DOUGLAS COUNTY, NV
This is a no fee document
NO FEE
DOUGLAS COUNTY/PUBLIC WORKS

2024-1012413
09/18/2024 02:58 PM
Pgs=66

00186534202410124130660668

SHAWNYNE GARREN, RECORDER

Recording Requested By:

Name: Nicole Hubbard

Department: Public Works

United States Department of the Interior - Right of Way Grant - Mountain View Water Storage Tanks

(Title of Document)

This page added to provide additional information required by NRS 111.312 Sections 1-2.

Form 2800-14
(August 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RIGHT-OF-WAY GRANT/TEMPORARY USE PERMIT

Issuing Office
Sierra Front Field Office

Serial Number
NVN 045053

1. A (right-of-way) (permit) is hereby granted pursuant to:

   a. ☑ Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761);

   b. ☐ Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185);

   c. ☐ Other *(describe)* _____

2. Nature of Interest:

   a. By this instrument, the holder **Douglas County** receives a right to construct, operate, maintain, and terminate a **2 water tank and access road** on public lands (or Federal land for MLA Rights-of-Way) described as follows:

   Within the following described lands:

   Mount Diablo Meridian, Nevada

   T. 14 N., R. 20 E.,
   Sec. 21, SESE;
   Sec. 22, SWSW;
   Sec. 27, NWNW.

   b. The right-of-way or permit area granted herein is **450** feet wide, **589** feet long and contains **6.36** acres, more or less. If a site type facility, the facility contains _____ acres.

   c. This instrument shall terminate on **December 31, 2054**, **--** years from its effective date unless, prior thereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.

   d. This instrument ☑ may ☐ may not be renewed. If renewed, the right-of-way or permit shall be subject to the regulations existing at the time of renewal and any other terms and conditions that the authorized officer deems necessary to protect the public interest.

   e. Notwithstanding the expiration of this instrument or any renewal thereof, early relinquishment, abandoment, or termination, the provisions of this instrument, to the extent applicable, shall continue in effect and shall be binding on the holder, its successors, or assigns, until they have fully satisfied the obligations and/or liabilities accruing herein before or on account of the expiration, or prior termination, of the grant.

(Continued on page 2)

3. Rental:

For and in consideration of the rights granted, the holder agrees to pay the Bureau of Land Management fair market value rental as determined by the authorized officer unless specifically exempted from such payment by regulation. Provided, however, that the rental may be adjusted by the authorized officer, whenever necessary, to reflect changes in the fair market rental value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices.

4. Terms and Conditions:

a. This grant or permit is issued subject to the holder's compliance with all applicable regulations contained in Title 43 Code of Federal Regulations parts 2800 and 2880.

b. Upon grant termination by the authorized officer, all improvements shall be removed from the public lands within 120 days, or otherwise disposed of as provided in paragraph (4)(d) or as directed by the authorized officer.

c. Each grant issued pursuant to the authority of paragraph (1)(a) for a term of 20 years or more shall, at a minimum, be reviewed by the authorized officer at the end of the 20th year and at regular intervals thereafter not to exceed 10 years. Provided, however, that a right-of-way or permit granted herein may be reviewed at any time deemed necessary by the authorized officer.

d. The stipulations, plans, maps, or designs set forth in Exhibit(s) A, dated December 2023, attached hereto, are incorporated into and made a part of this grant instrument as fully and effectively as if they were set forth herein in their entirety.

e. Failure of the holder to comply with applicable law or any provision of this right-of-way grant or permit shall constitute grounds for suspension or termination thereof.

f. The holder shall perform all operations in a good and workmanlike manner so as to ensure protection of the environment and the health and safety of the public.

Exhibit A: Plan of Development dated December 2023
Exhibit B: Construction Drawings dated July 2024
Exhibit C: Additional Terms and Conditions

IN WITNESS WHEREOF, The undersigned agrees to the terms and conditions of this right-of-way grant or permit.

(Signature of Holder)	(Signature of Authorized Officer)
Deputy Director - Public Works (Title)	Acting Field Manager (Title)
8/30/24 (Date)	9/4/2024 (Effective Date of Grant)

Exhibit A

Mountain View Water Storage Tank
Amendment to N-45053
Plan of Development

Purpose and Need for the Facility

Douglas County owns and operates the existing ±600,000-gallon Mountain View potable water storage tank which is located on BLM land (grant N-45053). The tank currently serves ±671 equivalent dwelling units (EDUs) and is estimated to serve ±832 EDUs at build out of the service area. However, the tank is approximately 35 years old, undersized, doesn't meet current design standards, and is reaching the end of its useful life. Photos of the existing tank and access road are shown in Figure 1.

To address these deficiencies, Douglas County proposes constructing two permanent ±565,000-gallon (nominal) water storage tanks at the same site to replace the existing Mountain View tank. The tanks will be used to store water to meet potable, emergency, and firefighting demands. Table 1 provides a summary of dimensions and details for the proposed tanks.

Table 1 – Proposed Tank(s) Details

Number of Tanks	2
Construction Material	Welded Steel
Diameter	66-feet
Tank Height	27.65-feet
Tank Overflow Height	23-feet
Operating Water Depth	22-feet
Operating Volume per Tank	563,000
Total Operating Volume (2 Tanks)	1,126,000

The following work is also anticipated as part of the proposed project:

- Construction of ±210-feet of underground potable water pipe to connect the new water tanks to the existing water line.
- Construction of ±144-feet of underground water pipe to drain the new water tanks.
- Construction of a drain water retention basin.
- Construction of electrical conduit between the tanks and the existing electrical cabinets.
- Realignment of ±3,400 square feet of approach road.
- Regrading of ±2,800 linear feet of existing access road.
- Construction of ±1,1450 square yards of asphalt site pavement

The engineer's opinion of probable cost for the project is $5,510,000. A map showing the location of the existing tank and proposed tanks is shown in Figure 2.

As part of the preliminary design, three additional tank replacement alternatives were considered. These include 1) constructing a new tank at the existing tank site ($5,860,000), 2) constructing a new tank at a new site north of the existing tank ($5,950,000), and 3) phasing construction of two new tanks at the existing site ($6,120,000). The rejected alternatives were not chosen because they had higher capital costs and were more difficult to construct.

Right-of-Way Location

Figure 3 shows the location of the proposed amended BLM permit area, the current BLM permit area, and the pre-existing access road. A summary of the area and dimensions are shown in the following table.

Table 2 – Permit Area and Dimensions (longest)

	Area (acres)	Length (ft)	Width (ft)
Existing BLM Grant N-45053	6.36	740 (longest)	450 (longest)
Proposed Permit Area	7.49	662 (longest)	648 (longest)
Proposed Access Road Area	1.70	2,475	30

Please note that Douglas County will hire a Professional Land Surveyor to prepare the legal description(s) when the final BLM permit area is defined.

Facility Design Factors

The proposed project is being designed by Keller Associates, an engineering firm licensed in the State of Nevada, and overseen by the Douglas County Public Works Engineering Department. The work is being designed to meet the codes established in Nevada Administrative Code 445A, the standards established in the Douglas County Design Standards, specifications established in the *Standard Specifications for Public Works Construction* (Orange Book), the American Water Works Association (AWWA) *Manual of Water Supply Practices M42 Steel Water Storage Tanks*, and AWWA Standard D100. All construction materials will be in compliance with AWWA standards and NSF 61 certified ensuring that water entering/leaving the project will be safe for human consumption.

New underground water pipelines will be primarily constructed using AWWA C900 DR18 PVC pipe (pressure class 235 psi) and/or AWWA C151 ductile iron pipe (pressure class 350 psi). Anticipated pipe pressures range from 0 psi (empty pipe) to ±12 psi (full tank). Pipe will be buried at minimum 42-inches underground.

The realigned approach road (±3,640 square feet) to the tank site will be gravel on native soils. The existing access road (±2,800-feet by ±15-feet) will remain native soils and follow the existing contours. No bridges, or water crossings are needed on the existing access road or the realigned approach road. One culvert will be installed as part of the drain water retention basin construction.

It is anticipated that the Contractor will be able to stage construction materials and equipment adjacent to the existing water storage tank. No other BLM property will be approved for staging, further development, or installation of temporary facilities.

Additional Components of Right-of-Way

At this time there are no additional project components other than detailed in other sections of the POD.

Site Selection

No site selection evaluation was completed due to the existing water tank on the site.

Government Agencies Involved

The following permits, rights-of-way, etc. are anticipated for the project:

- BLM grant or right-of-way
- Nevada Division of Environmental Protection Bureau of Safe Drinking Water Permit to Construct
- Douglas County Site Improvement Permit
- East Fork Fire Protection District Permit

Douglas County Public Works is managing the project from preliminary design through construction and will own and operate the proposed new tanks. No other direct Federal, State, Local, or Tribal Government involvement is anticipated.

Construction of the Facilities

Construction of the proposed new tanks will likely occur in the following phases:

Phase 1 – Site Grading. In this phase the BLM grant/ROW and work area will be staked, the contractor will excavate and grade the site to allow for construction of the new tanks, and realignment of the approach road. In this phase it is estimated that ±4,633 cubic yards of cut material will be removed from the site. During this phase it is anticipated to have heavy equipment grading the site and dump trucks hauling cut material from the site for several weeks.

Phase 2 – Civil Site Work. In this phase water pipeline and drain line will be constructed for both new tanks. This phase will likely require an excavator and loader/backhoe to complete the work.

Phase 3 – Tank 1 Construction. In this phase tank 1 will be constructed, tested, and brought into service. Tank construction crews typically consist of 3 to 5 workers and a fork lift (or similar) and coating crews typically consist of 2 to 4 workers with minor onsite equipment.

Phase 4 – Existing Tank Demolition. During this phase the existing tank will be demolished and removed from the project site. Some site grading will be completed to prepare the site for construction of tank 2. To complete the work the contractor will likely rely on a forklift (or similar) to demolish the tank and heavy earth moving equipment to grade the site for tank 2.

Phase 5 – Tank 2 Construction. In this phase tank 2 will be constructed, tested, and brought into service. Tank construction crews typically consist of 3 to 5 workers and a fork lift (or similar) and coating crews typically consist of 2 to 4 workers with minor onsite equipment.

Phase 6 – Site Cleanup. During this phase the site fence will be constructed and all ground surfaces will be finished (i.e. gravel approach road and site paving). In addition, the contractor will clean the site and demobilize all non-permanent equipment and materials. This phase will require various equipment.

It is anticipated that the project will take 12-months to complete all six phases of the construction. The contractor will be confined to the approved BLM grant/ROW.

Access to the site will be along the existing north-south access road. Ingress/egress to BLM lands and the existing access road is off Porter Drive. The contractor will be required to have and implement a safety program while working on the site.

No industrial waste or toxic substances will be used, generated, discharged, or left on the project site.

Resource Values and Environmental Concerns

Air – The proposed project will not lead to any permanent deterioration in air quality. However, it may lead to temporary, localized deterioration in air quality due to the use of heavy equipment, excavation, and grading required to complete the work.

Noise – The proposed project will not lead to any permanent changes in noise. However, it may lead to temporary, localized increase in noise due to the use of heavy equipment, excavation, and grading required to complete the work. Douglas County code does limits work to 7:00AM to 7:00PM.

Geological Hazards – No known geological hazards exist at the project site.

Mineral and Energy Resources – No known mineral and energy resources exist at the project site.

Paleontological Resources – No known paleontological resources exist at the project site.

Soils – The proposed permit area consists of primarily Incy fine sand (4 to 30% slopes) with the very southeast corner of the area consisting of Koontz-Stodick-Flex Association. The access road area consists of Incy fine sand (4 to 30% slopes) and Toll sand (0 to 4% slopes). None of the soils present is considered prime farmland (websoilsurvey.nrcs.usda.gov/app/).

Water – There are no blue line streams in the vicinity of the project area.

Threatened and Endangered Species –Table 3 list threatened or endangered species that may exist in the vicinity of the project. No critical habitat is identified in the vicinity of the project (ipac.ecosphere.fws.gov/location/index).

Table 3 – Threatened and Endangered Species

Greater Sage-grouse	Proposed Threatened
Northwestern Pond Turtle	Proposed Threatened
Carson Wandering Skipper	Endangered
Monarch Butterfly	Candidate

Cultural Resources – No known cultural resources exist at the project site.

Visual Resources – No known visual resources exist at the project site. However, there is an existing water tank at the project site.

BLM Projects – No known BLM projects exist at the project site.

Recreation Activities – Land adjacent to the project site is used for off highway vehicles (OHVs), hikers, and other recreational uses. The proposed project will have limited impact on public access to BLM lands.

Wilderness – There are no wilderness or wilderness study areas at the project site.

Stabilization and Rehabilitation
Disturbed soils will be reseeded with native vegetation. Seeding specifications will be developed as the project design progresses.

Trash, debris, rubbish, and other garbage generated during construction will be regularly collected by the contractor and hauled offsite for proper disposal (likely the Douglas County transfer station).

Public access to the tank site will be limited but the access road will continue to be open to the general public.

Operation and Maintenance
The Douglas County Public Works Department employs nine licensed water distribution operators and three Professional Engineers that specialize in potable water. Operations staff complete exterior tank inspections on a monthly basis and interior inspections (using a diver) every 3-years. These inspections take place during the work week between 7:30AM and 4:00PM. Operations and maintenance will be performed in accordance with County safety procedures. Operations and maintenance activities will be confined within the approved BLM grant/ROW.

The tank site will be accessed by the existing access road previously described. The tank site will be signed and fenced with anti-intruder chain link fencing (chain link with barb wire along the top). The fence will be installed to deter public access to the actual tank site for the safety of the public and to deter bad actors from vandalizing the tank site or disrupting operation of the water system. Access to the fenced tank site will be primarily limited to Public Works staff. However, BLM, regulators, and subcontractors will be admitted to the site by Public Works on an as-needed basis.

The tanks will be equipped with instrumentation and controls that will trigger a pump station (not located on BLM lands) to turn on to fill the tank and turn off when the tank has reached its operational level. Level transmitters will be used to monitor the water level in each tank and a back up float switch will be installed to turn off the pump station if the level transmitter fails. This redundant configuration will significantly reduce the risk of a tank overflow. Tank water levels and pump station status can be monitored remotely through the Public Works supervisory control and data acquisition (SCADA) system.

The new tanks and pipelines will be hydrostatically tested and disinfected using potable water from the County's distribution system. Disinfection water will be dechlorinated prior to release, in accordance with AWWA standards. The anticipated volume of water released is 1.13 million gallons

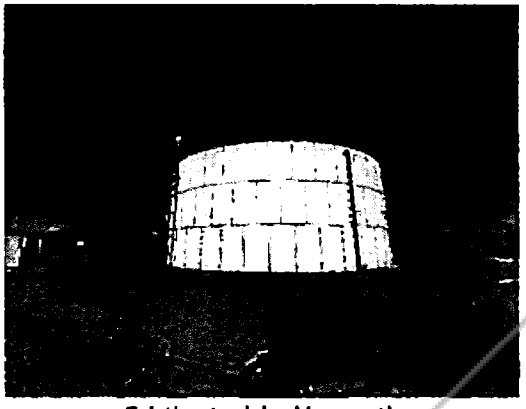
The tanks will be constructed of welded steel and do not pose a fire risk to the tank site. However, the tanks will improve fire fighting ability in the Johnson Lane area by increasing the volume of stored water available in an emergency.

In addition to being easier to construct, two tanks will provide redundancy for the water system and will be easier to service and repair in the future.

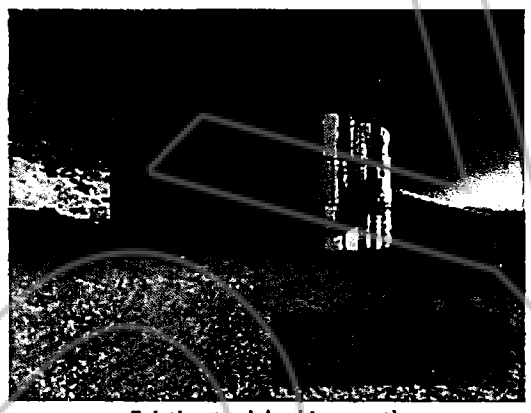
Termination and Restoration

The tank site is considered permanent and will serve the public for many years. There are no plans to terminate use of the tank site. Two tanks are being installed for numerous reasons including to meet future demand, provide additional firefighting capability, and to simplify future repairs and rehabilitation of the tanks (i.e. one tank can be taken offline for rehabilitation while the other tank stays in service).

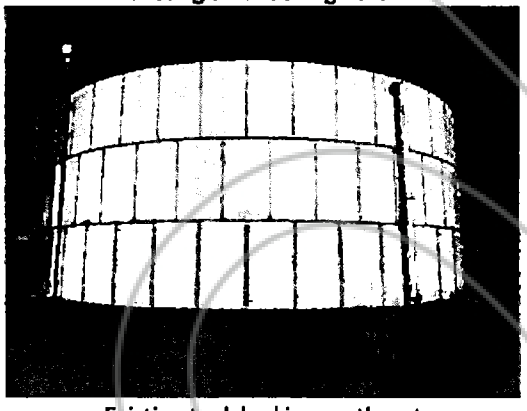
Figure 1 – Site Photos



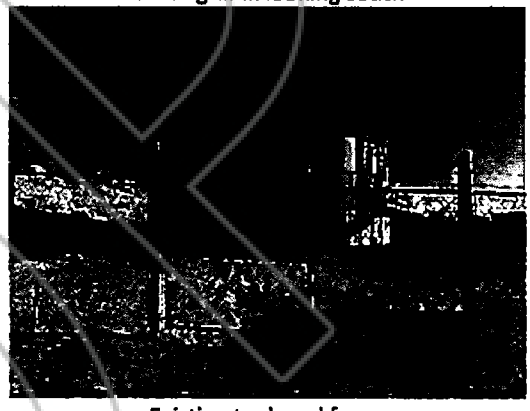
Existing tank looking north



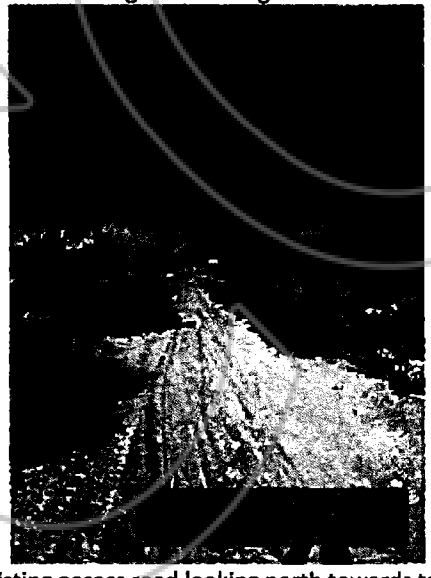
Existing tank looking south



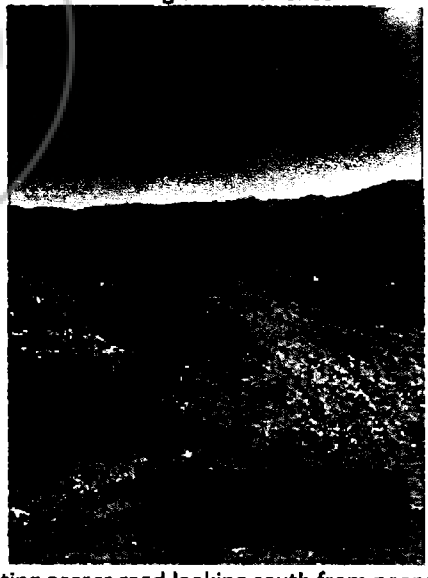
Existing tank looking northeast



Existing tank and fence



Existing access road looking north towards tank



Existing access road looking south from near tank

Figure 2 – Location Map

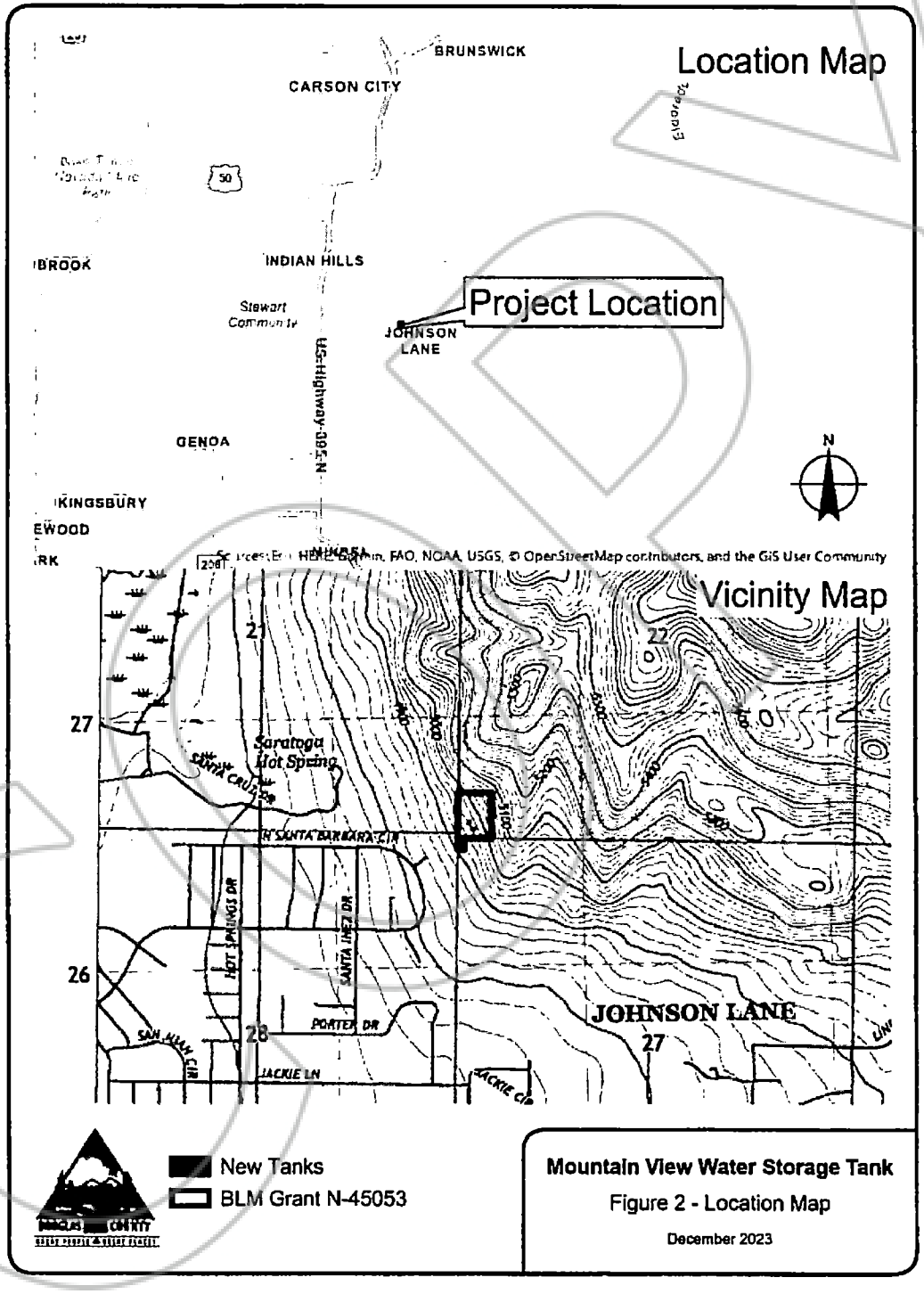


Figure 3 – Proposed BLM Permit Area

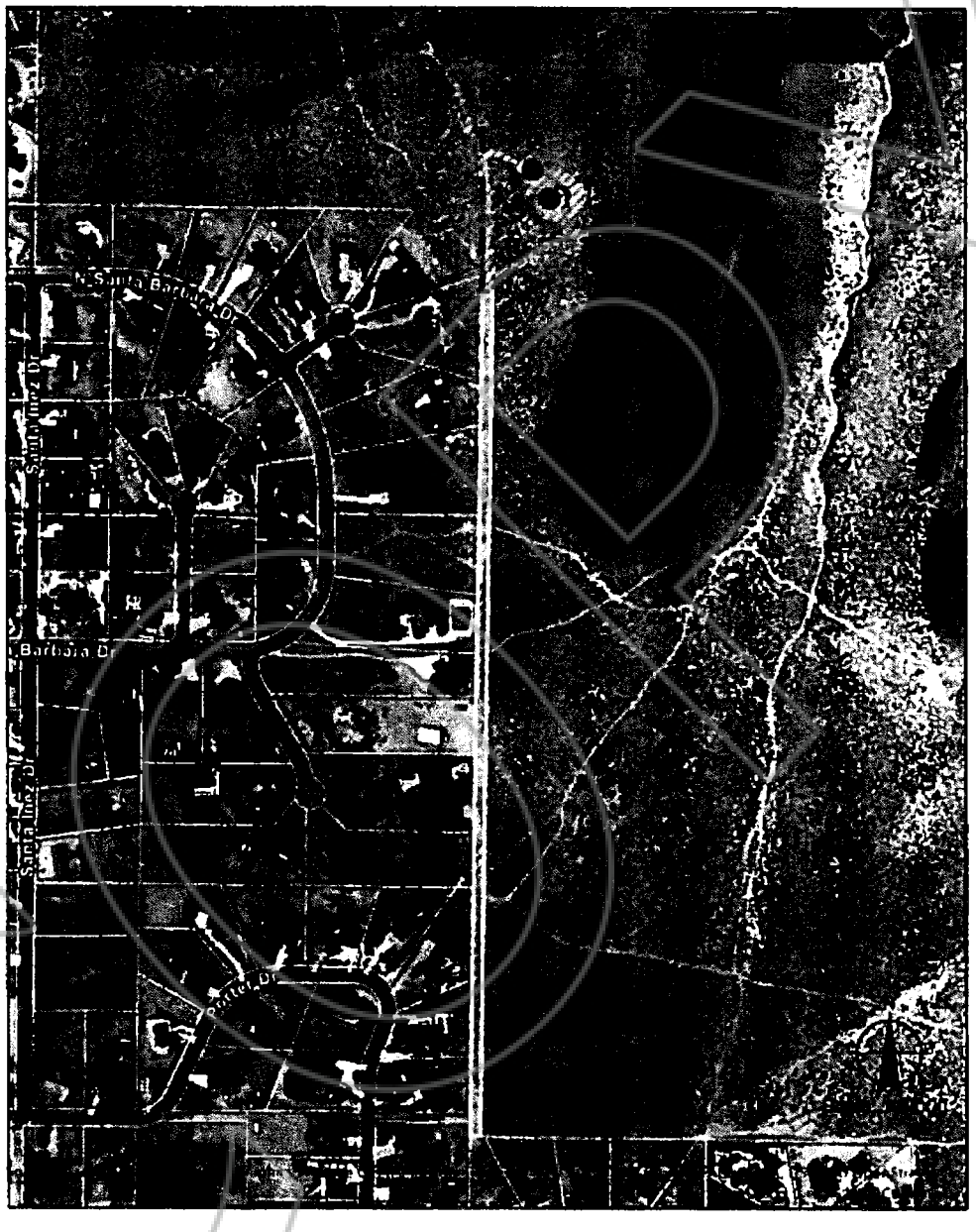


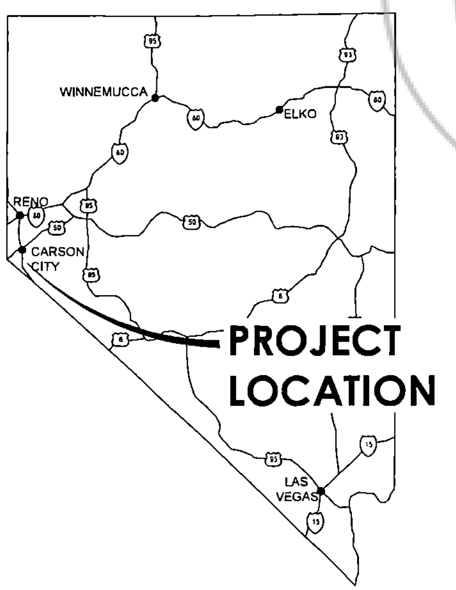
Exhibit B

DOUGLAS COUNTY, NV
MOUNTAIN VIEW RESERVOIR REPLACEMENT

JULY 2024

DOUGLAS COUNTY

COUNTY ENGINEER DATE



A1 LOCATION MAP
N.T.S.

BASIS OF BEARINGS

COORDINATES AND BEARINGS ARE BASED UPON THE NEVADA STATE PLANE COORDINATE SYSTEM, (NAD 83(94) ADJUSTED TO GROUND VALUES, AS ESTABLISHED BY A REAL-TIME KINEMATIC (RTK) GLOBAL SATELLITE SYSTEM (GNSS) UTILIZING THE UTAH VRS NETWORK. TO GO FROM STATE PLANE COORDINATES TO GROUND COORDINATES MULTIPLY BY 1.0002.

BASIS OF ELEVATIONS (NOT SHOWN IN PLAN)

REFERENCE BENCHMARK (NGS PID AA3458)
STATION IS LOCATED ABOUT 3.1 MILES NORTH OF MINDEN, NV, 1.25 MILES EAST OF US HIGHWAY 395, AT THE DOUGLAS COUNTY AIRPORT, ON THE EAST SIDE OF THE SYMETRICAL CIRCLE, BETWEEN THE CIRCLE AND THE PARALLEL TAXI FOR RUNWAY 16-34, IN A GRASSY AREA.

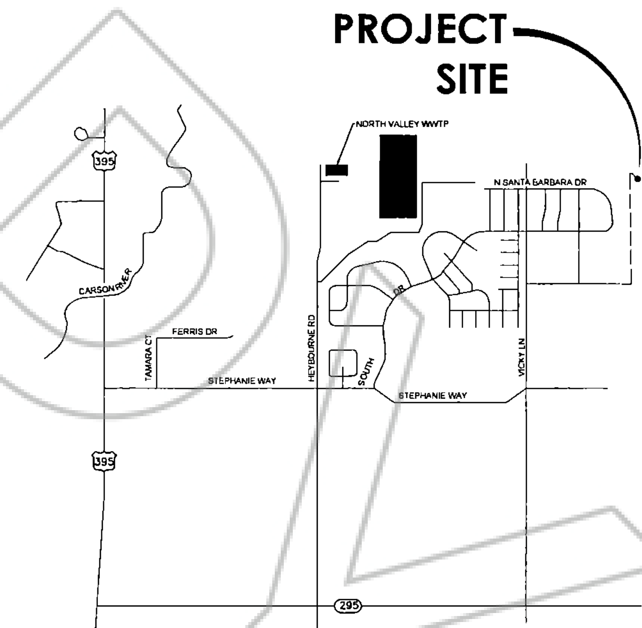
ELEVATION= 4704.60' DATUM= NAVD88 - GEOID 12B

SITE BENCH MARK
SET COTTON SPINDLE - CONTROL POINT COTTON
ELEVATION= 4967.26' DATUM= NAVD88 - GEOID 12B

OWNER
DOUGLAS COUNTY, NV
1120 AIRPORT ROAD, F2
MINDEN, NV 89423
CONTACT NICK CHARLES
PHONE 775.783.6437

CIVIL ENGINEER
KELLER ASSOCIATES, INC.
1325 AIRMOTIVE WAY, SUITE 375
RENO, NV 89502
CONTACT JEREMY WILSON, PE
PHONE 775.451.7288

811 Know what's below. Call before you dig. 800.642.2444



A3 VICINITY MAP
N.T.S.

KELLER ASSOCIATES
1325 Airmotive Way, Suite 375
Reno, NV 89502
(775) 451-7288

90 Design Review Not For Construction

NO. REVISIONS DATE

This document or any part thereof in detail or design concept is the personal property of Keller Associates, Inc. and shall not be copied in any form without the written authorization of Keller Associates, Inc.

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

TITLE SHEET

DRAWN JH CHECK JW
VERIFY SCALE Scales based on 22"x34" prints.
1-1/2 Inches
PROJECT NO 223125
PAGE
SHEET NO G-001

J:\223125 DOUGLAS COUNTY MTN VIEW TANK\C_DESN_CADD_DESIGN\D_PLANS-1000_GENERAL\G-001.DWG LAST SAVED 7/12/2024 1:05 PM PRINTED 7/12/2024 2:33 PM

LIST OF DRAWINGS

SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE
GENERAL	
G-001	TITLE SHEET
G-002	SHEET INDEX
G-003	NOTES SHEET
G-004	STANDARD ABBREVIATIONS
G-005	STANDARD ABBREVIATIONS CONT.
G-006	PIPE SCHEDULE
CIVIL	
C-001	SYMBOLS & LINE LEGEND
C-010	EXISTING SITE AND ACCESS
C-020	SITE DEMOLITION PLAN
C-100	SITE PLAN KEY MAP
C-110	WATER TANKS SITE PLAN
C-200	GRADING KEY MAP
C-201	WATER TANKS GRADING PLAN
C-210	GENERAL PROJECT CROSS SECTION
C-211	TANK 1 CROSS SECTION
C-212	TANK 2 CROSS SECTION
C-214	ENERGY DISSIPATION SECTION
C-400	YARD PIPING KEY MAP
C-410	WATER LINE PLAN & PROFILE
C-411	DRAIN LINE PLAN & PROFILE
C-412	STORM DRAIN CULVERT PLAN & PROFILE
C-501	VAULT DETAILS
C-510	CIVIL DETAILS
C-511	DOUGLAS COUNTY DETAILS (1 OF 3)
C-512	DOUGLAS COUNTY DETAILS (2 OF 3)
C-513	DOUGLAS COUNTY DETAILS (3 OF 3)
SITE ELECTRICAL	
E-120	ELECTRICAL SITE PLAN
TANK 1	
S-101	TANK 1 - STRUCTURAL PLAN
S-301	
M-101	TANK 1 - MECHANICAL PLAN
E-101	TANK 1 - ELECTRICAL AND INSTRUMENTATION PLAN
TANK 2	
S-102	TANK 2 - STRUCTURAL PLAN
S-302	TANK 2 - STRUCTURAL SECTION
M-102	TANK 2 - MECHANICAL PLAN
E-102	
STRUCTURAL DETAILS TANKS 1 & 2	
S-501	STRUCTURAL DETAILS
S-502	STRUCTURAL DETAILS
S-503	STRUCTURAL DETAILS
ELECTRICAL	
E-501	ELECTRICAL DETAILS
E-601	ONE-LINE DIAGRAM
E-602	CABLE AND CONDUIT SCHEDULES
EI-001	
EI-002	P&ID LEGEND
EI-003	P&ID LEGEND
EI-701	P&ID

J:\223125 DOUGLAS COUNTY MTN VIEW TANK\C_DESN_CADD_DESIGN\D_PLANS-1000_GENERAL\G-002.DWG LAST SAVED: 7/12/2024 1:07 PM PRINTED: 7/12/2024 2:33 PM

DISCIPLINE DESIGNATORS

G	GENERAL DRAWINGS
V	SURVEY DRAWINGS
C	CIVIL DRAWINGS
A	ARCHITECTURAL DRAWINGS
S	STRUCTURAL DRAWINGS
MP	PLUMBING DRAWINGS
MH	HVAC DRAWINGS
M	MECHANICAL PROCESS DRAWINGS
E	ELECTRICAL DRAWINGS
EI	ELECTRICAL INSTRUMENTATION DRAWINGS

CIVIL SHEET TYPES

0XX	GENERAL (SYMBOLS LEGEND, NOTES, TOPOGRAPHY, ETC.)
1XX	SITE (SITE LAYOUTS, ETC.)
2XX	GRADING (GRADING, DRAINAGE, EXCAVATION ETC.)
4XX	UTILITY (PLAN VIEW, PLAN & PROFILES, ETC.)
5XX	PROJECT DETAILS
6XX	MISCELLANEOUS

STRUCTURE SHEET TYPES

0XX	GENERAL (SYMBOLS LEGEND, NOTES, ETC.)
1XX	PLANS (HORIZONTAL VIEWS)
2XX	ELEVATIONS (VERTICAL VIEWS)
3XX	SECTIONS (SECTION VIEWS)
4XX	LARGE SCALE VIEWS (PLANS, ELEVATIONS OR SECTIONS)
5XX	PROJECT DETAILS
6XX	SCHEDULES AND DIAGRAMS
7XX	USER DEFINED (FOR TYPES WHICH DO NOT FALL IN OTHER CATEGORIES)

SHEET NUMBERING KEY

DISCIPLINE DESIGNATOR → M - 101 - C ← STRUCTURE DESIGNATOR (OPTIONAL)

SHEET TYPE

DETAIL & SECTION CALLOUT KEY

(REFERENCE)

RE: A1/S-101-A ← (PROJECT DETAIL NO./SHEET NO.)

RE: S120 ← (STANDARD DETAIL NO.)

C2 ← (DETAIL NO.) → A1

S-301-B ← (SHEET NO.) → C-204

M303 ← (STANDARD DETAIL NO.)

(PROJECT DETAIL NO./GRID LOCATION)

A1 PROJECT DETAIL ← (DETAIL TITLE)

SCALE 1"=1' 0 1 2

(STANDARD DETAIL NO.)

S120 TYP STANDARD DETAIL ← (DETAIL TITLE)

N.T.S.

KELLER ASSOCIATES

1225 Airmotive Way, Suite 375 Reno, NV 89502 (775) 451-7256

90% Design Review Not For Construction

NO.	REVISIONS	DATE

This document or any part thereof in detail or design concept is the personal property of Keller Associates Inc. and shall not be copied in any form without the written authorization of Keller Associates Inc.

DOUGLAS COUNTY

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

SHEET INDEX

DRAWN JH CHECK JW

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 223125

PAGE

SHEET NO. G-002

DOUGLAS COUNTY GENERAL WATER UTILITY NOTES:

ALL WORK SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AS ADOPTED BY DOUGLAS COUNTY. THE OWNER/CONTRACTOR SHALL OBTAIN A PERMIT FROM DOUGLAS COUNTY COMMUNITY DEVELOPMENT PRIOR TO THE START OF CONSTRUCTION.

ALL TRAFFIC CONTROL AND BARRICADING WITHIN THE PUBLIC RIGHT-OF-WAY SHALL CONFORM TO PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND THE NEVADA WORK ZONE TRAFFIC CONTROL HANDBOOK, 1998 EDITION. NO STREET CLOSURES WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF A TRAFFIC CONTROL PLAN BY THE DOUGLAS COUNTY ENGINEERING DIVISION.

THE OWNER/CONTRACTOR SHALL CALL UNDERGROUND SERVICE ALERT "CALL BEFORE YOU DIG" 1-800-227-2600 FORTY-EIGHT (48) HOURS PRIOR TO START OF CONSTRUCTION. AN UNDERGROUND SERVICE ALERT MAY ALSO BE LOGGED AT WWW.USANORTH.ORG.

THE OWNER/CONTRACTOR SHALL CALL DOUGLAS COUNTY ENGINEERING DIVISION (782-6237) FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION. THE OWNER/CONTRACTOR SHALL CALL TWENTY-FOUR (24) HOURS PRIOR TO REQUIRED INSPECTIONS AND TESTING. THE REQUIRED INSPECTIONS AND TESTING ARE LISTED ON THE INSPECTION RECORD ISSUED WITH EACH PERMIT. THE OWNER/CONTRACTOR MUST HAVE THE PERMIT NUMBER AND THE DESCRIPTION LISTED ON THE INSPECTION RECORD TO SCHEDULE REQUIRED INSPECTIONS AND TESTING.

THE APPROVED PLAN, PERMIT AND INSPECTION RECORD MUST BE ON THE JOB SITE AT ALL TIMES.

WATER MAIN SHUTDOWNS/INTERRUPTION OF SERVICE. WATER UTILITY APPROVAL IS REQUIRED FORTY-EIGHT (48) HOURS PRIOR TO NOTIFICATION OF CUSTOMERS. COMMERCIAL AND RESIDENTIAL CUSTOMERS SHALL BOTH RECEIVE FORTY-EIGHT (48) HOURS WRITTEN NOTICE OF A SHUTDOWN, AND SPECIAL ARRANGEMENTS MAY HAVE TO BE MADE TO ACCOMMODATE CUSTOMERS OPERATIONAL NEEDS. THE WATER UTILITY IS RESPONSIBLE FOR THE NOTIFICATION WHEN WORK IS PERFORMED BY THE WATER UTILITY. THE CONTRACTOR IS RESPONSIBLE IN ALL OTHER CASES. A LIST SHALL BE KEPT BY THE RESPONSIBLE PARTY LISTING THE DATE, TIME, AND ADDRESS OF ALL PERSONS NOTIFIED. THE PERSON NOTIFIED SHALL BE INCLUDED ON THE LIST FOR ALL COMMERCIAL CUSTOMERS. THE CONTRACTOR WILL BE SUBJECT TO DAMAGE CLAIMS SHOULD THEY FAIL TO NOTIFY CUSTOMERS OR MAINTAIN DOCUMENTATION OF NOTIFICATION OF CUSTOMERS. THE CONTRACTOR SHALL NOT OPERATE ANY EXISTING WATER VALVES WITHOUT AUTHORIZATION OF THE WATER UTILITY.

ALL WATER MAINS SHALL BE C900, DUCTILE IRON, AS SPECIFIED ON THE PLANS OR AS APPROVED BY THE WATER UTILITY. ALL WATER SERVICES 2" OR LESS SHALL BE IPS, PE PIPE (AWWA STANDARD C901); SERVICES 3" OR GREATER SHALL BE CLASS 150 C900 PVC OR AS SPECIFIED ON THE PLANS.

LINE SEPARATION MUST MEET THE PROVISIONS OF NAC 445A.6715 THROUGH 445A.6719 IN ITS ENTIRETY, NDEP'S VERTICAL CROSSING SUMMARY, AND BE APPROVED BY STATE AND WATER UTILITY.

ALL HOT TAPS ARE TO BE PERFORMED BY A LICENSED CONTRACTOR APPROVED BY THE WATER UTILITY. THE CONTRACTOR SHALL CONTACT THE WATER UTILITY AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO SCHEDULING HOT TAP DATE AND TIME.

WATER VALVE MARKERS SHALL BE BLUE CARSONITE UTILITY MARKER (CRM-3068), 5'-2" WITH WATER UTILITY'S DECAL OR APPROVED EQUAL. PLACE MARKER NO MORE THAN FIVE (5) FEET FROM THE VALVE OR AS DIRECTED BY THE WATER UTILITY.

ALL WATER MAIN AND WATER SERVICE INSPECTIONS MUST BE COMPLETED PRIOR TO ANY CERTIFICATE OF OCCUPANCY OR NOTICE OF COMPLETION BY THE WATER UTILITY ACCEPTING IMPROVEMENTS.

WATER NOTES:

DOUGLAS COUNTY ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. UTILITY LOCATIONS SHOWN ON THESE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT AND MAKE HIS OWN INTERPRETATIONS WITH REGARD TO MATERIALS, METHODS, AND EQUIPMENT NECESSARY TO PERFORM THE WORK REQUIRED FOR THIS PROJECT.

THE CONTRACTOR SHALL VERIFY IN FIELD, ALL ELEVATIONS, DIMENSIONS, FLOW LINES, EXISTING CONDITIONS, AND POINTS OF CONNECTIONS WITH EXISTING IMPROVEMENTS AND ADJOINING PROPERTY (PUBLIC OR PRIVATE). ANY DISCREPENCIES SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGE TO EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE UTILITY COMPANIES FOR LOCATIONS.

MODIFICATIONS TO THE APPROVED PLANS REQUIRES REVIEW AND APPROVAL BY THE ENGINEER. WORK PERFORMED WITHOUT WRITTEN APPROVAL BY THE ENGINEER WILL REQUIRE REMOVAL AT THE CONTRACTORS EXPENSE.

ALL MATERIALS IN CONTACT WITH POTABLE SHALL BE NSF 61 CERTIFIED AS COMPATIBLE WITH DRINKING WATER AND LEAD FREE.

DISPOSAL OF ANY SPENT CHLORINE SOLUTIONS MUST BE COORDINATED WITH THE BUREAU OF WATER POLLUTION CONTROL.

DURING CONSTRUCTION OF A DISTRIBUTION SYSTEM, ANY OPENINGS IN UNFINISHED PIPING OR APPURTENANCES MUST BE SEALED AT THE END OF EACH WORKING DAY IN SUCH A MANNER AS TO PREVENT THE ENTRY OF BIRDS AND OTHER ANIMALS, DIRT, TRENCH WATER AND OTHER SOURCES OF POLLUTION OR CONTAMINATION.

ALL SHORING & BRACING FOR EXCAVATION TO BE DESIGNED AND PROVIDED BY THE CONTRACTOR AND PROVIDED TO THE ENGINEER.

WASTE FROM CONSTRUCTION ACTIVITIES SHALL BE RECYCLED, REUSED, OR DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, OR FEDERAL REQUIREMENTS.

AT NO TIME SHALL THE CONTRACTOR CLOSE OFF ANY UTILITY, OPEN VALVES OR TAKE ANY OTHER ACTION WHICH WOULD AFFECT THE OPERATION OF THE EXISTING SYSTEM. ONLY AUTHORIZED UTILITY PERSONNEL ARE ALLOWED TO OPERATE VALVES OR OTHER WATER SYSTEM COMPONENTS. APPROPRIATE ADVANCE APPROVAL BY THE UTILITY COMPANY IS REQUIRED PRIOR TO THE INTERRUPTION OF THE EXISITING WATER SYSTEM. CONTACT THE OWNER AT (775) 783-6480.

LOCATE ALL EXISITNG UTILITIES WHICH MAY CONFLICT WITH THE NEW WORK IN ADVANCE SO AS TO ALLOW ADJUSTMENT, REALIGNMENT AND OR REDESIGN OF THE NEW WORK AROUND THE EXISTING UTILITY AND OR STRUCTURE. UTILITY LINES WHICH CONFLICT WITH THE NEW WORK SHALL BE REROUTED AS REQUIRED AFTER UTILITY AGENCY APPROVALS ARE OBTAINED. TEMPORARY REROUTES SHALL BE MADE PERMANENT AFTER ALL NEW WORK HAS BEEN COMPLETED IN ACCORDANCE WITH APPLICABLE STANDARDS. REROUTING OF WATER LINES SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE AWWA STANDARDS.

IF WATER OUTAGES EXTEND BEYOND ALLOWABLE/NOTIFIED TIMES, CONTRACTOR SHALL PROVIDE BOTTLED DRINKING WATER TO THE UTILITY CUSTOMERS AT A LOCATION CONVENIENT TO THE CUSTOMERS AFFECTED, AND AS APPROVED BY THE OWNER.

THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT THE INTEGRITY OF EXISTING WATER LINES DURING CONSTRUCTION UNTIL THE POINT WHICH THE NEW WATER LINES ARE PLACED INTO SERVICE.

TRENCH EXCAVATION AND BACKFILL SHALL BE PERFORMED IN ACCORDANCE WITH THE DETAILS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION AND SHORING PROCEDURES. PIPE PLACEMENT SHALL BE BY OPEN TRENCH UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE PLAN OR BY APPROVED ALTERNATIVE. SHORING, BRACING, AND SHEETING SHALL BE AS SET FORTH IN THE RULES, ORDERS, AND REGULATIONS OF THE OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION, OSHA.

COMPLETE BACKFILL OF TRENCH IN STREET RIGHT-OF-WAY AT THE END OF EACH WORKDAY. USE TEMPORARY PATCH MATERIAL WHERE REQUIRED. STEEL PLATES ON THE TRAVEL LANES MAY BE USED ONLY UPON APPROVAL OF THE OWNER'S REPRESENTATIVE.

CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS PIPE, FITTINGS AND APPURTENANCES AS REQUIRED TO COMPLETE THE UTILITY WORK AS SHOWN.

NOTIFY THE FIRE DEPARTMENT OF FIRE HYDRANTS AFFECTED DURING CONSTRUCTION.

PIPELINE DEPTHS SHALL BE INSTALLED TO AVOID ADDITIONAL HIGH POINTS.

ALL RADIUS OF CURVATURE (BOTH HORIZONTAL AND VERTICAL) OF THE WATER MAIN SHALL BE INSTALLED WITHIN THE MANUFACTURER'S RECOMMENDATIONS. IF CURVATURE IS EXCEEDED, CONTRACTOR SHALL INSTALL THE APPROPRIATE STANDARD ANGLE FITTING INSTEAD OF DEFLECTING JOINTS OR BENDING THE PIPE EXCESSIVELY. CURVATURES NOT LABELED ARE WITHIN THE MANUFACTURER'S RECOMMENDATIONS AS DESIGNED.

ALL ABANDONED WATER LINES SHALL BE DRAINED, CAPPED, AND PLUGGED WITH NON-SHRINK GROUT AS NECESSARY.

PVC WATERLINES SHALL COMPLY WITH AWWA C605, AND SSPWC AS ADOPTED BY REFERNCE IN NAC 445A.6663.

DUCTILE IRON WATERLINES SHALL COMPLY WITH AWWA C600 AND THE SSPWC, AS ADOPTED BY REFERENCE IN NAC 445A.6663.

BACTERIOLOGICAL TESTING, DISINFECTION, AND FLUSHING, FOR POTABLE WATER LINE CONSTRUCTION SHALL BE PERFORMED PER AWWA C651. THE OWNER SHALL BE RESPONSIBLE FOR PERFORMING AND FUNDING UP TO TWO BACTERIOLOGICAL TESTS PER RUN OF PIPE CONSTRUCTED. IF MORE THAN TWO TESTS ARE REQUIRED, THE COST SHALL BE PLACED UPON THE CONTRACTOR.

PER NAC 445A.67145(6), WATER MAIN MUST NOT BE PLACED INTO SERVICE AFTER ITS INITIAL CONSTRUCTION UNTIL:

THE WATER MAIN HAS BEEN DISINFECTED AND FLUSHED IN ACCORDANCE WITH AWWA STANDARD C651.

THE DISPOSAL OF ANY SPENT CHLORINE SOLUTIONS MUST BE COORDINATED WITH NDEP'S BUREAU OF WATER POLLUTION CONTROL (BWPC).

ANALYSES OF THE WATER MAIN WHICH INDICATE THAT THE WATER MEETS PRIMARY DRINKING WATER STANDARDS FOR COLIFORM BACTERIA (ABSENT FOR COLIFORM BACTERIA) HAVE BEEN OBTAINED AND REPORTED TO THE BSDW, PER AWWA STANDARD C651. TWO SETS OF CONSECUTIVE SAMPLES MUST BE TAKEN AT LEAST 24 HOURS APART FROM EVERY 1200 FEET OF MAIN, AT THE END OF THE LINE, AND FROM EACH BRANCH.

PE WATERLINES SHALL BE PRESSURE TESTED PER AWWA M55 AND ASTM F2164. PRESSURE TESTING SHALL FOLLOW STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (SSPWC).

ACCESS/TRAFFIC CONTROL NOTES:

STREETS SHALL REMAIN OPEN TO LOCAL TRAFFIC AT ALL TIMES.

CONTRACTOR SHALL BECOME FAMILIAR WITH THE SITE AND ACCESS TO THE SITE PRIOR TO BID.

CONTRACTOR SHALL DETERMINE BEST METHODS FOR ACCESS WHEN HAULING WASTE, DELIVERY OF MATERIALS, AND DAY TO DAY ACTIVITIES.

THE MAXIMUM LENGTH OF OPEN TRENCH AT ANYTIME MAY ONLY ENCROACH UPON ONE LANE OF TRAFFIC. ONE LANE OF TRAFFIC SHALL REMAIN FUNCTIONING AT ALL TIMES.

RESIDENCES SHALL HAVE ACCESS TO/FROM DRIVEWAY AT ALL TIMES. CONTRACTOR SHALL PROVIDE COORDINATION FOR ACCESS (TRENCH PLATE, MOVE EQUIPMENT, ETC.) WITH RESIDENCE.

GRADING & EARTHWORK NOTES:

THE CONTRACTOR SHALL UTILIZE TECHNIQUES WHICH MINIMIZE GRADING, VEGETATION REMOVAL, AND TEMPORARY AND PERMANENT DISTURBANCE. ALL AREAS DISTURBED AS A RESULT OF THE WORK SHALL BE RESURFACED TO EXISTING CONDITIONS PRIOR TO CONSTRUCTION OR BETTER.

ALL EARTHWORK, CLEARING AND GRUBBING, SUBGRADE PREPARATION, ETC. SHALL CONFORM TO THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

SOIL TYPES TO BE OMITTED FROM PROJECT INCLUDE:

3.1 ORGANIC MATERIAL (E.G. ORGANIC SILT, SOD, PEAT, MULCH, ETC.);

3.2 SOILS CONTAINING EXPANSIVE CLAYS;

3.3 SOILS CONTAINING EXCESSIVE MOISTURE;

3.4 POORLY GRADED COARSE MATERIAL, AND

3.5 MATERIAL WHICH WILL NOT ACHIEVE DENSITY AND/OR BEARING REQUIREMENTS.

THE CONTRACTOR SHALL GRADE ALL AREAS TO DRAIN AND SHALL BE RESPONSIBLE FOR ELIMINATING ALL LOW SPOTS OR PONDING AREAS.

NO FILL SHALL BE PLACED OR COMPACTED IN UNFAVORABLE WEATHER CONDITIONS. OVERLY WET, DRY OR FROZEN FILL SHALL NOT BE PLACED.

DRAINAGE SWALES, DITCHES, BERMS, AND OTHER EXISTING CONDITIONS SHALL BE PROTECTED IN PLACE OR RE-ESTABLISHED TO EQUAL OR BETTER CONDITIONS, INCLUDING BUT NOT LIMITED TO SLOPE PROTECTION (I.E. AGGREGATE ROCK).

TEMPORARY EROSION CONTROL NOTES:

BEST MANAGEMENT PRACTICES SHALL BE IN PLACE FOR DUST CONTROL AND EROSION CONTROL DURING CONSTRUCTION (COIR LOGS, GRAVELS BAGS, SILT FENCE).

THE CONTRACTOR SHALL INCORPORATE ADEQUATE DRAINAGE PROCEDURES DURING THE CONSTRUCTION PROCESS TO ELIMINATE EXCESSIVE EROSION OR PONDING AND TO PROTECT ADJACENT IMPROVEMENTS AND PROPERTIES FROM AN INFLUX OF RUNOFF OR SEDIMENT. SEDIMENTATION FENCING IS REQUIRED AT THE LIMITS OF GRADING.

DUST SHALL BE CONTROLLED BY THE CONTRACTOR TO THE SATISFACTION OF THE COUNTY, AND IN ACCORDANCE WITH THE AIR QUALITY PERMIT FROM THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION, WHEN REQUIRED.

IF NECESSARY, CONTRACTOR SHALL ENHANCE EROSION CONTROL MEASURES IN THE FIELD.

ALL STREETS SHALL BE MAINTAINED FREE OF DUST AND MUD CAUSED BY OPERATIONS.

STORM WATER SHALL BE CONTROLLED BY THE CONTRACTOR TO THE SATISFACTION OF THE COUNTY AND IN ACCORDANCE WITH THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION AND STORMWATER PERMIT.

SITE RESTORATION NOTES:

DURING CONSTRUCTION, ALL VEHICLE TRAFFIC SHALL BE LIMITED TO WITHIN THE DESIGNATED CONSTRUCTION LIMITS AND ON APPROVED ACCESS ROADS. CROSS-COUNTRY VEHICLE TRAVEL OUTSIDE THE APPROVED CONSTRUCTION LIMITS OR ON NON-APPROVED, EXISTING ACCESS ROADS WILL NOT BE ALLOWED.

FINAL GRADING OF CONSTRUCTION SITE LIMITS AND STAGING AREAS SHALL BE CONTOURED TO BLEND WITH THE SURROUNDING LANDSCAPE. CONTOURING SHALL EMPHASIZE RESTORATION OF EXISTING DRAINAGE AND LANDFORM PATTERNS, TO THE EXTENT PRACTICABLE.

RESTORATION OF DISTURBED AREAS SHALL BEGIN WITHIN 21 DAYS AFTER CONSTRUCTION AND SITE CLEANUP.

ACCESS ROADS USED DURING CONSTRUCTION SHALL BE REGRADED AND RESTORED TO PRE-CONSTRUCTION CONDITIONS.

ALL EXCESS MATERIAL, TEMPORARY CONSTRUCTION FENCING, AND CONSTRUCTION EQUIPMENT SHALL BE REMOVED PRIOR TO SITE RESTORATION WORK.

ALL DRIVEWAYS AND ACCESS ROADS SHALL BE RE-ESTABLISHED TO EQUAL OR BETTER CONDITIONS.

KELLER ASSOCIATES
1125 Airmotive Way, Suite 275
Reno, NV 89502
(775) 451-7266

90 Design Review Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

NOTES SHEET

DRAWN JH CHECK JW

VERIFY SCALE Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO 223125 PAGE

SHEET NO G-003

GENERAL ABBREVIATIONS

A	
A	-AMPERE
AB	-ANCHOR BOLT
ABI	-ADDITIVE BID ITEM
AC	-ASPHALTIC CONCRETE
	-ACOUSTIC
A/C	-AIR CONDITIONING
ACC	-AREA CONTROL CENTER
ACOU	-ACOUSTIC
ACP	-ASBESTOS
ACT	-ACOUSTICAL CEILING TILE
ADD	-ADDITION(AL)
ADF	-AVERAGE DESIGN FLOW (AVERAGE DAY, PEAK MONTH)
ADH	-ADHESIVE
ADJ	-ADJUSTABLE
ADPT	-ADAPTER
AF	-AIR FILTER
AFF	-ABOVE FINISHED FLOOR
AHU	-AIR HANDLING UNIT
AL	-ALUMINUM, ALUM
ALP	-AIR LOW PRESSURE
ALT	-ALTERNATE
AP	-AIR PROCESS
APPX	-APPROXIMATE(LY)
AR	-AIR RETURN
ARV	-AIR RELEASE VALVE
ARCH	-ARCHITECTURAL
AS	-AIR SUPPLY
ASME	-AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	-AMERICAN SOCIETY OF TESTING MATERIALS
ATM	-ATMOSPHERE
AUTO	-AUTOMATIC
AUX	-AUXILIARY
AV	-ANGLE VALVE
AVAR	-AIR VACUUM AND AIR RELEASE
AVE	-AVENUE
B	
B	-BOTTOM
B/C	-BOTTOM OF CURB
BC	-BEGINNING OF CURVE
BCL	-BOTTOM CAPACITY LEVEL
BCR	-BEGINNING OF CURVE CENTER
BD	-BOARD
BF	-BLIND FLANGE
BFP	-BACKFLOW PREVENTER
BFV	-BUTTERFLY VALVE
BHP	-BRAKE HORSEPOWER
BKR	-BREAKER
BLDG	-BUILDING
BLK	-BLOCK
BLVD	-BOULEVARD
BO	-BLOW OFF
BOP	-BOTTOM OF PIPE
	-BACK OF PIPE
BOT	-BOTTOM
BP	-POINT OF BEGINNING
BRG	-BEARING
BSN	-BAR SCREEN
BTD	-BIOTOWER DRAIN
BTI	-BIOTOWER INFLUENT
BTU	-BRITISH THERMAL UNIT
BV	-BALL VALVE
BVCE	-BEGIN VERTICAL CURVE ELEVATION
BVCS	-BEGIN VERTICAL CURVE STATION
C	
C	-CELSIUS
	-CONDUIT
CAB	-DIRECT BURIAL CABLE
	-CABINET
CAF	-COMBUSTION AIR FAN
CATV	-CABLE TELEVISION
CB	-CATCH BASIN
C/C	-CENTER TO CENTER
CCP	-CONCRETE CYLINDER PIPE
CCSP	-CONCRETE PINED AND COATED STEEL PIPE
CD	-CEILING DIFFUSER
CDF	-CONTROL DENSITY FILL
CDR	-CONDUCTOR
CDU	-CONDENSING UNIT
CED	-CEILING EXHAUST DIFFUSER
CER	-CEILING EXHAUST REGISTER
CF	-CUBIC FOOT
CFM	-CUBIC FEET PER MINUTE
CFR	-CODE OF FEDERAL REGULATIONS
CFS	-CUBIC FEET PER SECOND
CH	-CHANNEL
CI	-CAST IRON
CIP	-CAST IRON PIPE
CJ	-CONSTRUCTION JOINT
	-CONTROL JOINT
CK	-CHECK(ED)
CKPL	-CHECKER PLATE
CKT	-CIRCUIT
CL	-CHAIN LINK
	-CLEARANCE
	-CENTERLINE
CL2	-CHLORINE
CLG	-CEILING
CLO	-CHLORINE
CLR	-CLEAR
CLS	-CHLORINE SOLUTION
CMC	-CEMENT MORTAR COATED
CML	-CEMENT MORTAR LINED
CMP	-CORRUGATED METAL PIPE
CMU	-CONCRETE MASONRY UNIT
CND	-CONDUIT
CNTL	-CONTROL
CO	-CLEANOUT
COL	-COLUMN
COM	-COMMINUTOR
CON	-CONVEYOR
CONC	-CONCRETE
COND	-CONDITION
CONN	-CONNECTION
CONST	-CONSTRUCTION
CONT	-CONTINUOUS
COTG	-CLEANOUT TO GRADE
CPLG	-COUPLING
CPVC	-CHLORINATED POLYVINYL CHLORIDE
CR	-CIRCLE
CU	-CUBIC
CV	-CHECK VALVE
CV	-CONTROL VALVE
C/W	-COMPLETE WITH
CW	-CULINARY WATER (POTABLE)
CWR	-COOLING WATER RETURN
CWS	-COOLING WATER SUPPLY
CY	-CUBIC YARD
D	
DB	-DUCT BANK
	-DOWEL BAR
DBA	-DEFORMED BAR ANCHOR
DBL	-DOUBLE
DEMO	-DEMOLISH
DET	-DETAIL
DF	-DRINKING FOUNTAIN
DI	-DUCTILE IRON
DIA	-DIAMETER
DIAG	-DIAGRAM
DIFF	-DIFFERENTIAL
DIM	-DIMENSION
DIP	-DUCTILE IRON PIPE
DIR	-DIRECTION
DISCH	-DISCHARGE
DR	-DRAIN
DTL	-DETAIL
DWF	-DRY WEATHER FLOW
DWG	-DRAWING
E	
(E)	-EXISTING
E	-EPOXY
	-EAST
EA	-EACH
	-EXHAUST AIR
ECC	-ECCENTRIC
EF	-EACH FACE
	-EXHAUST FAN
EFF	-EFFLUENT
EG	-EDGE OF GRAVEL
EJ	-EXPANSION JOINT
EL	-ELEVATION
ELEV	-ELEVATION
ELL	-ELBOW
EMBED	-EMBEDMENT
ENG	-ENGINEERED
EOP	-END OF PIPE
EP	-EDGE OF PAVEMENT
EPDM	-ETHYLENE PROPYLENE DIENE MONOMER
EQ	-EQUAL
EQUIP	-EQUIPMENT
EOR	-ENGINEER OF RECORD
EP	-EDGE OF PAVEMENT
EQ	-EQUAL
	-EQUATION
EVCE	-END VERTICAL CURVE ELEVATION
EVCS	-END VERTICAL CURVE STATION
EW	-EACH WAY
EWEF	-EACH WAY EACH FACE
EX	-EXISTING
EXIST	-EXISTING
EXT	-EXTERIOR
F	
F	-FAHRENHEIT
FAB	-FABRICATE(D)
	-FABRICATION
FAI	-FRESH AIR INTAKE
FC	-FAIL CLOSED
FCA	-FLANGE COUPLING ADAPTER
FCO	-FLOOR CLEAN OUT
FCR	-FINE CRUSHED ROCK
FCV	-FLOW CONTROL VALVE
FD	-FLOOR DRAIN
	-FOUND
FE	-FIRE EXTINGUISHER
	-FLOW ELEMENT
FF	-FINISH FLOOR
	-FLAT FACE
FG	-FINISH GATE
FH	-FIRE HYDRANT
FIN	-FINISH
FIT	-FLOW INDICATOR TOTALIZER
FL	-FLANGE
	-FLOORING
	-FLOW LINE
FLEX	-FLEXIBLE
FLG	-FLANGE(D)
FLR	-FLOOR
FLT	-FILTER
FM	-FORCE MAIN
FMH	-FLEXIBLE METAL HOSE
FND	-FOUNDATION
FO	-FAIL OPEN
	-FIBER OPTICS
FPC	-FLEXIBLE PIPE COUPLING
FPS	-FEET PER SECOND
FRP	-FIBERGLASS REINFORCED PLASTIC
FS	-FAR SIDE
	-FLOW SWITCH
FT	-FEET
	-FOOT
FTG	-FOOTING
FUT	-FUTURE
G	
GA	-GAGE
	-GAUGE
GAL	-GALLON
GALV	-GALVANIZED
GAS	-NATURAL GAS
GB	-GRADE BREAK
GBV	-GLOBE VALVE
GCO	-GROUND CLEAN OUT
GEN	-GENERAL
GFD	-FLUX UNITS
GFI	-GROUND FAULT INTERRUPTER
GI	-GALVANIZED IRON
	-GRAVITY IRRIGATION
GL	-GLASS
	-GLASS LINED
GND	-GROUND
GPD	-GALLONS PER DAY
GPM	-GALLONS PER MINUTE
GRD	-GRADE
GRT	-GROUT
GRTG	-GRATING
GSKT	-GASKET
GSN	-GENERAL STRUCTURAL NOTES
GV	-GATE VALVE
GYP	-GYPSUM
H	
H	-HORIZONTAL
H/A	-HAND AUTO
H/B	-HOSE BIBB
HD	-HEAVY DUTY
HDPE	-HIGH DENSITY POLYETHYLENE
HDR	-HEADER
HG	-MERCURY
HH	-HANDHOLE
HM	-HOLLOW METAL
HOA	-HAND-OFF-AUTO
HOR	-HORIZONTAL
HP	-HORSEPOWER
	-HIGH PRESSURE
HR	-HOUR
HSA	-HEADED STUD ANCHOR
HSS	-HOLLOW STRUCTURAL SECTION
HT	-HEIGHT
HTR	-HEATER
H/V	-HEATING AND VENTILATING
HV	-HAND VALVE
HVAC	-HEATING AND AIR CONDITIONING
HWL	-HIGH WATER LEVEL
HWP	-HOT WATER PUMP
HWR	-HOT WATER RETURN
HWS	-HOT WATER SUPPLY
HYD	-HYDRAULIC
HYDT	-HYDRANT
HZ	-HERTZ (CYCLES PER SECOND)
I	
I	-INFLUENT
ID	-INSIDE DIAMETER
IE	-INVERT ELEVATION
IF	-INSIDE FACE
IN	-INCH
INFO	-INFORMATION
INT	-INTERIOR
	-INTERSECTION
INV	-INVERT
I/O	-INPUT/OUTPUT
IRR	-IRRIGATION
IT	-INSTRUMENT TAP
J	
JB	-JUNCTION BOX
JCT	-JUNCTION
JST	-JOIST
JT	-JOINT
	-JOINT UTILITY TRENCH
K	
K	-KIP (1,000 POUNDS)
	-CURVE K VALUE
KV	-KILOVOLT
KVA	-KILOVOLT AMPERE
KW	-KILOWATT
KWH	-KILOWATT HOUR
L	
LAM	-LAMINATED
LB	-POUND
LBS/DAY	-POUNDS PER DAY
LEV	-LEVEL
LF	-LINEAL FOOT
LG	-LONG
LIT	-LEVEL INDICATOR TRANSDUCER
LLH	-LONG LEG HORIZONTAL
LLV	-LONG LEG VERTICAL
LP	-LOW PRESSURE
LS	-LIMIT SWITCH
LSH	-LEVEL SWITCH HIGH
LSL	-LEVEL SWITCH LOW
LSLL	-LEVEL SWITCH LOW LOW
LV	-LOW VOLTAGE
LVC	-LENGTH VERTICAL CURVE
LVR	-LOUVER
LWL	-LOW WATER LEVEL
LWR	-LOWER
LLH	-LONG LEG HORIZONTAL
LLV	-LONG LEG VERTICAL
M	
M	-METER
	-MALE (PIPE THREAD)
	-MOTOR
MA	-MILLIAMPERE
MAG	-MAGNETIC
MAN	-MANUAL
MATL	-MATERIAL
MAX	-MAXIMUM
MBR	-MEMBRANE BIO-REACTOR
	-MEMBER
MCC	-MOTOR CONTROL CENTER
MCU	-MASTER CONTROL UNIT
ME	-MISCELLANEOUS MECHANICAL EQUIPMENT
MECH	-MECHANICAL
MFR	-MANUFACTURER
MG	-MILLION GALLONS
MGD	-MILLION GALLONS PER DAY
MGL	-MILLIGRAM PER LITER
MGR	-MANAGER
MH	-MANHOLE
MHHW	-MEAN HIGH HIGH WATER
MID	-MIDDLE
MIN	-MINIMUM
	-MINUTE
MISC	-MISCELLANEOUS
MJ	-MECHANICAL JOINT
ML	-MILLILITER
MLLW	-MEAN LOWER LOW WATER
MLW	-MEAN LOW WATER
MM	-MILLIMETER
MO	-MOTOR OPERATOR
MOL	-MAXIMUM OPERATING LEVEL
MPH	-MILES PER HOUR
MTR	-MOTOR
MV	-MUD VALVE
	-MILLIVOLT
MX	-MIXER
N	
(N)	-NEW
N	-NORTH
NC	-NORMALLY CLOSED
NAOH	-SODIUM HYDROXIDE
NE	-NORTHEAST
NEG	-NEGATIVE
NEMA	-NATIONAL ELECTRICAL MANUFACTURERS
NG	-NATURAL GAS
NIC	-NOT IN CONTRACT
NO	-NORMALLY OPEN
NOM	-NOMINAL
NPS	-NOMINAL PIPE SIZE
NPSH	-NET POSITIVE SUCTION HEAD
NPT	-NATIONAL PIPE THREAD
NTS	-NOT TO SCALE
NU	-NOT USED
NW	-NORTHWEST
O	
OAI	-OUTSIDE AIR INTAKE
OC	-ON CENTER
OD	-OUTSIDE DIAMETER
	-OVERALL DIAMETER
OF	-OVERFLOW
	-OUTSIDE FACE
OFF	-OFFSET
OH	-OVERHEAD
OHP	-OVERHEAD POWER
OL	-OVERLOAD
O/O	-OUT TO OUT
OP	-OVERHEAD POWER
P	
P	-PUMP
PA	-PROCESS AIR
PAR	-PARALLEL
PC	-PIPE COUPLING
	-PRECAST
	-POINT OF CURVATURE
P/C	-PLAIN CONCRETE (NO REINFORCING STEEL)
PDR	-POND DRAIN
PE	-PLAIN END
PEN	-PENETRATION
PG	-PRESSURE GAUGE
PH	-HYDROGEN ION CONCENTRATION
PI	-PLANT INFLUENT
	-POINT OF INTERSECTION
	-PRESSURE INDICATOR
	-PRESSURE IRRIGATION
PID	-PROPORTIONAL PLUS INTEGRAL PLUS DERIVATIVE CONTROL
PK	-PEAK
P/L	-PROPERTY LINE
PL	-PLATE
PLC	-PROGRAMMABLE LOGIC CONTROLLER
PP	-POWER POLE
	-UTILITY POLE
PPD	-POUNDS PER DAY
PPH	-POUNDS PER HOUR
PRV	-PRESSURE REGULATING
	-PRESSURE RELIEF
	-PRESSURE REDUCING VALVE
PS	-PRESSURE SWITCH
	-PRESSURE SEWER
PSH	-PRESSURE SENSORS
PSIA	-POUNDS PER SQUARE INCH ABSOLUTE
PSI	-POUNDS PER SQUARE INCH
PSIG	-POUNDS PER SQUARE INCH GAUGE
PT	-POINT OF TANGENCY
	-POINT
PV	-PLUG VALVE
	-PROCESS VARIABLE
PVC	-POLYVINYL CHLORIDE
PVI	-POINT OF VERTICAL INTERSECTION
PVT	-PAVEMENT

KELLER ASSOCIATES

90% Design Review Not for Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

STANDARD ABBREVIATIONS

DRAWN JH | CHECK JW

VERIFY SCALE. Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 223125 | PAGE

SHEET NO. G-004

GENERAL ABBREVIATIONS

Q
QCPL -QUICK COUPLING
QTY -QUANTITY

R
R -RADIUS
-RISER
RB -RUBBER WALL BASE
RCP -REINFORCED CONCRETE PIPE
RCR -RECORDER
RCY -RECYCLE
RD -ROOF DRAIN
-ROAD
RE -REFERENCE
RECP -RECEPTACLE
RED -REDUCE(R)
-REDUCING
REF -REFERENCE
REG -REGULATOR
REL -RELAY
REQ'D -REQUIRED
RF -RAISED FACE
RGS -RIGID GALVANIZED STEEL
RH -RIGHT HAND
RI -RAPID INFILTRATION
RM -ROOM
RO -ROUGH OPENING
RPM -REVOLUTIONS PER MINUTE
RR -RAILROAD
RT -RIGHT
RV -RELIEF VALVE
R/W -RIGHT OF WAY
ROW -RIGHT OF WAY

S
S -SOUTH
-SINK
-SECOND
-SLOPE
SA -SAMPLE
-SUPPLY AIR
SCFM -STANDARD CUBIC FEET PER MINUTE
SCH -SCHEDULE
SCR'D -SCREWED
SD -SMOKE DETECTOR
-STORM DRAIN
SDMH -STORM DRAIN MANHOLE
SDR -STORM DRAIN
SE -SOUTH EAST
SECT -SECTION
SEP -SEPARATOR
SF -SQUARE FOOT
SHT -SHEET
SIM -SIMILAR
SOR -SURFACE OVERFLOW RATE
SPEC -SPECIFICATION SECTION
SP -SPACES
SPC'G -SPACING
SPL -SPLICE
SQ -SQUARE
SRT -SOLIDS RETENTION TIME
SS -STAINLESS STEEL
-SERVICE TANK
-SUSPENDED SOLIDS
SSMH -SANITARY SEWER MANHOLE
SST -STAINLESS STEEL TUBING
ST -START
-STREET
STA -STATION
STD -STANDARD
STL -STEEL
STOR -STORAGE
STRUC -STRUCTURAL
SV -SOLENOID VALVE
SW -SOUTHWEST
-SOCKETWELD
SYM -SYMMETRICAL

T
T -THERMOSTAT
-TREAD OF STAIR
-TANGENT
-TOP
TB -TERMINAL BOX
-TOP AND BOTTOM
TC -TOP OF CURB
T/D -TELEPHONE/DATA COMMUNICATIONS
TD -TIME DELAY RELAY
-TANK DRAIN
TE -TOTALLY ENCLOSED
TEL -TELEPHONE
TEMP -TEMPERATURE
-TEMPORARY
TERM -TERMINATE
THD'D -THREADED
THRU -THROUGH
TK -TANK
TOC -TOP OF CONCRETE
TOF -TOP OF FOOTING
TOG -TOP OF GROUT
TOP -TOP OF PIPE
TOM -TOP OF MASONRY
TOW -TOP OF WALL
TPD -TONS PER DAY
TR -TIMING RELAY
TRANS -TRANSMITTANCE
-TRANSFORMER
TRM -TRANSMITTER
TRN -TRANSDUCER
TS -TEMPERATURE SWITCH
-TUBE STEEL
TV -TELEVISION
TYP -TYPICAL

U
UG -UNDERGROUND
UGP -UNDERGROUND POWER
UH -UNIT HEATER
UL -UNDERWRITERS LABORATORIES
-ULTIMATE LOAD
UN -UNION
UNO -UNLESS NOTED OTHERWISE
UP -UTILITY POLE
UPS -UNINTERRUPTIBLE POWER SUPPLY
UV -ULTRA VIOLET
UW -UTILITY WATER (NONPOTABLE)

V
V -VALVE
-VENT
-VOLTS
-VAULT
VAC -VACUUM
-VOLTS ALTERNATING CURRENT
VAR -VARIABLE
VB -VALVE BOX
VCP -VITRIFIED CLAY PIPE
VCT -VINYL COMPOSITE TILE
VDC -VOLTS DIRECT CURRENT
VERT -VERTICAL
VOL -VOLUME
VTC -VENT TO CEILING
VTR -VENT THRU ROOF

W
W -POTABLE WATER
-WEST
W/ -WITH
WC -WATER COLUMN
WCO -WALL CLEAN OUT
WF -WIDE FLANGE
W/O -WITHOUT
WS -WATER SURFACE
WSA -WELDED STUD ANCHOR
WSP -WELDED STEEL PIPE
WSTP -WATERSTOP
WT -WEIGHT
WWF -WELDED WIRE FABRIC
WWP -WATER WORKING PRESSURE

X
XFMR -POWER TRANSFORMER
XLP -CROSS LINKED POLYETHYLENE
XP -EXPLOSION PROOF

Y
YCO -YARD CLEANOUT
YD -YARD
-YARD DRAIN
YR -YEAR

Z
ZS -POSITION SWITCH

-NUMBER
-POUNDS
& -AND
@ -AT
Ø -DIAMETER
-PHASE
Δ -ANGLE OF DEFLECTION

KELLER ASSOCIATES
1125 Airmotive Way, Suite 175
Reno, NV 89502
(775) 451-7596

90% Design Review Not For Construction

NO. REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

STANDARD ABBREVIATIONS CONT.

DRAWN JH CHECK JW

VERIFY SCALE Scales based on 22"x34" prints. 1-1/2 inches

PROJECT NO. 223125 PAGE

SHEET NO. G-005

PIPE MATERIAL SCHEDULE	
ABBREVIATION	SERVICE
W	WATER (POTABLE)
DR	DRAIN
SD	STORM DRAIN
V	VENT

PIPE MATERIALS		
SYSTEM NUMBER	MATERIAL	DETAILS
12	POLYVINYL CHLORIDE (PVC)	ASTM D3034; SDR 35
13	POLYVINYL CHLORIDE (PVC)	AWWA C900
43	STAINLESS STEEL	ASTM A312; 304L; SEAMLESS; SCHEDULE 10S; WELDED
38	STEEL	AWWA C200; 3/16-INCH THICK, LINED

PIPE TESTING SCHEDULE				
ID	SPECIFICATION	TEST MEDIUM	TEST PRESSURE - PSI	LEAKAGE ALLOWANCE
C	33 01 12	WATER	150	0

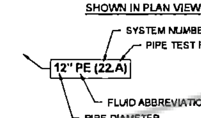
GENERAL SHEET NOTES

1. FOR FIELD TEST PROCEDURES AND ADDITIONAL TEST REQUIREMENTS, SEE PIPING SECTION OF SPECIFICATIONS.
2. FOR ACCEPTABLE PIPE USAGES. SEE PIPING SECTION OF SPECIFICATIONS.
3. FOR PIPE FITTINGS. SEE PIPING SECTION OF SPECIFICATIONS.
4. EXPOSED PIPING SHALL BE PAINTED IN ACCORDANCE WITH SPECIFICATIONS. COLORS SHALL BE SELECTED BY OWNER.
5. EXPOSED PIPING SHALL BE INSULATED WHERE SHOWN. SEE SPECIFICATIONS FOR INSULATION REQUIREMENTS.
6. DUCTILE IRON PIPE: POLYETHYLENE SLEEVE REQUIRED WHERE BURIED.
7. ANY DEVIATION FROM THE PIPING MATERIALS OR FIELD TEST PROCEDURES WILL BE NOTED IN THE SPECIFICATIONS OR ON THE DRAWINGS.

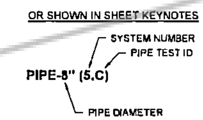
TYPICAL PIPE DESIGNATION

NOTE: INSTALL ALL PIPES WHERE THE FOLLOWING DESIGNATION ARE INDICATED.

SHOWN IN PLAN VIEW



OR SHOWN IN SHEET KEYNOTES



KELLER ASSOCIATES

90% Design Review Not For Construction

NO. | REVISIONS | DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

PIPE SCHEDULE

DRAWN: JH | CHECK: JW

VERIFY SCALE. Scales based on 22"x34" prints. 1-1/2 inches

PROJECT NO. 223125 | PAGE

SHEET NO. G-006

EXISTING TOPOGRAPHY

- TOPOGRAPHIC CONTOUR
- EDGE OF GRAVEL
- EDGE OF PAVEMENT
- CURB & GUTTER, SIDEWALK & DROP INLET
- FENCE (BARBED WIRE OR OTHER WITH GATES)
- FENCE (CHAINLINK WITH GATE)
- DITCH FLOWLINE
- TEST PIT
- SIGN
- BUILDING OR STRUCTURE

PROPERTY & CONTROL

- SURVEY CONTROL POINT
- BENCHMARK
- FOUND BRASS CAP
- FOUND ALUMINUM CAP
- FOUND 5/8" STEEL PIN
- SET 5/8" STEEL PIN W/CAP
- FOUND 1/2" STEEL PIN
- SET 1/2" STEEL PIN W/CAP
- FOUND PK NAIL
- SET PK NAIL
- CALCULATED POINT
- WITNESS CORNER
- EASEMENT - UTILITY
- EASEMENT - TEMPORARY
- EASEMENT - SETBACK
- PROJECT BOUNDARY
- PROPERTY LINES
- SECTION LINES
- PRESCRIPTIVE RIGHT OF WAY
- DEDICATED RIGHT OF WAY
- DATA OF RECORD
- QUARTER SECTION - NOT FOUND
- CENTER SECTION
- SECTION CORNER - FOUND

EXISTING UTILITY

- WATERLINE & VALVE
- SANITARY SEWER LINE & MANHOLE
- SANITARY SEWER SERVICE & CLEANOUT
- PRESSURE SEWER LINE & VALVE VAULT
- STORM DRAIN LINE & MANHOLE
- PRESSURE IRRIGATION & VALVE
- GRAVITY IRRIGATION & MANHOLE
- OVERHEAD POWER LINE & POWER POLE
- UNDERGROUND POWER LINE
- SIGNAL POLE
- LIGHT POLE
- NATURAL GAS LINE
- FIBER OPTIC LINE
- TELEPHONE LINE & RISER
- CABLE LINE & RISER

PROPOSED GRADING

- TOPOGRAPHIC CONTOUR
- RIDGELINE
- DRAINAGE ARROW & SLOPE
- SPOT ELEVATION
- SWALE FLOWLINE
- DAYLIGHT - CUT LINE
- DAYLIGHT - FILL LINE

PROPOSED DEMOLITION, ABANDONMENT, REMOVAL

- DEMOLITION & REMOVAL
- ABANDON IN PLACE
- REMOVE SURFACE FEATURE
- CLEARING AND GRUBBING

PROPOSED SITE

- BUILDING OR STRUCTURE
- CONCRETE
- ASPHALT
- GRAVEL SURFACE
- GRAVEL SECTION
- LANDSCAPE ROCK

PROPOSED SITE (CONT.)

- FENCE (BARBED WIRE OR OTHER WITH GATES)
- FENCE (CHAINLINK WITH GATE)
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- SIGN
- 6" VERTICAL CURB, GUTTER, SIDEWALK & INLET
- 6" VERTICAL CUT CURB & GUTTER
- 6" REVERSE CURB & GUTTER
- 6" REVERSE CUT CURB & GUTTER
- IMBEDDED CURB

PROPOSED UTILITY

FITTING TYPES

- BEND
- REDUCING TEE
- TEE
- REDUCER
- FLANGE TO MECHANICAL JOINT COUPLING
- CROSS
- CAP W/BLIND FLANGE
- CHECK VALVE
- GATE VALVE
- BUTTERFLY VALVE
- BLOW-OFF VALVE
- RESTRAINED FITTING
- WATER SERVICE LINE & METER
- FIRE HYDRANT
- FIRE LINE
- WATERLINE
- MONITORING WELL
- LOCATION WIRE BOX
- NON-FREEZE YARD HYDRANT
- PRESSURE IRRIGATION, TEE & GATE VALVE
- PRESSURE IRRIGATION SERVICE
- GRAVITY IRRIGATION & STRUCTURE

PROPOSED UTILITY (CONT.)

- SANITARY SEWER & MANHOLE
- SANITARY SEWER SERVICE & CAP
- SANITARY SEWER SERVICE & CLEANOUT
- PRESSURE SEWER & VALVE VAULT
- STORM DRAIN LINE, INLET & CATCH BASIN
- STORM DRAIN LINE & MANHOLE W/ VENTED LID
- JOINT TRENCH IN PROFILE
- CABLE & TELEPHONE RISERS
- JOINT TRENCH & DEVICE
- JUNCTION BOX & DUCT BANK
- NATURAL GAS LINE & METER
- NATURAL GAS LINE & RISER
- NATURAL GAS LINE & VALVE
- UNDERGROUND POWER
- OVERHEAD POWER & POLE
- LIGHT POLE
- TELEPHONE LINE & RISER
- FIBER OPTIC LINE & VAULT
- TELEPHONE DATA LINE
- CABLE & TV RISER

KELLER ASSOCIATES

90 % Design Review Not For Construction

NO. | DATE | REVISIONS

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

SYMBOLS & LINE LEGEND

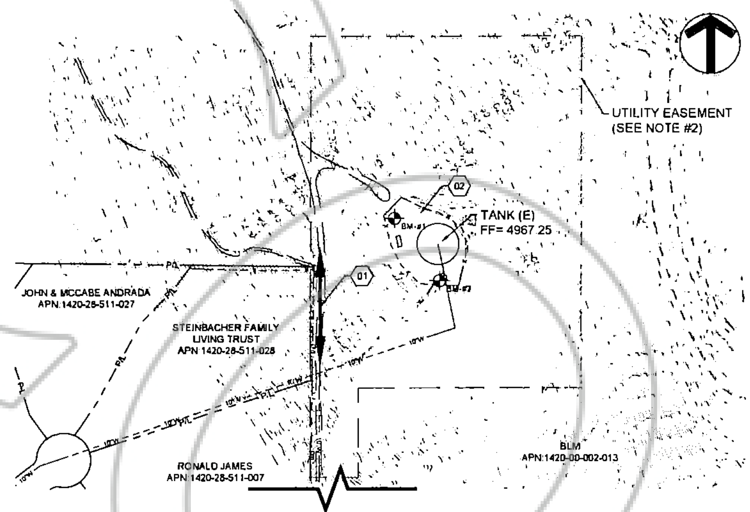
DRAWN JH | CHECK JW

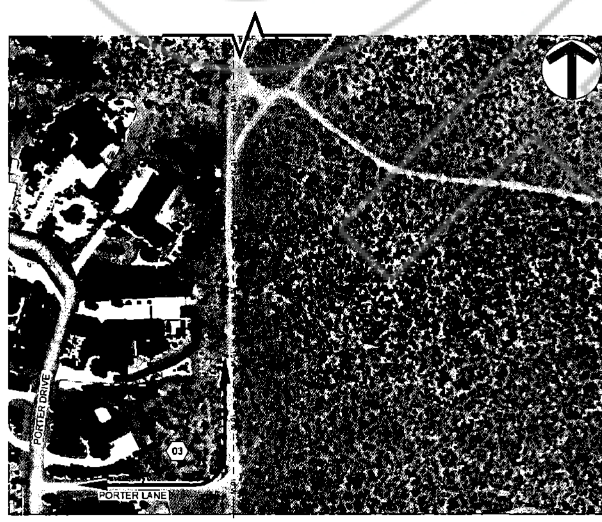
VERIFY SCALE Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 223125 | PAGE

SHEET NO. C-001





BENCHMARKS

BM #1 - COTTON SPINDLE
N = 14696027.81
E = 2298758.10
EL = 4966.63

BM #2 - COTTON SPINDLE "COTTON"
N = 14695822.81
E = 2298833.19
EL = 4966.60

SURVEY NOTES

1. SEE TITLE SHEET FOR BASIS OF BEARING AND BASIS OF ELEVATIONS.
2. BUREAU OF LAND MANAGEMENT RIGHT-OF-WAY GRANT NV 106177200.

SHEET KEYNOTES

01 EXISTING UNIMPROVED ROAD SHALL BE CONTRACTOR'S SOLE ACCESS TO THE PROJECT SITE.

02 EXISTING TANK SITE SHALL BE AVAILABLE FOR CONTRACTORS STAGING AREA. NO OTHER STAGING AREA WILL BE PROVIDED BY THE COUNTY.

03 BEGIN CONTRACTOR'S ACCESS FROM UNIMPROVED DRIVEWAY ON PORTER LANE NEAR 1394-1398 PORTER DRIVE.

KELLER ASSOCIATES
1325 Airmotive Way, Suite 175
Reno, NV 89502
(775) 451-7288

60% Design Review
Not For Construction

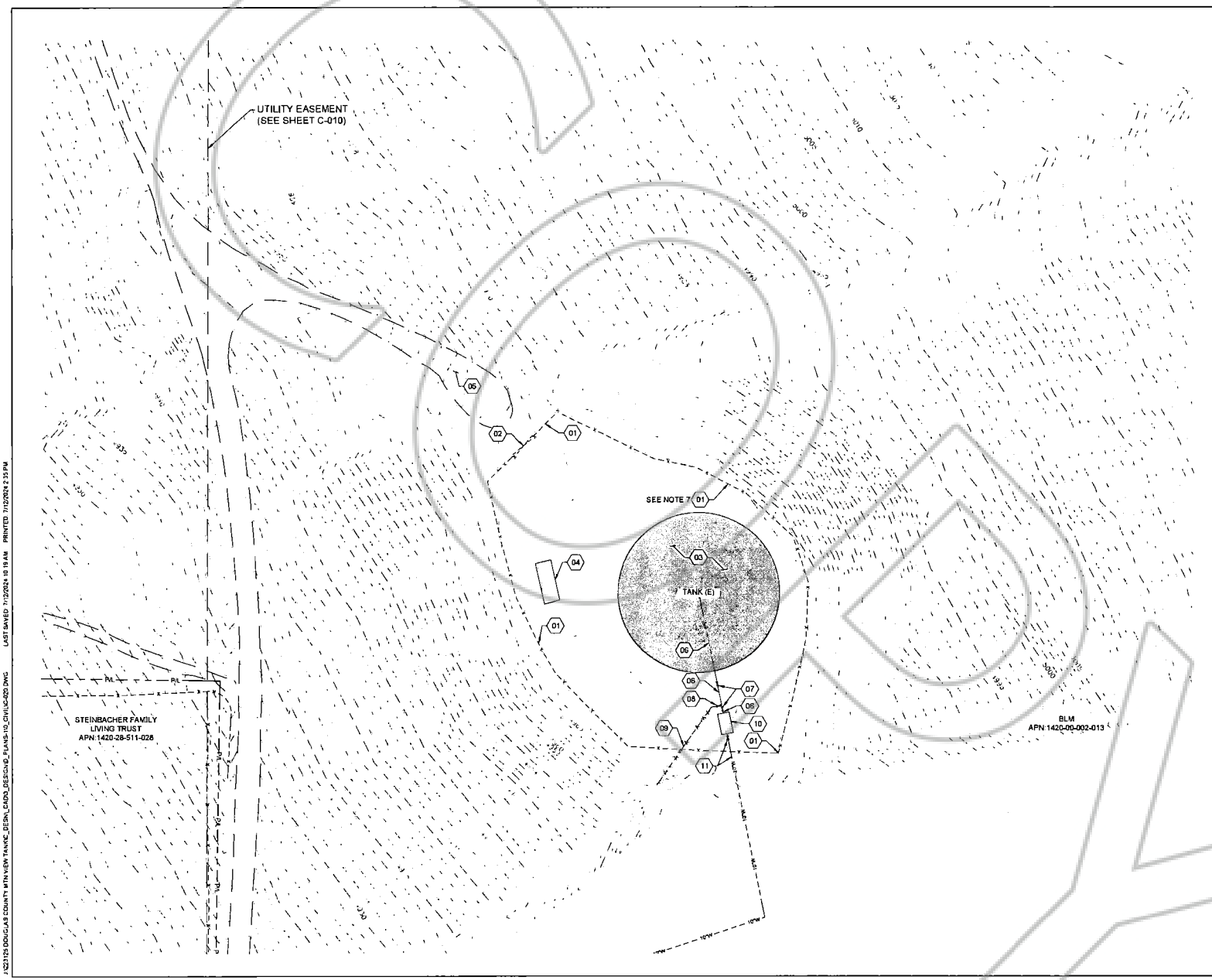
NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

EXISTING SITE AND ACCESS

DRAWN: JH CHECK: JW
VERIFY SCALE: Scales based on 22"x34" prints.
1-1/2 Inches
PROJECT NO: 223125
PAGE
SHEET NO: C-010



LEGEND

PIPE - ABANDON IN PLACE

REMOVE PIPES SHOWN IN RED

EXISTING STRUCTURE TO BE DEMOLISHED

GENERAL SHEET NOTES

1. PRIOR TO CONSTRUCTION, CONTRACTOR TO POTHOLE IN A NON-DESTRUCTIVE MANNER EXISTING UTILITIES TO VERIFY LOCATION & DEPTH.
2. REFER TO ELECTRICAL PLANS FOR ELECTRICAL DEMOLITION.
3. DISPOSE OF DEMOLISHED STRUCTURES, EQUIPMENT, AND OTHER MATERIALS OFFSITE AT A LOCATION DETERMINED BY THE OWNER, IN ACCORDANCE WITH STATE AND FEDERAL LAWS AND OWNER'S FRANCHISE AGREEMENTS UNLESS NOTED OTHERWISE.
4. CONTRACTOR IS RESPONSIBLE THAT WATER SYSTEM OPERATIONS ARE NOT DISRUPTED AND SHALL COORDINATE ALL DEMOLITION ACTIVITIES WITH ENGINEER AND OWNER, RE: SPECIFICATIONS. TANK 1 SHALL BE FULLY OPERATIONAL AND ON-LINE PRIOR TO ANY TANK OR PIPING DEMOLITION ACTIVITIES.
5. REFER TO SPECIFICATION [01 35 13] SPECIAL PROJECT PROCEDURES PRIOR TO PHASED DEMOLITION.
6. USE APPROPRIATE MEANS, METHODS, AND SHORING FOR DEMOLITION. NO ADDITIONAL COMPENSATION WILL BE MADE FOR WORK PERFORMED IN ADDITION TO WHAT IS SHOWN.
7. CONTRACTOR TO PROVIDE PERIMETER SECURITY FENCING FOR THE DURATION OF THE PROJECT. CONTRACTOR TO COORDINATE WITH OWNER TO PROVIDE INTERIM FENCING AND GATES FOR THE DURATION OF THE PROJECT. OWNER ACCESS SHALL NOT BE IMPACTED DURING CONSTRUCTION.
8. PROVIDE ADEQUATE SOIL AND EROSION CONTROL PREVENTION MEASURES ON ALL DISTURBED PROJECT AREAS.

SHEET KEYNOTES

01	REMOVE EXISTING FENCING.
02	REMOVE EXISTING GATE.
03	REMOVE EXISTING TANK, RE: SPECIFICATIONS & GENERAL NOTE 3
04	EXISTING ELECTRICAL ENCLOSURE, RE: E-120
05	EXISTING DIRT ROAD TO BE MODIFIED & REPLACED WITH NEW GRAVEL ROAD, RE: C-110
06	REMOVE EXISTING WATER PIPE.
07	REMOVE EXISTING VALVE
08	INSTALL TEMPORARY FILL STATION, RE: XX/C-SXX
09	ABANDON PIPE TO REMAIN UNLESS IMPACTED BY NEW CONSTRUCTION (CUT & REMOVE PIPE AS NEEDED). CAP ABANDONED ENDS (NO THRUST BLOCK)
10	MODIFY EXISTING VALVE VAULT, RE: C-501
11	RETAIN & PROTECT EXISTING VALVE & PIPING

KELLER ASSOCIATES

90% Design Review Not For Construction

NO | REVISIONS | DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

SITE DEMOLITION PLAN

DRAWN: JH | CHECK: JW

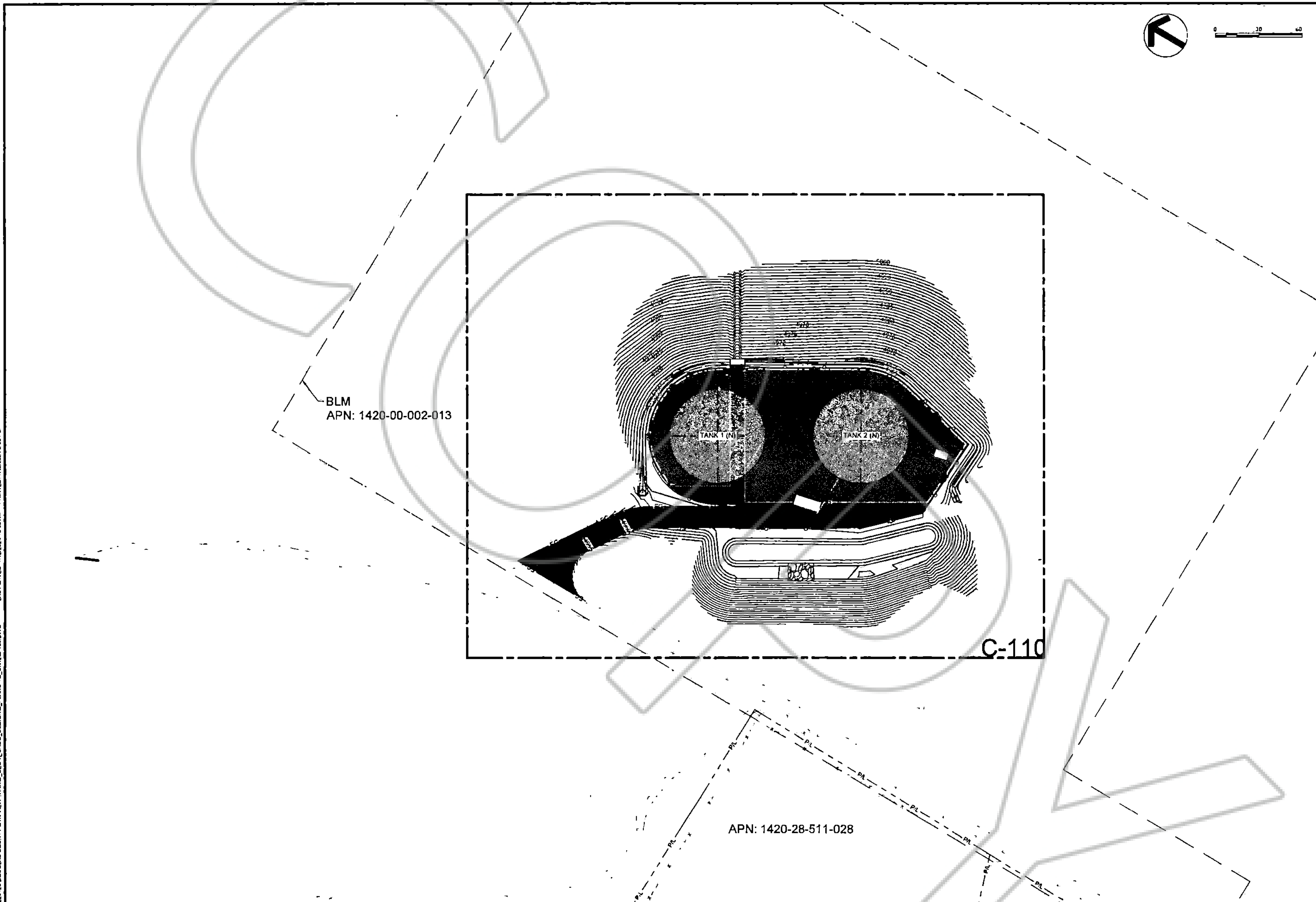
VERIFY SCALE. Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 223125 | PAGE

SHEET NO. C-020

J:\223125 DOUGLAS COUNTY MTN VIEW TANKC_DESN_CADD_DESIGN\D_PLANS-110_CIVILC-020.DWG LAST SAVED: 7/12/2024 10:19 AM PRINTED: 7/12/2024 2:35 PM



KELLER ASSOCIATES
1325 Airmotive Way, Suite 375
Reno, NV 89502
(775) 451-7288

90% Design Review
Not For Construction

NO.	REVISIONS	DATE

This document or any part thereof in detail or design concept is the personal property of Keller Associates, Inc. and shall not be copied in any form without the written authorization of Keller Associates, Inc.

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

SITE PLAN KEY MAP

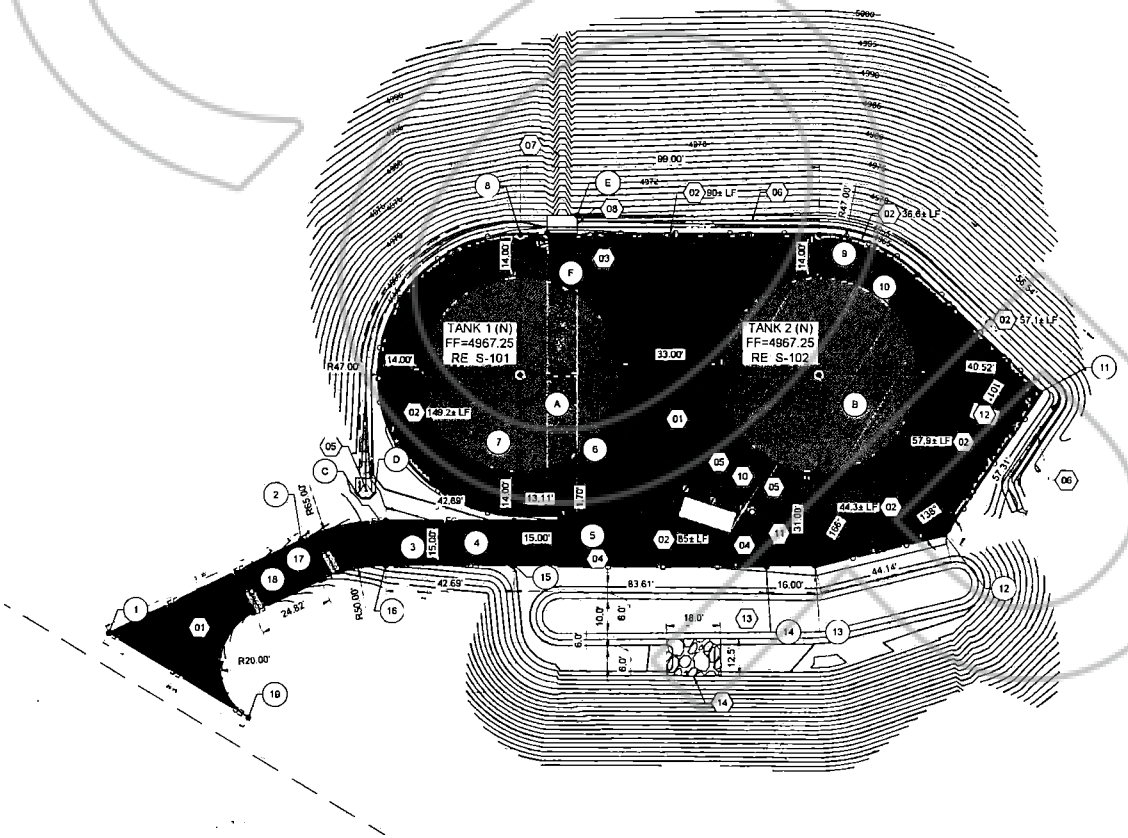
DRAWN: JH CHECK: JW

VERIFY SCALE: Scales based on 22"x34" prints.
1-1/2 Inches

PROJECT NO: 223125
PAGE

SHEET NO: C-100

J:\223125 DOUGLAS COUNTY MTN VIEW TANK\C_DESN_CAD\3_DESIGN\0_PLANS-1\0_CIVIL\C-100.DWG   LAST SAVED 7/12/2024 10:58 AM   PRINTED 7/12/2024 2:35 PM



GENERAL SHEET NOTES

1. AREAS DISTURBED BY CONSTRUCTION WHERE SURFACE REPAIR IS NOT INDICATED SHALL BE RESTORED TO CONDITIONS FOUND PRIOR TO CONSTRUCTION. THIS COST SHALL BE INCIDENTAL TO THE CONTRACT.
2. CONTRACTOR TO FURNISH ALL MATERIALS UNLESS NOTED OTHERWISE.
3. VERIFY DISTANCE BETWEEN COORDINATES WITH STRUCTURAL DRAWINGS PRIOR TO CONSTRUCTION.

SHEET KEYNOTES

01 CONSTRUCT GRAVEL SURFACING, RE: C4/C-510
02 INSTALL 3 STRAND CHAIN LINK FENCE, RE: A1/C-510
03 INSTALL 12.0' CHAIN LINK SINGLE SWING GATE, RE: A3/C-510
04 INSTALL 16.0' CHAIN LINK DOUBLE SWING GATE, RE: A3/C-510
05 CONCRETE HEADWALL, SEE C400 FOR PIPE CONTINUATION
06 CONSTRUCT PERIMETER DRAINAGE DITCH, RE: C2/C-510
07 CONSTRUCT DRAINAGE DITCH, RE: C1/C-510
08 INSTALL CONCRETE ENERGY DISSIPATION STRUCTURE, RE: A1/C-511
09 CONSTRUCT CONCRETE HEADWALL, RE: A2/C-511
10 ELECTRICAL ENCLOSURE, RE: E-120
11 INSTALL TEMPORARY ANTENNA TOWER, RE: E-120
12 EXISTING TO REMAIN WATER VAULT, RE: C-501
13 OVERFLOW BASIN
14 EMERGENCY SPILLWAY, RE: A4/C-510

STRUCTURE COORDINATES

TANK 1

A CENTER OF TANK
N: 14696066.34 E: 2298774.27

TANK 2

B CENTER OF TANK
N: 14695981.48 E: 2298825.26

HEADWALL

C NE CORNER
N: 14696093.03 E: 2298712.36

D NW CORNER
N: 14696087.43 E: 2298715.73

ENERGY DISSIPATION STRUCTURE

E NW CORNER
N: 14696083.35 E: 2298819.47

F SE CORNER
N: 14696077.87 E: 2298829.75

NOTE VERIFY DISTANCE BETWEEN COORDINATES WITH MECHANICAL DRAWINGS PRIOR TO CONSTRUCTION.

POINT TABLE GRAVEL

POINT #	NORTHING	EASTING	DESCRIPTION
1	14698139.26	2298628.32	EDGE GRAVEL
2	14696100.29	2298689.09	EDGE GRAVEL
3	14695079.32	2298709.31	EDGE GRAVEL
4	14695042.73	2298731.29	EDGE GRAVEL
5	14695029.87	2298739.02	EDGE GRAVEL
6	14695030.80	2298740.73	EDGE GRAVEL
7	14695042.13	2298733.98	EDGE GRAVEL
8	14695090.55	2298814.56	EDGE GRAVEL
9	14695005.69	2298865.55	EDGE GRAVEL
10	14695970.78	2298871.03	EDGE GRAVEL
11	14695915.73	2298858.18	EDGE GRAVEL
12	14695918.33	2298830.82	EDGE GRAVEL
13	14695949.59	2298759.75	EDGE GRAVEL
14	14695963.08	2298761.07	EDGE GRAVEL
15	14696035.00	2298718.44	EDGE GRAVEL
16	14696071.59	2298698.45	EDGE GRAVEL
17	14696087.72	2298680.90	EDGE GRAVEL
18	14696101.28	2298660.11	EDGE GRAVEL
19	14696084.58	2298629.18	EDGE GRAVEL

KELLER ASSOCIATES

90% Design Review Not For Construction

NO	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

WATER TANKS SITE PLAN

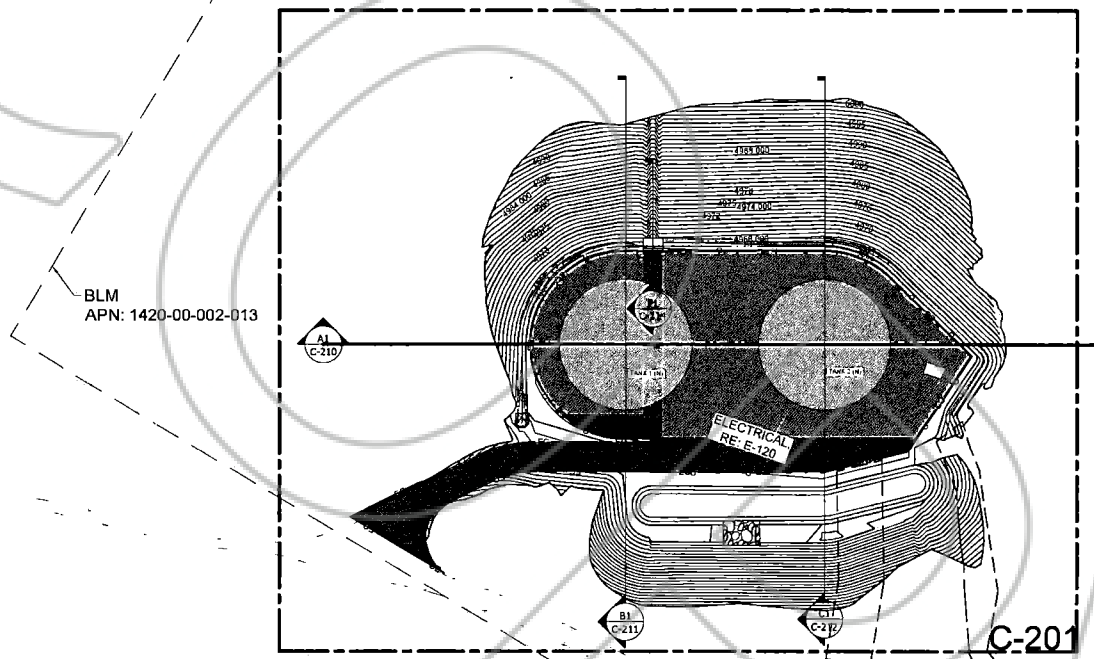
DRAWN JH CHECK JW

VERIFY SCALE Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 223125 PAGE

SHEET NO. C-110



KELLER ASSOCIATES
1325 Airmotive Way, Suite 175
Reno, NV 89502
(775) 451-3248

90 % Design Review Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

GRADING KEY MAP

DRAWN JH CHECK JW

VERIFY SCALE. Scales based on 22"x34" prints.

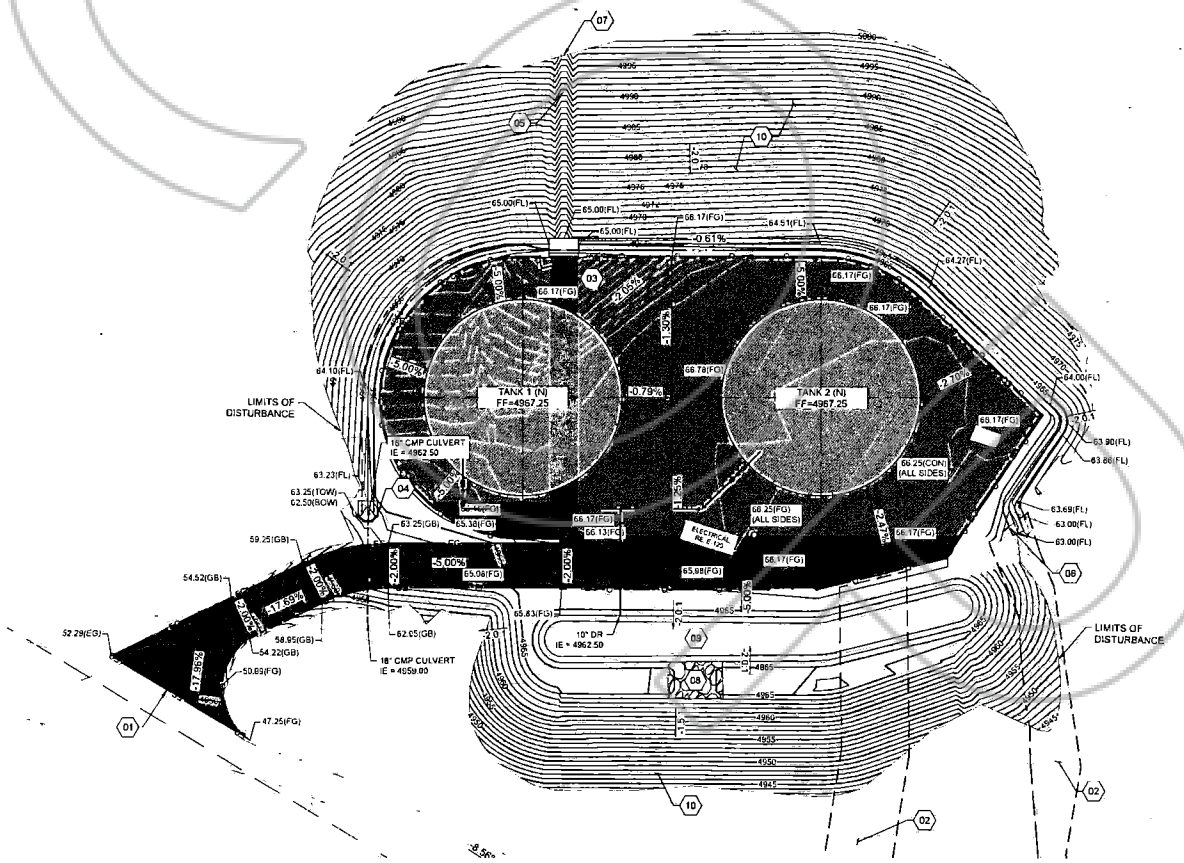
1-1/2 Inches

PROJECT NO 223125

PAGE

SHEET NO C-200

X:\223125 DOUGLAS COUNTY MTN VIEW TANK\C_DESIGN\C_CADD\C_DESIGNED_PLANS-110_CIVIL\C-200.DWG LAST SAVED 7/12/2024 12:11 PM PRINTED 7/12/2024 2:35 PM



ABBREVIATIONS

AC - TOP OF ASPHALT
CON - TOP OF CONCRETE
FF - FINISHED FLOOR
FL - FLOWLINE
FG - FINISHED GRADE
G.B. - GRADE BREAK
GVL - EDGE OF GRAVEL
FOW - FACE OF SIDEWALK
RTW - RETAINING WALL
TBC - TOP BACK OF CURB
TSW - TOP OF SIDEWALK
TOW - TOP OF WALL

SHEET KEYNOTES

01 MATCH EXISTING GRADES ENTIRE EDGE

02 CLEAR, GRUB & FILL IN ERODED DRAINAGE AREA TO CREATE A SMOOTH CROSS SECTION. MINIMIZE DAMAGE TO VEGETATION OUTSIDE ERODED CHANNEL

03 INSTALL CONCRETE ENERGY DISSIPATION STRUCTURE, RE: A1/C-511 FOR DETAILED GRADING ELEVATIONS AND DIMENSIONS

04 CONCRETE HEADWALL. SEE C400 FOR PIPE CONTINUATION

05 TRAPEZOIDAL DITCH (2' WIDE BOTTOM, 1:2.5 SIDE SLOPES, 1.8' DEPTH)

06 TIE PROPOSED V-DITCH (2:1 SIDE SLOPES, 1' DEEP) INTO EXISTING DITCH AFTER CLEARING AND GRUBBING HAS OCCURRED

07 CONNECT INTO EXISTING DRAINAGE DITCH (ELEVATION = 4995.0')

08 EMERGENCY SPILLWAY, RE: A4/C-510

09 OVERFLOW BASIN
- TOP OF DIKE = 4985.00
- HIGH WATER = 4984.0
- BOTTOM POND = 4962.50
- VOLUME = 65,000 GAL

10 PROVIDE SLOPE STABILIZATION AS REQUIRED

KELLER ASSOCIATES
1225 Airmotive Way Suite 275
Reno, NV 89502
(775) 457-3268

90% Design Review Not For Construction

NO	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

WATER TANKS GRADING PLAN

DRAWN JK CHECK JW

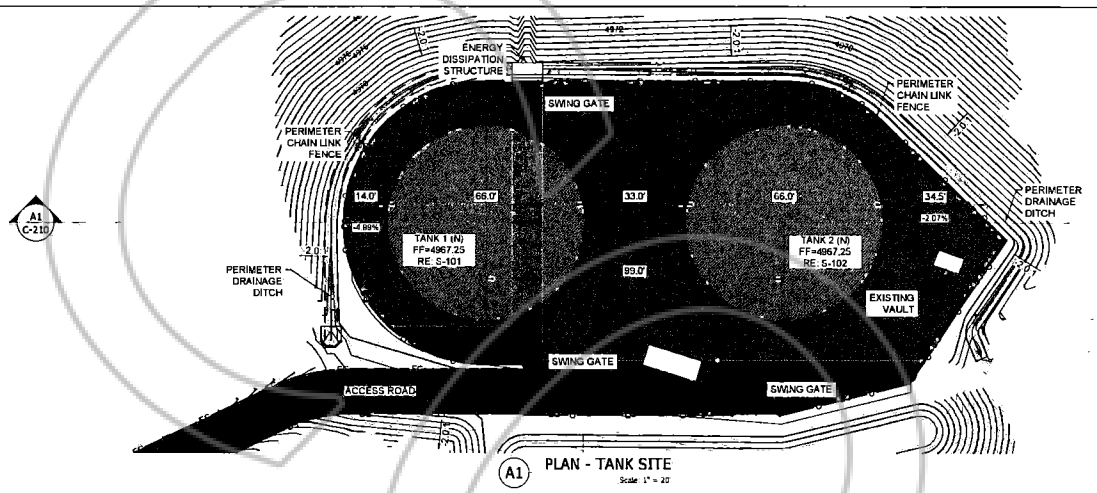
VERIFY SCALE. Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO 223125 PAGE

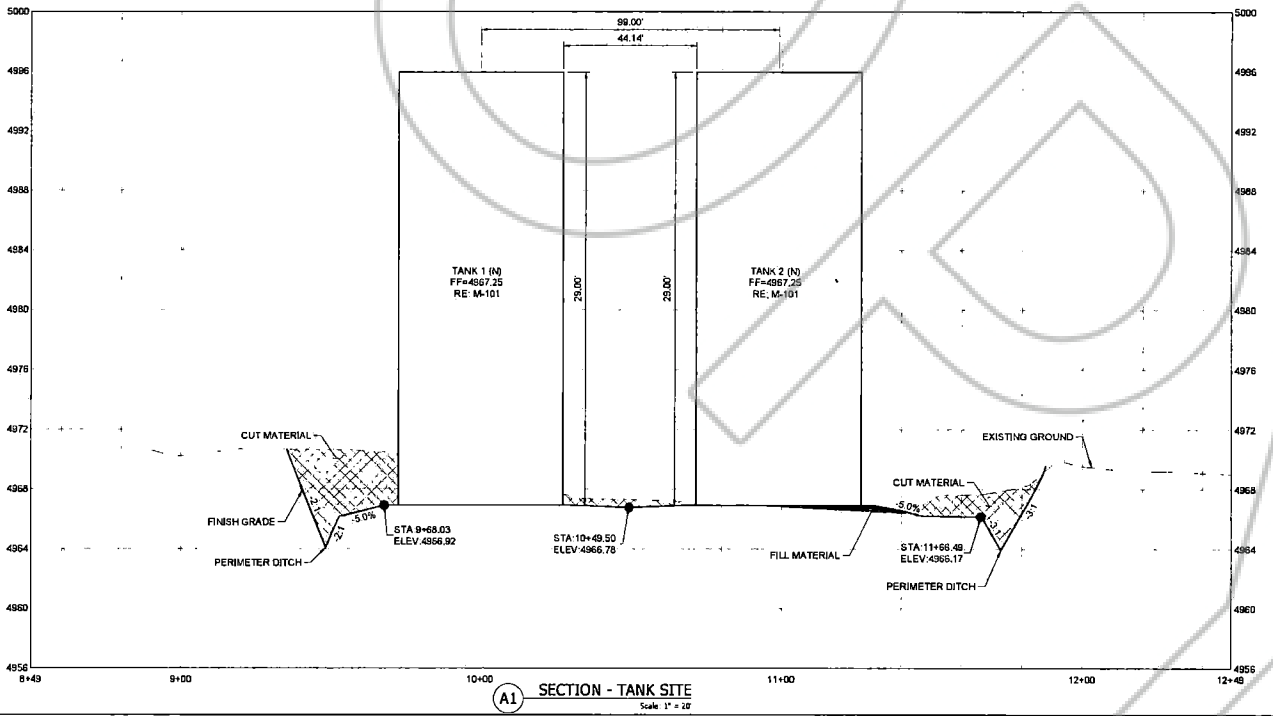
SHEET NO C-201

J:\223125 DOUGLAS COUNTY MTN VIEW TANKS_DESIGN\C_CAD\C_DESIGN\C_PLANS-10_CIVIL\C-201.DWG LAST SAVED: 7/12/2024 2:25 PM PRINTED: 7/12/2024 2:25 PM



A1 PLAN - TANK SITE

Scale: 1" = 20'



A1 SECTION - TANK SITE

Scale: 1" = 20'

ABBREVIATIONS

AC	- TOP OF ASPHALT
CON	- TOP OF CONCRETE
FF	- FINISHED FLOOR
FL	- FLOWLINE
FG	- FINISHED GRADE
G.B.	- GRADE BREAK
GVL	- EDGE OF GRAVEL
FCW	- FACE OF SIDEWALK
RTW	- RETAINING WALL
TBC	- TOP BACK OF CURB
TSW	- TOP OF SIDEWALK
TOW	- TOP OF WALL

KELLER ASSOCIATES

90% Design Review Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

GENERAL PROJECT CROSS SECTION

DRAWN JK CHECK JW

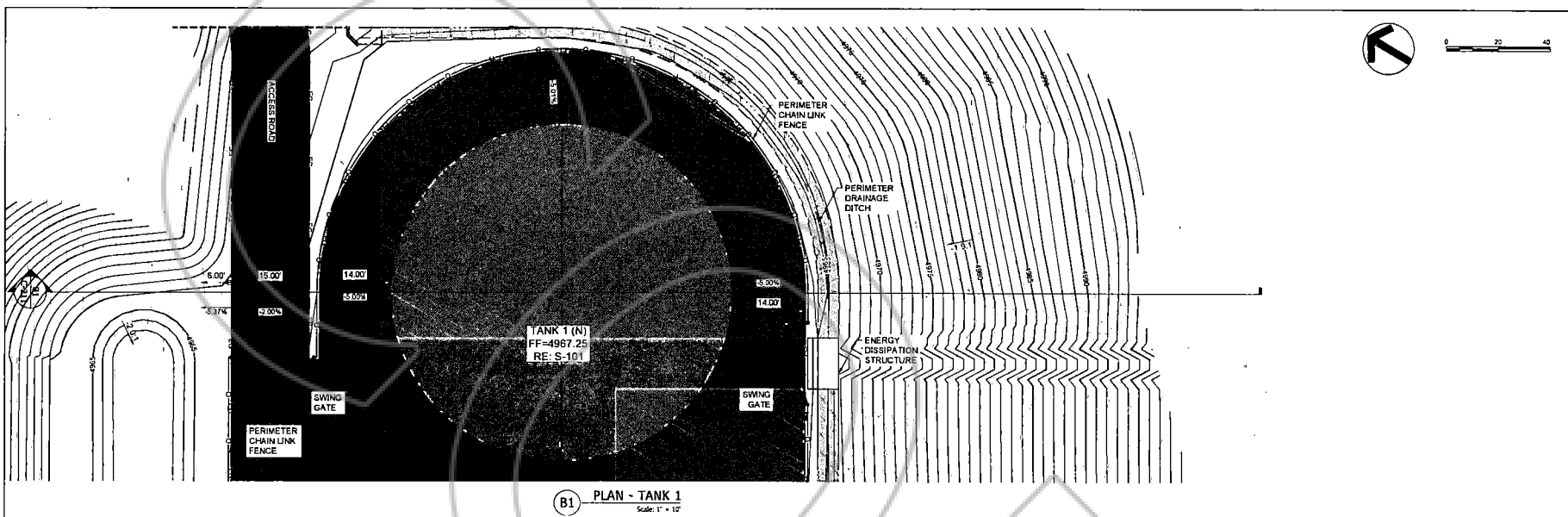
VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

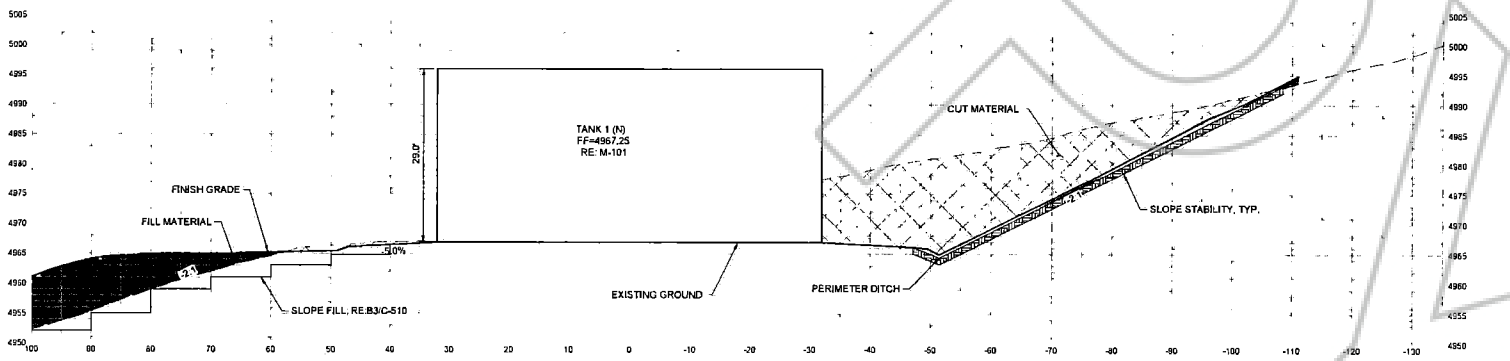
PROJECT NO 223125 PAGE

SHEET NO C-210

J:\223125 DOUGLAS COUNTY MTN VIEW TANKS_DESN_CADD_DESIGN\D_PLANS-1\D_CIVIL\C-210.DWG LAST SAVED: 7/12/2024 2:29 PM PRINTED: 7/12/2024 2:35 PM



B1 PLAN - TANK 1
Scale: 1" = 10'



B1 SECTION - TANK 1
Scale: 1" = 10'

KELLER ASSOCIATES

90% Design Review Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

TANK 1 CROSS SECTION

DRAWN JK CHECK JW

VERIFY SCALE. Scales based on 22"x34" prints.

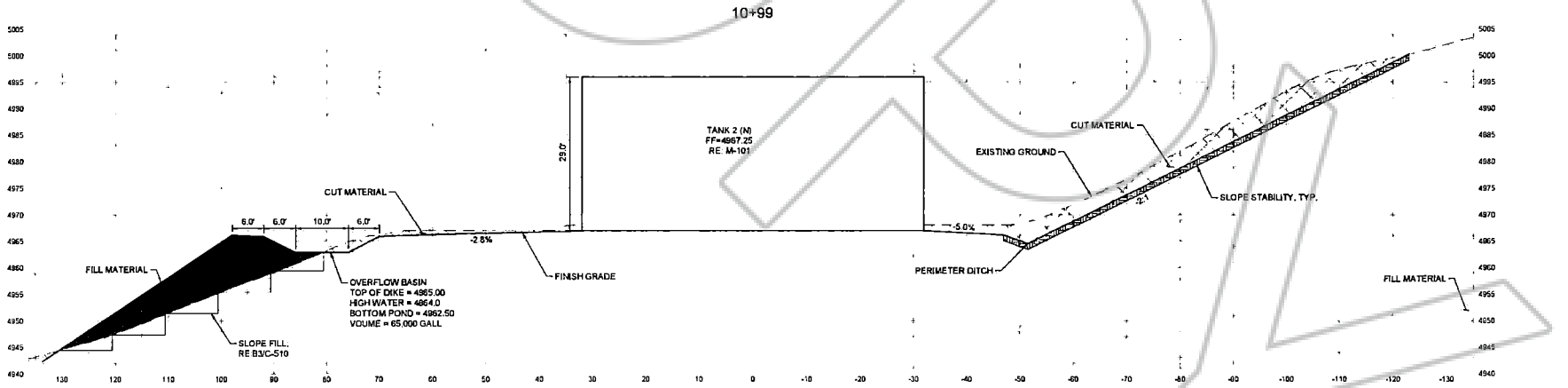
1-1/2 Inches

PROJECT NO. 223125

PAGE

SHEET NO. C-211

C1 PLAN - TANK 2
Scale 1" = 10'



C1 SECTION - TANK 2
Scale 1" = 10'

KELLER

90% Design Review Not For Construction

NO	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

TANK 2 CROSS SECTION

DRAWN JK CHECK JW

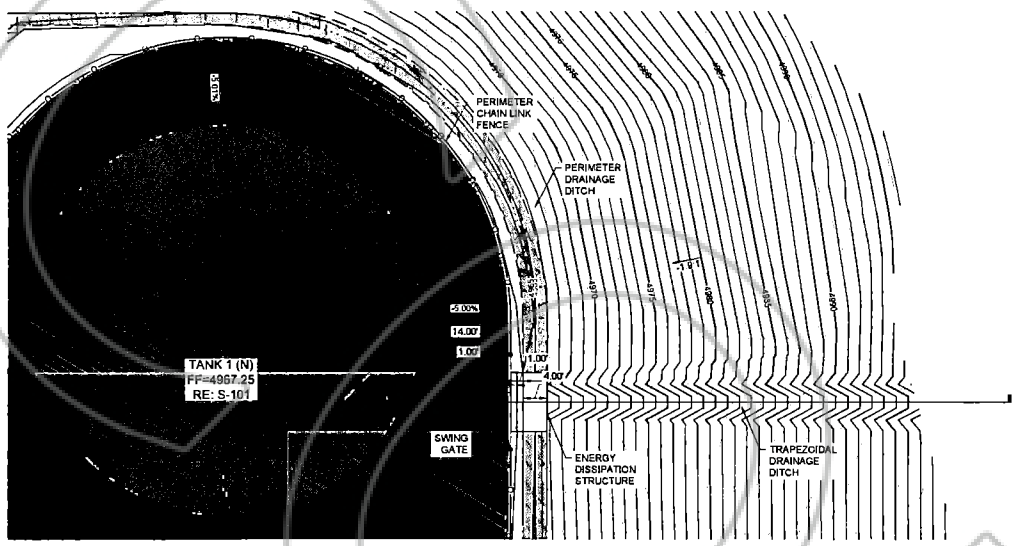
VERIFY SCALE. Scales based on 22"x34" prints.

1-1/2 Inches

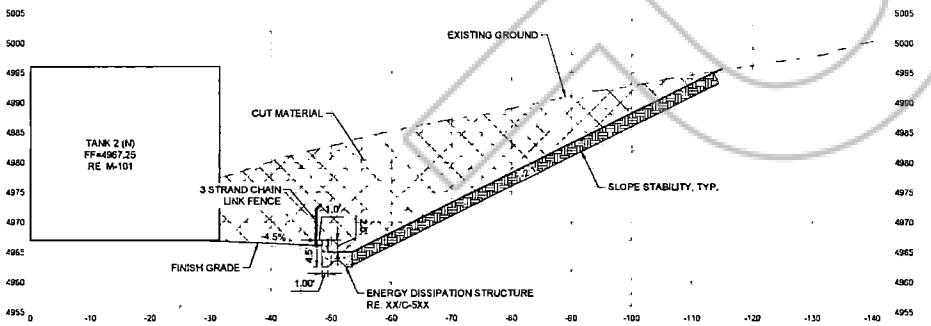
PROJECT NO. 223125

PAGE

SHEET NO. C-212



F1 PLAN - ENERGY DISSIPATOR
Scale: 1" = 10'



F1 SECTION - ENERGY DISSIPATOR
Scale: 1" = 10'

ABBREVIATIONS

AC - TOP OF ASPHALT
CON - TOP OF CONCRETE
FF - FINISHED FLOOR
FL - FLOWLINE
FG - FINISHED GRADE
G.B. - GRADE BREAK
GVL - EDGE OF GRAVEL
FOW - FACE OF SIDEWALK
RTW - RETAINING WALL
TBC - TOP BACK OF CURB
TSW - TOP OF SIDEWALK
TOW - TOP OF WALL

SHEET KEYNOTES

KELLER

90% Design Review Not For Construction

NO REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

ENERGY DISSIPATION SECTION

DRAWN: JK CHECK: JW

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO 223125 PAGE

SHEET NO C-214

J:\223125 DOUGLAS COUNTY MTN VIEW TANKS\C_DESIGN\C_PLANS-10_CIVIL\ENERGY DISSIPATION SECTION.DWG LAST SAVED 1/12/2024 12:18 PM PRINTED 7/12/2024 2:36 PM

MOUNTAIN VIEW WATER TANK
REPLACEMENT

YARD PIPING KEY MAP

DOUGLAS COUNTY, NEVADA

DRAWN JD | CHECK AW
VERIFY SCALE: Scales based on 22"x34" prints.
1 inch = 1/2 inches
PROJECT NO. 223125
PAGE
SHEET NO. C-400

NO.	REVISIONS	DATE

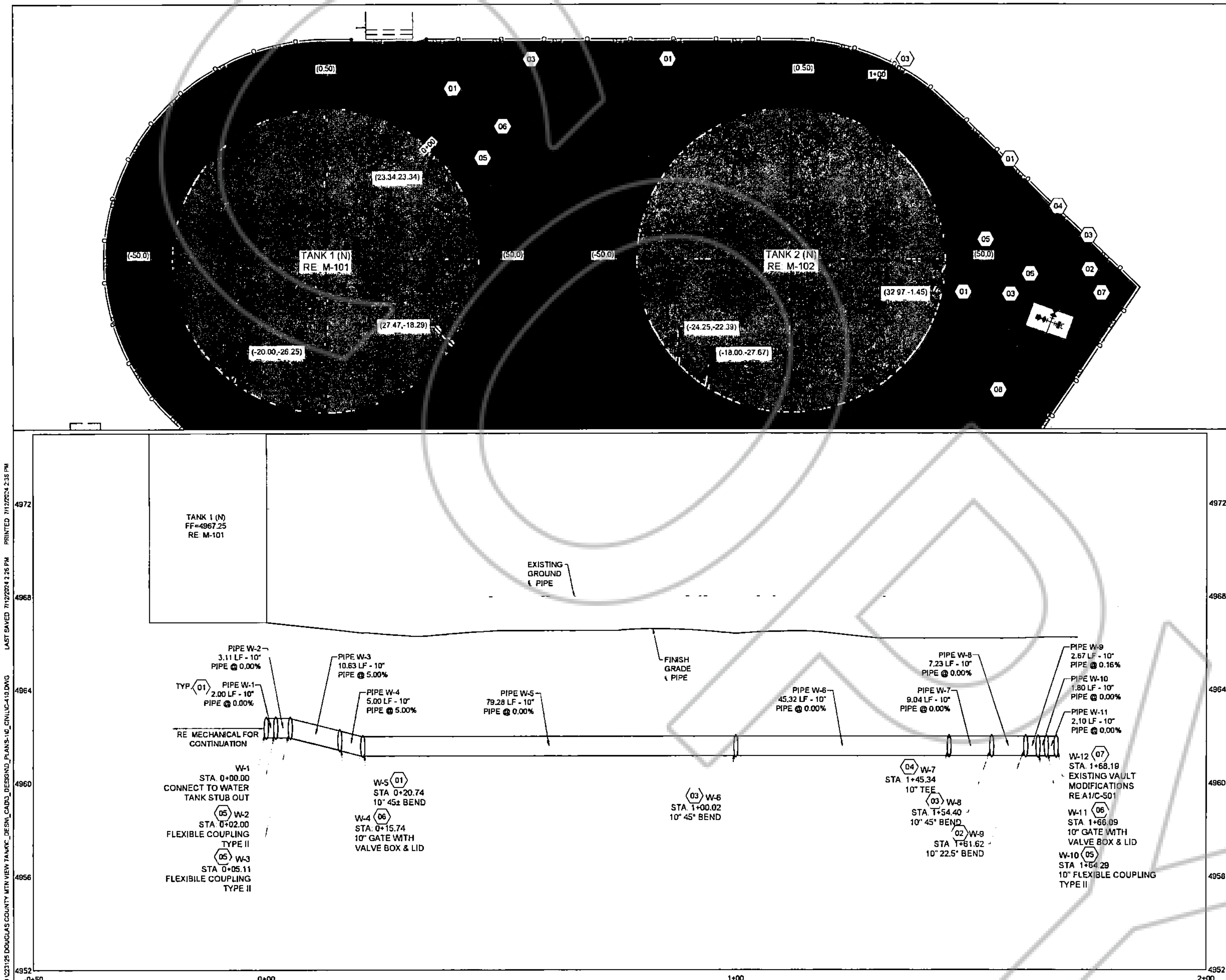
This document or any part thereof or detail or design concept is the personal property of Keller Associates Inc. and shall not be copied in any form without the written authorization of Keller Associates, Inc.

90% Design Review Not For Construction

KELLER ASSOCIATES

1325 Airmotive Way, Suite 275
Reno, NV 89502
(775) 857-7288

J:\22312S DOUGLAS COUNTY MTN VIEW TANK\C_DESN_CADD_DESIGN\D_PLANS-TO-CIVIL\C-400.DWG LAST SAVED: 7/1/2024 10:56 AM PRINTED: 7/1/2024 2:36 PM



GRAPHIC SCALE
HORIZ 0 10 20
VERT 0 2 4

GENERAL SHEET NOTES

1. PRIOR TO CONSTRUCTION CONTRACTOR TO POTHOLE IN A NON-DESTRUCTIVE MANNER EXISTING UTILITIES TO VERIFY LOCATION & DEPTH. WHERE EXISTING UTILITIES WILL BE ENCOUNTERED IT IS RECOMMENDED THAT THE CONTRACTOR HAND DIG OR VACUUM TRUCK EXCAVATE FOR MATERIAL EXCAVATION IN THESE AREAS.
2. CONTRACTOR TO POTHOLE AND LOCATE ALL PIPE CONNECTIONS TO VERIFY PIPE LENGTHS PRIOR TO ORDERING MATERIALS.
3. AREAS DISTURBED BY CONSTRUCTION WHERE SURFACE REPAIR IS NOT INDICATED SHALL BE RESTORED TO EQUAL OR BETTER CONDITION PRIOR TO CONSTRUCTION.
4. ABANDONED UTILITY PIPING TO REMAIN UNLESS IMPACTED BY NEW CONSTRUCTION. CONTRACTOR TO PLUG ENDS OF EXPOSED PIPING.
5. PROVIDE MECHANICALLY RESTRAINED JOINTS AT EACH VERTICAL AND HORIZONTAL CHANGE IN DIRECTION, RE SPECIFICATIONS.
6. HORIZONTAL & VERTICAL LOCATION OF EXISTING UTILITIES ARE APPROXIMATE, SEE GENERAL NOTE #1.
7. CONTRACTOR TO FURNISH ALL MATERIALS UNLESS NOTED OTHERWISE.

SHEET KEYNOTES

01 INSTALL PIPE - 10" W
02 INSTALL FITTING - 10" 22.5° BEND, RE DOUGLAS COUNTY STD B12
03 INSTALL FITTING - 10" 45° BEND, RE DOUGLAS COUNTY STD B12
04 INSTALL FITTING - 10" TEE, RE DOUGLAS COUNTY STD B12
05 INSTALL FITTING - 10" FLEXIBLE COUPLING TYPE II
06 INSTALL VALVE - 10" GATE WITH VALVE BOX & LID, RE DOUGLAS COUNTY STD DETAILS B10 & B11
07 EXISTING VAULT MODIFICATIONS, RE A1/C-501
08 ABANDONED UTILITY PIPING, RE C3/C-510

KELLER ASSOCIATES

90% Design Review Not For Construction

NO.	REVISIONS	DATE

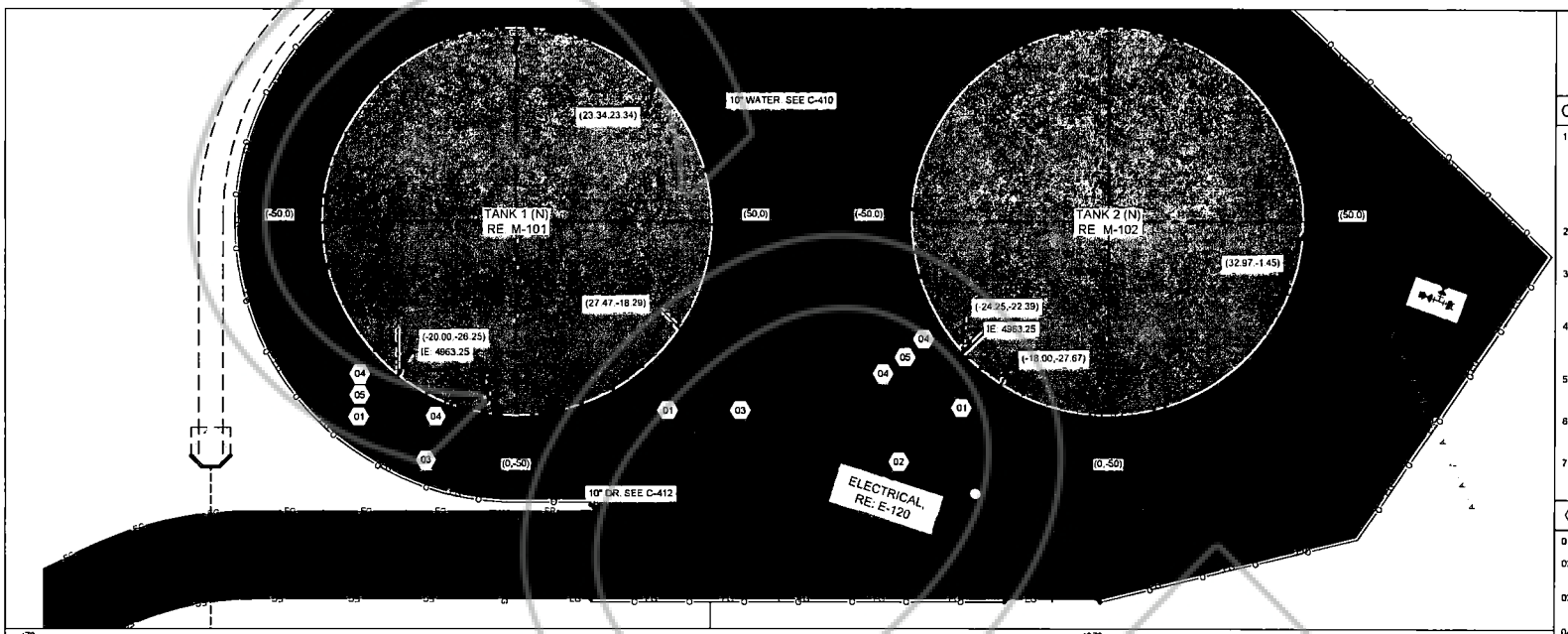
DOUGLAS COUNTY, NEVADA

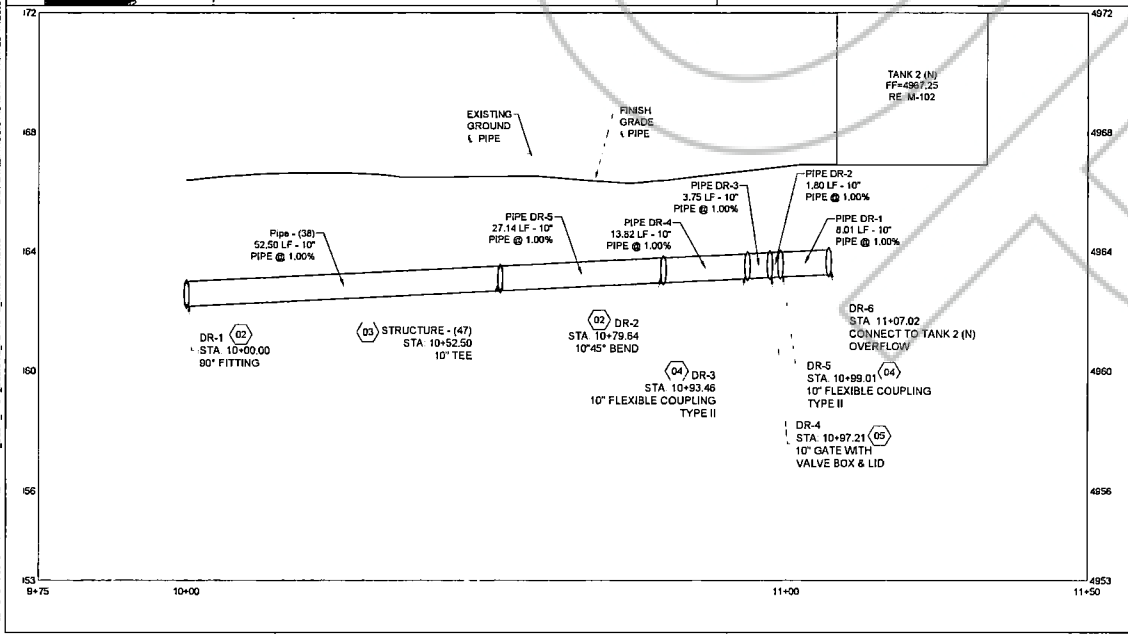
MOUNTAIN VIEW WATER TANK REPLACEMENT

WATER LINE PLAN & PROFILE

DRAWN JH CHECK JW
VERIFY SCALE Scales based on 22"x34" prints. 1-1/2 Inches
PROJECT NO. 223125
SHEET NO. C-410

J:\223125 DOUGLAS COUNTY MTN VIEW TANK_DESN_CADD_DESIGN\D_PLANS-10_CIVIL\C-410.DWG LAST SAVED 7/12/2024 2:26 PM PRINTED 7/12/2024 2:35 PM





GRAPHIC SCALE
HORIZ 0 10 20
VERT 0 2 4

GENERAL SHEET NOTES

1. PRIOR TO CONSTRUCTION CONTRACTOR TO POTHOLE IN A NON-DESTRUCTIVE MANNER EXISTING UTILITIES TO VERIFY LOCATION & DEPTH. WHERE EXISTING UTILITIES WILL BE ENCOUNTERED IT IS RECOMMENDED THAT THE CONTRACTOR HAND DIG OR VACUUM TRUCK EXCAVATE FOR MATERIAL EXCAVATION IN THESE AREAS.
2. CONTRACTOR TO POTHOLE AND LOCATE ALL PIPE CONNECTIONS TO VERIFY PIPE LENGTHS PRIOR TO ORDERING MATERIALS.
3. AREAS DISTURBED BY CONSTRUCTION WHERE SURFACE REPAIR IS NOT INDICATED SHALL BE RESTORED TO EQUAL OR BETTER CONDITION PRIOR TO CONSTRUCTION.
4. ABANDONED UTILITY PIPING TO REMAIN UNLESS IMPACTED BY NEW CONSTRUCTION. CONTRACTOR TO PLUG ENDS OF EXPOSED PIPING.
5. PROVIDE MECHANICALLY RESTRAINED JOINTS AT EACH VERTICAL AND HORIZONTAL CHANGE IN DIRECTION, RE: SPECIFICATIONS.
6. HORIZONTAL & VERTICAL LOCATION OF EXISTING UTILITIES ARE APPROXIMATE, SEE GENERAL NOTE #1.
7. CONTRACTOR TO FURNISH ALL MATERIALS UNLESS NOTED OTHERWISE.

SHEET KEYNOTES

01 INSTALL PIPE - 10" DR

02 INSTALL FITTING - 10" 45° BEND, RE: DOUGLAS COUNTY STD B12

03 INSTALL FITTING - 10" TEE RE: DOUGLAS COUNTY STD B12

04 INSTALL FITTING - 10" FLEXIBLE COUPLING TYPE II

05 INSTALL VALVE - 10" GATE WITH VALVE BOX & LID, RE: DOUGLAS COUNTY STD B12

KELLER ASSOCIATES

Design Review Not For Construction

NO REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

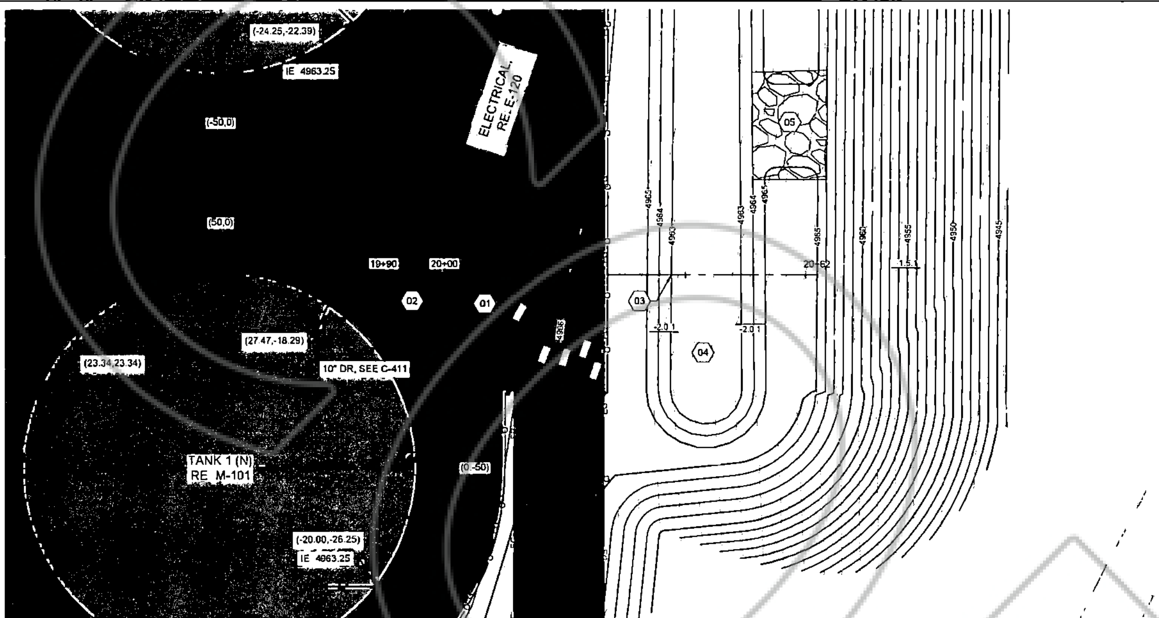
DRAIN LINE PLAN & PROFILE

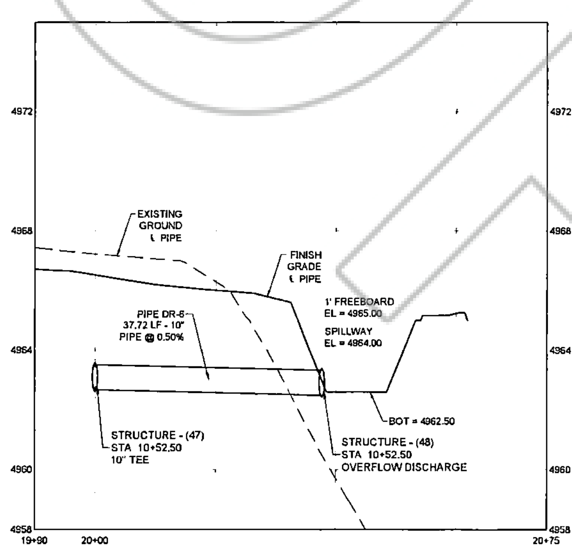
DRAWN JH CHECK JW

VERIFY SCALE. Scales based on 22"x34" prints.
1-1/2 Inches

PROJECT NO. 223125 PAGE

SHEET NO. C-411





GRAPHIC SCALE

HORIZ 0 10 20

VERT 0 2 4

GENERAL SHEET NOTES

1. PRIOR TO CONSTRUCTION CONTRACTOR TO POTHOLE IN A NON-DESTRUCTIVE MANNER EXISTING UTILITIES TO VERIFY LOCATION & DEPTH. WHERE EXISTING UTILITIES WILL BE ENCOUNTERED IT IS RECOMMENDED THAT THE CONTRACTOR HAND DIG OR VACUUM TRUCK EXCAVATE FOR MATERIAL EXCAVATION IN THESE AREAS.
2. CONTRACTOR TO POTHOLE AND LOCATE ALL PIPE CONNECTIONS TO VERIFY PIPE LENGTHS PRIOR TO ORDERING MATERIALS.
3. AREAS DISTURBED BY CONSTRUCTION WHERE SURFACE REPAIR IS NOT INDICATED SHALL BE RESTORED TO EQUAL OR BETTER CONDITION PRIOR TO CONSTRUCTION.
4. ABANDONED UTILITY PIPING TO REMAIN UNLESS IMPACTED BY NEW CONSTRUCTION. CONTRACTOR TO PLUG ENDS OF EXPOSED PIPING.
5. PROVIDE MECHANICALLY RESTRAINED JOINTS AT EACH VERTICAL AND HORIZONTAL CHANGE IN DIRECTION, RE. SPECIFICATIONS.
6. HORIZONTAL & VERTICAL LOCATION OF EXISTING UTILITIES ARE APPROXIMATE, SEE GENERAL NOTE #1.
7. CONTRACTOR TO FURNISH ALL MATERIALS UNLESS NOTED OTHERWISE.

SHEET KEYNOTES

01 INSTALL PIPE - 10" DR

02 INSTALL FITTING - 10" TEE RE. DOUGLAS COUNTY STD B12

03 DISCHARGE INTO OVERFLOW BASIN

04 OVERFLOW BASIN

05 EMERGENCY SPILLWAY RE XX/C-5XX

KELLER ASSOCIATES

90% Design Review, Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

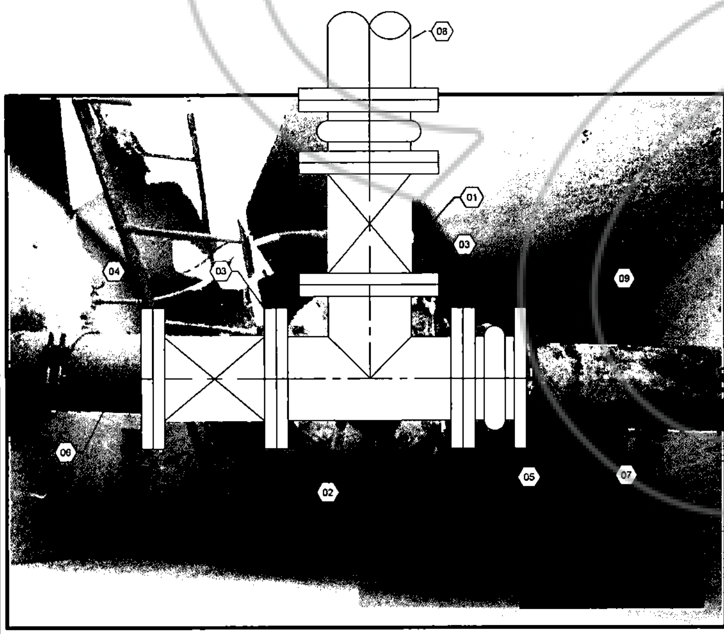
STORM DRAIN CULVERT PLAN & PROFILE

DRAWN JH CHECK JW

VERIFY SCALE: Scales based on 22"x34" prints. 1-1/2 Inches

PROJECT NO. 223125 PAGE

SHEET NO. C-412



LEGEND
- 01 SALVAGE CLA VALVE & RETURN TO OWNER
- 02 INSTALL FITTING - 10" TEE
- 03 INSTALL VALVE - 10" GATE
- 04 INSTALL FITTING - 10" BLIND FLANGE
- 05 REMOVE FLANGE COUPLING & INSTALL RESTRAINED FLANGE ADAPTER
- 06 REMOVE EXISTING PIPE, RE C-020
- 07 CORE OR HAMMER THROUGH FLOOR SLAB TO CREATE A MINIMUM OF 3, 6"Ø DRAIN HOLES
- 08 RE C-410 FOR CONTINUATION OF WATER LINE
- 09 RETAIN & PROTECT EXISTING PIPE

NOTES:
1. BACKFILL VAULT WITH CLSM TO 1' BELOW FINISHED GRADE. DEMO VAULT LID AND WALLS TO TOP OF CLSM FILL. BACKFILL AND SURFACE ABOVE VAULT IN ACCORDANCE WITH SPECIFICATIONS.
2. RE C-020 FOR TEMPORARY APPURTENANCES.

A1 VAULT MODIFICATIONS
N.T.S.

KELLER ASSOCIATES

90% Design Review Not For Construction

NO. REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

VAULT DETAILS

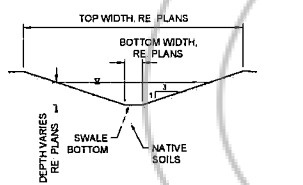
DRAWN JH CHECK JW

VERIFY SCALE Scales based on 22"x34" prints.

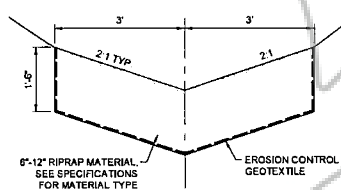
1-1/2 inches

PROJECT NO. 223125

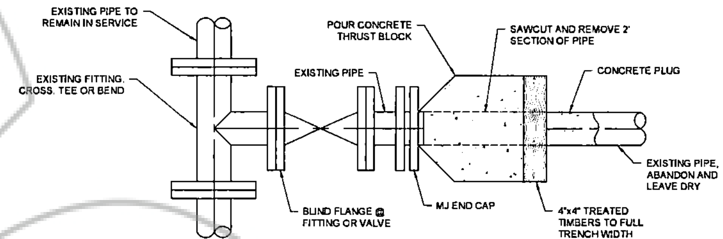
SHEET NO. C-501



C1 OUTFALL DRAINAGE DITCH
3/8" = 1'-0"

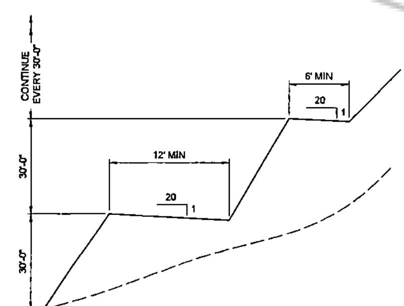


C2 PERIMETER DRAINAGE DITCH
N.T.S.



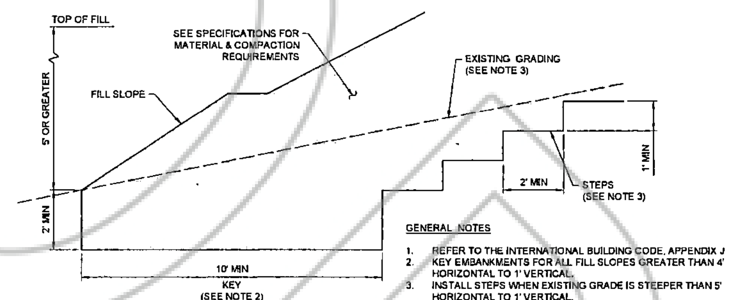
NOTES
1. FOR FLANGED FITTINGS, INSTALL BLIND FLANGE.
2. FOR MJ FITTINGS, LEAVE PIPE SPOOL AND PROVIDE MJ END CAP, THRUST BLOCK AS SHOWN.
3. FOR WATER SERVICE LINES, CLOSE CORPORATION STOP AND CAP.
4. PLUG END OF ABANDONDED PIPE WITH CONCRETE OR CAP.

C3 CUT, PLUG AND ABANDON EXISTING WATER LINES
3" = 1'-0"



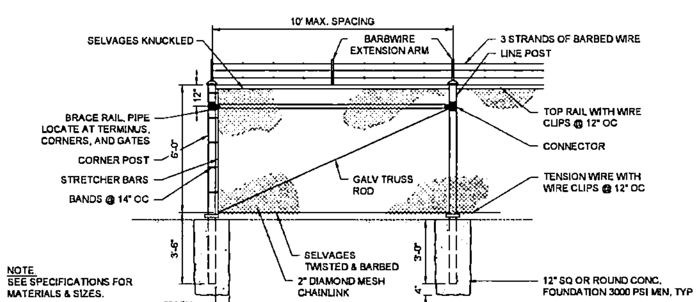
GENERAL NOTES
1. TERRACES AT LEAST 6 FEET IN WIDTH SHALL BE ESTABLISHED AT NOT MORE THAN 30 FEET VERTICAL INTERVALS ON ALL CUT OR FILL SLOPES TO CONTROL SURFACE DRAINAGE AND DEBRIS. SUITABLE ACCESS SHALL BE PROVIDED TO ALLOW FOR CLEANING AND MAINTENANCE.
2. WHERE MORE THAN TWO TERRACES ARE REQUIRED, ONE TERRACE, LOCATED AT APPROXIMATELY MID-HEIGHT, SHALL BE AT LEAST 12 FEET IN WIDTH.
3. SWALES OR DITCHES SHALL BE PROVIDED ON TERRACES. THEY SHALL HAVE A MINIMUM GRADIENT OF 20 HORIZONTAL TO 1 VERTICAL AND SHALL BE PAVED WITH CONCRETE NOT LESS THAN 3 INCHES IN THICKNESS, OR WITH OTHER MATERIALS SUITABLE TO THE APPLICATION. THEY SHALL HAVE A MINIMUM DEPTH OF 12 INCHES AND A MINIMUM WIDTH OF 5 FEET.
4. A SINGLE RUN OF SWALE OR DITCH SHALL NOT COLLECT RUNOFF FROM A TRIBUTARY AREA EXCEEDING 13,500 SQUARE FEET WITHOUT DISCHARGING INTO A DOWN DRAIN.

B1 TERRACING
1/2" = 1'-0"



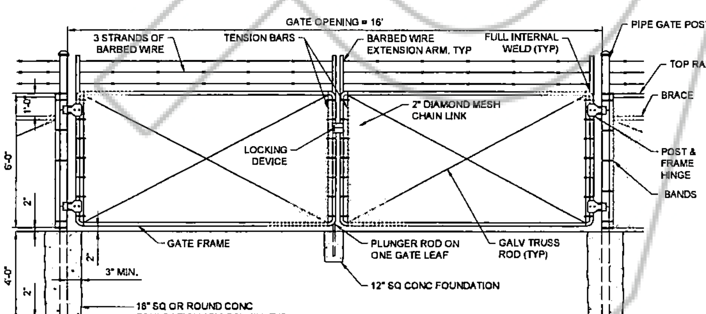
GENERAL NOTES
1. REFER TO THE INTERNATIONAL BUILDING CODE, APPENDIX J
2. KEY EMBANKMENTS FOR ALL FILL SLOPES GREATER THAN 4' HORIZONTAL TO 1' VERTICAL.
3. INSTALL STEPS WHEN EXISTING GRADE IS STEEPER THAN 5' HORIZONTAL TO 1' VERTICAL.

B3 FILL SLOPE FOUNDATION
1/2" = 1'-0"



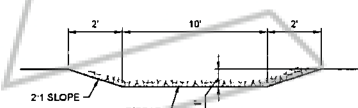
NOTE
SEE SPECIFICATIONS FOR MATERIALS & SIZES.

A1 FENCE - CHAIN LINK WITH 3 STRAND
N.T.S.



NOTE
1. SEE SPECIFICATIONS FOR MATERIALS AND SIZES.
2. SEE FENCE DETAIL FOR BRACING AT GATE.

A3 GATE - CHAIN LINK DOUBLE SWING WITH 3 STRANDS
N.T.S.



A4 SPILLWAY
N.T.S.

KELLER ASSOCIATES

90% Design Review Not For Construction

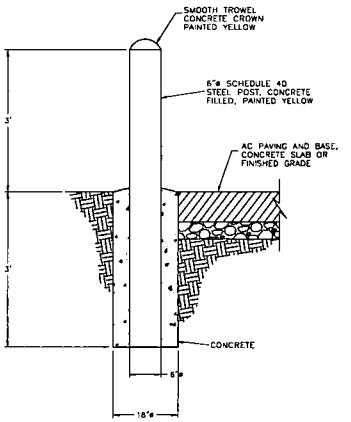
NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

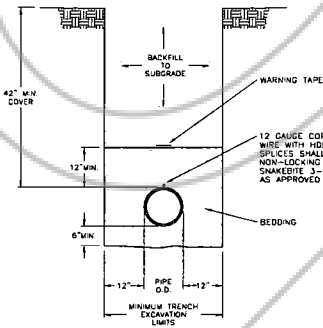
CIVIL DETAILS

DRAWN EWC CHECK JW
VERIFY SCALE Scales based on 22"x34" prints.
1-1/2 Inches
PROJECT NO 223125
PAGE
SHEET NO. C-510



NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION: DOUGLAS COUNTY
			BOLLARD	DATE: JULY 2017
				DWG: A20

PAGE 1 OF 1



NOTES

1. BACKFILL SHALL CONFORM TO THE REQUIREMENTS OF CLASS A (IMPORTED) OR CLASS E (NATIVE) BACKFILL AS SPECIFIED IN SUBSECTION 200.03 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. MATERIAL SHALL BE PLACED IN LIFT THICKNESS SPECIFIED IN SUBSECTION 305 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND DENSIFIED TO 90% RELATIVE COMPACTION.
2. BEDDING SHALL CONFORM TO THE REQUIREMENTS OF CLASS A BACKFILL AS SPECIFIED IN SUBSECTION 200.03.02 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. MATERIAL SHALL BE DENSIFIED TO 90% RELATIVE COMPACTION
3. CLASS C BACKFILL OR OTHER GRADATION AS APPROVED BY WATER UTILITY, WITH FILTER FABRIC MAY BE USED TO SUPPORT BEDDING IN HIGH GROUNDWATER OR UNSTABLE SOIL CONDITIONS WITH THE APPROVAL OF THE WATER UTILITY. FILTER FABRIC SHALL BE WRAPPED AROUND BEDDING SECTION WITH 2 FOOT OVERLAP ON TOP.
4. NOT USED.
5. SHORING OR SLOPED CUT SLOPES MAY BE NECESSARY. ALL EXCAVATIONS SHALL CONFORM TO THE MOST RECENT OSHA REQUIREMENTS.
6. PLACE WARNING TAPE 1 FOOT ABOVE WATER AND RECLAIMED WATER PIPE.
7. NOT USED.
8. FOR USE OUTSIDE PAVED ROAD SECTION.

PAGE 1 OF 1

NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION: DOUGLAS COUNTY
			TRENCH EXCAVATION & BACKFILL	DATE: JULY 2017
				DWG: B01

PARTS KEY

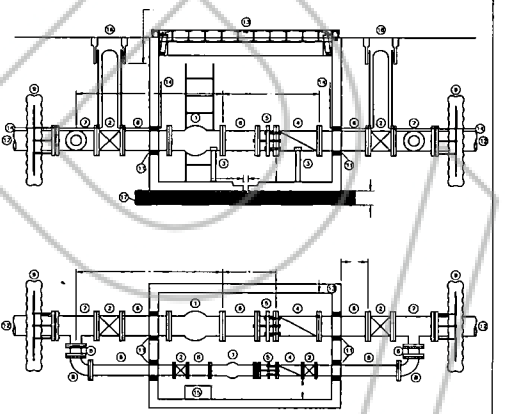
1. WATER METER (MAIN METER SIZED FOR PEAK AND MINIMUM DEMAND, BYPASS METER (IF REQUIRED BY UTILITY) SIZED FOR MINIMUM DEMAND), RADIO READ HARDWARE AS APPROVED BY WATER UTILITY AND STRAINER (IF REQUIRED BY UTILITY). CONTRACTOR TO VERIFY WITH WATER UTILITY AS TO WHO SUPPLIES METER
2. MUELLER GATE VALVE, NRS, AWWA C509 C/W OPERATING NUT OR APPROVED EQUAL
3. GRINNELL OR BLA PIPE SUPPORTS
4. MUELLER SWING CHECK VALVE OR APPROVED EQUAL
5. ROMAC DJ400 DISMANTLING JOINT OR APPROVED EQUAL
6. DUCTILE IRON PIPE, AWWA C115/C151. 250 PSI MINIMUM PRESSURE RATING.
7. TEE, AWWA C110/C153 250 PSI MINIMUM PRESSURE RATING
8. 90° BEND, AWWA C110/C153. 250 PSI MINIMUM PRESSURE RATING.
9. "HANDWERHEAD" THRUST BLOCK WITH JOINT RESTRAINT SIZED FOR APPLICATION ON UNDISTURBED SOIL EXPOSED REINFORCEMENT TO BE STAINLESS STEEL OR IRON. MINIMUM 3-INCH CLEARANCE ON ALL CONCRETE REINFORCEMENT
10. PRECAST CONCRETE VAULT, H20 LOAD RATED, WATERPROOF VAULT EXTERIOR WITH 2 COATS OF THOROSEAL/ACRYL 60 OR APPROVED EQUAL. VAULT TO BE SIZED SUCH THAT A MINIMUM OF 1'-6" HORIZONTAL CLEARANCE IS PROVIDED BETWEEN VAULT WALLS AND PIPING/APPURTENANCES AND BETWEEN PIPE/APPURTENANCES. A MINIMUM OF 1'-0" VERTICAL CLEARANCE IS TO BE PROVIDED BETWEEN PIPING/APPURTENANCES AND THE VAULT FLOOR. MINIMUM INTERIOR DIMENSIONS 6'-6"x4'-0"x5'-6". VAULT TO BE CAST WITH A SUMP. DRY INSTALLATIONS OUTSIDE OF ANY IMPACT FROM GROUNDWATER ARE TO HAVE A DRAIN HOLE CORED IN THE SUMP.
11. LINK-SEAL OR APPROVED EQUAL IN WET/GROUNDWATER INSTALLATIONS. KOR N-SEAL BOOT IN DRY INSTALLATIONS.
12. AWWA C900 PVC PIPE FOR 4-INCH THROUGH 8-INCH. AWWA C901 IPS HDPE PIPE FOR 3 INCH.
13. 48-INCH x 78-INCH ALUMINUM ACCESS COVER WITH STAINLESS STEEL HARDWARE, DRAIN CHANNEL, CONTINUOUS BUMPER SEAL, AND COMPRESSION SPRINGS (BILCO JDAL-H20 TRAFFIC RATED) OR APPROVED EQUAL FOR INCIDENTAL TRAFFIC AREAS. ACCESS COVERS CONSTRUCTED OUT OF STEEL OR THAT UTILIZE TORSION SPRINGS WILL NOT BE ALLOWED. 48-INCH x 78-INCH DIAMOND PLATE TOP SLAB WITH 36-INCH RING AND COVER FOR FULL H20 TRAFFIC LOAD.
14. 12 GAUGE COPPER-CLAD STEEL WIRE WITH HDPE COATING LOCATION WIRE, EXTEND 48 INCHES INTO METER BOX.
15. STEEL LADDER WITH LADDER-UP SAFETY POST, BILCO LU-1 OR APPROVED EQUAL
16. TRAFFIC RATED VALVE BOX
17. 3/4-INCH WASHED DRAIN ROCK

NOTES

1. BYPASS LINES REQUIRED BASED ON INSTALLATION. CONSULT WITH UTILITY TO DETERMINE IF A BYPASS LINE IS REQUIRED.
2. METER VAULT IS TO BE CONSTRUCTED SUCH THAT NO EXTERIOR WATER (INFILTRATION OR INFLOW) IS ALLOWED TO ENTER THE VAULT.
3. METER MANUFACTURER'S RECOMMENDED UPSTREAM AND DOWNSTREAM CLEAR OPEN PIPE REQUIREMENTS ARE TO INCORPORATED INTO THE VAULT DESIGN.
4. ALL PIPE, VALVES, METERS, AND ANY OTHER ITEM THAT WILL BE IN DIRECT CONTACT WITH POTABLE WATER MUST BE NSF 61 APPROVED.

PAGE 2 OF 2

NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION: DOUGLAS COUNTY
			3" TO 8" METER SET	DATE: JULY 2017
				DWG: B06



PAGE 1 OF 2

NO	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION: DOUGLAS COUNTY
			3" TO 8" METER SET	DATE: JULY 2017
				DWG: B06

KELLER ASSOCIATES

90 Design Review Not For Construction

NO. REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

DOUGLAS COUNTY DETAILS (1 OF 3)

DRAWN EWC CHECK JW

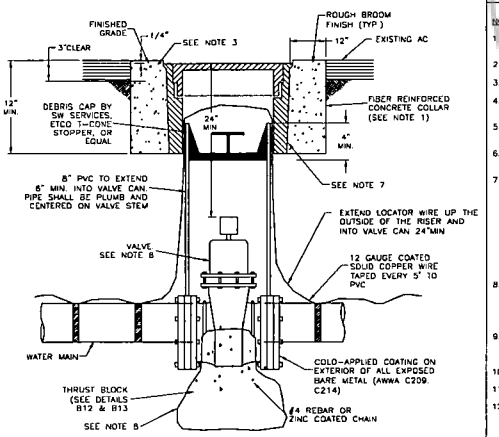
VERIFY SCALE Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO 223125 PAGE

SHEET NO. C-511

J:\223125 DOUGLAS COUNTY MTN VIEW TANK\C_DESN_CADD_DESIGN_PLANS\10_CIVIL\DOUGLAS COUNTY DETAILS (1 OF 3).DWG LAST SAVED: 7/1/2024 10:37 AM PRINTED: 7/12/2024 2:37 PM



SEE NOTES ON PAGE 2

PAGE 1 OF 2

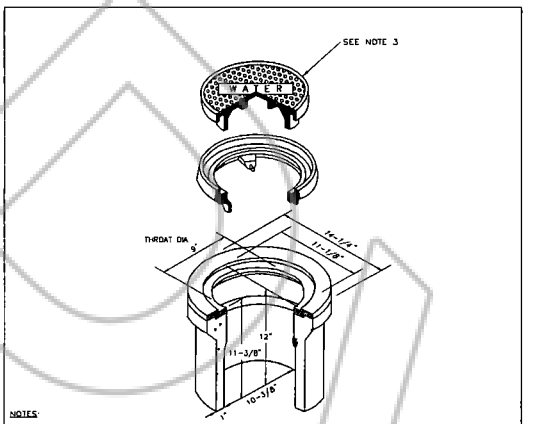
NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION: DOUGLAS COUNTY
			VALVE	DATE: JULY 2017
				DWG: B10

NOTES

1. CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 202.12 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. IN ALL AREAS, LIDS SHALL BE SET FLUSH WITH FINISHED GRADE UNLESS OTHERWISE NOTED.
3. THE CONCRETE COLLAR SHALL BE 1/4" BELOW SURROUNDING PAVEMENT.
4. SPLICES IN WIRE SHALL BE CONNECTED BY WIRE NUTS AND WRAPPED WITH U/L LISTED ELECTRICAL TAPE, OR AS SPECIFIED BY WATER UTILITY.
5. THE CONTRACTOR SHALL PROVIDE AND INSTALL EXTENSION STEMS SO THAT VALVE OPERATING NUT IS NOT GREATER THAN 5 FEET BELOW FINISHED GRADE.
6. 10" VALVE BOX AND COVER MARKED "WATER" CHRISTY G-5 (AS APPROVED BY WATER UTILITY) WITH CAST IRON LID OR EQUAL. SEE "VALVE BOX" DETAIL B11.
7. VALVE
   - FULL FLOW WATERWAY
   - O-RING SEAL
   - WEDGE DESIGN
   - FULL EPOXY COATING INSIDE AND OUT
   - OPERATOR NUT
   - 235 PSI RATING
   - STAINLESS STEEL BOLTS WITH BRONZE OR STAINLESS STEEL NUTS
   - LOW ZINC OR SS STEM
   - AWWA C509
   - RESILIENT WEDGE
8. THRUST BLOCK OR CONCRETE PILLOW WITH #4 REBAR OR ZINC COATED CHAIN MAY BE REQUIRED AT THE DISCRETION OF THE WATER UTILITY. MATERIAL USED FOR THRUST BLOCKING SHALL NOT PREVENT ACCESS TO THE BOLT ASSEMBLY.
9. THRUST BLOCK MAY BE ELIMINATED FOR FLANGED VALVES WITH MUELLER AQUAGRIP OR APPROVED EQUAL FLANGED RESTRAINT ADAPTOR, UNLESS CONSTRUCTING IN THE GARDNERVILLE WATER COMPANY SERVICE AREA.
10. RESTRAINTS PER ENGINEER'S DESIGN, BUT MANUFACTURER PARTS AS APPROVED BY WATER UTILITY.
11. ALL APPURTENANCES SHALL BE AS SPECIFIED, UNLESS APPROVED AS EQUAL BY WATER UTILITY.
12. VALVES LARGER THAN 12-INCH SHALL BE BUTTERFLY VALVES, OR AS APPROVED BY WATER UTILITY.

PAGE 2 OF 2

NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION: DOUGLAS COUNTY
			VALVE	DATE: JULY 2017
				DWG: B10



NOTES:

1. VALVE BOX MUST BE TRAFFIC RATED (CHRISTY G-5, AS APPROVED BY WATER UTILITY) WITH CAST IRON LID OR EQUAL.
2. MINIMUM OF 10 INCHES INSIDE DIAMETER.
3. CAST IRON LID MARKED "WATER" FOR WATER LINE APPLICATIONS. CAST IRON LID MARKED "RECLAIMED WATER" OR "RCW" WHEN INSTALLED ON A RECLAIMED WATER MAIN. CAST IRON LID SHALL BE MARKED "SS FORCE MAIN" OR "SS FM" WHEN INSTALLED ON A SANITARY SEWER FORCE MAIN.
4. RISER OF 8 INCHES PVC EXTENDED IN VALVE CAN A MINIMUM OF 6 INCHES.
5. ALL NEW VALVE BOXES TO BE SET TO GRADE PER "VALVE" DETAIL B10.
6. TORQUE GRADE RING BOLTS TO MANUFACTURER'S RECOMMENDATIONS.

PAGE 1 OF 1

NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION: DOUGLAS COUNTY
			VALVE BOX	DATE: JULY 2017
				DWG: B11

KELLER ASSOCIATES

90% Design Review Not For Construction

NO.	REVISIONS	DATE
	-	-

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

DOUGLAS COUNTY DETAILS (3 OF 4)

DRAWN EWC CHECK JW

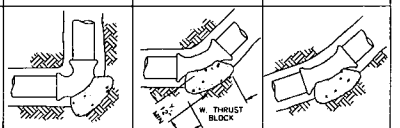
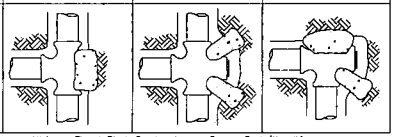
VERIFY SCALE. Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 223125 PAGE

SHEET NO. C-513

J:\223125 DOUGLAS COUNTY MTN VIEW TANK\C_DESIN\C_CADD_DESIGN\2_PLANS-110_CIVIL\DOUGLAS COUNTY DETAILS (2 OF 3).DWG LAST SAVED: 7/12/2024 10:33 AM PRINTED: 7/12/2024 2:37 PM

Type of Fitting	90° Bend	45° Bend	11.25° or 22.5° Bend
Typical Installation			
Type of Fitting	Tee or Dead End	Cross w/Plug	Tee w/Plug
Typical Installation			

Minimum Thrust Block Bearing Area – Square Feet (Y x W)

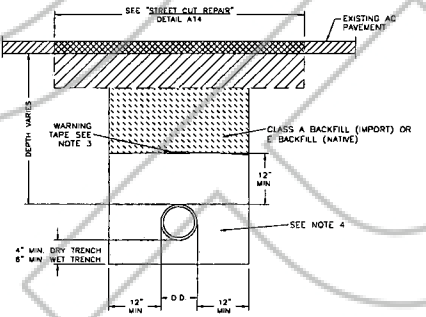
Size of Pipe	90° Bend, Cross w/Plug or Tee w/Plug	45° Bend	11.25° or 22.5° Bend	Tee or Dead End
4"	2	1	1	2
6"	5	3	2	4
8"	8	5	3	6
10"	13	7	4	9
12"	18	10	5	13
14"	25	13	7	17
16"	32	17	9	23

NOTES:

1. CONCRETE FOR THRUST BLOCKS SHALL CONFORM TO SECTION 337.10 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
2. THRUST BLOCKS SHALL BE PLACED AGAINST UNDISTURBED SOIL.
3. JOINTS AND FACE OF PLUGS SHALL BE KEPT CLEAR OF CONCRETE.
4. THRUST BLOCK BEARING AREAS ARE FOR A 150 PSI TEST PRESSURE WITH 2000 PSF BEARING CAPACITY, NOMINAL PIPE DIAMETER, AND A FACTOR OF SAFETY OF 1.5. INSTALLATIONS USING DIFFERENT TEST PRESSURES, AND/OR SOIL TYPES SHALL BE ADJUSTED BY THE DESIGN ENGINEER.
5. ALL JOINTS SHALL BE POLYWRAPPED (VIRGIN POLYETHYLENE, 8 MILS THICK).

PAGE 1 OF 1

NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION: DOUGLAS COUNTY
			THRUST BLOCKS	DATE: JULY 2017
				DWG: B12



THE FOLLOWING GRADED BEDDING MATERIAL MAY BE USED IN WET TRENCHES:

U.S. STANDARD SIEVE SIZE	PERCENT BY WEIGHT PASSING
1.5"	100%
1"	50-90%
3/4"	30-70%
3/8"	10-40%
#4	5-25%
#200	0-10%

CLASS A BACKFILL PER ORANGE BOOK 200.03.02 USED AS BEDDING MATERIAL MUST BE USED IN DRY TRENCHES ONLY, SEE NOTE 4

SEE NOTES ON PAGE 2

PAGE 1 OF 2

NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION: DOUGLAS COUNTY
			TYPICAL STORM DRAIN TRENCH	DATE: JULY 2017
				DWG: D01

NOTES

1. ALL REQUIREMENTS OF THE STORM DRAIN UTILITY ORDINANCE MUST BE MET.
2. CLASS A AND CLASS E BACKFILL AND BEDDING MATERIAL SHALL CONFORM TO SECTION 200 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. BEDDING AND BACKFILL SHALL BE MECHANICALLY COMPACTED IN CONFORMANCE WITH SECTION 305.10 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
3. PLACE WARNING TAPE 1-FOOT ABOVE STORM DRAIN PIPE. WARNING TAPE SHALL READ "CAUTION STORM DRAIN MAIN"
4. CLASS A BACKFILL AS BEDDING MATERIAL PER ORANGE BOOK 200.03.02. COMPACT OR CONSOLIDATE TO PROVIDE PROPER SUPPORT OF PIPE.
5. UTILIZE WATER STOP DETAIL D02 FOR WET TRENCHES.

PAGE 2 OF 2

NO.	REVISION	DATE	STANDARD DETAIL FOR PUBLIC WORKS CONSTRUCTION	SECTION: DOUGLAS COUNTY
			TYPICAL STORM DRAIN TRENCH	DATE: JULY 2017
				DWG: D01

KELLER ASSOCIATES

90% Design Review Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

DOUGLAS COUNTY DETAILS (3 OF 3)

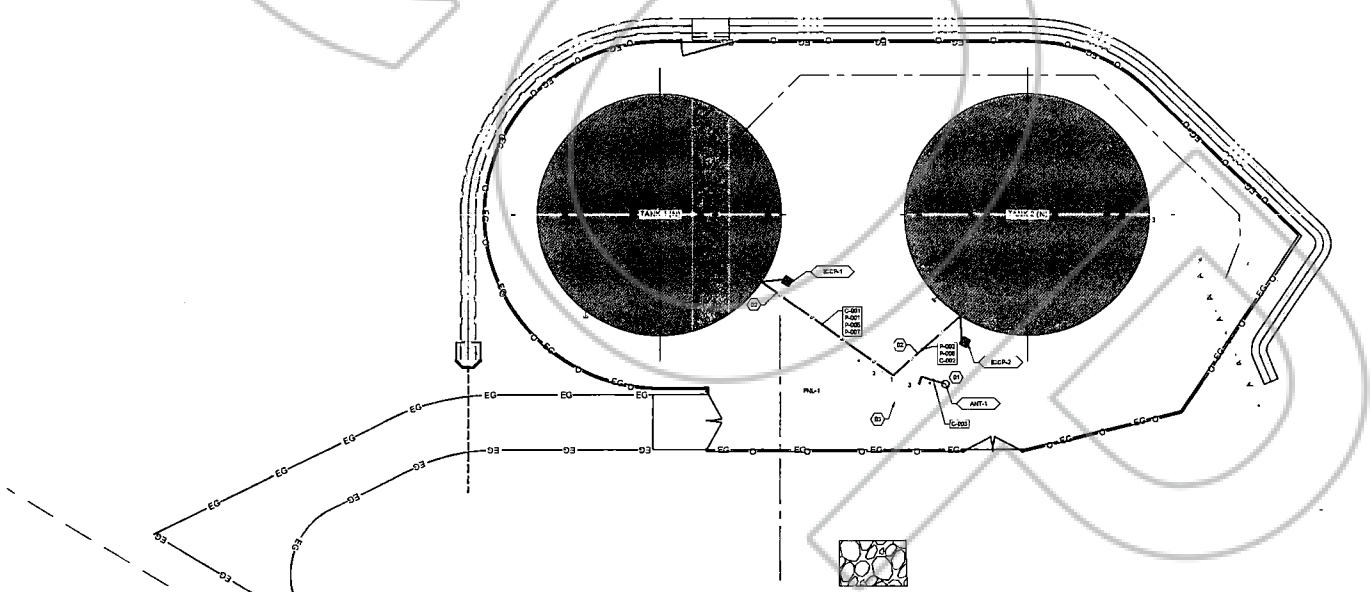
DRAWN: EWC CHECK: JW

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO: 223125 PAGE

SHEET NO: C-513



GENERAL SHEET NOTES

1. ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2017 NATIONAL ELECTRICAL CODE AND ANY OTHER STATE OR LOCAL CODE.
2. CABLE AND CONDUIT RUNS ARE DIAGRAMMATICALLY SHOWN ON THE DRAWING. FINAL ROUTING SHALL BE DETERMINED BY THE ELECTRICAL CONTRACTOR AND APPROVED BY THE OWNER.
3. ALL OUTDOOR EQUIPMENT AND WIRING SHALL BE WEATHERPROOF.
4. ALL UNDERGROUND CABLE RUNS SHALL BE INSTALLED IN CONDUIT.
5. UNDERGROUND ELECTRICAL CONDUITS SHALL BE MARKED WITH RED PLASTIC MARKING TAPE INSTALLED IN THE TRENCH ONE FOOT BELOW SURFACE. RE E-501.

SHEET KEYNOTES

01 RELOCATE EXISTING ANTENNA TO INDEPENDENT TOWER.

02 INSTALL POWER AND CONTROL CONDUIT TO TANK 1 AND TANK 2.

03 EXISTING PANEL SHIELD.

EQUIPMENT KEYNOTES

ANT-1	RELOCATED ANTENNA
ICCP-1	TANK 1 IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM
ICCP-2	TANK 2 IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM
PNL-1	EXISTING PANEL -SEC.1 - INVERTER AND CHARGE CONTROLLER -SEC.2 - BATTERIES -SEC.3 - SCADA CONTROLS

KELLER ASSOCIATES

90 % Design Review Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

ELECTRICAL SITE PLAN

DRAWN – CHECK BC

VERIFY SCALE Scales based on 22"x34" prints.

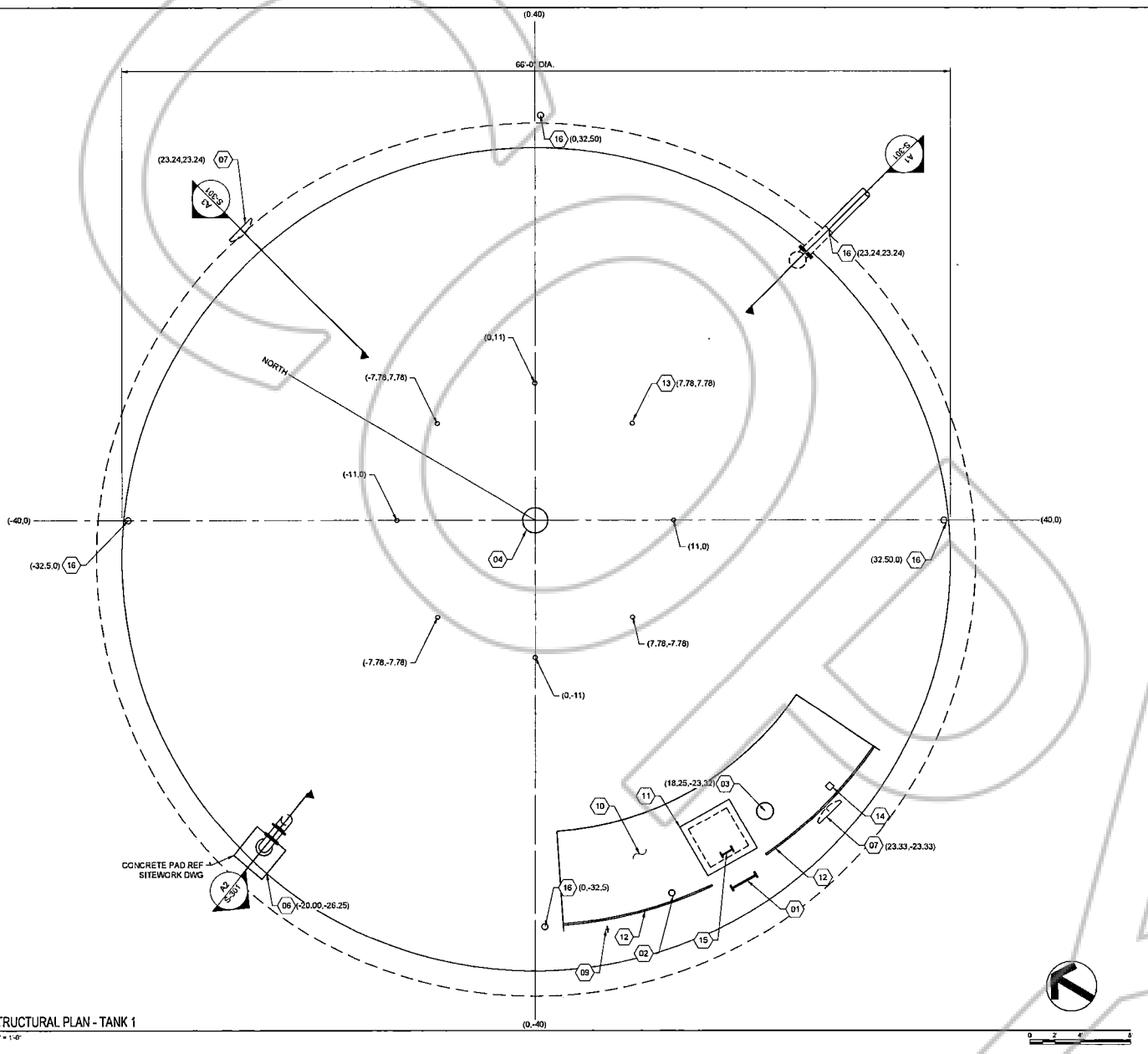
1-1/2 Inches

PROJECT NO. 223125

PAGE

SHEET NO. E-120

J:\223125 DOUGLAS COUNTY MTN VIEW TANKS_DESN_CADD_DESIGN\D_PLANS-108_ELEC\E-103.DWG LAST SAVED 8/28/2024 1:20 PM PRINTED 11/2/2024 2:37 PM



GENERAL SHEET NOTES

1. SEE SPECIFICATIONS FOR COMPLETE REQUIREMENTS, TANK SHOWN IS FOR REPRESENTATION ONLY
2. TANK CONTRACTOR TO PROVIDE FULL TANK FOOTING AND FOUNDATION DESIGN, AND SHOP DRAWINGS PRIOR TO CONSTRUCTION
3. ALL PIPING ABOVE GRADE TO BE STAINLESS STEEL 304
4. SEE C-110 FOR OVERALL LAYOUT AND STRUCTURE COORDINATES

SHEET KEYNOTES

01	ACCESS LADDER
02	LIQUID LEVEL INDICATOR
03	GRIDBEE MIXER PORT
04	24" TANK ROOF VENT, RE: B2/S-501
05	10" FLOOR DRAIN
06	10" OVERFLOW OUTLET
07	30" SHELL MANHOLE, RE: A5/S-502
08	10" TANK INLET, RE: B1/S-502
09	SAMPLE TAP
10	ROOF ANTI SLIP COATING, RE: B2/S-502
11	42" x 42" ROOF HATCH, RE: A1/S-501 AND A1/S-502
12	HANDRAIL, RE: A1, A3/S-502
13	ANODE SUPPORTS, RE: A1/S-503
14	STAINLESS STEEL JUNCTION BOX, RE: A1/S-503
15	INTERIOR LADDER
16	PERIMETER ROOF VENT

A1 STRUCTURAL PLAN - TANK 1
1/4" = 1'-0"

KELLER ASSOCIATES
1325 Airmotive Way, Suite 175
Reno, NV 89502
(775) 857-7200

90% Design Review Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

TANK 1 - STRUCTURAL PLAN

DRAWN: DAC | CHECK:

VERIFY SCALE. Scales based on 22"x34" prints.

1-1/2 Inches

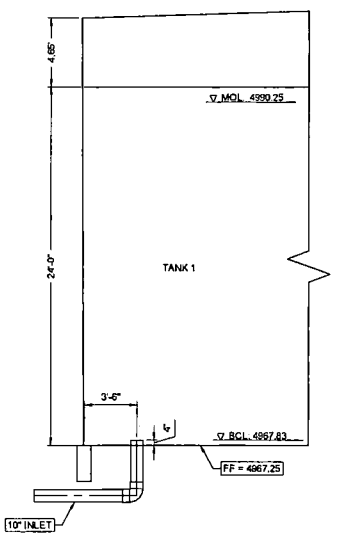
PROJECT NO. 223125 | PAGE

SHEET NO. S-101

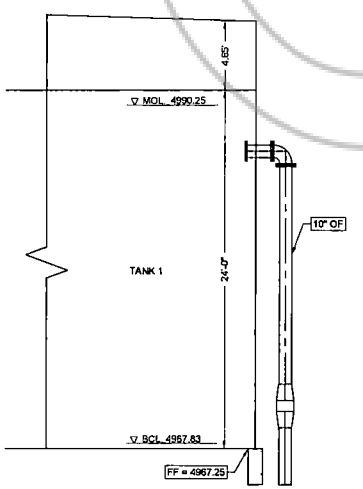
I:\223125 DOUGLAS COUNTY MTN VIEW TANKS_DESN_CADD_DESIGN\S_PLANS-XS_STRUCTURAL\S1_TANKS\S-101 TANK 1.DWG LAST SAVED: 6/20/2024 1:54 PM PRINTED: 7/18/2024 2:37 PM

GENERAL SHEET NOTES

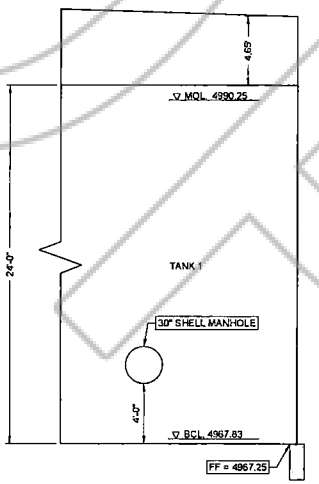
1. SEE SPECIFICATIONS FOR COMPLETE REQUIREMENTS, TANK SHOWN IS FOR REPRESENTATION ONLY
2. TANK CONTRACTOR TO PROVIDE FULL TANK REBAR AND FOUNDATION DESIGN, AND SHOP DRAWINGS PRIOR TO CONSTRUCTION



A1 STRUCTURAL SECTION - TANK 1
1/4" = 1'-0"



A2 STRUCTURAL SECTION - TANK 1
1/4" = 1'-0"



A3 STRUCTURAL SECTION - TANK 1
1/4" = 1'-0"

KELLER ASSOCIATES

90% Design Review Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

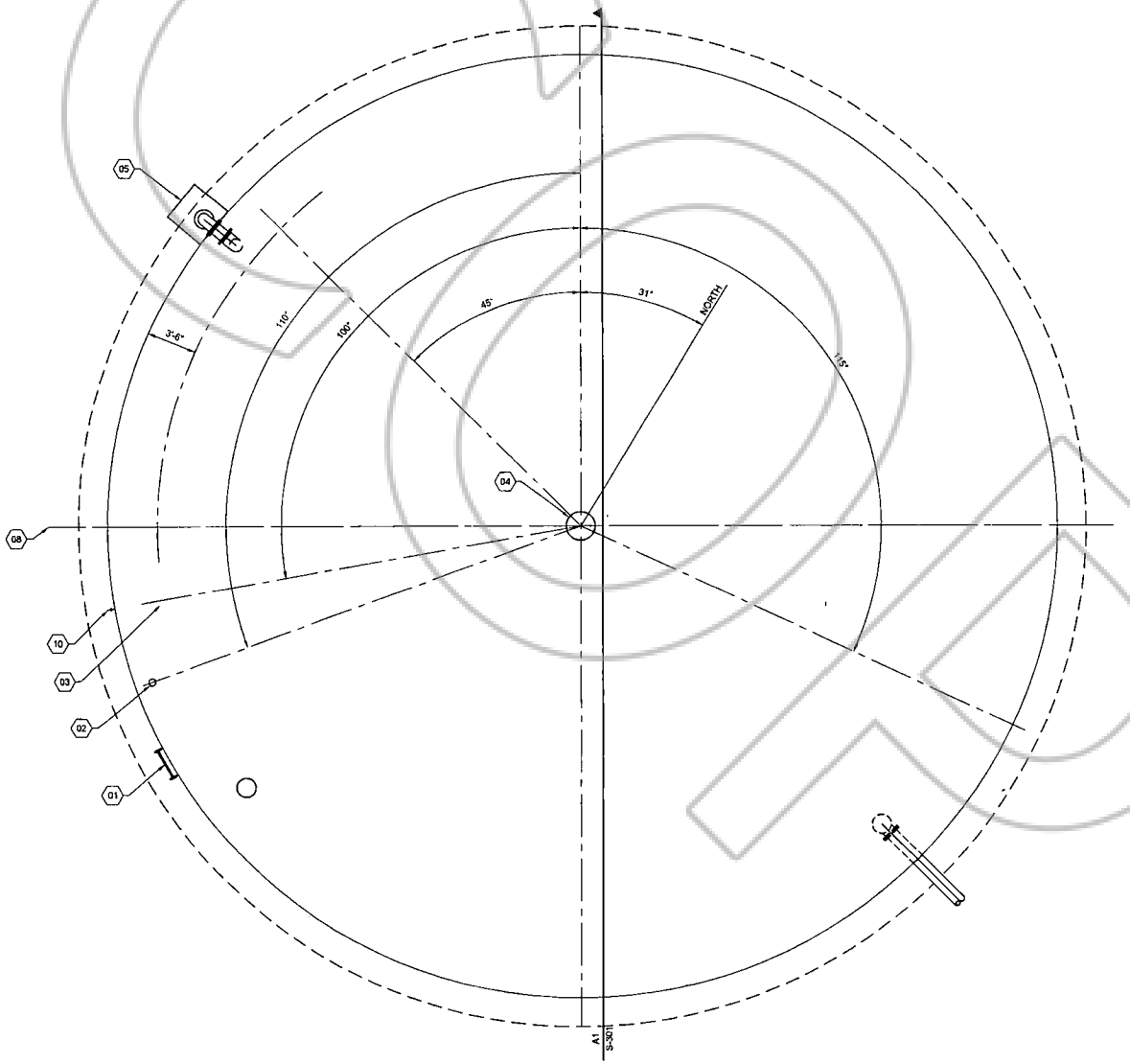
TANK 1 - STRUCTURAL SECTION

DRAWN: DAC | CHECK: DRK

VERIFY SCALE. Scales based on 22"x34" prints.
1-1/2 Inches

PROJECT NO. 223125 | PAGE

SHEET NO. S-301



A1 MECHANICAL PLAN - TANK 1
1/4" = 1'-0"

GENERAL SHEET NOTES

1. —
2. —
3. —

SHEET KEYNOTES

01	ACCESS LADDER, RE: STRUCTURAL
02	LIQUID LEVEL INDICATOR, RE: XX
03	GRIDBEE MIXER, RE: E-XXX
04	24" SCREEN ROOF VENT, RE: STRUCTURAL
05	10" FLOOR DRAIN
06	10" OVERFLOW OUTLET
08	10" TANK INLET, RE: B1/S-S02
09	3'x 3' CONCRETE SPLASH PAD
10	SAMPLE TAP

KELLER ASSOCIATES

90 Design Review Not For Construction

NO. REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

TANK 1 - MECHANICAL PLAN

DRAWN CJS CHECK —

VERIFY SCALE. Scales based on 22"x34" prints.

1-1/2 inches

PROJECT NO. 223125

PAGE

SHEET NO. M-101

J:\223125 DOUGLAS COUNTY MTN VIEW TANKS_DESIG_CADD_DESIGN\D_PLANS-110_MECHANICAL\01_TANK\BUA-101 TANK 1.DWG LAST SAVED: 07/30/2024 4:46 PM PRINTED: 7/30/2024 2:37 PM

GENERAL SHEET NOTES

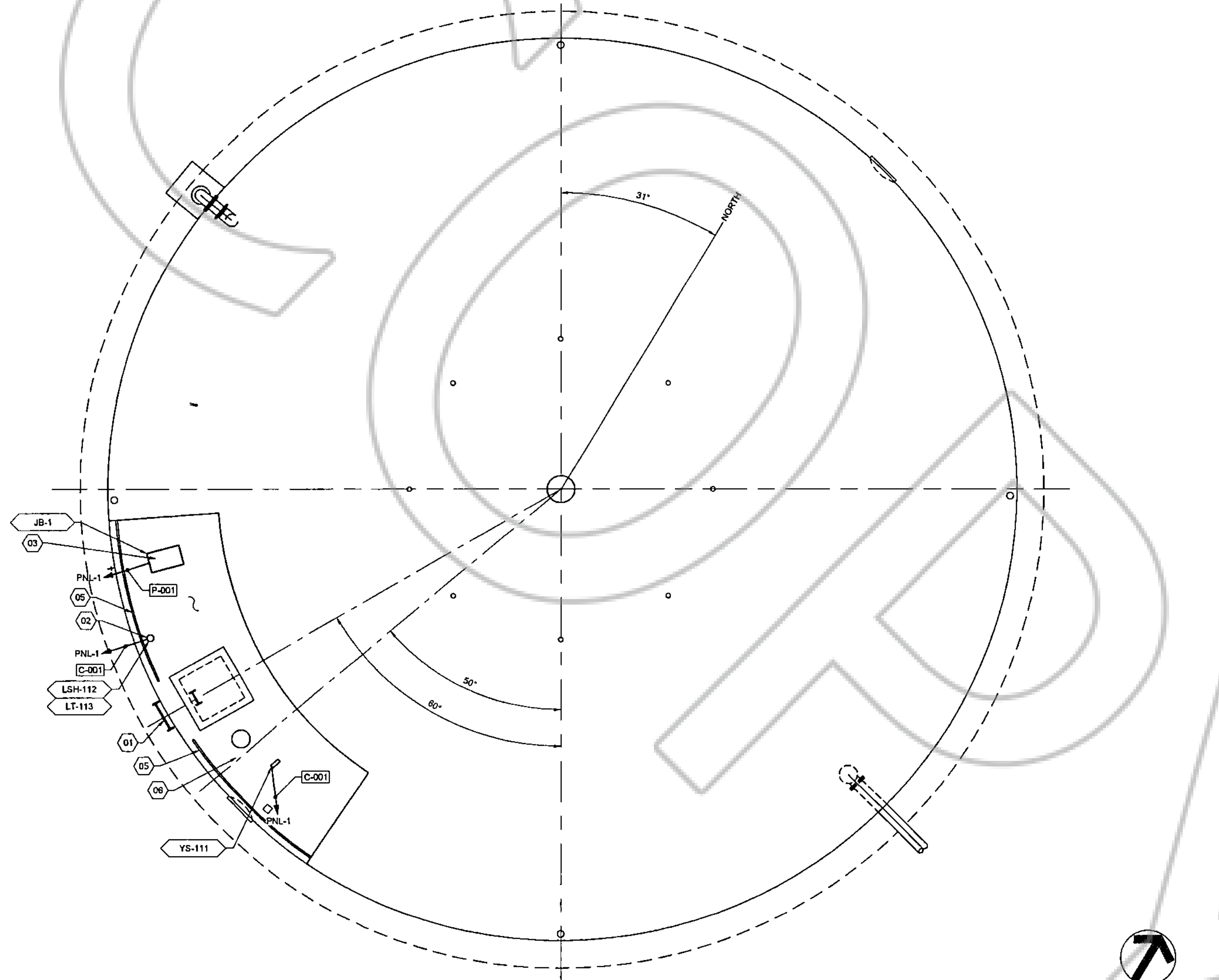
1. CONTRACTOR TO PROVIDE ALL EQUIPMENT AND ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.
2. COORDINATE WORK AND ROUGH-IN LOCATIONS WITH RELATED TRADES.
3. CONCEAL ALL RACEWAYS WITHIN FINISHED WALLS, CEILINGS AND FLOORS UNLESS OTHERWISE INDICATED.
4. ROUTE CONDUIT IN COMMON TRENCH WHENEVER POSSIBLE.
5. COORDINATE WITH SCADA INTEGRATOR.
6. RE E-602 FOR CONDUIT SCHEDULES.

SHEET KEYNOTES

01	ACCESS LADDER
02	LIQUID LEVEL INDICATOR, RE XX
03	GRIDBEE MIXER PORT AND JUNCTION BOX
04	ROOF HATCH, PROVIDE CONNECTION TO PROXIMITY SWITCH. RE: A1, A2, A3, B3/S-501 AND A1/S-50
05	HANDRAIL, RE: A1, A3/S-502
06	INTERIOR LADDER

EQUIPMENT KEYNOTES

JB-1	MANUFACTURER PROVIDED TOP OF TANK 1 JUNCTION BOX
LT-113	SUBMERSIBLE LEVEL TRANSMITTER
LSH-112	HIGH LEVEL FLOAT SWITCH
YS-111	ROOF HATCH PROXIMITY SWITCH



A1 ELECTRICAL AND INSTRUMENTATION PLAN - TANK 1
1/4" = 1'-0"

KELLER ASSOCIATES

90% Design Review Not For Construction

NO. REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

TANK 1 - ELECTRICAL AND INSTRUMENTATION PLAN

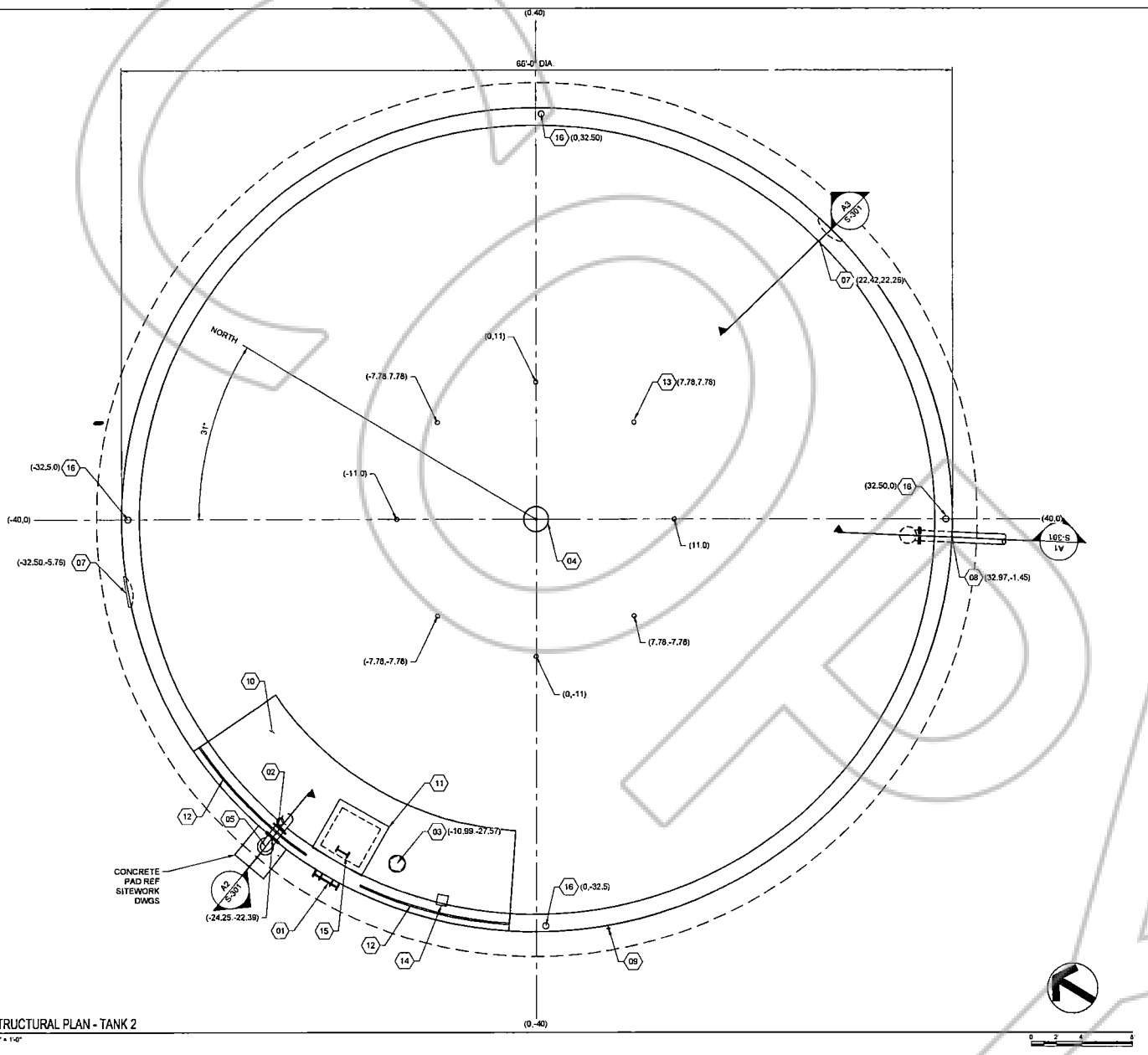
DRAWN DAC CHECK --

VERIFY SCALE. Scales based on 22"x34" prints. 1-1/2 Inches

PROJECT NO. 223125

SHEET NO. E-101

J:\223125 DOUGLAS COUNTY MTN VIEW TANK\C_DESN_CADD_DESIGN\D_PLANS-103_ELEC\E-101 TANK 1.DWG LAST SAVED 6/27/2024 8:43 AM PRINTED 7/12/2024 2:33 PM



A1 STRUCTURAL PLAN - TANK 2
1/4" = 1'-0"

GENERAL SHEET NOTES

1. SEE SPECIFICATIONS FOR COMPLETE REQUIREMENTS, TANK SHOWN IS FOR REPRESENTATION ONLY
2. TANK CONTRACTOR TO PROVIDE FULL TANK FOOTING AND FOUNDATION DESIGN, AND SHOP DRAWINGS PRIOR TO CONSTRUCTION
3. ALL PIPING ABOVE GRADE TO BE STAINLESS STEEL 304
4. SEE C-110 FOR OVERALL LAYOUT AND STRUCTURE COORDINATES

SHEET KEYNOTES

01	ACCESS LADDER
02	LIQUID LEVEL INDICATOR
03	GRIDBEE MIXER PORT
04	24" TANK ROOF VENT, RE: B2/S-501
05	10" FLOOR DRAIN
06	10" OVERFLOW OUTLET
07	30" SHELL MANHOLE, RE: A5/S-502
08	10" TANK INLET, RE: B1/S-502
09	SAMPLE TAP
10	ROOF ANTI SLIP COATING, RE: B2/S-502
11	42" x 42" ROOF HATCH, RE: A1/S-501 AND A1/S-502
12	HANDRAIL, RE: A1, A3/S-502
13	ANODE SUPPORTS, RE: A1/S-503
14	STAINLESS STEEL JUNCTION BOX, RE: A1/S-503
15	INTERIOR LADDER
16	PERIMETER ROOF VENT

KELLER ASSOCIATES

90% Design Review Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

TANK 2 - STRUCTURAL PLAN

DRAWN: DAC CHECK: --

VERIFY SCALE. Scales based on 22"x34" prints.

1-1/2 Inches

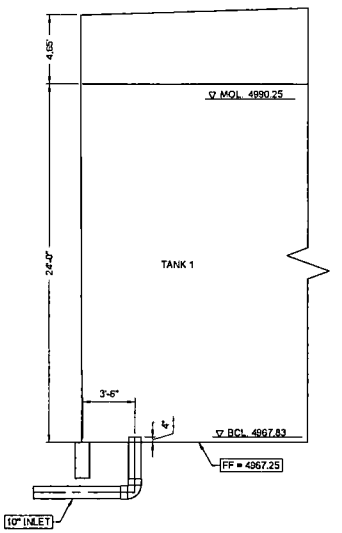
PROJECT NO. 223125 PAGE

SHEET NO. S-102

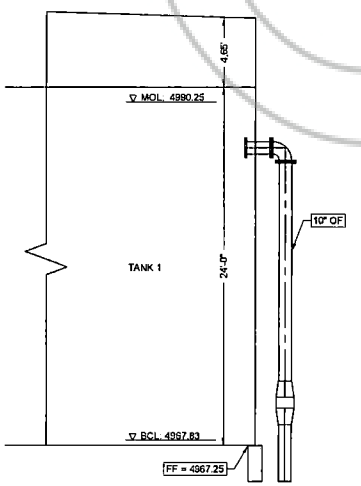
J:\223125 DOUGLAS COUNTY MTN VIEW TANKS_DESN_CADD_DESIGN\D_PLANS\10_STRUCTURAL\01_TANKS\S-102 TANK 2.DWG LAST SAVED: 6/3/2024 1:54 PM PRINTED: 7/12/2024 2:39 PM

GENERAL SHEET NOTES

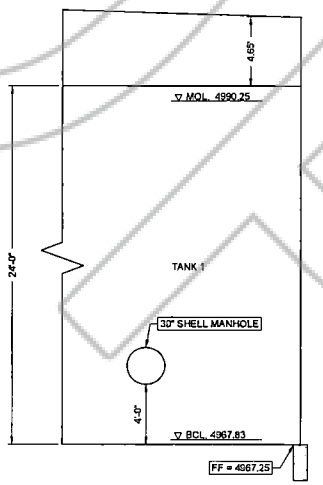
1. SEE SPECIFICATIONS FOR COMPLETE REQUIREMENTS, TANK SHOWN IS FOR REPRESENTATION ONLY
2. TANK CONTRACTOR TO PROVIDE FULL TANK REBAR AND FOUNDATION DESIGN, AND SHOP DRAWINGS PRIOR TO CONSTRUCTION



A1 STRUCTURAL SECTION - TANK 2
1/4" = 1'-0"



A2 STRUCTURAL SECTION - TANK 2
1/4" = 1'-0"



A3 STRUCTURAL SECTION - TANK 2
1/4" = 1'-0"

KELLER ASSOCIATES

90% Design Review Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

TANK 2 - STRUCTURAL SECTION

DRAWN: DAC | CHECK: --

VERIFY SCALE Scales based on 22"x34" prints.

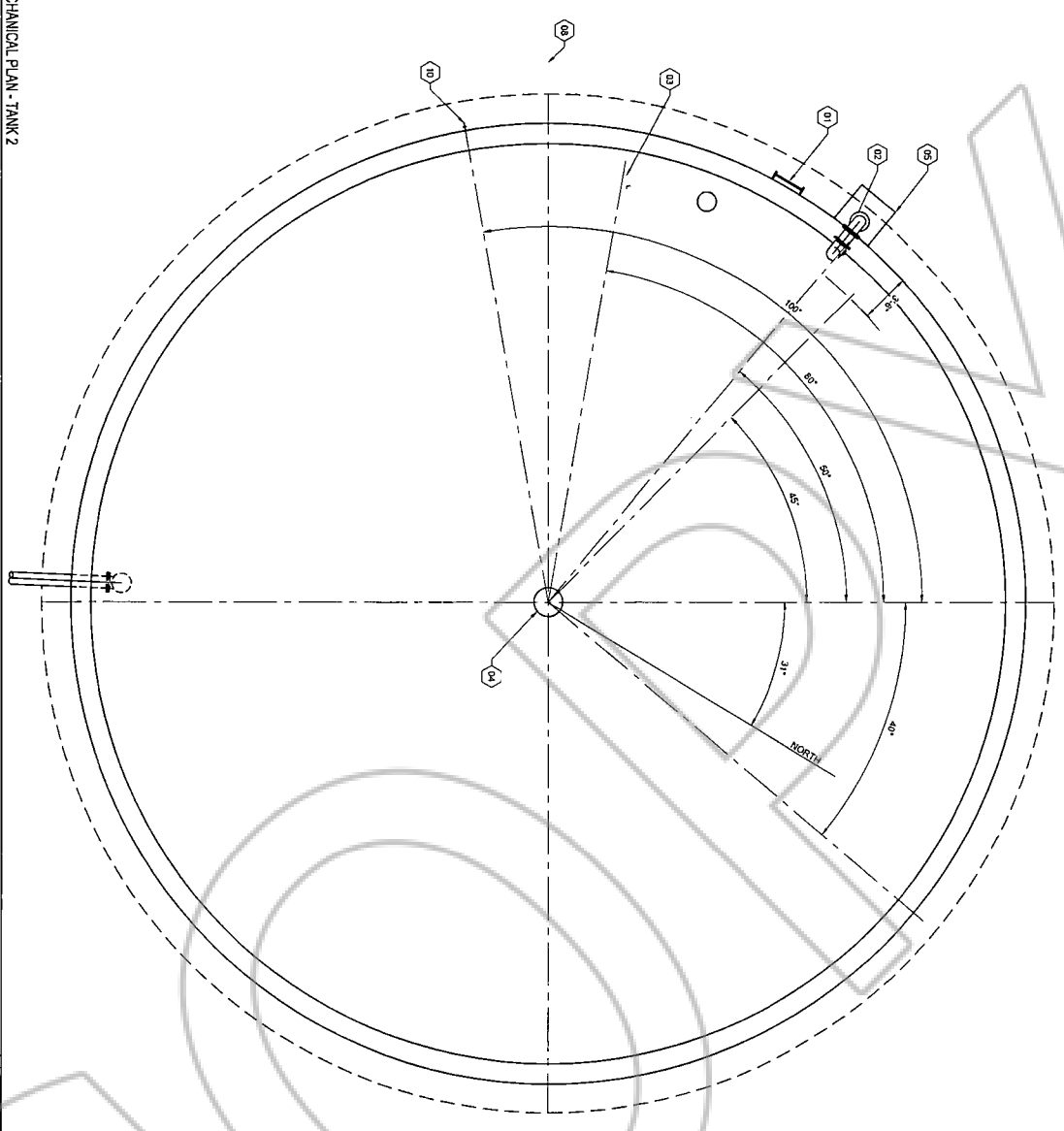
1-1/2 Inches

PROJECT NO: 223125 | PAGE:

SHEET NO: S-302

J:\223125 DOUGLAS COUNTY MTN VIEW TANKS_DESN_CAD\S_DESIGN\0_PLANS-1\0_STRUCTURAL\S1_TANKS\S-302 TANK 2.DWG LAST SAVED: 6/28/2024 11:51 AM PRINTED: 7/17/2024 2:39 PM

A1 MECHANICAL PLAN - TANK 2



GENERAL SHEET NOTES

1. —
2. —
3. —

SHEET KEYNOTES

01 ACCESS LADDER, RE: STRUCTURAL
02 LIQUID LEVEL INDICATOR, RE: XX
03 GRIDBEE MIXER, RE: E-XXX
04 24" SCREEN ROOF VENT, RE: B205-601
05 10" FLOOR DRAIN
06 10" OVERFLOW OUTLET
08 10" TANK INLET
09 3'x 3' CONCRETE SPLASH PAD
10 SAMPLE TAP

For Design Review Not For Construction

KELLER ASSOCIATES

NO. REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

TANK 2 - MECHANICAL PLAN

DRAWN: CS CHECK: —

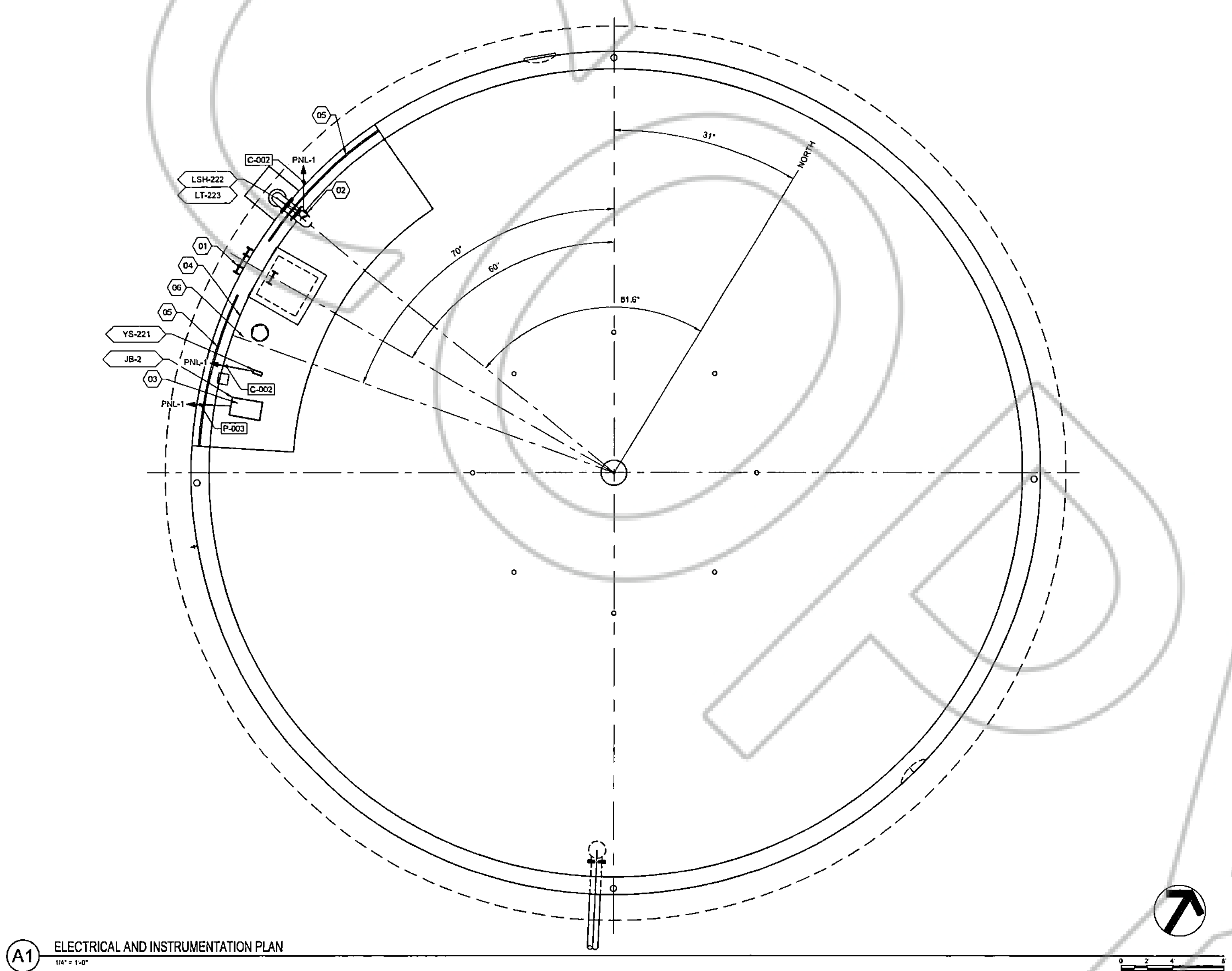
VERIFY SCALE: Scales based on 22"x34" prints

1-1/2 inches

PROJECT NO. 223125

PAGE

SHEET NO. M-102



A1 ELECTRICAL AND INSTRUMENTATION PLAN
1/4" = 1-0"

GENERAL SHEET NOTES

1. CONTRACTOR TO PROVIDE ALL EQUIPMENT AND ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.
2. COORDINATE WORK AND ROUGH-IN LOCATIONS WITH RELATED TRADES.
3. CONCEAL ALL RACEWAYS WITHIN FINISHED WALLS, CEILINGS AND FLOORS, UNLESS OTHERWISE INDICATED.
4. ROUTE CONDUIT IN COMMON TRENCH WHENEVER POSSIBLE.
5. COORDINATE WITH SCADA INTEGRATOR.
6. RE E-602 FOR CONDUIT SCHEDULES.

SHEET KEYNOTES

01 ACCESS LADDER
02 LIQUID LEVEL INDICATOR, RE XX
03 GRIDBEE MIXER PORT AND JUNCTION BOX
04 ROOF HATCH, PROVIDE CONNECTION TO PROXIMITY SWITCH, RE A1, A2, A3, B3/S-501 AND A1/S-50
05 HANDRAIL, RE A1, A3/S-502
06 INTERIOR LADDER

EQUIPMENT KEYNOTES

JB-2 MANUFACTURER PROVIDED TOP OF TANK 2 JUNCTION BOX
LT-223 SUBMERSIBLE LEVEL TRANSMITTER
LSH-222 HIGH LEVEL FLOAT SWITCH
YS-221 ROOF HATCH PROXIMITY SWITCH

KELLER ASSOCIATES
1525 Airmotive Way, Suite 172
Reno, NV 89502
(775) 451-7264

90 Design Review Not For Construction

NO REVISIONS DATE

This document or any part thereof in detail or design concept is the personal property of Keller Associates Inc. and shall not be copied in any form without the written authorization of Keller Associates, Inc.

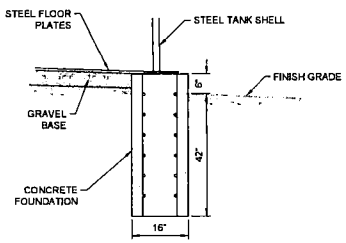
DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

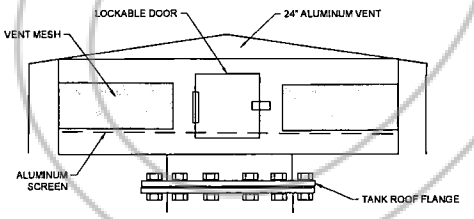
TANK 2 - ELECTRICAL AND INSTRUMENTATION PLAN

DRAWN DAC CHECK --
VERIFY SCALE Scales based on 22"x34" prints.
1-1/2 inches
PROJECT NO. 223125
PAGE
SHEET NO. E-102

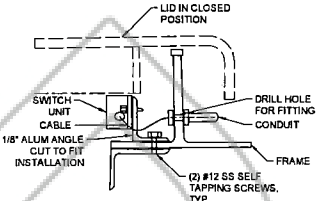
J:\223125 DOUGLAS COUNTY MTN VIEW TANK\C_DESN_CAD\3_DESIGN\D_PLANS-1\08_ELEC\E-102 TANK 2.DWG LAST SAVED 6/27/2024 8:44 AM PRINTED 7/12/2024 2:38 PM



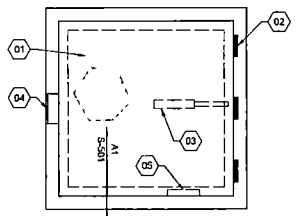
B1 TANK FOUNDATION
N.T.S.



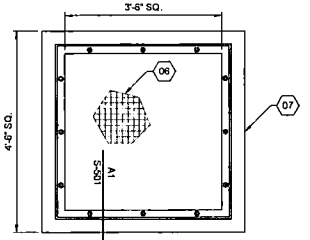
B2 TANK ROOF VENT
N.T.S.



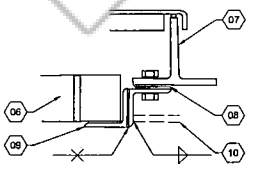
B4 HATCH PROXIMITY SWITCH
N.T.S.



ROOF HATCH COVER PLAN



ROOF HATCH FRAME PLAN



ROOF HATCH SECTION

ROOF HATCH NOTES:

01 ALUMINUM ROOF HATCH
02 HINGES
03 GAS SPRING DOOR ASSIST
04 LOCKABLE LATCH
05 DOOR PROXIMITY SWITCH
06 FIBERGLASS SAFETY GRATING
07 ALUMINUM HATCH FRAME
08 NEOPRENE GASKET
09 DOUBLE L2x2x1/4" AROUND OPENING
10 TANK ROOF PLATE

A1 ROOF HATCH DETAILS
N.T.S.

KELLER ASSOCIATES

90 % Design Review Not For Construction

NO	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

STRUCTURAL DETAILS

DRAWN CJS CHECK --

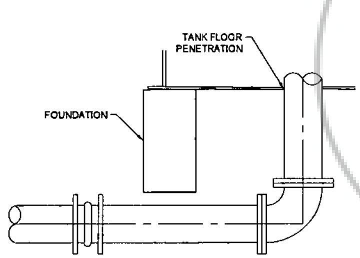
VERIFY SCALE Scales based on 22"x34" prints.

1-1/2 Inches

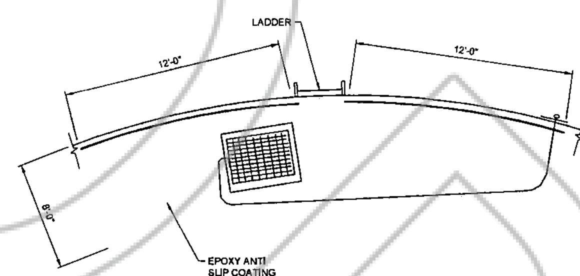
PROJECT NO 223125 PAGE

SHEET NO S-501

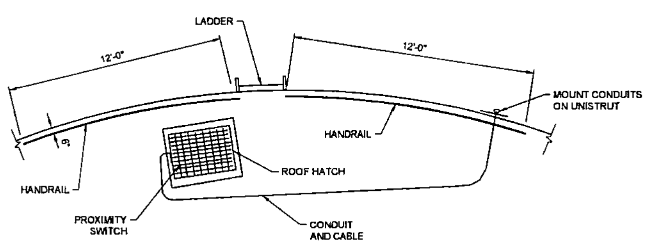
J:\223125 DOUGLAS COUNTY MTN VIEW TANK\C_DESN_CADD_DESIGN\D_PLANS-10_STRUCTURAL\S-501.DWG LAST SAVED: 6/26/2024 2:42 PM PRINTED: 7/1/2024 2:38 PM



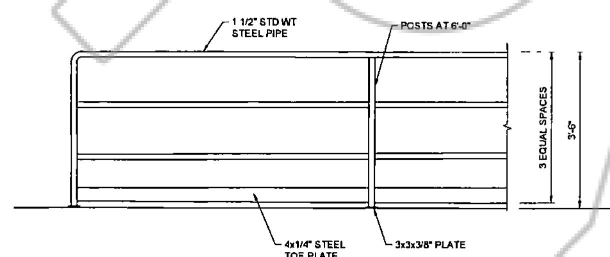
(B1) TANK PIPING INSTALLATION
N.T.S.



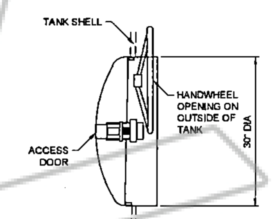
(B3) ROOF ANTI SLIP COATING
N.T.S.



(A1) ROOF HATCH AND HANDRAIL PLAN
N.T.S.



(A3) HANDRAIL
N.T.S.



(A5) GROUND LEVEL ACCESS WAY
N.T.S.

KELLER ASSOCIATES

90 Design Review Not For Construction

NO. REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

STRUCTURAL DETAILS

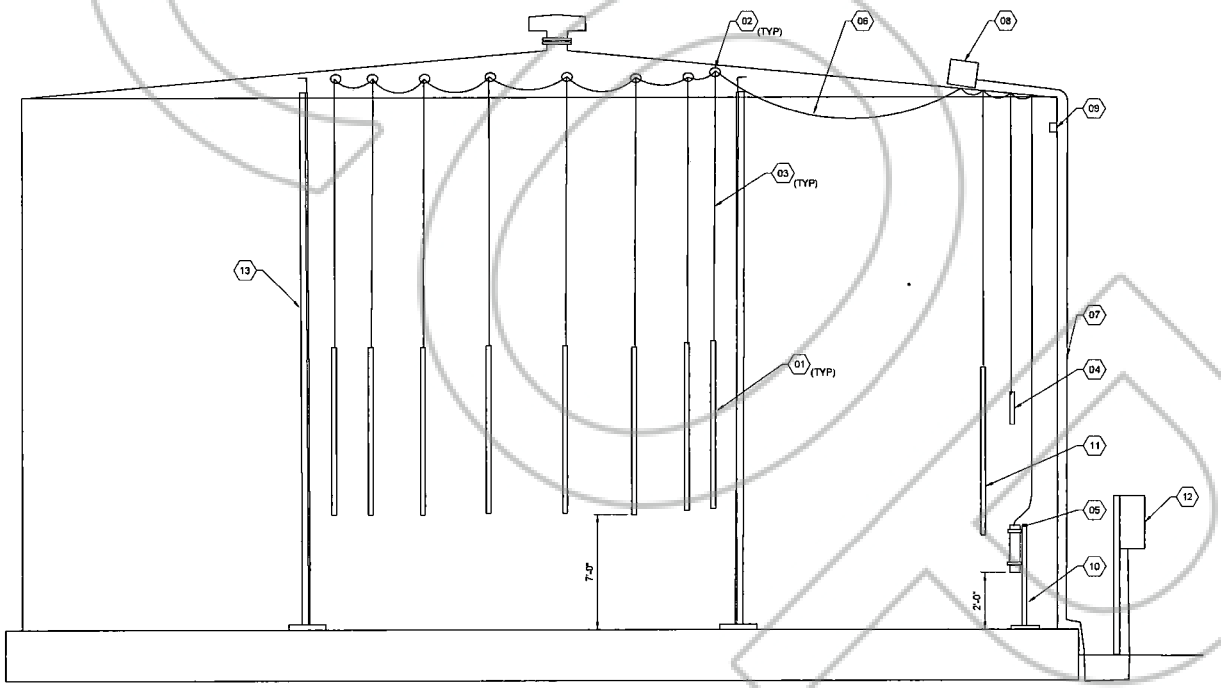
DRAWN CJS | CHECK --

VERIFY SCALE Scales based on 22"x34" prints. 1-1/2 Inches

PROJECT NO. 223125 | PAGE

SHEET NO. S-502

J:\223125 DOUGLAS COUNTY MTN VIEW TANK\0_DESN_CAD\3_DESIGN\0_PLANS-1\0_STRUCTURALS-502.DWG LAST SAVED 11/6/2023 8:44 PM PRINTED 7/12/2024 2:38 PM



CATHODIC PROTECTION NOTES:

01 ANODES
02 ANODE SUPPORTS
03 ANODE SUPPORTS CORDS
04 COPPER ELECTRODE
05 COPPER SULFATE REFERENCE CELL
06 SYSTEM CABLING
07 RIGID STEEL CONDUIT FOR EXPOSED CABLING
08 STAINLESS STEEL JUNCTION BOX
09 CONNECTION FROM TANK SHELL METAL TO CATHODIC PROTECTION SYSTEM
10 REFERENCE CELL SUPPORT
11 ONE ANODE NEAR HATCH
12 ANODE CONTROL STATION
13 TANK ROOF COLUMNS

A1 CATHODIC PROTECTION ELEVATION
N.T.S.

KELLER ASSOCIATES
1254 Irvington Way, Suite 127
Reno, NV 89502
(775) 451-2262

90% Design Review Not For Construction

NO. REVISIONS - DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

STRUCTURAL DETAILS

DRAWN CJS CHECK --

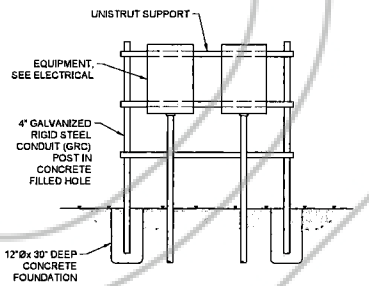
VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

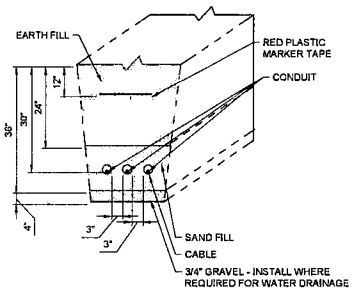
PROJECT NO. 223125 PAGE

SHEET NO. S-503

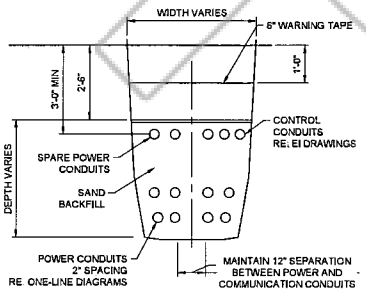
J:\23125 DOUGLAS COUNTY MTN VIEW TANK\C_DESN_CADD_DESIGN_PLANS-10_STRUCTURALS-503.DWG LAST SAVED: 11/8/2023 10:23 PM PRINTED: 7/12/2024 2:38 PM



E008 UNISTRUT EQUIPMENT RACK MOUNTED AT GRADE LEVEL
N.T.S.



E002 INSTALLATION OF UNDERGROUND CONDUITS
N.T.S.



E003 STANDARD ELECTRICAL DUCT BANK DETAIL
N.T.S.

KELLER ASSOCIATES
1329 Arrington Way, Suite 195
Reno, NV 89512
(775) 451-7228

90% Design Review Not For Construction

NO.	REVISIONS	DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

ELECTRICAL DETAILS

DRAWN — CHECK —

VERIFY SCALE. Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO 223125 | PAGE

SHEET NO. E-501

PANEL NAME: MMP-1

LOCATION: WEST OF TANK 2
FED FROM: PHOTOVOLTAIC MODULES
MOUNTING: SURFACE

VOLTAGE: 240/120
PHASE & WIRE: 1PH 3W
AIC RATING: 10k
ENCLOSURE: N1

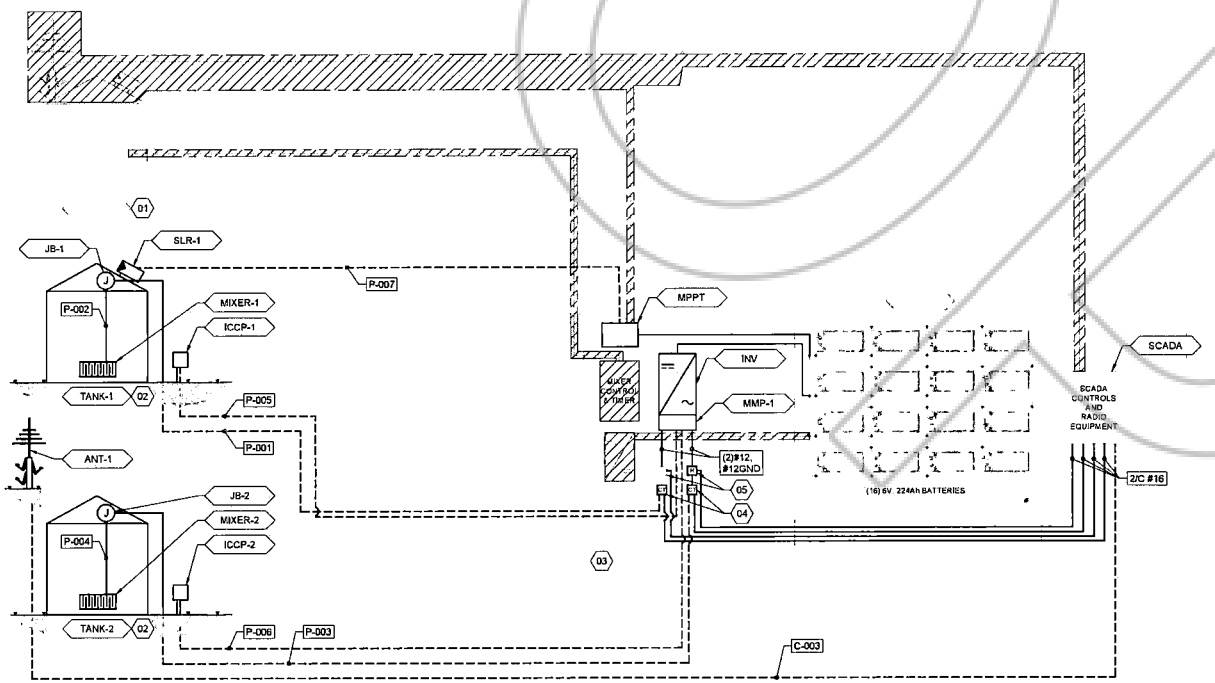
BUS: 120A
FEED: BOTTOM
MAIN BREAKER: 30A
SPACES: 5

NOTES: MINIMAGNUM PANEL A.C. VOLTAGE

NOTES	CIRCUIT DESCRIPTION	CODE	LOAD	POLE	BKR	CKT	PH	CKT	BKR	POLE	LOAD	CODE	CIRCUIT DESCRIPTION	NOTES
	MIXER 1	M	1176	2	20	1	A	2	20	2	180		SCADA	
	MIXER 2	M	1176	2	20	3	B	4	20	2	180	R	GFI OUTLET	
	SPARE					5	A							

CONNECTED VA PHASE A: 1356 — % CONNECTED VA PHASE A: 50%
CONNECTED VA PHASE B: 1356 — % CONNECTED VA PHASE B: 50%

TOTAL VA: 2712
CONNECTED AMPS: 11
DIVERSITY: 1.11 — DIVERSIFIED AMPS: 13



A1 ONE-LINE DIAGRAM
N.T.S.

GENERAL SHEET NOTES

1. CONTRACTOR TO PROVIDE ALL EQUIPMENT AND ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.
2. COORDINATE WORK AND ROUGH-IN LOCATIONS WITH RELATED TRADES.
3. ROUTE CONDUIT IN COMMON TRENCH WHENEVER POSSIBLE.
4. CONTRACTOR SHALL PROVIDE & CHECK CIRCUIT BREAKER POSITIONS.
5. CONTRACTOR SHALL PROVIDE NEW UPDATED DIRECTORIES FOR ALL PANELS IN WHICH CIRCUITS ARE ADDED OR REMOVED. DELETED CIRCUITS SHALL BE MARKED SPARE.
6. ALL ELECTRICAL EQUIPMENT SHALL BE FIELD MARKED PER THE NEC 110.16 "POTENTIAL ELECTRIC ARC FLASH HAZARD".

SHEET KEYNOTES

01 EXISTING TANK FOR DEMO. COORDINATE WITH INTEGRATOR FOR RELOCATION OF ANTENNA.

02 SEE CONSTRUCTION PHASING REQUIREMENTS FOR NEW TANK TO BE CONSTRUCTED WITH NEW ELECTRICAL AND CONTROLS EQUIPMENT TO BE IN PLACE PRIOR TO SWITCH OVER IN ORDER TO MINIMIZE TIME OFFLINE.

03 RETURN ELECTRICAL AND CONTROLS EQUIPMENT SHOWN FOR DEMO TO OWNER.

04 INSTALL NEW ACUAMP AC CURRENT SWITCH MODEL ACSN100-AE-F FOR EACH GRIDBEE MIXER'S CONDUCTOR. RETAIN/MATCH EXISTING CURRENT TRANSFORMER FOR EACH GRIDBEE MIXER'S PANEL LIGHTS.

05 INSTALL RELAY FOR EACH GRIDBEE MIXER. RETAIN/MATCH EXISTING RELAYS. PROVIDE A SECOND RELAY AS FIELD SPARE FOR EACH GRIDBEE MIXER.

EQUIPMENT KEYNOTES

ANT-1	RELOCATED ANTENNA
ICCP-1	TANK 1 IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM
ICCP-2	TANK 2 IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM
INV	INVERTER WITH MINI MAGNUM PANEL
JB-1	MANUFACTURER PROVIDED TOP OF TANK 1 JUNCTION BOX
JB-2	MANUFACTURER PROVIDED TOP OF TANK 2 JUNCTION BOX
MIXER-1	TANK 1 GRIDBEE MIXER
MIXER-2	TANK 2 GRIDBEE MIXER
MMP-1	MINI MAGNUM PANEL
MPPT	CHARGE CONTROLLER
PNL-1	EXISTING PANEL
SLR-1	SOLAR MODULES
SCADA	SCADA CONTROLS AND RADIO EQUIPMENT
TANK-1	NEW TANK 1
TANK-2	NEW TANK 2

LEGEND

- NEW EQUIPMENT
- FUTURE EQUIPMENT
- EXISTING EQUIPMENT
- UNDERGROUND CONDUIT

KELLER ASSOCIATES
1329 Airmotive Way, Suite 107
Reno, NV 89502
(775) 857-7200

90% Design Review Not For Construction

NO. REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

ONE-LINE DIAGRAM

DRAWN TLL CHECK KTH

VERIFY SCALE: Scales based on 22"x34" prints.
1-1/2 Inches

PROJECT NO. 223125 PAGE

SHEET NO. E-601

ELECTRICAL CABLE AND CONDUIT SCHEDULE

CONDUIT TAG	REF. SHEET	CONDUIT SPEC*	CABLE SPEC	SERVICE	DESCRIPTION	ORIGIN	DESTINATION	NOTES
P-001	E 120, E 601	3/4"	(2) #.2, #12 GND	120V	TANK 1 GRIDBEE MIXER	PNL 1	JB-1	
P-002	E-601	N/A	MANUFACTURER'S CABLE	120V	TANK 1 GRIDBEE MIXER	JB-1	MIXER-1	
P-003	E 120, E 601	3/4"	(2) #12, #12 GND	120V	TANK 2 GRIDBEE MIXER	PNL 1	JB-2	
P-004	E-601	N/A	MANUFACTURER'S CABLE	120V	TANK 2 GRIDBEE MIXER	JB-2	MIXER 2	
P-005	E 120, E 601	MATCH EXISTING	MATCH EXISTING	N/A	SOLAR MODULES	SLR-1	MPPT	

*NOTE: CONDUIT SPECIFICATION IS INDICATIVE OF THE TYPE OF INSTALLATION REQUIRED FOR MAJORITY OF CABLE ROUTING. EC IS RESPONSIBLE FOR ALL WIRING METHODS AND MATERIALS INCLUDING CONDUIT TRANSITIONS, SUPPORTS, PENETRATIONS, ETC., AS REQUIRED FOR A COMPLETE INSTALLATION AND MEETING ALL REQUIREMENTS

CONTROL CABLE AND CONDUIT SCHEDULE

CONDUIT TAG	REF. SHEET	*CONDUIT SPEC	CABLE SPEC	SERVICE	DESCRIPTION	ORIGIN	DESTINATION	NOTES
C-001	E 120, E-101	3/4	2/C#16	DISCRETE	TANK 1 HATCH INTRUSION	PNL-1	YS-111	
C 001	E 120, E 101	3/4"	2/C#16	DISCRETE	TANK 1 HIGH LEVEL	PNL 1	LSH 112	
C-001	E-120, E 101	3/4"	1PR #18 TWOS	ANALOG	TANK 1 LEVEL	PNL 1	LT 113	
C-002	E-120, E 102	3/4	2/C#16	DISCRETE	TANK 2 HATCH INTRUSION	PNL-1	YS-221	
C-002	E 120, E 102	3/4"	2/C#16	DISCRETE	TANK 2 HIGH LEVEL	PNL 1	LSH-222	
C 002	E 120, E 102	3/4	1PR #18 TWOS	ANALOG	TANK 2 LEVEL	PNL 1	LT 223	
C 003	E 120, E 601	MATCH EXISTING	MATCH EXISTING	N/A	ANTENNA	ANT 1	SCADA	

*NOTE: CONDUIT SPECIFICATION IS INDICATIVE OF THE TYPE OF INSTALLATION REQUIRED FOR THE MAJORITY OF THE CABLE ROUTING. EC IS RESPONSIBLE FOR ALL WIRING METHODS AND MATERIALS INCLUDING CONDUIT TRANSITIONS, SUPPORTS, PENETRATIONS, ETC., AS REQUIRED FOR A COMPLETE INSTALLATION AND MEETING ALL REQUIREMENTS OF ARTICLE 300 OF THE NATIONAL ELECTRIC CODE.
EC MAY COMBINE LOW VOLTAGE SIGNAL CABLES IN SAME CONDUITS AND RACEWAYS WHERE APPROPRIATE FOR ROUTING AND MAY INCREASE CONDUIT SIZE AS NEEDED FOR GROUPED CABLES. INSTRUMENT, SIGNAL, AND NETWORK CABLES ARE TO BE SEPARATED FROM POWER CONDUCTORS.
CABLE VOLTAGE > 50V SHALL BE ROUTED IN A SEPARATE RACEWAY OR SEGREGATED VIA PHYSICAL BARRIER SEPARATION AND/OR MINIMUM DISTANCE OF 12 IN. FROM SIGNAL CABLES, MAINTAINED FOR ENTIRE LENGTH OF CABLE RUN.

KELLER ASSOCIATES

90% Design Review Not For Construction

NO. REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

CABLE AND CONDUIT SCHEDULES

DRAWN — CHECK —
VERIFY SCALE Scales based on 22"x34" prints. 1-1/2 Inches
PROJECT NO 223125 PAGE
SHEET NO. E-602

INSTRUMENT AND SIGNAL LINE LEGEND

- INSTRUMENT CONNECTION TO PROCESS
- CONTROL WIRING
- POWER WIRING
- PNEUMATIC
- HYDRAULIC
- CAPILLARY TUBE
- ETHERNET
- FIBER — FO —
- RADIO — R — R —
- SERIAL — S — S —
- CABLE Ssplice
- INTERLOCK

INPUT AND OUTPUT SYMBOLS LEGEND

- DIGITAL INPUT
- DIGITAL OUTPUT
- ANALOG INPUT
- ANALOG OUTPUT
- PULSED INPUT
- NETWORK/COMMUNICATIONS
- SIGNAL CONTINUATION (X)

OFF-PAGE CONNECTORS

- NOTE / # PROCESS # / NOTE — PROCESS TAG LEFT
- NOTE / # PROCESS # / NOTE — PROCESS TAG RIGHT
- STRUCTURE / (X) # SHEET # / STRUCTURE — SHEET REFERENCE LEFT
- STRUCTURE / # SHEET # (X) / STRUCTURE — SHEET REFERENCE RIGHT

INSTRUMENT TAG IDENTIFICATION LETTERS

	MEASURED VARIABLE / INSTRUMENT FUNCTION	ELEMENT	TRANSMITTER	INDICATING TRANSMITTER	CONVERTER TRANSDUCER RELAY SPECIAL DEVICES	INDICATOR	RECORDER	CONTROLLER	SWITCH	SWITCH-LOW-LOW	SWITCH LOW	SWITCH-HIGH	SWITCH-HIGH-HIGH	ALARM LOW LOW	ALARM LOW	ALARM HIGH	ALARM HIGH HIGH	TOTALIZE	DIFFERENTIAL	VALVE	GAUGE	LIGHT
A	ANALYSIS	AE	AT	AIT	AY	AI	AR	AC	AS	ASLL	ASL	ASH	ASHH	AALL	AAL	AAH	AAHH					AL
B	BURNER FLAME	BE	BT	BIT	BY	BI	BR	BC	BS	BSLL	BSL	BSH	BSHH	BALL	BAL	BAH	BAHH					BL
C	CONDUCTIVITY	CE	CT	CIT	CY	CI	CR	CC	CS	CSLL	CSL	CSH	CSHH	CALL	CAL	CAH	CAHH					CL
D	DENSITY	DE	DT	DIT	DY	DI	DR	CD	DS	DSLL	DSL	DSH	DSHH	DALL	DAL	DAH	DAHH					DL
E	VOLTAGE	EE	ET	EIT	EY	EI	ER		ES	ESLL	ESL	ESH	ESHH	EALL	EAL	EAH	EAHH					EL
F	FLOW	FE	FT	FIT	FY	FI	FR	FC	FS	FSLL	FSL	FSH	FSHH	FALL	FAL	FAH	FAHH	FQ	FD	FV	FG	FL
G	GAUGE																					
H	HAND							HC	HS											HV		HL
I	CURRENT	IE	IT	IIT	IY	II	IR	IC	IS	ISLL	ISL	ISH	ISHH	IALL	IAL	IAH	IAHH					IL
J	POWER	JE	JT	JIT	JY	JI	JR	JC	JS	JSLL	JSL	JSH	JSHH	JALL	JAL	JAH	JAHH					JL
K	TIME				KY	KI	KR	KC	KS	KSLL	KSL	KSH	KSHH	KALL	KAL	KAH	KAHH					KL
L	LEVEL	LE	LT	LIT	LY	LI	LR	LC	LS	LSLL	LSL	LSH	LSHH	LALL	LAL	LAH	LAHH		LD	LV	LG	LL
M	MOISTURE/HUMIDITY	ME	MT	MIT	MY	MI	MR	MC	MS	MSLL	MSL	MSH	MSHH	MALL	MAL	MAH	MAHH					ML
N	TORQUE	NE	NT	NIT	NY	NI	NR	NC	NS	NSLL	NSL	NSH	NSHH	NALL	NAL	NAH	NAHH					NL
P	PRESSURE OR VACUUM	PE	PT	PIT	PY	PI	PR	PC	PS	PSLL	PSL	PSH	PSHH	PALL	PAL	PAH	PAHH		PD	PV	PG	PL
Q	QUANTITY	QE	QT	QIT	QY	QI	QR	QC	QS	QSLL	QSL	QSH	QSHH	QALL	QAL	QAH	QAHH					QL
R	RADIATION	RE	RT	RIT	RY	RI	RR	RC	RS	RSLL	RSL	RSH	RSHH	RALL	RAL	RAH	RAHH					RL
S	SPEED	SE	ST	SIT	SY	SI	SR	SC	SS	SSLL	SSL	SSH	SSHH	SALL	SAL	SAH	SAHH					SL
T	TEMPERATURE	TE	TT	TIT	TY	TI	TR	TC	TS	TSLL	TSL	TSH	TSHH	TALL	TAL	TAH	TAHH		TD	TV		TL
U	MULTIVARIABLE	UE	UT	UIT	UY	UI	UR	UC	US													UL
V	VIBRATION	VE	VT	VIT	VY	VI	VR	VC	VS	VSLL	VSL	VSH	VSHH	VALL	VAL	VAH	VAHH					VL
W	WEIGHT	WE	WT	WIT	WY	WI	WR		WS	WSLL	WSL	WSH	WSHH	WALL	WAL	WAH	WAHH					WL
X	UNCLASSIFIED	XE	XT	XIT	XY	XI	XR	XC	XS	XSLL	XSL	XSH	XSHH	XALL	XAL	XAH	XAHH			XV	XG	XL
Y	EVENT / STATUS				YY	YI	YR	YC	YS													YL
Z	POSITION	ZE	ZT	ZIT	ZY	ZI	ZR	ZC	ZS	ZSLL	ZSL	ZSH	ZSHH	ZALL	ZAL	ZAH	ZAHH					ZL

INSTRUMENT SYMBOLS, ACCESSORIES, AND SPECIAL DEVICES

- XX — FIELD INSTRUMENTATION
- XX XX — INSTRUMENTS OR OTHER COMPONENTS SHARING A COMMON HOUSING
- XX — INSTRUMENT OR OTHER COMPONENT MOUNTED ON MAIN OR PRIMARY PANEL
- XXX — INSTRUMENT OR OTHER COMPONENT MOUNTED ON LOCAL OR SECONDARY PANEL
- XXX (FUNCTION / LIGHT) — LOCAL INDICATING LIGHT
  - LIGHT COLOR ABBREVIATIONS: GRN = GREEN, WHT = WHITE, RED = RED, BLU = BLUE, AMB = AMBER
- HORN
- INSTRUMENT OR OTHER COMPONENT MOUNTED IN REAR OF MAIN PANEL
- INSTRUMENT OR OTHER COMPONENT MOUNTED IN REAR OF LOCAL OR SECONDARY PANEL
- XXX / XXX — PLC INPUTS/OUTPUTS
- XXX / XXX — HMI SCREEN INDICATION AND CONTROLS
- XXX / XXX — SCADA SYSTEM
- H HH / L LL — I/O SETPOINTS AND ALARMS AS INDICATED
- DEVICE POWER (VOLTAGE, AC/DC AS NOTED)
- EQUIPMENT TAG
- AMP — SIGNAL AMPLIFIER
- CT — CURRENT TRANSFORMER
- XXXX / 888.88 — DIGITAL DISPLAY TYPE AS NOTED
- HMI — HUMAN-MACHINE INTERFACE
- IB — INTRINSIC BARRIER
- R — RELAY
- SIGNAL TO / CONV / SIGNAL FROM — SIGNAL CONVERTER
- ISO — SIGNAL ISOLATOR
- SLR — SEAL LEAK RELAY
- SPL — SIGNAL SPLITTER
- TDR — TIME DELAY RELAY

INSTRUMENTATION / DEVICE TAGS

XXX - XXXXX - XXXX

- DEVICE PREFIX / TAG IDENTIFIER
- EQUIPMENT TAG / LOOP
- SUFFIX / TAG IDENTIFIER (AS NEEDED)
- TAG IDENTIFIER
- LOOP NUMBER
- MODIFIER
- ADD. MODIFIER

PLC & SCADA I/O LEGEND

- SCADA COMMUNICATION VIA XXXXXXXXX
- CONNECTION TO SCADA MEDIA: ETHERNET, RADIO, FIBER, CELLULAR, ETC. PROTOCOL: ETHERNET/IP, MODBUS TCP/IP, DEVICENET, ETC.
- I/O DESCRIPTION
- SCADA TAG NO.
- PLC
  - PLC TAG NO.
  - SIGNAL CONVERTERS AND SPECIAL DEVICES SHOWN AS REQUIRED FOR WIRING TO/FROM FIELD
  - INPUT/OUTPUT TYPE PER I/O SYMBOL LEGEND
- FIELD
  - SIGNAL TO/FROM FIELD DEVICE LINETYPE PER INSTRUMENT AND SIGNAL LINE LEGEND

GENERAL ABBREVIATIONS

AFF	ABOVE FINISH FLOOR
AG	ABOVE GROUND
ATM	ATMOSPHERE
BYP	BYPASS
EL	ELEVATION
ETM	ELAPSED TIME METER
FC	FAIL CLOSE
FO	FAIL OPEN
FOR	FORWARD / OFF / REVERSE
FL	FAIL LAST
HMI	HUMAN-MACHINE INTERFACE
HOA	HAND/OFF/AUTOMATIC
HPT	HIGH POINT
HS	HAND SWITCH
JKT	JACKET
KO	TIMER/OFF
LC	LOCKED CLOSE
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LO	LOCKED OPEN
LOR	LOCAL/OFF/REMOTE
LPT	LOW POINT
LR	LOCAL/REMOTE
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CONTROL PANEL
MIN	MINIMUM
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NNF	NORMALLY NO FLOW
OC	OPEN/CLOSE
OH	OVERHEAD
OOS	OUT OF SERVICE
PLC	PROGRAMMABLE LOGIC CONTROLLER
POT	POTENTIOMETER
RCP	REMOTE CONTROL PANEL
REQD	REQUIRED
RSL	RAISE/STOP/LOWER
RTU	REMOTE TELEMETRY UNIT
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SEL	SELECT
SP	SET POINT
SMP	SAMPLE POINT
TL	TANGENT LINE
TSO	TIGHT SHUTOFF
UG	UNDER GROUND
VAC	VACUUM
VCP	VENDOR CONTROL PANEL
VT	VENT

KELLER ASSOCIATES

90% Design Review Not For Construction

NO. | REVISIONS | DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

P&ID LEGEND & SCHEDULE

DRAWN ACM | CHECK BMC

VERIFY SCALE. Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 223125 | PAGE

SHEET NO. EI-001

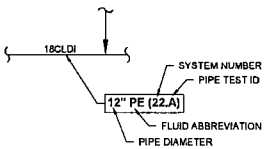
PROCESS AND PIPING LINE LEGEND

- MAIN PROCESS
- SECONDARY PROCESS
- CONNECTING LINES
- NON-CONNECTING LINES
- PIPING SPECIFICATION BREAK (AT LOWER PRESSURE SIDE WELD)
- DIRECTION FLOW
- SLOPING LINES
- ELECTRICAL TRACING
- JACKETED
- FLANGES

PROJECT SCOPE LEGEND

- EXISTING ITEM
- NEW ITEM
- FUTURE ITEM
- DEMOLITION ITEM
- (R) RELOCATED/TO BE RELOCATED ITEM
- (V) VENDOR PROVIDED EQUIPMENT

LINE SIZE AND MATERIAL IDENTIFICATION



NOTE REFER TO G-XXX. PIPE SCHEDULE FOR SYSTEM NUMBER, PIPE TEST ID AND FLUID ABBREVIATIONS

BOUNDARIES

- ABOVE GROUND / UNDERGROUND — UG / AG
- LINE MATERIAL CLASS — SPEC 1 / SPEC 2
- INTERFACE BETWEEN CONTRACTOR/VENDOR — VENDOR
- INSULATION BREAK — N / H
- VENDOR EQUIPMENT LIMITS PACKAGED
- BATTERY LIMITS (BUILDING ENTRY/EXIT)
- WATER SURFACE

PROCESS SERVICE CODES

AL	ALUM
ALP	AIR LOW PRESSURE
BW	BACKWASH
CA	COMPRESSED AIR
CHM	CHEMICAL
CIP	CLEAN IN PLACE
CLS	CHLORINE SOLUTION
CSL	CIRCULATED SLUDGE
DR	DRAIN
DG	DIGESTER GAS
DS	DIGESTED SLUDGE
FA	FOUL AIR
FC	FERRIC CHLORIDE
FLT	FILTRATE
HSL	HEATED SLUDGE LINE
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
ML	MIXED LIQUOR
NG	NATURAL GAS
OF	OVERFLOW
PD	PUMPED DRAIN/PLANT DRAIN
PE	PRIMARY EFFLUENT
PLR	POLYMER
PS	PRESSURE SEWER
RAS	RETURN ACTIVATED SLUDGE
RS	RAW SEWAGE
SA	SAMPLE
SCM	SCUM
SD	STORM DRAIN
SE	SECONDARY EFFLUENT
SLD	SLUDGE
SPD	SUMP PUMP DISCHARGE
SS	SANITARY SEWER (GRAVITY)
TE	TERTIARY EFFLUENT
V	VENT
WAS	WASTE ACTIVATED SLUDGE

PIPING COMPONENTS

- Y STRAINER
- ACCUMULATOR
- BASKET STRAINER
- AREA DRAIN
- (T) CONDENSATE TRAP
- DEMISTER
- EJECTOR / EDUCTOR
- COLLECTION TO DRAIN

PIPING COMPONENTS

- (SP) SAMPLE POINT
- BREATHER
- DAMPER
- VENT COVER
- (S) SILENCER
- AIR FILTER
- EXPANSION JOINT
- FLEXIBLE HOSE CONNECTION
- FLOW CONDITIONER
- EXPANSION CHAMBER
- FLOOR DRAIN
- GRINDER
- HOSE RACK
- STATIC MIXER
- IN-LINE MIXER
- PULSATION DAMPENER
- ROOF DRAIN
- RUPTURE DISK
- SIGHT GLASS
- SURGE DAMPENER
- TRENCH DRAIN
- WAFER-TYPE STATIC MIXER

PIPE FITTINGS

- FLANGE
- FLANGE, REDUCING
- ORIFICE UNION
- ECCENTRIC UNION (FLAT SIDE DOWN)
- ECCENTRIC UNION (FLAT SIDE UP)
- CAP (THREADED)
- CAP (WELDED)
- HOSE CONNECTION
- PLUG
- CAP
- HOSE CONNECTION (FEMALE)
- HOSE CONNECTION (MALE)
- REDUCER
- FLEXIBLE HOSE
- BLIND FLANGE

EQUIPMENT

- TANK OPEN
- TANK CLOSED
- TANK COVERED
- TANK, DOME ROOF
- TANK, CONE ROOF
- TANK, DOUBLE WALL
- TOTE
- DRUM
- VESSEL

EQUIPMENT

- BIN
- HEATER
- BARREL
- OPEN BULK STORAGE
- CONVEYOR
- ROTARY FEEDER
- AUTOMATIC TRANSFER SWITCH
- GENERATOR
- MANUAL BAR SCREEN
- PLATE AND FRAME HEAT EXCHANGER
- SHELL AND TUBE HEAT EXCHANGER
- AERATOR
- FAN
- ELECTRIC MOTOR
- AGITATOR / MIXER
- SCREW CONVEYOR
- SOFT STARTER
- STARTER
- VARIABLE FREQUENCY DRIVE

KELLER ASSOCIATES

90% Design Review Not For Construction

NO. REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

P&ID LEGEND

DRAWN — CHECK: BMC

VERIFY SCALE. Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 223125 | PAGE

SHEET NO. EI-002

ACCESSORIES AND MISCELLANEOUS

- ANNULAR SEAL
- REMOTE ELECTRONIC PRESSURE SENSOR
- CALIBRATION COLUMN
- DIAPHRAGM SEAL FLANGED
- DIAPHRAGM SEAL THREADED OR SANITARY
- HORN
- PIGTAIL
- ROOM THERMOSTAT
- SNUBBER
- THERMOWELL
- AIR REGULATOR/FILTER

FLOW METERS

- VENTURI FLOW METER
- MAGNETIC FLOW METER
- INSERTION MAGNETIC FLOW METER
- CORIOLIS FLOW METER
- PLATE FLOW METER dP/ORIFICE
- PARSHALL FLUME FLOW METER
- WEIR FLOW METER
- PITOT TUBE FLOW METER
- AVERAGING PITOT FLOW METER
- TURBINE FLOW METER
- ROTAMETER
- THERMAL DISPERSION FLOW METER

FLOW METERS

- ULTRASONIC FLOW METER
- CLAMP ON FLOW METER
- VORTEX FLOW METER

LEVEL

- FLOAT SWITCH
- FLOAT SWITCH, TILT-TYPE
- TUNING FORK
- CAPACITANCE
- GUIDED WAVE RADAR
- RADAR, NON-CONTACT
- ULTRASONIC
- LASER
- INDUCTIVE RELAY LEVEL SWITCH
- VENT
- SUBMERSIBLE LEVEL
- ANALYZER PROBE

PUMPS

- CENTRIFUGAL PUMP, FAN, OR BLOWER
- VERTICAL MULTI-STAGE CENTRIFUGAL PUMP
- BLOWER OR COMPRESSOR
- TURBINE PUMP
- DIAPHRAGM PUMP
- POSITIVE DISPLACEMENT PUMP
- EJECTOR PUMP
- GEAR PUMP
- CHEMICAL METERING PUMP
- PISTON COMPRESSOR
- RECIPROCATING PUMP
- ROTARY VANE PUMP
- PROGRESSIVE CAVITY PUMP
- SUBMERSIBLE SUMP PUMP
- ROTARY LOBE PUMP
- PERISTALTIC PUMP
- VACUUM PUMP
- VERTICAL TURBINE LINESHAFT PUMP

VALVES

- BALL VALVE
- GATE VALVE
- GLOBE VALVE
- NEEDLE VALVE
- PINCH VALVE
- PLUG VALVE
- PRESSURE REGULATING VALVE
- BACK-PRESSURE REGULATING VALVE
- PRESSURE SAFETY VALVE
- SLIDE GATE
- STOP OR SHEAR GATE
- PRESSURE SAFETY VALVE WITH VENT
- VACUUM SAFETY VALVE
- VEE BALL VALVE
- BALANCED WEIGHT VALVE
- BALL CHECK VALVE
- BALL CHECK VALVE, SPRING LOADED
- BUTTERFLY VALVE
- CHECK VALVE
- ALTITUDE / BACK PRESSURE CONTROL VALVE
  LIMIT SWITCHES AND SOLENOIDS TO BE ADDED AS REQUIRED
- DIAPHRAGM VALVE
- DUCKBILL CHECK VALVE

VALVES

- ANGLE VALVE
- THREE-WAY VALVE
- FOUR-WAY VALVE
- AIR RELEASE VALVE

VALVE ACTUATORS

- PNEUMATIC DIAPHRAGM SPRING-OPPOSED, SINGLE OR DOUBLE ACTING
- VALVE POSITIONER
- HYDRAULIC OR PNEUMATIC CYLINDER ACTUATOR
- HANDWHEEL, USED WITH ANY ACTUATOR
- MANUAL ACTUATOR
- MOTOR ACTUATOR
- SOLENOID ACTUATOR

VALVE FAILURE STATE SHOWN BENEATH VALVE
FO = FAIL OPEN FC = FAIL CLOSED
FL = FAIL LAST

SAFETY EQUIPMENT

- HOSE REEL
- EYE WASH
- SAFETY SHOWER
- SPRINKLER

KELLER ASSOCIATES

90% Design Review Not For Construction

NO. REVISIONS DATE

DOUGLAS COUNTY, NEVADA

MOUNTAIN VIEW WATER TANK REPLACEMENT

P&ID LEGEND

DRAWN – CHECK BMC

VERIFY SCALE Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 223125 PAGE

SHEET NO. EI-003

J:\223125 DOUGLAS COUNTY MTN VIEW TANKS_DESN_CADD_DESIGN\D_PLANS-1\09_INSTRUMENTATION SCHEMATIC.DWG LAST SAVED 6/22/2024 9:31 AM PRINTED 7/1/2024 2:39 PM

Exhibit C - Additional Terms and Conditions

Abbreviations

BLM U.S. Department of the Interior, Bureau of Land Management, Sierra Front Field Office
POD Plan of Development

Definitions

Grant: the instrument that the BLM has issued to the holder authorizing the use of public lands.

Holder: the entity to whom the BLM has issued grant no. N-045053.

Authorized officer: the individual to whom has been delegated the authority to approve all actions required for the granting and management of rights-of-way REFER TO BLM MANUAL 1203 within the Sierra Front Field Office. During the term of the grant, the holder shall contact the authorized officer through their designated representative:

Sierra Front Field Office
Attn: Assistant Field Manager
Lands and Realty
5665 Morgan Mill Road
Carson City, Nevada 89701
Telephone: (775) 885-6000

Right-of-way: the public lands that the BLM has authorized the holder to use or occupy under N-045053. The holder may only use the right-of-way for the specific use the grant authorizes, as determined by the authorized officer.

Facility: an improvement or structure, whether existing or planned, that is or would be owned and controlled by the holder within a right-of-way.

Notice to proceed: a written authorization, issued on Form 2800-15 Right-of-way Notice to Proceed, by the authorized officer that allows the holder to initiate actions under the grant. The authorized officer may issue separate notices to proceed if the grant involves distinct work phases and/or locations. Each notice to proceed will specify the nature of work, location, and dates to be authorized.

Substantial deviation: a change in the authorized location or use which requires:

1) Construction or use outside the boundaries of the right-of-way; or
2) Any change from, or modification of, the authorized use. Examples of substantial deviation may include: adding equipment, overhead or underground lines, pipelines, structures, or other facilities not included in the grant.

Surface disturbing activities: any authorized action that disturbs vegetation and/or surface soil.

General	
a.	This grant is subject to all valid rights existing on the effective date of the grant.
b.	This grant is issued subject to the holder also obtaining permits or clearances from applicable Federal agencies, State, Tribal, County, and other local authorities with regulatory authority over the approved land uses described herein.
c.	The holder shall contact the authorized officer, either in writing or by telephone, and obtain written approval prior to beginning any activity that is a substantial deviation from this grant or that will cause new surface disturbance.
d.	In case of change of address, the holder shall immediately notify the authorized officer in writing as previously described.
e.	The holder of this grant or the holder's successor in interest shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d et seq.) and the regulations of the Secretary of the Interior issued pursuant thereto.
f.	The holder shall conduct all activities associated with the construction, operation, and termination of the facility within the authorized limits of the right-of-way.
g.	The holder shall maintain the right-of-way in a safe, usable condition, as directed by the authorized officer.
h.	All design, material, and construction, operation, maintenance, and termination practices shall be in accordance with safe and proven engineering practices.
i.	The right-of-way shall be maintained in a sanitary condition at all times; waste material at those sites shall be properly contained and disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, used petroleum products, ashes, and equipment.
j.	No signs or advertising devices shall be placed on the right-of-way or on adjacent public lands, nor on approved facilities, except those posted by or approved in writing by the authorized officer.
Holder's Representative	
k.	The holder shall designate a representative(s) who shall have the authority to act upon and to implement instructions from the authorized officer. The holder's representative shall be available for communication with the authorized officer within a reasonable time when construction or other surface disturbing activities are underway.
Public Access and Use of Lands	
l.	The holder shall permit free and unrestricted public access to and upon the right-of-way for all lawful purposes except for those specific areas designated as restricted by the authorized officer to protect the public, wildlife, livestock, or facilities constructed within the right-of-way.
m.	The holder shall provide for the safety of the public entering the right-of-way. This includes, but is not limited to, barricades for open trenches, flagmen/women with communication systems for single-lane roads without inter-visible turnouts, and signage of hazards.
n.	Existing roads and trails on public lands that are blocked as the result of the holder's construction, operations, or maintenance activities shall be rerouted or rebuilt as directed by the authorized officer.

Road Maintenance	
o.	The road proposed as part of this grant shall be constructed and maintained in accordance with the BLM standards prescribed for a resource type road.
p.	The holder shall furnish and install culverts of the gauge, materials, diameter(s), and length(s) indicated and approved by the authorized officer. Culverts shall be free of corrosion, dents, or other deleterious conditions. Culverts shall be placed on channel bottoms on firm, uniform beds which have been shaped to accept them and aligned to minimize erosion. Backfill shall be thoroughly compacted. No equipment shall be routed over a culvert until backfill depth is adequate to protect the culverts.
q.	As directed by the authorized officer, the holder shall submit a complete culvert list to reflect the drainage plan for the road. The list shall include, but not be limited to, size(s), lengths, and locations of the culverts.
r.	The minimum diameter for culverts shall be 18 inches.
s.	The holder shall construct low-water crossings in a manner that will prevent any blockage or restriction of the existing channel, including fish passage. Material removed shall be stockpiled for use in rehabilitation of the crossings.
t.	All roads and parking areas shall be constructed to provide drainage and minimize erosion. Culverts shall be installed if necessary to maintain drainage. Areas to be used for roads and parking shall be surfaced with aggregate as directed by the authorized officer.
u.	As directed by the authorizing officer, all road segments shall be winterized by providing a well-drained roadway by water baring, maintaining drainage, and any additional measures necessary to minimize erosion and other damage to the roadway or the surrounding public lands.
Operations and Maintenance of Approved Facilities	
v.	The holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the POD dated December, 2023. Any relocation, additional construction, or use that is not in accord with the approved POD, shall not be initiated without the prior written approval of the authorized officer. Upon request, a copy of the complete right-of-way grant, including all stipulations and approved POD, shall be made immediately available to the authorized officer on the right-of-way during construction, operation, maintenance, and termination. Noncompliance with the above requirement will be grounds for an immediate temporary suspension of activities if it constitutes a threat to public health and safety or the environment.
w.	The holder shall not modify the layout, locations, or types of equipment or facilities shown in Exhibit (B) of this grant without prior written approval from the authorized officer. Variances from the site plans or drawings shown in Exhibit (B) must be approved in writing before commencing with new designs or specifications.
x.	Specific sites as identified by the authorized officer (e.g. archaeological sites, areas with threatened and endangered species, or fragile watersheds) where construction equipment and vehicles shall not be allowed shall be clearly marked onsite by the holder before any construction or surface disturbing activities begin. The holder shall be responsible for assuring that construction personnel are well trained to recognize these markers and understand the equipment movement restrictions involved.

y.	Construction-related traffic shall be restricted to routes approved by the authorized officer. New access roads or cross-country vehicle travel will not be permitted unless prior written approval is given by the authorized officer. Authorized roads used by the holder shall be rehabilitated or maintained when construction activities are complete as approved by the authorized officer.
z.	Within 60 days after receipt of the authorized officer's written notification of damage or defects found in the structure or related facilities the holder will restore the facility to the originally constructed condition, using materials of equal or superior quality to those used in the original construction.
aa.	Should the holder fail to perform the required maintenance or repair within 60 days of receipt of the authorized officer's written notification to do so, BLM may perform the required maintenance or repair, or at the discretion of the authorized officer, remove the facility, at the holder's expense, including the administrative costs to BLM to effect any such action.
Wildland Fire Management	
bb.	The holder shall be responsible, as determined by the authorized officer, for fire suppression costs resulting from wildland fire caused by the holder, including employees, agents, and/or representatives, and by all clients, customers, and/or contractors under the holder's supervision or control.
cc.	The holder shall be responsible for informing employees, agents, representatives, clients, customers, and/or contractors of the current fire danger and any required precautions or restrictions that may be placed in effect by the BLM or the State of Nevada. The holder may obtain current fire conditions from the Sierra Front Interagency Fire Dispatch Center online or by telephone at (775) 883-5995.
dd.	The holder shall immediately report all wildland fires that start within the right-of-way to the Sierra Front Interagency Dispatch Center by telephone or to other local emergency response agencies if the Sierra Front Interagency Dispatch Center cannot be contacted.
ee.	When directed by the authorized officer, the holder shall prepare a fire prevention and suppression plan that shall be reviewed, modified, and approved, as appropriate, by the authorized officer. The holder shall take into account such measures for prevention and suppression of fire on the right-of-way and other public land used or traversed by the holder in connection with operations of the right-of-way. Project personnel shall be instructed as to individual responsibility in implementation of the plan.
ff.	During conditions of extreme fire danger, operations shall be limited or suspended in specific areas, or additional measures may be required by the authorized officer.
gg.	When requested by the authorized officer, the holder shall make his/her equipment already at the site with operators, temporarily available for fighting fires in the vicinity of the project. Payment for such services will be made at rates determined by the authorized officer.
Hazardous Materials and Petroleum Products	
hh.	The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this grant. (See 40 CFR, Part 702-799 and especially,

	provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.
ii.	The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901 at ag.) on the right-of-way (unless the release or threatened release is wholly unrelated to the holder's activity on the right-of-way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.
jj.	The holder is prohibited from discharging oil or other pollutants into or upon the navigable waters of the United States, adjoining shorelines, or the waters of the contiguous zone in violation of Section 311 of the Clean Water Act as amended, 33 U.S.C. 1321, and the regulations issued thereunder, or applicable laws of the State of Nevada and regulations issued thereunder. The holder shall give immediate notice of any such discharge to the authorized officer and such other Federal and State officials as are required by law to be given such notice.
Termination	
kk.	Six months prior to termination of the grant, the holder shall contact the authorized officer to arrange a joint inspection of the right-of-way. This inspection will be held to agree to an acceptable termination and rehabilitation plan. This plan shall include, but is not limited to, removal of facilities, drainage structures, or surface material, recontouring, topsoiling, or seeding. The authorized officer must approve the plan in writing prior to the holder's commencement of any termination activities. The holder shall be responsible for the cost and implementation of the approved rehabilitation plan.
Conveyance Out of Federal Ownership	
ll.	In the event that the public land underlying the right-of-way encompassed in this grant, or portion thereof, is conveyed out of Federal ownership and administration of the right-of-way or the land underlying the right-of-way is not being reserved to the United States in the patent/deed and/or the right-of-way is not within a right-of-way corridor being reserved to the United States in the patent/deed, the United States waives any right it has to administer the right-of-way, or portion thereof, within the conveyed land under Federal laws, statutes, and regulations, including the regulations in Title 43 CFR parts 2800 and 2880, as well as any rights to have the holder apply to the BLM for amendments, modifications, or assignments and for the BLM to approve or recognize such amendments, modifications, or assignments. At the time of conveyance, the patentee/grantee, and their successors and assigns, shall succeed to the interests of the United States in all matters relating to the right-of-way, or portion thereof, within the conveyed land and shall be subject to applicable State and local government laws, statutes, and ordinances. After conveyance, any disputes concerning compliance with

	the use and the terms and conditions of the right-of-way shall be considered a civil matter between the patentee/grantee and the holder.
Air Quality	
mm.	The holder shall meet Federal, State, and local emission standards for air quality.
Noxious Weeds and Pests	
nn.	The holder shall be responsible for controlling noxious and invasive weed infestations within the approved limits of the right-of-way and areas where infestations have spread from the right-of-way as a result of the holder's operations. The holder will consult with the authorized officer for planning acceptable weed control measures on all noxious and invasive weed infestations directly associated with the right-of-way.
oo.	The holder shall monitor the right-of-way at least annually during the growing season for the presence of noxious weed species listed on the Nevada Department of Agriculture Nevada Noxious Weed List. The holder shall maintain a record of monitoring dates, person/s completing the monitoring, qualifications of person/s completing the monitoring, species found, and the extent of infestations, e.g. number of plants found, acres of land that are infested, etc. If requested, the holder shall provide the above described monitoring data to the authorized officer annually or as specified by the authorized officer.
pp.	As soon as practicable after discovery of a noxious weed infestation, the holder shall report the infestation to the authorized officer by telephone. The holder shall develop and implement, as approved by the authorized officer, a noxious weed management plan to control the infestation through treatment (manual, mechanical, biological, chemical, prescribed fire, or other approved methods) and monitoring.
qq.	If vehicles and equipment are working in known noxious weed infestations, equipment will be washed prior to entering the project area to remove noxious weed propagules.
rr.	All equipment to be used in connection with this project during construction, operations, maintenance, and/or reclamation will first be cleaned thoroughly to minimize the introduction of new noxious weed species to the area. The holder shall provide written documentation of when and how equipment was cleaned at the request of the authorized officer.
ss.	In locations with known noxious weed infestations, all vehicles and equipment performing surface disturbing activities in connection with the right-of-way shall be thoroughly cleaned to reduce the spread of noxious weed species outside the right-of-way. The holder shall set up a cleaning station within the right-of-way in a location approved by the authorized officer. The holder shall provide written documentation of when and how equipment was cleaned at the request of the authorized officer.
tt.	All seed, hay, straw, gravel, or other earth materials used on the right-of-way shall be certified as noxious weed-free by the Nevada Department of Agriculture or equivalent state agency prior to being used on the right-of-way. The holder will provide documentation of noxious weed-free certification at the request of the authorized officer. If such certification cannot be obtained, the holder will consult with the authorized officer and obtain written approval of acceptable weed monitoring measures prior to using the materials on the right-of-way.
Pesticide or Biological Control Agent Use	

uu.	The use of pesticides shall comply with Federal and state laws governing their proper usage, storage and disposal, and any limitations imposed by the Secretary of the Interior. Prior to the use of pesticides or biological control agents, the holder will obtain from the authorized officer written approval of a Pesticide Use Proposal/Plan (PUP) or Biological Control Agent Use Proposal/Plan (BCUP) showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposed-of containers, and any other information deemed necessary by the authorized officer. Emergency use of pesticides shall be approved in writing by the authorized officer prior to such use and shall use BLM-approved mechanical methods or chemicals.
Cultural Resources	
vv.	The holder and persons working on their behalf shall not collect any historic (50 years or older) or prehistoric artifacts from federal lands. Collection of artifacts is a misdemeanor or felony under multiple federal laws, including the Archaeological Resources Protection Act of 1990 (16 U.S.C. 470aa-470mm; Public Law 96-95).
ww.	The holder, or persons working on their behalf, shall immediately report to the authorized officer any cultural (historic or prehistoric site or object) or paleontological (fossil) resources discovered during the course of activities on federal land. The discovery shall be reported to the authorized officer's designated representative by telephone, followed by written confirmation sent to the address listed above. The holder shall stop all surface disturbing activities in the immediate area (minimum 100-foot radius) of such discovery and protect it until an evaluation of the discovery can be made by the authorized officer. In addition, the following shall occur: • For discoveries of cultural resources **other than** human remains, the authorized officer will determine the significance of the discovery and what mitigation measures are necessary to comply with applicable laws. The authorized officer will notify the holder in writing when surface disturbing activities may resume. • **For discoveries involving human remains**, the holder or their representative shall stop all work within a 100-foot radius, then immediately notify the authorized officer's designated representative **and** the County Coroner by telephone, followed by written notification to the BLM. The holder must cover and protect the discovery location from photography; viewing by employees, contractors, the media, and the public; and further disturbance until the authorized officer notifies the holder in writing that work may resume. The holder is responsible for the cost of protection, evaluation, and mitigation. Any decision on treatment and/or mitigation of discoveries will be made by the authorized officer after consulting with the holder and other parties, including Native American tribes, as required by law.
xx.	The holder, their contractors, and any persons working on the holder's behalf shall not contact or provide information to the media about discoveries, shall not post pictures or information about discoveries via corporate or personal social media, and shall not take, or allow to be taken, any photographs other than those required to respond to the

	discovery (such as by law enforcement or the authorized officer's designated representative).
Cadastral Survey and Land Status	
yy.	The holder shall protect all survey monuments found within the right-of-way. Survey monuments include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey Corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the holder shall immediately report the incident, in writing, to the authorized officer and the respective installing authority if known. Where General Land Office or Bureau of Land Management right-of-way monuments or references are obliterated during operations, the holder shall secure the services of a registered land surveyor or a Bureau cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the Manual of Surveying Instructions for the Survey of the Public Lands in the United States, latest edition. The holder shall record such survey in the appropriate county and send a copy to the Authorized Officer. If the Bureau cadastral surveyors or other Federal surveyors are used to restore the disturbed survey monument, the holder shall be responsible for the survey cost.
Wildlife – General	
zz.	The holder shall notify the authorized officer and the Nevada Department of Wildlife within 24 hours of any injuries and/or mortalities of special status wildlife within the right-of-way during construction, operation, maintenance, or reclamation /decommissioning activities.
aaa.	The holder shall remove only the minimum amount of vegetation necessary for the construction or maintenance of facilities. Topsoil shall be conserved during excavation and reused as cover on disturbed areas to facilitate regrowth of vegetation.
bbb.	Construction holes left open overnight shall be covered. Covers shall be secured in place and shall be strong enough to prevent livestock or wildlife from falling into the hole or trench. If adequate cover cannot be installed, effective escape ramps shall be installed to allow livestock or wildlife to avoid entrapment.
ccc.	All mammals, reptiles, and amphibians shall be removed from construction holes or trenches prior to backfilling.
ddd.	Open-top vertical pipes, including vents, stacks, fence posts, and survey markers, of any diameter, shall be securely capped or screened to prevent unintentional trapping of wildlife.
eee.	Artificial facility lighting shall be shielded to direct light towards the ground within the approved facility boundary.
fff.	All guy wires shall be effectively marked to be visible to birds, wild horses and burros, and big game animals.
ggg.	Fences, gates, brace panels, and cattleguards affected by the holder's use of the right-of-way shall be reconstructed to appropriate standards and/or specifications as determined by the authorized officer.
hhh.	Fences, gates, brace panels, and cattleguards affected by the holder's use of the right-of-way shall be re-constructed to appropriate BLM standards and/or specifications as

	determined by the authorized officer. The holder shall use the wire spacing standard shown in Illustration 2 of BLM Handbook H-1741-1 (Fencing) for "Combination of Cattle (Requiring Greater Restriction of Livestock Movements) With Deer, Elk, Moose, or Antelope" when constructing or re-constructing fences which control the movement of livestock. The holder shall disconnect fence wires from all fence posts between bracing structures prior to stretching wires to ensure adequate tensioning. When re-constructing or modifying wire fences, the holder shall repair or replace bracing structures to ensure the integrity of the fence.
Wildlife – Migratory Birds and Raptors	
iii.	The holder shall report observed raptor or other bird nests on existing facilities to the authorized officer as soon as practicable. The holder may be directed by the authorized officer to remove nests from facilities (e.g. power lines, communications towers, buildings, etc.) outside of nesting seasons.
Visual Resource Management	
jjj.	Colors on all above-ground structures not subject to safety requirements, such as buildings, antennas, towers, and microwave dishes, shall be earth/vegetative tones compatible with existing natural site features and complementary colors. The holder shall use Standard Environmental Color Chart CC-001 (June 2013 or most recent edition) to obtain paint colors to use on the right-of-way. Copies of Standard Environmental Color Chart CC-001 may be obtained from the BLM at the address listed above. The holder shall not use Carlsbad Canyon, Juniper Green, or Carob Brown without prior written authorization from the authorized officer.
kkk.	Paint colors shall not be more glossy than a semi-gloss finish. Paint colors that have faded from sun exposure shall be repainted to restore the approved color from Standard Environmental Color Chart CC-001.
lll.	Structures which cannot be painted or require a non-compatible color to operate in accordance with manufacturer specifications shall be immediately reported to the authorized officer. The authorized officer will work with the holder to establish alternate means of reducing the visual impact, such as constructing a screening fence to block the view or installing a cover. Alternative means to reduce visual impacts shall be approved by the BLM prior to use on the right-of-way.
Soil	
mmm.	No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of three (3) inches deep, the soil shall be deemed too wet to adequately support construction equipment.
nnn.	Earthwork and grading, including road surfacing, drainage structures, and ditch profiles, shall not block natural drainage systems nor change the character of natural drainage systems. Earthwork, grading, erosion control structures (e.g. culvert pipes, wing ditches, etc.), and stream crossings, including crossings with either perennial or intermittent flows, shall not cause excessive siltation that damages fish and/or wildlife habitat in waterways or water bodies.