING NO.: C-01
SHEET NO.: 8 OF 25

- NOTES:
1. CONTRACTOR SHALL VERIFY ALL EXISTING PIPE CROSSINGS AT EACH PROPOSED PIPELINE AND/OR CROSSING AND SHALL RECORD ALL PIPE MATERIAL, INVERT ELEVATIONS AND CLEARANCES ON THE AS-BUILT DRAWINGS.

2. CONTRACTOR SHALL POT HOLE AND VERIFY ALL EXISTING PIPING MATERIALS AND INVERT ELEVATIONS AT POINT OF CONNECTIONS.

3. UNDERGROUND GAS, WATER, ELECTRIC, TELEPHONE, CHEMICAL AND OTHER UTILITIES MAY EXIST WITHIN THE WORK AREA. THE UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND FOR INFORMATION ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE UNDERGROUND UTILITIES BEFORE COMMENCING WORK RELATED ACTIVITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO THE UTILITIES CAUSED BY THE CONTRACTOR'S OPERATION.

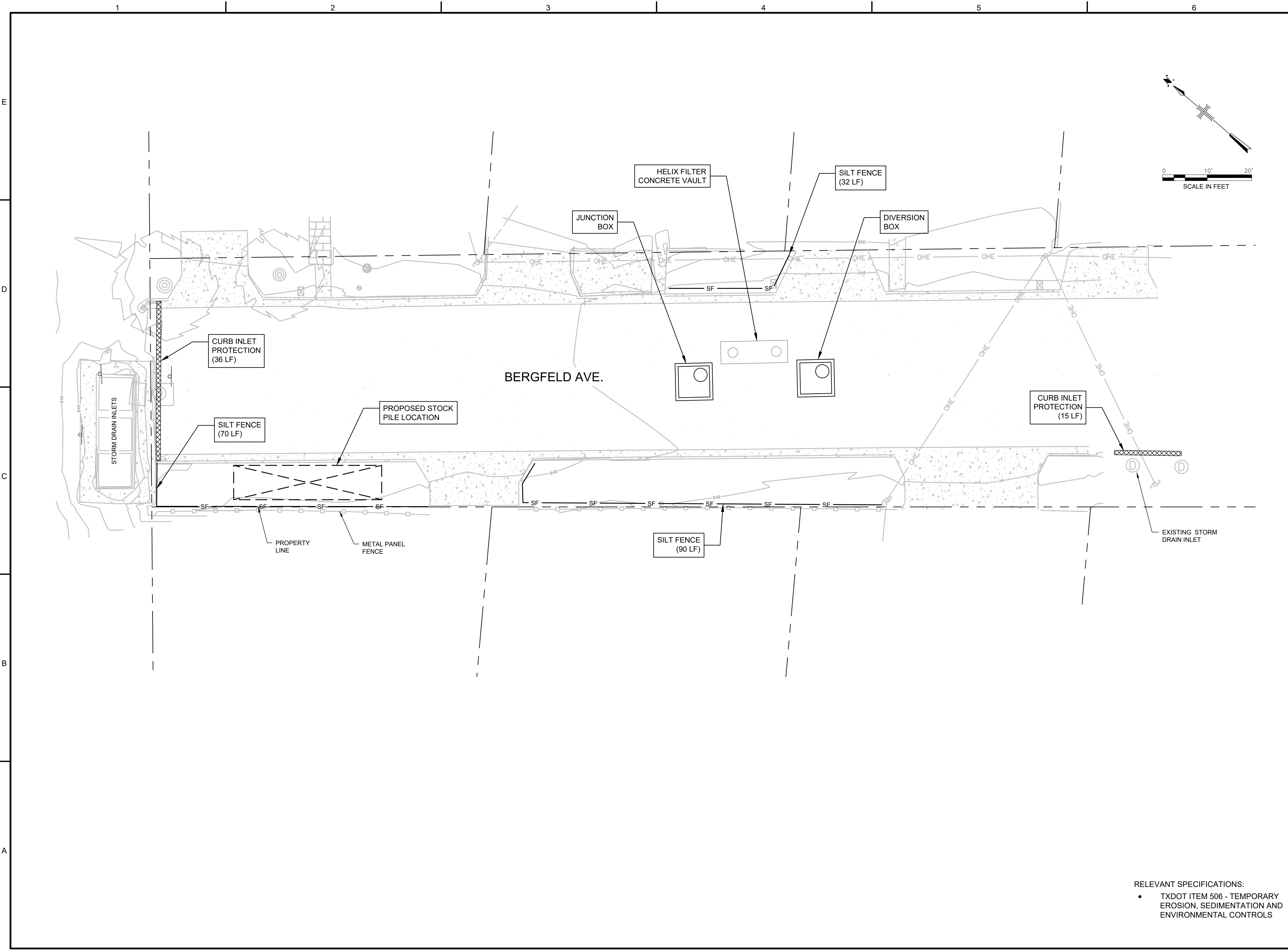
4. REFER TO SHEET C-04 FOR PLAN OF PROFILE OF THE DIVERSION AND JUNCTION BOXES.


5. CONTRACTOR TO PROVIDE CORRIDOR ACCESS TO RESIDENCE AT ALL TIMES.
- RELEVANT SPECIFICATIONS:
- TXDOT ITEM 100 - PREPARING RIGHT-OF-WAY

TXDOT ITEM 502 - BARRICADES, SIGNS, AND TRAFFIC HANDLING

TXDOT ITEM 508 - CONSTRUCTION DETOURS

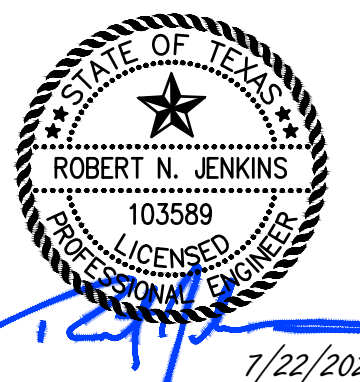
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Point #	Northing	Easting
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2	13798248.20	2239032.36
3	13798264.44	2239035.09
4	13798275.66	2239025.13
5	13798268.52	2239014.08
6	13798274.75	2239008.55





ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533


SEALS:



7/22/2024

SEALS:

CITY OF
NEW BRAUNFELS



TRANSPORTATION & CAPITAL IMPROVEMENTS

BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS			
NO.	DATE	ISSUED FOR	BY

STATUS:
FOR CONSTRUCTION

ARCADIS
PROJECT NO.: 30193770

DATE: JULY 2024

DESIGNED BY: C.MARTIN

DRAWN BY: N.CANDELAS

CHECKED BY: R. JENKINS

SHEET TITLE:
CIVIL

STORMWATER POLLUTION
PRESERVATION PLAN

RELEVANT SPECIFICATIONS:

- TXDOT ITEM 506 - TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENTAL CONTROLS

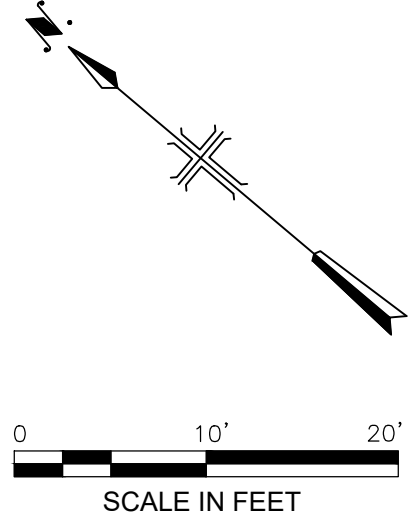
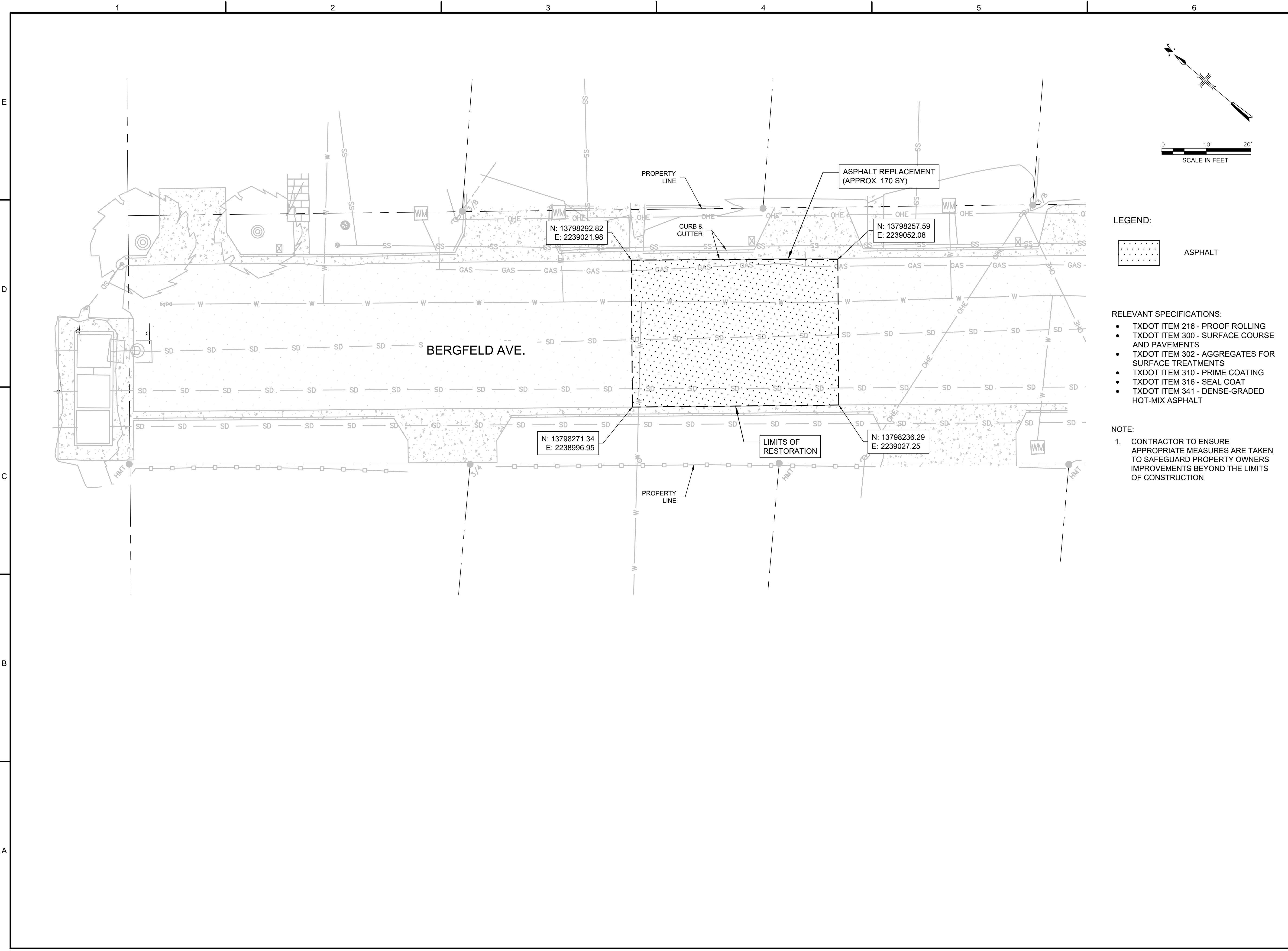
SCALE:
AS SHOWN

DRAWING NO.: C-02

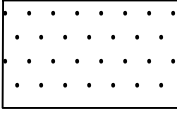
SHEET NO.: 9 OF 25

SCALE: 1" = 20'

BAR IS ONE INCH ON UNREDUCED DRAWING



LEGEND:

 ASPHALT

- RELEVANT SPECIFICATIONS:
- TXDOT ITEM 216 - PROOF ROLLING
 - TXDOT ITEM 300 - SURFACE COURSE AND PAVEMENTS
 - TXDOT ITEM 302 - AGGREGATES FOR SURFACE TREATMENTS
 - TXDOT ITEM 310 - PRIME COATING
 - TXDOT ITEM 316 - SEAL COAT
 - TXDOT ITEM 341 - DENSE-GRADED HOT-MIX ASPHALT

NOTE:

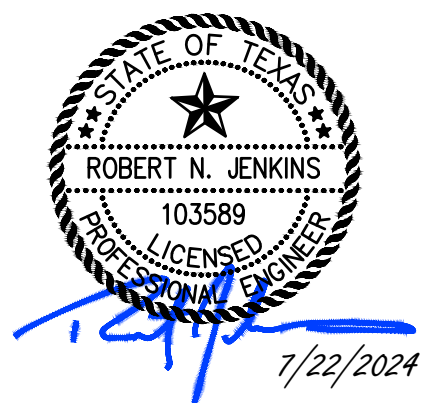
1. CONTRACTOR TO ENSURE APPROPRIATE MEASURES ARE TAKEN TO SAFEGUARD PROPERTY OWNERS IMPROVEMENTS BEYOND THE LIMITS OF CONSTRUCTION



ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533

SEALS:

SEALS:



CITY OF
NEW BRAUNFELS



BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS			
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STATUS:
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ARCADIS
PROJECT NO.: 30193770
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DESIGNED BY: C.MARTIN
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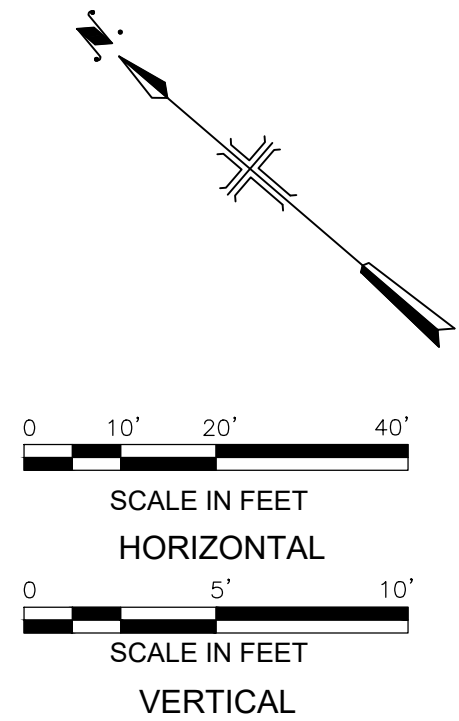
SHEET TITLE:
CIVIL

SITE
RESTORATION
PLAN

SCALE:
AS SHOWN

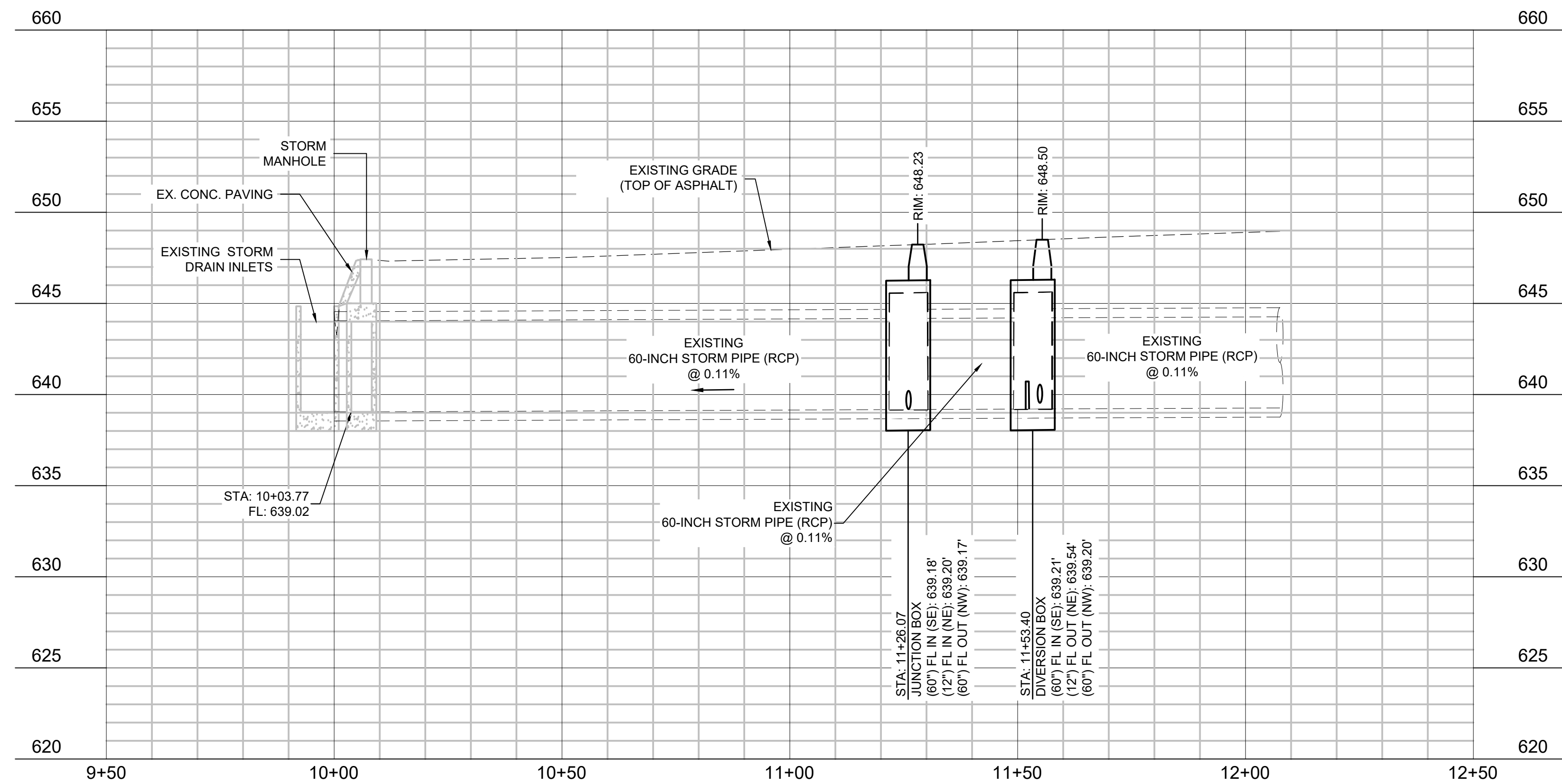
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DRAWING NO.: C-03
SHEET NO.: 10 OF 25

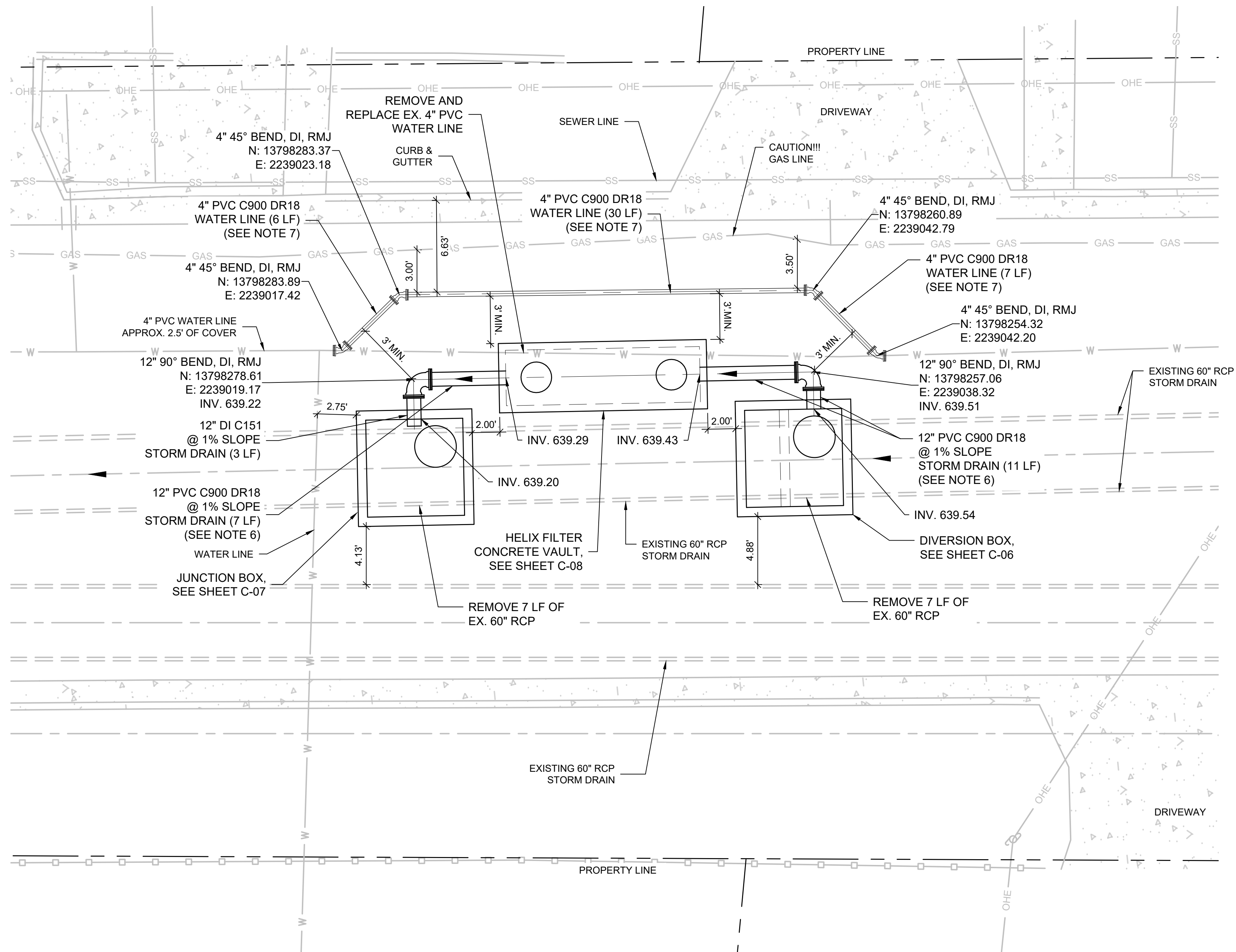


1. CONTRACTOR SHALL VERIFY ALL EXISTING PIPE CROSSINGS AT EACH PROPOSED PIPELINE AND/OR CROSSING AND SHALL RECORD ALL PIPE MATERIAL, INVERT ELEVATIONS AND CLEARANCES ON THE AS-BUILT DRAWINGS.
2. CONTRACTOR SHALL POTHOLE AND VERIFY ALL EXISTING PIPING MATERIALS AND INVERT ELEVATIONS AT POINT OF CONNECTIONS.
3. UNDERGROUND GAS, WATER, ELECTRIC, TELEPHONE, CHEMICAL AND OTHER UTILITIES MAY EXIST WITHIN THE WORK AREA. THE UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND FOR INFORMATION ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO THE UTILITIES CAUSED BY THE CONTRACTOR'S OPERATION.
4. MEANS AND METHODS OF EXCAVATION ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUBMIT EXCAVATION PLAN FOR REVIEW. IF SHORING WILL BE USED, PROVIDE SHORING PLAN SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS.

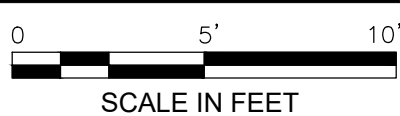
- TXDOT ITEM 400 - STRUCTURES
- TXDOT ITEM 402 - TRENCH EXCAVATION PROTECTION
- TXDOT ITEM 464 - REINFORCED CONCRETE PIPE
- TXDOT ITEM 465 - JUNCTION BOXES, MANHOLES, AND INLETS
- TXDOT ITEM 471 - FRAMES, GRATES, RINGS, AND COVERS



PROFILE



SITE PLAN



NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING PIPE CROSSINGS AT EACH PROPOSED PIPELINE AND/OR CROSSING AND SHALL RECORD ALL PIPE MATERIAL, INVERT ELEVATIONS AND CLEARANCES ON THE AS-BUILT DRAWINGS.
2. CONTRACTOR SHALL POTHOLE AND VERIFY ALL EXISTING PIPING MATERIALS AND INVERT ELEVATIONS AT POINT OF CONNECTIONS.
3. UNDERGROUND GAS, WATER, ELECTRIC, TELEPHONE, CHEMICAL AND OTHER UTILITIES MAY EXIST WITHIN THE WORK AREA. THE UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND FOR INFORMATION ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO THE UTILITIES CAUSED BY THE CONTRACTOR'S OPERATION.
4. ALL MANHOLE COVERS SHALL BE CONCRETE ENCASED.
5. REROUTED 4" WATER LINE TO MATCH EXISTING TOP OF PIPE ELEVATIONS TO BE INSTALLED WITHOUT INTERMEDIATE HIGH POINT.
6. CONTRACTOR TO REFER TO TRENCH DETAIL 2/C-09 FOR STORM DRAIN INSTALLATIONS.
7. CONTRACTOR TO CONCRETE ENCASE WATER LINES PER DETAIL 4/C-09. REFER TO TRENCH REPAIR DETAIL 1/C-09 FOR ALL WATER LINES INSTALLATIONS.
8. CONTRACTOR SHALL PROVIDE THRUST BLOCKING AT ALL BENDS PER NBU STANDARD DETAIL 221.
9. MEANS AND METHODS OF EXCAVATION ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUBMIT EXCAVATION PLAN FOR REVIEW. IF SHORING WILL BE USED, PROVIDE SHORING PLAN SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS.

- RELEVANT SPECIFICATIONS (WATER LINE):
- NBU ITEM NO. 509 - TRENCH SAFETY SYSTEMS
 - NBU ITEM NO. 510 - PIPE
 - NBU ITEM NO. 512 - TRACER WIRE

- RELEVANT SPECIFICATIONS (STORMWATER DIVERSION LINE):
- NBU ITEM NO. 509 - TRENCH SAFETY SYSTEMS
 - NBU ITEM NO. 510 - PIPE

- RELEVANT SPECIFICATIONS (JUNCTION BOXES):
- TXDOT ITEM 400 - STRUCTURES
 - TXDOT ITEM 402 - TRENCH EXCAVATION PROTECTION
 - TXDOT ITEM 464 - REINFORCED CONCRETE PIPE
 - TXDOT ITEM 465 - JUNCTION BOXES, MANHOLES, AND INLETS
 - TXDOT ITEM 471 - FRAMES, GRATES, RINGS AND COVERS

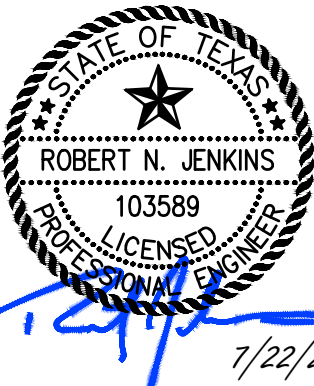
- RELEVANT SPECIFICATIONS (FILTER STRUCTURE):
- NEEDS TO MEET TXDOT ITEM 400 - STRUCTURES
 - NEEDS TO MEET TXDOT ITEM 402 - TRENCH EXCAVATION PROTECTION FOR EXCAVATION AND COMPACTION



ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533

SEALS:

SEALS:



CITY OF
NEW BRAUNFELS



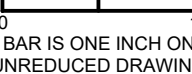
BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS			
NO.	DATE	ISSUED FOR	BY

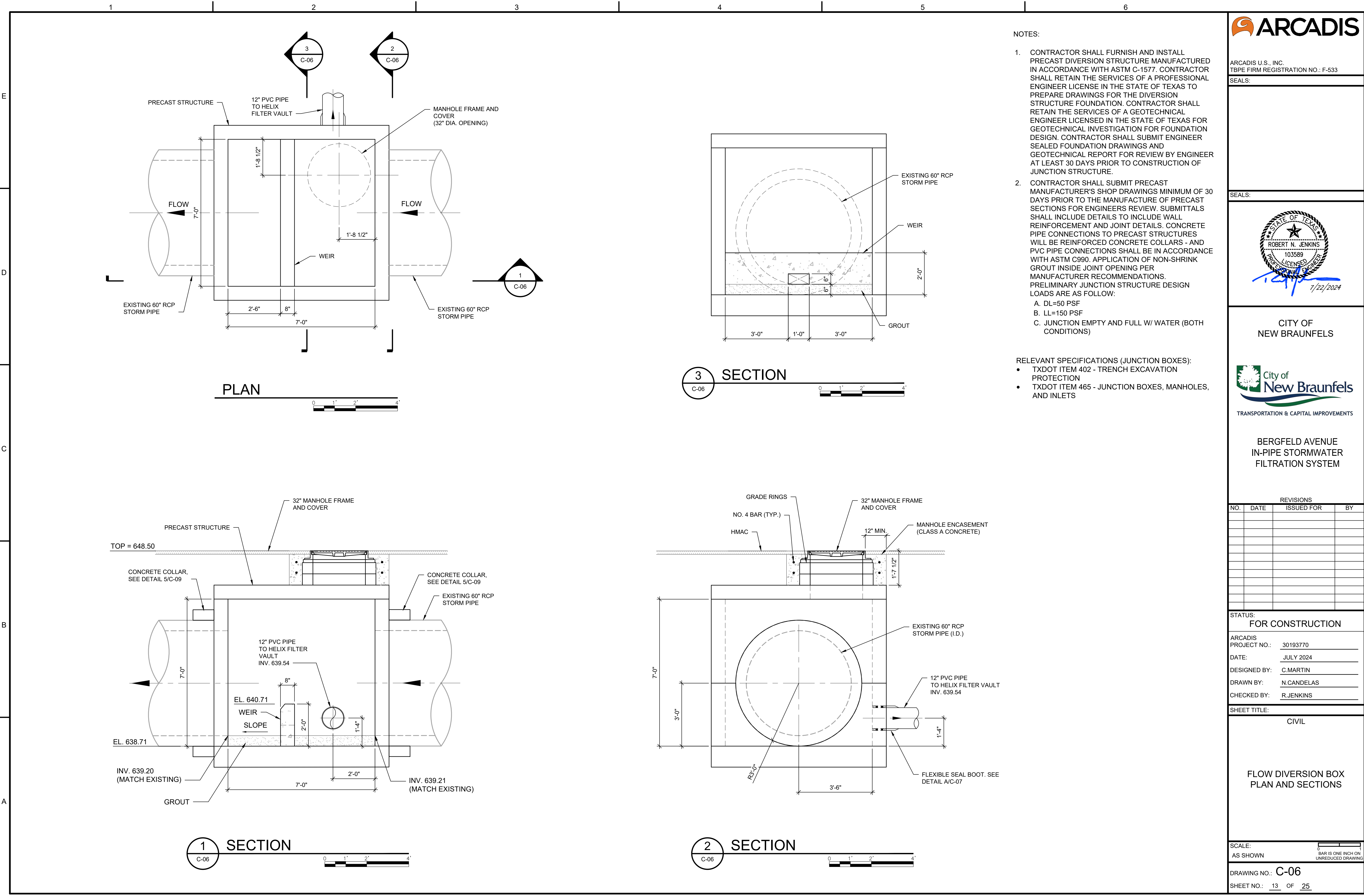
STATUS:	
FOR CONSTRUCTION	
ARCADIS PROJECT NO.:	30193770
DATE:	JULY 2024
DESIGNED BY:	C.MARTIN
DRAWN BY:	N.CANDELAS
CHECKED BY:	R.JENKINS

SHEET TITLE:
CIVIL

SCALE:
AS SHOWN



DRAWING NO.: C-05
SHEET NO.: 12 OF 25



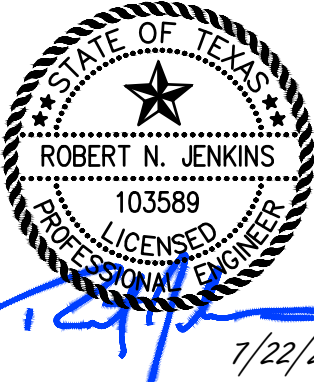
- NOTES:
- CONTRACTOR SHALL FURNISH AND INSTALL PRECAST DIVERSION STRUCTURE MANUFACTURED IN ACCORDANCE WITH ASTM C-1577. CONTRACTOR SHALL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS TO PREPARE DRAWINGS FOR THE DIVERSION STRUCTURE FOUNDATION. CONTRACTOR SHALL RETAIN THE SERVICES OF A GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF TEXAS FOR GEOTECHNICAL INVESTIGATION FOR FOUNDATION DESIGN. CONTRACTOR SHALL SUBMIT ENGINEER SEALED FOUNDATION DRAWINGS AND GEOTECHNICAL REPORT FOR REVIEW BY ENGINEER AT LEAST 30 DAYS PRIOR TO CONSTRUCTION OF JUNCTION STRUCTURE.
 - CONTRACTOR SHALL SUBMIT PRECAST MANUFACTURER'S SHOP DRAWINGS MINIMUM OF 30 DAYS PRIOR TO THE MANUFACTURE OF PRECAST SECTIONS FOR ENGINEERS REVIEW. SUBMITTALS SHALL INCLUDE DETAILS TO INCLUDE WALL REINFORCEMENT AND JOINT DETAILS. CONCRETE PIPE CONNECTIONS TO PRECAST STRUCTURES WILL BE REINFORCED CONCRETE COLLARS - AND PVC PIPE CONNECTIONS SHALL BE IN ACCORDANCE WITH ASTM C990. APPLICATION OF NON-SHRINK GROUT INSIDE JOINT OPENING PER MANUFACTURER RECOMMENDATIONS. PRELIMINARY JUNCTION STRUCTURE DESIGN LOADS ARE AS FOLLOW:
 - A. DL=50 PSF
 - B. LL=150 PSF
 - C. JUNCTION EMPTY AND FULL W/ WATER (BOTH CONDITIONS)

- RELEVANT SPECIFICATIONS (JUNCTION BOXES):
- TXDOT ITEM 402 - TRENCH EXCAVATION PROTECTION
 - TXDOT ITEM 465 - JUNCTION BOXES, MANHOLES, AND INLETS



ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533

SEALS:



CITY OF
NEW BRAUNFELS



BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

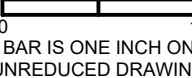
REVISIONS			
NO.	DATE	ISSUED FOR	BY

STATUS:	
FOR CONSTRUCTION	
ARCADIS PROJECT NO.:	30193770
DATE:	JULY 2024
DESIGNED BY:	C.MARTIN
DRAWN BY:	N.CANDELAS
CHECKED BY:	R.JENKINS

SHEET TITLE:
CIVIL

FLOW DIVERSION BOX
PLAN AND SECTIONS

SCALE:
AS SHOWN



DRAWING NO.: C-06

SHEET NO.: 13 OF 25

NOTES:

1.0 WEIGHT ESTIMATE:

- 1.1 COVER: 6,000 - LB (3.0 TONS)
1.2 BASE: 29,000 - LB (14.5 TONS)

2.0 VAULT:

- 2.1 REINFORCEMENT STEEL: ASTM A-615 OR EQUIVALENT.
2.2 CONCRETE MATERIALS:
THE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 28 MPA AT THE END OF 28 DAYS.
2.3 ACCESS MANHOLES: ASTM-A-48, CLASS 35B GRAY IRON OR ASTM A536, GRADE 80-55-06 DUCTILE IRON.
2.4 FILTER HOUSING: HDPE CORRUGATED PIPE, 30-IN DIA.
2.5 HELICAL FILTER ELEMENTS: CRS WIRE FRAME WITH TREATED T20 FOAM COVERS.

3.0 CONCRETE STRUCTURE DESIGNED TO MEET OR EXCEED H-20 LOAD RATING

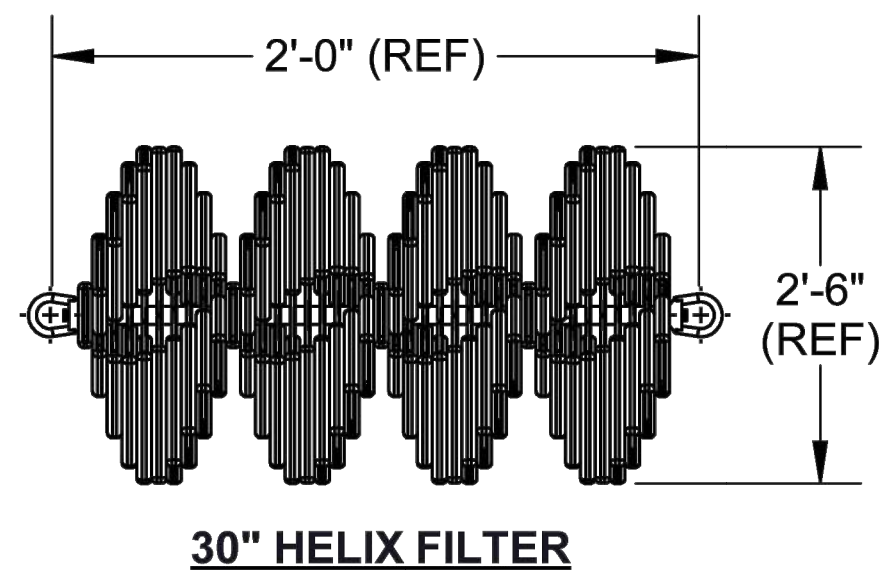
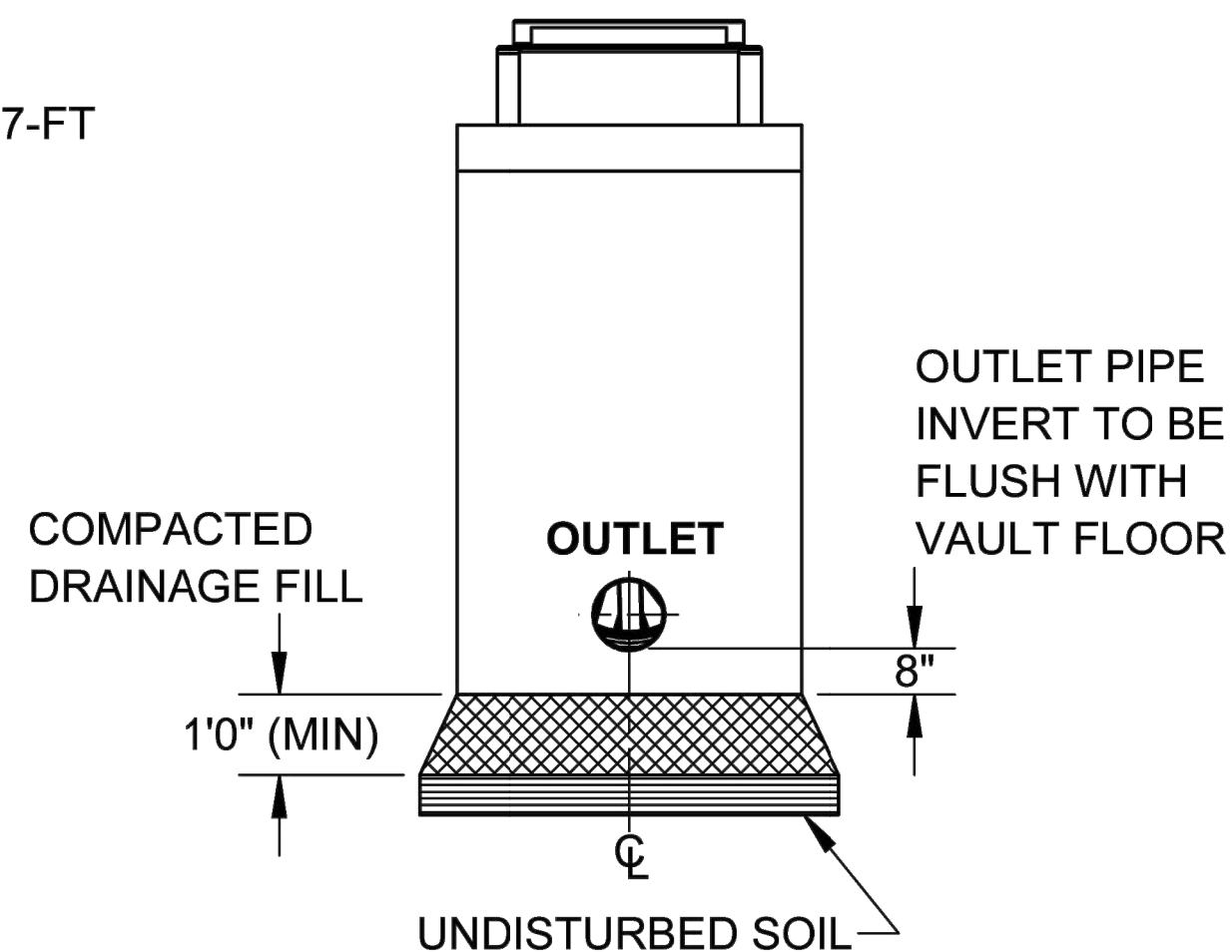
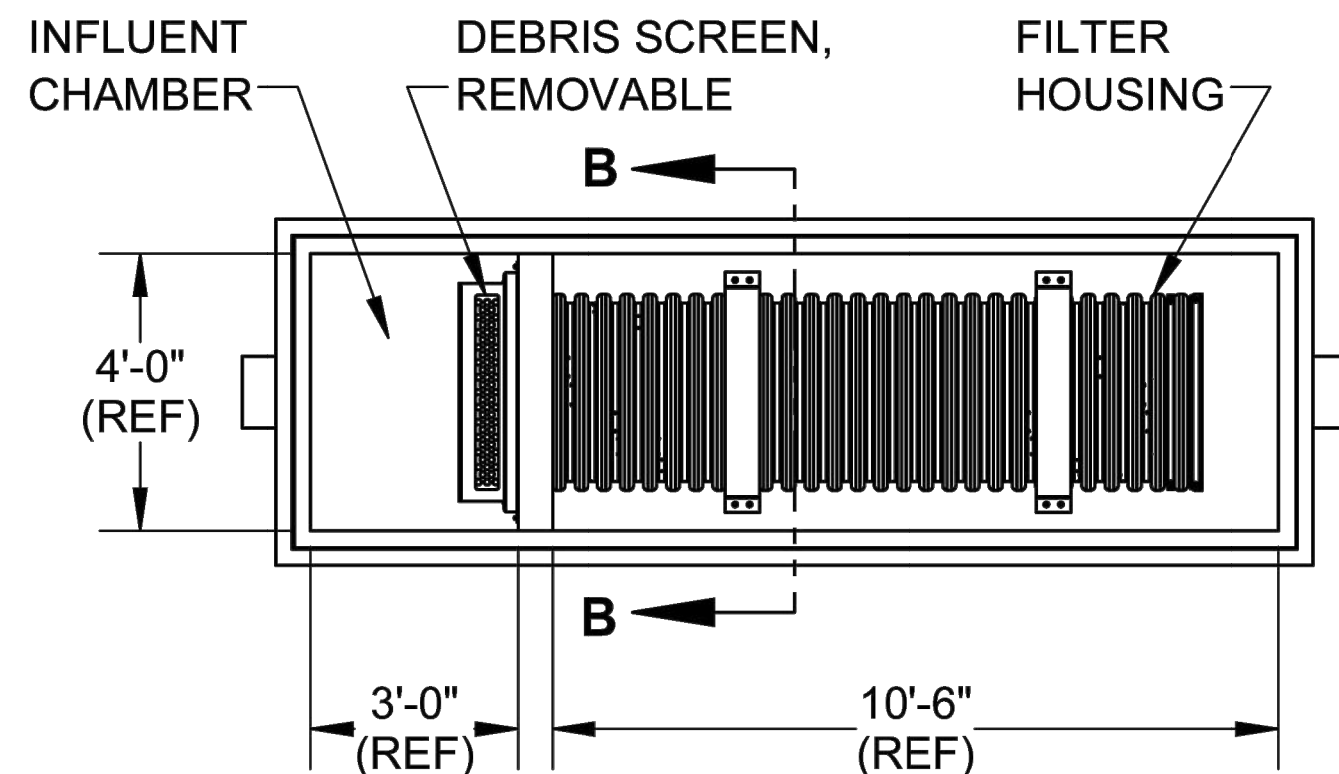
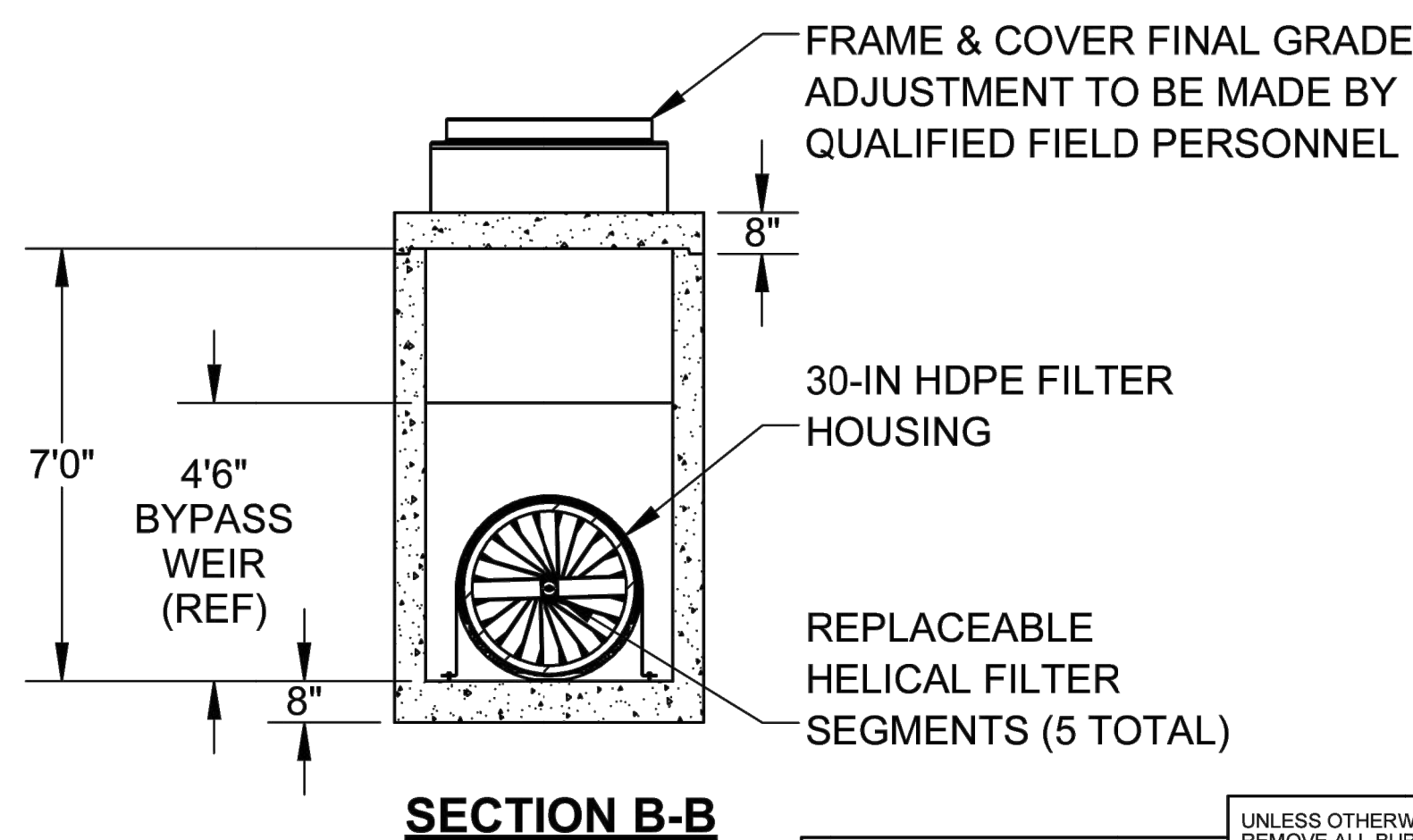
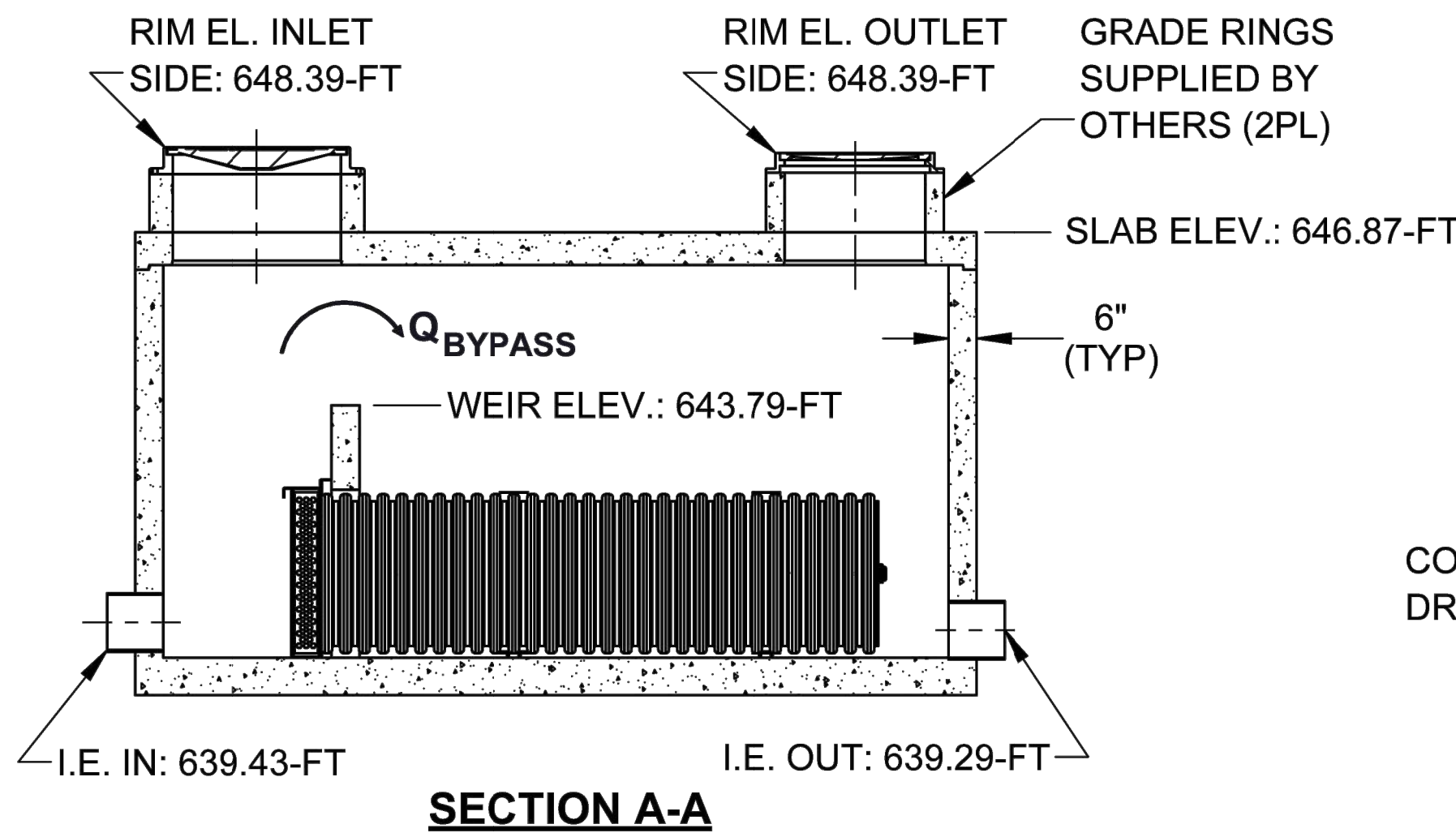
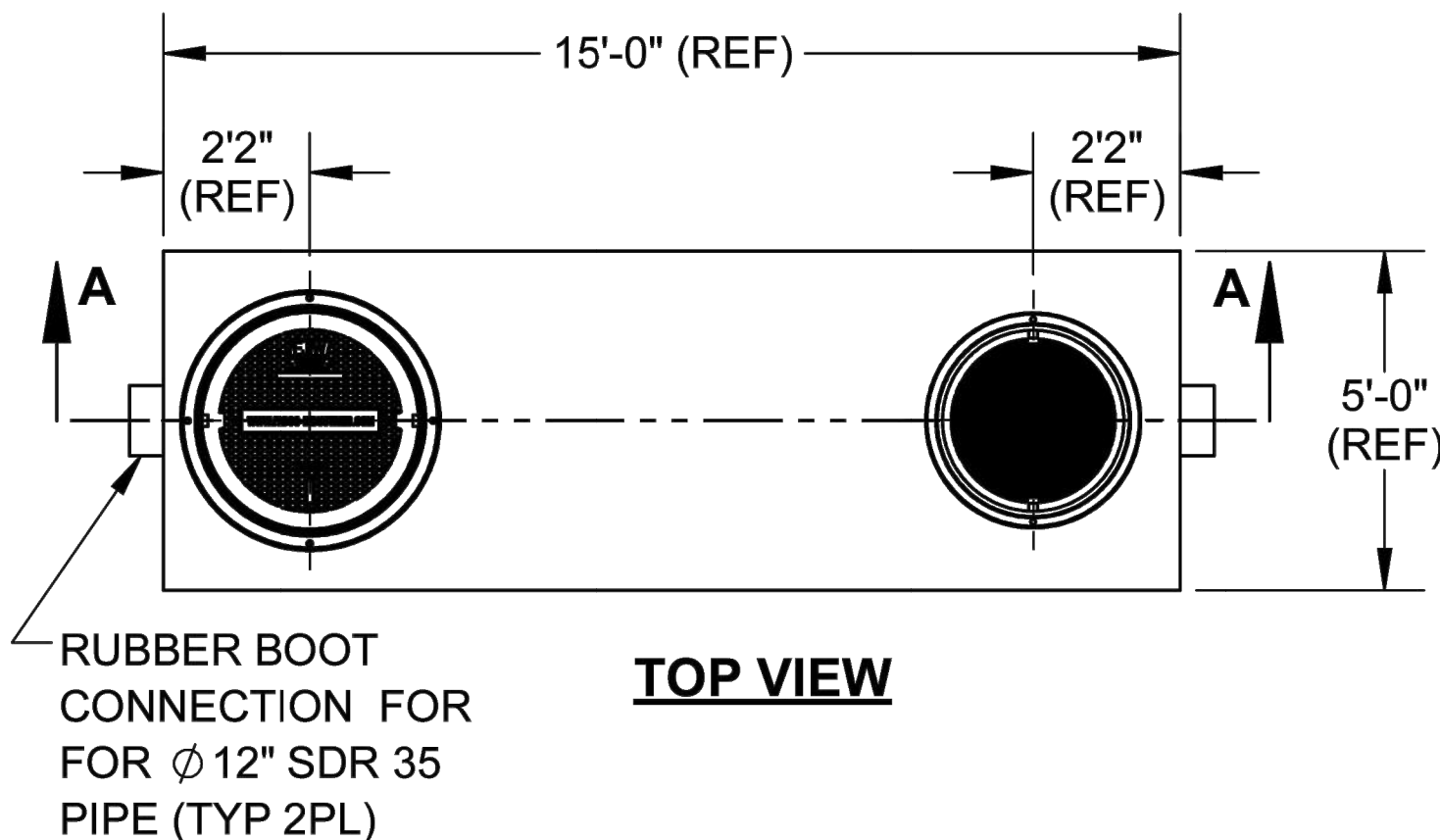
4.0 PERFORMANCE CHARACTERISTICS (REF):

- 4.1 TREATED FLOW RATE: 3 CFS (1350 GPM)
4.2 BYPASS FLOW RATE: 13 CFS (5800 GPM)

- 5.0 ACCESS MANHOLES ARE SUPPLIED SEPARATELY WITH THE HELIX VAULT. EAST JORDAN IRON WORKS, EJIW #1581 & EJIW #1480 CASTINGS ARE RECOMMENDED FOR REPEATED VEHICULAR TRAFFIC AND CONFORM TO AASHTO M306 STANDARDS. FINAL MANHOLE CASTING INSTALLATION, AND ADJUSTMENT TO GRADE, SHALL BE PERFORMED BY QUALIFIED PERSONNEL. GRADE RINGS ARE NOT SUPPLIED AND ARE THE RESPONSIBILITY OF THE CONTRACTOR.
6.0 OFFLOADING, EXCAVATION, DEWATERING, DRAINAGE FILL, AND BACKFILL OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH OSHA AND LOCAL REGULATIONS AND ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUB-BASE AND BACK-FILL DEPTH ARE SITE SPECIFIC AND SHALL BE SPECIFIED BY THE ENGINEER OF RECORD.

- 7.0 THE CONTRACTOR SHALL VERIFY THAT THE UNIT IS VERTICALLY AND HORIZONTALLY PLUMB AND STABLE, WITH MINIMUM VOIDS AND MINIMUM UN-COMPACTED SOIL AFTER BACK FILL OPERATION.
8.0 IF REQUIRED, REMOVE SKIN-KNOCKOUT FROM VAULT, CONNECT THE EXISTING PIPE TO THE VAULT INLET AND OUTLET PORTS WITH APPROVED NON-SHRINKING GROUT-FILL IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. HELIX VAULT "INLET" AND "OUTLET" PORTS ARE CLEARLY LABELED WITH BLACK PAINT. EXISTING INLET/OUTLET PIPE TO BE ALIGNED FLUSH WITH RESPECTIVE INTERIOR VAULT WALLS.

- 9.0 MAINTENANCE AND HELICAL FILTER REPLACEMENT INSTRUCTIONS ARE PROVIDED SEPARATELY AND ARE SITE SPECIFIC.
10.0 HELICAL FILTER REPLACEMENT (IN GENERAL):
FOR BEST PERFORMANCE REPLACE HELICAL FILTERS IAW FABCO RECOMMENDATIONS. HIGH CONTAMINANT LOCATIONS MAY REQUIRE MORE FREQUENT FILTER REPLACEMENT. REMOVE ANY DEBRIS OR HEAVY SEDIMENT FROM THE INFLUENT CHAMBER. REMOVE THE INLET DIFFUSER AND SLIDE EACH HELICAL FILTER SEGMENT OUT OF THE FILTER HOUSING. INSERT THE REPLACEMENT HELICAL FILTERS. EACH HOUSING REQUIRES FIVE (5) HELICAL FILTER SEGMENTS, DISPOSE OF USED FILTER MEDIA IN ACCORDANCE WITH LOCAL REGULATION.



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UNLESS OTHERWISE SPECIFIED
REMOVE ALL BURRS
BREAK SHARP EDGES .002 - .020
FILLET .020 MAX
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

TOLERANCES:
DEC .00 ± .01
DEC .000 ± .005
FRACT ± 1/16
ANGLE ± 2°

APPROVAL
DATE
DWN J.P. 12/21/2023
CHKR J.P. 12/21/2023
ENGR
UPD

FABCO INDUSTRIES, INC.
24 CENTRAL DRIVE
FARMINGDALE, NY 11735
WWW.FABCO-INDUSTRIES.COM

PROJECT
NEW BRAUNFELS, TX

MATERIAL

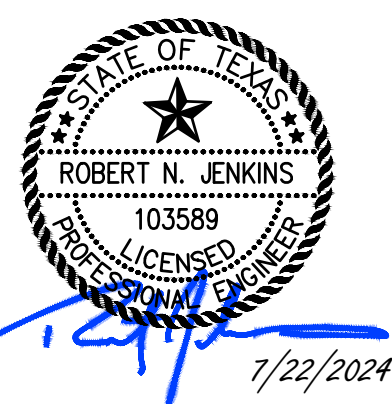
HELIX BACTERIA VAULT
SINGLE TUBE

SIZE DWG. NO. REV
B VHB30-1.1-000 C

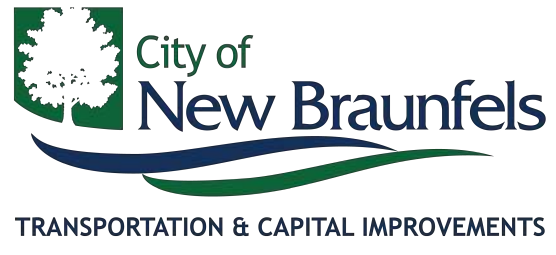
SCALE: NONE SHEET 1 OF 1

SEALS:

SEALS:



CITY OF
NEW BRAUNFELS



BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS			
NO.	DATE	ISSUED FOR	BY

STATUS:

FOR CONSTRUCTION

ARCADIS PROJECT NO.:	30193770
DATE:	JULY 2024
DESIGNED BY:	C.MARTIN
DRAWN BY:	N.CANDELAS
CHECKED BY:	R.JENKINS

SHEET TITLE:

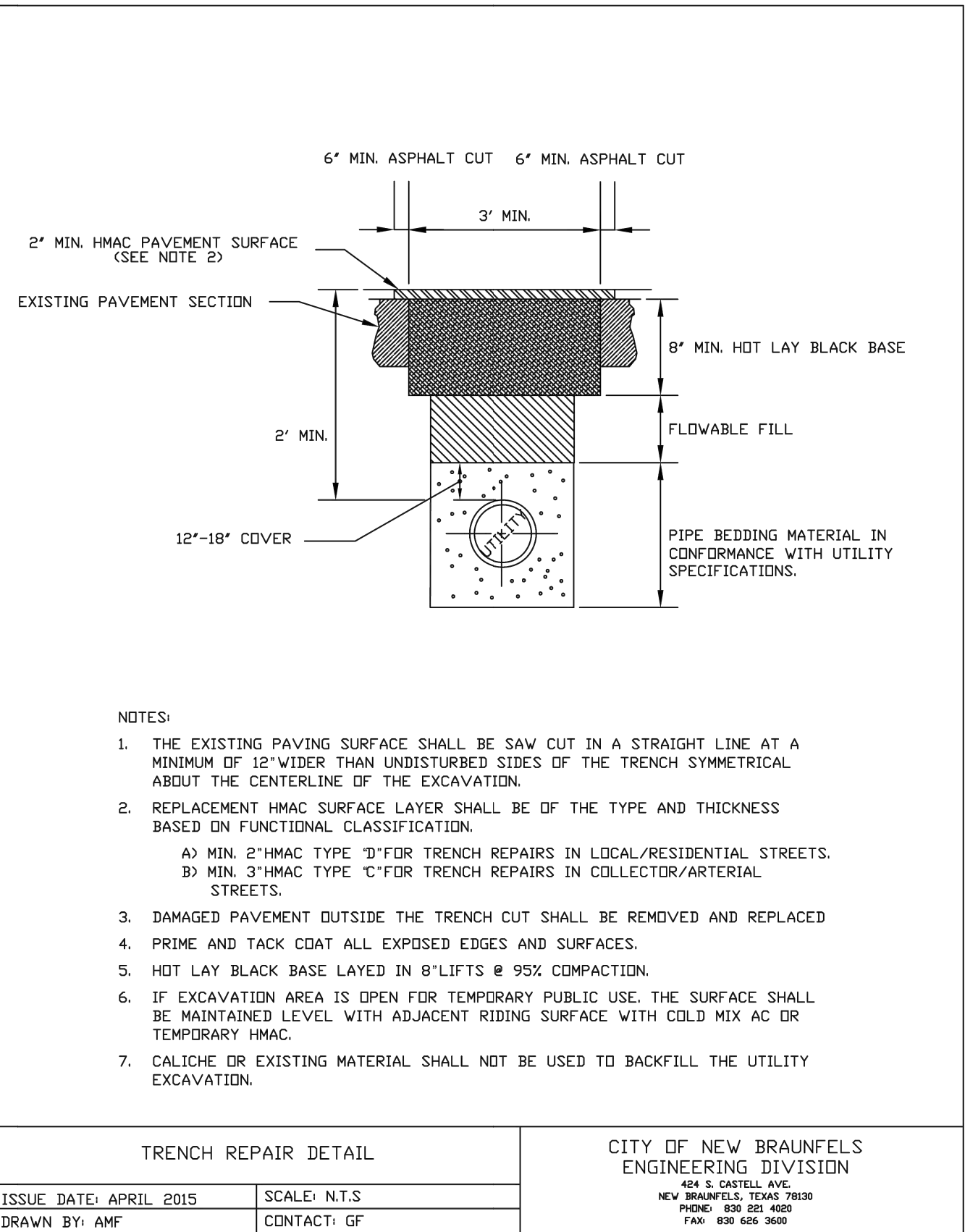
CIVIL

WATER QUALITY DETAILS

SCALE:
AS SHOWN
BAR IS ONE INCH ON UNREDUCED DRAWING

DRAWING NO.: C-08

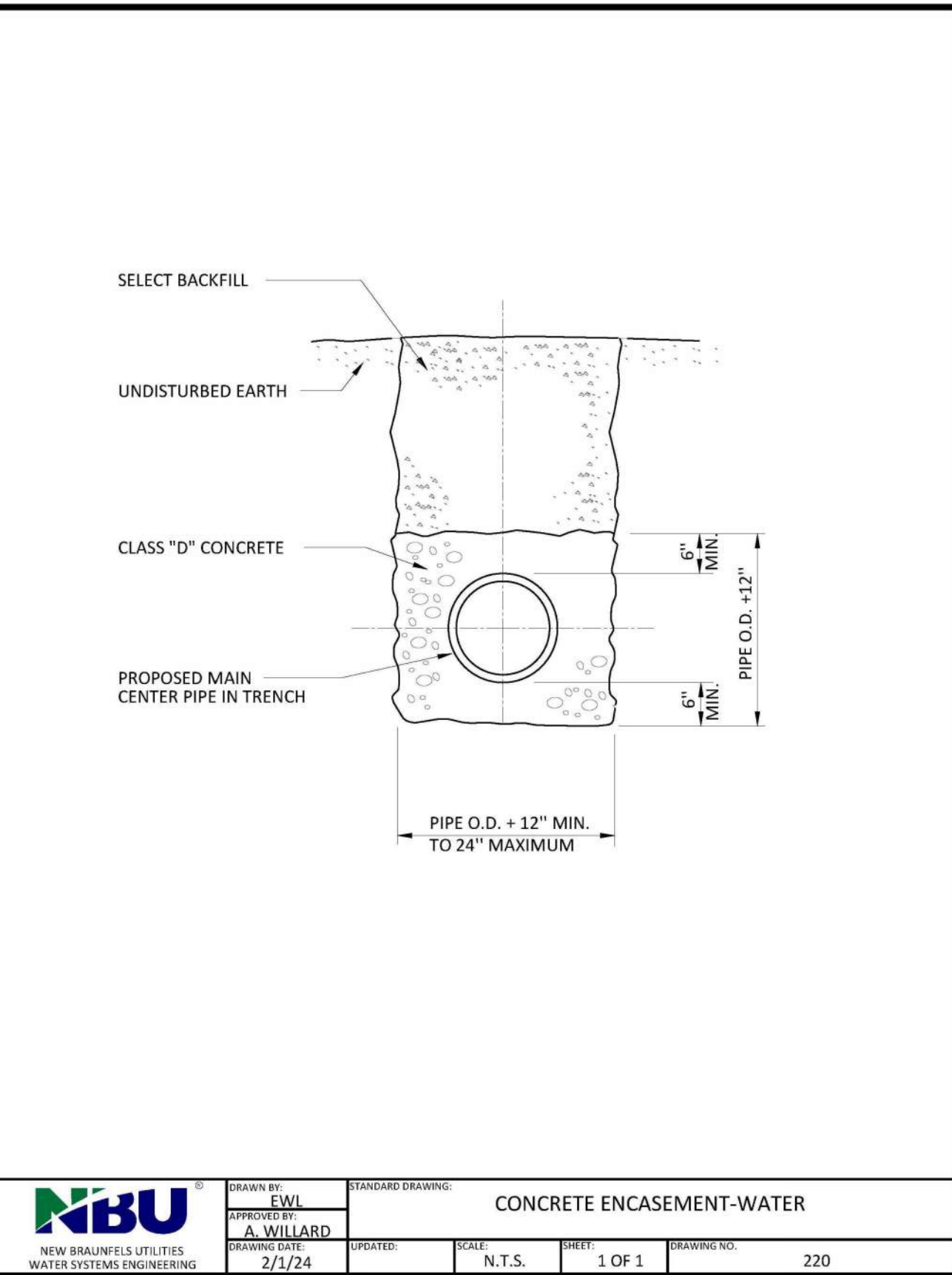
SHEET NO.: 15 OF 25



- NOTES:
1. IN LIEU OF BEDDING, SEE DETAIL 4/C-09 FOR THE REQUIRED CONCRETE ENCASEMENT.

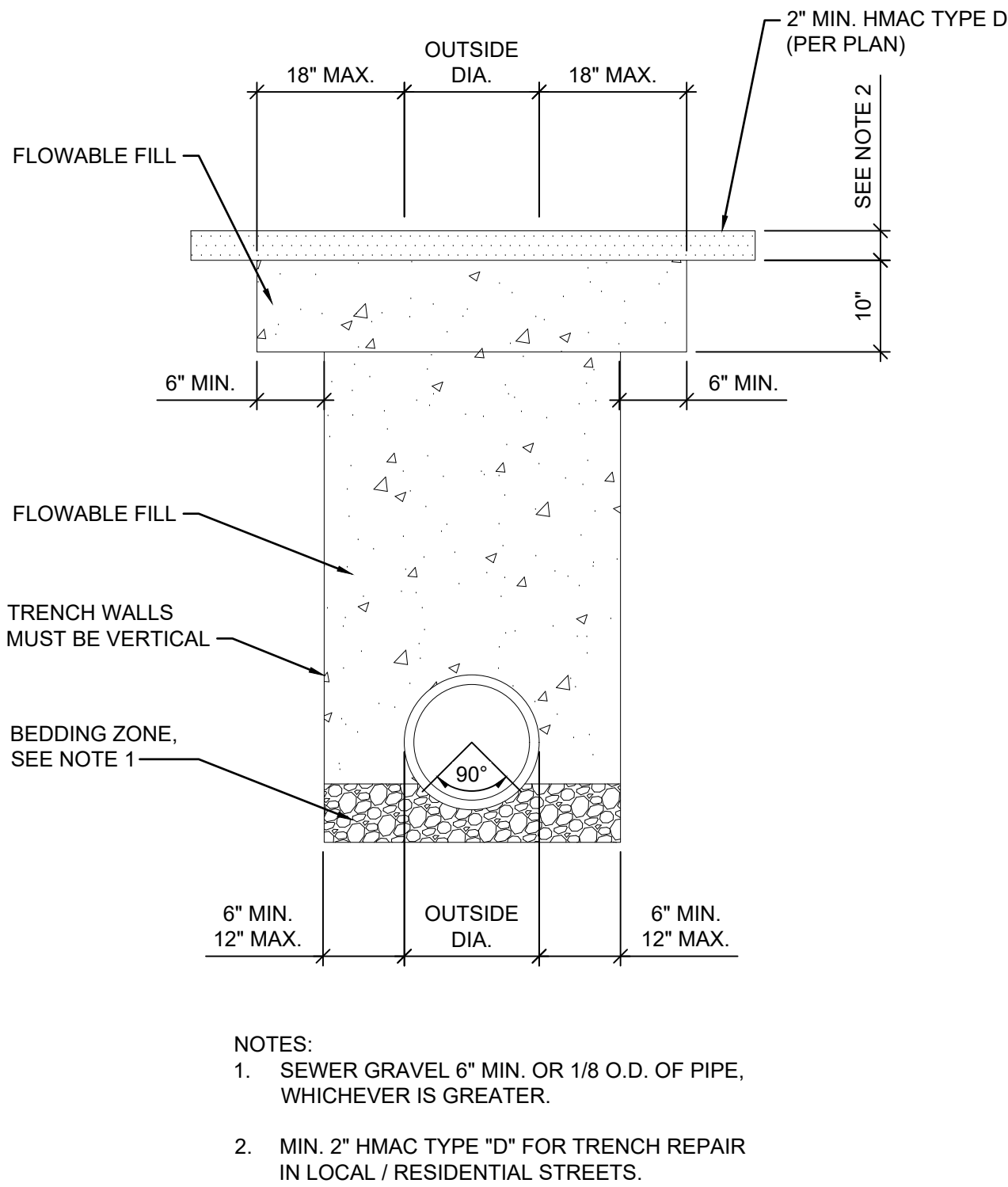
1 TRENCH REPAIR DETAIL

C-09 FOR WATER LINES ONLY



4 CONCRETE ENCASEMENT DETAIL

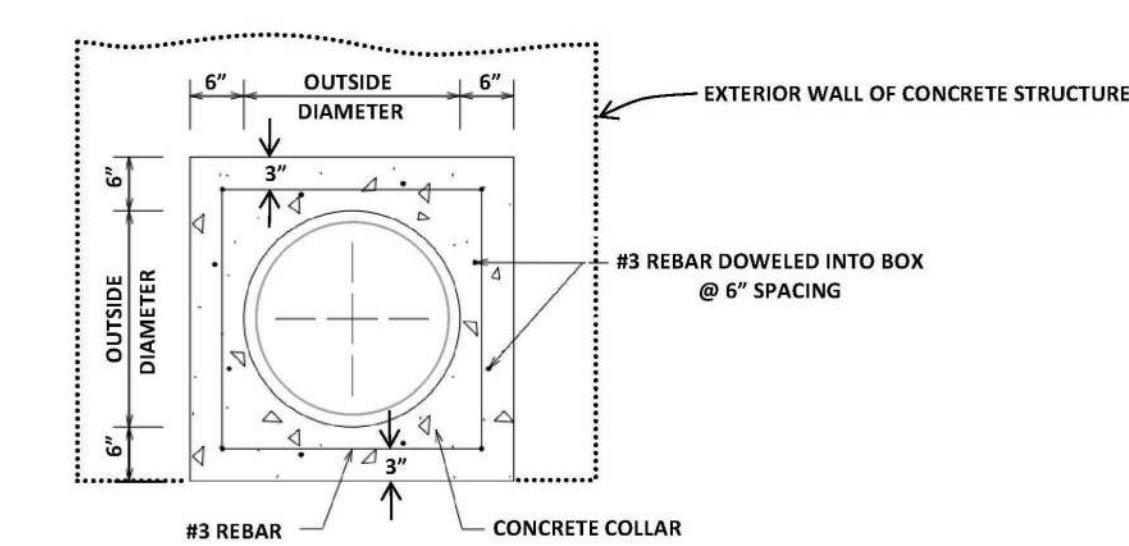
C-09 FOR WATER LINES ONLY



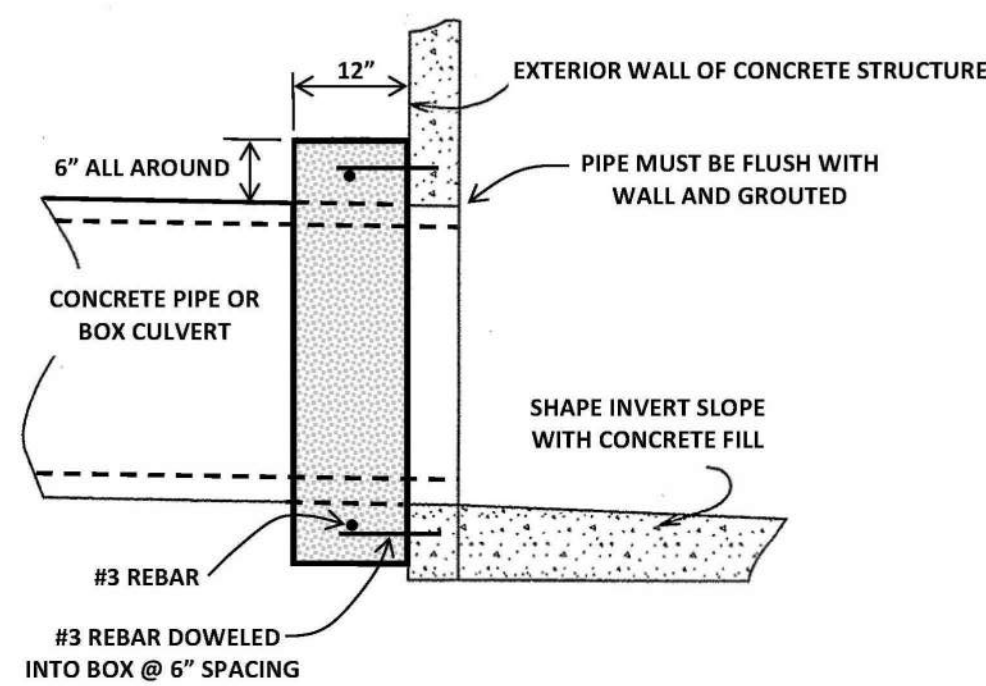
- NOTES:
1. SEWER GRAVEL 6" MIN. OR 1/8 O.D. OF PIPE, WHICHEVER IS GREATER.
 2. MIN. 2" HMAC TYPE "D" FOR TRENCH REPAIR IN LOCAL / RESIDENTIAL STREETS.

2 FLOWABLE FILL TRENCH REPAIR DETAIL

C-09 FOR STORM DRAIN LINES

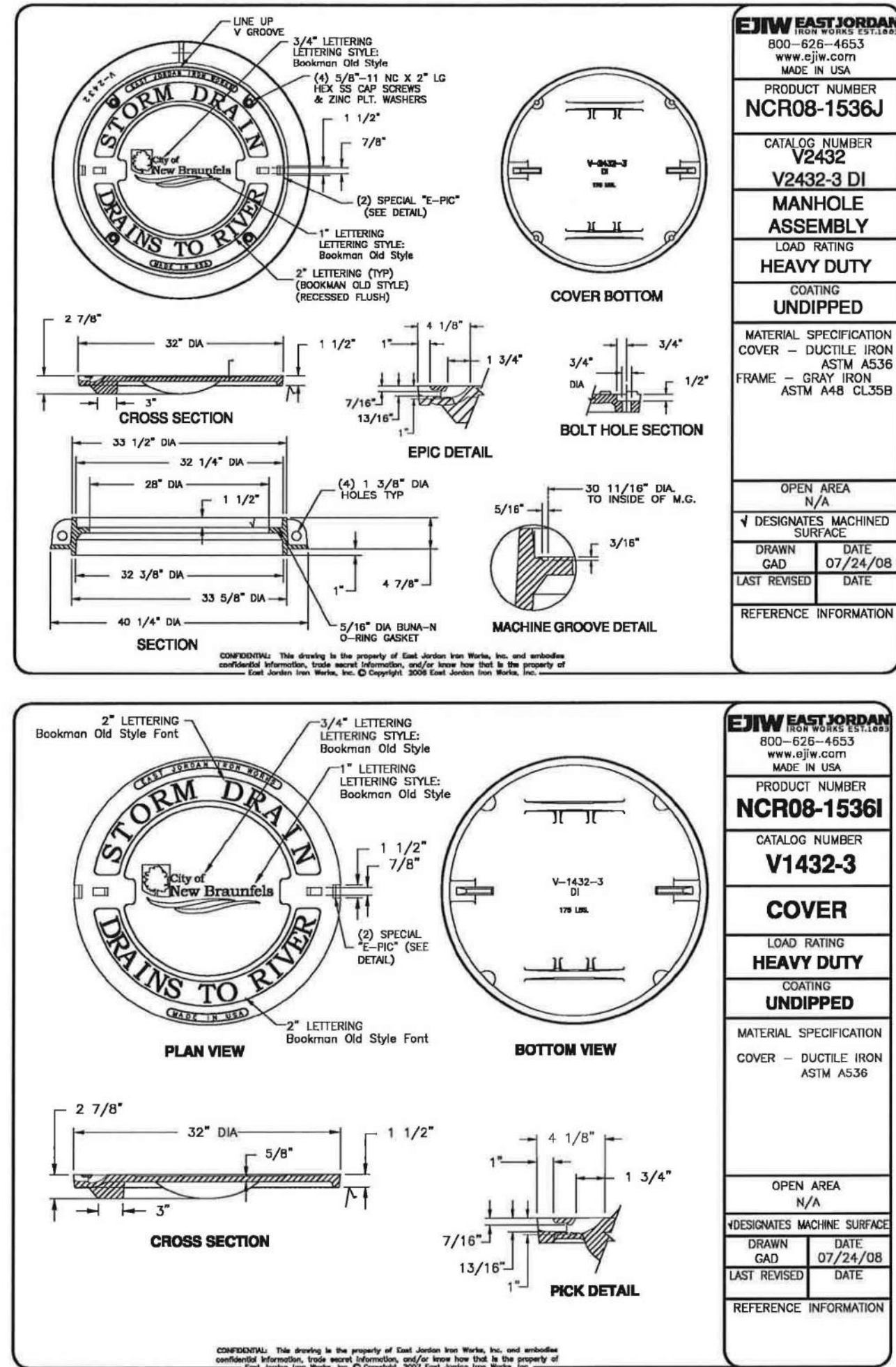


- NOTE:
- ALL COLLAR CONCRETE SHALL BE CLASS "A" WITH A MINIMUM 28-DAY STRENGTH OF 3,000 PSI.



5 CONCRETE COLLAR DETAIL

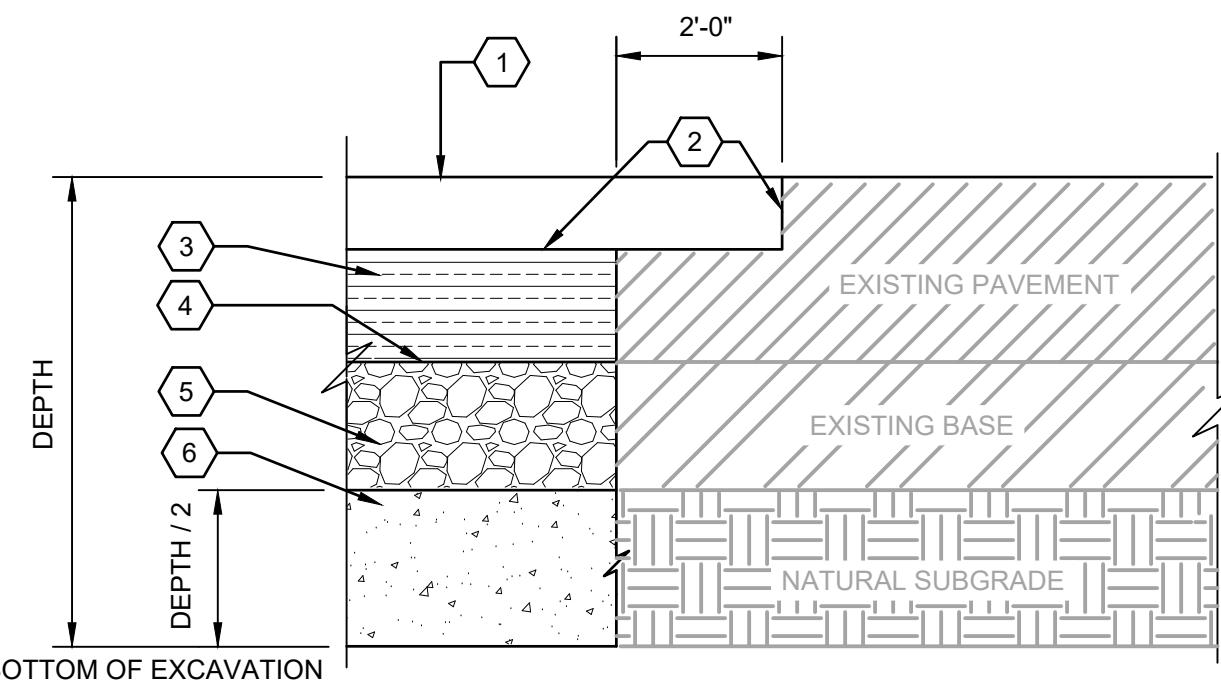
C-09



- NOTES:
1. EAST JORDAN IRON WORKS OR APPROVED EQUAL.
 2. COVER SHALL BE DESIGNED FOR H20 TRAFFIC LOADING.

3 RING AND COVER DETAIL

C-09



- KEYNOTES:
1. 2" MIN. TYPE D HOT MIX ASPHALTIC CONCRETE PAVEMENT. (TxDOT ITEM 341).
 2. TACK COAT.
 3. 8" TYPE B ASPHALT TREATED BASE (TxDOT ITEM 292).
 4. PRIME COAT (TxDOT ITEM 310).
 5. FLEX BASE (TxDOT ITEM 247).
 6. FLOWABLE FILL (TxDOT ITEM 401). DEPTH SHALL BE HALF OF EXCAVATION DEPTH.

- NOTES:
1. IF CLAY SUBGRADE IS FOUND, STABILIZE SUBGRADE WITH LIME IN ACCORDANCE WITH TxDOT ITEM 260.

6 SAWCUT & ASPHALT TRANSITION DETAIL

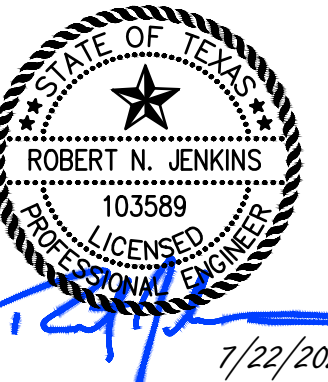
C-09



ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533

SEALS:

SEALS:



CITY OF
NEW BRAUNFELS



BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS			
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STATUS:
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ARCADIS PROJECT NO.:	30193770
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DESIGNED BY:	C.MARTIN
DRAWN BY:	N.CANDELAS
CHECKED BY:	R.JENKINS

SHEET TITLE:

CIVIL

CIVIL
DETAILS

SCALE:
AS SHOWN

DRAWING NO.: C-09

SHEET NO.: 16 OF 25

1

2

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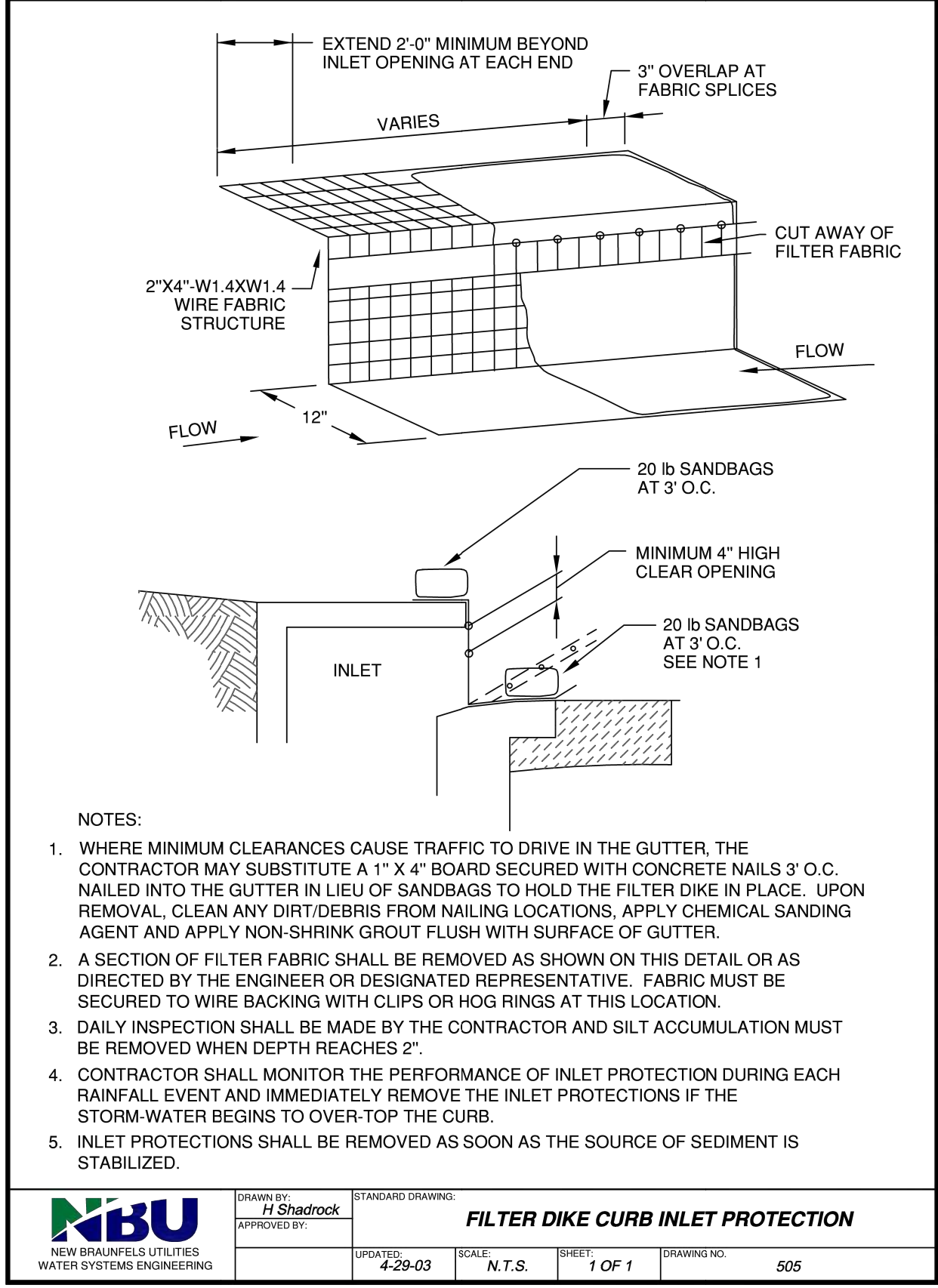
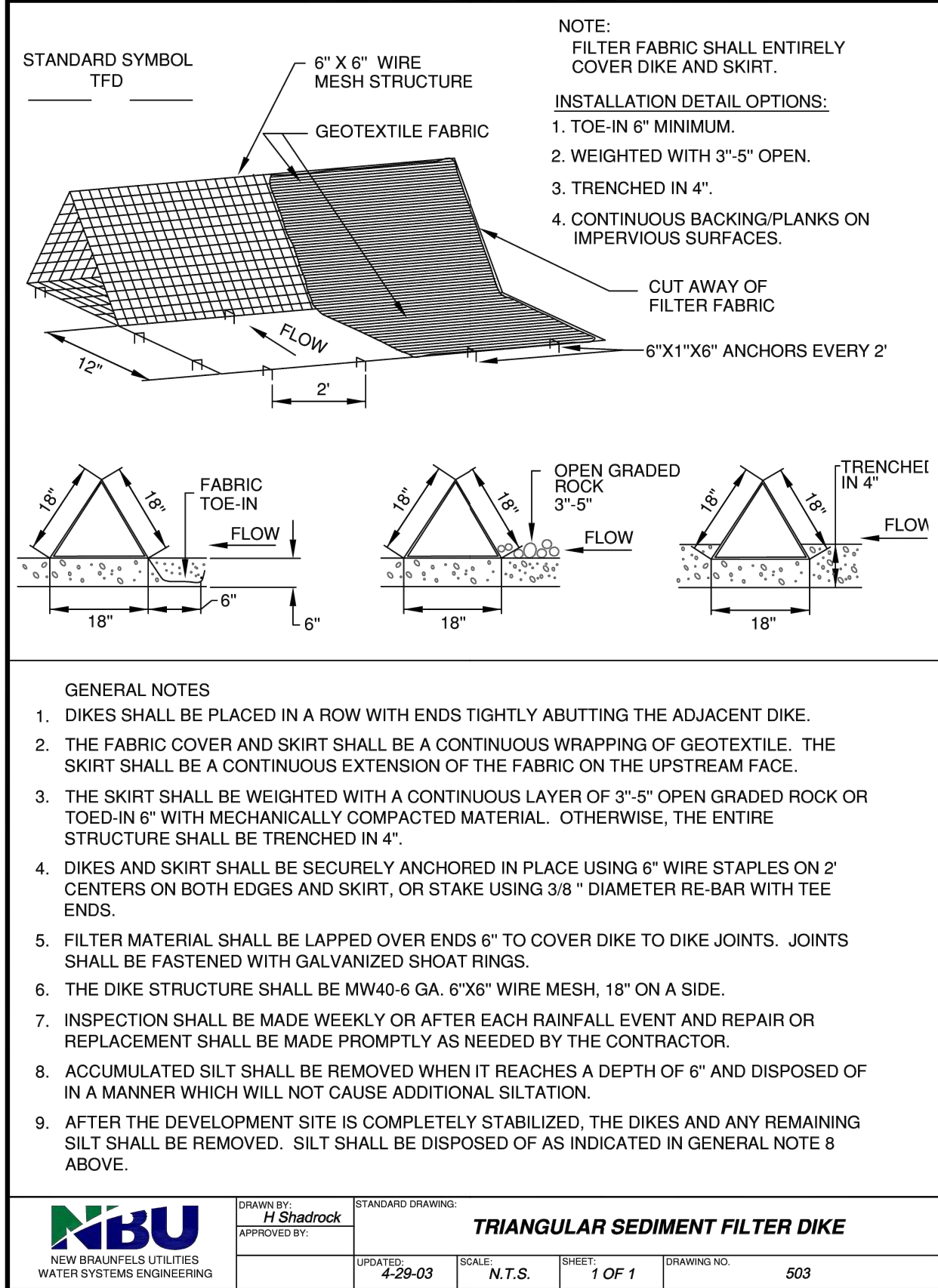
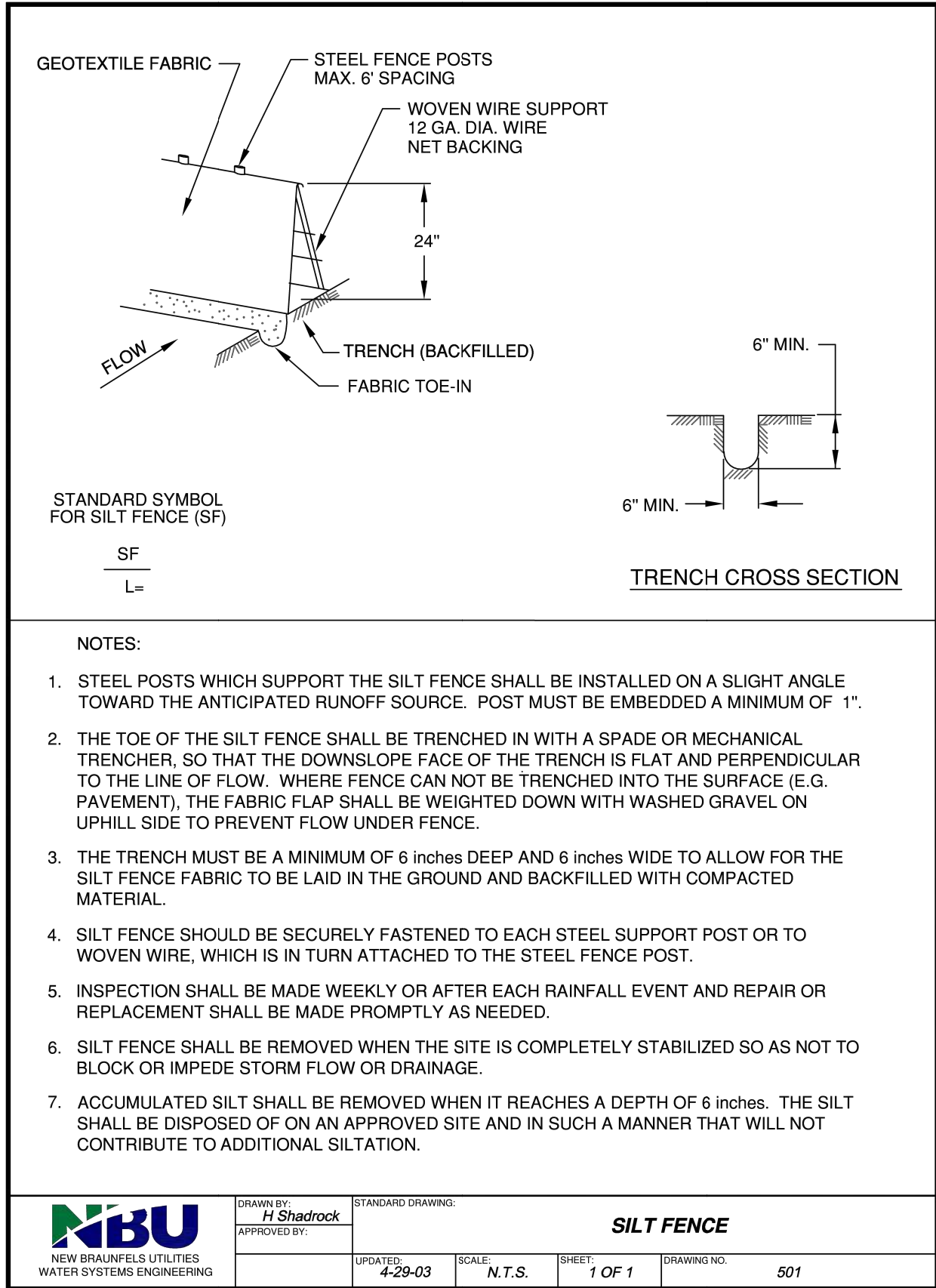
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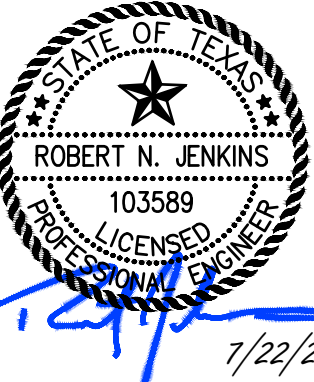
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ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533

SEALS:

SEALS:



CITY OF
NEW BRAUNFELS



TRANSPORTATION & CAPITAL IMPROVEMENTS

BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS			
NO.	DATE	ISSUED FOR	BY

STATUS:
FOR CONSTRUCTION

ARCADIS
PROJECT NO.: 30193770

DATE: JULY 2024

DESIGNED BY: C.MARTIN

DRAWN BY: N.CANDELAS

CHECKED BY: R.JENKINS

SHEET TITLE:
CIVIL

SWPPP DETAILS

SCALE:
AS SHOWN

DRAWING NO.: **C-10**

SHEET NO.: 17 OF 25

CL-DI

CL - CI

CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS
SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE
TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE
STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.

CL - GI

SECTION B-B

SANDBAG DETAIL

SHEET 3 OF 3



Texas Department of Transportation



TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC (9) - 16

FILE: ec916	DN: TXDOT	CK: KM	DN: LS/PT	CK: LS
© TXDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY	SHEET NO.	

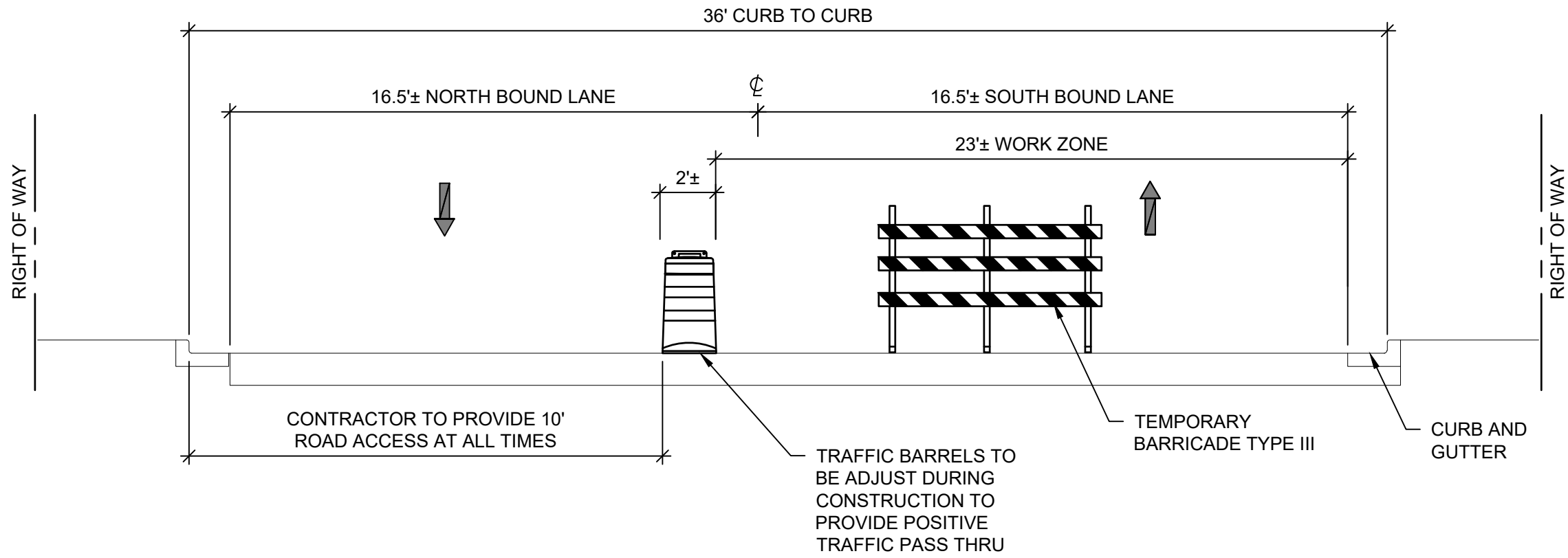
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: _____
FILE: _____



- TCP NOTES:**
1. CONB TCP STANDARDS, TXDOT TCP STANDARDS AND TMUTCD SHALL USED TO ACCOMPLISH THIS WORK OR AS DIRECTED.
 2. SIGN SPACING AND PLACEMENT ARE APPROXIMATELY SHOWN. CONTRACTOR MAY ADJUST PLACEMENT AND SPACING OF SIGNS IN ORDER TO PROVIDE TRAFFIC CONTROL IN THE MOST EFFECTIVE MANNER. CONTRACTOR SHALL ADHERE TO TXDOT AND CONB STANDARDS, IF AND WHENEVER POSSIBLE.
 3. FLAGS ATTACHED TO SIGNS WHERE SHOWN OR NOTED.
 4. THE CW20-1D "UTILITY WORK AHEAD" SIGN MAYBE REPEATED IF VISIBILITY OF THE WORK ZONE IS LESS THAN 1500 FEET.
 5. CONTRACTOR SHALL PROVIDE ACCESS TO RESIDENT'S PROPERTY AT THE END OF EACH WORK DAY.

- RELEVANT SPECIFICATIONS:**
- TXDOT ITEM 502 - BARRICADES, SIGNS, AND TRAFFIC HANDLING
 - TXDOT ITEM 508 - CONSTRUCTION DETOURS
 - TXDOT ITEM 510 - ONE WAY TRAFFIC CONTROL



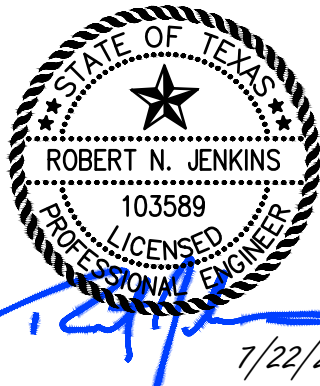
A SECTION
NOT TO SCALE



ARCADIS U.S., INC.
TBPE FIRM REGISTRATION NO.: F-533

SEALS:

SEALS:



CITY OF
NEW BRAUNFELS



BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS			
NO.	DATE	ISSUED FOR	BY

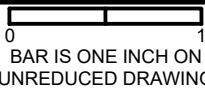
STATUS:
FOR CONSTRUCTION

ARCADIS
PROJECT NO.: 30193770
DATE: JULY 2024
DESIGNED BY: C.MARTIN
DRAWN BY: N.CANDELAS
CHECKED BY: R.JENKINS

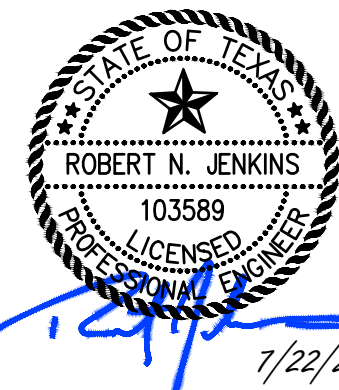
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CIVIL

**TRAFFIC CONTROL
PLAN**

SCALE:
AS SHOWN



DRAWING NO.: **C-12**
SHEET NO.: 19 OF 25



CITY OF
NEW BRAUNFELS



TRANSPORTATION & CAPITAL IMPROVEMENTS

BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS

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ARCADIS
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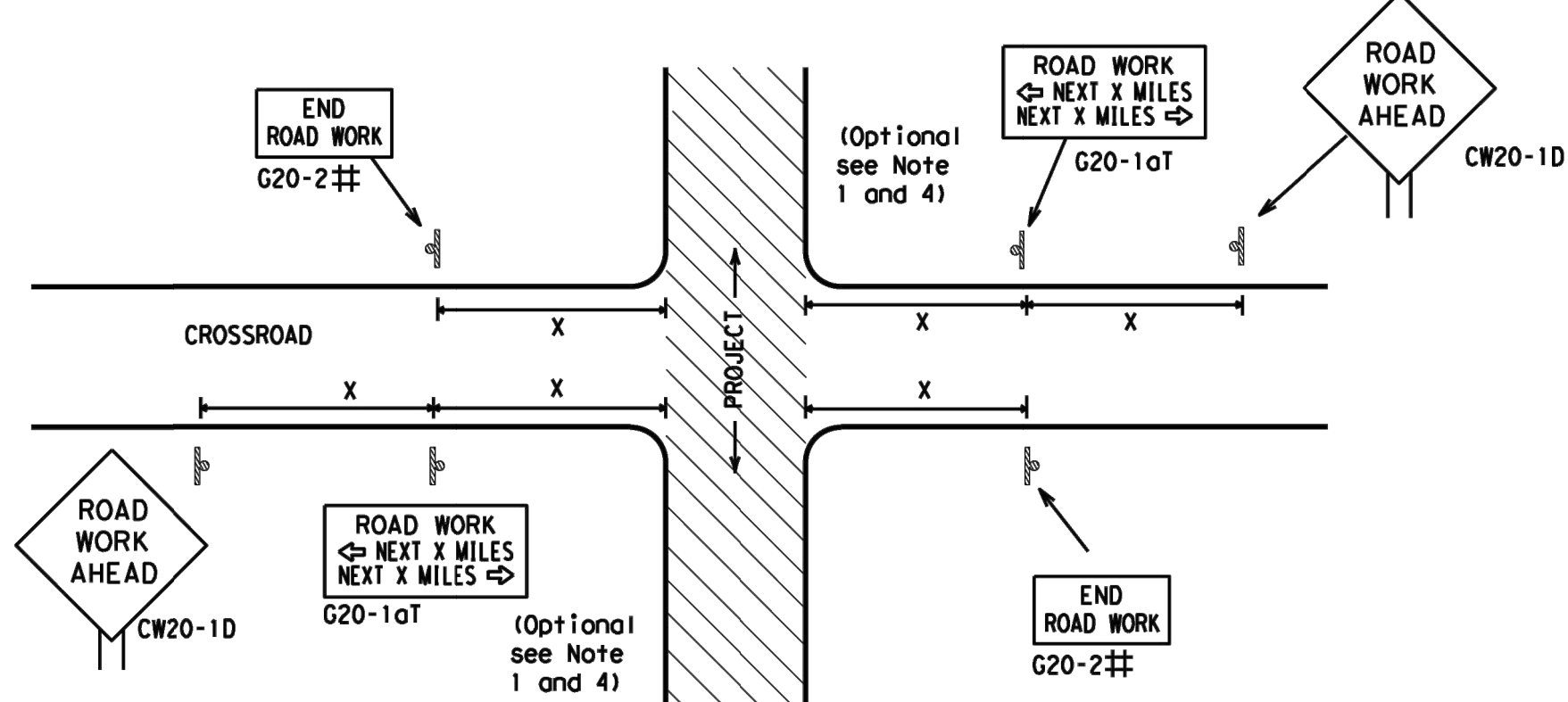
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CIVIL

TRAFFIC CONTROL
DETAILS I

SCALE:
AS SHOWN
BAR IS ONE INCH ON
UNREDUCED DRAWING

DRAWING NO.: C-13
SHEET NO.: 20 OF 25

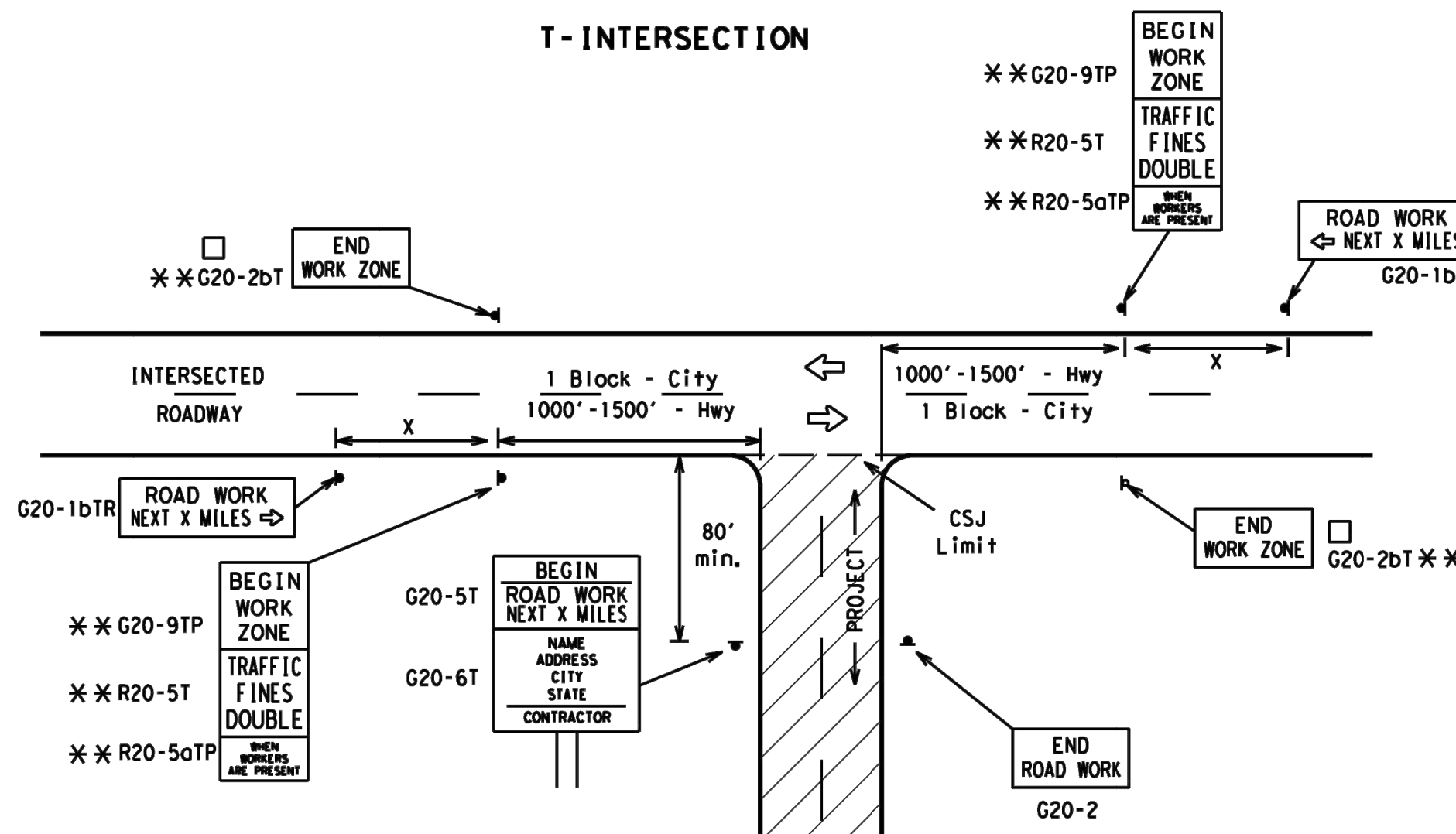
TYPICAL LOCATION OF CROSSROAD SIGNS



May be mounted on back of "ROAD WORK AHEAD" (CW20-1D) sign with approval of Engineer.
(See note 2 below)

- The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D) sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
- The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK" (G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
- Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
- The "ROAD WORK NEXT X MILES" (G20-1aT) sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
- Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
- When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

- The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
- If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME" (G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow (G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR) signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING^{1,5,6}

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/ Freeway	Posted Speed MPH	Sign Δ Spacing "x" (Feet (Apprx.))
CW20 ⁴ , CW21, CW22, CW23, CW25	48" x 48"	48" x 48"	30	120
			35	160
			40	240
			45	320
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	50	400
			55	500 ²
			60	600 ²
			65	700 ²
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	70	800 ²
			75	900 ²
			80	1000 ²
			*	*

* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

Δ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
- Only diamond shaped warning sign sizes are indicated.
- See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

LEGEND

—	Type 3 Barricade
○ ○ ○	Channelizing Devices
+	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

SHEET 2 OF 12



BARRICADE AND CONSTRUCTION PROJECT LIMIT

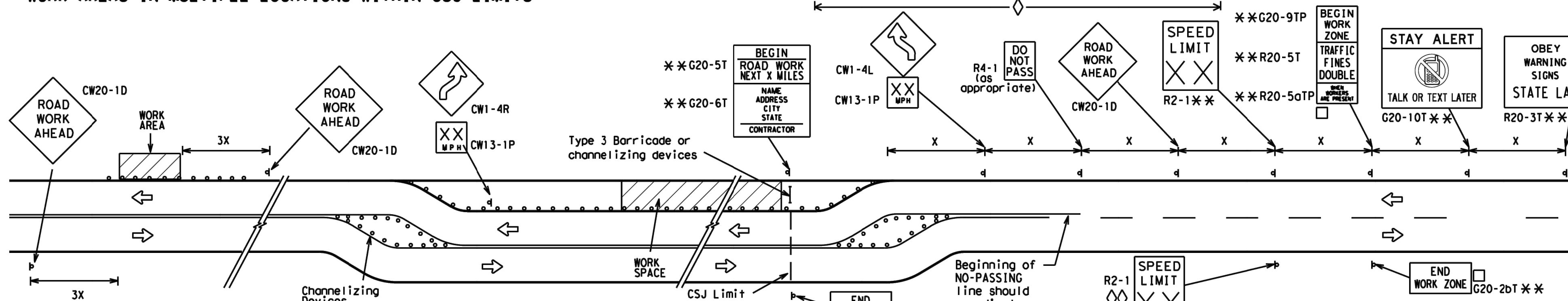
BC (2) -21

FILE: bc-21.dgn	DW: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY	SHEET NO.	
9-07 8-14				
7-13 5-21				

NOTE:

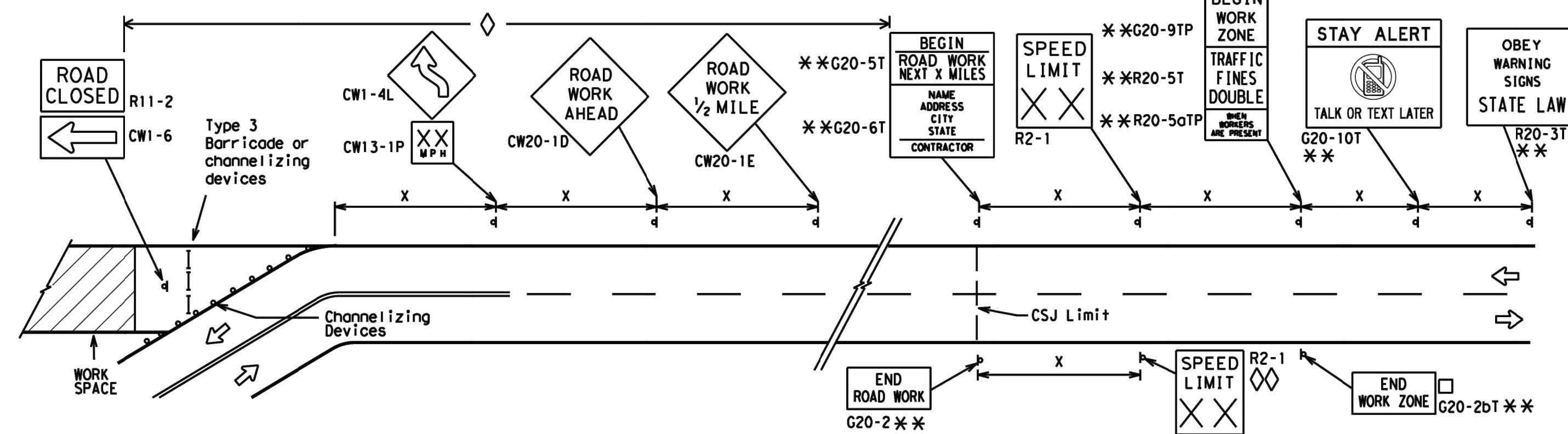
SPECIFICATIONS TO BE FOLLOWED TXDOT
510 (ONE WAY TRAFFIC CONTROL).

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-5T) sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

- The "BEGIN WORK ZONE" (G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

** CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◇ Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign and other signs or devices as called for on the Traffic Control Plan.

◇◇ Contractor will install a regulatory speed limit sign at the end of the work zone.

CITY OF
NEW BRAUNFELS

TRANSPORTATION & CAPITAL IMPROVEMENTS

BERGFELD AVENUE
IN-PIPE STORMWATER
FILTRATION SYSTEM

REVISIONS

NO.	DATE	ISSUED FOR	BY

STATUS:

FOR CONSTRUCTION

ARCADIS

PROJECT NO.: 30193770

DATE:

JULY 2024

DESIGNED BY:

C.MARTIN

DRAWN BY:

N.CANDELAS

CHECKED BY:

R.JENKINS

SHEET TITLE:

CIVIL

TRAFFIC CONTROL
DETAILS II

SCALE:

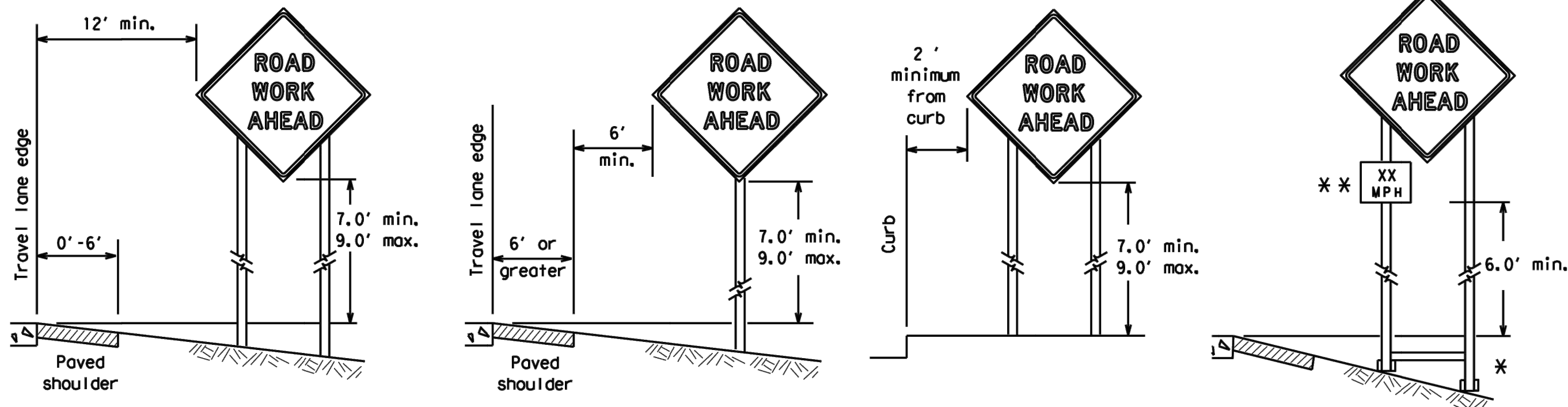
AS SHOWN

BAR IS ONE INCH ON
UNREDUCED DRAWING

DRAWING NO.: C-14

SHEET NO.: 21 OF 25

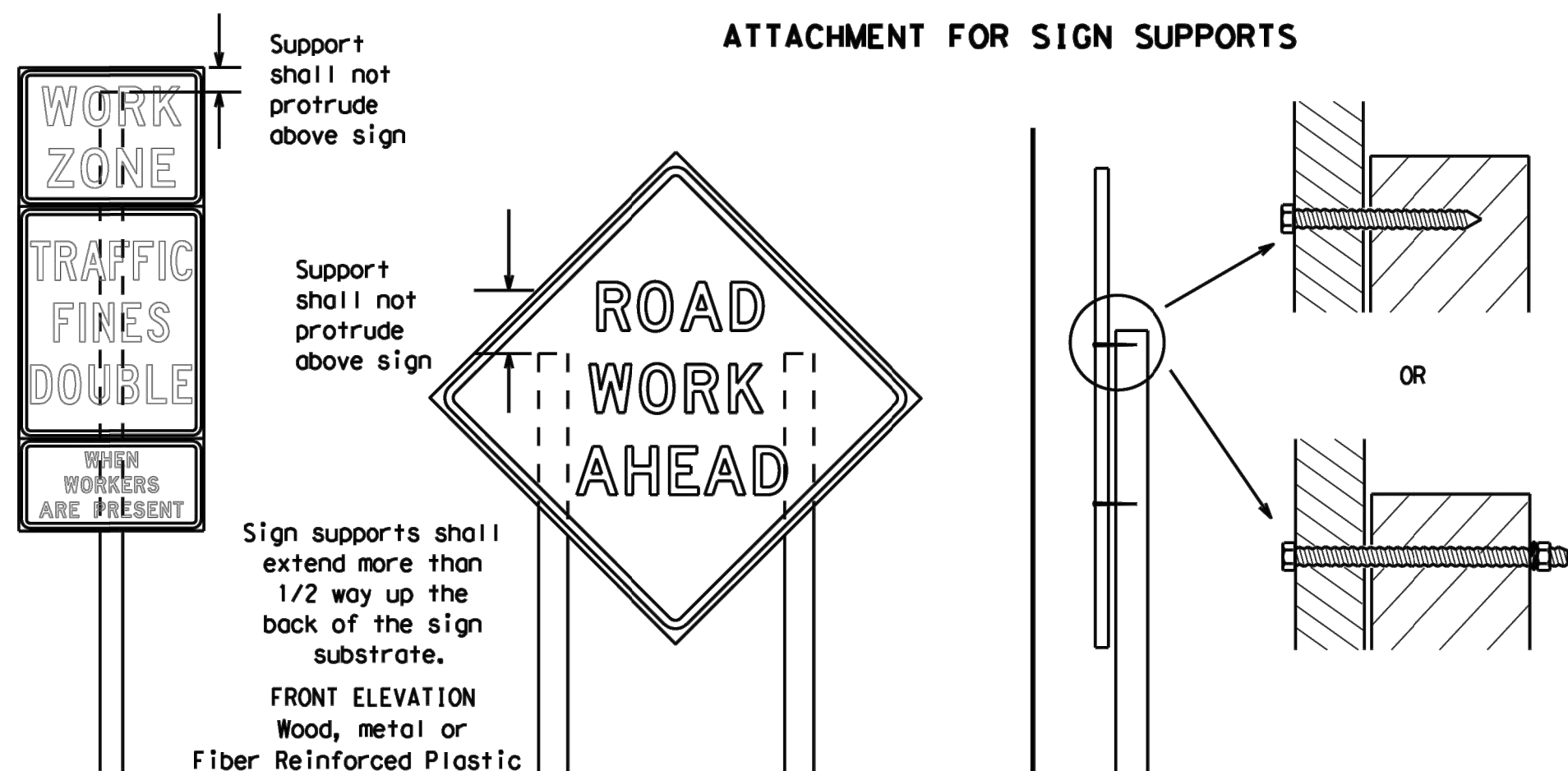
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

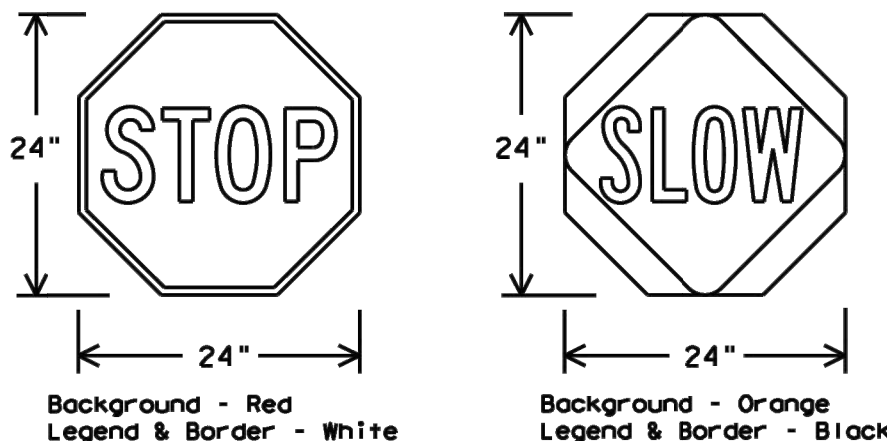
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

SIDE ELEVATION
Wood

STOP/SLOW PADDLES

- STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
- STOP/SLOW paddles shall be retroreflectORIZED when used at night.
- STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
- Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.

Background - Red
Legend & Border - WhiteBackground - Orange
Legend & Border - Black

SHEETING REQUIREMENTS (WHEN USED AT NIGHT)

USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

- Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
- When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
- When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
- If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
- If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRs standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
- Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
- Wooden sign posts shall be painted white.
- Barricades shall NOT be used as sign supports.
- All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
- The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
- The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
- The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
- Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
- The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

- The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
 - Long-term stationary - work that occupies a location more than 3 days.
 - Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
 - Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
 - Short, duration - work that occupies a location up to 1 hour.
 - Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

- The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
- The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
- Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
- Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
- Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

- The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

- The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
- "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
- All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

- All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
- White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
- Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

- All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

- When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
- Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
- Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
- When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
- Burlap shall NOT be used to cover signs.
- Duct tape or other adhesive material shall NOT be affixed to a sign face.
- Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
- Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
- Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
- Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
- Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
- Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

- Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

SHEET 4 OF 12



Texas Department of Transportation



Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION
TEMPORARY SIGN NOTES

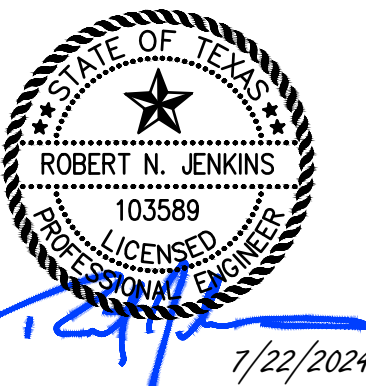
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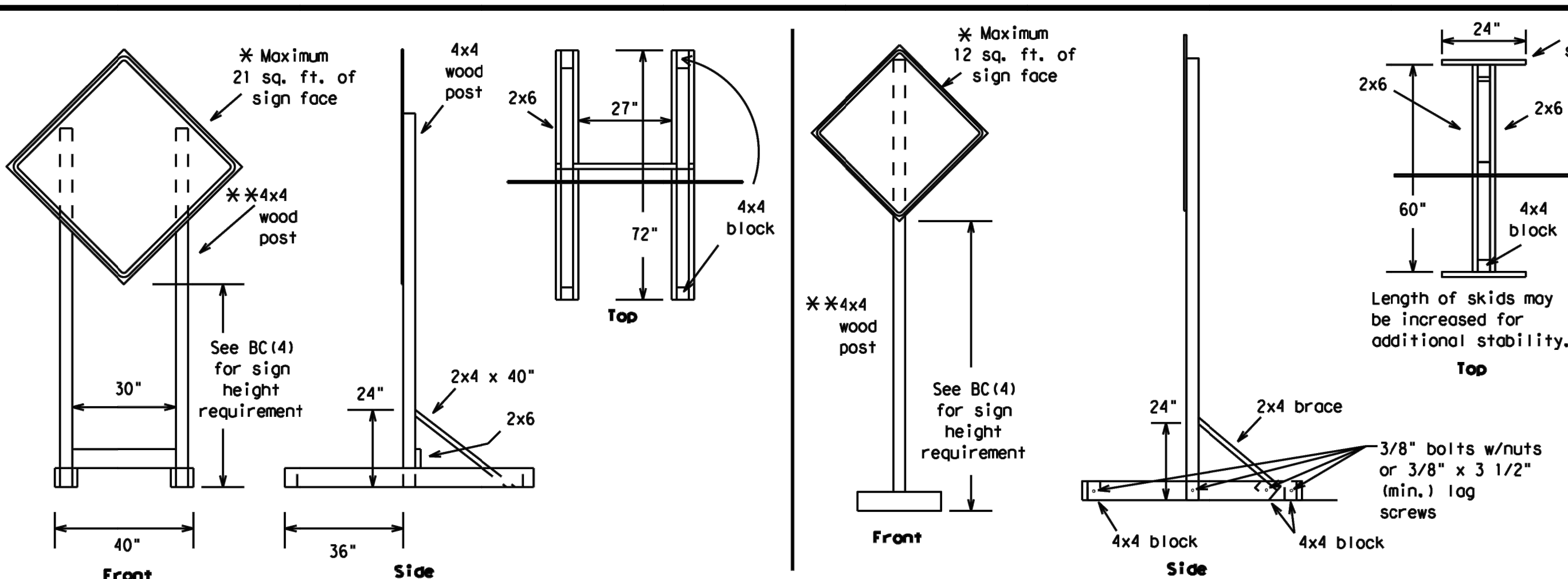
NOTE:

SPECIFICATIONS TO BE FOLLOWED TxDOT
510 (ONE WAY TRAFFIC CONTROL).



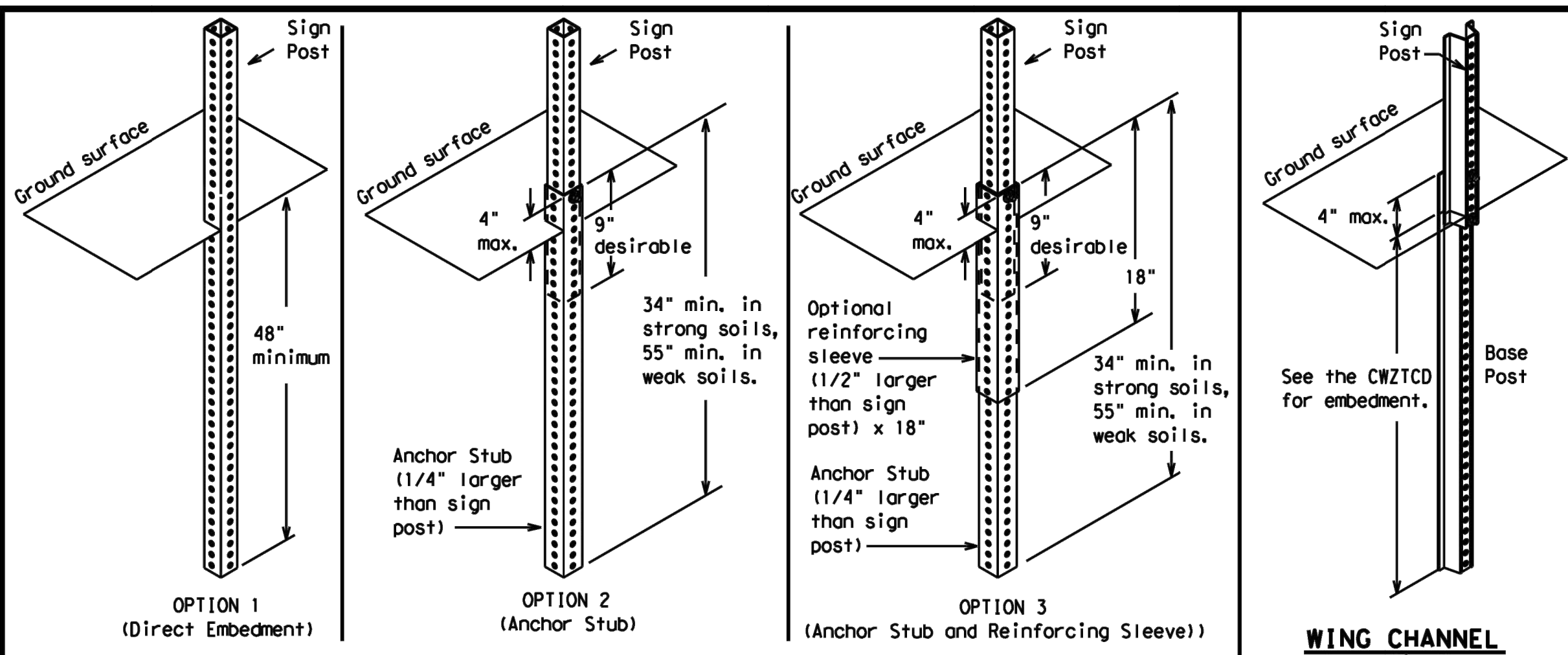
NO.	DATE	ISSUED FOR	BY

ARCADIS PROJECT NO.:	30193770
DATE:	JULY 2024
DESIGNED BY:	C.MARTIN
DRAWN BY:	N.CANDELAS
CHECKED BY:	R.JENKINS



SKID MOUNTED WOOD SIGN SUPPORTS

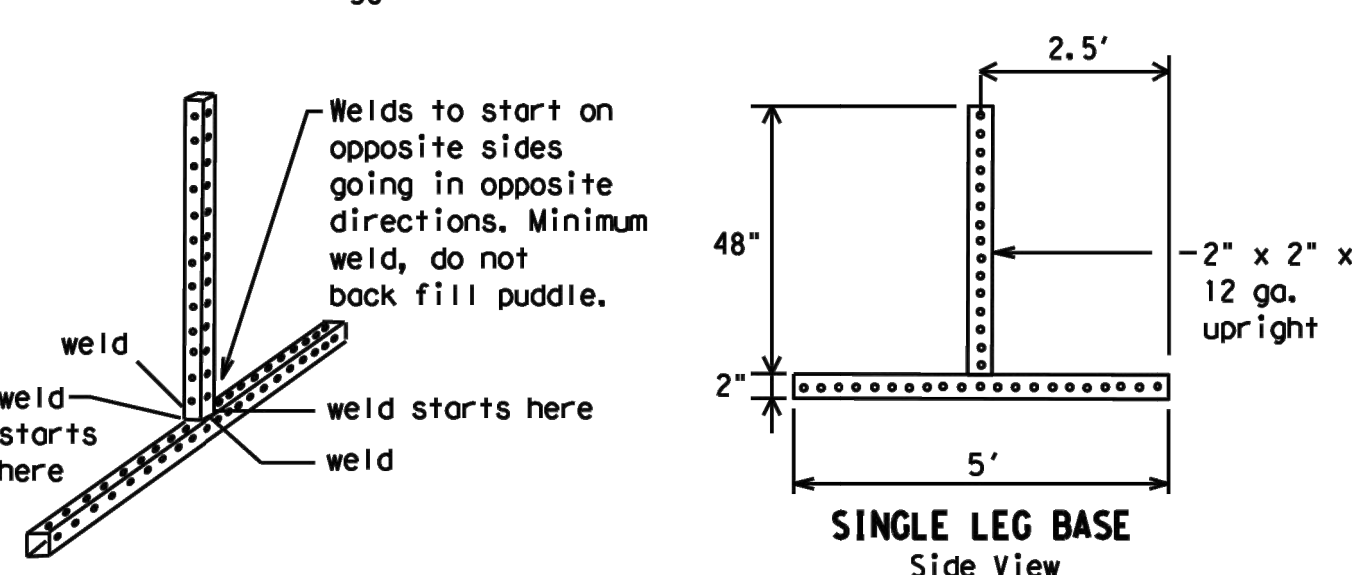
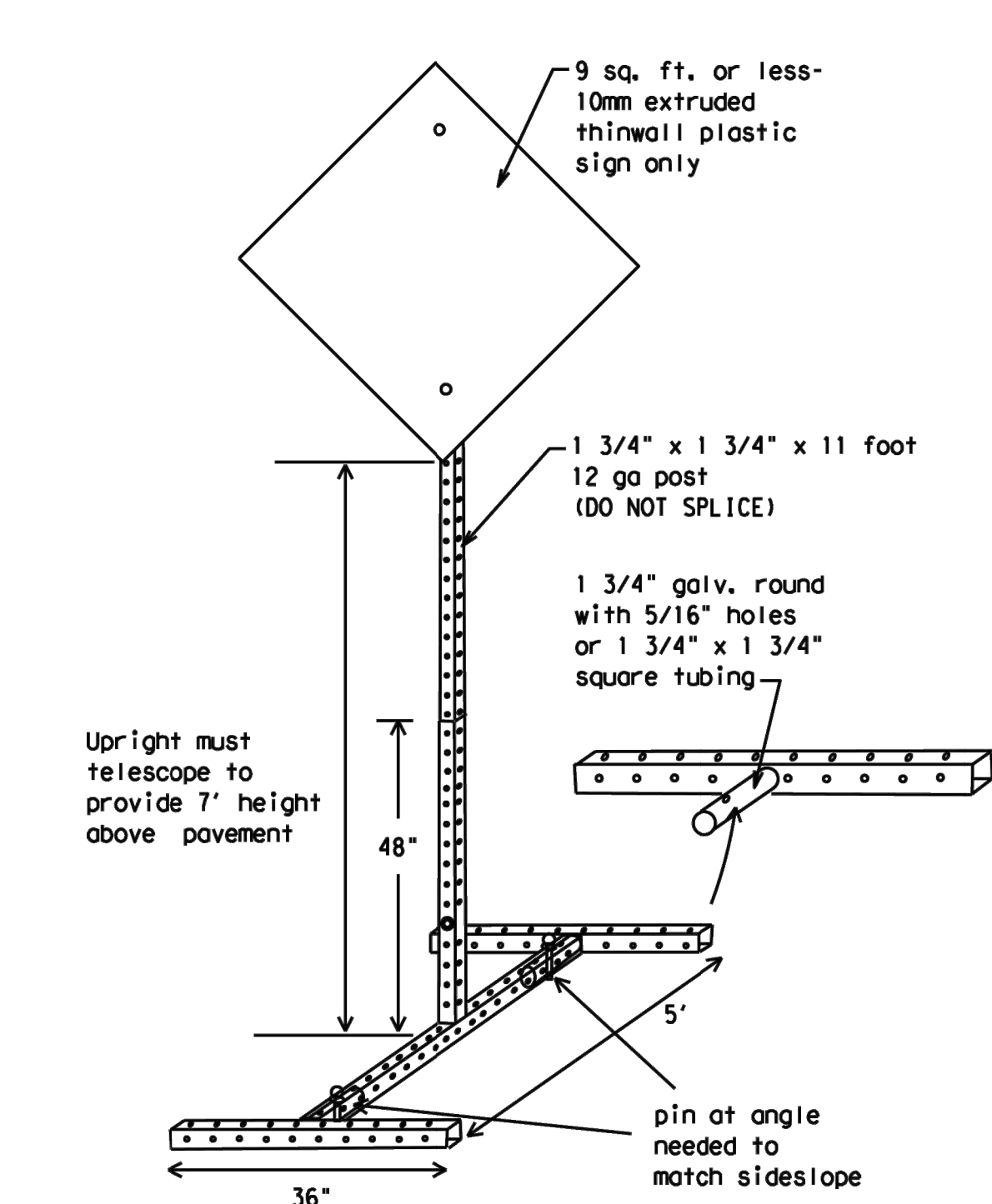
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



PERFORATED SQUARE METAL TUBING

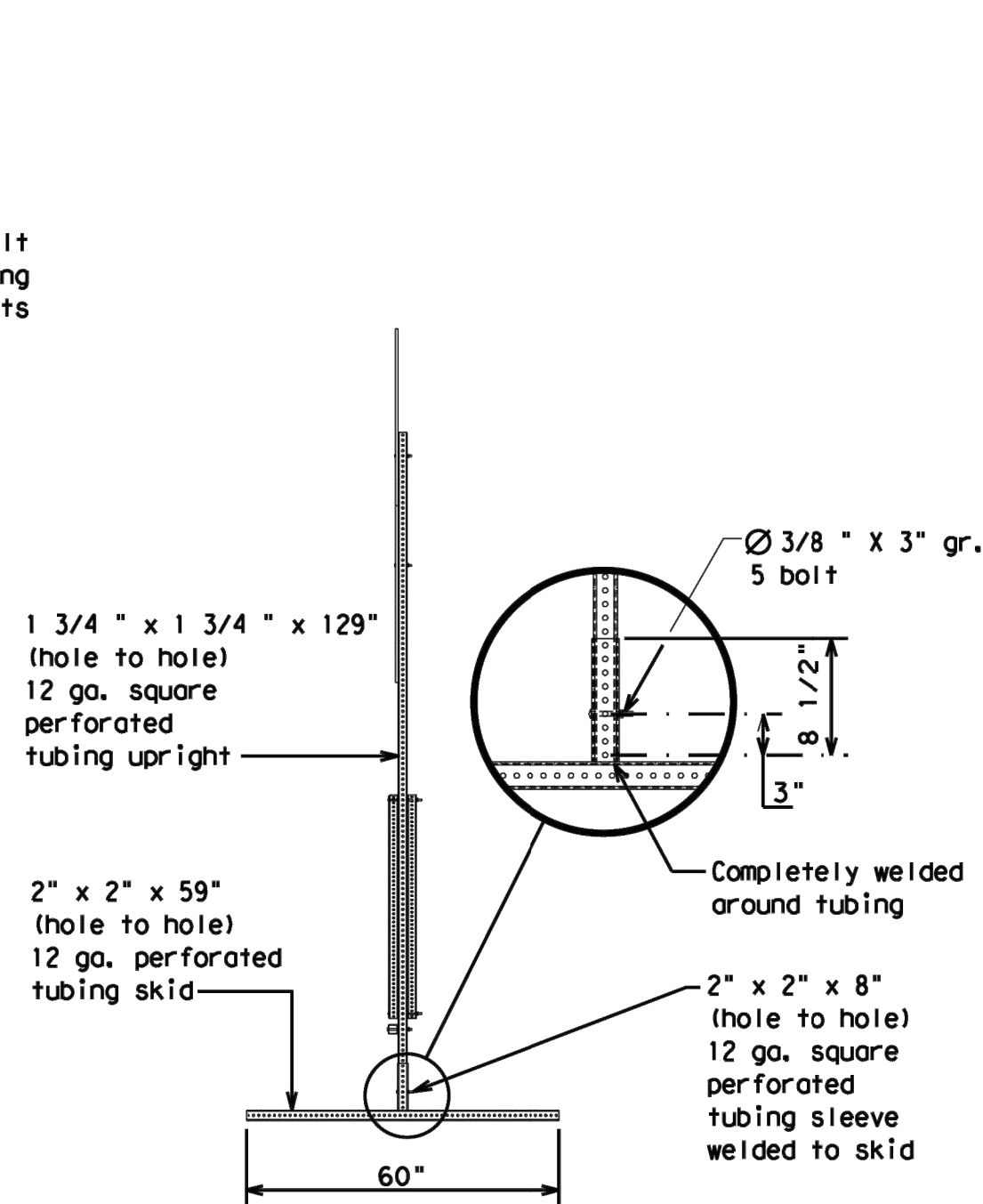
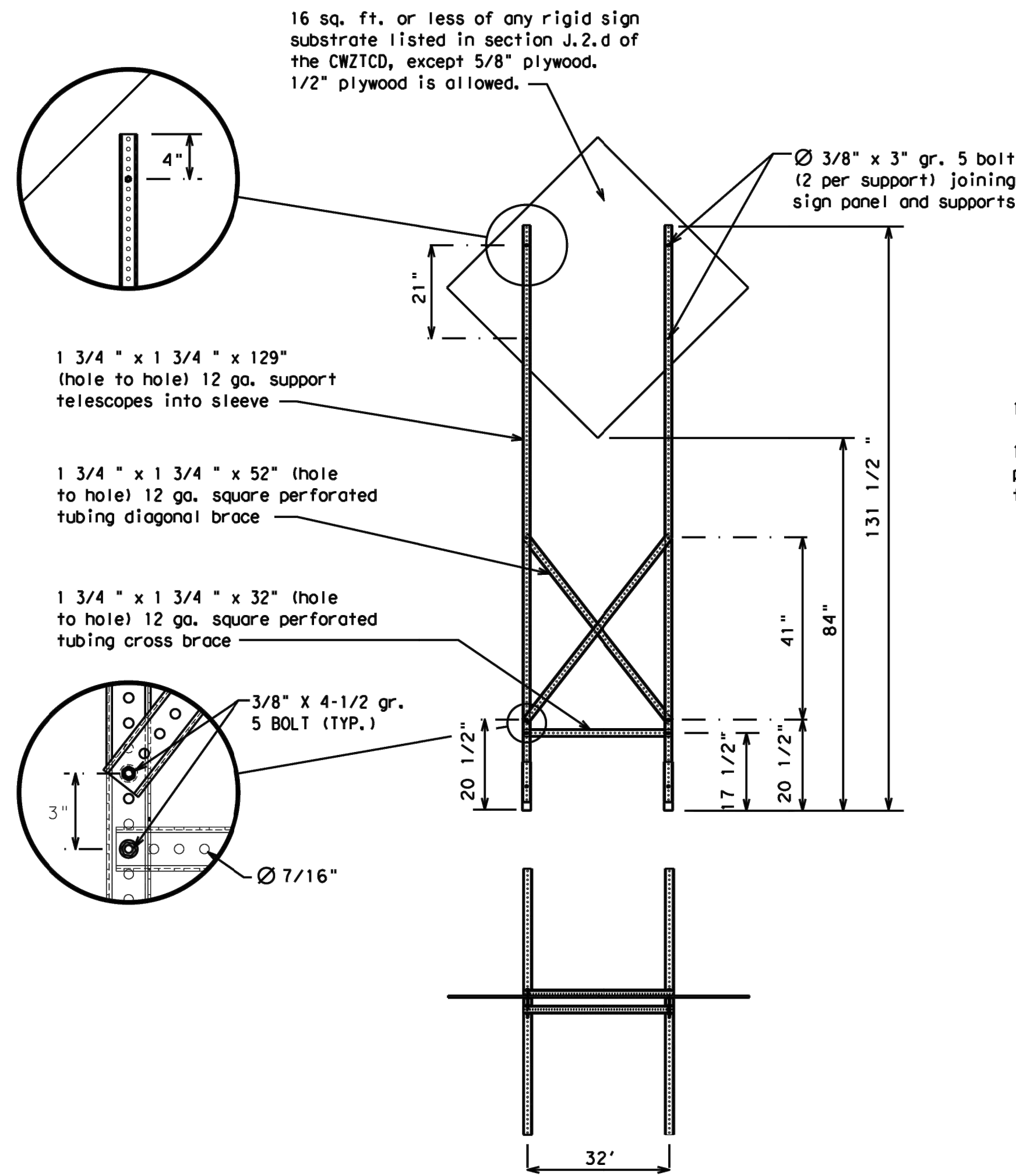
GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support.
The maximum sign square footage shall adhere to the manufacturer's recommendation.
Two post installations can be used for larger signs.



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

* See BC(4) for definition of "Work Duration."

** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

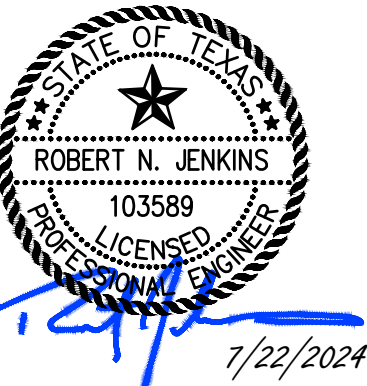
BC (5) - 21

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS									
9-07	8-14								
7-13	5-21								



File: C:\USERS\NCANDELAS\DC\ACCD\DOCS\ARCADIS ACC US\AUS-30076498-NBU-BMP\PROJECT FILES\10_WIP\10T_ARC_CIVIL\C-16 Date: 7/10/2024 8:36 AM Last Saved By: NCANDELAS





REVISIONS			
NO.	DATE	ISSUED FOR	BY

STATUS:
FOR CONSTRUCTION

ARCADIS
PROJECT NO.: 30193770
DATE: JULY 2024
DESIGNED BY: C.MARTIN
DRAWN BY: N.CANDELAS
CHECKED BY: R.JENKINS

SHEET TITLE:
CIVIL

TRAFFIC CONTROL
DETAILS VI

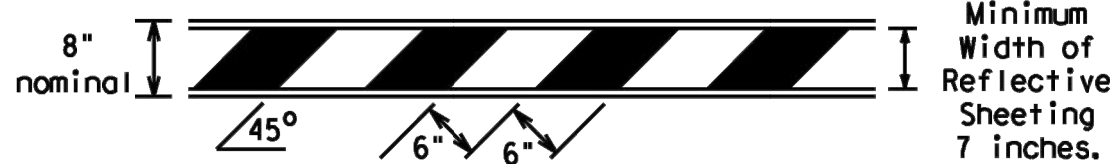
SCALE:
AS SHOWN
1" = 10'

DRAWING NO.: C-18
SHEET NO.: 25 OF 25

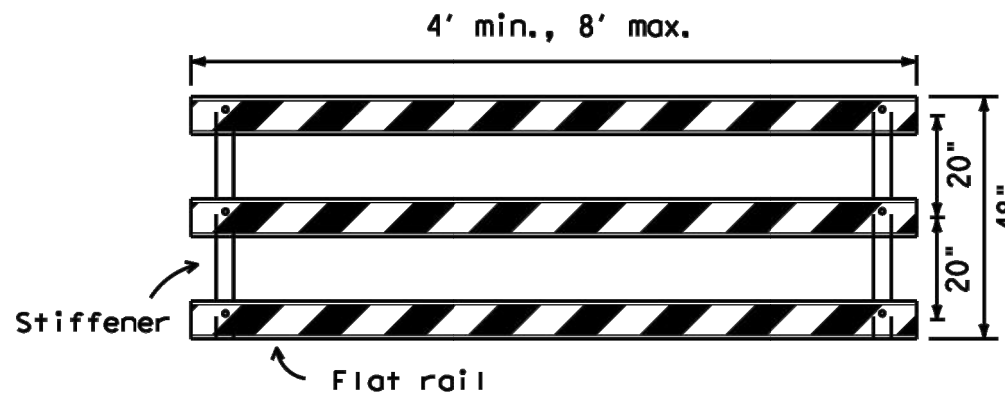
TYPE 3 BARRICADES

- Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
- Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
- Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road, striping should slope downward in both directions toward the center of roadway.
- Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
- Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
- Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
- Warning lights shall NOT be installed on barricades.
- Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
- Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT
be used as a sign support.

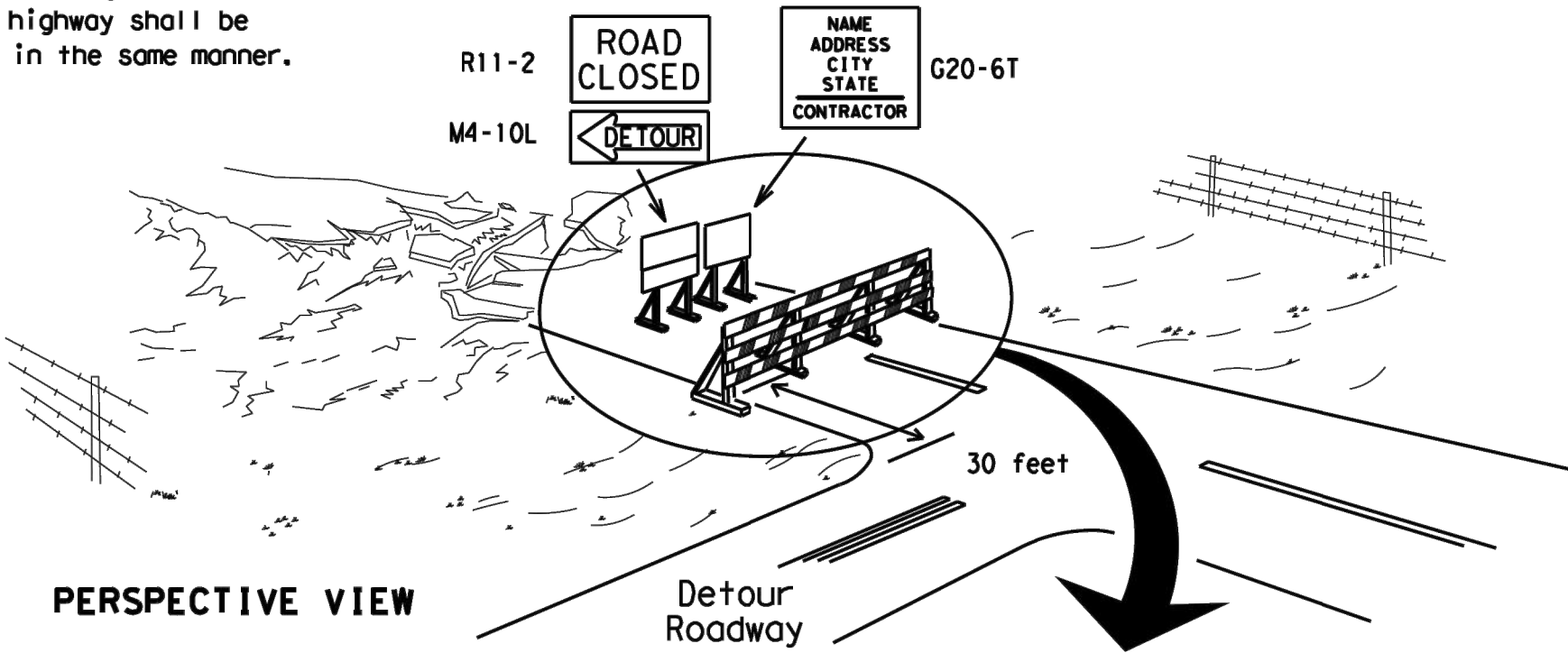


TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



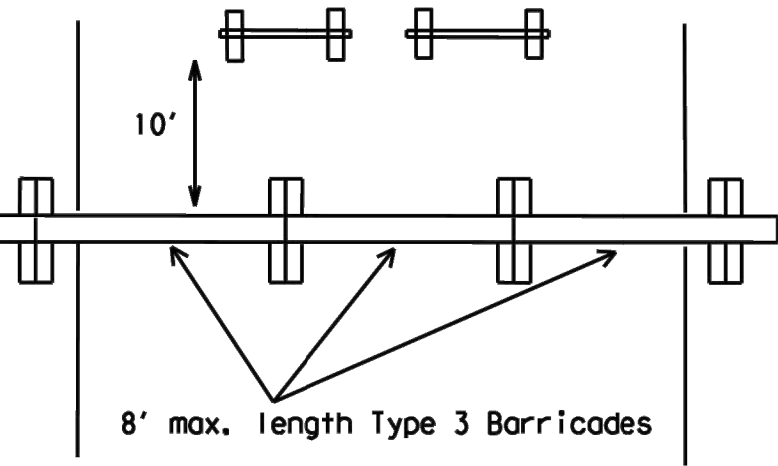
TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

Each roadway of a
divided highway shall be
barricaded in the same manner.



PERSPECTIVE VIEW

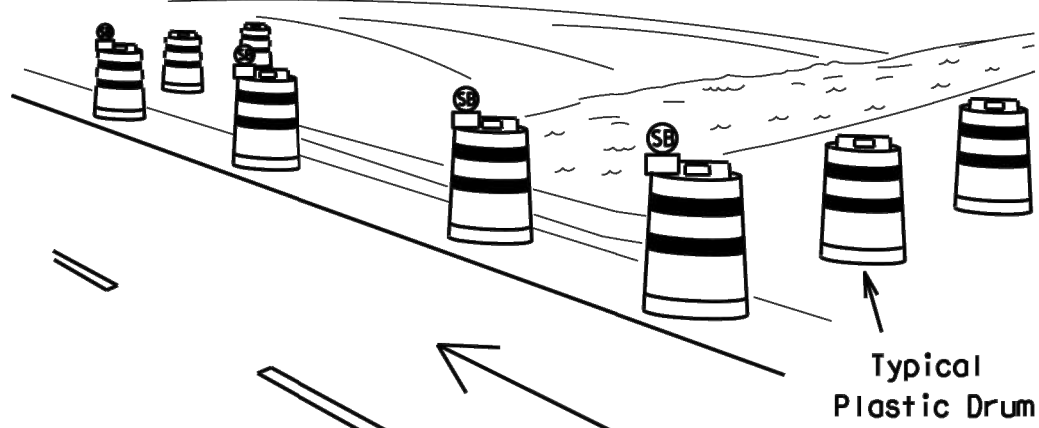
The three rails on Type 3 barricades
shall be reflectorized orange and
reflective white stripes on one side
facing one-way traffic and both sides
for two-way traffic.
Barricade striping should slant
downward in the direction of detour.



PLAN VIEW

- Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
- Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



Typical
Plastic Drum

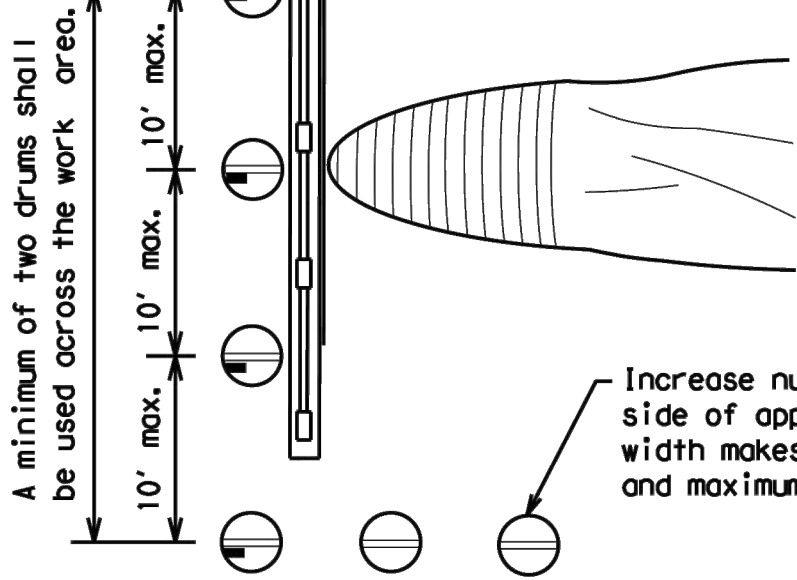
PERSPECTIVE VIEW

These drums
are not required
on one-way roadway

- Where positive redirection capability is provided, drums may be omitted.
- Plastic construction fencing may be used with drums for safety as required in the plans.
- Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
- When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
- Drums must extend the length of the culvert widening.

LEGEND

	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
	Steady burn warning light or yellow warning reflector

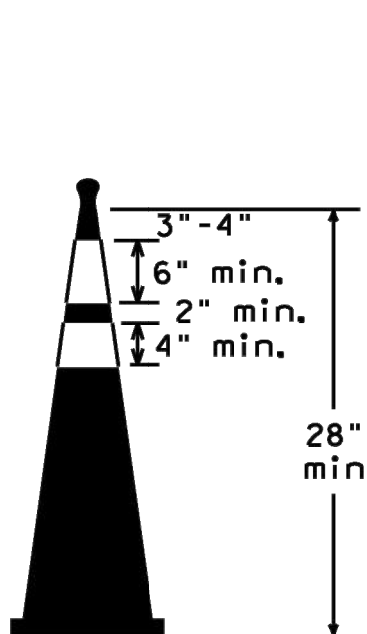


PLAN VIEW

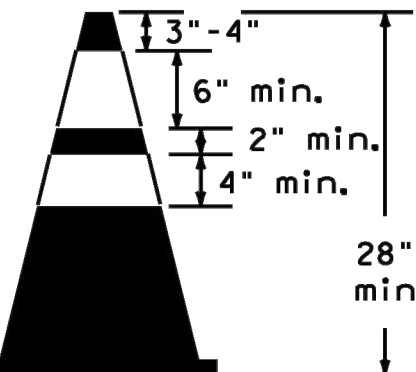
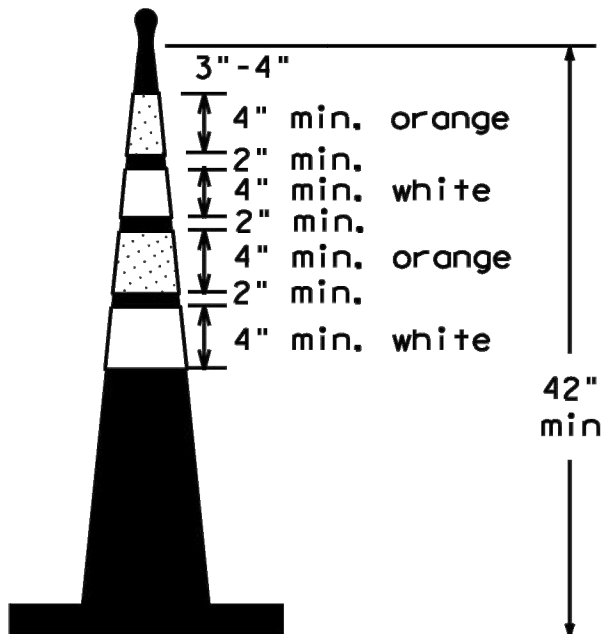
Increase number of plastic drums on the
side of approaching traffic if the crown
width makes it necessary. (minimum of 2
and maximum of 4 drums)

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

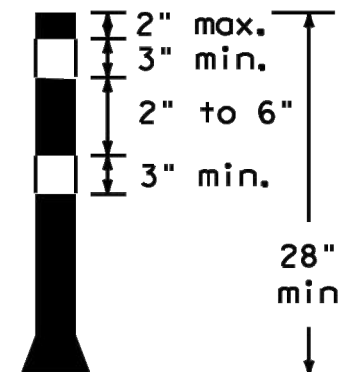
CONES



Two-Piece cones



One-Piece cones



Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.
42" 2-piece cones shall have a minimum weight of
30 lbs. including base.

- Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
- One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
- Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
- Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
- 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
- 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
- Cones or tubular markers used on each project should be of the same size and shape.

SHEET 10 OF 12



BARRICADE AND CONSTRUCTION
CHANNELIZING DEVICES

BC (10) -21

FILE: bc-21.dgn	DNS: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
9-07	8-14			
7-13	5-21			
DIST		COUNTY	SHEET NO.	

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NOTE:

SPECIFICATIONS TO BE FOLLOWED TxDOT
510 (ONE WAY TRAFFIC CONTROL).