Set No._____

# CITY OF GRAND JUNCTION
# KANNAH CREEK TANK PROJECT
## GRAND JUNCTION, COLORADO
## BID SET

### CONTACTS


| | | |
|---|---|---|
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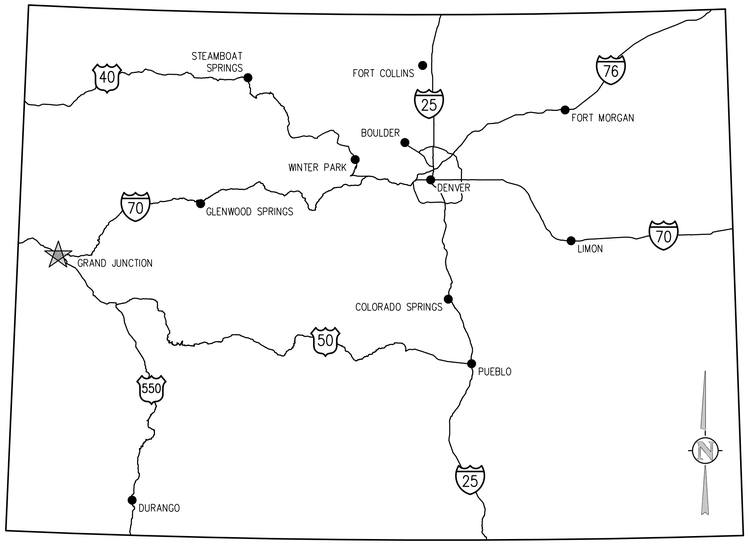
PREPARED UNDER THE SUPERVISION OF

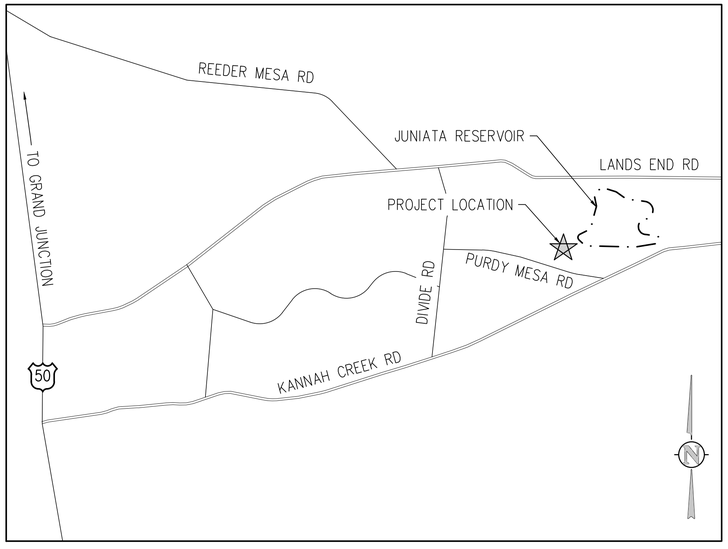
JVA, Inc.

### DRAWING INDEX






VICINITY MAP
NTS




PROJECT LOCATION MAP
NTS

## ABBREVIATIONS

| | |
|---|---|
| AASHTO | AMERICAN ASSOC. OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS |
| ABAN | ABANDON |
| AC | ASPHALTIC CONCRETE PAVING |
| ADDL | ADDITIONAL |
| ADDM | ADDENDUM |
| ADJ | ADJUSTABLE |
| AL | ALUMINUM |
| ALT | ALTERNATE |
| AMT | AMOUNT |
| APPROX | APPROXIMATE |
| ARCH | ARCHITECT(URAL) |
| ARV | AIR RELIEF VALVE |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS |
| ASPH | ASPHALT |
| ASSY | ASSEMBLY |
| ASYM | ASYMMETRICAL |
| AUTO | AUTOMATIC |
| AVG | AVERAGE |
| AWWA | AMERICAN WATER WORKS ASSOC. |
| BC | BACK OF CURB |
| BFV | BUTTERFLY VALVE |
| BG | FINISHED GRADE ADJACENT TO BOTTOM OF WALL |
| BLDG | BUILDING |
| BLK | BLOCK |
| BM | BENCH MARK |
| BMP | BEST MANAGEMENT PRACTICE |
| BS | BACKSIGHT |
| BOS | BOTTOM OF STEP |
| BOT | BOTTOM |
| BSMT | BASEMENT |
| BVCE | BEGIN VERTICAL CURVE ELEVATION |
| BVCS | BEGIN VERTICAL CURVE STATION |
| BW | BOTTOM OF WALL |
| CB | CATCH BASIN |
| CCW | COUNTER CLOCKWISE |
| CDOT | COLORADO DEPARTMENT OF TRANSPORTATION |
| CIP | CAST IRON PIPE |
| CJ | CONSTRUCTION JOINT |
| CL | CENTER LINE OR CHAIN LINK |
| CLR | CLEAR |
| CMP | CORRUGATED METAL PIPE |
| CMU | CONCRETE MASONRY UNIT |
| CO | CLEANOUT |
| CONC | CONCRETE |
| CONST | CONSTRUCTION |
| CONT | CONTINUOUS(ATION) |
| COR | CORNER |
| CR | CONCENTRIC REDUCER |
| CTR | CENTER |
| CY | CUBIC YARDS |
| DEMO | DEMOLITION |
| DIA | DIAMETER |
| DIAG | DIAGONAL |
| DIP | DUCTILE IRON PIPE |
| DOM | DOMESTIC |
| DN | DOWN |
| DR | DRAIN |
| DWG | DRAWING |
| DWL | DOWEL |
| E | EAST |
| EA | EACH |
| ECC | ECCENTRIC |
| EJ | EXPANSION JT |
| EL | ELEVATION |
| ELB | ELBOW |
| ELEC | ELECTRICAL |
| ENGR | ENGINEER |
| EOP | EDGE OF PAVEMENT |
| EQ | EQUAL |
| EQUIP | EQUIPMENT |
| EQUIV | EQUIVALENT |
| ESMT | EASEMENT |
| EST | ESTIMATE |
| EVCE | END VERTICAL CURVE ELEVATION |
| EVCS | END VERTICAL CURVE STATION |
| EW | EACH WAY |
| EXP | JT EXPANSION JOINT |
| EXIST | EXISTING |
| FND | FOUNDATION |
| FES | FLARED END SECTION |
| FF | FINISH FLOOR |
| FG | FINISH GRADE |
| FH | FIRE HYDRANT |
| FL | FLOW LINE |
| FN | FENCE |
| FOC | FACE OF CONCRETE |
| FPM | FEET PER MINUTE |
| FPS | FEET PER SECOND |
| FT | FEET |
| FTG | FOOTING OR FITTING |
| G | GAS |
| GA | GAUGE |
| GAL | GALLON |
| GALV | GALVANIZED |
| GCO | GRADE CLEANOUT |
| GIP | GALVANIZED IRON PIPE |
| GND | GROUND |
| GPD | GALLONS PER DAY |
| GPM | GALLONS PER MINUTE |
| GR | GRATE |
| GRTG | GRATING |
| GSP | GALVANIZED STEEL PIPE |
| GV | GATE VALVE |
| H | HIGH |
| HB | HOSE BIB |
| HE | HORIZONTAL ELLIPTICAL |
| HDWL | HEADWALL |
| HNDRL | HAND RAIL |
| HORIZ | HORIZONTAL |
| HP | HIGH POINT |
| HR | HOUR |
| HVAC | HEATING, VENTILATION, AIR CONDITIONING |
| HWY | HIGHWAY |
| HWL | HIGH WATER LINE |
| HYD | HYDRANT |
| INCL | INCLUDED |
| ID | INSIDE DIAMETER |
| IN | INLET |
| INSUL | INSULATION |
| INV | INVERT |
| IRR | IRRIGATION |
| JTS | JOINTS |
| KO | KNOCKOUT |
| KPL | KICK PLATE |
| KWY | KEYWAY |
| L | LEFT OR LITER |
| LSCAPE | LANDSCAPE(ING) |
| LF | LINEAR FOOT |
| LP | LOW POINT OR LIGHT POLE |
| LT | LIGHT |
| LWL | LOW WATER LEVEL |
| MAINT | MAINTENANCE |
| MAN | MANUAL |
| MATL | MATERIAL |
| MAX | MAXIMUM |
| ME | MATCH EXISTING |
| MECH | MECHANICAL |
| MFR | MANUFACTURER |
| MH | MANHOLE |
| MIN | MINIMUM |
| MISC | MISCELLANEOUS |
| MJ | MECHANICAL JOINT |
| N | NORTH |
| NA | NOT APPLICABLE |
| NIC | NOT IN CONTRACT |
| NPT | NATIONAL PIPE THREAD |
| NTS | NOT TO SCALE |
| OS | OFFSET |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER |
| OPP | OPPOSITE |
| OPT | OPTIONAL |
| PC | POINT OF CURVATURE |
| PCO | PRESSURE CLEAN OUT |
| PCR | POINT OF CURVE RETURN |
| PI | POINT OF INTERSECTION |
| PVI | POINT OF VERTICAL INTERSECTION |
| PL | PROPERTY LINE |
| PE | POLYETHYLENE |
| PREFAB | PREFABRICATED |
| PRELIM | PRELIMINARY |
| PREP | PREPARATION |
| PROP | PROPOSED |
| PRV | PRESSURE REDUCING VALVE OR PRESSURE RELIEF VALVE |
| PSF | POUNDS PER SQUARE FOOT |
| PSI | POUNDS PER SQUARE INCH |
| PT | POINT OF TANGENCY |
| PV | PLUG VALVE |
| PVC | POLYVINYL CHLORIDE OR POINT OF VERTICAL CURVATURE |
| PVMT | PAVEMENT |
| QTY | QUANTITY |
| R | RIGHT |
| RAD | RADIUS |
| RCP | REINFORCED CONCRETE PIPE |
| RD | ROOF DRAIN |
| RE | REFERENCE |
| RECT | RECTANGULAR |
| REINF | REINFORCE (D) (ING) (MENT) |
| REQD | REQUIRED |
| ROW | RIGHT OF WAY |
| SAN | SANITARY |
| SC | SAWCUT |
| SD | STORM DRAIN |
| SECT | SECTION |
| SPD | STANDARD PROCTOR DENSITY |
| SPEC | SPECIFICATION |
| SQ | SQUARE |
| SQ IN | SQUARE INCH |
| SQ FT | SQUARE FOOT |
| SQ YD | SQUARE YARD |
| SS | SANITARY SEWER |
| SST | STAINLESS STEEL |
| STA | STATION |
| STD | STANDARD |
| STL | STEEL |
| STRUCT | STRUCTURAL |
| SVC | SERVICE |
| SWMP | STORMWATER MANAGEMENT PLAN |
| SYM | SYMMETRICAL |
| TB | THRUST BLOCK |
| TBC | TOP BACK OF CURB |
| TBM | TEMPORARY BENCH MARK |
| TEMP | TEMPORARY |
| TG | FINISHED GRADE ADJACENT TO TOP OF WALL |
| THK | THICK |
| TOB | TOP OF BANK |
| TOC | TOP OF CONCRETE OR TOP OF CURB |
| TOS | TOP OF STEP |
| TOT | TOTAL |
| TW | TOP OF WALL OR CAP OF WALL |
| TYP | TYPICAL |
| UBC | UNIFORM BUILDING CODE |
| UGE | UNDERGROUND ELECTRIC |
| UTIL | UTILITY |
| VERT | VERTICAL |
| VC | POINT OF VERTICAL CURVATURE |
| VCP | VITRIFIED CLAY PIPE |
| W | WIDE OR WIDTH |
| W/ | WITH |
| W/O | WITHOUT |
| WQCV | WATER QUALITY CONTROL VOLUME |
| WSE | WATER SURFACE ELEVATION |
| WW | WASTEWATER |
| X | SECT CROSS SECTION |
| XFMR | ELECTRICAL TRANSFORMER |
| YH | YARD HYDRANT |

## DESIGN LEGEND

- BENCHMARK
- MANHOLE
- AREA DRAIN
- COMBINATION INLET
- TYPE R INLET
- TYPE 13 FIELD INLET
- FLARED END SECTION W/ RIPRAP
- TEE W/ THRUST BLOCK
- BEND W/ THRUST BLOCK
- END CAP W/ THRUST BLOCK
- GATE VALVE
- REDUCER/INCREASER
- WATER METER
- FIRE HYDRANT
- SD — STORM – 12" AND SMALLER
- STORM – LARGER THAN 12"
- RD — ROOF DRAIN
- TD — TRENCH DRAIN
- UD — UNDERDRAIN
- PD — PERIMETER DRAIN
- SS — SANITARY SEWER – 12" AND SMALLER
- SANITARY SEWER – LARGER THAN 12"
- FM — FORCE MAIN
- W — WATER – 12" AND SMALLER
- D — WATER – DRAIN
- OF — WATER – OVERFLOW
- WATER – LARGER THAN 12"
- NPW — NON POTABLE WATER
- PW — POTABLE WATER
- IRR — IRRIGATION – 12" AND SMALLER
- IRRIGATION – LARGER THAN 12"
- CATV — CABLE TV
- D — DRAIN
- E — ELECTRIC
- UE — UNDERGROUND ELECTRIC
- OE — OVERHEAD ELECTRIC
- T — TELEPHONE
- FO — FIBER OPTIC
- FUEL — FUEL
- G — GAS
- PVC — PVC PIPE (MISC)

DETAIL TITLE

SCALE

DETAIL TITLE

1 / –

- DETAIL NUMBER IDENTIFICATION
- SHEET WHERE THE SECTION OR ELEVATION IS CUT OR CALLED OUT – INDICATES SAME DRAWING

1 / C1.0

- DETAIL NUMBER IDENTIFICATION
- SHEET WHERE THE DETAIL IS DRAWN – INDICATES SAME DRAWING

- X — FENCE
- FLOW LINE OF DITCH OR WASH
- 5.0% — SLOPE ARROW
- +03.54 — PROPOSED SPOT ELEVATION
- +03.3 — EXIST SPOT ELEVATION
- 5220 — EXIST INDEX CONTOUR
- 5221 — EXIST INTERMEDIATE CONTOUR
- 20 — PROPOSED INDEX CONTOUR
- 21 — PROPOSED INTERMEDIATE CONTOUR
- CURB AND GUTTER
- SPILL/CATCH CURB TRANSITION
- SIGN W/ POST
- CURB RAMP
- SIDEWALK CHASE
- SIDEWALK
- CONCRETE PAVING
- HEAVY DUTY CONCRETE PAVING
- HEAVY DUTY ASPHALT PAVING
- LIGHT DUTY ASPHALT PAVING
- GRAVEL
- PROPOSED BUILDING
- BUILDING ACCESS
- RETAINING WALL
- BOULDER/ROCK WALL
- LIMITS OF SAWCUT
- LIMITS OF WORK
- EASEMENT LINE
- PROPERTY LINE
- ADJACENT PROPERTY LINE/ROW
- MATCHLINE

Know what's below. Call before you dig.

### SECTION CALLOUT

A / –

- SECTION NUMBER IDENTIFICATION
- SHEET WHERE THE SECTION IS – INDICATES SAME DRAWING

### DETAIL MARKER

- REVISION CLOUD
- REVISION NUMBER

## GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF THE CITY OF GRAND JUNCTION, COLORADO DEPARTMENT OF TRANSPORTATION, LOCAL FIRE PROTECTION REQUIREMENTS, AND APPLICABLE STATE AND LOCAL STANDARDS AND SPECIFICATIONS. THE CONTRACTOR SHALL HAVE IN POSSESSION AT THE JOB SITE AT ALL TIMES ONE (1) SIGNED COPY OF APPROVED PLANS, STANDARDS AND SPECIFICATIONS. CONTRACTOR SHALL CONSTRUCT AND MAINTAIN EMERGENCY ACCESS ROUTES TO THE SITE AND STRUCTURE AT ALL TIMES PER THE APPLICABLE LOCAL FIRE PROTECTION DISTRICT REQUIREMENTS. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FOR ANY VARIANCE TO THE ABOVE DOCUMENTS. NOTIFY ENGINEER OF ANY CONFLICTING STANDARDS OR SPECIFICATIONS. IN THE EVENT OF ANY CONFLICTING STANDARD OR SPECIFICATION, THE MORE STRINGENT OR HIGHER QUALITY STANDARD, DETAIL OR SPECIFICATION SHALL APPLY.
2. THE CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL APPLICABLE CODES, LICENSES, STANDARD SPECIFICATIONS, PERMITS, BONDS, ETC., WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK, INCLUDING, BUT NOT LIMITED TO A LOCAL AND STATE GROUNDWATER DISCHARGE AND COLORADO DEPARTMENT OF HEALTH AND ENVIRONMENT (CDPHE) STORMWATER DISCHARGE PERMIT ASSOCIATED WITH CONSTRUCTION ACTIVITY.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE REQUIRED PARTY CITY OF GRAND JUNCTION AND THERE REPRESENTATIVES AT LEAST 48 HOURS PRIOR TO START OF ANY CONSTRUCTION, PRIOR TO BACKFILLING, AND AS REQUIRED BY JURISDICTIONAL AUTHORITY AND/OR PROJECT SPECIFICATIONS. THE CONTRACTOR SHALL CONTINUE WITH NOTIFICATIONS THROUGHOUT THE PROJECT AS REQUIRED BY THE STANDARDS AND SPECIFICATIONS.
4. THE LOCATIONS OF EXISTING UTILITIES ARE SHOWN IN THE APPROXIMATE LOCATION BASED ON INFORMATION BY OTHERS. NOT ALL UTILITIES MAY BE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT SIZE, LOCATION AND TYPE OF ALL EXISTING UTILITIES WHETHER SHOWN OR NOT BEFORE COMMENCING WORK. THE ENGINEER AND/OR OWNER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS SHOWN ON PLANS. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR ANY AND ALL DAMAGES AND COSTS WHICH MIGHT OCCUR BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES. THE CONTRACTOR SHALL NOTIFY ALL PUBLIC AND PRIVATE UTILITY COMPANIES AND DETERMINE THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO PROCEEDING WITH GRADING AND CONSTRUCTION. ALL WORK PERFORMED IN THE AREA OF UTILITIES SHALL BE PERFORMED AND INSPECTED ACCORDING TO THE REQUIREMENTS OF THE UTILITY OWNER. LIKEWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MAPPING ANY EXISTING UTILITY (INCLUDING DEPTH) WHICH MAY CONFLICT WITH THE PROPOSED CONSTRUCTION, AND FOR RELOCATING ENCOUNTERED UTILITIES AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL CONTACT AND RECEIVE APPROVAL FROM CITY OF GRAND JUNCTION AND THEIR REPRESENTATIVES BEFORE RELOCATING ANY ENCOUNTERED UTILITIES. CONTRACTOR RESPONSIBLE FOR SERVICE CONNECTIONS, AND RELOCATING AND RECONNECTING AFFECTED UTILITIES AS COORDINATED WITH UTILITY OWNER AND/OR ENGINEER, INCLUDING NON-MUNICIPAL UTILITIES (TELEPHONE, GAS, CABLE, ETC., WHICH SHALL BE COORDINATED WITH THE UTILITY OWNER). THE CONTRACTOR SHALL IMMEDIATELY CONTACT ENGINEER UPON DISCOVERY OF A UTILITY DISCREPANCY OR CONFLICT. AT LEAST 48 HOURS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY NOTIFICATION CENTER OF COLORADO (1-800-922-1987, WWW.UNCC.ORG). SEE SURVEY UTILITY LOCATION INFORMATION BELOW.
5. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL PREPARE A TRAFFIC CONTROL PLAN FOR OWNER AND/OR CITY APPROVAL AND PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FENCING, FLAGMEN OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR AGREES TO COMPLY WITH THE PROVISIONS OF THE TRAFFIC CONTROL PLAN AND THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," PART VI, FOR CONSTRUCTION SIGNAGE AND TRAFFIC CONTROL. ALL TEMPORARY AND PERMANENT TRAFFIC SIGNS SHALL COMPLY TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) WITH REGARD TO SIGN SHAPE, COLOR, SIZE, LETTERING, ETC. UNLESS OTHERWISE SPECIFIED. IF APPLICABLE, PART NUMBERS ON SIGNAGE DETAILS REFER TO MUTCD SIGN NUMBERS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS NOR EROSION ON ABUTTING PROPERTIES IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. GROUNDWATER TO BE PUMPED SHALL BE TESTED, PERMITTED, AND PUMPED PER THE STATE OF COLORADO AND LOCAL GROUNDWATER DISCHARGING PERMIT REQUIREMENTS.
7. RIM AND GRATE ELEVATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY AND ARE NOT TO BE TAKEN AS FINAL ELEVATIONS. THE CONTRACTOR SHALL ADJUST RIMS AND OTHER IMPROVEMENTS TO MATCH FINAL PAVEMENT AND FINISHED GRADE ELEVATIONS.
8. THE EXISTING AND PROPOSED ELEVATIONS OF FLATWORK, SIDEWALKS, CURBS, THRESHOLDS, PAVING, ETC. AS SHOWN HEREON ARE BASED ON EXTRAPOLATION OF FIELD SURVEY DATA, EXISTING CONDITIONS, AND DATA PROVIDED BY OTHERS. AT CRITICAL AREAS CRITICAL AREAS AND SITE FEATURES, CONTRACTOR SHALL HAVE FORMWORK INSPECTED AND APPROVED BY OWNER, OWNER'S REPRESENTATIVE, OR ENGINEER PRIOR TO PLACING CONCRETE. MINOR ADJUSTMENTS, AS APPROVED, TO PROPOSED GRADES, INVERTS, ETC. MAY BE REQUIRED TO PREVENT PONDING OR SLOPE NOT IN CONFORMANCE WITH MUNICIPAL STANDARDS. ALL FLATWORK MUST PREVENT PONDING AND PROVIDE POSITIVE DRAINAGE AWAY FROM EXISTING AND PROPOSED BUILDINGS, WALLS, ROOF DRAIN OUTFALLS, ACROSS DRIVES AND WALKS, ETC., TOWARDS THE PROPOSED INTENDED DRAINAGE FEATURES AND CONVEYANCES.
9. FINAL LIMITS OF REQUIRED ASPHALT SAWCUTTING AND PATCHING MAY VARY FROM LIMITS SHOWN ON PLANS. CONTRACTOR TO PROVIDE SAWCUT AND PATCH WORK TO ACHIEVE POSITIVE DRAINAGE AND A SMOOTH TRANSITION TO EXISTING ASPHALT WITHIN SLOPES ACCEPTABLE TO THE ENGINEER AND WITHIN MUNICIPAL STANDARDS. CONTRACTOR SHALL PROVIDE ADDITIONAL SAWCUTTING AND PATCHING AT UTILITY WORK, CONNECTION POINTS TO EXISTING PAVEMENT AND FEATURES, ETC. THAT MAY NOT BE DELINEATED ON PLANS.
10. ANY EXISTING MONITORING WELLS, CLEANOUTS, VALVE BOXES, ETC. TO BE PROTECTED AND TO REMAIN IN SERVICE. IF FEATURES EXIST, EXTEND OR LOWER TO FINAL SURFACE WITH LIKE KIND CAP WITH STANDARD CAST ACCESS LID WITH SAME MARKINGS. IN LANDSCAPED AREAS PROVIDE A CONCRETE COLLAR (18"x18"x6" THICK) AT ALL EXISTING AND PROPOSED MONITORING WELLS, CLEANOUTS, VALVE BOXES, ETC.
11. OWNER TO APPROVE ALL PRIVATE CONCRETE FINISHING, JOINT PATTERNS AND COLORING REQUIREMENTS PRIOR TO CONSTRUCTION. SUBMIT JOINT LAYOUT PLAN TO OWNER FOR APPROVAL PRIOR TO CONSTRUCTION.
12. PIPE LENGTHS AND HORIZONTAL CONTROL POINTS SHOWN ARE FROM CENTER OF STRUCTURES, END OF FLARED END SECTIONS, ETC. SEE STRUCTURE DETAILS FOR EXACT HORIZONTAL CONTROL LOCATION. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING ACTUAL PIPE LENGTHS TO ACCOUNT FOR STRUCTURES AND LENGTH OF FLARED END SECTIONS.
13. ALL SURPLUS MATERIALS, TOOLS, AND TEMPORARY STRUCTURES, FURNISHED BY THE CONTRACTOR, SHALL BE REMOVED FROM THE PROJECT SITE BY THE CONTRACTOR. ALL DEBRIS AND RUBBISH CAUSED BY THE OPERATIONS OF THE CONTRACTOR SHALL BE REMOVED, AND THE AREA OCCUPIED DURING CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ITS ORIGINAL CONDITION, WITHIN 48 HOURS OF PROJECT COMPLETION, UNLESS OTHERWISE DIRECTED BY THE MUNICIPALITY OR OWNER'S REPRESENTATIVE.
14. THE CONTRACTOR IS REQUIRED TO PROVIDE AND MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE LOCAL JURISDICTION, THE STATE OF COLORADO, MILE HIGH FLOOD DISTRICT "URBAN STORM DRAINAGE CRITERIA MANUAL VOLUME 3", THE M-STANDARD PLANS OF THE COLORADO DEPARTMENT OF TRANSPORTATION, AND THE APPROVED EROSION CONTROL PLAN. JURISDICTIONAL AUTHORITY MAY REQUIRE THE CONTRACTOR TO PROVIDE ADDITIONAL EROSION CONTROL MEASURES AT THE CONTRACTOR'S EXPENSE DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE PLANS DO NOT FUNCTION AS INTENDED. THE CONTRACTOR IS RESPONSIBLE FOR PROHIBITING SILT AND DEBRIS LADEN RUNOFF FROM LEAVING THE SITE, AND FOR KEEPING ALL PUBLIC AREAS FREE OF MUD AND DEBRIS. THE CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING FINAL GRADES AND FOR REMOVING ACCUMULATED SEDIMENTATION FROM ALL AREAS INCLUDING SWALES AND DETENTION/WATER QUALITY AREAS. CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROL MEASURES AND REPAIR AREAS AS REQUIRED AFTER VEGETATION IS ESTABLISHED AND ACCEPTED BY OWNER AND MUNICIPALITY.
15. ADA COMPLIANCE: THE CROSS-SLOPE OF ALL WALKS MUST BE LESS THAN 1:48 (2.0%) PERPENDICULAR TO DIRECTION OF TRAVEL. RUNNING SLOPE OF ACCESSIBLE WALKS MUST BE NOT STEEPER THAN 1:20 (5.0%) IN DIRECTION OF TRAVEL. MAXIMUM GRADE OF ACCESSIBLE CURB RAMPS AND RAMPS IS 1:12 (8.3%). CURB RAMPS SHALL PROVIDE A LANDING AT THE TOP AND RAMP RUNS PROVIDE LANDINGS AT THE BOTTOM AND TOP OF EACH RAMP RUN AT A SLOPE NOT TO EXCEED 1:48. RAMPS RUNS EXCEEDING SIX INCHES SHALL INCLUDE HANDRAILS. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SHALL NOT EXCEED 1:48 IN ALL DIRECTIONS. CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO PLACEMENT OF FLATWORK OF SITE CONDITIONS OR DISCREPANCIES WHICH PREVENT TYPICAL REQUIRED GRADES FROM BEING ACHIEVED. ALL RAMPS, STAIRS, EDGE PROTECTION, AND RAILINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT ADA STANDARDS. ACCESSIBLE CURB RAMPS SHALL CONFORM TO THE CDOT M-STANDARDS (SEE DETAIL M-608-1, ETC). ACCESSIBLE FEATURE WITHIN THE PUBLIC RIGHTS-OF-WAY SHALL BE CONSTRUCTED TO CONFORM TO THE LOCAL AUTHORITY HAVING JURISDICTION REQUIREMENTS.
16. PROTECT ALL TREES AND VEGETATION. PLACE CONSTRUCTION FENCING AT DRIP LINE OF TREES AND PLANTS NEAR THE WORK ZONE. DEEP WATER TREES WEEKLY. HAND EXCAVATION REQUIRED AT ROOT ZONES WHERE PROPOSED PAVING OR UTILITY WORK IS WITHIN DRIPLINE OF TREES.
17. LOCATIONS OF CLEANOUTS, LIGHTS, SIGNAGE, JUNCTION BOXES, AND OTHER SIGNIFICANT SITE FEATURES TO BE STAKED FOR ENGINEER AND OR OWNER APPROVAL PRIOR TO WORK. CLEANOUTS, JUNCTION BOXES, AND ADJACENT GRADES TO BE RAISED ONE-HALF INCH AT ASPHALT/CONCRETE (OR 1" AT LANDSCAPING) TO PROVIDE POSITIVE DRAINAGE AWAY FROM FEATURES.
18. THE CONTRACTOR AT THE CONTRACTORS EXPENSE SHALL FURNISH THE OWNER AND ENGINEER OF RECORD A COMPLETE SET OF CONSTRUCTION RECORD DRAWINGS ("AS-BUILTS") FOR THE CONSTRUCTED IMPROVEMENTS. THE AS-BUILT SET SHALL SHOW SUFFICIENT DIMENSION TIES TO PERMANENT SURFACE FEATURES OR NORTHING/EASTING POINTS FOR ALL BURIED FACILITIES TO ALLOW FOR FUTURE LOCATING. THE AS-BUILT SET SHALL SHOW AS-BUILT CONTOURS AND ELEVATIONS OF ASPHALT AND CONCRETE FLATWORK, FLOWLINES, GRADE BREAKS, STAIRS, CROSS-SLOPES, HIGH AND LOW POINTS, AND ADDITIONAL ELEVATIONS TO DEMONSTRATE IMPROVEMENTS WERE CONSTRUCTED PER PLANS. THE AS-BUILT SET SHALL SHOW ELEVATIONS OF ALL DETENTION/WATER QUALITY FACILITIES, INCLUDING BUT NOT LIMITED TO BERMS, SPILLWAYS, BASIN BOTTOM, PIPE INVERTS, AND CONTROL STRUCTURE FEATURES (AS SURVEYED AND STAMPED BY A CERTIFIED P.L.S.). THE AS-BUILT SET SHALL ALSO INCLUDE ELEVATIONS OF MANHOLES, PIPES, INLETS, GRATES, AND SIZES OF ALL UTILITIES. THE AS-BUILT SET SHALL SHOW ANY AND ALL VARIATIONS FROM THE APPROVED PLAN. ENGINEER WILL PRODUCE FINAL RECORD DRAWINGS.

19. SURVEY INFORMATION:
    - 19.1 BENCHMARK INFORMATION: TOPOGRAPHIC INFORMATION WAS PROVIDED BY WILLIAM H. SMITH & ASSOCIATES, INC(WHS). SEE TOPOGRAPHIC MAP OF KANNAH CREEK WATER STORAGE TANK AREA DATED 1/3/2023. PROJECT BENCHMARK ELEVATION: 4644 AT SN01 AND THE DATUM IS MESA COUNTY LOCAL COORDINATE SYSTEM (MCLCS) PER SURVEY. COORDINATE AND VERIFY ALL VERTICAL AND HORIZONTAL DATA SHOWN IN SURVEY AND REPORT ANY IRREGULARITIES OR DISCREPANCIES TO ENGINEER PRIOR TO CONSTRUCTION.
    - 19.2 BASIS OF BEARINGS: SEE PLANS.
    - 19.3 HORIZONTAL CONTROL INFORMATION: HORIZONTAL CONTROL COORDINATES ARE BASED ON THE REFERENCED SURVEY AND ARE PROVIDED BY THE FOLLOWING POINTS AS SHOWN ON THE PLANS:

      P321 N-9038.768 E136295.655 ELEV4872.37 #5 REBAR IN MONUMENT WELL NORTH OF CATTLE GUARD ON OLD KANNAH CREEK ROAD WITH ORANGE CARSONITE READING "SURVEY MARKER".

      P322 N-14196.92 E141153.869 ELEV4902.64 #5 REBAR IN MONUMENT WELL SOUTHWEST OF FENCE PARALLELING HIGHWAY 50 WITH ORANGE CARSONITE READING "SURVEY MARKER".

      T1798 N-4450.32 E171750.83 ELEV5783.42 2" ALUMINUM CAP ALONG FENCE LINE FOR THE WEST ¼ CORNER BETWEEN SECTION 31 AND SECTION 6 SET IN 1995.
    - 19.4 SURVEY UTILITY LOCATION INFORMATION PER THE SURVEYOR: SUBSURFACE UTILITIES ARE SHOWN IN APPROXIMATE HORIZONTAL AND VERTICAL LOCATIONS CONSISTENT WITH ASCE 38-02 QUALITY LEVEL "C" (INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D; INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS), AND BASED ON FIELD MEASUREMENTS PROVIDED BY THE OWNER AND THE CONTRACTOR. SUBSURFACE UTILITIES ARE NOT DEPICTED TO THE EXTENT SET FORTH IN ASCE 38-02 QUALITY LEVELS "A" (INFORMATION OBTAINED THROUGH THE NONDESTRUCTIVE EXPOSURE OF UNDERGROUND UTILITIES, AND ALSO PROVIDES THE TYPE, SIZE, CONDITION, MATERIAL AND OTHER CHARACTERISTICS OF UNDERGROUND FEATURES.) OR "B" (INFORMATION OBTAINED BY THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND HORIZONTAL POSITION OF VIRTUALLY ALL UTILITIES WITHIN THE PROJECT LIMITS. THE INFORMATION OBTAINED IN THIS MANNER IS SURVEYED TO PROJECT CONTROL.). TO THE EXTENT DEEMED NECESSARY FOR THE PROTECTION OF PERSONS AND PROPERTY, POTHOLING OR OTHER PRECISE MAPPING SHOULD BE COMPLETED TO CONFIRM THE EXACT LOCATION OF ANY SUBSURFACE UTILITIES. NOTIFY OWNER AND ENGINEER WITH ALL UTILITY INFORMATION PRIOR TO CONSTRUCTION.VISIT HTTPS://WWW.FHWA.DOT.GOV/PROGRAMADMIN/SUEINDEX.CFM FOR MORE INFORMATION.

20. THE CONTRACTOR AT THE CONTRACTORS EXPENSE SHALL FURNISH THE OWNER AND ENGINEER OF RECORD A COMPLETE SET OF CONSTRUCTION RECORD DRAWINGS ("AS-BUILTS") FOR THE CONSTRUCTED IMPROVEMENTS. THE AS-BUILT SET SHALL SHOW SUFFICIENT DIMENSION TIES TO PERMANENT SURFACE FEATURES OR NORTHING/EASTING POINTS FOR ALL BURIED FACILITIES TO ALLOW FOR FUTURE LOCATING. THE AS-BUILT SET SHALL SHOW AS-BUILT CONTOURS AND ELEVATIONS OF ASPHALT AND CONCRETE FLATWORK, FLOWLINES, GRADE BREAKS, STAIRS, CROSS-SLOPES, HIGH AND LOW POINTS, AND ADDITIONAL ELEVATIONS TO DEMONSTRATE IMPROVEMENTS WERE CONSTRUCTED PER PLANS. THE AS-BUILT SET SHALL SHOW ELEVATIONS OF ALL DETENTION/WATER QUALITY FACILITIES, INCLUDING BUT NOT LIMITED TO BERMS, SPILLWAYS, BASIN BOTTOM, PIPE INVERTS, AND CONTROL STRUCTURE FEATURES (AS SURVEYED AND STAMPED BY A CERTIFIED P.L.S.). THE AS-BUILT SET SHALL ALSO INCLUDE ELEVATIONS OF MANHOLES, PIPES, INLETS, GRATES, AND SIZES OF ALL UTILITIES. THE AS-BUILT SET SHALL SHOW ANY AND ALL VARIATIONS FROM THE APPROVED PLAN. ENGINEER WILL PRODUCE FINAL RECORD DRAWINGS.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| NO. | DATE | DES'D | DWN | REVISION DESCRIPTION |
|---|---|---|---|---|

| | |
|---|---|
| DESIGNED BY: | LCO |
| DRAWN BY: | LJF |
| CHECKED BY: | JJM |
| JOB #: | 1071.17e |
| DATE: | MARCH 2024 |



CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

LEGENDS, NOTES & ABBREVIATIONS

SHEET NO.
G0.1

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# DESIGN CRITERIA

## EXISTING WATER TREATMENT PLANT CAPACITY

| | |
|---|---|
| CAPACITY: | 160 GPM |

## EXISTING HIGH SERVICE PUMPS

### PUMPS

| | |
|---|---|
| NUMBER: | 2 |
| TYPE: | VERTICAL TURBINE |
| CAPACITY: | 129 GPM (EACH) |
| TOTAL DYNAMIC HEAD: | 347 FT |
| MOTOR SIZE: | 15 HP |
| DRIVE: | VARIABLE FREQUENCY |

## WATER STORAGE TANK

### CONCRETE TANK

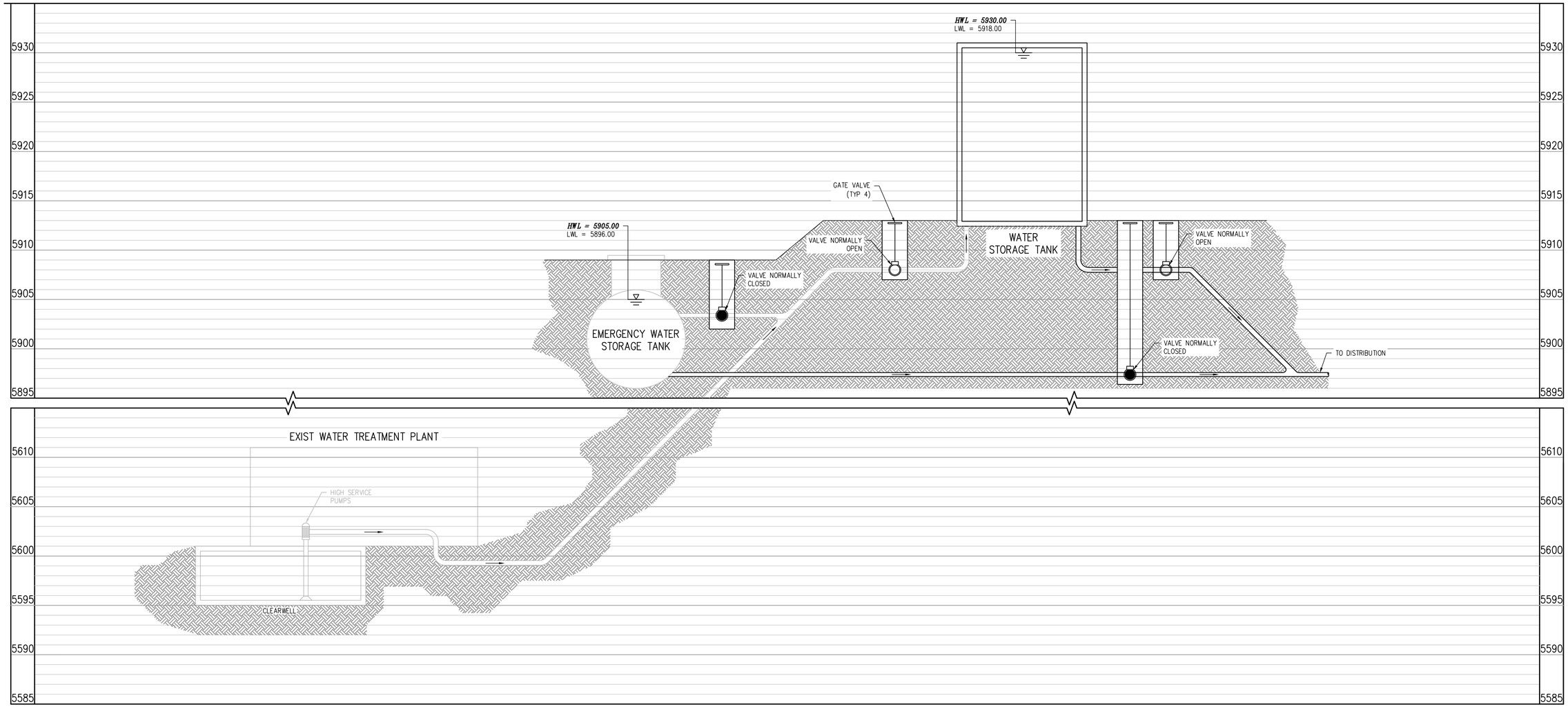
| | |
|---|---|
| QUANTITY: | 1 |
| VOLUME: | 150,000 GAL |
| HIGH WATER: | 5,930 FT |
| OPERATING RANGE: | 15–17 FT |
| DIAMETER: | 40 FT |
| MATERIAL: | CONCRETE |

### STEEL TANK (BID ALT)

| | |
|---|---|
| QUANTITY: | 1 |
| VOLUME: | 150,000 GAL (MIN) |
| HIGH WATER: | 5,930 FT |
| OPERATING RANGE: | 15–17 FT |
| DIAMETER: | 40 FT (MIN) |
| MATERIAL: | STEEL |

## EXIST EMERGENCY WATER STORAGE TANK

| | |
|---|---|
| QUANTITY: | 1 |
| VOLUME: | 20,000 GAL |




## HYDRAULIC PROFILE

SCALE: VERT. 1" = 5'
HORIZ. NO SCALE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CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

HYDRAULIC PROFILE & DESIGN CRITERIA

SHEET NO.
G1.0

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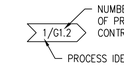
## PROCESS LEGEND




- MAIN PROCESS LINE
- EXIST MAIN PROCESS LINE
- FUTURE MAIN PROCESS LINE
- CHANNEL
- EXIST CHANNEL
- SECONDARY PROCESS LINE
- EXIST SECONDARY PROCESS LINE
- FUTURE SECONDARY PROCESS LINE
- BUILDING
- HARDWIRED SIGNAL
- DATA LINK OR SOFTWARE SIGNAL

## VALVE SYMBOLS

CLOSED OPEN

- GATE VALVE
- PLUG VALVE
- GLOBE VALVE
- BALL VALVE
- DIAPHRAGM VALVE
- BUTTERFLY VALVE
- SWING CHECK VALVE
- BALL CHECK VALVE
- GLOBE CHECK VALVE
- WAFER CHECK VALVE
- DUCKBILL CHECK VALVE
- HAND OPERATED VALVE
- PILOT OPERATED PRESSURE REDUCING VALVE W/ DOWNSTREAM PRESSURE SETTING
- PILOT OPERATED PRESSURE REDUCING VALVE W/ UPSTREAM PRESSURE SETTING
- SPRING PRESSURE RELIEF W/ PRESSURE RELIEF
- AIR RELEASE VALVE (ARV)
- SOLENOID OPERATED VALVE (S)
- MOTOR OPERATED VALVE (M)

## P&ID EQUIPMENT SYMBOLS

DRY PIT WET PIT

- CENTRIFUGAL PUMPS
- SUBMERSIBLE PUMP
- PROGRESSIVE CAVITY PUMP
- METERING PUMP
- PERISTALTIC PUMP
- VERTICAL TURBINE PUMP
- SUBMERSIBLE WELL PUMP
- DOUBLE DISC DIAPHRAGM PUMP (POSITIVE DISPLACEMENT)
- GEAR PUMP OR BLOWER (POSITIVE DISPLACEMENT)
- HANDLE OR THROTTLE
- MOTOR DRIVER (M)
- PRESSURE GAUGE
- MANUAL DRAIN
- CAM-LOCK FITTING/QUICK CONNECT
- BLIND FLANGE
- FLOW METER (M)
- SAMPLE VALVE/PORT
- ULTRASONIC LEVEL INDICATOR
- HYDROSTATIC LEVEL SENSOR
- ULTRASONIC FLOW SENSOR
- FLOAT SWITCH
- RADIO TRANSMITTER
- RADIO RECEIVER
- DRAIN

PH/TEMP — PH/TEMP ANALYZER

TURB — TURBIDIMETER

## INSTRUMENT IDENTIFICATION LETTERS
(INSTRUMENT SOCIETY OF AMERICA)

| | FIRST – LETTER | | SUCCEEDING – LETTERS | | |
|---|---|---|---|---|---|
| | MEASURED OR INITIATING VARIABLE | | READOUT OR PASSIVE FUNCTION | OUTPUT FUNCTION | MODIFIER |
| A | ANALYSIS | | ALARM | | |
| B | BURNER, COMBUSTION | | USER'S CHOICE | USER'S CHOICE | USER'S CHOICE |
| C | CONTROL | | | CONTROL SWITCH | CLOSED |
| D | USER'S CHOICE | DIFFERENTIAL | | | |
| E | VOLTAGE | | SENSOR (PRIMARY ELEMENT) | | |
| F | FLOW RATE | RATIO (FRACTION) | | | |
| G | USER'S CHOICE | | GLASS, VIEWING DEVICE | | |
| H | HAND | | | | HIGH |
| I | CURRENT (ELECTRICAL) | | INDICATE | | |
| J | POWER | SCAN | | | |
| K | TIME, TIME SCHEDULE | TIME RATE OF CHANGE | | CONTROL STATION | |
| L | LEVEL | | LIGHT | | LOW |
| M | USER'S CHOICE MOTOR | MOMENTARY | | | MIDDLE, INTERMEDIATE |
| N | TORQUE | | USER'S CHOICE | USER'S CHOICE | USER'S CHOICE |
| O | USER'S CHOICE | | ORIFICE, RESTRICTION | | OPEN |
| P | PRESSURE, VACUUM | | POINT (TEST) CONNECTION | | |
| Q | QUANTITY | INTEGRATE, TOTALIZE | | | |
| R | RADIATION | | RECORD | | |
| S | SPEED, FREQUENCY | SAFETY | | SWITCH | |
| T | TEMPERATURE | | | TRANSMIT | |
| U | FAILURE | | MULTIFUNCTION | MULTIFUNCTION | MULTIFUNCTION |
| V | VIBRATION, MECHANICAL ANALYSIS | | | VALVE, DAMPER, LOUVER | |
| W | WEIGHT, FORCE | | WELL | | |
| X | UNCLASSIFIED | X AXIS | UNCLASSIFIED | UNCLASSIFIED | UNCLASSIFIED |
| Y | EVENT, STATE OR PRESENCE | Y AXIS | | RELAY, COMPUTE, CONVERT | COMMAND |
| Z | POSITION, DIMENSION | Z AXIS | | DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT | |

## P&ID INSTRUMENT SYMBOLS

### PROCESS CONTROL SYSTEM INTERFACE SYMBOLS

YYY

INPUT/OUTPUT TO/FROM PLC, INSIDE PLC PANEL
YYY – INDICATES FUNCTION TYPE
XXX – INDICATES PANEL WHERE DEVICE IS LOCATED

### GENERAL INSTRUMENT SYMBOLS

- FIELD MOUNTED INSTRUMENT
- XXX — INSTRUMENT MOUNTED ON FACE OF PANEL NORMALLY ACCESSIBLE TO THE OPERATOR. XXX – INDICATES PANEL WHERE DEVICE IS LOCATED
- XXX — INSTRUMENT MOUNTED BEHIND OR INSIDE PANEL. XXX – INDICATES PANEL WHERE DEVICE IS LOCATED
- SINGLE INSTRUMENT HOUSING CONTAINING TWO OR (MORE) INSTRUMENTATION FUNCTIONS
- PLC I/O

## PANEL NOMENCLATURE

CP-XXX: CONTROL PANEL (AREA CONTROL)

LCP-XXXA: LOCAL CONTROL PANEL (SPECIFICATION PROCESS CONTROL) LETTERS A, B, C DENOTES VENDER SUPPLIED EQUIPMENT

LP-X LIGHTING PANEL

## COMMON INSTRUMENT DESIGNATIONS

| TAG | DESIGNATION |
|---|---|
| YL | EQUIPMENT RUNNING STATUS |
| YS | EQUIPMENT IN AUTO OR REMOTE STATUS |
| YY | EQUIPMENT RUN COMMAND |
| UA | EQUIPMENT FAULT STATUS |
| HC | HAND CONTROL |
| HS | HAND SWITCH |
| SI | SPEED INDICATION |
| SC | SPEED COMMAND |
| PSL | PRESSURE SWITCH LOW |
| PSH | PRESSURE SWITCH HIGH |
| FE | FLOW ELEMENT |
| FIT | FLOW INDICATOR/TRANSMITTER |
| ZSO | VALVE POSITION FULL OPEN |
| ZSC | VALVE POSITION FULL CLOSE |
| ZSI | VALVE POSITION INDICATOR |
| SP | SET POINT |
| PID | PROPORTIONAL-INTEGRAL-DERIVATIVE |
| HOA | HAND-OFF-AUTO |
| OCA | OPEN-CLOSE-AUTO |
| LCP | LOCAL CONTROL PANEL |

## GENERAL NOTES:

1. THIS IS A STANDARD LEGEND, THEREFORE NOT ALL OF THIS INFORMATION MAY BE USED ON THIS PROJECT.
2. P & ID INSTRUMENTATION DETAILS DO NOT REPRESENT INSTRUMENTS AND CONTROLS INTEGRAL TO VENDOR SUPPLIED CONTROL PANELS OR EQUIPMENT. SEE EQUIPMENT SPECIFICATIONS FOR THIS INFORMATION.
3. P & ID DOES NOT REPRESENT CONTROL STRATEGIES OR INTERACTIONS. REFERENCE SECTION 16950, CONTROL NARRATIVES, FOR THIS INFORMATION.
4. P & ID DOES NOT REPRESENT EQUIPMENT HARDWIRED INTERLOCK AND ENABLE CIRCUITRY, REFER TO SECTION 16950 FOR COMPLETE DESCRIPTION.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| CHECKED BY: | JJM |
| JOB #: | 1071.17e |
| DATE: | MARCH 2024 |



CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

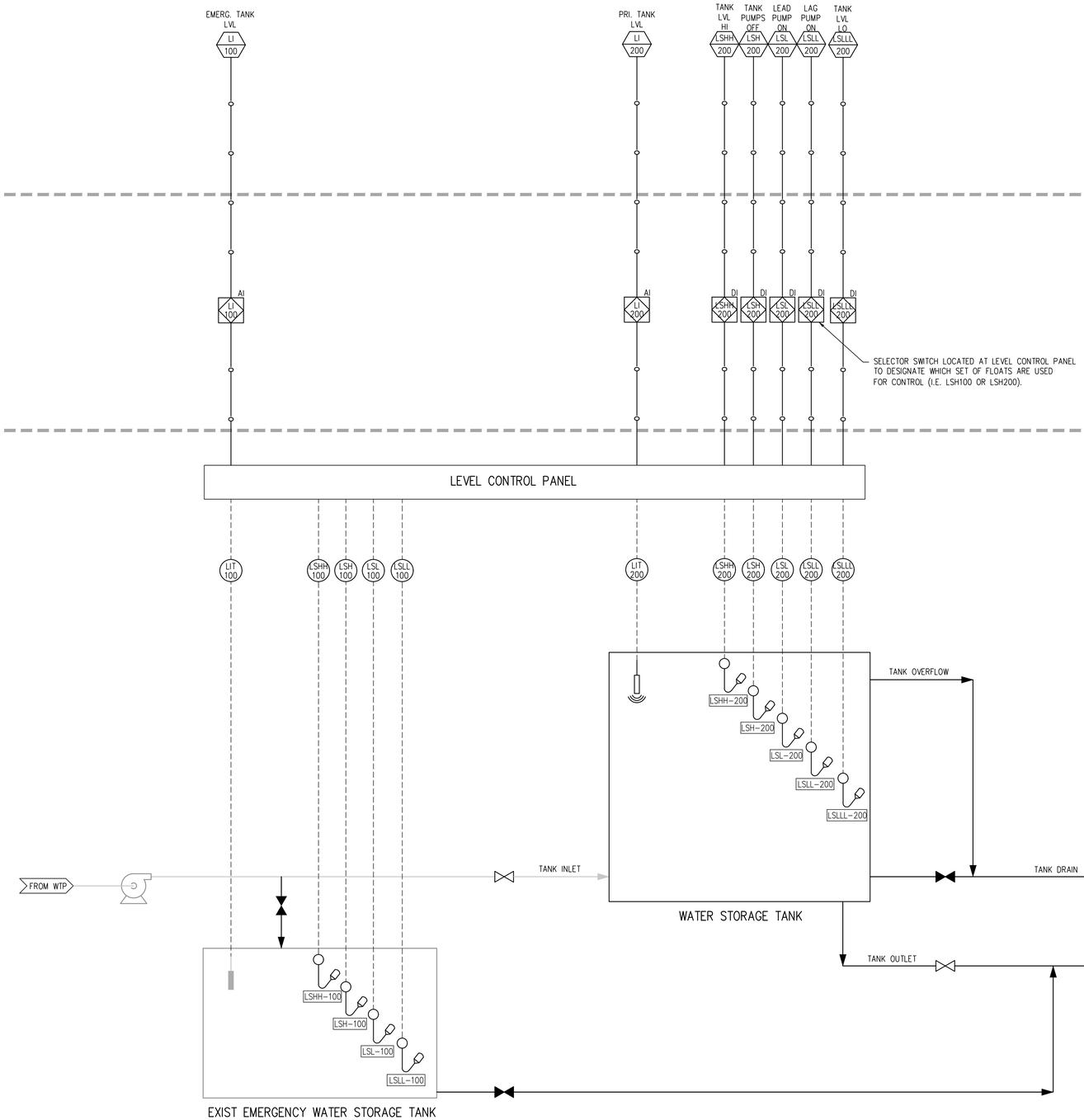
PROCESS & INSTRUMENTATION DIAGRAM LEGEND

SHEET NO.
G1.2

SCADA AND OPERATOR INTERFACE

KANNAH CREEK WTP PLC

FIELD





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CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

PROCESS & INSTRUMENTATION DIAGRAM

SHEET NO.

G1.3

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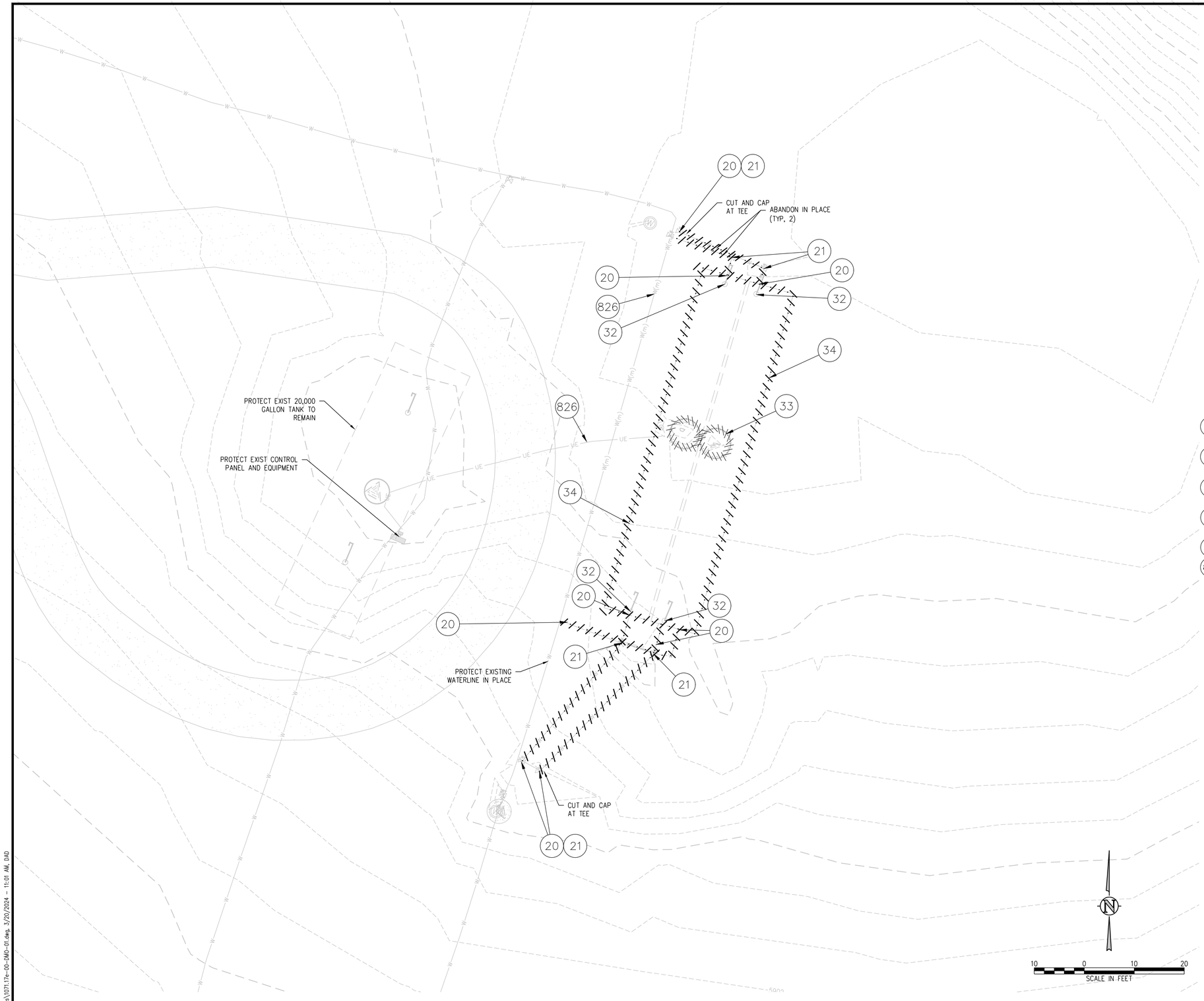


## DEMOLITION NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. REFER TO GENERAL NOTES FOR UTILITY LOCATION AND PROTECTION.
2. ACTUAL LIMITS MAY VARY, CONTRACTOR IS RESPONSIBLE FOR ADJUSTING LIMITS OF DEMOLITION AND CONSTRUCTION AS NECESSARY. COORDINATE DEMOLITION REQUIREMENTS, LIMITS OF DEMOLITION, SALVAGE ITEMS, PROTECTION OF ITEMS TO REMAIN WITH OWNER, ENGINEER, AND RELEVANT CONSTRUCTION AND PHASING PLANS.
3. ALL DRY UTILITY AND ELECTRIC DEMOLITION OR RELOCATION SHOULD BE COORDINATED WITH OWNER, AND ENGINEER PRIOR TO CONSTRUCTION.
4. ALL NECESSARY EROSION AND SEDIMENTATION CONTROLS MUST BE INSTALLED PRIOR TO CONSTRUCTION.
5. CONTRACTOR TO COMPLY WITH ALL REGULATORY REQUIREMENTS FOR HAZARDOUS MATERIAL REMOVAL AND DISPOSAL.
6. CONTRACTOR TO TAKE NECESSARY PRECAUTIONS TO PROTECT AND MAINTAIN SERVICE DURING CONSTRUCTION.
7. THE EXIST SEPTIC TANKS SHALL BE ABANDONED IN PLACE REM PERIOD. ACCORDING TO ALL APPLICABLE REGULATIONS, THE TANK MUST BE FILLED WITH GRAVEL OR SAND. GRADE TO SURROUNDINGS, ALLOWING FOR SETTLING.

## DEMOLITION LEGEND

- DEMO SUBSURFACE FEATURE
- DEMO SURFACE FEATURE
- DEMO BUILDING
- ABANDON SUBSURFACE FEATURE
- LIMITS OF SAWCUT
- REMOVE EXISTING TREE
- PROTECT EXISTING TREE

## CONSTRUCTION NOTES

(20) 202 - ABANDON PIPE. ABANDON BY PLUGGING REMAINING ENDS WITH CONCRETE. CUT AND CAP AT TEE.

(21) 202 - REMOVE EXISTING WATER VALVE BOXES & BURY. TYPICAL FOR ALL VALVES TO BE REMOVED.

(32) COORDINATE WITH CITY OF GRAND JUNCTION ON THE REMOVAL AND REUSE OF THE EXISTING VENTS

(33) REMOVE EXISTING CMP PIPE. CONTRACTOR TO BACKFILL TO SURROUNDING GRADE.

(34) ABANDON EXISTING 5' DIAMETER PIPES IN PLACE

(826) PROTECT EXISTING UTILITY LINE IN PLACE


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| DESIGNED BY: | DAD |
| DRAWN BY: | AR/DAD |
| CHECKED BY: | KAT |
| JOB #: | 1071.17e |
| DATE: | JANUARY 2024 |



CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

# DEMOLITION PLAN

SHEET NO.
C0.0

VEHICLE TRACKING TO BE INSTALLED AT THE CONSTRUCTION ACCESS CONTROL AT THE PAVED ROAD INTERSECTION

ACCESS ROAD TO BE IMPROVED BY OWNER PRIOR TO CONSTRUCTION. CONTRACTOR TO MAINTAIN ROAD AND BRING BACK TO EXISTING CONDITIONS AT COMPLETION OF CONSTRUCTION

20.00'

12.00'

APPROX LIMITS OF DISTURBANCE

APROXIMATE LIMITS OF CLEAR & GRUB

10 0 10 20
SCALE IN FEET

## EROSION AND SEDIMENTATION NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING ALL CONTROLS DURING INITIAL, INTERIM, AND FINAL CONDITIONS.
2. ALL CONTROLS SHALL BE INSTALLED WITHIN THE PROPERTY LINES UNLESS OTHERWISE SPECIFIED. WHEN CONSTRUCTION ACTIVITIES DISTURB ADJACENT AND/OR RIGHT-OF-WAY PROPERTIES, COORDINATION WITH PROPERTY OWNERS IS REQUIRED PRIOR TO CONSTRUCTION.
3. ALL NECESSARY EROSION AND SEDIMENTATION CONTROL MUST BE INSTALLED PRIOR TO CONSTRUCTION.

## EROSION CONTROL LEGEND

- EXISTING INDEX CONTOUR (5220)
- EXISTING INTERMEDIATE CONTOUR (5221)
- PROPOSED INDEX CONTOUR (20)
- PROPOSED INTERMEDIATE CONTOUR (21)
- LIMITS OF WORK
- IP — INLET PROTECTION
- OP — OUTLET PROTECTION
- SF — SILT FENCE
- CWA — CONCRETE WASHOUT AREA
- LIMITS OF CLEAR AND GRUB


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CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

EROSION CONTROL

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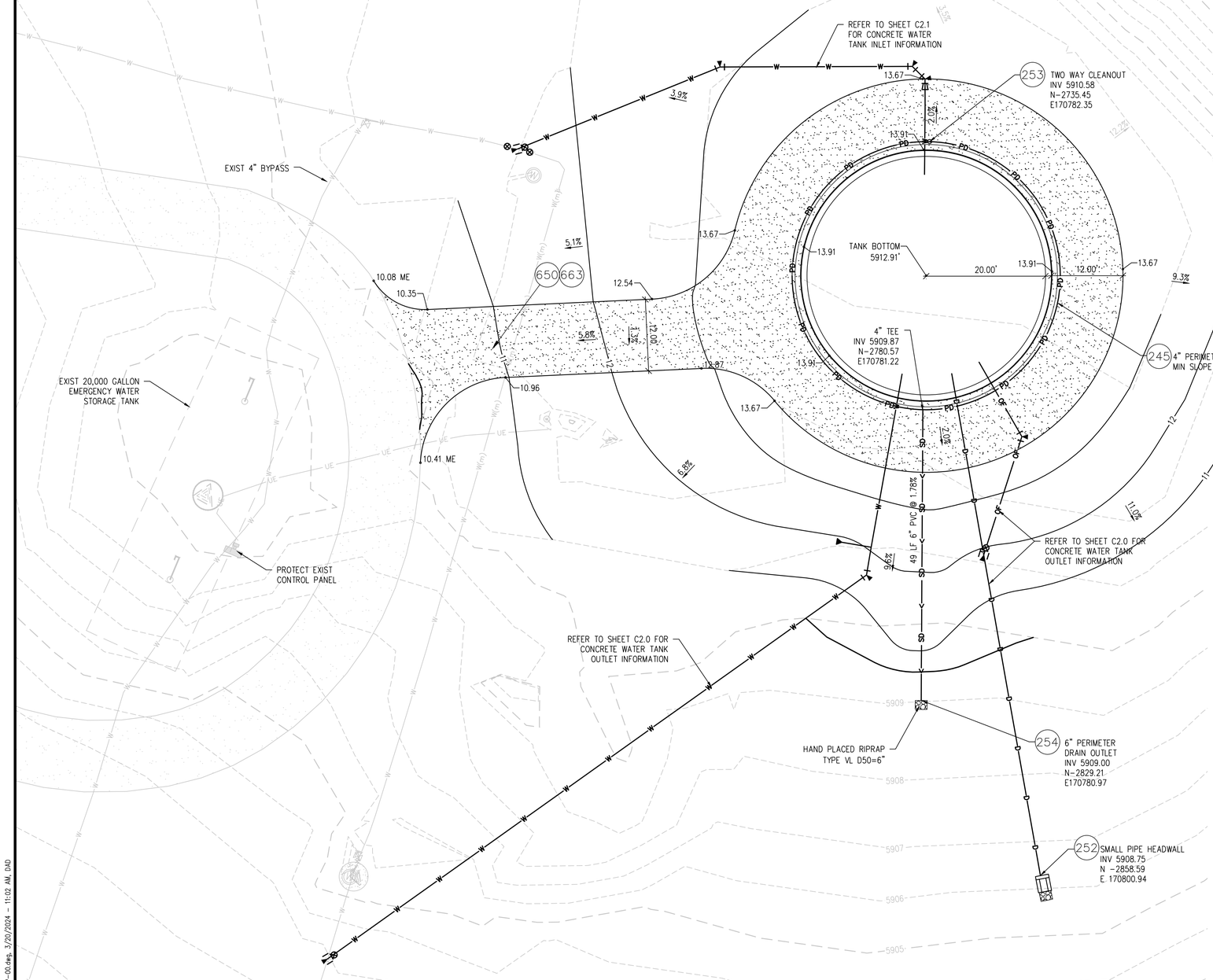



## GRADING AND DRAINAGE NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. REFER TO GENERAL NOTES FOR UTILITY LOCATION AND PROTECTION.
2. CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITIONS.
3. ALL SPOT ELEVATIONS ARE TO FINISHED GRADE OR FLOWLINE UNLESS OTHERWISE SPECIFIED.
4. CONTRACTOR TO COORDINATE ELECTRICAL AND CONTROL WORK WITH THE CITY OF GRAND JUNCTION.
5. THE CITY WILL INSTALL ALL CONDUIT AND WIRING. CONTRACTOR TO EXCAVATE, BED, BACKFILL AND COMPACT.

## PERIMETER DRAIN NOTES:

1. PERIMETER DRAIN MATERIALS NEED TO BE SLIGHTLY BELOW THE LAYER OF CDOT CLASS 1 STRUCTURAL FILL
2. FILTER FABRIC SHALL BE STRENGTH CLASS II SEPARATOR FABRIC PER CDOT GEOTEXTILE REQUIREMENTS
3. CONTRACTOR SHALL SUBMIT A PERIMETER DRAIN DETAIL TO THE GEOTECHNICAL ENGINEER OF RECORD FOR REVIEW PRIOR TO INSTALLATION

## CONSTRUCTION NOTES

(245) 108.2 - 4" UNDER-DRAIN PIPE (HDPE)

(252) SMALL PIPE HEADWALL WITH INLINE CHECK VALVE. COORDINATE WITH CITY OF GRAND JUNCTION ON MATERIAL. SEE DETAIL ON THIS SHEET.

(253) TWO WAY CLEANOUT - CONTRACTOR TO PROVIDE SUBMITTAL PRIOR TO CONSTRUCTION

(254) MITERED DRAIN OUTLET - CONTRACTOR TO PROVIDE SUBMITTAL PRIOR TO CONSTRUCTION

(400) 102.7/108.2 - WATER MAIN PIPE (C-900) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.

(403) 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)

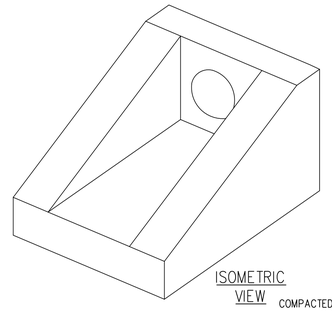
(407) 102.8/108.3 - TEE (SIZE AS SHOWN)

(409) 102.8/108.3 - ELBOW (SIZE AND ANGLE AS SHOWN)

(650) 203 - GRADE DRIVEWAY AS SHOWN.

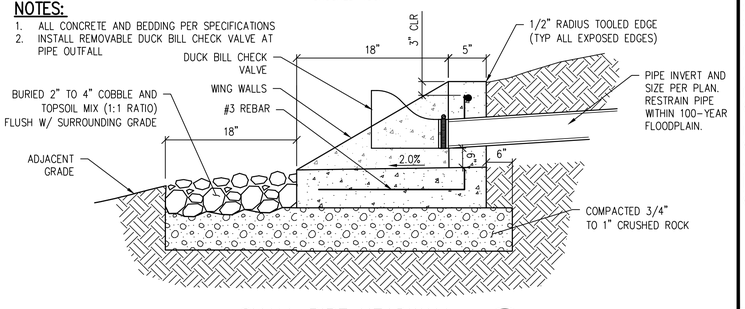
(663) 304 - AGGREGATE BASE COURSE (CLASS 6) (6" THICK)

PROPERTY INFORMATION:
PARCEL No.: 2971-361-00-001
OWNER: CITY OF GRAND JUNCTION
AREA: +/- 1057.469 ACRE




## NOTES:

1. ALL CONCRETE AND BEDDING PER SPECIFICATIONS
2. INSTALL REMOVABLE DUCK BILL CHECK VALVE AT PIPE OUTFALL




SMALL PIPE HEADWALL
NTS

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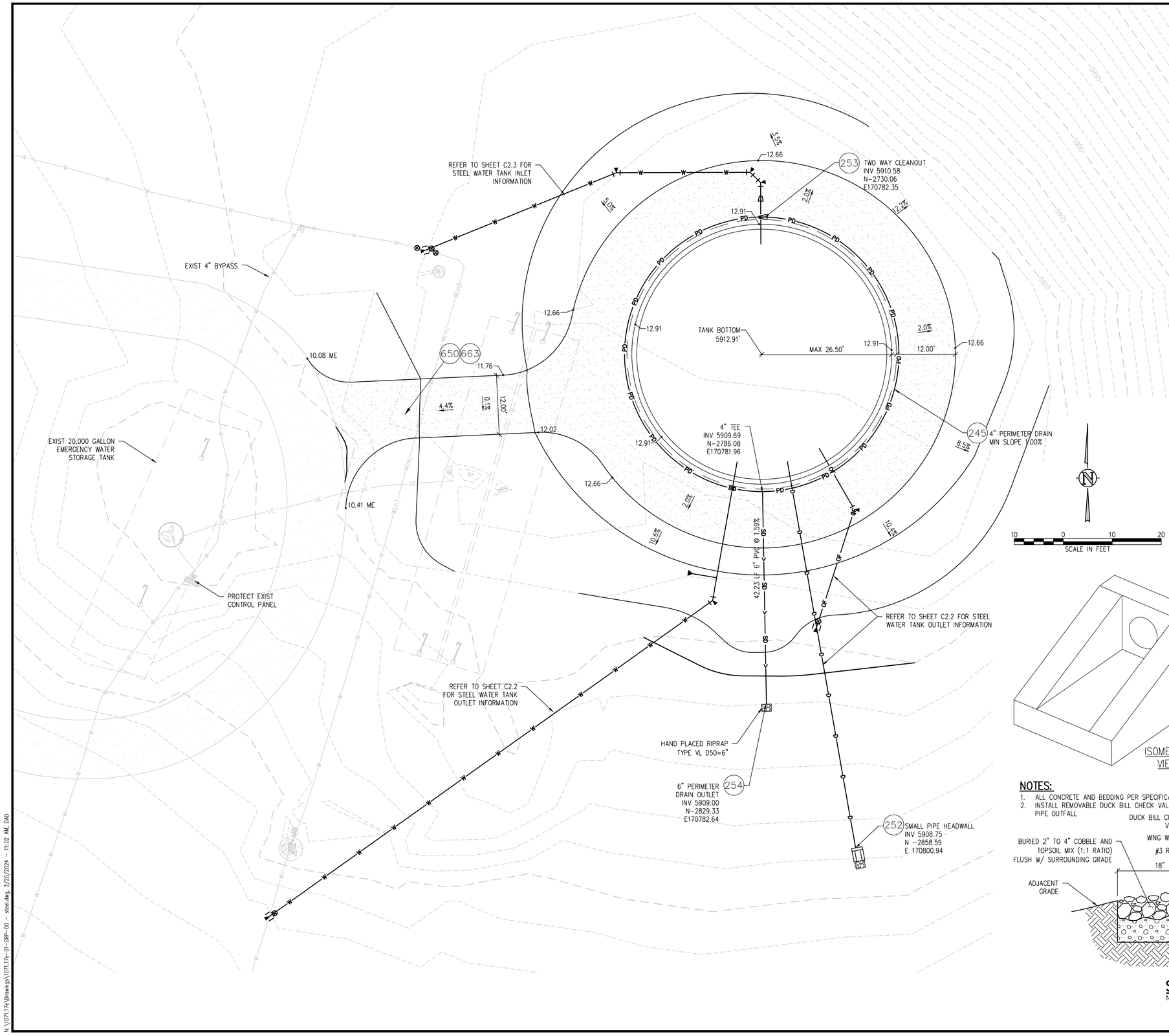
| DESIGNED BY: | DAD |
| DRAWN BY: | AR/DAD |
| CHECKED BY: | KAT |
| JOB #: | 1071.17e |
| DATE: | JANUARY 2024 |



CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

CONCRETE TANK SITE PLAN

SHEET NO.
C1.0




## GRADING AND DRAINAGE NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. REFER TO GENERAL NOTES FOR UTILITY LOCATION AND PROTECTION.
2. CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITIONS.
3. ALL SPOT ELEVATIONS ARE TO FINISHED GRADE OR FLOWLINE UNLESS OTHERWISE SPECIFIED.
4. CONTRACTOR TO COORDINATE ELECTRICAL AND CONTROL WORK WITH THE CITY OF GRAND JUNCTION.
5. THE CITY WILL INSTALL ALL CONDUIT AND WIRING. CONTRACTOR TO EXCAVATE, BED, BACKFILL AND COMPACT.

## PERIMETER DRAIN NOTES:

1. PERIMETER DRAIN MATERIALS NEED TO BE SLIGHTLY BELOW THE LAYER OF CDOT CLASS 1 STRUCTURAL FILL
2. FILTER FABRIC SHALL BE STRENGTH CLASS II SEPARATOR FABRIC PER CDOT GEOTEXTILE REQUIREMENTS
3. CONTRACTOR SHALL SUBMIT A PERIMETER DRAIN DETAIL TO THE GEOTECHNICAL ENGINEER OF RECORD FOR REVIEW PRIOR TO INSTALLATION

## CONSTRUCTION NOTES

(245) 108.2 - 4" UNDER-DRAIN PIPE (HDPE)

(252) SMALL PIPE HEADWALL WITH INLINE CHECK VALVE. COORDINATE WITH CITY OF GRAND JUNCTION ON MATERIAL AND APPLICABLE DETAILS

(253) TWO WAY CLEANOUT - CONTRACTOR TO PROVIDE SUBMITTAL PRIOR TO CONSTRUCTION

(254) MITERED DRAIN OUTLET - CONTRACTOR TO PROVIDE SUBMITTAL PRIOR TO CONSTRUCTION

(400) 102.7/108.2 - WATER MAIN PIPE (C-900) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.

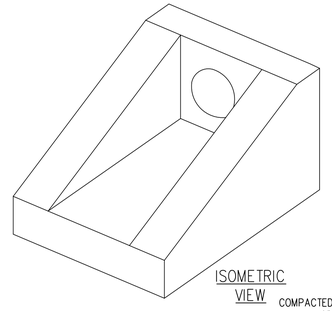
(403) 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)

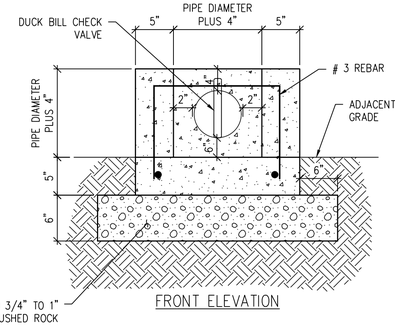
(407) 102.8/108.3 - TEE (SIZE AS SHOWN)

(409) 102.8/108.3 - ELBOW (SIZE AND ANGLE AS SHOWN)

(650) 203 - GRADE DRIVEWAY AS SHOWN.

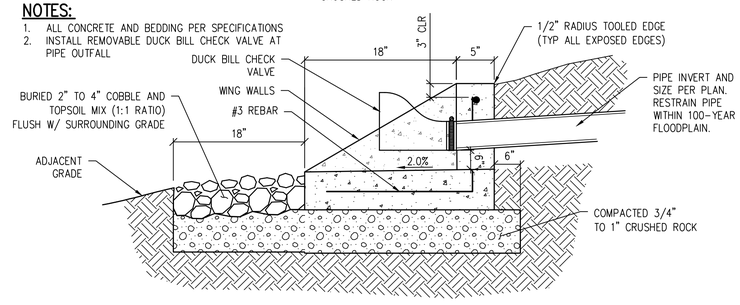
(663) 304 - AGGREGATE BASE COURSE (CLASS 6) (6" THICK)




**NOTES:**

1. ALL CONCRETE AND BEDDING PER SPECIFICATIONS
2. INSTALL REMOVABLE DUCK BILL CHECK VALVE AT PIPE OUTFALL




SMALL PIPE HEADWALL
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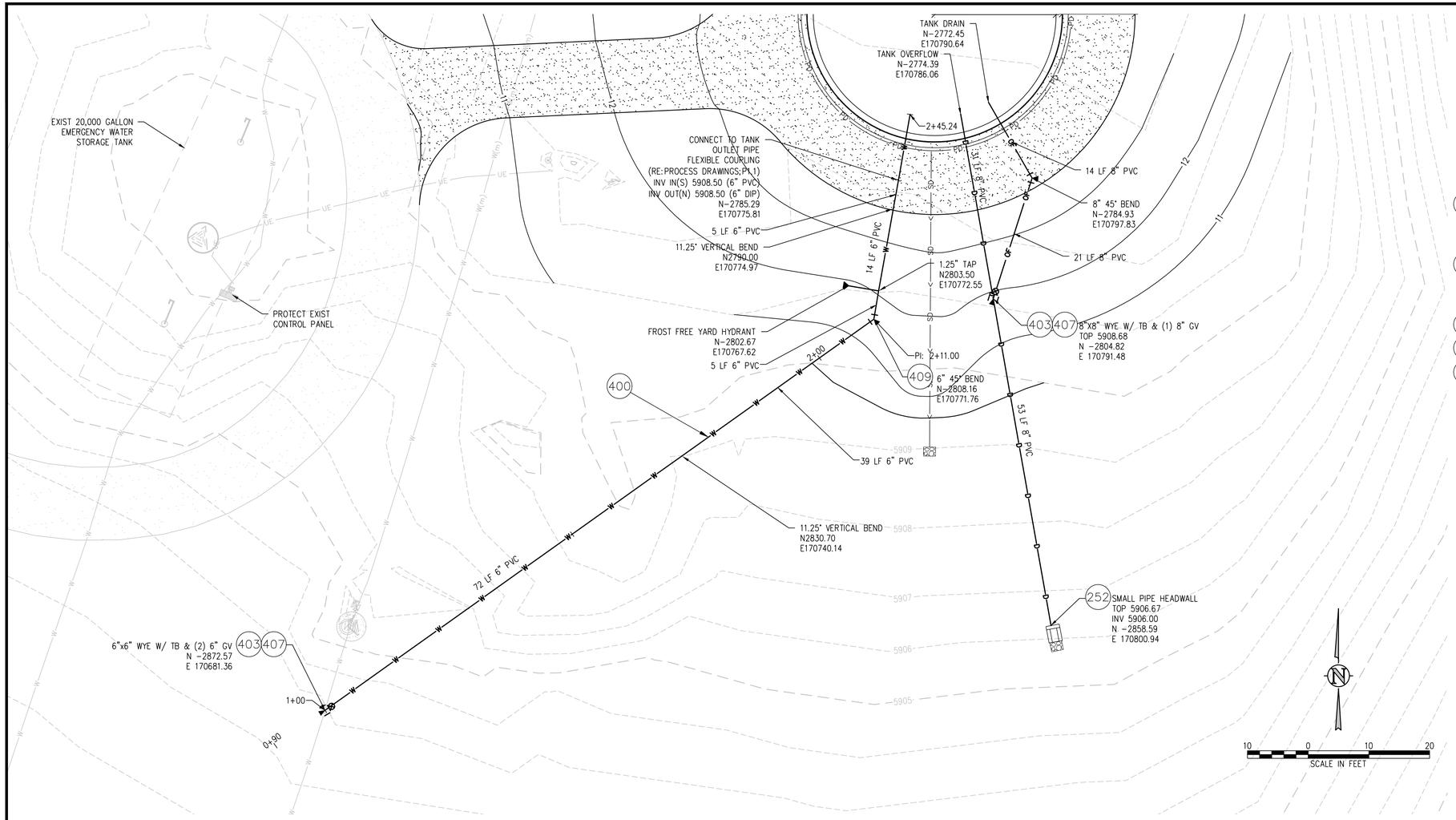
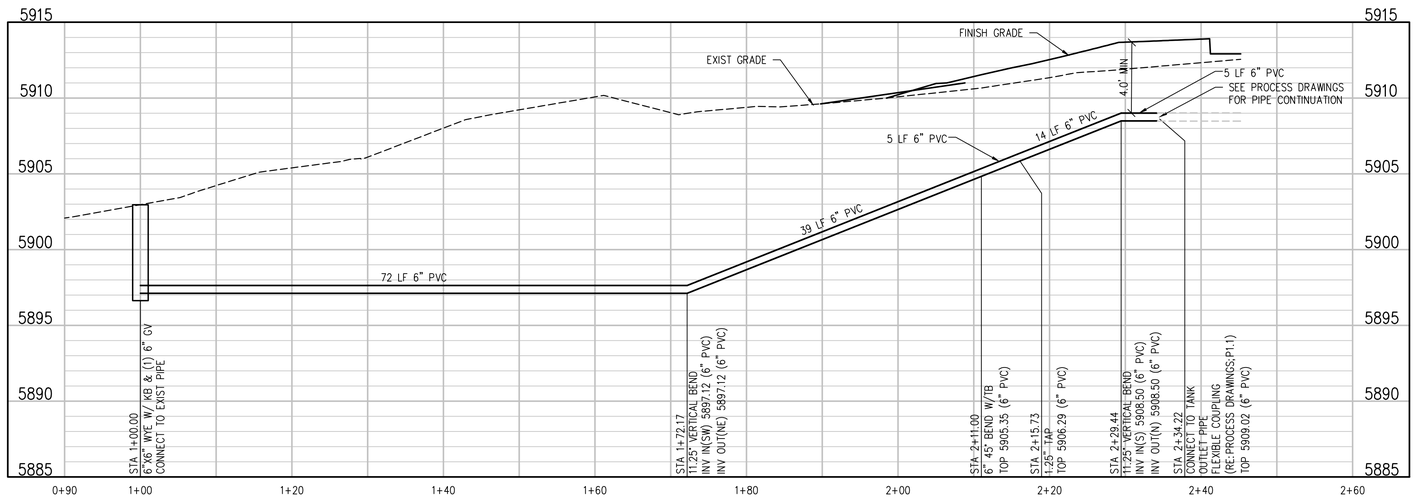
CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

BID ALT NO.1 STEEL TANK SITE PLAN

SHEET NO.
C1.1




## WATER – TANK OUTLET PROFILE

SCALE: 1"=10' HORIZ
1"=5' VERT

### UTILITY NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. REFER TO GENERAL NOTES FOR UTILITY LOCATION AND PROTECTION.
2. ALL DRY UTILITY AND ELECTRIC DESIGNS ARE PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. SEE MEP PLANS AND SPECIFICATIONS AND COORDINATE WITH ALL UTILITY OWNERS AS NEEDED.
3. CONTRACTOR TO MARK ALL UTILITY STUBS WITH MARKERS.
4. CONTRACTOR TO MAINTAIN MINIMUM BURIAL DEPTH PER CITY OF GRAND JUNCTION STANDARDS

## CONSTRUCTION NOTES

(252) SMALL PIPE HEADWALL WITH INLINE CHECK VALVE. COORDINATE WITH CITY OF GRAND JUNCTION ON MATERIAL. SEE DETAIL ON SHEET C1.0

(400) 102.7/108.2 - WATER MAIN PIPE (C-900) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.

(403) 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)

(407) 102.8/108.3 - TEE (SIZE AS SHOWN)

(409) 102.8/108.3 - ELBOW (SIZE AND ANGLE AS SHOWN)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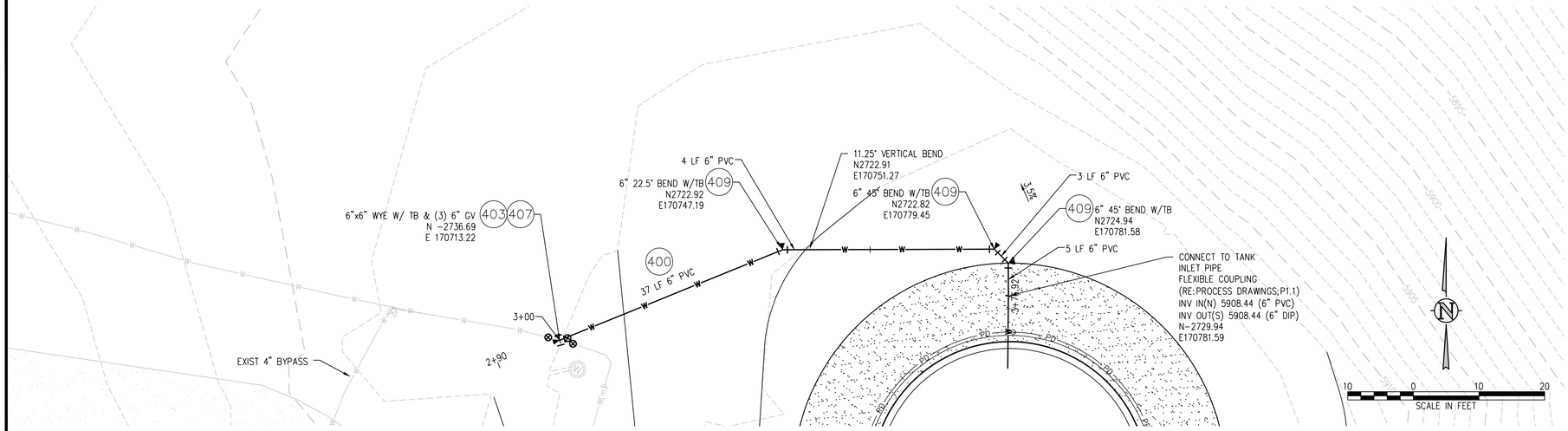
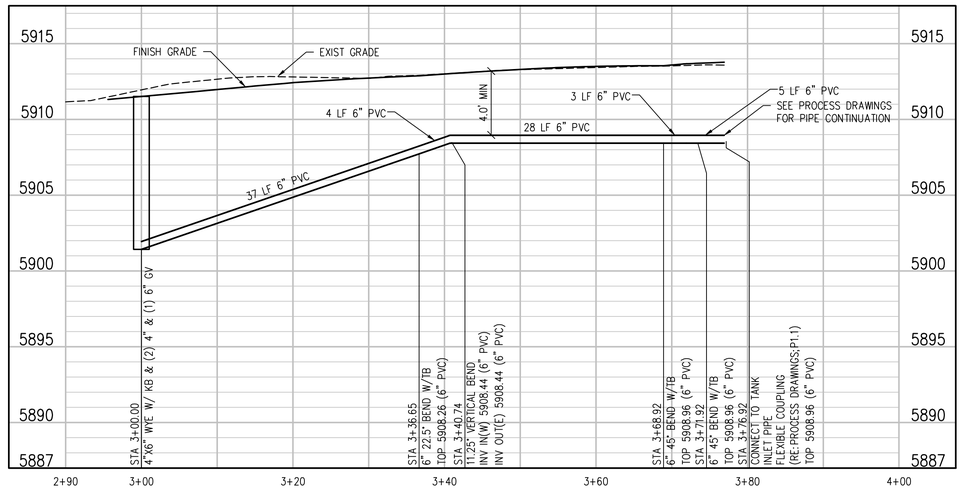
CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

WATER TANK OUTLET PLAN AND PROFILE
CONCRETE TANK

SHEET NO.
C2.0




WATER – TANK INLET PROFILE

SCALE: 1"=10' HORIZ
1"=5' VERT

## UTILITY NOTES:

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## CONSTRUCTION NOTES

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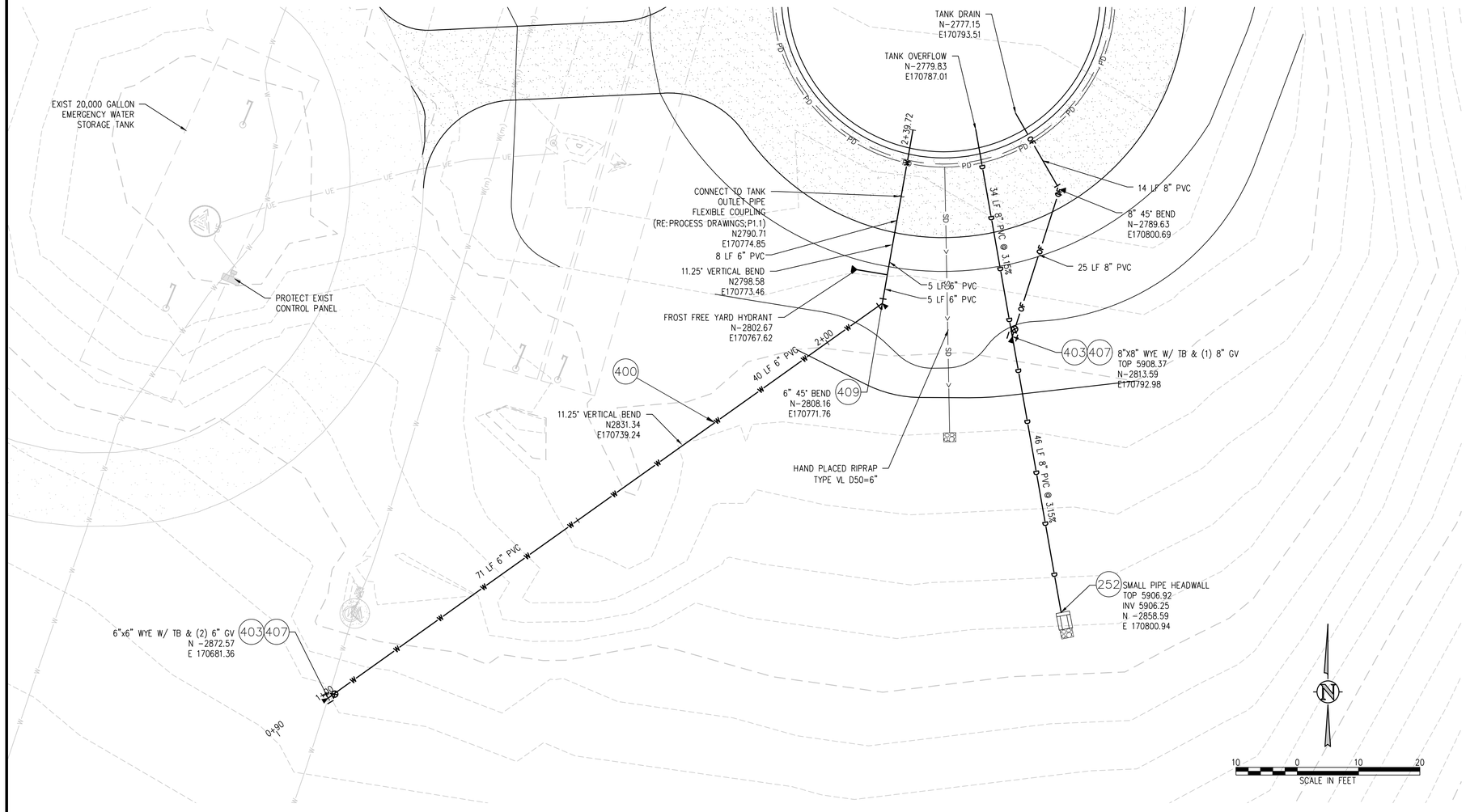
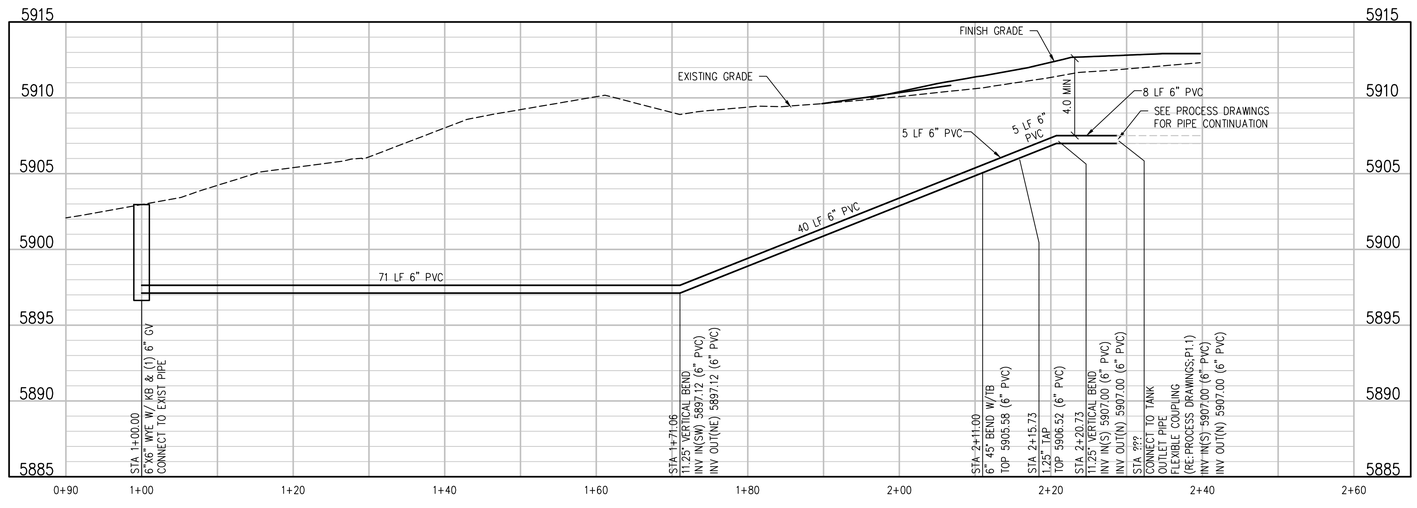
CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

CONCRETE TANK SITE PLAN

SHEET NO.
C2.1




WATER – STEEL TANK OUTLET PROFILE

SCALE: 1"=10' HORIZ
1"=5' VERT

## UTILITY NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. REFER TO GENERAL NOTES FOR UTILITY LOCATION AND PROTECTION.
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## CONSTRUCTION NOTES

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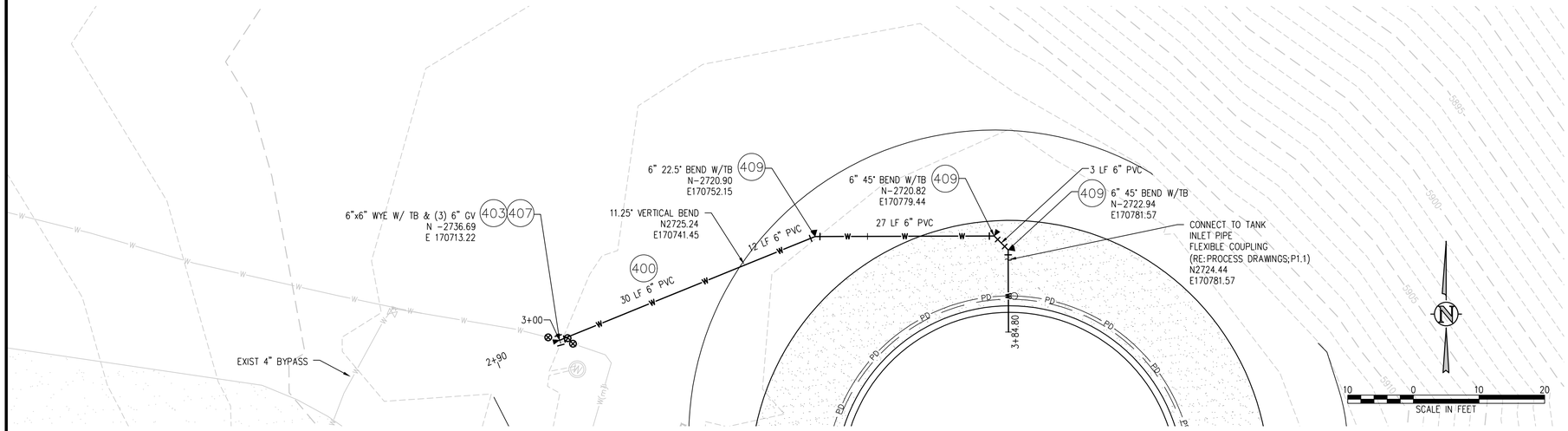
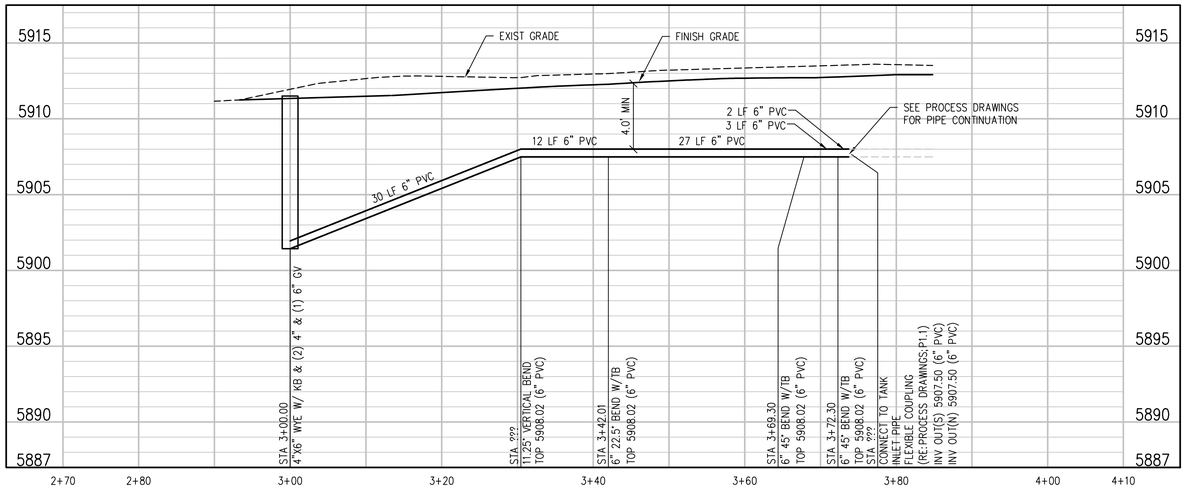
CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

WATER TANK OUTLET PLAN AND PROFILE
STEEL TANK

SHEET NO.
C2.2




## WATER – STEEL TANK INLET PROFILE

SCALE: 1"=10' HORIZ
1"=5' VERT

## UTILITY NOTES:

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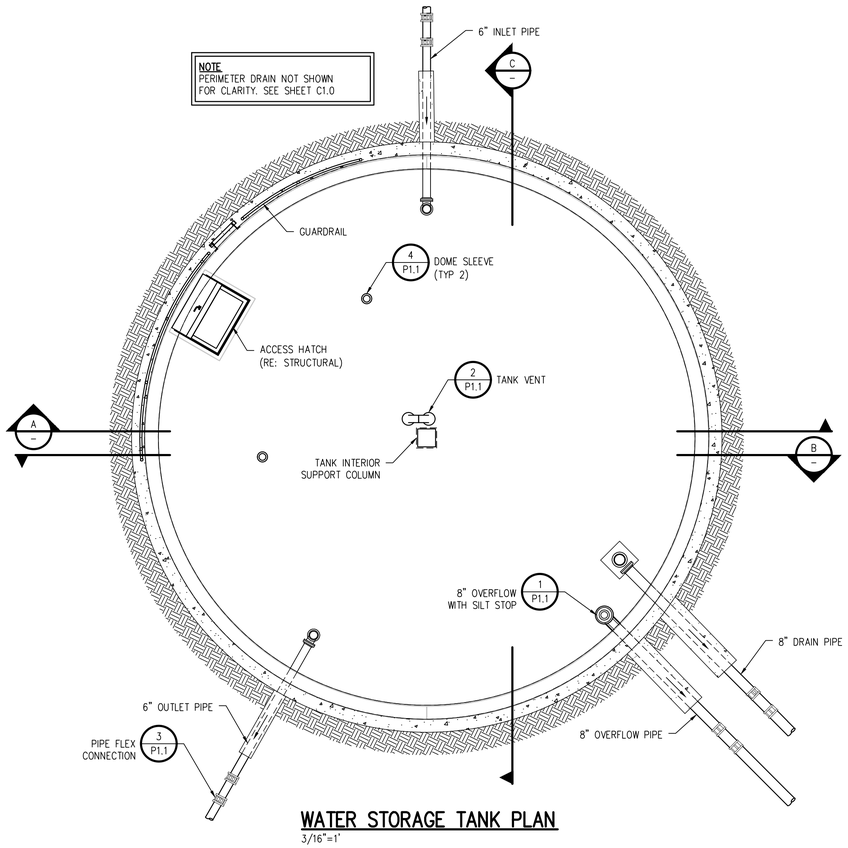
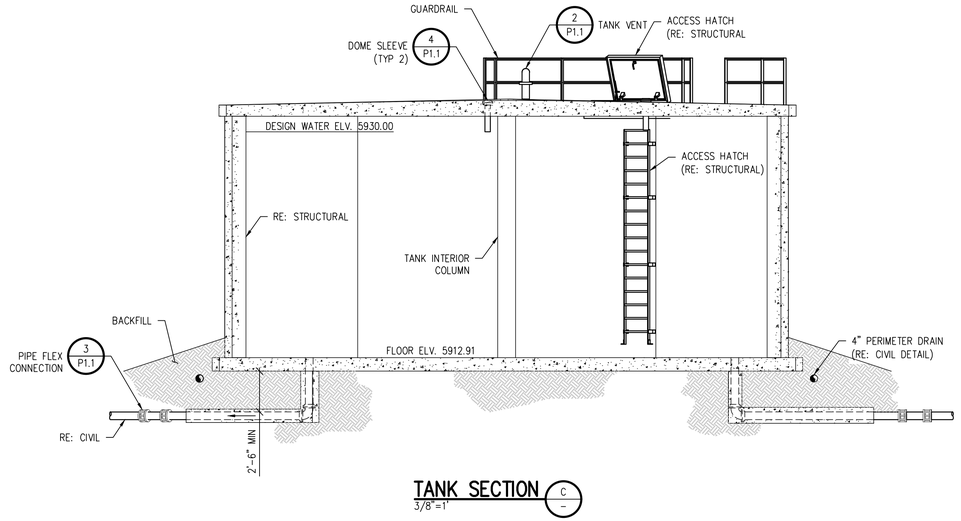
CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

WATER TANK INLET PLAN AND PROFILE
STEEL TANK

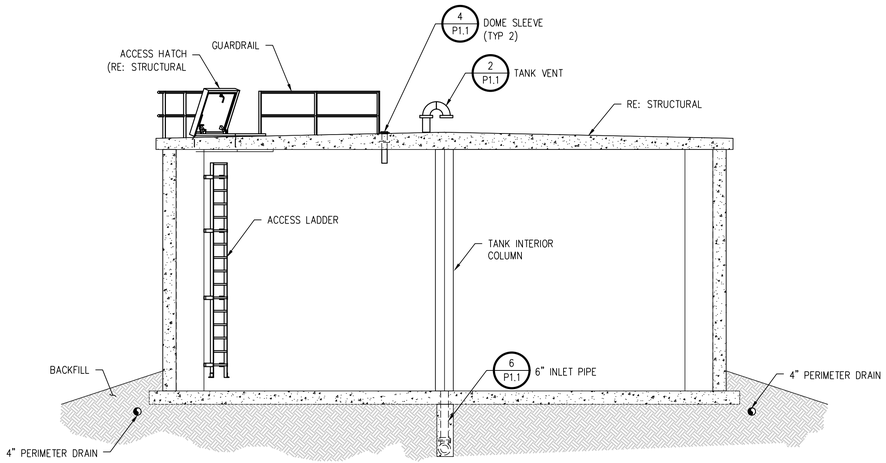
SHEET NO.
C2.3



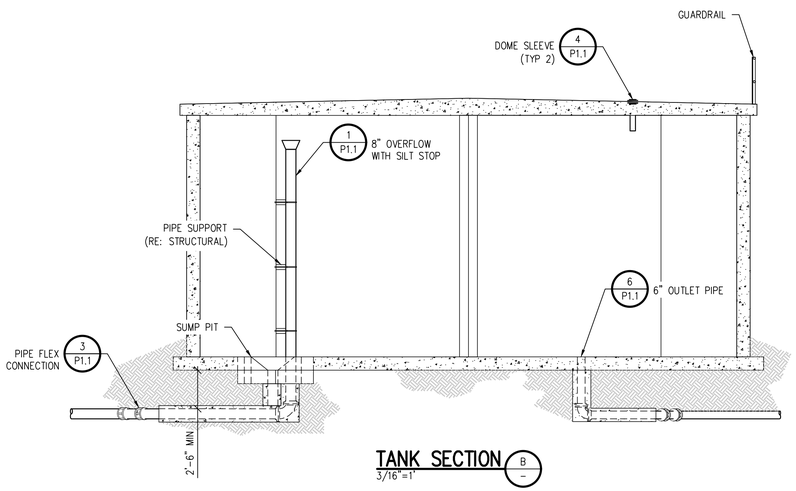

## WATER STORAGE TANK PLAN
3/16"=1'




## TANK SECTION
3/8"=1'

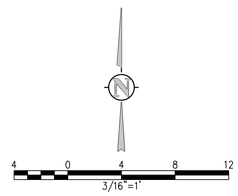



## TANK SECTION
3/16"=1'




## TANK SECTION
3/16"=1'

NOTE
RE: STRUCTURAL FOR ALL TANK DIMENSIONS

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| CHECKED BY: | JJM |
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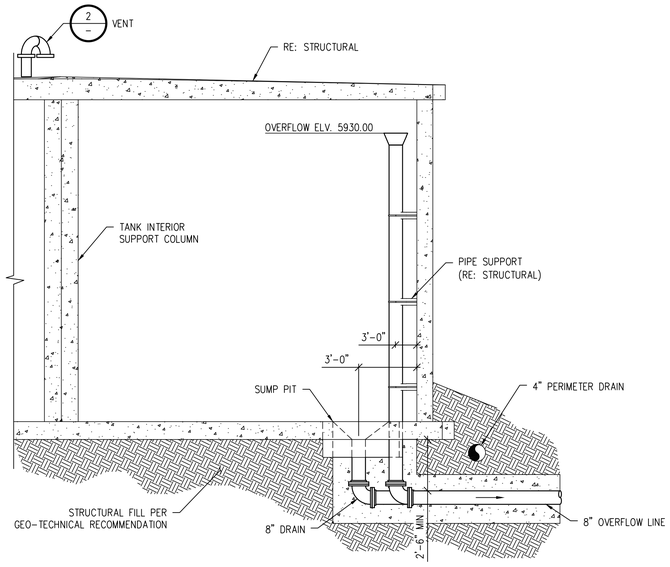
| DATE: | MARCH 2024 |



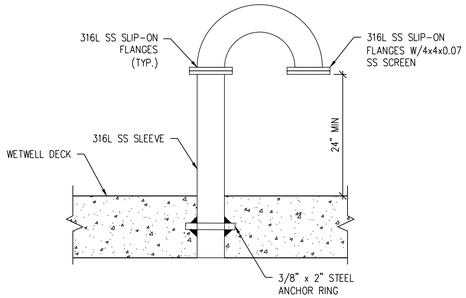
CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

WATER STORAGE TANK PLAN

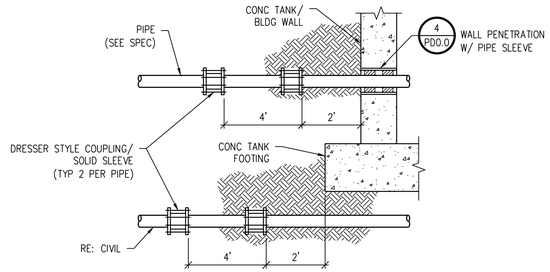
SHEET NO.
P1.0



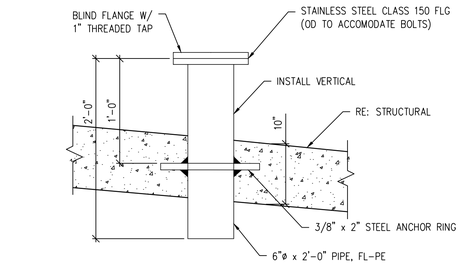

## OVERFLOW PIPE DETAIL (1 / P1.0)
1/4"=1'



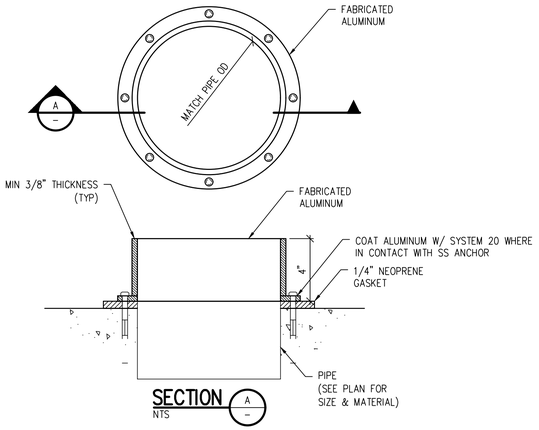

## WETWELL TANK VENT (2 / P1.0)
NTS




## PIPE FLEXIBILITY DETAIL (3 / P1.0)
NTS

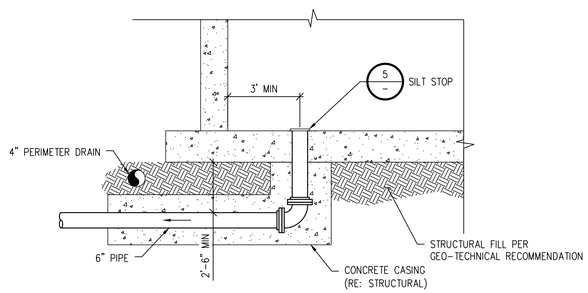



## DOME SLEEVE (4 / P1.0)
NTS

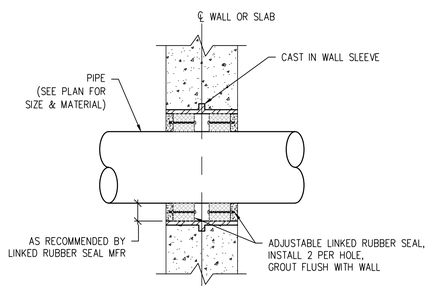



## SECTION (A)
NTS

## SILT STOP DETAIL (5 / –)
NTS

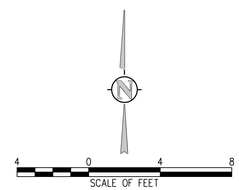



## INLET/OUTLET PIPE DETAIL (6 / P1.0)
3/8"=1'




## WALL OR SLAB PENETRATION WITH PIPE SLEEVE DETAIL (7 / –)
NTS

**NOTE**
RE: STRUCTURAL FOR ALL TANK DIMENSIONS

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CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

WATER STORAGE TANK DETAILS

SHEET NO.
P1.1

# STRUCTURAL GENERAL NOTES

**DESIGN LOADS:**

1. DESIGN LOADS: 2018 INTERNATIONAL BUILDING CODE, ASCE 7-16
2. RISK CATEGORY III: SUBSTANTIAL HAZARD
3. TANK LID DESIGN LOADS:
   - A. ROOF LIVE LOAD 60 PSF
   - B. GROUND SNOW LOAD, Pg 40 PSF
   - C. ROOF SNOW LOAD 34 PSF
   - D. SNOW EXPOSURE FACTOR, Ce 0.9
   - E. SNOW IMPORTANCE FACTOR, Is 1.1
   - F. THERMAL FACTOR, Ct 1.2
4. WIND:
   - A. BASIC DESIGN WIND SPEED, $V_{ULT}$, (3-SECOND GUST) 115 MPH
   - B. WIND EXPOSURE C
5. SEISMIC:
   - A. SHORT SECOND
     - a. $S_S$ 0.256g
     - b. $S_{DS}$ 0.221g
   - B. ONE PERIOD
     - a. $S_1$ 0.067g
     - b. $S_{D1}$ 0.067g
   - C. SOILS SITE CLASS C
   - D. SEISMIC IMPORTANCE FACTOR 1.25
   - E. SEISMIC DESIGN CATEGORY B

**FOUNDATION DESIGN:**

1. REFER TO SOILS REPORT NO. 599.61 BY ROCKSOL CONSULTING GROUP, INC. DATED APRIL 6, 2023 AND ADDENDUM LETTER FOR THE STEEL TANK ALTERNATIVE FROM ROCKSOL CONSULTING GROUP, INC. DATED SEPTEMBER 15, 2023.
2. GEOTECHNICAL ENGINEER SHALL VERIFY SOIL CONDITIONS AND TYPES DURING EXCAVATION AND PRIOR TO PLACEMENT OF FORMWORK OR CONCRETE. NATIVE SAND AND GRAVEL WITH ROUNDED AND ANGULAR COBBLES 3" - 1'-0" DIAMETER AND SMALL BOULDERS ARE ANTICIPATED.
3. MINIMUM EMBEDMENT DEPTH = 24 INCHES
4. MAXIMUM ALLOWABLE BEARING PRESSURE: 2,000 PSF

**REINFORCED CONCRETE:**

1. DESIGN IS BASED ON ACI 350 "BUILDING CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES."
2. CONCRETE WORK SHALL CONFORM TO ACI 301 "STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE."
3. STRUCTURAL CONCRETE SHALL HAVE THE FOLLOWING PROPERTIES:

| INTENDED USE | EXPOSURE CLASS | $f'_c$ PSI 28 DAYS | MAX W/CM RATIO | MAXIMUM AGGREGATE | AIR CONTENT PERCENT (+/- 1.5%) | CEMENT TYPE | ADMIXTURES / COMMENTS |
|---|---|---|---|---|---|---|---|
| WALLS | F2-S2-W2-C1 | 4500 | 0.45 | 3/4" STONE | 6% | I/II* OR TYPE IL (HS) | |
| FORMED STRUCTURAL SLAB | F2-S1-W2-C1 | 4500 | 0.45 | 3/4" STONE | 6% | I/II OR TYPE IL | SRA |
| BASE SLAB | F0-S2-W2-C1 | 4500 | 0.45 | 3/4" STONE | 3% | I/II* OR TYPE IL (HS) | |

*TYP I/II CEMENT TYPE MODIFIED TO MEET TYPE V

4. CONCRETE MIX TABLE NOTES:
   - A. CEMENT TYPE AS SHOWN IN TABLE OR EQUIVALENT BLENDED HYDRAULIC CEMENTS PER SPECIFICATIONS.
   - B. SHRINKAGE STRAIN: MIXES NOTED AS "SRA" SHALL BE LIMITED TO A MAXIMUM DRYING SHRINKAGE ( 0.04% UNLESS NOTED OTHERWISE) AT 28 DAYS (500 MICROSTRAIN) AS MEASURED BY ASTM C157. SHRINKAGE TEST RESULTS TO BE INCLUDED WITH MIX DESIGN SUBMITTAL.
5. DETAILING, FABRICATION, AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT."
6. REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60.
7. AT CORNERS AND INTERSECTIONS, MAKE HORIZONTAL BARS CONTINUOUS OR PROVIDE MATCHING CORNER BARS FOR EACH LAYER OF REINFORCEMENT.
8. FORM INTERMITTENT SHEAR KEYS AT ALL CONSTRUCTION JOINTS AND AS SHOWN ON THE STRUCTURAL DRAWINGS.
9. EXCEPT AS NOTED ON THE DRAWINGS, CONCRETE PROTECTION FOR REINFORCEMENT IN CAST-IN-PLACE CONCRETE SHALL BE AS FOLLOWS:
   - A. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
     - 1. EXPOSED TO EARTH, WEATHER, OR WATER: 2"
10. IN CONTINUOUS MEMBERS, SPLICE TOP BARS AT MID-SPAN AND SPLICE BOTTOM BARS OVER SUPPORTS.

**POST-INSTALLED ANCHORS**

1. ALL CAST IN PLACE ANCHORS DESIGNED IN ACCORDANCE WITH ACI 318.
2. POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER-OF-RECORD PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
3. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REBAR. EXISTING REINFORCING BARS SHALL NOT BE CUT UNLESS APPROVED BY THE EOR.
4. ALL ANCHORS MUST BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INFORMATION (MPII) IN CONJUNCTION WITH EDGE DISTANCE, SPACING, AND EMBEDMENT DEPTH AS INDICATED ON THE DRAWINGS. HOLES SHALL BE DRILLED AND CLEANED IN ACCORDANCE WITH THE MPII.
5. SUBSTITUTION REQUESTS, FOR PRODUCTS OTHER THAN THOSE SPECIFIED, SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER-OF-RECORD ALONG WITH CALCULATIONS THAT ARE PREPARED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER; REGISTRATION MUST BE IN THE STATE IN WHICH THE PROJECT IS LOCATED. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING EQUIVALENT PERFORMANCE VALUES (MINIMUM) OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
6. ADHESIVE ANCHORS INSTALLED IN HORIZONTAL TO VERTICALLY OVERHEAD ORIENTATION THAT SUPPORT SUSTAINED TENSION LOADS SHALL BE DONE BY A CERTIFIED ANCHOR INSTALLER (AAI) AS CERTIFIED THROUGH ACI/CRSI (ACI 318-11 D 9.2.2, ACI 318-14 17.8.2.2). PROOF OF CURRENT CERTIFICATION SHALL BE SUBMITTED TO THE EOR FOR APPROVAL PRIOR TO COMMENCEMENT OF INSTALLATION.
7. ADHESIVE ANCHORS MUST BE INSTALLED IN CONCRETE AGED A MINIMUM OF 21 DAYS (ACI 318-11 D 2.2, ACI 318-14 17.1.2)
8. ALL POST INSTALLED ANCHORS SHALL BE INSTALLED IN DRY HOLES THAT HAVE BEEN DRILLED, CLEANED, AND PREPARED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INFORMATION AND THE RESPECTIVE ICC-ES EVALUATION REPORTS.
9. PROVIDE SPECIAL INSPECTION FOR ALL MECHANICAL AND ADHESIVE ANCHORS PER THE APPLICABLE BUILDING CODE AND PER THE CURRENT ICC-ES REPORT (IBC 2012/2015 TABLE 1705.3 NOTE B).

**LEAK TESTING:**

- A. STRUCTURES SHALL BE SUBJECTED TO LEAKAGE TESTS AFTER CONCRETE HAS OBTAINED SPECIFIED DESIGN STRENGTH, AND BEFORE BACKFILLING OR OTHER WORK WHICH WILL COVER FACES OF WALLS IS BEGUN
- B. TANKS LATERALLY RESTRAINED OR SUPPORTED BY CROSS-WALLS, BEAMS OR SLABS SHALL NOT BE TESTED UNTIL SUCH RESTRAINING OR SUPPORTING CONSTRUCTION IS PLACED AND HAS OBTAINED ITS SPECIFIED DESIGN STRENGTH
- C. **FILL STRUCTURE WITH WATER TO ELEVATION 5930.00'** AFTER STRUCTURE HAS BEEN FULL FOR 24 HRS, IT WILL BE ASSUMED FOR PURPOSES OF TEST THAT ABSORPTION OF MOISTURE BY CONCRETE IN STRUCTURE IS COMPLETE. MEASURE CHANGE IN WATER LEVEL AFTER 24 HOURS HAVE ELAPSED.
- D. FILL CONTAINER WITH WATER AND PLACE NEXT TO OR IN STRUCTURE BEING TESTED. LOCATE CONTAINER SO IT EXPERIENCES ENVIRONMENTAL CONDITIONS AS CLOSE AS POSSIBLE TO THOSE EXPERIENCED BY STRUCTURE. CONTAINER SHALL BE USED AS AN INDICATOR TO MEASURE LOSS OF WATER DUE TO EVAPORATION. LEVEL OF WATER IN CONTAINER SHALL BE MEASURED AND RECORDED OVER SAME PERIOD AS STRUCTURE.
- E. IF DROP IN WATER LEVEL, ADJUSTED FOR EVAPORATION IN 24-HR PERIOD, EXCEEDS 1/32 OF AN INCH LEAKAGE SHALL BE CONSIDERED EXCESSIVE
- F. DURING TEST PERIOD, EXAMINE STRUCTURE AND MARK VISIBLE LEAKS OR DAMP SPOTS
- G. DAMP SPOTS ON THE EXTERIOR WALL FACES OR FOOTINGS SHALL BE QUALIFIED AS LEAKS. ALL LEAKS SHALL BE REPAIRED.
- H. DRAIN STRUCTURE TO 2-FT MINIMUM BELOW LEAKS AND DAMP SPOTS AND REPAIR. METHOD OF REPAIR SHALL BE CONTRACTOR'S OPTION, SUBJECT TO REQUIREMENTS OF THESE CONTRACT DOCUMENTS AND REVIEW BY ENGINEER.
- I. IF LEAKAGE WAS DETERMINED TO BE EXCESSIVE, REFILL STRUCTURE TO SPECIFIED LEVEL AND RETEST
- J. CONTINUE THIS PROCESS UNTIL DROP IN WATER LEVEL IN 24-HR PERIOD IS LESS THAN 1/32 OF AN INCH
- K. REPAIRS AND ADDITIONAL TESTS SHALL BE MADE BY CONTRACTOR, IN ACCEPTABLE MANNER, AT NO ADDITIONAL COST TO OWNER

**STRUCTURAL ERECTION AND BRACING REQUIREMENTS:**

1. THE STRUCTURAL DRAWINGS ILLUSTRATE AND DESCRIBE THE COMPLETED STRUCTURE WITH ELEMENTS IN THEIR FINAL POSITIONS, PROPERLY SUPPORTED, CONNECTED, AND/OR BRACED.
2. THE STRUCTURAL DRAWINGS ILLUSTRATE TYPICAL AND REPRESENTATIVE DETAILS TO ASSIST THE GENERAL CONTRACTOR. DETAILS SHOWN APPLY AT ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED. ALTHOUGH DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT EVERY DETAIL IS ILLUSTRATED AND NOT EVERY EXCEPTIONAL CONDITION IS ADDRESSED.
3. ALL PROPRIETARY CONNECTIONS AND ELEMENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. ALL WORK SHALL BE ACCOMPLISHED IN A WORKMANLIKE MANNER AND IN ACCORDANCE WITH THE APPLICABLE CODES AND LOCAL ORDINANCES.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL WORK, INCLUDING LAYOUT AND DIMENSION VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF SUBCONTRACTORS. ANY DISCREPANCIES OR OMISSIONS DISCOVERED IN THE COURSE OF THE WORK SHALL BE IMMEDIATELY REPORTED TO THE STRUCTURAL ENGINEER FOR RESOLUTION.
6. CONTINUATION OF WORK WITHOUT NOTIFICATION OF DISCREPANCIES RELIEVES THE STRUCTURAL ENGINEER FROM ALL CONSEQUENCES.
7. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE STRUCTURAL DRAWINGS DO NOT DESCRIBE METHODS OF CONSTRUCTION.
8. THE GENERAL CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO TEMPORARY BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.
9. THE STRUCTURAL ENGINEER BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND OBSERVATION VISITS TO THE SITE DO NOT IN ANY WAY INCLUDE INSPECTIONS OF THESE ITEMS.

**CORROSION CONTROL:**

1. ALL STEEL MEMBERS EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED PER ASTM A123, UON.
2. FASTENERS AND HARDWARE SHALL BE A316 OR A304 STAINLESS STEEL.
3. ALL FIELD CUT OR DAMAGED SURFACES, FIELD WELDED AREAS AND AUTHORIZED NON-GALVANIZED MEMBERS AS INDICATED ON THE STRUCTURAL DRAWINGS SHALL BE REPAIRED WITH (2) COATS OF A 95% ZINC RICH PAINT PER ASTM A780 (ZRC PREFERRED).

## CONCRETE SPECIAL INSPECTION (IBC 1705.3 & 1705.12.1)

| ITEM | REQUIRED QUALIFICATIONS | FREQUENCY | DETAILED INSTRUCTIONS |
|---|---|---|---|
| Reinforcing steel | ACI-CCI ICC-RCSI | Periodic | Verify prior to placing concrete that reinforcing is of specified type, grade and size; that it is free of oil, dirt and rust; that it is located and spaced properly; that hooks, bends, ties, stirrups and supplemental reinforcement are placed correctly; that lap lengths, stagger and offsets are provided; and that all mechanical connections are installed per the manufacturer's instructions and/or evaluation report. |
| Post-installed anchors or dowels | ACI-CCI ICC-RCSI | Periodic | All post-installed anchors/dowels shall be specially inspected as required by the approved ICC-ES report. Horizontally or upwardly inclined anchors that resist sustained tension loads require continuous inspection and approved installers. |
| Use of required mix design | ACI-CCI ICC-RCSI | Periodic | Verify that all mixes used comply with the approved construction documents; ACI 318: Ch. 19, 26.4.3, 26.4.4; and IBC 1904.1, 1904.2, 1908.2, 1908.3. |
| Concrete sampling for strength tests, slump, air content, and temperature | ACI-CFTT ACI-SIT | Continuous | |
| Concrete placement | ACI-CCI ICC-RCSI | Continuous | |
| Curing temperature and techniques | ACI-CCI ICC-RCSI | Periodic | Verify that the ambient temperature for concrete is kept at > 50°F for at least 7 days after placement. High-early-strength concrete shall be kept at > 50°F for at least 3 days. Accelerated curing methods may be used (see ACI 318: 26.4.7-26.4.9). The ambient temperature for shotcrete shall be > 40°F for the same period of time as noted for concrete. Shotcrete shall be kept continuously moist for at least 24 hours after shotcreting. All concrete materials, reinforcement, forms, fillers, and ground shall be free from frost. In hot weather conditions ensure that appropriate measures are taken to avoid plastic shrinkage cracking and that the specified water/cement ratio is not exceeded. |
| Strength verification | ACI-STT | Periodic | Verify that adequate strength has been achieved prior to the removal of shores and forms or the stressing of post-tensioned tendons. |
| Formwork | | Periodic | Verify that the forms are placed plumb and conform to the shapes, lines, and dimensions of the members as required by the approved construction documents. |

## SOIL SPECIAL INSPECTION (IBC 1705)

| ITEM | REQUIRED QUALIFICATIONS | FREQUENCY | DETAILED INSTRUCTIONS |
|---|---|---|---|
| SHALLOW FOUNDATIONS | | | (IBC 1705.6) |
| Verify subgrade | PE/GE | Periodic | Prior to placement of concrete inspect soils below footings for adequate bearing capacity and consistency with geotechnical report. |
| CONTROLLED STRUCTURAL FILL | | | (IBC 1705.6) |
| Excavations | PE/GE | Periodic | Verify excavations extend to proper depth and material prior to placement of compacted fill or concrete. |
| Fill materials | PE/GE | Periodic | Perform classification and testing of compacted fill materials. Check for proper classifications and gradations at each lift and not less than once for each 10,000ft² of surface area. |
| Placement and compaction | | Continuous | Verify proper materials, densities and lift thicknesses during placement and compaction. |
| Subgrade preparation | PE/GE | Periodic | Verify that subgrade has been appropriately prepared prior to placing compacted fill. |
| Density | | Continuous | Test density of each lift by nuclear methods (ASTM D2922). |

**SPECIAL INSPECTIONS**

The Special Inspection Coordinator shall keep records of all inspections and shall furnish inspection reports to the Registered Design Professional in Responsible Charge. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Interim reports shall be submitted to the Registered Design Professional in Responsible Charge.
Interim Report Frequency: Within 48 hours of inspection, unless indicated otherwise.

A *Final Report of Special Inspections* documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted to the Engineer.

Job site safety and means and methods of construction are solely the responsibility of the Contractor.

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Agency Number* on the Schedule.

PE/SE Structural Engineer – a licensed SE or PE specializing in the design of building structures
PE/GE Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations
EIT Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination

American Concrete Institute (ACI) Certification
ACI-CFTT Concrete Field Testing Technician – Grade 1
ACI-CCI Concrete Construction Inspector
ACI-LTT Laboratory Testing Technician – Grade 1 & 2
ACI-STT Strength Testing Technician

American Welding Society (AWS) Certification
AWS-CWI Certified Welding Inspector
AWS/AISC-SSI Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification
ASNT Non-Destructive Testing Technician – Level II or III

International Code Council (ICC) Certification
ICC-RCSI Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)
NICET-CT Concrete Technician – Levels I, II, III & IV
NICET-ST Soils Technician - Levels I, II, III & IV
NICET-GET Geotechnical Engineering Technician - Levels I, II, III & IV

## SCHEDULE OF INSPECTION AND TESTING AGENCIES

| SPECIAL INSPECTION AGENCIES | FIRM | ADDRESS, TELEPHONE, E-MAIL |
|---|---|---|
| Special Inspection Coordinator | TBD | |
| Inspector | TBD | |
| Inspector | TBD | |
| Testing Agency | TBD | |
| Testing Agency | TBD | |
| Continuous | TBD | |
| Other | TBD | |

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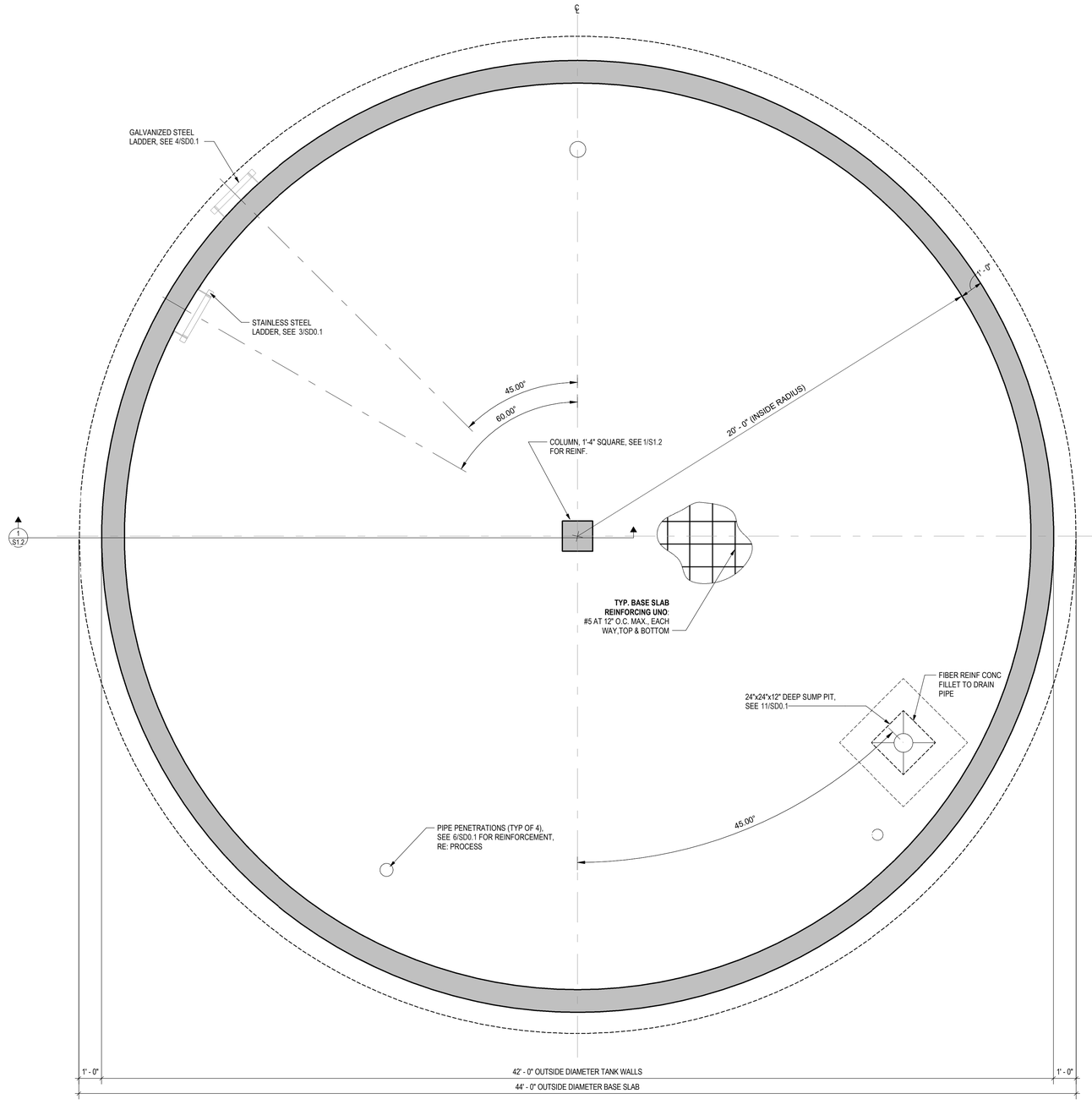
| | |
|---|---|
| DESIGNED BY: | ERB/KLB |
| DRAWN BY: | ERB |
| CHECKED BY: | AJT/PJH |
| JOB #: | 1071.17e |
| DATE: | MARCH 2024 |



CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

STRUCTURAL GENERAL NOTES

SHEET NO.
S0.1




**NOTES:**
1. REFER TO SITE PLAN/C1.0 FOR CONCRETE TANK SITE LOCATION.
2. **BID ALTERNATE** - STEEL TANK, RE: STEEL TANK SITE PLAN - BID ALT 1/C1.1.

NORTH

## TANK SLAB PLAN

3/8" = 1'-0"

0 1' 2' 4' 6'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| | |
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| DESIGNED BY: | ERB/KLB |
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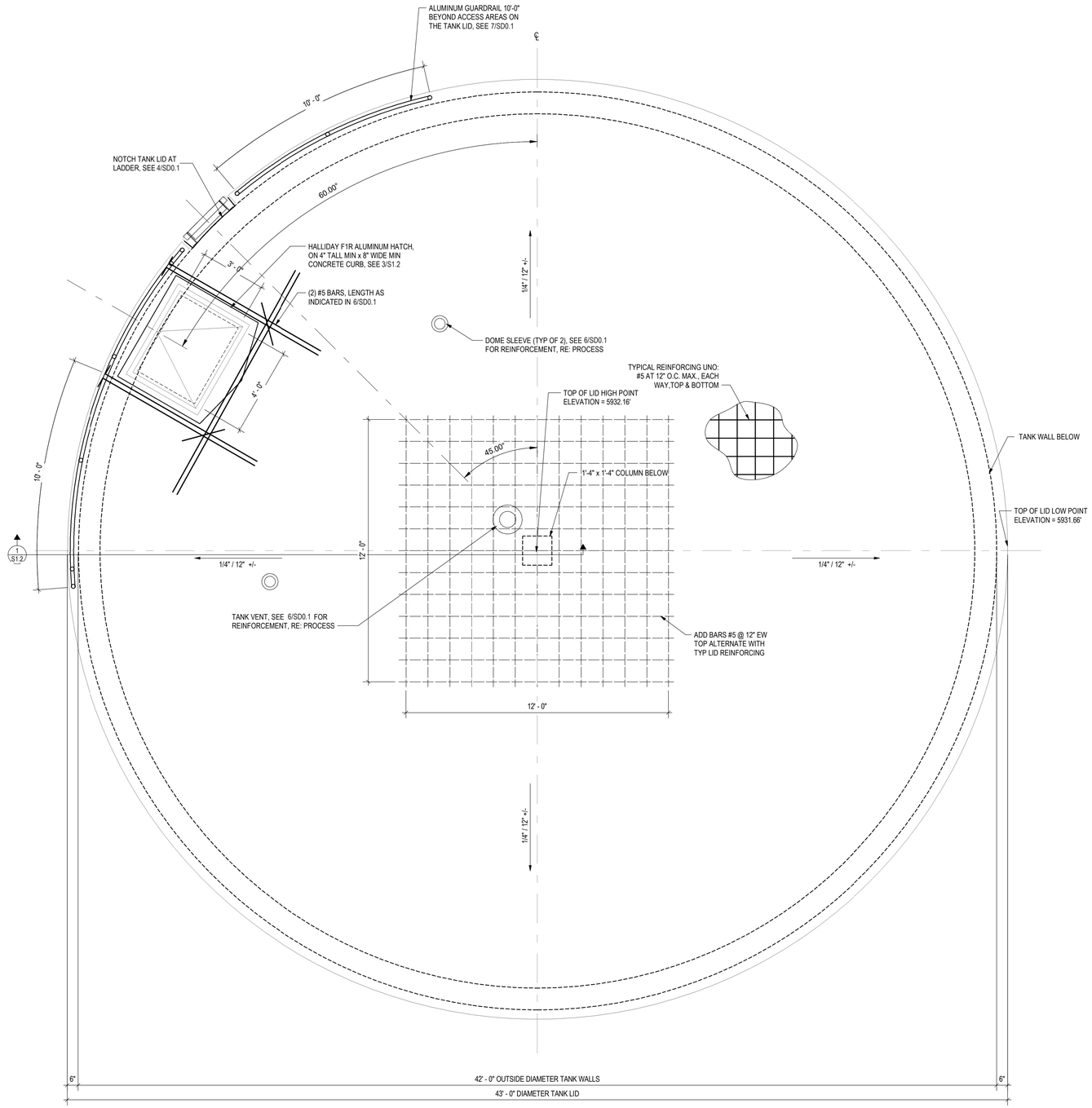
CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

TANK SLAB PLAN

SHEET NO.

S1.0




## TANK LID PLAN

NORTH

3/8" = 1'-0"

0 1' 2' 4' 6'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| | |
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| DRAWN BY: | ERB |
| CHECKED BY: | AJT/PJH |
| JOB #: | 1071.17e |
| DATE: | MARCH 2024 |

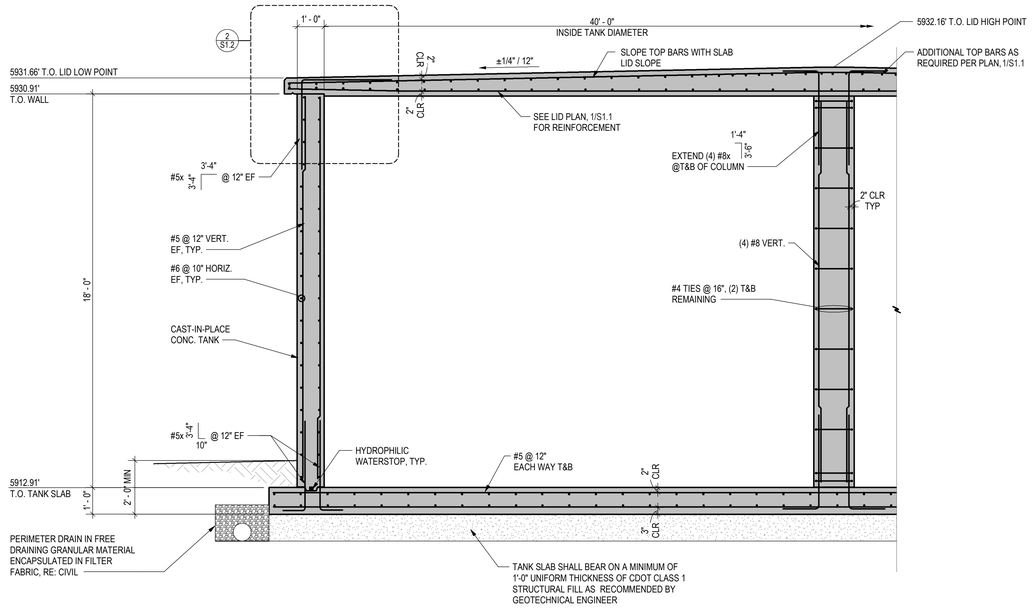


CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

TANK LID PLAN

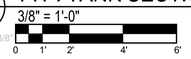
SHEET NO.

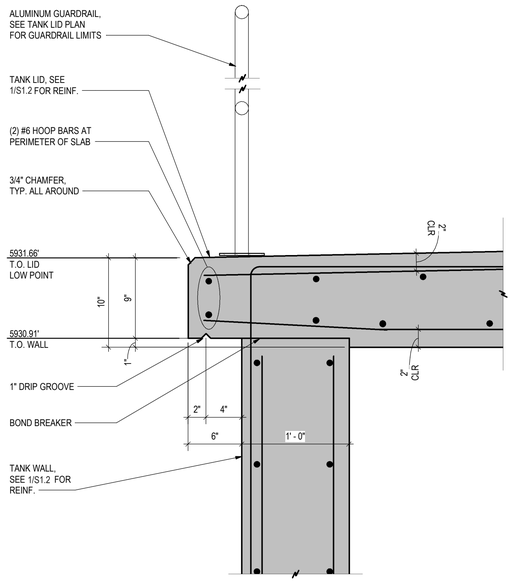
S1.1




1 S1.2 **TYP. TANK SECTION**

3/8" = 1'-0"

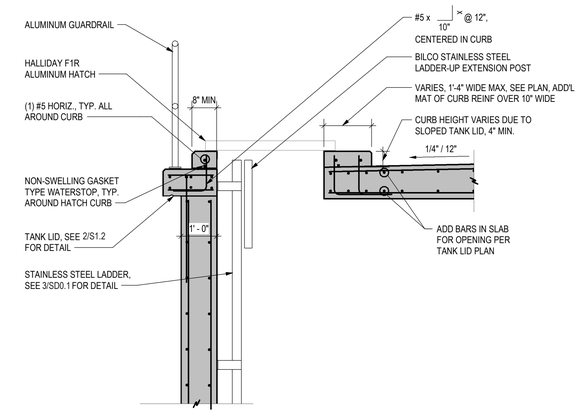



2 S1.2 **TANK LID AT WALL SECTION**

1 1/2" = 1'-0"




3 S1.2 **TANK LID OPENING AT HATCH SECTION**

1/2" = 1'-0"

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| | |
|---|---|
| DESIGNED BY: | ERB/KLB |
| DRAWN BY: | ERB |
| CHECKED BY: | AJT/PJH |
| JOB #: | 1071.17e |
| DATE: | MARCH 2024 |



CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

TANK SECTIONS

SHEET NO.

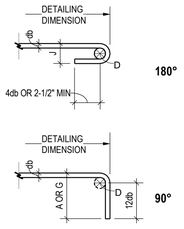
S1.2

| TYPICAL CONCRETE REINFORCING LAP & EMBEDMENT LENGTHS (UNO) | | | | | | | |
|---|---|---|---|---|---|---|---|
| BAR SIZE | TYPE | Fc = 4000 PSI (TOP) | Fc = 4000 PSI (OTHER) | Fc = 4500 PSI (TOP) | Fc = 4500 PSI (OTHER) | Fc = 5000 PSI (TOP) | Fc = 5000 PSI (OTHER) |
| #4 | EMBED | 25 | 19 | 24 | 18 | 22 | 17 |
| | LAP | 32 | 25 | 31 | 24 | 29 | 22 |
| #5 | EMBED | 31 | 24 | 30 | 23 | 28 | 22 |
| | LAP | 40 | 31 | 38 | 30 | 36 | 28 |
| #6 | EMBED | 37 | 29 | 35 | 28 | 33 | 26 |
| | LAP | 48 | 37 | 46 | 35 | 43 | 33 |
| #7 | EMBED | 54 | 42 | 52 | 40 | 49 | 37 |
| | LAP | 70 | 54 | 67 | 52 | 63 | 49 |
| #8 | EMBED | 62 | 48 | 59 | 46 | 55 | 43 |
| | LAP | 80 | 62 | 76 | 59 | 72 | 55 |
| #9 | EMBED | 70 | 54 | 67 | 51 | 63 | 48 |
| | LAP | 91 | 70 | 86 | 67 | 81 | 63 |

NOTES:
1. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF FRESH CONCRETE CAST BELOW BAR
2. TABULATED VALUES ARE BASED ON GRADE 60 NON-EPOXY-COATED REINFORCING BARS AND NORMAL WEIGHT CONCRETE
3. VALUES ARE IN INCHES

## 1 SD0.1 TYP CONC EMBED & LAP
3/4" = 1'-0"

**STANDARD HOOKS**

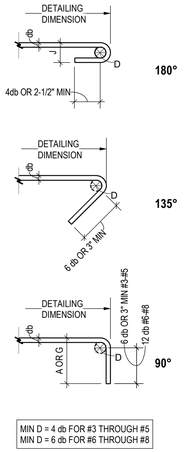



MIN D = 6 db FOR #3 THROUGH #8
MIN D = 8 db FOR #9, #10, AND #11

| BAR SIZE | STANDARD HOOKS 180° (J) | STANDARD HOOKS 90° (A OR G) | STIRRUPS & TIE HOOKS 180° (J) | STIRRUPS & TIE HOOKS 90° (A OR G) |
|---|---|---|---|---|
| #3 | 3" | 6" | 2 1/4" | 4 1/8" |
| #4 | 4" | 8" | 3" | 4 1/2" |
| #5 | 5" | 10" | 3 3/4" | 5 5/8" |
| #6 | 6" | 1'-0 | 6" | 1'-0 |
| #7 | 7" | 1'-2 | 7" | 1'-2 |
| #8 | 8" | 1'-4 | 8" | 1'-4 |
| #9 | 11 3/4" | 1'-7 | | |

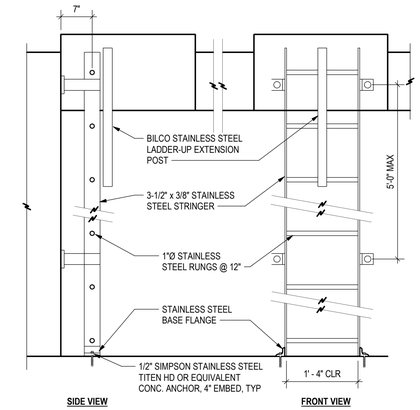
**ALL GRADES OF STEEL**
D = FINISHED INSIDE BEND DIAMETER
db = NOMINAL BAR DIAMETER

**STIRRUP & TIE HOOKS**

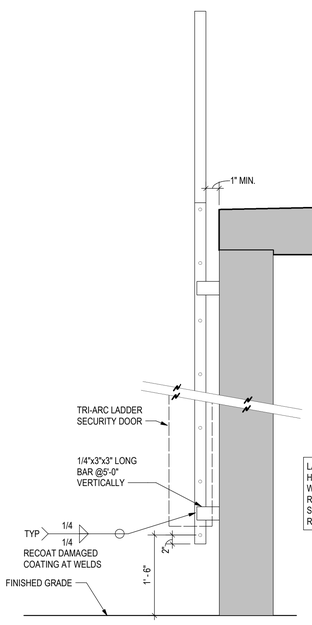


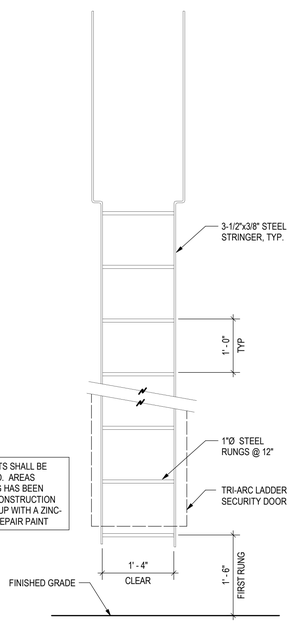

MIN D = 4 db FOR #3 THROUGH #5
MIN D = 6 db FOR #6 THROUGH #8

## 2 SD0.1 TYP CONC HOOKS & STIRRUPS
3/4" = 1'-0"



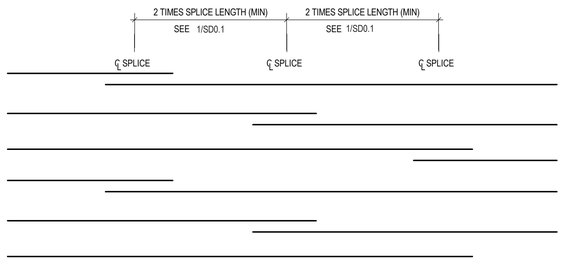

## 3 SD0.1 INTERIOR LADDER DETAIL
3/4" = 1'-0"



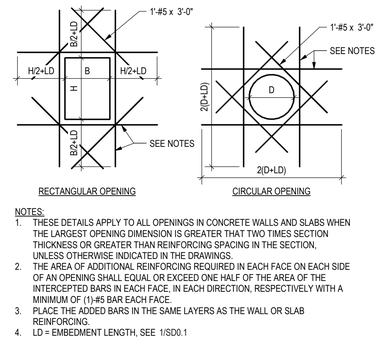

LADDER COMPONENTS SHALL BE HOT-DIP GALVANIZED. AREAS WHERE GALVANIZING HAS BEEN REMOVED DURING CONSTRUCTION SHALL BE TOUCHED UP WITH A ZINC-RICH GALVANIZING REPAIR PAINT

## 4 SD0.1 EXTERIOR LADDER DETAIL
3/4" = 1'-0"



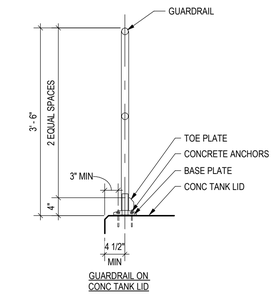

NOTES:
1. TYPICAL FOR CIRCULAR REINFORCING IN CIRCULAR TANK WALLS AND SLABS

## 5 SD0.1 RING BAR SPLICE STAGGER
3/4" = 1'-0"



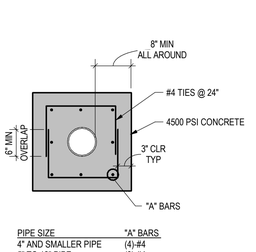

NOTES:
1. THESE DETAILS APPLY TO ALL OPENINGS IN CONCRETE WALLS AND SLABS WHEN THE LARGEST OPENING DIMENSION IS GREATER THAT TWO TIMES SECTION THICKNESS OR GREATER THAN REINFORCING SPACING IN THE SECTION, UNLESS OTHERWISE INDICATED IN THE DRAWINGS.
2. THE AREA OF ADDITIONAL REINFORCING REQUIRED IN EACH FACE ON EACH SIDE OF AN OPENING SHALL EQUAL OR EXCEED ONE HALF OF THE AREA OF THE INTERCEPTED BARS IN EACH FACE, IN EACH DIRECTION, RESPECTIVELY WITH A MINIMUM OF (1)-#5 BAR EACH FACE.
3. PLACE THE ADDED BARS IN THE SAME LAYERS AS THE WALL OR SLAB REINFORCING.
4. LD = EMBEDMENT LENGTH, SEE 1/SD0.1

## 6 SD0.1 OPENING THRU WALLS OR SLABS
3/8" = 1'-0"




GUARDRAIL SHALL BE DESIGNED TO RESIST THE LARGER LOAD CASE OF EITHER A SINGLE CONCENTRATED LOAD OF 200 LB OR A UNIFORM LOAD OF 50 PLF APPLIED IN ANY DIRECTION AT ANY POINT ON THE HANDRAIL OR TOP RAIL AND TRANSFERRED TO THE STRUCTURE.

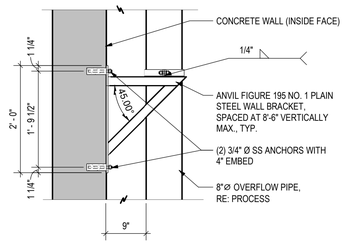
## 7 SD0.1 GUARDRAIL
3/4" = 1'-0"



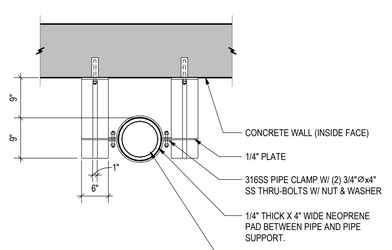

| PIPE SIZE | "A" BARS |
|---|---|
| 4" AND SMALLER PIPE | (4)-#4 |
| 5" TO 12" PIPE | (8)-#4 |
| 14" TO 36" PIPE | (8)-#5 |
| 42" AND LARGER PIPE | (12)-#5 |

NOTE:
EXTEND HORIZONTAL REINF. A MINIMUM OF 12" INTO STRUCTURE

## 8 SD0.1 PIPE ENCASEMENT
3/4" = 1'-0"



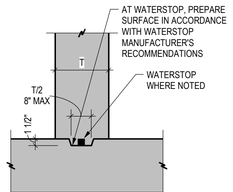

SECTION




PLAN

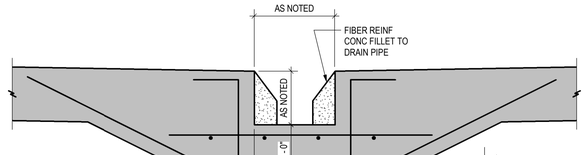
NOTE:
COAT PIPE SUPPORT AND PIPING WITH SYSTEM 27 PER SPECIFICATIONS.

## 9 SD0.1 VERTICAL PIPE SUPPORT AT WALL
3/4" = 1'-0"




BASE OF WALL JOINT

## 10 SD0.1 CONSTUCTION JOINT DETAILS
3/4" = 1'-0"




NOTE: REINFORCEMENT #5@12" AS SHOWN

## 11 SD0.1 SUMP DETAIL
3/4" = 1'-0"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| | |
|---|---|
| DESIGNED BY: | ERB/KLB |
| DRAWN BY: | ERB |
| CHECKED BY: | AJT/PJH |
| JOB #: | 1071.17e |
| DATE: | MARCH 2024 |



CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

DETAILS AND SCHEDULES

SHEET NO.
SD0.1

## ONE LINE DIAGRAM LEGEND

1500KVA
2.4KV-480Y/277
3Ø, 60 HZ
— TRANSFORMER WITH PRIMARY AND SECONDARY VOLTAGE, AND KVA RATING AS NOTED.

20 — 22: 3#8,#10G,2" — CIRCUIT NO. 22 WITH #8 INSULATED CONDUCTORS, 1#10 BARE GROUND WIRE ALL IN 2" CONDUIT TO 20 HP MOTOR.

AUXILIARY ITEMS MAY NOT BE SHOWN COMPLETELY
15
— ONE-LINE SHOWING POWER AND CONTROL TO A PACKAGE UNIT, AS FOR EXAMPLE A STEAM GENERATOR OR AN AIR HANDLING UNIT, SHALL IMPLY THAT ANY AND ALL ASSOCIATED EQUIPMENT SHALL ALSO BE INSTALLED AND WIRED AS REQUIRED BY THE EQUIPMENT FURNISHED.

— INDICATES THAT ALL OR PART OF CIRCUIT MAY BE ROUTED IN DUCT BANK OR UNDERGROUND. CONDUIT SIZE SHOWN ON ONE-LINE IS ABOVE GROUND AND/OR INSIDE OF STRUCTURE. SEE DUCT BANK SCHEDULE AND SECTIONS FOR CONDUIT SIZE OF UNDERGROUND PORTION OF CIRCUIT.

— HIGH VOLTAGE DRAWOUT AIR OR VACUUM CIRCUIT BREAKER.

3P-20 — LOW VOLTAGE AIR CIRCUIT BREAKER, 3 POLE, 20 AMPERE.

S4 — SIZE 4 COMBINATION MAGNETIC MOTOR STARTER.

S4 — SIZE 4 REDUCED VOLTAGE SOFT STARTER

— LOW VOLTAGE DRAWOUT AIR CIRCUIT BREAKER.

— HIGH VOLTAGE DRAWOUT CONTACTOR.

— FUSE AND DISCONNECT SWITCH.

S2 — SIZE 2 COMBINATION MAGNETIC MOTOR STARTER, REVERSING OR 2 SPEED.

— POTENTIAL TRANSFORMER.

— CURRENT TRANSFORMER.

## CONDUIT & WIRING INSTALLATION LEGEND

— CONDUIT EXPOSED.

— CONDUIT CONCEALED.

— CONDUIT TURNING UP, CONDUIT TURNING DOWN.

— CONDUIT PLUGGED FLUSH, CONDUIT CAPPED.

L2-5 — TYPICAL FOR HOME RUN TO BE ROUTED TO LIGHTING PANEL L2 AND CONNECTED TO CIRCUIT #5 (MINIMUM NO. 12 AWG CONDUCTORS & ¾" CONDUIT.)

A — LIGHTING FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE.

11 — FLUORESCENT FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE.

LP1-3 — RECEPTACLE POWERED FROM LIGHTING PANEL LP1, CIRCUIT 3.

A LP2-2 — LIGHTING FIXTURE POWERED FROM LIGHTING PANEL LP2, CIRCUIT 2 (NON-SWITCHED.)

LPA-4
11 — LIGHTING FIXTURE POWERED FROM LIGHTING PANEL LPA, CIRCUIT 4

A
11 — LIGHTING FIXTURE POWERED VIA SWITCH A.

— GENERAL UNDERGROUND ELECTRICAL DUCT CONDUIT OR DUCT BANK.

— GROUND CONDUCTOR.

## SCHEMATIC SYMBOLS

- WIRE CONNECTION POINT
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- STARTER, CONTACTOR OR RELAY COIL
- NORMALLY OPEN PUSH BUTTON
- NORMALLY CLOSED PUSH BUTTON
- MAINTAINED PUSH BUTTON
- NORMALLY CLOSED GEARED LIMIT SWITCH
- NORMALLY OPEN GEARED LIMIT SWITCH
- INDICATING LIGHT
- FUSE
- CONTROL POWER TRANSFORMER
- SWITCH
- MS MANUAL STARTER
- OL OVERLOAD
- FLOAT SWITCH (CLOSING ON RISING LEVEL)
- FLOAT SWITCH (OPENING ON RISING LEVEL)
- PRESSURE SWITCH (CLOSING ON RISING PRESSURE)
- PRESSURE SWITCH (OPENING ON RISING PRESSURE)
- VACUUM SWITCH (CLOSING ON INCREASING VACUUM)
- VACUUM SWITCH (OPENING ON INCREASING VACUUM)
- TEMPERATURE SWITCH (CLOSING ON RISING TEMPERATURE)
- TEMPERATURE SWITCH (OPENING ON RISING TEMPERATURE)
- FLOW ACTUATED SWITCH (CLOSING ON INCREASE IN FLOW)
- FLOW ACTUATED SWITCH (OPENING ON INCREASE IN FLOW)
- ON TIME DELAY SWITCH (NORMALLY OPEN WITH TIME DELAY CLOSING AFTER COIL IS ENERGIZED)
- ON TIME DELAY SWITCH (NORMALLY CLOSED WITH TIME DELAY OPENING AFTER COIL IS ENERGIZED)
- OFF TIME DELAY SWITCH (NORMALLY OPEN WITH TIME DELAY OPENING AFTER COIL IS DE-ENERGIZED)
- OFF TIME DELAY SWITCH (NORMALLY CLOSED WITH TIME DELAY CLOSING AFTER COIL IS DE-ENERGIZED)
- TORQUE SWITCH (NORMALLY OPEN)
- TORQUE SWITCH (NORMALLY CLOSED)
- LIMIT SWITCH (NORMALLY OPEN)
- LIMIT SWITCH (NORMALLY OPEN, HELD CLOSED)
- LIMIT SWITCH (NORMALLY CLOSED)
- LIMIT SWITCH (NORMALLY CLOSED, HELD OPEN)
- DIFFERENTIAL PRESSURE SWITCH (NORMALLY OPEN, CLOSING ON INCREASING DIFF.)
- DIFFERENTIAL PRESSURE SWITCH (NORMALLY CLOSED, OPENING ON INCREASING DIFF.)
- SUPX 24 VDC SURGE PROTECTION

## SWITCH & OUTLET SYMBOLS

- $S^{A}$ SINGLE POLE SWITCH, A=SWITCH DESIGNATION
- $S_2^{A}$ TWO POLE SWITCH, A=SWITCH DESIGNATION
- $S_3^{A}$ THREE-WAY SWITCH, A=SWITCH DESIGNATION
- $S_4^{A}$ FOUR-WAY SWITCH, A=SWITCH DESIGNATION
- $S^{A}_{WP}$ WEATHERPROOF SWITCH, A=SWITCH DESIGNATION
- $S^{A}_{KO}$ KEY OPERATED SWITCH, A=SWITCH DESIGNATION
- $S^{A}_{XP}$ EXPLOSION PROOF SWITCH, A=SWITCH DESIGNATION
- $SO^{A}$ OCCUPANCY SENSOR SWITCH, A=SWITCH DESIGNATION
- DUPLEX RECEPTACLE 120 VOLT
- 240V, 1 PHASE RECEPTACLE, TYPICAL AMPERE RATING NOTED
- 480V, 3 PHASE WELDING RECEPTACLE, TYPICAL AMPERE RATING NOTED

## MISCELLANEOUS SYMBOLS

- E ETHERNET PORT
- T THERMOSTAT
- J JUNCTION BOX
- DISCONNECT SWITCH
- COMBINATION STARTER
- POWER PANEL
- LIGHTING PANEL
- MISCELLANEOUS PANEL

## ABBREVIATIONS

| | |
|---|---|
| A | AMBER, AMPERE, ALARM |
| AC | ALTERNATING CURRENT |
| AFD | ADJUSTABLE FREQUENCY DRIVE |
| AFF | ABOVE FINISHED FLOOR |
| AM | AMMETER |
| ATO | AUTOMATIC THROWOVER |
| AWG | AMERICAN WIRE GAUGE |
| C | CLOSE, COUNTER, CONTACTOR |
| | CAPACITOR |
| CAP | CIRCUIT BREAKER |
| CB | CONTROL DAMPER |
| CD | CIRCUIT |
| CKT | CHLORINE |
| CL2 | CONTROL PANEL |
| CP | CONTROL POWER |
| CPT | TRANSFORMER |
| | CONTROL STATION |
| CS | CYCLE TIMER, CURRENT |
| CT | TRANSFORMER |
| | CYCLE TIMER MOTOR |
| CTM | 2 CONDUCTOR |
| 2/C | 4" CONDUIT |
| 4"C | DIRECT CURRENT |
| DC | DAMPER MOTOR, DEMAND |
| DM | METER |
| DPDT | DOUBLE POLE DOUBLE THROW |
| DPST | DOUBLE POLE SINGLE THROW |
| DPS | DIFFERENTIAL PRESSURE SWITCH |
| | DISCONNECT SWITCH |
| DS | ELECTRIC OPERATOR FOR CONTROL |
| E | DAMPER OR VALVE |
| | ELECTRICAL MANHOLE |
| EMH | ELAPSED TIME METER |
| ETM | EXISTING |
| EX | FORWARD |
| F | FLOW SWITCH |
| FS | GREEN, GROUND |
| G | GROUND FAULT INTERRUPTER |
| GFI | GEARED LIMIT SWITCH |
| GLS | #8 GROUND WIRE |
| #8G | HIGH, HUMIDISTAT |
| H | HANDHOLE |
| HH | HIGH MOTOR TEMPERATURE |
| HMT | HAND-OFF-AUTO |
| HOA | HAND-OFF-REMOTE |
| HOR | HORSEPOWER |
| HP | HIGH WATER CUTOFF |
| HWCO | HERTZ (CYCLE) |
| HZ | |
| I/O | INPUT/OUTPUT |
| J | JUNCTION BOX |
| KV | KILOVOLT |
| KVA | KILOVOLT AMPERE |
| KVAR | KILOVAR |
| KW | KILOWATT |
| KWH | KILOWATT HOUR |
| L | LOW, LEVEL |
| LA | LIGHTNING ARRESTOR |
| LAN | LOCAL AREA NETWORK |
| LP | LIGHTING PANEL |
| LS | LIMIT SWITCH, LEVEL SWITCH |
| | LOW WATER CUTOFF |
| LWCO | MAGNETIC MOTOR STARTER |
| M | MILLIAMPERE |
| | MAIN CIRCUIT BREAKER |
| MA | MOTOR CONTROL CENTER |
| MCB | THOUSAND CIRCULAR MIL |
| MCC | MOISTURE DETECTOR |
| MCM | MANHOLE, MOUNTING HEIGHT |
| MD | MOTOR OPERATED VALVE |
| MH | MANUAL MOTOR STARTER |
| | MOTOR SPACE HEATER |
| MOV | NEUTRAL |
| MS | NORMALLY CLOSED |
| MSH | NORMALLY OPEN, NUMBER |
| N | OPEN |
| NC | OVERLOAD |
| NO | PUSH BUTTON, PULL BOX |
| O | POWER FACTOR METER |
| OL | PHASE (CHEMICAL TERM) |
| PB | PROGRAMMABLE LOGIC |
| PF | CONTROLLER |
| PH | POWER PANEL |
| PLC | PRESSURE SWITCH |
| | POTENTIAL TRANSFORMER, |
| PP | PROGRAM TIMER |
| PS | 2 POLE |
| PT | RED, RAISE, RELAY, REVERSE |
| 2P | |
| R | |
| RECP | RECEPTACLE |
| RGS | RIGID GALVANIZED STEEL |
| RTD | RESISTANCE TYPE TEMP DETECTOR |
| | REMOTE TERMINAL UNIT |
| RTU | REDUCED VOLTAGE SOLID STATE |
| RVSS | STARTER |
| | SIZE 2 STARTER |
| S2 | SUPERVISORY CONTROL AND DATA |
| SCADA | ACQUISITION |
| | SINGLE POLE |
| SP | SINGLE POLE DOUBLE THROW |
| SPDT | SINGLE POLE SINGLE THROW |
| SPST | SELECTOR SWITCH |
| SS | SOLENOID VALVE |
| SV | SWITCHBOARD |
| SWB | SWITCHGEAR |
| SWGR | THERMOSTAT, TIMER, TOTALIZER |
| T | TACHOMETER |
| | TERMINAL BLOCK |
| TACH | TIME DELAY RELAY |
| TB | TEMPERATURE |
| TD | TORQUE |
| TEMP | TEMPERATURE SWITCH |
| TQ | UNDERGROUND |
| TS | UNINTERRUPTIBLE POWER SUPPLY |
| UG | VOLTS |
| UPS | VOLT AMPERE |
| | VALVE LIMIT SWITCH |
| V | VOLTMETER |
| VA | WHITE, WATTS |
| VLS | WATTHOUR METER |
| VM | WATT METER |
| W | WEATHERPROOF |
| WH | TRANSFORMER |
| WM | EXPLOSION PROOF |
| WP | AUXILIARY RELAY |
| XFMR | POSITION SWITCH |
| XP | |
| Y | |
| Z | |
| ZS | |

## AREA DESIGNATIONS

THE SPECIAL AREA DESIGNATION BOXES, AS DEFINED BELOW, ARE LOCATED ON THE PLAN DRAWINGS TO DEFINE ELECTRICAL INSTALLATION REQUIREMENTS. DESIGNATION BOXES ARE LOCATED WITHIN ROOM OR BELOW ROOM NUMBER. ALL INDOOR AREAS NOT INDICATED OTHERWISE ARE AREA TYPE 1 AND MINIMUM NEMA TYPE 1 ENCLOSURES.

AREA TYPE 1 — INDOOR AND DRY AREA. REQUIRES MINIMUM NEMA TYP 1 ENCLOSURES FOR ALL EQUIPMENT AND GASKETED FITINGS IN CONDUIT SYSTEMS.

AREA TYPE 1A — CORROSIVE CHEMICAL FEED AND STORAGE ROOMS. CONDUIT SYSTEM SHALL BE EXPOSED PVC COATED CONDUIT WITH FITTINGS, AND ACCESSORIES.

AREA TYPE 4 — INDOOR WET LOCATIONS SUCH AS VAULTS, HOSEDOWN AREAS, BASEMENTS, ETC. MINIMUM NEMA TYPE 4 ENCLOSURE FOR EQUIPMENT AND GASKETED FITTINGS IN A CONDUIT SYSTEM.

AREA TYPE 7A — CLASS 1, DIVISION 1 AREA AS DEFINED BY NEC. ALL EQUIPMENT AND CONDUIT SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.

AREA TYPE 7B — CLASS 1, DIVISION 2, GROUP C AND D (METHANE, GASOLINE) AS DEFINED BY NEC. EQUIPMENT AND CONDUIT SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.

AREA TYPE 12 — INDOOR, DRY, DIRTY AREA. REQUIRES MINIMUM NEMA TYPE 12 GASKETED ENCLOSURES FOR ALL EQUIPMENT AND GASKETED FITTINGS IN CONDUIT SYSTEMS.

AREA TYPE 4X — OUTDOOR AND INDOOR WET LOCATIONS SUBJECT TO CORROSION. CONDUIT SYSTEM SHOULD BE PVC COATED RIGID GALVANIZED STEEL WITH PVC COATED FITTINGS, BOXES, AND STAINLESS STEEL HARDWARE.

## GENERAL REQUIREMENTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS NOT SHOWN ON THE PLANS. THIS SHALL INCLUDE ALL CONDUITS SHOWN ON THE ONE-LINES AND HOME-RUNS SHOWN ON THE PLAN DRAWINGS. CONDUITS SHALL BE ROUTED AS DEFINED IN THE SPECIFICATIONS.
2. SPARE WIRES SHALL BE TAPED AND COILED.
3. IF EQUIPMENT SUPPLIED BY MANUFACTURER HAS A LARGER LOAD THAN VALUE SHOWN, THE CABLE CONDUIT AND ELECTRICAL EQUIPMENT SHALL BE ENLARGED, AS REQUIRED, TO ACCOMMODATE THE HIGHER VALUE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING PROPERLY SIZED STARTER OVERLOADS FOR EQUIPMENT FURNISHED.
5. LIGHTING AND RECEPTACLE CIRCUITS DESIGNATED ON THE FLOOR PLANS ARE NOT SHOWN ON THE ONE-LINES. CONDUCTORS FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM NO. 12 AWG. CONDUIT FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM ¾".
6. IN AREAS WHERE THERE ARE OVERHEAD BRIDGE CRANES, HOISTS, ETC., NO CONDUITS SHALL BE RUN OVERHEAD THAT WILL INTERFERE WITH THE OPERATION OF THE EQUIPMENT.

## GENERAL NOTES

1. SOLID LINES —— INDICATE NEW WORK OR EQUIPMENT.
2. DOTTED LINES ····· INDICATE EXISTING WORK OR EQUIPMENT.
3. DASHED LINES – – – INDICATE FUTURE WORK OR EQUIPMENT.
4. THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
5. INFORMATION RELATED TO CIRCUIT IDENTIFICATION, WIRE & CONDUIT SIZES, AND ROUTING, IS ON THE FOLLOWING DRAWING TYPES.
   A. ONE-LINE DIAGRAMS SHOW CIRCUIT IDENTIFICATION, WIRE QUANTITY AND SIZES, AND CONDUIT SIZE WITHIN STRUCTURES. ONE-LINE DIAGRAMS ALSO INDICATE ORIGIN AND DESTINATION OF CIRCUITS, AND IDENTIFY CIRCUITS ROUTED UNDERGROUND.
   B. FOR CIRCUITS WITHOUT UNDERGROUND PORTIONS, BUILDING FLOOR PLANS SHOW LOCATION OF EQUIPMENT FOR DETERMINING CIRCUIT LENGTH WITHIN THE STRUCTURE. FOR CIRCUITS WITH UNDERGROUND PORTIONS, ANTICIPATED PENETRATION OF UNDERGROUND CONDUITS ARE SHOWN ON STRUCTURE PLANS FOR DETERMINING THE LENGTH OF IN-STRUCTURE PORTIONS OF CIRCUITS. BUILDING FLOOR PLANS MAY ALSO SHOW HOME RUNS FOR LIGHTING, RECEPTACLE, AND OTHER MISCELLANEOUS EQUIPMENT CIRCUITS.
   C. SITE PLANS INDICATE THE GENERAL ROUTING OF UNDERGROUND CONDUITS AND DUCT BANKS. CIRCUITS ROUTED IN UNDERGROUND CONDUITS OR DUCT BANKS ARE INDICATED IN DUCT BANK SECTIONS REFERENCED ON THE SITE PLAN.
   D. DUCT BANK SECTIONS AND SCHEDULES IDENTIFY CONDUIT SIZE, CONDUIT MATERIAL, ARRANGEMENT OF THE UNDERGROUND CONDUITS, AND CIRCUITS ROUTED IN EACH UNDERGROUND CONDUIT.
6. DASHED RECTANGULAR SURROUNDS INDICATE WORK IN EXISTING AREAS THAT IS NEW OR NEW WORK ON AN EXISTING PIECE OF EQUIPMENT.


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| NO. | DATE | DES'D | DWN | REVISION DESCRIPTION |
|---|---|---|---|---|

| | |
|---|---|
| DESIGNED BY: | NJF |
| DRAWN BY: | NJF |
| CHECKED BY: | TFW |
| JOB #: | 1071.17e |
| DATE: | MARCH 2024 |

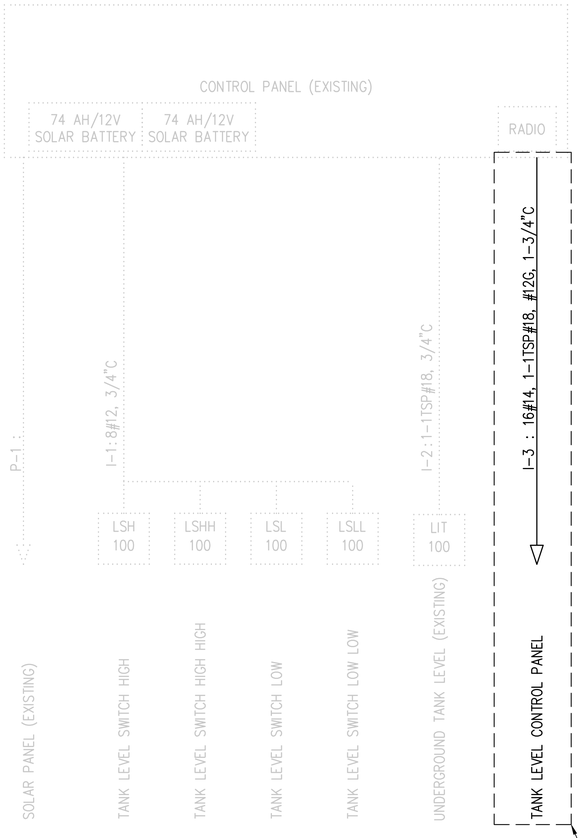


CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

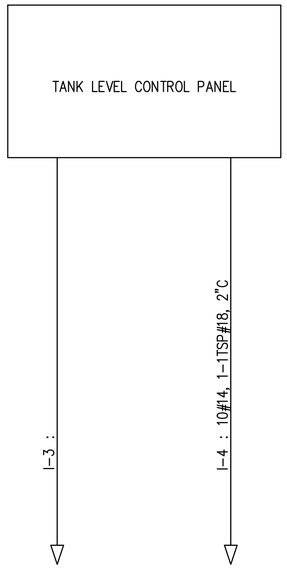
ELECTRICAL LEGEND

SHEET NO.
E0.1

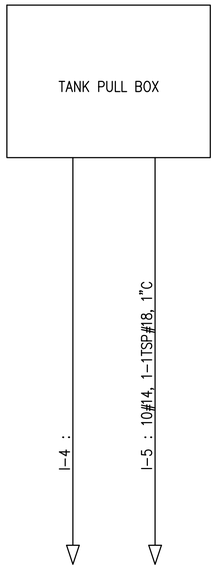
NOTES:
1. BONDING AND GROUNDING SHALL INCLUDE BUILDING STEEL AND PROCESS PIPE AS PER N.E.C.
2. ALL 120VAC CONDUCTORS WITH 20 AMP BREAKER SHALL BE 3#12, 3/4"C. ALL OTHER CONDUCTORS SHALL BE SIZED TO OVER CURRENT PROTECTION.
3. * INDICATES A PACKAGED SYSTEM.
4. CONTRACTOR TO REUSE EXISTING FLOAT SWITCHES.
5. CONTRACTOR SHALL INSTALL NEW CONDUIT BETWEEN EXISTING CONTROL PANEL AND NEW TANK LEVEL CONTROL PANEL.
6. ABANDON HARDWIRE SIGNALS RUNNING FROM EXIST CONTROL PANEL TO WTP. REWIRE EXIST AND NEW FLOATS TO RAD-900-IFS RADIOLINE SYSTEM.



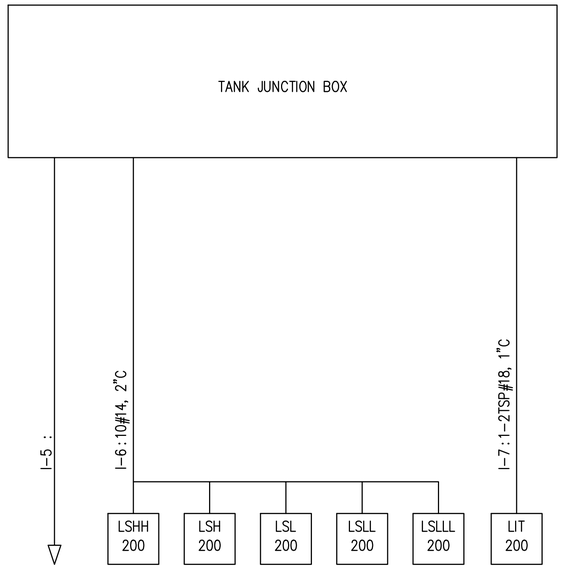

CONTROL PANEL (EXISTING)
ONE-LINE DIAGRAM




TANK LEVEL CONTROL PANEL
ONE-LINE DIAGRAM




TANK PULL BOX
ONE-LINE DIAGRAM




TANK JUNCTION BOX
ONE-LINE DIAGRAM

NOTE 5


CONSULTING ENGINEERS
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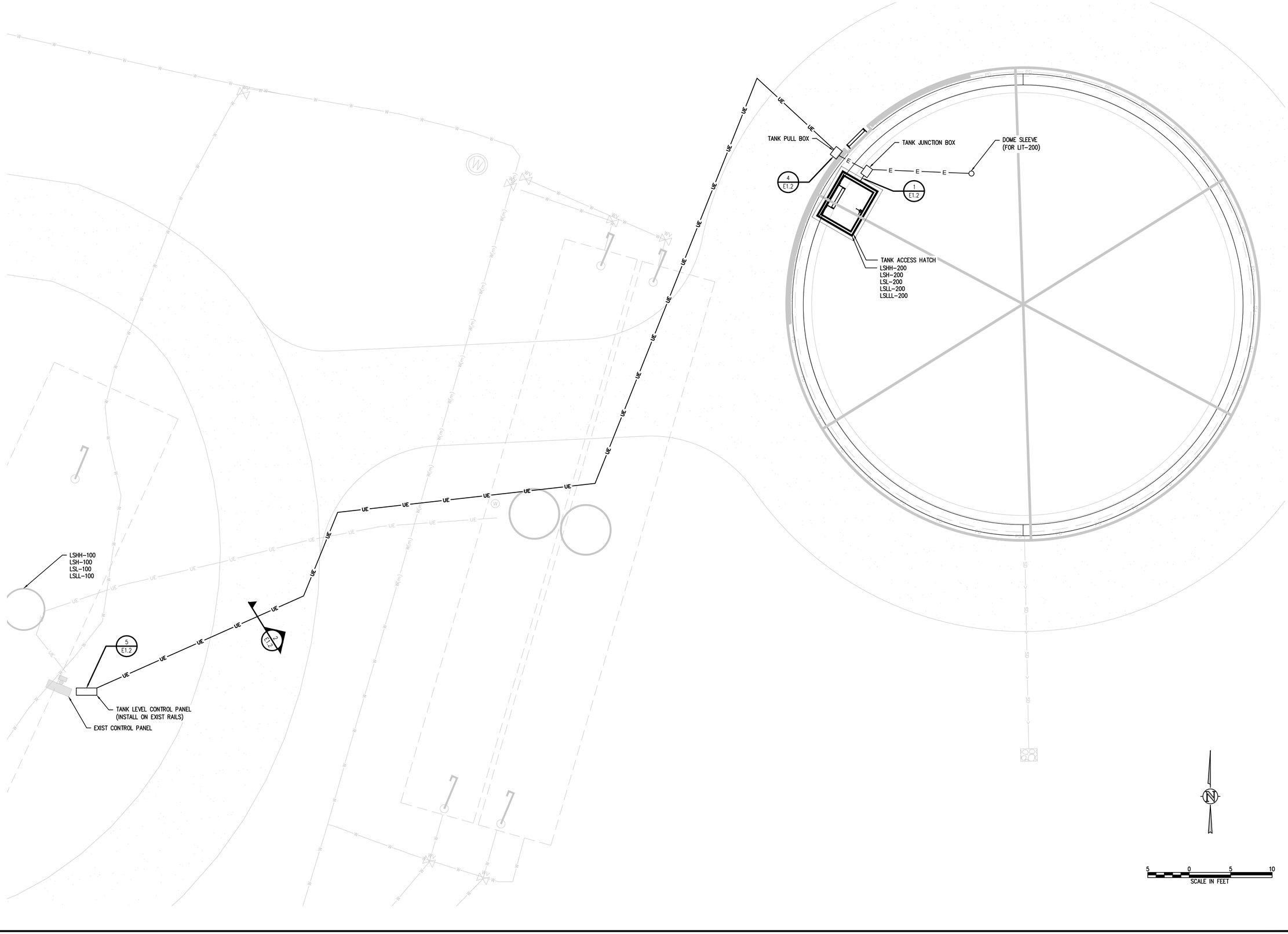
CITY OF GRAND JUNCTION
KANNAH CREEK WTP TANK
GRAND JUNCTION, COLORADO

ELECTRICAL ONE-LINE DIAGRAM

SHEET NO.
E1.0





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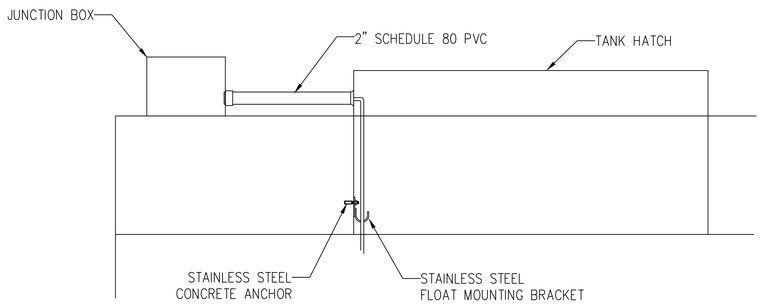
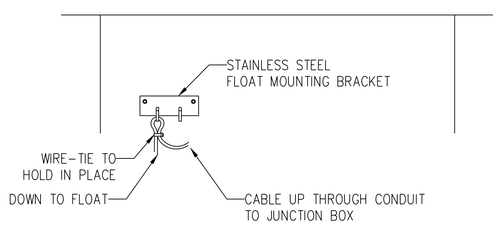
# ELECTRICAL SITE PLAN

SHEET NO.
E1.1

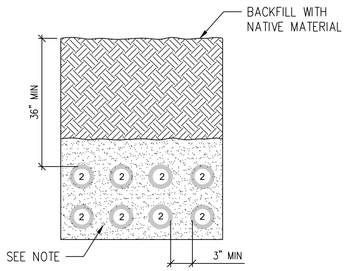



SIDE VIEW




FRONT VIEW

## FLOAT INSTALLATION DETAIL (1 / E1.1)
NTS

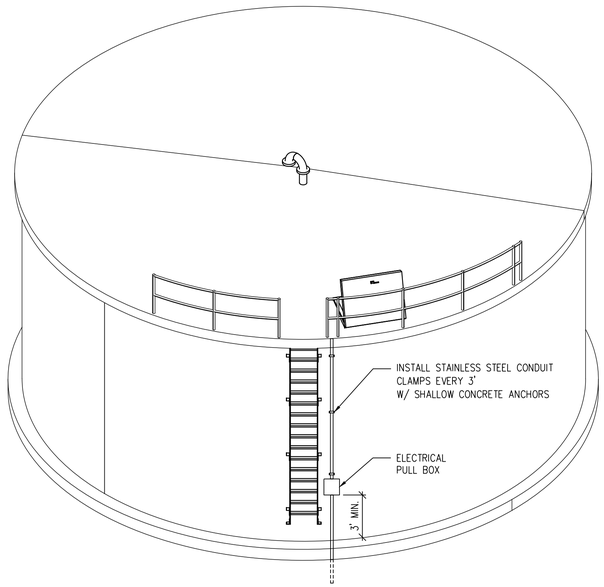



NOTE:

CONDUITS SHALL BE EMBEDDED IN SAND. THE SAND SHALL COVER ALL CONDUITS BY AT LEAST 3 INCHES

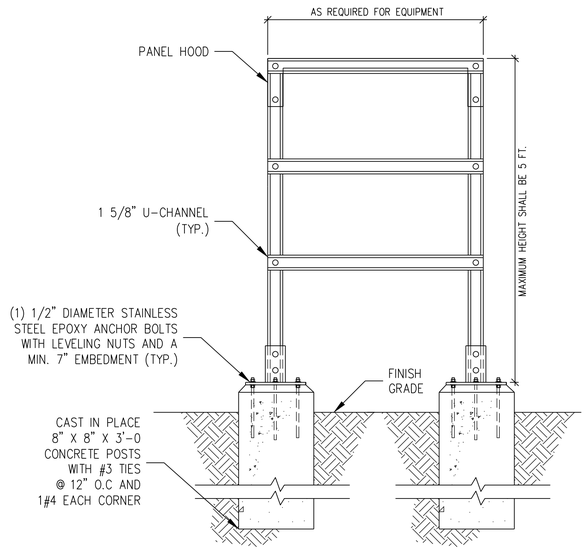

## DUCT BANK (2 / E1.1)
NTS

## ELECTRICAL DUCT BANK DETAIL (2 / –)
NTS

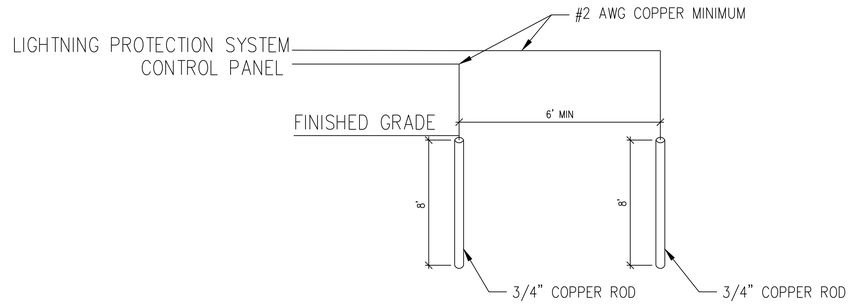



## TANK CONDUIT DETAIL (4 / E1.1)
NTS

CONTRACTOR TO ROUTE CONDUIT ON TOP OF TANK AS NEEDED.




## ELECTRICAL EQUIPMENT RACK DETAIL (5 / E1.1)
NTS




## STRUCTURE GROUNDING DETAIL (6 / –)
NTS

GROUNDING SHALL SATISFY N.E.C. STANDARDS.
GROUND CONDUCTORS CONNECTED TO GROUND PLATE SHALL BE #4 MINIMUM, UNLESS OTHERWISE NOTED.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ELECTRICAL DETAILS

SHEET NO.
E1.2