

ADDENDUM #2

ADVERTISEMENT FOR BIDS

**Sierra Nevada Research Institute: Wawona Informatics
SNRI: Wawona Informatics**

Subject to conditions prescribed by the undersigned, sealed bids for General Contractors are invited for the following Work:

**SNRI: Wawona Informatics
PROJECT NO.: 907265
UNIVERSITY OF CALIFORNIA
MERCED CAMPUS, MERCED COUNTY, MERCED CALIFORNIA**

The SNRI project will be constructed by a general contractor, working under a contract with the University.

DESCRIPTION OF PROJECT:

The project is a National Park Service historic building at the Sierra Nevada Research Institute Historic Stable located at Wawona California. The demolition phase of work will strip the structure back to its original historic state in order to refurbish the structure to its' original exterior appearance, thereby significantly improving the buildings' aesthetic quality and historic preservation. Archeologists monitoring will be necessary throughout the project.

The demolition includes removal of existing non-original: roofing, double doors, interior partitions, wall heater, raised flooring, concrete slab, miscellaneous plumbing and electrical.

Exterior work will be of historically appropriate in color, style and hardware as identified to maintain the appearance.

The interior improvements will improve the structures use as an efficient and effective research and teaching facility, with current technology and environmentally friendly and efficient building systems.

The Cost Estimate for the project is: \$330,000.00.

Bidding Documents will be made available to bidders on **September 2, 2011**. One complete set of bidding documents will be available free of charge beginning September 2, 2011. Contact **ARC** (Stockton Blue) at www.stocktonblue.com (follow the links to Planwell and Public Planroom) to order plans or call them at (209) 524-2924. Additional sets may be purchased at cost.

Plan Holder's List is available at ARC (Stockton Blue) and Bid Results will be available on our website at <http://www.ucmerced.edu/community/rfprfq.asp> or by calling (209) 228-0402 or by fax (209) 228-4468.

A **NON-MANDATORY** Pre-Bid Conference and **NON-MANDATORY** Project Site Visit will be conducted on **September 14, 2011** beginning promptly at **1:00 pm**. Participants shall meet at the Project Site.

If you need accommodations related to disabilities, please call Fran Telechea (209) 228-4479 at least 3 working days prior to Pre-Bid Conference/Project Site Visit or Bid Opening.

Requests for clarification or interpretation of the Bidding Documents must be in writing and received by **September 19, 2011 at 4:00 P.M.** Questions received after the above-noted deadline may be answered at the discretion of the University's Representative. Questions may be mailed, E-Mailed or faxed to:

Fran Telechea
Physical Planning, Design & Construction
University of California
5200 N Lake Road
Merced CA 95343
Fax (209) 228-4468
ftelechea@ucmerced.edu

Revisions, additions or deletions will be made by written addenda issued by Physical Planning Design & Construction.

Bids will be received only at:
(Overnight delivery only)

**UNIVERSITY OF CALIFORNIA, MERCED
Physical Planning Design and Construction
767 E Yosemite Ave., Bldg. B, Ste C
Merced CA 95340**

Or by US Mail at:

**UNIVERSITY OF CALIFORNIA, MERCED
Physical Planning Design and Construction
5200 Lake Rd.
Merced CA 95343**

Bids will not be accepted after:

**2:00 PM
Tuesday, September 27, 2011**

There will be bid security required for this project.

The successful Bidder and its Subcontractors will be required to follow the nondiscrimination requirements set forth in the Bidding Documents and to pay prevailing wage rates at the location of the Work.

The successful Bidder will be required to have General – B license.

THE UNIVERSITY OF CALIFORNIA IS AN AFFIRMATIVE ACTION/EQUAL OPPORTUNITY EMPLOYER.

ADDENDUM NO. 2

Bid Date September 27, 2011 @ 2:00 pm

**SNRI: Wawona Informatics Rebid
University of California, Merced Campus, Merced California**

A. Modify the specifications as follows:

1. Section 01113 Special Requirements shall be modified as follows:

- Page 8 of 11, section 1.26 Senior Project Manager – NOT USED. Senior Project Manager is not required for this project.
- Page 9 of 11, section 1.27 Project Superintendent - Delete Section 01113 1.27 and replace with: Contractor shall have a company representative on the project while work is being performed. Representative shall be able to bind the company in all decisions and commitment of work.
- Page 9 of 11, 1.28 Project Engineer – NOT USED. An onsite Project Engineer is not required for this project.
- Page 10 of 11, 1.29 Project Scheduler – NOT USED. A full time project scheduler is not required for this project.
- Page 10 or 11, 1.31 Project Management Software – (Identified in 01315 – Project Document Management and Control) NOT USED. The University will use and maintain the data base.

2. Section 01315 Project Document Management and Control (Prolog)

- Section 01315 is NOT USED. University will use and maintain the data base system.

3. Section 01329 Contract Schedules requirements shall be modified as follows:

- Page 1 of 9 1.1 Preliminary Contract Schedule – Revise to read: Prepare and maintain the Contract Schedule in GANTT format throughout the project in order to organize the Work to develop a construction plan that shows the project duration.
- Page 1 of 9 1.2 Project or Contract Schedule and Progress Payment Schedule – NOT USED. The University will work with a GANTT chart schedule provided by the Contractor.

4. Section 01500 Temporary Utilities shall be modified as follows:

- Page 3 of 4 1.8, Temporary Telephone Service is NOT USED. Cell phones are acceptable.

5. Section 01560 Temporary Barriers and Enclosures shall be modified as follows:

- Page 1 of 2, 1.2 Temporary Project Construction Fence is NOT USED.

B. Drawing revision:

- On Sheet A1.1, Demolition Plan, Keynote 1.11 revise to read: “Remove existing concrete and soil to accommodate new slab construction”.

C. Provide Deductive Alternates

- **Deductive Bid Alternate #1:** Deduct the new gen-set shown within the Drawings. Contractor shall disregard Specification Section 263213 and all work outlined on the following sheets: E1.0: Disregard scope associated with site construction notes #1, 5, 6, 7, 8 and 9. Modify note #4 to read all new conduit with no reuse of the existing. E2.0: Disregard detail D-1/E2.0 and within the Single Line Diagram. Include all work shown on Drawing AE-1 (i.e., installation of a new 100A-2P DPDT fused switch).
- **Deductive Bid Alternate #2:** Deduct all labor, material, and finishes associated with the 1 x 4 Douglas Fir ceiling identified on the Reflected Ceiling Plan and in keynote 6.3 on Sheet A2. Provide Level 5 gypsum board ceiling finish with an interior type “C” paint finish.
- **Deductive Bid Alternate #3:** Deduct all labor, material, and equipment charges associated with the earthwork, site grading, and asphaltic concrete paving work identified on the Site Plan, Subdrainage Plan, and in keynotes 32.1 – 32.3 on Sheet A1 and Specification Section 321216 – Asphalt Paving.
- **Deductive Bid Alternate #4:** Deduct all labor, material, and equipment charges associated with the Dyed and Polished concrete floor slab finish identified in keynote 3.1 on Sheet A1.1, keynote 3.1 on Sheet A2, keynote 3.1 on Sheet A3, and in Specification Section 033000 – Cast-In-Place Concrete. Furnish and install two coats of clear Sherwin Williams ArmorSeal Floor-Plex WB 7100 Epoxy or approved equal (Material is VOC compliant, dries rapidly, resists yellowing, meets ADA requirements for slip resistance, and is impact and abrasion resistant).
- **Deductive Bid Alternate #5:** Deduct all labor, material, and finishes associated with the recycled wainscoting identified in the Interior Elevations and in keynote 6.2 on Sheet A4 and in Detail 2 and in keynote 6.6 on sheet A5. Please note only the wainscoting is to be eliminated. The 8” high wood base and the 1 x 4 wood trim below the electrical raceway remain Base Bid work. Provide Level 5 wall finish with an interior type “C.” paint finish.
- **Deductive Bid Alternate #6:** Deduct all associated work with investigating, verification and removal of Lead as described in the Biologist report, including testing and sampling and final report by the Biologist confirming abatement is complete.

D. Request for local lodging

- SNRI has cabins for housing the construction crew can rent, if they are available, while construction is in progress. The housing rate is \$15 per night per person. For your reference, go to <https://snri.ucmerced.edu/snri> for specifics regarding the use of the SNRI cabins.
- UC Merced Sierra Nevada Research Institute, Wawona Station map is provided for your use.

E. Revise the bid date to Tuesday, September 27, 2001 @ 2:00 pm.

END OF ADDENDUM #2

ADDENDUM #2

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

1. Contract Time: 90 **Calendar** days.
2. Requests for clarification or interpretation of the Bidding Documents must be in **writing** and received by Monday, September 19th, at **4:00 P.M.** Questions received after the above-noted deadline may be answered at the discretion of the University's Representative. **Questions may be mailed, E-Mailed or faxed to:**

Fran Telechea
On-Site Coordinator/Construction Analyst
Physical Planning Design & Construction
University of California
5200 N Lake Road
Merced, CA 95343
Fax (209) 228-6648

Overnight Delivery
Fran Telechea
On-Site Coordinator/Construction Analyst
Physical Planning Design & Construction
University of California
767 E Yosemite Ave, Bldg. B, Suite C
Merced CA 95343

Revisions, additions or deletions will be made by written addenda issued by Physical Planning Design & Construction **only**.

3. A **NON-MANDATORY** Pre-Bid Conference and **NON-MANDATORY** Project Site Visit will be conducted on September 14, 2011 beginning promptly at **1:00 pm**. Participants shall meet at the Project Site.

If you need accommodations related to disabilities, please call **Steven Murray** at **(209) 228-4321** or **(209) 228-4479** at least 3 working days prior to Pre-Bid Conference/Project Site Visit or Bid Opening.
4. Bids will be received on or before the Bid Deadline and only at:
University of California, Merced
767 E. Yosemite Ave.
Merced California 95340
5. Bids will be opened at: **2:00 PM**
Tuesday, September 27, 2011
767 E. Yosemite Ave.
Merced California 95340
6. Contractor will be assessed as liquidated damages the sum of **\$500.00** for each day the Work remains incomplete beyond the expiration of the Contract Time. After Substantial completion, the rate for liquidated damages shall be reduced to the sum of **\$250.00** per day. See Article 5 of the Agreement for detailed requirements.
7. **ADDENDUM #2 Alternate #6** - Contractor shall comply with Bovee Environmental Management, Inc's Asbestos Inspection Report Dated May 18, 2011 and Lead Inspection Report dated May 17, 2011 with removal and disposal of hazardous materials. Contractor shall comply with all State and Federal Regulations for removal and disposal of hazardous materials.

8. Contractor shall comply with the Davis-Bacon Act, As Amended (40 U.S.C. 276A TO A-7).
9. Contractor shall comply with all requirements of the NSF National Science Foundation American Recovery and Reinvestment Act of 2009 (ARRA) as it applies to the Contractor.

ADDENDUM #2

BID FORM

FOR: SNRI: Wawona Informatics
Project Number 907265

UNIVERSITY OF CALIFORNIA
MERCED CAMPUS, MERCED COUNTY
MERCED CALIFORNIA

BID TO: PHYSICAL PLANNING, DESIGN & CONSTRUCTION
UNIVERSITY OF CALIFORNIA, MERCED
767 E. YOSEMITE AVE., SUITE C
MERCED CALIFORNIA 95340
TELEPHONE: (209) 228-4321

BID FROM: _____
(Name of Bidder)

(Address)

_____, _____, _____

(City) (State) (Zip Code)

(Telephone Number)

(Date Bid Submitted)

Note: All portions of this Bid Form must be completed and the Bid Form must be signed before the Bid is submitted. Failure to do so will result in the Bid being rejected as non-responsive.

1.0 BIDDER'S REPRESENTATIONS

Bidder, represents that a) Bidder and all Subcontractors, regardless of tier, has the appropriate current and active Contractor's licenses required by the State of California and the Bidding Documents; b) it has carefully read and examined the Bidding Documents for the proposed Work on this Project; c) it has examined the site of the proposed Work and all Information Available to Bidders; d) it has become familiar with all the conditions related to the proposed Work, including the availability of labor, materials, and equipment. Bidder hereby offers to furnish all labor, materials, equipment, tools, transportation, and services necessary to complete the proposed Work on this Project in accordance with the Contract Documents for the sums quoted. Bidder further agrees that it will not withdraw its Bid within 60 days after the Bid Deadline, and that, if it is selected as the apparent lowest responsive and responsible Bidder, that it will, within 10 days after receipt of notice of selection, sign and deliver to University the Agreement in triplicate and furnish to University all items required by the Bidding Documents. If awarded the Contract, Bidder agrees to complete the proposed Work within 90 days after the date of commencement specified in the Notice to Proceed.

2.0 ADDENDA

Bidder acknowledges that it is Bidder's responsibility to ascertain whether any Addenda have been issued and if so, to obtain copies of such Addenda from University's Facility at the appropriate address stated on Page 1 of this Bid Form. Bidder therefore agrees to be bound by all Addenda that have been issued for this Bid.

3.0 NOT USED

4.0 LUMP SUM BASE BID

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(Place figures in appropriate boxes.)

5.0 SELECTION OF APPARENT LOW BIDDER

Refer to the Instructions to Bidders for selection of apparent low bidder.

6.0 UNIT PRICES

The quantities set forth in the Unit Prices are estimates. University does not represent that the actual quantity of any Unit Price item will equal the Estimated Quantity stated below. University will perform the extension of the Unit Price times the respective Estimated Quantity.

Unit Price #1 – Replace lap siding as specified in Section 01270 1.3 .1

Estimated Quantity of Units: 100 LF

\$, • per LF

(Place Unit Price figures in appropriate boxes)

Unit Price #2 – Replace and/or repair wood trim as specified in Section 01270 1.3 .2

Estimated Quantity of Units: 100 LF.

\$, • per LF

(Place Unit Price figures in appropriate boxes)

Unit Price #3 – Replace and/or repair cedar roofing as specified in Section 01270 1.3 .3

Estimated Quantity of Units: 20 squares

\$, • per square

(Place Unit Price figures in appropriate boxes)

7.0 DAILY RATE OF COMPENSATION FOR COMPENSABLE DELAYS

Bidder shall determine and provide below the daily rate of compensation for any Compensable Delay caused by University at any time during the performance of the Work:

\$, • X 10 multiplier

(Place figures in appropriate boxes.)

Failure to fill in a dollar figure for the daily rate for Compensable Delay shall render the bid non-responsive. University will perform the extension of the daily rate time the multiplier.

University will perform the extension of the daily rate times the multiplier.

The daily rate shown above will be the total amount of Contractor entitlement for each day of Compensable Delay caused by University at any time during the performance of the Work and shall constitute payment in full for all delay costs, direct or indirect (including, without limitation, compensation

for all extended home office overhead and extended general conditions), of the Contractor and all subcontractors, suppliers, persons, and entities under or claiming through Contractor on the Project. The number of days of Compensable Delay shown as a "multiplier" above is not intended as an estimate of the number of days of Compensable Delay anticipated by the University. The University will pay the daily rate of compensation only for the actual number of days of Compensable Delay, as defined in the General Conditions; the actual number of days of Compensable Delay may be greater or lesser than the "multiplier" shown above.

8.0 ALTERNATES

In order for a Bid to be responsive, Bidder must submit an additive bid, a deductive bid, or a "no change" bid, for each Alternate listed below. The failure to do so shall result in the Bid being rejected as non-responsive. The failure to quote an amount, unless the bidder marks the "no change" box, will result in the bid being rejected as non-responsive.

The Contract Time will change by the number of days, if any, specified for each accepted Alternate.

Add Alternate No. 1

Description: Add Partition Separating Research 1 from Research 2

Bid for Alternate No. 1

If "Add" or "Deduct" is intended, indicate by placing figures in the corresponding boxes. If "No Change" is intended, indicate by marking the "No Change" box

Add	\$	<input type="text"/>	,	<input type="text"/>	<input type="text"/>	<input type="text"/>	,	<input type="text"/>	<input type="text"/>	<input type="text"/>	.	<input type="text"/>	<input type="text"/>
Deduct	\$	<input type="text"/>	,	<input type="text"/>	<input type="text"/>	<input type="text"/>	,	<input type="text"/>	<input type="text"/>	<input type="text"/>	.	<input type="text"/>	<input type="text"/>

No Change: Bidder will perform this Alternate without change to Contract Sum.

No extension of time will be granted if this Alternate is accepted.

University reserves the right to accept this Alternate within 30 calendar days after the date the University signs the Agreement.

Add Alternate No. 2

Description: Add Telecomm /A/V Enclosure

Bid for Alternate No. 2

If "Add" or "Deduct" is intended, indicate by placing figures in the corresponding boxes. If "No Change" is intended, indicate by marking the "No Change" box

Add \$, , .

Deduct \$, , .

No Change: Bidder will perform this Alternate without change to Contract Sum.

No extension of time will be granted if this Alternate is accepted.

University reserves the right to accept this Alternate within 30 calendar days after the date the University signs the Agreement.

Add Alternate No. 3

Description: Add Site Subdrainage

Bid for Alternate No. 3

If "Add" or "Deduct" is intended, indicate by placing figures in the corresponding boxes. If "No Change" is intended, indicate by marking the "No Change" box

Add \$, , .

Deduct \$, , .

No Change: Bidder will perform this Alternate without change to Contract Sum.

No extension of time will be granted if this Alternate is accepted.

University reserves the right to accept this Alternate within 30 calendar days after the date the University signs the Agreement.

Deductive Alternate No. 1

Description: **Delete the New Generator-Set**

Bid for Alternate No. 1

If "Add" or "Deduct" is intended, indicate by placing figures in the corresponding boxes. If "No Change" is intended, indicate by marking the "No Change" box

Add \$, , .

Deduct \$, , .

No Change: Bidder will perform this Alternate without change to Contract Sum.

No extension of time will be granted if this Alternate is accepted.

University reserves the right to accept this Alternate within 30 calendar days after the date the University signs the Agreement.

Deductive Alternate No. 2

Description: **Delete the Douglas Fir Ceiling**

Bid for Alternate No. 2

If "Add" or "Deduct" is intended, indicate by placing figures in the corresponding boxes. If "No Change" is intended, indicate by marking the "No Change" box

Add \$, , .

Deduct \$, , .

No Change: Bidder will perform this Alternate without change to Contract Sum.

No extension of time will be granted if this Alternate is accepted.

University reserves the right to accept this Alternate within 30 calendar days after the date the University signs the Agreement.

Deductive Alternate No. 3

Description: **Delete the Earthwork, Site Grading, and Asphaltic Concrete Paving**

Bid for Alternate No. 3

If "Add" or "Deduct" is intended, indicate by placing figures in the corresponding boxes. If "No Change" is intended, indicate by marking the "No Change" box

Add \$, , .

Deduct \$, , .

No Change: Bidder will perform this Alternate without change to Contract Sum.

No extension of time will be granted if this Alternate is accepted.

University reserves the right to accept this Alternate within 30 calendar days after the date the University signs the Agreement.

Deductive Alternate No. 4

Description: **Delete the Dyed and Polished Concrete Floor Slab Finish**

Bid for Alternate No. 4

If "Add" or "Deduct" is intended, indicate by placing figures in the corresponding boxes. If "No Change" is intended, indicate by marking the "No Change" box

Add \$, , .

Deduct \$, , .

No Change: Bidder will perform this Alternate without change to Contract Sum.

No extension of time will be granted if this Alternate is accepted.

University reserves the right to accept this Alternate within 30 calendar days after the date the University signs the Agreement.

Deductive Alternate No. 5

Description: **Delete the Recycled Wainscoting**

Bid for Alternate No. 5

If "Add" or "Deduct" is intended, indicate by placing figures in the corresponding boxes. If "No Change" is intended, indicate by marking the "No Change" box

Add \$, , .

Deduct \$, , .

No Change: Bidder will perform this Alternate without change to Contract Sum.

No extension of time will be granted if this Alternate is accepted.

University reserves the right to accept this Alternate within 30 calendar days after the date the University signs the Agreement.

Deductive Alternate No. 6

Description: **Delete the Exterior Lead Abatement**

Bid for Alternate No. 6

If "Add" or "Deduct" is intended, indicate by placing figures in the corresponding boxes. If "No Change" is intended, indicate by marking the "No Change" box

Add \$, , .

Deduct \$, , .

No Change: Bidder will perform this Alternate without change to Contract Sum.

No extension of time will be granted if this Alternate is accepted.

University reserves the right to accept this Alternate within 30 calendar days after the date the University signs the Agreement.

NAME OF PRESIDENT OF THE CORPORATION:

(Insert Name)

NAME OF SECRETARY OF THE CORPORATION:

(Insert Name)

IF A PARTNERSHIP, NAMES OF ALL GENERAL PARTNERS:

(Insert Names)

CALIFORNIA CONTRACTORS LICENSE(S):

(Classification)

(License Number)

(Expiration Date)

(For Joint Venture, list Joint Venture's license and licenses for all Joint Venture partners.)

12.0 REQUIRED COMPLETED ATTACHMENTS

The following documents are submitted with and made a condition of this Bid:

1. Bid Security in the form of _____
(Bid Bond or Certified Check)

13.0 DECLARATION

I, _____, hereby declare that I am the
(Printed Name)

_____ of _____
(Title) (Name of Bidder)

submitting this Bid Form; that I am duly authorized to execute this Bid Form on behalf of Bidder; and that all information set forth in this Bid Form and all attachments hereto are, to the best of my knowledge, true, accurate, and complete as of its submission date.

I further declare that this bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidders to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding' that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure an advantage against the public body awarding the contract of anyone interested in the proposed contract' that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his for her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid , and will not pay any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

I declare, under penalty of perjury, that the foregoing is true and correct and that this declaration was executed at: _____(Name of City if within a City, otherwise Name of County),
in the State of _____, on _____.
(State) (Date)

(Signature)

SECTION 01113 SPECIAL REQUIREMENTS

PART 1 - GENERAL

1.1 DEFINITION OF PROJECT SITE

- A. Contractor's use of the Project site for the Work and storage is restricted to the areas designated on the Drawings.
- B. The Project site is located at the Sierra Nevada Research Institute, 7799 Chilnualna Road, Yosemite National Park, California.

1.2 WORK HOURS

- A. No Work shall be done outside of standard Monday through Friday 8:00 A.M. to 5:00 P.M. working hours, on holidays or weekends unless prior written approval has been retained from the University's Representative.

1.3 SITE INGRESS AND EGRESS

- A. Access to Project site shall be as indicated on the Drawings.
- B. Contractor shall construct and maintain temporary access as required in the Drawings. All temporary access roads shall comply with all applicable laws, regulations & permit requirements.
- C. Temporary access roads necessary for use within the project shall be provided by the Contractor at the direction of the University's Representative.

1.4 SITE RESTRICTIONS

- A. OUT OF BOUNDS AREAS (Applies to University's Campus, Merced California)
 - 1. Little Lake
 - a. The Contractor shall not permit any Contractor personnel or construction vehicle to approach within 100 feet of Little Lake except with the prior written approval of the University's Representative.
 - b. The Contractor shall ensure that no Contractor personnel shall use the Lake to fish, swim or for other non-construction activities.
 - c. The Contractor shall ensure that no run-off shall enter the Lake except as indicated on the Drawings.
 - d. The Contractor shall ensure that no construction garbage, detritus, waste or debris (whether solid or liquid) of any type shall enter the Lake.
 - 2. Merced Irrigation District
 - a. The Contractor Shall not permit any Contractor personnel or construction vehicle to approach within 50 feet of the Fairfield Canal, the Yosemite Lateral and the penstock between La Grand and Fairfield Canal except with the prior written approval of the University's Representative.

- b. The Contractor shall ensure that no Contractor personnel shall use the Fairfield Canal, the Yosemite Lateral or the penstock between La Grand and Fairfield Canal to fish, swim or for other non-construction activities.
- c. The Contractor shall ensure that no run-off shall enter the Fairfield Canal, the Yosemite Lateral or the penstock between La Grand and Fairfield Canal except as indicated in the Contract documents.
- d. The Contractor shall ensure that no construction garbage, detritus, waste or debris (whether solid or liquid) of any type shall enter the Fairfield Canal, the Yosemite Lateral or the penstock between La Grand and Fairfield Canal.

1.5 ROADS

- A. Existing roads and existing or planned construction roads shall be used for construction access within the limits defined herein.
- B. Contractor shall take all necessary precaution to insure the safety of University Students, Faculty and Visitors at all times.
- C. Contractor must obtain prior written approval from the University's Representative to block streets or parking areas at any time.
- D. The Contractor shall clear all roads (including Lake Road), parking areas and sidewalks affected by the Contractor's operations. This will include the immediate removal of dust, dirt, or any other debris or detritus so that roads and sidewalks are maintained in a safe and usable condition.

1.6 PARKING

- A. All parking locations and arrangements must be coordinated and approved by University's Representative and Transportation and Parking Services (TAPS) prior to the start of the work.
- B. A parking permit and fee to utilize the University of California, Merced (UCM) parking facilities will be required for all areas. Parking fees are \$30 (update with each project) per month per vehicle. Contact Transportation and Parking Services (TAPS) at (209) 228-8277 for information on obtaining permits. A valid permit must be displayed at all times by all vehicles while parking on campus, whether in fenced construction areas or not.
- C. Contractor parking locations are indicated on the Site Plan (attached). Contractor shall not permit any personnel to park within the construction site or construction yard. Parking will be limited to a maximum of one company insured vehicle on site or within the construction yard.
- D. At the completion of the Project, the Contractor shall clear the parking locations of all improvement debris and restore the Project site to a condition acceptable to the University's Representative.

- E. On-street parking is not permitted in areas not designated for parking or construction.
- F. Vehicles found to be on university property without a valid permit, will be cited. Fines range from \$ 25.00 for no permit to \$ 976.00 for parking in a handicapped stall without a valid blue tag.

1.7 TRAFFIC CONTROL

- A. The Contractor shall adopt all practical means to minimize interference to traffic. Access to other facilities under construction shall be maintained at all times. The Contractor shall provide a schedule of any activity that will impact traffic, or any planned closing of the streets, for approval by the University's Representative and shall give a minimum of 14 working days notice before closing any street or access.
- B. Contractor shall furnish at Contractor's expense all barricades, lights, and other devices and means necessary to control traffic and shall maintain these devices at all times to protect the public and/or Work.
- C. It is the responsibility of the Contractor performing Work on or adjacent to, a public right-of-way to install and maintain such devices as are necessary to provide safe passage for the traveling public through the Work, as well as for the safeguard of workers. Before Work begins, traffic control plans for handling traffic through a construction or maintenance Project shall be submitted to and approved by the University's Representative and public agency or authority having jurisdiction over the public right-of-way, in accordance with Chapter 5 of the CalTrans Traffic Manual.
- D. The Contractor shall comply with the provisions of 01350 Environmental Mitigation.
- E. The Contractor shall ensure that all of the Contractor's activities that affect traffic control, road use, materials delivery, equipment delivery, rights of way and preservation of 3rd party access rights are coordinated with those of all Separate Contractors.

1.8 SURROUNDING SITE CONDITION SURVEY

- A. Prior to commencing the Work, Contractor, and University's Representative shall tour the Project site together to examine and record damage to existing adjacent buildings, campus streets and city streets, bicycle paths, sidewalks, and all other improvements. This record shall serve as a basis for determination of subsequent damage due to Contractor's operations and shall be signed by all parties making the tour. Any cracks, sags, or damage to the adjacent buildings and improvements not noted in the original survey, but subsequently discovered, shall be reported to the University's Representative.

1.9 INTERRUPTION OF BUILDING SERVICES

- A. Planned utility service shutdowns shall be accomplished during periods of minimum usage. In some cases this will require Work activities before 8:00 A.M. and after 5:00 P.M. and weekend Work, at no additional cost to the University. At least 7 working days advance notice shall be given to the University's Representative before interruptions to

utility service (refer to Exhibit 18 Utility Service Interruption/Shut Down Request) and other interferences with use of existing buildings, surrounding hardscape and roads.

- B. Shutdowns critical to the completion of the project shall be listed as Milestones on the project schedule. The Contractor shall program Work so that service will be restored in the minimum possible time, and shall cooperate with the University in reducing shutdowns of utility systems.
- C. The University reserves the right to deny shutdown requests based on scheduled work load, research projects, and usage of surrounding buildings or other activities planned on campus.

1.10 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. The Drawings show, if applicable, existing above and below grade structures, drainage lines, storm drains, sewers, water, gas, electrical, hot water, and other utilities that are known to the University.
- B. Contractor shall locate all known existing installations before proceeding with construction operations that may cause damage to such installations. Existing installations shall be kept in service where possible and damage to them shall be repaired at no additional cost to the University.
- C. Existing underground structures and utilities shall be kept in service unless prior approval to interrupt or shutdown service is obtained from University's Representative. If damaged, they shall be repaired by the Contractor with no adjustment of Contract Sum or Contract Time.
- D. The Contractor shall coordinate all Work with the operations of Separate Contractors as needed. This shall include, but not be limited to, the responsibility of the Contractor to coordinate with other contractors installing underground utilities. Such coordination should take place prior to any excavation or trenching operations by the Contractor.
- E. If any other structures or utilities are encountered, the Contractor shall request University's Representative to provide direction on how to proceed with the Work.
- F. If any structure or utility is damaged by the Contractor, the Contractor shall take appropriate action to ensure the safety of persons and property.
- G. No Work is to be performed on energized electrical equipment unless scheduled with the University's Representative. The University reserves the right to specify specific conditions for all Work involving energized high-voltage electrical equipment.
- H. Contractor shall uncover, prior to any earthwork for new construction, all existing piping where crossings, interferences or connections are shown on the Drawings, from 1 foot below proposed construction limit to the existing ground surface. Any variation in the actual elevations and the indicated elevations shall be brought to the University's Representative's attention. If the Contractor does not expose all existing utilities, Contractor shall not be entitled to additional compensation for Work necessary to avoid interferences.

- I. If interferences occur at locations other than the general locations shown on the Drawings, and such utilities are damaged before their locations have been established, or create interference, the Contractor shall notify the University's Representative and a method for repairing the damage or correcting the interference shall be supplied by the University's Representative. Payment for additional Work due to interferences not shown on the Drawings shall be in accordance with the General Conditions.
- J. Care shall be exercised to prevent damage to adjacent facilities including walks, streets, curbs, and gutters; where equipment will pass over these obstructions suitable planking shall be placed. Damaged facilities, due to the Contractor operations, shall be removed and replaced at the Contractor's expense.
- K. Prior to the start of work, the Contractor shall notify the University's Representative for coordination with the Archeologists. The Archeologists shall be present during all phases of construction.

1.11 PROTECTION OF PERSONNEL

- A. Contractor shall take proper precautions to ensure the safety of all persons at all times during the construction period.

1.12 PROJECT SITE SECURITY

- A. Security of the Project site shall be strictly maintained by the Contractor at all times. Contractor shall be responsible for keeping areas involved in this Work locked and secure at all times when Work is not in progress.
- B. The Contractor shall provide security and facilities to protect the Work, existing facilities and the University's operations from unauthorized entry, vandalism or theft.
- C. All persons working on the Project site shall receive a site safety briefing and Natural Resource Awareness Training from the University.

1.13 KEYS - NOT USED

1.14 CONSTRUCTION STAGING & MULTIPLE CONSTRUCTION CONTRACTS

- A. The following describes the scheduling of the Work and the coordination required for the Work done by Separate Contractors:
 - 1. The University reserves the right to let other contracts.
 - 2. The following projects may be in progress throughout the duration of this project:
 - a. None

3. Disagreements between the Contractor and other Separate Contractors about concurrent use of Work areas or access to the Project site which are not resolved by the participants shall be referred to the University's Representative and the Contractor agrees to abide by the University's Representative's determination as to concurrent use or priority of access and to perform its Work in compliance with the University's Representative's resolution at no additional cost to the University.
- B. All material and equipment for construction operations shall be brought in and the Work so conducted as to avoid any interference with existing University facilities or their normal operations, and with concurrent construction Work by other Separate Contractors.

1.15 FINAL EXAM SCHEDULE

- A. Contractor shall be advised that academic finals week takes place on the UC Merced campus during June, December and May of each year. During this period of time, students are involved in intensive testing relative to their academic course work. During these periods of time, noise level generated, as a result of construction activity must be kept to a minimum. Contractor will be expected to Work with the University's requirements to achieve a level of noise that is acceptable to the University. Actual schedule for finals week during each year will be coordinated with Contractor following the issuance of the Notice to Proceed.

1.16 WORK SITE DECORUM

- A. Extreme care to limit noise and odors shall be taken at all times. Loud or unnecessary conversation shall be avoided. The playing of radios tapes, or compact discs shall be strictly prohibited.
- B. Contractor shall control the conduct of its employees and those of its subcontractors and suppliers so as to prevent interaction initiated by said employees with University of California Merced students, staff, or other individuals (except those associated with the Project), on or adjacent to the Project site. Without limitation, unwanted interaction by these employees includes whistling at, motioning toward, or initiating conversations with passersby. In the event that any employee initiates such unwanted interaction, or utilizes profanity, Contractor shall, either upon request of University's Representative or on its own initiative, replace said employee with another of equivalent technical skill, at no additional cost to the University.
- C. Smoking is prohibited in and within 20 feet of any entrance, window, or air intake of all University buildings and enclosed areas. Smoking will not be allowed in the Construction area. Smoking will be allowed in a designated area within the construction storage yard only.
- D. Firearms are prohibited on University property.
- E. Alcoholic beverages are prohibited on University property unless the prior written approval of the University's Representative is obtained.

- F. Pets are prohibited on the Project site.

1.17 PUBLICITY

- A. Contractor shall not release any information, story, photograph, plan or drawing relating to the Project to anyone, including press or other public communications medium, except as submitted and approved for release by the University's Representative.

1.18 PROJECT SIGN

- A. No signs or advertisements will be permitted on the Project site, except with express permission of University's Representative.

1.19 JOB OFFICE

- A. Space on the Project Site is limited. Trailer space must be requested and approved by the University's Representative.
- B. Contractor shall provide and maintain all temporary facilities as required for completion of the Project.

1.20 COMPUTER EQUIPMENT FOR JOB OFFICE (NOT USED)

1.21 SALVAGE

- A. All material and equipment removed as part of this Project is the property of the Contractor and shall be removed from the Campus and legally disposed of.

1.22 CLEANUP

- A. During the progress of the Work, the Contractor shall keep the Project site in a neat and clean condition that is free of debris to the satisfaction of the University's Representative. All materials and debris accumulated in conjunction with completing this Work shall be disposed of by Contractor off campus. Contractor shall not use University refuse containers.

1.23 UNIVERSITY FURNISHED CONSTRUCTION DOCUMENTS

- A. University will furnish to the Contractor 1 set of Drawings and Specifications and 1 CD of the Drawings and Specifications upon an award of the Contract at no cost. If more than 1 set is required or if the Contractor wants the Drawings in another size other than the size issued with the Bidding Documents, the Contractor will pay the actual cost of reproduction for printing.

1.24 UNIVERSITY FURNISHED ITEMS

- A. Equipment shown on the drawings.

1.25 JOB CONDITIONS

- A. Protection: Where roof edge does not terminate in a parapet wall and/or where Work is in progress overhead and materials or objects could potentially fall, the Contractor is required to construct temporary covered pedestrian walkways over each building entrance. Walkway covers shall extend out 12 feet in length for the first floor and an additional 4 feet for each additional floor of the building. Walkway covers shall extend from face of building. Contractor shall be required to place and maintain yellow safety construction flagging or ropes with signage to prevent pedestrians from coming within 25 feet of Work in progress overhead and to route pedestrians in and out of building entrances.
- B. Safety Precautions: Perform Work in such a manner as to prevent damage to existing facilities to remain or to be salvaged. Hazardous Work shall not be left standing or hanging, but shall be knocked or pulled down to avoid damage or injury to employees or the public.
- C. Crane Operation, Staging and Storage
 - 1. Operator Training and Crane Certification: Prior to starting crane operations, Contractor shall provide copies of operator's training and crane certification to the University's Representative.
 - 2. Crane Staging Area: Crane staging areas may be shown on Drawings. Contractor shall be required to coordinate with the University's Representative a minimum of 5 working days in advance of loading and removal of materials from the roof.
 - 3. Storage: Contractor shall not be allowed on-site crane storage unless with the prior written approval of the University's Representative.

1.26 SENIOR PROJECT MANAGER – (NOT USED) SEE ADDENDUM #2

- ~~A. Contractor shall employ a competent Senior Project Manager satisfactory to University who shall be in attendance at the Project site 50% of the time. Senior Project Manager shall represent Contractor and communications given to and received from Senior Project Manager shall be binding on Contractor.~~
- ~~B. The Contractor shall submit to the University the qualifications of the Senior Project Manager prior to commencement of the Work. The University shall approve the Senior Project Manager based on his/her experience with projects similar in type, scope and size.~~
- ~~C. The Senior Project Manager approved for the Project must be able to proficiently read, write and verbally communicate in English. The Senior Project Manager may not perform the Work of any trade, pick up materials, or perform any Work not directly related to the supervision and coordination of the Work at the Project site while Work is in progress.~~
- ~~D. If the Contractor elects a replacement of the Senior Project Manager, such replacement shall be discussed with the University's Representative prior to actual replacement. The~~

~~same criteria employed by the University to evaluate the initial Senior Project Manager shall also apply to the University's approval of any subsequent Senior Project Manager.~~

1.27 PROJECT SITE SUPERINTENDENT – SEE ADDENDUM #1 & #2 FOR REQUIREMENTS

- A. ~~Contractor shall employ a competent Project Site Superintendent satisfactory to the University's Representative. The Project Site Superintendent shall be in attendance at the Project site at all times during the performance of the Work. Project Site Superintendent shall represent the Contractor and communications given to and received from the Project Site Superintendent shall be binding on Contractor.~~
- B. ~~The Contractor shall submit to the University's Representative the qualifications of the Project Site Superintendent prior to commencement of the Work. The University's Representative shall approve the Project Site Superintendent based on his/her experience with projects similar to type, scope, size, and complexity.~~
- C. ~~The Project Site Superintendent approved for the Project by the University's Representative, must be able to proficiently read, write and verbally communicate in English. The Project Site Superintendent may not perform the Work of any trade, pick-up materials, or perform any Work not directly related to the supervision and coordination of the Work at the Project site while Work is in progress.~~
- D. ~~Failure to maintain a Project Site Superintendent on the Project site at all times Work is in progress shall be considered a material breach of this Contract, entitling University to terminate the Contract or alternatively, issue a stop Work order until the Project Site Superintendent is on the Project site. If, by virtue of issuance of said stop Work order, Contractor fails to complete the Contract on time, Contractor will be assessed Liquidated Damages in accordance with the Agreement.~~
- E. ~~If the Project Site Superintendent fails to perform to the satisfaction of the University's Representative, the University's Representative may, upon 15 days written notice, require the Contractor to remove the Project Site Superintendent from the Project and replace the Project Site Superintendent with a replacement acceptable to the University's Representative.~~
- F. ~~If the Contractor elects a replacement of the Project Site Superintendent, such replacement shall be discussed with the University's Representative prior to actual replacement. The same criteria employed by the University's Representative to approve the initial Project Site Superintendent shall also apply to the University's Representative's approval of any subsequent Project Site Superintendent.~~

1.28 PROJECT ENGINEER – NOT USED – SEE ADDENDUM #2

- A. ~~Contractor shall have a competent Project Engineer satisfactory to the University's Representative for the duration of the project. The Project Engineer shall be in attendance at the Project site at all times during the performance of the Work.~~

- ~~B. The Contractor shall submit to the University's Representative the qualifications of the Project Engineer prior to commencement of the Work. The University's Representative shall approve the Project Engineer based on his/her experience with projects similar to type, scope, size, and complexity.~~
- ~~C. The Project Engineer approved for the Project by the University's Representative, must be able to proficiently read, write and verbally communicate in English.~~
- ~~D. If the Contractor elects a replacement of the Project Engineer, such replacement shall be discussed with the University's Representative prior to actual replacement. The same criteria employed by the University's Representative to approve the initial Project Scheduler shall also apply to the University's Representative's approval of any subsequent Project Engineer.~~

1.29 PROJECT SCHEDULER – NOT USED – SEE ADDENDUM #2

- ~~A. Contractor shall have a competent Project Scheduler satisfactory to the University's Representative for the duration of the project.~~
- ~~B. The Contractor shall submit to the University's Representative the qualifications of the Project Scheduler prior to commencement of the Work. The University's Representative shall approve the Project Scheduler based on his/her experience with projects similar to type, scope, size, and complexity.~~
- ~~C. The Project Scheduler approved for the Project by the University's Representative, must be able to proficiently read, write and verbally communicate in English.~~
- ~~D. If the Contractor elects a replacement of the Project Scheduler, such replacement shall be discussed with the University's Representative prior to actual replacement. The same criteria employed by the University's Representative to approve the initial Project Scheduler shall also apply to the University's Representative's approval of any subsequent Project Scheduler.~~

1.30 OTHER CONTRACTOR SITE PERSONNEL

- A. In addition to the Project Site Superintendent, the Contractor shall provide site personnel of quality and quantity sufficient to carry out all of the on-site Contractor responsibilities described in the Contract Documents.

1.31 PROJECT MANAGEMENT SOFTWARE – (IDENTIFIED IN 01315 –PROJECT DOCUMENT MANAGEMENT AND CONTROL) NOT USED – SEE ADDENDUM #2

- ~~A. The University will be using Prolog WebSite to manage and coordinate construction and design issues related to this project. Prolog WebSite is an Internet based collaboration tool that connects project team members to one another and to the database information, images and documents. Prolog WebSite offers an intuitive, easy to use interface for all project team members.~~

~~B. Software: Project administration and management will be performed by the Contractor and University Representative utilizing Prolog Software.~~

~~1. Contractor will be provided login access to Prolog WebSite License. The University will provide the Contractor with a User login and password. This login access will expire when the project is completed.~~

~~C. Training & Use of Prolog:~~

~~1. Contractor shall assume all costs and time associated with training Contractor's personnel on the proper use of Prolog WebSite. Contractor's staff shall be trained to perform tasks within the following functional areas of the program:~~

~~a. Accessing and working within the WebSite.~~

~~b. Newsletters~~

~~c. Meeting Minutes~~

~~d. Discussions~~

~~e. Project Drawings & Specifications~~

~~f. Hot List~~

~~g. Punch Lists~~

~~h. Request for Information.~~

~~i. Submittals~~

~~j. Reports~~

~~2. Training will be provided by Meridian Project Systems. To schedule training, please contact the Marketing Representative:~~

~~Aaron M. Alhady~~

~~Regional Account Manager~~

~~1180 Iron Point Road, Suite 300~~

~~Folsom, CA 95630~~

~~Phone: 800-850-2660 ext 2092 or 916-294-2180~~

~~Fax: 916-294-2093~~

~~aalhady@mps.com www.mps.com~~

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01113

SECTION 01230 ALTERNATES

1. GENERAL

1.1 ALTERNATES REQUIREMENTS

- A. This Section identifies each Alternate and describes basic changes to the Work only when that Alternate is made a part of the Work by specific provision in the Agreement.
- B. The Lump Sum Base Bid and Alternates shall include the costs of all supporting elements required, so that the combination of the Lump Sum Base Bid and any Alternates shall be complete. The scope of Work for all Alternates shall be in accordance with applicable Drawings and Specifications.
- C. Except as otherwise specifically provided by University, the Work described in Alternates shall be completed with no increase in Contract Time.
- D. This Section includes only the non-technical descriptions of the Alternates. Refer to the specific Sections of Divisions 2-16 of the Specifications for technical descriptions of the Alternates.
- E. Coordinate related Work and modify surrounding Work as required to properly and completely integrate the Alternates into the Work.

1.2 DESCRIPTION OF ADD ALTERNATES

- A. Add Alternate #1 – Add Partition separating Research 1 from Research 2
 - 1. Add partition over sliding doors separating Research 1 from Research 2. See Sheet A4, Interior Elevations, Keynote 9.5. Work to include: Painted 5/8" Type "X" gypsum board (finish C) over 2 1/2" x 20 GA. Steel studs @ 16" o.c. with 2" thick cotton batt insulation. Install gypsum board in plane with and over the room side face on each 6 x 14 beam indicated in detail 1 on sheet A2. Provide painted 1 x 8 wood closure member centered over 4 5/8" gap at top of beams.
- B. Add Alternate #2 – Add Telecomm / A/V Enclosure
 - 1. Add new Telecomm / A/V Enclosure (FE12) as shown on Sheet E2.2, Note S9 and Sheet A4, Interior Elevations, Note 27.1. Including all A/V cabling components and equipment within "IDF2.1" contained on Sheet E4.0 and all Ragidurn Cabling and related terminations shown on Sheet E2.2 Telecommunication/Signal Outlet & Cabling Schedule.
- C. Add Alternate #3 – Add Site Subdrainage
 - 1. Provide site subdrainage as shown on Sheet A1, Detail 1 and Keynote 33. Utilities. This includes Keynotes 33.1 through 33.6 as associated with Detail 1 on Sheet A1.

1.3 **DESCRIPTION OF DEDUCTIVE ALTERNATES – ADDENDUM #2**

A. Deductive Bid Alternate #1:

1. Deduct the new gen-set shown within the Drawings. Contractor shall disregard Specification Section 263213 and all work outlined on the following sheets: E1.0: Disregard scope associated with site construction notes #1, 5, 6, 7, 8 and 9. Modify note #4 to read all new conduit with no reuse of the existing. E2.0: Disregard detail D-1/E2.0 and within the Single Line Diagram. Include all work shown on Drawing AE-1 (i.e., installation of a new 100A-2P DPDT fused switch).

B. Deductive Bid Alternate #2:

1. Deduct all labor, material, and finishes associated with the 1 x 4 Douglas Fir ceiling identified on the Reflected Ceiling Plan and in keynote 6.3 on Sheet A2. Provide Level 5 gypsum board ceiling finish with an interior type “C” paint finish.

C. Deductive Bid Alternate #3:

1. Deduct all labor, material, and equipment charges associated with the earthwork, site grading, and asphaltic concrete paving work identified on the Site Plan, Subdrainage Plan, and in keynotes 32.1 – 32.3 on Sheet A1 and Specification Section 321216 – Asphalt Paving.

D. Deductive Bid Alternate #4:

1. Deduct all labor, material, and equipment charges associated with the Dyed and Polished concrete floor slab finish identified in keynote 3.1 on Sheet A1.1, keynote 3.1 on Sheet A2, keynote 3.1 on Sheet A3, and in Specification Section 033000 – Cast-In-Place Concrete. Furnish and install two coats of clear Sherwin Williams ArmorSeal Floor-Plex WB 7100 Epoxy or approved equal (Material is VOC compliant, dries rapidly, resists yellowing, meets ADA requirements for slip resistance, and is impact and abrasion resistant).

E. Deductive Bid Alternate #5:

1. Deduct all labor, material, and finishes associated with the recycled wainscoting identified in the Interior Elevations and in keynote 6.2 on Sheet A4 and in Detail 2 and in keynote 6.6 on sheet A5. Please note only the wainscoting is to be eliminated. The 8” high wood base and the 1 x 4 wood trim below the electrical raceway remain Base Bid work. Provide Level 5 wall finish with an interior type “C.” paint finish.

F. Deductive Bid Alternate #6:

1. Deduct all associated work with investigating, verification and removal of Lead as described in the Biologist report, including testing and sampling and final report by the Biologist confirming abatement is complete.

2 PRODUCTS (NOT USED)

3 EXECUTION (NOT USED)

END OF SECTION 01230

SECTION 01315 PROJECT DOCUMENT MANAGEMENT AND CONTROL (NOT USED)

~~PART 1— GENERAL~~

~~1.1 SUMMARY~~

- ~~A. This section describes the project document management extranet program or Project Control System that shall be utilized on the Project. This system is mandatory and the University will not accept any request for substitution for this program.~~
- ~~B. Requests for Information, Submittals, meeting minutes and other important project documentation will be issued via and stored on the Prolog Project Management System, accessed via secure Citrix interface, on the PPD&C website (<https://ppdc.ucmerced.edu>).~~

~~1.2 WORK SPECIFIED ELSEWHERE~~

- ~~A. The Contractor shall provide, at the Contractor's Temporary Site Office, and home office if required, the computer hardware and software to provide access to the Project Control System.~~
- ~~B. The University has established the project document management database for this project. The University or its agents will provide management of the database and interface with the system provider.~~
- ~~C. Use of the Project Control System will not replace or change any contractual responsibilities of the Contractor. The system has been implemented to enhance and expedite team communication.~~

~~PART 2— PRODUCTS~~

~~2.1 PROJECT CONTROL SYSTEM~~

- ~~A. The Project Control System will use Prolog from Meridian Project Systems via web based interface.~~

~~2.2 VENDOR CONTACT DETAILS & COSTS~~

- ~~A. Information concerning the system can be obtained by contacting:
 - ~~1. Meridian Project Systems, 1720 Prairie Road, Suite 120, Folsom CA 95630, Phone: 916 294 2000, Toll Free: (800) 850 2660, Fax: 916 294 2001, Website: www.meridiansystems.com.~~~~

~~PART 3— EXECUTION~~

~~3.1 LICENSES FOR CONTRACTOR~~

- ~~A. The Contractor is responsible for procurement of the temporary licenses to use the existing Prolog database for the duration of the Project. These licenses will permit~~

~~Internet access to the database for this Project. The Contractor will coordinate with the UC Merced Project Account Analyst for temporary licenses for the duration of the Project. The Contractor shall:~~

- ~~1. Determine the number of licenses required for the use of the Contractor's Project Talk Team. The Contractor's Prolog Team shall include the Contractor, sub-contractors and suppliers as deemed appropriate by the Contractor.~~
- ~~2. Procure sufficient licenses for the use of the Contractor's Prolog Team.~~
- ~~3. Provide training in the use of Project Talk to the Contractor's Prolog Team.~~
- ~~4. Make any and all license payments directly to the vendor identified in Subsection 2.2.~~

~~3.2 ADDITIONAL LICENSES~~

~~3.3 TECHNICAL REQUIREMENTS FOR PROJECT TALK~~

- ~~A. The Contractor shall employ, as a minimum, a cable, a DSL or ISDN connection to the Internet for those computers used for Prolog.~~
- ~~B. Meridian Project Systems' Software only runs via Internet Explorer. Said software will not run on Apple computers or Apple operating systems.~~
- ~~C. Contractor will conduct adequate training for all of their users and conduct ample testing to insure smooth communications with the University's Representative and University's Design Professional.~~

~~3.4 PROJECT TALK AND NETWORK SECURITY~~

- ~~A. Information regarding Prolog and network security can be obtained from the vendor listed in Subsection 2.2.~~

~~3.5 PROJECT CORRESPONDENCE~~

- ~~A. All Contractor Project correspondence shall be either created electronically or digitized so that it can be stored and tracked by the document management and control system. This includes, but is not limited to:
 - ~~1. Requests for Information (RFI's) and attachments,~~
 - ~~2. Submittal cover sheets and Submittal Registry,~~
 - ~~3. Potential Change Orders,~~
 - ~~4. Document Tracking,~~
 - ~~5. Meeting Minutes~~
 - ~~6. All Contractor produced reports and documents as defined in the Contract Documents. Shop Drawings, cut sheets and other samples may be included in the Prolog tracking and storage system at the discretion of the University's Representative.~~~~

- B. ~~Contractor agrees that all right, title, and ownership of all project information and project data is vested in the University. Contractor shall not use this data for any other project without written permission of the University's Representative. In the event that ownership is disputed, Contractor hereby grants a license to the University and it assigns and representatives to use the project information and project data for projects at the University's campus.~~

END OF SECTION 01315

SECTION 01329 CONTRACT SCHEDULES – SEE ADDENDUM #2

PART 1 - GENERAL

1.1 PRELIMINARY CONTRACT SCHEDULE - REVISED PER ADDENDUM #2

- A. Within the time stated in the Notice of Selection as Apparent Lowest Responsible Bidder, Contractor shall submit a preliminary work plan or schedule of proposed operations to the University's Representative for approval. This schedule shall acknowledge the full contract duration as well as significant known contract constraints. In preparation of the plan or schedule (which may be hand drawn if approved by the University's Representative, or computer generated), the Contractor shall make due allowance for and include the following:
1. Preparation of equipment and material submittals for review.
 2. Procurement schedule.
 3. Construction and installation schedule.
 4. Major milestones.
- B. Form
1. Prepare the Preliminary Contract Schedule as a bar chart (GANTT) showing continuous flow from left to right. Specific calendar dates shall be clearly and legibly shown for the start and finish of each Work activity.
 2. Prepare the Preliminary Contract Schedule in sufficient detail to demonstrate preliminary planning for the Work and to represent a practical plan to complete the Work within the Contract Time.

1.2 PROJECT OR CONTRACT SCHEDULE AND PROGRESS PAYMENT SCHEDULE NOT USED

- ~~A. Within 30 working days of receipt of the Notice to Proceed, the Contractor shall submit a detailed project schedule.~~
- ~~B. Form:~~
- ~~1. The Detailed Contract Schedule shall be CPM (Critical Path Method), using PDM (Precedence Diagram Method) method of scheduling, with time scaled diagrams (plots) and tabular charts.~~
 - ~~2. The Detailed Contract CPM Schedule must be computer generated; the system and its specifications must be first submitted for review and approval from the University's Representative. When approved, the schedule shall serve as the contract schedule for the project.~~
 - ~~3. The Detailed Contract CPM Schedule duration shall conform to the full contract duration; and may include one or more float activities, to show full accounting of the Contract Time.~~
 - ~~4. The Detailed Contract CPM Schedule if required by University's Representative shall be cost loaded and shall have an estimated cost value for each activity. The monthly pay applications will be calculated based upon the monthly CPM Update.~~

5. ~~Prepare the Detailed Contract Schedule in sufficient detail to demonstrate serious planning for the Work and to represent a practical plan to complete the Work within the Contract Time.~~
6. ~~Identify all holidays, UC Merced finals weeks and non-working days.~~
7. ~~Critical Work activities are defined as Work activities that, if delayed or extended, will delay the scheduled completion of 1 or more of the milestones specified in this Section or the scheduled completion of the Work, or both. All other Work activities are defined as non-critical Work activities and are considered to have float.~~
8. ~~Float is defined as the time that a non-critical Work activity can be delayed or extended without delaying the scheduled completion of milestones specified in this Section or the scheduled completion of the Work, or both. Neither the Contractor nor the University shall have an exclusive right to the use of float. The party using float shall document the effect on the updated Contract Schedule.~~

C. ~~Content:~~

1. ~~The Contract Schedule shall identify all Work activities in correct sequence for the completion of the Work. Work activities shall include the following:~~
 - a. ~~Major Contractor furnished equipment, materials, and building elements, and scheduled activities requiring submittals or University's Representative's prior approval.~~
 - (1) ~~Show dates for the submission, review, and approval of each such submittal. Dates shall be shown for the procurement, fabrication, delivery, and installation of major equipment, materials, and building elements, and for scheduled activities designated by the University.~~
 - (2) ~~A minimum of 18 days shall be allotted for University's Representative to review each submittal.~~
2. ~~System test dates.~~
3. ~~Scheduled overtime Work if required by Contract Documents.~~
4. ~~Dates Contractor requests designated workspaces, storage area, access, and other facilities to be provided by the University.~~
5. ~~Dates Contractor requests orders and decisions from the University on designated items.~~
6. ~~Dates Contractor requests University furnished equipment.~~
7. ~~Dates Contractor requests University furnished utilities.~~
8. ~~Connection and relocation of existing utilities.~~
9. ~~Connecting to or penetrating existing structures.~~
10. ~~Scheduled inspections as required by Codes, or as otherwise specified.~~

D. ~~Presentation~~

1. ~~Network Logic Diagrams~~
 - a. ~~The Contract Schedule shall include all construction and demolition activities, procurement of equipment components and major off-site fabricated items, through the entire construction phase, including pre-commissioning and job close out. Completion or "Punch List" work shall be included in the Contract Time.~~

- b. ~~The Contract Schedule shall include a complete sequence of construction, in adequate detail for the planning and coordination of the Work. Unless approved by the University's Representative, there shall be no activities shown with durations in excess of 20 working days.~~
 - c. ~~The Contract Schedule shall be depicted in the form of precedence diagramming method (PDM) and shall be segregated or divided into bands of activities to reflect the Contractor's scheduling areas and/or phasing of all construction and procurement activities.~~
 - d. ~~The PDM Diagram may be divided into a number of separate pages with suitable notation relating to the interface points from one page to the other. Individual pages shall not exceed 30 by 42 inches.~~
 - e. ~~Each activity shall be drawn so that the early start and early finish dates (or actual dates) are clearly indicated. The schedule plot also shall show the dates in tabular form.~~
 - f. ~~Each activity shall reflect at least the following information:
 - (1) ~~Description of the work.~~
 - (2) ~~Activity duration (in work days).~~
 - (3) ~~Activity number.~~
 - (4) ~~Activity relationship and float.~~~~
 - g. ~~All activities shall be shown, distinguishing critical path activities, non-critical activities and milestone activities.~~
 - h. ~~For large schedules, a summary page shall be provided indicating the major milestones. The summary page shall include a legend that clearly identifies all symbols used within the CPM PDM Diagram. The summary page shall include an index listing all sheets within each sub-network.~~
 - i. ~~Graphic schedules shall be accompanied by electronic data files of the network, showing all activities, durations, dependencies and constraints. The files shall be provided on 3.5 inch disk, Zip 100 disk, or CD-ROM, MS Windows format.~~
2. ~~Tabular Computer Reports~~
- a. ~~Accompanying the Construction Schedule, the Contractor shall submit various computer-generated tabular reports as further described within this Section.~~
 - b. ~~As requested by the University's Representative, the Contractor will be required to submit additional Schedule and Cost Reports.~~
- E. ~~Computer System and Computer Generated Tabular Reports:~~
- 1. ~~The computer system selected shall be based on PRIMAVERA/PRIMA VISION®, ALDERGRAF®, SURE TRACK®, MICROSOFT® PROJECT 98, or equal.~~
 - 2. ~~The computer software employed by the Contractor must be capable of:
 - a. ~~Numeric or Alpha/Numeric activity numbering.~~
 - b. ~~Activity codings (to facilitate selecting groups or groupings of activities); with at least a 6 position alpha/numeric code.~~
 - c. ~~Activity description field of at least 48 characters.~~~~

- d. ~~Reporting capabilities that allow sorting of a group or groupings of activities to generate various computer tabular reports and, establishing various planning schedules, as well as bar graphs.~~
 - e. ~~Identifying any user assigned constraint; e.g., start not earlier than on the printout, adjacent to the activity.~~
 - f. ~~Activity coding to allow graphic presentation in Gantt or PERT chart format.~~
3. ~~Computer generated tabular reports:~~
- a. ~~Construction Schedule tabular reports shall include the activity number, activity description, duration, remaining duration, percent complete, early start date, early finish date, late start date, late finish date, total float, precedence relationships, lead/lag values and shall correlate work days to schedule dates. If the activity is completed or in progress, it shall have actual start or actual finish dates in lieu of the planned dates. The following sorts are required:~~
 - (1) ~~A Schedule of all activities, sorted by activity number, with the CPM Logic.~~
 - (2) ~~A Schedule of all activities, sorted by early start date without the CPM Logic.~~
 - (3) ~~A Schedule of all activities, sorted by total float without the CPM Logic.~~
 - (4) ~~When requested, a Schedule of all activities showing successors, predecessors and constraints.~~
 - b. ~~Computer generated bar graphs of all activities. The following sorts are required:~~
 - (1) ~~Sorted by early start only.~~
 - (2) ~~Sorted by trade and/or responsibility, by early start.~~
 - c. ~~Computer generated milestone schedule.~~
 - d. ~~When required to be cost loaded, the Progress Payment Schedule shall include a tabular report showing all activities, sorted by each major trade and/or by responsibility, without the CPM Logic. The report shall have page breaks by the trade and/or responsibility and sorted by activity number. The report shall include the activity number, activity description, duration, remaining duration, percent complete, estimated cost value, progress payment value, cost to date, and cost remaining. The report shall be subtotaled by each major trade and/or responsibility and further totaled on the last page of the report to equal the current contract value, percent complete, total monthly payment request, total payment to date, and total balance remaining.~~
 - e. ~~When a cost loaded Progress Payment Schedule is required, a Cash Flow Histogram Report (Cost Curve) may be used. This report shall include the anticipated cash flow by month, by activity early start and late start dates through the entire project duration.~~

F. ~~Submission~~

- 1. ~~Upon receipt, the University's Representative shall review the, Detailed Contract Schedule; the University's Representative and the Contractor shall meet to jointly review the Schedule.~~

2. ~~If the Schedule is found to be acceptable, the schedule will then be approved by the University's Representative as the Baseline Construction Schedule (Contract Schedule).~~
3. ~~If the Contractor or the University's Representative determines the Contract Schedule to be in need of revision, within 10 working days thereafter, the Contractor shall revise and resubmit the Schedule to the University's Representative for approval, and, upon acceptance thereof, the Schedule shall be approved as the Baseline Construction Schedule (Contract Schedule).~~

G. ~~Distribution:~~

1. ~~University's Representative, 3 copies.~~
2. ~~Contractor's Superintendent.~~

H. ~~Updating:~~

1. ~~Contractor shall update the Contract Schedule and the Progress Payment Schedule reflecting progress as of the end of the month and shall submit to the University's Representative for approval by no later than the tenth day of the following month. The updates shall be made as follows:~~
 - a. ~~The schedule update shall consist of updated CPM Schedule reports similar to the Baseline Construction Schedule. The CPM Schedule reports shall report progress based upon percent complete of actual time and remaining duration. If the Contractor is behind schedule, or requests an extension to the Contract time, the Contract Schedule must be updated and submitted for review in support of the request. Contract Schedules must be updated any time that delays or a change in scheduled work occurs.~~
 - b. ~~If cost loading is required, the Contract Schedule shall be updated monthly and shall be considered part of a complete application for payment.~~
 - c. ~~The updated Contract Schedule shall reflect an up-to-date status of the contract work as completed, and materials furnished and in permanent place that qualify for payment.~~
 - d. ~~The updated Contract Schedule shall reflect the true effect of all processed change orders for the progress month. Subject to the provisions stated in the General Conditions, the Contractor will be granted an extension to the contract time for the cumulative effect any approved change orders have had on the critical path; refer to General Conditions for the prerequisites for entitlement to a time extension.~~
 - e. ~~The updated Contract Schedule shall include all delays for the progress month. Subject to the provisions stated in the General Conditions, the Contractor will be granted an extension to the contract time for the cumulative effect any excusable delay(s) had on the critical path. No time extension will be granted for a claimed delay, unless the Contractor can demonstrate to the satisfaction of the University's Representative the claimed delay affected the controlling operation or operations of the project. To receive an extension to the contract time, the following conditions must be met:~~

- ~~(1) — Written notice has been provided, within 7 days of the delay.~~
- ~~(2) — The written notice meets the notice requirements as outlined in the General Conditions.~~
- ~~(3) — The Contractor has met the conditions of the General Conditions, all of which are prerequisites for entitlement of an extension of the contract time. The Contractor may submit, with the written notification or with the updated Construction Schedule, a CPM sub-net sketch that delineates the activities that were affected by the delay and the effect the delay had on the critical path. No time extension will be granted if the Contractor has not met the requirements of the General Conditions, or if the Contractor has not satisfactorily demonstrated that the claimed delay affected the critical path. Accordingly, all delays not incorporated into the updated Construction Schedule shall be deemed denied by the University.~~
2. — Within 5 working days after receipt of the Updated Contract Schedule and the Progress Payment Schedule, the University's Representative shall review the Progress Payment Schedule and determine which work and material pay items qualify for payment; the approved data will be then returned to the Contractor for input. Within 10 working days, the University's Representative shall review the Construction CPM Schedule and will return same to the Contractor with comments.
3. — The Contractor shall then revise and resubmit (if required) the Updated Contract Schedule and Progress Payment Schedule to the University's Representative for payment approval. The Schedule, including approved time extensions, then becomes the new Contract Schedule and resultant Progress Payment Schedule.
4. — At the updating, in addition to the above, the Contractor shall provide short interval schedule reports, which include:
 - a. — A bar graph spanning 1 month prior to the datum line to 2 months beyond the datum line.
 - b. — A " Four Week Look Ahead" or predicated status report, covering the work within the next 4 week period, with activities sorted by early start.
5. — The Contractor shall provide an Accompanying Narrative Report as needed to explain changes to the schedule, changes to the critical path and shall include a list of critical activities that require action from the University's Representative. The Accompanying Narrative Report shall include a listing of all delays that affected the critical path and shall clearly explain the impact the claimed delay(s) had on the critical path and shall include an account audit of days lost/gained.
6. — Other conditions under which additional schedule updating will be required are as follows:
 - a. — When delay in completion of any work items or sequence of work items result in an indicated extension of the project completion.
 - b. — When delays in submittals or deliveries or work stoppages known to the Contractor are encountered that make replanning or rescheduling of the work necessary.
 - c. — When the schedule does not represent the actual prosecution and progress of the work.

- ~~7. Subject to all other requirements of the Contract Documents, nothing in these requirements shall be deemed to be a usurpation of the Contractor's authority and responsibility to plan and schedule the Work.~~
- ~~8. Distribute copies as required for initial distribution and monthly distribution.~~

1.3 CONTRACT SCHEDULE

- A. Within 20 working days of receipt of Notice to Proceed, Contractor shall submit a complete Contract Schedule.
- B. Identify the following milestone events on the Contract Schedule:
 1. Submittals
 2. Off-Site Improvements
 3. Earthwork
 4. Utility Shutdowns
 5. Excavation
 6. Foundation
 7. Structural Frame
 8. Rough-Outs
 - a. Mechanical
 - b. Electrical
 - c. HVAC
 9. Exterior Finishes
 10. Trimming
 - a. Plumbing
 - b. Electrical
 - c. HVAC
 11. Interior Drywall/Plaster
 12. Finishes
 - a. Painting
 13. Beneficial Occupancy
 14. Site Work
 - a. Curbs
 - b. Gutters
 - c. Paving
 15. Landscaping
 16. Punchlist
- C. Identify all holidays, UC Merced finals week and non-working days on the Contract Schedule.
- D. If the Contract Schedule is shown on more than 1 sheet, provide a summary sheet.
- E. The schedule shall be in critical path method format prepared on a computer.
- F. Activities
 1. Identify all Work activities in correct sequence for the completion of the Work. Work activities shall include the following:

- a. Major Contractor-furnished equipment, materials, and building elements, and scheduled activities requiring submittals or University's Representative's prior approval.
 - (1) Show dates for the submission, review, and approval of each submittal. Dates shall be shown for the procurement, fabrication, delivery, and installation of major equipment, materials, and building elements, and for scheduled activities designated by the University.
 - (2) A minimum of 18 days shall be allotted for University's Representative to review each submittal.
 2. System test dates.
 3. Scheduled overtime Work if required by Contract Documents.
 4. Dates Contractor requests designated workspaces, storage area, access, and other facilities to be provided by the University.
 5. Dates Contractor requests orders and decisions from the University on designated items.
 6. Dates Contractor requests University-furnished equipment.
 7. Dates Contractor requests University-furnished utilities.
 8. Connection and relocation of existing utilities.
 9. Connecting to or penetrating existing structures.
 10. Scheduled inspections as required by Codes, or as otherwise specified.
- G. Identify all Work activities that constitute the critical path.
- H. Critical Work activities are defined as Work activities that, if delayed or extended, will delay the scheduled completion of 1 or more of the milestones specified in this Section or the scheduled completion of the Work, or both. All other Work activities are defined as non-critical Work activities and are considered to have float.
- I. Float is defined as the time that a non-critical Work activity can be delayed or extended without delaying the scheduled completion of milestones specified in this Section or the scheduled completion of the Work, or both. Neither the Contractor nor the University shall have an exclusive right to the use of float. The party using float shall document the effect on the updated Contract Schedule.
- J. Delays of any non-critical Work activity shall not be the basis for an extension of Contract Time until the delays consume the float associated with that non-critical Work activity and cause the Work activity to become critical.
- K. The presentation of each Work activity on the Contract Schedule shall include a brief description of the Work activity, the duration of the Work activity in days, and a responsibility code identifying the organization or trades performing the Work activity.
- L. Contractor shall furnish cost estimates for each Work activity that cumulatively equal the total Contract Sum. Mobilization costs may be shown separately; however, other costs, e.g., profit and bond shall be pro-rated throughout all activities.

1.4 UPDATING – AS NECESSARY – ADDENDUM #2

- A. Review the Contract Schedule with University's Representative once each week to incorporate in the Contract Schedule all changes in the progress, sequences, and scope of Work activities.
- B. Prepare and submit to University's Representative an updated Contract Schedule once each month, or as mutually agreed.
 - 1. The updated Contract Schedule shall accurately represent the as-built condition of all completed and in-progress Work activities as of the date of the updated Contract Schedule.
 - 2. The updated Contract Schedule shall incorporate all changes mutually agreed upon by the Contractor and the University during preceding periodic reviews and all changes resulting from Change Orders and Field Orders.
 - 3. Contractor shall perform the Work in accordance with the updated Contract Schedule. Contractor may change the Contract Schedule to modify the order or method of accomplishing the Work only with prior agreement by the University.
- C. Contractor shall submit the updated Contract Schedule, in the form acceptable to University's Representative, at least 7 days prior to submitting the Application for Payment.
- D. University's Representative will determine acceptability of the updated Contract Schedule within 7 days after its receipt.
- E. No Applications for Payment (Exhibit 4) will be processed nor shall any progress payments become due until updated Contract Schedules are accepted by University's Representative.
- F. The accepted, updated Contract Schedule shall be the Contract Schedule of record for the period it is current and shall be the basis for payment during that period.

1.5 TIME CONTROL

- A. Set up control procedures so that approved schedules are adhered to. Contractor's responsibility is to properly notify University's Representative of anticipated and actual time delays (refer to General Conditions).
- B. Time extension requests shall be submitted in accordance with the provisions of General Conditions.
- C. The Contractor's time extension request shall be reviewed and evaluated by the University's Representative. A request for the extension shall be deemed denied if not responded to by University's Representative within 21 days.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01329

SECTION 01500 TEMPORARY UTILITIES

PART 1 - GENERAL

1.1 REQUIREMENTS

- A. Provide and maintain temporary utilities for construction operations and related necessary temporary structures. Remove them when they are no longer needed.
- B. Pay for connections/disconnections of all temporary utilities; e.g., gas, water, power, and telephone.
- C. Pay for connections for water and electricity to Project site sources.
- D. University does not guarantee amounts of water and electricity available from existing University's sources, nor will the University be responsible for interruptions in service.
- E. Maintain and operate systems to provide continuous service.
- F. Modify and extend systems as required.
- G. Materials may be new or used, but shall be adequate for the required purposes. Their use and methods of installation shall not create unsafe conditions or violate requirements of Applicable Codes Requirements.

1.2 REMOVAL AND RECONDITIONING

- A. Remove all temporary services installed as a requirement of these Contract Documents. Restore utilities to their original condition at the completion of Work.
- B. Legally and properly dispose of all debris resulting from removal and reconditioning operations.
- C. Contractor shall patch and repair building elements and finishes as required by temporary utility removals.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

- A. Install and use temporary utilities in accordance with latest version of the following:
 - 1. California Electrical Code.
 - 2. Federal, State, and local codes and regulations.
 - 3. Utility company requirements.

1.4 TEMPORARY ELECTRICITY

- A. Electricity may not be taken from University's systems without approval from the University's Representative. The Contractor shall provide all labor and equipment, including metering, connections, transformers and other materials necessary for either extending the utility lines to where they will be used or arranging for non-university

system electricity. The Contractor shall coordinate the installation with the University's Representative.

- B. If electricity is taken from the University's systems, the Contractor shall pay for electricity used at University's rate for the type of service required.
- C. If temporary power is not available, Contractor shall be required to provide generators as necessary.

1.5 TEMPORARY FIRE PROTECTION

- A. Contractor shall conform to the rules, regulations, and instructions of the University and the Merced County Fire Department and such agencies having jurisdiction or identified by the University's Representative. The Contractor shall:
 - 1. Ensure that no burning shall be done on Project site.
 - 2. Provide and maintain fire protection equipment including extinguishers, fire hoses, and other equipment as necessary for proper fire protection during the course of the Work.
 - 3. Use fire protection equipment only for extinguishing fires.
 - 4. Locate fire extinguishers in field offices, storage sheds, tool houses, other temporary buildings, and throughout the Project site.
- B. In the area under construction, the Contractor shall provide at least 1 multi-purpose dry chemical fire extinguisher for each 5,000-square feet of building floor area. Locate fire extinguishers so that a person never has to walk more than 75 feet to obtain one. Fire extinguisher minimum size must be 4A:20BC (10 pound ABC). Use fire protection equipment only for fighting fires. (Modify for PTC Contract)
- C. Assign a qualified person with authority to maintain fire protection equipment, institute fire prevention measures, be a liaison with the University's Representative, Merced County Fire Department and such agencies having jurisdiction or identified by the University's Representative, and direct the prompt removal of combustible and waste materials from the Project site. Prior to start of Work, the Contractor shall organize a mandatory safety meeting. The attendees at this meeting shall at a minimum include the University's Representative, a representative of the Merced County Fire Department, the Contractor's Project Site Superintendent and the Contractor's Fire Liaison. The Contractor shall instruct all subcontractors in the site fire prevention measures, the location of fire extinguishers and the procedures for dealing with fire on site.
- D. Call 9-1-1 and pull fire alarm box when applicable, for any emergency. Report the exact location (building name and street intersection) and nature of the emergency. Contractor is responsible for and will be billed for fire response charges (actual cost of personnel and equipment) for any false alarm and needless call.
- E. Refer to Section 01410 Regulatory Requirements for permits required.
- F. Vehicles or storage of materials on Project site must not obstruct, block or damage or render useless any fire hydrants, fire department connection, fire alarm box or fire access

roadway. Any necessary road closures or disruption to utilities shall be requested through the University's Representative as stated in Section 01113 Special Requirements.

- G. Do not tamper with or work on any fire alarm or fire protection system without first gaining authorization from the University's Representative. System shutdown requests shall require a minimum of 48 hours advance notice. Contact University's Representative for any such requests.

1.6 TEMPORARY HEAT, VENTILATION AND AIR CONDITIONING

- A. Provide temporary heat and ventilation as required to maintain adequate environmental conditions to meet specified minimum conditions for installation of materials; and to protect equipment, materials, and finishes from damage due to temperature or humidity. The use of temporary heating appliances will require a Hazardous Condition Permit as specified in Section 01410 Regulatory Requirements. (Modify for PTC Contract)
- B. Provide adequate forced ventilation of enclosed areas to cure installed materials, to prevent excessive humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.

1.7 TEMPORARY SANITARY FACILITIES

- A. Contractor shall provide at the Project site, temporary toilets of a type acceptable to the University's Representative. Portable chemical toilets, of a type approved by the University's Representative, are acceptable. Location of toilet facilities and their maintenance are subject to inspection and approval by the University's Representative.
- B. Permanent toilet facilities within an existing building shall not be used without written authorization of the University.

1.8 TEMPORARY TELEPHONE SERVICE – NOT USED SEE ADDENDUM #2

- ~~A. Provide direct line telephone service at the Project site for the use of personnel and employees. Minimum service required:
 - 1. One direct line telephone in Contractor's field office.
 - 2. One Fax line telephone in Contractor's field office.
 - 3. Other telephones as required, including coin operated telephones for general use.
 - 4. Coordinate phone service through the University's Representative.~~

1.9 TEMPORARY DATA SERVICE (NOT USED)

1.10 TEMPORARY WATER

- A. Water may be taken from University's systems in such quantities and at such times as they are available. If this is done, provide all equipment, including metering, connections, and other materials necessary for extending the utility lines to where they will be used. Coordinate the installation with University's Representative. Pay for connections and removal of connections to the local water and power mains.

- B. If water is obtained from a campus fire hydrant, the hydrant valve shall not be used as a control valve. Use hydrant wrench; do not use pipe wrench. Contractor shall provide all valving necessary to control the flow of water.

- C. The Contractor shall:
 - 1. Use a reduced pressure backflow preventer shall be used at any connection to University's system, including fire hydrants.
 - 2. Install according to California Administrative Code, Title 17, Section 7603(c), and test immediately after installation by a certified tester in accordance with Title 17, CAC, Section 7605(d).
 - 3. Install piping with taps located so that water is available throughout the Project site by the use of hoses. Protect piping and fittings against freezing.
 - 4. Provide water for human consumption in accordance with the regulatory requirements for potable water.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01500

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product data, concrete mix designs, and L & M Construction Chemicals FGS/PermaShine 10 year warranty information.
- B. Ready-Mixed Concrete Producer Qualifications: ASTM C 94/C 94M.
- C. Comply with ACI 301, "Specification for Structural Concrete"; ACI 117, "Specifications for Tolerances for Concrete Construction and Materials"; and CRSI's "Manual of Standard Practice."

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Plain Steel Wire: ASTM A 82, as drawn.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 185, as drawn, flat sheet.
- D. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.
- E. Portland Cement: ASTM C 150, Type I or II.
- F. Fly Ash: ASTM C 618, Type C or F.
- G. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- H. Silica Fume: ASTM C 1240, amorphous silica.
- I. Aggregates: ASTM C 33, uniformly graded.
- J. Sand: ASTM C33 fine aggregate concrete sand.
- K. Air-Entraining Admixture: ASTM C 260.
- L. Chemical Admixtures: ASTM C 494/C 494M, Type D, [water reducing and retarding]. Do not use calcium chloride or admixtures containing calcium chloride.
- M. Concrete Hardener: L & M Construction Chemicals FGS/PermaShine Concrete Polishing System (or approved equal) FGS Hardener Plus. Provide two coat application.

- N. **ALTERNATE #4** - Color Dye: L & M Construction Chemicals FGS/PermaShine Concrete Polishing System (or approved equal) Vivid Fast Dry Concrete Dye. Assume for bidding purposes "Rock Green" applied at 100% intensity.
- O. Plastic Vapor Retarder: ASTM E 1745, Class C, or polyethylene sheet, ASTM D 4397, not less than 10 mils (0.25) thick. Include manufacturer's recommended adhesive or pressure-sensitive tape.
- P. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.
- Q. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- R. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
- S. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
- T. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.2 MIXES

- A. Comply with ACI 301 requirements for concrete mixtures.
- B. Normal-Weight Concrete: Prepare design mixes, proportioned according to ACI 301, as follows:
 - 1. Minimum Compressive Strength: [3000 psi (20.7 MPa)] at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: [0.45].
 - 3. Slump Limit: [4 inches (100 mm)], plus or minus 1 inch (25 mm).
 - 4. Air Content: Maintain within range permitted by ACI 301. Do not allow air content of floor slabs to receive troweled finishes to exceed 3 percent.
 - 5. Use a maximum of 15% fly ash by weight, as needed to reduce the total amount of portland cement, which would otherwise be used.
- C. Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116.
 - 1. When air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 CONCRETING

- A. Construct formwork according to ACI 301 and maintain tolerances and surface irregularities within ACI 347R limits of Class A, 1/8 inch (3.2 mm) for concrete exposed to view and Class C, 1/2 inch (13 mm) for other concrete surfaces.
- B. Place vapor retarder on prepared subgrade, with joints lapped 6 inches (150 mm) and sealed.
- C. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- D. Install construction, isolation, and contraction joints where indicated. Install full-depth joint-filler strips at isolation joints.
- E. Place concrete in a continuous operation and consolidate using mechanical vibrating equipment.
- F. Protect concrete from physical damage, premature drying, and reduced strength due to hot or cold weather during mixing, placing, and curing.
- G. Formed Surface Finish: Smooth-formed finish for concrete exposed to view, coated, or covered by waterproofing or other direct-applied material; rough-formed finish elsewhere.
- H. Slab Finishes: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces. Provide the following finishes:
 - 1. Hard steel troweled finish for floor surfaces to receive polished concrete finish.
 - 2. Nonslip-broom finish for exterior concrete equipment pads, concrete surfaces not receiving polished finish, and miscellaneous exposed concrete surfaces.
- I. Cure formed surfaces by moist curing for at least seven days.
- J. Begin curing interior concrete slab after finishing per the requirements of the L & M Construction Chemicals FGS/PermaShine Concrete Polishing System (or approved equal). Grind, polish, dye, and densify concrete slab to a standard high gloss finish (HG-1 1500 grit) per manufacturer's recommendations.
- K. Owner will engage a testing agency to perform field tests and to submit test reports.
- L. Protect concrete from damage. Repair surface defects in formed concrete and slabs.

END OF SECTION 033000

SECTION 263213 – ENGINE GENERATORS – ALTERNATE #1 – DEDUCT THIS SCOPE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary to complete the installation required for the items specified under this Section, including but not limited to engine generators, its accessories and controls.

B. Related work under this section

1. Where items specified in other Division 26 sections conflict with the requirements of this Section, the most stringent requirement shall govern.
 - a. 2605260 – Grounding and Bonding for Electrical Systems
 - b. 262811 – Overcurrent Protection Devices
2. The requirements of this Section apply to all Division 26 work, as applicable.
3. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1.2 REFERENCES

A. The generator set and its installation and on-site testing shall conform to the requirements of the following codes and standards:

1. CCR –California Code of Regulations, Title 24
 - a. Part 3 -California Electrical Code(CEC); NFPA 70 National Electrical Code (NEC) with California amendments
 - b. Part 9 -California Fire Code; WFCU Uniform Fire Code (UFC) with California amendments
2. FCC Part 15, Subpart B.
3. ISO –International Organization for Standardization
 - a. 8528; Reciprocating Internal Combustion Engine Driven Alternating Current Generating Sets (All Parts)
4. IEEE –Institute of Electrical and Electronic Engineers
 - a. C2; National Electrical Safety Code (NESC)
 - b. 446; Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications
5. NECA –National Electrical Contractors Association
 - a. 404; Recommended Practice for Installing Generator Sets
6. NEMA –National Electrical Manufacturer’s Association

- a. ICS 1; Industrial Control and Systems: General Requirements
 - b. MG 1; Motors and Generators
 - c. MG 2; Safety Standard for Construction and Guide for Selection, Installation, and Use of Electric Motors and Generators
7. NFPA –National Fire Protection Association
- a. 37; Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines
 - b. 99; Standard for Health Care Facilities
 - c. 110; Standard for Emergency and Standby Power Systems
8. UL -Underwriters Laboratories, Inc.
- a. 508; Standard for Industrial Control Equipment
 - b. 2085; Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids
 - c. 2200; Standard for Stationary Engine Generator Assemblies

1.3 SYSTEM DESCRIPTION

- A. The stand-by generator set shall be supplied to operate on LP vapor fuel. The engine shall be liquid cooled by means of engine mounted radiator.
- B. The stand-by generator set shall be rated continuous stand-by (defined continuous for the duration of any power outage) per Part 2 below.
- C. Engine: The spark-ignited engine shall be 4 cycle, liquid cooled, with a governed speed of 1800 RPM. Engine shall be in full conformance with the latest and applicable California Air Resources requirements and all local emissions requirements. Submit certifications with the submittals.
- D. Sequence of Operation
 1. Generator set shall start on receipt of a start signal from remote equipment. The start signal shall be via hardwired connection to the generator set control.
 2. The generator set shall complete a time delay start period as programmed into the control.
 3. The generator set control shall initiate the starting sequence for the generator set. The starting sequence shall include the following functions:
 - a. The control system shall verify that the engine is rotating when the starter is signaled to operate. If the engine does not rotate after two attempts, the control system shall shut down and lock out the generator set, and indicate “fail to crank” shutdown.
 - b. The engine shall fire and accelerate as quickly as practical to start disconnect speed. If the engine does not start, it shall complete a cycle cranking process as described elsewhere in this specification. If the engine has not started by the completion of the cycle cranking sequence, it shall be shut down and locked out, and the control system shall indicate “fail to start”.

- c. The engine shall accelerate to rated speed and the alternator to rated voltage. Excitation shall be disabled until the engine has exceeded programmed idle speed, and regulated to prevent over voltage conditions and oscillation as the engine accelerates and the alternator builds to rated voltage.
4. On reaching rated speed and voltage, the generator set shall operate as dictated by the control system in isochronous, synchronize, load share, load demand, or load govern state.
5. When all start signals have been removed from the generator set, it shall complete a time delay stop sequence. The duration of the time delay stop period shall be adjustable by the operator.
6. On completion of the time delay stop period, the generator set control shall switch off the excitation system and shall shut down.
 - a. Any start signal received after the time stop sequence has begun shall immediately terminate the stopping sequence and return the generator set to isochronous operation.

1.4 SUBMITTALS

- A. Submit manufacturer's data for materials specified within this Section in accordance to Section 260500.

1.5 QUALITY ASSURANCE

- A. All materials, equipment and parts comprising the materials specified herein shall be new and unused, bearing UL labels where applicable.
- B. The engine shall be equipped with all devices and accessories required to meet the California Air Resources Board and other applicable State and Local emissions standards.
- C. Manufacturer shall provide all UL labeling as required by Local ordinances, which may include:
 1. UL 2200 labeling of engine generator.
- D. Factory Testing.
 1. The generator set manufacturer shall perform a complete operational test on the generator set prior to shipping from the factory. A certified test report shall be provided. Equipment supplied shall be fully tested at the factory for function and performance.
 2. Generator set factory tests on the equipment shall be performed at rated load and rated power factor. Generator sets that have not been factory tested at rated power factor will not be acceptable. Tests shall include: run at full load, maximum power, voltage regulation, transient and steady-state governing, single step load pickup, and function of safety shutdowns.
- E. Installation shall conform to NECA 404, Recommended Practice for Installing Generator Sets unless otherwise specified.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Handle carefully to avoid damage to internal components, enclosure and finish.
- B. Store in a clean, dry environment. Maintain factory packaging and, if required, provide an additional cover to protect enclosure in harsh environments.

1.7 WARRANTY

- A. Furnish one-year guarantee in accordance with and in form required under Section 260500.
- B. A. The generator set and associated equipment shall be warranted for a period of not less than 5 years from the date of commissioning against defects in materials and workmanship.
- C. Service and support
 - 1. The manufacturer of the generator set shall maintain service parts inventory at a central location which is accessible to the service location 24 hours per day, 365 days per year.
 - 2. The generator set shall be serviced by a local service organization that is trained and factory certified in generator set service. The supplier shall maintain an inventory of critical replacement parts at the local service organization, and in service vehicles. The service organization shall be on call 24 hours per day, 365 days per year.
 - 3. The manufacturer shall maintain model and serial number records of each generator set provided for at least 20 years.

1.8 SYSTEM STARTUP

- A. Refer to manufacturer's documentation to start-up procedures and requirements.

PART 2 -PRODUCTS

2.1 MANUFACTURERS

- A. All equipment shall be new and of current production of a National firm, who manufactures the generator, engine, control panel, acoustical assemblies comprising the stand-by generator set as a matched unit, having a service and parts organization.
- B. Onan-Cummins 60 Hz Model: 20GGMA or approved equal.
- C. Generator set
 - 1. Ratings
 - a. The generator set shall operate at 1800 RPM and at a voltage of: 120/240Vac, 1 phase, three-wire, 60 Hz.
 - b. The generator set shall be rated at 20kW, 20kVA at 0.8 PF, stand-by rating, based on site conditions of : Altitude 3,000ft. ambient temperatures up to 104°F (40°C)
 - c. The generator set rating shall be based on emergency/standby service.
 - 2. Performance

- a. Voltage regulation shall be $\pm 1.0\%$ for any constant load between no load and rated load for both parallel and non-parallel applications. Random voltage variation with any steady load from no load to full load shall not exceed $\pm 1.0\%$.
- b. Frequency regulation shall be isochronous from steady state no load to steady state rated load. Random frequency variation with any steady load from no load to full load shall not exceed $\pm 0.5\%$.
- c. The engine-generator set shall be capable of single step load pick up of 100% nameplate kW and power factor, less applicable derating factors, with the engine-generator set at operating temperature.
- d. The alternator shall produce a clean AC voltage waveform, with not more than 5% total harmonic distortion at full linear load, when measured from line to neutral, and with not more than 3% in any single harmonic. Telephone influence factor shall be less than 40.

3. Construction

- a. The engine-generator set shall be mounted on a heavy-duty steel base to maintain alignment between components. The base shall incorporate a battery tray with hold-down clamps within the rails
- b. All switches, lamps, and meters in the control system shall be oil-tight and dust-tight, and the enclosure door shall be gasketed. There shall be no exposed points in the control (with the door open) that operate in excess of 50V.

4. Connections

- a. The generator set load connections shall be composed of silver or tin plated copper bus bars, drilled to accept mechanical or compression terminations of the number and type as shown on the drawings. Sufficient lug space shall be provided for use with cables of the number and size as shown on the drawings.
- b. Power connections to auxiliary devices shall be made at the devices, with required protection located at a wall-mounted common distribution panel.
- c. Generator set control interfaces to other system components shall be made on a common, permanently labeled terminal block assembly.

D. Engine and Engine Equipment

1. The engine shall be spark-ignited, 4 cycle, radiator and fan cooled. The horsepower rating of the engine at its minimum tolerance level shall be sufficient to drive the alternator and all connected accessories. Two cycle engines are not acceptable.
2. An electronic governor system shall provide automatic isochronous frequency regulation. The governing system dynamic capabilities shall be controlled as a function of engine coolant temperature to provide fast, stable operation at varying engine operating temperature conditions. The control system shall actively control the fuel rate and excitation as appropriate to the state of the generator set. Fuel rate shall be regulated as a function of starting, accelerating to start

disconnect speed, accelerating to rated speed, and operating in various isochronous or parallel states.

3. Skid-mounted radiator and cooling system rated for full load operation in 122°F (50°C) ambient as measured at the generator air inlet, based on 0.5 in water external static head. Radiator shall be sized based on a core temperature which is 20°F higher than the rated operation temperature, or prototype tested to verify cooling performance of the engine/radiator/fan operation in a controlled environment. Radiator shall be provided with a duct adapter flange. The cooling system shall be filled with a 50/50 ethylene glycol/water mixture by the equipment manufacturer. Rotating parts shall be guarded against accidental contact.
4. Electric starter(s) capable of three complete cranking cycles without overheating.
5. Positive displacement, mechanical, full pressure, lubrication oil pump.
6. Full flow lubrication oil filters with replaceable spin-on canister elements and dipstick oil level indicator.
7. Replaceable dry element air cleaner with restriction indicator.
8. Flexible supply and return fuel lines.
9. Engine mounted battery charging alternator, 40-ampere minimum, and solid-state voltage regulator.
10. Coolant heater
 - a. Engine mounted, thermostatically controlled, coolant heater(s) for each engine. Heater voltage shall be as shown on the project drawings. The coolant heater shall be UL 499 listed and labeled.
 - b. The coolant heater shall be installed on the engine with silicone hose connections. Steel tubing shall be used for connections into the engine coolant system wherever the length of pipe run exceeds 12 inches. The coolant heater installation shall be specifically designed to provide proper venting of the system. The coolant heaters shall be installed using quick disconnect couplers to isolate the heater for replacement of the heater element. The quick disconnect/automatic sealing couplers shall allow the heater element to be replaced without draining the engine cooling system or significant coolant loss.
 - c. The coolant heater shall be provided with a 24Vdc thermostat, installed at the engine thermostat housing. An AC power connection box shall be provided for a single AC power connection to the coolant heater system.
 - d. The coolant heater(s) shall be sized as recommended by the engine manufacturer to warm the engine to a minimum of 100°F (40°C) in a 40°F ambient, in compliance with NFPA 110 requirements, or the temperature required for starting and load pickup requirements of this specification.
11. Provide vibration isolators, spring/pad type, quantity as recommended by the generator set manufacturer. Isolators shall include seismic restraints if required by site location.

12. Starting and Control Batteries shall be calcium/lead antimony type, 24Vdc, sized as recommended by the engine manufacturer, complete with battery cables and connectors.
13. Provide exhaust silencer(s) for each engine of size and type as recommended by the generator set manufacturer and approved by the engine manufacturer. The mufflers shall be critical grade as required. Exhaust system shall be installed according to the engine manufacturer's recommendations and applicable codes and standards.
14. A UL listed/CSA certified 10 ampere voltage regulated battery charger shall be provided for each engine-generator set. The charger may be located in an automatic transfer switch, or may be wall mounted, at the discretion of the installer. Input AC voltage and DC output voltage shall be as required. Chargers shall be equipped with float, taper and equalize charge settings. Operational monitors shall provide visual output along with individual form C contacts rated at 4 amps, 120 Vac, 30Vdc for remote indication of:

Loss of AC power - red light

Low battery voltage - red light

High battery voltage - red light

Power ON - green light (no relay contact)

Charger shall include an Analog DC voltmeter and ammeter, 12 hour equalize charge timer, and AC and DC fuses.

E. AC Generator

1. The AC generator shall be; synchronous, four pole, 2/3 pitch, revolving field, drip-proof construction, single prelubricated sealed bearing, air cooled by a direct drive centrifugal blower fan, and directly connected to the engine with flexible drive disc. All insulation system components shall meet NEMA MG1 temperature limits for Class H insulation system. Actual temperature rise measured by resistance method at full load shall not exceed 125°C.
2. The generator shall be capable of delivering rated output (kVA) at rated frequency and power factor, at any voltage not more than 5 percent above or below rated voltage.

F. Generator set Control

1. The generator set shall be provided with a microprocessor-based control system that is designed to provide automatic starting, monitoring, and control functions for the generator set. The control system shall also be designed to allow local monitoring and control of the generator set, and remote monitoring and control as described in this specification.
2. The control shall be mounted on the generator set. The control shall be vibration isolated and prototype tested to verify the durability of all components in the system under the vibration conditions encountered.

3. The generator set mounted control shall include the following features and functions:
 - a. Control Switches
 - 1) Mode Select Switch. The mode select switch shall initiate the following control modes. When in the RUN or Manual position the generator set shall start, and accelerate to rated speed and voltage as directed by the operator. In the OFF position the generator set shall immediately stop, bypassing all time delays. In the AUTO position the generator set shall be ready to accept a signal from a remote device to start and accelerate to rated speed and voltage.
 - 2) EMERGENCY STOP switch. Switch shall be Red "mushroom-head" push-button. Depressing the emergency stop switch shall cause the generator set to immediately shut down, and be locked out from automatic restarting.
 - 3) RESET switch. The RESET switch shall be used to clear a fault and allow restarting the generator set after it has shut down for any fault condition.
 - 4) PANEL LAMP switch. Depressing the panel lamp switch shall cause the entire panel to be lighted with DC control power. The panel lamps shall automatically be switched off 10 minutes after the switch is depressed, or after the switch is depressed a second time.
 - b. Generator Set AC Output Metering. The generator set shall be provided with a metering set including the following features and functions:
 - 1) Analog voltmeter, ammeter, frequency meter, and kilowatt (kW) meter. Voltmeter and ammeter shall display all three phases. Ammeter and kW meter scales shall be color coded in the following fashion: readings from 0-90% of generator set standby rating: green; readings from 90-100% of standby rating: amber; readings in excess of 100%: red.
 - 2) Digital metering set, 0.5% accuracy, to indicate generator RMS voltage and current, frequency, output current, output kW, kWh and power factor. Generator output voltage shall be available in line-to-line and line-to-neutral voltages, and shall display all three phase voltages (line to neutral or line to line) simultaneously.
 - 3) Both analog and digital metering are required. The analog and digital metering equipment shall be driven by a single microprocessor, to provide consistent readings and performance.
 - c. Generator Set Alarm and Status Display.
 - 1) The generator set shall be provided with alarm and status indicating lamps to indicate non-automatic generator status, and existing warning and shutdown conditions. The lamps shall be high-intensity LED type. The lamp condition shall be clearly apparent under bright room lighting conditions. The generator set control shall indicate the existence of the following alarm and shutdown conditions on an alphanumeric digital display panel:

low oil pressure (alarm)
low oil pressure (shutdown)
oil pressure sender failure (alarm)
low coolant temperature (alarm)
high coolant temperature (alarm)
high coolant temperature (shutdown)
engine temperature sender failure (alarm)
low coolant level (alarm or shutdown –selectable)
fail to crank (shutdown)
fail to start/overcrank (shutdown)
overspeed (shutdown)
low DC voltage (alarm)
high DC voltage (alarm)
weak battery (alarm)
low fuel-daytank (alarm)
high AC voltage (shutdown)
low AC voltage (shutdown)
under frequency (shutdown)
over current (warning)
over current (shutdown)
short circuit (shutdown)
ground fault (alarm) (where required by Drawings)
over load (alarm)
emergency stop (shutdown)

- 2) Provisions shall be made for indication of four customer-specified alarm or shutdown conditions. Labeling of the customer-specified alarm or shutdown conditions shall be of the same type and quality as the above specified conditions. The non-automatic indicating lamp shall be red, and shall flash to indicate that the generator set is not able to automatically respond to a command to start from a remote location.

d. Engine Status Monitoring.

- 1) The following information shall be available from a digital status panel on the generator set control:
 - engine oil pressure (psi or kPA)
 - engine coolant temperature (degrees F or C)

engine oil temperature (degrees F or C)

engine speed (rpm)

number of hours of operation (hours)

number of start attempts

battery voltage (DC volts)

- 2) The control system shall also incorporate a data logging and display provision to allow logging of the last 10 warning or shutdown indications on the generator set, as well as total time of operation at various loads, as a percent of the standby rating of the generator set.

e. Engine Control Functions.

- 1) The control system provided shall include a cycle cranking system, which allows for user selected crank time, rest time, and # of cycles. Initial settings shall be for 3 cranking periods of 15 seconds each, with 15-second rest period between cranking periods.
- 2) The control system shall include an idle mode control, which allows the engine to run in idle mode in the RUN position only. In this mode, the alternator excitation system shall be disabled.
- 3) The control system shall include an engine governor control, which functions to provide steady state frequency regulation as noted elsewhere in this specification. The governor control shall include adjustments for gain, damping, and a ramping function to control engine speed and limit exhaust smoke while the unit is starting. The governor control shall be suitable for use in paralleling applications without component changes.
- 4) The control system shall include time delay start (adjustable 0-300 seconds) and time delay stop (adjustable 0-600 seconds) functions.
- 5) The control system shall include sender failure monitoring logic for speed sensing, oil pressure, and engine temperature which is capable of discriminating between failed sender or wiring components, and an actual failure conditions.

f. Alternator Control Functions:

- 1) The generator set shall include an automatic digital voltage regulation system that is matched and prototype tested by the engine manufacturer with the governing system provided. It shall be immune from mis-operation due to load-induced voltage waveform distortion and provide a pulse width modulated output to the alternator exciter. The voltage regulation system shall be equipped with three-phase RMS sensing and shall control buildup of AC generator voltage to provide a linear rise and limit overshoot. The system shall include a torque-matching characteristic, which shall reduce output voltage in proportion to frequency below a threshold of 58-59Hz. The voltage regulator shall include adjustments for gain, damping, and frequency roll-off. Adjustments shall be broad range, and made via digital raise-lower

- switches, with an alphanumeric LED readout to indicate setting level. Rotary potentiometers for system adjustments are not acceptable.
- 2) Controls shall be provided to monitor the output current of the generator set and initiate an alarm (over current warning) when load current exceeds 110% of the rated current of the generator set on any phase for more than 60 seconds. The controls shall shut down and lock out the generator set when output current level approaches the thermal damage point of the alternator (over current shutdown). The protective functions provided shall be in compliance to the requirements of CEC/NEC 445
 - 3) Controls shall be provided to individually monitor all three phases of the output current for short circuit conditions. The control/protection system shall monitor the current level and voltage. The controls shall shut down and lock out the generator set when output current level approaches the thermal damage point of the alternator (short circuit shutdown). The protective functions provided shall be in compliance to the requirements of CEC/NEC 445.
 - 4) Controls shall be provided to monitor the kW load on the generator set, and initiate an alarm condition (over load) when total load on the generator set exceeds the generator set rating for in excess of 5 seconds. Controls shall include a load shed control, to operate a set of dry contacts (for use in shedding customer load devices) when the generator set is overloaded.
 - 5) An AC over/under voltage monitoring system that responds only to true RMS voltage conditions shall be provided. The system shall initiate shutdown of the generator set when alternator output voltage exceeds 110% of the operator-set voltage level for more than 10 seconds, or with no intentional delay when voltage exceeds 130%. Under voltage shutdown shall occur when the output voltage of the alternator is less than 85% for more than 10 seconds.
 - 6) A battery monitoring system shall be provided which initiates alarms when the DC control and starting voltage is less than 25Vdc or more than 32Vdc. During engine cranking (starter engaged), the low voltage limit shall be disabled, and if DC voltage drops to less than 14.4V for more than two seconds a "weak battery" alarm shall be initiated.
 - 7) When required by National Electrical Code or indicated on Drawings, the control System shall include a ground fault monitoring relay. The relay shall be adjustable from 3.8-1200 amps, and include adjustable time delay of 0.0-10.0 seconds. The relay shall be for indication only, and not trip or shut down the generator set. Note bonding and grounding requirements for the generator set, and provide relay that will function correctly in system as installed.
- g. Provide and install a 20-light LED type remote alarm annunciator with horn, located as shown on the drawings or in a location that can be conveniently monitored by facility personnel. The remote annunciator shall provide all the audible and visual alarms called for by NFPA 110 for level 1 systems; and in addition shall provide indications for high battery voltage, low battery

voltage, loss of normal power to the charger. Spare lamps shall be provided to allow future addition of other alarm and status functions to the annunciator. Provisions for labeling of the annunciator in a fashion consistent with the specified functions shall be provided. Alarm silence and lamp test switch(es) shall be provided. LED lamps shall be replaceable, and indicating lamp color shall be capable of changes needed for specific application requirements. Alarm horn shall be switchable for all annunciation points. Alarm horn (when switched on) shall sound for first fault, and all subsequent faults, regardless of whether first fault has been cleared, in compliance with NFPA 110 3-5.6.2.

- h. The generator set shall be provided with a mounted main line circuit breaker, sized to carry the rated output current of the generator set on a continuous basis. The circuit breaker shall incorporate an electronic trip unit that operates to protect the alternator under all overcurrent conditions. The supplier shall submit time overcurrent characteristic curves and thermal damage curve for the alternator, demonstrating the effectiveness of the protection provided.
- i. Control Interfaces for Remote Monitoring:
 - 1) All control and interconnection points from the generator set to remote components shall be brought to a separate connection box. No field connections shall be made in the control enclosure or in the AC power output enclosure. Provide the following features in the control system:
 - 2) Form "C" dry common alarm contact set rated 2A at 30Vdc to indicate existence of any alarm or shutdown condition on the generator set.
 - 3) One set of contacts rated 2A at 30Vdc to indicate generator set is ready to load. The contacts shall operate when voltage and frequency are greater than 90% of rated condition.
 - 4) A fused 10 ampere switched 24Vdc power supply circuit shall be provided for customer use. DC power shall be available from this circuit whenever the generator set is running.
 - 5) A fused 20 ampere 24Vdc power supply circuit shall be provided for customer use. DC power shall be available from this circuit at all times from the engine starting/control batteries.

G. Enclosure (Shall be of type noted on Drawings)

1. Outdoor Weather-Protective Enclosure

- a. Generator set housing shall be provided factory-assembled to generator set base and radiator cowling. Housing shall provide ample airflow for generator set operation at rated load in the ambient conditions previously specified. The housing shall have hinged side-access doors and rear control door. All doors shall be lockable. All sheetmetal shall be primed for corrosion protection and finish painted with the manufacturers standard color using a two step electrocoating paint process, or equal meeting the performance requirements specified below. All surfaces of all metal parts shall be primed

and painted. The painting process shall result in a coating which meets the following requirements:

- 1) Primer thickness, 0.5-2.0 mils. Top coat thickness, 0.8-1.2 mils.
 - 2) Gloss, per ASTM D523-89, 80% \pm 5%. Gloss retention after one year shall exceed 50%.
 - 3) Crosshatch adhesion, per ASTM D3359-93, 4B-5B.
 - 4) Impact resistance, per ASTM D2794-93, 120-160 inch-pounds.
 - 5) Salt Spray, per ASTM B117-90, 1000+ hours.
 - 6) Humidity, per ASTM D2247-92, 1000+ hours.
 - 7) Water Soak, per ASTM D2247-92, 1000+ hours.
- b. Painting of hoses, clamps, wiring harnesses, and other non-metallic service parts shall not be acceptable. Fasteners used shall be corrosion resistant, and designed to minimize marring of the painted surface when removed for normal installation or service work.
- c. The generator set shall be provided with a sound-attenuated housing which allows the generator set to operate at full rated load in the ambient conditions previously specified. The enclosure shall reduce the sound level of the generator set while operating at full rated load to a maximum of 66dBA at any location 23 feet from the generator set in a free field environment. Housing configuration and materials used may be of any suitable design which meets application needs, except that acoustical materials used shall be oil and water resistant. No foam materials shall be used unless they can be demonstrated to have the same durability and life as fiberglass.

PART 3 -EXECUTION

3.1 INSTALLATION

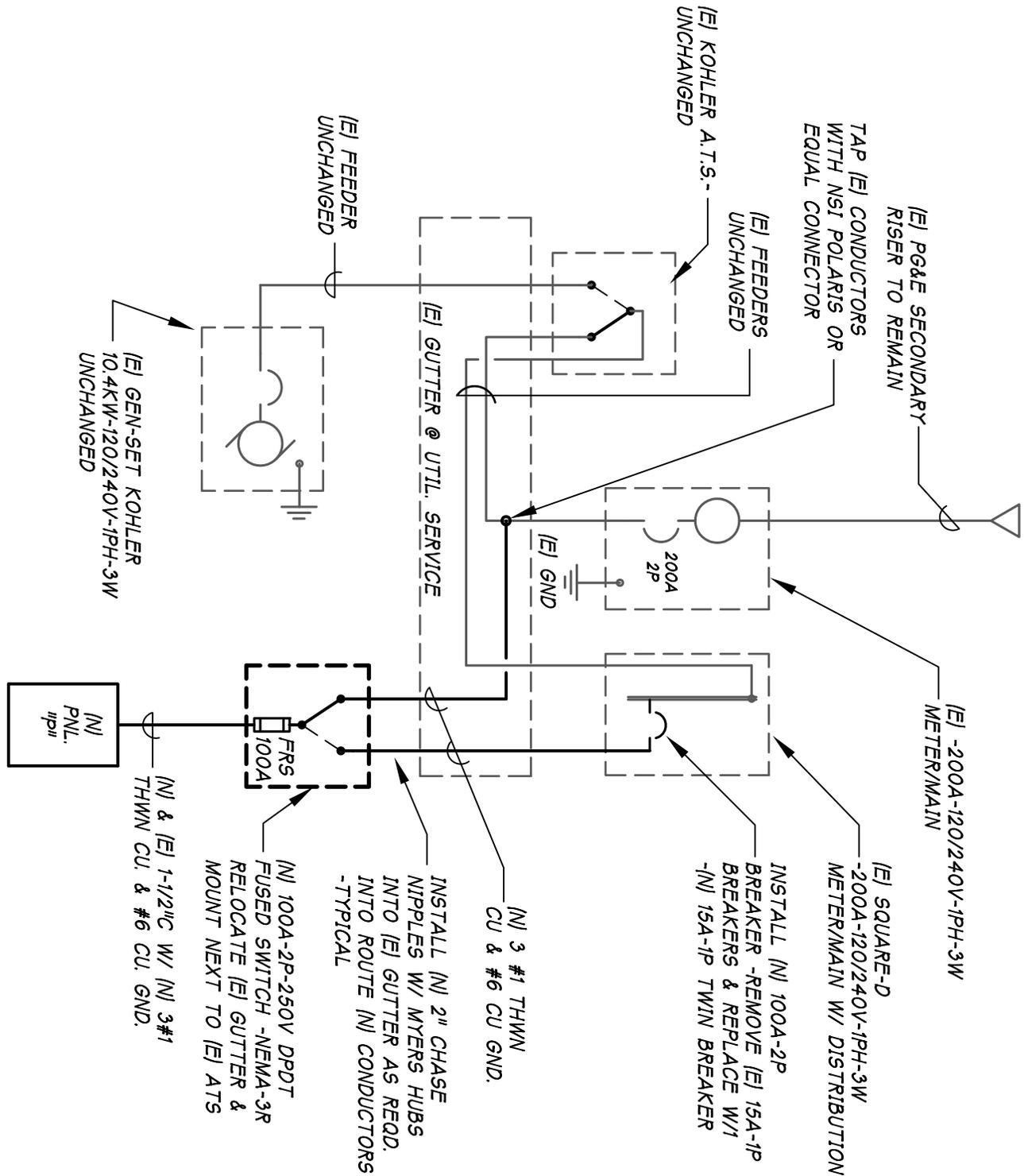
- A. Equipment shall be installed by the contractor in accordance with final submittals and Drawings. Installation shall comply with applicable state and local codes as required by the authority having jurisdiction. Install equipment in accordance with manufacturer's instructions and instructions included in the listing or labeling of UL listed products.
- B. Installation of equipment shall include furnishing and installing all interconnecting wiring between all major equipment provided for the on-site power system. The contractor shall also perform interconnecting wiring between equipment sections (when required), under the supervision of the equipment supplier. Provide flexible electrical connections from pad to equipment.
- C. Equipment shall be installed on concrete housekeeping pads. Equipment shall be permanently fastened to the pad in accordance with manufacturer's instructions and seismic requirements of the site.
- D. Equipment shall be initially started and operated by representatives of the manufacturer.

- E. All equipment shall be physically inspected for damage. Scratches and other installation damage shall be repaired prior to final system testing. Equipment shall be thoroughly cleaned to remove all dirt and construction debris prior to initial operation and final testing of the system.

3.2 TESTING

- A. The complete installation shall be tested for compliance with the specification following completion of all site work. Testing shall be conducted by representatives of the manufacturer, with required fuel supplied by Contractor. The Engineer shall be notified in advance and shall have the option to witness the tests.
- B. Installation acceptance tests to be conducted on-site shall include a "cold start" test, a one hour full load test, and a one step rated load pickup test in accordance with NFPA 110. Provide a resistive load bank and make temporary connections for full load test, if necessary.
- C. Perform a power failure test on the entire installed system. This test shall be conducted by opening the power supply from the utility service, and observing proper operation of the system for at least 1 hour. Coordinate timing and obtain approval for start of test with site personnel.

END OF SECTION 263213

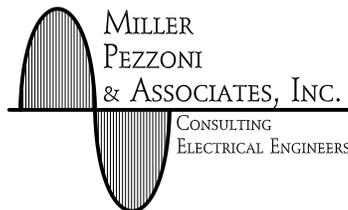


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SINGLE LINE DIAGRAM

REFERENCE SHEET E2.0

ADDENDUM #2

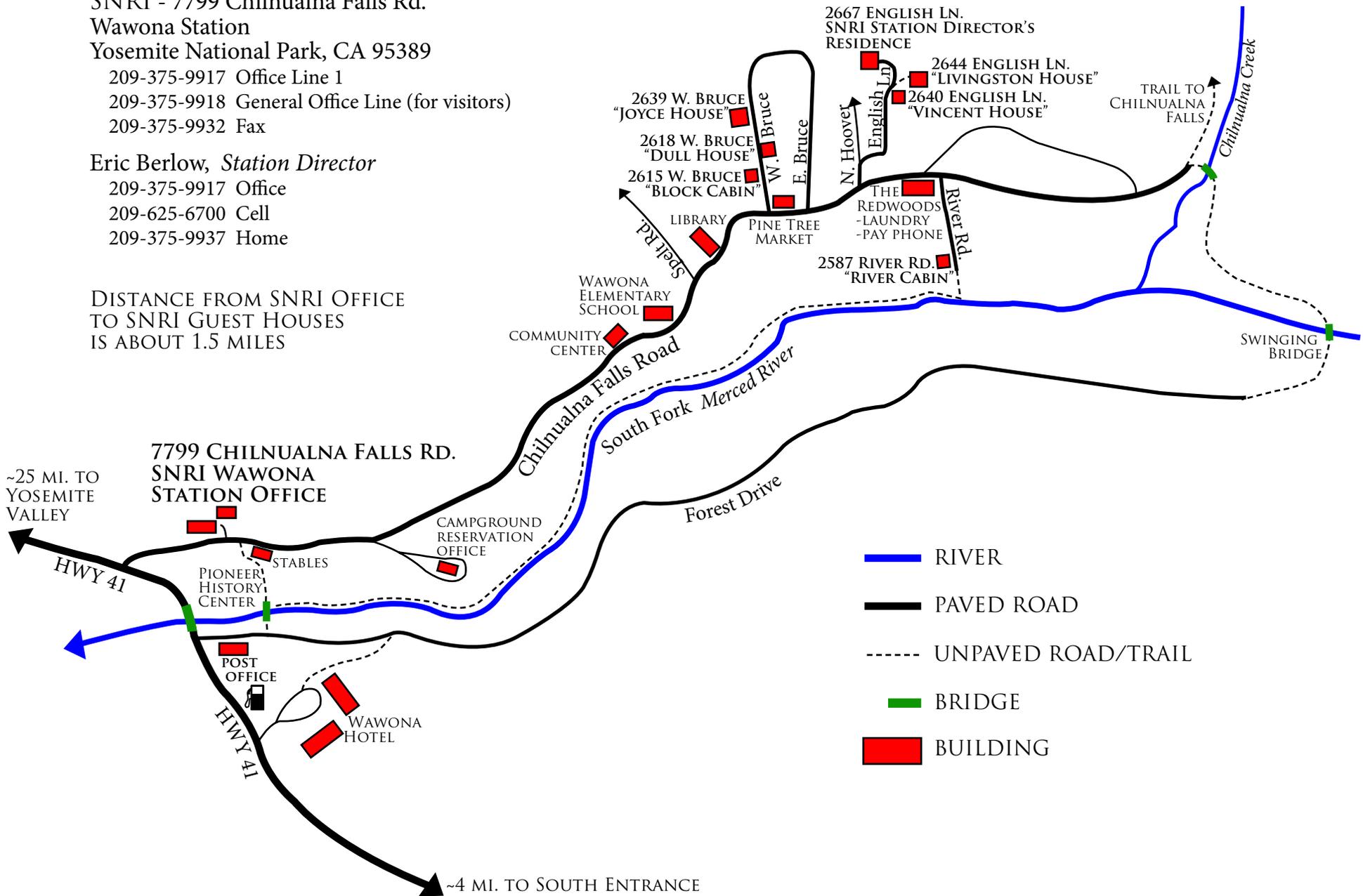
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