



Intro to Construction Utility Drawings, Details and Reports

Introduction

- ▶ Construction drawings are architectural or working drawings used to represent a structure or system.
- ▶ They were traditionally referred to as blueprints, because years ago the lines on a blueprint were white and the background was blue.

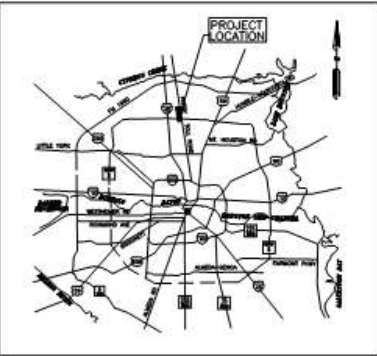
Drawings Organization

- ▶ **General Sheets (Cover Page, Index, Legend & Abbreviation, ect.)**
- ▶ **Civil Plan & Profile Sheets**
- ▶ **Project-Specific Details**
- ▶ **Standard Details**
- ▶ **Traffic Control**
- ▶ **Storm Water Pollution Prevention Plan (SWPPP)**

General Sheets – Cover Sheet

CITY OF HOUSTON HOUSTON PUBLIC WORKS CAPITAL PROJECTS

66-INCH WATER LINE INTERCONNECTION
ALONG W HARDY RD FROM BELTWAY 8
TO GREENS RD
WBS NO. S-000900-0166-4



LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

KEY MAP NO 373P 373T
GIMS MAP NO 5365a 5365c 5365d
COUNCIL DISTRICT B



MAYOR
SYLVESTER TURNER
CONTROLLER
CHRIS BROWN

DISTRICT COUNCIL MEMBERS

BRENDA STARDIG DISTRICT A	JERRY DAVIS DISTRICT B	ELLEN R. COHEN DISTRICT C	DWIGHT A. BOYKINS DISTRICT D
DAVE MARTIN DISTRICT E	STEVE LE DISTRICT F	GREG TRAVIS DISTRICT G	KARLA CISNEROS DISTRICT H
ROBERT GALLEGOS DISTRICT I	MIKE LASTER DISTRICT J	LARRY V. GREEN DISTRICT K	

COUNCIL MEMBERS AT-LARGE

MIKE KNOX POSITION 1	DAVID W. ROBINSON POSITION 2
MICHAEL KUBOSH POSITION 3	AMANDA EDWARDS POSITION 4
JACK CHRISTIE POSITION 5	

NOTIFY CITY OF HOUSTON 48 HOURS
BEFORE STARTING CONSTRUCTION

CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY
AN HCFCO RIGHT-OF-WAY NOTIFICATION (PERMIT) AND HCFCO 48-HR
PRE-CONSTRUCTION NOTICE ARE REQUIRED PRIOR TO ENTERING OR WORKING WITHIN
HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. BOTH THE HCFCO
RIGHT-OF-WAY NOTIFICATION AND 48-HOUR NOTICE MUST BE PROVIDED TO HCFCO
AT dcis@hcfcd.org. SITE PLANS MUST BE APPROVED PRIOR TO OBTAINING THE
REQUIRED HCFCO RIGHT-OF-WAY NOTIFICATION. BE ADVISED THAT THE HCFCO
RIGHT-OF-WAY NOTIFICATION IS SEPARATE FROM THE SITE DEVELOPMENT PERMIT
PACKAGE. FOR ADDITIONAL INFORMATION, PLEASE VISIT **
https://hcfcd.org/permits/docs/ROWS_notification_for_row_const_app.pdf ** OR
CONTACT THE PUBLIC REVIEW INSPECTIONS DEPARTMENT @ (713-956-3033)



12941 North Freeway, Suite 500
Houston, TX 77060
Tel: (281) 453-7700
www.auroratechservices.com

SURVEYED BY: AMANI ENGINEERING, INC.
C.O.H. FIELD BOOK P-6044

INTERIM REVIEW ONLY

Document description not intended for
regulatory approval, permit, or construction.
RAFAEL ORTEGA
60253
AURORA TECHNICAL SERVICES, LLC
E-2059
4/19/2018

Parks-Forestry Dept.

Metro

Houston Water

Transportation & Drainage Operations

Capital Projects

Survey

CITY ENGINEER DATE

DIRECTOR OF HOUSTON PUBLIC WORKS DATE

SHEET NO 1 OF 178 SHEETS

TDLR EABPR

PRE-90% SUBMITTAL

- ▶ Client Name, Project Name, Project Number
- ▶ Location & Vicinity Maps
- ▶ Titleblock

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SWTP
Sustainable Water Treatment Plant

Aurora Technical Services, LLC
12811 North Freeway, Suite 300
Houston, TX 77060
Tel: (281) 481-1700

INTERMEDIATE
DATE: 11/11/2014
TIME: 2:10

DESIGNED BY:
ANAM ENGINEERING, INC.
C.O.R. FIELD BOOK P-5044

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-INCH WATER LINE ALONG W. HARDY
FROM IWB TO GREENS RD.

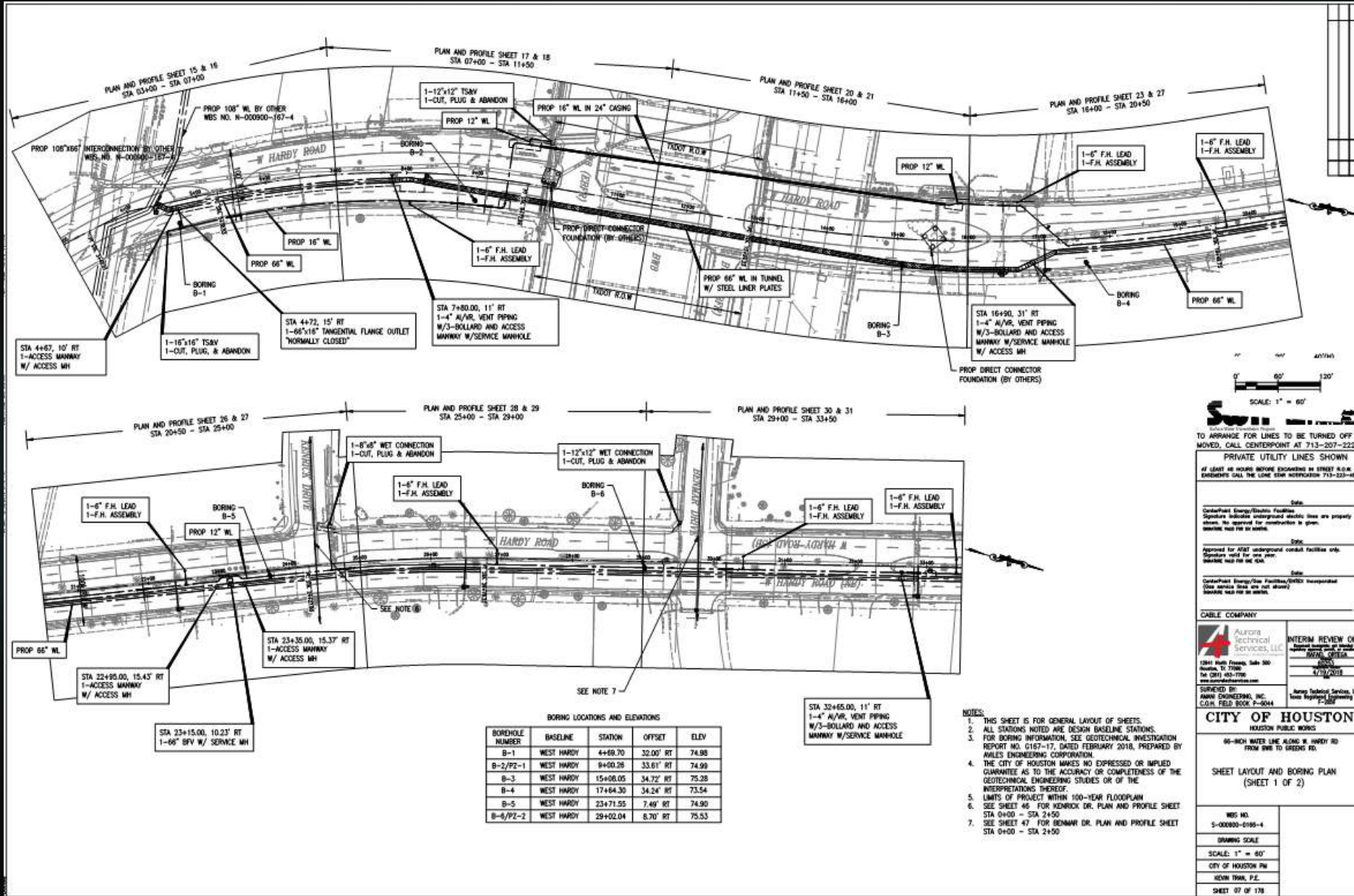
INDEX OF DRAWINGS

ISS NO:
S-00090-0160-4

DRAWING SCALE

- ▶ Sheet Names and Numbering
- ▶ Overall Organization of Project

General Sheets – Sheet Layout



- ▶ Overview of Project Plans
- ▶ Key Labels

Scale: 1" = 60'

DATE: 4/17/2019

PROJECT: 96-INCH WATER LINE ALONG W. HARDY RD FROM 8th TO GREENS RD.

INTERIM REVIEW ONLY

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHEET LAYOUT AND BORING PLAN
(SHEET 1 OF 2)

WBS NO: S-00000-0166-4

DRAWING SCALE: SCALE: 1" = 60'

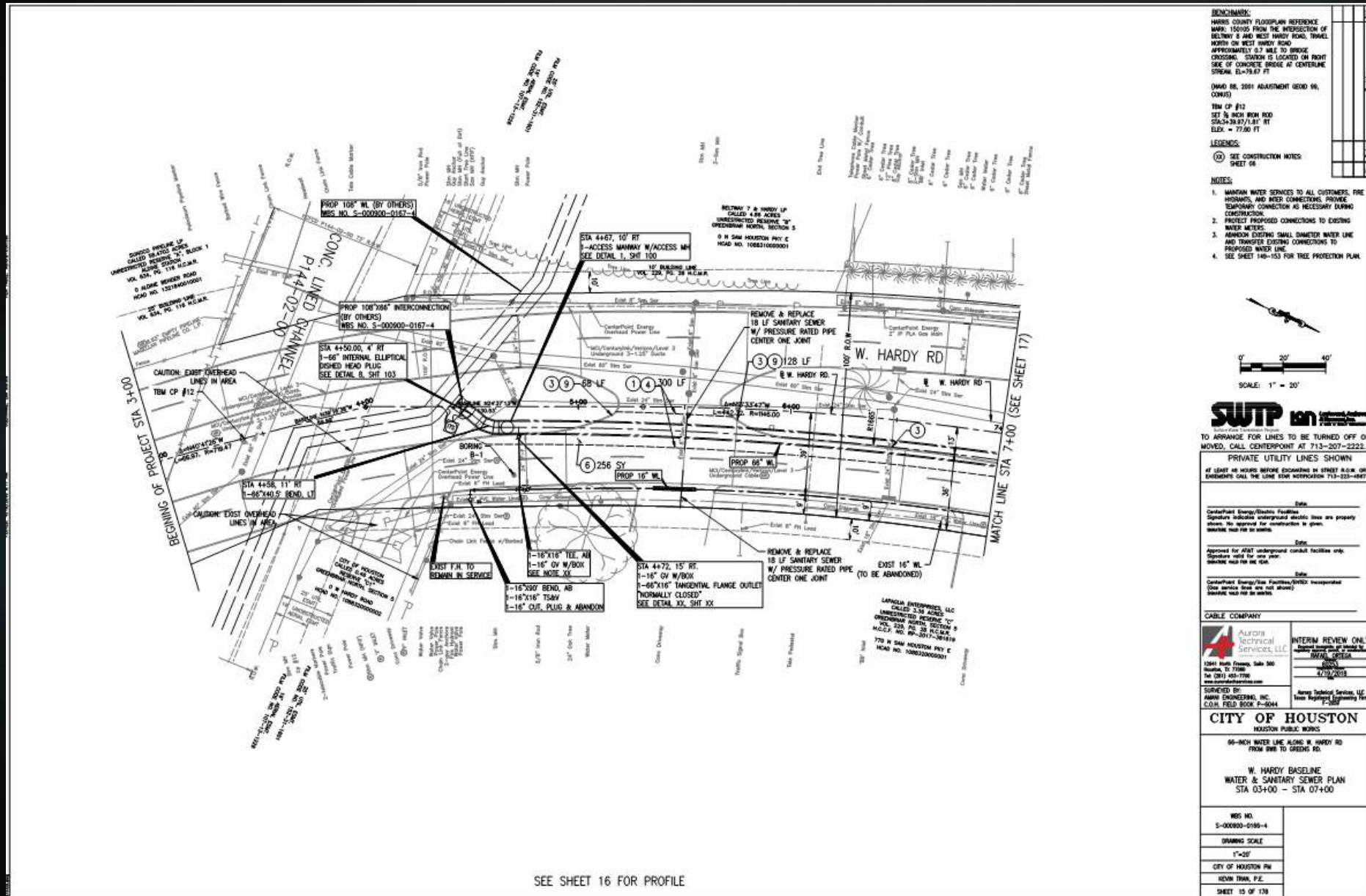
CITY OF HOUSTON PW
KEVIN TRAM, P.E.

SHEET 07 OF 178

General Sheets – Others

- ▶ General Construction Notes
- ▶ Utility Notes
- ▶ Survey Control Files
- ▶ Flood Plain Mitigation Plan

Plan & Profile – Key Parts



SEE SHEET 16 FOR PROFILE

BENCHMARK:
 HARRIS COUNTY FLOODPLAIN REFERENCE MARK: 150105 FROM THE INTERSECTION OF W. HARDY & WEST HARDY ROAD, TRAVEL NORTH ON WEST HARDY ROAD APPROXIMATELY 0.7 MILE TO BRIDGE CROSSING. STATION IS LOCATED ON RIGHT SIDE OF CONCRETE BRIDGE AT CENTERLINE STREAM EL=79.67 FT.

(DAMD 08, 2004 ADJUSTMENT GEOID 96, CONVD)

TM CP #12
 SET 1/2 INCH IRON ROD
 STAC+38.92/1.81 FT
 ELCK = 77.00 FT

LEGEND:
 (X) SEE CONSTRUCTION NOTES SHEET 06

NOTES:

1. MAINTAIN WATER SERVICES TO ALL CUSTOMERS, FIRE HOUSINGS, AND WRECK CONNECTIONS. PROVIDE TEMPORARY CONNECTION AS NECESSARY DURING CONSTRUCTION.
2. PROTECT PROPOSED CONNECTIONS TO EXISTING WATER METERS.
3. AMMOVIC EXISTING SMALL DIAMETER WATER LINE AND TRANSFER EXISTING CONNECTIONS TO PROPOSED WATER LINE.
4. SEE SHEET 140-153 FOR TREE PROTECTION PLAN.

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222.

PRIVATE UTILITY LINES SHOWN
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET ALONG OR ADJACENT CALL THE LINE STAY CORPORATION 713-233-1067.

CENTERPOINT ENERGY/PLUMBING FACILITIES
 Symbols indicate underground electric lines are properly shown. No approval for construction is given. Symbols not for in notes.

AT&T
 Approved for AT&T underground conduit facilities only. Symbols valid for one year. Symbols not for in notes.

CENTERPOINT ENERGY/PLUMBING FACILITIES (NEW INSTALLATION)
 (See symbols sheet and not shown) Symbols not for in notes.

CABLE COMPANY

Aurora Technical Services, LLC
 12441 North Frisco, Suite 500
 Houston, TX 77060
 Tel: (281) 483-1798
 www.auroratech.com

INTERIM REVIEW ONLY
 Project Number: 15-00000-0189-4
 SHEET: 0189-4
 DATE: 2/19/2025

SURVEYED BY:
 AMMO ENGINEERING, INC.
 COLIN FIELD SCOP 2-0244

CITY OF HOUSTON
 HOUSTON PUBLIC WORKS

66-INCH WATER LINE ALONG W. HARDY RD FROM SHR TO GREENS RD.

W. HARDY BASELINE WATER & SANITARY SEWER PLAN
 STA 03+00 – STA 07+00

WRS NO.
 S-00000-0189-4

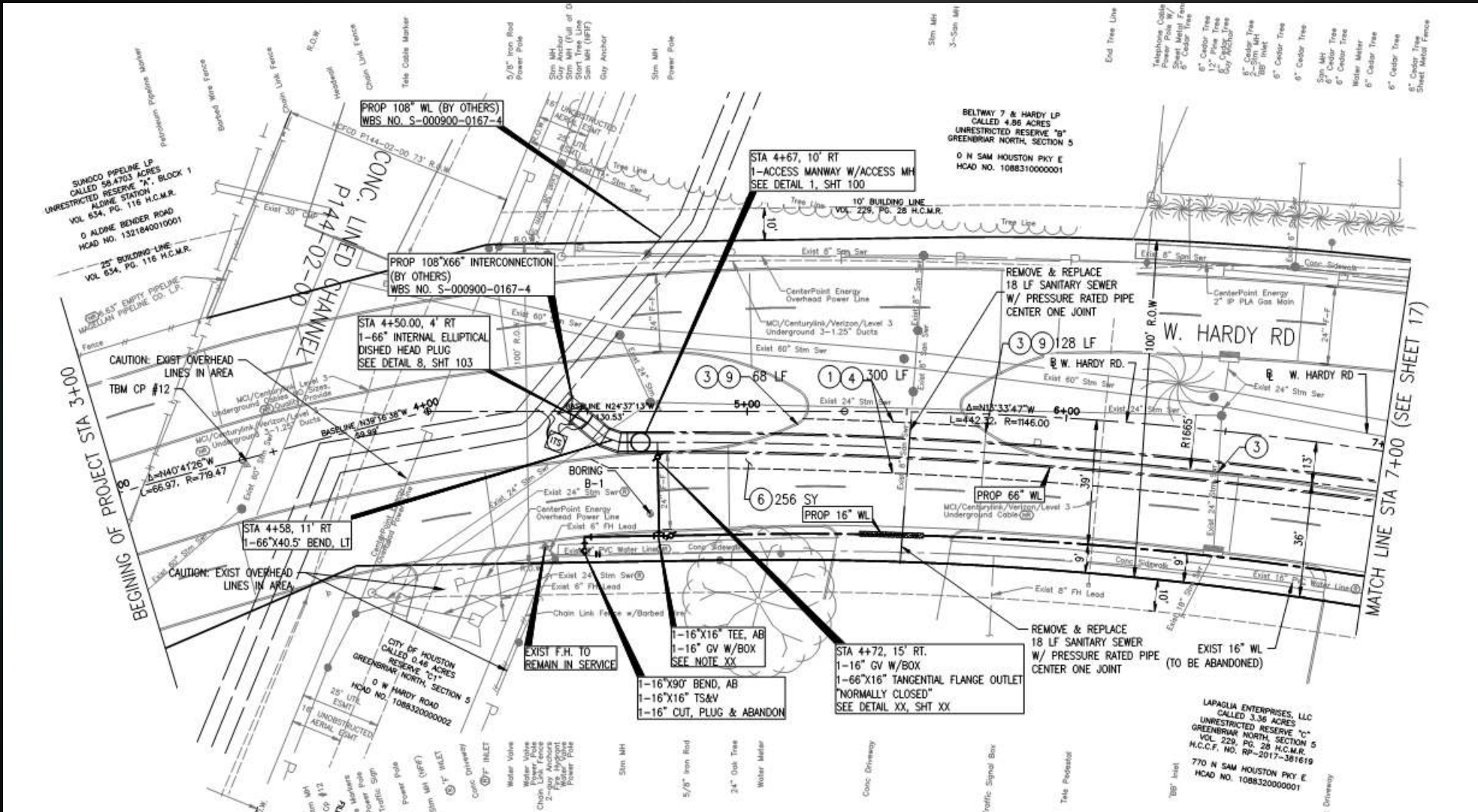
DRAWING SCALE
 1"=20'

CITY OF HOUSTON PW
 KEVIN TRAY, P.E.

SHEET 15 OF 170

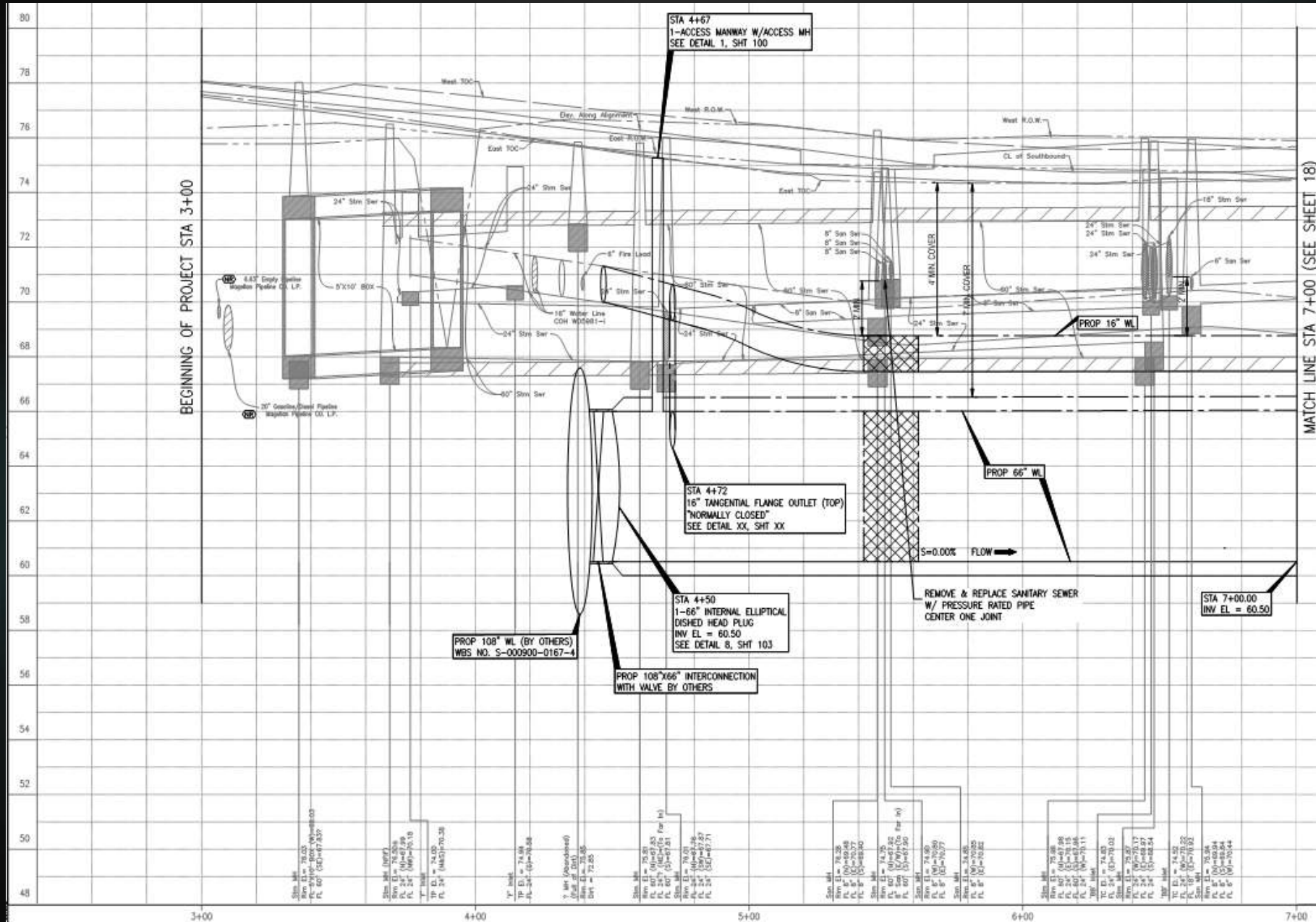
- ▶ Title block
- ▶ Benchmark
- ▶ Notes & Legend
- ▶ Scale & North Arrow
- ▶ Revision block

Plan & Profile – How to Read Plans



- ▶ Existing vs Proposed
- ▶ Baseline
- ▶ Call-outs
- ▶ Linework
- ▶ Survey Labels
- ▶ Matchlines

Plan & Profile – How to Read Profiles



- ▶ Existing vs Proposed
- ▶ Elevation & Grid
- ▶ Call-outs
- ▶ Linework
- ▶ Survey Labels
- ▶ Matchlines

Plan & Profile – General Organization

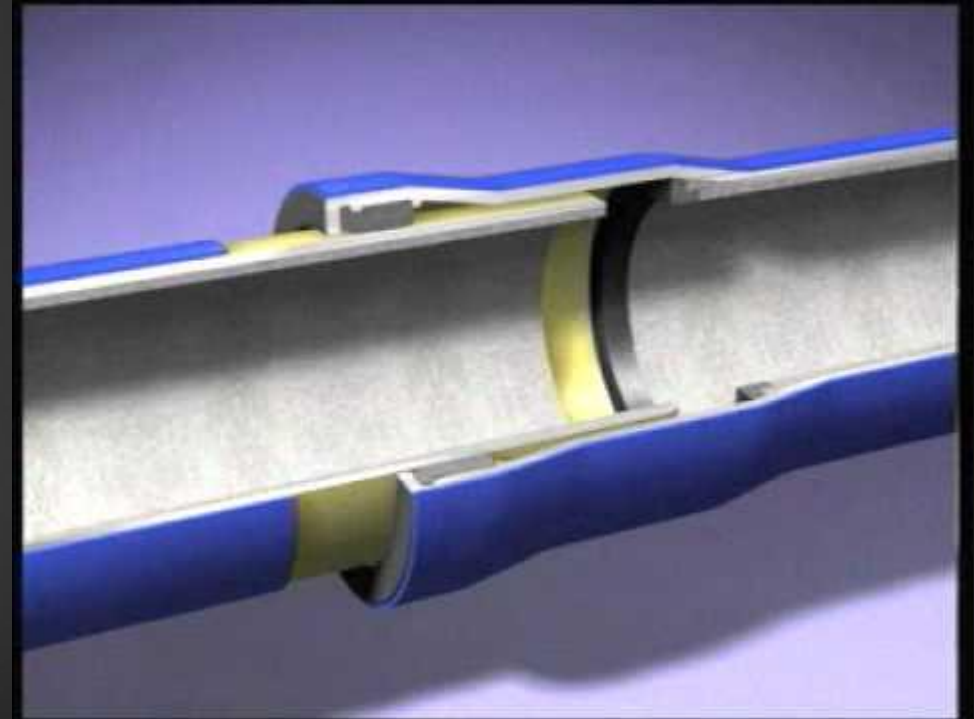
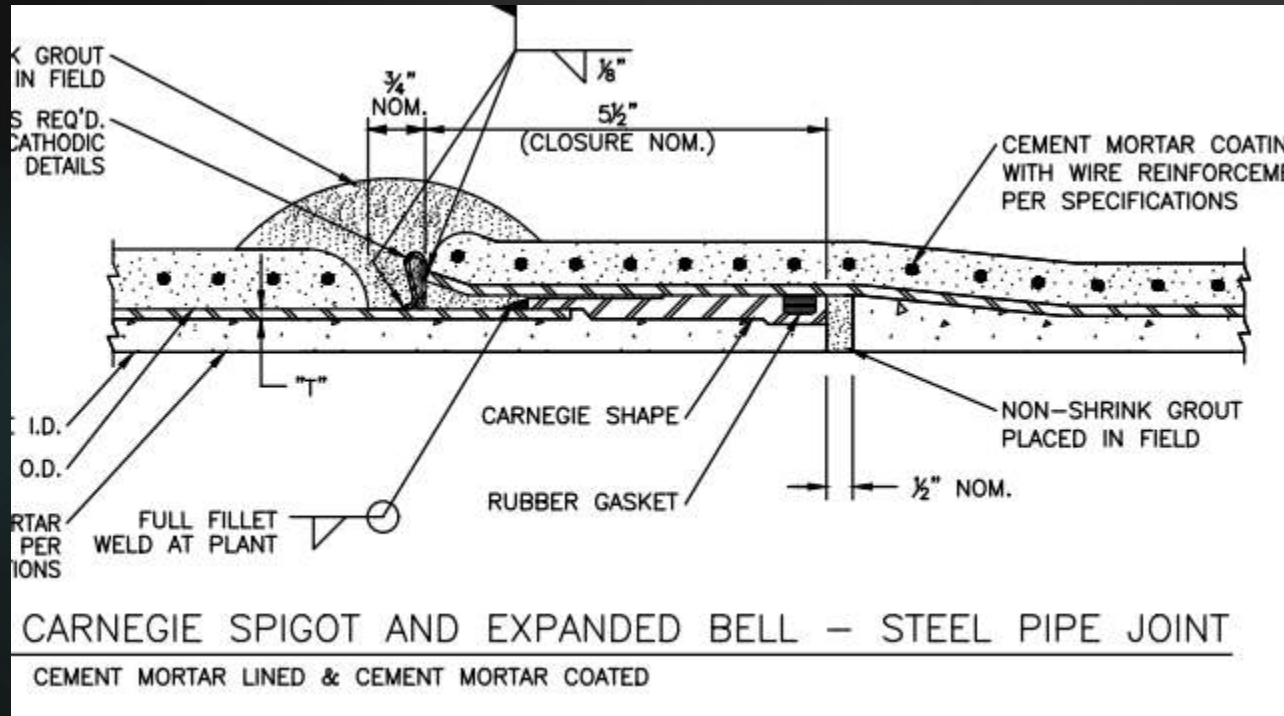
- ▶ Sanitary & Water (Example: Sheet 30)
- ▶ Roadway & Storm (Example: Sheet 57)
- ▶ Direction of Baseline (W-E & S-N)
- ▶ Standard Scale (H: 1:20 & V: 1:2 (Profile only))
- ▶ Typical Length

Project Specific Details

- ▶ On Utility Project Typical Details include:
 - ▶ Pipe Excavation, Bedding and Backfill
 - ▶ Tunnel Details (Sheet 94)
 - ▶ Isolation Valve Details (Sheet 109)
 - ▶ Air Valve Details (Sheet 103)
 - ▶ Manhole Details
 - ▶ Pipe Details (Sheet 106)

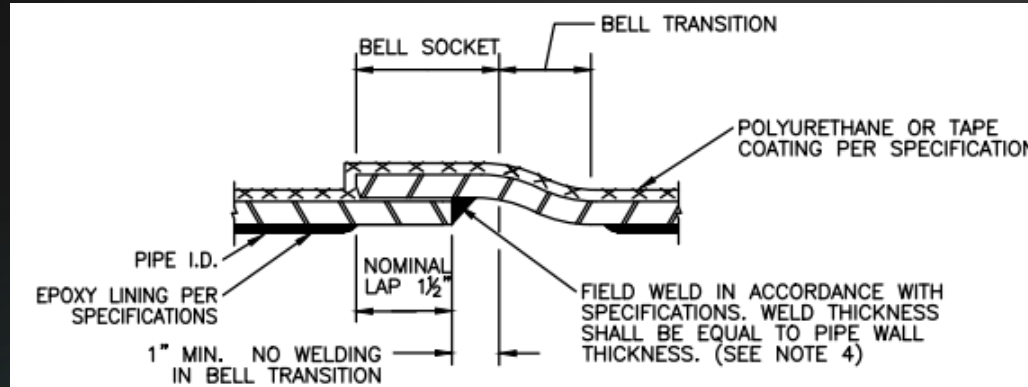
Project Specific Details

▶ Pipe Details – Carnegie Joints (Bell & Spigot)

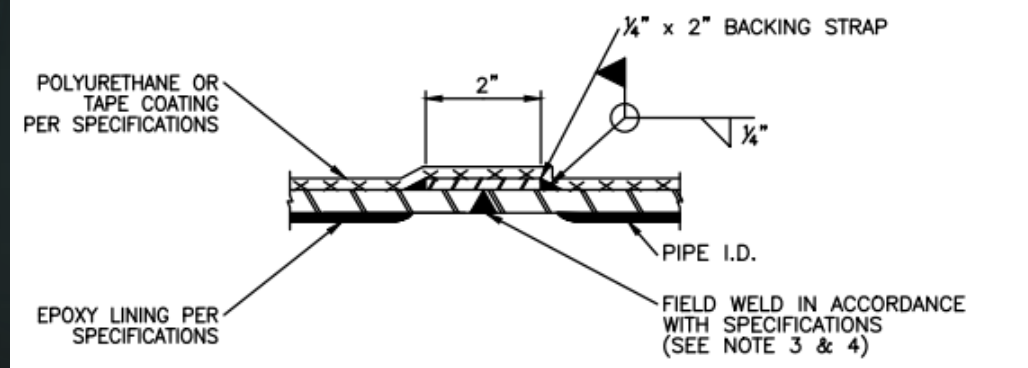


Project Specific Details

► Pipe Details – Welded Joints



1 LAP-WELD FIELD JOINT – STEEL PIPE JOINT
FLEXIBLE COATING AND LINING

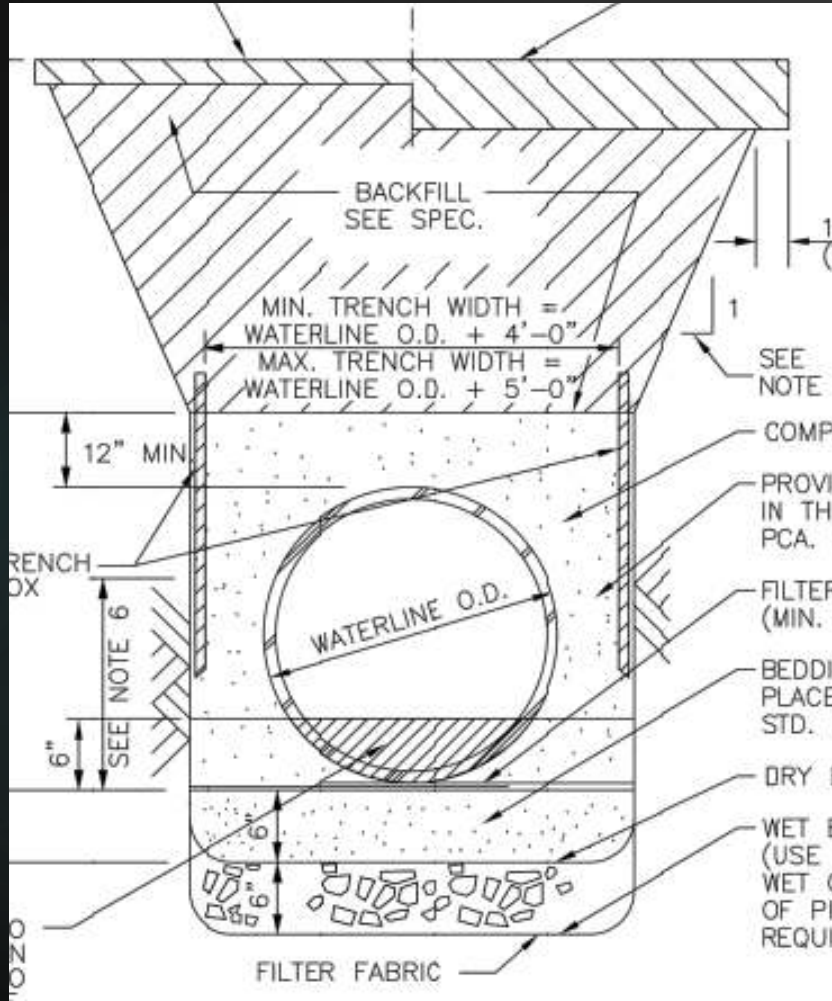


4 BUTT WELD FIELD JOINT – STEEL PIPE JOINT
FLEXIBLE COATING AND LINING



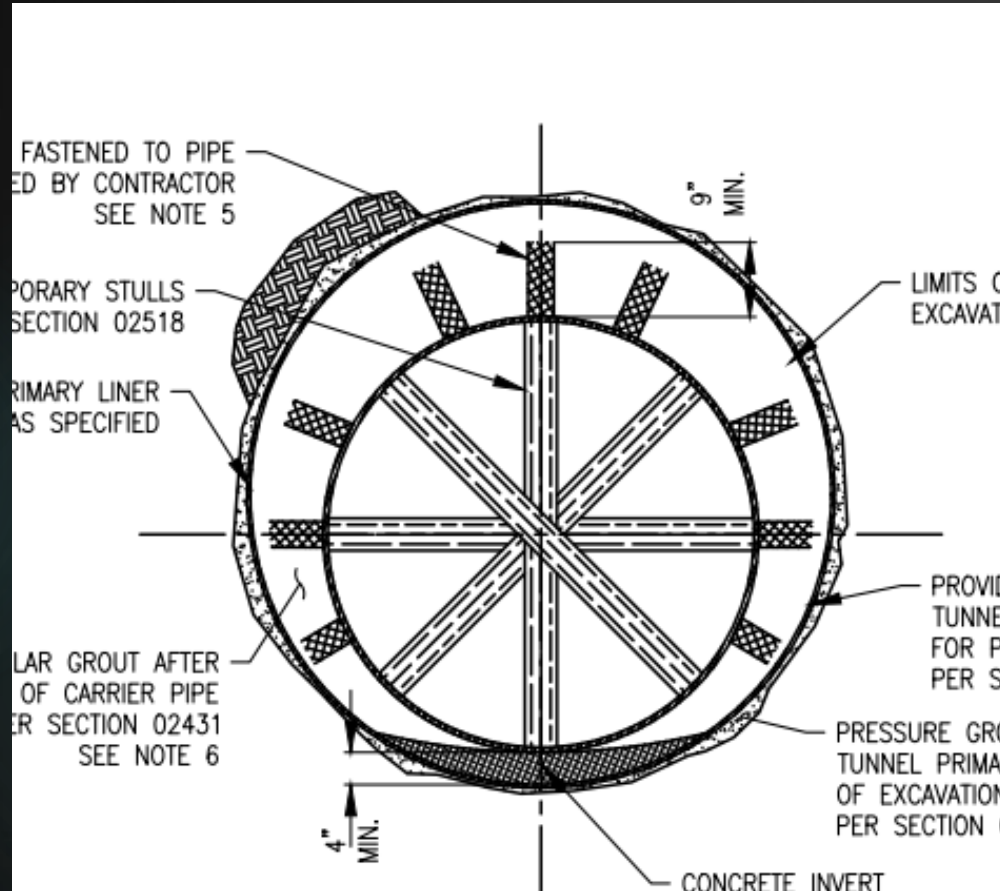
Project Specific Details

► Pipe Excavation, Bedding and Backfill



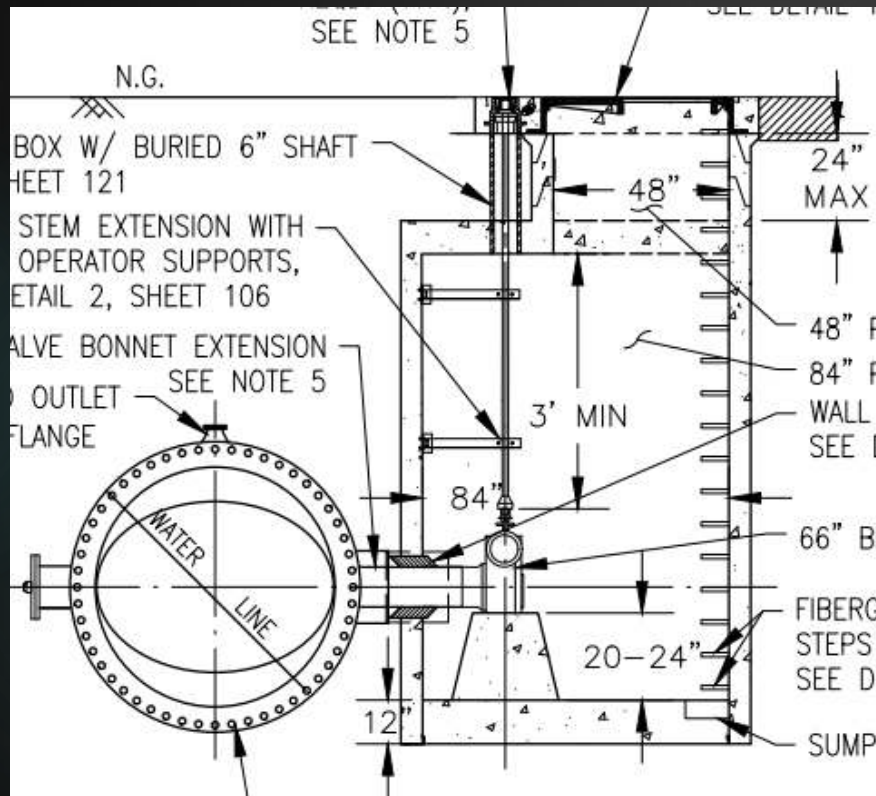
Project Specific Details

► Tunnel



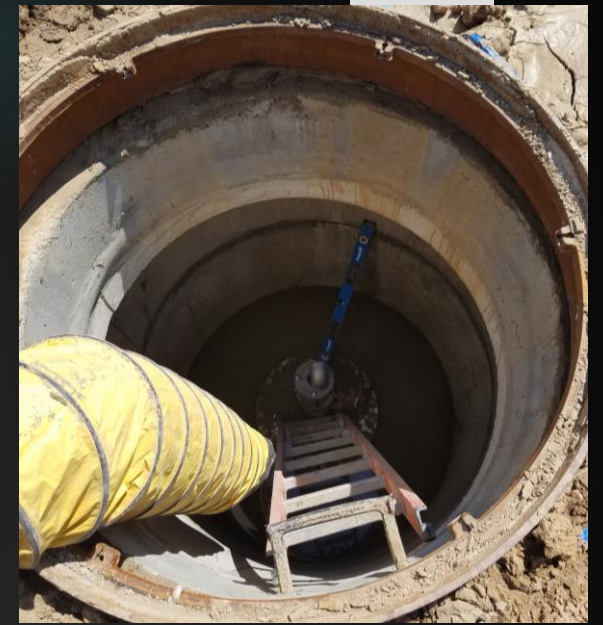
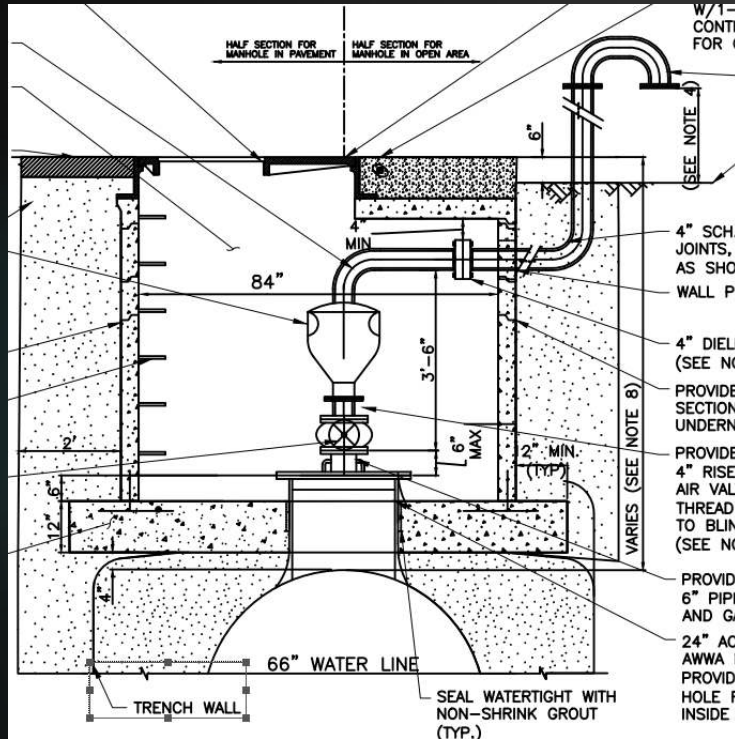
Project Specific Details

► Isolation Valve



Project Specific Details

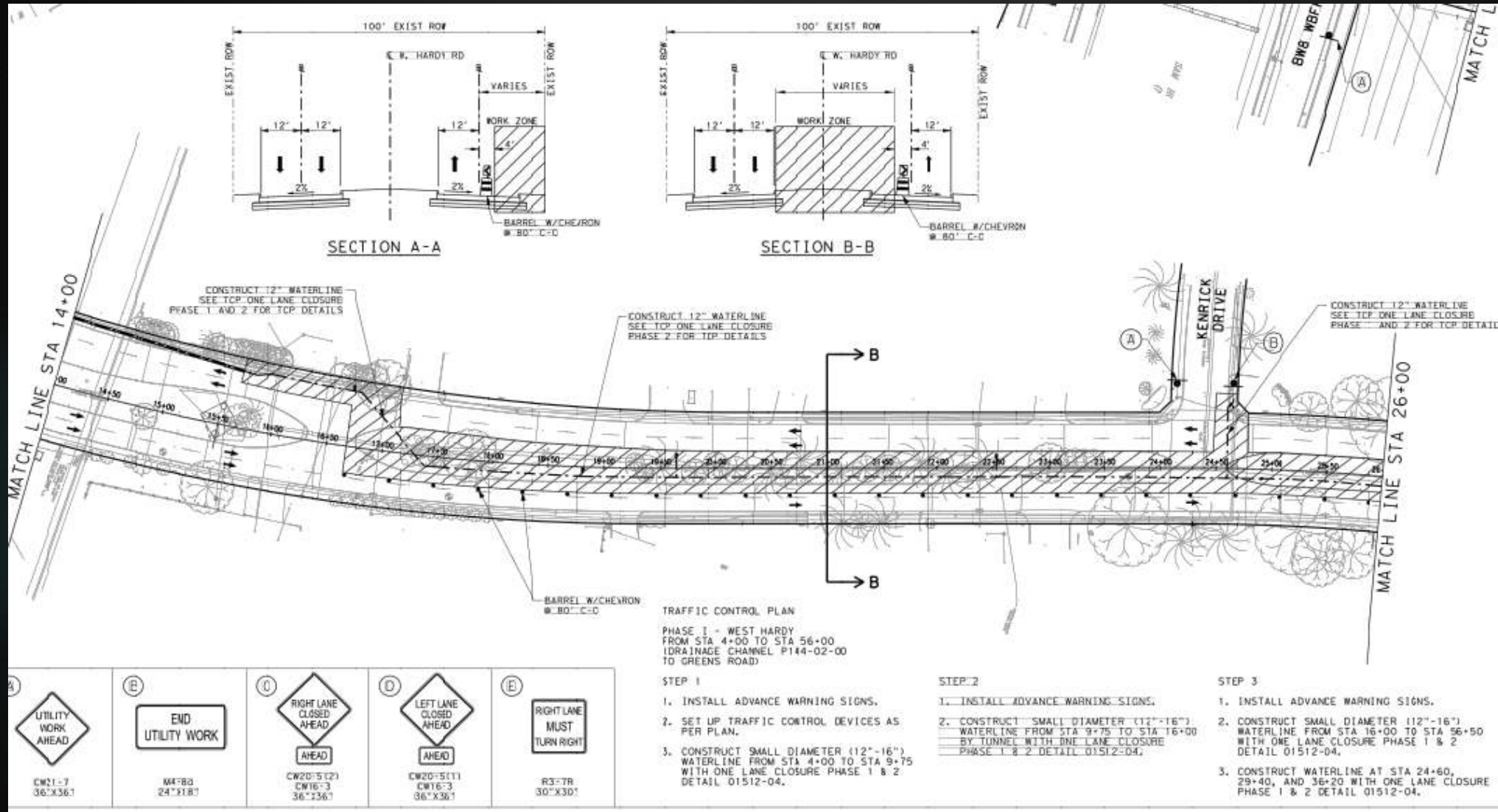
► Air Valves and Access Manhole



Standard Details

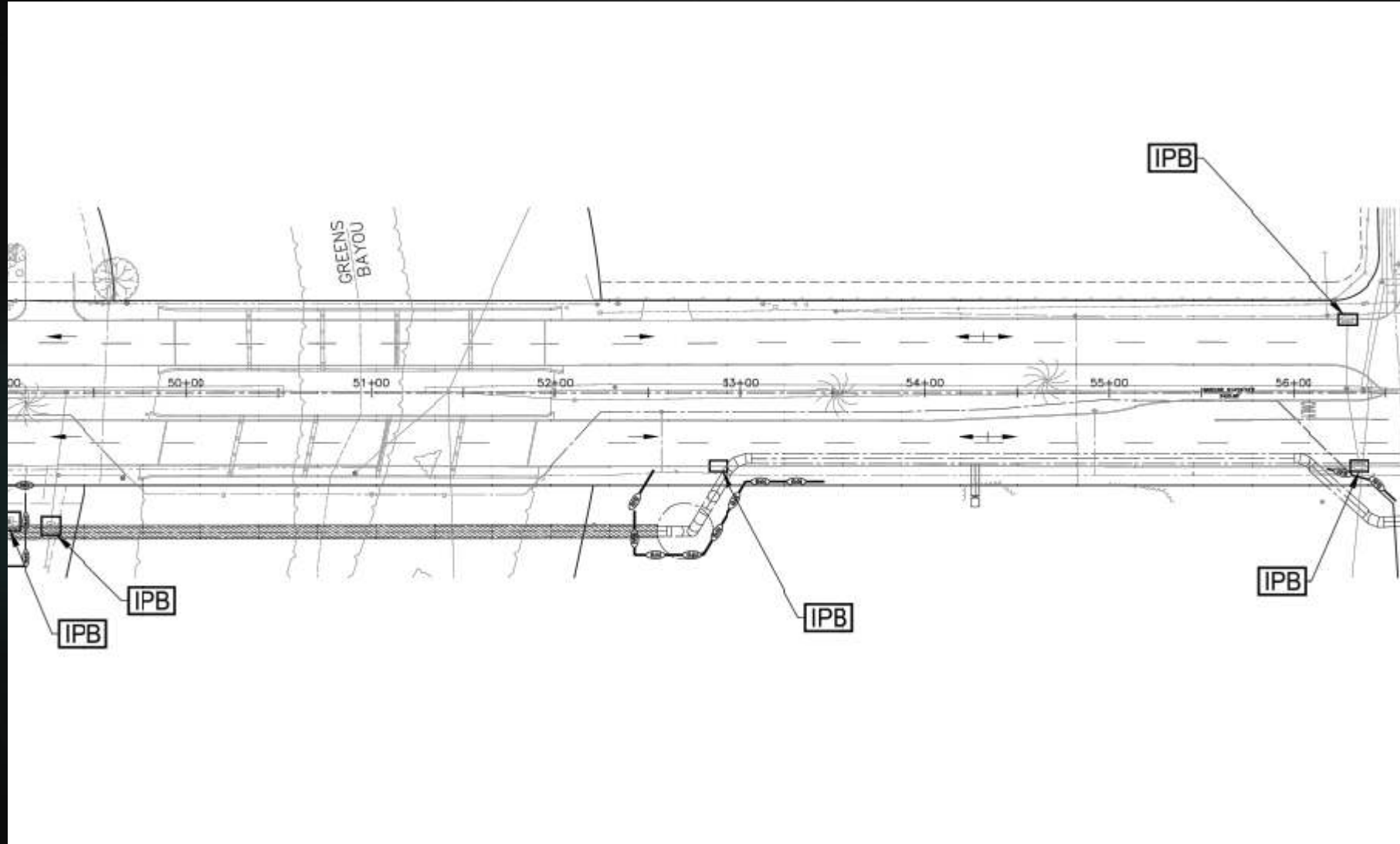
- ▶ Issued by Regulatory Agencies for civil work like Storm, Roadway, Sanitary, ect. Website to get details are below:
 - ▶ City of Houston:
<https://www.houstonpermittingcenter.org/office-city-engineer/design-and-construction-standards>
 - ▶ Harris County:
<https://www.eng.hctx.net/Consultants/Standards-Specifications/Standard-Civil-Drawings>
 - ▶ TxDOT:
<https://www.dot.state.tx.us/insdot/orgchart/cmd/cserve/standard/rdwylse.htm>

Traffic Control Plan (TCP)



- ▶ Traffic Phasing
- ▶ Location of Traffic Devices
- ▶ Lane Closures
- ▶ Detours

Surface Water Pollution Plant (SWPPP)

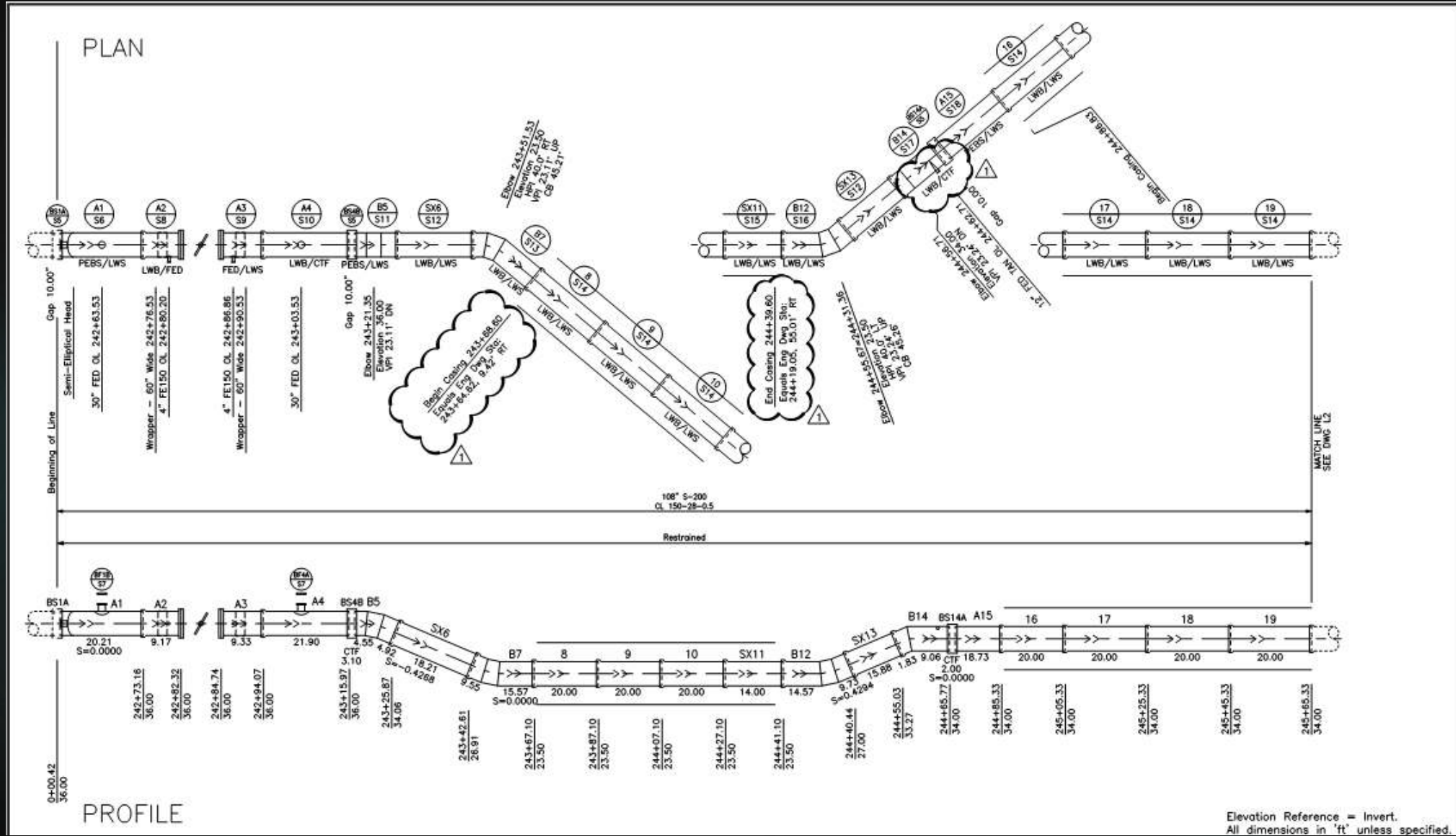


- ▶ Inlet Protection Barrier
- ▶ Filter Fabric Fence

Pipe Lay-Schedule

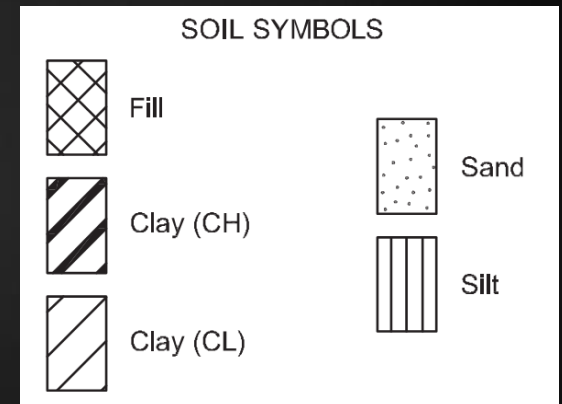
- ▶ **Created by Pipe Manufacturer**
- ▶ **Provide contractor specific details & information on how to install each piece of pipe**
- ▶ **Confirm location of fittings.**

Pipe Lay-Schedule Example



Geotechnical Bore Holes

- ▶ Provides Information on underground soil conditions
- ▶ Key to design underground utility.
- ▶ Main Type of soils to look for in Houston:
 - ▶ Clay
 - ▶ Sand
 - ▶ Silt
- ▶ Pay Attention to Groundwater level



Geotechnical Bore Holes - Examples

