# PUBLIC IMPROVEMENT PLANS **FOR**

# JACKSON MIDDLE SCHOOL

10600 INDIAN SCHOOL RD. NE ALBUQUERQUE, NM 87112

**MAY 2017** 

PREPARED FOR ALBUQUERQUE PUBLIC SCHOOLS 915 LOCUST ST SE ALBUQUERQUE, NM 87106

PREPARED BY SCOTT M. McGEE PE, LLC 9700 TANOAN DRIVE NE ALBUQUERQUE, NM 87111

## **INDEX TO DRAWINGS** SHEET NO.

**COVER SHEET** 

SITE BOUNDARY

**GRADING PLAN** 

**EROSION CONTROL PLAN** 

UTILITY PLAN

## WATER LINE PLAN AND PROFILE SHEETS:

TITLE

WEST WATER LINE STA 1+00 TO 7+50

SOUTH WATER LINE STA 7+50 TO 15+00

TRACER WIRE SPECIFICATIONS AND DETAILS

**CERTIFICATE OF SUBSTANTIAL COMPLIANCE ON RECORD DRAWINGS** 

I, Scott M McGee of the firm of SCOTT M MCGEE PE, LLC a Registered Professional Engineer in the State of New Mexico, do hereby certify, to the best of my knowledge and belief, that the infrastructure installed as part of this project has been inspected by me or by a qualified person under my direct supervision and has been constructed in accordance with the plans and specifications approved by the City Engineer and that the original design intent of the approved plans has been met, except as noted by me on the as-built construction drawings. This Certification is based on site inspections by me or personnel under my direction and survey information provided by Charles G Cala / High Mesa Consulting Group, NMPS number 11184.



**GENERAL NOTES** 

- 1. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986 EDITION THROUGH UPDATE #9 AND WILL BE REFERRED TO HEREIN AS "STANDARD
- 2. ALL CONSTRUCTION WITHIN CITY RIGHT-OF-WAY MUST BE DONE FROM APPROVED WORK ORDER DOCUMENTS FROM
- 3. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES, RULES, AND REGULATIONS
- AND ALL LIABILITY REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
- 5. ALL EXCAVATION, TRENCHING, AND SHORING ACTIVITIES MUST BE ACCOMPLISHED IN ACCORDANCE WITH OSHA 29CFR 1926.650 SUBPART P.
- 6. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY OR ABCWUA EASEMENTS.
- 7. CONTRACTOR SHALL NOTIFY THE ENGINEER NOT LESS THAN SEVEN (7) DAYS PRIOR TO STARTING WORK IN ORDER THAT THE CITY SURVEYOR MAY TAKE NECESSARY MEASURES TO INSURE THE PRESERVATION OF SURVEY MONUMENTS. CONTRACTOR SHALL NOT DISTURB PERMANENT SURVEY MONUMENTS WITHOUT THE CONSENT OF THE CITY SURVEYOR AND SHALL NOTIFY THE CITY SURVEYOR AND BEAR THE EXPENSE OF REPLACING ANY THAT MAY BE SURVEYOR SHALL REPLACE SURVEY MONUMENTS. WHEN A CHANGE IS MADE IN THE FINISHED ELEVATIONS OF THE PAVEMENT OF ANY ROADWAY IN WHICH A PERMANENT SURVEY MONUMENT IS LOCATED, CONTRACTOR SHALL, AT HIS OWN EXPENSE, ADJUST THE MONUMENT COVER TO THE NEW GRADE UNLESS OTHERWISE SPECIFIED. REFER TO STANDARD SPECIFICATIONS SECTION 4.4.
- 8. SEVEN (7) WORKING DAYS PRIOR TO STARTING CONSTRUCTION, CONTRACTOR SHALL SUBMIT TO DMD CONSTRUCTION COORDINATION DIVISION (CCD) A DETAILED CONSTRUCTION SCHEDULE. TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION, CONTRACTOR SHALL OBTAIN A BARRICADING PERMIT FROM THE DMD CCD. CONTRACTOR SHALL NOTIFY BARRICADE ENGINEER (924-3400) PRIOR TO OCCUPYING AN INTERSECTION. REFER TO SECTION 19 OF STANDARD SPECIFICATIONS. PERMIT REQUESTS MAY BE DENIED OR DELAYED DUE TO CONFLICTS WITH OTHER PROJECTS IN THE AREA.
- 9. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM (260-1990) FOR LOCATION OF EXISTING UTILITIES.

10. CONTRACTOR SHALL ASSIST THE ENGINEER/INSPECTOR IN THE RECORDING OF DATA ON ALL UTILITY LINES AND FOR THE PREPARATION OF "AS CONSTRUCTED" DRAWINGS CONTRACTOR SHALL NOT COVER UTILITY LINES AND ACCESSORIES UNTIL ALL DATA HAS BEEN RECORDED

APPROVED AS RECORD DRAWING DESIGN REVIEW SECTIONS

- FROM THOSE SECTIONS INDICATED FOR REMOVAL ON THE PLANS AND SHALL REPAIR OR REPLACE, PER STANDARD
- 12.ALL STREET STRIPING ALTERED OR DESTROYED SHALL BE REPLACED WITH PLASTIC REFLECTORIZED PAVEMENT MARKING BY CONTRACTOR TO THE SAME LOCATION AS EXISTING OR AS INDICATED BY THIS PLAN SET.
- 13. CONTRACTOR SHALL MAINTAIN A GRAFFITI-FREE WORK SITE. CONTRACTOR SHALL PROMPTLY REMOVE ALL GRAFFITI FROM EQUIPMENT, EITHER PERMANENT OR TEMPORARY.
- 14. CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL CONSTRUCTION SIGNING UNTIL THE PROJECT HAS BEEN ACCEPTED BY THE CITY OF ALBUQUERQUE.

## **WATER & SEWER**

- 15. ALL UTILITIES AND UTILITY SERVICE LINES SHALL BE INSTALLED PRIOR TO PAVING.
- 16. THE CONTRACTOR SHALL COORDINATE WITH THE ABCWUA SEVEN (7) DAYS IN ADVANCE OF PERFORMING WORK THAT AFFECTS PUBLIC WATER OR SANITARY SEWER INFRASTRUCTURE. WORK REQUIRING SHUTOFF OF WELL COLLECTORS, TRASMISSION LINES, OR FACILITIES DESIGNATED AS MASTER PLAN FACILITIES MUST BE COORDINATED WITH THE WATER AUTHORITY 14 DAYS IN ADVANCE OF PERFORMING SUCH WORK, ONLY WATER AUTHORITY CREWS ARE AUTHORIZED TO OPERATE PUBLIC VALVES. SHUTOFF REQUESTS MUST BE MADE ONLINE AT HTTP://ABCWUA.ORG/WATER\_SHUT\_OFF\_AND\_TURN\_ON\_PROCEDURES.ASPX.
- 17.PROPOSED WATERLINE MATERIALS SHALL BE PVC PIPE MEETING AWWA C-900: DR18 REQUIREMENTS (6" - 12"), DUCTILE IRON PIPE MEETING AWWA C-150 REQUIREMENTS (6" - 64"), SEWER MATERIALS SHALL BE PVC SDR 35.
- JOINTS AS NOTED ON THE PLANS. 19. ALL SANITARY SEWER LINE STATIONING REFERS TO SAS

18. ALL FITTINGS ON WATERLINE SHALL HAVE RESTRAINED

- SEWER CENTERLINE STATIONING.
- 20.ALL BACKFILL FOR TRENCHES WITHIN CITY R/W SHALL BE COMPACTED TO A MINIMUM OF 95% MAXIMUM DENSITY PER STANDARD DRAWING NO. 2465.
- 21.ELECTRONIC MARKER SPHERES (EMS) WILL BE PLACED PER SECTION 170 OF THE CITY OF ALBUQUERQUE SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986 EDITION AS REVISED THROUGH UPDATE #9.

## OTHER COMMON NOTES

22. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED

MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER AFTER CITY

**VICINITY MAP** 

- 23. CONTRACTOR SHALL SECURE A "TOPSOIL DISTURBANCE
- 24. CONTRACTOR SHALL DETERMINE IN ADVANCE OF HIS CONSTRUCTION IF OVERHEAD UTILITY LINES, SUPPORT STRUCTURES, POLES, GUYS, ETC, ARE AN OBSTRUCTION TO SHALL BE RESPONSIBLE FOR COORDINATING WITH THE APPROPRIATE UTILITY OWNER TO REMOVE OR SUPPORT THE UTILITY OBSTRUCTION. ANY COST ASSOCIATED WITH THIS EFFORT SHALL BE THE RESPONSIBILITY OF CONTRACTOR.
- 25. PNM WILL PROVIDE AT NO COST TO THE CITY OR THE CONTRACTOR THE REQUIRED PERSONNEL FOR OBSERVATION DEEMED NECESSARY BY PNM WHILE THE CONTRACTOR IS EXPOSING PNM'S CABLES. HOWEVER, THE CONTRACTOR SHALL BE CHARGED THE TOTAL COST ASSOCIATED WITH REPAIRS TO ANY DAMAGED CABLES OR FOR ANY COST ASSOCIATED WITH DAMAGING THE POLES AND CABLES DURING CONSTRUCTION.
- 26. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL PERTINENT EXISTING UTILITIES AND/OR OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT
- 27. EXISTING UTILITY LINE LOCATION ARE SHOWN IN AN APPROXIMATE MANNER ONLY AND LINES MAY EXIST WHERE NONE ARE SHOWN. THE LOCATION OF ANY EXISTING LINES IS BASED UPON INFORMATION PROVIDED BY THE UTILITY COMPANY, THE OWNER, OR BY OTHERS, AND MAY BE INCOMPLETE OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES.
- 28. THE ENGINEER HAS UNDERTAKEN NO FIELD VERIFICATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UNDERGROUND UTILITY LINES, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFORE. CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY, AND PRESERVE ALL EXISTING UTILITIES.
- 29. CONTRACTOR SHALL SUPPORT ALL EXISTING, UNDERGROUND UTILITY LINES WHICH BECOME EXPOSED DURING CONSTRUCTION. PAYMENT FOR SUPPORTING WORK SHALL BE INCIDENTAL TO WATERLINE AND/OR SEWER LINE COSTS.
- 30. CONTRACTOR IS TO SUPPORT AND MAINTAIN THE INTEGRITY OF ALL UNDERGROUND TELEPHONE, ELECTRIC CABLES AND CABLE TV UTILITIES AT NO ADDITIONAL COST TO THE OWNER. CABLE IS TO BE SUPPORTED EVERY 15 (MAXIMUM) FEET. CONTRACTOR SHALL COORDINATE WITH AND MAKE NECESSARY PAYMENT (IF ANY) TO UTILITY

OWNER FOR DE-ENERGIZATION OF CABLES OR SUPPORT O

J-21

EXCAVATED WITHIN THE PUBLIC R/W OR ROADWAY EASEMENTS SO THAT EXCAVATED MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET OR INTO ANY PUBLIC DRAINAGE FACILITY.

31. CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIA

- 32. REMOVALS SHALL BE DISPOSED OF OFF-SITE LEGALLY BY THE CONTRACTOR.
- MATERIAL IN AN ENVIRONMENTALLY ACCEPTABLE MANNER AT A LOCATION ACCEPTABLE TO THE PROJECT 34. CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A

33. CONTRACTOR SHALL DISPOSE OF ALL UNSUITABLE

LOCAL TRAFFIC AND PEDESTRIAN PATHS INCLUDING ADA

MANNER WHICH WILL MINIMIZE INTERFERENCE WITH

- 35. WORK AFFECTING ARTERIAL ROADWAYS MAY REQUIRE 24-HOUR CONSTRUCTION.
- 36. ALL EXISTING SIGNS, MARKERS, DELINEATORS, ETC., WITHIN THE CONSTRUCTION LIMITS SHALL BE REMOVED, STORED AND RE-SET BY THE CONTRACTOR.
- 37. WHEN ABUTTING EXISTING PAVEMENT TO NEW, SAWCUT EXISTING PAVEMENT TO A STRAIGHT EDGE AND AT A RIGHT ANGLE, OR AS APPROVED BY THE FIELD ENGINEER. REMOVAL OF BROKEN OR CRACKED PAVEMENT WILL ALSO
- 38. REMOVAL OF EXISTING CURB AND GUTTER OR SIDEWALK SHALL BE TO THE NEAREST JOINT. 39. CURB & GUTTER, SIDEWALKS, AND DRIVE PADS SHALL
- MATCH ELEVATIONS OF ABUTTING EXISTING AREAS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE PROJECT ENGINEER.
- 40. THE SUBGRADE PREP SHALL EXTEND ONE FOOT BEYOND THE FREE EDGE OF NEW CURB & GUTTER AND SIDEWALK.
- 41. OVERNIGHT PARKING OF CONSTRUCTION EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAYS OR DESIGNATED TRAFFIC LANES. CONTRACTOR SHALL NOT STORE ANY EQUIPMENT OR MATERIAL WITHIN PUBLIC R/W.
- 42. CONTRACTOR SHALL TEST SUBGRADE R-VALUE PRIOR TO CONSTRUCTION. IF R-VALUE < 50, REMOVE 2 FEET OF SUBGRADE MATERIAL AND IMPORT MATERIAL WITH R-VALUE > 50 OR CONTACT THE ENGINEER IMMEDIATELY SO PAVEMENT SECTION CAN BE MODIFIED.
- 43. TWO WEEKS PRIOR TO CONSTRUCTION CONTRACTOR SHALL NOTIFY TRANSIT DEPT OF ANY IMPACT THE PROPOSED WORK WILL HAVE ON TRANSIT SYSTEM SUCH AS CAUSING A DETOUR OR CAUSE THE CLOSING OR RELOCATION OF BUS STOP. CONTACT DOUGLAS GOFF (OFFICE) 724-3137 OR CELL 206-0151 OR AT DGOFF@CABQ.GOV.

/1,6,7 12.4.17 REV. SHEETS CITY ENGINEER DATE USER DEPARTMENT DATE USER DEPARTMENT DATE DATE ENGINEER'S STAMP & SIGNATURE APPROVALS ENGINEER DRC Chairman Transportation Water/Wastewater Hydrology City Engineer Date Constr. Mngmt. City Project No. Sheet 902080

SURVEYOR'S CERTIFICATION

I, Charles G. Cala, Jr., a duly qualified Registered

Professional Land Surveyor under the laws of the State of

New Mexico, do hereby certify that the "as-built"

information shown on these drawings was obtained from field construction and "as-built" surveys performed by me or under my supervision, that the "as-built" information shown

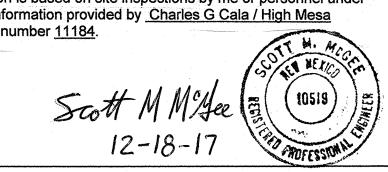
on these drawings was added by me or under my

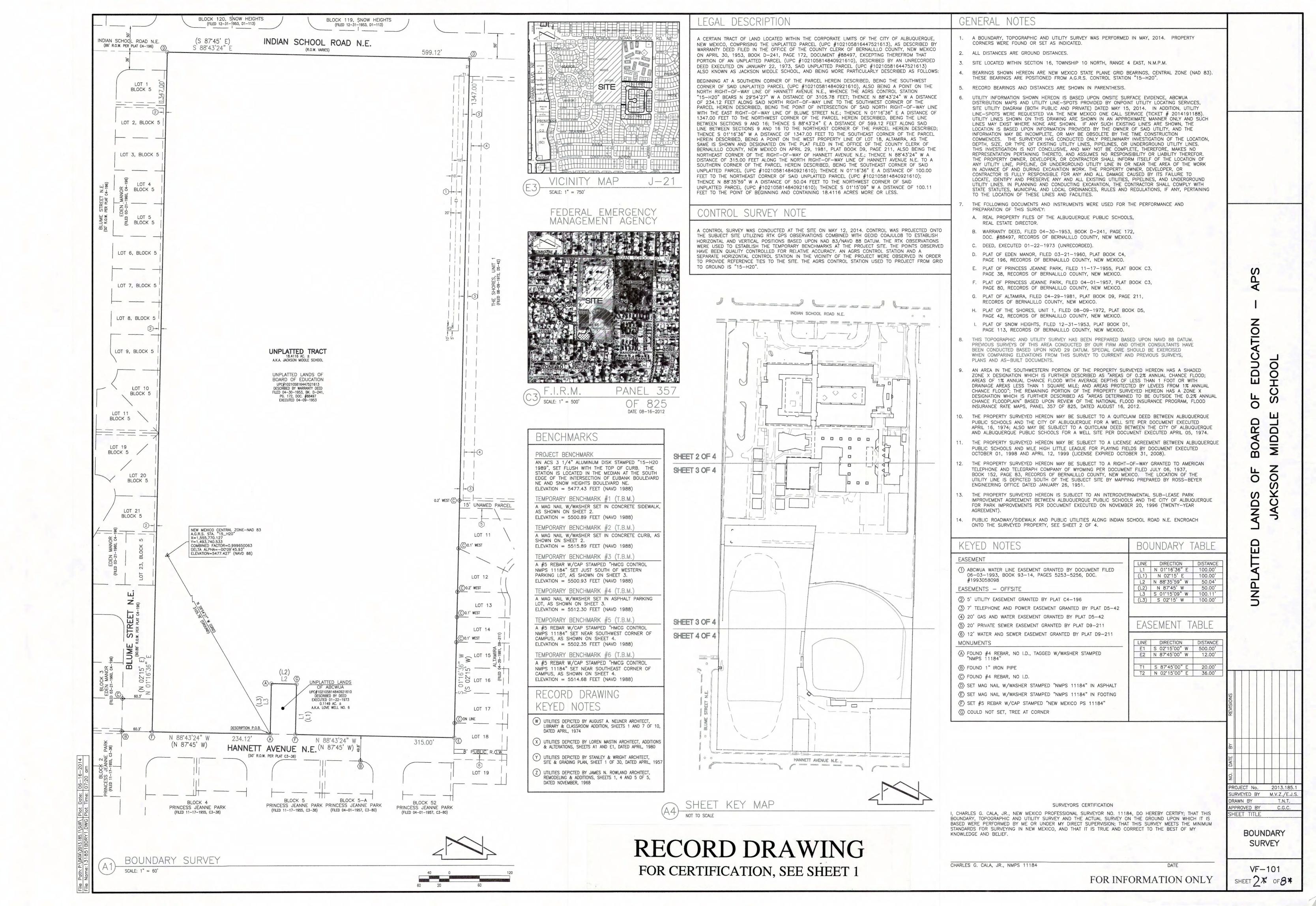
supervision, and that this "as-built" information is true and

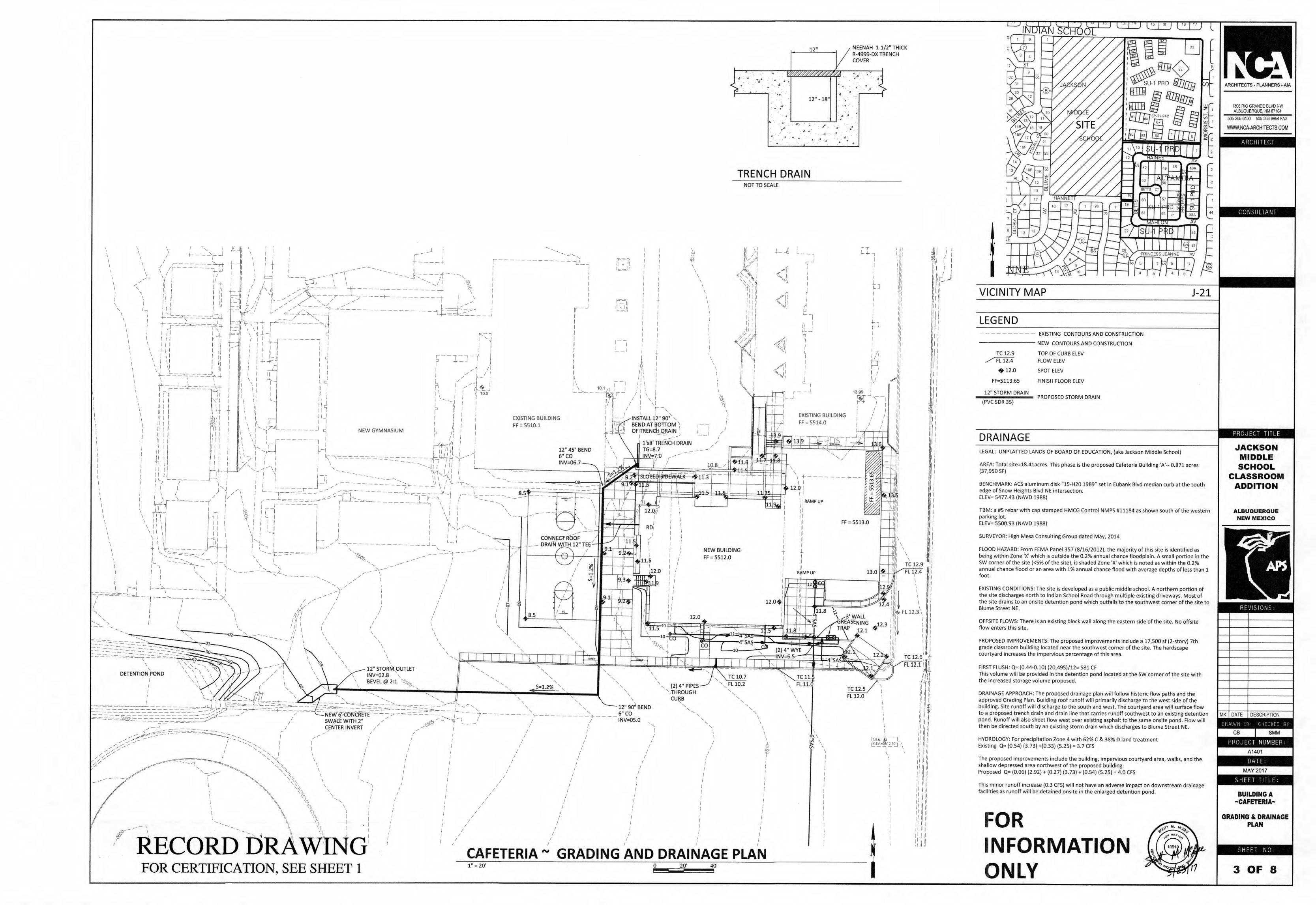
correct to the best of my knowledge and belief and that I am

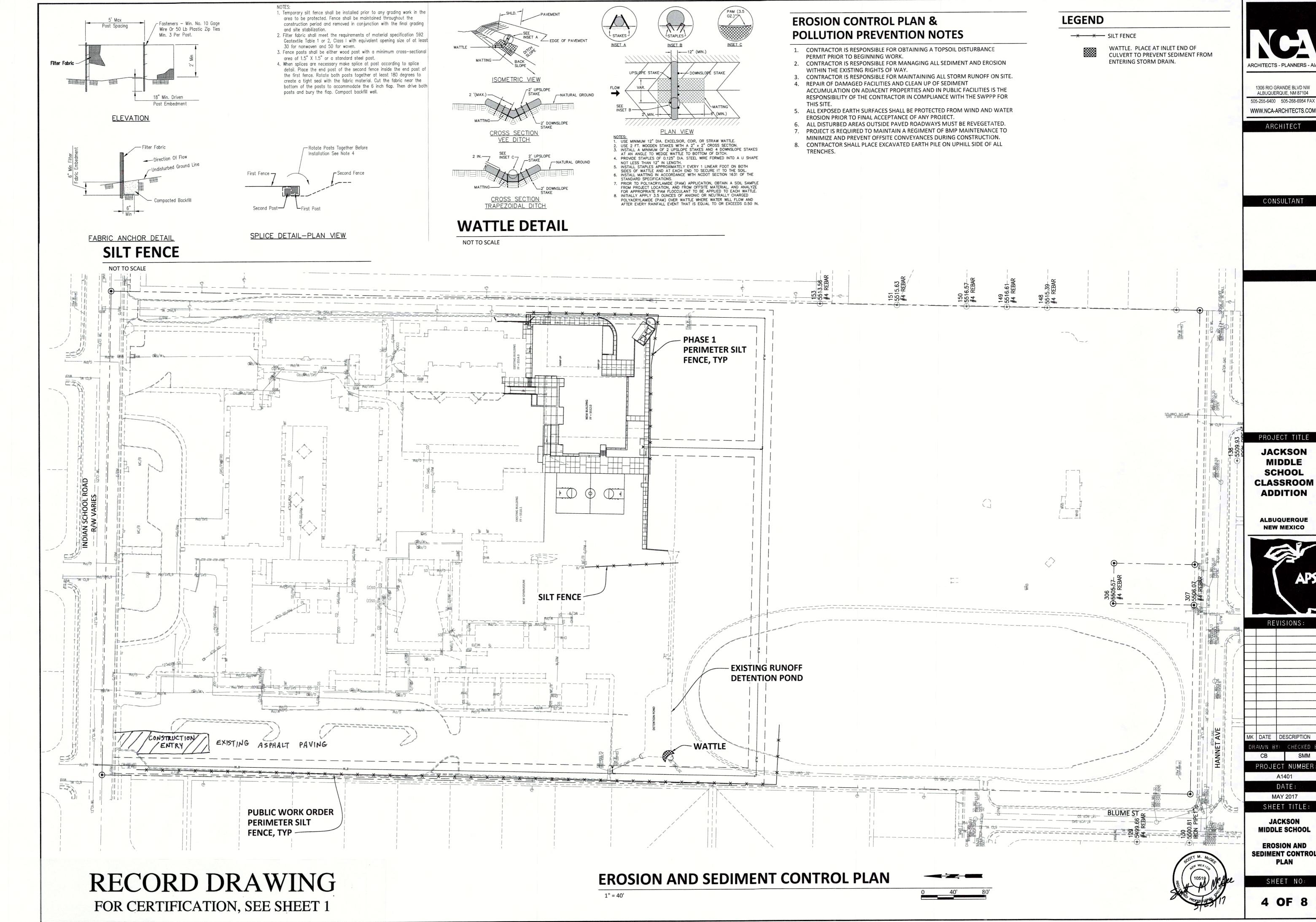
not responsible for any of the design concepts, calculations,

engineering, or intent of the record drawings.









1306 RIO GRANDE BLVD NW ALBUQUERQUE, NM 87104

**JACKSON** MIDDLE **SCHOOL CLASSROOM ADDITION** 

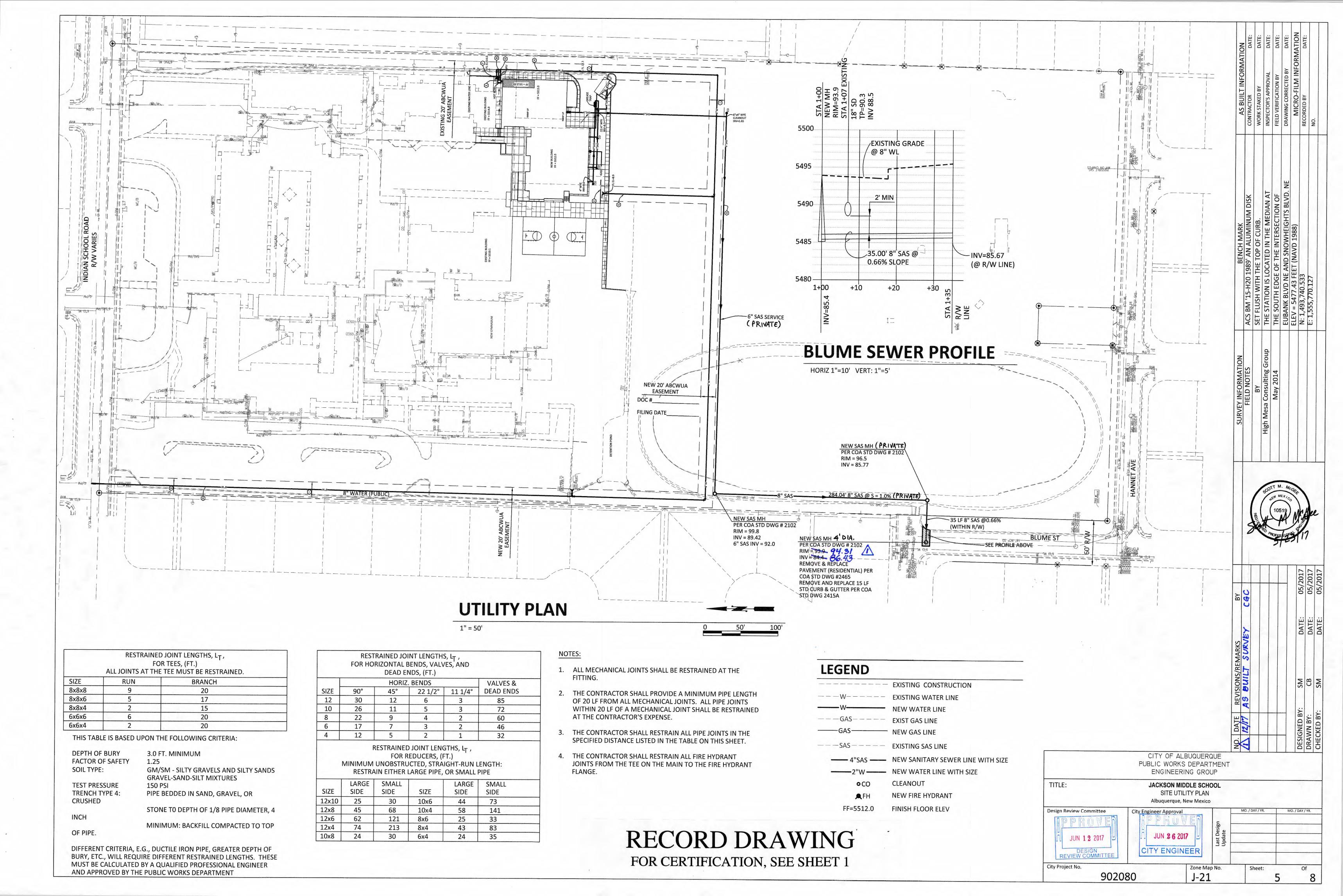
**ALBUQUERQUE** 

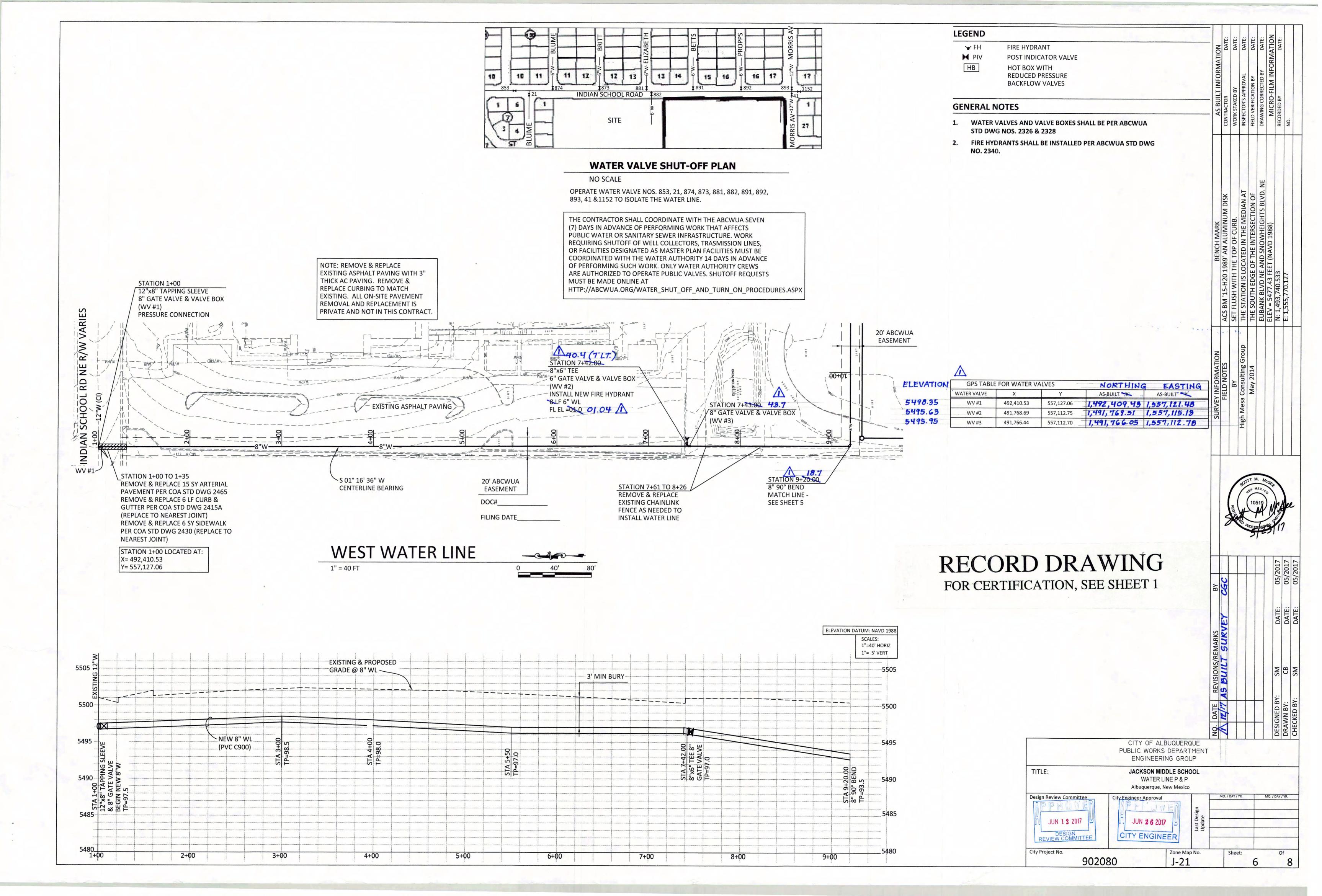


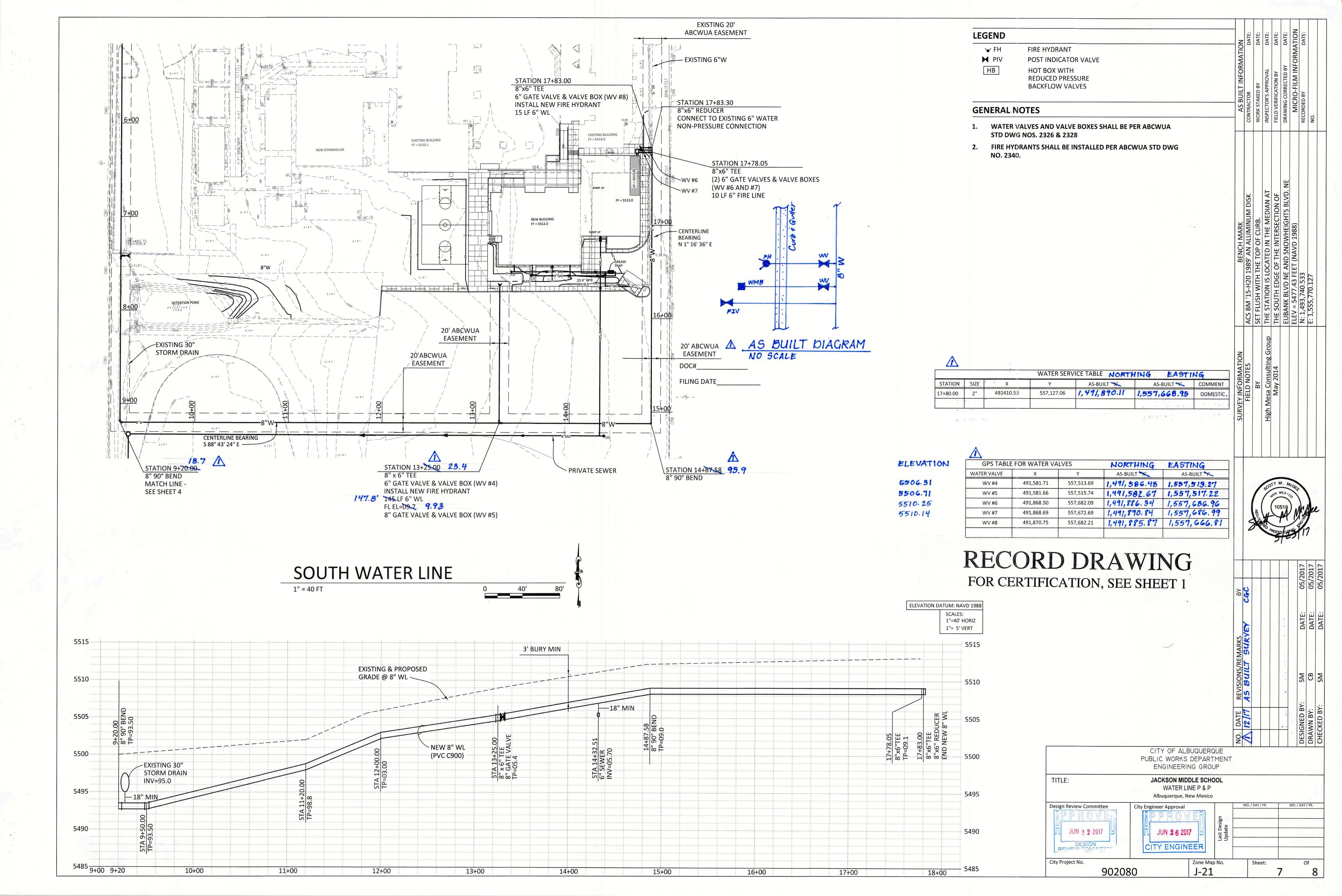
MIDDLE SCHOOL

SEDIMENT CONTROL

SHEET NO:







#### SECTION 33 05 26.23 UTILITY IDENTIFICATION TRACE WIRE

#### PART 1 GENERAL 1.1 SUMMARY

A. This technical specification covers the requirements for the installation of a conductive trace wire during the installation of water distribution, sewer and effluent (reuse) pipelines and appurtenances. The trace wire will be used for locating the pipelines, laterals, services and appurtenances with an electronic trace wire locator after installation.

### 1.2 MEASUREMENT AND PAYMENT

A. Payment for the work in this section shall be considered incidental to the pipeline being traced.

#### 1.3 REFERENCES

A. Where all or part of a Federal, ASTM, ANSI, AWWA, City of Albuquerque Standard Specifications for Public Works Construction, etc. is incorporated by reference in these specifications, the reference standard shall be the latest edition and revision.

#### 1.4 SUBMITTALS

A. The Contractor shall submit the manufacturer's data on materials furnished that indicate compliance with the specifications regarding materials used.

#### 1.5 QUALITY ASSURANCE

A. The products shown in this specification shall be used as approved on the Albuquerque Bernalillo County Water Utility Authority's Approved Product List (APL), or Engineer approved equal.

#### PART 2 PRODUCTS

#### 2.1 TRACE WIRE

- A. Open Trench Installation #12 AWG high strength copper clad steel (CCS) wire with minimum 450 pound break load and minimum 30 mil HDPE insulation thickness.
- B. Directional Drilling/Boring Installation #12 AWG high strength CCS wire with minimum 1,150 pound break load, with minimum 30 mil HDPE insulation thickness.
- C. Pipe Bursting/Slip Lining Installation High strength 7 x 7 stranded CCS wire with 4,700 pound break load, with minimum 50 mil HPDE insulation thickness.

- A. Tee Connections Single 3-way locking waterproof connector for 12 AWG. Connectors shall be approved by manufacturer for direct burial.
- B. Cross Connections Single 4-way locking waterproof connector for 12 AWG or two 3- way locking waterproof connectors for 12 AWG with a short jumper wire. Connectors shall be approved by manufacturer for direct
- C. Necessary Splices Single 3-way direct bury lug connector or twist connector rated up to 50 volts filled with dielectric silicone sealant to seal out moisture and corrosion and prevent uninsulated wire exposure. Connectors shall be approved by manufacturer for direct burial.
- D. Non-locking friction fit, twist on or taped connectors are prohibited.

#### 2.3 TEST STATIONS

- A. All trace wire test stations shall be made of corrosion-resistant materials and shall be equipped with 2-terminals, a flange to prevent the test station from sinking, and a locking cast iron cap with an encapsulated magnet for ease of locating the test station. The test station shall be specifically manufactured for trace wire access/testing.
- B. All trace wire test stations must include a manually interruptible conducting/connection link between the terminal(s) for the trace wire connection and terminal for the grounding anode wire connection.

### 2.4 GROUNDING ANODE

A. All grounding anodes shall be made of magnesium, with a pointed end to enable direct driving into the ground, specifically manufactured for this purpose. The anode shall come factory equipped with an HDPE cap and 20 feet of factory installed #12 AWG CCS wire with 30 mil HDPE coating (minimum 20 ft.) rated for direct burial at 30 volts with 21% conductivity. The wire shall have a minimum 282 pound break load.

## 2.5 COLOR CODING

A. Trace wire and test station caps shall be color coded per APWA standards for the specific utility being marked.

## PART 3 EXECUTION

## 3.1 OVERVIEW

- A. Trace wire shall be installed in such a manner as to be able to properly trace all pipelines and services, as applicable, without loss or deterioration of signal or without the transmitted signal migrating off the trace wire in the locations outlined below.
- 1. Water: The wire on all water mains and services and hydrants per the Standard Drawings.
- Sewer: On all sewer mains per the Standard Drawings. 3. Effluent (Reuse): On all effluent mains per the Standard Drawings.

- 3.2 INSTALLATION A. Trace Wire:
- 1. Trace wire shall be installed in the same trench and inside bored holes and casing with pipe during pipe
- 2. The trace wire shall be securely bonded together at all wire joints with an approved watertight connector to provide electrical continuity, and it shall be accessible at all trace wire access points.
- 3. Trace wire connectors shall be installed in a manner to prevent any uninsulated wire exposure 4. Except for approved spliced-in repair or replacement connections, trace wire shall be continuous and without splices between each trace wire access point. For required splices, either 3-way direct bury lug or twist connectors, both filled with dielectric silicone sealant, shall be used. Spliced wires must be knotted prior to being inserted in the connector to prevent separation from the connector in case the trace wires
- are stretched during backfilling operations. 5. Trace wire systems must be installed as a single continuous wire, except where using approved
- connectors. No looping or coiling of wire is allowed.
- 6. No breaks or cuts in the trace wire or trace wire insulation shall be permitted. 7. Trace wire installation shall be performed in such a manner that allows proper access for connection of line tracing equipment, proper locating of wire without loss or deterioration of low frequency (512 Hz) signal for distances in excess of 1,000 linear feet, and without distortion of signal caused by multiple wires
- being installed in close proximity to one another. 8. Any damage occurring during installation of the trace wire must be immediately repaired by removing the damaged wire, and installing a new section of wire with approved connectors. Taping and/or spray coating
- shall not be allowed. 9. Trace wire shall be laid flat on top of the pipe and securely affixed in 6-foot intervals with tape or plastic ties so as not to shift or be damaged during backfilling and excavation operations.
- 10. In occurrences where an existing trace wire is encountered on an existing utility that is being extended or tied into, the new trace wire and existing trace wire shall be connected using approved splice connectors, and shall be properly grounded at the splice location as specified.
- 11. Trace wire shall be attached to all appurtenances on the north or east side.
- 12. At service saddles, the trace wire shall not be allowed to be placed between the saddle and the main. 13. For sanitary sewer systems, lay mainline trace wire continuously, by-passing around the outside of
- manholes/structures on the north or east side.
- 14. For main line intersections and for service line connections, the main line trace wire shall not be cut. 15. All main line trace wires must be interconnected in intersections, at main line tees and main line crosses. At tees, the three wires shall be joined using a single 3-way locking connector. At crosses, the four wires
- shall be joined using a 4-way locking connector. Use of two 3-way connectors with a short jumper wire between them is an acceptable
- 16. All conductive and non-conductive water service lines shall include trace wire with a grounding anode installed in the meter box.
- 17. At the point of connection between a conductive main with a non-conductive main, the trace wire shall be properly connected to the conductive pipe with a cad weld or approved equivalent. Trace wire welds shall be completely sealed with the use of an approved mastic type sealer specifically manufactured for underground use. Mastic shall be applied in a thick coat a minimum of one- quarter inch (1/4") thick and shall be protected from contamination by the backfill material with the use of a plastic membrane.
- 18. Attach trace wire to PEX service piping per the manufacturer's recommendations.
- 19. Trace wire termination points on all mains must terminate at an approved grade level/inground trace wire 20. Trace wire termination points on all service laterals/stubs must terminate at an approved trace wire test station located directly above the utility, at the edge of the road right-of-way.

- B. Test Stations:
- 1. All trace wire termination points must utilize an approved trace wire test station and be properly
- grounded (See Grounding). 2. Termination points include water meter boxes/vaults, fire hydrants, sewer wet wells, force main discharge manholes, force main cleanouts, force main valve locations and low pressure sewer main appurtenances
- 3. All grade level/in-ground test stations shall be appropriately identified with "water", "sewer" or "reuse" cast into the cap and APWA color coded.
- 4. A minimum of 2 ft. of excess/slack wire is required in all trace wire test stations after meeting final elevation. Group and zip-tie excess wire. Do not coil.
- 5. Test stations shall not be spaced greater than 2,500 feet apart.
- 6. At hydrants, the trace wire must terminate at an approved grade level/in-ground trace wire test station in

#### C. Grounding: Trace wire must be properly grounded at all termination points/dead ends.

- 2. Grounding of trace wire shall be achieved by use of a drive-in magnesium grounding anode rod buried at
- the same depth as the trace wire. 3. The grounding anode shall be installed in a direction 180 degrees opposite of the trace wire, at the
- maximum possible distance.
- 4. The grounding anode wire shall be connected to the identified (or bottom) terminal on all test stations. 5. Where the grounding anode wire will be connected to a trace wire test station, a minimum of 2 ft. of excess/slack wire is required after meeting final depth.
- 6. When grounding the trace wire in areas where the trace wire is continuous and neither the mainline trace wire nor the grounding anode wire will be terminated at/above grade, install grounding anode directly beneath and in-line with the trace wire. Do not coil excess wire from grounding anode. In this installation method, the grounding anode wire shall be trimmed to an appropriate length before connecting to trace wire with a mainline to lateral lug connector.

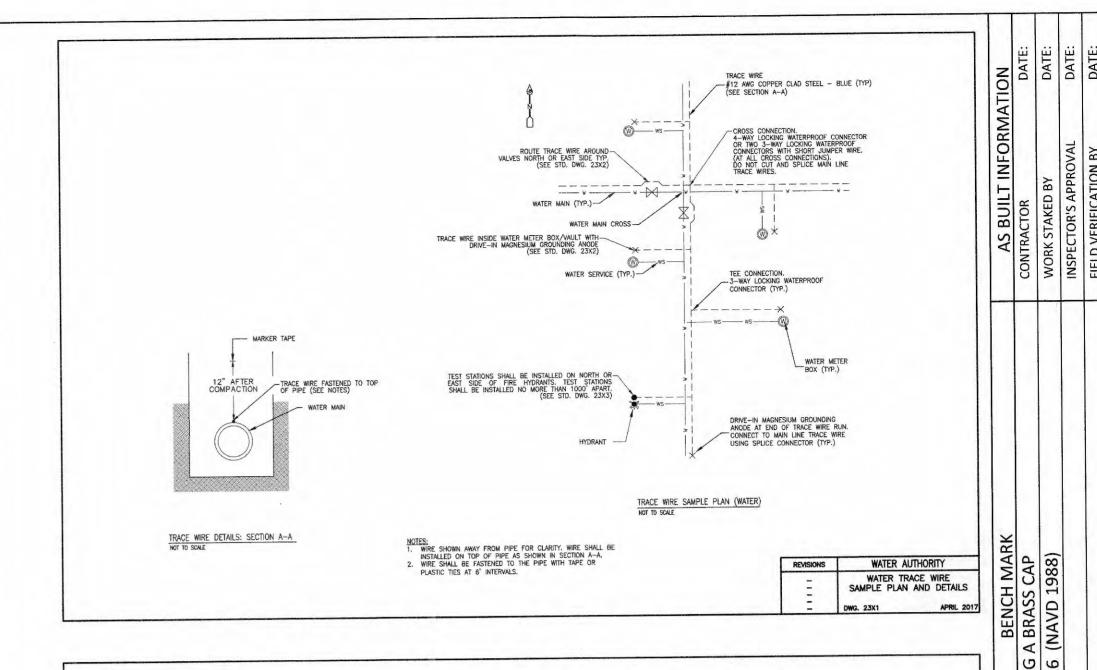
#### 3.3 TESTING REQUIREMENTS

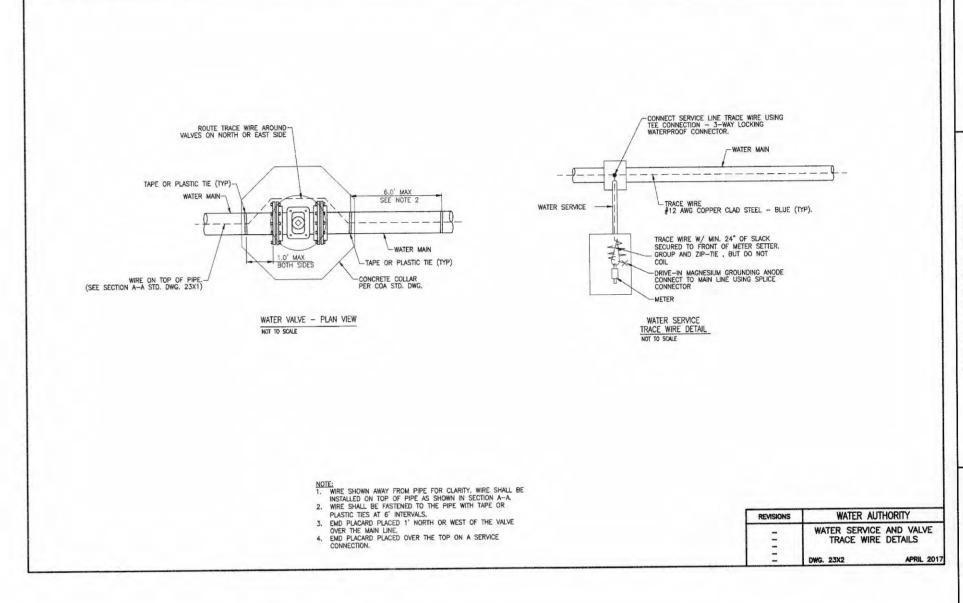
- A. Contractor shall perform a continuity test on all trace wire in the presence of the Engineer or the Engineers' representative. If the trace wire is found to be not continuous upon testing, the Contractor shall repair or replace the failed segment of the wire, and shall be responsible for the cost of any trenching, backfill, repaving and other improvements necessary to complete the trace wire repair. Contractor is encouraged to test trace wire prior to backfill so any issues can be addressed prior to backfill. Passing test results shall be provided for all pipe segments within the Engineer of Record's as-built data and plan set. To pass the continuity test, the following conditions must be met:
- 1. Continuity test shall be performed by using a metallic locator with audible tone and numeric values for certification of the facility locations and shall be identifiable between access points.
- 2. The wire shall be accessible at all access points and be identifiable between access points. 3. Depth readings must be accurate and consistent to within 15 (depth to diameter ratio).

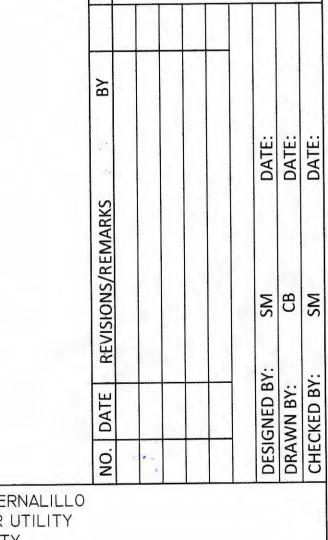
#### 3.4 WARRANTY

A. The product(s) and work shall be warranted against defects in material and workmanship for a period of one year. The warranty period shall begin after final inspection and acceptance by the Engineer and Owner.

**END OF SECTION** 







RECORD DRAWING FOR CERTIFICATION, SEE SHEET 1

	ALBUQUERQUI COUNTY WA AUTH					
TITLE:	JACKSON MII TRACER WIRE SPECI Albuquerque, N	FICATIONS	& DETA	ILS		
Design Review Committee  PPROVED  JUN 1 2 2017	City Engineer Approval  PPROVE  JUN 2 6 2017		Last Design Update	MO. / DAY / YR.	N	/IO. / DAY / YR.
DESIGN DE	CITY ENGIN	Zone Mar J-21		Sheet:	8	Of 8