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# PETITION TO AMEND

COLUSA GENERATING STATION (06-AFC-9C)

SUBMITTED TO: CALIFORNIA ENERGY COMMISSION

**SUBMITTED BY: PACIFIC GAS & ELECTRIC** 

COMPANY (PG&E)

**MARCH 2017** 



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#### 1.1 INTRODUCTION TO PETITION

Pursuant to Section 1769 of the California Energy Commission (Commission) regulations<sup>1</sup>, Pacific Gas & Electric Company (PG&E) files this Petition For Amendment (Petition) with the California Energy Commission (Commission) to modify the Colusa Generating Station (CGS). This Petition requests addition of a permanent stairway to access two condensate return pumps for the Air Cooled Condenser (ACC). The ACC steam duct has a low point to collect all condensate to return it to the condensate tank for usage. The bottom part of this steam duct is below grade, housed in a pit that is approximately 17-1/2 feet deep. Two condensate return pumps are located at the bottom of this pit. This section describes the procedural background of the CGS and cites the authority for the Commission to process this Petition.

Section 2 of the Petition describes the modifications proposed the CGS including an explanation of the need for the modification.

Sections 3, 4, 5 and 6 contain analysis of the proposed modifications comparing the potential environmental impacts from the modifications to the potential environmental impacts of the CGS as approved in the Commission Final Decision<sup>2</sup>. As discussed in these Sections, PG&E does not anticipate any significant environmental impacts from the proposed modifications and therefore is not proposing any modifications to the existing Conditions of Certification.

Section 7 contains an analysis demonstrating that the modifications do not increase any potential effects on nearby property owners or the public.

#### 1.2 FINAL DECISION BACKGROUND

E&L Westcoast, LLC filed an Application For Certification (AFC) with the Commission on November 6, 2006 to construct and operate the CGS, a nominal 660 megawatt (MW) combined cycle power plant. The CGS was proposed by E&L Westcoast, LLC in response to PG&E's 2004 Request For Offers and on January 11, 2008, PG&E became the Applicant and Project Owner. The Commission issued its Final Decision approving the CGS on April 23, 2008 (Order No. 08-0423-23, the "Final Decision", 06-AFC-9).

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<sup>&</sup>lt;sup>1</sup> Title 20 CCR Section 1769

<sup>&</sup>lt;sup>2</sup> References to the Commission Final Decision include all amendments approved after issuance and prior to the date of this Petition For Amendment.

#### 1.3 PRIOR PETITIONS FOR AMENDMENT

On August 14, 2008, PG&E filed a Petition For Amendment to revise the general equipment arrangement, eliminate the diesel emergency generator, replace the diesel fire pump with an electric fire pump, eliminate the auxiliary boiler, relocate the natural gas metering station, and incorporate a natural gas water bath heater system and a wet surface air cooler. On July 15, 2009 the Commission approved the Petition For Amendment.<sup>3</sup>

On January 21, 2009, PG&E submitted a Petition For Amendment proposing slight modifications to the size and layout of the switchyard and the electric transmission interconnection route. On April 16, 2009 the Commission approved the Petition For Amendment.<sup>4</sup>

On November 13, 2013, PG&E submitted a Petition For Amendment proposing to modify its ultra-filtration system. The Commission approved the Petition For Amendment on December 13, 2013.<sup>5</sup>

On February 6, 2014 PG&E submitted a Petition For Amendment to store a spare generator step-up transformer at the CGS site. The Commission approved the Petition For Amendment on March 14, 2014.<sup>6</sup>

On March 14, 2014, PG&E submitted an Emergency Petition for Amendment to allow temporary withdrawal and trucking of water from the Glenn Colusa Canal in the same manner that was authorized during construction. On April 22, 2014, the Commission approved the Petition For Amendment.

On May 28, 2014, PG&E filed a Petition For Amendment to replace the temporary withdrawal and trucking of water from the Glenn Colusa Canal with a permanent water supply line. The Commission approved the Petition For Amendment on August 22, 2014.<sup>7</sup>

On February 6, 2015, PG&E filed a Petition For Amendment to add a fin fan cooling apparatus to dry cool the Heat Recovery Steam Generator (HRSG) Blowdown effluent water and a separate Petition For Amendment to install additional grating on the steam

<sup>&</sup>lt;sup>3</sup> Order No. 09-715-2, dated July 15, 2009, TN 522443

<sup>&</sup>lt;sup>4</sup> Letter from Chris Davis, CEC Compliance Project Manager, dated April 16, 2009 to John Maring, PG&E, TN 51119

<sup>&</sup>lt;sup>5</sup> Notice of Determination, dated December 13, 2013, TN 201431, no objections filed within 14 days

 $<sup>^{6}</sup>$  Notice of Determination, dated March 14, 2014, TN 201878, no objections filed with 14 days

<sup>&</sup>lt;sup>7</sup> Notice of Determination, dated August 22, 2014, TN 202974, no objections filed with 14 days

turbine deck to expand the useful area and make it safer for turbine and generator work. On March 25, 2015, the Commission approved both Petitions.<sup>8</sup>

On June 25, 2015, PG&E filed a Petition For Amendment to conform the Air Quality Conditions of Certification to the Revised Title V Operating Permit. On July 27, 2015, PG&E revised the Petition For Amendment as requested by CEC Staff. The Commission approved the Petition For Amendment as revised on December 9, 2015.9

On June 28, 2016, PG&E filed a Petition For Amendment to install a new Warehouse, install electrical equipment to enable variable operation of the ACC, and installation of rotating intake screens to control algae blooms at the water intakes for the Tehama Colusa Canal (TCC). Due to data requests by the CEC Staff relating only to the rotating intake screens which required information from the U.S. Bureau of Reclamation and others, PG&E requested that Staff separate the Petition and process the Warehouse and ACC electrical upgrades quickly and prepare a separate analysis of the rotating intake screens later when the information is received from the U.S. Bureau of Reclamation and others.<sup>10</sup> The Commission approved the Petition For Amendment for the Warehouse and ACC electrical upgrades on October 17, 2016.<sup>11</sup>

On December 22, 2016, at the request of CEC Staff, PG&E prepared a separate Petition For Amendment for the rotating intake screens that was contained in the June 28, 2016 Petition. That Petition is still pending.

#### 1.4 SUMMARY OF ENVIRONMENTAL IMPACTS

As described in Sections 3, 4, 5 and 6 of this Petition, the project modifications proposed herein, with implementation of the Conditions of Certification contained in the Final Decision and subsequent amendments will not result in significant environmental impacts and will comply with all applicable LORS.

#### 1.5 CONSISTENCY OF PROJECT MODIFICATIONS WITH LICENSE

As demonstrated in Sections 3 through 6 the proposed modifications proposed in this Petition do not undermine any of the findings and conclusions contained in the Final Decision.

<sup>&</sup>lt;sup>8</sup> Notice of Determination, dated March 25, 2015, TN 203959 and letter dated April 22, 2015 from CEC Compliance Project Manager Eric Veer Kamp to Charles Price, PG&E, TN 204312

<sup>&</sup>lt;sup>9</sup> Order No. 15-1209-3, dated December 9, 2015, TN 207036

<sup>&</sup>lt;sup>10</sup> Letter from Day Zen LLC to Anwar Ali, Compliance Project Manager, CEC, dated September 30, 2016, TN 213864

<sup>&</sup>lt;sup>11</sup> Notice of Determination, dated October 17, 2016, TN 214076. There were no objections filed within the objection timeline and therefore the Notice of Determination became final approval of the Petition.

#### Section 2 DESCRIPTION OF PROJECT AMENDMENT

#### 2.1 DESCRIPTION OF PROPOSED MODIFICATION

PG&E is proposing in this Petition For Amendment to install a permanent stairway to access two condensate return pumps for the Air Cooled Condenser (ACC). The ACC steam duct has a low point to collect all condensate to return it to the condensate tank for usage. The bottom part of this steam duct is below grade, housed in a pit that is approximately 17-1/2 feet deep. Two condensate return pumps are located at the bottom of this pit which are currently accessed via a ladder.

The use of the ladder has proven inefficient for operators and/or maintenance personnel in accessing the condensate return pumps. Personnel are limited in transporting tools up and down the ladder. The installation of the permanent stairway will be much safer and efficient.

Appendix A includes the design drawings for the stairway.

#### 2.2 CONSTRUCTION ACTIVITIES AND SCHEDULE

PG&E will hire a contractor to install the stairway. It is anticipated that the materials for stairway will be transported to the CGS site in one truck trip. It is anticipated that the stairway installation will be completed within three working days using approximately 3 to 4 workers.

#### 2.3 PURPOSE AND NEED FOR AMENDMENT

During the time of licensing, PG&E did not envision needing the stairway and therefore it was not requested by PG&E at the time of the original licensing proceedings. The need for the stairway has been discovered during routine operation and maintenance activities since the CGS has been in service. As described above, the addition of the stairway will provide a safer and more efficient mechanism for servicing the condensate return pumps.

#### Section 3 ENGINEERING ASSESSMENT

This section contains an evaluation of the modification proposed in this Petition For Amendment to determine if it would result in modification of the findings, conclusions or conditions of certification for each technical discipline included within the Engineering Assessment section of the Final Decision.

#### 3.1 FACILITY DESIGN

The installation of the proposed new stairway will not undermine any finding or conclusion contained in the Final Decision. The proposed new stairway will be installed in accordance with the existing conditions of certification which will ensure it will comply with all applicable laws, ordinances, regulations and standards (LORS). Therefore, no modifications to the analysis, findings, conclusions or conditions to the certification contained in the Facility Design section of the Final Decision are necessary.

### 3.1.1 Changes in LORS Conformance and Other Permits

There are no changes in Facility Design LORS or required permits necessary to install the stairway.

#### 3.1.2 Conditions of Certification

No modifications to the any of the existing Facility Design conditions of certification are necessary.

#### 3.2 POWER PLANT EFFICIENCY AND RELIABILITY

The proposed stairway does not result in any effect on power plant efficiency or reliability.

#### 3.3 TRANSMISSION SYSTEM ENGINEERING

The proposed stairway does not result in any effect on the switchyard or the transmission line. Therefore it will have no effect on the findings, conclusions or conditions of certification contained in the Transmission System Engineering section of the Final Decision

#### 3.4 TRANSMISSION LINE SAFETY AND NUISANCE

The proposed stairway does not result in any effect on the switchyard or the transmission line. Therefore it will have no effect on the findings, conclusions or

conditions of certification contained section of the Final Decision.	in	the	Transmission	Line	Safety	and	Nuisance

#### Section 4 PUBLIC HEALTH AND SAFETY

This section contains an evaluation of the modification proposed in this Petition to determine if it would result in modification to the findings, conclusions or conditions of certification for each technical discipline included within the Public Health and Safety section of the Final Decision.

### 4.1 AIR QUALITY, GREENHOUSE GASES AND PUBLIC HEALTH

The proposed stairway does not result in any measurable air emissions. Therefore it will have no effect on the findings, conclusions or conditions of certification contained in the Air Quality or Public Health sections of the Final Decision.

#### 4.1.1 Changes in LORS Conformance and Other Permits

There are no new Air Quality, Public Heath, or Greenhouse Gases LORS or required permits for the stairway proposed in this Petition.

#### 4.1.2 Conditions of Certification

No modifications to the any of the existing Air Quality and Public Health conditions of certification are necessary.

#### 4.2 HAZARDOUS MATERIALS MANAGEMENT

The installation of the proposed stairway will not affect the findings and conclusions contained in the Hazardous Materials Management section of the Final Decision as stairway will not involve the use of hazardous materials.

#### 4.3 WORKER SAFETY/FIRE PROTECTION

The proposed stairway installation will not expose workers to any additional risks not evaluated in the Worker Safety/Fire Protection section of the Final Decision. PG&E will require the contractors to comply with its various safety plans during construction. Ultimately the installation of the proposed safety will reduce potential injuries to workers by eliminating the potential use of a ladder while transporting tools and equipment necessary to maintain the condensate return pumps.

Since installation of the proposed stairway will be performed in accordance with the Conditions of Certification, the proposed modifications do not undermine any finding or conclusion of the Worker Safety/Fire Protection section of the Final Decision.

#### Section 5 ENVIRONMENTAL ANALYSIS

This section contains an evaluation of the modification proposed in this Petition to determine if it would result in modification to any of the findings, conclusions or conditions of certification for each technical discipline included within the Environmental Assessment section of the Final Decision.

#### 5.1 BIOLOGICAL RESOURCES

Installation of the stairway will not involve any disturbance outside the ACC condensate pit other than routine worker traffic and transportation of the stairway building materials to the site. These types of activities are already authorized and are ongoing at the site and do not result in significant impacts to Biological Resources. Installation of the proposes new stairway will comply with the conditions of certification and therefore will not undermine any of the findings and conclusions of the Biological Resources sections of the Final Decision.

#### 5.1.1 Changes in LORS Conformance and Other Permits

There are no new applicable Biological Resource LORS or required permits for the proposed stairway described in this Petition.

#### 5.1.2 Conditions of Certification

No modifications to the any of the existing Biological Resource conditions of certification are necessary.

#### 5.2 SOIL AND WATER RESOURCES

The installation of the stairway will not involve grading or additional use of water resources. Therefore, it will not undermine any of the findings or conclusions contained in the Soil and Water Section of the Final Decision. No modification to any Soil and Water Resource condition of certification is necessary.

#### 5.3 CULTURAL RESOURCES

Since all of the construction will take place within the ACC condensate pit installation of the stairway proposed in this Petition will not have any effect on the findings, conclusions or will not require any modification to the conditions of certification contained in the Cultural Resources Section of the Final Decision.

#### 5.4 GEOLOGICAL AND PALEONTOLOGICAL RESOURCES

Since all of the construction will take place within the ACC condensate pit installation of the stairway proposed in this Petition will not have any effect on the findings, conclusions or will not require any modification to the conditions of certification contained in the Cultural Resources Section of the Final Decision.

#### 5.5 WASTE MANAGEMENT

The installation of the stairway proposed in this Petition will create minor amounts of construction related waste materials. However, compared to the amount of construction waste created during construction of the plant, the amounts are negligible. Therefore, the proposed stairway will not undermine any findings or conclusions of the Waste Management section of the Final Decision. No modifications to the Waste Management conditions of certification are required.

### Section 6 LOCAL IMPACT ANALYSIS

This section contains an evaluation of the stairway proposed in this Petition to determine if it would result in modification to any findings, conclusions or conditions of certification for each technical discipline included within the Local Impact Assessment section of the Final Decision.

#### 6.1 LAND USE

The stairway proposed in this Petition will not affect the findings and conclusions contained in the Land Use section of the Final Decision as it will not involve the use of new land areas.

#### 6.2 NOISE AND VIBRATION

The installation of the stairway proposed in this Petition will not affect the findings and conclusions, nor require any modifications to the existing conditions of certification, contained in the Noise and Vibration section of the Final Decision as installation will not create new sources of noise or vibration. Any noise and vibration will be consistent with allowable noise experienced during routine operations and maintenance activities.

#### 6.3 SOCIECONOMICS

The stairway proposed in this Petition will not affect the findings and conclusions, nor require any modifications to the existing conditions of certification, contained in the Socioeconomic Resources section of the Final Decision as it will not burden existing public services.

### 6.4 TRAFFIC AND TRANSPORTATION

The stairway proposed in this Petition will not affect the findings and conclusions, nor require any modifications to the existing conditions of certification, contained in the Traffic and Transportation section of the Final Decision as the installation activities will not significantly increase traffic on local roads.

#### 6.5 VISUAL RESOURCES

The stairway proposed in this Petition will not affect the findings and conclusions, nor require any modifications to the existing conditions of certification, contained in the Visual Resources section of the Final Decision as the stairway will not be visible outside the ACC condensate pit.

#### Section 7 POTENTIAL EFFECTS ON PROPERTY OWNERS

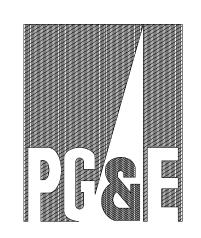
The Commission's Power Plant Siting Regulations require a Petition For Amendment to include 1) a discussion of how the modification affects the public; 2) a list of property owners potentially affected by the modification; and 3) a discussion of the potential effect on nearby property owners, the public and the parties in the application proceedings.

As described in technical area evaluated in Sections 3, 4, 5 and 6 of this Petition, with implementation of the existing conditions of certification the impacts of the proposed modifications are less than significant and therefore would not affect the public differently than the identified in the Final Decision.

PG&E has not included a list of property owners for this Petition because the property owners are the same as provided for the Commission during the previous Petitions For Amendment.

## Appendix A

Stairway Design Drawings



# PACIFIC GAS & ELECTRIC CO.

# ACC SUMP AND PUMP PIT STAIRWAY

COLUSA GENERATING STATION 4780 DIRKS ROAD MAXWELL, CA 95955

# **ENGINEERS:**

# CHOW ENGINEERING INC.

**ABBREVIATIONS** 

GLU

grade break

manufacturer

miscellaneous

not in contract

outside diameter

pounds per square inch

pound per square foot

square foot or square feet

not to scale

pound

REINF reinforcing steel

standard

U.O.N. unless otherwise noted

STRUCT structural

T.O.S. top of steel

TOT

T.O.C. top of concrete

minimum or minute

maximum

north

LONG longitudinal

International Symbol of Accessibility

GΑ

above finish floor

below grade surface

California Building Code

concrete masonary unit

construction grade

construction joint continuous, continued

construction

diameter

dimension

each face

each way

elevation

finished grade

finished floor

footing foundation

joint

Douglas Fir

bottom of footing or foundation

alternate

column

CLR

COL

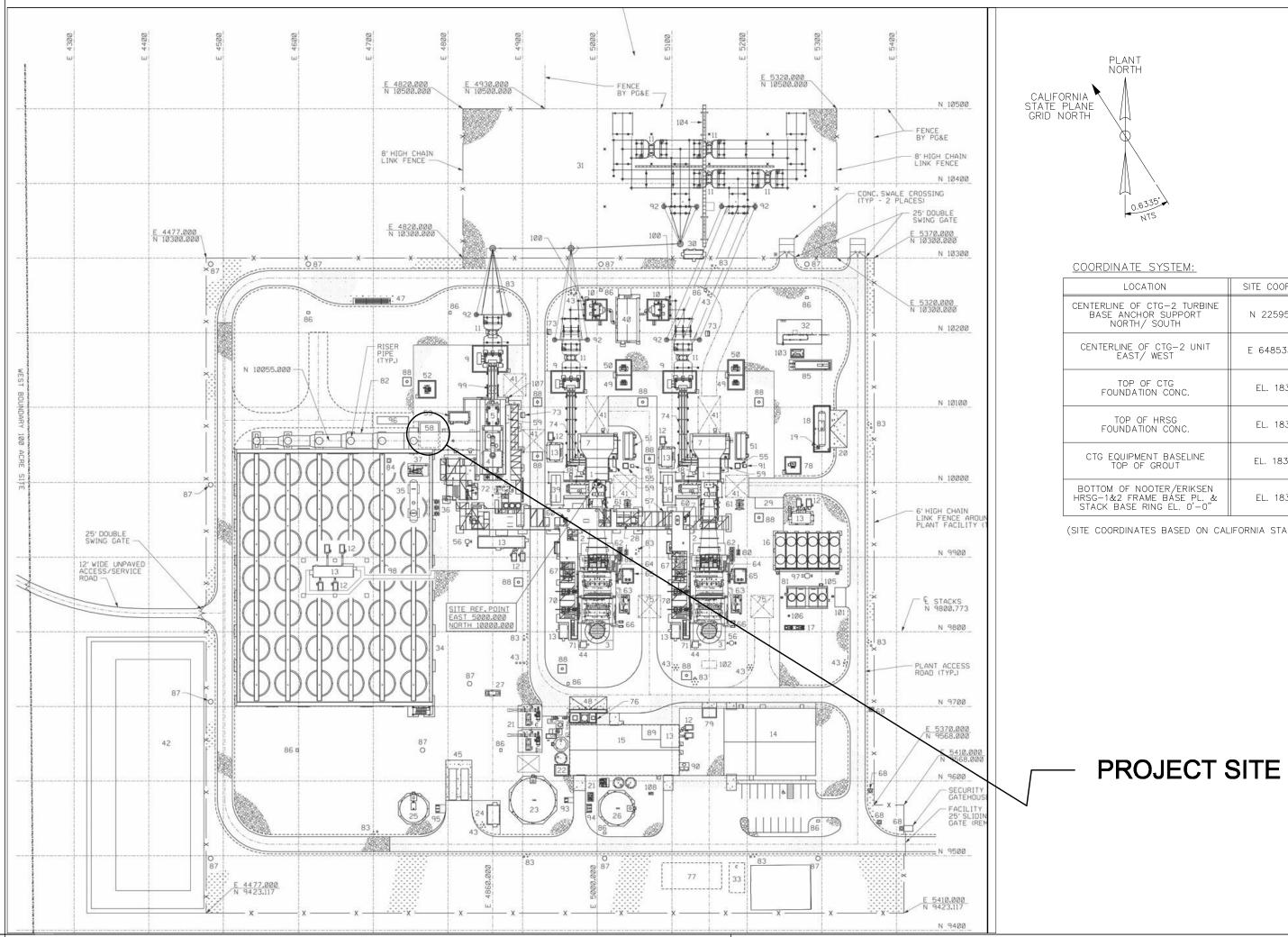
EQ

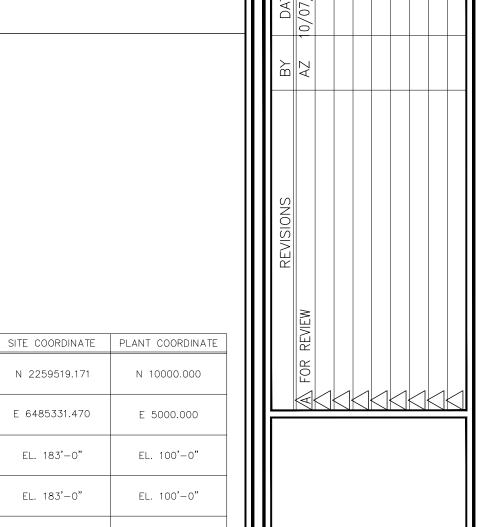
EXST, (E) existing

CONC

7770 PARDEE LANE **DAKLAND, CA 94621** PHONE: (510) 636-8500 FAX: (510) 636-8544

# LOCATION PLAN





EL. 183'-0"

EL. 183'-0"

DRAWING INDEX

TITLE SHEET

GENERAL NOTES

STAIRWAY LAYOUT

SECTIONS AND DETAILS

STANDARD STAIR DETAILS

STANDARD RAIL DETAILS

SHEET DWG NO. SHEET TITLE

C-1

SD-2

EL. 100'-0"

EL. 100'-1?"

EL. 100'-3"

PACIFIC GAS COLUSA GENI MAXWELL, CA

DATE 10/07/2016

SCALE AS NOTED DRAWING No.

JOB NO. 16R-123

1 of 6 ISSUE

# VICINITY MAP

# SCOPE OF PROJECT

SITE PREPARATION AND FOUNDATION CONSTRUCTION FOR

PROJECT SITE —

SCOPE OF WORK ON THESE PLANS INCLUDE: 70 FT X 130 FT WAREHOUSE BUILDING.

# GENERAL NOTES

- ALL WORK SHALL BE IN COMPLIANCE WITH THE 2013 CALIFORNIA BUILDING CODE, 2013 CALIFORNIA FIRE CODE, 2013 CALIFORNIA MECHANICAL CODE, 2013 CALIFORNIA ELECTRICAL CODE, 2013 CALIFORNIA PLUMBING CODE, AND ALL APPLICABLE LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE PROJECT DOUCMENTS WITH CONDITIONS AT THE SITE, AND SHALL VERIFY EXISTING DIMENSIONS, ELEVATIONS, AND CONDITIONS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINER AND SHALL BE RESOLVED BEFORE PROCEEDING WITH THE WORK. ANY DEVIATION, SUBSTITUTION OR ALTERATION TO THE DESIGN SHALL BE SUBJECT TO REVIEW BY THE ENGINEER.
- ALL BUILDING AND UTILITY INFORMATION SHALL BE VERIFIED AND/OR REVISED AS NECESSARY BY THE CONTRACTOR IN THE FIELD.
- DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE APPLIED, SUBJECT TO REVIEW BY THE ENGINEER.
- THIS IS AN ENERGIZED FACILITY. CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO PREVENT CONTACT WITH HIGH VOLTAGE EQUIPMENT, CONDUITS, AND POWER LINES.
- CONTRACTOR SHALL SUBMIT 3 SETS OF SHOP DRAWINGS TO THE OWNER (PG&E) FOR APPROVAL.
- . STRUCTURAL CONSULTATION AND OBSERVATION BY THE DESIGN ENGINEER SHALL BE PERFORMED ON A "AS NEEDED BASES".
- B. ALL WORK OR CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES, REGULATION AND SAFETY REQUIREMENTS.
- DISCREPANCIES: THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY DISCREPANCIES OR OMISSIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS OR OF ANY VARIATIONS NEEDED IN ORDER TO CONFORM TO CODES, RULES AND REGULATIONS. UPON RECEIPT OF SUCH INFORMATION, THE ENGINEER WILL SEND WRITTEN INSTRUCTIONS TO ALL CONCERNED. ANY SUCH DISCREPANCY, OMISSION, OR VARIATION NOT REPORTED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND WORK SHALL BE PERFORMED IN A MANNER AS DIRECTED BY THE ENGINEER.
- 10. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO DESIGN AND PROVIDE ADEQUATE SAFETY PRECAUTIONS AS REQUIRED FOR THE PROTECTION OF LIFE AND PROPERTY DURING THE CONSTRUCTION.
- 11. SAFETY: THE CONTRACTOR SHALL ADEQUATELY PROTECT HIS WORK, ADJACENT PROPERTY, AND THE PUBLIC, AND BE RESPONSIBLE FOR DAMAGE OR INJURY DUE TO HIS ACT OR NEGLECT.
- 12. INSPECTIONS: ANY INSPECTIONS, SPECIAL OR OTHERWISE, THAT ARE REQUIRED BY THE BUILDING CODES, LOCAL BUILDING DEPARTMENTS, OR THESE PLANS, SHALL BE DONE BY AN INDEPENDENT INSPECTION COMPANY. JOB SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE, OR SUBSTITUTE. INSPECTIONS UNLESS SPECIFICALLY CONTRACTED FOR.
- 13. ALL CONTRACTORS AND SUBCONTRACTORS PERFORMING WORK SHOWN ON OR RELATED TO THESE PLANS SHALL CONDUCT THEIR OPERATIONS SO THAT ALL EMPLOYEES ARE PROVIDED A SAFE PLACE TO WORK AND PG&E EMPLOYEES AND THE PUBLIC ARE PROTECTED. ALL CONTRACTORS AND SUBCONTRACTORS SHALL COMPLY WITH THE "OCCUPATIONAL SAFETY AND HEALTH REGULATION" OF THE U.S. DEPARTMENT OF LABOR AND WITH THE STATE OF CALIFORNIA DEPT. OF INDUSTRIAL RELATIONS' "CONSTRUCTION SAFETY ORDERS."
- 14. THE CIVIL ENGINEER SHALL NOT BE RESPONSIBLE IN ANY WAY FOR THE CONTRACTORS' AND SUBCONTRACTORS' COMPLIANCE WITH THE "OCCUPATIONAL SAFETY AND HEALTH REGULATION: OF THE U.S. DEPARTMENT OF LABOR OR WITH THE STATE OF CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS' "CONSTRUCTION SAFETY ORDERS."
- 15. CONTRACTOR AGREES THAT HE/SHE WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE ENGINEER.
- 16. PERMITS: THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL OBTAIN ALL REQUIRED PERMITS.
- 17. ALL CONTRACTORS PERFORMING WORK ON THIS PROJECT SHALL FAMILIARIZE THEMSELVES WITH THE SITE AND SHALL BE SOLELY RESPONSIBLE FOR ALL DAMAGE TO EXISTING FACILITIES RESULTING DIRECTLY OR INDIRECTLY FROM THEIR OPERATIONS, WHETHER OR NOT SHOWN ON THESE DRAWINGS.
- 18. AS-BUILTS:THE CONTRACTOR SHALL SUBMIT "AS-BUILT" DRAWINGS TO THE OWNER (PG&E) UPON COMPLETION OF WORK.

# CONSTRUCTION

- FIRE EXTINGUISHER: CONTRACTOR SHALL PROVIDE AND MAINTAIN A PORTABLE FIRE EXTINGUISHER OF THE TYPE SIZE APPROVED BY THE FIRE DEPARTMENT FIELD INSPECTOR AT THE JOB SITE THROUGHOUT CONSTRUCTION.
- NO HAZARDOUS MATERIALS: NO HAZARDOUS CHEMICALS OR MATERIALS SHALL BE USED OR STORED IN THIS AREA OR ADJACENT AREAS TO THIS PROJECT.
- COMPLY W/DRAWINGS: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE, SUPERVISE, AND COMMUNICATE WITH THE ENGINEER, OWNER, AND SUBCONTRACTORS ALL WORK TO INSURE CONFORMANCE WITH THE APPROVED DRAWINGS AND SPECIFICATIONS.

# CONSTRUCTION (CONT'D)

- 4. PRIOR WRITTEN APPROVAL AND HOT WORK PERMIT FOR ALL FIELD WELDING IS REQUIRED.
- 5. RIGGING: ALL RIGGING SHALL BE SCHEDULED, COORDINATED, AND HAVE PRIOR APPROVAL FROM OWNER (PG&E).
- 6. SITE CLEANLINESS: CONTRACTOR SHALL PROVIDE LABOR AND EQUIPMENT FOR DEMOLITION AND REMOVAL OF DEBRIS. LIMITED CONSTRUCTION SPACE REQUIRES THAT ACCUMULATION OF DEBRIS BE REMOVED AT FREQUENT INTERVALS.
- 8. COMPACTION (MIN): ALL FILL AND BACK FILL SHALL BE COMPACTED TO NOT LESS THAN 95 PERCENT OF MAXIMUM DENSITY AS DETERMINED BY A.S.T.M. SOIL COMPACTION TEST D1557-90T.
- 9. FIELD DENSITY: SHALL BE DETERMINED BY NUCLEAR GAUGE OR DRIVE CYLINDER METHOD. IN FINE-GRAINED COHESIVE SOILS, FIELD DENSITY MAYBE DETERMINED BY THE DRIVE-CYLINDER METHOD, A.S.T.M. D2937-71, THE METHOD OF DETERMINING FIELD DENSITY SHALL BE SHOWN IN THE COMPACTION REPORT. OTHER METHODS MAY BE USED IF RECOMMENDED BY THE SOIL ENGINEER AND APPROVED IN ADVANCE BY BUILDING OFFICIAL.
- 10. FILL PLACEMENT: NO FILL SHALL BE PLACED UNTIL STRIPPING OF VEGETATION, REMOVAL OF UNSUITABLE SOILS, AND INSTALLATION OF SUBDRAINS (IF ANY) HAVE BEEN INSPECTED AND APPROVED BY THE SOIL ENGINEER.
- 11. SAWCUT REMOVALS: ALL PAVEMENT AND CONCRETE REMOVALS SHALL BE SAWCUT.
- 12. BASE MATERIALS: AGGREGATE BASE SHALL BE EITHER CRUSHED AGGREGATE BASE OR CRUSHED MISCELLANEOUS RECYCLABLE BASE AS DEFINED IN SECTION 200-2.2 AND SECTION 200-2.4 RESPECTIVELY OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" UNLESS INDICATED
- 13. ADJUST (E) TO (F.G.): EXISTING SLABS, CURBS, GUTTERS AND ASPHALT & CONCRETE PAVEMENT WITHIN THE LIMITS OF NEW CONSTRUCTION SHALL BE ADJUSTED TO FINAL GRADE, UNLESS INDICATED OTHERWISE.
- 14. CONCRETE JOINTS: JOINTS IN CONCRETE CURBS, GUTTERS AND WALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 303-5.4 OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" UNLESS INDICATED OTHERWISE.
- 15. CONSTRUCTION DUST CONTROL: MEASURES SHALL BE REQUIRED IN ACCORDANCE WITH CITY'S DUST CONTROL ORDINANCE. GRADING WILL BE DISCONTINUED DURING FIRST-STAGE SMOG DURING CONSTRUCTION DUST CONTROL ALERTS AND SUSPENDED DURING PERIODS OF HIGH WIND, I.E. OVER 15 MPH ALL HAULING TRUCKS SHALL HAVE LOADS COVERED OR WETTED AND LOADED BELOW THE SIDEBOARD LEVEL TO MINIMIZE DUST.

## **EXCAVATION**

- 1. SPECIAL CARE TO BE TAKEN WHEN EXCAVATING FOR FOOTINGS TO AVOID DAMAGE TO UNDERGROUND PIPING.
- 2. ALL EXCAVATION TO BE DONE BY HAND WITH PRIOR APPROVAL FROM THE OWNER (PG&E).
- 3. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS AND UTILITIES IN ACCORDANCE TO THE OWNERS REQUIREMENTS.
- 4. UNDERGROUND UTILITIES: THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN AND ALL OTHER UTILITY LINES OR STRUCTURES NOT SHOWN ON THESE PLANS.

# CONCRETE ANCHORS

- 1. POST-INSTALLED ANCHORS SHALL BE AS FOLLOWS. NO SUBSTITUIONS ARE ALLOWED UNLESS WRITTEN APPROVAL IS GIVEN BY THE ENGINEER. ALL ANCHORS SHALL MEET THE REQUIREMENTS OF THE ICC REPORT LISTED.
  - A. MECHANICAL ANCHORS SHALL BE HILTI KWIK BOLT TZ STAINLESS STEEL ANCHORS INSTALLED PER ICC ESR-1917. PERIODIC SPECIAL INSPECTION IS REQUIRED.
  - B. ADHESIVE ANCHORS SHALL BE HILTI HIT-RE 500-SD ADHESIVE ANCHORS INSTALLED PER ICC ESR-2322. UNLESS NOTED OTHERWISE, USE STAINLESS 17. ROUGHENED SURFACES: WHERE INDICATED ON THE DRAWINGS, ROUGHENED STEELTHREADED ROD . PERIODIC SPECIAL INSPECTION IS REQUIRED.

# SPECIAL INSPECTIONS

- 1. ANY INSPECTIONS, SPECIAL OR OTHERWISE, THAT ARE REQUIRED BY THE BUILDING CODES, LOCAL BUILDING DEPARTMENTS, OR THESE PLANS, SHALL BE DONE BY AN INDEPENDENT INSPECTION COMPANY. JOB SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE, OR SUBSTITUTE, INSPECTIONS UNLESS SPECIFICALLY CONTRACTED FOR.
- 2. THE CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL SPECIAL INSPECTIONS REQUIRED BY THE STATE AND LOCAL AGENCIES AS STATED IN THE 2013 CBC SECTION 1704.

# CONCRETE AND REINFORCEMENT

- 1. DEBRIS: REMOVE ALL DEBRIS FROM FORMS BEFORE POURING.
- 2. INSERTS: ALL ITEMS TO BE CAST IN CONCRETE SUCH AS REINFORCING, DOWELS, BOLTS, ANCHORS, PIPES, SLEEVES, ETC., SHALL BE SECURELY POSITIONED IN THE FORMS BEFORE PLACING CONCRETE.
- 3. SPLICES: SPLICE BARS IN MEMBERS SUCH AS SPANDRELS, BEAMS, ETC., AS FOLLOWS: TOP BARS AT CENTERLINE OF SPAN, BOTTOM BARS AT THE SUPPORT. ALL REINFORCING STEEL SHALL BE SECURELY WIRED AND PROPERLY SUPPORTED ABOVE GROUND AND AWAY FROM THE FORMS.
- CONSTRUCTION JOINTS: CONSTRUCTION JOINTS SHALL HAVE ENTIRE SURFACE REMOVED TO EXPOSE CLEAN, SOLIDLY EMBEDDED AGGREGATE. THE CONTRACTOR SHALL OBTAIN THE ENGINEER'S APPROVAL OF CONSTRUCTION JOINT LOCATION IN SLABS AND BEAMS.
- TEMPERATURE AND SHRINKAGE REINFORCEMENT: SHALL HAVE A LAP OF THIRTY (30) BAR DIAMETERS, BUT NOT LESS THAN 18 INCHES, AND THE SPLICES IN ADJACENT BARS SHALL BE NOT LESS THAN FIVE (5) FEET APART.
- 6. REBAR GRADES: ALL REINFORCING STEEL SHALL BE NEW STOCK DEFORMED BARS CONFORMING TO ASTM A615 OR A706 AS FOLLOWS:
  - ...GRADE 40 #3 & SMALLER BARS.... #4 & LARGER BARS..... ...GRADE 60
- 7. WELDED WIRE FABRIC: WELDED WIRE FABRIC SHALL CONFORM TO ASTM A82 AND A185.
- WELDING: TACK WELDING OF REBAR IS NOT PERMITTED UNLESS CALLED FOR OR APPROVED BY THE ENGINEER. WELDING OF STIRRUPS. TIES, INSERTS OR OTHER SIMILAR ELEMENTS TO LONGITUDINAL REINFORCING BARS SHALL NOT BE PERMITTED.
- REBAR COVER: MINIMUM REBAR COVER FOR CONCRETE SHALL BE AS SHOWN IN THIS TABLE:

EXPOSURE CONDITION	MINIMUM COVER	TOLERANCE (-)
CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:	3"	3/8 INCH
EXPOSED TO EARTH OR WEATHER:		
NO. 5 AND SMALLER BARS	1-1/2"	1/4 INCH
NO. 6 AND LARGER BARS	2"	1/4 INCH
SLABS ON GRADE TOP BARS:	1-1/2"	1/4 INCH
BOTTOM BARS:	3"	3/8 INCH

- 10. TOLERANCES FOR REBAR PLACEMENT: TOLERANCE FOR LONGITUDINAL LOCATION OF BENDS AND ENDS OF REINFORCEMENT SHALL BE PLUS OR MINUS TWO (2) INCHES, EXCEPT AT DISCONTINUOUS ENDS OF MEMBERS WHERE TOLERANCES SHALL BE  $\pm 1/2$  INCH.
- 11. CONCRETE QUALITY: SHALL BE AS SHOWN IN TABLE BELOW:

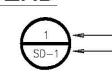
CONCRETE USE	STRENGTH AT 28 DAYS	SLUMP	AIR	AGGREGATE SIZE	AGGREGATE TYPE
ALL (OTHERWISE NOTED)	4000	4"	<u></u> 01	1"	HARDROCK
PILE FOUNDATION	5000	4"	===	1"	HARDROCK

- 12. CONCRETE WEIGHT: ALL CONCRETE SHALL BE OF REGULAR WEIGHT OF 145 POUNDS PER CUBIC FOOT UNLESS NOTED OTHERWISE.
- 13. AGGREGATE: SIZE OF AGGREGATE SHALL CONFORM TO ASTM C33-85. ...ASTM SIZE C67 ..ASTM SIZE C57
- 14. CEMENT: SHALL BE TYPE II.
- 15. CONCRETE AGE: NO MORE THAN 90 MINUTES SHALL ELAPSE BETWEEN CONCRETE BATCHING AND CONCRETE PLACEMENT UNLESS APPROVED BY TESTING
- 16. WET SET: REINFORCEMENT MAY NOT BE WET SET IN CONCRETE POURS.
- SURFACES SHALL BE PROVIDED BY MEANS OF HEAVY RAKING OR GROOVING. OTHER METHODS MAY BE ACCEPTABLE PENDING WRITTEN APPROVAL FROM THE ENGINEER. ALL INTERFACING SURFACES MUST BE CLEAN AND FREE OF LOOSE MATERIALS.
- 18. ADMIXTURES: NO ADMIXTURES SHALL BE ADDED TO THE CONCRETE MIX WITHOUT THE APPROVAL OF THE ENGINEER, UNLESS NOTED OTHERWISE. ADMIXTURES OR CONCRETE CONTAINING CHLORIDES SHALL NOT BE USED.

# STEEL NOTES

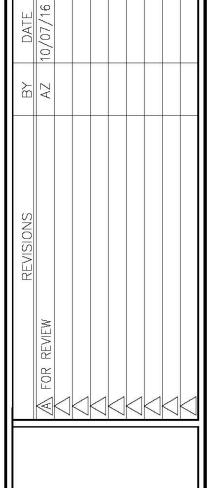
- 1. ALL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE A.I.S.C. "STEEL CONSTRUCTION MANUAL", LATEST EDITION. THE ERECTOR SHALL MEET ALL CAL O.S.H.A. SAFETY STANDARDS.
- 2. THE CONTRACTOR IS RESPONSIBLE FOR THE FIT OF ALL STRUCTURAL STEEL AND SHALL VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
- 3. WELDING SHALL BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE" USING E70 ELECTRODES. QUALIFIED WELDERS APPROVED BY THE BUILDING DEPARTMENT SHALL PERFORM ALL STRUCTURAL WELDING. A REGISTERED DEPUTY INSPECTOR SHALL CONTINUOUSLY INSPECT ALL FIELD WELDING BY USING NONDESTRUCTIVE TESTING OF ALL FULL PENETRATION WELD CONNECTIONS. WELDERS SHALL HAVE LIGHT GAUGE STEEL CERTIFICATION WHEN WELDING LIGHT GAUGE
- 4. ALL EXPOSED WELDS SHALL BE FILLED AND GROUND SMOOTH WHERE METAL COULD COME IN CONTACT WITH BUILDING OCCUPANTS.
- 5. BASE PLATES SHALL BE SHOP WELDED TO THE COLUMNS. ENDS OF COLUMNS SHALL BE CUT SQUARE TO ALLOW FOR FULL BEARING. TERMINATE ALL BASEPLATE WELDS AT LEAST 1/2" FROM FLANGE TOES AND "K" REGION.
- 6. NO CUTTING, BURNING, OR HOLES OTHER THAN THOSE SPECIFICALLY DETAILED SHALL BE ALLOWED THROUGH STRUCTURAL STEEL MEMBERS WITHOUT PRIOR CONSENT OF THE ENGINEER. BOLT HOLES SHALL CONFORM TO AISC SPECIFICATION, AND SHALL BE STANDARD HOLES UNLESS NOTED OTHERWISE.
- 7. CONNECTIONS SHALL HAVE THE CONNECTION ANGLES SHOP WELDED AND FIELD BOLTED.
- 8. CONNECTIONS SHALL BE MADE WITH ASTM A325 3/4" DIA. GALVANIZED BOLTS UNLESS OTHERWISE NOTED. BOLTED CONNECTIONS UNDER TENSION SHALL BE PRETENSIONED JOINTS. ALL OTHER BOLTED CONNECTIONS CAN BE SNUG TIGHTENED JOINTS.
- 9. BOLTED CONNECTIONS SHALL BE INSPECTED PER RCSC SPECIFICATION, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, JUNE 30, 2004" BY A.I.S.C.
- 10. COLUMN BASE PLATES SHALL BE GROUTED WITH "FIVE-STAR" NON-SHRINK GROUT OR APPROVED ALTERNATE, WHERE REQUIRED. MINIMUM COMPRESSIVE STRENGTH SHALL BE 5,000 PSI U.N.O. ALL SURFACES SHALL BE PROPERLY CLEANED OF FOREIGN MATERIAL PRIOR TO THE GROUTING OPERATION.
- 11. PROVIDE MILL REPORTS AND IDENTIFICATION OF STEEL (AFFIDAVIT OF COMPLIANCE) AS REQUIRED BY THE GOVERNING AGENCY.
- 12. RECTANGULAR TUBULAR STEEL MEMBERS SHALL CONFORM TO ASTM A500, GRADE B, FY=46 KSI. CIRCULAR PIPE MEMBERS SHALL BE ASTM A53, GRADE B. ALL W AND T SHAPES SHALL BE ASTM A992. CHANNELS, ANGLES, AND PLATES SHALL BE ASTM A36,
- 13. PAINT UNGALVANIZED STEEL WITH ONE SHOP COAT OF ZINC CHROMATE PRIMER OR EQUAL. FIELD CONNECTIONS AND DAMAGED PAINT SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER (PG&E).
- 14. FLOOR GRATING SHALL BE TYPE W-19-4 WITH 1 1/2" X 3/16" BARS U.O.N.
- 15. ALL PLATFORM STEEL INCLUDING BUT NOT LIMITED TO GUARDRAILS, HANDRAILS, CAGES, LADDERS, AND FLOOR GRATING SHALL BE HOT DIP GALVANIZED ACCORDING TO ASTM
- 16. APPLY COLD GALVANIZING COMPOUND TO ALL SHOP AND FIELD CONNECTIONS MADE ON ALL GALVANIZED MEMBERS TO THE SATISFACTION OF THE OWNER (PG&E).
- 17. ALL NEW PLAIFORMS TO HAVE 3 INCHES MINIMUM CLEARANCE FROM ALL PIPES AND EQUIPMENT.

# LEGEND



- SECTION OR DETAIL NUMBER - DRAWING NUMBER ON WHICH SECTION OR DETAIL APPEARS

EXISTING STRUCTURE OR EQUIPMENT

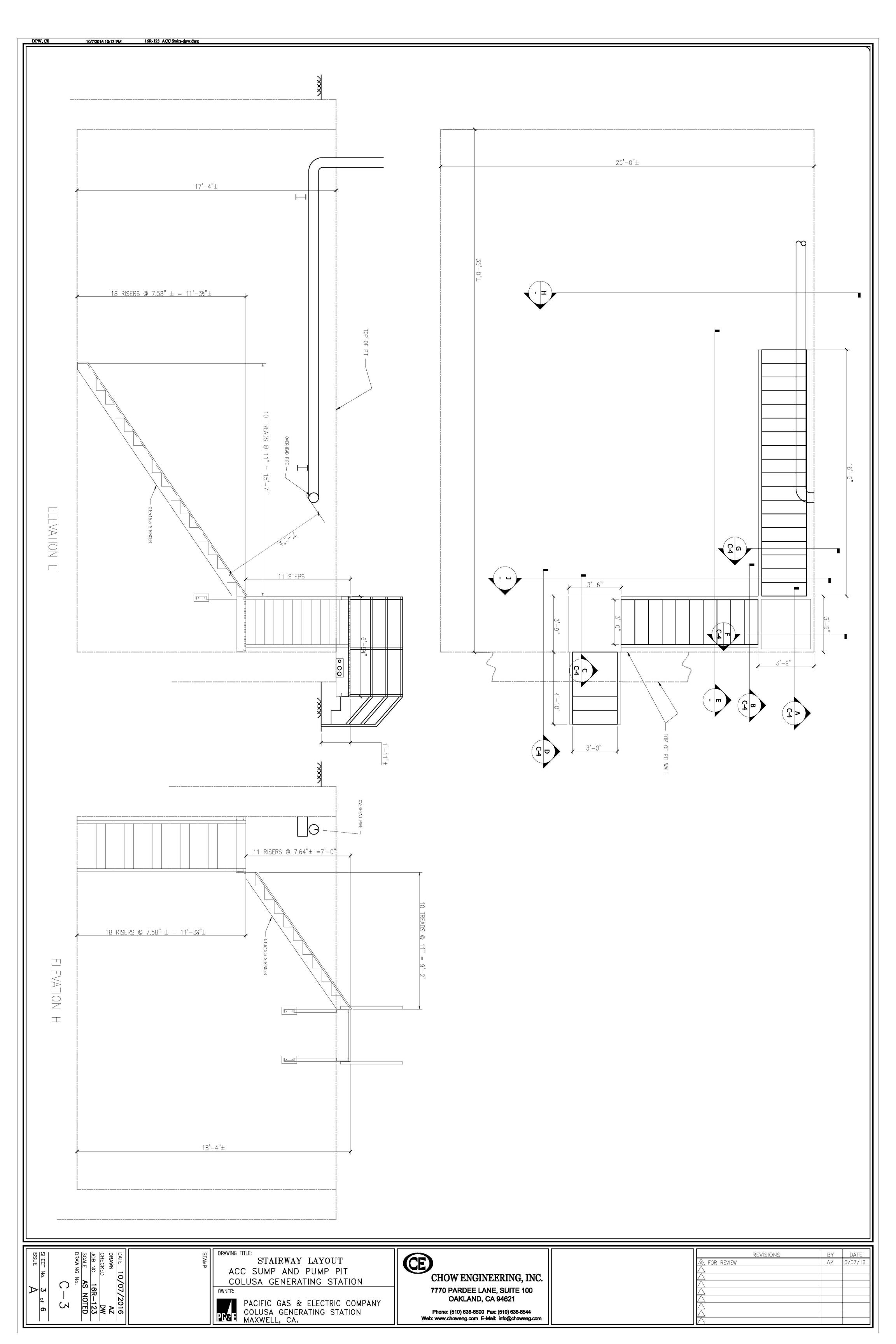


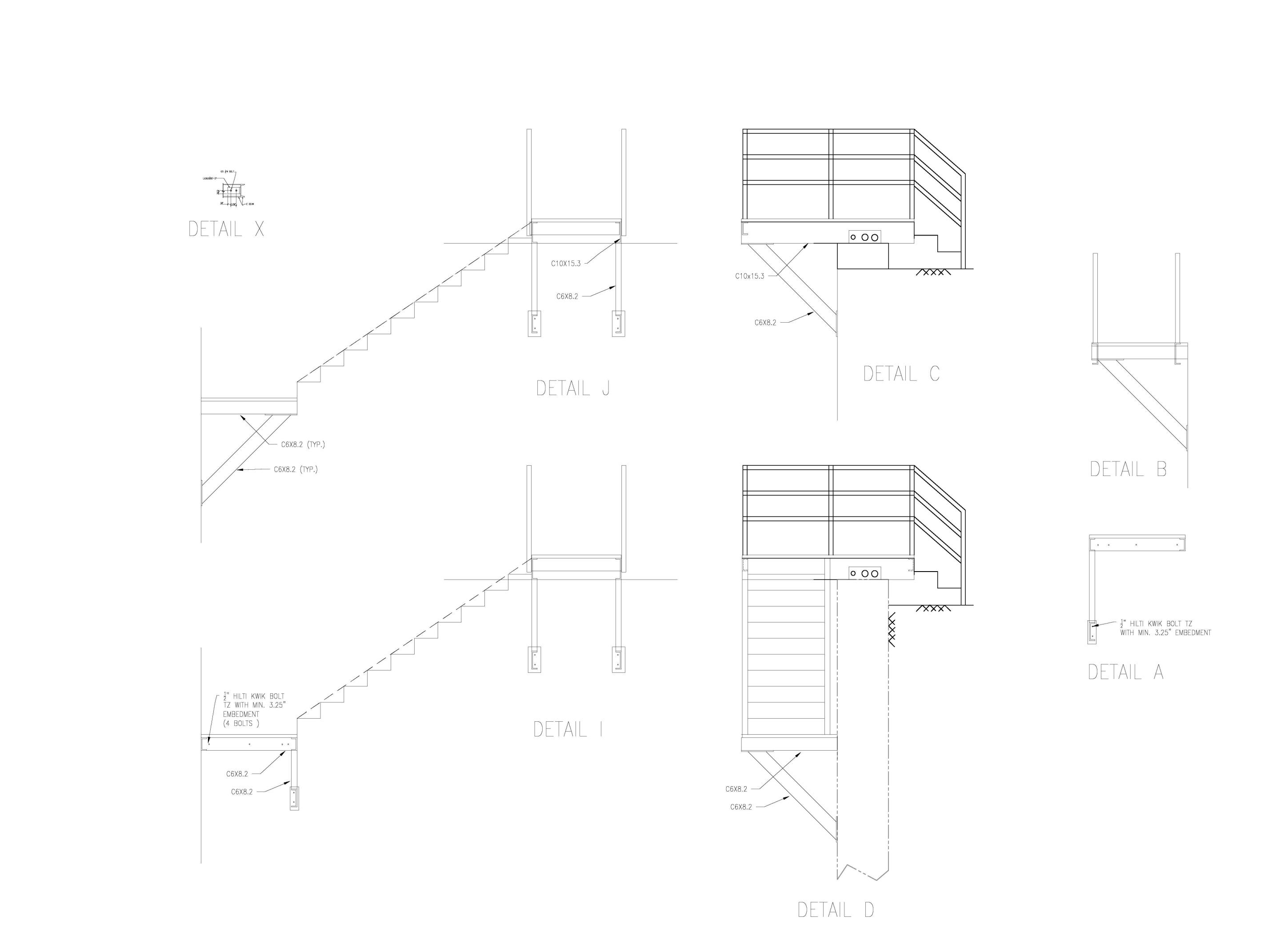
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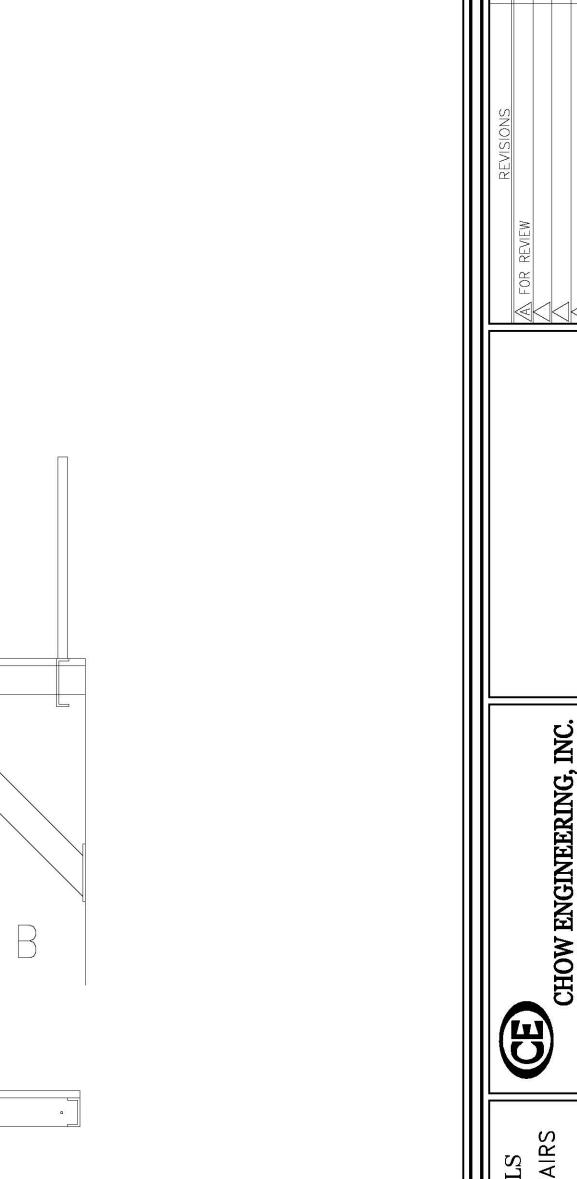
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C-2

SHEET No. 2 of 6







C SUMP AND PUMP PIT STAIR
LUSA GENERATING STATION
PACIFIC GAS & ELECTRIC COMPANICATION
COLUSA GENERATING STATION

ACC

DATE 10/07/2016
DRAWN AZ
CHECKED DW
JOB NO. 16R-123
SCALE AS NOTED
DRAWING No.

NG No.

SHEET No. 4 of 6

