

Approvals

- Custodial
- ReIT
- Facilities
- EOA

- Passage lock on restroom w/ Vacant Function

County of Riverside

Roy's Desert Resource Center

- Rest Hatch

- 5 warranty for URF - ^{w/} deferred maintenance
- Factory Training for facility staff
- Kitchen scope is being evaluated

- 1 Phase Project

- Look at Exterior Lighting

- Look at Infrastructure for Emergency Generator interconnection (No Generator) But Quick Disconnect

TABLE OF CONTENTS

GENERAL	1
MECHANICAL	2
ELECTRICAL.....	4
PLUMBING.....	6
FIRE PROTECTION.....	12
Appendix A MEP Equipment Locations	
Appendix B HVAC Zone Map	



Basis of Design
for
Roy's Desert Resource Center
Palm Springs, CA



GENERAL

- A. Codes and Standards: The new MEPFP systems will comply with the following codes and standards.
1. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Design Guides.
 - a. Standard 90.1 Energy Standard for Buildings Except Low Rise Residential
 - b. Standard 52.2 – 2012
 - c. Standard 62.1 – 2016
 - d. Standard 55 – 2013
 - e. ASHRAE Fundamentals
 - f. ASHRAE Systems and Equipment
 - g. ASHRAE Applications
 2. 2016 California Administrative Code, California Code of Regulations (CCR) Title 24, Part 1
 3. 2016 California Building Code, California Code of Regulations (CCR) Title 24, Part 2
 4. 2016 California Electrical Code, California Code of Regulations (CCR) Title 24, Part 3
 5. 2016 California Mechanical Code, California Code of Regulations (CCR) Title 24, Part 4
 6. 2016 California Plumbing Code, California Code of Regulations (CCR) Title 24, Part 5
 7. 2016 California Energy Code, California Code of Regulations (CCR) Title 24, Part 6
 8. 2016 California Fire Code, California Code of Regulations (CCR) Title 24, Part 9

9. 2016 California Green Building Standards Code, California Code of Regulations (CCR) Title 24, Part 11
10. 2016 California Referenced Standards Code, California Code of Regulations (CCR) Title 24, Part 12
11. NFPA 13 Standard for the Installation of Sprinkler Systems
12. NFPA 52 National Fuel Gas Code
13. Americans with Disabilities Act Accessibility Guidelines (ADAAG)

B. Design Criteria

1. Project Location
 - a. Location: Palm Springs, CA
 - b. Latitude: 33.8°N
 - c. Elevation: 411' above sea level
2. Outside Design Conditions
 - a. Summer: 113°F DB/73°F WB
 - b. Winter: 31°F

- C. Scope of Work: Tenant improvement to convert existing homeless shelter into new County operated behavioral health residential facility with an estimated 44,000 square feet. The space includes resident bedrooms, offices, and communal spaces. The project will be LEED certified.

MECHANICAL

A. Design Criteria

1. Interior design conditions will be based on the requirements of the 2016 Building Energy Efficiency Standards. Cooling setpoint will be 74°F. Heating setpoint will be 70°F.
2. All spaces in which residents or potential residents will be present will be designed with 50% outside air. All other spaces will be based on the minimum code required ventilation rates. *Add on economizer*
3. Rooms with similar occupancies and exposures will be zoned together. No more than 5 rooms will be in the same zone. Refer to Appendix B for HVAC Zone Map.

4. Ductwork serving shower rooms will be aluminum. All other ductwork will be G60 galvanized steel. All ductwork will be constructed to SMACNA standards and will be sized at a pressure drop of 0.08"/100'.
5. Offices and bedrooms will be designed with a maximum NC level of 30. Communal spaces will be designed with a maximum NC level of 40.

B. Mechanical Systems

1. The building will primarily be heated and cooled via four indoor, variable air volume (VAV), multizone air handling units (AHU's) with roof mounted, heat recovery variable refrigerant flow (VRF) condensing units. Each AHU will consist of a return fan, mixing box, filter section, supply fan, and VRF coils.
 - a. Each AHU is anticipated to be approximately 8,500 CFM and will have an associated 32-ton, roof mounted, VRF condensing unit. The AHU will have a field fabricated discharge section consisting of VRF coils and motor operated dampers for each zone. Final capacities will be determined by complete HVAC load calculations.
 - b. The supply and return fans will be airfoil centrifugal type.
 - c. Filters will have a minimum MERV 8 rating.
 - d. All AHU's will be provided with duct detectors and will be connected to the fire detection system to shut down upon detection of smoke.
 - e. Manufacturer will be Carrier or approved equal. *- Facilities Prep - 2 Pipe System - Mitsubishi*
 - f. For proposed equipment locations refer to Appendix A – MEP Equipment Locations.
2. Bathrooms, janitor rooms, and electrical rooms without heat producing equipment will be exhausted via roof mounted exhaust fans. Clothes dryers will be provided with a complete exhaust system in accordance with NFPA 54 and Chapter 5 of CMC. All exhaust fans will be Greenheck Model G or approved equal.
3. Elevator machine rooms, data rooms, and electrical rooms with heat producing equipment will be cooled via dedicated ductless split systems. The condensing units will be mounted on the roof. All ductless split systems will be Carrier or approved equal.

Switched to the light

4. Air Inlets and Outlets
 - a. Ceiling supply diffusers will be architectural square plaque type, Price SPD or approved equal.
 - b. Ceiling return or exhaust grilles will be perforated type, Price PDDR or approved equal.
 - c. Wall supply grilles will be double deflection type, Price 520 or approved equal.
 - d. Wall return grilles will be 45° deflection type, Price 530 or approved equal.
 - e. Roof mounted gravity intake and relief hoods with backdraft dampers will be provided for each AHU. Existing roof openings will be reused when reasonable.
 - f. All air inlets and outlets will be steel except when in bathrooms which will be aluminum.
5. Fire and smoke dampers will be provided as required by code. All fire and smoke dampers will be Pottorff or approved equal.
6. A new Building Automation System (BAS) will be provided. The BAS will utilize an open BACnet protocol and a Niagara AX Framework. The BAS will connect to the County of Riverside's Niagara AX Web Supervisor. The controls manufacturer will be Alerton or approved equal.

ELECTRICAL

- A. Design Criteria
 1. Interior and exterior design conditions will be based on the requirements of the 2016 California Electrical Code (CEC).
 2. The lighting levels of the following rooms will be designed to simulate daylighting. Indoor activity area, mezzanine storage, and laundry.
 3. Title 24 lighting requirements will apply to all areas except the bedrooms (no occupancy sensors). Restrooms will have the lighting sensor placed to avoid turning off while showering. Living spaces, group rooms, and indoor activity room to be provided with dimming. Supplemental task lighting to be provided in the nurse office/med storage, all work rooms and living spaces.
 4. Project to be designed with all Cal Green mandatory measures.

- Two ~~USB~~ ^{USB} charging ports to be provided in each bedroom and throughout the rest of the facility.

B. Electrical Power Systems

- The existing electrical building service is 1200amp, 277/480V-3phase-4W feed from an SCE pad mounted utility transformer.
- A 200amp meter and circuit breaker feed a 150KVA 480V to 120/208V-3phase 4W transformer and two 200amp 120/208V-3phase 4W panels for the existing kitchen to remain.
- There are three 200 ~~meter~~ ^{amp} and circuit breakers at 277/480 3phase 4W not in use that can be used for the interior additions.
- Two 277/4780V-3phase-4W panels will be added in the new tenant space for lighting and HVAC circuits and for two step down 480V-3phase to 120/208V 3phase 4W transformers for two 120/208V-3phase 4W panels per transformers. These will feed receptacle, small motors, and other miscellaneous loads.
- All bedrooms will receive a minimum of two receptacles.
- All offices and workrooms will have one duplex receptacle per wall. All storage rooms will have one duplex receptacle.
- Restrooms will have one duplex GFCI receptacle at the sink counter space.

C. Lighting Systems

- Lighting will be mainly LED lighting fixtures. Lighting in specified day lit spaces will be dimmed by automatic controls consisting of photosensor controls with stepped dimming. The interior lighting fixtures that are not in bedrooms will be turned on and off by occupancy sensor controls.
- Emergency egress lighting will be provided with an integral battery pack to maintain one-foot candle of lighting for ninety (90) minutes.
- Exterior lighting fixtures on the building and in the parking lot will match the existing fixtures by style and lamp type.
- The interior LED fixtures in the daylight simulated areas to have a ~~5000~~°K LED temperature.

4000k in offices
3000k in public spaces

D. Fire Alarm Systems

1. The fire alarm system design will be for a complete full coverage fully automatic fire alarm system per Riverside County Requirements.

E. Low Voltage Systems

1. A conduit and j-box only system for voice, data, security, CATV, and access controls system to be designed per County of Riverside Information Technology (RCIT) requirements.

PLUMBING

2. Sewer Mainline - Halt to Reservoir Systems
3. Duesess System

A. Design Criteria

1. Domestic Cold Water: Piping will be sized at 3 PSI per 100 feet, with velocities to not exceed six feet per second.
2. Domestic Hot Water: Piping will be sized at 3 PSI per 100 feet, with velocities to not exceed four feet per second.
3. Sanitary Waste and Vent:
 - a. Building vent terminations will match the cross-sectional area of the sanitary sewer leaving the building.
 - b. Pipe will be sized as described below:

**TABLE 703.2
 MAXIMUM UNIT LOADING AND MAXIMUM LENGTH OF DRAINAGE AND VENT PIPING**

SIZE OF PIPE (inches)	1¼	1½	2	3	4	5	6	8	10	12
Maximum Units										
Drainage Piping ¹										
Vertical	1	2 ²	16 ³	48 ⁴	256	600	1380	3600	5600	8400
Horizontal	1	1	8 ³	35 ⁴	216 ⁵	428 ⁵	720 ⁵	2640 ⁵	4680 ⁵	8200 ⁵
Maximum Length										
Drainage Piping										
Vertical, (feet)	45	65	85	212	300	390	510	750	—	—
Horizontal (unlimited)										
Vent Piping										
Horizontal and Vertical ⁶										
Maximum Units	1	8 ³	24	84	256	600	1380	3600	—	—
Maximum Lengths, (feet)	45	60	120	212	300	390	510	750		

— What's current water pressure

4. ~~Lint Interceptor~~ will be sized as follows:
 - a. 2 Washers, 20 GPM
 - b. 3 Washers, 25 GPM
 - c. 5 Washers, 50 GPM
 - d. 10 Washers, 100 GPM
 - e. 15 Washers, 150 GPM
 - f. 20 Washers, 200 GPM
 - g. 35 Washers, 350 GPM
 - h. 50 Washers, 500 GPM

5. Natural gas system will be sized based on the total gas load and the total developed length of the longest gas line. Gas line will be sized on a pressure drop of 0.3 inches water column (in W.C.).

6. Condensate drain piping will be sized as described in the table below.

**TABLE 014.3
MINIMUM CONDENSATE PIPE SIZE**

EQUIPMENT CAPACITY IN TONS OF REFRIGERATION	MINIMUM CONDENSATE PIPE DIAMETER (inches)
Up to 20	¾
21 – 40	1
41 – 90	1¼
91 – 125	1½
126 – 250	2

B. Plumbing Systems

1. Domestic Cold Water:
 - a. General Requirements
 - 1) System will be installed complete from the fixtures and equipment to the civil connection five feet from the edge of the building.
 - b. Lead-Free System Components:

- 1) Cold water supply will be sub-metered.
- 2) Reduced pressure principal backflow assembly. *Must have
Cage on BF*
- 3) Isolation valves located at the building main, branch line extensions, restrooms, and at each bank of fixtures or individual fixtures.
- 4) Angle stops at all fixtures.
- 5) Check valves.
- 6) Water hammer arrestors will be provided for quick closing valves.
- 7) Automatic trap primers will be provided at non-primed P-Traps.
- 8) Makeup water assemblies consisting of a reduced pressure backflow preventer and pressure reducing valve.

c. Materials:

- 1) Copper type K piping below grade with bronze soldered fittings.
- 2) Copper type L piping above grade with bronze soldered fittings.
- 3) Lead-free bronze ball valves for pipe sizes 2 1/2" and smaller.
- 4) Lead-free bronze check valves for all sizes.

2. Domestic Hot Water

a. General Requirements

- 1) System will be installed complete from the water heating equipment to plumbing fixtures requiring hot water, and back to the source.
- 2) The hot water return system will be comprised of two separate loops with one balancing valve per loop.
- 3) The system will be supplied at 120°F, the circulation system will activate at 110°F, switching off at 115°F.
- 4) Two condensing type, gas-fired water heaters with vertical storage will be provided.

*Verify size
based upon need*

- 5) A thermal expansion tank will be ASME rated and sized per water heater application.
- 6) Circulation pumps will be in line, bronze body type, and sized to ensure thermal losses through the entire system don't exceed 5-degree delta T.
- 7) System will be installed complete from the water heating equipment to plumbing fixtures requiring hot water.

b. Lead-Free System Components

- 1) Isolation valves located at the equipment supply, branch line extensions, restrooms, and at each bank of fixtures or individual fixtures.
- 2) Angle stops at individual fixtures.
- 3) Check valves.
- 4) Balancing valves.
- 5) ASSE rated thermostatic mixing valves will be point of use type located at each fixture.

c. Materials

- 1) Copper type K piping below grade with bronze soldered fittings.
- 2) Copper type L piping above grade with bronze soldered fittings.
- 3) Insulate all sections of piping including fittings and pipe accessories.
- 4) Lead-free bronze ball valves for pipe sizes 2 1/2" and smaller.
- 5) Lead-free bronze check valves for all sizes.
- 6) Lead-free bronze balancing valves for all sizes.

3. Sanitary Waste and Vent

a. General Requirements

- 1) System will be installed complete from the fixtures to the existing 15,000-gallon septic tank five feet on the exterior of the building.

- 2) Designed to gravity flow, drains will slope at 1/4" per foot. 1/8" per foot slopes are permitted where structural conditions don't allow 1/4" per foot.
 - 3) All fixtures will be trapped and vented.
- b. System Components
- 1) Cleanouts per CPC requirements (floor and wall type). *is preferred*
 - 2) Backwater valve if the nearest manhole, or next upstream manhole is higher than the finished floor. *Facilities to review location of C/O when proposed*
- c. Materials
- 1) Cast iron hub-less pipe with no-hub couplings.
 - 2) 8-millimeter polyethylene wrap in corrosive soil conditions.
 - 3) Lacquered cast Iron cleanouts.
4. Storm Drain
- 1) Existing gutter system which daylight above grade will be existing to remain.
5. Natural Gas
- a. System will be installed complete from the meter to each gas user within the building. The system will consist of low pressure (8"-12" WC) from the meter to each user.
- b. System Components
- 1) Low pressure gas supply will be sub-metered.
 - 2) Seismic Shut off valves are to be line size in the horizontal or vertical position at building entry.
 - 3) Pressure Regulators with internal relief located at the meter.
 - 4) Isolation valves located at the meter supply, branch line extensions, equipment banks, and individual equipment.

- c. Materials
 - 1) Yellow polyethylene piping with tracer wire below grade.
 - 2) Transition risers for below grade to above grade transitions.
 - 3) Schedule 40 black steel piping with screwed iron fittings up to 2 1/2" size, iron welded fittings for sizes 3" and larger.
 - 4) Two-piece brass body isolation ball valves.
 - 5) Bronze or cast-iron gas cocks.
 - 6) ASCE 25-97 flanged steel seismic shut off valve.

6. Condensate Drain

- a. System will be installed complete from the mechanical and plumbing equipment to the sanitary system through means of indirect connections, air gap fitting or floor receptor. Designed to gravity flow, drains will slope at 1/8" per foot.
- b. System Components:
 - 1) Plug cleanouts at end of lines and all changes of direction.
 - 2) Trap and vent each piece of equipment.
- c. Materials:
 - 1) Copper type L piping with soldered bronze fittings
- d. Insulate all sections of piping including fittings and pipe accessories.

C. Plumbing fixtures will be submitted for client review

- 1. Fixtures will comply with the state water conservation guidelines and standards, including the maximum flow rates as follows:

- a. Water Closets: 1.28 GPF ✓ *Flair mount - Tankless*
- b. Urinals: 0.125 GPF —
- c. Lavatories: 0.5 GPM
- d. Sinks: 1.5 GPM — *Countertop mounted w/ No cassette*

- w/ shelf for shower soaps/etc*
- e. Showers: 1.5 GPM *Standard Heat*
2. Water Closets: ~~Wall hung~~, vitreous china bowl with automatic flush valve. *No - Floor mount* *Battery dk*
3. Urinals: Wall mounted, vitreous china bowl with automatic flush valve.
4. Lavatories: Wall mount and counter mount type, vitreous china basin with automatic sensor faucet.
5. Sinks: Counter mounted, ~~stainless steel~~ *Solid Surface w/ integral Sink* with manual wrist blade handle operated L-type swing spout faucet and side spray as specified.
6. Drinking Fountain: Wall mount, hi-low unit, stainless steel construction. *Bottle fill station w/ Filter*
7. Mop Sinks: Floor mounted vitreous china basin with vacuum breaker faucet and pail hook.
8. Hose Bibbs:
- Wall mounted: stainless steel access box, complete with vacuum breaker.
 - Roof mounted: free standing, complete with shut off valve and vacuum breaker.
9. Floor drains: Adjustable bronze body, heelproof grate, complete with trap primer connection and nickel bronze top.
10. Floor sinks: Bronze body, complete with half grate and nickel bronze top.
11. Lint Interceptor: Fabricated steel with gray duco coating and stainless steel primary and secondary lint screens, and threaded inlet and outlet.

FIRE PROTECTION

- A. Design Criteria
- Light Hazard: Sprinkler density coverage for light hazard areas will be 0.10 gpm/SF.
 - Ordinary Hazard Group 1: Sprinkler density coverage for ordinary hazard group 1 areas will be 0.15 gpm/SF.
- B. Fire Protection Systems
- The existing wet pipe sprinkler system will remain in place. The sprinklers and branch piping will be adjusted as required based on the new floor plan and elevations to maintain complete sprinkler coverage in accordance with NFPA 13.

2. The piping system will be hydraulically calculated based on recent flow test results. The piping system will be seismically braced to comply with local USGS data and the building structure type. Sprinklers will be quick response type.

— concealed type

Prepared by: Eric M. DeSplinter, PE, John Lenzini, Tyler Lewis

EMD:JCL:TBL/aash

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Jose Deleon

From: Aaron N. DeVoe
Sent: Friday, April 20, 2018 11:54 AM
To: Jose Deleon
Cc: Eric M. DeSplinter; Matt Acton
Subject: VRF Zone Assignments

Hi Jose,

Here is a list of the zones that are currently under each VRF System:

VRF 1:

Zone 14
Zone 17
Zone 20
Zone 21
Zone 22
Zone 23
Zone 30

40 ton

VRF 2:

Zone 1
Zone 2
Zone 5
Zone 6
Zone 9
Zone 10
Zone 13
Zone 15

35 ton

VRF 3:

Zone 3
Zone 4
Zone 11
Zone 12
Zone 16
Zone 19
Zone 32

38 ton

VRF 4:

Zone 7
Zone 8
Zone 18
Zone 24
Zone 25
Zone 26
Zone 27
Zone 28
Zone 29

35 ton

Zone 33

Zone 34

Zone 35

One thing I forgot to mention on the phone was that we moved Zones 1 and 2 over to VRF-2 to help lighten the load on VRF-1.