EXHIBIT D

CRITERIA DOCUMENTS – BASIS OF DESIGN

FOR

SAN BERNARDINO COUNTY

303 W. 5TH STREET DESIGN-BUILD PROJECT

PROJECT NUMBER 10.10.1699

SAN BERNARDINO COUNTY

LPA

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San Bernardino County 303 W. 5th Street Design Build Project

CRITERIA DOCUMENTS

BASIS OF DESIGN

July 23, 2025

SAN BERNARDINO COUNTY

County of San Bernardino
San Bernardino, California

Project No:

10.10.1699

Developed by:

LPA, Inc.

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01 SUMMARY OF WORK

General Description

San Bernardino County's 303 5th Street is proposed as a renovated 2-story, approximately 27,500 sf building located at the southwest corner of 5th Street and Arrowhead Avenue in San Bernardino, California. The building will be occupied by the Community Development & Housing Department and the Office of Homeless Services.

This narrative provides an overview of the proposed facility that includes architectural, structural, mechanical, electrical, plumbing, technology, and security systems.

The Design Build Entity (DBE) will not be responsible for the procurement of **FF&E** items required. **FF&E** to be procured by the end user department. DBE to coordinate and provide **FF&E** infrastructure only.

General Design Goals

The Departments that are to be housed in 303 W. sth Street are in the business of helping people. Therefore, the environment should be designed with the following **QUALITATIVE** objectives in mind:

- DIGNITY
- DURABILITY
- ECONOMY

Visitors to the building will be greeted in the ground floor lobby prior to being allowed access (via the stairs or elevator) to the second-floor office/meeting area.

The second floor is to house two different Departments as well as shared spaces/amenities. The two departments work best "in their own neighborhoods". The spatial organization is not meant to be a multi-tenant office building, but rather two departments separately sharing a floor, amenities, and support facilities.

Each department has approximately 20-25% enclosed office space. If possible, the DBE should incorporate enclosed offices inboard in the plan with glass fronts at the offices. The offices and all the cubicles can, therefore, share the natural light equitably.

Cubicles shall be configured in four plex arrangements to encourage team dynamics.

To the greatest extent possible, please minimize cubicles proximity to Breakroom.

The Large Conference Room (Command Center) shall be relatively near the restroom area.
The Medium Conference Room will be used as a virtual overflow room to stream programs in the Command Center.

Each Department will have their own separate security access to their suites while also sharing general building access.

Separate restrooms to be provided for Men and Women. As an additive alternate, DBE to provide an optional single user All Gender Restroom.

Storage Rooms can be on the ground and second floor.

DBE should coordinate with County IT representatives for the proper security measures in the shared IDF Room.

Parking requirements are to be satisfied on site. Large gatherings (other than typical, daily use with 4 spaces per 1,000 square feet) *may* require visitors to park in the County's lot directly to the east across Arrowhead Avenue.

The westerly site will be for parking, trash enclosure, transformer, and water quality management strategies. The easterly side of the site will be more parking in a securable lot under the raised building. This floor will also have space for the building entry lobby, bicycle storage, and general building storage. The floor is surrounded by a shear wall on the south property line and architectural security feature (fencing) on the east, north and west exposure.

DBE is responsible for all onsite and offsite work as dictated by the project.

Area Summary

See Code Analysis on Drawings for size of building to be renovated.
Lot Size of the existing and newly acquired westerly lots are approximately 65,600 SF.

Construction Type

See Code Analysis on Drawings

Occupancy Type

See Code Analysis on Drawings

Project Delivery Method

Design/Build is the delivery method for the project.

Constraints and Opportunities

The information within the Criteria Documents are the guidelines required for the project.
Some guidelines are minimum while others are maximum.

DBE to plan on receiving:

- Design approval for the building from the County Administrative Officer for Capital Improvement Projects (CAO-CIP.)
- Design Approval for the Interiors from the Department Heads to be housed in the structure.

These Criteria Documents contain information for the Design/Build team to consider during the design process to meet - or exceed - the requirements within.

Should there be a discrepancy between the documents, governing codes have precedence over Basis of Design.

Should there be a discrepancy between the documents, Basis of Design has precedence over the Criteria Document Drawings.

Criteria Documents Index

The following represents the order of precedence for the Program Information on the above-mentioned project. The Design Build Team (DBE) shall create their solutions with the following hierarchy of requirements:

- Agencies Having Jurisdiction: The codes and regulations enforced by the AHJ's (State, County, City.)
- County Maintenance Guidelines

- Quantitative Program
- Criteria Documents
  - Basis of Design (included herein).
  - Criteria Document Drawings.
- Additive Alternates
  - Single All-Gender Restroom
  - Infrastructure for future electric vehicles (EV) charging stations.
- Alternative Proposals
  - All DBE's are encouraged to use its creative design capabilities to propose alternate solutions to achieve the requirements noted herein.
- Non-Compliant Conditions:
  - DBE to notify County of **any/all code requirements that are compromised** by "pre-existing/nonconforming conditions".

02 CODES AND STANDARDS

General Description

This building must comply with all the current building codes in the State of California and American Disabilities Act, effective at the time of agency submittal.

Municipal/ State Building Codes and Standards

- California Building Standards Administrative Code, Title 24 C.C.R., Part 1
- California Building Code (CBC), Title 24 C.C.R., Part 2
- California Electrical Code (CEC), Title 24 C.C.R., Part 3
- California Mechanical Code (CMC), Title 24 C.C.R., Part 4
- California Plumbing Code (CPC), Title 24 C.C.R., Part 5
- California Energy Code, Title 24 C.C.R., Part 6
- California Fire Code (CFC), Title 24 C.C.R., Part 9
- California Green Building Standards (Calgreen), Title 24 C.C.R., Part 11
- California Referenced Standards, Title 24 C.C.R., Part 12
- ADA Standards for Accessible Design
- Title 19 C.C.R., Public Safety, State Fire Marshal Regulations

Partial List of Applicable Standards

• ASHRAE	Standard Ventilation
• ASHRAE	Standard Thermal Comfort
• NFPA13	Automatic Sprinkler Systems (CA Amended)
• NFPA14	Standpipe Systems (CA Amended)
• NFPA 20	Stationary Pumps
• NFPA 24	Private Fire Mains (CA Amended)
• NFPA 72	National Fire Alarm Code (CA Amended)
• NFPA 80	Fire Door and Other Opening Protectives
• NFPA 2001	Clean Agent Fire Extinguishing Systems

Reference Code Section for NFPA Standards.
See Chapter 35 for the State of California Amendments to NFPA Standards.
California Code of Regulations, Title 15, Division 3, as applicable.

LEED

The County has no requirement for meeting a LEED rating for the building.

Reports

DBE is required to incorporate these findings in proposals:

- Phase I Environmental Site Assessment Report by Terracon Dated September 8th, 2025_Draft
- Property Assessment Report by IMEG Dated September 25, 2022
- Geotechnical Feasibility Report by Terracon Dated February 6, 2025
- Asbestos Report by Converse Consultants Dated September 8, 2023
- ALTA Survey by David Evans and Associates, Inc. Dated February 7, 2025
- 303 W. 5th street Remodel Record Drawings by Pete Volbeda Architecture Planning Dated 1977
- CDH & OHS General Questionnaire Dated April 2, 2024 and March 26, 2024 respectively
- Existing Site and Plan Information by County of San Bernardino Dated January 8, 2025
- Ralph Roach Area Plan Concept by Andresen Architecture, Inc., Dated December 12, 2022
- San Bernardino County Facility Planning Space Standards by County of San Bernardino Not Dated

03 SITE PLANNING

General Description

The project site is approximately 1.2 acres within the City of San Bernardino, San Bernardino County. The existing terrain is relatively flat with mild slope from south to north. The site is surrounded by an existing retaining wall/fence to the east and south, and existing street improvements to the east and north. There is a neighboring building at a zero lot line condition on the east side of the southerly property line.

An ALTA survey was performed by David Evans and Associates dated February 7, 2025. Field survey information of the existing site has not been provided. No public utility information was provided.

A geotechnical feasibility report was prepared by Terracon Consultants, Inc. on February 6, 2025. The report includes the findings of the subsurface exploration and preliminary liquefaction analysis for feasibility of the project and is not intended for design. Additional geotechnical investigation will be required for the proposed development.

The project proposes to utilize City of San Bernardino Public Works standards for offsite improvements, and San Bernardino County standards for onsite improvements. Water quality, hydromodification, and hydrology calculations will be required to comply with the San Bernardino County Santa Ana Watershed Stormwater Resource Plan requirements.

Demolition

Clear and grub existing vacant dirt lot.

Remove existing sidewalks/walkway that do not meet current ADA requirements.

Remove existing onsite fencing, site walls separating the existing parking lot and the vacant lot, asphalt surface parking lot and debris.

Remove existing sewer line between the building POC and the sewer lateral at property line.

Remove existing domestic water line between the building POC and the existing water meter.

Remove existing fire water line between the existing fire riser at the building and the existing double detector check assembly.

Protect existing storm drain outlets to the street.

Grading/ Earthwork

Refer to geotechnical investigation report for over-excavation, pavement sections, and utilities trenching and bedding recommendations.

Proposed grades shall support the building access, fire apparatus road, parking circulation, and drainage designs. Along ADA accessible path-of-travel, longitudinal grades shall not exceed 5%, and cross slopes shall not exceed 2%. ADA accessible ramps into the building shall meet the requirements of the latest Access Compliance Advisory Manual. Hardscape areas adjacent to buildings shall be sloped 2% maximum away from the building. Planting areas adjacent to buildings shall be sloped 5% minimum away from the building.

Exterior Improvements

Parking lot will be paved in asphalt. The thickness of asphalt pavement and base material shall be per Geotechnical Engineer's recommendation.

Offsite improvements include curb, gutter, sidewalk, driveway approaches, driveway closure and 5th Street match-up pavement, signage, and striping as required by the City of San Bernardino. Offsite improvements are to be per City of San Bernardino standards.

Onsite hardscape will include curb, gutter and sidewalk. All will follow County of San Bernardino standards and will utilize Portland Cement. Paving section, aggregate base section/compaction, subgrade compaction, over excavation, reinforcement, joint type and spacing as specified by the County's geotechnical engineer.

ADA detectable warning tiles and pavement markings are to be installed. Parking lot pavement markings are to be water emulsion-based traffic paint.

The existing SCE transformer will remain.

One (1) trash enclosure with solid roof structure is proposed. The trash enclosure wall will be 8'-0" high, CMU block with plaster with anti-graffiti coating on the walls with horizontal and vertical steel reinforcements, solidly grouted. The trash enclosure gates are to be 8'-0" height double (bi-parting) heavy-duty metal gate with locking hardware. Finish will be galvanized and painted. The trash enclosure will be per San Bernardino County standards.

Site signage to include directional signs and ADA required signs as required.

A new state-of-the-art irrigation system is proposed. The irrigation system for the entire site will be utilizing an independent irrigation water meter, point source drip emitters, tree bubblers, master valve, flow sensor, and an ET Weather based Smart irrigation controller in compliance with the California state requirements of the Model Water Efficient Landscape Ordinance. (MWELO) Remote control valve assemblies will be controlled using a two-wire system and be pressure regulating. The drip emitters will be pressure compensating, and both the emitters and tree bubblers will have built in check valves to prevent low head drainage. San Bernardino County Development Code for Landscaping Standards. (Chapter 83.10)

After grading, the soil shall be tested for fertility and agricultural suitability. Agronomic Soils Laboratory Test Reports shall be provided and are to include required soil amendments and maintenance recommendations. Planting preparation is required for all planting areas. Weed abatements shall be over a 6-week period. Planting areas to be rototilled to a depth of 18". All planting areas shall be amended as recommended in Agronomics Soil Test. If required, topsoil shall be imported (15" depth).

Drought tolerant plant materials are proposed for this project. Onsite Planting will include 24" box shade trees at parking areas, 1-gallon and 5-gallon shrubs and groundcover. Planting design shall adhere to the San Bernardino County Development Code for parking lots.(Chapter 83.11)

Provide 3" thick bark mulch to all planting areas. Size of mulch to be within ½"-1½" in size. Trees to be anchored using an aluminum alloy anchoring system or double stake for trees.

The landscape maintenance will be 90-day maintenance period.

All metal finishes (trash receptacles, gates, pole top lighting and poles) shall be aesthetically coordinated with the building materials. Motorized gates with secured access shall be provided at the parking structure entrances only.

Site boundary fencing to be provided at property lines only. Provide low landscape barrier at public right-of-way.

Site security fencing to be provided at secure parking structure only. See plan for extents.

Parking lot lighting shall be provided to accommodate light levels per County standards at both new and existing parking areas.

Site security cameras shall be provided at the parking lot(s), building perimeter, and building parking entrances.

Wet Utilities

Water Service
The existing water service and meter shall be protected in place. From the meter, the project proposes a backflow preventer assembly and service extension to the new plumbing POC. It will be installed and permitted by the City of San Bernardino Municipal Water Department. Domestic water pipes shall be PVC (SCH 80) for pipes sizes smaller or equal to 3" and PVC (DR-18) for 4" and up.

Fire Water Service
The existing fire water service and double detector check assembly with fire department connection (FDC) shall be protected in place. New onsite fire water piping will be installed between the backflow preventer and the new fire riser location. Fire water pipes shall be PVC (DR-14). Additional water appurtenances such as fire hydrants may be required per the City Fire Department requirements.

Sanitary Sewer System
The existing 4-inch sanitary sewer lateral at the property line connecting to the existing 12-inch sewer main in Arrowhead Avenue will be protected in place. New onsite sewer piping from the building and trash enclosure will be connected to the sewer at the property line. It is assumed that this existing sewer has the capacity to receive sewer flow generated from the proposed redevelopment. Sanitary sewer pipes shall be PVC (SDR 35) installed with slopes equal to or greater than 1 percent minimum (unless otherwise required by City of San Bernardino). Sewer manholes shall be spaced at 300 feet maximum with cleanouts located at intermediate horizontal grade breaks.

Storm Drain System
Stormwater treatment shall comply to San Bernardino County Santa Ana Watershed Stormwater Resource Plan requirements. Post-construction stormwater BMPs cannot be determined at this time because site infiltration test has not been performed by the Geotechnical Engineer.

If onsite infiltration is found to be feasible based on the field testing, infiltration BMPs such as drywells and underground infiltration chambers should be implemented for stormwater treatment. Hydrodynamic separator for pretreatment to capture trash and debris will be installed upstream of these infiltration BMPs. Since the site is relatively small, pervious AC paving in the parking lot can also be considered.

If onsite infiltration is not feasible based on the field testing, flow-based biotreatment BMPs such as Modular Wetlands System and Filterra Units can be utilized. If there is sufficient landscape areas to receive flow, vegetated swale can also be considered.

BMP sizing will be based on final calculations in the WQMP and drainage study in order to meet the water quality requirements.

Stormwater runoff from the parking lot is anticipated to discharge into 5th Street. Since there is no existing underground storm drain system in 5th Street for the site runoff to connect to, storm overflow will be discharged back into the street via a sump pump system or a concrete bubbler.

Onsite storm drain conveyance shall be PVC SDR 35 for pipe sizes 4" to 10" and HOPE for pipe sizes 12" and up. Cleanouts shall be installed at intermediate horizontal grade breaks.

Erosion Control

BMP's (Best Management Practices) and erosion control requirements will be stipulated on the Erosion Control Plan, to be prepared by the DBE.

Since the limits of disturbance exceed 1-acre, a Storm Water Pollution Prevention Plan (SWPPP) will be required, to be prepared by the DBE.

The construction Contractor shall be required to employ the services of a Qualified SWPPP Practitioner (QSP). The QSP shall be required to download copies of the approved SWPPP from the State and will be responsible for implementation and enforcement of the SWPPP and the Erosion Control Plan during construction.

Within 90 days of construction completion, the Contractor's QSP shall electronically file a Notice of Termination, NOT, to the State Water Board's SMARTS system.

04 STRUCTURAL SYSTEMS

General Description

The proposed structure will be a rehabilitated two-story building, depicted in the Criteria Document Drawings. Floor to floor heights are approximated to be 16'-0" from ground floor to second floor and a nominal 15' from second floor to the roof. Note: Exact dimensions need to be garnered from field measurements.

Roof Systems

Roof Deck: Please refer to the IMEG report.
Roof Structure: Provide structural upgrades necessitated by new rooftop equipment noted herein.

Floor Systems

Floor Decks: Please refer to the IMEG report.

Lateral System

N/A

Foundations

In all locations where existing slab on grade may need to be cut and removed for installation of new foundation, footings, or slab, provide new vapor barrier at underside of slab on grade and provide proper termination/transition at edges per manufacturer recommendations.

05 BUILDING EXTERIOR

Building Envelope

Exterior Skin

Plaster: Patch and repair existing plaster skin and waterproofing, as needed. Paint to match existing.

Glass: Remove and replace new glass and glazing system. Provide a written 12-year warranty from date of manufacture for insulating glass utilizing the required spacing system. Warranty covers deterioration due to normal conditions of use and not to handling, installing, protecting and maintaining practices contrary to the glass manufacturer's published instructions.

Existing Painted Block: Remove vegetation from score joints and repaint block.

Architectural

Roofing: PVC single ply roof over concrete deck. "Cool Roof", with applied walking pads, where required.
Insulation: R-30 / 6" min. rigid exterior insulation on roof. R-19 batt insulation.

All exterior building materials at ground level to receive graffiti resistant coatings compatible with each material on all exposed surfaces up to 10'-0" min. height.

All exterior exposed metals to be factory finished or coated with high performance paint.

All exterior exposed structural steel to be AESS and coated with high performance paint.

Provide tempered safety glazing at all locations where required by current CBC, including new glazing within 24" of either side of any door or greater than 9 SF in area with bottom edge less than 18" above (and horizontally, within 36") of a walking surface.

Ceiling Heights: Typical ceiling height:

- Floor 1: 9'-0" minimum, exterior plaster finish: Roll up vehicular gates to not hang below ADA clearance height.
- Floor 2: 9"-0" minimum

Exit Stairways Treads and Landings: Concrete filled steel pans and risers with painted finish.

Handrails: Maximum 1 ½" diameter metal pipe railing, aluminum at exterior, painted steel at interior.

Site Gates

At both vehicular site access points: Roll up/lay-flat tubular steel gates on motorized apparatus.

At the site pedestrian gate(s), provide a swinging gate with power assist at ADA location.

Exterior Doors

Storefront

Wide style clear glass doors with concealed overhead closers. Von Duprin panic devices, or equal.

Metal Doors, if required.

Flush galvanized metal insulated doors with infilled hollow metal frames. Finish: High performance paint to match aluminum custom color.

Exterior Noise Intrusion & CALGreen Building Code

The CALGreen Building Code (Title 24, Part 11) outlines projects which must comply with Section 5.507.4 - Acoustical Control. These are defined as projects located within the 65 CNEL noise contour of airports (i.e., nearby SBD International Airport) or freeways (i.e., San Bernardino 215 Freeway) or, in the absence of readily available noise contours, projects exposed to a noise level of 65 dB(A) Leq 1hr during any hour of operation. Based on the Noise Contours provided by the SBD International airport, we would not expect our project to be within the 65 CNEL radius of the airport.

The Design-Build team shall complete an exterior noise intrusion study to assess exterior noise levels for the project. The building envelope shall be designed in order to limit exterior noise intrusion to the levels specified in applicable Building Codes including local Codes.

06 BUILDING INTERIOR

Overview
Note: The following material callouts depict the minimum required quality. DBE may submit these products or approved equal.

Concrete Repair and Infill
Provide allowance for floor prep/ patch/ repair after demolition for new materials. Provide water moisture mitigation allowance for first floor.

Hazardous Material Abatement/ Encapsulation
The Design-Build Entity shall include within its Scope of Work all activities necessary for the identification, abatement, removal, and/or encapsulation of hazardous materials encountered within the Project site. Such materials may include, but are not limited to, asbestos-containing materials, lead-based paint, mold, and any other substances classified as hazardous under applicable federal, state, and local laws and regulations. The Design-Build Entity shall perform these services in compliance with all relevant codes, standards, and industry best practices to ensure a safe and compliant project environment.

Interior Stairs
New Interior Stair

- Painted steel channel stringers with steel tube and angle landings. Gypsum board framing underside of stairs. Provide concealed sprinklers and raised plinth or guardrail at underside of risers to prevent accessibility hazard.
- Concrete filled steel pan treads.
- Metal guardrails (if desired) consisting of top and bottom flat bar rails and vertical flat bar pickets every 4". Bottom rail mounted to top of channel stringers. 3'-6" tall above stair nosing. High performance painted finish.
- Stainless steel handrails on both sides with extensions. 3'-0" tall above finish floor.
- Metal guardrails (if desired) consisting of top and bottom flat bar rails and vertical flat bar pickets every 4" on upper floor along edge of stair openings. 3'-6" tall above finish floor. High performance painted finish.

Casework
Millwork - WI Custom Grade required.

Reception Desk - Solid surface countertop with plastic laminate vertical surface. Provide accommodation for sit-to-stand desks and counter heights to meet code requirements.

Break Room - High Pressure Plastic Laminate all base and upper cabinets, Solid Surface Countertops. Combination adjustable shelves and storage drawers. Built in tall microwave cabinets.

Restrooms - Solid Surface Countertops, where shown.

Copy / Work areas - High Pressure Plastic Laminate all base and upper cabinets, Corian Solid Surface Countertops. Combination Adjustable shelves and storage drawers.

Doors I Hardware/ Glazing/ Specialty Rated Openings
Offices Type - 3'-0" x 7'-10" Solid Core, Rift Cut White Oak veneer, with Western Integrated frames including sidelights. Captured aluminum framed sidelights with tempered 1/4" glass, Schlage 'L' series mortise locks on all doors.

Restroom doors to be like no. 2 office with additional kickplates/push/pull and closers on multi stall, Occupancy indicators and door bottom sound seals on single stalls.

Painted hollow metal doors/ frames for storage, electrical and stairwell doors,etc: 10" Kickplates with mortise hardware. Schlage 'L' series mortise locks on all doors. Card Readers on exterior doors.

Panic hardware for rooms with occupancies over 49.

Access Control required for end user-specified doors.

Wall Construction

Elevator Shafts, Electrical, Stair enclosure and MDF/IDF - One hour fire rated construction with Therma fiber (rock wool) acoustical insulation.

Mechanical & Elevator shafts - new rated shaft liner walls.

All walls to be 4" metal studs full height and gypsum board on each side with acoustical insulation, UNO. Provide acoustical sealant at penetrations in offices, meeting rooms, conference rooms, and restrooms.

Moisture Resistant Gypsum Board at all wet locations.

Wall backing for video monitors as required, cabinets, restroom toilet partitions, etc.

Restroom Walls - Double layer Gypsum Board each side full height with acoustical insulation.

Flooring Finish Materials

Offices and Meeting Rooms - Carpet Tile, Size: 20" x 20", 100% Solution Dyed, Gauge: 5/64", average pile height: .187" (4.7mm), Surface Texture: Tufted Cut and Loop. Face Weight: 20 oz., Stitches: 9.6 stitches per inch, Fiber System: Percentage of Recycled Content (permanent stain resistance) Recycled Backing and Carbon Neutral- CRI Green Labe. Equal to Interface "Duplex".

Entries and Vestibules, Breakrooms, Staff Workrooms - Luxury Vinyl Planks, 5 mm.

Storage Rooms - VCT 12"x 12", 1/8" thick, Static Load: 150 PSI, Flammability: Class I, Smoke Density ASTM E 662, Slip resistance: ADA Compliant, Warranty: 5 Year Limited. Equal to Johnsonite/Tarkett Azrock / Armstrong VCT.

Electrical, Elevator Machine Rooms - Sealed concrete.

IDF Room - Static dissipative tile with electrical grounding, 12"xl2" Armstrong or Equal.

Restrooms-12"W x 24"L x 3/8"H Porcelain tile, Breaking Strength: >500Ibf, Bond Strength>200 PSI, Chemical Resistance: Unaffected, Frost Resistance: Resistant, Water Absorption <0.20%, Scratch Hardness: 7, Finish: Unpolished, Wet Dynamic Coefficient of Friction Range: UPS .50-.60 Equal to Crossville Tile, Basalt Series.

Janitor/Utility Rooms - Sheet vinyl with welded seams and coved base.

Base Types

Everywhere - 4" cove and straight continuous rubber base.

Restrooms - 4" coved/ bullnose Ceramic Tile to match floor tile.

Janitor/Utility Rooms- 6" high self-coving sheet vinyl cove base, include aluminum cap edge at gypsum board walls.

Wall Finishes
All rooms UNO - Semi-gloss paint- allow for (4) four accent colors and pattern paint.

Restroom - Wall tile to 6'-8" ALL walls. Equal to Crossville, Retro Active 2.0 Series: Size: 6" x 24".

Janitor/ Utility Rooms - FRP wall protection panels to 48" AFF, All walls.

Wall Covering/ Graphics Allowance at entry - $15,000.

Ceiling Finishes
Restrooms - water resistant gypsum board with flat paint finish.

Acoustical ceiling tile - Suspension grids will be interrupted by full height walls all areas. 2'x4' with standard 15/16" 'T' grid - High NRC .85 or higher, CertainTeed Symphony Mor equal, Tegular tile. All spaces noted on plan.

Restrooms
Toilet Partitions - Solid Phenolic or HOPE Plastic. Floor mounted, overhead braced, no sightline feature and occupied indicator levers, Coat Hooks.

Restroom accessories - Combination automatic paper towel dispensers and semi-recessed trash receptacle, toilet partition mounted seat cover dispensers, combination toilet tissue/trash receptacle women's restroom, toilet tissue only dispenser men's restroom, grab bars, automatic soap dispensers, 24x48 mirrors.

Signage
$30,000 allowance - Exterior Monument, Building Identity Signage, Code, Wayfinding.

Fire Extinguisher Cabinets
Semi-recessed stainless steel with window and lettering - One (1) per 75'-0" radius.

Appliances
Breakroom - Two (2) Full size Refrigerators with Freezer and waterlines, Microwaves (2) total.
DBE to provide equipment infrastructure only and coordinate final locations with end users. Appliances to be provided by end user department.

Window Shading Devices
At all exterior windows, provide recessed roller shades 1% opening, Mecho or equal.

Elevators
New Interior Elevator
- Two-stop 3500# hydraulic elevator.
- Rigidized stainless steel cab panels, rubber flooring, and standard ceiling lighting.
- Elevator to meet all current code requirements, including gurney compliance.

Interior Sound Isolation
The noise reduction between two adjacent spaces depends on the composite transmission loss of the separation between the two spaces. Where acoustically sensitive rooms, such as conference rooms and quiet rooms, are located adjacent to core areas of the building such as mechanical, elevator shafts or toilet rooms, double stud partition types or furred walls in addition to shaft walls should be used.

All acoustically rated partitions shall extend to the structure above and be acoustically sealed to provide a good level of sound isolation, including where structure above slab-to-slab partitions is uneven, such as with corrugated metal decking.

For rooms with continuous suspended ceilings and partitions with multiple layers of gypsum board inside of the room, the outermost layer of drywall may be held to 6" above the finish ceiling plane. Otherwise, all drywall layers shall extend full height to the structure above.

Where furred walls or double stud partitions occur, where required to achieve minimum STC ratings, a minimum of l" airspace shall be maintained between the furred wall framing and the substrate or the opposite rows of studs. There shall be no rigid ties between rows or between the substrate and furred wall where structurally feasible.

Where a demising partition abuts a mullion, an acoustical weakness can often result. Therefore, layers of gypsum on either side of the stud should extend beyond the mullion and leave a½" air gap between the gypsum layers and the exterior glazing and be thoroughly acoustically sealed. As an alternative, the demising partition abutting the mullion could include a 2" x ¾" black closed cell durometer 40 +/- neoprene tape compressed to 3/8", floor to ceiling height in one continuous piece.

All penetrations, such as for duct, pipe and conduit, shall have a 1/8" gap minimum between the penetrating service line and the partition and be acoustically sealed with a resilient caulking.

There should be no back-to-back recessed boxes, boxes serving adjacent areas in the same partition should be spaced minimum 24" apart o.c., and box pads should be installed in all partitions. Recessed boxes should be installed with a sound pad on all five sides of the back of the box at all locations to maintain the expected acoustical performance. The use of mud rings without electrical back boxes should not occur.

Where wall-mounted monitors are installed and include an audio component (e.g., sound from integrated loudspeakers in the monitor), the monitor should be mounted on a wall which separates these rooms from a space which is acoustically non-sensitive (e.g., the Corridor). If this is not possible, a double stud or staggered stud partition should be used for wall on which the monitor is located.

Where glass partitions are used at room fronts where acoustically rated partitions occur, gypsum board shall be added above the glass partition to the structure above to aid in the acoustical performance and reduce sound transfer via the common ceiling plenum.

It is recommended that occupied rooms are not adjacent to restrooms unassociated with the space. If such adjacencies cannot be avoided, double stud partition types are preferred at these adjacencies to control noise disturbance from the toilets, hand dryers, sinks, etc. Where possible, restrooms should be oriented to avoid locating such noise-generating elements on partitions shared by noise-sensitive spaces.

Plumbing pipes and risers shall be resiliently isolated at all supports points. Plumbing pipes should always be located in a double stud chase wall, and in the stud cavities of the serviced wall only, so that rigid bridging of the opposite rows of studs does not occur. Recessed toilet accessories shall be avoided whenever possible, to maintain the sound isolation performance of the partition.

Hand sinks shall be located on the least acoustically sensitive partition (such as the corridor wall) as far as is practically possible.

Acoustically sensitive spaces shall not be located adjacent to mechanical equipment spaces. Where such an adjacency cannot be avoided, acoustical analysis is required to confirm background noise levels in acoustically sensitive spaces are appropriate.

Acoustically sensitive spaces should not be located adjacent to core areas of the building including elevator machine rooms and elevator shafts. Where such adjacencies cannot be avoided, a furred partition extending slab to slab will be required in addition to the shaft wall.

The following minimum acoustical assemblies should be provided where doors are proposed for general areas:

- STC-28 - Head and jamb seals
- STC-35 - Head and jamb seals and automatic drop bottom
- STC-41+ - Acoustical doors with manufacturer provided seals

Air transfer openings through full height partitions shall be provided with lined ducted sound boots. Return air grilles serving the acoustically separated spaces shall be located as far apart as possible.

07 MECHANICAL SYSTEMS

General Description

This Basis of Design for the San Bernardino County 303 W. 5th St. building (the Project) is intended to outline the Heating Ventilation and Air Conditioning (HVAC) systems design criteria for the Design-Build team and to outline design assumptions not otherwise indicated in the design documents.

The project mechanical systems will be designed to meet applicable State codes and industry standards. The project will be designed to provide a comfortable, healthy, and productive environment for occupants.

Applicable Codes and Standards (Current Edition to be Used)

- California Administrative Code (CAC) Part 1, Title 24, California Code of Regulations (CCR)
- California Building Code (CBC) Part 2, Title 24
- California Electrical Code (CEC) Part 3, Title 24
- California Mechanical Code (CMC) Part 4, Title 24
- California Plumbing Code (CPC) Part 5, Title 24
- California Fire Code (CFC) Part 9, Title 24
- California Energy Code Part 6, Title 24, CCR
- California Fire Code (CFC) Part 9, Title 24
- California Reference Standards Code Part 12, Title 24, CCR
- IESNA Illuminating Engineering Society Handbook, Latest Edition
- NEMA National Electrical Manufacturer's Association, Building Systems, and Lighting Systems Standards, Latest Editions
- NETA National Electrical Testing Association Acceptance Testing Specifications, Latest Edition
- NFPA 110 - Standard for Emergency and Standby Power Systems
- NFPA 101 - Life Safety Code
- San Bernardino Municipal Code

Existing Systems Description

As noted in the building assessment performed by IMEG the existing mechanical systems in the building have exceeded their useful life expectancy based on ASHRAE data. It is recommended that all existing mechanical equipment and distribution should be demolished and replaced with a new system that adheres to the parameters listed.

Design Criteria

Climate Design Criteria
San Bernardino, CA
Longitude 117.3; Latitude 34.1; Elevation 1100 ft
California Climate Zone 10
Cooling Design Temperatures (0.1%): I06°F DB, 70°F MCWB, 75°F WB.
Heating Design Temperatures (0.2%): 31°F.

Indoor Design Criteria, Office Areas:

People:	200 gross square feet per person
Lights:	0.70 watts/square foot
Equipment:	0.75 watts/square foot
Temperature:	Summer - 74°F (± 2°F)
Winter - 70°F (± 2°F)	
Humidity:	No direct humidity control

Indoor Design Criteria, Main Entry Lobby:

People:	100 gross square feet per person
Lights:	1.00 watts/square foot
Equipment:	0.25 watts/square foot
Temperature:	Summer - 74°F (± 2°F)
Winter - 70°F (± 2°F)	
Humidity:	No direct humidity control

Indoor Design Criteria, Conference/ Meeting Rooms:

People:	20 gross square feet per person
Lights:	0.75 watts/square foot
Equipment:	1.00 watts/square foot
Temperature:	Summer - 74°F (± 2°F)
Winter - 70°F (± 2°F)	
Humidity:	No direct humidity control

Indoor Design Criteria, Data and Equipment Rooms:

Lights:	0.70 watts/square foot
Equipment:	Estimated at 2kW / rack (to be confirmed by Client)
Temperature:	Summer - 72°F (± 2°F)
Winter - N/A (Cooling only unit)	
Humidity:	No direct humidity control

Zoning:

a. Each VAV zone will be dedicated to a unique building orientation, floor level, and interior use. On average, there will be one VAV zone per lOOOsf. Conference rooms, corner offices, and unique uses will have dedicated VAV zones. Up to three perimeter offices will be served by a single, shared VAV zone.

Ventilation and Exhaust Design Criteria

Design ventilation and Exhaust Rates will be per California Mechanical Code, Part 4, Title 24, CCR, Chapter 4, which is based on ASHRAE Standard 62.1. Design ventilation rates shall exceed minimum code requirements by at least 30%. Design ventilation rates shall be not less than 0.15 cfm/sf in any regularly occupied space.

Design exhaust rates for restrooms are based on 100 cfm per toilet, urinal, and shower. Janitor rooms will be exhausted at minimum 1.00 cfm/sf. Break rooms and copy/ work rooms will be provided continuous general exhaust at least 0.50 cfm/sf to control odors and particulates. Public lobby space will be fully exhausted with no recirculation of air.

HVAC Acoustical Design Criteria

HVAC systems will be designed with a goal of maintaining the following background noise criteria levels in various spaces per Table 1 Chapter 49 Noise and Vibration Control of the ASHRAE "HVAC Applications" Handbook. Please refer to the Room Data Sheets for background noise criteria (NC) for specific spaces and the general maximum limits, below:

Large/XL Conference	NC-30
Small Conference	NC 35
Quiet Rooms	NC-35
Private Offices	NC-35
Work Rooms	NC-35

Wellness Rooms	NC-35
Open Plan Offices	NC-40
Lobbies/Waiting	NC-45
Break Rooms	NC-45
Equipment Rooms	NC-45
Corridors	NC-45

Equipment and Equipment Room Locations
Mechanical equipment shall be designed with appropriate noise control, as required, to meet the maximum noise criteria for each space presented above. The noise data for all mechanical equipment shall be incorporated into the project specifications and project drawings.

Mechanical equipment and equipment rooms shall be located horizontally and vertically adjacent to the least acoustically sensitive rooms practical. For air handling units, dedicated outside air units and exhaust fans, side or end discharge/inlet units should be specified as opposed to down discharge units. A sufficient length of ductwork shall occur between the unit and the roof penetration, or where the ductwork penetrates the mechanical room envelope, such that sound attenuators may be incorporated into the duct runs prior to entering occupied space.

Airborne Noise Transmission through Building Structures
The Design-Build team shall provide acoustical analysis indicating that airborne noise from equipment openings or radiated from equipment casing shall not increase background noise levels in occupied spaces above the criteria presented above when transmitted through building structures including wall and floor/ceiling assemblies.

Ductborne Noise Control
Silencers and internally acoustically lined ductwork shall be provided on air moving equipment (e.g., air handling units, exhaust fans) as required in order to achieve the specified NC levels. Silencers shall be selected for a maximum pressure drop of 0.25" w.g. and located such that at least one and preferably two duct "diagonal(s)" of straight duct occur at either end of the attenuator prior to connections to equipment or fittings such as elbows. Please note that there may be alternatives to select quieter equipment in order to reduce noise control measures, however, this will need to be confirmed by the Design Build team.

All main supply, return, and exhaust ductwork shall be specified as 22 gauge at thinnest to control duct breakout noise. If necessary, specific locations where heavier gauge ductwork is required shall be specified as the mechanical design develops. The Design-Build team shall consider multiple methods of breakout noise control, including but not limited to heavier gauge duct, duct silencers upstream of the location of concern, and external wrapping of the ductwork in mass-loaded vinyl duct lagging or a drywall enclosure.

In-Duct Airflow Velocities
Duct velocities should be designed to not exceed the maximum air velocity values listed below to limit regenerated noise due to air movement that may cause the relevant design noise criteria to be exceeded.

Design Guidelines for Maximum Air Velocities in Ducts (fpm)

Noise Criterion - NC	45	40	35	30
Main branch above suspended ceiling - rectangular duct	2000	1800	1500	1300
Duct within 10 to 20 feet of supply diffuser/ return grille	900 / 1000	850 / 950	800 / 900	700 /800
Duct within O to 10 feet of supply diffuser/ return grille	700 / 800	650 / 750	600/ 700	500 / 600
Supply Diffuser - 'free' velocity	550	500	450	400
Return Grille - 'free' velocity	650	600	550	500
Open return duct above ceiling	850	750	650	-

Notes:

- These are guidelines only.
- These velocity guidelines assume good airflow conditions. Presence of elbows, fittings, or abrupt duct transitions may require air to run at lower velocities.
- Please note that if these guidelines conflict with any safety requirements, such as in duct air velocities for fume exhaust systems, the safety requirements shall supersede the acoustical guidelines.

Terminal Units

Volume control boxes shall be selected with manufacturer's radiated and discharge noise ratings of at least 10 NC points below the background noise criterion of the space above which the units are located and the space served, respectively. Volume control boxes should not be located over spaces with noise criteria more stringent than NC-35, if possible. Volume control boxes shall be located above a continuous suspended ceiling.

Additionally, the manufacturer's discharge and casing-radiated noise ratings for the various scheduled terminal device air volumes shall be included on the mechanical schedule. Flexible connections shall not be used at the inlet of volume control boxes.

Balancing Dampers and Flexible Ductwork

Balancing dampers shall not be located immediately upstream of diffusers. A minimum of 5' of acoustical flex duct, such as Casco Silent Flex II or acoustical equivalent shall be included between diffusers and balancing dampers. It is very important that dampers are not incorporated into grilles. The use of diffuser blades for "balancing" the air system should be avoided.

Grilles and Diffusers

Diffusers and grilles shall be selected with a manufacturer's rating 5 NC points below the criterion of the room served. Where linear diffusers/grilles occur, they should not extend beyond the footprint of the room they serve. The manufacturer's noise ratings for various scheduled grilles and diffusers shall be included on the mechanical schedules.

Duct Routing and Crosstalk Control

Transfer of sound from one room to another via common ductwork shall be controlled so that the required room-to-room sound isolation provided by the architectural separation (partitions etc.) is not degraded significantly. As preliminary guidelines:

- Ducts or return air openings should not penetrate high performance acoustical partitions except for ducts entering the room they serve.
- For any rooms which will be divisible using operable walls, air should be ducted separately to and from each sub-division of the room. Ducts or air transfer should not cross above the operable walls.
- Wherever possible, supply and return air ductwork should enter individual rooms over door heads, rather than penetrating full height walls separating adjacent spaces. These wall locations should be coordinated with the Architectural drawings.
- Duct runs in areas with full height walls should be configured to maximize separation between takeoffs to individual rooms in order to reduce duct borne room-to-room crosstalk. Duct takeoffs to terminal grilles should be staggered to maximize the available acoustical separation provided.

Equipment Vibration Isolation

All mechanical equipment shall be appropriately vibration isolated from the building structure to achieve the minimum static deflection requirements including but not limited the equipment listed, below. All basis of design isolator models are by Mason Industries (or equal). Where basis of design isolator models are restrained spring isolators (such as SLR or SLRS), equivalent bare spring isolators could be used with separate seismic restraint as an alternate. Where equipment is suspended from above, hangers should have 30° rod misalignment capability. Pre-compressed hangers would be acceptable for use at piping or equipment where the installed and operating weights differ greatly.

Vibration Isolation and Minimum Static Deflection Requirements

Equipment		Isolator Type	Basis of Design Mode	Min. Static Deflection	Notes
Air handlers	External	Neoprene pad	Super W	0.06"	Durometer 40-60
	Internal	Spring-neoprene	SLRS	2"	
Condensing units		Spring-neoprene	SLR or SLRS	2"	
Fans & fan coils	< 2,000 CFM	Spring-neoprene	(Floor Mounted) SLR orSLRS (Suspended) 30N	l"	
	≥ 2,000 CFM	Spring-neoprene	(Floor Mounted) SLR orSLRS (Suspended) 30N	2"	

In order for vibration isolators to work properly, the structure supporting the isolator must be significantly stiffer than the vibration isolator themselves. The deflection of the supporting structure due to the weight of the equipment should not exceed 10% of the isolator's deflection. This should be coordinated and confirmed with the structural engineer.

Flexible duct, conduit, and pipe connections shall be specified for all vibration isolated equipment. Code compliant seismic restraint that does not affect the vibration isolation efficiency shall be used for all vibration isolation systems.

Where neoprene pad is required, anchor bolts shall be isolated from equipment supports using neoprene grommets. Where the use of spring isolators is required, these should be specified as combination spring and neoprene in series.

Piping Vibration Isolation

Mechanical piping connected to vibrating equipment can impart vibration energy to the building structure, even when flexible equipment connections are incorporated. Therefore, supports for such piping shall also include vibration isolation. Please refer to the guidelines below for specifying these vibration isolators. Mechanical piping should not be routed through rooms with a design noise criterion lower than NC-30.

- Pipe risers should be vibration isolated from the building structure using neoprene pad with 0.06" static deflection and 40-60 durometer.
- The piping within equipment rooms and at roof level should be vibration isolated. Where piping is connected to items of vibrating equipment, if the static deflection of the equipment vibration isolators is greater than the static deflection provided by the piping vibration isolation, the first three piping supports, or the number of pipe supports between the vibrating equipment and the envelope of the room, whichever is least, shall be provided with the same static deflection as the equipment isolators. This is to avoid reducing the effectiveness of the equipment isolators.
- Mechanical piping passing through or located near, either horizontally or vertically, rooms with a design noise criterion of NC-30 or lower should be vibration isolated based on the piping diameter (D) as follows:
- D < l": Felt or neoprene inserts between pipe and support.
- l" ≤ D < 2": Neoprene vibration isolators with a minimum static deflection of 0.25".
- D ≥ 2": Steel spring and neoprene combination vibration isolators with a minimum static deflection of 2".

In-pipe fluid velocities shall be limited to 4 fps in piping 2" in diameter or smaller and 6 fps in piping larger than 2" in diameter.

Redundancy and Reliability

While there are no specific redundancy requirements for the Project, consideration should be made to connect the main duct loops from the building air handling units so that there is a level of inherent redundancy if one unit is offline for maintenance purposes. Air handling units will also include multiple independent supply and return fans.

Energy Conservation

The project will be designed with variable air volume, variable speed compressors, and air-side economizer to optimize HVAC energy efficiency while maintaining appropriate indoor thermal conditions in the facility in all operating conditions.

HVAC Equipment

Air-side Systems

Regularly occupied areas of the Project shall be air-conditioned via two total rooftop, packaged, heat pump units with variable air volume (VAV) air distribution and zone thermal control. Each unit should be sized to accommodate 50% of the total building load and each level of the building will be connected to the air handling units via a common VAV duct loop on each floor to provide a level of redundancy if any one air handling unit is off-line.

Packaged VAV multi-zone air handling units will include an air-side economizer, variable-speed relief fans, outside airflow monitoring station, variable speed supply fans, 2" MERV 8 / 4" MERV-13 combo rack filters, stainless steel condensate pan, DX heat pump coil and BACNet controls. Sound traps to be provided on downstream/ upstream supply and return main ductwork.

VAV Terminal Units

Each VAV zone inside the building will include a single duct VAV box with an electric resistance reheat coil. Tempered supply air from the heat pump units will be delivered to VAV boxes through medium pressure main duct loops routed on each floor.

Return Air Systems

Return air shall be via ceiling plenum return to minimize ductwork required. Transfer grilles and lined return boots, sized for a free area velocity less than 500fpm, will be provided in all full height walls segregating the return air plenum. Low pressure main return ducts will be routed from the return air plenum to the air handling units.

Process Cooling Systems

Air-cooled mini split systems to be provided for conditioning of MDF, IDF, elevator machine rooms, electrical rooms, and other 24/7 process cooling spaces in the Project. Condensing units will be located on the roof. Refrigerant pipe risers, where required, shall be run in shafts. Low GWP refrigerant units to be selected when possible.

Wall mounted fan coil units located above room doorways to be used, when possible, to minimize cooling equipment being located over any equipment in the space. When suspended fan coil units are required the unit location shall be coordinated with space equipment layout and any cooling requirements (hot aisle/ cold aisle) in each room.

General Exhaust

Roof mounted exhaust fans to be selected to provide continuous general exhaust of restrooms, janitors rooms, and lunch/break rooms in the building.

HVAC Ductwork and Accessories

Ductwork shall be galvanized steel with G-90 zinc coating, ASTM A 653, minimum 22 gage, unless otherwise noted. Duct elbows will have smooth radius curves or turning vanes. Ductwork will comply with SMACNA HVAC Duct Construction Standards, Metal and Flexible (SMACNA), and NFPA 90A. Testing, adjusting, and balancing agent will be certified by AABC or NEBB. HVAC systems commissioning to be provided in accordance with California Energy Code.

Concealed, indoor supply ductwork will be insulated with fiberglass blanket and FSK jacket. Acoustical flexible duct connections will be used for the final five-foot connection from sheet metal ductwork to supply and return diffusers and grilles.

Combination fire/smoke dampers, integrated with the building fire alarm system, will be provided as required at occupancy separations.

Grilles and Diffusers

General lay-in ceiling supply diffusers to be steel, perforated face with curved pattern controllers to align with the County's standards (Price PDC, or similar). Lay-in ceiling mounted return and exhaust grille to be steel, perforated face (Price model 10, or similar). Diffusers and grilles to be compatible with ceiling and wall conditions, field painted where required to match custom wall colors.

Supply diffusers in exposed ceiling areas to be spiral duct mounted type (Price model SDGE, or similar). Return air in exposed ceiling areas to be minimized to large open-ended ducts covered with wire mesh.

Supply, return, and exhaust diffusers and grilles in hard-lid ceiling areas to be louvered type to align with the County's standards (Price model 630L, or similar).

All grilles and diffusers will be selected at least 5 points below the NC rating of the room.

Manual volume dampers will be provided in branch ducts to each diffuser in accessible ceilings. In hard lid ceilings and non-accessible areas, remote balancing damper controllers to be provided at each inlet or outlet.

Refrigerant Piping and accessories

Type L copper tubing with brazed/solder connections shall be provided for refrigerant piping distribution. Refrigerant piping to be insulated with 1.5" elastomeric foam pipe insulation. Provide aluminum jacket for exterior applications.

HVAC Controls

All HVAC systems in the facility will be monitored and controlled by a new BACNet over internet protocol (BACNet IP) energy management system coordinated with County Facilities Management. The DDC controls manufacturer shall be Siemens per the County's standards.

Building Automation System will interface with lighting controls and energy submetering of major electrical panels and end uses.

County will review and approve design, submittals, installation, and graphics for Building Automation Systems.

Seismic Restraints

All HVAC ductwork and pipe supports to comply with SMACNA Seismic Restraint Manual, Guidelines for Mechanical Systems, Third Edition.

08 PLUMBING SYSTEMS

General Description

The plumbing scope of service for this project is to provide complete plumbing renovations for an existing two-story office building. The renovations to the building shall include all new plumbing fixtures as well as new domestic hot and cold water, sanitary soil, waste, vent, natural gas, and storm drain piping systems.

Existing Systems and Scope of Demolition

Due to age and existing conditions all plumbing fixtures, equipment and associated piping above grade is to be demolished, removed and replaced with a new system that adheres to the parameters listed in this document. All existing piping and equipment that is removed shall be disposed of as directed by the owner's Representative. All cutting of existing paving, walks and/or floors shall be by machine saw cutting. Holes for pipes in concrete walls or floors shall be done by core drilling equipment.

The contractor shall verify all site points of connection between Plumbing systems and Civil utilities for condition and compatibility with the new design criteria.

Plumbing Design Criteria

Codes and Guidelines

All aspects of the design shall follow the requirements of the current edition of the California Plumbing Code, CALGreen standards for plumbing fixtures and all additional applicable standards of the County of San Bernardino. Additional Regulations and Standards shall include as a minimum:

ANSI - American National Standards Institute Inc.
ASHRAE - American Society of Heating Refrigerating and Air Conditioning Engineers Handbooks
ASME - American Society of Mechanical Engineers Guidelines and Standards
AWS - American Welding Society
CAL/OSHA - California Occupational Safety and Health Administration
CBC - California Building Code
CCR-Title 24 California Code of Regulations
CFC - California Fire Code
CPC - California Plumbing Code
NFPA - National Fire Protection Association Guidelines and Standards
SFM - California State and local Fire Marshal

Plumbing Fixture Water Efficiency

Plumbing fixtures installed in the project will meet or exceed the water efficiency requirements of the California Green Building Standards (CalGreen) code. Unless otherwise required by Code, the maximum water uses for each indoor plumbing fixture type installed in the project shall be:

Water closets:	1.28 GPF
Urinals:	0.125 GPF
Lavatories:	0.50 GPM
Sinks	1.50 GPM
Showers	1.80 GPM

Accessibility

Accessible plumbing fixtures in each restroom will comply with the requirements of the Americans with Disabilities Act (ADA) and all California requirements for accessibility.

California AB 1953 Compliance

Potable water system fixtures, materials, valves, and appurtenances to be in compliance with California Assembly Bill 1953, which limits the allowable lead content in certain domestic water system components.

Site Utilities

Refer to Civil Sections for site domestic water, sewer, and storm drain basis of design.

Piping Systems

Domestic Water

Domestic water supply shall be from the site water main with distribution and connection to all plumbing fixtures and other equipment supplied under other sections. The system shall be designed to provide a minimum of 25 psi at the most remote flush valve outlet. If the building water supply exceeds a maximum pressure of 80 psi a pressure reducing valve station shall be provided.

The domestic water system will be sized using a maximum of 3 PSI pressure drop per 100 feet of pipe and a maximum velocity of 8.0 feet per second for cold water and the hot water system will be sized using a maximum of 3 PSI pressure drop per 100 feet of pipe and a maximum velocity of 5.0 feet per second with a distribution water temperature of 140 degrees.
Isolation shut off valves shall be provided at each horizontal or vertical riser branch to each bathroom and at all plumbing equipment and fixtures that do not have a supply stop or isolation valve.

Piping within the building and above grade shall be Type "L" ASTM B88, hard drawn copper tubing with wrought copper sweat fittings per ANSI B16.18 and B16.22. Below grade piping outside of the building within five feet (5') of the foundation shall be Type "K" ASTM B88, hard drawn copper with wrought copper sweat fittings per ANSI B16.18 and B16.22. Below slab piping shall be Type "K" soft annealed copper tubing with no fittings below the slab.

Sanitary Soil, Waste Piping

Soil, waste, and vent piping within the building and outside within five feet (5') of the foundation shall be no-hub cast iron pipe and fittings conforming to CISPI Standard 301-04 or ASTM A-888-04 or ASTM A-888-04 with Heavy-Duty No-Hub Couplings conforming to ASTM C-1540 and ASTM C-564.

Plumbing fixtures above grade shall be drained by gravity to the site sanitary drainage system. Gravity drainage system shall maintain a minimum slope down of 2% in the direction of flow except where indicated otherwise.

Sanitary Vent Piping

Same as specified for sanitary soil and waste piping except with Standard Duty No-Hub Couplings conforming to CISPI Standard 310 and ASTM C-564.

Exposed vent piping shall be Schedule 40 galvanized steel pipe, ASTM A53. Vents through roof shall be located a minimum of 10' from building outside air intakes and terminate a minimum of 12" above the roof with vandal resistant hoods.

Storm Drainage Piping

Storm drain piping within the building and outside within five feet (5') of the foundation, and overflow drain piping within the building shall be no-hub cast iron pipe and fittings conforming to CISPI Standard 301-04 or ASTM A-888-04 with Heavy-Duty No-Hub Couplings conforming to ASTM C-1540 and ASTM C-564.

Roof drains, overflow drains and leaders shall be designed for 4-inch per hour rainfall (unless otherwise specified by the Authority of Jurisdiction). Overflow drain piping shall "daylight" to the building exterior and be provided with downspout covers as indicated on the plumbing plans.

Perimeter Gutters and Downspouts will be provided as required, materials to be determined. Coordinate with architectural plans.

Condensate Drainage Piping

Condensate drainage for HVAC systems will type L copper. All condensate drains shall discharge to sanitary sewer.

Indirect Waste Drainage Piping

Indirect waste piping shall be Type "L" ASTM B88, hard drawn copper tubing with wrought copper fittings as specified for water piping.

Natural Gas

Natural gas systems to be medium pressure (2 to 5" PSI). Below grade piping to be Schedule 40, SDR-11, polyethylene with socket fusion type fittings conforming to D-2513. (30-inch minimum cover) Include tracer wire (Solid copper wire type THWN, 12 AWG gauge, with heat and moisture resistant wire insulation).

Above grade concealed gas piping within the building shall be Schedule 40 black steel pipe conforming to ASTM A-53.

Above grade exposed gas piping shall be Schedule 40 galvanized steel pipe conforming to ASTM A-53. Piping on roof to be painted.

Pipe Testing

All piping systems shall be tested in accordance with the applicable service as indicated in the California Plumbing Code.

All new water piping shall be disinfected/sterilized as directed by the California Plumbing Code.

Plumbing Equipment

Domestic Hot Water System

This project will include a natural gas fired tank type water heating system with expansion tank, drain pan and drain to receptor located in a Mechanical room or Janitorial Room. Hot water will be controlled to a supply temperature no more than 140 degrees Fahrenheit to serve all lavatories, sinks, and service sinks. Point of use thermostatic mixing valves located at the lavatories will provide tempered water. The hot water system will be fully circulated with a pump interlocked to an aquastat allowing for control of the circulating system. Water heaters shall be a A.O. Smith Commercial Gas type or approved equal.

Electric instantaneous point of use water heaters may be provided for remote locations requiring hot water. Water heaters shall be Eemax, Chronomite or equal.

Plumbing Fixtures

- All plumbing fixtures shall be low-flow water conserving type fixtures consistent with CalGreen.
- Plumbing fixtures by Sloan, Zurn, Kohler, American Standard or approved equal.
- Water closets shall be water efficient 1.28 GPF hardwired sensor actuated flushometer valve, wall mount vitreous china with siphon jet action, elongated bowl with open front seat, in both ADA and non-ADA compliant configurations as applicable.
- Urinals shall be water efficient 0.125 GPF "pint flush" hardwired sensor actuated flushometer valve, wall mount vitreous china with wash-down action, in both ADA and non-ADA compliant configurations as applicable.
- Restroom lavatories shall be wall mounted or undermounted vitreous china with hardwired sensor actuated, tempered water 0.5 GPM faucet, with prewrapped trap and supply covers, loose key stops, and rigid supplies. ADA compliant.
- Kitchen/ Break sinks shall be undermount stainless-steel ADA single bowl for use with solid surface countertops, HW/CW with 1.5 GPM kitchen faucet with prewrapped trap and supply covers, loose key stops, rigid supplies, and garbage disposal.
- Kitchen/ Break areas to be provided with connections for filtered water dispenser and coffee machine(s) as required.
- Icemaker supply box with shut-off valve will be provided at all refrigerators.
- Wellness Room sinks shall be undermount stainless-steel ADA single bowl for use with solid surface countertops, HW/CW with 1.5 GPM kitchen faucet with prewrapped trap and supply covers, loose key stops, rigid supplies, and garbage disposal.
- All general use sinks shall be stainless steel self-rimming at plastic laminate, countertop undermount at solid surface countertops. General counter sinks shall be accessible single bowl HW/CW with gooseneck faucet, 1.5 GPM.
- Interior drinking fountains shall be dual height, stainless steel, refrigerated and filtered with recessed compressor. All drinking fountains to include sensor operated bottle filler accessories.
- Service sinks shall be corner floor mount type with 2.2 GPM HW/CW wall mount faucet with integral vacuum breaker, hose, pail hook, and vinyl rim guard.
- Floor drains with trap primers shall be provided in all restrooms.
- Floor sinks will be provided in Mechanical Rooms as required.
- Housekeeping Hose Bibbs and Floor Drains to be provided at restrooms.
- Exterior hose bibbs around the building shall be recessed lockable box type with integral vacuum breaker. Rooftop hose bibbs shall be free standing with integral vacuum breaker.

Noise and Vibration Control for Plumbing Systems

Suitable vibration control measures shall be provided for pumps, water heaters, and any other plumbing system equipment which may generate noise and vibration. In addition, allowances shall be made for resilient attachment of plumbing piping at all support points.

Plumbing piping shall not pass over acoustically sensitive spaces wherever possible. Where this adjacency cannot be avoided, piping shall be enclosed in drywall or mass-loaded vinyl lagging to reduce fluid noise transfer to the sensitive space. The pressure at the inlet(s) to the building be limited to 70 psi if feasible.

Waste and vent lines shall utilize cast iron piping, and cold and hot water lines shall be copper. All condensate piping to be copper. All hot water and condensate piping to be insulated, with the minimum required insulation thickness noted.

09 ELECTRICAL SYSTEMS

For additional applicable codes and code sections, please refer to sections provided under other sections of this Basis of Design.

Overview

The general scope of work is to provide a new fully functional electrical service and distribution system for the Project. The detailed design of electrical system includes lighting, power, emergency power, fire alarm, and EV charging.

DBE to coordinate directly with San Bernardino County Innovation and Technology Department (ITD) for all standards, services, and requirements. DBE to engage ITD from the start of the project to provide input on structured cabling, conduit pathways, and communication rooms.

Applicable Codes and Standards (Current Edition to be Used)

- California Administrative Code (CAC) Part 1, Title 24, California Code of Regulations (CCR)
- California Building Code (CBC) Part 2, Title 24
- California Electrical Code (CEC) Part 3, Title 24
- California Mechanical Code (CMC) Part 4, Title 24
- California Plumbing Code (CPC) Part 5, Title 24
- California Fire Code (CFC) Part 9, Title 24
- California Energy Code Part 6, Title 24, CCR
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- California Reference Standards Code Part 12, Title 24, CCR
- IESNA Illuminating Engineering Society Handbook, Latest Edition
- NEMA National Electrical Manufacturer's Association, Building Systems, and Lighting Systems Standards, Latest Editions
- NETA National Electrical Testing Association Acceptance Testing Specifications, Latest Edition
- NFPA 99 - Health Care Facilities Code
- NFPA 110 - Standard for Emergency and Standby Power Systems
- NFPA 101 - Life Safety Code
- San Bernardino Municipal Code

Site Utilities

There is an existing 12KV service from Southern California Edison feeding an existing 500KVA utility transformer located nearby parking lot. A new 1,000 Amp switchboard will feed 480Y/277V, 3-Phase, 4-Wire panels, elevators, various equipment, transformers and 120/208V, 3-Phase, 4-Wire panels.

Load Summary

Total Building Area (Present and Future) - 26,000 SF

* a) General Lighting @ 125%	= 1.00 VA/SF
* b) General Power	= 5.00 VA/SF
* c) Miscellaneous	= 4.00 VA/SF
** d) HVAC Power	= 10.00 VA/SF
Total	= 20.00 VA/SF
X	27,5000 SF
Total	= 550,000 VA
Or	662A@ 480Y/277V, 3 Phase, 4-Wire.

* - Assumes Worst Case Application.
** - Estimated Loads

EV Charging Systems

Provide the cost to include EV Charging Stations and corresponding electrical infrastructure to support Level 2 (40A at 208v / Iph) Electrical Vehicle (EV) charging stations (ChargePoint, or similar).

Codes and Standards

Low-Voltage Electrical Power Conductors and Cables

Use only copper conductors, #12 AWG minimum for power wiring; #14 AWG for control circuitry.

A separate grounding conductor, other than the raceway, shall be included in all feeders and branch circuits.

Manufactured wiring systems are not acceptable except within modular partition systems.

Grounding and Bonding for Electrical Systems

- Provide separate insulated conductor within each feeder and branch circuit raceway.
- Use copper-clad steel ground rods.
- Ground resistance testing shall be performed by a Contractor engaged independent testing company.
- Provide exothermic weld connections.
- Utilize the following elements for grounding: Metal underground water pipe, metal building frame, concrete-encased electrode, rod electrode, and/or ground rings.
- 15 ohm maximum system ground performance.

Hangers and Supports for Electrical Systems

Utilize the following mounting, anchorage and attachment components:

- Powder actuated fasteners.
- Zinc-coated steel mechanical-expansions anchors.
- Concrete inserts.
- Clamps for attachment to structural steel elements.
- Toggle bolts.
- Hanger rods.
- Concrete bases: use 3000-psi, 28 day compressive-strength concrete

Raceways and Boxes for Electrical Systems

Conduit Materials: Rigid steel and PVC-coated rigid steel, electrical metallic tubing (EMT), galvanized flexible steel conduit, PVC schedule 40 and schedule 80.

Conduit applications:

- Underground, more than 5 feet outside foundation wall: provide PVC schedule 40 or PVC-coated rigid steel conduit.
- Underground, within 5 feet from foundation wall: provide rigid steel conduit wrapped with corrosion protective electrical tape, or PVC coated rigid steel conduit.
- In or under slab on grade: provide PVC schedule 80 conduit.
- Outdoor locations above grade: provide galvanized rigid steel conduit. EMT may be used in areas 10' above finished grade.
- In slab above grade: provide PVC schedule 40 Or 80 conduit.
- Wet and damp locations: provide galvanized rigid steel conduit.

- Exposed dry locations: provide galvanized rigid steel conduit. EMT may be used in areas 10' above finished grade or floor.
- Concealed dry locations: provide EMT.
- Provide sheet metal boxes; provide flush mounting outlet box in finished areas.
- Minimum conduit size shall be 3/4".
- Multi-outlet metal raceways in Laboratories shall be aluminum.
- Provide pull ropes in all empty conduit.

Underground Ducts and Raceways for Electrical Systems

- Use concrete encased PVC conduit or concrete encased rigid steel conduit in ductbanks.
- Use minimum 12-foot radius sweeps.
- Install #4/0 bare copper ground conductor with all circuit conductors.
- Provide duct plugs in all unused ducts.

Identification for Electrical Systems

Electrical Identification Materials and Devices:

- Identification for raceways.
- Identification for conductors and communication and control cable.
- Raceway and Metal-Clad Cable Identification: Adhesive labels and warning tape for underground lines.
- Conductor and Cable Identification: Colored adhesive tape and brass or aluminum tags.
- Equipment Labels: engraved plastic attached with rivets or screwed on.
- Warning Signs: Baked enamel and metal backed butyrate.
- Instruction Signs: Engraved, laminated acrylic or melamine plastic.

Overcurrent Protective Device Coordination Study

Provide computer-based, fault current and overcurrent protective devices coordination study including ground fault protection and arc fault hazard analysis studies to be performed by the contractor.

Protective devices shall be set based on the result of the protective device coordination study. Arc fault hazard analysis warning nameplates shall be printed and affixed to the electrical system equipment after the final protective relay settings have been applied and confirmed operational settings and adjustments of the relays shall be performed by an independent qualified agency familiar with this work and the agency is to be retained by the contractor.

The person performing this work shall have a minimum of five years' experience.

Contractor shall retain a 3rd party independent consultant to perform the study indicated in this section.

Perform study under direct supervision of Professional Engineer experienced in design of this Work and licensed at in State of California with minimum of five years' experience in power system analysis.

Low-Voltage Transformers

- Provide continuous copper windings.
- Ventilated enclosures.
- Insulation class: 220 degrees.
- Taps: 25KVA transformers and larger shall have two 2.5 percent full capacity taps above and two 2.5 percent full capacity taps below normal.
- Transformers shall be NEMA TP-1 compliant and meet NEMA sound criteria.
- Provide K- rated transformer or harmonic mitigating transformers for non-linear load applications.

Switchboards
The manufacturer of the switchboard assembly shall be the same as the manufacturer of circuit breakers and installed within the assembly.

Mains shall be individually or panel mounted; branch feeder breakers shall be group mounted.

Provide ground bussing the full length of the switchboard assembly.
Bussing: copper with silver or tin plating of standard size.
Connections shall be bolted, accessible from the front for ease of maintenance.

Provide bus extensions on ends for future sections.

Install individual circuit breaker nameplates.

Testing shall be done by a separate contractor-engaged testing firm.

Provide electronic metering for building main switchboard.

Main switchboard to be provided with a minimum of 65kAIC short circuit rating.

Circuit breakers to be fully rated, series rated combinations will not be allowed.

Panelboards
The manufacturer of the panelboard assembly shall be the same as the manufacturer of circuit breakers and installed within the assembly.

Copper ground bussing shall be installed in all panelboards.

Circuit breakers shall be bolt-on type.

For non-linear load applications subject to harmonics, furnish 200 percent rated, plated copper, solid neutral.

Install spare conduits out of each recessed panelboard to accessible location above ceiling or below floor. Minimum spare conduits: 5 empty 1 inch. Identify each as "SPARE"

Provide minimum 25 percent spare load capacity and 25 percent spare circuit breakers in panelboards.

Circuit directories shall be typed under clear plastic contained within a metal frame inside the panelboard door.

Provide HACR type circuit breakers for air conditioning equipment.

Circuit breakers to be fully rated, series rated combinations will not be allowed.

Wiring Devices
Receptacles: 120V, 20A

- Straight blade.
- GFCI: feed-thru type.
- Isolated ground in IT equipment rooms.

Momentary contact, center off switches.

Occupancy Sensors:

- Wall-Switch Sensors: Infrared type with adjustable time delay.
- Long-Range Wall-Switch Sensors: Passive-infrared type with adjustable time delay.
- Wide-Range Wall-Switch Sensors: Passive-infrared type with adjustable time delay.
- Exterior Occupancy Sensors: Passive-infrared type with adjustable time delay.

Wall Plates:

- Material for Finished Spaces: Type 302 stainless steel, satin finish
- Material for Unfinished Spaces: Galvanized steel.
- Material for Damp and Wet Locations: Thermoplastic.

Finishes:

- Switches and receptacles connected to normal power system: Ivory.
- Switches and receptacles connected to emergency power system: Red.

SPD Devices: Blue.

Isolated-Ground Receptacles: Orange.

Fuses

Cartridge fuses rated 600 V and less for use in switches:

- Spare-fuse cabinets. Wall-mounted steel unit with fuse pullers for each size of fuse. Quality Standard: NEMA FU 1.
- Cartridge Fuses: Nonrenewable

Fuse Applications:

- Service Entrance: Class L, fast acting.
- Feeders: Class L, fast acting.
- Motor Branch Circuits: Class RKI, time delay.
- Other Branch Circuits: Class RKI, time delay.

Enclosed Switches and Circuit Breakers

Fusible and Nonfusible Switches:

- Fusible Switch, 600 A and Smaller: NEMA KS 1, Type HD.
- Nonfusible Switch, 600 A and Smaller: NEMA KS 1, Type HD.

Accessories: Equipment ground kit. Neutral kit, where required. Auxiliary contact kit.

Commissioning

Commissioning, testing and studies will be performed on equipment or systems by parties as indicated in the Commissioning Plan.

Lighting

Interior Lighting

Interior lighting will be provided as follows:

- Interior lighting shall be static white LED with a Correlated Color Temperature (CCT) of 3500K with a Color Rendering Index (CRI) of a minimum of 80.
- Finishes to be selected by Architect and/or Lighting Designer.
- All required hardware for a complete installation shall be provided.

- Illumination levels shall be designed in accordance with the latest set of Recommended Practices (RP) published by the Illuminating Engineering Society of North America (IESNA).
- Lighting power density shall comply with California Energy Code Title 24 and any applicable local city ordinances.
- Lighting and controls will be designed to target high efficiency and lighting performance consistent with Client standards.

Lobby and Reception
Recessed downlights for general illumination, and decorative pendant over reception counter.
Product Basis: Gotham "EVO 4 Square Downlight" or equal
Product Basis: Decorative pendant TBD

Stairs
Recessed downlights for general illumination.
Product Basis: Gotham "EVO 4 Square Downlight" or equal

Typical Offices
Recessed LED 2x2 or 2x4 direct/indirect troffers.
Product Basis: Lithonia "BLT" or equal

Open Offices
Recessed LED 2x4 direct/indirect troffers.
Product Basis: Lithonia "BLT" or equal

Conference Rooms/ Command Center/ Operations Command Center
Recessed lensed, linear LED and regressed perimeter slot light for vertical illumination.
Product Basis: Mark "Slot 2 LED" recessed linear or equal
Product Basis: Alight "Accolade D9 Perimeter" or equal

Break Area/ Kitchenette/ Coffee
Recessed LED 2x4 direct/indirect troffers, regressed perimeter slot light for vertical illumination, and concealed surface mounted continuous LED tapelight in extruded aluminum housing under cabinet lighting.
Product Basis: Lithonia "BLT" or equal
Product Basis: Alight "Accolade D9 Perimeter" or equal
Product Basis: Aluz "ZAKY Standard (Al-ZAKY-STN)" or equal

Wellness Room
Wall mounted linear direct/indirect.
Product Basis: Alight "Accoled ACL2ST Direct/Indirect Wall" or equal

Storage Room and Support Areas
Recessed LED 2x4 direct/indirect troffers.
Product Basis: Lithonia "BLT" or equal

IDF/ Server Room/ Janitor's Closet
Pendant mounted or surface mounted LED striplight.
Product Basis: Lithonia "CLX" or equal

Restrooms
Perimeter slot lights along entire length of both longitudinal walls and recessed round downlights.
Product Basis: Alight "Accolade D9 Perimeter" or equal
Product Basis: Gotham "EVO 4 Round Downlight" or equal

Emergency/ Exit Lighting

Emergency lighting shall be provided on all egress paths in compliance with CBC requirements for light level and uniformity. Emergency lighting will be provided in select areas outside of the egress paths as determined necessary for safe operations. All emergency lighting fixtures and exit signs shall be powered by the Emergency Lighting Inverter. Exit signs shall have integral batteries in compliance with life safety code requirements for two independent power sources.

Energy efficient exit signs will be utilized. Exit signs to be hard wired and connect to inverter system. A central inverter will be provided at the main electrical room, connected to dedicated emergency dimming/ lighting control panels for code required emergency illumination.

Exit signs shall be edge lit LED signs as manufactured by Evenlite by Lithonia or Isolite or equal.

Lighting Control System

This project lighting will be designed to comply with the 2022 California Energy Code. All interior lighting fixtures in occupied areas will be dimmable LED type with occupancy sensor control and, where applicable and required, daylight responsive controls. Open areas will be controlled by ceiling mounted sensors with switch packs (where required), and private offices and smaller rooms will be controlled by wall-mounted sensors. Sensors shall be by nLight or equal by Wattstopper.

All zone occupancy (except when located in restrooms) are configured in occupancy on, automatic off setting.

The lighting control system will include networking central lighting control panel capable of scheduling control and responding to a future utility company demand response signal as manufactured by nlight or equal by Wattstopper. The system will be capable of manual override time event scheduling, holiday and special event scheduling and occupant warning. Home runs lighting fixtures will be run through lighting relays and controlled by low voltage switches at locations as directed by the Owner. System shall be integrated via a BACnet communication protocol compatible with the BMS.

Exterior and Site Lighting Systems

The primary objective of the exterior lighting systems is to facilitate safe movement of pedestrian and vehicular traffic, enhancement of security and deterrence of vandalism and theft. Optimizing energy usage and minimizing maintenance are also high priority objectives.

In addition to improving wayfinding, exterior building lighting systems utilize visual attraction to create a welcoming atmosphere to all buildings. This is achieved by highlighting building entry areas, paths of travel, and other destinations to make them stand out against general area lighting. Building accent lighting, in conjunction with landscape/hardscape path and accent lighting all contribute to outdoor activity functions including gathering areas outside the buildings or pathways and seating areas within the courtyard.

Building entry lighting should also assist in transitioning between the indoor and nighttime outdoor illumination levels. Security lighting, egress illumination and curfew (low activity) modes are also important considerations.

Additionally, landscape, hardscape, path, and accent lighting are all crucial for outdoor activity functions, including gathering areas, Staff and Public Respite areas, pedestrian walkways leading to outdoor amenity spaces.

Important considerations for site lighting include: visual tasks, vertical iiluminance (to aid in facial recognition), security lighting, eye adaptation, and curfew (low activity) modes. All these should be examined in conjunction with egress illumination.

Exterior Lighting should have a Correlated Color Temperature (CCT) of 3000K with a Color Rendering Index (CRI) of a minimum of 80.

Exterior lighting systems will include the following luminaire types:

Exterior Building Canopy

Remove and replace existing recessed downlights in kind with new retrofit exterior LED downlights. Re-use existing feeder for new light fixtures and control via new lighting control system.

Product Basis: Gotham "EVO Round Downlight" or equal

Remove and replace existing floodlights along west elevation under canopy with new retrofit exterior LED downlights. Re-use existing feeder for new light fixtures and control via new lighting control system.

Product Basis: Gotham "EVO Round Downlight" or equal

Remove flood lights along west elevation on top of roof. Cap conduits after fixture removal. Remove conductors back to source.

Parking Garage

Remove and replace existing fixtures with new light fixture. Re-use existing feeder for new light fixtures and control via new lighting control system.

Product Basis: Lithonia "VCPG Ultimate LED with uplight component" or equal

Parking Garage Stairs

Wall mounted linear direct/indirect.

Product Basis: Mark "Slot 2 Wall Direct Indirect" or equal

Roof

Wall mounted wallpacks along exterior plaster wall of mechanical penthouse for general illumination on walking pad for mechanical equipment and facade maintenance access.

Product Basis: Bega "22386" or equal

Exterior Parking Lot Pole Lights

Pole-mounted full cut-off high performance luminaires with multiple beam distribution optics (Type 11, Type 111, Type IV Forward Throw, Type IV Wide, Type V, Spill Control, 90° Spill Light Eliminator Right or Left), minimum 25-ft mounting height for efficient spacing, or as needed to provide code compliant light levels.

Product Basis: Lithonia "D-Series Size O" LED Area Luminaire, or equal

Trash Enclosure

Surface mounted exterior rated downlight with asymmetric beam and wiring box cover.

Product Basis: Bega "24404 + wiring box cover" or equal

Exterior Signage

If exterior signage is internally illuminated, provide power for integral signage lighting. If exterior signage is externally illuminated, provide continuous wall mounted wall washer to provide vertical illumination onto signage.

Product Basis: SPI "Styk Exterior Wall Stem" or equal

General Design Recommendations

The following illumination approaches are recommended:

- Fixtures throughout the site and building exterior will be LED type, with lumen packages selected to provide lighting levels in accordance with IESNA recommendations (see Illuminance Recommendations Tables below).
- Exterior lighting fixture controls will be provided per California Energy Code requirements.

Recommended Light Levels

A summary of the recommended exterior lighting levels for the project is found below. The target light levels are designed in accordance with the Illuminating Engineering Society of North America's Tenth Edition Handbook recommendations. Recommended average light levels are maintained at grade.

Illuminance Recommendations for Exterior			
TYPE OF OCCUPANCY	TARGET FC (AVG)	UNIFORMITY (AVG:MIN)	FIXTURE TYPE
Exterior Lighting			
Parking Lots	1.0 Min.	4:1	25-ft Pole Arm Mount
Pathway	1.0	4:1	Exterior Building Canopy
Service Yard (Security)	0.2	n/a	Wall Mount
Roadways			
Primary and Secondary	0.9	4:1	25-ft Pole Arm Mount
Service Roads and Alleys	0.4	4:1	25-ft Pole Arm Mount

Building Power

Miscellaneous Power

Provide power and control connections as required to all mechanical and plumbing equipment - see mechanical/ plumbing outline specifications and drawings for more information.

Open Office Areas

All furniture systems will be assumed to be a four (4) circuit/ eight (8) wire configuration. All furniture system workstations are assumed to have personal computers only and will be connected at a ratio of four (4) workstations per four (4) circuit/ eight (8) wire homerun.

All printers, faxes and copiers shall be provided with the following:

- One (1) dedicated 20 amp 120V receptacle.
- One (1) telephone/ data outlet.

All wall mounted communication outlets will be provided with¾" conduit, stubbed into the accessible ceiling space, 4S/DP box and a single gang mud ring in the wall.

All wall mounted furniture system communication feeds will be provided with 1 ¼" conduit, 4S/DP box and a double-gang mud ring in the wall. Provide a 1 ¼" conduit for every four (4) workstations.

Private Offices

Each office will be equipped with power and data outlets per plans. The circuiting will be such that no more than six (6) receptacles will be on any one circuit.

Conference Rooms

Conference Rooms will be equipped with power and data outlets per plans. The circuiting will be such that no more than six (6) receptacles will be on any one circuit. In addition, provide power and communications as required for any teleconferencing or audiovisual equipment.

Typical General Power

Refer to power and communication plans. Install One (1) outlet per wall per office, and at 50' o.c. in corridors.

Life-Safety

Provide Life Safety Fire Alarm System conforming to the requirements of the California Fire Code and County standards which will include a manual fire alarm system with pull stations, waterflow switches, tamper switches, duct smoke detectors, and ADA approved fire alarm audible horns and visual strobes, connected to a centralized system. See Fire Alarm section.

Noise and Vibration for Electrical Systems

Unlike noise from the mechanical system, which is typically broadband in nature, electrical components tend to generate highly tonal noise. Such noise can be annoying or distracting even at moderate noise levels. As such, noise and vibration control measures shall be incorporated into the design of the electrical system.

Suitable vibration control measures shall be provided for transformers, unit substations, UPS systems, inverters, emergency generators, and any other electrical equipment which may generate noise and vibration. Flexible electrical connections shall be provided at all connections to vibration-isolated equipment.

Transformers shall be mounted on neoprene 'cup' mount isolators, consisting of a captive steel insert embedded into a neoprene element that is enclosed by a steel housing which also includes floor mounting holes. The isolator shall have a rated deflection of 0.15 inches in compression, 0.12 inches in tension and 0.09 inches in shear.

10 STRUCTURED CABLING SYSTEM

Telecommunications Utilities

Service providers will attach to a single MP0E. All cables incoming to the building will have adequate slack to compensate for movement of the building relative to the surrounding landscape during a seismic event.

DBE to provide pathways only, including conduits from plenum to drop cable location and cable trays in the corridors to IDF. Cabling, WAPs, and head-end equipment (i.e., switches, patch panels, etc.) to be provided by County. Fiber optic connection from MP0E to local data provider will also be provided by County.

IDF Telecommunications Rooms (TRs)

There will be (1) IDF room on the second floor.

IDF room power will connect to the building redundant UPS. There will be dual "A side/ B side" power receptacles for each rack/cabinet to support equipment with dual input power supplies. Final receptacle configurations will need to be verified with owner. Each rack/cabinet will have (2) vertical PDUs for distribution of power to the critical equipment mounted within. For single corded critical equipment, a dual input horizontal PDU will be provided where necessary.

IDF room will be cooled by redundant HVAC systems.

Power and cable runs will be fed from overhead in basket trays. All horizontal cable runs to offices, cubicles and dispatch consoles will terminate in the IDF room. There will be adequate termination points in each IDF room to segregate the departments in the facility. All horizontal runs will terminate in 48 port Category 6 patch panels. To further distinguish between the segregated agencies the horizontal cabling will be of (2) distinct colors.

Open Office Areas

All furniture systems will be fed from wall or floor connections. Cabling will be concealed in flex loom between the floor or wall connection and the furniture system. Each workstation cubicle will receive conduit/pathways to support:

- (2) Category 6 cables from the telephone (ISD) rack and
- (2) Category 6 cables from the appropriate agency cabinet (see IDF section above).

Provide for wall phones at every large storage room, utility room (electrical, HVAC, UPS), break room, and lobby and standard height outlets in elevator equipment rooms with conduit/pathways to support:

- (2) Category 6 cables in a single gang outlet to closest IDF telephone (ISD) rack.

Private Offices

Each private office will have (2) wall outlets. Each wall outlet will receive conduit/pathways to support:

- (1) Category 6 cables from the telephone (ISD) rack and
- (2) Category 6 cables from the appropriate agency cabinet in the IDF room. (see IDF section above).

Conference Rooms

Each conference room will have (2) wall outlets and (1) floor outlet. Each wall outlet and floor outlet will receive conduit/pathways to support:

- (4) Category 6 cables from the ISD rack in the IDF room.

Wi-Fi

Category 6A cabling will be distributed throughout the ceiling area for County provided Wi-Fi antennas or Wireless Access Points (WAP). Each WAP location will be provided with conduit/pathways to support the following:

- (2) Category 6A cables from the IDF appropriate agency cabinet.

11 SECURITY SYSTEMS

Overview

In addition to Plans, County Security Committee to review and provide recommendations for Security System requirements to be implemented.

DBE to coordinate all security systems with County ITD.

Building Electronic Access Control/ Intrusion Alarm System

Intrusion Alarm System will consist of door contacts, glass break detectors and motion sensors by Genetec System. Alarm zones will be set on a schedule or can be armed and disarmed manually. Provide intrusion alarm as follows:

- Glass break detectors on l5[1] floor protecting all exterior facing glass windows and doors.
- Motion detectors protecting all secure storage areas zoned and armed separately from the building.
- Electronic Access Control System will consist of Bluetooth enabled proximity/ smart card readers, cards and/or key fobs, request to exit sensors, electric door hardware. All electric door hardware shall be electric strike configuration. Provide Electronic Access Control at the following locations.
- All building exterior entrances and exits.
- DBE to provide an electric "distress button" connecting the Reception Desk with the Second Floor Supervisors (four positions.)
- IDF rooms, Secure storage rooms.
- All Exterior Vehicle and Pedestrian gates
- Exterior Vehicle gates will have video intercoms, card readers and RF AVI readers.

Video Surveillance System

An IP based Video Surveillance System will consist of IP cameras, Video Management Software (VMS) and recording server by Genetec System. Recorded video will be retained for 6 months. Provide Video Surveillance for the following areas:

- Exterior perimeter of building, parking garage, and new/existing parking lots.
- All building exterior entrances and exits.
- IDF rooms, Secure storage rooms
- Public lobby and other public areas.

Intercom/ Reception Sequence of Operation

Video Intercoms at all vehicle and pedestrian gates and building entrances will be monitored at multiple locations. Each location will have the ability to have a 2-way conversation with the person at the intercom station as well as the ability to unlock the gate or door.

- During normal business hours the reception area will be occupied. Intercoms will ring at the reception desk. If no one answers the ring will roll over to Department designees.
- During off business hours the intercom will not ring at the reception desk. Confirm with County if offsite personnel to receive notification during off business hours.

12 AUDIOVISUAL

Large Conference Room

The SO-person Conference Room is a shared space that will be used by both building occupants. The seating configuration is flexible, with theater, classroom, and conference configurations available. Visual sources will include laptop and mobile devices, audio and web conferencing, and broadcast television. These sources will be displayed on a direct view screen at the front of the room. Voice and media audio reinforcement will be provided by ceiling loudspeakers. Ceiling microphones and a wall-mount camera may be used to capture participants for audio and web conferencing. A wired control panel will be provided for system and environmental controls.

Provide the following infrastructure for the SO-person Conference Room:

Mechanical

- Isolate camera from mechanical vibrations
- Avoid locating air handling units above ceiling in this room
- Locate air supplies a minimum of 8 feet from ceiling microphone locations
- Line Voltage Electrical
- Install line voltage electrical service at equipment locations

Low Voltage Electrical

- Install low voltage junction boxes and conduits at equipment locations
- Provide low voltage interface as required for lighting, window coverings and life safety

Structural support

- Provide adequate support for audiovisual equipment; this equipment includes, but is not limited to, speakers, visual display and camera
- Ensure there is no structure borne vibration at camera

Lighting

- Provide minimum of 40 vertical foot candles of illumination for adequate camera performance
- Shield lighting sources from camera field of view to avoid hot spots
- Avoid reflections at visual display
- Provide motorized shades on all windows for light control and privacy, typical for this sized room.

Millwork

- Provide adequate ventilation around equipment racks and flat panel displays installed in niches or millwork

Medium Conference Room

The 16-20 person Conference Room is a shared space that will be used by both building occupants. The seating configuration is flexible, with classroom and conference configurations available. Visual sources will include laptop and mobile devices, audio and web conferencing, and broadcast television. These sources will be displayed on a large direct view screen at the front of the room. Voice and media audio reinforcement will be provided by ceiling loudspeakers. Ceiling microphones and a wall-mount camera may be used to capture participants for audio and web conferencing. A wired control panel will be provided for system and environmental controls.

Provide the following infrastructure for the 20-person Conference Room:

Mechanical

- Isolate camera from mechanical vibrations
- Avoid locating air handling units above ceiling in this room
- Locate air supplies a minimum of 8 feet from ceiling microphone locations

Line Voltage Electrical

- Install line voltage electrical service at equipment locations

Low Voltage Electrical

- Install low voltage junction boxes and conduits at equipment locations
- Provide low voltage interface as required for lighting, window coverings and life safety

Structural Support

- Provide adequate support for audiovisual equipment; this equipment includes, but is not limited to, speakers, visual display and camera
- Ensure there is no structure borne vibration at camera

Lighting

- Provide minimum of 40 vertical foot candles of illumination for adequate camera performance
- Shield lighting sources from camera field of view to avoid hot spots
- Avoid reflections at visual display
- Provide motorized shades on all windows for light control and privacy, typical for this sized room.

Millwork

- Provide adequate ventilation around equipment racks and flat panel display installed in niche or millwork

Small Conference Rooms

The 8-12 Small Conference Room is a shared space that will be used by both building occupants. The room is configured with a permanent conference table. Visual sources will include laptop and mobile devices, audio and web conferencing, and broadcast television. These sources will be displayed on a direct view screen at the front of the room. Voice and media audio reinforcement will be provided by a soundbar below the display. The soundbar's camera and microphone may be used to capture participants for audio and web conferencing. A wired control panel will be provided for system and environmental controls.

Provide the following infrastructure for the 12-person Conference Room:

Mechanical

- Isolate camera from mechanical vibrations

Line Voltage Electrical

- Install line voltage electrical service at equipment locations

Low Voltage Electrical

- Install low voltage junction boxes and conduits at equipment locations
- Provide low voltage interface as required for lighting and life safety

Structural Support

- Provide adequate support for audiovisual equipment; this equipment includes, but is not limited to, visual display and camera
- Ensure there is no structure borne vibration at camera

Lighting

- Provide minimum of 40 vertical foot candles of illumination for adequate camera performance
- Avoid reflections at visual display
- Provide manual shades on all windows for light control and privacy, typical for this sized room.

Millwork

- Provide adequate ventilation around equipment racks and flat panel display installed in niche or millwork

13 ACOUSTICAL PRECONSTRUCTION AND POSTCONSTRUCTION REPORTS

Overview

The Design-Build team shall provide the following information and calculations for review prior to the start of construction. The preconstruction report shall include:

Preconstruction Report

- Noise measurements and calculations to support that the building perimeter construction provides sufficient noise reduction to reduce exterior noise sources to equal to or less than the criteria established.
- Acoustical test reports for partitions and floor ceiling assemblies as they pertain to the STC requirements of the project.
- Any specification sections pertaining to architectural acoustics recommended by the Design-Builder Acoustical Consultant to be included in the Contract Documents.
- Statements indicating compliance with requirements indicated within the "Interior Sound Isolation" and "Acoustical Finishes" subsections in this report.
- A minimum of 10 calculations for HVAC system noise shall be provided showing that the established noise criteria will be achieved. The typical areas shall include occupied areas adjacent to supply and return air shafts, acoustically sensitive rooms such as videoconference rooms and radiated and discharge noise from volume control boxes to typical rooms with NC35 or lower noise criteria.
- Calculations for noise transfer via the building structure shall be provided (e.g. roof, exterior fa□ade etc.) showing designed structural systems will comply with the established noise criteria.
- Calculations for noise transfer to the property line showing the project will comply with the established noise criteria.
- Acoustical performance requirements and locations for any sound attenuating devices recommended by the acoustical consultant such as flexible ductwork, acoustical lining and sound traps shall be provided.
- Statements indicating compliance with requirements indicated within the Mechanical, Electrical, Plumbing, and Elevator "Noise and Vibration Control" subsections in this report.
- A separate section documenting Vibration Isolation recommendations for the mechanical systems, including heating and chilled water piping. The section shall include an itemized table documenting the equipment to be isolated, the isolator manufacturer, model, rated static deflection, and reference detail.
- Letters from the following contractors indicating the Construction Documents follow the advice and requirements documented in the Preconstruction Acoustical Report:
    - Mechanical Engineer of Record
    - Mechanical Contractor
    - Electrical Engineer of Record
    - Electrical Contractor
    - Plumbing Engineer of Record
    - Plumbing Contractor
    - Elevator Contractor
    - Structural Engineer of Record

Post Construction Report
Noise measurements and calculations to support that the building perimeter construction provides sufficient noise.

The postconstruction report shall include:

- The Design-Builder's acoustical consultant, in accordance with the quoted standards and procedures, shall perform acoustical tests in the completed building with finishes and furniture installed. Test reports shall be submitted to the Client for review.
    - Airborne Sound Isolation measurements for 20 partitions. The measurements shall be in accordance with ASTM E 336 and classified in accordance with ASTM E 413. Final locations shall be selected by the Client. The measurements shall be considered in compliance if the measured NIC level is less than 5 points below the required STC rating of the assembly.
    - Airborne Sound Isolation measurements for each proprietary acoustical door. The measurements shall be in accordance with ASTM E 2964. The measurements shall be considered in compliance if the measured DTC level is less than 5 points below the required STC rating of the door.
    - Should any of the tested areas not comply with the requirements indicated in this report and the Room Data Sheets, the Design-Builder shall have the burden of modifying the space until the specifications are met. After remedial work, the areas not in compliance shall be retested per Items I.a and I.b. This shall continue until all tests performed comply with the project criteria.
- Perform background noise measurements in a total of 20 locations selected by the Client.
    - Perform after the building is substantially completed and system adjustments in the case of HVAC system such as air balancing is completed and reported.
    - Perform after the vibration isolation and seismic restraint for all equipment and piping has been installed, adjusted and observed by the vibration isolation manufacturer.
    - Perform all noise measurements in accordance with the latest edition of ANSI Standard Sl.13 using the slow meter reading of a Class 1 sound level meter and octave filter set meeting the requirements of the latest edition of ANSI Standard Sl.4 and Sl.11. Measurements shall be made with the microphone located 3 feet above the floor in areas where individuals are normally seated and 5 feet above the floor where individuals are normally standing.
- Provide an itemized table documenting the room location, the measured NC level and the NC level required by this document. Include drawings referencing the room tags used in the table.
    - Should any of the tested areas not comply with the NC level required by this document, the Design-Builder shall have the burden of modifying the space until the specifications are met. After remedial work, the areas not in compliance shall be retested per Item 2. This shall continue until all tests performed comply with the project criteria.
- Measure noise at the property lines to demonstrate compliance with the local Noise Ordinance and element. The Client shall determine the measurement locations.
    - Should any of the tested areas not comply, the Design-Builder shall have the burden of modifying the space until the specifications are met. After remedial work, the areas not in compliance shall be retested. This shall continue until all tests performed comply with the project criteria.
- Measure exterior noise intrusion at representative rooms on each fa□ade of the building to demonstrate compliance with the exterior noise intrusion criteria required for this project. The Client shall determine the measurement locations.
    - Should any of the tested areas not comply, the Design-Builder shall have the burden of modifying the space until the specifications are met. After remedial work, the areas not in compliance shall be retested. This shall continue until all tests performed comply with the project criteria.

- Commissioning of sound masking system
  - The measurement and reporting of the sound masking system shall be conducted in conformance with ASTM EI573.
  - The measurement of sound masking levels should be conducted using an appropriate Class 1 sound level meter and microphone. For indoor measurements, it is often assumed that the field is diffusive, and a random incidence response microphone or setting is preferred.
  - The test procedures shall be conducted with the sound masking system and all other background noise sources operational. The HVAC system shall be operated at its normal daytime condition.
  - The test space(s) shall be unoccupied during the tests.
  - All ceilings, floor coverings and interior finishes shall be in place during tests.
  - Measure the sound pressure levels in the specified range of one-third-octave bands and the A-weighted sound level at each measurement location in the test area using the scanning microphone method.
    - Sweep the microphone around a circle approximately 3 feet in radius from the center of the measurement location while spiraling upwards by 1 foot and complete at least 2 integer revolutions per measurement.
    - The center of the microphone sweep position(s) shall be at ear-height for the average seated person (i.e., 4 feet above the floor).
    - The microphone sweep position(s) shall be selected, if possible, so that all measurements are at least 3 feet from any reflective surfaces such as walls, columns, desks, or office furniture.
  - For open plan areas, at least one measurement should be taken per 1000 ft2 of open area (e.g., minimum 5 measurement positions for a 5000 ft2 open office). The arithmetic mean of the combined measurements should be calculated and reported for each sound masking zone.
  - Testing procedures, measurement locations and results for each sound masking zone shall be provided via a report in conformance with ASTM EI573.
  - Where observed, the report should include locations where background noise sources, other than the sound masking (e.g., noisy HVAC unit above ceiling, base building return air plenum, noisy transformer, noisy pump) were impacting measurement results.

14 FIRE PROTECTION

Overview

This Basis of Design for the Project is intended to describe the planned fire protection systems and to outline design assumptions not otherwise indicated in the design documents.

The project is to provide an automatic fire sprinkler system complying with CBC 903.3.1.1 and County standards, including monitoring system as is required per CBC 408.1.2.7 and all applicable codes and ordinances.

Wet Pipe Fire Sprinkler System

A complete wet pipe fire sprinkler system shall be provided. All design and installation for a complete and operable system, including but not limited to the following:

- Hydraulically calculated automatic sprinkler system in accordance with the requirements of NFPA 13.
- A single fire double detector check and supply will connect to the main water system.
- Fully recessed heads with flush concealed caps at lobbies, elevator lobbies, exterior soffits, restrooms and other hard ceilings exposed to view by the public.
- Semi-recessed heads with white enamel trimmed escutcheons at accessible ceilings and ancillary rooms.

15 FIRE ALARM

Overview

A complete addressable, fully automatic fire alarm system will be provided for the building.

- Fire Alarm System will conform to the requirements of the 2022 California Fire Code and NFPA 72 Standards.
- The new fire alarm system will include smoke detectors, heat detectors, pull stations, waterflow switches, tamper switches, duct smoke detectors to be connected to a centralized monitoring station.
- Notification appliances include ADA approved fire alarm audible and visual devices throughout the building.
- The new fire alarm system will interface with HVAC and elevator control systems.
- The new fire alarm equipment manufacturer shall be acceptable to the County and coordinated with County preferred standard and manufacturers.

END OF DOCUMENT