Walker Partners
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FREESE AND NICHOLS

804 Las Cimas Parkway, Suite 150
Austin, Texas 78746

June 30, 2020

Mr. Scott Lambert
Travis County TNR Road and Bridge
700 Lavaca Street
Austin, TX 78701

Re: Right-of-Way (ROW) Coordination for Brushy Creek Regional Utility Authority, Phase 2 Raw Water Delivery System (Project)

Dear Mr. Lambert:

We are writing to coordinate with Travis County for the subject project. This letter and the attached exhibits give an overview of the project and show anticipated impacts to Travis County ROW. We are seeking to determine the processes required to obtain approval from Travis County so that the identified Project improvements can be constructed. If there are any checklists or descriptions of the information required for approval, please direct us to how we can obtain it. If there is another contact person that we will be working with for this project, please let us know how to contact them. If any fees are required, please provide the required fee information.

The Brushy Creek Regional Utility Authority (BCRUA) Phase 2 Raw Water Delivery System is a major infrastructure initiative designed to deliver raw water from Lake Travis to existing water treatment plants that provide drinking water to the Cities of Cedar Park, Leander, and Round Rock. The Project includes the following major components located near the Sandy Creek arm of Lake Travis:

- Multi-tiered, screened raw water intake with two submerged lake taps connecting to an intake tunnel
- On-shore maintenance facilities serving the raw water intake within the Village of Volente, Texas
- A 9,000 linear feet (LF), 96-inch diameter, gravity-flow intake tunnel connecting the raw water intake to a remotely located pump station in Cedar Park, Texas
- A raw water pump station with a 300 foot-deep wet well and subterranean suction forebay and two separate pumping systems to convey water to three water treatment plants (WTPs)
- A 2,600 LF, 84-inch diameter transmission tunnel connecting the pump station to the existing Phase 1 raw water pipeline; and
- Electrical utility upgrades including a substation expansion and seven miles of new or rebuilt overhead distribution lines.

We are submitting, for your review and coordination, exhibits and details for the project that impacts Travis County ROW. The following elements of construction are shown on the referenced exhibits:

1. Exhibit A – Overall Project Layout Maps

2. Exhibit B – Tail-Tunnel – Lime Creek Road at the Raw Water Pump Station. The tail-tunnel is constructed as part of the tunnel construction. It will extend under Lime Creek Road ROW approximately 300-feet below the existing ground.
3. Exhibit C – 2-Inch Potable Water Line – Lime Creek Road at the Raw Water Pump Station. Relocated existing water line to be installed within the Lime Creek Road ROW.
4. Exhibit D – Proposed Construction at Trail End Road and Lake Travis. Transmission tunnel vertical shaft and open cut pipe within Trails End Road ROW.
5. Exhibit E – Flow Meter Vault – Trails End Road at the City of Leander Sandy Creek Water Treatment Plant. Flow meter vault and flow meter installed within Trails End Road ROW.
6. Exhibit F – Air Release Valve Improvements - Multiple Locations within existing vaults along Trails End Road ROW.
7. Exhibit G – Traffic Control at the Raw Water Pump Station – City of Austin standard details. This exhibit includes drawings submitted as part of a Basic Development Permit (Case No. 20-28321) and Driveway Permit (Case No. 20-28353).
8. Exhibit H – Conceptual Fiber Optic Layout along Trails End Road ROW.
9. Exhibit I – Memorandum on Traffic Impacts of Construction Activities (Traffic Study).

The Project is anticipated to complete final design in summer of 2021. Through coordination with Travis County, we hope to line out a direct path for the awarded Contractor to obtain right-of-way permitting from Travis County. Contractor award as early as Fall 2021 with a construction duration anticipated at 5 years.

Once you have reviewed the attached information, please let me know how we should move forward to obtain approval from Travis County. We would be happy to meet in-person or virtually with the County to answer any questions you may have. Thank you for your time and I look forward to hearing from you.

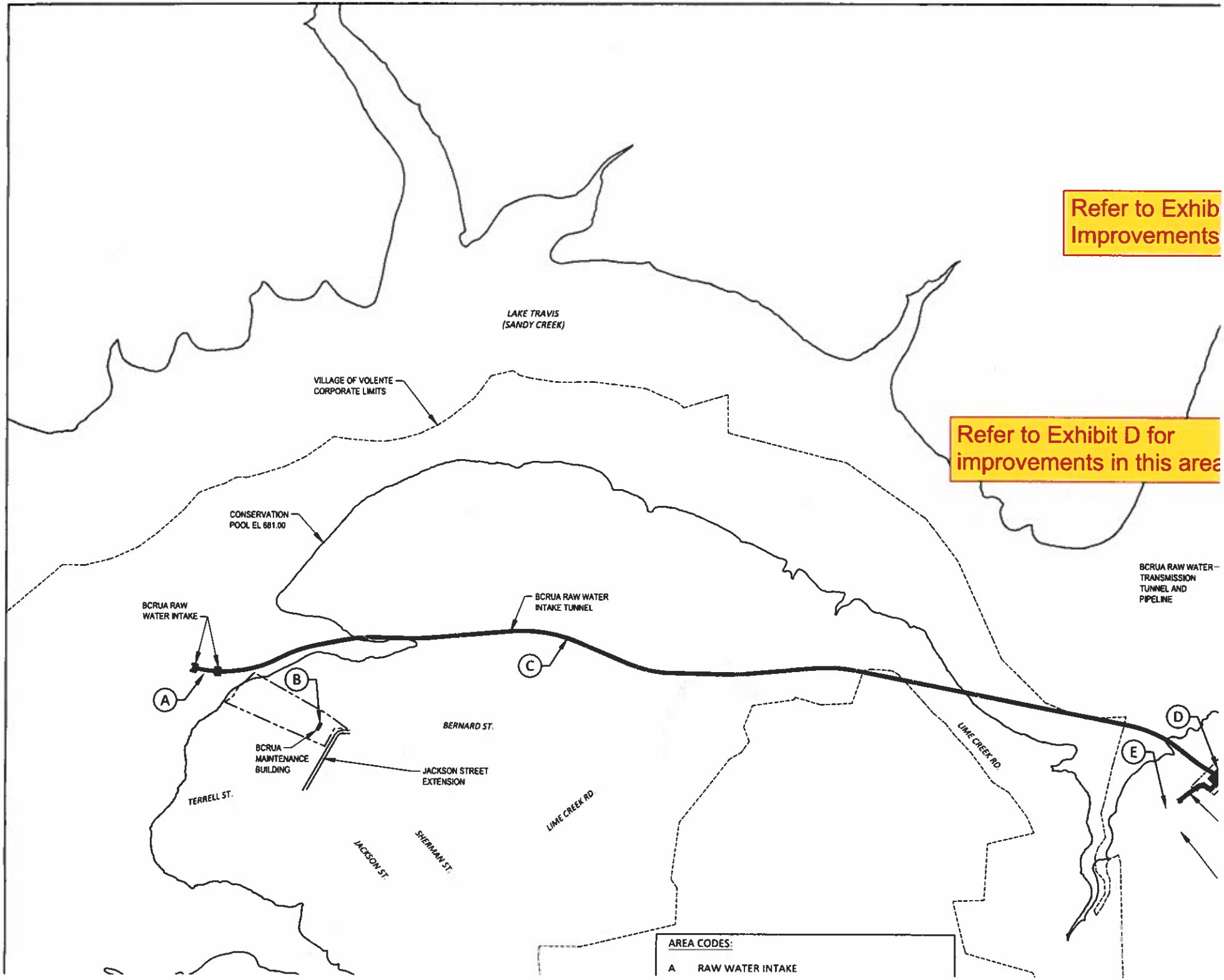
Sincerely,

Michael Brown, P.E.
Senior Engineer

Attachments

Cc: Karen Bondy, General Manager, BCRUA

EXHIBIT A
OVERALL PROJECT KEY MAP



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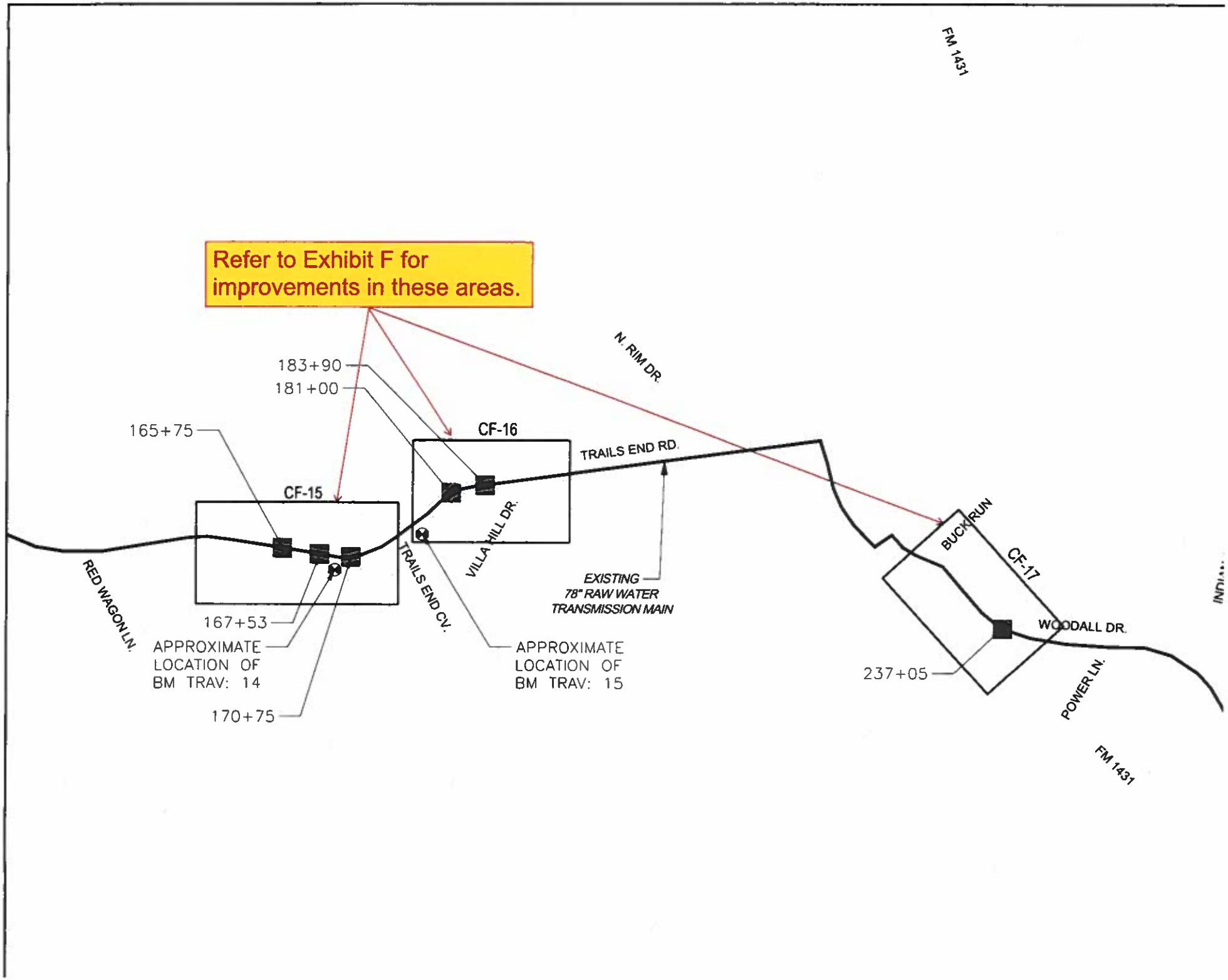

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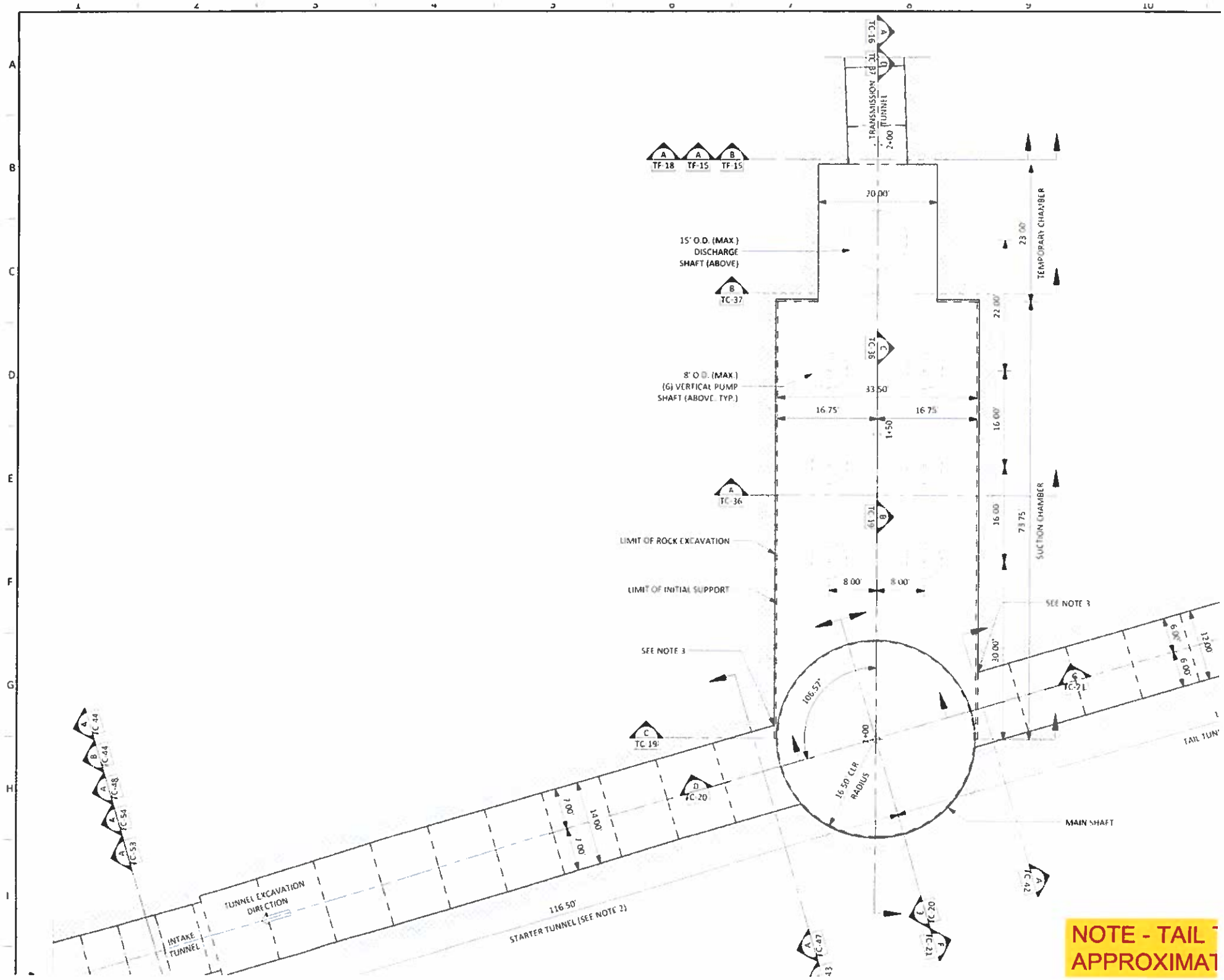
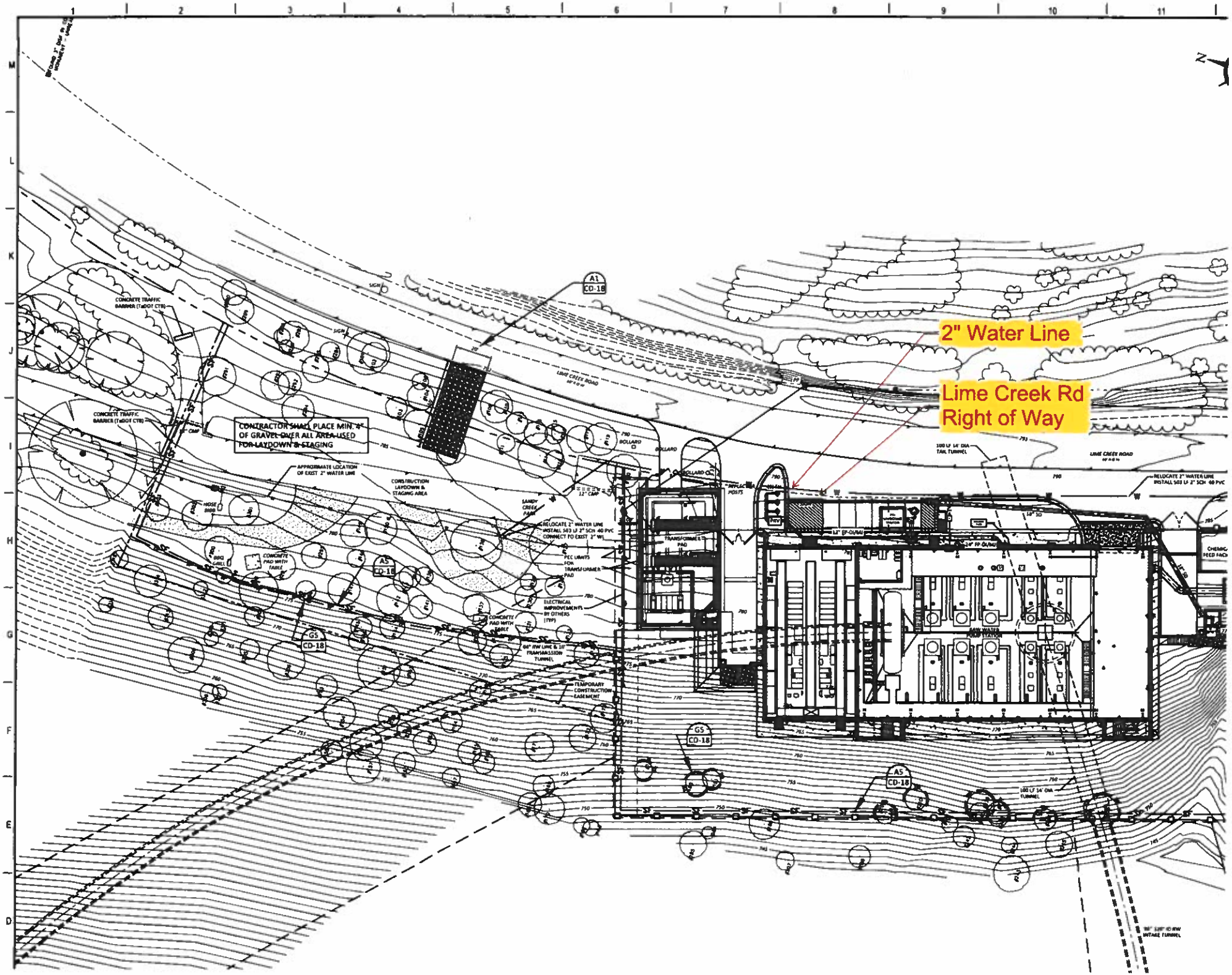
EXHIBIT B
TAIL-TUNNEL



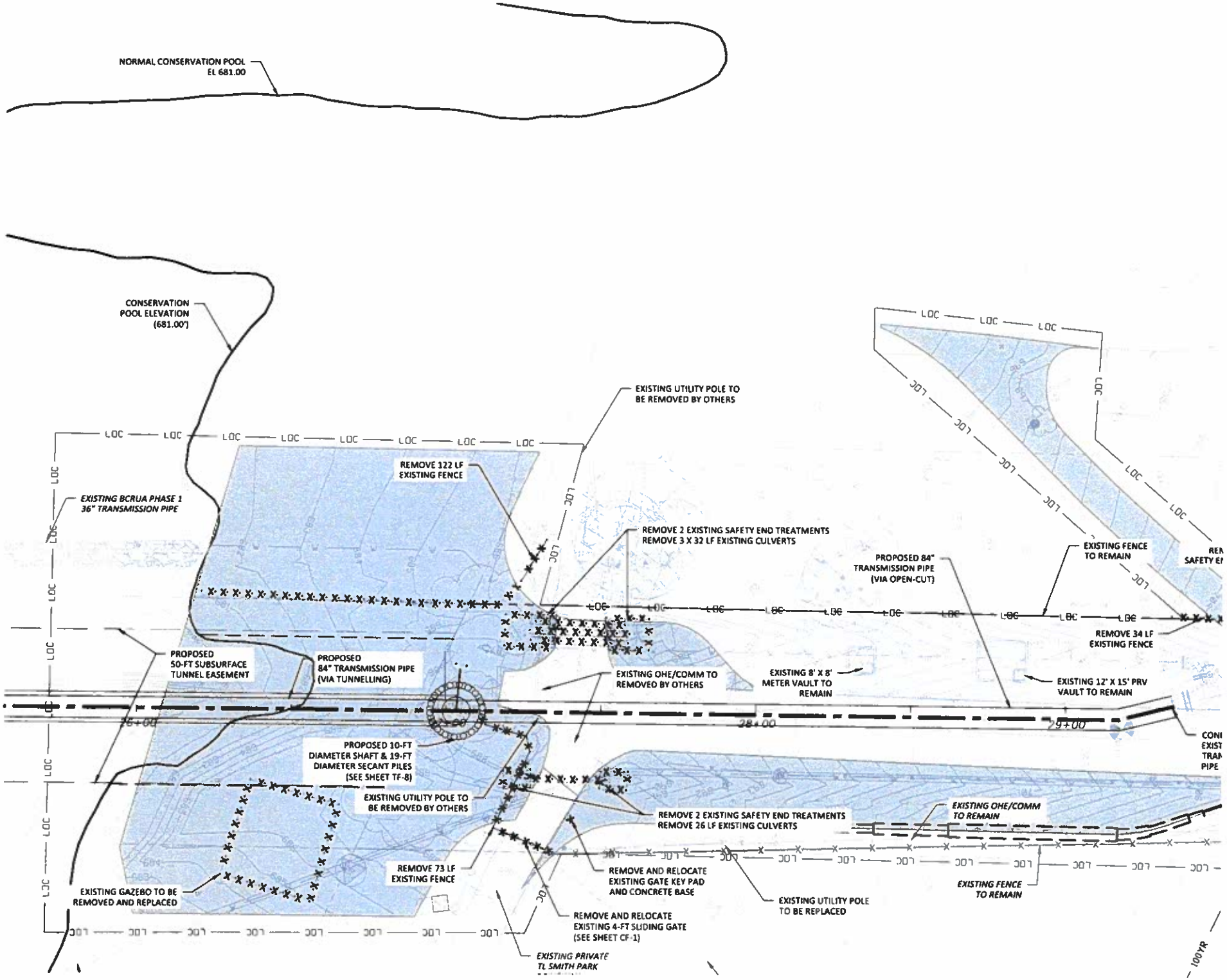
TRANSMISSION TUNNEL
TC-16
TC-37
TF-18
TF-15
TF-15
20.00'
15' O.D. (MAX.) DISCHARGE SHAFT (ABOVE)
TC-37
TEMPORARY CHAMBER
23.00'
22.00'
TC-36
8' O.D. (MAX.) (6) VERTICAL PUMP SHAFT (ABOVE, TYP.)
33.50'
16.75'
16.75'
1+50
16.00'
TC-36
TC-19
16.00'
73.75'
SUCTION CHAMBER
LIMIT OF ROCK EXCAVATION
LIMIT OF INITIAL SUPPORT
8.00'
8.00'
SEE NOTE 3
SEE NOTE 3
30.00'
6.00'
6.00'
12.00'
TC-21
106.57°
1+00
16.50' CLR RADIUS
TC-19
TC-20
TC-44
TC-44
TC-48
TC-54
TC-53
7.00'
14.00'
7.00'
MAIN SHAFT
TC-42
TC-20
TC-21
TC-47
TUNNEL EXCAVATION DIRECTION
INTAKE TUNNEL
116.50'
STARTER TUNNEL (SEE NOTE 2)
NOTE - TAIL T
APPROXIMAT

EXHIBIT C
2-INCH POTABLE WATER LINE



LL ESC PLAN, 5/20/2020 11:27:38 AM, tgeseke

EXHIBIT D
PROPOSED CONSTRUCTION AT TRAILS END ROAD AND LAKE TRAVIS



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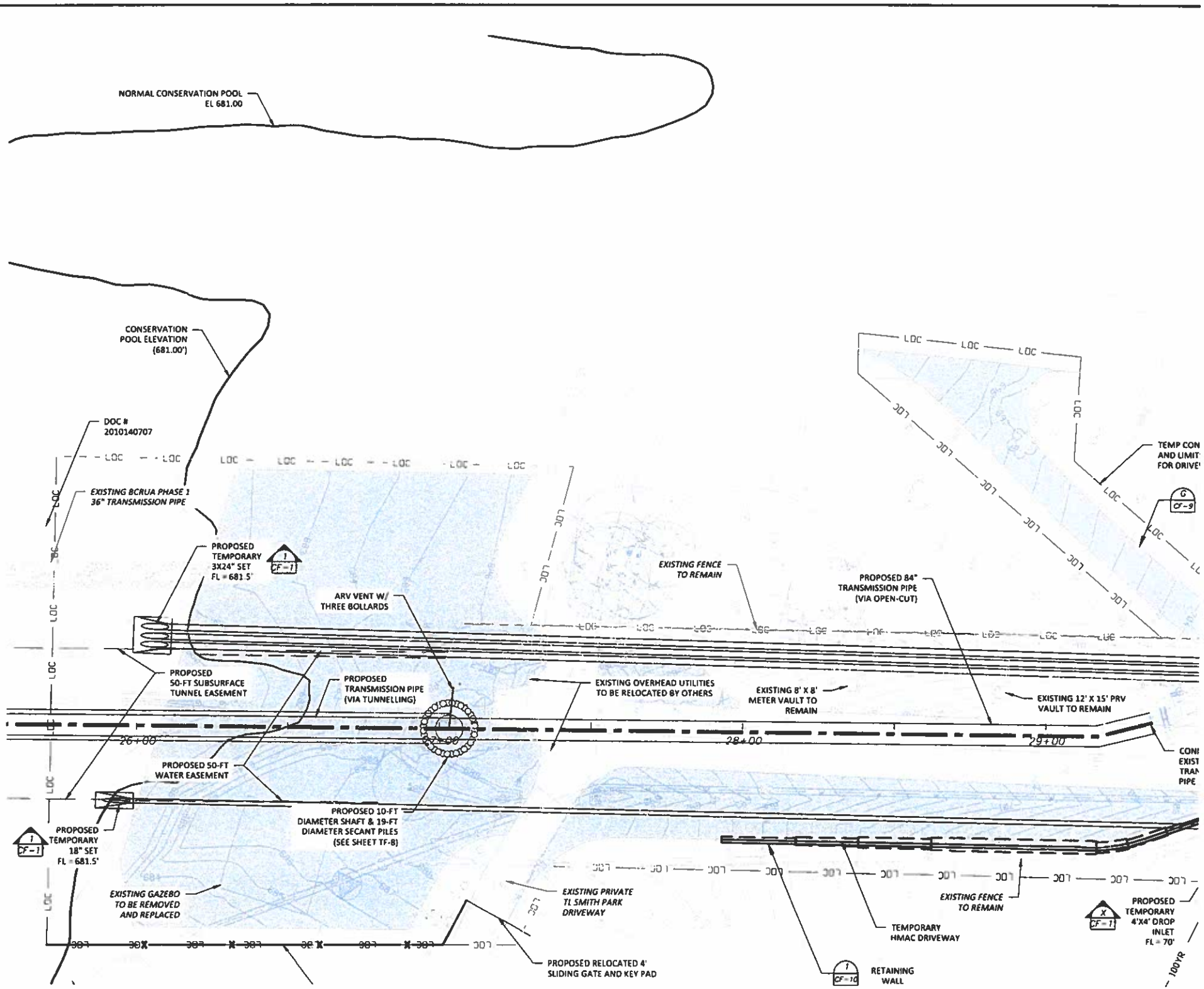

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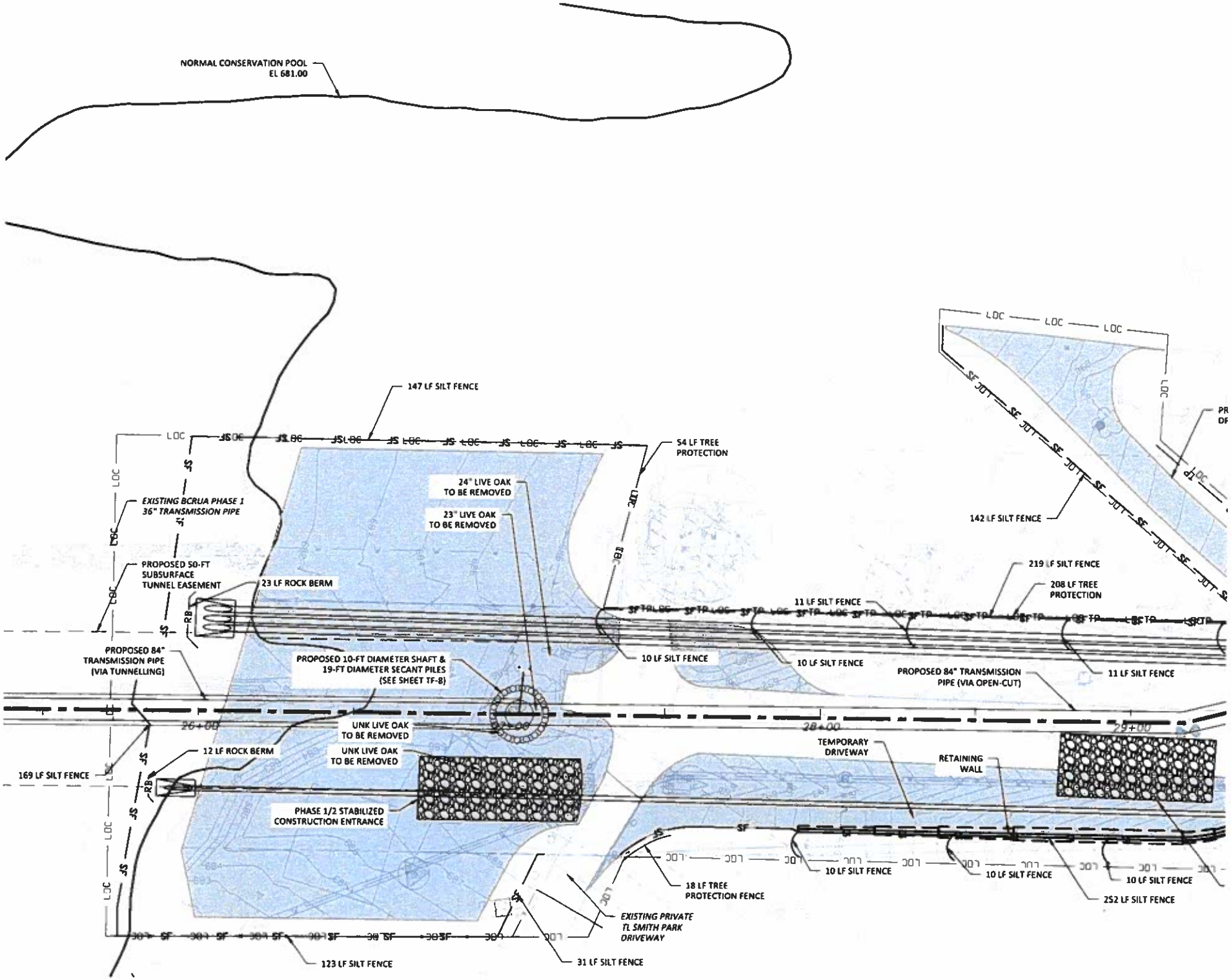

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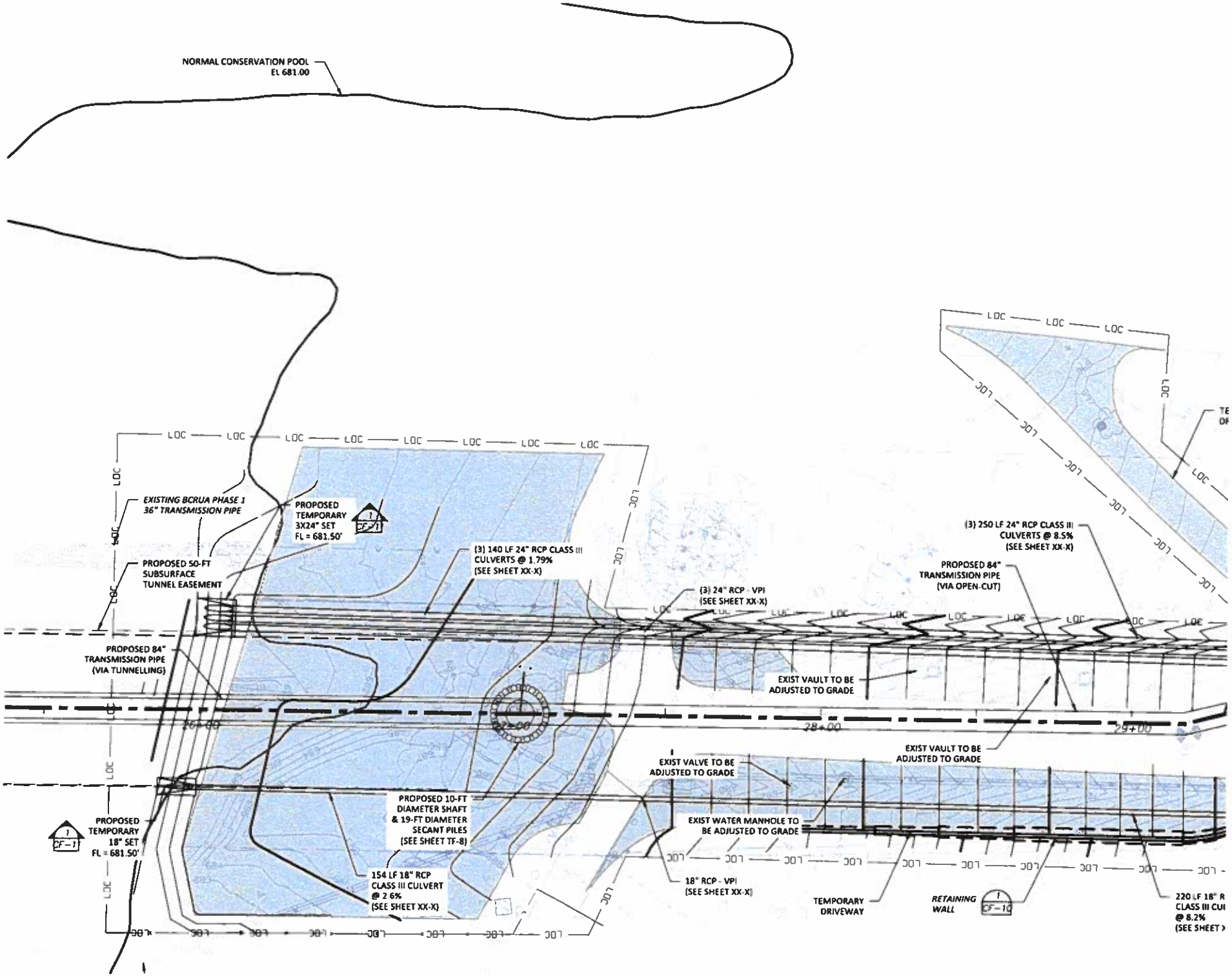

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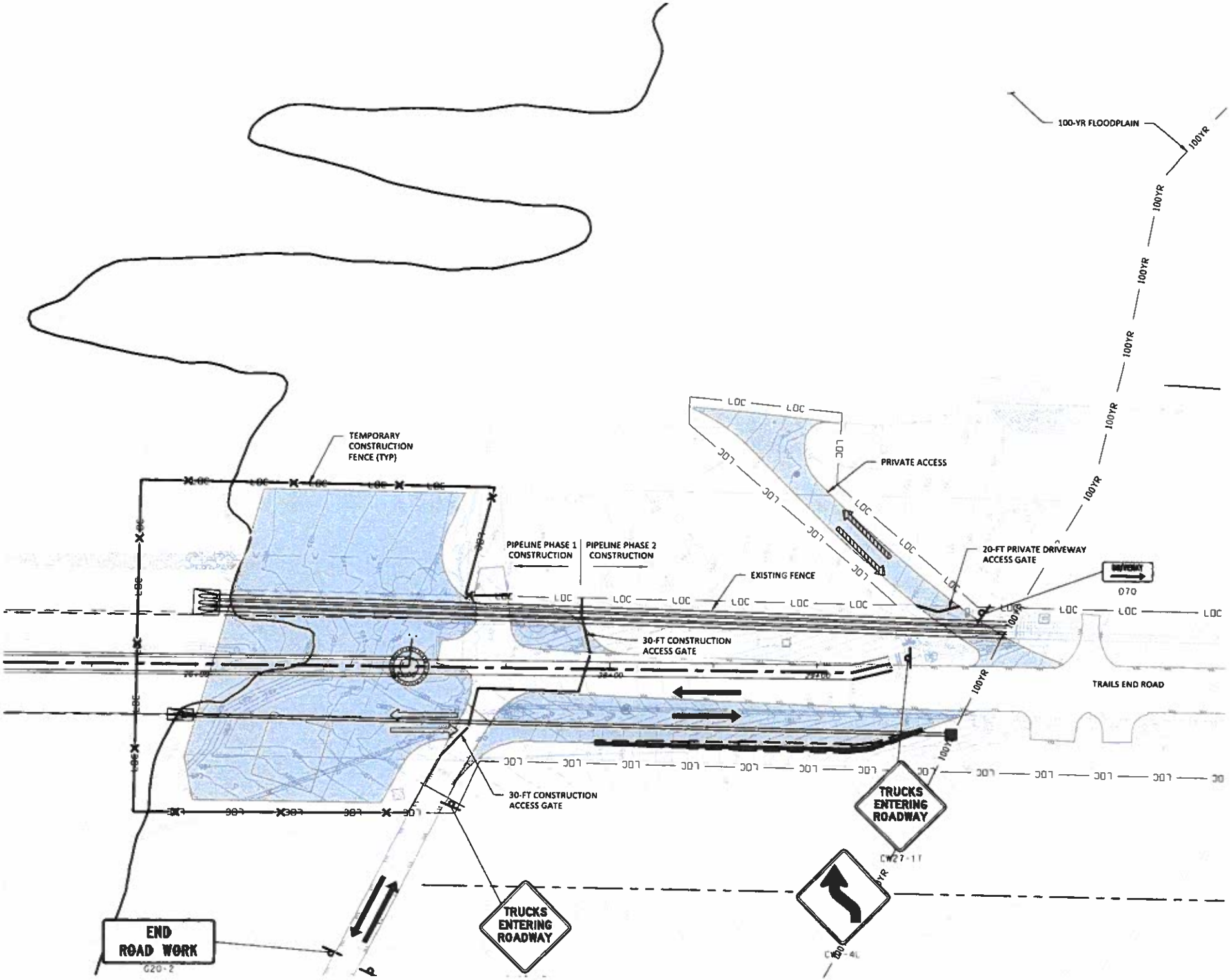

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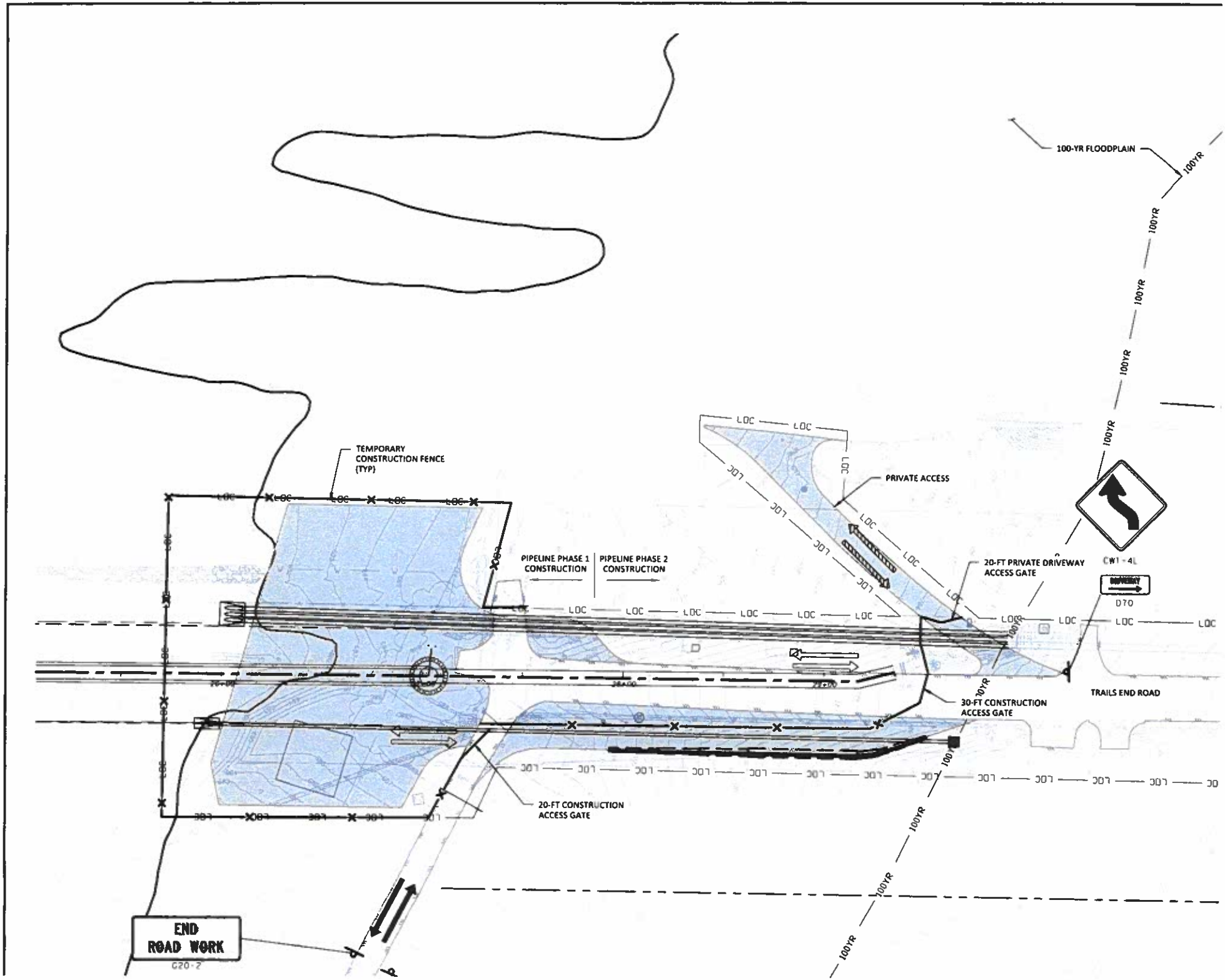

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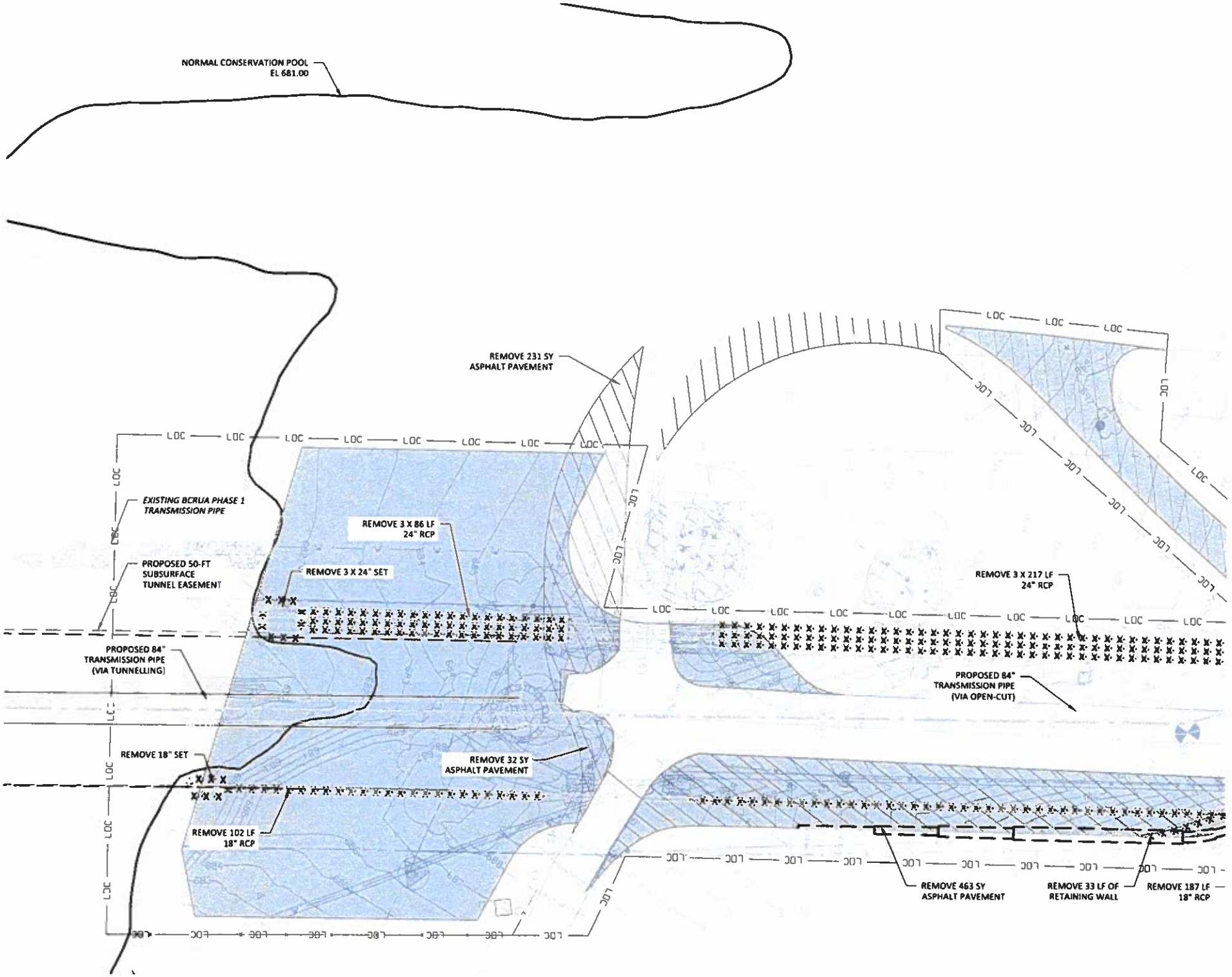

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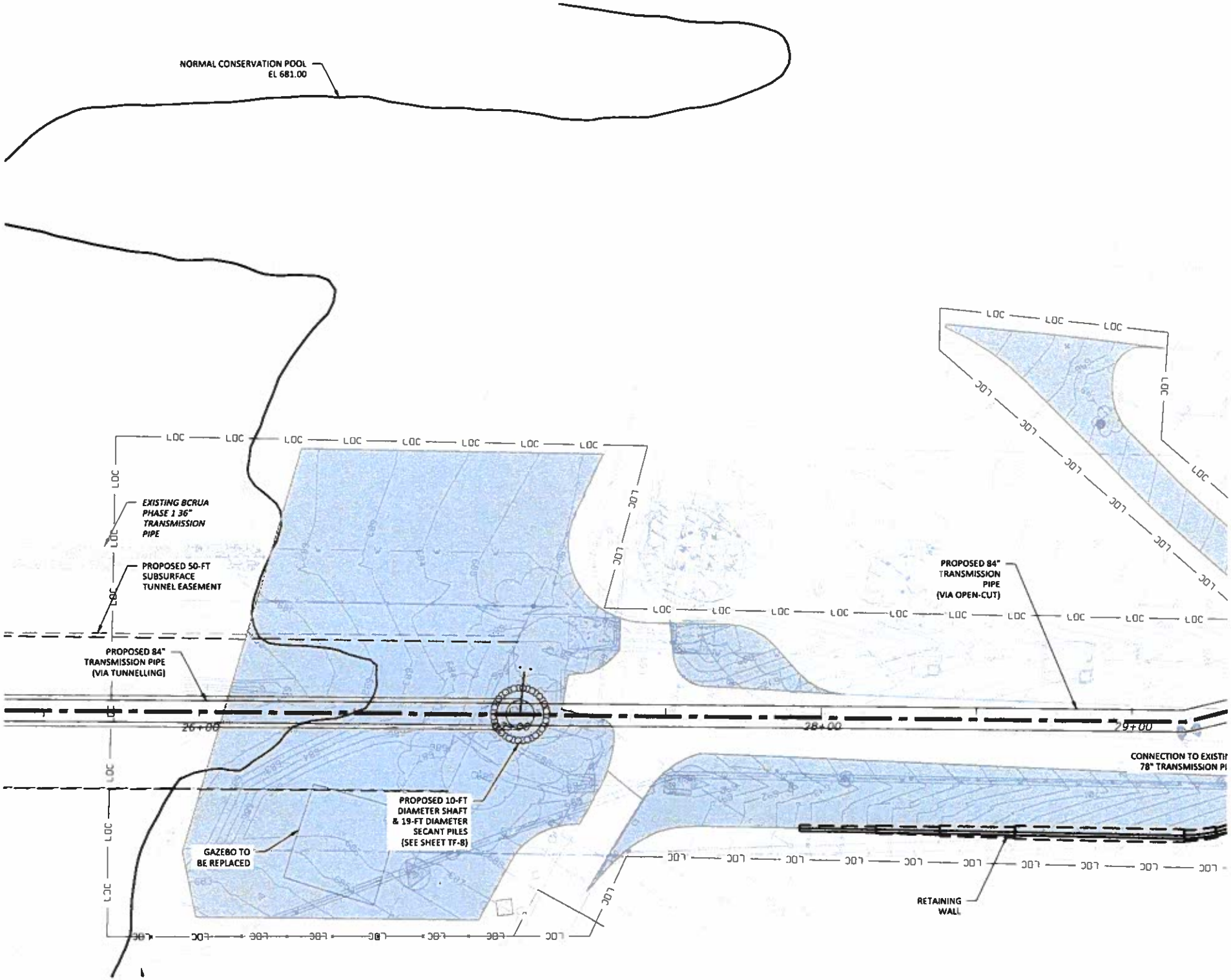

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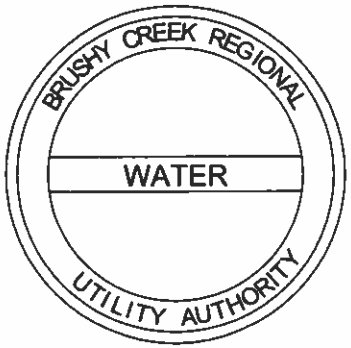
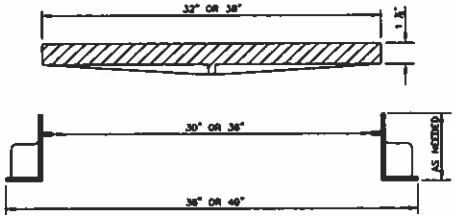
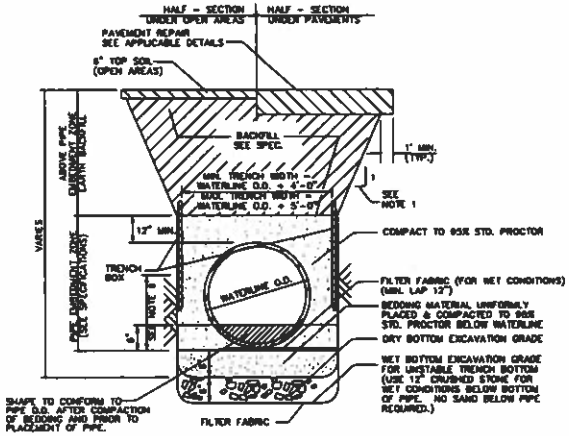




MANHOLE RING AND COVER

DETAIL A

N.T.S.



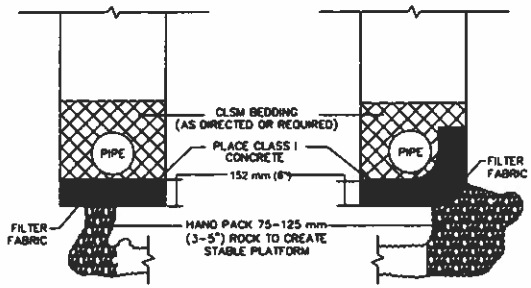
NOTES

1. SEE TRENCH SAFETY SYSTEM SPECIFICATIONS FOR MAXIMUM ALLOWABLE SLOPES
2. FOR WET BOTTOM EXCAVATION LIMITS OF CRUSHED STONE, EXTEND AS SHOWN.
3. KEY CONCRETE TRENCH DAM MINIMUM OF 6 INCHES INTO TRENCH BOTTOM AND WALLS.
4. TRENCH DAM MAY BE FORMED OR UNFORMED. ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING 6-INCH MINIMUM THICKNESS AND 8-INCH KEY DEPTH REQUIREMENTS.
5. TRENCH DAM SHALL BE PLACED AT LEAST 5 FT AWAY FROM ANY PIPELINE STRUCTURE (EACH SIDE). SEE SECTION 02317 FOR OTHER REQUIREMENTS.
6. THIS PORTION OF PIPE EMBEDMENT ZONE MUST BE RECOMPACTED TO PROPER DENSITIES AFTER MOVING SUPPORT SYSTEM FORWARD.

EXCAVATION AND BACKFILL
(FOR LARGE DIAMETER WATER MAIN)

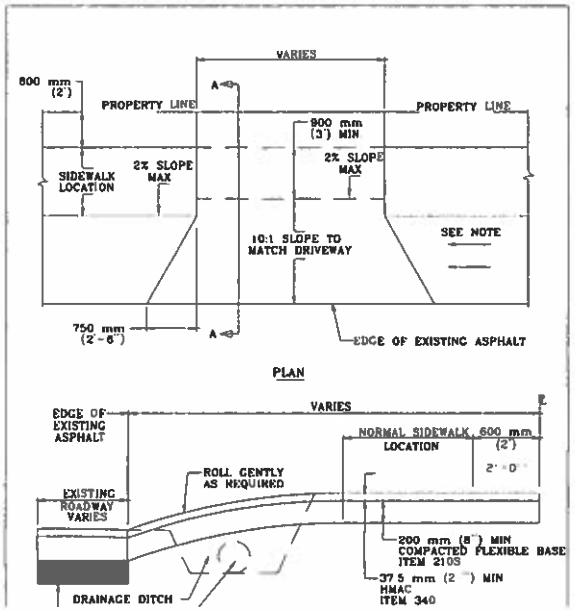
DETAIL B

N.T.S.



NOTES

1. VOID OPENING MAY REQUIRE REINFORCEMENT OR SUPPORT IF LARGER THAN 3-FT IN WIDTH OR LENGTH. INSTALL AT DIRECTION OF THE ENGINEER.
2. CLASS 1 CONCRETE SHALL CONFORM TO SPECIFICATIONS. PLACE A FORM TO ENSURE MINIMUM THICKNESS OF 18-INCHES EXTENDING A MINIMUM OF 6-INCHES BEYOND THE EDGE OF THE VOID.



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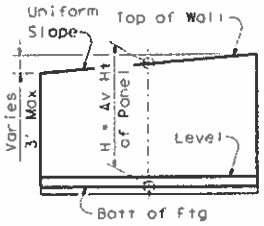
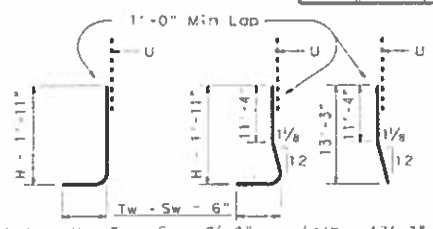


H DEFINITION

Wall Height "H"	PROPERTIES							REINFORCING STEEL FOR ONE 32' PAN																	
	WALL DIMENSIONS						Max Soil Press	A1 ~ 26 #5 at 15" c-c		A2 ~ 25 #6 at 15" c-c		A3 ~ 25 #7 at 15" c-c		A4 ~ 26 #8 at 15" c-c		A5 ~ 25 #9 at 15" c-c		A6 ~ 25 #11 at 15" c-c		A7 ~ 26 #11 at 15" c-c		B ~ 26 #5 at 15" c-c			
(Ft)	Fw	Tw	Sw	Hw	F1	Kw	T/SF	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Size	No
2	1'-8"	8"	1'-0"	0	9"	9"	0.11																		
3	2'-0"	1'-0"	1'-0"	0	9"	9"	0.15																		
4	2'-8"	1'-4"	1'-0"	4"	1'-0"	9"	0.21	3'-10"	104													3'-6"	95	#4	26
5	3'-6"	1'-9"	1'-0"	9"	1'-0"	9"	0.23	5'-3"	142													4'-6"	122	#4	26
6	4'-3"	2'-2"	1'-0"	1'-1"	1'-0"	9"	0.24	6'-8"	181													5'-6"	149	#4	26
7	5'-0"	2'-6"	1'-0"	1'-6"	1'-0"	9"	0.27	8'-0"	217													6'-6"	176	#4	26
8	5'-8"	2'-10"	1'-0"	1'-10"	1'-0"	9"	0.30	9'-4"	253													7'-6"	203	#4	26
9	6'-4"	3'-2"	1'-0"	2'-2"	1'-0"	9"	0.33	10'-8"	284													8'-6"	231	#4	26
10	7'-0"	3'-6"	1'-0"	2'-6"	1'-0"	9"	0.36	12'-0"	325	4'-2"	156											9'-6"	258	#4	38
11	7'-9"	3'-10"	1'-0"	2'-11"	1'-0"	9"	0.39	13'-4"	362	5'-4"	200											10'-6"	285	#6	38
12	8'-6"	4'-3"	1'-0"	3'-3"	1'-0"	9"	0.40	14'-9"	400	6'-7"	247											11'-6"	312	#6	38
13	9'-2"	4'-7"	1'-0"	3'-7"	1'-0"	9"	0.43	16'-1"	436	7'-8"	288	6'-9"	345									12'-6"	339	#7	38
14	9'-10"	4'-11"	1'-0"	3'-11"	1'-0"	1'-0"	0.47	17'-5"	472	8'-11"	335	8'-1"	413									13'-6"	366	#8	38
15	10'-6"	5'-3"	1'-1 1/8"	4'-1 7/8"	1'-0"	1'-0"	0.50	18'-10"	511	10'-1"	379	9'-6"	485									14'-6"	393	#9	38
16	11'-2"	5'-7"	1'-2"	4'-5"	1'-3"	1'-3"	0.55	13'-3"	359	11'-2"	419	10'-11"	558	8'-5"	584							15'-6"	420	#9	38
17	11'-10"	5'-11"	1'-3 1/8"	4'-7 7/8"	1'-3"	1'-3"	0.58	13'-3"	359	12'-5"	466	12'-4"	630	9'-10"	683							16'-6"	447	#9	38
18	12'-6"	6'-3"	1'-4"	4'-11"	1'-6"	1'-3"	0.63	13'-3"	359	13'-7"	510	13'-9"	703	11'-2"	775							17'-6"	475	#9	38
19	13'-3"	6'-7"	1'-5"	5'-3"	1'-6"	1'-6"	0.66	13'-3"	359	14'-9"	554	15'-2"	775	12'-8"	879							18'-6"	502	#9	38
20	13'-10"	6'-11"	1'-6 1/4"	5'-4 3/4"	1'-6"	1'-6"	0.70	13'-3"	359	15'-11"	598	16'-7"	847	14'-1	978							19'-6"	529	#10	38
21	14'-6"	7'-3"	1'-7"	5'-8"	1'-9"	1'-6"	0.75	13'-3"	359	11'-2"	419	18'-0"	920	15'-5"	1070	9'-7"	815					20'-6"	556	#10	38
22	15'-2"	7'-7"	1'-8 1/8"	5'-10 7/8"	1'-9"	1'-6"	0.78	13'-3"	359	11'-2"	419	19'-5"	992	16'-11"	1174	10'-11"	928					21'-6"	583	#10	38
23	16'-0"	8'-0"	1'-9 1/4"	6'-2 3/4"	1'-9"	1'-6"	0.79	13'-3"	359	11'-2"	419	20'-11"	1069	18'-5"	1278	12'-4"	1048					22'-6"	610	#8	76
24	16'-6"	8'-3"	1'-10 1/8"	6'-4 7/8"	2'-0"	1'-6"	0.86	13'-3"	359	11'-2"	419	22'-3"	1137	19'-9"	1371	13'-7"	1155					23'-6"	637	#8	76
25	17'-3"	8'-7"	1'-11 1/4"	6'-8 3/4"	2'-0"	1'-6"	0.89	13'-3"	359	11'-2"	419	12'-2"	622	21'-2"	1469	15'-0"	1275	6'-1"	808			24'-6"	664	#8	76
26	18'-0"	9'-0"	2'-0 1/8"	6'-11 7/8"	2'-3"	1'-6"	0.93	13'-3"	359	11'-2"	419	12'-2"	622	22'-8"	1574	16'-4"	1388	7'-1"	941			25'-6"	692	#8	76
27	18'-6"	9'-4"	2'-1 1/4"	7'-0 3/4"	2'-3"	1'-6"	0.97	13'-3"	359	11'-2"	419	12'-2"	622	24'-1"	1672	17'-8"	1502	8'-1"	1074			26'-6"	719	#9	76
28	19'-3"	9'-7"	2'-2 3/8"	7'-5 5/8"	2'-3"	1'-9"	1.00	13'-3"	359	11'-2"	419	12'-2"	622	25'-5"	1764	19'-0"	1615	9'-1"	1206			27'-6"	746	#9	76
29	20'-0"	10'-0"	2'-3 1/2"	7'-8 1/2"	2'-3"	1'-9"	1.02	13'-3"	359	11'-2"	419	12'-2"	622	27'-0"	1874	20'-5"	1735	10'-1"	1339			28'-6"	773	#9	76
30	20'-6"	10'-4"	2'-4 5/8"	7'-9 3/8"	2'-3"	1'-9"	1.06	13'-3"	359	11'-2"	419	12'-2"	622	14'-4"	995	21'-9"	1849	11'-1"	1472	17'-0"	2348	29'-6"	800	#10	76
31	21'-3"	10'-7"	2'-5 3/4"	8'-2 1/4"	2'-3"	1'-9"	1.09	13'-3"	359	11'-2"	419	12'-2"	622	14'-4"	995	23'-0"	1955	12'-1"	1605	18'-4"	2533	30'-6"	827	#10	76
32	22'-0"	11'-0"	2'-6 1/2"	8'-5 1/2"	2'-6"	1'-9"	1.13	13'-3"	359	11'-2"	419	12'-2"	622	14'-4"	995	24'-5"	2075	13'-1"	1738	19'-10"	2740	31'-6"	854	#10	76

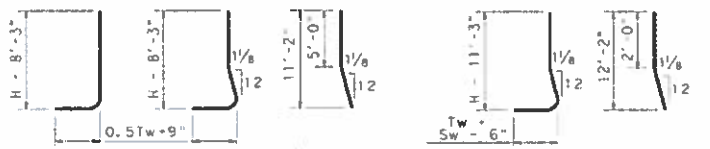


Lgth = H + Tw + Sw - 2'-6" H ≤ 14'

Lgth = 13'-3" H > 14' < 16'

H ≥ 16'

BARS A1



Lgth = H - 0.5Tw - 7'-7" H ≤ 14' H > 14' ≤ 20'

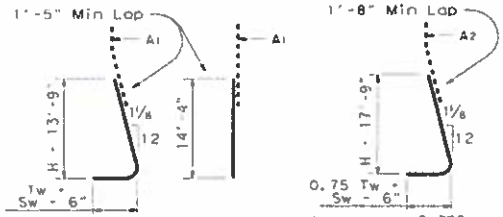
Lgth = 11'-2" H > 20'

BARS A2

Lgth = H + Tw + Sw - 11'-10" H ≤ 24'

Lgth = 12'-2" H > 24'

BARS A3



Lgth = H + Tw + Sw - 14'-4" H ≤ 29'

Lgth = 14'-4" H > 29'

BARS A4

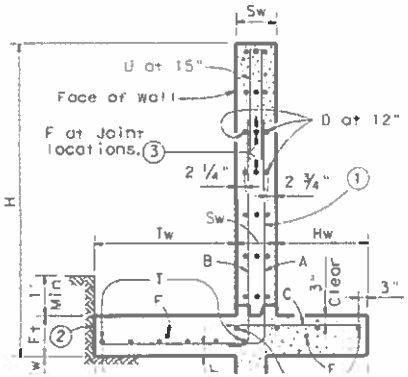
Lgth = H + 0.75Tw + Sw - 18'-5"

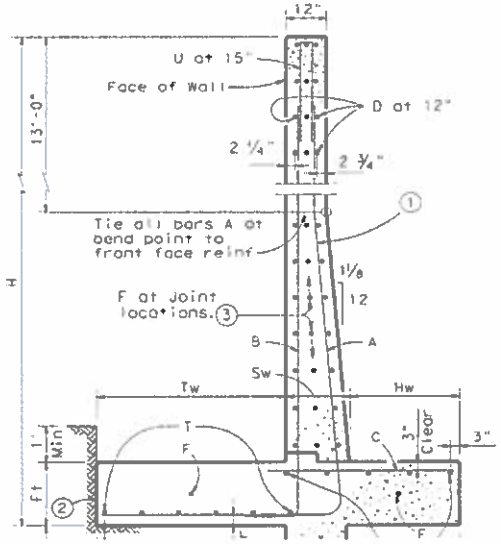
BARS A5

① Place vertical bars inside of horizontal bars (Typ both faces).

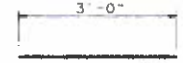
② Place footing toe against undisturbed soil.

③ See standard RW 2 for size.

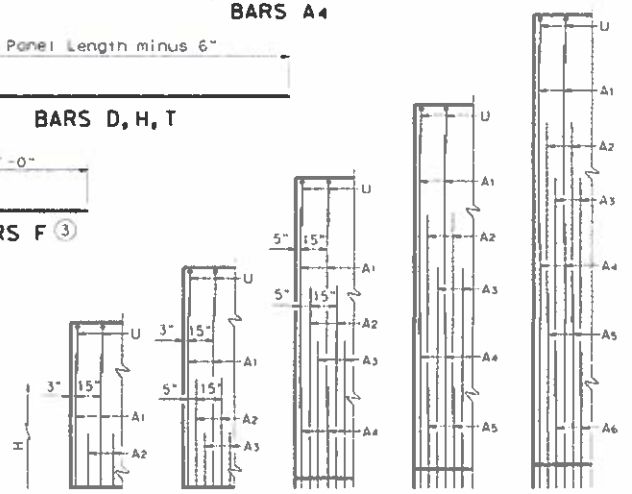




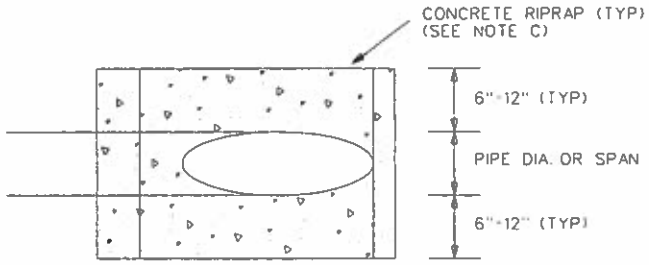
BARS D, H, T



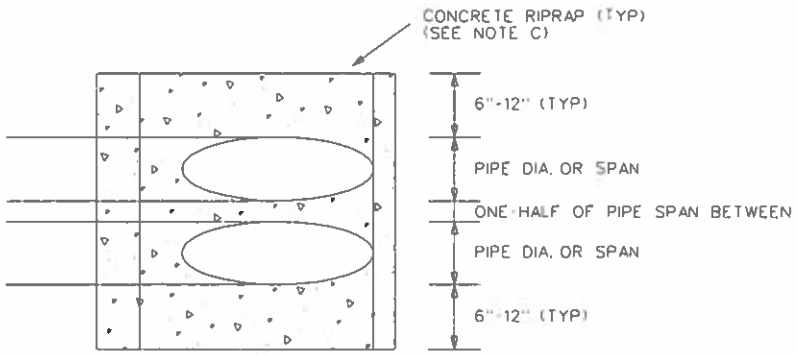
BARS F ③



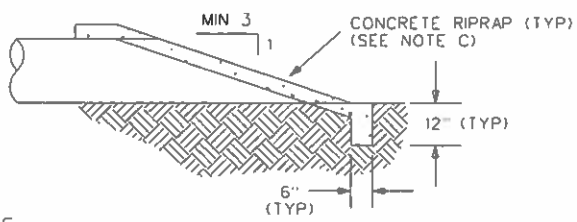
KEETS\C-F-DTL.DWG, DTL02, 6/19/2020 9:57:00 PM, mduran



PLAN VIEW -- SINGLE PIPE



PLAN VIEW -- MULTIPLE PIPES



NOT TO SCALE

SECTION

NOTES:

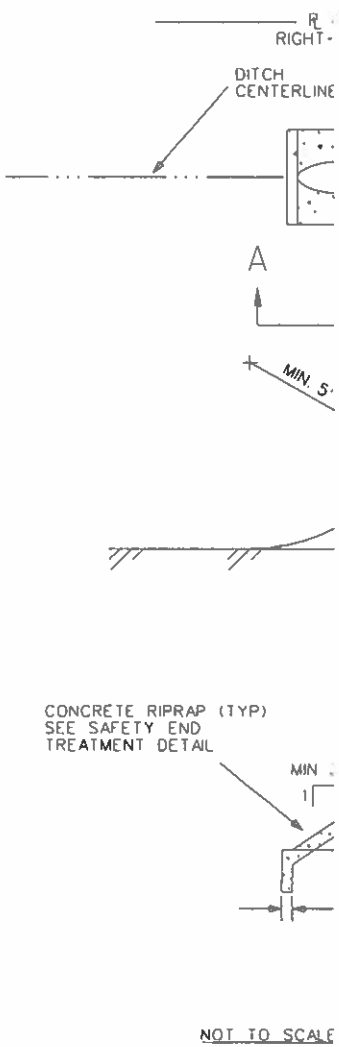
A) PIPE SIZE AND NUMBER TO BE DESIGNATED BY PERMITTING DEPARTMENT.

B) PIPE MAY BE CORRUGATED METAL OR CONCRETE ONLY. PIPE MAY BE ROUND OR ARCH SHAPE.

C) CONCRETE RIPRAP SHALL BE A NOMINAL 4" THICK REINFORCED WITH MIN. 6X6XW1.5XW1.5 WELDED WIRE MESH

TRAVIS COUNTY, TEXAS

TRANSPORTATION and NATURAL RESOURCES DEPARTMENT



NOT TO SCALE

NOTES:

A) MATERIAL DEPTHS SHOWN ABOVE A
COVER OVER PIPE IS RECOMMENDE

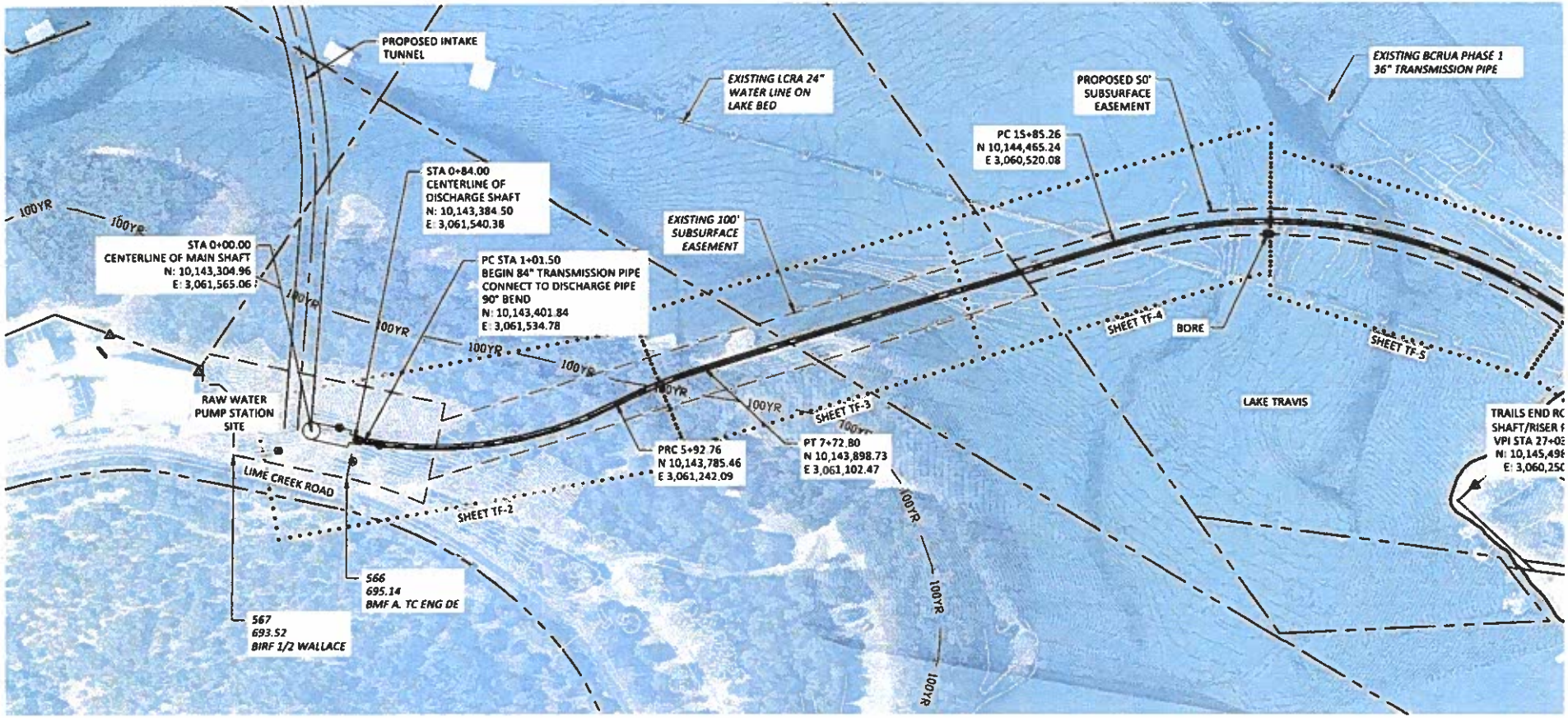
B) PIPE MAY BE CORRUGATED METAL
PIPE MAY BE ROUND OR ARCH SHA

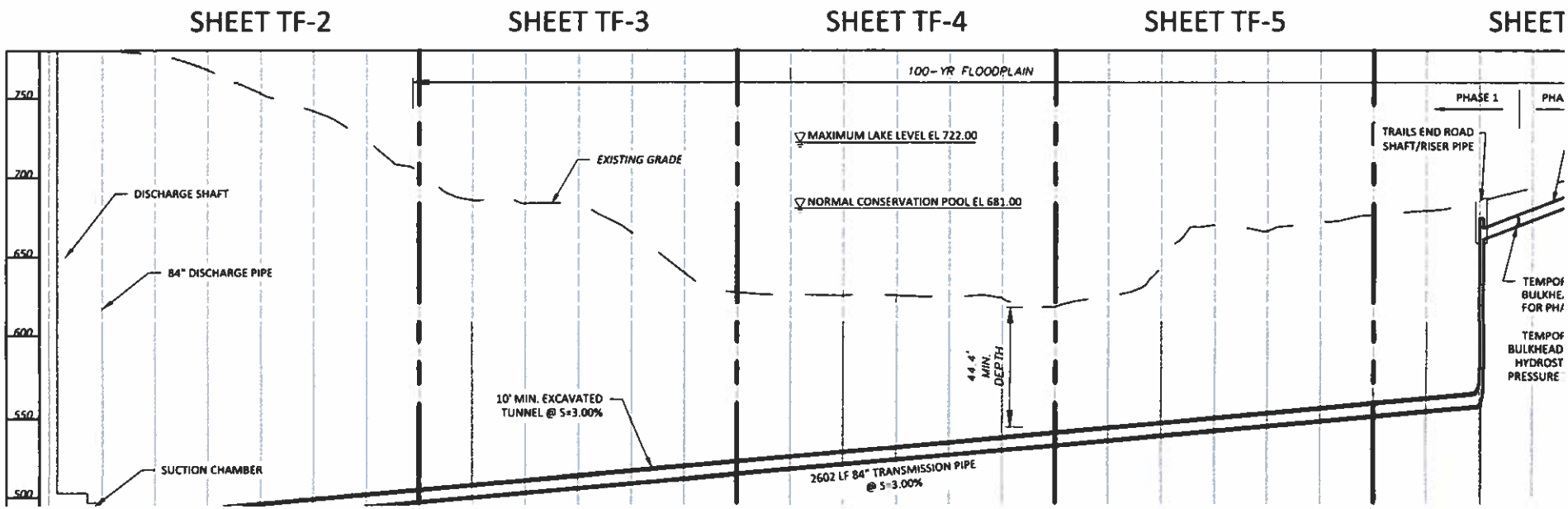
C) MINIMUM REINFORCEMENT IN CONCRI
#3 @ 18" O.C.E.W. OR 6X6XW1.5XW1

D) INSTALL CULVERT PIPE TO MATCH

E) ENGINEERED DRAWINGS MUST BE SU
COMMERCIAL DRIVEWAYS.

4EETS\C-F-DTL.DWG, DTL03, 6/19/2020 9:57:05 PM, mduran





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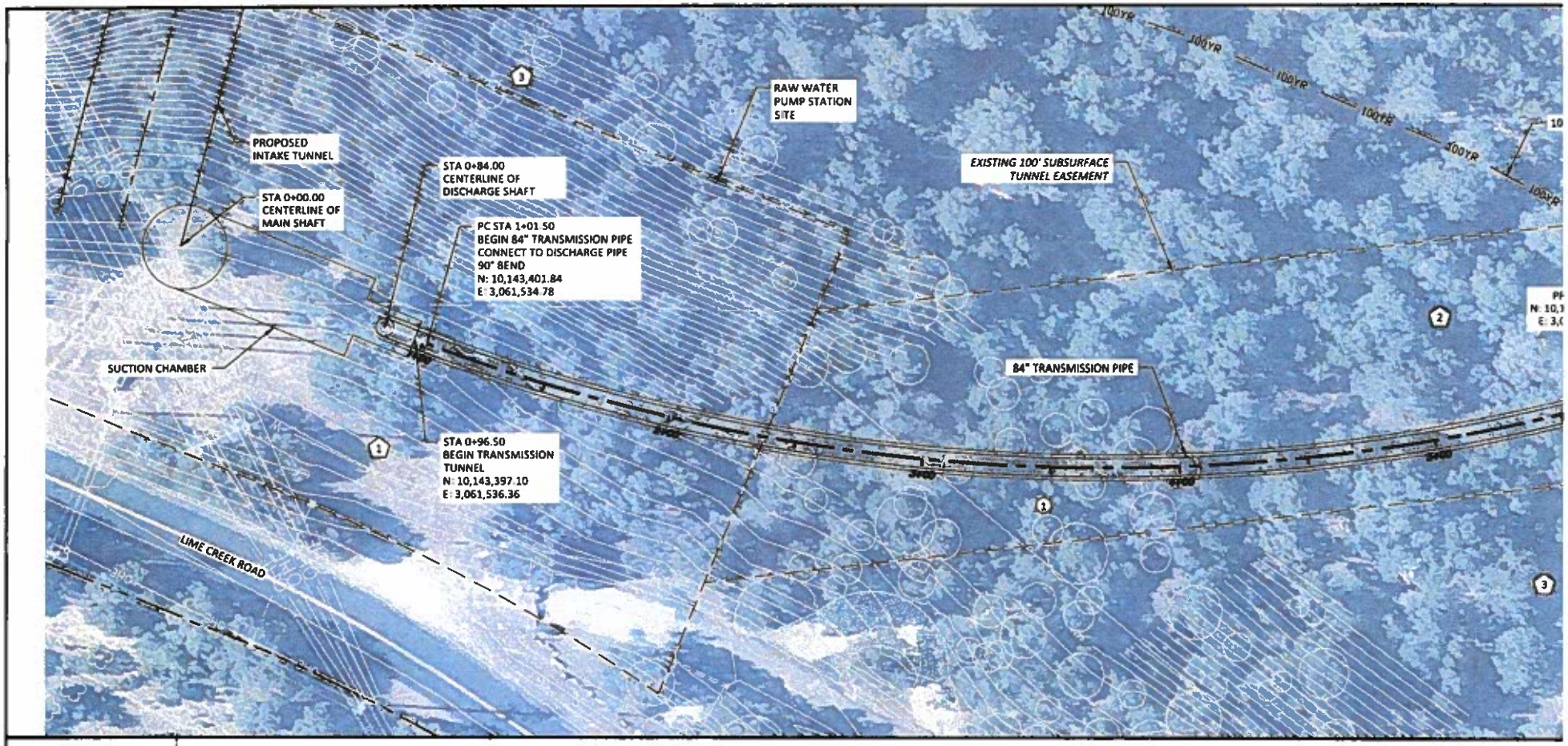

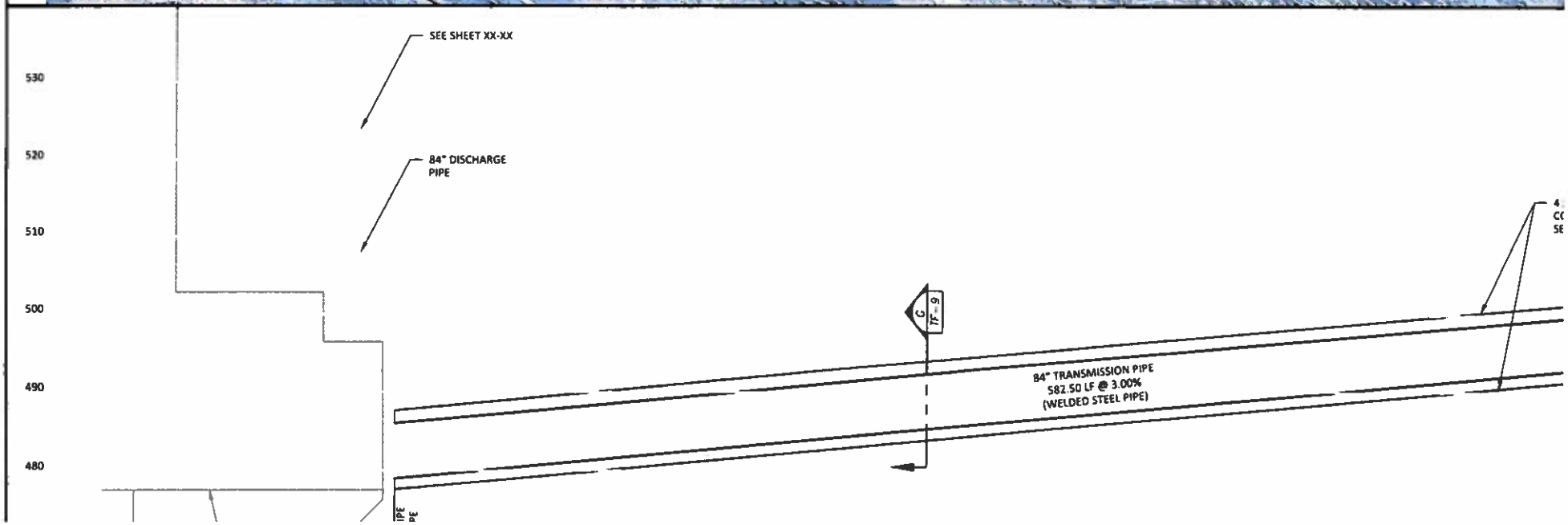

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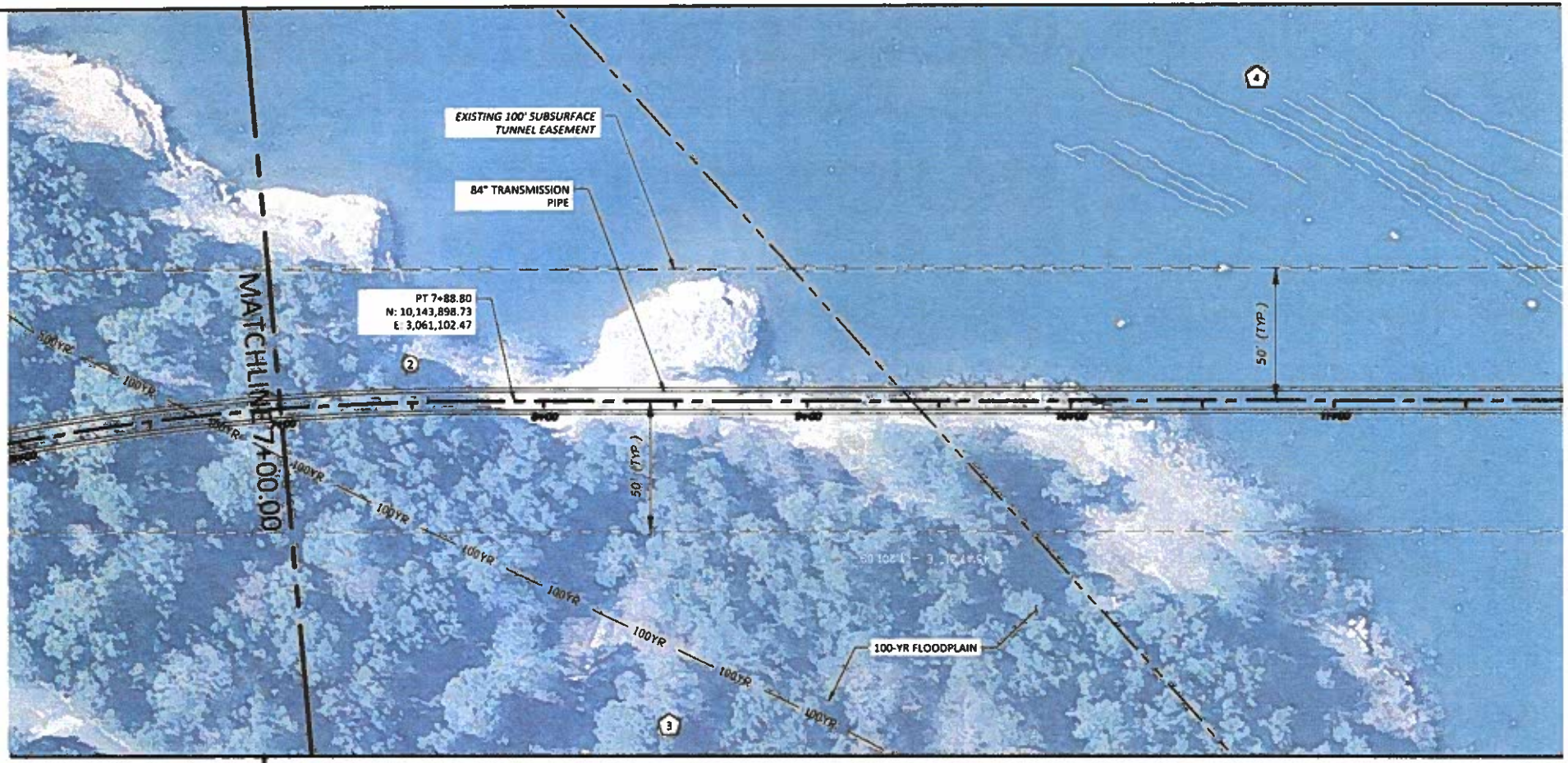

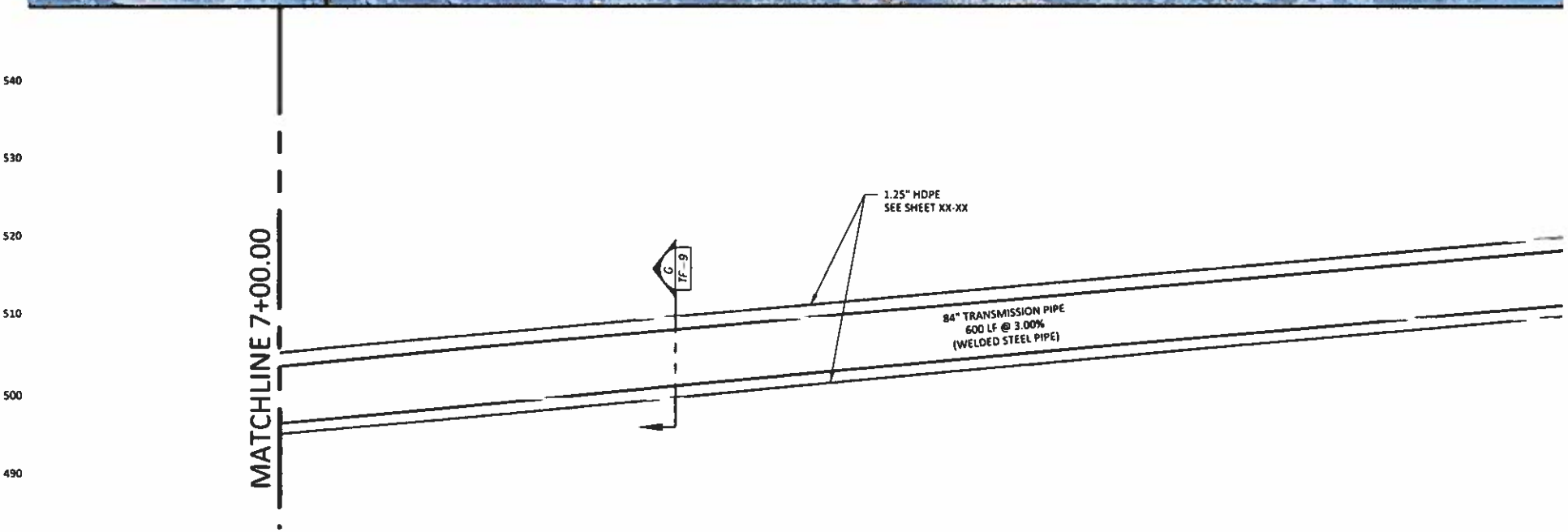

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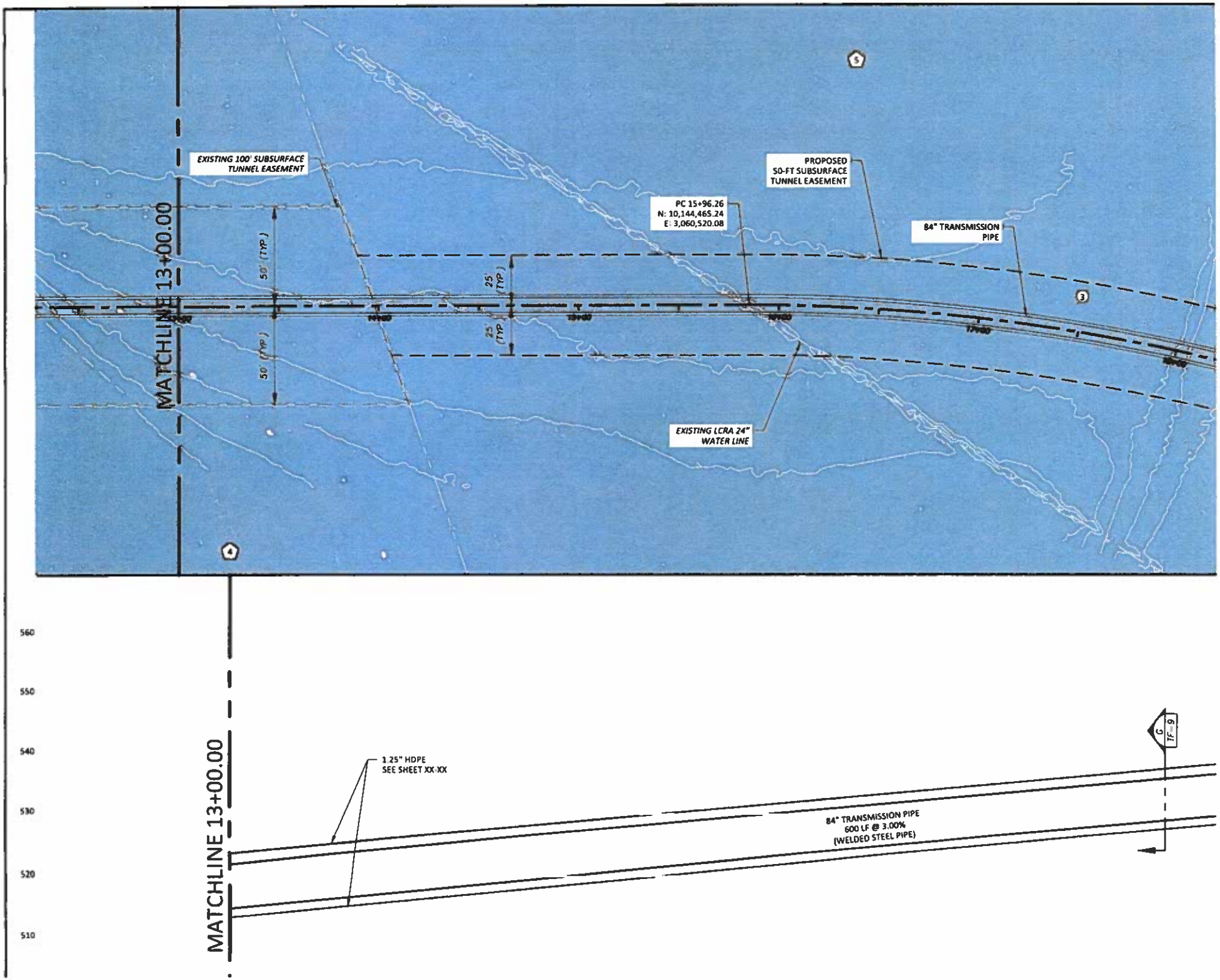

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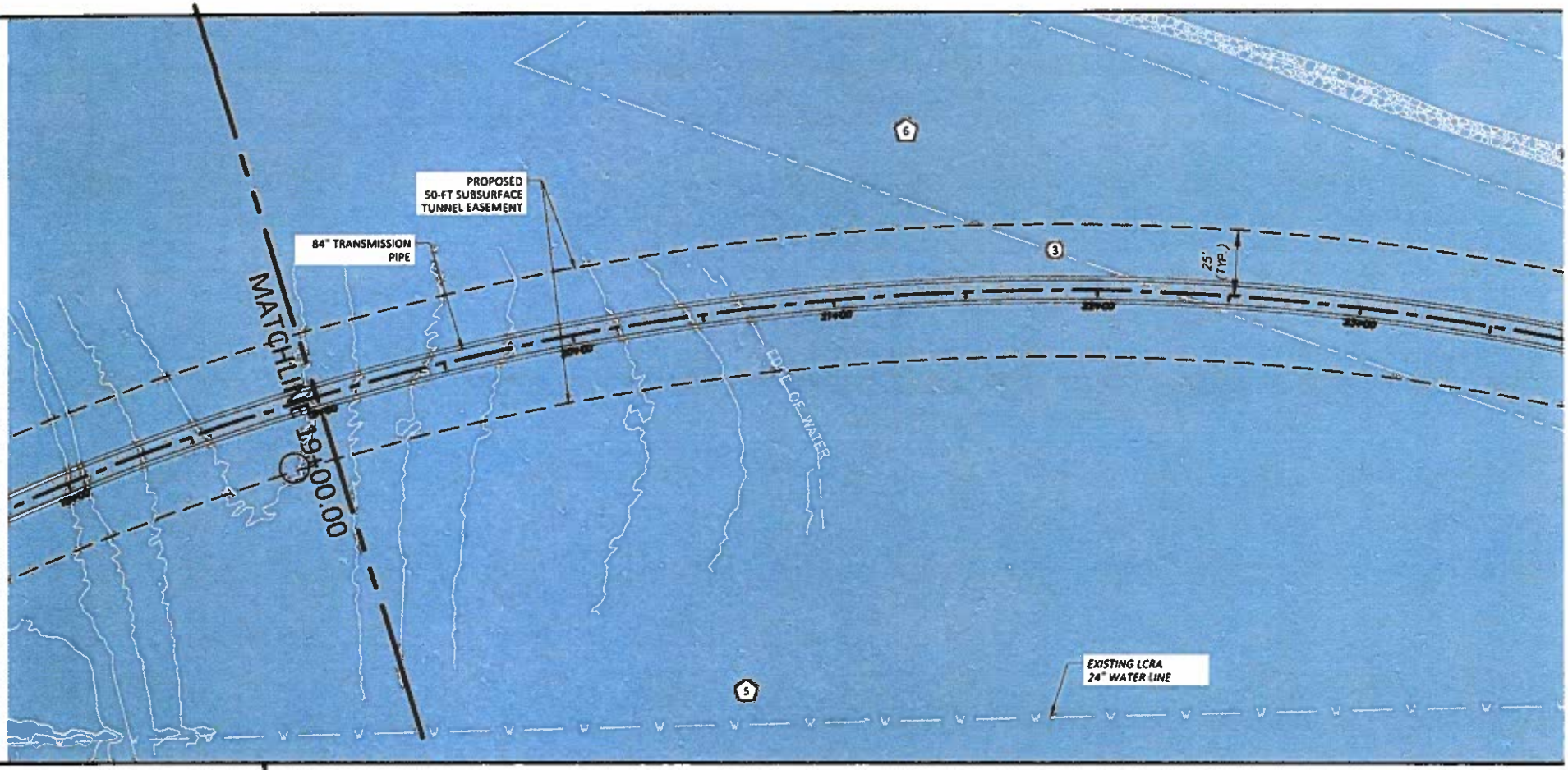

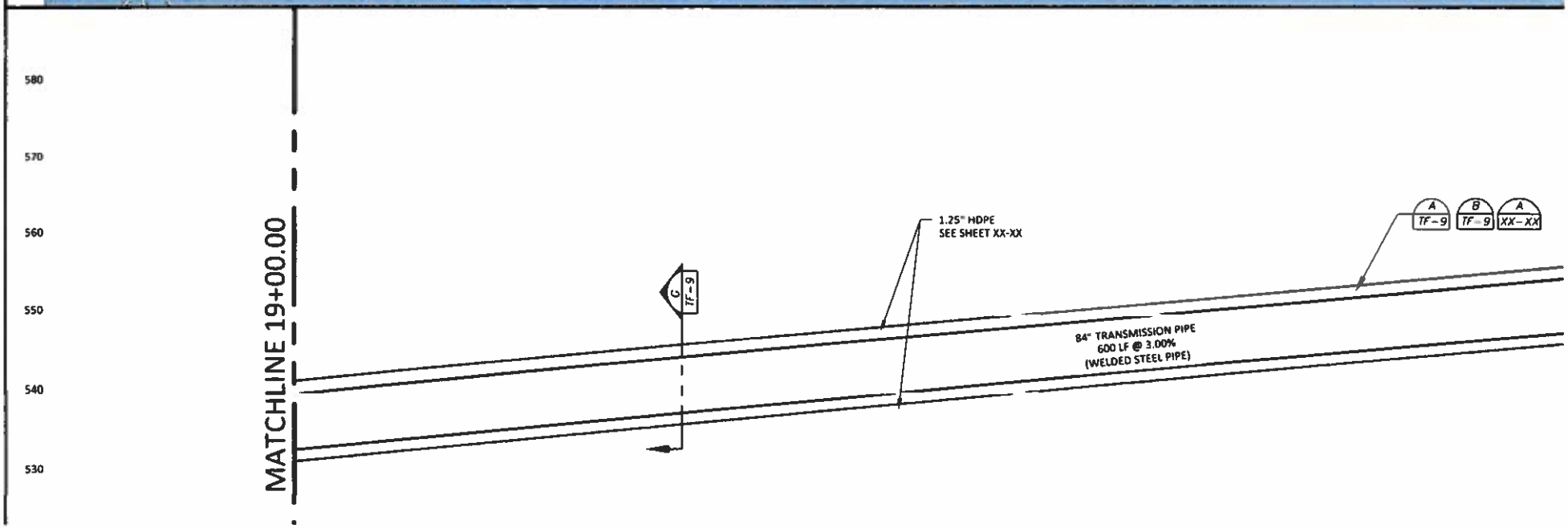

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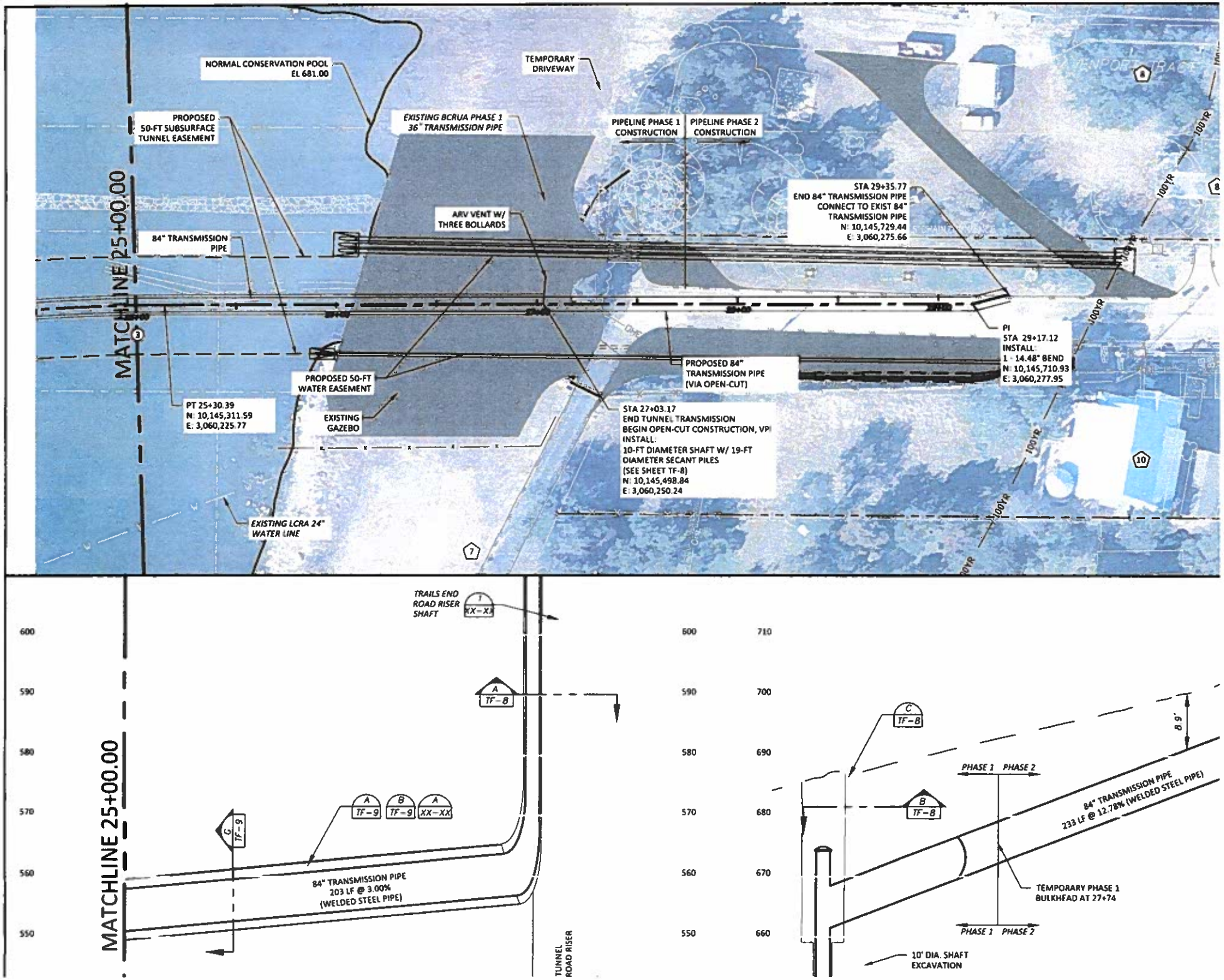


HEETS\T-F-PP.DWG, PP05, 6/19/2020 9:59:58 PM, mduran

1

BRUSHY CREEK REGIONAL
UTILITY AUTHORITY, INC.
CALLED 1.685 ACRES
T.C.C.D. 2014062484
O.P.R.T.C.T.

2

SUBSURFACE TUNNEL '8'
EASMENT
CALLED 2.656 ACRES
T.C.C.D. 2014062486
O.P.R.T.C.T.

3

L.C.R.A.
CALLED 20.80 ACRES
VOLUME 1110, PAGE 377
D.R.T.C.T.

4

L.C.R.A.
CALLED 2352.66 ACRES
VOLUME 1168, PAGE 120
D.R.T.C.T.

5

TRAILS END HOMEOWNERS
ASSOCIATION, INC.
T.C.C.D. 2000016270
VOLUME 11947, PAGE 2280
O.P.R.T.C.T.

6

TRAILS END PROPERTY OWNERS
ASSOCIATION
CALLED 1.2615 ACRES
T.C.C.D. 2013217070
BCRUA NO. 067

7

TRAILS END HOMEOWNERS
ASSOCIATION
LOT 31
RESUB. OF BLOCK 13
TRAIL'S END SUBDN.
VOLUME 11899, PAGE 670
O.P.R.T.C.T.

8

DAVENPORT NED JR.
LOT 30
RESUB. OF LOTS 13 & 14
TRAIL'S END SUBD.

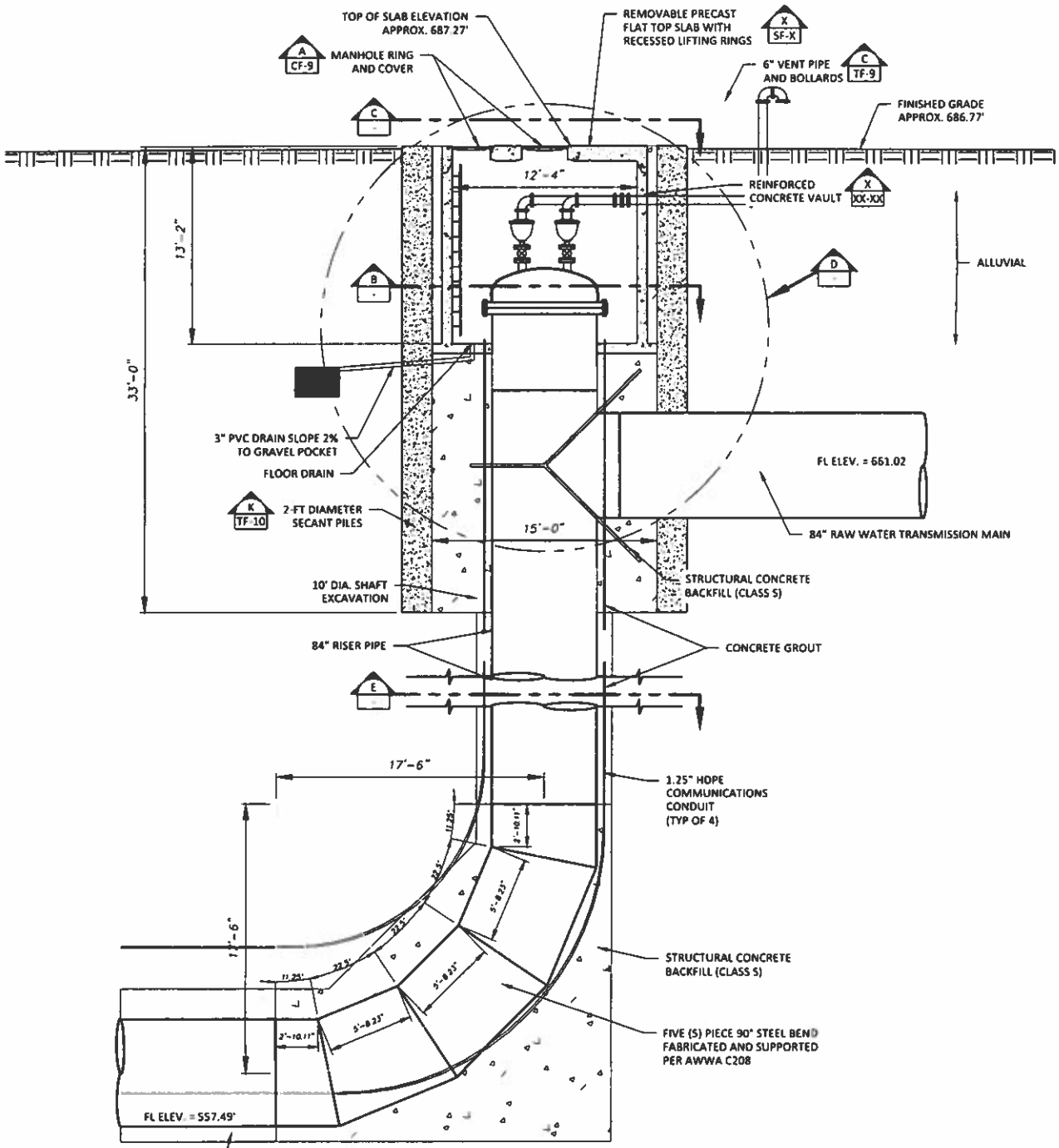
9

DAVENPORT NED JR.
LOT 28 & 29
RESUB. OF LOTS 13 & 14
TRAIL'S END SUBD.

10

HASKINS CHRISTOPHER &
KIMBERLY
LOT 9
RESUB. OF 13 & 14
TRAIL'S END SUBD.

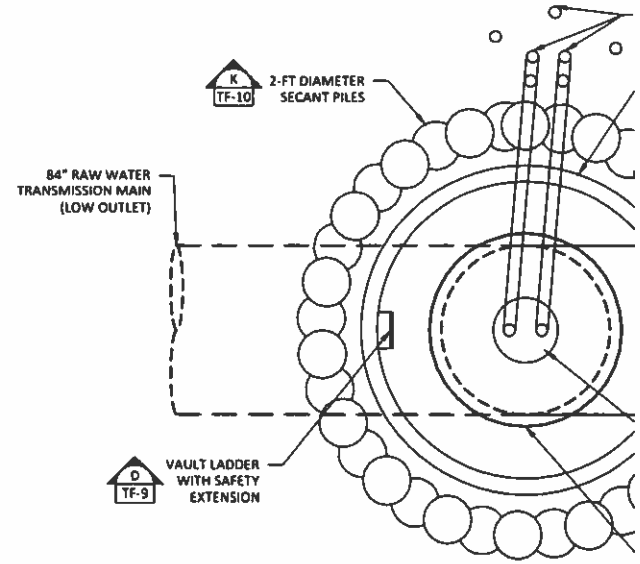
HEETS\T-F-OWNR.DWG, PROPERTY OWNERS, 6/19/2020 10:00:22 PM, mduran



TRAILS END ROAD RISER SECTION

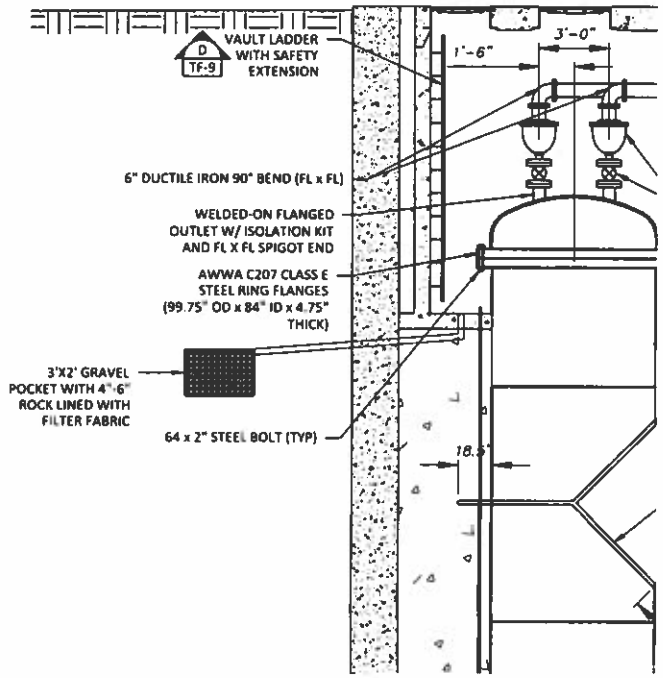
3/16" = 1'-0"

A

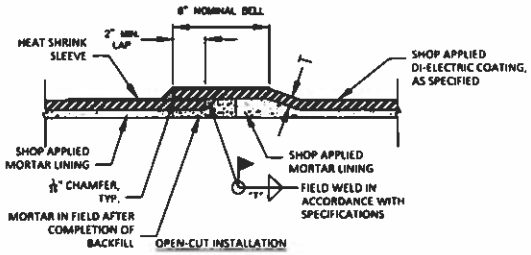


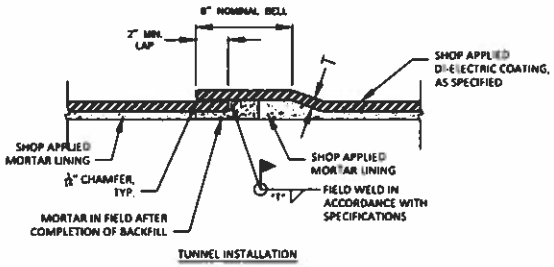
RISER SECTION BELOW TOP SLAB

1/4" = 1'-0"



HEETS\T-F-SITE.DWG, RISER SHAFT SITE, 6/19/2020 10:00:38 PM, mduran



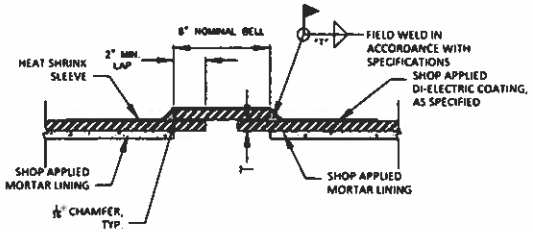


NOTES

1. T = STEEL PIPE WALL THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
2. ALL REFERENCES TO PIPE DIAMETER SHALL SIGNIFY SIZE MEASURED TO INSIDE DIAMETER OF THE LINED PIPE.
3. FOR CEMENT MORTAR COATED STEEL PIPE, APPLY FLEXIBLE MASTIC SEALER TO EXTERIOR OF PIPE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS INSTALLED IN TUNNEL OR ENCASEMENT PIPE.
4. REFER TO SPECIFICATIONS FOR POLYURETHANE OR CEMENT MORTAR COATING.

LAP-WELD FIELD JOINT-STEEL PIPE
(CEMENT MORTAR LINING WITH POLYURETHANE COATING)

DETAIL A
N.T.S.



NOTES

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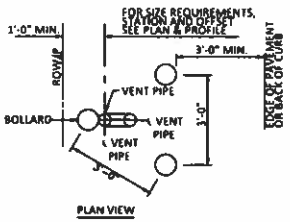
2. ALL REFERENCES TO PIPE DIAMETER SHALL SIGNIFY SIZE MEASURED TO INSIDE DIAMETER OF THE LINED PIPE.
3. FOR CEMENT MORTAR COATED STEEL PIPE, APPLY FLEXIBLE MASTIC SEALER TO EXTERIOR OF PIPE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS INSTALLED IN TUNNEL OR ENCASEMENT PIPE.
4. REFER TO SPECIFICATIONS FOR POLYURETHANE OR CEMENT MORTAR COATING.

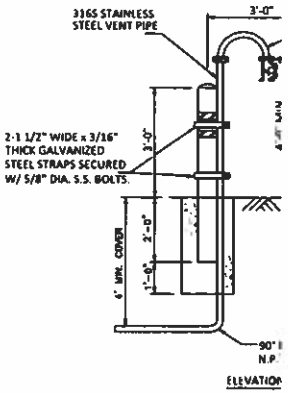
BUTT STRAP FIELD JOINT-STEEL PIPE
(CEMENT MORTAR LINING WITH CEMENT MORTAR COATING)

DETAIL B
N.T.S.



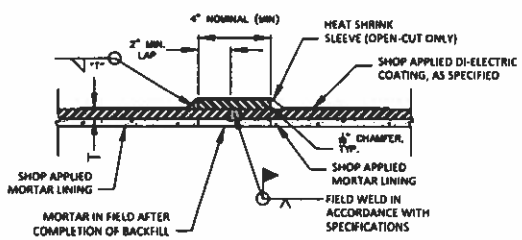
NOTES

1. 3 BOLLARDS SHOULD BE PROVIDED IN TRIANGULAR PATTERN AROUND VENT PIPE OR ANODE PIPE.



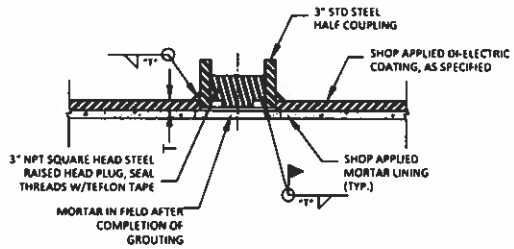
VENT PIPE WITH 3 BOLLA

DETAIL C
N.T.S.



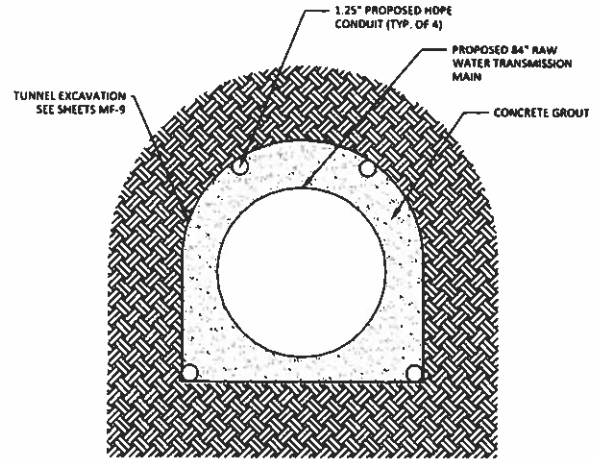
NOTES

1. T = STEEL PIPE WALL THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
2. ALL REFERENCES TO PIPE DIAMETER SHALL SIGNIFY SIZE MEASURED TO INSIDE DIAMETER OF THE LINED PIPE.
3. FOR CEMENT MORTAR COATED STEEL PIPE, APPLY FLEXIBLE MASTIC SEALER TO EXTERIOR OF PIPE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS INSTALLED IN TUNNEL OR ENCASEMENT PIPE.



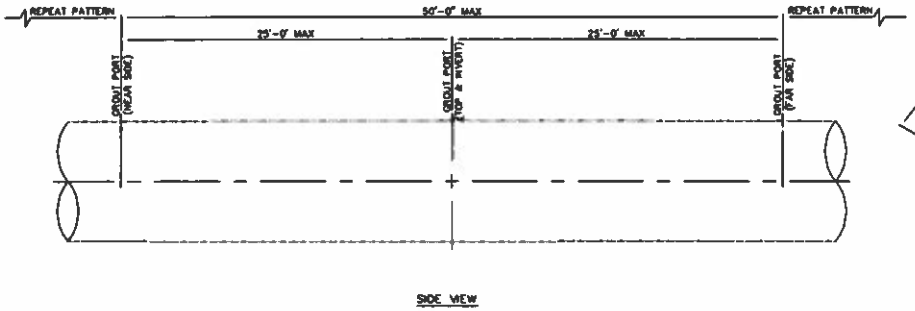
NOTES

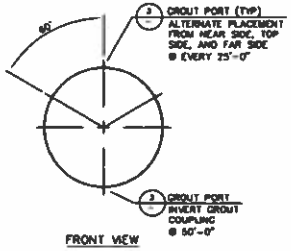
1. T = STEEL PIPE WALL THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
2. ALL REFERENCES TO PIPE DIAMETER SHALL SIGNIFY SIZE MEASURED TO INSIDE DIAMETER OF THE LINED PIPE.
3. FOR CEMENT MORTAR COATED STEEL PIPE, APPLY FLEXIBLE MASTIC SEALER TO EXTERIOR OF PIPE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS INSTALLED IN TUNNEL OR ENCASEMENT PIPE.



REP
REM
AND

4EETS\T-F-DTL.DWG, RISER SHAFT DTL, 6/19/2020 10:00:54 PM, mduran



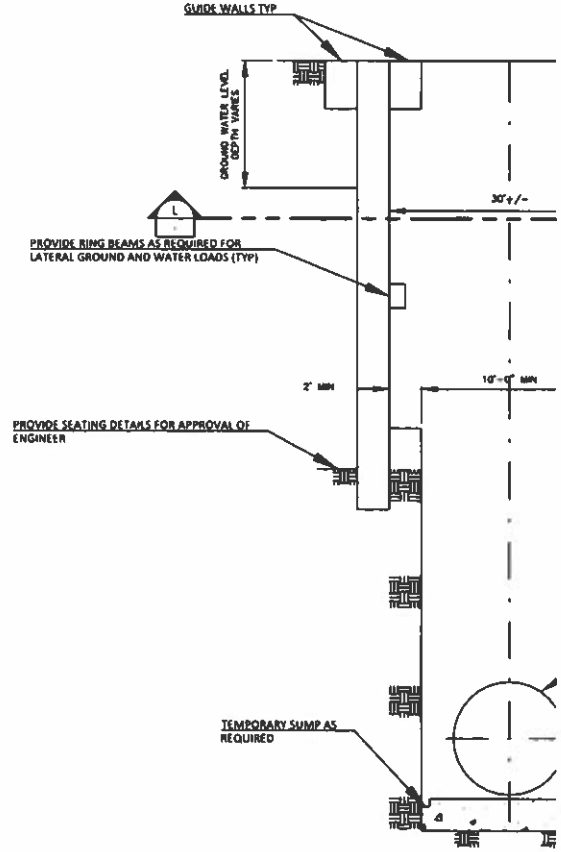


PROVIDE CONTACT GROUTING OF ALL VOIDS CREATED IN OVERBREAKS. INSTALL GROUT PORTS AND COUPLINGS AT THE PIPE MANUFACTURER'S SHOP, WHERE SHOWN. FIELD-INSTALL ADDITIONAL GROUT AND COUPLINGS WHERE REQUIRED AND AS DIRECTED BY THE ENGINEER TO FILL IN OVERBREAK AREAS.

GROUT PORT SPACING

DETAIL J

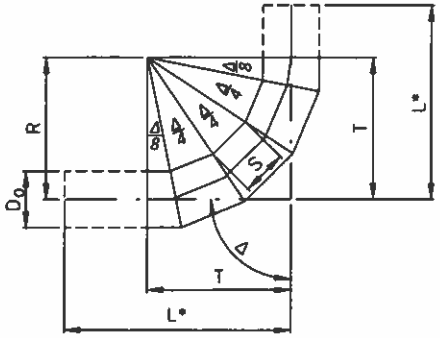
N.T.S.



SECANT PILE SHAFT SECTION

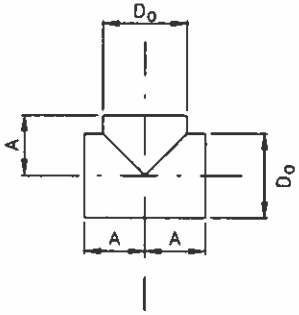
DETAIL K

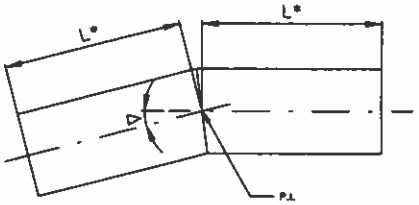
N.T.S.



FIVE-PIECE ELBOW (MORE THAN 67.5° TO 90°)

*NOTE: L MAY BE LESS THAN T





TWO-PIECE ELBOW (0° TO 22.5°)

*NOTE: L TO MATCH FIELD CONDITIONS

Item	Description	Value	Unit
D	Nominal diameter of pipe	84.00	inches
D_O	Outside diameter of steel cylinder	85.75	inches
fD	Formula factor corresponding to the D of a tee, lateral, wye, or elbow	17.26	inches
k	Scalar variable for elbow dimension calculations. k = (number of elbow segments) - 1	4.00	
n	Diameter multiplier for elbow radius calculation	2.50	
R	Radius to centerline of elbow (Figures [illegible], 2E, 2F, and [illegible]	17.50	feet

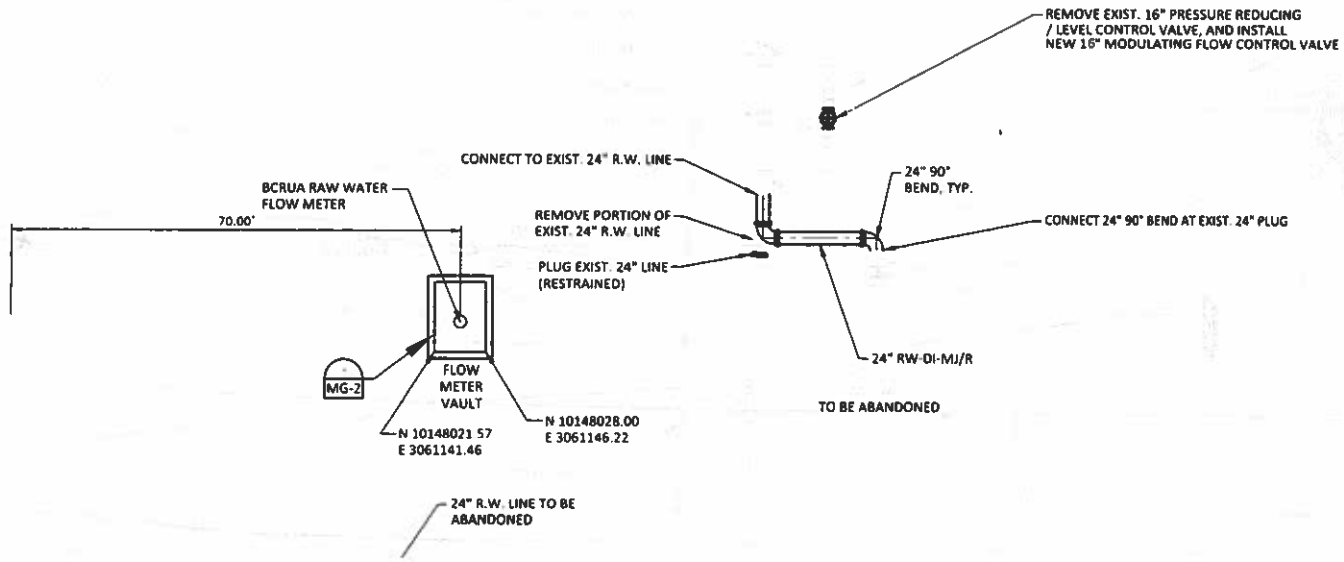
Item	Description	Value	Unit
	[illegible]		

EXISTING BCRUA WATER TRA

EETS\T-F-DTL_DWG, RISER SHAFT DTL (2), 6/19/2020 10:01:00 PM, mduran

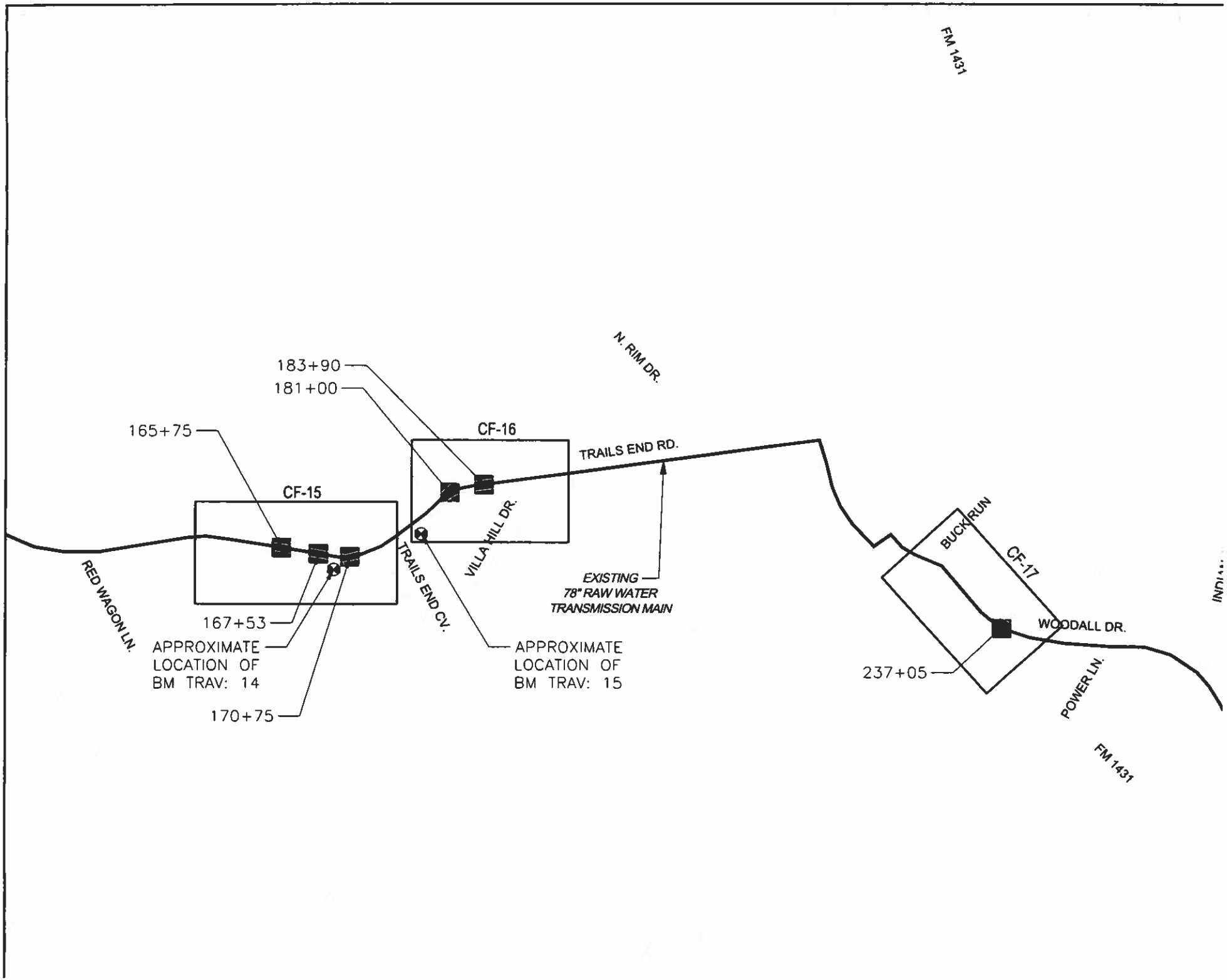
EXHIBIT E
FLOW METER VAULT

TO REMAIN

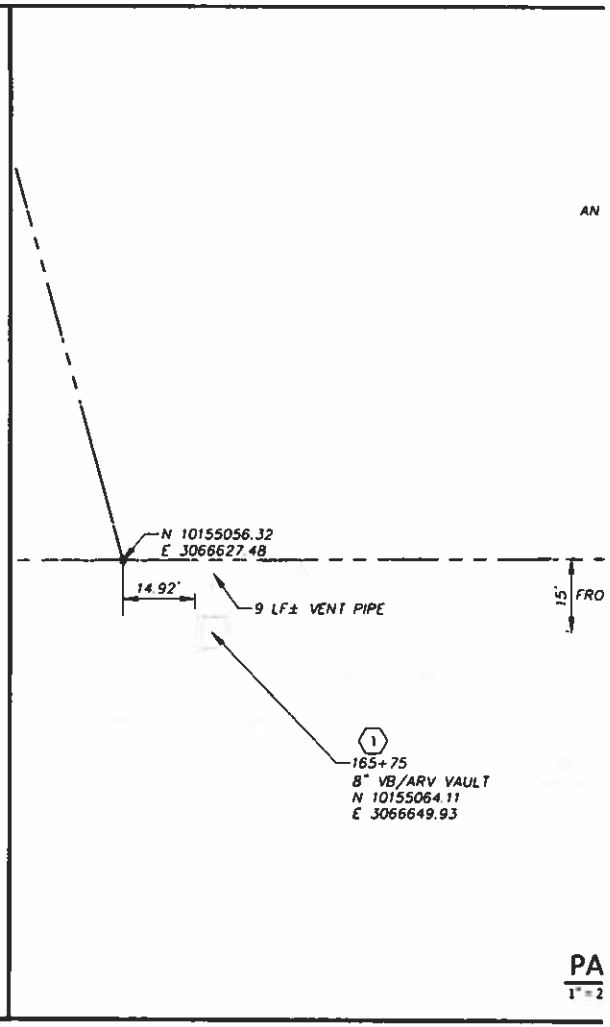


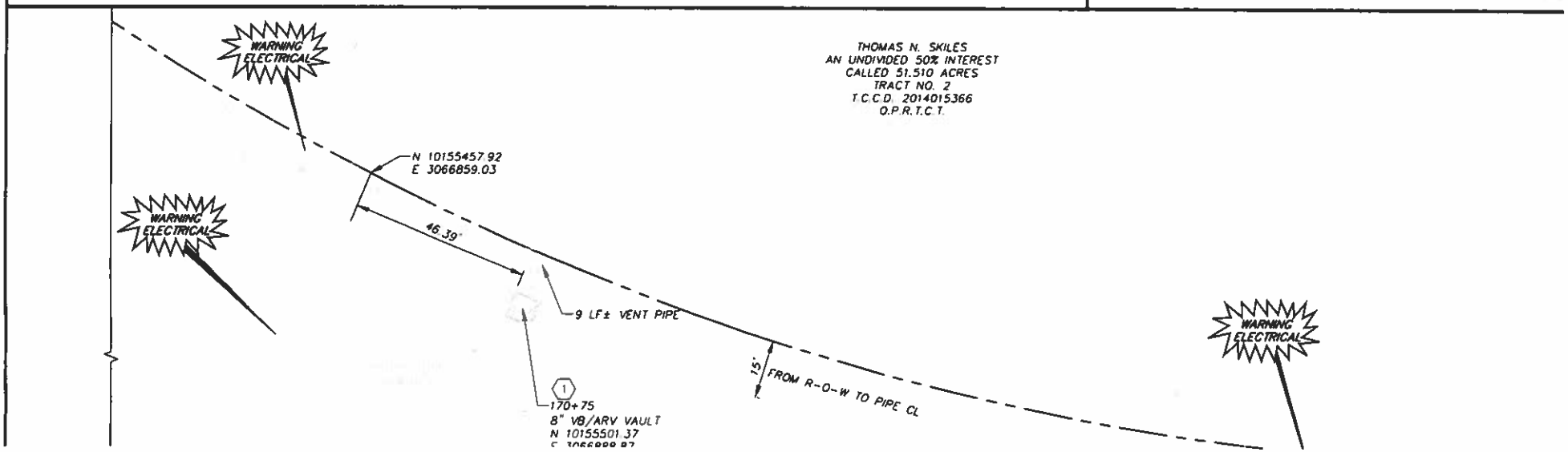
/3/2019 1:20:15 PM, tgiesske

EXHIBIT F
VALVE VAULT IMPROVEMENT PLANS

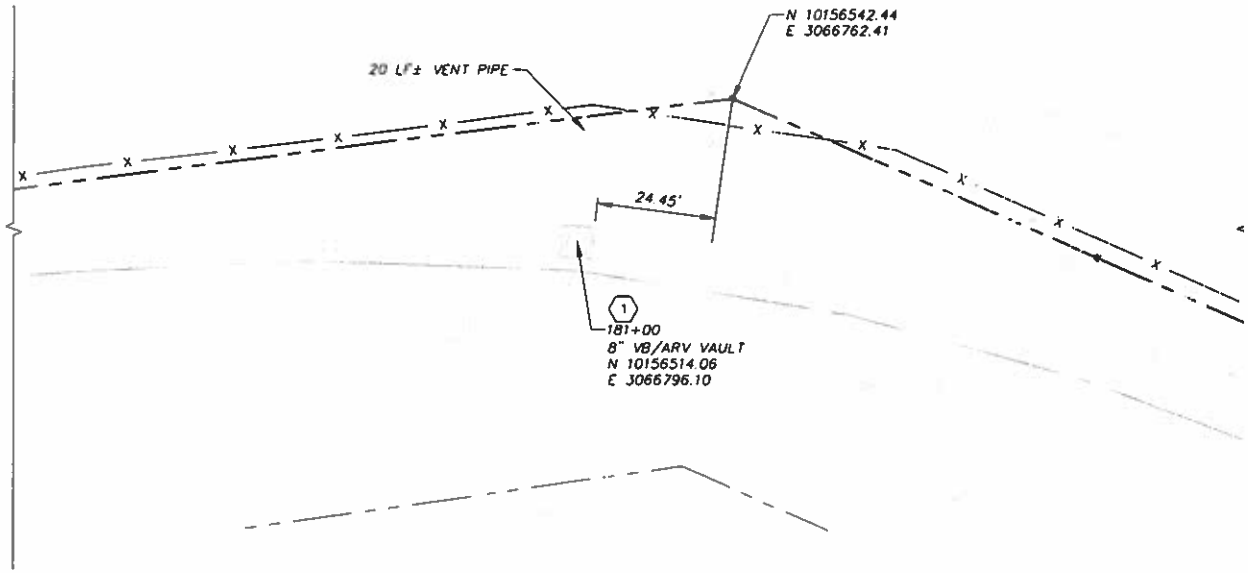


/31/2020 11:49:39 AM, tgiesecke



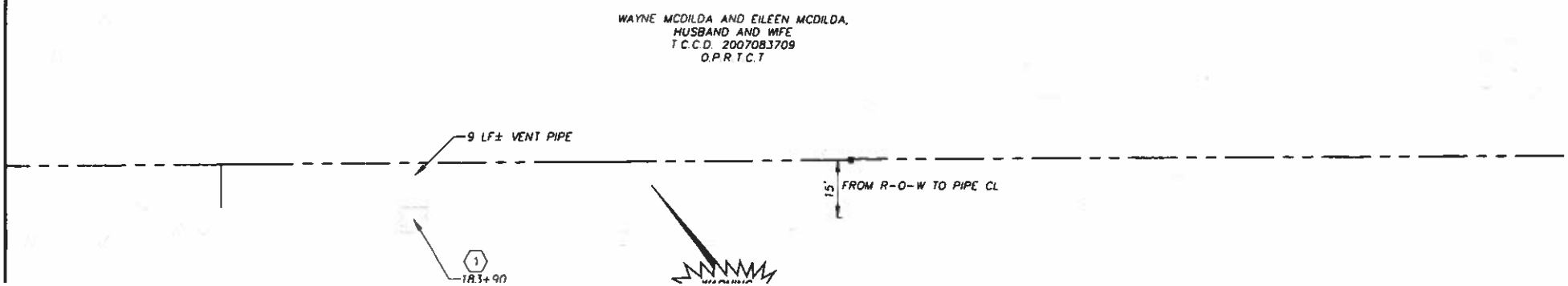


1/2020 12:35:01 PM, tgiesske



PARTIAL PLAN A

1" = 20'



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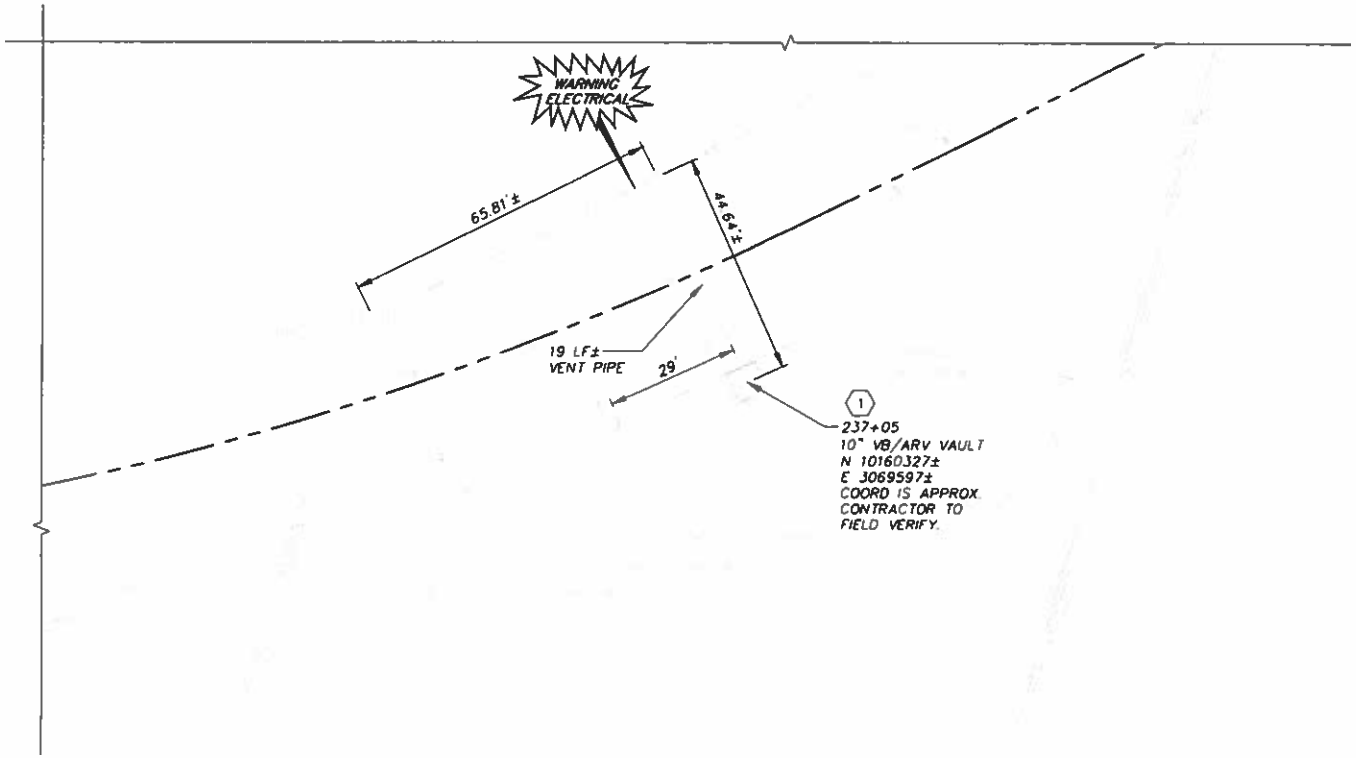

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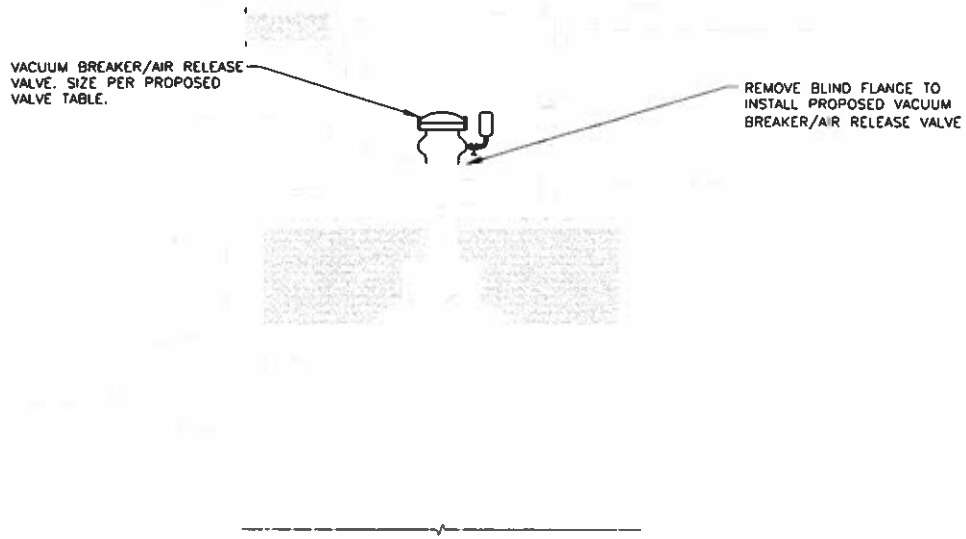


NOTES

1. REFER TO PROPOSED VALVE TABLE FOR LOCATIONS OF VACUUM BREAKER/AIR RELEASE VALVE.
2. ALL PROPOSED VALVES SHALL BE DESIGNED FOR MINIMUM PRESSURE CLASS LISTED IN PROPOSED VB/ARV TABLE.

VAULT SECTION

DETAIL A

NTS

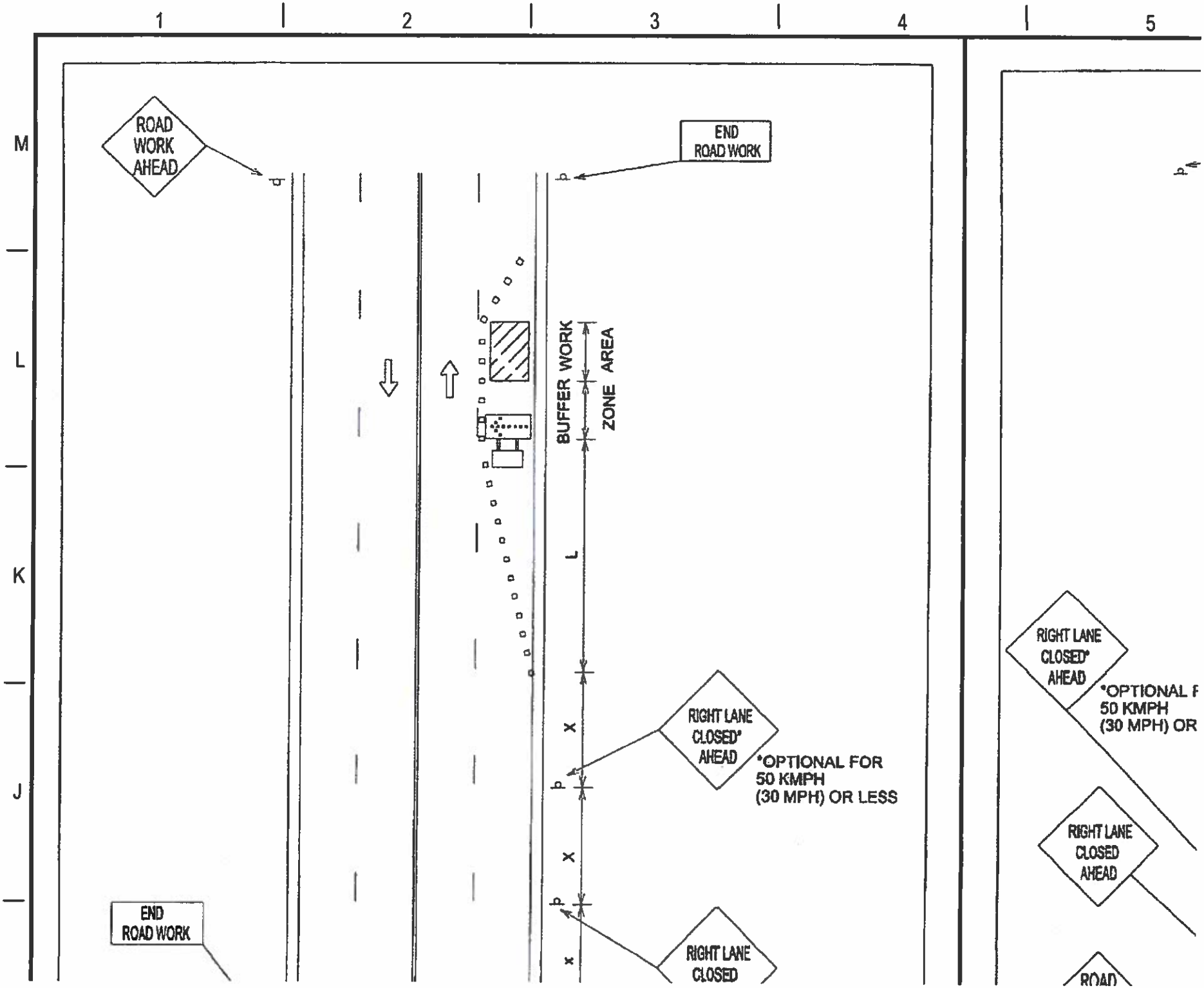
PROPOSED VB/ARV TABLE			
ROW JURISDICTION	STATION	VB VALVE, DIAMETER, IN	MIN. PRESSURE CLASS, PSI
TRAVIS COUNTY	165+75	8	250
TRAVIS COUNTY	167+53	8	250
TRAVIS COUNTY	170+75	8	250
TRAVIS COUNTY	181+00	8	150
TRAVIS COUNTY	183+90	12	150
CITY OF CEDAR PARK	237+05	10	150

DE

NTS

0 1:10:11 PM, tgieseke

EXHIBIT G
TRAFFIC CONTROL AT THE RAW WATER PUMP STATION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3
4
5
M
L
K
J
ROAD WORK AHEAD
END ROAD WORK
BUFFER WORK ZONE AREA
L
X
p
X
p
x
RIGHT LANE CLOSED* AHEAD
*OPTIONAL FOR 50 KMPH (30 MPH) OR LESS
RIGHT LANE CLOSED
END ROAD WORK
RIGHT LANE CLOSED* AHEAD
*OPTIONAL F
50 KMPH
(30 MPH) OR
RIGHT LANE CLOSED AHEAD

1. ALL SETUPS SHALL BE IN ACCORDANCE WITH THE CURRENT ADDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND THE CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL.

2. TO DETERMINE APPROPRIATE DEVICES AND SIGN SIZES TO BE USED, REFER TO STANDARD 804S-5. SHEETS 5, 6 AND 7 OF 11.

3. FOR INTERMEDIATE-TERM SITUATIONS, WHEN IT IS NOT FEASIBLE TO REMOVE AND RESTORE PAVEMENT MARKINGS, THE CHANNELIZATION MUST BE MADE DOMINANT BY USING A VERY CLOSE DEVICE SPACING. THIS IS ESPECIALLY IMPORTANT IN LOCATIONS OF CONFLICTING INFORMATION, SUCH AS WHERE TRAFFIC IS DIRECTED OVER A DOUBLE YELLOW CENTERLINE. IN SUCH LOCATIONS, A MAXIMUM CHANNELIZING DEVICE SPACING OF 3 m (10') IS REQUIRED.

4. FOR LONG TERM STATIONARY WORK, ALL CONFLICTING PAVEMENT MARKINGS MUST BE REMOVED AND CENTERLINE STRIPING PROVIDED WHERE TWO WAY TRAFFIC IS IN ADJACENT LANES.

5. FOR TEMPORARY PAVEMENT MARKING REQUIREMENTS SEE STANDARD 804S-3.

6. FOR ONE-WAY AND MULTI-LANE ROADWAYS THE "LANE BLOCKED" SIGN MAY BE USED IN LIEU OF THE "LANE CLOSED AHEAD" SIGN. THE NUMBER OF DIGITS ON THE SIGN SHALL NOT BE GREATER THAN THE NUMBER OF LANES PRESENT ON THE ROADWAY. THE "X" SHALL BE PLACED UNDER THE NUMBER OF LANE(S) BLOCKED.

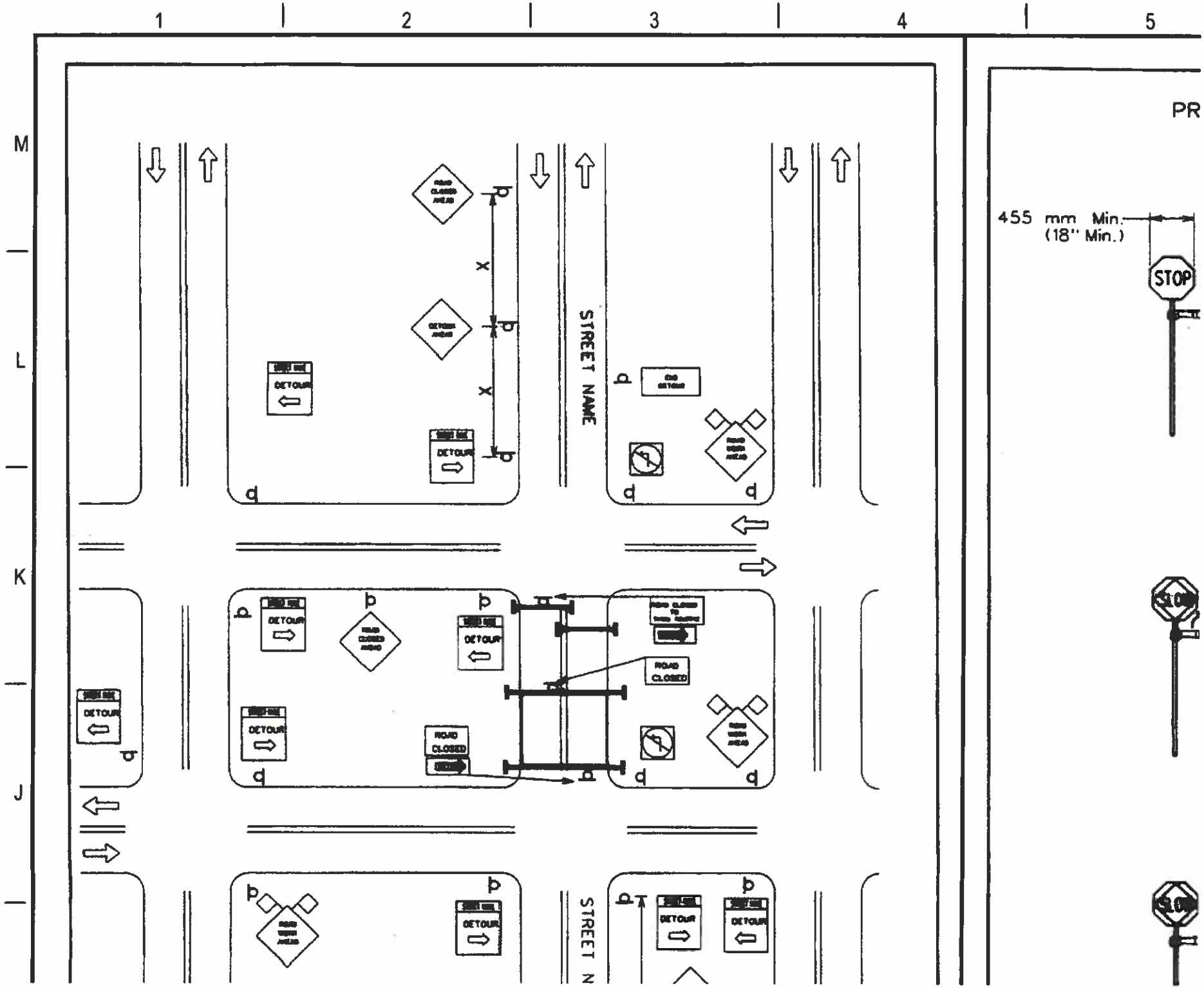
7. FOR FLAGGING OPERATION REQUIREMENTS SEE STANDARD 804S-2.

8. CONTRACTOR SHALL PROVIDE SIDEWALK CLOSURES, CROSSWALK CLOSURES OR WALKWAY BYPASS WHEREVER PEDESTRIAN MOVEMENTS ARE AFFECTED BY CONSTRUCTION ACTIVITIES. ALL SIDEWALKS AND CROSSWALKS SHALL BE ACCESSIBLE WHEN CONTRACTOR IS NOT WORKING UNLESS APPROVED BY THE TRANSPORTATION DIVISION.

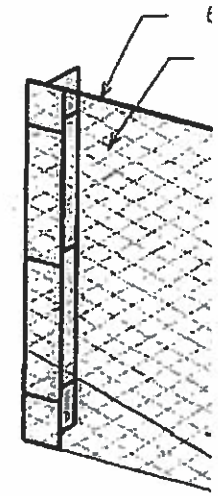
9. FOR EXCAVATION PROTECTION AND SAFETY FENCE REQUIREMENTS SEE STANDARD 804S-4.

10. THE USE OF ARROW DISPLAYS ARE REQUIRED ON ALL LANE CLOSURES. THE CONTRACTOR SHALL PROVIDE ONE (1) STAND-BY UNIT IN GOOD WORKING CONDITION AT THE JOB SITE, READY FOR USE IF THE OPERATION REQUIRES 24-HOUR A DAY LANE CLOSURE SET-UPS.

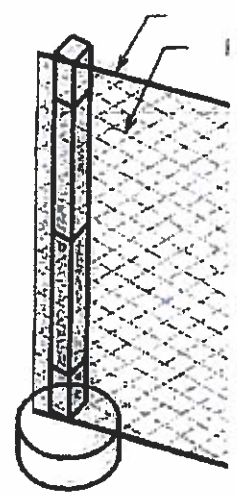
Speed KMPH	Posted Speed MPH
50	30
55	35
65	40
70	45
80	50
90	55
95	60
105	65
115	70


1
2
3
4
5
M
L
K
J
STREET NAME
STREET N
DETOUR
ROAD CLOSED
PR
455 mm Min.
(18" Min.)
STOP

1. ALL PAVEMENT MARKINGS USED SHALL CONFORM TO THE CURRENT EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND THE CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY AND EXISTING PAVEMENT MARKINGS ON ALL ROADWAYS WITHIN THE CONSTRUCTION LIMITS AND ON ANY ROADWAY OUTSIDE THE CONSTRUCTION LIMITS THAT REQUIRES THE REROUTING OF TRAFFIC FOR HIS WORK.
3. ALL ROADWAYS TO BE OPENED TO TRAFFIC SHALL HAVE TEMPORARY OR STANDARD PAVEMENT MARKINGS INSTALLED AS SHOWN IN THE DRAWINGS, AT THE END OF EACH DAY'S OPERATION.
4. MARKINGS SHALL PROVIDE A VISIBLE REFERENCE FOR A MINIMUM DISTANCE OF 91.5 m (300') DURING NORMAL DAYLIGHT HOURS AND 49 m (160') WHEN ILLUMINATED BY AUTOMOBILE LOW-BEAM HEADLIGHTS AT NIGHT, UNLESS SIGHT DISTANCE IS RESTRICTED BY ROADWAY GEOMETRICS.
5. ALL TEMPORARY REMOVABLE PAVEMENT MARKINGS SHALL BE SUPPLEMENTED WITH RAISED PAVEMENT MARKERS.
6. TEMPORARY REMOVABLE PAVEMENT MARKING TAPE IS THE PREFERRED PAVEMENT MARKING; HOWEVER, THE CONTRACTOR MAY, WITH APPROVAL OF THE ENGINEER OR DESIGNATED REPRESENTATIVE, USE RAISED PAVEMENT MARKINGS, PAINT AND BEADS OR THERMOPLASTIC IF THE ROADWAY IS TO BE COMPLETELY RESURFACED.
7. PAVEMENT MARKINGS THAT ARE NO LONGER APPLICABLE AND WHICH MAY CREATE CONFUSION OR DIRECT A MOTORIST TOWARD OR INTO THE CLOSED PORTION OF THE ROADWAY, SHALL BE REMOVED OR OBLITERATED BEFORE THE ROADWAY IS OPENED TO TRAFFIC. THE ABOVE DOES NOT APPLY TO SHORT-DURATION, SHORT TERM STATIONARY OR INTERMEDIATE TERM STATIONARY WORK.
8. REMOVAL OR OBLITERATION OF PAVEMENT MARKINGS INCLUDES CENTERLINES, CHANNELIZING LINES, LANE LINES, EDGE LINES, WORDS, ARROWS, SYMBOLS AND RAISED PAVEMENT MARKINGS.
9. PAVEMENT MARKINGS SHALL BE REMOVED OR OBLITERATED TO THE FULLEST EXTENT POSSIBLE, SO AS NOT TO LEAVE A DISCERNIBLE MARK. GRINDING OF PAVEMENT MARKINGS WILL ONLY BE ALLOWED ON PAVEMENT THAT IS TO BE COMPLETELY REPLACED.
10. TEMPORARY FLEXIBLE-REFLECTIVE TABS MAY BE USED FOR TEMPORARY PAVEMENT MARKINGS ON NEW PAVEMENT, PROVIDED THEY ARE PLACED ON 1.5 m (5') CENTERS.
11. THE CONTRACTOR SHALL PLACE TEMPORARY FLEXIBLE-REFLECTIVE TABS IMMEDIATELY AFTER THE FINAL HMAC OVERLAY AS EACH LANE IS COMPLETED AND READY FOR TRAFFIC. NO DIRECT PAYMENT WILL BE MADE FOR THIS OPERATION, BUT WILL BE CONSIDERED SUBSIDIARY TO THE OTHER BID ITEMS. FINAL STRIPING SHOULD BE COMPLETED WITHIN FOURTEEN (14) DAYS OF THE FINAL PAVING.



PLASTIC WIRE T
3 MIN. PER PO



PLASTIC WI

NOTES:

1. WHERE TRAFFIC MUST CROSS TRENCHES, THE CONTRACTOR SHALL PROVIDE SUITABLE BRIDGES.

2. THE USE OF STEEL PLATES SHALL BE APPROVED BY THE RIGHT OF WAY MANAGEMENT DIVISION OF WATERSHED PROTECTION AND DEVLOPMENT DEPARTMENT PRIOR TO INITIATION OF CONSTRUCTION.

3. THE THICKNESS OF PLATES FOR TRENCH WIDTHS EXCEEDING 1.8 m (6') SHALL BE ESTABLISHED IN AN ANALYSIS COMPLETED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF TEXAS. THE ANALYSIS SHALL BE BASED ON HS-20 TRAFFIC LOADING WITH A MAXIMUM PLATE DEFLECTION OF 50 mm (1/2") WHEN EXPERIENCING SAID LOADING. FOR SITUATIONS WHERE MULTIPLE LAYERS OF PLATES (OR STACKED PLATES) ARE TO BE EMPLOYED, THE SEAMS (IE. THE INTER-FACE BETWEEN PLACED SIDE-BY-SIDE) OF THE UPPER LAYER SHALL BE PLACED PERPENDICULAR TO THE SEAMS OF THE UNDERLYING PLATES.

4. WHEN APPROVED, THE TYPE OF PLATE INSTALLATION SHALL BE BASED ON THE ANTICIPATED LENGTH OF TIME THE PLATE WILL BE IN SERVICE:
CASE I: A CASE I INSTALLATION SHALL APPLY FOR NO LONGER THAN A 2 WEEK PERIOD.
CASE II: A CASE II INSTALLATION SHALL APPLY FOR NO LONGER THAN 2 WEEK PERIOD.

5. THE TOPSIDE OF THE STEEL PLATE SHALL BE FLAT AND FREE OF ANY CLIPS, CHAINS, ATTACHMENTS, WELDMENTS OR SURFACE IRREGULARITIES.

6. PLATES WITH A PERMANENT DISPLACEMENT (I.E. DISPLACEMENT ANYWHERE ON THE SURFACE OF THE PLATE WITH RESPECT TO A PLANE FORMED BY THE OUTSIDE EDGES) THAT EXCEEDS 12 mm (1/2") SHALL NOT BE USED FOR PLATING PURPOSES. PLATES THAT DEVELOP A PERMANENT DISPLACEMENT EXCEEDING 12 mm (1/2") DURING SERVICE SHALL BE REMOVED AND REPLACED.

7. THE PLATES SHALL BE PROVIDED WITH APPROPRIATE NUMBER OF KEYHOLE SLOTS OR CIRCULAR HOLES FOR HANDLING, LIFTING, INSTALLATION AND REMOVAL PURPOSES.

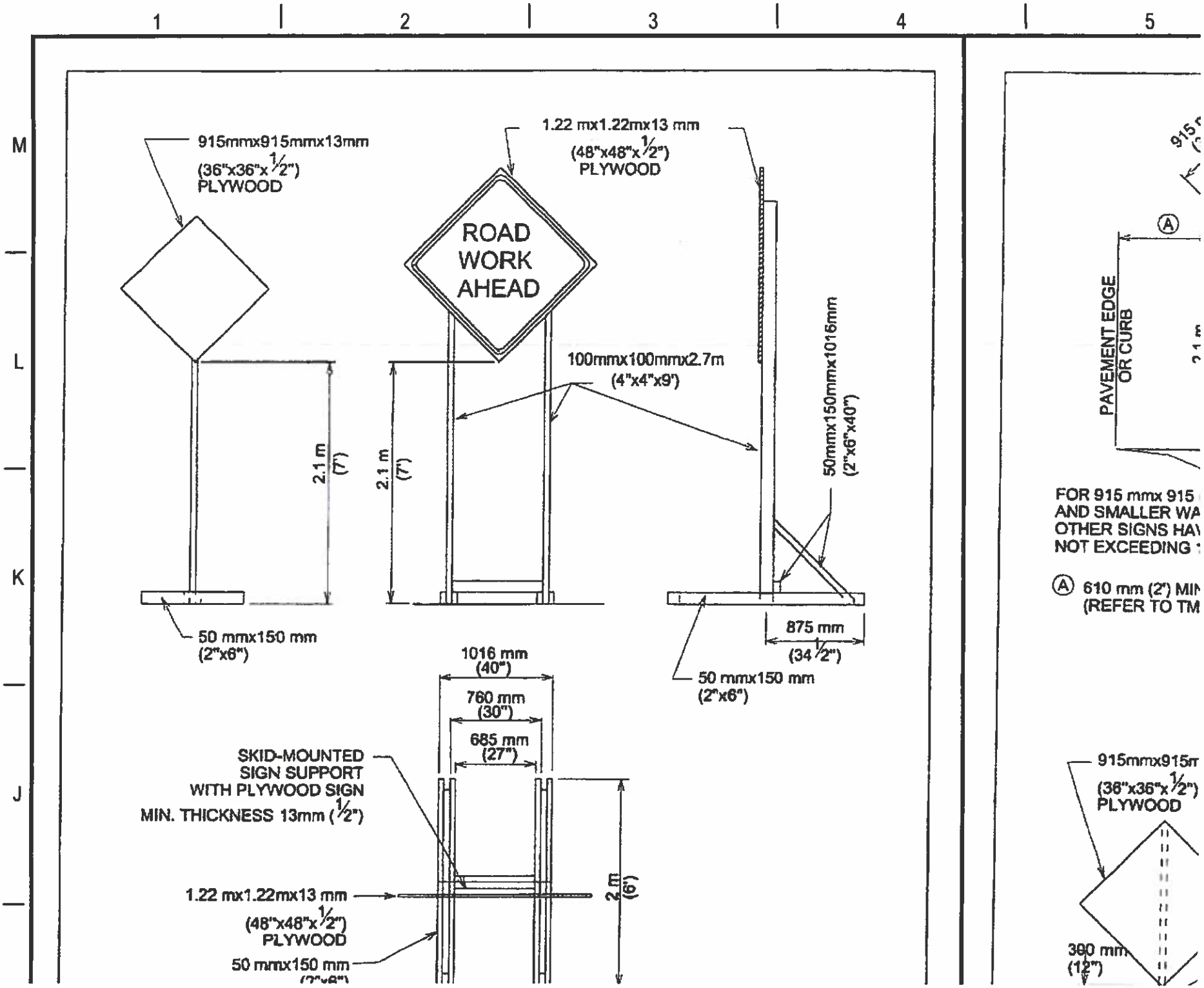
8. THE CONTRACTOR SHOULD AVOID USING A LONG SERIES OF PLATES THAT RUN PARALLEL TO VEHICULAR TRAFFIC WHEELS PATHS.

9. ADDITIONAL METHODS OF SECURING PLATES MAY BE REQUIRED DEPENDING ON FIELD CONDITIONS.

10. FOR PLATES 1.8 M (6') OR GREATER IN DIRECTION OF TRAFFIC, A NON-SKID COATING SHOULD BE APPLIED TO THE ENTIRE SURFACE AREA OF ALL PLATES, AS WELL AS ADJACENT AREAS. THE NON-SKID COATING SHALL BE TCA (TEXTURED COATING OF

CHANNELIZING DEVICES

TYPE III BARRICADE
WITH TYPE "A" LIG


915mmx915mmx13mm
(36"x36"x 1/2")
PLYWOOD
1.22 mx1.22mx13 mm
(48"x48"x 1/2")
PLYWOOD
ROAD
WORK
AHEAD
100mmx100mmx2.7m
(4"x4"x9')
50mmx150mmx1016mm
(2"x6"x40")
2.1 m
(7')
2.1 m
(7')
50 mmx150 mm
(2"x6")
875 mm
(34 1/2")
50 mmx150 mm
(2"x6")
1016 mm
(40")
760 mm
(30")
685 mm
(27")
SKID-MOUNTED
SIGN SUPPORT
WITH PLYWOOD SIGN
MIN. THICKNESS 13mm (1/2")
1.22 mx1.22mx13 mm
(48"x48"x 1/2")
PLYWOOD
50 mmx150 mm
2 m
(6')
PAVEMENT EDGE
OR CURB
FOR 915 mmx 915
AND SMALLER WA
OTHER SIGNS HA
NOT EXCEEDING
610 mm (2') MIN
(REFER TO TM
915mmx915m
(36"x36"x 1/2")
PLYWOOD
300 mm
(12")

1. ALL TRAFFIC CONTROL DEVICES, SIGNS, BARRICADES AND WARNING SIGNS SHALL BE FURNISHED, PLACED, CONSTRUCTED AND MAINTAINED IN THE APPROPRIATE TYPES AND SIZES AND FLAGGER OPERATIONS EXECUTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE TEXAS MANUAL ON UNIFORM CONTROL DEVICES (TMUTCD), THE CITY OF AUSTIN STANDARD SPECIFICATIONS SERIES 800 AND THE CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL, OR AS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. IF A CONFLICT ARISES THEN THE CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL SHALL CONTROL UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.

2. THE CONTRACTOR SHALL NOTIFY THE TRANSPORTATION DIVISION OF THE DEPARTMENT OF PUBLIC WORKS AT 974-7024 NO LATER THAN THE MONDAY OF THE WEEK DURING WHICH THE CONTRACTOR INTENDS TO SET UP BARRICADES TO START CONSTRUCTION.

3. PROPOSED CONSTRUCTION TRAFFIC MOVEMENTS MAY REQUIRE EXISTING SIGNAL HEADS TO BE RELOCATED. THE CITY OF AUSTIN WILL REVIEW SIGNAL HEAD LOCATIONS DURING CONSTRUCTION AND PERFORM THE REQUIRED ADJUSTMENTS. THE CONTRACTOR SHALL CONTACT THE TRANSPORTATION DIVISION OF THE DEPARTMENT OF PUBLIC WORKS AT 974-7024, THREE (3) DAYS PRIOR TO PLACMENT ANY TRAFFIC CONTROLS WHICH MAY REQUIRE SIGNAL HEAD ADJUSTMENTS/RELOCATION.

4. THE CONTRACTOR SHALL PROVIDE ONE (1) FULL-TIME OFF-DUTY, UNIFORMED AUSTIN POLICE DEPARTMENT CERTIFIED PEACE OFFICER AND ONE (1) VEHICLE OF THE TYPE APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE FOR TEMPORARY LANE CLOSURES WHEN UNDERSEALING, MILLING, PAVING AND WHEN WORKING IN INTERSECTIONS AS PART OF THE TRAFFIC CONTROL OPERATIONS. THE PEACE OFFICER SHALL BE ABLE TO SHOW PROOF OF CERTIFICATION BY THE TEXAS COMMISSION ON LAW ENFORCEMENT OFFICER STANDARDS.

5. THE CONTRACTOR SHALL NOTIFY ALL OTHER GOVERNMENTAL AGENCIES WHOSE RIGHTS-OF-WAY ARE AFFECTED BY HIS WORK ACTIVITIES. THE CONTRACTOR SHALL PROVIDE ANY ADDITIONAL TRAFFIC CONTROL DEVICES THAT THEY MAY NEED.

6. THE CONTRACTOR SHALL MAINTAIN ONE (1) DUST-FREE LANE OF TRAFFIC IN EACH DIRECTION AT ALL TIMES, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR APPROVED THE ENGINEER OR DESIGNATED REPRESENTATIVE.

7. THERE SHALL BE A MINIMUM OF THREE (3) METERS (10 FEET) CLEAR WIDTH FOR EACH LANE OF TRAFFIC IN CHANNELIZED AREAS, UNLESS OTHERWISE NOTED ON THE DRAWINGS OR APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.

8. THE CONTRACTOR SHALL MAINTAIN DRIVEWAY ACCESS AT ALL TIMES. IF ACCESS CANNOT BE MAINTAINED, THE CONTRACTOR WITH THE APPROVAL OF THE ENGINEER OR DESIGNATED REPRESENTATIVE SHALL PROVIDE AT LEAST 24 HOUR WRITTEN NOTICE OF LIMITED ACCESS TO AFFECTED PROPERTY OWNERS. THE CONTRACTOR SHALL PROVIDE BUSINESS ACCESS SIGNS AS NEEDED TO NFORM DRIVERS OF THE LOCATIONS OF ALL DRIVEWAYS.

9. TEMPORARY LANE CLOSURES IN THE CENTRAL BUSINESS DISTRICT (CBD) OR ON ARTERIAL STREETS SHALL NOT BE PERMITTED DURING THE HOURS OF 7 AM TO 9 AM AND 4 PM TO 6PM MONDAY THROUGH FRIDAY UNLESS PRIOR APPROVAL HAS BEEN OBTAINED FROM THE TRANSPORTATION DIVISION.

10. TRAFFIC CONTROL SHOWN ON STANDARD DETAILS IS TYPICAL. ADDITIONAL SIGNING AND/OR BARRICADING, AS WELL AS TEMPORARY PAVEMENT MARKINGS AND OBLITERATION/RESTORATION OF EXISTING PAVEMENT MARKINGS, MAY BE REQUIRED DEPENDING ON FIELD CONDITIONS. FIELD ADJUSTMENTS TO TRAFFIC CONTROLS WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM NO. 803S "BARRICADES, SIGNS

13. ALL PERSONS WOR
SAFETY VEST. FOR N

14. WHEN AN INTERSEC
PROCEED WITH CONS
MINIMIZED.

15. THE CONTRACTOR
(1) WEEK PRIOR TO L

DURATION OF WORK

WORK DURATION IS A M
DEVICES USED IN TEMP
DURATION AND THEIR

- LONG-TERM STAT
DAYS.
- INTERMEDIATE-TI
OVERNIGHT TO 3
- SHORT-TERM STA
TO 12 HOURS.
- SHORT-DURATIO
- MOBILE-WORK TI

Posted Speed KPH (MPH)	Formu
50 (30)	L=WS/60
55 (35)	
65 (40)	
70 (45)	
80 (50)	
90 (55)	

EXHIBIT H
CONCEPTUAL FIBER OPTIC LAYOUT ALONG TRAILS END ROAD ROW

LEGEND

ROAD SHADE

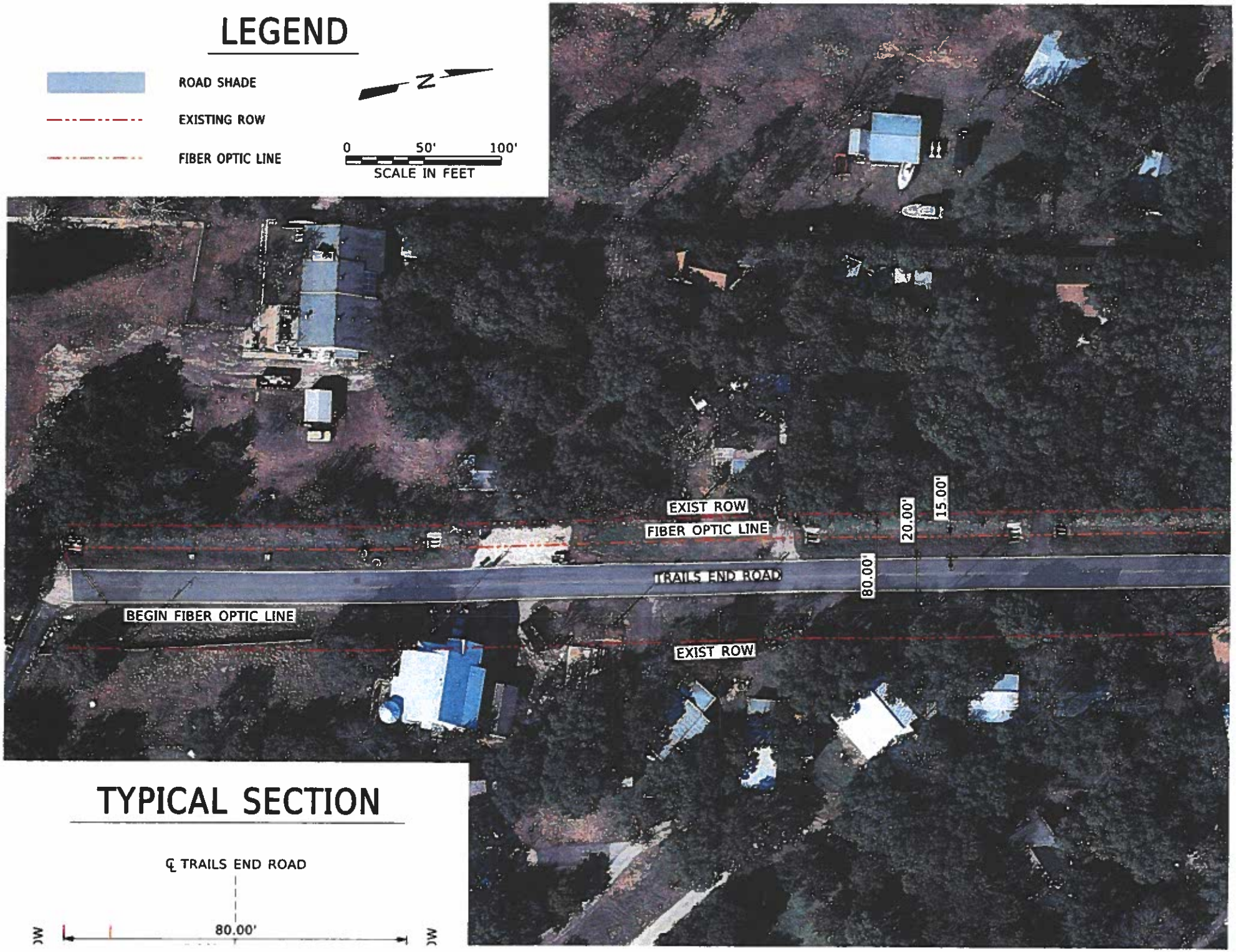
EXISTING ROW

FIBER OPTIC LINE

N

0 50' 100'

SCALE IN FEET



TYPICAL SECTION

℄ TRAILS END ROAD

80.00'

LEGEND

ROAD SHADE

EXISTING ROW

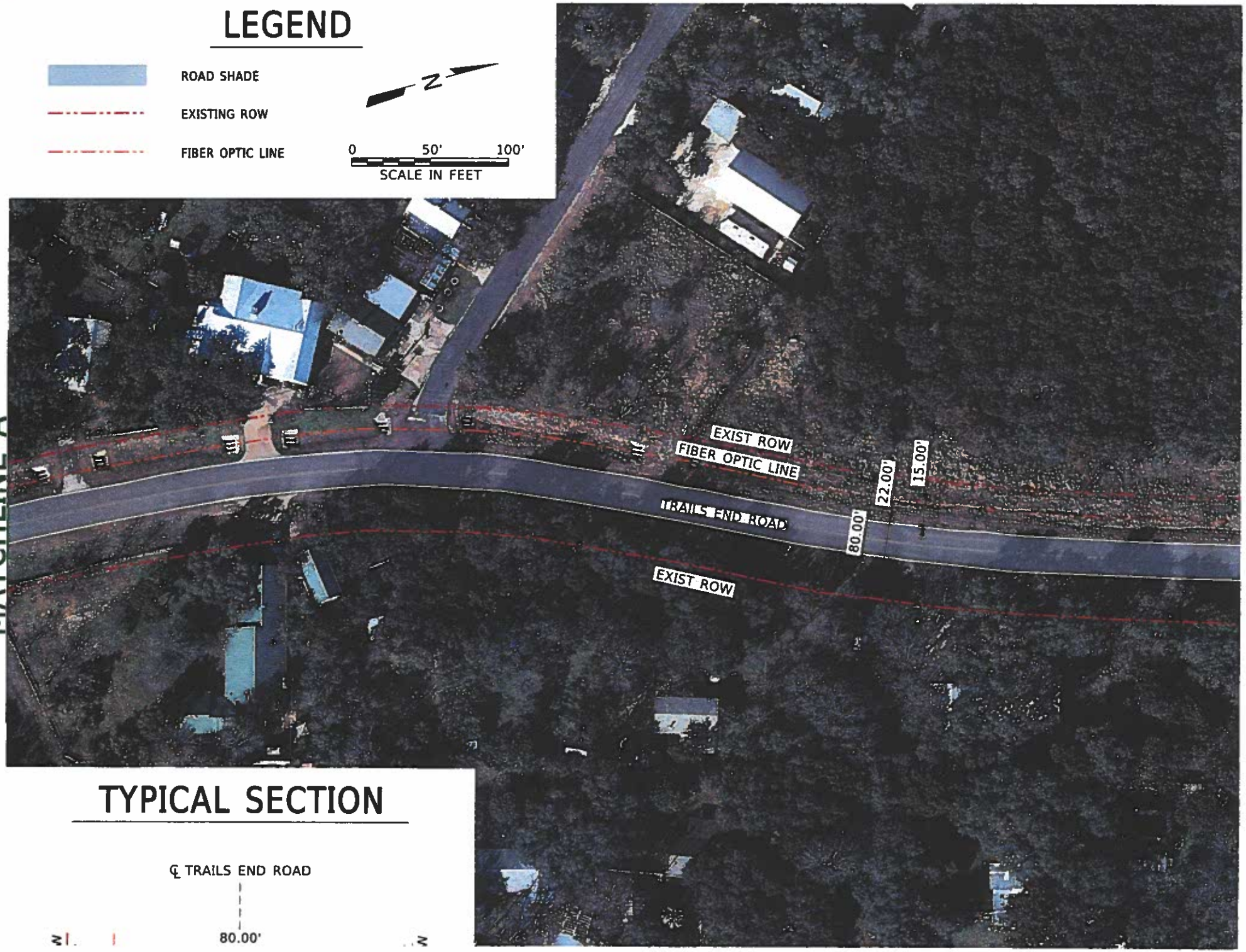
FIBER OPTIC LINE

N

0 50' 100'

SCALE IN FEET

MATCHLINE A



TYPICAL SECTION

℄ TRAILS END ROAD

80.00'

LEGEND

ROAD SHADE

EXISTING ROW

FIBER OPTIC LINE

N

0 50' 100'

SCALE IN FEET

MATCHLINE B

EXIST ROW

FIBER OPTIC LINE

TRAILS END ROAD

80.00'

22.00'

15.00'

EXIST ROW

TYPICAL SECTION

℄ TRAILS END ROAD

80.00'

EXHIBIT I
MEMORANDUM ON TRAFFIC IMPACTS OF CONSTRUCTION ACTIVITIES (TRAFFIC STUDY)