LOWER TUNLII - HELPING HANDS

YAVAPAI APACHE RESERVATION **CAMP VERDE, ARIZONA**

APN 403-20-003C

WITHIN A PORTION OF THE SOUTH 1/2 SECTION 10 & THE NORTH 1/2 OF SECTION 15, TOWNSHIP 14 NORTH, RANGE 4 EAST OF THE GILA & SALT RIVER BASE AND MERDIAN, WITHIN THE TOWN OF CAMP VERDE, YAVAPAI COUNTY, ARIZONA

SHEET INDEX

COVER SHEET

OVERALL SITE PLAN

GRADING & DRAINAGE PLAN

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11-05-25

PROJECT NO:

Contact Arizona 811 at least two full working days before you begin excavation Call 811 or click Arizona811.com

GENERAI

- ALL PAVING, GRADING PIPING AND UTILITY LINE CONSTRUCTION WORK WITHIN THE PUBLIC RIGHT-OF-WAY, ON PRIVATE STREETS, ACCESS WAYS, LOT GRADING, MATERIALS, AND WORKMANSHIP SHALL COMPLY WITH ENGINEERING STANDARDS AND SPECIFICATIONS, AND SHALL CONFORM TO THE LATEST MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) AND A.D.O.T. STANDARD DETAILS AND SPECIFICATIONS. GRADING WORK SHALL CONFORM TO MAG SPECS, THE SOILS REPORT AND CHAPTER 70 ENTITLED "EXCAVATION AND GRADING" OF THE UNIFORM BUILDING CODE (UBC) LATEST EDITION, SUBSECTIONS 7001 TO 7005, 7009 TO 7013, FIGURES 70-1 AND 70-2 AND AS STATED THEREIN. LOCAL MUNICIPAL STANDARD DETAILS WILL CONTINUE TO APPLY WHERE NOT ADOPTED OR INCLUDED BY MAG. THE FOLLOWING NOTES AND SPECIFICATIONS ARE HEREBY MADE A PART OF THE CONTRACT DOCUMENTS AND PROJECT MANUAL. WHERE THERE EXISTS A CONFLICT BETWEEN THESE NOTES, MAG SPECS, UBC, THE SOILS REPORT OR THE PROJECT MANUAL, THE MORE STRINGENT OF THE REQUIREMENTS SHALL GOVERN UNLESS PRIOR CLARIFICATION FROM THE ENGINEER HAS BEEN GIVEN IN WRITING TO THE CONTRACTOR. THE CONTRACTOR AS STATED HEREIN SHALL MEAN THE GENERAL CONTRACTOR AND HIS ASSOCIATED SUBCONTRACTORS. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION AND PERFORMANCE OF THE WORK OF ALL OF HIS SUBCONTRACTORS AND SUPPLIERS.
- 1.2 ALL WORK SHALL BE BID AND INSTALLED BY THE CONTRACTOR COMPLETE AND OPERATIONAL TO LINES, GRADES AND FUNCTIONS INDICATED ON ALL PLANS AND SPECIFICATIONS. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY TO COMPLETE ALL PROJECT EARTHWORK AND SITE WORK INCLUDING BUT NOT LIMITED TO: SITE CLEARING, GRUBBING, DEMOLITION'S, DEBRIS REMOVALS FROM THE SITE, IMPORT AND/OR EXPORT OF SOILS AND OTHER MATERIALS TO AND FROM THE SITE, BORROW MATERIALS, TEMPORARY SOILS MATERIAL STOCKPILING, BACKFILL OF ONSITE BORROW PITS, MOVING OF MATERIALS, CUT AND FILL, SLOPES, SOILS AND BANK STABILIZATION AND PROTECTION, BERMING, ROADWAY EXCAVATIONS, RELOCATION'S, STRUCTURE EXCAVATIONS, TRENCHING, ALL BACKFILLING, SITE GRADING, PAVING, PIPING, UTILITY LINE AND STORM DRAINAGE CONSTRUCTION, CURBS, SITE CONCRETE WORK AND OTHER MISCELLANEOUS SITE WORK STRUCTURES AND ITEMS INDICATED ON THE PLANS AND IN THE CONTRACT DOCUMENTS.
- 1.3 CONSTRUCTION IS PERMITTED.
- ANY QUANTITIES SHOWN ON PLANS ARE <u>NOT VERIFIED</u> BY THE ENGINEER. QUANTITIES ARE APPROXIMATE ONLY AND INTENDED AS A GUIDE FOR OWNERS PURPOSES. THE <u>CONTRACTOR IS RESPONSIBLE FOR PROVIDING</u> <u>HIS OWN QUANTITY TAKE OFFS</u>. THE <u>CONTRACTOR SHALL VISIT THE SITE</u> AND REVIEW THE SOILS CONDITIONS AND THE SOILS REPORT (WESTERN ENGINEER PRIOR TO BIDDING THIS PROJECT. ANY DISCREPANCIES IN SITE MATERIALS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER 7 DAYS MINIMUM PRIOR TO BID OPENING FOR REVIEW. ALL SHRINK OF EARTH MATERIAL OR EXCESS MATERIAL FROM UTILITY TRENCHES AND FOUNDATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.
- THE ENGINEER MAY REQUIRE THE SUBMITTAL OF A "CERTIFICATE OF COMPLIANCE" AND/OR "MANUFACTURER'S GUIDELINES" FOR ANY MATERIALS USED IN THE WORK. MANUFACTURER'S GUIDELINES SHALL CONSISTS OF WRITTEN INSTRUCTIONS FOR SHIPPING, HANDLING, UNLOADING, CUTTING, JOINING, INSTALLATION, STORAGE, AND/OR ANY OTHER FACETS OF CONSTRUCTION.
- THE ENGINEER WILL REQUIRE ANY MATERIALS USED IN THE WORK TO BE TESTED ACCORDING TO AASHTO AND ASTM STANDARDS. THE CONTRACTOR SHALL, AT HIS EXPENSE, SUPPLY CERTIFICATES OR RESULTS OF TESTING.
- ALL WORK AND MATERIALS NOT CONFORMING TO SPECIFICATIONS OR PERFORMED WITHOUT THE CONSENT OF THE OWNER OR HIS REPRESENTATIVE WILL BE SUBJECT TO REJECTION BY THE OWNER AND/OR ENGINEER AND REPLACED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL GUARD AGAINST DAMAGE DURING CONSTRUCTION TO ADJACENT PROPERTIES, FENCES, WALLS AND UTILITY EQUIPMENT. ANY ITEMS DAMAGED BY CONSTRUCTION SHALL BE REPLACED WITH SAME KIND OR BETTER AT CONTRACTOR'S EXPENSE.
- 1.9 NO CONSTRUCTION SHALL BEGIN UNTIL CONFLICTING UNDERGROUND UTILITY MITIGATING CONSTRUCTION IS COMPLETED, IF ANY.
- 1.10 NO EXISTING SURVEY MONUMENTATION SHALL BE REMOVED OR DISTURBED BY THE CONTRACTOR WITHOUT NOTIFICATION AND APPROVAL OF THE PROJECT SURVEYOR. THE CONTRACTOR SHALL CONTACT THE PROJECT SURVEYOR FOR THE SETTING OF REFERENCE POINTS 48 HOURS PRIOR TO DISTURBING OR REMOVING ANY MONUMENTS. THE CONTRACTOR SHALL BE FINANCIALLY RESPONSIBLE FOR COSTS TO REESTABLISH MONUMENTATION OR CONTROLS REMOVED WITHOUT PRIOR NOTICE AND APPROVAL.
- TRAFFIC CONTROL SHALL CONFORM TO THE LOCAL ADOPTED STANDARDS AND MUTCD. CONTRACTOR SHALL SUBMIT PLAN TO PROJECT ENGINEER FOR 1.28 REVIEW AND APPROVAL PRIOR TO STARTING CONSTRUCTION.
- 1.12 BENCH MARK: ELEVATIONS ESTABLISHED WITH REFERENCE TO THE BENCH MARKS AS INDICATED ON THE SITE PLAN (SHEET C-4).
- 1.13 CONTRACTOR SHALL COORDINATE HIS WORK WITH THE DESIGN ENGINEER, OWNER, PUBLIC UTILITY COMPANIES AND OTHER ASSOCIATED TRADES ON AND ADJACENT TO THE PROJECT SITE. COORDINATE INSTALLATION OF ALL PUBLIC AND PRIVATE UNDERGROUND UTILITIES, PIPES, CONDUITS AND PIPE SLEEVE SIZES AND LOCATIONS PRIOR TO THEIR PLACEMENT. INSTALLATION: THE CONTRACTOR IS RESPONSIBLE FOR SETTING CAPPED SLEEVES AND PROVIDING TYPE 1 COMPACTION IN ALL BACKFILLED TRENCHES IN PAVED AREAS AND EASEMENTS. PROVIDE TRACER WIRE AND MARKER AT GRADE LEVEL FOR FUTURE LOCATING.
- 1.13.5 COMPACT TO THE FOLLOWING SPECIFIED PERCENT OF MAXIMUM DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D698 AND MAG SECTION 211.

MINIMUM PERCENT COMPACTION:

SUBGRADE SOIL: ROADWAY AND STRUCTURE AREAS -----95 PAVED AREAS (PAVEMENTS, SIDEWALKS, & PADS)----95

ROADWAY AND STRUCTURE AREAS----95 PAVED AREAS (PAVEMENTS, SIDEWALKS, & PADS)----95 GRASSED AND PLANTING AREAS-----85 AGGREGATE BASE COURSE-----100 BACKFILL AROUND STRUCTURES----95 BACKFILL FOR UTILITY TRENCHES (PER MAG SECTION 601) EXCEPT AS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR READING AND UNDERSTANDING THE PROJECT SOIL REPORT.

FOLLOWS: BACKFILL FOR TRENCHES SHALL BE COMPACTED TO 100%.

CONTRACTOR TO BE RESPONSIBLE FOR ALL IDENTIFIED AND REQUIRED TESTING AND CONSTRUCTION STAKING, AND FOR THE FOLLOWING ADDITIONAL ENGINEERING SERVICES SHOULD THEY OCCUR;

A. RE-OBSERVATION, COORDINATION AND EXTRA TESTING OR RETESTING COSTS INCURRED BECAUSE OF IMPROPER OR FAULTY CONSTRUCTION.

B. ANY RESTAKING REQUIRED BY THE CONTRACTOR.

C. CHANGES AND SUBSTITUTIONS IN MATERIALS CONSTRUCTION METHODS, REQUESTED BY THE CONTRACTOR, THAT MUST BE REVIEWED, RECALCULATED 4.2 OR APPROVED BY THE PROJECT ENGINEER.

D. ENGINEERING DESIGN SERVICES REQUESTED BY THE CONTRACTOR OR CAUSED BY ERRORS OR OMISSIONS BY THE CONTRACTOR.

E. ANY ENGINEERING DESIGN APPROVED BY OTHERS AND SUBMITTED FOR REVIEW. THESE SHALL BEAR THE SEAL OF AN ENGINEER REGISTERED IN ARIZONA.

- 1.15 ANY DIFFERENCE BETWEEN PLANS AND SPECIFICATIONS AND QUESTIONS AS TO THEIR MEANING SHALL BE DETERMINED PRIOR TO BID OPENING OF THE CONTRACT AND SHALL BE INTERPRETED BY THE ENGINEER. THE GENERAL INTENT AND MEANING OF THE PLANS AND SPECIFICATIONS WILL GOVERN AND SHALL NOT WARRANT ANY ADDITIONAL COMPENSATION TO THE CONTRACTOR. THE ENGINEER WILL PROVIDE FULL INSTRUCTIONS WHEN DISCREPANCIES ARE DISCOVERED IN THE DOCUMENTS.
- 1.16 THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LIMITS OF THE WORK AREA PRIOR TO BEGINNING CONSTRUCTION ALL CONSTRUCTION LIMITS, AREAS OF WORK, SETBACKS, PERIMETERS, ADJACENT PROPERTY LINES, BOUNDARIES, AND OTHER CRITERIA DEFINING THE LIMITS OF THE CONTRACTOR'S WORK AREA AND LIMITS, SHALL BE STAKED BY THE CONTRACTOR'S SURVEYOR PRIOR TO CONSTRUCTION OR CLEARING OF THE SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH THE EXTENT OF WORK TO BE DONE IN EACH SEPARATE PHASE OF THE PROJECT, AND ANY WORK NECESSARY IN INACTIVE PHASES REQUIRED TO DEEM THE ACTIVE PHASES FINISHED, SAFE, AND SERVICEABLE.
- ALL OBSTRUCTIONS IN THE ROAD PRISM SHALL BE REMOVED BEFORE ANY 1.17 THE CONTRACTOR OR SUBCONTRACTORS SHALL NOT DEVIATE FROM THESE PLANS OR MAKE FIELD CHANGES WITHOUT WRITTEN APPROVAL FROM THE NATION. ANY CHANGES MADE WITHOUT APPROVAL OF THE PROJECT ENGINEER ARE SUBJECT TO REMOVAL AT THE EXPENSE OF THE CONTRACTOR.
 - 1.18 THE PROJECT ENGINEER RESERVES THE RIGHT TO MAKE MINOR FIELD MODIFICATIONS TO GRADES AND STRUCTURE DESIGNS TO ACCOMMODATE FIELD CONDITIONS FOUND ON SITE THAT DO NOT INVOLVE COST OR TIME. THIS INCLUDES BUT IS NOT LIMITED TO MINOR MODIFICATIONS TO GRADE, ALIGNMENT, SLOPE OR STRUCTURE LOCATIONS.
 - 1.19 NO JOB WILL BE CONSIDERED COMPLETE UNTIL FINE GRADING IS COMPLETE AND ALL CURBS, PAVEMENT AND SIDEWALKS HAVE BEEN SWEPT CLEAN OF ALL DIRT AND DEBRIS. ALL SURVEY MONUMENTS ARE INSTALLED AND ALL VALVES, MANHOLES AND BOXES HAVE BEEN ADJUSTED ACCORDING TO THE PLANS AND STANDARD DETAILS.
 - 1.20 EXISTING GRADES INDICATED ON PLANS ARE BASED ON PRE-GRADING CONDITIONS. LOSSES IN MATERIAL DUE TO SHRINKAGE OF MATERIAL, DEMOLITION OF EXISTING SITE FEATURES, CLEARING AND GRUBBING OF THE SITE SHALL BE INCLUDED IN CONTRACTOR'S BID.
 - 1.21 SHOP DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR PER MAG SECTION 105.2.
 - 1.22 ALL SERVICES SHALL BE MAINTAINED TO ALL AREAS AT ALL TIMES DURING THE CONSTRUCTION PERIOD, EXCEPT WHEN IT IS NECESSARY TO SHUT DOWN A LINE TO MAKE A CONNECTION WITH THE NEW LINE. RESIDENTS SHALL BE GIVEN A 24 HOUR NOTICE WHEN IT IS KNOWN THAT SERVICE WILL BE INTERRUPTED.
 - 1.23 NO EXISTING SURVEY MONUMENTATION SHALL BE REMOVED OR DISTURBED BY THE CONTRACTOR WITHOUT NOTIFICATION AND APPROVAL OF THE PROJECT SURVEYOR. THE CONTRACTOR SHALL CONTACT THE PROJECT MANAGER FOR THE SETTING OF REFERENCE POINTS 48 HOURS PRIOR TO DISTURBING OR REMOVING ANY MONUMENTS. THE CONTRACTOR SHALL BE FINANCIALLY RESPONSIBLE FOR COSTS TO REESTABLISH MONUMENTATION OR CONTROLS REMOVED WITHOUT PRIOR NOTICE AND APPROVAL.
 - 1.24 N/A
 - 1.25 N/A
 - 1.26 N/A
 - 1.27 N/A
 - THE CONTRACTOR SHALL COORDINATE HIS WORK AND COOPERATE WITH ANY OTHER PERSONS OR ENTITIES OPERATING ON OR ADJACENT TO THE SITE OF THE PROJECT.
 - 1.29 N/A

PERMITS

- 2.1 CONTRACTOR SHALL OBTAIN ALL PERMITS AT HIS OWN EXPENSE FROM FEDERAL. STATE OR LOCAL MUNICIPAL AND AIR POLLUTION CONTROL AUTHORITIES PRIOR TO BEGINNING CONSTRUCTION.
- 2.2 REQUIRED PERMITS SHALL BE SECURED BY THE CONTRACTOR FROM THE APPROPRIATE AGENCIES.
- 2.3 THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AT HIS OWN EXPENSE ALL APPROPRIATE INSURANCE FORMS FOR PERMIT REQUIREMENTS.
- 2.4 IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ARRANGE FOR THE RELOCATION AND RELOCATION COSTS, IF ANY, OF ALL UTILITIES, AND SUBMIT A UTILITY RELOCATION SCHEDULE TO THE MUNICIPALITY AND DESIGN ENGINEER PRIOR TO CONSTRUCTION. ALL PUBLIC UTILITY EQUIPMENT POLES, BOXES, STRUCTURES AND MUNICIPAL UTILITY COMPANY EQUIPMENT SHALL BE RELOCATED BY THE APPROPRIATE UTILITY COMPANY OR MUNICIPALITY BEFORE ANY WORK IS STARTED.

3 APPROVALS

3.1 THE CONTRACTOR IS TO USE ONLY THAT OFFICIAL CONSTRUCTION SET OF DRAWINGS WHICH CONTAINS THE APPROVAL OF THE GOVERNMENT AGENCY SIGNED ON THE COVER SHEET OF THE PLANS. THE CONTRACTOR SHALL NOT PLACE BIDS ON A SET OF DRAWINGS UNSIGNED BY THE GOVERNMENT AGENCY AND/OR MARKED "NOT FOR CONSTRUCTION".

RECORD DRAWINGS

- 4.1 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AND KEEP AN UPDATED RECORD SET OF AS-BUILT INFORMATION DRAWINGS IN GOOD CONDITION ON THE JOB SITE FOR THE PROJECT MANAGER & UTILITY DIRECTOR TO INSPECT AND PROVIDE A COPY TO THE PROJECT ENGINEER AT COMPLETION OF THE WORK, WITH THE RECORD SET SHOWING FIELD VERIFIED LOCATIONS OF ALL VALVES, BOXES, MANHOLES, UTILITY POLES, PIPE SLEEVES, UTILITY ENCASEMENT AND OTHER UTILITY LINES AND EQUIPMENT ABOVE AND BELOW GROUND WHICH THE CONTRACTOR ENCOUNTERS AND INSTALLS IN HIS AREA OF WORK.
- ACCEPTANCE OF THE COMPLETED PAVING, GRADING OR UTILITY INSTALLATION WILL NOT BE GIVEN UNTIL REPRODUCIBLE AS-BUILT PLANS HAVE BEEN SUBMITTED BY THE CONTRACTOR TO THE ENGINEER AND APPROVED BY THE LOCAL GOVERNING AGENCY INCLUDING HOUSING AND UTILITY DEPARTMENTS.

5 OBSERVATION

- 5.1 ALL MATERIALS USED AND ALL WORK DONE BY THE CONTRACTOR SHALL BE SUBJECT AT ALL TIMES TO THE OBSERVATION, TESTING AND APPROVAL OF THE ENGINEER AND GOVERNING AGENCY. SPECIAL INSPECTION AND TESTING SERVICES SHALL BE PROVIDED AT THE CONTRACTOR'S EXPENSE. AS REQUIRED BY THE CONTRACT DOCUMENTS.
- 5.2 THE CONTRACTOR SHALL CONTACT THE APPROPRIATE PUBLIC UTILITY COMPANIES FOR INSPECTION OF TRENCHING, BEDDING AND BACKFILLING DONE IN CONJUNCTION WITH INSTALLATION OF THOSE UTILITIES ON THIS
- 5.3 THE NATION OR ITS DESIGNATED AGENT WILL PREPARE AND SUBMIT THE ENGINEER'S CERTIFICATE AND AUTHORITY TO OPERATE. THE CONTRACTOR SHALL PROVIDE ALL THE TESTING AND WRITTEN RESULTS REQUIRED TO SUPPORT THESE ACTIONS.
- SOILS COMPACTION TEST RESULTS MUST BE SUBMITTED TO THE PROJECT ENGINEER'S OFFICE FOR ALL FILL MATERIAL FOR ROADS, TRENCH BACKFILL AND SITE FILL MATERIALS UNDER SLABS AND STRUCTURES. NO FILL MATERIALS SHALL BE PLACED WITHOUT TESTING DURING PLACEMENT. NO EARTH MATERIAL SHALL BE PLACED WITHOUT APPROVAL OF THE PREVIOUS LIFTS. THE CONTRACTOR SHALL SUBMIT ALL TEST RESULTS TO THE PROJECT ENGINEER.
- 5.5 THE CONTRACTOR WILL BE RESPONSIBLE FOR SCHEDULING AND COORDINATION OF ALL TESTING INCLUDING THE FOLLOWING ITEMS WHICH
 - SHALL BE TESTED IN ACCORDANCE WITH MAG SPECIFICATIONS...
 - 2. BASE COURSE COMPACTION 3. ASPHALT PAVEMENT MIX DESIGN QUALITY

1. SUBGRADE COMPACTION

- 4. CONCRETE STRENGTH
- TRENCH BEDDING AND BACKFILL
- 6. TESTING FOR UTILITIES, PIPING AND DRAINAGE SYSTEMS 7. RETAINING WALLS CONCRETE AND COMPACTION
- THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR 24 HOURS PRIOR TO BEGINNING DIFFERENT ASPECTS OF CONSTRUCTION SO THAT INSPECTIONS MAY BE SCHEDULED.

Bureau of Indian Affairs Minimum Sampling and Testing Guide

Material Remarks lanufacturer's Certificate of Compliance with each Shipment. End Sections MiscItems Moisture-Density in accordance with ASTM D698 (AASHTO T238) Method C One per 6-inch lift, each mpaction in accordance with ASTM D2922 side and above the (AASHTO T238) or ASTM D1556 (AASHTO T191) structure. Gradation in accordance with ASTM C136 One per 2,000 cubic yards. Grandular Backfill Compaction in accordance with ASTM D2922 side and above the (AASHTO T238) or ASTM D1556 (AASHTO T191) Moisture-Density in accordance with ASTM ne per Soil Classification. D698 (AASHTO T238) Method C. ackfill at Utility Trenche: One per 6-inch lift, per | Conduct a minimum of 2 Tests per each Compaction in accordance with ASTM D2922 each 500 linear feet of 6-inch lift on trenches less than 500 (AASHTO T238) or ASTM D1556 (AASHTO T19 Quality I accordance with AASHTO M80. One per source. Coarse Aggregate Gradation in accordance with AASHTO T27. One per 100 cubic yards. uality I accordance with AASHTO M80. One per source. Gradation in accordance with AASHTO T27. One per 100 cubic yards. Manufacturer's Certificate of Reinforcing Steel Compliance with each Shipment. Test to be run on questionable water Quality I accordance with AASHTO T26. One per source. Prepare 3 sets of test cylinders, at random, for each day's production in 28 Day Compressive Strength in accordance with ASTM C39 (AASHTO T22). ccordance with ASTM C31 (AASHTO Acceptance or rejection of each set Slump in accordance with ASTM C143 (AASHT0 One per batch of cylinders is to be based on the verage strenth of both cylinders. Air Content in accordance with ASTM C231 (AASHTO T152) Manufacturer's Certificate of Compliance with each Shipment. Asphalt Cement Quality in accordance with AASHTO M226. Quality in accordance with AASHTO M81 or Liquid Asphalt Quality in accordance with AASHTO M140 or Emulsions Conduct a minimum of 1 test for each Gradation in accordance with AASHTO T30. One per each day's run. Asphalt Content in accordance with AASHTO T neoretical Maximum Specific Gravity in accordance wit ASTM D2041. One per 500 linear feet of 1. Conduct a minimum of 2 tests on Compaction in accordance with ASTM D2950. each section of roadway less than 500 roadway 2. Measure pavement thickness and Surface Tolerance using a 10 foot straight edge. One per 50 linear feet. width in conjunction with this test.

6 FINAL ACCEPTANCE

6.1 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. ACCEPTANCE OF COMPLETED IMPROVEMENTS WILL NOT BE GIVEN UNTIL DEFECTIVE OR UNAUTHORIZED WORK IS REMOVED, AND FINAL CLEANUP IS COMPLETE.

7 UTILITIES

- 7.1 A UTILITY COORDINATION MEETING SHALL BE COORDINATED BY THE CONTRACTOR PRIOR TO THE START OF ANY WORK. ALL UTILITY ISSUES SHALL BE ADDRESSED IN ACCORDANCE WITH MAG
- 7.2 THE CONTRACTOR SHALL CALL "BLUE STAKE" AND NOTIFY THE APPROPRIATE PRIVATE, PUBLIC AND MUNICIPAL UTILITY COMPANIES 48 HOURS PRIOR TO ANY CONSTRUCTION WORK TO VERIFY LOCATION AND DEPTH OF ALL UTILITY LINES IN THE AREA OF WORK. UTILITIES IF INDICATED ON PLANS ARE APPROXIMATE LOCATIONS ONLY, TAKEN FROM THE UTILITY COMPANY MAPS. IF THE CONTRACTOR ENCOUNTERS ANY LINES NOT INDICATED ON THE DRAWINGS OR MARKED IN THE FIELD BY THE UTILITY COMPANY THAT MAY INTERFERE WITH HIS WORK, HE SHALL NOTIFY THE APPROPRIATE UTILITY COMPANY IMMEDIATELY FOR DISPOSITION OF THOSE FACILITIES.
- 7.3 THE CONTRACTOR IS RESPONSIBLE FOR PREPARATION OF GRADE, TRENCHING. BACKFILLING. PAD CONSTRUCTION AND CONCRETE PADS FOR UTILITY EQUIPMENT INSTALLED ON THIS PROJECT. CONTRACTOR SHALL CONTACT LOCAL UTILITY COMPANIES FOR DETAILS AND REQUIREMENTS.
- 7.4 REQUIRED UTILITY SLEEVES SHALL BE PLACED PRIOR TO SUBBASE CONSTRUCTION AND PAVING. CONTACT APPROPRIATE UTILITY COMPANIES FOR REQUIREMENTS IN ALL AREAS.

8 CONSTRUCTION STAKING

- 8.1 THE ACCURACY OF ALL CONSTRUCTION WORK SHALL BE MAINTAINED AND VERIFIED BY A REGISTERED LAND SURVEYOR. CONSTRUCTION STAKING SUITABLE TO THE ENGINEER WILL BE SET ESTABLISHING LINES AND GRADES (FINISH OR FLOWLINE) FOR ALL CONSTRUCTION INCLUDING ROADS, CURB AND GUTTER, SIDEWALKS, UTILITIES, STRUCTURES, AND OTHER WORK AS CONSIDERED NECESSARY BY THE PROJECT ENGINEER. ALL SURVEY CONTROL SHALL BE SET BY THE SURVEYOR FROM MONUMENTS ACCEPTABLE TO THE ENGINEER.
- 8.2 THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING.

9 GRADING AND EARTHWORK

- 9.1 NOT USED.
- 9.2 NO GRADING OR TRENCHING WORK SHALL BEGIN PRIOR TO SUPPORTING AND PROTECTING EXISTING ONSITE AND ADJACENT PROPERTY FROM SETTLING, CRACKING, OR OTHER DAMAGE WHICH MIGHT RESULT.
- 9.3 WATER SOURCE: THE CONTRACTOR SHALL MAKE THE NECESSARY ARRANGEMENTS FOR OBTAINING ALL WATER REQUIRED FOR SOIL COMPACTION, DRINKING PURPOSES AND DUST CONTROL. (MAG SPEC 225)
- 9.4 CLEARING AND GRUBBING: EXAMINE SITE AND PROVIDE NECESSARY EQUIPMENT AND LABOR TO REMOVE FROM THE SITE AND DISPOSE OF STUMPS, ROOTS, ROCKS, LOOSE FILL, VEGETATION, DEBRIS, AND ANY CLEAN, UNCLASSIFIED ONSITE SOILS MAY BE USED IN GENERAL AS FILL MATERIAL. SEE MAG SPECIFICATION SECTIONS 201 AND 215.
- 9.5 TOPSOIL THAT WILL BE AFFECTED BY ROUGH GRADING OR EXCAVATION SHALL BE STOCKPILED ON THE SITE SEPARATELY AND SHALL NOT BE USED FOR FILL, BUT SHALL BE CONSERVED AND USED FOR FINE AND FINISH GRADING.
- 9.6 SITE DRAINAGE: CONSTRUCTION OF ALL SWALES, CHANNELS, DRAINAGE PIPES, DRAINAGE STRUCTURES AND BANK PROTECTION SHALL BE CONSTRUCTED DURING THE FIRST PHASES OF SITE CONSTRUCTION TO PROTECT ALL OTHER CONSTRUCTION FROM SURFACE WATERS. DIVERT RUN OFF WATER AROUND CONSTRUCTION OPERATIONS. CARE SHALL BE TAKEN BY THE CONTRACTOR NOT TO ADVERSELY AFFECT ADJACENT PROPERTIES. DRAIN EXCAVATIONS BY PUMPING OR OTHER SATISFACTORY METHOD TO PREVENT SOFTENING OF THE FOUNDATION SOILS, UNDERCUTTING OF FOOTINGS, OR OTHER ACTIONS DETRIMENTAL TO PROPER CONSTRUCTION PROCEDURES.
- THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM ALL WALLS AND FOUNDATIONS. ALL STORM DRAINS, DRAIN LINES, OVERFLOWS, OUTLETS, AND/OR OTHER DRAINAGE TYPE OUTLETS WHICH CONDUCT MOISTURE NEAR THE STRUCTURES SHALL BE POSITIVELY DRAINED AWAY FORM THE STRUCTURE. NO WATER SHALL BE PERMITTED TO POND NEAR STRUCTURES OR FOUNDATIONS. ALL DRAINAGE SHALL BE CHANNELED AND TAKEN A MINIMUM OF 10 FEET AWAY FROM ALL STRUCTURES.
- SUBGRADE PREPARATION: IF THE NATURAL SUBGRADE IS LESS THAN THE REQUIRED DENSITY, IT SHALL BE SCARIFIED AND COMPACTED TO A MINIMUM DEPTH OF TWELVE INCHES OR AS NOTED IN THE SOILS REPORT IMMEDIATELY PRIOR TO PLACING SUBSEQUENT FILL MATERIAL THEREON. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND REPAIR OF DAMAGE TO PREPARED SUBGRADE CAUSED BY CONTRACTORS OPERATIONS OR PUBLIC TRAFFIC UNTIL ACCEPTANCE OF PROJECT. NO MATERIALS SHALL BE PLACED UPON THE PREPARED SUBGRADE UNTIL IT MEETS THE SPECIFIED REQUIREMENTS. ROADWAY SUBGRADE COMPACTION INCLUDES SUBGRADE UNDER ALL PAVEMENT, CURB, SIDEWALKS, SHOULDERS AND FILL SLOPES. SUBGRADE TOLERANCES SHALL BE AS SPECIFIED IN MAG SECTION 301. OPEN LANDSCAPED AREAS SHALL BE GRADED TO +/- 0.20
- EARTH FILL: AREAS TO BE FILLED SHALL BE LEVELED TO PROVIDE A LEVEL BASE TO SUPPORT FILL MATERIALS. SUBGRADE AND SUBBASE AREAS REQUIRING FILL MATERIAL SHALL BE SCARIFIED MOISTENED AND COMPACTED PRIOR TO PLACING FILL. ALL FILL, SUBGRADE AND SUBBASE MATERIALS SHALL BE COMPACTED TO SPECIFIED DENSITIES AT OR NEAR OPTIMUM MOISTURE CONTENTS AS VERIFIED AND RECOMMENDED BY THE SOILS ENGINEER. PLACE FILL IN HORIZONTAL LIFTS NOT EXCEEDING SIX INCHES IN LOOSE THICKNESS BEFORE COMPACTION. SLOPED SURFACES SHALL BE PLOWED, STEPPED, AND BENCHED SO THAT THE FILL MATERIAL WILL BOND WITH THE EXISTING MATERIAL. BENCH AT THE TOE OF FILL SLOPES AND PERIODIC INTERVALS UP THE FILL SLOPES BENCHES.
- 9.10 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE SOILS ENGINEER FOR SCHEDULING OF COMPACTION TESTING. THE FREQUENCY OF DENSITY AND MOISTURE TESTS REQUIRED FOR ADEQUATE CONTROL SHALL BE THE RESPONSIBILITY OF THE SOILS ENGINEER WHO SHALL CERTIFY TO THE ENGINEER AND CONTRACTOR AT PROJECT END THAT THE ROADBED FILL IS COMPACTED AS OUTLINED HEREIN. COMPACTION SHALL BE ACHIEVED BY MECHANICAL MEANS. IN NO CASE SHALL STRUCTURE BACKFILLING BE FLOOD WATER SETTLED.

9 GRADING AND EARTHWORK

9.11 ALL SLOPE CONSTRUCTION AND ROADWAY EXCAVATION SHALL CONFORM TO THE REQUIREMENTS OF MAG SPECIFICATIONS SECTIONS 201, 205, 212, 301, AND UBC SECTIONS 7009 AND 8010. CUT AND FILL SLOPES SHALL BE AS INDICATED ON THE DETAILS AND PLANS. CUT AND FILL SLOPE GRADIENTS SHALL NOT EXCEED 2:1 IN STEEPNESS WITHOUT WRITTEN AUTHORIZATION FROM THE PROJECT ENGINEER AND EXAMINATION BY THE PROJECT ENGINEER. ALL SLOPE CONDITIONS SHALL BE PROVIDED WITH THE APPROPRIATE BENCHES AS SPECIFIED IN THE REFERENCE DOCUMENTS AND INDICATED ON THE PLANS. IF SOILS CONDITIONS ARE ENCOUNTERED WHICH DO NOT ALLOW THE ESTABLISHMENT OF THE INDICATED CUT OR FILL SLOPES, THE PROJECT ENGINEER AND SOILS ENGINEER SHALL BE CONTACTED IMMEDIATELY TO DETERMINE AN ADJUSTMENT TO THE SLOPE GRADIENT OR TO ESTABLISH A METHOD OF STABILIZATION. ALL FILL SLOPES SHALL BE COMPACTED AS EACH LIFT OF FILL MATERIAL IS PLACED. ALL CUT AND FILL SLOPES SHALL BE UNIFORMLY GRADED TO LINES AND GRADES INDICATED. TOPS OF ALL CUT SLOPES SHALL BE ROUNDED AND ALL UNSTABLE AND LOOSE MATERIAL AT TOP OF SLOPE SHALL BE REMOVED. TOP OF CUT SLOPES OVER 10' HIGH SHALL BE PROVIDED WITH BROW DITCHES FOR DRAINAGE.

REFER TO SECTION 15 FOR SEED MIX DESIGN.

THERE ARE EXISTING SEWER, WATER, GAS, AND DRY UTILITIES LOCATED WITHIN THE ROAD PRISM. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND PROTECT THESE UTILITIES DURING CONSTRUCTION.

10 PAVING

- 10.1 COMPLETE ASPHALTIC CONCRETE PAVEMENT INSTALLATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
- A. TACK COATING OF CONCRETE SURFACES, UNDILUTED .02 TO .10 GAL/SY, DILUTED 1:1 MIXTURE, .05 TO .15 GAL/SY, OR AS
- B. PAINT FOR PAVEMENT STRIPING AND MARKING SHALL CONFORM TO FEDERAL SPEC. NO. TTP-155E, "PAINT, TRAFFIC, HIGHWAY, WHITE AND YELLOW". COLORS FOR PAVEMENT MARKING AND STRIPING SHALL BE AS SPECIFIED BY THE PROJECT ENGINEER.
- C. TRAFFIC CONTROL DEVICES: SIGNS AND PAVEMENT MARKINGS SHALL CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" LATEST EDITION, PUBLISHED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY
- 10.2 ASPHALTIC PAVEMENT SHALL CONFORM TO MAG SPECIFICATION SECTION 32 WITH THICKNESS AND DESIGN MIX AS INDICATED ON THE PLANS.
- 10.3 ALL FRAMES, COVERS, VALVE BOXES, AND MANHOLES IN PAVED AREAS AND RIGHT-OF-WAY SHALL BE ADJUSTED TO GRADE BY THE PAVING CONTRACTOR. IN NON-PAVED AREAS THEY SHALL BE ADJUSTED TO GRADE BY THE GENERAL CONTRACTOR.
- 10.4 ALL PAVING WORK SHALL BE PLACED IN STRICT CONFORMANCE TO MAG SECTION 321 PAR.3213 WEATHER AND MOISTURE CONDITIONS. ALL WORK AND MATERIALS PLACED IN VIOLATION OF THESE REQUIREMENTS WILL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
- 10.5 EXACT POINT OF PAVEMENT MATCHING, TERMINATION AND/OR OVERLAY, IF NECESSARY. SHALL BE SUBJECT TO FIELD APPROVAL BY THE ENGINEER, HIS REPRESENTATIVE AND LOCAL MUNICIPAL AUTHORITIES. EDGE OF EXISTING PAVEMENT WHERE NECESSARY SHALL BE UNIFORMLY SAWCUT AND TACK COAT
- 10.6 THE CONTRACTOR SHALL IN ALL AREAS OF PAVING PROVIDE A UNIFORM DENSE SURFACE SMOOTH AND TRUE TO LINE. SURFACE SHALL BE FREE OF PITS, DEPRESSIONS, ROCK POCKETS AND PATCHES.

11 FIELD INSPECTION

- 11.1 THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTAINING ALL CONSTRUCTION STAKING. ANY ADDITIONAL STAKING WILL BE AT THE COST OF THE CONTRACTOR.
- 11.2 THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR 24 HOURS PRIOR TO BEGINNING DIFFERENT ASPECTS OF CONSTRUCTION SO THAT INSPECTIONS MAY BE SCHEDULED.
- 11.3 ANY QUESTIONS RAISED RELATIVE TO ACCURACY OF IMPROVEMENT INSTALLATION SHALL NOT BE RAISED SUBSEQUENT TO COMPLETION OF THE WORK UNLESS AL SURVEY STAKES ARE MAINTAINED INTACT. SHOULD SUCH STAKES NOT BE PRESENT AND VERIFIED AS TO THEIR ORIGIN. NO CLAIM FOR ADDITIONAL COMPENSATION FOR CORRECTION SHALL BE PRESENTED TO ANY PARTY AND SUCH WORK SHALL BE CORRECTED BY THE CONTRACTOR AT HIS EXPENSE.

13 WARRANTY

13.1 ANY DEFECTS WHICH APPEAR IN THE WORK WITHIN TWO YEARS 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

14 ADEQ WATER AND SEWER SYSTEM NOTES

- 14.1 WATER SYSTEM THRUST BLOCKING AND/OR JOINT RESTRAINT
- 14.2 PIPE LINES SHALL BE PROVIDED WITH CONCRETE THRUST BLOCKS AT ALL CHANGES IN DIRECTION AND SIZE AND AT ALL TEES, VALVES, PLUGS, AND DEAD ENDS, PER MAG STANDARD DETAILS 301 AND 380 AND YAG STANDARD DETAIL 3-03. PIPE LINES MAY ALSO BE PROVIDED WITH RESTRAINED JOINTS AT ALL CHANGES IN DIRECTION AND SIZE AND AT ALL TEES, VALVES, PLUGS, AND DEAD ENDS, PER MAG STANDARD DETAILS 302 AND 303.
- 14.3 TRENCHING AND BACKFILLING
- 14.3.1 ROUGH GRADING SHALL BE COMPLETED PRIOR TO INSTALLATION OF UNDERGROUND UTILITIES.
- 14.3.2 TRENCH BOTTOM SHALL BE COMPACTED BY SUITABLE MEANS APPROVED BY THE ENGINEER PRIOR TO PLACEMENT OF BEDDING MATERIAL. BEDDING MATERIAL SHALL BE PLACED TO PROVIDE UNIFORM AND ADEQUATE LONGITUDINAL SUPPORT UNDER THE PIPE. THE CONTRACTOR SHALL ENSURE THAT A MINIMUM COMPACTED DEPTH OF 6" IS MAINTAINED UNDERNEATH THE PIPE. BELL HOLES SHOULD BE PROVIDED AT EACH JOINT TO PERMIT PROPER ASSEMBLY WHILE MAINTAINING UNIFORM SUPPORT.
- 14.3.3 BEDDING MATERIAL SHALL BE AGGREGATE BASE COURSE WITH A MAXIMUM PARTICLE SIZE OF 3/4" AND SHALL BE NON-PLASTIC. WHERE DEPTH OF COVER IS 2-FT. OR LESS, BACKFILL MATERIAL SHALL BE ROUNDED GRAVEL WITH A MAXIMUM PARTICLE SIZE OF 1/2" AND WITH NO MORE THAN 20% PASSING THE #200 SIEVE.
- 14.4 GENERAL CONTRACTOR TO STUB OUT UTILITIES 1-FT WITHIN EACH PROPERTY AND MARKED, UTILITY STUB-OUT TO BE MARKED W/ 12" #4 REBAR TIED TO END OF UTILITY W/ 2X4 WHICH WILL EXTEND FROM PIPE INVERT TO 12" ABOVE FINISHED GRADE PAINTED ALL SIDES WITH UTILITY COLOR, GREEN FOR SEWER, BLUE FOR WATER AND RED FOR APS. PIPES ALSO TO HAVE TRACER WIRE AND MARKING TAPE.





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14 CONTINUE

- 14.5 BACKFILL SHALL BE PLACED IN LAYERS OF NOT MORE THAN 8" LOOSE DEPTH AND COMPACTED TO ACHIEVE COMPACTION OF 95% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99 AND T-191 OR ASTM D-2922 AND D-3017. THE CONTRACTOR SHALL CONTRACT WITH AN INDEPENDENT TESTING LABORATORY TO PROVIDED COMPACTION TESTING. TESTS SHALL BE PROVIDED AT MINIMUM INTERVALS OF ONE TEST PER 50 CUBIC YARDS OF TRENCH BACKFILL. TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER DAILY.
- 14.6 TRENCHING, PIPELAYING, BACKFILLING, AND ALL OTHER CONSTRUCTION SHALL BE PERFORMED UNDER THE INSPECTION, COORDINATION, AND SUPERVISION OF A REGISTERED PROFESSIONAL CIVIL ENGINEER.
- 14.7 NO TRENCH SHALL BE FILLED WITH BEDDING MATERIAL OR BACKFILL UNTIL THE EXCAVATION AND PIPE LAYING, RESPECTIVELY, HAVE BEEN APPROVED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE.
- 14.8 THE EXCAVATION METHOD EMPLOYED SHALL BE THE CONTRACTOR'S OPTION. MATERIAL SHALL NOT BE STOCKPILED TO A DEPTH OF MORE THAN 5 FEET ABOVE FINISHED GRADE WITHIN 25 FEET OF ANY EXCAVATION OR STRUCTURE. EXCAVATION SHALL EXTEND SUFFICIENT DISTANCE FROM WALLS AND FOOTINGS TO ALLOW PLACING AND REMOVAL OF FORMS, INSTALLATION OF SERVICES AND INSPECTION BY THE ENGINEER. WITHIN 12" OF FINISHED GRADE SHOWN ON THE DRAWINGS, AND FOR THE MANHOLES, FILL AND BACKFILL SHALL BE NATIVE MATERIAL, FEE FROM BROKEN CONCRETE, ORGANIC MATERIAL, OR OTHER DEBRIS WITH SUFFICIENT FINES TO FILL ALL VOIDS AND TO INSURE A UNIFORMLY COMPACTED MASS OF THE REQUIRED DENSITY AND HAVING A MAXIMUM SIZE OF 2 - 1/2 INCHES WITH 0 TO 20% MINUS #200. ALL FILL AND BACKFILL SHALL BE PLACED IN LAYERS OF NOT MORE THAN 8" LOOSE AND COMPACTED TO 95% OF MAXIMUM DENSITY. DETERMINED BY AASHTO TEST METHOD T-99, PRIOR TO PLACEMENT OF THE NEXT LAYER.

WATER AND SEWER SYSTEM DESIGN; MINIMUM DESIGN CRITERIA

WATER AND SEWER MAINS SHALL BE SEPARATED IN ORDER TO PROTECT PUBLIC WATER SYSTEMS FROM POSSIBLE CONTAMINATION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE SEWER MAIN TO THE OUTSIDE OF THE WATER MAIN. SEPARATION REQUIREMENTS ARE AS FOLLOWS: 1. A WATER MAIN SHALL NOT BE PLACED: (AAC: 18-5-502) A. WITHIN SIX FEET, HORIZONTAL DISTANCE, AND BELOW TWO FEET, VERTICAL DISTANCE, ABOVE THE TOP OF A SEWER MAIN UNLESS EXTRA PROTECTION IS PROVIDED (WHEN A WATER MAIN IS ABOVE A SEWER MAIN; EXTRA PROTECTION IS REQUIRED WHEN THE WATER MAIN IS CLOSER THAN TWO (2) FEET TO THE SEWER MAIN. WHEN A WATER MAIN IS BELOW A SEWER MAIN: THE MINIMUM SEPARATION IS TWO (2) FEET AND EXTRA PROTECTION IS ALWAYS REQUIRED PER MAG SPECIFICATIONS). EXTRA PROTECTION SHALL CONSIST OF CONSTRUCTING THE SEWER MAIN WITH MECHANICAL JOINT DUCTILE IRON PIPE OR WITH SLIP-JOINT DUCTILE IRON PIPE IF JOINT RESTRAINT IS PROVIDED. ALTERNATE EXTRA

AREA COVERED BY THIS SUBPARAGRAPH. B. WITHIN TWO FEET HORIZONTALLY AND TWO FEET BELOW THE SEWER MAIN. NO WATER PIPE SHALL PASS THROUGH OR COME INTO CONTACT WITH ANY PART OF A SEWER MANHOLE. THE MINIMUM HORIZONTAL SEPARATION BETWEEN WATER MAINS AND MANHOLES SHALL BE SIX FEET, MEASURED FROM THE CENTER

PROTECTION SHALL CONSIST OF ENCASING BOTH THE WATER AND SEWER MAINS

IN AT LEAST SIX INCHES OF CONCRETE FOR AT LEAST TEN FEET BEYOND THE

- OF THE MANHOLE. 3. THE MINIMUM SEPARATION BETWEEN FORCE MAINS OR PRESSURE SEWERS AND WATER MAINS SHALL BE TWO FEET VERTICALLY AND SIX FEET HORIZONTALLY UNDER ALL CONDITIONS. WHERE A SEWER FORCE MAIN CROSSES ABOVE OR LESS THAN SIX FEET BELOW A WATER LINE, THE SEWER MAIN SHALL BE ENCASED IN AT LEAST SIX INCHES OF CONCRETE OR CONSTRUCTED USING MECHANICAL JOINT DUCTILE IRON PIPE FOR TEN FEET ON EITHER SIDE OF THE
- 4. A ONE (1) FOOT MINIMUM VERTICAL SEPARATION SHALL BE PROVIDED BETWEEN A STORM DRAIN CROSSING A WATER MAIN. THE MINIMUM VERTICAL SEPARATION IS MEASURED FROM OUTSIDE OF WATER MAIN TO OUTSIDE OF STORM DRAIN. EXTRA PROTECTION IS REQUIRED PER MAG SPECIFICATIONS WHEN THESE REQUIREMENTS ARE NOT MET.
- 5. A SIX (6) FOOT MINIMUM HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN A SEWER MAIN OR STORM DRAIN AND A WATER MAIN. THE MINIMUM HORIZONTAL SEPARATION IS MEASURED FROM OUTSIDE OF PIPE TO OUTSIDE OF
- WHENEVER TWO PARALLEL WATER MAINS ARE REQUIRED. THERE SHALL BE A TEN (10) FOOT MINIMUM HORIZONTAL SEPARATION BETWEEN THE TWO MAINS TO ALLOW FOR TAPPING, TIE-OVER, AND MAINTENANCE.
- 7. A THREE (3) FOOT MINIMUM HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN A FIRE HYDRANT AND ANY WATER SERVICE LINE. 8. RECLAIMED WASTEWATER MAINS SHALL BE CONSIDERED THE SAME AS WATER MAINS FOR THE PURPOSE OF MINIMUM COVER AND SEPARATION.
- 9. VERTICAL CLEARANCE BETWEEN WATER MAINS AND SEWER SERVICE CONNECTIONS: THE WATER MAIN SHALL NOT BE LESS THAN 6 INCHES ABOVE THE SEWER SERVICE EVEN IF THE SEWER SERVICE CONNECTION IS CONSTRUCTED WITH DUCTILE IRON PIPE IN ACCORDANCE WITH NOTE 3B OF MAG STANDARD
- 10. WHEN THE <u>SEWER SERVICE</u> IS ABOVE THE WATER MAIN IS NOT ALLOWED. 11. SEPARATION FROM STORM DRAINS AND CULVERTS; WATER AND SEWER MAINS SHALL MAINTAIN SIX (6) FEET HORIZONTAL AND ONE FOOT VERTICAL SEPARATION FROM STORM DRAINS AND CULVERTS. 12. MINIMUM COVER IS TO BE MEASURED TO SUBGRADE UNLESS THERE IS NO
- PAVEMENT; THEN IT IS MEASURED TO FINISHED GRADE. IN ALL CASES, SEWER LINES ARE TO BE AT A DEPTH SUFFICIENT TO PROVIDE GRAVITY SERVICE TO ALL ADJACENT BUILDING PADS. SERVICE LINES ARE TO BE LAID AT GRADES AND DEPTHS PRESCRIBED IN THE INTERNATIONAL PLUMBING CODE.

SEWER SYSTEM:

MANHOLES

ALL MANHOLES SHALL BE 4-FT. ID PRECAST CONCRETE WITH POURED-IN-PLACE CONCRETE BASE AND TRAFFIC BEARING RING AND COVER. ALL COVERS SHALL BE 2-FT. IN DIAMETER AND SHALL BE MARKED "SEWER". TEST MANHOLES FOR WATER TIGHTNESS (INFILTRATION) PER R 18-9-E301.4.01.D.3.F. WATER TIGHTNESS SHALL BE TESTED BY EITHER 1) FILLING THE MANHOLE WITH WATER AND ENSURING THAT THE DROP IN WATER LEVEL DOES NOT EXCEED 0.001% OF THE TOTAL MANHOLE VOLUME IN ONE HOUR, OR 2) AIR PRESSURE TESTING USING THE "STANDARD TEST METHOD FOR CONCRETE SEWER MANHOLES BY NEGATIVE AIR PRESSURE (VACUUM) TEST". ASTM C-1244-93. TEST 100% OF ALL MANHOLES. MANHOLES SHALL CONFORM TO A.D.E.Q. AND M.A.G. SPECIFICATIONS. CONSTRUCTION SHALL CONFORM TO M.A.G. STD. DTLS. 420-1 AND 420-2.

CONCRETE

CLASS A CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI. ALL POURED-IN-PLACE CONCRETE FOR WATER CONTAINING AND/OR TRANSPORTING CHAMBERS, MANHOLES AND BOXES, AND FOUNDATIONS SHALL BE CLASS A CONCRETE, AND SHALL BE SMOOTH FINISHED ON WATER CONTACT SURFACES. THRUST BLOCKS, VALVE ANCHORS, AND CONCRETE SURROUNDS MAY BE FORMED FROM CLASS C CONCRETE. THE EXCAVATION METHOD EMPLOYED SHALL BE THE CONTRACTOR'S GRADE WITHIN 25 FEET OF ANY EXCAVATION OR STRUCTURE. EXCAVATION SHALL EXTEND A SUFFICIENT DISTANCE FROM WALLS AND FOOTINGS TO ALLOW PLACING AND REMOVAL OF FORMS, INSTALLATION OF SERVICES AND INSPECTION BY THE ENGINEER.

TESTING OF GRAVITY SANITARY SEWERS

ALL GRAVITY SANITARY SEWER MAINS SHALL BE TESTED IN ACCORDANCE WITH THE ARIZONA ADMINISTRATIVE CODE. ALL ACCEPTANCE TESTING SHALL BE PERFORMED IN THE PRESENCE OF THE PROJECT ENGINEER OR AUTHORIZED REPRESENTATIVE. TESTING SHALL CONSIST OF THE FOLLOWING:

TEST EACH SECTION OF GRAVITY PIPELINE FOR LEAKAGE AND PRESSURE RATING AFTER BACKFILLING OCCURS AND BEFORE ROAD IS PAVED. PERFORM LEAKAGE TESTS WITH THE AIR TEST AS SPECIFIED BELOW. TEST LATERALS FROM THE MAIN LINE TO PROPERTY LINE.

2. IN ADDITION TO PRESSURE AND LEAKAGE TESTING, A DEFLECTION TEST SHALL BE PERFORMED ON ALL GRAVITY PIPELINES INSTALLED. A RIGID BALL OR MANDREL DEFLECTION TESTING EQUIPMENT AND LABOR SHALL BE PROVIDED. TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES. ANY SECTION OF THE PIPELINE WHICH SHOWS DEFLECTION IN EXCESS OF 5 PERCENT OF THE AVERAGE INSIDE DIAMETER AS PER ASTM D3034 SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. ENGINEER MAY REQUIRE CONTRACTOR TO TEST PVC PIPE AFTER BACKFILL HAS BEEN IN PLACE FOR 30 DAYS. VIDEO INSPECTION

3.a. THE CONTRACTOR WILL BE REQUIRED TO VIDEO RECORD THE INTERIOR OF THE SEWER LINE USING A VIDEO CAMERA. ANY DEFECTS OR 'SAGS' IN THE PIPE OR CONSTRUCTION METHODS REVEALED BY THE INSPECTION SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.

3.b. THE CONTRACTOR SHALL RE-VIDEO THE PIPE AFTER IT HAS BEEN REPAIRED OR EXCAVATED. ANY ADDITIONAL INSPECTION(S) REQUIRED, BASED ON A FAILURE OR DEFICIENCY DISCOVERED DURING THE INSPECTION, SHALL BE PAID FOR BY THE CONTRACTOR. ALL SEWER LINE VIDEOS SHALL BE TURNED IN TO THE PROJECT MANAGER AFTER ACCEPTANCE.

4.a. PERFORM AIR TESTS FOR PLASTIC MAINLINE AND WILL INCLUDE LATERAL PIPES TO THE PROPERTY LINES WHERE APPLICABLE.

4.b. CONTRACTOR SHALL FURNISH ALL FACILITIES REQUIRED INCLUDING: NECESSARY PIPING CONNECTIONS, TEST PUMPING EQUIPMENT, PRESSURE GAUGES OR MANOMETERS, BULKHEADS, ALL MISCELLANEOUS ITEMS REQUIRED. OBTAIN APPROVAL OF EQUIPMENT AND ACCEPTANCE OF METHODS PROPOSED FOR USE. CONDUCT INITIAL TEST ON FIRST SECTION OF PIPE LAID BY EACH CREW. 4.c. INTRODUCE LOW-PRESSURE AIR UNTIL INTERNAL AIR PRESSURE IS 4.0 PSI. ALLOW TWO TO FIVE MINUTES FOR INTERNAL AIR PRESSURE AND TEMPERATURE TO STABILIZE. ADJUST PRESSURE TO 3.5 PSI AND START TEST. THE TIME REQUIRED FOR THE PRESSURE TO DECREASE 1.0 PSI FROM 3.5 TO 2.5 PSI GREATER THAN THE AVERAGE BACK PRESSURE OF ANY GROUND WATER ABOVE THE PIPE INVERT SHALL NOT BE LESS THAN THE MINIMUM TEST TIME IN THE FOLLOWING FOR THE GIVEN DIAMETERS: NOMINAL PIPE TIME (MIN) PER DIAMETER PER 100FT OF PIPE: 4"=.66 MIN; 6"=1.48 MIN; 8"=2.510 MIN; 10"=3.912 MIN; 12"=5.615 MIN; 15"=8.918 MIN; 18" = 12.8 MIN.

MANHOLES SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH AAC R18-9-E301D.3, ASTM C -1244 AND MAG SPECIFICATION SECTION 615.

WATER SYSTEM PRESSURE AND LEAKAGE TESTING:

4. AIR TESTING (ASTM F1417)

1. THE CONTRACTOR SHALL PROVIDE THE LABOR, TOOLS, EQUIPMENT, AND MATERIALS NECESSARY TO PERFORM THE PRESSURE TESTS AND LEAKAGE TESTS. 2. ALL TESTS PERFORMED FOR EACH PIPE TEST SECTION. FACILITY. OR PART OF A FACILITY SHALL BE OBSERVED AND APPROVED BY THE ENGINEER BEFORE ACCEPTANCE. IN THE EVENT THE CONTRACTOR PERFORMS ANY TEST WITHOUT OBSERVED BY THE ENGINEER, THE CONTRACTOR WILL BE REQUIRED TO TEST THE SECTION. FACILITY. OR PART OF A FACILITY AGAIN IN CONFORMANCE WITH THIS SPECIFICATION AT NO COST TO THE OWNER. SUBMIT TEST RESULTS OF ALL TESTING INCLUDED IN THIS SECTION, INCLUDING

BUT NOT LIMITED TO THE FOLLOWING: PRESSURE TESTS AND GAUGE CALIBRATIONS. 4. THE ENGINEER AND PROJECT MANAGER SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO ANY TESTING AND/OR DISINFECTING. TEST PRESSURES SHALL BE MIN 250 PSI, MEASURED AT THE HIGHEST POINT

OF THE PIPE SEGMENT BEING TESTED OR 150% OF THE NORMAL SYSTEM PRESSURE. ONLY POTABLE WATER SHALL BE USED FOR FLUSHING AND TESTING THE POTABLE WATER SYSTEM. 6. THE CONTRACTOR WILL BE RESPONSIBLE FOR DISPOSAL OF ANY WATER

ASSOCIATED WITH HYDROSTATIC TESTING. THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ENGINEER TO DETERMINE DISPOSAL LOCATIONS. PERMITTING, COORDINATION, AND APPROVAL OF DISPOSAL LOCATIONS ARE THE RESPONSIBILITY OF CONTRACTOR. ALL TEMPORARY PLUGS, BULKHEADS, OR BLIND FLANGES USED FOR HYDROSTATIC TESTING WILL BE FURNISHED BY THE CONTRACTOR AND INCIDENTAL TO THE COST OF THE PIPELINE.

7. ALL PRESSURE MAINS SHALL BE PRESSURE AND LEAKAGE TESTED IN ACCORDANCE WITH MAG SPECIFICATION SECTION 610. SUBSECTION 610.15 EXCEPT THAT THE MAXIMUM ALLOWABLE LEAKAGE FROM THE PIPE LINE SHALL BE DETERMINED BY THE FOLLOWING FORMULA: WHERE: $L = SD\sqrt{P/133,200}$; $L = SD\sqrt{P/133,200}$ ALLOWABLE LEAKAGE IN GALLONS PER HOUR, S = LENGTH OF PIPE TESTED IN FEET. D = NOMINAL DIAMETER OF PIPE IN INCHES. AND P = AVERAGE TEST PRESSURE IN PSI GAGE DURING THE HYDROSTATIC TEST AS MEASURED AT THE LOWEST POINT IN THE TEST SECTION.

WITH WATER AND THE SPECIFIED TEST PRESSURE SHALL BE APPLIED BY MEANS OF A PUMP CONNECTED TO THE PIPE IN A MANNER SATISFACTORY TO THE ENGINEER. BEFORE APPLYING THE SPECIFIED TEST PRESSURE, ALL AIR SHALL BE EXPELLED FROM THE PIPE. THE WATER PRESSURE SHALL BE BROUGHT TO THE SPECIFIED TEST PRESSURES AND MAINTAINED FOR AT LEAST 2 HOURS. LEAKAGE WILL BE DETERMINED BY MEASURING THE QUANTITY OF WATER TO BE SUPPLIED TO MAINTAIN THE SPECIFIED TEST PRESSURE. THE CONTRACTOR SHALL REPAIR AND RETEST ANY LINES THAT FAILED. 9. PRESSURE TESTING OF NEW MAINS SHALL BE BY THE CONTRACTOR PER MAG SECTION 610.15 AND PROJECT ENGINEER OR REPRESENTATION WILL BE PRESENT AT ALL TESTING.

8. EACH SECTION OF PRESSURE MAIN TO BE TESTED SHALL BE SLOWLY FILLED

WATER SYSTEM CHLORINATION FLUSHING AND BACTERIOLOGICAL TESTING:

 CHLORINATION, FLUSHING AND BACTERIOLOGICAL TESTING CHLORINATION AND FLUSHING OF NEW MAINS SHALL BE PERFORMED BY THE CONTRACTOR PER MAG SECTION 611 AND PART V OF ADEQ ENGINEERING BULLETIN NO. 8, BEFORE BEING PLACED IN SERVICE, ALL NEWLY INSTALLED PIPE, VALVES, HYDRANTS, AND APPURTENANCES SHALL BE FLUSHED, DISINFECTED, KEPT CLEAN, AND WILL BE SAMPLED FOR ACCEPTABLE BACTERIOLOGICAL ANALYSIS. THE CONTRACTOR WILL HAVE SAMPLE TAKEN FROM EACH AND EVERY 500-FOOT INTERVAL, AND AT EACH END. FOR EACH HYDRANT LATERAL OVER 18-FEET IN LENGTH, A SAMPLE WILL BE TAKEN AT THE HYDRANT END. ON NEW WATERLINE WITHOUT HYDRANT, TEMPORARY SAMPLING TAPS SHALL BE PROVIDED, AND THEN REMOVED AND PLUGGED AFTER ACCEPTABLE BACTERIOLOGICAL RESULTS ARE RECEIVED. HYDRANT USED FOR SAMPLING SHALL BE FITTED WITH AN APPROVED SAMPLING TAP. THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ENGINEER AND UTILITY

DEPARTMENT FOR THE LOCATION OF SAMPLING TAPS. 2. PRE-DISINFECTION FLUSHING: PIPE SHALL FIRST BE FLUSHED TO REMOVE ANY SOLID OR CONTAMINATED MATERIAL. FLUSHING VELOCITY SHALL BE AT LEAST 2.5-FEET PER SECOND IN THE PIPE. FLUSHING PERIOD SHALL BE AT LEAST 5 MINUTES FOR EVERY 150-FEET OF NEW PIPE BUT IN NO CASE LESS THAN 30 MINUTES. B. ONE 2-1/2 INCH HYDRANT OPENING WILL, UNDER NORMAL PRESSURE OF 40 PSI, PROVIDE THIS VELOCITY IN PIPE SIZES UP TO AND INCLUDING 12-INCHES.

3. FINAL FLUSHING AND TESTING. FOLLOWING CHLORINATION, ALL TREATED WATER SHALL BE FLUSHED FROM THE PIPE UNTIL THE REPLACEMENT WATER TREATED THROUGHOUT ITS LENGTHS SHOWS AN ABSENCE OF CHLORINE. IF CHLORINE IS NORMALLY USED IN THE SOURCE OF SUPPLY. TESTS SHALL SHOW A RESIDUAL NOT IN EXCESS OF THAT CARRIED IN THE SYSTEM. FLUSHING VELOCITY SHALL BE AT LEAST 2.5-FEET PER SECOND IN THE WATERLINE. FLUSHING PERIOD SHALL BE AT LEAST 5 MINUTES FOR EVERY 150-FEET OF NEW WATERLINE BUT IN NO CASE LESS THAN 30 MINUTES. ALL HYDRANTS ON THE NEW WATERLINE SHALL BE FLUSHED TO REMOVE EXCESS CHLORINE FROM THE HYDRANT AND HYDRANT

THE CONTRACTOR WILL PROVIDE A COPY OF ALL TEST TO THE PROJECT

ENGINEER AND UTILITY DEPARTMENT.

15 EROSION CONTROL NOTES

(SPECIFICATIONS FOR PERMANENT SEEDING)

- SITE PREPARATION A. INSTALL NECESSARY SURFACE WATER CONTROL MEASURES PRIOR TO
- PLANTING PERMANENT SEEDING. B. GRADE TO PERMIT USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED
- C. PROVIDE ADEQUATE DRAINAGE WHERE INTERNAL WATER MOVEMENT ESPECIALLY AT TOES OF SLOPES, MAY CAUSE SEEPS OR SLIPPAGE BEFORE SEEDING IS WELL ESTABLISHED.

A. AS PRACTICAL, PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO THE SLOPE.

B. IMMEDIATELY BEFORE SEEDING, RAKE OR OTHERWISE LOOSEN PLANTING SURFACE TO PROVIDE A SMOOTH, FRIABLE SURFACE FREE OF EARTH CLODS, HUMPS AND DEPRESSIONS, AND DISPOSE OF LOOSE STONES HAVING A DIMENSION GREATER THAN ONE INCH AND DEBRIS BROUGHT TO THE SURFACE DURING CULTIVATION.

PLANTING

- A. APPLY SEED MIX AT THE RATE OF 11 POUNDS PER ACRE. SHALL CONTAIN THE FOLLOWING PROPORTION OF PURE LIVE SEED: SAND DROPSEED (SPOROBOLUS CRYPTANDRUS) 1 LB
- SIDEOATS GRAMA (BOUTELOUS CURTIPENDULA)5 LB CRESTED WHEAT GRASS (AGROPYRON CRISTATUM) 5 LB
- B. APPLY SEED IN TWO DIRECTIONS AT RIGHT ANGLES TO EACH OTHER WITH HALF THE SPECIFIED APPLICATION RATE APPLIED IN EACH
- C. IMMEDIATELY AFTER SEEDING, UNIFORMLY SPREAD SCREENED MANURE AT THE RATE OF ONE CUBIC YARD PER 1000 SQUARE FEET AND WATER UNTIL THE GROUND IS WET TO A MINIMUM DEPTH OF TWO INCHES.
- D. HYDRAULIC SEEDING USING 1500 POUNDS OF WOOD CELLULOSE FIBER PER ACRE MAY BE UTILIZED IN LIEU OF PLANTING.

MAINTENANCE

- A. PROTECT PLANTED AREAS FROM GRAZING, FIRE, TRAFFIC, AND WEED
- B. MAINTAIN PLANTED AREAS UNTIL A GOOD STAND OF GRASS IS ESTABLISHED. AREAS AS REQUIRED IF NO GROWTH IS PRESENT WITHIN 15 DAYS OF PLANTING.





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DRAWN BY: LAS NTS 11-05-25

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GENERAL GRADING AND DRAINAGE NOTES:

- 1. SITE BENCHMARK IS A 3-IN. BRASS CAP STAMPED 26925 AT THE INTERSECTION OF CHERRY CREEK ROAD AND OLD STATE HIGHWAY 279 WITH AN ELEVATION OF 3277.78'
- 2. SURVEY AND TOPOGRAPHY DATA PROVIDED BY HERITAGE LAND SURVEYING & MAPPING INC, AND COOPER AERIAL SURVEYS CO. TOPOGRAPHY WAS PERFORMED IN JUNE OF 2025.
- 3. SITE BENCHMARK IS A 1/2" REBAR WITH A CAP MARKED L.S. 14184 FOUND AT THE SE CORNER OF LOT 11 WITH AN ELEVATION OF 4482.70. BENCHMARK ELEVATION REFERENCES CITY OF SEDONA BENCHMARK NO. 53.
- 4. TOP OF CUT SLOPES SHALL BE MADE NOT NEARER TO A SITE BOUNDARY LINE THAN 1/5 OF THE THE VERTICAL HEIGHT OF THE CUT WITH A MINIMUM OF 2 FEET. THE TOE OF FILL SLOPES SHALL BE MADE NOT NEARER TO A SITE BOUNDARY LINE THAN 1/2 OF THE VERTICAL HEIGHT OF THE FILL, WITH A MINIMUM OF 2 FEET. ALL CUT OR FILL SLOPES STEEPER THAN 2:1 SHALL BE STABILIZED WITH RIPRAP.
- 5. THE GROUND SURFACE SHALL BE PREPARED TO RECEIVE FILL BY REMOVING ALL VEGETATION, NON-COMPLYING FILL, AND OTHER UNSUITABLE MATERIALS.
- 6. NO ROCK OR SIMILAR IRREDUCIBLE MATERIAL WITH A MAXIMUM DIMENSION GREATER THAN 12" SHALL BE ALLOWED IN FILLS IN THE ABSENCE OF A SOILS REPORT AND INSPECTION BY A SOILS ENGINEER.
- 7. ALL FILLS SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AND VERIFIED BY A COMPACTION REPORT WHEN SUPPORTING A STRUCTURE.
- ANY SUB-BASE FILL PLACED GREATER THAN A DEPTH OF 8 FEET BELOW FINISHED HOUSE PAD AND FINISHED ROADWAY GRADE SHALL BE COMPACTED TO A MINIMUM OF 100% OF THE ASTM D698 MAXIMUM DENSITY, PLACED IN 8-INCH LIFTS.

KEY NOTES:

- 1 INSTALL 4" THICK CONC. DRIVEWAY. WIDTH PER PLAN.
- (2) INSTALL 4" DIA. SCH 40 PVC SEWER SERVICE LINE w/ BACKFLOW VALVE
- (3) INSTALL 4" SEWER CLEANOUT
- (4) INSTALL 3/4" WATER SERVICE w/ 3/4" NEPTUNE T-10 METER IN POLYMER BOX

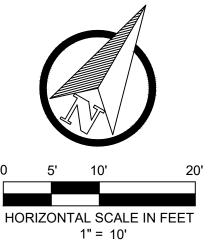
SPOT ELEVATIONS LEGEND

BACK OF CURB BOTTOM OF WALL BENCH MARK **CENTER LINE EXISTING GROUND** FINISHED CONCRETE FINISHED FLOOR FINISHED GROUND FLOW LINE **EDGE OF PAVEMENT** GRADE BREAK HIGH POINT **LOW POINT** POINT OF CURVATURE POINT OF TANGENCY TOP OF WALL

TOP OF CURB

SANITARY SEWER CONSTRUCTION NOTES:

- 1. SEWER SERVICES TO BE INSTALLED 1-FT INSIDE OF BUILDING SITES AND MARKED AS STATED IN THE GENERAL NOTES.
- 2. NO STEPS TO BE INSTALLED WITHIN ANY SEWER MANHOLE.







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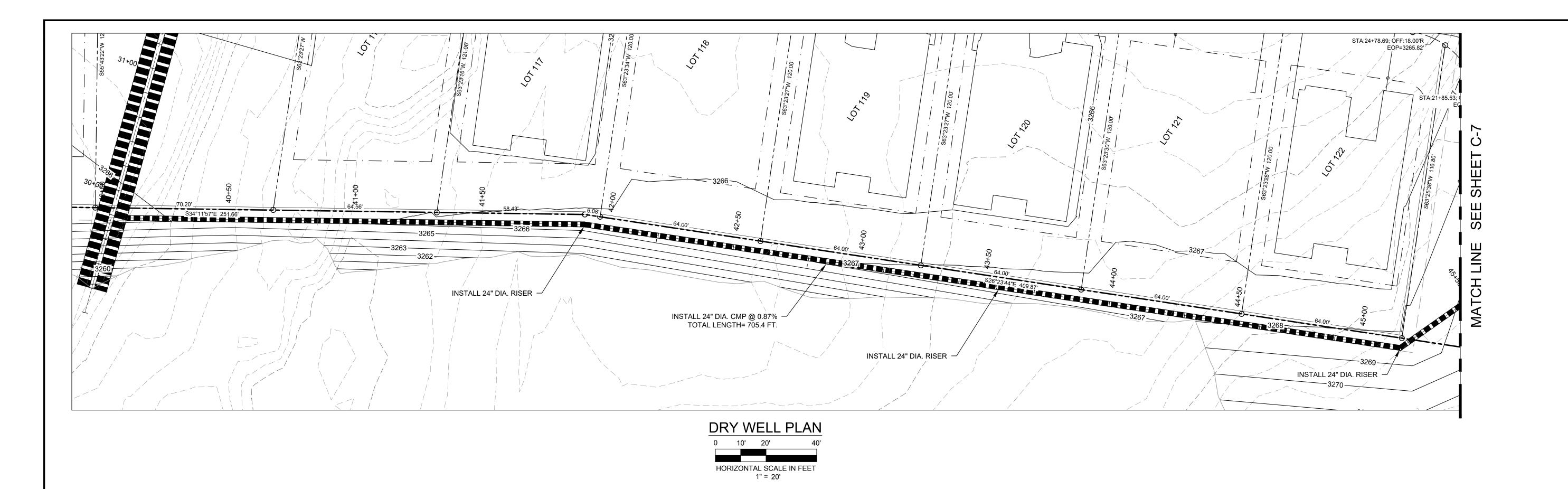
GRADING

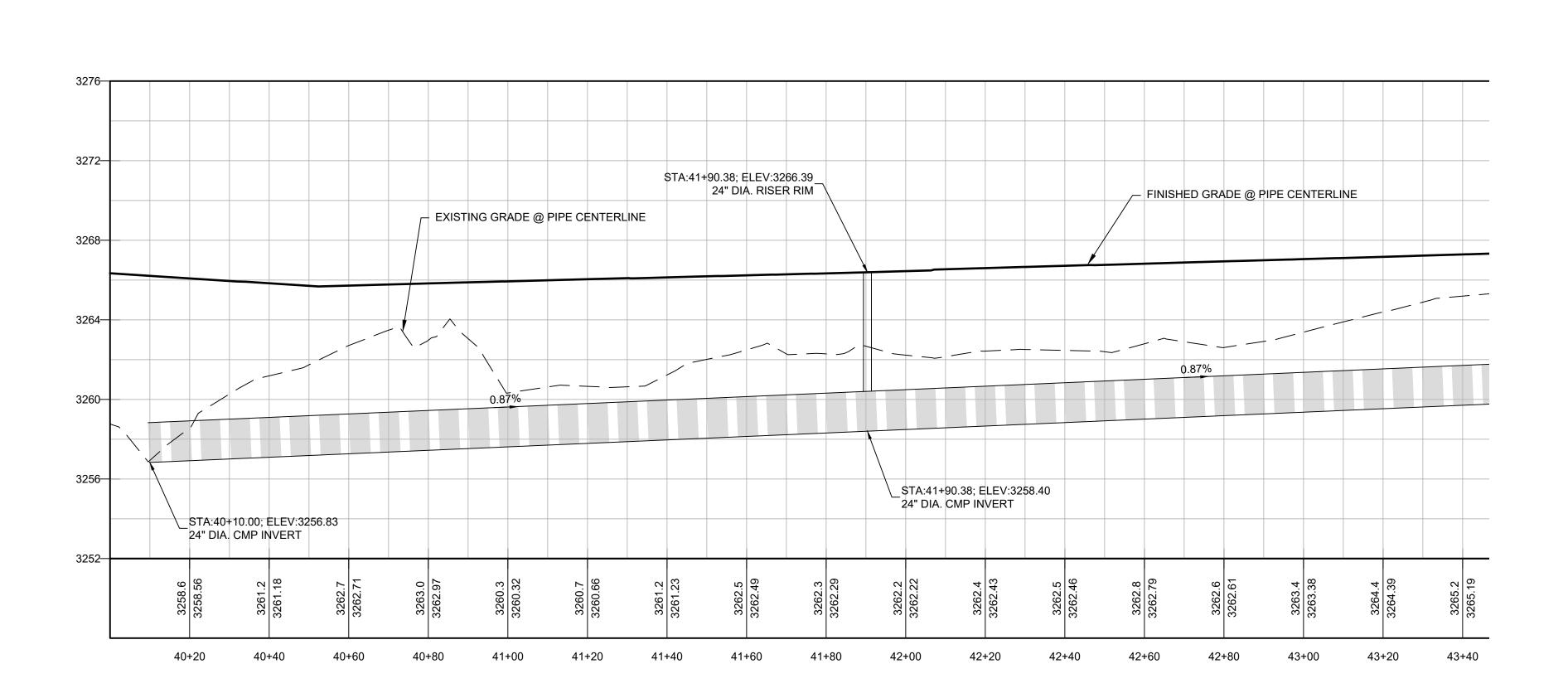
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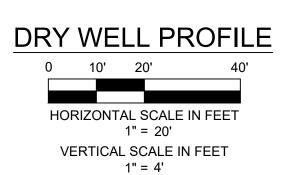
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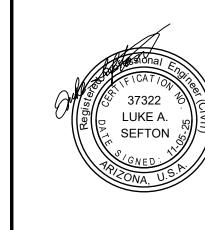
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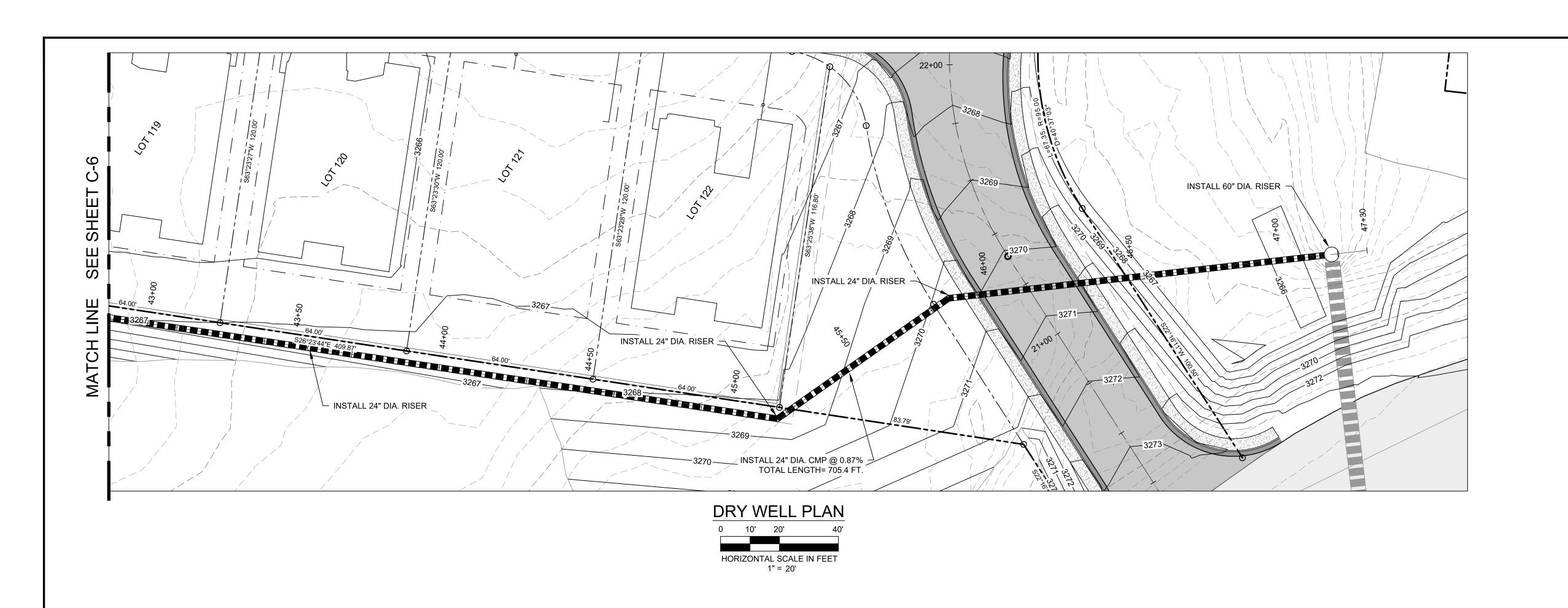
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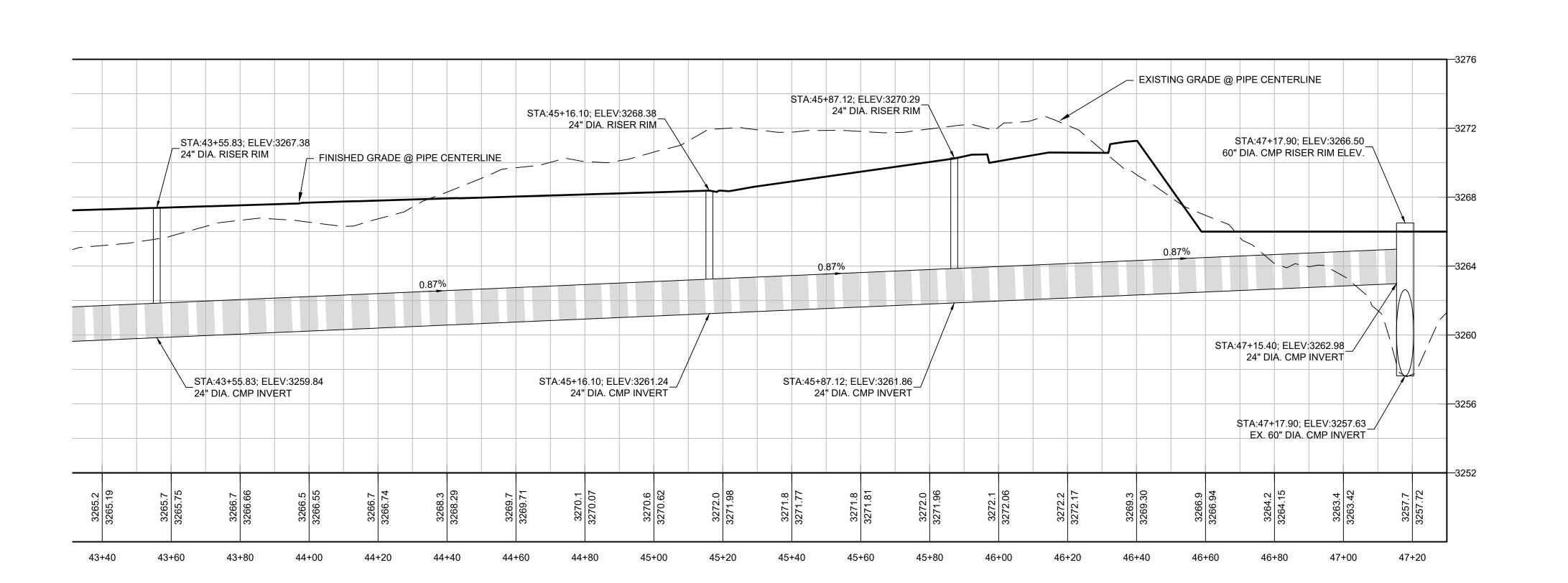
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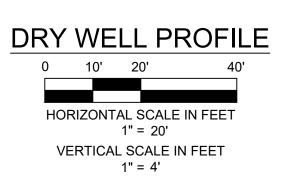
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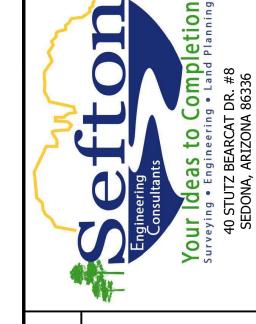
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AND

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