

**ADDENDUM NO. 1  
FEBRUARY 13, 2024**

**PROJECT: CITY OF AZLE  
BROADWAY DRAINAGE CULVERT**

**BID DATE: FEBRUARY 22, 2024**

The following changes and/or additions shall be made to the Plans, Specifications, and Contract Documents for the above referenced project. Bidder shall acknowledge receipt of this Addendum by signing below and returning this Addendum with the Bid.

**1) GENERAL:**

- a) **The scope in the Advertisement for Bids shall be modified to the following: This project includes installing culverts with headwalls, rip rap, energy dissipation blocks and all associated appurtenances, regrade associated drainage ditches and install an energy dissipation wall at the intersection of Lakeview Dr and Broadway St.**
  
- b) **The bid schedule has been updated to include:**
  - i) **line item 15 – Contingency, and**
  - ii) **changes to line items 4 and 5 to use two (2) 2' x 4' RCB which is reflected in the reissued plans under item 2a of this addendum.**

**2) PLAN SHEETS**

- a) **The plan sheets have been reissued to show the revisions to the box culvert dimensions.**

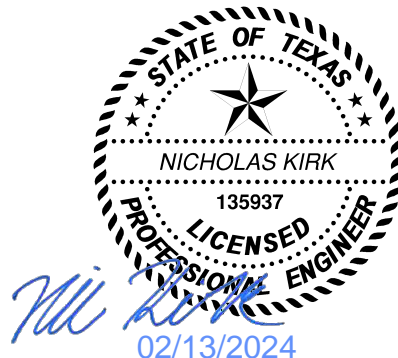
**3) SPECIFICATIONS:**

- a) **N/A**

\_\_\_\_\_  
**Bidder's Acknowledgment**

\_\_\_\_\_  
**Date**

**Prepared by:  
Nic Kirk, P.E.  
JACOB | MARTIN  
TBPE Firm No. 2448**



**CITY OF AZLE, TEXAS  
DRAINAGE IMPROVEMENTS**

Show prices in numerals. Round off unit prices to two decimal places only.

These Bid Prices must include all labor, materials, equipment, insurance, overhead, superintendence, transportation, profits & incidentals to cover the finished Work called for in the Contract Documents.

**BASE BID SCHEDULE**

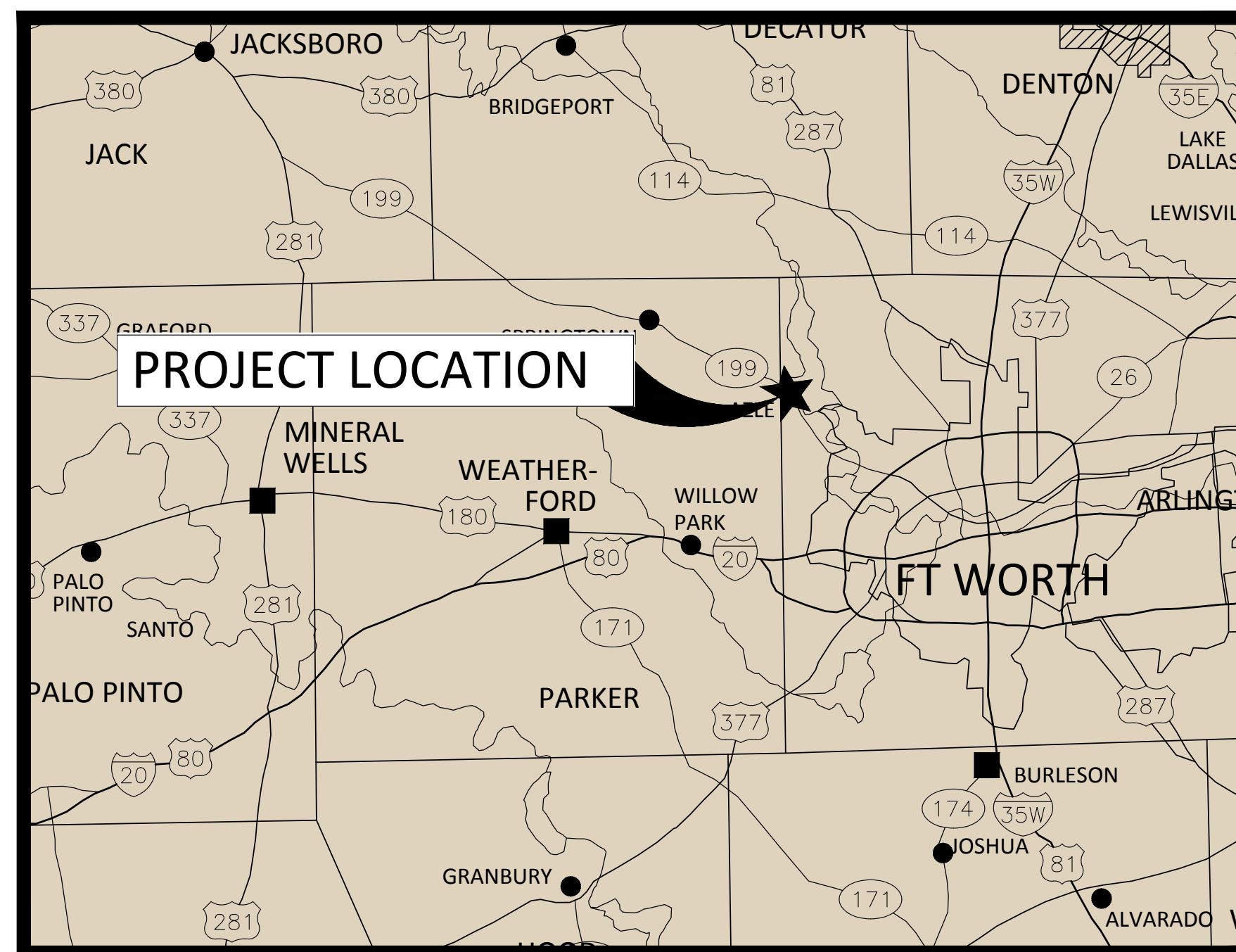
**For all Labor, Materials, Equipment and Incidentals to Furnish and Install the Following:**

<b>Bid Item</b>	<b>Description</b>	<b>Est. Qty.</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Extended Amount</b>
1	Mobilization, Bonds, and Insurance	1	LS	\$	\$
2	Demolition - Saw cut and repair asphalt	93	SY	\$	\$
3	Culvert - 18" RCP	58	LF	\$	\$
4	Culvert - (2) 2' x 4' RCB	100	LF	\$	\$
5	Culvert - (2) 2' x4' RCB	172	LF	\$	\$
6	Earthwork - Site Grading	1,398	SY	\$	\$
7	Earthwork - Rock Rip-Rap	150	SY	\$	\$
8	Earthwork - Hydromulch	1,398	SY	\$	\$
9	Concrete - Concrete Lined Channel	18	SY	\$	\$
10	Concrete - Headwall / Retaining Wall - Northwest Corner	1	LS	\$	\$
11	Concrete - Headwall / Retaining Wall - Northeast Corner	1	LS	\$	\$
12	Concrete - Headwall / Retaining Wall - Southwest Corner	1	LS	\$	\$
13	Concrete - Headwall / Retaining Wall - Southeast Corner	1	LS	\$	\$
14	Concrete - Headwall / Retaining Wall - Ditch Outfall	1	LS	\$	\$
15	Contingency	1	LS	\$ 72,500.00	\$ 72,500.00
	<b>TOTAL BASE BID (Items 1 - 15)</b>				<b>\$</b>

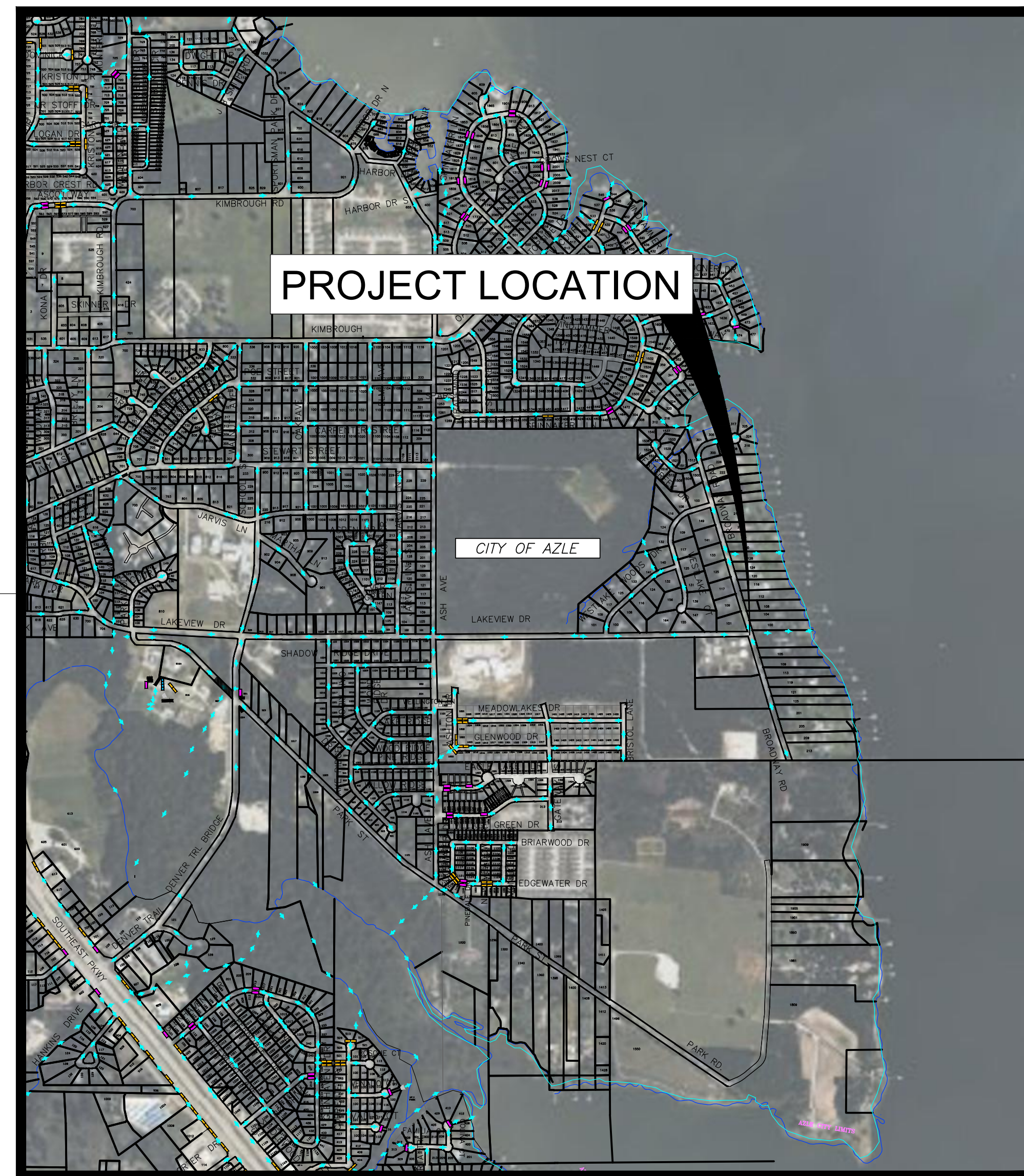
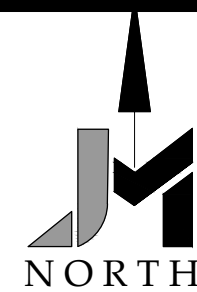
# PLANS FOR CITY OF AZLE, TEXAS

## BROADWAY DRAINAGE IMPROVEMENTS

### PROJECT No. 22449 FEBRUARY 2024

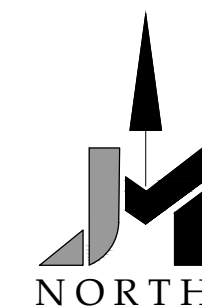


VICINITY MAP  
NTS



PROJECT LOCATION MAP

SCALE: 1"=1000'



REVISIONS:	
DESCRIPTION	DATE
⚠️ REVISE BOX CULVERTS	02/13/2024

#### COUNCIL MEMBERS

- ALAN BRUNDRETT ..... MAYOR
- RANDA GOODE ..... MAYOR PRO TEM
- DERRICK NELSON ..... PLACE 1
- AMY ESTES ..... PLACE 2
- STACY PEEK ..... PLACE 3
- ROUEL ROTHENBERGER ..... PLACE 5
- BRIAN CONNER ..... PLACE 6
- TOM MUIR ..... CITY MANAGER
- Yael FORGEY ..... CITY SECRETARY



TBPE FIRM # 2448 | TBAE FIRM # BR 2261 | TBPELS FIRM # 10194493

1925 FORT WORTH HIGHWAY  
WEATHERFORD, TX 76086  
817-594-9880



**GENERAL NOTES**

1. ACCESS TO RESIDENCES AND BUSINESS SHALL BE PROVIDED AT ALL TIMES. COST ASSOCIATED WITH THE CONSTRUCTION AND MAINTENANCE OF THIS ACCESS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO OTHER BID ITEMS. THE WORK PERFORMED ON THIS CONTRACT WILL BE PERFORMED UNDER TRAFFIC AND IT IS IMPERATIVE THAT THE CONTRACTOR HAVE THE EQUIPMENT AND MANPOWER AVAILABLE AT ALL TIMES TO ENSURE THAT ACCESS IS AVAILABLE. THE CONTRACTOR IS TO MAINTAIN TWO-WAY TRAFFIC AT ALL TIMES.
2. THE CONTRACTOR SHALL APPOINT, IN WRITING, A SUPERINTENDENT FOR THIS PROJECT. SAID SUPERINTENDENT SHALL BE HIRED BY THE CONTRACTOR AND BE FULLY RESPONSIVE TO THE ADMINISTRATION OF THE CONTRACT. HE/SHE WILL BE ON THE PROJECT DAILY. SHOULD THIS SUPERINTENDENT LEAVE THE EMPLOYER OR MOVE TO ANOTHER PROJECT, THE CONTRACTOR IS TO APPOINT ANOTHER SUPERINTENDENT IMMEDIATELY. CONTRACTOR SHALL PROVIDE 24HR/7DAY A WEEK PHONE NUMBER FOR SUPERINTENDENT IN CASE OF EMERGENCY.
3. THE CONTRACTOR WILL ENSURE THAT ALL EXISTING DRAINAGE WILL REMAIN UNALTERED UNLESS GRADES ARE SHOWN TO BE ADJUSTED AND OR DRAINAGE STRUCTURES ADDED OR ALTERED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL AND REMOVAL OF SURPLUS MATERIAL OFF-SITE AT HIS OWN EXPENSE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ALL SURFACES DISTURBED TO A CONDITION THAT IS EQUAL TO OR BETTER THAN THE ORIGINAL CONDITION. THIS INCLUDES (BUT IS NOT LIMITED TO) EXISTING BUILDINGS, MAILBOXES, UTILITIES, PAVEMENT, CURBS, AND LANDSCAPE.
6. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT OR LIMITS OF THE DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT. ENGINEER SHALL PROVIDE CONSTRUCTION STAKING FOR THIS PROJECT.
7. CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO; WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRIC, DUCT BANKS, LANDSCAPING IRRIGATION FACILITIES AND GAS LINES, ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGES TO EXISTING UTILITIES SHALL BE AT THE CONTRACTORS SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THE PLANS OR NOT.
8. ALL CONSTRUCTION SHALL CONFORM TO THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION (LATEST-EDITIONS) UNLESS OTHERWISE NOTED. THE TECHNICAL SPECIFICATIONS CONTAINED IN THE CONTRACT DOCUMENTS OR OTHER SPECIFIC REFERENCE SHALL TAKE PRECEDENCE OVER NCTCOG STANDARDS.
9. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES A COPY OF ANY REQUIRED CONSTRUCTION PERMITS, EROSION CONTROL PLANS, SW3P WITH INSPECTION REPORTS, AND THE CONTRACT DOCUMENTS INCLUDING PLANS, SPECIFICATIONS, AND SPECIAL CONDITIONS.
10. CONTRACTOR SHALL VERIFY BENCHMARKS AND DATUM PRIOR TO COMMENCING CONSTRUCTION OR STAKING OF IMPROVEMENTS.
11. BARRICADES, SIGNS, AND TRAFFIC HANDLING. THIS PROJECT REQUIRES THE CONTRACTOR TO INSTALL CONSTRUCTION BARRICADES, SIGNS, AND TRAFFIC HANDLING ON THIS PROJECT. THERE MAY BE OTHER MINOR SIGNS AND/OR TRAFFIC MARKINGS THAT ARE DEEMED NECESSARY TO PROTECT THE TRAVELING PUBLIC AND CONSTRUCTION EMPLOYEES. PAYMENT FOR MISCELLANEOUS MINOR SIGNS WILL BE INCLUDED IN THE PRICE BID FOR THIS ITEM.  
ALL MARKERS, TRAFFIC CONTROL PLAN, AND OR OTHER TRAFFIC RELATED INCIDENTALS SHALL BE AS OUTLINED IN THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. THE CONTRACTOR IS REQUIRED TO CONTROL TRAFFIC BY FLAG MEN WHEN PLACING CONCRETE OR USING EQUIPMENT IN THE TRAFFIC AREAS. PAY FOR THIS WILL BE SUBSIDIARY TO THE TRAFFIC HANDLING ITEM. FLAG MEN SHALL HAVE A LEGAL STOP/SLOW PADDLE (STANDARD) OR RED FLAG (ALTERNATE) AND WEAR A REFLECTIVE VEST WHILE PERFORMING THIS WORK.
12. SIGN LOCATIONS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH NCTCOG STANDARDS. THE CONTRACTOR SHALL REVIEW LOCATION OF ALL TRAFFIC CONTROL DEVICES WITH THE OWNER PRIOR TO INSTALLATION.
13. CONTRACTOR SHALL SUBMIT A SEQUENCE OF WORK PLAN AND A CONSTRUCTION SCHEDULE FOR APPROVAL AT THE PRE-CONSTRUCTION CONFERENCE. UPDATED CONSTRUCTION SCHEDULES WILL BE REQUIRED MONTHLY PRIOR TO PROGRESS PAYMENTS.
14. ALL EXCAVATION MORE THAN 5 FEET DEEP SHALL COMPLY WITH O.S.H.A. TRENCH SAFETY STANDARDS.
15. ANY WORK THAT WILL BE PERFORMED OUTSIDE THE RIGHT-OF-WAY WILL BE COORDINATED BY THE CONTRACTOR WITH THE PROPERTY OWNER PRIOR TO BEGINNING WORK.

**EROSION AND POLLUTION CONTROL NOTES**

1. ALL CONTRACTORS SHALL COMPLY WITH THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM AS FURTHER DESCRIBED IN THE SPECIAL TECHNICAL SPECIFICATIONS.
2. THE CONTRACTOR SHALL INSTALL EROSION AND POLLUTION CONTROL MEASURES AS FIELD CONDITIONS WARRANT TO PREVENT OFF-SITE MIGRATION OF SOILS OR OTHER POLLUTANTS BY VEHICULAR TRACKING OR IN STORM WATER RUNOFF. PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY, INSTALLATION OF CONTROL MEASURES, REPAIRS OR MODIFICATIONS TO THE MEASURES WILL BE MADE BY THE CONTRACTOR IF THE CONTROL MEASURES PROVE INEFFECTIVE OR IF ADDITIONAL CONTROL MEASURES ARE NECESSARY.
3. ALL STOCKPILED SOILS SHALL BE MAINTAINED IN A MANNER TO PROPERLY CONTROL SEDIMENT RUNOFF.
4. THE CONTRACTOR SHALL CONSTRUCT A BERM OR OTHER SPILL PROTECTION MEASURE FOR ANY TEMPORARY FUEL STORAGE TANK(S) ON SITE.
5. IF SUMP PUMPS ARE USED TO REMOVE WATER FROM EXCAVATED AREAS, THE DISCHARGE SHALL BE CONTAINED, FILTERED OR DISCHARGED TO A SETTLING BASIN TO REMOVE SEDIMENT AND OTHER POLLUTANTS BEFORE THE WATER ENTERS A STORM DRAIN OR LEAVES THE SITE.
6. THE CONTRACTOR SHALL STABILIZE, WITH SOME FORM OF GROUND COVER, ANY AREA WHERE CONSTRUCTION ACTIVITY IS TO BE CEASED (TEMPORARILY OR PERMANENTLY) FOR MORE THAN TWENTY-ONE (21) DAYS. RE-VEGETATION OF ALL DISTURBED SOIL SHALL BE INITIATED WITHIN TWENTY-ONE (21) DAYS OF FINAL CONSTRUCTION OPERATIONS.
7. AT THE CONCLUSION OF THE PROJECT, ALL CHANNELS, DRAINAGE WAYS AND BORROW DITCHES IN THE WORK ZONE SHALL BE CLEARED OF ANY SEDIMENT AND DEBRIS GENERATED BY THE PROJECT OR DEPOSITED AS A RESULT OF THE EROSION AND POLLUTION CONTROL MEASURES.
8. CONTRACTOR SHALL INSTALL EROSION CONTROL DEVICES ON UPSTREAM SIDE OF ALL CULVERTS, INLETS AND AT DOWNSTREAM GUTTER FLOW EXIT POINTS. EROSION CONTROL DEVICES WILL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS. LOCATIONS FOR EROSION CONTROL DEVICES ARE THE MINIMUM REQUIRED. CONTRACTOR IS RESPONSIBLE FOR PROVIDING A STORM WATER POLLUTION PREVENTION (SW3P) PLAN FOR THE PROJECT FOR APPROVAL AT THE PRE-CONSTRUCTION CONFERENCE.

LEGEND			
	PROPOSED 6" WATER LINE		EASEMENT
	EXISTING WATER LINE		PROPERTY LINE
	PROPOSED GATE VALVE		PAVED ROAD
	PROPOSED WATER TAP		GRAVEL ROAD
	EXISTING VALVE		TELEPHONE PEDESTAL
	PROPOSED FLUSH VALVE / FIRE HYDRANT		SIGN AND POST
	EXISTING FLUSH VALVE / FIRE HYDRANT		OVERHEAD ELECTRIC
	EXISTING WATER METER		ELECTRIC METER
	POWER POLE		ELECTRIC BOX
	AIR VALVE		UNDERGROUND ELECTRIC
	TREE		GAS LINE
	GUY WIRE		GAS METER
	FENCE LINE		UNDERGROUND TELEPHONE
			COMMUNICATIONS MANHOLE

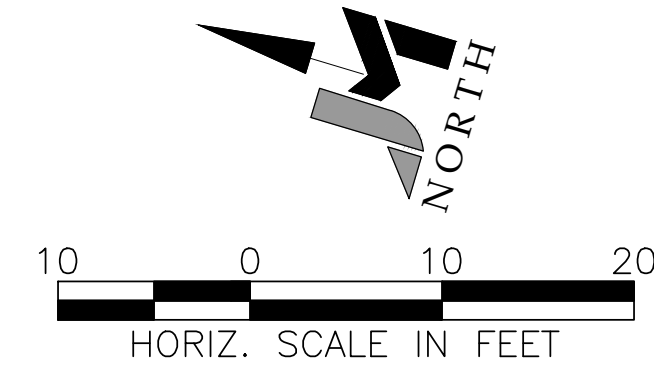
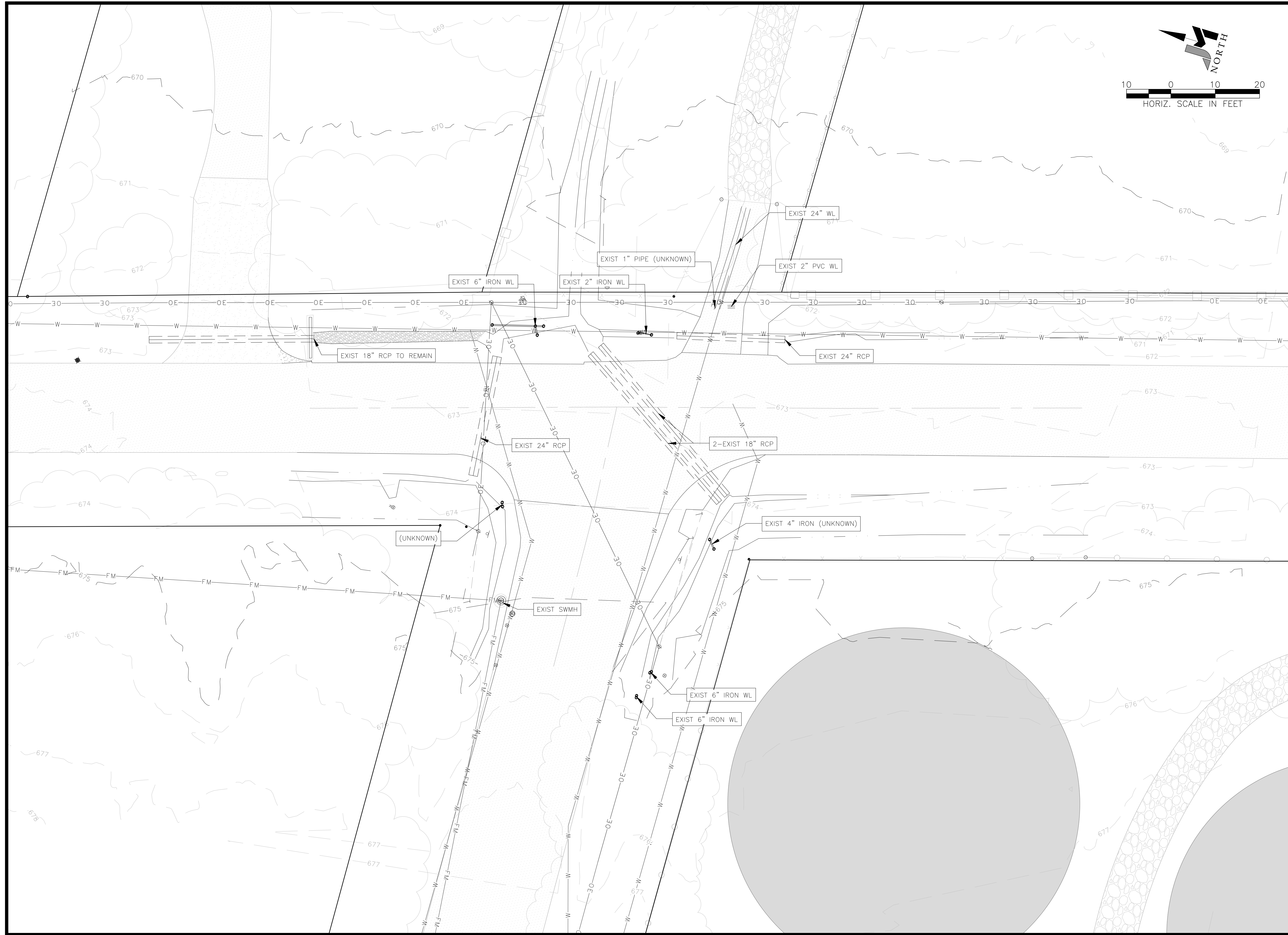
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Sheet Number	Sheet Title
01	COVER
02	NOTES
03	EXISTING_DRAINAGE
04	PROPOSED_DRAINAGE
05	PROPOSED_DRAINAGE
06	PROPOSED_DRAINAGE
07	DITCH & CULVERT-A_STA.-0+00 - END
08	DITCH-B_STA.-0+00 - END
09	CULVERT-B_STA.-0+00 - END (2)
10	DITCH-C_STA.-0+00-END
11	DITCH D_STA.-0+00-2+50
12	DITCH D_STA.-2+50-5+00
13	DITCH D_STA.-5+00-END
14	TxDOT_CH-PW-0
15	TxDOT_CH-FW-0
16	TxDOT_CH-PW-S
17	STANDARD DETAIL A
18	STANDARD DETAIL B
19	STANDARD DETAIL C
20	STANDARD DETAIL D



CITY OF AZLE, TEXAS		DRAINAGE CULVERT	CONSTRUCTION DRAWINGS	NOTES
NO. REVISION				
DATE				
PROJECT #	22449	SCALE	N.T.S.	BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING.
SEQ.	SHEET	CHECK SCALE AND ADJUST ACCORDINGLY.		
02 OF 17				

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*Derek Turner*  
 STATE OF TEXAS  
 DEREK TURNER  
 6485  
 LICENSED PROFESSIONAL ENGINEER  
 02-13-2024

*Nicholas Kirk*  
 STATE OF TEXAS  
 NICHOLAS KIRK  
 13887  
 LICENSED PROFESSIONAL ENGINEER  
 02-13-2024

ISSUED FOR BID

**JACOB MARTIN**

TBPEL FIRM # 10194893  
 TBPEL FIRM # BR 2261  
 TBPEL FIRM # 2448

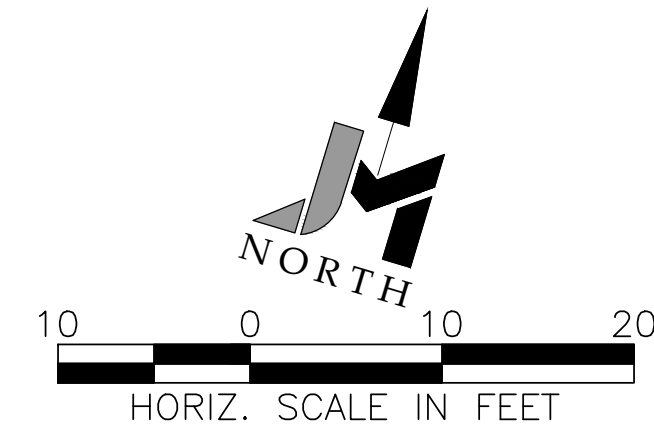
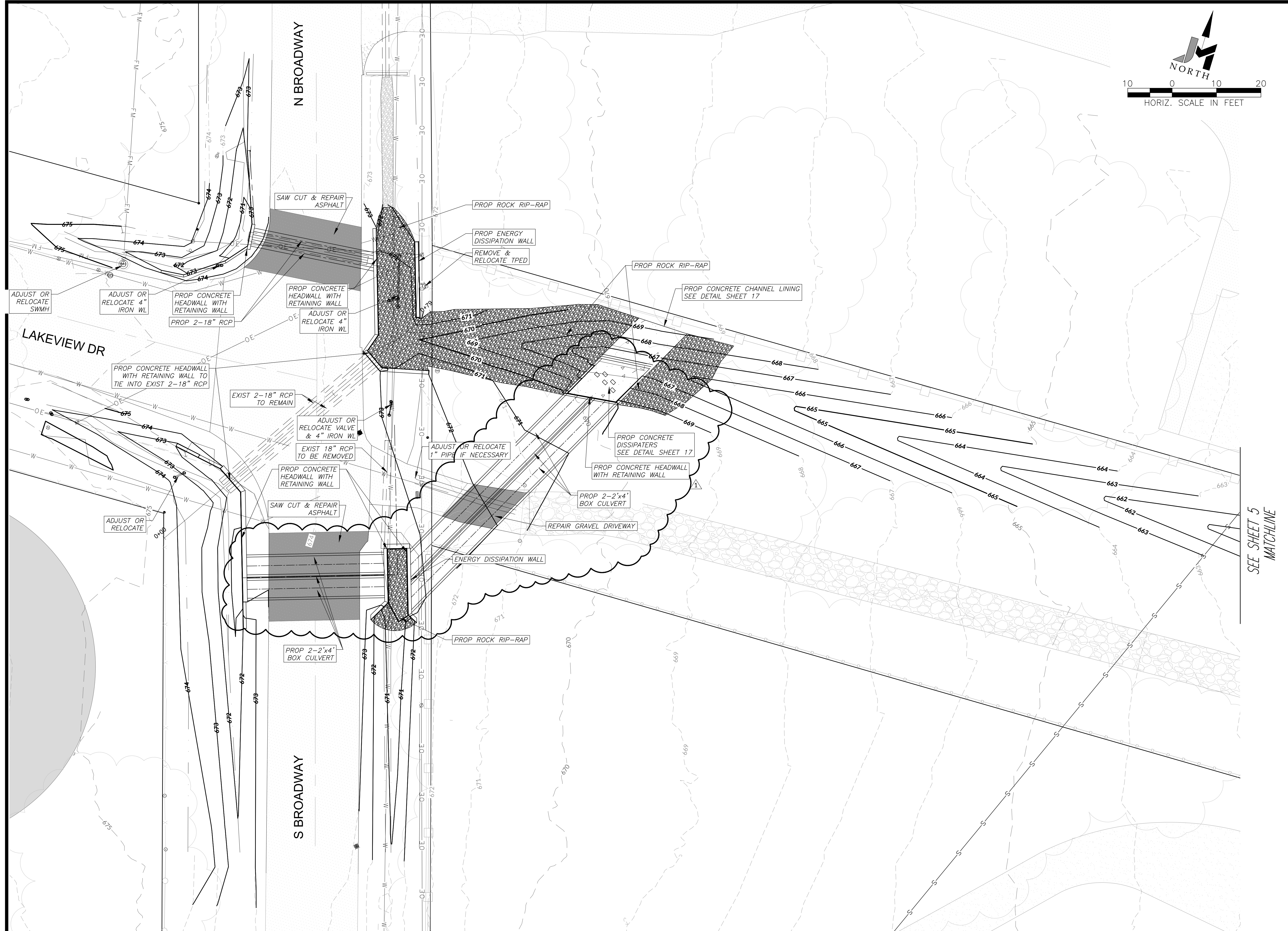
CITY OF AZLE, TEXAS  
 DRAINAGE CULVERT  
 CONSTRUCTION DRAWINGS  
 EXISTING DRAINAGE

NO.	REVISION	DATE

PROJECT # 22449  
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 BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING.  
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SEQ. SHEET 03 OF 17

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SEE SHEET 5  
MATCHLINE

*Derek Turner*  
STATE OF TEXAS  
DEREK TURNER  
19848  
LICENSED PROFESSIONAL ENGINEER  
02-13-2024

*Nick Kirk*  
STATE OF TEXAS  
NICHOLAS KIRK  
13887  
LICENSED PROFESSIONAL ENGINEER  
02-13-2024

ISSUED FOR BID

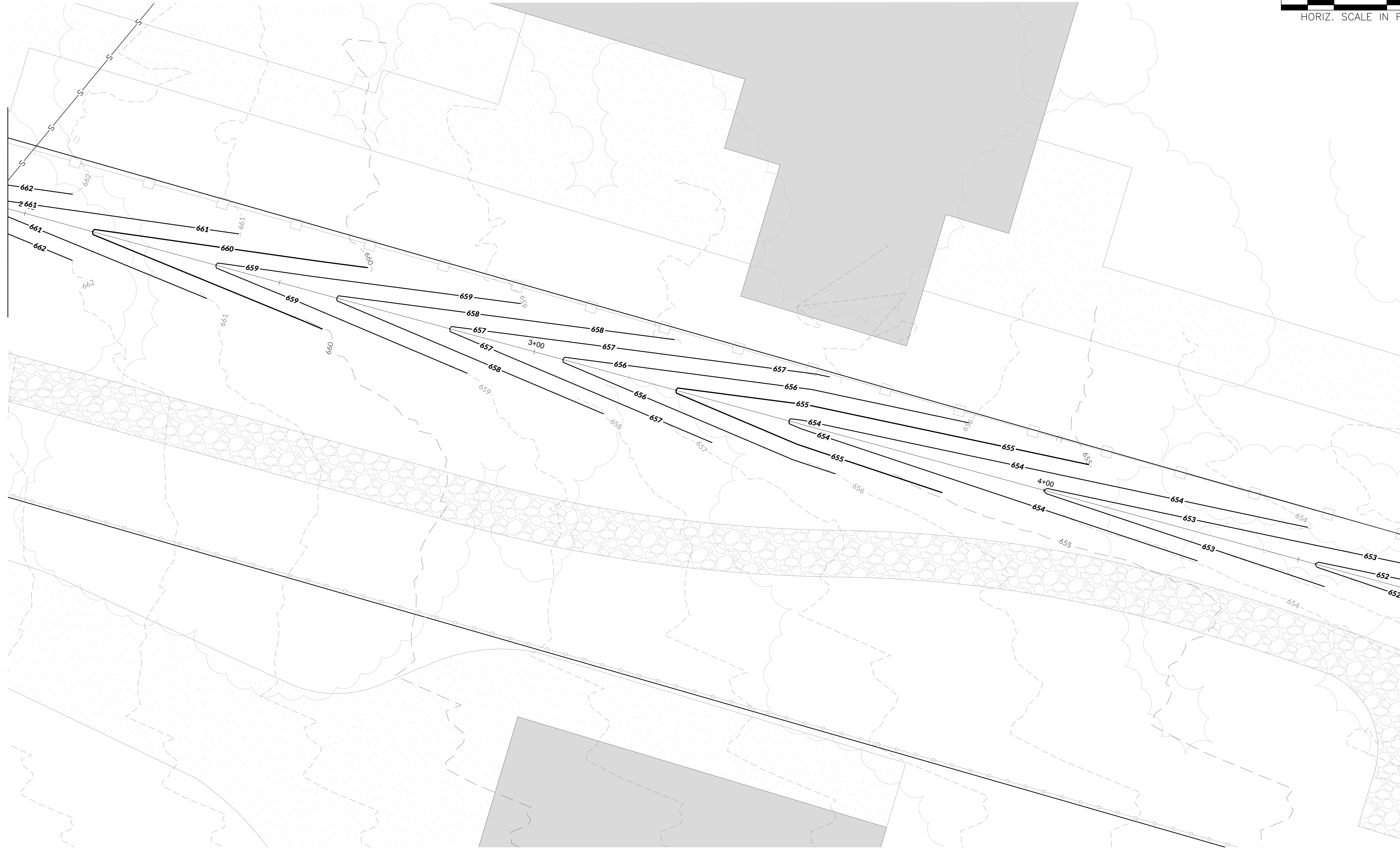
**JACOB MARTIN**

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TBE FIRM # BR 2261  
TBE FIRM # 10194993

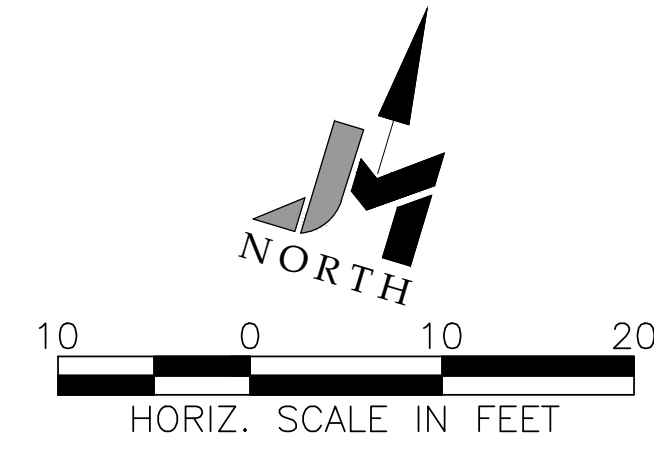
CITY OF AZLE, TEXAS  
DRAINAGE CULVERT  
CONSTRUCTION DRAWINGS  
PROPOSED DRAINAGE

NO.	REVISION	DATE	02/13/2024
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PROJECT #			22449
SCALE			1" = 10'
BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING.			
CHECK SCALE AND ADJUST ACCORDINGLY.			
SEQ.	SHEET		04 OF 17

SEE SHEET 4  
MATCHLINE



SEE SHEET 6  
MATCHLINE



NO.	REVISION	DATE

PROJECT # | SCALE | 1" = 10'  
22449

BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING.  
CHECK SCALE AND ADJUST ACCORDINGLY.

CITY OF AZLE, TEXAS  
DRAINAGE CULVERT  
CONSTRUCTION DRAWINGS  
PROPOSED DRAINAGE



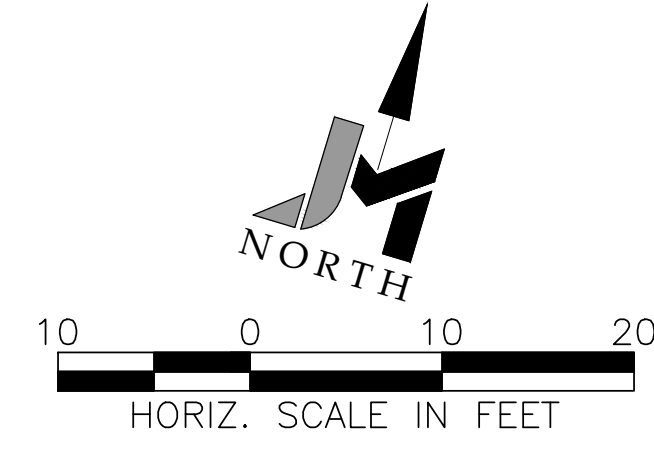
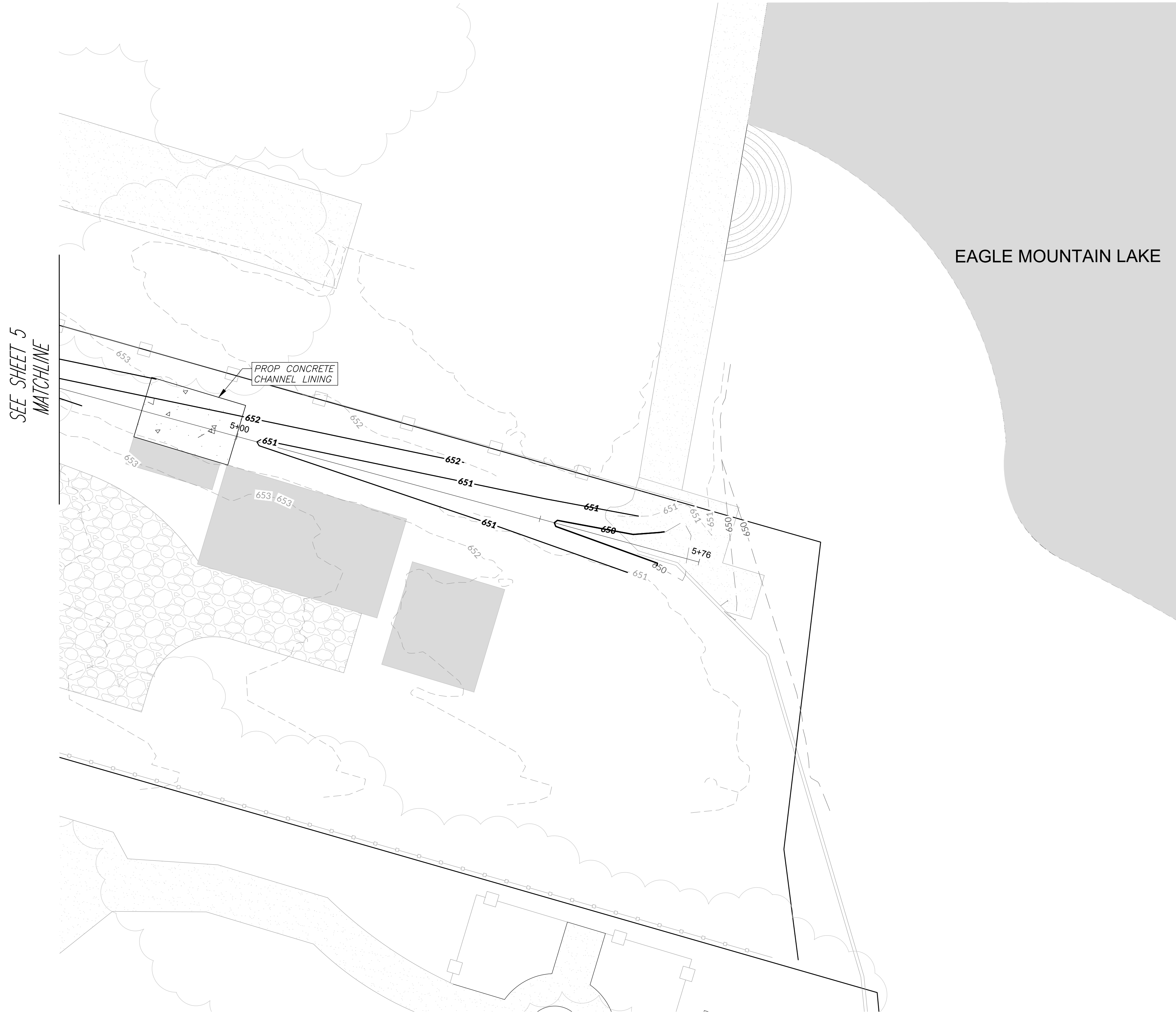
ISSUED FOR BID



02-13-2024



02-13-2024



*Derek Turner*  
 STATE OF TEXAS  
 DEREK TURNER  
 84848  
 LICENSED PROFESSIONAL ENGINEER  
 02-13-2024

*Nicholas Kirk*  
 STATE OF TEXAS  
 NICHOLAS KIRK  
 13887  
 LICENSED PROFESSIONAL ENGINEER  
 02-13-2024

ISSUED FOR BID

**JACOB MARTIN**

TBPE FIRM # 2448  
 TBPAE FIRM # BR 2261  
 TBPELS FIRM # 10194893

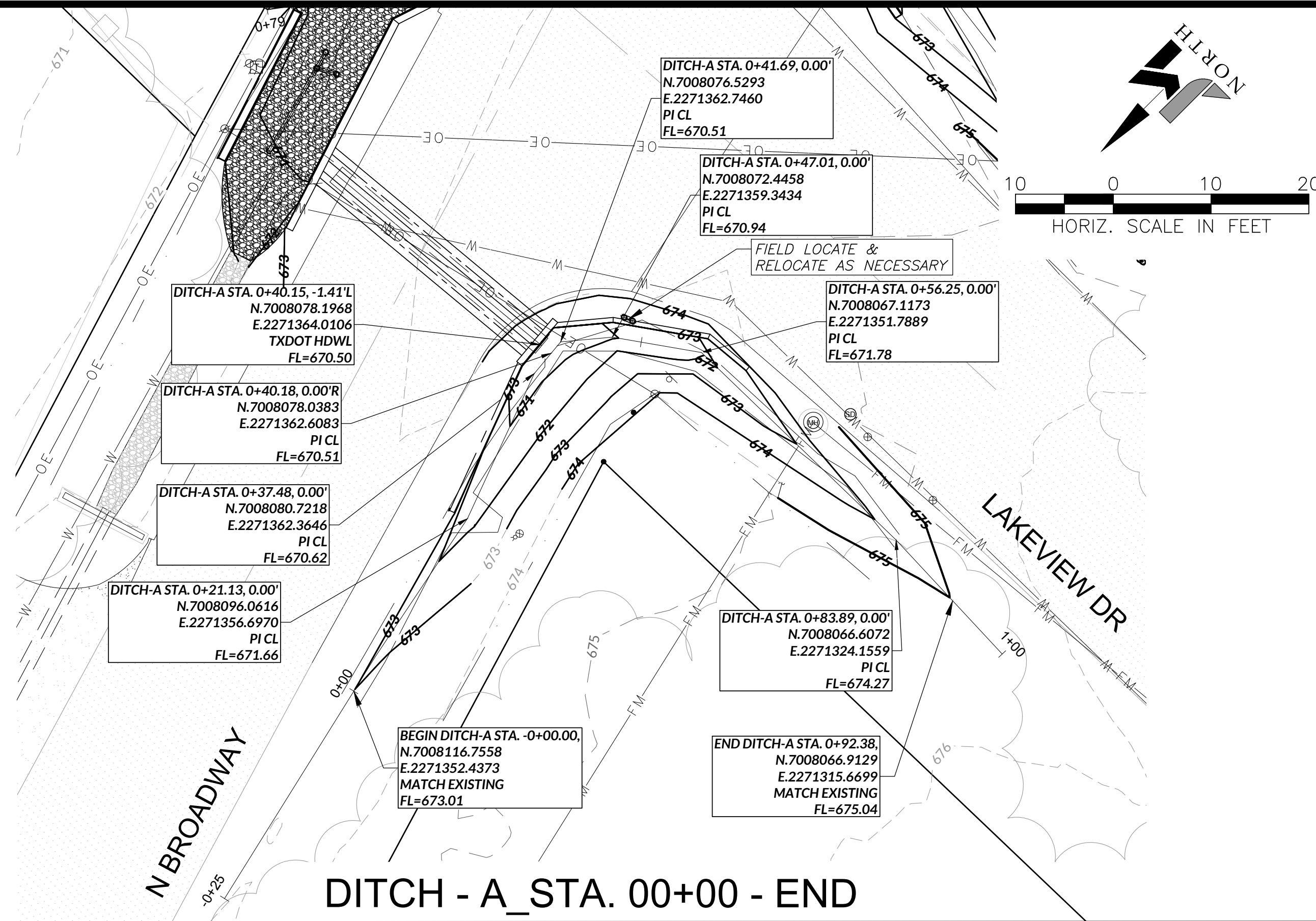
CITY OF AZLE, TEXAS  
 DRAINAGE CULVERT  
 CONSTRUCTION DRAWINGS  
 PROPOSED DRAINAGE

NO.	REVISION	DATE

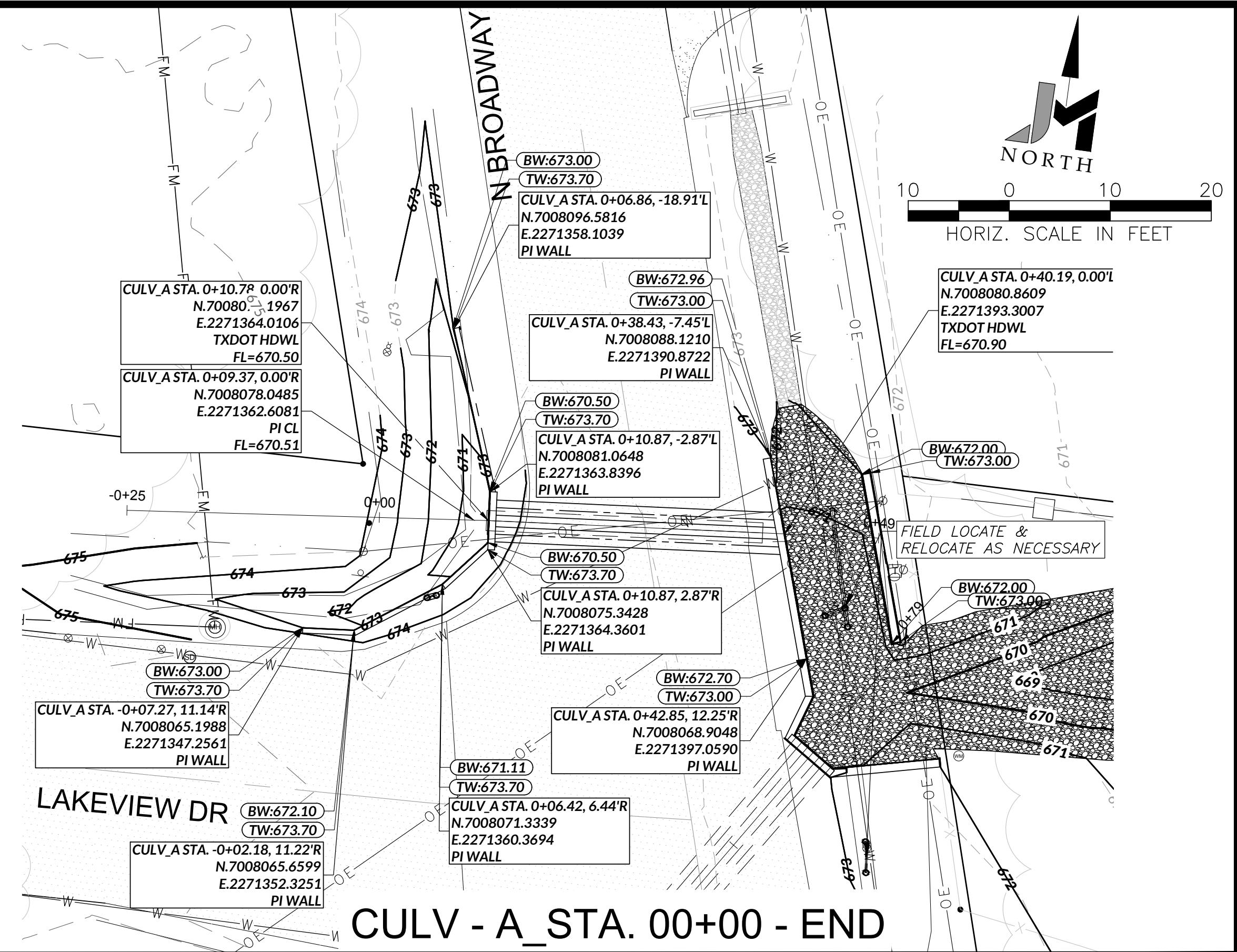
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 22449 | 1" = 10'

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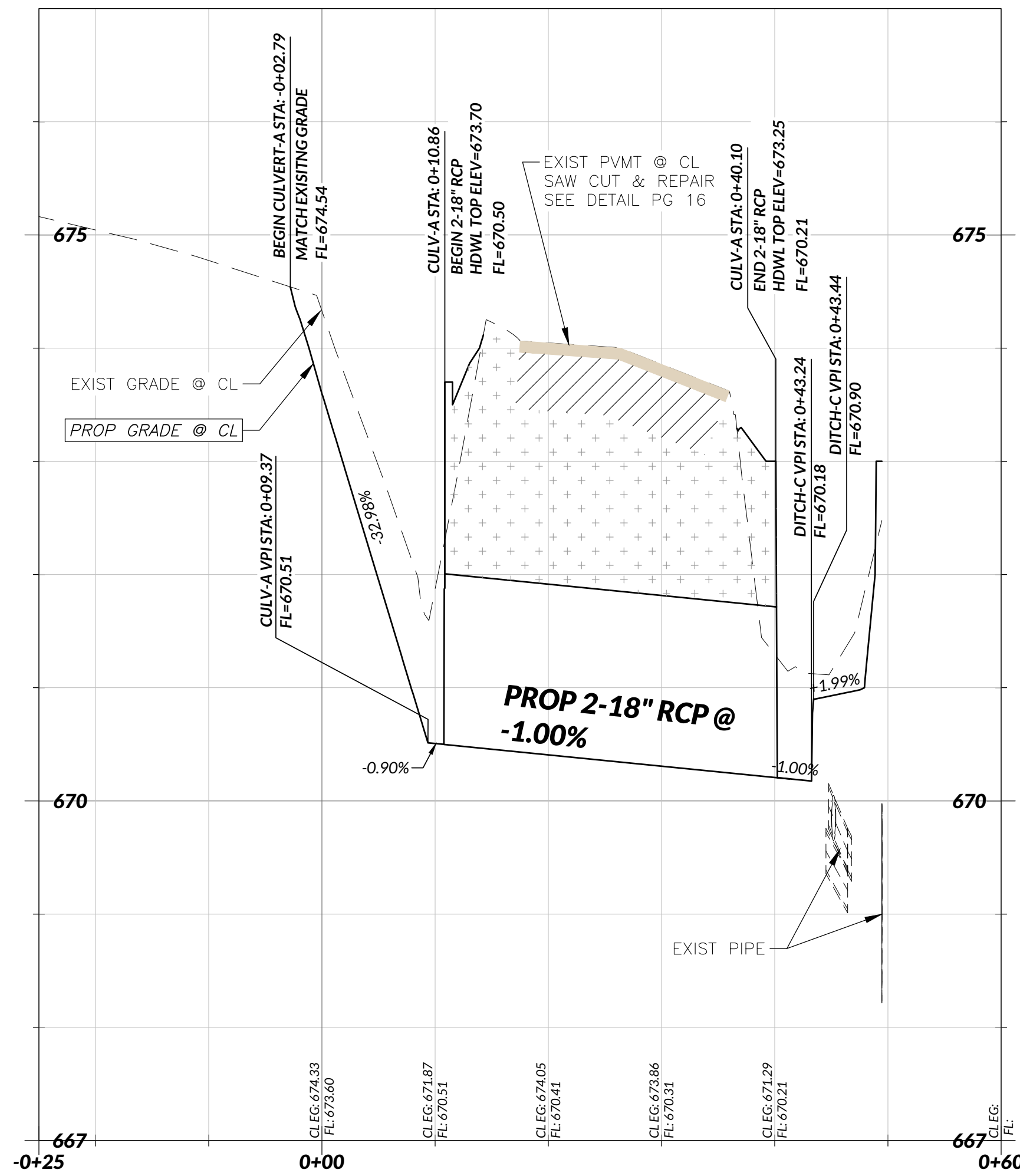
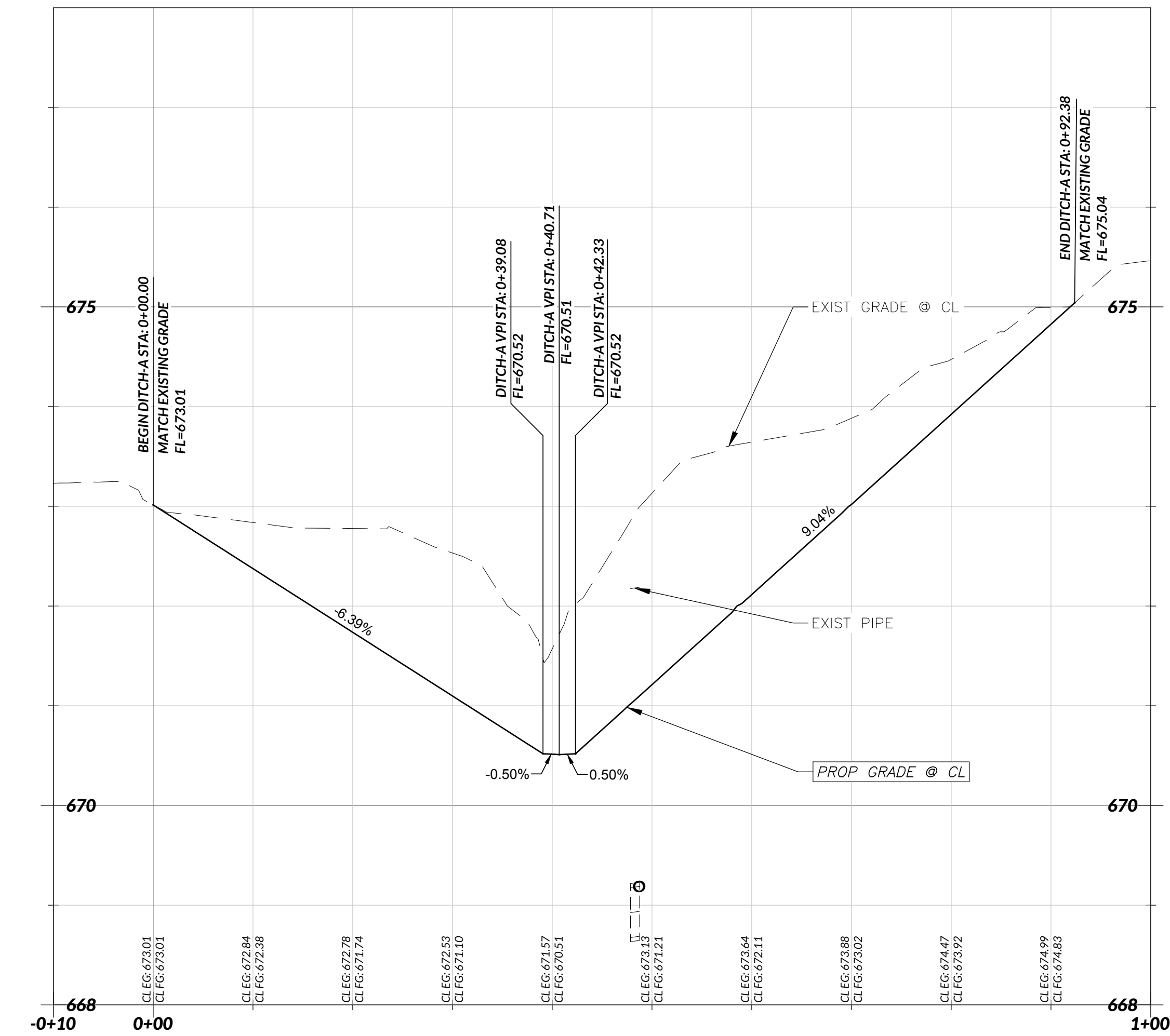




DITCH - A\_STA. 00+00 - END



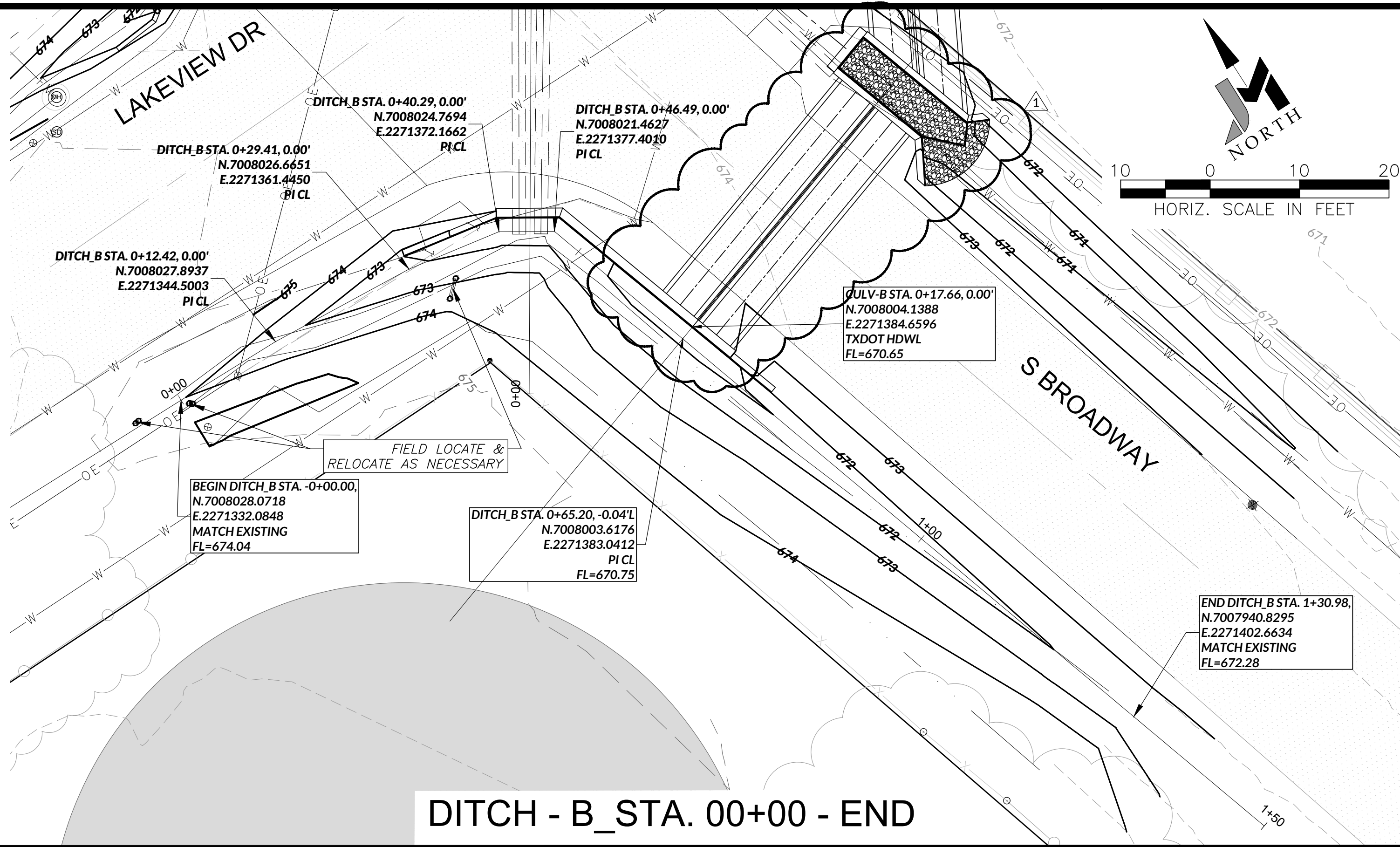
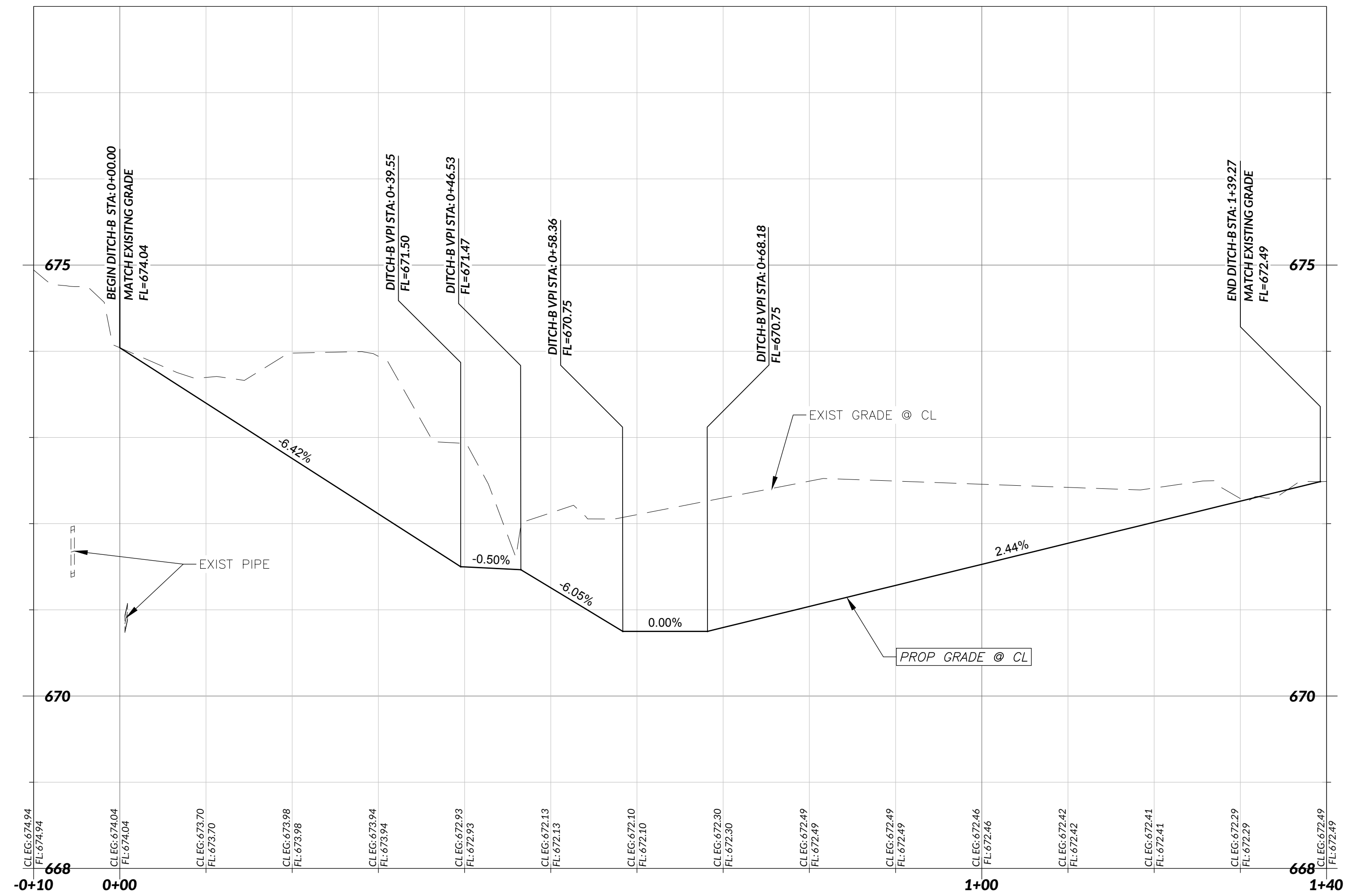
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CITY OF AZLE, TEXAS  
 DRAINAGE CULVERT  
 CONSTRUCTION DRAWINGS  
 DITCH & CULVERT A  
 STA. 0+00 - END

NO.	REVISION	DATE

PROJECT # 22449  
 SCALE: H: 1" = 10'  
 V: 1" = 1'  
 BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING.  
 CHECK SCALE AND ADJUST ACCORDINGLY.



NO.	REVISION	DATE
1	REVISE BOX CULVERTS	02/13/2024
SEQ.	SHEET	
		08 OF 17

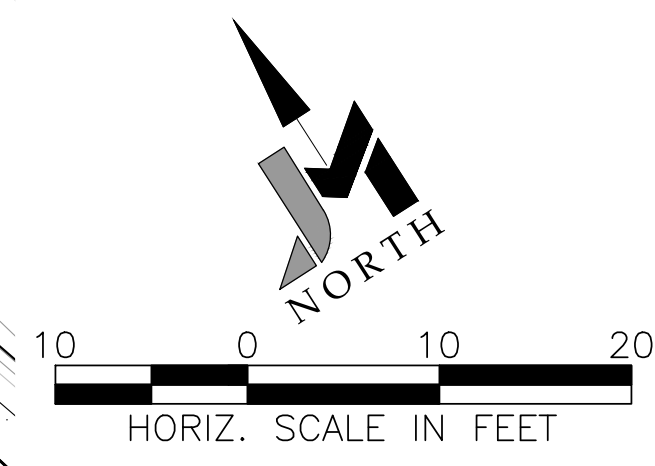
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**DRAINAGE CULVERT**  
 CONSTRUCTION DRAWINGS  
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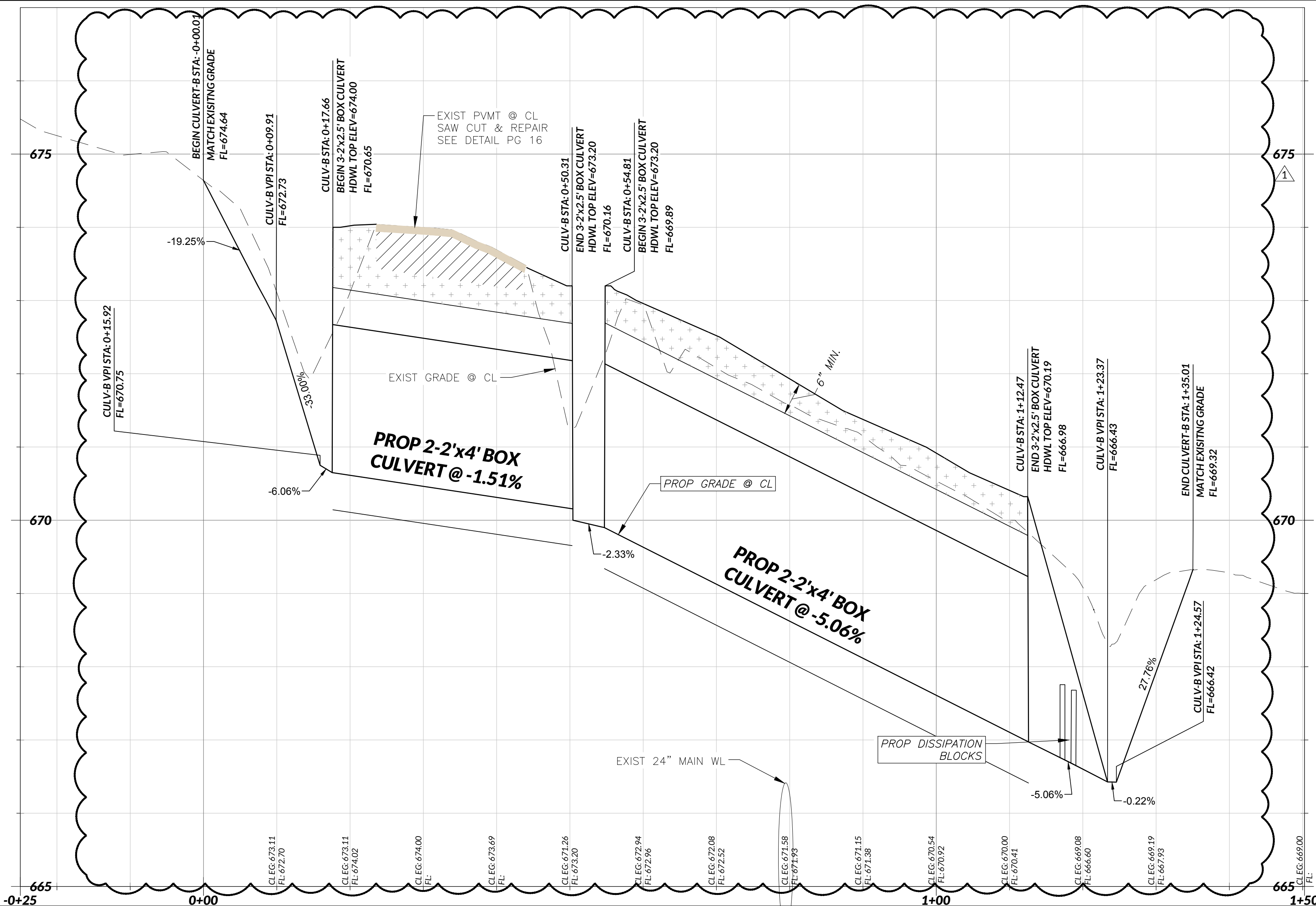
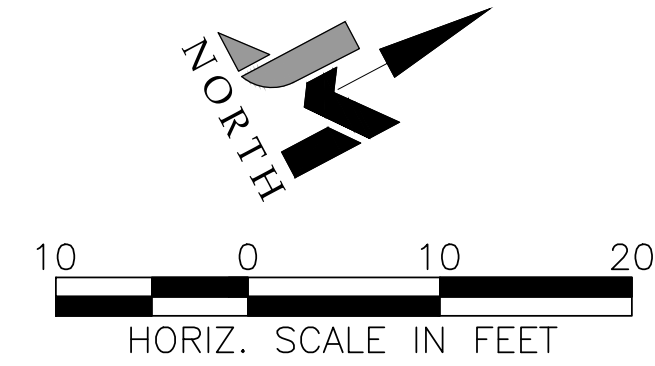
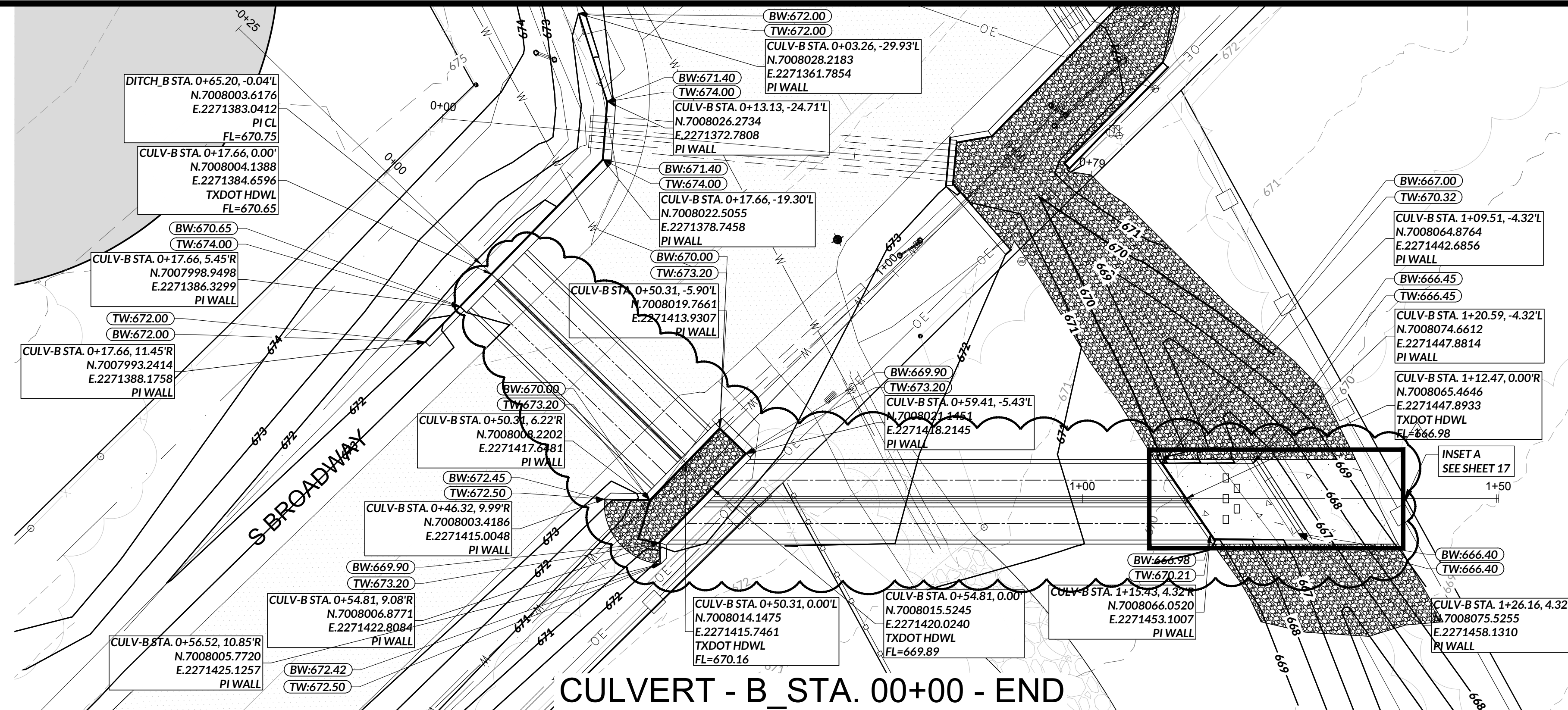
**JACOB MARTIN**  
 TBPE FIRM # 2448  
 TBPE FIRM # BR 2261  
 TBPELS FIRM # 10194893

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 LICENSED PROFESSIONAL ENGINEER  
 13887  
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ISSUED FOR BID





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CITY OF AZLE, TEXAS  
 DRAINAGE CULVERT  
 CONSTRUCTION DRAWINGS  
 CULVERT B STA. 0+00 - END

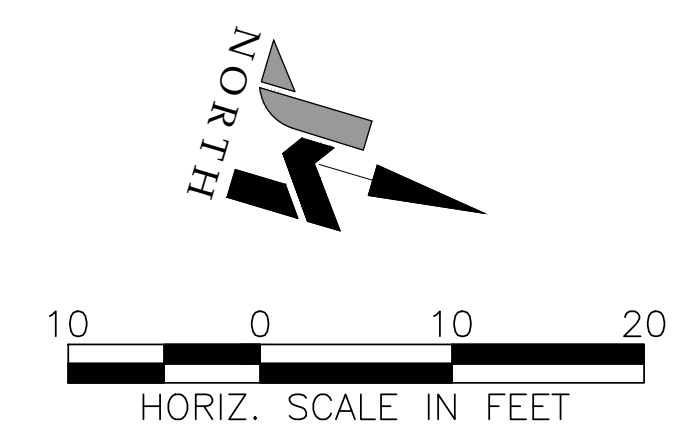
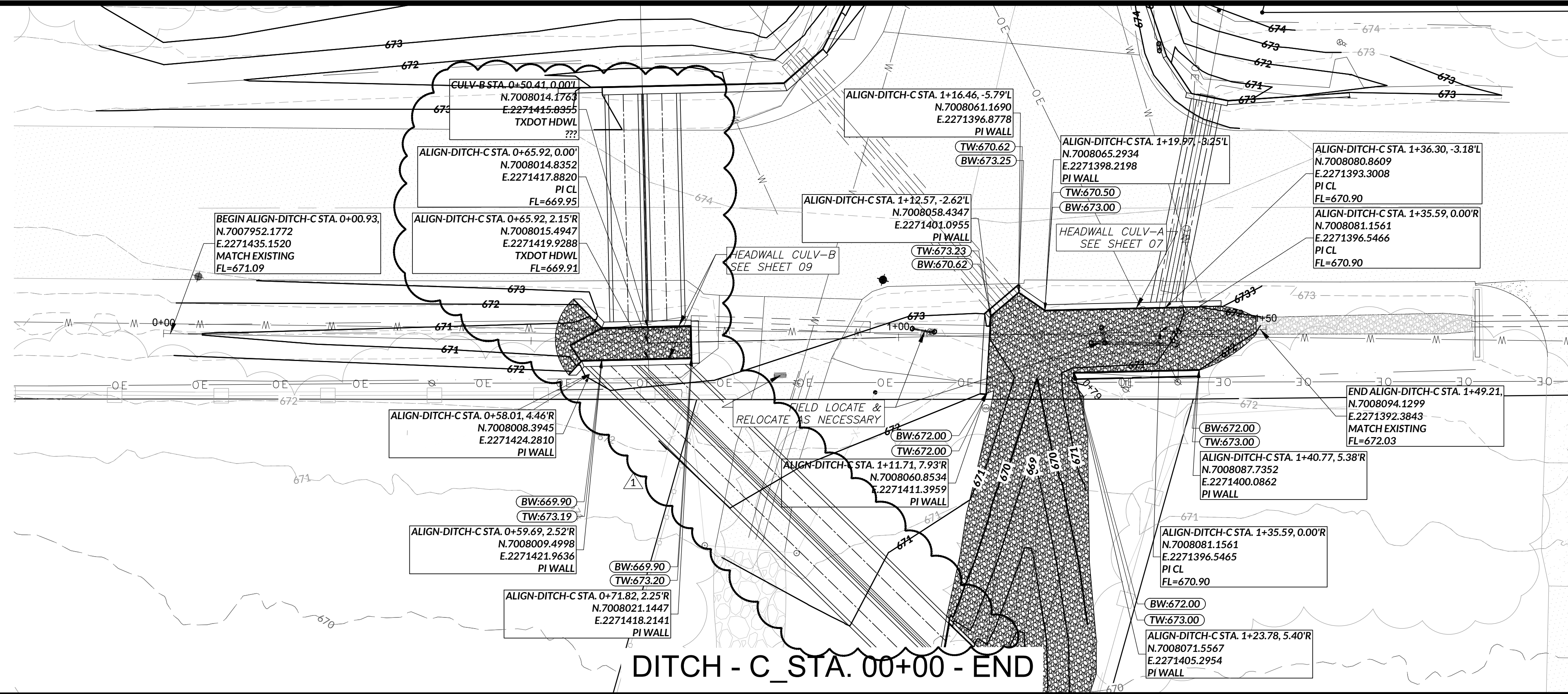
NO.	REVISION	DATE
1	REVISE BOX CULVERTS	02/13/2024
PROJECT # 22449		
SCALE H <sub>1</sub> :1"=10' V <sub>1</sub> :1"=1'		
BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING. CHECK SCALE AND ADJUST ACCORDINGLY.		
SEQ.	SHEET	
	09 OF 17	

Plotted by: sarah atalig Plot Date: 2/13/2024 3:47 PM

Save Time: 2/13/2024 3:22 PM

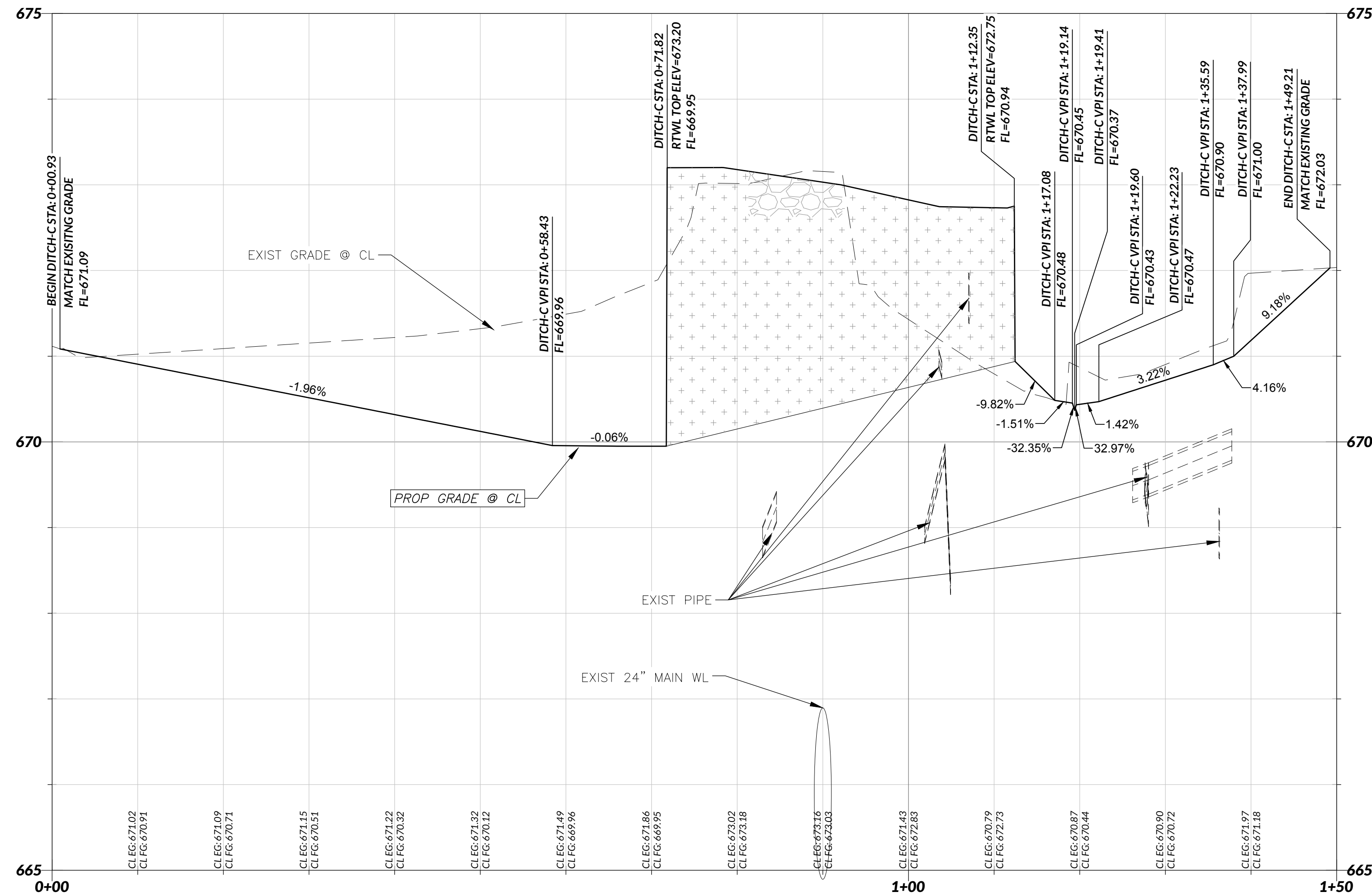
Saved By: svanderpool

X:\D\_Azle\22449 - Broadway Drainage Culvert\Drafting\Plans\C-Civil\22449\_BDC\_BROADWAY\_PROF.dwg



**JACOB MARTIN**  
 TBAE FIRM # BR 2261  
 TIBPEL FIRM # 10194893  
 TIBPEL FIRM # 2448

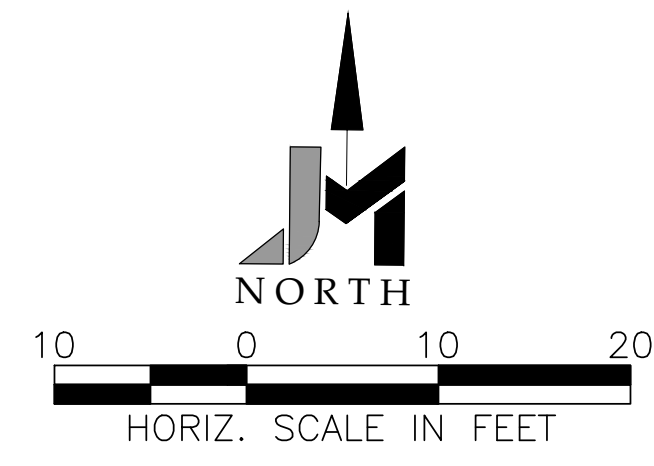
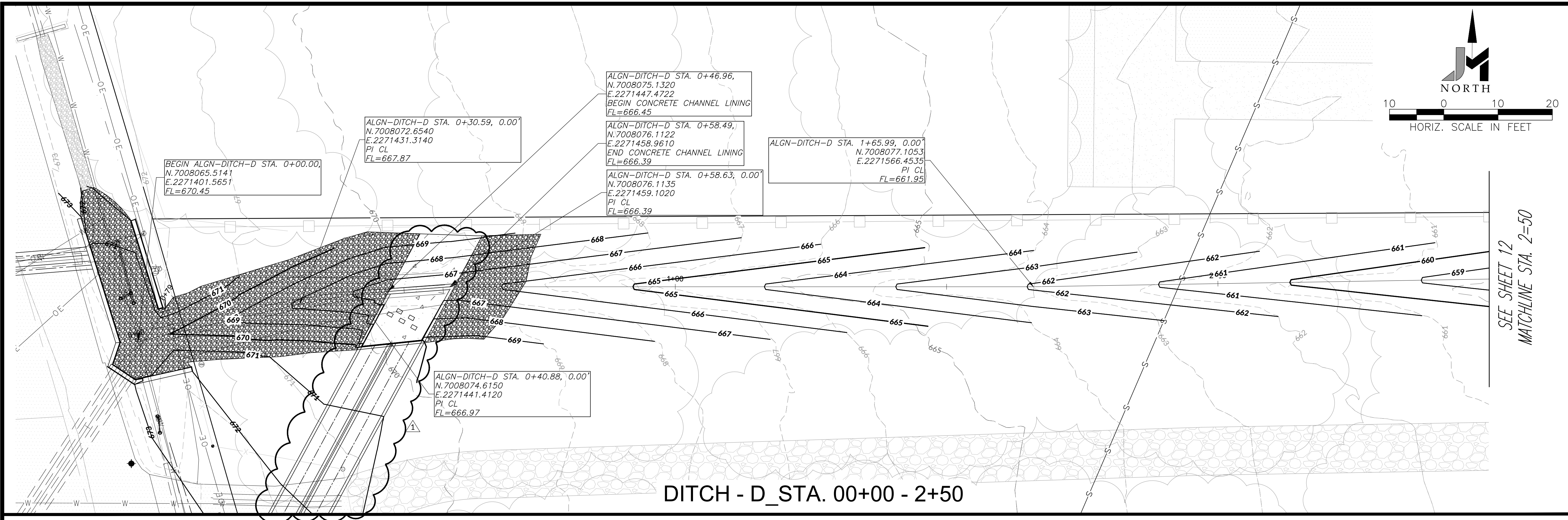
CITY OF AZLE, TEXAS  
**DRAINAGE CULVERT**  
 CONSTRUCTION DRAWINGS  
 DITCH C STA. 0+00 - END



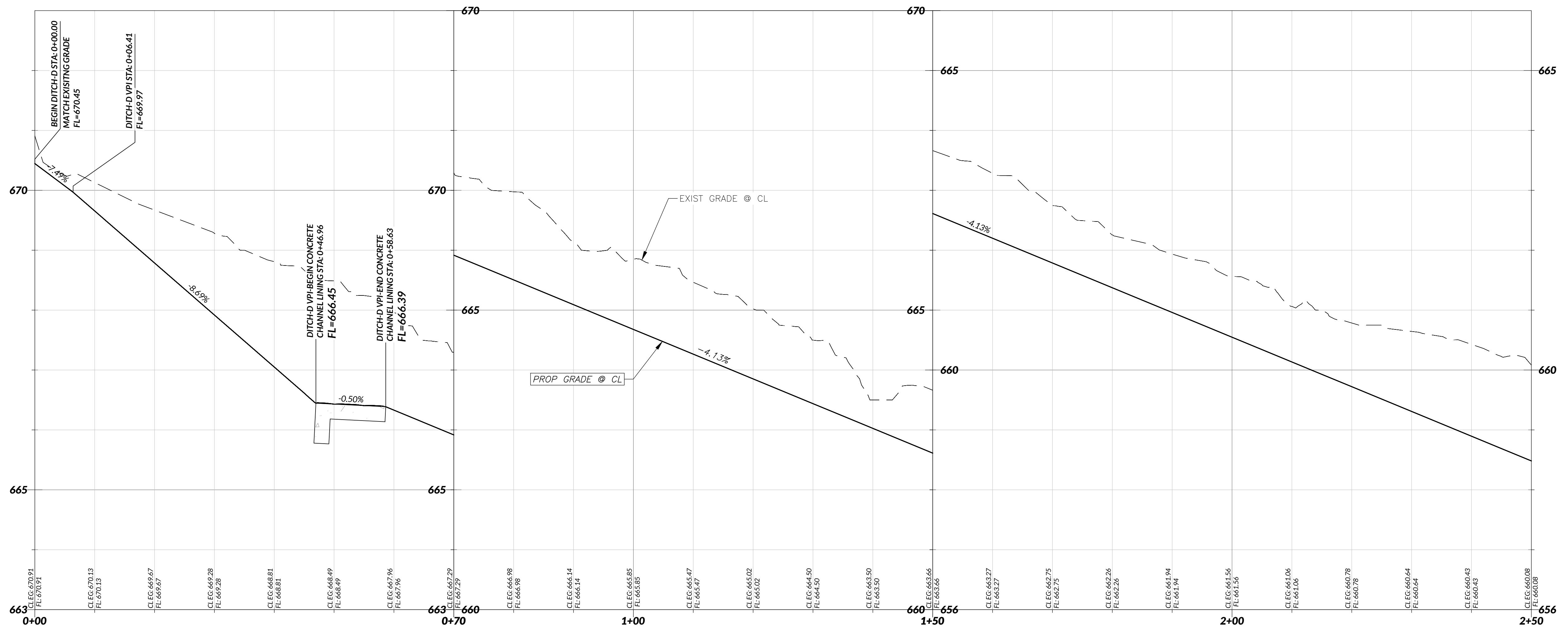
NO.	REVISION	DATE
1	REVISE BOX CULVERTS	02/13/2024
SEQ.	SHEET	
		10 OF 17

PROJECT # 22449  
 SCALE H:1"=10'  
 V:1"=11'  
 BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING.  
 CHECK SCALE AND ADJUST ACCORDINGLY.

X:\D\_Azle\22449 - Broadway Drainage Culvert\Drafting\Plans\Civil\22449\_BDC\_BROADWAY\_PROP.dwg Saved By: svanderpool Save Time: 2/13/2024 3:22 PM Plotted by: sarah atciff Plot Date: 2/13/2024 3:47 PM



SEE SHEET 12  
MATCHLINE STA. 2=50



CITY OF AZLE, TEXAS  
DRAINAGE CULVERT  
CONSTRUCTION DRAWINGS  
DITCH D STA. 0+00 - 2+50

NO.	REVISION	DATE
1	REVISE BOX CULVERTS	02/13/2024

PROJECT # 22449  
SCALE H<sub>1</sub>: 1" = 10'  
V<sub>1</sub>: 1" = 11'

BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING.  
CHECK SCALE AND ADJUST ACCORDINGLY.

X:\D\_Azle\22449 - Broadway Drainage Culvert\Drafting\Plans\Civil\22449\_BDC\_BROADWAY\_PROP.dwg Saved By: svanderpool Save Time: 2/13/2024 3:22 PM Plotted by: sarah atalig Plot Date: 2/13/2024 3:47 PM

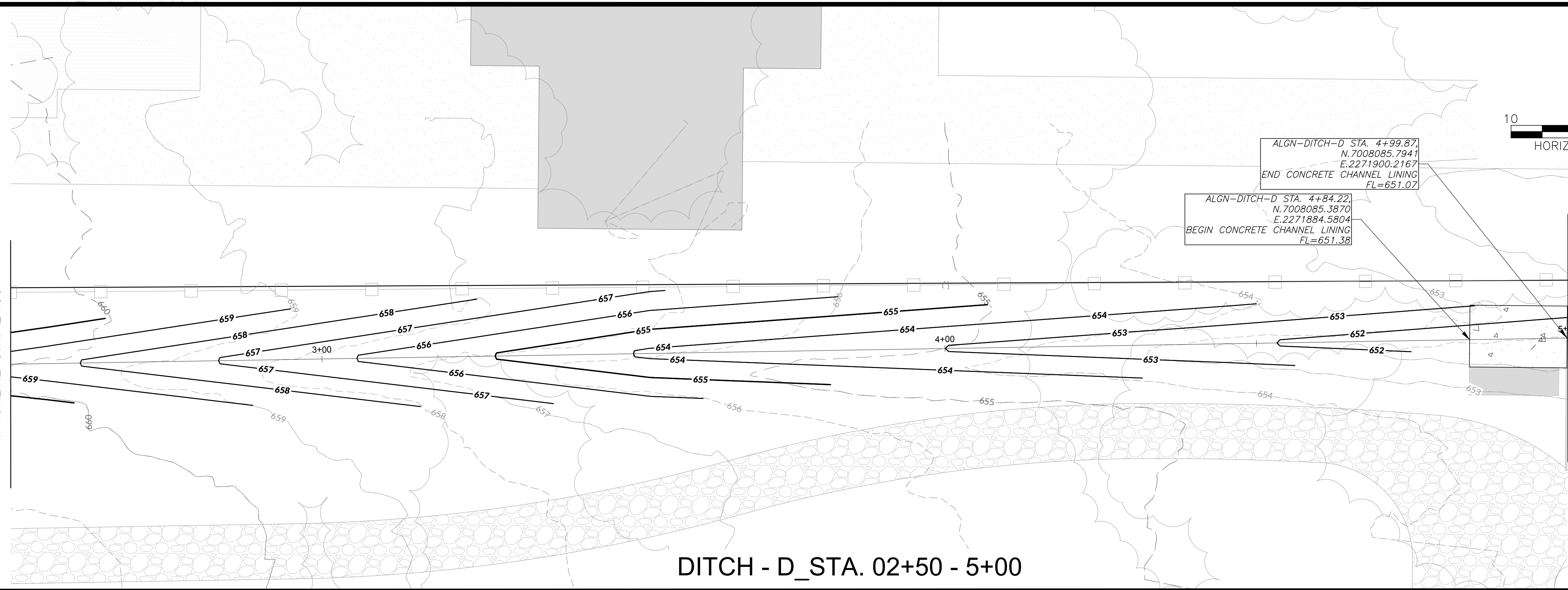
SEE SHEET 11  
MATCHLINE STA. 2+50

SEE SHEET 13  
MATCHLINE STA. 5+00

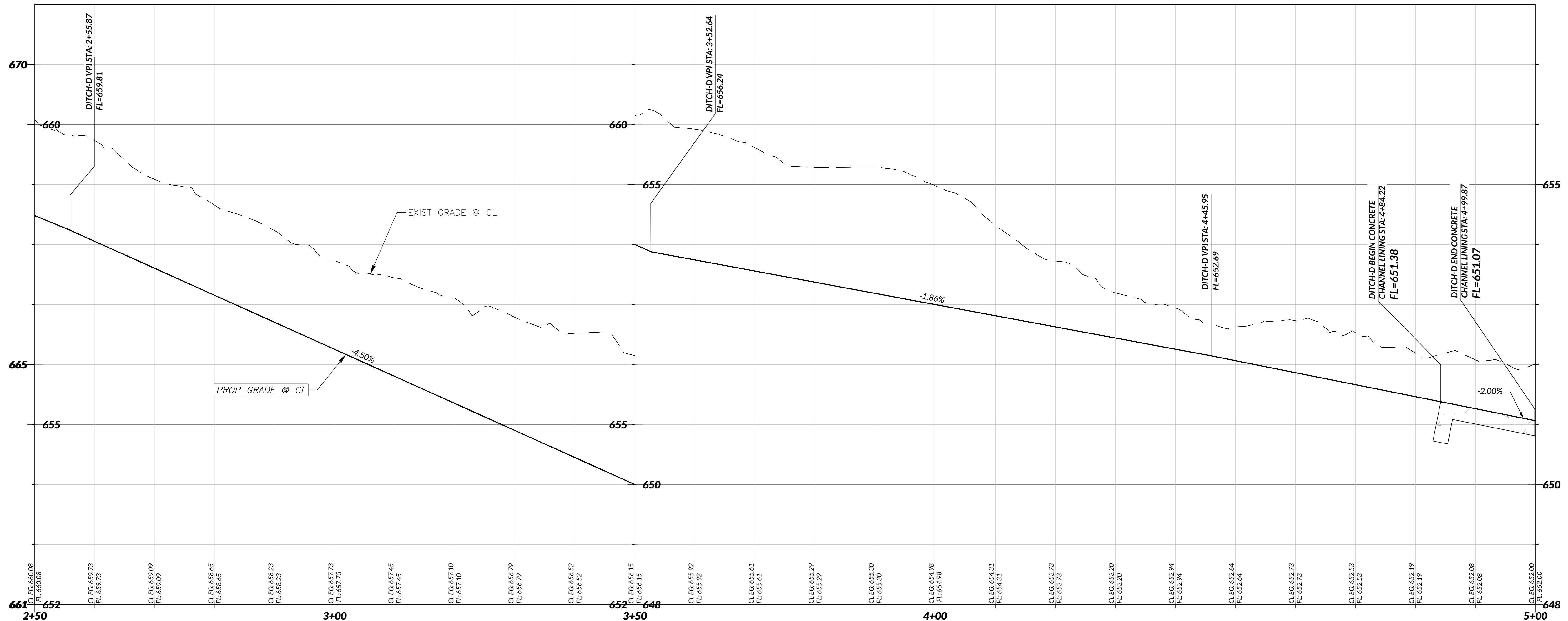


ALGN-DITCH-D STA. 4+99.87  
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E.2271900.2167  
END CONCRETE CHANNEL LINING  
FL=651.07

ALGN-DITCH-D STA. 4+84.22  
N.7008085.3870  
E.2271884.5804  
BEGIN CONCRETE CHANNEL LINING  
FL=651.38



DITCH - D\_STA. 02+50 - 5+00



**Derek Turner**  
STATE OF TEXAS  
DEREK TURNER  
1987  
LICENSED PROFESSIONAL ENGINEER  
02-13-2024

**Nicholas Kirk**  
STATE OF TEXAS  
NICHOLAS KIRK  
1987  
LICENSED PROFESSIONAL ENGINEER  
02-13-2024

ISSUED FOR BID

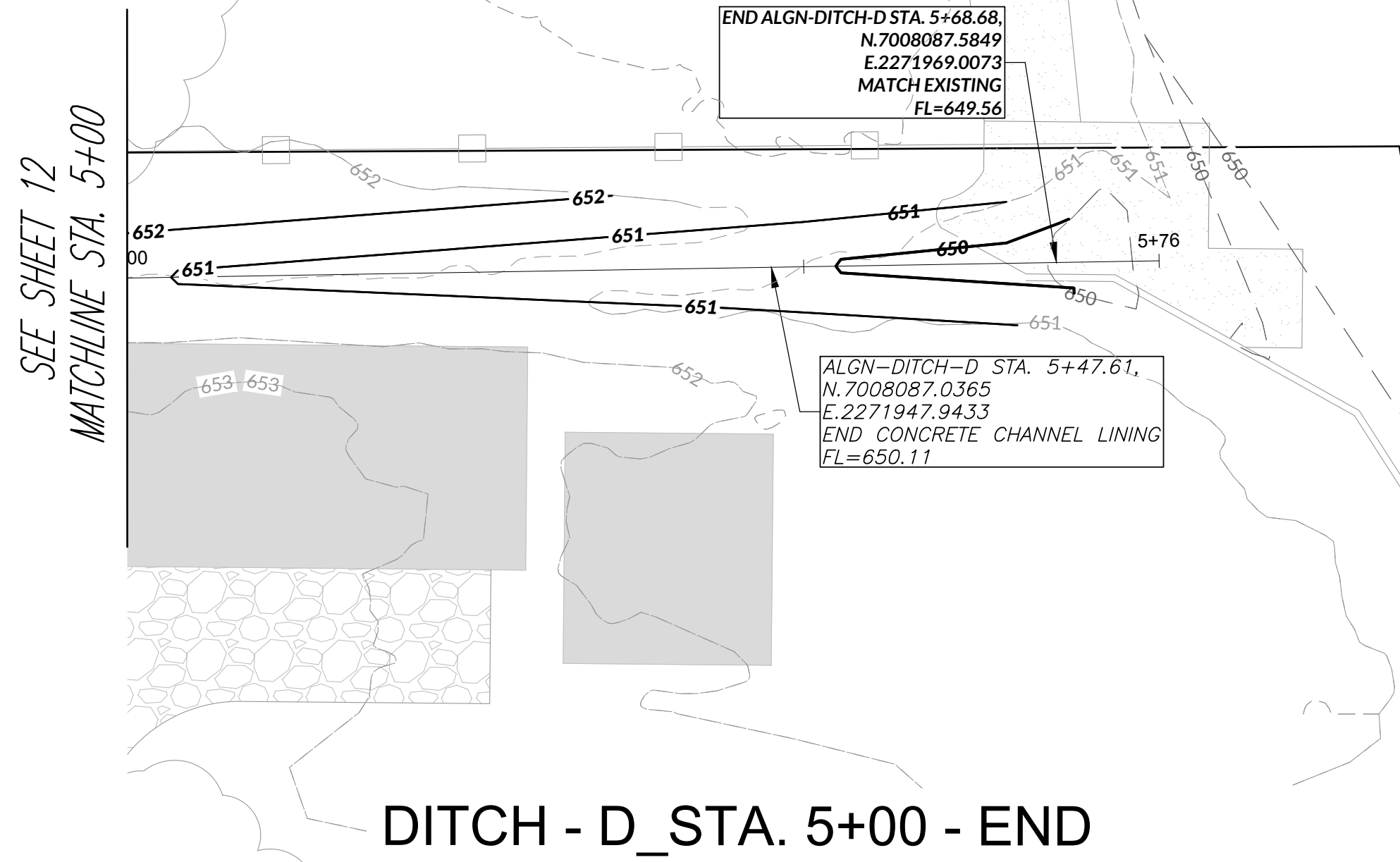
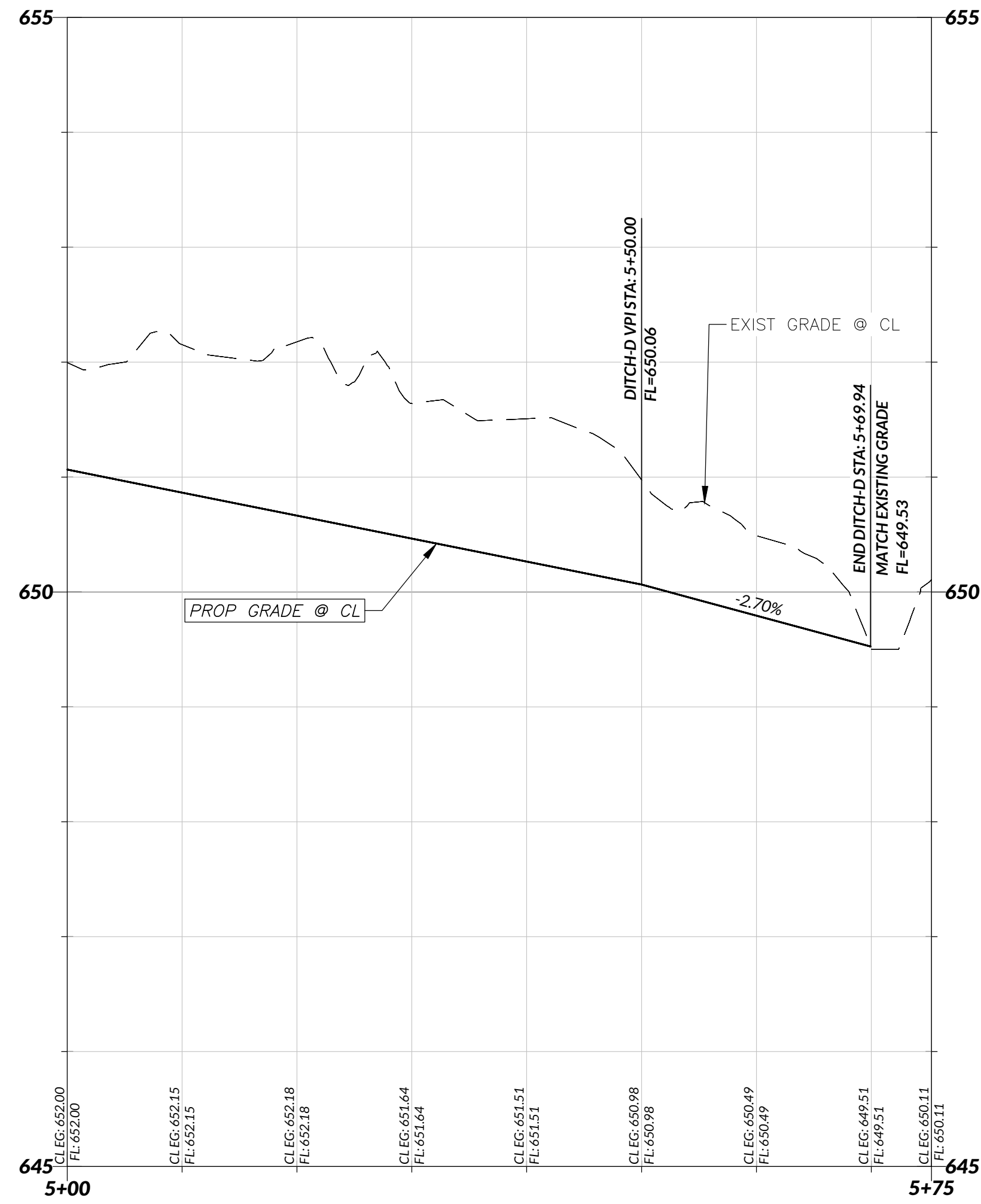
**JACOB MARTIN**  
TBAE FIRM # BR 2261  
TBE FIRM # 2448

CITY OF AZLE, TEXAS  
DRAINAGE CULVERT  
CONSTRUCTION DRAWINGS  
DITCH D STA. 2+50 - 5+00

NO.	REVISION	DATE

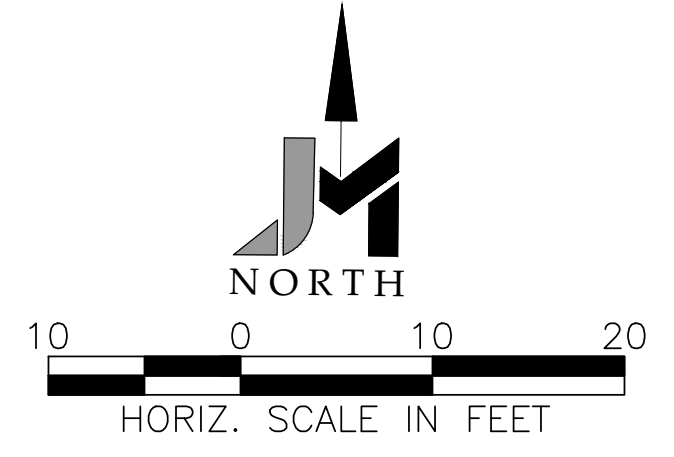
PROJECT # 22449  
SCALE H:1"=10'  
V:1"=11'

BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING.  
CHECK SCALE AND ADJUST ACCORDINGLY.



DITCH - D\_STA. 5+00 - END

SEE SHEET 12  
MATCHLINE STA. 5+00



CITY OF AZLE, TEXAS  
DRAINAGE CULVERT  
CONSTRUCTION DRAWINGS  
DITCH D STA. 5+00 - END

NO.	REVISION	DATE

PROJECT # | SCALE | H: 1" = 10' | V: 1" = 11'  
22449 | 22449

BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING.  
CHECK SCALE AND ADJUST ACCORDINGLY.

SEQ. SHEET 13 OF 17

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DATE:  
FILE:

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL ④							
SLOPE	DIA OF PIPE, D	Values for one Pipe			Values to be added for each add'l Pipe		
		W	Reinf (Lbs)	Conc (CY)	W	Reinf (Lbs)	Conc (CY)
2:1	12"	9'-0"	122	1.1	1'-9"	15	0.2
	15"	10'-3"	136	1.3	2'-2"	16	0.2
	18"	11'-6"	163	1.5	2'-8"	19	0.3
	21"	12'-9"	200	1.8	3'-1"	31	0.4
	24"	14'-0"	217	2.1	3'-7"	34	0.4
	27"	15'-3"	254	2.4	3'-11"	37	0.5
	30"	16'-6"	272	2.7	4'-4"	40	0.6
	33"	17'-9"	314	3.1	4'-8"	43	0.6
	36"	19'-0"	371	3.9	5'-1"	46	0.8
	42"	21'-6"	442	4.9	5'-10"	52	1.0
	48"	25'-0"	569	6.4	6'-7"	59	1.3
	54"	27'-6"	701	7.5	7'-6"	82	1.6
60"	30'-0"	794	8.8	8'-3"	90	1.8	
66"	32'-6"	894	10.2	8'-9"	96	2.0	
72"	35'-0"	1055	11.7	9'-4"	103	2.3	
3:1	12"	13'-0"	175	1.6	1'-9"	14	0.2
	15"	14'-9"	193	1.9	2'-2"	17	0.2
	18"	16'-6"	228	2.2	2'-8"	19	0.3
	21"	18'-3"	299	2.6	3'-1"	31	0.4
	24"	20'-0"	323	3.0	3'-7"	33	0.4
	27"	21'-9"	371	3.5	3'-11"	37	0.5
	30"	23'-6"	415	4.0	4'-4"	40	0.5
	33"	25'-3"	469	4.6	4'-8"	43	0.6
	36"	27'-0"	556	5.7	5'-1"	46	0.8
	42"	30'-6"	675	7.1	5'-10"	52	1.0
	48"	35'-6"	837	9.2	6'-7"	59	1.3
	54"	39'-0"	1015	11.0	7'-6"	84	1.6
60"	42'-6"	1171	12.9	8'-3"	91	1.8	
66"	46'-0"	1298	14.9	8'-9"	98	2.0	
72"	49'-6"	1561	17.1	9'-4"	103	2.3	
4:1	12"	17'-0"	229	2.0	1'-9"	15	0.2
	15"	19'-3"	266	2.4	2'-2"	17	0.2
	18"	21'-6"	308	2.9	2'-8"	19	0.3
	21"	23'-9"	382	3.5	3'-1"	31	0.3
	24"	26'-0"	430	3.9	3'-7"	34	0.4
	27"	28'-3"	486	4.7	3'-11"	37	0.5
	30"	30'-6"	539	5.2	4'-4"	40	0.6
	33"	32'-9"	603	6.0	4'-8"	42	0.6
	36"	35'-0"	738	7.5	5'-1"	47	0.8
	42"	39'-6"	881	9.3	5'-10"	52	1.0
	48"	46'-0"	1102	12.1	6'-7"	61	1.3
	54"	50'-6"	1364	14.4	7'-6"	84	1.6
60"	55'-0"	1547	16.9	8'-3"	91	1.8	
66"	59'-6"	1741	19.5	8'-9"	98	2.0	
72"	64'-0"	2069	22.4	9'-4"	102	2.3	
6:1	12"	25'-0"	336	3.0	1'-9"	14	0.2
	15"	28'-3"	384	3.6	2'-2"	17	0.2
	18"	31'-6"	452	4.2	2'-8"	19	0.3
	21"	34'-9"	581	5.1	3'-1"	31	0.4
	24"	38'-0"	644	5.8	3'-7"	34	0.4
	27"	41'-3"	737	6.9	3'-11"	37	0.5
	30"	44'-6"	807	7.7	4'-4"	39	0.6
	33"	47'-9"	912	8.9	4'-8"	44	0.6
	36"	51'-0"	1108	11.0	5'-1"	48	0.8
	42"	57'-6"	1318	13.7	5'-10"	54	1.0
	48"	67'-0"	1674	17.9	6'-7"	59	1.3
	54"	73'-6"	2064	21.3	7'-6"	83	1.6
60"	80'-0"	2343	24.9	8'-3"	89	1.8	
66"	86'-6"	2635	28.9	8'-9"	96	2.0	
72"	93'-0"	3123	33.1	9'-4"	101	2.3	

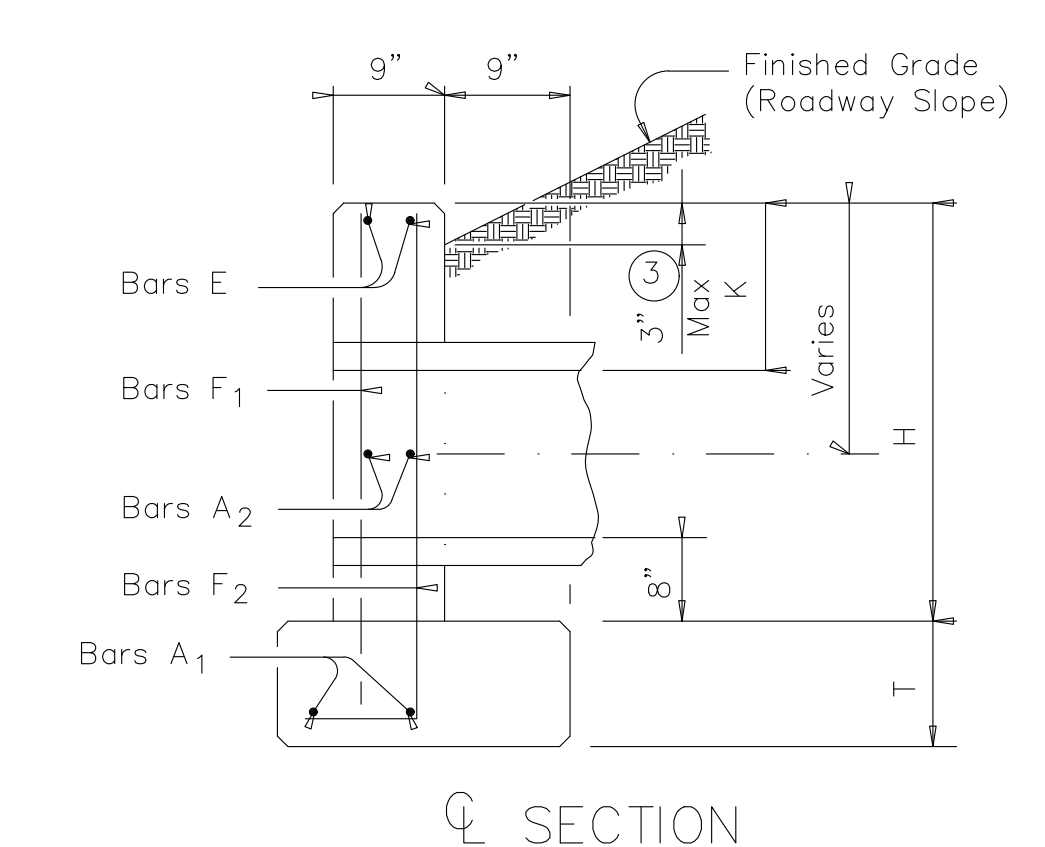
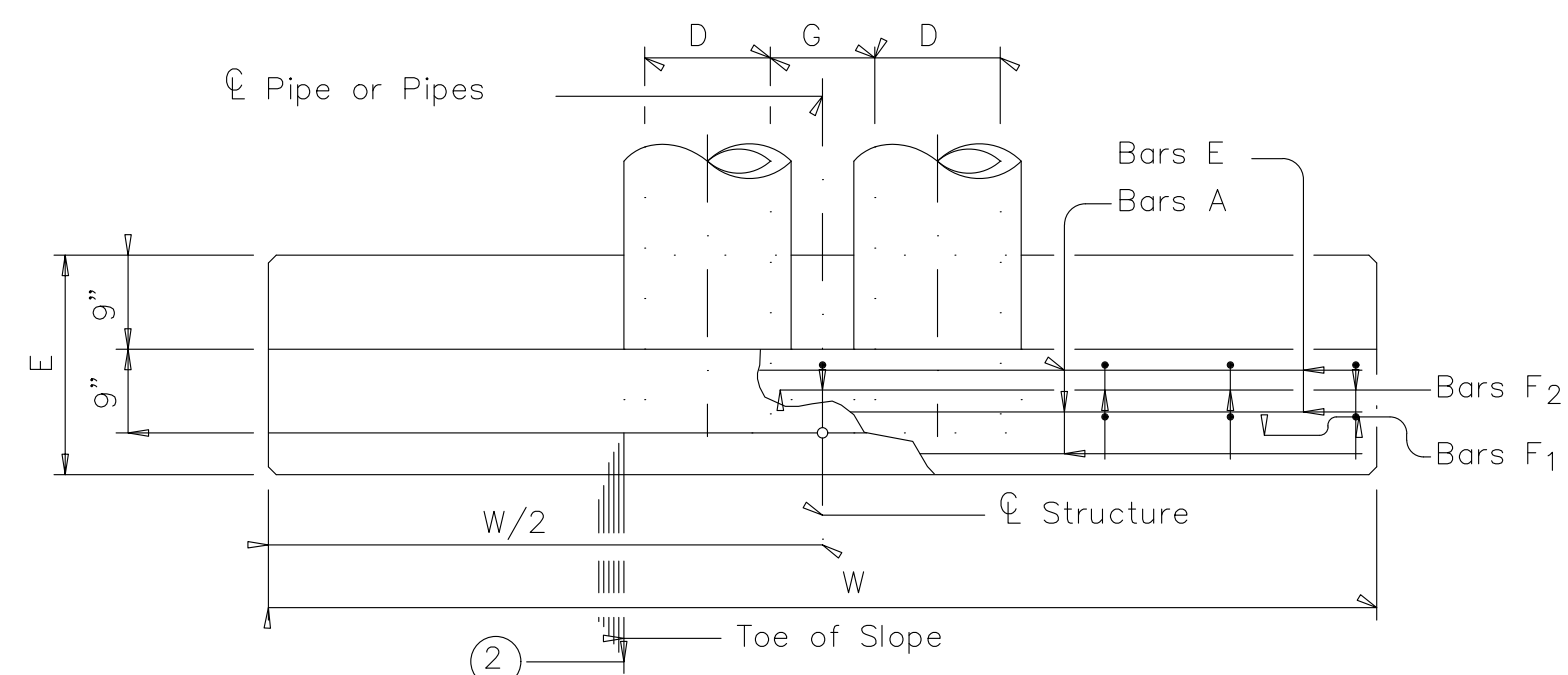
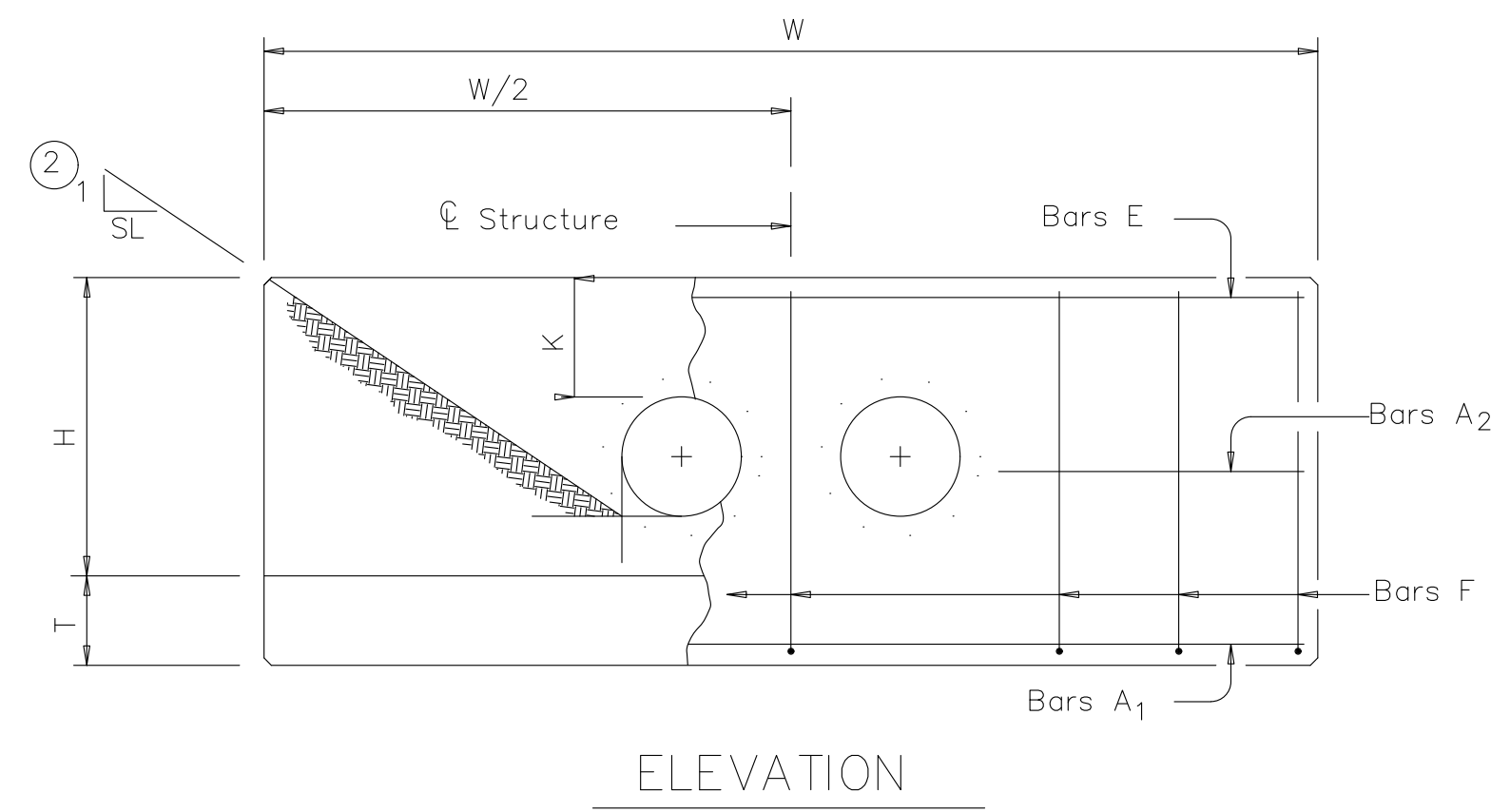
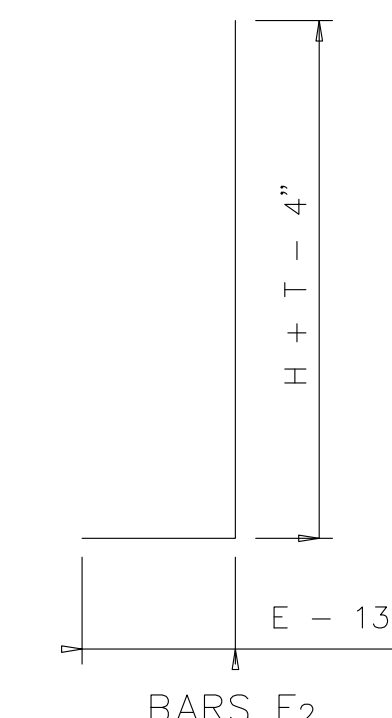



TABLE OF CONSTANT DIMENSIONS					
DIA OF PIPE, D	G	K	H	T	E
12"	9"	1'-0"	2'-8"	9"	1'-9"
15"	11"	1'-0"	2'-11"	9"	1'-9"
18"	1'-2"	1'-0"	3'-2"	9"	1'-9"
21"	1'-4"	1'-0"	3'-5"	9"	2'-0"
24"	1'-7"	1'-0"	3'-8"	9"	2'-0"
27"	1'-8"	1'-0"	3'-11"	9"	2'-3"
30"	1'-10"	1'-0"	4'-2"	9"	2'-3"
33"	1'-11"	1'-0"	4'-5"	9"	2'-6"
36"	2'-1"	1'-0"	4'-8"	1'-0"	2'-6"
42"	2'-4"	1'-0"	5'-2"	1'-0"	2'-9"
48"	2'-7"	1'-3"	5'-11"	1'-0"	3'-0"
54"	3'-0"	1'-3"	6'-5"	1'-0"	3'-3"
60"	3'-3"	1'-3"	6'-11"	1'-0"	3'-6"
66"	3'-3"	1'-3"	7'-5"	1'-0"	3'-9"
72"	3'-4"	1'-3"	7'-11"	1'-0"	4'-0"

TABLE OF REINFORCING STEEL ④			
Bar	Size	Spa	No.
A1	# 5	~	2
A2	# 5	1'-6"	~
E	# 5	~	2
F	# 5	1'-0"	~



GENERAL NOTES:  
 Designed according to AASHTO LRFD Specifications.  
 Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.  
 All reinforcing steel shall be Grade 60.  
 All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.  
 No bridge rails of any type may be mounted directly to these culvert headwalls.

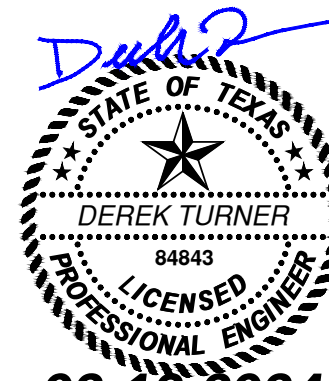
- Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
- Indicated slope is perpendicular to centerline Pipe or Pipes.
- For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- Quantities shown are for one structure end only (one headwall).




**CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS**

CH-PW-0

FILE: chpw0ste.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: GAF
© TxDOT February 2010	CONT SECT	JOB	HIGHWAY	
REVISIONS				
DIST	COUNTY		SHEET NO.	



**DEREK TURNER**  
 LICENSED PROFESSIONAL ENGINEER  
 02-13-2024



**NICHOLAS KIRK**  
 LICENSED PROFESSIONAL ENGINEER  
 02-13-2024

ISSUED FOR BID



**JACOB MARTIN**  
 TBP&S FIRM # 10194693  
 TBA&E FIRM # BR 2261  
 TBP&S FIRM # 2448

CITY OF AZLE, TEXAS  
**DRAINAGE CULVERT**  
 CONSTRUCTION DRAWINGS  
 TXDOT CH-PW-0

NO.	REVISION	DATE

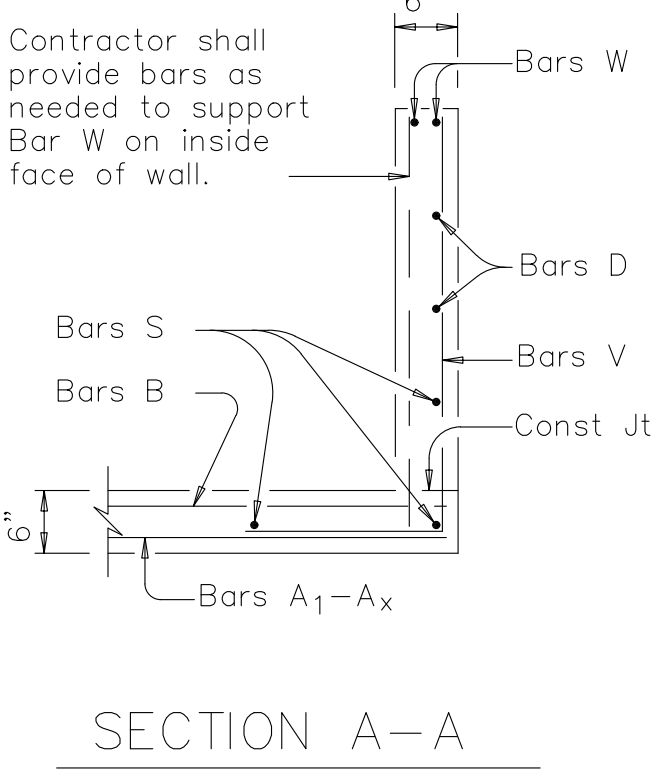
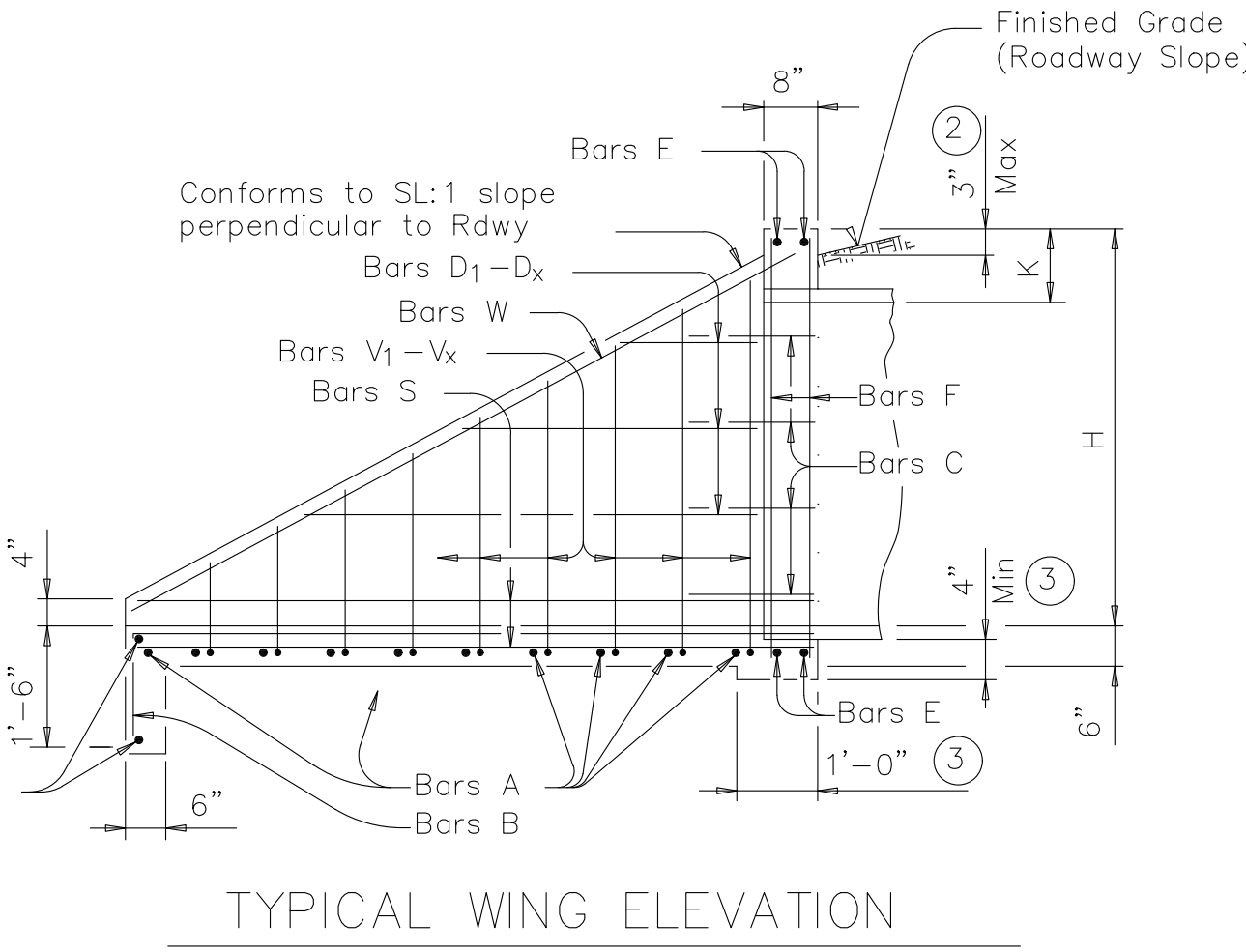
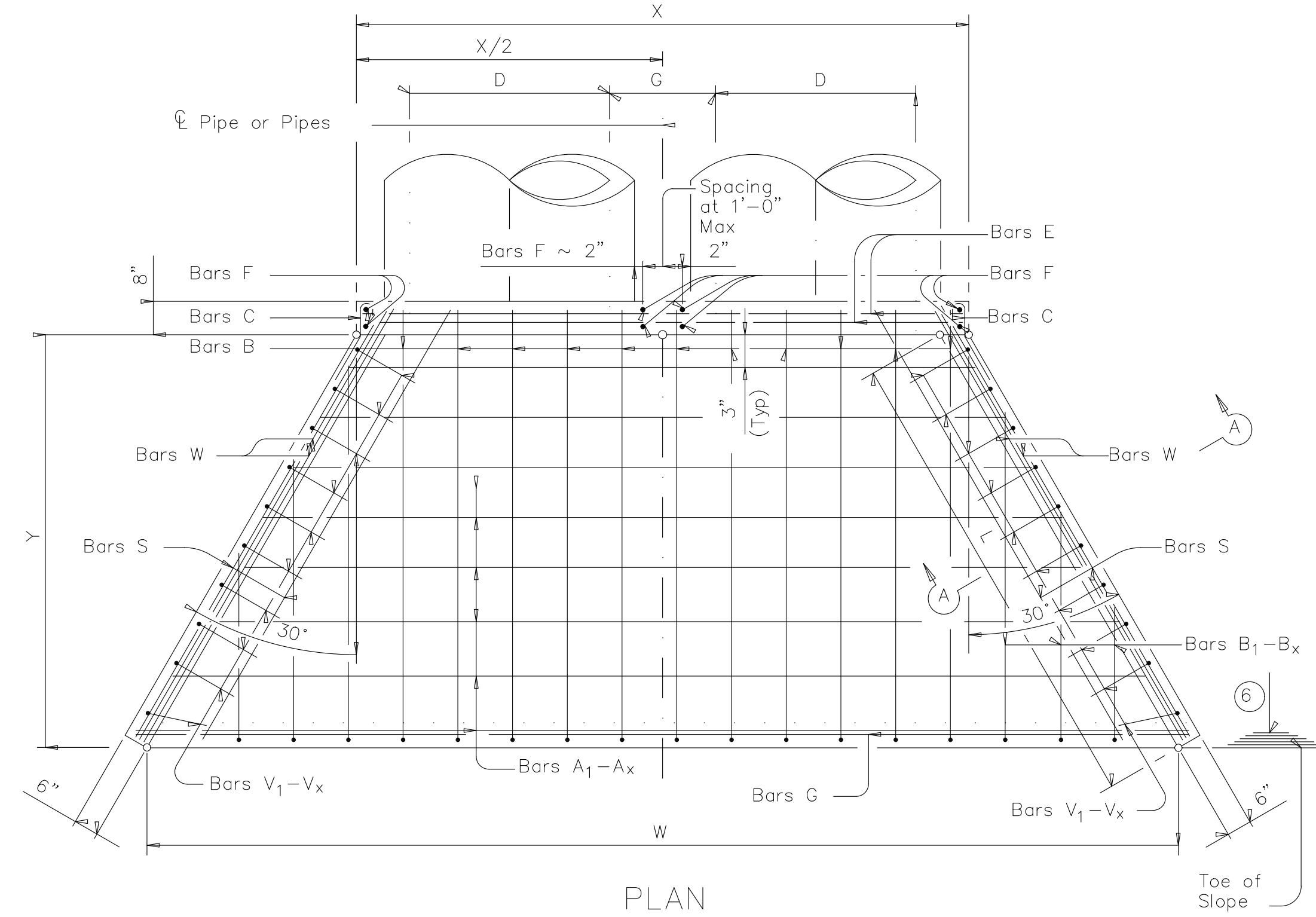
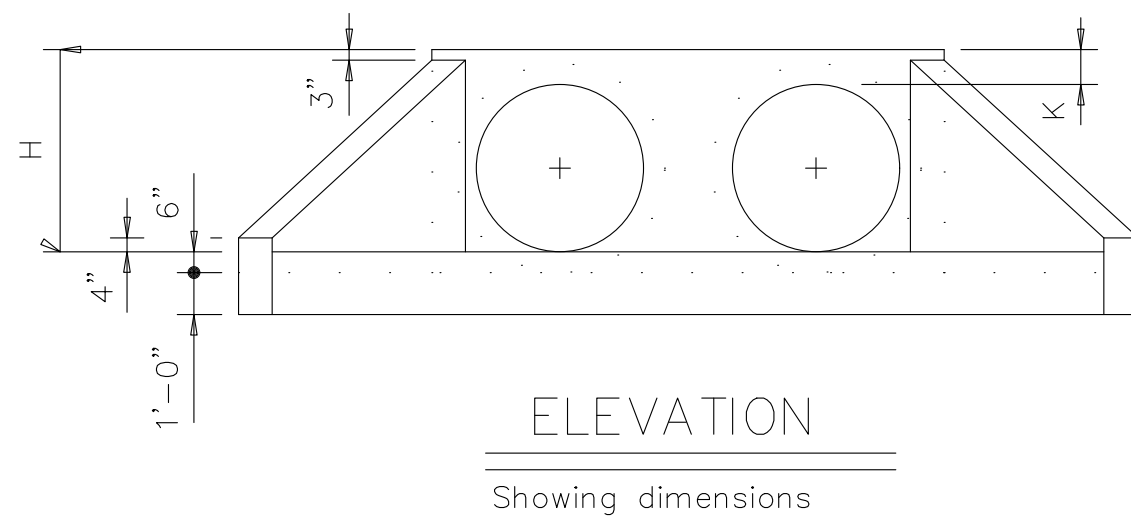
PROJECT # 22449  
 SCALE N.T.S.  
 BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING.  
 CHECK SCALE AND ADJUST ACCORDINGLY.



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DATE: FILE:

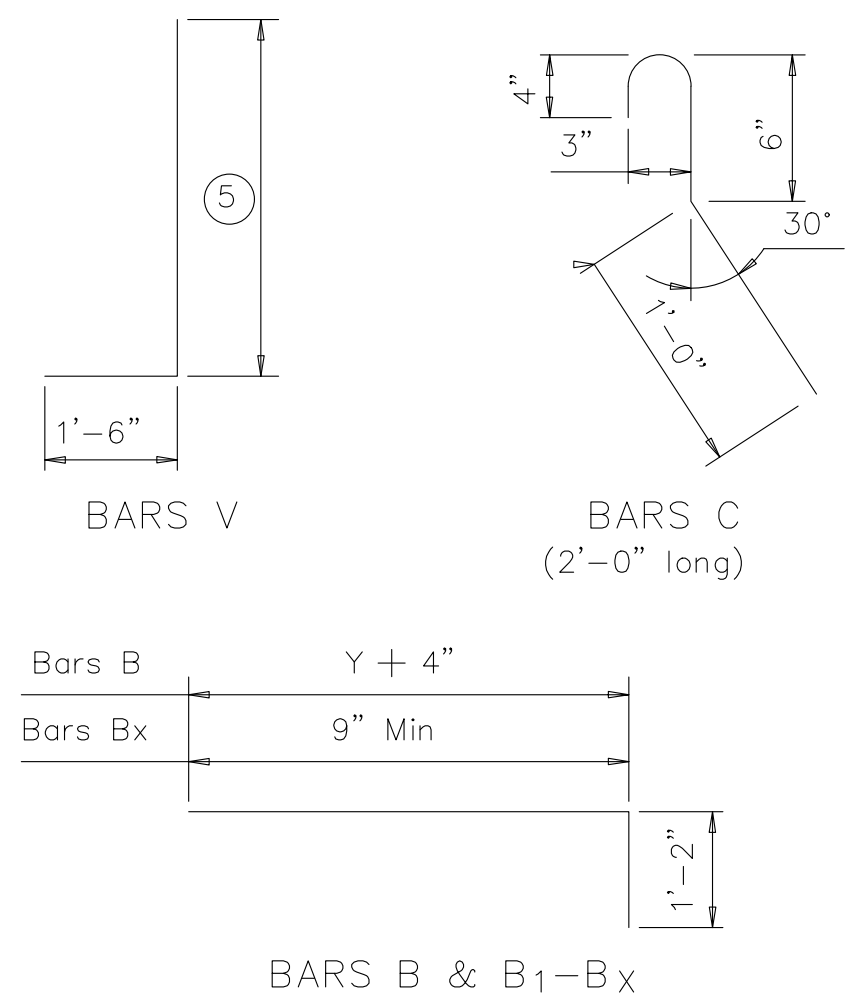
SLOPE	TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL ④										
	DIA OF PIPE, D	Values for one Pipe					Values to be added for each add'l Pipe				
		W	X	Y	L	Reinf (Lbs)	Conc (CY) ①	X and W	Reinf (Lbs)	Conc (CY) ①	
2.1	12"	4'-7 1/2"	2'-6"	2'-10"	3'-3 1/4"	84	0.6	1'-9"	20	0.2	
	15"	5'-5 3/4"	2'-9 1/2"	3'-4"	3'-10 1/4"	99	0.7	2'-2"	24	0.3	
	18"	6'-4 1/4"	3'-1"	3'-10"	4'-5"	120	0.9	2'-8"	32	0.3	
	21"	7'-2 3/4"	3'-4 1/2"	4'-4"	5'-0"	137	1.1	3'-1"	43	0.4	
	24"	8'-2 1/2"	3'-9 1/2"	4'-10"	5'-7"	158	1.3	3'-7"	50	0.5	
	27"	9'-1"	4'-1"	5'-4"	6'-2"	173	1.5	3'-11"	56	0.6	
	30"	9'-11 1/2"	4'-4 1/2"	5'-10"	6'-8 3/4"	197	1.7	4'-4"	65	0.8	
	33"	10'-10"	4'-8"	6'-4"	7'-3 3/4"	216	2.0	4'-8"	71	0.9	
	36"	11'-8 1/4"	4'-11 1/2"	6'-10"	7'-10 3/4"	241	2.2	5'-1"	81	1.0	
	42"	13'-5 1/4"	5'-6 1/2"	7'-10"	9'-0 1/2"	290	2.8	5'-10"	97	1.3	
	48"	15'-9"	6'-1 1/2"	9'-4"	10'-9 1/4"	350	3.8	6'-7"	117	1.7	
	54"	17'-5 3/4"	6'-8 1/2"	10'-4"	11'-11 1/4"	415	4.5	7'-6"	151	2.1	
60"	19'-2 3/4"	7'-3 1/2"	11'-4"	13'-1"	469	5.3	8'-3"	174	2.5		
66"	20'-11 1/2"	7'-10 1/2"	12'-4"	14'-3"	530	6.2	8'-9"	194	2.9		
72"	22'-8 1/2"	8'-5 1/2"	13'-4"	15'-4 3/4"	587	7.1	9'-4"	213	3.3		
3.1	12"	6'-3"	2'-6"	4'-3"	4'-11"	114	0.8	1'-9"	22	0.2	
	15"	7'-5"	2'-9 1/2"	5'-0"	5'-9 1/4"	133	1.1	2'-2"	28	0.3	
	18"	8'-6 3/4"	3'-1"	5'-9"	6'-7 3/4"	166	1.3	2'-8"	37	0.5	
	21"	9'-8 3/4"	3'-4 1/2"	6'-6"	7'-6"	189	1.6	3'-1"	48	0.6	
	24"	11'-0"	3'-9 1/2"	7'-3"	8'-4 1/2"	221	2.0	3'-7"	58	0.7	
	27"	12'-2"	4'-1"	8'-0"	9'-2 3/4"	245	2.3	3'-11"	67	0.8	
	30"	13'-4"	4'-4 1/2"	8'-9"	10'-1 1/4"	287	2.7	4'-4"	77	1.0	
	33"	14'-5 3/4"	4'-8"	9'-6"	10'-11 3/4"	310	3.1	4'-8"	84	1.2	
	36"	15'-7 3/4"	4'-11 1/2"	10'-3"	11'-10"	343	3.5	5'-1"	96	1.4	
	42"	17'-11 1/2"	5'-6 1/2"	11'-9"	13'-6 3/4"	424	4.5	5'-10"	119	1.7	
	48"	21'-1 3/4"	6'-1 1/2"	14'-0"	16'-2"	527	6.1	6'-7"	146	2.3	
	54"	23'-5 1/4"	6'-8 1/2"	15'-6"	17'-10 3/4"	618	7.3	7'-6"	186	2.9	
60"	25'-9 1/2"	7'-3 1/2"	17'-0"	19'-7 1/2"	707	8.7	8'-3"	219	3.4		
66"	28'-1"	7'-10 1/2"	18'-6"	21'-4 1/4"	797	10.1	8'-9"	242	3.9		
72"	30'-4 3/4"	8'-5 1/2"	20'-0"	23'-1 1/4"	910	11.7	9'-4"	272	4.4		
4.1	12"	7'-10 3/4"	2'-6"	5'-8"	6'-6 1/2"	144	1.1	1'-9"	24	0.3	
	15"	9'-4"	2'-9 1/2"	6'-8"	7'-8 1/2"	177	1.5	2'-2"	32	0.4	
	18"	10'-9 1/2"	3'-1"	7'-8"	8'-10 1/4"	217	1.9	2'-8"	42	0.5	
	21"	12'-2 3/4"	3'-4 1/2"	8'-8"	10'-0"	254	2.3	3'-1"	57	0.7	
	24"	13'-9 1/2"	3'-9 1/2"	9'-8"	11'-2"	295	2.8	3'-7"	67	0.9	
	27"	15'-3"	4'-1"	10'-8"	12'-3 3/4"	328	3.3	3'-11"	77	1.0	
	30"	16'-8 1/4"	4'-4 1/2"	11'-8"	13'-5 3/4"	379	3.8	4'-4"	89	1.3	
	33"	18'-1 3/4"	4'-8"	12'-8"	14'-7 1/2"	417	4.5	4'-8"	101	1.4	
	36"	19'-7"	4'-11 1/2"	13'-8"	15'-9 1/4"	464	5.1	5'-1"	115	1.7	
	42"	22'-5 3/4"	5'-6 1/2"	15'-8"	18'-1"	575	6.5	5'-10"	141	2.1	
	48"	26'-6 1/4"	6'-1 1/2"	18'-8"	21'-6 3/4"	720	8.9	6'-7"	175	2.8	
	54"	29'-5"	6'-8 1/2"	20'-8"	23'-10 1/4"	863	10.7	7'-6"	226	3.6	
60"	32'-3 3/4"	7'-3 1/2"	22'-8"	26'-2"	984	12.7	8'-3"	264	4.3		
66"	35'-2 1/2"	7'-10 1/2"	24'-8"	28'-5 3/4"	1126	14.9	8'-9"	300	4.9		
72"	38'-1 1/4"	8'-5 1/2"	26'-8"	30'-9 1/2"	1283	17.3	9'-4"	334	5.6		
6.1	12"	11'-2"	2'-6"	8'-6"	9'-9 3/4"	220	1.9	1'-9"	28	0.4	
	15"	13'-2 1/4"	2'-9 1/2"	10'-0"	11'-6 1/2"	264	2.5	2'-2"	37	0.5	
	18"	15'-2 1/2"	3'-1"	11'-6"	13'-3 1/4"	326	3.2	2'-8"	50	0.7	
	21"	17'-2 3/4"	3'-4 1/2"	13'-0"	15'-0 1/4"	381	3.9	3'-1"	69	0.9	
	24"	19'-4 1/2"	3'-9 1/2"	14'-6"	16'-9"	447	4.8	3'-7"	80	1.2	
	27"	21'-4 3/4"	4'-1"	16'-0"	18'-5 3/4"	506	5.7	3'-11"	96	1.4	
	30"	23'-5 1/4"	4'-4 1/2"	17'-6"	20'-2 1/2"	587	6.7	4'-4"	110	1.7	
	33"	25'-5 1/2"	4'-8"	19'-0"	21'-11 1/4"	667	7.8	4'-8"	127	2.0	
	36"	27'-5 3/4"	4'-11 1/2"	20'-6"	23'-8"	727	9.0	5'-1"	144	2.3	
	42"	31'-6 1/4"	5'-6 1/2"	23'-6"	27'-1 1/2"	914	11.5	5'-10"	179	3.0	
	48"	37'-3 1/2"	6'-1 1/2"	28'-0"	32'-4"	1181	15.9	6'-7"	231	4.0	
	54"	41'-4 1/4"	6'-8 1/2"	31'-0"	35'-9 1/2"	1412	19.2	7'-6"	300	5.0	
60"	45'-4 3/4"	7'-3 1/2"	34'-0"	39'-3"	1619	22.9	8'-3"	353	6.0		



- Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
- For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- Provide a 1'-0" footing as shown where required to maintain 4" Min cover for pipes.
- Quantities shown are for one structure end only (one headwall).
- Min Length =  $6" + 3" \times \left( \frac{12 \times H - 7}{12 \times L} \right)$   
Max Length =  $12 \times H - 3" \times \left( \frac{12 \times H - 7}{12 \times L} \right) - 1"$
- Lengths of wings based on SL:1 Slope along this line.

TABLE OF REINFORCING STEEL ④			
Bar	Size	Spa	No.
A	# 4	1'-0"	~
B	# 3	1'-6"	~
C	# 4	1'-0"	~
D	# 3	1'-0"	~
E	# 5	~	4
F	# 5	~	~
G	# 3	~	2
S	# 4	~	6
V	# 4	1'-0"	~
W	# 5	~	4

DIA OF PIPE, D	TABLE OF CONSTANT DIMENSIONS		
	G	K	H
12"	9"	1'-0"	2'-0"
15"	11"	1'-0"	2'-3"
18"	1'-2"	1'-0"	2'-6"
21"	1'-4"	1'-0"	2'-9"
24"	1'-7"	1'-0"	3'-0"
27"	1'-8"	1'-0"	3'-3"
30"	1'-10"	1'-0"	3'-6"
33"	1'-11"	1'-0"	3'-9"
36"	2'-1"	1'-0"	4'-0"
42"	2'-4"	1'-0"	4'-6"
48"	2'-7"	1'-3"	5'-3"
54"	3'-0"	1'-3"	5'-9"
60"	3'-3"	1'-3"	6'-3"
66"	3'-3"	1'-3"	6'-9"
72"	3'-4"	1'-3"	7'-3"



GENERAL NOTES:  
 Designed according to AASHTO LRFD Specifications.  
 Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.  
 All reinforcing steel shall be Grade 60.  
 All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.  
 No bridge rails of any type may be mounted directly to these culvert headwalls.

**Texas Department of Transportation** Bridge Division Standard

### CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

FILE: chfw00se.dgn	DN: TxDOT	CR: TxDOT	DR: TxDOT	CK: GAF
© TxDOT February 2010	CDNT	SECT	JOB	HIGHWAY
REVISIONS				
DIST	COUNTY		SHEET NO.	

**Derek Turner**  
 STATE OF TEXAS  
 DEREK TURNER  
 19887  
 LICENSED PROFESSIONAL ENGINEER  
**02-13-2024**

**Nicholas Kirk**  
 STATE OF TEXAS  
 NICHOLAS KIRK  
 19887  
 LICENSED PROFESSIONAL ENGINEER  
**02-13-2024**

ISSUED FOR BID

**JACOB MARTIN**  
 TBE FIRM # 10194893  
 TBE FIRM # BR 2251  
 TBE FIRM # 2448

CITY OF AZLE, TEXAS  
 DRAINAGE CULVERT  
 CONSTRUCTION DRAWINGS  
 TXDOT CH-FW-0

NO.	REVISION	DATE

PROJECT # 22449  
 SCALE N.T.S.  
 BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING.  
 CHECK SCALE AND ADJUST ACCORDINGLY.

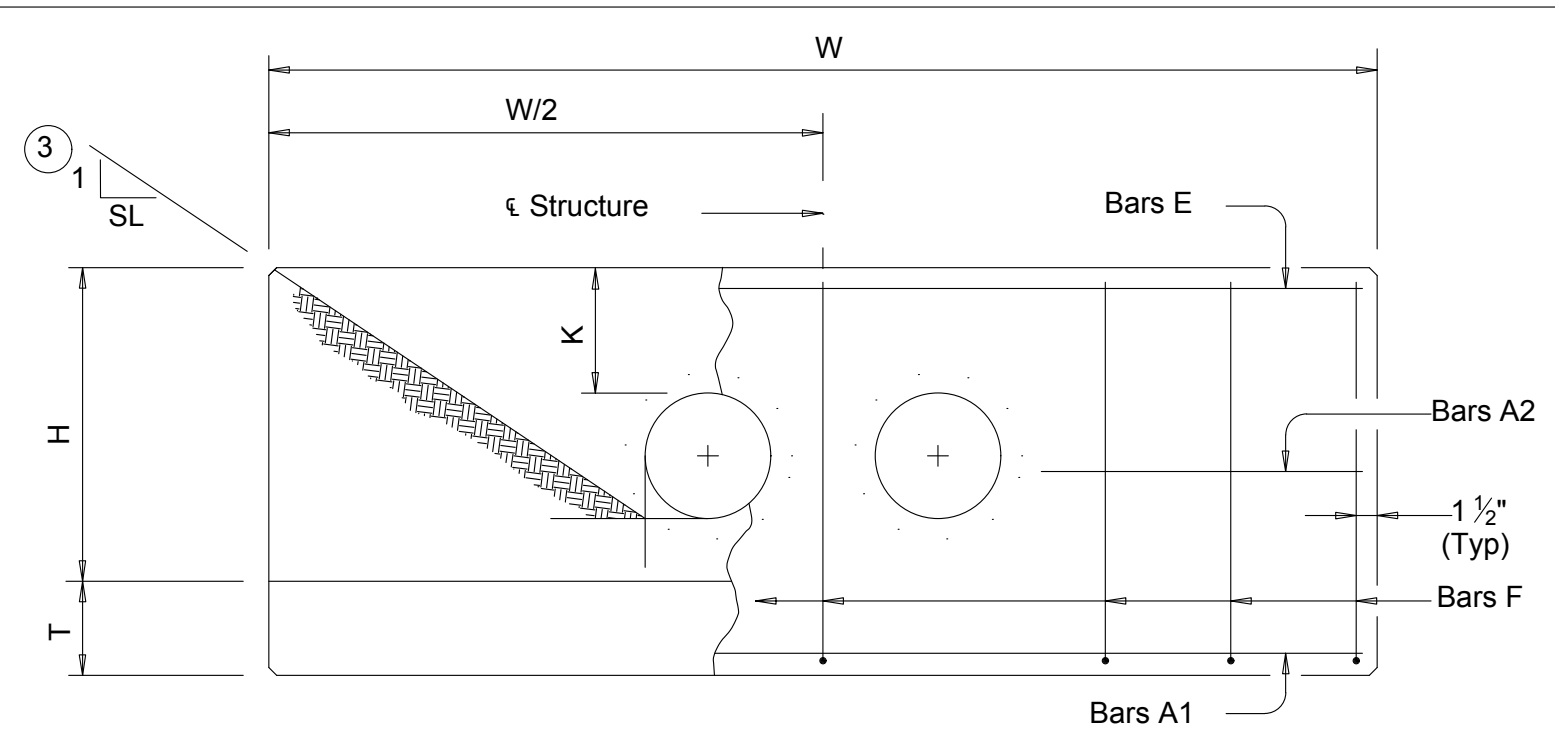
SEQ. SHEET 15 OF 17

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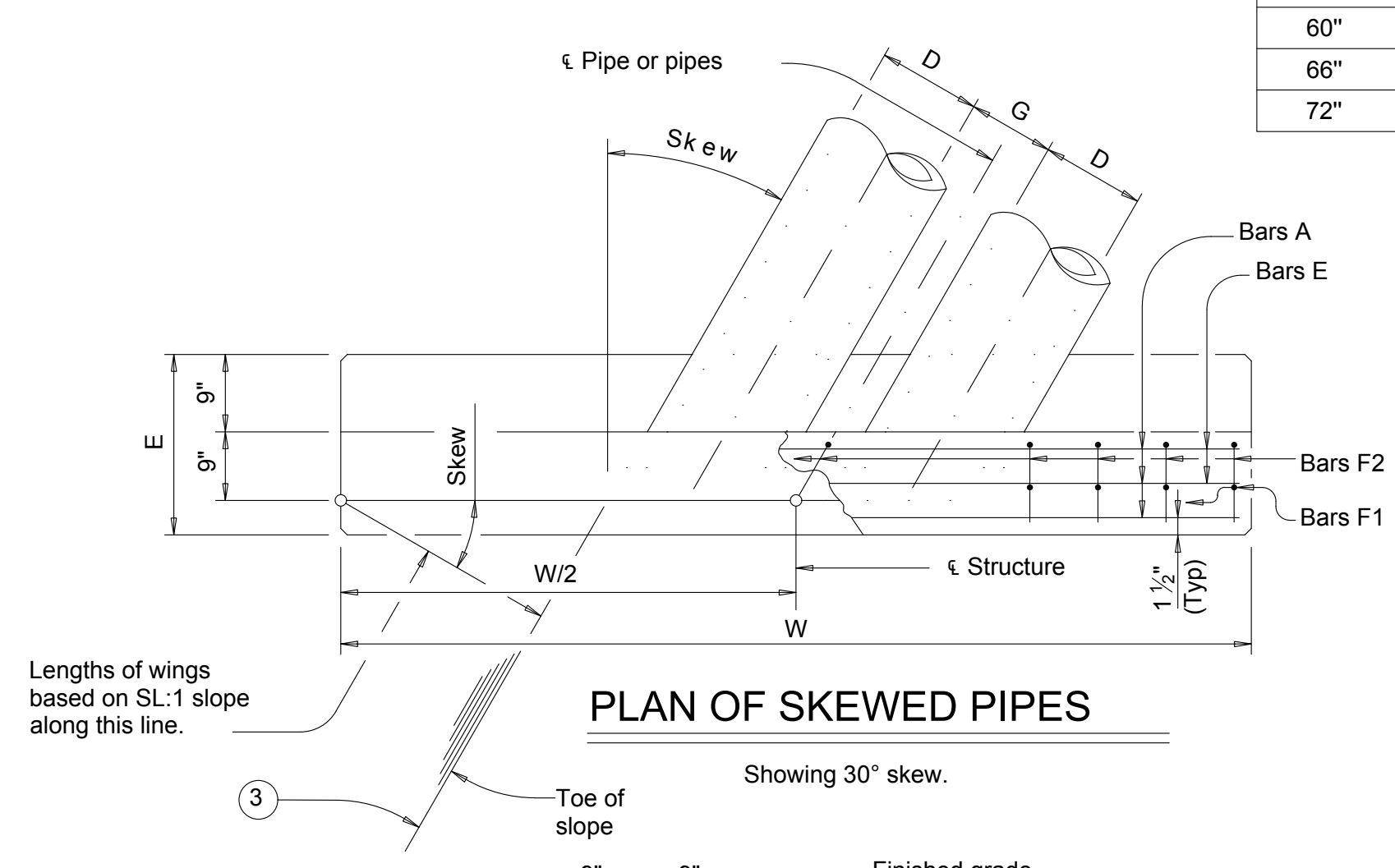
DATE: \_\_\_\_\_

### TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL 5

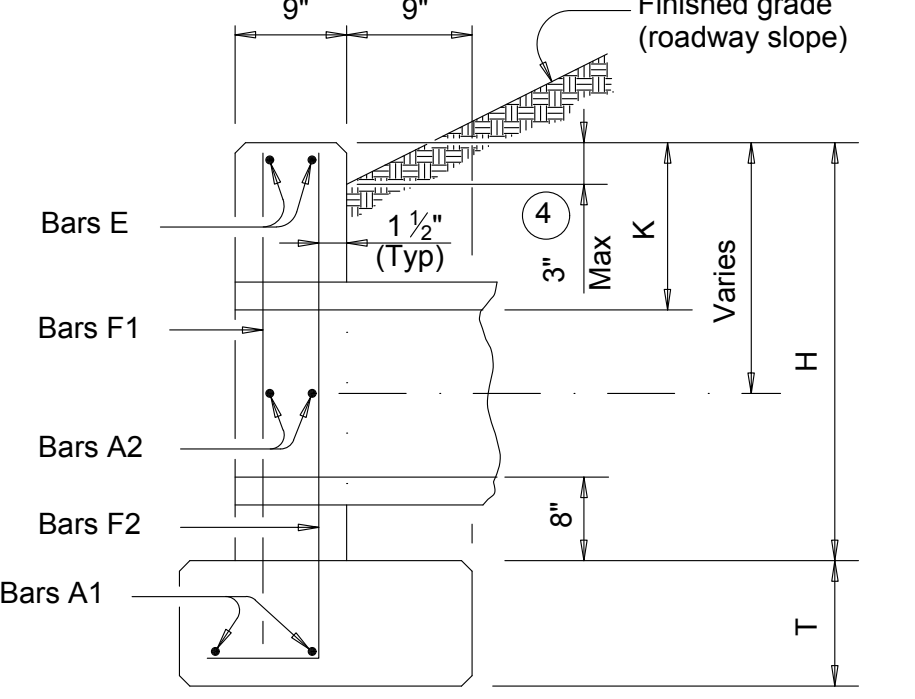
Slope	15° Skew						30° Skew						45° Skew						
	Values for One Pipe			Values To Be Added for Each Addtl Pipe			Values for One Pipe			Values To Be Added for Each Addtl Pipe			Values for One Pipe			Values To Be Added for Each Addtl Pipe			
	W	Reinf (Lbs)	Conc (CY)	W	Reinf (Lbs)	Conc (CY)	W	Reinf (Lbs)	Conc (CY)	W	Reinf (Lbs)	Conc (CY)	W	Reinf (Lbs)	Conc (CY)	W	Reinf (Lbs)	Conc (CY)	
2:1	12"	9' - 4"	124	1.1	1' - 9 3/4"	15	0.2	10' - 5"	130	1.2	2' - 0"	16	0.2	12' - 9"	159	1.5	2' - 5 3/4"	17	0.3
	15"	10' - 7"	136	1.3	2' - 3"	17	0.2	11' - 10"	159	1.5	2' - 6"	18	0.2	14' - 6"	191	1.8	3' - 0 3/4"	20	0.4
	18"	11' - 11"	165	1.5	2' - 9"	19	0.3	13' - 3"	174	1.7	3' - 1"	29	0.3	16' - 3"	207	2.1	3' - 9 1/4"	33	0.4
	21"	13' - 2"	203	1.9	3' - 2 1/4"	31	0.4	14' - 9"	233	2.1	3' - 6 3/4"	33	0.4	18' - 0"	276	2.6	4' - 4 1/4"	36	0.5
	24"	14' - 6"	240	2.1	3' - 8 1/4"	34	0.4	16' - 2"	251	2.4	4' - 1 1/4"	36	0.5	19' - 10"	318	2.9	5' - 0 3/4"	39	0.6
	27"	15' - 9"	258	2.5	4' - 0 3/4"	38	0.5	17' - 7"	292	2.8	4' - 6 1/4"	39	0.6	21' - 7"	342	3.4	5' - 6 1/4"	44	0.7
	30"	17' - 1"	297	2.8	4' - 5 3/4"	40	0.6	19' - 1"	311	3.1	5' - 0"	42	0.6	23' - 4"	388	3.8	6' - 1 1/4"	47	0.8
	33"	18' - 5"	320	3.3	4' - 9 3/4"	43	0.6	20' - 6"	358	3.6	5' - 4 3/4"	46	0.7	25' - 1"	439	4.4	6' - 7 1/4"	51	0.9
	36"	19' - 8"	401	4.0	5' - 3"	47	0.9	21' - 11"	422	4.5	5' - 10 3/4"	50	0.9	26' - 10"	517	5.5	7' - 2 1/4"	55	1.2
	42"	22' - 3"	476	5.0	6' - 0 3/4"	53	1.1	24' - 10"	528	5.6	6' - 8 3/4"	56	1.2	30' - 5"	634	6.9	8' - 3"	76	1.4
	48"	25' - 11"	577	6.6	6' - 9 3/4"	60	1.3	28' - 10"	637	7.3	7' - 7 1/4"	79	1.5	35' - 4"	791	9.0	9' - 3 3/4"	88	1.8
	54"	28' - 6"	711	7.8	7' - 9"	83	1.6	31' - 9"	781	8.7	8' - 8"	81	1.8	38' - 11"	958	10.7	10' - 7 1/4"	97	2.2
60"	31' - 1"	805	9.2	8' - 6 1/4"	91	1.9	34' - 8"	881	10.2	9' - 6 1/4"	97	2.1	42' - 5"	1,113	12.5	11' - 8"	124	2.6	
66"	33' - 8"	907	10.6	9' - 0 3/4"	98	2.1	37' - 6"	1,028	11.8	10' - 1 1/4"	102	2.4	46' - 0"	1,235	14.5	12' - 4 1/4"	132	2.9	
72"	36' - 3"	1,071	12.1	9' - 8"	105	2.4	40' - 5"	1,207	13.5	10' - 9 3/4"	110	2.6	49' - 6"	1,446	16.6	13' - 2 1/4"	141	3.2	
3:1	12"	13' - 6"	178	1.6	1' - 9 3/4"	15	0.2	15' - 0"	189	1.8	2' - 0"	15	0.2	18' - 5"	237	2.2	2' - 5 3/4"	17	0.2
	15"	15' - 3"	212	1.9	2' - 3"	17	0.2	17' - 0"	223	2.1	2' - 6"	17	0.3	20' - 10"	276	2.6	3' - 0 3/4"	20	0.3
	18"	17' - 1"	231	2.3	2' - 9"	19	0.3	19' - 1"	259	2.5	3' - 1"	29	0.3	23' - 4"	318	3.1	3' - 9 1/4"	32	0.4
	21"	18' - 11"	306	2.7	3' - 2 1/4"	31	0.4	21' - 1"	339	3.0	3' - 6 3/4"	33	0.4	25' - 10"	413	3.7	4' - 4 1/4"	36	0.5
	24"	20' - 8"	345	3.1	3' - 8 1/4"	35	0.4	23' - 1"	384	3.5	4' - 1 1/4"	36	0.5	28' - 3"	462	4.2	5' - 0 3/4"	40	0.6
	27"	22' - 6"	376	3.7	4' - 0 3/4"	38	0.5	25' - 1"	438	4.1	4' - 6 1/4"	39	0.6	30' - 9"	522	5.0	5' - 6 1/4"	44	0.7
	30"	24' - 4"	422	4.1	4' - 5 3/4"	40	0.6	27' - 2"	466	4.6	5' - 0"	42	0.6	33' - 3"	578	5.6	6' - 1 1/4"	47	0.8
	33"	26' - 2"	476	4.8	4' - 10"	43	0.6	29' - 2"	522	5.3	5' - 4 3/4"	46	0.7	35' - 9"	644	6.5	6' - 7 1/4"	51	0.9
	36"	27' - 11"	590	5.9	5' - 3"	47	0.8	31' - 2"	645	6.6	5' - 10 3/4"	50	0.9	38' - 2"	787	8.0	7' - 2 1/4"	56	1.2
	42"	31' - 7"	684	7.3	6' - 0 3/4"	53	1.1	35' - 3"	776	8.2	6' - 8 3/4"	56	1.2	43' - 2"	933	10.0	8' - 3"	79	1.4
	48"	36' - 9"	880	9.6	6' - 9 3/4"	61	1.3	41' - 0"	953	10.7	7' - 7 1/4"	81	1.5	50' - 2"	1,166	13.1	9' - 3 3/4"	88	1.8
	54"	40' - 5"	1,065	11.4	7' - 9"	85	1.6	45' - 0"	1,185	12.7	8' - 8"	89	1.8	55' - 2"	1,435	15.5	10' - 7 1/4"	97	2.2
60"	44' - 0"	1,224	13.3	8' - 6 1/4"	93	1.9	49' - 1"	1,356	14.8	9' - 6 1/4"	96	2.1	60' - 1"	1,635	18.2	11' - 8"	124	2.6	
66"	47' - 7"	1,357	15.4	9' - 1"	98	2.1	53' - 1"	1,497	17.2	10' - 1 1/4"	103	2.3	65' - 1"	1,892	21.1	12' - 4 1/4"	130	2.9	
72"	51' - 3"	1,624	17.7	9' - 8"	105	2.3	57' - 2"	1,787	19.7	10' - 9 3/4"	109	2.6	70' - 0"	2,218	24.1	13' - 2 1/4"	139	3.2	
4:1	12"	17' - 7"	232	2.1	1' - 9 3/4"	15	0.2	19' - 8"	259	2.4	2' - 0"	16	0.2	24' - 0"	314	2.9	2' - 5 3/4"	18	0.2
	15"	19' - 11"	272	2.5	2' - 3"	17	0.2	22' - 3"	301	2.8	2' - 6"	18	0.3	27' - 3"	361	3.5	3' - 0 3/4"	21	0.3
	18"	22' - 3"	313	3.0	2' - 9"	19	0.3	24' - 10"	344	3.3	3' - 1"	29	0.3	30' - 5"	427	4.0	3' - 9 1/4"	32	0.4
	21"	24' - 7"	407	3.6	3' - 2 1/4"	31	0.4	27' - 5"	446	4.0	3' - 6 3/4"	33	0.4	33' - 7"	549	4.9	4' - 4 1/4"	36	0.5
	24"	26' - 11"	455	4.1	3' - 8 1/4"	35	0.4	30' - 0"	499	4.5	4' - 1 1/4"	36	0.5	36' - 9"	609	5.6	5' - 0 3/4"	40	0.6
	27"	29' - 3"	514	4.8	4' - 0 3/4"	38	0.5	32' - 7"	562	5.4	4' - 6 1/4"	40	0.6	39' - 11"	703	6.6	5' - 6 1/4"	43	0.7
	30"	31' - 7"	568	5.4	4' - 5 3/4"	40	0.6	35' - 3"	620	6.0	5' - 0"	42	0.6	43' - 2"	768	7.4	6' - 1 1/4"	49	0.8
	33"	33' - 11"	634	6.2	4' - 10"	43	0.7	37' - 10"	710	7.0	5' - 4 3/4"	46	0.7	46' - 4"	848	8.5	6' - 7 1/4"	52	0.9
	36"	36' - 3"	776	7.7	5' - 3"	48	0.9	40' - 5"	868	8.6	5' - 10 3/4"	49	0.9	49' - 6"	1,058	10.6	7' - 2 1/4"	56	1.1
	42"	40' - 11"	921	9.6	6' - 0 3/4"	53	1.0	45' - 7"	1,022	10.7	6' - 8 3/4"	57	1.2	55' - 10"	1,262	13.1	8' - 3"	78	1.4
	48"	47' - 7"	1,152	12.6	6' - 10"	61	1.3	53' - 1"	1,268	14.0	7' - 7 1/4"	80	1.5	65' - 1"	1,587	17.2	9' - 3 3/4"	86	1.8
	54"	52' - 3"	1,416	14.9	7' - 9 3/4"	86	1.6	58' - 4"	1,589	16.6	8' - 8"	89	1.8	71' - 5"	1,924	20.4	10' - 7 1/4"	95	2.2
60"	56' - 11"	1,606	17.5	8' - 6 3/4"	92	1.9	63' - 6"	1,806	19.5	9' - 6 1/4"	95	2.1	77' - 9"	2,192	23.9	11' - 8"	122	2.6	
66"	61' - 7"	1,819	20.2	9' - 0 3/4"	97	2.1	68' - 8"	2,019	22.5	10' - 1 1/4"	101	2.4	84' - 2"	2,472	27.6	12' - 4 1/4"	131	2.9	
72"	66' - 3"	2,150	23.2	9' - 8"	104	2.4	73' - 11"	2,379	25.9	10' - 9 3/4"	108	2.6	90' - 6"	2,937	31.7	13' - 2 1/4"	138	3.2	
6:1	12"	25' - 11"	342	3.1	1' - 9 3/4"	15	0.2	28' - 10"	374	3.5	2' - 0"	16	0.2	35' - 4"	456	4.3	2' - 5 3/4"	17	0.2
	15"	29' - 3"	390	3.7	2' - 3"	17	0.2	32' - 7"	442	4.2	2' - 6"	18	0.2	39' - 11"	549	5.1	3' - 0 3/4"	20	0.3
	18"	32' - 7"	459	4.4	2' - 9"	20	0.3	36' - 4"	515	4.9	3' - 1"	29	0.3	44' - 7"	629	6.0	3' - 9 1/4"	33	0.4
	21"	36' - 0"	608	5.3	3' - 2 1/4"	31	0.4	40' - 2"	660	5.9	3' - 6 3/4"	33	0.4	49' - 2"	823	7.2	4' - 4 1/4"	38	0.5
	24"	39' - 4"	672	6.0	3' - 8 1/4"	35	0.4	43' - 11"	748	6.7	4' - 1 1/4"	36	0.5	53' - 9"	920	8.2	5' - 0 3/4"	42	0.6
	27"	42' - 8"	770	7.1	4' - 0 3/4"	38	0.5	47' - 8"	852	8.0	4' - 6 1/4"	41	0.5	58' - 4"	1,039	9.7	5' - 6 1/4"	45	0.7
	30"	46' - 1"	839	8.0	4' - 5 3/4"	40	0.6	51' - 5"	949	8.9	5' - 0"	44	0.6	62' - 11"	1,162	10.9	6' - 1 1/4"	48	0.8
	33"	49' - 5"	947	9.2	4' - 10"	45	0.7	55' - 2"	1,040	10.3	5' - 4 3/4"	48	0.7	67' - 6"	1,292	12.6	6' - 7 1/4"	50	0.9
	36"	52' - 10"	1,151	11.4	5' - 3"	49	0.8	58' - 11"	1,287	12.7	5' - 10 3/4"	51	1.0	72' - 1"	1,583	15.6	7' - 2 1/4"	55	1.1
	42"	59' - 6"	1,365	14.2	6' - 0 3/4"	55	1.0	66' - 5"	1,530	15.8	6' - 8 3/4"	57	1.2	81' - 4"	1,875	19.4	8' - 3"	76	1.4
	48"	69' - 4"	1,737	18.5	6' - 10"	59	1.3	77' - 4"	1,942	20.7	7' - 7 1/4"	79	1.5	94' - 9"	2,368	25.3	9' - 3 3/4"	86	1.8
	54"	76' - 1"	2,138	22.0	7' - 9 3/4"	83	1.6	84' - 10"	2,378	24.6	8' - 8"	87	1.8	103' - 11"	2,912	30.1	10' - 7 1/4"	95	2.2
60"	82' - 10"	2,426	25.8	8' - 6 3/4"	90	1.9	92' - 5"	2,681	28.8	9' - 6 1/4"	94	2.1	113' - 2"	3,294	35.3	11' - 8"	122	2.6	
66"	89' - 7"	2,730	29.9	9' - 0 3/4"	96	2.1	99' - 11"	3,038	33.3	10' - 1 1/4"	101	2.4	122' - 4"	3,697	40.8	12' - 4 1/4"	130	2.9	
72"	96' - 3"	3,218	34.2	9' - 8"	102	2.4	107' - 5"	3,580	38.2	10' - 9 3/4"	108	2.6	131' - 6"	4,372	46.8	13' - 2 1/4"	139	3.2	



ELEVATION



PLAN OF SKEWED PIPES



SECTION AT CENTER OF PIPE

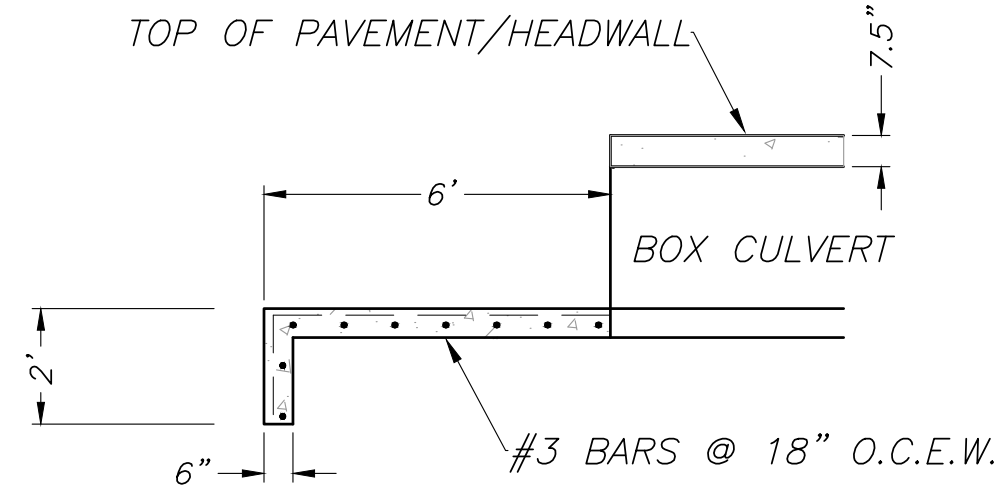
### TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K	H	T	E
12"	0' - 9"	1' - 0"	2' - 8"	0' - 9"	1' - 9"
15"	0' - 11"	1' - 0"	2' - 11"	0' - 9"	1' - 9"
18"	1' - 2"	1' - 0"	3' - 2"		

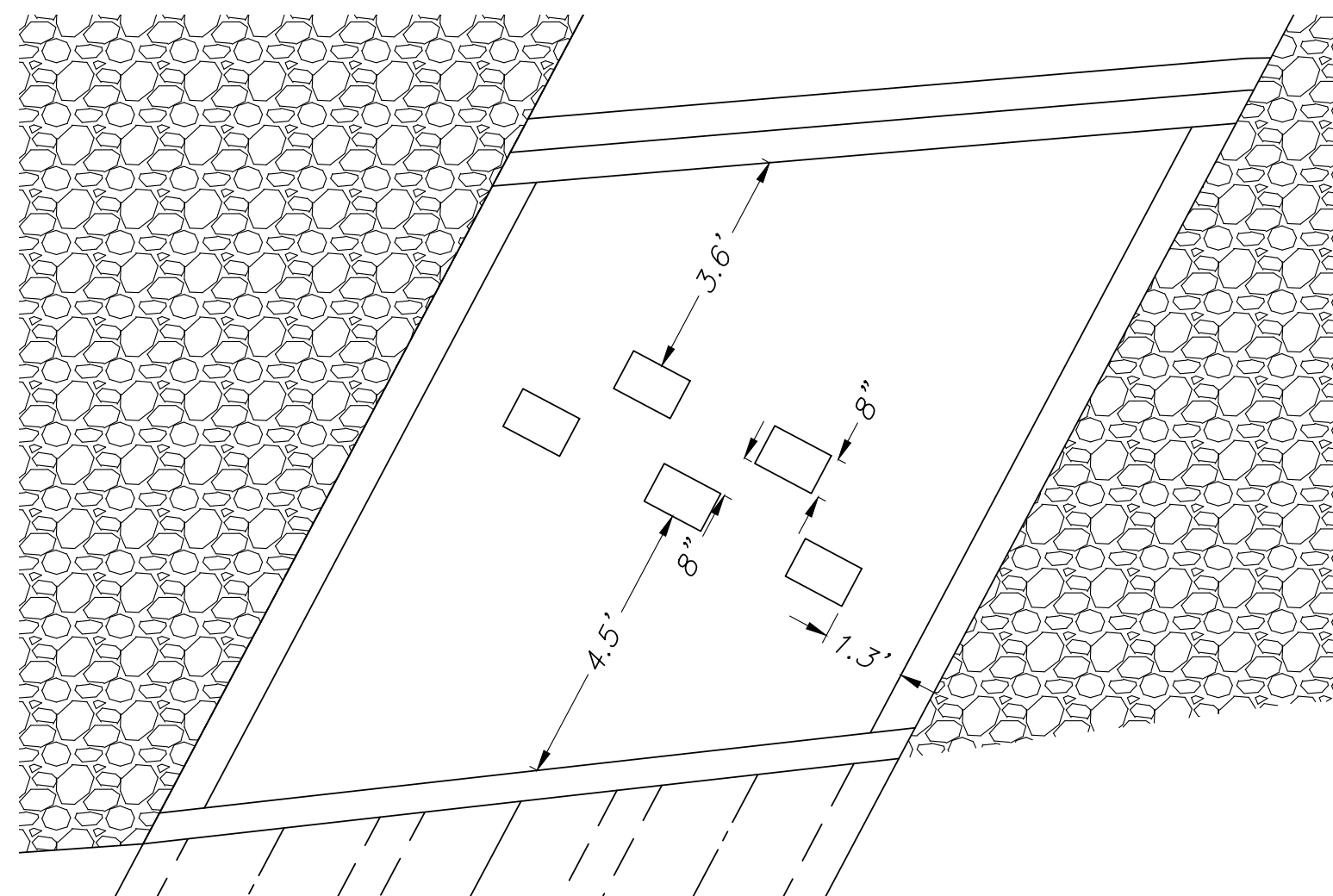
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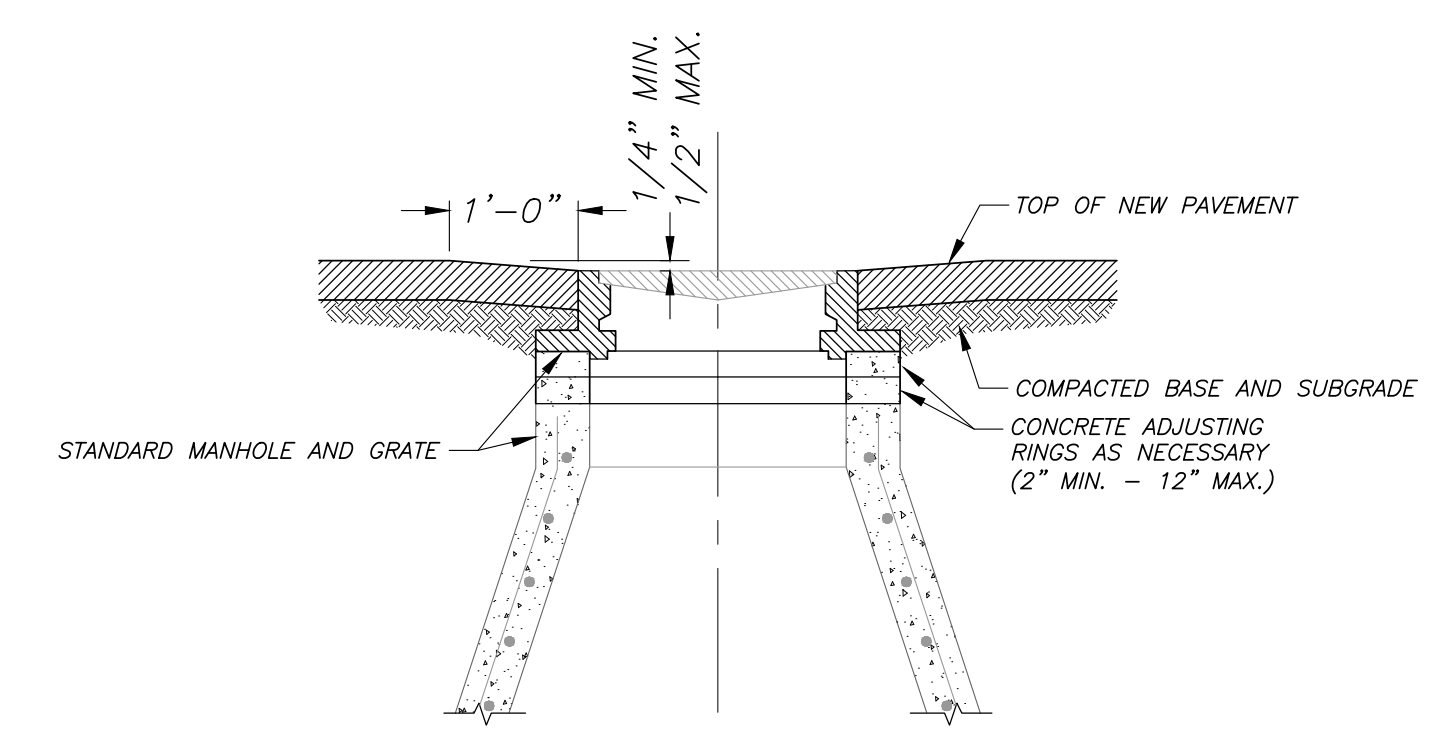
Save By: swanderpoul



ELEVATION AT CL



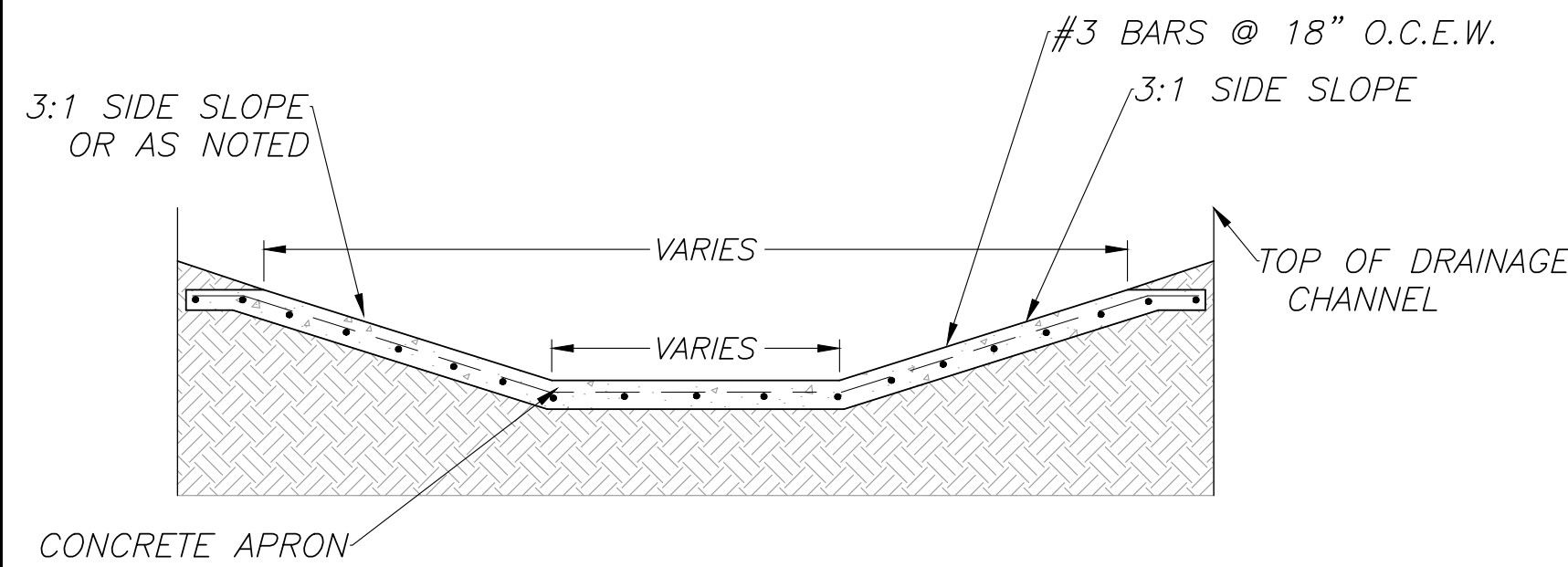
INSET A



NOTES:  
 1. ADJUST MANHOLES UPWARD WITH ADJUSTING RINGS UNDER FRAME.  
 2. ADJUST MANHOLES DOWNWARD BY REMOVING CONE AND BARREL SECTIONS AS NECESSARY AND REPLACING WITH SECTIONS OF LENGTH REQUIRED TO MATCH GRADE.  
 3. SLOPE MANHOLE FRAME AS REQUIRED TO MATCH SLOPE OF STREET.  
 4. MAKE FINAL MANHOLE ADJUSTMENTS BEFORE PAVING.

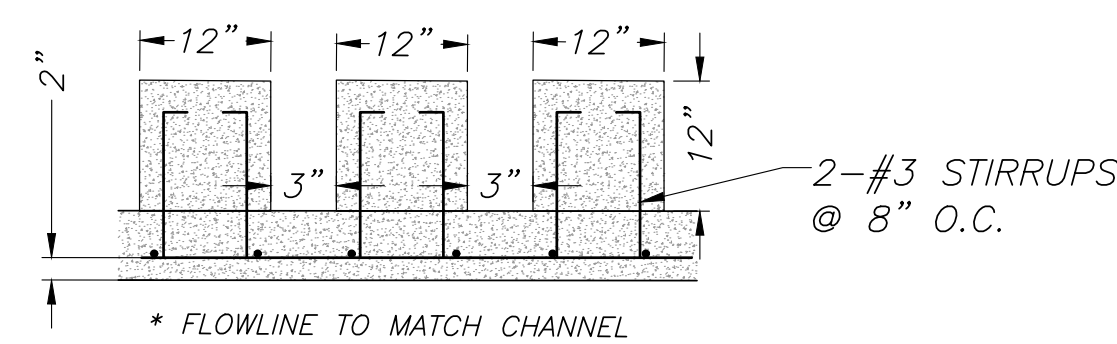
MANHOLE ADJUSTMENT DETAIL

N.T.S.



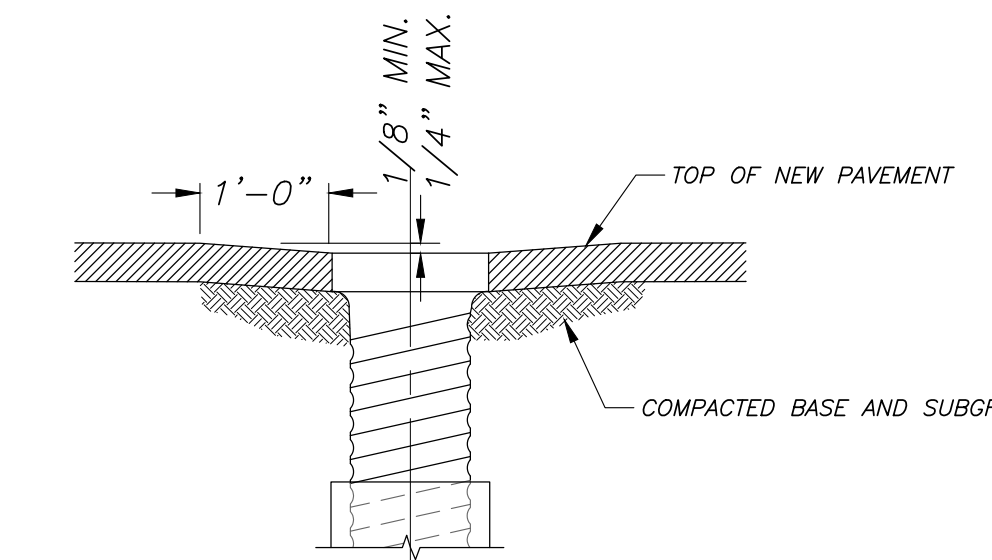
CONCRETE CHANNEL DETAIL

N.T.S.



DISSIPATOR DETAILS

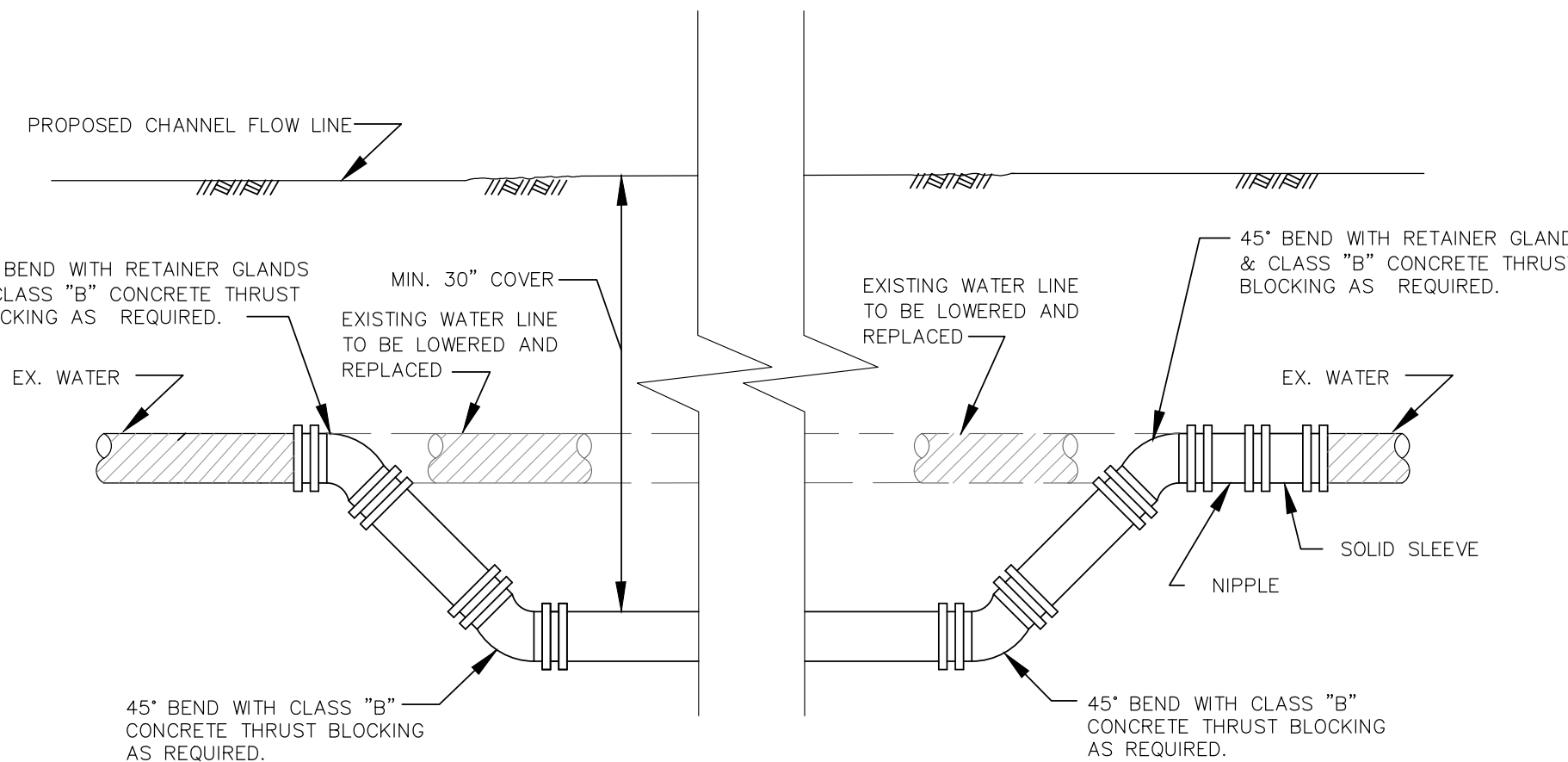
SCALE: N.T.S.



NOTES:  
 1. ADJUST WATER VALVES UPWARD OR DOWNWARD AS REQUIRED.  
 2. MAKE FINAL ADJUSTMENTS BEFORE PAVING.

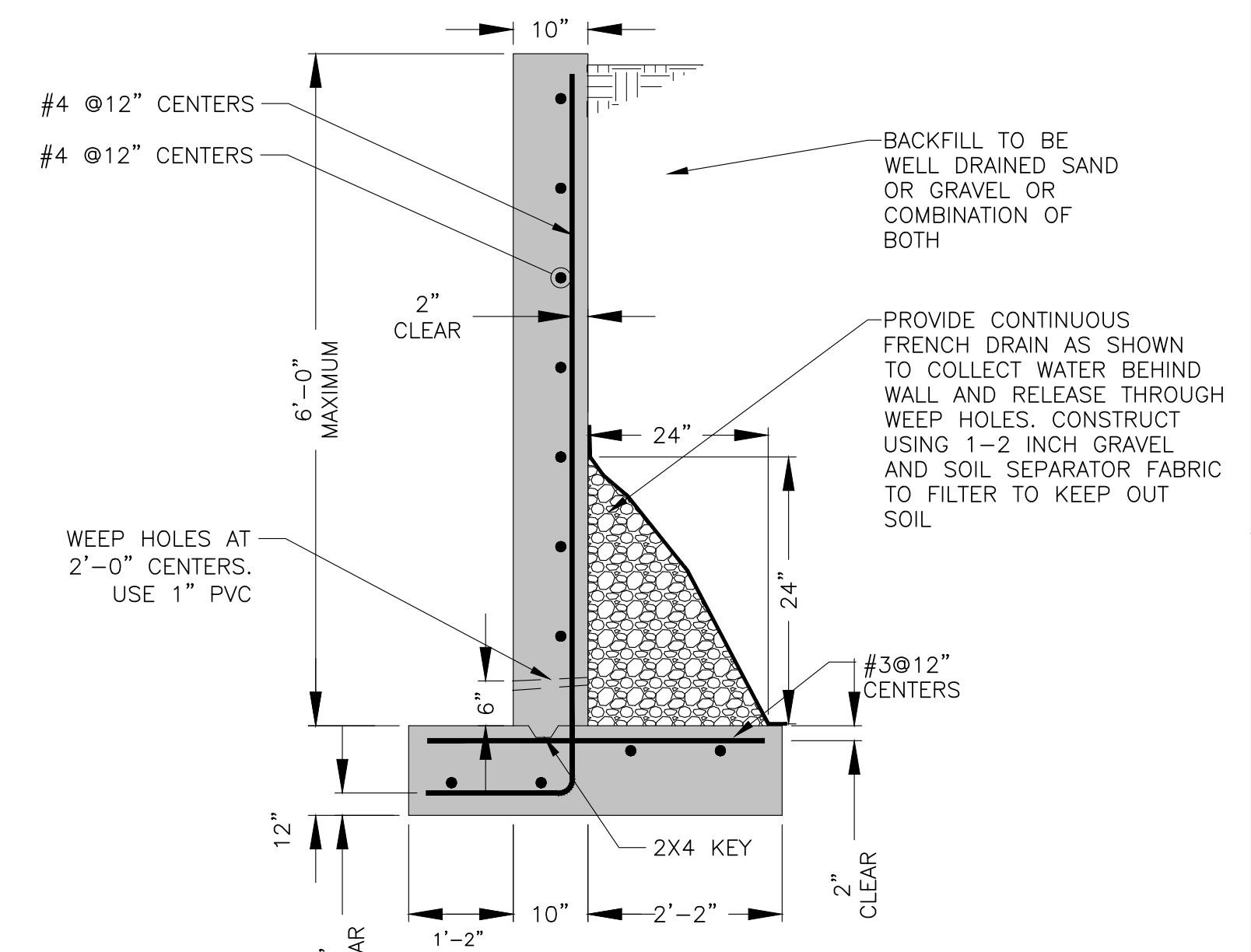
VALVE BOX ADJUSTMENT DETAIL

N.T.S.



WATER LINE LOWERING DETAIL

N.T.S.

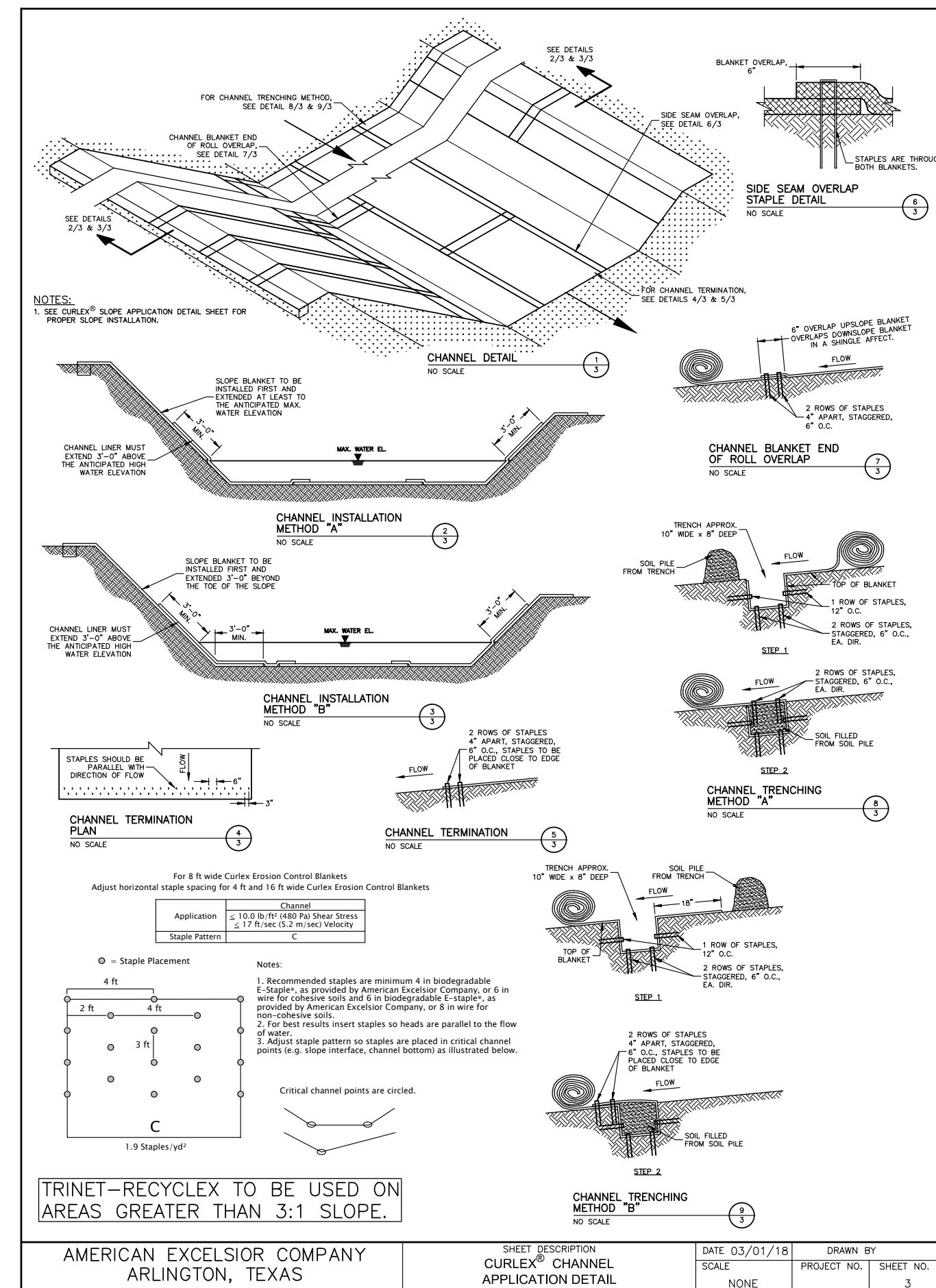


CONCRETE WALL DETAIL

N.T.S.

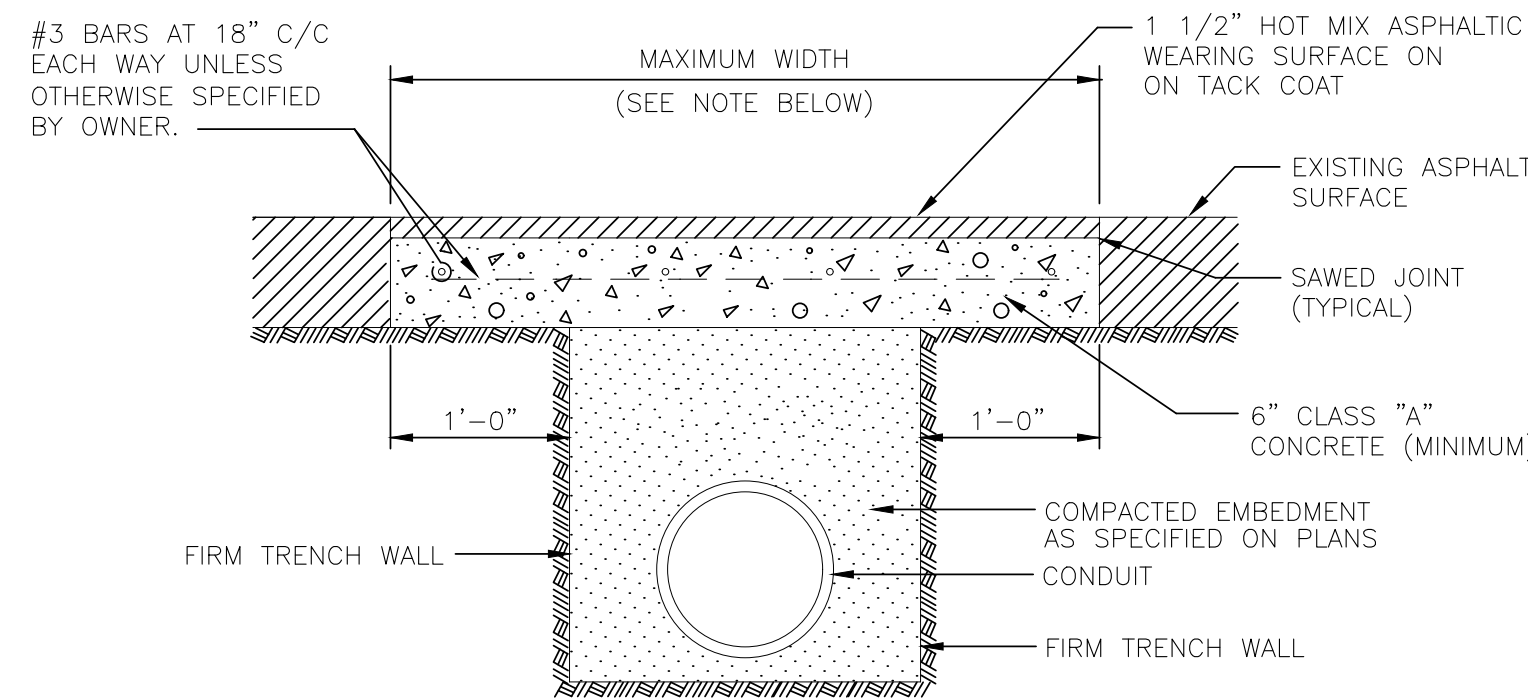
NOTES:

- ALL REINFORCING STEEL TO BE GRADE 60.
- CONCRETE TO BE 3,500 PSI
- PROVIDE CONSTRUCTION, EXPANSION JOINT EVERY 80 FEET USING 1/4 INCH EXPANSION MATERIAL. DOWEL WITH THE #4 BARS AT 12 INCH CENTERS. DOWELS TO BE 30 INCHES LONG AND SET INTO ONE SIDE USING 15 INCH LONG GALVANIZED STEEL PIPE SLEEVES FOR SLIPPAGE. SEAL JOINT WITH CALK.
- AT EVERY 10 FOOT VERTICALLY PROVIDE A CONTROL JOINT ON THE EXPOSED CONCRETE WALL. INSTALL 1 INCH "V" WITHIN THE CONCRETE FORM OR SAW CUT 1 INCH DEEP WITHIN 24 HOURS OF POUR
- RETAINING WALL TO BE CONSTRUCTED PER REQUIREMENT OF GEOTECHNICAL REPORT. CONTRACTOR TO FOLLOW RECOMMENDATIONS OF THIS REPORT.
- WALLS WERE DESIGNED USING AN EQUIVALENT ACTIVE FLUID PRESSURE OF 40 POUNDS PER CUBIC FOOT.
- WALLS ARE DESIGNED WITH AN OVERTURNING SAFETY FACTOR OF 2 AND A MAXIMUM TOE PRESSURE OF 2,200 POUNDS PER SQUARE FOOT.



TRINET-RECYCLEX TO BE USED ON AREAS GREATER THAN 3:1 SLOPE.

AMERICAN EXCELSIOR COMPANY ARLINGTON, TEXAS	SHEET DESCRIPTION CURBLEX® CHANNEL APPLICATION DETAIL	DATE 03/17/18	DRAWN BY SCALE NONE	PROJECT NO. 3	SHEET NO. 3
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PAVEMENT CUTS  
REMOVAL AND REPLACEMENT

N.T.S.

NOTES:

- PAYMENT TO THE CONTRACTOR FOR REPLACEMENT OF PAVEMENT AND/OR DRIVEWAYS WILL BE BASED ON ACTUAL MEASUREMENTS UP TO A MAXIMUM WIDTH EQUAL TO THE SPECIFIED MAXIMUM TRENCH WIDTH (PER STD. SPEC. ITEM 6.2.) PLUS 2 FEET. ANY EXISTING PAVEMENT DAMAGED OR REMOVED IN EXCESS OF THE MAXIMUM LIMITS SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
- WHEN REMOVING CONCRETE PAVEMENT THE CONTRACTOR SHALL ENDEAVOR TO LIMIT DAMAGE TO EXISTING REINFORCEMENT SO IT MAY BE EMPLOYED IN THE REPLACEMENT OPERATION. IF ORIGINAL REINFORCEMENT IS CUT OR BROKEN, REPLACEMENT BARS OF THE SAME SIZE SHALL BE INSTALLED BY DRILLING AND DOWELLING AS DIRECTED BY THE OWNER.



JACOB MARTIN  
 TBE FIRM # 10194893  
 TBE FIRM # BR 2261  
 TBE FIRM # 2148

CITY OF AZLE, TEXAS	DRAINAGE CULVERT	CONSTRUCTION DRAWINGS	STANDARD DETAIL A
NO. / REVISION	DATE	PROJECT # / SCALE	BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING. CHECK SCALE AND ADJUST ACCORDINGLY.
17 OF 17		22-419 N.T.S.	