

APPENDIX 2-2
STRUCTURAL ENGINEERING DESIGN CRITERIA

1.0 INTRODUCTION

The design, engineering, procurement, and construction activities on the project will be completed in accordance with various predetermined standard practices and project specific programs/practices. An orderly sequence of events for the implementation of the project is planned consisting of the following major activities:

- Conceptual design
- Licensing and permitting
- Detailed design
- Procurement
- Construction and construction management
- Start-up, testing, and checkout
- Project completion

The purpose of this appendix is to summarize the codes and standards and standard design criteria and practices that will be used during the project engineering, design and construction phases of the project. These criteria form the basis of the design for the structural components and systems for the project. More specific design and construction relation specifications and criteria will be developed during detailed design to support equipment procurement and construction. Section 2.0 summarizes the applicable codes and standards and Section 3.0 includes the general criteria for natural phenomena, design loads, architectural features, concrete, steel and Earthquake design. Section 4.0 describes the structural design methodology for structures and equipment. Section 5.0 describes the hazard mitigation for the project.

The following Attachment is part of this document:

Attachment-1 Representative Drawings

2.0 DESIGN CODES, STANDARDS, LAWS AND ORDINANCES

The design and specification of work shall be in accordance with all applicable laws and regulations of the federal government, the State of California, and with the applicable local codes and ordinances. The following Laws, Ordinances, Codes and Standards have been identified as applying to structural engineering design and construction.

When an edition date is not indicated, the latest edition and addenda at time of plant design and construction shall apply.

2.1 FEDERAL

Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards.

2.2 STATE

- Business and Professions Code Section 6704, et seq.; Section 6730 and 6736. Requires state registration to practice as a Civil Engineer or Structural Engineer in California.
- Labor Code Section 6500, et seq. requires a permit for construction of trenches or excavations 5 feet or deeper where personnel have to descend. This also applies to construction or demolition of any building, structure, false work or scaffolding which is more than three stories high or equivalent.
- Title 24, California Administration Code (CAC) Section 2-111, et seq.; Sections 3-100, et seq.; Section 4-106 et seq.; Section 5-102, et seq.; Section 6-T8-769, et seq.; Section 6-T8-3233, et seq.; Section ST8-3270, et seq.; Section 6-T8-5138, et seq.; Section 6-T8-5465, et seq.; Section 6-T8-5531, et seq.; and Section 6-T8-5545, et seq. Adopts current edition of UBC as minimum legal building standards.
- State of California Department of Transportation (Caltrans), Standard Specifications, July 1995.
- California Building Code (CBC).

2.3 INDUSTRY CODES AND STANDARDS

The following general design requirements and procedures will be followed in development of project specifications regarding the use of Codes and Industry Standards.

- Specifications for materials will generally follow the standard specifications of the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI).
- Field and laboratory testing procedures for materials will follow standard ASTM specifications.
- Design and placement of structural concrete will follow the recommended practices and the latest version of the American Concrete Institute (ACI), California Building Code (CBC), and the Concrete Reinforcing Steel Institute (CRSI).
- Design, fabrication, and erection of structural steel will follow the recommended practices and the latest version of the American Institute of Steel Construction Code (AISC) and CBC and IBC.

APPENDIX 2-2

STRUCTURAL ENGINEERING DESIGN CRITERIA

- Steel components for metal wall panels and roof decking will conform to the American Iron and Steel Institute (AISI) Specification for the Design of Light Gage Cold-Formed Structural Members.
- Welding procedures and qualifications for welders will follow the recommended practices and codes of the American Welding Society (AWS).
- Preparation of metal surfaces for coating systems will follow the specifications and standard practices of the Steel Structures Painting Council (SSPC), National Association for Corrosion Engineers (NACE), and the specific instructions of the coatings manufacturer.
- Fabrication and erection of grating will follow applicable standards of the National Association of Architectural Metals Manufacturers (NAAMM).
- Design and erection of masonry materials will follow the recommended practices and codes of the latest revision of the ACI Concrete Masonry Structures Design and Construction Manual, International Building Code (IBC), and California Building Code (CBC).
- Plumbing will conform to the International Plumbing Code (IPC).
- Design will conform to the requirements of the Federal and California Occupational Safety and Health Administration (OSHA and CALOSHA).
- Design of roof coverings will conform to the requirements of the National Fire Protection Association (NFPA) and Factory Mutual (FM).

The following Codes and Industry Standards shall be used:

- International Building Code, 2006 Edition.
- California Building Code (CBC) 2001 Edition or later if adopted.
- American Society of Civil Engineers (ASCE 7-05), Minimum Design Loads for Buildings and other Structures.
- American Institute of Steel Construction (AISC).
 - S360-05 – “Specification for Structural Steel Buildings
 - S303-05 – “Code of Standard Practice for Steel Buildings and Bridges”
 - AISC 325-05 – Steel Construction Manual, 13th Edition
 - AISC 327-05 – “AISC Earthquake Design Manual.”
- American Iron and Steel Institute (AISI), NAS-01 “North American Specification for the Design of Cold-Formed Steel Structural Members,” including 2004 Supplement

APPENDIX 2-2
STRUCTURAL ENGINEERING DESIGN CRITERIA

- American Welding Society (AWS) , AWS D1.1-04 “Structural Welding Code-Steel
- American Concrete Institute (ACI).
 - ACI 318-05 “Building Code Requirements for Structural Concrete
 - ACI 530-05 “Building Code Requirements for Masonry Structures
 - ACI 350-01 “Code requirements for Environmental Engineering Concrete Structures.”
- American Society for Testing and Materials (ASTM).
 - ASTM A36/A36M-04 “Standard Specification for Carbon Structural Steel”
 - ASTM A53A53M-02 “Standard Specification for Pipe, Steel Black and Hot-Dipped, Zinc Coated, Welded and Seamless”
 - ASTM A82-02 “Standard Specification for Steel Wire, Plain, for Concrete Reinforcement”
 - ASTM A153-03 “Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware”
 - ASTM A185-02 “Standard Specification for Welded Steel Wire Reinforcement , Plain, for Concrete”
 - ASTM A307-03 “Standard Specification for Carbon Steel Bolts and Studs. 60,000 psi Tensile Strength”
 - ASTM A325-04 “ Standard Specification for Structural Bolts, Steel , Heat Treated”
 - ASTM A500-03a “Standard Specification for Cold-formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes”
 - ASTM A563-04 “Standard Specification for Carbon and Alloy Steel Nuts
 - ASTM A572/A572M-04 “ Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel”
 - ASTM A615/A615M-04a “Standard Specification Deformed and Plain Billet-Steel Bars for Concrete Reinforcement”
 - ASTM A653/A653M—04a “ Standard Specification for Steel Sheet, Zinc-coated Galvanized or c-iron Alloy-coated Galvanized by Hot-dip Process”
 - ASTM A992/A992M-04 “ Standard Specification for Steel Structural Shapes for Use in Building Framing”
- Masonry Institute of America, “Reinforced Masonry Engineering Handbook”

- American Water Works Association (AWWA).
 - AWWA D100-2005 “Welded Steel Tanks for Water Storage.
 - AWWA C301-99 “Prestressed Concrete Pressure Pipe, Steel Cylinder Type for Water and Other Liquids”
 - AWWA C302-2004 “Standards for Reinforced Concrete Water Pipe Noncylinder Type, Not Prestressed”
- American Association of State Highway and Transportation Officials (AASHTO) (GDHS-2-1990), “A Policy on Geometric Design of Highways and Streets.”
- Heating, Ventilating, and Air Conditioning Guide by American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE).
- International Plumbing Code, IPC-06.
- International Association of Plumbing and Mechanical Officials.
- NFPA-01-2006, Uniform Fire Code
- Steel Structures Painting Council Standards (SSPC).

3.0 STRUCTURAL DESIGN CRITERIA

3.1 NATURAL PHENOMENA

3.1.1 Rainfall

The in-plant surface drainage system will be designed and constructed for a 10-year frequency storm. Temporary facilities will be designed for the 2-year storm. U.S. Bureau Technical Paper No. 40, rainfall intensity charts will be utilized in the design.

3.1.2 Wind Speed

The design basis wind speed will be based on ASCE 7-05.

3.1.3 Temperature

Systems and system component design criteria, which require ambient temperature extremes, shall use the range 14°F to 115°F for dry-bulb temperatures.

3.1.4 Earthquake

The plant site is located in high Earthquake zone and the mapped maximum credible accelerations and design response spectrum shall be determined from Section 1613 of IBC 2006.

3.1.5 Snow

The plant site is located in a zero ground snow load area.

3.2 DESIGN LOADS, LOAD COMBINATIONS AND ALLOWABLE STRESSES

Design loads for all structures will be determined according to the criteria described below, unless the applicable building code requires more severe design conditions. The power plant shall be designed for Occupancy Category III in accordance with IBC Table 1604.5 and corresponding Importance Factors for wind and earthquake are applied.

3.2.1 Dead Loads (D)

Dead loads shall be considered permanent loads. They consist of the weights of the structure and all equipment of a permanent or semi permanent nature including tanks, bins, wall panels, partitions, roofing, piping, drains, electrical trays, bus ducts, and the contents of tanks and bins measured at full operating capacity. The contents of tanks and bins shall not be considered for resisting over turning due to wind forces, but shall be considered effective for resisting overturning for Earthquake forces.

3.2.2 Live Loads (L) or Roof Live Load (L_r)

Live loads are those defined by use or occupancy of building or structure. They consist of uniformly distributed, concentrated or equipment live loads. Uniform live loads are assumed unit loads which are sufficient to provide for movable and transitory loads, such as the weight of people, portable equipment and tools, planking and small equipment, or parts which may be moved over or placed on floors during maintenance operations. These uniform live loads shall not be applied to floor areas which will be permanently occupied by equipment or other dead load.

Equipment live loads are calculated loads based upon the actual weight and size of the equipment and parts to be placed on floors during dismantling and maintenance, or to be temporarily placed on or moved over floors during installation.

Consideration will be given to designing appropriate areas of the ground floor for support of heavy equipment such as construction and maintenance cranes. Grating floors will be designed for a minimum live loading of 75 pounds per square foot (psf).

Live loads may be reduced in accordance with the provisions of IBC Section 1607.9 for floors and Section 167.11.2 for roof. Live load reduction will not be permitted in areas where equipment laydown loads are considered.

All roof areas will be designed for live loads as indicated in IBC Subsection 1607.11. Roof shall also be designed for rain ponding load effect of IBC Section 1611. All roof areas will be designed for a minimum of 20 psf live load in addition to calculated dead loads.

Pipe hanger loads for the major piping systems will be specifically determined and located. Piping expansion and dynamic loads will be considered on an individual basis for their effect on the structural systems. Loads imposed on perimeter beams around pipe chase areas will also be considered on an individual basis.

Pipe loads for other areas will be treated as uniform loads per unit floor area, and will be carried to the columns and foundations as dead loads. Pipe loads will not be considered as reliable dead load for uplift.

Equipment loads will be specifically determined and located. For major equipment, structural members and bases will be specifically located and designed to carry the equipment load into the structural system. For equipment weighing less than the uniform live load, the structural system will be designed for the live load.

The combustion turbine support systems will be designed for the following loads:

- Dead loads
- Live loads
- Normal torque loads (turbine)
- Temperature and pressure loads
- Earthquake loads
- Emergency loads, such as turbine accident loads, and any temperature and pressure loads present during the emergency

3.2.3 Wind Loads (W)

Wind loads on structures, systems, and components will be determined from ASCE 7-05 and IBC 2006. Consideration will be given to along-wind and across-wind responses. A step function of pressure with height and Exposure C conditions will be used. The Importance Factor shall equal 1.15. Allowance shall not be made for the effect of shielding by other structures.

The overturning moment calculated from wind pressure shall not exceed two-thirds of the dead load resisting moment. The uplift forces calculated from the wind load pressure shall not exceed 2/3 of the resisting dead load. For determining stresses, all vertical design loads, except roof live loads, shall be considered to act simultaneously with the wind pressure.

3.2.4 Steel Stacks

The steel exhaust stacks and supports shall be capable of enduring specified normal and abnormal design operating conditions in combination with wind or Earthquake loads for the design life of the facility. Effects of wind will include along-wind and across-wind response. The design will address the design considerations, meet the requirements, and utilize the design methods of Steel Stacks, ASME STS-1-1992. Stack ladders, platforms, and ancillary structures will be designed in accordance with AISC Manual of Steel Construction, Thirteenth Edition. Design values for yield strength and modulus of elasticity of the stack material will depend on the composition of the material and the maximum temperature of the metal at design operating conditions, and will be as prescribed by the ASME Pressure Vessel Code, Section VIII, Division 2, Part AM. Earthquake loads shall be in accordance with IBC 2006. The maximum lateral displacement at the top of the stack due to design loads shall be 6 inches/100ft, assuming a rigid base (normal industry accepted deflection).

3.2.5 Earthquake Loads (E)

Loads shall be determined in accordance with the requirements specified in IBC2006 Section 1613.

3.2.6 Construction Loads

The integrity of the structures will be maintained without use of temporary framing struts or ties and cable bracing insofar as possible. However, construction or crane access considerations may dictate the use of temporary structural systems.

3.2.7 Load Combinations

At a minimum, buildings and other structures shall be designed to resist the load combinations specified in IBC 2006 Section 1605 for strength or allowable stress design.

3.3 BUILDINGS

General design criteria for the architectural systems are discussed in the following subsections.

3.3.1 Architectural System

General design criteria for materials and installation of architectural systems or components will be as follows:

- **Exterior Walls.** These will be metal wall panel systems of the factory assembled or field erected type with exposed fasteners and minimum thickness of exterior sheet of 24 gauge galvanized steel. Installed walls will be watertight and will provide a “U” factor in accordance with the California Administrative Code, Title 24 and the ASHRAE Handbook. Added insulation will be provided for sound absorption on walls enclosing equipment generating excessive noise.

- **Interior Walls.** Where durability is required, interior walls may be constructed of concrete block masonry, structurally designed and reinforced as required. In offices, shops, etc., metal studs with gypsum board will usually be used to form interior partitions. Insulation for sound control will be used where required by design.
- **Fire Exits and Doors.** Fire exits will be provided at outside walls as required by code. Exit signs will be provided. Fire doors will bear an Underwriters Laboratory (UL) certification level for class of opening and rating for door, frame, and hardware. Doors will conform to hollow metal door requirements and have fillers adequate to meet the fire rating.
- **Large Access Exterior Doors.** Large access exterior doors will be rolling steel type with weather seals and windlocks. Components will be formed from galvanized steel, factory assembled, and field painted. Doors will be motor-operated with override manual operation.
- **Metal Roof Deck and Insulation System.** Roof deck and insulation system will be fluted steel decking with minimum depth of 1-1/2 inches. The deck will have interlocking side laps.
 - The completed roof system shall carry an Underwriters Laboratory (UL) Class 90 rating in accordance with Underwriters Laboratory UL 580.
 - The roof system will have a minimum slope of 1/4 inch per foot. Deflection of the roof panels shall not exceed 1/180 of their span.
- **Painting.** Exterior steel material that is not galvanized or factory finished will be painted. Painted color will match or harmonize with the color of the exterior face of the wall panels.
- **Color Schemes.** Color schemes will be selected for overall compatibility.

3.3.2 Prefabricated Metal Buildings

Prefabricated metal buildings {packaged to include exterior doors, wall louvers, windows, skylights, and related enclosure components) will be furnished as follows:

- **Building Enclosure.** Building enclosures will be of manufacturer's standard modular rigid frame construction with tapered or uniform depth rafters rigidly connected at ends to pinned-base tapered or uniform depth columns. Purlins and girts will be cold-formed "C" or "Z" sections conforming to "Specifications for Design of Cold-Formed Steel Structural Members" of American Iron and Steel Institute. All other members will be hot rolled shapes conforming to "Specification for Design, Fabrication and Erection of Structural Steel for Buildings" of American Institute of Steel Construction. Metal roof coverings will be of pre-finished standing seam panels of 24 gauge minimum.
- **Steel.** Cold-formed components will conform to ASTM A570, Grade E, 42,000 pounds per square inch (psi) minimum yield for material thickness equal to or less than 0.23 inch, or to ASTM A375, 50,000 psi minimum yield for high tensile strength purlin or girt sections with material thickness equal to or less than 0.23 inch. Roof covering and wall covering will

conform to ASTM A446, Grade A, galvanized 33,000 psi minimum yield. All cold-formed components will be manufactured by precision roll or break forming.

3.4 CONCRETE STRUCTURES

Reinforced concrete structures will be designed in accordance with ACI 318-05, Building Code Requirements for Reinforced Concrete and the CBC.

3.4.1 Materials

The materials described below will be specified and used as a basis for design.

- **Reinforcing Steel.** Reinforcing steel shall meet the requirements of ASTM A615, Grade 60.
- **Cement.** Cement used in all concrete mixes will be Portland cement meeting the requirements of ASTM C150, Type I or Type II, unless soil condition requires a different type.
- **Aggregates.** Fine aggregates will be clean natural sand. Coarse aggregates will be crushed gravel or stone. All aggregates shall meet the requirements of ASTM C33.
- **Admixtures.** Plasticizers and retarders will be used to control setting time and to obtain optimum workability. Air entrainment of 4 to 6 percent by volume will be used in all concrete mixes. Calcium chloride will not be permitted. Interior slabs to be trowel finished may use less air entrainment,
- **Water.** Clean water of potable quality shall be used in all concrete.

3.4.2 Design

The system of concrete and steel reinforcing strength combinations will be used as follows:

- Concrete Compressive strength 4,000 psi minimum (at 28 days)
- Reinforcing strength – 60,000 psi, Grade 60.

3.4.3 Mixes

Concrete strength will be determined by ASTM C39.

3.4.4 Reinforcing Steel Test

Test reports certifying that reinforcing steel is in accordance with ASTM and project specifications will be required.

3.5 STRUCTURAL STEEL

Steel framed structures will be designed in accordance with the CBC and the AISC Specification for the Structural Steel Building. In addition, steel framed structures will be designed in accordance with the criteria discussed in the following subsections.

3.5.1 Materials

Structural steel shapes, plates, and appurtenances for general use will conform to ASTM A36 and A992. Structural steel required for heavy framing members may consider use of ASTM A572. Structural steel required for tube steel will conform to ASTM A500, Grade B. Connection bolts will conform to ASTM A325. Connections will conform to AISC Manual of Steel Construction. Welding electrodes will be as specified by the AWS. All structural steel will be hot dip galvanized. Alternatively structural steel can be shop primed and finish painted after fabrication.

3.5.2 Design

Steel structures, braced or rigid frame, shall be designed in accordance with Steel Construction Manual and ANSI/AISC-360-05, Specification for Structural Steel Buildings.

Suspended concrete slabs will be considered as horizontal diaphragms after setup and curing. Deflections of the support steel will be controlled to prohibit “ponding” of the fresh concrete as it is placed. Metal roof decks attached with welding washers or fasteners may be considered to provide a structure with lateral force diaphragm action.

Connections will be in accordance with AISC standard connection design for field bolted connections.

3.6 EARTHQUAKE DESIGN CRITERIA

This section provides the general criteria and procedures which will be used for Earthquake design of building and non-building structures.

The project is located in high Earthquake Zone and mapped Maximum Spectral Accelerations for 0.2 sec and 1 sec shall be determined from IBC 2006 Figure 1613.5(3) and 1613.5(4) respectively. The Earthquake performance objectives for this facility are as follows:

- Resist minor levels of ground motion without damage
- Resist moderate levels of ground motion without structural damage, but possibly experience some nonstructural damage
- Resist major levels of ground motion without collapse, but possibly with some structural as well as nonstructural damage

To achieve these objectives, the facility will be designed in accordance with the 2006 edition of the International Building Code and ASCE 7-05.

It should be noted that structures having one or more of the features listed in ASCE 7-05 Table 12.3-1 and Table 12.3.2 shall be designated as having a horizontal (plan) and vertical structural irregularity, respectively. All structures, regular or irregular, shall be designed by static or dynamic procedures in accordance with ASCE 7-05 Chapter 12 for Building Structures, Chapter 13 for Non-Structural Components and Chapter 15 for Non-Building Structures.

It should be also noted that additional provisions for torsional irregularity, overturning, discontinuous lateral load-resisting element, story drift limitation and P-Delta effects, etc. shall be considered in accordance with Chapter 12 of ASCE 7-05.

3.6.1 Buildings

The building structural system shall be constructed of steel framing supported on spread footings or piles if required, tied together by perimeter grade beams and floor slab. Lateral forces will be resisted by moment-frames in the short direction, braced-frames in the long direction, and by horizontal bracing in the roof level steel.

Earthquake forces will be computed by Chapter 12 of ASCE 7-05. The Earthquake dead load, D , will include the total dead load of the structural system, architectural enclosure, and the weight of any attached permanent equipment.

3.6.2 Non-Building Structures

Non-building structures such as tanks and equipment skids will be designed to resist Earthquake forces in accordance with ASCE 7-05 Chapter 15.

3.6.3 Non-Structural Components

Nonstructural components and equipment, including piping and cable tray and their supports, will be designed in accordance with ASCE 7-05 Chapter 13.

4.0 STRUCTURAL DESIGN METHODOLOGY

This section describes the structural aspects of the design of the proposed facility. Each major structural component of the plant is addressed by defining the design criteria and analytical techniques that will be employed.

4.1 STRUCTURES

4.1.1 Steam Turbine Generator Foundation

The Steam Turbine Generator (STG) foundation will be designed to support the turbine and generator components. The foundation will be designed to resist the loadings furnished by the Supplier and will be constructed of reinforced concrete.

4.1.1.1 Loads

Foundation loads will be furnished by the turbine Supplier and will be superimposed with loads of the foundation itself. Typical loading data will include the following:

- Dead loads
- Live loads
- Wind loads from project specific criteria
- Earthquake loads from project specific criteria
- Hydrostatic loads
- Temperature and pressure loads
- Emergency loads such as turbine accident loads

4.1.1.2 Anchor Bolts

The turbines and associated equipment will be securely anchored to the foundation using cast-in-place steel anchor bolts designed to resist the equipment forces.

4.1.1.3 Structural Design

The foundation will be designed and constructed as monolithic reinforced concrete structure. The foundation system will be a rigid mat supported on soil or piles if required.

The foundation design will address the following considerations:

- Soil bearings and earth pressures
- Allowable settlements
- Equipment, structure, and environmental loads
- Natural frequencies of rotating equipment
- Access and maintenance
- Equipment performance criteria
- Dynamic effects of the rotating machinery

Design loads will be determined in accordance with Section 3.1, Natural Phenomena. Earthquake loads on foundation from the turbine will be calculated using equivalent lateral forces applied at

the center-of-gravity of the equipment in accordance with the criteria specified in Section 3.6, Earthquake Design Criteria.

Applicable load combinations from IBC 2006 Section 1605 will be used for the foundation design.

4.1.1.4 Analysis

The turbine foundations will be designed using static analysis techniques assuming a rigid mat supported directly on soil or piles. The mats will be sized such that the allowable settlement and soil bearing or pile load from geotechnical investigation report are not exceeded.

The turbine foundations will be checked for dynamic response of the operating turbine. Manual calculations and simple computer models based on the fundamental principles of dynamic behavior of structures will be used to determine the natural frequencies of the support system. Where soil structure interaction effects are important, low strain soil properties will be used to calculate soil springs using the procedures from Vibrations of Soils and Foundation by Richart, Hall, and Woods or a similar procedure. Each concrete foundation will be analyzed as a rigid body on soil with the equipment modeled as a rigid mass located at its center of gravity and rigidly attached to the foundation. The foundation will be proportioned such that the principal natural frequencies will be at least 25 percent removed from the equipment operating speed. Should the resulting foundation design prove to be uneconomical, the dynamic behavior of the foundation will be evaluated and compared to ISO (3945) Criteria for Vibration Severity. The resultant vibration level will be within the “Good” range of this standard.

A procedure for the dynamic analysis of large fan foundations supported by soil may be used to evaluate the dynamic behavior of the turbine foundations.

4.1.2 HRSG Foundation

The HRSG and its self supported stack will be installed on a reinforced concrete mat foundation supported directly on soil or piles.

4.1.2.1 Loads

The design of the HRSG and stack foundation will include the following loads.

- Dead loads
- Live loads
- Wind loads
- Earthquake loads
- Temperature and pressure loads

4.1.2.2 Anchor Bolts

The HRSG and its stack will be securely anchored to the foundation using cast-in-place steel anchor bolts.

4.1.2.3 Structural System

The HRSG stacks will resist lateral loading as a fixed base cantilevered structure. Lateral stability shall be provided for by integral structural steel columns inherent in the HRSG casing structure.

4.1.2.4 Structural Design

The predominant forces acting on the HRSG and its stack will result from wind or Earthquake loading.

Wind loads will be determined from ASCE 7-05, American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures. Consideration will be given to along-wind and across-wind responses.

Earthquake loads will be determined in accordance with ASCE Chapter 15, Non-Building Structures. The fundamental period will be determined using ASCE 7-05 Equation 15.4-6, and will be calculated by both considering and ignoring the structural contribution of lining material. The lower period will be used in the development of the Earthquake forces. The shell thickness of the stack will account for corrosion allowance. The corrosion allowance will be considered in the generation of Earthquake loads, but not in the resistance to Earthquake or wind loads.

Allowable stresses for stiffeners, platform members, and other details will be in accordance with the American Institute of Steel Construction, Thirteenth Edition. Allowable stresses for the shell will not be increased for wind or Earthquake loadings.

The stack will be supported using an octagonal shaped pier on a combined reinforced concrete mat. The foundation will be designed and constructed as a monolithic reinforced concrete structure using the project criteria. The foundation system will be a rigid mat supported on soil or piles if required.

The foundation design will address the following considerations.

- Soil bearings and earth pressures or allowable pile load (down, uplift, horizontal)
- Allowable settlements
- Structure and environmental loads
- Access and Maintenance

4.1.2.5 Analysis

Moments, shears, and axial forces for the stack will be calculated using static analysis procedures on a cantilevered member. Longitudinal stresses resulting from axial loads and flexure will be combined and compared to a single allowable stress.

The HRSG and stack foundation will be designed using static analysis techniques assuming a combined rigid mat. The mat will be sized such that the allowable settlement in the geotechnical investigation report is not exceeded. The mat will be proportioned to resist the vertical gravity loads concurrent with the controlling lateral loads.

4.1.3 Buildings and Non-Building Structures

4.1.3.1 Loads

Foundation loads will be determined from the analysis and design of the superstructure and from the support of the equipment contained within the structure. The following loads will be considered:

- Dead loads
- Live loads
- Equipment and piping Loads
- Wind loads
- Earthquake loads
- Other applicable loads, such as soil pressure, temperature, and rain.

4.1.3.2 Anchor Bolts

The buildings and non-building structures will be securely anchored to the foundations using cast-in-place steel anchor bolts designed to resist any induced forces.

4.1.3.3 Structural System

The buildings will be designed as a braced frame and/or moment frames structure. For the purpose of resisting Earthquake lateral loads, structures will be classified as regular structures with concentric braced frames or ordinary moment frame and corresponding design coefficient and factor will be selected from ASCE 7-05 Chapter 12.

4.1.3.4 Structural Design

The steel frames of the buildings will be designed and constructed using the materials and criteria set forth in Section 3.5, Structural Steel.

Design loads will be determined in accordance with IBC 2006 Chapter 16.

Earthquake loading for the buildings will be calculated using equivalent lateral forces applied to the structure in accordance with the procedures of ASCE 7-05, Chapter 12 for Buildings and Chapter 15 for Non-Building structures.

The foundations will be designed and constructed using reinforced concrete according to the criteria set forth in Section 3.1 and Section 3.4 Concrete. The foundations will likely be supported on soil or piles to resist the column loads and an isolated slab on grade floor system.

The foundation design will consider the following: • Soil bearing and earth pressures

- Allowable settlements
- Equipment, structure, and environmental loads
- Access and maintenance
- Equipment performance criteria

4.1.3.5 Analysis

The steel frames will be analyzed using stiffness matrix-analysis techniques on a two-dimensional plane frame or a three-dimensional space frame model. All loads will be applied as static forces. The foundations will be designed using static analysis techniques assuming rigid foundations. Footings will be sized such that the allowable settlement in the geotechnical investigation report is not exceeded. Piles may be used if required

4.1.4 Air Cooled Condenser Foundation

The air cooled condenser supporting structure will be designed and supplied by the equipment supplier. The foundation will be on a soil or pile supported.

4.1.4.1 Loads

The design of the cooling tower basin and foundation will include the following loads:

- Dead loads
- Live loads
- Equipment weight and piping loads
- Wind loads
- Earthquake loads

4.1.4.2 Anchor Bolts

The Air Cooled Condenser support structure columns will be securely anchored to the foundation using cast-in-place stainless steel anchor bolts.

4.1.4.3 Structural System

The structural system will be determined by the equipment supplier and designed in accordance with CBC provisions.

4.1.4.4 Structural Design

The predominant forces acting on the Air Cooled Condenser will result from wind or Earthquake loading. Wind loads will be determined from ASCE 7-05, American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures. Consideration will be given to along wind and across-wind responses.

Earthquake loads will be determined in accordance with ASCE 7-05 – Non-Building Structures.

The foundation design will address the following consideration:

- Soil bearing and earth pressures
- Allowable settlements
- Structure and environment loads

4.1.4.5 Analysis

The air cooled condenser foundation will be analyzed using static analysis techniques assuming rigid foundation. The foundation will be sized in accordance with the requirements of the geotechnical report. The foundation will be proportioned to resist the vertical gravity loads concurrent with the controlling lateral loads.

4.2 TANKS

4.2.1 Vertical, Cylindrical Field Erected Storage Tanks

The tank roof will be of the self-supported dome or cone type. The tank bottom will be ground supported, flat bottomed, with a slope of 1 percent. The tank will be provided with ladders, landing platforms, and handrails as required to provide access to all working areas. Vents, manholes, overflow piping, and grounding lugs will also be provided as necessary.

The typical foundation will consist of a circular concrete ring wall if the foundations are soil supported. The interior of the ring will be comprised of compacted backfill with a layer of compacted sand or asphalt to serve as a bearing surface for the tank bottom. If piles are required, then a reinforced concrete mat foundation will be used.

4.2.1.1 Loads

The design of tanks and foundations will include the following loads.

- Dead loads
- Live loads
- Wind loads
- Earthquake loads
- Hydrodynamic loads

Allowable soil bearing and settlements values will not be exceeded.

4.2.1.2 Anchor Bolts

Storage tanks will be securely anchored to the foundation using cast-in-place steel anchor bolts designed to resist all induced forces in accordance with AWWA D100.

4.2.1.3 Structural System

Storage tanks will resist lateral loading through shear in the tank wall base. Overturning will be resisted by anchor bolts connecting the tank wall to the foundation.

4.2.1.4 Structural Design

The foundation will be designed and constructed as a reinforced concrete ring wall or a reinforced concrete mat foundation on piles.

The tank structures will be designed and constructed using the criteria established in AWWA D100.

Design loads will be determined in accordance Section 3.1, Natural Phenomena. Wind loads will be determined by ASCE 7-05 Chapter 6 and the appropriate force coefficient from Figure 6-21 therein.

Earthquake loads will be determined in accordance with ASCE 7-05 Chapter 15 and AWWA D100.

The Earthquake overturning moment will be determined from AWWA D100, Section 13.3.3.1 for $Z = 0.4$. The structure coefficient will be determined from AWWA Table 16.

The value of C_1 will be determined from Section 13.3.3.1. The site amplification factor, S , will be determined from Table 17.

Load combinations and their respective allowable strengths will be as indicated in Subsection 3.2.7 Load Combinations, and Section 3 of AWWA D100.

Design loads will be applied at the center of gravity of the tank. The design of the tank foundation will include the moment resulting from lateral displacement (hydrodynamics) of the tank contents in accordance with AWWA D100, Section 133.3.2.

Piping connections will be designed with a minimum 2 inches of flexibility in all directions as specified in AWWA D100, Section 135.

4.2.1.5 Analysis

The tank foundation will be designed using static analysis techniques of a circular ringwall. The ringwall will be proportioned to resist the dead load of the tank and the overturning moment determined from AWWA D100. The ring wall will also be proportioned to resist maximum anchor bolt uplift force. Circumferential reinforcing steel hoops will be provided in the ringwall to develop the hoop stress produced by lateral soil pressure within the ringwall. The ringwall will be proportioned to resist the vertical gravity loads concurrent with the controlling lateral loads. The tank structure will be designed and proportioned such that during the application of any load, or combination of loads, the maximum stresses as stipulated in AWWA D100 will not be exceeded. Alternatively if piles are required, a reinforced concrete mat foundation on piles will be designed.

4.2.2 Horizontal, Cylindrical, Shop Fabricated Storage Tanks

4.2.2.1 Loads

Foundation loads will be furnished by the tank Supplier and will be superimposed with loads for the foundation itself. Typical loads supplied by the Supplier include the following:

- Dead loads
- Live loads
- Wind loads
- Earthquake loads
- Temperature loads
- Hydrodynamic loads

4.2.2.2 Anchor Bolts

The tanks will be securely anchored to the foundation using cast-in-place steel anchor bolts designed to resist all induced forces.

4.2.2.3 Structural System

The tanks will be supported by integral legs or saddle supports designed to resist gravity and environmental loadings.

4.2.2.4 Structural Design

The foundation will be designed and constructed as a monolithic reinforced concrete structure using the criteria from Section 3.1 Natural Phenomena and Section 3.4, Concrete Structures. The foundation will be a rigid mat supported directly on soil or piles if required. When required, the foundation will incorporate an integral containment basin capable of holding 130 percent of the tank's contents.

Environmental loading will be determined in accordance Section 3.1, Natural Phenomena. Wind loads will be determined using the velocity pressures specified in Subsection 3.2.3, Wind Loads, multiplied by the appropriate pressure coefficient from ASCE Chapter 6.

Earthquake loading will be calculated using equivalent lateral forces applied at the center of gravity of the tank or tank component in accordance with the criteria specified Section 3.6 Earthquake Design Criteria.

Load combinations and their respective allowable strengths will be as indicated Subsection 3.2.7 Load Combinations.

4.2.2.5 Analysis

The tank foundations will be designed using static analysis techniques assuming a rigid mat. The mat will be sized such that the allowable settlement criteria developed from a detailed subsurface investigation will not be exceeded.

The tanks will be designed by a tank manufacturer in accordance with the AWWA code, ANSI code, and the ASTM or ASME standards. Gravity and lateral loadings will be transferred to the foundation by integral legs or a saddle support system.

4.3 EQUIPMENT

4.3.1 Gas Turbine Generator and Accessories

The foundations for gas turbine generator (GTG) and accessories will be designed to resist the loads furnished by the Supplier, and will be constructed of reinforced concrete.

4.3.1.1 Equipment Loads

Equipment loads will be determined by the Supplier based on project design criteria. Typical loads used for design include the following:

- Dead loads

- Live loads
- Operating loads
- Construction loads
- Wind loads
- Earthquake loads
- Temperature loads
- Emergency loads such as turbine accident loads

4.3.1.2 Anchorage

The turbine and associated equipment will utilize steel anchor bolts, fasteners, welds, and other equipment anchorage devices to resist equipment induced forces.

4.3.1.3 Structural Design

The gas turbine generator (GTG) and accessories will be designed to resist project specific design loads. Design loads will be determined in accordance Section 3.1, Natural Phenomena.

Wind loads will be determined using the velocity specified in Subsection 3.2.3, Wind Loads, multiplied by the appropriate pressure coefficient from ASCE 7-05 Chapter 6.

The Earthquake loading and design of the turbine and accessories will be in accordance with project specific criteria and the ASCE 7-05. Earthquake loading will be calculated using equivalent lateral forces applied at the center of gravity of the equipment or component in accordance with the criteria specified in Section 3.6, Earthquake Design Criteria.

The turbine inlet air filtration equipment and inlet air duct support structures shall be designed to resist the loading specified in ASCE 7-05 Chapter 13.

Lateral forces on elements of structural and nonstructural components will be determined in accordance with ASCE Chapter 13 & 15. These Earthquake forces will be combined with forces due to normal operating loads.

Load combinations will be as indicated in Subsection 3.2.7, Load Combinations. These load combinations are in addition to those normally used in design and those specified in applicable codes and standards. For all load combinations, including Earthquake, the stresses in the structural supporting members and connections will remain in the elastic range.

4.3.1.4 Analysis

The CTG and auxiliary equipment will be designed and constructed in accordance with applicable requirements of codes and standards. Stamps will be affixed to denote conformance to the appropriate codes.

4.3.2 Main and Auxiliary Transformers

The main and auxiliary power transformers, transformer equipment, material and accessories will conform to the applicable standards of ANSI C57.12, NEMA TR1, ANSI/IEEE C59, C94 and C98, and project specific criteria. The power transformer will be designed, fabricated, and tested in accordance with ANSI C57.12 series, NEMA TR 1, and project specific criteria.

The foundations will be designed to resist the loads furnished by the Supplier and will be constructed of reinforced concrete.

4.3.2.1 Loads

Foundations loads will be furnished by the transformer Supplier and will be superimposed with loads for the foundation itself. Typical loads include the following:

- Dead loads
- Live loads
- Wind loads
- Earthquake loads

4.3.2.2 Anchorage

The power transformers, transformer equipment, and accessories will utilize steel anchor bolts, fasteners, welds; and other equipment anchorage devices to resist equipment induced forces.

4.3.2.3 Structural System

The transformer will be regarded as a rigid body for foundation design purposes.

4.3.2.4 Structural Design

The foundations will be designed and constructed as a reinforced concrete structure using the criteria from Section 3.1, Natural Phenomena and Section 3.4, Concrete Structure. The foundation will likely be a soil supported rigid mat. The foundation will incorporate an integral containment basin capable of holding 130 percent of the transformer coolant contents prior to passage through an oil water separator. Design loads will be determined in accordance with Section 3.1, Natural Phenomena. Wind loads will be determined using the velocity pressures

specified in Subsection 3.2.3, Wind Loads, multiplied by the appropriate pressure coefficients from ASCE 7-05 Chapter 6.

The Earthquake loading and design of the power transformers, transformer equipment, accessories, and foundations will be in accordance with project specific criteria and ASCE 7-05 Chapter 15. Loading will be approximated using equivalent lateral forces applied to the center of gravity of the equipment or component using the criteria specified Section 3.6, Earthquake Design Criteria.

Load combinations will be as indicated in Subsection 3.2.7, Load Combinations. These load combinations are in addition to those normally used in design and those specified in applicable codes and standards. For all load combinations, including Earthquake, the stresses in the structural members and connections will remain in the elastic range.

4.3.2.5 Analysis

The power transformer foundations will be designed using static analysis techniques assuming a rigid mat. The mat will be sized such that the allowable settlements in the geotechnical report are not exceeded.

4.3.3 Miscellaneous Equipment

4.3.3.1 Loads

Foundation loads will be furnished by the equipment Supplier and will be superimposed with loads for the foundation itself. Typical loads include the following:

- Dead loads
- Live loads
- Wind loads
- Earthquake Loads
- Temperature and pressure loads (as applicable)

4.3.3.2 Anchorage

All miscellaneous equipment will utilize steel anchor bolts, fasteners, welds, and other equipment anchorage devices to resist equipment induced forces.

4.3.3.3 Structural, System

Each individual piece of equipment will have its own unique structural system, and it is the responsibility of each manufacturer to assure its adequacy.

4.3.3.4 Structural Design

All miscellaneous equipment will be designed to resist project specific and IBC 2006 specified loads where possible and loads from applicable codes and standards.

Earthquake loading and design of miscellaneous equipment will be in accordance with project specific criteria and ASCE 7-05 Chapter 15. The Earthquake loading will be calculated using equivalent lateral forces applied to the center of gravity of the equipment or component in accordance with the criteria specified Section 3.6, Earthquake Design Criteria.

Load combinations will be as indicated in Subsection 3.2.7, Load Combinations. These load combinations are in addition to those normally used in design and those specified in applicable codes and standards. For all load combinations, including Earthquake, the stresses in the structural supporting members and connections shall remain in the elastic range.

4.3.3.5 Analysis

All miscellaneous equipment and accessories will be designed and constructed in accordance with applicable requirements of codes and standards.

All structural supports required for the miscellaneous equipment will be designed using static analysis techniques.

4.4 PIPING

The project will include all piping systems necessary for a complete installation. Piping will include all high point vents, low point drains, instrument piping, lube oil piping, steam piping and other piping as required for the complete system. Insulation, hangers, valves, and other piping accessories will also be provided. Piping, pipe supports, and pipe accessories will be constructed of carbon, alloy, and stainless steel.

The foundations and support superstructures will be designed to resist the loads generated by the piping system.

4.4.1 Loads

All piping loads will be determined using project specified loading and IBC specified loads. Typical loadings for a piping system include the following:

- Dead loads
- Live loads
- Wind loads
- Earthquake loads

- Temperature and pressure loads
- Test loads

4.4.2 Anchorage

The design and configuration of all hangers and accessories will utilize steel anchor bolts, fasteners, welds, and other pipe anchorage devices. All pipe anchorages will be designed to resist induced forces.

4.4.3 Structural Design

All piping, pipe supports, and pipe accessories will be designed to resist project specific loads, IBC 2006 specified loads, and loads from applicable codes and standards.

Environmental loading will be determined in accordance with Section 3.1, Natural Phenomena. Wind loads will be determined using the velocity pressures specified Subsection 3.2.3, Wind Loads, multiplied by the appropriate pressure coefficients from ASCE 7-05 Chapter 6.

The Earthquake loading and design of piping systems and pipe supports will be in accordance with project specific criteria. Earthquake analysis of piping and components will be designed in accordance with ASCE 7-05 Chapter 13.

Load combinations will be as indicated in Subsection 3.2.7, Load Combinations. These load combinations are in addition to those normally used in design and the applicable codes and standards specified in mechanical engineering design criteria. For all Load combinations, including Earthquake, the stresses in the structural supporting members will remain in the elastic range.

4.4.4 Analysis

All piping, piping supports, and pipe accessories will be designed and constructed in accordance with applicable requirements of the codes and standards referenced in Mechanical Engineering Design Criteria.

Structural supports required for piping shall be designed using static analysis techniques using the procedures established in Mechanical Engineering Design Criteria.

5.0 HAZARD MITIGATION

The project will be designed to mitigate natural and environmental hazards caused by Earthquake and meteorological events. This section addresses the structural design criteria used to mitigate such hazards.

5.1 EARTHQUAKE HAZARD MITIGATION CRITERIA

The Earthquake design criteria for the project will be based on the following considerations:

- Compliance with applicable laws, ordinances, regulations, and standards
- Life safety
- Structural behavior and performance
- Reliability of the plant
- Financial impacts from Earthquake induced outages
- Earthquake probability and magnitude

The project Earthquake design criteria will be developed to incorporate these considerations using a systematic approach to correlate performance criteria with assumed risk level. The following procedure will be used to establish the design criteria.

- The Earthquake hazards will be assessed by studying the geologic features of the surrounding area. Major faults will be identified and information collected regarding each fault's proximity, capability, recurrence, and magnitude.
- The Earthquake risk associated with each source will be assessed considering historical magnitudes.
- Acceleration levels for various structural frequencies will be based on ASCE 7-05 Figure No. 11.4-1, Design Response Spectrum.
- Appropriate design criteria and analysis methods will be established for each major plant structure, equipment, and component consistent with the Earthquake performance criteria.

Specific design features that will be incorporated into the plant to mitigate the identified Earthquake hazards include the following:

- Appropriate analysis techniques will be employed to calculate structure specific Earthquake loads.
- Plant structures, equipment, piping, and other components will be designed to resist the project specific Earthquake loads.
- All equipment will be positively anchored to its supporting structure. Nominal uplift capacity will be provided in the absence of calculated overturning forces.
- Anchorages will be designed to resist the project specific Earthquake loadings.

- The design of piping connections to structures, tanks, and equipment will consider the differential Earthquake displacements between components.
- Adjacent structures will be isolated from one another.
- Structural elements will be designed to comply with special detailing requirements intended to provide ductility.
- Connections for steel structures will have a minimum load carrying capability without regard to the calculated load.
- Lateral and vertical displacements of structures and elements of structures will be limited to specified values.

The foregoing design features are intended to provide the following degrees of safety for structures and equipment:

- Resist minor earthquakes without damage. Plant remains operational.
- Resist moderate earthquakes without structural damage but with some nonstructural damage. Plant remains operational or is returned to service following visual inspection and minor repairs.
- Resist major earthquakes without collapse but with some structural and nonstructural damage. Plant is returned to service following visual inspection and minor repairs.

5.2 METEOROLOGICAL AND CLIMATIC HAZARD MITIGATION

Meteorological and climatic data will form the design basis for the project. Portions of the data and the design bases that pertain to structural engineering have been provided in this Appendix.

Specific design features that will be incorporated into the plant to mitigate meteorological and climatic hazards include the following:

- Structures and cladding will be designed to resist the wind forces.
- Sensitive structures will be designed for wind induced vibrational excitation.
- Roofs will be sloped and equipped with drains to prevent accumulation of rainfall.
- Plant drainage systems will be designed to convey the runoff from a rainfall event in accordance with Civil Engineering Design Criteria listed in Appendix 2-1.
- Ground floor levels of structures will be placed above probable flood levels.
- The plant site will be graded to convey runoff away from structures and equipment.

APPENDIX 2-2

STRUCTURAL ENGINEERING DESIGN CRITERIA

The foregoing design features will be incorporated in accordance with applicable codes and standards identified in this Appendix.

The degree of safety offered by these features is consistent with the requirements of the applicable codes and standards and the economic benefits provided by these features.

Attachment -1

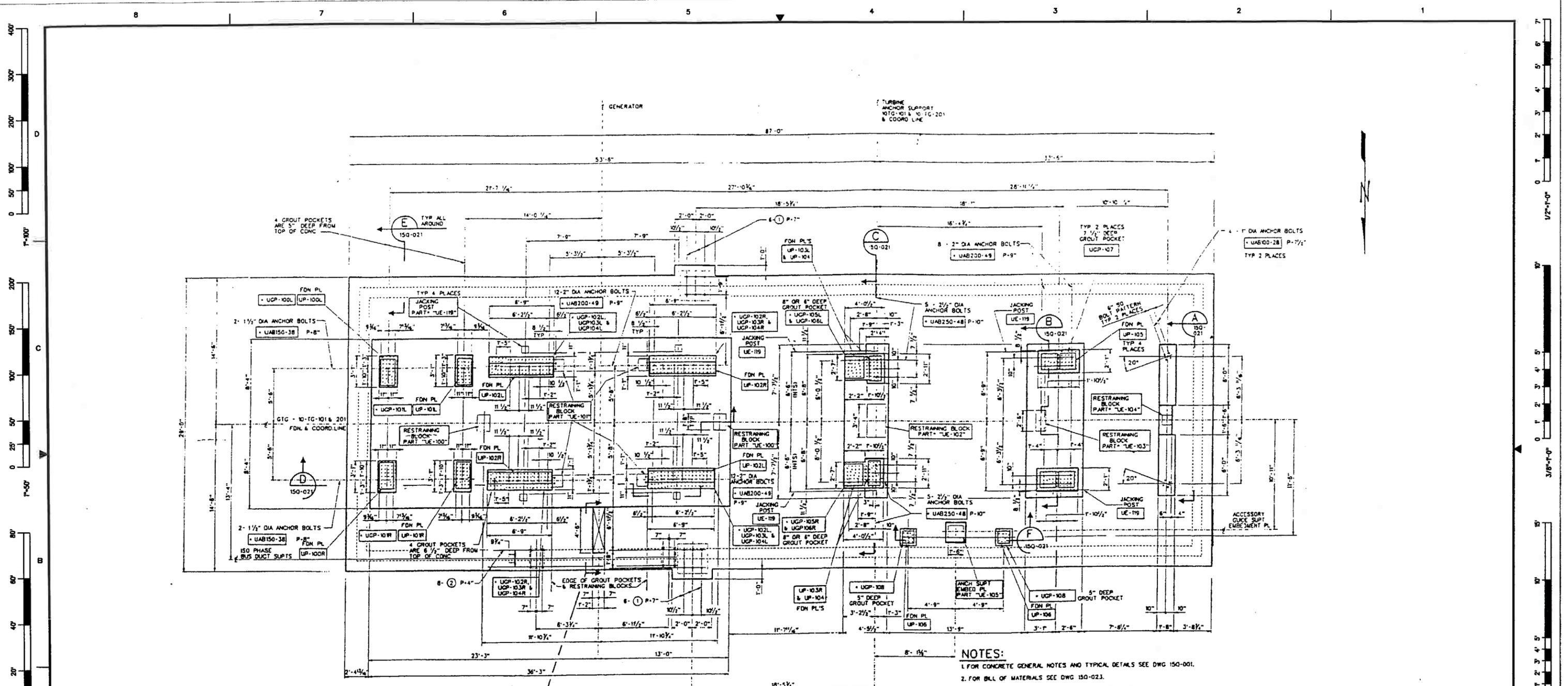
Representative Drawings

Representative drawings of major equipment, structures and systems are listed in Table B-1 below. These drawings are for illustration purposes only, and are not to be used for design and construction.

TABLE B-1

| Item No. | Description | Drawing No. | Figure No. |
|----------|---|--|--------------------|
| 1 | Typical GTG Foundation | CD-1-GT-1 CD-1-GT-2 CD-1-GT-3 | B-1; B-2; B-3 |
| 2 | Typical STG Foundation | CD-1-ST-1 CD-1-ST-2 CD-1-ST-3 CD-1-ST-4 | B-4; B-5; B-6; B-7 |
| 3 | Typical HRSG Foundation | CD-1-HR-1 CD-1-HR-2 | B-8; B-9 |
| 4 | Typical Acid/Caustic Storage and Containment Foundation | CD-1-YM-1 | B-10 |
| 5 | Typical Air Cooled Condenser Structure Foundation | later | Later |
| 6 | Typical Control Building | AD-3-SB-1 | B-14 |
| 7 | Typical Transformer Foundation and Containment | CD-1-TY-1 | B-15 |
| 8 | Typical Tank Foundation | CD-1-SIV-1 | B-16 |
| 9 | Typical Gas Turbine Generator (GTG) and Accessories | SU-4-GT-1 SU-4-GT-2 | B-17; B-18 |
| 10 | Typical Steam Turbine Generator (STG) and Accessories | SU-4-ST-1 SU-4-ST-2 | B-19; B-20 |
| 11 | Typical Heat Recovery Steam Generator (HRSG) | SU-4-HR-1 SU-4-HR-2 | B-21; B-22 |
| 12 | Typical Air Cooled Condenser | Later | Later |
| 13 | Typical Transformer | SU-6-TY-1 | B-24 |
| 14 | Typical Field Erected Tank | SU-4-SIV-1 | B-25 |

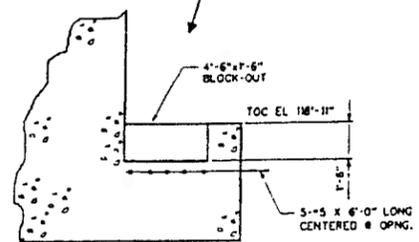
APPENDIX 2-2
STRUCTURAL ENGINEERING DESIGN CRITERIA



LEGEND:

XXXXX-XXX INDICATES CALL-OUTS FOR ITEMS SUPPLIED BY UNSORB, WITH UNSORB PART NUMBERS. SEE UNSORB DRAWINGS 15927-FL1, FL2, FT1 THRU FT5.

INDICATES GROUT POCKET FORMS SUPPLIED BY UNSORB. SEE UNSORB DRAWINGS 15927-FL1, FL2, FT1 THRU FT5.



FORMING & EMBED PLAN

10-TG-101 & 10-TG-201
 2 FOMS REQUIRED @ 730 CU YDS CONC EA - 1460 CU YDS

- NOTES:**
- FOR CONCRETE GENERAL NOTES AND TYPICAL DETAILS SEE DWG 150-001.
 - FOR BILL OF MATERIALS SEE DWG 150-023.
 - WORK DWGS 150-018 THRU 023 WITH UNSORB DWGS 15927-FL1, FL2, FT1 THRU FT5.
 - ALL ANCHOR BOLT PROJECTIONS ARE FROM TOP OR EDGE OF CONCRETE POUR. WHERE GROUT POCKETS OCCUR, PROJECTION IS FROM TOP OF CONCRETE/TOP OF GROUT POCKET, (NOT FROM BOTTOM OF GROUT POCKET).
 - ALL GROUT POCKETS ARE TO BE CHIPPED BACK TO SOUND CONCRETE AND THOROUGHLY CLEANED BEFORE PLACING GROUT.
 - PILE CAP SHALL BE W/OLITHIC POUR.
 - CONCRETE FOR THIS GTG FOUNDATION SHALL BE MADE FROM TYPE 1CEMENT.
 - FOR GAS TURBINE GENERATORS FOUNDATION LOCATIONS SEE FOUNDATION LOCATION PLAN DWG 150-009.
 - FOR PILE LOCATION PLAN SEE DWG 150-006.
 - GROUT POCKETS SHOWN ON THIS DRAWING FOR THE TURBINE & GENERATOR SHALL BE FILLED WITH HYDRAULIC CEMENT-BASED NONSHRINK GROUT IN ACCORDANCE WITH SP-4648-0-2, SECTION 6, EXCEPT THE MINIMUM COMPRESSIVE STRENGTH SHALL BE 5000 PSI AT 7 DAYS, AND 7000 PSI AT 28 DAYS. ALL REMAINING GROUTING SHALL BE HYDRAULIC CEMENT-BASED NONSHRINK GROUT WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS.

Figure B-1

USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LOANED TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

CONTRACT: _____
 DESIGNED BY: _____
 CHECKED BY: _____
 SUPERVISOR: _____
 LEAD ENGR/SPEC: _____
 FLUOR
 CLIENT: _____

APP DATE: _____
 APP DATE: _____
 APP DATE: _____
 APP DATE: _____

FEDERAL POWER AVAL, LLC
 AVAL ENERGY PROJECT
 AVAL, CALIFORNIA

TYPICAL GTG FOUNDATION

SCALE: _____ DRAWING NUMBER: **CD-1-GT-1** REV: **A**

XREF ATTACHED - YES NO MANUAL CHANGES MADE - YES NO DWG FILE UPDATED - YES NO MODEL UPDATED - YES NO CAD FILE NAME: _____

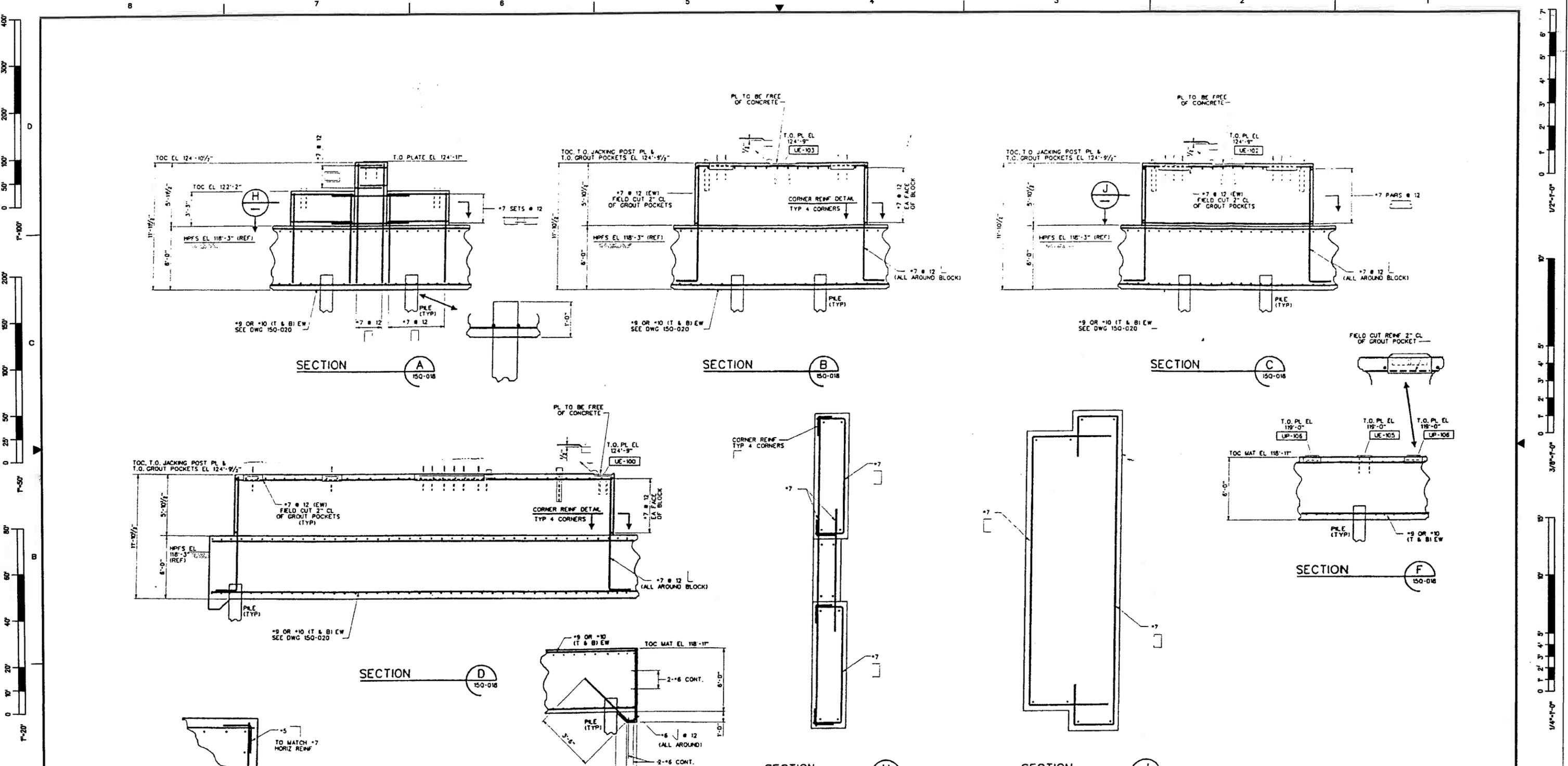
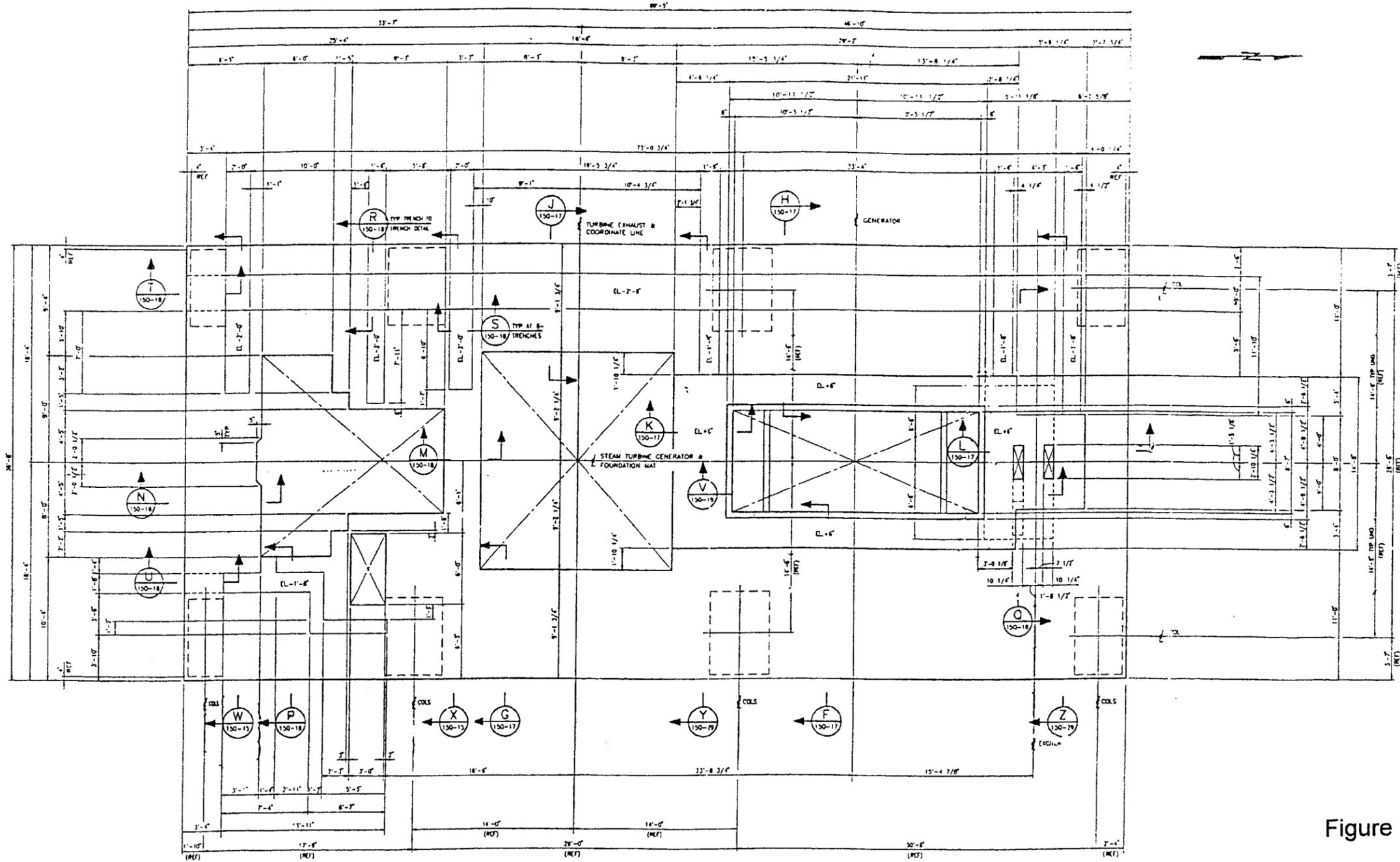


Figure B-3
 USE FOR ILLUSTRATION
 ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

| | | | | | |
|---------------|--|--|----------|--|--|
| FLUOR. | | CONTRACT | | FEDERAL POWER AVENAL, LLC AVENAL ENERGY PROJECT AVENAL, CALIFORNIA | |
| | | DESIGNED BY | APP DATE | TYPICAL GTG FOUNDATION | |
| | | CHECKED BY | APP DATE | DRAWING NUMBER CD-1-GT-3 | |
| | | SUPERVISOR | APP DATE | REV A | |
| | | LEAD ENGR/SPEC. A. MACKENZIE | APP DATE | SCALE | |
| | | CLIENT | APP DATE | DWT CODE | |

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LOANED TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.



STG-PEDESTAL TOP DECK FORMING PLAN AT EL. 57'-0" TYP UNO
SCALE 1/8"=1'-0"

Figure B-4

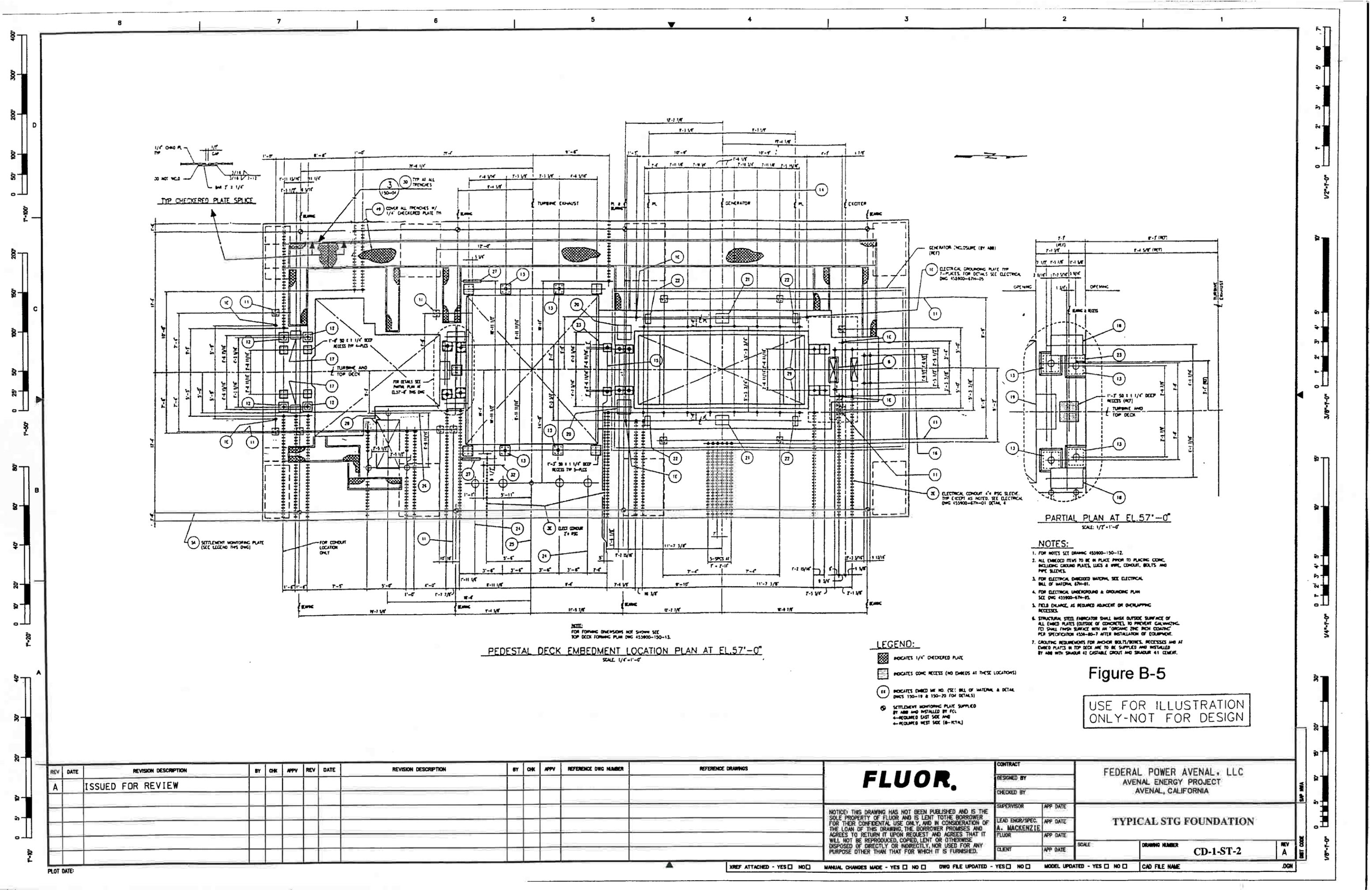
USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | | | |
|----------------|----------|--|----------------|
| CONTRACT | | FEDERAL POWER AVENAL, LLC AVENAL ENERGY PROJECT AVENAL, CALIFORNIA | |
| DESIGNED BY | APP DATE | TYPICAL STG FOUNDATION | |
| CHECKED BY | APP DATE | | |
| SUPERVISOR | APP DATE | | |
| LEAD ENGR/SPEC | APP DATE | SCALE | DRAWING NUMBER |
| FLUOR | APP DATE | | CD-1-ST-1 |
| CLIENT | APP DATE | REV | A |



1/4" DIA R.
3/16" DIA
3/8" DIA
1/2" DIA
3/4" DIA
1" DIA
1 1/4" DIA
1 1/2" DIA
2" DIA
3" DIA
4" DIA
6" DIA
8" DIA
10" DIA
12" DIA
14" DIA
16" DIA
18" DIA
20" DIA
24" DIA
30" DIA
36" DIA
42" DIA
48" DIA
54" DIA
60" DIA
66" DIA
72" DIA
78" DIA
84" DIA
90" DIA
96" DIA
102" DIA
108" DIA
114" DIA
120" DIA
126" DIA
132" DIA
138" DIA
144" DIA
150" DIA
156" DIA
162" DIA
168" DIA
174" DIA
180" DIA
186" DIA
192" DIA
198" DIA
204" DIA
210" DIA
216" DIA
222" DIA
228" DIA
234" DIA
240" DIA
246" DIA
252" DIA
258" DIA
264" DIA
270" DIA
276" DIA
282" DIA
288" DIA
294" DIA
300" DIA
306" DIA
312" DIA
318" DIA
324" DIA
330" DIA
336" DIA
342" DIA
348" DIA
354" DIA
360" DIA
366" DIA
372" DIA
378" DIA
384" DIA
390" DIA
396" DIA
402" DIA
408" DIA
414" DIA
420" DIA
426" DIA
432" DIA
438" DIA
444" DIA
450" DIA
456" DIA
462" DIA
468" DIA
474" DIA
480" DIA
486" DIA
492" DIA
498" DIA
504" DIA
510" DIA
516" DIA
522" DIA
528" DIA
534" DIA
540" DIA
546" DIA
552" DIA
558" DIA
564" DIA
570" DIA
576" DIA
582" DIA
588" DIA
594" DIA
600" DIA
606" DIA
612" DIA
618" DIA
624" DIA
630" DIA
636" DIA
642" DIA
648" DIA
654" DIA
660" DIA
666" DIA
672" DIA
678" DIA
684" DIA
690" DIA
696" DIA
702" DIA
708" DIA
714" DIA
720" DIA
726" DIA
732" DIA
738" DIA
744" DIA
750" DIA
756" DIA
762" DIA
768" DIA
774" DIA
780" DIA
786" DIA
792" DIA
798" DIA
804" DIA
810" DIA
816" DIA
822" DIA
828" DIA
834" DIA
840" DIA
846" DIA
852" DIA
858" DIA
864" DIA
870" DIA
876" DIA
882" DIA
888" DIA
894" DIA
900" DIA
906" DIA
912" DIA
918" DIA
924" DIA
930" DIA
936" DIA
942" DIA
948" DIA
954" DIA
960" DIA
966" DIA
972" DIA
978" DIA
984" DIA
990" DIA
996" DIA
1000" DIA

TYP CHECKERED PLATE SPLICE

COVER ALL TRENCHES W/ 1/4" CHECKERED PLATE TH

TURBINE EXHAUST

GENERATOR

EXCITER

GENERATOR ENCLOSURE (BY AM) (NOT)

ELECTRICAL GROUNDING PLATE TYP 7-PLACES FOR DETAILS SEE ELECTRICAL DWG 45900-67H-05

OPENING

BEAM & KEYS

11-7 5/8" x 1 1/4" DEEP RECESS (NOT)

TURBINE AND TOP DECK

FOR DETAILS SEE PARTIAL PLAN AT EL. 57'-0" DWG 45900-67H-05

7-5" x 1 1/4" DEEP RECESS TYP 3-PLCS

ELECT CONDUIT 2" PSC

SETTLEMENT MONITORING PLATE (SEE LEGEND THIS DWG)

FOR CONDUIT LOCATION ONLY

11-7 3/8"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

7-1 1/4"

PEDESTAL DECK EMBEDMENT LOCATION PLAN AT EL. 57'-0"
SCALE: 1/4"=1'-0"

NOTE:
FOR FORMING DIMENSIONS NOT SHOWN SEE
TOP DECK FORMING PLAN DWG 45900-150-13.

- LEGEND:**
- ☒ INDICATES 1/4" CHECKERED PLATE
 - ☐ INDICATES CONC RECESS (NO EMBEDS AT THESE LOCATIONS)
 - Ⓜ INDICATES EMBED NO. (SEE BILL OF MATERIALS & DETAIL DWGS 150-18 & 150-20 FOR DETAILS)
 - Ⓢ SETTLEMENT MONITORING PLATE SUPPLIED BY AMB AND INSTALLED BY PCL
← REQUIRED EAST SIDE AND
← REQUIRED WEST SIDE (B-RCTA)

- NOTES:**
1. FOR NOTES SEE DRAWING 45900-150-12.
 2. ALL EMBEDDED ITEMS TO BE IN PLACE PRIOR TO PLACING CONCRETE INCLUDING GROUNDING PLATES, LUGS & WPC, CONDUIT, BOLTS AND PVC SLEEVES.
 3. FOR ELECTRICAL EMBEDDED MATERIALS SEE ELECTRICAL BILL OF MATERIALS 67H-01.
 4. FOR ELECTRICAL UNDERGROUND & GROUNDING PLAN SEE DWG 45900-67H-05.
 5. FIELD CHANGE, AS REQUIRED ADJACENT OR OVERLAPPING RECESSES.
 6. STRUCTURAL STEEL FABRICATOR SHALL MASK OUTSIDE SURFACE OF ALL EMBED PLATES (OUTSIDE OF CONCRETE) TO PREVENT GALVANIZING. FE SHALL FINISH SURFACE WITH AN "ORGANIC ZINC RICH COATING" PER SPECIFICATION 459-80-7 AFTER INSTALLATION OF EQUIPMENT.
 7. COATING REQUIREMENTS FOR ANCHOR BOLTS/BONES, RECESSES AND ALL EMBED PLATES IN TOP DECK ARE TO BE SUPPLIED AND INSTALLED BY AMB WITH SMOUR 42 CASTABLE GROUT AND SMOUR 41 CEMENT.

PARTIAL PLAN AT EL. 57'-0"
SCALE: 1/2"=1'-0"

Figure B-5
USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS | CONTRACT | | | | | |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|--|--|---|--|---------------|------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | | DESIGNED BY | FEDERAL POWER AVENAL, LLC AVENAL ENERGY PROJECT AVENAL, CALIFORNIA | | | | |
| | | | | | | | | | | | | | | CHECKED BY | | | | | |
| | | | | | | | | | | | | | | SUPERVISOR | APP DATE | | | | |
| | | | | | | | | | | | | | | LEAD ENGR/SPEC. | APP DATE | | | | |
| | | | | | | | | | | | | | | A. MACKENZIE | APP DATE | | | | |
| | | | | | | | | | | | | | | FLUOR | APP DATE | | | | |
| | | | | | | | | | | | | | | CLIENT | APP DATE | | | | |
| | | | | | | | | | | | | | | SCALE: | DRAWING NUMBER | REV | | | |
| | | | | | | | | | | | | | | | CD-1-ST-2 | A | | | |
| | | | | | | | | | | | | | | UNIT CODE | | | | | |
| | | | | | | | | | | | | | | XREF ATTACHED - YES <input type="checkbox"/> NO <input type="checkbox"/> | MANUAL CHANGES MADE - YES <input type="checkbox"/> NO <input type="checkbox"/> | DWG FILE UPDATED - YES <input type="checkbox"/> NO <input type="checkbox"/> | MODEL UPDATED - YES <input type="checkbox"/> NO <input type="checkbox"/> | CAO FILE NAME | .DCN |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

UNIT CODE

PLOT DATE:

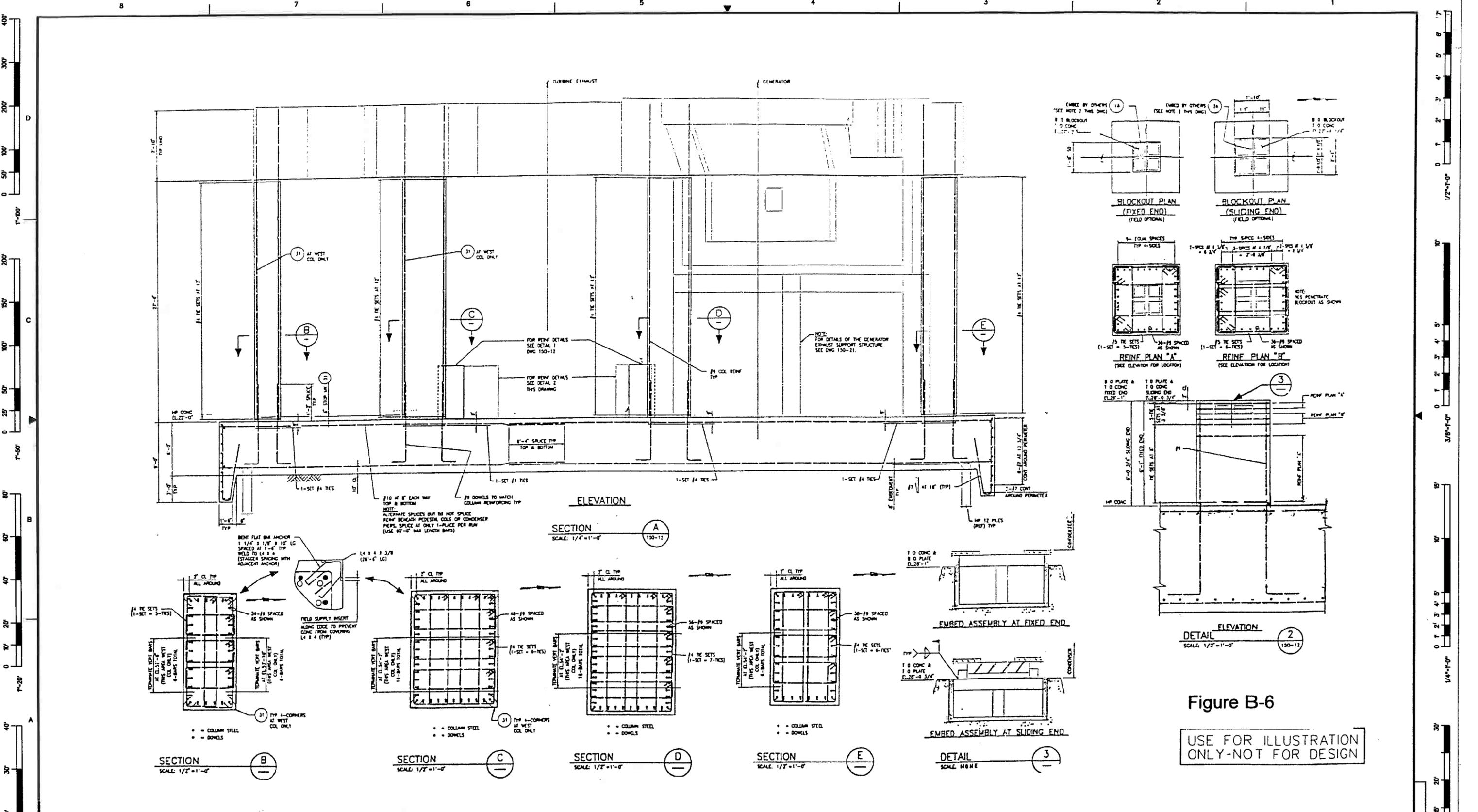


Figure B-6
 USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

CONTRACT

DESIGNED BY

CHECKED BY

SUPERVISOR

APP DATE

LEAD ENGR/SPEC

APP DATE

FLUOR

APP DATE

CLIENT

APP DATE

FEDERAL POWER AVENAL, LLC
 AVENAL ENERGY PROJECT
 AVENAL, CALIFORNIA

TYPICAL STG FOUNDATION

SCALE

DRAWING NUMBER

CD-1-ST-3

REV

A

DGN

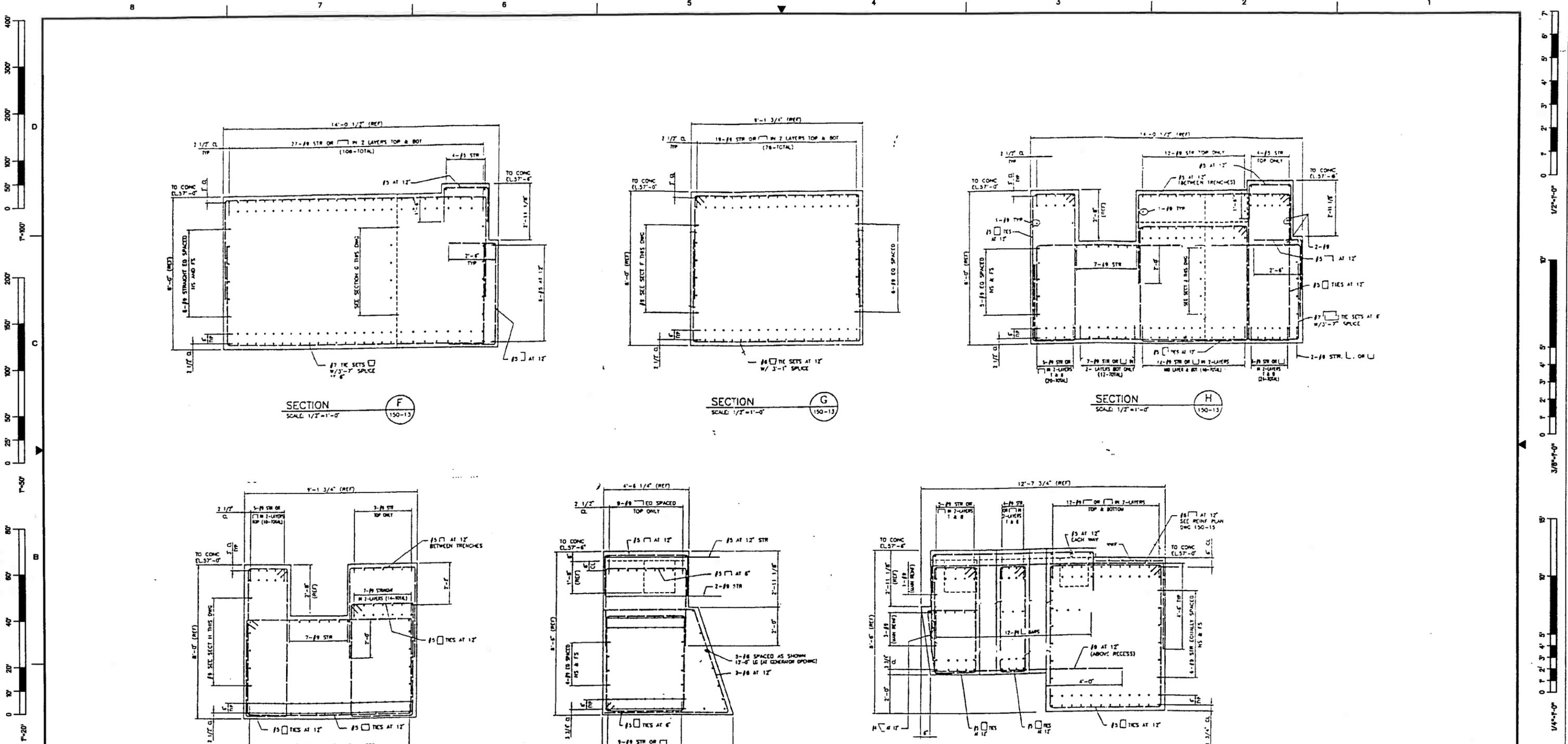


Figure B-7
 USE FOR ILLUSTRATION
 ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | | | |
|---------------------------------|----------|--|-----------------------------|
| CONTRACT | | FEDERAL POWER AVENAL, LLC AVENAL ENERGY PROJECT AVENAL, CALIFORNIA | |
| DESIGNED BY | APP DATE | TYPICAL STG FOUNDATION | |
| CHECKED BY | APP DATE | | |
| SUPERVISOR | APP DATE | | |
| LEAD ENGR/SPEC. A. MACKENZIE | APP DATE | | |
| FLUOR | APP DATE | SCALE | DRAWING NUMBER CD-1-ST-4 |
| CLIENT | APP DATE | REV A | EST. CODE |

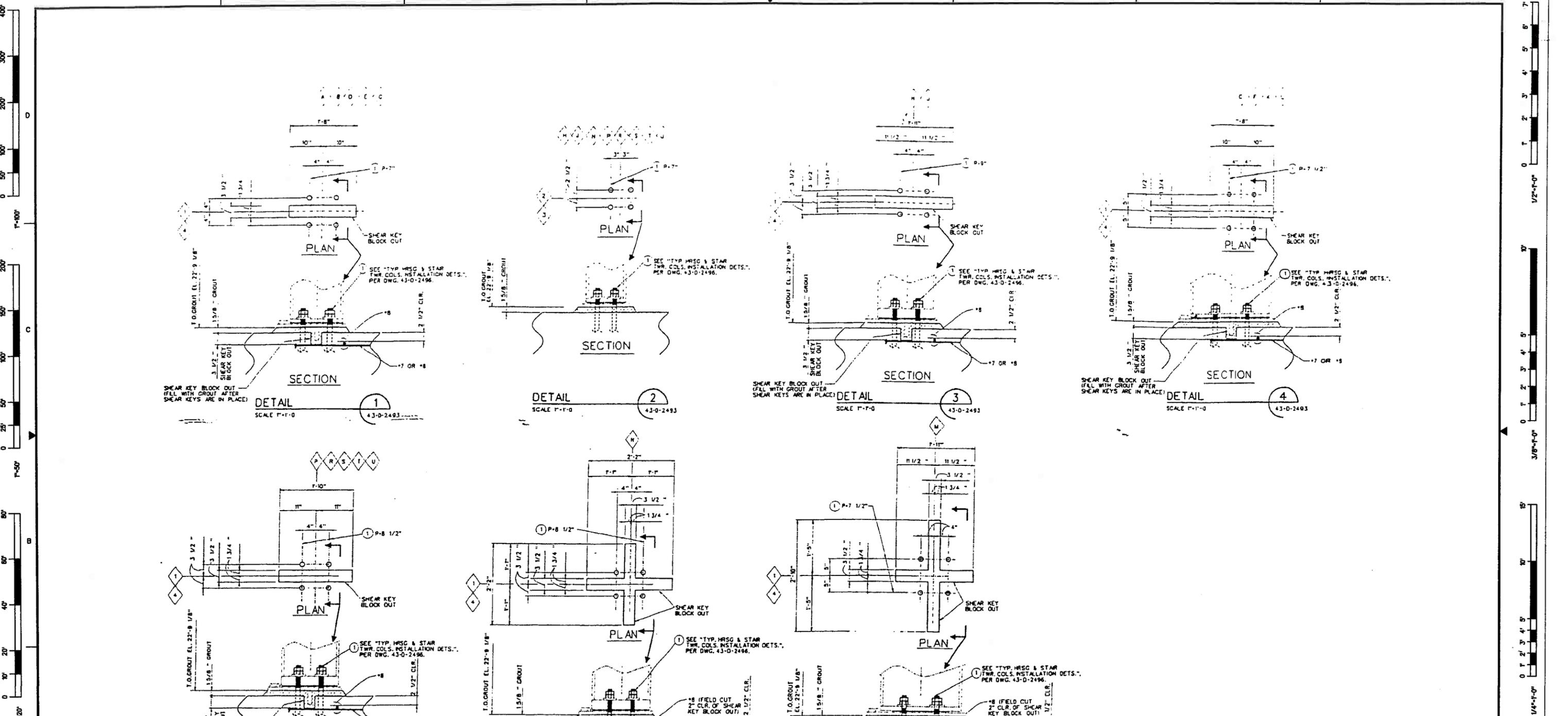


Figure B-9
 USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

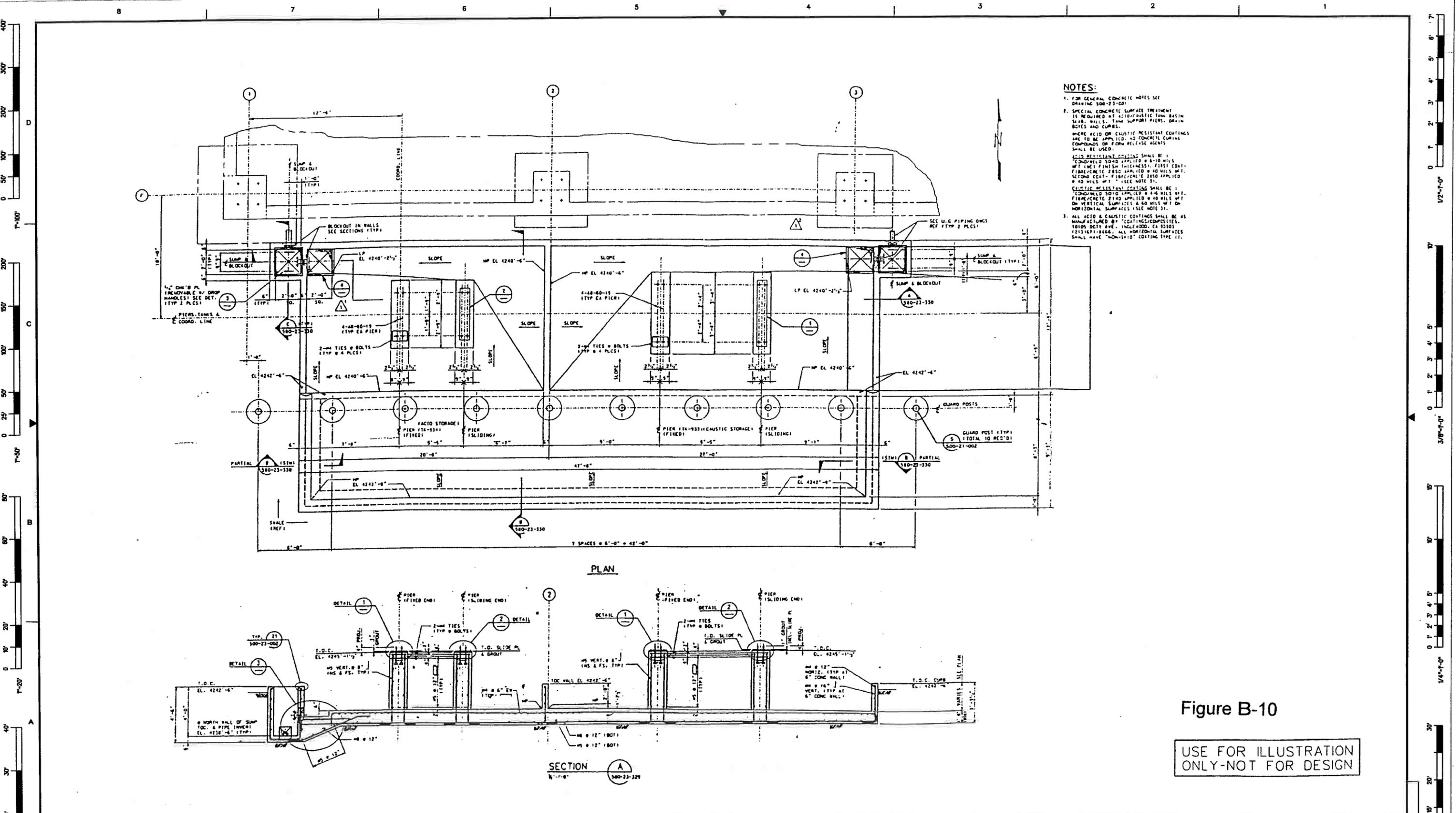
| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | | | | | | | | |
|---------------------------|--|--------------|--|------------|--|----------------|--|----------|
| CONTRACT | | DESIGNED BY | | CHECKED BY | | SUPERVISOR | | APP DATE |
| FEDERAL POWER AVENAL, LLC | | A. MACKENZIE | | FLUOR | | CLIENT | | APP DATE |
| AVENAL ENERGY PROJECT | | | | | | | | APP DATE |
| AVENAL, CALIFORNIA | | | | | | | | APP DATE |
| TYPICAL HRSG FOUNDATION | | | | SCALE | | DRAWING NUMBER | | REV |
| | | | | | | CD-1-HR-2 | | A |

XREF ATTACHED - YES NO MANUAL CHANGES MADE - YES NO DWG FILE UPDATED - YES NO MODEL UPDATED - YES NO CAD FILE NAME .DGN



- NOTES:**
1. FOR GENERAL CONCRETE NOTES SEE DRAWING 300-23-001
 2. SPECIAL CONCRETE SURFACE TREATMENT IS REQUIRED AT ACID/CAUSTIC TANK BASIN, SLAB, WALLS, TANK SUPPORT PIERS, DRAIN BODIES AND CURBS. WHERE ACID OR CAUSTIC RESISTANT COATINGS ARE TO BE APPLIED, NO CONCRETE CURING COMPOUND OR FORM RELEASE AGENTS SHALL BE USED.
 - ACID RESISTANT COATING SHALL BE: 1. CONCRETE 2850 APPLIED @ 4-8 MILS W/F. 2. FINISH THICKNESS. FIRST COAT - FIBRE/CRETE 2850 APPLIED @ 40 MILS W/F. SECOND COAT - FIBRE/CRETE 2850 APPLIED @ 40 MILS W/F. (SEE NOTE 3).
 - CAUSTIC RESISTANT COATING SHALL BE: 1. CONCRETE 3010 APPLIED @ 4-8 MILS W/F. FIBRE/CRETE 2140 APPLIED @ 40 MILS W/F ON VERTICAL SURFACES & 60 MILS W/F ON HORIZONTAL SURFACES (SEE NOTE 3).
 3. ALL ACID & CAUSTIC COATINGS SHALL BE AS MANUFACTURED BY: COATINGS/COMPOSITES, 10105 DCHY AVE., INGLEWOOD, CA 90301 (915)871-8468. ALL HORIZONTAL SURFACES SHALL HAVE "NON-SKID" COATING TYPE II.

Figure B-10

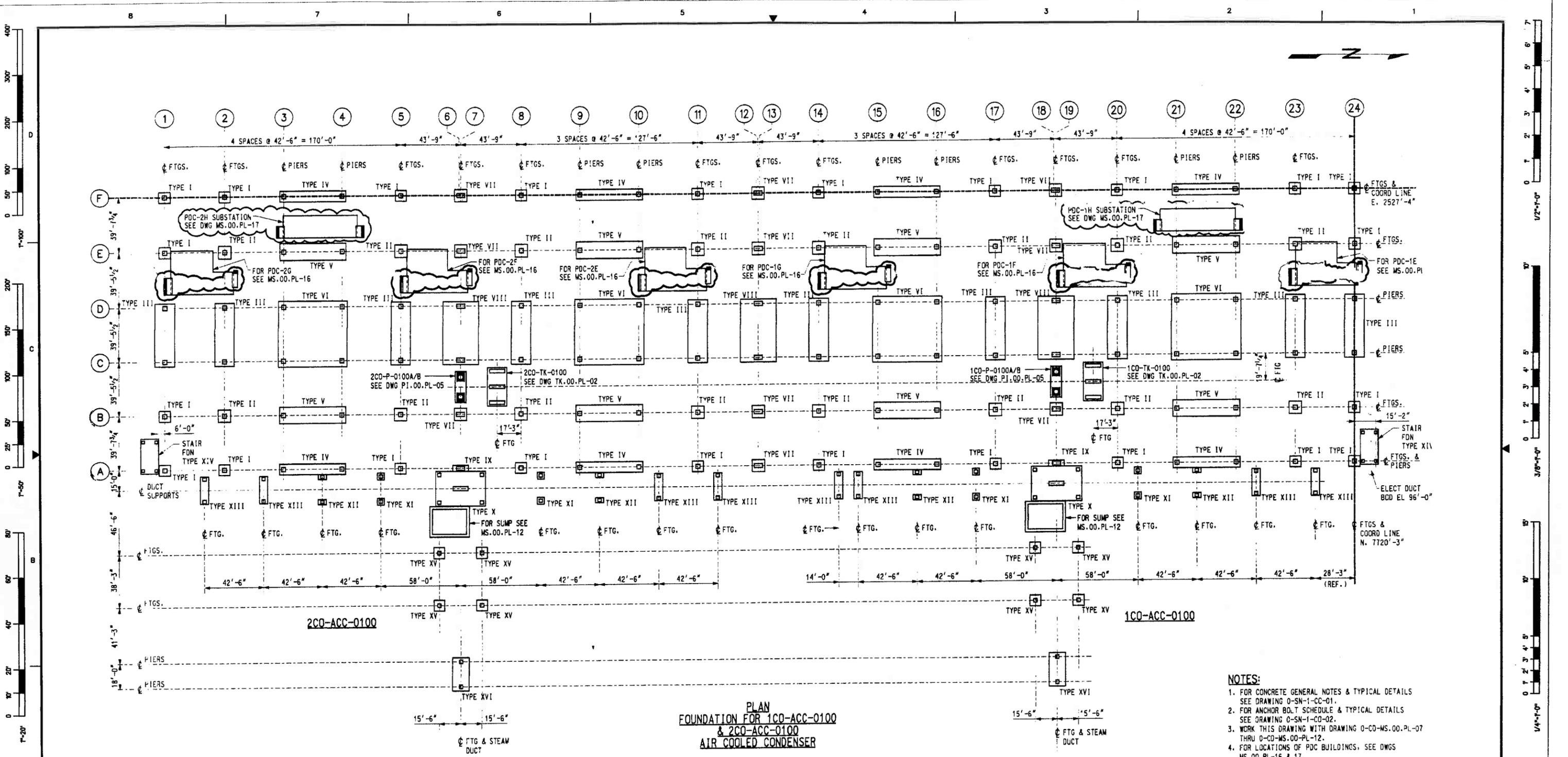
USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | | | |
|-----------------|----------|--|--|
| CONTRACT | | FEDERAL POWER AVENAL, LLC AVENAL ENERGY PROJECT AVENAL, CALIFORNIA | |
| DESIGNED BY | APP DATE | SUPERVISOR | |
| CHECKED BY | APP DATE | LEAD ENGR/SPEC. A. MACKENZIE | |
| FLUOR | APP DATE | CLIENT | |
| | APP DATE | SCALE | |
| DRAWING NUMBER | | CD-1-YM-1 | |
| REV A | | DST CODE | |



PLAN
FOUNDATION FOR 1CO-ACC-0100
& 2CO-ACC-0100
AIR COOLED CONDENSER

- NOTES:**
1. FOR CONCRETE GENERAL NOTES & TYPICAL DETAILS SEE DRAWING O-SN-1-CO-01.
 2. FOR ANCHOR BOLT SCHEDULE & TYPICAL DETAILS SEE DRAWING O-SN-1-CO-02.
 3. WORK THIS DRAWING WITH DRAWING O-CD-MS-00.PL-07 THRU O-CD-MS-00.PL-12.
 4. FOR LOCATIONS OF PDC BUILDINGS, SEE DWGS MS-00.PL-16 & 17.

Figure B-11

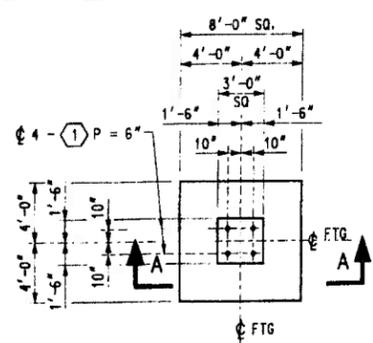
USE FOR ILLUSTRATION
 ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

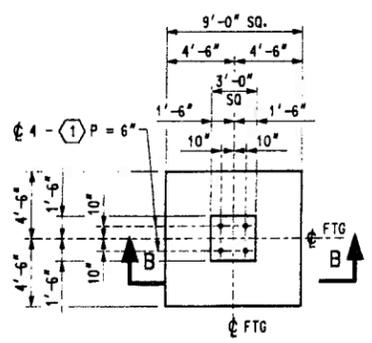
FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

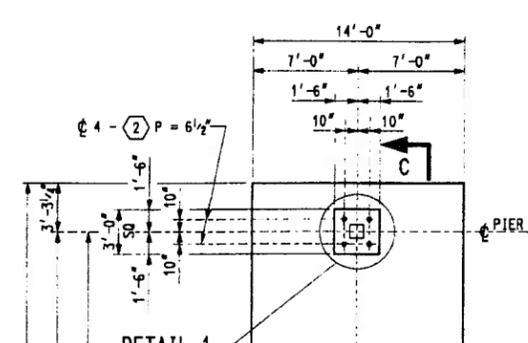
| | | | |
|-----------------|----------|--|------------------|
| CONTRACT | | FEDERAL POWER AVENAL, LLC | |
| DESIGNED BY | | AVENAL ENERGY PROJECT | |
| CHECKED BY | | AVENAL, CALIFORNIA | |
| SUPERVISOR | APP DATE | TYPICAL AIR COOLED CONDENSER STRUCTURE FOUNDATION | |
| LEAD ENGR/SPEC. | APP DATE | | |
| FLUOR | APP DATE | | |
| CLIENT | APP DATE | SCALE | DRAWING NUMBER |
| | | | CD-1-MS-1 |



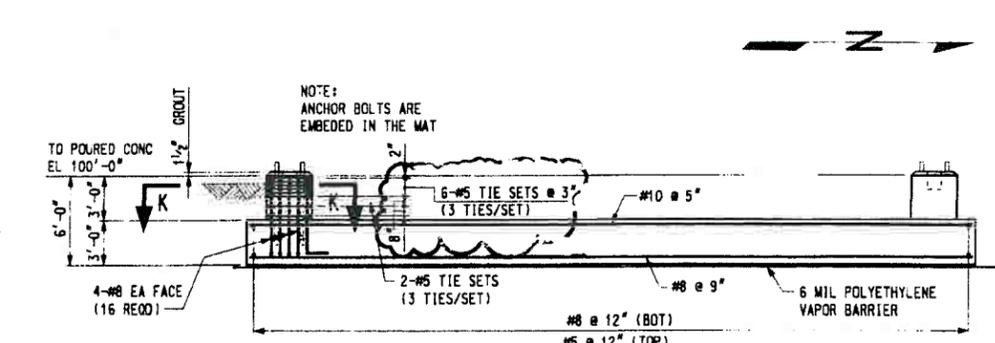
PLAN - FTG TYPE I
5.1 CUBIC YARDS CONC EACH
(24 REQ'D)



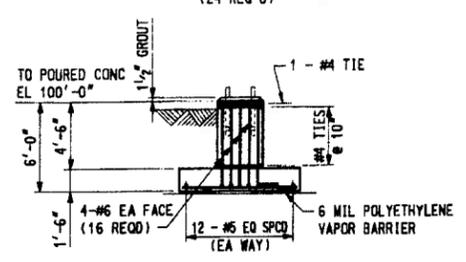
PLAN - FTG TYPE II
7.3 CUBIC YARDS CONC EACH
(16 REQ'D)



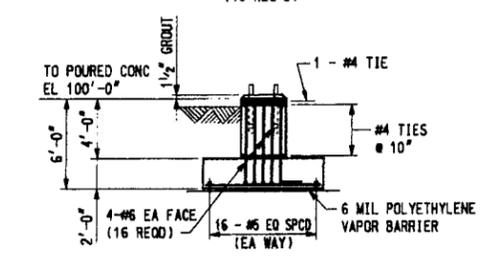
PLAN - FTG TYPE III
74.6 CUBIC YARDS CONC EACH
(10 REQ'D)



SECTION C-C

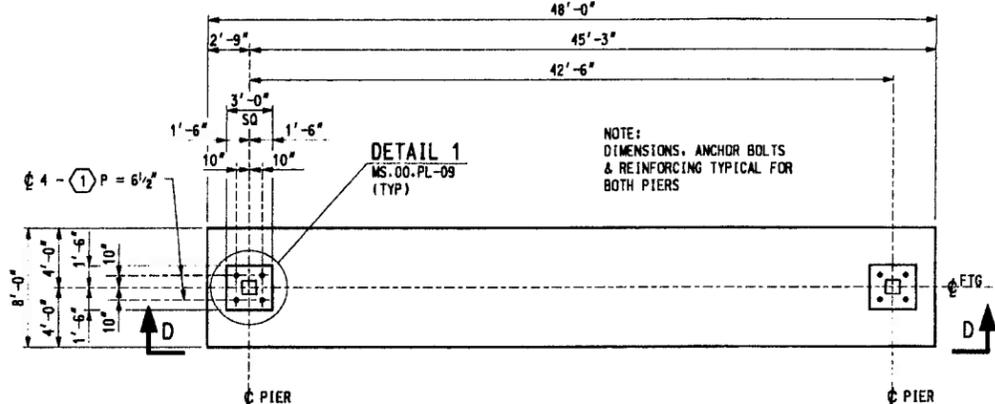


SECTION A-A

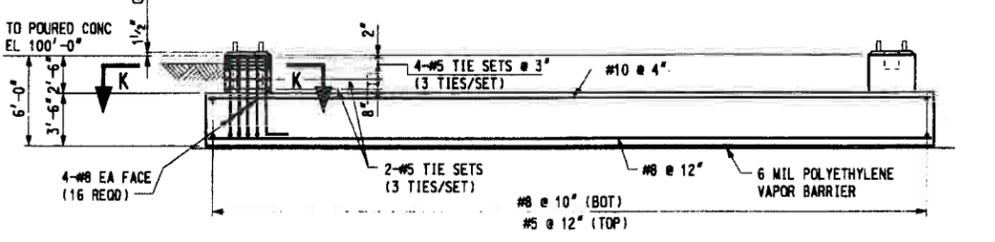


SECTION B-B

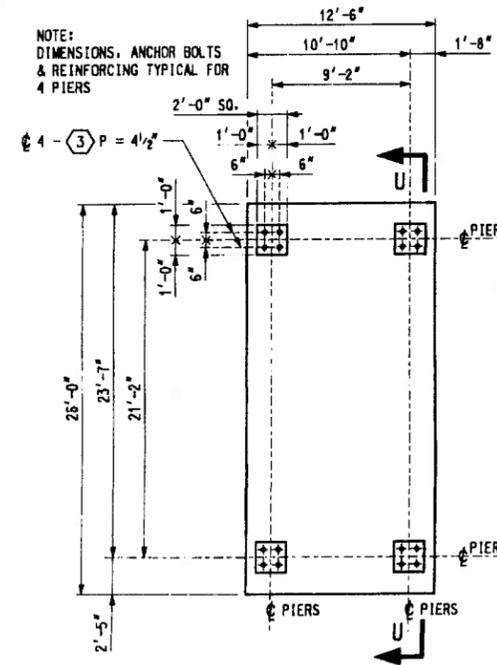
NOTE:
DIMENSIONS, ANCHOR BOLTS
& REINFORCING TYPICAL FOR
BOTH PIERS



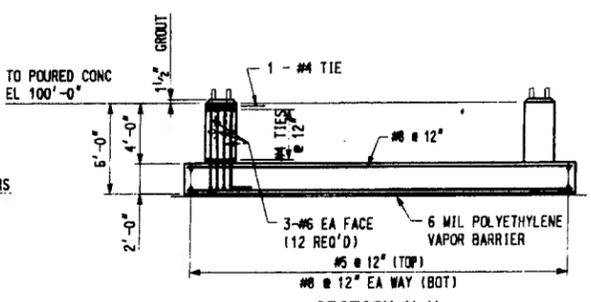
PLAN - FTG TYPE IV
51.4 CUBIC YARDS CONC EACH
(8 REQ'D)



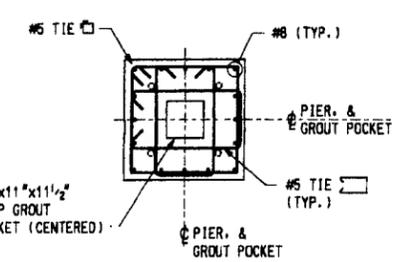
SECTION D-D



PLAN - STAIR FDN TYPE XIV
26.4 CUBIC YARDS CONC EACH
(2 REQ'D)



SECTION U-U



SECTION K-K
SCALE: 1/2"=1'-0"

NOTE:
1. WORK THIS DRAWING WITH DRAWINGS
MS.DD.PL-06 THRU MS.DD.PL-10.

Figure B-12

USE FOR ILLUSTRATION
ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

FLUOR.

CONTRACT: FEDERAL POWER AVENAL, LLC
AVENAL ENERGY PROJECT
AVENAL, CALIFORNIA

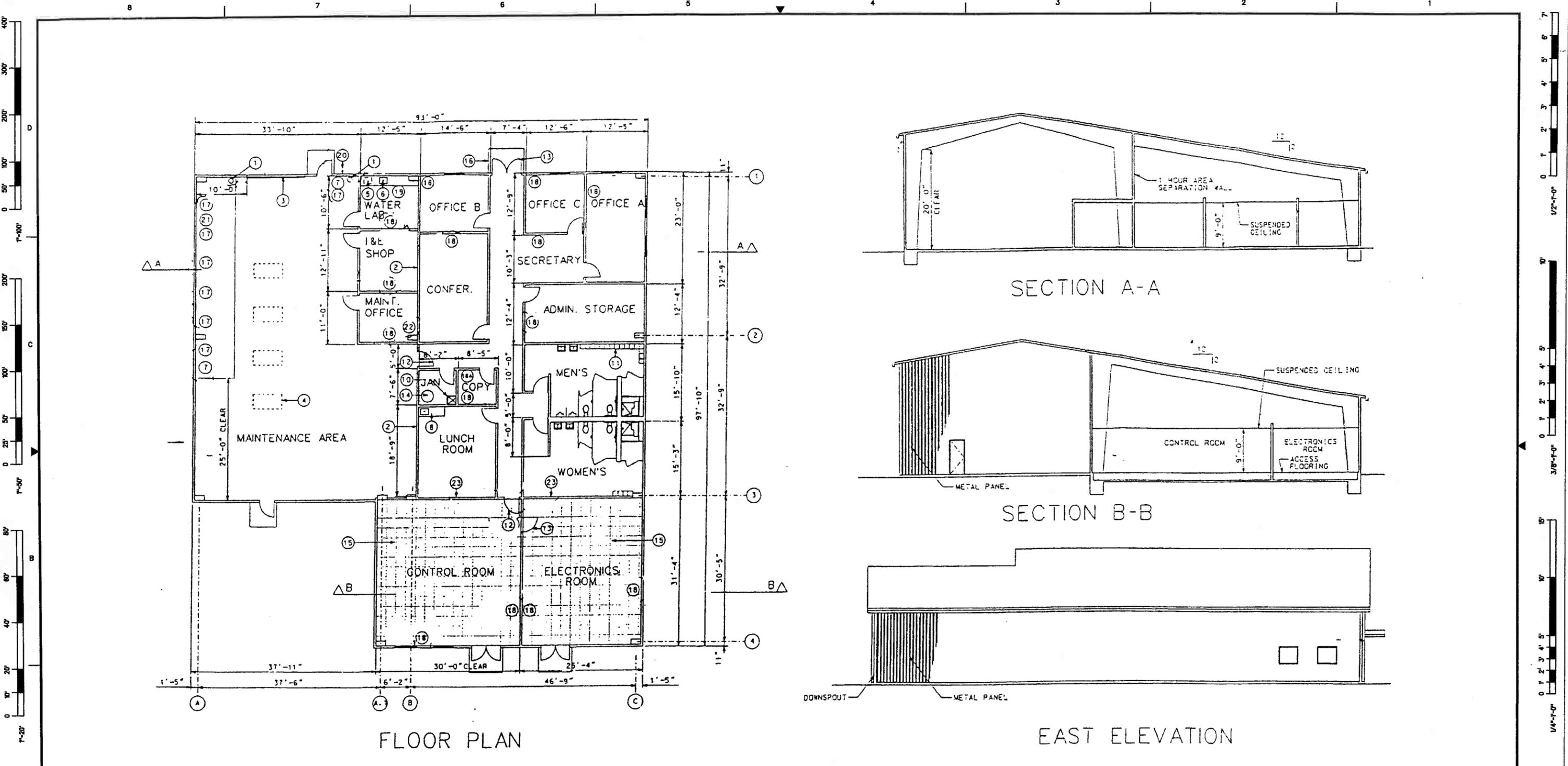
DESIGNED BY: A. MACKENZIE
CHECKED BY:
SUPERVISOR: APP DATE:
LEAD ENGR/SPEC: APP DATE:
FLUOR: APP DATE:
CLIENT: APP DATE:

**TYPICAL AIR COOLED CONDENSER
STRUCTURE FOUNDATION**

SCALE: DRAWING NUMBER: **CD-1-MS-2** REV: **A**

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

XREF ATTACHED - YES NO MANUAL CHANGES MADE - YES NO DWG FILE UPDATED - YES NO MODEL UPDATED - YES NO CAD FILE NAME: .DGN



FLOOR PLAN

SECTION A-A

SECTION B-B

EAST ELEVATION

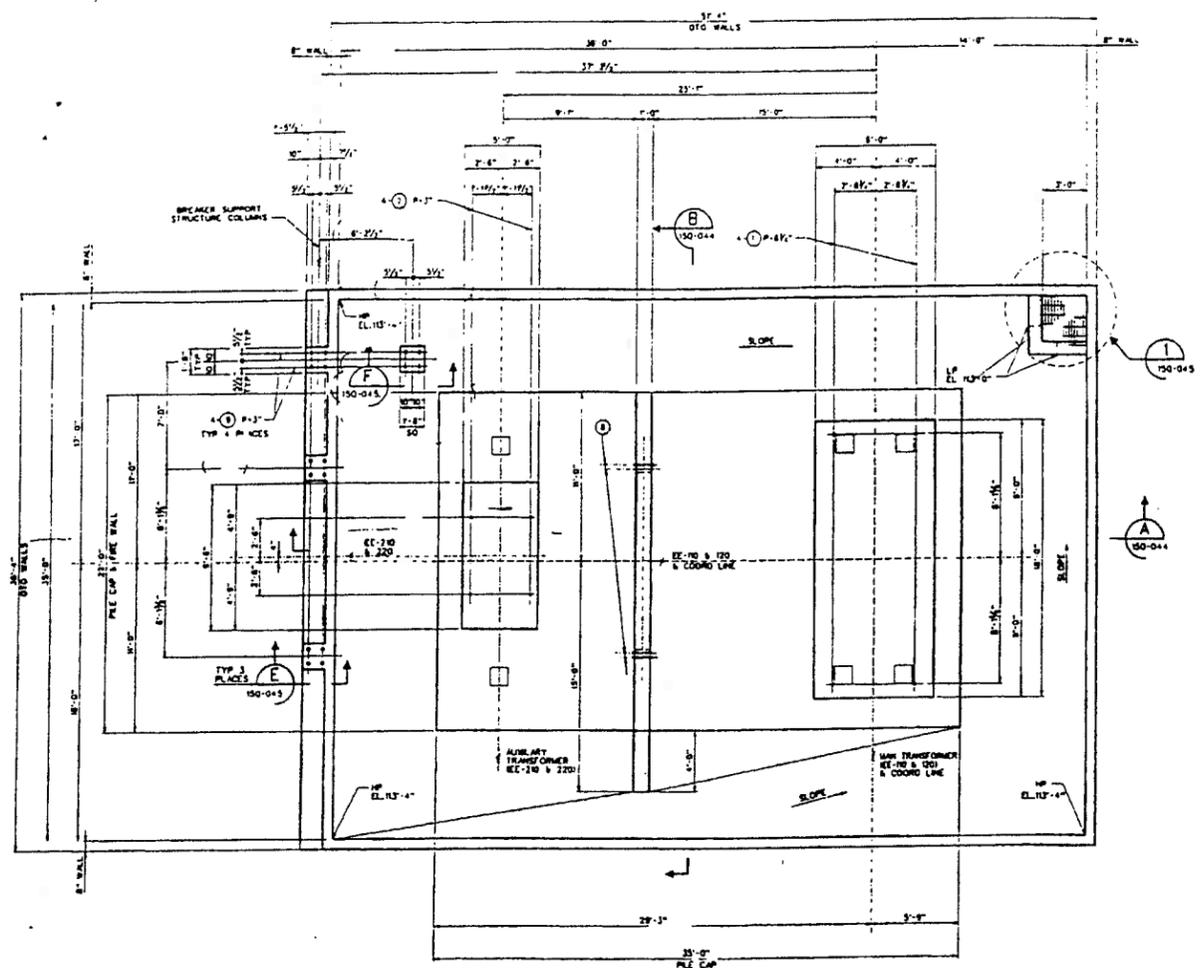
Figure B-13
 USE FOR ILLUSTRATION
 ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

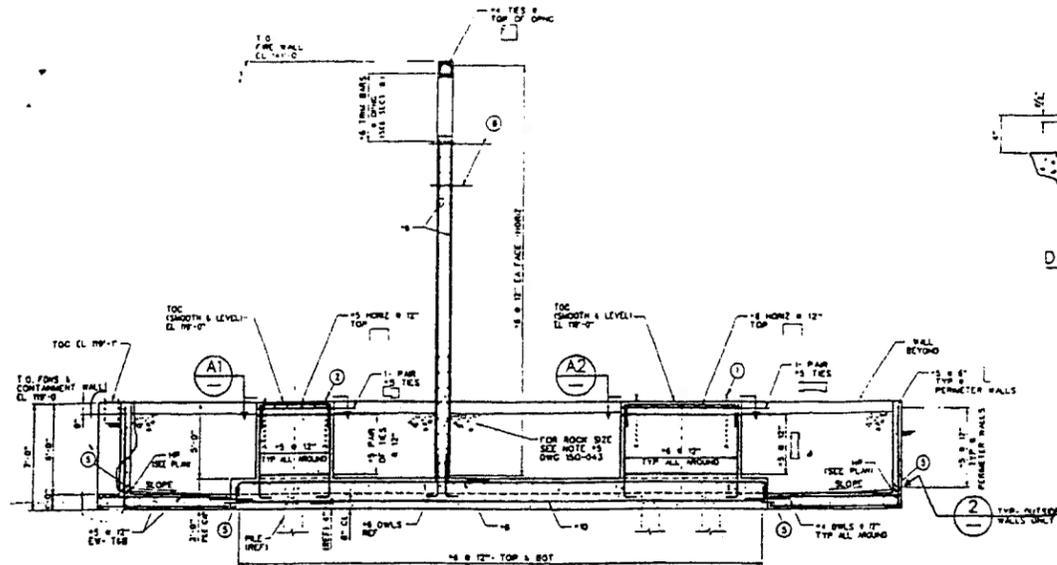
FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LOANED TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

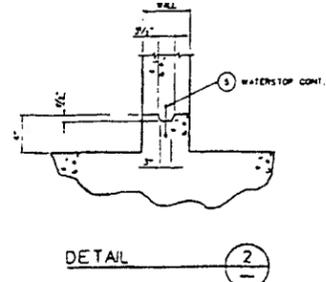
| | | | |
|-----------------|----------|--|--|
| CONTRACT | | FEDERAL POWER AVENAL, LLC AVENAL ENERGY PROJECT AVENAL, CALIFORNIA | |
| DESIGNED BY | APP DATE | TYPICAL CONTROL BUILDING SCALE: _____ DRAWING NUMBER: AD-3-SB-1 REV: A | |
| CHECKED BY | APP DATE | | |
| SUPERVISOR | APP DATE | | |
| LEAD ENGR/SPEC. | APP DATE | | |
| CLIENT | APP DATE | CAD FILE NAME: _____ .DGN | |



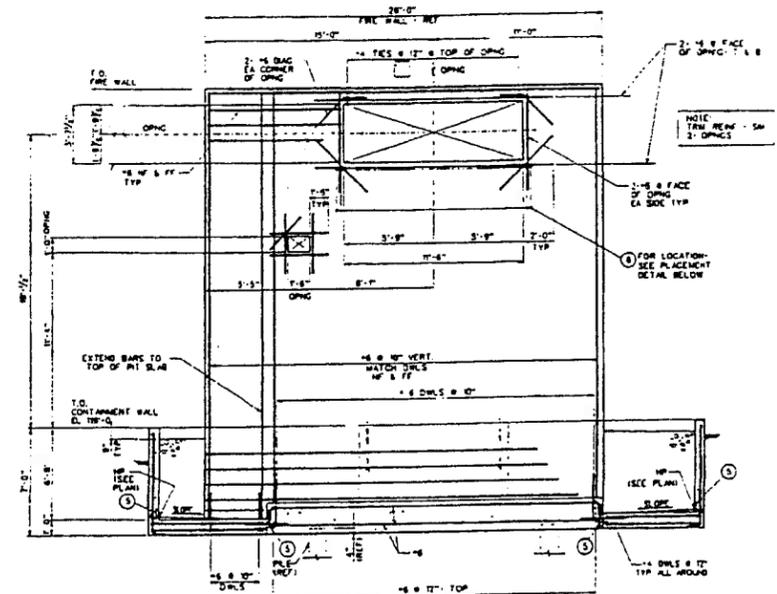
PLAN
 FOUNDATION DETAILS FOR EE-110 & 210 / EE-120 & 220
 (1.2 FDN PITS REQ'D @ 33.7 QTY 105 CONC E4)



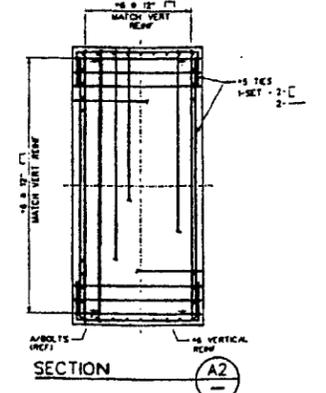
SECTION
 A-A (100-043)



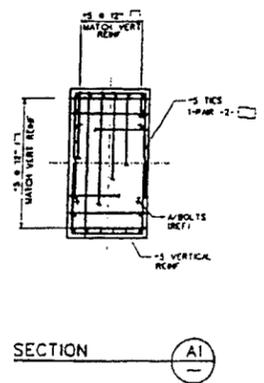
DETAIL
 2



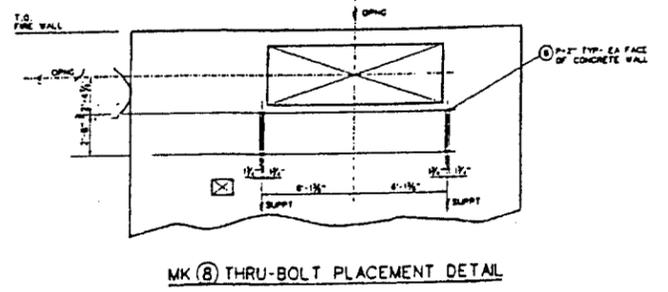
SECTION
 B-B (100-043)



SECTION
 A2-A2



SECTION
 A1-A1



MK (B) THRU-BOLT PLACEMENT DETAIL

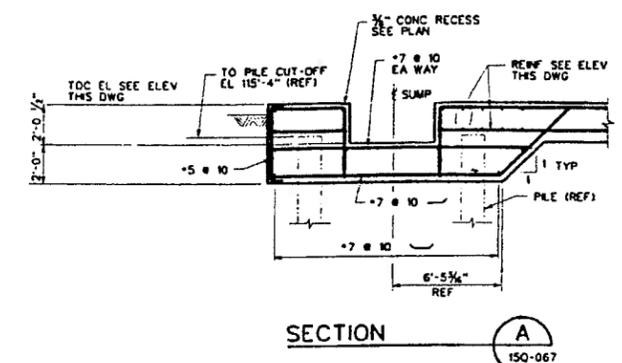
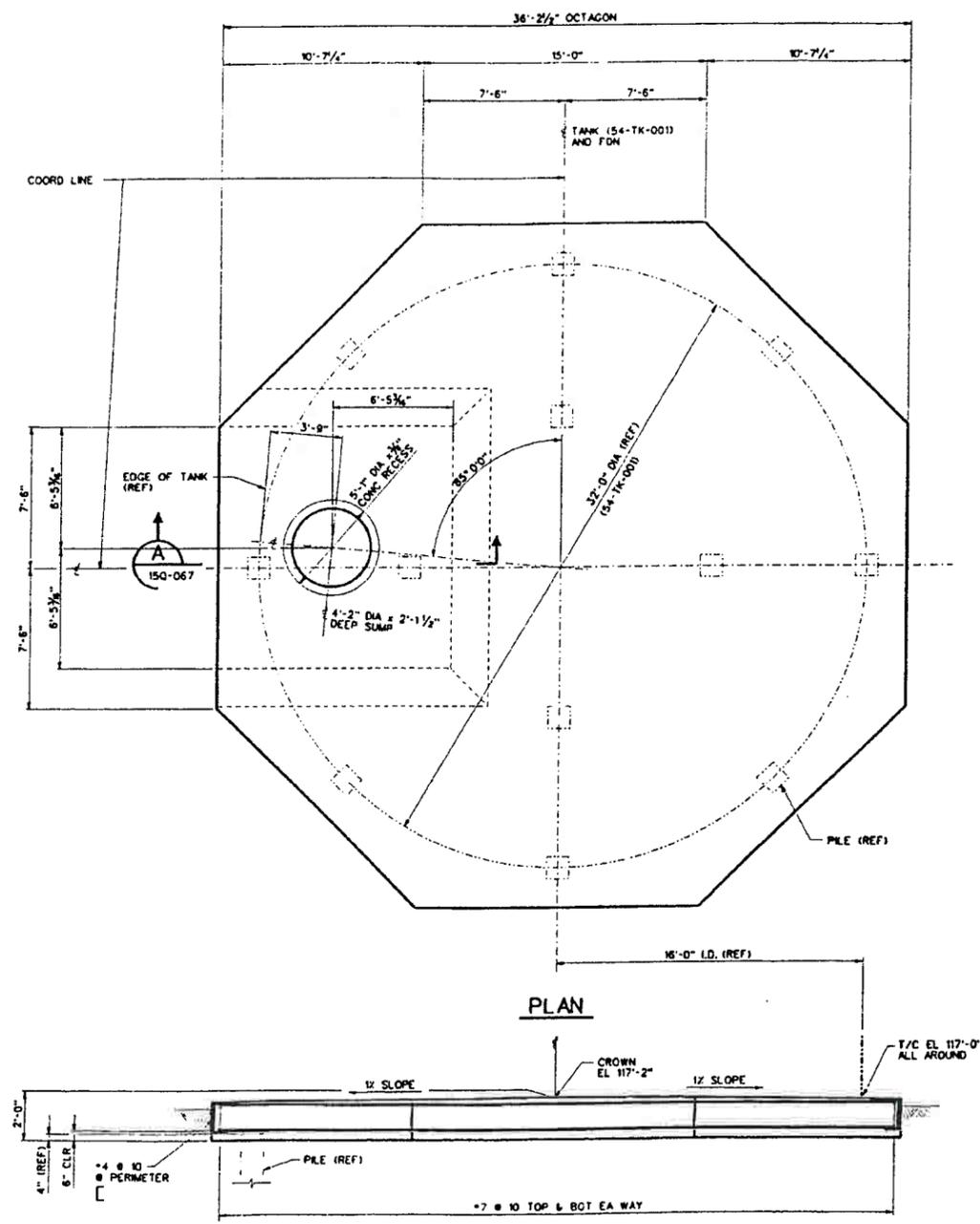
Figure B-14
 USE FOR ILLUSTRATION
 ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|--|-----------------------|--|--------------------|--|---------------------|--|--------------------------|--|----------------|--|----------------|--|-----------|--|----------|--|--------|--|----------|--|
| CONTRACT | | DESIGNED BY | | CHECKED BY | | SUPERVISOR | | APP DATE | | LEAD ENGR/SPEC | | APP DATE | | FLUOR | | APP DATE | | CLIENT | | APP DATE | |
| FEDERAL POWER AVENAL, LLC | | AVENAL ENERGY PROJECT | | AVENAL, CALIFORNIA | | TYPICAL TRANSFORMER | | FOUNDATION & CONTAINMENT | | SCALE | | DRAWING NUMBER | | CD-1-TY-1 | | REV | | A | | EST CODE | |



FDN DETS FOR TREATED WATER STORAGE TANK (54-TK-001)
 ONE FDN RECD • CU YDS CONC TOTAL

Figure B-15
 USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

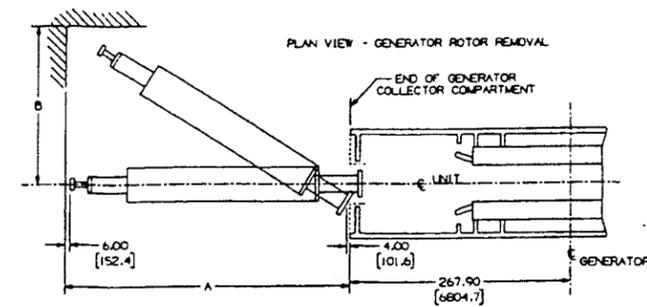
FLUOR

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY. AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | |
|-----------------|--|
| CONTRACT: | FEDERAL POWER AVENAL, LLC AVENAL ENERGY PROJECT AVENAL, CALIFORNIA |
| DESIGNED BY: | |
| CHECKED BY: | |
| SUPERVISOR: | |
| APP DATE: | |
| LEAD ENGR/SPEC: | A. MACKENZIE |
| APP DATE: | |
| CLIENT: | FLUOR |
| APP DATE: | |
| SCALE: | |
| DRAWING NUMBER: | CD-1-SIV-1 |
| REV: | A |

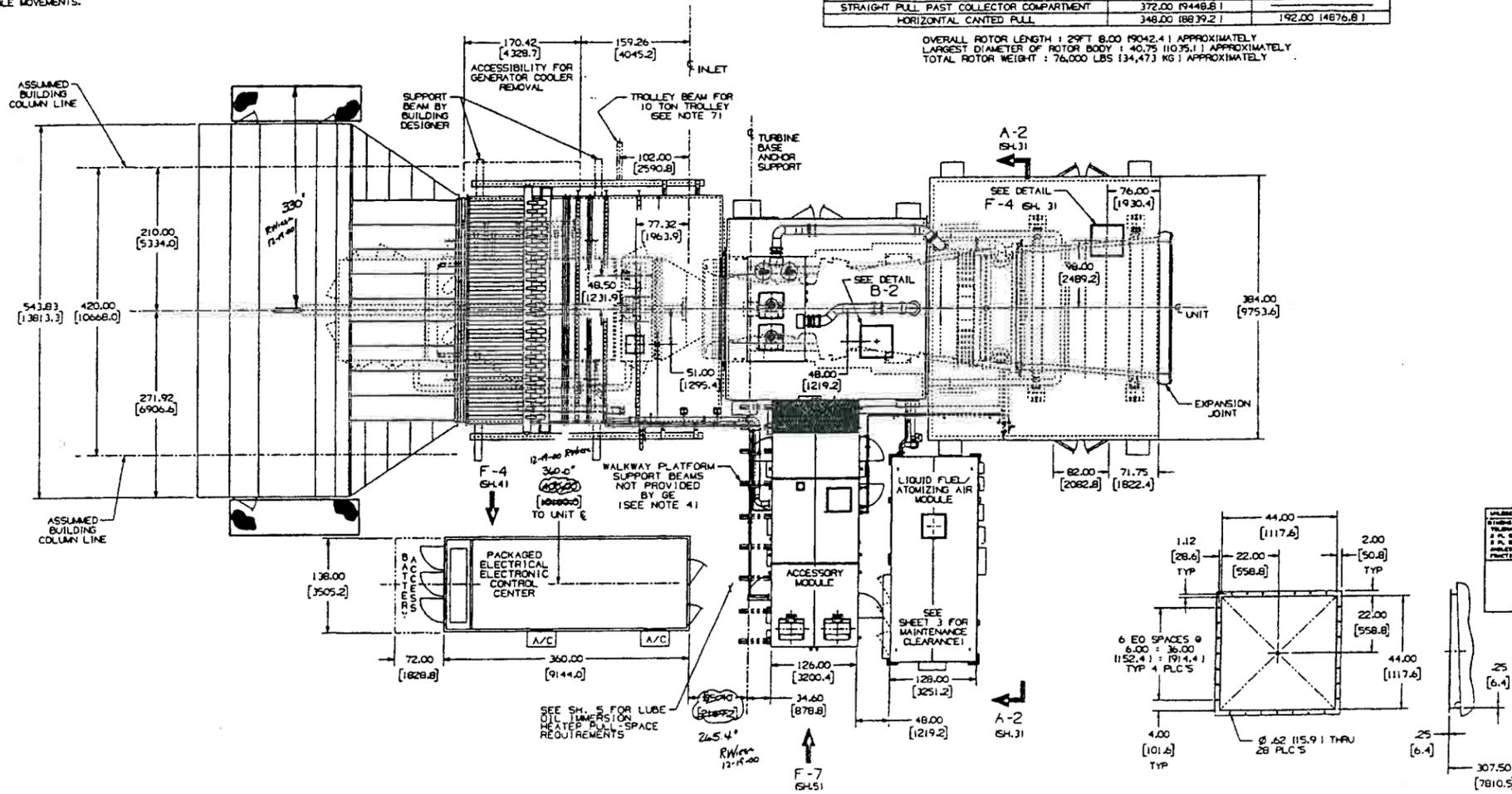
NOTE:

1. WHEN POSITIONING THE GAS TURBINE WITH THE STATION AND SURROUNDINGS, CONSIDERATION SHOULD BE GIVEN TO THE PREVAILING WINDS SO THAT THE POSSIBILITY OF EXHAUST GAS INTO THE INLET WILL BE MINIMIZED.
2. DIMENSIONS IN BRACKETS ARE IN MILLIMETERS, ALL OTHERS ARE IN INCHES.
3. ALLOW 48" MINIMUM CLEARANCE AROUND GENERATOR COLLECTOR COMPARTMENT AND ACCESSORY MODULE FOR ADEQUATE VENTILATION AND EQUIPMENT ACCESSIBILITY.
4. EXTERNAL WALKWAYS NOT SUPPLIED BY GE; WALKWAY BRACKETS SUPPLIED WHERE INDICATED. TURBINE ENCLOSURE, ACCESSORY MODULE, GENERATOR COLLECTOR COMPARTMENT AND PECC WALKWAY BRACKETS ARE CAPABLE OF SUSTAINING A 2,400 LBS VERTICAL LOAD AND A 4,800 FT-LBS MOMENT.
5. LOOKING DOWNSTREAM REFERS TO LOOKING IN THE DIRECTION OF THE GAS TURBINE AIR FLOW.
6. SEE M. ITEM 0301, THE ELECTRICAL OUTLINE, FOR THE LOCATION AND REQUIRED CLEARANCE FOR JUNCTION BOXES.
7. 516 X 70 TROLLEY BEAM FOR REMOVAL OF THE GENERATOR END SHIELDS. 10 TON TROLLEY BEAM CAPACITY. TROLLEY BEAM & LIFTING DEVICE NOT SUPPLIED BY GE.
8. THE AFT EXHAUST EXPANSION JOINT IS CAPABLE OF ACCOMMODATING 1.00 (25.4) COMPRESSION, .50 (12.7) EXTENSION, AND 10.50 (266.7) LATERAL MISALIGNMENT. THE TOTAL RELATIVE MOVEMENT OF THE WATING EXHAUST FLANGE, IN ADDITION TO ANY LONG TERM FOUNDATION DIFFERENTIAL SETTLEMENT, SHALL NOT EXCEED THESE TOTAL ALLOWABLE MOVEMENTS.



| METHOD OF REMOVAL | DISTANCE REQUIRED TO REMOVE GENERATOR ROTOR (FH2) | |
|---|---|-----------------|
| | A | B |
| STRAIGHT PULL PAST STATOR WITH COLLECTOR HOUSING ROOF REMOVED | 240.00 (6096.0) | |
| STRAIGHT PULL PAST COLLECTOR COMPARTMENT | 372.00 (9448.8) | |
| HORIZONTAL CANTED PULL | 348.00 (8839.2) | 192.00 (4876.8) |

OVERALL ROTOR LENGTH : 29FT 8.00 (9042.4) APPROXIMATELY
 LARGEST DIAMETER OF ROTOR BODY : 40.75 (1035.1) APPROXIMATELY
 TOTAL ROTOR WEIGHT : 76,000 LBS (34,473 KG) APPROXIMATELY



| DATE | BY | DESCRIPTION |
|----------|--------------|-------------------|
| 03/01/01 | J. MACKENZIE | ISSUED FOR REVIEW |
| 03/01/01 | J. MACKENZIE | ISSUED FOR REVIEW |
| 03/01/01 | J. MACKENZIE | ISSUED FOR REVIEW |
| 03/01/01 | J. MACKENZIE | ISSUED FOR REVIEW |
| 03/01/01 | J. MACKENZIE | ISSUED FOR REVIEW |

OUTLINE, MECHANICAL GTRB & LOAD
 FIRST MADE FOR M. JAIN/FA144-12
 586E1921

Figure B-16

USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | | | |
|----------------|----------|--|------------------|
| CONTRACT | | FEDERAL POWER AVENAL, LLC | |
| DESIGNED BY | | AVENAL ENERGY PROJECT | |
| CHECKED BY | | AVENAL, CALIFORNIA | |
| SUPERVISOR | APP DATE | TYPICAL GAS TURBINE GENERATOR(GTG)& ACCESSORIES | |
| LEAD ENGR/SPEC | APP DATE | | |
| FLUOR | APP DATE | | |
| CLIENT | APP DATE | SCALE | DRAWING NUMBER |
| | | | SU-4-GT-1 |
| | | | REV |
| | | | A |

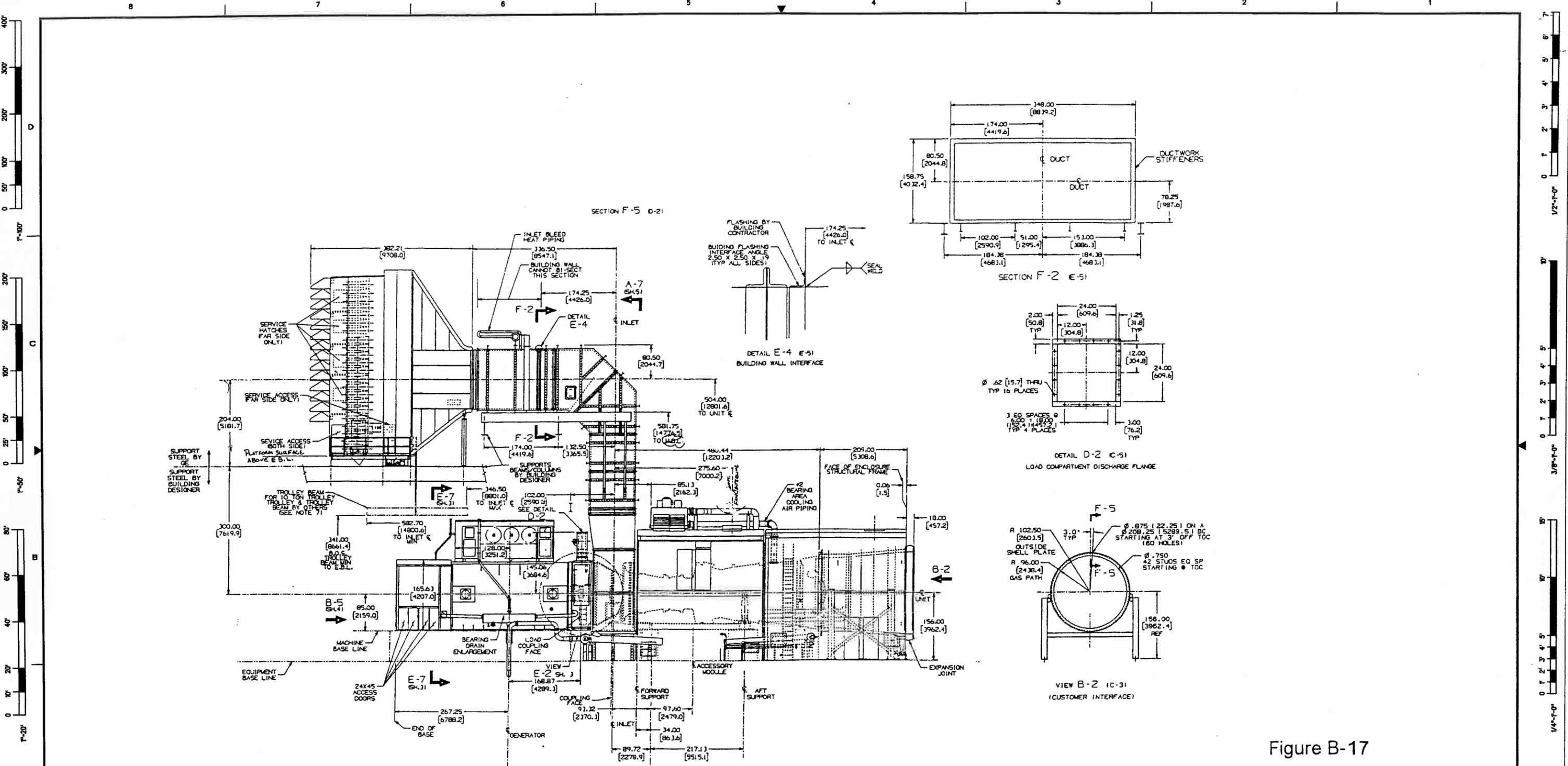


Figure B-17

USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

© COPYRIGHT 2003 BENTLEY SYSTEMS, INC. ALL RIGHTS RESERVED. THIS DRAWING IS THE PROPERTY OF BENTLEY SYSTEMS, INC. AND IS LOANED TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY. IT IS NOT TO BE REPRODUCED, COPIED, LENT, OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

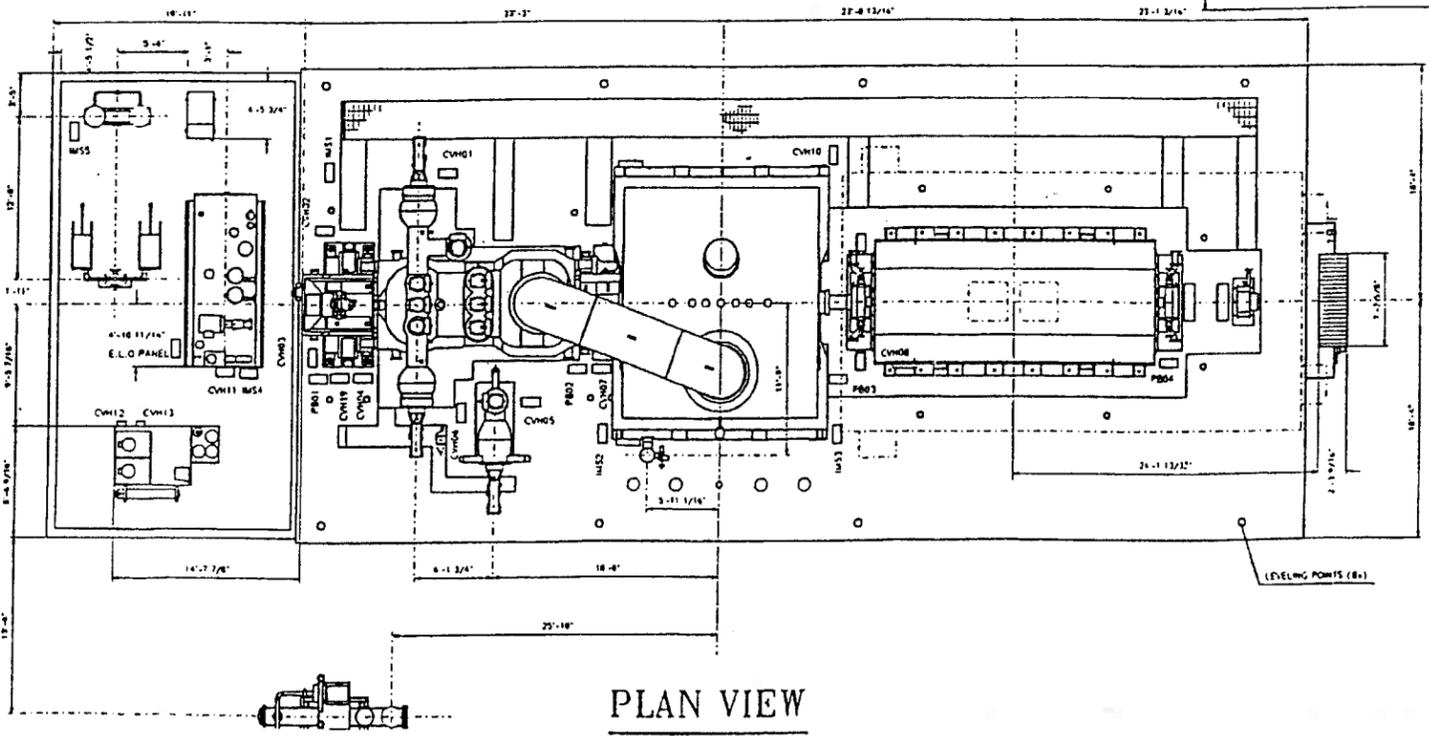
| | |
|-------------|----------|
| PROJECT NO. | 586E1921 |
| DRAWING NO. | |
| DATE | |
| SCALE | |
| BY | |
| CHECKED BY | |
| APPROVED BY | |

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

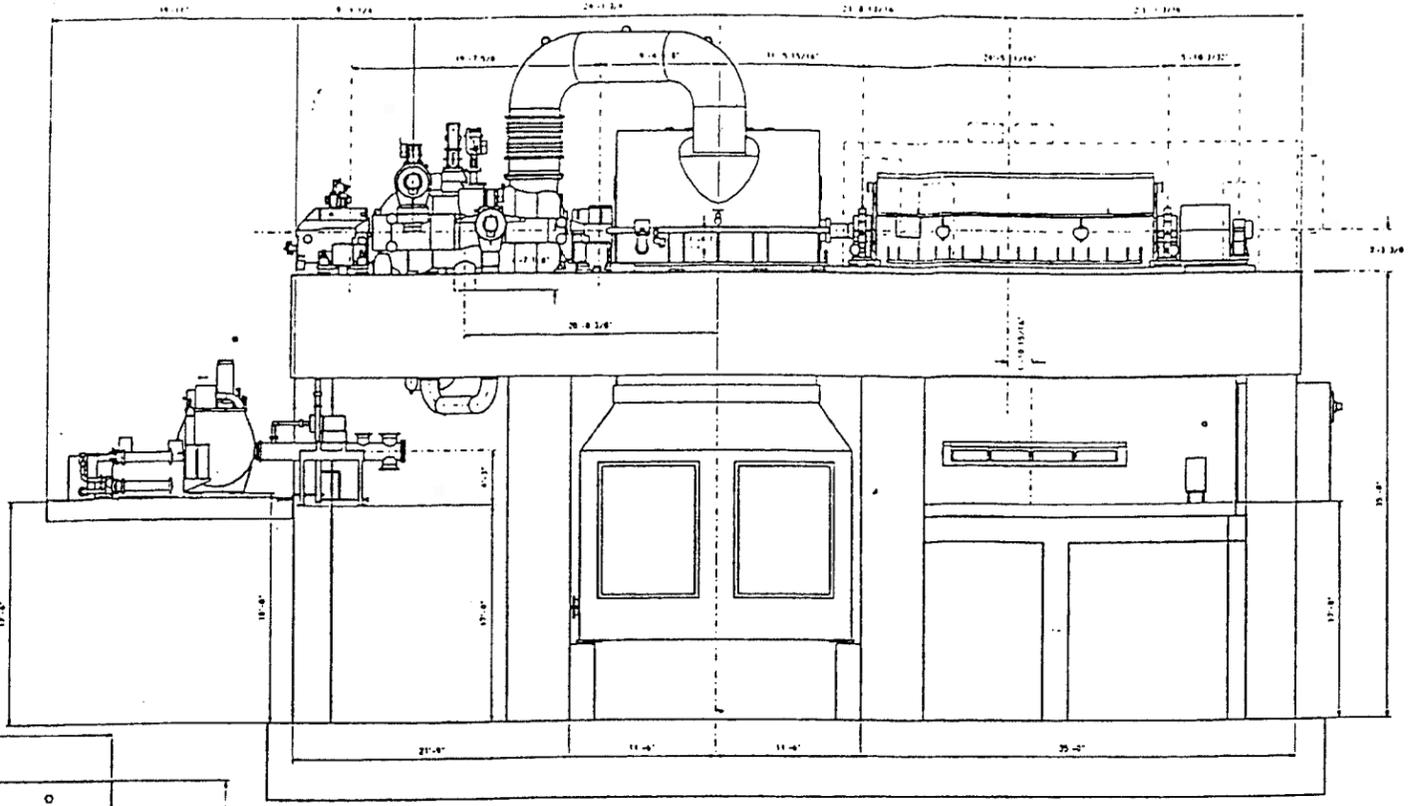
FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LOANED TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | | | |
|-----------------|----------|---|----------------|
| CONTRACT | | FEDERAL POWER AVENAL, LLC | |
| DESIGNED BY | | AVENAL ENERGY PROJECT | |
| CHECKED BY | | AVENAL, CALIFORNIA | |
| SUPERVISOR | APP DATE | TYPICAL GAS TURBINE GENERATOR(GTG)& ACCESSORIES | |
| LEAD ENGR/SPEC. | APP DATE | | |
| FLUOR | APP DATE | | |
| CLIENT | APP DATE | SCALE | DRAWING NUMBER |
| | | | SU-4-GT-2 |
| | | | REV A |



PLAN VIEW



VIEW WEST

Figure B-18

USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

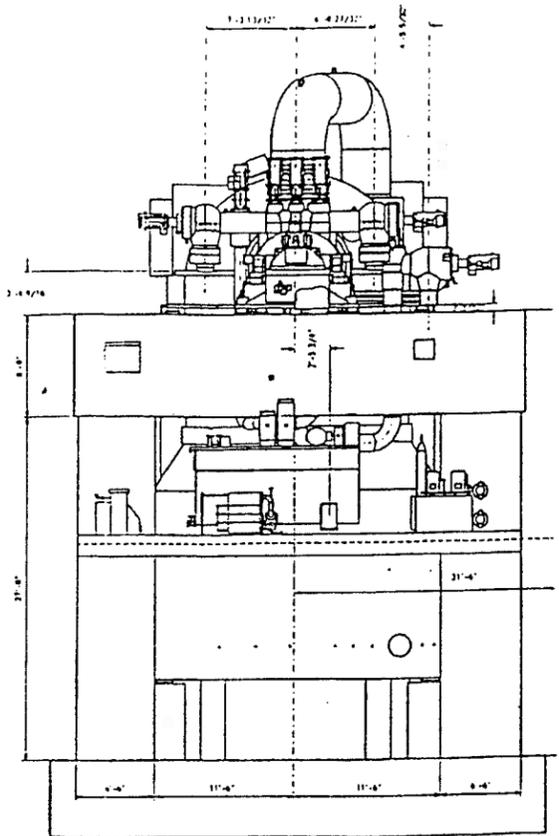
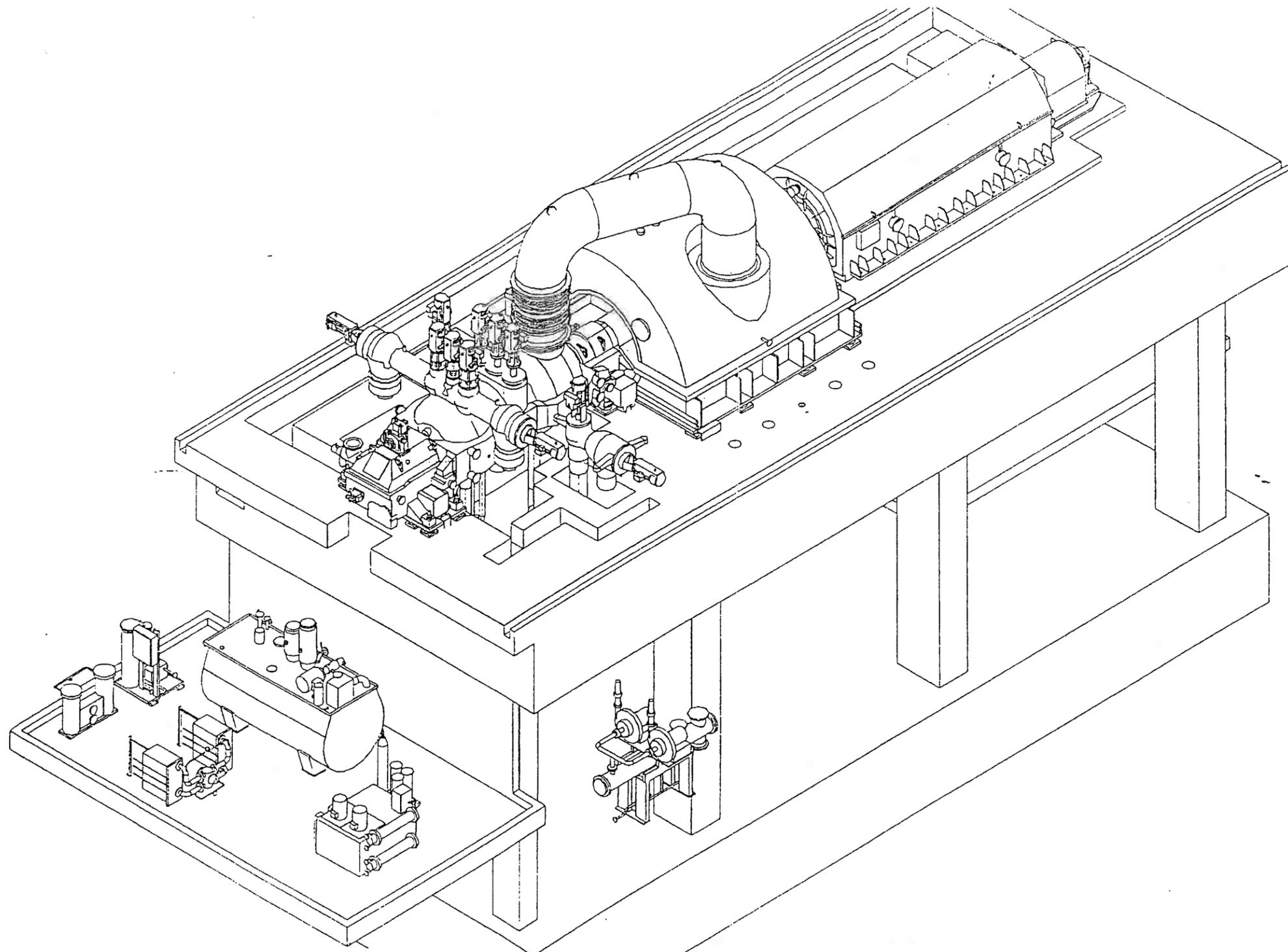
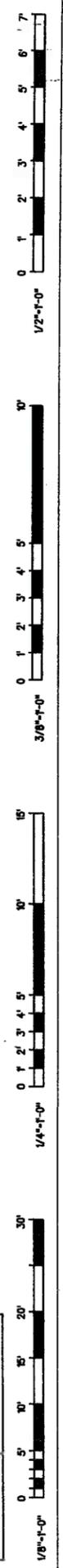
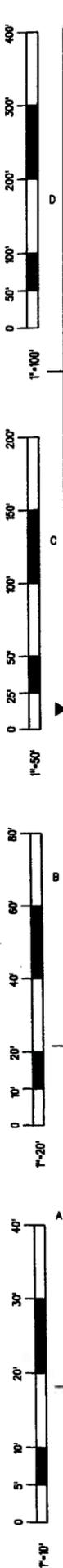
| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | |
|-----------------|----------|
| DESIGNED BY | APP DATE |
| CHECKED BY | APP DATE |
| SUPERVISOR | APP DATE |
| LEAD ENGR/SPEC. | APP DATE |
| FLUOR | APP DATE |
| CLIENT | APP DATE |

| | |
|--|-----------------------------|
| FEDERAL POWER AVALON, LLC AVALON ENERGY PROJECT AVALON, CALIFORNIA | |
| TYPICAL STEAM TURBINE GENERATOR(STG) & ACCESSORIES | |
| SCALE | DRAWING NUMBER SU-4-ST-1 |
| REV A | DGN |



VIEW NORTH

Figure B-19

USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | |
|-----------------|-----------|
| DESIGNED BY | APP. DATE |
| CHECKED BY | APP. DATE |
| SUPERVISOR | APP. DATE |
| LEAD ENGR/SPEC. | APP. DATE |
| FLUOR | APP. DATE |
| CLIENT | APP. DATE |

FEDERAL POWER AVALON, LLC
 AVALON ENERGY PROJECT
 AVALON, CALIFORNIA

**TYPICAL STEAM TURBINE
 GENERATOR(STG) & ACCESSORIES**

SCALE: _____ DRAWING NUMBER: **SU-4-ST-2** REV: **A**

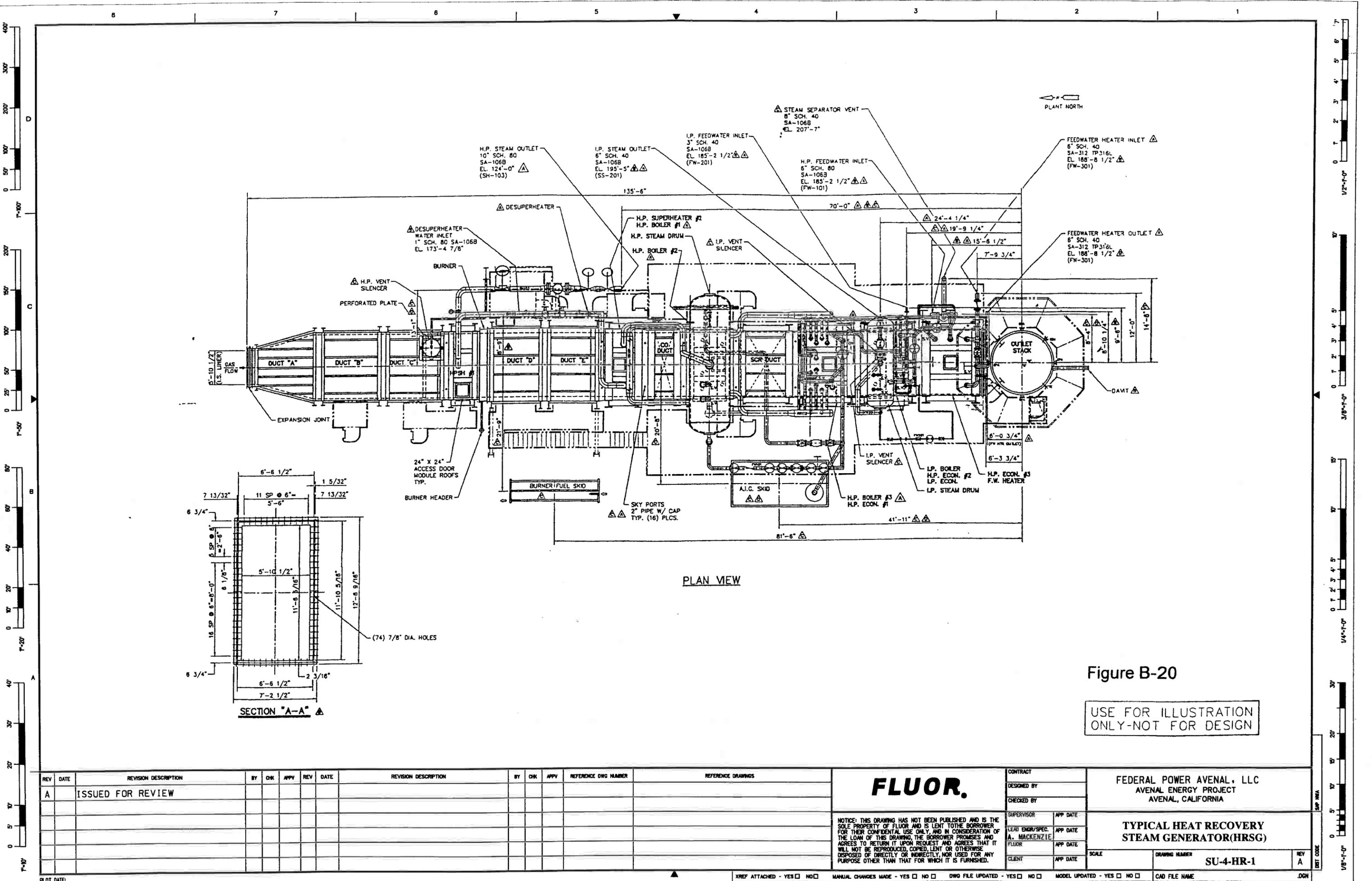


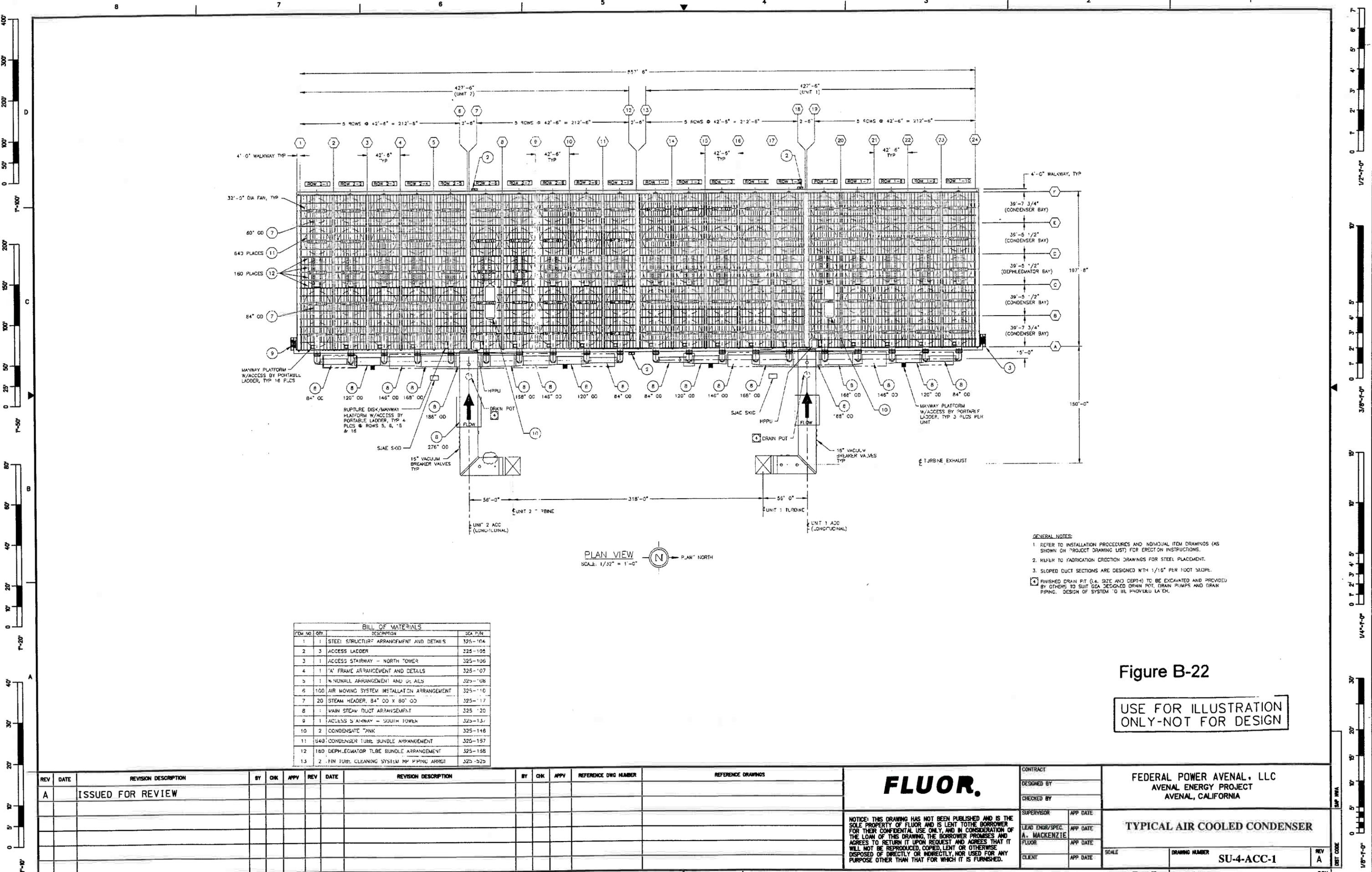
Figure B-20
 USE FOR ILLUSTRATION
 ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | | | | | | | | | | | |
|-----------------|--|-------------|--|------------|--|----------------|--|----------|--|--|--|
| CONTRACT | | DESIGNED BY | | CHECKED BY | | SUPERVISOR | | APP DATE | | FEDERAL POWER AVENAL, LLC AVENAL ENERGY PROJECT AVENAL, CALIFORNIA | |
| LEAD ENGR/SPEC. | | APP DATE | | FLUOR | | APP DATE | | APP DATE | | TYPICAL HEAT RECOVERY STEAM GENERATOR(HRSG) | |
| CLIENT | | APP DATE | | SCALE | | DRAWING NUMBER | | REV | | EST CODE | |
| | | | | | | SU-4-HR-1 | | A | | | |



- GENERAL NOTES:**
- REFER TO INSTALLATION PROCEDURES AND INDIVIDUAL ITEM DRAWINGS (AS SHOWN ON PROJECT DRAWING LIST) FOR ERECTION INSTRUCTIONS.
 - REFER TO FABRICATION ERECTION DRAWINGS FOR STEEL PLACEMENT.
 - SLOPED DUCT SECTIONS ARE DESIGNED WITH 1/16" PER FOOT SLOPE.
 - FINISHED DRAIN PIT (1.6' SIZE AND DEPTH) TO BE EXCAVATED AND PROVIDED BY OTHERS TO SUIT GSA DESIGNED DRAIN POT, DRAIN PUMPS AND DRAIN PIPING. DESIGN OF SYSTEM TO BE PROVIDED LATER.

| ITEM NO. | QTY. | DESCRIPTION | SEA P/N |
|----------|------|--|---------|
| 1 | 1 | STEEL STRUCTURE ARRANGEMENT AND DETAILS | 325-104 |
| 2 | 3 | ACCESS LADDER | 325-105 |
| 3 | 1 | ACCESS STAIRWAY - NORTH TOWER | 325-106 |
| 4 | 1 | 'A' FRAME ARRANGEMENT AND DETAILS | 325-107 |
| 5 | 1 | WINDWALL ARRANGEMENT AND DETAILS | 325-108 |
| 6 | 100 | AIR MOVING SYSTEM INSTALLATION ARRANGEMENT | 325-110 |
| 7 | 20 | STEAM HEADER, 84" OD X 80" OD | 325-117 |
| 8 | 1 | MAIN STEAM DUCT ARRANGEMENT | 325-120 |
| 9 | 1 | ACCESS STAIRWAY - SOUTH TOWER | 325-157 |
| 10 | 2 | CONDENSATE TANK | 325-148 |
| 11 | 640 | CONDENSER TUBE BUNDLE ARRANGEMENT | 325-137 |
| 12 | 160 | DEPHLEGMATOR TUBE BUNDLE ARRANGEMENT | 325-138 |
| 13 | 2 | FIN TUBE CLEANING SYSTEM PIPE ARRANGEMENT | 325-529 |

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

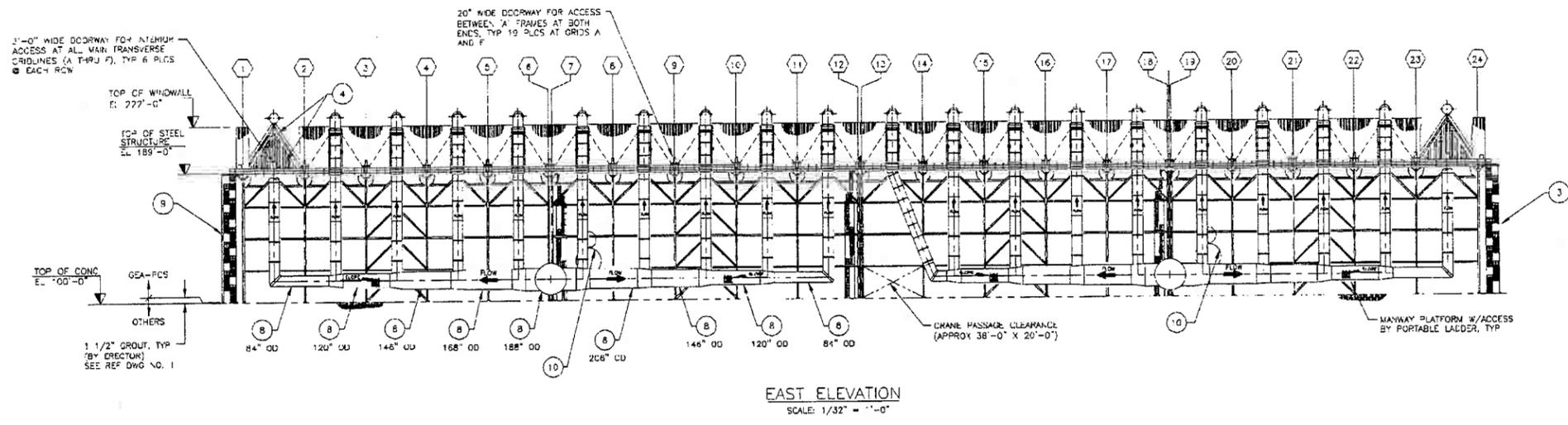
FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LOANED TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

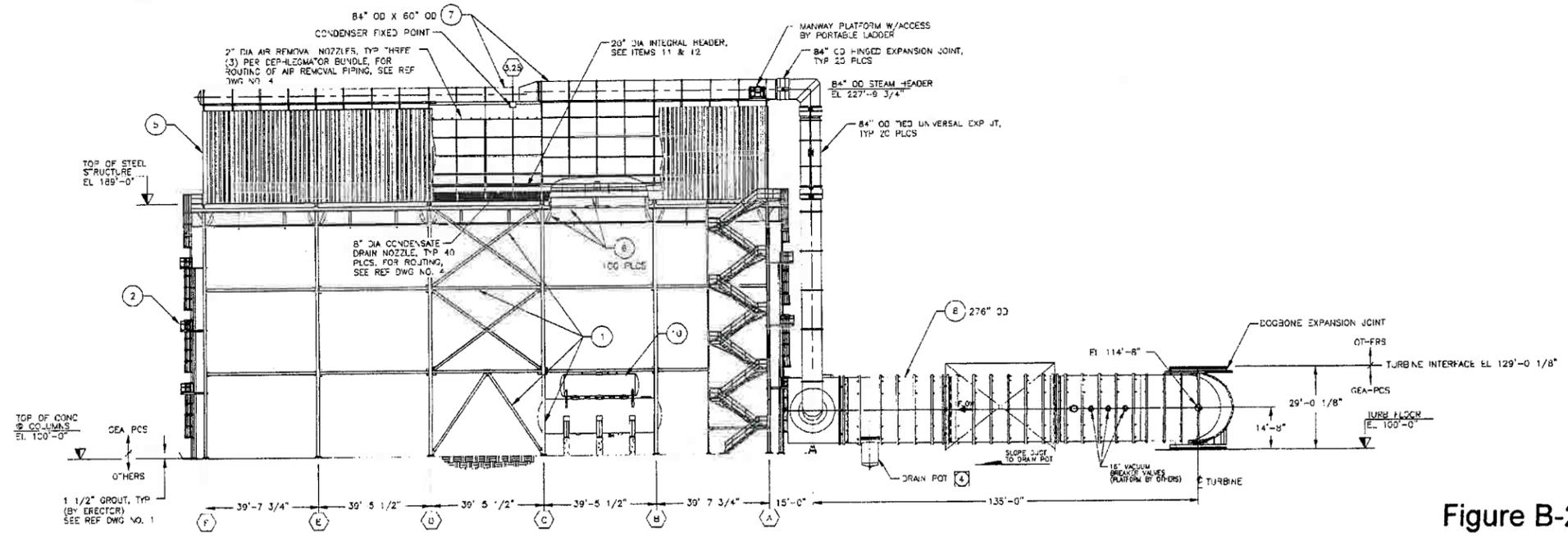
| | | | | | | | | | |
|--|--|--|--|--|--|---|--|--|--|
| CONTRACT | | DESIGNED BY | | CHECKED BY | | SUPERVISOR | | APP DATE | |
| FEDERAL POWER AVENAL, LLC AVENAL ENERGY PROJECT AVENAL, CALIFORNIA | | | | | | LEAD ENGR/SPEC. A. MACKENZIE | | APP DATE | |
| TYPICAL AIR COOLED CONDENSER | | | | | | FLUOR | | APP DATE | |
| SCALE | | DRAWING NUMBER | | REV | | CLIENT | | APP DATE | |
| | | SU-4-ACC-1 | | A | | SU-4-ACC-1 | | | |
| PLOT DATE: | | XREF ATTACHED - YES <input type="checkbox"/> NO <input type="checkbox"/> | | MANUAL CHANGES MADE - YES <input type="checkbox"/> NO <input type="checkbox"/> | | DWG FILE UPDATED - YES <input type="checkbox"/> NO <input type="checkbox"/> | | MODEL UPDATED - YES <input type="checkbox"/> NO <input type="checkbox"/> | |
| | | CAD FILE NAME | | | | | | .DGN | |

Figure B-22

USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN



EAST ELEVATION
SCALE: 1/32" = 1'-0"



SOUTH ELEVATION
SCALE: 1/16" = 1'-0"

Figure B-23

USE FOR ILLUSTRATION
ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | | | |
|-------------|----------|--|----------|
| CONTRACT | | FEDERAL POWER AVALAN, LLC AVALAN ENERGY PROJECT AVALAN, CALIFORNIA | |
| DESIGNED BY | APP DATE | SUPERVISOR | |
| CHECKED BY | APP DATE | LEAD ENGR/SPEC | APP DATE |
| FLUOR | APP DATE | CLIENT | APP DATE |
| SCALE | | DRAWING NUMBER | REV |
| | | SU-4-ACC-2 | A |

ITEMS:

1. PROVISION ON BASE FOR SKIDDING
2. TRANSFORMER LIFTING LUGS
3. STAINLESS STEEL GROUND PADS (2), EACH WITH CRIMP LUG FOR 4/0 CABLE
4. STAINLESS STEEL DIAGRAMATIC NAMEPLATE
5. MANHOLE WITH COVER
6. WELDED TOP COVER
7. COOLING RADIATORS, DEMOUNTABLE, WITH ISOLATION VALVES AND VENT AND DRAIN PLUGS
8. HV BUSHING, 25KV, 150KV BIL, LAPP (3) WITH 4 HOLE NEMA PAD
9. LV BUSHING, 5KV, 75KV BIL (3) EACH WITH 3 CRIMP LUGS, 750MCM
10. COMBINATION LOWER DRAIN AND FILTER VALVE WITH SAMPLER
11. UPPER FILTER VALVE WITH PIPE PLUG
12. VTC PRESSURIZATION TEST POINT
13. LIQUID LEVEL GAUGE WITH CONTACTS, GAUGE CENTER IS 25°C OIL LEVEL MARK
14. OIL TEMPERATURE GAUGE WITH CONTACTS, TILTED 30°
15. PRESSURE VACUUM GAUGE WITH BLEEDER, TILTED 30°
16. PRESSURE RELIEF DEVICE WITH CONTACTS
17. DE-ENERGIZED, NO LOAD MANUAL TAP CHANGER WITH PROVISION FOR PADLOCKING
18. AIR TERMINAL CHAMBER, NEMA 3R, WITH BOLTED REMOVABLE END PANEL
19. JUNCTION BOX, 36 X 30 X 12, NEMA 4, PADLOCKABLE
20. WINDING TEMPERATURE GAUGE, SIMULATION SYSTEM, WITH CONTACTS, TILTED 30°
21. SUDDEN PRESSURE RELAY
22. JACK PADS WITH PULLING EYES
23. NEUTRAL GROUNDING RESISTOR IN PAINTED (ANSI-70 EPOXY) ALUMINUM ENCLOSURE
24. GROUND BUS, 1/4 X 2 COPPER, WITH 2 CRIMP LUGS FOR 4/0 CABLE
25. GLOBE VALVE, 2", FOR VACUUM CONNECTION
26. FRP SUPPORT FOR CUSTOMER CABLES
27. FANS
28. STAINLESS STEEL ID TAG: "EE-210" FOR JOB 9062A
"EE-220" FOR JOB 9062B
29. LV NEUTRAL BUSHING, 5KV, 75KV BIL, WITH 4 HOLE NEMA PAD
30. BOX FOR EXTERNAL CORE GROUND BUSHING

NOTES:

1. TYPE II MINERAL OIL FILLED TRANSFORMER-APPX 1872 GALLONS
 2. OUTDOOR SERVICE
 3. TANK DESIGNED TO ELIMINATE CORNER WELDS
 4. PAINT: ANSI-70 EPOXY
 5. UNIT DESIGNED FOR SEALED TANK OIL PRESERVATION
 6. SEE SHEETS 21, 22 FOR SCHEMATIC
 7. ALL ACCESSORY WIRING IN RIGID ALUMINUM CONDUIT, EXCEPT FINAL 18" MAY BE IN UQUITITE FLEX CONDUIT
 8. ALL GASKETS WILL HAVE COMPRESSION STOPS
 9. UNIT DESIGNED FOR FULL VACUUM FILLING
 10. GUARANTEED LOSSES: 13KW NL, 55KW LL
 11. LV LUGS ARE BOLTED TO BUSHINGS WITH SS HARDWARE
 12. UNIT SHIPS WITH RADIATORS, FANS, NGR AND HV SPADES DEMOUNTED-
- SHIPPING WEIGHTS:
- RADIATORS 5000 LBS
 - FANS & SPADE CONNECTORS 400 LBS
 - OIL FOR RADS 2000 LBS
(5 DRUMS @ 55 GALLON=275 GALLONS)
 - NGR 500 LBS
 - MAIN UNIT 56600 LBS
- (NOTE THAT HV BUSHINGS SHIP MOUNTED)
13. SEE SHEET 102 FOR SEGMENT 3 VIEW AND FOR REVISION BLOCK DESCRIPTIONS
 14. CG1 IS FULLY ASSEMBLED, CG2 IS WITHOUT RADIATORS, OIL, FANS, NGR
 15. ALL DEVICES ARE LABELED WITH STAINLESS STEEL TAGS TO MATCH DRAWING NOMENCLATURE

| LIQUID FILLED TRANSFORMER DATA | | | |
|---|-----------------|-----------|--------------|
| MCO/SN: 45012MAD08 | MVA: 12/16 | | |
| PH: 3 | 60 Hz | 65°C RISE | |
| TAP: = 2 x 2.5 % | CLASS: OA/FA | | |
| IMP: 5.0 % NOM. ON 12MVA BASE WT: 54500 LBS | | | |
| WINDINGS: COPPER | | | |
| | VOLTS | BIL | AMPS @ 16MVA |
| -V | 18000 DELTA | 150 KV | 513 NOM |
| LV 1 | 4150 GND Y/2400 | 60 KV | 2221 |

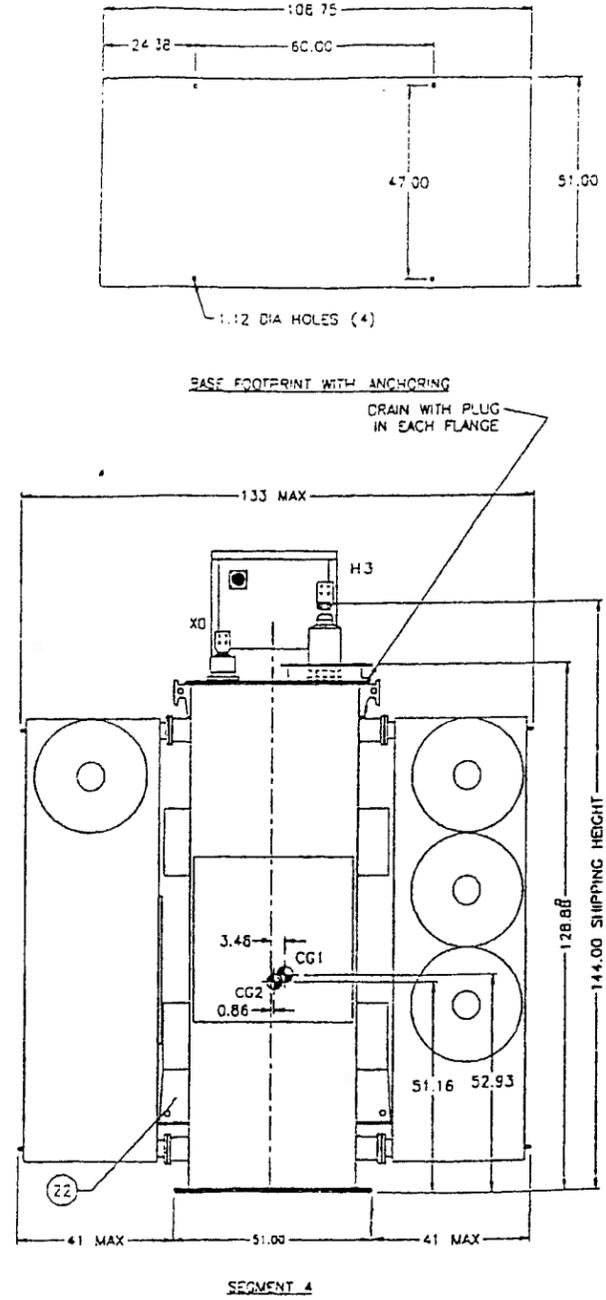
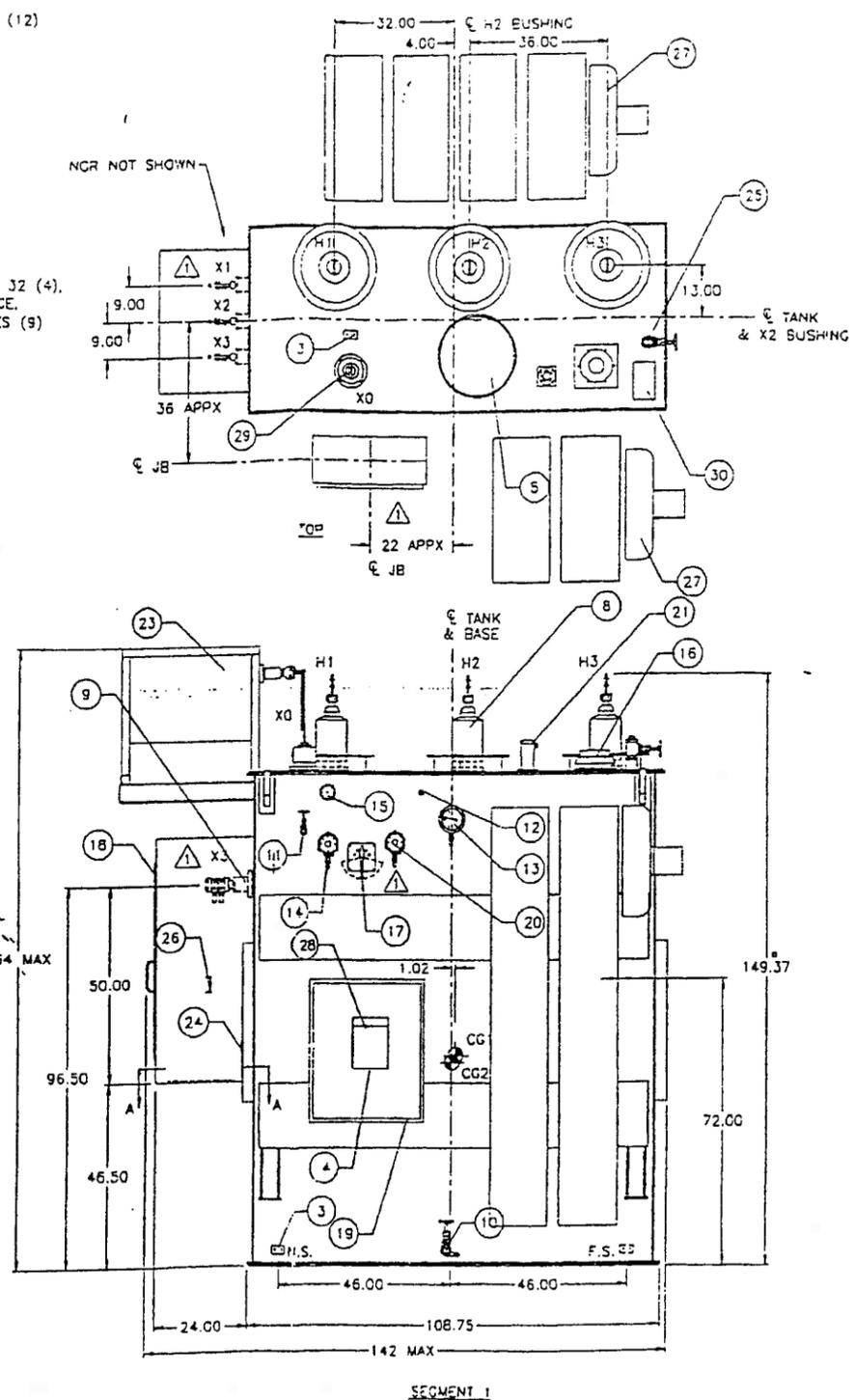
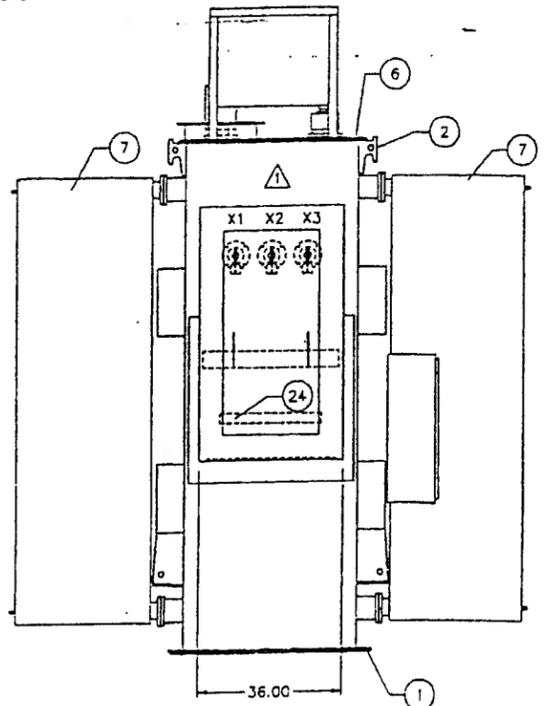
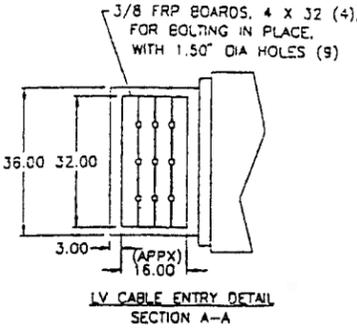
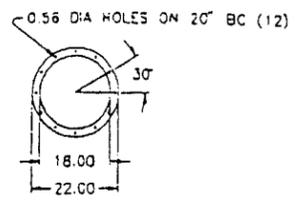


Figure B-24
USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LENT TO THE BORROWER FOR THEIR CONIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

CONTRACT

DESIGNED BY

CHECKED BY

SUPERVISOR

LEAD ENGR/SPEC.

CLIENT

APP DATE

APP DATE

APP DATE

APP DATE

FEDERAL POWER AVENAL, LLC
AVENAL ENERGY PROJECT
AVENAL, CALIFORNIA

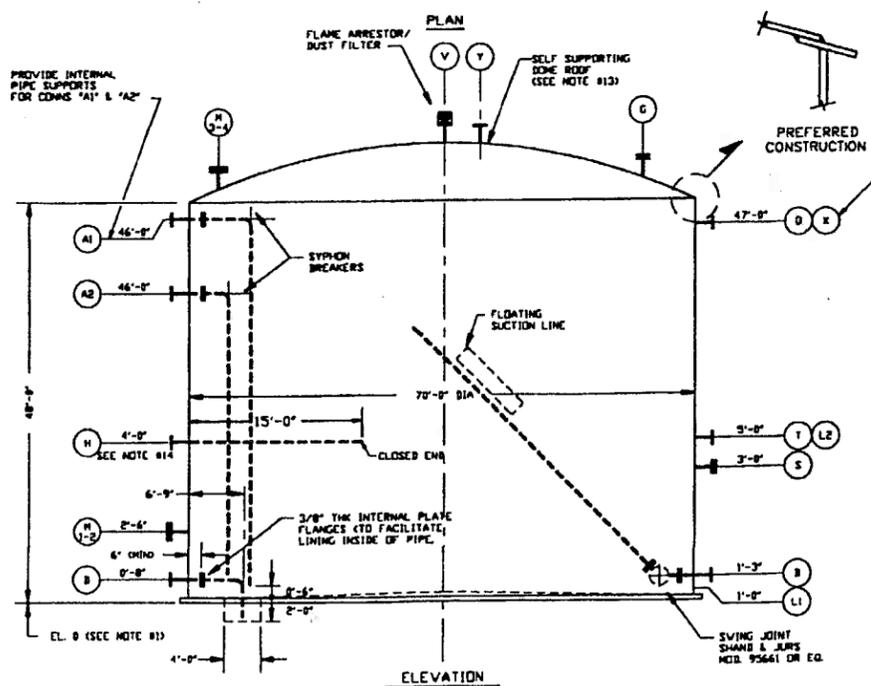
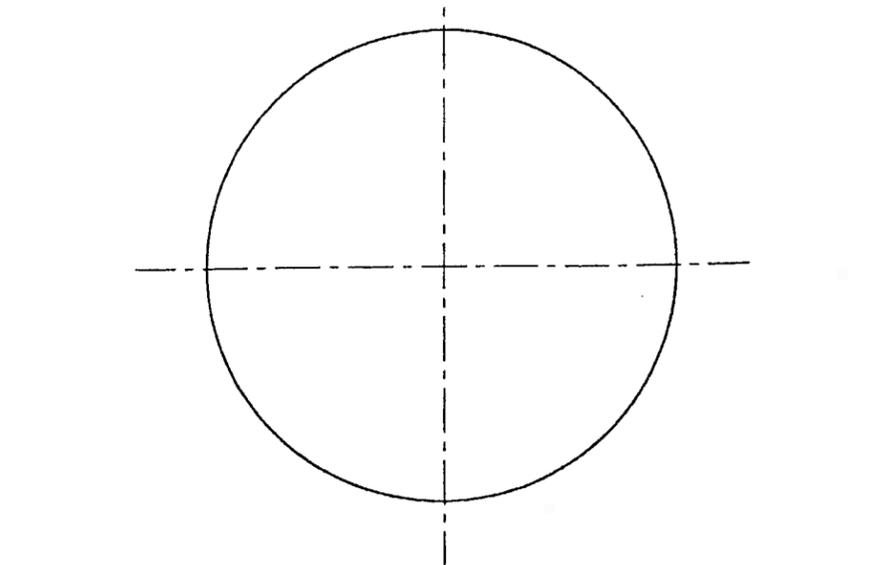
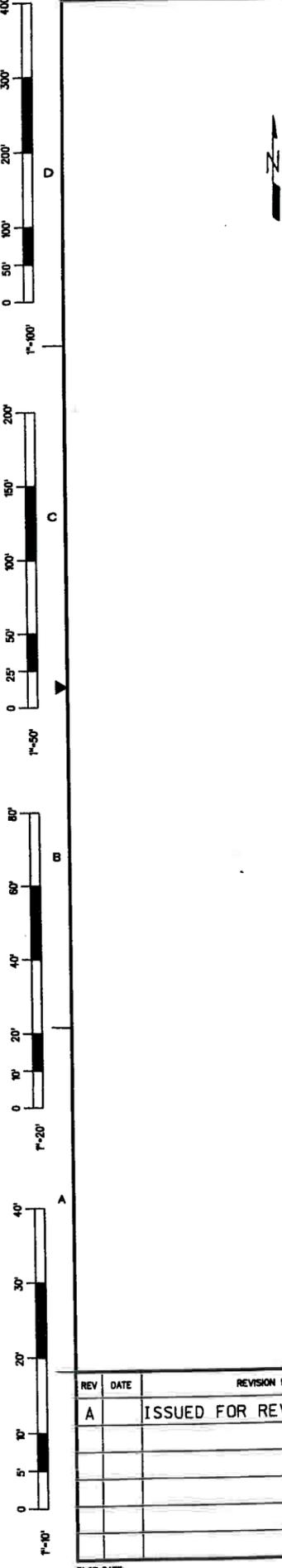
TYPICAL TRANSFORMER

SCALE:

DRAWING NUMBER
SU-6-TY-1

REV
A

XREF ATTACHED - YES NO
MANUAL CHANGES MADE - YES NO
DWG FILE UPDATED - YES NO
MODEL UPDATED - YES NO
CAD FILE NAME

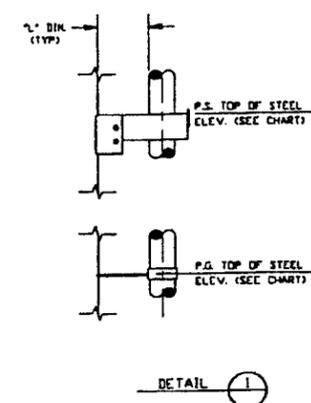


PREFERRED CONSTRUCTION

FOAM MAKER FOAM CHAMBER ASSY. MESH TYPE "B" WITH SPLIT DEFLECTOR WFG BY NATIONAL FOAM

BIDDER SHALL QUOTE ALTERNATE TANK SIZE AS FOLLOWS & PROVIDE SEPARATE COST FOR FOUNDATION.

ALTERNATE TANK SIZE: 76 Ft. 0 In. DIA x 48 Ft. 0 In. HIGH



| MARK | ITCH | TYPE | SIZE | "L" DIM = | ELEVATION | ORIENT. | REMARKS |
|------|------|------|------|-----------|-----------|---------|-----------|
| A1 | PS | - | 6" | "Later" | "Later" | "Later" | DETAIL B1 |
| A1 | PG | - | 6" | "Later" | "Later" | "Later" | DETAIL B1 |
| A2 | PS | - | 6" | "Later" | "Later" | "Later" | DETAIL B1 |
| A2 | PG | - | 6" | "Later" | "Later" | "Later" | DETAIL B1 |
| D | PS | - | 8" | "Later" | "Later" | "Later" | DETAIL B1 |
| D | PG | - | 8" | "Later" | "Later" | "Later" | DETAIL B1 |

* "L" DIM IS DISTANCE FROM TANK OD TO BACK OF PIPE.

| MARK | REQ. | SIZE | RATING | FACING | PROJECTION | API SPEC. FIGURE | SERVICE |
|------|------|--------|--------|--------|------------|------------------|-----------------------|
| Y | 1 | 4" | - | - | API 650 | 3-19 | SCAFFOLD CABLE SUPP |
| X | 1 | 4" | 150# | R.F. | API 650 | 3-19 | FIRE PROT/FOAM CHAM |
| V | 1 | 6" | 150# | R.F. | API 650 | 3-16 | VENT (NOTE B4d) |
| T | 1 | 1 1/2" | 150# | R.F. | 35'-6" | 3-5 | TEMP. INDICATOR |
| S | 1 | 4" | 150# | R.F. | 35'-7" | 3-5 | SPARE V/B/LIND |
| D | 1 | 8" | 150# | R.F. | 35'-8" | 3-5 | OVERFLOW |
| M3-4 | 2 | 24" | - | - | API 650 | 3-12 | ROOF MANHOLE |
| M1-2 | 2 | 24" | - | - | API 650 | 3-4A | SHELL MANHOLE |
| L2 | 1 | 2" | 150# | R.F. | 35'-6" | 3-5 | LEVEL SV. CLOW-LWD |
| L1 | 1 | 3" | 150# | R.F. | 35'-7" | 3-5 | LEVEL TRANSMITTER |
| H | 1 | 10" | 150# | R.F. | 35'-9" | 3-5 | ELEC. MTR. INTL. PIPE |
| G | 1 | 8" | 150# | R.F. | API 650 | 3-16 | GAUGE MATCH |
| D | 1 | 4" | 150# | R.F. | 35'-7" | 3-18 | DRAIN (NOTE B4F) |
| B | 1 | 10" | 150# | R.F. | 35'-8" | 3-5 | PUMP SUCT. FLOAT PIPE |
| A2 | 1 | 6" | 150# | R.F. | 35'-8" | 3-5 | MIN FLOW BP INTL PIPE |
| A1 | 1 | 6" | 150# | R.F. | 35'-8" | 3-5 | FUEL OIL INTL PIPE |

| DOME ROOF TANK | |
|--|---------------------------------------|
| DESIGN DATA | MATERIALS |
| CODE (DESIGN & CONSTR) API-650 (NOTE #8) | 1. SHELL CARBON STEEL |
| SPECS. SEE NOTE #11 | 2. BOTTOM CARBON STEEL |
| PRESS. DESIGN ATMOS OPER. 0 PSIG | 3. ROOF CARBON STEEL |
| TEMP. DESIGN 150 °F OPER. AMB °F | 4. NOZZLE NECKS SA-106-B |
| WELD Insp. BY RADIOGRAPHY SPOT | 5. FLANGES SA-106 |
| CORROSION ALLOWANCE 1/16" | 6. BOLTS EXTERNAL SA-193-B7/SA-194-2H |
| SPECIFIC GRAVITY OF CONTENTS 0.85 | 7. BOLTS INTERNAL SA-193-B7/SA-194-2H |
| CAPACITY 1,382,000 Gal | 8. GASKETS CARLOCK BLUECARD 3200 |
| RATES FILLING 580 Gpm | 9. INTERNALS PIPE SA-106-B |
| EMPTYING 1,200 Gpm | 10. INTERNALS PLATE SA-36 |
| COIL NONE | 11. OTHERS CARBON STEEL |
| HEATER YES 350 KW by others (NOZ "H") | 12. LINING EPOXY BTM PL, 2FL OF SHELL |
| (SEE NOTE #14) | INCLUDING SHELL NOZZLES B/LIND FLG |
| AGITATOR NONE | AND INTERNAL PIPING INSIDE & OUTSIDE |
| | PER SPEC 596001-0-SP-4-PA-2-Rev |
| PURCHASE ORDER NO. - | FABRICATOR - |

- NOTES
- ELEVATIONS ARE GIVEN FROM UNDERSIDE OF BOTTOM PLATE (EL. 0'-0") TO: (a) & OF CONNECTION (b) TOP OF STL. OF PIPE SUPPORT CLIPS (c) TOP OF PLATF. FLOOR.
 - NOZZLE PROJECTIONS ARE MEASURED FROM TANK & TO EXTREME FACE OF FLANGE UNLESS NOTED.
 - TANK BOTTOM PLATE TO BE: FLAT SLOPED INWARD SLOPED OUTWARD SLOPE = 3/4" PER 12'-0"
 - TANK FABRICATOR TO SUPPLY AND/OR INSTALL (SEE NOTE 3) ITEMS INDICATED "X":
 - GALVANIZED STRAIGHT LADDER WITH CAGE OR REQUIREDS.
 - SPIRAL STAIRWAY WITH PLATFORM.
 - GALVANIZED HANDRAIL AT TOP OF TANK ALL AROUND.
 - 8" GAUGE MATCH MATERIAL ALUMINUM TYPE (OR EQUAL) VANCE FIG. 42 (SIZE)
 - TYPE OF INSULATION SUPPORTS NONE.
 - BOTTOM SUMP WITH BRAIN PER API-650 FIG. 3-18.
 - INTERNAL COIL DE (SIZE-SCHEDULE)
 - FOAM CHAMBER.
 - TANK GAUGE.
 - PRESSURE-VACUUM VENT TYPE.
 - SETTING PRESSURE VACUUM =
 - (4) GROUNDING LINES FOR 84/3 AVG.
 - WITH VANCE NO. 508 FLAME ARRESTOR & DUST FILTER.
 - FABRICATOR TO SUPPLY ONLY THOSE PARTS DIRECTLY WELDED TO SHELL AND/OR ROOF.
 - PAINTING YES PER SPEC 596001-0-SP-4-PA-1-Rev BY FABR. BY OTHERS
 - INSULATION TO BE SUPPLIED AND INSTALLED BY OTHERS. THICKNESS = NONE.
 - TANK FOUNDATION (FURNISH BY OTHERS)
 - ALL DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE NOTED.
 - NOZZLE BOLT HOLES SHALL STRADDLE NORMAL CENTERLINES.
 - SPECIFICATIONS: LATEST REVISIONS
 - 596001-0-SP-2-SS-1-Rev FIELD ERECTED WELDED STEEL STORAGE TANKS
 - 596001-0-SP-2-SS-1-Rev STRUCTURAL DATA FOR MECHANICAL EQUIPMENT.
 - 596001-0-SP-4-PA-1-Rev PAINTING.
 - 596001-0-SP-4-PA-2-Rev GALVANIZING.
 - 596001-0-SP-4-PA-3-Rev INTERNAL LININGS.
 - 596001-0-SP-4-VC-4-Rev WELDING STORAGE TANKS.
 - 596001-0-SP-9-DC-1-Rev SUPPLIER DRAWING AND DATA SUBMITTAL REQUIREMENTS.
 - PIPE SUPPORTS AND PIPE GUIDES TO BE DESIGNED, FURNISHED AND INSTALLED BY TANK FABRICATOR FOR CONDS. "A1", "A2" & "D". GALVANIZE PER SPECIFICATION FOR LOADING CALCULATIONS. ASSUME PIPE IS FILLED WITH WATER FROM NOZZLE CENTERLINE TO 1'-0" FROM TANK BOTTOM.
 - ROOF PLATE SHALL BE BUTT WELDED OR SEAL WELDED UNDERSIDE IF THE PLATES OVERLAP.
 - ELECTRIC HEATER WITH THERMOSTAT (BY OTHERS) SHALL BE REMOVABLE FROM NOZZLE "H" WITHOUT DRAINING TANK VENDOR TO PROVIDE AND INSTALL INTERNAL SUPPORTS.

Figure B-25

USE FOR ILLUSTRATION ONLY-NOT FOR DESIGN

| REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REV | DATE | REVISION DESCRIPTION | BY | CHK | APPV | REFERENCE DWG NUMBER | REFERENCE DRAWINGS |
|-----|------|----------------------|----|-----|------|-----|------|----------------------|----|-----|------|----------------------|--------------------|
| A | | ISSUED FOR REVIEW | | | | | | | | | | | |

FLUOR.

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR AND IS LOANED TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT WILL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS FURNISHED.

| | |
|-----------------|---------------------------|
| CONTRACT | FEDERAL POWER AVENAL, LLC |
| DESIGNED BY | AVENAL ENERGY PROJECT |
| CHECKED BY | AVENAL, CALIFORNIA |
| SUPERVISOR | |
| APP DATE | |
| LEAD ENGR/SPEC. | |
| APP DATE | |
| FLUOR | |
| APP DATE | |
| CLIENT | |
| APP DATE | |
| SCALE | |
| DRAWING NUMBER | SU-4-SIV-1 |
| REV | A |

DGN

