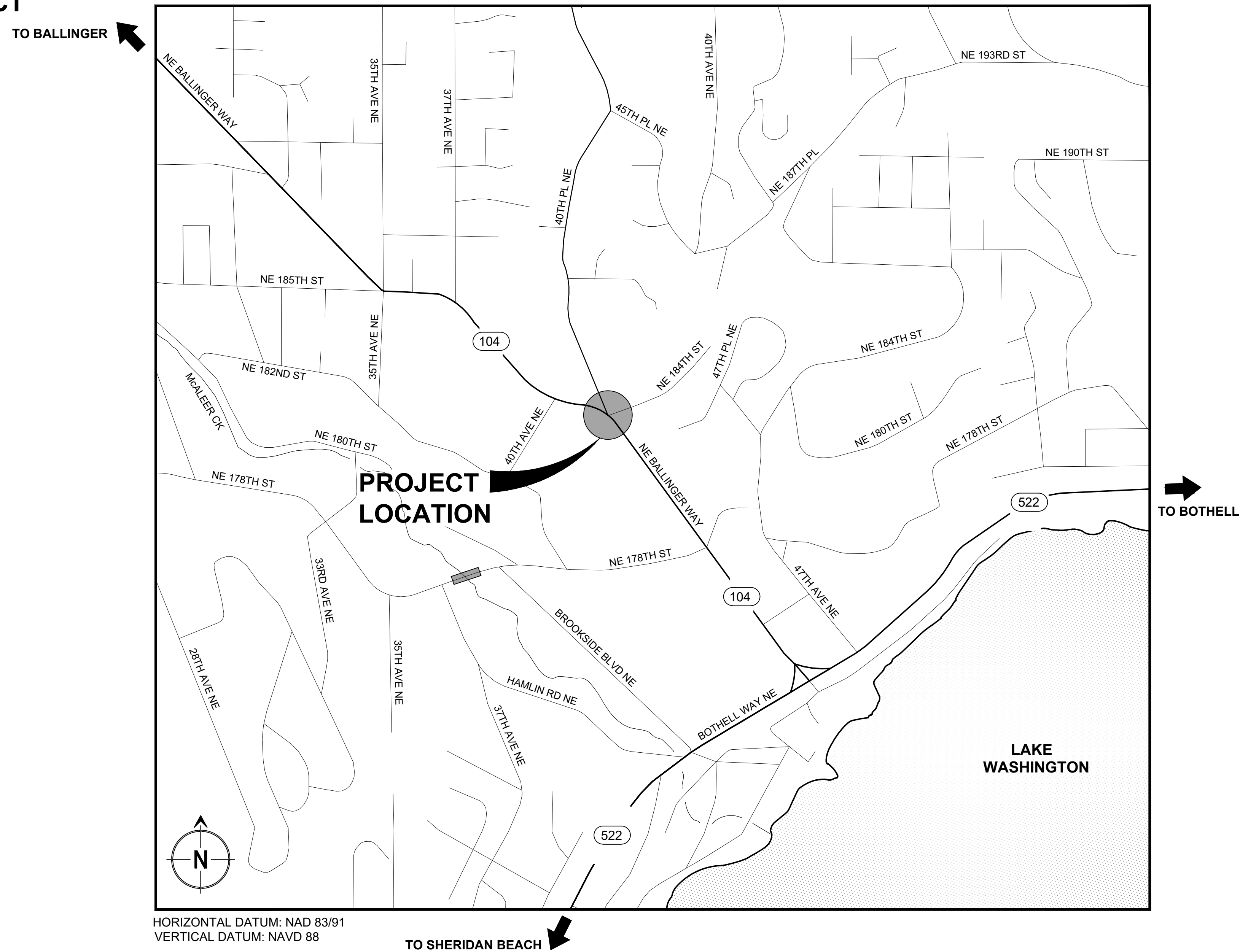


PLAN SET 2 OF 3

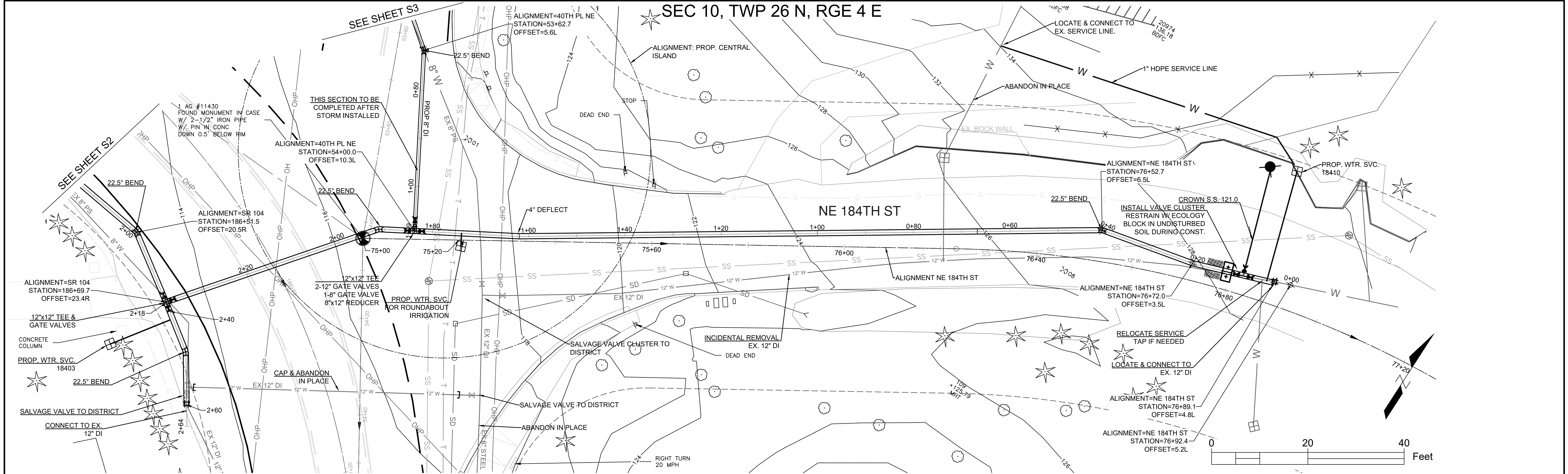
LFPWD ENGINEER:
DAN MUNDALL P.E.



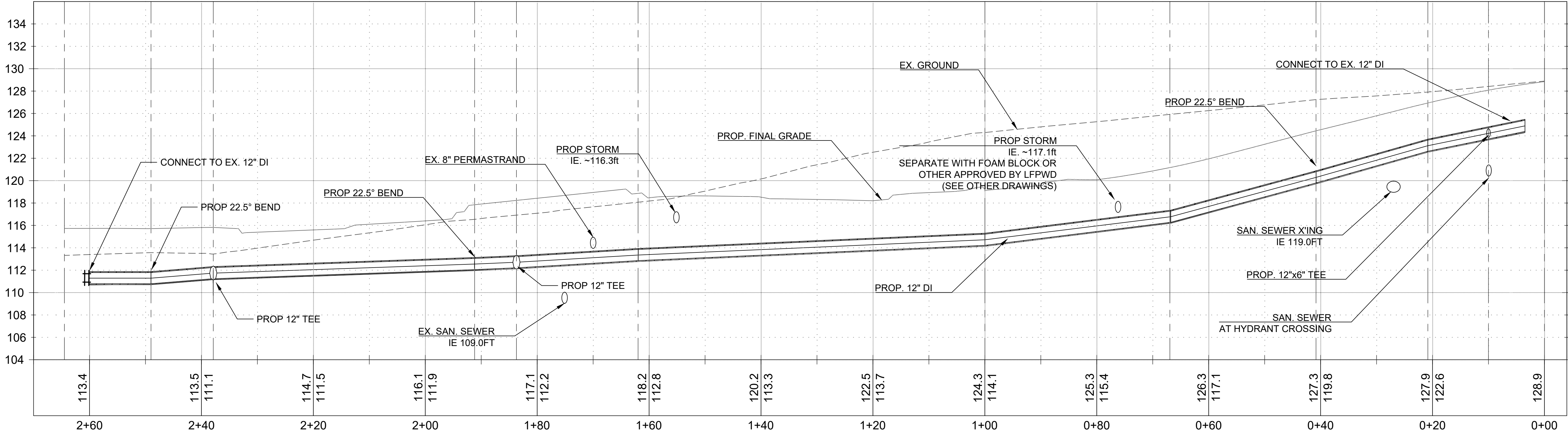
VICINITY MAP
N.T.S.

SHEET INDEX		
SHEET NO.	DRAWING ABBR.	DESCRIPTION
1	CP1	COVER, VICINITY MAP AND SHEET INDEX
2	WTS1	SITE PLAN AND PROFILE 184TH ST
3	WTS2	SITE PLAN AND PROFILE BALLINGER WAY
4	WTS3	SITE PLAN AND PROFILE 40TH PL NE AND BALLINGER HYDRANT
5	WTS D1	STANDARD DETAILS 1
6	WTS D2	STANDARD DETAILS 2 AND GENERAL NOTES

NO.	BY	DATE	REVISION	BY:	DATE:		 MUNDALL ENGINEERING & CONSULTING P.O. Box 799 Sumas Washington 98295 Bus. (250) 455-0085 FAX (250) 455-2276 P.O. Box 30 Lytton, B.C. V0K 1Z0 Cellular (250) 319-1285 E-Mail Dan@Mundall.com (800) 913-4705	WA LIC #32196	 DATE: 06/06/2025	CITY OF LAKE FOREST PARK SR 104 AND 40TH PLACE NE ROUNABOUT PROJECT LFPWD WATERMAIN RELOCATION: COVER, VICINITY MAP AND SHEET INDEX	PROJECT NO.
				Drawn	SBM			2/25			CONTRACT NO.
				Designed	KAH			12/24			-
				Reviewed	DLM			2/25			DRAWING NO.
				Approved	DLM			2/25			CP1
				BID SET NOT FOR CONSTRUCTION				SHEET 1 OF 6			



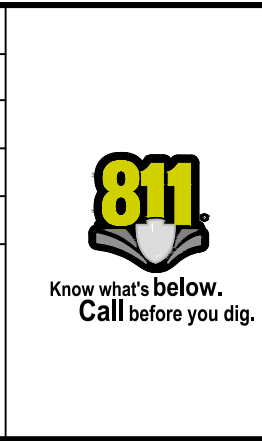
PROFILE VIEW: WM_184TH

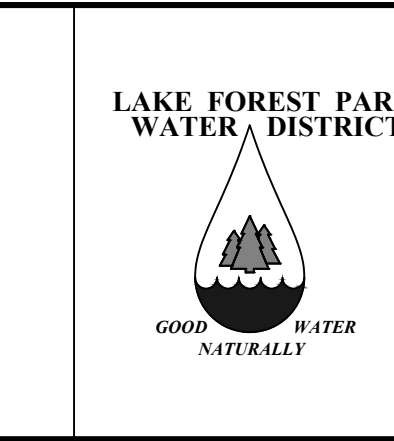


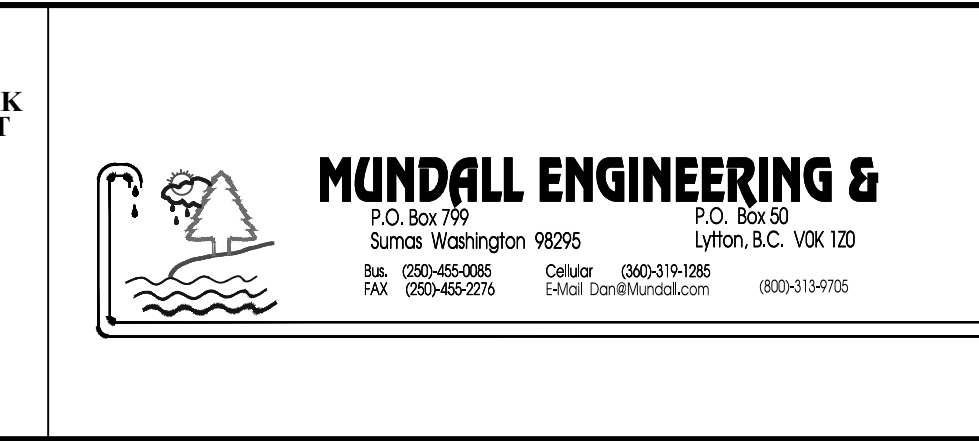
- STA 0+10**
CONNECT TO EX. 12"DI
1 - 12" SLEEVE COUPLER (LONG BARREL)
1 - 1" SERVICE LINE
1 - 12"x6" TEE FLxFL
2 - 12" GV FLxMJ
1 - 6" GV FLxMJ
1 - FIRE HYDRANT (SEE DETAIL) THRUST BLOCK & MEGALUG (OR APPROVED EQUIV. TYP.) THROUGHOUT
- STA 0+40**
1 - 12" 22.5° BEND MJxMJ THRUST BLOCK & MEGALUG THROUGHOUT
- STA 1+83**
1 - 12"x12" TEE FLxFL
1 - 12"x2" COMPANION FLANGE (TEMP DURING CONST.)
2 - 12" GV FLxMJ
1 - 8" GV FLxMJ
1 - 12"x8" REDUCER FLxFL
1 - 22.5° BEND MJxMJ THRUST BLOCK & MEGALUG THROUGHOUT
- STA 2+40**
1 - 12"x12" TEE FLxFL
3 - 12" GV FLxMJ
2 - 22.5° BEND MJxMJ
1 - 12" SLEEVE COUPLER (LONG BARREL)
THRUST BLOCK & MEGALUG THROUGHOUT

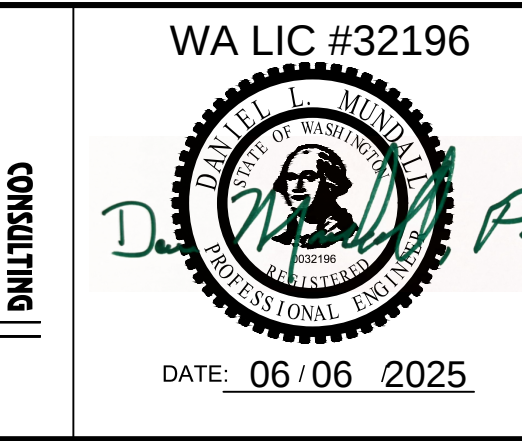
NO.	BY	DATE	REVISIONS

BY:		DATE:
Drawn	S.Mundall	5/15/2025
Designed	D.Mundall	5/15/2025
Reviewed	D.Mundall	5/15/2025
Approved	D.Mundall	5/15/2025
BID SET		









CITY OF LAKE FOREST PARK
SR104 AND 40TH PLACE NE
ROUNDAABOUT PROJECT

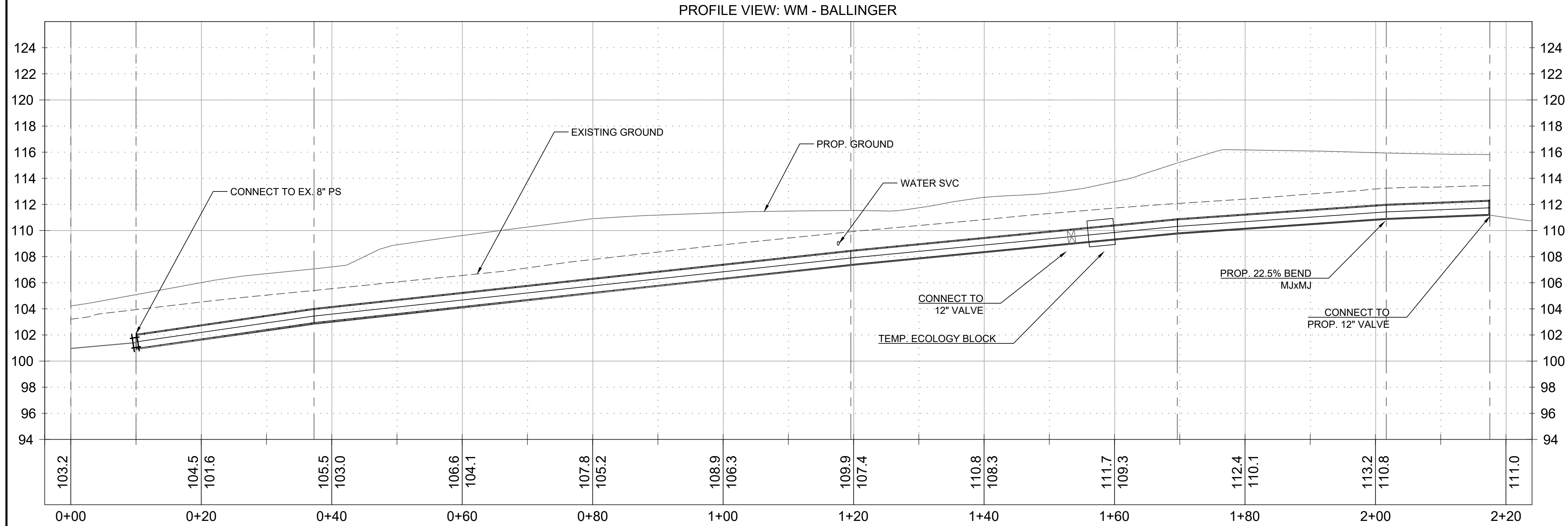
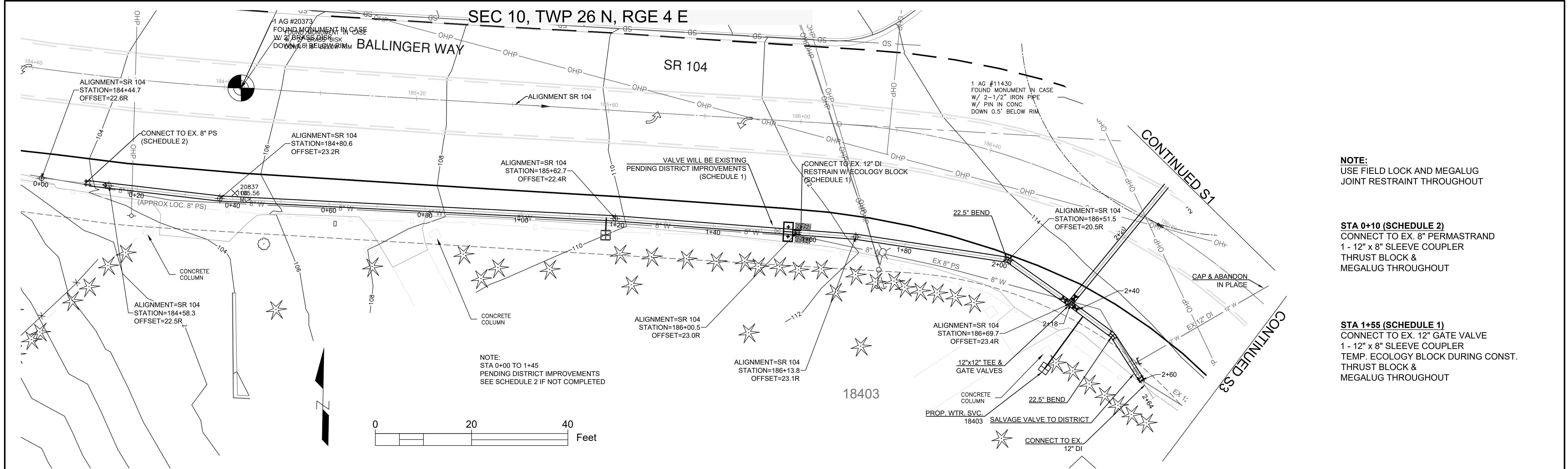
LFPWD WATERMAIN RELOCATION:
NE 184TH ST

PROJECT NO. _____

CONTRACT NO. _____

DRAWING NO. **WTS1**

SHEET **2** OF **6**



NO.	BY	DATE	REVISIONS	BY:	DATE:						PROJECT NO.
				Drawn	S.Mundall	5/15/2025					CONTRACT NO.
				Designed	D.Mundall	5/15/2025					-
				Reviewed	D.Mundall	5/15/2025					DRAWING NO.
				Approved	D.Mundall	5/15/2025					WTS2
				BID SET							SHEET
											OF
											6

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Lyfton, B.C. V0K 1Z0
Cellular (360) 319-1285 E-Mail Don@Mundall.com (800) 413-1705

CONSULTING

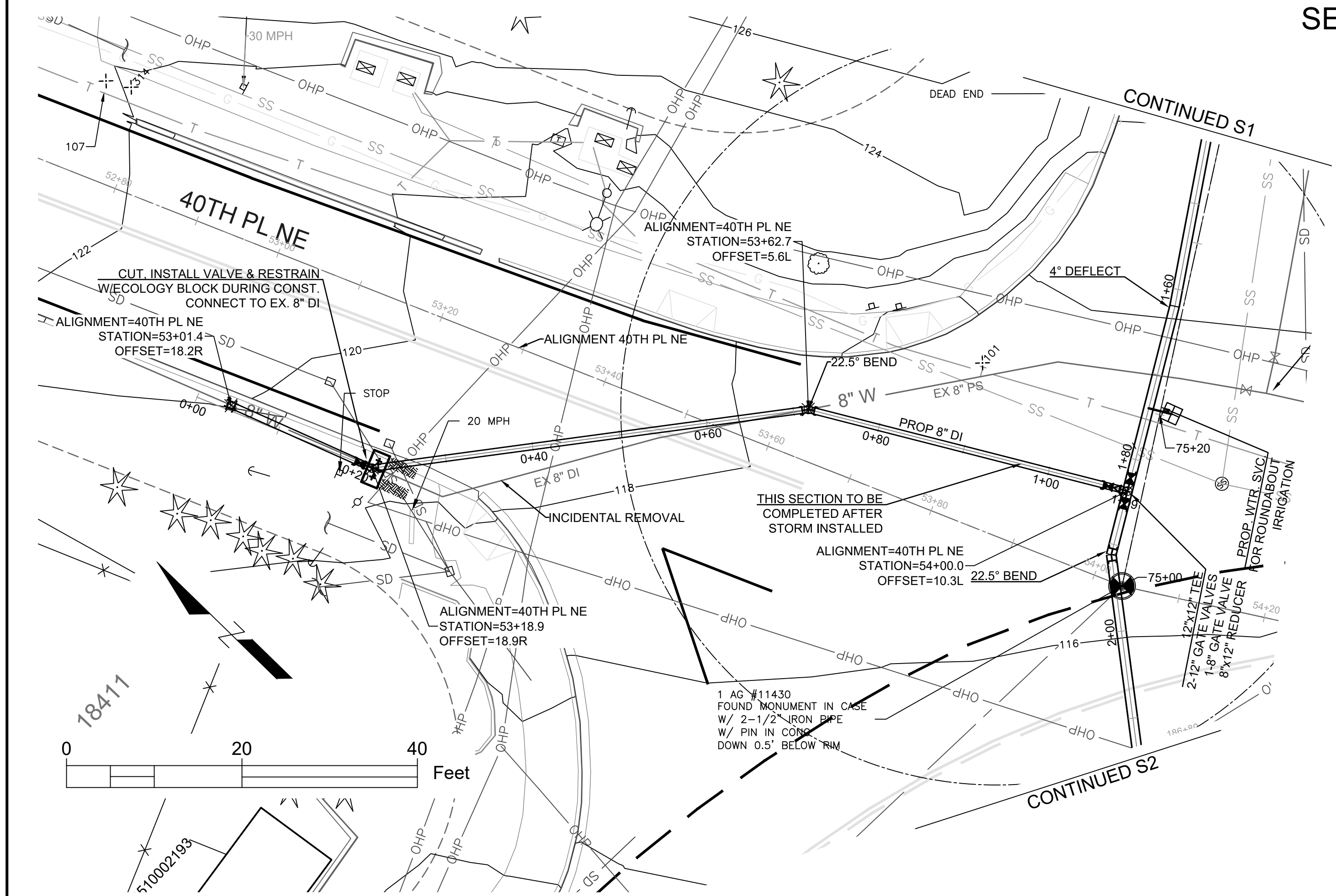
WA LIC #32196

DATE: 06/06/2025

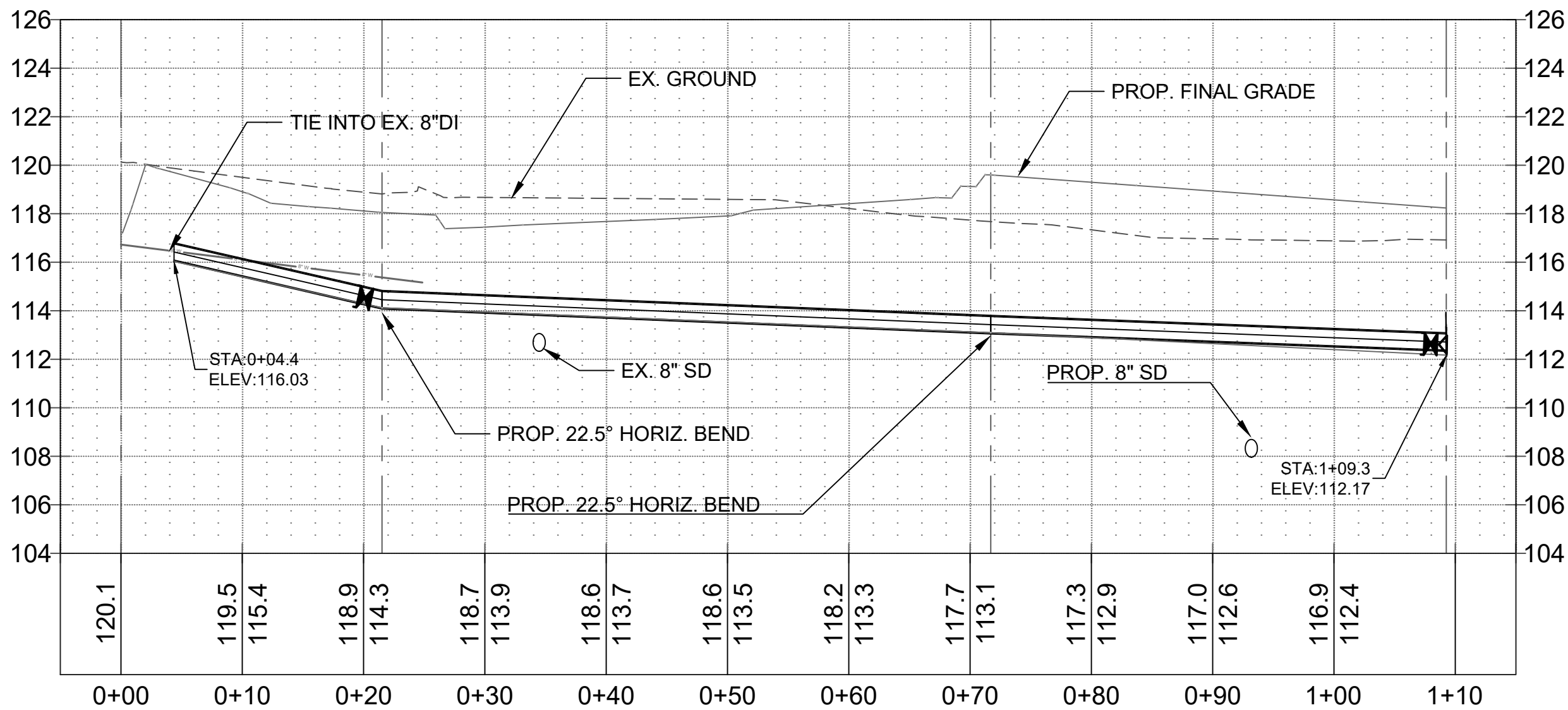
CITY OF LAKE FOREST PARK
SR104 AND 40TH PLACE NE
ROUNDAABOUT PROJECT

LFPWD WATERMAIN RELOCATION:
BALLINGER WAY

SEC 10, TWP 26 N, RGE 4 E



PROFILE VIEW: WM - 40TH PL NE

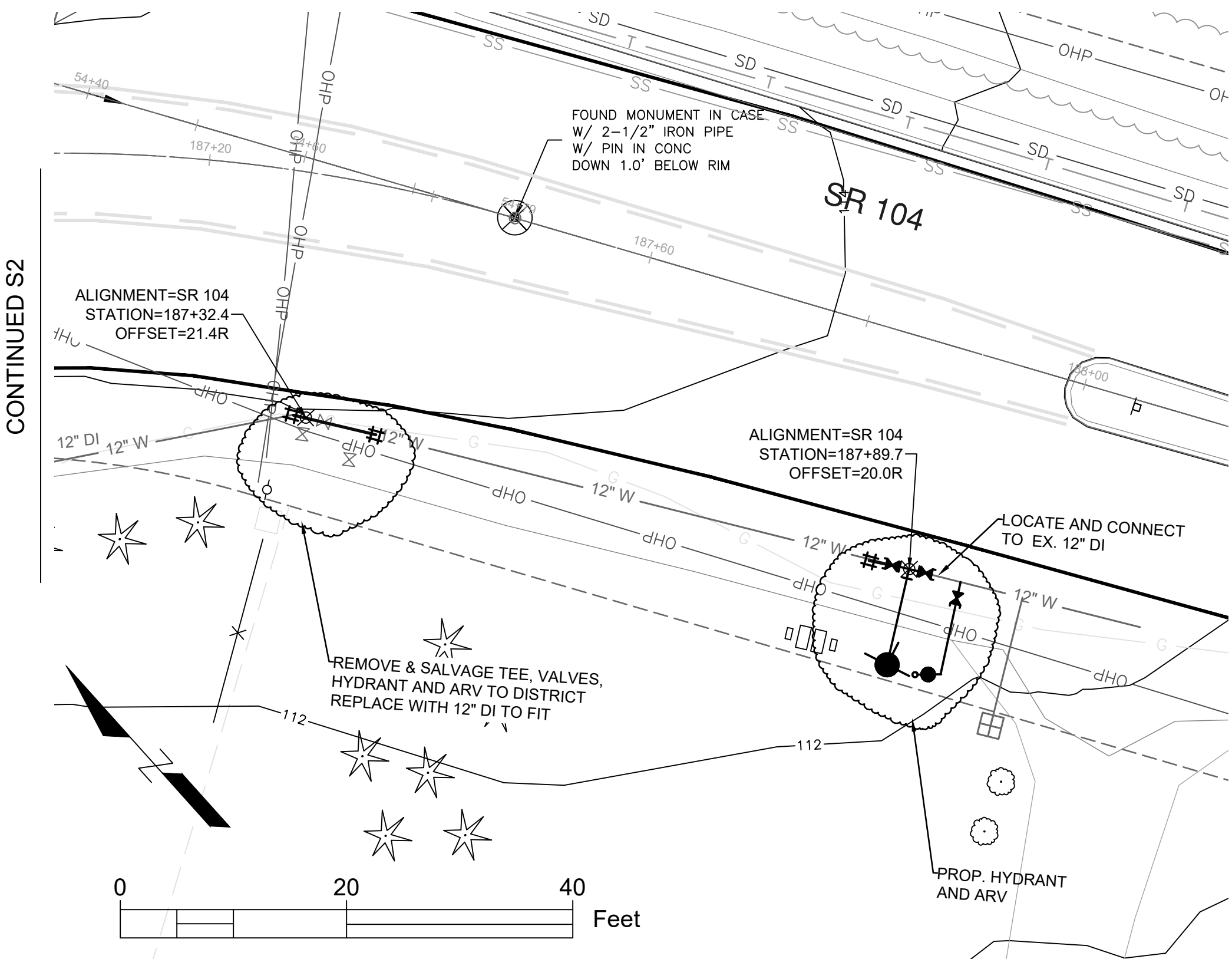


STA 0+4
CONNECT TO EX. 8" DI
1 - 8" x 8" SLEEVE COUPLER

STA 0+21
1 - 8" GATE VALVE (NRS) FLxMJ
1 - 8" 22.5° BEND FLxMJ
TEMP. ECOLOGY BLOCK DURING CONST.

STA 0+71
1 - 8" 22.5° BEND FLxMJ

STA 1+09
CONNECT TO PROP. 8" GATE VALVE



(SR104) STA 187+32.4 OFFSET 21.4R
2 - 12" SLEEVE COUPLERS
(LONG BARREL)

(SR104) STA 187+89.7 OFFSET 20.0R
1 - 12" SLEEVE COUPLERS
(LONG BARREL)
1 - 12"x6" TEE FLxFL
1 - 6" GATE VALVE FLxMJ
1 - FH (SEE DETAIL)
2 - 12" GATE VALVE FLxMJ
1 - ARV (SEE DETAIL)

NO.	BY	DATE	REVISIONS

BY:	DATE:
Drawn S. Mundall	5/15/2025
Designed D. Mundall	5/15/2025
Reviewed D. Mundall	5/15/2025
Approved D. Mundall	5/15/2025
BID SET	



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E-Mail: Dore@Mundall.com
(800) 313-9105



WA LIC #32196
DATE: 06/06/2025

**CITY OF LAKE FOREST PARK
SR104 AND 40TH PLACE NE
ROUNDAABOUT PROJECT**

**LFPWD WATERMAIN RELOCATION:
40TH PL NE & BALLINGER HYDRANT**

PROJECT NO.
CONTRACT NO.
DRAWING NO.
SHEET
OF

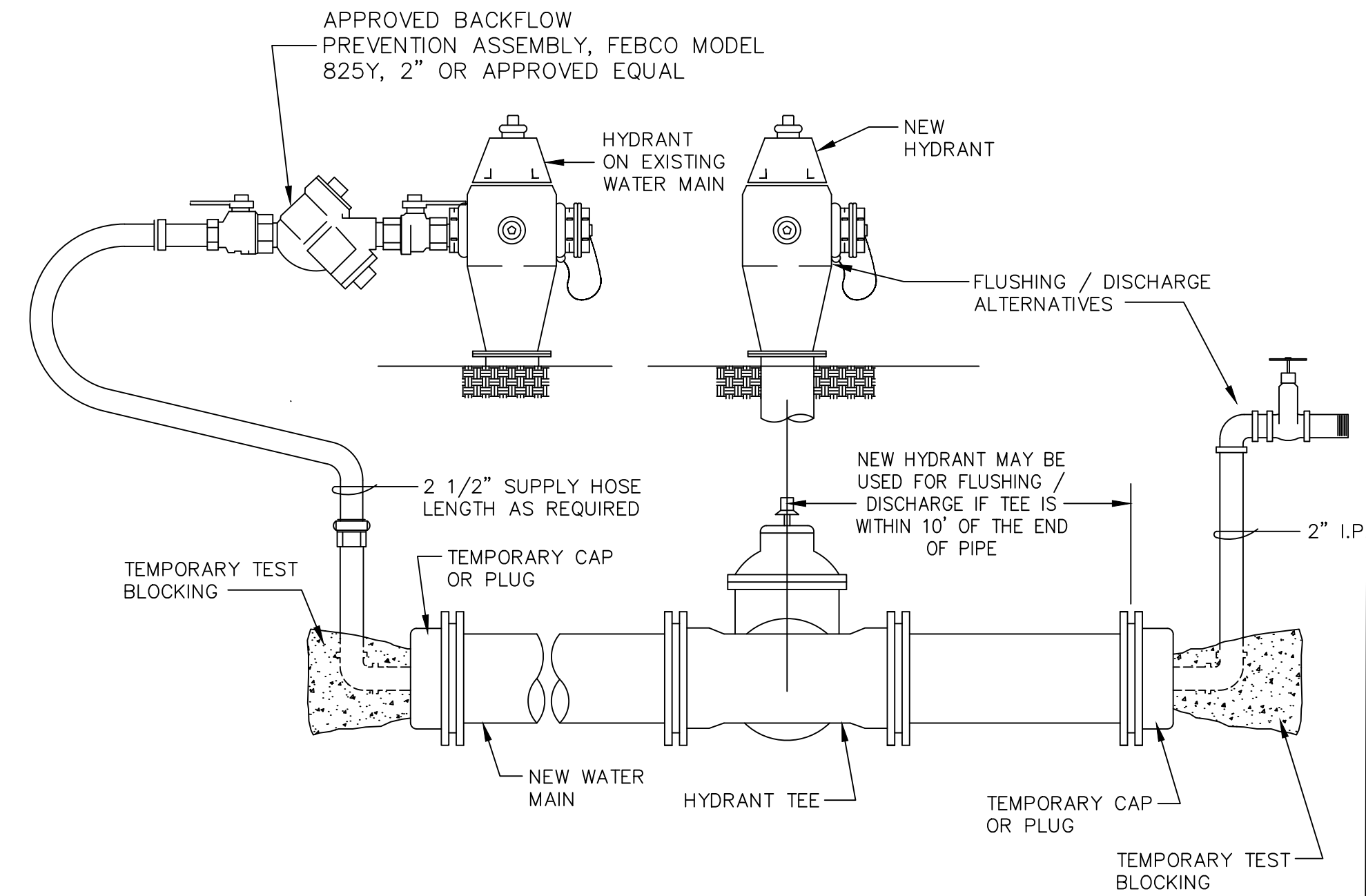
WTS3
4
6

NOTES:

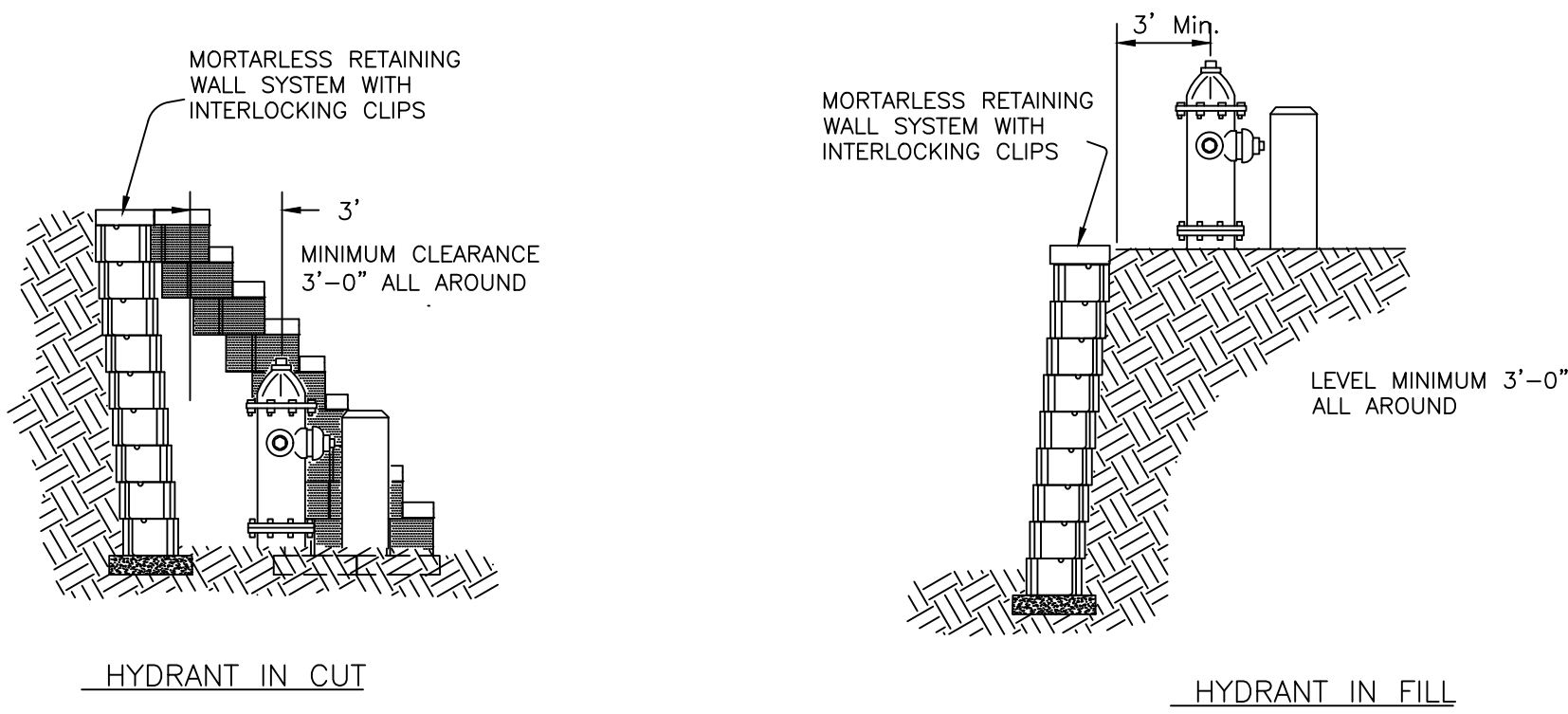
NEW SECTIONS OF WATER MAIN THAT ARE INSTALLED WHEN EXPANDING A DISTRIBUTION SYSTEM MUST BE SEPARATED FROM THE EXISTING SYSTEM. UNTIL SATISFACTORY FLUSHING, DISINFECTION AND BACTERIOLOGICAL SAMPLING HAS BEEN COMPLETED, THE NEW WATER MAIN MUST BE CONSIDERED CONTAMINATED. IN ADDITION, THE CHLORINE CONCENTRATION USED FOR DISINFECTION PROCEDURES (MINIMUM 25 mg/l) MAKES WATER NON-POTABLE.

AN APPROVED BACKFLOW PREVENTION ASSEMBLY MUST BE USED ON THE SUPPLYING WATER LINE WHEN FILLING THE NEW WATER MAIN DURING DISINFECTION AND FLUSHING. THE BACKFLOW PREVENTION ASSEMBLY AND SUPPLY PIPING MUST BE REMOVED DURING HYDROSTATIC PRESSURE TESTING OF THE NEW WATER MAIN.

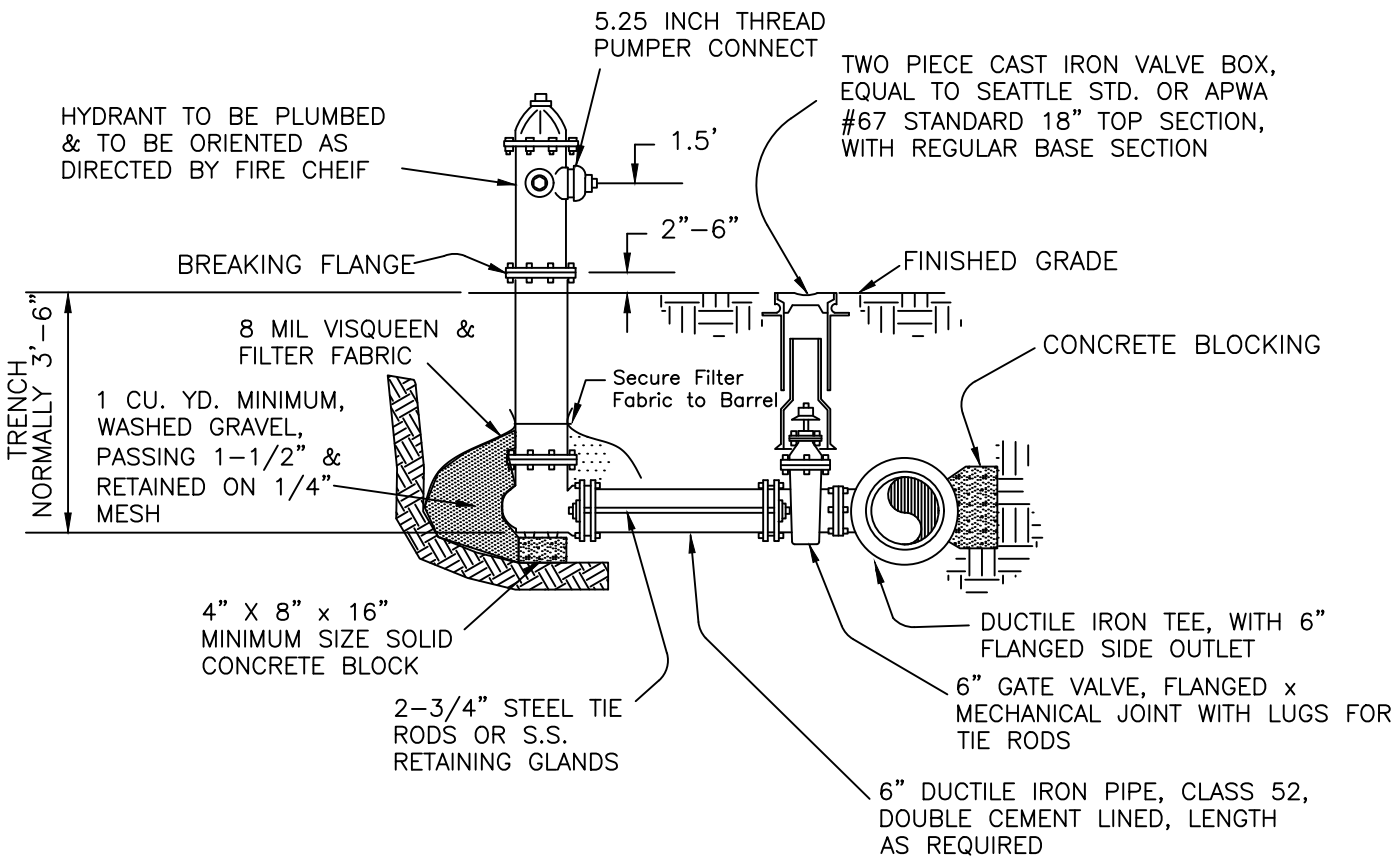
AFTER SATISFACTORY BACTERIOLOGICAL SAMPLE RESULTS ARE OBTAINED FROM THE NEW WATER MAIN, SECTIONS OF CONNECTING PIPE MUST BE INSTALLED BETWEEN IT AND THE EXISTING SYSTEM. BEFORE INSTALLATION, THE INTERIORS OF ALL PIPE AND FITTINGS USED TO MAKE THE CONNECTION MUST BE SWABBED OR SPRAYED WITH A 1% AVAILABLE CHLORINE SOLUTION.



WATER FILLING DETAIL
NO SCALE



HYDRANT LOCATION IN CUT OR FILL



NOTES:
HYDRANT SHALL BE PRIME COATED WITH STEELCOTE SR-53 HEAVY DUTY-BRUSH TYPE OR APPROVED EQUAL. TOP COATS SHALL BE STEELCOTE ACID AND OIL RESISTANT ENAMEL NO. 44-68, COLOR-WHITE, BRUSH TYPE OR APPROVED EQUAL.
STEEL TIE RODS SHALL HAVE A LENGTH TO FIT BETWEEN LUGS. APPLY A HEAVY COATE OF COAL TAR PRESERVATIVE ON TIE RODS, NUTS AND BOLTS.

HYDRANT SHALL CONFORM TO AWWA STANDARD SPECIFICATION C-502 AND BE ONE OF THE FOLLOWING TYPES: AMERICAN DARLING B-62-B, CLOW MEDALLION, M & H 929 AND MUELLER SUPER CENTURION

HYDRANT ASSEMBLY

NO SCALE

1" or 1-1/2" SERVICE LINE TO BE DRISCO D2239 SDR 7 200 PSI HDPE

1" COPPER SETTER EQUAL TO MUELLER, FORD,MCDONALD, OR HAYS, EQUIPPED AS FOLLOWS.

- PADLOCK WINGS ON BALL VALVE
- ANGLE CHECK ON METER OUTLET
- IRON PIPE CONNECTIONS ON SETTER INLET AND OUTLET
- COMPRESSION ADAPTOR ON SETTER INLET AND OUTLET
- INSTALL TYPE K COPPER AND MISC. BRASS FITTINGS FOR CONNECTION TO CUSTOMER'S LINE

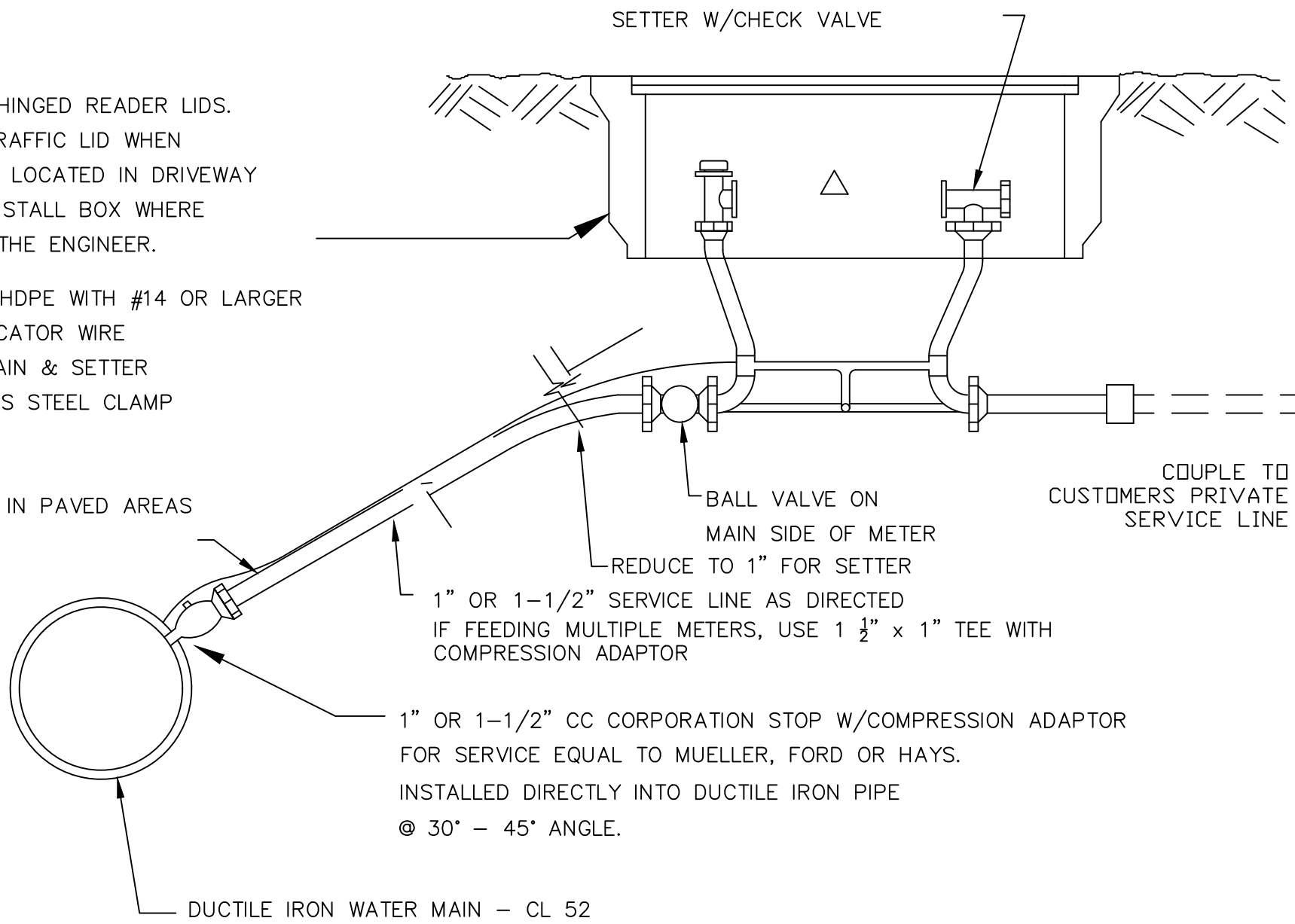
HEIGHT OF SETTER CAN VARY BETWEEN 9" AND 15"

COPPER SETTER SHALL BE SET LEVEL AND CENTERED IN THE METER BOX.

BROOKS #37/HINGED READER LIDS. SUBSTITUTE TRAFFIC LID WHEN METER BOX IS LOCATED IN DRIVEWAY OR STREET. INSTALL BOX WHERE DIRECTED BY THE ENGINEER.

1" or 1-1/2" HDPE WITH #14 OR LARGER INSULATED LOCATOR WIRE ATTACH TO MAIN & SETTER WITH STAINLESS STEEL CLAMP

NO OPEN CUT IN PAVED AREAS



METER BOX SHALL BE INSTALLED FLUSH W/FINAL GRADE AND MUST BE SIZED TO ALLOW FOR MIN. CLEARANCE REQUIREMENTS.

1" OR 1-1/2" - WATER SERVICE DETAIL
NO SCALE

Rev. 6/03
Service, One Inch.dwg

NO.	BY	DATE	REVISIONS	BY:	DATE:				WA LIC #32196		PROJECT NO.
				Drawn	S.Mundall	5/15/2025					CONTRACT NO.
				Designed	D.Mundall	5/15/2025					-
				Reviewed	D.Mundall	5/15/2025					DRAWING NO.
				Approved	D.Mundall	5/15/2025					WTSD1
											SHEET
											5
											OF
											6

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(800) 313-9705

WA LIC #32196

D. Mundall P.E.

PROFESSIONAL ENGINEER

DATE: 06/06/2025

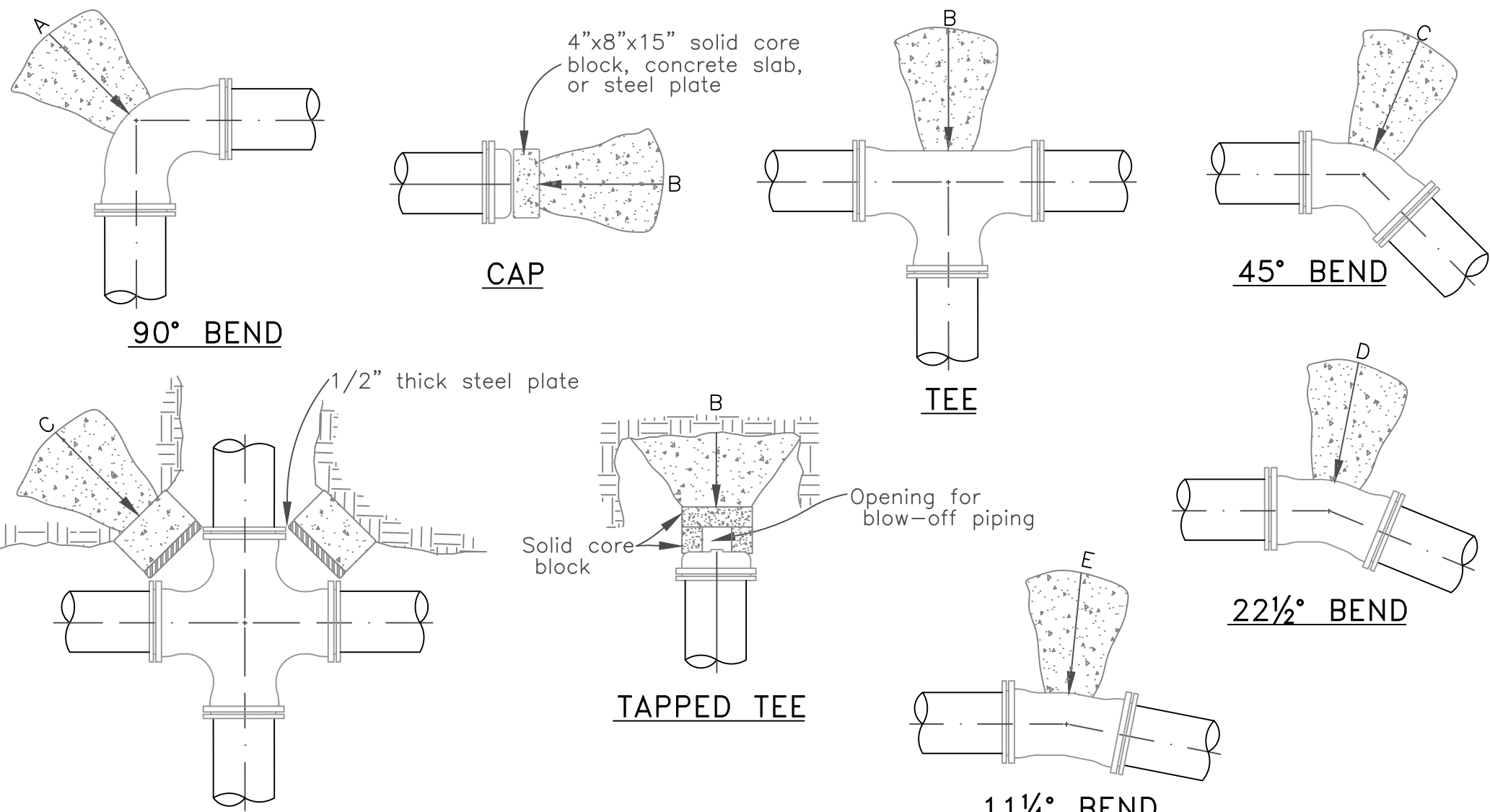
CITY OF LAKE FOREST PARK

SR104 AND 40TH PLACE NE

ROUNDAABOUT PROJECT

LFPWD WATERMAIN RELOCATION:

STANDARD DETAILS 1



THRUST BLOCK						
PIPE SIZE	PRESSURE PSI	MIN. BEARING AREA AGAINST UNDISTURBED SOIL—SQ.FT.				
		A	B	C	D	E X (100 PSI)
4"	200	2/(1)	1/(NONE)	1/(NONE)	NONE	NONE
	300	3/(2)	2/(2)	2/(1)	1/(1)	NONE
6"	200	4/(3)	3/(2)	3/(1)	1/(1)	1(NONE)
	300	6/(4)	4/(3)	3/(2)	2/(1)	1(NONE)
8"	200	7/(5)	5/(3)	4/(3)	2/(2)	1/(1)
	300	11/(3)	8/(5)	6/(4)	3/(2)	2/(1)
10"	200	11/(8)	8/(6)	6/(4)	3/(2)	2/(1)
	275	16/(11)	11/(7)	9/(6)	5/(3)	3/(2)
12"	200	16/(11)	11/(8)	9/(6)	5/(3)	3/(2)
	250	24/(16)	17/(11)	13/(9)	7/(5)	4/(3)
14"	200	22/(13)	16/(11)	12/(8)	6/(4)	3/(2)
	250	33/(22)	23/(16)	18/(12)	9/(6)	5/(3)
16"	200	29/(19)	21/(14)	16/(11)	8/(6)	5/(3)
	225	23/(16)	23/(16)	17/(12)	9/(6)	5/(3)
18"	200	36/(24)	26/(17)	20/(13)	10/(7)	5/(4)
20"	200	45/(29)	32/(21)	24/(16)	13/(8)	7/(4)
24"	200	64/(43)	46/(30)	35/(23)	18/(12)	9/(6)

- NOTE**
- Square feet of concrete thrust — block area based on safe bearing load of 2000/(3000) pounds per square feet.
 - Areas must be adjusted for other size pipe, pressures and soil conditions.
 - Concrete blocking shall be cast in place and have a minimum of 1/2 square foot bearing against the fitting.
 - Block shall bear against fittings only and shall be clear of joints to permit taking up or dismantling joint.
 - Contractor shall install blocking adequate to withstand full test pressure as well as to continuously withstand operating pressure under all conditions of service.

CONCRETE BLOCKING

NO SCALE

- 2 — 1/2" dia. rods for 10" size and smaller
2 — 1" dia. rods for sizes larger than 10"

NOTE
Additional blocking must be provided if gate valve is at end of line during test.

SAFE BEARING LOADS IN LBS./SQ. FT.

The safe bearing loads given in the following table are for horizontal thrusts when the depth of cover over the pipe exceeds 2 feet.

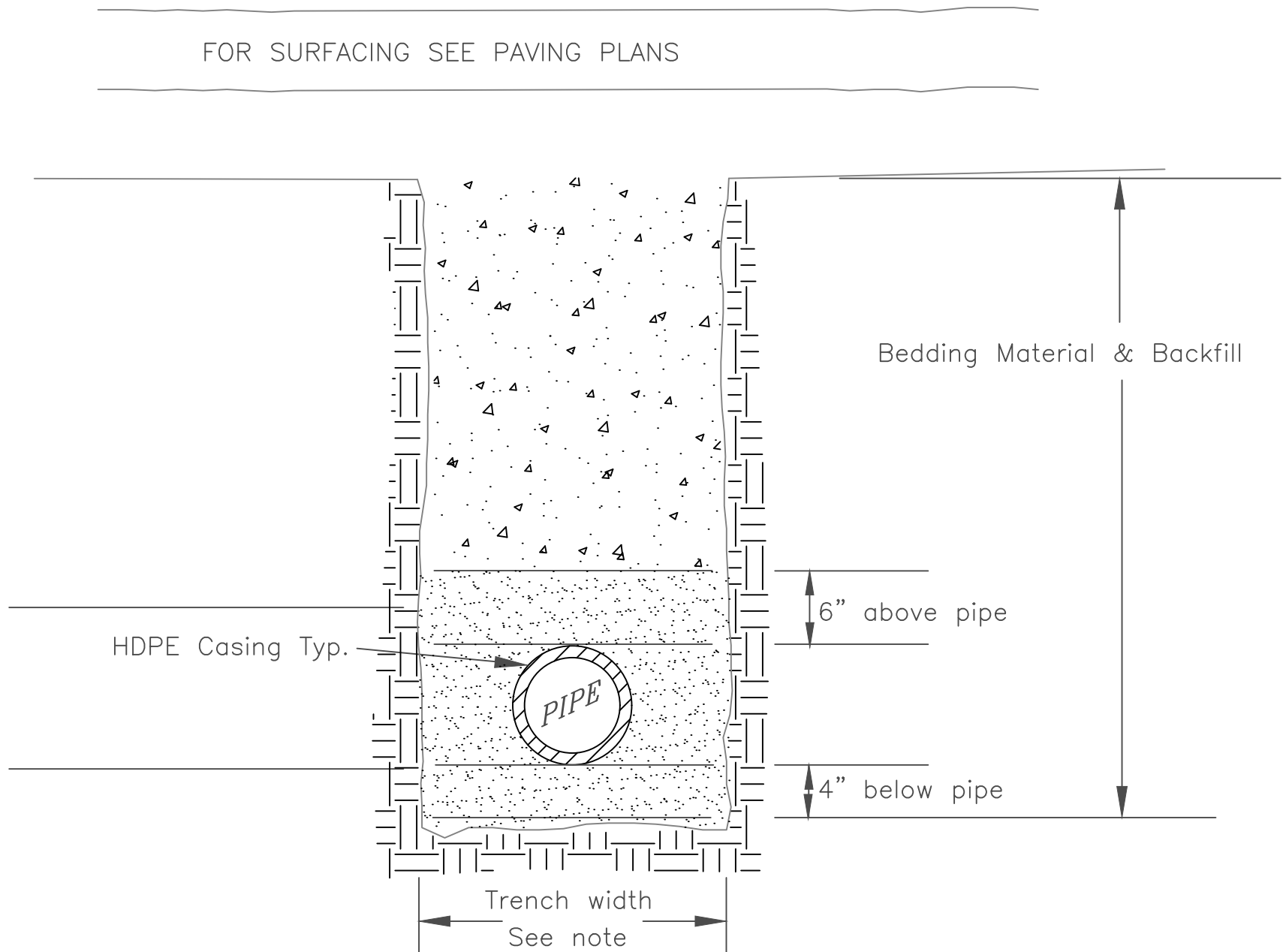
SOIL

SAFE BEARING LOAD LBS./SQ. FT.

*Muck, peat, etc.	0
Soft caly	1,000
Sand	2,000
Sand and gravel	3,000
Sand and gravel cemented with clay	4,000
Hard shale	10,000

*In muck or peat, all thrusts shall be restrained by piles or tie rods to solid foundations or by removal of muck or peat and replacement with ballast of sufficient stability to resist thrusts.

Rev. June 2003
Contrete Blocking.dwg



NOTE:
Minimum trench width shall be the pipe O.D. + 12" (6" each side of pipe)

Maximum trench width:
15" diameter and smaller: 40"
18" diameter and larger: 1-1/2 x I.D. + 18"

RIGID PIPE
SUB-BASE TRENCH SECTION

NO SCALE

Rev. 1/24
Trench Section.dwg

CONSTRUCTION NOTES
GENERAL NOTES:

- THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE DISTRICT AND ENGINEER.
- A COMPLETE SET OF PLANS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION, AND SHALL REFLECT ANY VARIATION IN CONSTRUCTION FROM THE PLANS. THESE "AS-BUILT" PLANS SHALL BE PROVIDED TO THE DISTRICT AT THE COMPLETION OF CONSTRUCTION.
- THE CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION ACTIVITIES WITH THE PERTINENT UTILITY COMPANIES TO ENSURE WATER METERS, TELEPHONE VAULTS, ETC., ARE BROUGHT TO GRADE PRIOR TO CONSTRUCTION OF CURB AND SIDEWALKS.
- THE CONTRACTOR WILL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND WILL NEED FIELD VERIFICATION FOR EXACT ALIGNMENT AND DEPTH. THERE MAY BE EXISTING UTILITIES NOT SHOWN ON THE PLANS.
- CONTRACTOR SHALL COORDINATE CONSTRUCTION WITH SEATTLE CITY POWER & LIGHT FOR UTILITY POLE STABILIZATION IF REQUIRED.
- ALL EXCAVATION METHODS AND SHORING TECHNIQUES SHALL BE IN ACCORDANCE WITH WAC 296 TRENCH EXCAVATION SAFETY SYSTEMS.
- THE DISTRICT SHALL AT ALL TIMES HAVE ACCESS TO THE WORK AND TO THE LOCATIONS WHERE THE WORK IS IN PREPARATION.
- THE CONTRACTOR SHALL NOTIFY ONE CALL UTILITY LOCATING SERVICE PRIOR TO ANY CONSTRUCTION TO VERIFY LOCATION OF EXISTING UTILITIES, AT (800) 424-5555.

WATER NOTES:

- ALL WORK, MATERIALS, CONCRETE BLOCKING AND TESTING OF WATER LINES SHALL CONFORM TO STANDARD DETAILS OF LAKE FOREST PARK WATER DISTRICT AND AWWA STANDARDS.
- THE WATER MAIN SHALL BE INSTALLED WITH MINIMUM OF 36 INCHES OF COVER UNLESS OTHERWISE APPROVED. WHERE UTILITY CONFLICTS OCCUR, THE WATER MAIN SHALL BE LOWERED TO CLEAR AS APPROVED BY THE WATER DISTRICT. THIS INFORMATION SHALL BE REFLECTED ON THE "AS-BUILT" RECORD BY CONTRACTOR.
- EXACT LOCATIONS AND CONFIGURATION OF WATER METERS AND VAULTS SHALL BE APPROVED BY THE DISTRICT PRIOR TO CONSTRUCTION.
- BEDDING FOR WATER MAINS SHALL BE PROVIDED AS REQUIRED IN THE STANDARD DETAIL AND SPECIFICATIONS.
- ALL SERVICE CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH LAKE FOREST PARK WATER DISTRICT REQUIREMENTS.
- ALL FIRE HYDRANTS SHALL BE INSTALLED, INSPECTED AND ADJUSTED IN ACCORDANCE WITH THE DISTRICT'S STANDARD DETAILS.
- AFTER THE PIPE AND APPURTENANCES ARE IN PLACE AND THE SYSTEM HAS BEEN SATISFACTORILY PRESSURE TESTED, IT SHALL BE FLUSHED WITH WATER OF SUFFICIENT VELOCITY TO REMOVE ALL DIRT AND OTHER FOREIGN MATERIALS AND DISINFECTED/CHLORINATED IN ACCORDANCE WITH RECOMMENDED AWWA STANDARDS. THE CONTRACTOR SHALL REQUEST A BACTERIOLOGICAL SAMPLE TO BE TAKEN AT LEAST 24 HOURS AFTER FLUSHING AND DISINFECTING.
- DUCTILE IRON PIPE SHALL CONFORM TO AWWA C-151 WITH A STANDARD THICKNESS CLASS 52. FITTINGS FOR D.I. PIPE SHALL BE DUCTILE IRON OR CLASS 250 GRAY IRON CONFORMING TO AWWA C-110.
- PRIOR TO BACKFILLING, ALL MAINS AND APPURTENANCES SHALL BE INSPECTED AND APPROVED FOR BACKFILLING BY THE DISTRICT.
- NO CONNECTIONS TO THE EXISTING WATER SYSTEM SHALL BE MADE WITHOUT AN APPROVED BACKFLOW PREVENTION DEVICE AND THE DISTRICT'S OR LAKE FOREST PARK WATER DISTRICT'S APPROVAL. PERMANENT CONNECTION SHALL NOT BE MADE UNTIL NEW MAINS HAVE BEEN DISINFECTED, FLUSHED AND HAVE PURITY IN ACCORDANCE WITH DISTRICT REQUIREMENTS. ANY CONNECTION TO THE EXISTING WATER SYSTEM SHALL BE WITNESSED BY THE DISTRICT'S INSPECTOR.
- ALL THRUST BLOCKS SHALL BE FORMED IN PLACE. BLOCKS SHALL NOT BE BACKFILLED PRIOR TO SPECIFIC APPROVAL OF THE DISTRICT AND THE FIRST AGES OF THE CONCRETE CURING PROCESS ARE EVIDENT.
- WATER PIPE ABANDONMENT:
 - REMOVE WHERE DIRECTED AND SALVAGE TO DISTRICT (VALVES/FITTINGS ONLY)
 - OPEN ALL MAIN VALVES AND CAP ENDS OF PIPE
 - REMOVE VALVE BOX TOPS AND RESTORE SURFACE

NO.	BY	DATE	REVISIONS	BY:	DATE:	 Know what's below. Call before you dig.	 LAKE FOREST PARK WATER DISTRICT	 MUNDALL ENGINEERING & CONSULTING P.O. Box 799 Sumas, Washington 98295 Bus: (206)-455-0085 Fax: (206)-455-2276 P.O. Box 130 Lytton, B.C. V0K 1Z0 Cellular: (250)-319-1285 E-Mail: Dan@Mundall.com (800)-313-9705	 WA LIC #32196 DATE: <u>06 / 06 / 2025</u>	CITY OF LAKE FOREST PARK SR104 AND 40TH PLACE NE ROUNDAABOUT PROJECT LFPWD WATERMAIN RELOCATION: STANDARD DETAILS 2	PROJECT NO.	
				Drawn	S.Mundall						5/15/2025	CONTRACT NO.
				Designed	D.Mundall						5/15/2025	-
				Reviewed	D.Mundall						5/15/2025	DRAWING NO.
				Approved	D.Mundall						5/15/2025	WTSD2
				BID SET							SHEET	
								6				
								OF				
								6				