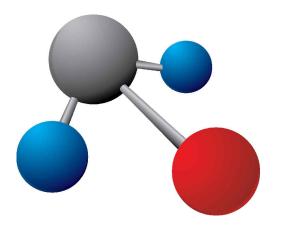
KID 5400 SOUTH WATER LINE REPLACEMENT (PHASE 2)

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively





PREPARED FOR:

Kearns Improvement District

LOCATION:

Kearns, UT

DATE:

FEBRUARY 2024

AE2S PROJECT NO:

PROJECT 24-01

CLIENT PROJECT NO:

P14286-2022-005

ENGINEERING TEAM:

ENGINEER

Advanced Engineering and Environmental Services, LLC

CONFORMED SET

PROJECT DRAWINGS

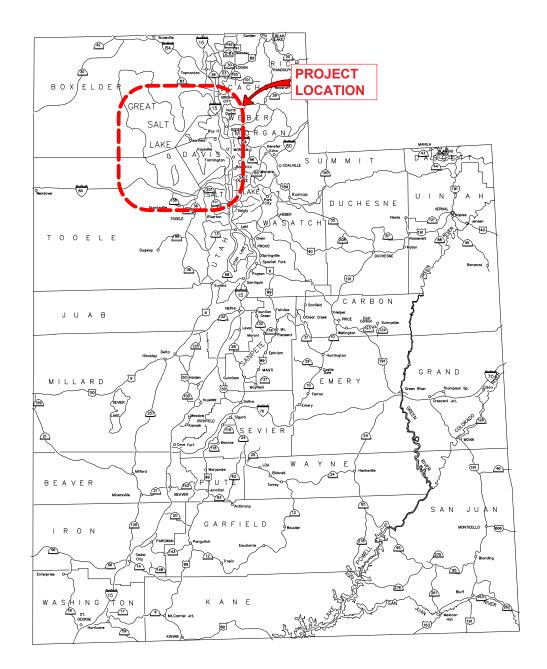
Advanced Engineering and Environmental Services, LLC 3400 N. Ashton Blvd Ste 105 Lehi, UT 84043 (t) 701-746-8087 www.ae2s.com

THE DRAWINGS INCLUDED IN THIS DRAWING DOCUMENT SET HAVE BEEN UPDATED TO REFLECT CHANGES MADE TO THE BIDDING DRAWING DOCUMENTS BY ADDENDUMS AND ARE LABELED AS "CONFORMED TO BID". THE ENGINEER/ARCHITECT DOES NOT GUARANTEE THE COMPLETENESS OR ACCURACY OF THESE CHANGES. CONTRACTOR SHALL VERIFY ALL INFORMATION AND NOT HOLD THE ENGINEER LIABLE FOR ANY ERRORS OR OMISSIONS.

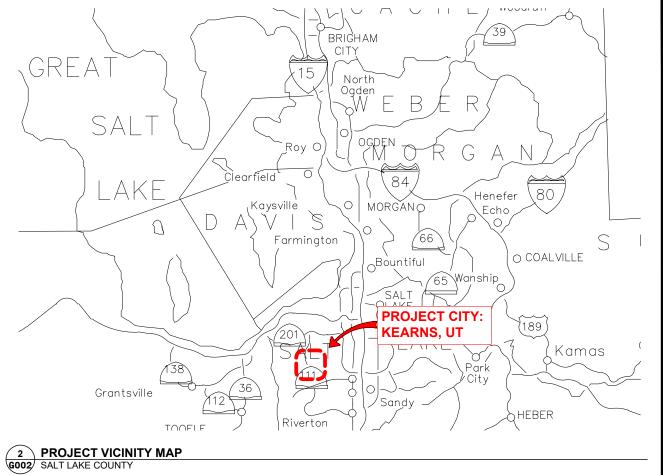
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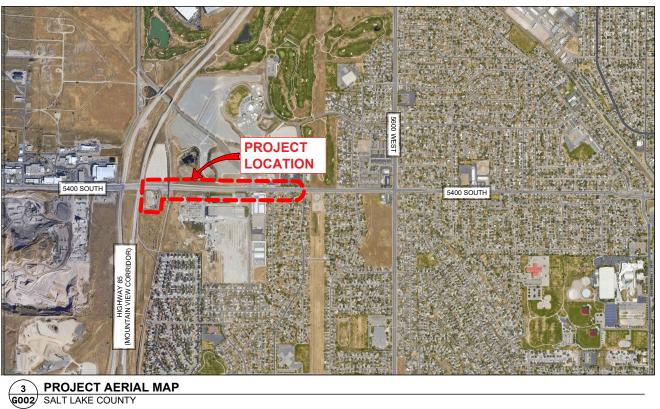
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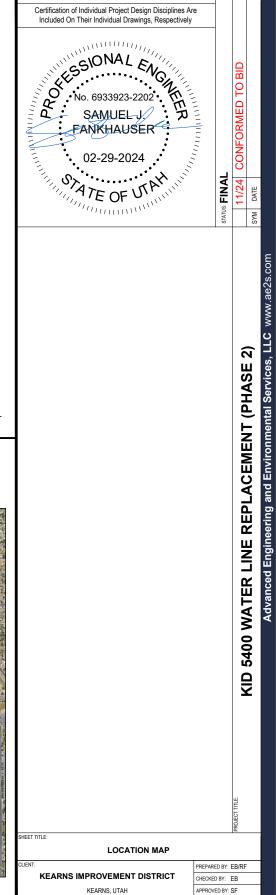




STATE OF UTAH







DJECT NO: 14286-2022-005 SHEET DESIGNATOR:

GEN

ATE: FEBRUARY 2024

G002

PROJECT LOCATION MAP
G002 SALT LAKE COUNTY

GENERAL REQUIREMENTS

- 1. ALL CONSTRUCTION SHALL COMPLY WITH THE KEARNS IMPROVEMENT DISTRICT DESIGN STANDARDS AND SPECIFICATIONS, LATEST
- 2. CONTRACTOR SHALL PERFORM AND INSTALL WORK IN ACCORDANCE WITH THESE CONTRACT DOCUMENTS FOR THE KEARNS IMPROVEMENT DISTRICT 5400 SOLITH WATER LINE REPLACEMENT. WHEREVER THERE ARE DIFFERENCES OR DISCREPANCIES RETWEEN THE CONSTRUCTION DOCUMENTS AND REFERENCED CODES, REGULATIONS, DRAWINGS, STANDARDS, AND SPECIFICATIONS, THE MOST STRINGENT OR HIGHEST REQUIREMENT SHALL GOVERN. THE CONTRACTOR IS RESPONSIBLE TO KNOW AND CONFIRM TO THE APPROPRIATE CODES, REGULATIONS, DRAWINGS, STANDARDS, AND SPECIFICATIONS. CONTRACTORS SHOULD THOROUGHLY READ AND UNDERSTAND THESE ASSOCIATED DOCUMENTS BEFORE PERFORMING ANY WORK FOR THE DISTRICT.
- 3. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND INVERT ELEVATIONS OF EXISTING UTILITIES BEFORE STAKING OR CONSTRUCTION OF ANY NEW KID LITILITY LINES
- 4 PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL FIELD VERIFY LOCATION FLEVATION SIZE AND MATERIAL OF EXISTING LITHLITIES. SCHEDULED AS POINTS OF CONNECTION. PROVIDE FITTINGS, ADAPTERS, SOLID SLEEVES, HARNESSED MECHANICAL COUPLING, AND ROTATE FITTINGS AND DEFIECT JOINTS AS REQUIRED TO MAKE CONNECTIONS. PROVIDE TEMPORARY PLUG WITH FACTORY QUITLET SIZED AS REQUIRED FOR CONTRACTOR'S TESTING AND DISINFECTION WORK BEFORE MAKING CONNECTION
- 5. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND UTILITY CROSSINGS OF PROPOSED SITE PIPING PRIOR TO EXCAVATION.
- 6. THE APPROXIMATE LOCATION OF KNOWN EXISTING UNDERGROUND UTILITY LINES ARE SHOWN ON THE PLANS. OTHER UNKNOWN UTILITIES MAY EXIST. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL UTILITIES OR REPAIRING ANY DAMAGE THAT OCCURS AS A RESULT OF THE CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE EXISTING UTILITIES. IF A CONFLICT ARISES RESULTING FROM THE CONTRACTOR NEGLECTING TO VERIFY UTILITY LOCATION, THE CONTRACTOR IS TO RESOLVE THE CONFLICT WITHOUT ADDITIONAL COST OR CLAIM TO THE OWNER.
- 7. INFORMATION DEPICTED ON DRAWINGS FOR EXISTING UNDERGROUND UTILITY LOCATIONS WAS COMPILED FROM MAPS, RECORDS, AND SUPPLEMENTED BY FIELD LOCATIONS OF VISIBLE SURFACE FEATURES. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL UNDERGROUND UTILITIES
- 8. AERIAL PHOTOS PROVIDED AS BACKGROUND IN DRAWINGS ARE PROVIDED TO HELP CLARIFY THE WORK SITE. HOWEVER, THE PHOTOS DEPICT CONDITIONS AS THEY EXISTED IN 2022. PRESENT-DAY CONDITIONS MAY VARY FROM THOSE SHOWN. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO BIDDING. BID SHALL INCLUDE ALL WORK REQUIRED TO COMPLETE THE PROJECT
- 9. CONTRACTOR SHALL FURNISH AND PAY FOR ALL TEMPORARY UTILITY SERVICES AND UTILITY PROTECTION MEASURES AND TEMPORARY RELOCATIONS NECESSARY FOR CONSTRUCTION. ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE UTILITY COMPANY OR OWNER.
- 10. CONTRACTOR MUST NOTIFY AFFECTED AGENCIES, RESIDENTS, BUSINESSES, SCHOOLS, AND PROPERTY OWNERS 14 DAYS PRIOR TO
- 11. CONTRACTOR WILL PROVIDE AND UPDATE A CONSTRUCTION SCHEDULE IN ACCORDANCE WITH THE SPECIFICATIONS AND THE REGULATIONS OF THE GOVERNING AGENCY FOR WORKING IN THE PUBLIC WAY PRIOR TO CONSTRUCTION.
- 12. CONTRACTOR SHALL NOT ALLOW GROUNDWATER OR DEBRIS TO ENTER THE NEW PIPE DURING CONSTRUCTION. THE OPEN END OF ALL PIPES SHALL BE COVERED AND SEALED AT THE END OF EACH DAY.
- 13. ALL MEASURES CONTAINED IN THIS PLAN SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A RAINFALL EVENT. ANY NEEDED CLEANING AND REPAIRS NEED TO BE DONE IMMEDIATELY UPON DISCOVERY.
- 14. CONTRACTOR TO INSTALL INVERT COVERS IN ALL SANITARY SEWER AND STORM DRAIN MANHOLES AFFECTED BY THE PROJECT PRIOR TO STARTING CONSTRUCTION.
- 15. CONTRACTOR MUST PROVIDE MARSHAL AND/OR PROCTOR TEST DATA 24 HOURS PRIOR TO USE, CERTIFIED IN WRITING FROM A LAB RECOGNIZED AND ACCEPTED BY KEARNS CITY AND THE RIGHT-OF-WAY GOVERNING AGENCY, AS APPLICABLE.
- 16.NO CHANGE IN DESIGN LOCATION OR GRADE WILL BE MADE BY THE CONTRACTOR WITHOUT THE WRITTEN APPROVAL OF THE PROJECT
- 17.IF CONTRACTOR CHOOSES TO WORK ON PROJECT IN COLD WEATHER, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING APPROVAL FROM APPROPRIATE GOVERNING AGENCY PRIOR TO CONSTRUCTION. CONTRACTOR SHALL FURNISH AND INSTALL TEMPORARY ASPHALT. WHEN WEATHER PERMITS, THE CONTRACTOR SHALL REMOVE THE TEMPORARY ASPHALT, AND FURNISH AND INSTALL THE PERMANENT ASPHALT AT NO ADDITIONAL COST TO THE OWNER
- 18.UNLESS OTHERWISE NOTED, CONTRACTOR SHALL PROVIDE A MINIMUM COVER OF FOUR (4) FEET FROM THE TOP OF THE WATER MAIN TO
- 19.IHP GAS LATERALS THAT INTERSECT THE WATERMAIN WILL BE LOOPED AROUND THE PIPE. SUCH LOCATIONS ARE INDICATED IN THE
- 20.ALL FITTINGS, VALVES, AND OTHER APPURTENANCES SHALL BE MECHANICALLY RESTRAINED AS DESCRIBED IN SPECIFICATIONS. RESTRAINT LENGTHS ARE SHOWN IN TABLES IN DETAIL 1/C504
- 21.ALL BENDS MUST HAVE A THRUST BLOCK IN ADDITION TO THE RESTRAINT AND MUST BE INSTALLED ACCORDING TO DETAIL CW3 ON DETAIL SHEET C504.
- 22.ALL ABANDONED PIPE MUST BE CUT AND CAPPED. ANY ABANDONED PIPE BELOW ROAD SURFACE MUST BE FILLED WITH FLOWABLE FILL.
- 23. CONTRACTOR SHALL PERFORM WASHOUT PROCEDURE DURING PIPELINE COMMISSIONING. SEE DETAIL CW5 ON SHEET C507

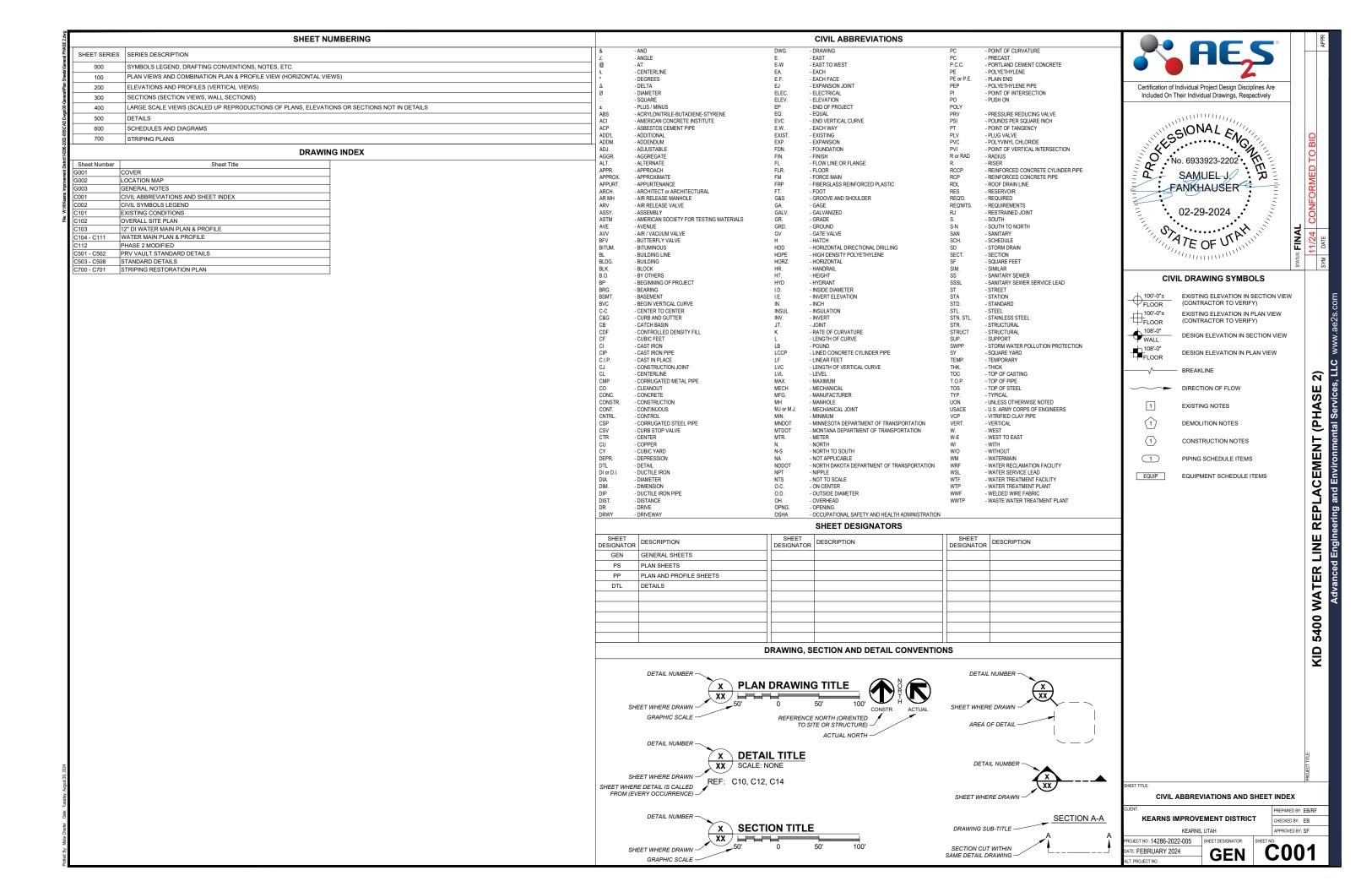
UDOT REQUIREMENTS

- MAY BE REQUIRED
- 1. NIGHT WORK WILL OCCUR FROM THE HOURS OF 8 PM 5 AM. NO HAMMERING OR LOUD NOISES DURING THESE HOURS.
- 2. TWO LANES EACH DIRECTION DURING PEAK HOURS ARE REQUIRED. ONE LANE CAN BE CLOSED BETWEEN 9 AM 3 PM. MILLED IN PLATING REQUIRED FOR TRAFFIC CONTROL BUT JERSEY BARRIERS ARE NOT NECESSARY
- 3. MINIMUM OF 2 INCH DEPTH FOR MILL AND OVERLAY. ASPHALT RESTORATION IN MEDIAN MUST BE 12 FEET WIDE AND IN LANE FROM LINE
- 4. FLOW FILL REQUIRED AT LEAST THE TOP 3 FEET OF TRENCH BACKFILL. FLOW STRENGTH MUST BE BETWEEN 50 PSI AND 150 PSI
- 5. LINE MARKERS MUST BE GROOVED WITH 3M TAPE AND TURN ARROWS MUST BE THERMOPLASTIC.
- 6. TRENCH BOX IS REQUIRED IN THE TRENCH AND MUST FOLLOW DETAIL 1/C500.
- 7. ALL TRENCHES MUST BE PLATED OR PAVED. NO OPEN TRENCH ALLOWED. MUST HAVE MILLED-IN PLATES OR BACKFILLED WITH FLOWFILL.
- 8. FOR TRAFFIC DETECTOR LOOP REPAIR OR REPLACEMENT REFER TO THE CURRENT UDOT STANDARD DRAWINGS TRAFFIC SIGNAL LOOP DETECTOR DETAILS (STG. DWG. NO. SL 9) AND TRAFFIC COUNTING LOOP DETECTOR DETAILS (STD. DWG. NO. SL 10) IF APPLICABLE.

ASBESTOS COATED PIPE REQUIREMENTS

- 1. AC PIPE MUST BE REMOVED, HANDLED, AND DISPOSED OF IN A MANNER THAT KEEPS THE MATERIAL IN WHOLE PIECES TO BE CONSIDERED NON-FRIABLE. SANDING, SAWING, GRINDING, OR CHIPPING WITH HAND METHODS WILL MAKE AC PIPE FRIABLE AND MUST BE MINIMIZED. THE DIVISION OF AIR QUALITY LISTS APPROVED CUTTING METHODS ON PAGE 2 OF DAQA-155-14.
- 2. AC PIPE CAN BE ABANDONED AND BURIED IN PLACE SO LONG AS IT IS NOT ACTIVELY CRUSHED, CRUMBLED OR PULVERIZED. WHEN REMOVING NON-FRIABLE AC PIPE FOR DISPOSAL, LOCATE A LANDFILL THAT IS AUTHORIZED TO ACCEPT CATEGORY II NON-FRIABLE ASBESTOS-CONTAINING MATERIAL AND INQUIRE ABOUT PACKAGING REQUIREMENTS.
- 3. IF THE AC PIPE BECOMES FRIABLE, IT MUST BE REMOVED BY PROPERLY TRAINED AND DAQ CERTIFIED PERSONNEL. FRIABLE AC PIPE WORK MUST COMPLY WITH UAC R307-801-14. SMALL QUANTITIES OF FRIABLE AC PIPE FRAGMENTS AND DUST MUST BE PLACED IN LEAK-TIGHT CONTAINERS FOR REMOVAL. WRAP AND ENCAPSULATE LARGER PIECES. MARK ALL WASTE WITH THE WARNING STATEMENT "DANGER ASBESTOS-CONTAINING MATERIAL." LOCATE A LANDFILL THAT IS APPROVED BY THE UTAH DAQ AND/OR OPERATED UNDER 40 CFR PART 61.154 THAT IS AUTHORIZED TO ACCEPT FRIABLE ASBESTOS WASTE MATERIAL AND INQUIRE ABOUT PACKAGE REQUIREMENTS.





	WATER	
DESCRIPTION	EXISTING	NEW
WATER MAIN	—— W ——	
		- W
WATER SERVICE	STRUCTURES	
MANHOLE	(W)	W
METER MANHOLE		W
ARV MANHOLE	\bigcirc	
WELL		ww
MONITORING WELL	(MW)	MW
PRV MANHOLE	$\overline{\hspace{1cm}}$	
WATER HANDHOLE		W
VAULT		w
WHOE!	VALVES	
CURBSTOP	(i)	
GATE		
BUTTERFLY		
PLUG		
CHECK	<u> </u>	
GLOBE		
GLOBE	HYDRANTS	
FIRE	Д	
		-
ARV		
BLOW OFF	0	
	FITTINGS	
11.25° BEND		
22.50° BEND		
30° BEND		
45° BEND		
60° BEND		~
90° BEND	<u></u>	
WYE (R)	\	7
WYE (L)		
CAP		<u> </u>
COUPLING		
CROSS		
PLUG	þ	þ
REDUCER		
TEE	<u>"</u>	

SANITARY		
DESCRIPTION	EXISTING	NEW
	PIPE	
SANITARY MAIN	ss	ss
SANITARY SERVICE		
	STRUCTURES	
MANHOLE	S	S
CLEAN OUT	(co)	CO
METER MANHOLE	(s)	S
SEPTIC TANK	ST	ST
VAULT	S	S
LIFTSTATION	L	L
	VALVES	
GATE		
BUTTERFLY		
PLUG	\Diamond	•
	FITTINGS	
WYE (R)	3	<u> </u>
WYE (L)	Å	
PLUG	þ	þ
CAP		Γ
UAF		<u> </u>

STORINI				
DESCRIPTION	EXISTING	NEW		
	PIPE			
STORM MAIN	SD	SD		
STORM LEAD				
	STRUCTURES			
MANHOLE	D	D		
AREA INLET				
BEEHIVE INLET	\otimes	\bigotimes		
CURB INLET				
DOUBLE CURB INLET				
OUTFALL		•		

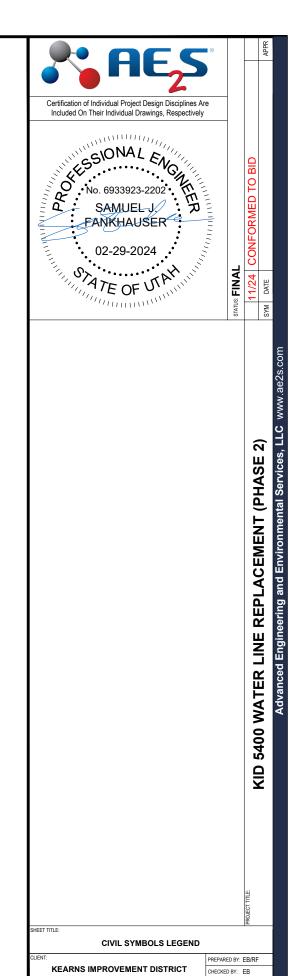
GAS				
DESCRIPTION	NEW			
	LINES			
NATURAL GAS	G	G		
STRUCTURES				
MANHOLE	G	G		
METER	G	G		
VALVES				
GATE VALVE	\boxtimes	X		
- '				

SITE				
DESCRIPTION	EXISTING	NEW		
	VEGETATION			
CONIFEROUS TREE (LARGE)				
CONIFEROUS TREE (SMALL)	*	*		
DECIDUOUS TREE (LARGE)	£43	E & S		
DECIDUOUS TREE (SMALL)	8	₩		
SHRUB	0	0		
STUMP	·	<u></u>		
TREE LINE	.~~~	.~~~		
	SIGNAGE			
STREET SIGN				
MILE POST	<u>MP</u> _	<u>MP</u>		
	SITE			
BUILDING				
CURB				
CONCRETE	4 4 4 4			
FENCES				
BARBED WIRE	xx	xx		
CHAIN LINK		• —•		
WOOD				
VINYL				
WOVEN WIRE	—xx——xx—	—xx—xx—		
GUARD RAIL				
SILT	SF			
SUPER SILT	SSF	SSF		
GATE POST	(GP)			
	TOPOLOGY			
CONTOURS	7-900-1	900		

	ELECTRICAL	
DESCRIPTION	EXISTING	NEW
	LINES	
ELECTRIC	—— Е ——	—— Е ——
OVERHEAD	OHE	OHE
UNDERGROUND	——— UGE ———	——— UGE ——
	STRUCTURES	
MANHOLE	E	E
HANDHOLE	E	E
UTILITY POLE	-0-	
GUY ANCHOR	С	С
LIGHT POST	\	—
PUSH TO WALK POST	P	P
STREET LIGHT		
SIGNAL		
SIGNAL WITH ARM		

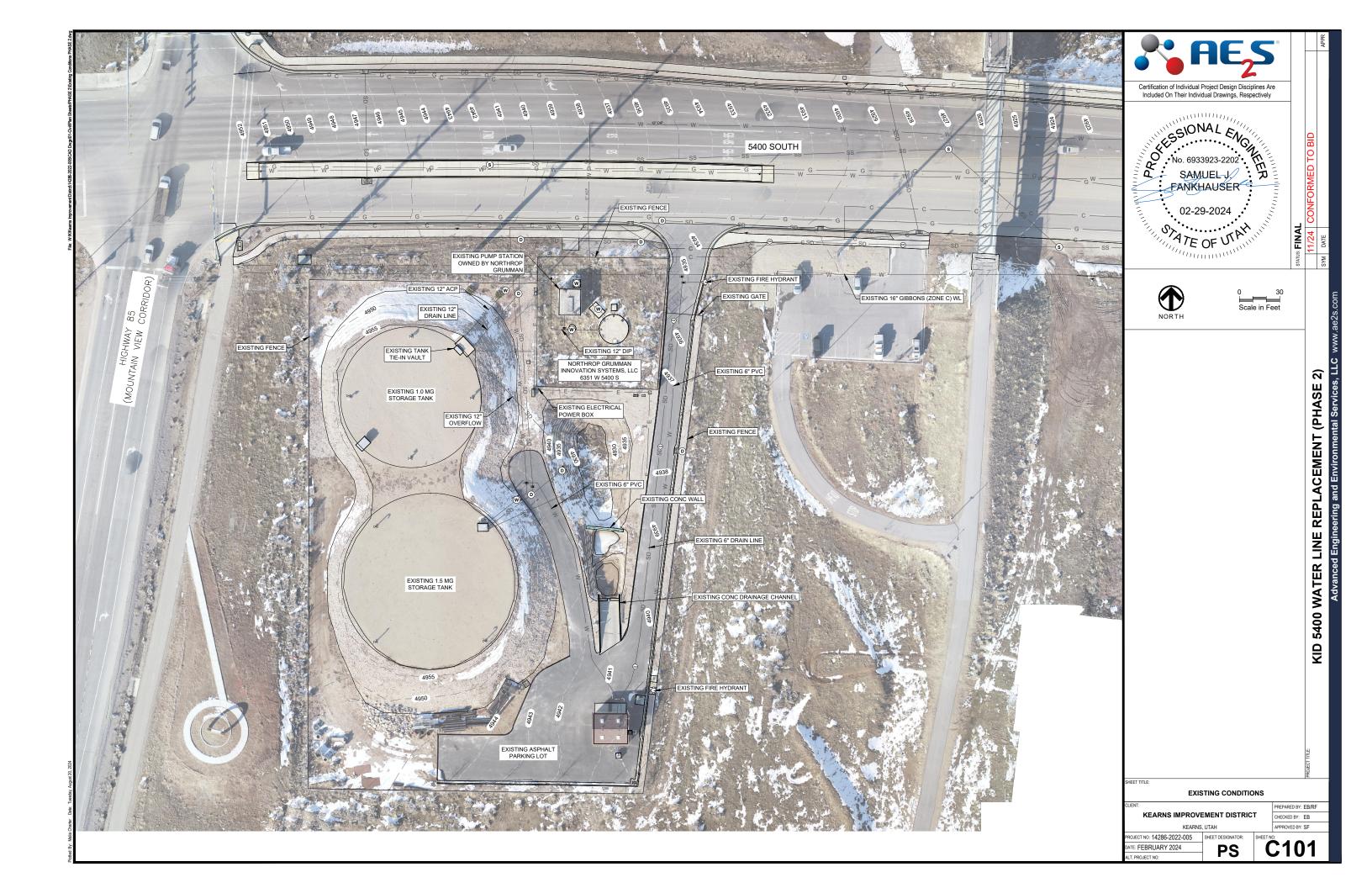
COMMUNICATIONS					
DESCRIPTION	EXISTING	NEW			
	LINES				
COMMUNICATIONS	с				
FIBER OPTIC	FO				
TELEPHONE	т				
CABLE TV	CATV				
CLOSED CIRCUIT TV	CCTV				
	STRUCTURES				
MANHOLE	C	C			
TELEPHONE MANHOLE	T	T			
TELEPHONE PEDESTAL	Т	T			
TELEPHONE FIBER OPTIC PEDESTAL	FO	FO			
TELEVISION PEDESTAL	ΤV	TV			
UNKNOWN PEDESTAL	U	U			

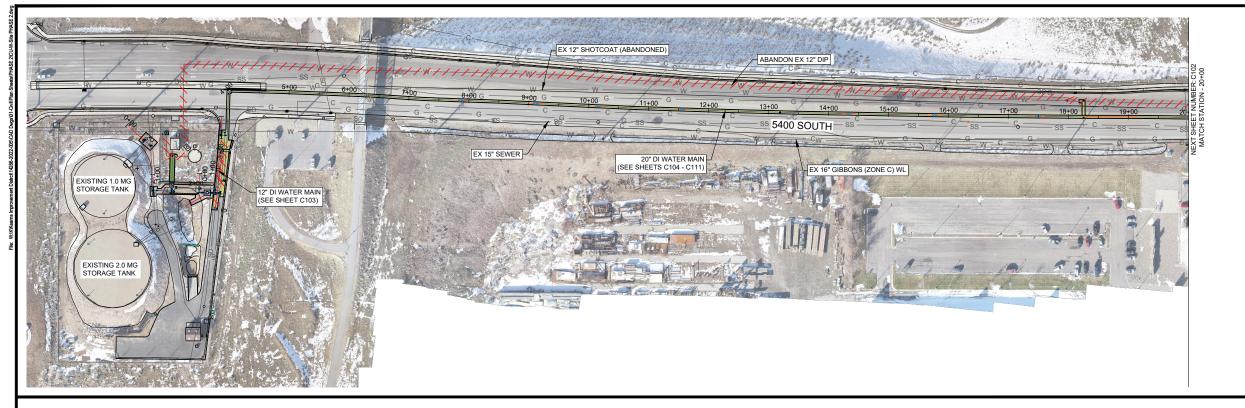
DEMOLITION			
DESCRIPTION	DESCRIPTION EXISTING NEW		
	LINES		
FEATURES TO BE REMOVED	* * * * * * * * *		
FEATURES TO BE ABANDONED	1111111		
REMOVE CURB & GUTTER			
STRUCTURES			
REMOVE TREE OR SHRUB			
AREA			
ITEMS TO BE REMOVED			



KEARNS, UTAH
PROJECT NO: 14286-2022-005
DATE: FEBRUARY 2024
ALT, PROJECT NO:

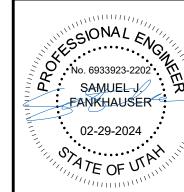
APPROVED BY: SF
SHEET NO:
C002











7

REPLACEMENT (PHASE sering and Environmental Services

ER LINE

5400 WATER I

중

NORTH

Scale in Feet

GENERAL NOTES

 THE LOCATIONS OF ANY AND ALL UNDERGROUND UTILITIES SHOWN ARE BASED UPON ABOVE GROUND EVIDENCE (INCLUDING, BUT NOT LIMITED TO, MANHOLES, INLETS, AS-BUILT MAPS, AND MARKS MADE ON THE GROUND BY OTHERS) AND ARE SPECULATIVE IN NATURE. THERE MAY BE UNDERGROUND UTILITIES WHETHER IN SERVICE OR ABANDONED, FOR WHICH THERE IS NO ABOVE GROUND EVIDENCE OR FOR WHICH THE ABOVE GROUND EVIDENCE OR FOR WHICH THE ABOVE GROUND EVIDENCE WAS NOT OBSERVED. THE ABOVE GROUND EVIDENCE WAS NOT OBSERVED.
FURTHERMORE, THE UTILITIES MAY NOT BE IN THE EXACT LOCATIONS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF UTILITIES AND TOPOGRAPHIC FEATURES PRIOR TO THE START OF CONSTRUCTION. FEATURES PRIOR TO THE START OF CONSTRUCTION.
ANY AND ALL DAMAGES THAT MAY OCCUR FROM THE
CONTRACTOR'S FAILURE TO EXACTLY LOCATE ANY AND
ALL UTILITIES SHALL BE THE RESPONSIBILITY OF THE
CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE
ENGINEER IMMEDIATELY IF ANY DISCREPANCIES OR
VARIANCES TO THE PLANS ARE FOUND.

SURFACING LEGEND

REMOVE & REPLACE ASPHALT CONCRETE REMOVE, SALVAGE, & REPLACE ALL LANDSCAPE MATERIAL

REMOVE & REPLACE TYPE B1 CURB & GUTTER

REMOVE & REPLACE CONCRETE MEDIAN

REMOVE & REPLACE CONCRETE SIDEWALK

REPARED BY: EB/RF CHECKED BY: EB APPROVED BY: SF

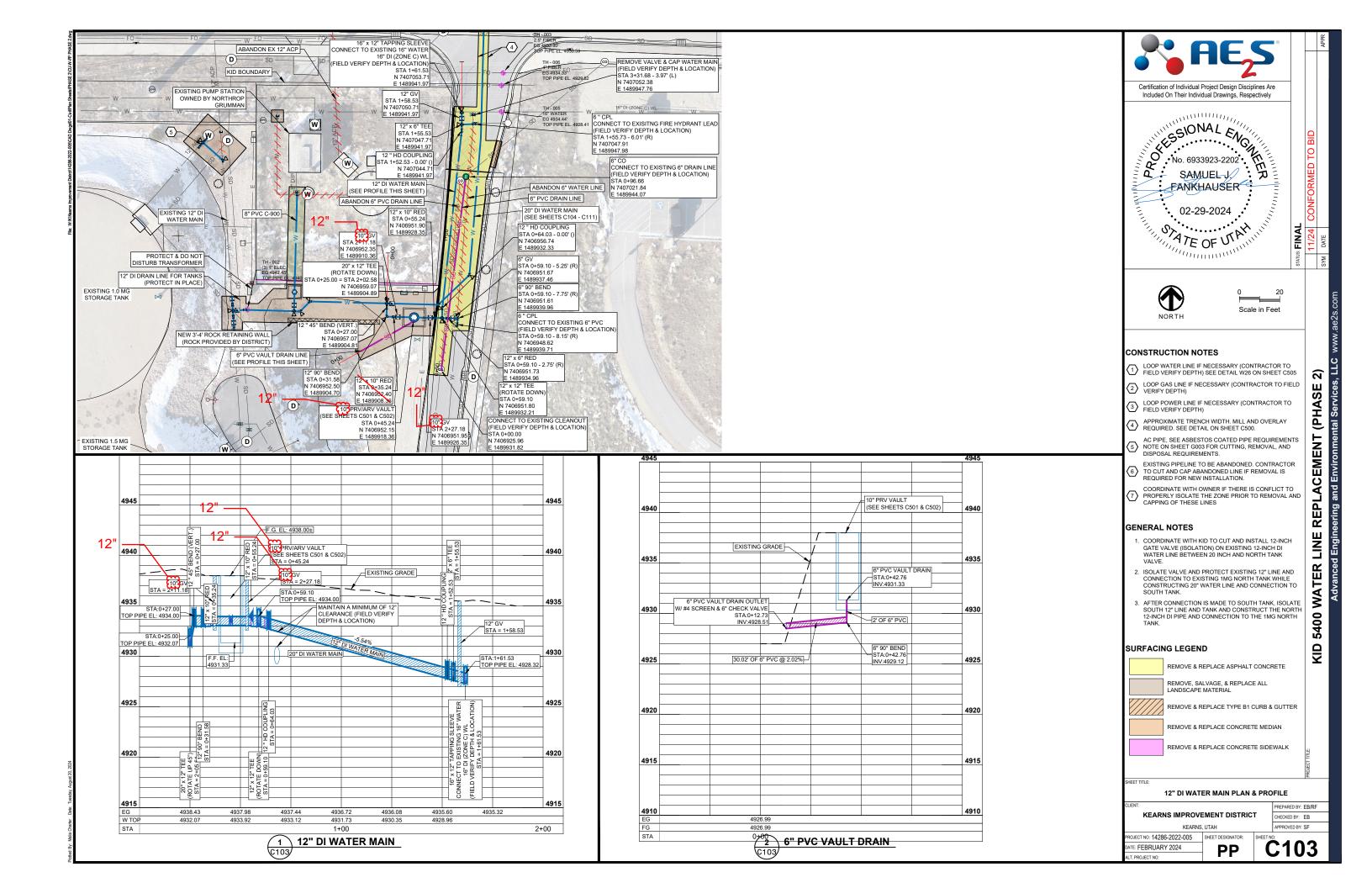
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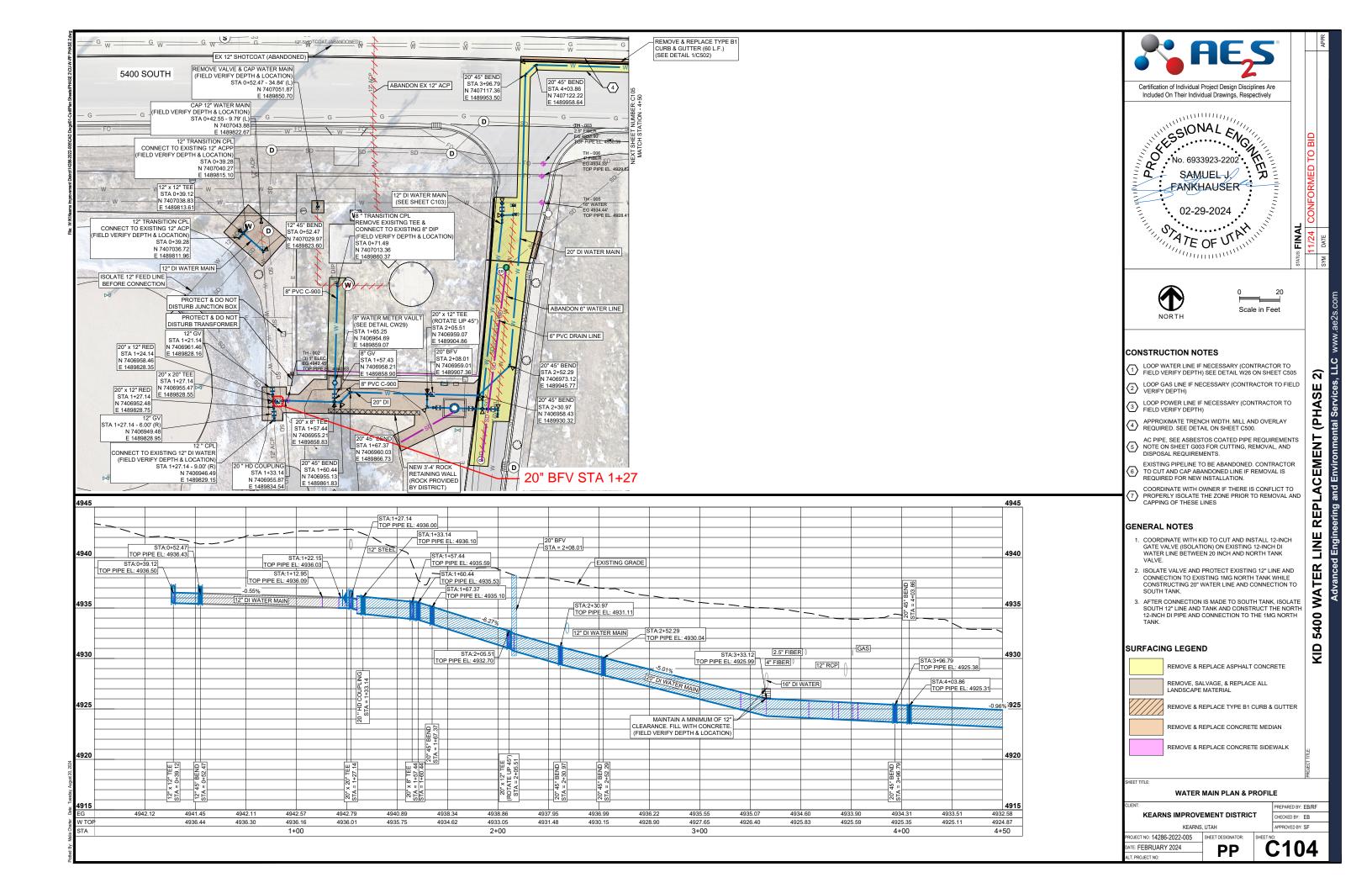
C102

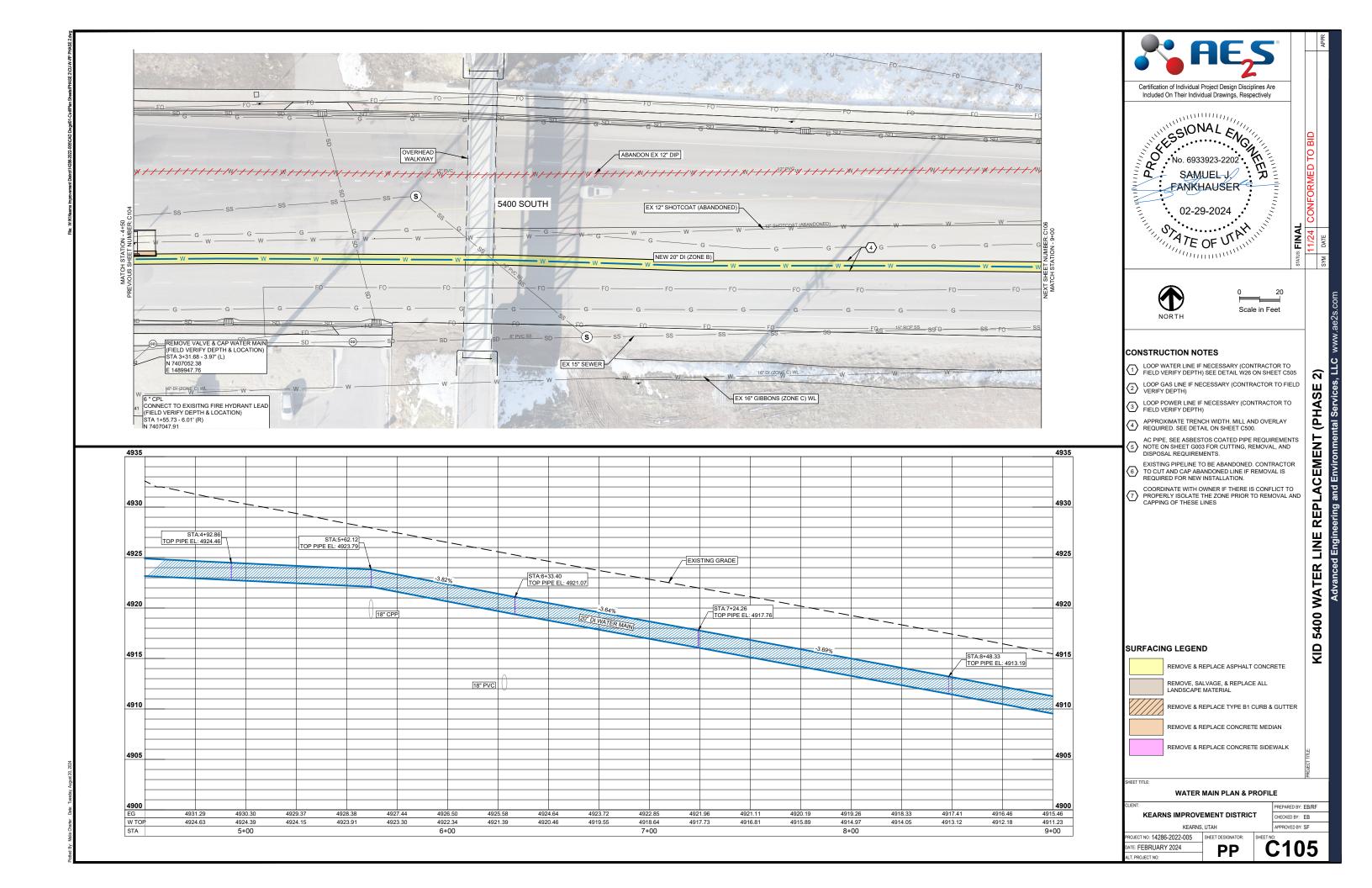
OVERALL SITE PLAN

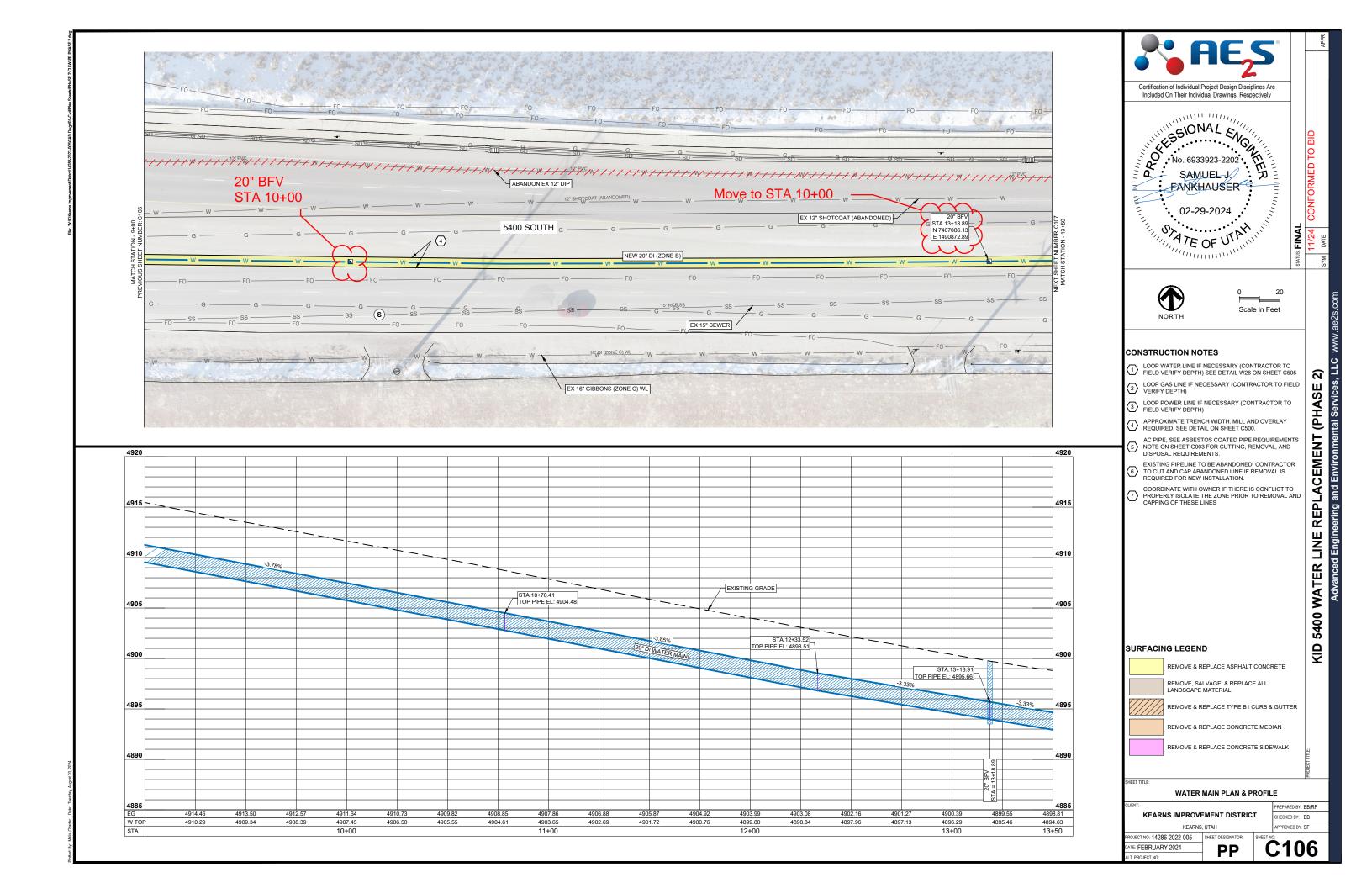
KEARNS IMPROVEMENT DISTRICT

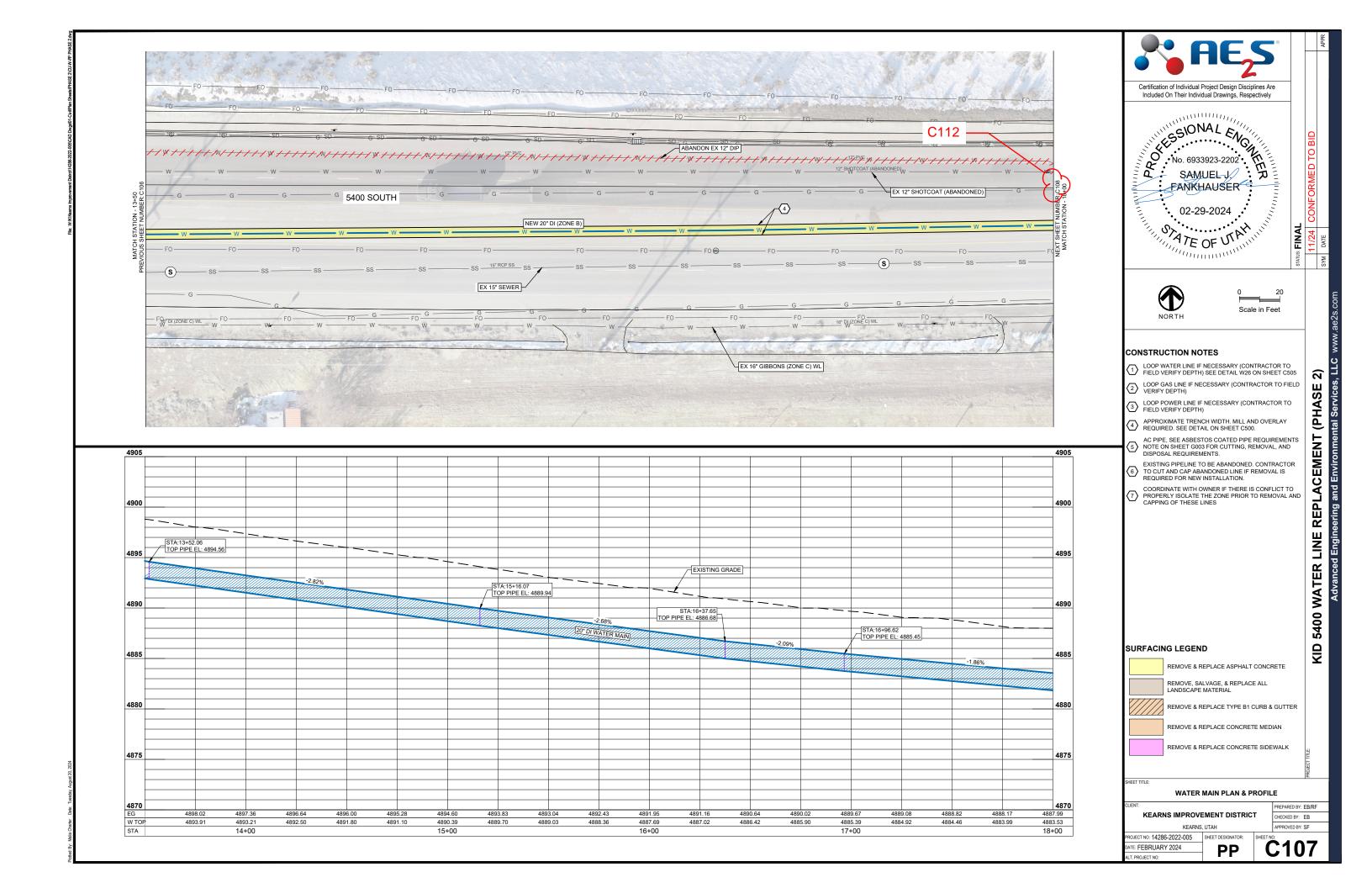
KEARNS, UTAH

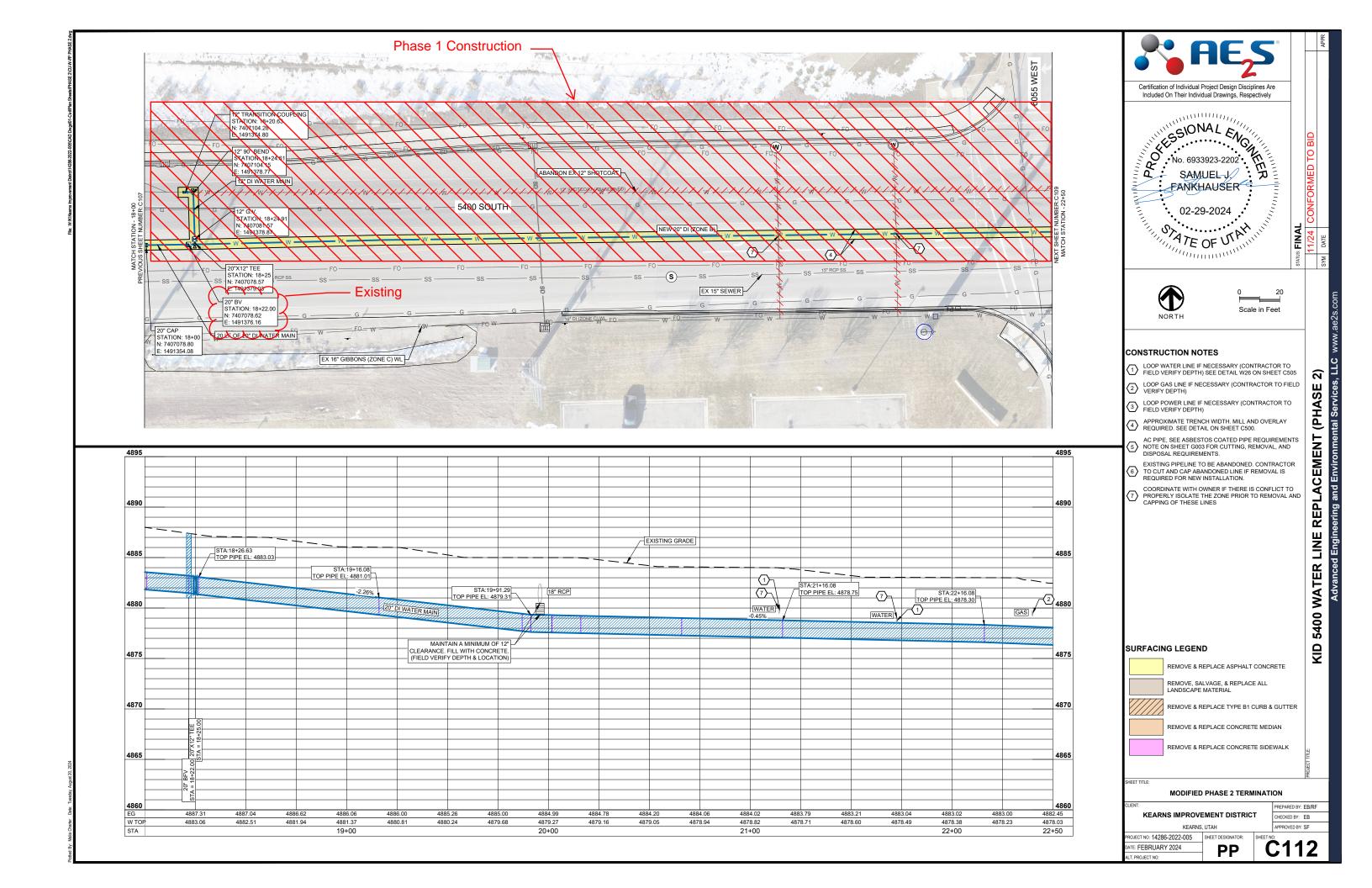


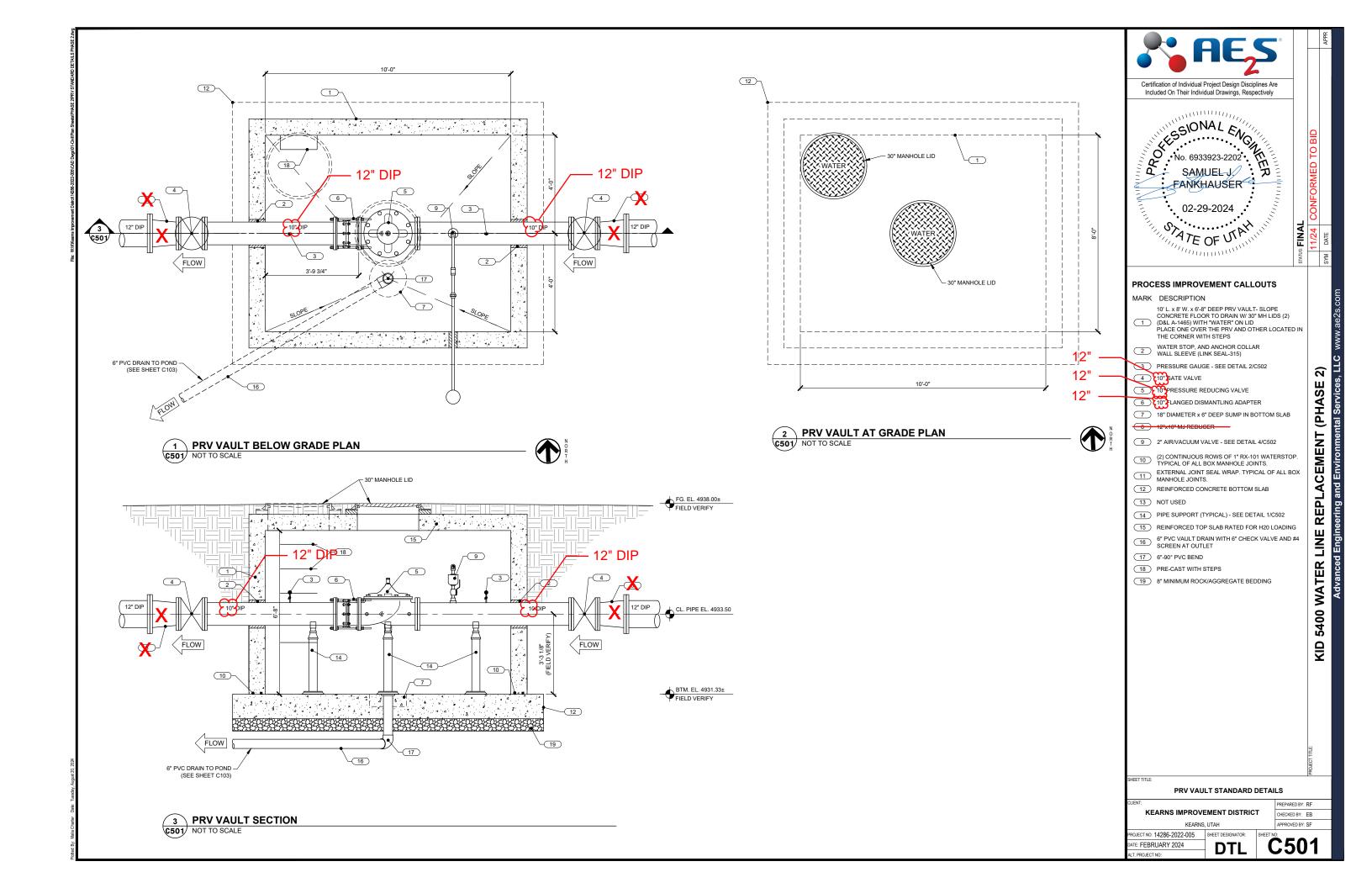


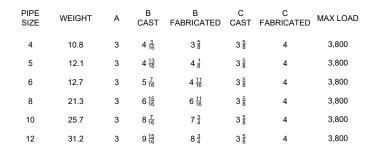


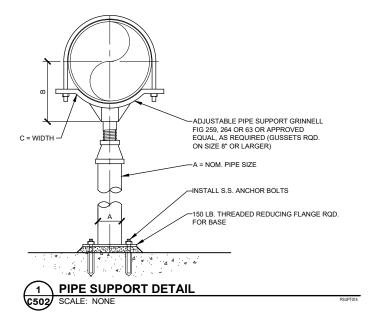


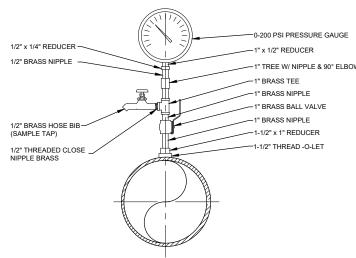




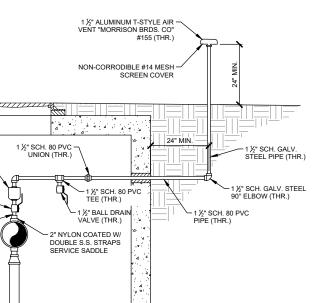


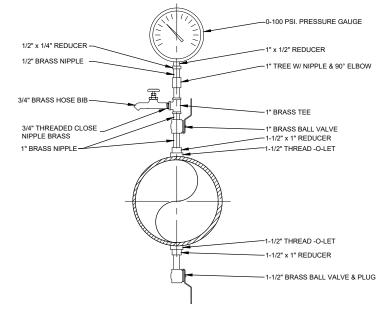




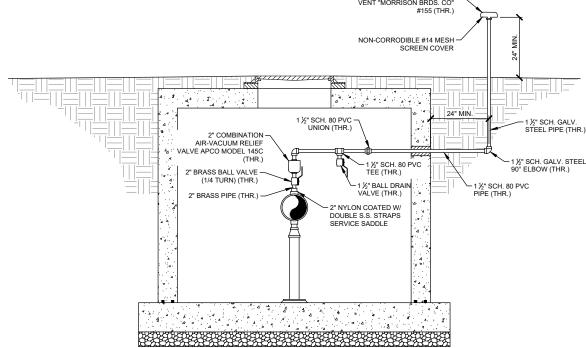


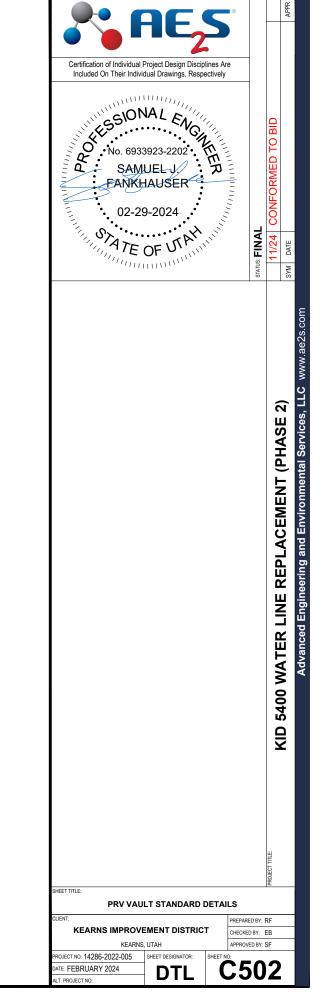




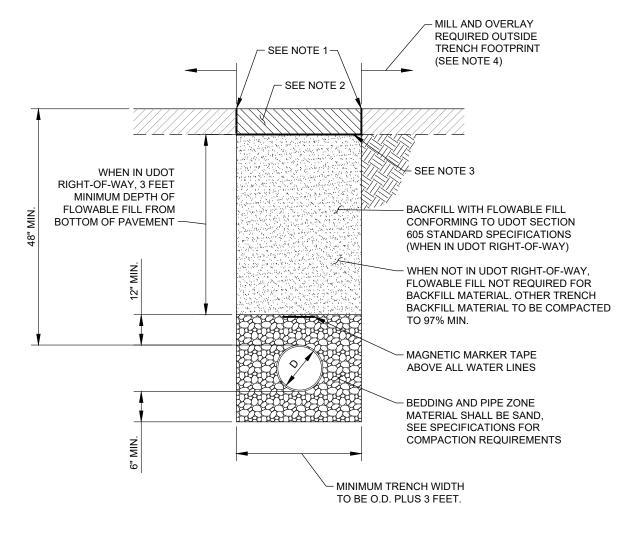


PRESSURE GAUGE DETAIL (LOW PRESSURE DOWNSTREAM) C502 SCALE: NONE





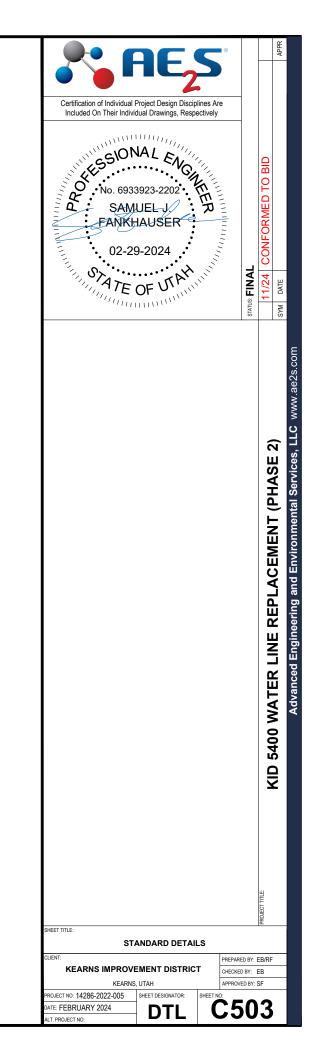
2" AIR/VACUUM VALVE C502 SCALE: NONE

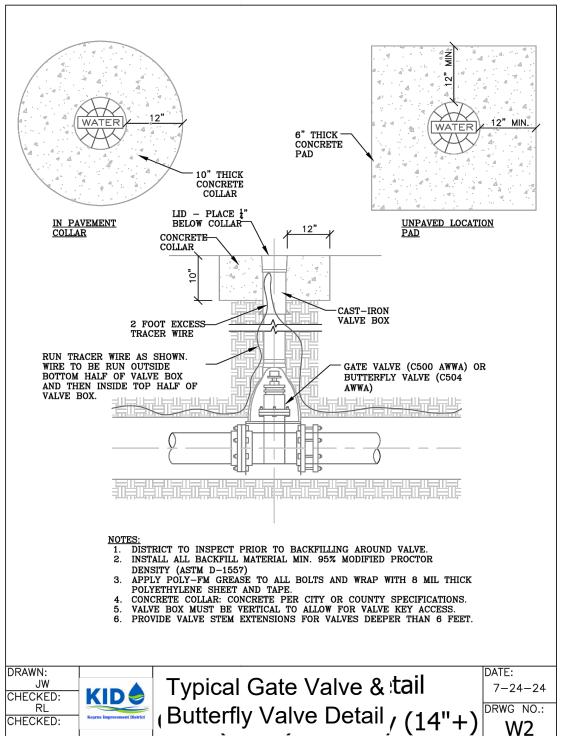


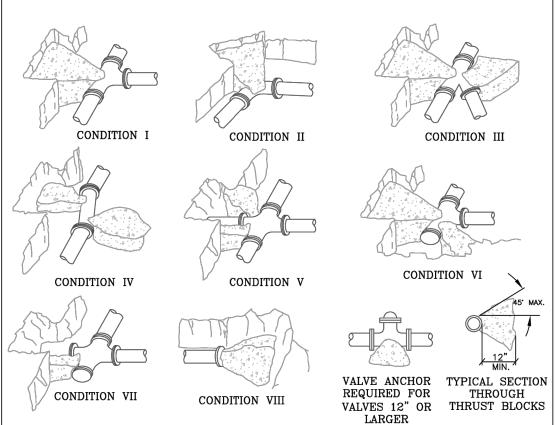
NOTES:

- 1. SAW CUT PAVEMENT EDGES, APPLY A HOT-POUR RUBBERIZED ASPHALT JOINT SEALANT OR APPROVED EQUAL, APPLIED AFTER PATCH IS INSTALLED.
- 2. USE DEPARTMENT APPROVED MATERIAL FOR BACKFILL AND PAVEMENT PATCHES.
- 3. EVENLY APPLY TACK COAT ON FINAL BACKFILL BEFORE INSTALLING PAVEMENT.
- 4. MINIMUM OF 2 INCH DEPTH FOR MILL AND OVERLAY. ASPHALT RESTORATION IN MEDIAN MUST BE 12 FEET WIDE AND IN LANE MUST BE FROM LINE TO LINE.









Typical Thrust Block Details

NO	TES:
-	

ALL THRUST BLOCK BEARING
FACES SHALL BE POURED AGAINST
UNDISTURBED SOIL OR APPROVED COMPACTED BACKFILL. CONCRETE SHALL BE 4,000 PSI.

ALL THRUST BLOCK SIDES SHALL BE FORMED.
JOINT RESTRAINTS REQUIRED WITH

ALL THRUST BLOCKS.

CALCULATED ON 200 LB TEST
PRESSURE AND ALLOWABLE
BEARING PRESSURE OF 2000 LBS PER SQUARE FOOT.

IF BEARING PRESSURE IS LESS THAN 2,000 LBS, CALCULATIONS AND BLOCK DETAIL DESIGN REQUIRED.

KID INSPECTION REQUIRED PRIOR

DATE: Thrust Block **Details**

7-24-24 DRWG NO.: W3

Included On Their Individual Drawings, Respectively ON THE OF UTEN "INATE OF UNITED KID 5400 WATER LINE REPLACEMENT (PHASE 2)
Advanced Engineering and Environmental Services, L

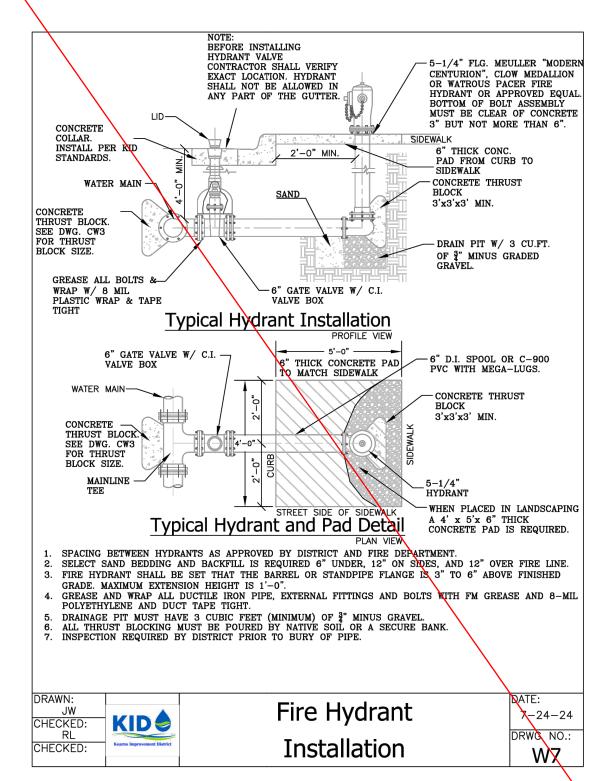
STANDARD DETAILS **KEARNS IMPROVEMENT DISTRICT**

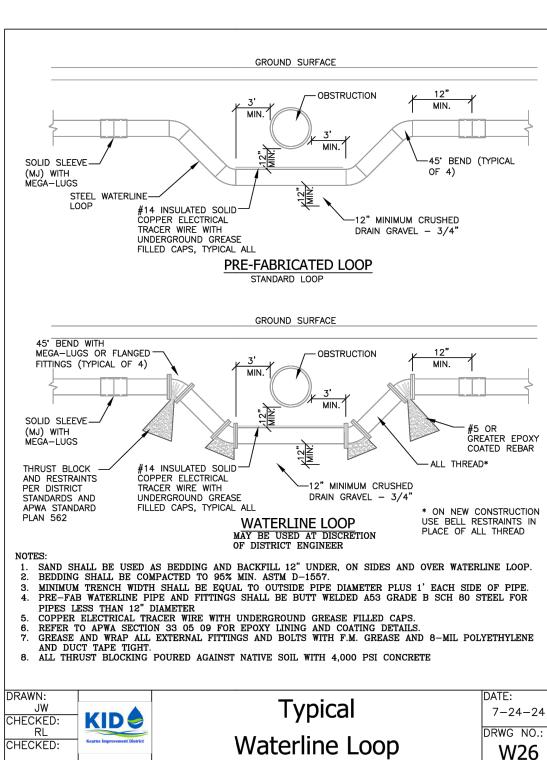
KEARNS, UTAH APPROVED BY: SF DJECT NO: 14286-2022-005 C504 TE: FEBRUARY 2024 DTL

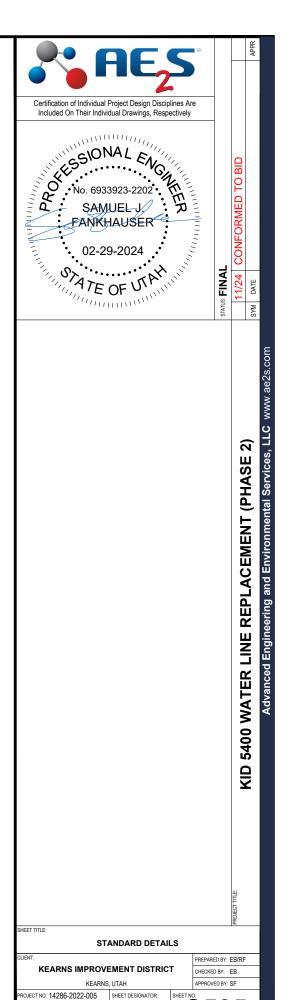
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DRAWN: CHECKED: **KID** CHECKED:

NOMINAL PIPE



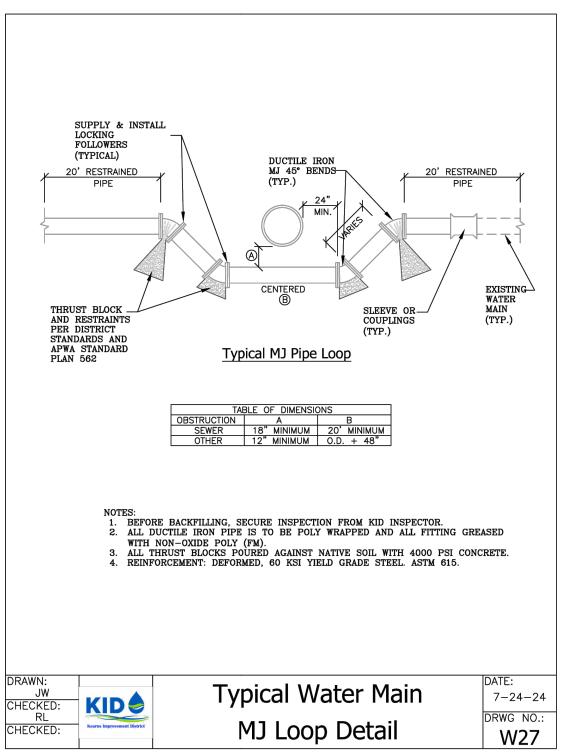


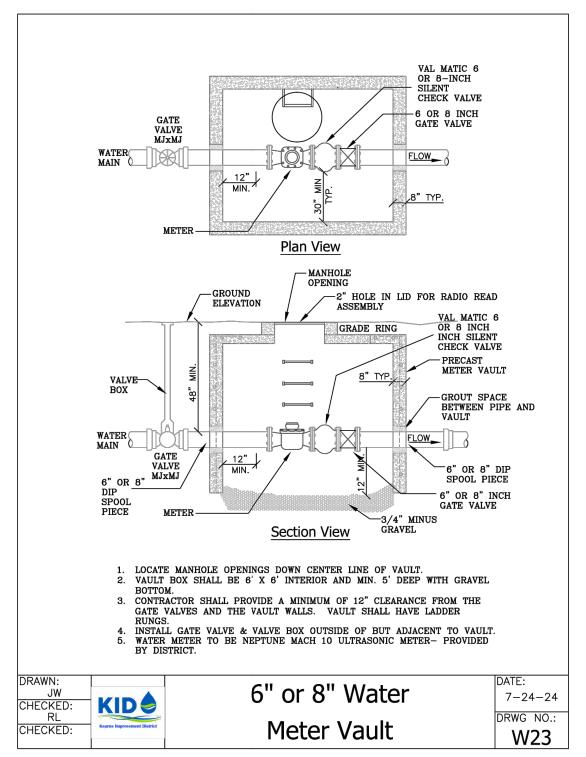


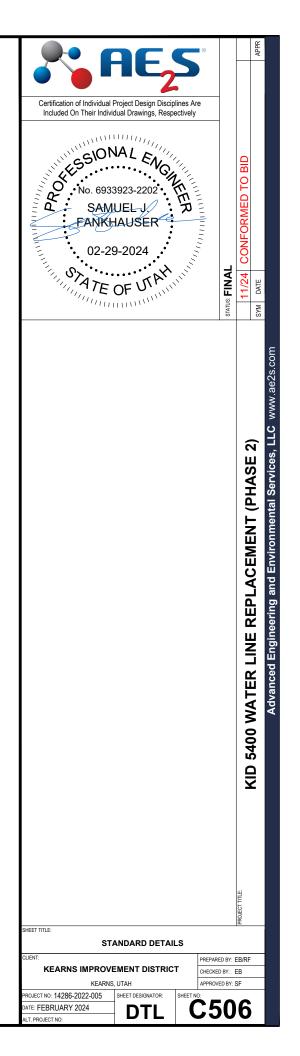
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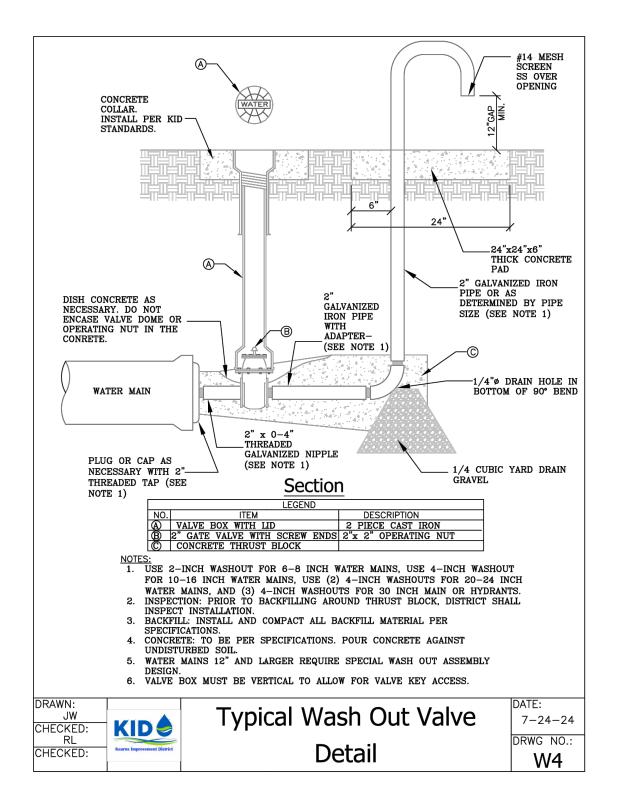
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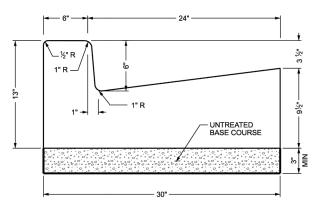
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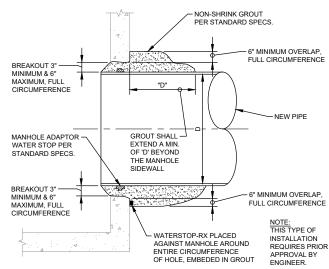




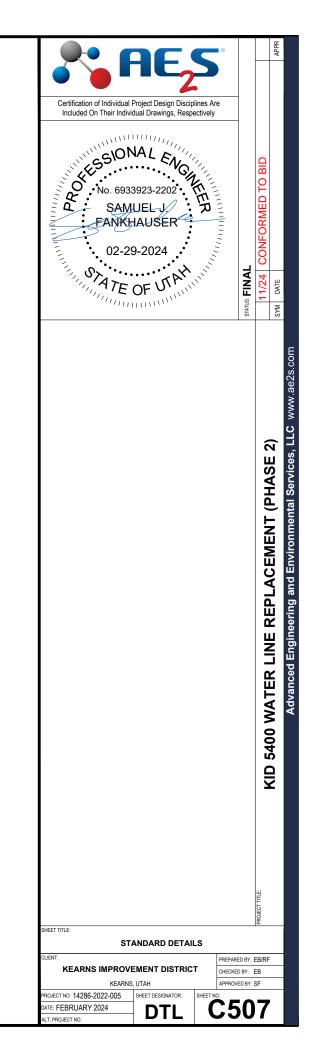




1 TYPE B1 CURB & GUTTER



PIPE CONNECTION TO EXISTING MANHOLE
SCALE: NONE



ALL PRESSURE PIPE JOINTS SHALL BE RESTRAINED PER THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL BE GUIDED BY THE RESTRAINT LENGTH TABLE SHOWN BELOW AS RESTRAINT LENGTHS WILL VARY AS THE FIELD INSTALLATION MAY VARY FROM DESIGN CRITERIA ASSUMED. JOINT RESTRAINT LENGTHS ARE A FUNCTION OF THE PIPE SIZE, THE INTERNAL PRESSURE, DEPTH OF COVER, THE CHARACTERISTICS OF THE SOIL SURROUNDING THE PIPE AND WHETHER THE PIPE IS POLYETHYLENE ENCASED. THE CONTRACTOR SHALL CONSULT THE JOINT RESTRAINT MANUFACTURER FOR INSTALLATION GUIDELINES. ALL PRESSURE PIPE JOINTS SHALL BE RESTRAINED PER THE MANUFACTURER'S

TABLE OF JOINT RESTRAINTS ON WATER MAINS

	TEE TABLE			
FITTING SIZE	ASSUMED DEPTH OF BURY (FT)	ASSUMED RESTRAINT LENGTH ALONG RUN (FT)	RESTRAINT LENGTH ALONG BRANCH (FT)	
20"x12"	6	20	20	
20"x6"	4	20	20	
16"x12"	6	2	93	
12"x12"	6	6	64	
12"x12"	6	4	116	
12"x12"	5	2	121	
12"x6"	6	6	20	

BEND TABLE			
FITTING SIZE	ASSUMED DEPTH OF BURY (FT)	BEND ANGLE	RESTRAINT LENGTH (FT)
20" PIPE	4	45° HORIZ.	20
20" PIPE	6	45° HORIZ.	20
20" PIPE	8	45° HORIZ.	28
12" PIPE	4	45° HORIZ.	18
12" PIPE	4	45° VERT.	71
12" PIPE	4	90° HORIZ.	43
6" PIPE	4	90° HORIZ.	24

REDUCER TABLE			
ITTING SIZE ASSUMED DEPTH OF BURY (FT) RESTRAINT LENGTH ON LARGE OF REDUCER (FT)			
4	166		
6	116		
4	50		
4	124		
4	51		
	ASSUMED DEPTH OF BURY (FT)		

VALVE & CAP/PLUG TABLE		
FITTING SIZE	ASSUMED DEPTH OF BURY (FT)	RESTRAINT LENGTH (FT)
20" PIPE	4	265
12" PIPE	4	170
12" PIPE	6	117
10" PIPE	4	144
8" PIPE	4	120
6" PIPE	4	91

- NOTES:

 1. PIPE SHALL BE RESTRAINED EACH SIDE OF BENDS AND VALVES TO THE LENGTHS SHOWN IN THE TABLE.

 2. RESTRAIN A MINIMUM OF ONE FULL LENGTH OF PIPE ON ALL SIDES OF FITTINGS REGARDLESS OF LENGTH INDICATED ON TABLE.

 3. RESTRAINT LENGTHS SHOWN ARE BASED ON THE FOLLOWING CRITERIA: A PIPE MATERIAL: POLY WRAPPED DUCTILE IRON

 B. SOIL TYPE: ML

 C. SAFETY FACTOR: 1.5

 D. TRENCH TYPE: 5

 E. DEPTH OF BURY: 4 FT

 F. TEST PRESSURE: 200 PSI

 G. RESTRAINT LENGTH ALONG TEE BRANCH CALCULATED BASED ON A RESTRAINT LENTGTH ALONG TEE RUN OF 3 FT, BASED ON PROXIMITY TO EDGE OF EXCAVATION.



