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Addendum No. 1

TRUCKEE CANYON WATER SYSTEM EXPANSION

PWP Bid No. WA-2016-094

March 07, 2016

The following information, clarifications, changes and modifications are by reference incorporated into the bid documents for the above referenced project. Any work item or contract provision not changed or modified will remain in full force and effect. The bid date and time and construction schedule remain the same.

QUESTIONS AND RESPONSES

Question No. 1: I have gone to your site and looked at the information, Can you please let me know if this specification has surge control vessels on it?

Response to Question No. 1: **There are no surge tanks on this project.**

Question No. 2: Bid items 4.5 and 4.6 are noted as LS, with quantities of 2. Should the units be each?

Response to Question No. 2: Yes, change the unit for Bid Items 4.5 and 4.6 to EA (each).

Question No. 3: The Adjustable Unit Cost Item 8.1 is not clear and/or does not provide enough information to quote. The additional trenching depth is expressed in lineal feet, but without knowing where this is expressed, and to what extent we cannot quote. Are we talking 1 foot deeper, 3 foot deeper, are we shoring this through the street or is this a place we can open up the trench? Is this in a congested area where we have a lot of utilities to support if we go deeper and wider, or is it a shored area where we have to shore around deeper utilities? A possible solution would be to change this to a cubic yardage unit price for excavation as it tells us more of the nature of what you are expecting?

Response to Question No. 3: Unless noted otherwise, the design profile is based on 42" of cover over the top of the pipe, so unless conflicts are experienced, the trench depth will not exceed about 53". Please note that Bid Item 8.1 is not applicable until trench depth exceeds six feet (72"). The unit price submitted for this item is for each additional one foot of depth (beyond the base six foot depth) per lineal foot of trench.

Question No. 4: The Adjustable Unit Cost Item 8.2 is not clear and/or does not provide enough information to quote. Your unit price adjustment for rock excavation is expressed in lineal feet of trench as well. General conditions section 4.06 B.2 states the rock excavation will be paid on a price per cubic yard basis. Please clarify which is correct, the bid schedule or the specification.

Response to Question No. 4: Bid Item 8.2 will be applicable to Rock Excavation as defined in Article 4.06-A-1 and will be paid per lineal foot of trench. If rock is encountered meeting the definition of Rock Excavation in Article 4.06-A-3, the work will be paid on a time & materials basis or as a lump sum price negotiated between the Project Representative and the Contractor.

Question No. 5: Sheets P100 and P101 note the proposed easements. Does this mean the easement is not finalized? What is the status of this easement?

Response to Question No. 5: The easement documents have not been executed by the owner yet. We do not anticipate any delays in obtaining the easements prior to the start of construction.

Question No. 6: Detail D/S102 calls out Pre-Manufactured Roof Truss (by others). I did not see a specification for the trusses, does this mean they are supplied by someone else? Please clarify.

Response to Question No. 6: The Contractor will procure the roof trusses from a truss manufacturer. The truss manufacturer will design the trusses based on the structural loading specified on Sheet S102 and will furnish design calculations and drawings stamped by a licensed civil/structural engineer. These calculations and drawings must be submitted to the Washoe County Building & Safety Department as part of the building permit review process.

Question No. 7: A101 calls out R-30 Batt insulation, sheet S102 calls out Fiberglass batt insulation to match existing R-19 minimum. What is existing, and which sheet is correct?

Response to Question No. 7: The contractor shall install R-30 Batt insulation for the ceiling. Attached is the revised detail D/S102.

Question No. 8: I did not see a specification for roofing. Please furnish a roofing specification.

Response to Question No. 8: Please see the attached specification section 07311.

Question No. 9: Detail B/S103 calls out Gable end vent (size per roof venting calculation). Who is responsible for the calculations/vent sizing?

Response to Question No. 9: Please see attached revised detail B/S103.

Question No. 10: There are 3 lines (2ea. 3" WS, and a 2" DWR) which will need to be down for a significant time to install the automated valve vault. How long can these lines be down to do this work?

Response to Question No. 10: Shut down of the 3 lines (2ea. 3" WS, and a 2" DWR) will be determined during construction sequencing.

Question No. 11: The Filter Vessel and Media Specification calls for the manufacturer to submit a certification of compliance letter with the bid. Can we turn in certifications from multiple manufacturer's, and tell the owner who we want to use at or after bid time. Typically bid packages are prepared well in advance of the bid and the low suppliers are not clear until moments before the bid is turned in.

Response to Question No. 11: Certifications from multiple filter manufacturers may be submitted to the owner with the bid packet.

Question No. 12: A typical time frame based on one filter representative I spoke with had submittal delivery around 4-6 weeks, and procurement of filters around 12-14 weeks, based on complexities. This did not take into account the time to perform the specified pilot testing. Assuming we can come to terms on a PO in 2 weeks, procure submittals in 6 weeks, get submittal approval in 2 weeks, have filters delivered in 14 weeks, Install the filters, piping, media, and painting in 4 weeks, start-up and test filters in 3 weeks, relocate and retrofit the existing filter in 3 weeks, and perform punchlist and clean-up in 4 weeks we have a total contract duration of 35 weeks, which is well over the 190 contract days allowed, and this is with no re-submittals. With-out more information a contract duration of 9 months would be more realistic.

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Response to Question No. 12: Time is of the essence for the Truckee Canyon Water System Expansion; therefore, the contract schedule will not be extended.

Question No. 13: Specification section 01020 3.4 indicates the owner has determined an anticipated method of construction, but this section does not contain an anticipated method.

Response to Question No. 13: The possible sequence of construction is presented in 01020-3.5.

Question No. 14: At any given time how long can we shut down the water system for tie-ins and switch-overs?

Response to Question No. 14: Any one outage shall be limited to one day in duration and the Contractor should anticipate that such outages cannot be taken on consecutive days.

Question No. 15: Specification section 11405 under 1.05 C.3 indicates our Filter O&M is to include filter control programming, however this is not referenced or specified anywhere else in the filter specification. What is required here? Who is providing the filter control programming?

Response to Question No. 15: Specification section 11405 105.C.3.h references filter an electronic copy of the completely functional filter control program with full documentation and notations. Specification section 11405 1.01.A notes "A completely functional filtration process control program will be delivered to TMWA for installation and use in the existing plant PLC."

TMWA will supply the plant PLC, all necessary PLC I/O modules (analog and discrete) and the landing point TBs in the plant PLC cabinet, and the 10.4" plant HMI panel. TMWA's expectation is that the contractor and/or filter manufacturer will provide a working filter system for Filters 2 and 3, one or more common terminal block location junction boxes (NEMA 4X rated box with terminal blocks wired and labeled to/from the filter) to hand off filter I/O signals, and an electronic copy of a start-up and run process control description, control application, and PDF copies of the printed control application used to pre-test the new Filters 2 and 3, prior to shipping. The contractor is required to provide all conduit and wiring from the common new Filter 2 and 3 junction box TBs to the plant PLC cabinet, wiring from the filter junction box back to the filter I/O locations (analog instruments provided with the filter package, discrete contacts or solenoids provided with the filter package, etc.). The filter provider will have personnel available (verbal, email, etc., as needed) to review their pre-tested control application with TMWA personnel. TMWA personnel will make all plant PLC programming changes necessary to include the Filter 2 and 3 package controls into the plant PLC. TMWA personnel will provide programming licenses for the plant PLC changes, the HMI changes, etc.

All filter I/O as noted in the drawing set and P&IDs, and additionally any additional I/O required to make new Filter packages operational, is required to land in one or more common junction boxes, so as to provide a common demarcation point for filter I/O. All wiring in these junction boxes and Filter I/O landing points shall conform to requirements in sections 11010 2.22, 11010 2.23, 11010 2.4, 16120, and other Specification sections, as applicable.

Note that the contractor will be responsible for the controls cabinet components (Advantys, Phoenix Contact, etc.) referenced at the Well 3 site. The contractor will also be required to provide onsite start-up assistance with the filter packages with the Filter representative.

Question No. 16: In Specification Section 11405 (vertical Filtration Vessels & Filtration Media) paragraph 2.01.A.8 for the manufacturers it says or "engineered approved equivalent". We are wondering what this process of engineered approval is.

Response to Question No. 16: See response to Question #11. Assuming a specification compliance certification letter (with or without noted exceptions) from a filter supplier has been submitted prior to bidding, a normal equipment submittal and review process will occur. As noted in Question 12, this project has a limited construction period and the filters submittal, production, and installation schedule is pivotal to the project schedule. The certification to meet specifications unless otherwise noted by the filter vendors prior to bidding is intended to reduce the submittal, review, response, and fabrication time required, as, per 11405.103.A "…*Any filter equipment submittals during construction that do not meet these specifications that were not noted during the bid period will be cause for rejection, and potential disqualification of vendor.***" will be adhered to. We don't want this to happen, and are trying to ensure the complete filter package requirements have been reviewed prior to bidding. This is not meant to limit vendor bidding opportunities, but is meant to reduce a project pivotal submittal review and response time.**

Question No. 17: Spec section 11300 for the submersible turbine pump requires the engineer approval to come before the bid. Is this the same for the Filtration Vessels?

Response to Question No. 17: No. Specification 11300 is written as intended. As noted in Question 16 responses, the filter submittals have their own requirements.

TECHNICAL SPECIFICATIONS

Section	Page(s)	Description of amendment
07311	07311-1 through 07311-6	Asphalt Shingle Roofing System section 07311 was added to the technical specifications. Please see attached.
11010	11010-18	Material 2.28 Fixed Wall Louvers was added to specification section 11010 as follows: 2.28 Fixed Wall Louvers A. 4-inch drainable fixed blade with a front lip gutter and a recessed second gutter designed to catch both airborne droplets and cascading water. B. Heads, sills, jambs and mullions to be one-piece structural members of 6063-T52 alloy 0.125-inch thick, with integral caulking slot and retaining beads. C. Mullions and jambs shall be sliding interlock type with integral internal drains. D. Drainage blade to be minimum 0.125-inch thick. E. Closed cell PVC compression gaskets to be provided between bottom of mullion or jamb and

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		top of sill to insure leak tight connections. F. Structural supports to be designed by louver manufacturer to carry a wind load of not less than 20 pounds per square foot, in accordance with Specification Section 01615. G. All fasteners to be stainless steel or aluminum. H. All louvers to be furnished with bird screens. Bird screens shall be removable 18 X 14 aluminum mesh, 0.0123-inch diameter, 5056 clad, rolled or extruded aluminum with mitered corners and secured with clips to provide a strong neat frame. I. All louvers to be free of scratches and shall be finished in a two coat fluorocarbon polymeric system, Kynar 500, or equal, color as selected by Engineer. J. All louvers shall be provided with internal 19 gauge galvanized steel ½" mesh bird screen in removable frame
15200-3.1.D	15200-7	In the third line of the fourth paragraph of page 15200-7, "fall of 2013" was replaced with "fall of 2016."

DRAWINGS

Sheet Number	Page(s)	Description of amendment
Drawing E001	50	See attached drawing with revision cloud indicating amendments.
Drawing E030	54	See attached drawing with revision clouds indicating amendments.
Drawing E101	58	See attached drawing with revision clouds indicating amendments.
Drawing I101	63	See attached drawing with revision clouds indicating amendments.

DETAILS

Sheet Number	Page(s)	Detail	Description of amendment
C007	15	C615/TYP	Ductile iron check flap valve with neoprene seat sloped to prevent storing water in the discharge pipe.
S102	44	D/S102	Ceiling insulation callout in detail D/S102 changed to "Insulation, see 1/A101 for detail"
S103	45	B/S103	Gable end vent callout in detail B/S103 changed to "Gable end vent. Min size 28" x 24"w/ min 50% NFA. See spec section 11010"

PLEASE NOTE: QUESTION CUT-OFF DATE IS MARCH 14, 2016 AT 5 P.M.

SECTION 07311

ASPHALT SHINGLE ROOFING SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Granule surfaced asphalt shingle roofing.

B. Moisture shedding underlayment, eaves, valley and ridge protection.

C. Associated metal flashing.

1.2 REFERENCES

A. ASTM A 653/A 653M – Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron-Alloy-Coated (Galvannealed) by the Hot-Dip ProcessASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

B. ASTM B 370 – Standard Specification for Copper Sheet and Strip for Building Construction.

C. ASTM D 225 – Standard Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules.

D. ASTM D 226 – Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

E. ASTM D 1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials used as Steep Roofing Underlayment for Ice Dam Protection.

F. ASTM D 3018 – Standard Specification for Class A Shingles Surfaced with Mineral Granules.

G. ASTM D 3161 – Standard Test Method for Wind Resistance of Asphalt Shingles (Fan-Induced Method).

H. ASTM D 3462 – Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.

I. ASTM D 4586 – Standard Specification for Asphalt Roof Cement, Asbestos-Free.

J. ASTM D-4869 – Standard Specification for Asphalt-Saturated Organic Felt Shingle Underlayment Used in Roofing.

K. ASTM D 6757 – Standard Specification for Inorganic Underlayment for Use with Steep Slope Roofing Products.

L. ASTM E 108 – Standard Test Methods for Fire Test of Roof Coverings

M. ASTM G 21 – Determining Resistance of Synthetic Polymers to Fungi

1.3 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Provide manufacturer's printed product information indicating material characteristics, performance criteria and product limitations.

C. Manufacturer's Installation Instructions: Provide published instructions that indicate preparation required and installation procedures..

1.4 QUALITY ASSURANCE

A. Installer Minimum Qualifications: Installer shall be licensed or otherwise authorized by all federal, state and local authorities to install all products specified in this section. Installer Installer shall perform work in accordance with NRCA Roofing and Waterproofing Manual. Work shall be acceptable to the synthetic roof shingle manufacturer.

B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish areas designated by construction drawings.

2. Do not proceed with remaining work until workmanship, color and pattern are approved by Engineer.

3. Rework Mock-Up area as required to produce acceptable work.

C. Maintain one copy of manufacturers application instructions on the project site.

D. Verify that manufacturer's label contains references to specified ASTM standards.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store all products in manufacturer's unopened, labeled packaging until they are ready for installation.

B. Store and dispose of solvent-based materials and materials used with solvent based materials, in accordance with requirements of local authorities having jurisdiction.

C. Deliver shingles to site in manufacturer's unopened labeled bundles. Promptly verify quantities and conditions. Immediately remove damaged products from site.

1.6 PROJECT CONDITIONS

A. Anticipate and observe environmental conditions (temperature, humidity and moisture) within limits recommended by manufacturer for optimum results. Do not install products under environment conditions outside manufacturer's absolute limits.

B. Take special care when applying Winterguard Waterproofing Shingle Underlayment and shingles when ambient or wind chill temperature is below 45 degrees F (7 degrees C). Tack WinterGuard in place if it does not adhere immediately to the deck

1.7 WARRANTY

A. Manufacturer's Warranty: Furnish shingle manufacturer's warranty for the product listed below:

1. CertainTeed Landmark Premium AR: Lifetime Limited Warranty

B. Warranty Supplement: Provide manufacturer's supplemental warranty (CertainTeed's Surestart or Surestart Plus) to cover labor and materials in the event of a material defect for the following period after completion of application of shingles:

1. First Ten Years (All Lifetime Warranty products)

2. First Seven Years (Symphony Slate Shingles)

3. First Five Years (All 25 to 30 year Shingles)

4. First Three Years (CT20 and CT20 AR)

5. No Surestart or Surestart Plus for any shingle applied to inadequately ventilated roof deck.

C. Extended Warranty Protection (can only be provided by a CertainTeed Credentialed Contractor): Provide NON-PRO-RATED SureStart Plus protections as follows:

1. 3Star Coverage (20 years) material and labor costs for repair or replacement

2. 4Star Coverage (50 years) material and labor costs for repair or replacement tear off and disposal costs.

3. 5Star Coverage (50 years) material and labor costs for repair or replacement, tear off protection, disposal costs and workmanship defects.

D. Warranty Transferability Clause: Make available to Owner shingle manufacturer's standard option for transferring warranty to a new owner.

E. Wind Warranty Upgrade to 130 mph for first 15 years provided all manufacturers' conditions and instructions are met by contractor.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Provide products manufactured by the CertainTeed Corporation. Contact Sales Support Group P.O. Box 860 Valley Forge, PA 19482 Toll Free 800-233-8990

B. Requests for substitutions will be considered in accordance with provisions of Section 01300.

2.2 ASPHALT FIBERGLASS SHINGLES

A. CertainTeed Landmark Premium AR: Conforming to ASTM D 3018 Type I – Self-Sealing; UL Certification of ASTM D 3462, ASTM D 3161/UL997 80-mph Wind Resistance and UL Class A Fire Resistance; glass fiber mat base; ceramically colored/UV resistant mineral service granules across entire face of the shingle; two-piece laminated shingle, algae-resistant.

B. Weight: 300 pounds per square (100 square feet) (14.6 kg/sq m)

C. Color:Match existing

2.3 SHEET MATERIALS

A. Underlayment: CertainTeed "Roofers' Select", ASTM D 6757; asphalt-impregnated fiberglass-reinforced organic felt designed for use on roof decks as a water-resistant layer beneath roofing shingles.

B. Underlayment: CertainTeed Diamond Deck ASTM D 226 and ASTM D 4869 synthetic polymer-based scrim reinforced underlayment designed for use on roof decks as a water-resistant layer beneath asphalt shingles, wood shingles, and shakes, metal shingles or slate.

C. Underlayment: ASTM D 4869, Asphalt saturated felt.

D. Underlayment: ASTM D 226, Asphalt saturated felt (non-perforated).

E. Waterproofing Underlayment: CertainTeed “WinterGuard”; ASTM D 1970 sheet barrier of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement, and “split” back plastic release film; Use in “low slope’ areas (below 4:12, but no less that 2:12 pitch); provide material warranty with equal in duration to that of shingles being applied

1. CertainTeed WinterGuard Sand
2. CertainTeed WinterGuard HT
3. CertainTeed WinterGuard Granular

2.4 FLASHING MATERIALS

A. Sheet Flashing: ASTM A 361/A361M; 26 Guage (0.45 mm) steel with minimum G115/Z350 galvanized coating.

B. Tinner’s Paint: Color as selected by Engineer to match existing.

2.5 ACCESSORIES

A. Nails: Standard round wire type roofing nails, corrosion resistant; hot dipped zinc coated steel, aluminum or chormated steel; minimum 3.8 inch (9.5mm) head diameter; minimum 11 or 12 gage (2.5mm) shank diameter; shank to be sufficient length to penetrate through the roof sheathing or ¾ inch (19mm) into solid wood, plywood or non-veneer wood decking.

B. Asphalt Roofing Cement: ASTM D 4586, Type I or II.

2.6 FLASHING FABRICATION

A. Form flashing to profiles indicated on Drawings and to protect roofing materials from physical damage and shed water.

B. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing site conditions under provisions of Section 01620.

B. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surfaces.

C. Verify deck surfaces are dry and free of ridges, warps or voids.

3.2 ROOF DECK PREPARATION

A. Follow shingle manufacturer’s recommendations for acceptable roof deck material

B. Broom clean deck surfaces under eave protection and underlayment prior to their application.

3.3 INSTALLATION – EAVE ICE DAM PROTECTION

A. Place eave edge and gable metal edge flashing tight with fascia boards. Weather-lap joints 2 inches (50mm). Secure flange with nails spaced 8 inches (200 mm) on center.

B. Apply CertainTeed “WinterGuard” Waterproofing Shingle Underlayment as eave protection in accordance with manufacturer’s instructions.

C. Extend eave protection membrane minimum 24 inches (640 mm) up slope beyond interior face of exterior wall.

3.4 INSTALLATION – PROTECTIVE UNDERLAYMENT

A. Roof Slopes between 2:12 and 4:12: Apply two layers of Roofer’s Select or D4869 underlayment over areas not protected my WinterGuard at eaves, with ends and edges weather-lapped 19 inches (480 mm) .Stagger end laps each consecutive layer. Nail in place.

B. Roof Slopes 4:12 or Greater: Install one layer of asphalt felt shingle underlayment perpendicular to slope of roof and lap minimum 4 inches (100) over eave protection.

C. Weather-lap and seal watertight with asphalt roofing cement items projecting through or mounted on roof. Avoid contact or solvent-based cements with WinterGuard and Diamond Deck.

3.5 INSTALLATION – VALLEY PROTECTION

A. For “closed-cut,” “woven,” and “open” valleys, first place one ply of WinterGuard, minimum 36 inches (910 mm) wide, centered over valleys. Lap joints minimum of 6 inches (152 mm) Follow instructions of shingle an membrane manufacturer.

3.6 INSTALLATON – METAL FLASHING

A. Weather-lap joints minimum 2 inches (50 mm).

B. Visual inspection of the work will be provided by Owner. If conditions are unacceptable, Owner will notify the Engineer.

3.7 INSTALLATION- ASPHALT SHINGLES

A. Install shingles in accordance with manufacturer’s instructions for product type and application specified.

3.8 FIELD QUALITY CONTROL

A. Field inspection will be performed under provisions of Section 01620.

B. Visual inspection of the work will be provided by Owner. If conditions are unacceptable, Owner will notify the Engineer.

3.9 PROTECTION OF FINISHED WORK

A. Protect finished work under provisions of Section 01620.

B. Do not permit traffic over finished roof surface.

END OF SECTION

ELECTRICAL SYMBOLS

CLG.	WALL	FLOOR	SYMBOLS DESCRIPTION
			EMERGENCY LIGHT
			CEILING MOUNTED LIGHT FIXTURE
			WALL MOUNTED LIGHT FIXTURE
			EXIT SIGN
	A 2/40		FIXTURE TYPE "A", 2–40 WATT LAMPS TYPICAL FOR ROOM NOTED, UON
	$		SINGLE POLE SWITCH **
	*		+ 18" UON
	**		+ 48" UON
	X/Y		DETAIL CALL–OUT: X, DETAIL IDENTIFIER; Y, SHEET WHERE DETAIL IS DRAWN
	GW		GROUND ROD, 3/4" x 10'–0" GW NEXT TO SYMBOL INDICATES GROUND ROD IN HANDHOLE
			EQUIPMENT TAG
			CONDUIT CONCEALED IN WALLS OR CEILING 3/4"C–2#12, 1#12G, UON
			CONDUIT UNDER GROUND 3/4"C–2#12, 1#12G, UON
			CONDUIT EXPOSED 3/4"C–2#12, 1#12G, UON
			QUANTITY OF WIRES,CURVE LINE INDICATES GROUND WIRE
			CONNECTION TO GROUND BUS.
			GROUNDING CONDUCTOR 30" BELOW GRADE, #4/0 UON
			EXOTHERMIC WELD CONNECTION
			HOMERUN TO PANEL A, CIRCUIT 1 AND 3
			CONDUIT BENDS TOWARD OBSERVER
			CONDUIT BENDS AWAY FROM OBSERVER
			CONDUIT STUB–OUT AND CAPPED
			FLEXIBLE CONDUIT CONNECTION
			POWER DISTRIBUTION SWITCHBOARD
			SURFACE MOUNTED PANELBOARD
			FLUSH MOUNTED PANELBOARD
			SHEET NOTE, SEE NOTE INDICATED
			UTILITY METERING
			POWER TRANSFORMER
			CIRCUIT BREAKER, 3 POLE UNLESS NOTED MCP INDICATES MOTOR CIRCUIT PROTECTOR
			DISCONNECT SWITCH, NON–FUSIBLE SEE PLANS FOR RATING
			MOTOR, 10 HORSEPOWER
			POWER MONITOR
			GROUND
			INCOMING ELECTRIC SERVICE
			SHUNT TRIP
			PULL BOX, 11"X17" NON

ELECTRICAL SYMBOLS - SCHEMATIC DIAGRAMS

NORMALLY OPEN	NORMALLY CLOSED	DEVICE
		CONTACT
		TIMED CONTACT CONTACT ACTION RETARDED ON ENERGIZATION
		PUSH BUTTON SINGLE CIRCUIT MOMENTARY CONTACT
		PUSH BUTTON SINGLE CIRCUIT LOCK–OUT
		LIQUID LEVEL SWITCH
		TEMPERATURE SWITCH
	D/I	DOOR INTERLOCK SWITCH
	A	PILOT LIGHT R=RED, W=WHITE, G=GREEN, A=AMBER, C=CLEAR
	R	PILOT LIGHT–PUSH TO TEST
	R	RELAY
	TD	TIME DELAY RELAY
	M	STARTER COIL
	S	SOLENOID OPERATED VALVE
		MOTOR
	ETM	ELAPSED TIME METER
		FUSE
		CONTROL POWER TRANSFORMER
		GROUND
		WIRING IN MOTOR STARTER OR CONTROL PANEL
		FIELD WIRING
		TERMINAL BLOCK IN MOTOR STARTER OR PANEL
		TERMINAL BLOCK IN PLC
	PFR	POWER FAILURE
		CIRCUIT BREAKER
	PR	PLC OUTPUT ISOLATION RELAY

ELECTRICAL ABBREVIATIONS

A	AMPERES	MTS	MANUAL TRANSFER SWITCH
AC	ALTERNATING CURRENT	N	NEUTRAL
AFF	ABOVE FINISHED FLOOR	NC	NORMALLY CLOSED
AFG	ABOVE FINISHED GRADE	NIC	NOT IN CONTRACT
ATS	AUTOMATIC TRANSFER SWITCH	NO	NORMALLY OPEN
BKBD	BACKBOARD	NO.	NUMBER
C	CONDUIT, CONDUCTOR	NTS	NOT TO SCALE
CB	CIRCUIT BREAKER	NVE	NEVADA ENERGY
CL	CONTINUOUS LOAD	P	POLE
CKT	CIRCUIT	PB	PUSH BUTTON, PULL BOX
CNTL	CONTROL	PH, ø	PHASE
CO	CONDUIT ONLY	PLC	PROGRAMMABLE LOGIC CONTROLLER
CPT	CONTROL POWER TRANSFORMER	PS	PRESSURE SWITCH
DTL	DETAIL	PVC	POLYVINYL CHLORIDE
DWG	DRAWING	RECPT	RECEPTACLE
E	EXISTING	REQ'D	REQUIRED
FLUOR	FLUORESCENT	SPD	SURGE PROTECTIVE DEVICE
G, GND	GROUND	SSRV	SOLID STATE REDUCE VOLTAGE
GFP	GROUND–FAULT PROTECTION	SW	SWITCH
GFCI	GROUND–FAULT CIRCUIT INTERRUPTER	TB	TERMINAL BOARD
HP	HORSEPOWER	TTB	TELEPHONE TERMINAL BOARD
HPS	HIGH PRESSURE SODIUM	TYP	TYPICAL
HZ	HERTZ	UG	UNDERGROUND
JB	JUNCTION BOX	UON	UNLESS OTHERWISE NOTED
KVA	KILOVOLT–AMPERES	V	VOLT
KW	KILOWATT	W	WATTS, WIRE
LA	LIGHTNING ARRESTER	W/	WITH
LT	LIQUID TIGHT	WP	WEATHERPROOF
LTG	LIGHTING	XFMR	TRANSFORMER

POWER WIRE COLOR CODE

SYSTEM	PHASE A	PHASE B	PHASE C	NEUTRAL	GROUND
208Y/120V	BLACK	RED	BLUE	WHITE	GREEN
480Y/277V	BROWN	ORANGE	YELLOW	GRAY	GREEN

LOAD CALCULATION

LOAD CENTER: MSB/MCC — 480 VAC, 3 PHASE — 4 WIRE

EQUIPMENT NUMBER	HP	MOTOR CONTROL	EQUIPMENT DESCRIPTION	CONNECTED LOAD (AMPS)	CONNECTED QTY	CONNECTED LOAD (KVA)	UTILITY RUN QTY	UTILITY RUN (KVA)	GENERATOR RUN QTY	GENERATOR RUN (KVA)
PMP	15		WELL PUMP 3	21	1	17.5	1	17.5	0	-
PMP	1.5		RECYCLE PUMP 1	3	1	2.5	1	2.5	0	-
PMP	1.5		RECYCLE PUMP 2	3	1	2.5	1	2.5	0	-
PMP	15		BOOSTER PUMP 1	21	1	17.5	1	17.5	0	-
PMP	15		BOOSTER PUMP 2	21	1	17.5	1	17.5	0	-
	5KW		TANK T-400 HEAT TRACE PNL 2	6	1	5.0	1	5.0	0	-
			MOTOR OPERATED VALVES	2	10	16.6	10	16.6	0	-
			EXISTING PP-HA	86	1	71.9	1	71.9	0	-
			LP-LB	18	1	15.0	1	15.0	0	-
SUBTOTAL						165.9		165.9		0.0
LARGEST MOTOR @ 25%				15	HP			18.0		
TOTAL								183.9		0.0

3 PHASE CURRENT	221 AMPS	
	100%	MAXIMUM LOAD CURRENT
CALCULATED SERVICE SIZE	221 AMPS	
MAIN BREAKER SIZE	400 AMPS	
% MAIN BREAKER LOAD	55%	

PANEL SCHEDULE

LOCATION (E) LA — **MAIN BKR** 60A
VOLTAGE 120/240V — **SYSTEM** 3Φ, 4W
TRIM SURFACE — **BUS RATING** 100A

CKT	LOAD	VA	AMPS	CB	PHASE LOADS-AMPS A	B	C	CB	AMPS	VA	LOAD	CKT
1	RECPT-SE WALLS		0.0	20/1	0.0			60/2	0.0		SECONDARY	2
3	LIGHTING		0.0	20/1		0.0			0.0		MAIN	4
5	CONTROL PANEL		0.0	20/1			0.0	20/1	0.0		ATTIC FAN	6
7	HEAT TRACE		0.0	20/1	0.0			20/1	0.0		RECEPT	8
9	CLOCK/CAMERA/COVEN		0.0	20/1		0.0		20/1	0.0		HEAT TRACE	10
11	PNL-FLT		0.0	20/1			0.0	20/1	0.0		WELL 1 FCV	12
Notes					**A**	**B**	**C**					
(L)	**Lockout Provision Required**				**0 A**	**0 A**	**0 A**					
(H)	**HACR - Rated Breaker**				**0 VA**	**0 VA**	**0 VA**					
(GFI)	**Ground Fault Interupt Rated Breaker**				**PHASE LOADS**			**TOTAL**	**0 VA**	**240 V**		
(AFI)	**Arc-Fault Interupt Rated Breaker**				**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**AMPS**	**0 A**			

PANEL SCHEDULE

LOCATION LB — **MAIN BKR** 100A
VOLTAGE 120Y/208Δ — **SYSTEM** 3Φ, 4W
TRIM SURFACE — **BUS RATING** 100A

CKT	LOAD	VA	AMPS	CB	PHASE LOADS-AMPS A	B	C	CB	AMPS	VA	LOAD	CKT
1	(E) TANK HEAT TRACE PNL 1	600	5.0	20/1	7.0			20/1	2.0	240	CHEM MTR PUMP PNL-600	2
3	SITE LIGHTING	216	1.8	20/1		3.8		20/1	2.0	240	CHEM MTR PUMP PNL-700	4
5	HP1A	1250	10.4	20/2			10.4	20/1	0.0		(F) CHEM MTR PUMP	6
7		1250	10.4		10.4			20/1	0.0		SPARE	8
9	HP1B	1350	11.3	20/2		11.3		20/1	0.0		SPARE	10
11		1350	11.3				11.3	20/1	0.0		SPARE	12
13	SPARE		0.0	20/1	0.0			20/1	0.0		SPARE	14
15	SPARE		0.0	20/1		0.0		20/1	0.0		SPARE	16
17	SPARE		0.0	20/1			0.0	20/1	0.0		SPARE	18
19	SPARE		0.0	20/1	0.0			20/1	0.0		SPARE	20
21	SPARE		0.0	20/1		0.0		20/1	0.0		SPARE	22
23	SPARE		0.0	20/1			0.0	20/1	0.0		SPARE	24
Notes					**A**	**B**	**C**					
(L)	**Lockout Provision Required**				**17 A**	**15 A**	**22 A**					
(H)	**HACR - Rated Breaker**				**2090 VA**	**1806 VA**	**2600 VA**					
(GFI)	**Ground Fault Interupt Rated Breaker**				**PHASE LOADS**			**TOTAL**	**6496 VA**	**208 V**		
(AFI)	**Arc-Fault Interupt Rated Breaker**				**97%**	**83%**	**120%**	**AMPS**	**18 A**			

PANEL SCHEDULE

LOCATION (E) HA — **MAIN BKR** 200A
VOLTAGE 277Y/480Δ — **SYSTEM** 3Φ, 4W
TRIM SURFACE — **BUS RATING** 200A

CKT	LOAD	VA	AMPS	CB	PHASE LOADS-AMPS A	B	C	CB	AMPS	VA	LOAD	CKT
1	WELL PUMP 1	10667	38.5		50.4				11.9	3300	LIGHTING PANELBOARD - LA	2
3		10667	38.5	80/3		50.4		50/3	11.9	3300		4
5		10667	38.5				50.4		11.9	3300		6
7	CIRCUIT PROTECTOR	100	0.4		11.2				10.8	3000	HEATER - NORTH WALL	8
9		100	0.4	30/3		11.2		20/3	10.8	3000		10
11		100	0.4				11.2		10.8	3000		12
13	RECYCLE PUMP (E) FILTER 1	0	0.0		10.8				10.8	3000	HEATER - NORTH WALL	14
15	MOTOR OPERATED		0.0	20/3		10.8		20/3	10.8	3000		16
17	VALVES		0.0				10.8		10.8	3000		18
19	WASTE SOLIDS PUMP	2000	7.2		7.2				0.0		CHEMICAL PUMPS	20
21		2000	7.2	20/3		7.2		20/3	0.0			22
23		2000	7.2						0.0			24
25	FILTER 2	2200	7.9						19.9	5500	BOOSTER PUMP **FILTER 3**	26
27	**MOTOR OPERATED**	2200	7.9	20/3				20/3	19.9	5500	**MOTOR OPERATED**	28
29	**VALVES**	2200	7.9				27.8		19.9	5500	**VALVES**	30
Notes					**A**	**B**	**C**					
(L)	**Lockout Provision Required**				**80 A**	**80 A**	**100 A**					
(H)	**HACR - Rated Breaker**				**22067 VA**	**22067 VA**	**27767 VA**					
(GFI)	**Ground Fault Interupt Rated Breaker**				**PHASE LOADS**			**TOTAL**	**71901 VA**	**480 V**		
(AFI)	**Arc-Fault Interupt Rated Breaker**				**92%**	**92%**	**116%**	**AMPS**	**86 A**			

LIGHTING FIXTURE SCHEDULE

TYPE		MANUFACTURER/ CATALOG NO.	VOLTS	BALLAST TYPE	NO. LAMPS/ LAMP TYPE	LAMP WATTAGE	FIXTURE WATTAGE	MOUNTING	DESCRIPTION
A		LITHONIA FEM LED FEM4LED-4L/35-IMAFL	120	LED DRIVER	LED 4728 LUMENS		61	PENDANT 10'-0"	ENCLOSED GASKETED LED FIXTURE WITH FIBERGLASS HOUSING, ACRYLIC LENS, AND STAINLESS STEEL LATCHES. UL LISTED FOR CORROSIVE AND WET LOCATIONS.
B		LITHONIA TWHLED20C50K	120	LED DRIVER	LED		72	WALL	OUTDOOR LED FIXTURE, TEMPERED GLASS LENS, DIE-CAST ALUMINUM HOUSING. UL LISTED FOR WET LOCATIONS. BRONZE FINISH.
C		LITHONIA LQM QUANTUM	120	LED DRIVER	LED	0.62	0.62	WALL	RED LED EXIT SIGN, CORROSIVE AND WET LOCATION RATED.
D		LITHONIA LIGHTING KAD-60C-1000-40K-R5	120	LED DRIVER	LED	216	216	POLE 10'-0"	LED AREA LIGHT
E		LITHONIA LIGHTING WLTU LED	120	LED DRIVER	2 LED	3	3	SURFACE	LED EMERGENCY LIGHT WITH THERMOPLASTIC HOUSING. Ni-Cad BATTERY. CORROSIVE AND WET LOCATION RATED.

REVISION	DESCRIPTION	BY	APP	DATE
1	ADDENDUM #1	LVH	LVH	3/2/16

WORK ORDER NO. _____
DESIGNED LVH
DRAWN HAM
DATE JANUARY 2016
CHECKED LVH
SUBMITTED _____
RECOMMENDED _____
APPROVED _____

TRUCKEE MEADOWS WATER AUTHORITY
1355 CAPITAL BLVD. / PO BOX 30013
RENO, NEVADA 89520–3013
PH 775–834–8080 / FX 775–834–8003

TRUCKEE CANYON WATER SYSTEM EXPANSION

ELECTRICAL SYMBOLS, ABBREVIATIONS& PANELBOARD SCHEDULES

REGISTERED PROFESSIONAL ENGINEER — LONG V. HOANG — No. 019006 — EXP.6-30-17 ELECTRICAL — STATE OF NEVADA

SHEET NUMBER
E001
50 OF 71

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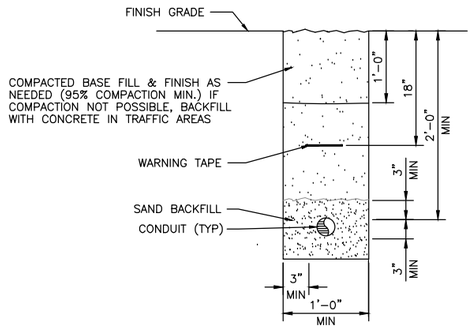
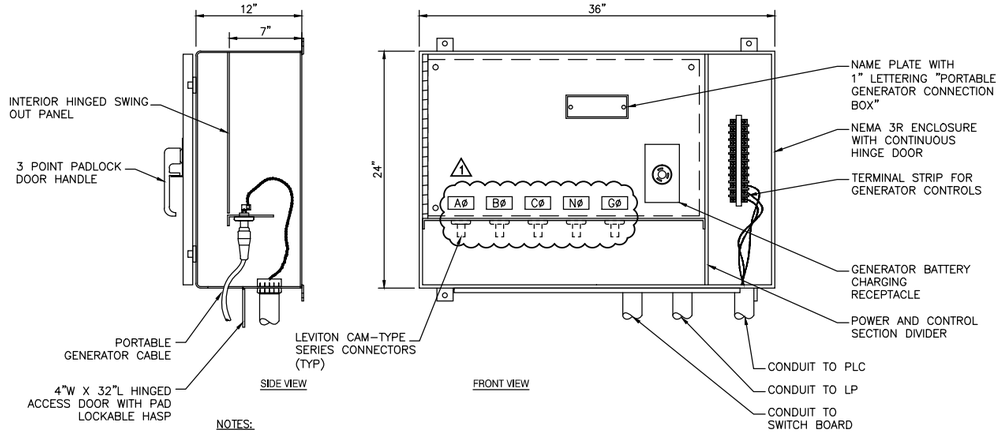


TRENCH DETAIL

SCALE: NONE

A E030



NOTES:

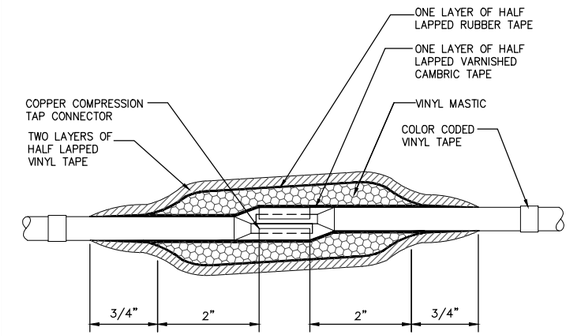
1. CONNECTIONS TO BOX MUST BE WATER TIGHT SEALED WITH RING AND INSULATED THROAT.
2. ENCLOSURE SHALL BE 400A RATED, PROVIDE POWERTRON SERIES 400, NEVADA ENERGY SYSTEMS, CONTRACTOR FABRICATED, OR APPROVED EQUAL.
3. PROVIDE CAM CONNECTORS WITH THE FOLLOWING COLORS:
   A∅=BROWN
   B∅=ORANGE
   C∅=YELLOW
   ~~G∅=GREEN~~
   N∅=WHITE

1

PORTABLE GENERATOR CONNECTION BOX

SCALE: NONE

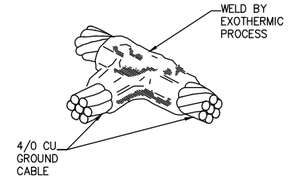
B E030



600V AND LESS CABLE SPLICE DETAIL

SCALE: NONE

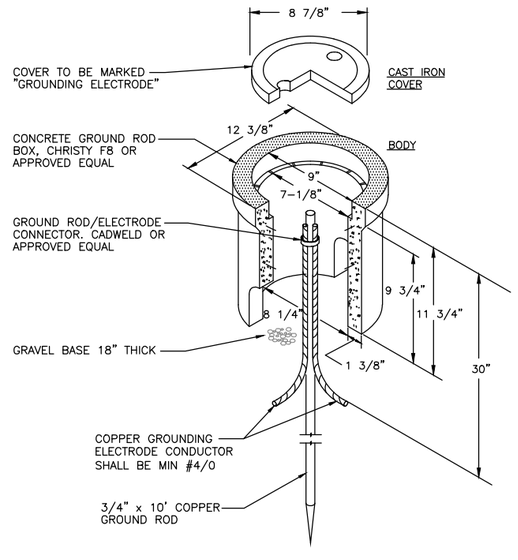
C E030



GROUND CONNECTION DETAIL

SCALE: NONE

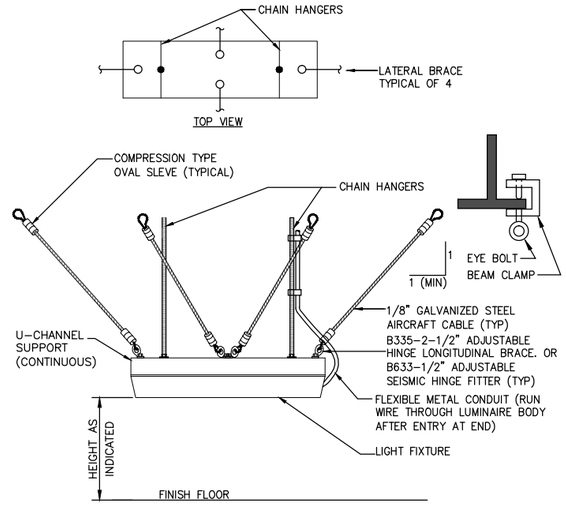
D E030



CONCRETE GROUND ROD BOX DETAIL

SCALE: NONE

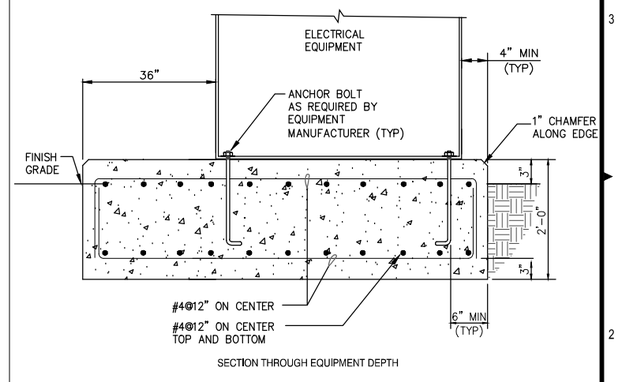
E E030



INDUSTRIAL LUMINAIRE MOUNTING AND SEISMIC SUPPORT SYSTEM DETAIL

SCALE: NONE

F E030



SECTION THROUGH EQUIPMENT DEPTH

NOTES:

1. EQUIPMENT BASE TOP SHALL BE LEVEL.
2. PRIOR TO EQUIPMENT BASE INSTALLATION, COMPACT SOIL UNDER AND 6" BEYOND THE BASE TO 95% RELATIVE COMPACTION.

ELECTRICAL EQUIPMENT FOUNDATION

SCALE: NONE

G E030

REVISION	DESCRIPTION	BY	APP	DATE
1	ADDENDUM #1	LVH	LVH	3/2/16

WORK ORDER NO. _____
DESIGNED LVH
DRAWN HAM
DATE JANUARY 2016
CHECKED LVH
SUBMITTED _____
RECOMMENDED _____
APPROVED _____

TRUCKEE MEADOWS WATER AUTHORITY
1355 CAPITAL BLVD. / PO BOX 30013
RENO, NEVADA 89520-3013
PH 775-834-8080 / FX 775-834-8003

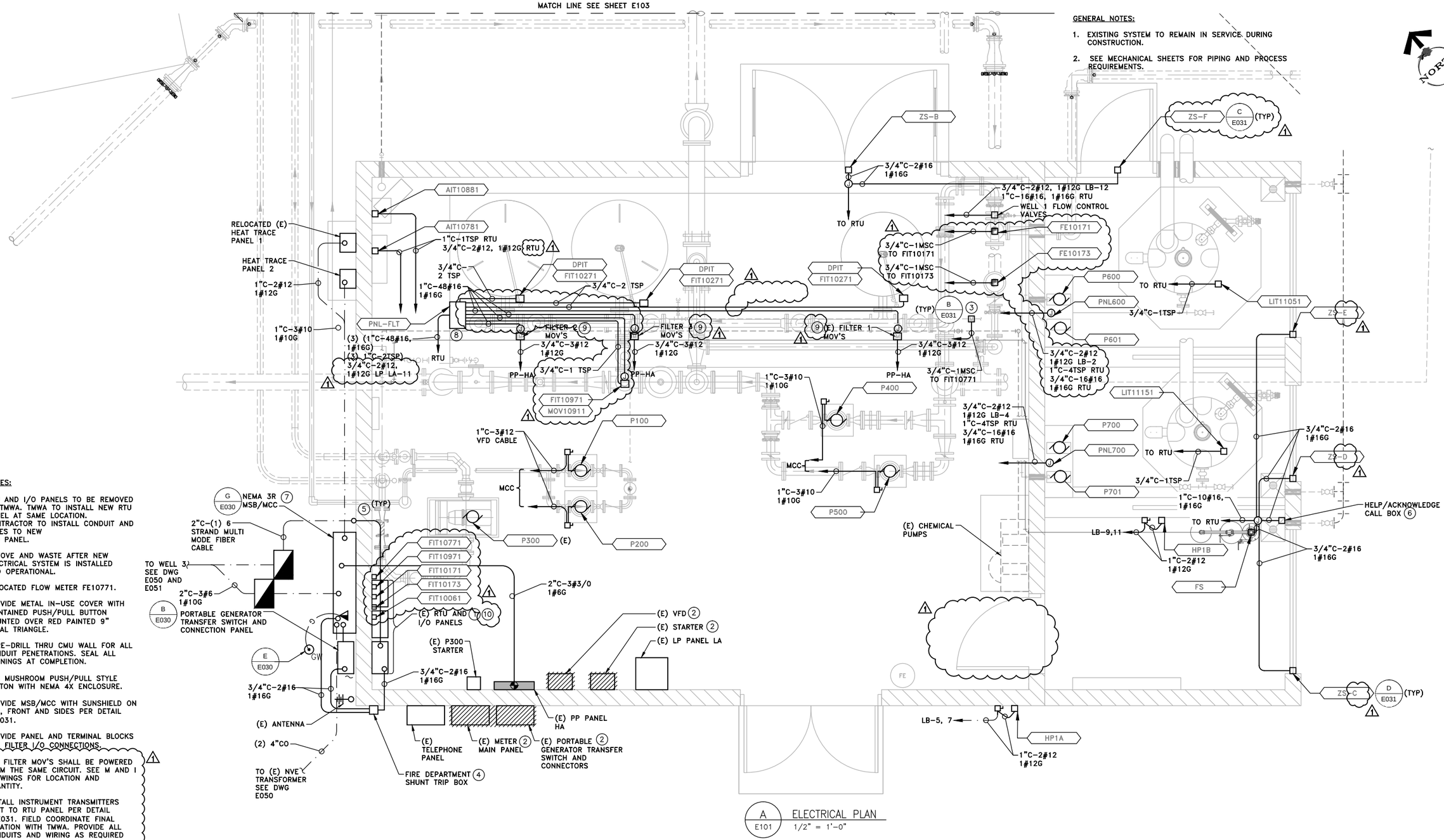
TRUCKEE CANYON WATER SYSTEM EXPANSION

TYPICAL ELECTRICAL DETAILS 1

REGISTERED PROFESSIONAL ENGINEER
LONG V. HOANG
No. 019006
EXP.6-30-17 ELECTRICAL
STATE OF NEVADA

SHEET NUMBER
E030
54 OF 71

MATCH LINE SEE SHEET E103



A E101 ELECTRICAL PLAN
1/2" = 1'-0"

NOTES:

1. RTU AND I/O PANELS TO BE REMOVED BY TMWA. TMWA TO INSTALL NEW RTU PANEL AT SAME LOCATION. CONTRACTOR TO INSTALL CONDUIT AND WIRES TO NEW RTU PANEL.
2. REMOVE AND WASTE AFTER NEW ELECTRICAL SYSTEM IS INSTALLED AND OPERATIONAL.
3. RELOCATED FLOW METER FE10771.
4. PROVIDE METAL IN-USE COVER WITH MAINTAINED PUSH/PULL BUTTON MOUNTED OVER RED PAINTED 9" METAL TRIANGLE.
5. CORE-DRILL THRU CMU WALL FOR ALL CONDUIT PENETRATIONS. SEAL ALL OPENINGS AT COMPLETION.
6. RED MUSHROOM PUSH/PULL STYLE BUTTON WITH NEMA 4X ENCLOSURE.
7. PROVIDE MSB/MCC WITH SUNSHIELD ON TOP, FRONT AND SIDES PER DETAIL F/E031.
8. PROVIDE PANEL AND TERMINAL BLOCKS FOR FILTER I/O CONNECTIONS.
9. ALL FILTER MOV'S SHALL BE POWERED FROM THE SAME CIRCUIT. SEE M AND I DRAWINGS FOR LOCATION AND QUANTITY.
10. INSTALL INSTRUMENT TRANSMITTERS NEXT TO RTU PANEL PER DETAIL A/E031. FIELD COORDINATE FINAL LOCATION WITH TMWA. PROVIDE ALL CONDUITS AND WIRING AS REQUIRED FROM TRANSMITTERS TO RTU PANEL.

REVISION	DESCRIPTION	BY	APP	DATE
1	ADDENDUM #1	LVH	LVH	3/2/16

WORK ORDER NO.
DESIGNED LVH
DRAWN HAM
DATE JANUARY 2016
CHECKED LVH
SUBMITTED
RECOMMENDED
APPROVED

TRUCKEE MEADOWS WATER AUTHORITY
1355 CAPITAL BLVD. / PO BOX 30013
RENO, NEVADA 89520-3013
PH 775-834-8080 / FX 775-834-8003

TRUCKEE CANYON WATER SYSTEM EXPANSION

TREATMENT BUILDING ELECTRICAL BUILDING

REGISTERED PROFESSIONAL ENGINEER
LONG V. HOANG
No. 019006
EXP.6-30-17
ELECTRICAL
STATE OF NEVADA

SHEET NUMBER
E101
58 OF 71

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TMWA_Map5mono.ctb

ALARM CALLOUT

SCADA OI DISPLAY

PROGRAMMABLE LOGIC CONTROLLER PLC-WTP

FIELD

GPM FI

GPM FI

WELL 1 FLOW F

WELL 3 FLOW F

ES FIT 10171

FE 10171 M

FME10971

WELL 1

ES FIT 10173

FE 10173 M

FME10971

WELL 3

1

I108 SODIUM HYPOCHLORITE FEED SYSTEM

I109 FERRIC CHLORIDE FEED SYSTEM

FUTURE POLYMER FEED SYSTEM

STATIC MIXER

STATIC MIXER

STATIC MIXER

1

(E) FILTER NO.1

FILTER NO.2 I102 (1)

FILTER NO.3 I103 (1)

BACKWASH DECANT SYSTEM I106 AND I107

I108 BOOSTER PUMPS

I109 BACKWASH SUPPLY

ALARM CALLOUT

SCADA OI DISPLAY

PLC-WTP

FIELD

NOTES:

(1) VENDOR PROVIDED

(2) PANEL SHALL BE CONSTRUCTED PER LAYOUTS ON SHEET I002 TO MATCH TMWA STANDARD.

REVISION	DESCRIPTION	BY	APP	DATE
1	ADDENDUM #1	LVH	LVH	3/2/16

WORK ORDER NO. _____
DESIGNED LVH
DRAWN HAM
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APPROVED _____

TRUCKEE MEADOWS WATER AUTHORITY
1355 CAPITAL BLVD. / PO BOX 30013
RENO, NEVADA 89520-3013
PH 775-834-8080 / FX 775-834-8003

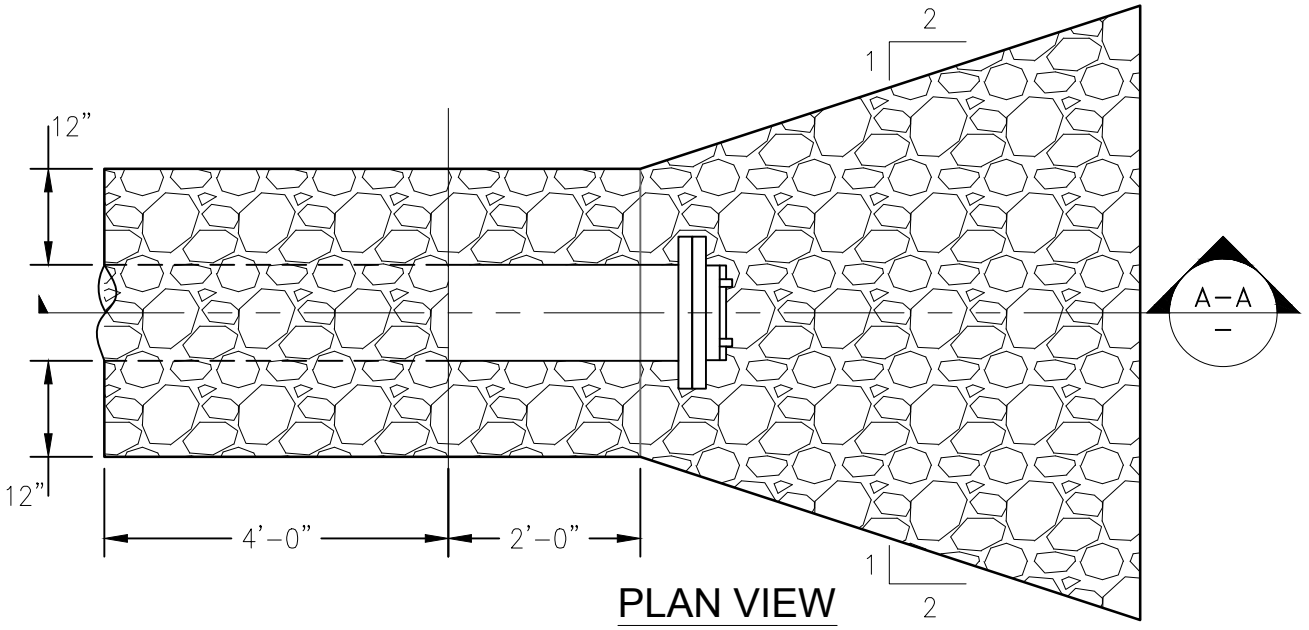
TRUCKEE CANYON WATER SYSTEM EXPANSION

FILTER OVERVIEW P&ID

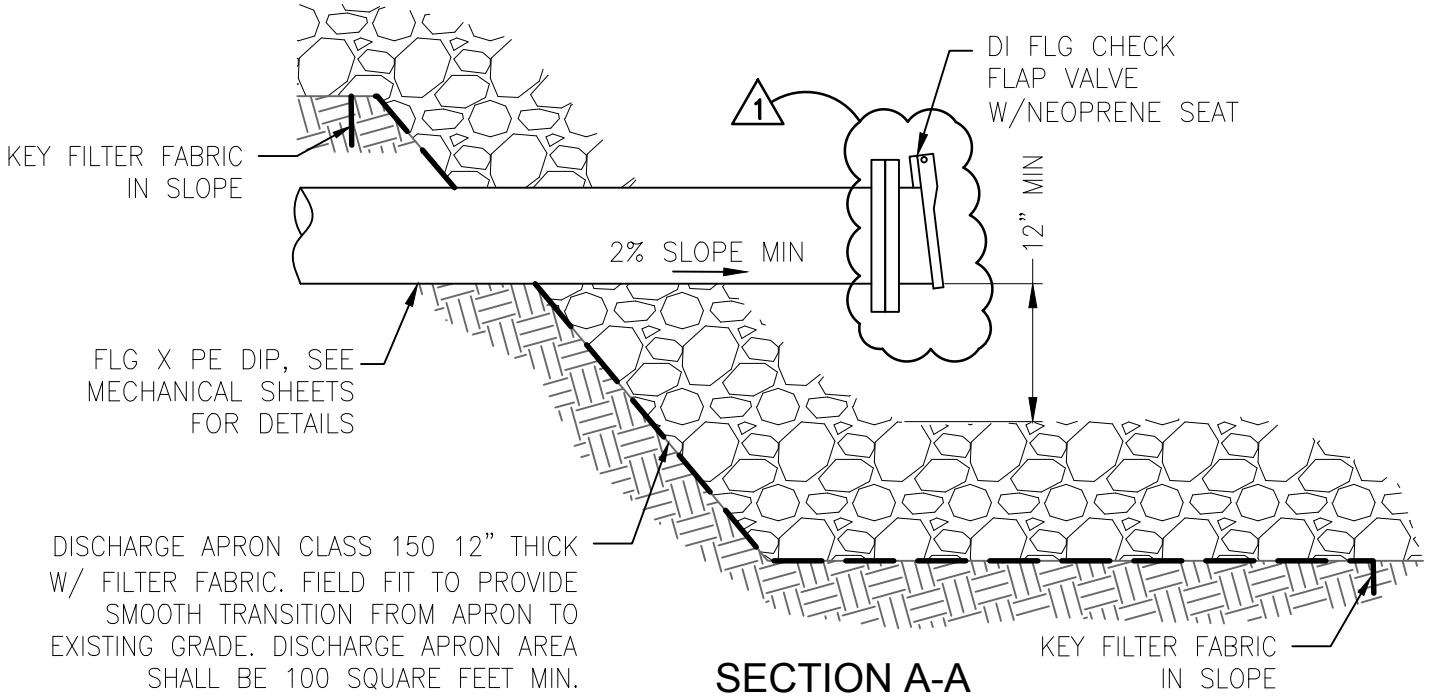
REGISTERED PROFESSIONAL ENGINEER
LONG V. HOANG
No. 019006
EXP.6-30-17
ELECTRICAL
STATE OF NEVADA

SHEET NUMBER
I101
63 OF 71

TRUCKEE CANYON WATER SYSTEM EXPANSION
ADDENDUM #1
NOT TO SCALE
03/02/2016



PLAN VIEW



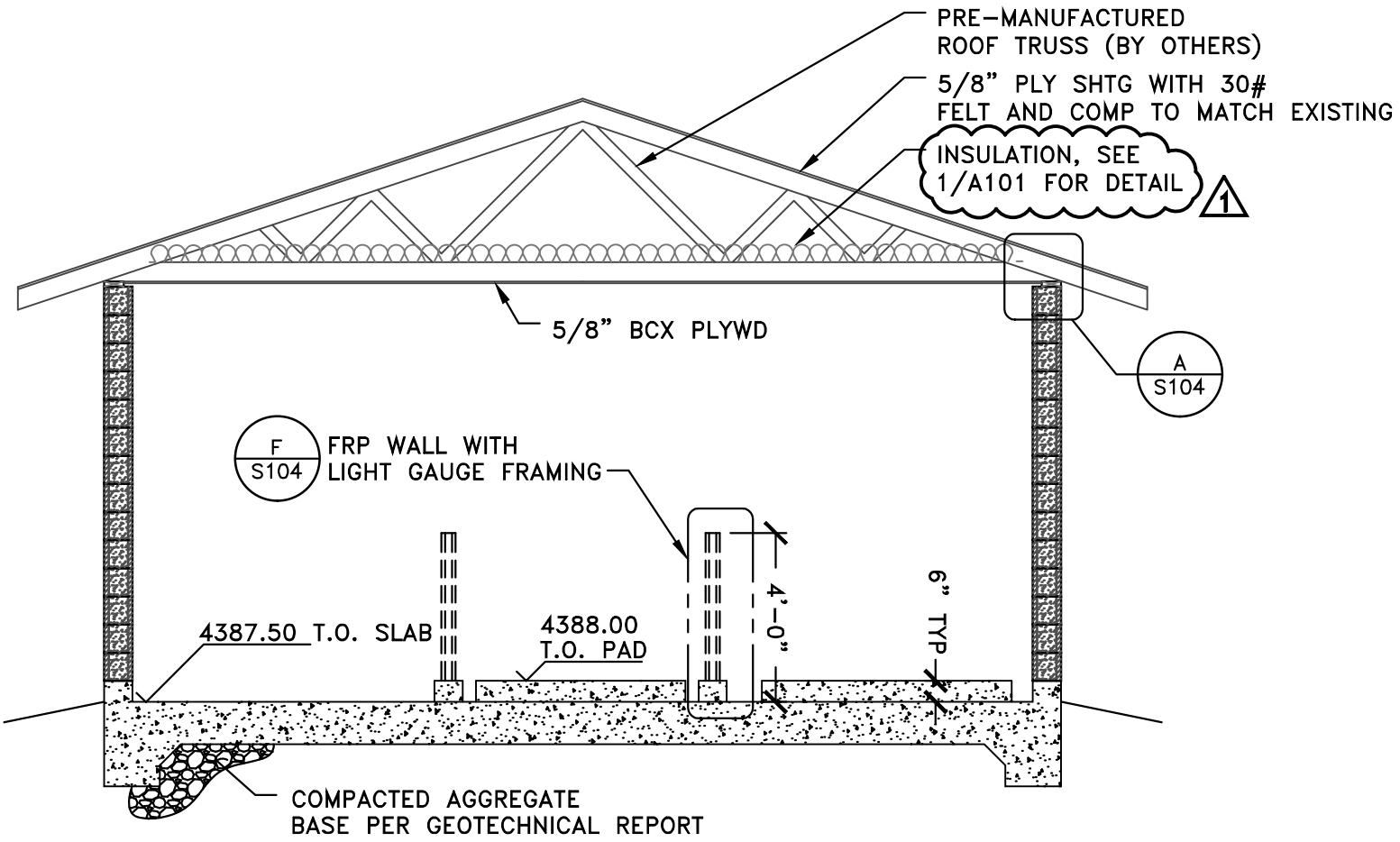
SECTION A-A

TYPCAL DRAINAGE OUTLET

N.T.S.

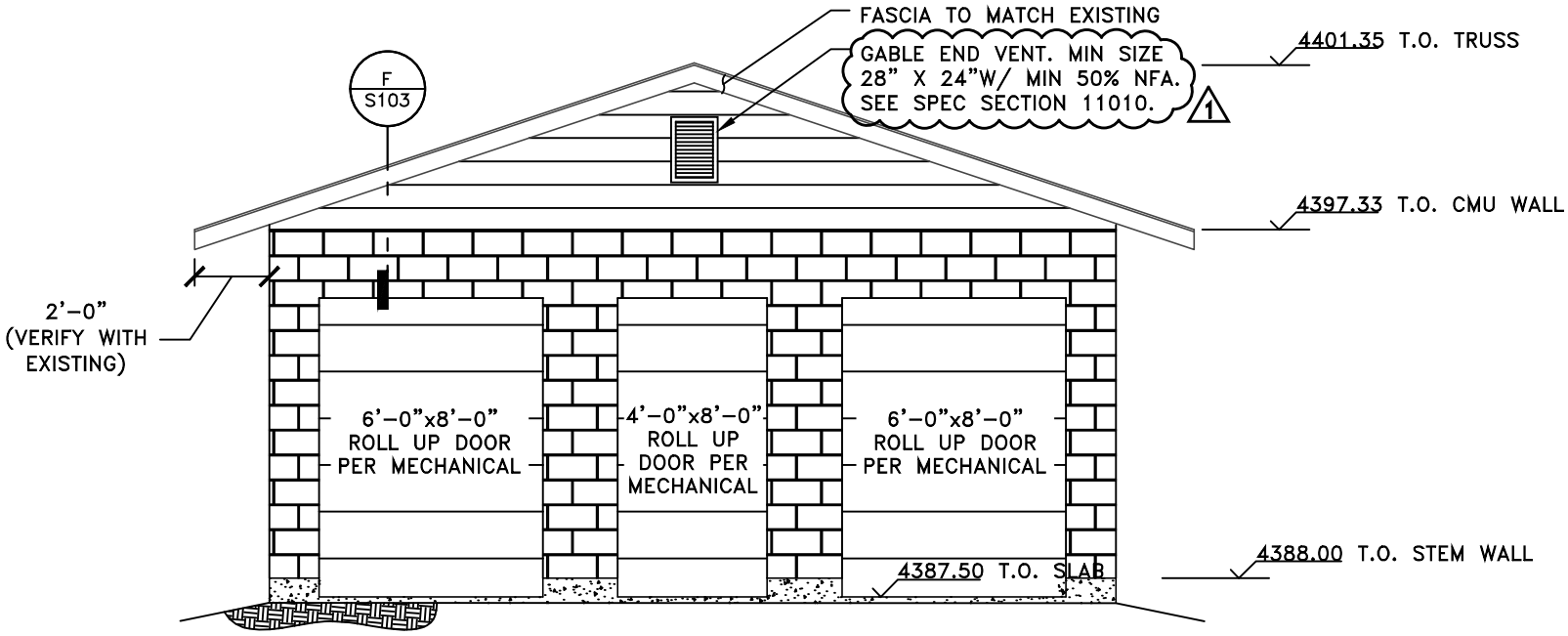
C615
TYP

TRUCKEE CANYON WATER SYSTEM EXPANSION
ADDENDUM #1
NOT TO SCALE
03/02/2016



D / S102 BUILDING SECTION
1/4" = 1'-0"

TRUCKEE CANYON WATER SYSTEM EXPANSION
ADDENDUM #1
NOT TO SCALE
03/02/2016



B / S103 EAST ELEVATION
1/4" = 1'-0"