

GENERAL NOTES:

- BASIS OF BEARING AND THE BASIS OF ELEVATION ARE PER TOPOGRAPHIC SURVEY OF TRACT X, DATED APRIL 25, 2018 A DIGITAL SURVEY DONE BY EXTREME MEASURES LAND SURVEYS, INC.
- BASIS OF BEARING IS THE LINE FROM KCBS 18 AND KCBS 19.
- SAD BEARING BEING: N 60°46'24" E
- BASIS OF ELEVATION IS PER PREVIOUS KAYENTA TOWNSHIP SURVEYS.
- A COPY OF THESE APPROVED PLANS SHALL BE KEPT IN AN EASILY ACCESSIBLE LOCATION ON THE CONSTRUCTION SITE AT ALL TIMES DURING CONSTRUCTION.
- CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS. ALL MINOR OBSTRUCTIONS MAY NOT BE SHOWN ON PLANS. THE CONTRACTOR SHALL VISIT THE SITE AND DETERMINE THE ACTUAL CONDITIONS WITH REGARD TO THE EXISTENCE OF FENCES, DRIVEWAYS, TREES, SIDEWALKS, CULVERTS, UTILITIES AND OTHER MISCELLANEOUS OBSTACLES THAT MAY INTERFERE WITH CONSTRUCTION PRIOR TO SUBMITTING BIDS.
- IF UNANTICIPATED SITE CONDITIONS ARE ENCOUNTERED DURING THE COURSE OF CONSTRUCTION OR OMISSIONS AND/OR CONFLICT BETWEEN VARIOUS ELEMENTS OF CONSTRUCTION DRAWINGS, NOTES, AND/OR DETAILS, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD IMMEDIATELY UPON BECOMING AWARE OF SUCH CONDITIONS, OMISSIONS AND/OR CONFLICTS AND WORK SHALL CEASE AND NOT PROCEED IN THE AREA OF CONCERN UNTIL AUTHORIZED BY THE ENGINEER OF RECORD.
- THE INFORMATION REGARDING THE TYPE, SIZE, AND LOCATION OF UTILITIES IS SHOWN BASED ON BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING EXACT LOCATIONS AND ELEVATIONS OF ALL UTILITIES FROM THE OWNERS OF RESPECTIVE UTILITIES. ALL UTILITY COMPANIES SHALL BE NOTIFIED AT LEAST 72 HOURS PRIOR TO EXCAVATION. CONTRACTOR SHALL NOTIFY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH WORK AND SHALL PROTECT ALL EXISTING UTILITIES THROUGH THE DURATION OF CONSTRUCTION. NO ASSURANCE IS HEREBY GIVEN THAT ALL EASEMENTS OR UTILITIES ARE COMPLETELY OR ACCURATELY DEPICTED.
- ANY AMBIGUITIES OR DEFICIENCIES DISCOVERED ON THESE PLANS ARE TO BE RESOLVED BY ARROWHEAD ENGINEERING, INC. ANYONE ELSE WHO MODIFIES THE PLANS OR THE DESIGNS ON THEM OR RESOLVES AMBIGUITIES OR DEFICIENCIES BECOMES RESPONSIBLE FOR HIS OR HER MODIFICATIONS OR DECISION.
- UTILITY INFORMATION SHOWN ON THESE PLANS ARE PROVIDED BY NTUA. THE ENGINEER MAKES NO GUARANTEE REGARDING THE LOCATION OR ELEVATION OF EXISTING UTILITIES SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CALL BLUE STAKE FOR ALL UTILITIES.
- CONTRACTOR SHALL GIVE A MINIMUM OF FORTY-EIGHT (48) HOURS NOTICE BEFORE HE REQUIRES HORIZONTAL OR VERTICAL LAYOUT OF ANY PORTION OF THE WORK. HE SHALL ALSO DIG ALL STAKE HOLES NECESSARY TO GIVE LINES AND LEVELS. MEASUREMENTS OF THE WORK SHALL REMAIN IN THEIR PROPER PLACES UNTIL AUTHORIZED TO REMOVE THEM BY THE ENGINEER OF RECORD OR HIS AGENT. ANY EXPENSE INCURRED IN REPLACING ANY STAKES THAT THE CONTRACTOR OR HIS SUBORDINATES MAY HAVE FAILED TO PRESERVE SHALL BE CHARGED TO THE CONTRACTOR.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FURNISH, HAUL, AND APPLY ALL WATER REQUIRED FOR COMPACTION AND FOR THE CONTROL OF DUST FROM CONSTRUCTION ACTIVITY. THE COST THEREOF IS TO BE INCLUDED IN THE CONSTRUCTION PRICE.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE A REGISTERED SOILS ENGINEER OBSERVE, INSPECT, AND TEST ALL EARTHWORK PREPARATION. EARTHWORK PREPARATION IS REGARDED AS (BUT NOT LIMITED TO) STRUCTURAL AND TRENCH EXCAVATION, BACKFILL, AND TOGETHER WITH THE PLACEMENT OF FILL MATERIAL AND ITS SUBSEQUENT COMPACTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE, MAINTENANCE, REPAIR OR REPLACEMENT OF ANY EXISTING IMPROVEMENT(S) IN THE WORK AREA WHICH BECOMES DAMAGED OR IS REMOVED DURING THE COURSE OF CONSTRUCTION. ALL REPAIR, REPLACEMENT, OR CLEANUP SHALL BE DONE TO THE SATISFACTION OF THE OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING A TRAFFIC CONTROL PLAN THAT MEETS THE REQUIREMENTS OF THE MUTCD (LATEST EDITION WITH SUPPLEMENTS) AND THE OWNER'S AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL PROPERLY MAINTAIN THIS PLAN FOR ALL WORK WITHIN THE PROPERTY.
- THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS, GRADES AND POTHOLE EXISTING UTILITY LOCATIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION. ALL DISCREPANCIES AND DEVIATIONS FROM EXISTING SITE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER PRIOR TO START OF CONSTRUCTION.
- QUANTITIES SHOWN THROUGHOUT THESE DRAWINGS AND SPECIFICATIONS ARE APPROXIMATE. THEY SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR INDEPENDENTLY ESTIMATING BID OR WORK QUANTITIES.
- ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE CURRENT "MAG UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION" AND WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICE. ALL WORK AND MATERIALS WHICH DO NOT CONFORM TO THE STANDARDS AND SPECIFICATIONS ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
- ANY WORK PERFORMED WITHOUT THE KNOWLEDGE AND APPROVAL OF THE OWNER OR HIS AUTHORIZED REPRESENTATIVE IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
- THE OWNER OR HIS AUTHORIZED REPRESENTATIVE MAY SUSPEND THE WORK BY WRITTEN NOTICE WHEN, IN HIS JUDGMENT, PROGRESS IS UNSATISFACTORY, WORK BEING DONE IS UNAUTHORIZED OR DEFECTIVE, WEATHER CONDITIONS ARE UNSUITABLE, OR THERE IS DANGER TO THE PUBLIC HEALTH OR SAFETY.
- THE OWNER MAY ORDER ANY AND ALL MATERIALS USED IN THE WORK TO BE TESTED ACCORDING TO THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) AND THE AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM) STANDARDS. THE CONTRACTOR SHALL, AT HIS EXPENSE, SUPPLY ALL SAMPLES REQUIRED FOR TESTING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE PAVEMENT AND OF PARTIALLY COMPLETED PORTIONS OF THE WORK UNTIL FINAL ACCEPTANCE OF THE WORK. THE CONTRACTOR SHALL SUBMIT TO THE OWNER OR HIS AUTHORIZED REPRESENTATIVE FOR APPROVAL OF CONSTRUCTION SCHEDULE FOR ANY STREETS REQUIRED TO BE CLOSED OR PARTIALLY CLOSED FOR THE CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL REOPEN THE STREETS NO LATER THAN THE OPENING DATE SHOWN ON THE CONSTRUCTION SCHEDULE OR UPON ORDER OF THE OWNER OR HIS AUTHORIZED REPRESENTATIVE. THE REGULATION AND CONTROL OF CONSTRUCTION TRAFFIC SHALL BE AS DIRECTED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE.
- APPROVAL OF A PORTION OF THE WORK IN PROGRESS DOES NOT GUARANTEE ITS FINAL ACCEPTANCE. TESTING AND EVALUATION MAY CONTINUE UNTIL WRITTEN FINAL ACCEPTANCE OF A COMPLETE WORKABLE UNIT. ANY DEFECTS WHICH APPEAR IN THE WORK WITHIN ONE YEAR FROM THE DATE OF ACCEPTANCE AND WHICH ARE DUE TO IMPROPER WORKMANSHIP OR INFERIOR MATERIALS SUPPLIED SHALL BE CORRECTED BY OR AT THE EXPENSE OF THE OWNER OR THE CONTRACTOR.
- ACCEPTANCE OF COMPLETED IMPROVEMENTS WILL NOT BE GIVEN UNTIL DEFECTIVE OR UNAUTHORIZED WORK IS REMOVED, AND FINAL CLEAN-UP IS COMPLETE.
- LOCATION OF UNDERGROUND UTILITIES BEFORE WORK BEGINS IS TO BE ACCOMPLISHED IN ACCORDANCE WITH ARS 40-360.22.
- THE ESTABLISHMENT AND USE OF TEMPORARY CONSTRUCTION YARDS SHALL RECEIVE PRIOR APPROVAL FROM THE OWNER OR HIS AUTHORIZED REPRESENTATIVE.
- ALL EXCAVATED MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE KAYENTA TOWNSHIP CODES AND REGULATIONS. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED KAYENTA TOWNSHIP'S APPROVALS AND PERMITS, AS DEEMED NECESSARY BY THE KAYENTA TOWNSHIP, TO DISPOSE OF EXCAVATED MATERIAL.
- ALL CONSTRUCTION STAKING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND PERFORMED UNDER THE DIRECT SUPERVISION OF A REGISTERED LAND SURVEYOR OR CIVIL ENGINEER.
- CONTRACTOR MUST COORDINATE WITH GAS UTILITY COMPANY/PROVIDER TO EXTEND SERVICES TO BUILDINGS.

EARTHWORK:

- CONTRACTOR SHALL FOLLOW RECOMMENDATIONS FROM GEOMAT, INC. JOB NO. 112-1303, DATED 5-26-11.
- GENERAL - THE CONTRACTOR SHALL ACCEPT REASONABLE VARIATIONS IN SITE CONDITIONS. NO EXTRA PAYMENT SHALL BE ALLOWED FOR REMEDIATION OF SUBGRADE MATERIALS DUE TO HIGH MOISTURE CONTENT OR POCKETS OF OVERLY PLASTIC MATERIALS WHICH CAN BE REMEDIATED THROUGH MIXING WITH ON SITE MATERIALS, AS DETERMINED BY THE ENGINEER. IF REMOVAL AND REPLACEMENT OF MATERIAL IS REQUIRED, A CHANGE ORDER WILL BE ISSUED AT THE DISCRETION OF THE OWNER, WITH PAYMENT BASED UPON PREDETERMINED UNIT COSTS.
- NO FILL SHALL BE PLACED OVER FROZEN GROUND OR ON-SITE CLAY. IMPORTED AND ON-SITE SOIL SHALL BE COMPACTED WITH A WATER CONTENT RANGE OF 4 PERCENT BELOW TO 2 PERCENT ABOVE OPTIMUM WATER CONTENT.
- SUBGRADE PREPARATION - SCARIFY, PREPARE TO PROPER MOISTURE CONTENT, AND RE-COMPACT TO A MINIMUM DEPTH OF 8 INCHES PRIOR TO PLACEMENT OF FILL AND ROAD MATERIALS.
- IMPORT SOILS - IMPORTED SOILS SHALL CONFORM TO THE FOLLOWING IN ACCORDANCE WITH THE SOILS REPORT:
PERCENT FINER BY WEIGHT
(ASTM C136)
GRADATION
3" 100
NO. 4 SIEVE 50-100
NO. 200 SIEVE 50 (MAX)
MAXIMUM EXPANSIVE POTENTIAL (%) 1.50

MEASURED ON A SAMPLE COMPACTED TO APPROXIMATELY 95 PERCENT OF THE ASTM D698 MAXIMUM DRY DENSITY AT ABOUT 3 PERCENT BELOW OPTIMUM WATER CONTENT. THE SAMPLE IS CONFINED UNDER A 144 PSF SURCHARGE AND SUBMERGED.

PAVING NOTES:

- EXACT POINT OF MATCHING TERMINATION AND OVERLAY, IF NECESSARY, SHALL BE DETERMINED IN THE FIELD BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE.
- NO JOB WILL BE CONSIDERED COMPLETE UNTIL: A) ALL CURBS, PAVEMENTS, SIDEWALKS CATCH BASINS, STORM DRAINS, AND MANHOLES HAVE BEEN CLEANED OF ALL DIRT AND DEBRIS; B) SURVEY MONUMENTS ARE INSTALLED AND STAMPED; C) ALL FRAMES, COVERS AND VALVE BOXES ARE ADJUSTED TO GRADE.
- NO PAVING CONSTRUCTION SHALL BE STARTED UNTIL ALL UTILITY LINES ARE COMPLETED AND APPROVED UNDER PROPOSED PAVING AREAS.
- BASE COURSE WILL NOT BE PLACED UNTIL SUBGRADE HAS BEEN APPROVED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE.
- THE LOCATION OF ALL WATER VALVES, FIRE HYDRANTS, AND MANHOLES MUST AT ALL TIMES DURING CONSTRUCTION BE REFERENCED AND MADE ACCESSIBLE TO THE OWNER.
- UTILITY FACILITIES IN CONFLICT WITH THIS WORK WILL BE RELOCATED BY THE PERMITEE OR THE UTILITY OWNER. THIS ACTIVITY SHALL BE COORDINATED WITH THE OWNER OF THE UTILITY TO PREVENT ANY UNNECESSARY INTERRUPTION OF SERVICE TO EXISTING CUSTOMERS.
- EXISTING STREET NAME SIGNS, TRAFFIC SIGNS AND DEVICES SHALL BE MAINTAINED DURING CONSTRUCTION AND RELOCATED BY THE CONTRACTOR AS SHOWN ON THE APPROVED PLANS.
- ALL CURB AND GUTTER, SIDEWALK, DRIVEWAYS, AND SIDEWALK RAMPS SHALL BE CONSTRUCTED ON A MINIMUM 3 INCHES (80 mm) OF AGGREGATE BASE COURSE (ABC). THE ABC SHALL BE CONSTRUCTED PER MAG SECTION 310 AND SHALL BE COMPACTED TO 95% RELATIVE DENSITY.

NTUA WATER GENERAL NOTES:

- ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE NTUA TECHNICAL SPECIFICATIONS FOR MATERIALS AND WORKMANSHIP FOR WATER AND WASTEWATER FACILITIES, MARCH 2002.
- THE CONTRACTOR SHALL OBTAIN APPROVED PERMISSION TO TAP (PTT) FORM PRIOR TO TAPPING EXISTING WATER AND SEWER MAIN.
- THE CONTRACTOR SHALL COORDINATE WITH NTUA PRESENT AT THE SITE TO VERIFY LOCATION, DEPTH, SIZE AND TYPE OF UNDERGROUND UTILITIES.
- THE CONTRACTOR IS TO COORDINATE WITH NTUA REGARDING WATER SHUT OFF WITH AT LEAST 3 DAYS ADVANCE NOTICE TO ISOLATE LINE(S), TO NOTIFY AFFECTED CUSTOMERS AND TO MINIMIZE OUTAGE TIME PRIOR TO CONNECTION OF NEW WATER SERVICE.
- UNLESS OTHERWISE DIRECTED, ONLY AUTHORIZED NTUA STAFF WILL BE ALLOWED TO CLOSE/OPEN WATER VALVES FOR ANY CONNECTIONS TO EXISTING LINES AND FOR THE USAGE OF WATER.
- ROUGH GRADING SHALL BE COMPLETED WITHIN 1/10 OF A FOOT OF PLAN GRADE PRIOR TO INSTALLING WATER AND WASTEWATER UTILITIES.
- COORDINATE WITH LOCAL UTILITY PROVIDERS FOR ANY REMOVAL OF EXISTING FACILITIES PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL PROTECT EXISTING UTILITIES IN PLACE. CONTRACTOR SHALL RESTORE AT OWN EXPENSE ANY DAMAGE TO EXISTING UTILITIES.
- ALL WATER MAINS SHALL BE POLYVINYL CHLORIDE (PVC) PRESSURE PIPE WITH A MINIMUM OF 200 PSI PRESSURE CLASS UNLESS SPECIFIED OTHERWISE.
- ALL MATERIAL AND EQUIPMENT REQUIRED FOR A CONNECTION OR TIE-IN SHALL BE ON THE JOB SITE BEFORE AUTHORIZATION IS GIVEN TO COMMENCE THE WORK.
- ALL FITTINGS AND VALVES 4" OR GREATER IN SIZE SHALL BE MADE FROM DUCTILE IRON FURNISHED WITH MECHANICAL JOINT ENDS AND SHALL HAVE A PRESSURE RATING OF 350 PSI. ALL MJ ENDS SHALL HAVE "MEGALUG" MECHANICAL RESTRAINT WITH CONCRETE THRUST BLOCK, STD DTL WS-19. POLYETHYLENE WRAPPING (8 MILS MINIMUM THICKNESS IN ACCORDANCE WITH AWWA STANDARD C-105) SHALL BE INSTALLED AROUND DUCTILE IRON PIPES, FITTINGS, AND VALVES, FIRE HYDRANT BARRELS AND RODS AND CLAMPS.
- A WARNING/DETECTABLE MARKING TAPE SHALL BE INSTALLED AT 12" MINIMUM AND 18" MAXIMUM ABOVE THE WATER AND SEWER PIPE. MARKING TAPE SHALL CONSIST OF ONE LAYER OF ALUMINUM FOIL LAMINATED BETWEEN TWO COLORED LAYERS OF INERT PLASTIC FILM. THE LAMINATION BOND SHOULD BE STRONG ENOUGH THAT THE LAYERS CANNOT BE SEPARATED BY HAND. TAPE SHALL BE A MINIMUM OF 5 MILS THICK AND 6 INCHES WIDE. TAPE SHALL BEAR A CONTINUOUS, PRINTED MESSAGE EVERY 16 TO 36 INCHES WARNING OF THE INSTALLATION BURIED BELOW. TAPE SHALL BE TERRA TAPE, LINETEC, OR AS APPROVED BY NTUA.
- DEFLECTION (VERTICAL OR HORIZONTAL) OF PIPES IS PERMITTED AND SHALL CONFORM TO AMERICAN WATER WORKS ASSOCIATION (AWWA) JOINT DEFLECTION FOR AWWA PRESSURE PIPE AND AT 80% OF MANUFACTURER'S RECOMMENDED MAXIMUM DEFLECTION, WHICHEVER IS MORE STRINGENT. A COPY OF THE MANUFACTURER'S RECOMMENDATION SHALL BE SUBMITTED TO NTUA.
- PIPES SHALL NOT BE BACKFILLED (INCLUDING BEDDING MATERIAL ABOVE THE SPRING LINE OF THE PIPE) UNTIL THE CONSTRUCTION HAS BEEN INSPECTED AND APPROVED FOR BACKFILLING BY A NTUA REPRESENTATIVE.
- CONTRACTOR IS TO PURCHASE AMI WATER METER(S) WITH MODULE(S) AT LOCAL NTUA DISTRICT OFFICE.
- CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS OF ALL UTILITIES TO OWNER AND NTUA IN HARD COPY AND DIGITAL FORMAT.
- HYDROSTATIC TESTING, FLUSHING AND CHLORINATION (SHALL BE CONDUCTED IN ACCORDANCE WITH NTUA TECHNICAL SPECIFICATIONS FOR MATERIALS AND WORKMANSHIP FOR WATER AND WASTEWATER FACILITIES, MARCH 2002) SHALL BE COORDINATED WITH NTUA AT LEAST 3 DAYS IN ADVANCE. NTUA REPRESENTATIVE SHALL BE PRESENT TO RECORD THE INFORMATION AND CERTIFY THE TESTING.
- UTILITY CONSTRUCTION ACCEPTANCE AND UTILITY TRANSFER: CONTRACTOR SHALL SCHEDULE A FINAL OR PRE-FINAL INSPECTION WITH NTUA HQ ENGINEERING AND LOCAL DISTRICT OFFICE, OWNER AND GENERAL CONTRACTOR AT THE END OF CONSTRUCTION. DOCUMENTS SHALL BE PROVIDED BY THE CONTRACTOR AS FOLLOWS: AS-BUILT DRAWING, APPROVED PTT, HYDROSTATIC TESTING RESULTS, BACTERIOLOGICAL TESTING RESULTS, MATERIALS SUBMITTALS AND COST OF PLANT. PLEASE FOLLOW THE NTUA TECHNICAL SPECIFICATIONS FOR MATERIALS AND WORKMANSHIP FOR WATER AND WASTEWATER FACILITIES, MARCH 2002, SECTION TP 5.0.
- THE CONTRACTOR/ENGINEER SHALL PROVIDE WARRANTY ON ALL NEW WATER AND WASTEWATER FACILITIES AGAINST DEFECTS IN MATERIALS, WORKMANSHIP AND FOR ANY DESIGN DEFICIENCIES, ERRORS AND OMISSIONS FOR THE PERIOD OF ONE YEAR WHEN THE FACILITIES WERE INSPECTED, ACCEPTED AND APPROVED.
- UTILITY LOCATIONS ARE SHOWN ON THE PLANS FOR DESIGN PURPOSES ONLY. IN GENERAL, THE LOCATIONS OF EXISTING MAJOR UTILITIES, ABOVE GROUND AND UNDERGROUND ARE INDICATED ON THE DRAWING FOR DRAFTING PURPOSES ONLY. THIS INFORMATION HAS BEEN OBTAINED FROM UTILITY MAPS, FILED SURVEY WORK AND FROM DESCRIPTIONS PROVIDED BY THE VARIOUS AGENCIES INVOLVED AND REPRESENT THE BEST INFORMATION AVAILABLE. ARROWHEAD ENGINEERING, INC. DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THIS INFORMATION AND IT IS UNDERSTOOD THAT OTHER FACILITIES NOT SHOWN ON THE DRAWINGS MAY BE ENCOUNTERED DURING THE COURSE OF THE WORK. UNDER STATE LAW (ARS-40-360-21), THE CONTRACTOR SHALL CONTACT ALL UTILITIES IN ORDER TO DETERMINE THE LOCATION OF THEIR RESPECTIVE UTILITIES PRIOR TO ANY EXCAVATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR ANY NECESSARY REPAIRS AT HIS OR HER OWN EXPENSE.
- ALL MATERIALS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61 INCLUDING GASKETS, LUBRICANTS, PIPE FITTINGS, VALVES, ETC. (NSF-PW SPEC) (R18-4-119B).
- LATERAL 3" OR SMALLER SHALL USE CORPORATION STOPS.

NTUA SEWER GENERAL NOTES:

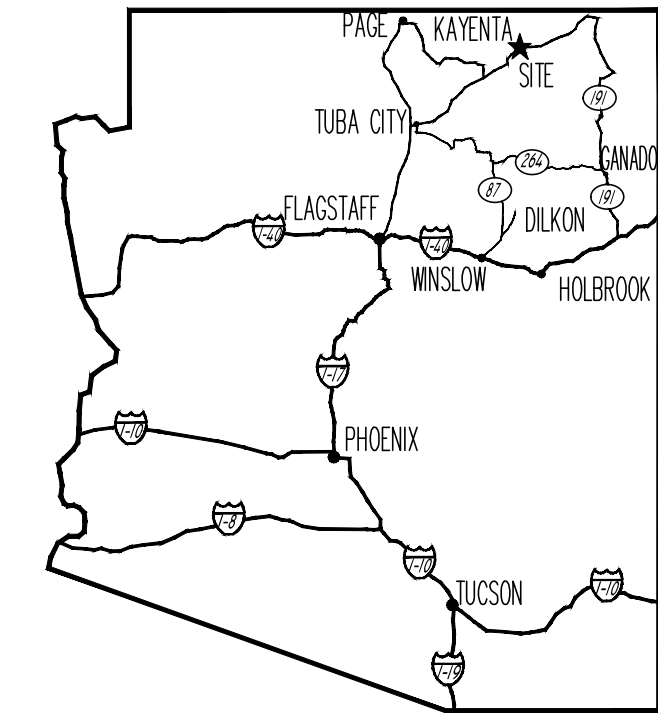
- ALL SEWER PIPES SHALL BE MADE OF MATERIAL CONFORMING TO REQUIREMENTS OF ASTM D1784, TYPE I, GRADE I FOR RIGID POLYVINYL CHLORIDE COMPOUNDS. ALL SEWER PIPES AND FITTINGS SHALL BE AT LEAST SDR 35, TYPE PSM WITH ELECTROMETRIC GASKET JOINTS MEETING THE REQUIREMENTS OF ASTM D 3034. SERVICE CONNECTIONS TO NEW SEWER MAINS SHALL BE WYE FITTINGS.
- PROVIDE 10 FT. MINIMUM HORIZONTAL SEPARATION IN SEPARATE TRENCHES BETWEEN THE WATER AND SEWER SERVICES. PROVIDE 5 FT. MIN. HORIZONTAL SEPARATION BETWEEN THE SEWER SERVICES AND OTHER UTILITIES. IF SEWER SERVICES CROSSES OTHER SERVICES, SEE N.T.U.A. CROSSING POLICY, OR CONTACT N.T.U.A. HEADQUARTERS ENGINEERING.
- SEWER CLEANOUTS ARE REQUIRED ON ALL BENDS IN EXCESS OF 45 DEGREES AS PER PLUMBING CODE ADOPTED BY THE NAVAJO NATION. MODIFY MATERIAL LIST ACCORDINGLY AFTER CONSULTING WITH N.T.U.A. HEADQUARTERS ENGINEERING.

NTUA SEWER GENERAL NOTES:

- ADDITIONAL SEWER CLEANOUTS ARE REQUIRED ON SEWER SERVICES LONGER THAN 50 FT. AS PER UNIFORM PLUMBING CODE ADOPTED BY THE NAVAJO NATION. MODIFY MATERIAL LIST ACCORDINGLY AFTER CONSULTING WITH N.T.U.A. HEADQUARTERS ENGINEERING. EACH ADDITIONAL CLEANOUT IS AT THE CUSTOMER'S EXPENSE. INSTALL AT LEAST ONE CLEANOUT AS REQUIRED. IF CUSTOMER REQUESTS FEWER AND REALIZED THAT IT VIOLATES NAVAJO TRIBAL CODE, THEN INSTALL PER THE CUSTOMER'S REQUEST AND NOTE ON THE INDIVIDUAL AS-BUILT. N.T.U.A. RECOMMENDS THAT CLEANOUTS BE SPACED NO MORE THAN 100'.
- PROVIDE PROPOSED ELEVATION AT WALL. PROVIDE 6 IN. DIAMETER SLEEVE IF PIPING PENETRATES WALL OR 4 IN. DEPTH OF SAND BETWEEN FOOTING AND TOP OF PIPING IS BELOW THE FOOTING. ORDER ASTM D-1785 SCH. 40 PIPE WITH LENGTH AS NEEDED FOR THE SLEEVE. CONTACT N.T.U.A. HEADQUARTERS ENGINEERING ON PIPING SMALLER THAN 2 IN. IN SIZE.
- MINIMUM SLOPE OF 1/4 INCH PER FOOT (2%) OR AS APPROVED BY N.T.U.A. HEADQUARTERS ENGINEERING.
- BACKFILL IS TO BE HAND TAMPED (NO MECHANICAL) AND COMPACTED IN 6 INCH LAYERS FOR AT LEAST 12 IN. ABOVE PVC PIPE. INSTALL PER ASTM D-2321 AND UNIFORM PLUMBING CODE ADOPTED BY NAVAJO NATION.
- NEW SEWER MAIN SHALL BE INSTALLED WITH 42" OF MINIMUM COVER PER S.D. WWS-10, UNLESS OTHERWISE INDICATED ON THESE PLANS.
- ALL NEWLY CONSTRUCTED LINES ARE REQUIRED TO BE CLAMPED AND TESTED FOR INFILTRATION. TESTING IS TO BE CONDUCTED WITH NAVAJO AREA STANDARDS AND CONSTRUCTION REQUIREMENTS TP 4.08. THE ENGINEER IS REQUIRED TO COMPLETE THE CERTIFICATION FORMS AS APPROPRIATE. THE COMPLETED FORMS ARE TO BE FORWARDED BY THE ENGINEER TO THE NTUA HEADQUARTERS, SPECIAL PROJECT DEPARTMENT, FOR REVIEW AND APPROVAL. A LETTER OF ACCEPTANCE OF THE TEST RESULTS WILL BE FORWARDED FROM THE NTUA HEADQUARTERS TO THE DISTRICT ENGINEER.
- THE MATERIAL LIST SHALL BE MODIFIED IF A FIELD MARKER OF THE TAP POINT IS TO BE INSTALLED. UNDER THE AS-BUILT TIE INFORMATION. PROVIDE THE SURFACE DESCRIPTION OF THE TAP POINT (e.g. OPEN FIELD, PAVED ROAD, etc.)

NTUA CONSTRUCTION NOTES:

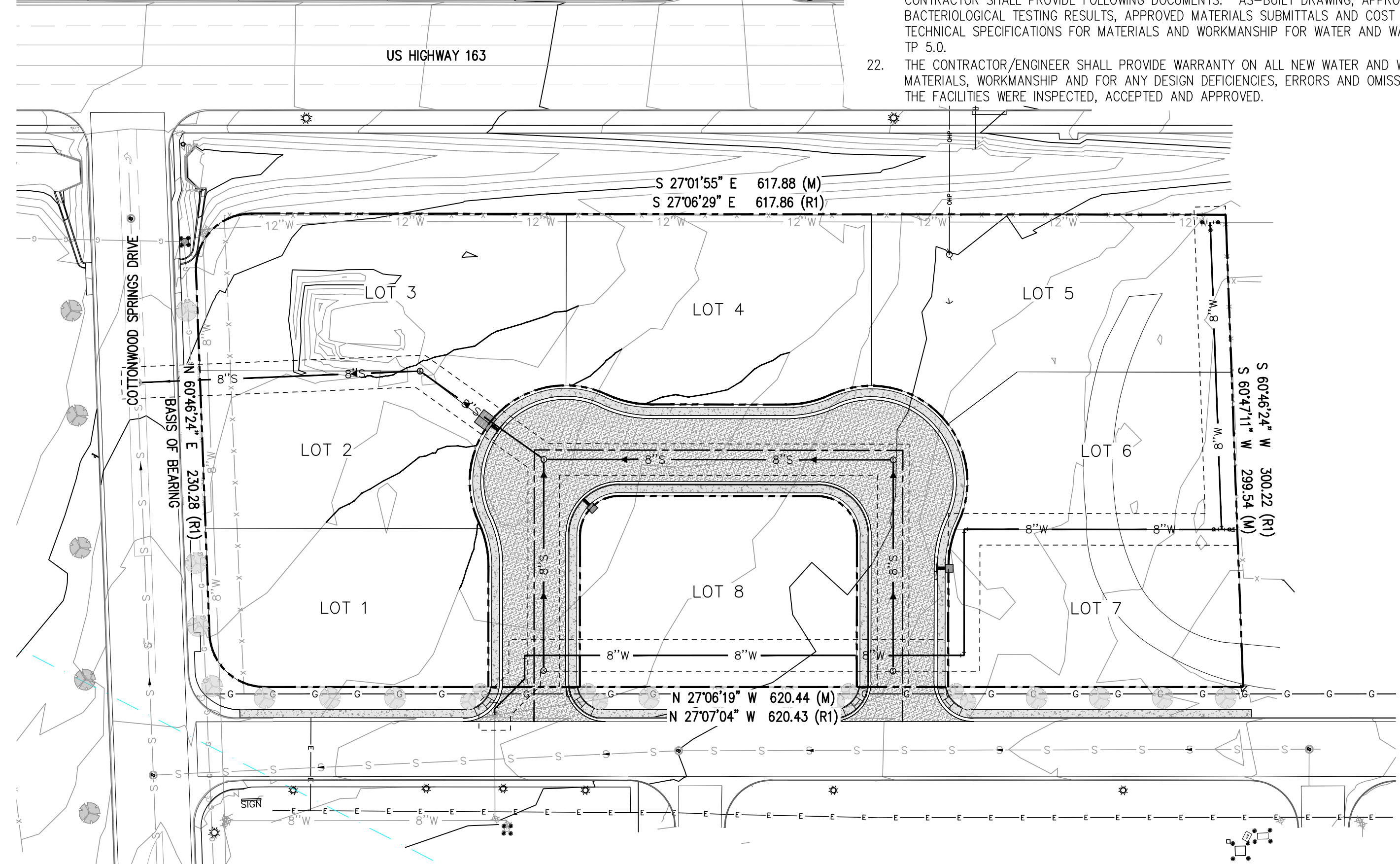
- ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE NTUA TECHNICAL SPECIFICATIONS FOR MATERIALS AND WORKMANSHIP FOR WATER AND WASTEWATER FACILITIES, MARCH 2002.
- THE CONTRACTOR SHALL CONTACT THE LOCAL NTUA DISTRICT OFFICE TO REQUEST FOR UTILITY LINE LOCATES PRIOR TO CONSTRUCTION. THE UTILITY PROVIDER SHALL IDENTIFY THEIR UTILITY LINES AND MARK LOCATIONS OF THE UNDERGROUND UTILITIES.
- THE CONTRACTOR SHALL OBTAIN APPROVAL FROM NTUA THE PERMISSION TO TAP (PTT) APPLICATION PRIOR TO TAPPING EXISTING WATER AND SEWER MAINS.
- THE CONTRACTOR SHALL COORDINATE WITH NTUA PRESENT AT THE SITE TO VERIFY LOCATION, DEPTH, SIZE AND TYPE OF UNDERGROUND UTILITIES.
- THE CONTRACTOR IS TO COORDINATE WITH NTUA REGARDING WATER SHUT OFF WITH AT LEAST 3 DAYS ADVANCE NOTICE TO ISOLATE LINE(S), TO NOTIFY AFFECTED CUSTOMERS AND TO MINIMIZE OUTAGE TIME PRIOR TO CONNECTION OF NEW WATER SERVICE.
- UNLESS OTHERWISE DIRECTED, ONLY AUTHORIZED NTUA STAFF WILL BE ALLOWED TO CLOSE/OPEN WATER VALVES FOR ANY CONNECTIONS TO EXISTING LINES AND FOR THE USAGE OF WATER.
- ROUGH GRADING SHALL BE COMPLETED WITHIN 1/10 OF A FOOT OF PLAN GRADE PRIOR TO INSTALLING WATER AND WASTEWATER UTILITIES.
- COORDINATE WITH LOCAL UTILITY PROVIDERS FOR ANY REMOVAL OF EXISTING FACILITIES PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL PROTECT EXISTING UTILITIES IN PLACE. THE CONTRACTOR SHALL RESTORE AT OWN EXPENSE ANY DAMAGE TO EXISTING UTILITIES.
- ALL WATER MAINS SHALL BE POLYVINYL CHLORIDE (PVC) PRESSURE PIPE WITH A MINIMUM OF 200 PSI PRESSURE CLASS UNLESS SPECIFIED OTHERWISE.
- ANY ABRUPT CHANGE IN LINE ARE GRADE SHALL REQUIRE MJ FITTINGS. ALL FITTINGS AND VALVES 4" OR GREATER IN SIZE SHALL BE MADE FROM DUCTILE IRON FURNISHED WITH MECHANICAL JOINT ENDS AND SHALL HAVE A PRESSURE RATING OF 350 PSI. ALL MJ ENDS SHALL HAVE "MEGALUG" MECHANICAL RESTRAINTS WITH CONCRETE THRUST BLOCK PER STD DTL WS-19.
- POLYETHYLENE WRAPPING (8 MILS MINIMUM THICKNESS IN ACCORDANCE WITH AWWA STANDARD C-105) SHALL BE INSTALLED AROUND DUCTILE IRON PIPES, FITTINGS, AND VALVES, FIRE HYDRANT BARRELS AND RODS AND CLAMPS.
- DEFLECTION (VERTICAL OR HORIZONTAL) OF PIPES IS PERMITTED AND SHALL CONFORM TO AMERICAN WATER WORKS ASSOCIATION (AWWA) JOINT DEFLECTION FOR AWWA PRESSURE PIPE AND AT 80% OF MANUFACTURER'S RECOMMENDED MAXIMUM DEFLECTION, WHICHEVER IS MORE STRINGENT. A COPY OF THE MANUFACTURER'S RECOMMENDATION SHALL BE SUBMITTED TO NTUA.
- TRENCHES SHALL NOT BE BACKFILLED (INCLUDING BEDDING MATERIAL ABOVE SPRING LINE OF THE PIPE) UNTIL THE PIPE LAYING HAS BEEN INSPECTED AND APPROVED FOR BACKFILLING BY A NTUA REPRESENTATIVE.
- A WARNING MARKING TAPE SHALL BE INSTALLED AT 12" MINIMUM AND 18" MAXIMUM ABOVE THE WATER AND SEWER PIPE. MARKING TAPE SHALL CONSIST OF ONE LAYER OF ALUMINUM FOIL LAMINATED BETWEEN TWO COLORED LAYERS OF INERT PLASTIC FILM. THE TAPE SHALL BE A MINIMUM OF 5 MILS THICK AND 3 INCHES WIDE. TAPE SHALL BEAR A CONTINUOUS, PRINTED MESSAGE EVERY 16 TO 36 INCHES WARNING OF THE INSTALLATION BURIED BELOW.
- ALL NEW WATER LINES SHALL BE TESTED. HYDROSTATIC TESTING, DISINFECTION, FLUSHING AND BACTERIOLOGICAL TESTING (SHALL BE CONDUCTED IN ACCORDANCE WITH NTUA TECHNICAL SPECIFICATIONS FOR MATERIALS AND WORKMANSHIP FOR WATER AND WASTEWATER FACILITIES, MARCH 2002) SHALL BE COORDINATED WITH NTUA AT LEAST 3 DAYS IN ADVANCE. NTUA REPRESENTATIVE SHALL BE PRESENT TO RECORD THE INFORMATION AND TO CERTIFY THE TESTING.
- ALL NEW SEWER MAINS SHALL BE TESTED. SEWER LINE: HYDROSTATIC OR AIR TESTING AND LAMP TEST FOR ALIGNMENT; AND MANHOLES: HYDROSTATIC OR VACUUM TESTING SHALL BE DONE IN ACCORDANCE WITH NTUA TECHNICAL SPECIFICATIONS FOR MATERIALS AND WORKMANSHIP FOR WATER AND WASTEWATER FACILITIES, MARCH 2002. NTUA REPRESENTATIVE SHALL BE PRESENT TO RECORD THE INFORMATION AND TO CERTIFY THE TESTING.
- ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE INSPECTED BY NTUA. ONCE THE INSPECTION HAS PASSED, AND THE METER INSTALLED, THE BACKFLOW PREVENTER SHALL BE TESTED BY A NAVAJO EPA CERTIFIED TESTER.
- THE CONTRACTOR IS TO PURCHASE AMI WATER METER(S) WITH MODULE(S) AT THE LOCAL NTUA DISTRICT OFFICE.
- THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS OF ALL UTILITIES TO OWNER AND NTUA IN HARD COPY AND DIGITAL FORMAT.
- UTILITY CONSTRUCTION ACCEPTANCE AND UTILITY TRANSFER: THE CONTRACTOR SHALL SCHEDULE A FINAL INSPECTION WITH NTUA HQ ENGINEERING AND LOCAL DISTRICT OFFICE, OWNER AND GENERAL CONTRACTOR AT THE END OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE FOLLOWING DOCUMENTS: AS-BUILT DRAWING, APPROVED PTT, HYDROSTATIC TESTING RESULTS, BACTERIOLOGICAL TESTING RESULTS, APPROVED MATERIALS SUBMITTALS AND COST OF PLANT. PLEASE FOLLOW THE NTUA TECHNICAL SPECIFICATIONS FOR MATERIALS AND WORKMANSHIP FOR WATER AND WASTEWATER FACILITIES, MARCH 2002, SECTION TP 5.0.
- THE CONTRACTOR/ENGINEER SHALL PROVIDE WARRANTY ON ALL NEW WATER AND WASTEWATER FACILITIES AGAINST DEFECTS IN MATERIALS, WORKMANSHIP AND FOR ANY DESIGN DEFICIENCIES, ERRORS AND OMISSIONS FOR THE PERIOD OF ONE YEAR WHEN THE FACILITIES WERE INSPECTED, ACCEPTED AND APPROVED.



LOCATION MAP
SCALE: NO SCALE
A PORTION OF SECTIONS 11&12, T-38-N, R-19-E, G&S R.M. KAYENTA, NAVAJO COUNTY, ARIZONA

LEGEND

±82.6XG	EXISTING GRADE
±82.6NV	INVERT GRADE
±82.6FL	FLOW LINE GRADE
±82.6P	PAVEMENT GRADE
±82.6SW	SIDEWALK GRADE
⊗	EXISTING SEWER LINE
⊙	EXISTING SEWER MANHOLE
⊕	EXISTING WATER LINE
⊖	EXISTING WATER VALVE
⊗	EXISTING FIRE HYDRANT
⊙	PROPOSED STREET CENTERLINE
⊕	PROPOSED 8" WATER LINE
⊖	PROPOSED SEWER MANHOLE
⊗	PROPOSED 6" SEWER LINE
⊘	PROPOSED FLOW LINE



SHEET INDEX

SHEET C1.0.....	COVER SHEET
SHEET C1.1.....	GRADING PLAN & DETAILS
SHEET C1.2.....	WATER PLAN & DETAILS
SHEET C1.3.....	WATER DETAILS
SHEET C1.4.....	SEWER PLAN & PROFILE
SHEET C1.5.....	SEWER DETAILS
SHEET C1.6.....	UTILITY EASEMENT MAP

SURVEYOR

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3121 E. KLEINDALE RD.
TUCSON, AZ. 85716
ATTN: GREGORY W. BAUER
RLS 35111
PH: (520) 881-2155

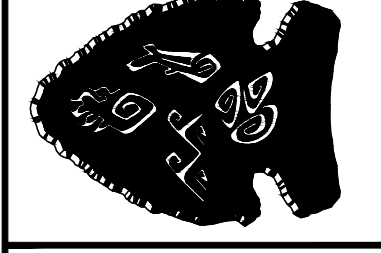


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REVISIONS

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KAYENTA TOWNSHIP COMMERCIAL LOTS KAYENTA, AZ COVER SHEET



PROJECT NO.: 218-005
DATE: 6-03-19
DESIGNED BY: MTY
DRAWN BY: EO
APPROVED BY:

SHEET NO:
C1.0



KEYNOTES:

GENERAL CONSTRUCTION NOTES:

- ALL CLEARING AND GRUBBING, EXCAVATION, FILL, GRADING, BERM, SWALE, AND DITCH CONSTRUCTION IS INCIDENTAL TO CONSTRUCTION AND SHALL BE CONSTRUCTED TO GRADES AND LINES SHOWN, EVEN IF NOT SPECIFICALLY NOTED AS A WORK ITEM.
- USE TYPE II PORTLAND CEMENT ON AND BELOW GRADE.

SITE KEYNOTES:

- 200 INSTALL PAVEMENT SECTION PER DETAIL A ON SHEET C1.1.
- 201 INSTALL VERTICAL CURB AND GUTTER PER DETAIL C ON SHEET C1.1.
- 202 INSTALL WEDGE CURB PER DETAIL C ON SHEET C1.1.
- 203 INSTALL SIDEWALK PER DETAIL D ON SHEET C1.1.
- 204 INSTALL SIDEWALK RAMP PER DETAIL E ON SHEET C1.1.

WATER KEYNOTES:

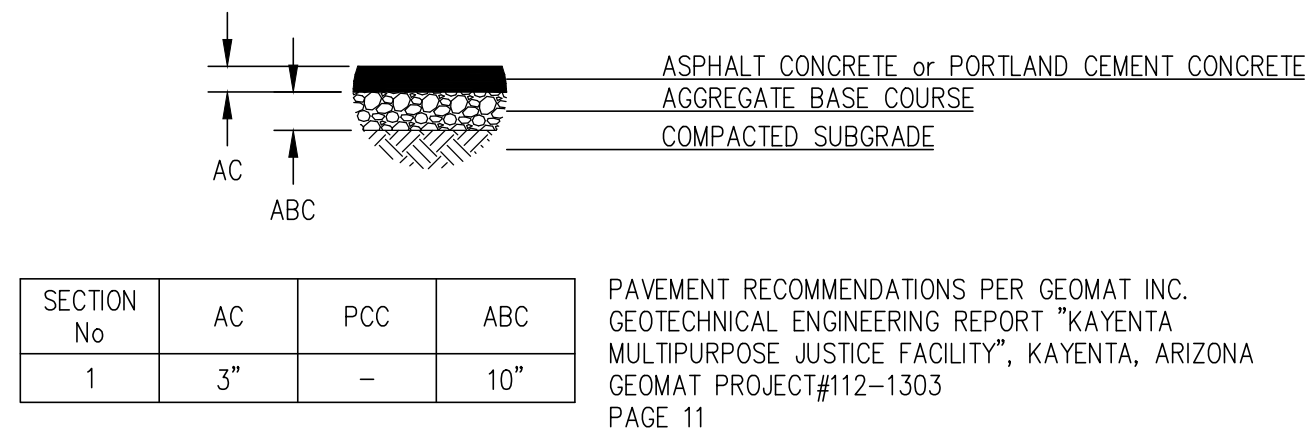
SEE SHEET C1.2

SEWER KEYNOTES:

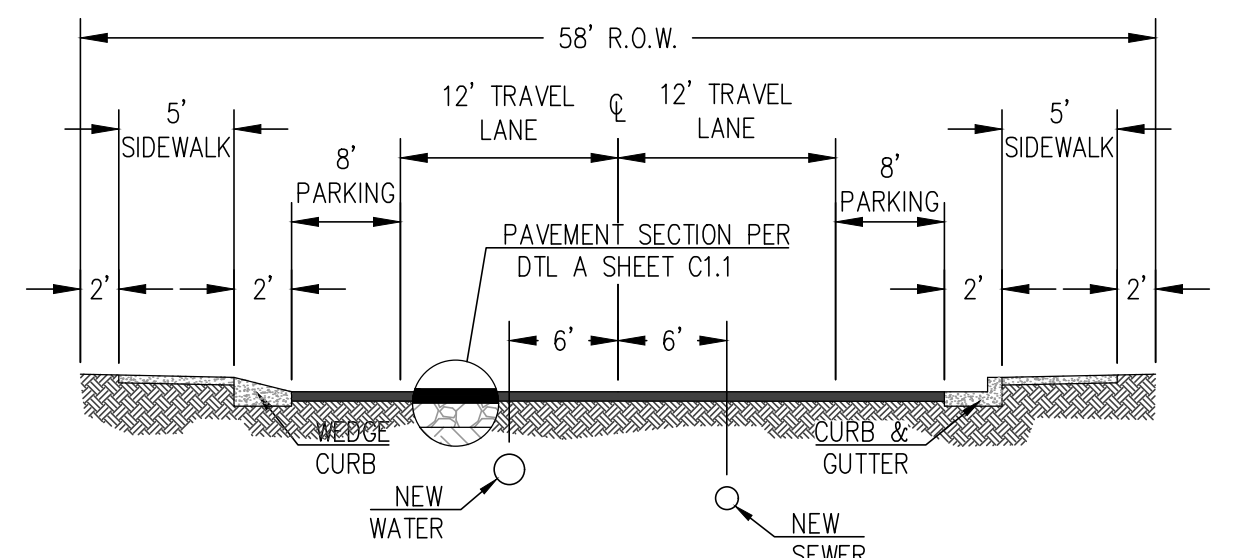
SEE SHEET C1.2

DRAINAGE KEYNOTES:

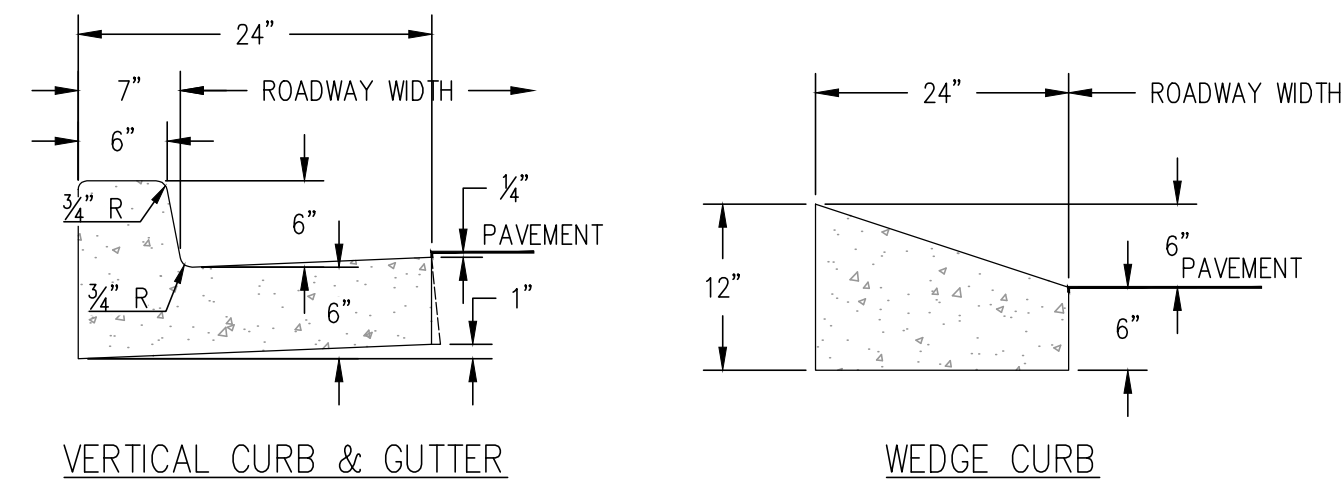
- 500 INSTALL 18" SIDEWALK SCUPPER PER DETAIL F ON SHEET C1.1.
- 601 INSTALL 6" D50 RIPRAP WITH MATTRESS THICKNESS = 2x50.



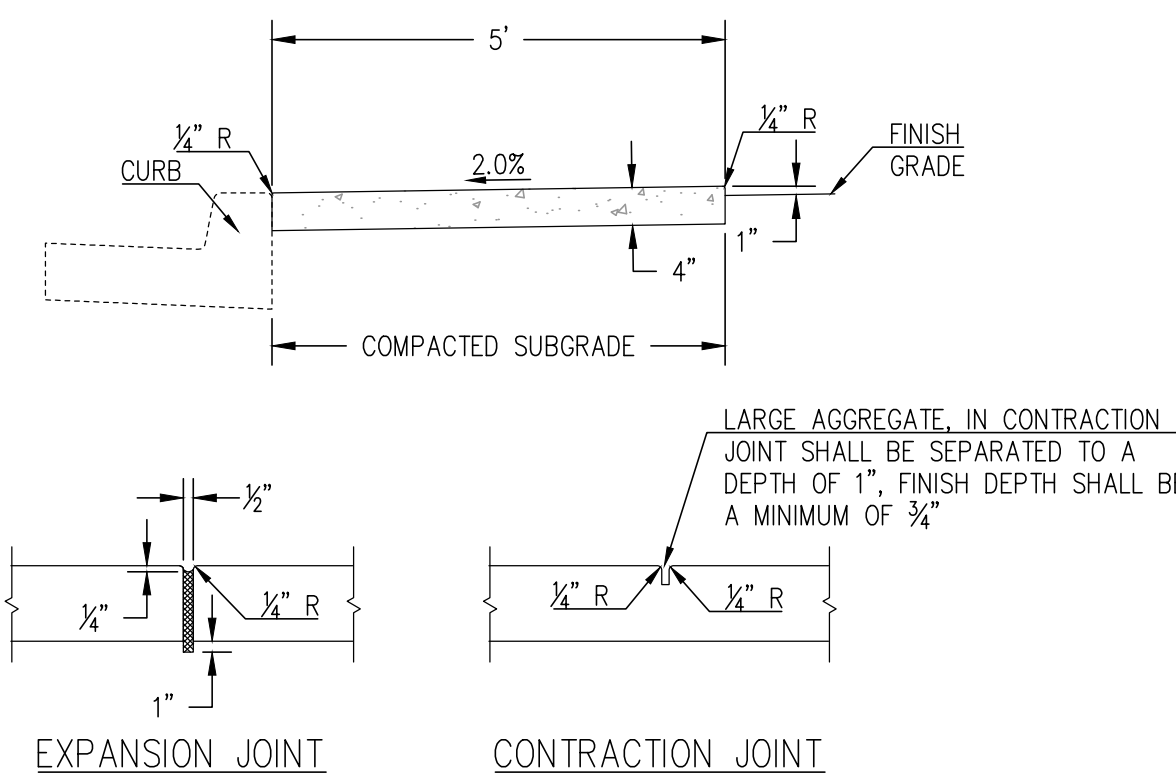
PAVEMENT SECTIONS
NOT TO SCALE



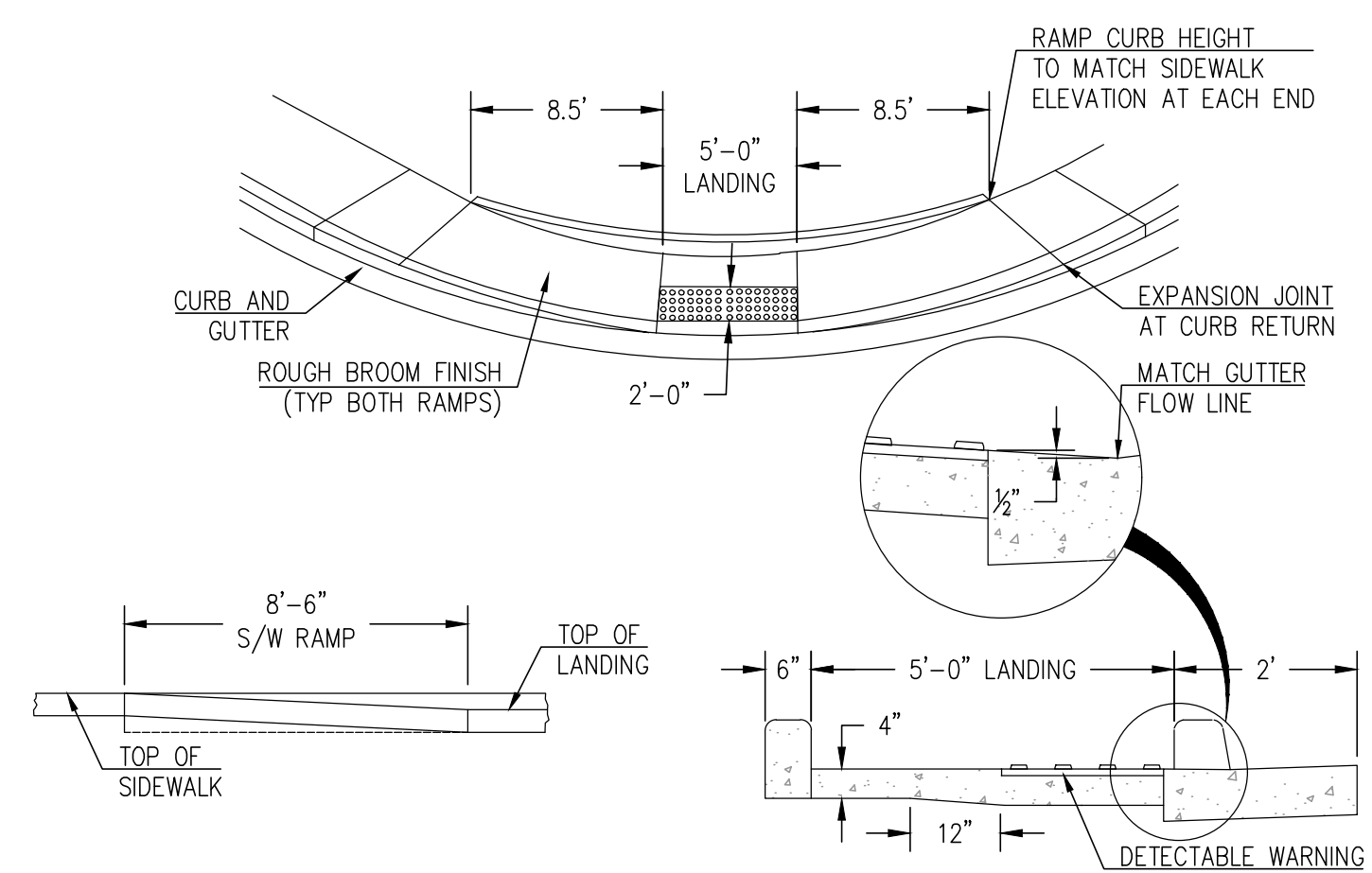
DRIVEWAY STREET SECTION
NOT TO SCALE



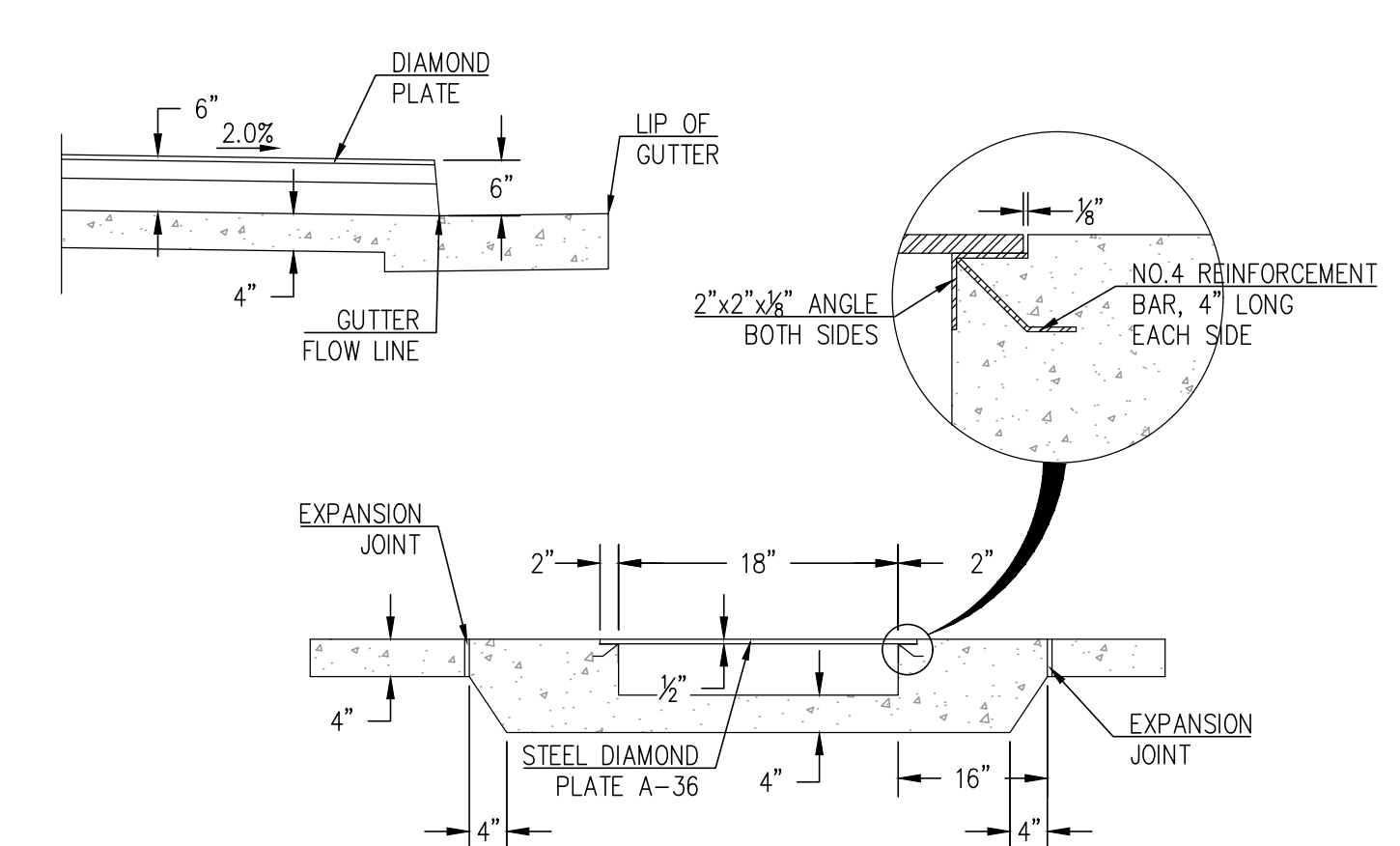
CURB DETAILS
NOT TO SCALE



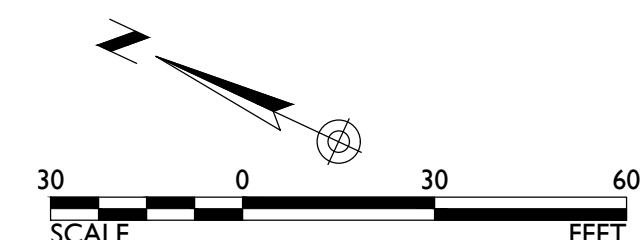
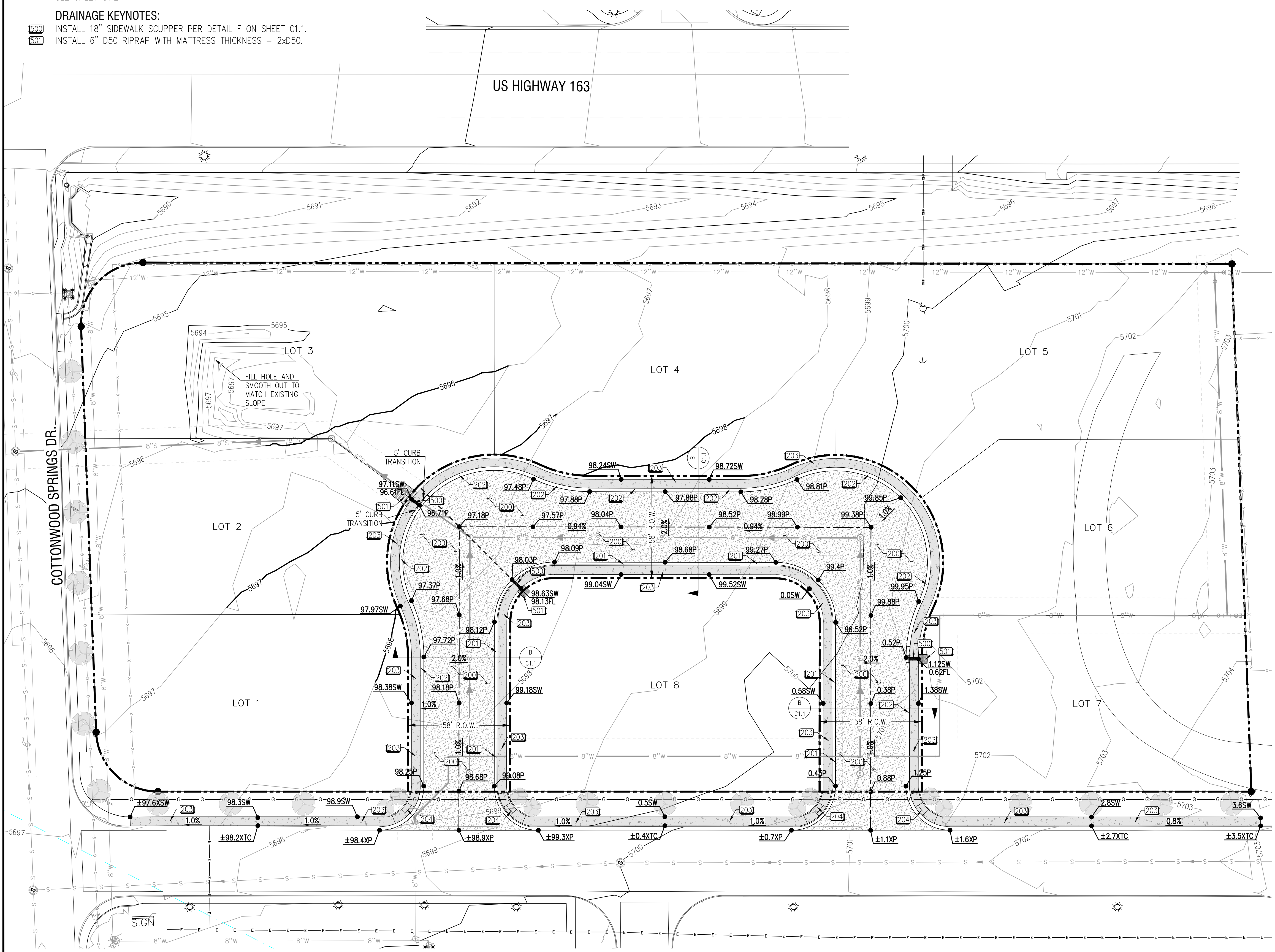
SIDEWALK DETAIL
NOT TO SCALE



CURB ACCESS RAMP
NOT TO SCALE



CURB ACCESS RAMP
NOT TO SCALE



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KAYENTA TOWNSHIP COMMERCIAL LOTS KAYENTA, AZ GRADING PLAN



PROJECT NO.: 218-005
DATE: 6-03-19
DESIGNED BY: MTY
DRAWN BY: EQ
APPROVED BY:

SHEET NO:
C1.1

KEYNOTES:

GENERAL CONSTRUCTION NOTES:

- ALL CLEARING AND GRUBBING, EXCAVATION, FILL, GRADING, BERM, SWALE, AND DITCH CONSTRUCTION IS INCIDENTAL TO CONSTRUCTION AND SHALL BE CONSTRUCTED TO GRADES AND LINES SHOWN, EVEN IF NOT SPECIFICALLY NOTED AS A WORK ITEM.
- USE TYPE II PORTLAND CEMENT ON AND BELOW GRADE.

SITE KEYNOTES:

SEE SHEET C1.1.

WATER KEYNOTES:

CONTRACTOR SHALL ADJUST ALL VALVE BOXES TO GRADE IN ACCORDANCE WITH NTUA SD WS-14. ALL LINE VALVES SHALL BE THE SIZE OF THE PIPE, SHALL HAVE MECHANICAL JOINT ENDS, AND SHALL BE INSTALLED PER NAVAJO AREA STANDARDS AND CONSTRUCTION REQUIREMENTS TECHNICAL SPECIFICATION FOR MATERIALS AND WORKMANSHIP FOR WATER AND WASTEWATER FACILITIES. ALL PVC WATER LINES AND FITTINGS SHALL BE NSF-PW SEAL AND SHALL BE PVC SD-21 PSI. ALL MATERIALS AND PRODUCTS USED IN DRINKING WATER SYSTEMS SHALL CONFORM TO NAVAJO AREA STANDARDS AND CONSTRUCTION REQUIREMENTS TECHNICAL SPECIFICATION FOR MATERIALS AND WORKMANSHIP FOR WATER AND WASTEWATER FACILITIES MOST CURRENT EDITIONS.

WATER KEYNOTES: (CONTINUED)

- K000** INSTALL 12"x12"x8" TEE DUCTILE IRON MJ WITH MEGALUGS RESTRAINT AND THRUST BLOCK PER NTUA SD WS-19 AND WS-19A.
- K001** INSTALL 12" GATE VALVE MJ WITH MEGALUGS RESTRAINT AND THRUST BLOCK PER NTUA SD WS-14 AND WS-16.
- K002** INSTALL 8" C-900 PVC PRESSURE CLASS 235 PSI. TRENCHING PER NTUA SD WS-15.
- K003** INSTALL 8" GATE VALVE MJ WITH MEGALUGS RESTRAINT AND THRUST BLOCK PER NTUA SD WS-14, WS-16.
- K004** INSTALL 8"x8"x8" TEE DUCTILE IRON MJ WITH MEGALUGS RESTRAINT AND THRUST BLOCK PER NTUA SD WS-19 AND WS-19A.
- K005** INSTALL 8" DUCTILE IRON MJ CAP WITH MEGALUGS RESTRAINT AND THRUST BLOCK PER NTUA SD WS-19 AND WS-19A.
- K006** INSTALL 8"-90° BEND DUCTILE IRON MJ WITH MEGALUGS RESTRAINT AND THRUST BLOCK PER NTUA SD WS-19 AND WS-19A.
- K007** INSTALL 8"-45° BEND DUCTILE IRON MJ WITH MEGALUGS RESTRAINT AND THRUST BLOCK PER NTUA SD WS-19 AND WS-19A.
- K008** CONNECT TO EXISTING WATER SYSTEM AT EXISTING 8" WATER VALVE. IF NO VALVE IS INSTALLED, INSTALL 8" GATE VALVE MJ WITH MEGALUGS RESTRAINT AND THRUST BLOCK PER NTUA SD WS-14, WS-16.
- K009** INSTALL IRRIGATION CONNECTION, 8"x1" SADDLE, BRASS OR STAINLESS STEEL, DOUBLE STRAP PER NTUA SD WS-1.

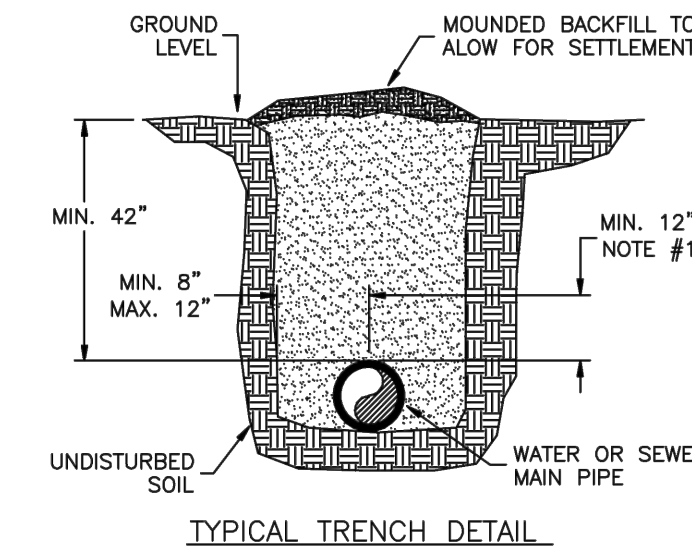
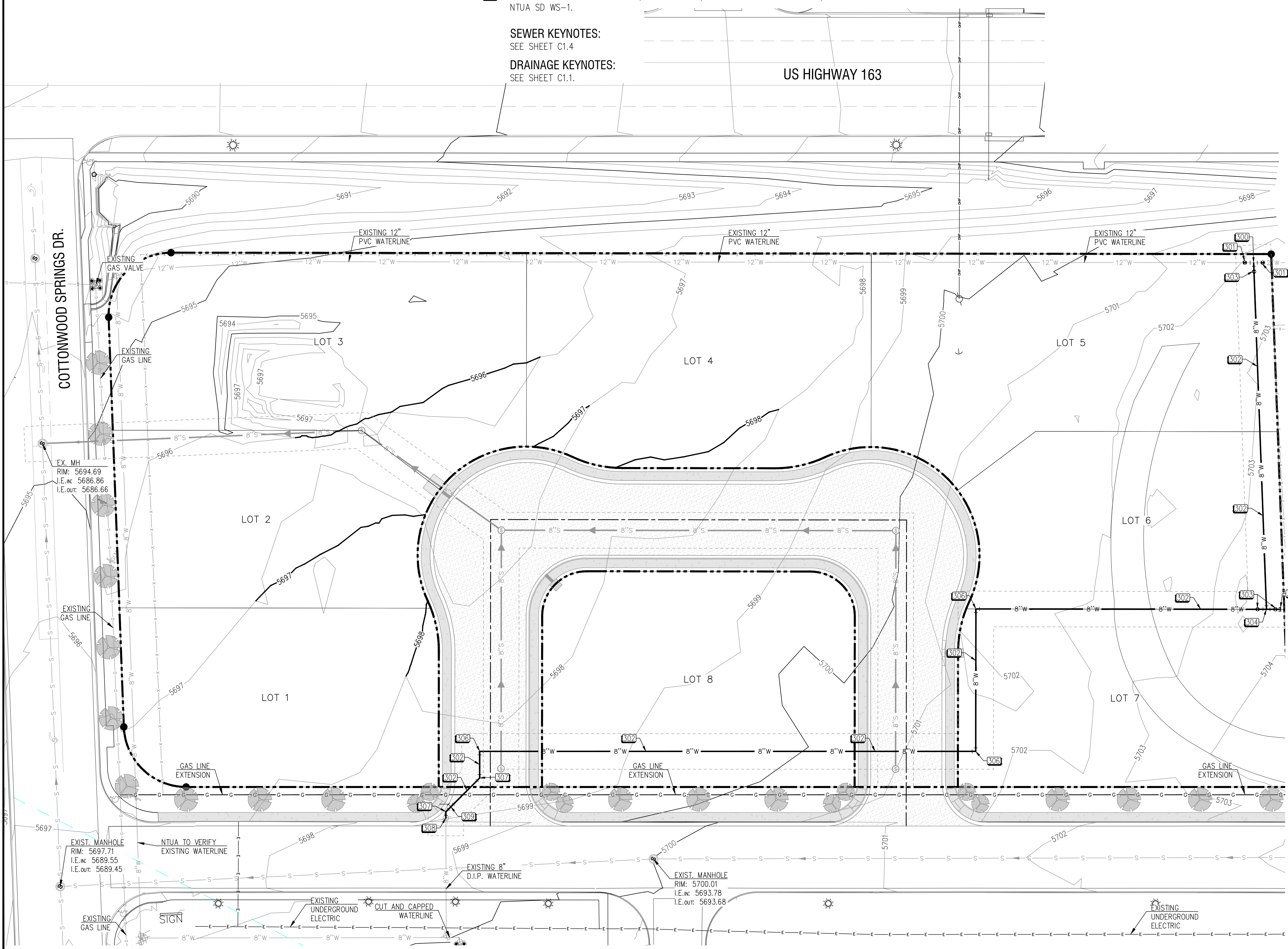
SEWER KEYNOTES:

SEE SHEET C1.4

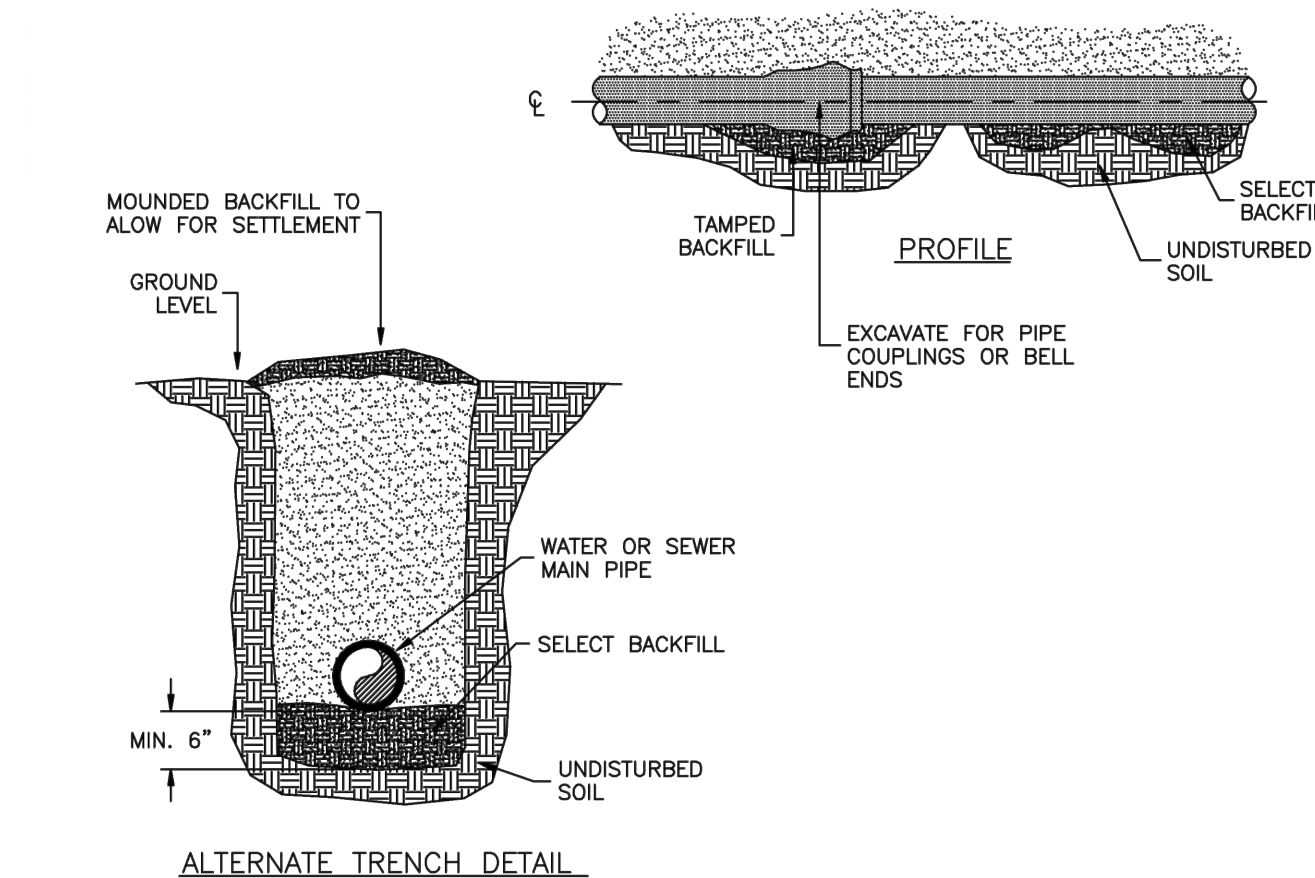
DRAINAGE KEYNOTES:

SEE SHEET C1.1.

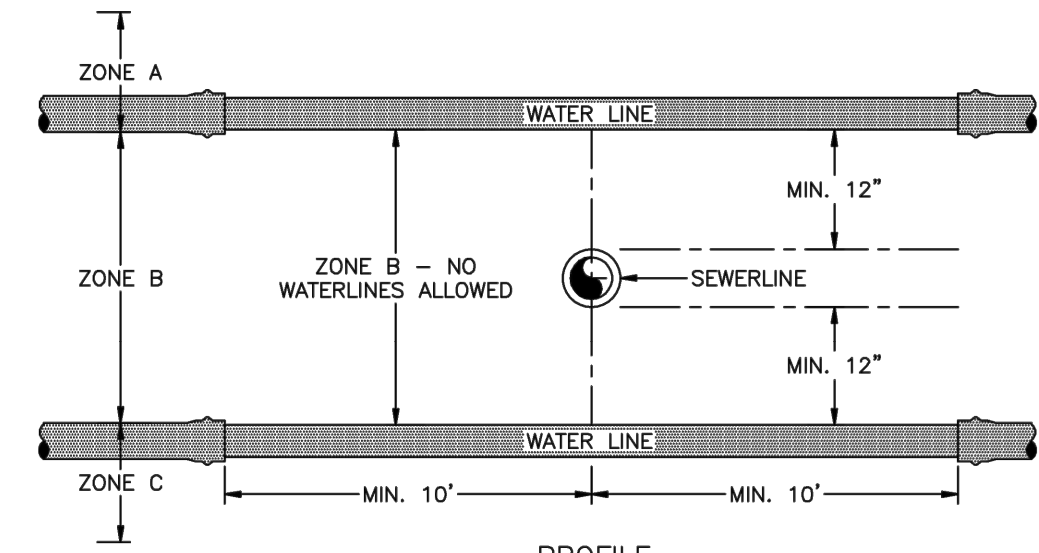
US HIGHWAY 163



- NOTES:**
- HAND COMPACTED IN 6" LIFTS FROM BOTTOM OF TRENCH TO 12" ABOVE PIPE CROWN.
 - OPEN CUT OR PAVED OR GRAVEL ROADS (IF REQUIRED), BACK FILL MINIMUM COMPACTION 95% OPTIMUM DENSITY IN LIFTS.
 - REPAVING AND REGRAVELING WILL BE DONE TO ROAD OWNER'S REQUIREMENTS.
 - KEEP LOWER 5" OF TRENCH WALL VERTICAL IF POSSIBLE. UPPER PART OF THE TRENCH WILL VARY IN WIDTH TO COMPENSATE FOR UNSTABLE SOIL. APPLICABLE O.S.H.A. REQUIREMENTS SHALL BE MET.



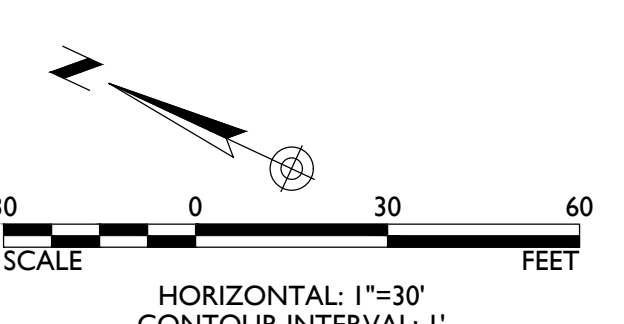
TRENCH BACKFILL
PER NTUA SD WS-15 & WWS-10
NOT TO SCALE



- ZONE A** - THE BOTTOM OF THE WATER LINE SHALL BE 12" OR MORE ABOVE THE TOP OF THE SEWER LINE - NO SPECIAL PRECAUTIONS REQUIRED.
- ZONE B** - 12' ABOVE AND 12' BELOW SEWER LINE - NO WATER LINES ALLOWED.
- ZONE C** - THE TOP OF THE WATER LINE SHALL BE 12" OR MORE BELOW THE BOTTOM OF THE SEWER LINE. IF THE SEWER LINE IS A NEWLY CONSTRUCTED SEWER LINE, AN 18" LENGTH OF DUCTILE IRON SEWER PIPE W/ GASKETED JOINTS SHALL BE CENTERED OVER THE WATER LINE WITH NO JOINTS CLOSER THAN 9" TO THE WATER LINE IN EACH DIRECTION. IF THE WATER LINE IS IN ZONE C AND THE WATER MAIN IS A NEWLY CONSTRUCTED WATER LINE, A 20' LENGTH OF PVC WATER PIPE SHALL BE CENTERED UNDER THE SEWER LINE.

- NOTES:**
- WHEN POSSIBLE, WATER LINES SHALL BE INSTALLED ABOVE SEWER LINES AND CROSSINGS SHALL BE AT 90° ANGLE(S).
 - WHEN WATER AND SEWER LINES ARE INSTALLED PARALLEL TO EACH OTHER, THE MINIMUM HORIZONTAL SEPARATION SHALL BE 10'.

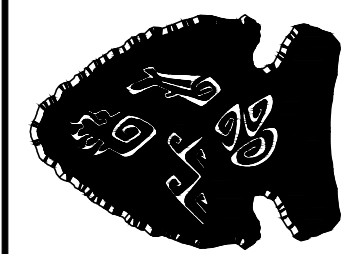
WATER/SEWER CROSSING DETAIL
PER NTUA SD WS-20
NOT TO SCALE



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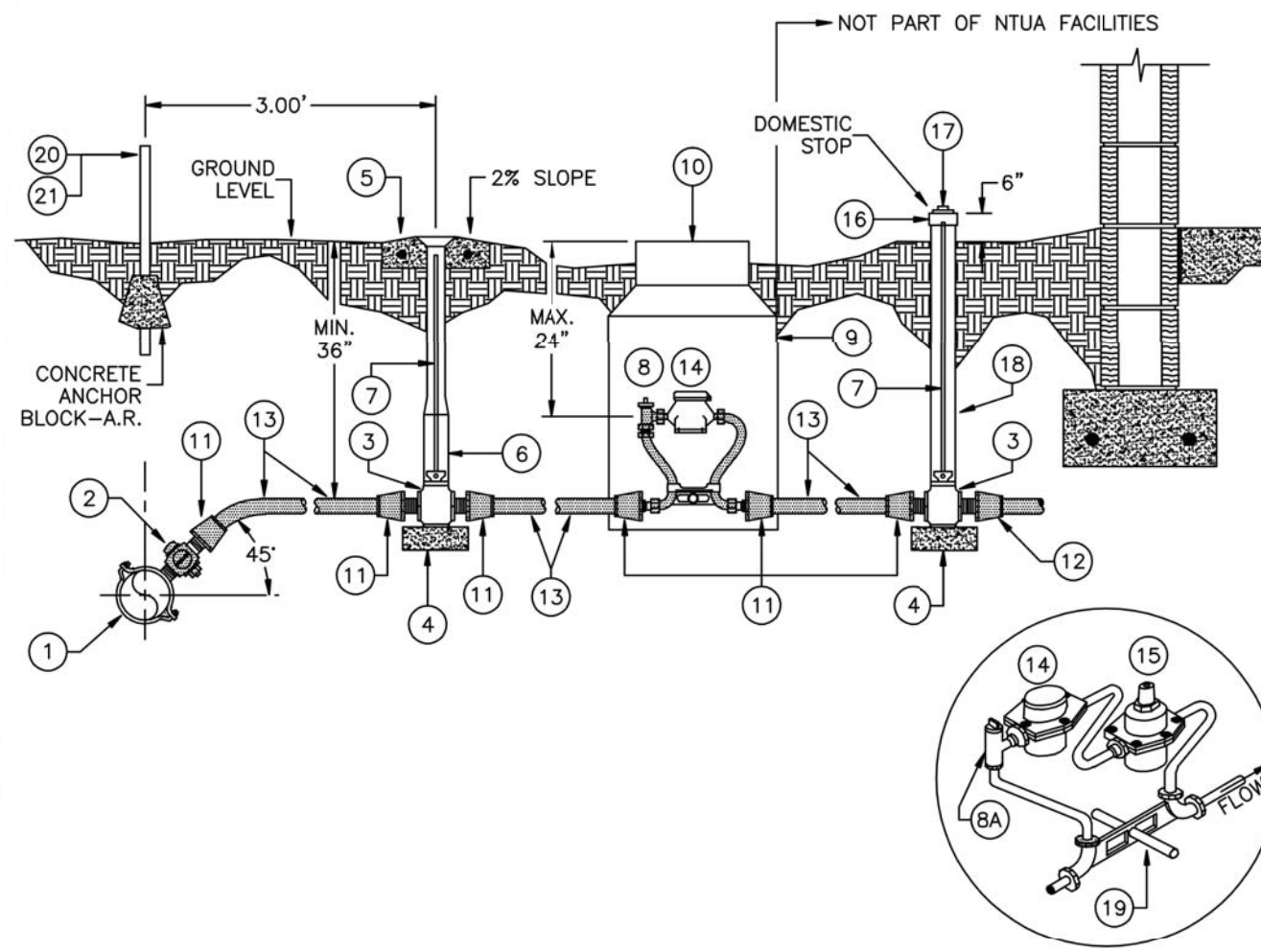
KAYENTA TOWNSHIP COMMERCIAL LOTS KAYENTA, AZ WATER PLAN



PROJECT NO.: 218-005
DATE: 6-03-19
DESIGNED BY: MTY
DRAWN BY: EQ
APPROVED BY:

SHEET NO:
C1.2



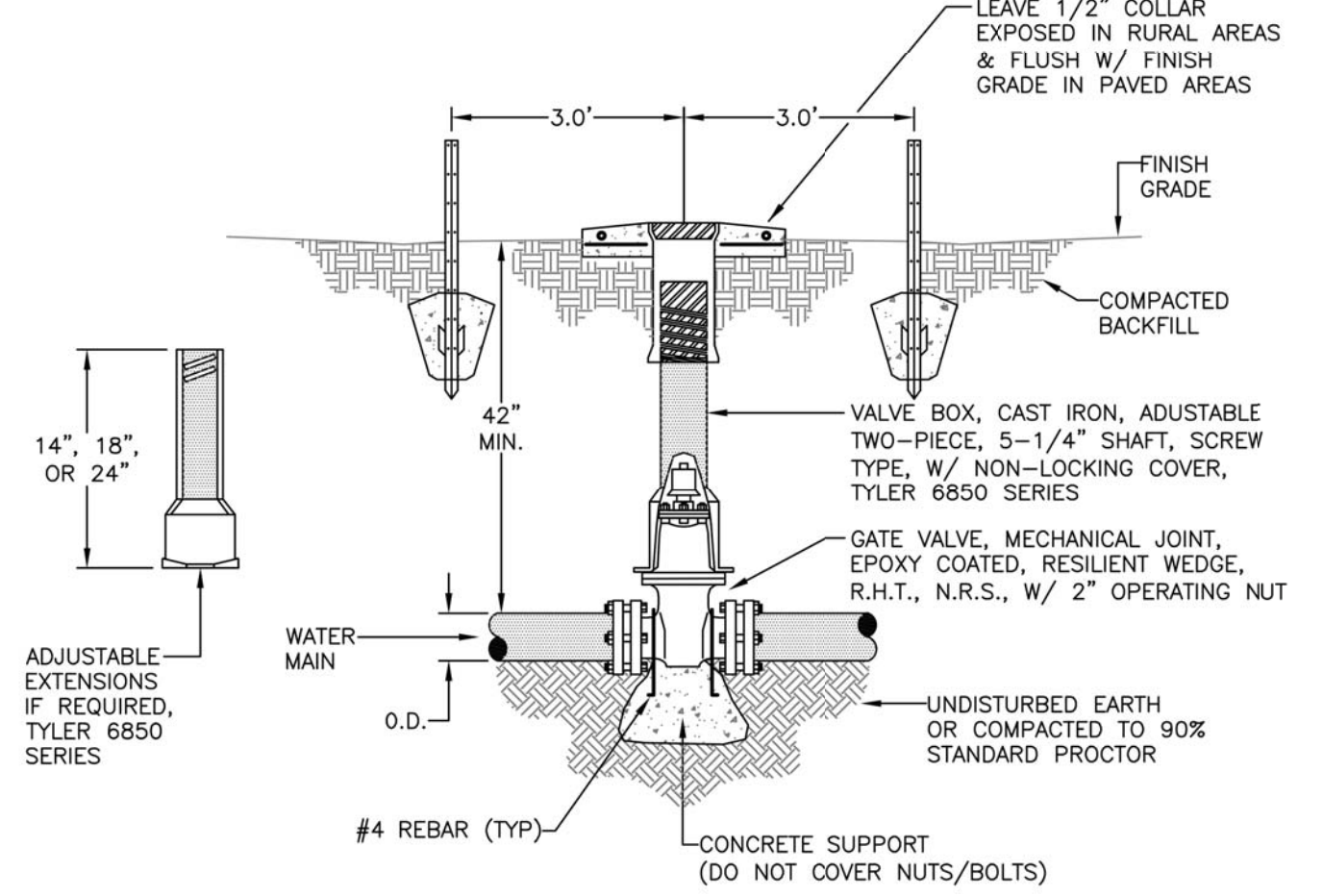
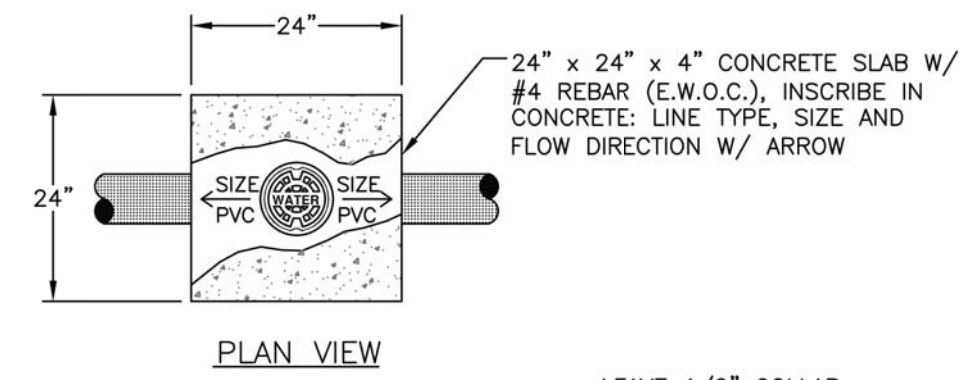


NOTES:
 1. SELECT EITHER PAGE 2a OR 2b BASED ON METER SIZE.
 2. TEST DURATION SHALL BE FOR 2 HOURS.
 DATE PERFORMED: _____ LAB SAMPLE NO.: _____ INITIALED (NTUA): _____

INDEX	SHEET	AS-BUILT LOCATION OF TAP
1" WATER SERVICE	1 of 5	SYSTEM NAME
MATERIAL LIST: 5/8" x 3/4" METER	2a of 5	PROJECT NO.
MATERIAL LIST: 1" METER	2b of 5	SHEET NO.
GENERAL NOTES	3 of 5	LINE NO.
PROPOSED CONSTRUCTION DRAWING	4 of 5	STATION NO.
INDIVIDUAL AS-BUILT	5 of 5	

WATER SERVICE DETAIL
 PER NTUA SD WS-1
 NOT TO SCALE

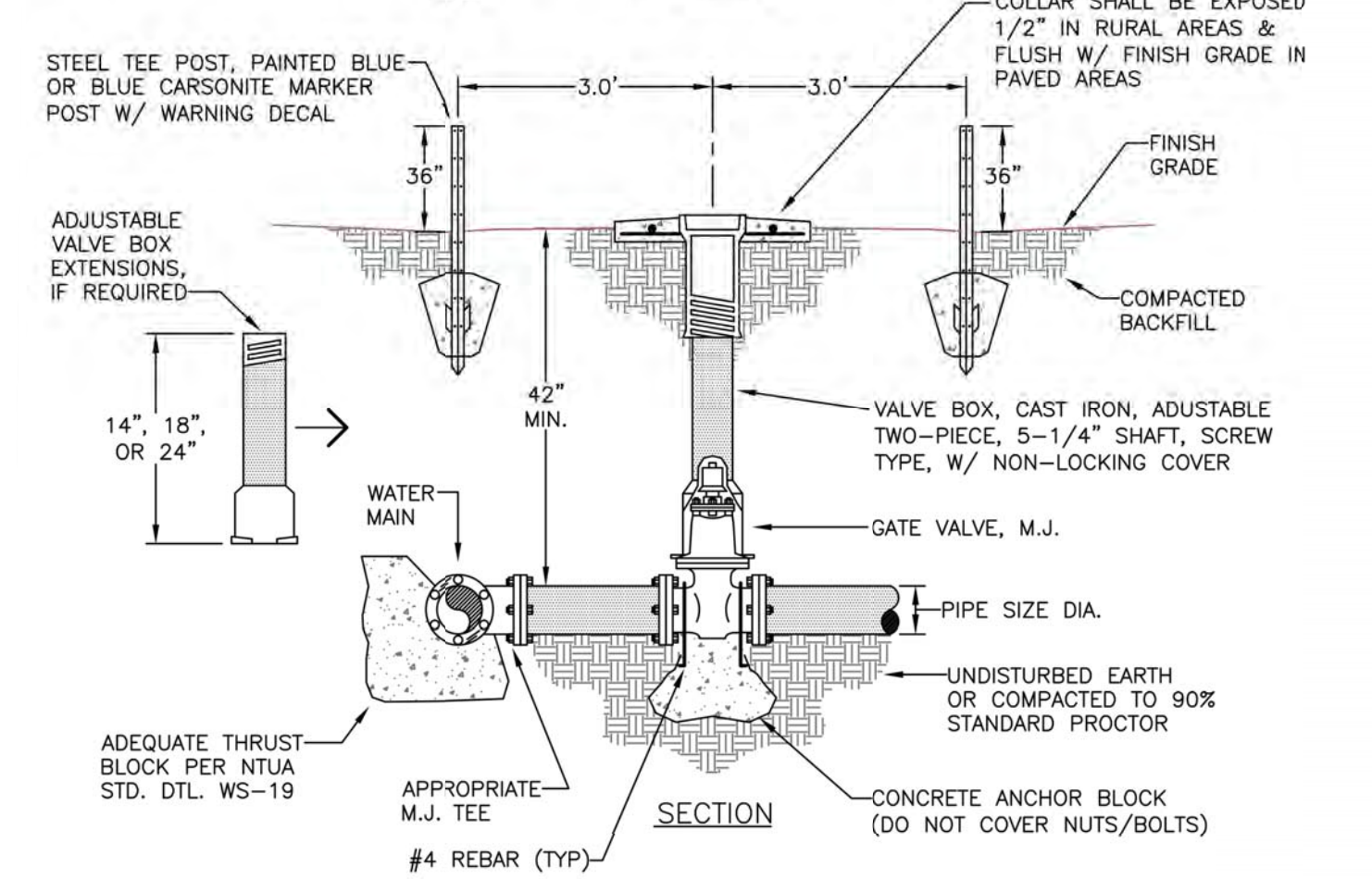
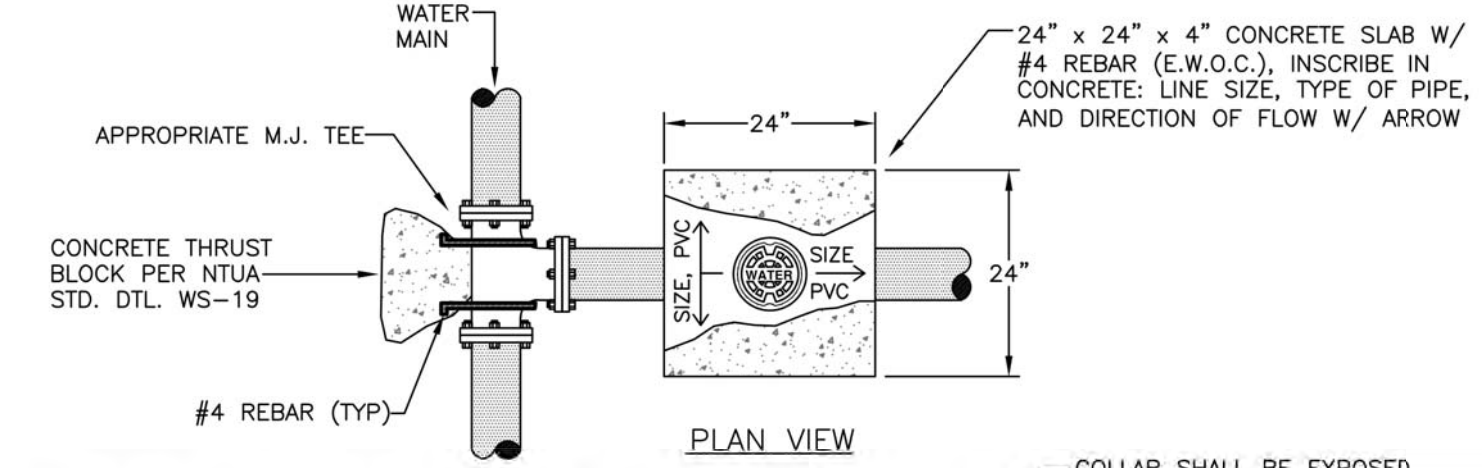
A
 C1.3



GENERAL NOTES:
 1. USE SERIES 2000, PV MEGALUG GLANDS TO SECURE GATE VALVE(S) TO SDR-21, PVC PIPE.
 2. USE SERIES 1100 MEGALUG GLANDS TO SECURE GATE VALVE(S) TO DUCTILE IRON PIPE.
 3. DO NOT COVER JOINTS AND BOLTS WITH CONCRETE.
 4. SEE WS-13 FOR APPROPRIATE LOCATIONS OF MARKER POST.
 5. INSTALL #4 REBARS TO THE GATE VALVE & CONCRETE ANCHOR BLOCK.

WATER VALVE INSTALLATION DETAIL
 PER NTUA SD WS-14
 NOT TO SCALE

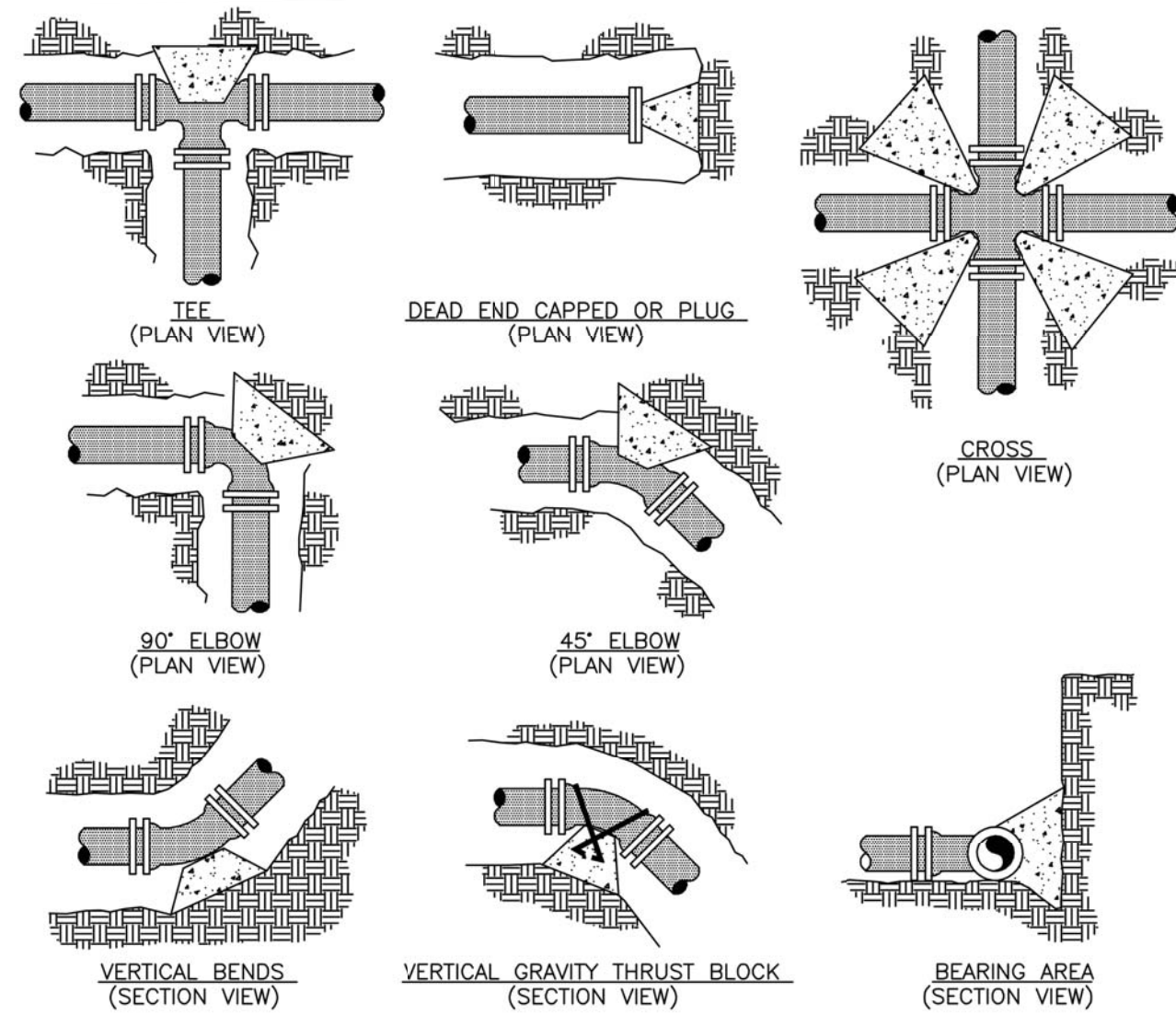
B
 C1.3



GENERAL NOTES:
 1. USE SERIES 2000, PV MEGALUG GLANDS TO SECURE GATE VALVE(S) TO SDR-21, PVC PIPE.
 2. USE SERIES 1100 MEGALUG GLANDS TO SECURE GATE VALVE(S) TO DUCTILE IRON PIPE.
 3. DO NOT COVER JOINTS AND BOLTS WITH CONCRETE.
 4. SEE WS-13 FOR APPROPRIATE LOCATIONS OF MARKER POST.
 5. INSTALL #4 REBARS TO THE GATE VALVE & CONCRETE ANCHOR BLOCK.

WATER MAINLINE TAP W/ GATE VALVE DETAIL
 PER NTUA SD WS-16
 NOT TO SCALE

C
 C1.3



PIPE SIZE	TEE & PLUG	90° ELBOW	45° OR 22 1/2° ELBOW	CROSS
2"	0.5	0.5	0.5	0.5
4"	1.5	2.0	1.5	1.0
6"	3.0	4.5	2.5	2.0
8"	5.0	7.5	4.0	4.0
10"	8.0	11.0	6.5	5.5
12"	11.0	15.5	9.0	8.0
14"	15.0	21.0	12.0	10.5
16"	19.0	27.0	15.5	13.5
18"	24.0	34.0	19.0	17.0

NOTES:
 1. DO NOT COVER GASKETED JOINTS AND NUTS/BOLTS.

CONCRETE THRUST BLOCK DETAIL
 PER NTUA SD WS-19
 NOT TO SCALE

D
 C1.3

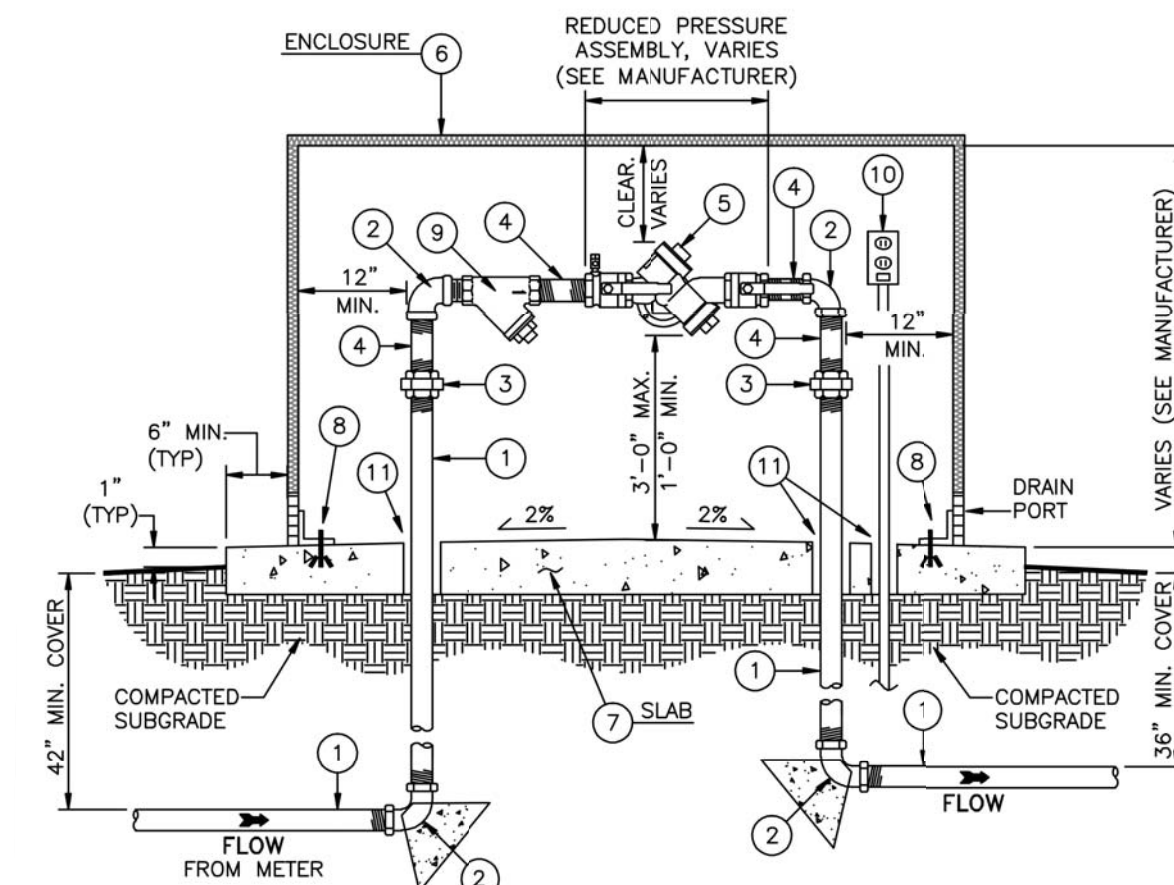
GRAVITY THRUST BLOCK
 (ALSO TO BE USED IN UNSTABLE TRENCH CONDITIONS)
 RESULTANT THRUST IN POUNDS OF FITTINGS AT 100 PSI WATER PRESSURE

PIPE SIZE	DEAD END	90° ELBOW	45° ELBOW	22 1/2° ELBOW	11 1/4° ELBOW
3"	1,232	1,742	943	481	241
4"	1,810	2,559	1,385	706	355
6"	3,739	5,288	2,862	1,459	733
8"	6,433	9,097	4,923	2,510	1,261
10"	9,677	13,685	7,406	3,776	1,897
12"	13,685	19,353	10,474	5,340	2,683
14"	18,385	26,001	14,072	7,174	3,604
16"	23,799	33,628	18,199	9,278	4,661
18"	29,865	42,235	22,858	11,653	5,855
20"	36,644	51,822	28,046	14,298	7,183
24"	52,279	73,934	40,013	20,398	10,249
30"	80,425	113,738	61,554	31,380	15,766
36"	115,209	162,931	88,177	44,952	22,585
42"	155,528	219,950	119,036	60,684	30,489
48"	202,683	286,637	155,127	79,083	39,733
54"	260,214	367,999	199,160	101,531	51,011
60"	298,121	421,606	228,172	116,321	58,442
64"	338,707	479,004	259,235	132,157	66,398

NOTES:
 1. THE THRUST (IN TOTAL POUNDS) IN THE CHART IS BASED ON DUCTILE IRON OUTSIDE DIAMETER PIPE DIMENSION. SURGES SHOULD BE CONSIDERED AT TWICE THE NORMAL OPERATING PRESSURE. THE VOLUME OF THE GRAVITY THRUST BLOCK IS BASED ON CONCRETE AT 150 LBS./FT.³.
 2. TO OBTAIN VOLUME OF CONCRETE REQUIRED, USE:
 VOLUME OF CONCRETE (FT³) = THRUST (LBS.) x SYSTEM PRESSURE (PSI) / 100 PSI // 150 LBS./FT.³.
 E.G.: CALCULATE THE VOLUME OF THE GRAVITY THRUST BLOCK FOR AN 8" x 45° BEND AT AN OPERATING PRESSURE OF 80 PSI.
 ANSWER: 4923 LBS. x 160 PSI / 100 PSI DIVIDED BY 150 LBS./CUBIC FT. = 52.5 CUBIC FEET OR 2 CUBIC YARDS.

CONCRETE THRUST BLOCK CHART
 PER NTUA SD WS-19A
 NOT TO SCALE

E
 C1.3



GENERAL NOTES:
 1. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1013, AWWA C511 & USC-FCCOHR.
 2. NO WATERLINE CONNECTIONS ARE ALLOWED BETWEEN THE METER AND BACKFLOW PREVENTION ASSEMBLY.
 3. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED WITHIN 5-FT OF THE METER BOX.
 4. BACKFLOW PREVENTION ASSEMBLY SHALL BE CENTERED ON CONCRETE PAD AND COVERED WITH AN ENCLOSURE.
 5. MINIMUM INSULATED CLASS II, ASSE 1060 WEATHERPROOF ENCLOSURE REQUIRED.
 6. PROTECT PIPES & BACKFLOW PREVENTION ASSEMBLY FROM FREEZING WITH INSULATION AND OPTIONAL HEATING SOURCE.
 7. OPTIONAL 120V GFCI ELECTRICAL RECEPTACLE TO BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE FOR OUTDOOR AND DAMP ENCLOSURE OPERATION.
 8. PIPE MATERIAL SHALL BE CLASS 350 OR BETTER COPPER (TYPE K) OR BRASS (ASTM B43).
 9. INSTALLATION SHALL BE IN COMPLIANCE WITH ALL APPLICABLE SPECIFICATIONS.
 10. PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE AND OPERATION OF BACKFLOW PREVENTION ASSEMBLY AND COMPLIANCE WITH REPORTING AND TESTING REQUIREMENTS.
 11. MINIMUM 24" CLEARANCE FROM WALL ON THE TEST PORTS SIDE OF THE ASSEMBLY FOR TESTING.
 12. CLEARANCE FOR TOP OF ENCLOSURE TO ASSEMBLY VARIES PER ASSEMBLY MODEL AND ENCLOSURE MANUFACTURER.

REDUCED PRESSURE BACKFLOW ASSEMBLY DETAIL
 PER NTUA SD WS-22
 NOT TO SCALE

F
 C1.3

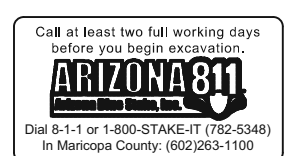
1" - 2" OUTDOOR, REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY

#	ITEM	QTY	DESCRIPTION
1	A.R.		TYPE K COPPER OR BRASS (ASTM B-43) PIPE
2	4		TYPE K COPPER 90 DEGREE ELBOW OR BRASS 90 DEGREE THREADED ELBOWS
3	2		TYPE K COPPER OR BRASS THREADED UNIONS
4	A.R.		TYPE K COPPER OR BRASS THREADED PIPE NIPPLES
5	1		BACKFLOW PREVENTION ASSEMBLY, REDUCED PRESSURE PRINCIPLE
6	1		CLASS II, ASSE 1060 INSULATED WEATHERPROOF ENCLOSURE W/ DRAIN OUTLETS, ANCHORED TO CONCRETE MOUNTING PAD
7	1		4" - 3,000 PSI CONCRETE MOUNTING PAD, DIMENSIONS PER ENCLOSURE MANUFACTURER SPECIFICATION
8	A.R.		ANCHOR SYSTEM FOR ENCLOSURE (HARDWARE)
9	1		BRONZE WYE STRAINER (THREADED), WILKINS MODEL "S" SERIES, OAE
10	1		GFCI ELECTRICAL RECEPTACLE (OPTIONAL)
11	A.R.		MINIMUM 1" ANNULAR AREA AROUND PIPE & ELECTRICAL CONDUIT W/ PIPE SLEEVE

GENERAL NOTES:
 1. A.R. = AS REQUIRED
 2. OAE = OR APPROVED EQUAL

REDUCE PRESSURE BACKFLOW MATERIAL LIST
 PER NTUA SD WS-22A
 NOT TO SCALE

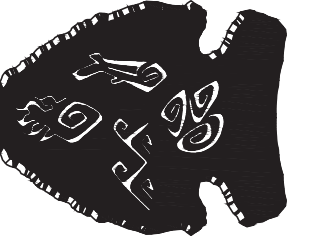
F
 C1.3



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 FAX: 520-777-3438



KAYENTA TOWNSHIP
 COMMERCIAL LOTS
 KAYENTA, AZ
 WATER DETAILS



PROJECT NO.: 218-005
 DATE: 6-03-19
 DESIGNED BY: MTY
 DRAWN BY: EQ
 APPROVED BY:

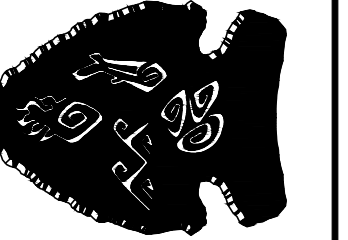
SHEET NO.:
C1.3



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TUCSON, ARIZONA 85701
PHONE: 520-822-7702
FAX: 520-777-3438

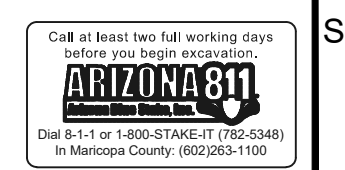


**KAYENTA TOWNSHIP
COMMERCIAL LOTS
KAYENTA, AZ
UTILITY EASEMENT MAP**



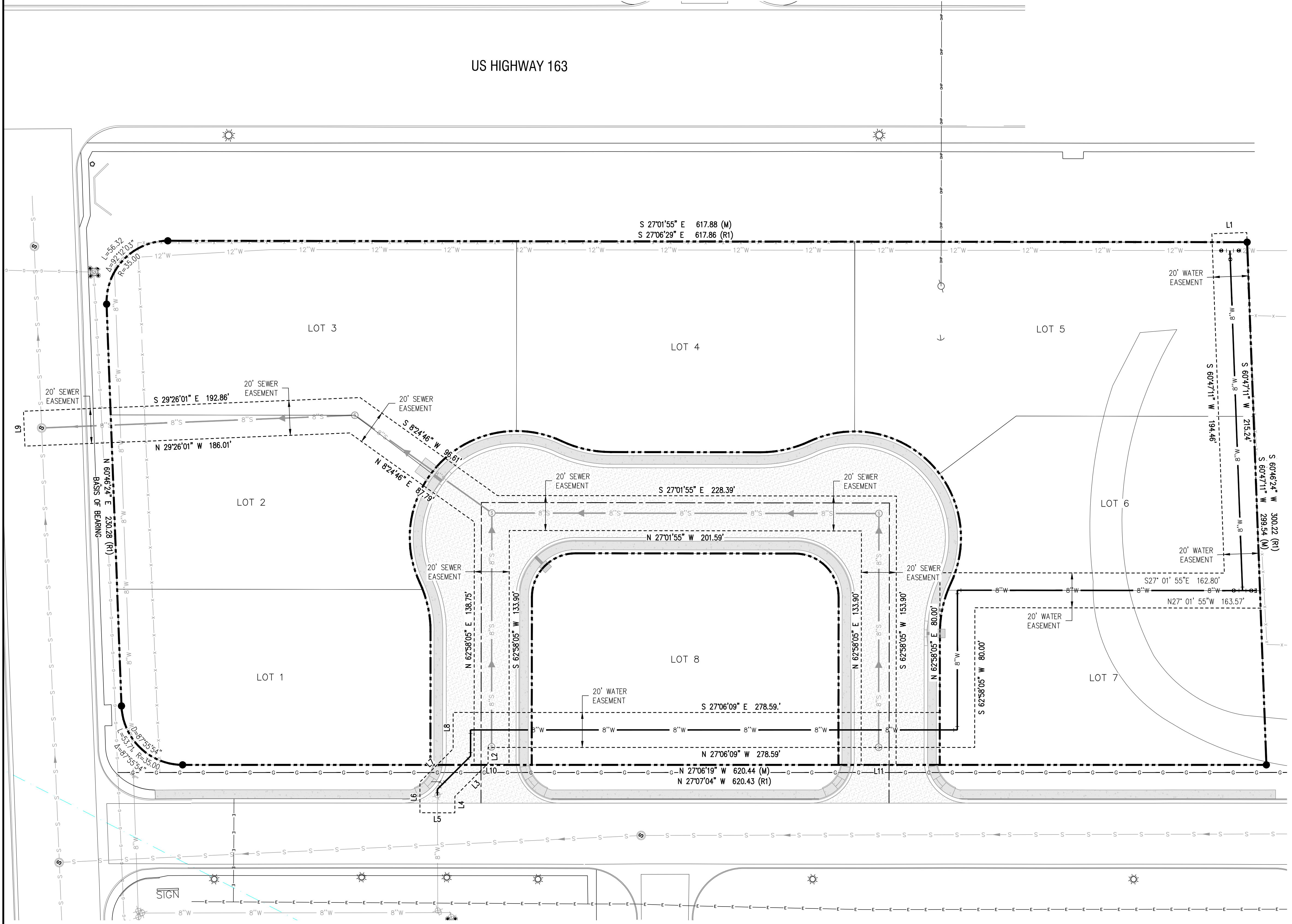
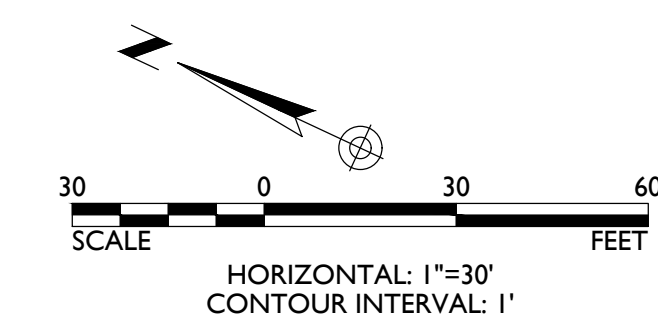
PROJECT NO.: 218-005
DATE: 6-03-19
DESIGNED BY: MTY
DRAWN BY: EQ
APPROVED BY:

SHEET NO.:
C1.6



NTUA WATER EASEMENT		
LINE	BEARING	DISTANCE
L1	S 29° 12' 49" E	20.00'
L2	S 62° 58' 05" W	9.15'
L3	N 72° 01' 55" W	26.80'
L4	S 62° 58' 05" W	9.38'
L5	N 27° 01' 55" W	20.00'
L6	N 62° 58' 05" E	17.66'
L7	S 72° 01' 55" E	26.80'
L8	N 62° 58' 05" E	20.85'

NTUA SEWER EASEMENT		
LINE	BEARING	DISTANCE
L9	N 60° 33' 59" E	20.00'
L10	N 27° 01' 55" W	20.00'
L11	N 27° 01' 55" W	20.00'



US HIGHWAY 163

S 27°01'55" E 617.88 (M)
S 27°06'29" E 617.86 (R1)

LOT 3

LOT 4

LOT 5

LOT 2

LOT 6

LOT 1

LOT 8

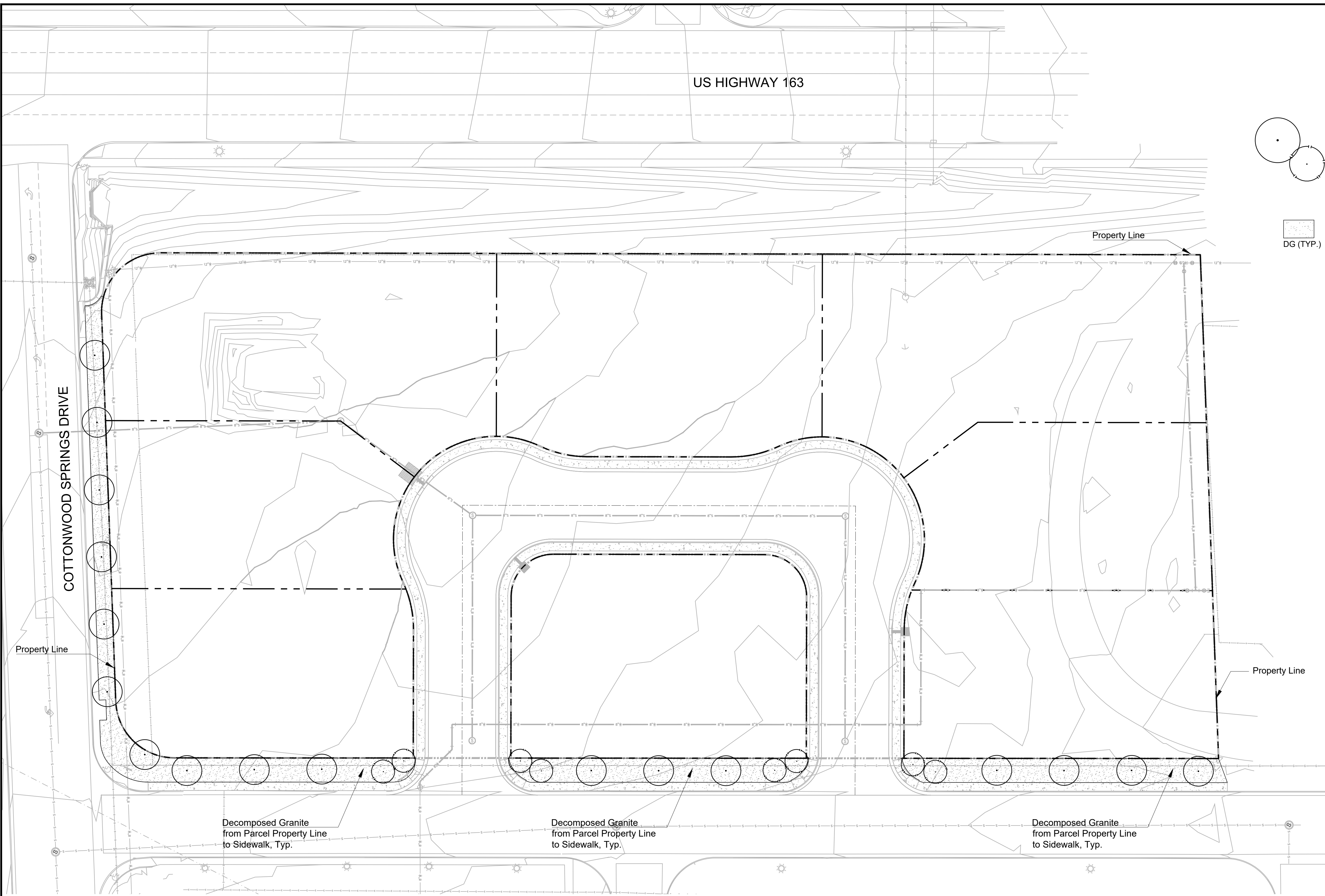
LOT 7

S 27°06'09" E 278.59'

N 27°06'09" W 278.59'

N 27°06'19" W 620.44 (M)
N 27°07'04" W 620.43 (R1)

SIGN



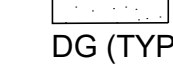
LANDSCAPE LEGEND

Supply and install the following plant material. Landscape designer to field verify location prior to planting. All plant material to meet A.N.A. specifications and be of sound health and appearance

TREES	SIZE	QTY
<i>Gleditsia triacanthos inermis</i> Honey Locust	Standard 24" Box	17
<i>Quercus buckleyi</i> Texas Red Oak	24" Box	8

GROUND COVER/ HARDSCAPE MATERIAL QTY

Decomposed Granite - 1" Screened
Color and appearance to match existing
Highway 160 Landscape Improvements.
Three (3) inches in all planting areas as noted.



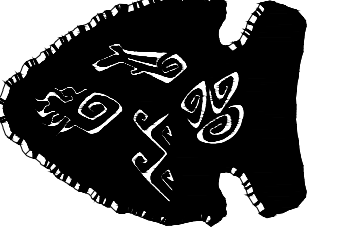
DG (TYP.)



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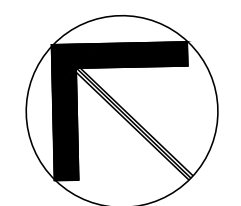
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PHONE: 520-822-7702
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1 LANDSCAPE PLAN
SCALE: 1" = 30'-0"

GENERAL LANDSCAPE NOTES:

- The Landscape Architect, or his representative, reserve the right to refuse any plant materials he deems unacceptable. (See specifications)
- For clarification of discrepancies between the drawings and the site, it should be brought to the attention of the Landscape Architect prior to beginning work.
- The Landscape Architect is to approve any and all substitutions.
- Plant list provided for contractor's convenience only. Plans take precedence.
- Double stake all 15 gallon and 24" box trees as required.
- Exposed soil in planters shall be raked and free from rocks, roots, weeds, etc.
- Finished grade in ground cover and granite areas shall be 1" below adjacent header board, paving, curbing, etc.
- Plants shall be quality material having a growth habit that is normal for the species and be sound, vigorous, healthy, and free from insects and injury.
- Ground cover and/or decomposed granite shall extend under shrubs unless noted.
- After all work is completed, the contractor shall remove all materials not incorporated in the Scope of Work from the job site.
- Grading shall include all excavation, settlement, handling, import, distribution, transportation, and disposal necessary to bring ground to finish grade as shown on the civil and landscape plans.
- All earthwork is to be done so that all water drains away from all structures.
- All underground conduits and utilities are to be located before digging.
- All plant material to be guaranteed for a period of eighteen (18) months after final acceptance.
- Landscape Contractor is responsible for final grading on all landscaped areas.
- Backfill planting soil for all native species, cacti and succulents to be existing native soil. A planting mix of 1/3 mulch, 2/3 native soil mixed thoroughly is to be used as plant backfill for non-native or exotic species.
- In the event of major discrepancies between the plans and field conditions, contractor shall notify the Landscape Architect immediately. Allow a minimum of forty-eight (48) hours between notification of Landscape Architect and proceeding with construction of irrigation system.
- All finished granite areas are to be 1" below all sidewalks and curbs.
- Test drainage of plant beds and pits by filling with water. Conditions permitting the retention of water in locations for more than twenty-four (24) hours shall be brought to the attention of the LA prior to any planting.
- Contractor is responsible for providing sleeves to all landscape areas regardless whether they are shown on plans or not. Refer to sleeving schedule for size and quantity. If doubt or discrepancy exists request clarification from LA in writing.
- Refer to Specifications for Plants that are considered to be Invasive and should NOT be utilized on this project.



SHEET KEY

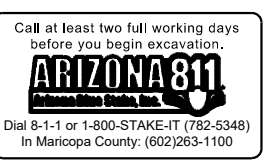
- L-101 LANDSCAPE PLAN
- L-201 IRRIGATION PLAN
- L-301 DETAILS
- L-302 DETAILS
- L-303 DETAILS

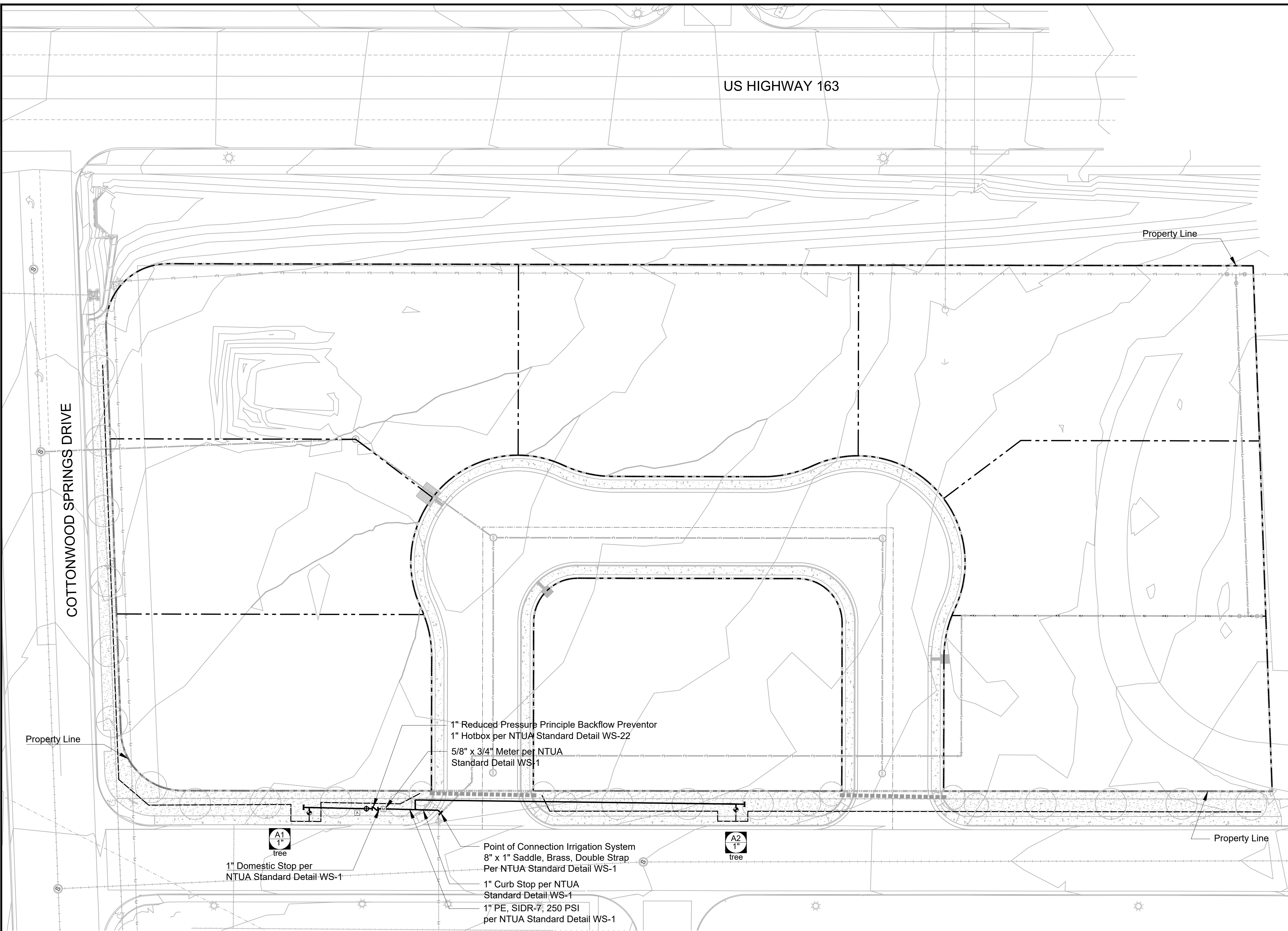
**KAYENTA TOWNSHIP
COMMERCIAL LOTS
KAYENTA, AZ
IMPROVEMENT PLANS**



PROJECT NO.: 218-005
DATE: 3-27-19
DESIGNED BY: JSR
DRAWN BY: JSR
APPROVED BY:

SHEET NO:
L1.01





IRRIGATION LEGEND

- Reduced Pressure Backflow Preventer
- Irrigation Mainline - 1" unless otherwise shown.
- 5/8" x 3/4" Water Meter
- Irrigation Controller - Rainbird
- Gate Valve - Febco Brass Ball Valve - Line Size
- Electrical Remote Control Valve and Filter - Valve - Rain Bird PESB Seriees - Filter - Rainbird RBY-100-150MX
- Irrigation Sleeve - Sch. 40 PVC - 4" unless otherwise shown
- Tree Lateral - 3/4" Class 200 PVC - unless otherwise shown
- Shrub Lateral - 3/4" Poly - unless otherwise shown
- Spray Lateral - 3/4" Class 200 PVC unless otherwise shown
- Pot Lateral - 3/4" Poly unless otherwise shown
- Hose End Cap
- Wilkins #90 - adjustable outlet pressure regulator
- Multiport Emitters Rain Bird - (6) 1gph or 2gph ports - Refer to Emitter Chart
- Station Number
Valve Size
Valve Type

GENERAL IRRIGATION NOTES:

1. Maintain irrigation without disruption to all existing plant material as necessary. Coordinate with General Contractor to prevent damage to plant material caused by damage to irrigation caused by construction.
2. Irrigation system shall meet all specifications. If conflict arises between specifications and drawings, specifications shall prevail. If conflict arises between details and notes, notes shall prevail.
3. Irrigation plans are schematic. Contractor is responsible for locating all lines and heads away from obstructions and preventing hazardous conditions caused by irrigation.
4. Landscape Contractor shall coordinate all necessary sleeving with General Contractor. Landscape Contractor is responsible for all necessary sleeving whether shown on plans or not. No additional changes for sleeving or boring will be allowed after acceptance of bid.
5. All water used for irrigation purposes will conform to the Arizona Groundwater Code, Arizona Revised Statutes Title 45, Chapter 2.
6. The contractor shall verify the existing pressure and shall notify the landscape architect of any discrepancy before continuing the work.

SLEEVING SCHEDULE:		PIPE SIZE SCHEDULE	
Contractor is responsible for all sleeving whether shown or not.		pipe size	flow
	6" Mainline	1 1/2"	0-5
	3" Submain to Regulator	3/4"	6-10
	3" Irrigation Wires	1"	11-15
	3" Low Voltage Lighting Wires	1-1/4"	16-25
	2" Lateral Lines	1-1/2"	26-35
		2"	36-60
		2-1/2"	61-80
		3"	81-120
		4"	121-200

IRRIGATION VALVE SCHEDULE

VALVE	SIZE	TYPE-GPM	VALVE	SIZE
A-1	1"	TREE	-	-
A-2	1"	TREE	-	-

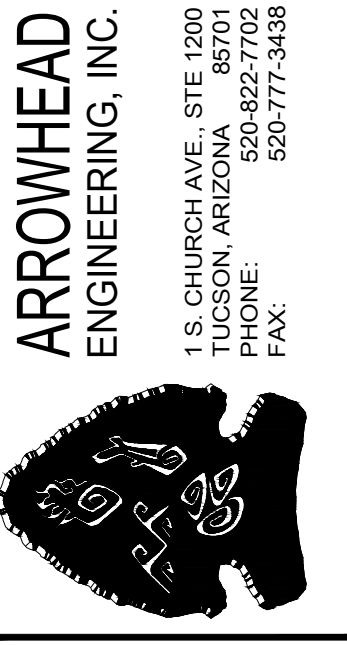
NOTES:

1. (M) Multi-port emitter, (S) Single-port emitter. Contractor may select to provide multi-port emitters for shrub plant material. All multi-port emitters shall be installed in emitter box per the project details.
2. Contractor shall adjust controller for the proposed emitter schedule and provide watering to promote healthy growth of plant material.



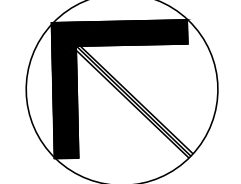
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**KAYENTA TOWNSHIP
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KAYENTA, AZ
IMPROVEMENT PLANS**



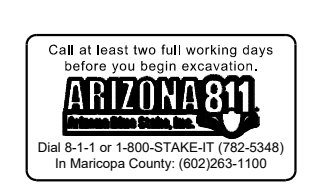
SHEET KEY

- L-101 LANDSCAPE PLAN
- L-201 IRRIGATION PLAN
- L-301 DETAILS
- L-302 DETAILS
- L-303 DETAILS



PROJECT NO.: 218-005
DATE: 3-27-19
DESIGNED BY: JSR
DRAWN BY: JSR
APPROVED BY:

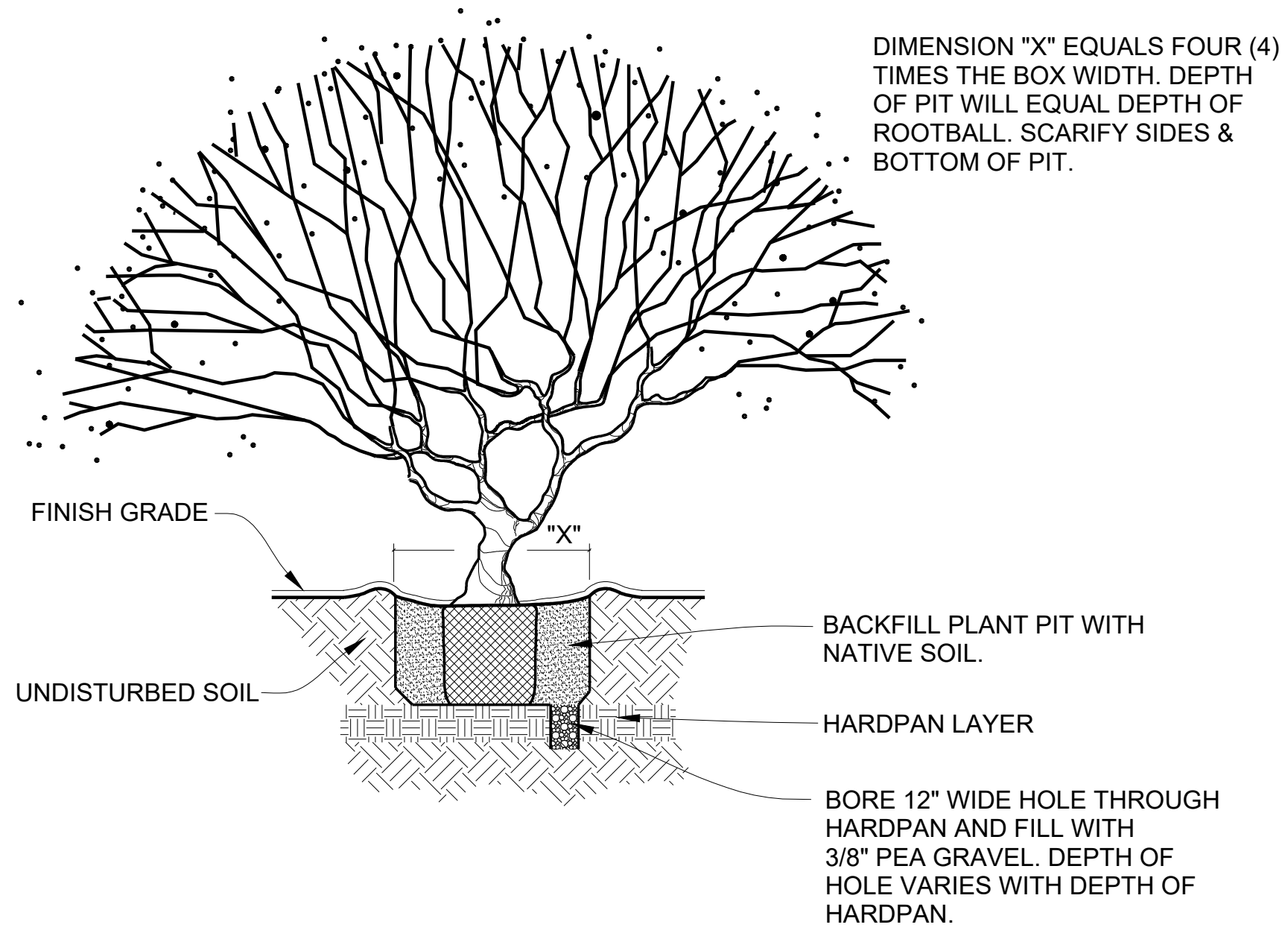
SHEET NO:
L2.01



1 IRRIGATION PLAN
SCALE: 1" = 30'-0"

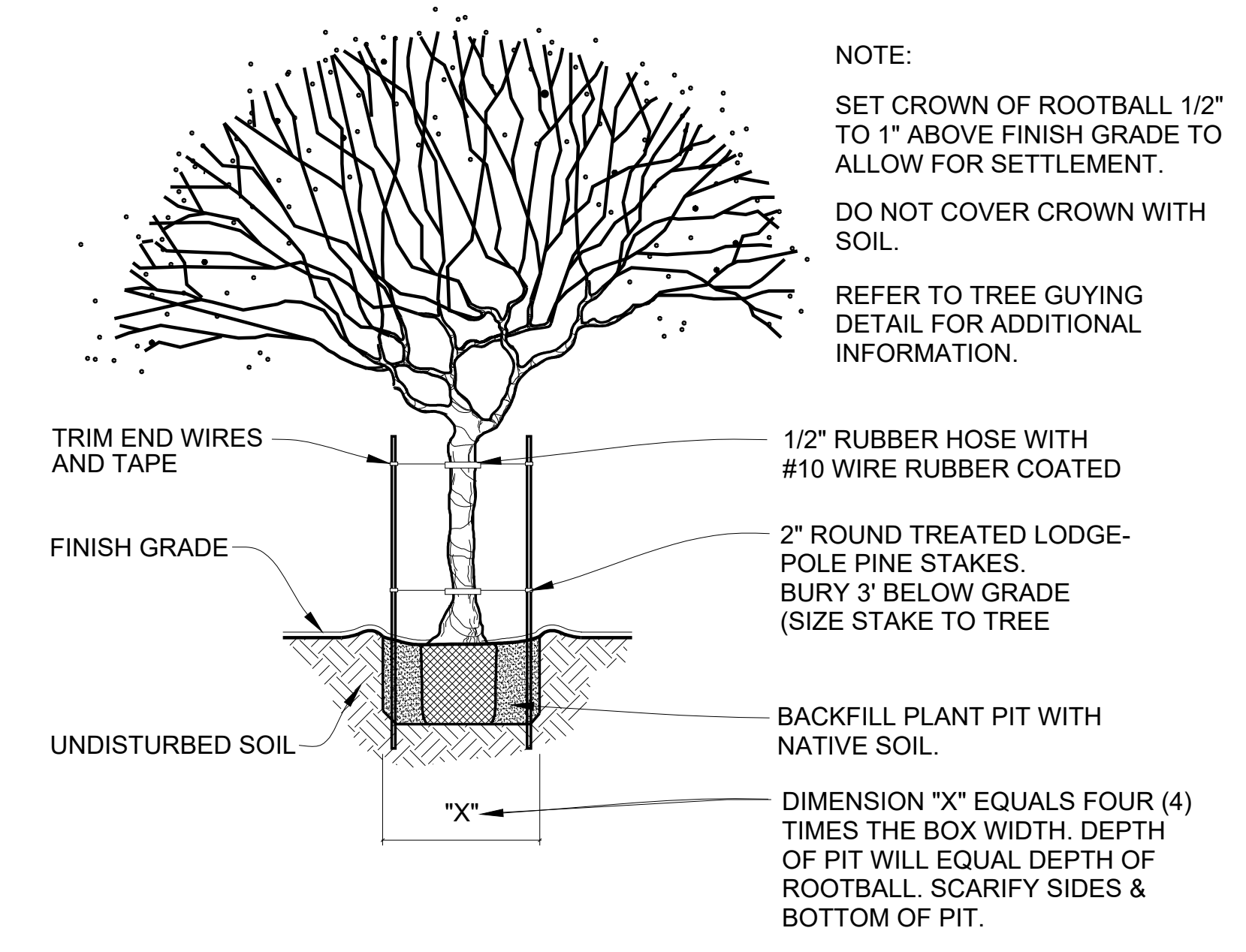
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14. Landscape Contractor is responsible for final grading on all landscaped areas.
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21. Refer to Specifications for Plants that are considered to be Invasive and should NOT be utilized on this project.



DIMENSION "X" EQUALS FOUR (4) TIMES THE BOX WIDTH. DEPTH OF PIT WILL EQUAL DEPTH OF ROOTBALL. SCARIFY SIDES & BOTTOM OF PIT.

1 TREE PLANTING - HARDPAN
N.T.S.

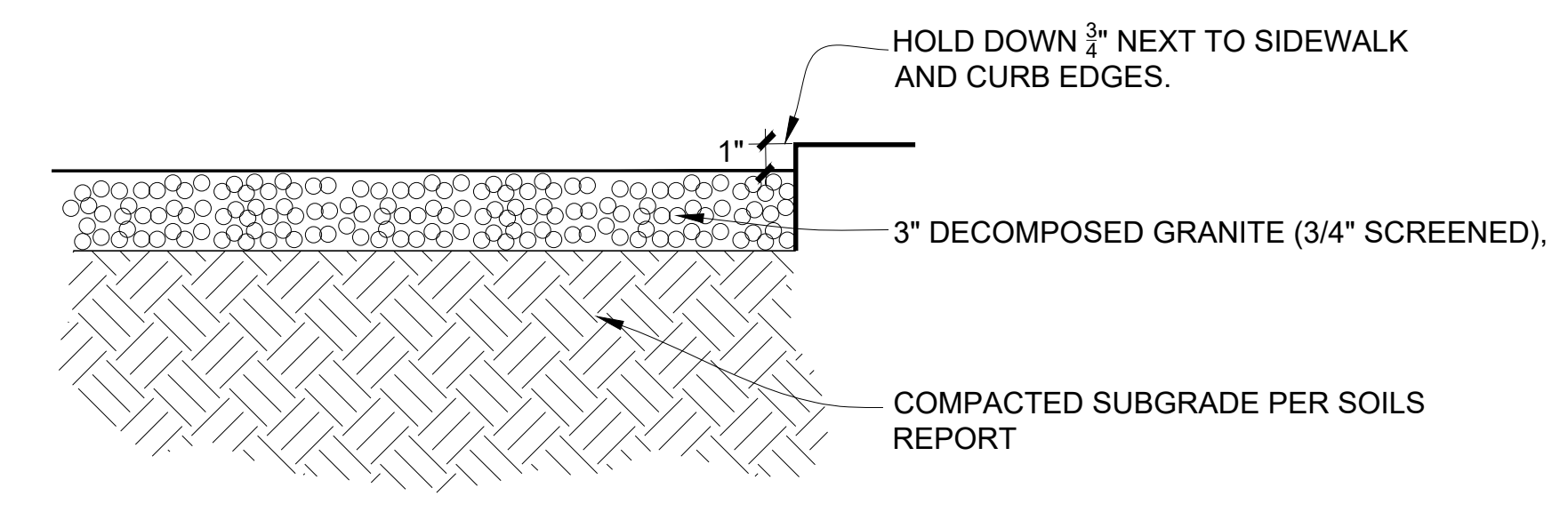


NOTE:
SET CROWN OF ROOTBALL 1/2" TO 1" ABOVE FINISH GRADE TO ALLOW FOR SETTLEMENT.
DO NOT COVER CROWN WITH SOIL.

REFER TO TREE GUYING DETAIL FOR ADDITIONAL INFORMATION.

DIMENSION "X" EQUALS FOUR (4) TIMES THE BOX WIDTH. DEPTH OF PIT WILL EQUAL DEPTH OF ROOTBALL. SCARIFY SIDES & BOTTOM OF PIT.

2 TREE PLANTING - 5 GAL TO 36" BOX (STAKING)
N.T.S.



INSTALLATION:

1. SUB-GRADE SHALL BE COMPACTED PRIOR TO PLACEMENT OF DECOMPOSED GRANITE.
2. SPREAD DECOMPOSED GRANITE OVER PREPARED SUB-BASE/BASE MATERIAL TO SPECIFIED DEPTH.

3 DECOMPOSED GRANITE
N.T.S.

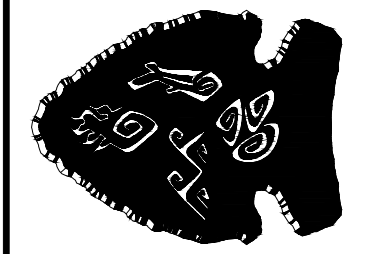


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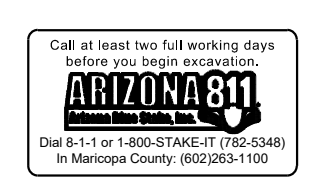


**KAYENTA TOWNSHIP
COMMERCIAL LOTS
KAYENTA, AZ
IMPROVEMENT PLANS**



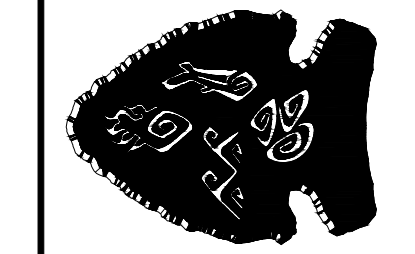
PROJECT NO.: 218-005
DATE: 3-27-19
DESIGNED BY: JSR
DRAWN BY: JSR
APPROVED BY:

SHEET NO:
L3.01



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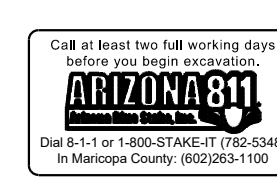


**KAYENTA TOWNSHIP
COMMERCIAL LOTS
KAYENTA, AZ
IMPROVEMENT PLANS**

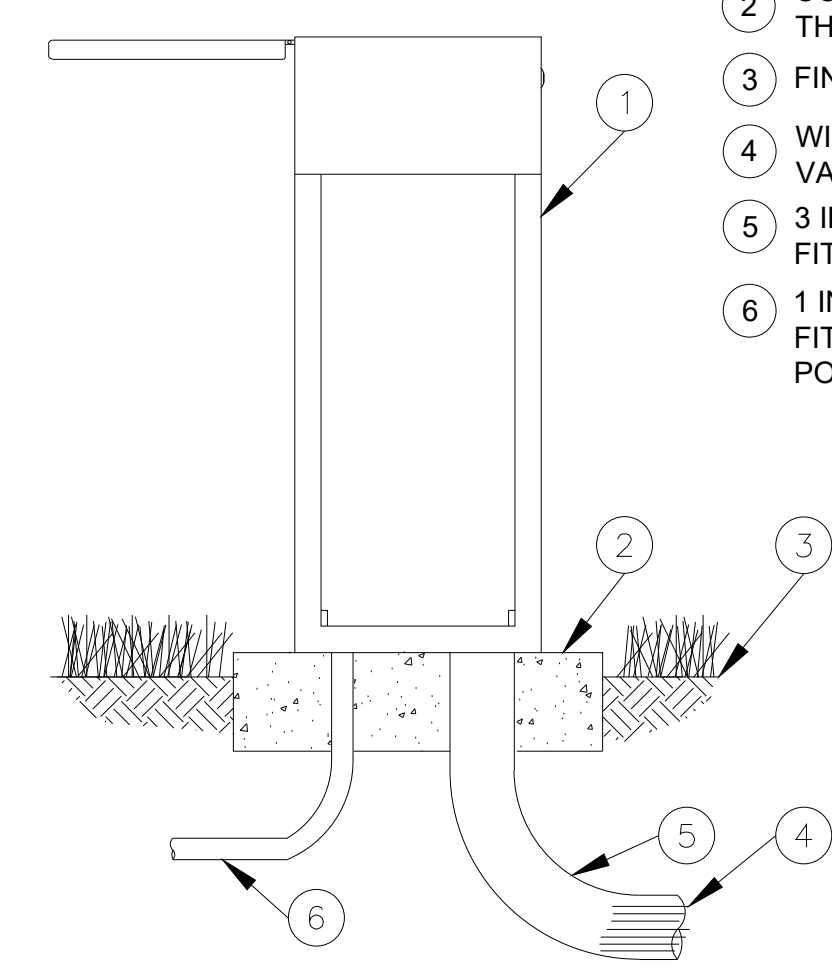


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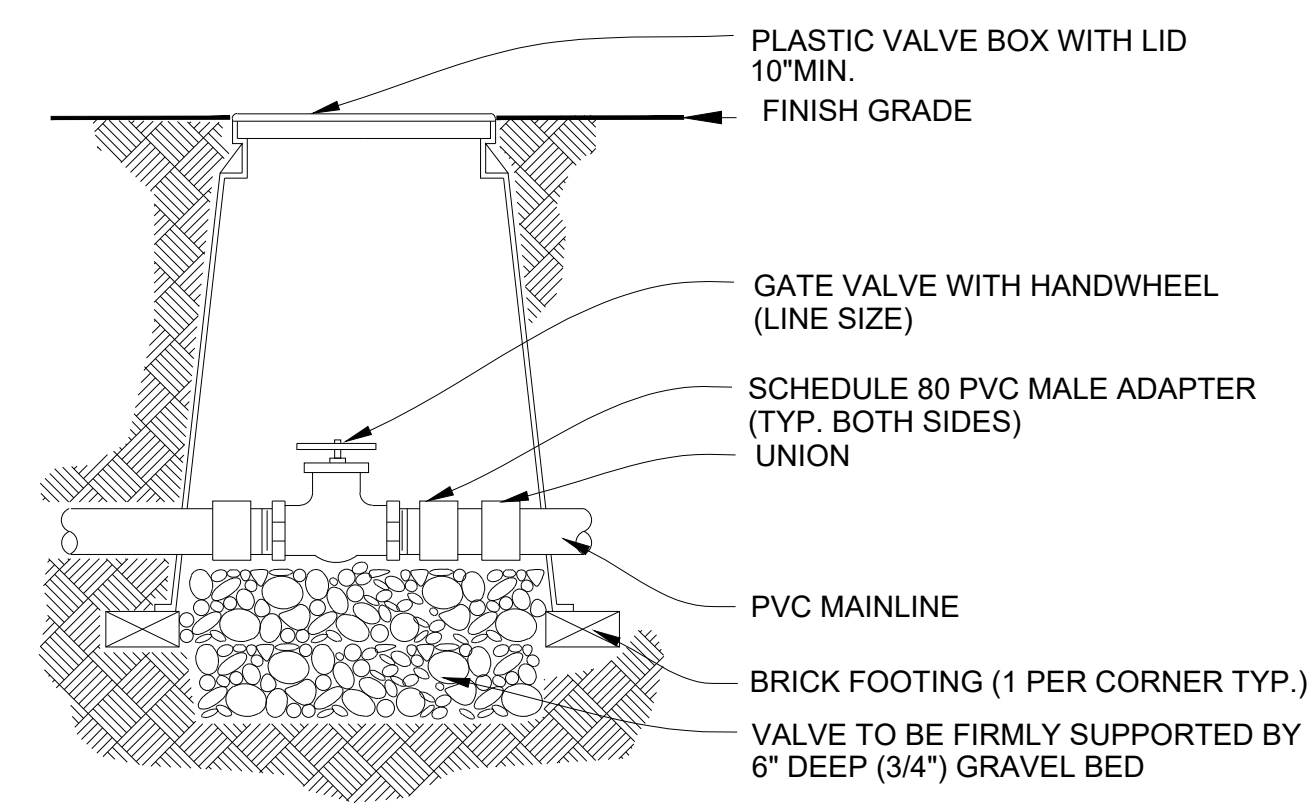
SHEET NO:
L3.02



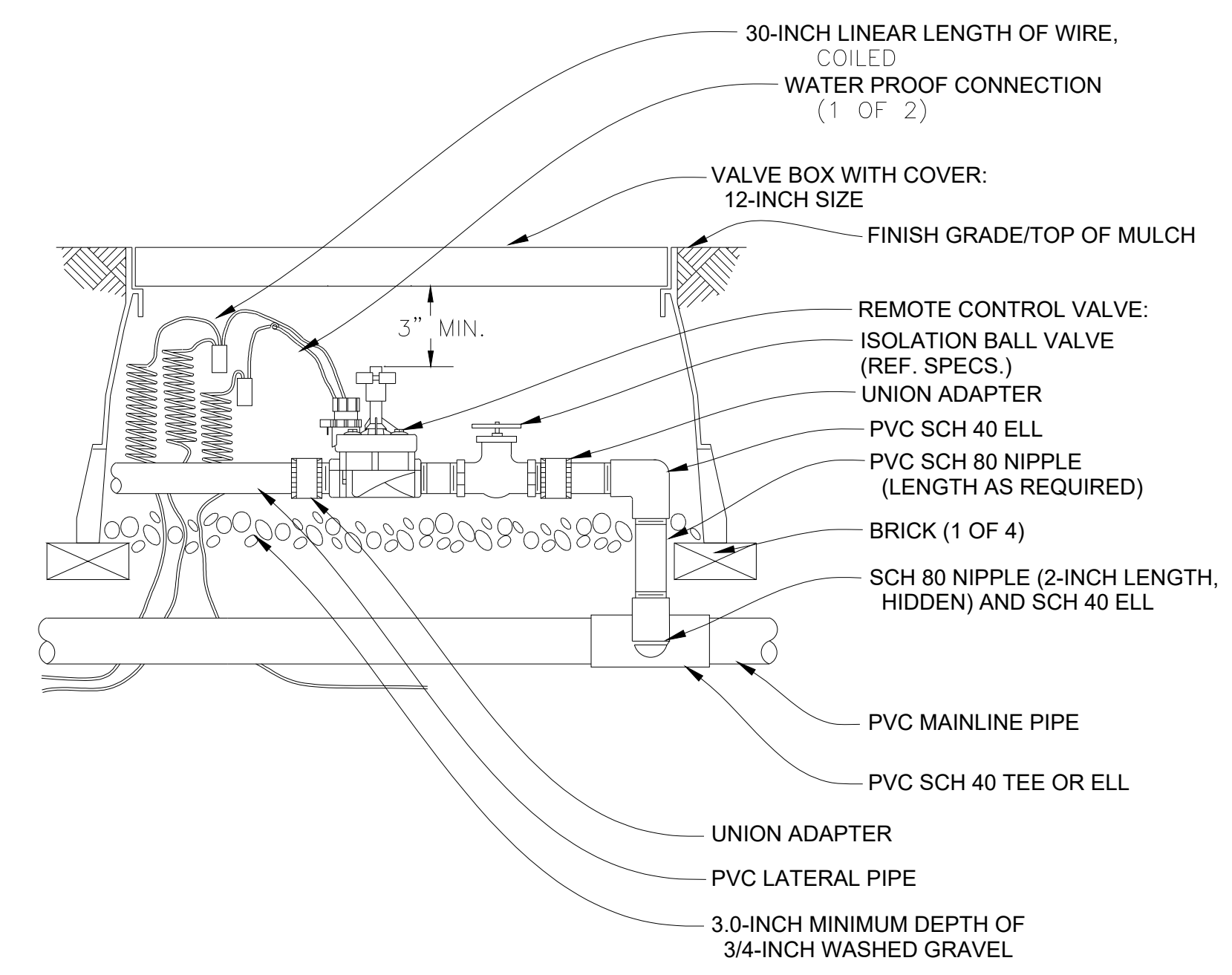
- 1 FIELD SATELLITE CONTROLLER: IRRITROL RAIN DIAL SERIES
- 2 CONCRETE PAD: 6 INCH MIN. THICKNESS
- 3 FINISH GRADE
- 4 WIRES TO REMOTE CONTROL VALVES
- 5 3 INCH PVC SCH. 40 CONDUIT, FITTINGS AND SWEEP ELL
- 6 1 INCH PVC SCH. 40 CONDUIT, FITTINGS AND SWEEP ELL TO POWER SUPPLY



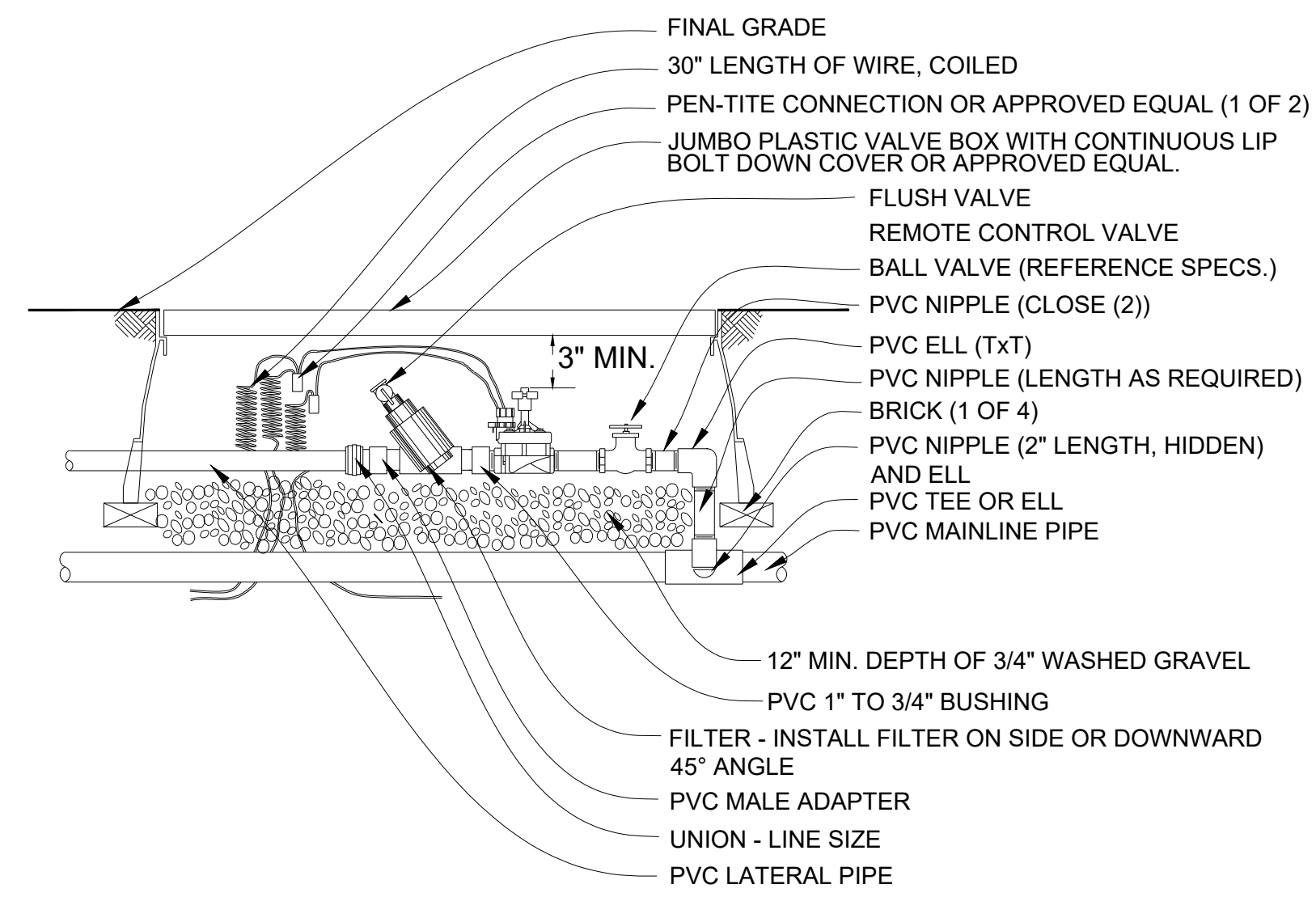
1 PEDESTAL MOUNTED CONTROLLER
N.T.S.



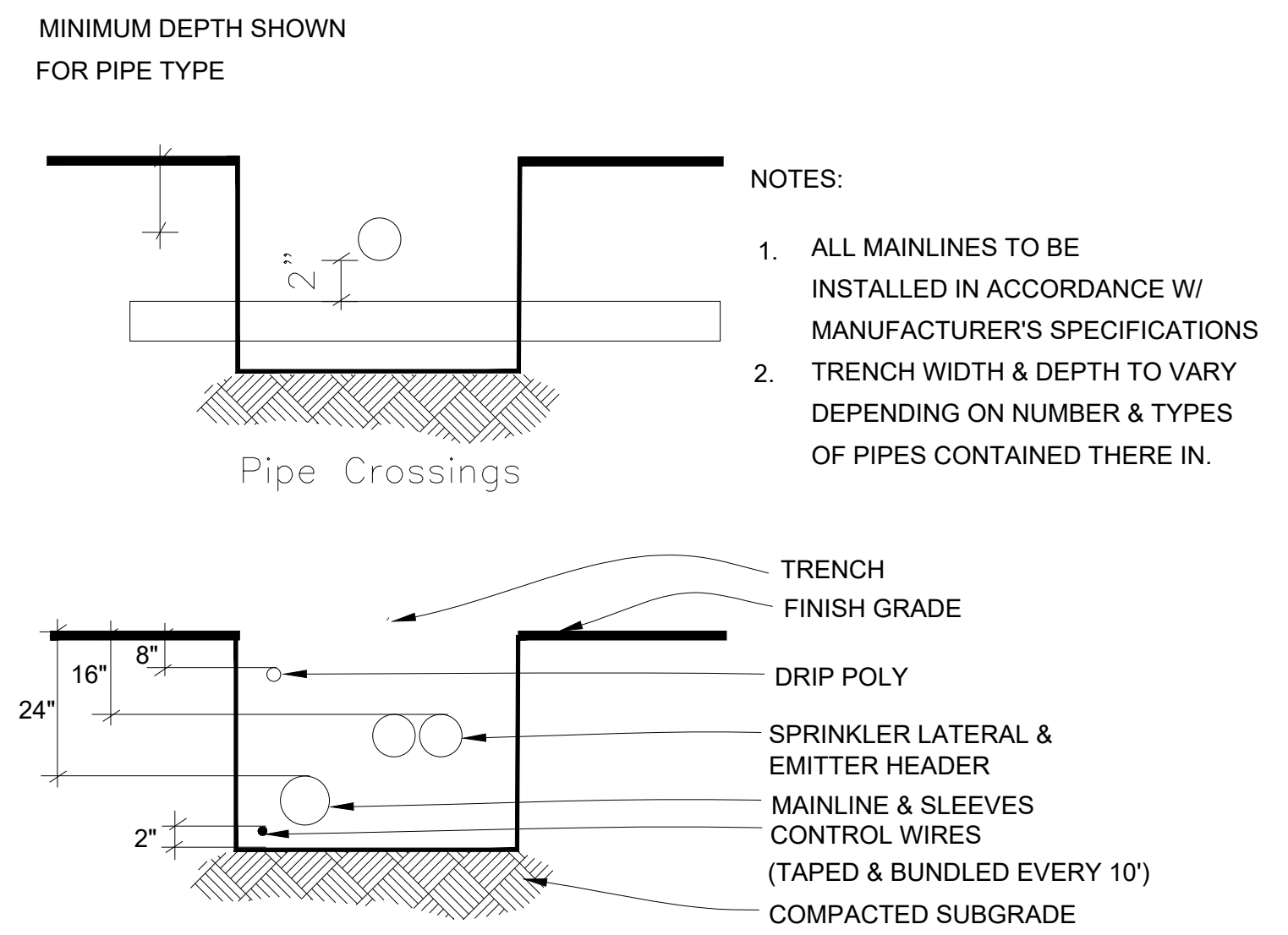
2 ISOLATION VALVE
N.T.S.



3 REMOTE CONTROL VALVE
N.T.S.

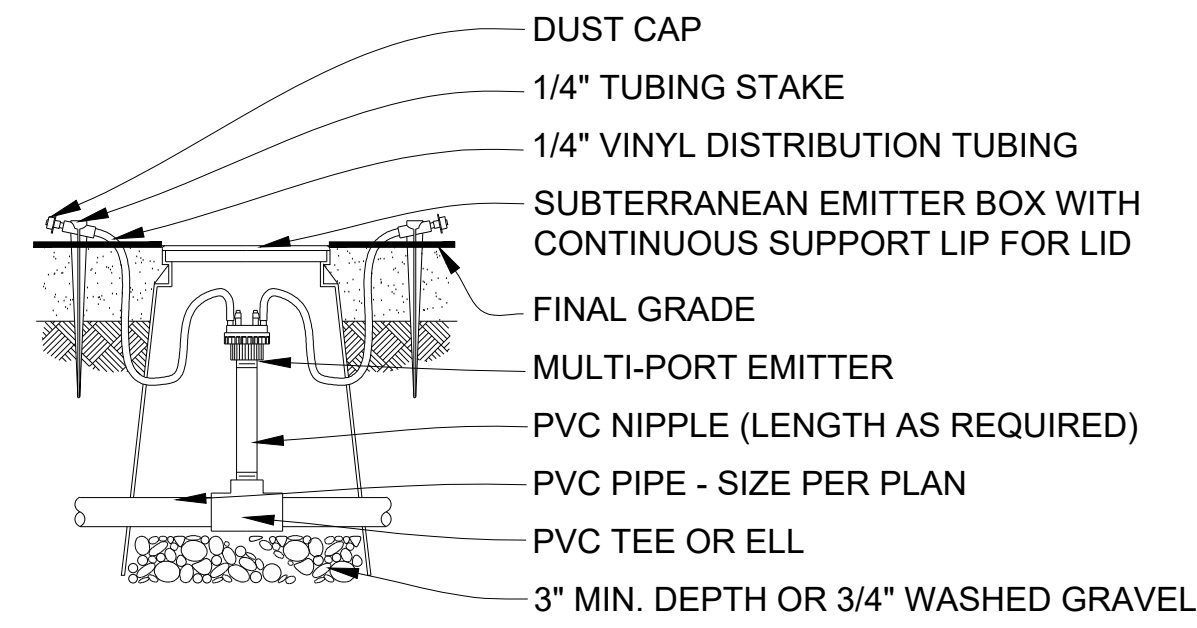


4 REMOTE CONTROL VALVE, PRESSURE REGULATOR & FILTER ASSEMBLY
N.T.S.

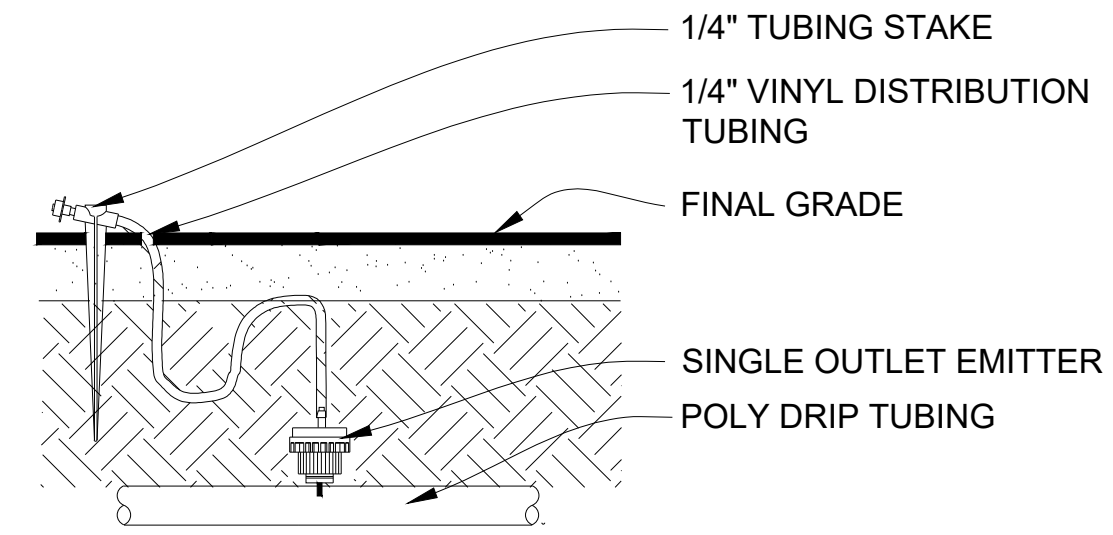


5 IRRIGATION TRENCHING DETAIL
N.T.S.

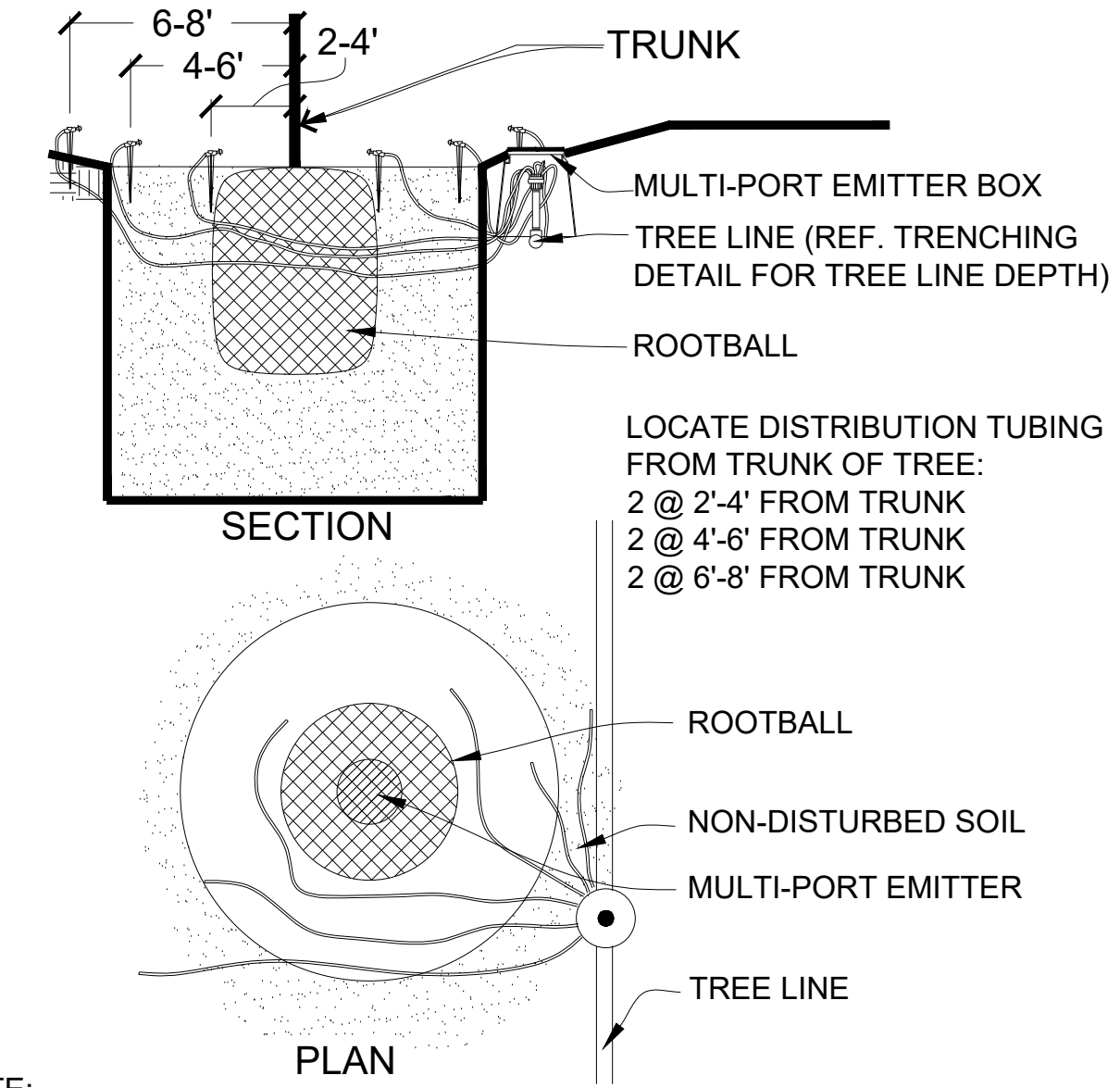
- NOTES:
1. ALL MAINLINES TO BE INSTALLED IN ACCORDANCE W/ MANUFACTURER'S SPECIFICATIONS
 2. TRENCH WIDTH & DEPTH TO VARY DEPENDING ON NUMBER & TYPES OF PIPES CONTAINED THERE IN.



1 MULTI-PORT EMITTER IN EMITTER BOX
N.T.S.



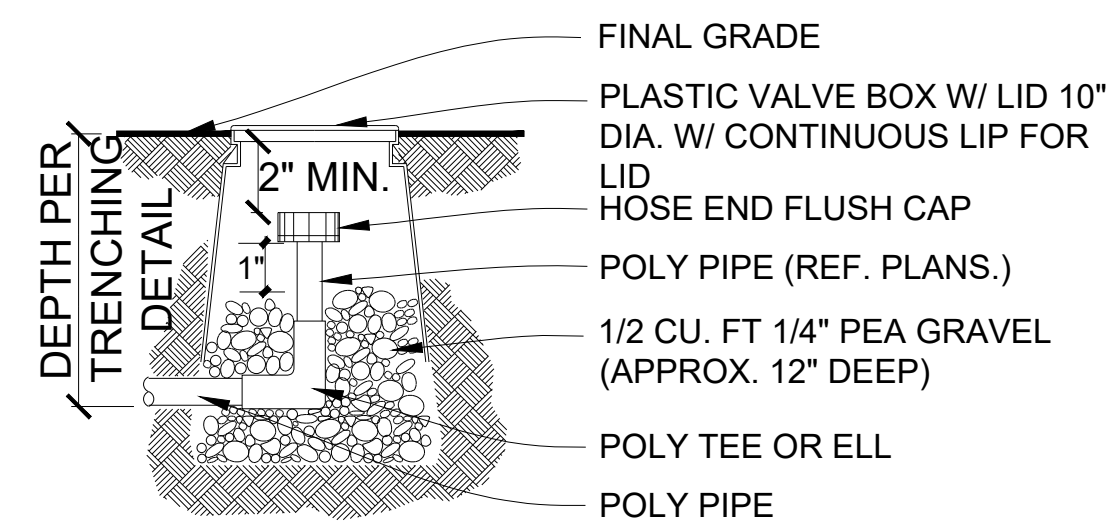
2 SINGLE OUTLET EMITTER
N.T.S.



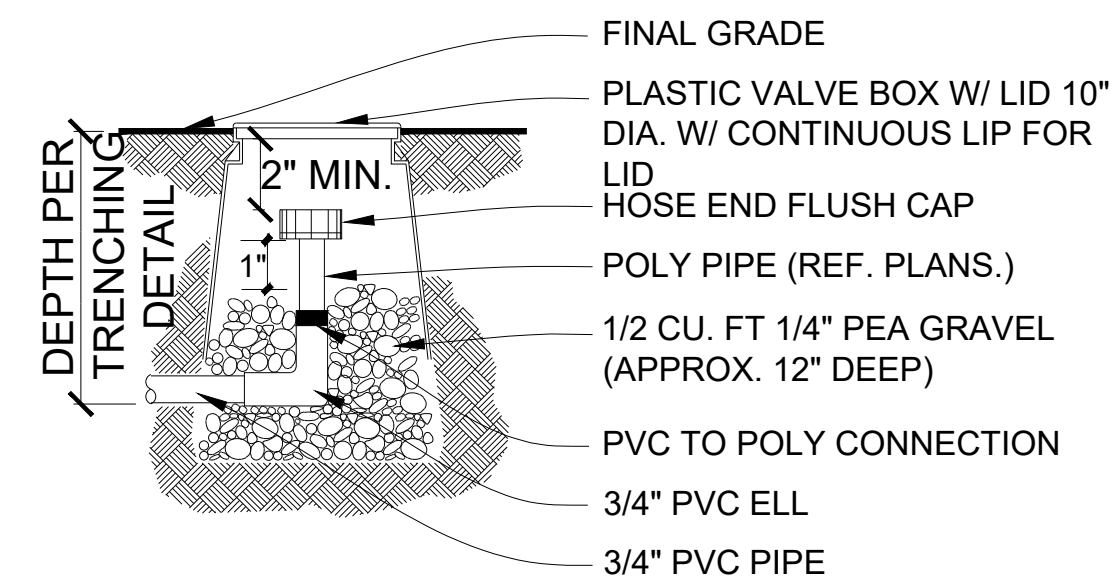
LOCATE DISTRIBUTION TUBING FROM TRUNK OF TREE:
2 @ 2'-4" FROM TRUNK
2 @ 4'-6" FROM TRUNK
2 @ 6'-8" FROM TRUNK

NOTE:
INSTALL DISTRIBUTION TUBES EQUALLY AROUND EDGE OF ROOTBALL. DRIP TUBING AT SURFACE TO CLEAR FINAL GRADE BY A MIN. OF 1" AND A MAX. OF 2". DETAIL REPRESENTS TYP. INSTALLATION REFER TO IRRIGATION LEGEND FOR MULTI-PORT EMITTER QUANTITIES.

3 MULTI-PORT EMITTER DRIP TUBING @ TREE
N.T.S.

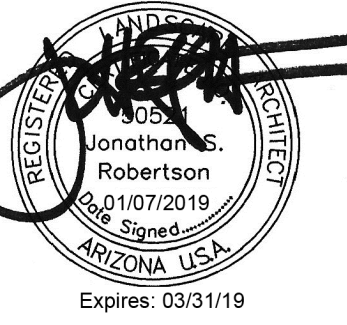


4 HOSE END CAP - POLY
N.T.S.



5 HOSE END CAP - PVC
N.T.S.

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KAYENTA TOWNSHIP
COMMERCIAL LOTS
KAYENTA, AZ
IMPROVEMENT PLANS



PROJECT NO.: 218-005
DATE: 3-27-19
DESIGNED BY: JSR
DRAWN BY: JSR
APPROVED BY:

SHEET NO:
L3.03

