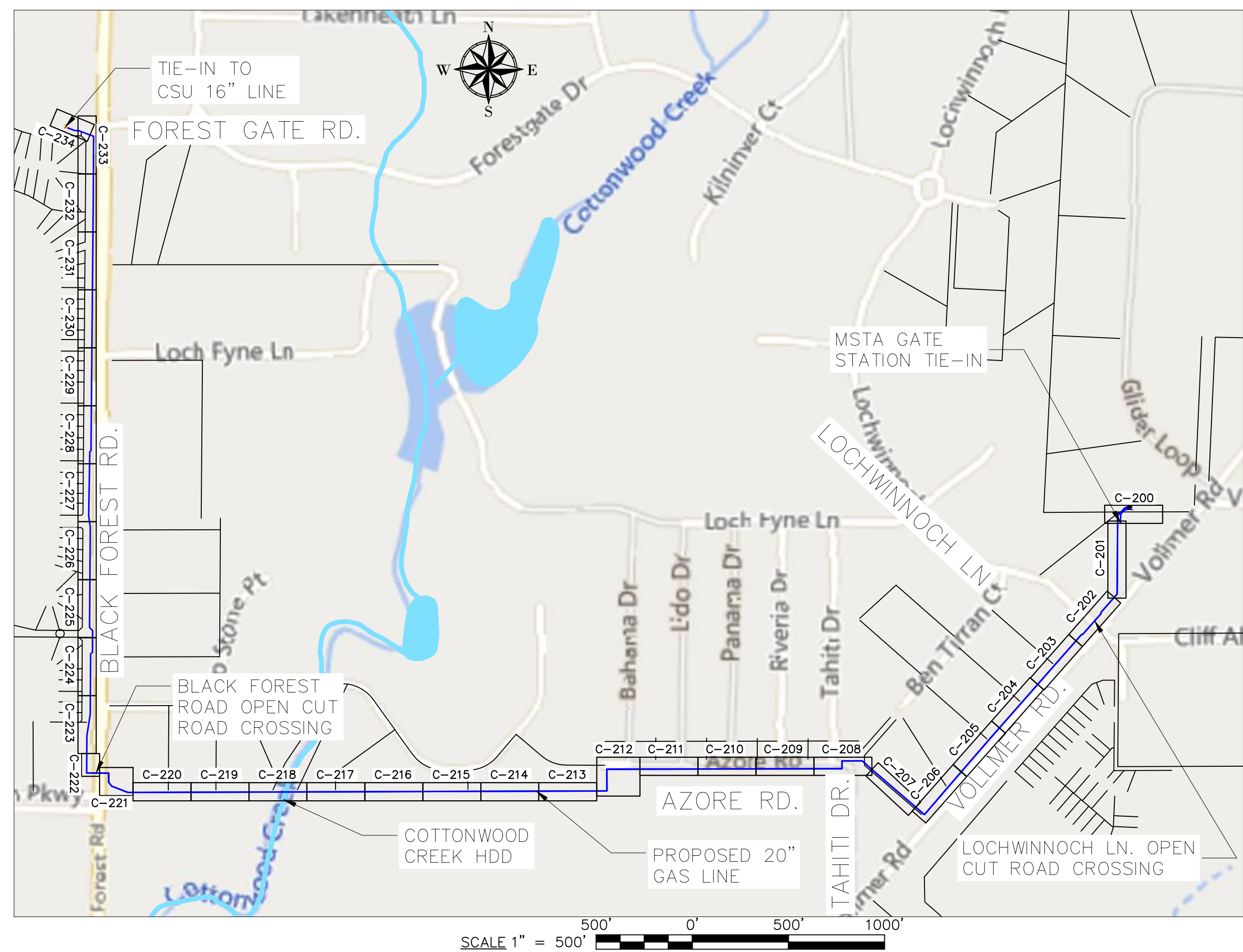


COLORADO SPRINGS UTILITIES LOCH FYNE 20" GAS PIPELINE

LEGEND	
EXISTING GAS LINE	
GAS LINE TO BE ABANDONED	
EXISTING GAS VALVE	
PURGE POINT	
PROPOSED GAS LINE	
ROW/PROPERTY LINE	
EDGE OF PAVEMENT/SIDEWALK	
ELECTRIC-OVERHEAD	
ELECTRIC-UNDERGROUND	
PHONE UNDERGROUND ABANDON	
FIBER OPTIC	
FIBER OPTIC ABANDON	
STORM WATER	
WATER	
FENCE (ALL)	
PERM. GAS EASEMENT	
TEMP. GAS EASEMENT	
UTILITY PEDESTALS & HANDHOLES	
MANHOLE	
POWER POLE	
BOLLARD	
IRON PIN FOUND	
POST	
SIGN	
RIP-RAP	



DRAWING PREPARATION NOTE:

THE DRAWINGS COMPLETED IN THIS PACKAGE WERE PREPARED FROM VARIOUS SOURCES. IN SOME INSTANCES DISCREPANCIES MAY EXIST BETWEEN THE VARIOUS SOURCES, ESPECIALLY RELATED TO LOCATION OF EXISTING UTILITIES THAT MAY EXIST AND THE ACTUAL LOCATIONS WHERE UTILITIES NOT YET INSTALLED ARE PLACED.

PATRICK ENGINEERING COMPLETED A SURVEY OF THE PROJECT INCLUDING POT HOLING UTILITIES WHERE FOUND BY SURVEY AND SUE SOURCES.

THE FOLLOWING SOURCES WERE USED:

CSU PROVIDED DRAWING INFORMATION RELATED TO THE TIE-IN OF THE 16" GAS MAIN THAT THE 20" PIPELINE WILL CONNECT TO, AND THEIR RELOCATION OF THE LOW PRESSURE GAS MAIN ALONG THE EAST SIDE OF BLACK FOREST RD.

CSU PROVIDED DRAWINGS FOR THE PROPOSED PROJECT WORK ALONG VOLLMER RD. PREPARED BY JR ENGINEERING.

TERRA TECHNOLOGIES PROVIDED DRAWINGS RELATED TO REPLACEMENT OF CENTURYLINK'S FIBER AND TELEPHONE RELOCATIONS AT BLACK FOREST ROAD.

THE BLACK FOREST RD. ROAD IMPROVEMENT PROJECT WAS PREPARED AND PROVIDED BY AECOM.

THE WOLF RANCH DEVELOPMENT LANDSCAPE PLAN WAS PROVIDED BY THE DEVELOPER.

PATRICK ENGINEERING DOES NOT TAKE RESPONSIBILITY FOR THESE DESIGNS PROVIDED BY OTHERS. PATRICK ENGINEERING UTILIZED THEM AS THE BEST SOURCE OF INFORMATION TO DETERMINE THE ROUTE OF THE GAS MAIN.

CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES, AND UTILITIES THAT ARE NOT INSTALLED YET, BUT ARE EXPECTED TO BE IN PLACE PRIOR TO THE CONSTRUCTION OF THE GAS MAIN.

IF THERE ARE ANY CONFLICTS FOUND THAT CANNOT BE ADJUSTED IN THE FIELD THAT REQUIRE AN ENGINEERING EVALUATION, CONTACT PATRICK ENGINEERING.

TRANSITION WELDS - CONNECTION METHOD NOTE:

IF WALL THICKNESS BETWEEN PIPE ENDS OR PIPE FITTING ENDS EXCEED 3/32" OR 0.09375". REQUEST FOR ENGINEERING APPROVAL OF A TRANSITION PIPE WHEN AVAILABLE TO ELIMINATE THE NEED FOR BACK WELDING AND TAPER BORES. WHEN BACK WELDING AND/OR TAPER BORE IS REQUIRED INDICATE LOCATION AND METHOD OF EACH CONNECTION MADE ON THE WELD DIAGRAM NEXT TO THE WELD NO.

GPS WELDS NOTE:

GPS ALL NEW WELDS AND EXISTING WELDS THAT ARE UNCOVERED IN THE TRENCH DURING CONSTRUCTION. ENSURE ALL WALL THICKNESS, AND OTHER PIPE INFORMATION AND WELD INFORMATION IS RECORDED.

Design Engineer's Statement:

These detailed plans and specifications were prepared under my direction and supervision. Said plans and specifications have been prepared according to criteria established by the County for detailed roadway, drainage, grading and erosion control plans and specifications, and said plans and specifications are in conformity with applicable master drainage plans and master transportation plans. Said plans and specifications meet the purpose for which the particular roadway and drainage facilities are designed and are correct to the best of my knowledge and belief. I accept responsibility for any liability caused by my negligent acts, errors or omissions on my part in the preparation of these plans and specifications.

Date: 03/23/2023
Jeremiah M. Smith, P.E.
Sr. Manager Pipeline Engineering P.E. # PE.0059747

Owner/Developer's State:

I, the owner/developer have read and will comply with the requirements of the grading and erosion control plan and all of the requirements specified in these detailed plans and specifications.

Date: 3/24/2023
Melissa Lingo, PMP
Sr. Technical Project Manager

Colorado Springs Utilities
1521 Hancock Expressway
Colorado Springs, CO 80903

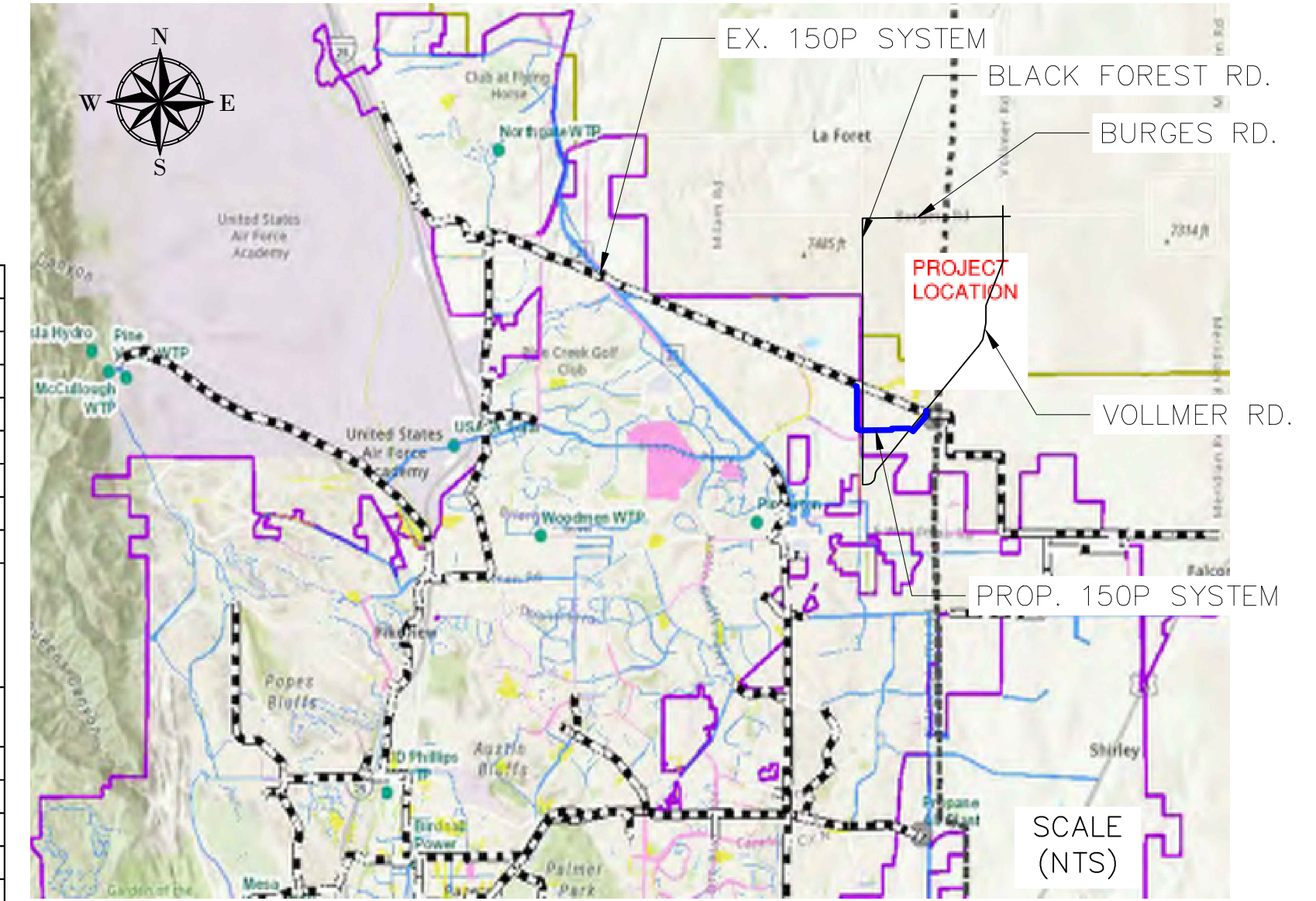
El Paso County:

County plan review is provided only for general conformance with County Design Criteria. The County is not responsible for accuracy and adequacy of the design, dimensions, and/or elevations which shall conform to the job site. The County through the approval of this document assumes no responsibility for completeness or accuracy of this document.

Filed in accordance with the requirements of the El Paso Land Development Code, Drainage Criteria Manual, Volumes 1 and 2, and Engineering Criteria Manual as amended.

In accordance with ECM Section 1.12, these construction documents will be valid for a period of 2 years from the date signed by the El Paso County Engineer. If construction has not started within those 2 years, the plans will need to be resubmitted for approval, including payment or review fees at the Planning and Community Development Director's discretion.

Date: _____
Joshua Palmer, P.E.
County Engineer/ECM Administrator



TOTAL INSTALLED LENGTH: 10,187'			
DESIGN PIPE SUMMARY		ABANDONMENT PIPE SUMMARY	
DESIGN QUANTITY	DESCRIPTION	ABANDONED QUANTITY	DESCRIPTION
8802	20" PIPE, STL, 0.375", API 5L-X52, FBE	2464	12" FBE 0.219 WT X-42
1440	20" PIPE, STL, 0.375", API 5L-X52, FBE/ARO	4807	12" TAR COAT
40	10" PIPE, STL, 0.365", API 5L-X52, FBE	1000	16" TAR WRAP
40	2" PIPE, STL, 0.154", ASTM A-105, FBE	5	1" XTRU
		42	3/4" PL
		5	4" XTRU
VALVE INSTALLATION AND ABANDONMENT			
INSTALLED	ABANDONED	VALVES TO BE INSTALLED/ABANDONED	
		VALVE NUMBER	LOCATION
X			McCLINTOCH STATION
X			McCLINTOCH STATION
X			McCLINTOCH STATION
	X		16" Buried Q-18
	X		4" Boxed P-18
TOTAL NUMBER OF EMERGENCY/FIRE VALVES INSTALLED ON 150P		0	
TOTAL NUMBER OF VALVES ABANDONED ON 150P		2	

Colorado Springs Utilities
It's how we're all connected

PATRICK ENGINEERING
8902 Vincennes Circle, Suite F
Indianapolis, IN 46268
TEL. (317) 217-1701
www.patrickco.com
PROJ. NO. 22282.003

REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 1 OF 60	SCALE: NTS
N/A				BY:	DATE:	APPROV:	PATRICK ENGINEERING TEAM	
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A		DWN BY: NORM WEST	CHKD BY: SETH BROWN
N/A		N/A	TWN. 12S, RING. 65W, SECTIONS 31, 32, 33	R-18, R-19, Q-19, P-17, P-18, P-19	SYSTEM MAOP:		APPD. BY: JEREMIAH SMITH	
					SYSTEM MOP:		LOCH FYNE 20" GAS PIPELINE	
							COLORADO SPRINGS, COLORADO	
							COVER SHEET	
							DWG. NO. COVER	

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-CSD-03.dwg LAYOUT NAME: COVER PLOTTED: Wednesday, March 22, 2023 - 4:27pm USER: jms

PCD FILE NO. CDR-231

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MAINLINE AIR TEST DETAIL & PROCEDURE TM2

MAOP DETERMINED USING THE FOLLOWING TEST METHODS FOR SPECIFIED SECTIONS

- TM TEST PRESSURE EXCEEDING OF EQUAL TO 150% MAOP, TESTED WITH WATER (150 HYDRO)
- TM2 TEST PRESSURE EXCEEDING OF EQUAL TO 150% MAOP, TESTED WITH AIR, NITROGEN, OR NATURAL GAS (150 OTHER)

DETAIL NOTES
1. TEST THE VALVES IN THE OPEN POSITION.

AS-BUILT DRAWING—PRESSURE TEST DATA TEST # _____

DESCRIPTION: _____ TEST MEDIUM _____ TEST METHOD _____

AIR GAUGE
 NITROGEN CHART
 WATER SOAP
 NATURAL GAS

DESCRIPTION POINTS _____

PIPE DIA. _____ GAUGE SN# _____

TOTAL LENGTH _____ PRESSURE REC SN# _____

PRESSURE (ALL TESTS) (START) _____ (STOP) _____

PRESSURE (CHART ONLY) (MIN) _____ (MAX) _____

TIME (START) _____ (STOP) _____

DATE (START) _____ (STOP) _____

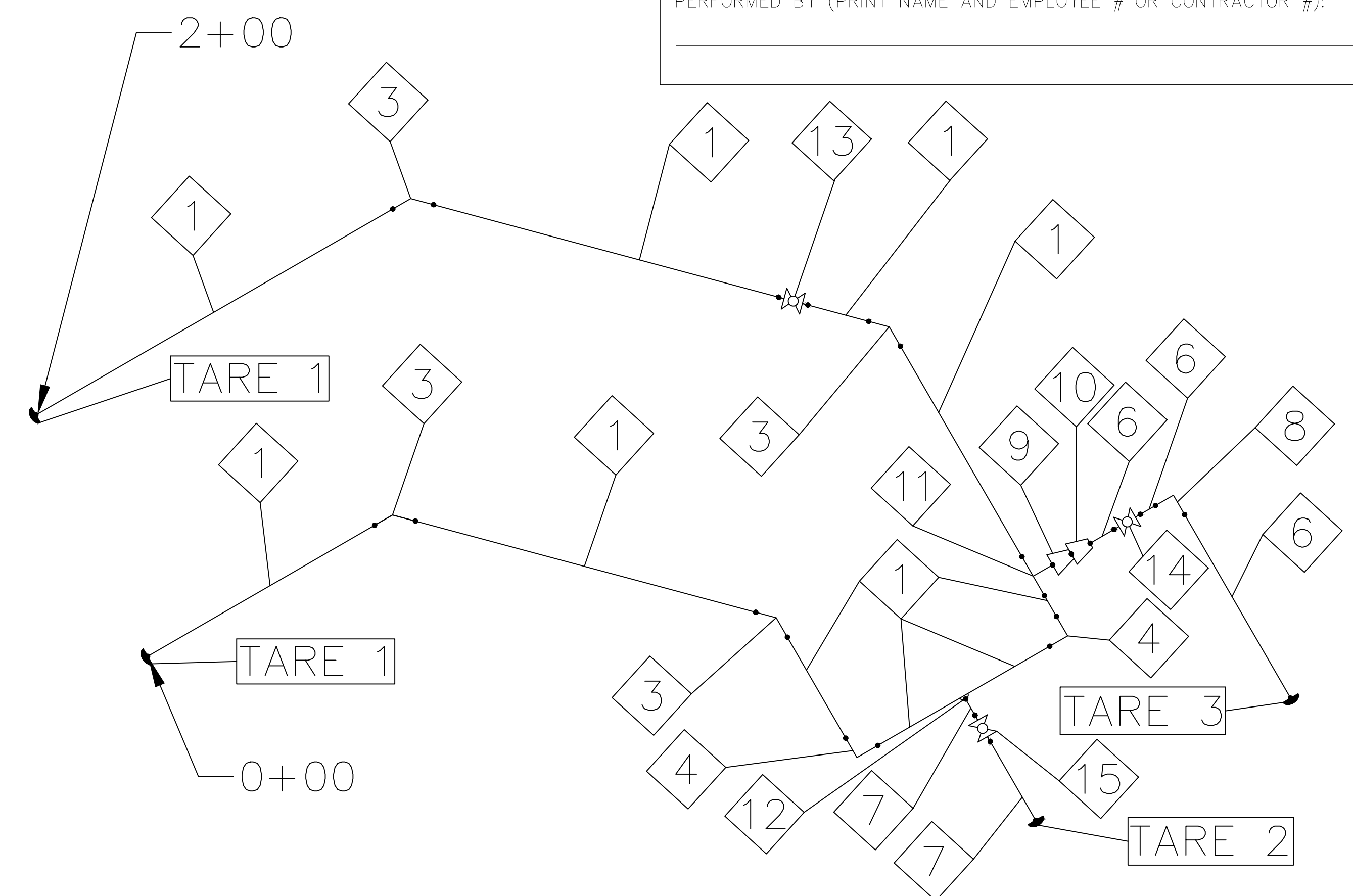
INTERMEDIATE LEAK TEST YES NO

LEAK SURVEY WR# (NATURAL GAS TEST ONLY) _____

ANY LEAKS OR FAILURES ON A TEST YES NO

IF YES, NOTE THE LEAKS AND FAILURES AND THEIR DISPOSITION: _____

PERFORMED BY (PRINT NAME AND EMPLOYEE # OR CONTRACTOR #): _____



COLORADO SPRINGS UTILITIES

RECORD OF STEEL PIPELINES FOR 145 PSIG MOP OPERATION

Designer Instructions PLEASE ENTER THE DATA REQUESTED ON THE HIGHLIGHTED CELLS IN SECTIONS I THROUGH IV OF THIS FORM. DESIGN PRESSURE OF WEAKEST PIPE/COMPONENT MUST EQUAL OR EXCEED DESIRED MAOP.

I. JOB DESCRIPTION/LOCATION: Loch Fyne 20" Gas Line Relocation **GRID:** R-18
TEST DETAIL (IF APPLICABLE): TEST 1 McCintock Station to Station 2+00 20" Piping and 10" and 2" LP System Tie-in.

A. CLASS LOCATION: 3 **F. TEST DURATION REQUIRED:** 2 HR **W.R. # 3747144**
B. MOP: 145 **G. TEST MEDIUM REQUIRED:** Air **RELATED W.R. #** _____
C. DESIRED MAOP: 275
D. TEST PRESSURE (MIN): 413 **H. TEST PRESS (MIN) MULTIPLE:** 1.5
E. TEST PRESSURE (MAX): 433 **I. TEST PRES (MAX) ADJUSTER:** 20

II. ITEMS LISTED IN THIS SECTION MUST BE PRESSURE TESTED

II.A. DESIGN PRESSURE FOR PIPE/BUTT-WELD FITTING, P=(2SD)/E; Where E = 1.0, T = 1.0 HOOP STRESS EQUATION, $\sigma_s = PD/2t$

Insert/Delete Selected Row:

PLAN REF NO.	ITEM NO.	DESIGN QTY	TESTED QTY	LT QTY	COMPONENT SPECIFICATION	SMYS	WT (t)	D	F	E	T	P	DURING TEST							
													σ_s	%SMYS	σ_s	%SMYS				
1	240-375-920	200			20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	\$2000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
7	240-154-238	40			2" PIPE, STL, 0.154" WT, API 5L-X52, FBE	\$3500	0.154	2.375	0.5	1	1	975	1118	3.2	2121	6.1	3181	9.1	3335	9.5
6	240-365-910	40			10" PIPE, STL, 0.365" WT, API 5L-X52, FBE	\$2000	0.365	10.750	0.5	1	1	975	2135	4.1	4050	7.8	6074	11.7	6369	12.2
3	220-647-920	4			20" ELBOW, 0.375 WT, STL, 45 DEG, 3R, WPHY 52	\$2000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
4	220-692-920	2			20" ELBOW, 0.375 WT, STL, 90 DEG, 3R, WPHY 52	\$2000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
8	220-692-910	1			10" ELBOW, 0.365 WT, STL, 90 DEG, 3R, WPHY 52	\$2000	0.365	10.750	0.5	1	1	1766	2135	4.1	4050	7.8	6074	11.7	6369	12.2
10	215-790-100	1			REDUCER, CONC, 12"x10", 0.375"x0.365", WPHY-52	\$2000	0.375	12.750	0.5	1	1	1529	2465	4.7	4675	9.0	7013	13.5	7353	14.1
9	215-790-920	1			REDUCER, CONC, 20"x12", 0.375"x0.375", WPHY-52	\$2000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
11	280-700-920	1			20" TEE, WELD WT, 0.375", CS, WPHY-52	\$2000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
TARE 1	209-700-920	2			20" CAP. WELD, WPHY52, CARBON STEEL, 0.375" WT	\$2000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
TARE 2	209-700-200	1			2" CAP. WELD, WPHY52, CARBON STEEL, 0.154" W	\$2000	0.154	2.375	0.5	1	1	3372	1118	2.2	2121	4.1	3181	6.1	3335	6.4
TARE 3	209-700-910	1			10" CAP. WELD, WPHY52, CARBON STEEL, 0.365" WT	\$2000	0.365	10.750	0.5	1	1	1766	2135	4.1	4050	7.8	6074	11.7	6369	12.2

II.B. VALVES, REGULATORS, COMPONENTS AND OTHER FITTINGS INSERT/DELETE ROWS:

PLAN REF NO.	ITEM NO.	DESIGN QTY	TESTED QTY	ASBUI LT QTY	PRE-CERTIFIED COMPONENTS(S)	MANUFACTURER'S PRESSURE RATING (PSIG)	MANUFACTURER'S TEST PRESSURE (PSIG)
12	254-960-055	1			WELD-O-LET 2" X 20", CS, ASTM A105	3000	
13	290-100-920	1			VALVE, BALL, 20", API6D CL150, VERTICAL GEAR OPER., FULL POR	285	450
14	290-100-911	1			VALVE, BALL, 10", API6D CL150, VERTICAL GEAR OPER., FULL POR	285	450
15	290-100-200	1			VALVE, BALL, CL 150, VERTICAL GEAR OPER., WELD END, 2" X 0.154"	285	450

III. ITEMS LISTED IN THIS SECTION ARE SINGLE PRE-CERTIFIED COMPONENT INSTALL ONLY. PRESSURE TEST NOT REQUIRED. SOAP TEST REQUIRED.

III.A. DESIGN PRESSURE FOR PIPE/BUTT-WELD FITTING, P=(2SD)/E; Where E = 1.0, T = 1.0 HOOP STRESS EQUATION, $\sigma_h = PD/2t$

PLAN REF NO.	ITEM NO.	DESIGN QTY	ASBUI LT QTY	PRE-CERTIFIED COMPONENTS(S)	SMYS	WT (t)	D	F	E	T	P	σ_s	%SMYS	σ_s	%SMYS

III.B. VALVES, REGULATORS, COMPONENTS AND OTHER FITTINGS

PLAN REF NO.	ITEM NO.	DESIGN QTY	ASBUI LT QTY	PRE-CERTIFIED COMPONENTS(S)	MANUFACTURER'S PRESSURE RATING (PSIG)	MANUFACTURER'S TEST PRESSURE (PSIG)

IV. INFORMATION TO BE SUPPLIED BY TEST PERSONNEL

A. TEST PERFORMED BY: _____ COMPANY: _____ TEST # _____

B. (SIGNATURE): _____ TEST DATE: _____

C. LOCATION OF TEST: _____

D. FACILITY TESTED: REGULATOR STATION SPOOL (FAB SHOP) MAIN OTHER (SPECIFY IN REMARKS)

E. TEST MEDIUM (CHECK): AIR NATURAL GAS INERT GAS (NITROGEN) WATER

F. TEST PRESSURE: MAX (PSIG): _____ MIN (PSIG): _____

G. TEST DURATION: START TIME: _____ END TIME: _____ DURATION (HR:MIN): _____

H. TEST PRESSURE DOC'D ON: MECHANICAL CHART GAUGE OTHER

I. RECORDING DEVICE NO: _____ CALIBRATION DUE DATE: _____

J. LEAK TEST CONDUCTED: YES* IF YES, IDENTIFY METHOD(S) LEAK SURVEY SOAP TEST INTERMEDIATE LEAK TEST (100 PSIG MINIMUM) NO

K. PIPE MANUFACTURER'S NAME: _____ P.O. NO.: _____ HEAT CODE NO.: _____

L. WELDING ELECTRODE MFR: _____ PART NUMBER: _____ LOT NUMBER: _____

REMARKS: _____

CSU REPRESENTATIVE (Sign/Print): _____ DATE: _____

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-CSD-CD\dwg LAYOUT NAME: C-101 PLOTTED: Wednesday, March 22, 2023 - 4:27pm USER: rwest

 Colorado Springs Utilities <i>It's how we're all connected</i>	 P.E. CERTIFICATION	 8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com PROJ. NO. 22282.003	REVISIONS 5 REISSUED FOR CONSTRUCTION NEW 3/16/23 JMS 4 ISSUED FOR CONSTRUCTION NEW 11/14/22 JMS 3 100% DESIGN PACKAGE ISSUED FOR REVIEW NEW 10/14/22 JMS	SYSTEM NAME: 150P SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	JOB TYPE: HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	W/O # 3747144 RELATED W/O #s 3789816	ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196 PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794 CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675 SHEET NO. 3 OF 60 SCALE: NTS PATRICK ENGINEERING TEAM DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH
			PERMIT INFORMATION N/A	ISOLATION AREA N/A	LOCATION TWN. 12S, RNG. 65W, SECTION 33	ATLAS OR TITLE R-18	N/A

MAINLINE AIR TEST DETAIL & PROCEDURE TM2

MAOP DETERMINED USING THE FOLLOWING TEST METHODS FOR SPECIFIED SECTIONS

TM TEST PRESSURE EXCEEDING OF EQUAL TO 150% MAOP, TESTED WITH WATER (150 HYDRO)

TM2 TEST PRESSURE EXCEEDING OF EQUAL TO 150% MAOP, TESTED WITH AIR, NITROGEN, OR NATURAL GAS (150 OTHER)

COLORADO SPRINGS UTILITIES

Designer Instructions PLEASE ENTER THE DATA REQUESTED ON THE HIGHLIGHTED CELLS IN SECTIONS I THROUGH IV OF THIS FORM. DESIGN PRESSURE OF WEAKEST PIPE/COMPONENT MUST EQUAL OR EXCEED DESIRED MAOP.

RECORD OF STEEL PIPELINES FOR 145 PSIG MOP OPERATION

I. JOB DESCRIPTION/LOCATION: Loch Fyne 20" Gas Line Relocation GRID: Q-19 & R-19
TEST DETAIL (F APPLICABLE): TEST 2 From 2+00 to 46+60

A. CLASS LOCATION: 3 **F. TEST DURATION REQUIRED:** 24 HR **W.R. #** 3747144
B. MOP: 145 **G. TEST MEDIUM REQUIRED:** Air **RELATED W.R. #**
C. DESIRED MAOP: 275
D. TEST PRESSURE (MIN): 413 **H. TEST PRESS (MIN) MULTIPLIER:** 1.5
E. TEST PRESSURE (MAX): 433 **I. TEST PRES (MAX) ADJUSTER:** 20

II. ITEMS LISTED IN THIS SECTION MUST BE PRESSURE TESTED

II. A. DESIGN PRESSURE FOR PIPE/BUTT-WELD FITTING, P=(2SD) FET; Where E = 1.0, T = 1.0 HOOP STRESS EQUATION, $\sigma_h = PD/2t$

Insert/Delete Selected Row:

PLAN REF NO.	ITEM NO.	DESIGN QTY	TESTED QTY	ASBUILT QTY	COMPONENT SPECIFICATION	SMYS	WT (t)	D	F	E	T	P	AT MOP				AT MAOP				DURING TEST			
													σ_h	%SMYS	σ_h	%SMYS	σ_h	%SMYS	σ_h	%SMYS	σ_h	SMYS%	σ_h	SMYS%
1	240-375-920	4535			20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2				
3	220-647-920	6			20" ELBOW, 0.375 WT, STL, 45 DEG, 3R, WPHY 52	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2				
4	220-692-920	6			20" ELBOW, 0.375 WT, STL, 90 DEG, 3R, WPHY 52	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2				
TARE 1	209-700-920	2			20" CAP, WELD, WPHY52, CARBON STEEL, 0.375"	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2				

II. B. VALVES, REGULATORS, COMPONENTS AND OTHER FITTINGS INSERT/DELETE ROWS:

PLAN REF NO.	ITEM NO.	DESIGN QTY	TESTED QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	MANUFACTURER'S PRESSURE RATING (PSIG)	MANUFACTURER'S TEST PRESSURE (PSIG)

III. ITEMS LISTED IN THIS SECTION ARE SINGLE PRE-CERTIFIED COMPONENT INSTALL ONLY. PRESSURE TEST NOT REQUIRED. SOAP TEST REQUIRED.

III. A. DESIGN PRESSURE FOR PIPE/BUTT-WELD FITTING, P=(2SD) FET; Where E = 1.0, T = 1.0 HOOP STRESS EQUATION, $\sigma_h = PD/2t$

PLAN REF NO.	ITEM NO.	DESIGN QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	SMYS	WT (t)	D	F	E	T	P	AT MOP		AT MAOP	
												σ_h	%SMYS	σ_h	%SMYS

III. B. VALVES, REGULATORS, COMPONENTS AND OTHER FITTINGS

PLAN REF NO.	ITEM NO.	DESIGN QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	MANUFACTURER'S PRESSURE RATING (PSIG)	MANUFACTURER'S TEST PRESSURE (PSIG)

IF, DURING THE TEST, THE PIPELINE IS TO BE STRESSED TO **20% OF SMYS OR GREATER** AND THE TEST MEDIUM IS OTHER THAN WATER, A SPECIAL LEAK SURVEY OR LEAK TEST IS **REQUIRED**. IF APPLICABLE, CONDUCT THE SPECIAL LEAK TEST OR SURVEY AT **100 PSIG** AND HOLD PRESSURE AT THIS LEVEL FOR A MINIMUM OF **10 MIN**. **CONDUCT LEAK SURVEY IF NATURAL GAS IS USED**. **SUBSTITUTION OR ADDITION OF MATERIAL LISTED ON THIS SHEET IS NOT PERMITTED** UNLESS APPROVED BY ENGINEERING SUPERVISOR.

CALC/ANALYSIS BY: DATE: 03/23/2023 ENGINEERING SUPERVISOR'S APPROVAL: DATE:

ENGINEERING REMARKS:

IV. INFORMATION TO BE SUPPLIED BY TEST PERSONNEL

A. TEST PERFORMED BY: COMPANY: TEST #

B. (SIGNATURE): TEST DATE:

C. LOCATION OF TEST:

D. FACILITY TESTED: REGULATOR STATION (SPOOL (FAB SHOP) MAIN OTHER (SPECIFY IN REMARKS)

E. TEST MEDIUM (CHECK): AIR NATURAL GAS INERT GAS (NITROGEN) WATER

F. TEST PRESSURE: MAX (PSIG): MIN (PSIG):

G. TEST DURATION: START TIME: END TIME: DURATION (HR:MIN):

H. TEST PRESSURE DOC'D: MECHANICAL CHART GAUGE OTHER

I. RECORDING DEVICE NO: CALIBRATION DUE DATE:

J. LEAK TEST CONDUCTED: YES* IF YES, IDENTIFY METHOD(S) LEAK SURVEY SOAP TEST INTERMEDIATE LEAK TEST (100 PSIG MINIMUM) NO

K. PIPE MANUFACTURER'S NAME: P.O. NO.: HEAT CODE NO:

L. WELDING ELECTRODE MFR: PART NUMBER: LOT NUMBER:

REMARKS:

CSU REPRESENTATIVE (Sign/Print): DATE:

AS-BUILT DRAWING—PRESSURE TEST DATA TEST #

DESCRIPTION: TEST MEDIUM TEST METHOD

AIR GAUGE
 NITROGEN CHART
 WATER SOAP
 NATURAL GAS

DESCRIPTION POINTS:

PIPE DIA. GAUGE SN#

TOTAL LENGTH PRESSURE REC SN#

PRESSURE (ALL TESTS) (START) (STOP)

PRESSURE (CHART ONLY) (MIN) (MAX)

TIME (START) (STOP)

DATE (START) (STOP)

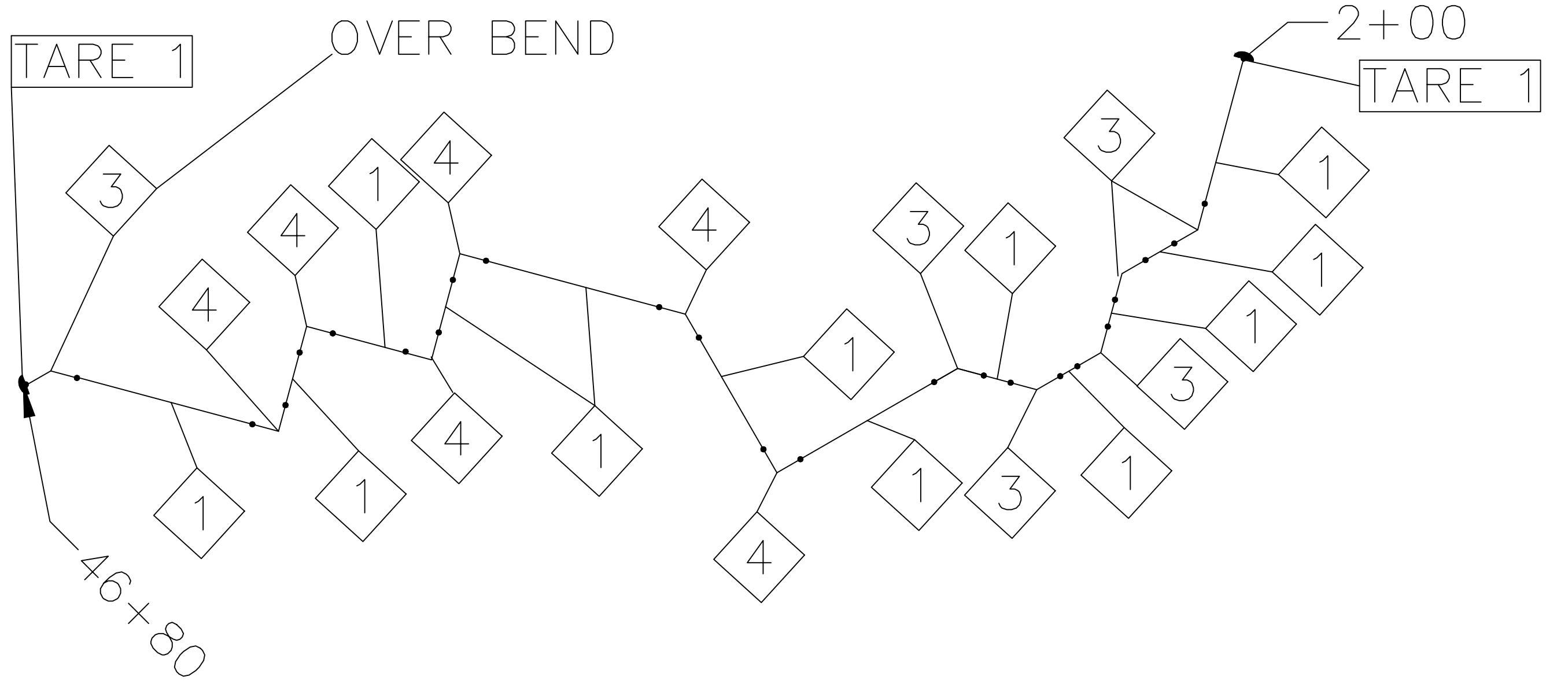
INTERMEDIATE LEAK TEST YES NO

LEAK SURVEY WR# (NATURAL GAS TEST ONLY)

ANY LEAKS OR FAILURES ON A TEST YES NO

IF YES, NOTE THE LEAKS AND FAILURES AND THEIR DISPOSITION:

PERFORMED BY (PRINT NAME AND EMPLOYEE # OR CONTRACTOR #):



FILE NAME: P:\indianapolis\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\IFC-C3D-CSD.dwg LAYOUT NAME: C-102 PLOTTED: Wednesday, March 22, 2023 - 4:27pm USER: rwest

 Colorado Springs Utilities <i>It's how we're all connected</i>	 P.E. CERTIFICATION	 PATRICK ENGINEERING 8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com PROJ. NO. 22282.003	REVISIONS 5 REISSUED FOR CONSTRUCTION NEW 3/16/23 JMS 4 ISSUED FOR CONSTRUCTION NEW 11/14/22 JMS 3 100% DESIGN PACKAGE ISSUED FOR REVIEW NEW 10/14/22 JMS NO. N/A BY: DATE: APPVD:	SYSTEM NAME: 150P SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	JOB TYPE: HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF: <input type="checkbox"/> TRANS v 20%: <input type="checkbox"/>	W/O # 3747144 RELATED W/O #s 3789816	ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196 PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794 CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675 SHEET NO. 4 OF 60 SCALE: NTS PATRICK ENGINEERING TEAM DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH
			PERMIT INFORMATION N/A	ISOLATION AREA N/A	LOCATION TWN. 12S, RNG. 65W, SECTIONS 33	ATLAS OR TITLE R-19, Q-19	SYSTEM MAOP: SYSTEM MOP:

MAINLINE AIR TEST DETAIL & PROCEDURE TM2

MAOP DETERMINED USING THE FOLLOWING TEST METHODS FOR SPECIFIED SECTIONS

- TM TEST PRESSURE EXCEEDING OF EQUAL TO 150% MAOP, TESTED WITH WATER (150 HYDRO)
- TM2 TEST PRESSURE EXCEEDING OF EQUAL TO 150% MAOP, TESTED WITH AIR, NITROGEN, OR NATURAL GAS (150 OTHER)

AS-BUILT DRAWING—PRESSURE TEST DATA TEST # _____

DESCRIPTION: _____ TEST MEDIUM _____ TEST METHOD _____

AIR GAUGE
 NITROGEN CHART
 WATER SOAP
 NATURAL GAS

DESCRIPTION POINTS _____

PIPE DIA. _____ GAUGE SN# _____

TOTAL LENGTH _____ PRESSURE REC SN# _____

PRESSURE (ALL TESTS) (START) _____ (STOP) _____

PRESSURE (CHART ONLY) (MIN) _____ (MAX) _____

TIME (START) _____ (STOP) _____

DATE (START) _____ (STOP) _____

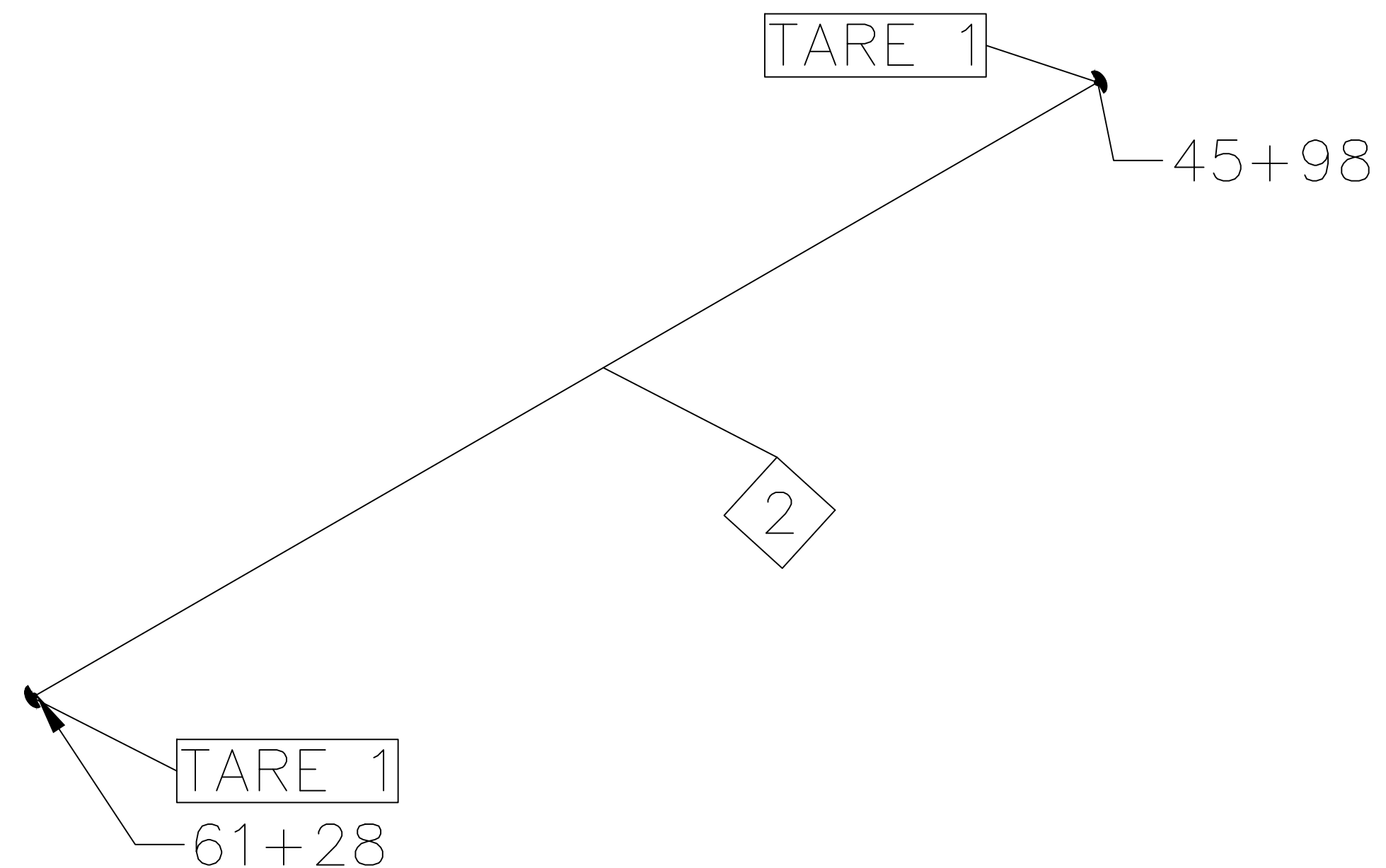
INTERMEDIATE LEAK TEST YES NO

LEAK SURVEY WR# (NATURAL GAS TEST ONLY) _____

ANY LEAKS OR FAILURES ON A TEST YES NO

IF YES, NOTE THE LEAKS AND FAILURES AND THEIR DISPOSITION:

PERFORMED BY (PRINT NAME AND EMPLOYEE # OR CONTRACTOR #): _____



COLORADO SPRINGS UTILITIES

Designer instructions PLEASE ENTER THE DATA REQUESTED ON THE HIGHLIGHTED CELLS IN SECTIONS I THROUGH IV OF THIS FORM. DESIGN PRESSURE OF WEAKEST PIPE/COMPONENT MUST EQUAL OR EXCEED DESIRED MAOP.

RECORD OF STEEL PIPELINES FOR 145 PSIG MOP OPERATION

I. JOB DESCRIPTION/LOCATION: Loch Fyne 20" Gas Line Relocation GRID: Q-19
 TEST DETAIL (IF APPLICABLE): Pre-HDD Pullback Pipe String

A. CLASS LOCATION: 3 F. TEST DURATION REQUIRED: N/A W.R. # 3747144
 B. MOP: 145 G. TEST MEDIUM REQUIRED: Air RELATED W.R. # _____
 C. DESIRED MAOP: 275
 D. TEST PRESSURE (MIN): 413 H. TEST PRESS (MIN) MULTIPLIER: 1.5
 E. TEST PRESSURE (MAX): 433 I. TEST PRES (MAX) ADJUSTER: 20

II. ITEMS LISTED IN THIS SECTION MUST BE PRESSURE TESTED

II.A. DESIGN PRESSURE FOR PPF/BLT/WFI/D FITTING $P = (2S/D) FET$ Where $F = 1.0, T = 1.0$ HOOP STRESS EQUATION, $\sigma_h = PD/2t$

Insert/Delete Selected Row:

PLAN REF NO.	ITEM NO.	DESIGN QTY	TESTED QTY	ASBUILT QTY	COMPONENT SPECIFICATION	SMYS	WT (t)	D	F	E	T	P	AT MOP				AT MAOP				DURING TEST			
													σ_h	%SMYS	σ_h	%SMYS	σ_h	SMYS%	σ_h	SMYS%	σ_h	SMYS%	σ_h	SMYS%
2	241-375-920	1530			20" Pipe, STL, 0.375" WT, API 5L-X52, FBE/ARO	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2				
TARE 1	209-700-920	2			20" CAP. WELD, WPHY52, CARBON STEEL, 0.375" WT	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2				

II.B. VALVES, REGULATORS, COMPONENTS AND OTHER FITTINGS INSERT/DELETE ROWS:

PLAN REF NO.	ITEM NO.	DESIGN QTY	TESTED QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	MANUFACTURER'S PRESSURE RATING	MANUFACTURER'S TEST PRESSURE (PSIG)

III. ITEMS LISTED IN THIS SECTION ARE SINGLE PRE-CERTIFIED COMPONENT INSTALL ONLY. PRESSURE TEST NOT REQUIRED. SOAP TEST REQUIRED.

III.A. DESIGN PRESSURE FOR PIPE/BUTT-WELD FITTING, $P = (2S/D) FET$, Where $E = 1.0, T = 1.0$ HOOP STRESS EQUATION, $\sigma_h = PD/2t$

PLAN REF NO.	ITEM NO.	DESIGN QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	SMYS	WT (t)	D	F	E	T	P	AT MOP		AT MAOP	
												σ_h	%SMYS	σ_h	%SMYS

III.B. VALVES, REGULATORS, COMPONENTS AND OTHER FITTINGS

PLAN REF NO.	ITEM NO.	DESIGN QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	MANUFACTURER'S PRESSURE RATING (PSIG)	MANUFACTURER'S TEST PRESSURE (PSIG)

IF, DURING THE TEST, THE PIPELINE IS TO BE STRESSED TO 20% OF SMYS OR GREATER AND THE TEST MEDIUM IS OTHER THAN WATER, A SPECIAL LEAK SURVEY OR LEAK TEST IS REQUIRED. IF APPLICABLE, CONDUCT THE SPECIAL LEAK TEST OR SURVEY AT 100 PSIG AND HOLD PRESSURE AT THIS LEVEL FOR A MINIMUM OF 10 MIN. CONDUCT LEAK SURVEY IF NATURAL GAS IS USED. SUBSTITUTION OR ADDITION OF MATERIAL LISTED ON THIS SHEET IS NOT PERMITTED UNLESS APPROVED BY ENGINEERING SUPERVISOR.

CALC/ANALYSIS BY: *[Signature]* DATE: 03/23/2023 ENGINEERING SUPERVISOR'S APPROVAL: _____ DATE: _____

ENGINEERING REMARKS: _____

IV. INFORMATION TO BE SUPPLIED BY TEST PERSONNEL

A. TEST PERFORMED BY: _____ COMPANY: _____ TEST # _____

B. (SIGNATURE): _____ TEST DATE: _____

C. LOCATION OF TEST: _____

D. FACILITY TESTED: REGULATOR STATION (SPOOL (FAB SHOP) MAIN OTHER (SPECIFY IN REMARKS)

E. TEST MEDIUM (CHECK): AIR NATURAL GAS INERT GAS (NITROGEN) WATER

F. TEST PRESSURE: MAX (PSIG): _____ MIN (PSIG): _____

G. TEST DURATION: START TIME: _____ END TIME: _____ DURATION (HR:MIN): _____

H. TEST PRESSURE DOC MECHANICAL CHART GAUGE OTHER

I. RECORDING DEVICE NO: _____ CALIBRATION DUE DATE: _____

J. LEAK TEST CONDUCTED: YES* IF YES, IDENTIFY METHOD(S) LEAK SURVEY SOAP TEST INTERMEDIATE LEAK TEST (100 PSIG MINIMUM) NO

K. PIPE MANUFACTURER'S NAME: _____ P.O. NO.: _____ HEAT CODE NO.: _____

L. WELDING ELECTRODE MFR: _____ PART NUMBER: _____ LOT NUMBER: _____

REMARKS: _____

CSU REPRESENTATIVE (Sign/Print): _____ DATE: _____

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\IFC-csb-cs\Draw LAYOUT NAME: C-103 PLOTTED: Wednesday, March 22, 2023 - 4:27pm USER: rwet

			<p>8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL. (317) 217-1701 www.patrickco.com</p> <p>PATRICK ENGINEERING PROJ. NO. 22282.003</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr><th colspan="2">REVISIONS</th></tr> </thead> <tbody> <tr> <td>5</td> <td>REISSUED FOR CONSTRUCTION NEW 3/16/23 JMS</td> </tr> <tr> <td>4</td> <td>ISSUED FOR CONSTRUCTION NEW 11/14/22 JMS</td> </tr> <tr> <td>3</td> <td>100% DESIGN PACKAGE ISSUED FOR REVIEW NEW 10/14/22 JMS</td> </tr> <tr> <td>NO.</td> <td>N/A BY: DATE: APPVD:</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>PERMIT INFORMATION</th> <th>ISOLATION AREA</th> <th>LOCATION</th> <th>ATLAS OR TITLE</th> <th>N/A</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> <td>TWN. 12S, RNG. 65W, SECTIONS 32</td> <td>Q-19</td> <td></td> </tr> </tbody> </table>	REVISIONS		5	REISSUED FOR CONSTRUCTION NEW 3/16/23 JMS	4	ISSUED FOR CONSTRUCTION NEW 11/14/22 JMS	3	100% DESIGN PACKAGE ISSUED FOR REVIEW NEW 10/14/22 JMS	NO.	N/A BY: DATE: APPVD:	PERMIT INFORMATION	ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A	N/A	N/A	TWN. 12S, RNG. 65W, SECTIONS 32	Q-19		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SYSTEM NAME:</th> <th>150P</th> </tr> </thead> <tbody> <tr> <td>SYSTEM MAOP:</td> <td>275 psig</td> </tr> <tr> <td>SYSTEM MOP:</td> <td>145 psig</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>JOB TYPE:</th> <th>W/O #</th> </tr> </thead> <tbody> <tr> <td>HP SERVICE: <input type="checkbox"/></td> <td>3747144</td> </tr> <tr> <td>DISTRIBUTION: <input checked="" type="checkbox"/></td> <td></td> </tr> <tr> <td>FEEDER: <input type="checkbox"/></td> <td></td> </tr> <tr> <td>TRANS. BY DEF. <input type="checkbox"/></td> <td></td> </tr> <tr> <td>TRANS v 20% <input type="checkbox"/></td> <td>3789816</td> </tr> </tbody> </table>	SYSTEM NAME:	150P	SYSTEM MAOP:	275 psig	SYSTEM MOP:	145 psig	JOB TYPE:	W/O #	HP SERVICE: <input type="checkbox"/>	3747144	DISTRIBUTION: <input checked="" type="checkbox"/>		FEEDER: <input type="checkbox"/>		TRANS. BY DEF. <input type="checkbox"/>		TRANS v 20% <input type="checkbox"/>	3789816	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ENGINEER:</th> <th>SCOTT JENSEN</th> <th>PHONE:</th> <th>(719) 668-8196</th> </tr> </thead> <tbody> <tr> <td>PROJECT MANAGER:</td> <td>MELISSA LINGO</td> <td>PHONE:</td> <td>(719) 668-8794</td> </tr> <tr> <td>CONSTRUCTION LEAD:</td> <td>JOSH RICHARD</td> <td>PHONE:</td> <td>(719) 668-3675</td> </tr> <tr> <td>SHEET NO. 5 OF 60</td> <td>SCALE: NTS</td> <td colspan="2">PATRICK ENGINEERING TEAM</td> </tr> <tr> <td>DWN BY:</td> <td>NORM WEST</td> <td>CHKD. BY:</td> <td>SETH BROWN</td> </tr> <tr> <td>APPD. BY:</td> <td>JEREMIAH SMITH</td> <td colspan="2"></td> </tr> </tbody> </table> <div style="text-align: center;"> <p>LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PRESSURE TEST SHEET (HDD PRE-TEST)</p> <p>DWG. NO. C-103</p> </div>	ENGINEER:	SCOTT JENSEN	PHONE:	(719) 668-8196	PROJECT MANAGER:	MELISSA LINGO	PHONE:	(719) 668-8794	CONSTRUCTION LEAD:	JOSH RICHARD	PHONE:	(719) 668-3675	SHEET NO. 5 OF 60	SCALE: NTS	PATRICK ENGINEERING TEAM		DWN BY:	NORM WEST	CHKD. BY:	SETH BROWN	APPD. BY:	JEREMIAH SMITH		
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MAINLINE AIR TEST DETAIL & PROCEDURE TM2

MAOP DETERMINED USING THE FOLLOWING TEST METHODS FOR SPECIFIED SECTIONS

TM TEST PRESSURE EXCEEDING OF EQUAL TO 150% MAOP, TESTED WITH WATER (150 HYDRO)

TM2 TEST PRESSURE EXCEEDING OF EQUAL TO 150% MAOP, TESTED WITH AIR, NITROGEN, OR NATURAL GAS (150 OTHER)

COLORADO SPRINGS UTILITIES

Designer instructions PLEASE ENTER THE DATA REQUESTED ON THE HIGHLIGHTED CELLS IN SECTIONS I THROUGH IV OF THIS FORM. DESIGN PRESSURE OF WEAKEST PIPE/COMPONENT MUST EQUAL OR EXCEED DESIRED MAOP.

RECORD OF STEEL PIPELINES FOR 145 PSIG MOP OPERATION

I. JOB DESCRIPTION/LOCATION: Loch Fyne 20" Gas Line Relocation GRID: Q-19
 TEST DETAIL (F APPLICABLE): TEST 3 HDD section for Cottonwood Creek

A. CLASS LOCATION: 3 F. TEST DURATION REQUIRED: 8 HR W.R. # 3747144
 B. MOP: 145 G. TEST MEDIUM REQUIRED: Air RELATED W.R. # _____
 C. DESIRED MAOP: 275
 D. TEST PRESSURE (MIN): 413 H. TEST PRESS (MIN) MULTIPLIER: 1.5
 E. TEST PRESSURE (MAX): 433 I. TEST PRESS (MAX) ADJUSTER: 20

II. ITEMS LISTED IN THIS SECTION MUST BE PRESSURE TESTED

II. A. DESIGN PRESSURE FOR PIPE/BUTT-WELDED FITTING, $P=(2Si/D)$ FET; Where E = 1.0, T = 1.0 HOOP STRESS EQUATION, $\sigma_h = PD/2t$

Insert/Delete Selected Row:

PLAN REF NO.	ITEM NO.	DESIGN QTY	TESTED QTY	ASBUILT QTY	COMPONENT SPECIFICATION	SMYS		D	F	E	T	P	AT MOP		AT MAOP		DURING TEST			
						σ_h	%SMYS						σ_h	%SMYS	σ_h	SMYS%	σ_h	SMYS%		
2	241-375-920	1530			20" Pipe, STL, 0.375" WT, API 5L-X52, FBE/ARO	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
TARE 1	209-700-920	2			20" CAP, WELD, WPHY52, CARBON STEEL, 0.375" WT	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2

II. B. VALVES, REGULATORS, COMPONENTS AND OTHER FITTINGS INSERT/DELETE ROWS:

PLAN REF NO.	ITEM NO.	DESIGN QTY	TESTED QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	MANUFACTURER'S PRESSURE RATING (PSIG)	MANUFACTURER'S TEST PRESSURE (PSIG)

III. ITEMS LISTED IN THIS SECTION ARE SINGLE PRE-CERTIFIED COMPONENT INSTALL ONLY. PRESSURE TEST NOT REQUIRED. SOAP TEST REQUIRED.

III. A. DESIGN PRESSURE FOR PIPE/BUTT-WELDED FITTING, $P=(2Si/D)$ FET; Where E = 1.0, T = 1.0 HOOP STRESS EQUATION, $\sigma_h = PD/2t$

PLAN REF NO.	ITEM NO.	DESIGN QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	SMYS		D	F	E	T	P	AT MOP		AT MAOP	
					σ_h	%SMYS						σ_h	%SMYS		

III. B. VALVES, REGULATORS, COMPONENTS AND OTHER FITTINGS

PLAN REF NO.	ITEM NO.	DESIGN QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	MANUFACTURER'S PRESSURE RATING (PSIG)	MANUFACTURER'S TEST PRESSURE (PSIG)

IF, DURING THE TEST, THE PIPELINE IS TO BE STRESSED TO 20% OF SMYS OR GREATER AND THE TEST MEDIUM IS OTHER THAN WATER, A SPECIAL LEAK SURVEY OR LEAK TEST IS REQUIRED. IF APPLICABLE, CONDUCT THE SPECIAL LEAK TEST OR SURVEY AT 100 PSIG AND HOLD PRESSURE AT THIS LEVEL FOR A MINIMUM OF 10 MIN. CONDUCT LEAK SURVEY IF NATURAL GAS IS USED. SUBSTITUTION OR ADDITION OF MATERIAL LISTED ON THIS SHEET IS NOT PERMITTED UNLESS APPROVED BY ENGINEERING SUPERVISOR.

CALC/ANALYSIS BY: JMS DATE: 03/23/2023 ENGINEERING SUPERVISOR'S APPROVAL: _____ DATE: _____

ENGINEERING REMARKS: _____

IV. INFORMATION TO BE SUPPLIED BY TEST PERSONNEL

A. TEST PERFORMED BY: _____ COMPANY: _____ TEST # _____

B. (SIGNATURE): _____ TEST DATE: _____

C. LOCATION OF TEST: _____

D. FACILITY TESTED: REGULATOR STATION SPOOL (FAB SHOP) MAIN OTHER (SPECIFY IN REMARKS)

E. TEST MEDIUM (CHECK): AIR NATURAL GAS INERT GAS (NITROGEN) WATER

F. TEST PRESSURE: MAX (PSIG): _____ MIN (PSIG): _____

G. TEST DURATION: START TIME: _____ END TIME: _____ DURATION (HR:MIN): _____

H. TEST PRESSURE DOC'D MECHANICAL CHART GAUGE OTHER

I. RECORDING DEVICE NO: _____ CALIBRATION DUE DATE: _____

J. LEAK TEST CONDUCTED: YES* IF YES, IDENTIFY METHOD(S) LEAK SURVEY SOAP TEST INTERMEDIATE LEAK TEST (100 PSIG MINIMUM) NO

K. PIPE MANUFACTURER'S NAME: _____ P.O. NO.: _____ HEAT CODE NO.: _____

L. WELDING ELECTRODE MFR: _____ PART NUMBER: _____ LOT NUMBER: _____

REMARKS: _____

CSU REPRESENTATIVE (Sign/Print): _____ DATE: _____

AS-BUILT DRAWING—PRESSURE TEST DATA TEST # _____

DESCRIPTION: _____ TEST MEDIUM _____ TEST METHOD _____

AIR GAUGE
 NITROGEN CHART
 WATER SOAP
 NATURAL GAS

DESCRIPTION POINTS: _____

PIPE DIA. _____ GAUGE SN# _____

TOTAL LENGTH _____ PRESSURE REC SN# _____

PRESSURE (ALL TESTS) (START) _____ (STOP) _____

PRESSURE (CHART ONLY) (MIN) _____ (MAX) _____

TIME (START) _____ (STOP) _____

DATE (START) _____ (STOP) _____

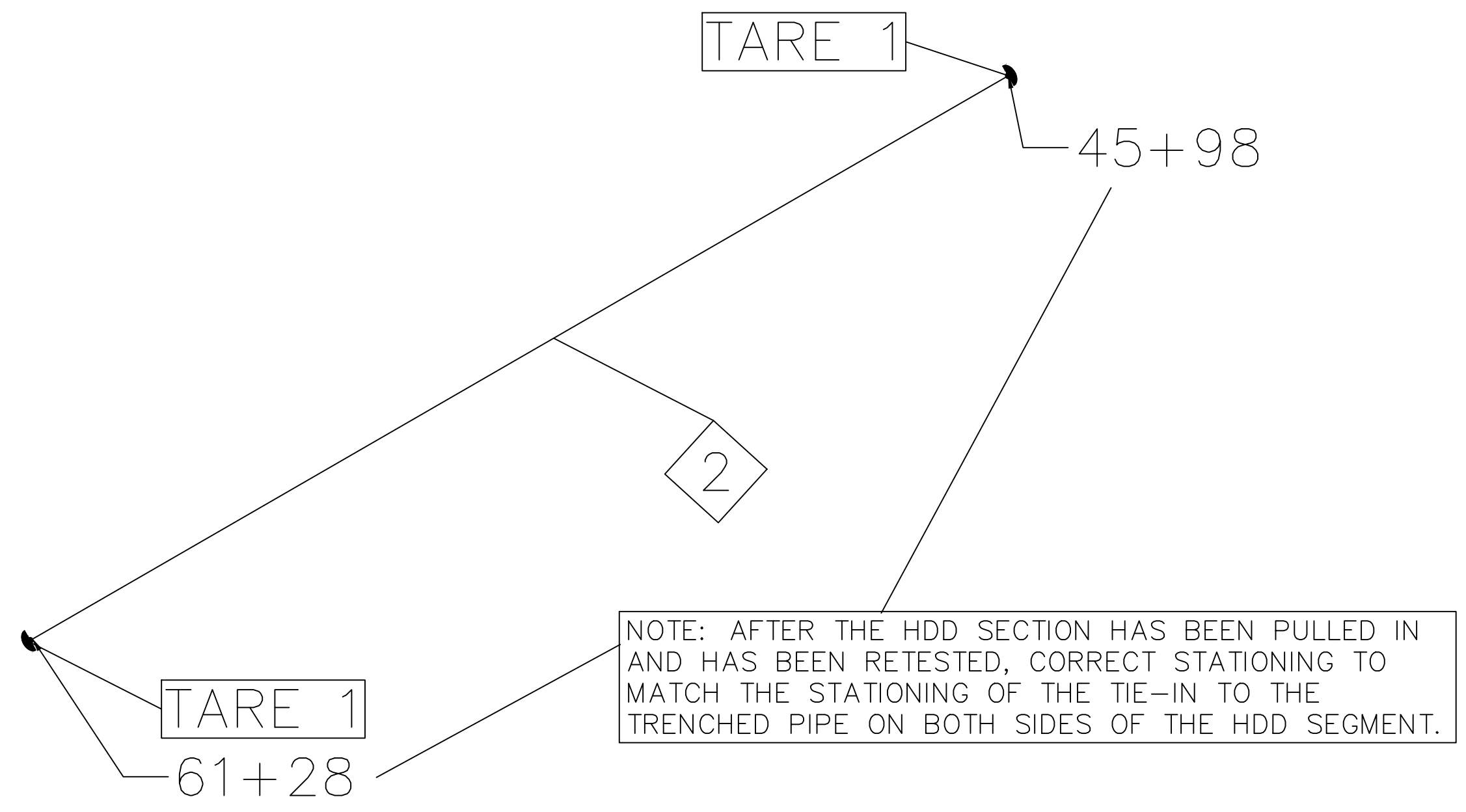
INTERMEDIATE LEAK TEST YES NO

LEAK SURVEY WR# (NATURAL GAS TEST ONLY) _____

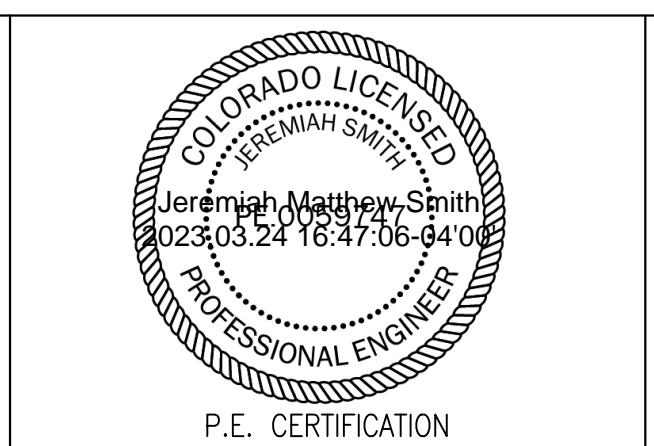
ANY LEAKS OR FAILURES ON A TEST YES NO

IF YES, NOTE THE LEAKS AND FAILURES AND THEIR DISPOSITION: _____

PERFORMED BY (PRINT NAME AND EMPLOYEE # OR CONTRACTOR #): _____



FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-CSD-CSD.dwg LAYOUT NAME: C-104 PLOTTED: Wednesday, March 22, 2023 - 4:27pm USER: rwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
5	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS	HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	3747144	PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
4	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
3	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 6 OF 60	SCALE: NTS
N/A				SYSTEM MAOP: 275 psig			PATRICK ENGINEERING TEAM	
PERMIT INFORMATION				SYSTEM MOP: 145 psig		RELATED W/O #s	DWN BY: NORM WEST	CHKD. BY: SETH BROWN
ISOLATION AREA						3789816	APPD. BY: JEREMIAH SMITH	
LOCATION				TWN. 12S, RNG. 65W, SECTIONS 32			LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PRESSURE TEST SHEET (POST PULLBACK HDD)	
ATLAS OR TITLE				Q-19		DWG. NO. C-104		
N/A							COPYRIGHT PROTECTED © 2018 PATRICK ENGINEERING INC.	

MAINLINE AIR TEST DETAIL & PROCEDURE TM2

MAOP DETERMINED USING THE FOLLOWING TEST METHODS FOR SPECIFIED SECTIONS

TM1 TEST PRESSURE EXCEEDING OF EQUAL TO 150% MAOP, TESTED WITH WATER (150 HYDRO)

TM2 TEST PRESSURE EXCEEDING OF EQUAL TO 150% MAOP, TESTED WITH AIR, NITROGEN, OR NATURAL GAS (150 OTHER)

COLORADO SPRINGS UTILITIES

Designer Instructions PLEASE ENTER THE DATA REQUESTED ON THE HIGHLIGHTED CELLS IN SECTIONS I THROUGH IV OF THIS FORM. DESIGN PRESSURE OF WEAKEST PIPE/COMPONENT MUST EQUAL OR EXCEED DESIRED MAOP.

RECORD OF STEEL PIPELINES FOR 145 PSIG MOP OPERATION

I. JOB DESCRIPTION/LOCATION: Loch Fyne 20" Gas Line Relocation GRID: P-18, P-19, Q-19
TEST DETAIL (F APPLICABLE): TEST 4 60+90 to 101+67

A. CLASS LOCATION: 3 F. TEST DURATION REQUIRED: 21 HR W.R. # 3747144
 B. MOP: 145 G. TEST MEDIUM REQUIRED: Air RELATED W.R. # _____
 C. DESIRED MAOP: 275
 D. TEST PRESSURE (MIN): 413 H. TEST PRESS (MIN) MULTIPLE: 1.5
 E. TEST PRESSURE (MAX): 433 I. TEST PRESS (MAX) ADJUSTER: 20

II. ITEMS LISTED IN THIS SECTION MUST BE PRESSURE TESTED

II. A. DESIGN PRESSURE FOR PIPE/BUTT-WELDED FITTING, P=(2S/D) FET, Where E = 1.0, T = 1.0 HOOP STRESS EQUATION, $\sigma_h = PD/2t$

Insert/Delete Selected Row:

PLAN REF NO.	ITEM NO.	DESIGN QTY	TESTED QTY	ASBUILT QTY	COMPONENT SPECIFICATION	SMYS	WT (t)	D	F	E	T	P	DURING TEST							
													AT MOP		AT MAOP		MINIMUM		MAXIMUM	
													σ_h	%SMYS	σ_h	%SMYS	σ_h	SMYS%	σ_h	SMYS%
1	240-375-920	4107			20" Pipe, STL, 0.375" WT, API 5L-XS2, FBE	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
3	220-647-920	40			20" Elbow, 0.375 WT, STL, 45 Deg, 3R, WPHY 52	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
4	220-692-920	3			20" Elbow, 0.375 WT, STL, 90 Deg, 3R, WPHY 52	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
5	215-796-920	1			REDUCER, CONC, 20"x16", 0.375"x0.375", WPHY-52	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
TARE 1	209-700-920	1			20" CAP, WELD, WPHY52, CARBON STEEL, 0.375" WT	52000	0.375	20.000	0.5	1	1	975	3867	7.4	7333	14.1	11000	21.2	11533	22.2
TARE 4	209-700-916	1			16" CAP, WELD, WPHY52, CARBON STEEL, 0.375" WT	52000	0.375	16.000	0.5	1	1	1219	3093	5.9	5867	11.3	8800	16.9	9227	17.7

II. B. VALVES, REGULATORS, COMPONENTS AND OTHER FITTINGS INSERT/DELETE ROWS:

PLAN REF NO.	ITEM NO.	DESIGN QTY	TESTED QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	MANUFACTURER'S PRESSURE RATING (PSIG)	MANUFACTURER'S TEST PRESSURE (PSIG)

III. ITEMS LISTED IN THIS SECTION ARE SINGLE PRE-CERTIFIED COMPONENT INSTALL ONLY. PRESSURE TEST NOT REQUIRED. SOAP TEST REQUIRED.

III. A. DESIGN PRESSURE FOR PIPE/BUTT-WELDED FITTING, P=(2S/D) FET, Where E = 1.0, T = 1.0 HOOP STRESS EQUATION, $\sigma_h = PD/2t$

PLAN REF NO.	ITEM NO.	DESIGN QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	SMYS	WT (t)	D	F	E	T	P	AT MOP						
												σ_h	%SMYS	σ_h	%SMYS	σ_h	SMYS%	

III. B. VALVES, REGULATORS, COMPONENTS AND OTHER FITTINGS

PLAN REF NO.	ITEM NO.	DESIGN QTY	ASBUILT QTY	PRE-CERTIFIED COMPONENTS(S)	MANUFACTURER'S PRESSURE RATING (PSIG)	MANUFACTURER'S TEST PRESSURE (PSIG)

IF, DURING THE TEST, THE PIPELINE IS TO BE STRESSED TO 20% OF SMYS OR GREATER AND THE TEST MEDIUM IS OTHER THAN WATER, A SPECIAL LEAK SURVEY OR LEAK TEST IS REQUIRED. IF APPLICABLE, CONDUCT THE SPECIAL LEAK TEST OR SURVEY AT 100 PSIG AND HOLD PRESSURE AT THIS LEVEL FOR A MINIMUM OF 10 MIN. CONDUCT LEAK SURVEY IF NATURAL GAS IS USED. SUBSTITUTION OR ADDITION OF MATERIAL LISTED ON THIS SHEET IS NOT PERMITTED UNLESS APPROVED BY ENGINEERING SUPERVISOR.

CALC/ANALYSIS BY: DATE: 03/23/2023 ENGINEERING SUPERVISOR'S APPROVAL: _____ DATE: _____

ENGINEERING REMARKS: _____

IV. INFORMATION TO BE SUPPLIED BY TEST PERSONNEL

A. TEST PERFORMED BY: _____ COMPANY: _____ TEST # _____

B. (SIGNATURE): _____ TEST DATE: _____

C. LOCATION OF TEST: _____

D. FACILITY TESTED: REGULATOR STATION SPOOL (FAB SHOP) MAIN OTHER (SPECIFY IN REMARKS)

E. TEST MEDIUM (CHECK): AIR NATURAL GAS INERT GAS (NITROGEN) WATER

F. TEST PRESSURE: MAX (PSIG): _____ MIN (PSIG): _____

G. TEST DURATION: START TIME: _____ END TIME: _____ DURATION (HR:MIN): _____

H. TEST PRESSURE DOC'D: MECHANICAL CHART GAUGE OTHER

I. RECORDING DEVICE NO: _____ CALIBRATION DUE DATE: _____

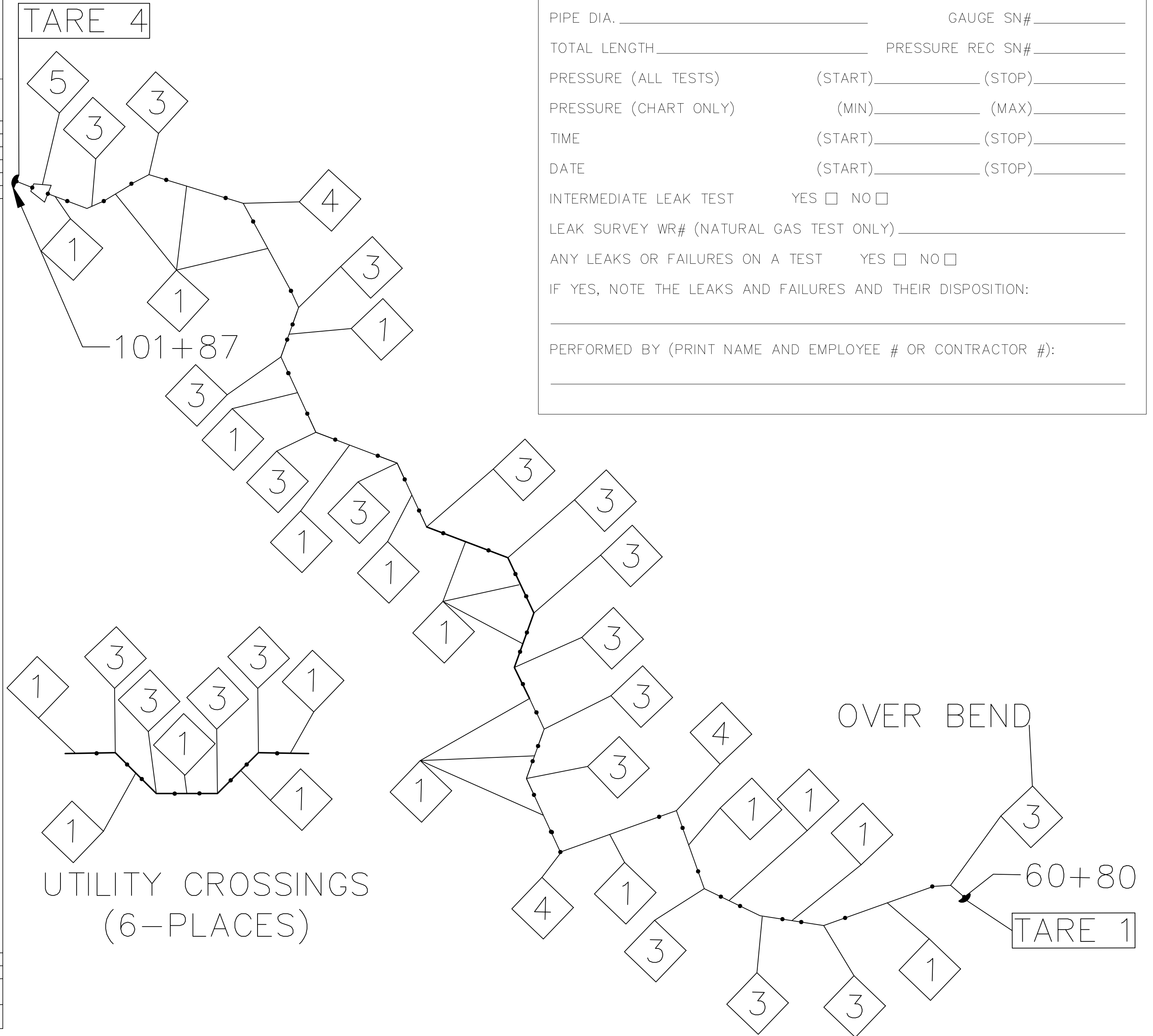
J. LEAK TEST CONDUCTED: YES* IF YES, IDENTIFY METHOD(S) LEAK SURVEY SOAP TEST INTERMEDIATE LEAK TEST (100 PSIG MINIMUM)
 NO

K. PIPE MANUFACTURER'S NAME: _____ P.O. NO.: _____ HEAT CODE NO.: _____

L. WELDING ELECTRODE MFR: _____ PART NUMBER: _____ LOT NUMBER: _____

REMARKS: _____

CSU REPRESENTATIVE (Sign/Print): _____ DATE: _____



AS-BUILT DRAWING—PRESSURE TEST DATA TEST # _____

DESCRIPTION: _____ TEST MEDIUM: _____ TEST METHOD: _____

AIR GAUGE
 NITROGEN CHART
 WATER SOAP
 NATURAL GAS

DESCRIPTION POINTS: _____

PIPE DIA. _____ GAUGE SN# _____

TOTAL LENGTH _____ PRESSURE REC SN# _____

PRESSURE (ALL TESTS) (START) _____ (STOP) _____

PRESSURE (CHART ONLY) (MIN) _____ (MAX) _____

TIME (START) _____ (STOP) _____

DATE (START) _____ (STOP) _____

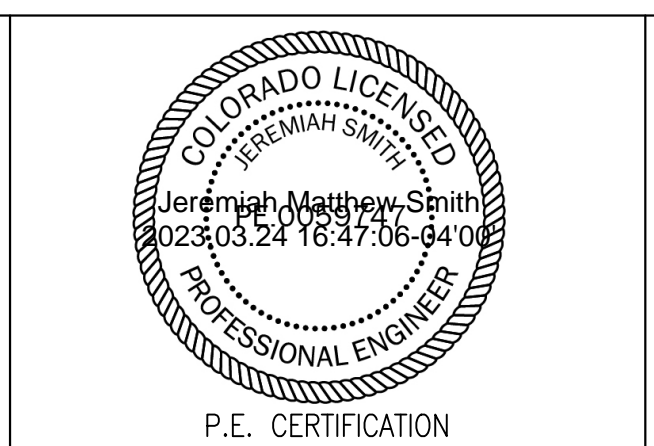
INTERMEDIATE LEAK TEST YES NO

LEAK SURVEY WR# (NATURAL GAS TEST ONLY) _____

ANY LEAKS OR FAILURES ON A TEST YES NO

IF YES, NOTE THE LEAKS AND FAILURES AND THEIR DISPOSITION: _____

PERFORMED BY (PRINT NAME AND EMPLOYEE # OR CONTRACTOR #): _____



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
5	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS				
4	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS				
3	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS				
	N/A		BY:	DATE:	APPROV:			
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A			
N/A		N/A	TWN. 12S, RNG. 65W, SECTIONS 31, 32, 33	Q-19, P-18, P-19				
				SYSTEM MAOP:				
				SYSTEM MOP:				

HP SERVICE:

DISTRIBUTION:

FEEDER:

TRANS. BY DEF.

TRANS v 20%:

RELATED W/O #s

3747144

3789816

PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794

CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675

SHEET NO. 7 OF 60 SCALE: NTS

PATRICK ENGINEERING TEAM

DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH

LOCH FYNE 20" GAS PIPELINE

COLORADO SPRINGS, COLORADO

PRESSURE TEST SHEET (TEST 4)

DWG. NO. **C-105**

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-C3D-C3D.dwg LAYOUT NAME: C-106 PLOTTED: Wednesday, March 22, 2023 - 4:27pm USER: rwest

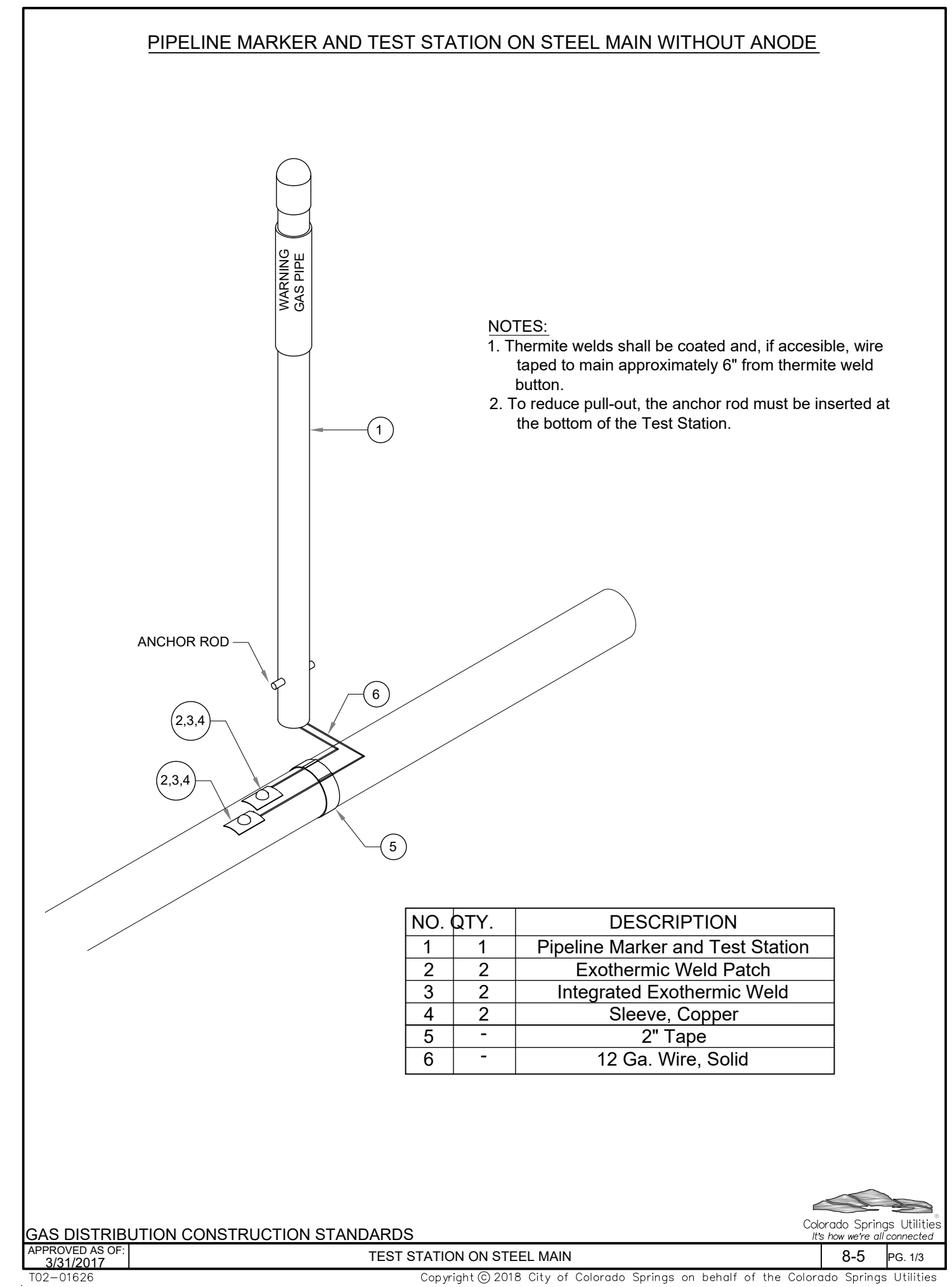
TIE-IN PROCEDURES		
STEP NO.	CHECK COMPLETE	PROCEDURE
1		INSTALL ALL MAINS AND FITTINGS PER DRAWINGS
2		INSTALL TEMPORARY 20", 16", 10" AND 2" STEEL END CAPS AS NEEDED FOR PRESSURE TESTING. PRESSURE TEST THROUGH END CAP FITTINGS
3		PRESSURE TEST ALL NEW PIPING IN SEGMENTS PER PRESSURE TEST SHEETS
4		LEAVE APPROX 50 PSIG OF AIR PRESSURE ON COMPLETED SEGMENTS UNTIL READY TO MAKE TIE-INS
5		COMPLETE TIE-INS OF ALL NEW PIPELINE SEGMENTS AFTER ALL PRESSURE TESTS HAVE BEEN COMPLETED
6		WITH THE EXISTING 20" VALVE CLOSED, COMPLETE 20" TIE-IN AT MCCLINTOCK STATION (SHEET C-200)
7		INSTALL BYPASS AND PURGE AND DE-GAS THE EXISTING 10" LINE, AND COMPLETE 10" STEEL TIE-IN AT MCCLINTOCK STATION (SHEET C-200)
8		PURGE AND DE-GAS THE 2" LINE, AND COMPLETE 2" STEEL TIE-IN AT MCLINTOCK STATION (SHEET C-200)
9		COMPLETE TIE-IN OF THE NEW 20" LINE TO THE EXISTING 16" LINE AT FORESTGATE DR. WEST OF BLACK FOREST RD. (SHEET C-234)
10		VERIFY ODORIZER SET UP FOR PURGE OF NEW STEEL PIPE HAS BEEN COMPLETED (SHEET C-200)
11		INSTALL GROUNDED PURGE STACK AT TIE-IN POINT ON FORESTGATE DR WEST OF BLACK FOREST RD. TO BE MANNED BY A QUALIFIED STATION TECHNICIAN WITH CGI AND RADIO. (SHEET C-234)
12		PRIOR TO STARTING PURGE OF THE 20", COMPLETE A TAILGATE MEETING WITH PURGE TEAM ABOUT THE PURGE PROCEDURE, AND COMPLETE A RADIO CHECK.
13		INFORM TECHNICIAN AT THE PURGE LOCATION THAT THE PURGE IS BEGINNING THEN SLOWLY OPEN THE 20' VALVE AT MCCLINTOCK TIE-IN. THROTTLE THROUGH THE VALVE TO CONTROL PUGE RATE (SHEET C-200)
14		TECHNICIAN TO MONITOR PURGE WITH CGI AT FORESTGATE DR AND BLACK FOREST RD, AND VERIFY THAT AT 2 READINGS OF AT LEAST 80% GAS IS RECORDED. TECHNICIAN SHALL INFORM PURGE TEAM THAT PURGE CAN BE COMPLETED, AND CLOSE THE PURGE VENT.
15		VERIFY SUFFICIENT PICKLING OF NEW STEEL PIPE HAS BEEN ACHIEVED
16		VERIFY 20" VALVE AT MCCLINTOCK STATION TIE IN IS FULLY OPEN (SHEET C-200)
17		VERIFY THAT PRESSURE IN THE NEW 20" LOCH FYNE PIPELINE HAS STABILIZED
18		COMPLETE THE TAP ON THE 16" SPHERICAL TEE AT THE WEST TIE-IN TO COMPLETE THE CONNECTION OF THE 20" PIPELINE TO THE 16" PIPELINE (SHEET C-234)
19		INSTALL GROUNDED PURGE VENT AND PURGE AIR FROM THE NEW 10" STEEL LINE AT MCCLINTOCK STATION (SHEET C-200)
20		INSTALL GROUNDED PURGE VENT AND PURGE AIR FROM NEW 2" STEEL LINE AT MCCLINTOCK STATION (SHEET C-200)
21		VERIFY ALL MAINS ARE LOCATABLE

ANY DEVIATIONS FROM PROCEDURES MUST BE COMMUNICATED TO GPD (SCOTT JENSEN 605-430-4798)
 -CREW SUPERVISOR TO CHECK OF EACH STEP OF THE PROCEDURE AS IT IS COMPLETED IN THE FIELD
 -VERIFY AND ADD TEST STATIONS ACCORDING TO CATHOIC PROTECTION NOTES

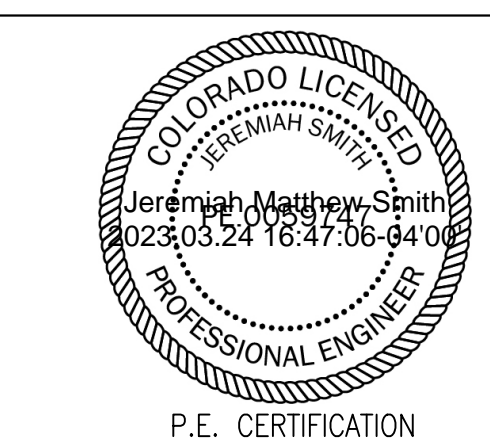
TIE-IN PROCEDURE APPROVED BY			
NAME	TITLE	SIGNATURE	DATE
SCOTT JENSEN	ENGINEER		
JOSH RICHARD	CONSTRUCTION LEAD		

TIE-IN COMPLETED			
NAME	TITLE	SIGNATURE	DATE
SCOTT JENSEN	ENGINEER		
JOSH RICHARD	CONSTRUCTION LEAD		

CATHODIC PROTECTION NOTES	
	INSTALL TEST STATIONS AT LOCATIONS SHOWN IN THE DESIGN PACKAGE.
	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003
	TEST STATIONS SHALL BE ATTACHED PER THE DETAIL BELOW.



CONSTRUCTION NOTES	
	ALL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, COUNTY, AND CITY LAWS AND STANDARDS
	ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH APPLICABLE CSU STANDARDS AND SPECIFICATIONS.
	ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH PERMITS ISSUED FOR THE PROJECT
	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
	IF ROCK IS ENCOUNTERED IN THE TRENCH, CONTRACTOR SHALL INCREASE TRENCH DEPTH BY 1' IN ORDER TO PLACE 12" OF ROCK-FREE PADDING SOIL PRIOR TO LOWERING THE PIPELINE INTO THE TRENCH.
	THE PIPELINE SHALL MEET THE MINIMUM HORIZONTAL SEPARATION FROM PARALLEL UTILITIES.
	PRIOR TO BACKFILLING THE TRENCH WHERE ROCK IS PRESENT IN THE BACKFILL, 12" OF ROCK-FREE SOIL SHALL BE FILLED OVER THE TOP OF THE PIPELINE. NO ROCK GREATER THAN 6" WILL BE ALLOWED IN THE REMAINING BACKFILL. NO ROCK WILL BE ALLOWED IN THE TOP 12" OF THE TRENCH.
	PREFERRED METHOD OF BACKFILLING THE TWO ROAD CROSSING IS USING A CDOT APPROVED EXCAVATABLE FLOWABLE FILL. OTHERWISE THE BACKFILL WILL NEED TO BE COMPACTED IN 6" MAXIMUM LEFTS AND COMPACTED TO 98% PROCTOR READING
	FOR BOTH ROAD CROSSING, PAVEMENT SHALL BE THE SAME AS THE EXISTING CROSSING.
	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
	THE COTTONWOOD CREEK SHALL BE COMPLETED USING AN HDD IN ACCORDANCE WITH THE HDD DESIGN THAT IS PART OF THIS DESIGN.
	PRIOR TO PULLING IN THE HDD PIPE STRING, AN AIR TEST WILL BE COMPLETED ON THE PIPE, AFTER PULL BACK, THE PIPE SEGMENT WILL BE AIR TESTED AGAIN.
	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
5	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS				
4	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS				
3	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS				
NO.	N/A	BY:	DATE:	APPVD:				
PERMIT INFORMATION				ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A	
N/A				N/A	TWN. 12S, RNG. 65W, SECTIONS 31, 32, 33	Q-19, P-18, P-19	SYSTEM MAOP:	
							SYSTEM MOP:	
						HP SERVICE:	<input type="checkbox"/>	
						DISTRIBUTION:	<input checked="" type="checkbox"/>	
						FEEDER:	<input type="checkbox"/>	
						TRANS. BY DEF.	<input type="checkbox"/>	
						TRANS v 20%:	<input type="checkbox"/>	
							RELATED W/O #s	3747144
								3789816
							CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-8794
							SHEET NO. 7 OF 60	PHONE: (719) 668-3675
							SCALE: NTS	
							PATRICK ENGINEERING TEAM	
							DWN BY: NORM WEST	CHKD. BY: SETH BROWN
							APPD. BY: JEREMIAH SMITH	
							LOCH FYNE 20" GAS PIPELINE	
							COLORADO SPRINGS, COLORADO	
							CONSTRUCTION NOTES	
							DWG. NO. C-106	

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs_UIC-C3B-C3J.dwg LAUOUT NAME: D-100 PLOTTED: Wednesday, March 22, 2023 - 4:27pm USER: rtwet

**TRAFFIC CONTROL FOR STREET CONSTRUCTION,
UTILITY WORK AND MAINTENANCE OPERATIONS
CITY OF COLORADO SPRINGS**

SPECIFIC REQUIREMENTS

Temporary Traffic Barrier:

The Contractor shall install Pre-cast Type 7F concrete, Type IV concrete, or Plastic Water Filled barrier between any lanes carrying public traffic and any excavation, obstacle, or storage area when the following conditions exist:

- When an excavation is 12 inches or greater in depth a minimum clear zone (CZ) in feet shall be required for the following design speeds:

30 MPH	35 MPH	40 MPH	45 MPH	50 MPH	55 MPH	60 MPH
12' CZ	14' CZ	16' CZ	20' CZ	22' CZ	24' CZ	30' CZ

- If the minimum Clear Zone cannot be maintained, then a temporary traffic barrier shall be required for work site protection.
- A temporary traffic barrier shall be supplemented with standard delineation (reflectors), pavement markings, or channelizing devices to provide nighttime visibility for vehicle traffic. The delineation or pavement marking color shall conform to the latest edition of the MUTCD.
- Temporary traffic barrier ends shall be installed in accordance with AASHTO's "Roadside Design Guide" by flaring until the end is outside the acceptable clear zone (clear zone is based on 85th percentile speed) or by providing crashworthy end treatments that meet or exceed MASH 350 Report.
- A temporary traffic barrier is required when the contractor has installed a permanent obstacle and the protective system, such as guardrail has not been installed or when a portion of an existing protective guardrail has been removed.
- A temporary traffic barrier is required when materials or equipment are stored within the clear zone of the work site.
- The use of a 12 ft. transition section is allowed at the downstream end of the installation pointing away from approaching traffic out of the clear zone, or at locations outside the clear zone, generally more than 30 ft. from the high speed travel lane edge.
- Glare Screens may be required, if used the blade height shall be 24".

Excavation and Trenches:

Excavations and/or trenches, which cannot be properly back-filled and patched prior to the end of the work day, shall be bridged to permit unobstructed traffic flow. Trench walls and adjacent soils shall be sufficiently stabilized prior to the use of steel plates for bridging.

Where traffic must cross trenches:

- The use of steel plates shall be approved by City Traffic Engineering prior to installation.
- The Colorado Springs Fire Department - Heavy Rescue Response Group shall be notified when the excavation or trench is 5 feet or greater in depth.
- Steel Trench Plate width and thickness requirements:

18" or less in width	Minimum thickness of 3/4"
> 18" in width to 72" in width	Minimum thickness of 1"

- The thickness of Steel Plates for trench widths exceeding 72" a structural design shall be prepared by a Licensed Professional Engineer Registered in Colorado.
- Steel Plates can be installed in two ways. First, the Steel Plates can be installed flush with the existing pavement, milling out the pavement surface to ensure that the top of plate elevation matches the existing elevations of adjacent pavement surface. Second, the Steel Plates can be installed on top of the asphalt with transitional ramps (cold mix) on all four sides of the plates, with feathered edges to match the existing asphalt (8% or a lesser slope).
- The Steel Plates shall extend beyond the edge of the trench a minimum of 18" but no more than 30" on both sides.
- A non-skid surface treatment shall be applied to the entire surface area of the plate in the direction of traffic flow.
- The contractor should avoid using a long series of plates that run parallel to traffic wheel paths. If allowed, the length of a series of plates running parallel to traffic wheel paths shall not exceed 30'.
- The trench shall be adequately shored to support the steel plates and traffic loads.
- Steel Plates shall be installed to operate with minimum noise.
- All Steel Plates within the right-of-way, whether used in or out of the traveled way, shall be without deformation (free from any clips, chains, attachments, weldments, or surface irregularities).
- No one is allowed in the trench while covered by the Steel Plate.
- The use of Steel Plates shall not exceed four weeks and Rough Road or Bump signs shall be required during this period of time.

Arrow Boards:

Arrow Boards shall be furnished as required by project conditions and shall meet the following requirements:

Type	Minimum Size	Min. # of Panel Lamps	Min. Legibility Distance
A	48" x 24"	12	1/2 mile
B	60" x 30"	13	3/4 mile
C	96" x 48"	15	1 mile

(Example: length of arrow equals 48"; width of arrowhead equals 24")

An arrow panel is a sign with a matrix of elements capable of flashing or showing sequential displays. This sign shall provide additional warning and directional information to assist in merging and channeling road users through or around a temporary traffic control zone. The panel face shall be rectangle in shape, solid construction and finished in non-reflective black. The arrow panel shall have the capability of the following mode selection: left arrow, right arrow, left and right arrow and caution. The caution mode consists of four or more flashing lamps arranged in a pattern which does not indicate a direction. Arrow panels shall include an automatic photocell sensor type signal lamp dimmer with manual override and shall be capable of a minimum of 50 percent dimming from rated lamp voltage.

Portable Variable Message Signs:

Variable Message Signs (VMS) are temporary traffic control devices with the flexibility to display a variety of messages. Each message shall consist of one or two phases. A phase consists of up to three lines of eight characters per line. Each character module shall use at least five wide and seven high pixel matrices.

- VMS's shall be used on all major residential collector streets and higher classification of roadways, including roadway closures and detour routes. Also, VMS's shall be used when lane reductions can not handle the normal volume of traffic (no greater than 1,000 vehicles per lane per hour).
- VMS's shall be used to advise vehicular traffic of alternate routes and expected delays due to construction activity.
- VMS's shall be used to notify the general public of upcoming construction activities up to two weeks prior to start of construction.
- VMS's shall be solar powered or a non-internal combustion device.
- VMS's shall be equipped with a power source and a battery back-up to provide continuous operation when failure of the primary power source occurs.
- VMS's shall be capable of 360 degree rotation and elevated so the bottom of the sign is 5 feet above the ground.
- The sign shall be visible from one-half mile during both daytime and nighttime conditions.
- The message shall be legible from a minimum of 650 feet.
- The sign shall automatically adjust its light source to meet nighttime legibility requirements.

**APPENDIX C
GENERAL GUIDE TO WORK ZONE TRAFFIC CONTROL**

General Guide to Work Zone Traffic Control										
	Interstate (I)	Expressway (E)	Principal Arterial (P)	Minor Arterial (M)	Industrial Commercial	Major Res. Collector	Minor Res. Collector	Residential Street	Minor Residential	Highway Minor Res.
Number of Traffic Lanes	2, 4, 6	2, 4, 6	2, 4, 6	2, 4, 6	2, 3, 4	2, 3, 4	2, 3	2	2	2
ADT	80,000	75,000	15,000 to 25,000	10,000 to 20,000	7,000 to 10,000	5,000 to 10,000	1,000 to 5,000	750 to 150	100 to 200	200
Time Restrictions (No Work 6 AM to 8 AM & 4 PM to 7 PM)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Noise Restriction (7 PM to 7 AM in All Residential Areas)			possibly	possibly	possibly	yes	yes	yes	yes	yes
Shoulder Closures Allowed	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Sidewalk Closures Allowed	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Single Lane Closure (8 AM to 3 PM) Allowed	yes-night	yes-night	yes	yes	yes	yes	yes	yes	yes	yes
Multi-Lane Closure (Weekends & Nights) Allowed	note #6	note #6	note #6	yes	yes	yes	yes	yes	yes	yes
Street Closure Allowed	note #6	note #6	note #6	note #6	yes	yes	yes	yes	yes	yes
Night Work Allowed	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Weekend Work Allowed	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Flagger Required			possibly	possibly	possibly	yes	yes	yes	yes	yes
Detour Routes (reasonable distance w/o cut thru's) Required	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Portable VMS's Required	yes	yes	yes	yes	possibly	possibly	possibly	possibly	possibly	possibly
Arrow Boards Required	yes	yes	yes	yes	possibly	possibly	possibly	possibly	possibly	possibly
Portable Traffic Signals Allowed	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Note:
* This table represents general requirements under average conditions.
1. All subject to change pending on site evaluation, roadway design, ADT, hourly vpi, speed, # of lanes, weather, time of year, school walk routes, Fire, Transit, and Truck routes.
2. All roadways which are under CDOT jurisdiction requires CDOT's approval and permit.
3. Flagger required for One-Lane Roadways and Truck Access (entering & exiting).
4. Uniform Traffic Control (UTC) required where traffic is routed against a traffic signal.
5. Requires extensive coordination with City, County and CDOT and only allowed under extreme conditions.
6. All requirements subject to City Code.

**APPENDIX D
LETTER CODES & FORMULAS**

LETTER CODES

Road Type	Distance between Signs in Ft (metric)		
	A	B	C
Urban (low speed)	100 (30)	100 (30)	100 (30)
Urban (high speed)	350 (100)	350 (100)	350 (100)
Rural	500 (150)	500 (150)	500 (150)
Expressway / Freeway	1000 (300)	1500 (450)	2640 (800)

Type of Taper	Taper Length (L)*
Merging Taper	At least L
Shifting Taper	At least 0.5 L
Shoulder Taper	At least 0.33 L
One-Lane, Two-Way Traffic Taper	100 ft (30m) maximum
Downstream Taper	100 ft (30m) per lane

FORMULAS

Speed Limits of 40 mph (60 km/h) or less / Speed Limits of 45 mph (70 km/h) or >:

$L=WS^2$ 60	$(L=WS)^2$ 155	$L=WS$ 1.6	$(L=WS)$ 1.6
----------------	-------------------	---------------	-----------------

Lane Width	Speed in MPH	25 MPH	30 MPH	35 MPH	40 MPH	45 MPH	50 MPH	55 MPH	60 MPH	65 MPH
10 ft. Merging Taper	105' 150' 205' 270' 450' 500' 550'								600' 650'	
11 ft. Merging Taper	115' 165' 225' 294' 495' 550' 605'								660' 715'	
12 ft. Merging Taper	125' 180' 245' 320' 540' 600' 660'								720' 780'	

Where: L = Taper length in feet (meters)
W = Width of offset in feet (meters)
S = Posted speed limit, or off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph (km/h)

* Distances are shown in feet (meters)

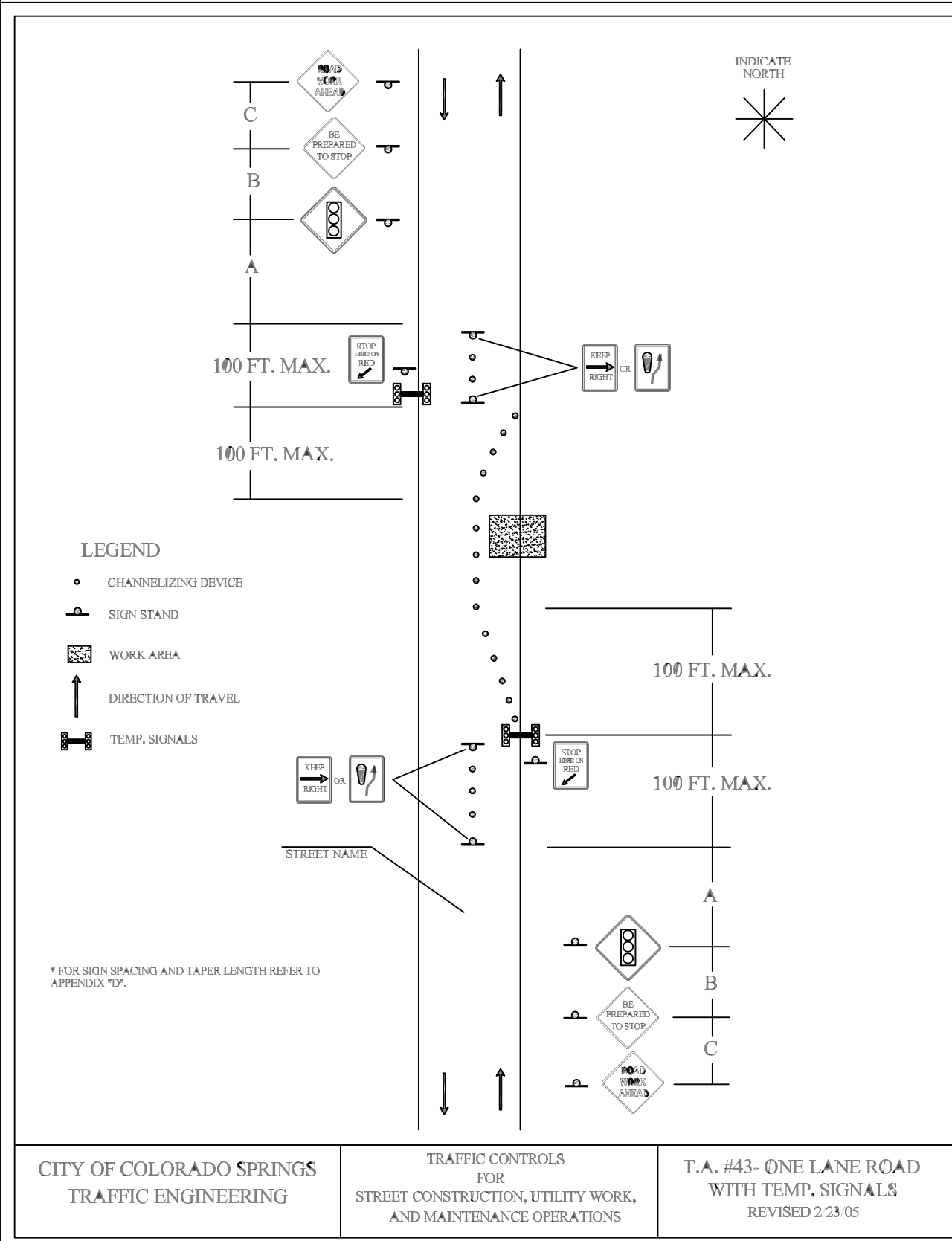
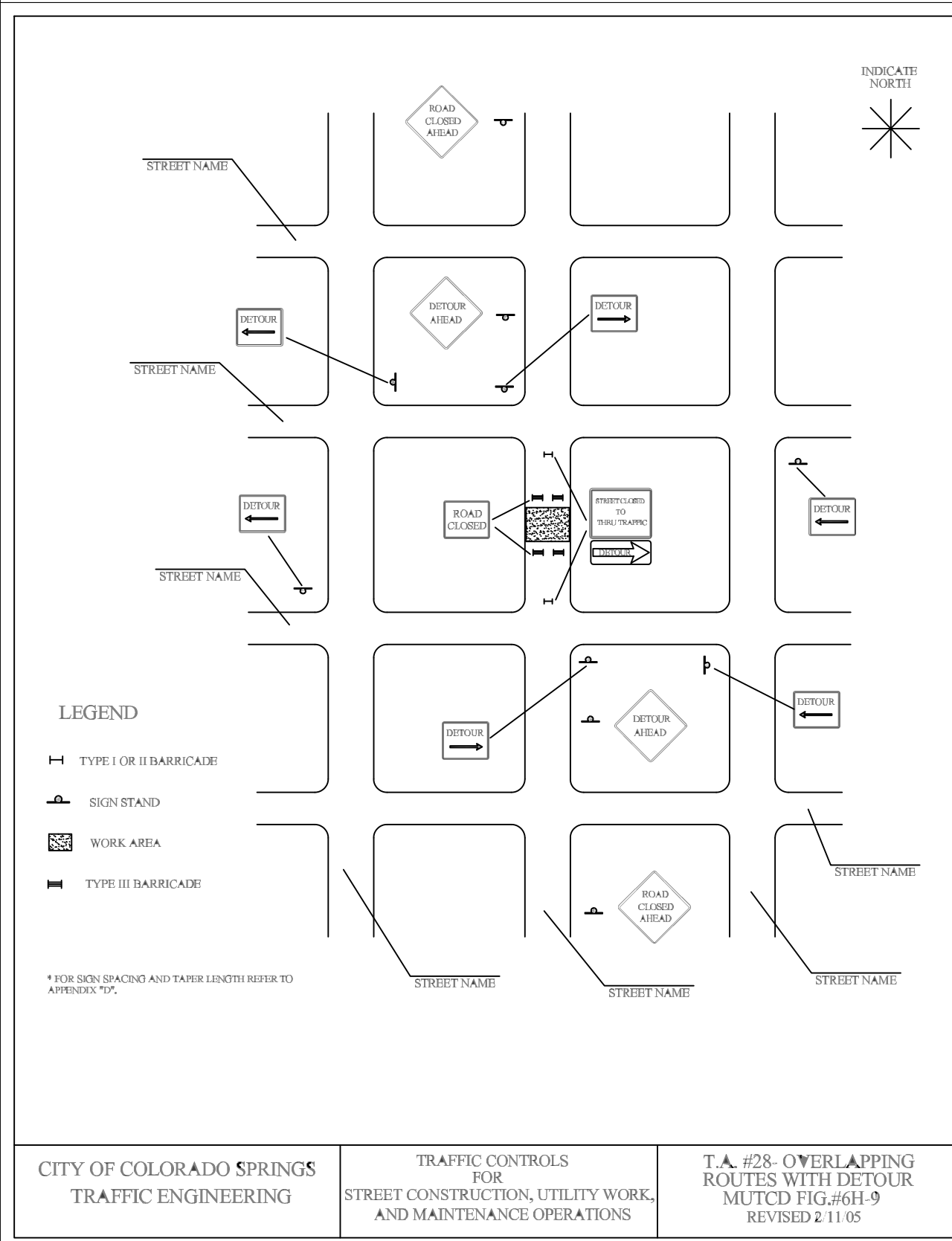
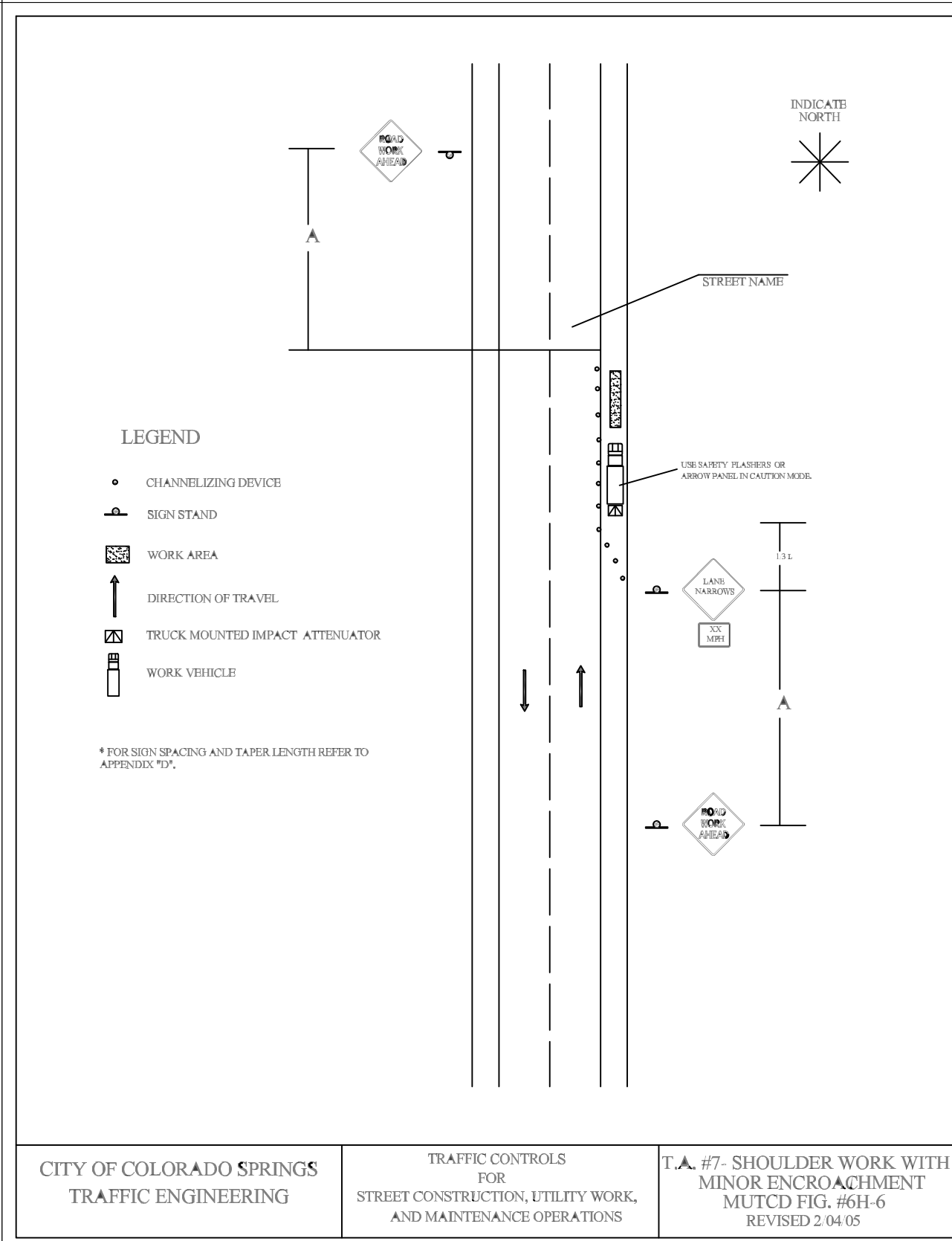
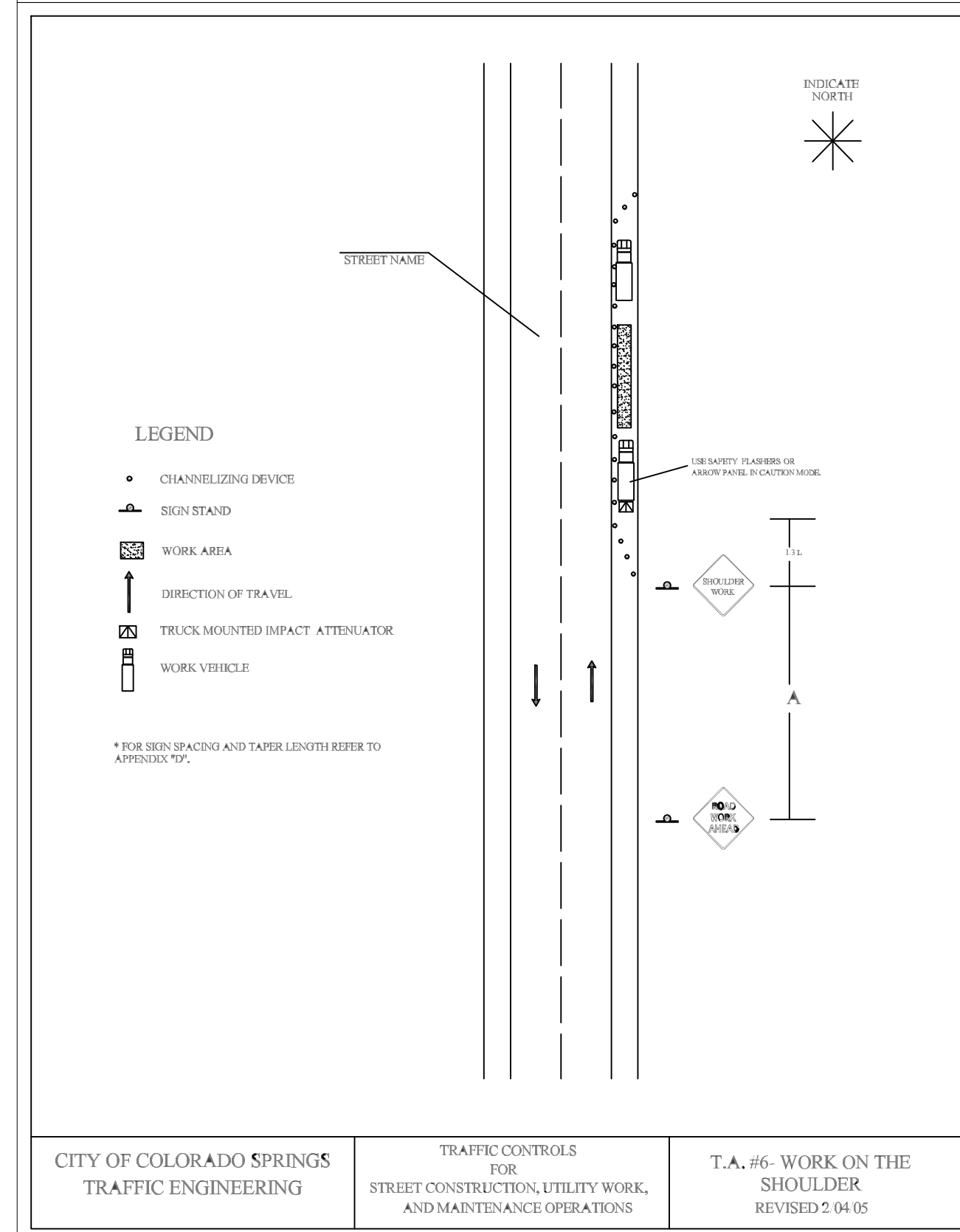
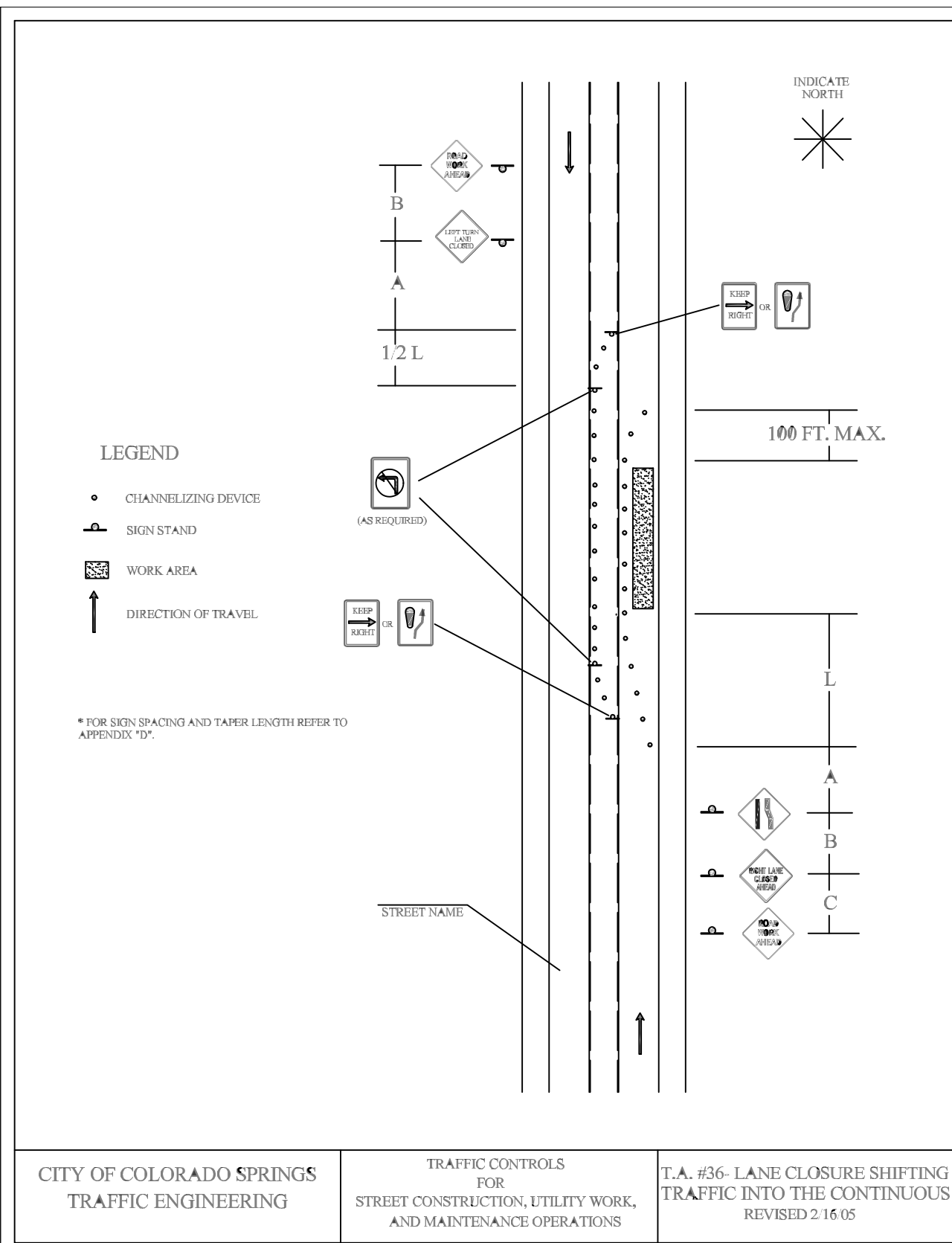
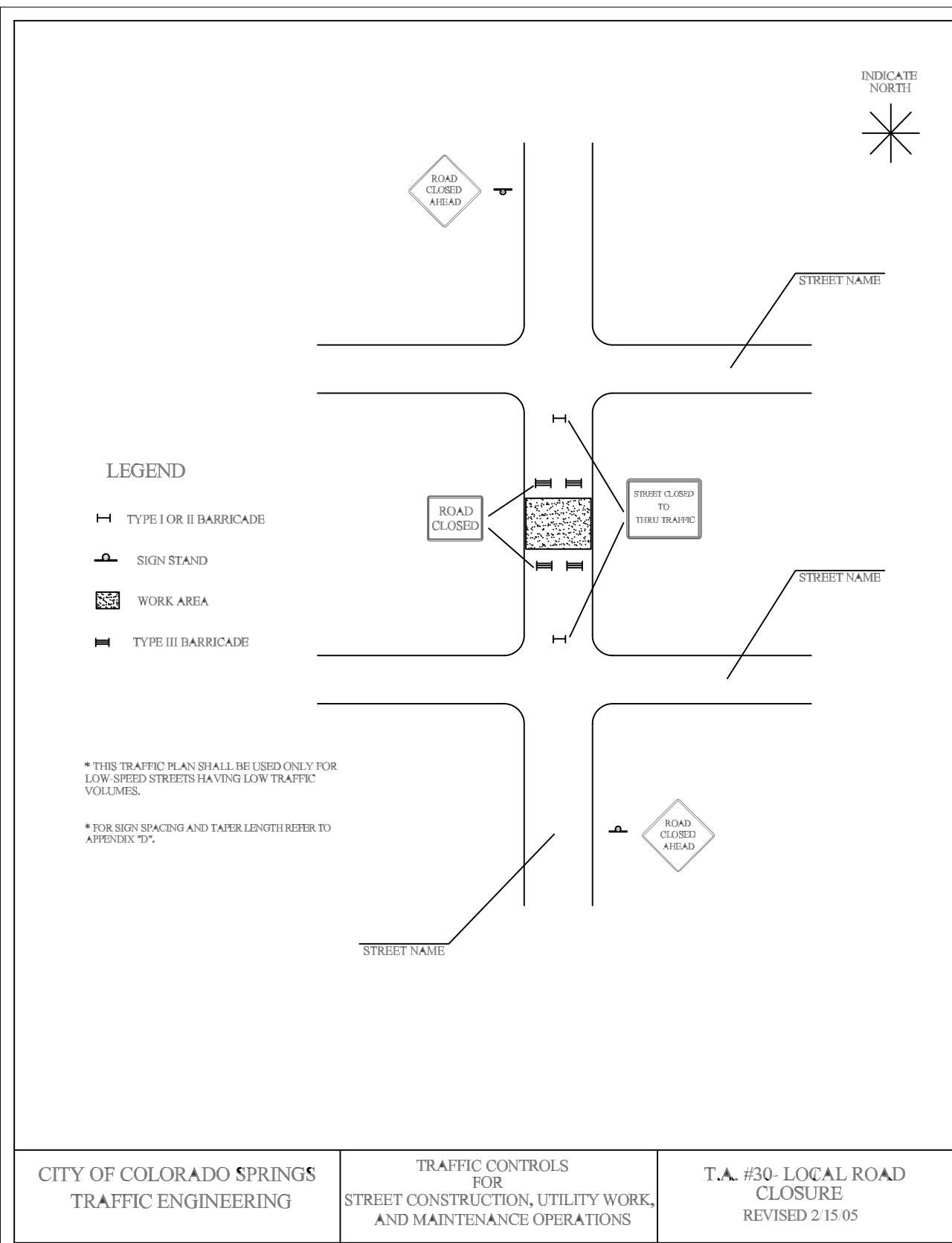
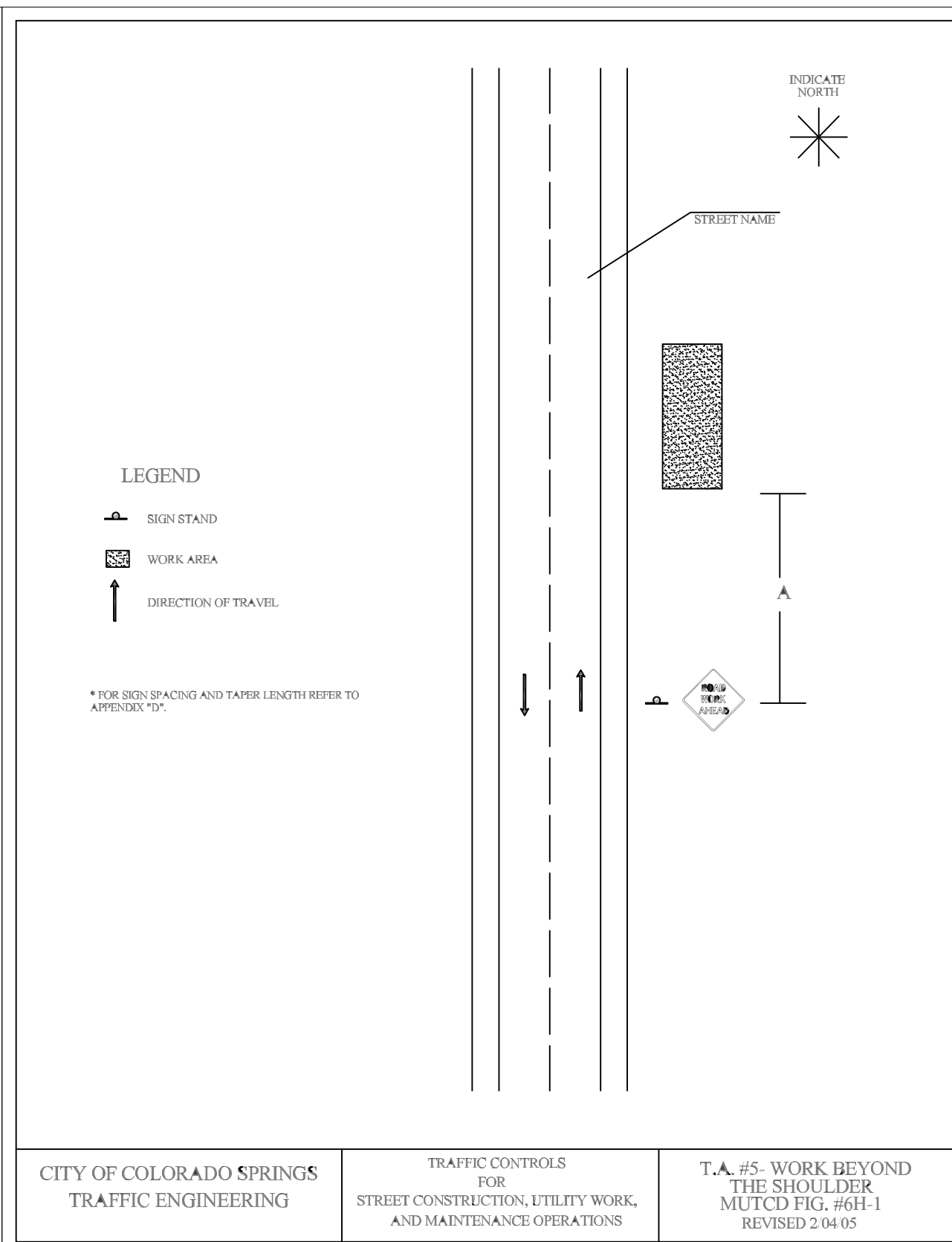
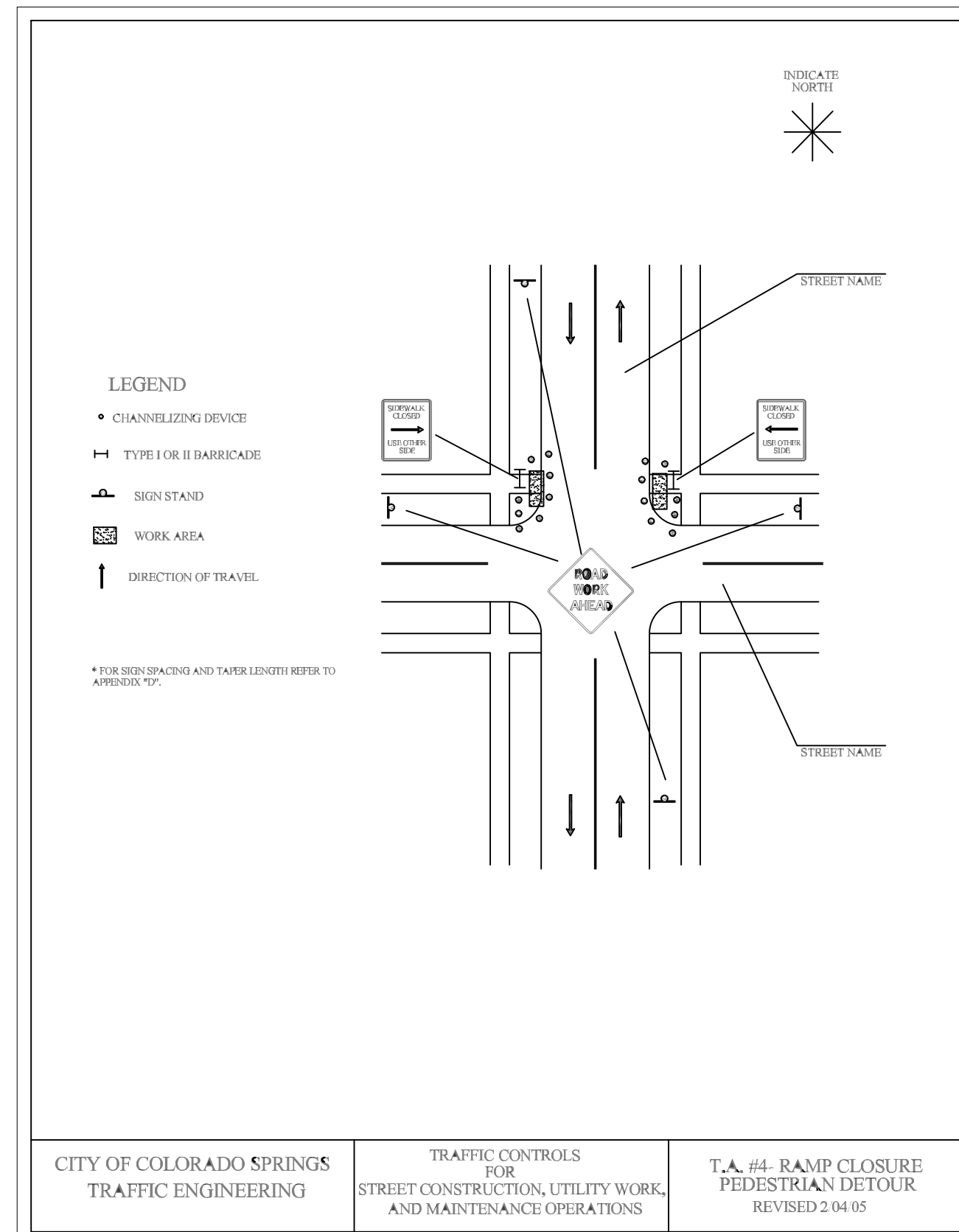


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PROJ. NO. 22282.003

REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			
NO.	N/A	BY:	DATE:	APPVD:			
PERMIT INFORMATION				ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A
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				SYSTEM MAOP:	275 psig		
				SYSTEM MOP:	145 psig		
				HP SERVICE:	<input type="checkbox"/>	3747144	PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794
				DISTRIBUTION:	<input checked="" type="checkbox"/>		CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675
				FEEDER:	<input type="checkbox"/>		SHEET NO. 9 OF 60 SCALE: NTS
				TRANS. BY DEF.	<input type="checkbox"/>		PATRICK ENGINEERING TEAM
				TRANS v 20%	<input type="checkbox"/>	3789816	DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH
<p align="center">LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO TRAFFIC CONTROL NOTES</p>							DWG. NO. D-100
							<p align="right">COPYRIGHT PROTECTED © 2018 PATRICK ENGINEERING INC.</p>

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-CSD-UG.dwg LAYOUT NAME: D-101 PLOTTED: Wednesday, March 22, 2023 - 4:27pm USER: rwast



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Indianapolis, IN 46268
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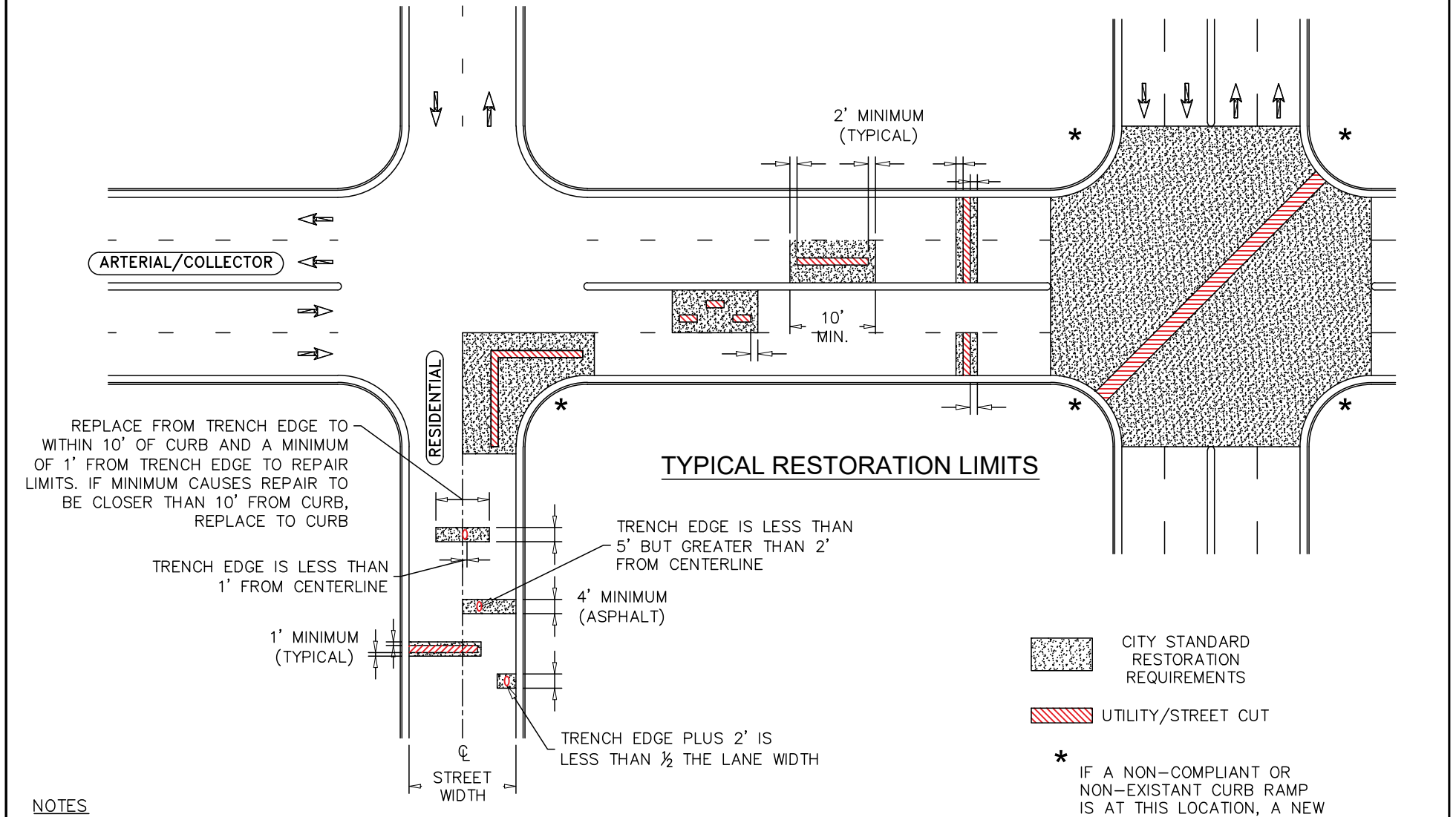
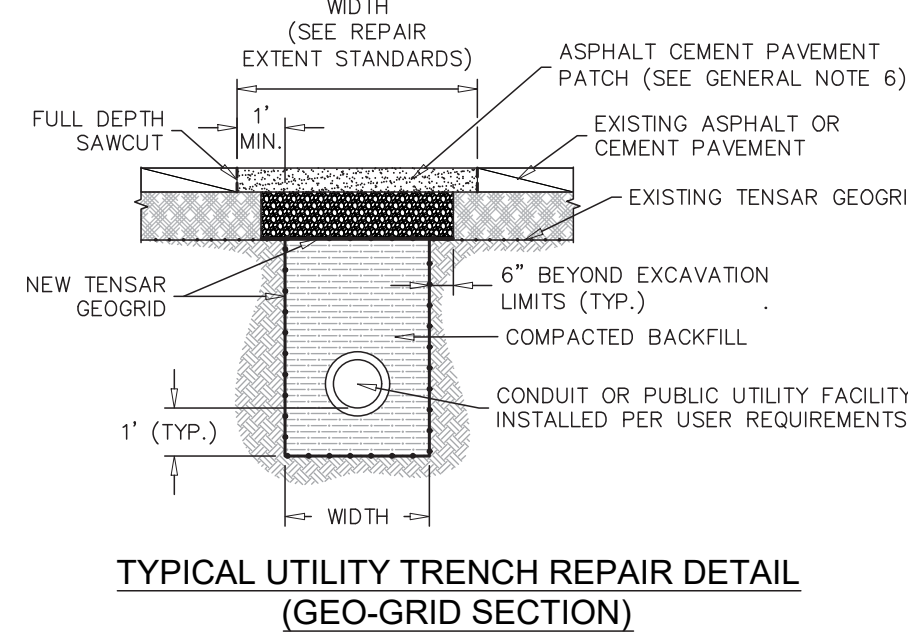
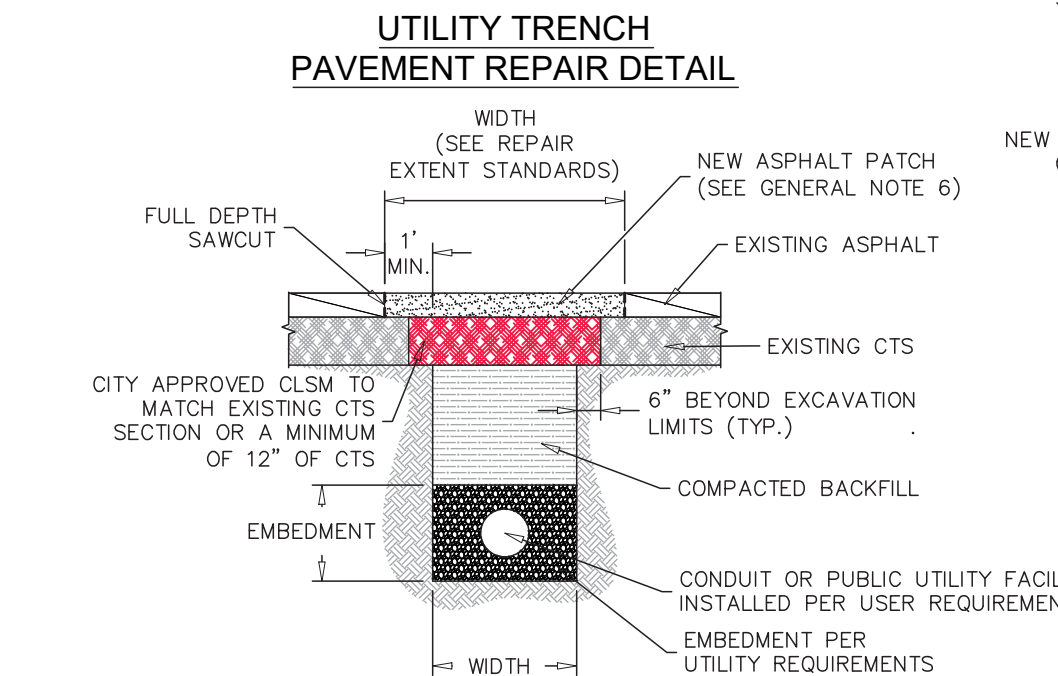
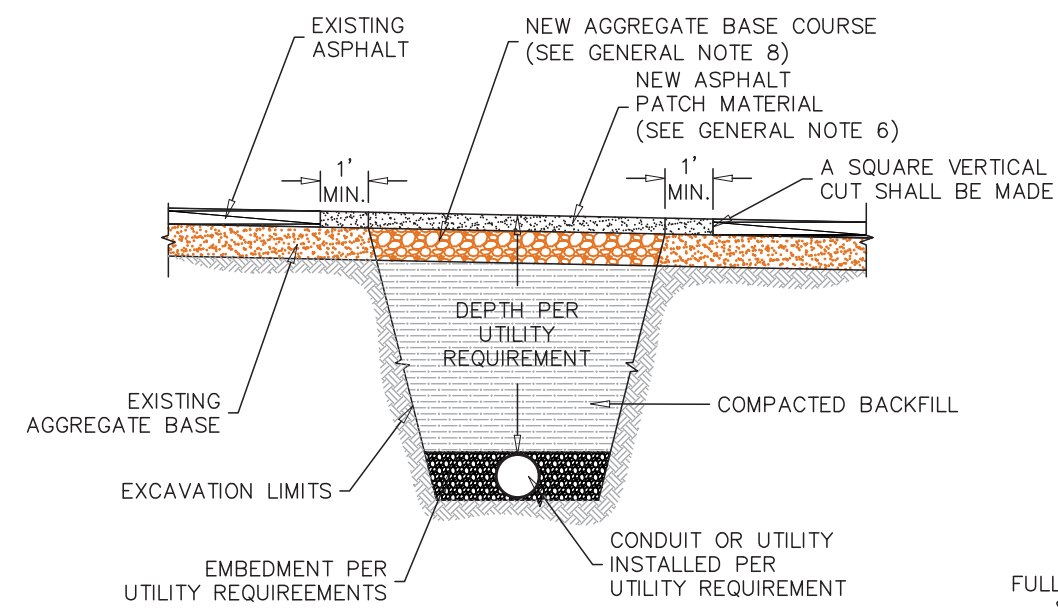
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REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196	
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5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675	
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 10 OF 60	SCALE: NTS	
N/A				BY: DATE: APPVD:			PATRICK ENGINEERING TEAM		
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE		RELATED W/O #s	DWN BY: NORM WEST	CHKD. BY: SETH BROWN	
N/A		N/A	TWN. 12S, RNG. 65W, SECTIONS 31, 32, 33	R-18, R-19, Q-19, P-18, P-19		3789816	APPD. BY: JEREMIAH SMITH		
LOCH FYNE 20" GAS PIPELINE								COLORADO SPRINGS, COLORADO	
MAINTENANCE OF TRAFFIC DETAILS								DWG. NO. D-101	

General Notes:

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT CITY OF COLORADO SPRINGS ENGINEERING DIVISION (THE CITY) STANDARD SPECIFICATIONS.
- THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FOR CITY PERMITS CONTRACTORS SHALL USE THE ACELA ON-LINE PERMIT SYSTEM. ONCE CITY PERMITS ARE APPROVED AND PAID, THEN APPROPRIATE SCHEDULING AND NOTIFICATIONS SHALL BE IN ACELA.
- PRIOR TO CUTTING INTO A ROADWAY, A MEETING IS REQUIRED WITH CITY INSPECTOR.
- EXISTING PAVEMENT MAY BE INITIALLY ROUGH CUT. A SQUARE, VERTICAL CUT SHALL BE MADE IN THE EXISTING ASPHALT PAVEMENT PRIOR TO PAVEMENT PLACEMENT.
- BACKFILL SHALL BE COMPACTED WITH SECTION 206 OF CITY STANDARD SPECIFICATIONS.
- CLSM (FLOW-FILL) IS REQUIRED AS BACKFILL FOR TRENCHES LESS THAN 1-FOOT IN WIDTH. CLSM SHALL NOT EXTEND INTO PAVEMENT SECTION.
- CLSM SHALL BE USED WHERE PAVEMENT SECTION IS LESS THAN 5-YEARS OLD.
- HOT MIX ASPHALT (ASPHALT PAVING MATERIAL) SHALL MEET THE REQUIREMENTS OF THE PIKES PEAK ASPHALT SPECIFICATION AND BE APPROVED BY CITY ENGINEERING.
- NEW ASPHALT SHALL NOT BE PLACED AGAINST FRESHLY POURED CONCRETE. CONCRETE SHALL BE 5-DAYS OLD OR HAVE REACHED A COMPRESSIVE STRENGTH OF 3,200 PSI AS DEMONSTRATED BY FIELD CURE CYLINDERS.
- A TACK COAT SHALL BE APPLIED TO ALL VERTICAL EDGES INCLUDING CONCRETE EDGES. THE TACK COAT SHALL HAVE 100% COVERAGE AND BE APPLIED BETWEEN LIFTS.
- A MINIMUM PAVEMENT SECTION OF:
 - A) RESIDENTIAL/COLLECTOR: SHALL MATCH EXISTING OR A MINIMUM 6-INCHES OF CLASS 6 AGGREGATE BASE COURSE WITH 6-INCHES OF HOT-MIX ASPHALT (ASPHALT PAVING MATERIAL);
 - B) ARTERIAL: 12-INCHES OF CLASS 6 AGGREGATE BASE COURSE WITH 8-INCHES OF HOT-MIX ASPHALT (ASPHALT PAVING MATERIAL).

- THE NEW PAVEMENT SECTION SHALL MATCH EXISTING PAVEMENT REPORT. FOR ROADWAYS WHERE THE SUBGRADE IS CHEMICALLY TREATED (CTS), CTS OR FLOW-FILL SHALL BE EQUIVALENT TO THE REQUIREMENT IN THE PAVEMENT DESIGN REPORT.
- ALTERNATE REPAIR SECTIONS MAY BE APPROVED PROVIDED THEY ARE COMPLETED BY THE PAVEMENT DESIGN GEOTECHNICAL ENGINEER, AND APPROVED BY CITY ENGINEERING.
- NEW HOT-MIXED ASPHALT (ASPHALT PAVING MATERIAL) SHALL BE FLUSH TO EXISTING ASPHALT AND CONCRETE EDGES AND SHALL NOT HAVE HUMPS OR VALLEYS.
- WHERE CONCRETE PAVEMENT EXISTS BELOW THE ASPHALT, NEW CONCRETE SHALL BE PLACED TO MATCH THE EXISTING CONCRETE THICKNESS UNLESS OTHERWISE APPROVED BY CITY ENGINEERING.
- IF A PLATE TAMPER IS USED FOR COMPACTION OF ASPHALT, THE MAXIMUM LOOSE LIFT THICKNESS SHALL BE 2-INCHES.
- THESE DETAILS ARE FOR PAVEMENT CUTS LESS THAN 200-SF. CUTS GREATER THAN 200-SF SHALL BE IN CONFORMANCE WITH AN ENGINEERED DESIGN.
- ANY DISTURBED PAVEMENT MARKINGS SHALL BE RESTORED TO CITY STANDARDS.

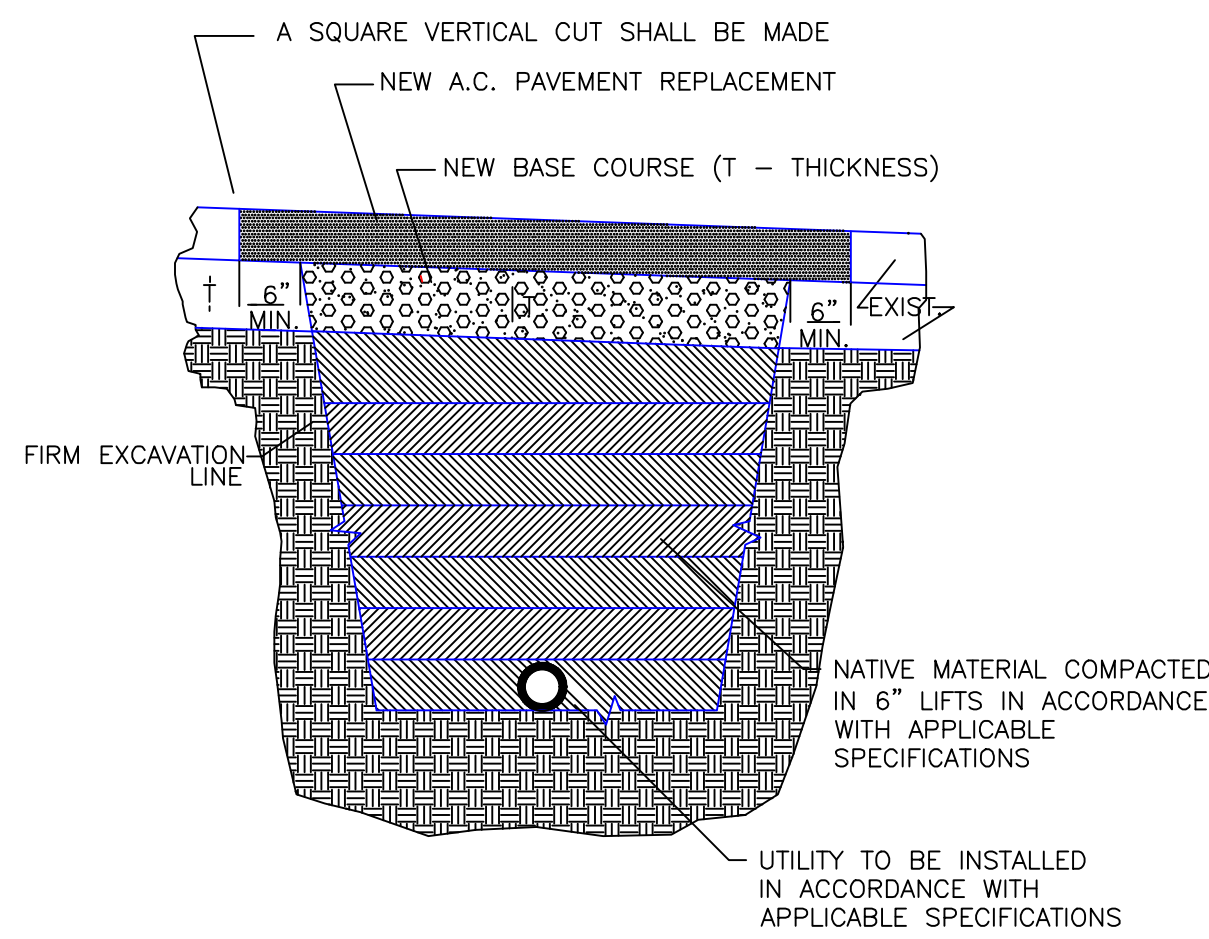


- NOTES:**
- REMOVE AND REPLACE A MINIMUM OF 4- FEET LONGITUDINAL OR 2- FEET FROM THE EDGE OF THE TRENCH, WHICHEVER IS GREATER.
 - IF WITHIN 5- FEET OF AN EXISTING JOINT THEN REMOVE TO THE EXISTING JOINT.
 - MULTIPLE LOCATIONS ARE TO BE A MINIMUM OF 10- FEET APART FROM EDGE OF REPAIR TO EDGE OF REPAIR; IF REPAIRS ARE LESS THAN 10- FEET APART, A CONTINUOUS SECTION MUST BE REPLACED.
 - CURB & GUTTER MAY REMAIN, PROVIDED THE CURB AND GUTTER ARE NOT DAMAGED BY THE CONSTRUCTION ACTIVITY.
 - EXACT RESTORATION LIMITS/LOCATIONS SHALL BE APPROVED BY THE CITY REPRESENTATIVE PRIOR TO REPAIRS.
 - LONGITUDINAL REPAIRS GREATER THAN 40- FEET IN LENGTH SHALL BE MILLED AND PAVED.

UTILITY TRENCH REPAIR RESTORATION LIMITS		
APPROVED:		
CITY ENGINEER		
ISSUED:	REVISION:	DRAWING NO.
11/2/20		4C

UTILITY TRENCH REPAIR GENERAL NOTES		
APPROVED:		
CITY ENGINEER		
ISSUED:	REVISION:	DRAWING NO.
11/2/20		4A

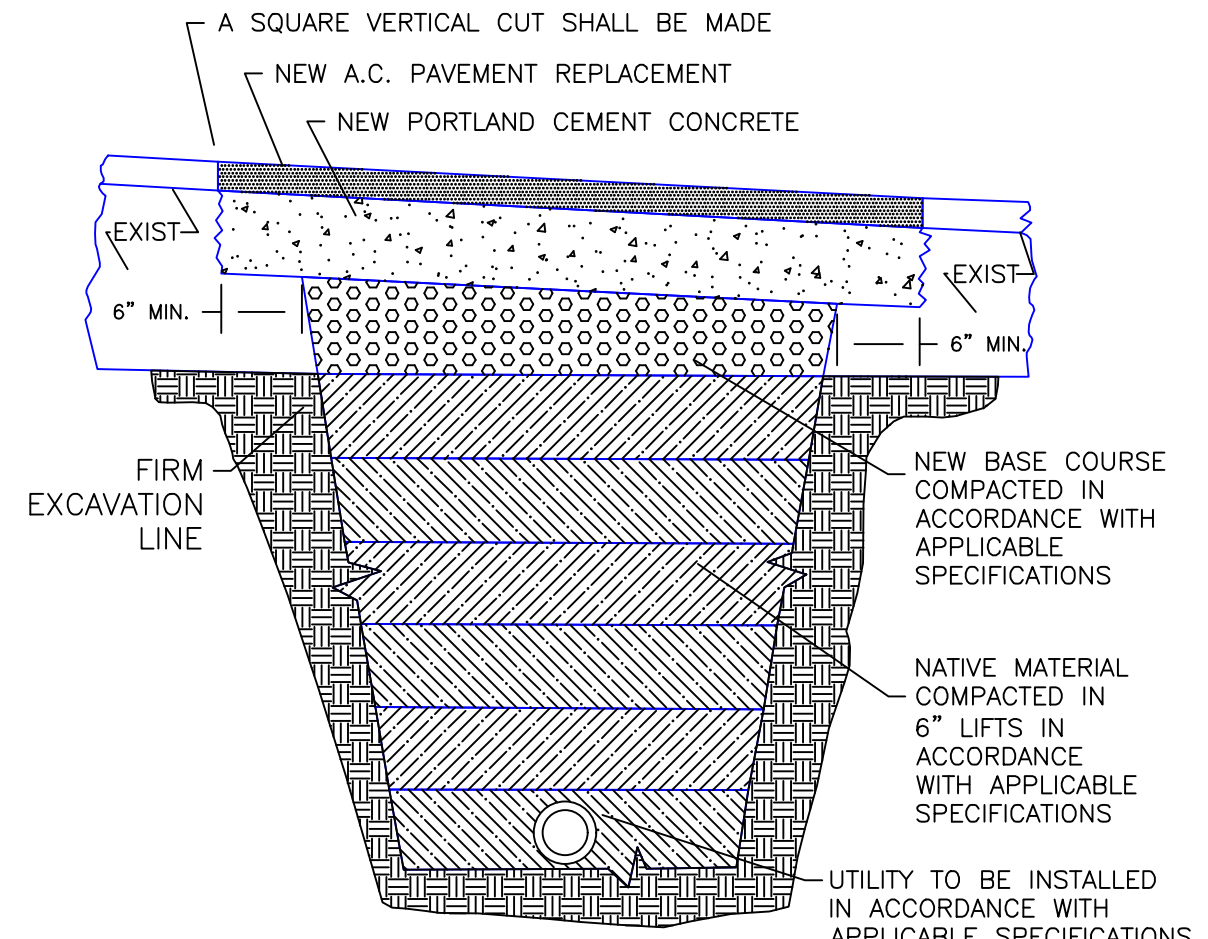
UTILITY TRENCH REPAIR TYPICAL SECTIONS		
APPROVED:		
CITY ENGINEER		
ISSUED:	REVISION:	DRAWING NO.
11/2/20		4B



- NOTES:**
- THIS DETAIL MAY BE USED FOR PAVEMENT CUTS LESS THAN 200 SQ. FT.
 - EXISTING PAVEMENT MAY BE ROUGH CUT INITIALLY IN CONJUNCTION WITH TRENCHING.
 - A SQUARE VERTICAL CUT SHALL BE MADE IN THE EXISTING A.C. PAVEMENT AFTER PLACEMENT OF BACKFILL PRIOR TO PAVEMENT REPLACEMENT.
 - THICKNESS OF NEW A.C. PAVEMENT REPLACEMENT SHALL MATCH EXISTING (4" MIN.)
 - THICKNESS OF NEW BASE COURSE SHALL BE MINIMUM OF 6" OR EQUAL TO EXISTING, WHICHEVER IS GREATER.

SCALE: NOT TO SCALE

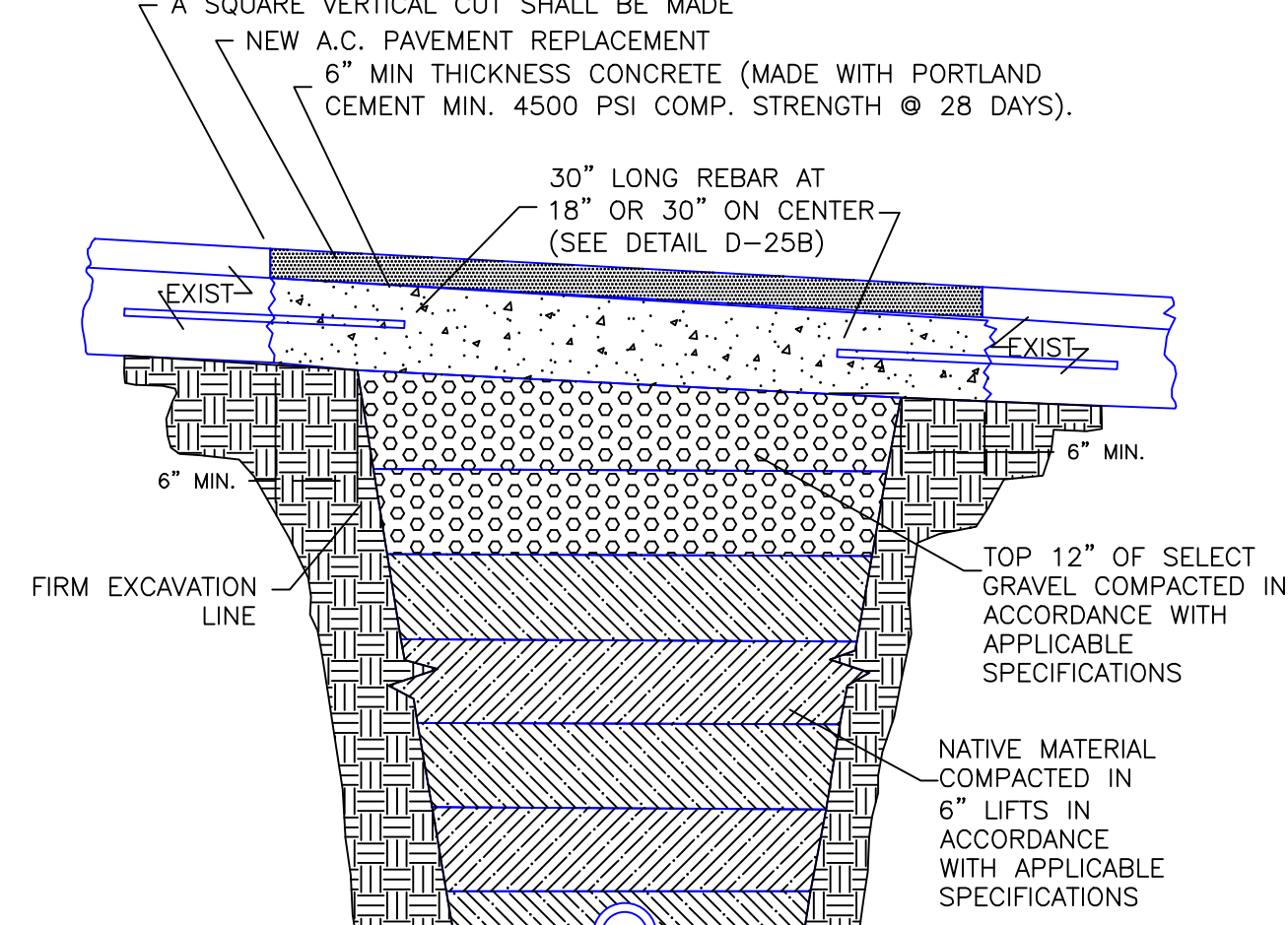
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DATE APPROVED:	FILE NAME:
André P. Brackin	SD_4-20
DEPARTMENT OF TRANSPORTATION	REVISION DATE: 11/10/04



- NOTES:**
- THIS DETAIL MAY BE USED FOR PAVEMENT CUT LESS THAN 200 SQ. FT.
 - EXISTING PAVEMENT MAY BE ROUGH CUT INITIALLY IN CONJUNCTION WITH TRENCHING.
 - A SQUARE VERTICAL CUT SHALL BE MADE IN THE EXISTING A.C. PAVEMENT AFTER PLACEMENT OF BACKFILL AND PRIOR TO PAVEMENT REPLACEMENT.
 - THICKNESS OF NEW A.C. PAVEMENT REPLACEMENT SHALL MATCH EXISTING.
 - THICKNESS OF PORTLAND CEMENT CONCRETE SHALL BE A MINIMUM OF 6" WITH A 4000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
 - THICKNESS OF NEW BASE COURSE SHALL BE A MINIMUM OF 6" WHEN THE EXISTING BASE COURSE EXCEEDS 12" IN DEPTH. STREETS WITH LESS THAN 12" OF EXISTING BASE COURSE REQUIRE NO NEW BASE COURSE.

SCALE: NOT TO SCALE

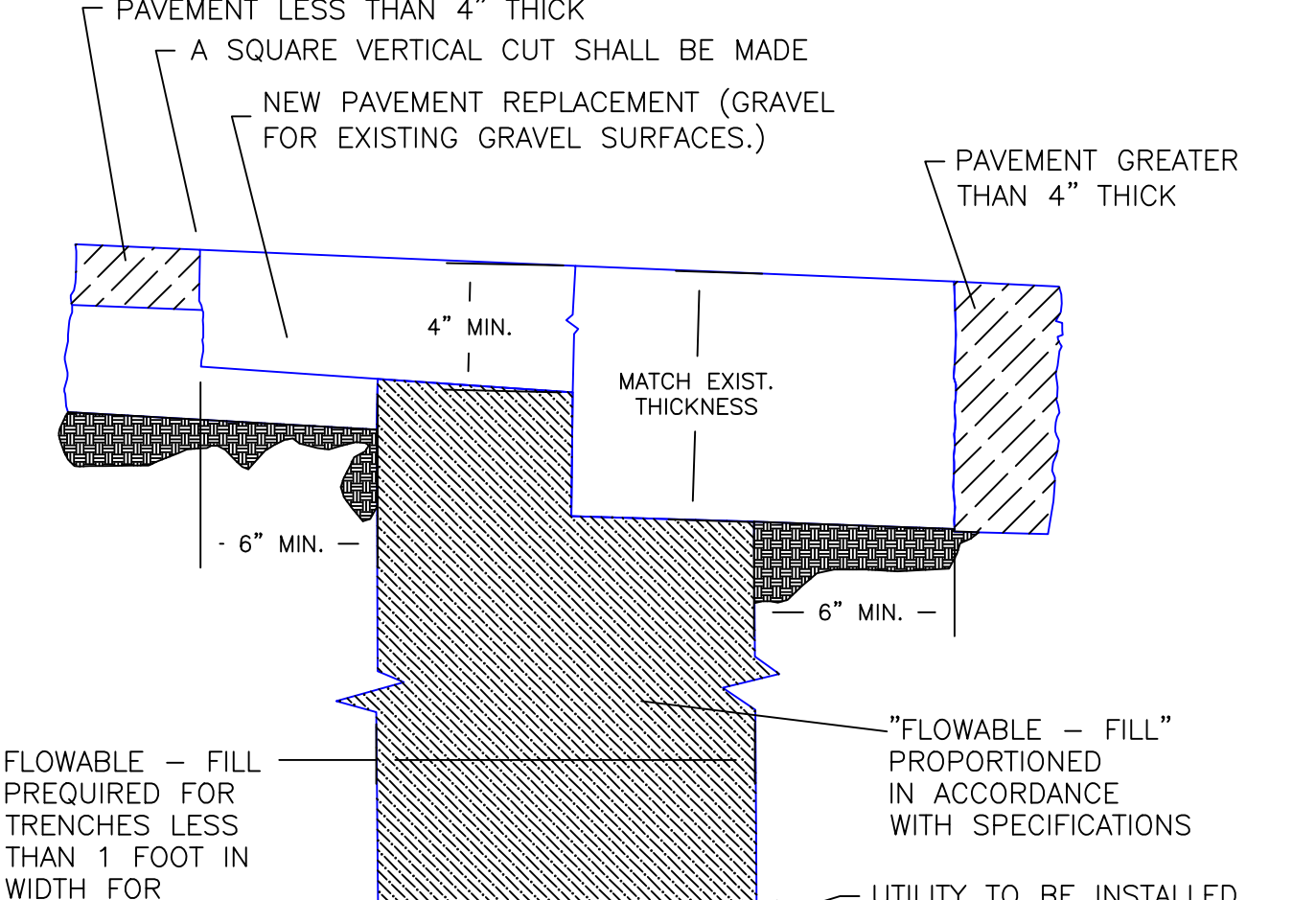
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DATE APPROVED:	FILE NAME:
André P. Brackin	SD_4-21
DEPARTMENT OF TRANSPORTATION	REVISION DATE: 11/10/04



- NOTES:**
- EXISTING PAVEMENT MAY BE ROUGH CUT INITIALLY IN CONJUNCTION WITH TRENCHING.
 - A SQUARE, VERTICAL CUT SHALL BE MADE IN THE EXISTING A.C. PAVEMENT AFTER PLACEMENT OF BACKFILL AND PRIOR TO PAVEMENT REPLACEMENT.
 - THICKNESS OF CONCRETE AND A.C. SHALL BE EQUAL TO EXISTING CONCRETE AND A.C. THICKNESS WITH MINIMUM AS SHOWN.
 - DRILL AND EPOXY 30" LONG REBARS 15" DEEP INTO EXISTING CONCRETE PAVEMENT IN ACCORDANCE WITH DETAIL D-25B FOR TRANSVERSE AND LONGITUDINAL JOINTS.

SCALE: NOT TO SCALE

8/11/11	Utility Trench Repair Detail Concrete Pavement Standard Drawing
DATE APPROVED:	FILE NAME:
André P. Brackin	SD_4-22
DEPARTMENT OF TRANSPORTATION	REVISION DATE: 11/10/04



- NOTES:**
- EXISTING PAVEMENT MAY BE ROUGH CUT INITIALLY IN CONJUNCTION WITH TRENCHING.
 - A SQUARE, VERTICAL CUT SHALL BE MADE IN THE EXISTING A.C. PAVEMENT AFTER PLACEMENT OF BACKFILL AND PRIOR TO PAVEMENT REPLACEMENT.
 - THICKNESS OF NEW A.C. PAVEMENT REPLACEMENT SHALL MATCH EXISTING OR 4" MINIMUM, WHICHEVER IS GREATER.

SCALE: NOT TO SCALE

8/11/11	Utility Trench Repair Detail Flowable Fill Standard Drawing
DATE APPROVED:	FILE NAME:
André P. Brackin	SD_4-23
DEPARTMENT OF TRANSPORTATION	REVISION DATE: 11/10/04



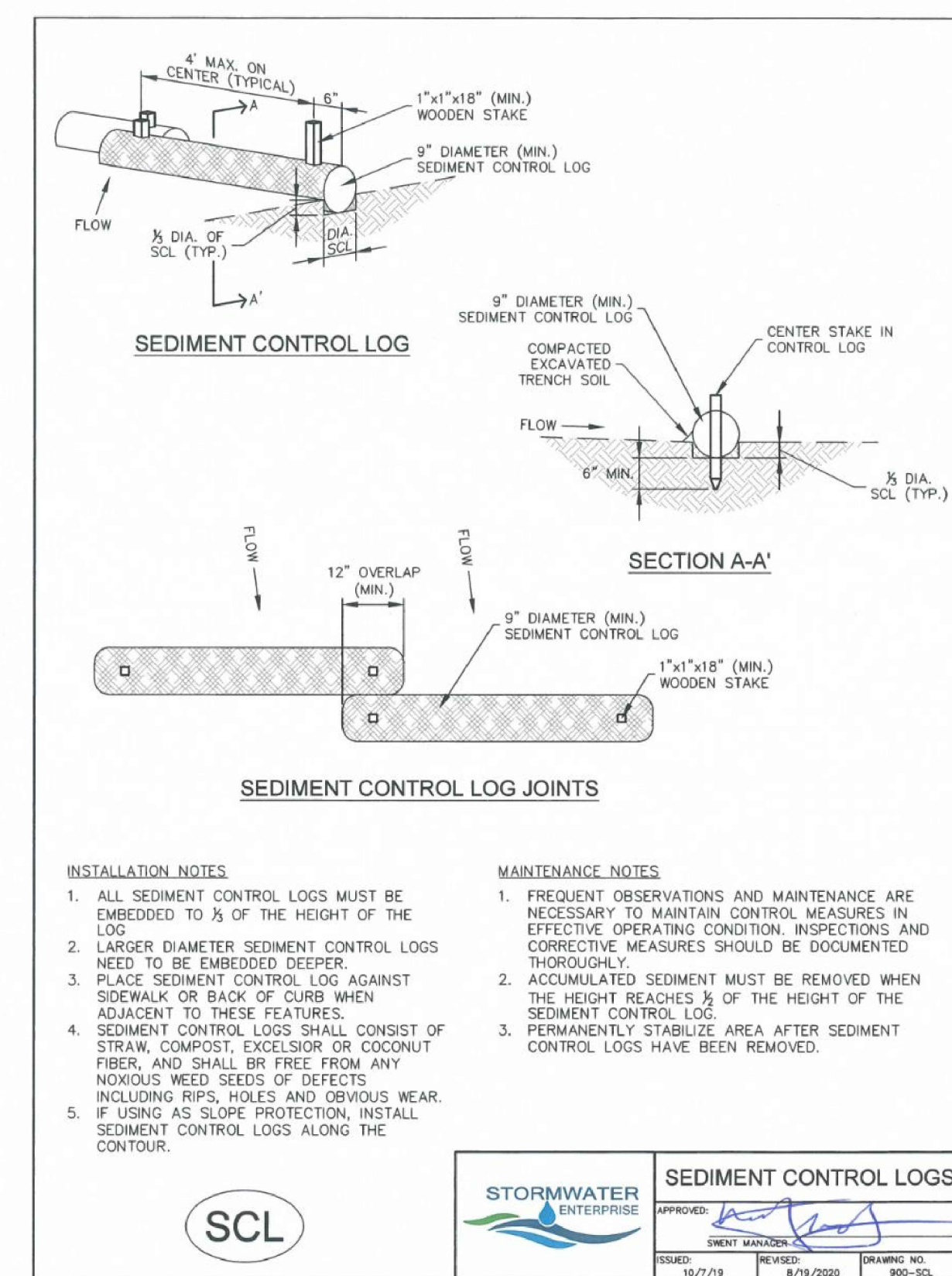
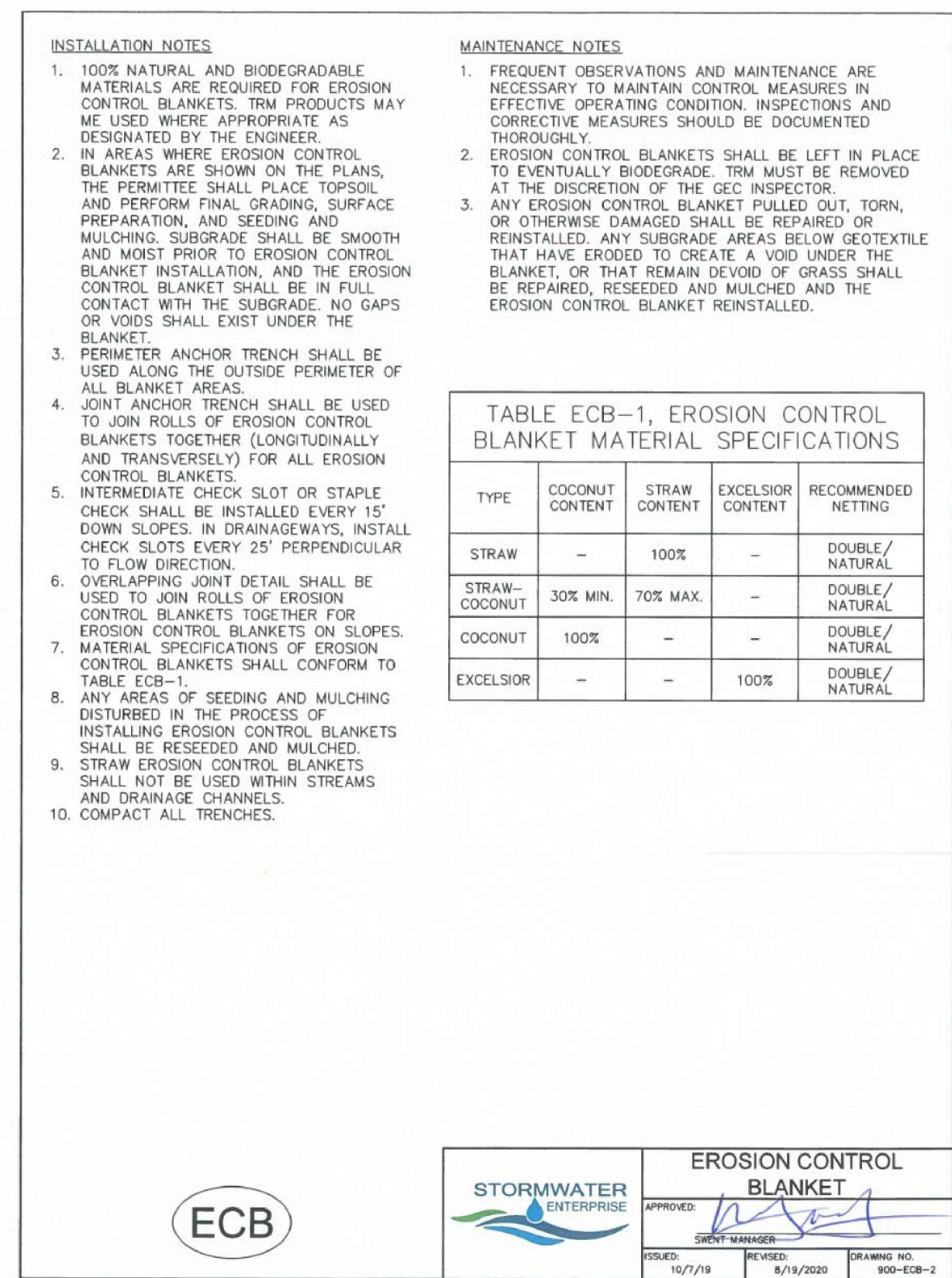
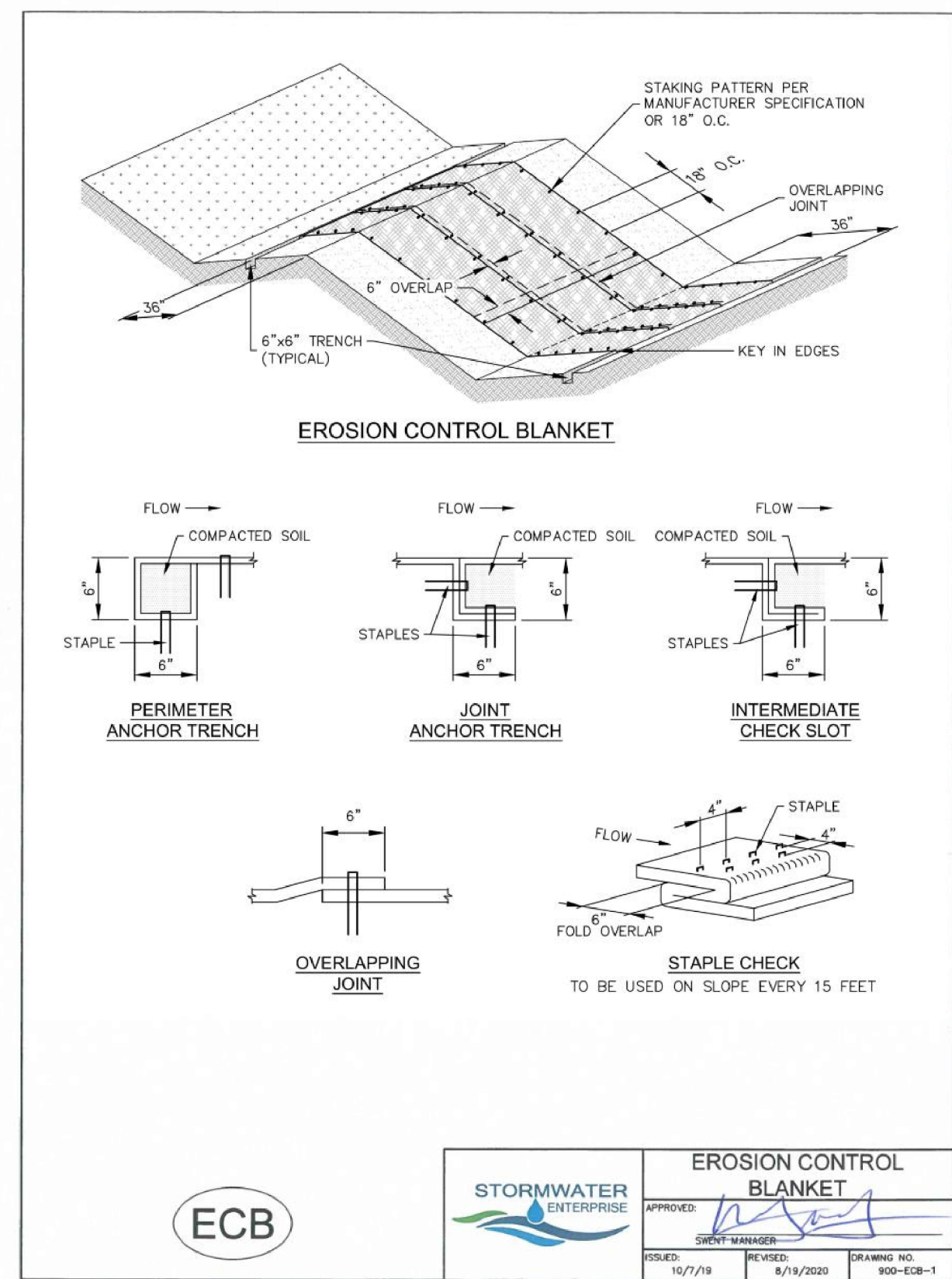
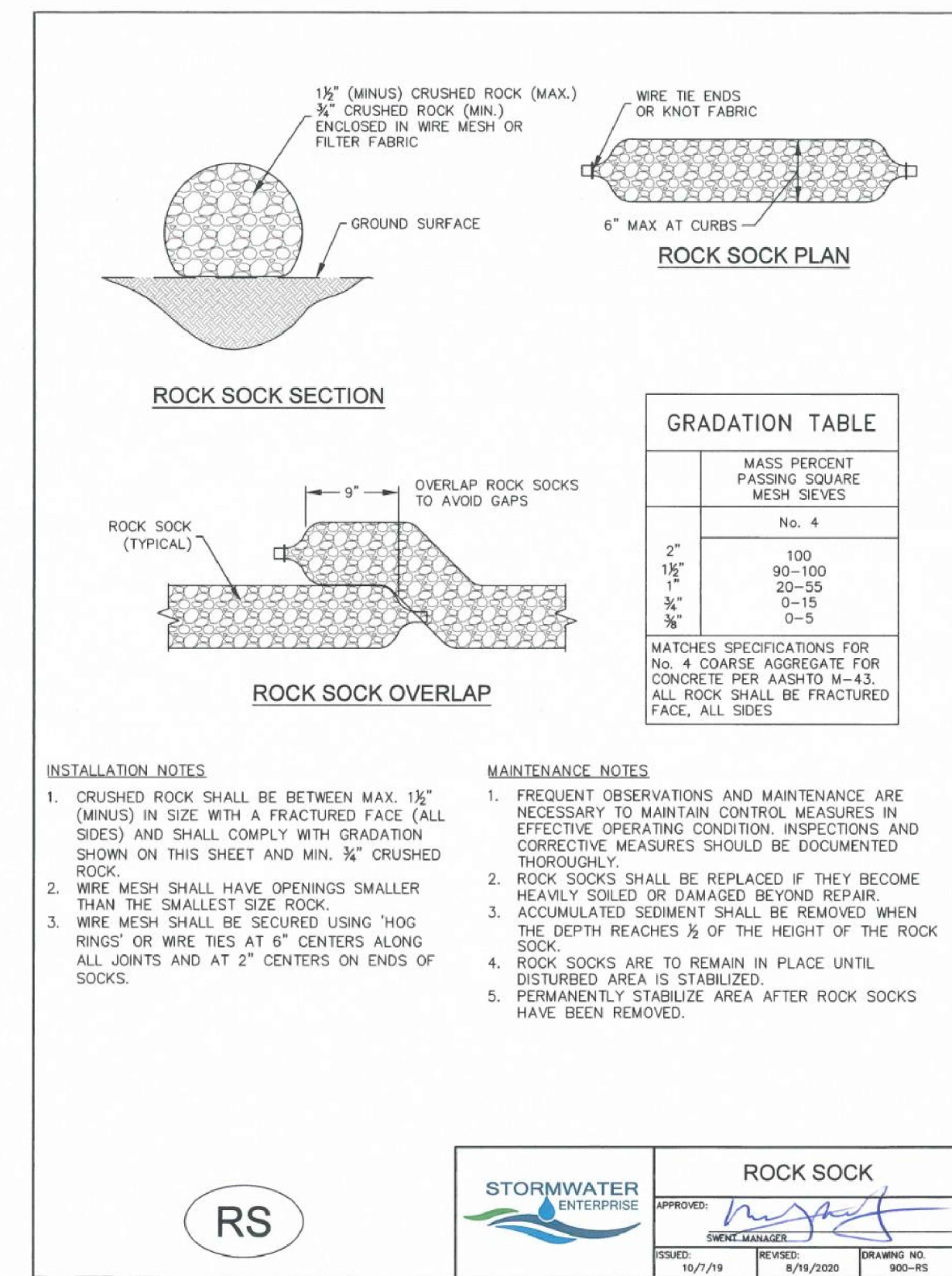
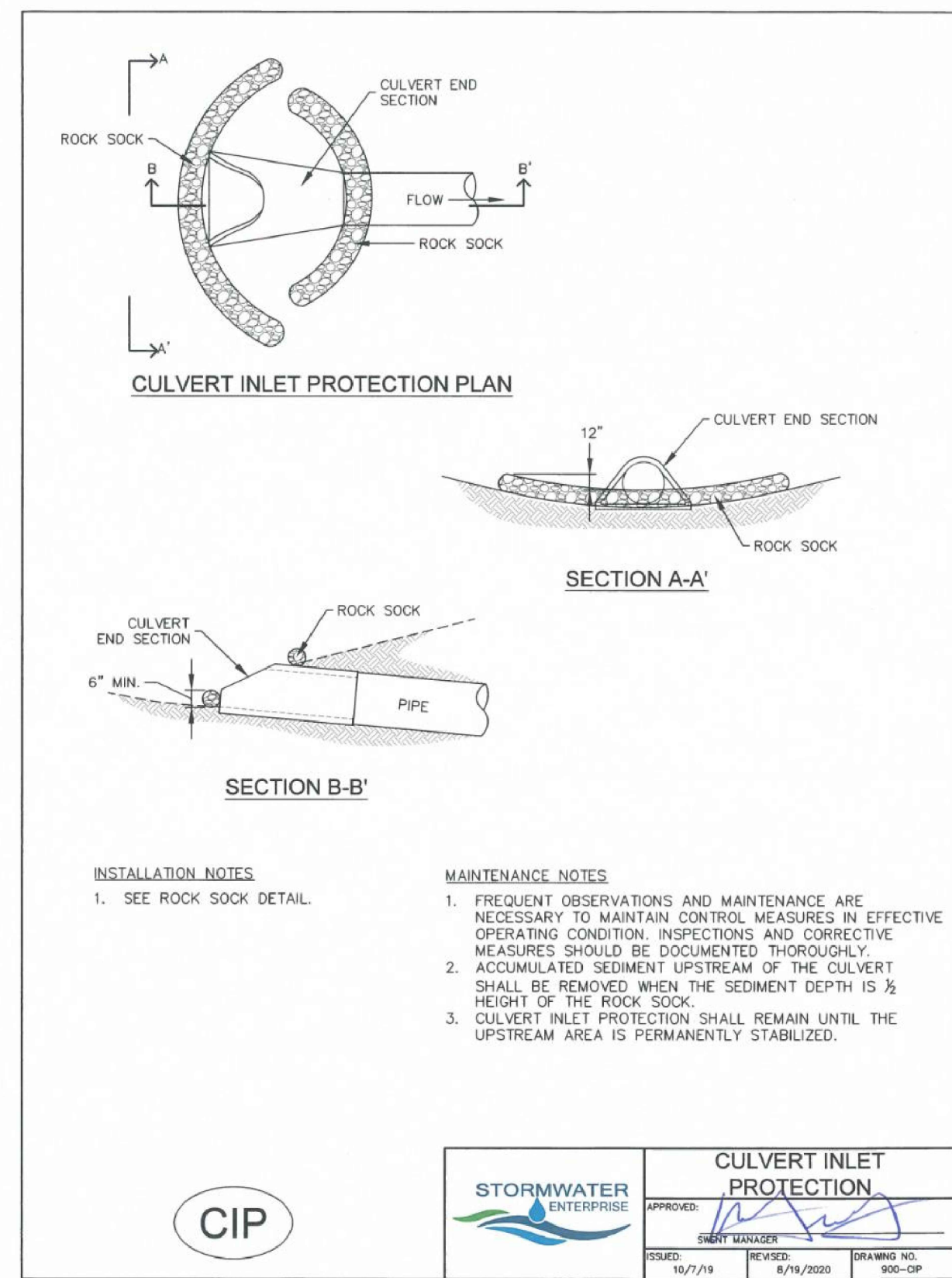
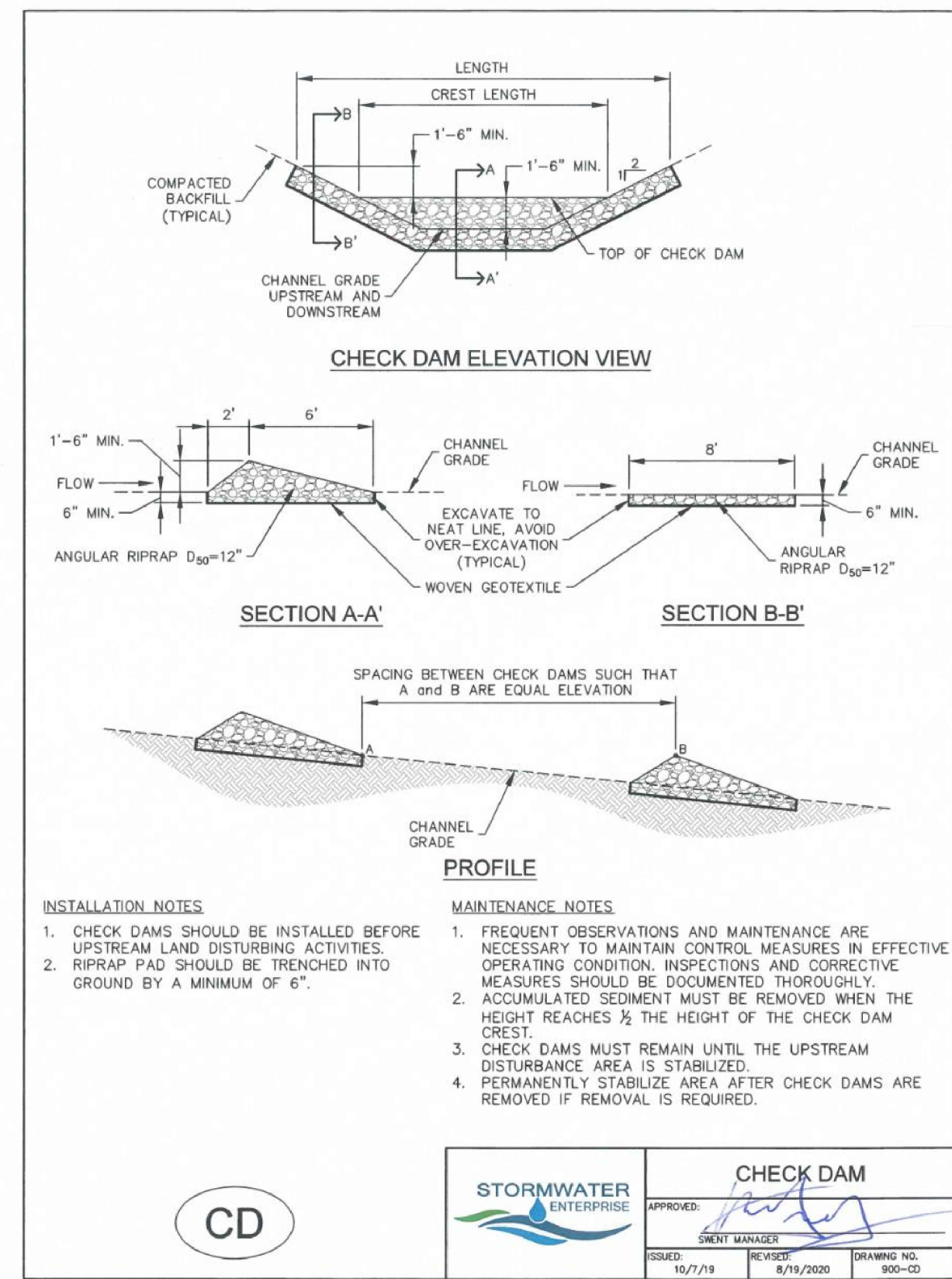
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SYSTEM MAOP:	275 psig
SYSTEM MOP:	145 psig
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DISTRIBUTION:	<input checked="" type="checkbox"/>
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TRANS. BY DEF.	<input type="checkbox"/>
TRANS v 20%:	<input type="checkbox"/>

W/O #	3747144
RELATED W/O #s	3789816

ENGINEER:	SCOTT JENSEN	PHONE:	(719) 668-8196
PROJECT MANAGER:	MELISSA LINGO	PHONE:	(719) 668-8794
CONSTRUCTION LEAD:	JOSH RICHARD	PHONE:	(719) 668-3675
SHEET NO. 11 OF 60	SCALE: NTS	PATRICK ENGINEERING TEAM	
DWN BY: NORM WEST	CHKD. BY: SETH BROWN	APPD. BY: JEREMIAH SMITH	
LOCH FLYNE 20" GAS PIPELINE			
COLORADO SPRINGS, COLORADO			
UTILITY TRENCHING REPAIR DETAILS			
			DWG. NO. D-102

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-C3B-C3L.dwg LAUOUT NAME: D-103 PLOTTED: Wednesday, March 22, 2023 - 4:28pm USER: rwest



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PROJ. NO. 22282.003

NO.	DESCRIPTION	DATE	BY	DATE	APP'D
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5	ISSUED FOR CONSTRUCTION	11/14/22	JMS		
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N/A	N/A	TWN. 12S, RNG. 65W, SECTIONS 31, 32, 33	R-18, R-19, Q-19, P-18, P-19	

REVISIONS

SYSTEM NAME: 150P

JOB TYPE:

W/O #

HP SERVICE:

DISTRIBUTION:

FEEDER:

TRANS. BY DEF.

TRANS. V 20%

3747144

RELATED W/O #s

3789816

ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196

PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794

CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675

SHEET NO. 12 OF 60 SCALE: NTS

PATRICK ENGINEERING TEAM

DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH

LOCH FYNE 20" GAS PIPELINE

COLORADO SPRINGS, COLORADO

BEST MANAGEMENT PRACTICES DETAILS - 1

DWG. NO. **D-103**

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FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-C3B-C51.dwg LAUOUT NAME: D-105 PLOTTED: Wednesday, March 22, 2023 - 4:28pm USER: rtwet

MATERIAL CONSTITUENTS

2F Cement

Cement shall meet the standard chemical requirements of Type II or Type IP, ASTM C150 or ASTM C595, respectively.

2G Fly Ash

Fly ash shall meet the requirements of ASTM C618 Type C or Type F. Fly ash not meeting the requirements of ASTM C618 may be used if prior testing indicates acceptable, consistent results for strength and air content.

2H Water

Potable water or reasonably clean and free of chemicals injurious to the final product are to be used.

2I Chemical Admixtures

Air-entraining admixtures shall conform to ASTM C260 requirements; other chemical admixtures shall conform to ASTM C494 requirements.

2J Foaming Agents

Foaming agents shall conform to ASTM C869 and C796, or as approved by the CITY.

2K Suitability of CLSM Constituents

The supplier shall have the required Beneficial Use Determination (BUD) from the CDPHE for the product they are supplying. Material Safety Data Sheets (MSDS) must be available for any cement, flyash or admixture component of the mixture upon request. Flowable Backfill shall be compatible with bedding materials, electrochemically and otherwise if used as a metal pipe backfill application. Thermal compatibility with plastic pipes should be considered for direct contact of the CLSM with the pipe; heat generation of the mix must not exceed the softening point of the pipe material.

2L CLSM Use Restrictions

CLSM products containing coal combustion residuals (CCR) (i.e. fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers) may not be placed below groundwater, or into permanent standing water, without the CONTRACTOR obtaining a

STANDARD SPECIFICATIONS MANUAL SECTION 200 - STREET SECTION Page 6

or from not allowing sufficient strength gain time between placement of layers shall be repaired at the CONTRACTOR's expense.

The maximum layer thickness for Flashfill is not restricted except to prevent flowing or running into undesired areas.

Contractor shall observe all other Construction Requirements as provided in CDOT Section 206 for placement of CLSM.

4 STREET SURFACING and PATCHING

Placement of pavement materials for vehicle traffic shall not be allowed until the removable CLSM backfill has cured 24 hours (Flow-Fill only) or achieved sufficient resistance to allow paving. CLSM (either type) should be subjected to standard proofroll criteria, or penetration resistance tests. CLSM should achieve a penetration resistance of at least 3.6 tsf (tons per square foot) (equivalent to 50 psi) using a hand-held soil penetrometer, typically pushed to 1/4" depth, in accordance with the penetrometer manufacturer's instructions. Alternately, penetration resistance shall be considered achieved when a person weighing 100 pounds by use of their body weight as an axial load, cannot penetrate the CLSM backfill with the square cut end of a 1/2" diameter (#4) steel reinforcing bar.

4A Temporary Pavement Selection

Whenever permanent pavement patches are not constructed immediately following trench backfilling operations, temporary pavement patch construction consisting of:

- A minimum of 3 inches of hot mix asphalt (or approved warm mix if allowed) or cold plant mix asphalt on Flashfill or cured Flow-Fill CLSM, or
- A thickness of Flash-Patch equal to existing pavement thickness on CLSM, or
- Steel plates per CITY requirements on CLSM,

must be utilized to provide the required number of paved travel lanes. Sufficient excavation of backfill shall be done to allow the temporary surfacing to be level with surrounding pavement. Use of steel plates may be left in place for a short duration as approved by the CITY. Temporary pavement patches may be left in place for a maximum of 30 working days following completion of backfilling operations unless otherwise approved by the CITY.

STANDARD SPECIFICATIONS MANUAL SECTION 200 - STREET SECTION Page 9

written waiver from the Colorado Department of Public Health & Environment's (CDPHE's) Hazardous Materials and Waste Management Division (HMMWD), and providing such waiver to the CITY for review / concurrence prior to placement.

The above noted use restriction with respect to groundwater and permanent standing water is not applicable if the CLSM product is being used in association with an emergency. An emergency is an occurrence involving a clear and imminent danger to human health or the environment, or similar occurrence demanding immediate attention, such as the restoration of a damaged utility, roadway, or storm water conveyance. If the emergency has subsided and sufficient time is available for planning (e.g., three weeks or more) the project is not considered an emergency with sole respect to CLSM placement.

Additionally, if a project involves the placement of CLSM on the land in non-roadway applications and the CLSM will contain 12,400 tons of CCR or more, the CONTRACTOR shall obtain written project specific approval from the CDPHE's HMMWD and provide such approval to the CITY for review / concurrence prior to placement. To obtain such approval, the CONTRACTOR shall adequately demonstrate that environmental releases to groundwater, surface water, soil and air are comparable to or lower than those from analogous products made without CCR, or that environmental releases to groundwater, surface water, soil and air will be at or below relevant regulatory and health-based benchmarks for human and ecological receptors during use.

2M Aggregates

The final blend of aggregates for CLSM, including rock, gravel or sand, shall conform to the following gradations:

Sieve Size	% Passing
1 inch (25 mm)	100
No. 200	0 to 10

When coarse aggregate is used, 100 percent shall pass the 1 inch sieve, and it shall comprise not more than 40 percent of the total aggregate content. Other aggregate products such as aggregate base, crushed rock, pea gravel, or reject sand which has no more than 20 percent passing the No. 200 sieve and is free of organic material and other deleterious substances, may

CLSM strengths, but are limited in thickness to the existing pavement thickness to allow removal.

- Flash-Patch usage on arterial roadways will require that Small Aggregate topping be used. Gradations shall meet ASTM C33 for size #9, and be crushed stone or natural gravels, with gradations requirements listed below:

Sieve	3/8"	#4	#8	#16	#50
% Passing	100	85 - 100	10 - 40	0 - 10	0 - 5

4C Temporary Pavement Patch Placement

Temporary asphalt should ideally be placed according to the Pikes Peak Region Asphalt Paving Specifications requirements. Any temporary asphalt pavement patch shall be placed and compacted and shall be maintained by the CONTRACTOR so that the patched surface and the surrounding area remain a single even (smooth) unbroken plane, suitable to handle the traffic, for the duration of Temporary Patch.

Flash-Patch usage on arterial roadways will require that the Small Aggregate shall be broadcast on and embedded into the surface, for increased skid-resistance. Aggregate application will occur on patches within 100 feet of approaching stop signs or signal lights on other city streets. This aggregate shall be applied at approximately 5 lb per SY of patch surface, before the Flash-Patch hardens. The CONTRACTOR shall be responsible to apply and embed the surface aggregate in a timely manner before set occurs.

The following surface tolerance for any temporary patches shall be observed. When a 10 foot straight edge is laid across the temporary patch parallel to the centerline of the street and in the direction transverse to the centerline, there shall be no more than a 3/4 inch rut, hump, or depression evident. Deteriorated temporary patches exhibiting ruts, humps, or depressions shall be repaired or replaced immediately. If the existing street exceeded the above tolerances prior to patching, then the temporary patch shall be equal to or better than the condition of the surrounding pavements.

STANDARD SPECIFICATIONS MANUAL SECTION 200 - STREET SECTION Page 7

Temporary patches with hot or cold mix asphalt may be opened to traffic after proper compaction and clean-up of the adjacent areas has occurred. Temporary patches of Flash-Patch may be opened to traffic usually within 1-1/2 hours after placement on arterial roadways, and usually within one hour on other streets.

4D Permanent Pavement Materials

Asphalt for replacement of Asphalt Pavement streets, shall be HMA (Hot Mix Asphalt), or WMA (Warm Mix Asphalt) if allowed by CITY, and shall meet the material requirements in the Pikes Peak Region Asphalt Paving Specifications for Grading S or SX with PG 64-22 binder, unless specified otherwise. Completion of the permanent patch in areas where an open graded surface course (SMA) exists shall include placement of a surface course to match the existing surface texture.

4E Permanent Pavement Construction

Prior to placing the permanent patch, the existing cuts made for trenches shall be properly prepared for final pavement patching.

Existing Asphalt Pavement shall be saw cut to a neat straight line and to a minimum 12 inches outside of the trench area. The CITY may require just the top lift be outside the trench edges. The resulting "T patch" edges shall not fall within existing wheel paths. Patches parallel to the direction of traffic and encompassing the wheel path shall extend to lane lines.

The asphalt thickness shall be the thicker of the existing depth, or the minimum depth of at least 4 inches.

A tack coat shall be applied to all edges to the existing freshly cut and/or approved well cleaned edges of asphalt pavement prior to placing new pavement.

Compaction of each lift shall be to a density of 94% (± 2%) of the maximum theoretical density of the approved Job Mix Formula, and conforming to the Pikes Peak Region Asphalt Paving Specifications.

STANDARD SPECIFICATIONS MANUAL SECTION 200 - STREET SECTION Page 11

be accepted by the CITY if a flowable, workable mix can be produced without segregation of the aggregate.

3 TRENCH BACKFILL WITH CLSM

Except as otherwise provided or approved by the CITY, after the pipe or conduit is laid, trenches shall be backfilled with CLSM in the pipe zone as defined in the following table:

Pipe or Conduit	Pipe Zone ^{1,2}
2-inch or less diameter	6 inches above the top of the pipe up to subgrade
Greater than 2-inch diameter, except vitrified clay pipe	12 inches above the top of the pipe up to subgrade
Vitrified clay pipe	24 inches above the top of the pipe up to subgrade

¹ The Utility Owner shall dictate any variance to these CLSM separation distances.
² Where depths of flashfill exceed 3 feet over water or wastewater mains please contact Colorado Springs Utilities for bedding depths.

CLSM should be well mixed and discharged directly from the truck into the space to be filled, or by other methods approved by the CITY. The mix may be placed part depth or full depth as conditions at the site and CLSM type dictate. When used as backfill in the pipe zone, care should be taken to prevent flotation or misalignment of the pipe by means of straps, soil anchors or other approved means of restraint. Material may be placed in stages with initially lesser flowability, to prevent movement or flotation of pipe. Refer to Section 2K for thermal compatibility when using CLSM directly against plastic pipe materials. CLSM shall not be placed when the trench bottom or walls are frozen or contain frozen materials.

Compaction of CLSM shall not be performed.

The maximum layer thickness for CLSM shall be determined by the Contractor. Additional layers shall not be placed until the backfill has lost sufficient moisture to be walked on without indenting more than 2 inches. Allow bleed water to rise and divert away from placement area before another layer may be added. Do not place CLSM on top of bleed water or on any water above the bearing layer. Any damage resulting from placing Flow-Fill in layers that are too thick

STANDARD SPECIFICATIONS MANUAL SECTION 200 - STREET SECTION Page 8

or from not allowing sufficient strength gain time between placement of layers shall be repaired at the CONTRACTOR's expense.

The maximum layer thickness for Flashfill is not restricted except to prevent flowing or running into undesired areas.

Contractor shall observe all other Construction Requirements as provided in CDOT Section 206 for placement of CLSM.

4 STREET SURFACING and PATCHING

Placement of pavement materials for vehicle traffic shall not be allowed until the removable CLSM backfill has cured 24 hours (Flow-Fill only) or achieved sufficient resistance to allow paving. CLSM (either type) should be subjected to standard proofroll criteria, or penetration resistance tests. CLSM should achieve a penetration resistance of at least 3.6 tsf (tons per square foot) (equivalent to 50 psi) using a hand-held soil penetrometer, typically pushed to 1/4" depth, in accordance with the penetrometer manufacturer's instructions. Alternately, penetration resistance shall be considered achieved when a person weighing 100 pounds by use of their body weight as an axial load, cannot penetrate the CLSM backfill with the square cut end of a 1/2" diameter (#4) steel reinforcing bar.

4A Temporary Pavement Selection

Whenever permanent pavement patches are not constructed immediately following trench backfilling operations, temporary pavement patch construction consisting of:

- A minimum of 3 inches of hot mix asphalt (or approved warm mix if allowed) or cold plant mix asphalt on Flashfill or cured Flow-Fill CLSM, or
- A thickness of Flash-Patch equal to existing pavement thickness on CLSM, or
- Steel plates per CITY requirements on CLSM,

must be utilized to provide the required number of paved travel lanes. Sufficient excavation of backfill shall be done to allow the temporary surfacing to be level with surrounding pavement. Use of steel plates may be left in place for a short duration as approved by the CITY. Temporary pavement patches may be left in place for a maximum of 30 working days following completion of backfilling operations unless otherwise approved by the CITY.

STANDARD SPECIFICATIONS MANUAL SECTION 200 - STREET SECTION Page 9

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STANDARD SPECIFICATIONS MANUAL SECTION 200 - STREET SECTION Page 9

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STANDARD SPECIFICATIONS MANUAL SECTION 200 - STREET SECTION Page 9



8902 Vincennes Circle, Suite F
Indianapolis, IN 46268
TEL: (317) 217-1701
www.patrickco.com

PROJ. NO. 22282.003

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5	ISSUED FOR CONSTRUCTION	NEW	11/14/22 JMS
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NO.	N/A	BY:	DATE: APPVD:

SYSTEM MAOP:	275 psig
SYSTEM MOP:	145 psig

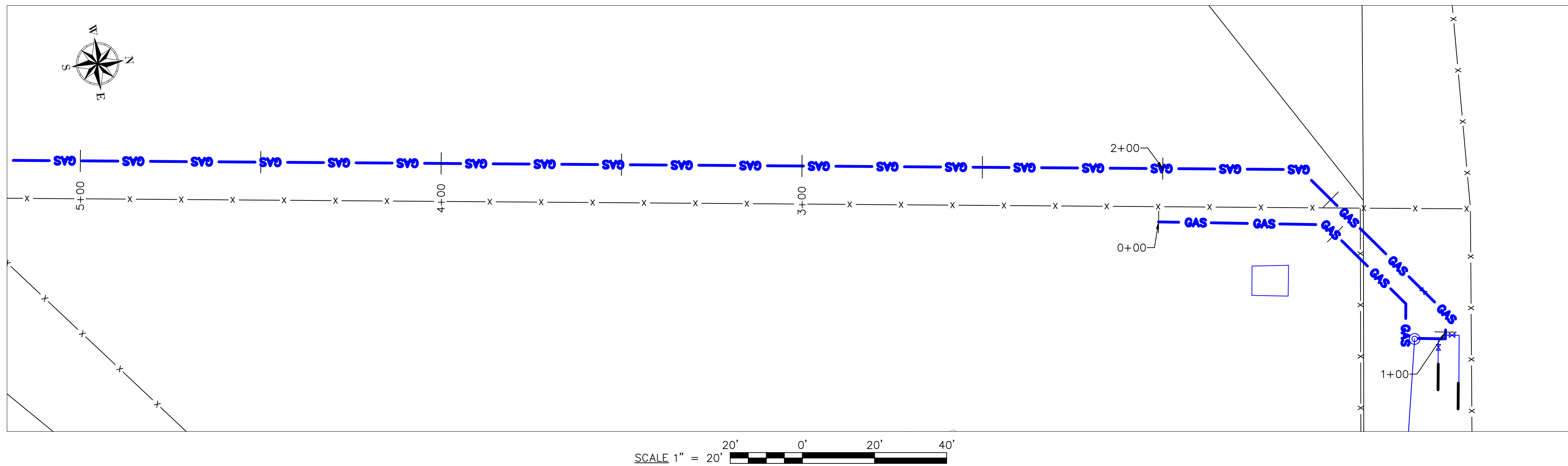
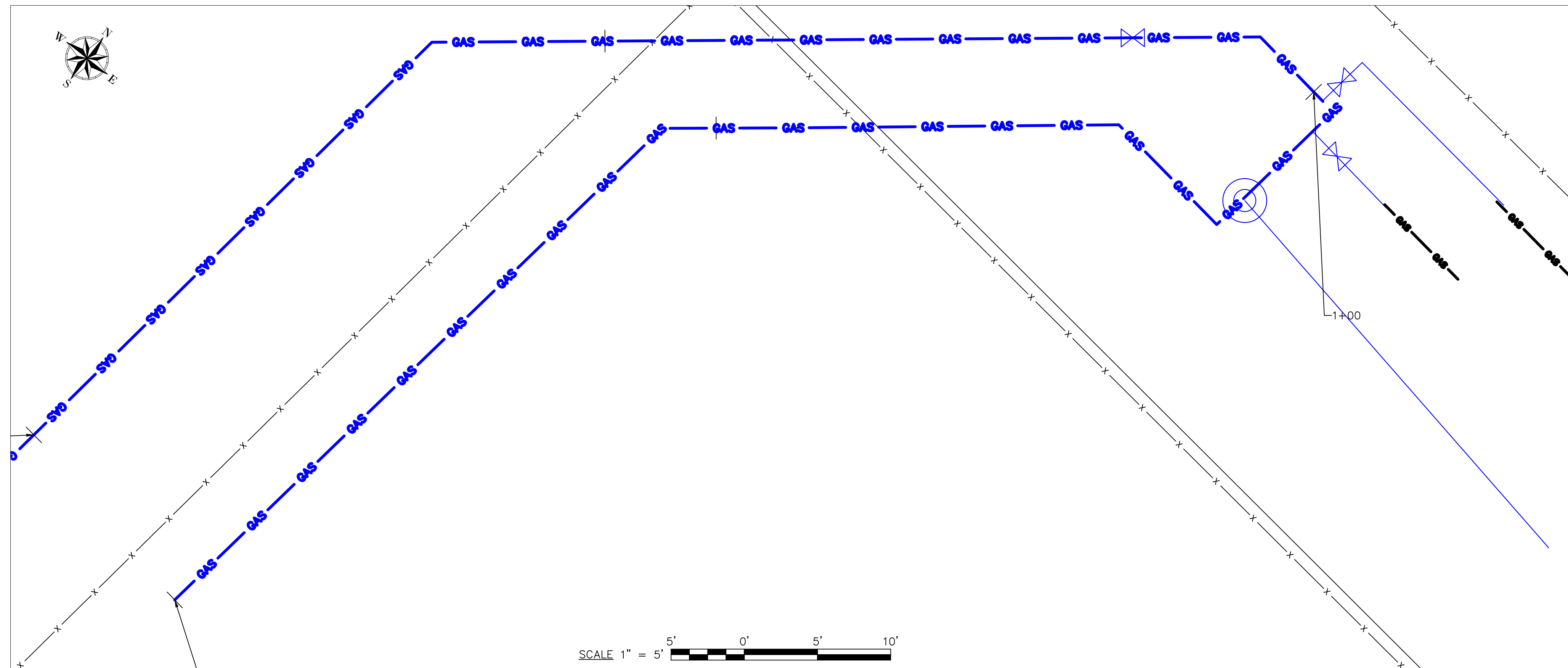
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JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
HP SERVICE: <input type="checkbox"/>	3747144	PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
DISTRIBUTION: <input checked="" type="checkbox"/>		CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
FEEDER: <input type="checkbox"/>	RELATED W/O #s	SHEET NO. 14 OF 60	SCALE: NTS
TRANS. BY DEF. <input type="checkbox"/>	3789816	PATRICK ENGINEERING TEAM	
TRANS v 20% <input type="checkbox"/>		DWN BY: NORM WEST	CHKD. BY: SETH BROWN
		APPD. BY: JEREMIAH SMITH	

LOCH FYNE 20" GAS PIPELINE
COLORADO SPRINGS, COLORADO
CLSM SPECIFICATIONS

DWG. NO: **D-105**

WELD & X-RAY (NDT) DOCUMENTATION



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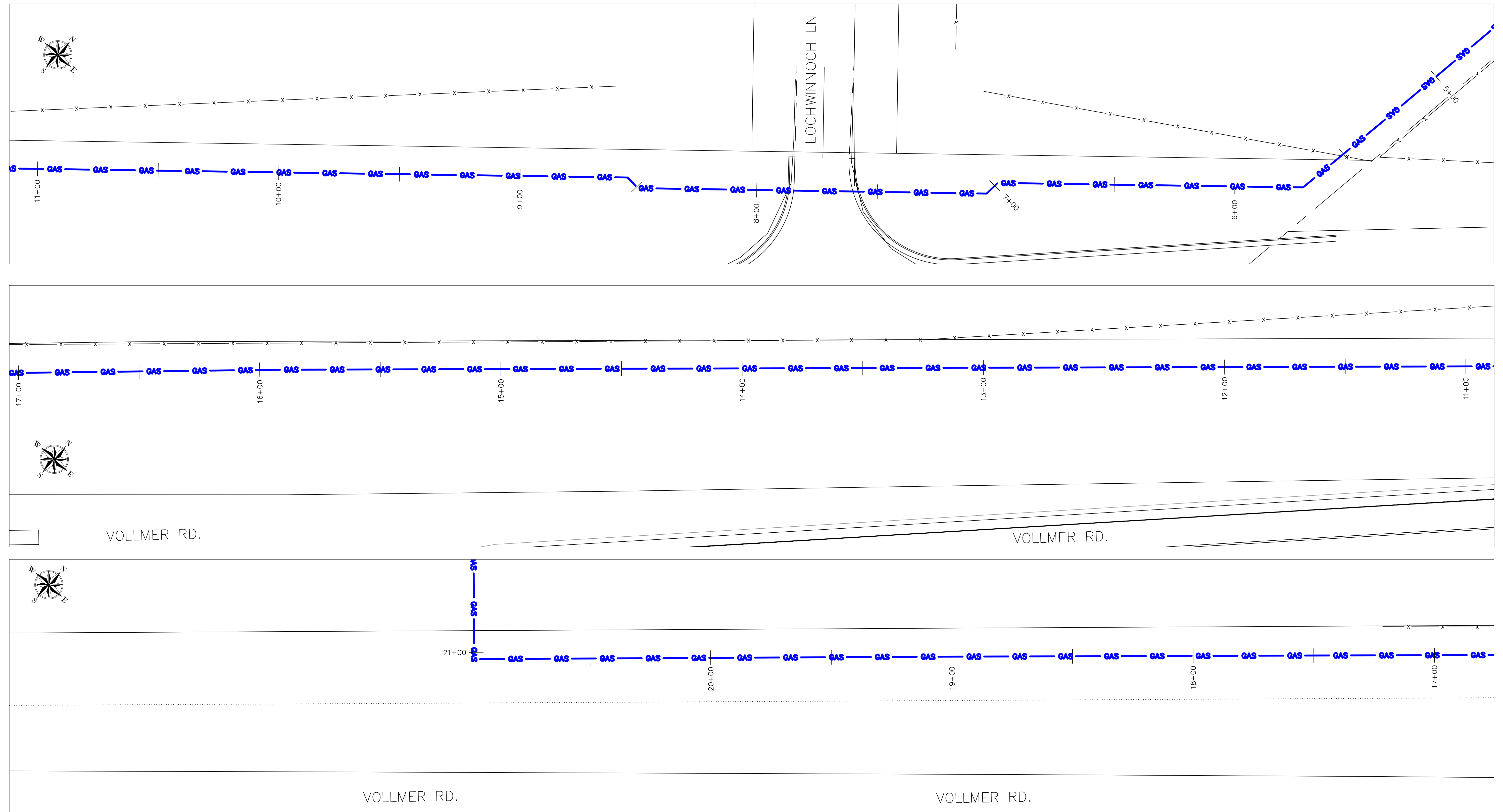


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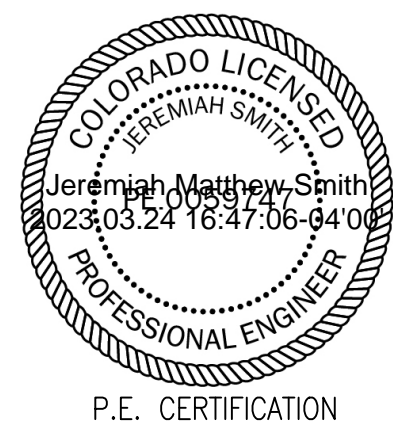
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NO. N/A				BY: DATE: APPVD:		RELATED W/O #s	PATRICK ENGINEERING TEAM	
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							LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO WELD, X-RAY, NDT DOCUMENTATION 0+00 - 5+00	
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WELD & X-RAY DOCUMENTATION



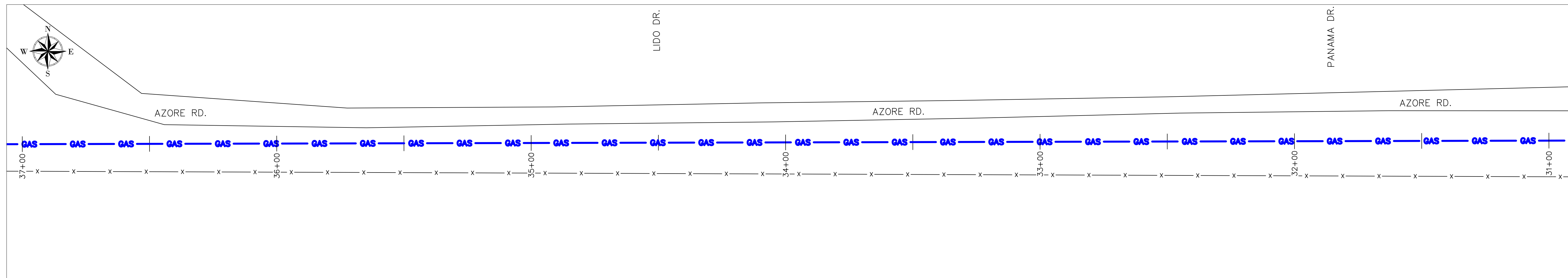
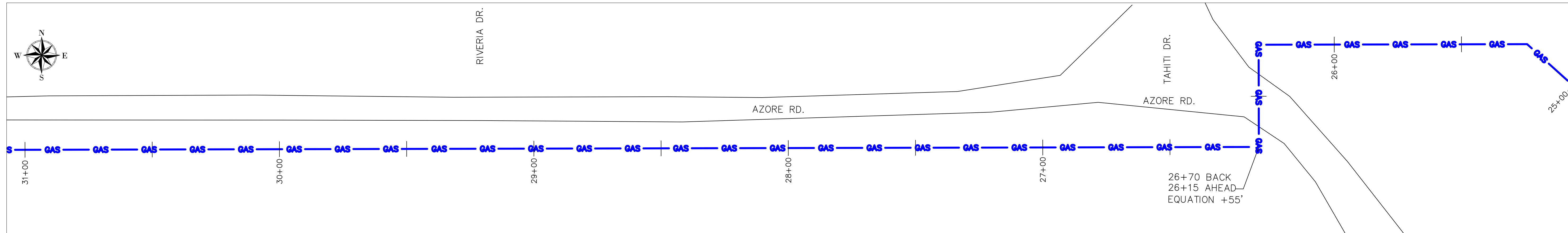
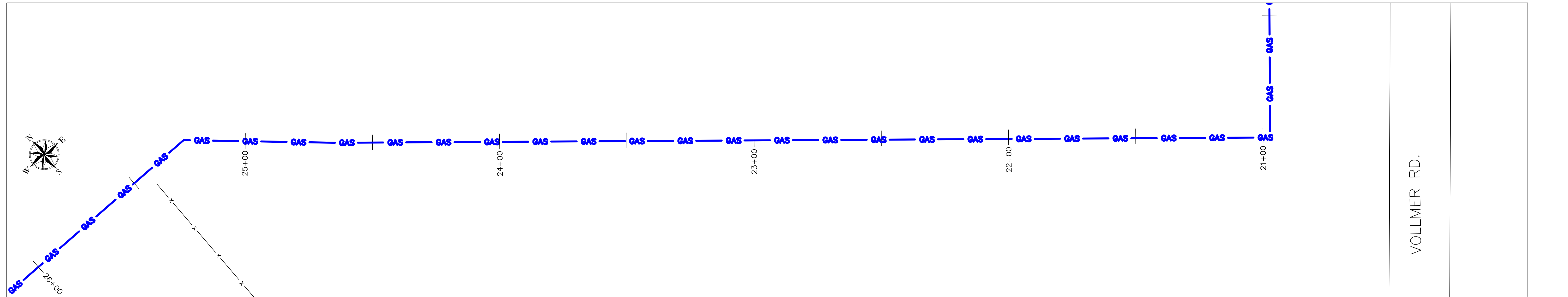
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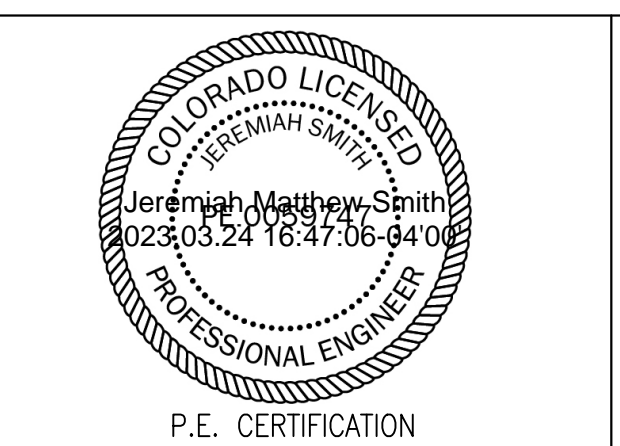
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SCALE: 1" = 20'-0"	DWN BY: NORM WEST	CHKD. BY: SETH BROWN	APPD. BY: JEREMIAH SMITH
LOCH FYNE 20" GAS PIPELINE			
COLORADO SPRINGS, COLORADO			
WELD, X-RAY, NDT DOCUMENTATION			
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WELD & X-RAY (NDT) DOCUMENTATION

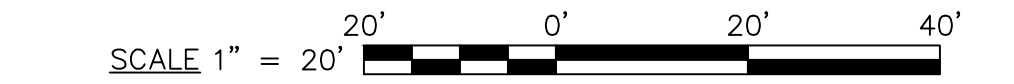


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						TRANS v 20% <input type="checkbox"/>		PATRICK ENGINEERING TEAM	
								DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
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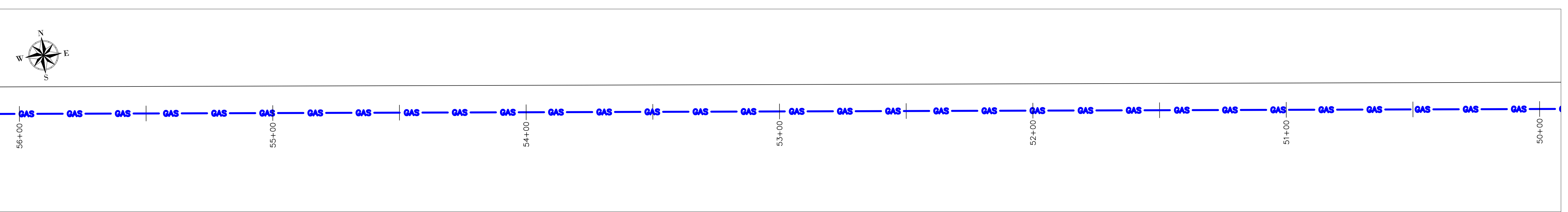
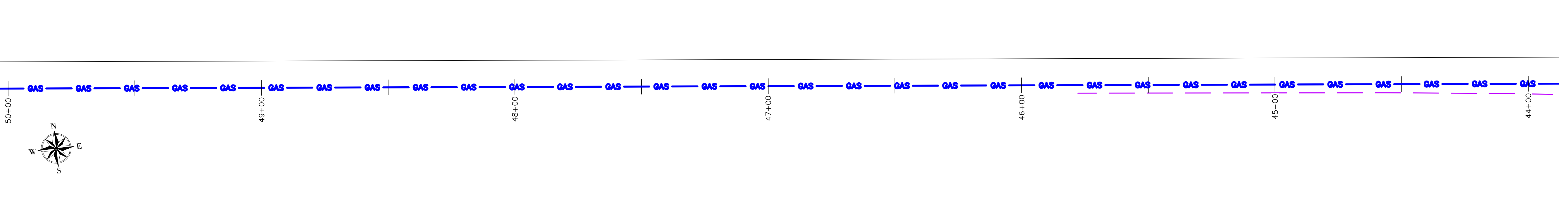
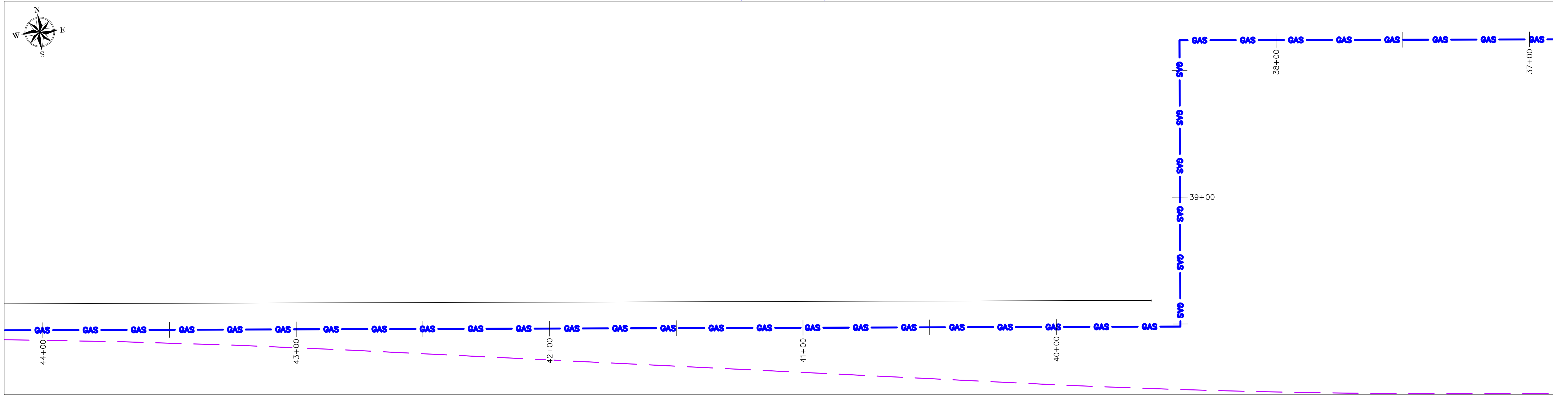
ENGINEER:	SCOTT JENSEN	PHONE:	(719) 668-8196
PROJECT MANAGER:	MELISSA LINGO	PHONE:	(719) 668-8794
CONSTRUCTION LEAD:	JOSH RICHARD	PHONE:	(719) 668-3675
SHEET NO. 17 OF 60			
PATRICK ENGINEERING TEAM			
DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH			
RELATED W/O #s	3789816		



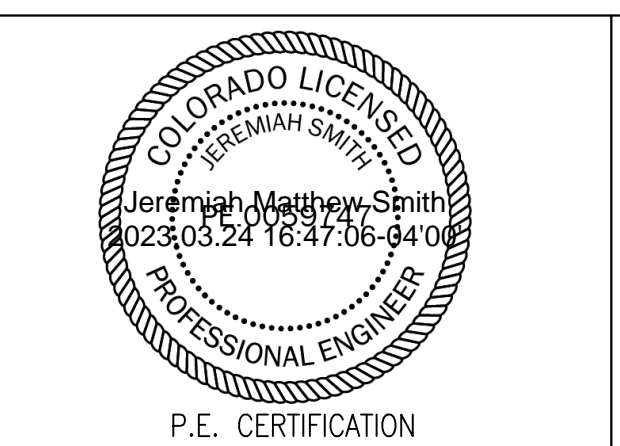
LOCH FYNE 20" GAS PIPELINE
COLORADO SPRINGS, COLORADO
WELD, X-RAY, NDT DOCUMENTATION
 21+00 - 37+00

DWG. NO: **W-102**

WELD & X-RAY (NDT) DOCUMENTATION



FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-CSD-UG.dwg LAYOUT NAME: W-103 PLOTTED: Wednesday, March 22, 2023 - 4:28pm USER: rwest



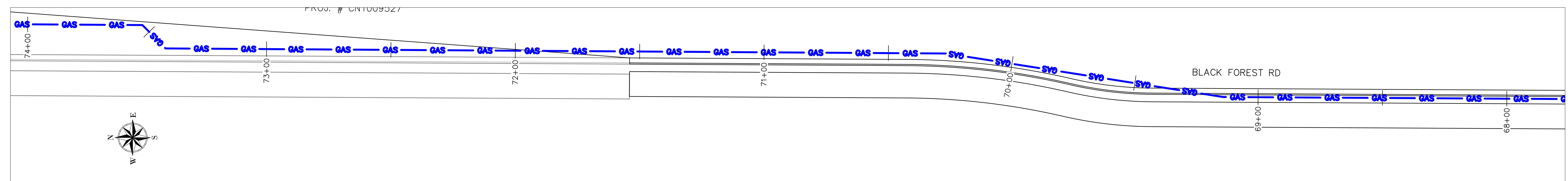
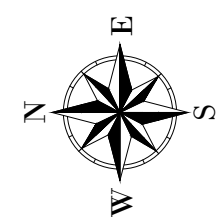
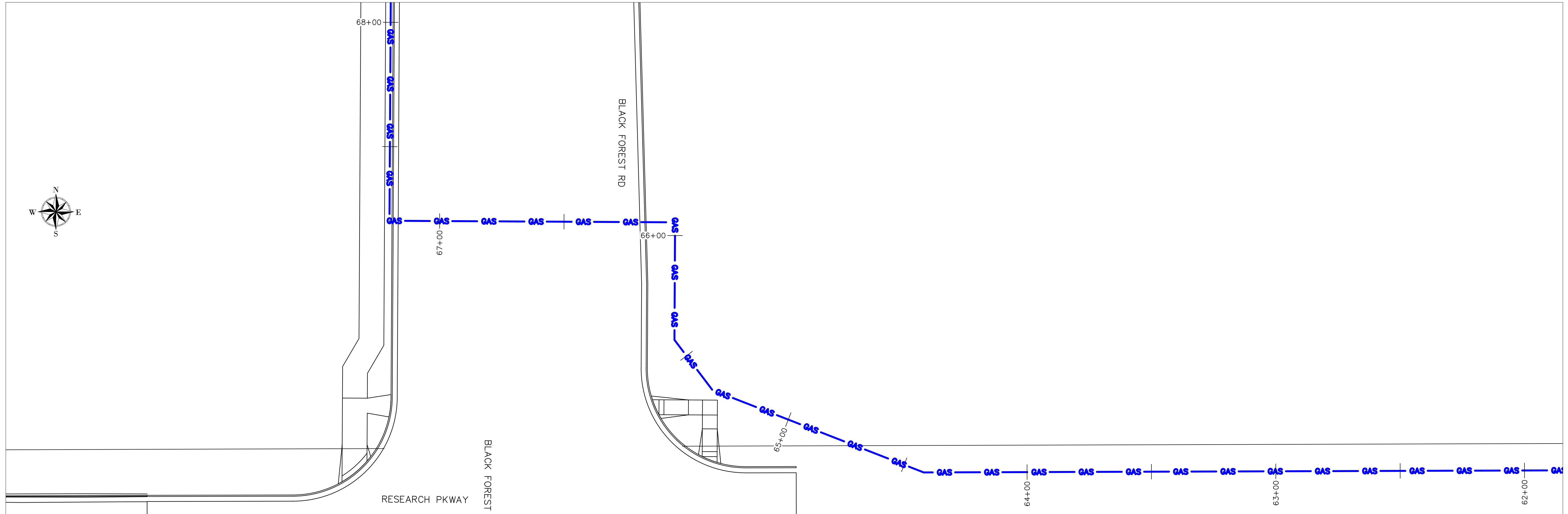
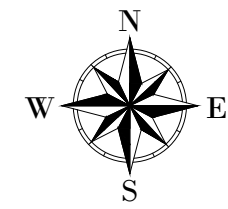
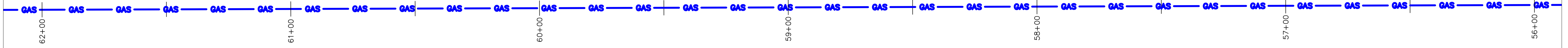
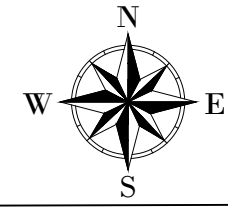
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PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A				
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DISTRIBUTION:	<input checked="" type="checkbox"/>
FEEDER:	<input type="checkbox"/>
TRANS. BY DEF.	<input type="checkbox"/>
TRANS v 20%:	<input type="checkbox"/>

ENGINEER:	SCOTT JENSEN	PHONE:	(719) 668-8196
PROJECT MANAGER:	MELISSA LINGO	PHONE:	(719) 668-8794
CONSTRUCTION LEAD:	JOSH RICHARD	PHONE:	(719) 668-3675
SHEET NO. 18 OF 60	SCALE: 1" = 20'-0"		
PATRICK ENGINEERING TEAM			
DWN BY:	NORM WEST	CHKD. BY:	SETH BROWN
APPD. BY:	JEREMIAH SMITH		
LOCH FYNE 20" GAS PIPELINE			
COLORADO SPRINGS, COLORADO			
WELD, X-RAY, NDT DOCUMENTATION			
37+00 - 56+00			
			DWG. NO: W-103

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WELD & X-RAY (NDT) DOCUMENTATION



SCALE 1" = 20'



REVISIONS				SYSTEM NAME: 150P		JOB TYPE:		W/O #			
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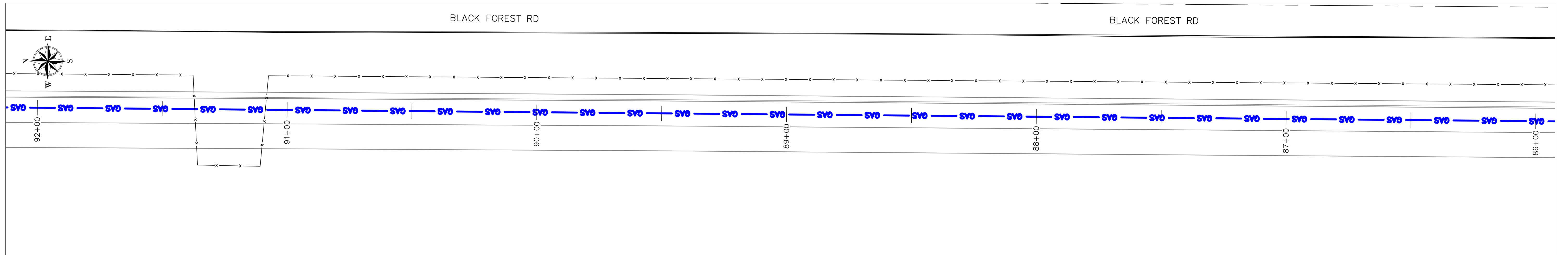
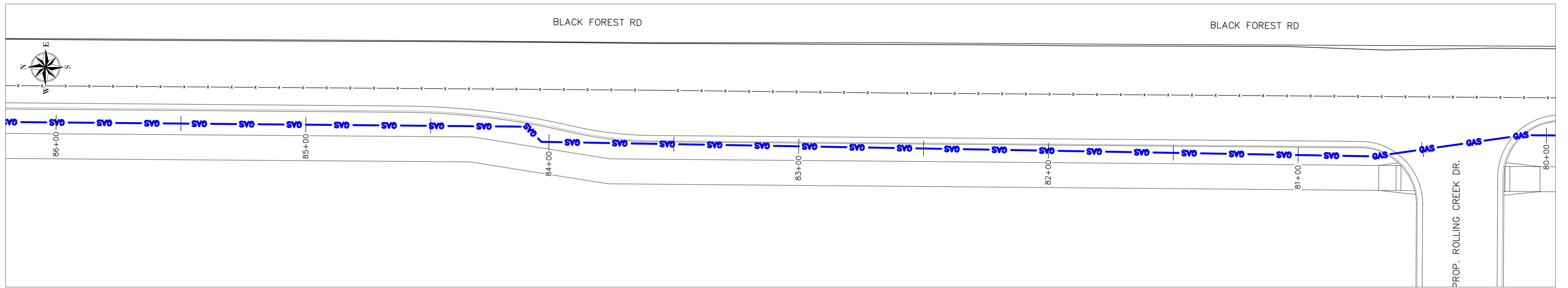
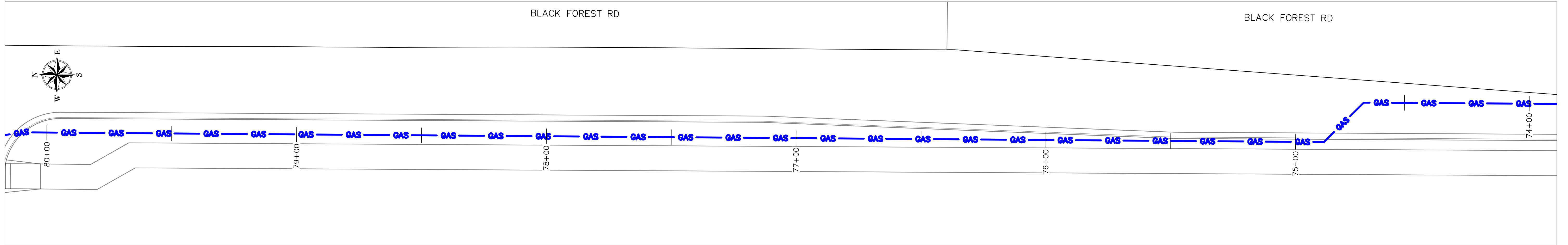
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LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO WELD, X-RAY, NDT DOCUMENTATION 56+00 - 74+00				
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SCALE 1" = 20'



REVISIONS				SYSTEM NAME: 150P		JOB TYPE:		W/O #	
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5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS	SYSTEM MOP:	145	psig		PROJECT MANAGER: MELISSA LINGO
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS					CONSTRUCTION LEAD: JOSH RICHARD
N/A		BY:	DATE:	APPV:					SHEET NO. 20 OF 60
PERMIT INFORMATION		ISOLATION AREA		LOCATION		ATLAS OR TITLE		N/A	
N/A		N/A		TWN. 12S, R1NG. 65W, SECTIONS 31, 32		P-19		DWN BY: NORM WEST	

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FEEDER:	<input type="checkbox"/>
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TRANS v 20%:	<input type="checkbox"/>

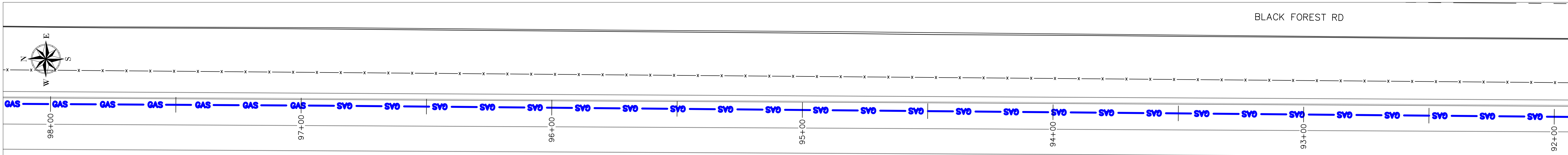
RELATED W/O #s	3789816
----------------	---------

ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196
 PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794
 CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675
 SHEET NO. 20 OF 60 SCALE: 1" = 20'-0"
 PATRICK ENGINEERING TEAM
 DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH
LOCH FYNE 20" GAS PIPELINE
COLORADO SPRINGS, COLORADO
WELD, X-RAY, NDT DOCUMENTATION
74+00 - 92+00 DWG. NO: **W-105**

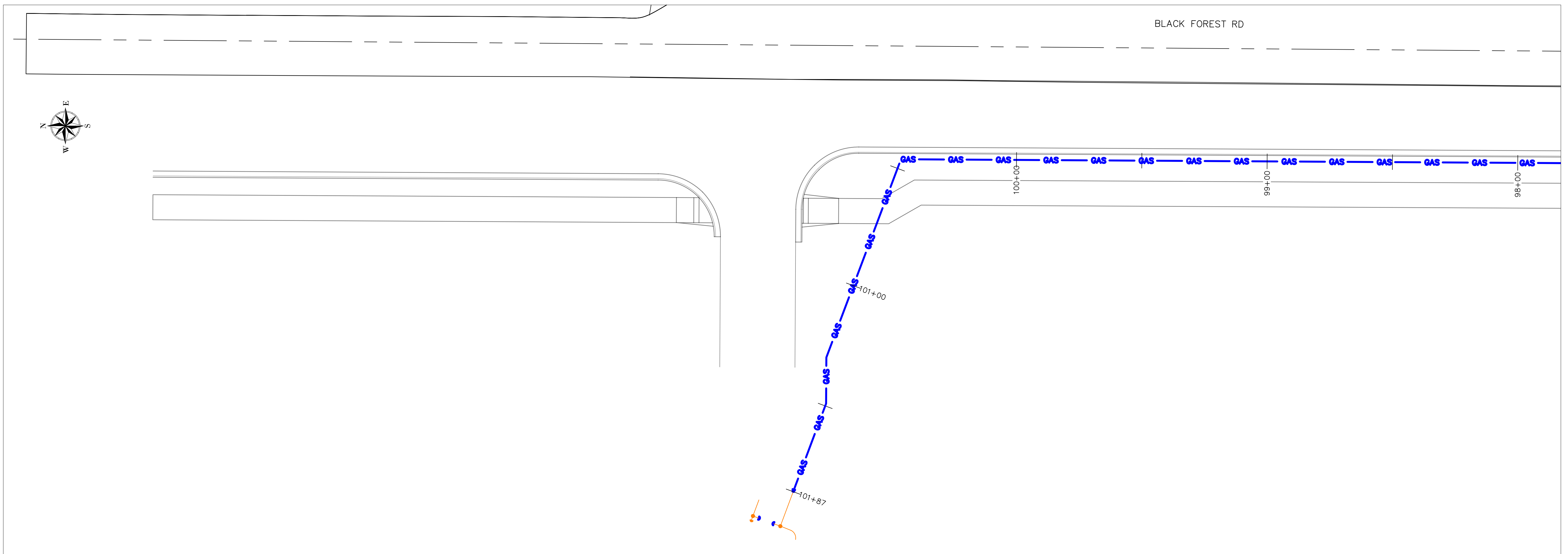
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-C3D-C3D.dwg LAYOUT NAME: W-105 PLOTTED: Wednesday, March 22, 2023 - 4:29pm USER: rwest

WELD & X-RAY (NDT) DOCUMENTATION

BLACK FOREST RD



BLACK FOREST RD



SCALE 1" = 20'

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-C3D-C3D.dwg LAYOUT NAME: W-106 PLOTTED: Wednesday, March 22, 2023 - 4:29pm USER: mwst



REVISIONS				SYSTEM NAME: 150P		JOB TYPE:		W/O #	
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS	SYSTEM MAOP: 275 psig		3747144		
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS	SYSTEM MOP: 145 psig		RELATED W/O #s		
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS	N/A		3789816		
N/A				BY:	DATE:	APPRV:			
PERMIT INFORMATION		ISOLATION AREA		LOCATION		ATLAS OR TITLE		N/A	
N/A		N/A		TWN. 12S, RING. 65W, SECTION 31		P-18, P-19			

HP SERVICE:	<input type="checkbox"/>
DISTRIBUTION:	<input checked="" type="checkbox"/>
FEEDER:	<input type="checkbox"/>
TRANS. BY DEF.	<input type="checkbox"/>
TRANS v 20%:	<input type="checkbox"/>

ENGINEER:	SCOTT JENSEN	PHONE:	(719) 668-8196
PROJECT MANAGER:	MELISSA LINGO	PHONE:	(719) 668-8794
CONSTRUCTION LEAD:	JOSH RICHARD	PHONE:	(719) 668-3675
SHEET NO.	21 OF 60	SCALE: 1" = 20'-0"	
PATRICK ENGINEERING TEAM			
DWN BY:	NORM WEST	CHKD. BY:	SETH BROWN
APPRV. BY:	JEREMIAH SMITH		
LOCH FYNE 20" GAS PIPELINE			
COLORADO SPRINGS, COLORADO			
WELD, X-RAY, NDT DOCUMENTATION			
			DWG. NO: W-106
92+00 - 101+67			

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WELD CHART - FABRICATION

TAG #	WELD #	COMP. #	WELD #	X-RAY DATE	X-RAY TYPE	RESULT	REPAIR	X-RAY DATE	X-RAY TYPE	RESULT	TAG #	WELD #	COMP. #	WELD #	X-RAY DATE	X-RAY TYPE	RESULT	REPAIR	X-RAY DATE	X-RAY TYPE	RESULT	TAG #	WELD #	COMP. #	WELD #	X-RAY DATE	X-RAY TYPE	RESULT	REPAIR	X-RAY DATE	X-RAY TYPE	RESULT

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-CSD-CSD.dwg LAYOUT NAME: W-109 PLOTTED: Wednesday, March 22, 2023 - 4:28pm USER: rwest




Colorado Springs Utilities
It's how we're all connected




PATRICK ENGINEERING
 8902 Vincennes Circle, Suite F
 Indianapolis, IN 46268
 TEL. (317) 217-1701
 www.patrickco.com
 PROJ. NO. 22282.003

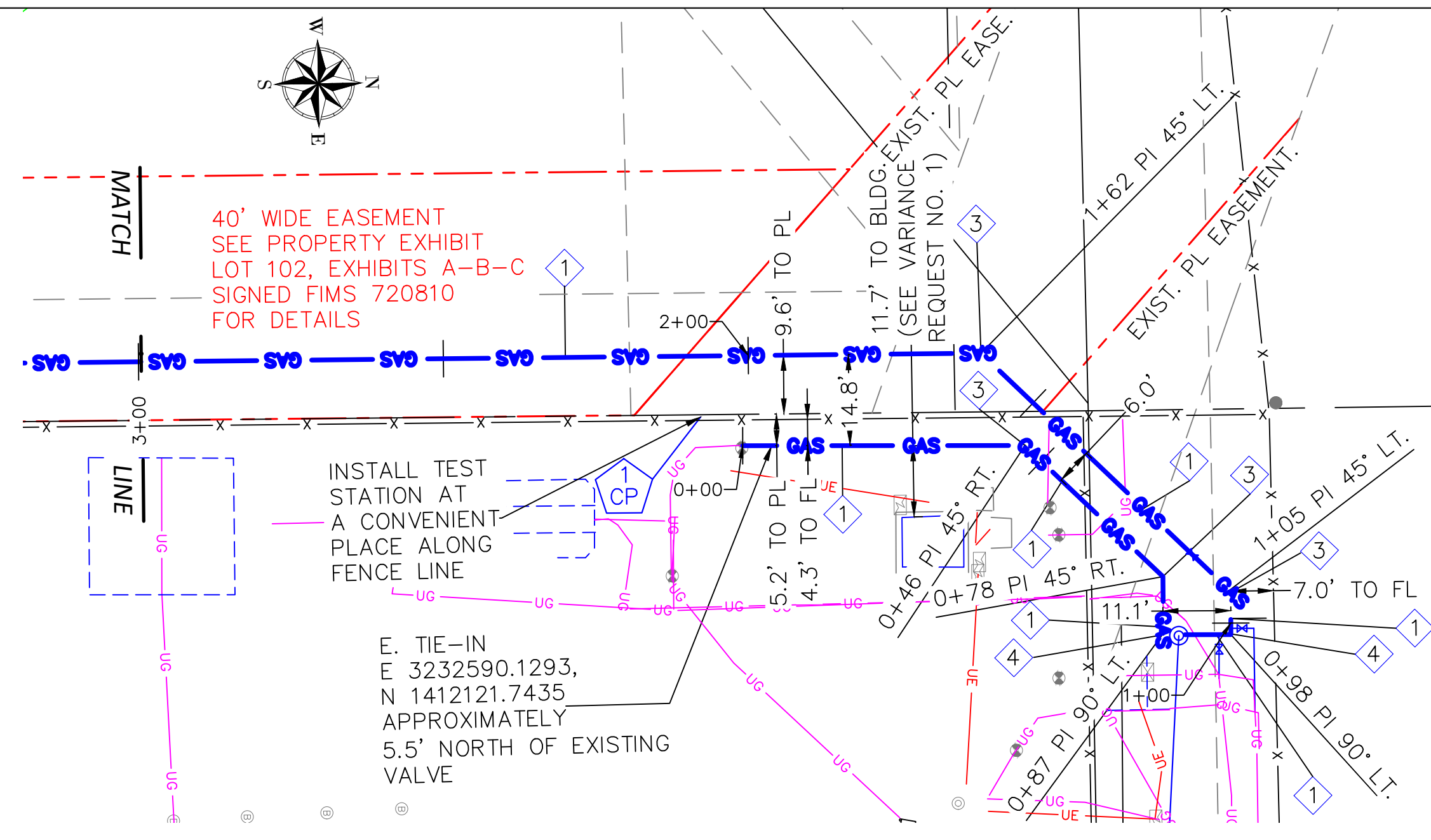
REVISIONS					SYSTEM NAME: 150P		JOB TYPE:		W/O #		ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196						
5	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS	SYSTEM MAOP:	275 psig	HP SERVICE:	<input type="checkbox"/>	3747144	PROJECT MANAGER:	MELISSA LINGO PHONE: (719) 668-8794						
4	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS	SYSTEM MOP:	145 psig	DISTRIBUTION:	<input checked="" type="checkbox"/>		CONSTRUCTION LEAD:	JOSH RICHARD PHONE: (719) 668-3675						
3	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS	SCALE: NTS												
SHEET NO. 24 OF 60 PATRICK ENGINEERING TEAM																	
PERMIT INFORMATION			ISOLATION AREA			LOCATION			ATLAS OR TITLE			DWN BY:	NORM WEST	CHKD. BY:	SETH BROWN	APPD. BY:	JEREMIAH SMITH
N/A			N/A			TWN. 12S, RNG. 65W, SECTIONS 31, 32, 33			R-18, R-19, Q-19, P-17, P-18, P-19			3789816					
SYSTEM MAOP:						SYSTEM MOP:						TRANS. BY DEF. <input type="checkbox"/>					
SYSTEM MOP:						SYSTEM MOP:						TRANS v 20% <input type="checkbox"/>					
LOCH FYNE 20" GAS PIPELINE											DWG. NO. W-109						
COLORADO SPRINGS, COLORADO											COPYRIGHT PROTECTED © 2018 PATRICK ENGINEERING INC.						
WELD CHART																	

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	4		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	
4	2		220-692-920	20" ELBOW, 0.375" WT, STL, 90 DEG., 3R, WPHY 52	FORGED	FBE	
6	13'		240-365-910	10" PIPE, STL, 0.365" WT, API 5L-X52, FBE	ERW	FBE	
7	4'		240-154-238	2" PIPE, STL, 0.154" WT, X-52, FBE	SMLS	FBE	
8	1		220-692-910	10" ELBOW, 0.365" WT, STL, 90 DEG., 3R, WPHY 52	FORGED	FBE	
9	1		215-792-920	REDUCER, WELD, WPHY52, CARBON STEEL, STD., 20IN X 12 NPS	FORGED	FBE	
10	1		215-790-100	REDUCER, WELD, WPHY52, CARBON STEEL, STD., 12IN X 10 NPS	FORGED	FBE	
11	1		220-700-920	20" TEE, WELD, WPHY 52, CARBON STEEL, STD. WALL	FORGED	FBE	
12	1		254-960-055	BRANCH CONNECTION, WELDOLET, CS, CL3000, 20"X2"	FORGED	N/A	
13	1		290-100-920	20" BALL VALVE, API 6D, CL150, VERTICAL GEAR OPERATED, FULL PORT, STD 0.375" WALL	FORGED	FBE	
14	1		290-100-911	10" BALL VALVE, API 6D, CL150, VERTICAL GEAR OPERATED, FULL PORT, STD 0.365" WALL	FORGED	FBE	
15	1		290-100-200	2" BALL VALVE, API 6D, CL150, VERTICAL GEAR OPERATED, FULL PORT, STD. 0.154" WALL	FORGED	FBE	

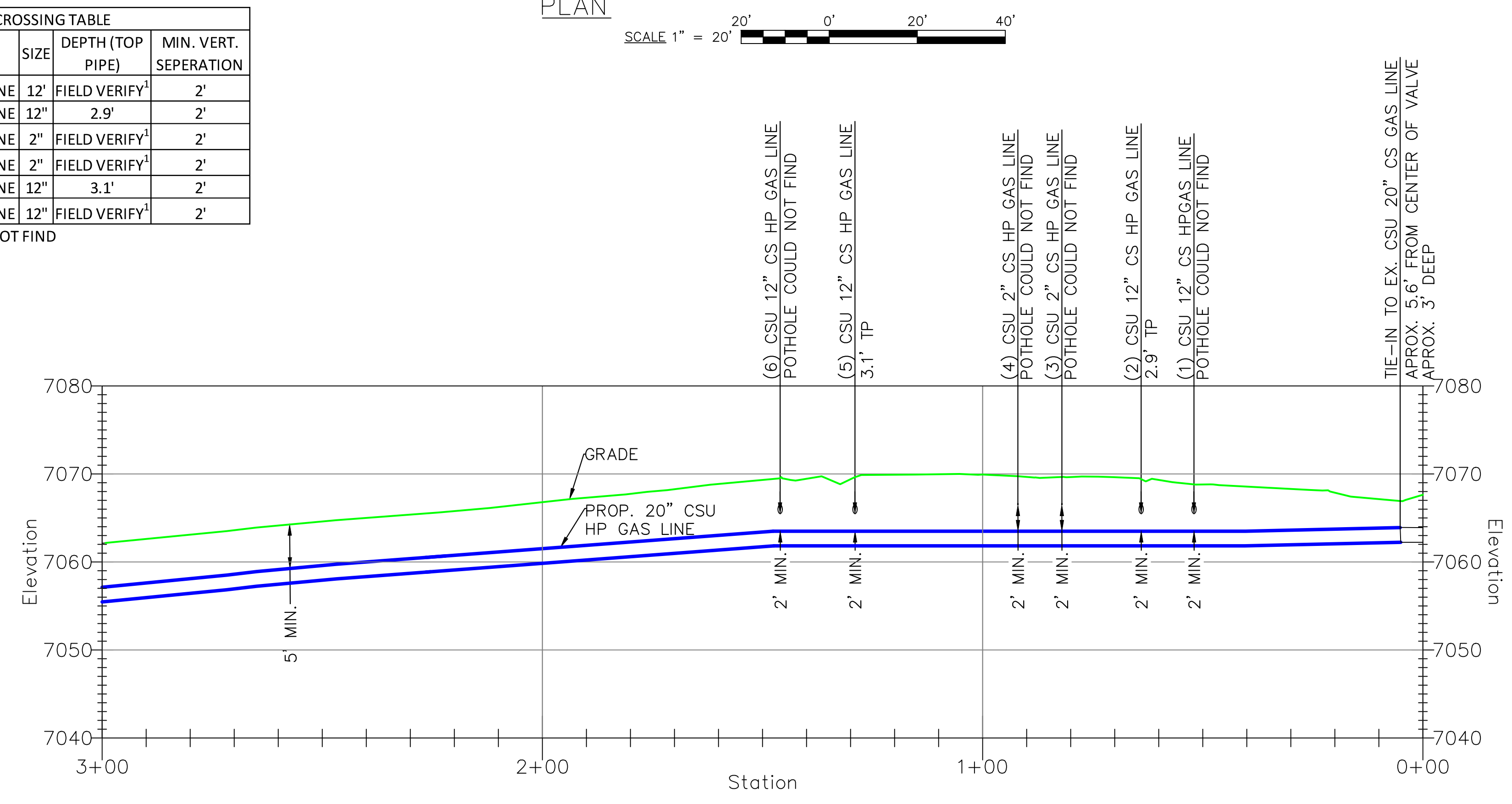
CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
1 CP	INSTALL TEST STATIONS AT LOCATIONS SHOWN IN THE DESIGN PACKAGE.
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

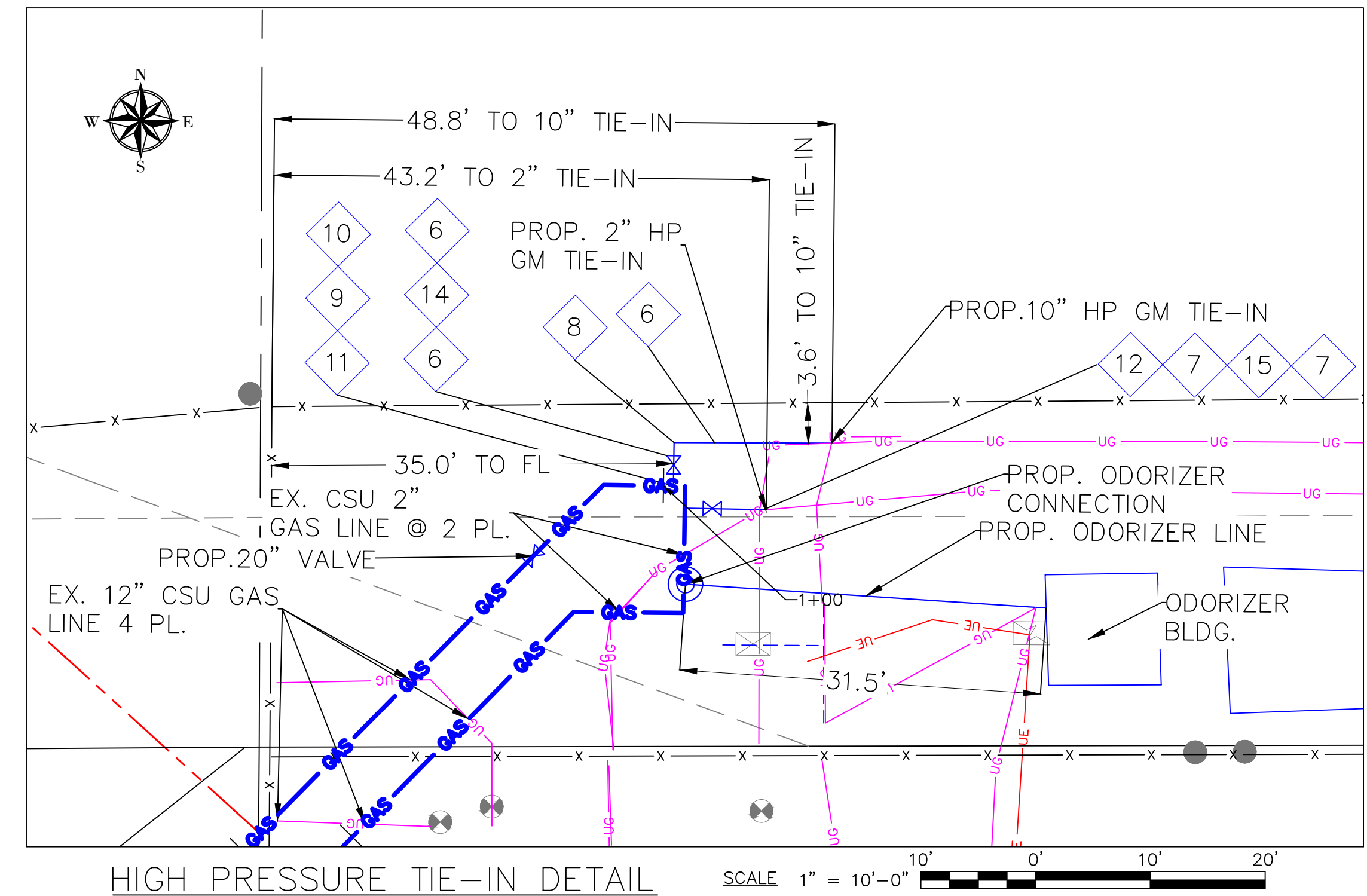
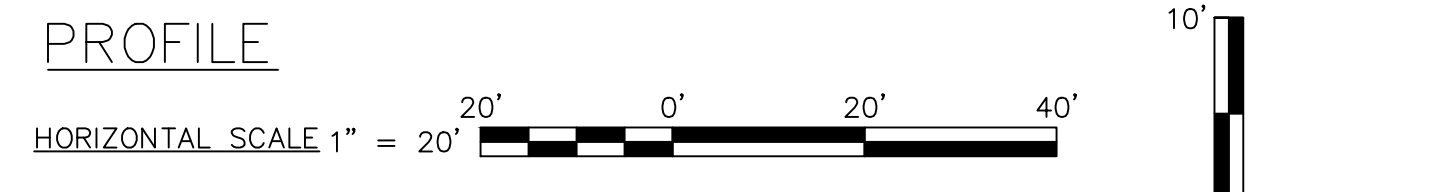


CROSSING TABLE				
ITEM	CROSSING	SIZE	DEPTH (TOP PIPE)	MIN. VERT. SEPERATION
1	CSU HP GAS LINE	12"	FIELD VERIFY ¹	2'
2	CSU HP GAS LINE	12"	2.9'	2'
3	CSU HP GAS LINE	2"	FIELD VERIFY ¹	2'
4	CSU HP GAS LINE	2"	FIELD VERIFY ¹	2'
5	CSU HP GAS LINE	12"	3.1'	2'
6	CSU HP GAS LINE	12"	FIELD VERIFY ¹	2'

1 POTHOLE COULD NOT FIND



CSU SPECIFICATION VARIANCE APPROVAL REQUEST	
1	THE PROPOSED 20" CSU GAS LINE IN THE MCLINTOCH STATION IS ROUTED ADJACENT TO AND LESS THAN 15 FEET FROM A STATION BUILDING THAT IS NOT MEANT FOR HUMAN OCCUPANCY, AND A VARIANCE REQUEST IS BEING APPLIED FOR APPROVAL.
APPROVED BY	



HIGH PRESSURE TIE-IN DETAIL SCALE 1" = 10'-0"

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-C30-C31.dwg LAYOUT NAME: C-200 PLOTTED: Wednesday, March 22, 2023 - 4:29pm USER: rwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS				
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS				
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS				
NO. N/A				BY:	DATE:	APPRD:		
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A			
N/A		N/A	SEC. 33 TOWN. 12S, RNG. 65W	R-18				

SYSTEM MAOP: 275 psig	HP SERVICE: <input type="checkbox"/>	RELATED W/O #s	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
SYSTEM MOP: 145 psig	DISTRIBUTION: <input checked="" type="checkbox"/>	3747144	PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
	FEEDER: <input type="checkbox"/>		CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
	TRANS. BY DEF. <input type="checkbox"/>		SHEET NO. 25 OF 60	SCALE: AS NOTED
	TRANS v 20% <input type="checkbox"/>	3789816	PATRICK ENGINEERING TEAM	
			DWN BY: NORM WEST	CHKD. BY: SETH BROWN
			APPD. BY: JEREMIAH SMITH	

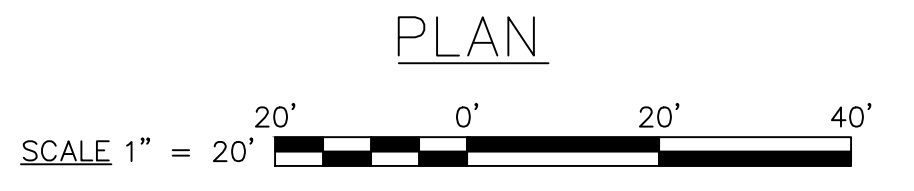
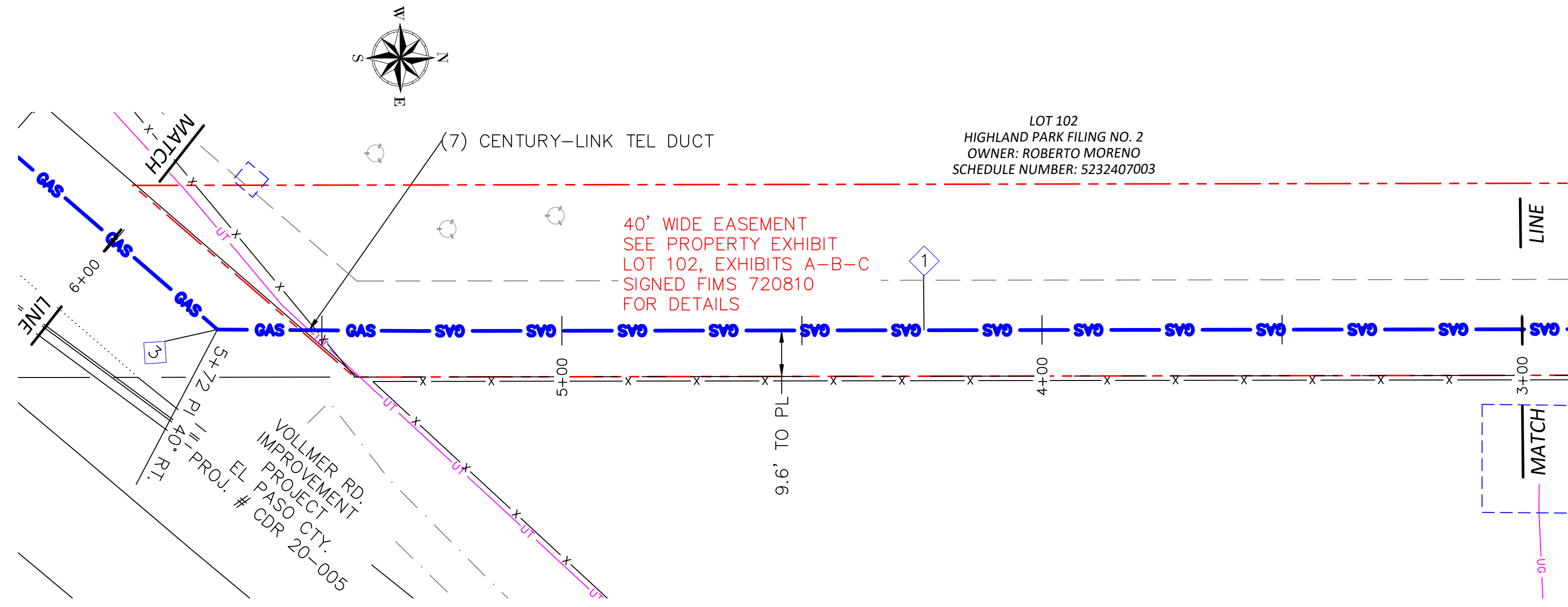
LOCH FYNE 20" GAS PIPELINE
COLORADO SPRINGS, COLORADO
PLAN & PROFILE
0+00 - 3+00

DWG. NO. **C-200**

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HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	1		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	



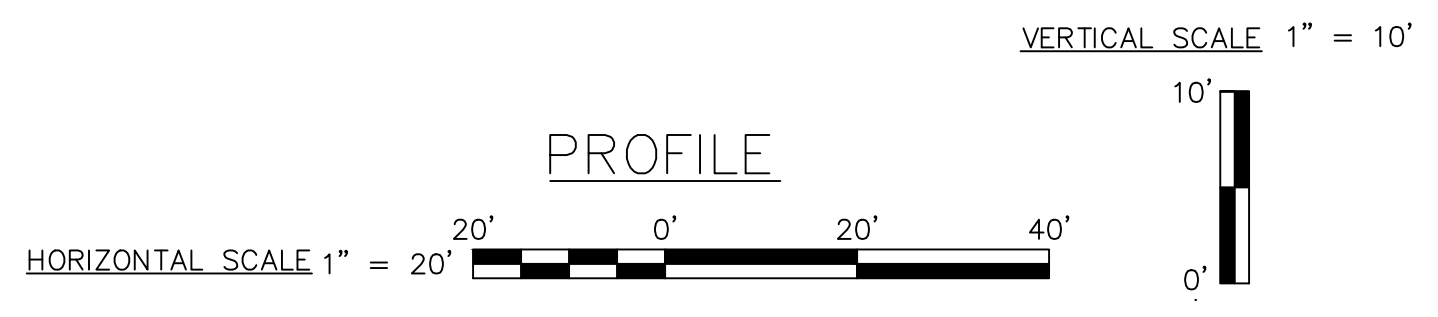
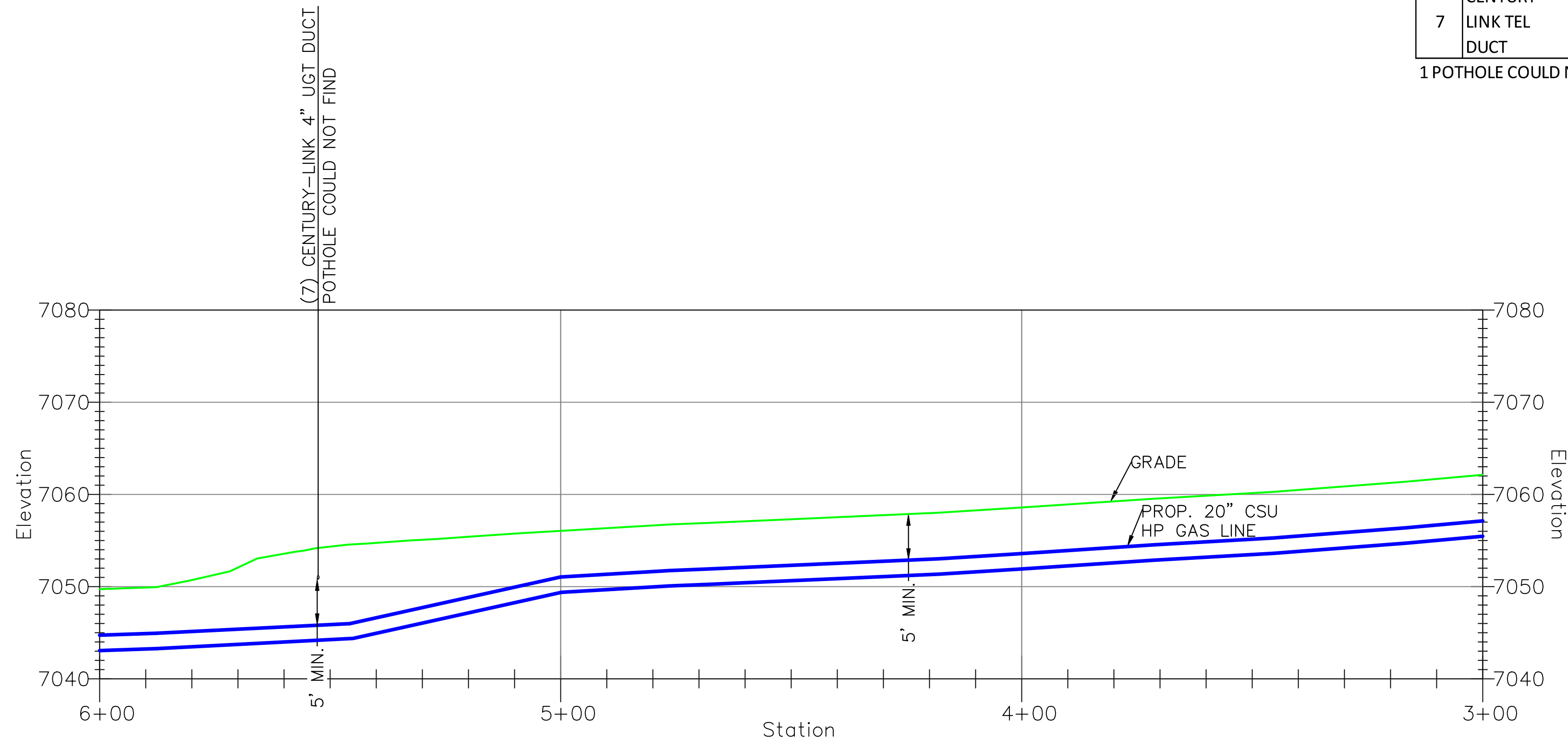
CROSSING TABLE				
ITEM	CROSSING	SIZE	DEPTH (TOP OF PIPE)	MIN. VERT. SEPERATION
7	CENTURY-LINK TEL DUCT	4"1	FIELD VERIFY ¹	5'

1 POTHOLE COULD NOT FIND

CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

REFERENCE NOTE:
ANY WORK RELATED TO VOLLMER RD., (COUNTY REFERENCE FILE NO. CDR 20-005) OR OTHER UTILITIES TO BE INSTALLED IN THE AREA OTHER THAT THE 20" GAS LINE IS TO BE COMPLETED BY OTHER PROJECTS.

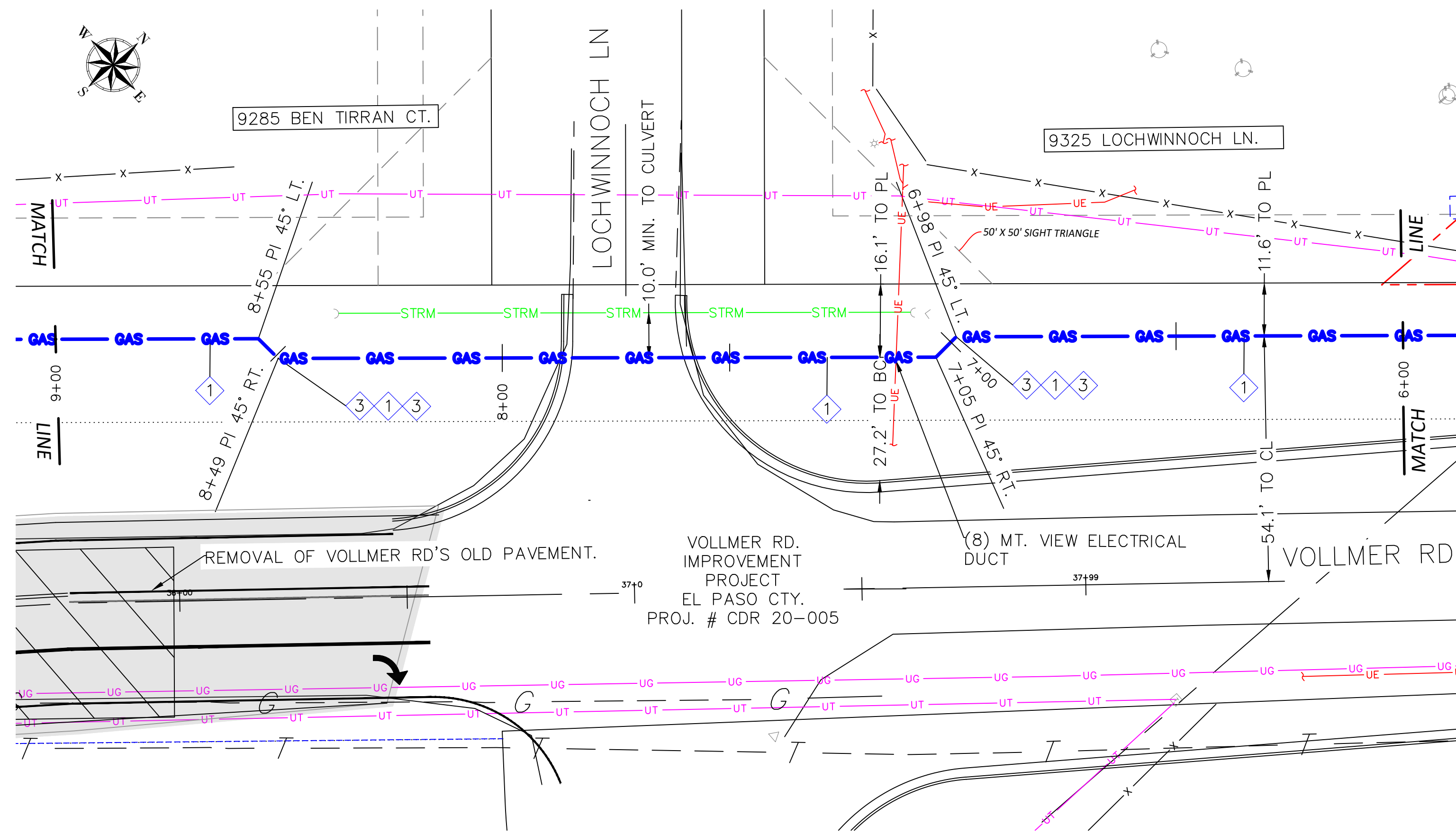


FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-CSD-CDU.dwg LAYOUT NAME: C-201 PLOTTED: Wednesday, March 22, 2023 - 4:29pm USER: rwest

<p>Colorado Springs Utilities It's how we're all connected</p>	<p>Jeremiah Matthew Smith 023.03.24 16:47:06-64'00"</p>	<p>8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com</p>	REVISIONS 6 REISSUED FOR CONSTRUCTION NEW 3/16/23 JMS 5 ISSUED FOR CONSTRUCTION NEW 11/14/22 JMS 4 100% DESIGN PACKAGE ISSUED FOR REVIEW NEW 10/14/22 JMS NO. N/A BY: DATE: APPVD:		SYSTEM NAME: 150P SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	JOB TYPE: HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	W/O # 3747144 RELATED W/O #s 3789816	ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196 PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794 CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675 SHEET NO. 26 OF 60 SCALE: AS NOTED PATRICK ENGINEERING TEAM DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH
			PERMIT INFORMATION N/A	ISOLATION AREA N/A	LOCATION SEC. 33 TWN. 12S, RNG. 65W	ATLAS OR TITLE R-18, R-19	N/A SYSTEM MAOP: SYSTEM MOP:	N/A SYSTEM MAOP: SYSTEM MOP:

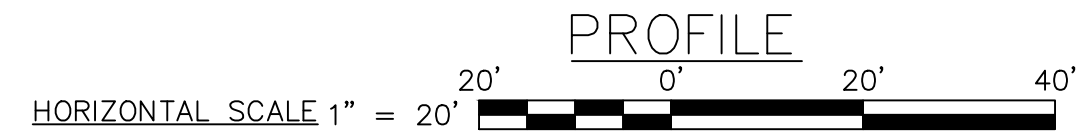
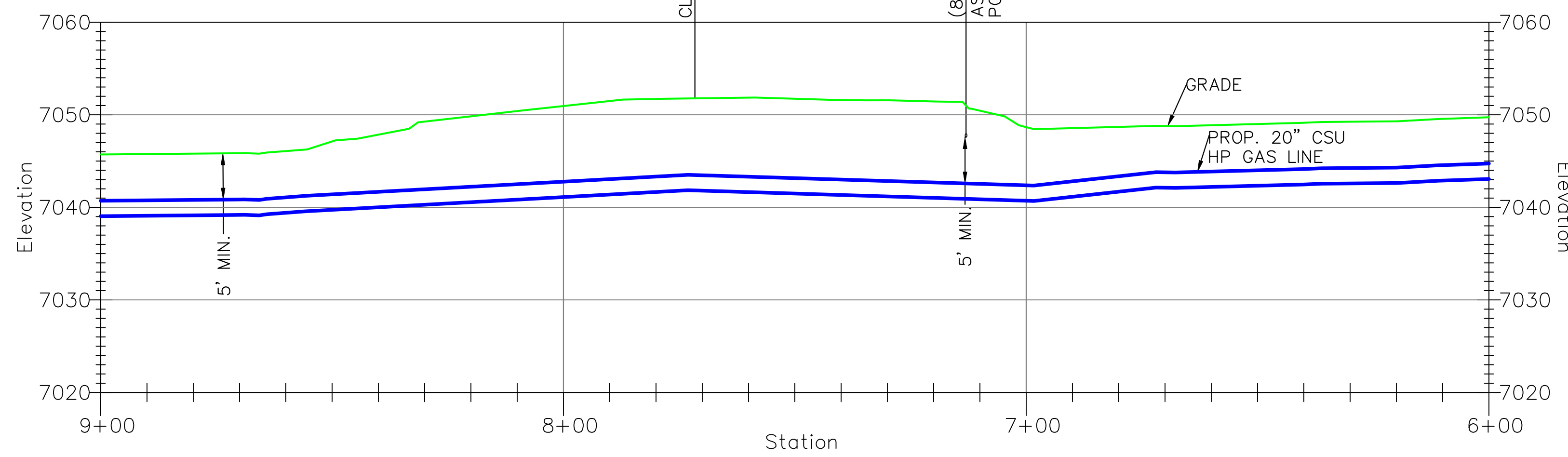
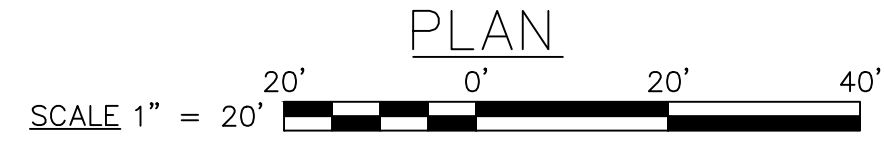
HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	4		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	



CROSSING TABLE				
ITEM	CROSSING	SIZE	DEPTH (TOP OF PIPE)	MIN. VERT. SEPERATION
8	MT. VIEW ELECTRIC DUCT	2"	FIELD VERIFY ¹	5'

1 POTHOLE COULD NOT FIND



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

REFERENCE NOTE:
ANY WORK RELATED TO VOLLMER RD., (COUNTY REFERENCE FILE NO. CDR 20-005) OR OTHER UTILITIES TO BE INSTALLED IN THE AREA OTHER THAT THE 20" GAS LINE IS TO BE COMPLETED BY OTHER PROJECTS.

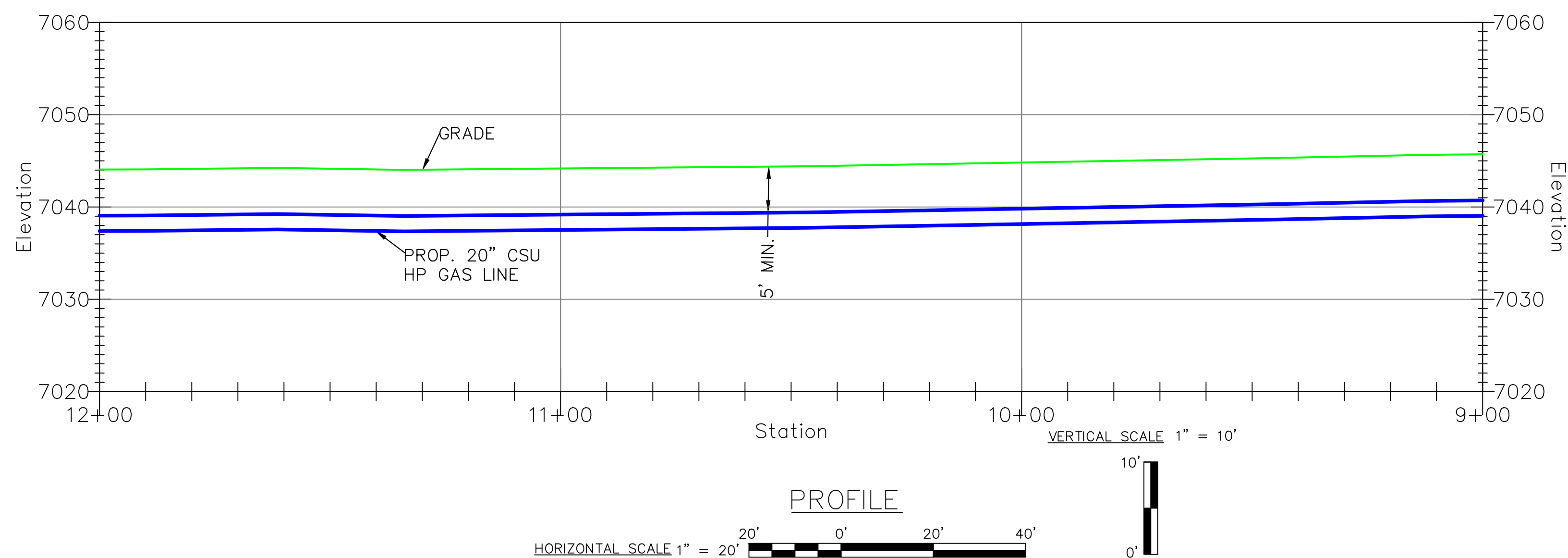
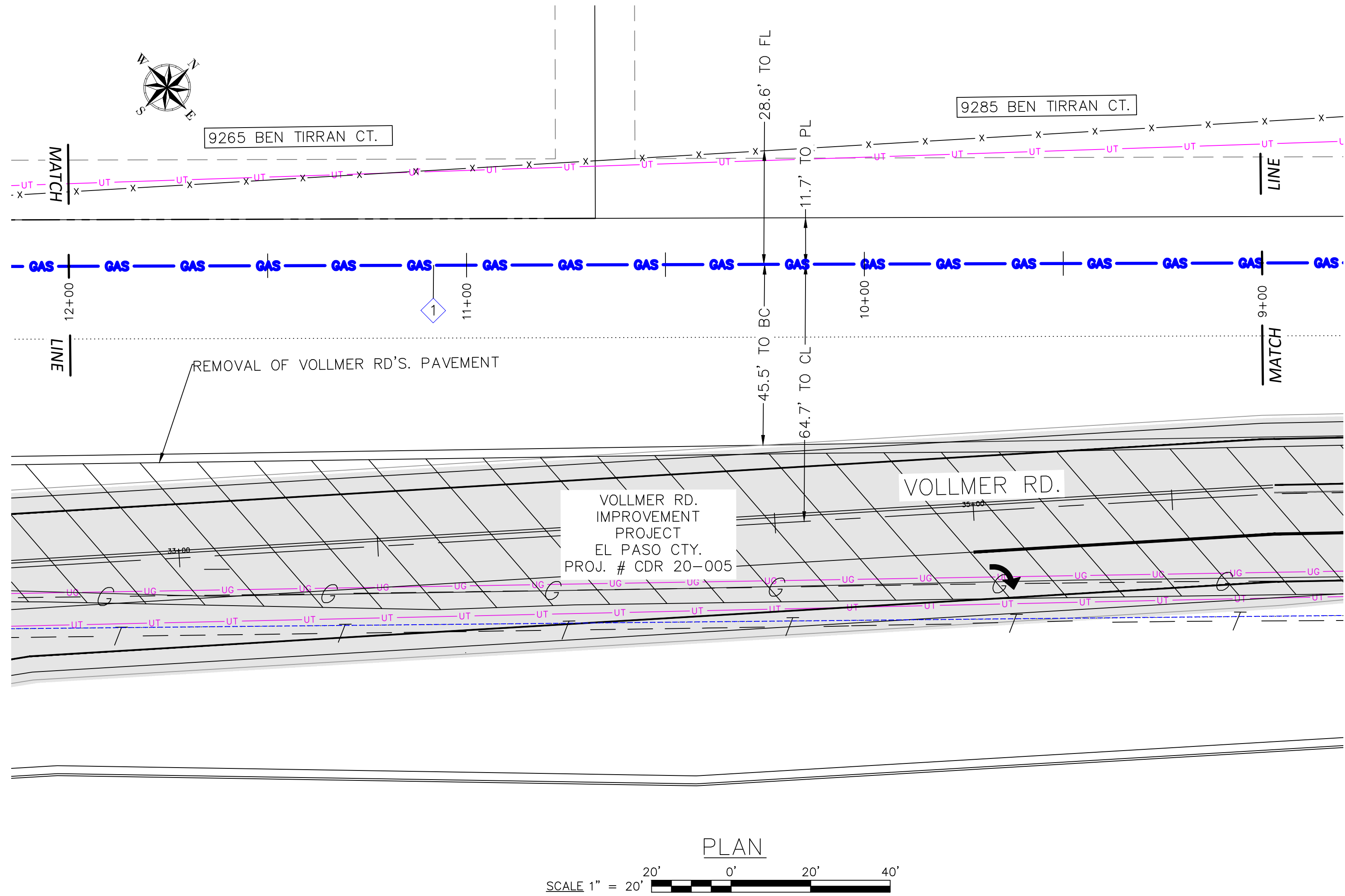
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Springs\FC-CSD-UG.dwg LAYOUT NAME: C-202 PLOTTED: Wednesday, March 22, 2023 - 4:29pm USER: rwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 27 OF 60	SCALE: AS NOTED
N/A				SYSTEM MAOP: 275 psig	HP SERVICE: <input type="checkbox"/>	3747144	PATRICK ENGINEERING TEAM	
PERMIT INFORMATION				SYSTEM MOP: 145 psig	DISTRIBUTION: <input checked="" type="checkbox"/>	RELATED W/O #s	DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
N/A					FEEDER: <input type="checkbox"/>	3789816	LOCH FYNE 20" GAS PIPELINE	
ISOLATION AREA					TRANS. BY DEF. <input type="checkbox"/>		COLORADO SPRINGS, COLORADO	
LOCATION					TRANS v 20% <input type="checkbox"/>		PLAN & PROFILE	
ATLAS OR TITLE							6+00 - 9+00	
N/A				SYSTEM MAOP:			DWG. NO. C-202	
N/A				SYSTEM MOP:			COPYRIGHT PROTECTED © 2018 PATRICK ENGINEERING INC.	

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

REFERENCE NOTE:
 ANY WORK RELATED TO VOLLMER RD., (COUNTY REFERENCE FILE NO. CDR 20-005) OR OTHER UTILITIES TO BE INSTALLED IN THE AREA OTHER THAN THE 20" GAS LINE IS TO BE COMPLETED BY OTHER PROJECTS.

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-CSD-UG.dwg LAYOUT NAME: C-203 PLOTTED: Wednesday, March 22, 2023 - 4:29pm USER: rwest

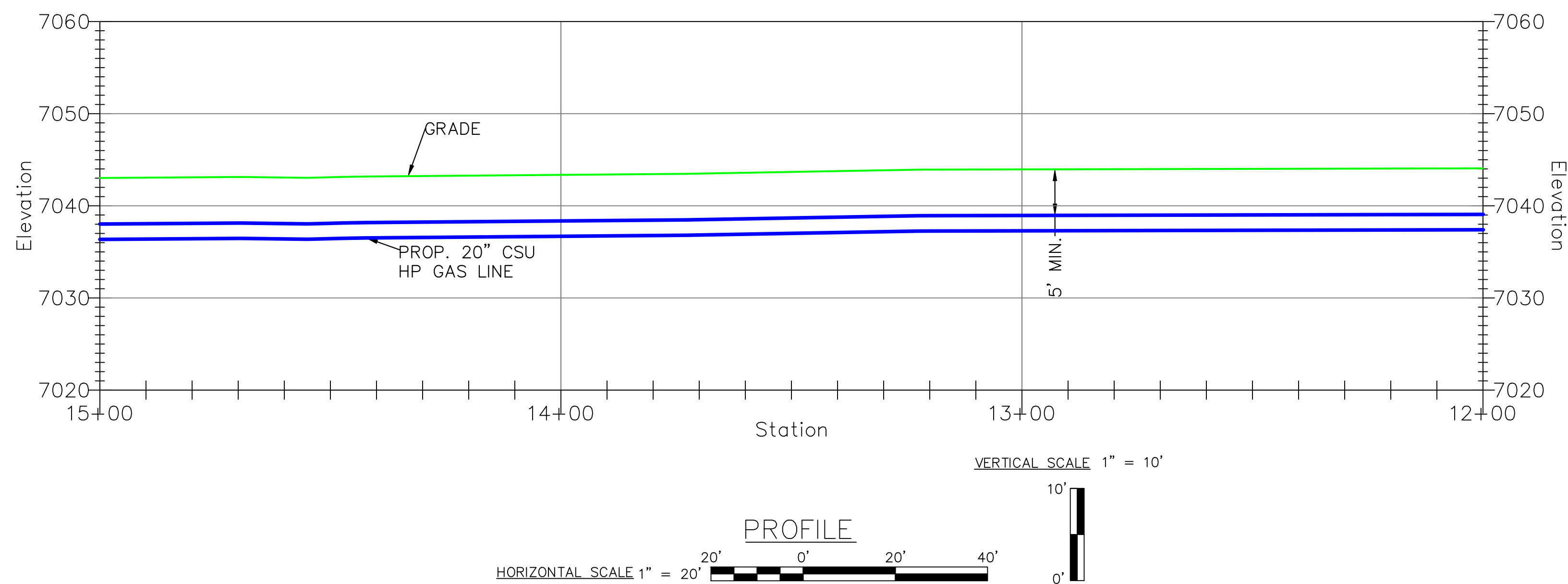
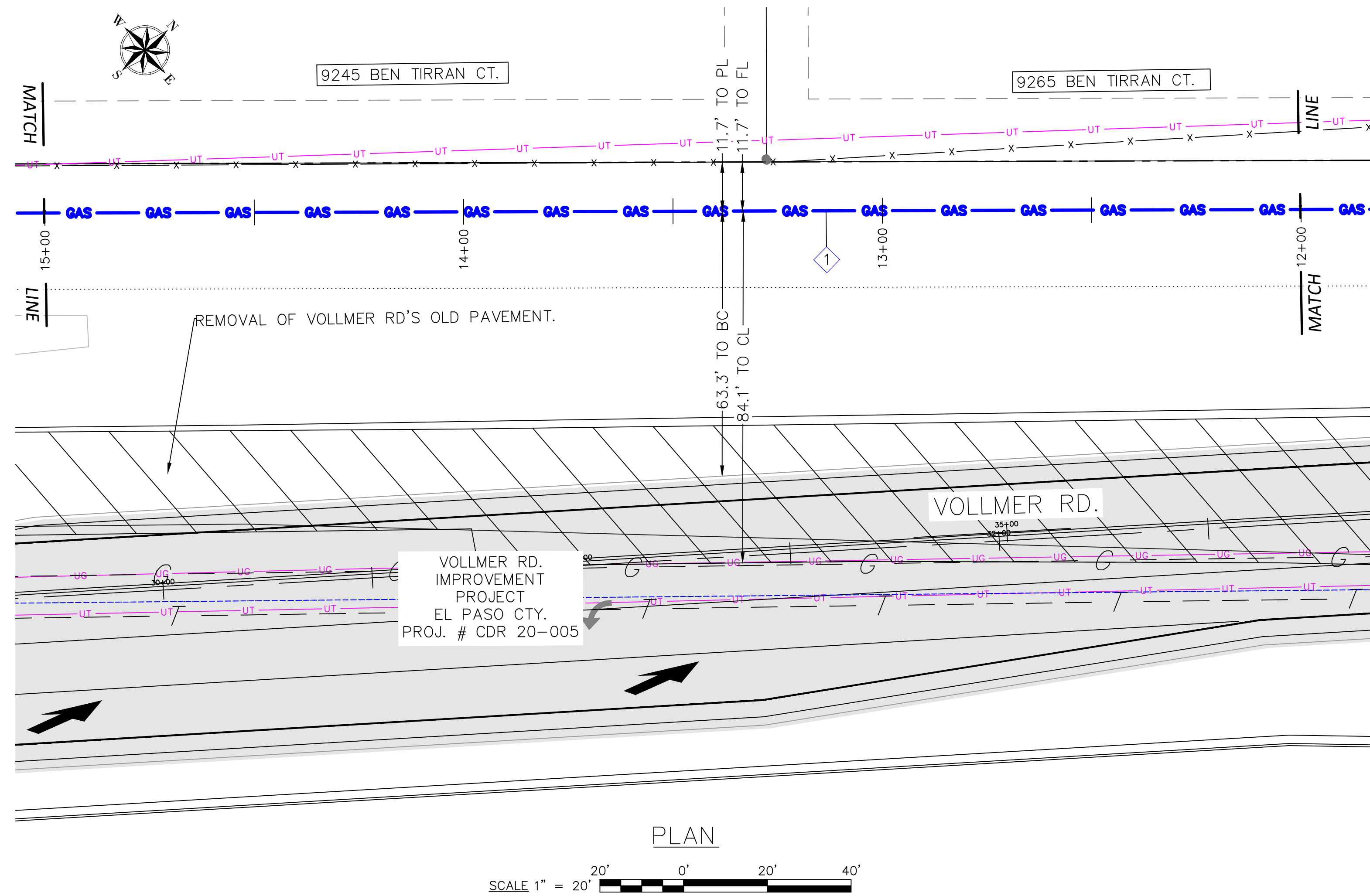
<p>Colorado Springs Utilities It's how we're all connected</p>	<p>Jeremiah Smith Professional Engineer P.E. CERTIFICATION</p>	<p>8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com</p> <p>PROJ. NO. 22282.003</p>	<table border="1"> <thead> <tr> <th colspan="4">REVISIONS</th> <th>SYSTEM NAME: 150P</th> <th>JOB TYPE:</th> <th>W/O #</th> <th>ENGINEER: SCOTT JENSEN</th> <th>PHONE: (719) 668-8196</th> </tr> </thead> <tbody> <tr> <td>6</td> <td>REISSUED FOR CONSTRUCTION</td> <td>NEW</td> <td>3/16/23</td> <td>JMS</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>ISSUED FOR CONSTRUCTION</td> <td>NEW</td> <td>11/14/22</td> <td>JMS</td> <td></td> <td>3747144</td> <td></td> <td>PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794</td> </tr> <tr> <td>4</td> <td>100% DESIGN PACKAGE ISSUED FOR REVIEW</td> <td>NEW</td> <td>10/14/22</td> <td>JMS</td> <td></td> <td></td> <td></td> <td>CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675</td> </tr> <tr> <td colspan="4">NO.</td> <td colspan="2">N/A</td> <td colspan="2">RELATED W/O #s</td> <td>SHEET NO. 28 OF 60 SCALE: AS NOTED</td> </tr> <tr> <td colspan="4">PERMIT INFORMATION</td> <td colspan="2">ISOLATION AREA</td> <td colspan="2">LOCATION</td> <td colspan="2">ATLAS OR TITLE</td> </tr> <tr> <td colspan="4">N/A</td> <td colspan="2">N/A</td> <td colspan="2">SEC. 33 TWN. 12S, RNG. 65W</td> <td colspan="2">R-19</td> </tr> <tr> <td colspan="4">SYSTEM MAOP:</td> <td colspan="2">SYSTEM MOP:</td> <td colspan="2">SYSTEM MAOP:</td> <td colspan="2">SYSTEM MOP:</td> </tr> <tr> <td colspan="4"></td> <td colspan="2"></td> <td colspan="2">275 psig</td> <td colspan="2">145 psig</td> </tr> <tr> <td colspan="4"></td> <td colspan="2"></td> <td colspan="2">3789816</td> <td colspan="2">DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH</td> </tr> </tbody> </table>	REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196	6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS					5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS		3747144		PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794	4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS				CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675	NO.				N/A		RELATED W/O #s		SHEET NO. 28 OF 60 SCALE: AS NOTED	PERMIT INFORMATION				ISOLATION AREA		LOCATION		ATLAS OR TITLE		N/A				N/A		SEC. 33 TWN. 12S, RNG. 65W		R-19		SYSTEM MAOP:				SYSTEM MOP:		SYSTEM MAOP:		SYSTEM MOP:								275 psig		145 psig								3789816		DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196																																																																																										
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LOCH FYNE 20" GAS PIPELINE
COLORADO SPRINGS, COLORADO
PLAN & PROFILE
9+00 - 12+00

DWG. NO:
C-203

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

REFERENCE NOTE:
ANY WORK RELATED TO VOLLMER RD., (COUNTY REFERENCE FILE NO. CDR 20-005) OR OTHER UTILITIES TO BE INSTALLED IN THE AREA OTHER THAN THE 20" GAS LINE IS TO BE COMPLETED BY OTHER PROJECTS.

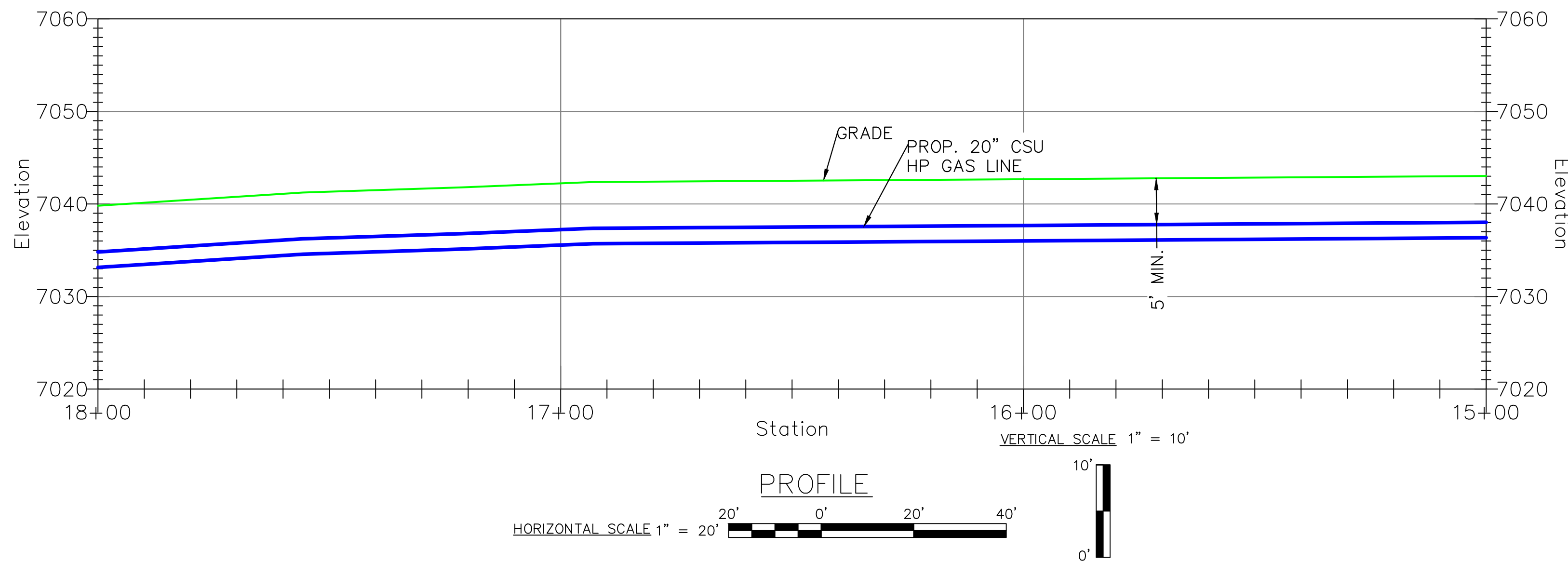
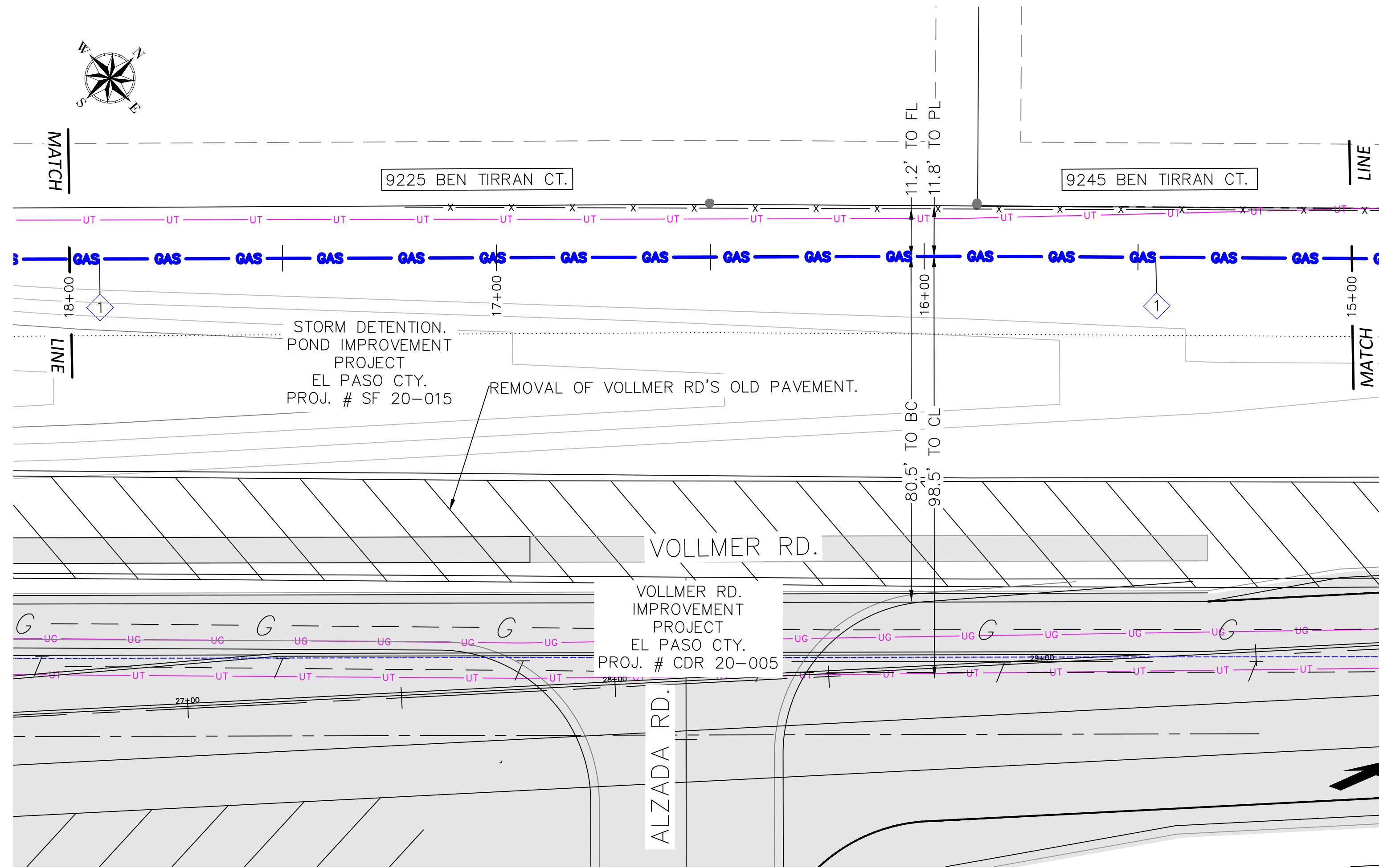
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-CSD-CSD.dwg LAYOUT NAME: C-204 PLOTTED: Wednesday, March 22, 2023 - 4:30pm USER: rwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 29 OF 60	SCALE: AS NOTED
N/A				BY: DATE: APPVD:			PATRICK ENGINEERING TEAM	
PERMIT INFORMATION				ISOLATION AREA	LOCATION	ATLAS OR TITLE	DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
N/A				N/A	N/A	N/A	LOCH FYNE 20" GAS PIPELINE	
N/A				N/A	N/A	N/A	COLORADO SPRINGS, COLORADO	
N/A				N/A	N/A	N/A	PLAN & PROFILE	
N/A				N/A	N/A	N/A	12+00 - 15+00	
N/A				N/A	N/A	N/A	DWG. NO. C-204	

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	



CONSTRUCTION NOTES	
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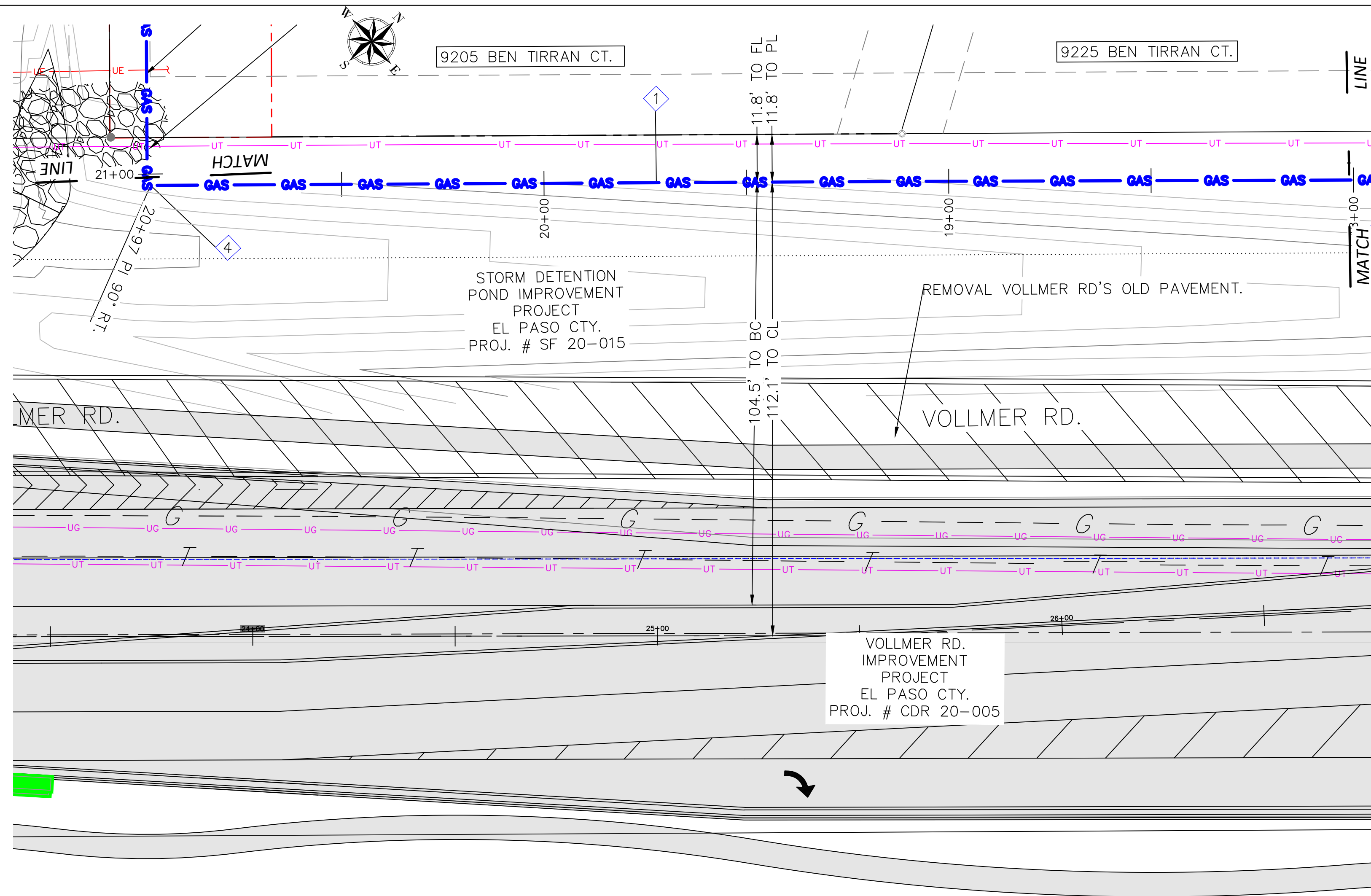
CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

REFERENCE NOTE:
 ANY WORK RELATED TO VOLLMER RD., (COUNTY REFERENCE FILE NO. CDR 20-005) AND THE STORM DETENTION POND (COUNTY REFERENCE FILE NO. SF-20-015) OR OTHER UTILITIES TO BE INSTALLED IN THE AREA OTHER THAN THE 20" GAS LINE IS TO BE COMPLETED BY OTHER PROJECTS.

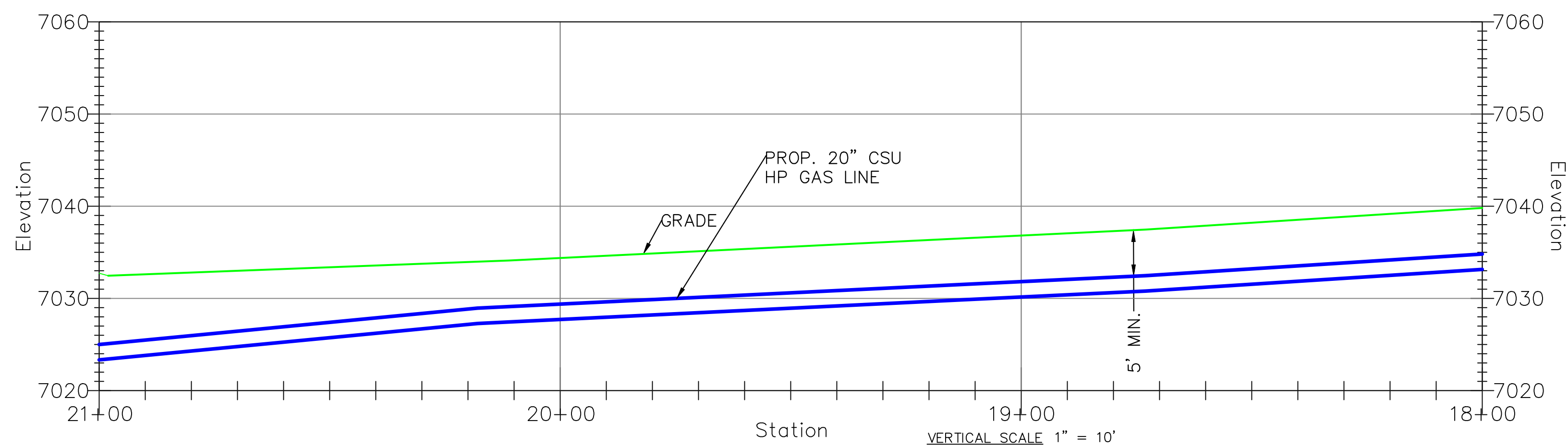
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-CSD-CDU.dwg LAYOUT NAME: C-205 PLOTTED: Wednesday, March 22, 2023 - 4:30pm USER: rwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 30 OF 60	SCALE: AS NOTED
N/A				SYSTEM MAOP: 275 psig	HP SERVICE: <input type="checkbox"/>	3747144	PATRICK ENGINEERING TEAM	
PERMIT INFORMATION				SYSTEM MOP: 145 psig	DISTRIBUTION: <input checked="" type="checkbox"/>	RELATED W/O #s	DWN BY: NORM WEST	CHKD. BY: SETH BROWN
ISOLATION AREA				N/A	FEEDER: <input type="checkbox"/>	3789816	APPD. BY: JEREMIAH SMITH	
LOCATION				SYSTEM MAOP:	TRANS. BY DEF. <input type="checkbox"/>		LOCH FYNE 20" GAS PIPELINE	
ATLAS OR TITLE				SYSTEM MOP:	TRANS v 20% <input type="checkbox"/>		COLORADO SPRINGS, COLORADO	
N/A							PLAN & PROFILE	
SEC. 32 TWN. 12S, RNG. 65W							15+00 - 18+00	
R-19							DWG. NO. C-205	



PLAN
SCALE 1" = 20'



PROFILE
HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 10'

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
4	1		220-692-920	20" ELBOW, 0.375" WT, STL, 90 DEG., 3R, WPHY 52	FORGED	FBE	

4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
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14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003
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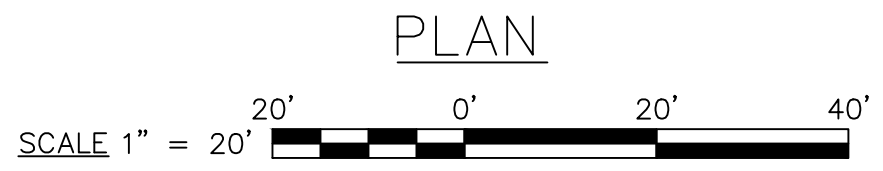
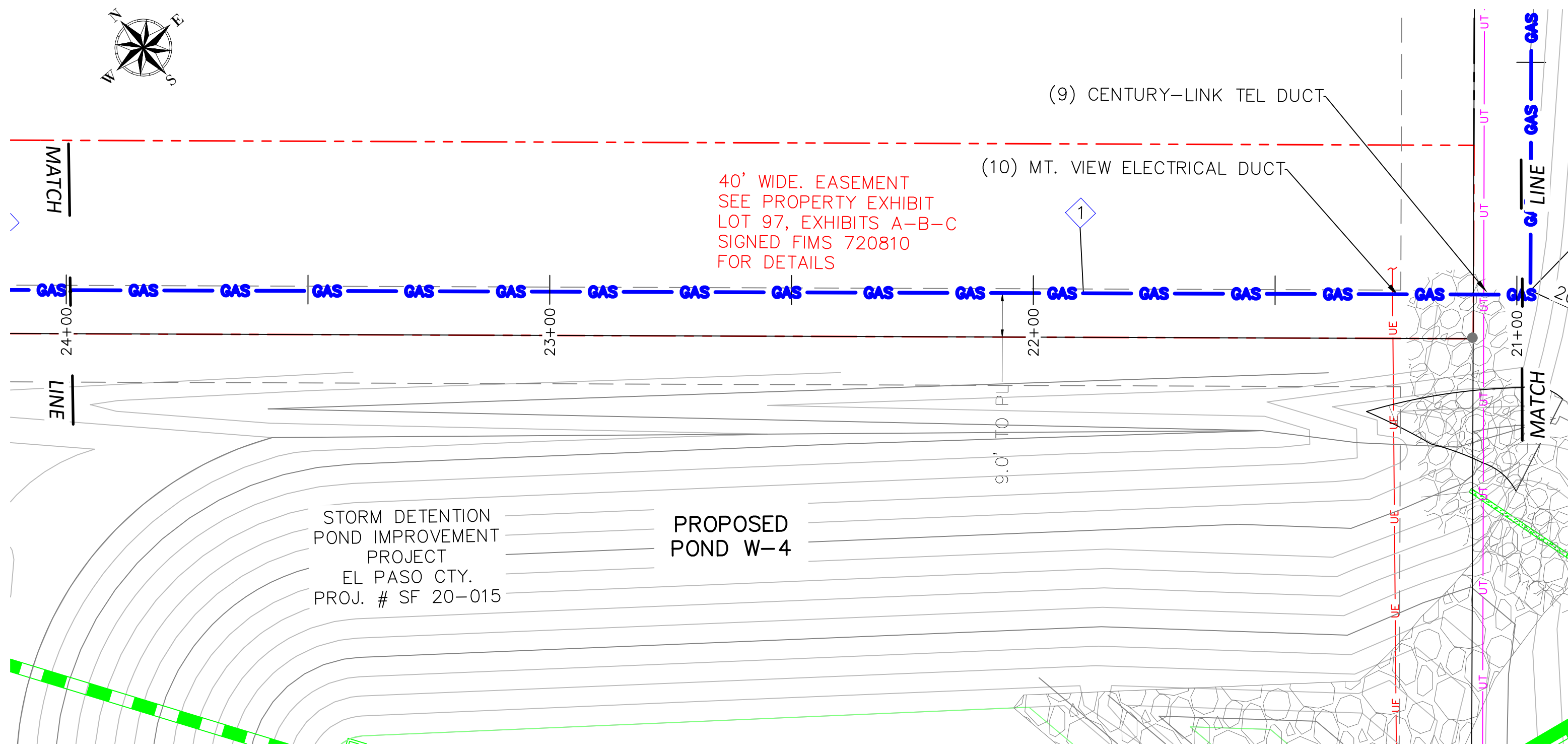
REFERENCE NOTE:
ANY WORK RELATED TO VOLLMER RD., (COUNTY REFERENCE FILE NO. CDR 20-005) AND THE STORM DETENTION POND (COUNTY REFERENCE FILE NO. SF-20-015) OR OTHER UTILITIES TO BE INSTALLED IN THE AREA OTHER THAN THE 20" GAS LINE IS TO BE COMPLETED BY OTHER PROJECTS.

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-CSD-UG.dwg LAYOUT NAME: C-206 PLOTTED: Wednesday, March 22, 2023 - 4:30pm USER: rwest

<p>Colorado Springs Utilities It's how we're all connected</p>	<p>Jeremiah Matthew Smith Professional Engineer P.E. CERTIFICATION</p>	<p>8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com</p> <p>PROJ. NO. 22282.003</p>	REVISIONS		SYSTEM NAME: 150P SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	JOB TYPE: HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	W/O # 3747144 RELATED W/O #s 3789816	ENGINEER: SCOTT JENSEN PROJECT MANAGER: MELISSA LINGO CONSTRUCTION LEAD: JOSH RICHARD SHEET NO. 31 OF 60 SCALE: AS NOTED PATRICK ENGINEERING TEAM DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	PHONE: (719) 668-8196 PHONE: (719) 668-8794 PHONE: (719) 668-3675
			PERMIT INFORMATION N/A			ISOLATION AREA N/A	LOCATION SEC. 32 TWN. 12S, RNG. 65W	ATLAS OR TITLE R-19 & Q-19	SYSTEM MAOP: SYSTEM MOP:

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	



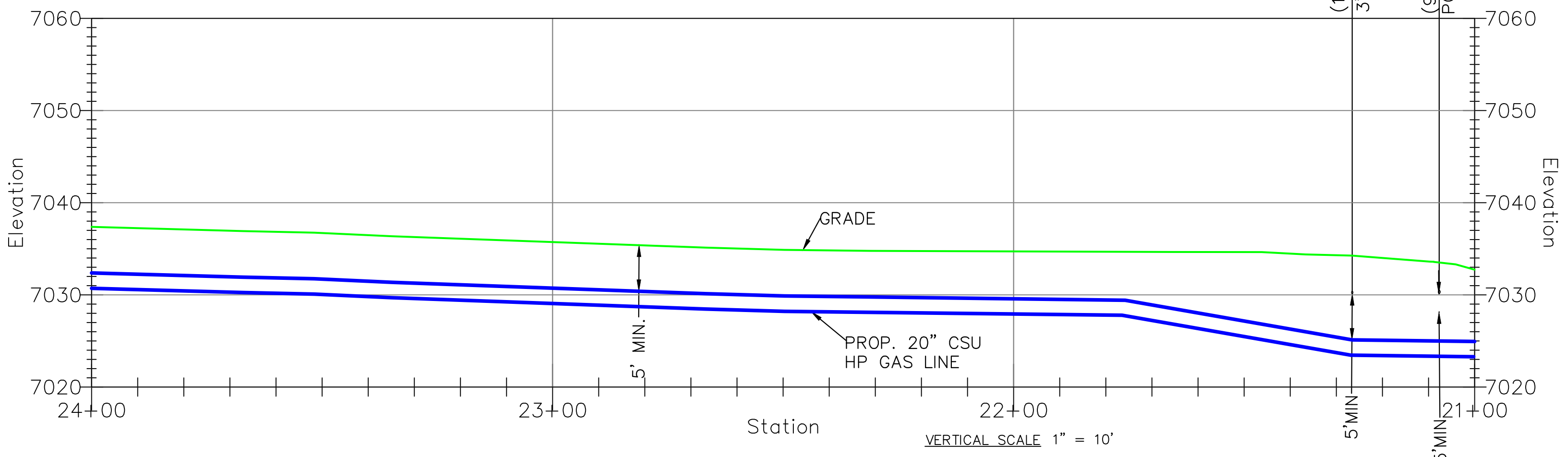
CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
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CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

CROSSING TABLE				
ITEM	CROSSING	SIZE	DEPTH	MIN. VERT. SEPERATION
9	CENTURY-LINK TEL DUCT	4"1	FIELD VERIFY	5'
10	MT. VIEW ELECTRIC DUCT	3"	3.2'	5'

1 POT HOLE COULD NOT FIND

REFERENCE NOTE:
ANY WORK RELATED TO THE STORM DETENTION POND (COUNTY REFERENCE FILE NO. F-20-015) OR OTHER UTILITIES TO BE INSTALLED IN THE AREA OTHER THAN THE 20" GAS LINE IS TO BE COMPLETED BY OTHER PROJECTS.

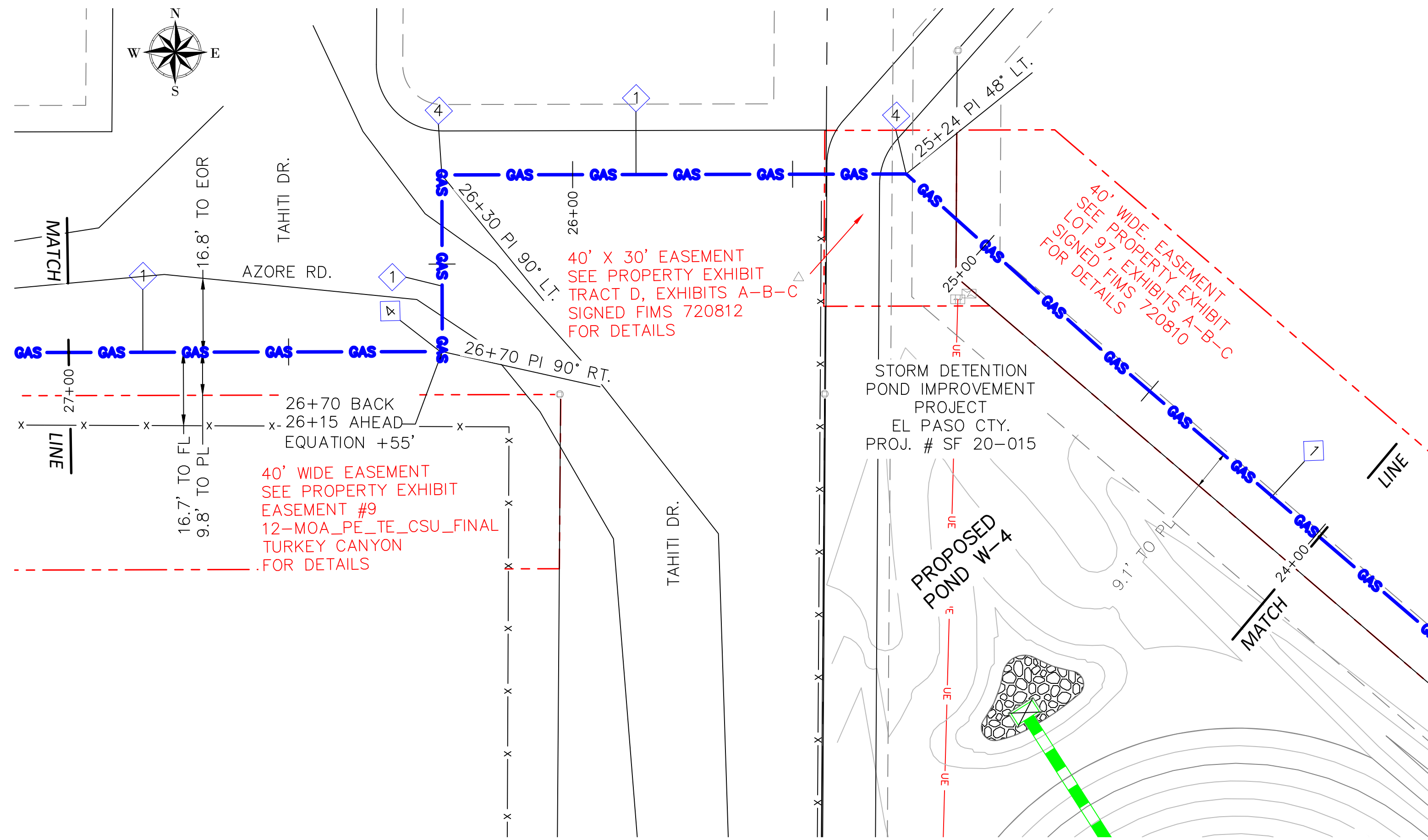


<p>Colorado Springs Utilities It's how we're all connected</p>	<p>Jeremiah Matthew Smith P.E. CERTIFICATION</p>	<p>8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com</p> <p>PROJ. NO. 22282.003</p>	REVISIONS 6 REISSUED FOR CONSTRUCTION 5 ISSUED FOR CONSTRUCTION 4 100% DESIGN PACKAGE ISSUED FOR REVIEW NO. N/A		SYSTEM NAME: 150P SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	JOB TYPE: HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	W/O # 3747144 RELATED W/O #s 3789816	ENGINEER: SCOTT JENSEN PROJECT MANAGER: MELISSA LINGO CONSTRUCTION LEAD: JOSH RICHARD SHEET NO. 32 OF 60 DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	PHONE: (719) 668-8196 PHONE: (719) 668-8794 PHONE: (719) 668-3675 SCALE: AS NOTED PATRICK ENGINEERING TEAM
			PERMIT INFORMATION: N/A ISOLATION AREA: N/A LOCATION: SEC. 32 TWN. 12S, RNG. 65W ATLAS OR TITLE: Q-19			SYSTEM MAOP: N/A SYSTEM MOP: N/A	LOCH FLYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 21+00 - 24+00 DWG. NO. C-207		

FILE NAME: P:\indianapolis\Colorado Springs Utilities\22282.003 - Loch Flyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-csb-csu.dwg LAYOUT NAME: C-207 PLOTTED: Wednesday, March 22, 2023 - 4:30pm USER: rwest

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	355'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
4	3		220-692-920	20" ELBOW, 0.375" WT, STL, 90 DEG., 3R, WPHY 52	FORGED	FBE	

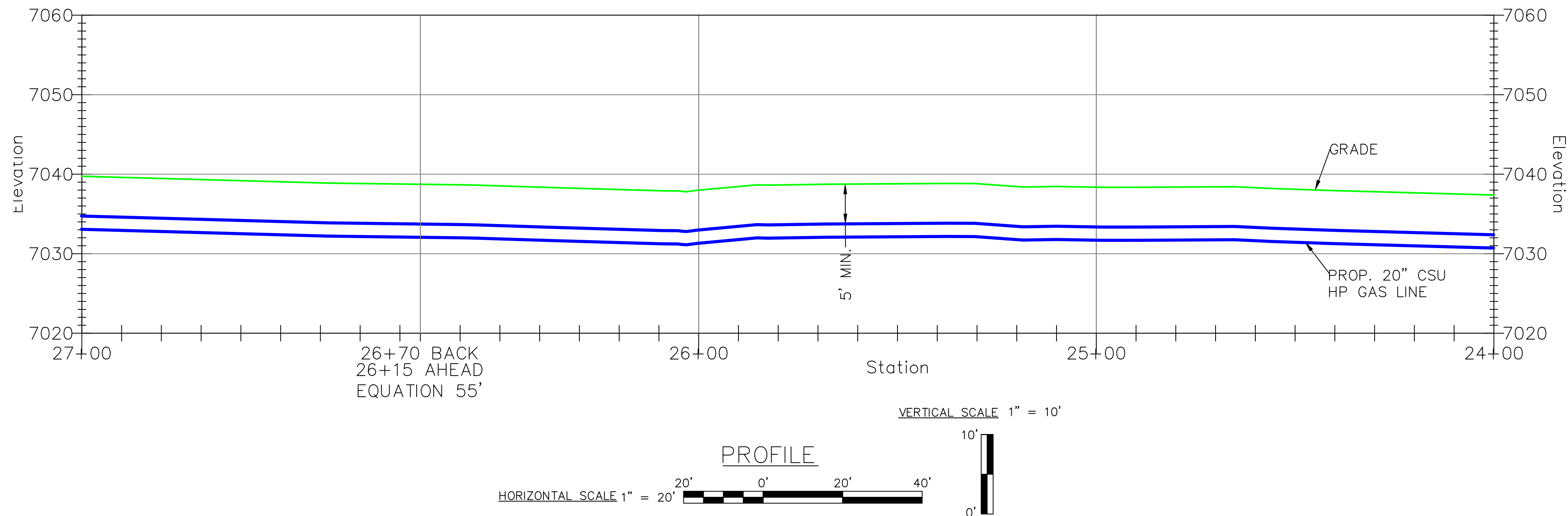


CONSTRUCTION NOTES

4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
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CATHODIC PROTECTION NOTES

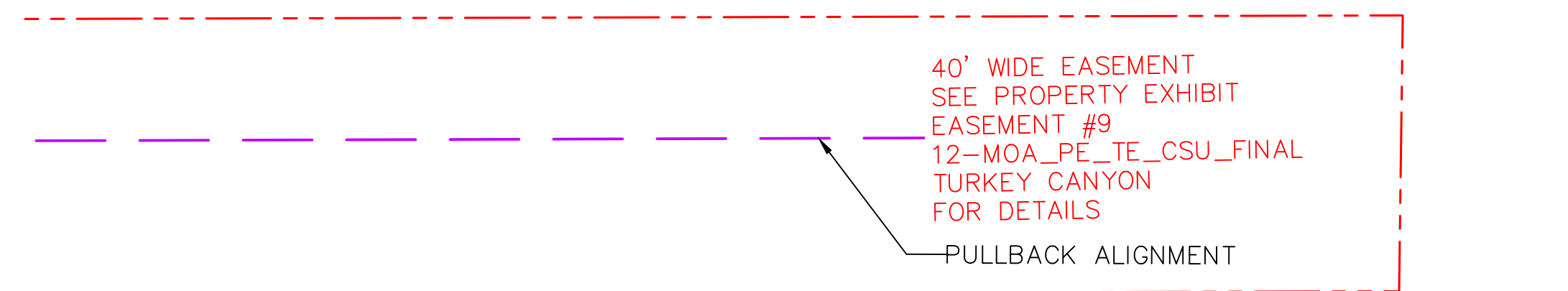
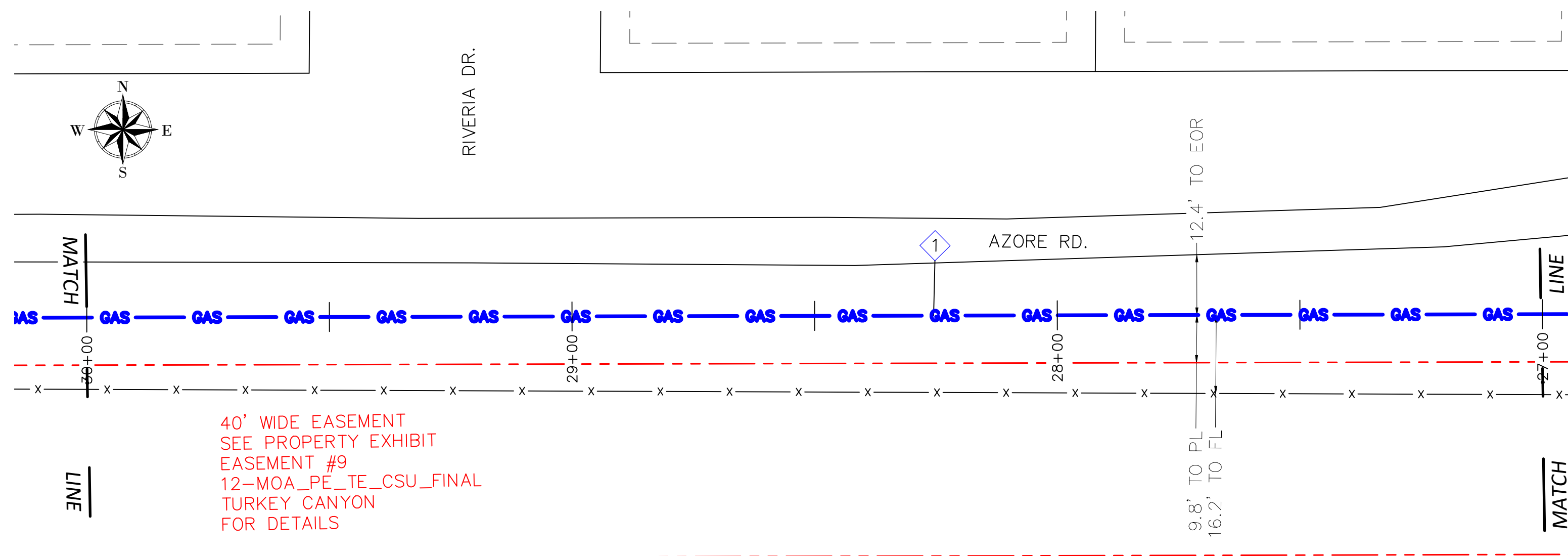
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003
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REFERENCE NOTE:
 ANY WORK RELATED TO THE STORM DETENTION POND (COUNTY REFERENCE FILE NO. F-20-015) OR OTHER UTILITIES TO BE INSTALLED IN THE AREA OTHER THAN THE 20" GAS LINE IS TO BE COMPLETED BY OTHER PROJECTS.

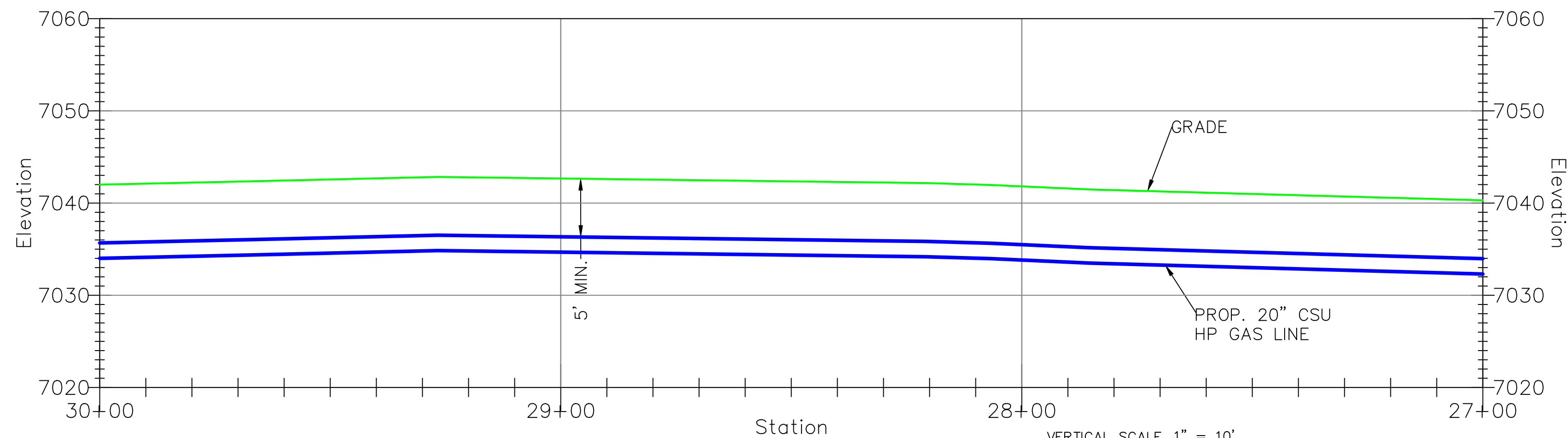
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-C3D-C3D.dwg LAYOUT NAME: C-208 PLOTTED: Wednesday, March 22, 2023 - 4:30pm USER: rwest

				REVISIONS 6 REISSUED FOR CONSTRUCTION NEW 3/16/23 JMS 5 ISSUED FOR CONSTRUCTION NEW 11/14/22 JMS 4 100% DESIGN PACKAGE ISSUED FOR REVIEW NEW 10/14/22 JMS NO. N/A BY: DATE: APPVD:		SYSTEM NAME: 150P SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	JOB TYPE: HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	W/O # 3747144 RELATED W/O #s 3789816	ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196 PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794 CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675 SHEET NO. 33 OF 60 SCALE: AS NOTED PATRICK ENGINEERING TEAM DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH
				PERMIT INFORMATION N/A	ISOLATION AREA N/A	LOCATION SEC. 32 TWN. 12S, RNG. 65W	ATLAS OR TITLE Q-19	SYSTEM MAOP: SYSTEM MOP:	LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 24+00 - 27+00 DWG. NO. C-208



PLAN

SCALE 1" = 20'



PROFILE

HORIZONTAL SCALE 1" = 20'

VERTICAL SCALE 1" = 10'

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	

CONSTRUCTION NOTES

4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

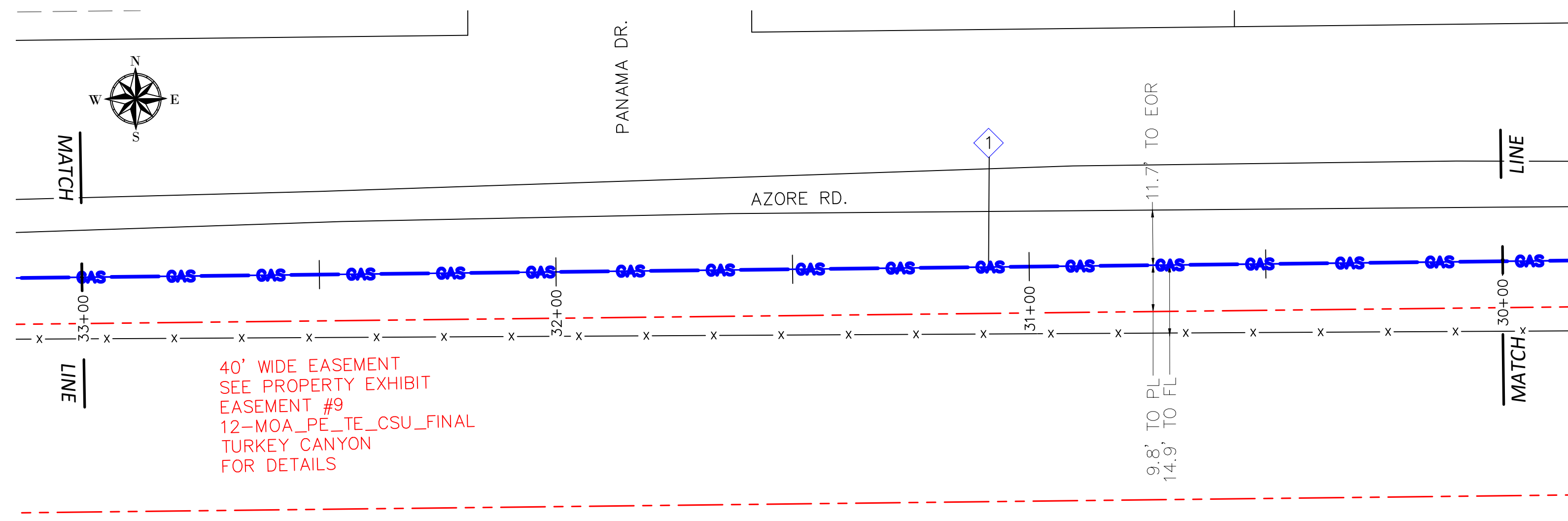
CATHODIC PROTECTION NOTES

2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003
------	---

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-C3D-CSU.dwg LAYOUT NAME: C-209 PLOTTED: Wednesday, March 22, 2023 - 4:30pm USER: rwest

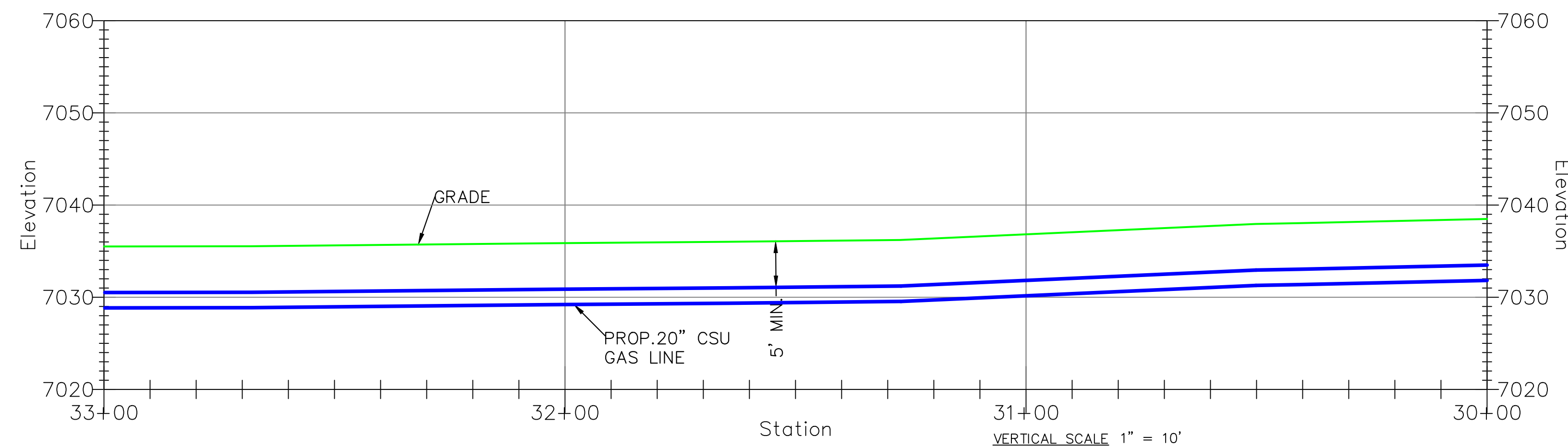
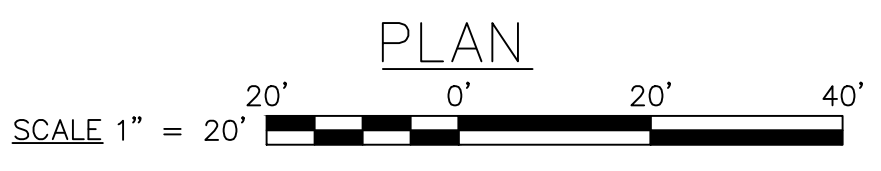
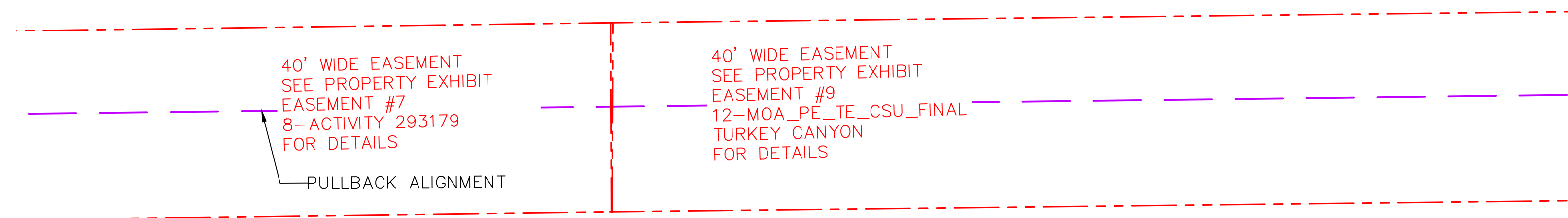


REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 34 OF 60	SCALE: AS NOTED
N/A				BY: DATE: APPVD:			PATRICK ENGINEERING TEAM	
PERMIT INFORMATION				ISOLATION AREA	LOCATION	ATLAS OR TITLE	DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
N/A				N/A	SEC. 32 TWN. 12S, RNG. 65W	Q-19	LOCH FYNE 20" GAS PIPELINE	
				SYSTEM MAOP: 275 psig	SYSTEM MOP: 145 psig		COLORADO SPRINGS, COLORADO	
							PLAN & PROFILE	
							27+00 - 30+00	
							DWG. NO. C-209	



HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-csb-csu.dwg LAYOUT NAME: C-210 PLOTTED: Wednesday, March 22, 2023 - 4:30pm USER: rwest

Colorado Springs Utilities
It's how we're all connected

8902 Vincennes Circle, Suite F
Indianapolis, IN 46268
TEL: (317) 217-1701
www.patrickco.com

Jeremiah Matthew Smith
0230324164706-04'00

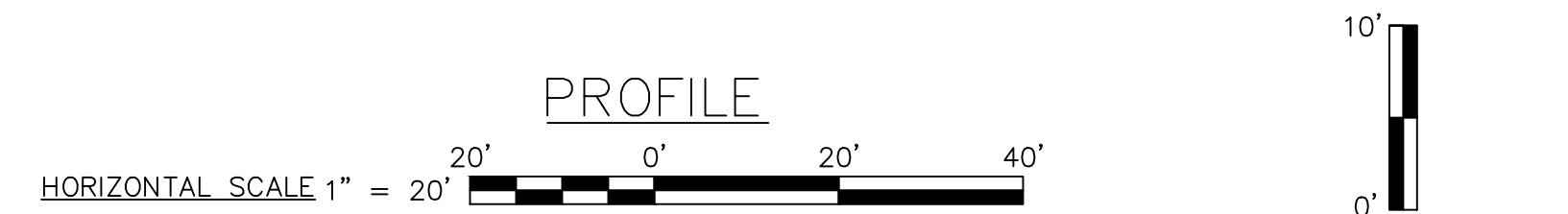
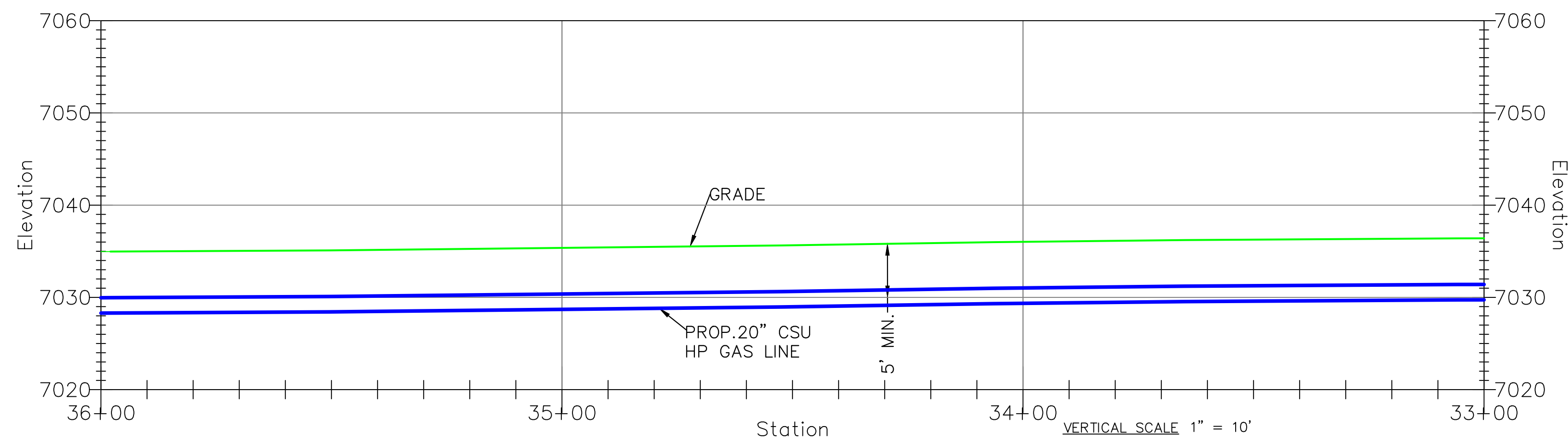
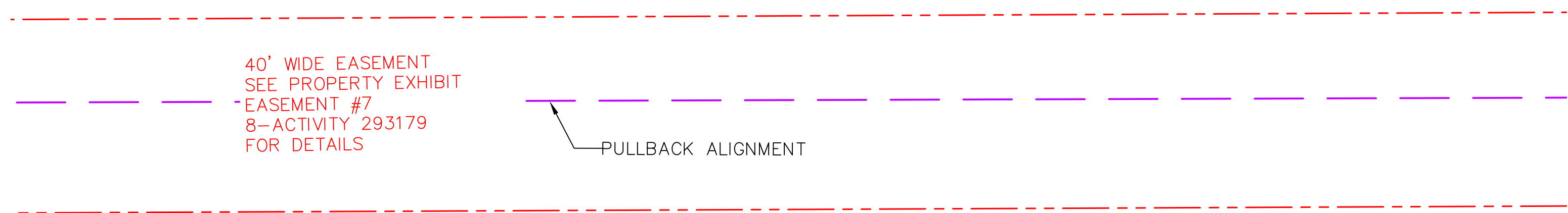
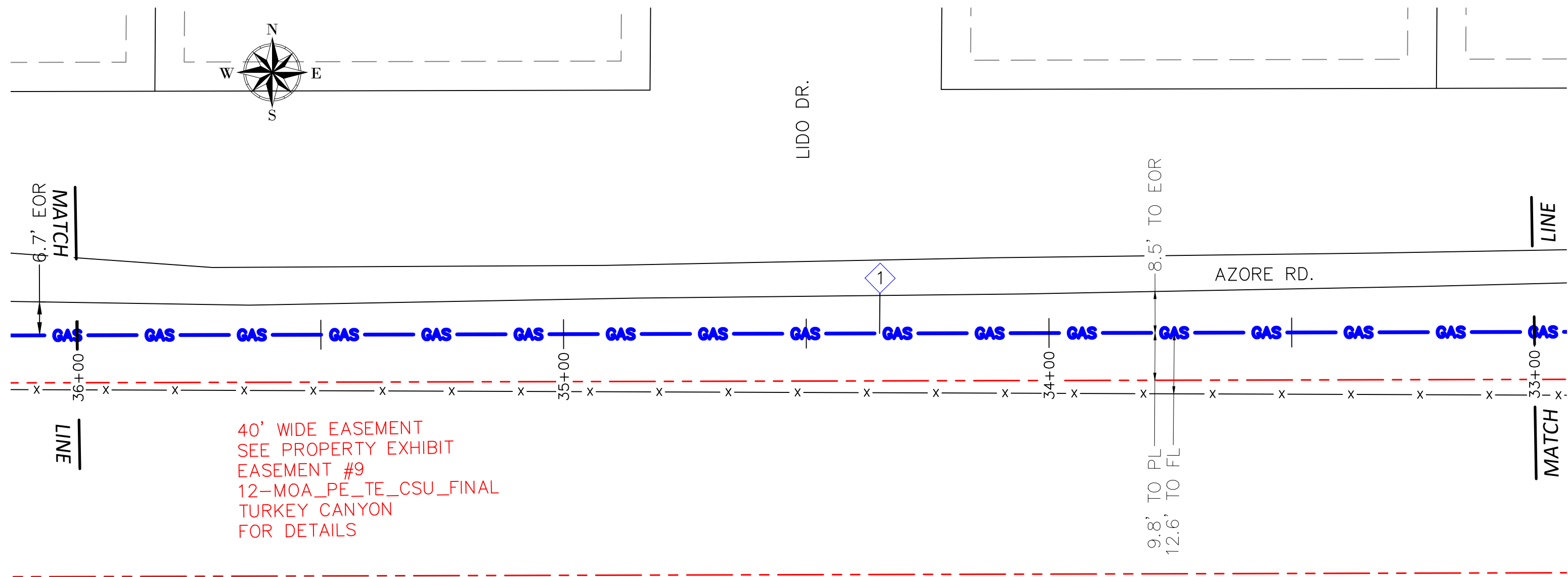
8902 Vincennes Circle, Suite F
Indianapolis, IN 46268
TEL: (317) 217-1701
www.patrickco.com

REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196	
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794	
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675	
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 35 OF 60	SCALE: AS NOTED	
NO.				BY: DATE: APPVD:		PATTERN ENGINEERING TEAM			
PERMIT INFORMATION				ISOLATION AREA		LOCATION		ATLAS OR TITLE	
N/A				N/A		N/A		N/A	
SYSTEM MAOP: 275 psig				SYSTEM MOP: 145 psig		DISTRIBUTION: <input checked="" type="checkbox"/>		DWN BY: NORM WEST	
SYSTEM MAOP: 275 psig				SYSTEM MOP: 145 psig		FEEDER: <input type="checkbox"/>		CHKD. BY: SETH BROWN	
SYSTEM MAOP: 275 psig				SYSTEM MOP: 145 psig		TRANS. BY DEF. <input type="checkbox"/>		APPD. BY: JEREMIAH SMITH	
SYSTEM MAOP: 275 psig				SYSTEM MOP: 145 psig		TRANS v 20% <input type="checkbox"/>		DWN BY: NORM WEST	

LOCH FYNE 20" GAS PIPELINE
COLORADO SPRINGS, COLORADO
PLAN & PROFILE
30+00 - 33+00

DWG. NO: **C-210**

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-CSD-UG Layout NAME: C-211 PLOTTED: Wednesday, March 22, 2023 - 4:30pm USER: rwest



HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	

CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

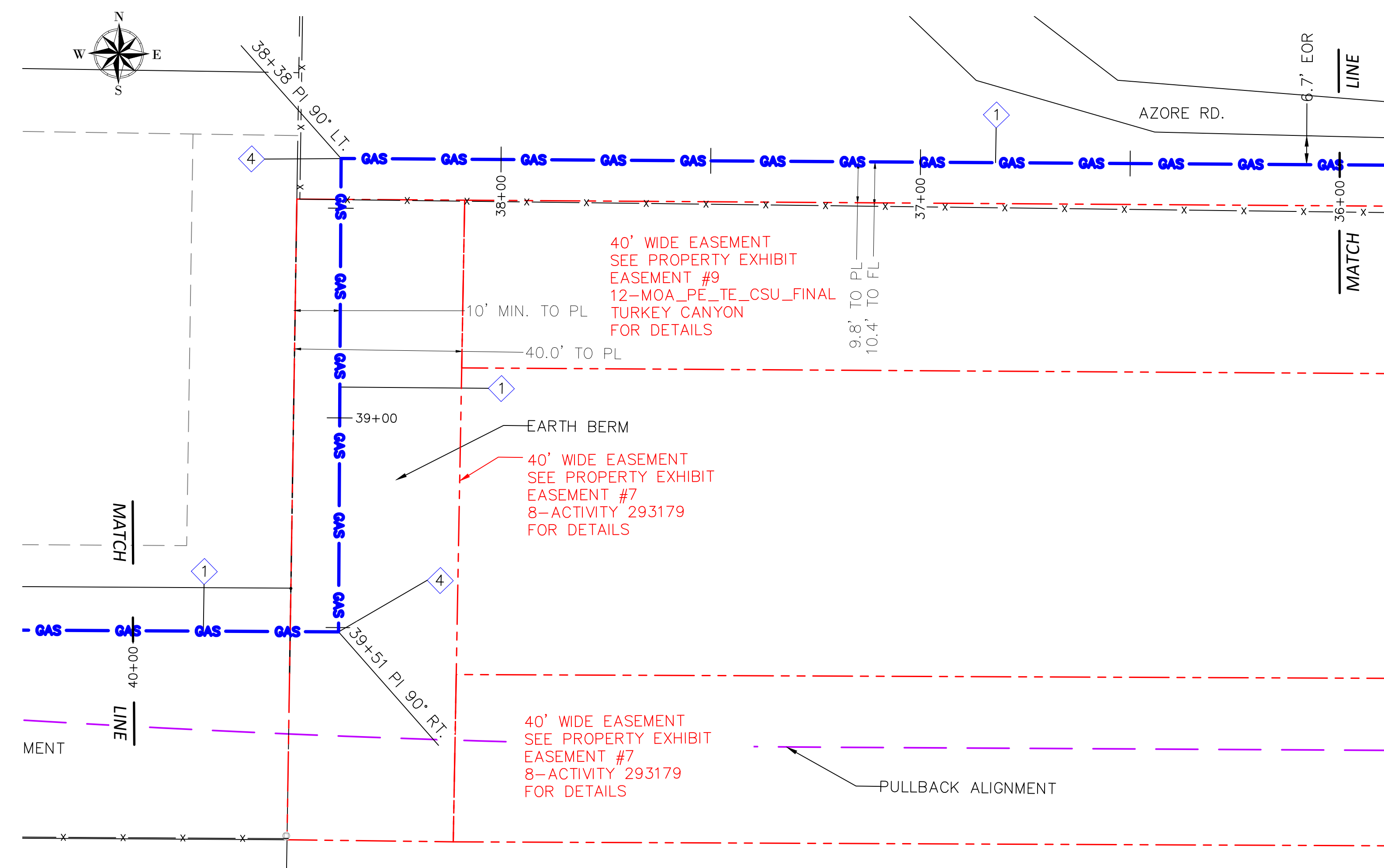
CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS				
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS				
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS				
NO. N/A				BY: DATE: APPVD:				
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A			
N/A		N/A	SEC. 32 TWN. 12S, RNG. 65W	Q-19				
				SYSTEM MAOP: 275 psig	HP SERVICE: <input type="checkbox"/>	3747144	PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
				SYSTEM MOP: 145 psig	DISTRIBUTION: <input checked="" type="checkbox"/>		CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
					FEEDER: <input type="checkbox"/>		SHEET NO. 36 OF 60	SCALE: AS NOTED
					TRANS. BY DEF. <input type="checkbox"/>		PATRICK ENGINEERING TEAM	
					TRANS v 20% <input type="checkbox"/>		DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
						3789816	LOCH FYNE 20" GAS PIPELINE	
							COLORADO SPRINGS, COLORADO	
							PLAN & PROFILE	
							33+00 - 36+00	
							DWG. NO: C-211	

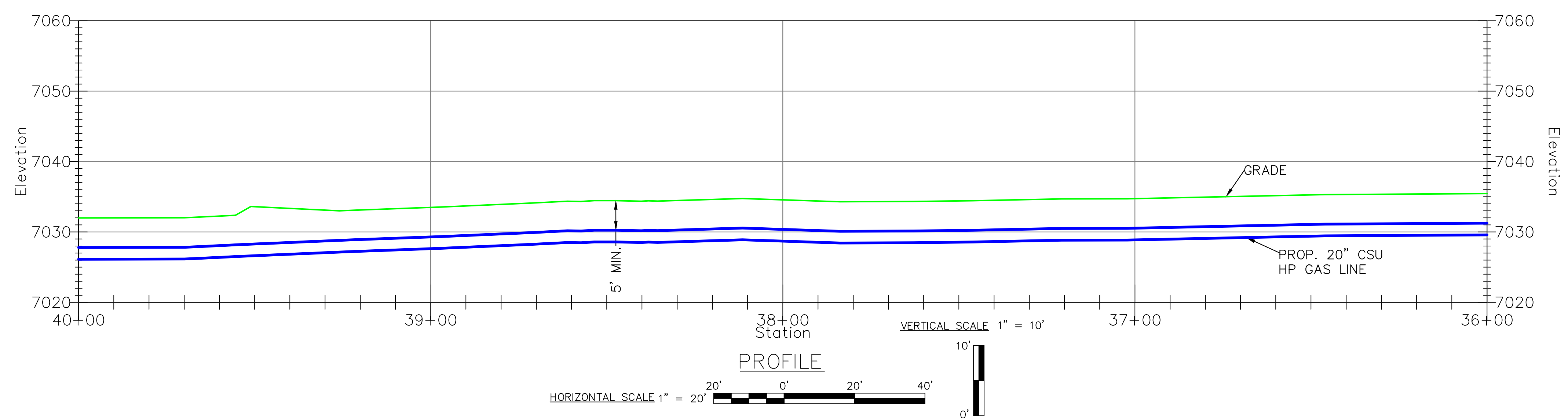
HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	400'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
4	2		220-692-920	20" ELBOW, 0.375" WT, STL, 90 DEG., 3R, WPHY 52	FORGED	FBE	



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003



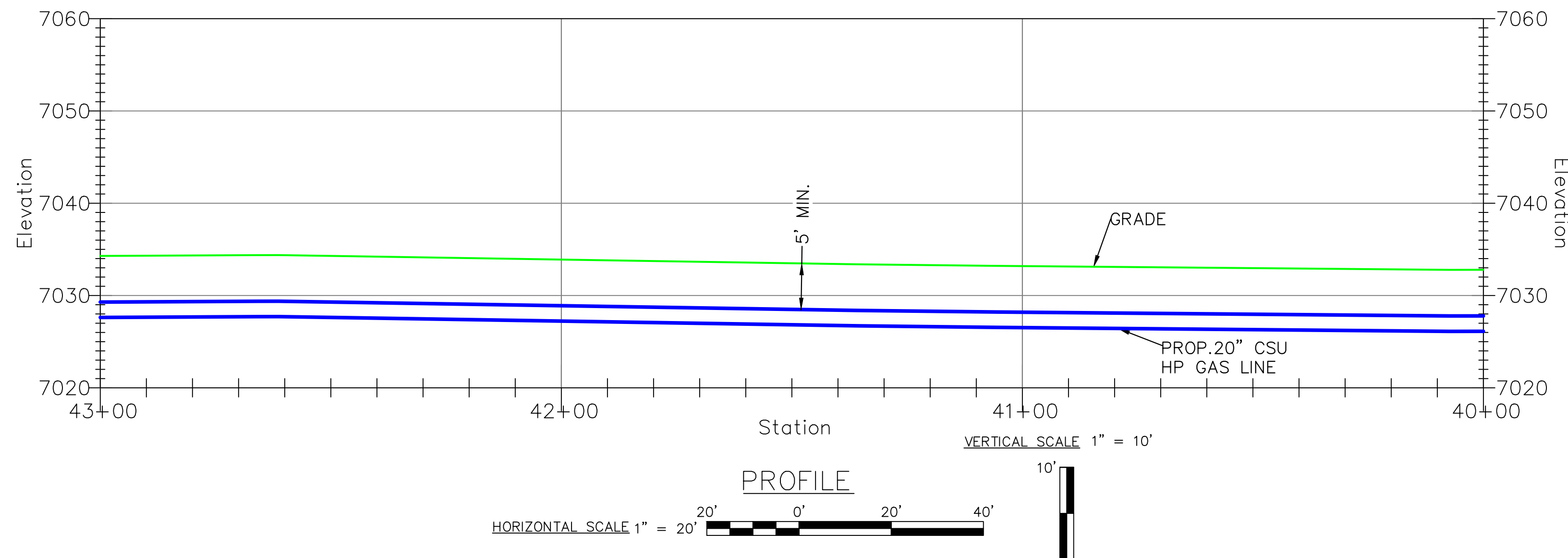
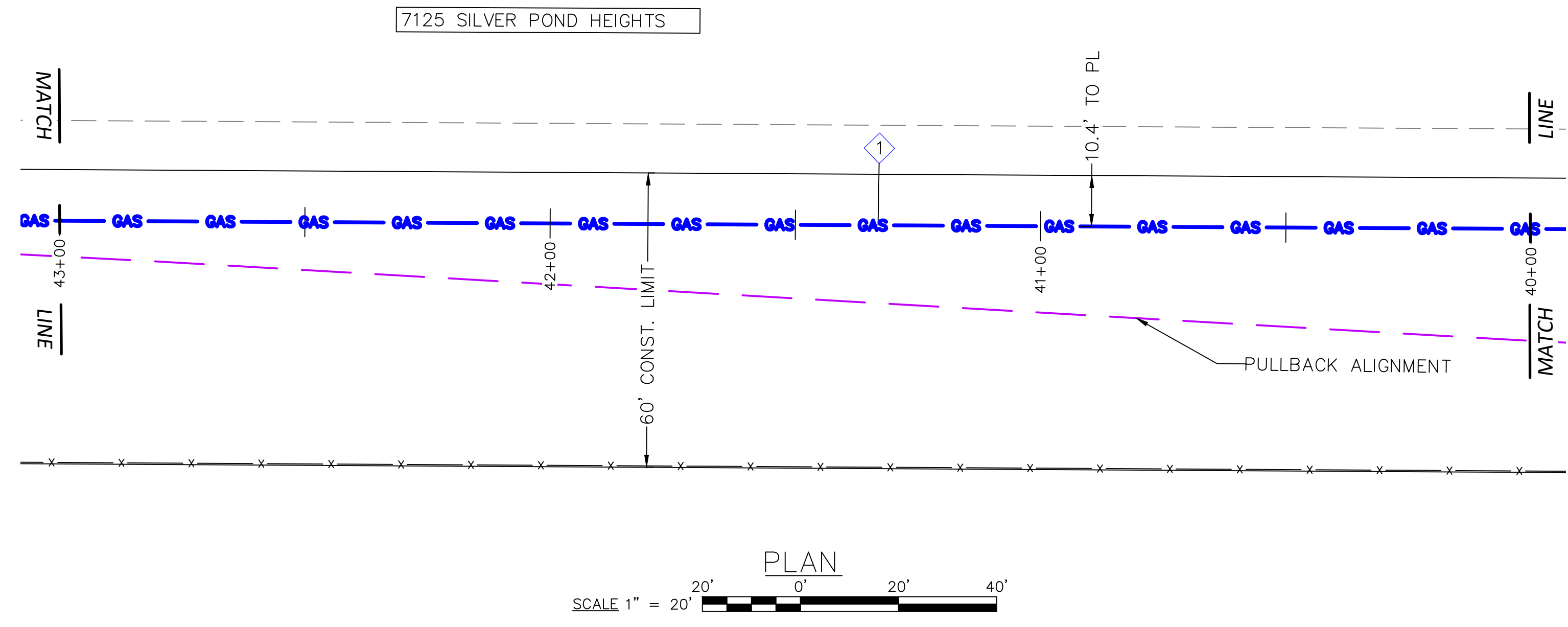
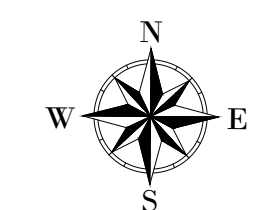
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC_CSD\06 Layout NAME: C-212 PLOTTED: Wednesday, March 22, 2023 - 4:31pm USER: rwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS				
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS				
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS				
	N/A	BY:	DATE:	APPROV:				
PERMIT INFORMATION				ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A	
N/A				N/A	SEC. 32 TWN. 12S, RNG. 65W	Q-19		
SYSTEM MAOP: 275 psig				SYSTEM MOP: 145 psig				
DISTRIBUTION: <input checked="" type="checkbox"/>				FEEDER: <input type="checkbox"/>				
TRANS. BY DEF. <input type="checkbox"/>				TRANS v 20% <input type="checkbox"/>				
RELATED W/O #s				3747144				
DWN BY: NORM WEST				CHKD. BY: SETH BROWN	APPD. BY: JEREMIAH SMITH			
LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 36+00 - 40+00								DWG. NO: C-212

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

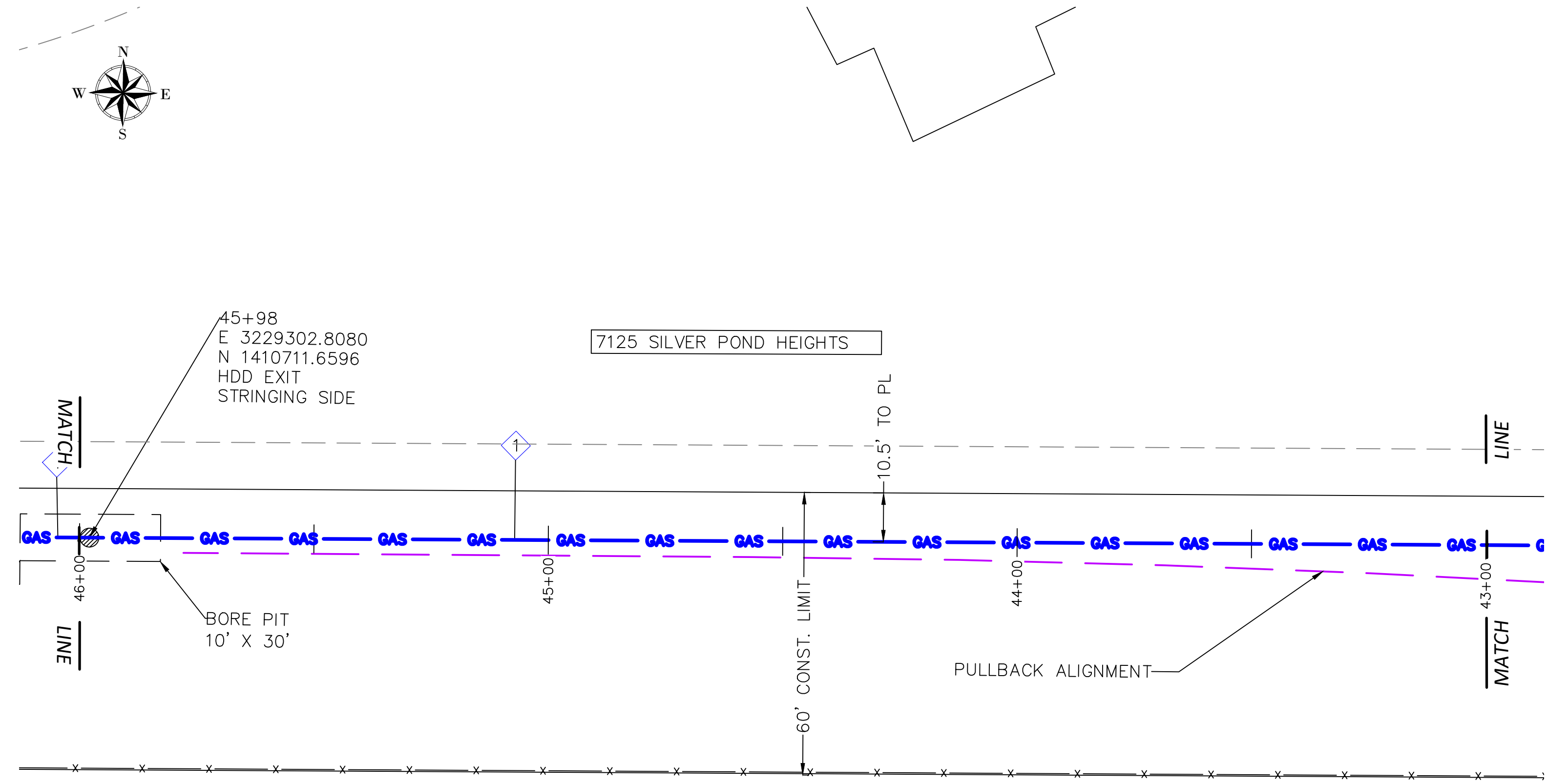
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-C3D-C3D.dwg LAYOUT NAME: C-213 PLOTTED: Wednesday, March 22, 2023 - 4:31pm USER: rwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 38 OF 60	SCALE: AS NOTED
NO.				N/A	BY: DATE: APPVD:		PATTERN ENGINEERING TEAM	
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A	RELATED W/O #s	DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
N/A		N/A	SEC. 32 TWN. 12S, RNG. 65W	Q-19	SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	3789816	LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 40+00 - 43+00	
						HP SERVICE: <input type="checkbox"/>	DWG. NO. C-213	
						DISTRIBUTION: <input checked="" type="checkbox"/>	COPYRIGHT PROTECTED © 2018 PATRICK ENGINEERING INC.	
						FEEDER: <input type="checkbox"/>		
						TRANS. BY DEF. <input type="checkbox"/>		
						TRANS v 20% <input type="checkbox"/>		

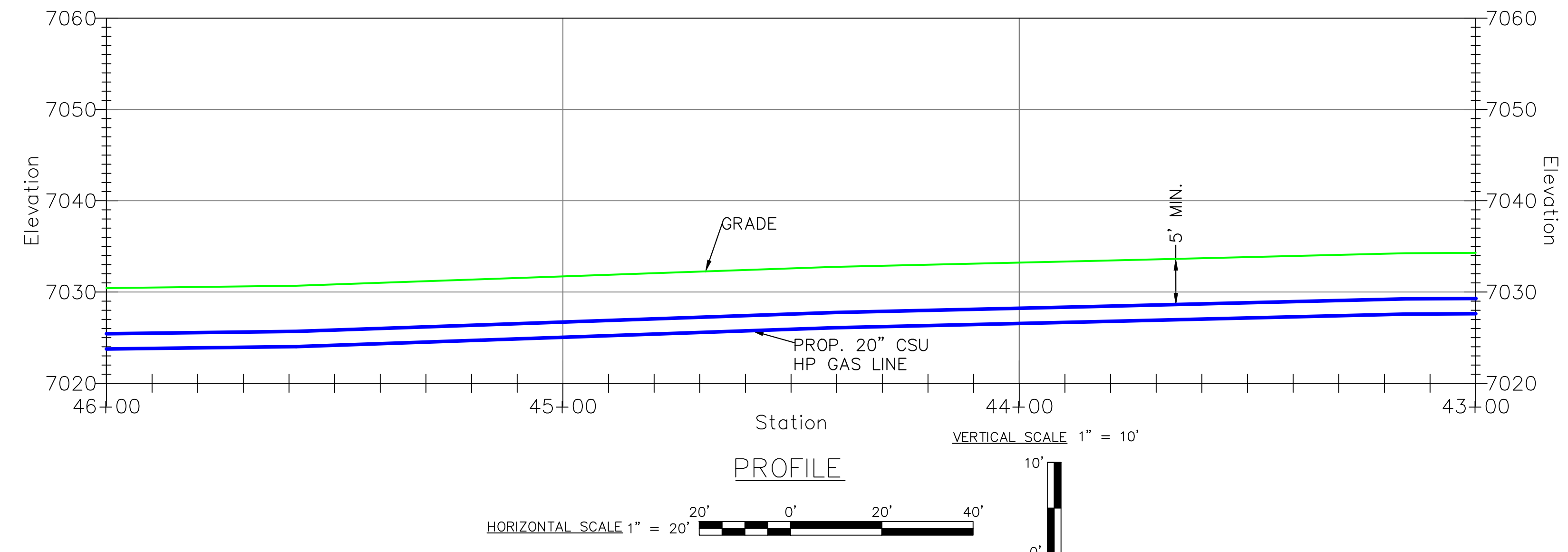
HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
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14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003



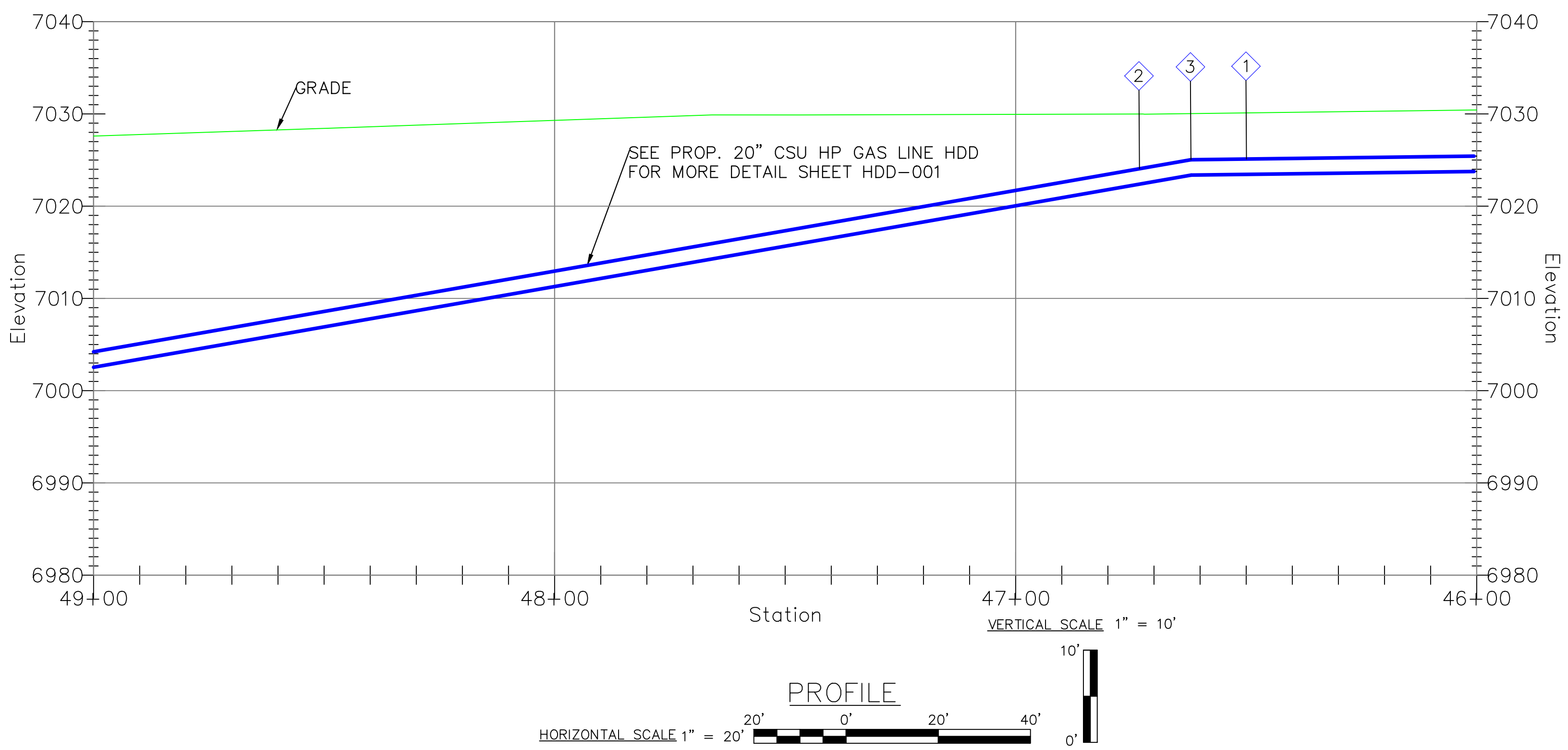
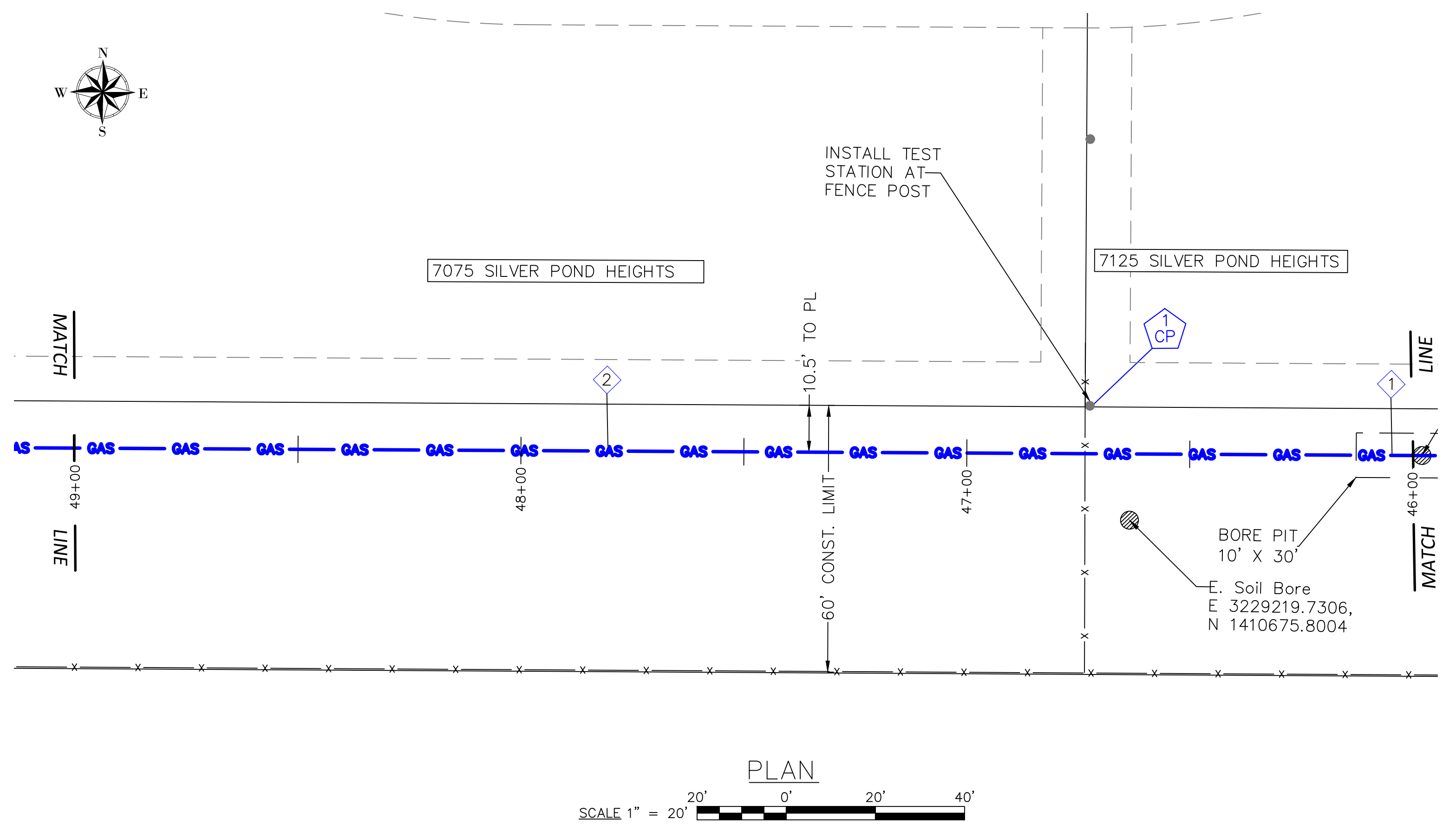
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-csb-csb.dwg LAYOUT NAME: C-214 PLOTTED: Wednesday, March 22, 2023 - 4:31pm USER: rwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS				
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS		3747144	PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
N/A							SHEET NO. 39 OF 60	SCALE: AS NOTED
PERMIT INFORMATION				ISOLATION AREA	LOCATION	ATLAS OR TITLE	PATRICK ENGINEERING TEAM	
N/A				N/A	SEC. 32 TWN. 12S, RNG. 65W	Q-19	DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
SYSTEM MAOP: 275 psig				SYSTEM MOP: 145 psig			LOCH FYNE 20" GAS PIPELINE	
SYSTEM MAOP:				SYSTEM MOP:			COLORADO SPRINGS, COLORADO	
HP SERVICE: <input type="checkbox"/>				DISTRIBUTION: <input checked="" type="checkbox"/>	FEEDER: <input type="checkbox"/>		PLAN & PROFILE	
TRANS. BY DEF. <input type="checkbox"/>				TRANS. v 20% <input type="checkbox"/>			43+00 - 46+00	
RELATED W/O #s						3789816	DWG. NO. C-214	

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	60'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
2	240'		241-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE/ARO	ERW	FBE/ARO	
3	1		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
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11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
1 CP	INSTALL TEST STATIONS AT LOCATIONS SHOWN IN THE DESIGN PACKAGE.
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-CSD-06.dwg LAYOUT NAME: C-215 PLOTTED: Thursday, March 23, 2023 - 8:45am USER: mwest



REVISIONS			
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23 JMS
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22 JMS
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22 JMS
NO.	N/A	BY:	DATE: APPVD:

SYSTEM NAME:	150P
SYSTEM MAOP:	275 psig
SYSTEM MOP:	145 psig

JOB TYPE:	
W/O #	3747144
RELATED W/O #s	3789816

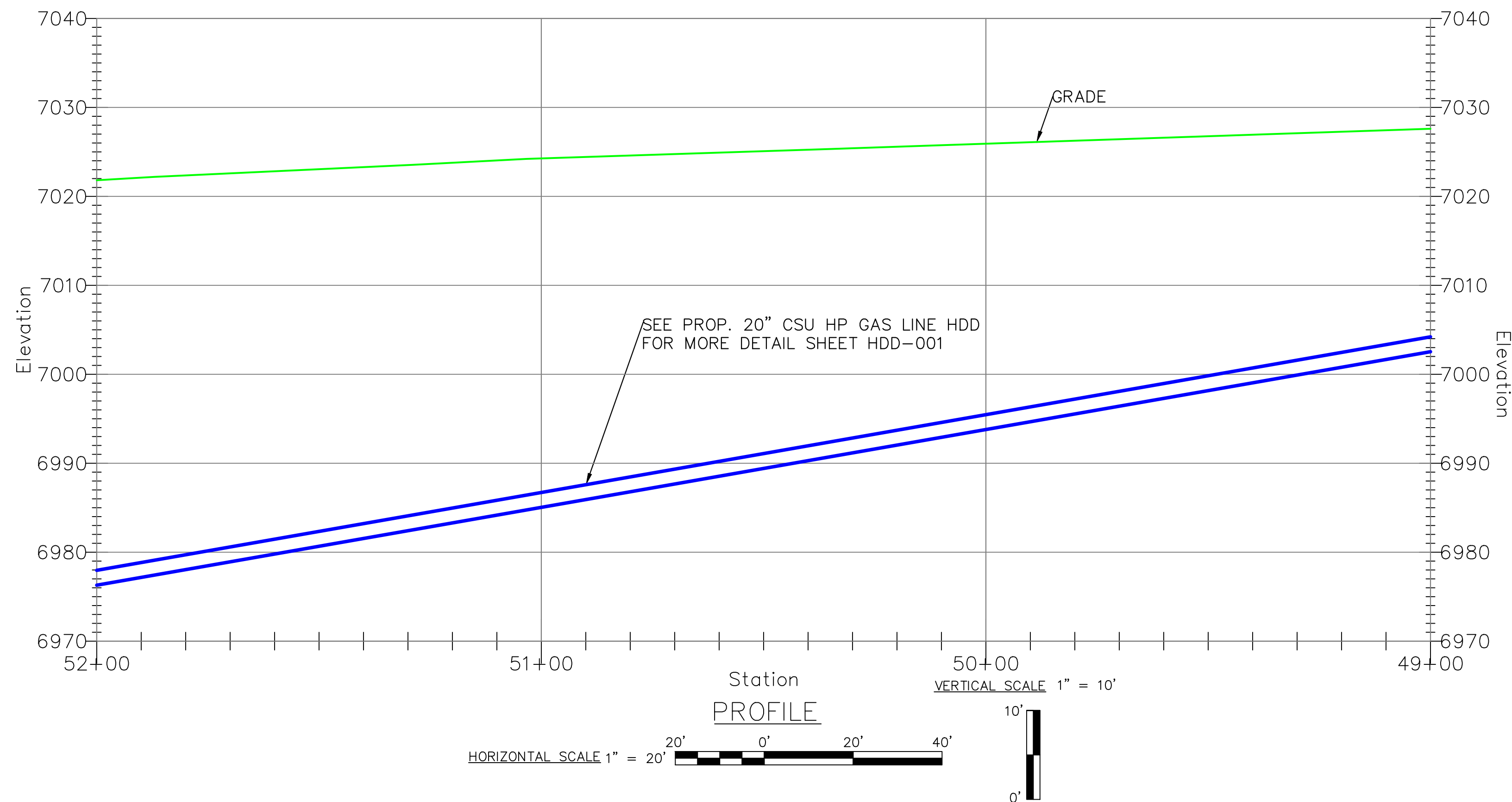
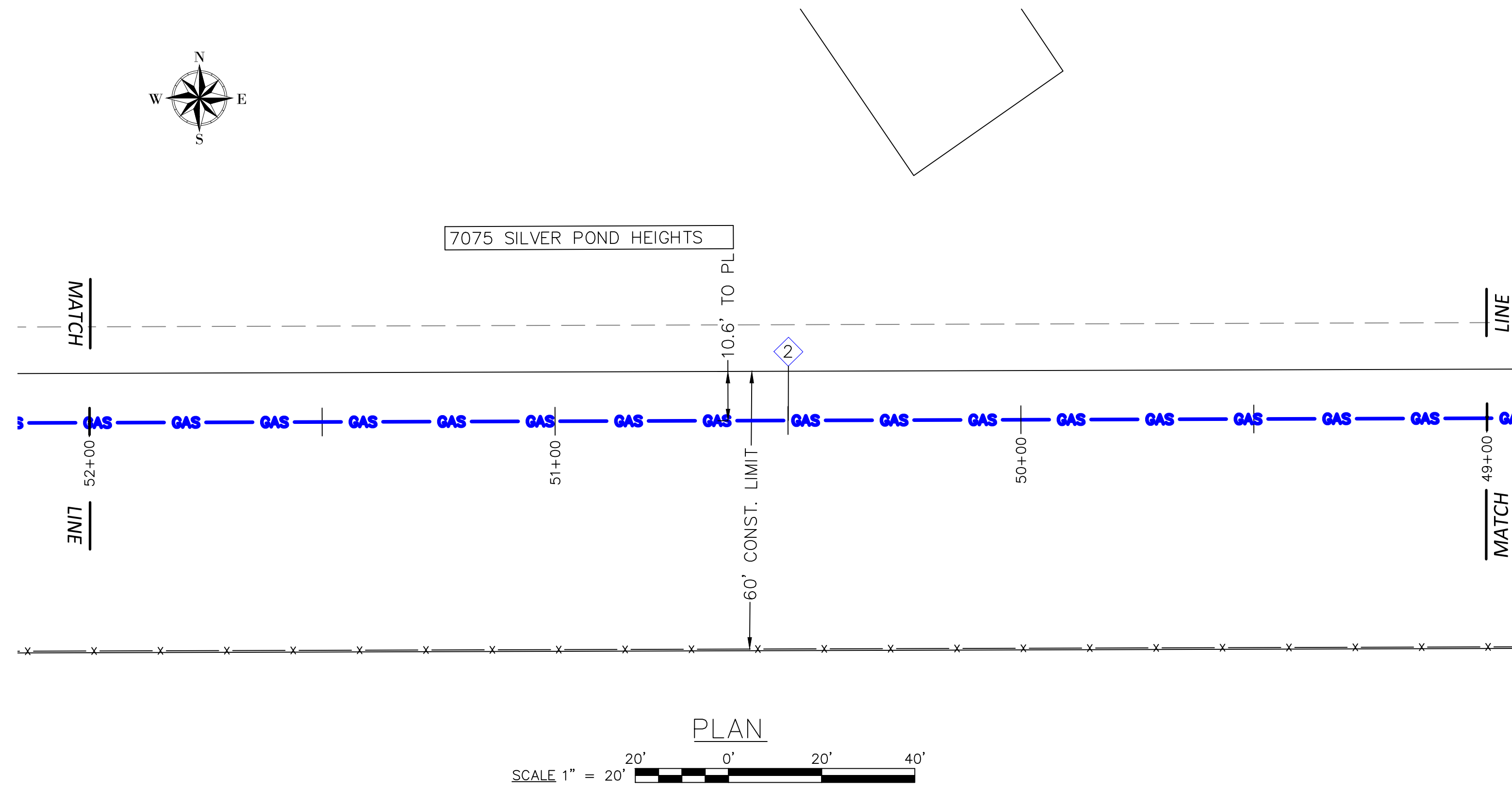
ENGINEER:	SCOTT JENSEN	PHONE:	(719) 668-8196
PROJECT MANAGER:	MELISSA LINGO	PHONE:	(719) 668-8794
CONSTRUCTION LEAD:	JOSH RICHARD	PHONE:	(719) 668-3675
SHEET NO. 40 OF 60	SCALE: AS NOTED	PATRICK ENGINEERING TEAM	
DWN BY:	NORM WEST	CHKD. BY:	SETH BROWN
APPD. BY:	JEREMIAH SMITH		

LOCH FYNE 20" GAS PIPELINE
COLORADO SPRINGS, COLORADO
PLAN & PROFILE
46+00 - 49+00

DWG. NO:
C-215

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
2	300'		241-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE/ARO	ERW	FBE/ARO	



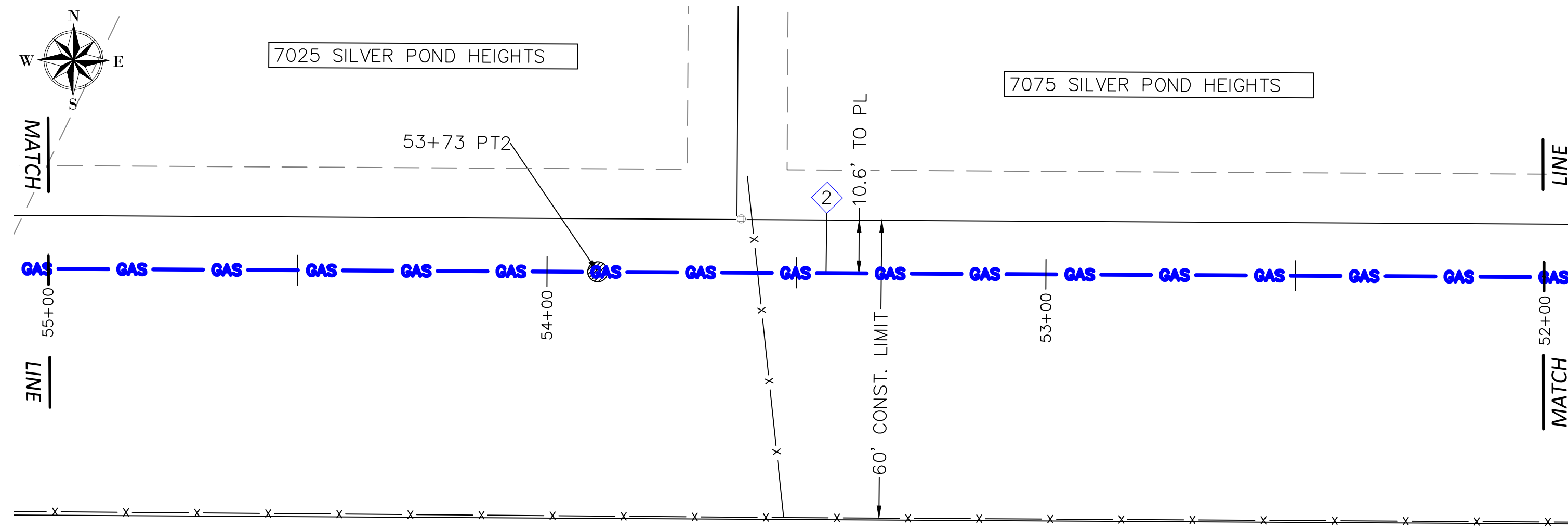
CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

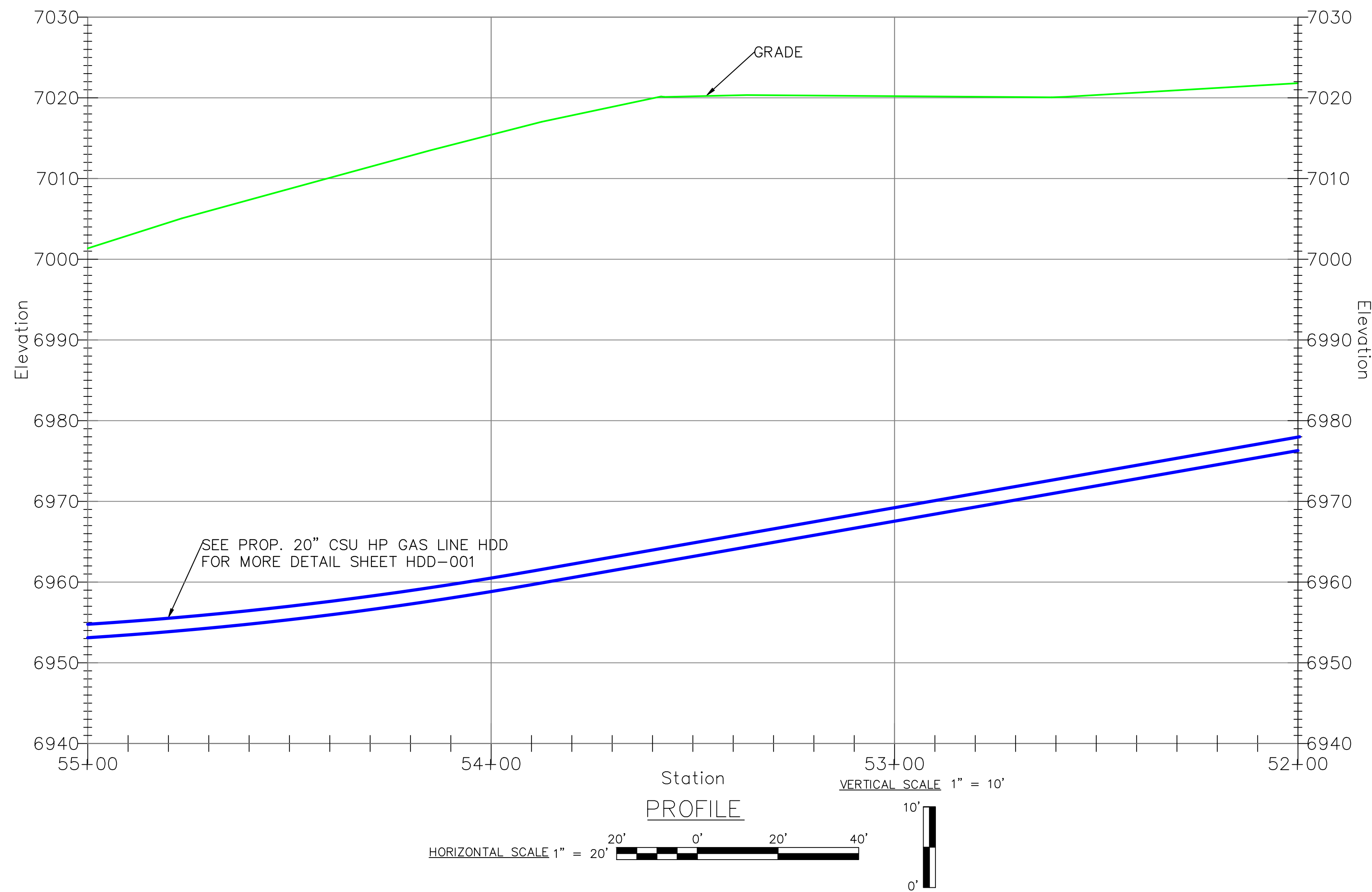
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-CSD\Jung LAYOUT NAME: C-216 PLOTTER: Thursday, March 23, 2023 - 8:44am USER: mwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS				
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS				
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS				
NO.	N/A	BY:	DATE:	APPVD:				
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A			
N/A		N/A	SEC. 32 TWN. 12S, RNG. 65W	Q-19	SYSTEM MAOP: 275 psig	3747144	PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
					SYSTEM MOP: 145 psig	RELATED W/O #s	CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
							SHEET NO. 41 OF 60	SCALE: AS NOTED
							PATRICK ENGINEERING TEAM	
							DWN BY: NORM WEST	CHKD. BY: SETH BROWN
							APPD. BY: JEREMIAH SMITH	
							LOCH FYNE 20" GAS PIPELINE	
							COLORADO SPRINGS, COLORADO	
							PLAN & PROFILE	
							49+00 - 52+00	
							DWG. NO. C-216	



PLAN
SCALE 1" = 20'



PROFILE
HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 10'

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
2	300'		241-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE/ARO	ERW	FBE/ARO	

CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

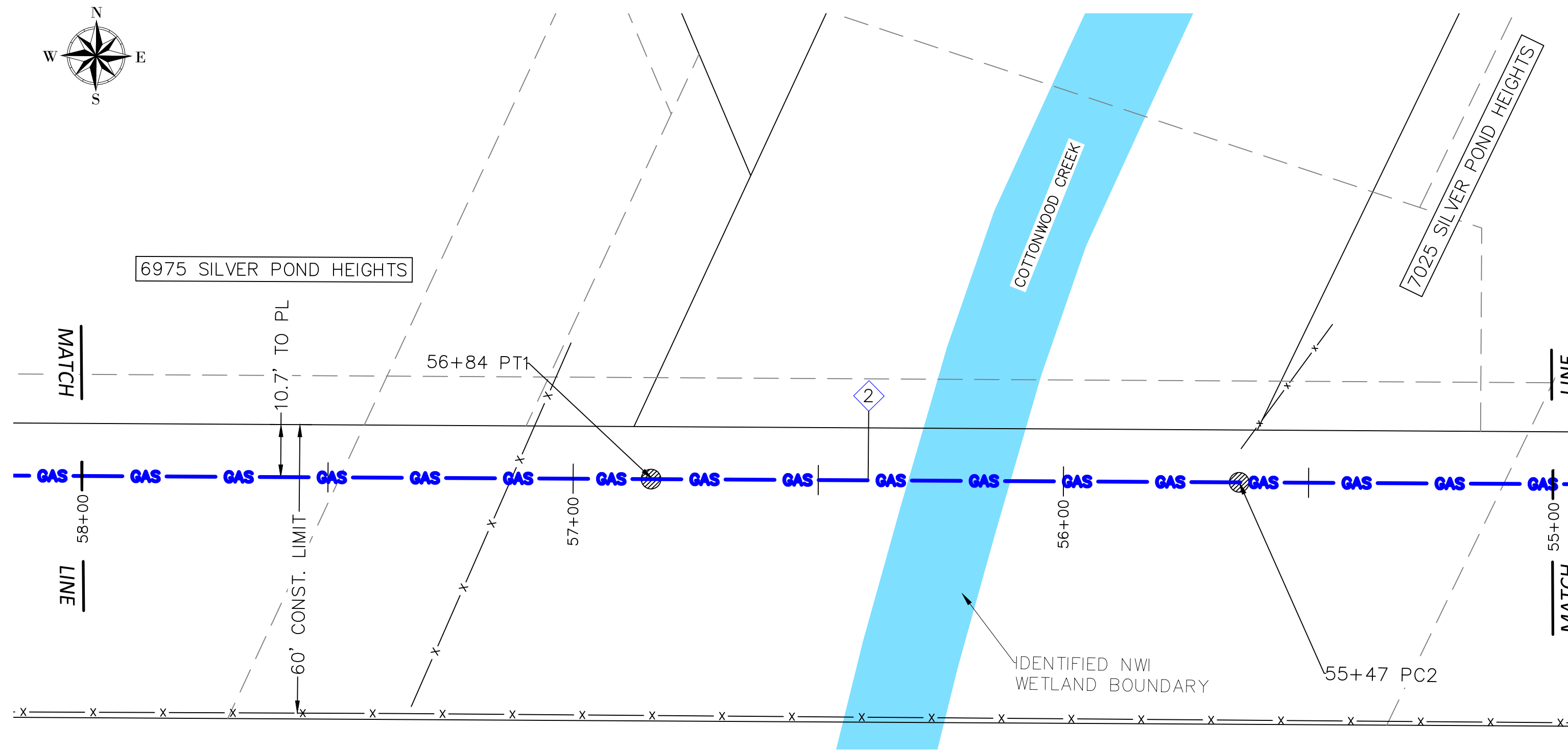
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC_C3D_C3D.dwg LAYOUT NAME: C-217 PLOTTER: Thursday, March 23, 2023 - 8:45am USER: mwest



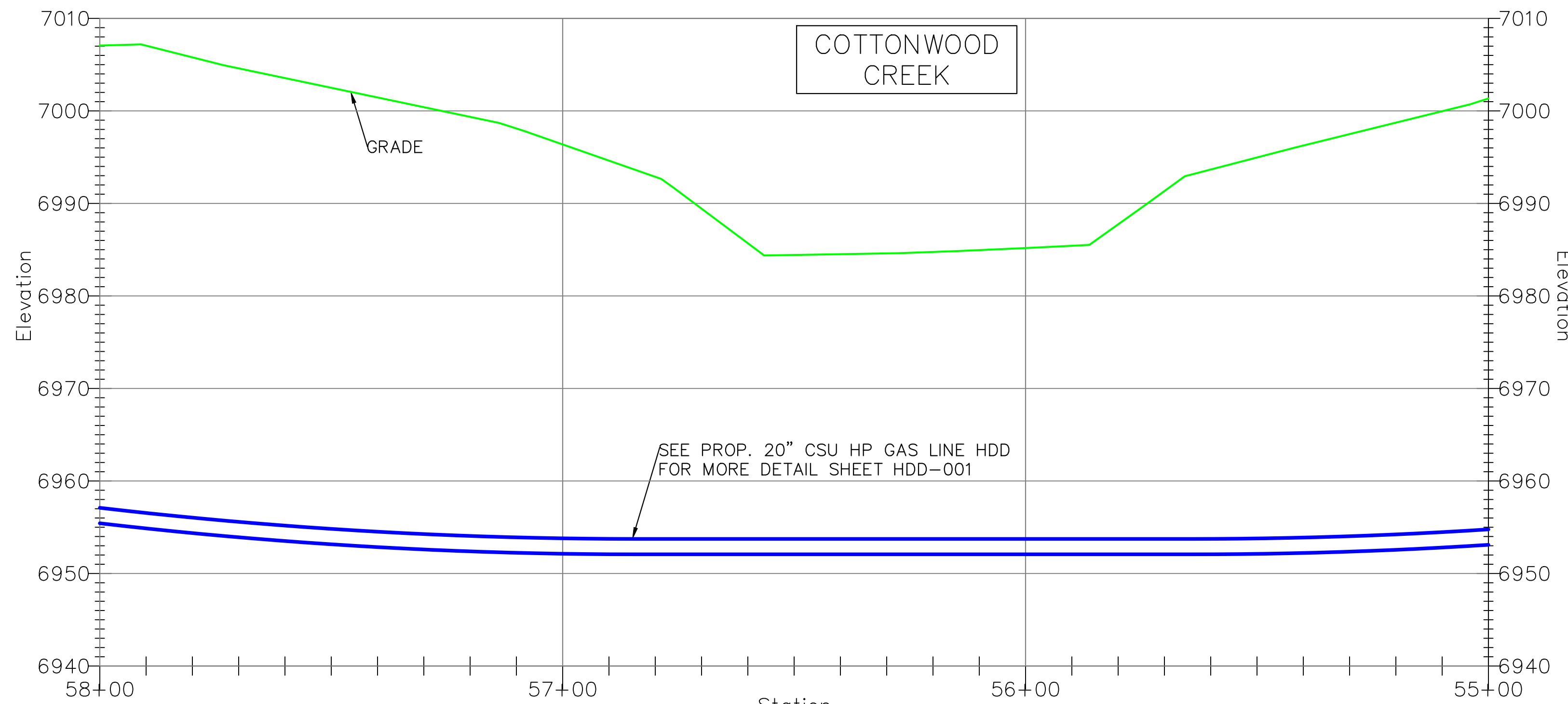
REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS				
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS				
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS				
NO.	N/A	BY:	DATE:	APPVD:				
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A			
N/A		N/A	SEC. 32 TWN. 12S, RNG. 65W	Q-19	SYSTEM MAOP: 275 psig	HP SERVICE: <input type="checkbox"/>	PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
					SYSTEM MOP: 145 psig	DISTRIBUTION: <input checked="" type="checkbox"/>	CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
						FEEDER: <input type="checkbox"/>	SHEET NO. 42 OF 60	SCALE: AS NOTED
						TRANS. BY DEF. <input type="checkbox"/>	PATRICK ENGINEERING TEAM	
						TRANS v 20% <input type="checkbox"/>	DWN BY: NORM WEST	CHKD. BY: SETH BROWN
							APPD. BY: JEREMIAH SMITH	
							LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 52+00 - 55+00	
							DWG. NO. C-217 <small>COPYRIGHT PROTECTED © 2018 PATRICK ENGINEERING INC.</small>	

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
2	300'		241-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE/ARO	ERW	FBE/ARO	



PLAN
SCALE 1" = 20'



Station PROFILE
VERTICAL SCALE 1" = 10'
HORIZONTAL SCALE 1" = 20'

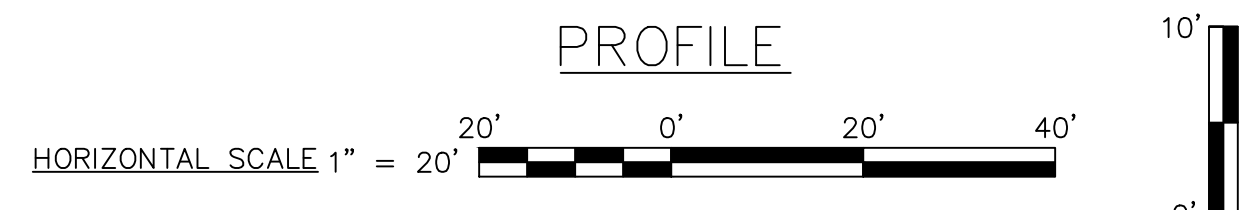
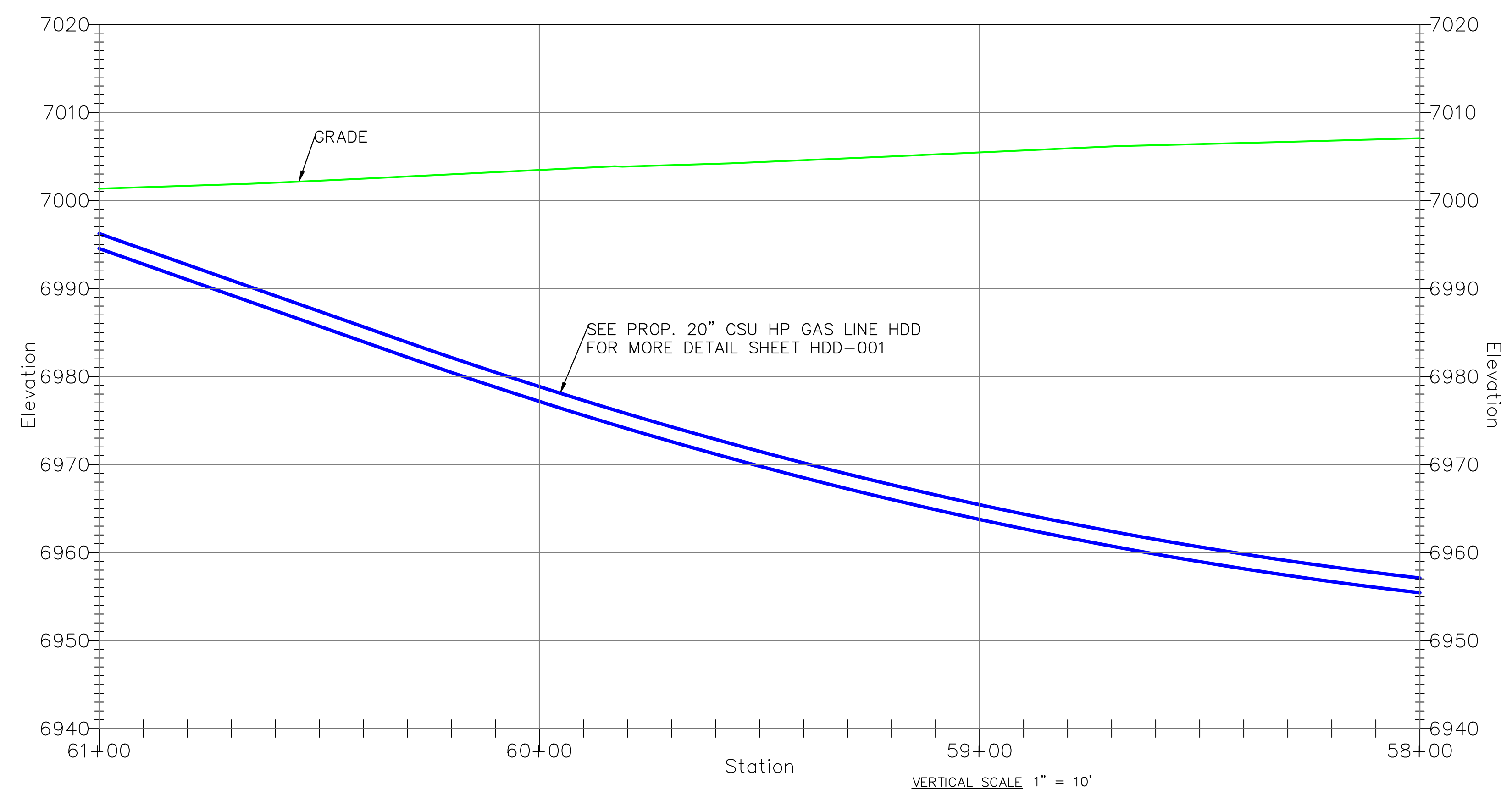
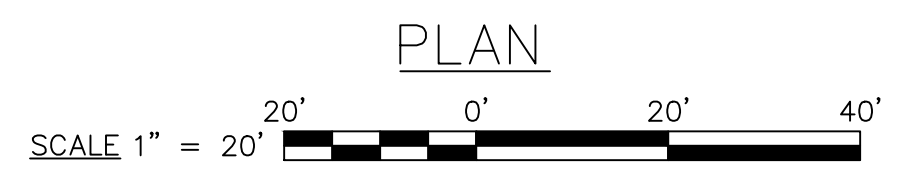
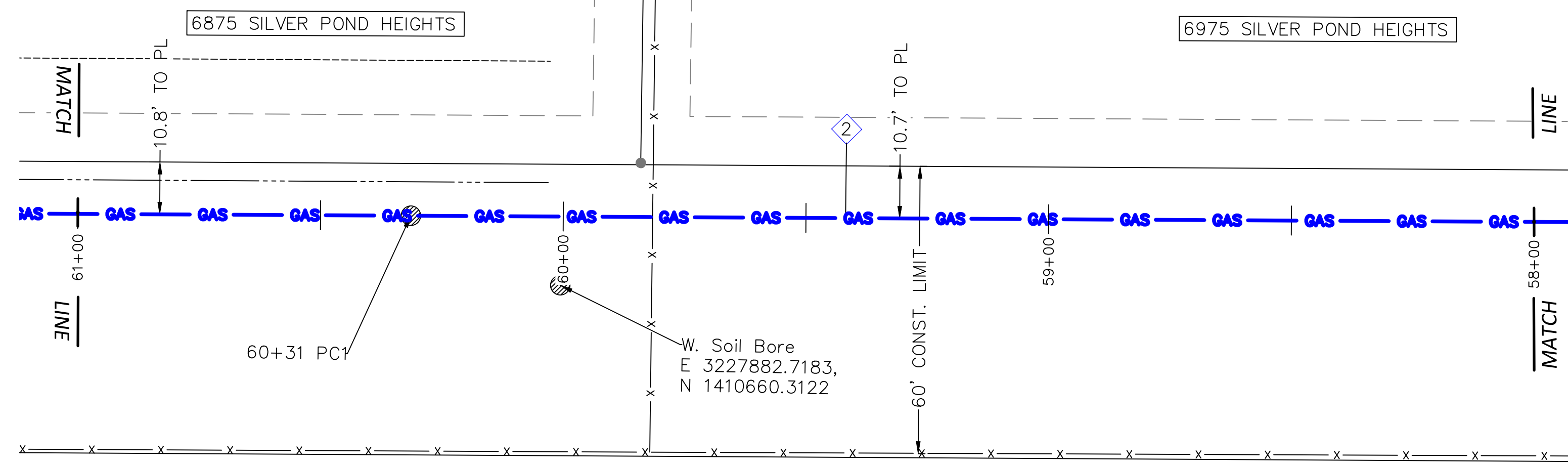
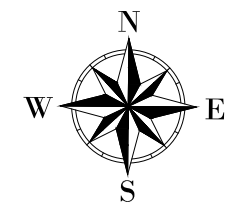
CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-CSD-CDU.dwg LAYOUT NAME: C-218 PLOTTED: Thursday, March 23, 2023 - 8:40am USER: mwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196	
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS					
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS					
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS					
NO.	N/A	BY:	DATE:	APPVD:					
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A	SYSTEM MAOP: 275 psig	HP SERVICE: <input type="checkbox"/>	PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
N/A	N/A	N/A	SEC. 32 TOWN. 12S, RNG. 65W	Q-19				CONSTRUCTION LEAD: JOSH RICHARD <td>PHONE: (719) 668-3675 </td>	PHONE: (719) 668-3675
								SHEET NO. 4.3 OF 60	SCALE: AS NOTED
								PATRICK ENGINEERING TEAM	
								DWN BY: NORM WEST	CHKD. BY: SETH BROWN
								APPD. BY: JEREMIAH SMITH	
								LOCH FYNE 20" GAS PIPELINE	
								COLORADO SPRINGS, COLORADO	
								PLAN & PROFILE	
								55+00 - 58+00	
								DWG. NO. C-218	



HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
2	300'		241-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE/ARO	ERW	FBE/ARO	

CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

FILE NAME: P:\indianapolis\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-C3D-CSD.dwg LAYOUT NAME: C-219 PLOTTED: Thursday, March 23, 2023 - 8:35am USER: mwest

P.E. CERTIFICATION

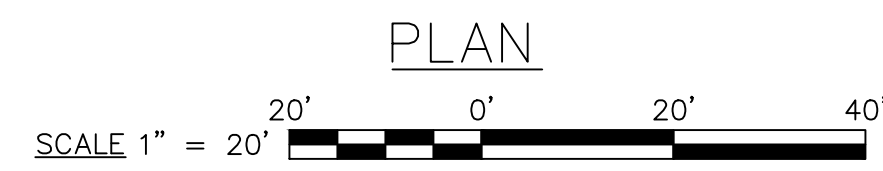
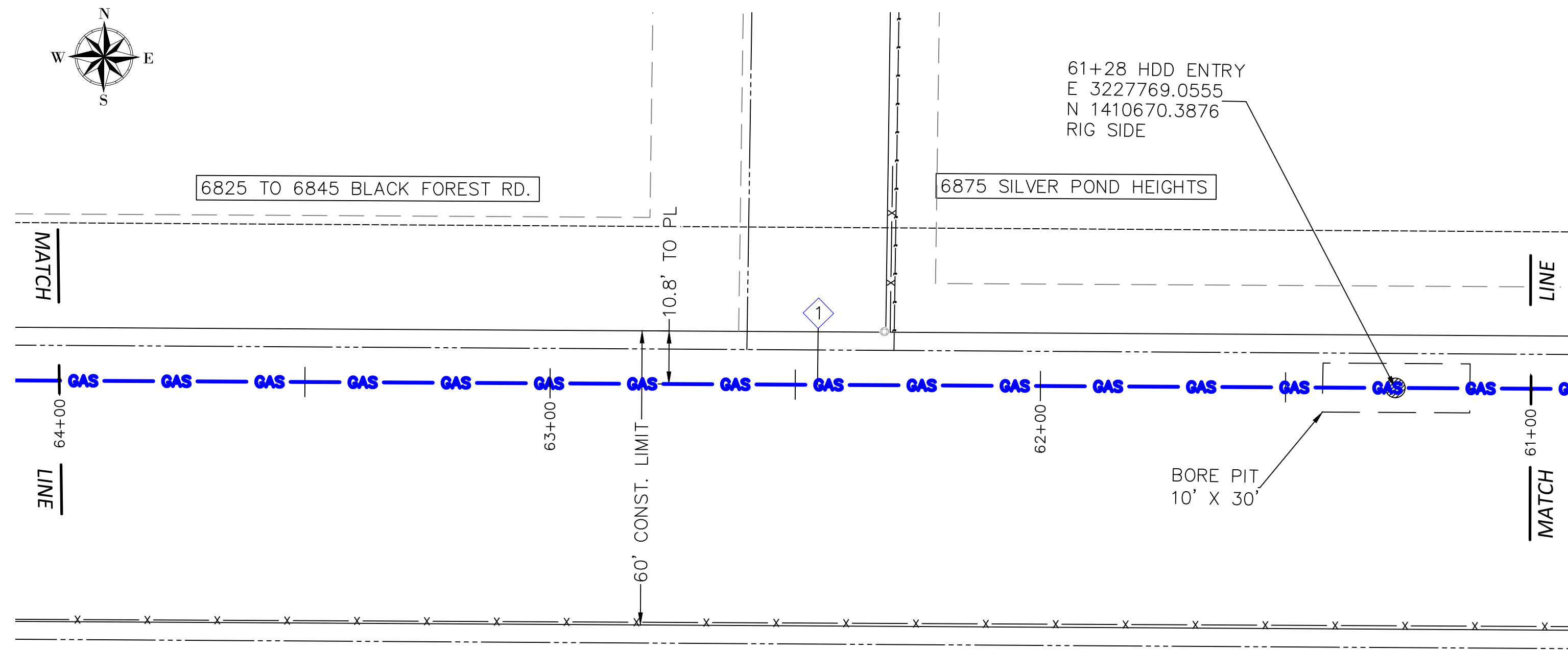
REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS	HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	3747144	
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			
NO.	N/A	BY:	DATE:	APPVD:			
PERMIT INFORMATION				ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A
N/A				N/A	SEC. 32 TWN. 12S, RNG. 65W	Q-19	
SYSTEM MAOP:				275 psig			
SYSTEM MOP:				145 psig			

ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
SHEET NO. 44 OF 60	SCALE: AS NOTED
PATRICK ENGINEERING TEAM	
DWN BY: NORM WEST	CHKD. BY: SETH BROWN
APPD. BY: JEREMIAH SMITH	
<p>LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 58+00 - 61+00</p>	
DWG. NO. C-219	

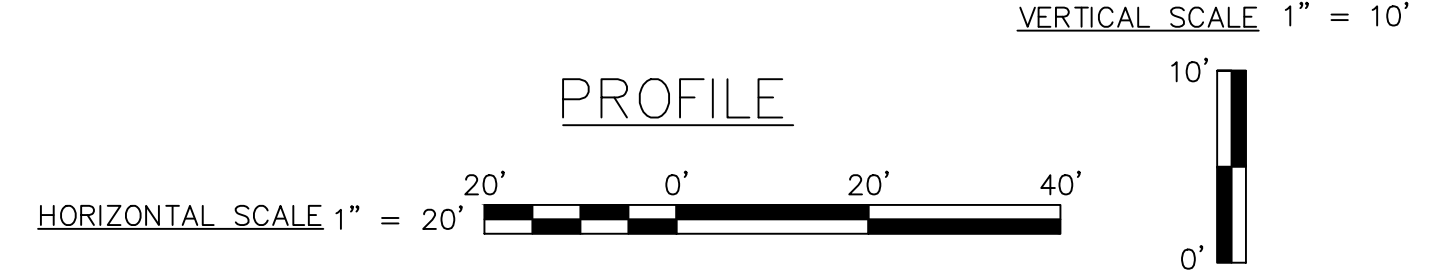
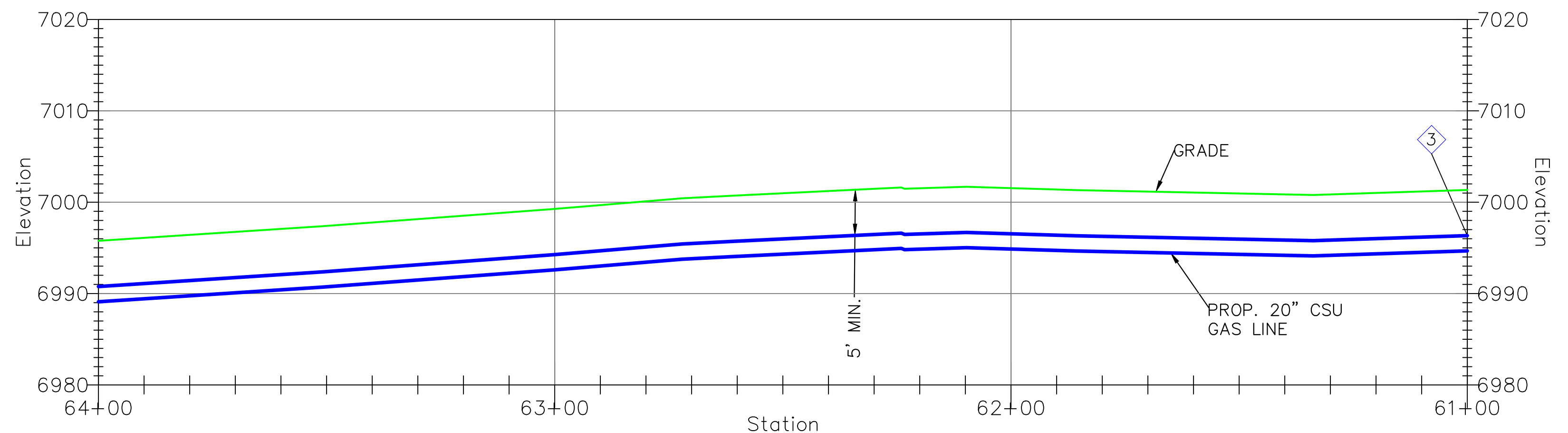
COPYRIGHT PROTECTED © 2018 PATRICK ENGINEERING INC.

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	1		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	



PLAN

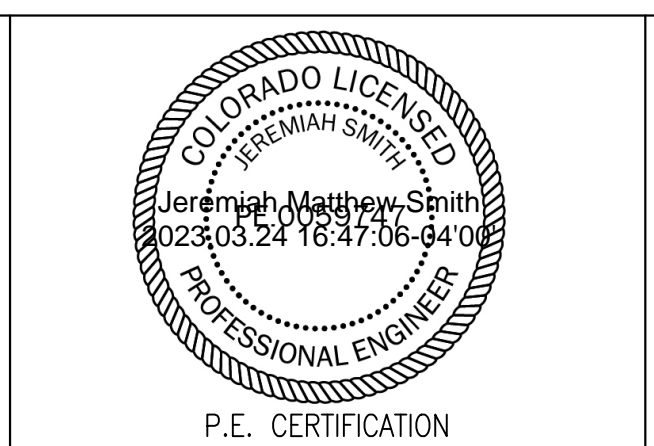


PROFILE

CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
1 CP	NOT ON THIS SHEET.
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

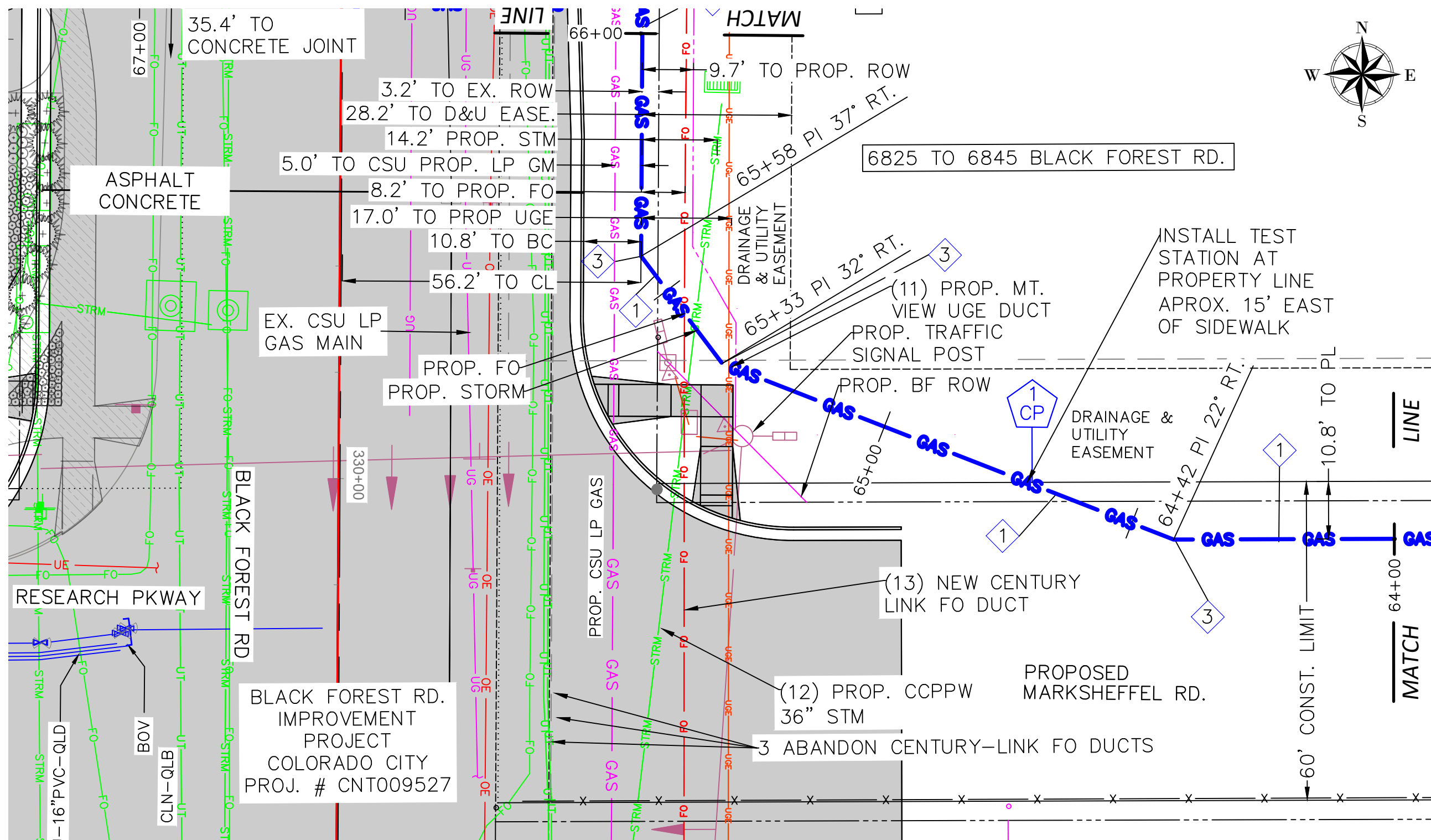
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Springs\FC-C30-C31.dwg LAYOUT NAME: C-220 PLOTTED: Thursday, March 23, 2023 - 8:35am USER: mwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 45 OF 60	SCALE: AS NOTED
N/A				BY: DATE: APPVD:			PATRICK ENGINEERING TEAM	
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A		DWN BY: NORM WEST	CHKD. BY: SETH BROWN
N/A		N/A	SEC. 32 TWN. 12S, RNG. 65W	Q-19	SYSTEM MAOP: 275 psig		APPD. BY: JEREMIAH SMITH	
					SYSTEM MOP: 145 psig		LOCH FYNE 20" GAS PIPELINE	
							COLORADO SPRINGS, COLORADO	
							PLAN & PROFILE	
							61+00 - 64+00	
							DWG. NO. C-220	

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

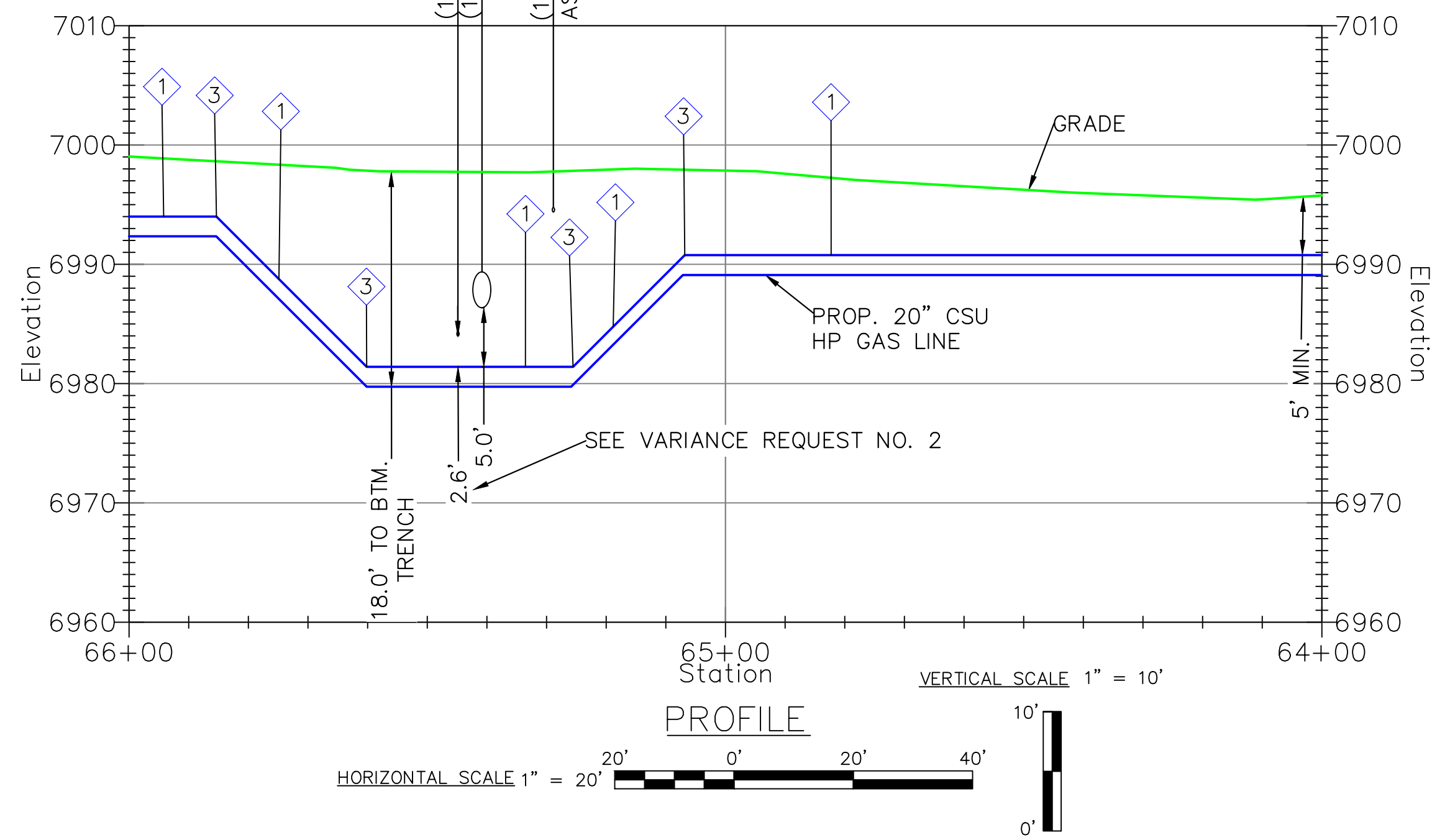
CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	200'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	7		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	



PLAN
SCALE 1" = 20'

CROSSING TABLE					
ITEM	CROSSING	SIZE	DEPTH (TOP OF PIPE)	MIN. VERT. SEPERATION	MIN. HORIZ. SEPERATION
11	MT. VIEW ELECTRIC DUCT	4"	3 ¹	5'	6'
12	CCPPW ² STORM	36"	8.4 ¹	5'	10'
13	CENTURY-LINK FO DUCT	4"	13.4 ¹	5'	6'

1. PROPOSED UTILITIES, VERIFY DEPTH AND LOCATION BEFORE CONSTRUCTION.
2. CCPPW- COLORADO CITY OF PARKS AND PUBLIC WORKS.



CSU SPECIFICATION VARIANCE APPROVAL REQUEST	
2	REQUESTING APPROVAL TO REDUCE THE SEPARATION CLEARANCE BETWEEN THE PROPOSED 20" GAS LINE AND THE PROPOSED FIBER OPTIC DUCT TO REDUCE THE EXCAVATION DEPTH TO LESS THAN 20- FEET FOR THE NEW GAS LINE. THIS WILL PREVENT HAVING TO HAVE AN ENGINEERED EXCAVATION.
APPROVED BY	

CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
1 CP	INSTALL TEST STATIONS AT LOCATIONS SHOWN IN THE DESIGN PACKAGE.
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

REFERENCE NOTE:
ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: TOO9527) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-CSD-CSD.dwg LAYOUT NAME: C-221 PLOTTED: Wednesday, March 22, 2023 - 4:32pm USER: rtwet



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 46 OF 60	SCALE: AS NOTED
N/A				BY: DATE: APPVD:			PATRICK ENGINEERING TEAM	
PERMIT INFORMATION				ISOLATION AREA	LOCATION	ATLAS OR TITLE	DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
N/A				N/A	SEC. 32 TWN. 12S, RNG. 65W	Q-19	LOCH FYNE 20" GAS PIPELINE	
N/A				N/A			COLORADO SPRINGS, COLORADO	
N/A				N/A			PLAN & PROFILE	
N/A				N/A			64+00 - 66+00	

HP SERVICE:	<input type="checkbox"/>
DISTRIBUTION:	<input checked="" type="checkbox"/>
FEEDER:	<input type="checkbox"/>
TRANS. BY DEF.	<input type="checkbox"/>
TRANS v 20%:	<input type="checkbox"/>

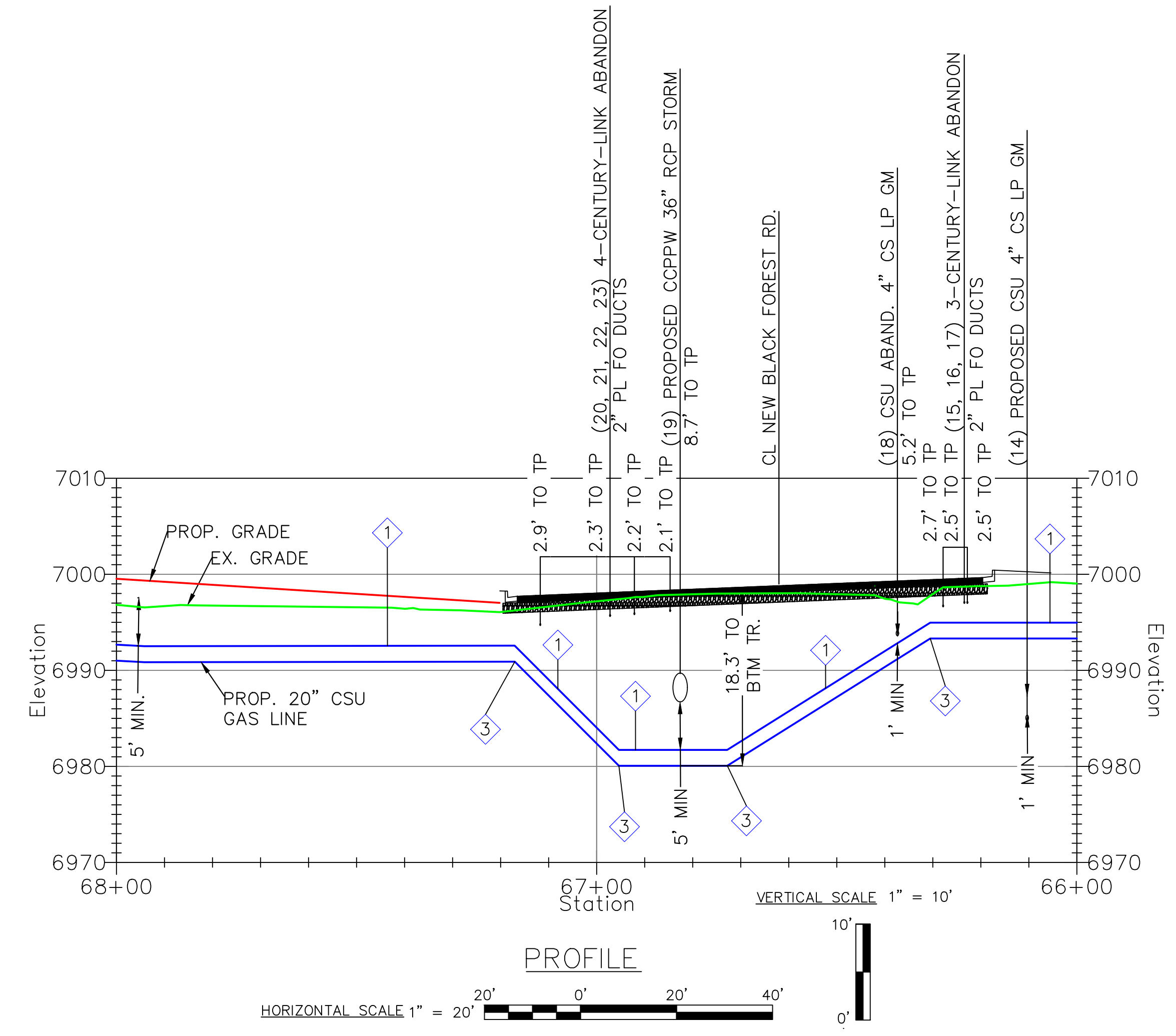
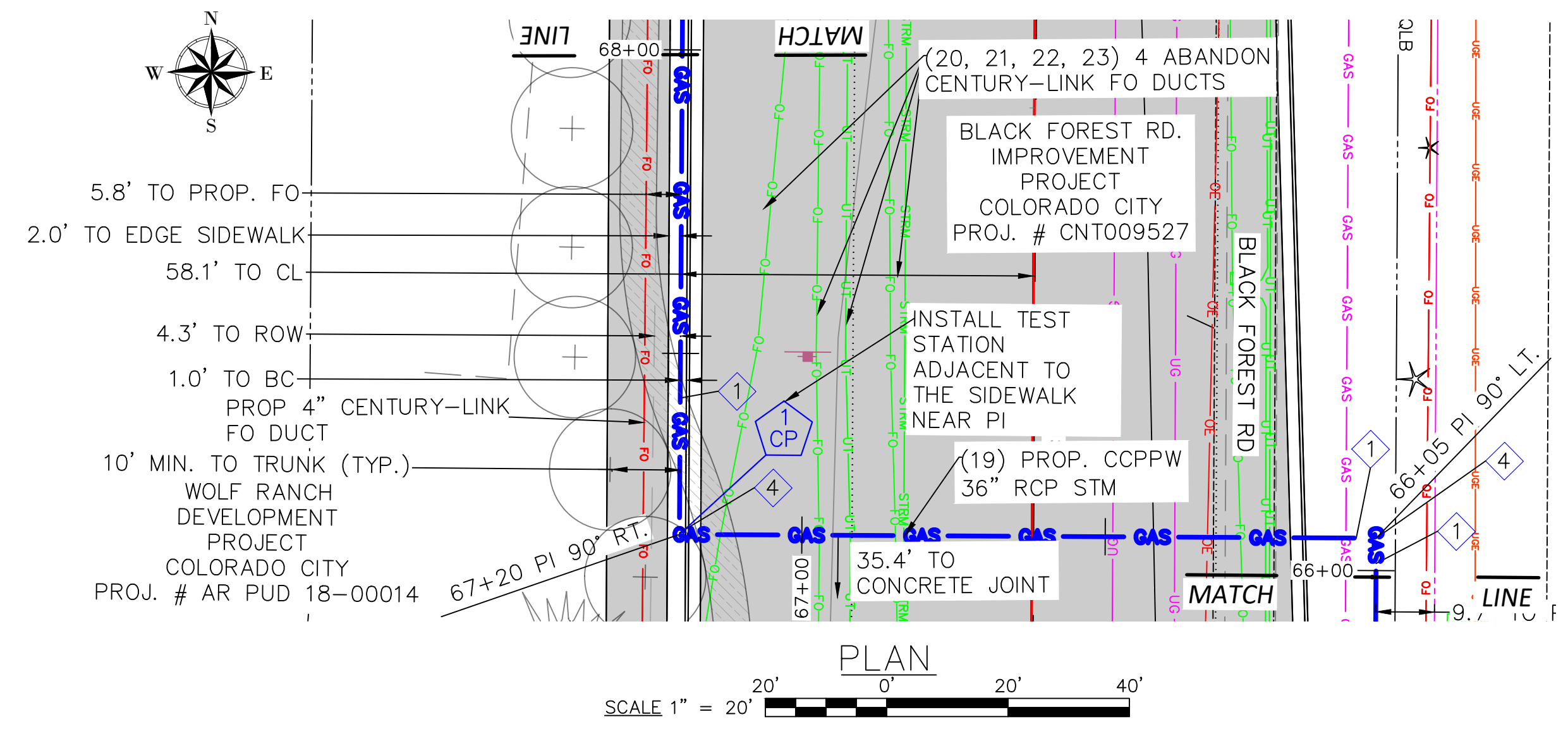
3747144	RELATED W/O #s	3789816
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LOCH FYNE 20" GAS PIPELINE
COLORADO SPRINGS, COLORADO
PLAN & PROFILE
64+00 - 66+00

DWG. NO: **C-221**
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HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	200'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	4		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	
4	2		220-692-920	20" ELBOW, 0.375" WT, STL, 90 DEG., 3R, WPHY 52	FORGED	FBE	



CROSSING TABLE				
ITEM	CROSSING	SIZE	DEPTH (TOP OF PIPE)	MIN. VERT. SEPERATION
14	CSU PROP LP GAS LINE	4"	14.9' ¹	1'
15	CENTURY-LINK ABANDON FO DUCT	2"	2.5' ²	NONE
16	CENTURY-LINK ABANDON FO DUCT	2"	2.5' ²	NONE
17	CENTURY-LINK ABANDON FO DUCT	2"	2.5' ²	NONE
18	CSU ABANDON LP GAS LINE	4"	5.2' ³	NONE
19	CCPPW ⁵ PROP.RCP STORM	36"	8.7' ⁴	5'
20	CENTURY-LINK ABANDON FO DUCT	2"	2.1' ²	NONE
21	CENTURY-LINK ABANDON FO DUCT	2"	2.2' ²	NONE
22	CENTURY-LINK ABANDON FO DUCT	2"	2.3' ²	NONE
23	CENTURY-LINK ABANDON FO DUCT	2"	2.9' ²	NONE

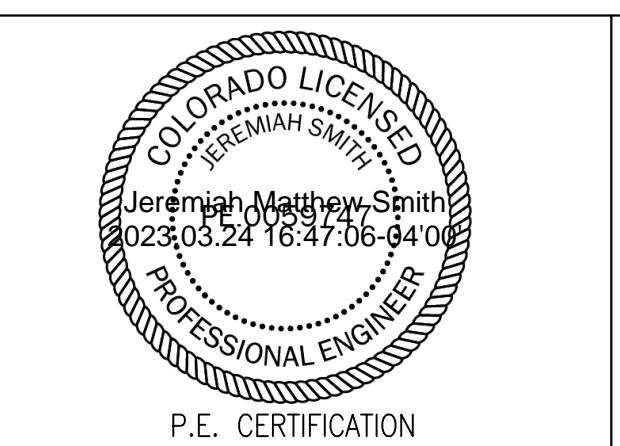
- (1) PROPOSED CSU PROPOSED LP LINE LINE, VERIFY DEPTH AND LOCATION BEFORE CONSTRUCTION. THE DEPTH IS BASED ON THE NEED TO CROSS A PROPOSED STORM SEWER.
- (2, 3, 4, 7, 8, 9, 10) FIBER OPTIC DUCTS ARE EXPECTED TO BE ABANDON IN PLACE, BUT THEY MAY HAVE BEEN REMOVED DURING ROAD CONSTRUCTION.
- (5) EXISTING CSU 4" LP GAS LINE THAT WILL BE ABANDON. DEPTH IS MEASURED FROM TOP OF THE PROPOSED BLACK FOREST RD.
- (6) PROPOSED STORM SEWER, VERIFY LOCATION AND DEPTH BEFORE CONSTRUCTION.
- CCPPW - COLORADO CITY PARKS AND PUBLIC WORKS

CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPERATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
1 CP	INSTALL TEST STATIONS AT LOCATIONS SHOWN IN THE DESIGN PACKAGE.
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

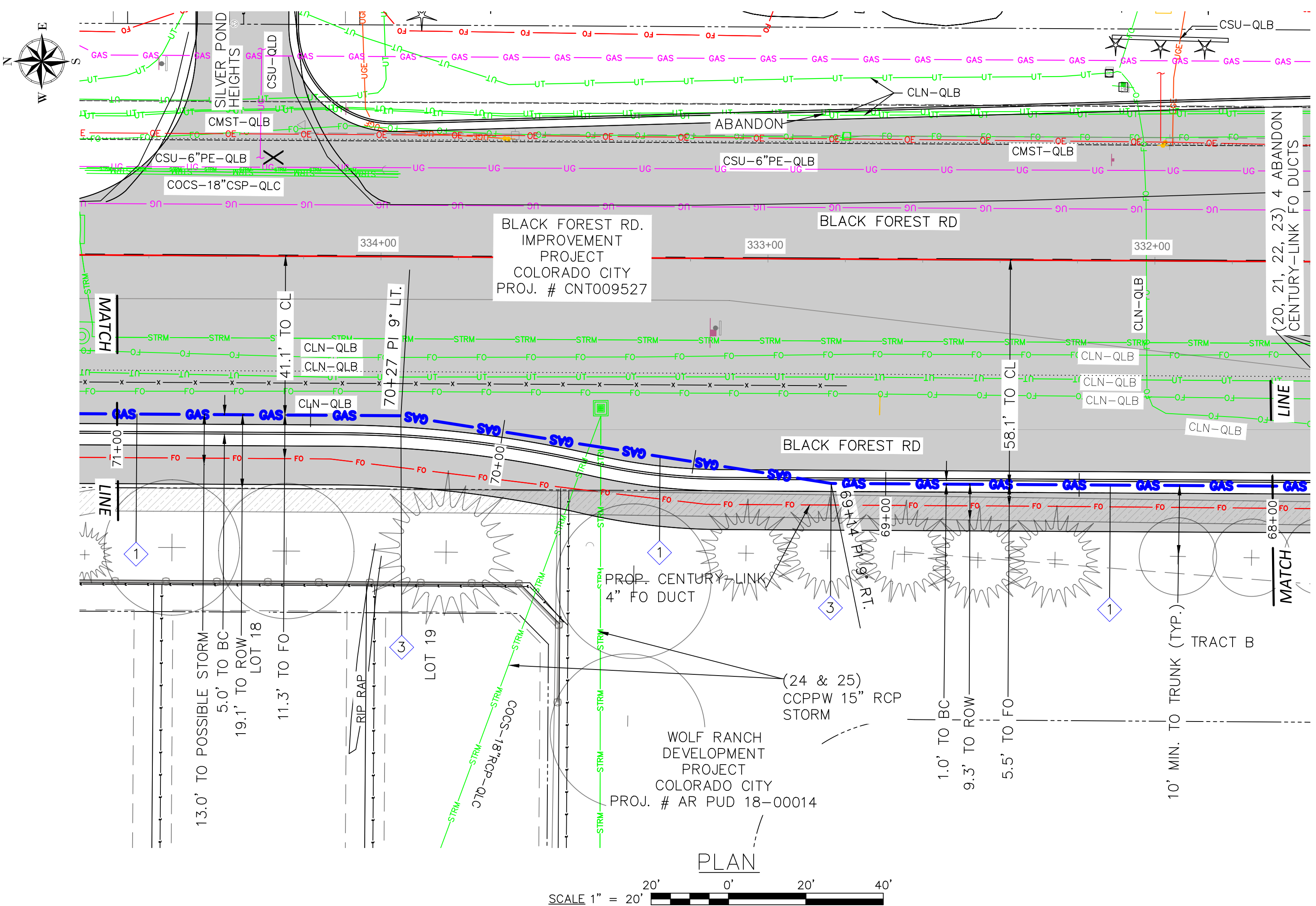
REFERENCE NOTE:
 ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: TOO9527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-C3D-C3U.dwg LAYOUT NAME: C-222 PLOTTED: Wednesday, March 22, 2023 - 4:32pm USER: rwest

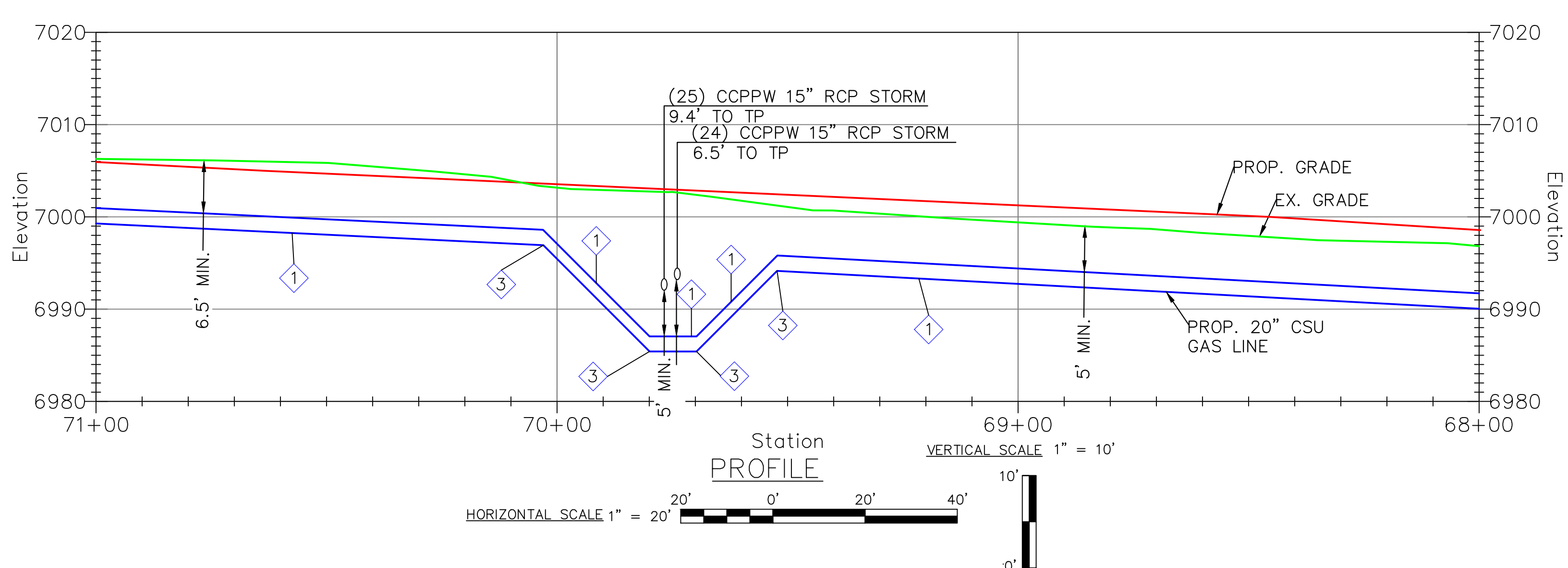


REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS	HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	3747144	PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-8794
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 47 OF 60	PHONE: (719) 668-3675
N/A				BY: DATE: APPVD:			SCALE: AS NOTED	PATRICK ENGINEERING TEAM
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A	RELATED W/O #s	DWN BY: NORM WEST	CHKD. BY: SETH BROWN
N/A		N/A	SEC. 32 TOWN 12S, RANG. 65W	Q-19	SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	3789816	APPD. BY: JEREMIAH SMITH	

LOCH FYNE 20" GAS PIPELINE
 COLORADO SPRINGS, COLORADO
 PLAN & PROFILE
 66+00 - 68+00
 DWG. NO. C-222



SCALE 1" = 20'



HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 10'

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	6		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	

CONSTRUCTION NOTES

4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES

2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003
------	---

CROSSING TABLE

SIZE	CROSSING	SIZE	DEPTH (TOP OF PIPE)	MIN. VERT. SEPERATION	MIN. HORZ. SEPERATION
24	CCPPW RCP STORM	15"	6.4'	5'	-
25	CCPPW RCP STORM	15"	9.4'	5'	-

CCPPW - COLORADO CITY PARKS AND PUBLIC WORKS

REFERENCE NOTE:
ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: TOO9527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-CSP-CSI.dwg LAYOUT NAME: C-223 PLOTTED: Wednesday, March 22, 2023 - 4:32pm USER: rwest

Colorado Springs Utilities
It's how we're all connected

Jeremiah Smith
P.E. CERTIFICATION

8902 Vincennes Circle, Suite F
Indianapolis, IN 46268
TEL: (317) 217-1701
www.patrickco.com
PROJ. NO. 22282.003

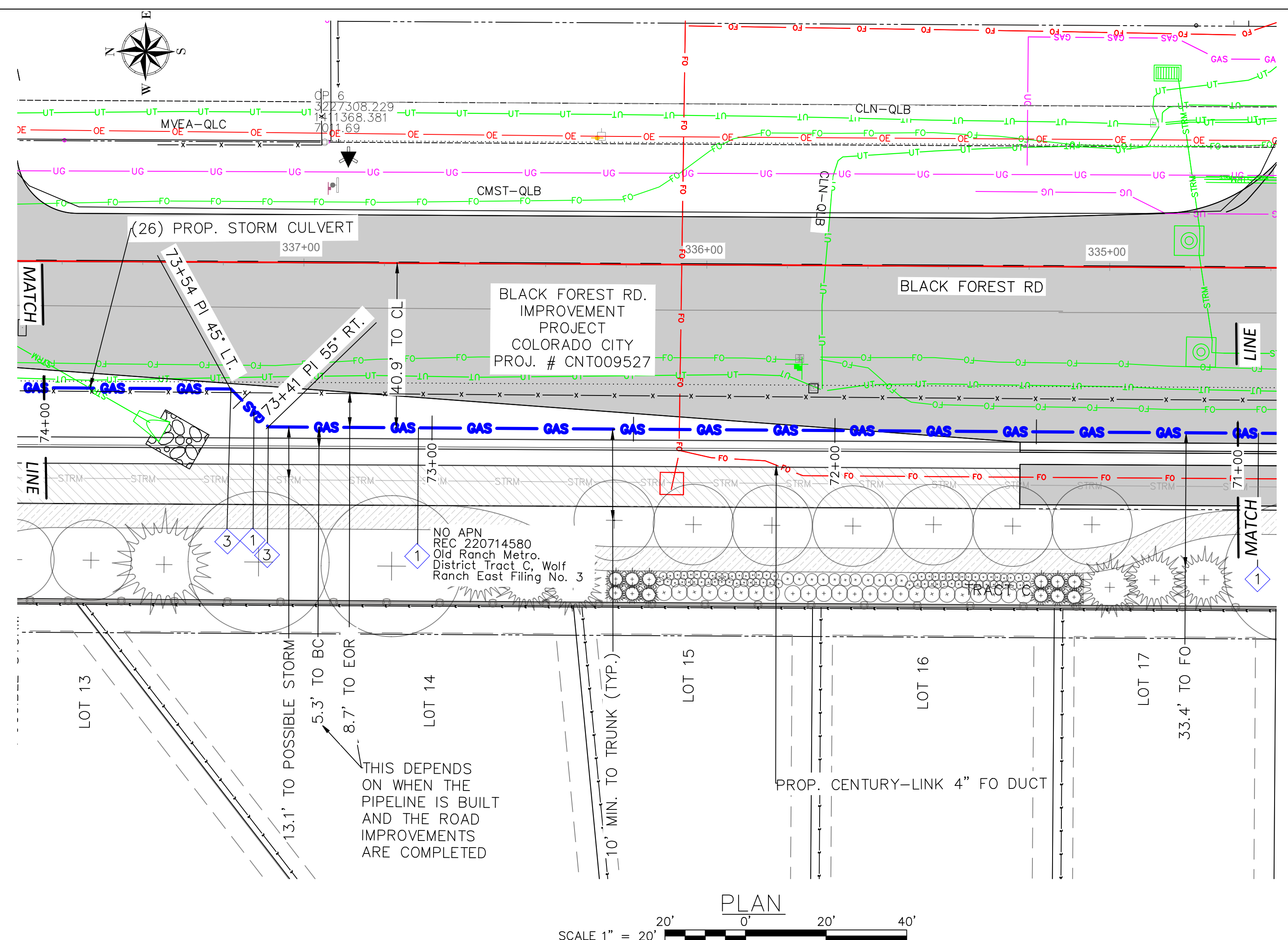
REVISIONS		SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW 3/16/23 JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW 11/14/22 JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW 10/14/22 JMS			SHEET NO. 48 OF 60	SCALE: AS NOTED
N/A		BY: DATE: APPVD:			PATRICK ENGINEERING TEAM	
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
N/A		N/A	SEC. 32 TOWN. 12S, RNG. 65W	Q-19	LOCH FYNE 20" GAS PIPELINE	
					COLORADO SPRINGS, COLORADO	
					PLAN & PROFILE	
					68+00 - 71+00	

3747144

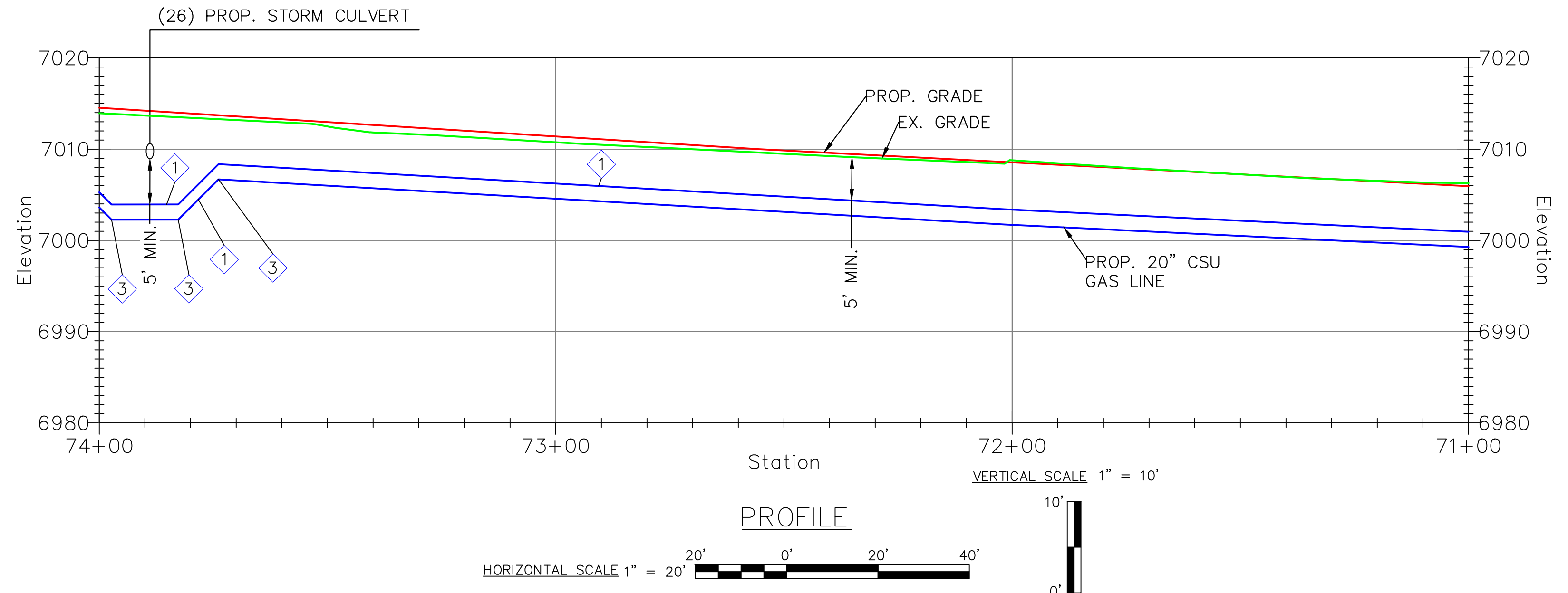
3789816

DWG. NO. C-223

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-CSP-CStu.dwg LAYOUT NAME: C-224 PLOTTED: Wednesday, March 22, 2023 - 4:53pm USER: rwest



PLAN
SCALE 1" = 20'



PROFILE
HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 10'

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	5		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	

CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

CROSSING TABLE					
SIZE	CROSSING	SIZE	DEPTH (TOP OF PIPE)	MIN. VERT. SEPARATION	MIN. HORIZ. SEPARATION
26	CCPPW STORM CULVERT	TBD	TBD	5'	-

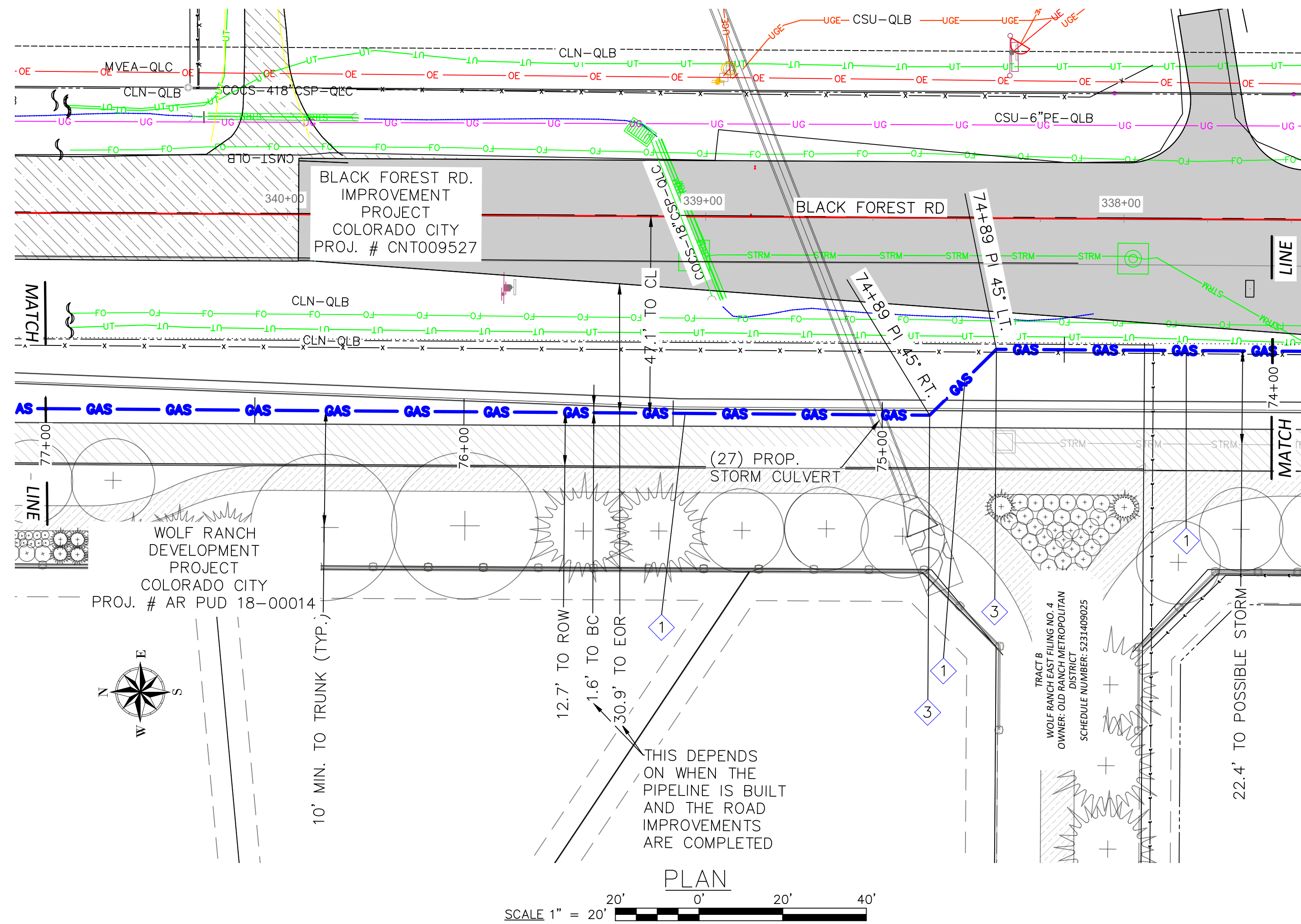
CCPPW - COLORADO CITY PARKS AND PUBLIC WORKS

REFERENCE NOTE:
ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: TOO9527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

<p>Colorado Springs Utilities It's how we're all connected</p>	<p>Jeremiah Matthew Smith 023.03.24.16.47.06.84.00 P.E. CERTIFICATION</p>	<p>8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com PROJ. NO. 22282.003</p>	<p>REVISIONS</p> <table border="1"> <tr> <td>6</td> <td>REISSUED FOR CONSTRUCTION</td> <td>NEW</td> <td>3/16/23</td> <td>JMS</td> </tr> <tr> <td>5</td> <td>ISSUED FOR CONSTRUCTION</td> <td>NEW</td> <td>11/14/22</td> <td>JMS</td> </tr> <tr> <td>4</td> <td>100% DESIGN PACKAGE ISSUED FOR REVIEW</td> <td>NEW</td> <td>10/14/22</td> <td>JMS</td> </tr> <tr> <td>NO.</td> <td>N/A</td> <td>BY:</td> <td>DATE:</td> <td>APPVD:</td> </tr> </table>		6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS	5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS	4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS	NO.	N/A	BY:	DATE:	APPVD:	<p>SYSTEM NAME: 150P</p> <p>SYSTEM MAOP: 275 psig</p> <p>SYSTEM MOP: 145 psig</p>	<p>JOB TYPE:</p> <p>HP SERVICE: <input type="checkbox"/></p> <p>DISTRIBUTION: <input checked="" type="checkbox"/></p> <p>FEEDER: <input type="checkbox"/></p> <p>TRANS. BY DEF. <input type="checkbox"/></p> <p>TRANS v 20% <input type="checkbox"/></p>	<p>W/O #</p> <p>3747144</p> <p>RELATED W/O #s</p> <p>3789816</p>	<p>ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196</p> <p>PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794</p> <p>CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675</p> <p>SHEET NO. 49 OF 60 SCALE: AS NOTED</p> <p>PATRICK ENGINEERING TEAM</p> <p>DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH</p>
			6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS																					
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS																								
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS																								
NO.	N/A	BY:	DATE:	APPVD:																								
	<p>LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 71+00 - 74+00</p>	<p>PROJ. NO. 22282.003</p>	<p>PERMIT INFORMATION</p> <p>N/A</p>	<p>ISOLATION AREA</p> <p>N/A</p>	<p>LOCATION</p> <p>SEC. 32 TWN. 12S, RNG. 65W</p>	<p>ATLAS OR TITLE</p> <p>Q-19 & P-19</p>	<p>SYSTEM MAOP:</p> <p>SYSTEM MOP:</p>	<p>W/O #</p> <p>3747144</p>	<p>ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196</p> <p>PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794</p> <p>CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675</p> <p>SHEET NO. 49 OF 60 SCALE: AS NOTED</p> <p>PATRICK ENGINEERING TEAM</p> <p>DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH</p>																			

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	7		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	

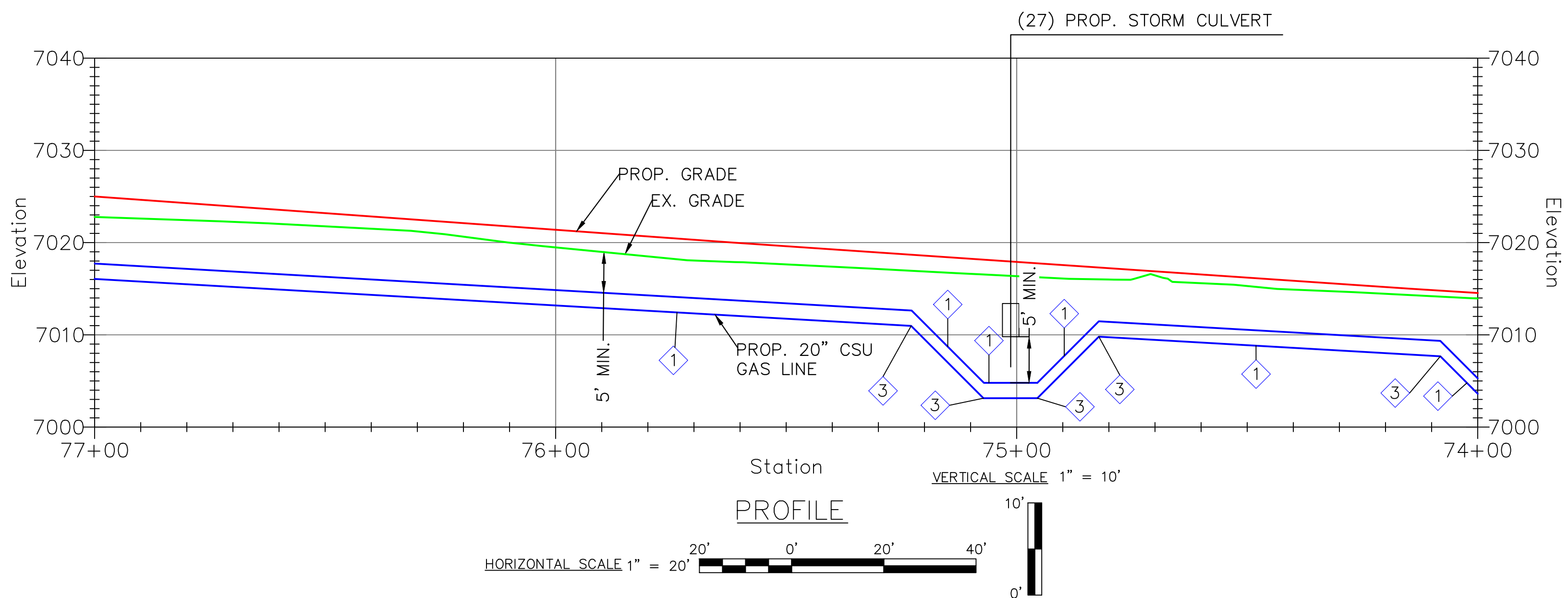


CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

CROSSING TABLE					
SIZE	CROSSING	SIZE	DEPTH (TOP OF PIPE)	MIN. VERT. SEPERATION	MIN. HORZ. SEPERATION
27	CCPPW STORM CULVERT	TBD	TBD	5'	-

CCPPW - COLORADO CITY PARKS AND PUBLIC WORKS



REFERENCE NOTE:
ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: T009527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-C3D-C3D.dwg LAYOUT NAME: C-225 PLOTTED: Wednesday, March 22, 2023 - 4:33pm USER: rwest

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P.E. CERTIFICATION

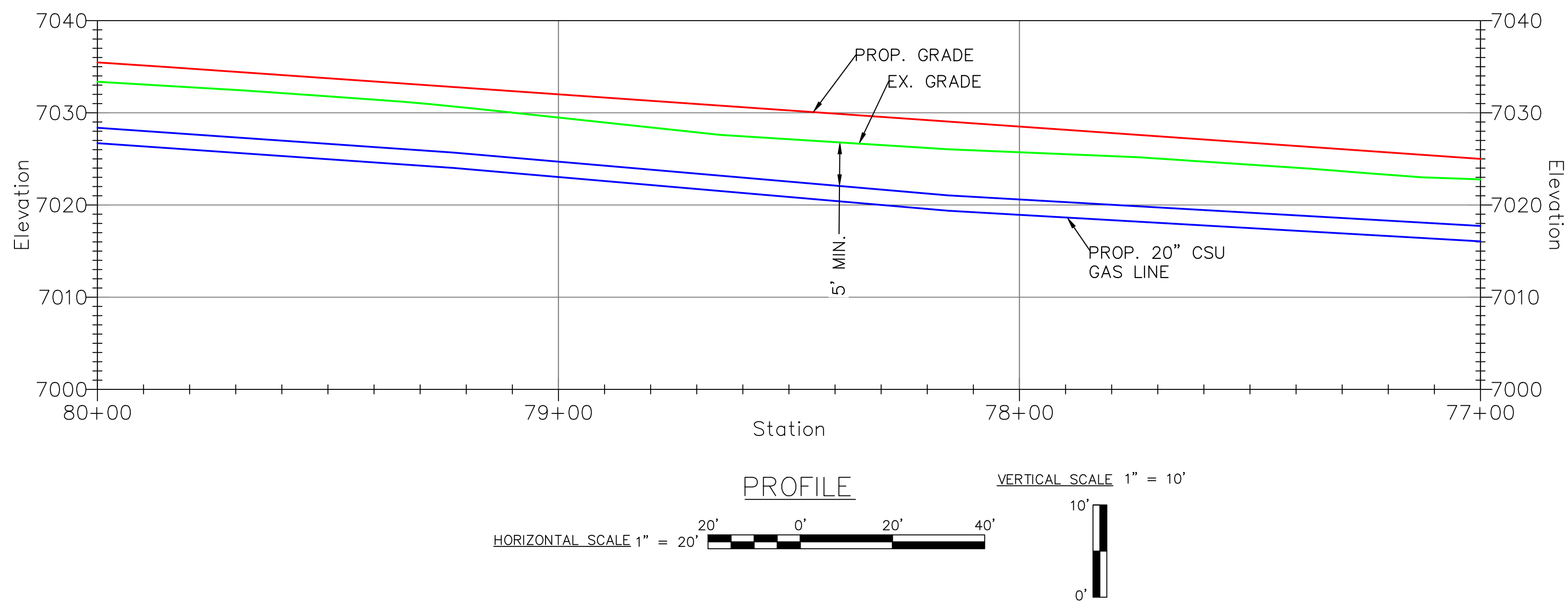
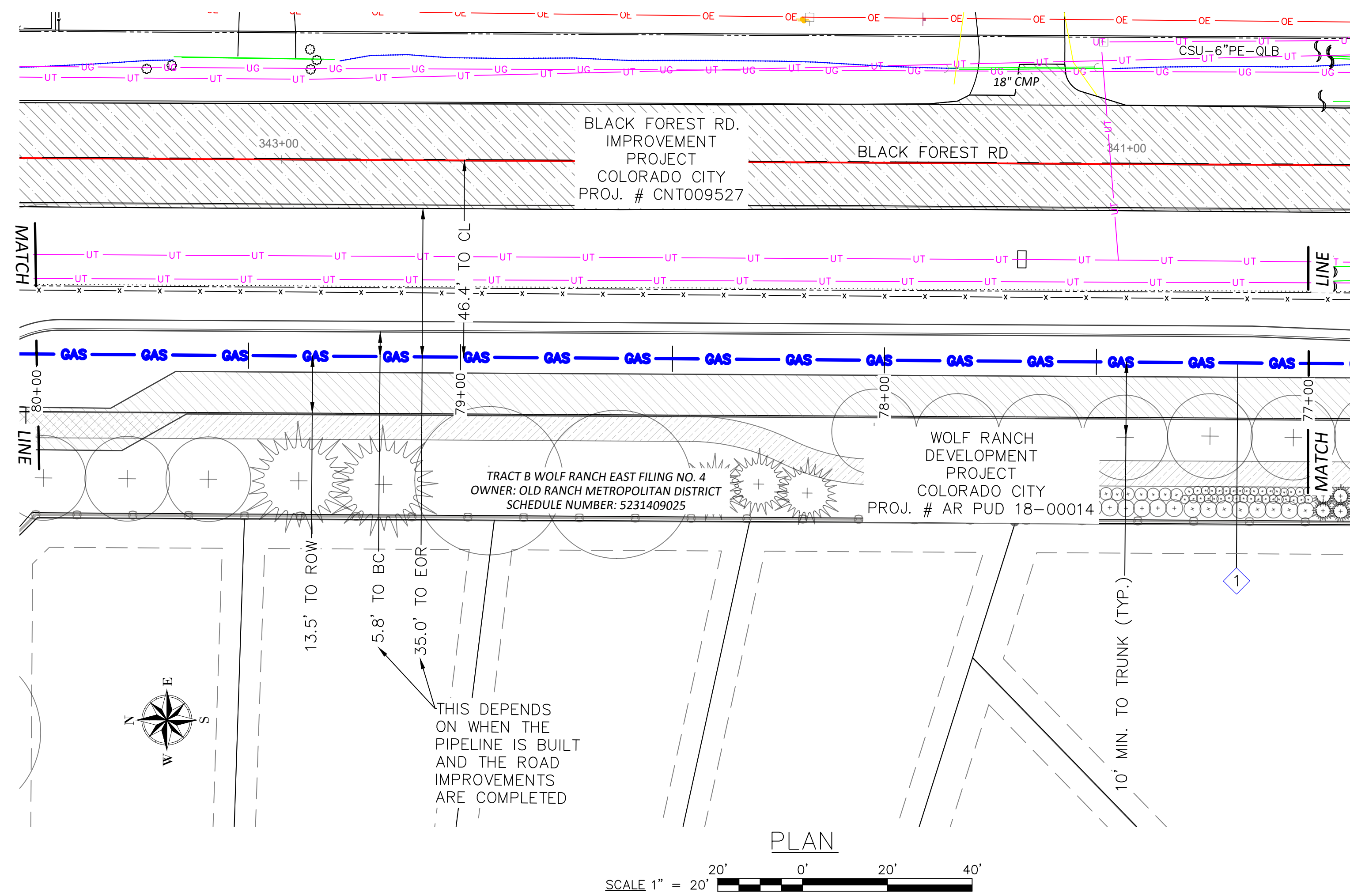
8902 Vincennes Circle, Suite F
Indianapolis, IN 46268
TEL. (317) 217-1701
www.patrickco.com

PROJ. NO. 22282.003

REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 50 OF 60	SCALE: AS NOTED
N/A				BY: DATE: APPVD:			PATRICK ENGINEERING TEAM	
PERMIT INFORMATION				ISOLATION AREA	LOCATION	ATLAS OR TITLE	DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
N/A				N/A	SEC. 32 TOWN. 12S, RNG. 65W	P-19	LOCH FYNE 20" GAS PIPELINE	
				SYSTEM MAOP: 275 psig	SYSTEM MOP: 145 psig		COLORADO SPRINGS, COLORADO	
							PLAN & PROFILE	
							74+00 - 77+00	
							DWG. NO. C-225	

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

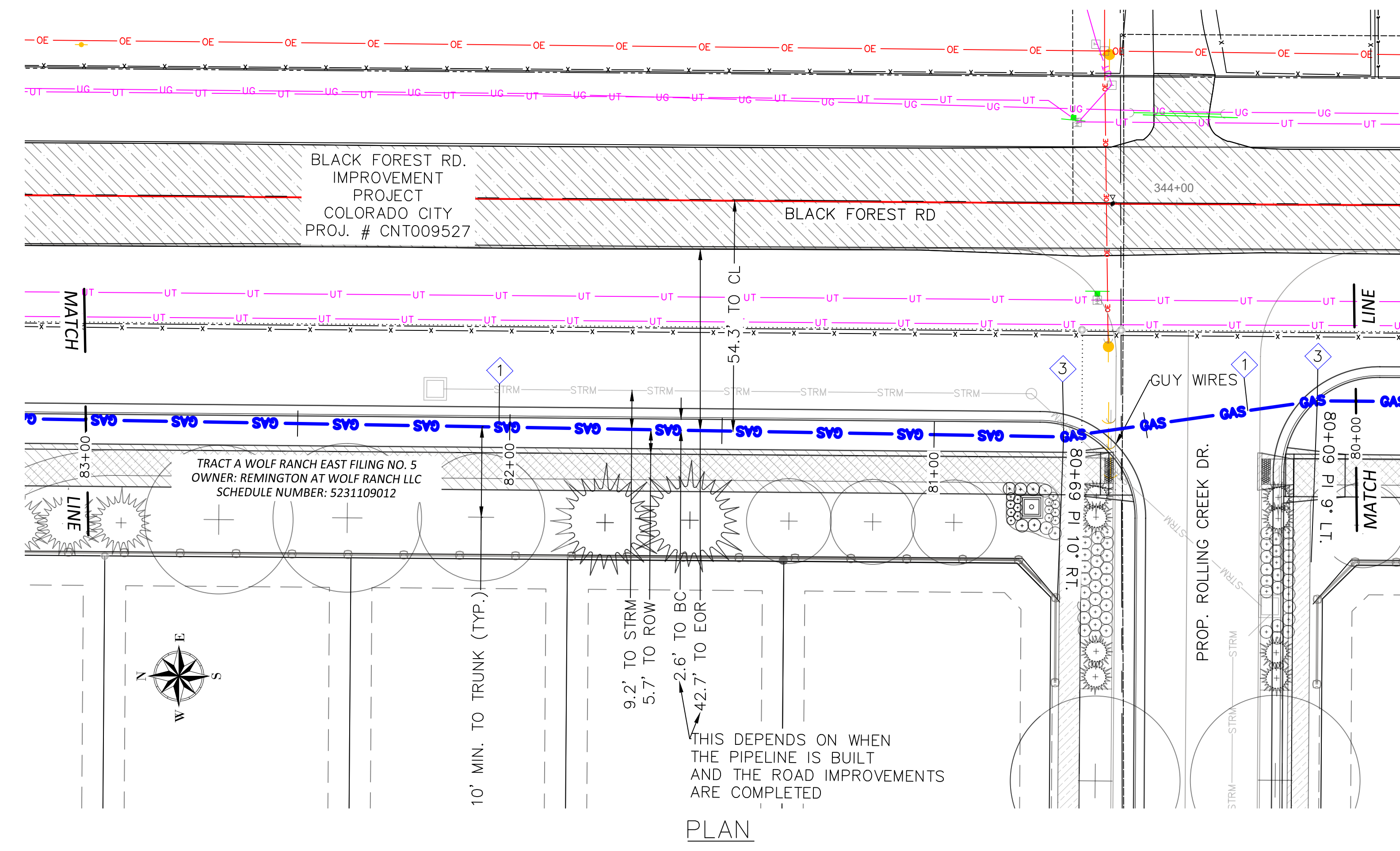
REFERENCE NOTE:
 ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: TOO9527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-C3D-C3D.dwg LAYOUT NAME: C-226 PLOTTED: Wednesday, March 22, 2023 - 4:34pm USER: rwest

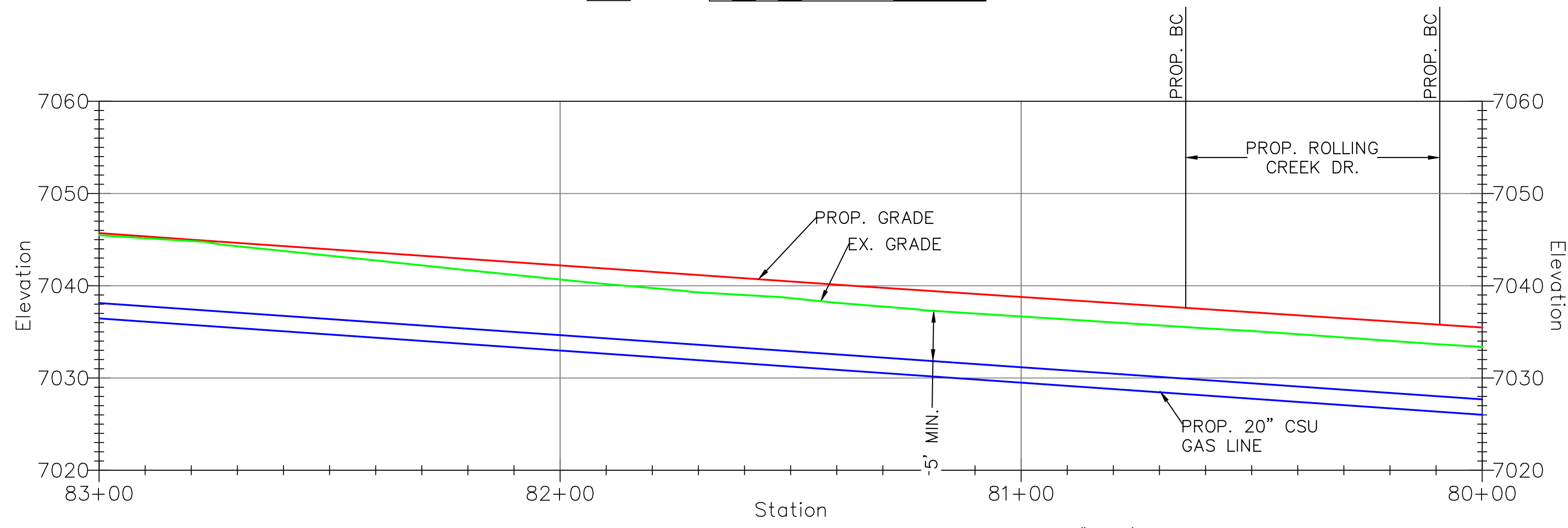
<p>Colorado Springs Utilities It's how we're all connected</p>	<p>Jeremiah Matthew Smith P.E. CERTIFICATION</p>	<p>8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com PROJ. NO. 22282.003</p>	REVISIONS 6 REISSUED FOR CONSTRUCTION NEW 3/16/23 JMS 5 ISSUED FOR CONSTRUCTION NEW 11/14/22 JMS 4 100% DESIGN PACKAGE ISSUED FOR REVIEW NEW 10/14/22 JMS NO. N/A BY: DATE: APPVD:		SYSTEM NAME: 150P SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	JOB TYPE: HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	W/O # 3747144 RELATED W/O #s 3789816	ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196 PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794 CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675 SHEET NO. 51 OF 60 SCALE: AS NOTED PATRICK ENGINEERING TEAM DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH
			PERMIT INFORMATION N/A	ISOLATION AREA N/A	LOCATION SEC. 31 TWN. 12S, RNG. 65W	ATLAS OR TITLE P-19	SYSTEM MAOP: SYSTEM MOP:	LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 77+00 - 80+00 DWG. NO. C-226

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

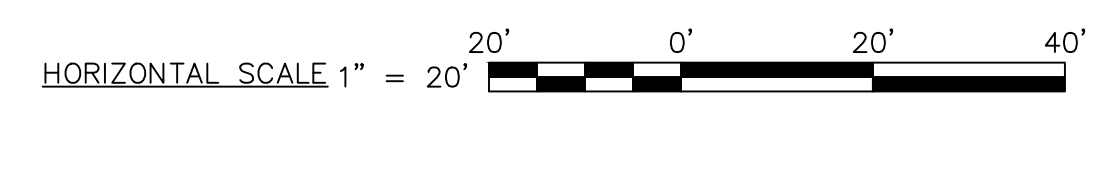
CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	2		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	



PLAN



PROFILE



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

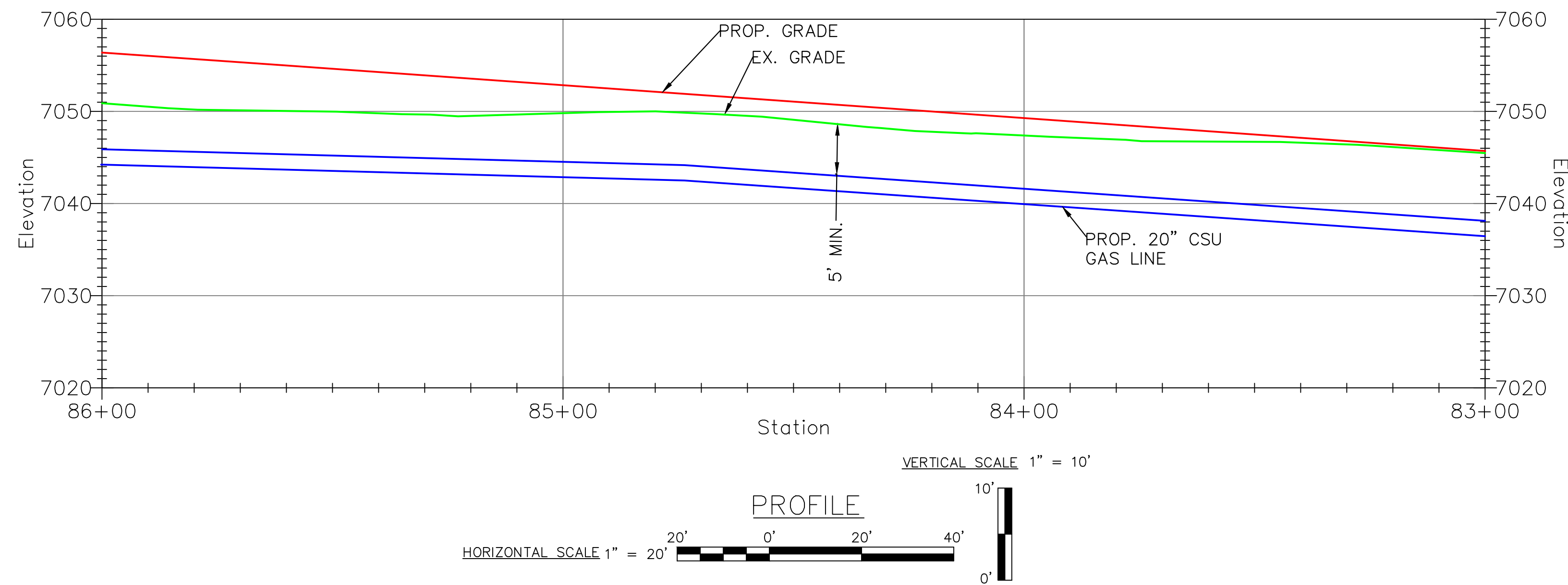
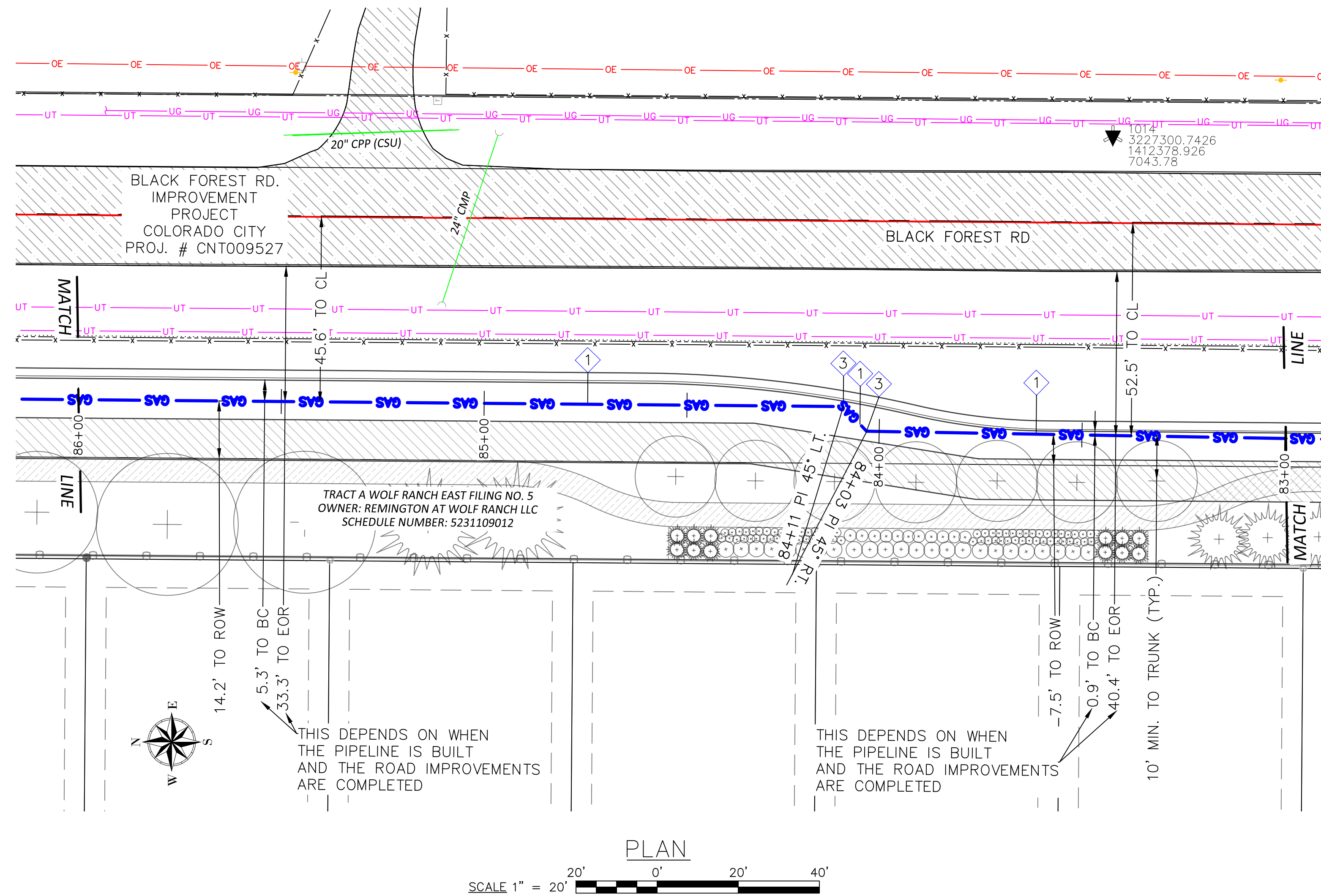
REFERENCE NOTE:
 ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: TOO9527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

FILE NAME: P:\indianapolis\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-csb-csb.dwg LAYOUT NAME: C-227 PLOTTED: Thursday, March 23, 2023 - 11:18pm USER: mwest

<p>Colorado Springs Utilities It's how we're all connected</p>	<p>Jeremiah Matthew Smith 023.03.24 16:47:06 -04'00'</p>	<p>8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com</p>	REVISIONS 6 REISSUED FOR CONSTRUCTION NEW 3/16/23 JMS 5 ISSUED FOR CONSTRUCTION NEW 11/14/22 JMS 4 100% DESIGN PACKAGE ISSUED FOR REVIEW NEW 10/14/22 JMS NO. N/A BY: DATE: APPVD:		SYSTEM NAME: 150P SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	JOB TYPE: HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	W/O # 3747144 RELATED W/O #s 3789816	ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196 PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794 CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675 SHEET NO. 52 OF 60 SCALE: AS NOTED PATRICK ENGINEERING TEAM DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH
			PERMIT INFORMATION N/A	ISOLATION AREA N/A	LOCATION SEC. 31 TWN. 12S, RNG. 65W	ATLAS OR TITLE P-19	SYSTEM MAOP: SYSTEM MOP:	LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 80+00 - 83+00 DWG. NO. C-227

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	2		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

REFERENCE NOTE:
 ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: TOO9527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-C3B-C3U.dwg LAYOUT NAME: C-228 PLOTTED: Thursday, March 23, 2023 - 1:21pm USER: mwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 5.3 OF 60	SCALE: AS NOTED
NO.				N/A	BY: DATE: APPVD:		PATRICK ENGINEERING TEAM	
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A	RELATED W/O #s	DWN BY: NORM WEST	CHKD. BY: SETH BROWN
N/A		N/A	SEC. 31 TOWN 12S, RANG. 65W	P-19	SYSTEM MAOP: 275 psig	3747144	APPD. BY: JEREMIAH SMITH	
					SYSTEM MOP: 145 psig	3789816		

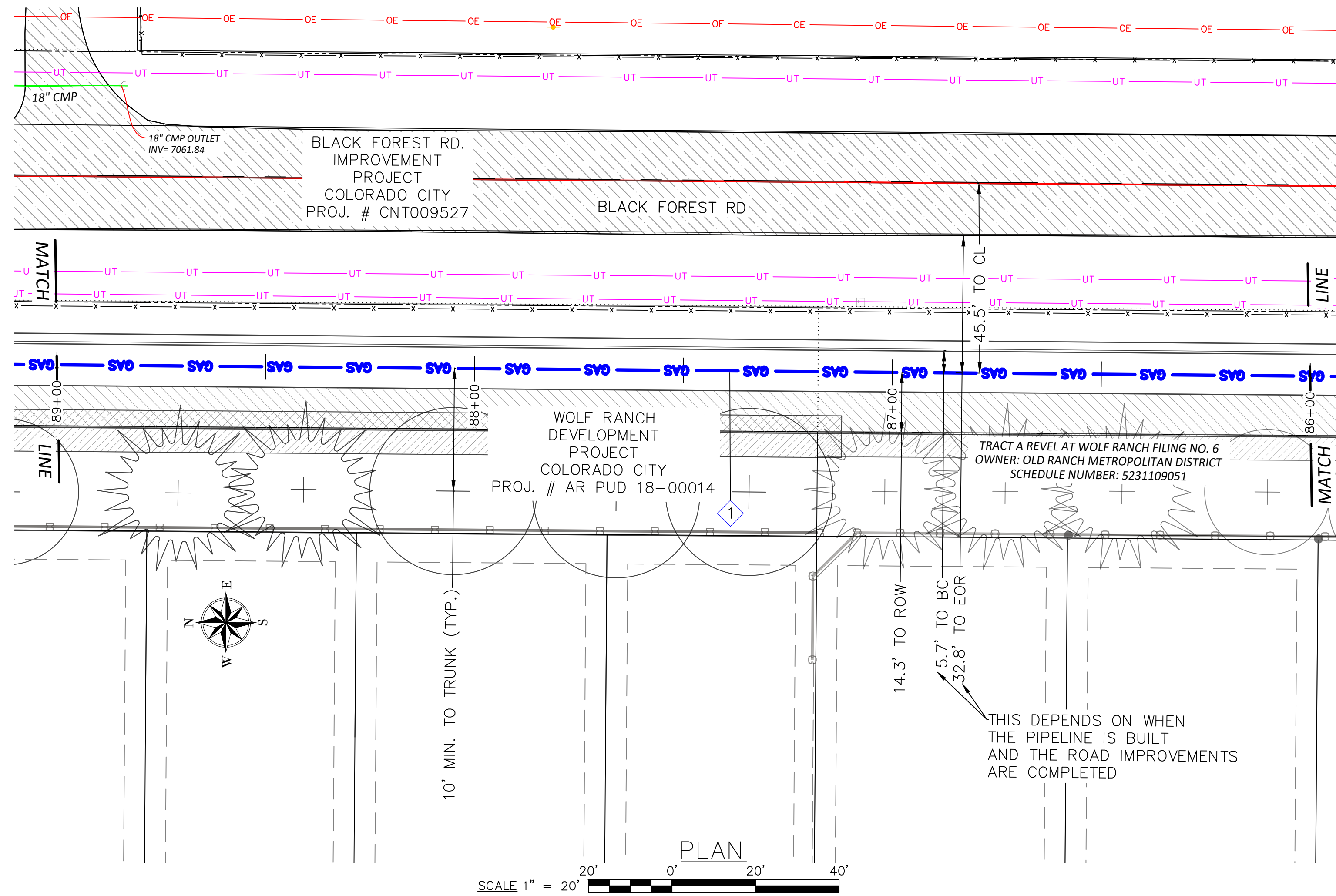
LOCH FYNE 20" GAS PIPELINE
 COLORADO SPRINGS, COLORADO
 PLAN & PROFILE
 83+00 - 86+00

DWG. NO. **C-228**

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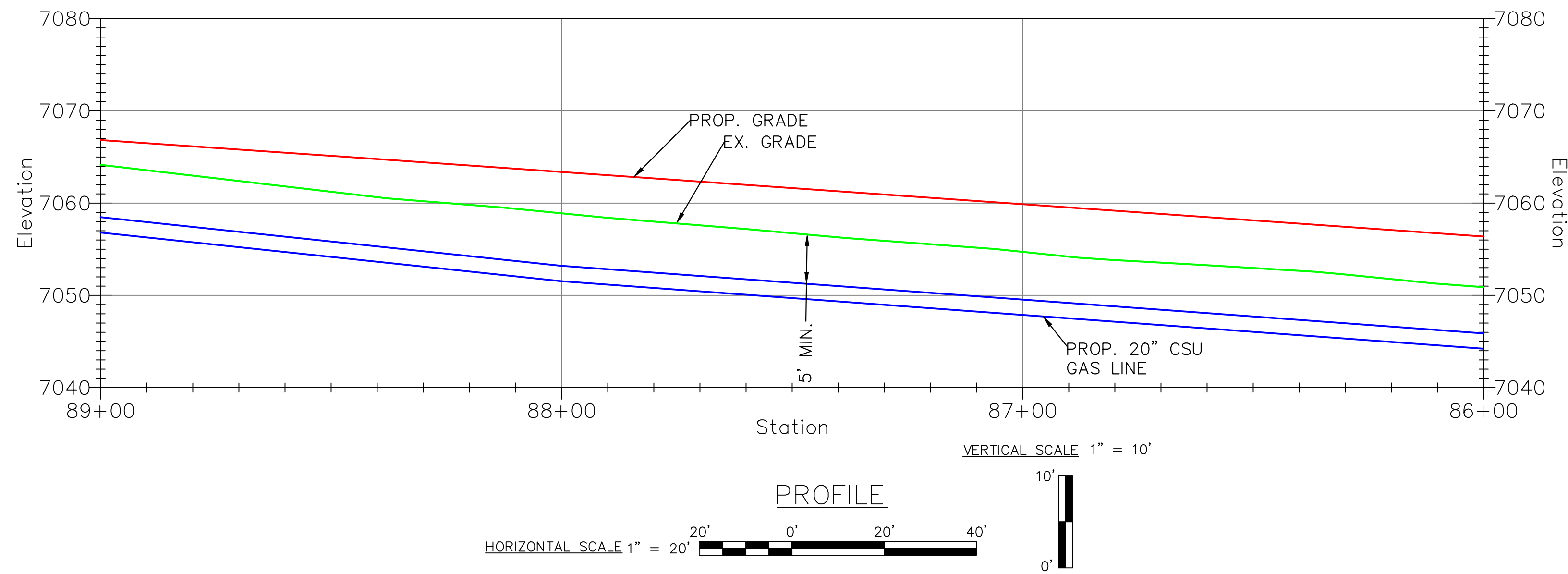
HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
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11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003



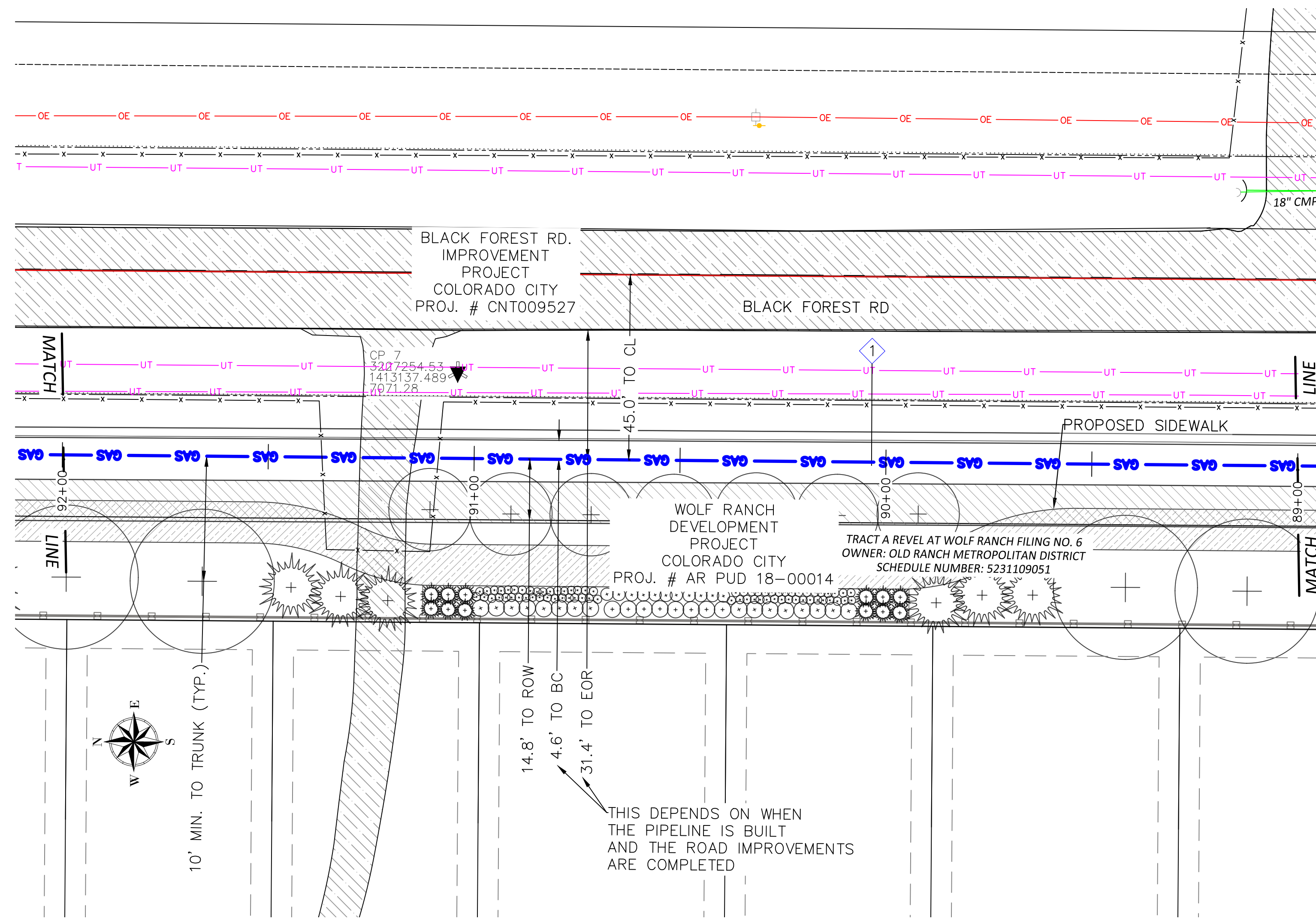
REFERENCE NOTE:
 ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: TOO9527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-C3D-C3D.dwg LAYOUT NAME: C-229 PLOTTED: Wednesday, March 22, 2023 - 4:34pm USER: rwest

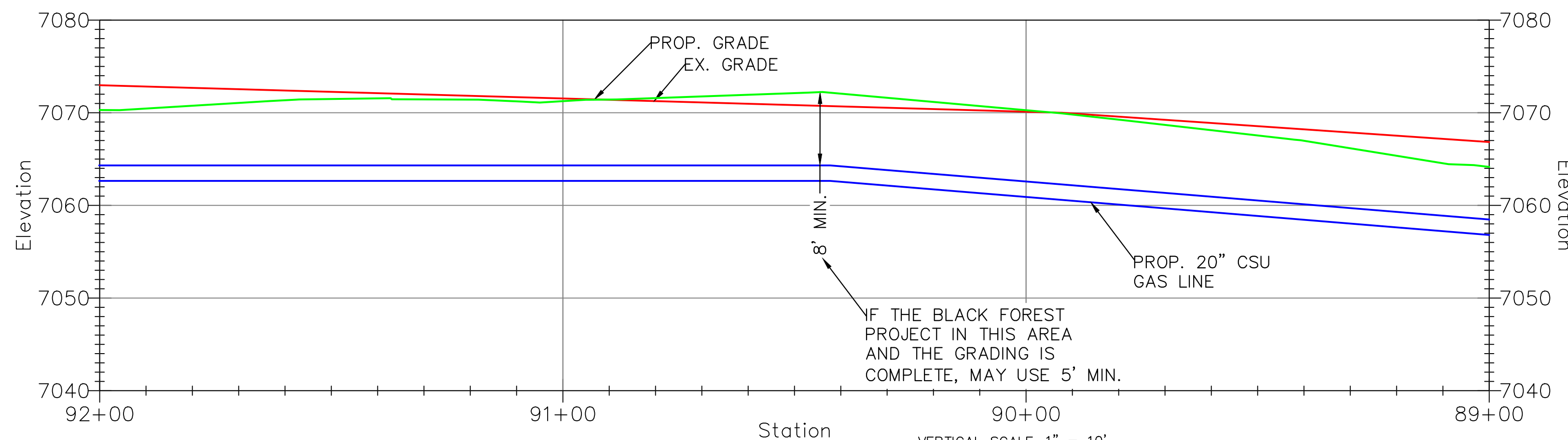
<p>Colorado Springs Utilities It's how we're all connected</p>	<p>Jeremiah Matthew Smith P.E. CERTIFICATION</p>	<p>8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com</p> <p>PROJ. NO. 22282.003</p>	REVISIONS 6 REISSUED FOR CONSTRUCTION NEW 3/16/23 JMS 5 ISSUED FOR CONSTRUCTION NEW 11/14/22 JMS 4 100% DESIGN PACKAGE ISSUED FOR REVIEW NEW 10/14/22 JMS NO. N/A BY: DATE: APPVD:		SYSTEM NAME: 150P SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	JOB TYPE: HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	W/O # 3747144 RELATED W/O #s 3789816	ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196 PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794 CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675 SHEET NO. 54 OF 60 SCALE: AS NOTED PATRICK ENGINEERING TEAM DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH
			PERMIT INFORMATION N/A	ISOLATION AREA N/A	LOCATION SEC. 31 TWN. 12S, RNG. 65W	ATLAS OR TITLE P-19	SYSTEM MAOP: SYSTEM MOP:	LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 86+00 - 89+00 DWG. NO. C-229

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	



PLAN
SCALE 1" = 20'



PROFILE
HORIZONTAL SCALE 1" = 20'

CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

REFERENCE NOTE:
ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: TO09527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

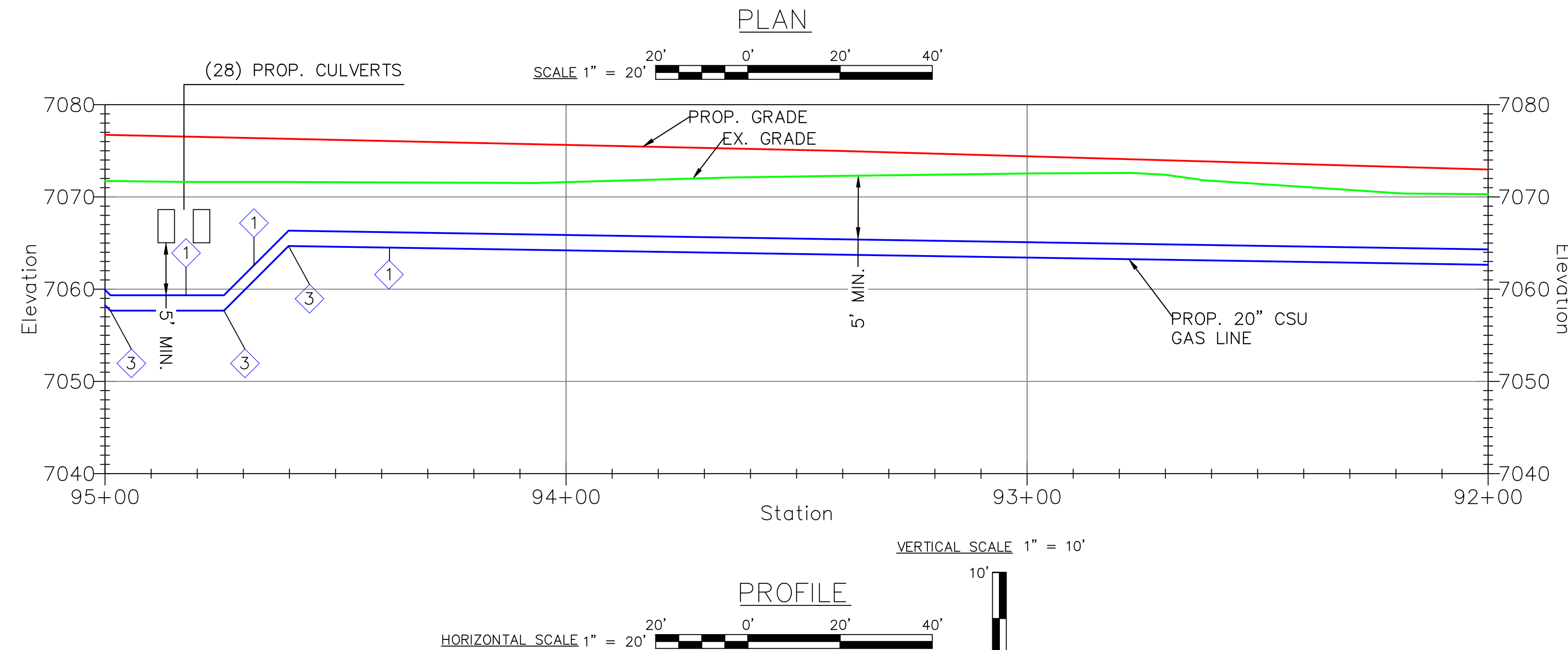
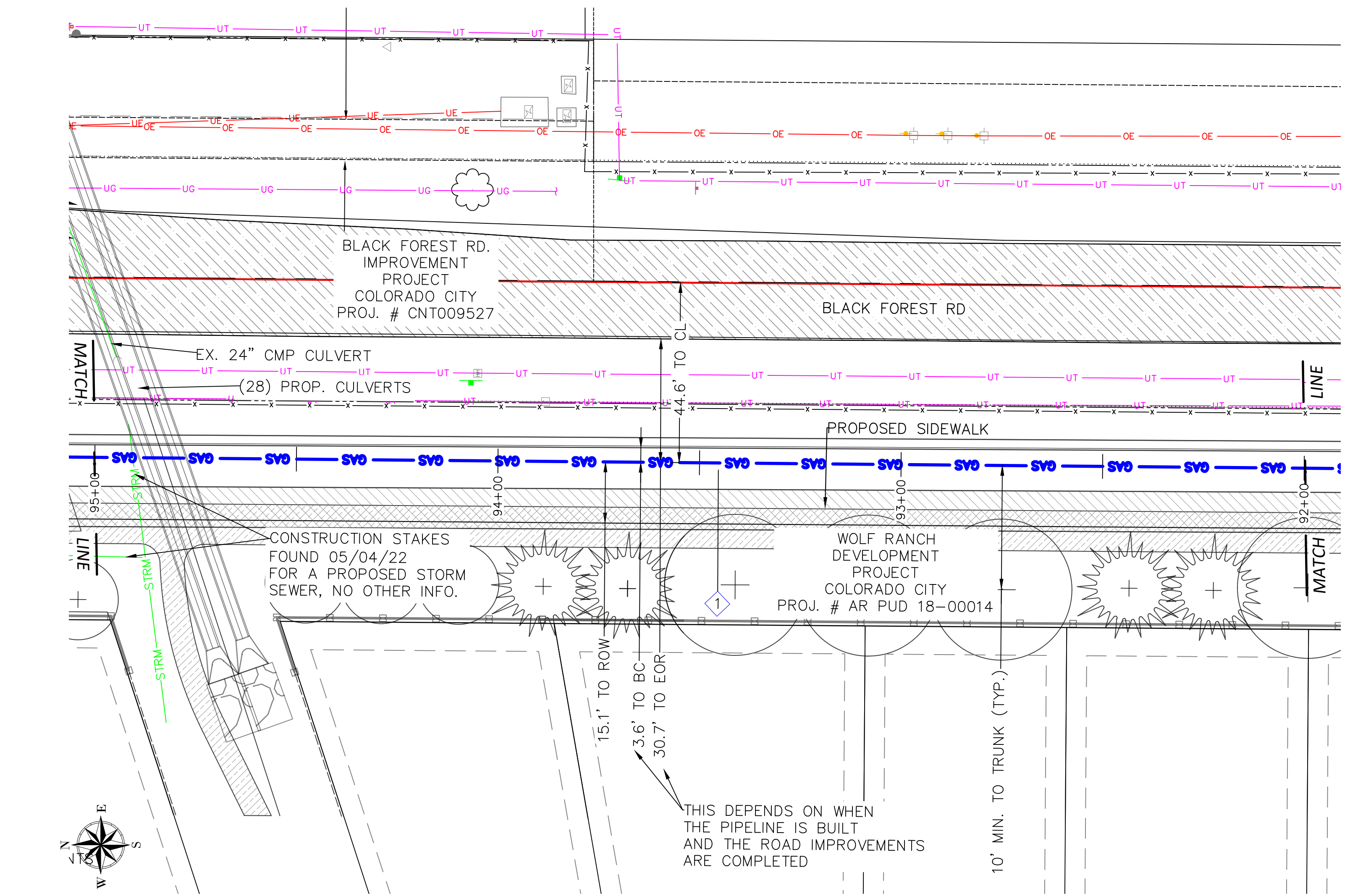
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-csb-csu.dwg LAYOUT NAME: C-230 PLOTTER: Thursday, March 23, 2023 - 1:24pm USER: mwest



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 55 OF 60	SCALE: AS NOTED
N/A				SYSTEM MAOP: 275 psig	HP SERVICE: <input type="checkbox"/>	3747144	PATRICK ENGINEERING TEAM	
PERMIT INFORMATION				SYSTEM MOP: 145 psig	DISTRIBUTION: <input checked="" type="checkbox"/>	RELATED W/O #s	DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
ISOLATION AREA				N/A	FEEDER: <input type="checkbox"/>	3789816	LOCH FYNE 20" GAS PIPELINE	
LOCATION				SEC. 31 TWN. 12S, RNG. 65W	TRANS. BY DEF. <input type="checkbox"/>		COLORADO SPRINGS, COLORADO	
ATLAS OR TITLE				P-19 & P-18	TRANS v 20% <input type="checkbox"/>		DWG. NO. C-230	
N/A				SYSTEM MAOP:			89+00 - 92+00	
N/A				SYSTEM MOP:			COPYRIGHT PROTECTED © 2018 PATRICK ENGINEERING INC.	

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	3		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	



CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
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10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

CROSSING TABLE					
SIZE	CROSSING	SIZE	DEPTH (TOP OF PIPE)	MIN. VERT. SEPERATION	MIN. HORZ. SEPERATION
28	CCPPW STORM CULVERTS	TBD	TBD	5'	-

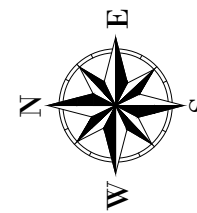
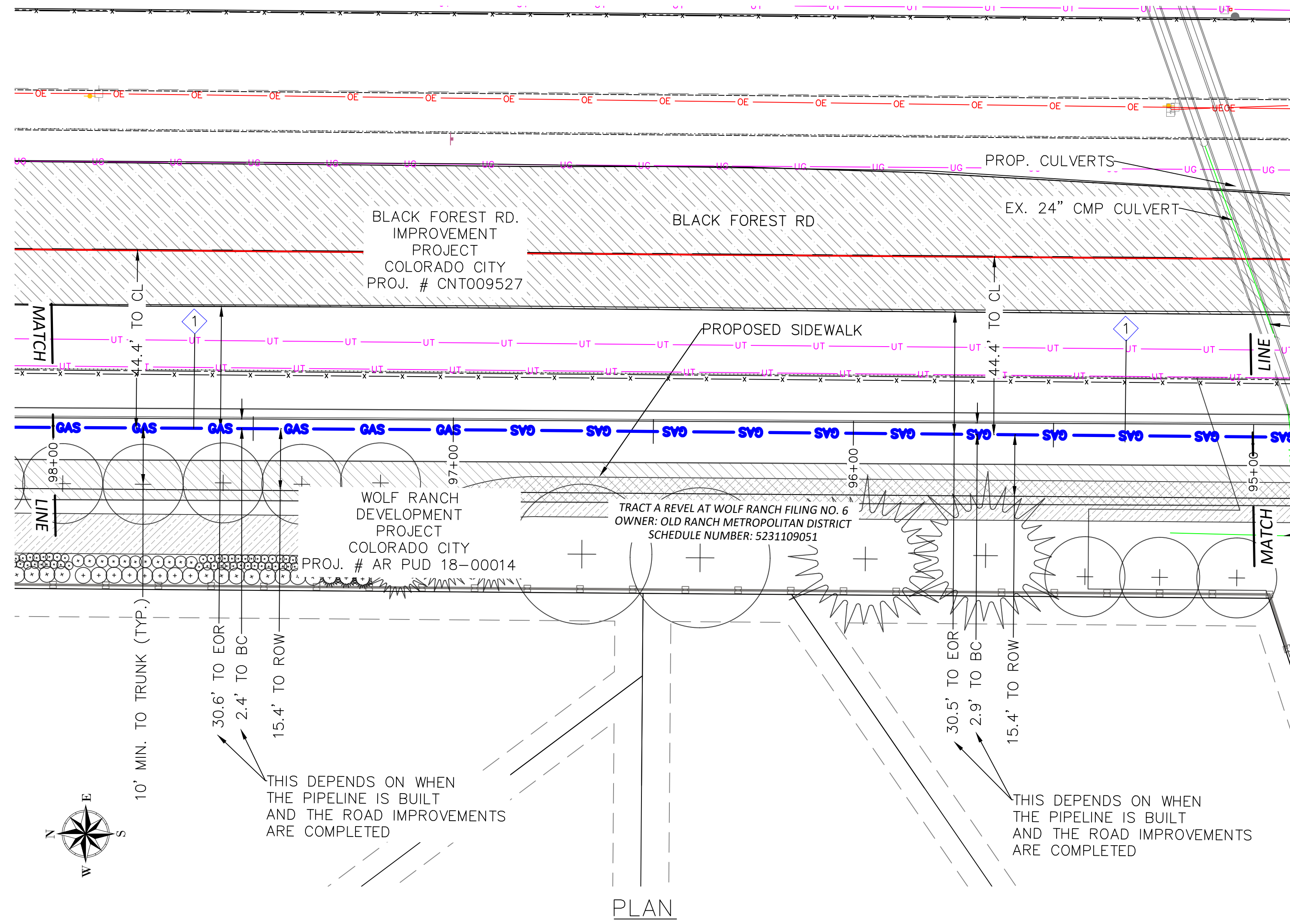
CCPPW - COLORADO CITY PARKS AND PUBLIC WORKS

REFERENCE NOTE:
 ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: TOO9527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

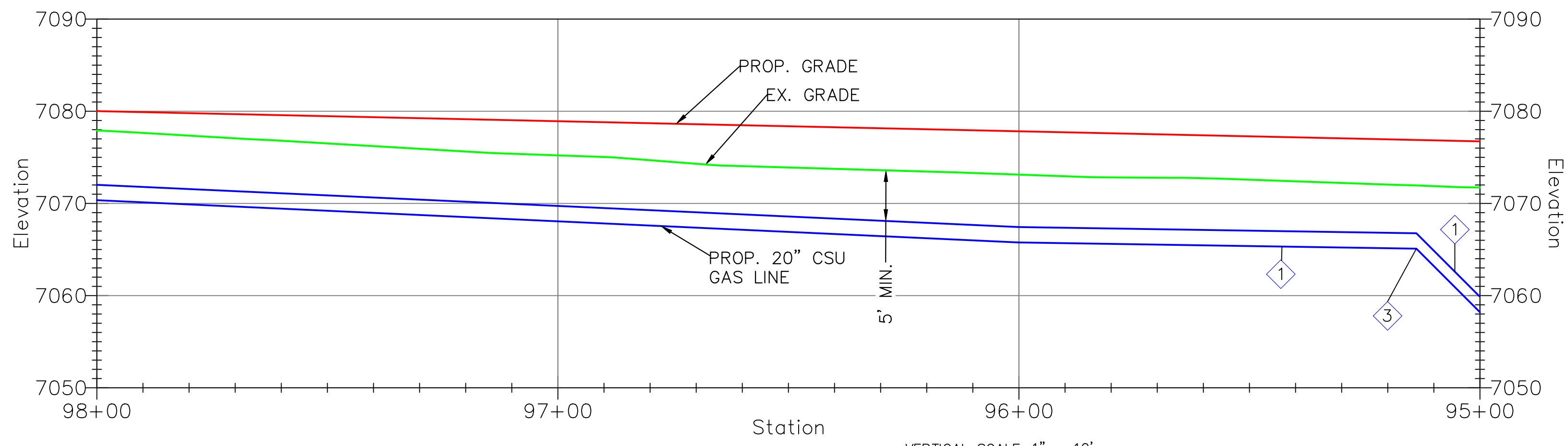
FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-C3D-C3D.dwg LAYOUT NAME: C-231 PLOTTED: Thursday, March 23, 2023 - 2:11pm USER: mwest

<p>Colorado Springs Utilities It's how we're all connected</p>	<p>Jeremiah Matthew Smith 023.03.24.16.47.06-94'00" P.E. CERTIFICATION</p>	<p>8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com PROJ. NO. 22282.003</p>	REVISIONS 6 REISSUED FOR CONSTRUCTION NEW 3/16/23 JMS 5 ISSUED FOR CONSTRUCTION NEW 11/14/22 JMS 4 100% DESIGN PACKAGE ISSUED FOR REVIEW NEW 10/14/22 JMS NO. N/A BY: DATE: APPVD:		SYSTEM NAME: 150P SYSTEM MAOP: 275 psig SYSTEM MOP: 145 psig	JOB TYPE: HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	W/O # 3747144 RELATED W/O #s 3789816	ENGINEER: SCOTT JENSEN PHONE: (719) 668-8196 PROJECT MANAGER: MELISSA LINGO PHONE: (719) 668-8794 CONSTRUCTION LEAD: JOSH RICHARD PHONE: (719) 668-3675 SHEET NO. 56 OF 60 SCALE: AS NOTED PATRICK ENGINEERING TEAM DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH
			PERMIT INFORMATION N/A	ISOLATION AREA N/A	LOCATION SEC. 31 TWN. 12S, RNG. 65W	ATLAS OR TITLE P-18	SYSTEM MAOP: SYSTEM MOP:	LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 92+00 - 95+00 DWG. NO. C-231

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20" Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-C3D-C3U.dwg LAYOUT NAME: C-232 PLOTTED: Thursday, March 23, 2023 - 2:15pm USER: mwest



SCALE 1" = 20'



HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 10'

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	1		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	

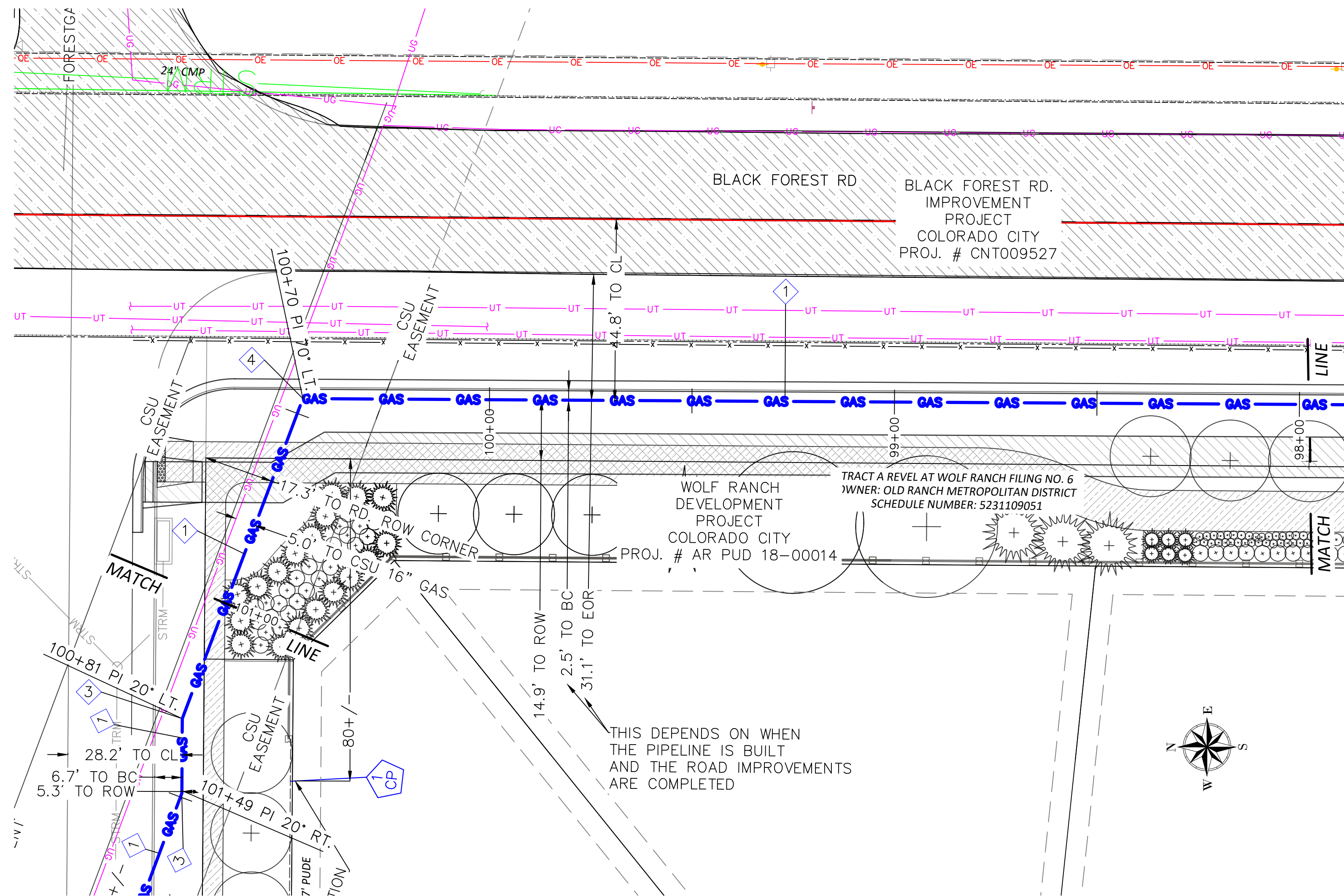
CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

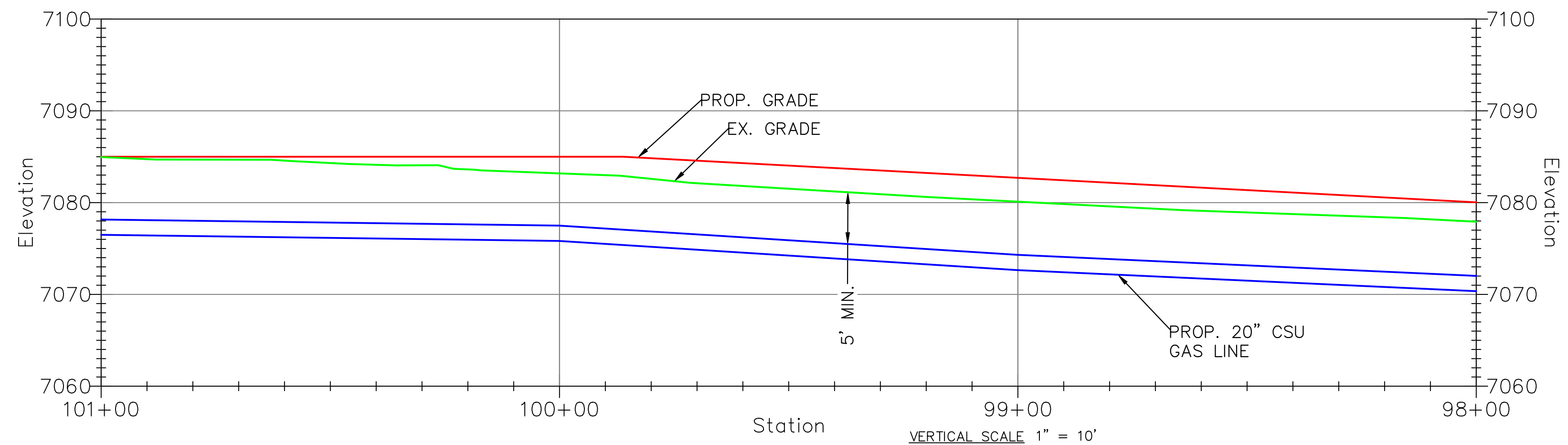
REFERENCE NOTE:
ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: TOO9527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS			PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 57 OF 60	SCALE: AS NOTED
N/A				SYSTEM MAOP: 275 psig	HP SERVICE: <input type="checkbox"/>	3747144	PATRICK ENGINEERING TEAM	
PERMIT INFORMATION				SYSTEM MOP: 145 psig	DISTRIBUTION: <input checked="" type="checkbox"/>	RELATED W/O #s	DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
ISOLATION AREA				N/A	FEEDER: <input type="checkbox"/>	3789816	LOCH FYNE 20" GAS PIPELINE	
LOCATION				SEC. 31 TWN. 12S, RNG. 65W	TRANS. BY DEF. <input type="checkbox"/>		COLORADO SPRINGS, COLORADO	
ATLAS OR TITLE				P-18	TRANS v 20% <input type="checkbox"/>		PLAN & PROFILE	
N/A				SYSTEM MAOP:			95+00 - 98+00	
N/A				SYSTEM MOP:			DWG. NO. C-232	



PLAN
SCALE 1" = 20'



PROFILE
HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 10'

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	300'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
4	1		220-692-920	20" ELBOW, 0.375" WT, STL, 90 DEG., 3R, WPHY 52	FORGED	FBE	

CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
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CATHODIC PROTECTION NOTES	
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

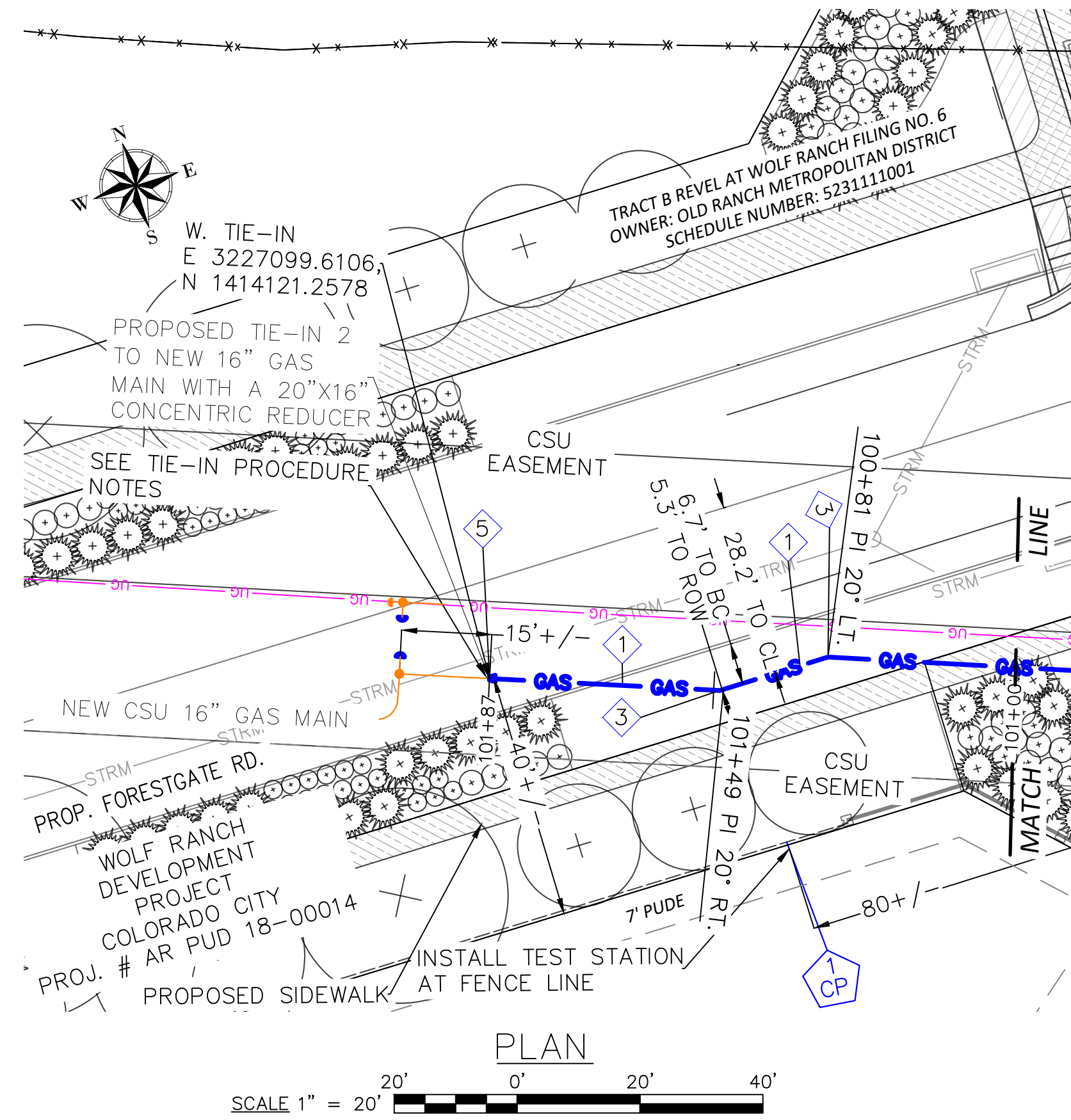
REFERENCE NOTE:
ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: 009527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-C30-C3U.dwg LAYOUT NAME: C-233 PLOTTED: Thursday, March 23, 2023 - 2:15pm USER: nwest

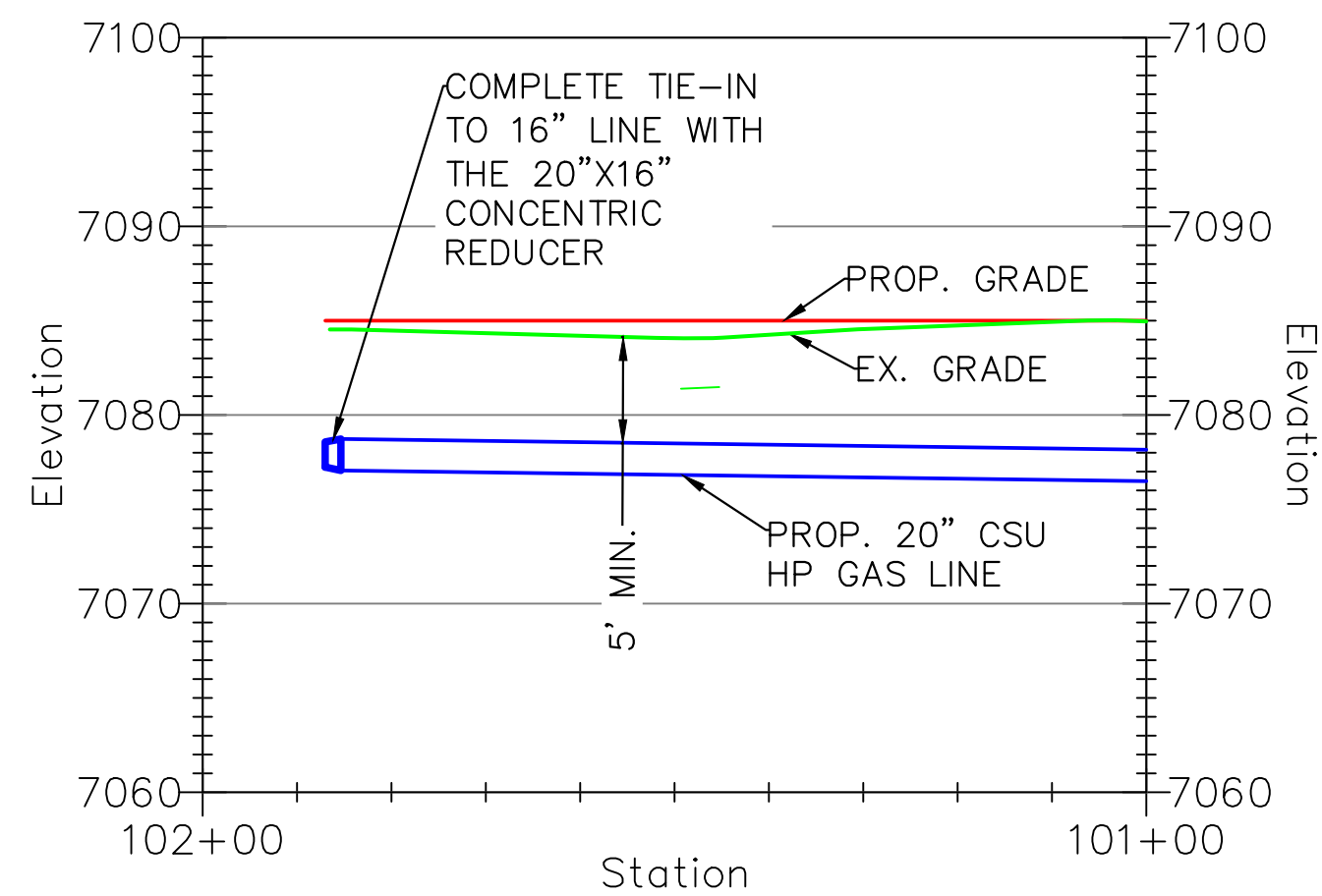
<p>Colorado Springs Utilities It's how we're all connected</p>	<p>Jeremiah Matthew Smith Professional Engineer P.E. CERTIFICATION</p>	<p>8902 Vincennes Circle, Suite F Indianapolis, IN 46268 TEL: (317) 217-1701 www.patrickco.com</p>	<p>REVISIONS</p> <table border="1"> <tr> <td>6</td> <td>REISSUED FOR CONSTRUCTION</td> <td>NEW</td> <td>3/16/23</td> <td>JMS</td> </tr> <tr> <td>5</td> <td>ISSUED FOR CONSTRUCTION</td> <td>NEW</td> <td>11/14/22</td> <td>JMS</td> </tr> <tr> <td>4</td> <td>100% DESIGN PACKAGE ISSUED FOR REVIEW</td> <td>NEW</td> <td>10/14/22</td> <td>JMS</td> </tr> <tr> <td>NO.</td> <td>N/A</td> <td>BY:</td> <td>DATE:</td> <td>APPVD:</td> </tr> </table>		6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS	5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS	4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS	NO.	N/A	BY:	DATE:	APPVD:	<p>SYSTEM NAME: 150P</p> <p>SYSTEM MAOP: 275 psig</p> <p>SYSTEM MOP: 145 psig</p>	<p>JOB TYPE:</p> <p>HP SERVICE: <input type="checkbox"/></p> <p>DISTRIBUTION: <input checked="" type="checkbox"/></p> <p>FEEDER: <input type="checkbox"/></p> <p>TRANS. BY DEF. <input type="checkbox"/></p> <p>TRANS v 20% <input type="checkbox"/></p>	<p>W/O #</p> <p>3747144</p> <p>RELATED W/O #s</p> <p>3789816</p>	<p>ENGINEER: SCOTT JENSEN</p> <p>PROJECT MANAGER: MELISSA LINGO</p> <p>CONSTRUCTION LEAD: JOSH RICHARD</p> <p>SHEET NO. 58 OF 60</p> <p>PATRICK ENGINEERING TEAM</p> <p>DWN BY: NORM WEST</p> <p>CHKD. BY: SETH BROWN</p> <p>APPD. BY: JEREMIAH SMITH</p>	<p>PHONE: (719) 668-8196</p> <p>PHONE: (719) 668-8794</p> <p>PHONE: (719) 668-3675</p> <p>SCALE: AS NOTED</p>
			6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS																						
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NO.	N/A	BY:	DATE:	APPVD:																									
<p>PERMIT INFORMATION: N/A</p> <p>ISOLATION AREA: N/A</p> <p>LOCATION: SEC. 31 TWN. 12S, RNG. 65W</p> <p>ATLAS OR TITLE: P-18</p>			<p>SYSTEM MAOP: N/A</p> <p>SYSTEM MOP: N/A</p>	<p>LOCH FYNE 20" GAS PIPELINE COLORADO SPRINGS, COLORADO PLAN & PROFILE 98+00 - 101+00</p>			<p>DWG. NO. C-233</p>																						

HIGH PRESSURE MATERIALS LIST (WO# 3747144)

CODE	DESIGN QTY.	AS-BUILT QTY.	STOCK ID	DESCRIPTION	SEAM	COATING	COMPONENT NO.
1	87'		240-375-920	20" PIPE, STL, 0.375" WT, API 5L-X52, FBE	ERW	FBE	
3	1		220-647-920	20" ELBOW, 0.375" WT, STL, 45 DEG., 3R, WPHY 52	FORGED	FBE	
5	1		215-796-920	REDUCER, WELD, WPHY52, CARBON STEEL, STD., 20IN X 16 NPS	FORGED	FBE	



PLAN
SCALE 1" = 20'



PROFILE
VERTICAL SCALE 1" = 10'
HORIZONTAL SCALE 1" = 20'

WEST TIE-IN PROCEDURE NOTES	
1	AFTER THE TIE-IN OF THE NEW 20" GAS LINE TO THE NEWLY INSTALLED 16" LINE IS COMPLETED, COMPLETE THE PURGE OUT OF AIR FROM THE NEW 20" LINE AND PACK WITH GAS (SEE PURGE PROCEDURE ON SHEET C-106 FOR ADDITIONAL INFORMATION).
2	REMOVE THE BLIND FLANGE FROM THE EXISTING 16" SPHERICAL TEE, AND INSTALL A TEMPORARY 16" TAPPING FULL PORT BALL VALVE, THEN INSTALL TAPPING MACHINE.
3	OPEN THE TAPPING VALVE AND USE THE TAPPING MACHINE TO REMOVE THE INNER PLUG IN THE SPHERICAL TEE. THEN RECLOSE THE VALVE, AND REMOVE THE TAPPING MACHINE WITH THE INNER PLUG.
4	REINSTALL THE TAPPING MACHINE WITH A CUTTER HEAD ON THE TAPPING VALVE. CUT OUT THE COUPON FROM THE EXISTING 16" PIPE AND WITHDRAW THE COUPON. CLOSE THE TAPPING VALVE AND REMOVE THE TAPPING MACHINE AND COUPON.
5	REINSTALL THE TAPPING MACHINE WITH A STOPPLE PLUG REOPEN THE TAPPING VALVE AND SET THE STOPPLE PLUG IN PLACE.
5	WITH THE STOPPLE IN PLACE, COMPLETE THE PURGE OF THE EXISTING 16" SECTION TO BE RETIRED USING A CSU APPROVED PURGE PROCEDURE. ONCE THE LINE HAS BEEN PURGE, COLD-CUT OUT A SECTION OF THE 16" PIPE BETWEEN THE NEW AND EXISTING 16" LINE AND INSTALL 16" WED CAPS ON EACH END.
7	REMOVE AND WITHDRAW THE STOPPLE PLUG AND RECLOSE THE TAPPING VALVE. THEN REMOVE THE TAPPING MACHINE WITH THE STOPPLE.
8	REINSTALL THE TAPPING MACHINE WITH THE INNER PLUG TO THE TAPPING VALVE. THEN REOPEN THE TAPPING VALVE AND REINSTALL INNER PLUG IN THE SPHERICAL TEE. REMOVE TAPPING MACHINE AND TAPPING VALVE AND REPLACE BLIND FLANGE TO SPHERICAL TEE.

CONSTRUCTION NOTES	
4	MINIMUM DEPTH OF COVER FOR THE ENTIRE PIPELINE IS 5'. THE PIPELINE SHALL MEET THE MINIMUM VERTICAL SEPARATION FROM UTILITIES BEING CROSSED AS INDICATED IN THE CROSSING TABLES.
6	BACKFILL OF THE TRENCH SHALL NOT BE COMPLETED UNTIL ALL WELDS HAVE BEEN GPS'ED
10	WELDING SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF API 1104, AND CSU APPROVED WELDING PROCEDURES. WELDERS SHALL BE REQUIRED TO QUALIFY ON THE CSU APPROVED WELDING PROCEDURES.
11	THE PIPE SEGMENTS SHALL BE AIR TESTED IN ACCORDANCE WITH CSU STANDARD PROCEDURES.
14	CONTRACTOR SHALL RESTORE ALL CONSTRUCTION AREAS, AND REMOVE ALL TRASH, DEBRIS, AND MATERIALS AFTER COMPLETION OF CONSTRUCTION.

CATHODIC PROTECTION NOTES	
1 CP	INSTALL TEST STATIONS AT LOCATIONS SHOWN IN THE DESIGN PACKAGE.
2 CP	STEEL PIPE WILL BE PROTECTED WITH THE EXISTING IMPRESSED CURRENT CATHODIC PROTECTIONS SYSTEM UTILIZING RECTIFIER 1003

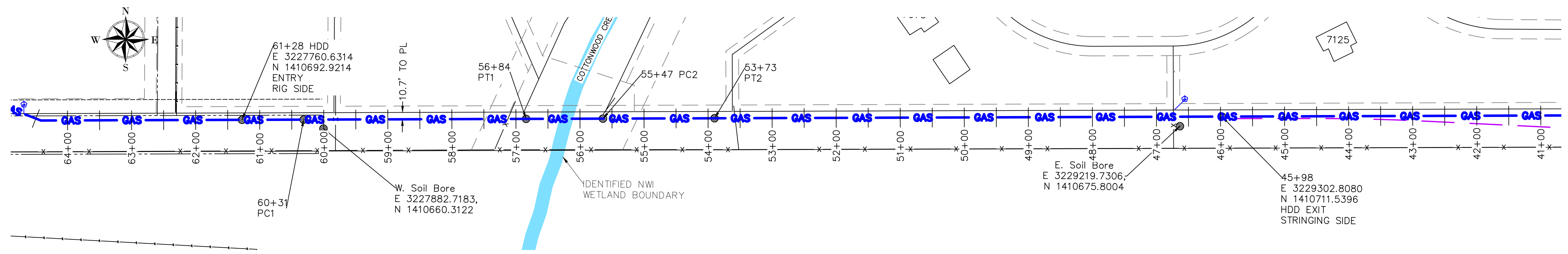
REFERENCE NOTE:
ANY WORK RELATED TO THE BLACK FOREST RD. PROJECT, (CITY REFERENCE FILE NO. CN: T009527) AND THE WOLF RANCH DEVELOPMENT INCLUDING LANDSCAPING PROJECT (CITY REFERENCE FILE NO. AR-PUD 18-00014) AND OTHER UTILITIES OTHER THAN THE 20" GAS LINE ARE TO BE COMPLETED BY OTHERS.

FILE NAME: P:\indianapolis\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\06 Colorado Springs\FC-C30-C31.dwg LAYOUT NAME: C-234 PLOTTED: Wednesday, March 22, 2023 - 4:35pm USER: rwest

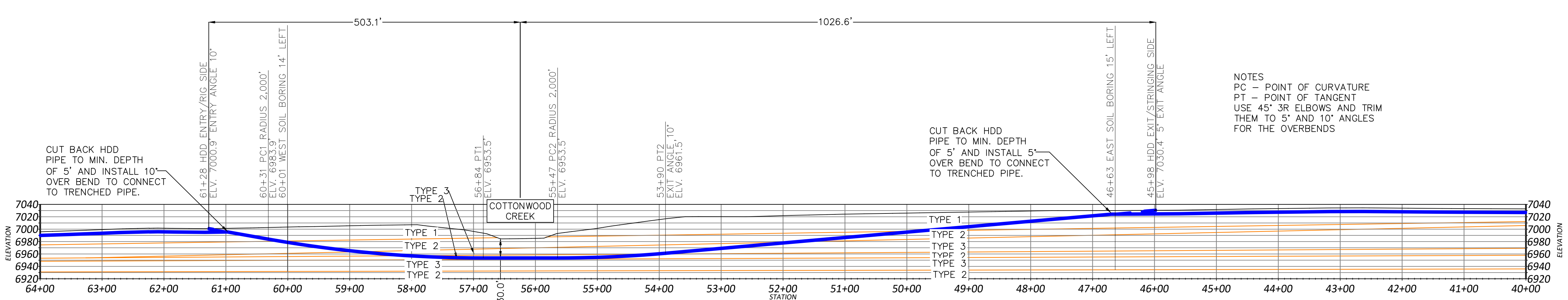


REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196	
6	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS	HP SERVICE: <input type="checkbox"/>	3747144	PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794	
5	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675	
4	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS	DISTRIBUTION: <input checked="" type="checkbox"/>	RELATED W/O #s	SHEET NO. 59 OF 60	SCALE: AS NOTED	
N/A				BY: DATE: APPVD:	FEEDER: <input type="checkbox"/>		PATRICK ENGINEERING TEAM		
PERMIT INFORMATION		ISOLATION AREA	LOCATION	ATLAS OR TITLE	N/A	3789816	DWN BY: NORM WEST	CHKD. BY: SETH BROWN	APPD. BY: JEREMIAH SMITH
N/A		N/A	SEC. 31 TOWN, 12S, RING. 65W	P-18	SYSTEM MAOP: 275 psig		LOCH FYNE 20" GAS PIPELINE		
					SYSTEM MOP: 145 psig		COLORADO SPRINGS, COLORADO		DWG. NO. C-234
							PLAN & PROFILE 101+00 - 101+87		

FILE NAME: P:\indiana\Colorado Springs Utilities\22282.003 - Loch Fyne 20in Gas Line\11 Design\01 Drawings\06 Alignment\Colorado Springs\FC-C30-C31.dwg LAYOUT NAME: HDD-001 PLOTTED: Wednesday, March 22, 2023 - 4:35pm USER: mwest



PLAN



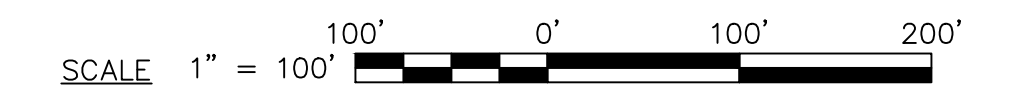
NOTES
 PC - POINT OF CURVATURE
 PT - POINT OF TANGENT
 USE 45° 3R ELBOWS AND TRIM THEM TO 5° AND 10° ANGLES FOR THE OVERBENDS

HDD TOLERANCES (UNLESS OTHERWISE APPROVED BY ENGINEER)	
LENGTH - NOT TO BE MORE THAN 10' SHORT OR 20' LONG	
LEFT-RIGHT OF CENTERLINE +/- 5'	
DEPTH NOT TO BE 0' SHALLOWER, OR 10' DEEPER	
RADIUS OF CURVATURE NOT TO BE LESS THAN 1,800' PER 3-JOINT RULE	

COTTONWOOD CREEK HDD

SOIL TYPE	SOIL DESCRIPTION
1	SM-SW SAND, SILTY, FINE TO COURSE GRAINED, TAN, MEDIUM DENSE, DRY TO MOIST
2	SANDSTONE, SM-SC, SLIGHTLY SILTY-CLAYEY, FINE TO COURSE GRAINED, GRAY-BROWN, DENSE TO VERY DENSE, MOIST
3	CLAYSTONE, SC, SANDY TO VERY SANDY, GRAY-BROWN, VERY DENSE, MOIST

PROFILE



REVISIONS				SYSTEM NAME: 150P	JOB TYPE:	W/O #	ENGINEER: SCOTT JENSEN	PHONE: (719) 668-8196
4	REISSUED FOR CONSTRUCTION	NEW	3/16/23	JMS	HP SERVICE: <input type="checkbox"/> DISTRIBUTION: <input checked="" type="checkbox"/> FEEDER: <input type="checkbox"/> TRANS. BY DEF. <input type="checkbox"/> TRANS v 20% <input type="checkbox"/>	3747144	PROJECT MANAGER: MELISSA LINGO	PHONE: (719) 668-8794
3	ISSUED FOR CONSTRUCTION	NEW	11/14/22	JMS			CONSTRUCTION LEAD: JOSH RICHARD	PHONE: (719) 668-3675
2	100% DESIGN PACKAGE ISSUED FOR REVIEW	NEW	10/14/22	JMS			SHEET NO. 60 OF 60	
N/A				SYSTEM MAOP: 275 psig			PATRICK ENGINEERING TEAM	
PERMIT INFORMATION				SYSTEM MOP: 145 psig			DWN BY: NORM WEST CHKD. BY: SETH BROWN APPD. BY: JEREMIAH SMITH	
ISOLATION AREA				N/A			SCALE: 1" = 100'	
LOCATION				N/A			RELATED W/O #s	
ATLAS OR TITLE				N/A			3789816	
N/A				SYSTEM MAOP:			LOCH FYNE 20" GAS PIPELINE	
N/A				SYSTEM MOP:			COLORADO SPRINGS, COLORADO	
N/A							HDD PLAN & PROFILE	

LOCH FYNE 20" GAS PIPELINE
 COLORADO SPRINGS, COLORADO
 HDD PLAN & PROFILE
 DWG. NO. HDD-001