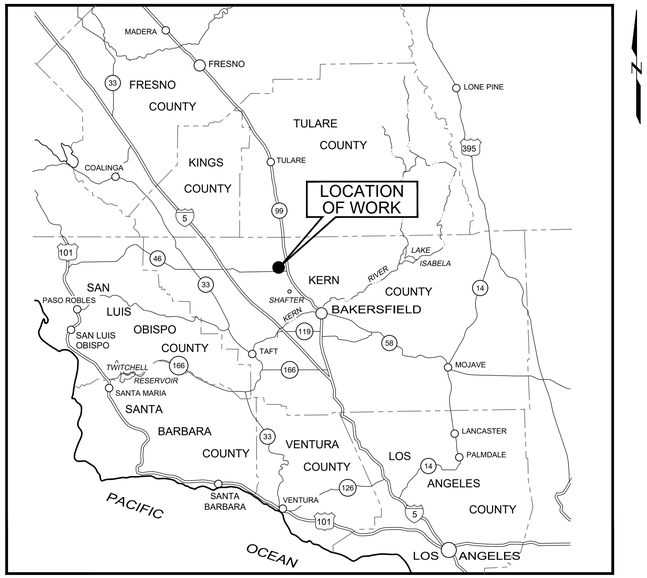
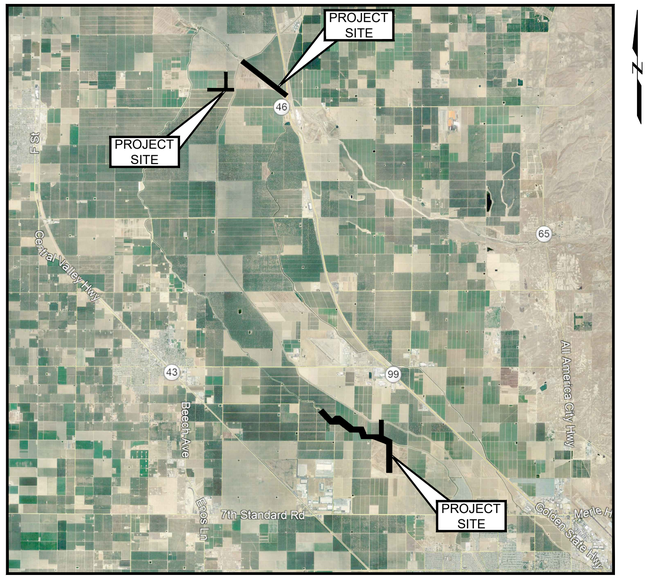
# NORTH KERN WATER STORAGE DISTRICT
# PIPELINE AND PUMP STATION PROJECT

SPECIFICATION NO. NK-619

NORTH KERN WATER STORAGE DISTRICT
KERN COUNTY
SEPTEMBER 2021




VICINITY MAP
(NOT TO SCALE)




SOURCE:
(GOOGLE 2021)

SITE LOCATION MAP
(NOT TO SCALE)

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STATE OF CALIFORNIA
09-22-2021

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

PROJECT LOCATION AND VICINITY MAP

DWG. NO. G-01
SHEET NO. 1
ARCHIVE #

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| SHT NO | DWG NO | TITLE |
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| GENERAL | | |
| 1 | G-01 | PROJECT LOCATION AND VICINITY MAP |
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| 3 | G-03 | ABBREVIATIONS AND SYMBOLS |
| 4 | G-04 | GENERAL NOTES AND UTILITY CONTACT LIST |
| 5 | G-05 | BASIS OF SURVEY, KEY MAP, AND BORING LOCATIONS SHEET 1 OF 2 |
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| 7 | G-07 | PROCESS MECHANICAL ABBREVIATIONS AND SYMBOLS LEGEND |
| 8 | G-08 | PROCESS MECHANICAL SYMBOLS LEGEND |
| CIVIL | | |
| 9 | CA-01 | 88-29 WELLS PIPELINE PLAN AND PROFILE STA 9+53.51 TO STA 20+00 |
| 10 | CA-02 | 88-29 WELLS PIPELINE PLAN AND PROFILE STA 20+00 TO STA 30+00 |
| 11 | CA-03 | 88-29 WELLS PIPELINE PLAN AND PROFILE STA 30+00 TO STA 40+00 |
| 12 | CA-04 | 88-29 WELLS PIPELINE PLAN AND PROFILE STA 40+00 TO STA 50+00 |
| 13 | CA-05 | 88-29 WELLS PIPELINE PLAN AND PROFILE STA 50+00 TO STA 60+00 |
| 14 | CA-06 | 88-29 WELLS PIPELINE PLAN AND PROFILE STA 60+00 TO STA 70+00 |
| 15 | CA-07 | 88-29 WELLS PIPELINE PLAN AND PROFILE STA 70+00 TO STA 80+00 |
| 16 | CA-08 | 88-29 WELLS PIPELINE PLAN AND PROFILE STA 80+00 TO STA 84+07.80 |
| 17 | CB-01 | 88-25 WELLS PIPELINE PLAN AND PROFILE STA 11+46.26 TO STA 20+00 |
| 18 | CB-02 | 88-25 WELLS PIPELINE PLAN AND PROFILE STA 20+00 TO STA 30+00 |
| 19 | CB-03 | 88-25 WELLS PIPELINE PLAN AND PROFILE STA 30+00 TO STA 40+00 |
| 20 | CB-04 | 88-25 WELLS PIPELINE PLAN AND PROFILE STA 40+00 TO STA 48+05.99 |
| 21 | CB-05 | 88-29 WELLS PIPELINE (NORTH) PLAN AND PROFILE STA 10+02.66 TO STA 20+00 |
| 22 | CB-06 | 88-29 WELLS PIPELINE (NORTH) PLAN AND PROFILE STA 20+00 TO STA 30+00 |
| 23 | CB-07 | 88-29 WELLS PIPELINE (NORTH) PLAN AND PROFILE STA 30+00 TO STA 37+15.47 |
| 24 | CC-01 | WEST ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 9+95.86 TO STA 20+00 |
| 25 | CC-02 | WEST ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 20+00 TO STA 30+00 |
| 26 | CC-03 | WEST ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 30+00 TO STA 40+00 |
| 27 | CC-04 | WEST ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 40+00 TO STA 50+00 |
| 28 | CC-05 | WEST ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 50+00 TO STA 60+00 |
| 29 | CC-06 | WEST ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 60+00 TO STA 70+00 |
| 30 | CC-07 | WEST ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 70+00 TO STA 80+00 |
| 31 | CC-08 | WEST ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 80+00 TO STA 90+00 |
| 32 | CC-09 | WEST ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 90+00 TO STA 100+00 |
| 33 | CC-10 | WEST ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 100+00 TO STA 109+81.66 |
| 34 | CC-11 | CENTRAL ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 10+09.18 TO STA 20+00 |
| 35 | CC-12 | CENTRAL ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 20+00 TO STA 30+00 |
| 36 | CC-13 | CENTRAL ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 30+00 TO STA 40+00 |
| 37 | CC-14 | CENTRAL ROSEDALE WELLS PIPELINE PLAN AND PROFILE STA 40+00 TO STA 49+00 |
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| 41 | CC-18 | ROSEDALE PUMP STATION DISCHARGE PIPELINE PLAN AND PROFILE STA 20+00 TO STA 30+00 |
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NORTH KERN WATER STORAGE DISTRICT

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NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

LIST OF DRAWINGS

DWG. NO. G-02

SHEET NO. 2

ARCHIVE #

# ABBREVIATIONS

| | |
|---|---|
| AB | ANCHOR BOLT |
| ABAND | ABANDONED |
| AC | ASPHALTIC CONCRETE |
| ADJ | ADJUSTABLE |
| AV | AIR VALVE |
| BC | BEGIN CURVE |
| BCR | BEGIN CURB RETURN |
| BF | BLIND FLANGE |
| BFV | BUTTERFLY VALVE |
| BM | BENCH MARK |
| BVC | BEGIN VERTICAL CURVE |
| CAV | COMBINATION AIR VALVE |
| ℄, CL | CENTERLINE |
| C/E | CONSTRUCTION EASEMENT |
| CCT | CENTRAL CALIFORNIA TRACTION |
| CDF | CONTROL DENSITY FILL |
| CFS | CUBIC FEET PER SECOND |
| CI | CAST IRON |
| CML&C | CEMENT MORTAR LINED AND COATED |
| CMP | CORRUGATED METAL PIPE |
| CO | CLEAN OUT |
| CONC | CONCRETE |
| COND | CONDUIT |
| COTG | CLEAN-OUT TO GRADE |
| CPLG | COUPLING |
| CV | CHECK VALVE |
| DI | DUCTILE IRON |
| DIA, Ø | DIAMETER |
| DWG | DRAWING |
| (E) | EAST |
| EA | EACH |
| EC | END CURVE |
| ECR | END CURVE RETURN |
| EF | EACH FACE |
| EL | ELEVATION |
| ELEC | ELECTRICAL OR ELECTRONIC |
| EVC | END VERTICAL CURVE |
| EXIST | EXISTING |
| EXP JT | EXPANSION JOINT |
| FCA | FLEXIBLE COUPLING ADAPTER |
| FG | FINISH GRADE |
| FH | FIRE HYDRANT |
| FIG | FIGURE |
| FIN | FINISHED |
| FKC | FRIANT-KERN CANAL |
| FL | FLOWLINE OR FLOOR |
| FLG | FLANGE, FLANGED |
| FM | FORCE MAIN |
| FND | FOUND |
| FPS | FEET PER SECOND |
| FT | FEET OR FOOT |
| G | GAS OR GATE |
| GA | GAGE OR GAUGE |
| GAL | GALLON |
| GALV | GALVANIZED |
| GEN | GENERAL OR GENERATOR |
| GPM | GALLONS PER MINUTE |
| GV | GATE VALVE |
| H/B | HOSE BIBB |
| HDPE | HIGH DENSITY POLYETHYLENE |
| HORIZ | HORIZONTAL |
| HPI | HORIZONTAL POINT OF INTERSECTION |
| I.P. | IRON PIPE |
| ID | INSIDE DIAMETER |
| IN | INCH |
| INV | INVERT |
| IRR | IRRIGATION |
| JT | JOINT |
| L | LENGTH |
| L/D | LIMITS OF DISTURBANCE |
| LS | LIFT STATION |
| LT | LEFT |
| MAX | MAXIMUM |
| MGD | MILLION GALLONS PER DAY |
| MH | MANHOLE |
| MIN | MINIMUM |
| MISC | MISCELLANEOUS |
| MJ | MECHANICAL JOINT |
| MON | MONUMENT |
| MP | MILE POST |
| (N) | NORTH |
| NAPOTC | NOT A PART OF THIS CONCTRACT |
| NKWSD | NORTH KERN WATER STORAGE DISTRICT |
| NO | NUMBER |
| NTS | NOT TO SCALE |
| O&M | OPERATIONS AND MAINTENANCE |
| OD | OUTSIDE DIAMETER OR OVERALL DIMENSION |
| OH | OVERHEAD |
| P | POLE |
| PC | POINT OF CURVATURE |
| PVMT | PAVEMENT |
| PCC | PORTLAND CEMENT CONCRETE |
| PE | POLYETHYLENE |
| PG&E | PACIFIC GAS & ELECTRIC |
| PH | POT HOLE |
| PI | POINT OF INTERSECTION |
| PIP | PLASTIC IRRIGATION PIPE |
| PL | PLATE, PROPERTY LINE OR PLACE |
| PRC | POINT OF REVERSE CURVE |
| PREFAB | PREFABRICATED |
| PRESS | PRESSURE |
| PS | PIPE STIFFNESS |
| PSI | POUNDS PER SQUARE INCH |
| PT | POINT OF TANGENCY, POINT |
| PV | PLUG VALVE |
| PVC | POLYVINYL CHLORIDE |
| QTY | QUANTITY |
| R | RADIUS |
| RC | REINFORCED CONCRETE |
| RCP | REINFORCED CONCRETE PIPE |
| RCCP | REINFORCED CONCRETE CYLINDER PIPE |
| REF | REFERENCE |
| REQD | REQUIRED |
| REV | REVISION |
| RFCA | RESTRAINED FLANGED COUPLING ADAPTER |
| RPM | REVOLUTIONS PER MINUTE |
| RR | RAILROAD |
| RT | RIGHT |
| R/W | RIGHT OF WAY |
| S | SLOPE (ALSO SIGN SYMBOL) |
| (S) | SOUTH |
| S/E | SEWER EASEMENT |
| SCH | SCHEDULE |
| SD | STORM DRAIN |
| SHT | SHEET |
| SPECS | SPECIFICATIONS |
| SP | STEEL PIPE |
| SS | SANITARY SEWER, STAINLESS STEEL |
| SSP | STATE STANDARD PLANS |
| STA | STATION |
| STL | STEEL |
| T | TELEPHONE |
| TBM | TEMPORARY BENCH MARK |
| TBC | TOP BACK CURB |
| TCE | TEMPORARY CONSTRUCTION EASEMENT |
| TDH | TOTAL DYNAMIC HEAD |
| TEMP | TEMPORARY |
| TW | TOP OF WALL |
| TYP | TYPICAL |
| UG | UNDERGROUND |
| U.N.O | UNLESS NOTED OTHERWISE |
| VAR | VARIES OR VARIABLE |
| VCP | VITRIFIED CLAY PIPE |
| VERT | VERTICAL |
| VFD | VARIABLE FREQUENCY DRIVE |
| VPI | VERTICAL POINT OF INTERSECTION |
| W | WATER |
| W/ | WITH |
| (W) | WEST |
| W.P | WORK POINT |
| WWM | WELDED WIRE MESH |

# SYMBOLS

CONCRETE

EARTH

RIPRAP OR GRAVEL

NATIVE CLASS II, III, OR IV MATERIAL

NEW STRUCTURE OR FACILITY

FUTURE STRUCTURE OR FACILITY

DRAINAGE SLOPE

123 — CONTOUR LINE, FINISHED GRADE

123 — CONTOUR LINE, EXISTING GRADE

309.4 — SPOT ELEVATION

TOP / TOE — CUT OR FILL SLOPE TO BE CONSTRUCTED

NEW AC PAVING

EXISTING AC PAVING (DASHED OR SCREENED)

EXISTING BUILDING

EXISTING BRUSH/TREE

EXISTING ELEC POLE

EXISTING MAIL BOX

EXISTING POLE

EXISTING SIGN POST

EXISTING VALVE

EXISTING MANHOLE

EXISTING LIGHT POLE

EXISTING GUY WIRE

EXISTING CANAL GATE

EXISTING POWER POLE

EXISTING WELL

EXISTING IRRIGATION

EXISTING GAS

EXISTING ELECTRICAL (OVERHEAD)

EXISTING ELECTRICAL (UNDERGROUND)

EXISTING PVC

EXISTING FENCE

SECTION LINE

MID-SECTION LINE

PERMANENT EASEMENT

TEMPORARY EASEMENT

RIGHT OF WAY

PROPERTY LINE

AIR VALVE (SEE DWG CG-03)

BLOWOFF (SEE DWG CG-09)

PG — PRESSURE GAUGE (SEE DETAIL 2 ON DWG CG-05)

VALVE

FLOW METER

SURVEY POINT

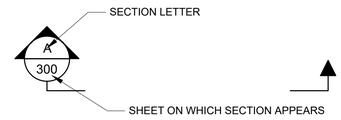
BORING LOCATION

AERIAL SURVEY TARGET

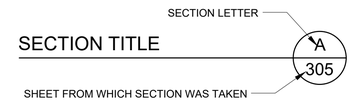
# DETAIL & SECTION IDENTIFICATION:

## SECTION IDENTIFICATION

### SECTION CUT CALL-OUT




### SECTION TITLE




## DETAIL IDENTIFICATION

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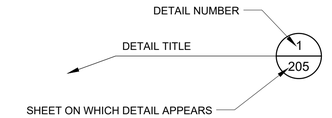


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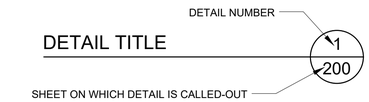


DETAIL AND SECTION IDENTIFICATION NOTES:

1. IF PLAN AND SECTION (OR DETAIL CALL-OUT AND DETAIL) ARE SHOWN ON THE SAME SHEET, THEN THE SHEET NUMBER IS REPLACED WITH "-".
2. IF DETAIL IS SHOWN ON NUMEROUS SHEETS THEN THE SHEET NUMBER IN THE DETAIL TITLE IS REPLACED WITH "VAR" FOR "VARIES".

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| Submitted: | S. GALA |

REGISTERED PROFESSIONAL ENGINEER — KUN YAO — C 76823 — EXP. 12-31-22 — CIVIL — STATE OF CALIFORNIA — 09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

DWG. NO. G-03

ABBREVIATIONS AND SYMBOLS

SHEET NO. 3

ARCHIVE #

## GENERAL NOTES

1. THIS PROJECT INVOLVES THE CONSTRUCTION OF FIVE NEW PIPELINE SYSTEMS, A PUMP STATION, ELEVEN WELL CONNECTIONS, ONE CONNECTION TO EXISTING DISCHARGE, AND TWO TEMPORARY DISCHARGES FOR THE NORTH KERN WATER STORAGE DISTRICT (DISTRICT). THE WORK IS LOCATED IN KERN COUNTY, CALIFORNIA. REFER TO PARAGRAPH D-4 OF SPECIFICATION SECTION D - SPECIAL CONDITIONS FOR A LIST OF THE PRINCIPAL WORK ITEMS.
2. THE PROJECT SHALL BE COMPLETED WITHIN THE PROJECT COMPLETION WORK TIMES INDICATED IN PARAGRAPH D-5 OF SPECIFICATION SECTION D - SPECIAL CONDITIONS. AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS, THE PROJECT CONSISTS OF THE FOLLOWING FOUR SCHEDULES:
    a. SCHEDULE A - GENERAL ITEMS
    b. SCHEDULE B - WATER MAINS
    c. SCHEDULE C - WELL CONNECTIONS AND MODIFICATIONS
    d. SCHEDULE D - ROSEDALE PUMP STATION
3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE DRAWINGS AND THE SPECIFICATIONS, STANDARD PLAN AND SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. ALL WORK SHALL CONFORM TO ALL APPLICABLE COUNTY, STATE, AND FEDERALS LAWS AND REGULATIONS.
4. THESE NOTES SUPPLEMENT THE SPECIFICATIONS, WHICH MAY BE REFERENCED FOR ADDITIONAL REQUIREMENTS.
5. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST THREE (3) BUSINESS PRIOR TO BEGINNING ANY WORK WITHIN THE PROJECT AREA.
6. REFER TO THE SPECIFICATIONS (PARAGRAPH D-37 OF SPECIFICATION SECTION D - SPECIAL CONDITIONS) FOR ALLOWABLE WORKING DAYS AND HOURS.
7. PROVIDE TEMPORARY FENCING AS NECESSARY TO MAINTAIN SECURITY AT ALL TIMES.
8. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING EXISTING ABOVE GROUND AND UNDERGROUND CONDITIONS PRIOR TO START OF ALL CONSTRUCTION. ANY DISCREPANCY BETWEEN THE DRAWINGS AND THE FIELD SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER AND FOLLOW NOTIFICATION UP IN WRITING WITHIN 24 HOURS OF FINDING THE CONFLICT. IF NECESSARY, THE ENGINEER WILL REVISE AND RE-ISSUE DRAWINGS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, AND NOTES, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN. DETAILS ON DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL OSHA AND CAL-OSHA REQUIREMENTS DURING CONSTRUCTION.
10. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS.
11. EXERCISE DUE CARE TO AVOID INJURY TO EXISTING IMPROVEMENTS OR FACILITIES, UTILITY FACILITIES, ADJACENT PROPERTY, TREES, SHRUBBERY, AND CROPS, THAT ARE NOT TO BE SHOWN TO BE REMOVED.
12. REFER TO THE SPECIFICATION SECTION D-19 OF SPECIFICATION D - SPECIAL CONDITIONS FOR ACCESS ROADS AND STAGING AREA.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING, OBTAINING, AND COMPLYING WITH A DUST CONTROL PLAN/PERMIT FROM SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT. SEE SPECIFICATIONS (REFER TO PARAGRAPH D-30 OF SPECIFICATION SECTION D - SPECIAL CONDITIONS) FOR ADDITIONAL REQUIREMENTS.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING, PAYING ALL FEES ASSOCIATED WITH, AND COMPLYING WITH A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND IMPLEMENTING ALL NECESSARY BMP'S. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE N.P.D.E.S. STORM WATER DISCHARGE PERMIT INCLUDING THE MONITORING PROGRAM. REFER TO PARAGRAPH D-30 OF SPECIFICATION SECTION D - SPECIAL CONDITIONS) FOR ADDITIONAL REQUIREMENTS.
15. LOOSE EXCAVATED MATERIAL SHALL NOT BE PLACED OR STORED WITHIN 10 FEET FROM DISTRICT CANALS. ALL EXCESS EXCAVATED SOIL AND MATERIALS SHALL BE PROMPTLY REMOVED AND DISPOSED OF IN A PROPER AND LEGAL MANNER BY THE CONTRACTOR. ALL DISTURBED SURFACE AREAS SHALL BE SHAPED TO FACILITATE DRAINAGE AND AVOID PONDING AND SHALL BE RESTORED TO NEAR NATURAL OR PRE-CONSTRUCTION CONDITIONS.
16. CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND ADEQUATE PHYSICAL BARRIERS TO ENSURE NO GROUND DISTURBANCE WITHIN FRIANT-KERN CANAL RIGHT-OF-WAY.
17. SURVEY REFERENCE AND CONTROL STAKING FOR CONSTRUCTION SHALL BE PROVIDED BY THE DISTRICT IN ACCORDANCE WITH THE PARAGRAPH D-16 OF SPECIFICATION SECTION C - GENERAL CONDITIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE ENGINEER AT THREE (3) WORKING DAYS BEFORE SURVEY SERVICES ARE REQUIRED.
18. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS AND STAKES WHICH ARE DISTURBED OR DESTROYED. THE WORK SHALL BE PERFORMED BY A CALIFORNIA LICENSED LAND SURVEYOR AND PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER AND AT THE CONTRACTOR'S EXPENSE. REFER TO PARAGRAPH C-16 OF SPECIFICATION SECTION C - GENERAL CONDITIONS FOR ADDITIONAL REQUIREMENTS.
19. CONTRACTOR SHALL PERFORM ALL DATA COLLECTION NECESSARY DURING AND AFTER CONSTRUCTION AND PROVIDE AS-BUILT DRAWINGS OF THE CONSTRUCTED PROJECT. REFER TO PARAGRAPHS C-32 OF SPECIFICATION SECTION C - GENERAL CONDITIONS FOR ADDITIONAL REQUIREMENTS.
20. ALL NATURAL AND EXISTING GROUND ELEVATIONS SHOWN ARE APPROXIMATE.
21. THE WALL AND FACE OF ALL EXCAVATIONS GREATER THAN (5) FEET IN DEPTH SHALL BE EFFECTIVELY GUARDED BY A SHORING SYSTEM, SLOPING OF THE GROUND, OR OTHER EQUIVALENT MEANS IN ACCORDANCE WITH OSHA AND CAL/OSHA REQUIREMENTS. TRENCHES OR EXCAVATIONS LESS THAN FIVE (5) FEET IN DEPTH SHALL ALSO BE GUARDED WHEN EXAMINATION INDICATES THAT HAZARDOUS GROUND MOVEMENT MAY BE EXPECTED.
22. EXCAVATION SLOPING AND SHORING SHOWN IN THE DRAWINGS OR DETAILS ARE GRAPHICAL REPRESENTATIONS ONLY, AND DO NOT REPRESENT ACTUAL EXCAVATION SLOPING AND SHORING FOR SAFE CONDITIONS REQUIRED TO COMPLETE THE WORK. CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE EXCAVATION SUPPORT NEEDED TO SAFELY COMPLETE THE WORK IN CONFORMANCE WITH LOCAL, STATE AND FEDERAL CODES GOVERNING SHORING, SHEETING, AND BRACING OF EXCAVATIONS AND TRENCHES AND FOR PROTECTION AND SAFETY OF THE WORKERS AND OTHER CONSTRUCTION-RELATED PERSONNEL.
23. THE LOCATION, PIPE DIAMETER, MATERIAL, AND/OR ELEVATIONS OF UNDERGROUND UTILITIES SHOWN ON THESE DRAWINGS ARE APPROXIMATE ONLY. THIS DATA IS PROVIDED SOLELY AS AN AID TO BIDDING AND SHALL NOT SUBSTITUTE FOR THE CONTRACTOR'S OWN UTILITY LOCATION RESPONSIBILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES SO THAT THOSE COMPANIES MAY MARK THE LOCATIONS OF THEIR UTILITIES PRIOR TO THE START OF THE WORK. PURSUANT TO STATE LAW, THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) AT (800) 642-2444 OR (811) AT LEAST TWO (2) FULL WORKING DAYS PRIOR TO EXCAVATION. THE CONTRACTOR SHALL MARK OUT THE APPROXIMATE LIMITS OF THE PROPOSED EXCAVATION PRIOR TO CALLING USA IN ORDER TO ASSIST THE EXISTING UTILITY OWNERS IN UNDERSTANDING THE LIMITS OF THE REQUIRED PRE-MARK SERVICES.
24. THE TYPES, EXTENTS, LOCATIONS, SIZES, AND /OR DEPTHS OF EXISTING UNDERGROUND UTILITIES, AS SHOWN ON THESE PLANS, WERE OBTAINED FROM SOURCES OF VARYING RELIABILITY. EXISTING UTILITIES AND STRUCTURES (UNDERGROUND, SURFACE, OR OVERHEAD) ARE INDICATED ONLY TO THE EXTENT THAT SUCH INFORMATION WAS KNOWN, OR MADE AVAILABLE TO, OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. THE LOCATIONS, CONFIGURATIONS, AND ELEVATIONS OF SUBSURFACE FACILITIES AND UTILITIES ARE APPROXIMATE, AND NOT ALL UTILITIES, SERVICE LATERALS AND FACILITIES MAY BE INDICATED. OVERHEAD UTILITIES ARE SHOWN ON THE PLAN BUT NOT THE PROFILE OR SECTION DRAWINGS. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE TYPES, EXTENT, SIZES, MATERIALS, LOCATIONS, AND DEPTHS OF SUCH UNDERGROUND UTILITIES. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF ITS DELINEATION OF SUCH UNDERGROUND UTILITIES NOR FOR THE EXISTENCE OF OTHER BURIED OBJECTS OR UTILITIES WHICH MAY BE ENCOUNTERED BUT WHICH ARE NOT SHOWN ON THESE DRAWINGS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE AND PROTECT UNDISCLOSED SERVICE LATERALS.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING UTILITIES AND TO FIELD VERIFY (POTHOLE) THE SIZE, MATERIAL, LOCATION, AND DEPTH OF ALL EXISTING UTILITIES AND TIE-IN CONNECTIONS IN THE PROPOSED WORK AREAS IN ADVANCE OF ALL CONSTRUCTION AND PRIOR TO PIPE LAYING DIAGRAMS IN ACCORDANCE WITH SPECIFICATION SECTION D-13 OF SPECIFICATION D - SPECIAL CONDITIONS.
26. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING CONDITIONS, DIMENSIONS, ELEVATIONS, AND QUANTITIES IN THE FIELD PRIOR TO BIDDING, FABRICATING, CONSTRUCTING, OR INSTALLING ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO ENGINEER.
27. EXISTING UTILITIES AND PAVING SHALL BE PROTECTED AND MAINTAINED IN PLACE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.
28. ALL CROSSING/PARALLEL UTILITIES WITHIN TRENCH EXCAVATIONS SHALL BE TEMPORARILY SUPPORTED TO THE SATISFACTION OF THE UTILITY OWNER AND AS SHOWN ON THE DRAWINGS AND CALLED FOR IN THE SPECIFICATIONS.
29. USE EXTREME CAUTION NEAR GAS PIPELINES. GAS PIPELINES CONTAIN EXTREMELY FLAMMABLE AND EXPLOSIVE PETROLEUM PRODUCTS UNDER HIGH PRESSURE. THE GAS PIPELINES SHALL BE PROTECTED FROM DAMAGE BY THE CONTRACTOR AT ALL TIMES DURING THIS PROJECT WHILE PIPELINE RELATED WORK IS BEING PERFORMED. ANY DAMAGE TO THE GAS PIPELINES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED IN KIND BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE DISTRICT.
30. UNLESS OTHERWISE NOTED OR APPROVED, CONSTRUCTION ACTIVITIES SHALL NOT BE CONDUCTED OUTSIDE THE DELINEATED PROJECT BOUNDARY.
31. CONTRACTOR SHALL COMPLY WITH SPECIAL ENVIRONMENTAL REQUIREMENTS SPECIFIED IN PARAGRAPH D-34 OF SPECIFICATION SECTION D - SPECIAL CONDITIONS.
32. SEE PARAGRAPH D-5 OF SPECIFICATION SECTION D - SPECIAL CONDITIONS FOR COMPLETION OF WORK REQUIREMENTS.
33. STATIONS SHOWN ON THE DRAWING ARE ALONG THE CENTERLINE OF THE PIPE. STATIONS AND INVERT ELEVATIONS OF PIPE SHOWN ON THE PROFILE ARE AT THE BOTTOM, INSIDE FACE OF CONDUIT UNLESS OTHERWISE SHOWN. LENGTHS SHOWN ARE HORIZONTAL PLANE DISTANCE.
34. REPORTS OF COMPACTION SHALL BE SUBMITTED IN A TIMELY MANNER FOR REVIEW AND APPROVAL TO THE ENGINEER.
35. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROTECT, REPLACE AND/OR RELOCATE ALL SIGNS AND FENCES AS SHOWN ON THE PLANS OR AS REQUIRED BY THE ENGINEER.
36. BEFORE FORMS HAVE BEEN SET AND 24 HOURS PRIOR TO THE PLACEMENT OF ANY CONCRETE THE CONTRACTOR SHALL ADJUST ALL NECESSARY UTILITIES TO GRADE AND OBTAIN APPROVAL FROM THE ENGINEER.
37. UNLESS OTHERWISE APPROVED BY THE ENGINEER, SHOWN ON THE DRAWINGS, SPECIFIED, OR REQUIRED BY THE UTILITY OWNER, THE FOLLOWING CLEARANCE SHALL BE MAINTAINED BETWEEN EXISTING IRRIGATION WATER FACILITIES AND ANY OTHER EXISTING UTILITIES:
    a. A MINIMUM VERTICAL SEPARATION OF 12 INCHES FOR VERTICAL CROSSINGS.
    b. A MINIMUM HORIZONTAL SEPARATION OF 5 FEET FOR VERTICAL CROSSINGS.
    c. A MINIMUM SEPARATION OF 6 FEET FOR HORIZONTAL/PARALLEL INSTALLATIONS
    d. A MINIMUM OF 2 FEET AROUND ANY ABOVE-GROUND WATER FACILITY / APPURTENANCE.
38. THE CONTRACTOR SHALL MAINTAIN ACCESS TO FARM ROADS, PRIVATE DRIVES, AND UTILITY EASEMENTS.
39. THE CONTRACTOR SHALL REPLACE ALL DISTURBED AREAS IN KIND PRIOR TO PROJECT COMPLETION AND TO THE SATISFACTION OF THE DISTRICT, PROPERTY OWNERS, AND THE ENGINEER.
40. WORK NOT SHOWN OR INDICATED ON THESE DRAWINGS, OR CALLED FOR IN THE SPECIFICATIONS, SHALL BE CONSIDERED INCIDENTAL WORK, THE COST OF WHICH SHALL BE INCLUDED IN THE CONTRACT PRICE.
41. AT LEAST 14 BUSINESS DAYS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT CONSTRUCTION PLANS AND SCHEDULES FOR EXISTING PIPELINE TIE-IN(S) AND THE PROPOSED SHUTDOWN(S) FOR DISTRICT REVIEW AND APPROVAL.
42. THE CONTRACTOR SHALL NOT OPERATE ANY EXISTING WATER VALVES. WATER VALVES SHALL BE OPERATED BY DISTRICT EMPLOYEES ONLY.
43. THE CONTRACTOR SHALL NOTIFY THE DISTRICT AT LEAST 10 WORKING DAYS IN ADVANCE OF ALL EXISTING WELL TIE-IN CONNECTIONS AND PIPELINE TIE-IN CONNECTIONS. THE DISTRICT WILL ISOLATE AND DEWATER THE PIPELINE(S) BEING CONNECTED TO AS PART OF THIS CONTRACT. THE CONTRACTOR SHALL EXPECT NUISANCE WATER AND REMOVE AND DISPOSE OF IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
44. THE CONTRACTOR SHALL NOTIFY THE DISTRICT AT LEAST 15 WORKING DAYS IN ADVANCE OF PIPELINE CANAL CROSSINGS. THE DISTRICT WILL SHUT DOWN AND DEWATER THE CANALS BEING CROSSED TO AS PART OF THIS CONTRACT. THE CONTRACTOR SHALL EXPECT NUISANCE WATER AND REMOVE AND DISPOSE OF IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
45. ALL ENGINEER APPROVED MATERIALS REQUIRED FOR COMPLETING THE TIE-IN(S) AND CANAL CROSSINGS SHALL BE ONSITE PRIOR TO THE DISTRICT APPROVED SHUTDOWN PERIOD.
46. THE TIE-IN POINT(S) AND CANAL CROSSINGS SHALL BE EXCAVATED AS REQUIRED AND PROPERLY PROTECTED PRIOR TO THE DISTRICT APPROVED SHUTDOWN PERIOD.
47. ALL EXISTING PIPELINE REMOVAL, TIE-IN CONNECTIONS TO EXISTING DISTRICT FACILITIES, CANAL REPAIR AND RESTORATION WORK SHALL BE COMPLETED DURING THE DISTRICT APPROVED SHUT DOWN PERIOD.
48. THE DISTRICT'S EXISTING CONCRETE PIPE IS KNOWN TO BE BRITTLE. CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHILE WORKING ON OR NEAR THE EXISTING CONCRETE PIPE. DAMAGED PIPE SHALL BE REPLACED IN ACCORDANCE WITH THE ENGINEER'S INSTRUCTIONS.
49. CONTRACTOR SHALL COORDINATE CONSTRUCTION WITH LANDOWNERS' TO MINIMIZE THE IMPACTS TO CULTURAL PRACTICES.
50. ALL FITTINGS SHALL BE DUCTILE IRON WITH RESTRAINED JOINTS.
51. CONTRACTOR SHALL OBTAIN PERMISSION FROM THE DISTRICT BEFORE DAMAGING OR DISPOSING OF ANY ITEMS. THE DISTRICT RESERVES THE RIGHT TO SALVAGE FOR ITSELF ANY ITEMS IT DEEMS NECESSARY.
52. UNLESS OTHERWISE SHOWN, PIPELINES SHALL HAVE MINIMUM COVER OF 48-INCHES.
53. THE FOLLOWING GEOTECHNICAL REPORT WAS USED IN PREPARATION OF THESE DRAWINGS AND SPECIFICATIONS AND IS AVAILABLE IN SPECIFICATION APPENDIX A:
    a. GEOTECHNICAL ENGINEERING INVESTIGATION PROPOSED NKWSD TCP MITIGATION PROJECT, KRAZAN AND ASSOCIATES, AUGUST 5, 2021
54. THE CONTRACTOR SHALL COORDINATE PVC PIPE PICKUP FROM THE STORAGE YARD WITH NKWSD. ALL PIPE MATERIAL IS TO BE TRANSPORTED FROM THE STORAGE SITE TO THE PROJECT SITE BY THE CONTRACTOR.
55. DUST CONTROL METHODS SHOULD BE USED AT ALL TIMES WHEN ACCESSING DISTRICT PROPERTY. ANY POTHOLES CREATED DURING CONSTRUCTION SHALL BE FIXED IMMEDIATELY.
56. CONTRACTOR SHALL NOT OPEN TRENCH MORE THAN 1,000 LINEAR FEET PER DAY UNLESS WITH WRITTEN APPROVAL FROM THE DISTRICT.

## UTILITY CONTACT LIST

| UTILITY COMPANY | CONTACT PERSON | PHONE NUMBER | EMAIL |
|---|---|---|---|
| ATT (PACIFIC BELL) | MARSHALL JOHNSON | (510) 645-2929 | mj2949@att.com |
| PG&E | MATTHEW CONNORS | (661) 437-8701 | MUC6@pge.com |
| SOUTHERN CALIFORNIA GAS COMPANY | PHIL PREVOST | (818) 701-3459 | PPrevost@socalgas.com |

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Approved: K. YAO
Submitted: S. GALA

REGISTERED PROFESSIONAL ENGINEER
KUN YAO
C 76823
12-31-22
CIVIL
STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

GENERAL NOTES AND UTILITY CONTACT LIST

DWG. NO. G-04
SHEET NO. 4
ARCHIVE #

| PT | NORTHING | EASTING | EL | DESCRIPTION |
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| 1 | 2407494.48 | 6202403.97 | 420.90 | BM |
| 2 | 2407462.42 | 6202390.70 | 419.93 | BM |
| 9 | 2410932.66 | 6196090.54 | 400.90 | FND " REBAR+CAP |
| 10 | 2360438.33 | 6211654.73 | 379.88 | FND " REBAR+CAP |
| 11 | 2360609.55 | 6211650.07 | 380.51 | COTTON SPINDLE |
| 12 | 2377958.75 | 6203103.51 | 425.83 | FND " REBAR+CAP |
| 20 | 2407592.75 | 6203630.64 | 424.40 | FND CONC MON W/ BRASS CAP TAGGED |
| 21 | 2412872.01 | 6203689.79 | 411.57 | FND CONC MON W/ BRASS CAP TAGGED |
| 22 | 2410235.70 | 6203660.22 | 416.98 | I.P. W/BRASS CAP |
| 23 | 2407605.95 | 6200987.90 | 430.53 | FND CONC MON W/ BRASS CAP TAGGED |
| 24 | 2410262.30 | 6197950.16 | 405.65 | I.P. W/BRASS CAP |
| 25 | 2412904.25 | 6198022.20 | 400.19 | BRASS NAIL&TAG |
| 26 | 2418180.44 | 6198100.68 | 387.18 | I.P. W/PLUG NO TAG |
| 27 | 2418198.07 | 6195474.05 | 384.54 | FND CONC MON W/ BRASS CAP TAGGED |
| 28 | 2412957.72 | 6192737.62 | 388.86 | I.P. W/BRASS CAP |
| 29 | 2418215.73 | 6192847.26 | 380.35 | FND CONC MON W/ BRASS CAP TAGGED |
| 30 | 2412976.09 | 6190091.75 | 380.49 | I.P. W/BRASS CAP |
| 31 | 2412994.86 | 6187445.78 | 371.10 | I.P. W/BRASS CAP |
| 32 | 2407685.16 | 6195238.44 | 400.70 | RIGHT OF WAY CONC. POST |
| 33 | 2407628.95 | 6192597.10 | 394.10 | RIGHT OF WAY CONC. POST |
| 34 | 2364845.79 | 6218407.22 | 406.82 | I.P. W/BRASS CAP |
| 35 | 2362197.94 | 6218307.31 | 395.62 | FND CONC MON W/ BRASS CAP TAGGED |
| 36 | 2356909.05 | 6218108.32 | 375.90 | FND CONC MON W/ BRASS CAP TAGGED |
| 37 | 2362416.25 | 6202465.39 | 364.99 | FND CONC MON W/ BRASS CAP TAGGED |
| 38 | 2354268.33 | 6218008.98 | 372.27 | FND CONC MON W/ BRASS CAP TAGGED |
| 39 | 2359701.60 | 6207659.52 | 368.79 | FND CONC MON W/ BRASS CAP TAGGED |

NOTE: NOT ALL POINT ARE SHOWN.

| PT | NORTHING | EASTING | EL | DESCRIPTION |
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| 40 | 2359660.00 | 6210307.80 | 374.50 | FND CONC MON W/ BRASS CAP TAGGED |
| 41 | 2359618.33 | 6212956.00 | 378.93 | I.P. W/PLUG NO TAG |
| 42 | 2356980.02 | 6212849.79 | 369.11 | FND CONC MON W/ BRASS CAP TAGGED |
| 43 | 2354340.99 | 6212744.59 | 359.00 | FND CONC MON W/ BRASS CAP TAGGED |
| 44 | 2354304.88 | 6215376.71 | 365.35 | FND CONC MON W/ BRASS CAP TAGGED |
| 45 | 2359550.05 | 6218207.20 | 385.54 | BRASS NAIL&TAG |
| 46 | 2362271.56 | 6213040.60 | 389.96 | FND CONC MON W/ BRASS CAP TAGGED |
| 47 | 2365063.13 | 6202564.93 | 374.62 | I.P. W/CONC.+NAIL |
| 48 | 2365029.76 | 6205210.49 | 380.09 | I.P. W/CONC.+NAIL |
| 49 | 2359770.14 | 6202364.27 | 353.45 | FND CONC MON W/ BRASS CAP TAGGED |
| 50156 | 2412879.63 | 6192812.19 | 391.10 | FND CONC MON W/ BRASS CAP TAGGED |
| 50257 | 2410308.63 | 6193723.50 | 393.54 | FND CONC MON W/ BRASS CAP TAGGED |

| BORING | NORTHING | EASTING |
|---|---|---|
| B1 | 2355711.32 | 6215490.82 |
| B2 | 2357657.96 | 6215569.92 |
| B3 | 2359525.01 | 6214349.69 |
| B4 | 2360332.56 | 6214400.75 |
| B5 | 2361234.89 | 6214441.00 |
| B6 | 2362221.05 | 6214473.29 |
| B7 | 2363195.66 | 6206492.66 |
| B8 | 2362226.21 | 6208741.25 |
| B9 | 2360087.28 | 6212018.55 |
| B10 | 2411802.80 | 6198008.44 |
| B11 | 2409922.91 | 6200824.78 |
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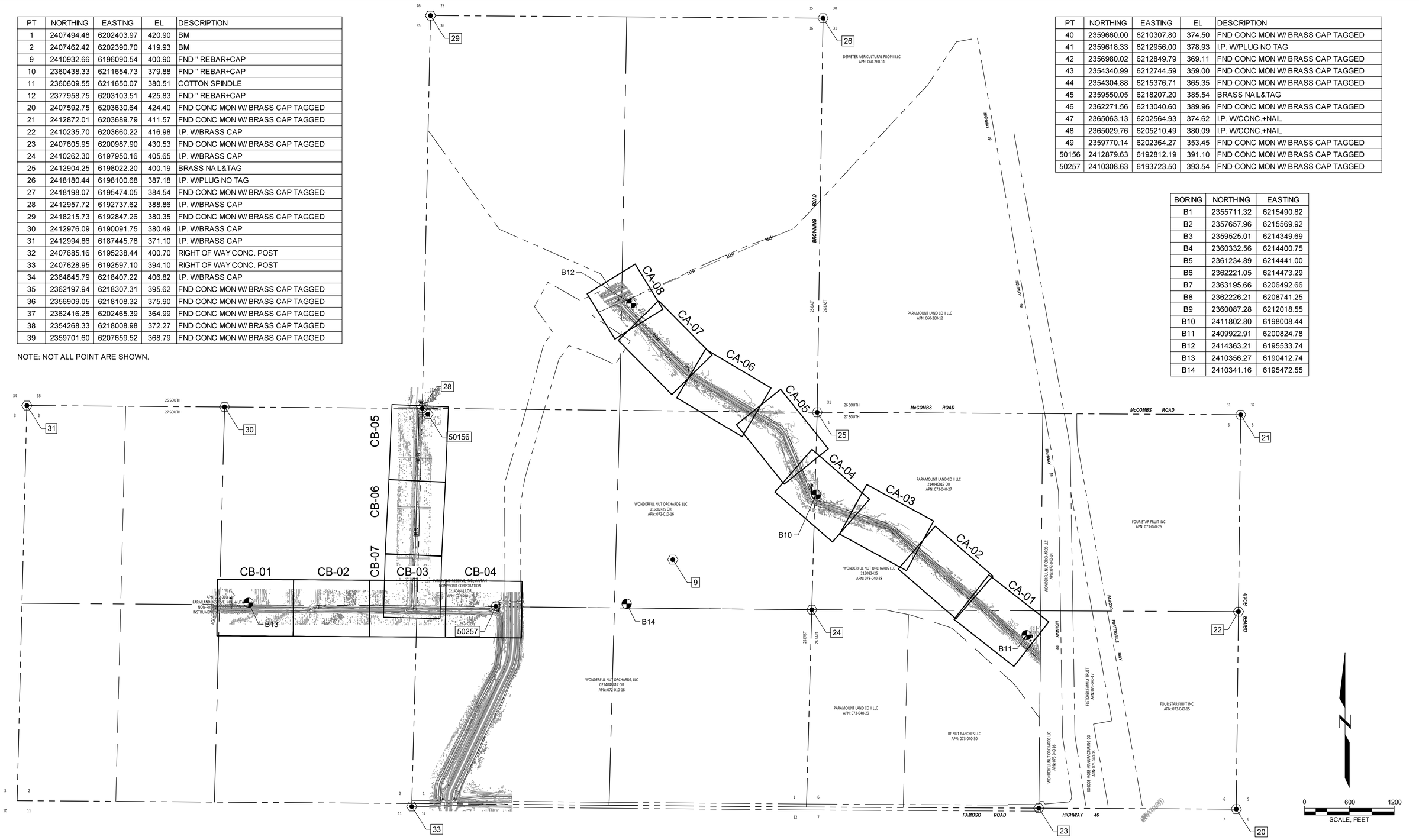


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EXP. 12-31-22
CIVIL
STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

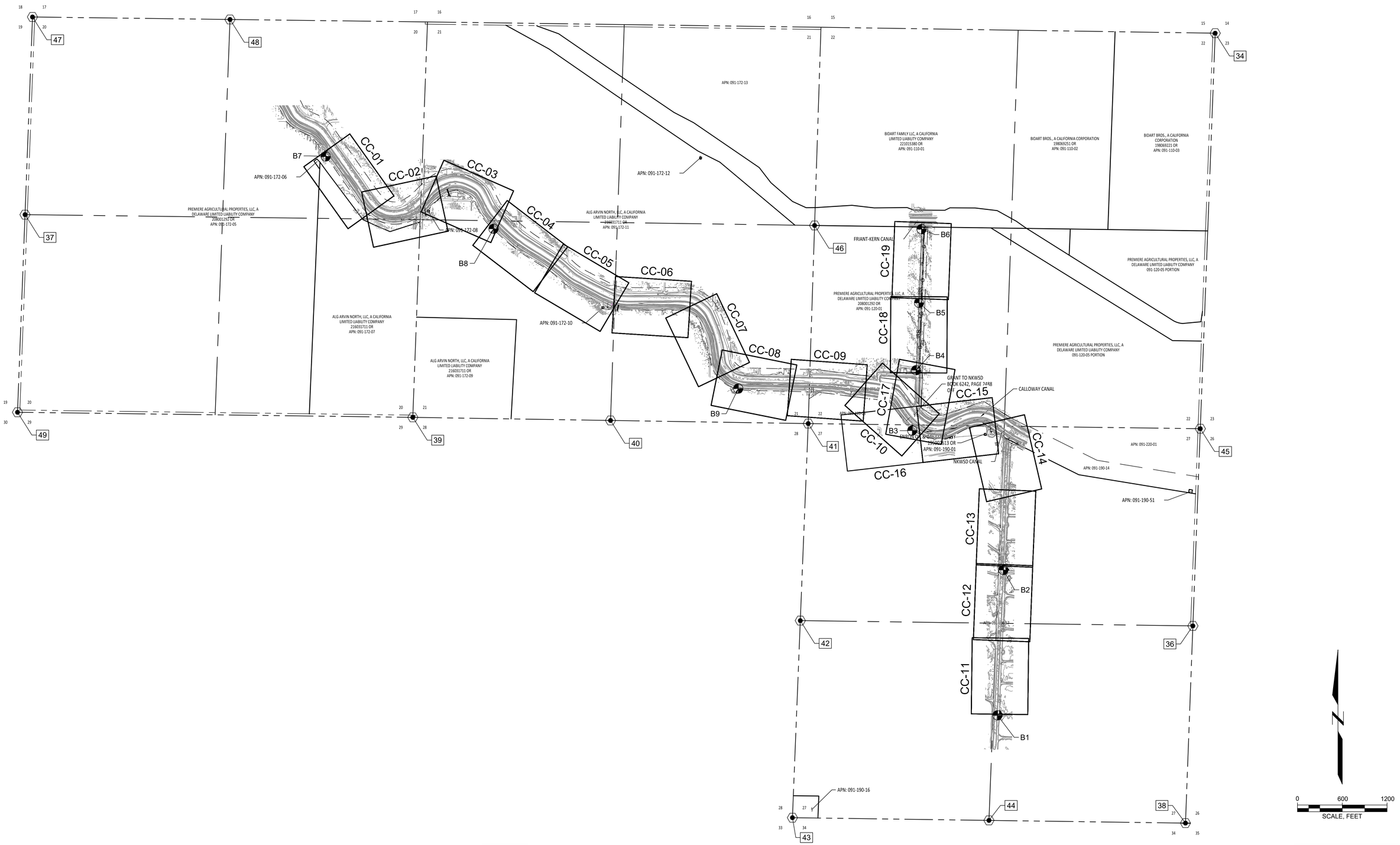
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

BASIS OF SURVEY, KEY MAP, AND BORING LOCATIONS
SHEET 1 OF 2

DWG. NO. G-05

SHEET NO. 5

ARCHIVE #

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09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

BASIS OF SURVEY, KEY MAP, AND BORING LOCATIONS
SHEET 2 OF 2

DWG. NO. G-06

SHEET NO. 6

ARCHIVE #

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## ABBREVIATIONS

| | |
|---|---|
| AVG | AVERAGE |
| B/ | BOTTOM OF |
| BF | BLIND FLANGE |
| BFP | BACKFLOW PREVENTER |
| ℄ | CENTERLINE |
| CO | CLEAN OUT |
| CONT | CONTINUATION |
| CPVC | CHLORINATED POLYVINYL CHLORIDE |
| CT | COPPER TUBE |
| DEG or ° | DEGREE |
| DIA | DIAMETER |
| DIP | DUCTILE IRON PIPE |
| DWG | DRAWING |
| ECC | ECCENTRIC |
| EL | ELEVATION |
| ELL | ELBOW |
| EXIST | EXISTING |
| EXP | EXPANSION |
| FCA | FLANGED COUPLING ADAPTER |
| FLG | FLANGE |
| FL | FLOOR |
| GALV | GALVANIZED |
| HB | HOSE BIBB |
| HDPE | HIGH DENSITY POLYETHYLENE |
| HP | HIGH POINT |
| HWL | HIGH WATER LEVEL |
| ID | INSIDE DIAMETER |
| INV | INVERT |
| LP | LOW POINT |
| LR | LONG RADIUS |
| LWL | LOW WATER LEVEL |
| MAX | MAXIMUM |
| MFR | MANUFACTURER |
| MIN | MINIMUM |
| MJ | MECHANICAL JOINT |
| NO | NUMBER |
| NTS | NOT TO SCALE |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER |
| P&ID | PROCESS AND INSTRUMENTATION DIAGRAM |
| PCP | PRESTRESSED CONCRETE PIPE |
| PVC | POLYVINYL CHLORIDE |
| RCP | REINFORCED CONCRETE PIPE |
| RED | REDUCER |
| SR | SHORT RADIUS |
| SST | STAINLESS STEEL |
| STD | STANDARD |
| STL | STEEL |
| T/ | TOP OF |
| TYP | TYPICAL |
| W/ | WITH |
| W/O | WITHOUT |
| WL | WATER LEVEL |
| YR | YEAR |

## FLOW STREAM IDENTIFIERS WASTEWATER PROJECTS

| | |
|---|---|
| ACS | ACID SOLUTION |
| AHP | AIR, HIGH PRESSURE |
| AI | AIR, INSTRUMENT |
| AL | ALUM |
| ALP | AIR, LOW PRESSURE |
| ALS | ALUM SOLUTION |
| AM | LIQUID AMMONIA |
| AMG | AMMONIA GAS-PRESSURE |
| AMS | AMMONIA SOLUTION |
| AMV | AMMONIA GAS-VACUUM |
| BD | BASIN DRAIN |
| BPW | BELT PRESS WASH WATER |
| BWS | BACKWASH SUPPLY |
| BYP | BYPASS |
| CAG | COAGULANT |
| CAR | COOLING AIR RETURN |
| CAS | COOLING AIR SUPPLY |
| CD | CARBON DIOXIDE GAS |
| CDS | CARBON DIOXIDE SOLUTION |
| CFE | CHLORINATED FINAL EFFLUENT |
| CG | CHLORINE GAS-PRESSURE |
| CGV | CHLORINE GAS-VACUUM |
| CHS | CHEMICAL SLUDGE |
| CL | LIQUID CHLORINE |
| CNT | CENTRATE |
| CRS | CARBON SLURRY |
| CS | CHLORINE SOLUTION |
| CW | COOLING WATER |
| CWR | COOLING WATER RETURN |
| CWS | COOLING WATER SUPPLY |
| D | DRAIN |
| DCT | DECANT |
| DFE | DECHLORINATED FINAL EFFLUENT |
| DG | DIGESTER GAS |
| DS | DIGESTED SLUDGE |
| DWS | DEWATERED SLUDGE |
| F | FILTRATE |
| FA | FLY ASH |
| FB | FILTER BACKWASH WASTE WATER |
| FC | FERRIC CHLORIDE |
| FCE | FINAL CLARIFIER EFFLUENT |
| FCI | FINAL CLARIFIER INFLUENT |
| FCS | FINAL CLARIFIER SCUM |
| FE | FILTER EFFLUENT |
| FI | FILTER INFLUENT |
| FW | FINISHED WATER |
| G | NATURAL GAS |
| GR | GRIT |
| GRS | GRIT SLURRY |
| GS | GREASE |
| GTS | GRAVITY THICKENED SLUDGE |
| HF | HYDRAULIC FLUID |
| HP | HYDROGEN PEROXIDE |
| HWR | HEATING WATER RETURN |
| HWS | HEATING WATER SUPPLY |
| LCO2 | LIQUID CARBON DIOXIDE |
| LD | LIME DRY |
| LOC | LUBE OIL CLEAN |
| LOD | LUBE OIL DIRTY |
| LPO | LIQUID POLYMER |
| LS | LIME SLURRY |
| LSD | LIME SLUDGE |
| ML | MIXED LIQUOR |
| NA | SODIUM HYDROXIDE |
| NG | NATURAL GAS |
| NML | NITRIFIED MIXED LIQUOR |
| OA | ODOROUS AIR |
| OF | OVERFLOW |
| PD | PROCESS DRAIN |
| PDG | PURIFIED DIGESTER GAS |
| PE | PRIMARY EFFLUENT |
| PI | PRIMARY INFLUENT |
| PL | PICKLE LIQUOR |
| PLE | PLANT EFFLUENT |
| PO | POLYMER SOLUTION |
| PSU | PRIMARY SLUDGE UNDERFLOW |
| PSM | PRIMARY SCUM |
| RAS | RETURN ACTIVATED SLUDGE |
| RCS | RECARBONATION SLUDGE |
| RCY | RECYCLE |
| RNS | RETURN NITRIFIED SLUDGE |
| RSD | RECIRCULATED SLUDGE |
| RW | RAW WATER |
| RWW | RAW WASTEWATER |
| SA | SAMPLE |
| SAN | SANITARY SEWER |
| SAS | SODA ASH SOLUTION |
| SB | SODIUM BISULFITE |
| SBE | SEDIMENTATION BASIN EFFLUENT |
| SC | SCUM |
| SCN | SCREENINGS |
| SDG | SULFUR DIOXIDE GAS-PRESSURE |
| SDL | SULFUR DIOXIDE-LIQUID |
| SDS | SULFUR DIOXIDE SOLUTION |
| SDV | SULFUR DIOXIDE GAS-VACUUM |
| SE | SECONDARY EFFLUENT |
| SEB | SELENIUM BRINE |
| SH | SLUDGE HOT |
| SHC | SODIUM HYPOCHLORITE SOLUTION |
| SI | SECONDARY INFLUENT |
| SSM | SECONDARY SCUM |
| SBN | SUBNATANT |
| SPN | SUPERNATANT |
| SW2 | SOFTENED W2 WATER |
| SWR | STORMWATER |
| TS | TAILINGS SLURRY |
| TAS | THICKENED ACTIVATED SLUDGE |
| TBS | THICKENED BOTTOM SLUDGE |
| TDS | THICKENED DIGESTED SLUDGE |
| TFE | TRICKLING FILTER EFFLUENT |
| TFI | TRICKLING FILTER INFLUENT |
| TFR | TRICKLING FILTER RECYCLE |
| TOF | THICKENER OVERFLOW |
| TPS | THICKENED PRIMARY SLUDGE |
| TUF | THICKENER UNDERFLOW |
| UD | UNDERDRAIN |
| V | VENT |
| VAC | VACUUM |
| W1 | WATER (POTABLE) |
| W2 | WATER (POTABLE WATER AFTER A BACKFLOW PREVENTER) |
| W3 | WATER (PROCESS EFFLUENT USED FOR FLUSHING WATER OR OTHER UTILITY REQUIREMENTS |
| WAS | WASTE ACTIVATED SLUDGE |
| WNS | WASTE NITRIFIED SLUDGE |
| WW | WELL WATER |

## INSTRUMENT IDENTIFICATION

SAME AS SHOWN ON P & ID LEGEND. EXCEPTION:
COMPONENT DESIGNATORS NOT USED ON M DRAWINGS.

## EQUIPMENT AND SELF ACTUATED VALVE IDENTIFICATION

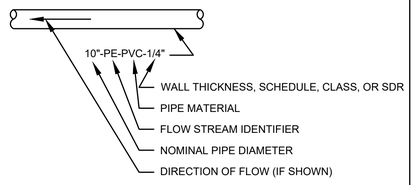
SAME AS SHOWN ON P & ID LEGEND. EXCEPTION:
COMPONENT DESIGNATORS NOT USED ON M DRAWINGS.

## POWER OPERATED VALVE IDENTIFICATION

SAME AS SHOWN ON P & ID LEGEND. EXCEPTION:
COMPONENT DESIGNATORS NOT USED ON M DRAWINGS.

## PIPE IDENTIFICATION

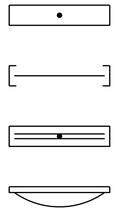
EXAMPLE:




## LINE LEGEND

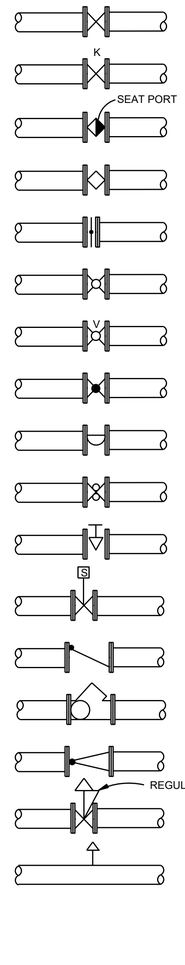
- NON-PROCESS-MECHANICAL ITEM
- EXISTING PROCESS-MECHANICAL ITEM TO REMAIN
- EXISTING PROCESS-MECHANICAL ITEM RELOCATED OR TO BE RELOCATED
- NEW PROCESS-MECHANICAL ITEM OR EXISTING ITEM TO BE REMOVED
- NEW PROCESS-MECHANICAL ITEM HIDDEN FROM VIEW
- FUTURE ITEM OR ITEM TO BE PROVIDED UNDER OTHER CONTRACT

## GATE SYMBOLS



- SLUICE GATE
- SLIDE GATE
- WEIR GATE
- FLAP GATE

## VALVE SYMBOLS




NOTES
1. THIS IS A STANDARD LEGEND. NOT ALL THE INFORMATION SHOWN ON THIS LEGEND IS USED ON THIS PROJECT.
2. ONLY FLANGED END CONNECTIONS FOR VALVES ARE SHOWN HERE. VALVES WITH OTHER END CONNECTIONS ARE SHOWN SIMILARLY ON THE "M" DRAWINGS.

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

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Drawn: R. WARD
Approved By: K. YAO

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09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

PROCESS MECHANICAL ABBREVIATIONS AND SYMBOLS LEGEND

DWG. NO. G-07
SHEET NO. 7
ARCHIVE #

## VALVE SYMBOLS

- ECCENTRIC PLUG
- THREE-WAY
- BUTTERFLY
- BALL
- VEE-BALL
- GLOBE
- PRESSURE RELIEF
- AIR / VACUUM RELIEF W / BALL VALVE
- GATE
- KNIFE GATE
- SAMPLE VALVE
- MUD
- BALL CHECK
- SWING CHECK
- SPLIT DISC CHECK
- REGULATED SIDE PRESSURE CONTROL
- PINCH
- DIAPHRAGM
- NEEDLE
- CALIBRATED BALANCE
- CONSTANT VOLUME FLOW REGULATOR
- TELESCOPING
- YARD HYDRANT

## GATE SYMBOLS

- SLUICE
- SLIDE
- FLAP GATE
- WEIR GATE
- STOP PLANK

## VALVE AND GATE POWER ACTUATOR SYMBOLS

- M XX — ELECTRIC MOTOR
- S XX — SOLENOID
- M P XX — ELECTRIC MOTOR W/ POSITIONER
- HW XX — HYDRAULIC WITH POSITIONER
- H S XX — HYDRAULIC WITH SOLENOID
- P P XX — PNEUMATIC WITH POSITIONER
- P S XX — PNEUMATIC WITH SOLENOID

XX: FC = FAIL CLOSED
FIP = FAIL INTERMEDIATE POSITION
FLP = FAIL TO LAST POSITION
FO = FAIL OPEN

NOTE: XX = FAIL POSITION ON LOSS OF PRIMARY POWER (PNEUMATIC OR ELECTRICAL)

## FLOW ELEMENT SYMBOLS

- WEIR
- PARSHALL FLUME
- ROTAMETER
- PROPELLER OR TURBINE METER
- ORIFICE METER
- VORTEX SHEDDING
- CLAMP ON ULTRASONIC FLOWMETER
- MAGNETIC FLOWMETER
- PITOT-STATIC
- TARGET TYPE SENSOR
- VENTURI OR FLOW TUBE

## MISCELLANEOUS SYMBOLS

- BLIND FLANGE OR CLEAN OUT
- AIR GAP
- STRAINER
- FLUSHING WATER CONNECTION (F)
- SEAL WATER CONNECTION (S)
- EJECTOR
- AUTOMATIC SAMPLER (S)
- DIFFUSER
- BUBBLER LEVEL ELEMENT
- VENT
- RUPTURE DISK
- AIR SET (AS) SEE SPECIFICATIONS
- PURGE SET (XP) X: W = WATER, A = AIR
- STATIC MIXER
- HEAT EXCHANGER
- BASKET STRAINER
- PULSATION DAMPENER
- INCREASER/DECREASER
- QUICK CONNECT COUPLING
- MAGNETIZING BLOCK
- FLUID LEVEL
- AUTO SELF CLEANING FILTER (M) — DRAIN
- 120V — 120 VOLT, 60 HZ POWER SUPPLY POINT
- M — MIXER WITH ELECTRIC MOTOR
- M — ELECTRIC MOTOR
- S — MANUAL SAMPLE PORT
- A — AUTOMATIC DRAIN
- D — MANUAL DRIP TRAP
- Px XXX — DIAPHRAGM SEAL
- ANNULAR SEAL
- FLOW STRAIGHTENING VANE
- CALIBRATION CHAMBER
- (X) — DENSITY METER X: N - NUCLEAR, O - OPTICAL, U - ULTRASONIC
- ULTRASONIC LEVEL ELEMENT
- M — FLOATING MIXER WITH ELECTRIC MOTOR
- PLATE PRESS
- UNION
- SUGGESTED UNLICENSED RADIO ANTENNA
- SUGGESTED UNLICENSED RADIO ANTENNA AND VPN CONNECTION

## PUMP & COMPRESSOR SYMBOLS

- SUBMERSIBLE PUMP (XX)
- CENTRIFUGAL BLOWER (XX)
- CENTRIFUGAL PUMP (XX)
- PERISTALTIC PUMP
- PROGRESSING CAVITY PUMP (XX)
- LOBE PUMP, BLOWER OR COMPRESSOR (POSITIVE DISPLACEMENT) (XX)
- COMPRESSOR (PISTON) (XX)
- CHEMICAL FEED PUMP (XX)
- PLUNGER PUMP
- DIAPHRAGM PUMP
- DOUBLE DIAPHRAGM PUMP

M — TURBINE PUMP; TURBINE PUMP W / CAN; SUBMERSIBLE TURBINE PUMP

NOTE: XX: AS = ADJUSTABLE SPEED
CS-1 = CONSTANT SPEED (SINGLE SPEED)
CS-2 = CONSTANT SPEED (TWO SPEED)
CS-R = CONSTANT SPEED (REVERSIBLE)

## FLOW STREAM IDENTIFIERS

SEE PROCESS - MECHANICAL LEGEND

## INPUTS & OUTPUTS TO PLC OR DISTRIBUTED CONTROL

- (X) ANALOG INPUT
- (X) ANALOG OUTPUT
- (X) PULSE INPUT
- (X) PULSE OUTPUT
- (X) DIGITAL INPUT
- (X) DIGITAL OUTPUT

NOTE:
X = TOTAL NUMBER OF SIGNALS WHERE MORE THAN ONE SIGNAL IS REQUIRED. IF QUANTITY IS NOT SHOWN THEN ONE SIGNAL IS REQUIRED.

## GENERAL NOTES:

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Attention:

0 1"

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Checked: R. ANDERSON
Drawn: R. WARD
Approved By: K. YAO

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09-22-2021

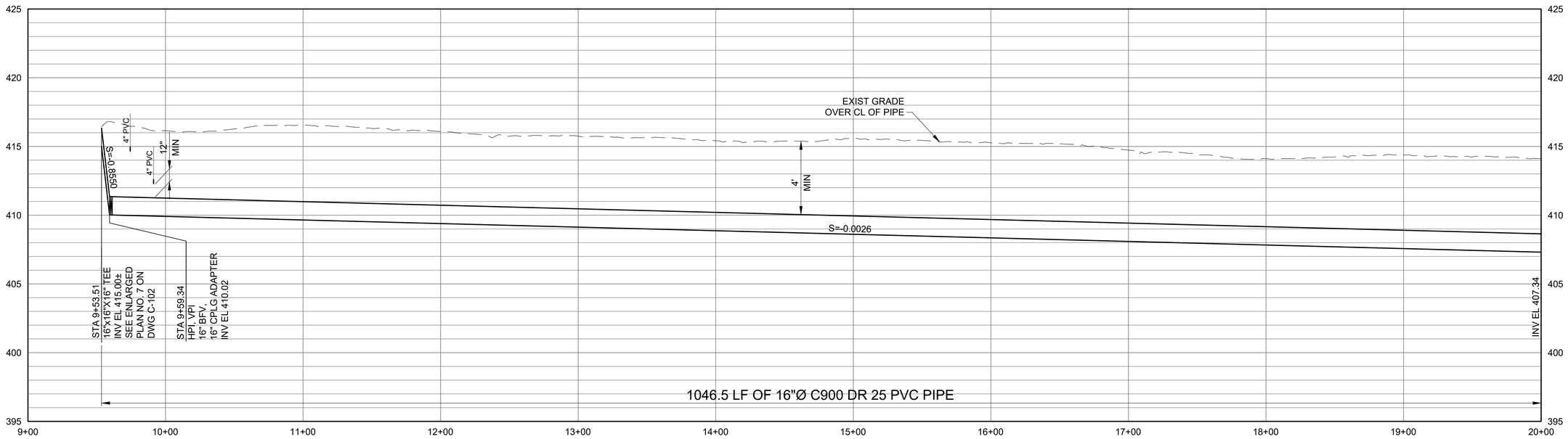
NORTH KERN WATER STORAGE DISTRICT

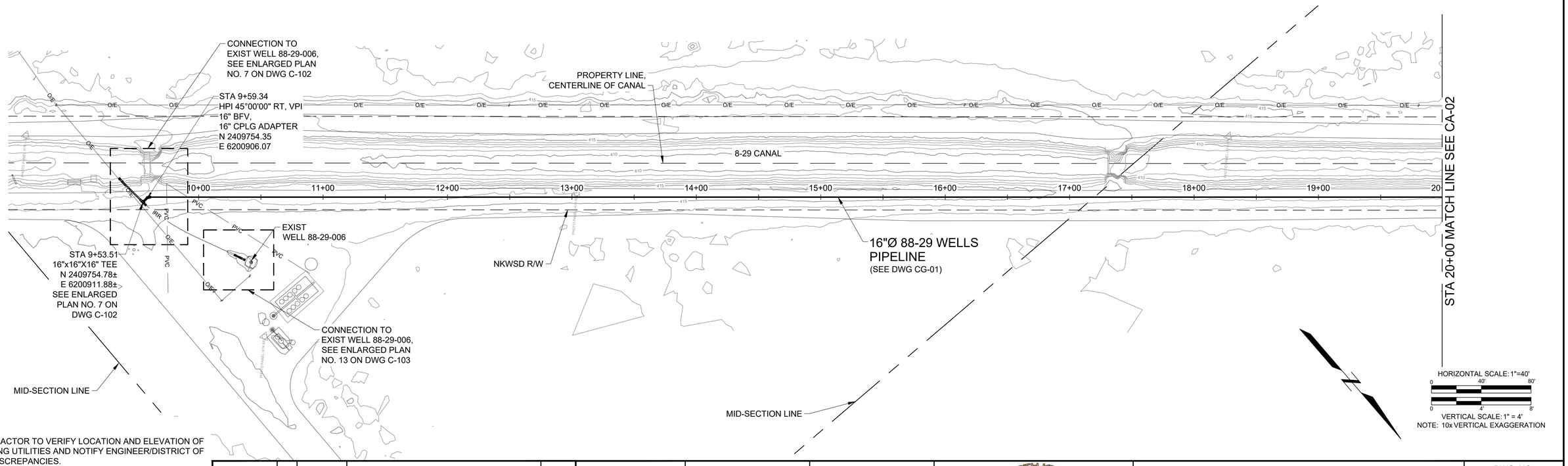
GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

PROCESS MECHANICAL SYMBOLS LEGEND

DWG. NO. G-08
SHEET NO. 8
ARCHIVE #




NOTES:

1. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES AND NOTIFY ENGINEER/DISTRICT OF ANY DISCREPANCIES.
2. CONTRACTOR TO PROTECT-IN-PLACE ALL EXISTING UTILITIES AND FACILITIES WITHIN PROJECT AREA UNLESS SPECIFIED IN DRAWINGS.
3. CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND ADEQUATE PHYSICAL BARRIERS TO ENSURE NO GROUND DISTURBANCE WITHIN 2' OF THE EDGE OF CANAL O&M ROAD ON EACH SIDE.
4. CONTRACTOR SHALL UTILIZE 1° MAXIMUM JOINT DEFLECTION AT EACH JOINT.

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| Checked: | M. WONG |
| Approved: | K. YAO |
| Submitted: | S. GALA |

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STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

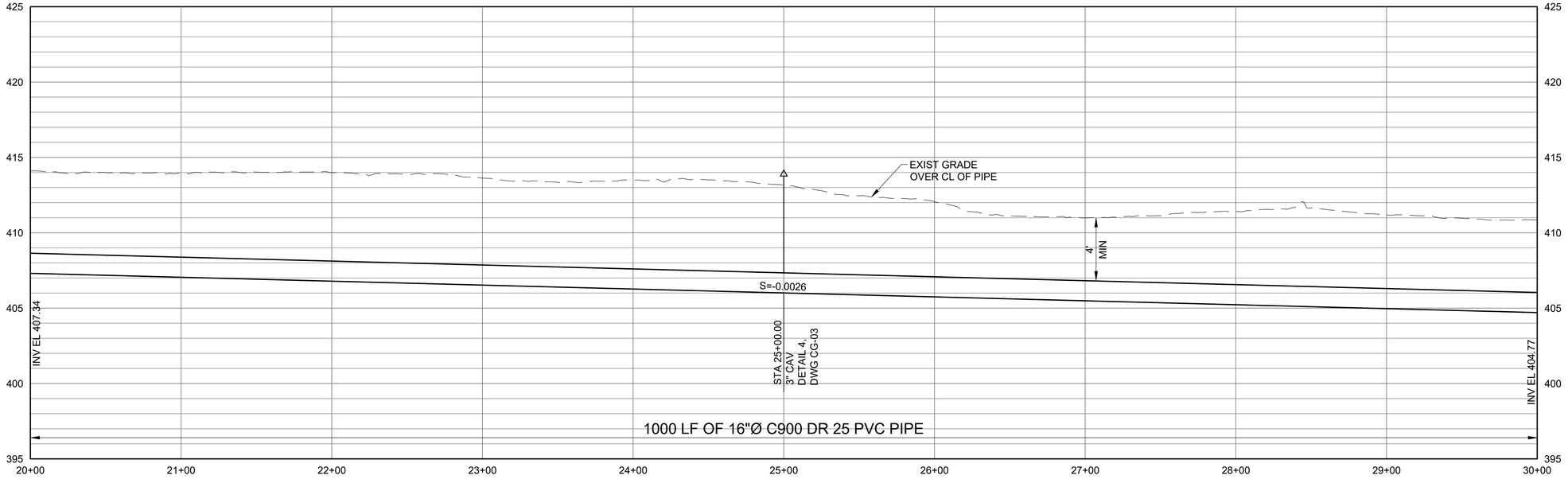
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

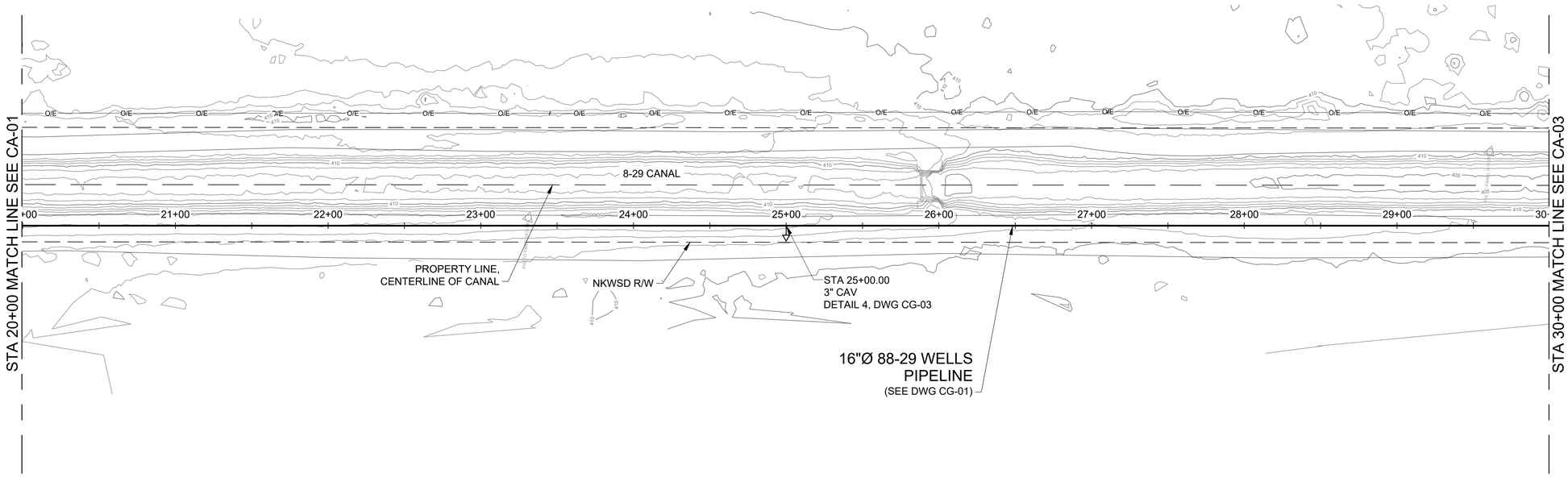
88-29 WELLS PIPELINE
PLAN AND PROFILE
STA 9+53.51 TO STA 20+00

DWG. NO.
CA-01

SHEET NO.
9

ARCHIVE #




HORIZONTAL SCALE: 1"=40'
0 40' 80'
VERTICAL SCALE: 1" = 4'
0 4' 8'
NOTE: 10x VERTICAL EXAGGERATION

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09-22-2021

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GEI PROJECT NO. 2005381

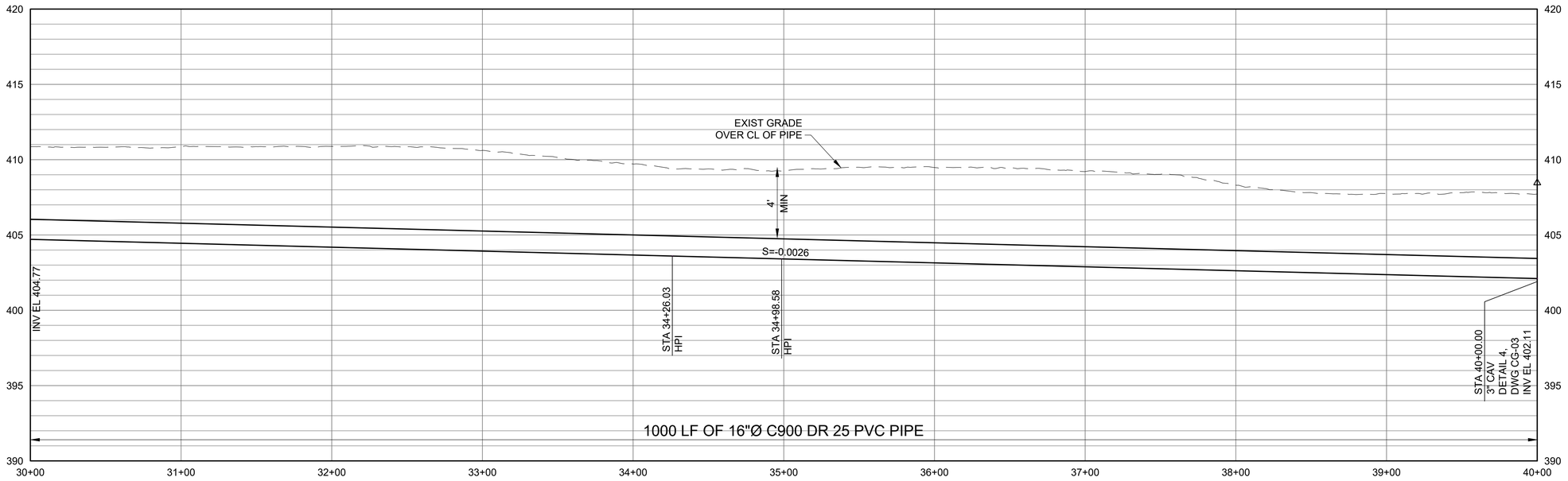
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

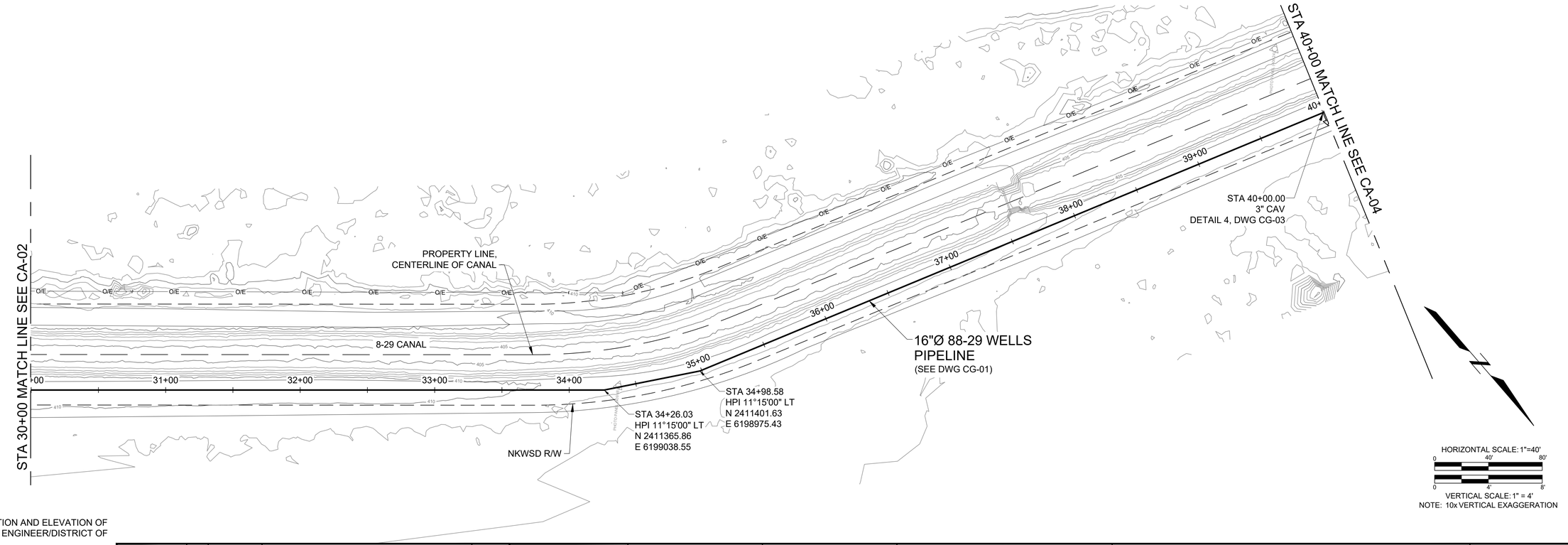
88-29 WELLS PIPELINE
PLAN AND PROFILE
STA 20+00 TO STA 30+00

DWG. NO.
CA-02

SHEET NO.
10

ARCHIVE #

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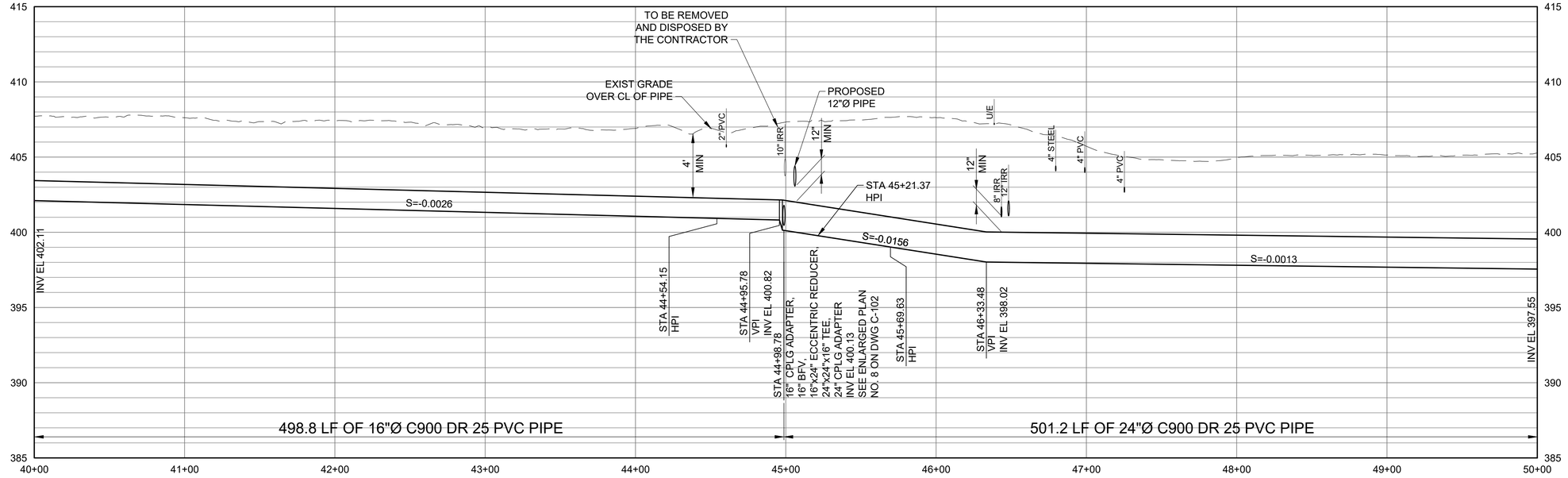
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

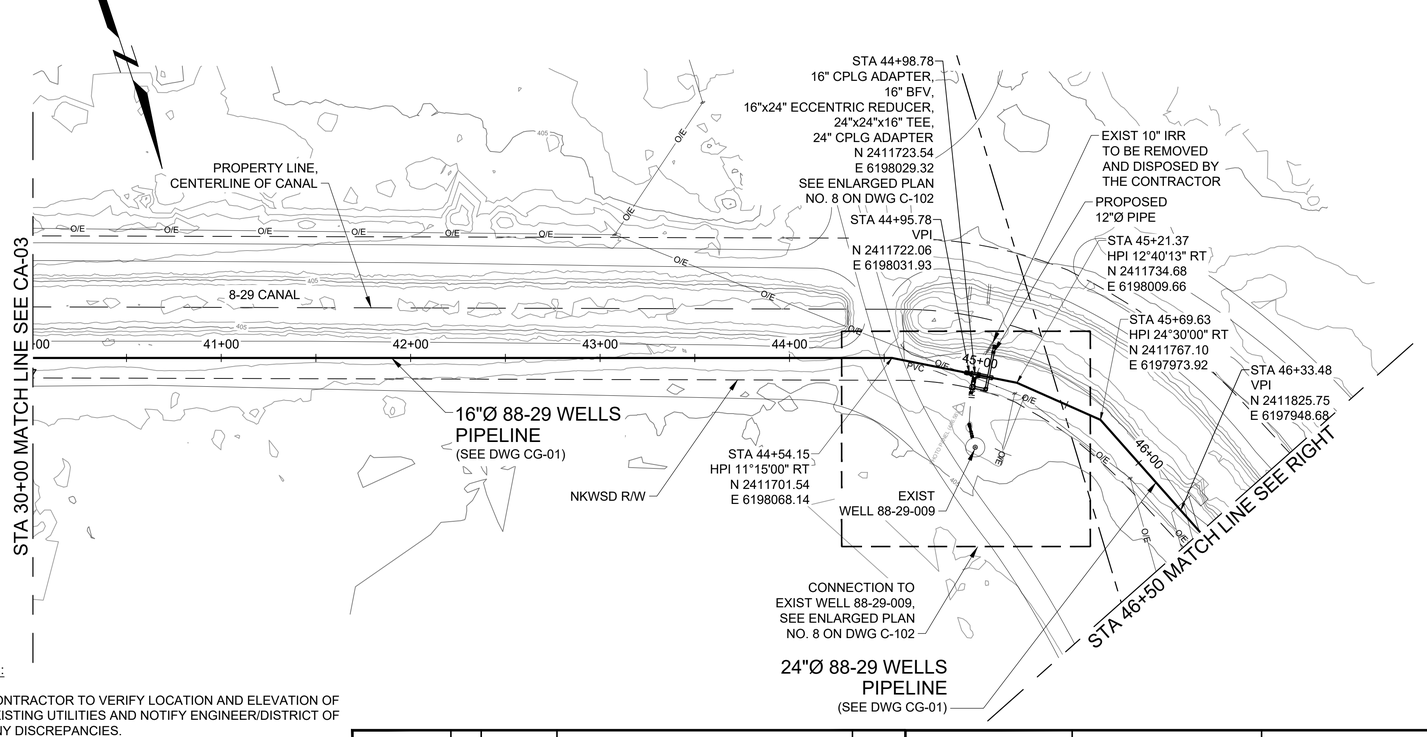
88-29 WELLS PIPELINE
PLAN AND PROFILE
STA 30+00 TO STA 40+00

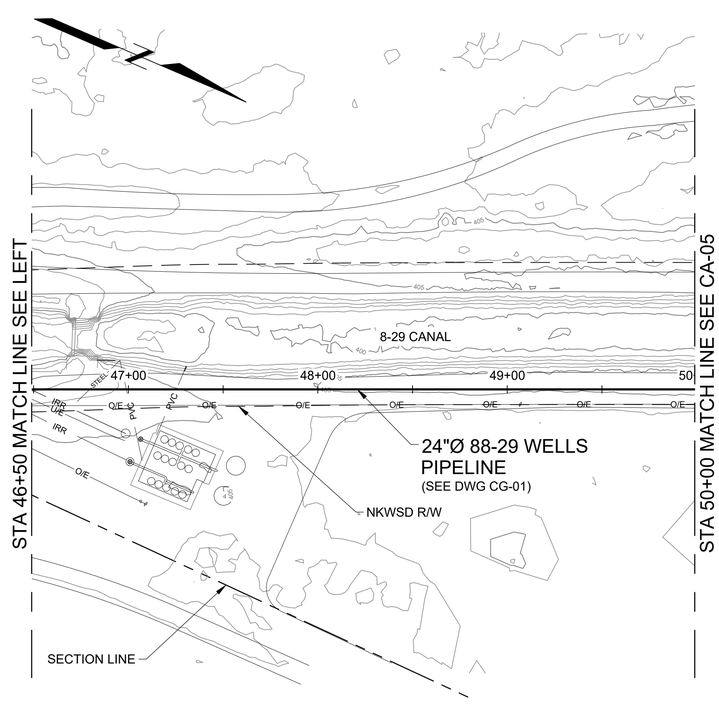
DWG. NO.
CA-03

SHEET NO.
11

ARCHIVE #

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| Submitted: | S. GALA |

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09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

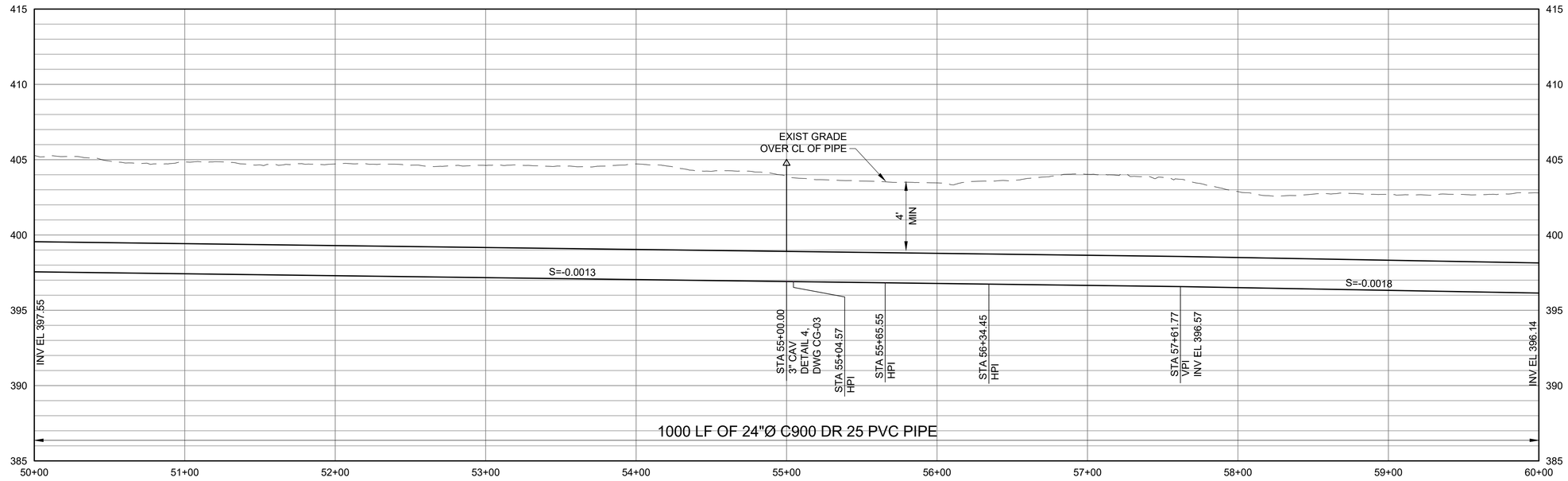
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

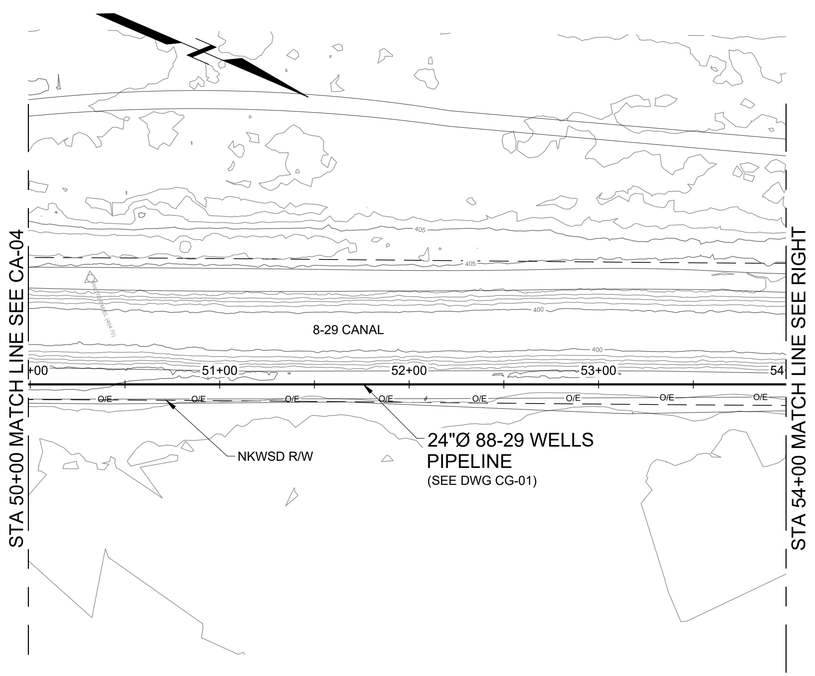
88-29 WELLS PIPELINE
PLAN AND PROFILE
STA 40+00 TO STA 50+00

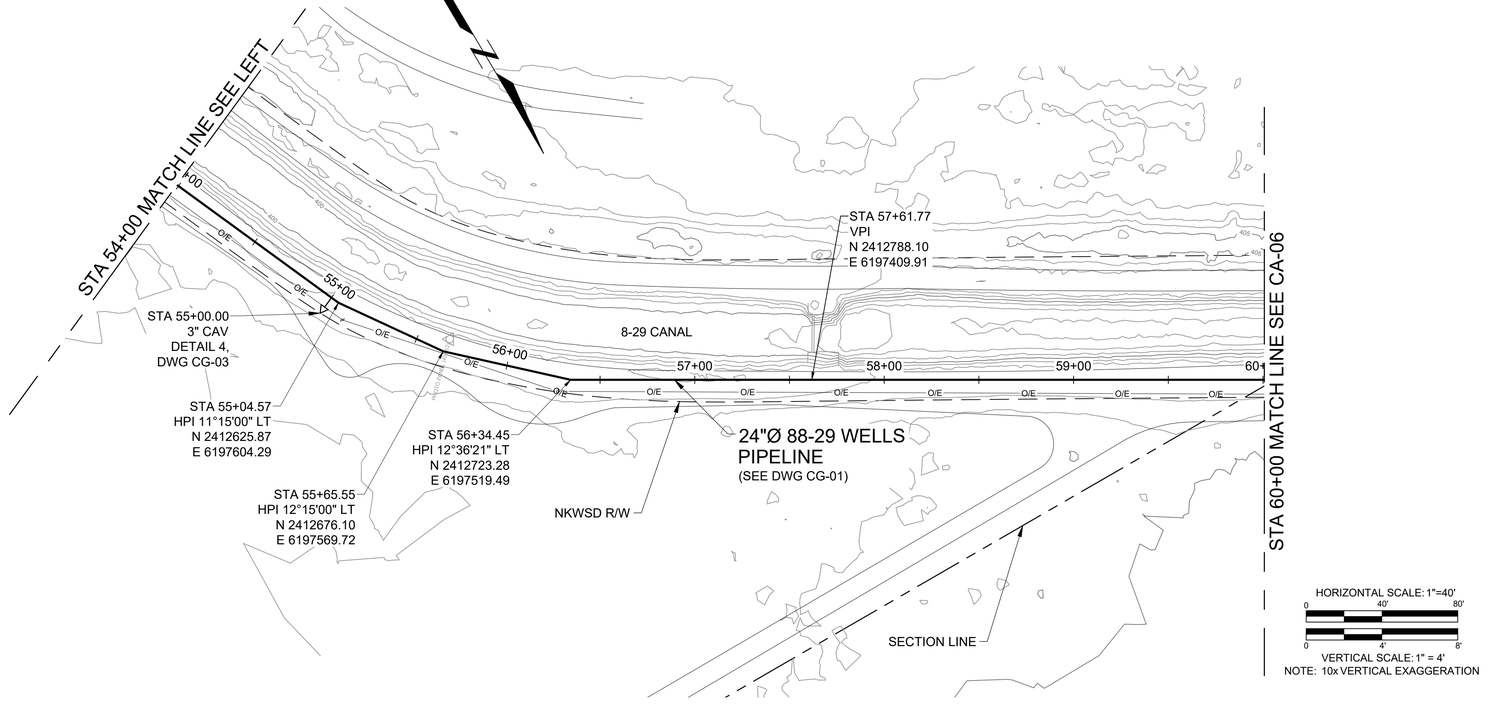
DWG. NO. CA-04

SHEET NO. 12

ARCHIVE #

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| Submitted: | S. GALA |

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RON TAO
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STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

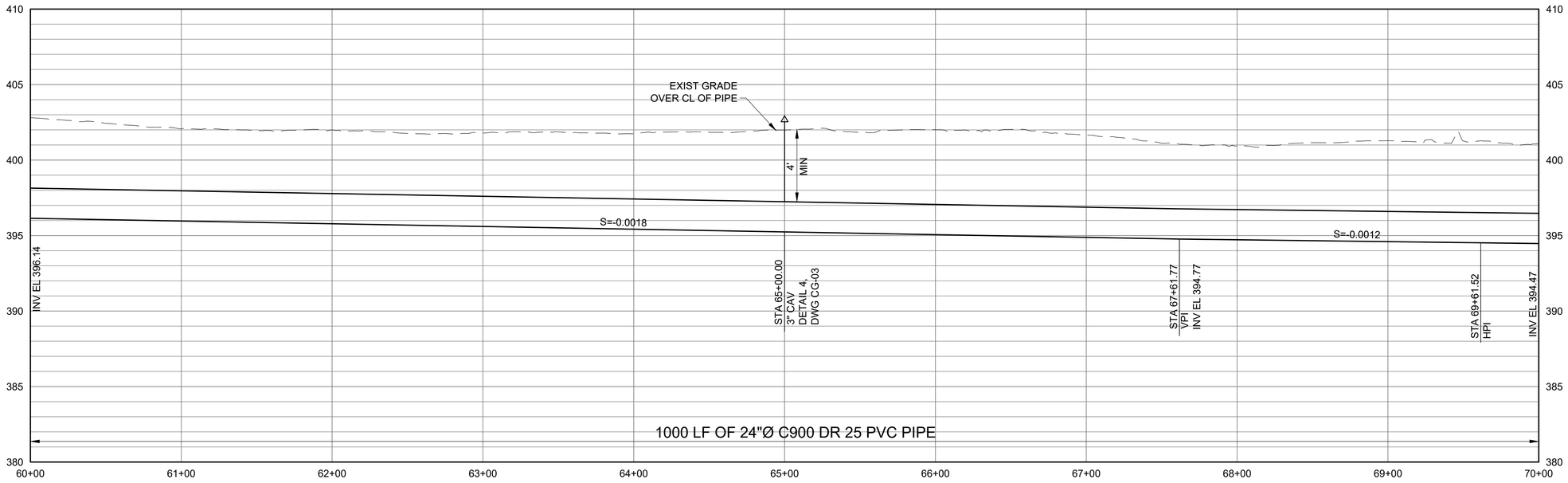
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

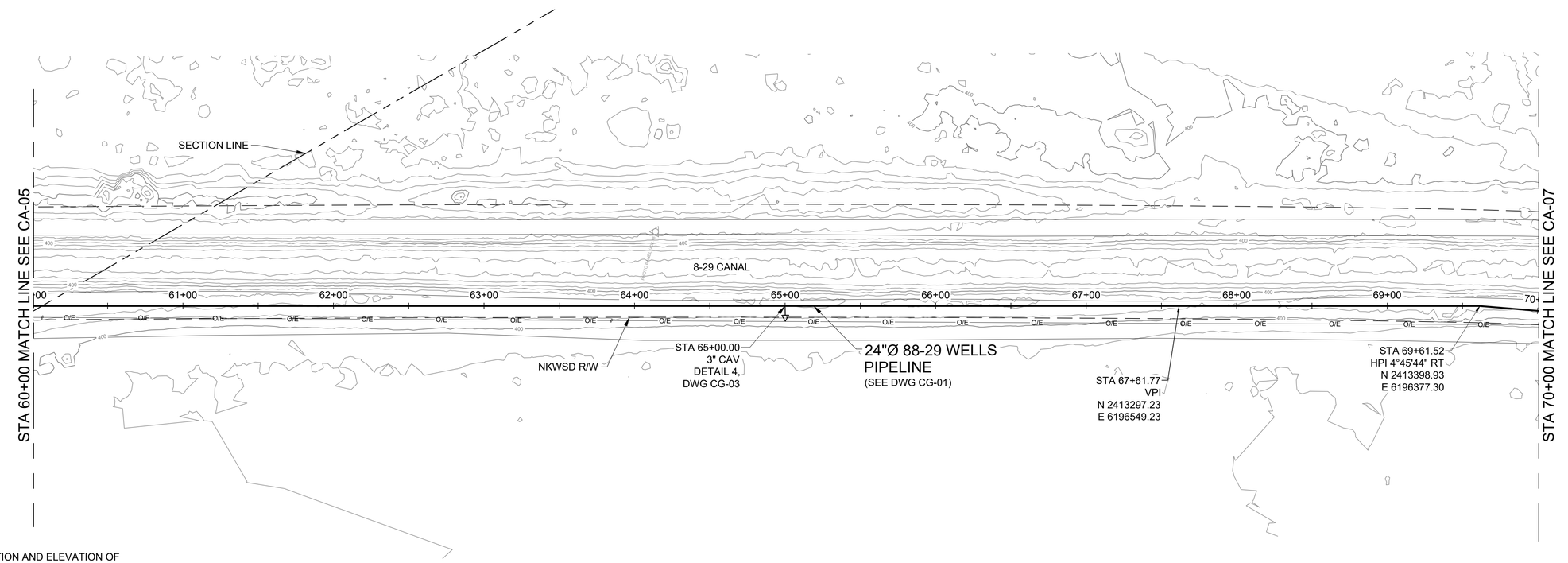
88-29 WELLS PIPELINE
PLAN AND PROFILE
STA 50+00 TO STA 60+00

DWG. NO. CA-05

SHEET NO. 13

ARCHIVE #




HORIZONTAL SCALE: 1"=40'
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VERTICAL SCALE: 1" = 4'
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4. CONTRACTOR SHALL UTILIZE 1° MAXIMUM JOINT DEFLECTION AT EACH JOINT.

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

| NO. | DATE | ISSUE/REVISION | APP |
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GEI Consultants
GEI CONSULTANTS, INC.
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Drawn: K. CHUNG
Checked: M. WONG
Approved: K. YAO
Submitted: S. GALA

REGISTERED PROFESSIONAL ENGINEER
KUN YAO
C 76823
EXP. 12-31-22
CIVIL
STATE OF CALIFORNIA
09-22-2021

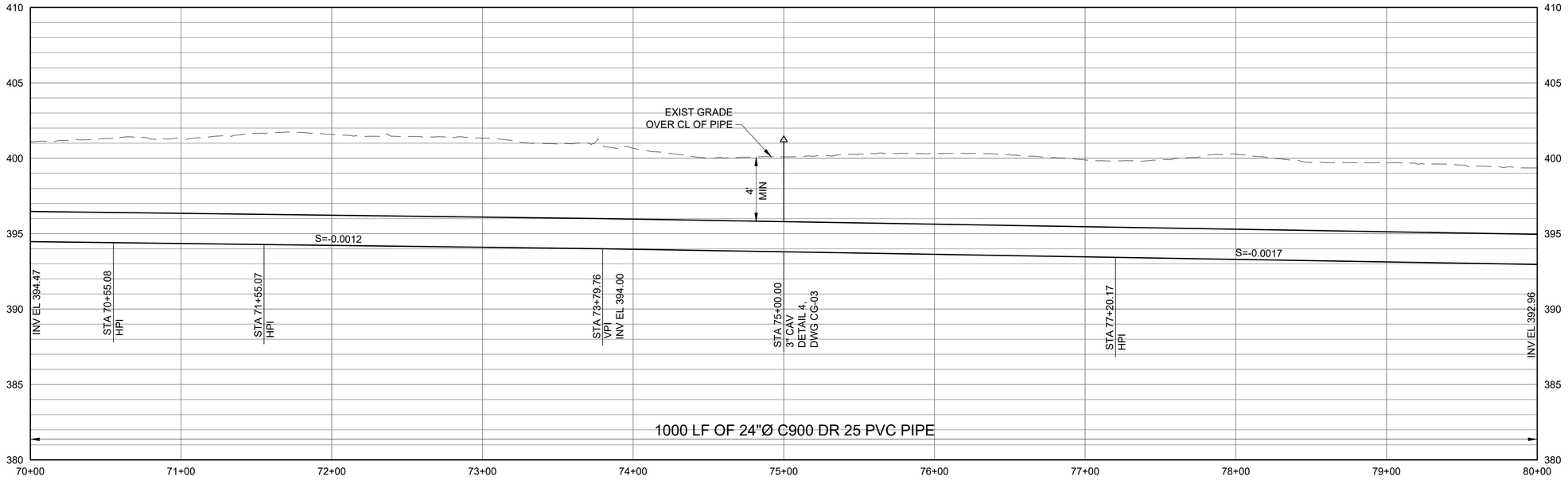
NORTH KERN WATER STORAGE DISTRICT

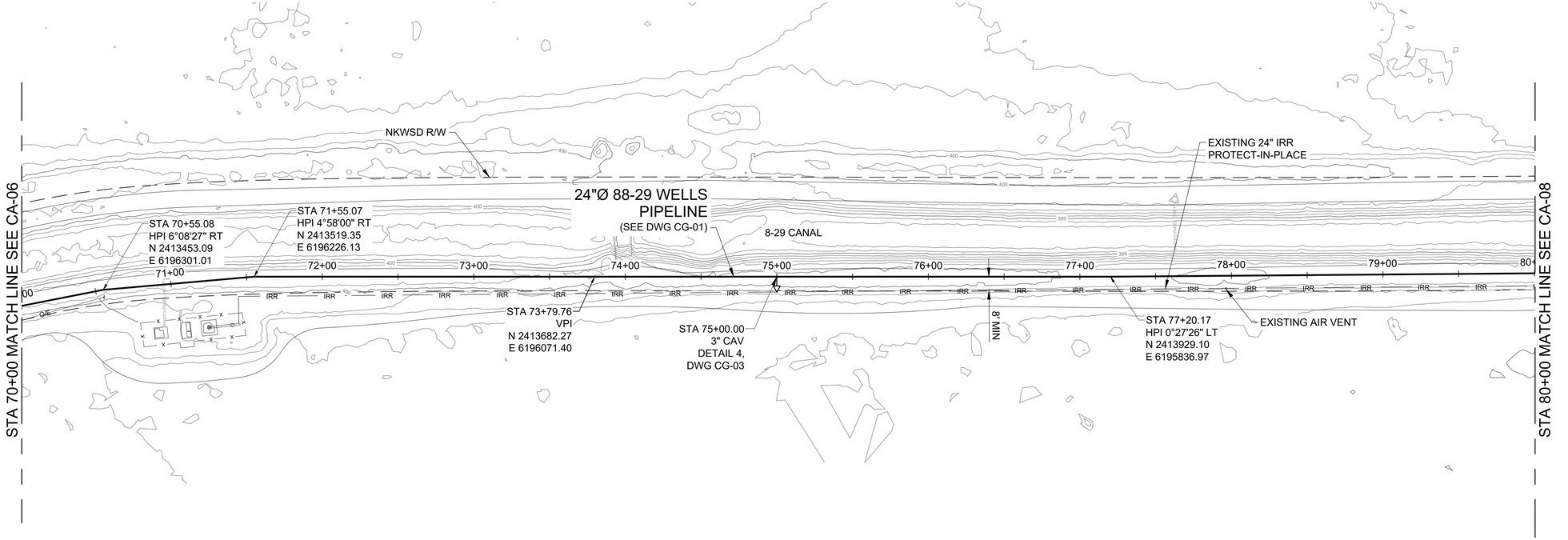
GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

88-29 WELLS PIPELINE
PLAN AND PROFILE
STA 60+00 TO STA 70+00

DWG. NO. CA-06
SHEET NO. 14
ARCHIVE #




HORIZONTAL SCALE: 1"=40'
0 40' 80'
VERTICAL SCALE: 1" = 4'
0 4' 8'
NOTE: 10x VERTICAL EXAGGERATION

NOTES:

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09-22-2021

NORTH KERN WATER STORAGE DISTRICT

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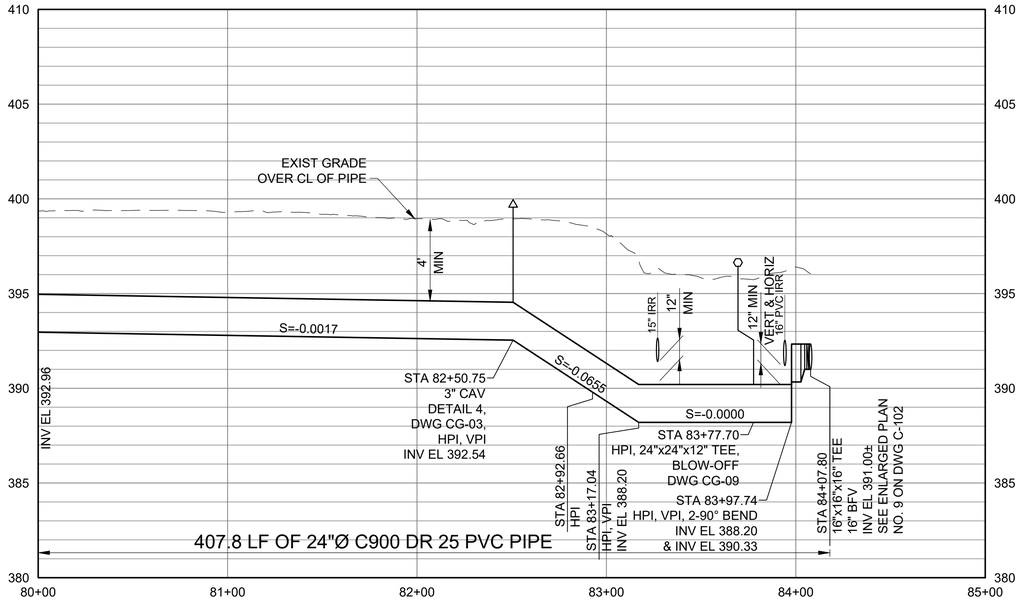
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

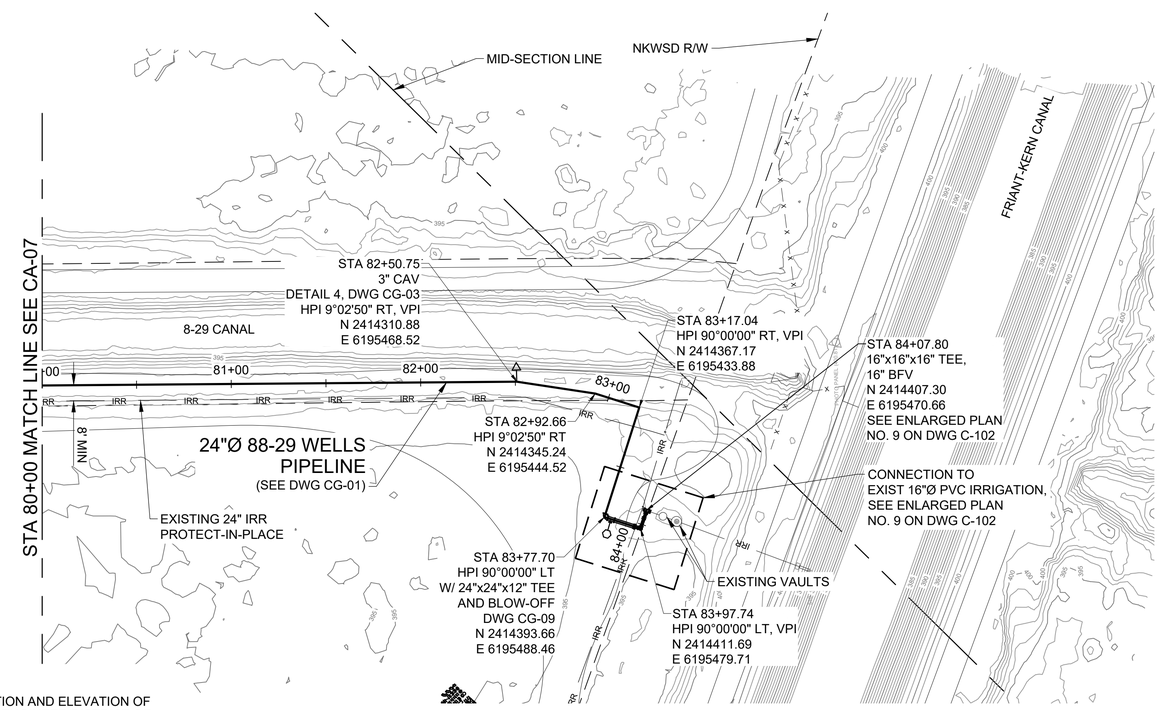
88-29 WELLS PIPELINE
PLAN AND PROFILE
STA 70+00 TO STA 80+00

DWG. NO.
CA-07

SHEET NO.
15

ARCHIVE #

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NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

88-29 WELLS PIPELINE
PLAN AND PROFILE
STA 80+00 TO STA 84+07.80

DWG. NO. CA-08
SHEET NO. 16
ARCHIVE #

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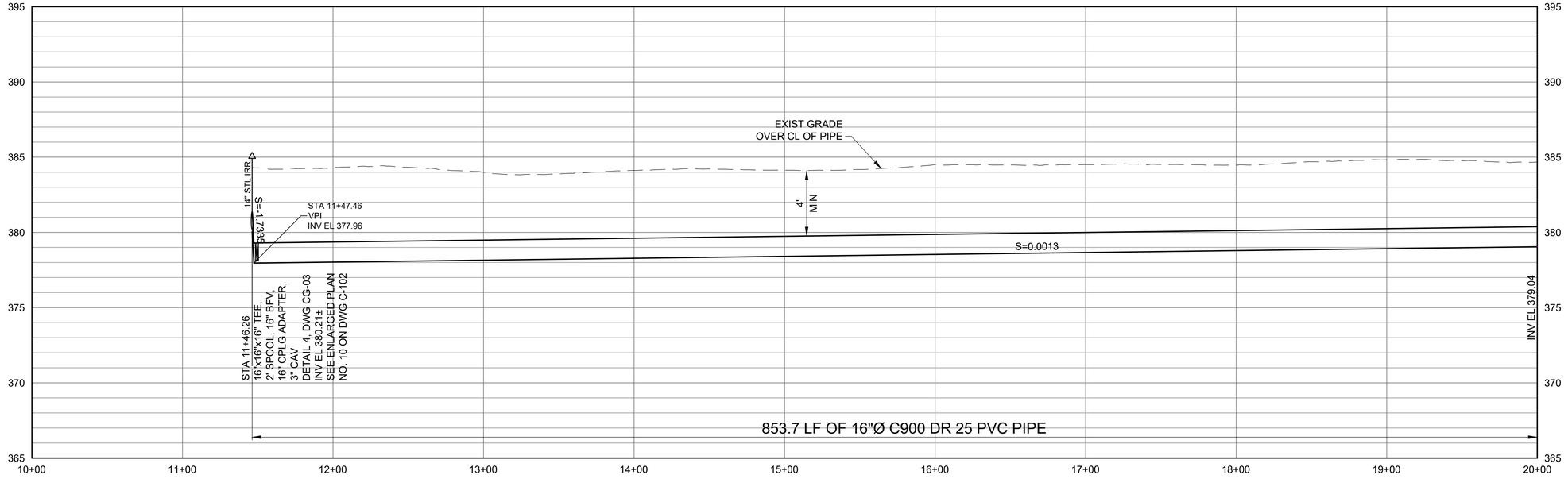


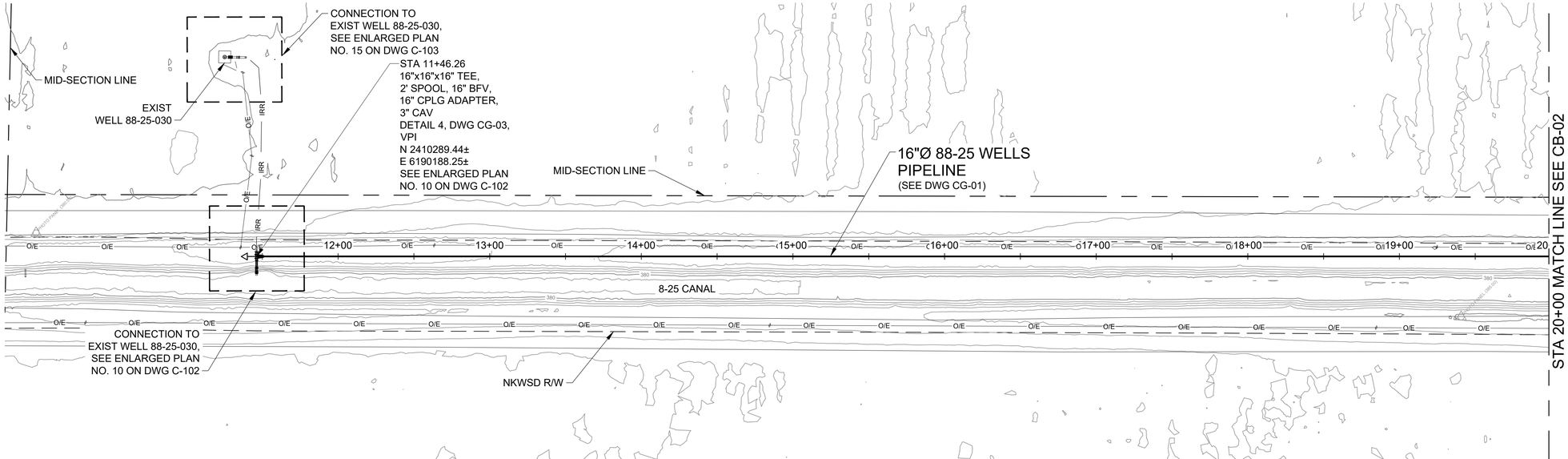


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NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

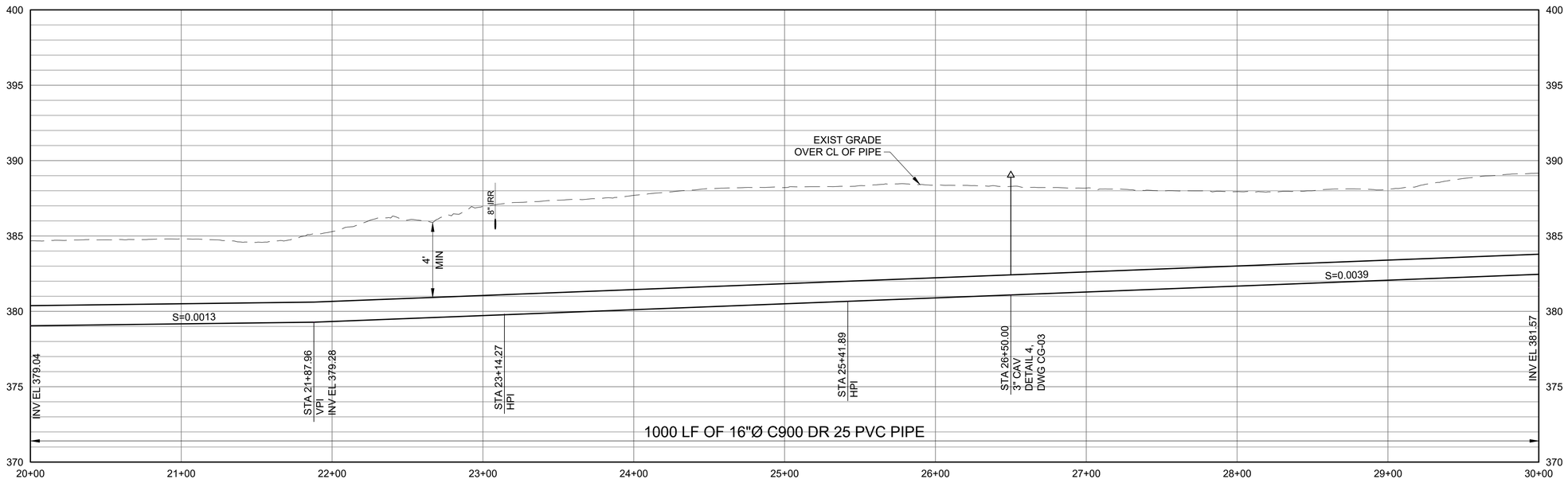
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

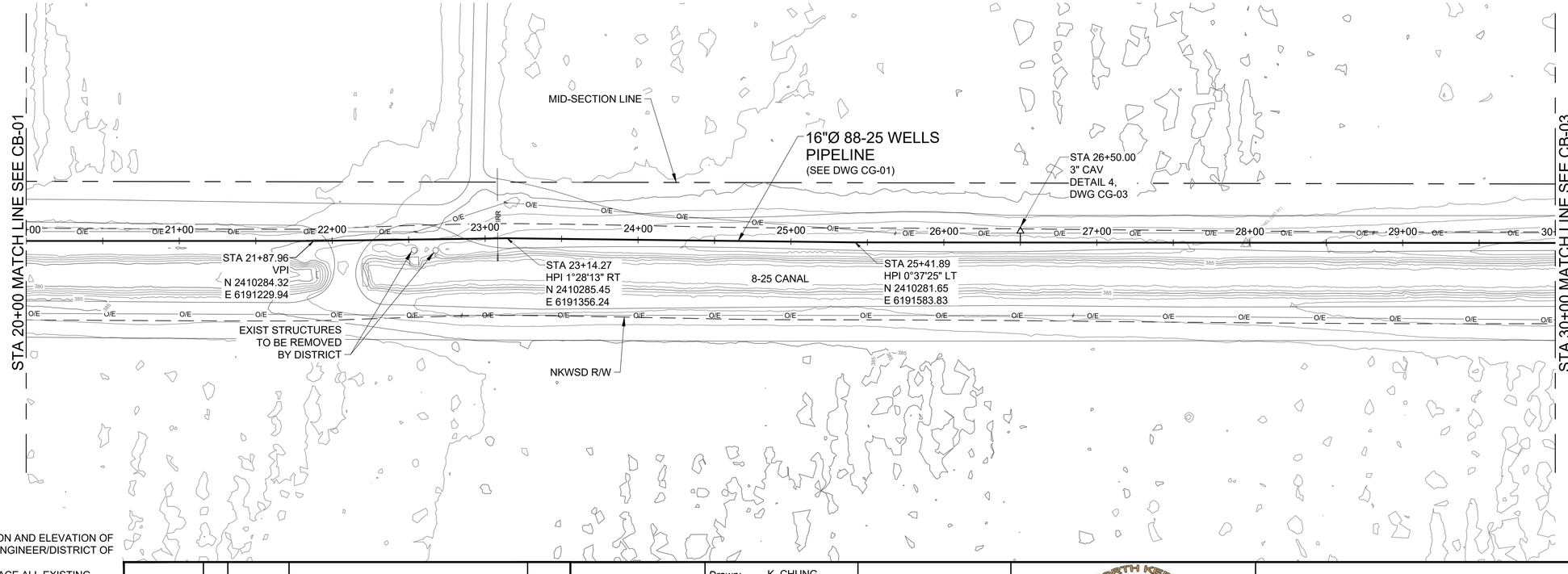
88-25 WELLS PIPELINE
PLAN AND PROFILE
STA 11+46.26 TO STA 20+00

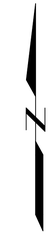
DWG. NO.
CB-01

SHEET NO.
17

ARCHIVE #

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| Submitted: | S. GALA |

REGISTERED PROFESSIONAL ENGINEER
KUN YAO
C 76823
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STATE OF CALIFORNIA
09-22-2021

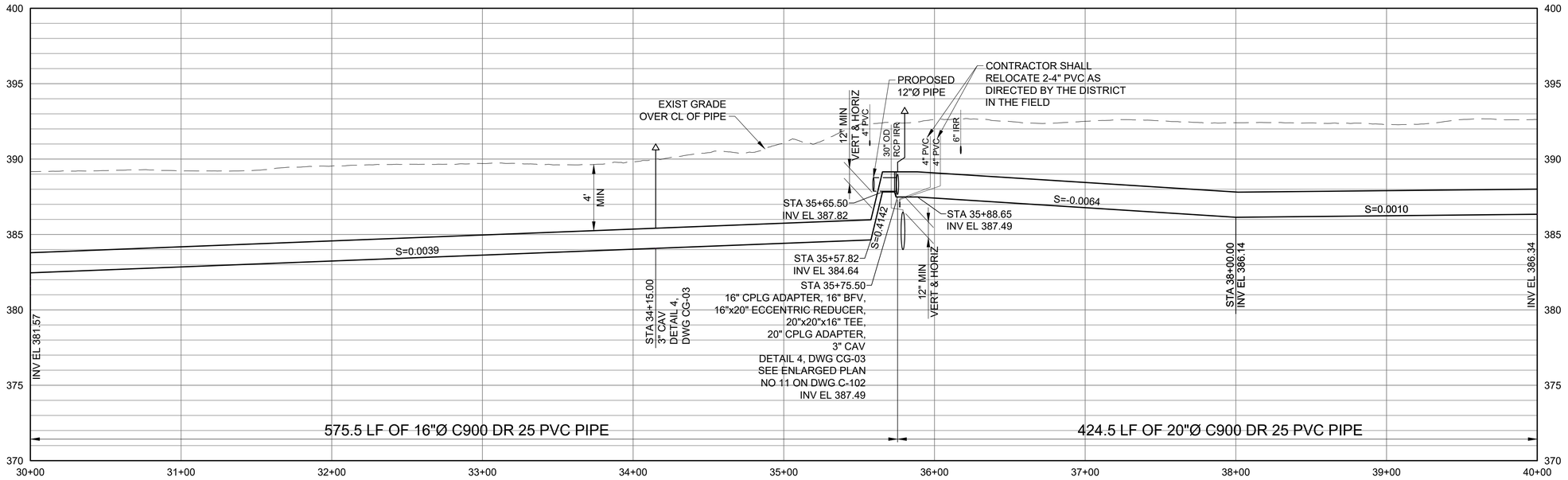
NORTH KERN WATER STORAGE DISTRICT

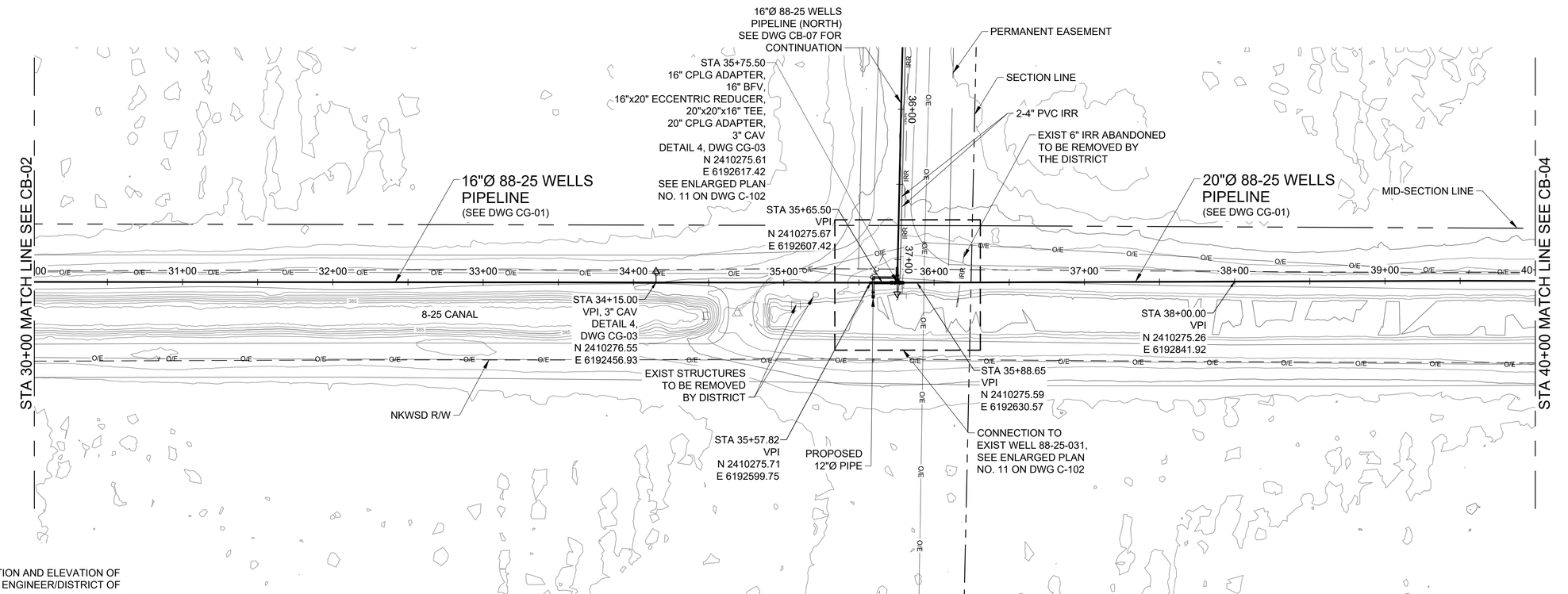
GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

88-25 WELLS PIPELINE
PLAN AND PROFILE
STA 20+00 TO STA 30+00

DWG. NO. CB-02
SHEET NO. 18
ARCHIVE #

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| Approved: | K. YAO |
| Submitted: | S. GALA |

REGISTERED PROFESSIONAL ENGINEER
KUN YAO
C 76823
12/31/22
CIVIL
STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

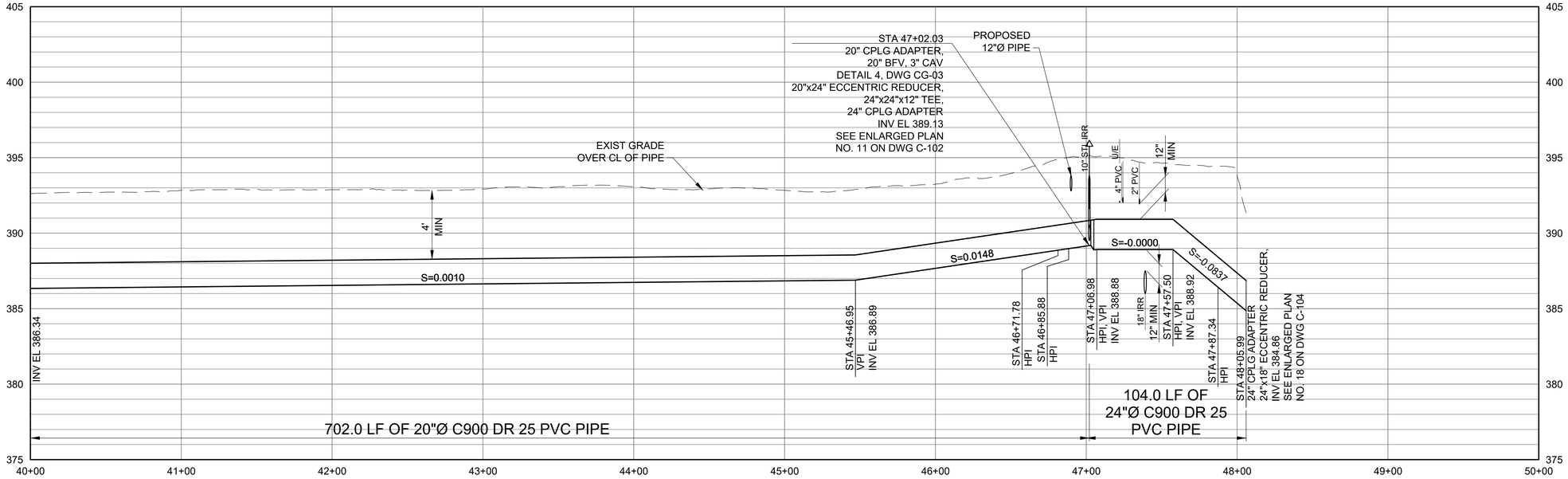
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

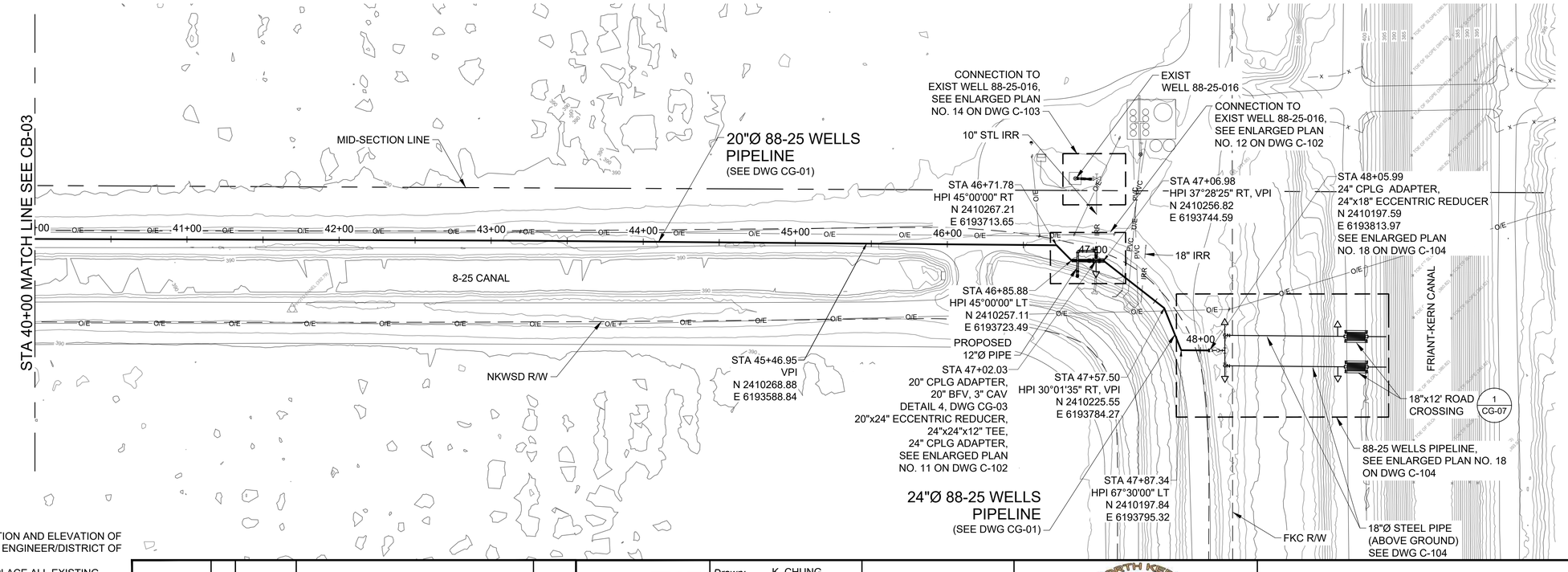
88-25 WELLS PIPELINE
PLAN AND PROFILE
STA 30+00 TO STA 40+00

DWG. NO.
CB-03

SHEET NO.
19

ARCHIVE #

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(661) 327-7601

Drawn: K. CHUNG
Checked: M. WONG
Approved: K. YAO
Submitted: S. GALA

REGISTERED PROFESSIONAL ENGINEER
KUN YAO
C 76823
EXP. 12-31-22
CIVIL
STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

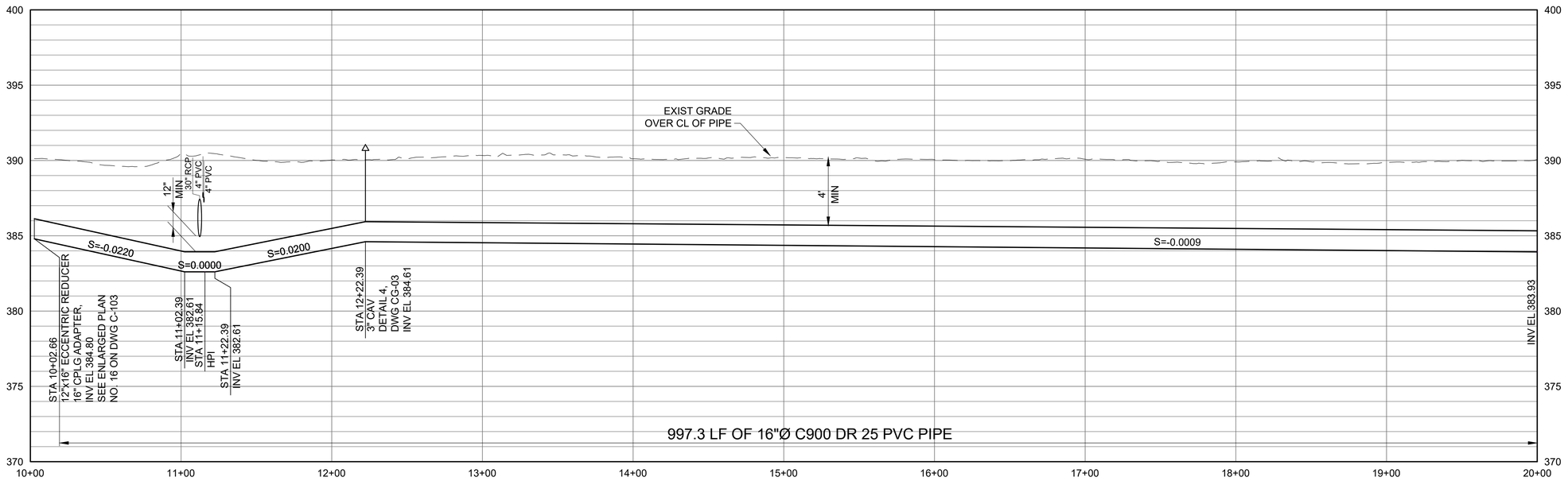
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

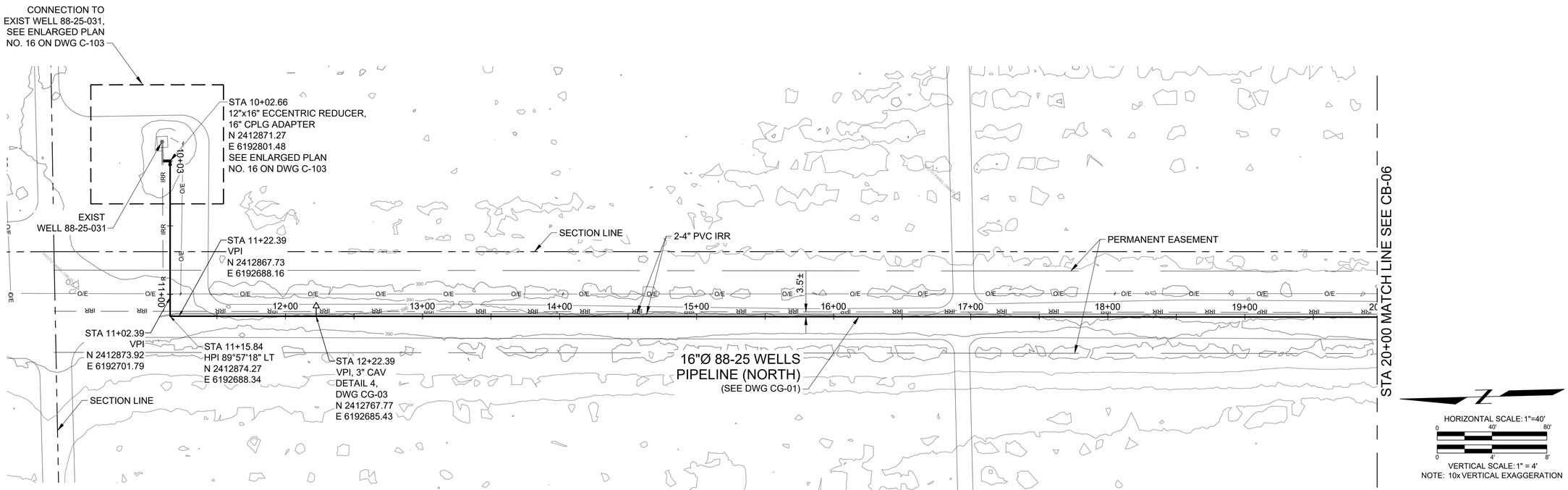
88-25 WELLS PIPELINE
PLAN AND PROFILE
STA 40+00 TO STA 48+05.99

DWG. NO.
CB-04

SHEET NO.
20

ARCHIVE #

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09-22-2021

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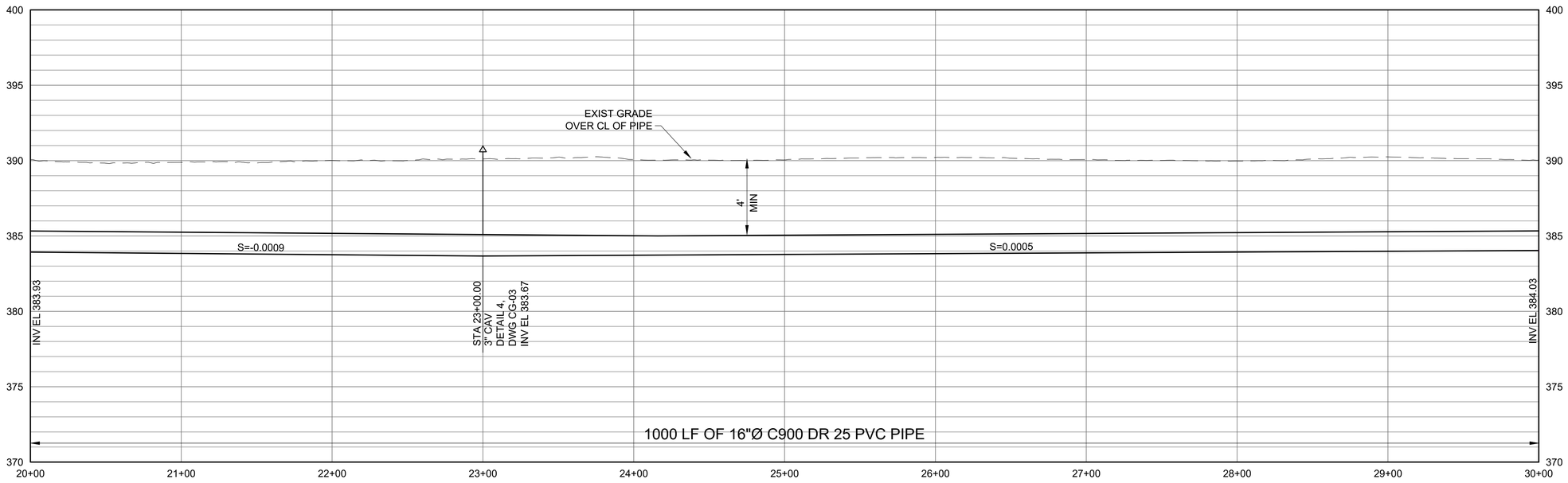
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

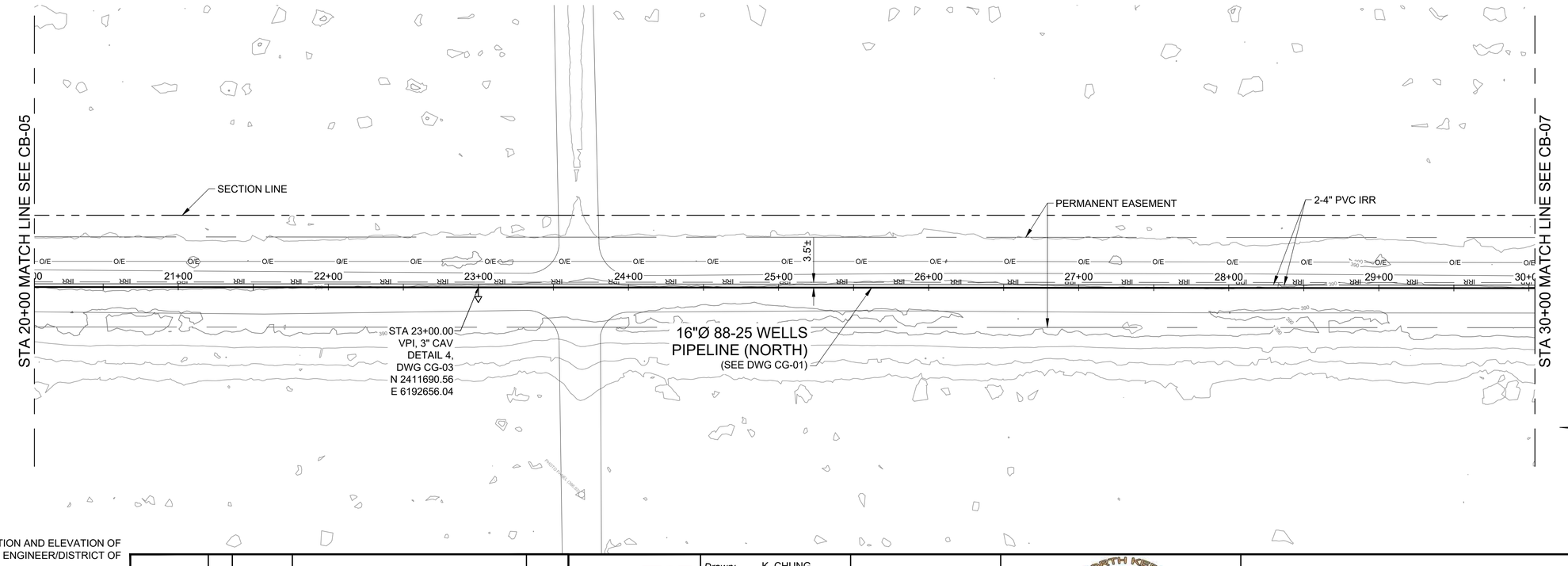
88-25 WELLS PIPELINE (NORTH)
PLAN AND PROFILE
STA 10+02.66 TO STA 20+00

DWG. NO. CB-05

SHEET NO. 21

ARCHIVE #




HORIZONTAL SCALE: 1"=40'

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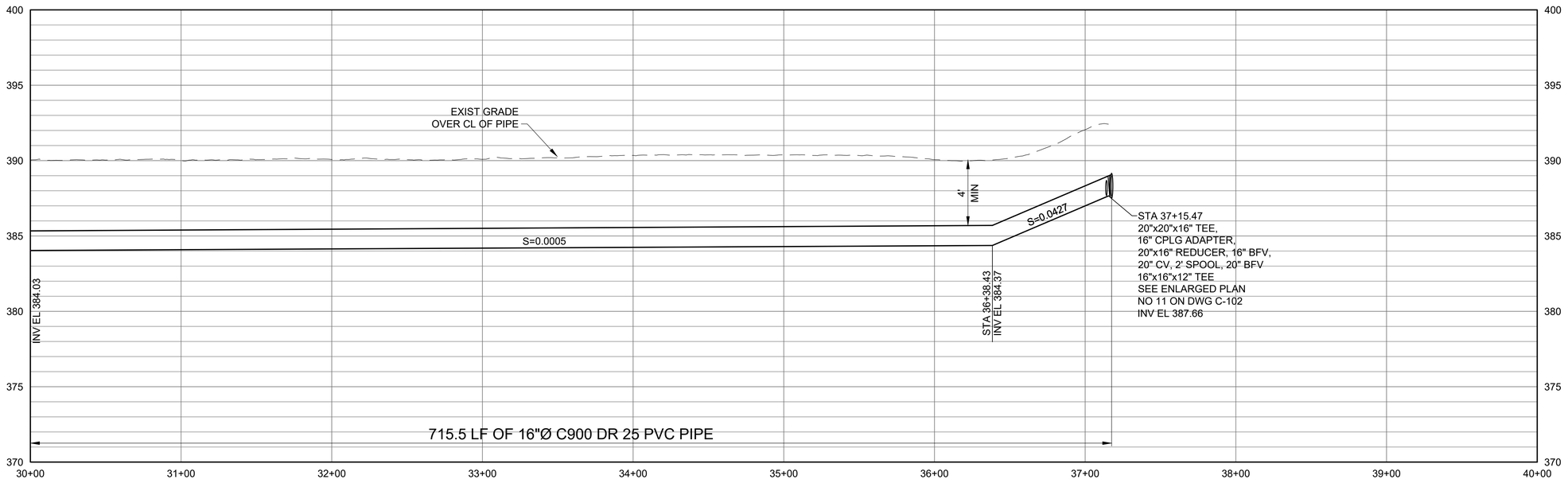
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

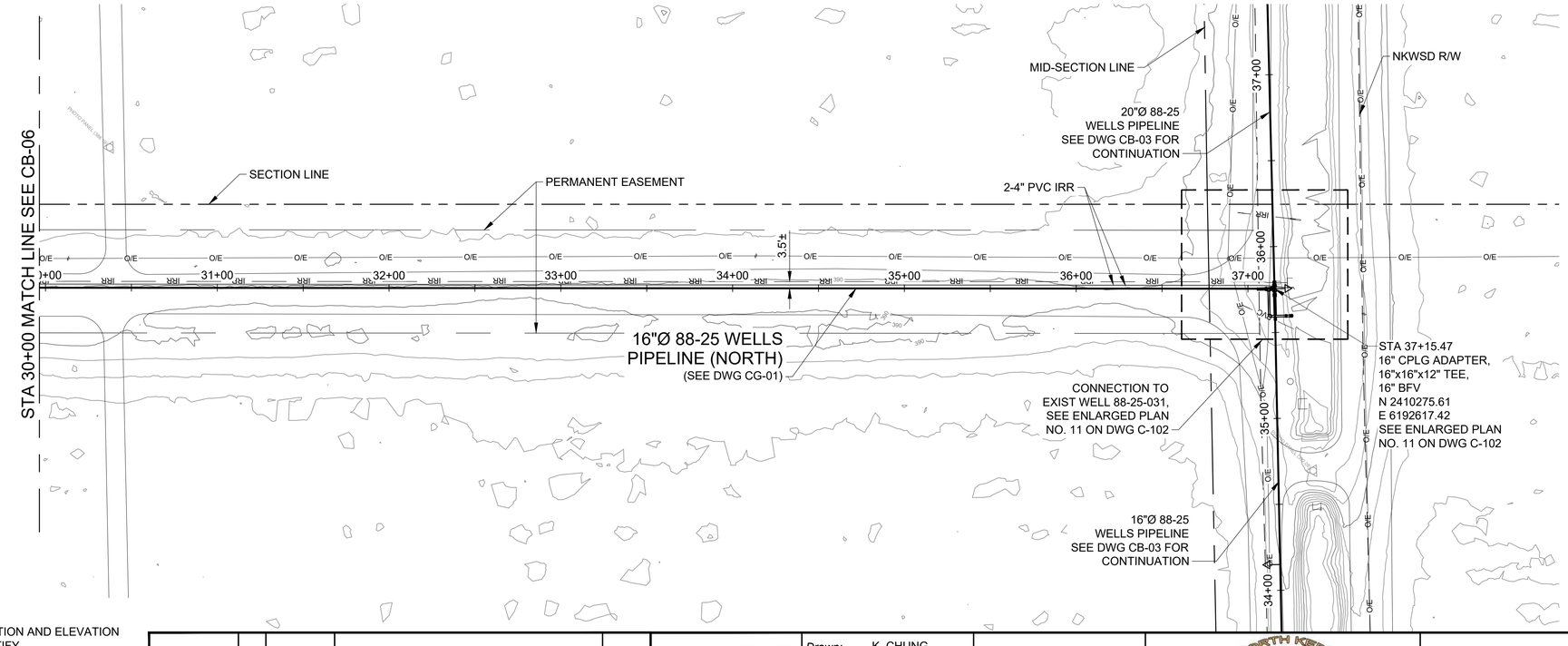
88-25 WELLS PIPELINE (NORTH)
PLAN AND PROFILE
STA 20+00 TO STA 30+00

DWG. NO. CB-06

SHEET NO. 22

ARCHIVE #

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PIPELINE AND PUMP STATION PROJECT

88-25 WELLS PIPELINE (NORTH)
PLAN AND PROFILE
STA 30+00 TO STA 37+15.47

DWG. NO.
CB-07

SHEET NO.
23

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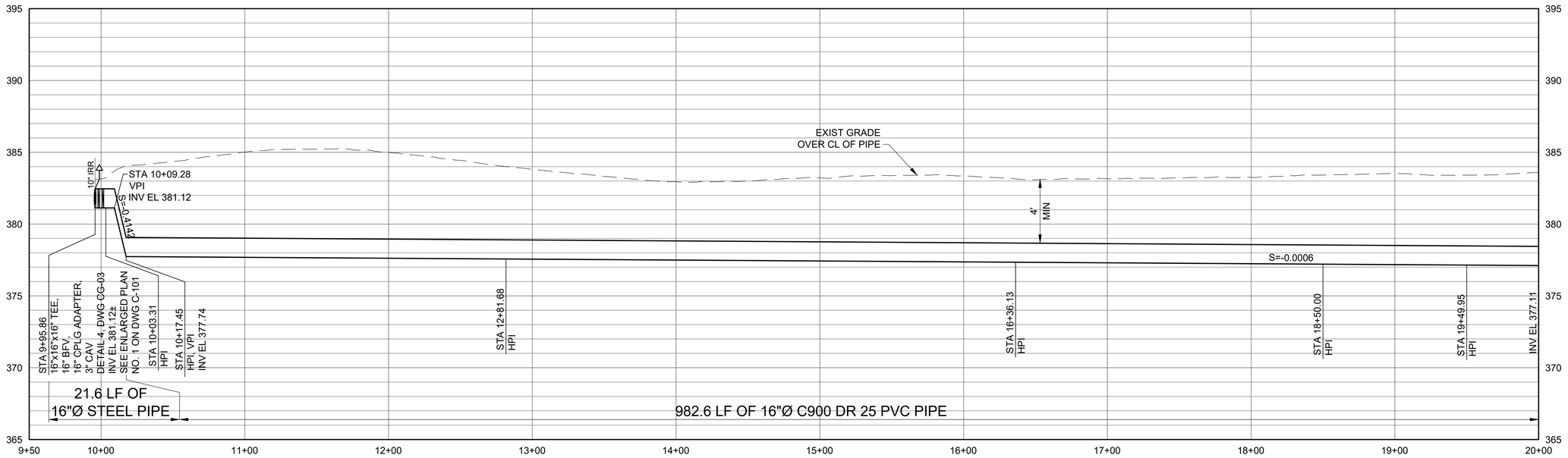


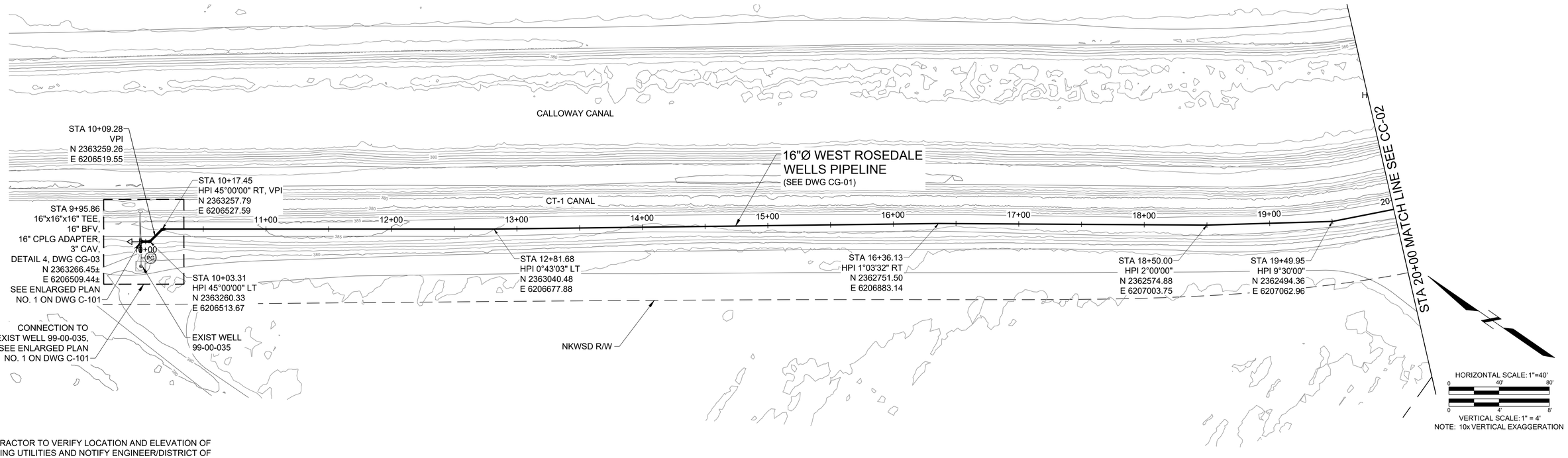


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|---|---|
| Drawn: | K. CHUNG |
| Checked: | M. WONG |
| Approved: | K. YAO |
| Submitted: | S. GALA |

REGISTERED PROFESSIONAL ENGINEER
KUN YAO
C 76823
C 12-31-22
CIVIL
STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

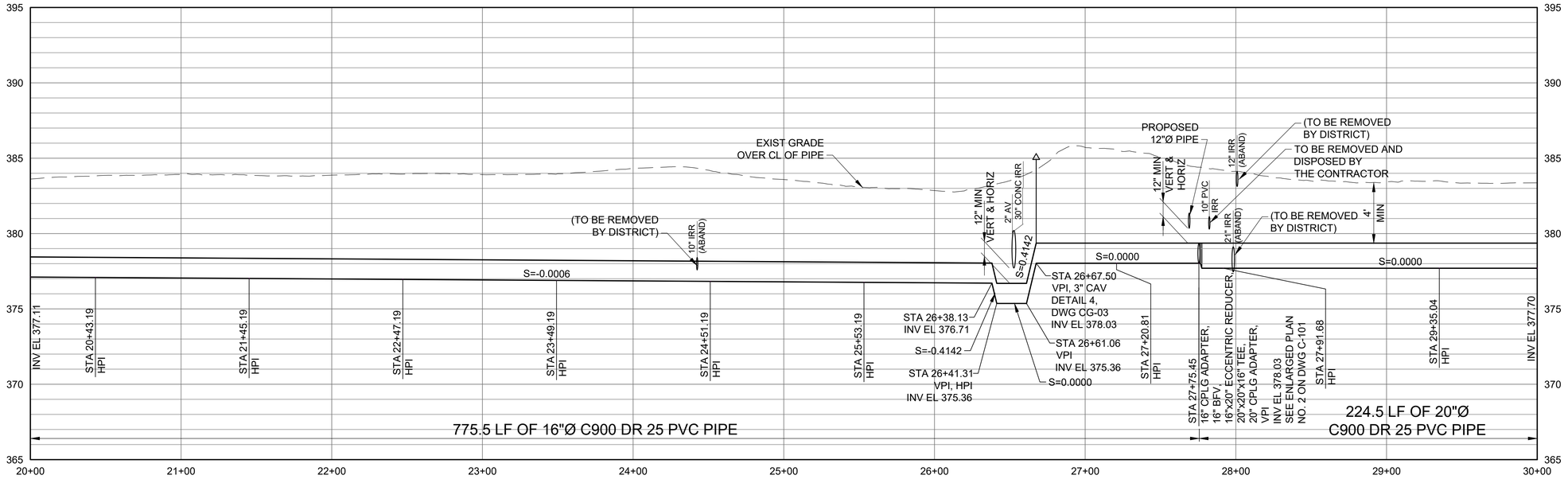
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

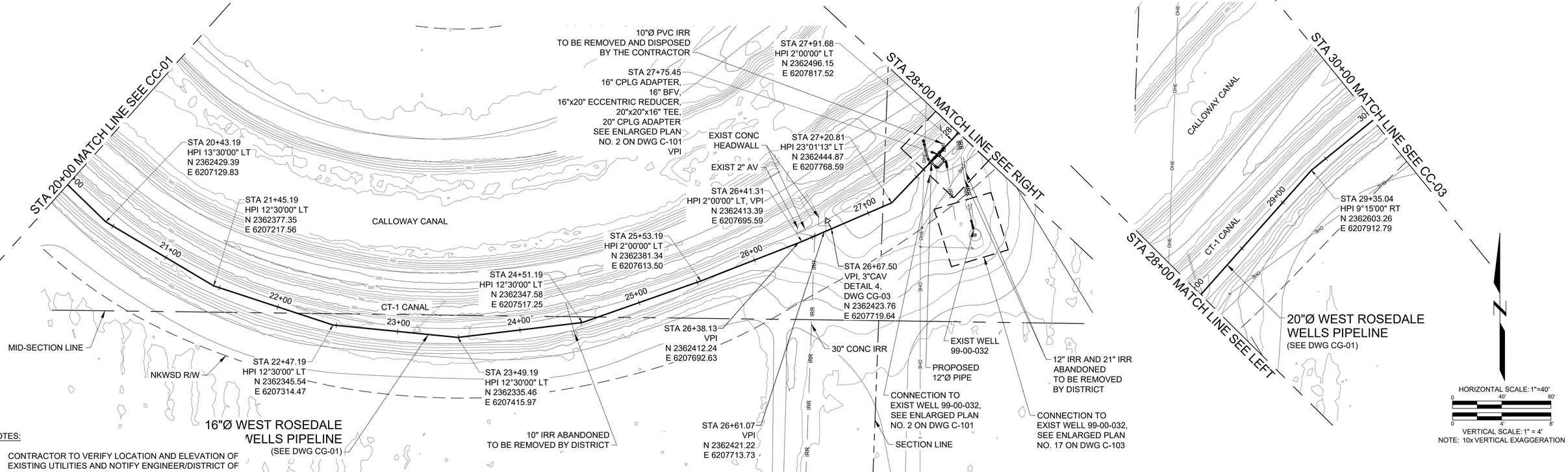
WEST ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 9+95.86 TO STA 20+00

DWG. NO.
CC-01

SHEET NO.
24

ARCHIVE #




NOTES:

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Attention:

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09-22-2021

NORTH KERN WATER STORAGE DISTRICT

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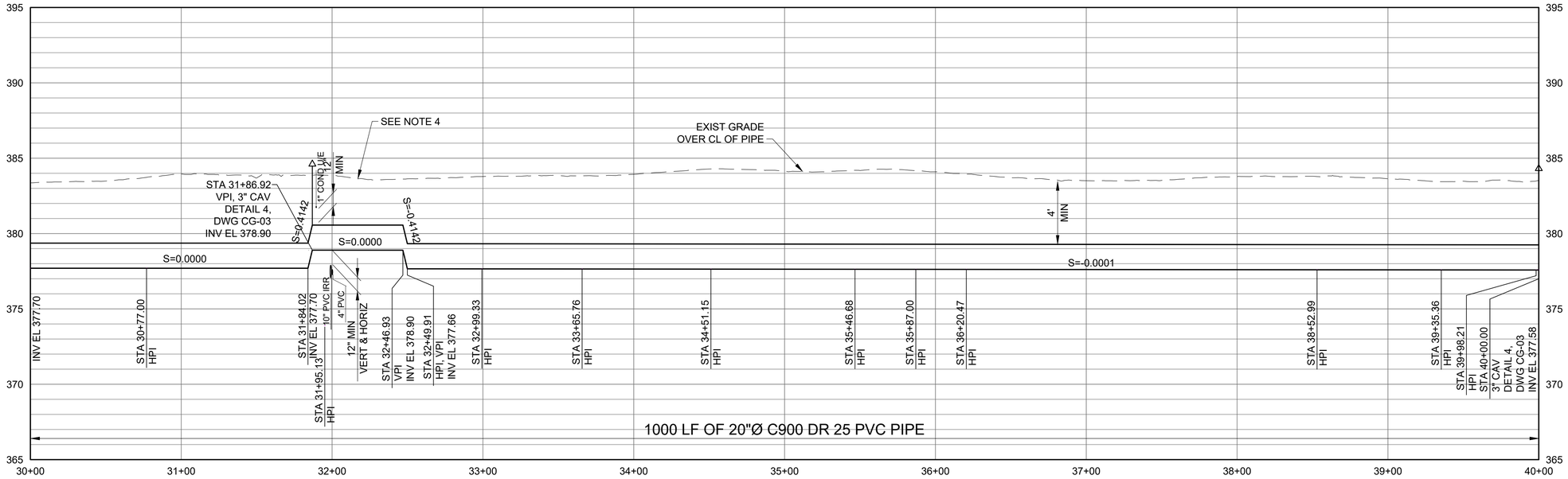
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

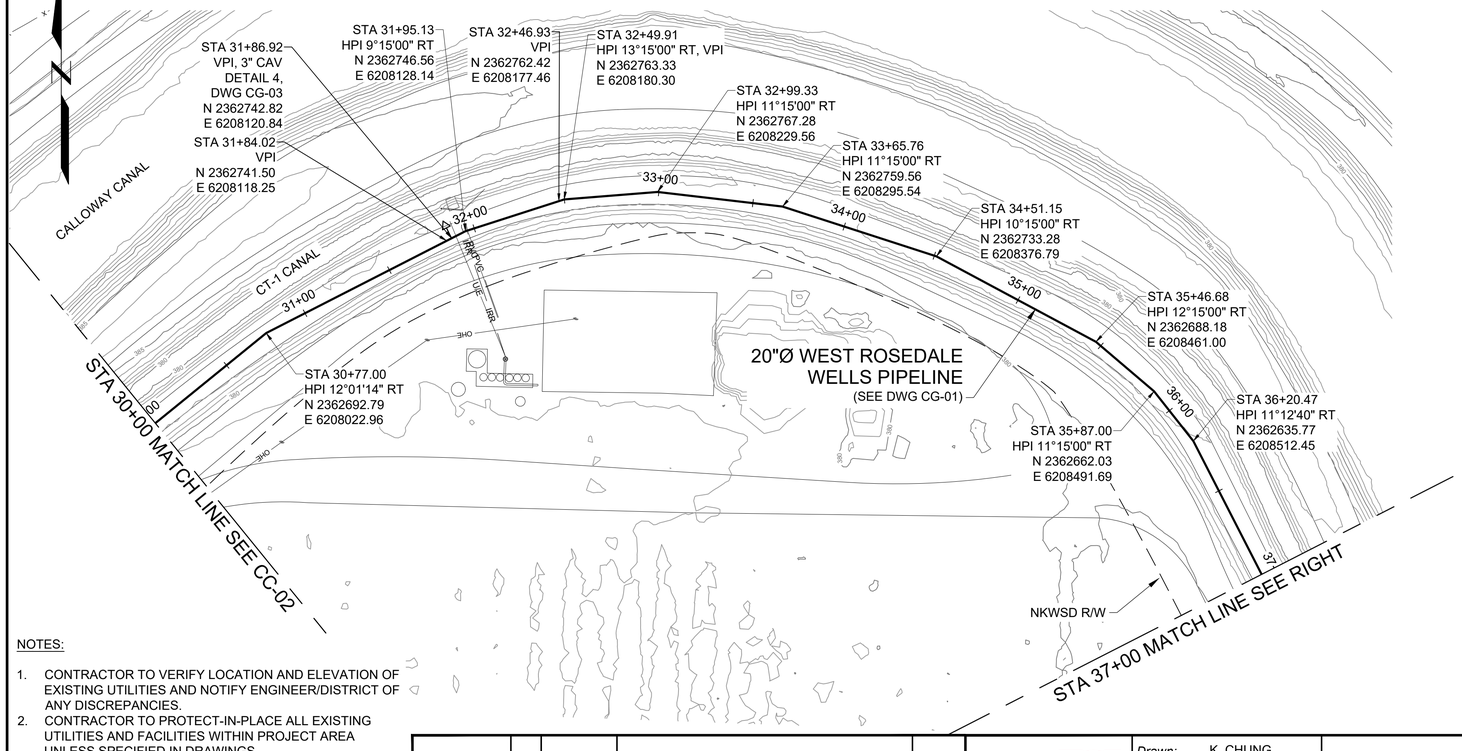
WEST ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 20+00 TO STA 30+00

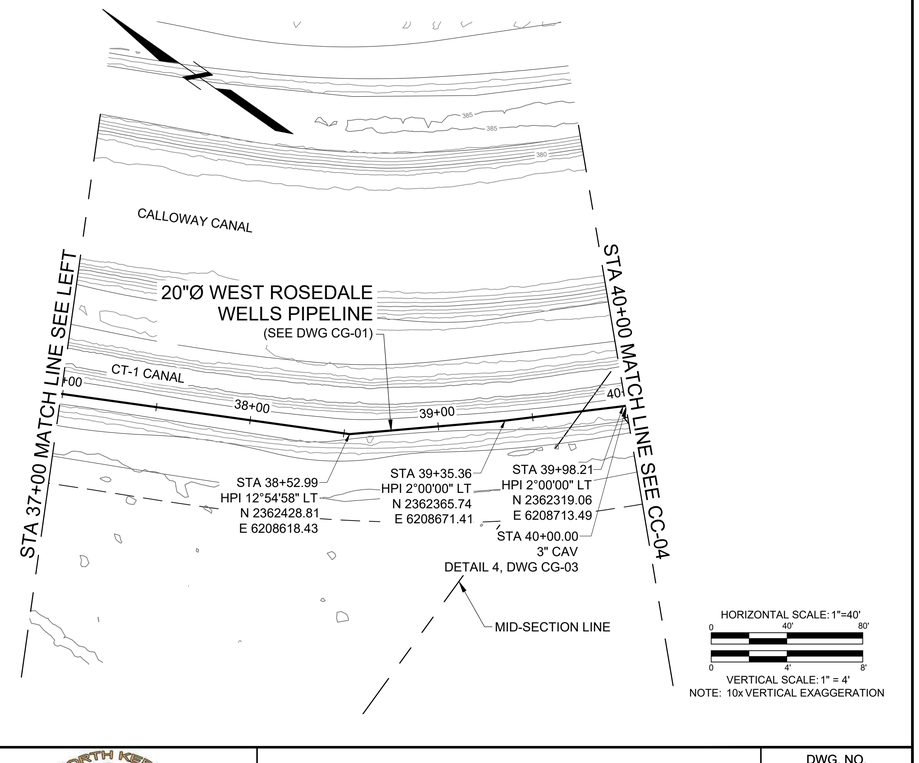
DWG. NO. CC-02

SHEET NO. 25

ARCHIVE #

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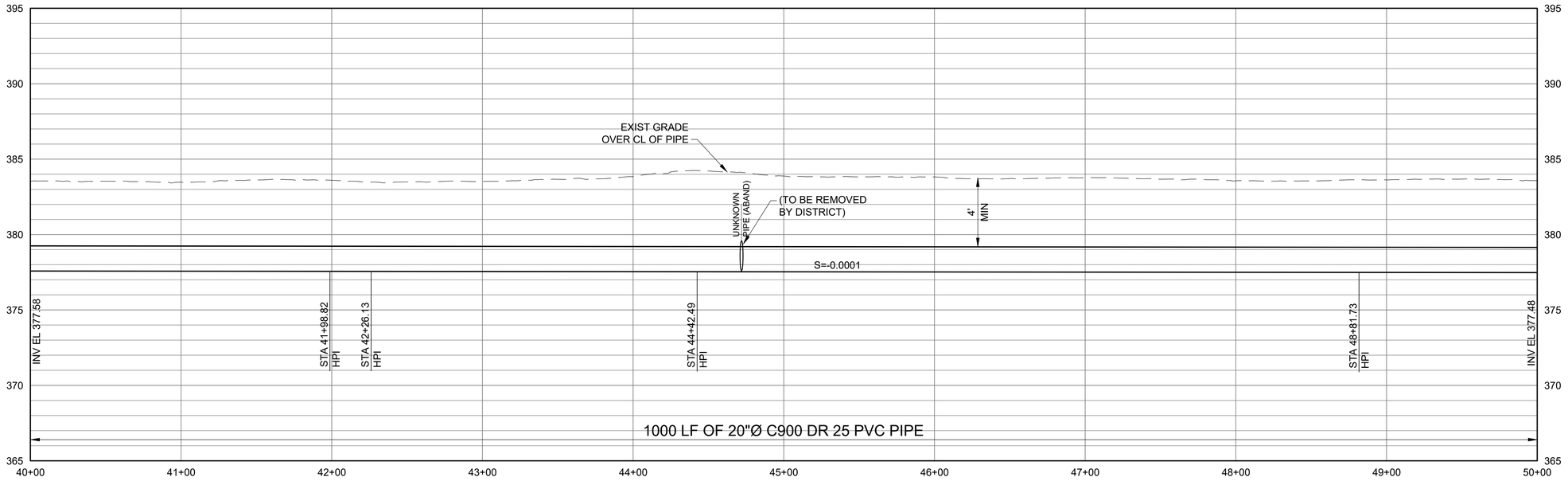
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

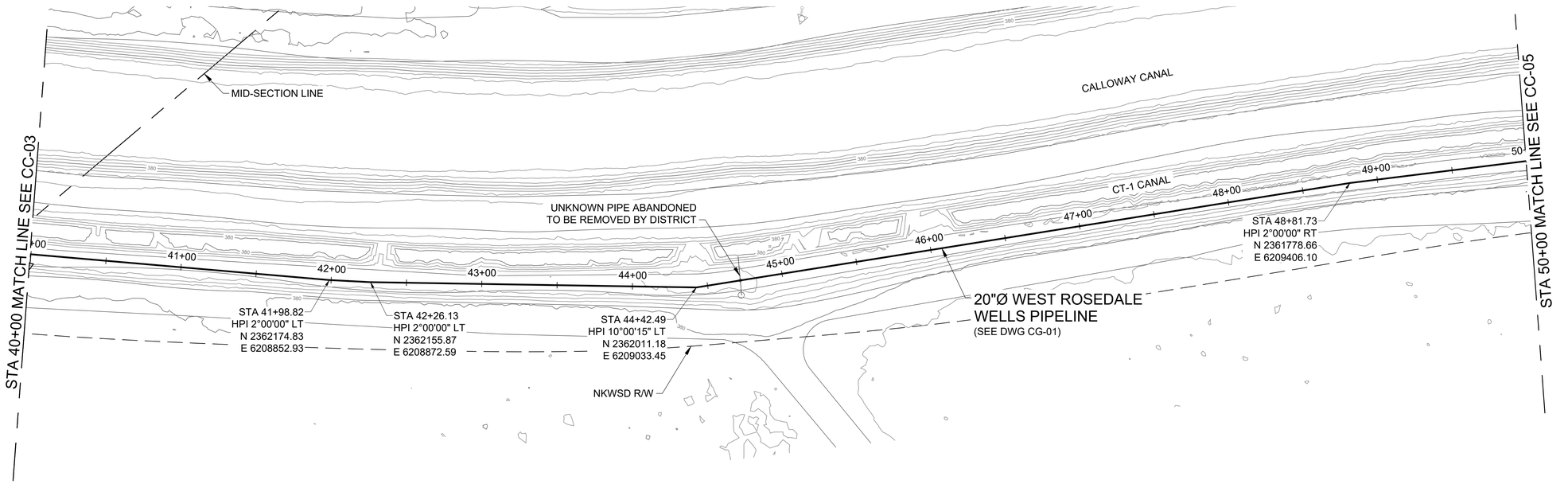
WEST ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 30+00 TO STA 40+00

DWG. NO. CC-03

SHEET NO. 26

ARCHIVE #




HORIZONTAL SCALE: 1"=40'
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PIPELINE AND PUMP STATION PROJECT

WEST ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 40+00 TO STA 50+00

DWG. NO. CC-04
SHEET NO. 27
ARCHIVE #

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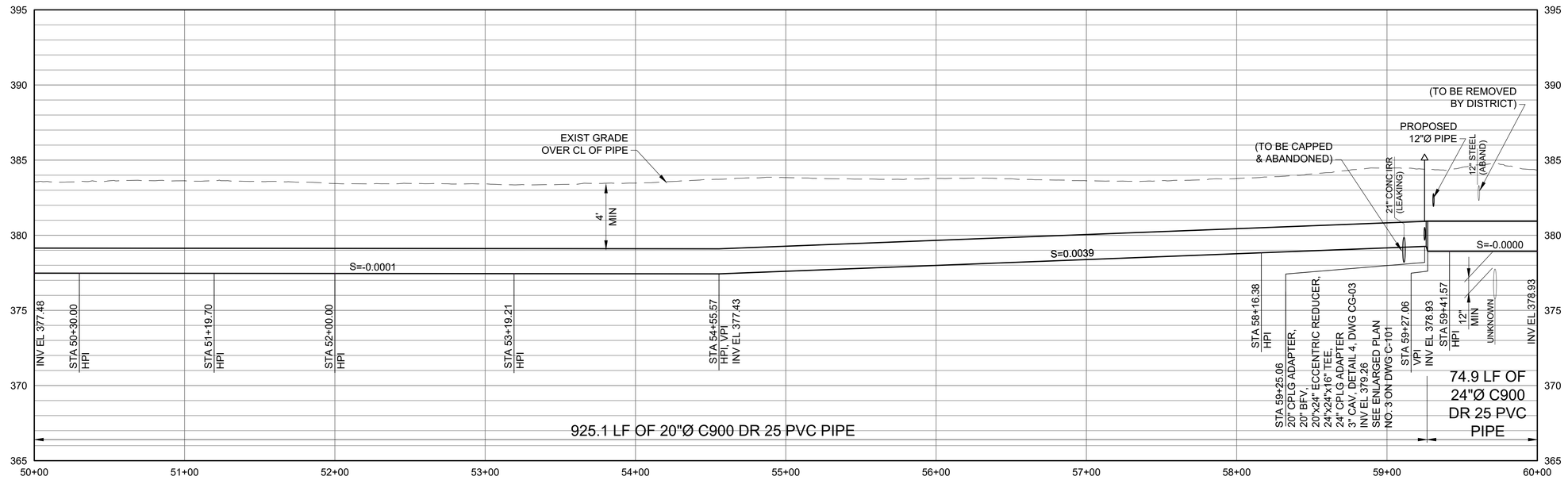


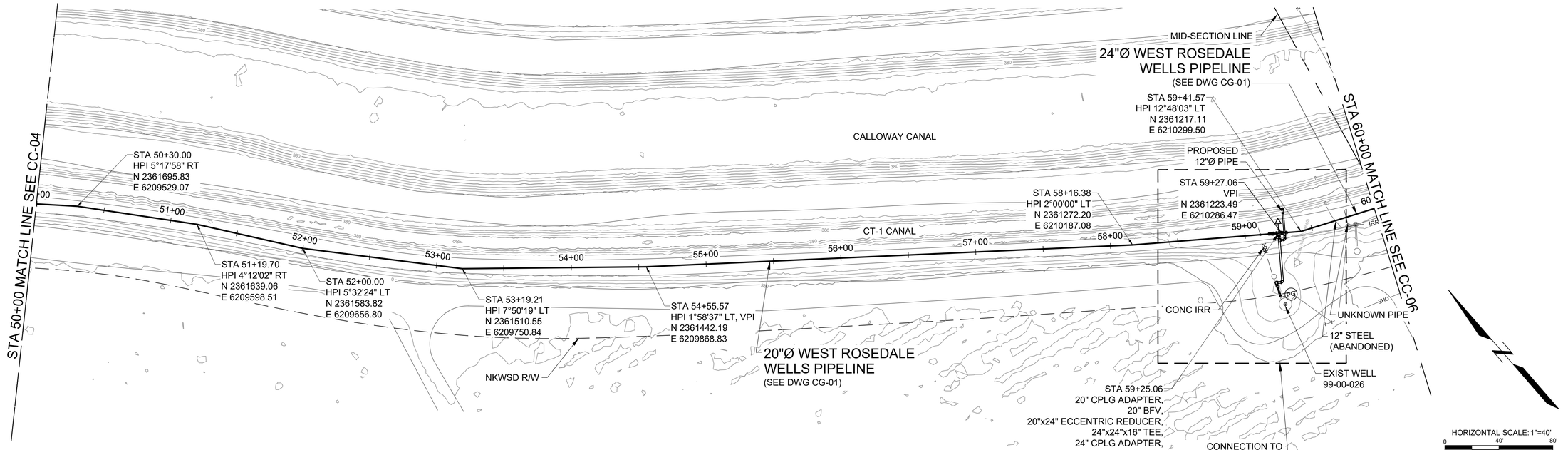


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PIPELINE AND PUMP STATION PROJECT

WEST ROSEDALE WELLS PIPELINE
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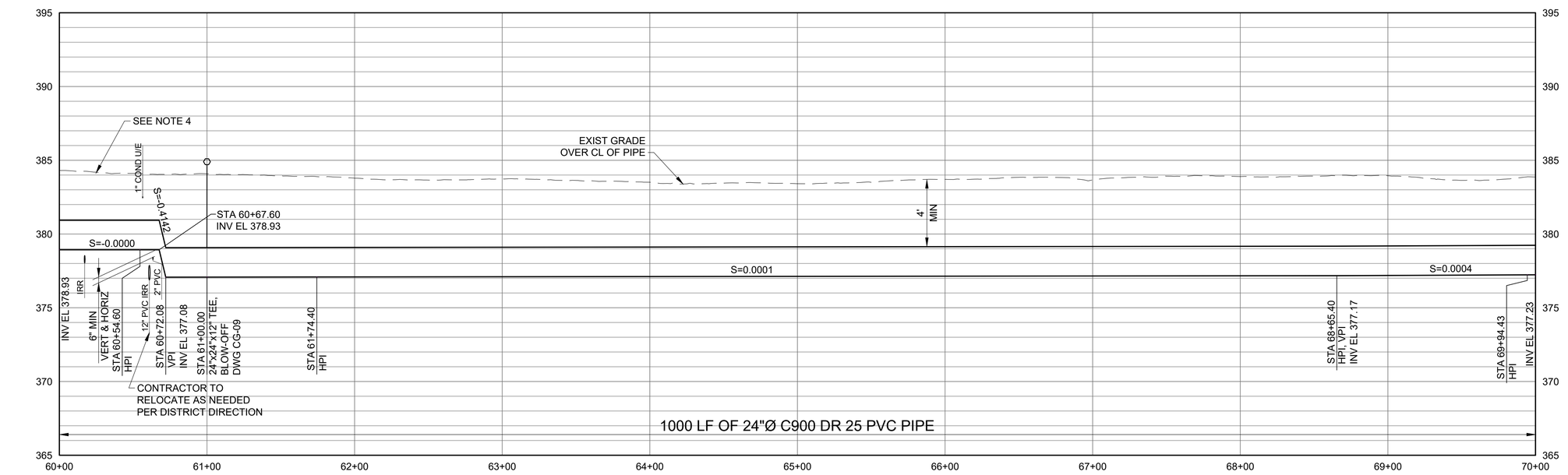
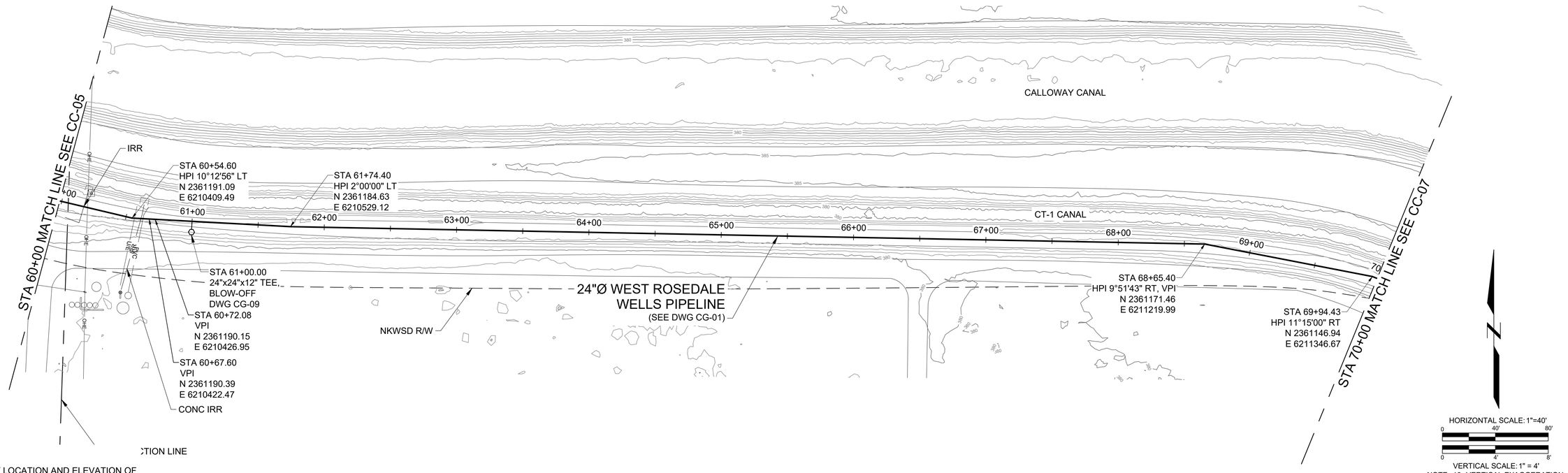
DWG. NO. CC-05

SHEET NO. 28

ARCHIVE #

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09-22-2021

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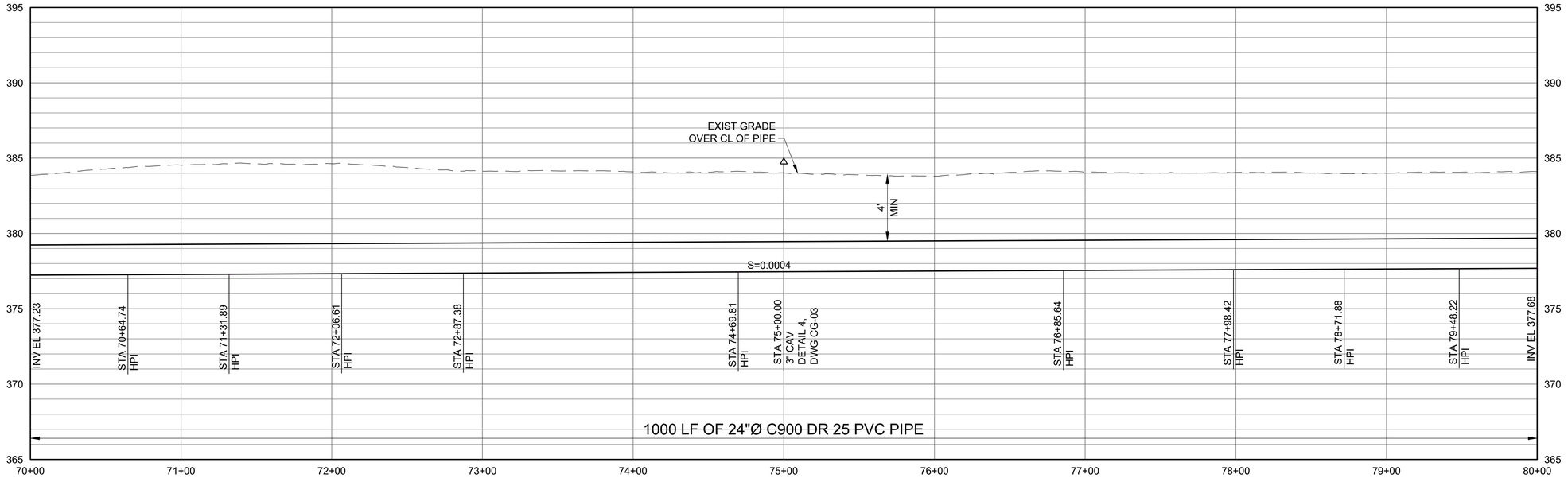
PIPELINE AND PUMP STATION PROJECT

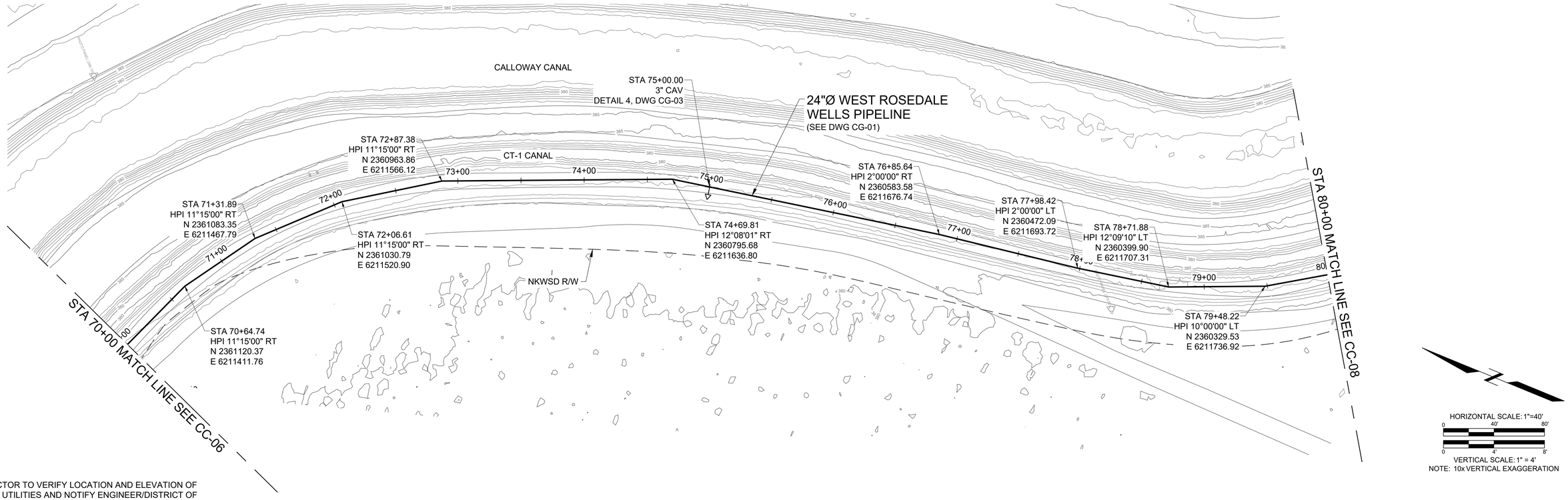
WEST ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 60+00 TO STA 70+00

DWG. NO. CC-06

SHEET NO. 29

ARCHIVE #

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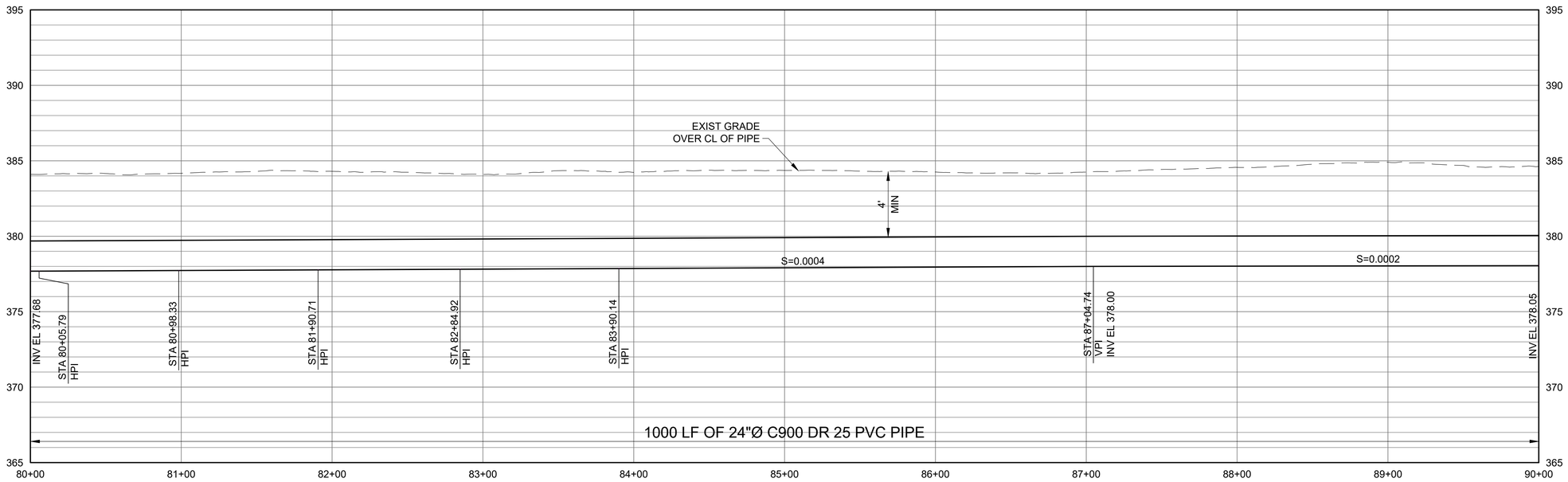
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

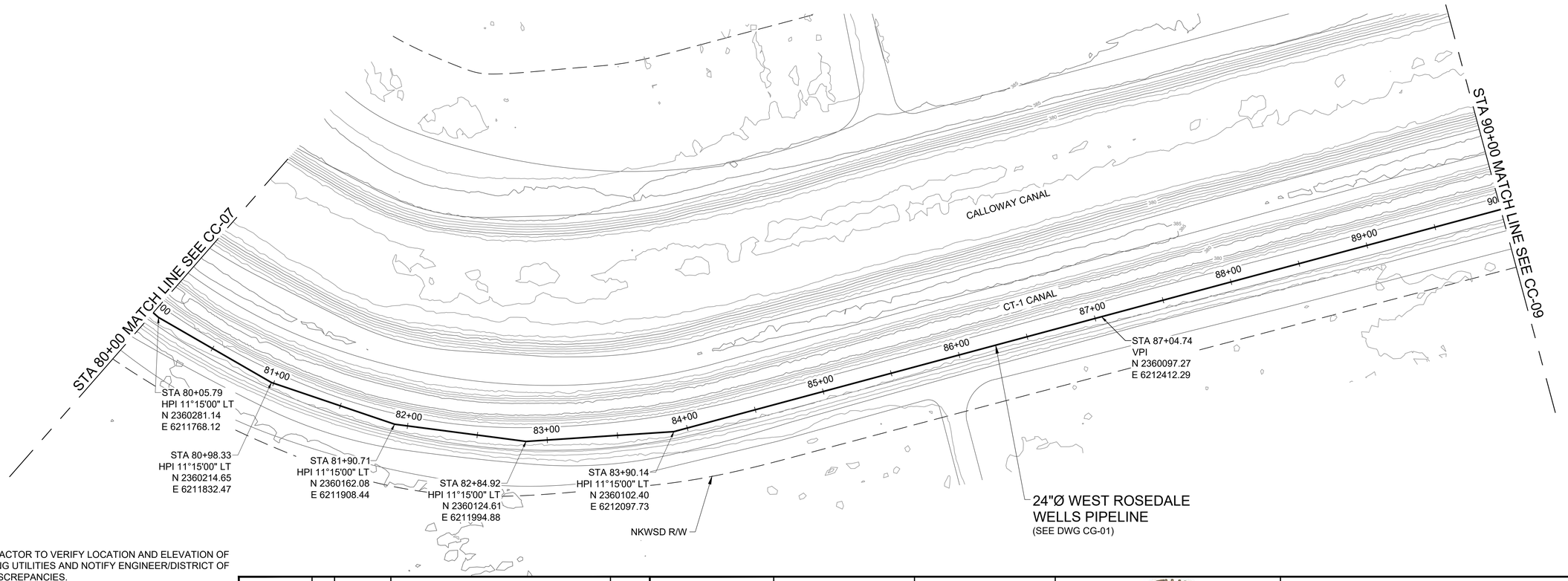
WEST ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 70+00 TO STA 80+00

DWG. NO.
CC-07

SHEET NO.
30

ARCHIVE #

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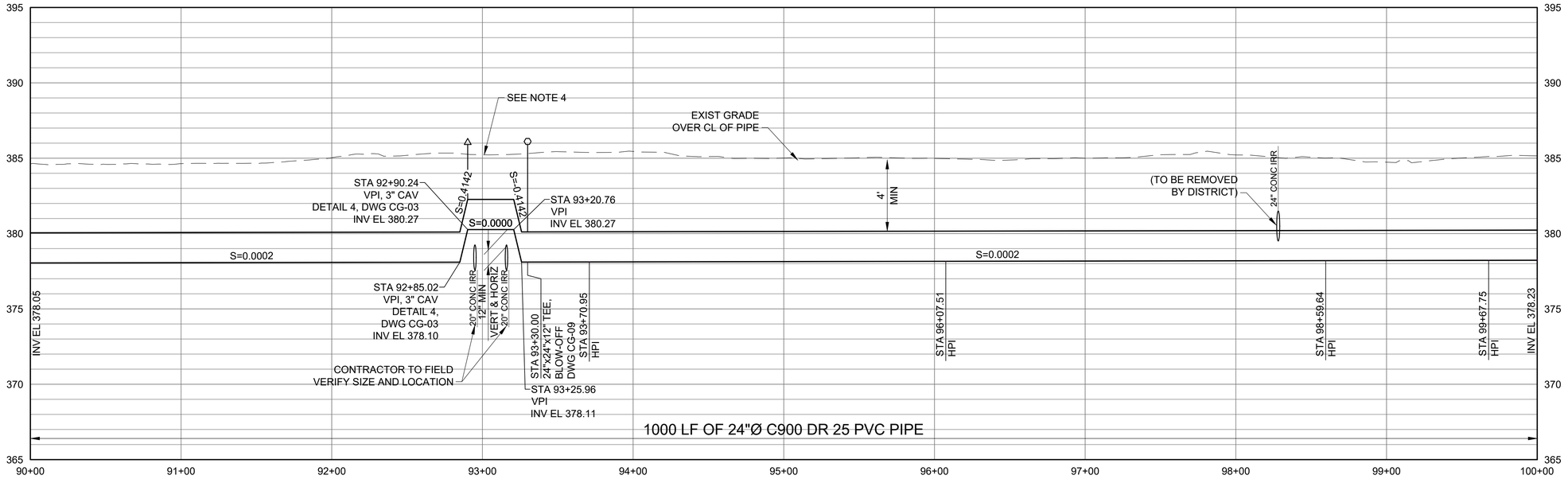
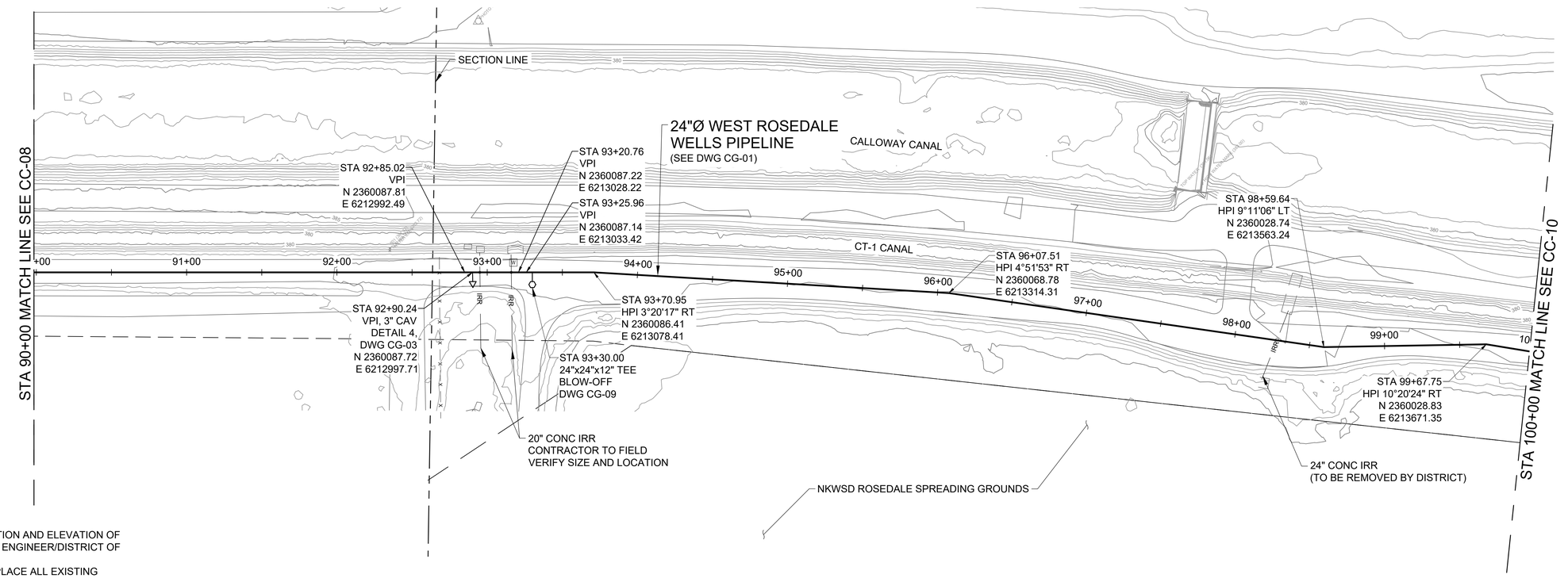
PIPELINE AND PUMP STATION PROJECT

WEST ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 80+00 TO STA 90+00

DWG. NO. CC-08
SHEET NO. 31
ARCHIVE #

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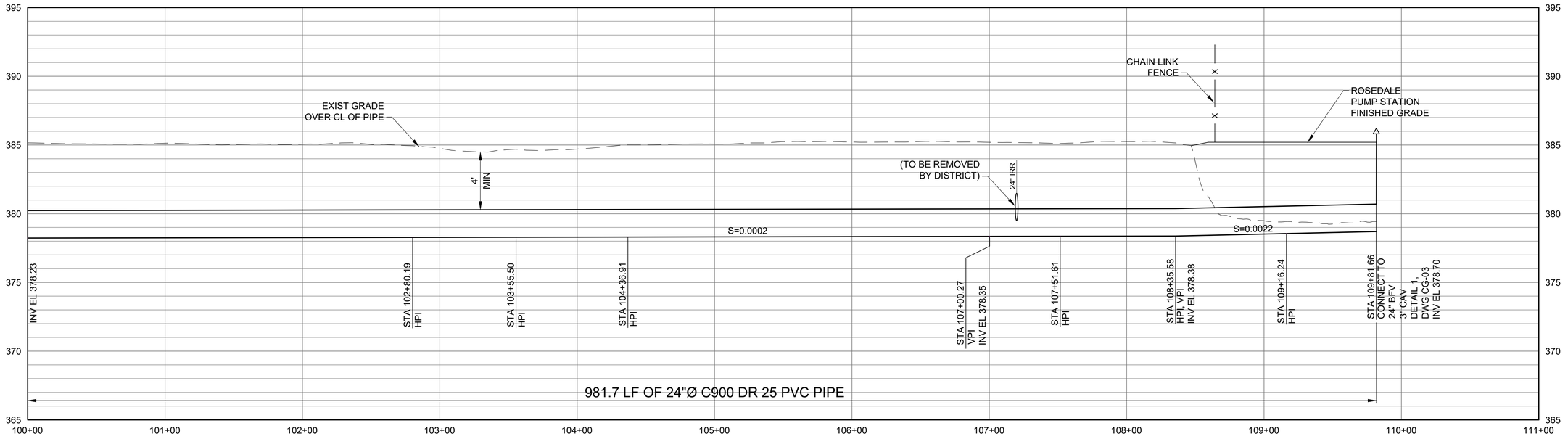
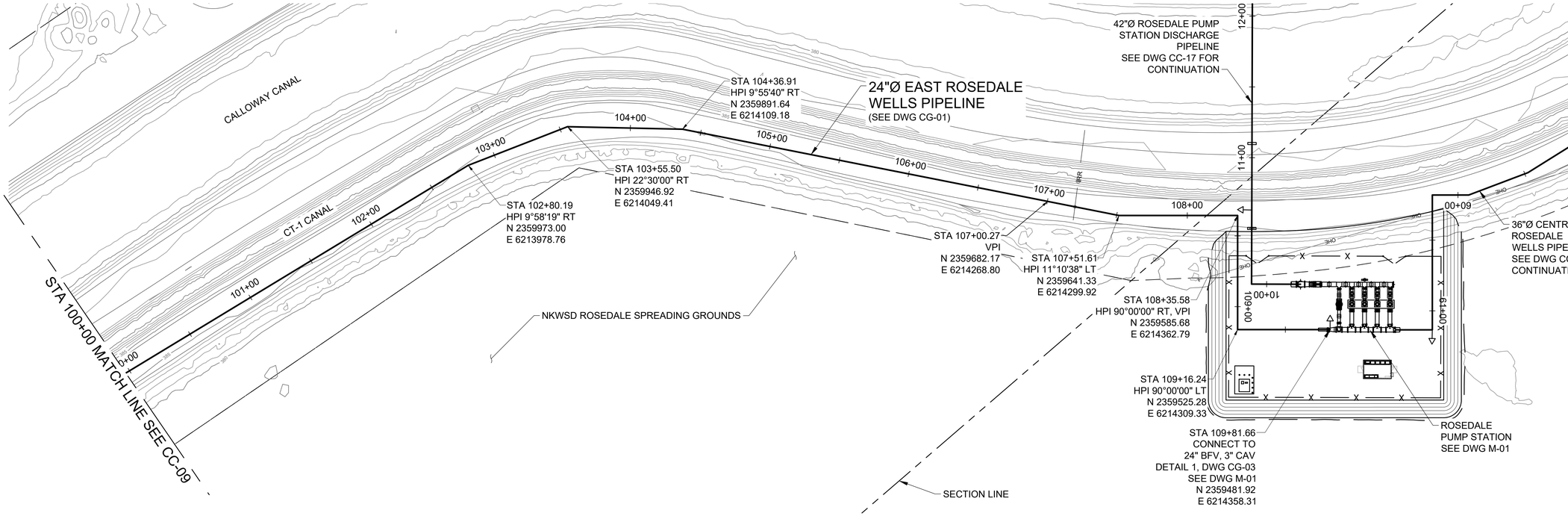
PIPELINE AND PUMP STATION PROJECT

WEST ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 90+00 TO STA 100+00

DWG. NO. CC-09
SHEET NO. 32
ARCHIVE #

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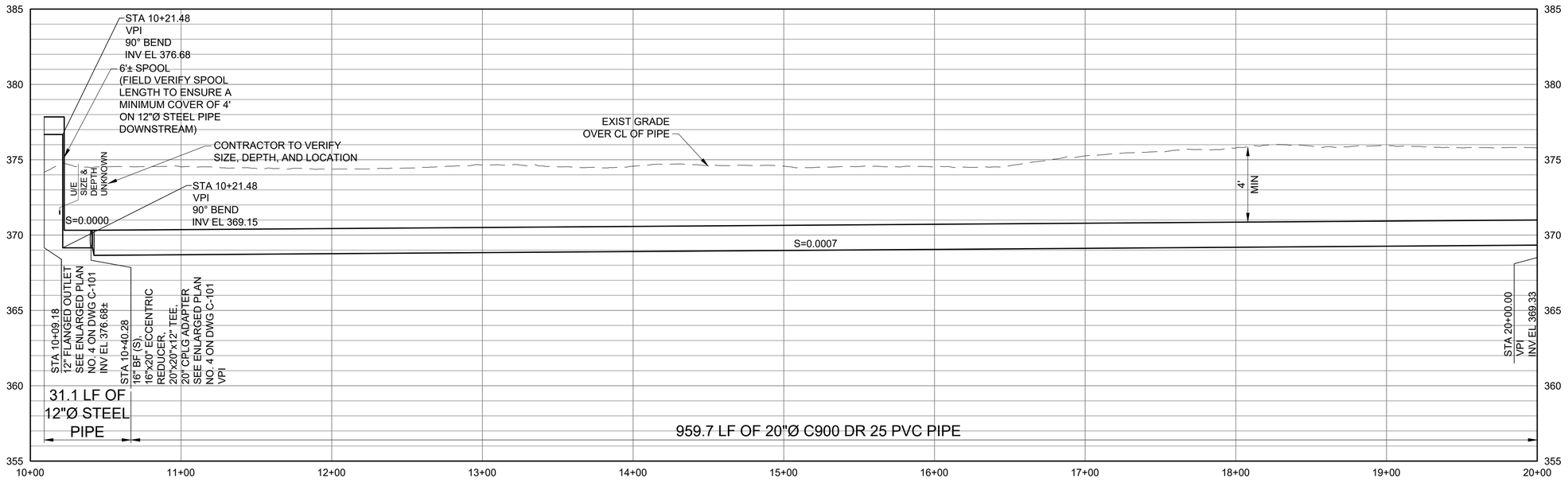
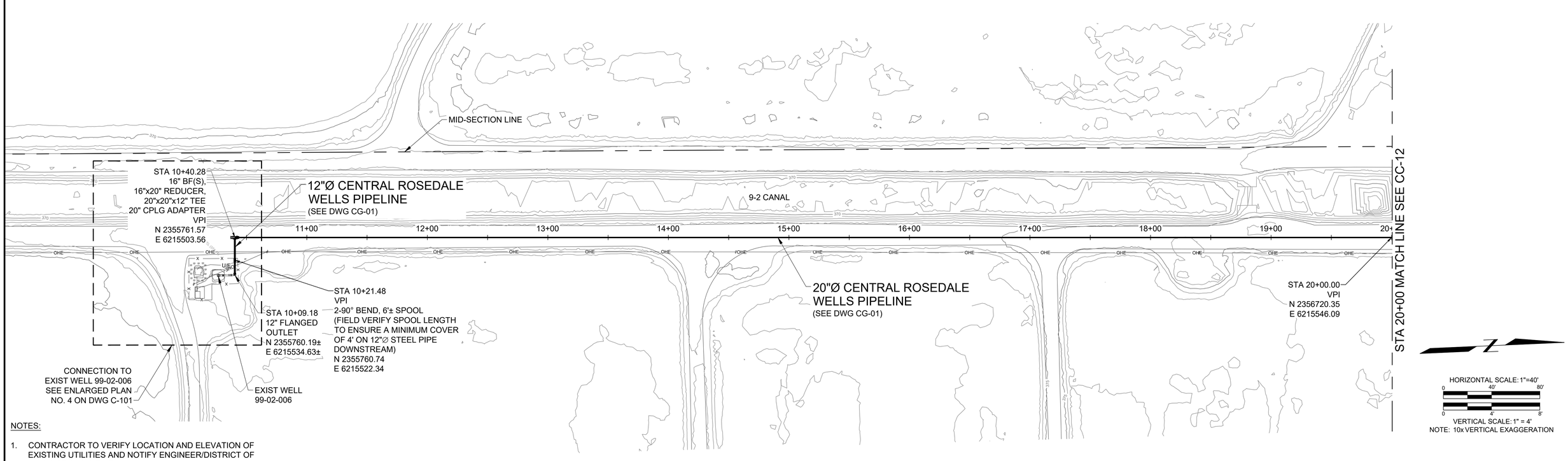
WEST ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 100+00 TO STA 109+81.66

DWG. NO. CC-10

SHEET NO. 33

ARCHIVE #

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WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

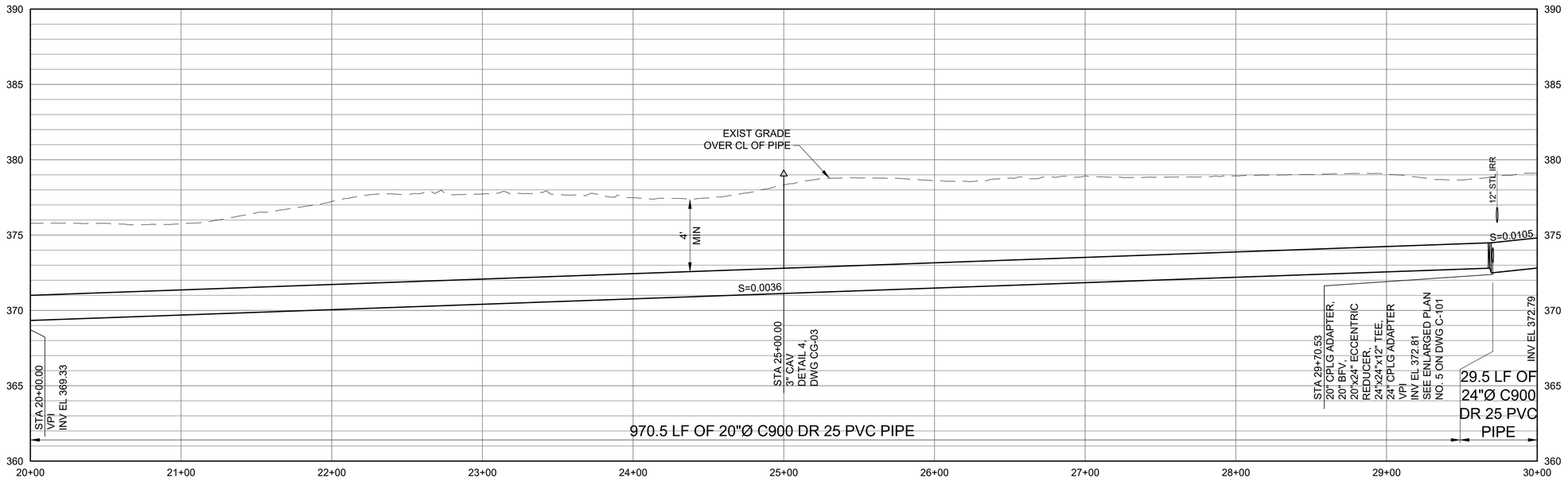
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

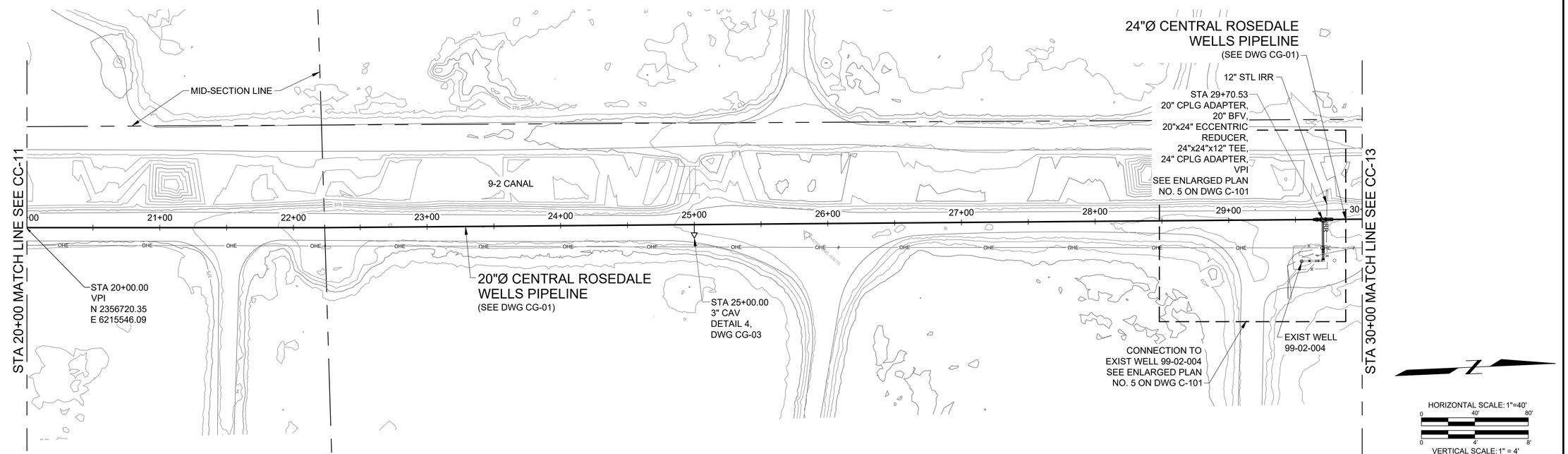
CENTRAL ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 10+09.18 TO STA 20+00

DWG. NO.
CC-11

SHEET NO.
34

ARCHIVE #




HORIZONTAL SCALE: 1"=40'
0 40' 80'
0 4' 8'
VERTICAL SCALE: 1" = 4'
NOTE: 10x VERTICAL EXAGGERATION

NOTES:

1. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES AND NOTIFY ENGINEER/DISTRICT OF ANY DISCREPANCIES.
2. CONTRACTOR TO PROTECT-IN-PLACE ALL EXISTING UTILITIES AND FACILITIES WITHIN PROJECT AREA UNLESS SPECIFIED IN DRAWINGS.
3. CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND ADEQUATE PHYSICAL BARRIERS TO ENSURE NO GROUND DISTURBANCE WITHIN 2' OF THE EDGE OF CANAL O&M ROAD ON EACH SIDE.
4. CONTRACTOR SHALL UTILIZE 1° MAXIMUM JOINT DEFLECTION AT EACH JOINT.

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

| NO. | DATE | ISSUE/REVISION | APP |
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(661) 327-7601

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|---|---|
| Drawn: | K. CHUNG |
| Checked: | M. WONG |
| Approved: | K. YAO |
| Submitted: | S. GALA |

REGISTERED PROFESSIONAL ENGINEER
KUN YAO
C 76823
C.12-31-22
CIVIL
STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

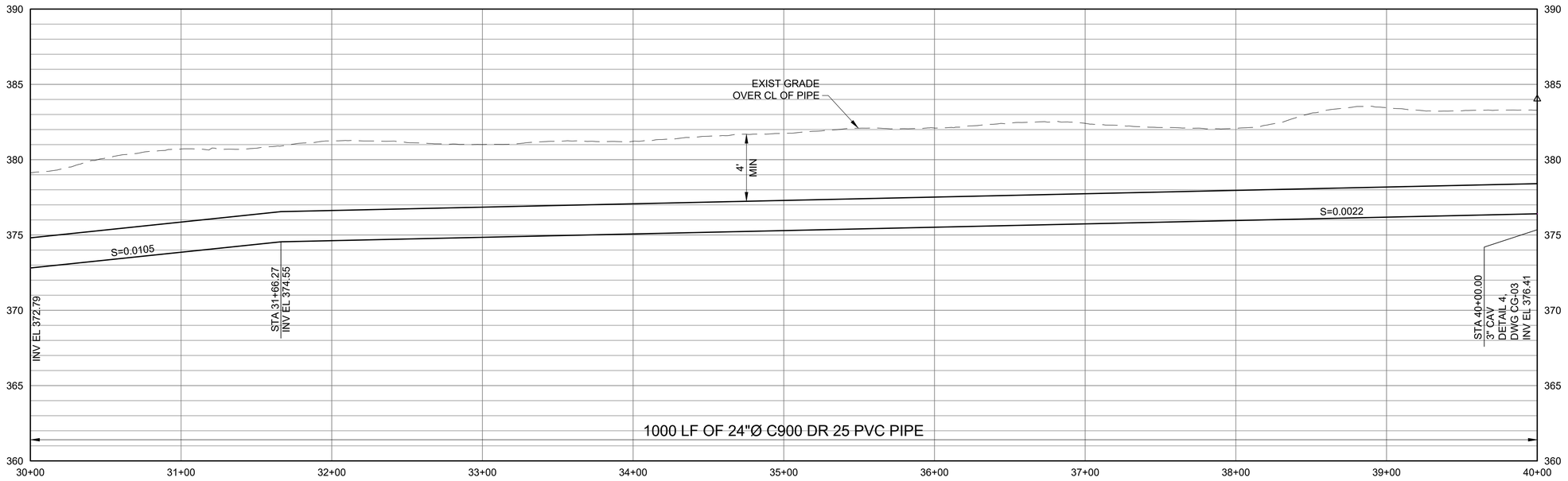
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

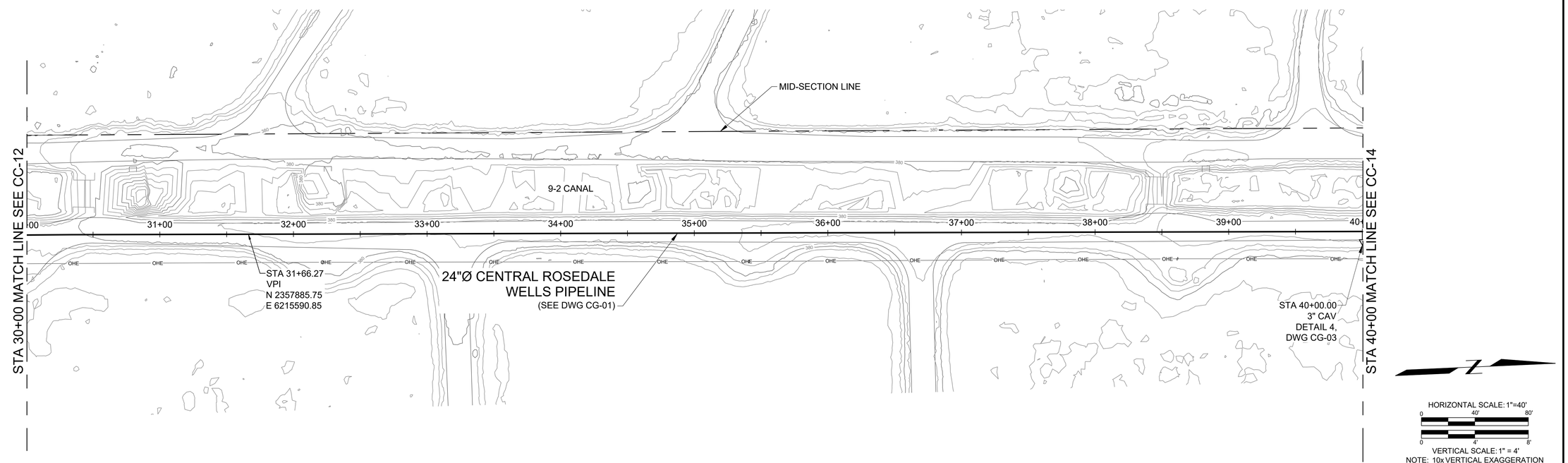
CENTRAL ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 20+00 TO STA 30+00

DWG. NO.
CC-12

SHEET NO.
35

ARCHIVE #




HORIZONTAL SCALE: 1"=40'
0 40' 80'
0 4' 8'
VERTICAL SCALE: 1" = 4'
NOTE: 10x VERTICAL EXAGGERATION

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Checked: M. WONG
Approved: K. YAO
Submitted: S. GALA

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STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

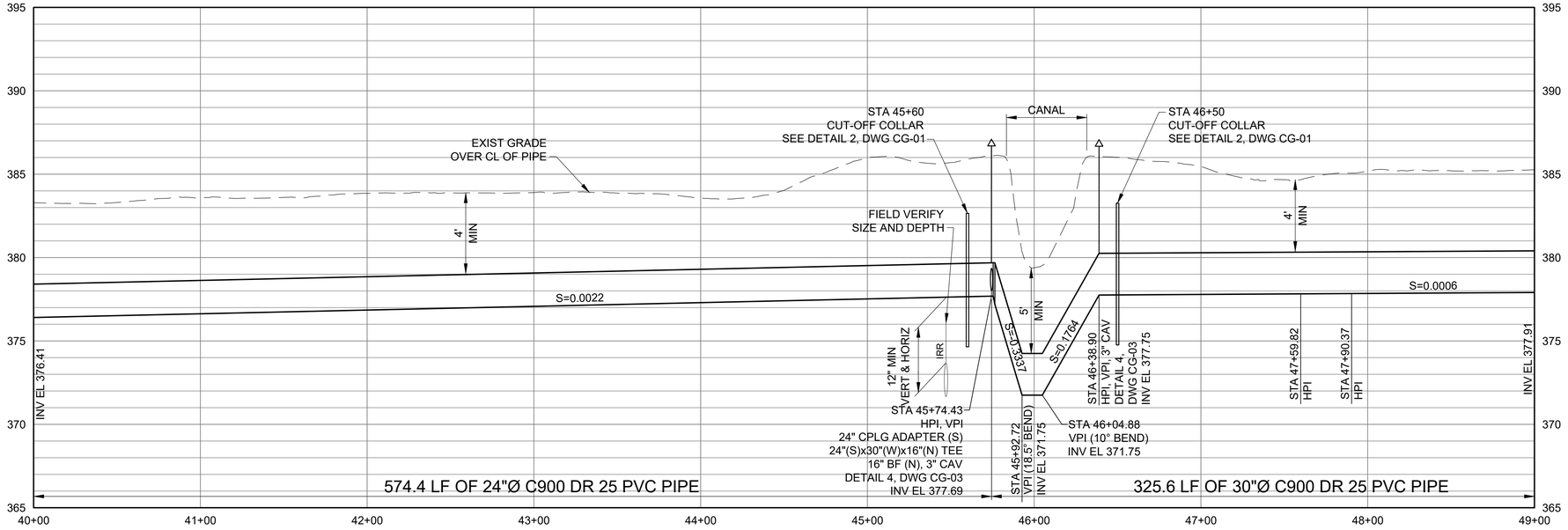
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

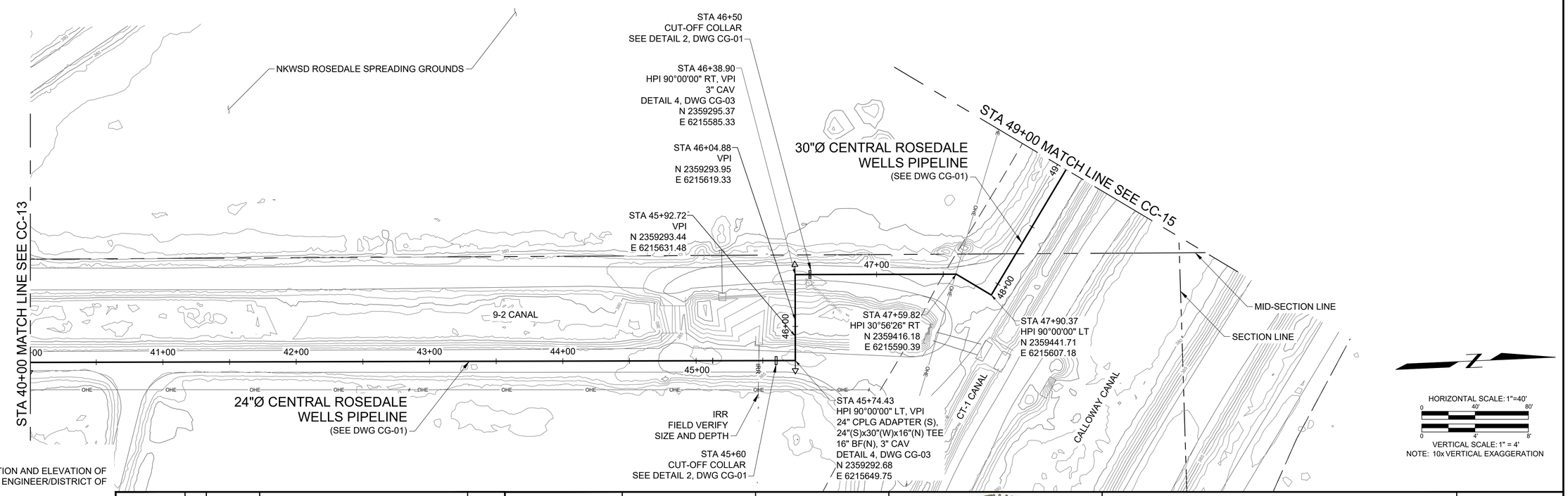
CENTRAL ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 30+00 TO STA 40+00

DWG. NO. CC-13

SHEET NO. 36

ARCHIVE #




NOTES:

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REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

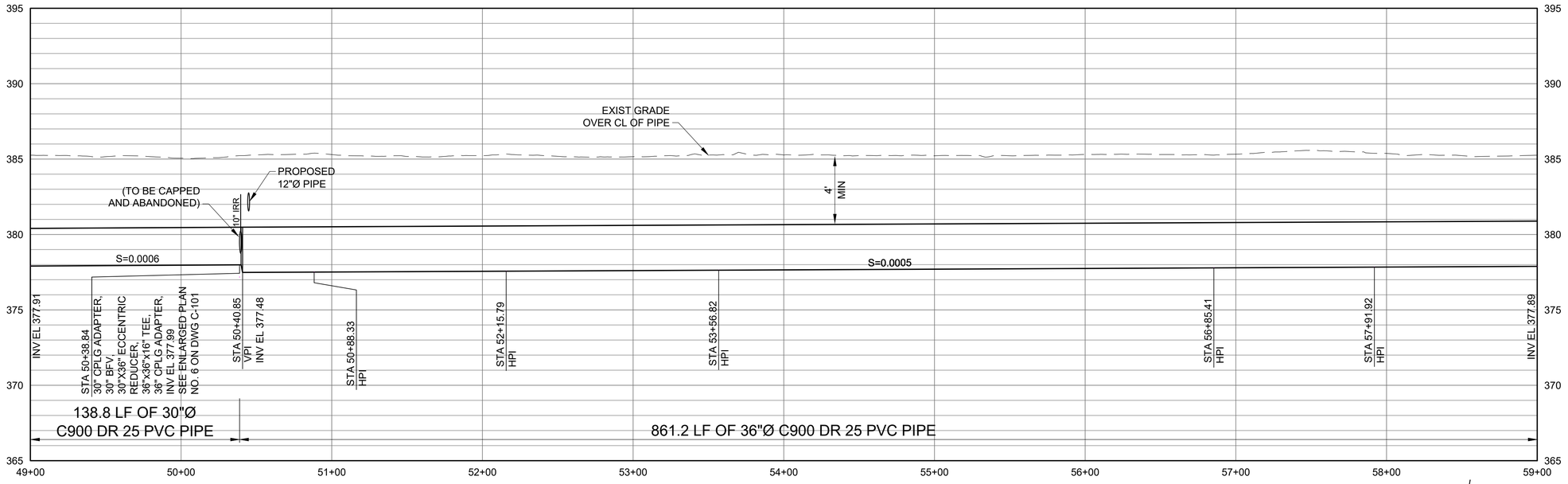
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

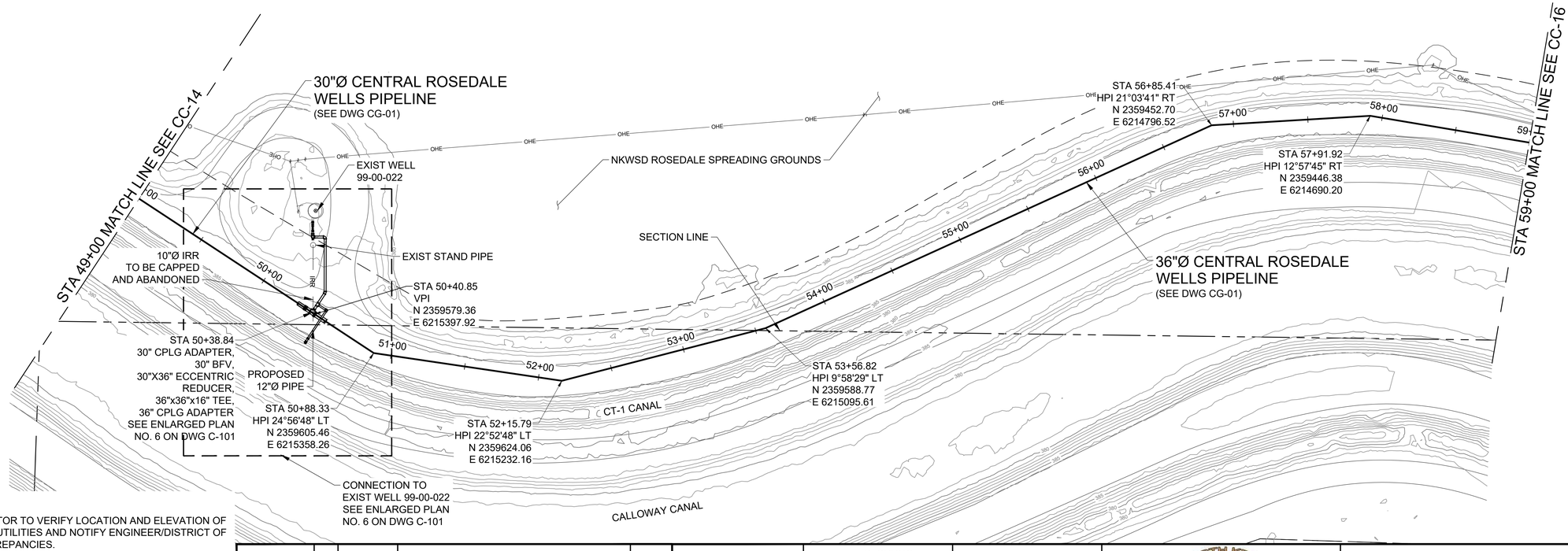
DWG. NO. CC-14

CENTRAL ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 40+00 TO STA 49+00

SHEET NO. 37

ARCHIVE #




NOTES:

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Submitted: S. GALA

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STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

DWG. NO. CC-15

CENTRAL ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 49+00 TO STA 59+00

SHEET NO. 38

ARCHIVE #

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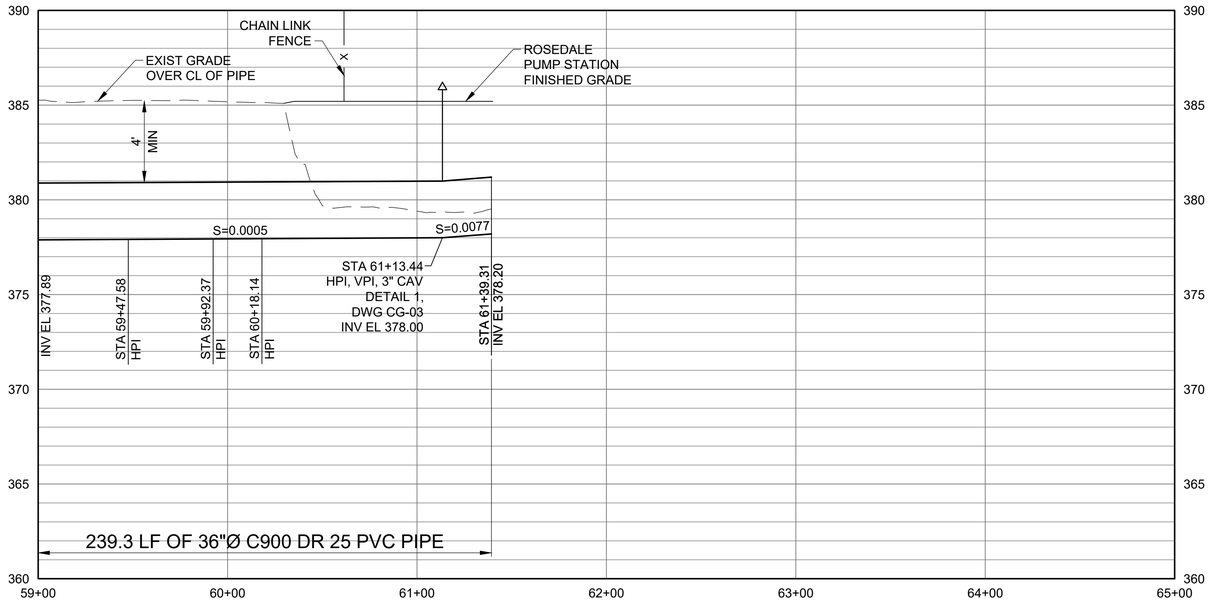


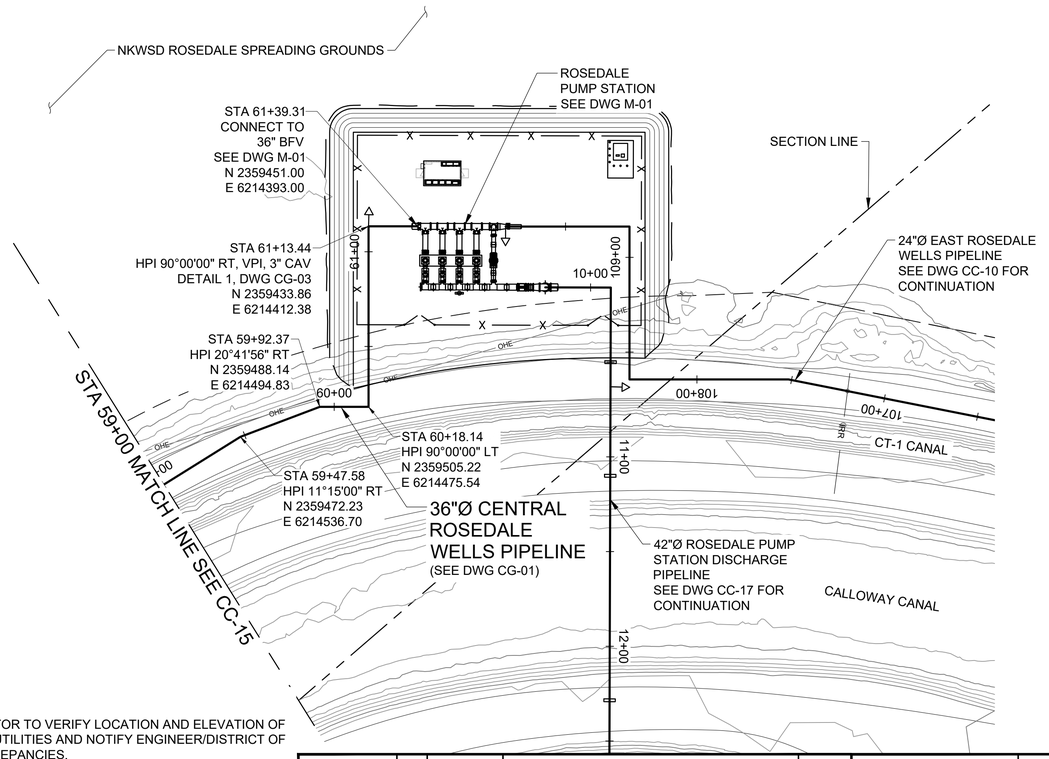


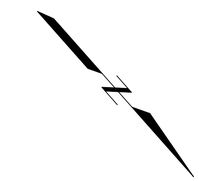


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Attention:

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| Approved: | K. YAO |
| Submitted: | S. GALA |

REGISTERED PROFESSIONAL ENGINEER — KUN YAO — C 76823 — EXP. 12-31-22 — CIVIL — STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

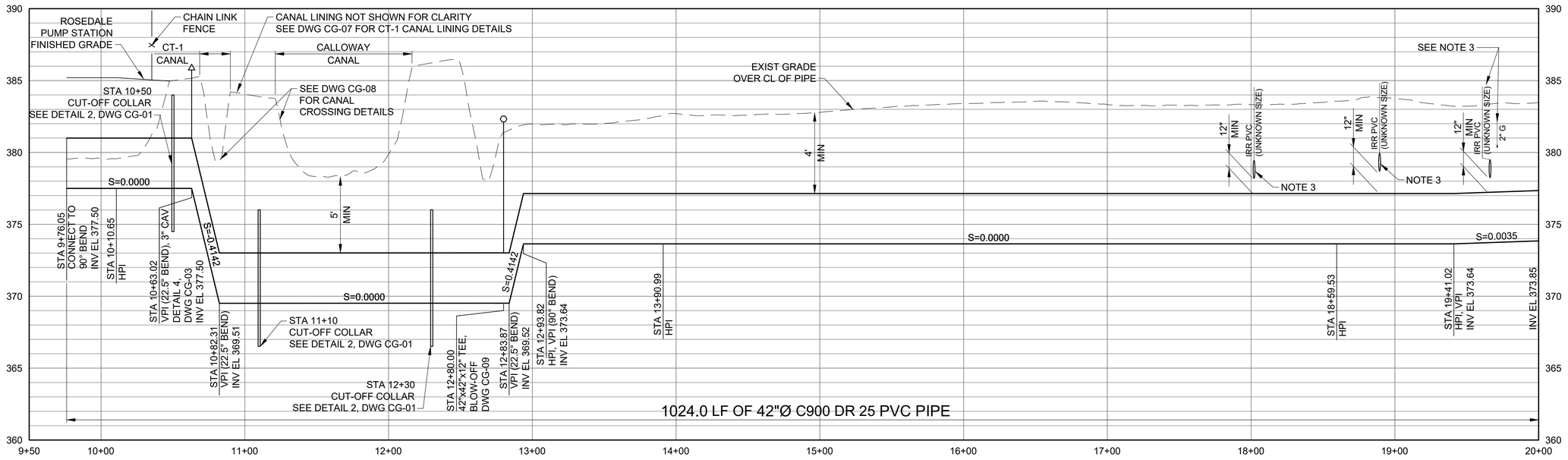
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

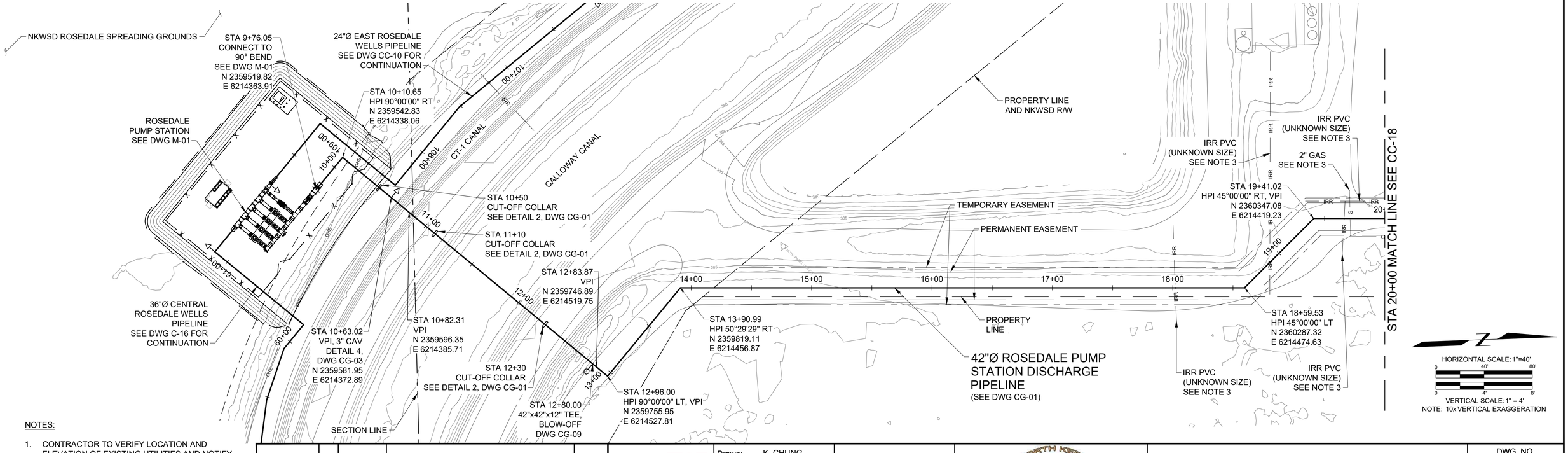
DWG. NO. CC-16

CENTRAL ROSEDALE WELLS PIPELINE
PLAN AND PROFILE
STA 59+00 TO STA 61+39.31

SHEET NO. 39

ARCHIVE #

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| Approved: | K. YAO |
| Submitted: | S. GALA |

REGISTERED PROFESSIONAL ENGINEER KUN YAO C 76823 EXP. 12-31-22 CIVIL STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

ROSEDALE PUMP STATION DISCHARGE PIPELINE
PLAN AND PROFILE
STA 9+76.05 TO STA 20+00

DWG. NO. CC-17

SHEET NO. 40

ARCHIVE #

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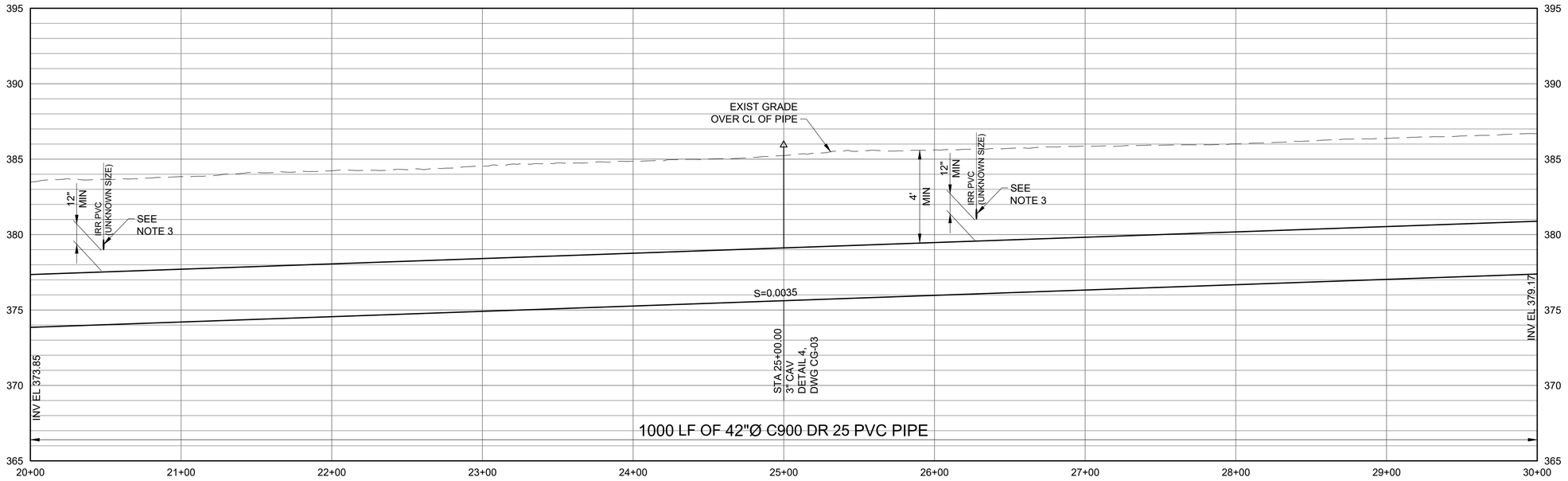


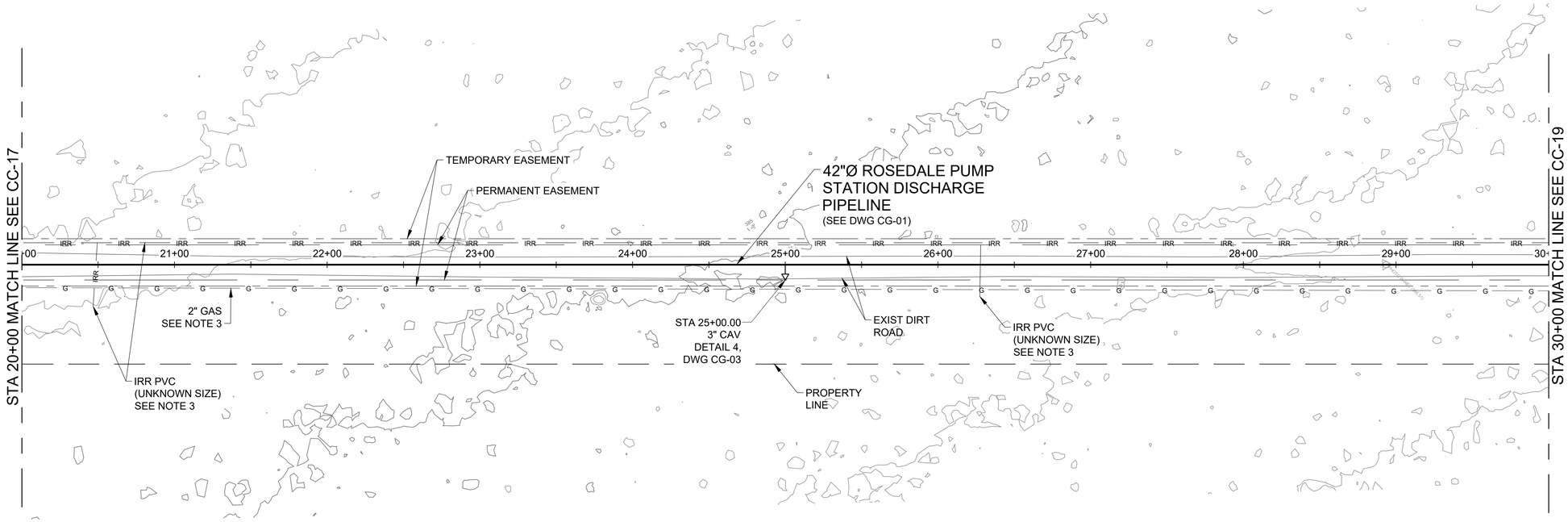


HORIZONTAL SCALE: 1"=40'
0 40' 80'
0 4' 8'
VERTICAL SCALE: 1" = 4'
NOTE: 10x VERTICAL EXAGGERATION

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KUN YAO
C 76823
EXP. 12-31-22
CIVIL
STATE OF CALIFORNIA
09-22-2021

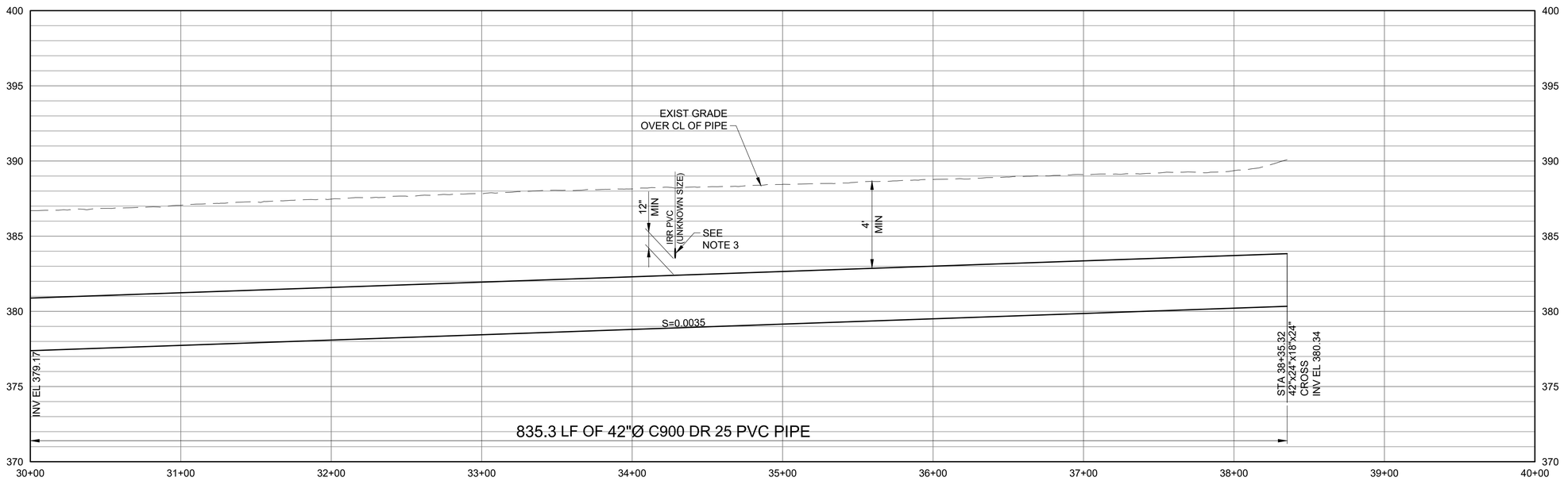
NORTH KERN WATER STORAGE DISTRICT

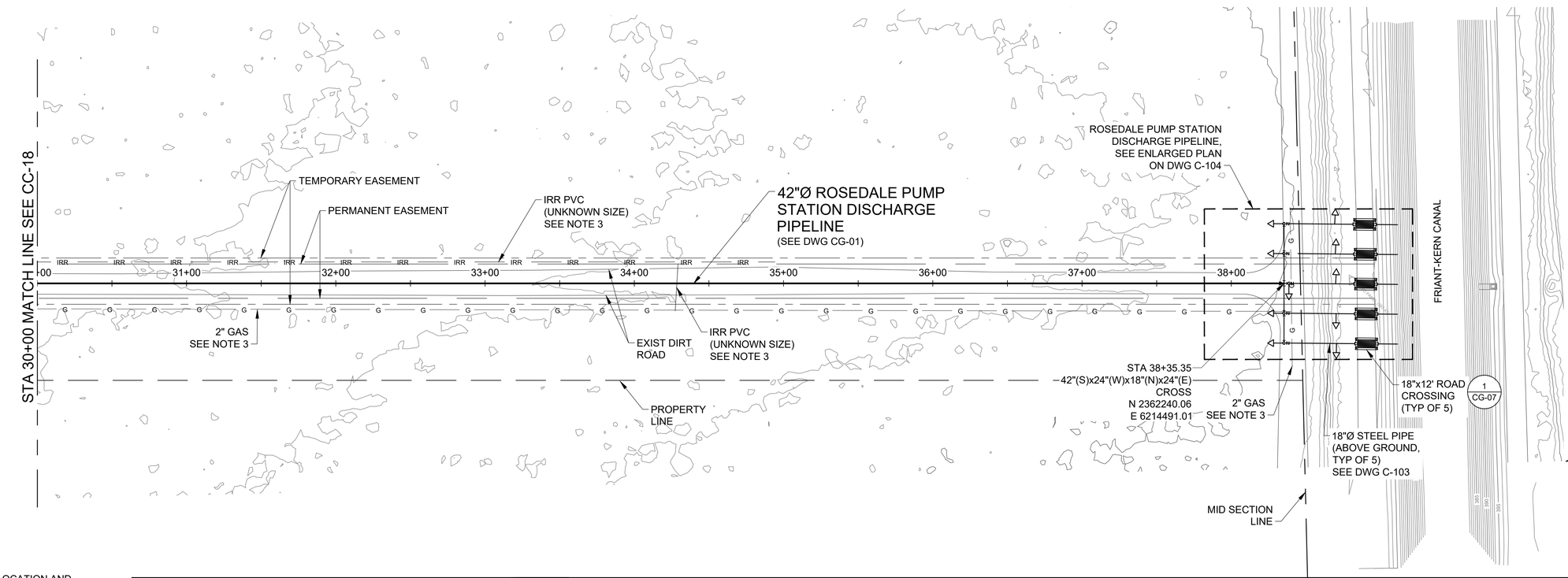
GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

ROSEDALE PUMP STATION DISCHARGE PIPELINE
PLAN AND PROFILE
STA 20+00 TO STA 30+00

DWG. NO. CC-18
SHEET NO. 41
ARCHIVE #




NOTES:

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| *Checked:* | M. WONG |
| *Approved:* | K. YAO |
| *Submitted:* | S. GALA |

REGISTERED PROFESSIONAL ENGINEER KUN YAO C 76823 EXP. 12-31-22 CIVIL STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

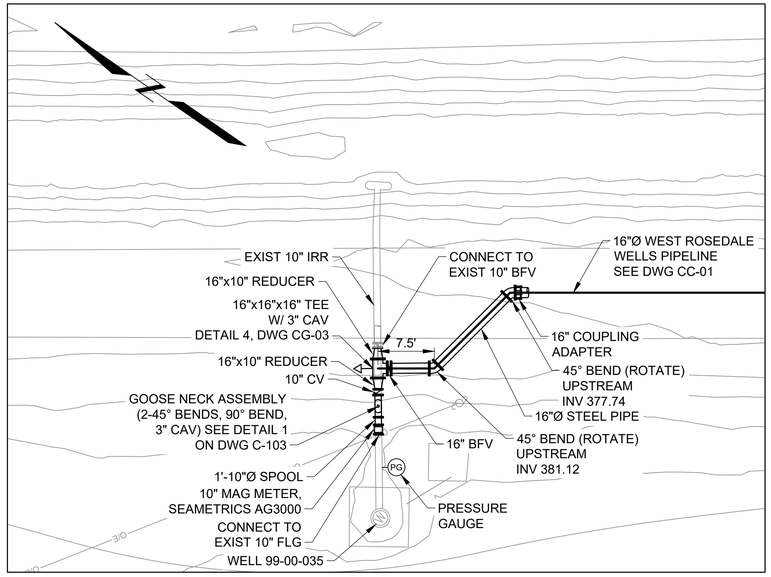
ROSEDALE PUMP STATION DISCHARGE PIPELINE
PLAN AND PROFILE
STA 30+00 TO STA 38+35.32

DWG. NO. CC-19

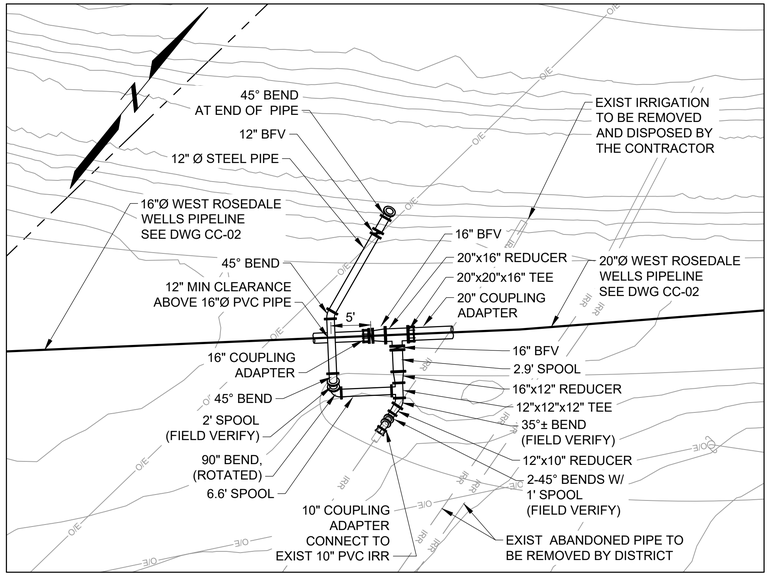
SHEET NO. 42

ARCHIVE #

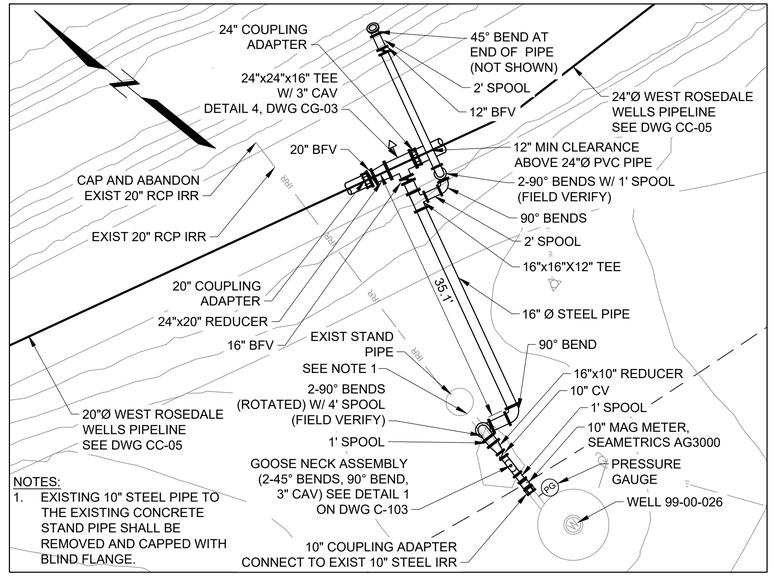
NOTE:
1. SEE GENERAL NOTES ON DWG C-103.



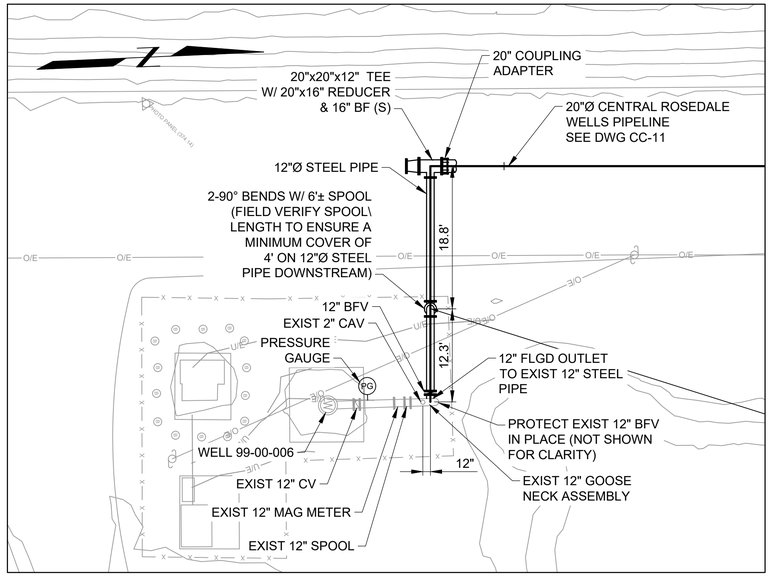

ENLARGED PLAN NO. 1 - WELL 99-00-035
SCALE: 1"=10'



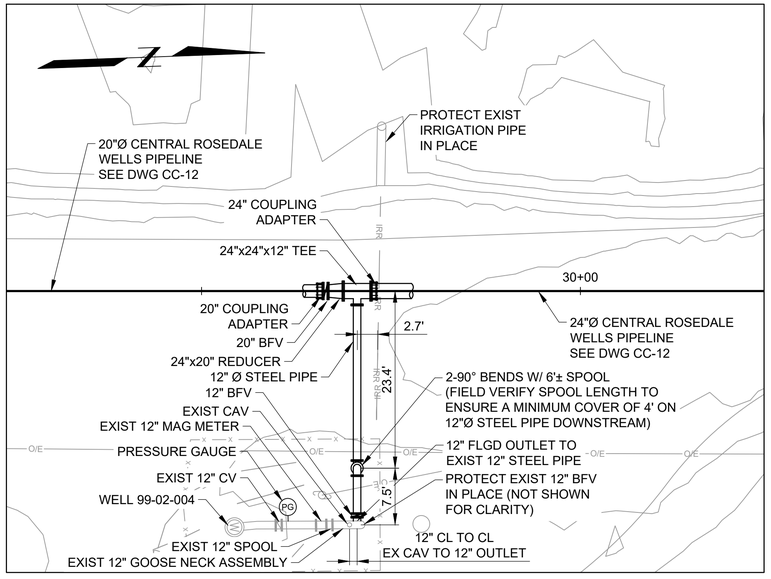

ENLARGED PLAN NO. 2 - WELL 99-00-032
SCALE: 1"=10'



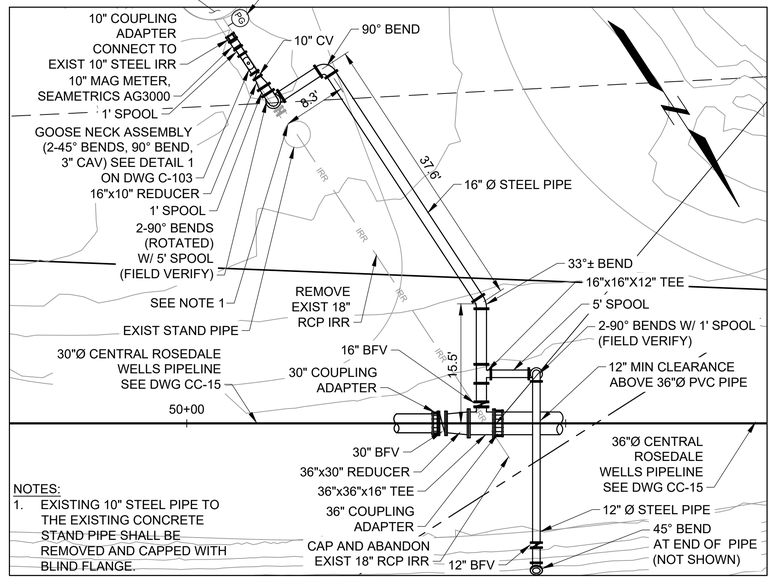

ENLARGED PLAN NO. 3 - WELL 99-00-026
SCALE: 1"=10'




ENLARGED PLAN NO. 4 - WELL 99-02-006
SCALE: 1"=10'




ENLARGED PLAN NO. 5 - WELL 99-02-004
SCALE: 1"=10'




ENLARGED PLAN NO. 6 - WELL 99-00-022
SCALE: 1"=10'

NOTES:
1. SEE GENERAL NOTES ON DWG C-103.

0 10 20
SCALE, FEET

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

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REGISTERED PROFESSIONAL ENGINEER
KUN YAO
C 76823
EXP. 12-31-22
CIVIL
STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

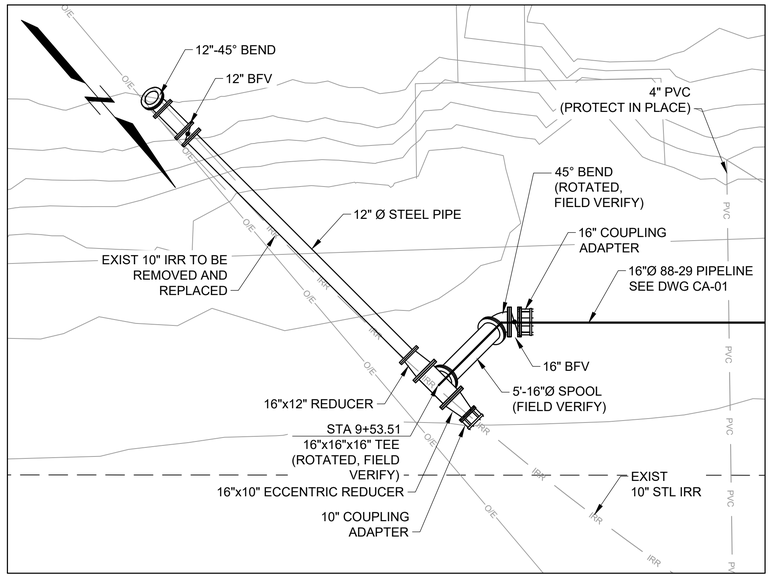
GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

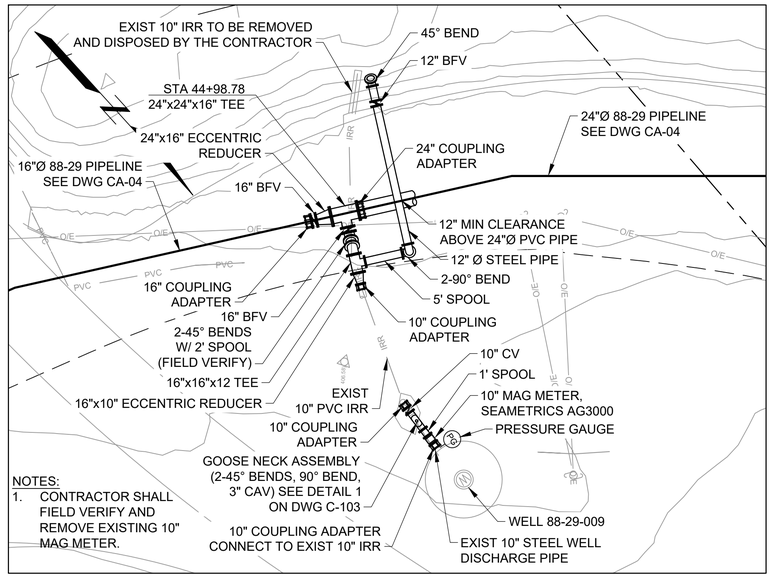
WELL CONNECTION AND MODIFICATION
ENLARGED PLANS 1

DWG. NO. C-101
SHEET NO. 43
ARCHIVE #

NOTE:
1. SEE GENERAL NOTES ON DWG C-103.

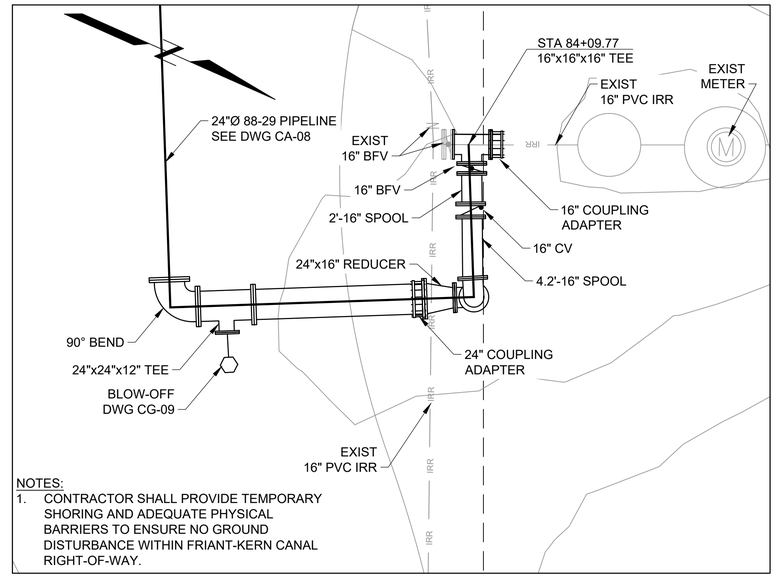



ENLARGED PLAN NO. 7 - WELL 88-29-006
SCALE: 1"=5'



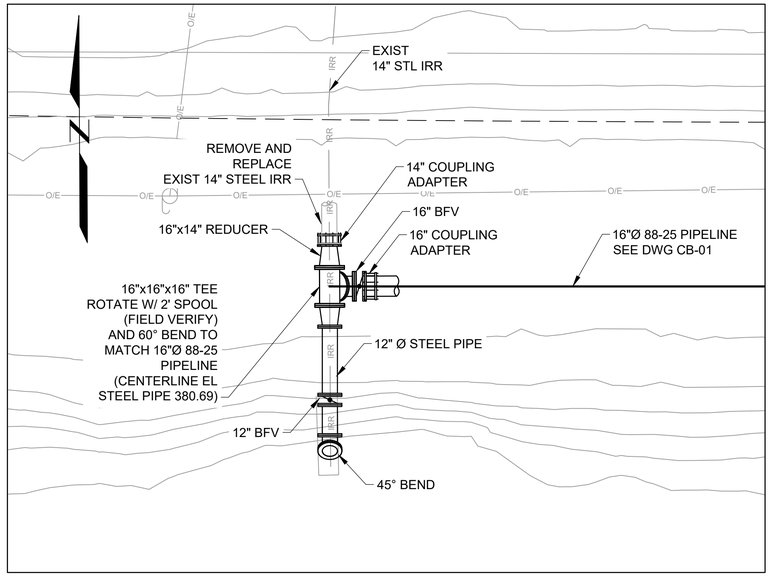

NOTES:
1. CONTRACTOR SHALL FIELD VERIFY AND REMOVE EXISTING 10" MAG METER.

ENLARGED PLAN NO. 8 - WELL 88-29-009
SCALE: 1"=10'

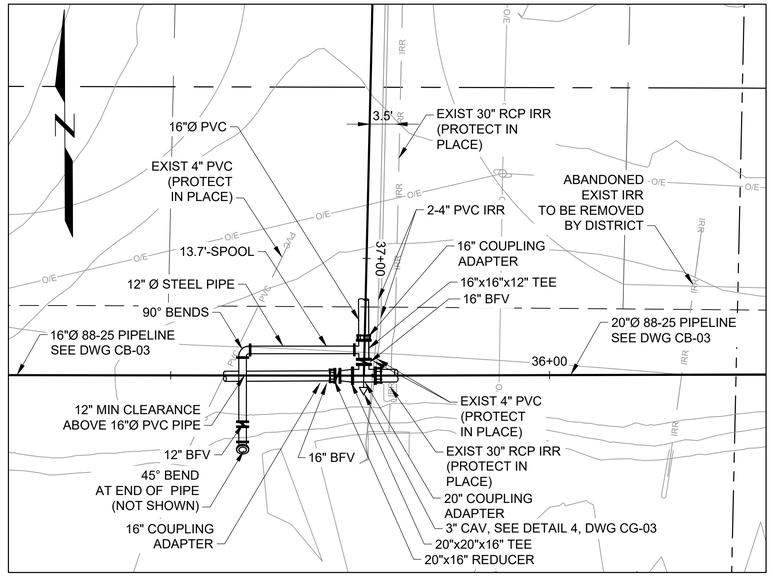



NOTES:
1. CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND ADEQUATE PHYSICAL BARRIERS TO ENSURE NO GROUND DISTURBANCE WITHIN FRIANT-KERN CANAL RIGHT-OF-WAY.

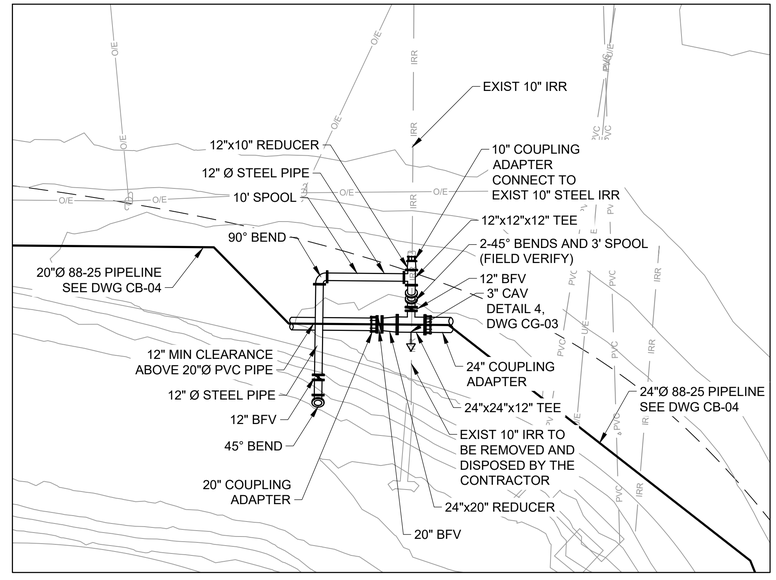
ENLARGED PLAN NO. 9 -
CONNECTION TO EXISTING 16" PVC IRRIGATION
SCALE: 1"=10'




ENLARGED PLAN NO. 10 - WELL 88-25-030
SCALE: 1"=5'




ENLARGED PLAN NO. 11 - WELL 88-25-031
SCALE: 1"=10'




ENLARGED PLAN NO. 12 - WELL 88-25-016
SCALE: 1"=10'

NOTES:
1. SEE GENERAL NOTES ON DWG C-103.

0 10 20
SCALE, FEET

0 5 10
SCALE, FEET

Attention:
0 1"
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STATE OF CALIFORNIA
09-22-2021

NORTH KERN
WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

WELL CONNECTION AND MODIFICATION
ENLARGED PLANS 2

DWG. NO.
C-102

SHEET NO.
44

ARCHIVE #

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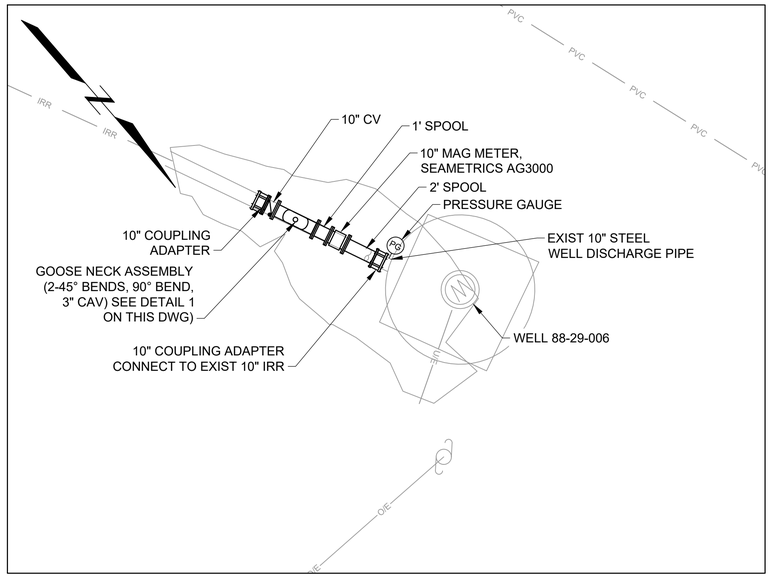
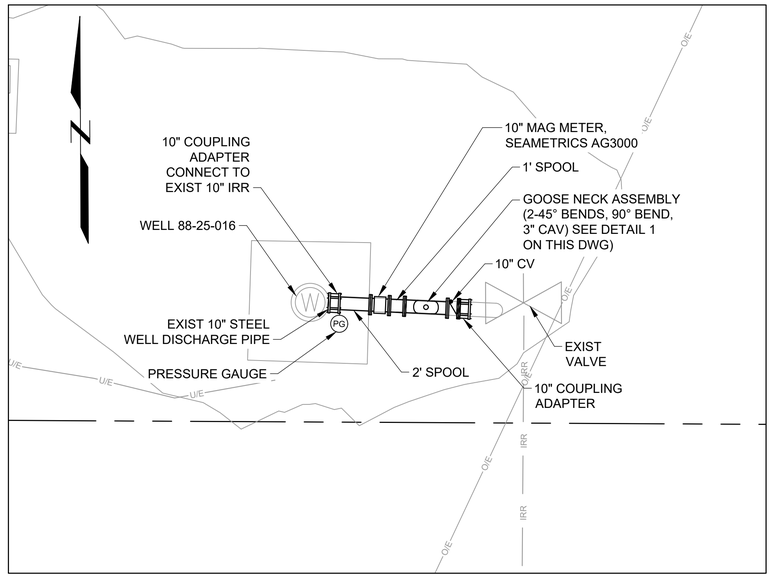


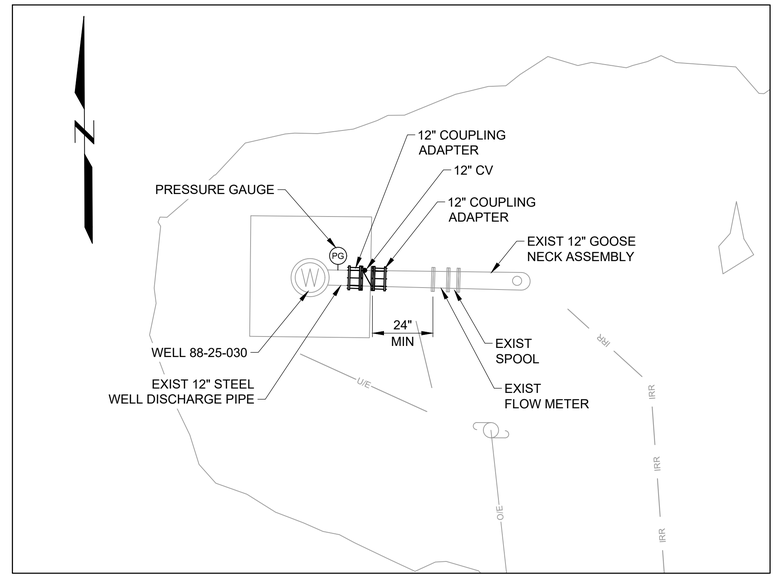

ENLARGED PLAN NO. 13 - WELL 88-29-006

SCALE: 1"=5'



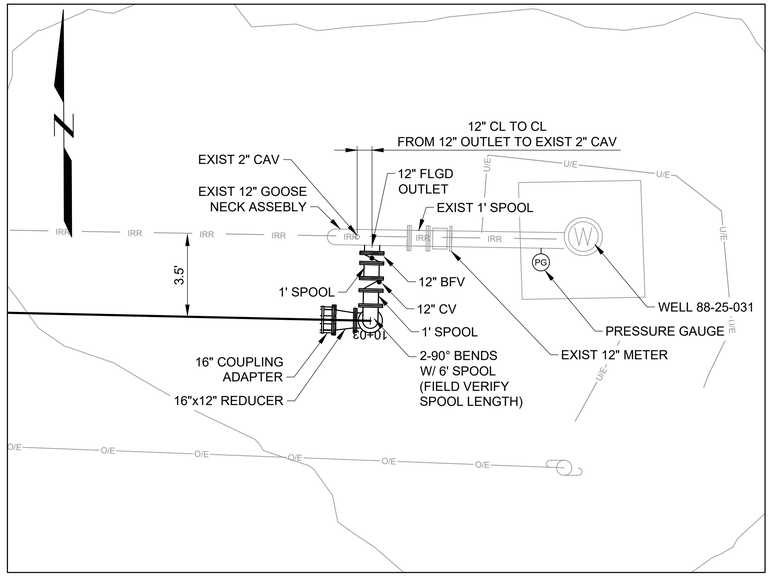

ENLARGED PLAN NO. 14 - WELL 88-25-016

SCALE: 1"=5'



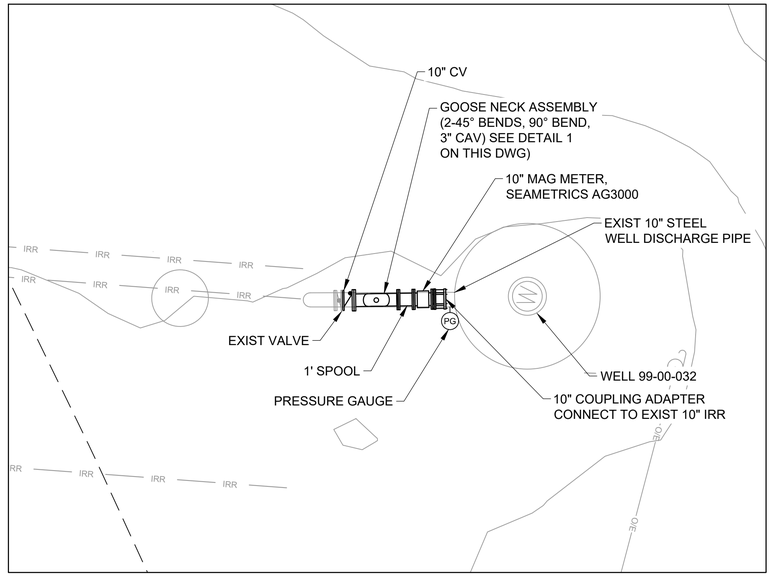

ENLARGED PLAN NO. 15 - WELL 88-25-030

SCALE: 1"=5'



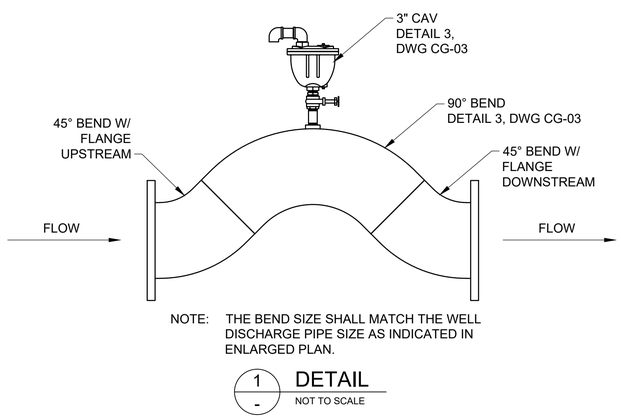

ENLARGED PLAN NO. 16 - WELL 88-25-031

SCALE: 1"=5'




ENLARGED PLAN NO. 17 - WELL 99-00-032

SCALE: 1"=5'




NOTE: THE BEND SIZE SHALL MATCH THE WELL DISCHARGE PIPE SIZE AS INDICATED IN ENLARGED PLAN.

1 DETAIL
NOT TO SCALE

GENERAL NOTES:

1. CONTRACTOR SHALL FIELD VERIFY EXISTING WELL DISCHARGE MANIFOLD, EQUIPMENT, INSTRUMENT, VALVES, FITTINGS, AND APPURTENANCES. IF RELOCATION OF THE EXIST EQUIPMENT OR INSTRUMENT IS REQUIRED, CONTRACTOR SHALL SUBMIT RELOCATION PLAN FOR THE DISTRICT'S APPROVAL PRIOR TO CONSTRUCTION.
2. CONTRACTOR SHALL FIELD VERIFY AND PROTECT IN PLACE ALL EXISTING UTILTIES AND WELL SITE FACILITIES.
3. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF BFV FOR THE NEW DISCHARGE PIPE TO THE DISTRICT CANAL AND ENSURE NKWSD STAFF WILL BE ABLE TO ACCESS THE BFV FROM THE O&M ROAD.
4. ALL STEEL PIPES AND SPOOLS SHALL BE SCHEDULE 40 STEEL PIPE WITH A COATING SYSTEM AS SPECIFIED IN SPECIFICATION SECTION H PAINTING AND COATING.
5. CONTRACTOR SHALL RESTORE THE PAINTING FOR EXISTING WELL STEEL MANIFOLDS PER SPECIFICATION SECTION H PAINTING AND COATING.
6. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE LOCATION, SIZE, MATERIAL FOR THE CONNECTION AND MODIFICATION.
7. CONTRACTOR SHALL INSULATE THE FLANGED CONNECTION FOR ALL TIE-IN CONNECTIONS TO EXISTING STEEL PIPES, SEE DETAIL 5, DWG CG-5

NOTES:

1. SEE GENERAL NOTES ON DWG C-103.

0 5 10
SCALE, FEET

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0 1"
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09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

WELL CONNECTION AND MODIFICATION
ENLARGED PLANS 3

DWG. NO. C-103
SHEET NO. 45
ARCHIVE #

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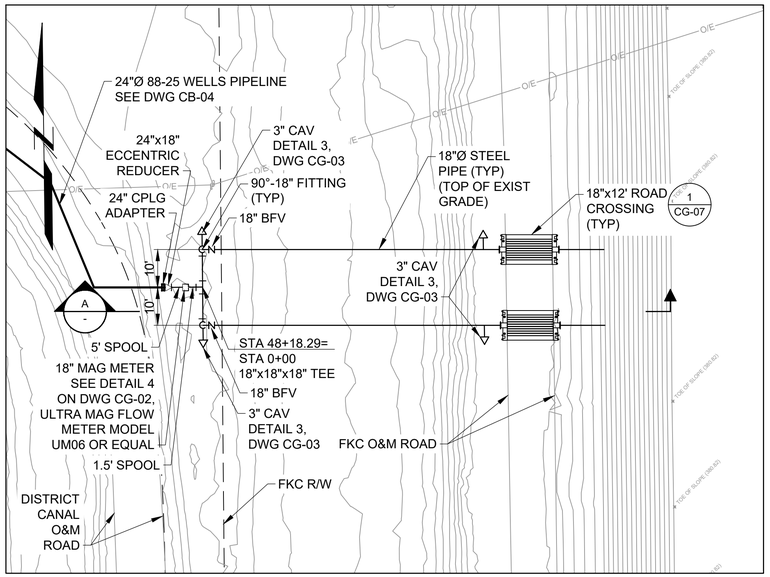
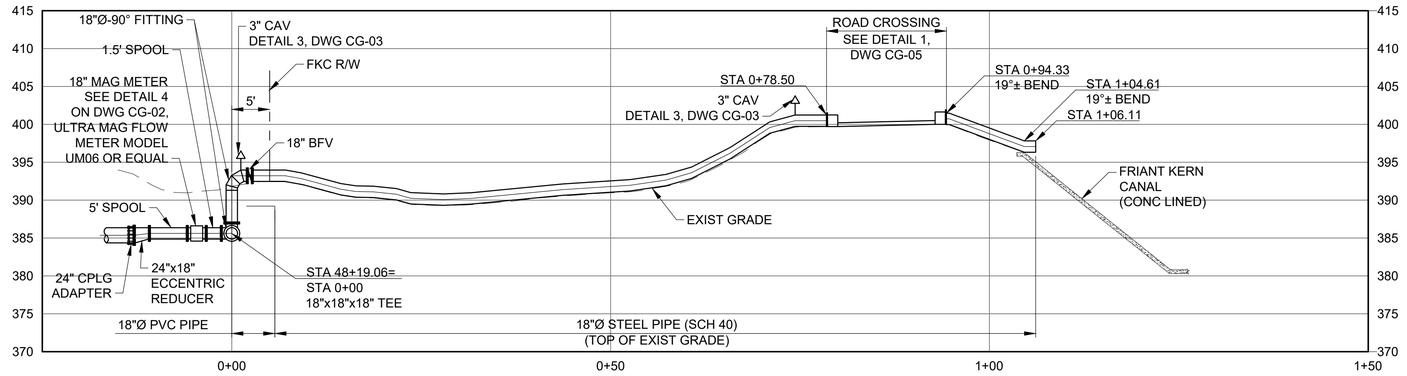


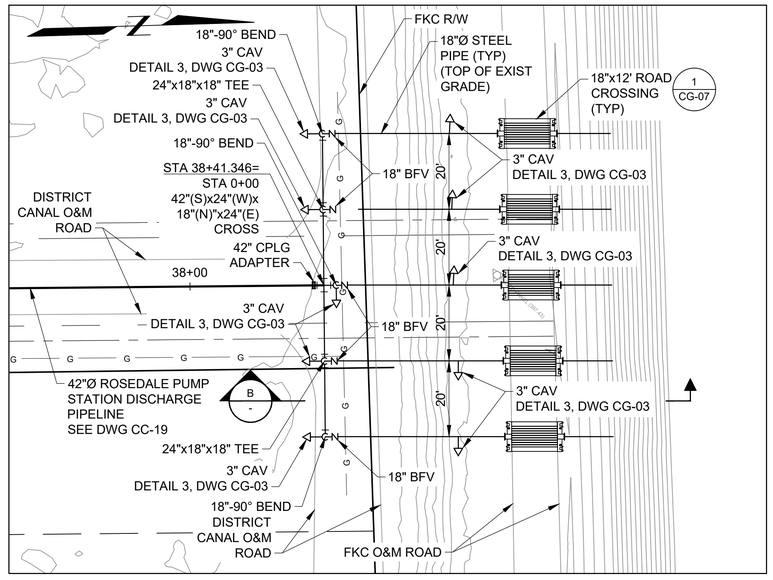

ENLARGED PLAN NO 18 - 88-25 WELLS PIPELINE

SCALE: 1"=20'



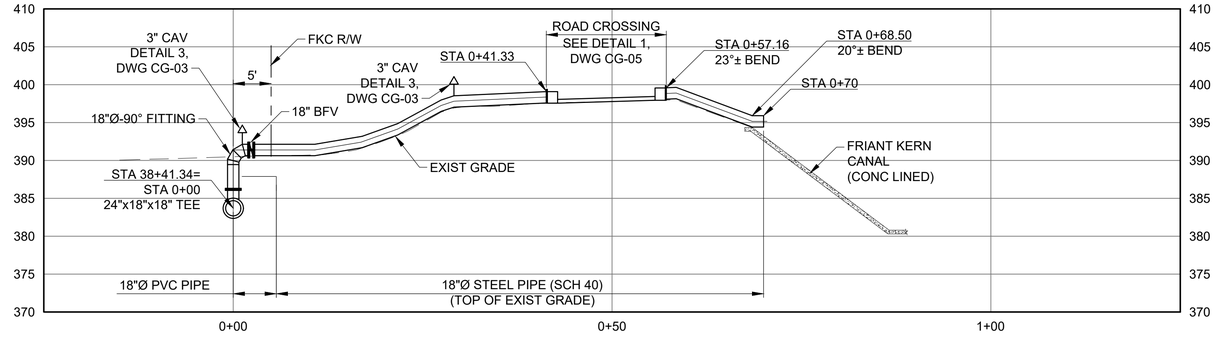

A - SECTION

SCALE: 1"=10'




ENLARGED PLAN NO 19- ROSEDALE PUMP STATION DISCHARGE PIPELINE

SCALE: 1"=20'




B - SECTION

SCALE: 1"=10'

GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND ADEQUATE PHYSICAL BARRIERS TO ENSURE NO GROUND DISTURBANCE WITHIN FRIANT-KERN CANAL RIGHT-OF-WAY.
2. CONTRACTOR SHALL VERIFY IN FIELD AND INSTALL PIPE SUPPORTS AND RESTRAINED COUPLINGS FOR ALL ABOVEGROUND 18" STEEL PIPES.
3. ALL PVC PIPES SHALL BE C900 DR 25 PVC PIPES.
4. ALL STEEL PIPES AND SPOOLS SHALL BE SCHEDULE 40 STEEL PIPE WITH A COATING SYSTEM AS SPECIFIED IN SPECIFICATION SECTION H PAINTING AND COATING.

0 20 40

SCALE, FEET

Attention:

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NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

TEMPORARY DISCHARGE PIPING
ENLARGED PLANS AND SECTIONS

DWG. NO. C-104

SHEET NO. 46

ARCHIVE #

DAYLIGHT EXIST GRADE N 2359582.75 E 6214349.24 EG 385.0±

EXIST ROAD

DAYLIGHT EXIST GRADE N 2359533.63 E 6214408.57 EG 385.0±

DAYLIGHT EXIST GRADE N 2359492.69± E 6214475.17± EG 385.0±

16' DOUBLE DRIVE GATE PER DETAIL 1, DWG. NO. CG-06

16' DOUBLE DRIVE GATE PER DETAIL 1, DWG. NO. CG-06

SLOPE

SLOPE

AREA LIGHT POLE PER DWG. NO. E-09

FG 385.20

FG 385.20

FG 385.20

FG 385.20

FG 385.00

6" GRAVEL SURFACING

FG 385.00

CHAIN LINK FENCE (TYP)

2.5:1

2.5:1

DAYLIGHT EXIST GRADE

380

381

382

383

384

100'

2' (TYP)

2' (TYP)

A

-

N 2359507.43 E 6214290.8

SLOPE

N 2359498.45 E 6214300.93

BOLLARD, TYP SEE DETAIL 2, DWG SG-02

TRANSFORMER PAD SEE DWG S-03

DAYLIGHT EXIST GRADE

CHAIN LINK FENCE (TYP)

N 2359449.20 E 6214361.78

N 2359437.01 E 6214375.47

SLOPE

ELECTRICAL EQUIPMENT BUILDING AND FOUNDATION SEE DWG S-02 AND S-03

N 2359440.43 E 6214353.97

N 2359428.24 E 6214367.66

150'

2.5:1

384

383

382

381

380

N 2359493.42 E 6214270.18 FG 385.00

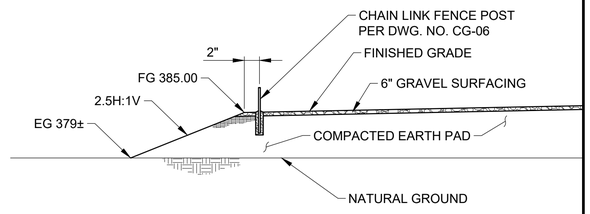
N 2359492.62 E 6214277.66

N 2359483.64 E 6214287.74

DAYLIGHT EXIST GRADE

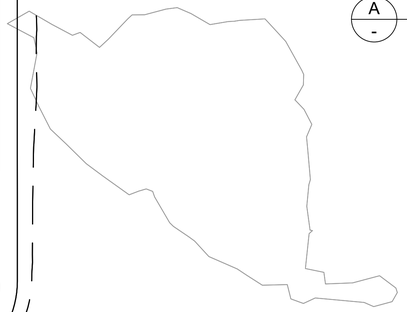
N 2359446.16 E 6214323.16 FG 385.00

N 2359391.35 E 6214385.49 FG 385.00




A - TYPICAL SECTION

N.T.S.



0 10 20

SCALE, FEET

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NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

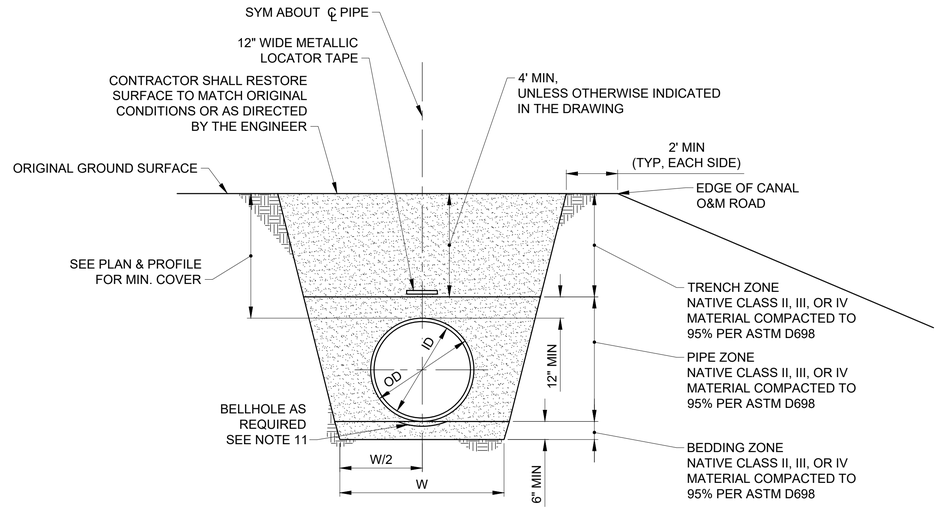
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

WEST ROSEDALE WELLS PIPELINE
ROSEDALE PUMP STATION
GRADING PLAN

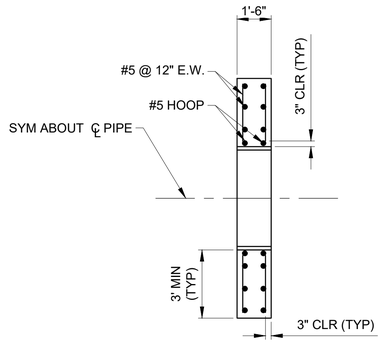
DWG. NO. C-201

SHEET NO. 47

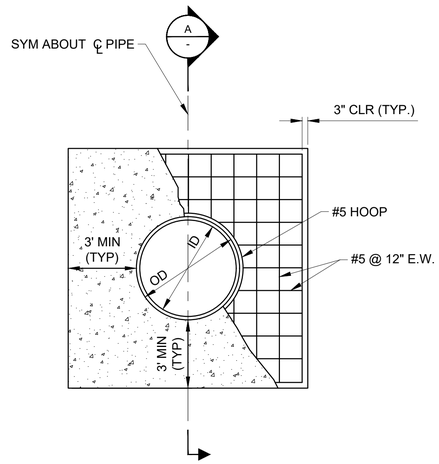
ARCHIVE #




1 / VAR ALL TYPES AND SIZES OF PIPE IN UNPAVED AREAS
NO SCALE




A / - SECTION
NO SCALE




2 / - TYPICAL CUT-OFF COLLAR DETAILS
NO SCALE

NOTE:
SEE DWG S-01 FOR GENERAL STRUCTURAL NOTES, STEEL NOTES, AND CONCRETE NOTES.

GENERAL NOTES:

1. ALL EARTHWORK SHALL BE IN ACCORDANCE WITH SECTION E - EARTHWORK AND SITEWORK OF THE SPECIFICATIONS.
2. TRENCH BOTTOM OR BEDDING FOR ALL PIPE SHALL BE GRADED TO PROVIDE UNIFORM SUPPORT FOR THE ENTIRE LENGTH OF THE PIPE EXCEPT AT BELLHOLES AND RESTRAINED JOINTS.
3. BELLHOLES FOR PIPE SHALL HAVE A CLEARANCE OF 3" BETWEEN THE BOTTOM OF THE BELLHOLE AND THE EXTERIOR OF THE PIPE BELL, BUT IN NO CASE SHALL BELLHOLES BE SMALLER THAN REQUIRED TO FACILITATE PLACING OF THE PIPE OR PROPER JOINING OF THE PIPE. WHERE THE BELL AND SPIGOT JOINS ARE RESTRAINED THE 3" CLEARANCE SHALL BE FROM THE TIE-ROD RESTRAINERS AND HORIZONTAL LENGTH SHALL BE AS REQUIRED TO FACILITATE INSTALLATION.
4. COMPACTED BACKFILL SHALL BE COMPACTED TO A DEGREE AT LEAST EQUIVALENT TO THE EXISTING DEGREE OF COMPACTING OF ADJACENT IN-PLACE EARTH MATERIALS AGAINST WHICH SUCH COMPACTED BACKFILL IS TO BE PLACED, OR TO A MINIMUM OF 95% PER ASTM D698, WHICHEVER IS GREATER. FOR DEFINITION OF COMPACTED BACKFILL AND OF MAXIMUM DENSITY, SEE SPECIFICATIONS.
5. MINIMUM 3-INCH DEEP LAYER OF SCARIFIED MATERIAL WHEN IN HARD MATERIAL. IN UNSUITABLE MATERIAL, OVEREXCAVATE AS DIRECTED BY THE ENGINEER (6" MIN.) AND REPLACE WITH COMPACTED BACKFILL.
6. W = PIPE O.D. + 24" MIN.
7. ALL TRENCH SECTIONS SHALL COMPLY WITH CAL-OSHA REQUIREMENTS.
8. ALL SHORING SHALL BE DESIGNATED BY A CIVIL OR STRUCTURAL ENGINEER LICENSED IN THE STATE OF CALIFORNIA.
9. CONTRACTOR SHALL MAINTAIN MINIMUM 3-FEET OF UNDISTURBED EARTH BETWEEN EDGE OF TRENCH AND THE EDGE OF ALL UTILITY POLES.
10. ALL UNDERGROUND UTILITIES AND ABOVE GROUND UTILITIES SHALL BE PROTECTED IN PLACE. IF THE CONTRACTOR FINDS CONFLICT BETWEEN CONTRACT FACILITIES AND EXISTING FEATURES, HE SHALL NOTIFY THE ENGINEER IMMEDIATELY AND FOLLOW NOTIFICATION UP IN WRITING WITHIN 24 HOURS.
11. BEDDING FOR ALL PIPE SHALL BE GRADED TO PROVIDE UNIFORM SUPPORT FOR THE ENTIRE LENGTH OF THE PIPE EXCEPT AT BELLHOLES.

Attention:
0 1"
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09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

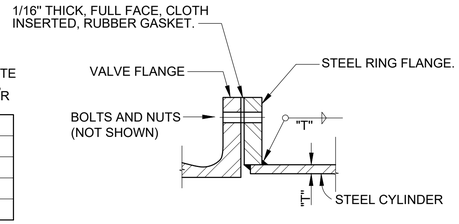
TYPICAL PIPE TRENCH SECTIONS

DWG. NO. CG-01
SHEET NO. 48
ARCHIVE #

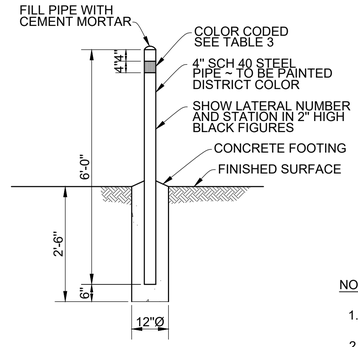
TABLE 2

MINIMUM THICKNESS "T" OF STEEL PLATE CYLINDER FOR TEE OUTLETS, SPOOLS, ELBOWS AND REDUCERS. (USE LARGER DIAMETER OF REDUCER.)

| DIAMETERS | MIN. "T" |
|---|---|
| 6" THRU 15" | 10 GAGE |
| 18" THRU 24" | 3/16" |
| 27" THRU 42" | 1/4" |
| 45" THRU 51" | 5/16" |




1 - TYPICAL FLANGED VALVE CONNECTION



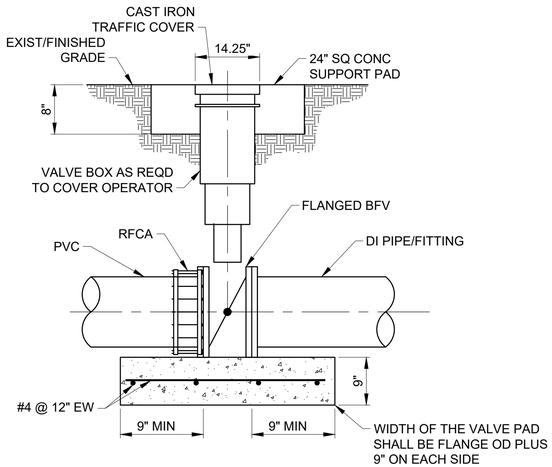

2 - TYPICAL MARKER POST

TABLE 3

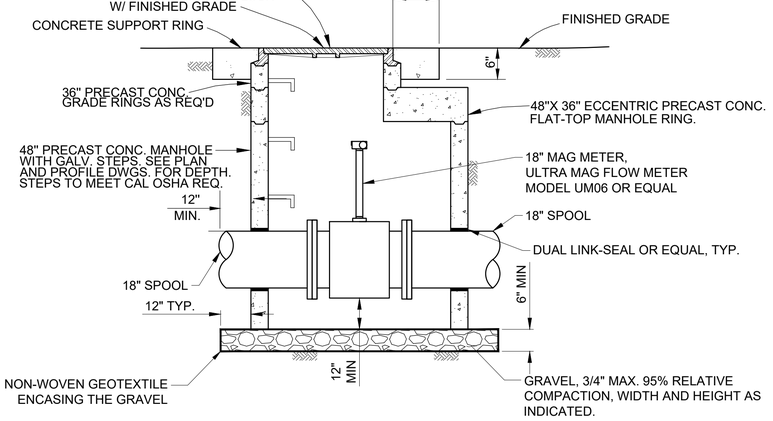
| BURIED APPURTENANCE | COLOR CODE |
|---|---|
| BURIED VALVE | RED |
| AIR VALVE | BLUE |
| BURIED MANHOLE | GREEN |
| BLIND FLANGED OUTLET | BROWN |
| BUMPED HEAD | PINK |

NOTES:

1. LOCATE ONE MAKER POST FOR EACH BURIED APPURTENANCE AS DIRECTED BY THE DISTRICT.
2. SHOW LATERAL NUMBER AND STATION IN 2" HIGH BLACK FIGURES AND DISTANCE/BEARING FROM APPURTENANCE IN 1" BLACK FIGURES.




3 - UNDERGROUND BFV INSTALLATION




4 - UNDERGROUND METER INSTALLATION
NO SCALE

FLANGED TEE NOTES:

1. ALTERNATE DETAILS MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
2. ALL FLANGES ARE TO BE A.W.W.A. CLASS "D".
3. SEE SPECIFICATIONS FOR COATING DETAILS FOR EXPOSED METAL SURFACES.

BURIED VALVE NOTES:

1. SEE SPECIFICATION FOR COATING DETAILS FOR EXPOSED METAL SURFACES.
2. PROVIDE CONCRETE VALVE SUPPORT PAD FOR EACH BURIED VALVE. SEE DETAIL 5 AND 6 ON DWG CG-04.
3. BELL RESTRAINTS NOT SHOWN, SEE DETAILS ON DWG. CG-04.

GENERAL NOTES:

1. THE FINISHED I.D. OF ALL STEEL PLATE FITTINGS IS TO BE THE SAME AS THAT OF ADJACENT LATERAL PIPE.
2. DETAILS SHOWN HEREON ARE ``NOT TO SCALE".
3. SEE DWG S-01 FOR GENERAL STRUCTURAL NOTES, STEEL NOTES, AND CONCRETE NOTES.

Attention:

0 1"

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REGISTERED PROFESSIONAL ENGINEER KUN YAO C 76823 EXP. 12-31-22 CIVIL STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

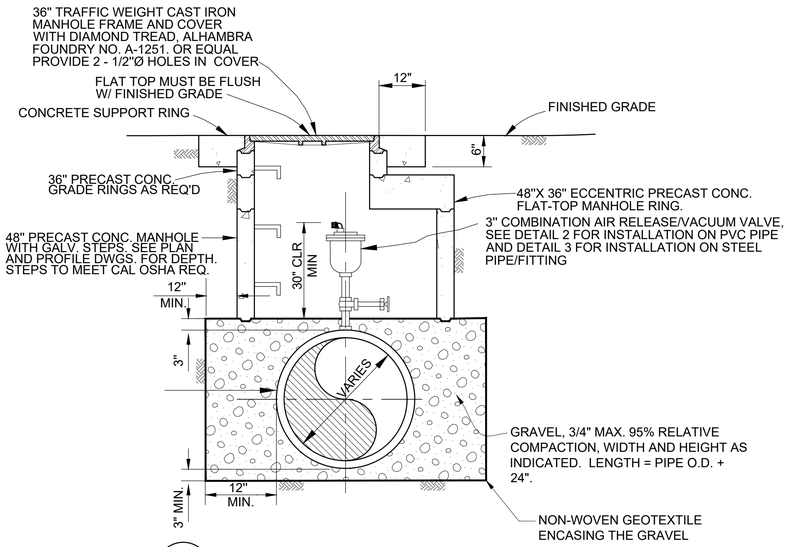
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

STEEL PIPE SPECIALS AND FITTINGS

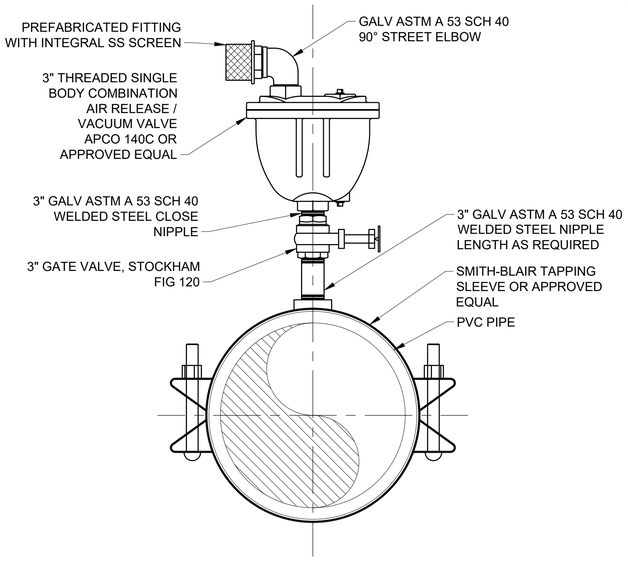
DWG. NO. CG-02

SHEET NO. 49

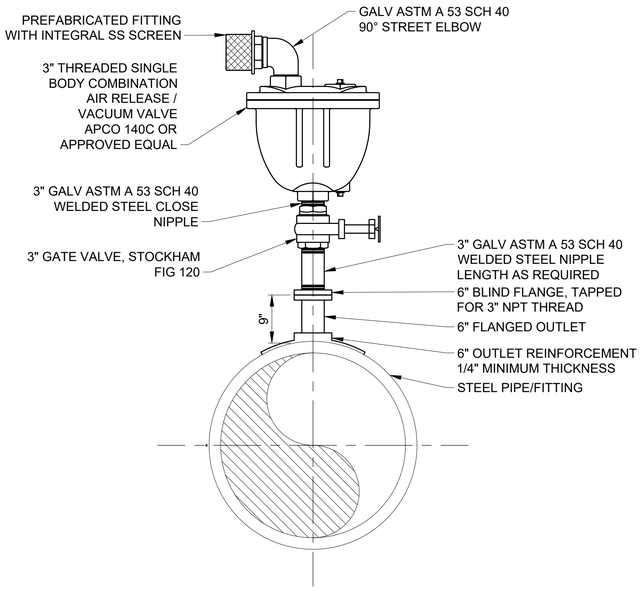
ARCHIVE #



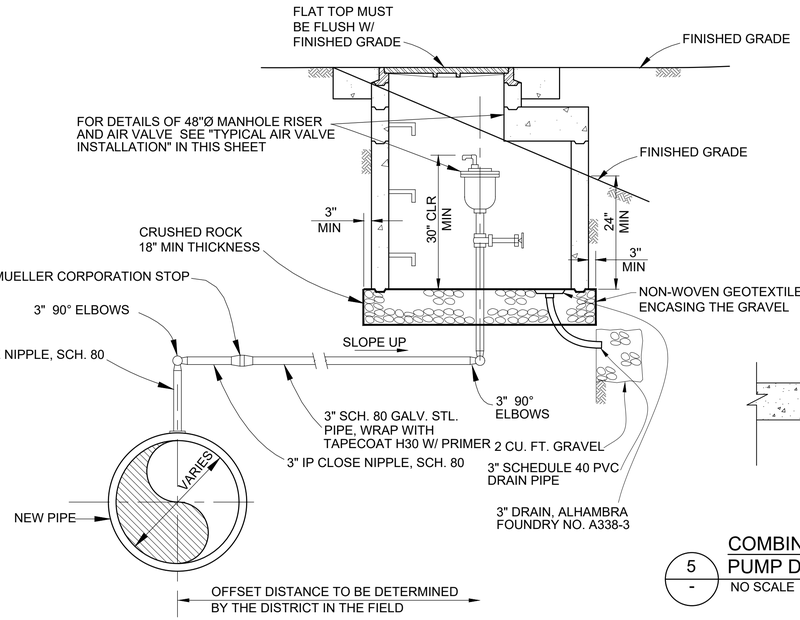

1 - TYPICAL CAV INSTALLATION
NO SCALE



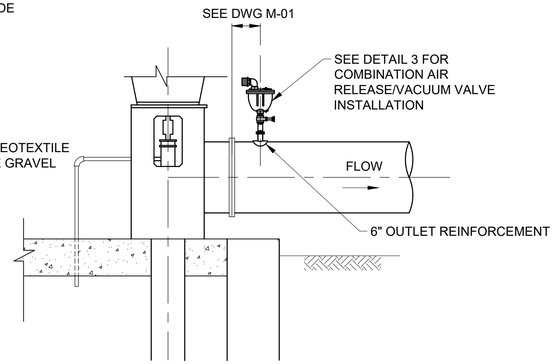

2 - COMBINATION AIR RELEASE/VACUUM VALVE ON PVC PIPE
NO SCALE



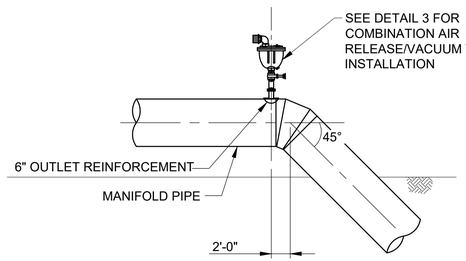

3 - COMBINATION AIR RELEASE/VACUUM VALVE ON STEEL PIPE/FITTING
NO SCALE




4 - TYPICAL CAV INSTALLATION OFFSET FROM PIPELINE
NO SCALE




5 - COMBINATION AIR RELEASE/VACUUM VALVE INSTALLATION PUMP DISCHARGE MANIFOLD PIPE
NO SCALE




6 - COMBINATION AIR RELEASE/VACUUM VALVE ABOVE GROUND MANIFOLD PIPE INSTALLATION
NO SCALE

NOTES:

1. ALL PIPING, VALVES, TAPPING SLEEVES, SUCTION STRAINERS, AND FITTINGS SHALL BE EQUIVALENT IN SIZE TO THE INLET SIZE OF THE ARV.
2. ALL AIR VALVE INSTALLATIONS SHALL BE COMPLETED PRIOR TO FILLING THE PIPELINE WITH WATER.

CONSTRUCTION NOTES:

1. ORIFICES SHALL BE SOFT SEATED AND SIZED PER THE MANUFACTURER'S RECOMMENDATION, WITH AN ANTICIPATED OPERATING PRESSURE RANGE BETWEEN 5 PSI AND 20 PSI AND OPERATING FLOW RATE AS SHOWN IN TABLE 1.
2. THE FINAL AIR VALVE AND MANHOLE LOCATIONS SHALL BE AS DIRECTED BY THE DISTRICT IN THE FIELD.

TABLE 1

| PIPE DIAMETER (IN) | FLOW (CFS) |
|---|---|
| 16 | 6 |
| 20 | 12 |
| 24 | 18 |
| 30 | 24 |
| 36 | 30 |
| 42 | 45 |

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

| NO. | DATE | ISSUE/REVISION | APP |
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09-22-2021

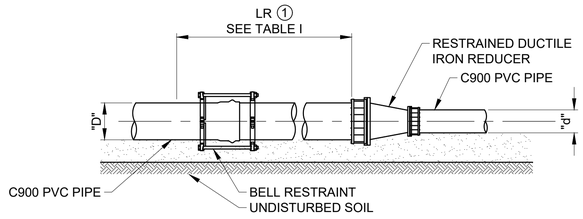
NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

AIR VALVES AND MANHOLES

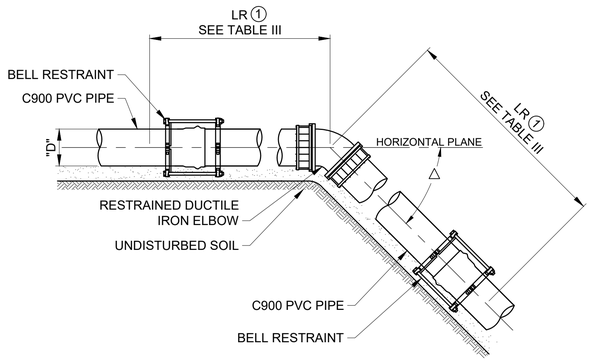
DWG. NO. CG-03
SHEET NO. 50
ARCHIVE #




1 - DETAIL - REDUCERS
NOT TO SCALE

TABLE I
MINIMUM RESTRAINED LENGTHS (LR)
REDUCERS

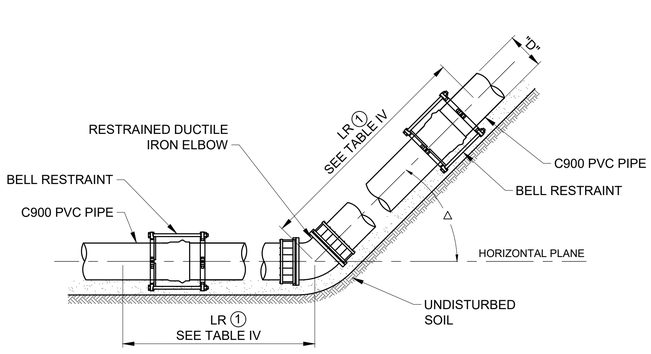
| "D" | "d" | | | | | | |
|---|---|---|---|---|---|---|---|
| | 36 | 30 | 24 | 20 | 16 | 12 | 10 |
| 42 | 30'-0" | 50'-0" | 60'-0" | 70'-0" | 80'-0" | 90'-0" | 90'-0" |
| 36 | N/A | 30'-0" | 50'-0" | 60'-0" | 70'-0" | 80'-0" | 80'-0" |
| 30 | N/A | N/A | 30'-0" | 40'-0" | 50'-0" | 60'-0" | 70'-0" |
| 24 | N/A | N/A | N/A | 20'-0" | 40'-0" | 50'-0" | 50'-0" |
| 20 | N/A | N/A | N/A | N/A | 20'-0" | 40'-0" | 40'-0" |
| 16 | N/A | N/A | N/A | N/A | N/A | 20'-0" | 30'-0" |
| 12 | N/A | N/A | N/A | N/A | N/A | N/A | 10'-0" |
| 10 | N/A | N/A | N/A | N/A | N/A | N/A | N/A |




3 - DETAIL - UPPER VERTICAL BENDS
NOT TO SCALE

TABLE III
MINIMUM RESTRAINED LENGTHS (LR)
UPPER VERTICAL BENDS

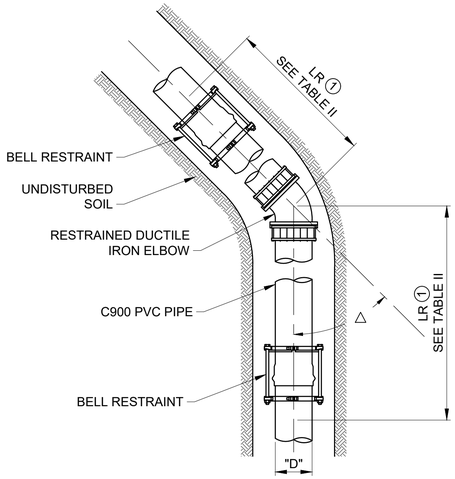
| "D" | Δ = 90° | Δ = 60° | Δ = 45° | Δ = 30° | Δ = 22.5° | Δ = 11.25° |
|---|---|---|---|---|---|---|
| 42 | 100'-0" | 60'-0" | 40'-0" | 30'-0" | 20'-0" | 10'-0" |
| 36 | 90'-0" | 50'-0" | 40'-0" | 30'-0" | 20'-0" | 10'-0" |
| 30 | 70'-0" | 50'-0" | 30'-0" | 20'-0" | 20'-0" | 10'-0" |
| 24 | 60'-0" | 40'-0" | 30'-0" | 20'-0" | 20'-0" | 10'-0" |
| 20 | 50'-0" | 30'-0" | 30'-0" | 20'-0" | 10'-0" | 10'-0" |
| 16 | 50'-0" | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" |
| 12 | 40'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 10 | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |




4 - DETAIL - LOWER VERTICAL BENDS
NOT TO SCALE

TABLE IV
MINIMUM RESTRAINED LENGTHS (LR)
LOWER VERTICAL BENDS

| "D" | Δ = 90° | Δ = 60° | Δ = 45° | Δ = 30° | Δ = 22.5° | Δ = 11.25° |
|---|---|---|---|---|---|---|
| 42 | 40'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 36 | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 30 | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 24 | 30'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 20 | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 16 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 12 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 10 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |




2 - DETAIL - HORIZONTAL BENDS
NOT TO SCALE

TABLE II
MINIMUM RESTRAINED LENGTHS (LR)
HORIZONTAL BENDS

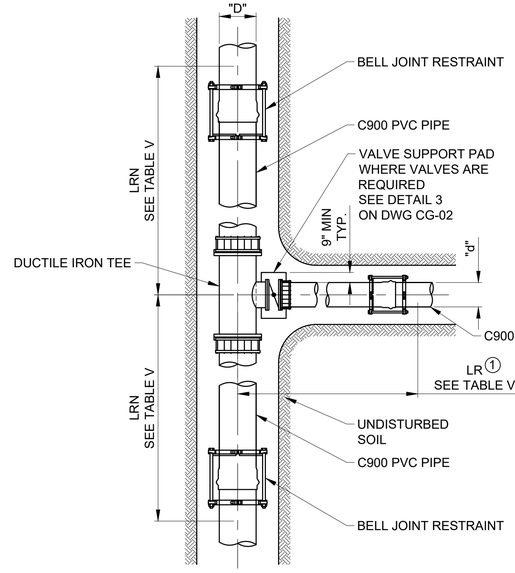
| "D" | Δ = 90° | Δ = 60° | Δ = 45° | Δ = 30° | Δ = 22.5° | Δ = 11.25° |
|---|---|---|---|---|---|---|
| 42 | 40'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 36 | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 30 | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 24 | 30'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 20 | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 16 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 12 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 10 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |

NOTES:

1. PROVIDE POLYETHYLENE SHEET (8 MIL MIN) BETWEEN FITTINGS AND/OR VALVES, REBAR, AND CONCRETE.

CONSTRUCTION NOTES:

① ALL JOINTS WITHIN THE LR LENGTH MUST BE RESTRAINED. IF THE DISTANCE BETWEEN TWO FITTINGS IS LESS THAN OR EQUAL TO THE LR LENGTH, RESTRAIN ALL JOINTS BETWEEN THOSE FITTINGS.



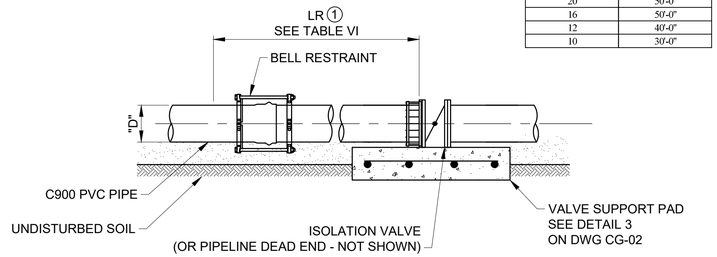

5 - DETAIL - TEES
NOT TO SCALE

TABLE V
MINIMUM RESTRAINED LENGTHS (LR)
TEES (LRN = 10 FEET)

| RUN "D" | BRANCH "d" | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 42 | 36 | 30 | 24 | 20 | 16 | 12 | 10 |
| 42 | 40'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 36 | 50'-0" | 30'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 30 | 60'-0" | 50'-0" | 30'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 24 | 70'-0" | 60'-0" | 40'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 20 | 70'-0" | 60'-0" | 40'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 16 | 80'-0" | 70'-0" | 50'-0" | 30'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 12 | 80'-0" | 70'-0" | 60'-0" | 40'-0" | 30'-0" | 10'-0" | 10'-0" | 10'-0" |
| 10 | 90'-0" | 70'-0" | 60'-0" | 50'-0" | 30'-0" | 20'-0" | 10'-0" | 10'-0" |

TABLE VI
MINIMUM RESTRAINED LENGTHS (LR)
DEAD END AND ISOLATION VALVES

| "D" | LR |
|---|---|
| 42 | 100'-0" |
| 36 | 90'-0" |
| 30 | 70'-0" |
| 24 | 60'-0" |
| 20 | 50'-0" |
| 16 | 50'-0" |
| 12 | 40'-0" |
| 10 | 30'-0" |




6 - DETAIL - DEAD END AND ISOLATION VALVE
NOT TO SCALE

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

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| | | | |

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C 76823
EXP. 12-31-22
CIVIL
STATE OF CALIFORNIA
09-22-2021

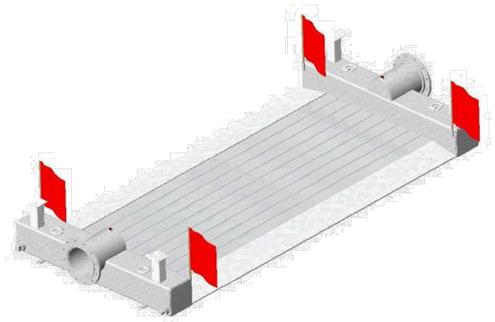
NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

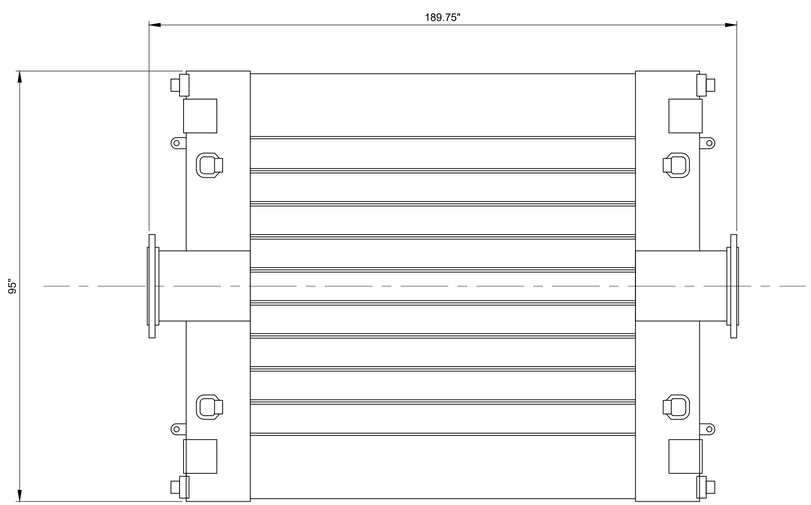
RESTRAINED FITTING DETAILS

DWG. NO. CG-04
SHEET NO. 51
ARCHIVE #

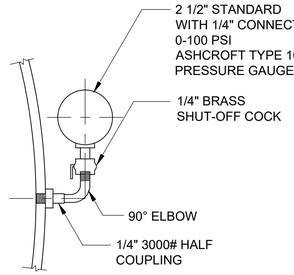


## 18″ x 12′ Road Crossing

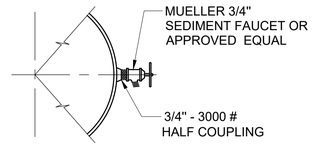
| | |
|---|---|
| **Cleanouts** | Four 3-inch clean outs |
| **Dry Weight** | 4700 lbs. |
| **Footprint** | 95" x 189.75" |
| **Inlet Diameter** | 18" |
| **Max PSI** | 75 |
| **Outlet Diameter** | 18" |
| **Pressure Gauges** | Two 0.5 inch valves |
| **Vehicle Width Clearance** | 12' |




1 / - 18"x12' ROAD CROSSING
NO SCALE

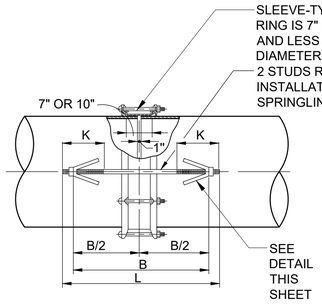



2 / - PRESSURE GAUGE
NO SCALE

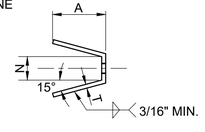


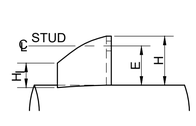

NOTE:
SEE MANIFOLD DWGS FOR LOCATION.

3 / - HOSE FAUCET OUTLET
NO SCALE




PLAN




ELEVATION

TABLE I

| JOINT HARNESS DIMENSIONS (IN INCHES) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIPE SIZE | STUD Ø D | A | B | T | H | E | $H_1$ | L | N | K |
| 12 | 5/8 | 3 | 26 | 3/8 | 3 7/8 | 3 | 2 | 28 1/4 | 2 | 3 1/2 |
| 16 | 3/4 | 3 3/4 | 27 1/2 | 3/8 | 4 1/8 | 3 1/8 | 2 | 30 | 2 | 3 5/8 |
| 20 | 7/8 | 4 1/2 | 29 | 3/8 | 4 1/4 | 3 1/8 | 2 | 31 3/4 | 2 | 3 3/4 |
| 24 | 7/8 | 4 3/4 | 30 | 3/8 | 4 1/4 | 3 1/8 | 2 | 32 1/2 | 2 | 3 3/4 |
| 30 | 1 | 5 1/8 | 30 1/4 | 3/8 | 4 1/2 | 3 1/4 | 2 | 33 3/4 | 4 | 3 7/8 |
| 36 | 1 1/4 | 6 3/4 | 33 1/2 | 1/2 | 5 | 3 3/4 | 2 1/2 | 37 | 4 | 4 1/4 |
| 48 | 1 1/2 | 8 3/4 | 47 1/2 | 1/2 | 5 3/4 | 3 7/8 | 2 1/2 | 51 1/2 | 4 | 4 1/2 |
| 60 | 1 3/4 | 11 1/4 | 50 1/2 | 1/2 | 6 3/8 | 4 1/8 | 2 1/2 | 55 | 4 | 4 3/4 |

4 / - HARNESS
NO SCALE




5 / - INSULATED FLANGE
NO SCALE

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

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| *Approved:* | K. YAO |
| *Submitted:* | S. GALA |

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09-22-2021

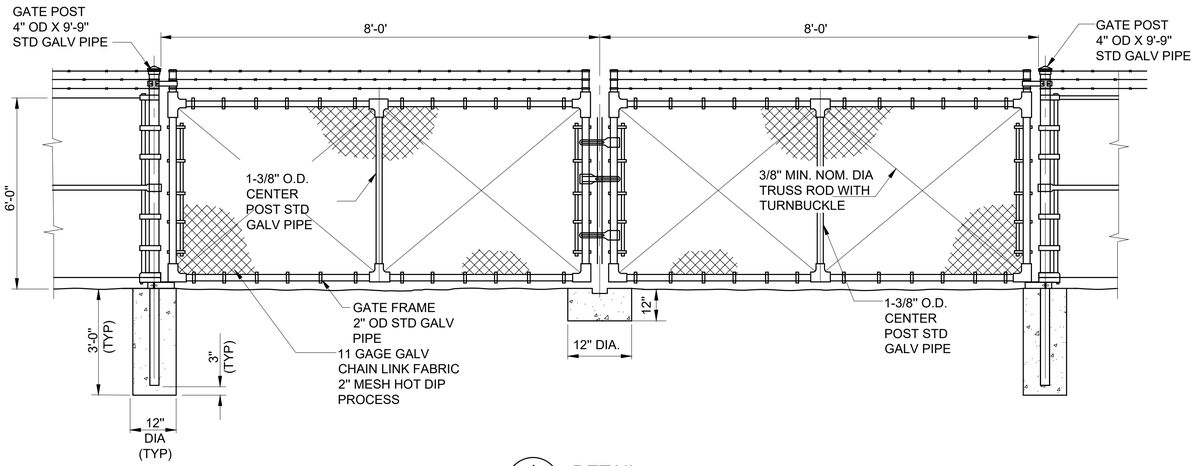
NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

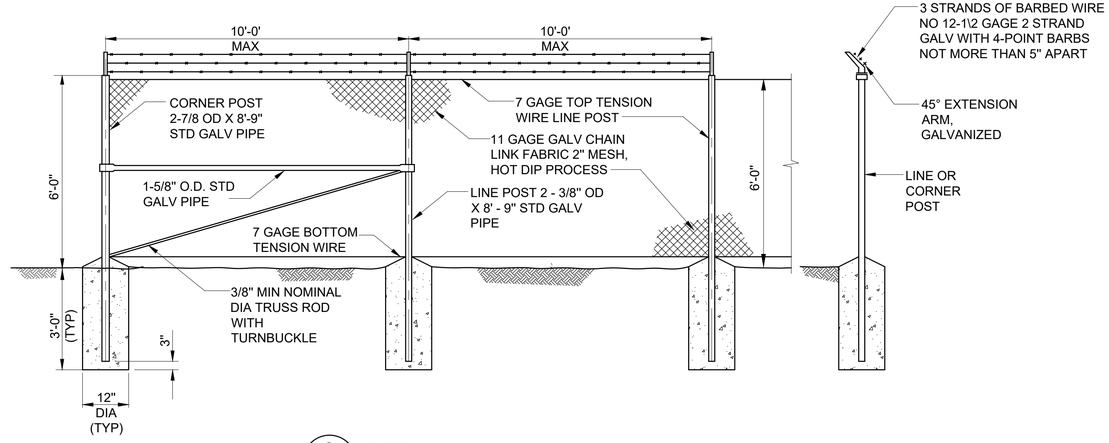
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

TYPICAL DETAILS AND
MISCELLANEOUS MANIFOLD DETAILS

DWG. NO. CG-05
SHEET NO. 52
ARCHIVE #




1 - DETAIL
NO SCALE




2 - DETAIL
NO SCALE

NOTES:

1. SEE SPEC SECTION E.
2. ALL PIPE DIAMETERS SHOWN ARE STEEL PIPE SIZES-STANDARD WEIGHT.
3. CHAIN LINK FABRIC SHALL BE ATTACHED TO FENCE FRAMEWORK IN ACCORDANCE WITH SPEC SECTION E AND THE MANUFACTURERS' STANDARD INSTRUCTIONS.
4. EMBANKMENT AT FENCE POST LOCATION SHALL BE THOROUGHLY COMPACTED PRIOR TO POST INSTALLATION.
5. ALL GATES SHALL BE EQUIPPED WITH GATE FASTENERS SUITABLE FOR LOCKING WITH PADLOCK.
6. CORNER AND END POSTS SHALL BE BRACED IN THE DIRECTION OF PULL.
7. ALTERNATE DETAILS MAY BE SUBMITTED FOR APPROVAL.

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

| NO. | DATE | ISSUE/REVISION | APP |
|---|---|---|---|

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NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

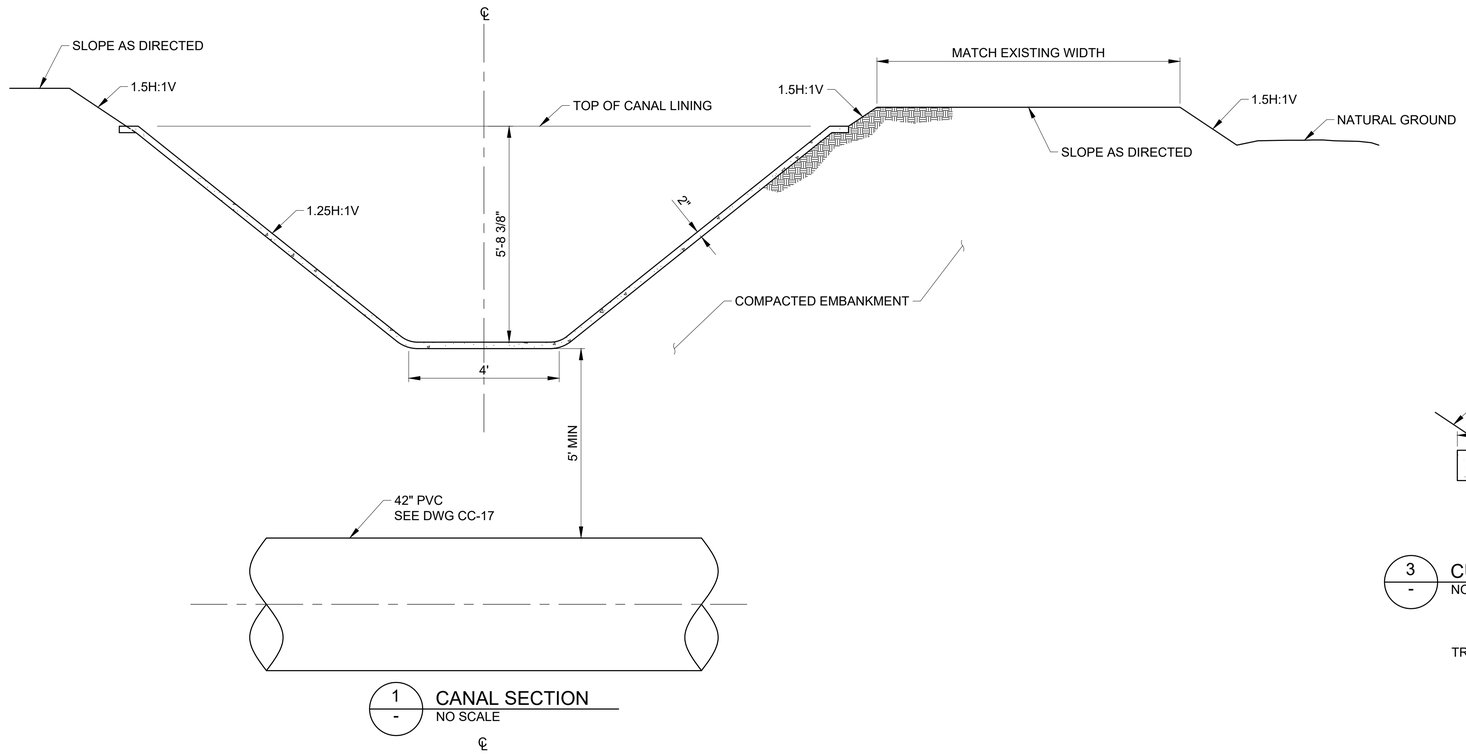
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

TYPICAL CHAIN LINK FENCE DETAILS

DWG. NO. CG-06

SHEET NO. 53

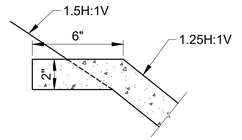
ARCHIVE #



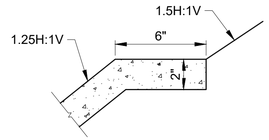

1 - CANAL SECTION
NO SCALE

NOTES:

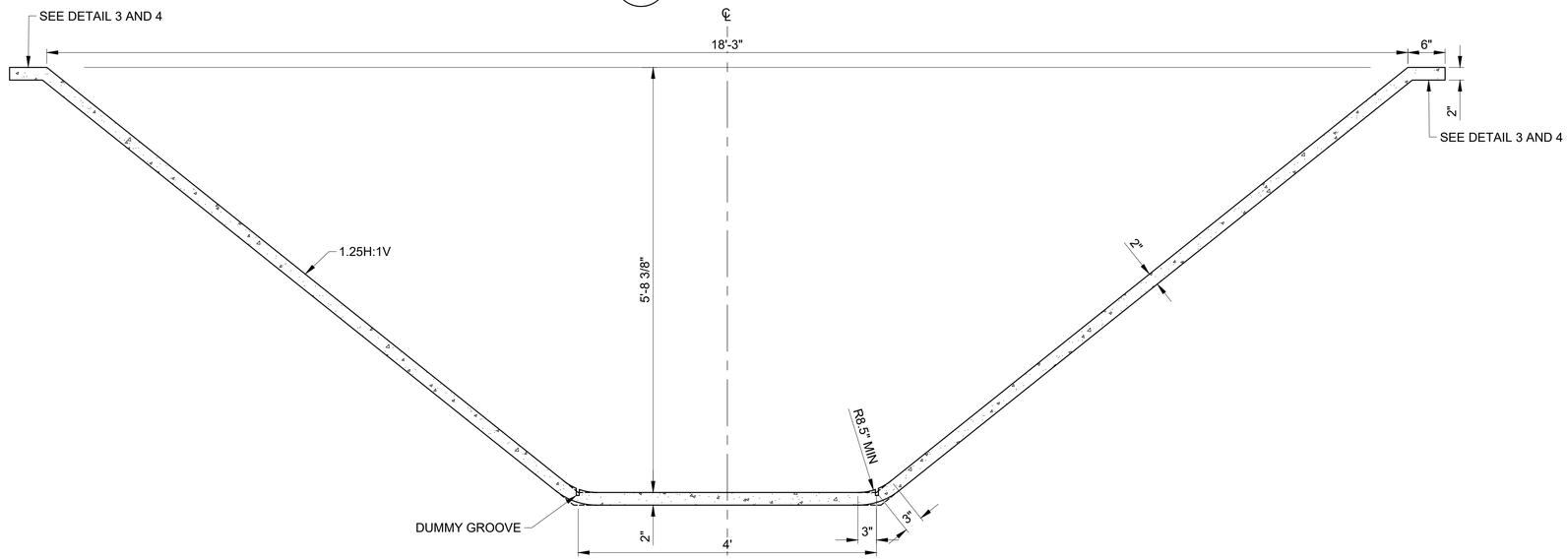
1. SAW CUT EXISTING CONCRETE LINING AT TRANSVERSE GROOVES.
2. REMOVE AND DISPOSE OF CONCRETE LINING BEFORE PIPE TRENCH EXCAVATION.
3. COMPACT BACKFILL BEFORE PLACING NEW CONCRETE LINING.
4. 5' MINIMUM VERTICAL CLEARANCE FROM TOP OF CASING TO DESIGN INVERT OF CANAL.
5. SEE DWG CG-01 AND CG-08 FOR REINFORCED CONCRETE CUT-OFF COLLAR DETAILS AND LOCATIONS.
6. COMPACTION SPECS ARE 95% USING ASTM D698 (STANDARD PROCTOR) THROUGH BANKS.
7. ONLY NATIVE MATERIAL SHALL BE USED FOR BACKFILL.
8. IN THE EVENT DIRT IS IMPORTED FROM OUTSIDE SOURCE INTO DISTRICT'S ROW, THE DIRT SHALL BE TESTED AND RESULTS PROVIDED TO THE DISTRICT FOR APPROVAL BEFORE IMPORT.
9. THE CANAL SHOULD BE GRADED BACK TO THE PRE-CONSTRUCTION GRADES AND ELEVATIONS TO THE SATISFACTION OF THE DISTRICT.



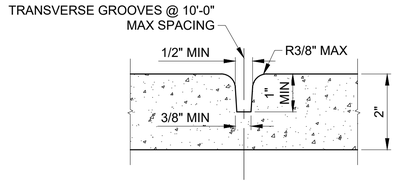

3 - CURB DETAIL - CUT
NO SCALE



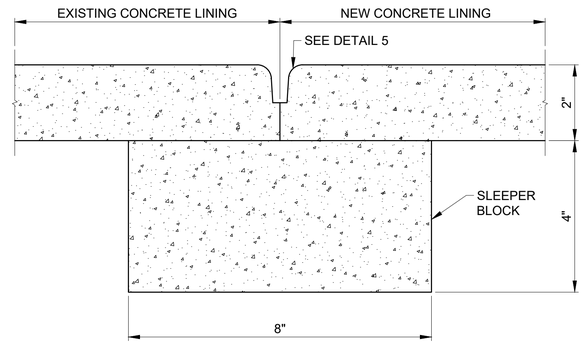

4 - CURB DETAIL - FILL
NO SCALE




2 / CG-08 - CONCRETE LINING DETAIL
NO SCALE




5 - SECTION AT GROOVES
NO SCALE




6 - LINING JOINT DETAIL
NO SCALE

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| | NO. | DATE | ISSUE/REVISION | APP | | | |

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

ROSEDALE PUMP STATION DISCHARGE PIPELINE
CT-1 CANAL CROSSING

DWG. NO. CG-07

SHEET NO. 54

ARCHIVE #

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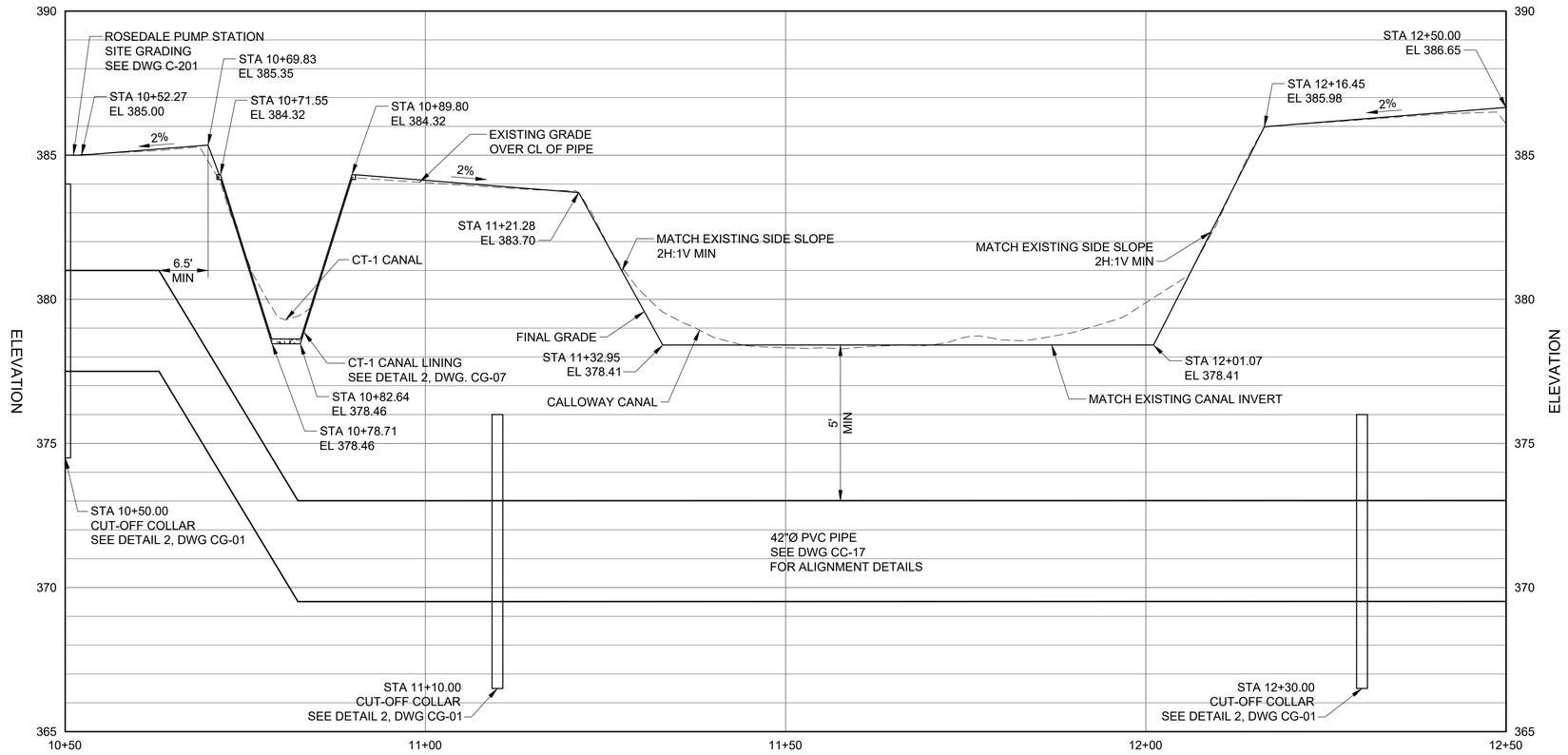


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STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

ROSEDALE PUMP STATION DISCHARGE PIPELINE
CANAL CROSSINGS PROFILE
STA 10+50 TO STA 12+50

DWG. NO.
CG-08

SHEET NO.
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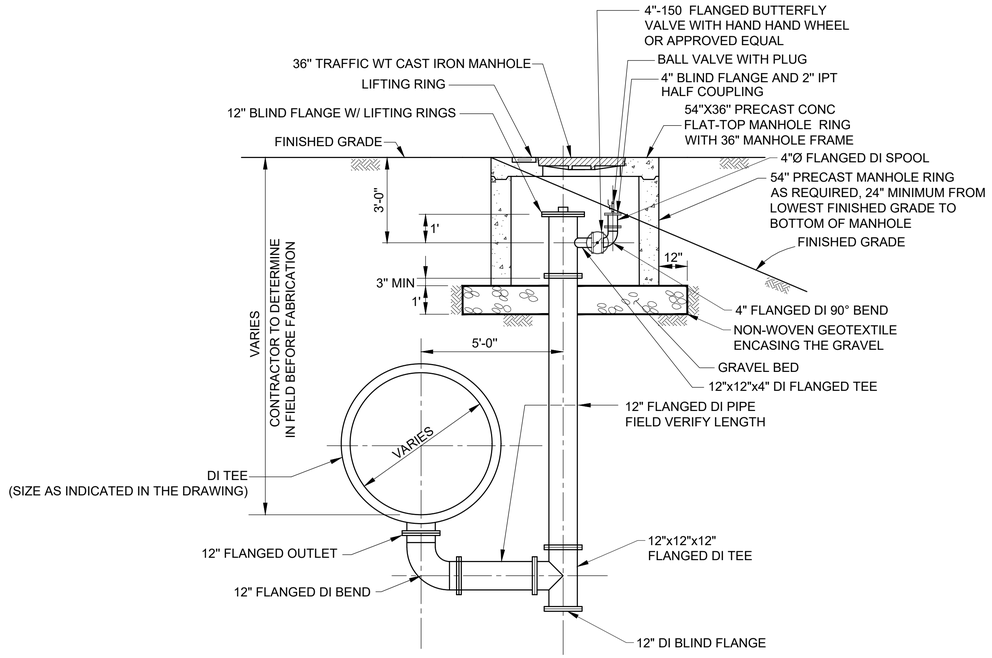
ARCHIVE #




1 - TYPICAL BLOW-OFF
NO SCALE

NOTES:

1. ALL BACKFILL TO BE COMPACTED TO FINISHED GRADE AS INDICATED ON DRAWINGS.
2. TANGENTIAL OUTLET MAY BE FURNISHED IN LIEU OF FLANGED OUTLET.
3. ALL BLOW-OFF PIPING SHALL BE COATED THE SAME AS THE DI TEE.
4. THE FINAL LOCATION OF THE BLOW-OFF ASSEMBLY AND MANHOLE SHALL BE AS DIRECTED BY THE DISTRICT IN THE FIELD.

Attention:

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| *Submitted:* | S. GALA |

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09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

TYPICAL BLOW-OFF DETAIL

DWG. NO. CG-09

SHEET NO. 56

ARCHIVE #

WELL FIELD 88DR25
WELL 88DR25-021
MAIN CONTROL PANEL

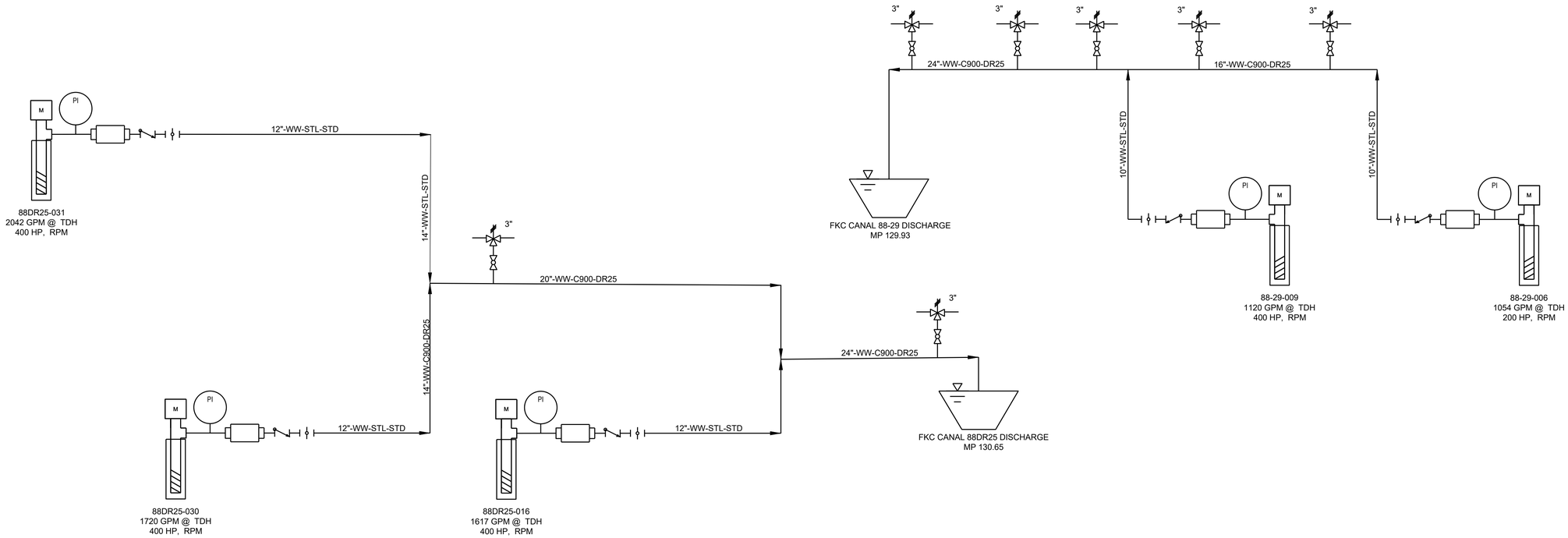
WELL FIELD 88DR25
WELL 88DR25-030
MAIN CONTROL PANEL

WELL FIELD 88DR25
WELL 88DR25-016
MAIN CONTROL PANEL

WELL FIELD 88-29
WELL 88-29-009
MAIN CONTROL PANEL

WELL FIELD 88-29
WELL 88-29-006
MAIN CONTROL PANEL

ELECTRICAL PANELS NOT IN CONTRACT

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| Checked: | R. ANDERSON |
| Drawn: | R. WARD |
| Approved By: | K. YAO |

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09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

88-25 & 88-29 WELL FIELDS
FLOW SHEET

DWG. NO. P-01
SHEET NO. 57
ARCHIVE #

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WEST ROSEDALE
WELL 99-00-035
MAIN CONTROL PANEL

WEST ROSEDALE
WELL 99-00-032
MAIN CONTROL PANEL

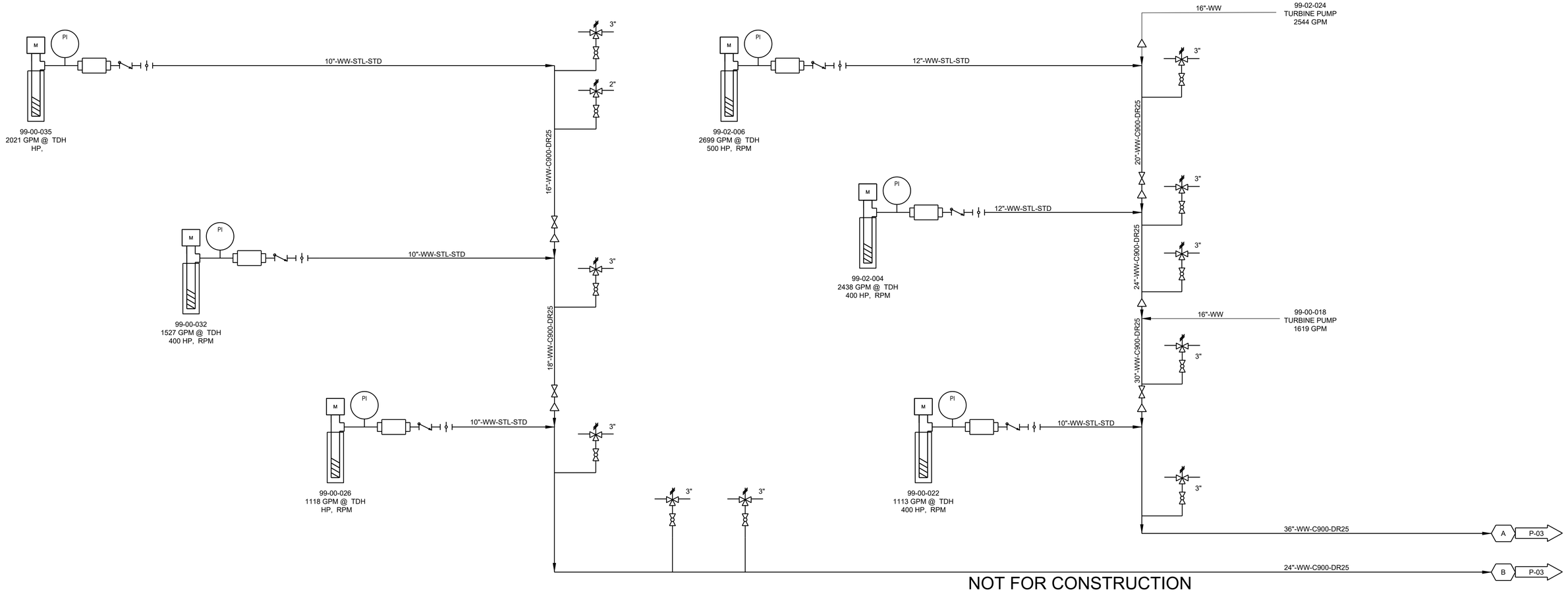
WEST ROSEDALE
WELL 99-00-026
MAIN CONTROL PANEL

CENTRAL ROSEDALE
WELL 99-02-006
MAIN CONTROL PANEL

CENTRAL ROSEDALE
WELL 99-02-004
MAIN CONTROL PANEL

CENTRAL ROSEDALE
WELL 99-00-022
MAIN CONTROL PANEL

ELECTRICAL PANELS NOT IN CONTRACT

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09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

ROSEDALE WELL FIELD
FLOW SHEET

DWG. NO. P-02
SHEET NO. 58
ARCHIVE #

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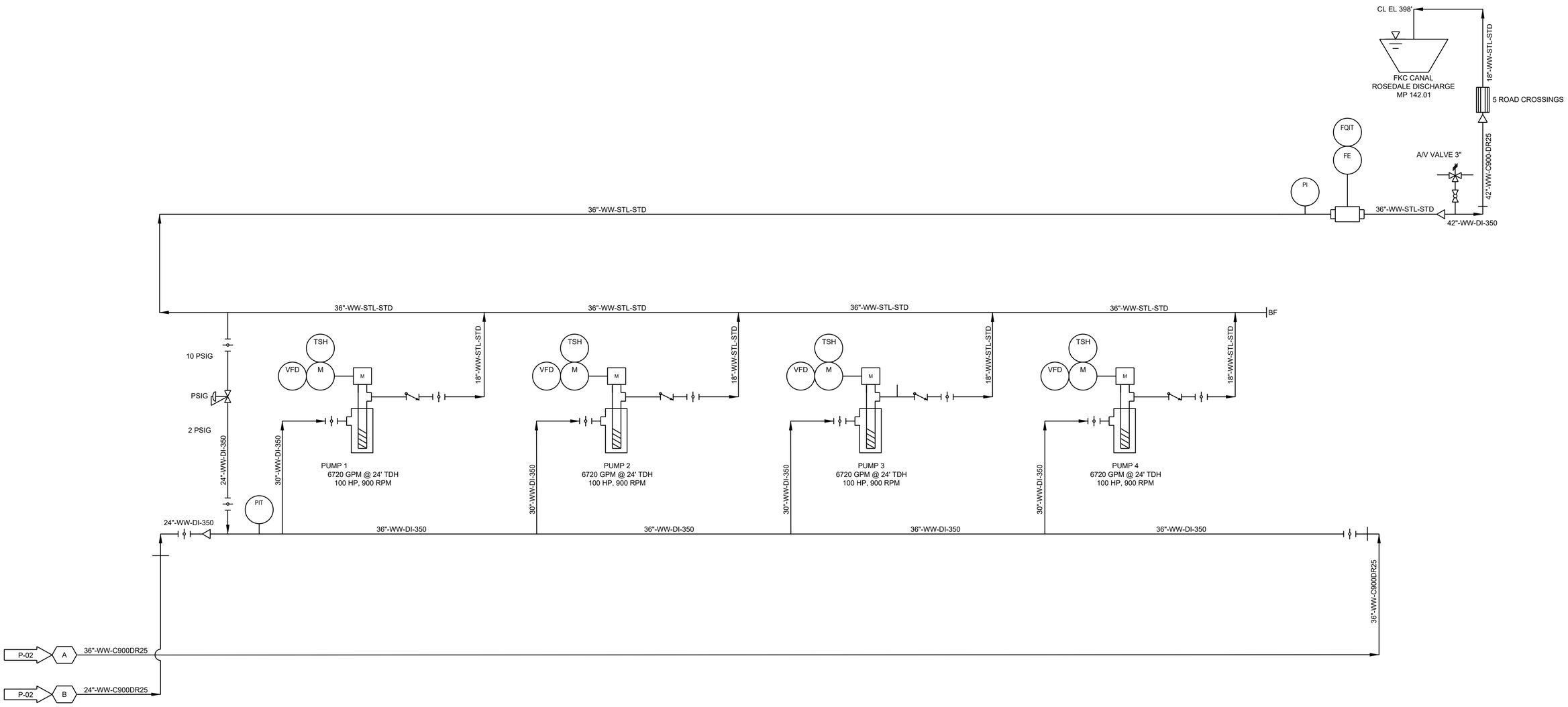
ROSEDALE PUMP STATION
MAIN CONTROL PANEL

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CIVIL
STATE OF CALIFORNIA
09-22-2021

NORTH KERN WATER STORAGE DISTRICT

GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

ROSEDALE BOOSTER STATION
FLOW SHEET

DWG. NO. P-03

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ARCHIVE #

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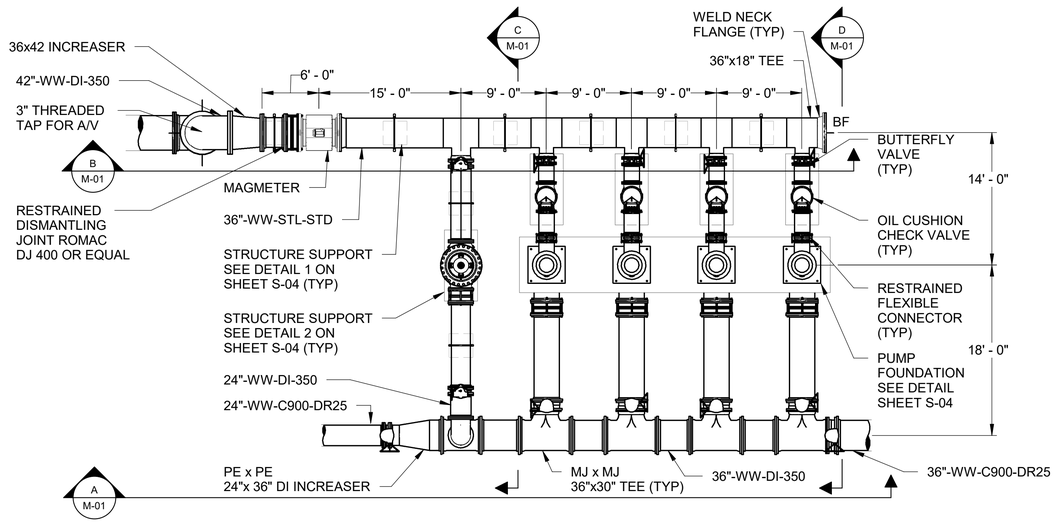
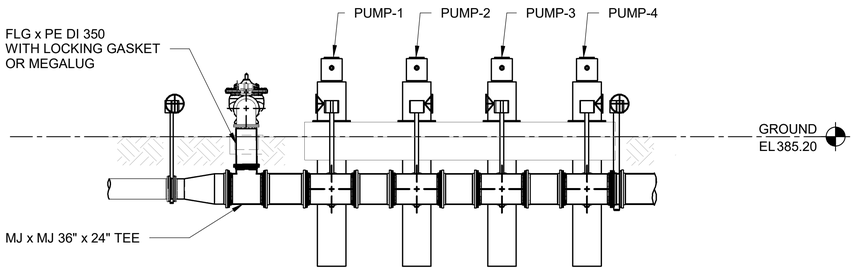


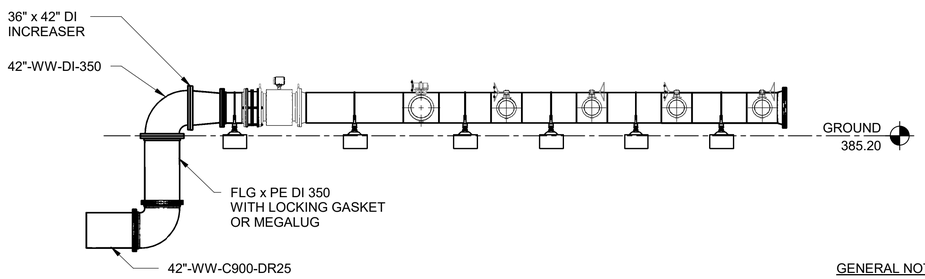

## PLAN

SCALE: 1/8" = 1'-0"




## A SECTION A

SCALE: 1/8" = 1'-0"

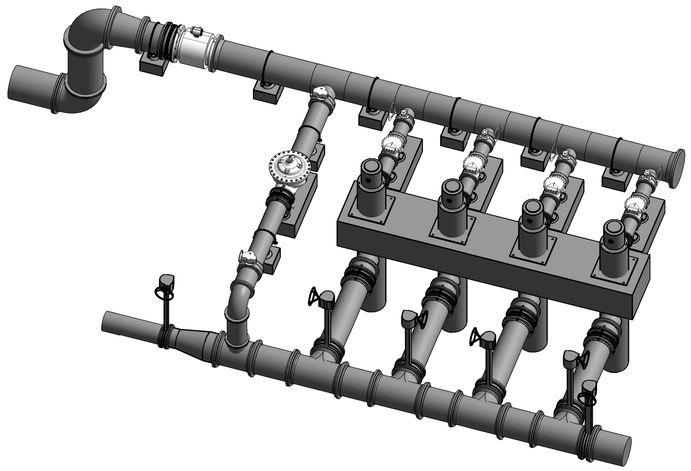


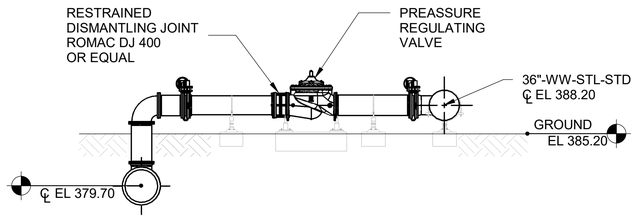

## B Section B

SCALE: 1/8" = 1'-0"

GENERAL NOTES

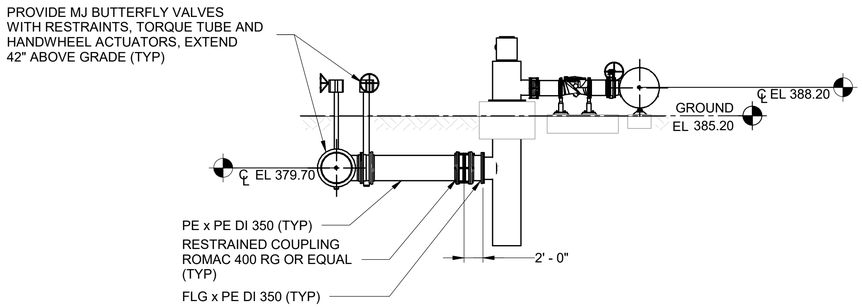
1. ALL BURIED PIPE UNLESS SHALL USE RESTRAINED MECHANICAL JOINT FITTINGS.
2. ALL ABOVE GROUND SHALL USE WELDED OR FLANGED FITTINGS AS SHOWN.






## C SECTION C

SCALE: 1/8" = 1'-0"




## D SECTION D

SCALE: 1/8" = 1'-0"

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| Attention: 0 — 1" If this scale bar does not measure 1" then drawing is not original scale. | | | | | GEI Consultants GEI CONSULTANTS, INC. 5001 CALIFORNIA AVE. SUITE 120 BAKERSFIELD, CA 93309 (661) 327-7601 | Designed: J. BAL<br>Checked: R. ANDERSON<br>Drawn: R. WARD<br>Approved By: K. YAO | REGISTERED PROFESSIONAL ENGINEER KUN YAO C 76823 EXP. 12-31-21 CIVIL STATE OF CALIFORNIA 09-22-2021 |
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NORTH KERN WATER STORAGE DISTRICT

GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

BOOSTER PUMP

DWG. NO. M-01

SHEET NO. 60

ARCHIVE #

## GENERAL STRUCTURAL NOTES

1. THE NOTES ON THIS SHEET AND THE STANDARD STRUCTURAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT WHETHER SPECIFICALLY CALLED OUT OR NOT, EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY ON STRUCTURAL SHEETS. IF THERE ARE QUESTIONS, THEY SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER AND ANSWERED IN WRITING PRIOR TO CONSTRUCTION.
2. APPLICABLE CODES
   - A. AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 318-19.
   - B. AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AISC STEEL CONSTRUCTION MANUAL, 15TH ED.
   - C. CALIFORNIA BUILDING CODE, CBC, 2019.
3. DESIGN CRITERIA
   - A. DEAD LOAD: ACTUAL TRIBUTARY STRUCTURE WEIGHT
   - B. LIVE LOAD: 250 PSF
   - C. WIND: BASIC WIND SPEED: $V_{ULT}$ = 94 MPH (3-SECOND GUST); $V_{ASD}$ = 73 MPH (3-SECOND GUST)
     EXPOSURE: C
     RISK CATEGORY: II
   - D. SEISMIC:
     1. ABOVE GRADE STRUCTURES:

| | |
|---|---|
| a. RISK CATEGORY: | II |
| b. SEISMIC IMPORTANCE FACTOR: | Ie = 1 |
| c. SPECTRAL RESPONSE ACCELERATION: | SS = 0.852 |
| d. SPECTRAL RESPONSE ACCELERATION: | S1 = 0.315 |
| e. SITE CLASS: | D |
| f. SEISMIC DESIGN CATEGORY: | D |
| g. SPECTRAL RESPONSE COEFFICIENT: | SDS = 0.618 |
| h. SPECTRAL RESPONSE COEFFICIENT: | SD1 = 0.417 |
| i. SEISMIC BASE SHEAR: | V = 0.4(Wi+Wc) |
| j. RESPONSE MODIFICATION COEFFICIENT: | R = 2 |
| k. ANALYSIS PROCEDURE: | EQUIVALENT LATERAL FORCE (ELF) |

4. SAFETY
   SAFETY AND STRUCTURE STABILITY DURING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. STRUCTURES HAVE BEEN DESIGNED TO RESIST THE DESIGN LIVE LOADS ONLY AS A COMPLETED STRUCTURE.
5. OPENINGS
   OPENINGS FOR PIPES, DUCTS, CONDUITS, ETC. ARE NOT ALL SHOWN ON THE STRUCTURAL DRAWINGS. COORDINATE AND PROVIDE OPENINGS AS REQUIRED TO ACCOMMODATE ALL WORK SHOWN OR SPECIFIED IN THE CONTRACT DOCUMENTS AND OTHERWISE REQUIRED FOR THE FURNISHING OF A FUNCTIONALLY COMPLETE PROJECT. REINFORCE AROUND OPENINGS PER STANDARD STRUCTURAL DETAILS UNLESS OTHERWISE SHOWN.
6. THE CONTRACTOR IS RESPONSIBLE FOR DEWATERING, SHORING, AND TEMPORARY SLOPE DESIGN PER OSHA RECOMMENDATIONS.
7. STANDARD DETAILS
   THE STANDARD DETAILS DEPICT TYPICAL DETAILING TO BE USED ON THIS PROJECT. IF CONDITIONS ARE NOT EXPLICITLY SHOWN ON THE DRAWINGS THEY SHALL BE MADE SIMILAR TO THE STANDARD DETAILS. OBTAIN APPROVAL OF ENGINEER IN WRITING FOR SIMILAR CONDITIONS PRIOR TO CONSTRUCTION.
8. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS OF EXISTING CONSTRUCTION AS REQUIRED TO COORDINATE NEW CONSTRUCTION. SUBMIT REQUIRED CHANGES FOR REVIEW AND OBTAIN APPROVAL OF ENGINEER IN WRITING PRIOR TO CONSTRUCTION.
9. CONTRACTOR TO SUBMIT FOR REVIEW ALL EQUIPMENT SIZES, OPERATING WEIGHTS, VIBRATION FORCES, SUPPORT LOCATIONS, ALONG WITH ANY FLOOR OPENINGS, NOTCHES, AND RECESSES REQUIRED BY SUCH EQUIPMENT. CONCRETE SUPPORT PADS AND/OR FRAMING REQUIRED TO SUPPORT SAID EQUIPMENT SHALL NOT BE FABRICATED AND PLACED UNTIL THE CONCRETE SUPPORT PADS AND/OR FRAMING IS APPROVED TO SUPPORT THE EQUIPMENT.
10. CONFLICTS
    IN CASES WHERE CONFLICTS OCCUR BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE MOST STRINGENT REQUIREMENTS SHALL CONTROL FOR BID PURPOSES. SUBMIT QUESTIONS IN WRITING TO THE ENGINEER FOR CLARIFICATION PRIOR TO CONSTRUCTION.

## STEEL NOTES

1. DESIGN STRENGTHS:

| | | |
|---|---|---|
| WIDE FLANGE AND TEES: | ASTM A992 | Fy=50 KSI |
| PIPES: | ASTM A53 GR.B | Fy=35 KSI |
| HSS SECTIONS | ASTM A500 GR.B | Fy=46 KSI |
| HP PILES | ASTM A572 GR.50 | Fy=50 KSI |
| ALL OTHER PLATES AND SHAPES: | ASTM A36 | Fy=36 KSI |

2. DIMENSIONS:
   TO CENTERLINES OF COLUMNS AND BEAMS, TOP SURFACES OF BEAMS AND TUBES AND BACKS OF CHANNELS AND ANGLES UNO.
3. ELEVATIONS:
   TOP OF STEEL REFERS TO TOP SURFACE OF MEMBER OR FLANGE UNO.
4. WHEN FILLET WELD SIZE IS NOT INDICATED, PROVIDE MAXIMUM WELD SIZE BASED ON MATERIAL THICKNESS IN ACCORDANCE WITH AISC SPECIFICATIONS.
5. ALL BOLTED STRUCTURAL CONNECTIONS ARE BEARING TYPE CONNECTIONS UNLESS OTHERWISE SPECIFIED TO BE SLIP-CRITICAL. PROVIDE LOAD INDICATING WASHERS AT SLIP-CRITICAL CONNECTIONS.

## CONCRETE NOTES

1. ALL STRUCTURAL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS, UNLESS OTHERWISE NOTED.
2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO THE REQUIREMENTS OF ASTM A-615, GRADE 60, UNLESS OTHERWISE NOTED.
3. ALL DETAILING, FABRICATION, AND PLACING OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ACI-315, "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", LATEST EDITION.
4. THE FIRST AND LAST BARS IN SLABS AND WALLS, STIRRUPS IN BEAMS, AND TIES IN COLUMNS SHALL START AND END A MAXIMUM OF ONE HALF OF THE ADJACENT BAR SPACING OR 3-INCHES, WHICHEVER IS LESS, FROM THE START OR END OF THE MEMBER.
5. ALL CONSTRUCTION JOINTS SHALL BE ROUGHENED TO AN AMPLITUDE OF 1/4 INCH AND THOROUGHLY CLEANED FOR BOND PRIOR TO PLACING CONCRETE.
6. TOLERANCES FOR PLACING REINFORCING STEEL SHALL BE: ± 3/8 INCH FOR MEMBERS </ = 8 INCHES THICK. ± 1/2 INCH FOR MEMBERS > 8 INCHES THICK.
7. DOWELS, PIPING, WATERSTOPS, AND OTHER EMBEDS SHALL BE HELD SECURELY IN PLACE WHILE THE CONCRETE IS BEING POURED.
8. ALL EXTERIOR CORNERS SHALL HAVE A 3/4 INCH CHAMFER.
9. ALL GROUT SHALL BE NON-SHRINK, UNLESS OTHERWISE NOTED.
10. BAR SUPPORTS, SPACERS, AND OTHER ACCESSORIES ARE NOT SHOWN ON THE DESIGN DRAWINGS.
11. METAL CLIPS OR SUPPORTS SHALL NOT BE PLACED IN CONTACT WITH THE FORMS OR SUBGRADE. CONCRETE BLOCKS OR DOBIES SHALL BE IN SUFFICIENT NUMBERS TO SUPPORT THE BARS ON THE SUBGRADE WITHOUT SETTLEMENT. IN NO CASE SHALL SUCH SUPPORT BE CONTINUOUS.
12. ALUMINUM FORMS SHALL NOT BE USED FOR PLACEMENT OF CONCRETE.
13. UNLESS OTHERWISE INDICATED, THE FOLLOWING SHALL BE USED IN ADDITION TO THE NORMAL ACCESSORIES USED TO HOLD REINFORCING BARS FIRMLY IN POSITION:

    A. IN SLABS #5 RISER BARS @ 36" O.C.. MAX. TO SUPPORT REINFORCING BARS.

    B. IN WALLS WITH 2 CURTAINS #3 U OR Z SHAPE SPACERS @ 6'-0" O.C. MAX EACH WAY.
14. DOWELS SHALL BE SET AND WIRED OR OTHERWISE HELD IN PLACE PRIOR TO PLACING THE CONCRETE. DOWELS SHALL NOT BE INSERTED INTO FRESHLY PLACED CONCRETE.
15. A MINIMUM CLEAR DISTANCE OF 2 INCHES SHALL BE MAINTAINED BETWEEN THE REINFORCING STEEL AND ALL PIPES, PIPE FLANGES, OR OTHER METAL PARTS EMBEDDED IN THE CONCRETE.
16. ALL ITEMS EMBEDDED IN THE CONCRETE SHALL BE SPACED AT NO LESS THAN 4 TIMES THE OUTSIDE DIMENSION OF THE LARGEST ITEM. THE OUTSIDE DIMENSION SHALL NOT EXCEED ONE THIRD THE CONCRETE MEMBER THICKNESS.
17. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS:

    CONCRETE PLACED AGAINST EARTH.....3"

    FOR SURFACES IN CONTACT WITH WATER OR WEATHER AND FORMED SURFACES IN CONTACT WITH EARTH.....2"

    FOR CONCRETE NOT EXPOSED TO WEATHER OR CONTACT WITH WATER OR EARTH.....2"
18. UNLESS OTHERWISE NOTED, WHERE A SINGLE LAYER OF REINFORCING STEEL IS SHOWN IN A WALL OR SLAB THE REINFORCING SHALL BE CENTERED.
19. SLAB THICKNESS CALLED OUT ON THE DRAWINGS ARE MINIMUMS. WHERE SLABS HAVE A SLOPING SURFACE THE SLAB BOTTOM MAY BE FLAT OR IT MAY BE SLOPED TO MAINTAIN A CONSTANT THICKNESS. REINFORCING STEEL IN SLABS WITH SLOPING SURFACES SHALL BE PLACED AT THE REQUIRED DISTANCES FROM THE SLAB SURFACES.
20. ABSOLUTELY NO WELDING OF REINFORCING BARS OR TORCHING TO BEND REINFORCING BARS SHALL BE ALLOWED WITHOUT SPECIFIC APPROVAL IN WRITING FROM THE STRUCTURAL ENGINEER.
21. ANCHOR BOLTS NOT SPECIFIED BY THE ENGINEER SHALL BE DESIGNED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF CALIFORNIA, RETAINED BY THE CONTRACTOR, IN ACCORDANCE WITH THIS PROJECT AND REQUIRED CODE REQUIREMENTS. SUBMIT AS A SHOP DRAWING FOR REVIEW AND APPROVAL BY THE ENGINEER. COORDINATE LOCATION, SIZE AND EMBEDMENT PRIOR TO CASTING CONCRETE.

Attention:

0 1"

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Submitted: S. GALA

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C 78724
EXP. 09-30-23
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STATE OF CALIFORNIA
10-05-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

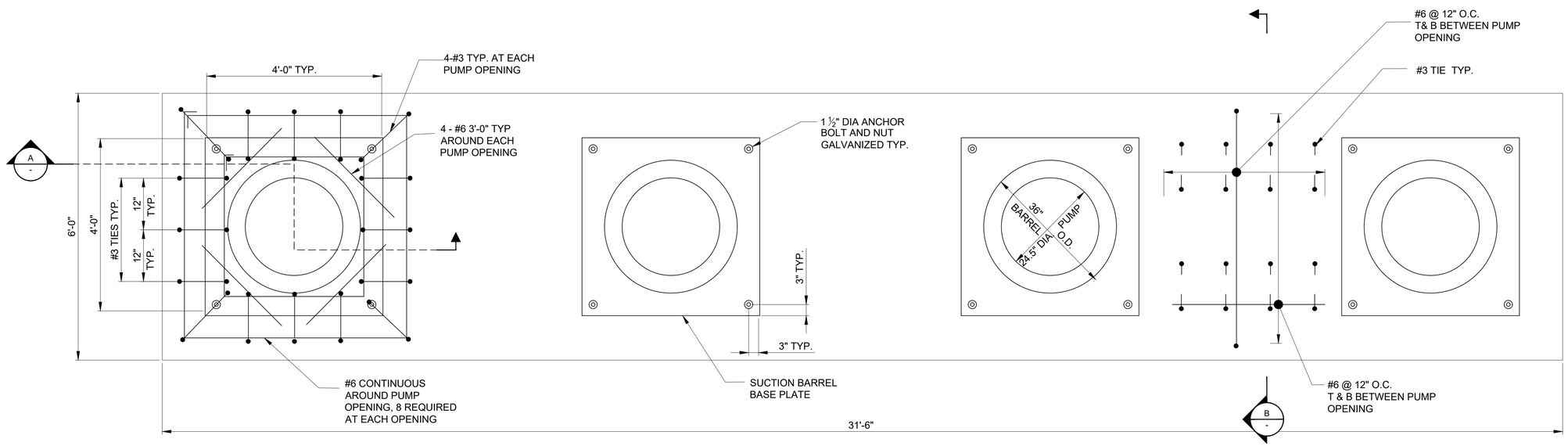
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

STRUCTURAL NOTES

DWG. NO. S-01

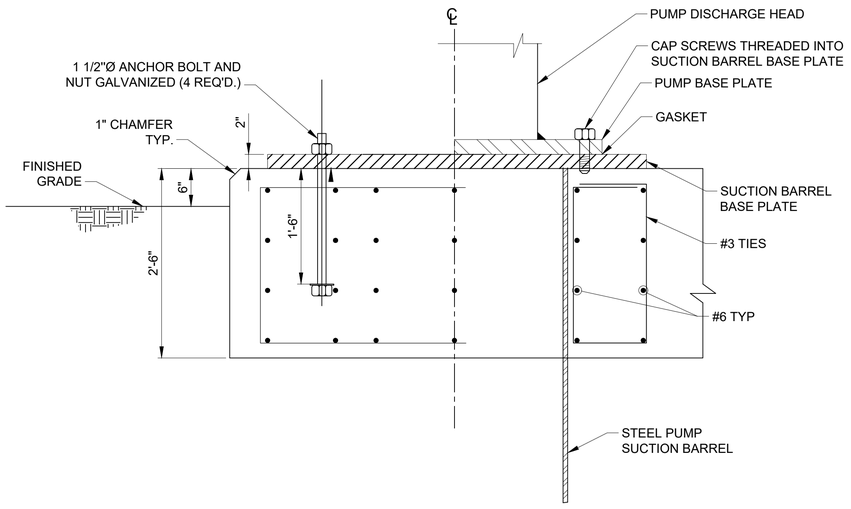
SHEET NO. 61

ARCHIVE #



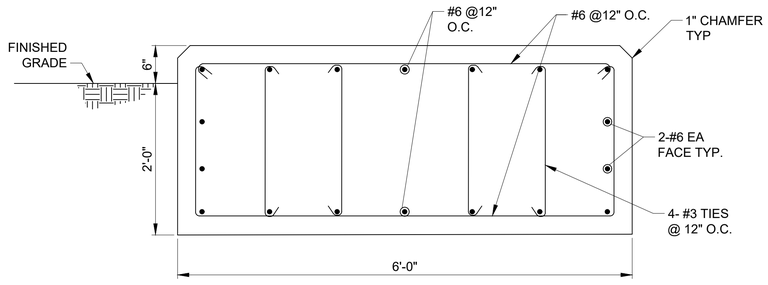

PLAN

SCALE: 3/4"=1'-0"




A - SECTION

SCALE: 1" = 1'-0"




B - SECTION

SCALE: 1" = 1'-0"

| NO. | DATE | ISSUE/REVISION | APP |
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Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

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| *Drawn:* | T. PRADHAN |
| *Checked:* | K. AMIRINENI |
| *Approved:* | K. YAO |
| *Submitted:* | S. GALA |

REGISTERED PROFESSIONAL ENGINEER KRISHNA C. AMIRINENI C 78724 EXP. 09-30-23 CIVIL STATE OF CALIFORNIA

10-05-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

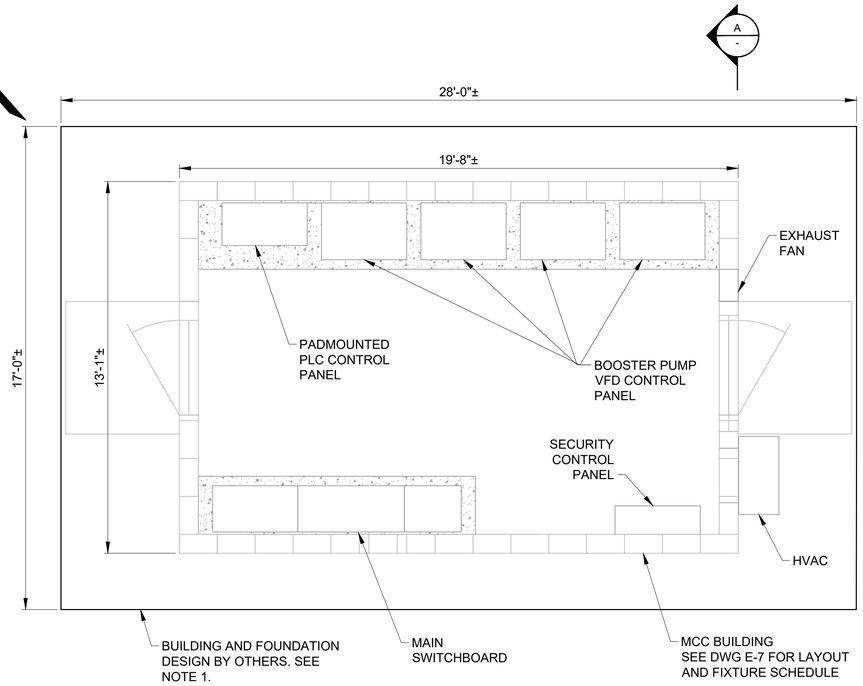
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

ELECTRICAL EQUIPMENT
BUILDING FOUNDATION

DWG. NO. S-02

SHEET NO. 62

ARCHIVE #

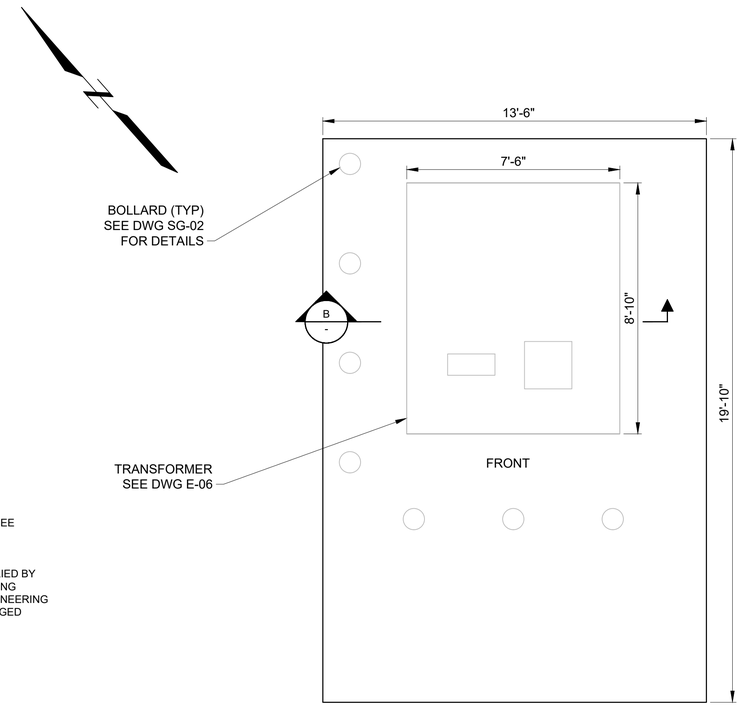



## ELECTRICAL EQUIPMENT BUILDING AND FOUNDATION

SCALE: 3/8"=1'-0"

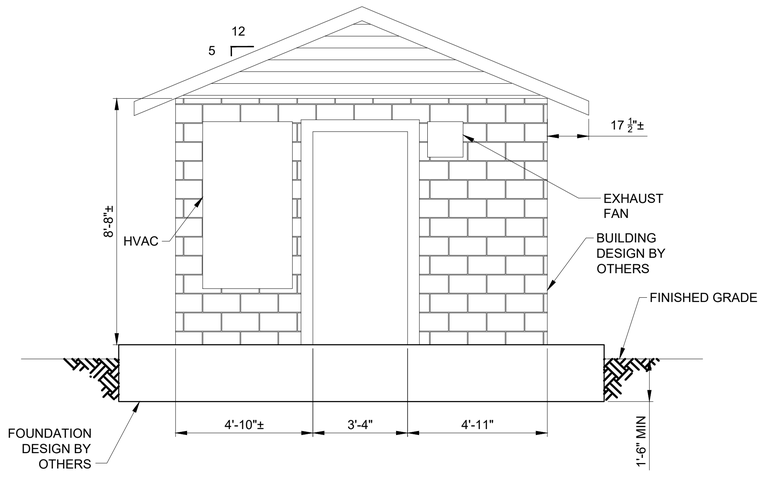
NOTES:

1. CONTROL BUILDING IS PRE-ENGINEERED BUILDING. SEE TECHNICAL SPECIFICATION SECTION O.
2. PACKAGED BUILDING AND ASSOCIATED DESIGN AND ENGINEERING WITH ALL LISTED COMPONENTS SUPPLIED BY ROMTEC INC OR APPROVED EQUIVALENT. THE BUILDING SUPPLIER SHALL BE A SINGLE SOURCE DESIGN, ENGINEERING AND MANUFACTURE WHO SHALL SUPPLY THE PACKAGED BUILDING.
3. ROMTEC INC
   18240 NORTH BANK RD
   ROSEBURG, OR. 97470
   TEL: 541-496-3541
   EMAIL: TRAVIS.OLSON@ROMTEC.COM

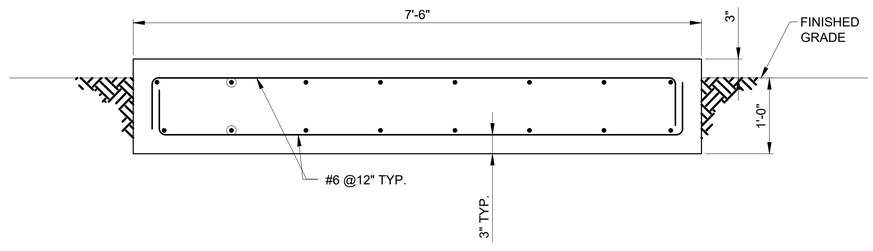



## TRANSFORMER PAD

SCALE: 3/8"=1'-0"




A
-
ELEVATION
SCALE: 3/8" = 1'-0"




B
-
SECTION
SCALE: 1" = 1'-0"

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Attention:

0 1"

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NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

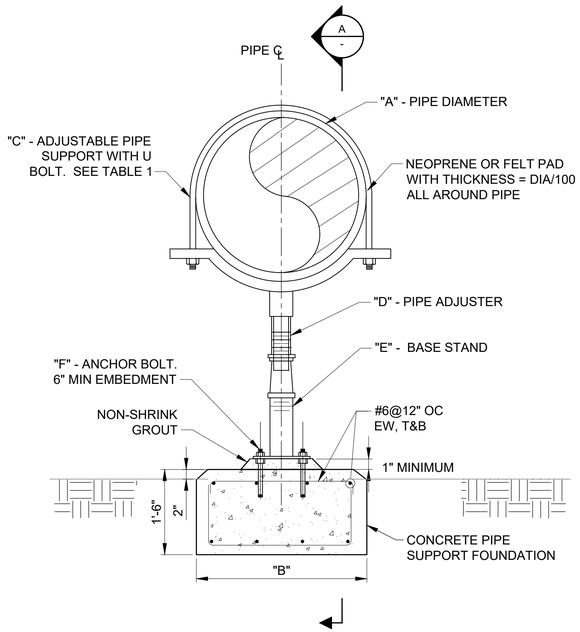
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

ELECTRICAL EQUIPMENT
BUILDING FOUNDATION

DWG. NO. S-03

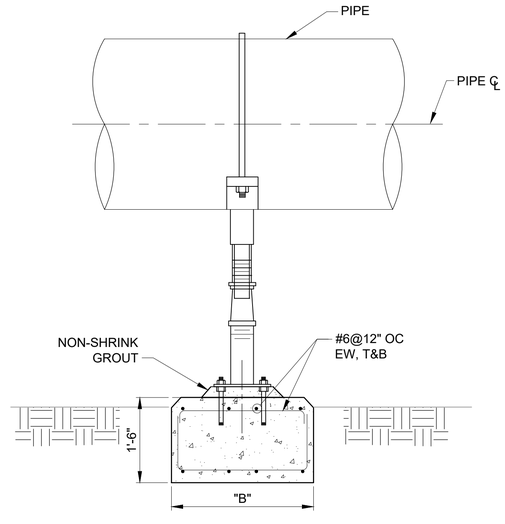
SHEET NO. 63

ARCHIVE #




NOTE: SEE TABLE 1 FOR MODEL NUMBERS AND DIMENSIONS

1 DETAIL
ADJUSTABLE PIPE SUPPORT
SCALE : $\frac{3}{4}$" = 1'




A SECTION
SCALE: 3/4"=1'-0"

NOTES:

1. ALL ADJUSTABLE PIPE SUPPORT COMPONENTS SHALL BE HOT DIP GALVANIZED STEEL.
2. BASE PLATE SHALL HAVE MINIMUM DIMENSIONS SHOWN ON TABLE 1. ADJUSTABLE PIPE SUPPORT, PIPE ADJUSTOR, AND THREADED BASE STAND, SHALL BE COOPER B-LINE SERIES OR APPROVED EQUAL.
3. ANCHORS SHALL BE HOT DIP GALVANIZED ALL THREAD (ASTM F1554 GR. 36), HILTI HAS-V-36. EPOXY SHALL BE HILTI HIT-RE 500. THREADED ANCHORS SHALL BE DOUBLE NUTTED (TOP AND BOTTOM OF BASE PLATE).

TABLE 1: ADJUSTABLE PIPE SUPPORT

| PIPE SIZE "A" | FOUNDATION WIDTH "B" (FT) | B-LINE SERIES ADJUSTABLE PIPE SUPPORT MODEL NUMBER | | | ANCHOR BOLT DIA "F" (IN) |
|---|---|---|---|---|---|
| | | ADJUSTABLE PIPE SUPPORT WITH U-BOLT "C" | PIPE ADJUSTER "D" | BASE STAND "E" | |
| 10 | 2'-0" | B3090-10 | B3089-2 $\frac{1}{2}$ | B3088T-3 | 3/4 |
| 12 | 2'-0" | B3090-12 | B3089-2 $\frac{1}{2}$ | B3088T-3 | 3/4 |
| 18 | 2'-6" | B3090-18 | B3089-4 | B3088T-6 | 7/8 |
| 24 | 2'-6" | B3090-24 | B3089-4 | B3088T-6 | 7/8 |
| 36 | 3'-0" | B3090-36 | B3089-4 | B3088T-6 | 1 |

Attention:
0 1"
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| NO. | DATE | ISSUE/REVISION | APP |
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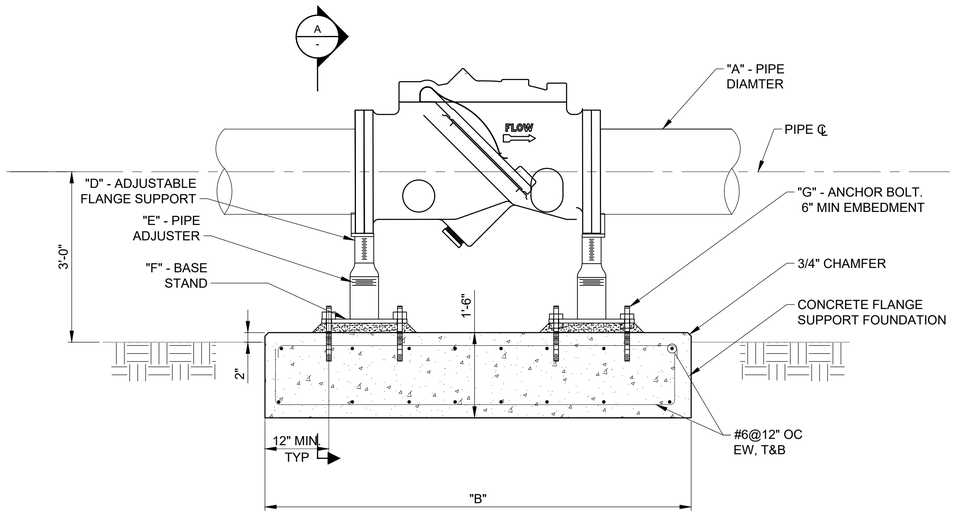
NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

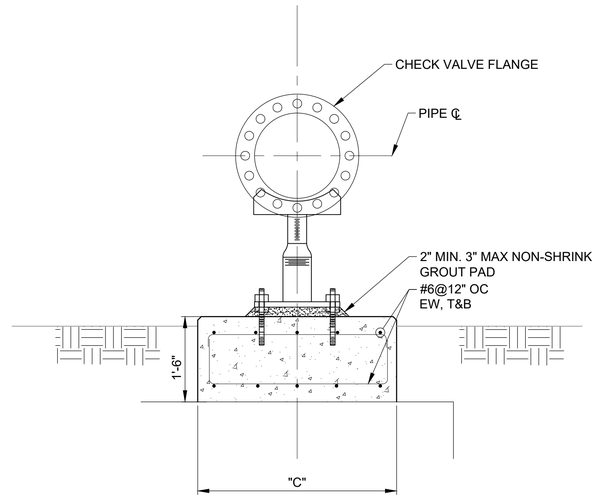
ADJUSTABLE PIPE SUPPORTS

DWG. NO. S-04
SHEET NO. 64
ARCHIVE #




NOTE: SEE TABLE 1 FOR MODEL NUMBERS AND DIMENSIONS

1 DETAIL
ADJUSTABLE FLANGE SUPPORT
SCALE : 3/4" = 1'




A - SECTION
SCALE: 3/4"=1'-0"

NOTES:

1. ALL ADJUSTABLE FLANGE SUPPORTS COMPONENTS SHALL BE HOT DIP GALVANIZED STEEL.
2. BASE PLATE SHALL HAVE MINIMUM DIMENSIONS SHOWN ON TABLE 1. ADJUSTABLE FLANGE SUPPORT, PIPE ADJUSTOR, AND THREADED BASE STAND, SHALL BE COOPER B-LINE SERIES OR APPROVED EQUAL.
3. ANCHORS SHALL BE HOT DIP GALVANIZED ALL THREAD (ASTM F1554 GR. 36), HILTI HAS-V-36. EPOXY SHALL BE HILTI HIT-RE 500. THREADED ANCHORS SHALL BE DOUBLE NUTTED (TOP AND BOTTOM OF BASE PLATE).
4. ANCHOR BOLTS FOR FLANGE SUPPORT SHALL BE A MINIMUM OF 12-INCHES FROM THE EDGE OF THE PAD. CONTRACTOR TO INCREASE PAD LENGTH OR WIDTH AS REQUIRED TO MAINTAIN 12-INCH REQUIREMENT.

TABLE 1: ADJUSTABLE FLANGE SUPPORT

| PIPE SIZE "A" | FOUNDATION LENGTH "B" (FT) | FOUNDATION WIDTH "C" (FT) | B-LINE SERIES ADJUSTABLE PIPE SUPPORT MODEL NUMBER | | | ANCHOR BOLT DIA "G" (IN) |
|---|---|---|---|---|---|---|
| | | | ADJUSTABLE FLANGE SUPPORT "D" | PIPE ADJUSTER "E" | BASE STAND "F" | |
| 18 | 7'-0" | 3'-6" | B3094-18 | B3089-4 | B3088T-6 | 1 |
| 24 | 9'-0" | 4'-0" | B3094-24 | B3089-4 | B3088T-6 | 1 1/4 |

Attention:
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10-05-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

ADJUSTABLE FLANGE SUPPORTS

DWG. NO. S-05
SHEET NO. 65
ARCHIVE #

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GENERAL NOTES:

1. 'TOP' BARS ARE HORIZONTAL BARS PLACED WITH MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE BAR.

2. UNLESS NOTED OTHERWISE, ALL HOOK BARS EXTEND TO THE FAR FACE (LESS COVER)

3. ALL SPLICES SHALL BE WIRED IN CONTACT AND STACKED VERTICALLY

4. ALL SPLICE ARE 'LTS' UNLESS NOTED OTHERWISE

5. SMALLER BAR LAP LENGTH SHALL BE USED WHEN SPLICING DIFFERENT SIZED BARS

6. LAP LENGTHS SPECIFICALLY DETAILED ON DRAWINGS SHALL GOVERN IN LIEU OF LAP LENGTHS SCHEDULE

7. BUNDLED BAR SPLICES:
   7.1. INDIVIDUAL BAR SPLICES WITHIN THE BUNDLE SHALL BE STAGGERED
   7.2. INCREASE LAP LENGTH 20% FOR A 3 BAR BUNDLE
   7.3. INCREASE LAP LENGTH 33% FOR A 4 BAR BUNDLE

ADJUSTMENTS FOR GIVEN LAP LENGTHS:

1. IF REINFORCING IS SPECIFIED AS EPOXY COATED, INCREASE SCHEDULED LAP LENGTHS BY 50%

2. IF LIGHTWEIGHT AGGREGATE IS SPECIFIED, INCREASE SCHEDULED LAP LENGTHS BY 30%

3. SCHEDULED LAP LENGTHS ASSUME:
   3.1 CLEAR COVER IS GREATER THAN BAR DIAMETER, AND NOT LESS THAN 3/4"
   3.2 CLEAR SPACING BETWEEN BARS IS GREATER THAN 2 BAR DIAMETERS
   3.3 IF EITHER CONDITION A OR B IS NOT MET FOR A GIVEN BAR, INCREASE LENGTHS BY 50%

4. SPLICE LENGTHS NOTED BASED ON Fy = 60,000 PSI. FOR OTHER YIELD STRENGTHS, MULTIPLY SPLICE LENGTHS NOTED BY Fy/60,000

HOOK EMBEDMENT NOTES:

1. SCHEDULED HOOK EMBEDMENT LENGTHS ASSUME:
   1.1 AREA OF CONFINING REINFORCEMENT IS GREATER THAN 0.4 TIMES THE AREA OF THE HOOKED BARS OR CENTER TO CENTER SPACING OF HOOKED BARS IS 6 BAR DIAMETERS OR GREATER
   1.2 SIDE COVER NORMAL TO THE PLANE OF THE HOOK INSIDE A COLUMN CORE IS 2 1/2 INCHES OR GREATER
   1.3 SIDE COVER NORMAL TO THE PLANE OF THE HOOK FOR OTHER ELEMENTS IS 6 BAR DIAMETERS OR GREATER

2. IF REINFORCING IS SPECIFIED AS EPOXY COATED INCREASE SCHEDULED LAP LENGTHS BY 20%

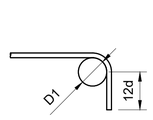
3. IF AREA OF CONFINING REINFORCEMENT IS LESS THAN 0.4 TIMES THE AREA OF THE HOOKED BARS AND HOOKED BAR SPACING IS LESS THAN 6 BAR DIAMETERS OR GREATER, INCREASE LENGTHS BY 60%

4. IF SIDE COVER IS LESS THAN 2 1/2 INCHES, INCREASE LENGTHS BY 25%

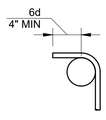
| STEEL REINFORCING COVER SCHEDULE | |
|---|---|
| CONCRETE SECTION | MINIMUM CLEAR COVER |
| **UNIFORM SURFACE IN CONTACT WITH FOUNDATION** | 3 INCHES |
| **FORMED SURFACES SUCH AS WALLS AND SLAB** | |
| ≥ 24 INCH THICKNESS | 4 INCHES |
| > 12 INCHES AND < 24 INCHES IN THICKNESS | 3 INCHES |
| **≤ 12 INCHES IN THICKNESS CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH** | 3 INCHES |
| **≤ 12 INCHES CONCRETE EXPOSED EARTH AND WEATHER** | 2 INCHES |

LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE (INCHES)

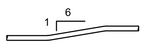
| BAR SIZE (US) | BAR DIAMETER | F'c = 4500 PSI | | | | |
|---|---|---|---|---|---|---|
| | | TENSION | | | | |
| | | LDH | LTE TOP | LTE | LTS TOP | LTS |
| #3 | 0.375 | 6 | 17 | 13 | 23 | 17 |
| #4 | 0.500 | 6 | 23 | 18 | 30 | 23 |
| #5 | 0.625 | 7 | 29 | 22 | 38 | 29 |
| #6 | 0.750 | 10 | 35 | 27 | 45 | 35 |
| #7 | 0.875 | 12 | 51 | 39 | 66 | 51 |
| #8 | 1.000 | 15 | 58 | 45 | 76 | 58 |
| #9 | 1.128 | 18 | 66 | 50 | 85 | 66 |
| #10 | 1.270 | 21 | 74 | 57 | 96 | 74 |
| #11 | 1.410 | 25 | 82 | 63 | 107 | 82 |



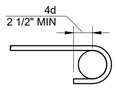

**PRINCIPAL REINFORCING 90° HOOK**



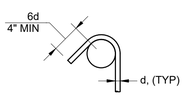

**#3-#5 90° HOOK STIRRUPS ONLY**




**MAX OFFSET BEND**




**PRINCIPAL REINFORCING 180° HOOK**




**#3-#8 135° HOOK TIE OR STIRRUPS**

| D1 | | D2 | |
|---|---|---|---|
| #3 - #8 | 6d | #3 - #5 | 4d |
| #9 - #11 | 8d | #6 - #8 | 6d |
| | | #9 - #11 | 8d |

## TYPICAL REINFORCING BENDS

**NOTES:**
1. ALL REINFORCEMENT SHALL BE BENT COLD AND IN THE SHOP.

| Attention: 0 1" If this scale bar does not measure 1" then drawing is not original scale. | NO. | DATE | ISSUE/REVISION | APP |
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| *Approved:* | K. YAO |
| *Submitted:* | S. GALA |

REGISTERED PROFESSIONAL ENGINEER — KRISHNA C. AMIRINENI — C 78724 — CIVIL — STATE OF CALIFORNIA — 09-30-23
10-05-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

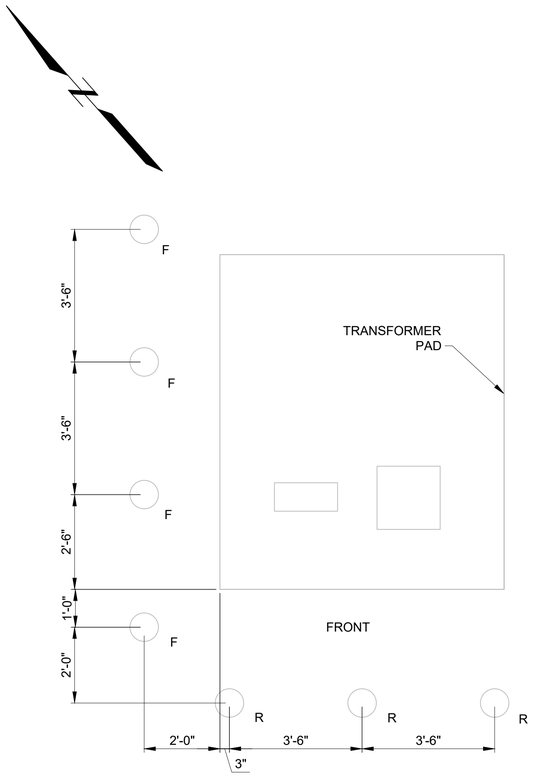
NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

STRUCTURAL
DETAILS 1

DWG. NO. SG-01

SHEET NO. 65

ARCHIVE #



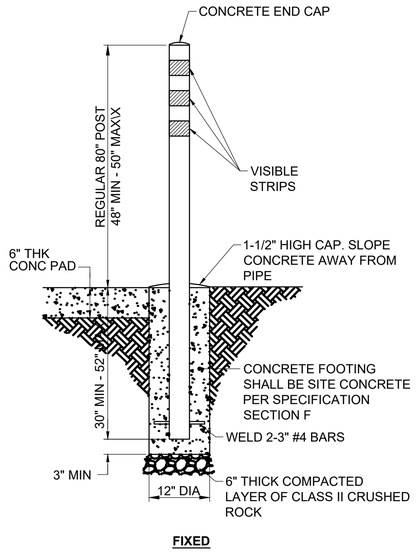

LEGEND:

F=FIXED BOLLARD
R=REMOVABLE BOLLARD

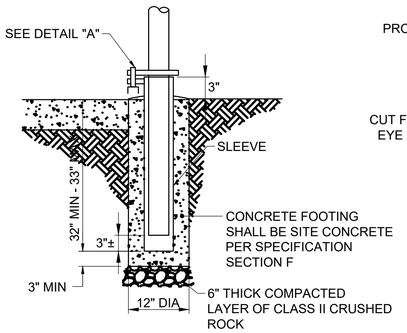
NOTE:

1. SEE DETAIL 2 ON THIS DWG.
2. SEE DWG S-03 FOR STRUCTURAL DETAILS.

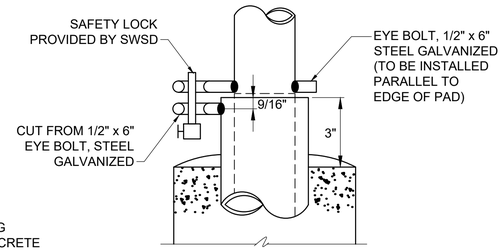
1 - DETAIL
TRANSFORMER BOLLARD/GUARD POST LAYOUT
NO SCALE




FIXED




REMOVABLE




DETAIL A

| DESCRIPTION | LENGTH (INCHES) |
|---|---|
| GALVANIZED FIXED POST, 4", STEEL PIPE, STANDARD, SCHEDULE 40 | 80 |
| REMOVABLE POST, 4", GALVANIZED STEEL PIPE, STANDARD, SCHEDULE 40 WITH 5" GALVANIZED STEEL PIPE SLEEVE, 35W LONG, STANDARD, SCHEDULE 40 | 80 |
| REPLACEMENT 4" REMOVABLE BARRIER POST GALVANIZED STEEL PIPE WITH CAP LESS SLEEVE AND EYE BOLT | 80 |
| END CAP, 4", GALVANIZED MALLEABLE IRON, MAY BE SCREWED FOR REMOVABLE. FIXED SHALL BE CONCRETE END CAP | - |
| STRIP, VISIBILITY REFLECTIVE YELLOW ADHESIVE SHEET, 2" X 12", ALMETEK #DL-RY2X12-A | - |
| SAFETY LOCK | - |

2 - DETAIL
BOLLARD/GUARD POST
NO SCALE

Attention:

0 1"

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10-05-2021

NORTH KERN WATER STORAGE DISTRICT

GEI PROJECT NO. 2005381

NORTH KERN WATER STORAGE DISTRICT
PIPELINE AND PUMP STATION PROJECT

STRUCTURAL DETAILS 2

DWG. NO. SG-02
SHEET NO. 66
ARCHIVE #

## COMPONENTS

| SYMBOL | DESCRIPTION |
|---|---|
| RES | RESISTOR |
| SV | SOLENOID COIL |
| HTR | HEATER |
| | CAPACITOR |
| | DIODE |
| | DIODE, ZENER |
| MOV | METAL OXIDE VARISTOR |
| | AUDIBLE ALARM |
| ? | 3 PHASE MOTOR<br>? = MOTOR HP |
| M | 3 PHASE MOTOR |
| M | SINGLE PHASE MOTOR |
| | TRANSFORMER<br>SIZE AND VOLTAGE AS SHOWN |
| M | UTILITY POWER METER |
| | UFER GROUND |
| | GROUND ROD |
| | CURRENT TRANSFORMER<br>RATIO AS NOTED |
| | DISCONNECT SWITCH<br>SIZED PER FEEDER |
| PDB | POWER DISTRIBUTION BLOCK |

## SWITCHES – OPERATOR

| SYMBOL | DESCRIPTION |
|---|---|
| SW | TOGGLE OR DISCONNECT SWITCH |
| PB | PUSHBUTTON –<br>NORMALLY OPEN, MOMENTARY ACTION |
| PB | PUSHBUTTON –<br>NORMALLY CLOSED, MOMENTARY UNLESS LOS (LOCK OUT STOP) WHERE MECHANICALLY HELD |
| PB | PUSHBUTTON, MECHANICALLY CONNECTED, DOUBLE CIRCUIT – NORMALLY CLOSED AND NORMALLY OPEN |
| HAND OFF AUTO | SELECTOR SWITCH, 3 POSITION – CONTACT STATUS SHOWN EXISTS I.E. AT POSITION OF HAND, OFF, OR AUTO |
| | SELECTOR SWITCH, 2 POSITION – MIDDLE POSITION IS DELETED |
| | ALTERNATE METHOD: X00 = HAND<br>00X = AUTO, 0X0 = OFF |
| | POTENTIOMETER |

## SWITCHES – PROCESS

| SYMBOL | DESCRIPTION |
|---|---|
| FS | FLOW SWITCH –<br>CLOSES UPON INCREASING FLOW |
| FS | FLOW SWITCH –<br>OPENS UPON INCREASING FLOW |
| LS | LEVEL SWITCH –<br>CLOSES UPON INCREASING LEVEL |
| LS | LEVEL SWITCH –<br>OPENS UPON INCREASING LEVEL |
| PS | PRESSURE SWITCH –<br>CLOSES UPON INCREASING PRESSURE (DECREASING VACUUM) |
| PS | PRESSURE SWITCH –<br>OPENS UPON INCREASING PRESSURE (DECREASING VACUUM) |
| TS | TEMPERATURE SWITCH –<br>CLOSES UPON INCREASING TEMPERATURE |
| TS | TEMPERATURE SWITCH –<br>OPENS UPON INCREASING TEMPERATURE |
| ZS | LIMIT SWITCH –<br>CLOSES AT SET LIMIT |
| ZS | LIMIT SWITCH –<br>OPENS AT SET LIMIT |
| WS | TORQUE SWITCH –<br>CLOSES UPON INCREASING TORQUE |
| WS | TORQUE SWITCH –<br>OPENS UPON INCREASING TORQUE |

## DEVICES – FRONT PANEL

| SYMBOL | DESCRIPTION |
|---|---|
| X | INDICATING LIGHT, LETTER "X" INDICATES COLOR: R=RED G=GREEN, A=AMBER, W=WHITE Y=YELLOW, B=BLUE |
| PTT X | INDICATING LIGHT, PUSH TO TEST |
| ETM | ELAPSED TIME METER |

## DEVICES – PROTECTIVE

| SYMBOL | DESCRIPTION |
|---|---|
| S | CT SHORTING TERMINAL BLOCK |
| PTS | FUSED POTENTIAL TRANSFORMER, 208 / 120 V SECONDARY OR AS SHOWN |
| PM | POWER MONITOR |
| SPD | SURGE PROTECTION DEVICE |
| PFR | POWER FAIL REPLAY |

## DEVICES – RELAY

| SYMBOL | DESCRIPTION |
|---|---|
| M1 | CONTACTOR OR STARTER M1 |
| CR 1 | CONTROL RELAY CR1 |
| TR 2 | TIME DELAY RELAY TR2 –<br>ADJUSTABLE TIME DELAY RANGE & SETTING AS SHOWN |
| TDOE | TIME DELAY ON ENERGIZATION |
| TDOD | TIME DELAY ON DE–ENERGIZATION |
| 107, 121 | REFERENCED RELAY WITH<br>N.O. CONTACT ON LINE 107<br>N.C. CONTACT ON LINE 121 |
| CR1 (105) | NORMALLY OPEN,<br>RELAY CONTACT –<br>ACTUATED BY RELAY CR1<br>COIL LOCATED ON LINE 105 |
| CR1 | NORMALLY CLOSED,<br>RELAY CONTACT –<br>ACTUATED BY RELAY CR1 |
| TR2 | NORMALLY OPEN,<br>TIME DELAY RELAY CONTACT –<br>CONTACT CLOSES AFTER<br>TR2 IS ENERGIZED |
| TR2 | NORMALLY CLOSED,<br>TIME DELAY RELAY CONTACT –<br>CONTACT OPENS AFTER<br>TR2 IS ENERGIZED |
| TR2 | NORMALLY OPEN,<br>TIME DELAY RELAY CONTACT –<br>CONTACT OPENS AFTER<br>TR2 IS DE–ENERGIZED |
| TR2 | NORMALLY CLOSED,<br>TIME DELAY RELAY CONTACT –<br>CONTACT CLOSES AFTER<br>TR2 IS DE–ENERGIZED |
| TR2 | CONTACT OPENS AND CLOSES IN A TIMED REPEAT CYCLE |

## DEVICES – PROTECTIVE

| SYMBOL | DESCRIPTION |
|---|---|
| Y xA xP xT | LOW VOLTAGE MOLDED CASE, INSULATED CASE OR POWER CIRCUIT BREAKER. RATINGS AS SHOWN IN DRAWINGS AND AS DEFINED BELOW:<br>xA: CIRCUIT BREAKER AMERAGE<br>xAT: AMPERAGE TRIP<br>xAF: AMPERAGE FRAME<br>xP: NUMBER OF POLES<br>xT: TRIP PROTECTION<br>MCP: MOTOR CIRCUIT PROTECTION<br>TM: THERMAL MAGNETIC<br>L: LONG TIME DELAY<br>S: SHORT TIME DELAY<br>I: INSTANTANEOUS TRIP<br>G: GROUND FAULT<br>A: ARC FLASH PROTECTION<br>100% DUTY RATED |
| 100% | y: BREAKER FEATURES / OPTIONS |
| S | – SHUNT TRIP |
| K | – KIRK–KEY INTERLOCK |
| M | – MANUALLY CHARGED PUSHBUTTON OPERATION |
| E | – ELECTRICALLY CHARGED PUSHBUTTON OPERATION |
| OL | THERMAL OVERLOAD CONTACT |
| | THERMAL OVERLOAD ELEMENT |
| | FUSE<br>MEDIUM VOLTAGE CIRCUIT BREAKER |
| 52 | TRIP FUNCTIONS PER DRAWINGS AND SPECIFICATIONS |
| MFR | MULTIFUNCTION RELAY PER SPECIFICATIONS |

## WIRING – CONNECTIONS

| SYMBOL | DESCRIPTION |
|---|---|
| | PANEL OR EQUIPMENT WIRING |
| | FIELD WIRING |
| | CONDUCTORS –<br>NOT CONNECTED |
| | CONDUCTORS –<br>CONNECTED |
| | GROUND CONNECTION |
| | PLUG AND RECEPTACLE |
| | INCOMING LINE |
| 123 123 | TERMINAL BLOCKS WITH TERMINAL NUMBER AS SHOWN OR AS DETERMINED BY SUBMITTAL |
| 123 | DISCONNECTING TERMINAL BLOCK |
| | FUSE |
| SHIELD CONDUCTOR | SHIELDED CABLE |

## PLAN – SYMBOLS

| SYMBOL | DESCRIPTION |
|---|---|
| | CONDUIT, EXPOSED |
| | CONDUIT, IN SLAB OR BELOW GRADE |
| | CONDUIT, CONCEALED IN WALL OR CEILING |
| | CONDUIT STUBBED OUT & CAPPED |
| | CONDUIT BENDS TOWARD OBSERVER |
| | CONDUIT BENDS AWAY FROM OBSERVER |
| | CONDUIT ENDS |
| J | FLEXIBLE CONDUIT CONNECTION FROM J–BOX TO EQUIPMENT |
| | CONDUIT CHANGE IN ELEVATION |
| G | BARE COPPER GROUND WIRE |
| G | GROUND CONNECTION BOLTED TYPE |
| G | GROUND CONNECTION EXOTHERMIC WELD TYPE |
| | DISCONNECT SWITCH |
| | FIELD MOUNTED DEVICE |
| | TELEPHONE/DATA RECEPTACLE<br>2 PORT TA568A, 2 CAT 6 CABLES |
| # | CONDUIT REFERENCE TO SCHEDULE |
| T | THERMOSTAT |
| E | EYS SEAL |
| J | JUNCTION BOX |
| | PULL BOX OF SIZE SHOWN (CHRISTY BOX SIZE MINIMUM) |
| A a # | LIGHTING FIXTURE<br># – CIRCUIT BREAKER NUMBER<br>A – FIXTURE SCHEDULE REF.<br>a – CONTROL SWITCH REFERENCE |
| WP #7 WP | DUPLEX RECEPTACLE<br># – CIRCUIT BREAKER NUMBER<br>WP – WEATHERPROOF (IF SHOWN)<br>GFI – GROUND FAULT TYPE |
| a M | TOGGLE SWITCH<br>a – FIXTURES CONTROLLED<br>3 – 3 WAY<br>M = MOTION DETECTOR<br>T = TIMER SWITCH |
| | SPECIAL RECEPTACLE AS REQUIRED FOR EQUIPMENT TO BE CONNECTED |

## MISCELLANEOUS ABBREVIATIONS

| | | | |
|---|---|---|---|
| & | AND | N | NEUTRAL |
| @ | AT | NC | NORMALLY CLOSED |
| A | AMBER, AMPERES | NHC | NORMALLY HELD CLOSED |
| AC | ALTERNATING CURRENT | NHO | NORMALLY HELD OPEN |
| ACK | ACKNOWLEDGE | NIC | NOT IN CONTRACT |
| AFF | ABOVE FINISHED FLOOR | NL | NIGHT LIGHT |
| AH | AMP HOUR | NO | NORMALLY OPEN |
| AI | ANALOG INPUT | NTS | NOT TO SCALE |
| AIC | AMP INTERRUPTING CAPACITY SYMMETRICAL | (N) | NEW |
| AM | AMP METER | OC | ON CENTER |
| AO | ANALOG OUTPUT | OI, OIT | OPERATOR INTERFACE |
| AWG | AMERICAN WIRE GUAGE | OL | OVERLOAD |
| ATS | AUTOMATIC TRANSFER SWITCH | ORP | OXIDATION REDUCTION POTENTIAL |
| BATT | BATTERY | P | POLE |
| BFC | BELOW FINISHED CEILING | PB | PUSHBUTTON |
| BOD | BIOCHEMICAL OXYGEN DEMAND | PBX | PULL BOX |
| BPF | BAND PASS FILTER | PDB | POWER DISTRIBUTION BLOCK |
| BYP | BYPASS | PF | POWER FACTOR |
| C | CONDUIT | PFR | POWER FAIL RELAY |
| CAP | CAPACITOR | PH | HYDROGEN ION CONCENTRATION |
| CB | CIRCUIT BREAKER | PLC | PROGRAMMABLE LOGIC CONTROLLER |
| CKT | CIRCUIT | PM | POWER MONITOR |
| COAX | COAXIAL CABLE | PNL | PANEL |
| COMM | COMMUNICATION | POT | POTENTIOMETER |
| CR | CONTROL RELAY | PR | PAIR, TWISTED AND SHIELDED |
| CT | CURRENT TRANSFORMER | PRI | PRIMARY |
| CS | CONSTANT SPEED | PROVIDE | FURNISH, INSTALL, AND CONNECT |
| CU | COPPER | PS | PRESSURE SWITCH |
| DC | DIRECT CURRENT | PT | POTENTIAL TRANSFORMER |
| DET | DETAIL | PTT | PUSH TO TEST |
| DI | DIGITAL INPUT | PVC | POLYVINYLCHLORIDE |
| DISC | DISCONNECT | PWR | POWER |
| DO | DIGITAL OUTPUT | REF | REFERENCE |
| DPDT | DOUBLE POLE DOUBLE THROW | RFI | RADIO FREQUENCY INTERFERENCE |
| DWG | DRAWING | RMS | ROOT MEAN SQUARE |
| E–DTL | ELECTRICAL DRAWING DETAIL | RTD | RESISTANCE TEMPERATURE DETECTOR |
| ELEV | ELEVATION | RST | RESET |
| ENET | ETHERNET | RVAT | REDUCE VOLTAGE AUTO TRANSFORMER |
| ETM | ELAPSED TIME METER | RTU | REMOTE TERMINAL UNIT |
| ESW | ETHERNET SWITCH | (R) | REWIRE, RELOCATE, REVISE, REUSE |
| (E) | EXISTING | SCH | SCHEDULE |
| FCS | FIELD CONTROL STATION | SEC | SECONDARY, SECOND |
| FLA | FULL LOAD AMPS | SECS | SECONDS |
| FLEX | FLEXIBLE LIQUID TIGHT CONDUIT | SEL | SELECTOR |
| FS | FULL SPEED | SFA | SERVICE FACTOR AMPS |
| FVNR | FULL VOLTAGE NON–REVERSING | SPEC | SPECIFICATION |
| FVR | FULL VOLTAGE REVERSING | SPD | SURGE PROTECTIVE DEVICE |
| FWD | FORWARD | SS | STAINLESS STEEL |
| (F) | FUTURE | SSRC | STAINLESS STEEL RIGID CONDUIT |
| GALV | GALVANIZED | SSS | SOLID STATE STARTER |
| GFI | GROUND FAULT INTERRUPTER | STT | START |
| GND | GROUND | STP | STOP |
| GRS | GALVANIZED RIGID STEEL CONDUIT | SV | SOLENOID VALVE |
| GRS–PVC | PVC COATED GRS CONDUIT | SW | SWITCH |
| HI | HIGH | SWBD | SWITCHBOARD |
| HIM | HUMAN INTERFACE MODULE | SYM | SYMMETRICAL |
| HOA | HAND OFF AUTO | TB | TERMINAL BLOCK |
| HP | HORSE POWER | TC | TIME CLOCK |
| HPS | HIGH PRESSURE SODIUM | TDOD | TIME DELAY ON DE–ENERGIZATION |
| HS | HAND SWITCH | TDOE | TIME DELAY ON ENERGIZATION |
| HTR | HEATER | TELCO | TELEPHONE COMPANY |
| HZ | HERTZ | TM | THERMAL MAGNETIC |
| HZD | HAZARD | TEMP | TEMPERATURE |
| I | INTERLOCK | TR | TIME DELAY RELAY |
| I/O | INPUT/OUTPUT | TRIAD | TWISTED AND SHIELDED 3 CONDUCTOR |
| INST | INSTANTANEOUS | TS | TEMPERATURE SWITCH |
| ISR | INTRINSICALLY SAFE RELAY | TSPR | TWISTED AND SHIELDED PAIR |
| IS | INTRINSICALLY SAFE | TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| J | JUNCTION BOX | TYP | TYPICAL |
| K | KILO, PREFIX | UG | UNDERGROUND |
| LA | LIGHTNING ARRESTOR | ULH | ULTRA LOW HARMONIC |
| LC | LIGHTING CONTACTOR | UON | UNLESS OTHERWISE NOTED |
| LEL | LOWER EXPLOSION LIMIT | UPS | UNINTERRUPTIBLE POWER SUPPLY |
| LOS | LOCK OUT STOP | V | VOLTAGE |
| LS | LIMIT SWITCH | VA | VOLT AMPS |
| M | MOTOR CONTACTOR | VAR | VOLT AMPS REACTIVE |
| MAG | MAGNETIC FLOWMETER | VFD | VARIABLE FREQUENCY DRIVE |
| MAX | MAXIMUM | VLV | VALVE |
| MCC | MOTOR CONTROL CENTER | VM | VOLTMETER |
| MCM | THOUSAND CIRCULAR MILS | VMR | VOLTAGE MONITOR RELAY |
| MCP | MOTOR CIRCUIT PROTECTOR | VR | VOLTAGE RELAY |
| MCS | MOLDED CASE SWITCH | W | WATTS |
| MH | MANHOLE | WP | WEATHER PROOF, NEMA 3R |
| MIN | MINIMUM, MINUTE | WTP | WATER TREATMENT PLANT |
| MODEM | MODEM | WWTP | WASTE WATER TREATMENT PLANT |
| MOV | MOTOR OPERATED VALVE | XFMR | TRANSFORMER |
| MTR | MOTOR | Z | IMPEDANCE |
| MUX | MULTIPLEXER | ZS | LIMIT SWITCH |
| MV | MERCURY VAPOR, MEDIUM VOLTAGE | | |


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GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

ELECTRICAL
SYMBOLS AND ABBREVIATIONS

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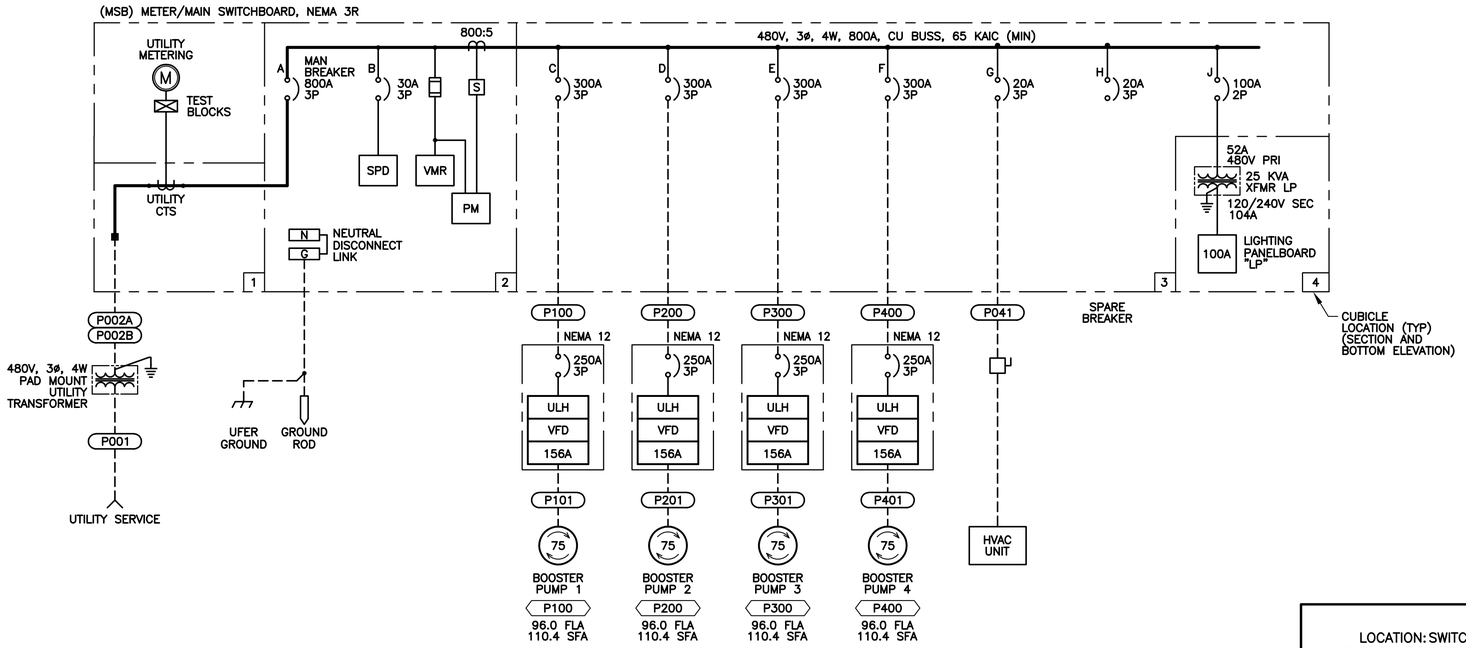
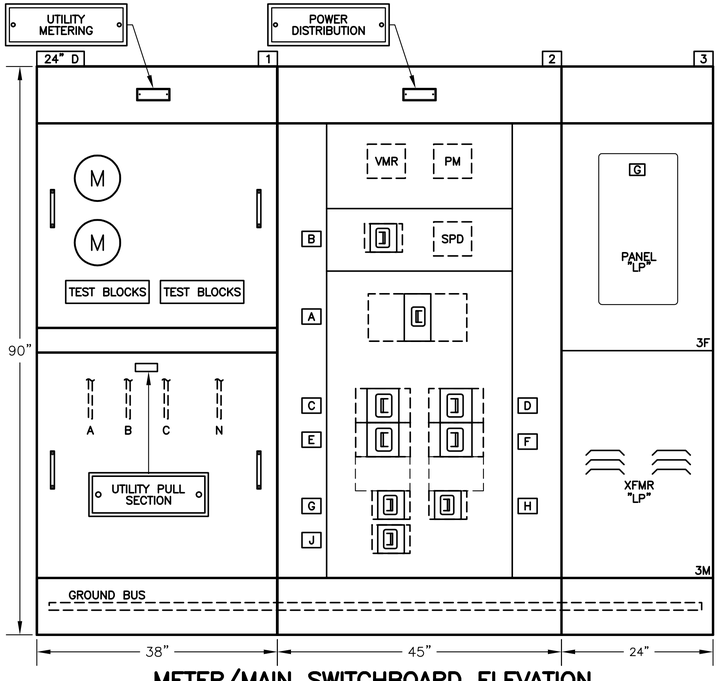



## METER/MAIN ONE-LINE (MSB) 1




## METER/MAIN SWITCHBOARD ELEVATION

### NOTES REFERENCED IN DRAWING:

1. EQUIPMENT OVERSIZED FOR 100HP PUMPS.

### GENERAL NOTES:

1. REAR ACCESS SHALL NOT BE REQUIRED TO SERVICE OR REPLACE SWITCHBOARD COMPONENTS.
2. EACH BREAKER SHALL HAVE A PADLOCKABLE HASP TO LOCK BREAKER IN THE OFF POSITION.
3. ALL DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS SHALL BE PER MANUFACTURER APPROVED IN SUBMITTAL.
4. FURNISH AND APPLY ENGRAVED WHITE LETTERING ON BLACK PLASTIC NAMEPLATES FOR DEVICES AND BREAKERS WHERE NOTED, AT MINIMUM, WITH A LETTERED BOX. TEXT HEIGHT SHALL BE 1/4 INCH MINIMUM. REFRENCE ONE-LINE DIAGRAM FOR LABEL.
5. FURNISH CODE REQURIED WARNING LABELS AND EQUIPMENT RATINGS LABELS.
6. WHERE GROUNDED CONDUCTORS OF DIFFERENT SYSTEMS ARE INSTALLED IN THE SAME RACEWAY, CABLE, BOX, OR OTHER ENCLOSURE, EACH GROUNDED CONDUCTOR SHALL BE IDENTIFIED BY SYSTEM, TYPICAL.

### WEATHERWRAP FABRICATION METHODS

1. NEMA 3R WEATHER-PROOF FOR OUTDOOR INSTALLATION.
2. OUTER DOORS SHALL BE SEALED WITH RUBBERIZED FOAM GASKET.
3. EXTERIOR FABRICATED FROM GALVANEAL (PAINT BOND) SHEET STEEL.
4. 12 GAUGE EXTERIOR AND 14 GAUGE INTERIOR.
5. ALL SEAMS SHALL HAVE CONTINUOUS WELD, GROUND SMOOTH.
6. OUTER DOORS TO BE PADLOCKABLE WITH HEAVY DUTY 3 POINT LATCHES.
7. DOOR HINGES AND PINS SHALL BE 316 STAINLESS STEEL.
8. NO SCREWS, RIVETS, OR BOLTS SHALL PROTRUDE EXTERNALLY.
9. INTERNAL SCREWS, RIVETS, BOLTS, AND NUTS SHALL BE STAINLESS STEEL.
10. PAINT APPLICATION SHALL BE AS FOLLOWS:
    A. TWO STAGE CHEMICAL BATH CLEANING.
    B. ELECTROSTATICALLY APPLIED POWDER COAT PAINT FINISH.
    C. OVEN CURED FOR TWO HOURS.
    D. EXTERIOR COLOR SHALL BE: [MATCH MCC]
11. PHENOLIC SCREW MOUNTED NAMEPLATES SHALL BE PROVIDED FOR ALL OUTER DOOR SECTIONS.
12. FABRICATION, COMPONENTS, AND WIRING SHALL CONFORM TO UL, NEC AND NEMA STANDARDS. PANEL SHALL BE APPROPRIATELY LABELLED.
13. ALL WIRING SHALL BE LABELLED ON BOTH ENDS OF WIRE.
14. AS-BUILT WIRING DIAGRAMS SHALL BE SHIPPED WITH PANEL.
15. PROVIDE DRAWING POCKET ON INSIDE OF CONTROL PANEL DOOR.

### LOAD CALCULATIONS

| LOAD DESCRIPTION | | CONNECTED LOAD LOAD | QTY | TOTAL | DEMAND LOAD LOAD | QTY | TOTAL |
|---|---|---|---|---|---|---|---|
| 100 HP BOOSTER PUMPS 1, 2, 3 & 4 | | 124.00 A | 4 | 412366.7 VA | 124.00 A | 3 | 309275.0 VA |
| 6 KW HVAC SYSTEM | | 9.07 A | 1 | 7540.0 VA | 9.07 A | 1 | 7540.0 VA |
| PANELBOARD LP | 120/240 | 6.57 A | 1 | 5465.0 VA | 5.26 A | 1 | 4372.0 VA |
| | TOTAL LOAD = | 511.64 A | < | 425371.7 VA | 386.33 A | < | 321187.0 VA |
| LOAD CORRECTION FACTORS | | | | | | | |
| LARGEST MOTOR LOAD x 25%: | | | | | | | |
| 100 HP HP => 0.25 x 103091.7 VA | = | 31.00 A | | 25772.9 VA | 31.00 A | | 25772.9 VA |
| 80% BREAKER DERATING = TOTAL x 0.25 | = | 135.66 A | | 112786.1 VA | 104.33 A | | 86740.0 VA |
| FOR CONTINUOUS LOADS NEC 210-20 | | | | | | | |
| SERVICE SIZE (MIN) | = | 678.30 AMP | | 563930.7VA | 521.66 A | | 433699.9VA |
| UTILITY SERVICE | = | 800 AMP | | | | | |
| 480V, 3 PHASE, 4 WIRE | | | | | | | |

### PANEL "LP"

LOCATION: SWITCHBOARD
ENCLOSURE: NEMA 1A
AIC RATING: 10 KAIC

120/ 240 VOLTS, 1 PHASE, 3 WIRE
100 AMP BUS
100 AMP MAIN BREAKER

| BKR NO. | DESCRIPTION | LOAD VA | LINE AMPS | | AMPS/ POLE | BKR NO. |
|---|---|---|---|---|---|---|
| 1 | LIGHTING INDOORS | 336 | 2.8 | | 20/1 | 1 |
| 3 | LIGHTING OUTDOORS | 304 | | 2.5 | 20/1 | 3 |
| 5 | RECEPTACLE INDOORS | 1800 | 15.0 | | 20/1 | 5 |
| 7 | RECEPTACLE OUTDOORS | 1800 | | 15.0 | 20/1* | 7 |
| 9 | SPARE | 0 | 0.0 | | 20/1* | 9 |
| 11 | SPARE | 0 | | 0.0 | 20/1 | 11 |
| 13 | SPARE | 0 | 0.0 | | 20/1 | 13 |
| 15 | SPARE | 0 | | 0.0 | 20/1 | 15 |
| 17 | SPARE | 0 | 0.0 | | 20/1 | 17 |
| 19 | SPARE | 0 | | 0.0 | 20/1 | 19 |
| 21 | SPARE | 0 | 0.0 | | 20/1 | 21 |
| 23 | SPARE | 0 | | 0.0 | 20/1 | 23 |
| 25 | SPARE | 0 | 0.0 | | 20/1 | 25 |
| 27 | SPACE | 0 | | 0.0 | | 27 |
| 29 | SPACE | 0 | 0.0 | | | 29 |
| 31 | SPACE | 0 | | 0.0 | 20/1 | 31 |
| 33 | SPACE | 0 | 0.0 | | | 33 |
| 35 | SPACE | 0 | | 0.0 | | 35 |
| 37 | SPACE | 0 | 0.0 | | | 37 |
| 39 | SPACE | 0 | | 0.0 | | 39 |
| 41 | SPACE | 0 | 0.0 | | | 41 |

| BKR NO. | AMPS/ POLE | LINE AMPS | | LOAD VA | DESCRIPTION | BKR NO. |
|---|---|---|---|---|---|---|
| 2 | 20/1 | 4.4 | | 525 | CONTROL PANEL | 2 |
| 4 | 20/1 | | 2.9 | 350 | CONTROL PANEL AUXILIARY | 4 |
| 6 | 15/1 | 0.0 | | 0 | SPARE | 6 |
| 8 | 15/1 | | 2.9 | 350 | EXHAUST FAN | 8 |
| 10 | 20/1 | 4.2 | | 500 | SITE LIGHTING | 10 |
| 12 | 20/1* | | 0.0 | 0 | SPARE | 12 |
| 14 | 20/2 | 0.0 | | 0 | SPARE | 14 |
| 16 | | | 0.0 | 0 | | 16 |
| 18 | 20/1 | 0.0 | | 0 | SPARE | 18 |
| 20 | 20/1 | | 3.8 | 450 | SECURITY PANEL RECEPTACLE | 20 |
| 22 | 20/1 | 2.9 | | 350 | SECURITY PANEL AUX. RECEPTACLE | 22 |
| 24 | 20/1 | | 0.0 | 0 | SPARE | 24 |
| 26 | 20/1 | 0.0 | | 0 | SPARE | 26 |
| 28 | | | 0.0 | 0 | SPACE | 28 |
| 30 | | 0.0 | | 0 | SPACE | 30 |
| 32 | | | 0.0 | 0 | SPARE | 32 |
| 34 | | 0.0 | | 0 | SPACE | 34 |
| 36 | | | 0.0 | 0 | SPACE | 36 |
| 38 | | 0.0 | | 0 | SPACE | 38 |
| 40 | | | 0.0 | 0 | SPACE | 40 |
| 42 | | 0.0 | | 0 | SPACE | 42 |

| PHASE | A | B |
|---|---|---|
| LEFT SIDE AMPS | 17.80 | 17.53 |
| LEFT SIDE KVA | 2.14 | 2.10 |
| TOTAL PHASE KVA | 3.51 | 3.25 |
| TOTAL PHASE AMPS | 29 | 27 |
| % OF AVERAGE | 104 | 96 |

NEUTRAL

GROUND

| A | B | PHASE |
|---|---|---|
| 11.46 | 9.58 | RIGHT SIDE AMPS |
| 1.38 | 1.15 | RIGHT SIDE KVA |
| 6.77 | | TOTAL KVA |
| 28.19 | | TOTAL AMPS @ 240V, 1P |
| 0.80 | | DIVERSITY FACTOR |
| 5.41 | | LOAD KVA |

NOTES:
1 MEANS OF WIRE COLOR CODING SHALL BE POSTED ON PANELBOARD PER NEC 210 (4)
2 ASTERISK ( * ) DENOTES GFI BREAKER REQUIRED WITH 5 MA SENSITIVITY
3 TILDA ( ~ ) DENOTES GFI BREAKER REQUIRED WITH 30 MA SENSITIVITY

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GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

BOOSTER PUMP STATION
ONE LINE DIAGRAM AND PANEL ELEVATION

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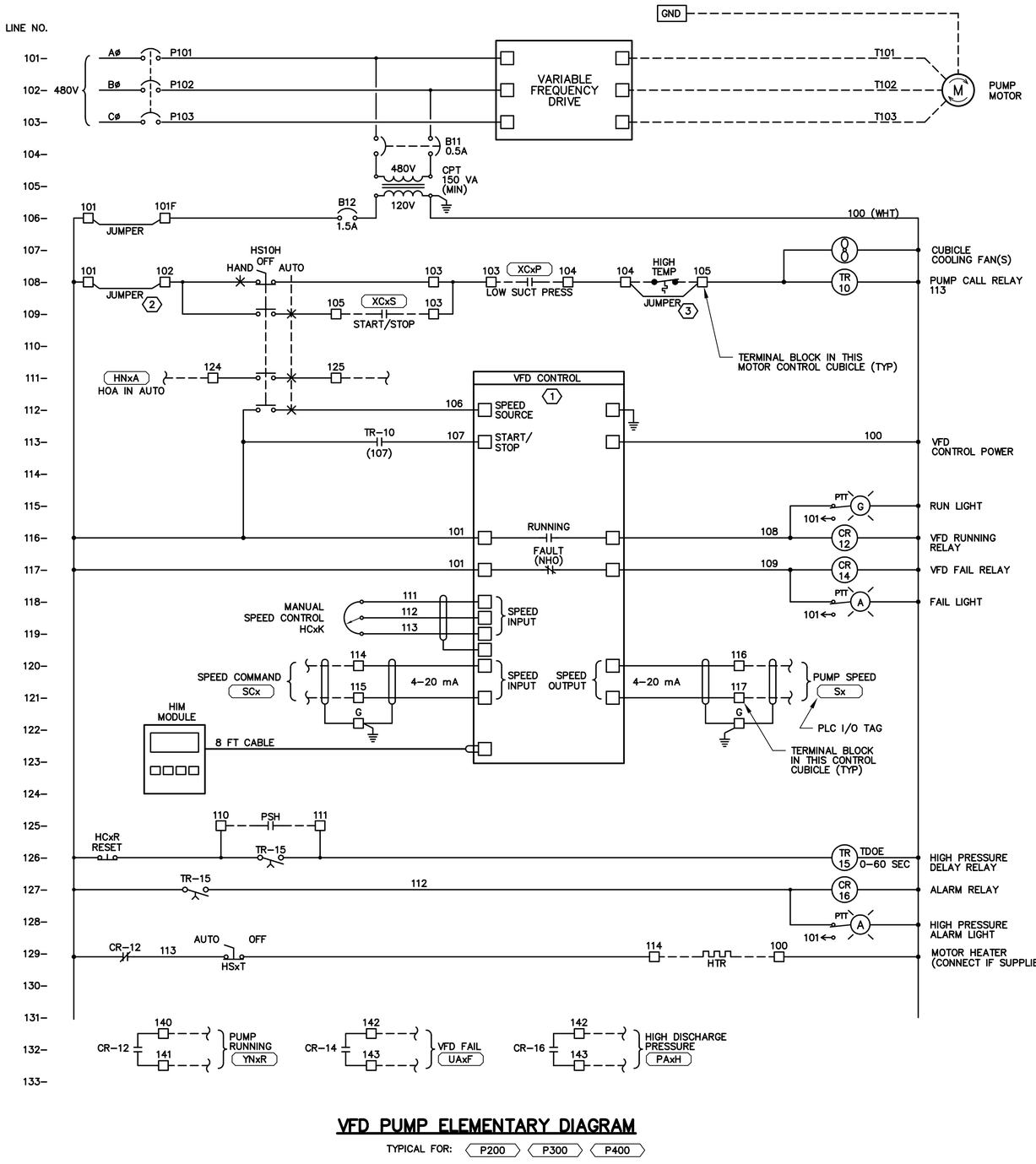
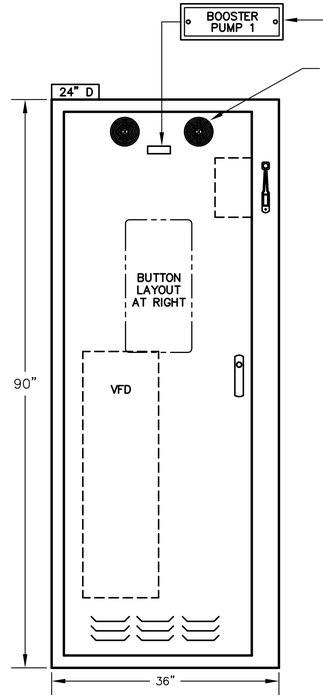


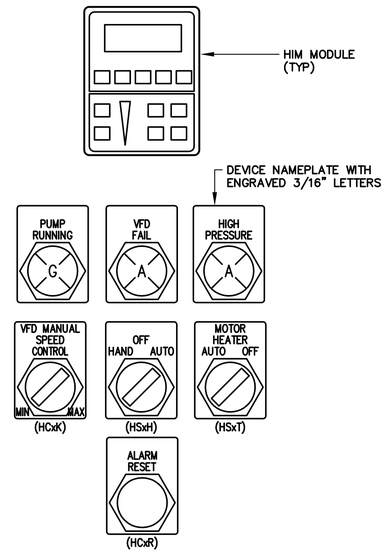

## VFD PUMP ELEMENTARY DIAGRAM

TYPICAL FOR: P200 P300 P400




## VFD ELEVATION (4)

INDOOR, NEMA 1




## DOOR LAYOUT

NOT TO SCALE

## PANEL FABRICATION METHODS

1. NEMA 12, GA STEEL FOR INDOOR INSTALLATION.
2. ALL SEAMS CONTINUOUS WELDED.
3. OUTER DOORS TO BE PADLOCKABLE WITH HEAVY DUTY 3 POINT LATCHES.
4. DOOR HINGES AND PINS SHALL BE 316 STAINLESS STEEL.
5. NO SCREWS, RIVETS, OR BOLTS SHALL PROTRUDE EXTERNALLY.
6. INTERNAL SCREWS, BOLTS, AND NUTS SHALL BE MACHINE THREAD.
7. EXTERIOR PANEL COLOR: BRUSHED STAINLESS STEEL
8. PLASTIC SCREW MOUNTED NAMEPLATES SHALL BE PROVIDED FOR ALL DEVICES ON DEADFRONT.
9. FABRICATION AND WIRING SHALL CONFORM TO U.L. AND NEMA STANDARDS.
10. ALL WIRING SHALL BE PERMANENTLY LABELLED WITH WIRE MARKERS ON BOTH ENDS.
11. WIRING DIAGRAMS SHALL BE PLACED IN A PLASTIC DRAWING HOLDER PERMANENTLY ATTACHED TO THE INSIDE OF THE FRONT DOOR.
12. AS – BUILT WIRING DIAGRAMS SHALL BE SHIPPED WITH EQUIPMENT.

## NOTES REFERENCED IN DRAWING:

(1) PROVIDE VFD WITH 120 VAC CONTROL CIRCUIT INTERFACE AND ELECTRONIC OVERLOAD PROTECTION.

(2) MOTOR OVERTEMPERATURE SWITCH, INSTALL IF SUPPLIED, JUMPER IF NOT.

(3) REMOVE JUMPER FOR DEVICE WHEN CONNECTED.

(4) CONTROL ENCLOSURE SHALL BE HOFFMAN PAINTED STEEL SINGLE DOOR FLOOR–MOUNTED FREESTANDING DISCONNECT ENCLOSURE, TYPE 12, OR EQUAL. PROVIDE DOOR LATCHES, BACKPAN, BREAKER HANDLE MECHANISM, FANS, AND OTHER PARTS TO COMPLETE PANEL.

## GENERAL NOTES:

1. TERMINAL BLOCKS AND WIRES SHALL BE LABELED SAME EXCEPTION: WIRES TO PLC SHALL BE NUMBERED PER CONTROL PANEL TERMINAL BLOCK NUMBER.
2. SIMILAR DIAGRAM FOR ALL VFD MOTORS AS SHOWN IN ONE–LINE DIAGRAM
3. USE 2, 20 & 200 SERIES NUMBERING FOR BOOSTER PUMP 2 DEVICES
   USE 3, 30 & 300 SERIES NUMBERING FOR BOOSTER PUMP 3 DEVICES
   USE 4, 40 & 400 SERIES NUMBERING FOR BOOSTER PUMP 4 DEVICES

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Drawn: M.YARBROUGH
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NORTH KERN WATER STORAGE DISTRICT

GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

ELECTRICAL
VFD PUMP ELEMENTARY DIAGRAM

DWG. NO. E-03
SHEET NO. 70
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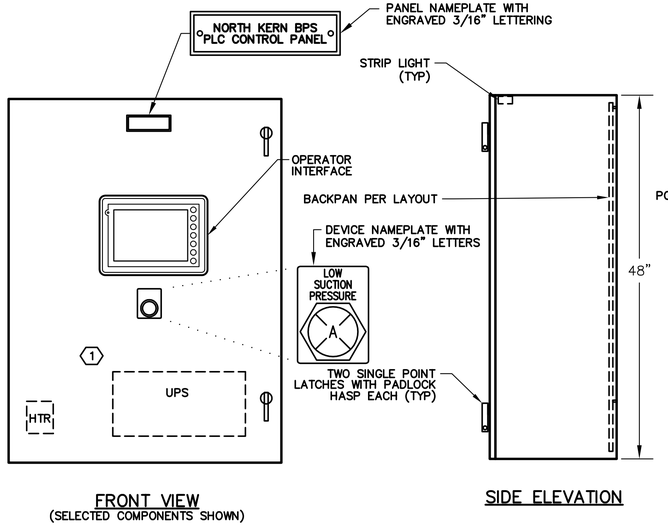
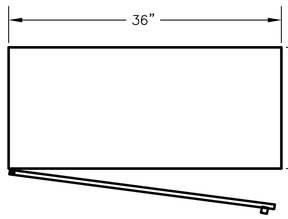



FRONT VIEW
(SELECTED COMPONENTS SHOWN)

SIDE ELEVATION




TOP VIEW

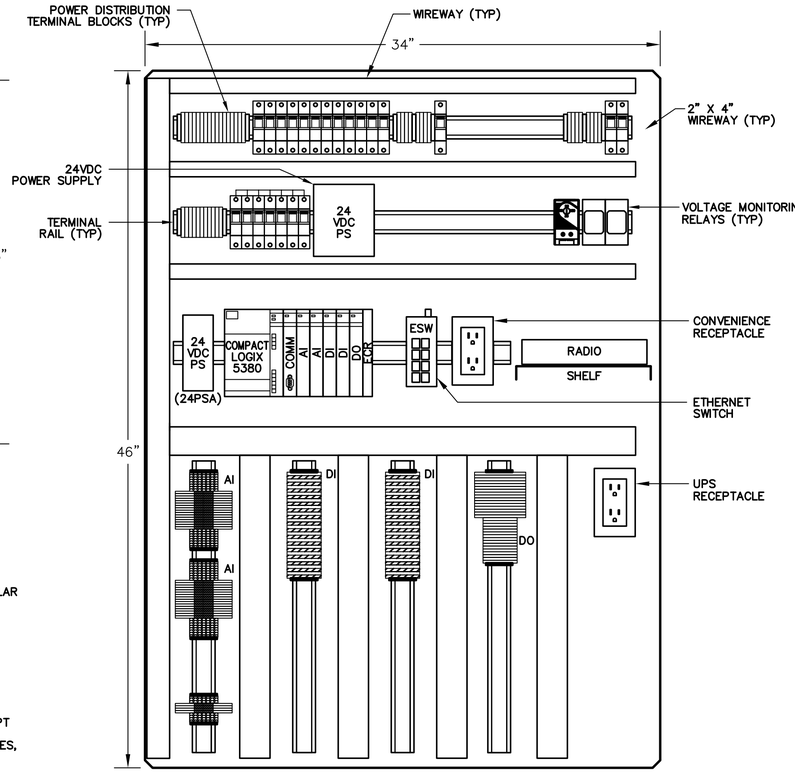
## GENERAL NOTES:

1. LAYOUT REPRESENTATIVE OF MAJOR COMPONENTS ONLY. ACTUAL BACKPAN LAYOUT SHALL BE SIMILAR TO LAYOUT SHOWN. SUBMIT SCALED BACKPAN LAYOUT FOR REVIEW.
2. QUANTITY OF TERMINAL BLOCKS, FUSES, AND RELAYS SHALL BE AS DETERMINED BY P&IDS, EXAMPLE I/O WIRING DIAGRAMS AND POWER DISTRIBUTION DIAGRAM.

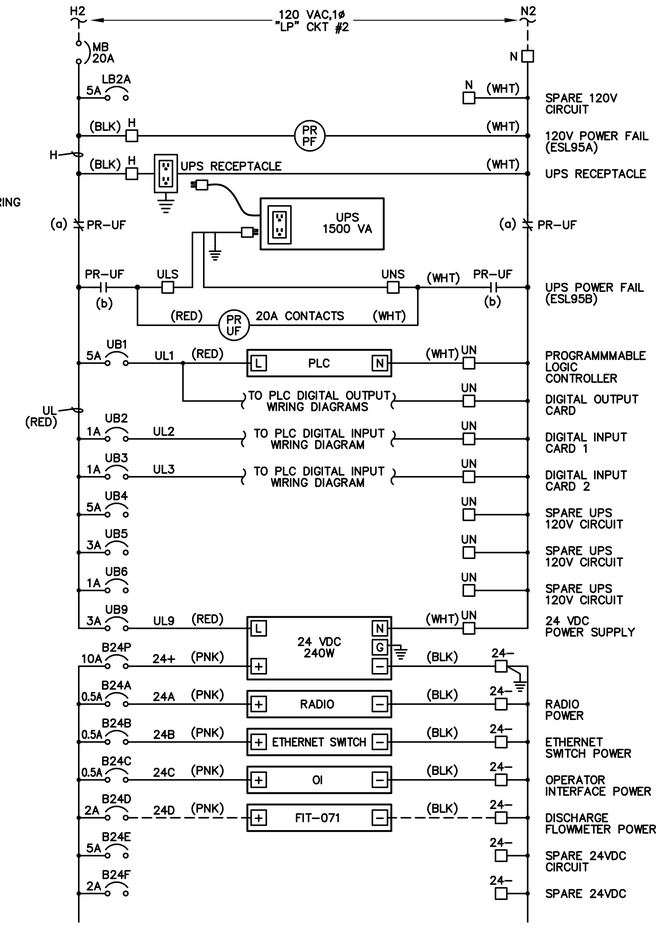
## DRAWING REFERENCED NOTES:

1. CONTROL ENCLOSURE SHALL BE HOFFMAN CONCEPT MODEL NUMBER CSD483616 PAINTED STEEL CONSTRUCTION OR EQUAL. PROVIDE DOOR LATCHES, BACKPAN, AND ANY OTHER PARTS TO COMPLETE PANEL.

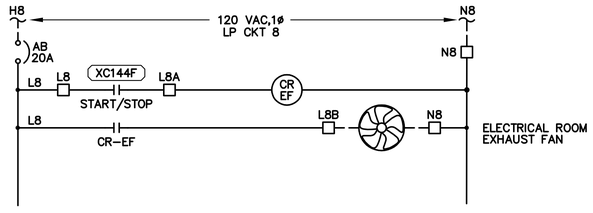
## CONTROL PANEL ELEVATION



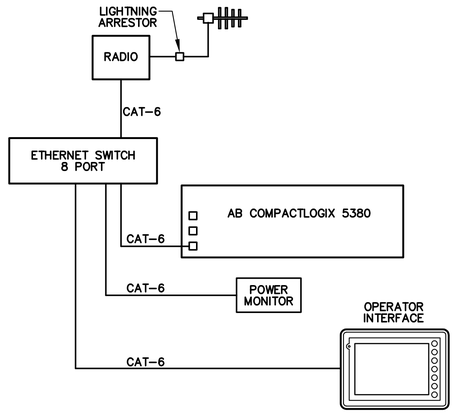

## BACKPAN LAYOUT



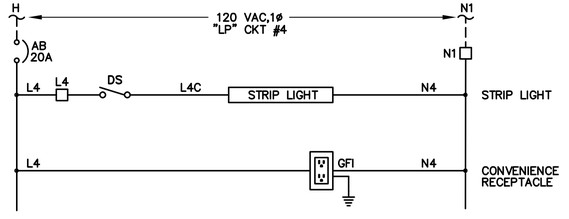

## POWER DISTRIBUTION DIAGRAM




## ELECTRICAL ROOM EXHAUST FAN POWER DIAGRAM




## COMMUNICATION BLOCK DIAGRAM




## AUXILLIARY POWER DIAGRAM

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GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

PLC CONTROL PANEL
WIRING DIAGRAMS, ELEVATION & BACKPAN LAYOUT

DWG. NO. E-04
SHEET NO. 71
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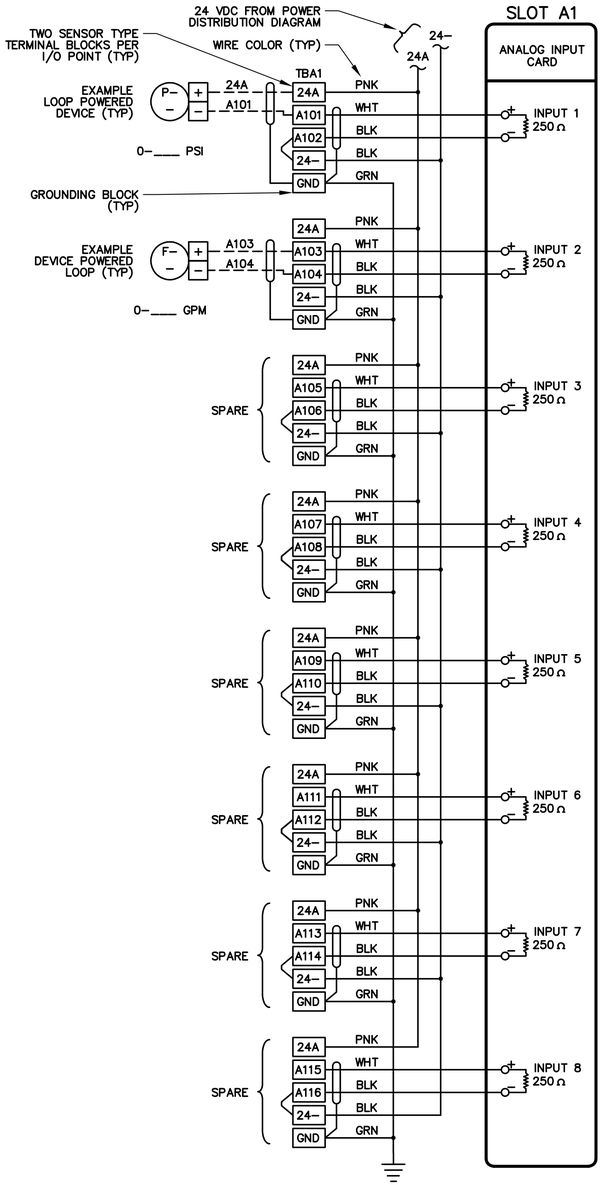
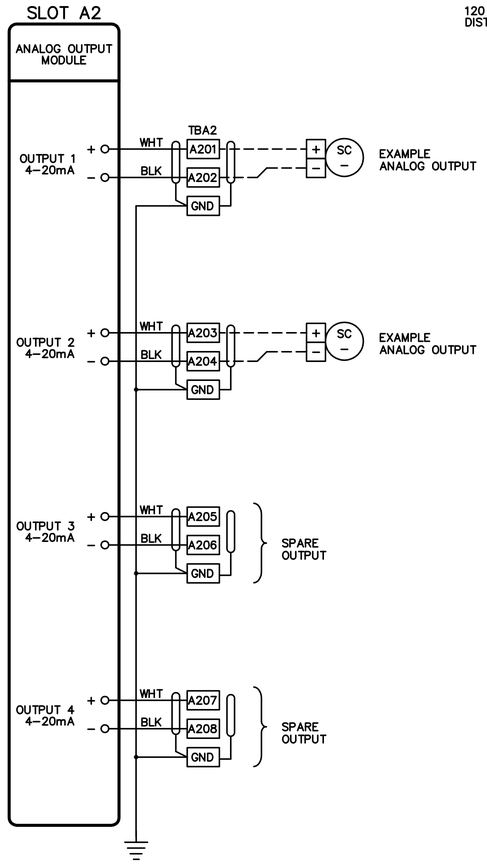


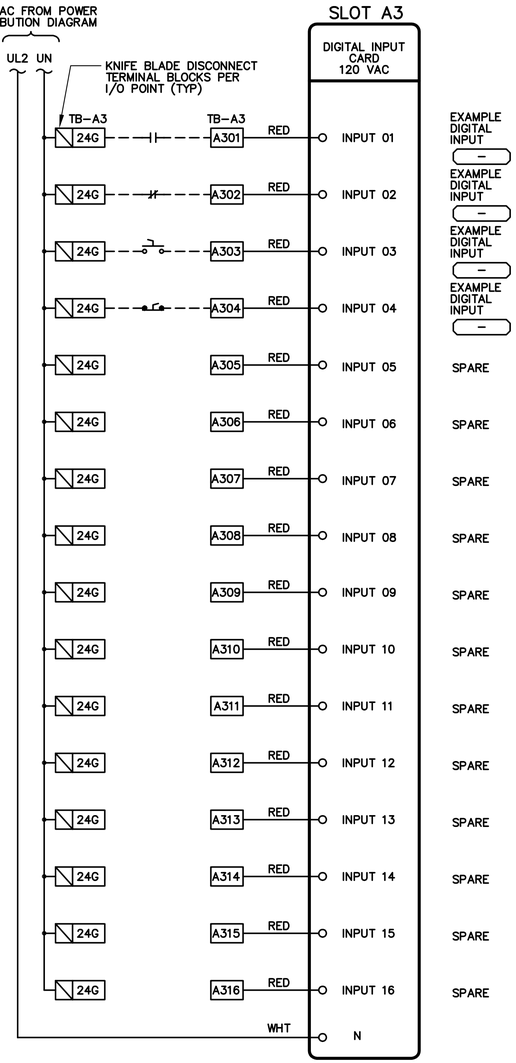

## AI CARD

NOTES: 1. TWO CARDS PER DRAWING MAXIMUM.
2. USE MANUFACTURED TERMINAL BLOCK JUMPERS WHERE POSSIBLE



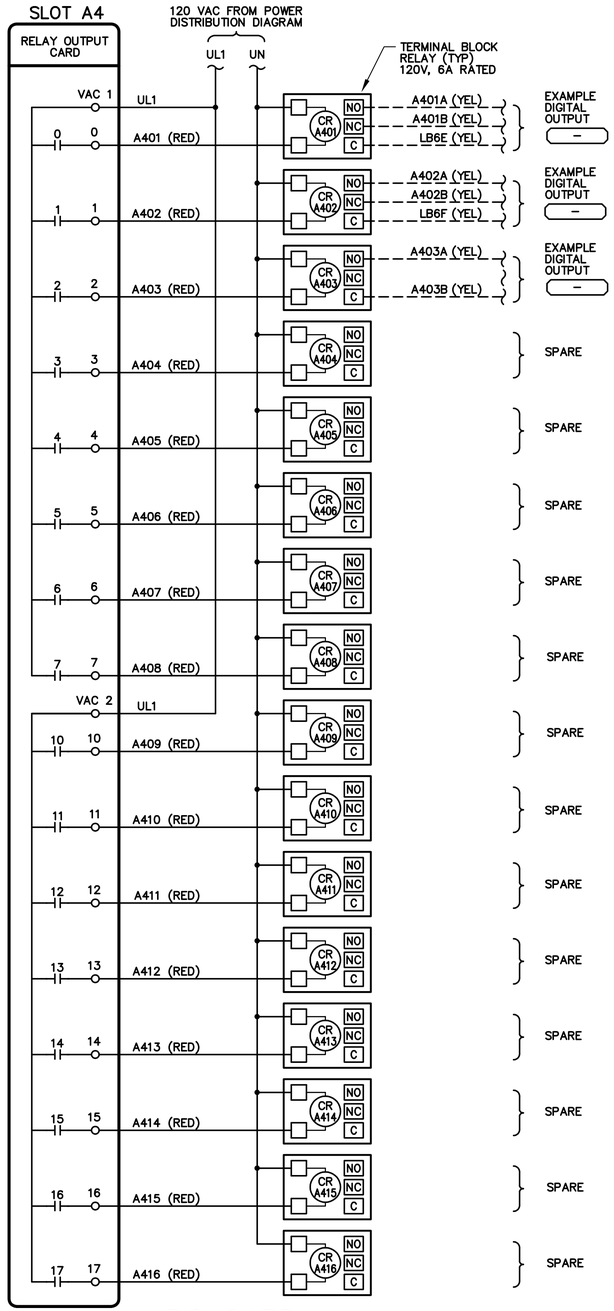

## AO CARD

NOTES: 1. TWO CARDS PER DRAWING MAXIMUM.




## DI CARD

NOTES: 1. TWO CARDS PER DRAWING MAXIMUM.




## DO CARD

NOTES: 1. TWO CARDS PER DRAWING MAXIMUM.

# EXAMPLE PLC I/O WIRING DIAGRAMS

NOTES:
1. WIRE SPARE PLC I/O POINTS TO TERMINAL BLOCKS.
2. EXAMPLE I/O POINTS SHOWN. THIS DRAWING INTENDED TO SHOW I/O WIRING ONLY.
3. I/O TYPE AND NUMBER OF POINTS AND CARDS REQUIRED IS DETERMINED BY P&ID DRAWINGS.
4. MINIMUM 20% SPARE I/O POINTS PER I/O TYPE.
5. PLC I/O CARD WIRE NUMBERS SHALL BE BUILT AS SHOWN IN EXAMPLE BELOW. FIELD WIRES SHALL HAVE SAME NUMBER AS TERMINAL NUMBER.

A101
- RACK LETTER
- SLOT NUMBER
- INPUT NUMBER

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ELECTRICAL
STATE OF CALIFORNIA

NORTH KERN WATER STORAGE DISTRICT

GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

PLC CONTROL PANEL
EXAMPLE PLC I/O WIRING DIAGRAMS

DWG. NO. E-05
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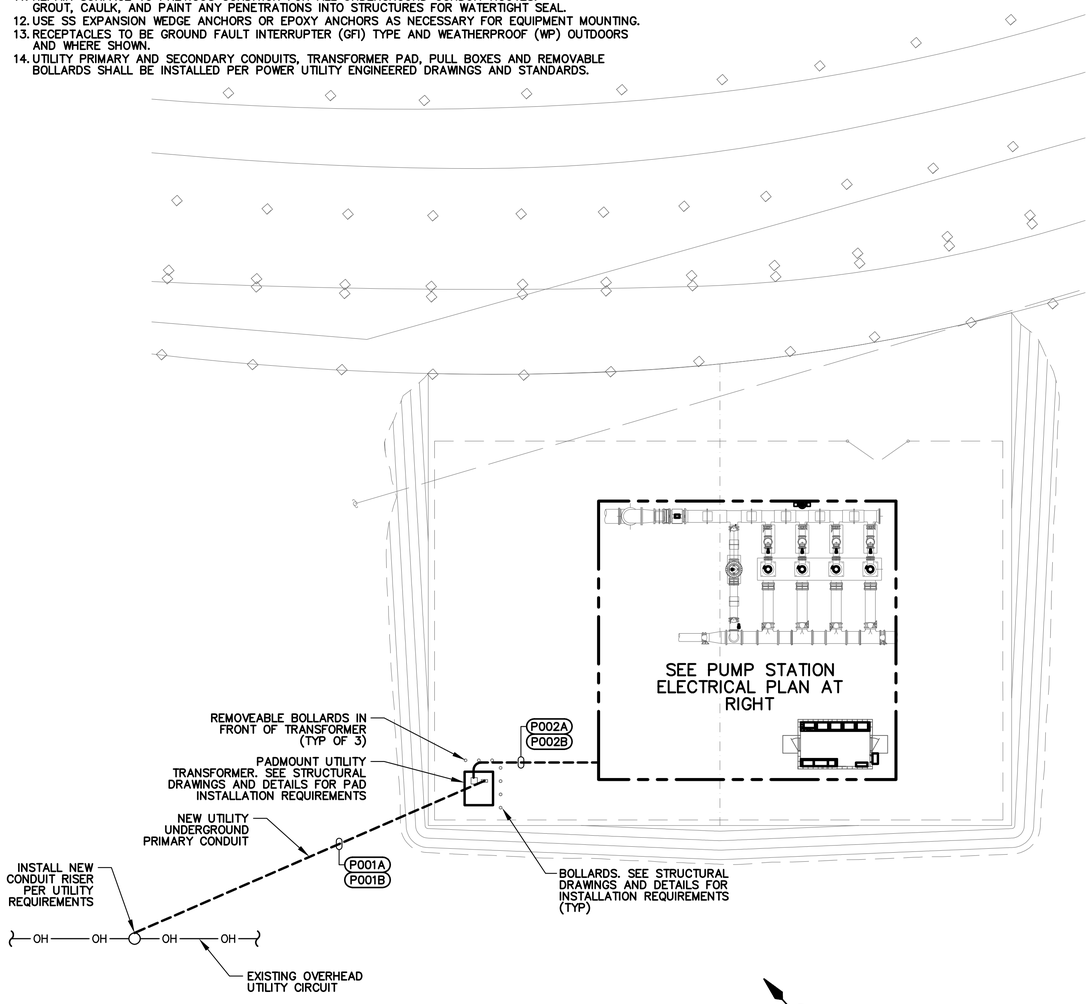
## DRAWING REFERENCED NOTES:

(1) DIRECT ANTENNA TOWARD DISTRICT OFFICE. CONFIRM DIRECTION WITH OWNER PRIOR TO AIMING.

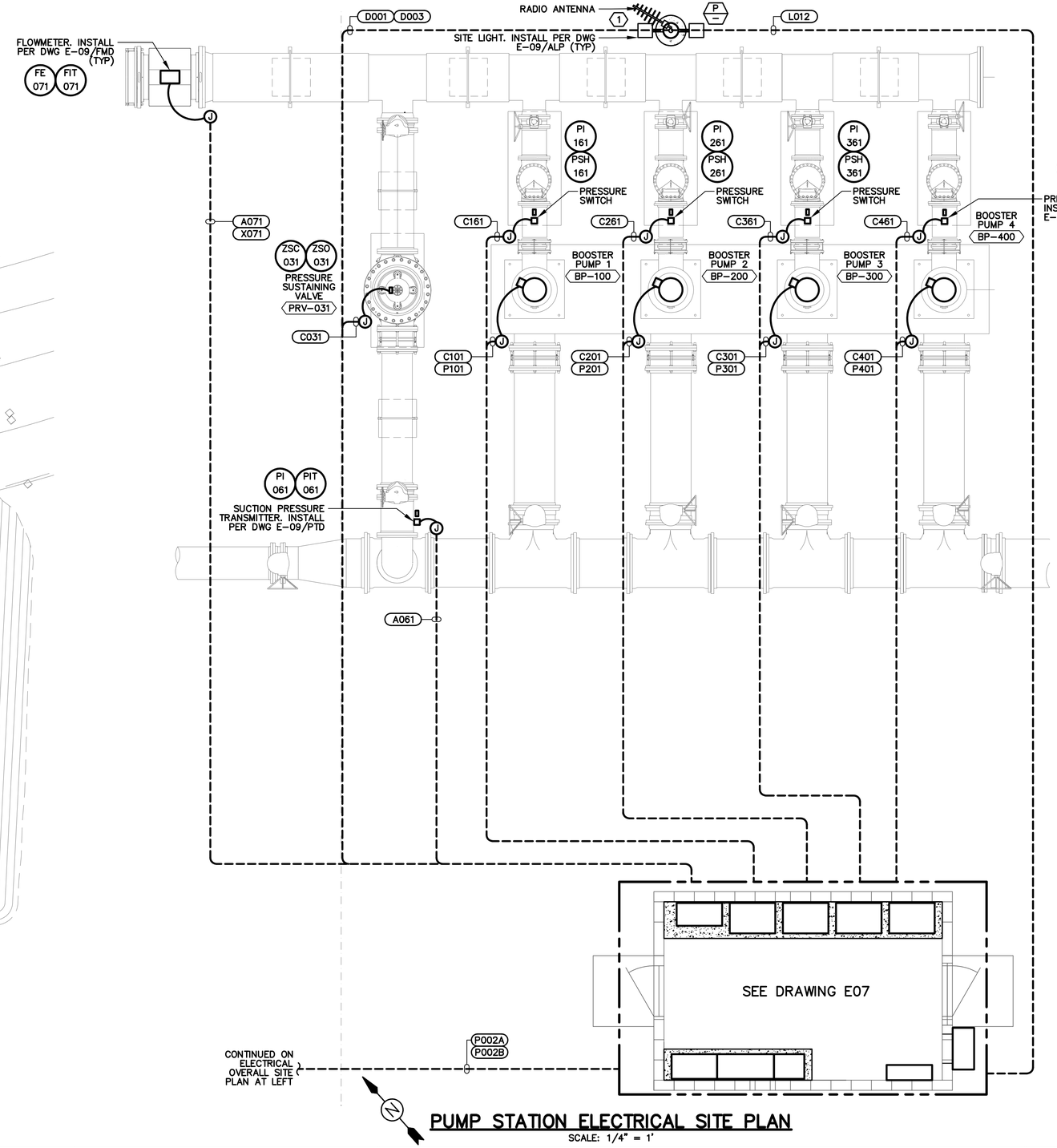
## ELECTRICAL PLAN NOTES:

1. SEE ELECTRICAL SYMBOLS AND ABBREVIATIONS DRAWING FOR SYMBOL DEFINITION.
2. ALL WORK SHALL CONFORM TO LOCAL CODES AND NATIONAL ELECTRIC CODE.
3. SITEPLAN ACCURATE FOR ELECTRICAL WORK ONLY. COORDINATE WITH OTHER DISCIPLINES.
4. CONFIRM HOOKUP REQUIREMENTS FOR ELECTRICAL AND MECHANICAL EQUIPMENT PRIOR TO INSTALLING UNDERGROUND CONDUIT AND STUB-UPS. MISSING CONDUITS, INCORRECT SIZING, OR OTHER ISSUES MUST BE BROUGHT TO THE ATTENTION OF ENGINEER PRIOR TO BACKFILL.
5. CONDUIT ROUTING IS SHOWN GENERALLY DIAGRAMMATIC AND DOES NOT INDICATE TRENCH WIDTH OR TRENCH LAYOUT. FOR CONDUITS OUTSIDE BUILDINGS, IF CONTRACTOR WANTS TO RUN CONDUITS IN ROUTES OTHER THAN THOSE SHOWN FOR ANY REASON, THEN HE SHALL SUBMIT THE PLAN FOR APPROVAL PRIOR TO INSTALLATION. SPECIFY REASON FOR CHANGE.
6. INSTALL NON-UTILITY CONDUITS PER DRAWING DETAILS AND SPECIFICATIONS SECTION 16110.
7. CONDUITS SIZE, TYPE AND FILL DEFINED BY TAG NAME IN CONDUIT AND WIRE ROUTING SCHEDULE.
8. INSTALL UNDERGROUND NON-DUCTBANK CONDUITS PER ELECTRICAL DETAIL LVC.
9. CONDUIT TRANSITIONS SHALL BE PER EXPOSED CONDUIT TRANSITION DETAIL ECT.
10. EXPOSED CONDUIT TYPE AND FITTINGS TO BE USED ABOVE TRANSITION SHALL BE PER AREA CLASSIFICATION DEFINED IN CONDUIT SPECIFICATIONS AND EQUIPMENT SPECIFIC DETAIL.
11. REPAIR SURFACE TO PREVIOUS CONDITION FOR ALL UNDERGROUND CONDUIT ROUTES. GROUT, CAULK, AND PAINT ANY PENETRATIONS INTO STRUCTURES FOR WATERTIGHT SEAL.
12. USE SS EXPANSION WEDGE ANCHORS OR EPOXY ANCHORS AS NECESSARY FOR EQUIPMENT MOUNTING.
13. RECEPTACLES TO BE GROUND FAULT INTERRUPTER (GFI) TYPE AND WEATHERPROOF (WP) OUTDOORS AND WHERE SHOWN.
14. UTILITY PRIMARY AND SECONDARY CONDUITS, TRANSFORMER PAD, PULL BOXES AND REMOVABLE BOLLARDS SHALL BE INSTALLED PER POWER UTILITY ENGINEERED DRAWINGS AND STANDARDS.




## ELECTRICAL OVERALL SITE PLAN

SCALE: 1" = 20'




## PUMP STATION ELECTRICAL SITE PLAN

SCALE: 1/4" = 1'

0 4 8 (Approximate Scale in Feet)

0 20 40 (Approximate Scale in Feet)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GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
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BOOSTER PUMP STATION
ELECTRICAL SITE PLAN

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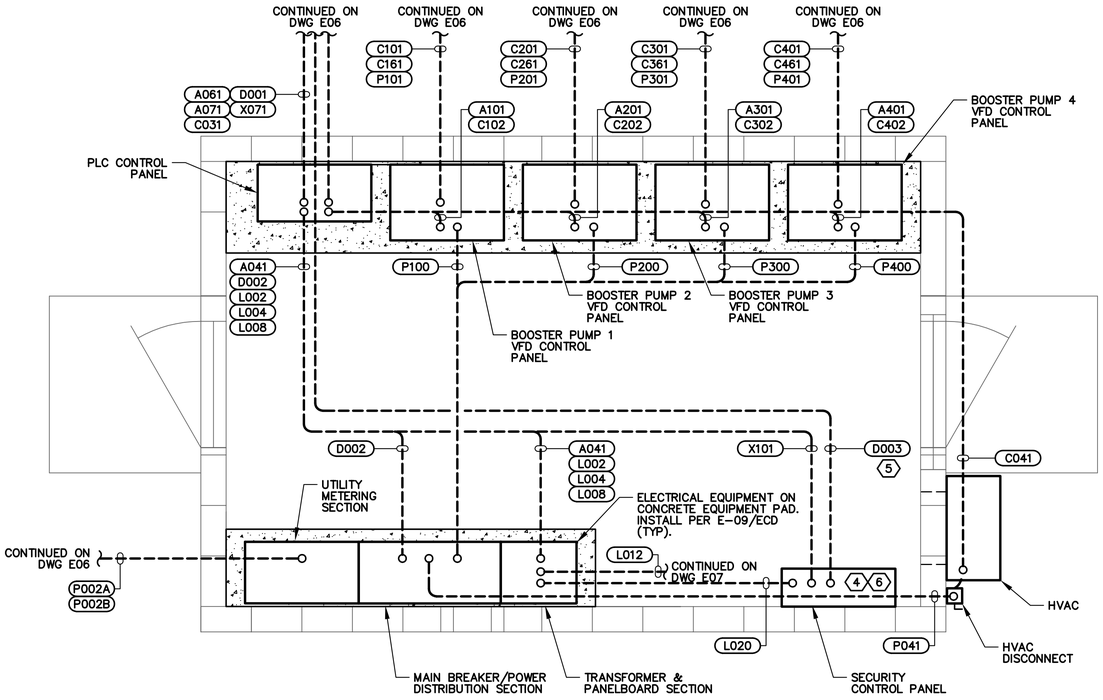
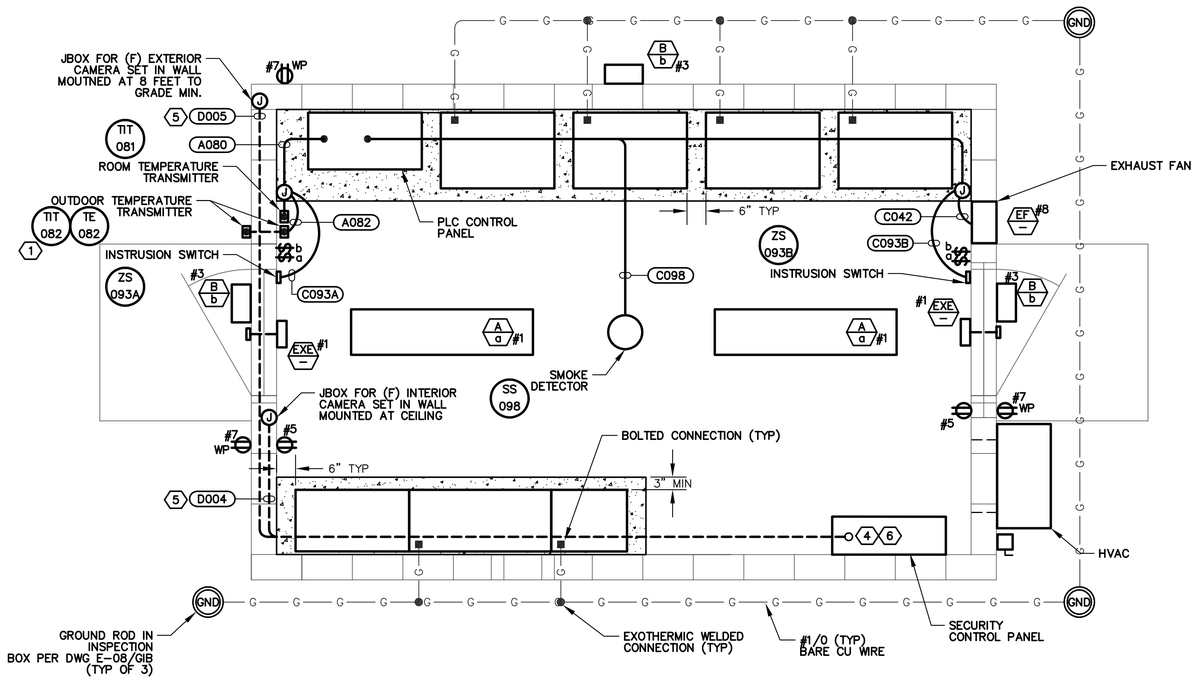



## ⟨2⟩ ELECTRICAL BUILDING POWER AND CONTROL PLAN

SCALE: 1/2" = 1'




## ELECTRICAL BUILDING LIGHTING AND RECEPTACLE PLAN

SCALE: 1/2" = 1'

### DRAWING REFERENCED NOTES:

1. INSTALL OUTDOOR TEMPERATURE ELEMENT ON BUILDING WALL 6" BELOW EAVE.
2. REFERENCE DRAWINGS E-02, E-03 AND E-04 FOR ELECTRICAL EQUIPMENT DIMENSIONS.
3. DIRECT ANTENNA TOWARD DISTRICT OFFICE. CONFIRM DIRECTION WITH OWNER PRIOR TO AIMING.
4. FURNISH AND INSTALL 30" X 36" X 12" PAINTED STEEL, NEMA 12, PADLOCKABLE, HINGED DOOR ENCLOSURE. ENCLOSURE SHALL BE HOFFMAN CONCEPT CSD363012 WITH PADLOCKABLE HANDLE KIT OR APPROVED EQUAL. PROVIDE AND INSTALL 3/4" PLYWOOD BACKPAN.
5. TERMINATE BOTH ENDS OF CAT 6 CABLE WITH RJ45 CONNECTORS. LEAVE MINIMUM 36" OF CABLE COILED AT BOTH ENDS FOR FUTURE CONNECTIONS THAT WILL BE MADE BY OTHERS.
6. PROVIDE AND INSTALL 2 RECEPTACLES NEAR THE BOTTOM OF THE ENCLOSURE ON THE PLYWOOD BACKBOARD TO POWER FUTURE SECURITY EQUIPMENT THAT WILL BE PROVIDED BY OTHERS. INSTALL WIREWAY TO ROUTE POWER WIRING FROM CONDUIT ENTRY TO RECEPTACLES.

### ELECTRICAL PLAN NOTES:

1. SEE ELECTRICAL SYMBOLS AND ABBREVIATIONS DRAWING FOR SYMBOL DEFINITION.
2. ALL WORK SHALL CONFORM TO LOCAL CODES AND NATIONAL ELECTRIC CODE.
3. SITEPLAN ACCURATE FOR ELECTRICAL WORK ONLY. COORDINATE WITH OTHER DISCIPLINES.
4. CONFIRM HOOKUP REQUIREMENTS FOR ELECTRICAL AND MECHANICAL EQUIPMENT PRIOR TO INSTALLING UNDERGROUND CONDUIT AND STUB-UPS. MISSING CONDUITS, INCORRECT SIZING, OR OTHER ISSUES MUST BE BROUGHT TO THE ATTENTION OF ENGINEER PRIOR TO BACKFILL.
5. CONDUIT ROUTING IS SHOWN GENERALLY DIAGRAMMATIC AND DOES NOT INDICATE TRENCH WIDTH OR TRENCH LAYOUT. FOR CONDUITS OUTSIDE BUILDINGS, IF CONTRACTOR WANTS TO RUN CONDUITS IN ROUTES OTHER THAN THOSE SHOWN FOR ANY REASON, THEN HE SHALL SUBMIT THE PLAN FOR APPROVAL PRIOR TO INSTALLATION. SPECIFY REASON FOR CHANGE.
6. INSTALL NON-UTILITY CONDUITS PER DRAWING DETAILS AND SPECIFICATIONS SECTION 26 01 10.
7. CONDUITS SIZE, TYPE AND FILL DEFINED BY TAG NAME IN CONDUIT AND WIRE ROUTING SCHEDULE.
8. INSTALL UNDERGROUND NON-DUCTBANK CONDUITS PER ELECTRICAL DETAIL LVC.
9. CONDUIT TRANSITIONS SHALL BE PER EXPOSED CONDUIT TRANSITION DETAIL ECT.
10. EXPOSED CONDUIT TYPE AND FITTINGS TO BE USED ABOVE TRANSITION SHALL BE PER AREA CLASSIFICATION DEFINED IN CONDUIT SPECIFICATIONS AND EQUIPMENT SPECIFIC DETAIL.
11. REPAIR SURFACE TO PREVIOUS CONDITION FOR ALL UNDERGROUND CONDUIT ROUTES. GROUT, CAULK, AND PAINT ANY PENETRATIONS INTO STRUCTURES FOR WATERTIGHT SEAL.
12. USE SS EXPANSION WEDGE ANCHORS OR EPOXY ANCHORS AS NECESSARY FOR EQUIPMENT MOUNTING.
13. RECEPTACLES TO BE GROUND FAULT INTERRUPTER (GFI) TYPE AND WEATHERPROOF (WP) OUTDOORS AND WHERE SHOWN.

**FIXTURE SCHEDULE**

| CODE LETTER | FIXTURE TYPE | FIXTURE LAMPS | WATTS/ FIXTURE | MANUFACTURER OR APPROVED EQUAL | MOUNTING ARRANGEMENT | NOTES |
|---|---|---|---|---|---|---|
| A | STRIP LUMINAIRE, 4 FT, VAPORTIGHT<br>MOLDED POLYCARBONATE HOUSING<br>FROSTED LENS, MEDIUM DISTRIBUTION | 6000 LUMEN<br>4000K | 120V<br>50W | ATLAS ILW48LED4D<br>RAB SEAL4-50/D10<br>METALUX 4VT2 | CEILING MOUNT | U.L. LISTED FOR WET LOCATIONS<br>-20F TO 140F |
| B | WALL PACK LIGHT - MEDIUM<br>DARK BRONZE COLOR<br>ALUMINUM CASE | 7000 LUMEN<br>4000K | 120V<br>64W | ATLAS WPM64LED<br>RAB WPLEDFC80N/PCS<br>LUMARK AXCS6A-PC | WALL MOUNT<br>15 FT AFF | U.L. LISTED FOR WET LOCATIONS<br>PHOTOCELL CONTROL<br>FULL CUTOFF |
| EF | 12" EXHAUST FAN WITH FAN INTAKE GUARD<br>FIBERGLASS GRAVITY OPERATED SHUTTER<br>AND THERMOSTAT CONTROL | | 1/8 HP<br>120 VAC<br>1 PHASE | DAYTON<br>GRAINGER 5C530 | WALL MOUNT | LINE VOLTAGE THERMOSTAT<br>50 - 90 DEG F COOLING<br>GRAINGER 6GVX8 OR EQUAL |
| EXE | EXIT LIGHT PACK WITH EGRESS LAMPS<br>AND REMOTE OUTDOOR EGRESS FIXTURE<br>LED LAMPS WITH RED LED SIGN<br>INTEGRAL BATTERY AND CHARGER | 2 LED 3W | 120V<br>5W | DUAL-LITE<br>HCX-U-R-W-03L-RC12<br>CPRSB0603L | WALL MOUNT<br>9 FT AFF | WHITE INTERIOR, BROWN EXTERIOR<br>DUAL LED LAMPS INDOORS AND OUT<br>12W REMOTE LIGHT CAPACITY |
| HVAC | WALL MOUNT HVAC UNIT<br>WEATHERPROOF ZINC COATED CABINET<br>PAINTED BEIGE ENAMEL FINISH | 2.5 TON AC<br>6 KW HEAT<br>460 VAC, 3PH | 6000 HEAT<br>6400 COOL | BARD<br>WA301-C06 | WALL MOUNT<br>ON BUILDING | PROVIDE WASHABLE FILTER<br>PROGRAMMABLE 24VAC THERMOSTAT |
| P | POLE MOUNTED CUTOFF LUMINAIRE<br>BRONZE POLE AND LAMP<br>TYPE IV DISTRIBUTION | LED, 4000K<br>> 14000 LM | MVOLT<br>~130W | LITHONIA<br>LUMARK | POLE MOUNT<br>POLE BASE PER DETAILS | LAMP HEIGHT 18 FT OR AS SHOWN<br>ON PLANS, PHOTOCELL CONTROL |

### GENERAL NOTES THAT APPLY TO LIGHTING AND RECEPTACLE PLAN.

1. THESE NOTES SHALL APPLY TO ALL EQUIPMENT OR FIXTURES WITH ELECTRICAL CONNECTIONS BUT WITHOUT CONDUITS SHOWN, CONDUIT NUMBERS, OR NOT LISTED IN SCHEDULE.
2. PROVIDE AND INSTALL NECESSARY WIRES IN SURFACE MOUNT 3/4" (MINIMUM) CONDUIT FOR FOR ELECTRICAL FIXTURE ARRANGEMENT AS SHOWN. MAXIMUM 3 CIRCUITS PER CONDUIT SECTION OVER 24" IN LENGTH. CONDUITS SHALL NOT EXCEED 40% FILL.
3. CONDUITS UNDER SLAB SHALL BE PVC-40 WITH STUB-OUTS PER EXPOSED CONDUIT TRANSITION DETAIL.
4. CONDUITS ABOVE CEILING SHALL BE EMT WITH COMPRESSION STYLE FITTINGS. CONDUITS BELOW CEILING SHALL BE GRS. ACCESS TO ATTIC AREA SHALL NOT BE REQUIRED TO INSTALL CONDUCTORS.
5. DEVICE BOXES AND CONDUIT BODIES SHALL BE CAST IRON OR ALUMINUM WITH THREADED HUB.
6. CONDUCTORS SHALL BE COPPER TYPE THHN, CLASS C STRANDING, #12 AWG (MINIMUM).
7. MOUNT CONDUITS USING SINGLE BOLT GALVANIZED PIPE STRAPS AND CLAMP BACK SPACERS.
8. USE SS EXPANSION WEDGE ANCHORS OR EPOXY ANCHORS AS NECESSARY FOR EQUIPMENT MOUNTING.
9. EXPOSED CONDUIT SHALL BE PAINTED WITH WALL AND/OR CEILING AS SPECIFIED.
10. PROVIDE AND INSTALL FIXTURES PER SCHEDULE THIS PAGE, QUANTITY AS SHOWN IN DRAWINGS.
11. PROVIDE AND INSTALL ALL DEVICE BOXES, JUNCTION BOXES, RECEPTACLES, SWITCHES, AND COVERS MOUNT ALL RECEPTACLES AT 48" AFF UNLESS OTHERWISE NOTED.
12. RECEPTACLES TO BE GROUND FAULT INTERRUPTER (GFI) TYPE AND WEATHERPROOF (WP) WHERE SHOWN.
13. SEE ELECTRICAL SYMBOLS AND ABBREVIATIONS DRAWING FOR SYMBOL DEFINITION.
14. ALL WORK SHALL CONFORM TO LOCAL CODES AND NATIONAL ELECTRIC CODE.

0 2 4
(Approximate Scale in Feet)

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STATE OF CALIFORNIA

NORTH KERN WATER STORAGE DISTRICT

GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

BOOSTER PUMP STATION
BUILDING POWER, CONTROL, LIGHTING & RECEPTACLE PLAN

DWG. NO. E-07
SHEET NO. 74
ARCHIVE #

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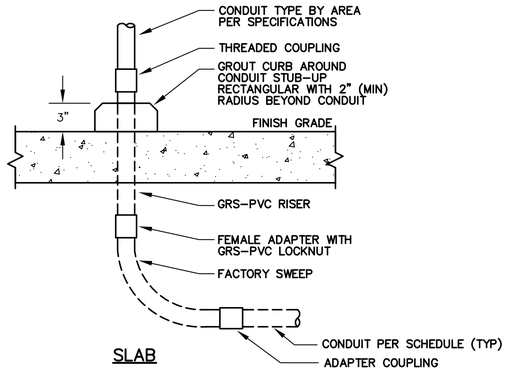
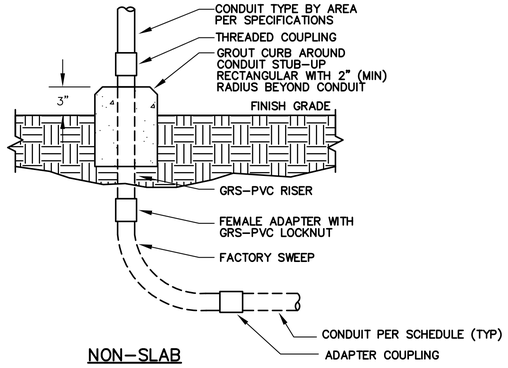
## CONDUIT & WIRE ROUTING SCHEDULE

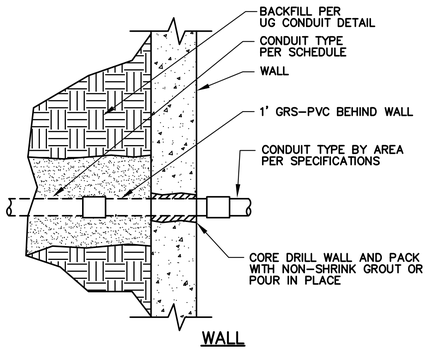
| REV | CONDUIT DETAILS TAG NO. | FROM | TO | QTY | SIZE | TYPE | POWER WIRE QTY | POWER WIRE SIZE | CONTROL WIRE QTY | CONTROL WIRE SIZE | GROUND SIZE | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A041 | MAIN SWITCHBOARD | PLC CONTROL PANEL | 1 | 3/4" | SPEC | – | – | 1 | #16 TSPR | – | IT–041 |
| | A061 | PLC CONTROL PANEL | PRESSURE TRANSMITTER | 1 | 3/4" | SPEC | – | – | 1 | #16 TSPR | – | PIT–061 |
| | A071 | PLC CONTROL PANEL | FLOW METER | 1 | 1" | SPEC | – | – | 1 | #16 TSPR | – | FE/FIT–071 |
| | A080 | PLC CONTROL PANEL | TSTAT JBOX | 1 | 1" | SPEC | – | – | 2 | #16 TSPR | – | |
| | A081 | TSTAT JBOX | TEMPERATURE TRANSMITTER | 1 | 1" | SPEC | – | – | 1 | #16 TSPR | – | TIT–081 |
| | A082 | TSTAT JBOX | TEMPERATURE TRANSMITTER | 1 | 1" | SPEC | – | – | 1 | #16 TSPR | – | TIT–082 |
| | A101 | PLC CONTROL PANEL | PUMP 1 VFD CONTROL PANEL | 1 | 2" | SPEC | – | – | 3 | #16 TSPR | – | |
| | A201 | PLC CONTROL PANEL | PUMP 2 VFD CONTROL PANEL | 1 | 2" | SPEC | – | – | 3 | #16 TSPR | – | |
| | A301 | PLC CONTROL PANEL | PUMP 3 VFD CONTROL PANEL | 1 | 2" | SPEC | – | – | 3 | #16 TSPR | – | |
| | A401 | PLC CONTROL PANEL | PUMP 4 VFD CONTROL PANEL | 1 | 2" | SPEC | – | – | 3 | #16 TSPR | – | |
| | C031 | PLC CONTROL PANEL | PRESSURE SUSTAINING VALVE | 1 | 3/4" | SPEC | – | – | 4 | #14 | #14 | ZS–031, SV–031 |
| | C041 | PLC CONTROL PANEL | HVAC | 1 | 3/4" | SPEC | – | – | 6 | #14 | #14 | |
| | C042 | PLC CONTROL PANEL | EXHAUST FAN | 1 | 3/4" | SPEC | – | – | 2 | #14 | #14 | |
| | C093A | PLC CONTROL PANEL | DOOR INTRUSION SWITCH | 1 | 3/4" | SPEC | – | – | 2 | #14 | #14 | ZS–093A |
| | C093B | PLC CONTROL PANEL | DOOR INTRUSION SWITCH | 1 | 3/4" | SPEC | – | – | 2 | #14 | #14 | ZS–093B |
| | C098 | PLC CONTROL PANEL | SMOKE DETECTORS | 1 | 3/4" | SPEC | – | – | 2 | #14 | #14 | SS–098 |
| | C101 | PUMP 1 VFD CONTROL PANEL | PUMP 1 | 1 | 3/4" | SPEC | – | – | 4 | #14 | #14 | TS–100, SV–100 |
| | C102 | PUMP 1 VFD CONTROL PANEL | PLC CONTROL PANEL | 1 | 3/4" | SPEC | – | – | 10 | #14 | #14 | |
| | C201 | PUMP 2 VFD CONTROL PANEL | PUMP 2 | 1 | 3/4" | SPEC | – | – | 4 | #14 | #14 | TS–200, SV–200 |
| | C202 | PUMP 2 VFD CONTROL PANEL | PLC CONTROL PANEL | 1 | 3/4" | SPEC | – | – | 10 | #14 | #14 | |
| | C301 | PUMP 3 VFD CONTROL PANEL | PUMP 3 | 1 | 3/4" | SPEC | – | – | 4 | #14 | #14 | TS–300, SV–300 |
| | C302 | PUMP 3 VFD CONTROL PANEL | PLC CONTROL PANEL | 1 | 3/4" | SPEC | – | – | 10 | #14 | #14 | |
| | C401 | PUMP 4 VFD CONTROL PANEL | PUMP 4 | 1 | 3/4" | SPEC | – | – | 4 | #14 | #14 | TS–400, SV–400 |
| | C402 | PUMP 4 VFD CONTROL PANEL | PLC CONTROL PANEL | 1 | 3/4" | SPEC | – | – | 10 | #14 | #14 | |
| | C161 | PUMP 1 VFD CONTROL PANEL | DISCHARGE PRESSURE SWITCH | 1 | 3/4" | SPEC | – | – | 2 | #14 | #14 | PSH–061 |
| | C261 | PUMP 2 VFD CONTROL PANEL | DISCHARGE PRESSURE SWITCH | 1 | 3/4" | SPEC | – | – | 2 | #14 | #14 | PSH–062 |
| | C361 | PUMP 3 VFD CONTROL PANEL | DISCHARGE PRESSURE SWITCH | 1 | 3/4" | SPEC | – | – | 2 | #14 | #14 | PSH–063 |
| | C461 | PUMP 4 VFD CONTROL PANEL | DISCHARGE PRESSURE SWITCH | 1 | 3/4" | SPEC | – | – | 2 | #14 | #14 | PSH–064 |
| | D001 | PLC CONTROL PANEL | ANTENNA | 1 | 2" | SPEC | – | – | 1 | ANT CABLE | #12 | |
| | D002 | PLC CONTROL PANEL | MAIN SWITCHBOARD | 1 | 2" | SPEC | – | – | 1 | CAT 6 | – | POWER MONITOR |
| | D003 | SECURITY CONTROL PANEL | AREA LIGHT POLE | 1 | 1" | SPEC | – | – | 2 | CAT 6 | – | (F) CAMERA & RADIO |
| | D004 | SECURITY CONTROL PANEL | (F) INTERIOR CAMERA JBOX | 1 | 3/4" | SPEC | – | – | 1 | CAT 6 | – | (F) CAMERA |
| | D005 | SECURITY CONTROL PANEL | (F) EXTERIOR CAMERA JBOX | 1 | 3/4" | SPEC | – | – | 1 | CAT 6 | – | (F) CAMERA |
| | P001 A,B | UTILITY SERVICE | TRANSFORMER | 2 | 4" | SPEC | – | – | – | – | – | PER UTILITY REQUIREMENTS |
| | P002 A,B | TRANSFORMER | MAIN SWITCHBOARD | 2 | 5" | SPEC | – | – | – | – | – | PER UTILITY REQUIREMENTS |
| | P041 | MAIN SWITCHBOARD | HVAC | 1 | 3/4" | SPEC | 3 | #10 | – | – | #12 | |
| | P100 | MAIN SWITCHBOARD | PUMP 1 VFD CONTROL PANEL | 1 | 3" | SPEC | 3 | #350 | – | – | #4 | |
| | P101 | PUMP 1 VFD CONTROL PANEL | PUMP 1 | 1 | 3" | SPEC | 3 | #2/0 | – | – | #4 | VFD CABLE |
| | P200 | MAIN SWITCHBOARD | PUMP 2 VFD CONTROL PANEL | 1 | 3" | SPEC | 3 | #350 | – | – | #4 | |
| | P201 | PUMP 2 VFD CONTROL PANEL | PUMP 2 | 1 | 3" | SPEC | 3 | #2/0 | – | – | #4 | VFD CABLE |
| | P300 | MAIN SWITCHBOARD | PUMP 3 VFD CONTROL PANEL | 1 | 3" | SPEC | 3 | #350 | – | – | #4 | |
| | P301 | PUMP 3 VFD CONTROL PANEL | PUMP 3 | 1 | 3" | SPEC | 3 | #2/0 | – | – | #4 | VFD CABLE |
| | P400 | MAIN SWITCHBOARD | PUMP 4 VFD CONTROL PANEL | 1 | 3" | SPEC | 3 | #350 | – | – | #4 | |
| | P401 | PUMP 4 VFD CONTROL PANEL | PUMP 4 | 1 | 3" | SPEC | 3 | #2/0 | – | – | #4 | VFD CABLE |
| | L002 | MAIN SWITCHBOARD | PLC CONTROL PANEL | 1 | 3/4" | SPEC | 2 | #12 | – | – | #12 | CKT#2 CNTRL PNL PWR |
| | L004 | MAIN SWITCHBOARD | PLC CONTROL PANEL | 1 | 3/4" | SPEC | 2 | #12 | – | – | #12 | CKT#4 CNTRL PNL AUX PWR |
| | L008 | MAIN SWITCHBOARD | PLC CONTROL PANEL | 1 | 3/4" | SPEC | 2 | #12 | – | – | #12 | CKT#8 EXH FAN PWR |
| | L012 | MAIN SWITCHBOARD | SITE LIGHT | 1 | 3/4" | SPEC | 2 | #12 | – | – | #12 | CKT#12 |
| | L020 | MAIN SWITCHBOARD | SECURITY CONTROL PANEL | 1 | 3/4" | SPEC | 4 | #12 | – | – | #12 | CKT#20, CKT#22 |
| | X071 | PLC CONTROL PANEL | FLOW METER | 1 | 3/4" | SPEC | – | – | – | – | – | PULL ROPE |
| | X100 | PLC CONTROL PANEL | PRESSURE REDUCING VALVE | 1 | 1" | SPEC | – | – | – | – | – | PULL ROPE |
| | X101 | PLC CONTROL PANEL | SECURITY CONTROL PANEL | 1 | 1" | SPEC | – | – | – | – | – | PULL ROPE |



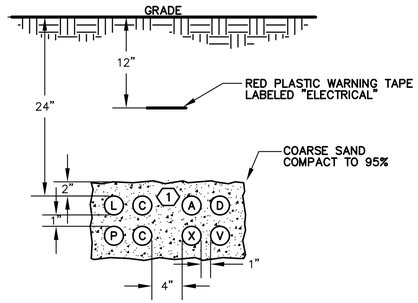

SLAB




NON–SLAB



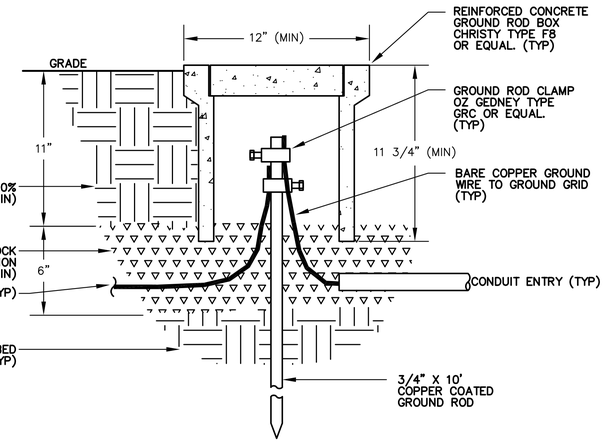

WALL




## LVC – LOW VOLTAGE NON–DUCT BANK SECTION

NOT TO SCALE

NOTES:
1. NUMBER OF CONDUITS PER PLANS AND SCHEDULE. MAXIMUM DEPTH OF TRENCH SHALL BE 42". DESIGN TRENCH DESIGN AND INSTALL TRENCH TO MAINTAIN 6" VERTICAL CLEARANCE AND 12" HORIZONTAL CLEARANCE FROM PIPES.
2. P, L, OR C DESIGNATION FOR POWER OR CONTROL CONDUITS.
3. A, D, V, OR X DESIGNATION FOR COMMUNICATION (TELEPHONE, DATA, VIDEO, OR INSTRUMENTATION) CONDUITS.
4. USE CONDUIT SPACERS TO SUPPORT CONDUITS AND MAINTAIN SPACING (3' INTERVALS)




## NOTES PERTAINING TO CONDUIT SCHEDULE:

1. CONDUIT TYPE "SPEC" IS AS DEFINED IN SPECIFICATIONS SECTION 26 01 10 FOR NON–EXPOSED AND EXPOSED PORTIONS OF CONDUIT RUN.
2. SEE SPECIFICATIONS AND EXPOSED TRANSITION DETAIL OR EQUIPMENT SPECIFIC DETAIL FOR CONDUIT TRANSITION MATERIALS AND METHODS FROM BELOW GROUND TO EXPOSED PORTIONS OF RUN.
3. CONDUITS OVER 15 FT LENGTH (EITHER EMPTY OR WITH CONDUCTORS SIZED LESS THAN #8 AWG), SHALL INCLUDE A POLY PULL STRING. STRING SHALL BE TIED OFF AT EACH END.
4. FITTINGS, CONDULETS, BOXES AND COVERS SHALL MATCH DUTY OF ADJACENT PIPE, SEE SPECIFICATIONS 26 01 10.
5. WIRE SIZING IN TABLE IS BASED ON COPPER CONDUCTORS, THHN INSULATION, WITH TYPE C STRANDING. OTHER CONDUCTOR TYPES, IF ALLOWED OR REQUIRED PER SPECIFICATION, MAY REQUIRE CONDUITS TO BE UPSIZED BY CONTRACTOR AND SUBMITTED FOR APPROVAL.
6. SEE GENERAL NOTES ON LIGHTING AND RECEPTACLE PLAN FOR CONDUIT REQUIREMENTS FOR ELECTRICAL DEVICES WITHOUT CONDUITS SHOWN, CONDUIT NUMBERS, OR NOT LISTED IN SCHEDULE.

## ECT – EXPOSED CONDUIT TRANSITION DETAIL

NOT TO SCALE

## GIB – GROUND INSPECTION BOX DETAIL

NOT TO SCALE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Drawn: M.YARBROUGH
Approved By: S. GALA

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NORTH KERN WATER STORAGE DISTRICT

GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK–619 PIPELINE AND PUMP STATION PROJECT

ELECTRICAL
CONDUIT SCHEDULE & DETAILS SHEET 1

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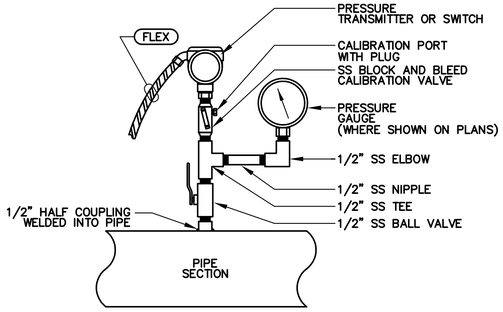
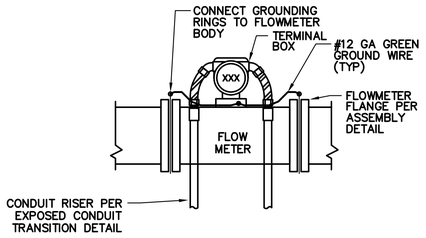
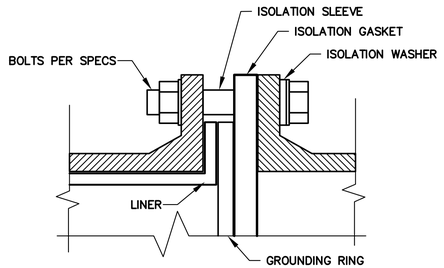


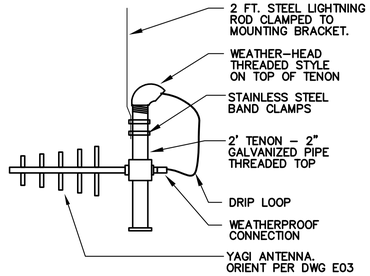

PTD — **PRESSURE SWITCH DETAIL**
NOT TO SCALE



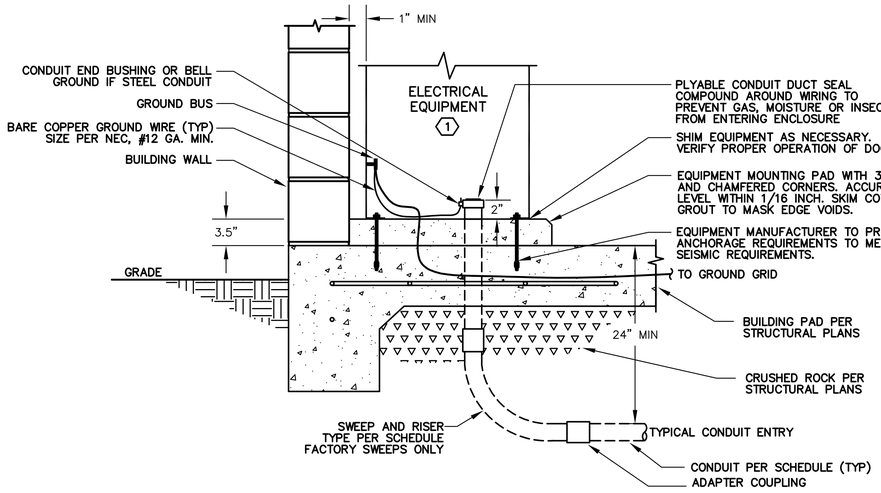

FMD — **FLOWMETER DETAIL**
NOT TO SCALE




FLG — **FLOWMETER FLANGE ASSEMBLY**
NOT TO SCALE



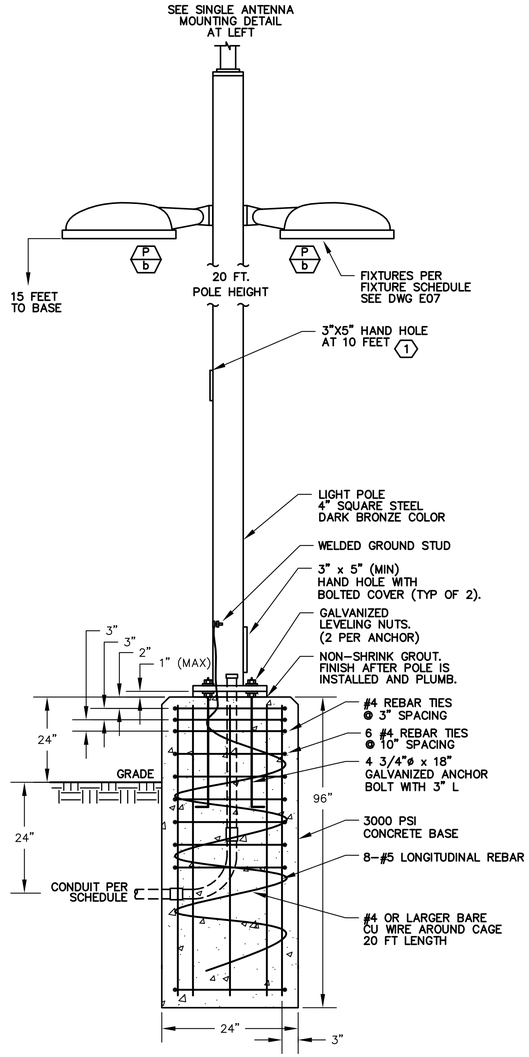

**SINGLE ANTENNA MOUNT**



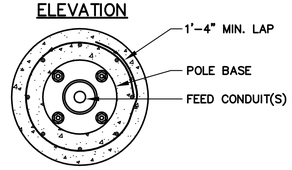

ECP — **EQUIPMENT CONCRETE PAD DETAIL**
NOT TO SCALE

**DETAIL REFERENCED NOTES:**

1 MAINTAIN MINIMUM 2" CLEARANCE ON EACH SIDE OF ELECTRICAL ENCLOSURE.




**ELEVATION**




**TOP VIEW**

ALP — **AREA LIGHT POLE**
NOT TO SCALE

**DETAIL REFERENCED NOTES:**

1 LEAVE MINIMUM 36" OF CAT 6 CABLE TERMINATED WITH RF45 CONNECTOR COILED AND SECURED IN UPPER HAND HOLE FOR FUTURE CONNECTIONS THAT WILL BE MADE BY OTHERS.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| Checked: | T.FRISCH |
| Drawn: | M.YARBROUGH |
| Approved By: | S. GALA |

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NORTH KERN WATER STORAGE DISTRICT

GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

ELECTRICAL DETAILS SHEET 2

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# P&ID ABBREVIATIONS

INSTRUMENTATION SYBMOLS

| | FIRST LETTER | | SUCCEEDING LETTERS | | |
|---|---|---|---|---|---|
| | MEASURED OR INITIATING VARIABLE | MODIFIER | READOUT PASSIVE FUNCTION | OUTPUT FUNCTION | MODIFIER |
| A | ANALYSIS | | ALARM | | |
| B | BURNER, COMBUSTION | | USER'S CHOICE | USER'S CHOICE | USER'S CHOICE |
| C | CONDUCTIVITY | | | CONTROLLER | |
| D | DENSITY | DIFFERENTIAL | | | |
| E | VOLTAGE | | SENSOR, PRIMARY ELEMENT | | |
| F | FLOW | RATIO | | | |
| G | GENERAL | | GLASS VIEWING DEVICE | | |
| H | HAND | | | | HIGH, OPENED |
| I | CURRENT | | INDICATING, INDICATOR | | |
| J | POWER | SCAN | | | |
| K | TIME, TIME SCHEDULED | TIME RATE OF CHANGE | | CONTROL STATION | |
| L | LEVEL | | LIGHT | | LOW, CLOSED |
| M | MOISTURE | MOMENTARY | | | MIDDLE |
| N | STATUS | | STATUS | USER'S CHOICE | USER'S CHOICE |
| O | OPERTOR | | ORIFICE, RESTRICTION | | |
| P | PRESSURE, VACUUM | | POINT (TEST) CONNECTION | | |
| Q | QUANTITY | INTEGRATE, TOTALIZE | | | |
| R | RESET | | RECORD | | |
| S | SPEED, FREQUENCY | SAFETY | | SWITCH | |
| T | TEMPERATURE | | | TRANSMITTER | TEST |
| U | MULTIVARIABLE | | MULTIFUNCTION | MULTIFUNCTION | MULTIFUNCTION |
| V | VIBRATION | | | VAVE, DAMPER, LOUVER | |
| W | WEIGHT | | WELL | | |
| X | SWITCH | X AXIS | UNCLASSIFIED | UNCLASSIFIED | UNCLASSIFIED |
| Y | EVENT, STATE OF PRESENCE | Y AXIS | | RELAY, COMPUTER, CONVERTER | |
| Z | POSITION, DIMENSION | Z AXIS | | DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT | |

# P&ID ABBREVIATIONS

SWITCH IDENTIFIER

| | | | |
|---|---|---|---|
| F/R | FORWARD/REVERSE | OPN | OPEN |
| HOA | HAND–OFF–AUTO | CLS | CLOSE |
| HOR | HAND–OFF–REMOTE | SEL | SELECTOR |
| LOS | LOCK OUT STOP | S/S | START / STOP |
| L/R | LOCAL / REMOTE | % | PERCENT ADJUSTMENT |
| MOA | MANUAL–OFF–AUTO | | |
| OCA | OPEN–CLOSE–AUTO | | |
| O/C | OPEN / CLOSE | | |
| O/O | ON / OFF | | |

# P&ID SYMBOLS

## ISA SYMBOLS

- XXX / XXX — FIELD MOUNTED INSTRUMENT
- XXX / XXX — INSTRUMENT MOUNTED ON DOOR OF LOCAL PANEL, OPERATOR ACCESSIBLE
- XXX / XXX — INSTRUMENT MOUNTED ON DOOR OF FIELD PANEL, OPERATOR ACCESSIBLE
- XXX / XXX — INSTRUMENT MOUNTED WITHIN PANEL, OPERATOR INACCESSIBLE
- XXX / XXX — INSTRUMENT MOUNTED WITHIN FIELD PANEL, OPERATOR INACESSIBLE
- I — OPERATION PERFORMED WITH LOGIC OR HARDWIRED DEVICES
- MCE–XX — ASSOCIATED MOTOR CONTROL ELEMENTARY IF APPLICABLE
- UNIT XXX / XXX — VISUAL DISPLAY OF PLC ANALOG REGISTER SCALE TO UNITS AS SHOWN
- XXX / XXX — VISUAL DISPLAY OF PLC ANALOG ALARM REGISTER
- XXX / XXX — VISUAL DISPLAY OF PLC DIGITAL REGISTER
- XXX / XXX — VISUAL DISPLAY OF PLC DIGITAL ALARM REGISTER
- X / X — TAG DESCRIPTION
- XXXX — PLC I/O TAG
- PLC DIGITAL INPUT
- PLC DIGITAL OUTPUT
- ANALOG INPUT
- ANALOG OUTPUT
- AUDIBLE ALARM (BUZZER OR HORN)
- X — LAMP INDICATION COLOR DENOTED BY "X" RED, BLU, GRN, WHT, AMBER
- a XXXX / XXXX a — CONTINUATION TAG FROM ONE AREA TO ANOTHER AREA OF DIFFERENT DRAWINGS "a" TAG IDENTIFIER TO POINT ON DRAWING NUMBER XXXX.
- I–X / I–X — CONTINUED ON DWG I–X

## LINE TYPES

- PRIMARY PROCESS LINE
- SECONDARY PROCESS LINE
- ELECTRICAL SIGNAL LINE (DIGITAL OR ANALOG)
- SOFTWARE OR DATA LINK
- BOUNDARY OF EQUIPMENT PACKAGE SYSTEM
- COMMUNICATION CONNECTION

## VALVES

- GATE VALVE
- CHECK VALVE
- PLUG VALVE
- BALL VALVE
- BALL CHECK VALVE
- BUTTERFLY VALVE
- ANGLE VALVE
- NEEDLE VALVE
- RELIEF VALVE
- DIAPHRAGM VALVE
- 3–WAY VALVE
- FLOW CONTROL VALVE
- PINCH VALVE
- S — SOLENOID VALVE (2–WAY) (S ➔ M FOR MOTORIZED VALVE)
- S — SOLENOID VALVE (3–WAY) (S ➔ M FOR MOTORIZED VALVE)
- S — SOLENOID VALVE (4–WAY) (S ➔ M FOR MOTORIZED VALVE)
- PNEUMATIC DIAPHRAGM CONTROL VALVE
- PRESSURE SUSTAINING VALVE
- PRESSURE REGULATING VALVE
- MULTIFUNCTION VALVE
- SLUICE GATE (SG) OR SLIDE GATE (SLG)
- AIR RELIEF VALVE (ARV)
- FLOAT VALVE
- STRAINER
- BACKFLOW PREVENTER
- CV — CALIBRATION VALVE
- CALIBRATION COLUMN
- ROTAMETER
- UNION

## ACTUATORS

- M — MOTORIZED
- S — SOLENOID
- S / A — PNEUMATIC OPERATOR S– SOLENOID – OPEN/CLOSE A– POSITIONER – MODULATING

## PUMPS

- CENTRIFUGAL PUMP OR BLOWER
- SUBMERSIBLE SEWAGE PUMP
- VERTICAL TURBINE PUMP OR WELL PUMP
- SUBMERSIBLE WELL PUMP
- GEAR PUMP
- POSITIVE DISPLACEMENT PUMP OR BLOWER
- DIAPHRAGM PUMP
- PERISTALTIC PUMP
- M M — MOTOR

## SENSORS

- ORIFICE PLATE
- LIT XXX — ULTRASONIC LEVEL TRANSMITTER (FLOW IF OVER FLUME OR WEIR)
- LE XXX — CONDUCTANCE TYPE LEVEL ELEMENTS
- LIT XXX — RADAR TYPE LEVEL TRANSMITTER
- GUIDED OPTION
- LIT XXX — CAPACITANCE TYPE LEVEL TRANSMITTER

## SENSORS

- MAG — MAGNETIC FLOWMETER
- % — DENSITY METER
- ~ — ULTRASONIC FLOWMETER
- TURBINE OR PROPELLER METER
- VENTURI TUBE
- THERMAL DISPERSION FLOWMETER OR SWITCH
- PADDLE WHEEL FLOWMETER
- C — CORIOLIS FLOWMETER

## MISCELLANEOUS MECHANICAL ITEMS

- PIPE REDUCER
- RUPTURE DISC
- PRESSURE OR VACUUM RELIEF VALVE
- DIAPHRAGM SEAL
- ANNUALAR SEAL
- DRAIN TO WASTE
- MIXER
- F OR F — FILTER
- VENT W/CAP OR SCREEN
- FLEXIBLE HOSE OR TUBING
- SPRAY NOZZLE SYSTEM
- EXPANSION JOINT
- STATIC MIXER
- EJECTOR / EDUCTOR
- HOSE COUPLING
- PULSATION DAMPENER
- OMNI ANTENNA NON–DIRECTIONAL
- YAGI ANTENNA DIRECTIONAL


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NORTH KERN WATER STORAGE DISTRICT

GEI Project 2005381

NORTH KERN WATER STORAGE DISTRICT
NK-619 PIPELINE AND PUMP STATION PROJECT

INSTRUMENTATION
SYMBOLS AND ABBREVIATIONS

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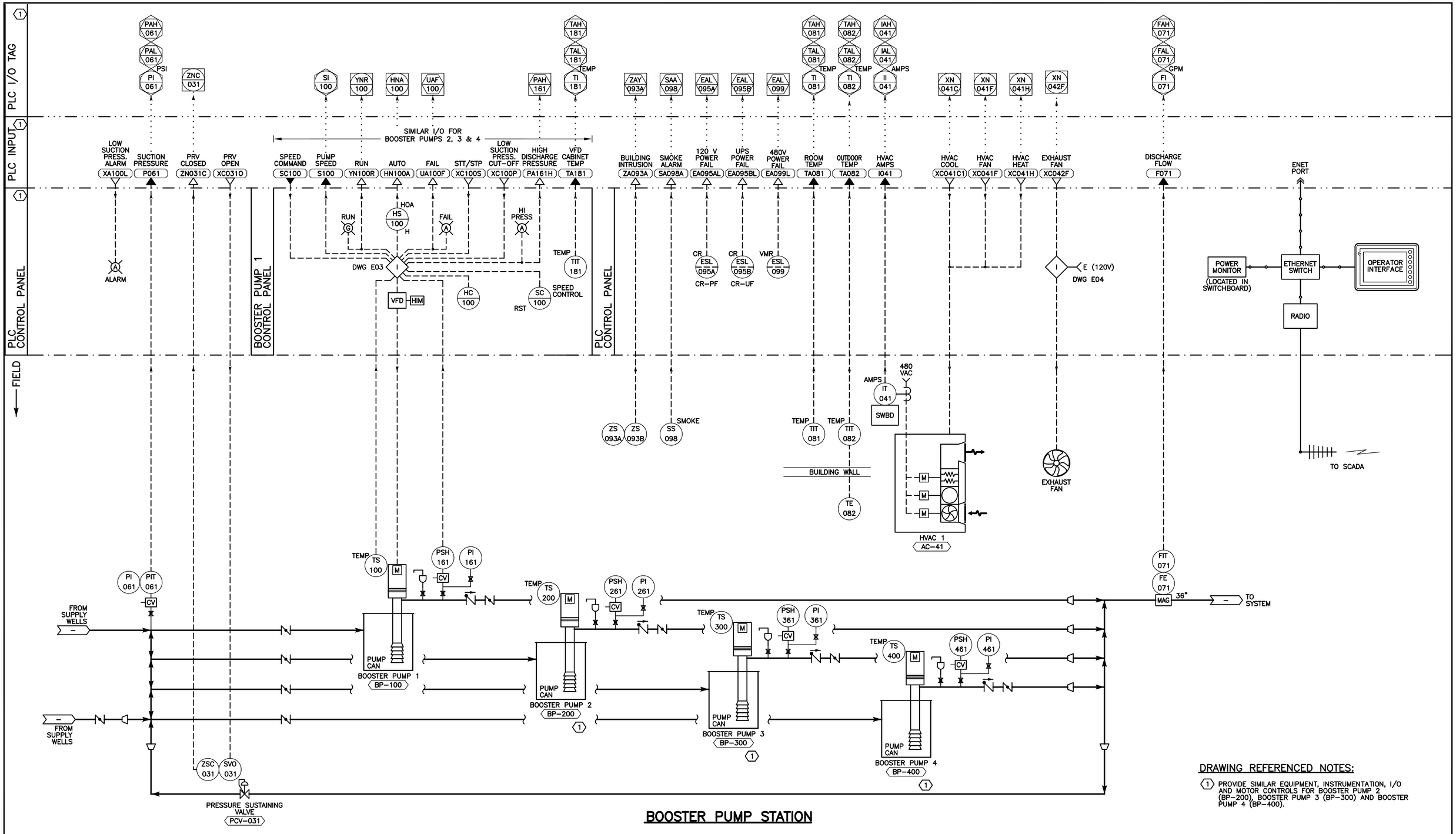


## BOOSTER PUMP STATION

### DRAWING REFERENCED NOTES:

(1) PROVIDE SIMILAR EQUIPMENT, INSTRUMENTATION, I/O AND MOTOR CONTROLS FOR BOOSTER PUMP 2 (BP-200), BOOSTER PUMP 3 (BP-300) AND BOOSTER PUMP 4 (BP-400).


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NK-619 PIPELINE AND PUMP STATION PROJECT

BOOSTER PUMP STATION
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