

Updated by UC Davis for Bid

SESP CPU Water Upgrade Project

FEASIBILITY STUDY

PROJECT # 9557950

BASEMENT LEVEL, UCDH PAVILION,
4301 X STREET, SACRAMENTO, CA 95817



06/30/2023

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SESP CPU Water Upgrade Project

EXECUTIVE SUMMARY

This project is an equipment replacement of Critical Water in the Sterile Processing Department in the basement of the SESP that is being underserved by the existing critical water system. The current system is both too small and no longer meets the current water filtration requirements of TIR34.

To accomplish the project upgrades, a new system is proposed in a remote location to the SPD and piping the water back through utility rooms and corridors into the SPD. The existing system will be decommissioned and removed. Once the new supply lines are connected to the SPD, a multi-phase process of connecting the individual pieces of equipment to the water supply will begin.

This project will also size the TIR 34 water system to account for a small amount of growth in the facility with the addition of a new washer at a future point in time.

Updated by UC Davis for Bid

SESP CPU Water Upgrade Project

DESIGN SUMMARY

Design Codes and Standards

The design and construction of this project shall comply with the applicable laws, rules, and regulations of the California Code of Regulations (CCR). The following CCR titles contain requirements that would apply:

- Title 8, Industrial Relations
- Title 17, Public Health
- Title 19, Public Safety
- Title 20, Public Utilities and Energy
- Title 21, Public Works
- Title 24, California Building Standards Code
 - Part 1, Building Standards Administrative Code
 - Part 2, California Building Code
 - Part 3, California Electrical Code
 - Part 4, California Mechanical Code
 - Part 5, California Plumbing Code
 - Part 6, California Energy Code
 - Part 7, California Elevator Safety Construction Code
 - Part 8, California Historical Building Code
 - Part 9, California Fire Code
 - Part 10, California Code for Building Conservation
 - Part 12, California State Reference Standards Code
- Title 25, Housing and Community Development
- Title 26, Toxic

In addition to the CCR titles listed above, construction work shall also comply with the following Codes or Acts. In general, in the case of conflicts between codes, the more stringent conditions shall apply.

- NFPA National Fire Protection Association
- OSHA Federal Occupational Safety and Health Act of 1970
- ADA Accessibility Guidelines for the Americans with Disabilities Act, Title 24 ADAAG

Other applicable codes not listed above but required for a particular project
California Coastal Commission Regulations

SESP CPU Water Upgrade Project

The University is its own enforcement agency for all code requirements except those regarding fire code, access compliance, and medical facilities.

- California Department of General Services, Division of the State Architect - Access Compliance (DSA)
- Office of the State Fire Marshal (SFM)
- Health Care Access and Information (HCAI) - For Medical Facilities Only

University policies and Campus Standards where applicable.

- University of California Seismic Safety Policy of March 19, 2021 including revisions.
- University of California Policy on Sustainable Practices, dated March 10, 2022.
- FP&D Design Guidelines current at the execution date of each project Authorization

Design Scope

This project is an equipment replacement of SPD Critical Water in the basement of the SESP that is being underserved by the existing critical water system. The current system is both too small and no longer meets the current water filtration requirements of TIR34.

To accomplish the project upgrades, a new system is proposed in a remote location to the SPD and piping the water back through utility rooms and corridors into the SPD. The existing system will be decommissioned and removed.

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Accessibility

Regarding accessibility, this project will provide compliant elements as part of the scope of work. Outside the area of work, we do not foresee significant work based on recent remodels of the suite and exterior path of travel.

Interior Finishes

This project's intent is to match, or as closely match as possible, the existing finishes of the suite. Changes will be made as needed if materials are no longer available or have lead time issues.

IT support

IT department will need to review scope and connect to the Building Management System.

PO&M

Review layout and final equipment selection.

SESP CPU Water Upgrade Project

Commissioning

Assumed to be done by UCDH Standards.

Fire Marshalls office

Needs to signoff on design scope and phases.

Environmental Services (EVS)

No anticipated EVS scope as part of this project.

California Department of Public Health (CDPH)

Design scope and phasing will need to be reviewed by CDPH

Signage

Will be provided as per code and per UCDH standards. No additional signage is assumed at this point.

Artwork

No artwork is part of this project.



BOULDER ASSOCIATES
 1651 ALHAMBRA BLVD, SUITE 120
 SACRAMENTO, CALIFORNIA 95816
 916.492.8796

PROJECT P225707.00
SESP CPU Water Upgrade Project

BASEMENT LEVEL, UCDC PAVILION,
 4301 X STREET, SACRAMENTO, CA
 95817

FEASIBILITY STUDY

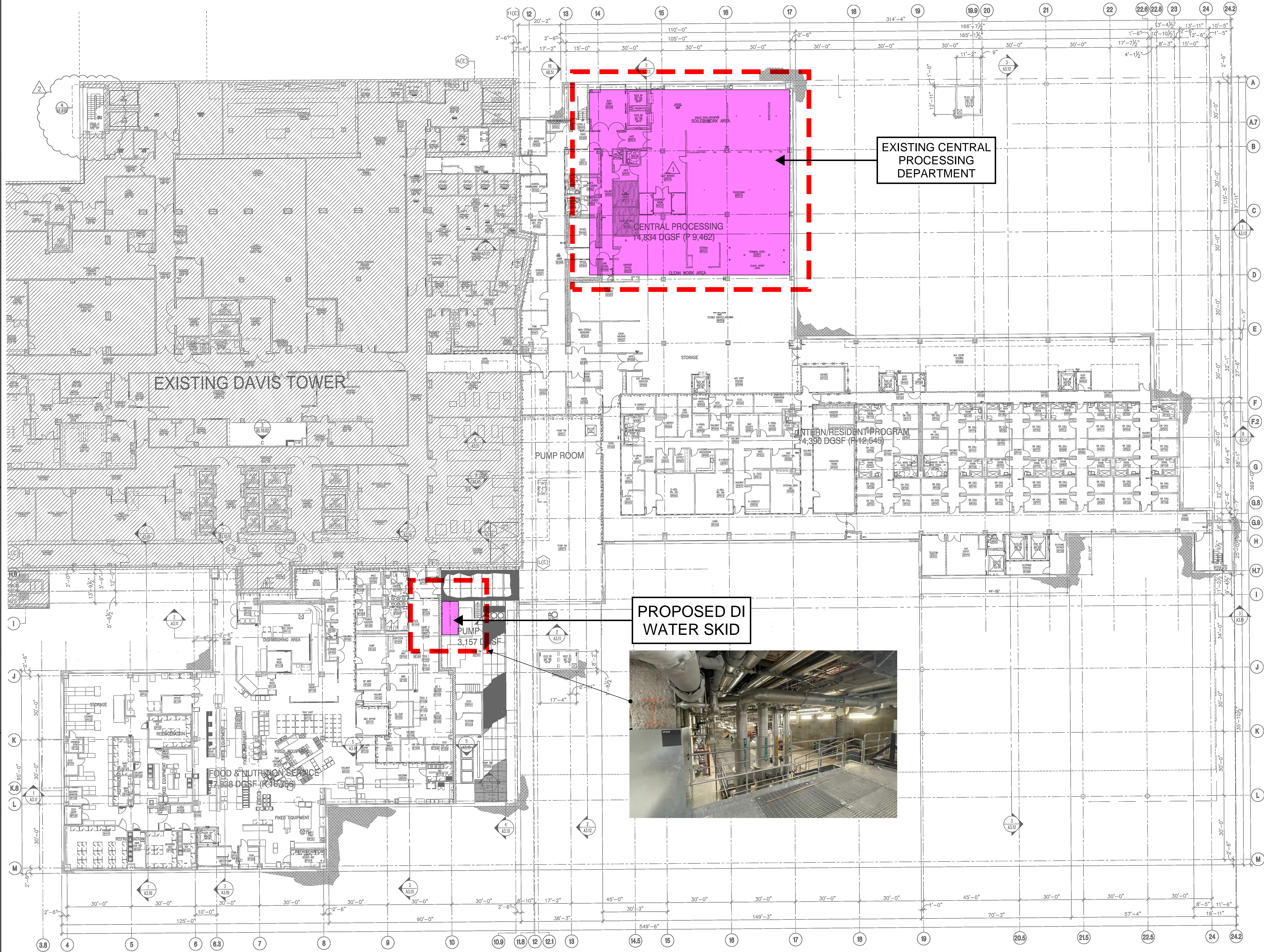
DATE

REVISIONS

#	DESCRIPTION	DATE

SHEET TITLE
**OVERALL
 GROUND
 FLOOR PLAN**

SHEET NUMBER



**PROPOSED DI
 WATER SKID**



**EXISTING CENTRAL
 PROCESSING
 DEPARTMENT**

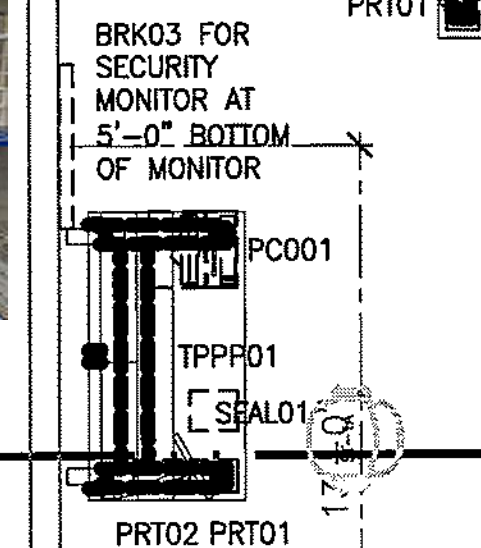
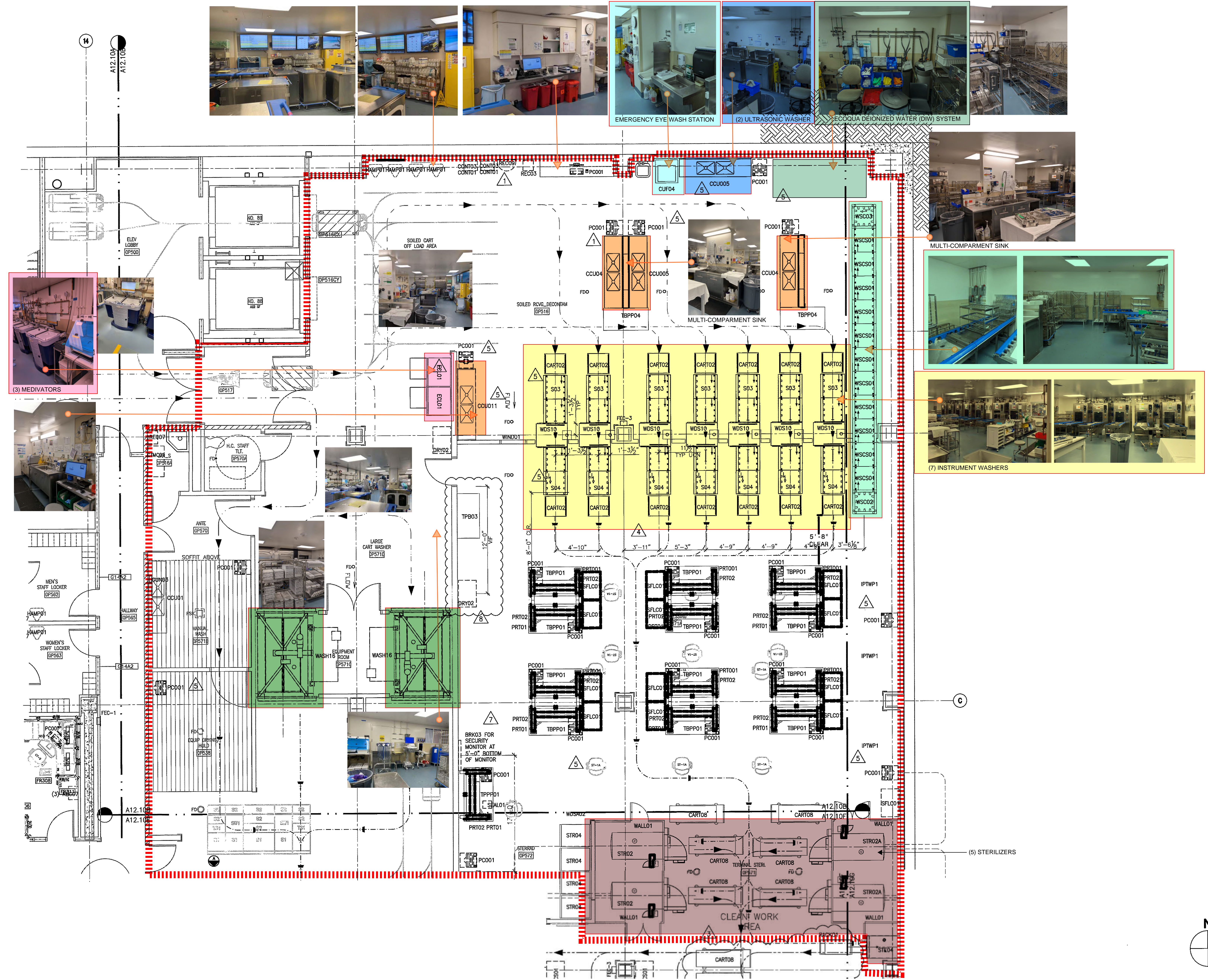
EXISTING DAVIS TOWER

CENTRAL PROCESSING
 14,834 DGSF (P 9,462)

INTERIM/RESIDENT PROGRAM
 14,390 DGSF (P 12,545)

FOOD & NUTRITION SERVICE
 17,938 DGSF (P 16,766)

PUMP
 3,157 DGSF



LEGEND

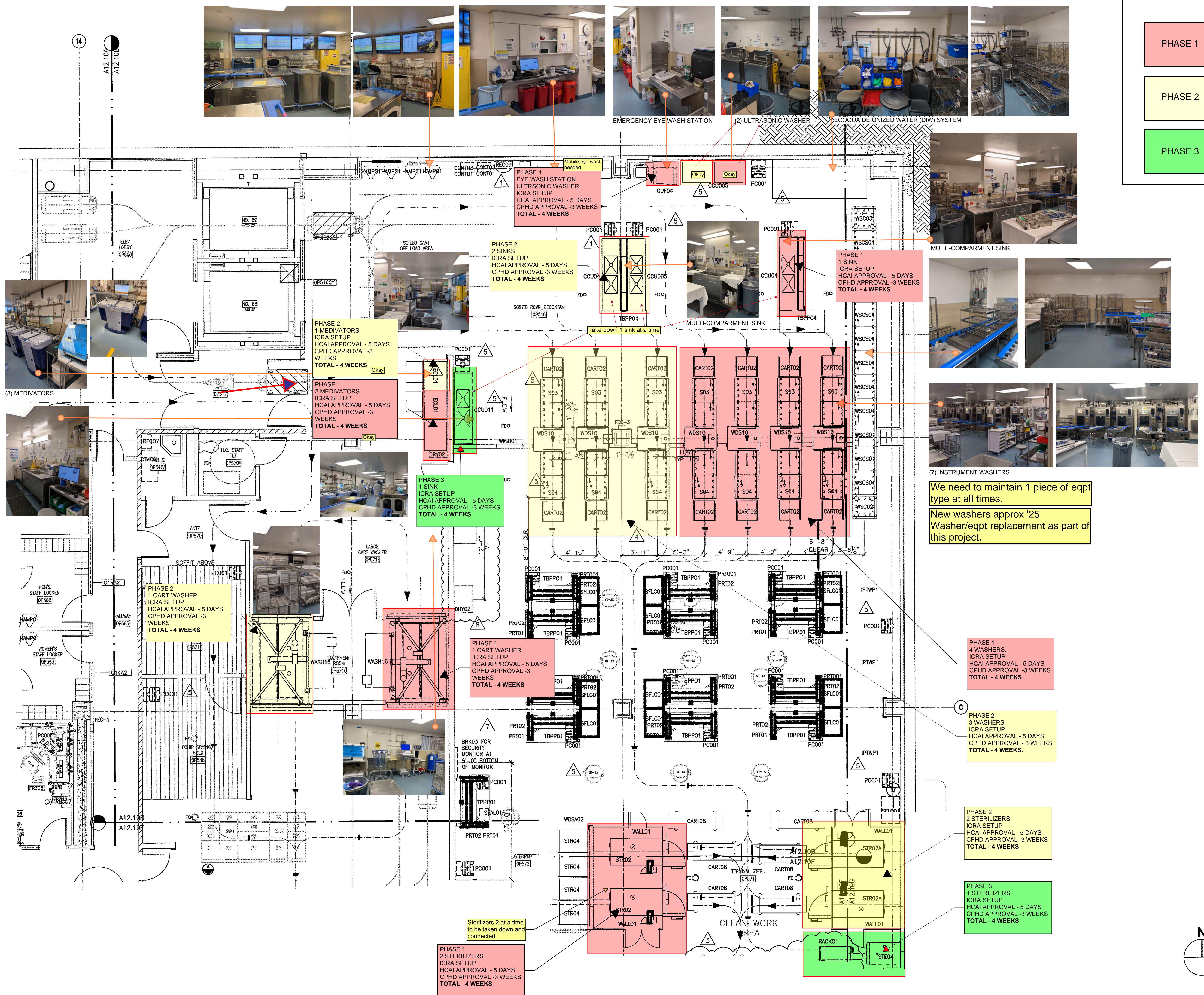
PHASE 1

PHASE 2

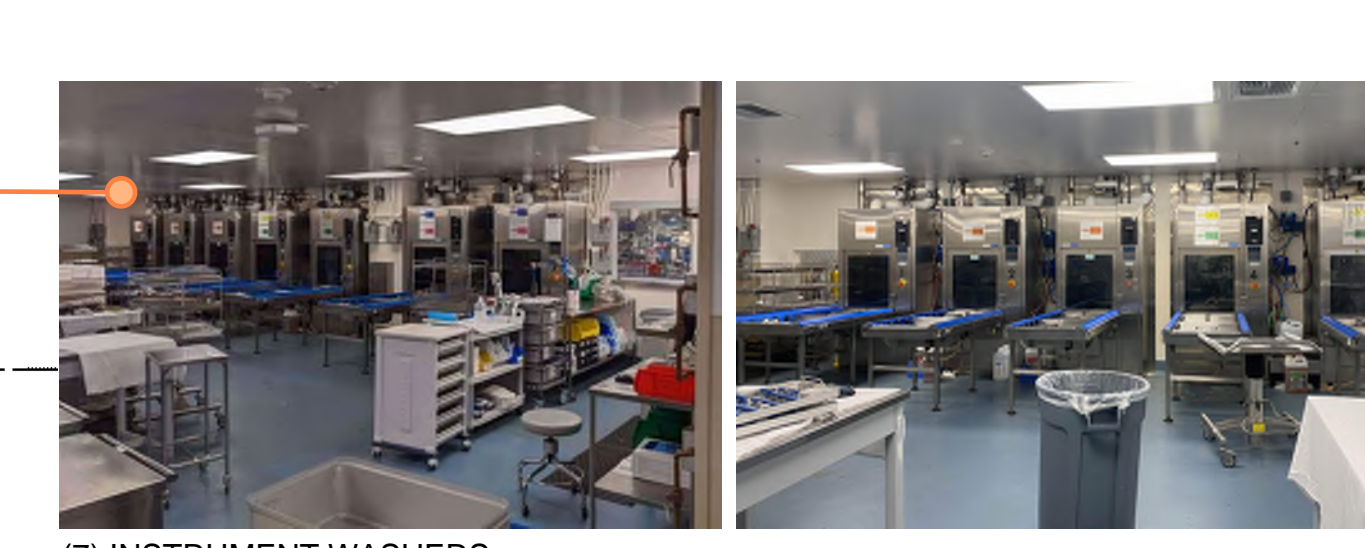
PHASE 3



EMERGENCY EYE WASH STATION (2) ULTRASONIC WASHER ECOQUA DEIONIZED WATER (DIW) SYSTEM



MULTI-COMPARTMENT SINK



(7) INSTRUMENT WASHERS

We need to maintain 1 piece of eqpt type at all times.
New washers approx '25 Washer/eqpt replacement as part of this project.

PHASE 1
4 WASHERS.
ICRA SETUP
HCAI APPROVAL - 5 DAYS
CPHD APPROVAL - 3 WEEKS
TOTAL - 4 WEEKS

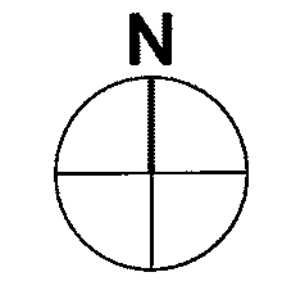
PHASE 2
3 WASHERS.
ICRA SETUP
HCAI APPROVAL - 5 DAYS
CPHD APPROVAL - 3 WEEKS
TOTAL - 4 WEEKS.

PHASE 2
2 STERILIZERS
ICRA SETUP
HCAI APPROVAL - 5 DAYS
CPHD APPROVAL - 3 WEEKS
TOTAL - 4 WEEKS

PHASE 3
1 STERILIZERS
ICRA SETUP
HCAI APPROVAL - 5 DAYS
CPHD APPROVAL - 3 WEEKS
TOTAL - 4 WEEKS

PHASE 1
2 STERILIZERS
ICRA SETUP
HCAI APPROVAL - 5 DAYS
CPHD APPROVAL - 3 WEEKS
TOTAL - 4 WEEKS

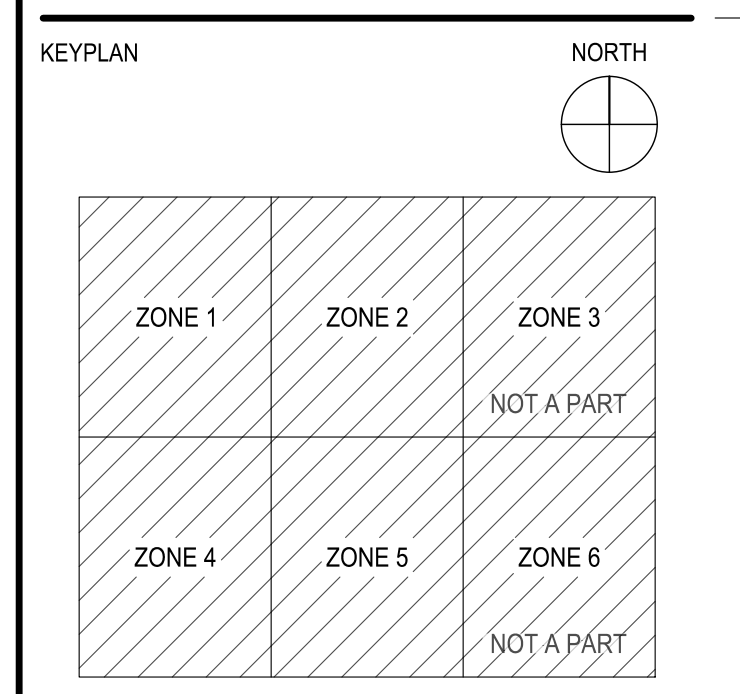
Sterilizers 2 at a time to be taken down and connected



ISSUED FOR	REV	DATE
UCDH BACK CHECK 2	B	02 FEB 2022
ACCESSIBILITY UPDATES	AA	02 FEB 2022
UPDATES	AA	20 NOV 2021

SEALS AND SIGNATURES

DATE SIGNED: 02/02/22

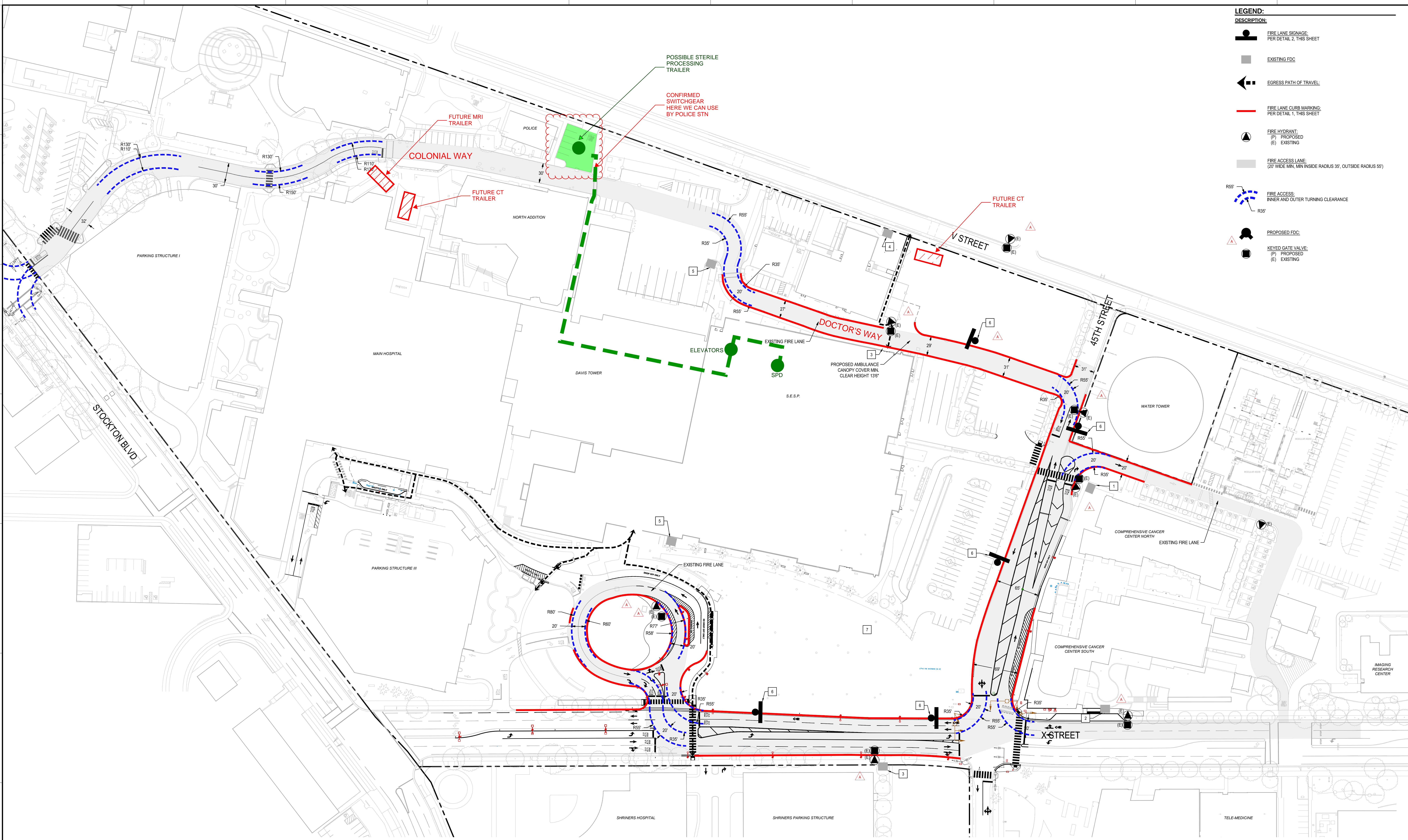


AGENCY APPROVED
 UC DAVIS HEALTH
 BUILDING DEPARTMENT
 REVIEWED FOR CODE COMPLIANCE
 Paul R. Mansard, AIA 02/14/2022 3:59:28 PM

02/14/2022 3:05:17 PM

SHEET TITLE
FIRE ACCESS PLAN

SIEGFRIED Project Number [20082]
 PROJECT NUMBER
2-C1.0.3
 SHEET NUMBER



- LEGEND:**
- DESCRIPTION:**
- FIRE LANE SIGNAGE PER DETAIL 2, THIS SHEET
 - EXISTING FDC
 - EGRESS PATH OF TRAVEL
 - FIRE LANE CURB MARKING PER DETAIL 1, THIS SHEET
 - FIRE HYDRANT: (P) PROPOSED (E) EXISTING
 - FIRE ACCESS LANE (27' WIDE MIN. MIN INSIDE RADIUS 35', OUTSIDE RADIUS 55')
 - FIRE ACCESS INNER AND OUTER TURNING CLEARANCE
 - PROPOSED FDC
 - KEYED GATE VALVE: (P) PROPOSED (E) EXISTING

GENERAL FIRE DEPARTMENT ACCESS REQUIREMENTS:

FIRE DEPARTMENT SITE ACCESS IS REGULATED BY CFC 503, CCR TITLE 19, CFC APPENDIX D, AND CITY OF SACRAMENTO FIRE DEPARTMENT (SPD) REQUIREMENTS, SACRAMENTO CITY MUNICIPAL CODE (SCMC) AMENDMENTS TO CFC FIRE DEPARTMENT ACCESS REQUIREMENTS WILL ALSO BE APPLICABLE TO THE EXTENT ENFORCED BY SPD UNDER THE LOCAL FIRE AUTHORITY PROVISIONS FROM HCAL.

DOCTORS WAY MEETS THE 26 FT WIDTH AND 15-30 FT PROXIMITY REQUIREMENTS FOR AERIAL APPARATUS ACCESS (CFC D105.2 AND D105.3) AND IS THEREFORE ASSURED TO BE THE EXISTING AERIAL ACCESS ROAD FOR THE SESP. ACCESS IS ALSO PROVIDED ALONG THE EAST SIDE OF THE SESP AND AT THE CIRCULAR DROP-OFF ROADWAY ON THE SOUTH SIDE OF THE SESP, THROUGH THE ACCESS ALONG THE EAST AND SOUTH SIDES EXCEEDS 30 FT FROM THE BUILDING AND THEREFORE ARE ASSURED NOT TO BE THE EXISTING AERIAL APPARATUS LOCATION.

APPARATUS ACCESS ALONG THE NORTH SIDE OF THE SESP WILL BE MAINTAINED IN ITS EXISTING ARRANGEMENT. THE COVERED WALKWAY SERVING THE AMBULANCE CANOPY WHICH EXTENDS OVER DOCTORS WAY WILL MEET THE MINIMUM HEIGHT OF 13 FT 6 IN. PER CFC D102.1, THE REMAINDER OF DOCTORS WAY ADJACENT TO THE SESP WILL STILL BE AVAILABLE FOR AERIAL APPARATUS VERTICAL LADDER EXTENSION.

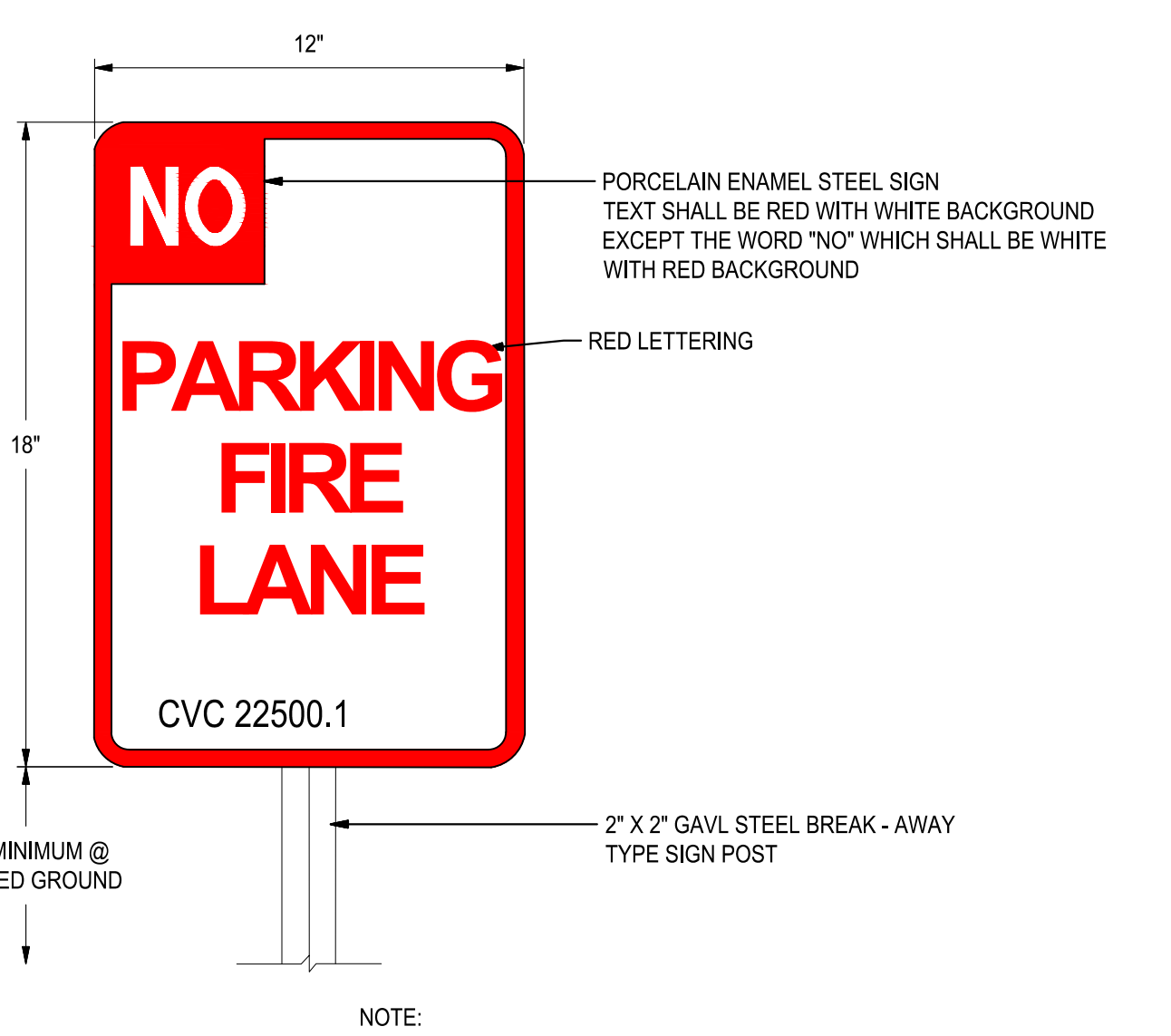
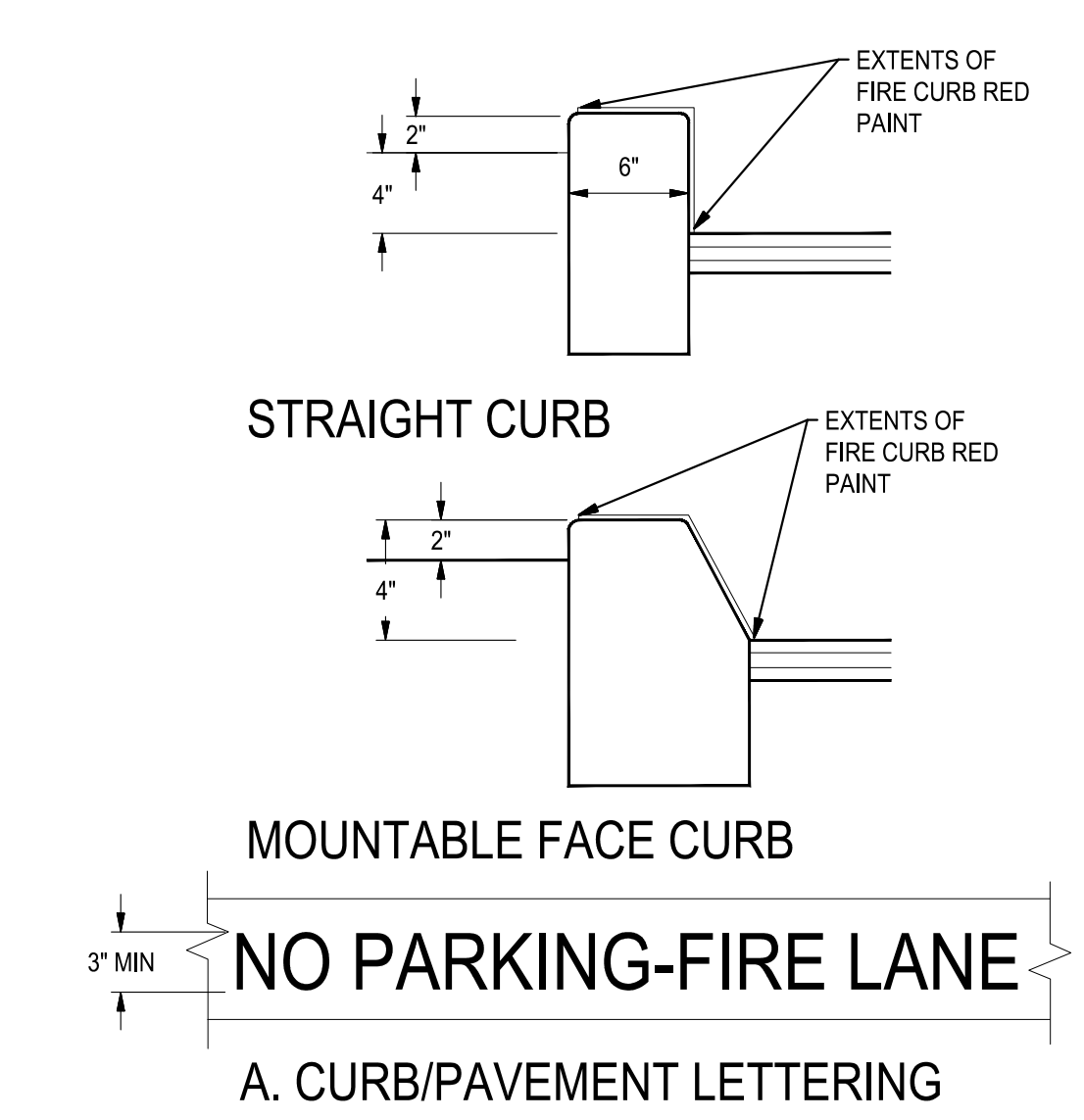
THE RHT CONSTRUCTION SITE WILL BE PROVIDED WITH FIRE DEPARTMENT ACCESS AS APPLICABLE FOR ACTIVE CONSTRUCTION SITES, TO BE ESTABLISHED PER CFC CHAPTER 33 AND IN COORDINATION WITH HCAL, THE CAMPUS FIRE MARSHAL, AND SPD.

FIRE DEPARTMENT ACCESS REQUIREMENTS (CFC 503 AND APPENDIX D):

- FIRE DEPARTMENT ACCESS (CFC 503, CCR TITLE 19)**
 - A FIRE DEPARTMENT SITE ACCESS MUST COMPLY WITH CFC 503, CCR TITLE 19, AND CITY OF SACRAMENTO FIRE DEPARTMENT REQUIREMENTS. SACRAMENTO CITY MUNICIPAL CODE (SCMC) AMENDMENTS TO CFC FIRE DEPARTMENT ACCESS REQUIREMENTS WILL ALSO BE APPLICABLE TO THE EXTENT ENFORCED BY SPD UNDER THE LOCAL FIRE AUTHORITY PROVISIONS FROM HCAL. THE SCMC AMENDS CFC APPENDIX C WITH THE ADDITION OF SECTIONS C104.2 THROUGH C104.5 AND THE AMENDMENT OF TABLE C102.1. THE SCMC DOES NOT EXPLICITLY AMEND OR REPEAL CFC APPENDICES B AND D, SO THESE APPENDICES ARE ASSUMED TO APPLY AS WRITTEN IN THE CFC.
 - A FIRE APPARATUS ACCESS ROAD SHALL EXTEND TO WITHIN 150 FT OF ALL PORTIONS OF THE FIRST STORY EXTERIOR WALLS AS MEASURED BY AN APPROVED ROUTE AROUND THE EXTERIOR OF THE BUILDING (CFC 503.1.1).
 - BUILDINGS EXCEEDING 3 STORIES OR 30 FT HEIGHT MUST HAVE AT LEAST TWO MEANS OF FIRE APPARATUS ACCESS. BUILDINGS HAVING A GROSS AREA GREATER THAN 124,000 SQ. FT. SHALL BE PROVIDED WITH TWO FIRE ACCESS ROADS. THE TWO ACCESS ROADS MUST BE PLACED AT A DISTANCE APART OF AT LEAST ONE-HALF OF THE MAXIMUM OVERALL DIAGONAL DIMENSION OF THE AREA SERVED (CFC 503).
 - AERIAL APPARATUS ACCESS MUST BE PROVIDED FOR BUILDINGS HAVING A ROOF HEIGHT GREATER THAN 30 FT ABOVE GRADE. AERIAL APPARATUS ACCESS ROADS MUST COMPLY WITH CFC D105.
- AERIAL ACCESS ROADS MUST HAVE A MINIMUM WIDTH OF 26 FEET. PORTIONS OF THE ACCESS ROAD THAT ARE IDENTIFIED AS AERIAL APPARATUS SET-UP LOCATIONS MUST HAVE AT LEAST 30 FT WIDTH (SCMC SECTION 15.100.110).
- THE AERIAL APPARATUS ACCESS ROAD SHALL BE LOCATED BETWEEN 15 FT AND 30 FT FROM THE BUILDING, AS MEASURED FROM THE NEAREST CURB PARALLEL TO ONE ENTIRE SIDE OF THE BUILDING. THIS IS TYPICALLY PROVIDED ALONG ONE LONG SIDE OF THE BUILDING.
- OVERHEAD UTILITY AND POWER LINES SHALL NOT BE LOCATED OVER THE AERIAL FIRE APPARATUS ACCESS ROAD OR BETWEEN THE AERIAL FIRE APPARATUS ROAD AND THE BUILDING. OTHER OBSTRUCTIONS MAY BE PLACED IF APPROVED BY THE FIRE CODE OFFICIAL.
- ACCESS ROADS SHALL HAVE AN UNOBSTRUCTED WIDTH NOT LESS THAN 20 FT (OR 26 FT FOR AERIAL APPARATUS ACCESS ROADS) AND AN UNOBSTRUCTED VERTICAL CLEARANCE OF AT LEAST 13 FT 6 IN.
- FIRE APPARATUS ACCESS ROADS SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS (75,000 LBS. PER CFC D102.1). APPARATUS LOADS SHOULD BE CONFIRMED WITH THE CITY OF SACRAMENTO FIRE DEPARTMENT.
- FIRE ACCESS LANE TURNS MUST HAVE A MINIMUM INSIDE RADIUS OF 35 FT AND MINIMUM OUTSIDE RADIUS OF 55 FT (SACRAMENTO FIRE DESIGN GUIDELINES FOR DEVELOPMENT SECTION 1.0).
- THE GRADE OF THE FIRE APPARATUS ACCESS ROAD SHALL BE WITHIN THE LIMITS ESTABLISHED BY THE FIRE CODE OFFICIAL (4% LIMIT PER SCMC SECTION 15.100.110).
- DEAD-END FIRE APPARATUS ACCESS ROADS LONGER THAN 100 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURNAROUND AREA. TYPICAL TURNAROUND FEATURES AND INFORMATION ARE PROVIDED IN CFC APPENDIX D (FIGURE D103.1 AND TABLE D103.4).

FIRE ACCESS PLAN KEY NOTES:

- EXISTING CANCER NORTH CENTER FDC
- EXISTING CANCER CENTER SOUTH FDC
- EXISTING SHRINERS PARKING STRUCTURE FDC
- EXISTING PATHOLOGY FDC
- EXISTING SESP FDC
- INSTALL "NO PARKING FIRE LANE" SIGN PER DETAIL 2
- FUTURE RHT BUILDING



1 FIRE LANE CURB / PAVEMENT MARKING
NO SCALE

2 FIRE LANE SIGNAGE
NO SCALE

ALL RAISED CURBS IN "NO PARKING" AREAS SHALL BE PAINTED RED WITH ACCEPTABLE RED CURB PAVEMENT PAINT AND LETTERED TO THE ABOVE STANDARD. LETTERING SHALL BE 3" HIGH (MIN), WHITE AND HAVE A 3/4" STROKE. MARKINGS TO BE LOCATED EVERY 25'-0", PER CFC 503.1. PAVEMENT MARKING DIRECT TO PAVEMENT AS INDICATED ON PLANS.

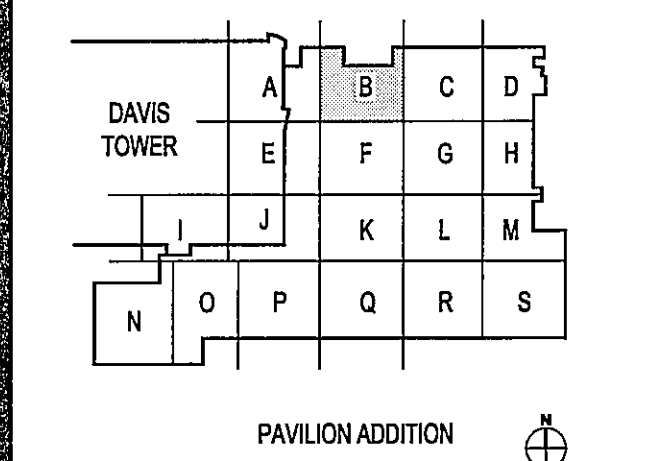
NOTE:
 1. LETTERS AND NUMBERS ON SIGNS PER CBC 11B703.5.4
 2. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND PER CBC 11B-703.6.2 & 11B-703.7.1



NO.	BY	DATE	DESCRIPTION
17	ARUP	09/30/09	CO#770
16	ARUP	07/22/09	CO#730
15	ARUP	03/31/09	CO#654
14	ARUP	03/13/09	CO#618
13	ARUP	02/02/09	CO#612
12	ARUP	12/20/08	CO#578

UC DAVIS MEDICAL CENTER SURGERY AND EMERGENCY SERVICES PAVILION
 UCD A/C 9550900

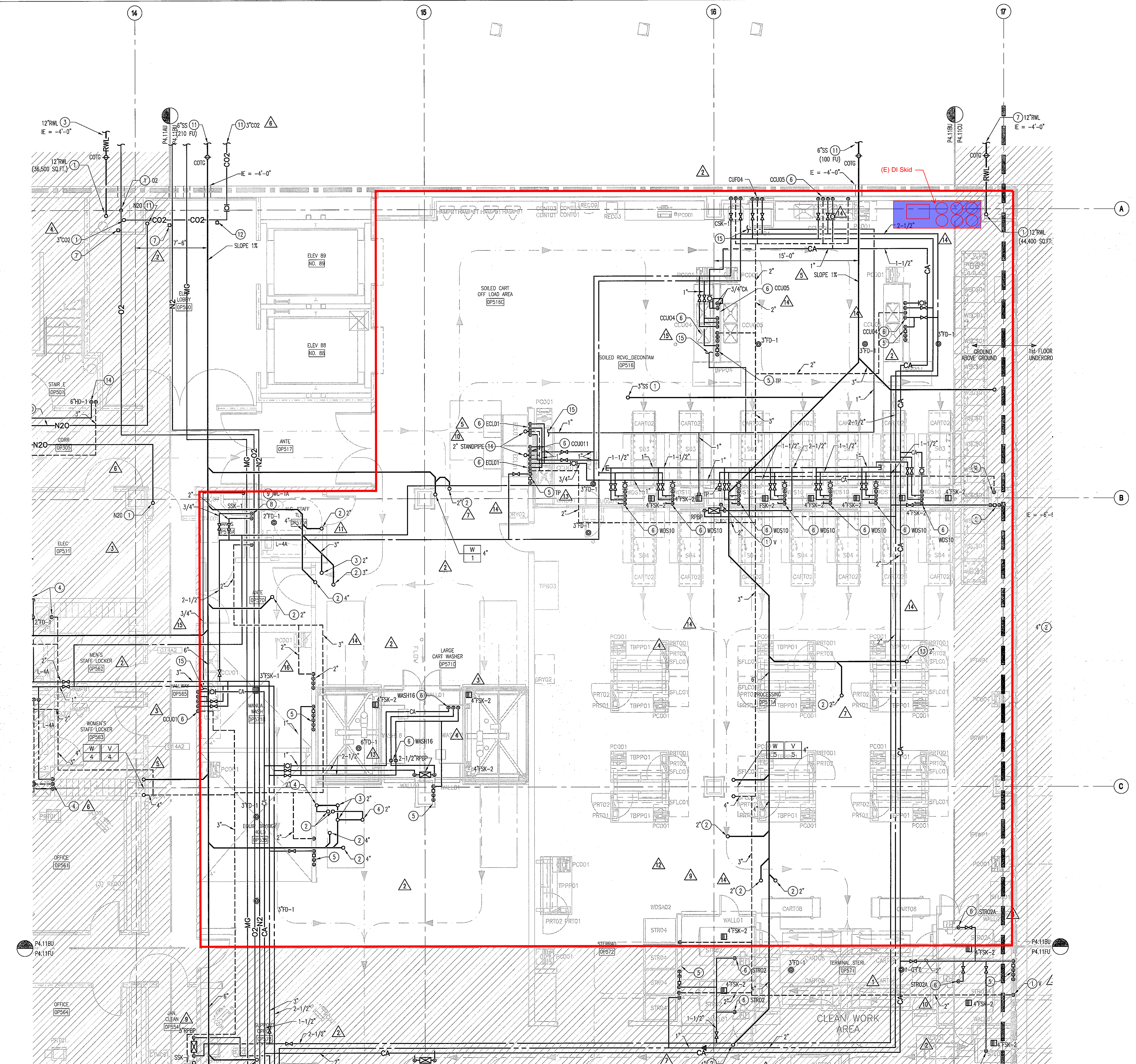
SACRAMENTO CALIFORNIA



KEY PLAN
 SHEET TITLE
PLUMBING GROUND ABOVE GRADE AND 1st FLOOR BELOW GRADE AREA - B
 PROJECT NUMBER
 GHCP 01075.00
 DATE
 8/20/05
 OSHPD SUBMITTAL
 SHEET NUMBER
P4.11BU

- SHEET NOTES:**
- PIPE RISER(S).
 - SS UP TO PLUMBING FIXTURES.
 - V UP AND CONNECT TO V MAIN.
 - SS UP TO FD/ED.
 - TRAP PRIMER PIPING.
 - PIPING DOWN TO MEDICAL EQUIPMENT. SEE MEDICAL EQUIPMENT SCHEDULE.
 - PIPING DOWN TO PLUMBING FIXTURE. SEE PLUMBING FIXTURE SCHEDULE FOR ALL SIZES.
 - PIPING DOWN TO PLUMBING FIXTURE(S). SEE PLUMBING PIPING DIAGRAMS FOR PIPE SIZES.
 - PROVIDE FLUSH VALVE TRAP PRIMER.
 - IN FLOOR CA VALVE BOX FLUSH WITH FLOOR.
 - FOR CONTINUATION, SEE PLUMBING SITE PLAN P1.01.
 - CO2 MEDICAL GAS PRESSURE SENSOR.
 - CAP SS ON FLOOR ABOVE.
 - CONNECT 2" STANDPIPE SS TO 2" SS IN WALL.
 - CONNECT PIPING TO PRESSURE RELIEF VALVE.

FOR REFERENCE



1 PLUMBING GROUND ABOVE GRADE AND FIRST FLOOR BELOW GRADE - AREA B
 SCALE: 1/4"=1'-0"

023936

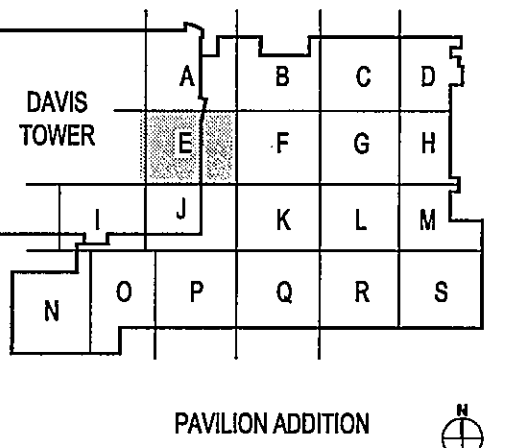
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6	ARUP	12/18/08	CO#576
5	ARUP	11/19/07	CO#291
4	ARUP	11/16/07	IB#57
3	ARUP	NOT USED	
2	ARUP	02/23/06	CO#128
1	ARUP	12/16/05	CO#123

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MEDICAL CENTER
SURGERY AND
EMERGENCY
SERVICES
PAVILION
UCD A/C 9550900

SACRAMENTO
CALIFORNIA

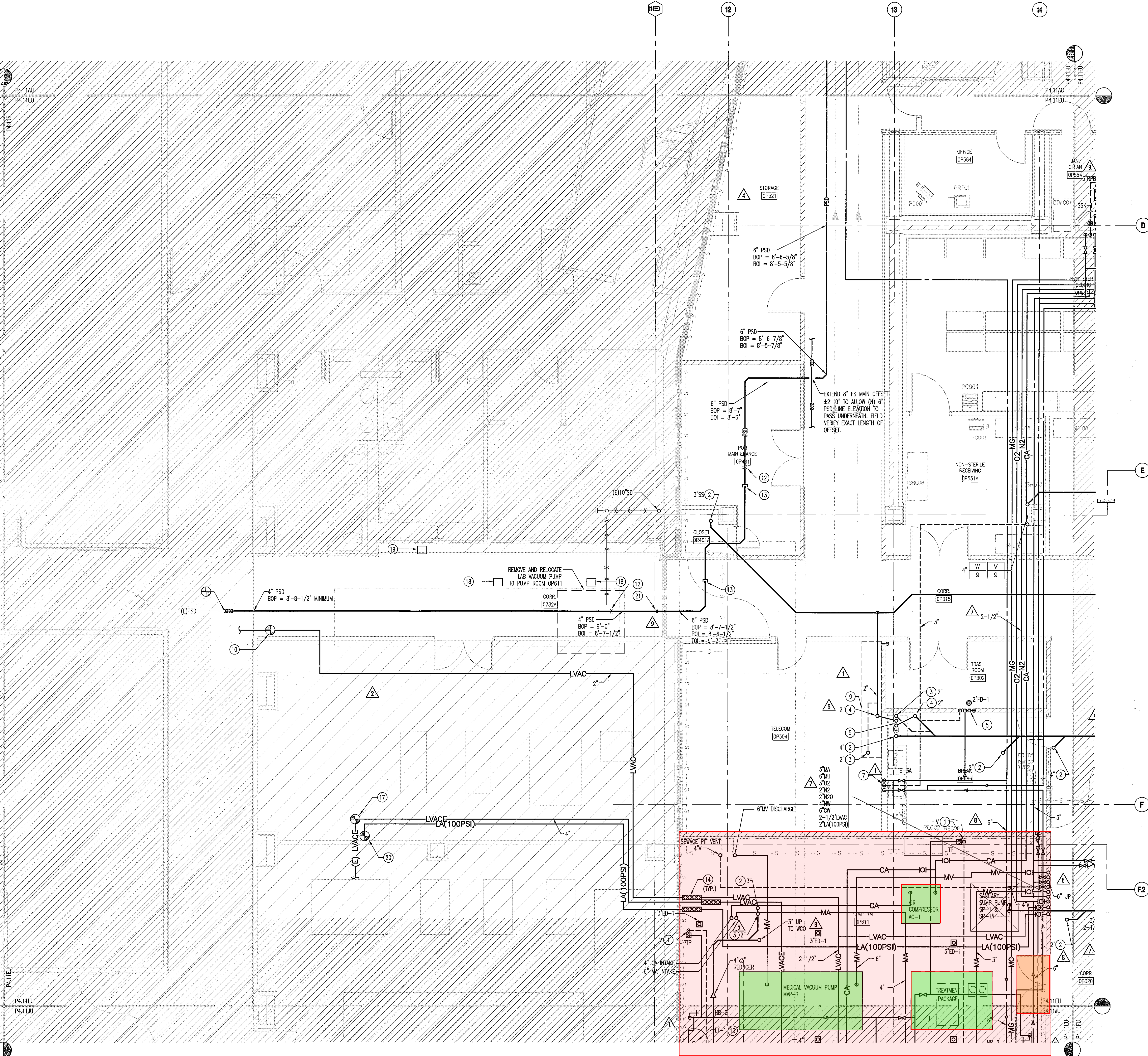


KEY PLAN
SHEET TITLE
PLUMBING GROUND ABOVE GRADE AND 1st FLOOR BELOW GRADE AREA - E
PROJECT NUMBER
GHCP 01075.00
DATE
8/20/05
OSHPD SUBMITTAL
SHEET NUMBER
P4.11EU

SHEET NOTES:

- PIPE RISER(S).
- SS UP TO PLUMBING FIXTURES.
- V UP AND CONNECT TO V MAIN.
- SS UP TO FD/ED.
- TRAP PRIMER PIPING.
- NOT USED.
- PIPING DOWN TO PLUMBING FIXTURE. SEE PLUMBING FIXTURE SCHEDULE FOR ALL SIZE.
- NOT USED.
- DRIP PAN UNDER PIPING WITH 3/4" PAN DRAIN LINE TERMINAL FLUSH WITH CEILING IN TRASH ROOM.
- CONNECT LV TO EXISTING LV PIPING.
- NOT USED.
- ANCHOR PIPE TO STRUCTURE.
- BALL JOINTS.
- BUILDING SEISMIC JOINT CONNECTOR
- ENVIROX CHLORINE DIOXIDE GENERATOR EQUIPMENT. SEE PIPING DIAGRAM 5/P5.01
- NOT USED.
- CONNECT 4" LVACE TO (E) 4" LVACE.
- REMOVE (E) EQUIPMENT DRAIN & CAP (E) SS PIPING BELOW FINISH FLOOR.
- REMOVE (E) TRAP PRIMER & CAP CW ABOVE FINISH CEILING.
- CONNECT 2" LA (100 PSI) TO (E).
- VICTAULIC COUPLING SYSTEM.

FOR REFERENCE



1 PLUMBING GROUND ABOVE GRADE AND FIRST FLOOR BELOW GRADE - AREA E

SCALE: 1/4"=1'-0"

023939

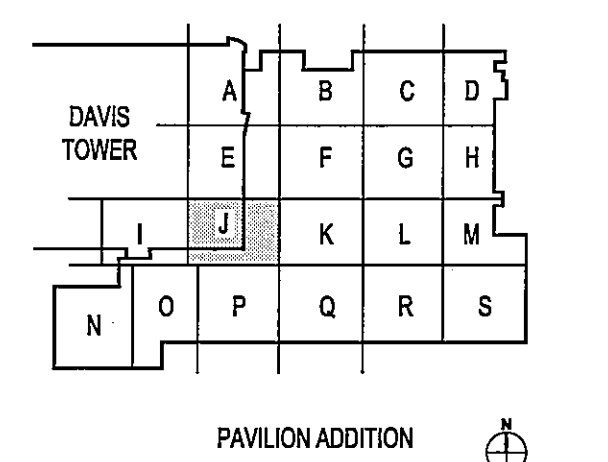
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NO.	BY	DATE	DESCRIPTION
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9	ARUP	03/13/09	CO#618
8	ARUP	02/02/09	CO#612
7	ARUP	02/03/09	CO#588
6	ARUP	01/21/09	CO#605
5	ARUP	12/20/08	CO#577
4	ARUP	04/25/08	IB#59
3	ARUP	01/02/08	CO#317
2	ARUP	02/23/06	CO#128
1	ARUP	12/16/05	CO#123

UC DAVIS MEDICAL CENTER SURGERY AND EMERGENCY SERVICES PAVILION
UCD A/C 9550900

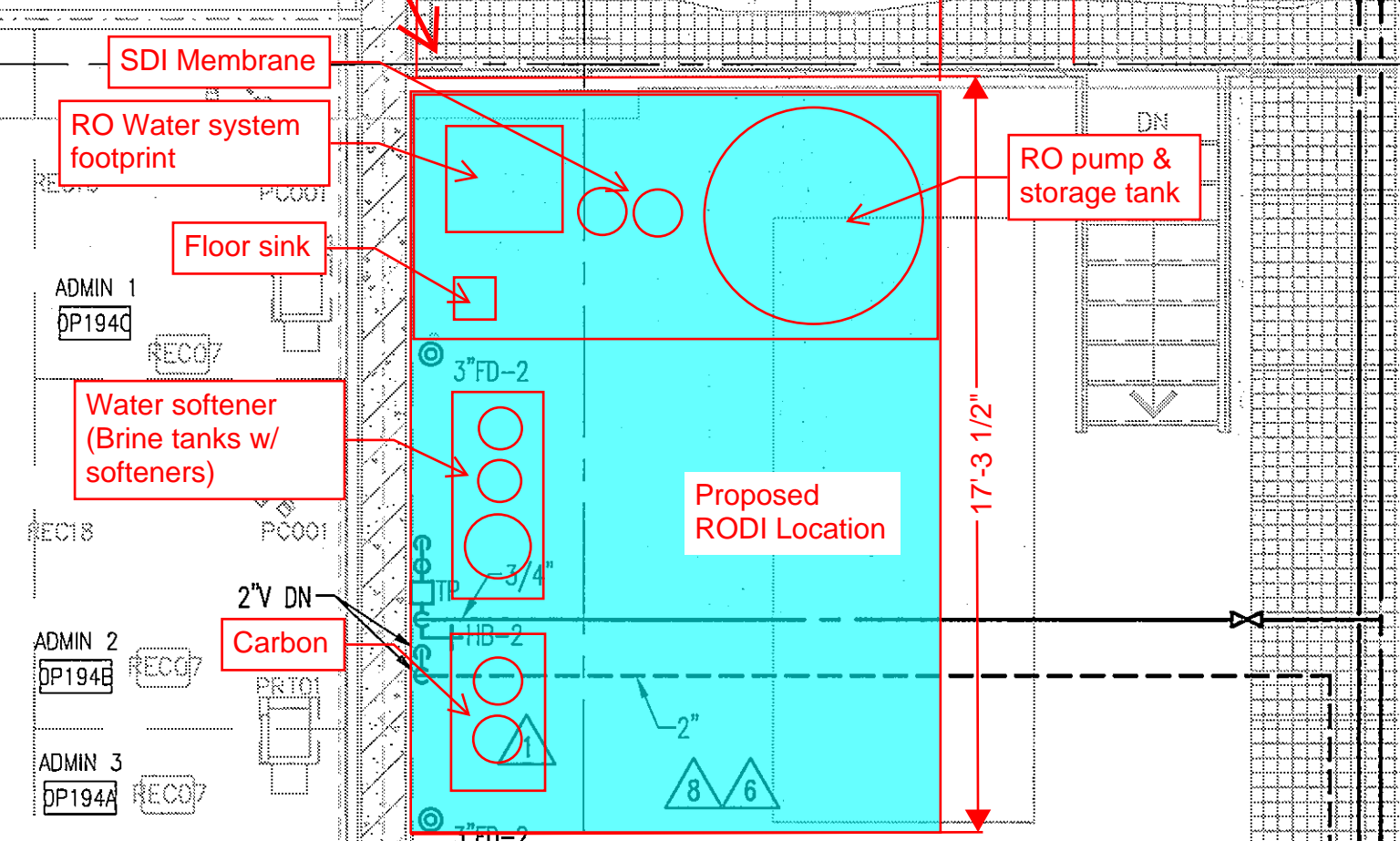
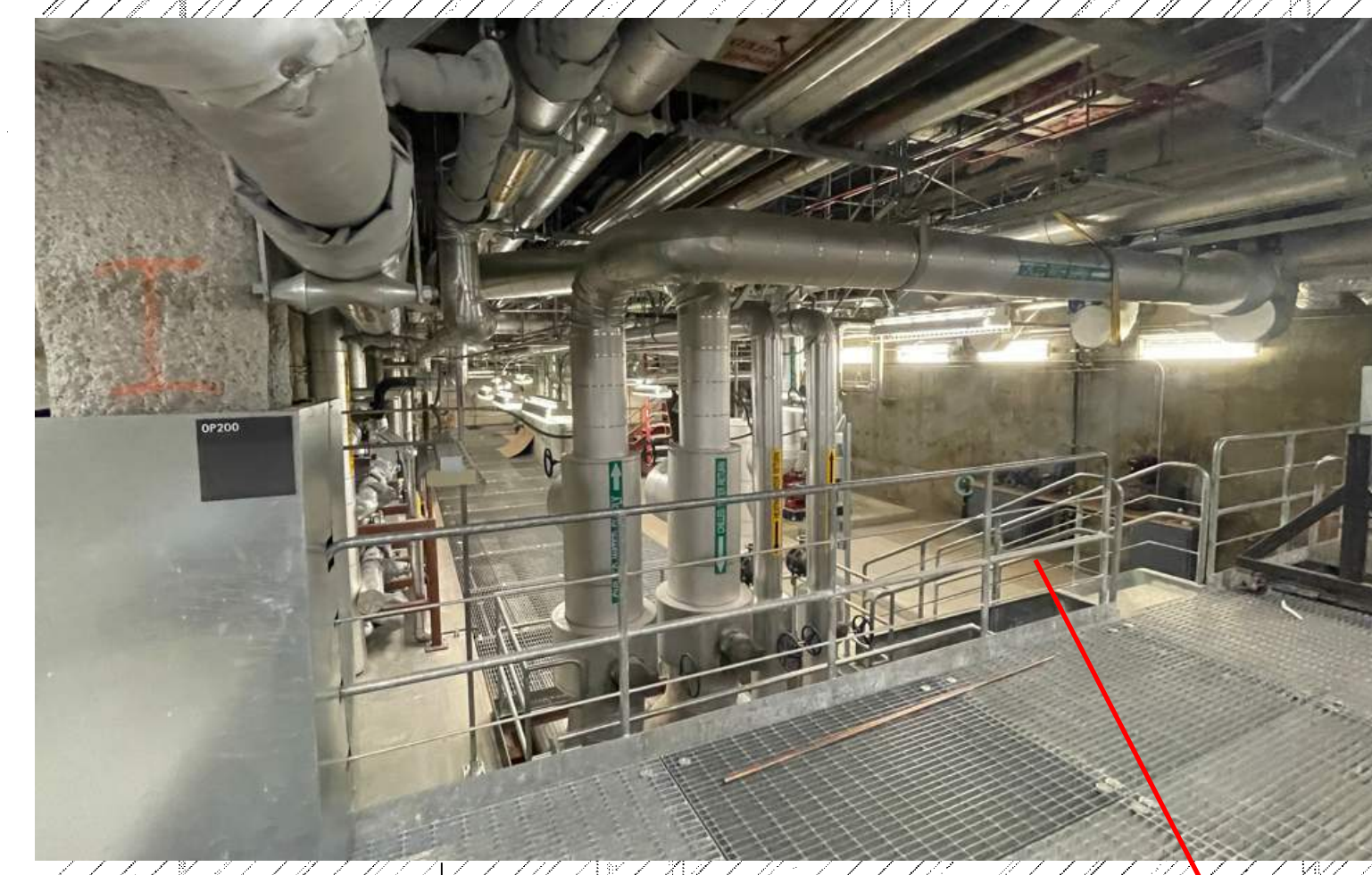
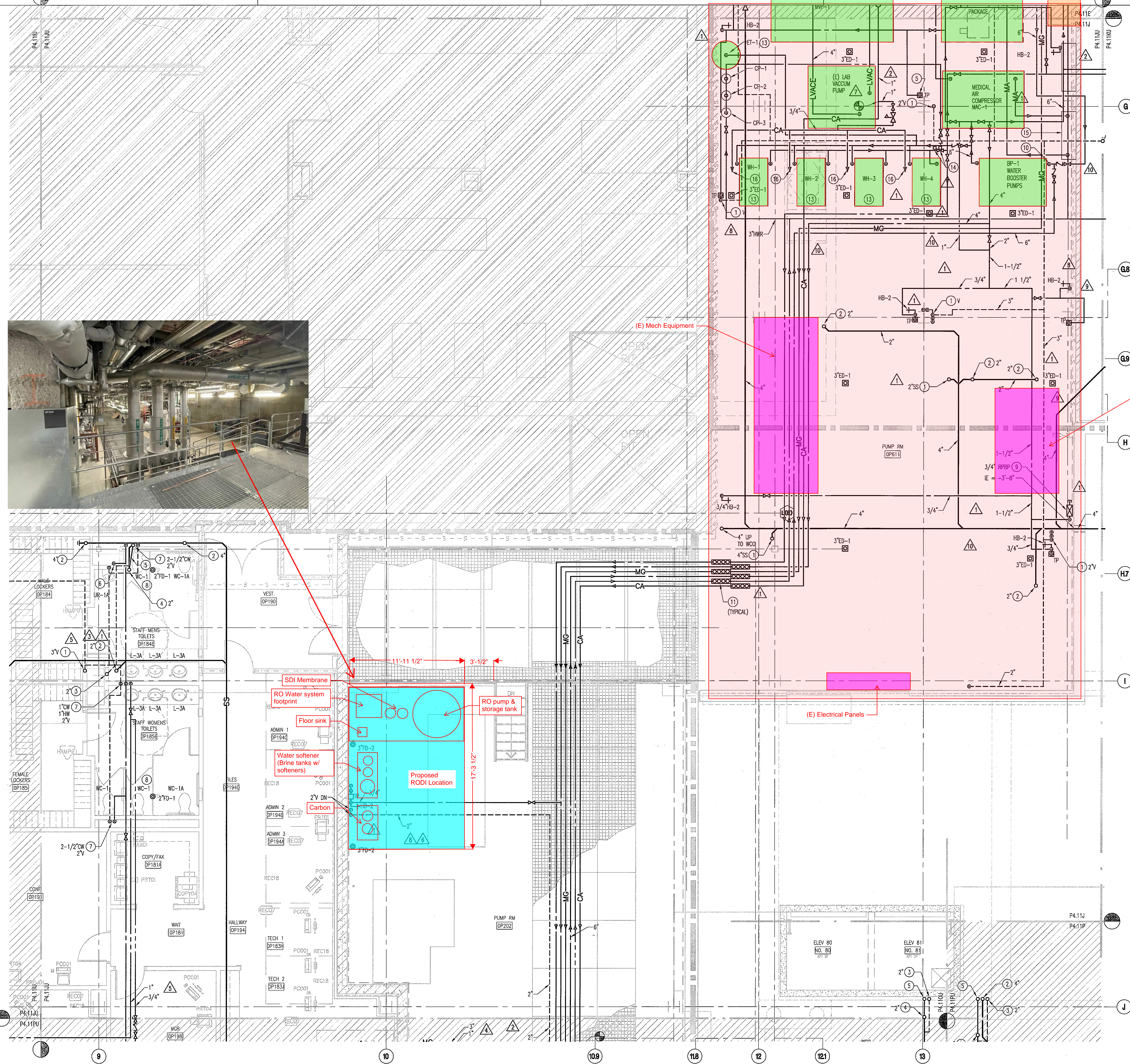
SACRAMENTO CALIFORNIA



KEY PLAN
SHEET TITLE
PLUMBING GROUND ABOVE GRADE AND 1st FLOOR BELOW GRADE AREA - J
PROJECT NUMBER
GHCP 01075.00
DATE
8/20/05
OSHPD SUBMITTAL
SHEET NUMBER
P4.11JU

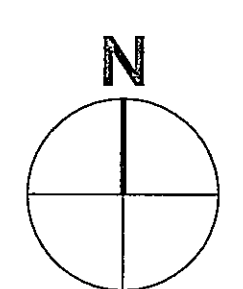
SHEET NOTES:

- 1 PIPE RISER(S).
- 2 SS UP TO PLUMBING FIXTURES.
- 3 V UP AND CONNECT TO V MAIN.
- 4 SS UP TO FD/ED.
- 5 TRAP PRIMER PIPING.
- 6 PIPING DOWN TO PLUMBING FIXTURE. SEE PLUMBING FIXTURE SCHEDULE FOR ALL SIZES.
- 7 PIPING DOWN TO PLUMBING FIXTURE(S). SEE PLUMBING PIPING DIAGRAMS FOR PIPE SIZES.
- 8 PROVIDE FLUSH VALVE TRAP PRIMER.
- 9 CONNECT TO MECHANICAL EQUIPMENT MAKE-UP.
- 10 6" CW TO BOOSTER PUMP.
- 11 BUILDING SEISMIC JOINT CONNECTOR.
- 12 GAS VENT UP.
- 13 PIPING AT WATER HEATERS SEE PIPING DIAGRAM 1/PS.01
- 14 HIGH TEMP. SENSOR & SOLENOID SHUT-OFF VALVE.
- 15 MAC-1 AIR FILTERS/PRESSURE REGULATOR ASSEMBLY.
- 16 1/2" COMPRESSED AIR PIPING TO WATER HEATER PNEUMATIC CONTROL VALVE.



023944

1 PLUMBING GROUND ABOVE GRADE AND FIRST FLOOR BELOW GRADE - AREA J
SCALE: 1/4"=1'-0"



MOD. BY: lryyrenomotion
MOD. DATE: 4/15/2008 02:51 PM
DATE: 8/13/2005 04:05 PM
DWG NAME: A:\23944\p_project_data\p-01_drawing\p4.11ju.dwg



600 Q Street, Suite 200
Sacramento, CA 95811

P 916 443 0303

Sacramento
Los Angeles
Phoenix
San Francisco
Silicon Valley

buehlerengineering.com

Structural Scoping Narrative

SESP CPU Water Upgrade Project

Feasibility Study

Project #M057715

4301 X Street, Sacramento, CA 95817

2023-0096

June 9, 2023

Executive Summary

The project consists of the renovation of the existing Sterile Processing Department (SPD) in the basement of the SESP building at UC Davis Medical Center in Sacramento, California. The current system is underserved by the existing critical water system and needs to be upgraded. A new system is proposed to serve this area of the hospital from a remote location to provide the necessary capacity required. As part of the upgrade, sterilizer equipment will be affected in the connection to the new system.

References

- 2022 California Building Code with State of California Amendments
- ASCE 7-16 Minimum Design Loads for Buildings and Other Structures
- OSHPD PIN 68

General Building Description and Considerations

The SPD is located in the basement of the facility. The floor construction is 5" concrete slab on grade which supports the base-mounted sterilizers and associated equipment. The floor level above consists of concrete over metal deck spanning to structural steel wide flange beams and girders, supported by structural steel columns.

Structural Anchorage of Equipment

Preliminary information has been provided for the purpose of scoping this project. Any new equipment requires structural support and anchorage design if it does not fall under the exceptions listed in OSHPD PIN 68. Equipment affected in the SPD includes sterilizers, medivators, and cart washers, all set to impacted by the

renovation and will require structural anchorage design. A new deionized water skid is set to installed in the basement level in another equipment room.

Some interior partition work is expected with non-compliant existing conditions needing to be mitigated when encountered in the field. Metal stud framing details would need to be developed accordingly.

Distribution Systems and Utilities

It is assumed that the existing mechanical, electrical and plumbing (MEP) associated ductwork, piping, and conduit may be affected in this scope of the project. Any existing systems that are modified will require that the entire line be upgraded to meet current code including the installation of seismic bracing as needed. All new MEP systems installed will require support and seismic bracing per code.

UCDMC – Central Sterile Basis of Design

PLUMBING NARRATIVE

Design Codes and Standards

The work shall be in accordance with, but not limited to, the requirements of:

1. 2022 California Building Code
2. 2022 California Plumbing Code
3. AAMI TIR34 – Water for the Reprocessing of Medical Devices (2021)

SANITARY WASTE AND VENT SYSTEM – NEW WORK

Floor sinks connected to the existing sanitary sewer system will be provided to accommodate any water discharge from the pure water equipment. Drains will be sized to extract peak gpm discharge at any given moment. Emergency floor drains shall be provided to accommodate water that may land outside of designated floor sink locations, and to assist in maintenance spillover. All drains will be vented and connected overhead to the existing sanitary sewer vent system.

Drain and waste piping material for above and below slab applications shall be ASTM A888 cast iron soil pipe and no-hub fittings, asphaltic coated with mechanical banded joints. Vent piping shall be ASTM A888 cast iron soil pipe and fittings with mechanical banded joints.

DOMESTIC WATER - NEW WORK

There will be a new domestic water supply line routed to the pure water skid. Domestic cold water will be connected to an existing 4" CW main branching from the 6" CW main downstream of the booster pump. The 4" CW branch runs in the South direction passing the pure water skid proposed location and serves the South-West portion of the building. Prior to connecting to the pure water equipment to this existing line, it will pass through a backflow prevention device to isolate the pure water from the facility potable water to ensure no contaminants.

Piping material for all DI/RO supply piping shall be stainless steel except final connection to equipment.

Updated by UC Davis for Bid

PURE WATER – TIR34 SUMMARY

The purpose of meeting TIR34 water quality standards is to prolong the life of medical instrumentation, ensure effective functioning instrumentation, and most importantly, help minimize the risk of adverse patient outcomes consistent with contaminated medical devices.

Lower water quality can lead problems during the reprocessing of medical instrumentation including corrosion, pitting, rusting, stress cracking, and loss of color. Examples of problems related to sterile equipment consist of gold-brown discoloration, orange-brown discoloration, multicolored staining, and biofilm development. All problems listed above can be related directly to low quality pure water.

Critical water specifications consist of:

Table 1—Categories and recommended levels of water quality for medical device reprocessing

Type of Water		Utility Water ¹⁾		Critical Water
Water Use		Flushing/Washing/Rinsing		Final Rinse ²⁾ /Steam
Specifications:				
	Units			
Hardness	mg/L	< 150 ³⁾		< 1
Conductivity (mg/L = ppm)	µS/cm	< 500		< 10
pH ⁴⁾		6 – 9		5 – 7
Chlorides	mg/L	< 250		< 1
Bacteria	cfu/mL	n/a	<10 ⁵⁾	< 10
Endotoxin	EU/mL	n/a	<20 ⁵⁾	< 10

NOTE 1—This is the quality of water that might come from the tap but might need some form of treatment to achieve these specifications.

NOTE 2—If this is the final rinse prior to sterilization of a critical device

NOTE 3—If hardness is greater than 150 mg/L, a water softener is recommended unless used for washing and the cleaning chemistry is capable of handling higher levels of hardness.

NOTE 4—For boiler-treated steam, most boilers are treated to maintain a pH of 7.5 or 8.5. Any treatment of water that goes into boilers should be in accordance with the sterilizer and boiler manufacturers' written IFU.

NOTE 5—After high-level disinfection

Table 1 – Recommended Levels of Water Quality (2021 AAMI TIR34)

PURE WATER - EXISTING CONDITIONS

The current Pure Water conditions consist of an Evoqua Deionized water (DIW) system. This system is 6 filter bottles and a one-way ¾" Stainless steel DI Water line serving (7) Instrument Washers all within the Sterile Processing zone. There is a ¾" return line not in use and has been capped at the equipment. The current uncirculated pure water system is not compliant with AAMI pure water standards TIR34 and cannot supply the current demand of all sterile equipment. The only equipment receiving DI Water are the (7) Instrument Washers. These units must be cycled to allow for the DIW to keep up with demand. There are multiple sinks which have stub-outs for Deionized water (DIW) and are in need of pure water for final rinse

but are not connected to the system because of insufficient pure water supply. There are (2) cart washers which are not connected to the pure water because of insufficient pure water supply. The sterile equipment is under constant use and the users would like the ability to run more washer units at once than what is currently allowed to supply the demand of the facility. The components of the existing DIW skid are not usable for the intent of new pure water application. The assumption of current DIW gallon per minute being supplied is 15 gpm. This is based on a 60% diversity of 7 instrument washers, information from Steris, and assumptions on cycle schedule.

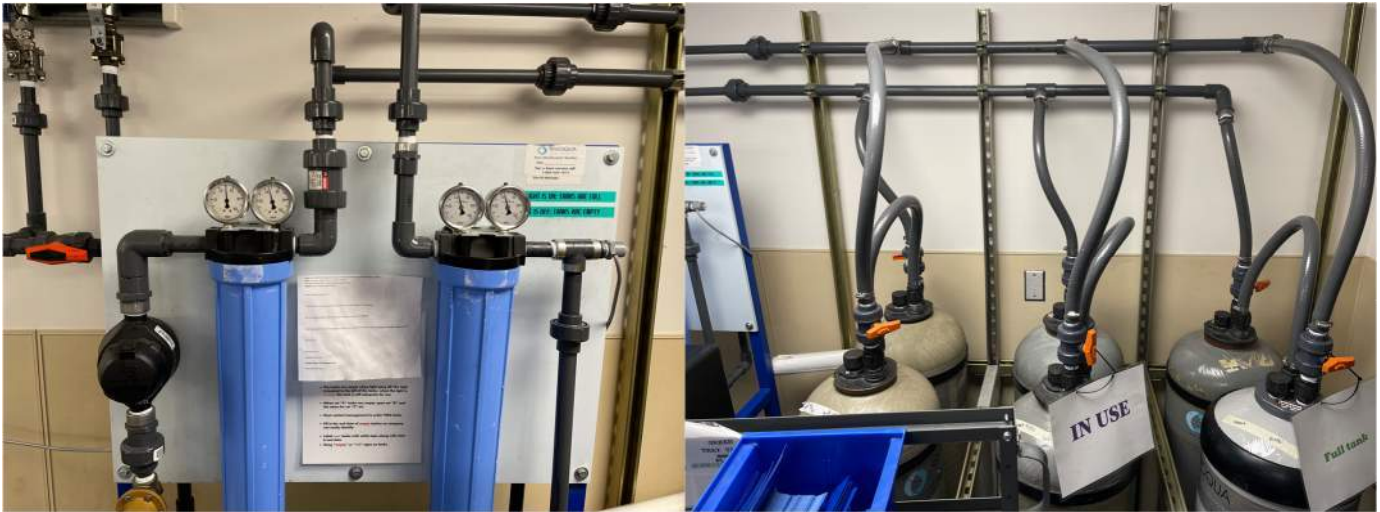


Image 1 & 2 – Existing Deionized Water Skid

PURE WATER – NEW WORK

To follow current AAMI water quality standards and supply the equipment demand, the facility will need to upgrade the Pure Water system to a larger system capable of higher purification and greater supply. The new pure water equipment will follow current AAMI TIR34 water quality standards and be sized to supply peak demand of all sterile equipment. High purity water will be supplied to all sterile processing equipment requiring this utility.

A pure water equipment package capable of providing this level of purity will consist of a Reverse Osmosis-Deionized Water (RODI) combination. This package will consist of, but is not limited to, a Reverse Osmosis Unit, Ultraviolet Disinfection, Water Softener with Brine Tank, Carbon filters, Mixed Bed Deionizer, Final filter, RO/DI Storage Tank, and a RO/DI Recirculation Pump. There is insufficient clearance in the sterile processing zone to accommodate the Pure Water system. “Pump Room OP202” has been identified as the proposed new location to house the RODI equipment. There is sufficient clearance and available existing utilities nearby to accommodate the needs of the package.

Room “OP202” is approximately 425 feet from the sterile processing zone. New supply and return piping with hydraulically calculated sizing based on maximum of 5 ft./sec. will be routed overhead from the pure water equipment location and supply the equipment. The pipe path will be determined based on most direct route and path of least disruption to the facility. All shutdowns will be coordinated with UCDMC prior to

construction. The anticipated design load is 60 gpm with an anticipated pipe sizing of 2" supply and return. As user input progresses the calculations will be adjusted accordingly.

Pipe materials for above slab conditions shall be Schedule 40 Polyvinylidene Fluoride (PVDF) Pipe and Fittings with butt-fusion joints.

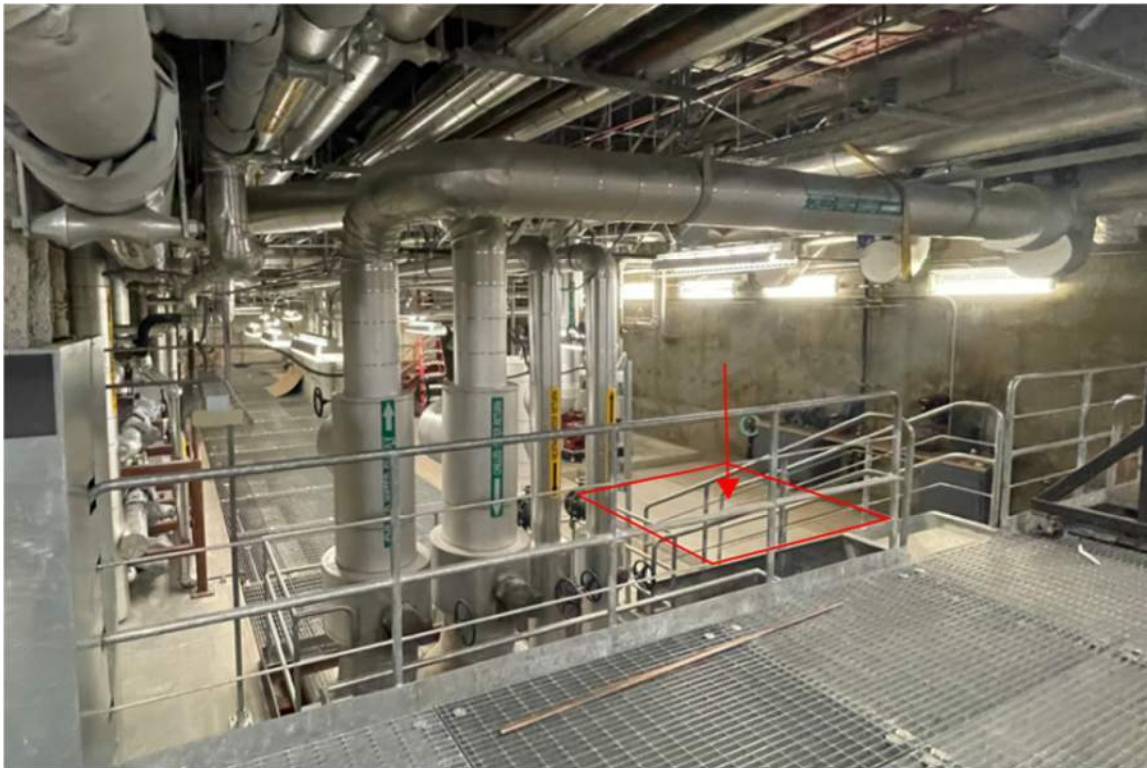


Image 3 – Proposed RO/DI Skid Location

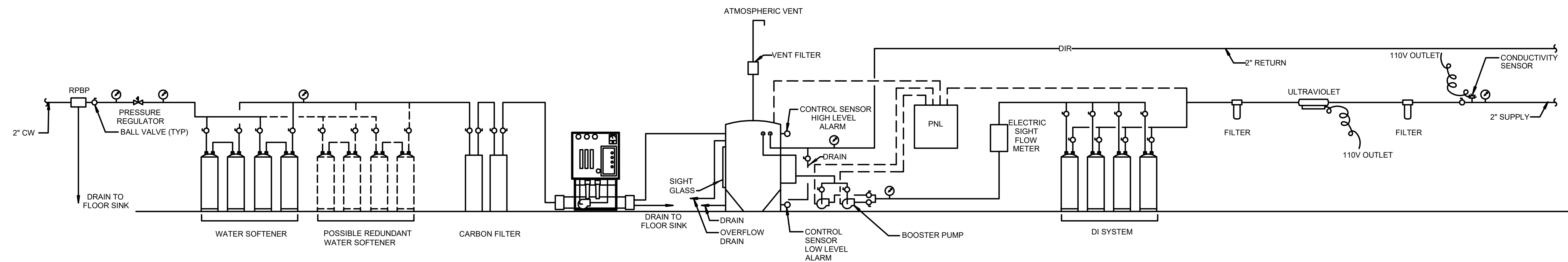
PURE WATER – ANTICIPATED OBSTACLES

There are a few obstacles that are anticipated, but are not limited to:

1. Pipe routing and equipment shut downs will require significant coordination with the facility. There is roughly 450 feet of supply and return piping that will be routed over corridors and occupied rooms.
2. Pipe mounting is will require alternative pipe mounting solutions in areas with hard lid ceilings. To minimize disruption of the sterile processing zone, surface mounted piping shall be considered in future coordination.
3. Phasing to maintain sterile processing services during construction.
4. Pure water equipment and piping long lead times. This can be coordinated with manufacturers during project design to minimize any construction delays. Recent long lead times for equipment and piping have been extending towards 12 - 16 weeks depending on size and quantity of the item.

Appendix A

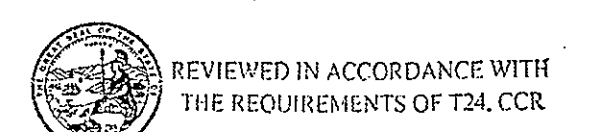
Purified Water System Diagram



1 PURIFIED WATER SUPPLY SYSTEM
SCALE: NONE

Appendix B

Proposed Pipe Route to Mechanical Rm



HS022883

DATE
Office of Statewide Health
Planning & Development

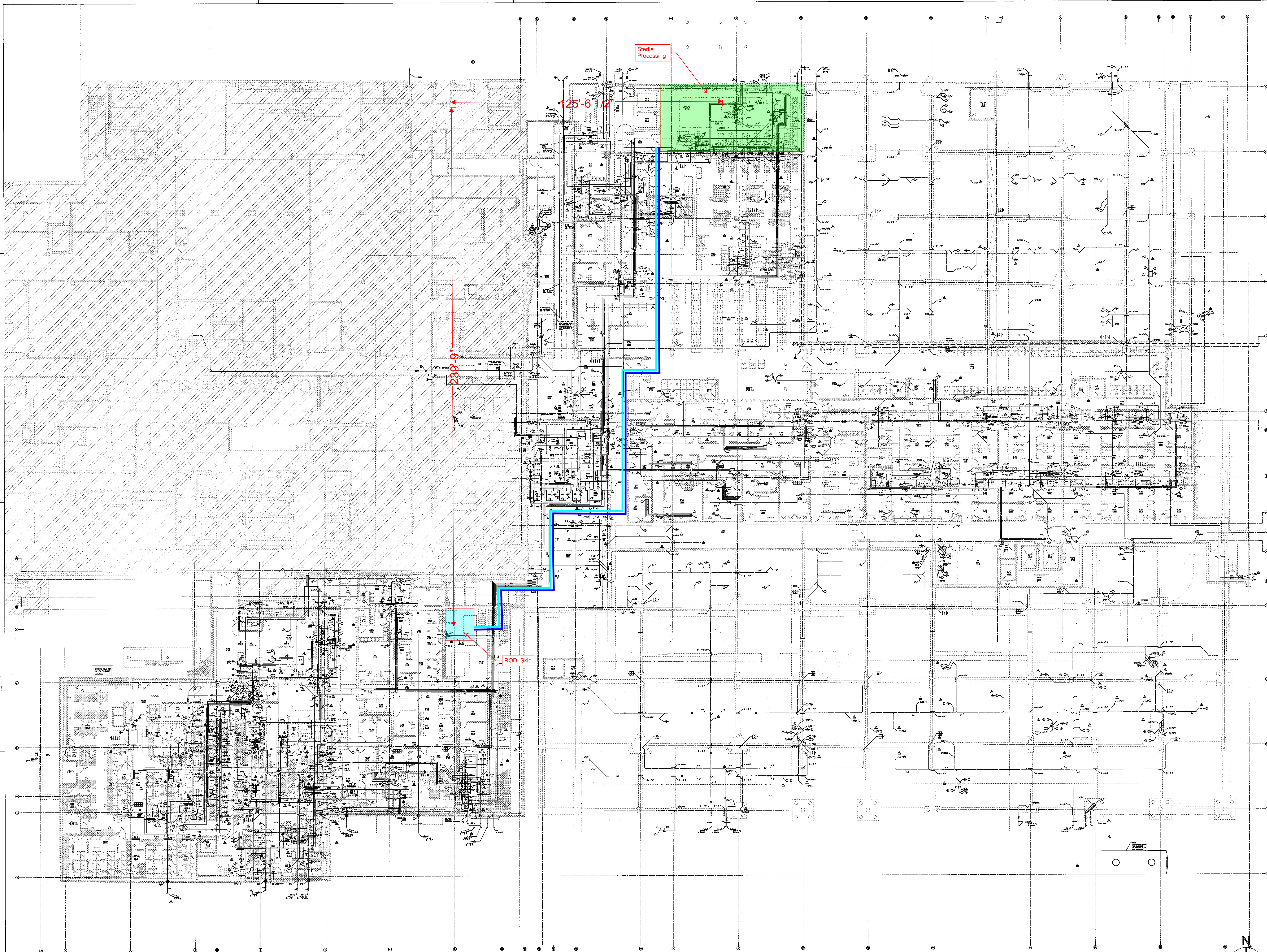
ARUP 06/18/07 00#230
NO. BY DATE DESCRIPTION

UC DAVIS
MEDICAL CENTER
SURGERY AND
EMERGENCY
SERVICES
PAVILION
UCD A/C 9550900

SACRAMENTO
CALIFORNIA

KEY PLAN
DAVIS TOWER
A B C D E
F G H
I J K L M
N O P Q R S
PAVILION ADDITION

KEY PLAN
SHEET TITLE
PLUMBING GROUND FLOOR ABOVE GRADE AND 1ST FLOOR BELOW GRADE OVERALL PLAN
PROJECT NUMBER
GHCP 01075.00
DATE
8/20/05
OSHPD SUBMITTAL
SHEET NUMBER
P4.11U



Sterile Processing

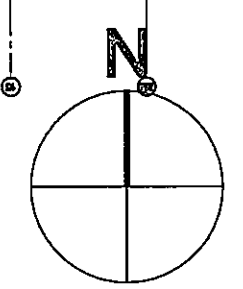
125'-6 1/2"

239'-9"

RODI Skid

023934

1 PLUMBING GROUND FLOOR ABOVE GRADE AND 1ST FLOOR BELOW GRADE OVERALL PLAN
SCALE: 1/16"=1'-0"



PLD BY: yehkay
DATE: 11/21/2007 03:21 PM
PLOT DATE: 11/21/2007 02:06 PM
DWG NAME: A:\32434\4_projects\4_dwg\plumbing\plumbing\023934.dwg

Appendix C

Proposed Pipe Route in Central Processing

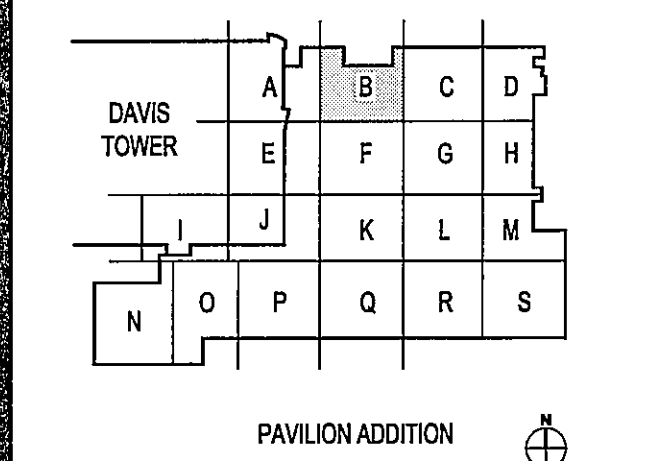


DATE: Office of Statewide Health Planning & Development

NO.	BY	DATE	DESCRIPTION
17	ARUP	09/30/09	CO#770
16	ARUP	07/22/09	CO#730
15	ARUP	03/31/09	CO#654
14	ARUP	03/13/09	CO#618
13	ARUP	02/02/09	CO#612
12	ARUP	12/20/08	CO#578

UC DAVIS MEDICAL CENTER SURGERY AND EMERGENCY SERVICES PAVILION
 UCD A/C 9550900

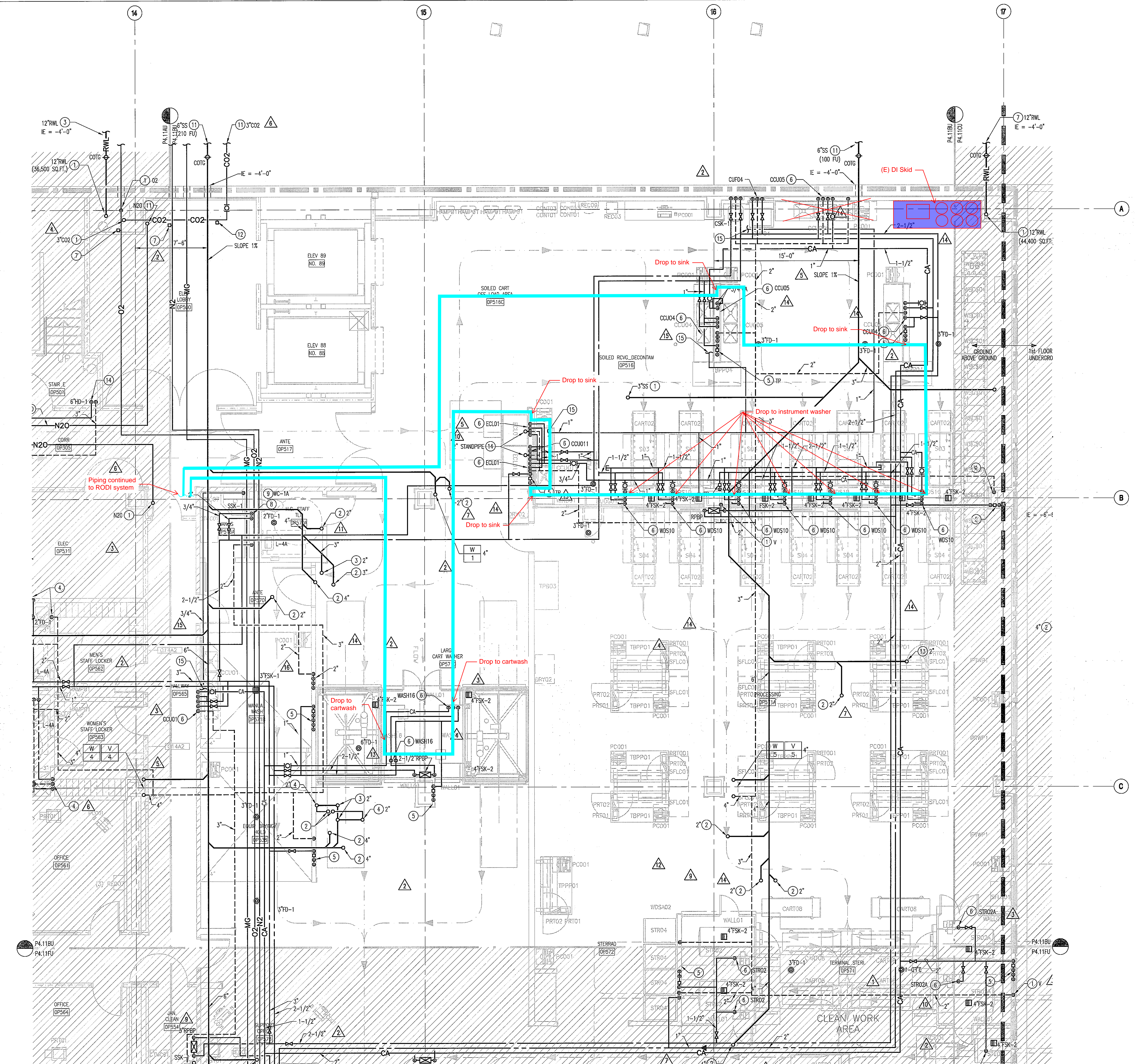
SACRAMENTO CALIFORNIA



KEY PLAN
 SHEET TITLE
PLUMBING GROUND ABOVE GRADE AND 1st FLOOR BELOW GRADE AREA - B
 PROJECT NUMBER
 GHCP 01075.00
 DATE
 8/20/05
 OSHPD SUBMITTAL
 SHEET NUMBER
P4.11BU

SHEET NOTES:

- PIPE RISER(S).
- SS UP TO PLUMBING FIXTURES.
- V UP AND CONNECT TO V MAIN.
- SS UP TO FD/ED.
- TRAP PRIMER PIPING.
- PIPING DOWN TO MEDICAL EQUIPMENT. SEE MEDICAL EQUIPMENT SCHEDULE.
- PIPING DOWN TO PLUMBING FIXTURE. SEE PLUMBING FIXTURE SCHEDULE FOR ALL SIZES.
- PIPING DOWN TO PLUMBING FIXTURE(S). SEE PLUMBING PIPING DIAGRAMS FOR PIPE SIZES.
- PROVIDE FLUSH VALVE TRAP PRIMER.
- IN FLOOR CA VALVE BOX FLUSH WITH FLOOR.
- FOR CONTINUATION, SEE PLUMBING SITE PLAN P1.01.
- CO2 MEDICAL GAS PRESSURE SENSOR.
- CAP SS ON FLOOR ABOVE.
- CONNECT 2" STANDPIPE SS TO 2" SS IN WALL.
- CONNECT PIPING TO PRESSURE RELIEF VALVE.



1 PLUMBING GROUND ABOVE GRADE AND FIRST FLOOR BELOW GRADE - AREA B
 SCALE: 1/4"=1'-0"

023936

PLOT BY: lmyers@arup.com
 PLOT DATE: 7/17/2009 04:41 PM
 PLOT TIME: 4/15/2009 01:54 PM
 DWG NAME: s:\projects\4_03_drainage\plumbing\p4.11bu.dwg



Appendix D

Plumbing Equipment Cutsheets



Model 975XL2

Reduced Pressure Principle Assembly

Application

Ideal for use where Lead-Free* valves are required. Designed for installation on potable water lines to protect against both backsiphonage and backpressure of contaminated water into the potable water supply. Assembly shall provide protection where a potential health hazard exists.

Standards Compliance

- ASSE® Listed 1013
- IAPMO® Listed
- CSA® Certified B64.4
- AWWA Compliant C511
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California
- Meets the requirements of NSF/ANSI/CAN 61

*(0.25% MAX. WEIGHTED AVERAGE LEAD CONTENT)

- UL® Classified (less shut-off valves or with OS&Y valves)
- C-UL® Classified

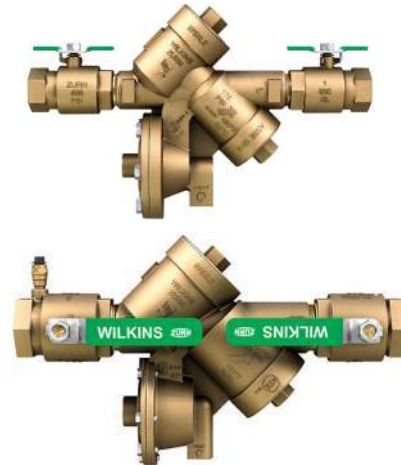
Materials

Main valve body	Low Lead Cast Bronze ASTM B 584
Access covers	Low Lead Cast Bronze ASTM B 584
Fasteners	Stainless Steel, 300 Series
Elastomers	Silicone
	Buna Nitrile
Polymers	Noryl™
Springs	Stainless Steel, 300 series
Ball valve handles	Stainless Steel

Features

Sizes:	3/4", 1", 1-1/4", 1-1/2", 2"
Maximum working water pressure	175 PSI
Maximum working water temperature	180°F
Hydrostatic test pressure	350 PSI
End connections	Threaded
	ANSI B1.20.1

Relief Valve discharge port:	
3/4" - 1"	- 0.63 sq. in.
1 1/4" - 2"	- 1.19 sq. in.



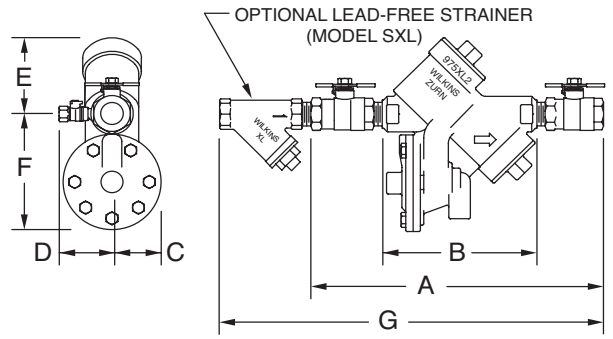
Options

(Suffixes can be combined)

- with full port QT ball valves (standard)
- S - with bronze "Y" type strainer
- FT - with integral male 45° flare SAE test fitting
- TCU - with test cocks up
- SE - with street elbows (3/4" & 1")
- U - with union ball valves

Accessories

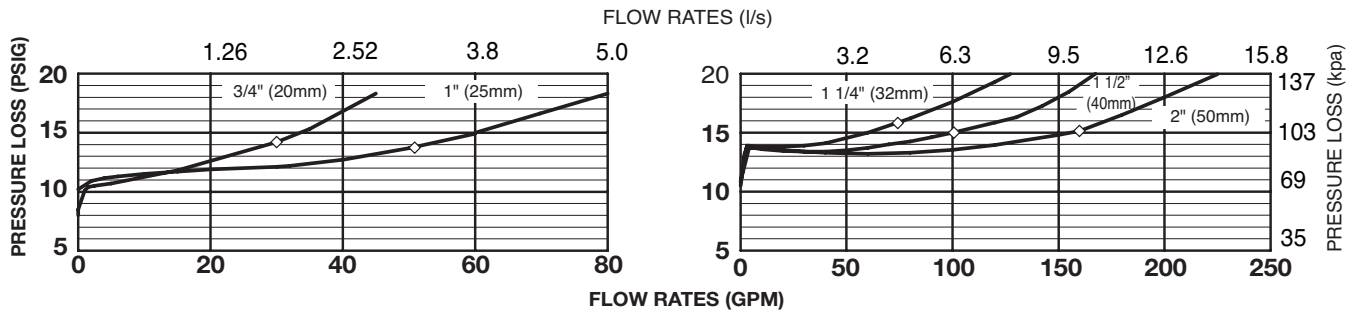
- Air gap (Model AG)
- Repair kits (rubber only)
- Thermal expansion tank (Mdl. XT)
- Soft seated check valve (Model 40XL2)
- Shock arrester (Model 1260XL)
- QT-SET Quick Test Fitting Set



Dimensions & Weights (do not include pkg.)

MODEL SIZE		DIMENSIONS (approximate)														WITH BALL VALVES	
		A		B		C		D		E		F		G			
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg
3/4	20	12	305	7 3/4	197	2 1/8	54	3	76	3 1/2	89	5	127	16 1/8	410	12	5.5
1	25	13	330	7 3/4	197	2 1/8	54	3	76	3 1/2	89	5	127	17 3/8	441	14	6.4
1 1/4	32	17	432	10 15/16	278	2 3/4	70	3 1/2	89	5	127	6 3/4	171	22 9/16	573	28	12.7
1 1/2	40	17 3/8	441	10 15/16	278	2 3/4	70	3 1/2	89	5	127	6 3/4	171	24 1/16	611	28	12.7
2	50	18 1/2	470	10 15/16	278	2 3/4	70	3 1/2	89	5	127	6 3/4	171	26 1/2	673	34	15.4

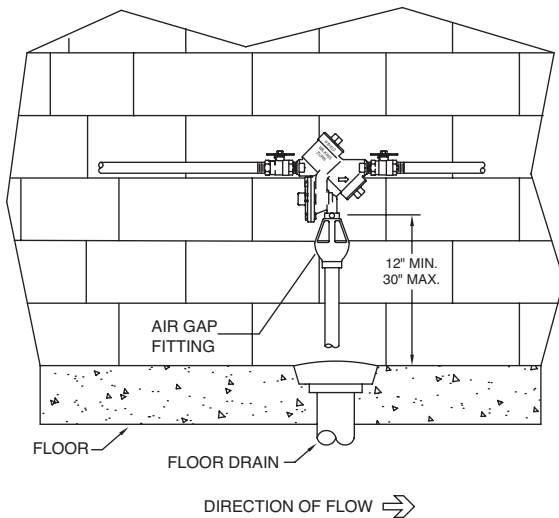
MODEL 975XL2 3/4", 1", 1 1/4", 1 1/2" & 2" (STANDARD & METRIC)



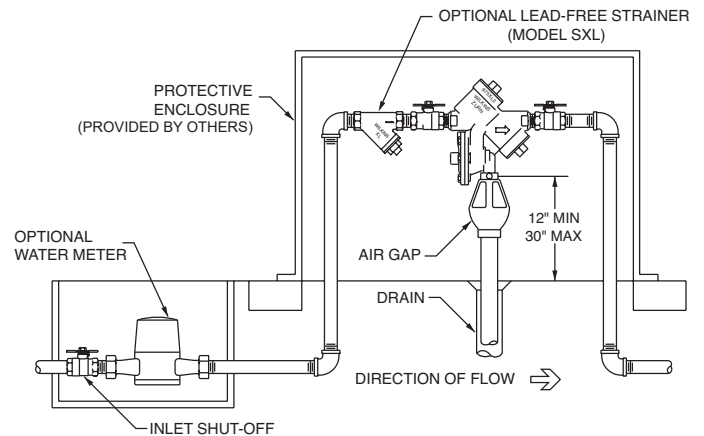
Typical Installation

Local codes shall govern installation requirements. To be installed in accordance with the manufacturers' instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. The installation shall be made so that no part of the unit can be submerged.

Capacity thru Schedule 40 Pipe				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
1/8"	1	1	2	3
1/4"	2	2	3	5
3/8"	3	4	6	9
1/2"	5	7	9	14
3/4"	8	12	17	25
1"	13	20	27	40
1 1/4"	23	35	47	70
1 1/2"	32	48	63	95
2"	52	78	105	167



INDOOR INSTALLATION



OUTDOOR INSTALLATION

Specifications

The Reduced Pressure Principle Backflow Preventer shall be certified to NSF/ANSI/CAN 61, shall be ASSE® Listed 1013, rated to 180°F, and supplied with full port ball valves. The main body and access covers shall be low lead bronze (ASTM B 584), the seat ring and all internal polymers shall be Noryl™ and the seat disc elastomers shall be silicone. The first and second checks shall be accessible for maintenance without removing the relief valve or the entire device from the line. If installed indoors, the installation shall be supplied with an air gap adapter. The Reduced Pressure Principle Backflow Preventer shall be a ZURN WILKINS Model 975XL2.



Deluxe Twin Configuration

VANTAGE® PTC TWIN SOFTENERS

Vantage® PTC twin softeners for commercial applications offer a flexible, reliable and feature rich solution to reduce the level of hardness in the feed water by filtering the water through a cation resin bed. Softeners are necessary to remove hardness or calcium that can clog or minimize the effectiveness of other sensitive downstream devices, such as RO membranes or boilers.

Systems are available in a twin configuration using a specialized valve where only one tank is in operation and the other is in standby.

The Vantage PTC twin softener vessel diameters start at 10" (25cm) and end at 24" (61cm). Each softener contains high capacity cation resin for this ion exchange process.

The Vantage PTC twin softener comes in two models: Economy and Deluxe.

- Economy - Controlled by a digital controller and composite valve
- Deluxe - Controlled by a digital controller and a lead free brass valve

The Economy and Deluxe twin softener models will only operate in the following flow:

- Simplex Operation - single vessel operation. Each twin softener will operate in a 1+1 or standby configuration.
- When one tank has exhausted the resin bed it will regenerate with softened water which will provide higher quality regeneration. A system lockout is available.

VANTAGE PTC SYSTEM FEATURES

- Regeneration with softened water
- 24vac systems with UL® and cUL® Listed transformers
- Feature-rich digital controller for networked systems
- Tanks and valves are NSF/WQA* approved
- Corrosion resistant fiberglass vessels

VANTAGE PTC SYSTEM BENEFITS

- Provides a higher quality regeneration while minimizing calcium leakage
- Complies with regulatory and safety requirements
- Offers maximum operational flow and configuration flexibility to the customer
- Requires stringent testing for leaching contaminants, providing a safe system
- Prevents rust and increases longevity of the vessel

* NSF = National Science Foundation
WQA = Water Quality Association

NOMINAL DESIGN PARAMETERS

Configurations	Twin Alternating
Inlet Pressure	30 psig minimum
Inlet Temperature	65° F
Sizing	3 gpm/ft ³
Bed Depth	30 to 38 inches of Evoqua Water Technologies. C-211 strong acid cation resin.
Freeboard	26 to 37% of tank volume
Capacities	30 Kgrains/ft ³
Free Chlorine	0.5 ppm
Regeneration	15 lb. NaCl/ft ³



Economy Twin Configuration

SPECIFICATIONS *

Recommended flow
for RO Applications
(hardness dependant)

Model Number	Tank Dia. (Inches)	Media Volume (cuft)	Minimum Flow (min)*	Nominal Flow @ 3 GPM/ Cuft	Nominal Flow @ 6 GPM/ Cuft	Service Flow @ 15 psi	Maximum Temporary Service Flow @ 25 psi	Capacity (Kgrains) **	Economy Valve Size	Deluxe Valve Size
PTCSW_00-10X54	10	1.5	1.1	4.5	9.0	16.0	22.0	45	1"	1"
PTCSW_00-12X52	12	2	1.6	6.0	12.0	16.0	22.0	60	1"	1"
PTCSW_00-14X65	14	3	2.1	9.0	18.0	18.0	24.0	90	1.5"	1" / 1.5"
PTCSW_00-16X65	16	4	2.8	12.0	24.0	18.0	24.0	120	1.5"	1" / 1.5"
PTCSW_00-18X65	18	5	3.5	15.0	30.0	35.0	46.0	150	N/A	1.5"
PTCSW_00-21X62	21	7	4.8	19.5	39.0	35.0	46.0	195	N/A	1.5"
PTCSW_00-24X72	24	10	6.3	27.0	46.0	35.0	46.0	270	N/A	1.5"

To calculate metrics: 1 inch equals 2.54 centimeter, 1 gallon per minute equals 3.79 liters per minute.

_ defines the trim package selected (E-Economy, D-Deluxe)

* Flow rates can vary based on Valve Size and Trim Package selected

** Based on 30 Kgrains/cuft of resin regenerated @ 15 lbs NaCl / cuft and service flow at 3 gpm / cuft

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Subject to change without notice

HPS-PTCTWINDS-0717



Deluxe Triplex Configuration

VANTAGE® PTC CARBON FILTERS

Vantage® PTC carbon filters for commercial applications offer a flexible, reliable and feature-rich solution to remove Chlorine and Chloramines. They also reduce organics from your feed water - substances that are harmful to RO membranes and other sensitive downstream devices.

Carbon filter vessel diameters range from 10" (25.4cm) to 48" (122cm). Each carbon filter contains acid washed granular activated carbon media.

Vantage PTC carbon filters are available in three models: Economy, Plus, and Deluxe.

- Economy - Controlled by a digital controller and composite valve
- Plus - Controlled by mechanical time clock and a lead free brass valve
- Deluxe - Controlled by a feature-rich digital controller and a lead free brass valve

The Deluxe models are available in four vessel configurations: Simplex, Duplex, Triplex and Quadplex.

Deluxe models are available in three Operational Flow configurations depending on the number of vessels.

- Simplex Operation - single vessel operation
- Parallel - all vessels (2-4) working together
- X + N - two, three or four vessels working together as flow increases and then vessels are placed in stand-by as flow decreases.

VANTAGE PTC SYSTEM FEATURES

- Optional differential pressure switch
- 24vac systems with UL® & cUL® Listed transformers
- Feature-rich digital controller for networked systems
- Tanks and valves are NSF/WQA* approved
- Corrosion-resistant fiberglass vessels

VANTAGE PTC SYSTEM BENEFITS

- Minimizes backwash and water usage while maximizing duration between backwashes
- Complies with regulatory and safety requirements
- Offers maximum operational flow and configuration flexibility to the customer
- Requires stringent testing for leaching of contaminants, providing a safe system
- Prevents rust and increases longevity of the vessel

* NSF = National Science Foundation
WQA = Water Quality Association

Deluxe models are also available with a side mount valve configuration on the 36", 42" and 48" diameter vessels.

- Minimizes climbing up a ladder to service the valve, enhancing safety
- Provides for more even flow through the Media Bed on larger diameter vessels

The Economy and Plus models will only operate in the following flows:

- Simplex Operation - single vessel operation. Multiple simplex units may be purchased to work together, however they will not function as one system as with the Deluxe model. A system lockout is available.

NOMINAL DESIGN PARAMETERS

Configurations	Simplex, Duplex, Triplex or Quadplex
Inlet Pressure	30 psig minimum
Inlet Temperature	65° F
Sizing	1 - 3 gpm/ft ³
Bed Depth*	35 to 49 inches
Freeboard	33 to 45% of tank volume
Backwash	12.8 gpm/ft ²

SPECIFICATIONS *

Carbon Filter	Vessel Diameter	Media Height (inches)	Media Volume (ft ³)	Min Flow Rate (.5 gpm ft ³)	Nominal Flow Rate Chloramine Removal (.75 gpm ft ³)	Nominal Flow Rate TOC Removal (1 gpm ft ³)	Nominal Flow Rate Chlorine Removal (3 gpm ft ³)	Temporary Max Flow Rate (6 gpm ft ³)	Economy Valve size	Plus & Deluxe Valve Size options
PTCCS_xx10X54	10	37	1.7	1.1	1.1	1.5	4.5	9.0	1"	1"
PTCCS_xx12X52	12	35	2.3	1.6	1.5	2.0	6.0	12.0	1"	1"
PTCCS_xx14X65	14	38	3.4	2.1	2.3	3.0	9.0	18.0	1"	1" / 1.5"
PTCCS_xx16X65	16	40	4.6	2.8	3.0	4.0	12.0	24.0	1"	1" / 1.5"
PTCCS_xx18X65	18	46	6.8	3.5	4.5	6.0	18.0	36.0	1.5"	1.5" / 2"
PTCCS_xx21X62	21	45	9.0	4.8	6.0	8.0	24.0	48.0	N/A	1.5" / 2"
PTCCS_xx24X65	24	49	12.8	6.3	8.3	11.0	33.0	66.0	N/A	1.5" / 2"
PTCCS_xx30X72	30	48	19.8	9.8	12.8	17.0	51.0	102.0	N/A	2" / 3"
PTCCS_xx36X72	36	48	28.0	14.1	18.0	24.0	72.0	144.0	N/A	2" / 3"
PTCCS_xx42X72	42	46	36.5	19.2	24.0	32.0	96.0	192.0	N/A	3"
PTCCS_xx48X72	48	46	48.5	25.1	31.5	42.0	126.0	252.0	N/A	3"

* Flow rates can vary based on Valve Size and Trim Package selected

EVOQUA WATER TECHNOLOGIES IS A LEADER IN THE WATER TREATMENT SERVICE INDUSTRY

A customizable contract allows you to decide the level and frequency that is best for your facility. Our trained and certified field service technicians are ready to partner with you for your success.

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HPS-PTCCARBON-DS-0717

VANTAGE® M41 GENERAL PURPOSE (GP) SERIES REVERSE OSMOSIS UNITS

THE CLEAR ADVANTAGE IN MEMBRANE SYSTEMS

Vantage® Reverse Osmosis (RO) units are pre-engineered and pre-assembled units designed for a variety of industrial and commercial applications. Vantage RO units offer you the greatest flexibility possible from a standard unit. Product lines within the Vantage single-pass RO family include the MicRO-Flex, M21, M41RS, M43, M83, M84 and M86; each designed for a specific range of flow rates.

Each M41 GP series RO unit consists of a vertical centrifugal high pressure feed pump, fiberglass reinforcement plastic (FRP) pressure vessels, spiral wound thin-film composite (TFC) membranes, PVC/PEX low pressure feed, reject, recycle and product piping, stainless steel high pressure piping/rubber hose and a microprocessor controller.

Vantage M41 GP Unit Benefits

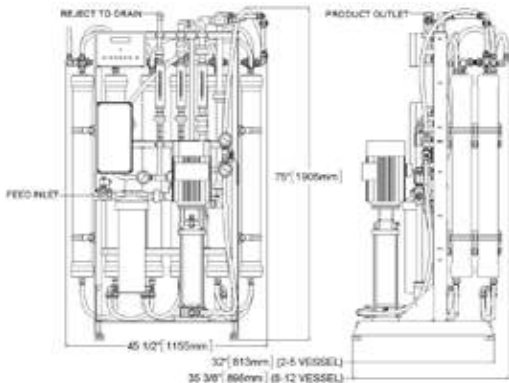
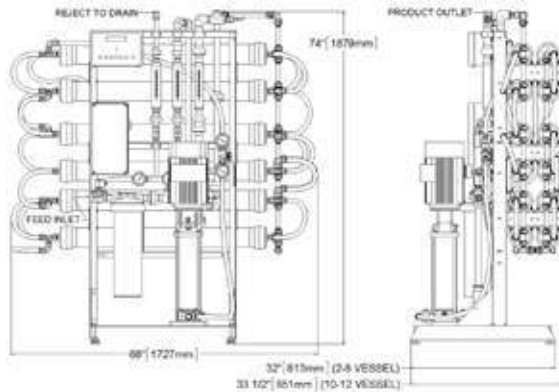
- Low energy TFC membranes ensure optimum water quality
- Microprocessor-based controller provides user-friendly programmable controls
- Auxiliary equipment interface provides system-wide control
- Reject recycle maximizes water recovery and minimizes waste
- Compact footprint saves valuable floor space
- Configurable in horizontal or vertical RO housing orientation to either maximize membrane serviceability or minimize footprint
- Easily expandable between 2 to 12 membrane units to provide increased flow demand to meet customer requirements and future needs (see equipment specifications for available expansion options)



M41GP 12 MEMBRANE VERTICAL UNIT

MODEL NO	Flow Rate Specifications GPM Nominal (m ³ /hr)								Vessel Staging	Membrane Quantity	Customer Connection Specifications			Approximate Shipping Weight			
	Product		Feed		Reject		Reject/Recycle				Feed	(FNPT) Product	Reject	Horizontal Orientation		Vertical Orientation	
	gpm	m ³ /hr	gpm	m ³ /hr	gpm	m ³ /hr	gpm	m ³ /hr						lb	kg	lb	kg
M41RGP002	2.8	0.6	3.7	0.8	0.9	0.2	4.5	1.0	1:1	2	1"	3/4"	1/2"	360	163	360	163
M41RGP003	4	0.9	5.3	1.2	1.3	0.3	3.5	0.8	1:1:1	3	1"	3/4"	1/2"	392	178	392	178
M41RGP004	5.2	1.2	6.9	1.6	1.7	0.4	2.75	0.6	1:1:1:1	4	1"	3/4"	1/2"	423	192	423	192
M41RGP005	6.3	1.4	8.4	1.9	2.1	0.5	2	0.5	1:1:1:1:1	5	1"	3/4"	1/2"	455	206	455	206
M41RGP006	7.5	1.7	10.0	2.3	2.5	0.6	3	0.7	1:1:1:1:1:1	6	1"	3/4"	1/2"	490	222	541	245
M41RGP008	10	2.3	13.3	3.0	3.3	0.7	6	1.4	2:2:1:1:1:1	8	1"	1"	1/2"	658	298	608	276
M41RGP010	12.5	2.8	16.7	3.8	4.2	1.0	8	1.8	3:2:2:1:1:1	10	1"	1"	1/2"	688	312	688	312
M41RGP012	15	3.4	20.0	4.5	5	1.1	8	1.8	3:3:2:2:1:1	12	1"	1"	1/2"	759	344	768	348

DIMENSIONS



NOMINAL DESIGN PARAMETERS

Configuration	Multi-Stage, Single Pass
Feed Water Source	Well or Softened
Prefiltration Requirements	5 μ nominal (included)
Feed Water Fouling Index	Silt Density Index (SDI) < 3
Feed Water Temperature	77°F (25°C)*
Inlet Pressure Requirement	25 - 50 PSIG (172 - 345 KPA)
Product Pressure Available	15 PSIG (103 KPA)
System Recover (Nominal)	75%
Performance Basis	A specific computer projection must be run for each individual application.

* Lower temperature may require larger booster pump.

If any of the feed water parameters are not within the limits given, contact Evoqua Water Technologies Technical Support.



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EQ 1500

EQUALIZATION AND WATER STORAGE TANKS

The Equalization and Water Storage Tanks are specifically designed to be used with the transfer pump system. The tanks are used to provide the proper holding capacity before a wastewater treatment system or to hold purified water from an ion exchange or reverse osmosis system.

The tanks are available in either high density polyethylene (HDPE) or fiberglass (FRP). The tank can be supplied as either open top construction features or with a dome/cover.

The tanks come complete with a level control and all of the associated bulk head fittings.

Available Standard Options

- Ultrasonic Level Control
- Redundant Level Control
- Non-corrosive construction (HDPE or FRP)
- Level control included (floats)
- Integrate with other wastewater products

EQUALIZATION AND WATER STORAGE TANKS (HDPE) SPECIFICATIONS

Model Number	EQ-250-HDPE	EQ-500-HDPE	EQ-1000-HDPE	EQ-1500-HDPE	EQ-3200-HDPE	EQ-6500-HDPE	EQ-9000-HDPE	EQ-10000-HDPE	EQ-12000-HDPE
Tank Volume	250 gallons 0.95 m ³	500 gallons 1.9 m ³	1,000 gallons 3.8 m ³	1,500 gallons 5.7 m ³	3,200 gallons 12.1 m ³	6,500 gallons 24.6 m ³	9,000 gallons 34.0 m ³	10,000 gallons 37.9 m ³	12,000 gallons 45.4 m ³
Material of Construction	HDPE Dome Top	HDPE Dome Top	HDPE Dome Top	HDPE Dome Top	HDPE Dome Top	HDPE Dome Top	HDPE Dome Top	HDPE Dome Top	HDPE Dome Top
Drain Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve
Level Control	Float	Float	Float	Float	Float	Float	Float	Float	Float
Dimensions (Dia. x H)	43" x 59" 1,092 x 1,499mm	45-1/2" x 82-3/4" 1,156 x 2,102mm	64-1/2" x 88-1/4" 1,638 x 2,242 mm	64" x 126- 1/2" 1,626 x 3,213mm	95-3/4" x 116-3/4" 2,432 x 2,965 mm	120" x 152- 1/4" 3,048 x 3,867 mm	141" x 145" 3,581 x 3,683mm	141" x 159" 3,581 x 4,039mm	141" x 192" 3,581 x 4,877mm
Manway	8"	16"	16"	16"	16"	16"	16"	16"	16"
Shipping Weight	100 lbs (45 kg)	120 lbs (54 kg)	220 lbs (100 kg)	365 lbs (166 kg)	660 lbs (299 kg)	1,595 lbs (723 kg)	1,940 lbs (880 kg)	2,310 lbs (1,048 kg)	3,100 lbs (1,406 kg)
Operating Weight	2,185 lbs (991 kg)	4,290 lbs (1,946 kg)	8,560 lbs (3,883 kg)	12,875 lbs (5,840 kg)	27,348 lbs (12,405 kg)	58,307 lbs (26,448 kg)	77,000 lbs (34,927 kg)	85,710 lbs (38,877 kg)	103,180 lbs (46,802 kg)

EQUALIZATION AND WATER STORAGE TANKS (FRP) SPECIFICATIONS

Model Number	EQ-500-FRP	EQ-1000-FRP	EQ-1500-FRP	EQ-3200-FRP	EQ-6500-FRP	EQ-9000-FRP	EQ-10000-FRP	EQ-12000-FRP
Tank Volume	500 gallons 1.9 m ³	1,000 gallons 3.8 m ³	1,500 gallons 5.7 m ³	3,200 gallons 12.1 m ³	6,500 gallons 24.6 m ³	9,000 gallons 34.0 m ³	10,000 gallons 37.9 m ³	12,000 gallons 45.4 m ³
Material of Construction	FRP Open Top w/cover	FRP Open Top w/cover	FRP Dome Top	FRP Dome Top	FRP Dome Top	FRP Dome Top	FRP Dome Top	FRP Dome Top
Drain Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve	2" True Union Ball Valve
Level Control	Float	Float	Float	Float	Float	Float	Float	Float
Dimensions (Dia. x H)	42" x 66" 1,067 x 1,676 mm	60" x 84" 1,524 x 2,134 mm	72" x 84" 1,829 x 2,134 mm	96" x 108" 2,438 x 2,743 mm	96" x 210" 2,438 x 5,334 mm	120" x 186" 3,048 x 4,724 mm	120" x 210" 3,048 x 5,334 mm	144" x 168" 3,658 x 4,267 mm
Manway	8"	16"	24"	24"	24"	24"	24"	24"
Shipping Weight	230 lbs (104 kg)	406 lbs (186 kg)	560 lbs (254 kg)	947 lbs (430 kg)	1,950 lbs (885 kg)	2,200 lbs (998 kg)	2,730 lbs (1,238 kg)	3,745 lbs (1,699 kg)
Operating Weight	4,400 lbs (1,996 kg)	8,746 lbs (3,967 kg)	13,070 lbs (5,928 kg)	27,635 lbs (12,535 kg)	57,200 lbs (25,945 kg)	78,700 lbs (35,697 kg)	87,730 lbs (39,793 kg)	105,745 lbs (47,965 kg)



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Grundfos CR high pressure pumps

High pressure pumps

In a number of industrial applications within the water treatment industry (such as filtration) and the washing and cleaning industry, high pressure is required for successful daily production. It takes a special pump to handle very high system pressure. Grundfos has developed the CR high pressure

pumps specifically to cope with high pressure over 362 psi (25 bar). The CR high pressure program makes it possible to deliver very high pressure for a multitude of applications that deal with liquids from potable water to industrial liquids.



CR high pressure program advantages

Complete flow range

The CR High Pressure comes in two versions — as a single pump solution or as a double pump solution. In applications where a low flow is required, a single pump is installed. Where a large flow is important for a successful process, two pumps are mounted in series. Grundfos can supply a high-pressure pump solution for either situation.

Robust design

The robust construction of the CR high pressure pumps makes it possible for the pumps to handle very high system pressures. The high-pressure pumps have the same long lifespan as the other pumps in the CR range despite the fact that they are constantly working under extreme conditions.

Technical data	
Max. discharge pressure	696 psi (48 bar)
Max. ambient temp.	104°F (40° C)
Max. liquid temp.	248°F (120° C)
Min. flow	No change from standard CR

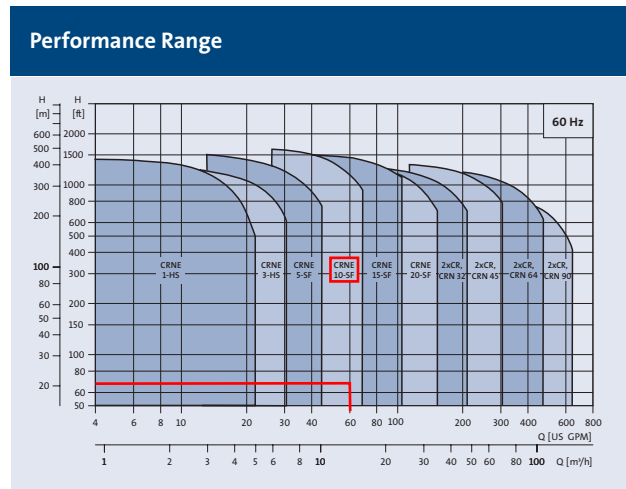
Worldwide pump supplier

Being a worldwide pump supplier, Grundfos has committed itself to provide its clients with a global, reliable and efficient service network. Our experienced team of technicians are ready to provide service wherever in the world you are, whenever you need it.



CR range

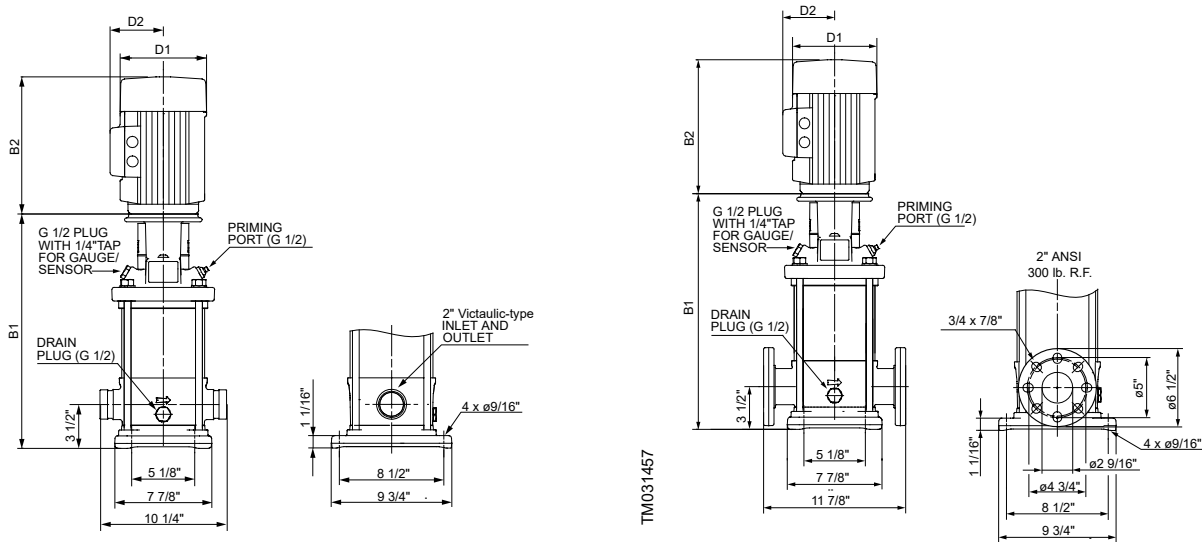
The CR high pressure program is available in all the CR standard material versions and can deliver a maximum operating pressure of up to 725 psi (50 bar). In applications where the need of pressure and flow exceeds the CR performance range, Grundfos offers our high-pressure boosters: BM, BMB, and BME(T).



L-CR-SL-012 | Rev. 1/04
 PRINTED IN USA

Subject to alterations

CRN 10



Pump type	P2 [HP]	Ph.	PJE ³³⁾	ANSI dimensions [inch (mm)]						Net wt. [lb (kg)]	
				B1	TEFC			ODP			
					D1	D2	B1+B2	D1	D2		B1+B2
CRN 10-1	3/4	1	●	15.20 (386)	7.64 (194)	5.87 (149)	26.50 (673)	-	-	-	99.21 (45)
		3	●	15.20 (386)	6.69 (170)	5.51 (140)	23.86 (606)	-	-	-	85.98 (39)
CRN 10-2	1 1/2	1	●	15.20 (386)	7.64 (194)	5.87 (149)	27.68 (703)	-	-	-	105.8 (48)
		3	●	15.20 (386)	7.64 (194)	5.87 (149)	26.89 (683)	-	-	-	105.8 (48)
CRN 10-3	3	1	●	17.13 (435)	9.45 (240)	8.07 (205)	33.58 (853)	-	-	-	158.7 (72)
		3	●	17.13 (435)	9.45 (240)	6.69 (170)	30.83 (783)	-	-	-	156.5 (71)
CRN 10-4	3	1	●	18.31 (465)	9.45 (240)	8.07 (205)	34.76 (883)	-	-	-	160.9 (73)
		3	●	18.31 (465)	9.45 (240)	6.69 (170)	32.01 (813)	-	-	-	158.7 (72)
CRN 10-5	5	1	●	19.49 (495)	10.98 (279)	8.43 (214)	38.82 (986)	-	-	-	218.3 (99)
		3	●	19.49 (495)	9.45 (240)	6.69 (170)	34.76 (883)	-	-	-	174.2 (79)
CRN 10-6	5	1	●	20.67 (525)	10.98 (279)	8.43 (214)	40.00 (1016)	-	-	-	220.5 (100)
		3	●	20.67 (525)	9.45 (240)	6.69 (170)	35.94 (913)	-	-	-	178.6 (81)
CRN 10-7	7 1/2	1	●	22.17 (563)	10.98 (279)	8.43 (214)	41.50 (1054)	-	-	-	249.1 (113)
		3	●	22.17 (563)	10.98 (279)	7.95 (202)	39.13 (994)	-	-	-	235.9 (107)
CRN 10-8	7 1/2	1	●	23.35 (593)	10.98 (279)	8.43 (214)	42.68 (1084)	-	-	-	251.3 (114)
		3	●	23.35 (593)	10.98 (279)	7.95 (202)	40.32 (1024)	-	-	-	238.1 (108)
CRN 10-9	7 1/2	1	●	24.53 (623)	10.98 (279)	8.43 (214)	43.86 (1114)	-	-	-	253.5 (115)
		3	●	24.53 (623)	10.98 (279)	7.95 (202)	41.50 (1054)	-	-	-	240.3 (109)
CRN 10-10	7 1/2	1	●	25.71 (653)	10.98 (279)	8.43 (214)	45.04 (1144)	-	-	-	255.7 (116)
		3	●	25.71 (653)	10.98 (279)	7.95 (202)	42.68 (1084)	-	-	-	244.7 (111)
CRN 10-12	10	1	●	28.07 (713)	10.98 (279)	8.43 (214)	47.40 (1204)	-	-	-	266.8 (121)
		3	●	28.07 (713)	10.98 (279)	7.95 (202)	46.89 (1191)	-	-	-	277.8 (126)
CRN 10-14	15	3	●	32.95 (837)	13.19 (335)	9.45 (240)	51.77 (1315)	11.57 (294)	9.45 (240)	51.61 (1311)	308.6 (140)
CRN 10-16	15	3	●	35.32 (897)	13.19 (335)	9.45 (240)	54.13 (1375)	11.57 (294)	9.45 (240)	53.98 (1371)	313.1 (142)
CRN 10-17	15	3	●	37.68 (957)	13.19 (335)	9.45 (240)	56.50 (1435)	11.57 (294)	9.45 (240)	56.34 (1431)	317.5 (144)

³³⁾PJE flanged pump dimensions B1 and B1+B2 are 1 inch (25 mm) less than the corresponding ANSI dimensions, and the net weight is approximately 9 lb (4 kg) less.

● Available.

STRUCTURAL® POLY GLASS® VESSELS

PROVEN PERFORMANCE IN RESIDENTIAL AND LIGHT COMMERCIAL APPLICATIONS



Pentair® Structural® Poly Glass Vessels have been the industry standard for quality and performance for over 30 years. Featuring a one piece, seamless high density polyethylene liner and an encapsulated, leak free engineered polymer inlet, Structural Poly Glass Vessels are designed to provide you with years of worry free performance.

FEATURES/BENEFITS

For residential and light commercial water softener/filtration applications

Slim diameter with capacities from 2 to 49 gallons

Unmatched strength and chemical resistance

10-year warranty for 6" - 13" vessels

5-year warranty for 14" - 16" vessels

MATERIAL OF CONSTRUCTION

Inner shell of high density polyethylene

Threaded inlet in various sizes: 2.5", 4", 4.5"

APPLICATIONS

Residential/light commercial softening

Residential/light commercial filtration

Portable exchange tanks

OPERATING PARAMETERS

Maximum operating pressure – 150 psi

Maximum operating temperature – 120° F

PENTAIR DESIGN PARAMETERS

Safety factor – 4:1

Minimum burst at 600 psi

Tested to 250,000 cycles without leakage

NSF/ANSI STD. 44 DESIGN PARAMETERS

Safety factor – 4:1

Minimum burst at 600 psi

Tested to 100,000 cycles without leakage

COLOR OPTIONS

AL – Almond

GR – Gray

BL – Blue

NA – Natural

BK – Black

Vessels tested and certified by the Water Quality Association (WQA) to NSF/ANSI Std. 44 for material safety and structural integrity requirements and Std. 372 for low lead compliance.



SPECIFICATIONS

VESSEL	PART NO.	DESCRIPTION	HEIGHT W/BASE INCHES / MM	CAPACITY GALLONS / LITERS	CUBIC FEET
6" DIA.	CH30109	0613 PG 2.5"T	13.4 / 340	1.1 / 4.2	0.15
	CH30127	0618 PG 2.5"T	18.8 / 479	1.8 / 6.8	0.24
	CH30151	0635 PG 2.5"T	35.7 / 906	3.8 / 14.4	0.51
7" DIA.	CH30190	0735 PG 2.5"T	35.4 / 898	5.2 / 19.7	0.7
	CH30213	0744 PG 2.5"T	44.0 / 1120	6.7 / 25.4	0.9
8" DIA.	CH31835	0818 PG 2.5"T	18.7 / 475	3.3 / 12.5	0.44
	CH33858	0824 PG 2.5"T	24.4 / 620	4.5 / 17.0	0.6
	CH31836	0830 PG 2.5"T	30.3 / 770	5.9 / 22.3	0.79
	CH30264	0835 PG 2.5"T	35.39 / 899	6.6 / 25	0.88
	CH30286	0840 PG 2.5"T	40.1 / 1018	7.8 / 29.5	1
	CH30305	0844 PG 2.5"T	44.5 / 1130	8.7 / 32.9	1.2
9" DIA.	CH30317	0918 PG 2.5"T	18.4 / 467	3.9 / 14.8	0.52
	CH30347	0935 PG 2.5"T	35.3 / 896	8.3 / 31.4	1.1
	CH30360	0940 PG 2.5"T	39.8 / 1010	9.5 / 36	1.3
	CH30367	0942 PG 2.5"T	41.9 / 1063	10.1 / 38.2	1.4
	CH30383	0948 PG 2.5"T	48.7 / 1237	11.8 / 44.7	1.6
10" DIA.	CH31357	1018 PG 2.5"T	18.9 / 480	4.9 / 18.5	0.65
	CH30460	1035 PG 2.5"T	35.5 / 902	10.2 / 38.6	1.4
	CH30491	1040 PG 2.5"T	40.3 / 1024	11.5 / 43.5	1.54
	CH30523	1044 PG 2.5"T	44.6 / 1134	13.1 / 49.6	1.8
	Consult Factory	1044 PG 2.5"T 1.25" THD	44.9 / 1142	13.1 / 49.6	1.8
	CH30546	1047 PG 2.5"T	47.7 / 1211	15.1 / 57.2	2
	CH30579	1054 PG 2.5"T	54.4 / 1383	16.4 / 62.1	2.2
	Consult Factory	1054 PG 2.5"T 1.25" THD	54.4 / 1383	16.4 / 62.1	2.2
	CH31478	1060 PG 2.5"T	61.3 / 1558	18.3 / 69.3	2.45
12" DIA	CH30615	1242 PG 2.5"T	43.0 / 1093	19.1 / 72.3	2.6
	CH30617	1242 PG 4.5"T	43.1 / 1095	19.1 / 72.3	2.6
	CH30646	1248 PG 2.5"T	49.0 / 1245	20.6 / 78	2.8
	CH30647	1248 PG 4"T	49.4 / 1256	20.6 / 78	2.8
	Consult Factory	1248 PG 2.5"T 1.25" TDH	49.0 / 1244	20.6 / 78	2.8
	CH30666	1252 PG 2.5"T	53.0 / 1346	22.2 / 84	2.97
	Consult Factory	1252 PG 2.5"T 1.25" TDH	53.0 / 1346	22.2 / 84	2.97
	CH30669	1252 PG 4"T	53.4 / 1356	22.2 / 84	2.97
	CH32127	1252 PG 4.5"T	53.14 / 1350	22.2 / 84	2.97
13" DIA.	CH30721	1354 PG 2.5"T	54.3 / 1380	27 / 102	3.6
	Consult Factory	1354 PG 2.5"T 1.25" TDH	54.3 / 1380	27 / 102	3.6
	30724	1354 4"T	54.9 / 1394	27 / 102	3.6
14" DIA.	CH30745	1447 4"T	47.0 / 1195	27.5 / 104	3.7
	CH32006	1447 4.5"T	47.3 / 1200	27.5 / 104	3.7
	Consult Factory	1454 4"T	54.7 / 1388	32.8 / 124	4.4
	CH30785	1465 4"T	66.1 / 1679	38 / 144	5.1
16" DIA	CH34368	1633 4"T	34.8 / 885	22.4 / 85	3
	CH30864	1653 4"T	55.0 / 1397	40 / 151	5.3
	CH30912	1665 4"T	66.2 / 1682	49 / 186	6.6
	CH30868	1665 4"T 4"B	78.8 / 2002	49 / 186	6.6



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UC Davis Medical Center (UCDMC) – SESP Central Processing – Scoping Report

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OVERVIEW

The following report outlines the existing electrical conditions associated with the Central Processing unit on the basement floor of the SESP building. Per facility and Central Processing staff, the mechanical piping and pumps are undersized for current capacity. A site investigation walk was performed on 02/28/23 to observe existing Central Processing conditions.

EXISTING CONDITIONS

The existing Central Processing department is located on the lower level of the Surgery and Emergency Services Pavilion (SESP) building of the UC Davis Medical Center.

Power – The Central Processing department is currently served by Normal and Equipment branch panels located in Electrical Room #0P511. There are limited number of Equipment branch circuits located within the Central Processing department. Only (1) medivator was observed to be on Equipment branch. The remaining medivators, washers, sterilizers, ultrasonic cleaners and cart washers are all currently powered by Normal branch power. The high voltage panel (480/277V) serving the space is the two-section panel ‘NGZH1’ and ‘NGZH2’. The 208/120V panel serving the space is the two-section panel ‘NGZL1’ and ‘NGZL2’. Each of these Normal branch panels have sufficient space for new circuit breakers.

Lighting – The project area is currently served by Normal Branch lighting. Light levels are sufficient for the space. Life Safety and Normal Branch lighting is provided in the project circulation areas and path of egress.

PROPOSED NEW WORK

Refer to Architectural schematic for phasing of new work.

Power – For the new equipment, it is recommended that at least (1) of each type of equipment be connected to the generator backed up Equipment branch. The high voltage (480/277V) Equipment branch panel ‘EQGZH1’ is protected by a 225A/3P circuit breaker and has sufficient

space for new circuit breakers to serve the Central Processing department. The 208/120V Equipment branch panel 'EQGZL1' only has (3) observable spaces for new breakers and is protected by a 50A/3P main circuit breaker.

See mechanical narrative for recommended upgrades to the mechanical system. New electrical work will also include providing power for new and/or upgraded mechanical equipment serving Central Processing.

Lighting – There are no proposed modifications to the existing Central Processing lighting or controls.

Telecommunications – No proposed modifications to the existing telecommunications system.

RISKS AND RECOMMENDATIONS

The current panel schedules for all panels do not completely match the record drawings. Thus, load analysis will need to be completed for the panels within the project area to confirm sufficient capacity for additional loads.

Coordination studies will need to be completed for all new and existing repurposed circuit breakers on the emergency branches of power per HCAi PIN 70. Panel 'EQGZL1' is protected by a 50A/3P main circuit breaker and may have coordination issues with the downstream 20A/1P branch circuit breakers. Assuming coordination of these breakers is an issue, the project would either need a new transformer and panel to serve the new 208/120V loads within Central Processing, or to utilize another Equipment branch panel with sufficient space and breaker sizes.

Short Circuit Current analysis needs be completed for new work to confirm new equipment disconnects are properly rated to withstand the available fault current.

END OF NARRATIVE