

CONSTRUCTION PLANS

PARADISE HILLS HOMEOWNERS ASSOCIATION

SUNRISE DRIVE WATER LINE REPLACEMENT PROJECT

JEFFERSON COUNTY, CO

NW 1/4, SECTION 17, TOWNSHIP 4 SOUTH, RANGE 70 WEST OF THE 6TH P.M.

MAY 2021

PREPARED FOR

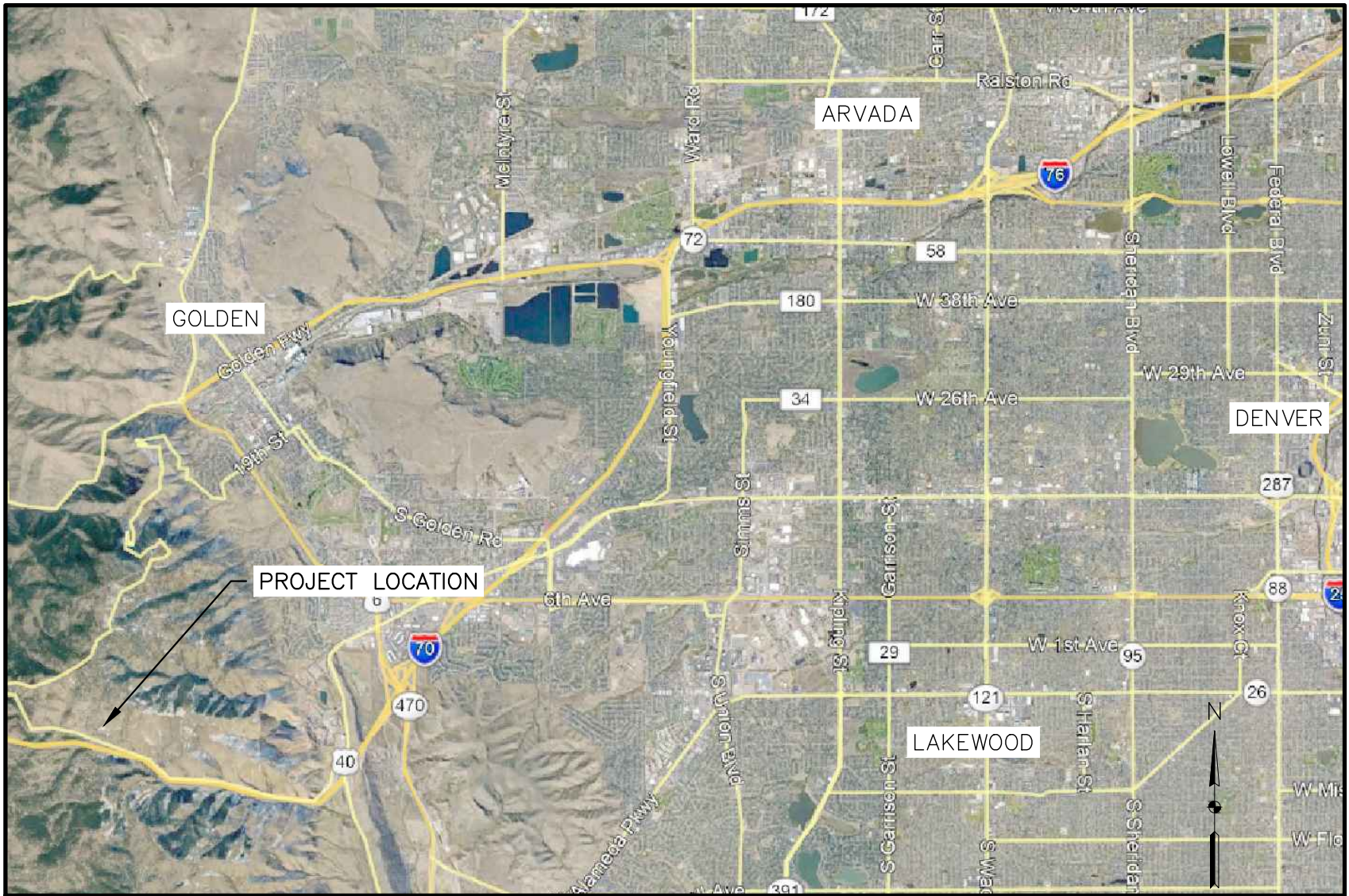
PARADISE HILLS HOA  
25754 BRISTLECONE CT.  
GOLDEN, CO 80401

CIVIL ENGINEERING

KARLYNN THERRIAN, P.E.  
NO. 56999  
ELEMENT ENGINEERING, LLC  
12687 W. CEDAR DR., SUITE 300  
LAKEWOOD, CO 80228  
303.378.2969

UTILITIES

SEWER — NONE  
WATER — PHHOA  
ELECTRICITY — XCEL ENERGY  
CABLE — CENTURY LINK



LOCATION MAP  
NOT TO SCALE



AREA MAP  
NOT TO SCALE

- |   |                                            |
|---|--------------------------------------------|
| 1 | COVER                                      |
| 2 | NOTES                                      |
| 3 | SURVEY, BASE BID AND ALTERNATE BID EXHIBIT |
| 4 | WATER BID ALTERNATE                        |
| 5 | WATER BID ALTERNATE                        |
| 6 | WATER BASE BID                             |
| 7 | WATER BASE BID                             |
| 8 | DETAILS                                    |

48 hours before you dig, CALL UTILITY  
NOTIFICATION CENTER OF COLORADO (UNCC)

811

Gas,Electric,Telephone,CATV and  
Panhandle Eastern Pipeline Locations

ELEMENT  
ENGINEERING LLC

12687 W. CEDAR DRIVE, SUITE 300  
LAKEWOOD, CO 80228

720.749.4165  
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REVISIONS	NO	DESCRIPTION	DATE	BY

SUNRISE DRIVE	COVER	PARADISE HILLS HOA 25754 BRISTLECONE CT. GOLDEN, CO 80401
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PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF  
ELEMENT ENGINEERING, LLC

DATE	MAY 2021
JOB NUMBER	0064.0003
SCALE	NTS
DRAWING NAME	COVER
SHEET	1 OF 8

Approved by Will Raatz, PE (W2 Engineering) LMWD District Engineer  
on 5/20/21. Signed original drawings on file at Element Engineering.

THESE PLANS HAVE BEEN APPROVED BY LOOKOUT MOUNTAIN WATER DISTRICT. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF THE FACILITIES IN ACCORDANCE WITH THE APPROVED PLANS AND WITH APPLICABLE RULES AND REGULATIONS. WORK NOT PERFORMED IN ACCORDANCE WITH THE APPROVED PLANS WILL NOT BE ACCEPTED. ACCEPTANCE OF THE WORK DOES NOT RELIEVE THE CONTRACTOR OF THEIR OBLIGATIONS UNDER APPLICABLE WARRANTIES.



GENERAL CIVIL CONSTRUCTION NOTES:

- ALL WORK TO BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- THE CONTRACTOR SHALL PROVIDE ALL BONDS AND INSURANCE REQUIRED BY THE CONTRACT DOCUMENTS.
- UNLESS OTHERWISE APPROVED BY THE ENGINEER AND OWNER CONSTRUCTION SHALL BE LIMITED TO HOURS BETWEEN 7:00 AM AND 5:00 PM, MONDAY THROUGH FRIDAY.
- THE CONTRACTOR IS TO PROVIDE A DETAILED CONSTRUCTION SCHEDULE DELINEATING CONSTRUCTION MILESTONES AND THE NATURE OF WORK BEING PERFORMED. THE SCHEDULE SHALL DETAIL ACTIVITIES FROM THE START OF CONSTRUCTION THROUGH COMPLETION. THIS SCHEDULE SHALL BE PROVIDED TO THE ENGINEER TWO (2) WEEKS PRIOR TO CONSTRUCTION AND UPDATED WEEKLY.
- THE CONTRACTOR SHALL PERFORM ALL WORK NECESSARY TO COMPLETE THE PROJECT IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DRAWINGS INCLUDING SUCH INCIDENTALS AS MAY BE NECESSARY TO MEET APPLICABLE AGENCY REQUIREMENTS AND PROVIDE A COMPLETED PROJECT.
- THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR AND EQUIPMENT AND PERFORM WORK SHOWN OR IMPLIED AS NECESSARY FOR THE COMPLETED WATERLINE.
- THE ENGINEER HAS ATTEMPTED TO LOCATE EXISTING SUBSURFACE UTILITIES, HOWEVER, SOME MAY EXIST THAT ARE NOT SHOWN. THE CONTRACTOR SHALL POT HOLE AS NECESSARY AND EXERCISE CARE IN HIS WORK SO AS TO AVOID DAMAGE TO ANY UTILITIES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING. ALL DIMENSIONS, ELEVATIONS, AND LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO BEGINNING THE WORK.
- ANY SUBSURFACE CONDITIONS ENCOUNTERED THAT ARE UNUSUAL OR DIFFERENT THAN THOSE INDICATED BY THE ENGINEER SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
- CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL PERMITS REQUIRED OF THIS WORK AND SHALL FAITHFULLY ADHERE TO THE ALL PERMIT REQUIREMENTS.
- CONTRACTOR SHALL CLEAN UP, SEED, AND RESTORE DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF THE WORK.
- ALL EXISTING FACILITIES SHALL BE MAINTAINED IN-PLACE BY THE CONTRACTOR UNLESS OTHERWISE SHOWN OR DIRECTED. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO SUPPORT, MAINTAIN, OR OTHERWISE PROTECT EXISTING UTILITIES AND OTHER FACILITIES AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR TO LEAVE EXISTING FACILITIES IN AN EQUAL OR BETTER-THAN-ORIGINAL CONDITION.
- THE CONTRACTOR SHALL ERECT AND MAINTAIN BARRICADES, WARNING SIGNS, CONES IN ACCORDANCE WITH STATE, LOCAL AND FEDERAL GUIDELINES TO ENSURE THE SAFETY OF WORKERS AND THE PUBLIC. ALL BARRICADES, SIGNS SHALL BE IN PLACE PRIOR TO THE BEGINNING OF ANY CONSTRUCTION ACTIVITY.
- UNLESS OTHERWISE GRANTED PERMISSION BY THE OWNER IN WRITING, THE CONTRACTOR MUST ALLOW ACCESS TO ALL PROPERTIES FOR BOTH RESIDENTS AND EMERGENCY VEHICLES.
- THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE CLEANLINESS AND SAFETY OF ALL ROADWAYS ADJACENT TO THE PROJECT SITE. IF AT ANY TIME, THESE ROADWAYS ARE FOUND TO BE DANGEROUS OR NOT PASSABLE DUE TO DEBRIS OR MUD, THE COUNTY MAY SHUT THE PROJECT DOWN.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER OF ANY PROBLEM IN CONFORMING TO THE APPROVED PLANS FOR ANY ELEMENT OF THE PROPOSED IMPROVEMENTS PRIOR TO ITS CONSTRUCTION.
- BLUE STAKES – THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AND THE FACILITY OPERATOR FOR LOCATION OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION, AS WELL AS ANY INDEPENDENT LOCATOR FOR PRIVATE LINES.
- THE CONTRACTOR SHALL NOTIFY THE INSPECTOR AT LEAST 48 HOURS PRIOR TO ANY DESIRED INSPECTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
- SURVEY MONUMENTS DISTURBED MUST BE SET BEFORE THE COMPLETION OF THE PROJECT.
- SERVICE TRENCHES AND UTILITY MAIN TRENCHES SHALL BE COMPACTED THROUGHOUT THE DEPTH OF THE TRENCH PER THE SPECIFICATIONS.
- THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF APPROVED DRAWINGS ON THE CONSTRUCTION SITE AT ALL TIMES WHEREON HE WILL RECORD ANY APPROVED DEVIATIONS IN THE CONSTRUCTION FROM THE APPROVED DRAWINGS AS WELL AS THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES. THESE FIELD RECORD DRAWINGS SHALL BE KEPT UP TO DATE AT ALL TIMES AND SHALL BE AVAILABLE FOR INSPECTION BY THE OWNER'S REPRESENTATIVE UPON REQUEST.
- UPON COMPLETION OF CONSTRUCTION AND PRIOR TO INITIAL ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL SUBMIT A CLEAN SET OF FIELD RECORD DRAWINGS CONTAINING ALL AS-BUILT INFORMATION TO THE ENGINEER. ALL INFORMATION SHOWN ON THE CONTRACTOR'S FIELD RECORD DRAWINGS SHALL BE SUBJECT TO VERIFICATION BY THE ENGINEER. IF SIGNIFICANT ERRORS OR DEVIATIONS ARE NOTED BY THE ENGINEER, AN AS-BUILT SURVEY PREPARED AND STAMPED BY A REGISTERED PROFESSIONAL LAND SURVEYOR SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE.
- ALL SUBMITTAL RECORDS ARE TO BE KEPT ONSITE AS WELL AS ALL DAILY INSPECTION REPORTS, INCLUDING, BUT NOT LIMITED TO, COMPACTION TESTS, ETC.
- PIPE BEDDING SHALL BE SQUEEGEE OR WELL GRADED SAND, GRADATIONS PER DETAIL W-8 (SEE SHEET 8), 6" BELOW THE BOTTOM OF THE PIPE AND 12" ABOVE THE PIPE.
- ALL BURIED DUCTILE IRON PIPE, FITTINGS, VALVES AND OTHER APPURTENANCES SHALL BE WRAPPED WITH POLYETHYLENE SHEETING.
- FOR ALL VALVES TO BE ABANDONED: CLOSE VALVE, REMOVE AND DISPOSE OF VALVE BOX AND COVER, FILL HOLE WITH APPROVED MATERIAL AND RESTORE SITE.
- FOR ALL PIPE TO BE ABANDONED: AT A MINIMUM, UNLESS OTHERWISE NOTED ON THE PLANS, ALL ENDS ARE TO BE CAPPED WITH CONCRETE. ABANDONED WATERLINES ABOVE OR BELOW THE NEW WATERLINE AND/OR CONFLICTS WITH CLEARANCES SHALL BE REMOVED (18" BEYOND O.D.) AND CAPPED WITH CONCRETE. ACTIVE WATERLINES WILL REQUIRE PLUGS/CI CAPS AND THRUST BLOCKS. THE COST FOR THIS WILL BE INCLUDED IN THE INSTALLATION OF THE WATERLINE.
- NO TEMPORARY OR PERMANENT THRUST BLOCKS ALLOWED AGAINST NEW OR EXISTING PIPE. TEMPORARY THRUST BLOCKS (4X4 AGAINST TRENCH WALL) WILL BE ALLOWED.
- CONTRACTOR SHALL FIELD VERIFY INVERTS PRIOR TO COMPLETING CONNECTIONS TO EXISTING.
- CONTRACTOR SHALL HAUL OFF AND DISPOSE OF ANY EXCESS SPOIL MATERIAL, ANY MISCELLANEOUS DEBRIS, AND ANY STRUCTURES, PIPING OR OTHER DEBRIS CALLED OUT TO BE DEMOLISHED AT HIS OWN EXPENSE. ALL MATERIAL MUST BE DISPOSED OF IN AN APPROVED OFFSITE LOCATION.
- PIPE, FITTINGS, AND ACCESSORIES SHALL BE HANDLED IN SUCH A MANNER THAT WILL ENSURE INSTALLATION IN SOUND, UNDAMAGED CONDITION. EQUIPMENT, TOOLS, AND METHODS USED IN HANDLING AND INSTALLING PIPE AND FITTINGS SHALL NOT DAMAGE THE PIPE AND FITTINGS.

- THE INTERIOR OF ALL PIPE AND FITTINGS SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATTER PRIOR TO INSTALLATION. BEFORE JOINTING, ALL JOINT CONTACT SURFACES SHALL BE WIRE BRUSHED IF NECESSARY, WIPED CLEAN, AND KEPT CLEAN UNTIL JOINTING IS COMPLETED.
- PRECAUTIONS SHALL BE TAKEN TO PREVENT FOREIGN MATERIAL FROM ENTERING THE PIPE DURING INSTALLATION. DEBRIS, TOOLS, CLOTHING, OR OTHER OBJECTS SHALL NOT BE PLACED IN OR ALLOWED TO ENTER THE PIPE. END OF LINES TO BE PLUGGED TO PREVENT DEBRIS OR ANIMALS FROM ENTERING PIPE.
- CUTTING SHALL BE DONE IN A NEAT MANNER, WITHOUT DAMAGE TO THE PIPE OR THE LINING. CUTS SHALL BE SMOOTH, STRAIGHT, AND AT RIGHT ANGLES TO THE PIPE AXIS. AFTER CUTTING, THE ENDS OF THE PIPE SHALL BE DRESSED WITH A FILE OR POWER GRINDER TO REMOVE ALL ROUGHNESS AND SHARP EDGES. THE CUT ENDS OF PUSH-ON JOINT PIPE SHALL BE SUITABLY BEVELED.
- DIAMETRICALLY OPPOSITE NUTS SHALL BE TIGHTENED PROGRESSIVELY AND EVENLY.FINAL TIGHTENING SHALL BE DONE WITH A TORQUE LIMITING WRENCH SET FOR THE TORQUE RECOMMENDED BY THE COUPLING MANUFACTURER.
- BEFORE THE JOINT IS ASSEMBLED, THE FLANGE FACES SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATERIAL WITH A POWER WIRE BRUSH. THE GASKET SHALL BE CENTERED AND THE CONNECTING FLANGES DRAWN UP WATERTIGHT WITHOUT UNNECESSARY STRESSING OF THE FLANGES. ALL BOLTS SHALL BE TIGHTENED IN A PROGRESSIVE DIAMETRICALLY OPPOSITE SEQUENCE USING TORQUE WRENCHES AT SETTINGS RECOMMENDED BY THE MANUFACTURER. WHERE DISSIMILAR FLANGES ARE CONNECTED, AN INSULATING CONNECTION SHALL BE PROVIDED.
- ALL JOINTS SHALL BE WATERTIGHT AND FREE FROM LEAKS. EACH LEAK WHICH IS DISCOVERED WITHIN THE CORRECTION PERIOD STIPULATED IN THE GENERAL PROVISIONS SHALL BE REPAIRED BY AND AT THE EXPENSE OF THE CONTRACTOR.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PUMPING EQUIPMENT; PIPING CONNECTIONS BETWEEN THE PIPING AND THE NEAREST AVAILABLE SOURCE OF TEST WATER; PRESSURE GAUGES; AND OTHER EQUIPMENT, MATERIALS, AND FACILITIES NECESSARY FOR THE TESTS.
- ALL CONTRACTOR INSTALLED PIPE, FITTINGS, VALVES, PIPE JOINTS, AND OTHER MATERIALS WHICH ARE FOUND TO BE DEFECTIVE SHALL BE REMOVED AND REPLACED WITH NEW AND ACCEPTABLE MATERIALS, AND THE AFFECTED PORTION OF THE PIPING RETESTED BY AND AT THE EXPENSE OF THE CONTRACTOR.
- ALL VALVES SHALL HAVE THE MANUFACTURER AND SIZE OF THE VALVE VISIBLY CAST ON THE BODY OR ON A PLATE ATTACHED TO THE BODY OF THE VALVE. VALVES AND REQUIRED OPERATING APPURTENANCES SHALL BE THE PRODUCT OF THE SAME MANUFACTURER. VALVE SEALS SHALL BE ABLE TO PROVIDE TIGHT CLOSURE AND PREVENT METAL-TO-METAL CONTACT. VALVES SHALL OPEN RIGHT.
- THE CONTRACTOR IS RESPONSIBLE FOR:
  - NOTIFYING CUSTOMERS WHO MAY BE AFFECTED BY A WATER OUTAGE DURING CONSTRUCTION BY FACE TO FACE CONTACT AND DOOR HANGAR.
  - OBTAINING, AT THE CONTRACTORS EXPENSE, APPLICABLE LICENSES, PERMITS, BONDS, ETC.
- CONTRACTOR TO LOCATE AND EXPOSE EXISTING SERVICE LINES, VERIFY SIZE AND MATERIAL, HAVE NECESSARY PARTS ON SITE FOR TEMPORARY WATER HOOKUP. CONNECTION TO SERVICE LINE IMMEDIATELY AFTER CUTTING TO PREVENT WATER FROM DRAINING FROM THE HOUSE. EXTRA PARTS, CORPS, SADDLES IN CASE EXISTING CORP IS BROKE OR PULLED FROM THE MAINLINE.

TESTING AND INSPECTION NOTES:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL REQUIRED OR NECESSARY INSPECTIONS ARE COMPLETED BY AUTHORIZED INSPECTORS PRIOR TO PROCEEDING WITH THE SUBSEQUENT WORK WHICH COVERS OR THAT IS DEPENDENT ON THE WORK TO BE INSPECTED. FAILURE TO OBTAIN NECESSARY INSPECTION(S) AND APPROVAL(S) SHALL RESULT IN THE CONTRACTOR BEING FULLY RESPONSIBLE FOR ANY ISSUES ARISING FROM UN-INSPECTED WORK.
- NEWLY INSTALLED WATER MAINS SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH THE SPECIFICATIONS.
- NEWLY INSTALLED WATER MAINS, PIPING, EQUIPMENT, ETC. MUST BE DISINFECTED PER AWWA STANDARD C651 (LATEST EDITION). THE WATER STORAGE TANK SHALL BE DISINFECTED PER AWWA STANDARD C652 (LATEST EDITION). THE PREFERRED METHOD FOR CHLORINATION OF WATER MAINS IS TO USE SUFFICIENT CHLORINE TABLETS TO PRODUCE A 50 MG/L SOLUTION. TABLETS SHOULD BE ATTACHED TO THE TOP OF THE PIPE WITH AN APPROVED ADHESIVE CERTIFIED TO NSF STANDARD 61, PRIOR TO THE PIPE INSTALLATION IN THE TRENCH. CHLORINATION OF ANY FINISHED PIPELINE SHALL BE COMPLETED PRIOR TO HYDROSTATIC TESTING.
- CONTRACTOR IS REQUIRED TO PERFORM CLEAR WATER SAMPLING. ENGINEER MUST SEE PASSING LAB RESULTS PRIOR TO PRESSURE TESTING AND CONNECTING SERVICE LINES TO NEW LINES.
- THE WATER QUALITY CONTROL DIVISION OF THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) REQUIRES ALL WATER LINE CONTRACTORS POSSESS A CURRENT DISCHARGE PERMIT FOR THE DISCHARGES OF CHLORINATED AND PROCESS WATERS ASSOCIATED WITH THE INSTALLATION OF NEW MAINS, TANKS, ETC.

BACKFILLING AND COMPACTION NOTES:

- ALL TRENCHES SHALL BE BACKFILLED AFTER PIPE, FITTINGS AND APPURTENANCES HAVE BEEN INSTALLED, INSPECTED AND APPROVED BY THE INSPECTOR.
- WHENEVER A COMPACTION REQUIREMENT VALUE IS SPECIFIED HEREIN, THE OPTIMUM MOISTURE CONTENT AND STANDARD PROCTOR DENSITY SHALL BE DETERMINED IN ACCORDANCE WITH ASSHTO T-99 FOR NINETY-FIVE PERCENT (95%).

DENSITY REQUIREMENTS IN TRENCH – THE OWNER SHALL OBTAIN A STANDARD PROCTOR DENSITY OF NINETY-FIVE (95%) STANDARD PROCTOR FOR THE TOTAL DEPTH OF ALL TRENCHES IN OPEN FIELDS AND IN DEDICATED ROWS. BACKFILLING SHALL BE DONE WITH GOOD SOUND EARTH, SAND OR GRAVEL, AND NO BITUMINOUS PAVEMENT, CONCRETE, ROCK OR OTHER LUMPY MATERIAL SHALL BE USED IN THE BACKFILL. UNLESS THESE MATERIALS ARE SCATTERED AND DO NOT EXCEED SIX INCHES (6") IN ANY DIMENSION AND NOT PLACED WITHIN ONE FOOT OF THE 2-1/2' LIMIT. MATERIAL OF PERISHABLE, SPONGY OR OTHERWISE IMPROPER NATURE SHALL NOT BE USED IN BACKFILLING AND NO MATERIAL GREATER THAN TWO INCHES (2") IN ANY DIMENSION SHALL BE PLACED WITHIN ONE FOOT (1') OF ANY PIPE OR ROADWAY SURFACE, MANHOLE OR STRUCTURE. BACKFILLING SHALL BE ACCOMPLISHED IN THE ZONE IN LAYERS NOT TO EXCEED TWO FEET (2') OR AS RECOMMENDED BY TESTER. ALL BACKFILL MATERIAL SHALL BE SUBJECT TO THE APPROVAL OF THE DISTRICT ENGINEER.

COMPACTED FILL – COMPACTION SHALL BE DONE BY THE USE OF VIBRATORY EQUIPMENT, TAMPING ROLLERS, PNEUMATIC TIRE ROLLERS OR OTHER MECHANICAL TAMPERS OF THE TYPE AND SIZE APPROVED BY THE INSPECTOR. HAND TAMPERS SHALL BE USED AROUND ALL MANHOLES, VALVE BOXES, AND ANY SURFACE STRUCTURE. THE BACKFILL SHALL BE PLACED IN HORIZONTAL LAYERS OF SUCH DEPTHS AS ARE CONSIDERED PROPER FOR THE TYPE OF COMPACTING EQUIPMENT BEING USED IN RELATION TO THE BACKFILL MATERIAL BEING PLACED. EACH LAYER SHALL BE EVENLY SPREAD, PROPERLY MOISTENED AND COMPACTED. ANY DAMAGE TO THE PIPE AS A RESULT OF CONTRACTOR'S OPERATION SHALL BE REPAIRED AND/OR REPLACED.

PROCEDURE AT STREET ZONE – THE TOP TWO AND ONE-HALF-FOOT (2-1/2') FROM FINISH STREET GRADE OR GROUND SURFACE, AS THE CASE MAY BE, SHALL BE COMPACTED IN HORIZONTAL LAYERS NOT EXCEEDING EIGHT INCHES (8") IN THICKNESS, USING APPROVED HAND PNEUMATIC OR MECHANICAL TYPE TAMPERS TO OBTAIN A STANDARD PROCTOR DENSITY OF NINETY-FIVE PERCENT (95%) FLOODING AND JETTING ARE NOT PERMITTED.

COMPACTION TESTS – COMPACTION TESTS WILL BE TAKEN BY AN APPROVED TESTING LABORATORY AT LOCATIONS DESIGNATED BY THE INSPECTOR. ALL EXPENSES INVOLVED IN THESE TESTS WILL BE BORNE BY PHHOA WHO WILL HIRE AND PAY TESTING LABORATORY DIRECTLY. IN ALL CASES WHERE THE TESTS INDICATE COMPACTION LESS THAN THAT REQUIRED IN THESE STANDARDS, ADDITIONAL COMPACTION AND TESTS WILL BE REQUIRED AT THE EXPENSE OF THE CONTRACTOR UNTIL THESE SPECIFICATIONS ARE MET. PROBATIONARY ACCEPTANCE OF THE LINES BY THE DISTRICT WILL BE CONTINGENT UPON SATISFACTORY COMPACTION RESULTS. NO HYDROSTATIC TESTING OF THE FORCE MAIN WILL BE ALLOWED UNTIL SATISFACTORY COMPACTION IS OBTAINED FREQUENCY OF TESTING WILL BE AS FOLLOWS:

- ONE (1) TEST AT EVERY ABOVE GROUND APPURTENANCE (I.E. VALVE BOX, MANHOLE) AT TWO-FOOT (2.0') INCREMENTS.
- ONE (1) TEST EVERY TWO-HUNDRED (200) LF OF MAINLINE AND 1 TEST PER SERVICE LINE TRENCHES AT TWO-FOOT (2.0') INCREMENTS BEGINNING TWO FEET (2') ABOVE SQUEEGE TO FINAL GRADE AND ONE TEST AT FINAL GRADE.

PERMITS

- CONTRACTORS SHALL OBTAIN ALL NECESSARY COUNTY, STATE, AND FEDERAL PERMITS REQUIRED TO COMPLETE INSTALLATION.
- TYPICAL PERMITS INCLUDE RIGHT-OF-WAY PERMITS, STREET CUT PERMITS, STORMWATER DISCHARGE PERMITS, AND DISCHARGE OF POTABLE WATER.

- CONTRACTOR TO PROVIDE EROSION CONTROL PLANS AND A TRAFFIC CONTROL PLANS TO JEFFERSON COUNTY FOR APPROVAL. PLANS MUST BE SUBMITTED TO ENGINEER FOR APPROVAL AS WELL.

PIPE

- FOR ALL WATER MAINS AND LATERALS BELOW 7,250 FEET ELEVATION, PIPE SHALL BE DIP CLASS 50 WITH A PRESSURE RATING OF 350 PSI.
- FOR ALL WATER MAINS AND LATERAL ABOVE 7250 IN ALTERNATE 1, PIPE SHALL BE PVC DR-14 WITH A PRESSURE RATING OF 305 PSI.
- FOR ALL FIRE HYDRANT LINES, DIP SHALL BE CLASS 52.
- DIP SHALL BE LINED PER THE CURRENT STANDARDS OF AWWA C104 – CEMENT-MORTAR LINING FOR DUCTILE-IRON PIPE AND FITTINGS.
- DIP SHALL BE COATED WITH SHOP-APPLIED ASPHALTIC COATING.

PIPE COVER DEPTH:

- MINIMUM COVER SHALL 6 FEET FROM FINISHED GRADE TO TOP OF PIPE.

TRACER WIRE:

- TRACER WIRE SHALL BE 12-GAUGE COPPER WIRE (COATED) AND USED ON ALL PIPE INSTALLATIONS.
- TEST STATIONS SHALL BE SET UP AT A MINIMUM OF 500-FOOT INTERVALS AND AT EVERY FIRE HYDRANT.

WARNING TAPE:

- WARNING TAPE SHALL BE LABELED "CAUTION: WATER LINE BELOW" OR EQUIVALENT WITH BLACK LETTERING ON A BLUE BACKGROUND AND BE PLACED ON TOP OF BEDDING MATERIAL.

POLYETHYLENE WRAP:

- POLYETHYLENE WRAP SHALL MEET THE CURRENT STANDARDS OF AWWA C105 – POLYETHYLENE ENCASEMENT FOR DUCTILE-IRON PIPE SYSTEMS AND BE 8-MIL THICKNESS, TO BE USED ON ALL DIP, FITTINGS, AND VALVES. POLYETHYLENE WRAP SHALL BE TAPED TIGHTLY WITH AT LEAST THREE LAYERS OF 2-INCH WIDE TAPE SUITABLE FOR SUCH USE.

RESTRAINTS:

- PIPE, FITTINGS, VALVES, AND FIRE HYDRANTS SHALL BE RESTRAINED PER THE STANDARD DETAILS.
- MECHANICAL JOINTS SHALL BE RESTRAINED PER THE STANDARD DETAILS.
- DIP MECHANICAL JOINT RESTRAINTS SHALL BE EBBA IRON 1100 MEGALUG.
- DIP RESTRAINTS SHALL BE EBBA IRON 1900 SPLIT SERRATED RESTRAINT HARNESS.
- PVC MECHANICAL JOINT RESTRAINTS SHALL BE EBBA IRON 2000 PV MEGALUG.
- PVC PIPE RESTRAINTS SHALL BE EBBA IRON 1700 MEGALUG HARNESS.
- FITTINGS, FIRE HYDRANTS, AND PLUGS SHALL BE PROTECTED USING CONCRETE THRUST BLOCKS PER THE STANDARD DETAILS AND IN ADDITION TO RESTRAINTS.

FITTINGS

- FITTINGS SHALL BE DUCTILE IRON AND MEET THE CURRENT STANDARDS OF AWWA C110 – DUCTILE-IRON AND GRAY-IRON FITTINGS.
- FITTINGS SHALL BE RATED TO 350 PSI.
- FITTINGS SHALL UTILIZE MECHANICAL JOINTS AND BE RESTRAINED PER THE STANDARD DETAILS.
- FITTINGS SHALL BE LINED PER THE CURRENT STANDARDS OF AWWA C104 – CEMENT-MORTAR LINING FOR DUCTILE-IRON PIPE AND FITTINGS.

VALVES AND BOXES:

- GATE VALVES SHALL MEET THE CURRENT STANDARDS OF AWWA C509 – RESILIENT-SEATED GATE VALVES FOR WATER SUPPLY SERVICE AND BE SUITABLE FOR BURIED SERVICE.
- GATE VALVES SHALL BE MANUFACTURED BY MUELLER
- GATE VALVES SHALL BE RATED TO 350 PSI.
- GATE VALVES SHALL UTILIZE MECHANICAL JOINTS AND BE RESTRAINED PER THE STANDARD DETAILS.

- GATE VALVES SHALL OPEN TO THE LEFT (COUNTER-CLOCKWISE).
- VALVE BOXES SHALL BE TYLER UNION 6860 SCREW TYPE VALVE BOX WITH #160 BASE.

FIRE HYDRANTS

- FIRE HYDRANTS SHALL MEET THE CURRENT STANDARDS OF AWWA C502-73 – DRY-BARREL FIRE HYDRANTS.
- FIRE HYDRANTS SHALL BE FOR 6' BURY DEPTH WITH 18" FROM BOTTOM OF STEAMER TO SURFACE LEVEL.
- FIRE HYDRANTS SHALL BE MANUFACTURED BY MUELLER (OR DISTRICT ENGINEER APPROVED EQUAL), SUPER CENTURION MODEL A-473 WITH A 5-1/4-INCH PUMPER NOZZLE AND TWO 2-1/2-INCH HOSE NOZZLES.
- FIRE HYDRANTS SHALL BE RATED TO 350 PSI.
- FIRE HYDRANTS SHALL OPEN TO THE LEFT (COUNTER-CLOCKWISE).
- FIRE HYDRANTS TO BE FACTORY RED

SERVICE LINES:

- SERVICE LINES SHALL BE ¾-INCH, SEAMLESS TYPE K COPPER TUBING IN ACCORDANCE WITH ASTM B88.
- SERVICE LINES SHALL BE BEDDED IN WELL GRADED SAND OR SQUEEGEE AS SPECIFIED IN THESE STANDARDS.
- SERVICE LINES SHALL BE BURIED A MINIMUM OF 6 FEET BELOW GRADE.
- SERVICE LINES SHALL INCLUDE A CORPORATION STOP CC THREAD TO COMPRESSION AT THE MAIN THAT IS ANGLED AT 45° ABOVE HORIZONTAL AND UTILIZE A TAPPING SADDLE. TAPPING SADDLE TO BE BRONZE DOUBLE STRAP.
- SERVICE LINES SHALL INCLUDE A COMPRESSION CURB STOP AT THE PROPERTY LINE. THE CURB STOP SHALL BE OF THE STOP AND WASTE TYPE AND INCLUDE A CAST IRON VALVE BOX TO GRADE. CURB BOX TO BE AY MCDONALD 5603 WITH STATIONARY ROD.

DISINFECTION

- ALL PIPE SHALL BE DISINFECTED WITH SODIUM HYPOCHLORITE IN ACCORDANCE WITH THE CURRENT STANDARDS OF AWWA C651 – DISINFECTING WATER MAINS.
- CONTRACTOR SHALL PROVIDE ALL NECESSARY CONNECTIONS TO PERFORM DISINFECTION.
- ALL PIPE DISINFECTION SHALL BE COORDINATED AND VERIFIED THROUGH THE JEFFERSON COUNTY HEALTH DEPARTMENT THROUGH BACTERIOLOGICAL TESTING.
- FOLLOWING SUCCESSFUL DISINFECTION, THE PIPE SHALL BE FLUSHED TO REMOVE HIGH STRENGTH CHLORINATED WATER. HIGH STRENGTH CHLORINATED WATER MUST BE NEUTRALIZED IF DISCHARGED TO THE SURFACE.

PRESSURE TESTING

- ALL PIPE SHALL BE PRESSURE TESTED IN ACCORDANCE WITH THE CURRENT STANDARDS OF AWWA C600 – INSTALLATION OF DUCTILE-IRON MAINS AND THEIR APPURTENANCES.
- CONTRACTOR SHALL PROVIDE ALL NECESSARY CONNECTIONS TO PERFORM PRESSURE TESTING.
- PRESSURE TESTING SHALL BE PERFORMED ON PIPE SECTIONS LESS THAN 2,000 FEET IN LENGTH.
- PRESSURE TESTING SHALL BE AT A MINIMUM OF 150 PSI OR 150% OF STATIC PRESSURE, WHICHEVER IS GREATER, BUT NO MORE THAN THE RATED PRESSURE OF THE PIPE.
- PIPE SHALL BE FILLED IN A MANNER TO REMOVE ALL AIR FROM THE PIPE. PIPE SHALL ALSO BE FILLED SLOWLY TO ALLOW AIR TO VENT AND PREVENT PRESSURE SURGES.
- THE PIPE ALIGNMENT SHALL BE VISUALLY INSPECTED FOR SIGN OF LEAKAGE.
- ONCE PRESSURIZED, THE TEST SHALL RUN FOR TWO (2) HOURS, WITH ALLOWABLE LEAKAGE RATES AS FOLLOWS:

ALLOWABLE LEAKAGE		
PIPE SIZE (INCHES)	GALLONS PER 1,000 FEET PER HOUR	GALLONS PER 1,000 FEET PER 2 HOURS
6	0.50	1.00
8	0.66	1.32



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PREPARED UNDER THE DIRECT SUPERVISION OF



FOR AND ON BEHALF OF  
ELEMENT ENGINEERING, LLC

DATE  
MAY 2021

JOB NUMBER  
0064.0003

SCALE  
N/A

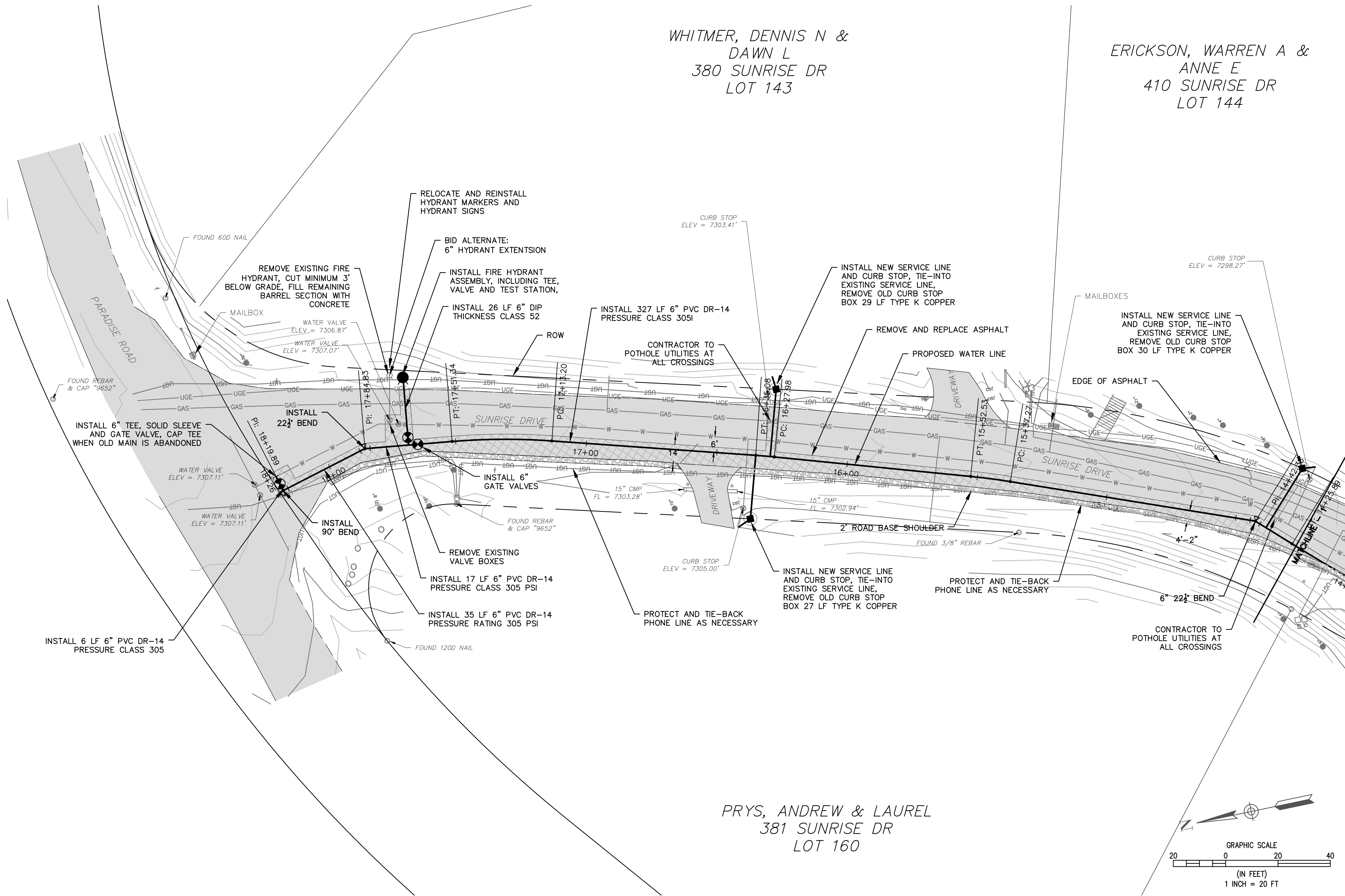
DRAWING NAME  
NOTES

SHEET  
2 OF 8









NOTES:

1. MAXIMUM TRENCH WIDTH 4' WIDE
2. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION AND RESEED.
3. CONTRACTOR TO PROTECT ALL MAILBOXES, DRIVEWAYS AND CULVERTS.

PRYS, ANDREW & LAUREL  
381 SUNRISE DR  
LOT 160

NO.	REVISIONS	DESCRIPTION	DATE	BY

SUNRISE DRIVE	SUNRISE DRIVE
PARADISE HILLS HOA 25754 BRISLEONE CT. GOLDEN, CO 80401	

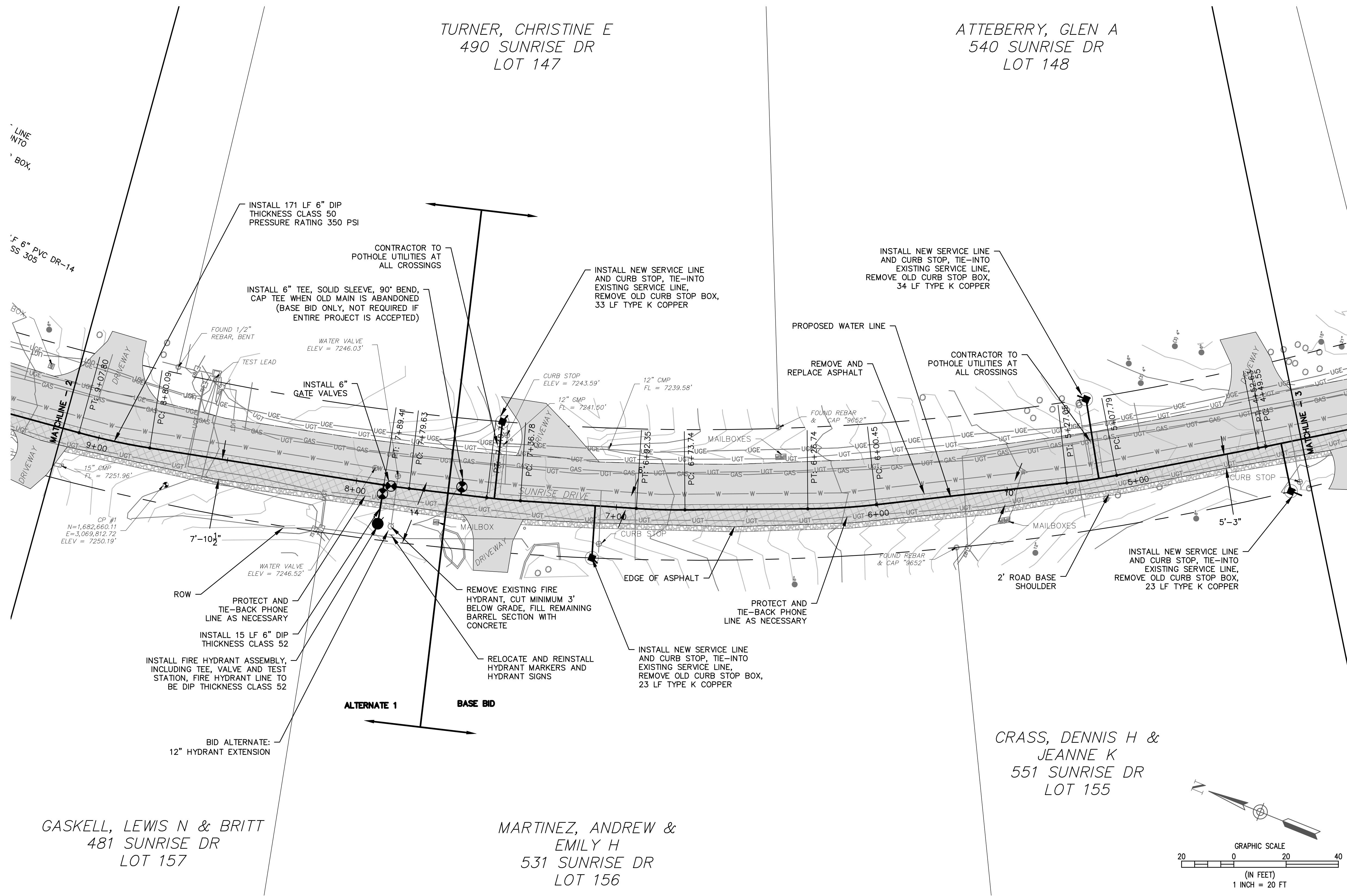


DATE MAY 2021
JOB NUMBER 0064.0003
SCALE 1 INCH = 20 FT
DRAWING NAME PLANS
SHEET 4 OF 8









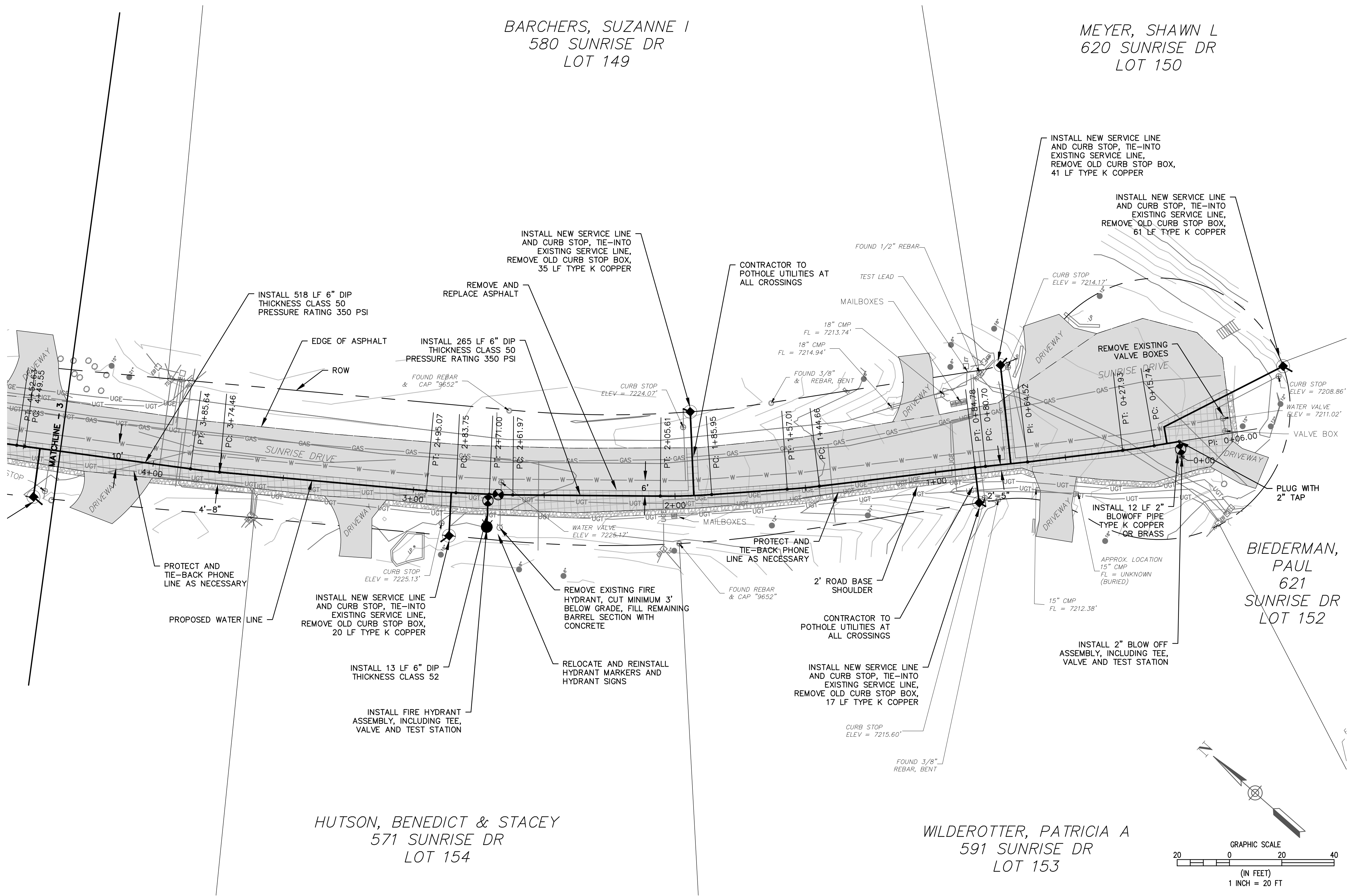
- NOTES:
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  2. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION AND RESEDED.
  3. CONTRACTOR TO PROTECT ALL MAILBOXES, DRIVEWAYS AND CULVERTS.

NO.	REVISIONS	DESCRIPTION	DATE	BY

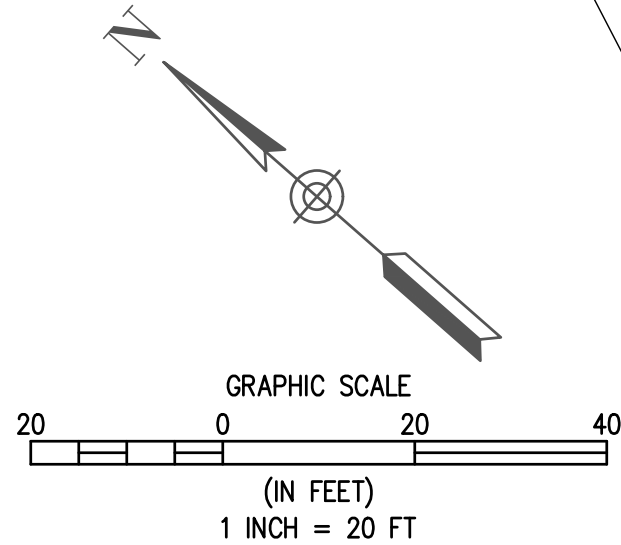
SUNRISE DRIVE	
WATER BASE BID	
PARADISE HILLS HOA 25754 BRISTLEcone CT. GOLDEN, CO 80401	

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC	
DATE MAY 2021	
JOB NUMBER 0064.0003	
SCALE 1 INCH = 20 FT	
DRAWING NAME PLANS	
SHEET 6 OF 8	





- NOTES:
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  2. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION AND RESEED.
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REVISIONS			
NO.	DESCRIPTION	DATE	BY

SUNRISE DRIVE	
WATER BASE BID	
PARADISE HILLS HOA 25754 BRISLEONE CT. GOLDEN, CO 80401	

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ELEMENT ENGINEERING, LLC

DATE  
MAY 2021

JOB NUMBER  
0064.0003

SCALE  
1 INCH = 20 FT

DRAWING NAME  
PLANS

SHEET  
7 OF 8



