STATEMENT OF WORK
FOR

CONSOLIDATED CHILLED WATER PIPING AND HEATING PIPING INSTALLATION

Project: 612A4-18-233

VA NORTHERN CALIFORNIA HEALTH CARE SYSTEM (VANCHCS), MATHER, CALIFORNIA.

March 5, 2018

1. General: The contractor shall furnish all services, materials, supplies, investigations, and project supervision as required per this Statement of work and VA design and construction Procedures.

Background: The VANCHCS, campus located at 10535 Hospital Way, Mather, California. This project will include replacement and consolidation of existing Chilled Water and Hot Water piping on roof of building 650. The Energy Center (Building 703) is located on the campus and serve, building 650 and other buildings. Figure 1 is a map of the campus, it identifies the buildings that are served by the Energy Center, with the exception of building 703. Building 703 houses CH-3, associated cooling tower and pumps. The Energy Center provides chilled water and hydronic heating to Building 650 Air Handling Units (AHUs) and other building AHUs, See Table 1 for an equipment list. Figure 2, is a diagram of existing piping system.

Existing Chilled Water and Hydronic Piping: There are four chilled water loops that serve the campus. One of the loop is serves Building 650, and other building listed in Table 1 from the common 8-inch heater inside chiller room, building 703 and from that reduced to 6 inches on roof and branch off to each Air Handling Units (AHUs) on roof of building 650. The intend of this project is to run new 8" CHW supply and Return (CHWS/R) from main CHW headers inside the chiller room and 6 inches How Water Supply and Return (HWS/R) from main headers inside the mechanical room building 703. All the new piping shall run parallel on roof and branch off to each existing AHUs.

2. Scope of Work

2.1 Contractor shall have a professional mechanical engineering licensed in California during the piping layouts and construction. Prior to start work, contractor shall perform a thorough field survey of the existing site condition and features. Verify at project site the exact size and clearance of all existing piping being relocated, extended, connected to or removed to allow new piping.

2.2 Contractor shall install new 8-inch Chilled Water Supply and Return (CHWS/R) from main headers and 6-inch Hot Water Supply and Return (HWS/R) from main headers inside the chiller room and mechanical room building 703. These new piping shall run thru exterior mechanical building wall up to roof building 650. The new piping shall run along the north wall of building 650 (Pancake roof), and should not obstruct any existing windows or equipment. The new piping shall terminate approximately 15 feet from the existing Photovoltaics panels location and provide blind flange at the end.

2.3 An existing 3-inch natural gas pipe currently runs from B-650 roof top to B-645. Contractor shall re-rote/relocate to run parallel with new piping.

2.4 Before any chilled water supply outage, contractor shall obtain a Mobil 250-ton chiller with 40 HP, 1400 GPM in-line pump. The temporary chiller will be connected to existing temporary piping outside the building 703. The temporary chiller will use to minimize the chilled water supply outage during the work. All the existing temporary piping and point of connection are

in place. Contractor to field verification to ensure all the valves and temporary system in good condition before connecting the temporary chiller.

3. Sequence of Installation- Chilled Water Supply (CHWS) and Chilled Water Return (CHR).

3.1 At no time any system should be shut down. Contractor shall install all new piping and isolation valves. Maintain existing utility services for medical center, such as electricity, heating water and chilled water all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to assure uninterrupted services. No utility services may be interrupted without prior approval of VA Project Manager.

3.2 Install temporary chiller and pump and test the system. This work need to be coordinate with VA Energy Center engineering staff. Before any shutdown, bypass chilled water supply and return to new temporary system.

3.2 After all new piping, valves, tees installed, then schedule outage and drained building 650 chilled water supply.

3.3 Install new in- line 8" butterfly valves and tee's in existing 8" CHS/R headers inside chiller room to provide connection points for new chilled water supply and return in bldg.703.When installing these valves and tee's, ensure that there is sufficient clearance for maintenance.

3.4 At each point of connection to AHU's install new appropriate Tee's and valves in new 8-inch CHS/R and continue running the new pipes to the AHU's and connect to AHU's. If the existing valves at AHUs needs to be replace due to the new piping configuration replace the valves.

3.4 After completion of all new work and work has accepted by VA switch the chilled water from temporary to permeant and remove the temporary chiller and pump. Leave all other temporary piping, valves in place.

4. Sequence of Installation- Hot Water Supply (HW/S) and Hot Water Return (HW/R)

4.1 Do not shut down HWS/R , install 6" valves by using HOT Tap in supply and return at the main headers in energy center, building 703. Install new approved piping thru exterior of building 703 to roof of building 650. All HWS/R routes shall be run parallel to new CHS/R.

4.2 At each point of connection to AHUs, provide a shut-off valve and connect to existing HWS/R by installing appropriate valves using Hot Taps.

4.3 After all new piping, connection and valves complete flush all the new piping, switch over to new piping.

5. Remove all abounding piping from the roof.

6. SUBMITTALS

Contractor to provide the following Detailed Submittals for review and approval:

6.1 Submit all materials, samples, insulations, roof support, piping, valves etc.
6.2 Submit recommended Seismic Roof Supports, Wall Supports, new Piping Routes Layouts, Demolition, Underground piping layouts, Seismic expansion joints and piping size (see attached details). All submittal shall be signed by a licensed mechanical engineer.

6.3 Contractor shall conduct site investigation, prepare draft submittal to VA for review and approval. The submittal should show all exiting piping that need to be demo, all new piping and the sequence of the installation. The draft submittal also should show new proposed pipe sizing, insulations, pipping route.

6.4 After draft submittal approved from VA, contractor shall proceed to prepare complete final submittal to VA for final approval. The submittal shall provide all the details such as seismic support, piping material, flanges, valves etc. In addition, the submittal shall show the sequence of the installation and transition from new line to existing line. All new lines to existing AHUs shall have isolation valves at the main headers.

Applicable Standards and Technical Resources: VA design instructions, guide specifications and reference material are available at the VA Office of Facilities Management website http://vaww.va.gov/facmgt/ standard . The piping, materials, etc. Shall meet all VA requirements such as HVAC guidance, the latest edition of the National and Local codes and standards.

6.5 Provide Seismic expansion joint for all the CHWS/R & HWS/R. After completion of all piping flush and clean the piping. Add approved water treatment to the system. All piping joint shall be welded by certify welder, and shall be inspected by third party welding inspector.

6.6 Building 651 (New Mental Health): B-651 is currently under construction, provide 3- inch CHWS/R and 2-1/2- inch HWS/R from new headers. The new piping shall be routed down from exterior wall then underground to south part of the new Mental Health building. Install new CHW & HW isolation valves vault, see detail A, B, C. Saw cutting can only be performed on weekends, from 08:00 am to 4:00 pm PST, unless otherwise approved.

Contractor shall guarantee that all work done under this contract shall be free from faulty materials or workmanship and hereby agree to repair or replace all defects and imperfection appearing in the said work without cost to VA and to the satisfaction of the Contracting Officer within the period of one year after the date of final inspection and acceptance of all work of the completed.

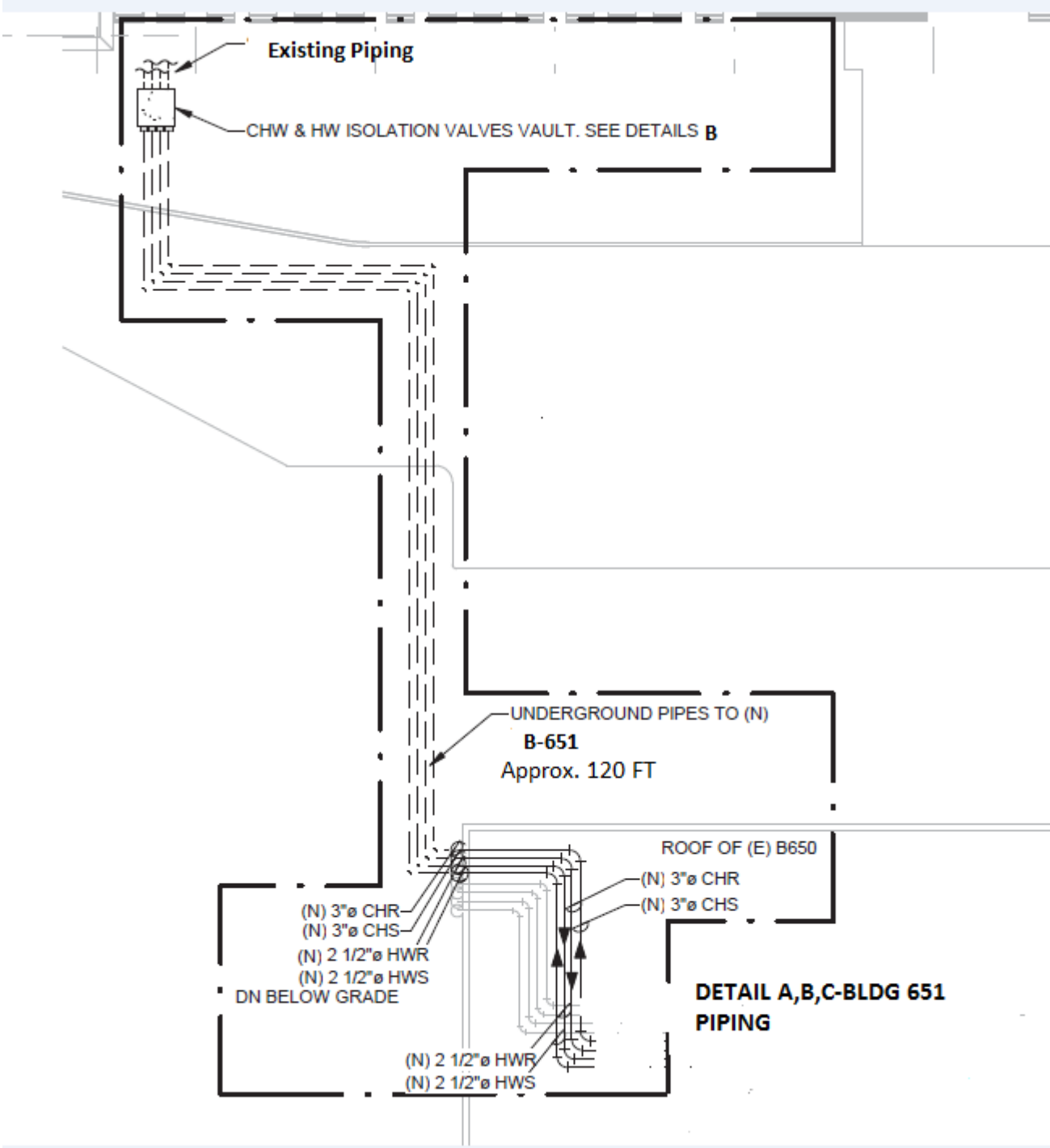
7 The Period of Performance 180 calendar.

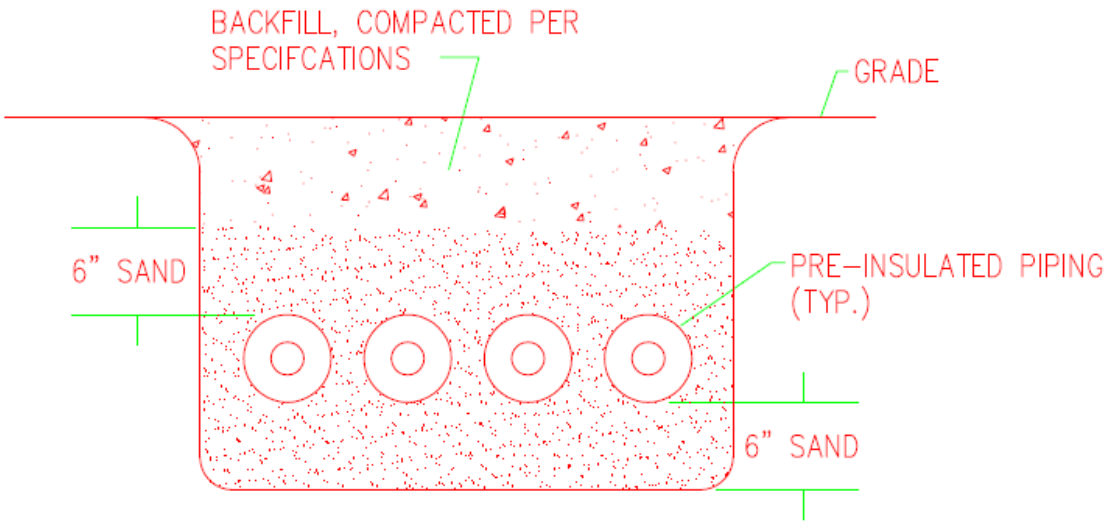
Figure 1: Campus map

Table 1: AHU Inventory roof top Building 650

AHUs/ Building	LOCATION	SERVICE	SIZE	SERVICE	SIZE
Bldg. 647, 649,	Roof	CHS/CHR	4”	HWS/HWR	2-1/2”
AHU-102, Bldg., 651(MH)	Under Construction. See Scope	CHS/CHR	3”	HWS/HWR	2-1/2”
AHU-1, Bldg. 650	Pancake Roof	CHS/CHR	4”	HWS/HWR	3”
AHU-7, Bldg. 650	Pancake Roof	CHS/CHR	2-1/2	HWS/HWR	3”
AHU-8, Bldg. 650	Pancake Roof	CHS/CHR	2”	HWS/HWR	3”
AHU-9, Bldg. 650	Pancake Roof	CHS/CHR	2-1/2”	HWS/HWR	3”
AHU-10, Bldg. 650	Pancake Roof	CHS/CHR	1-1/4”	HWS/HWR	3”
AHU-11, Bldg. 650	Pancake Roof	CHS/CHR	2”	HWS/HWR	3”
AHU-12, Bldg. 650	Pancake Roof	CHS/CHR	3”	HWS/HWR	3”
AHU-10, Bldg. 650	Tower Penthouse (East)	CHS/CHR	3”	HWS/HWR	3”
AHU-14, Bldg. 650	Tower Penthouse (West)	CHS/CHR	3”	HWS/HWR	3”
RTU-101, Bldg.650	Pancake Roof	CHS/CHR	2”	HWS/HWR	3”
RTU-102, Bldg.650	Pancake Roof	CHS/CHR	2”	HWS/HWR	3”

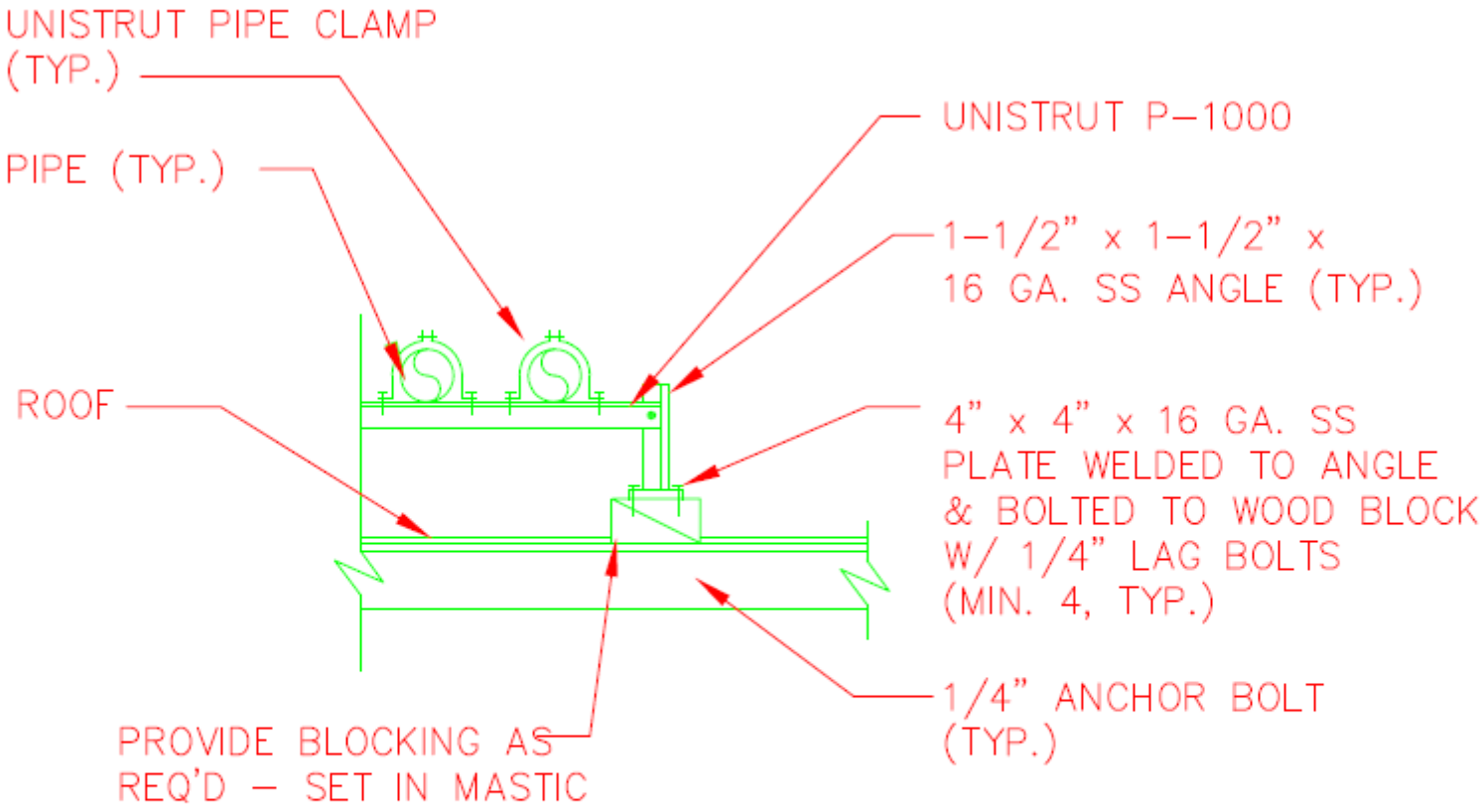
RTU-103, Bldg.650	Pancake Roof	CHS/CHR	1-1/2”	HWS/HWR	3”
RTU-104, Bldg. 650	Pancake Roof	CHS/CHR	1-1/2”	HWS/HWR	3”
AHU-1, Bldg. 646 (COSS)	Pancake Roof	CHS/CHR	6”	HWS/HWR	3”
AHU-1, Bldg. 642	Pancake Roof	CHS/CHR	4”	HWS/HWR	3”


Existing Piping
CHW & HW ISOLATION VALVES VAULT. SEE DETAILS B
UNDERGROUND PIPES TO (N)
B-651
Approx. 120 FT
ROOF OF (E) B650
(N) 3"ø CHR
(N) 3"ø CHS
(N) 3"ø CHR
(N) 3"ø CHS
(N) 2 1/2"ø HWR
(N) 2 1/2"ø HWS
DN BELOW GRADE
(N) 2 1/2"ø HWR
(N) 2 1/2"ø HWS
DETAIL A,B,C-BLDG 651
PIPING



DETAIL C- PIPING IN TRENCH

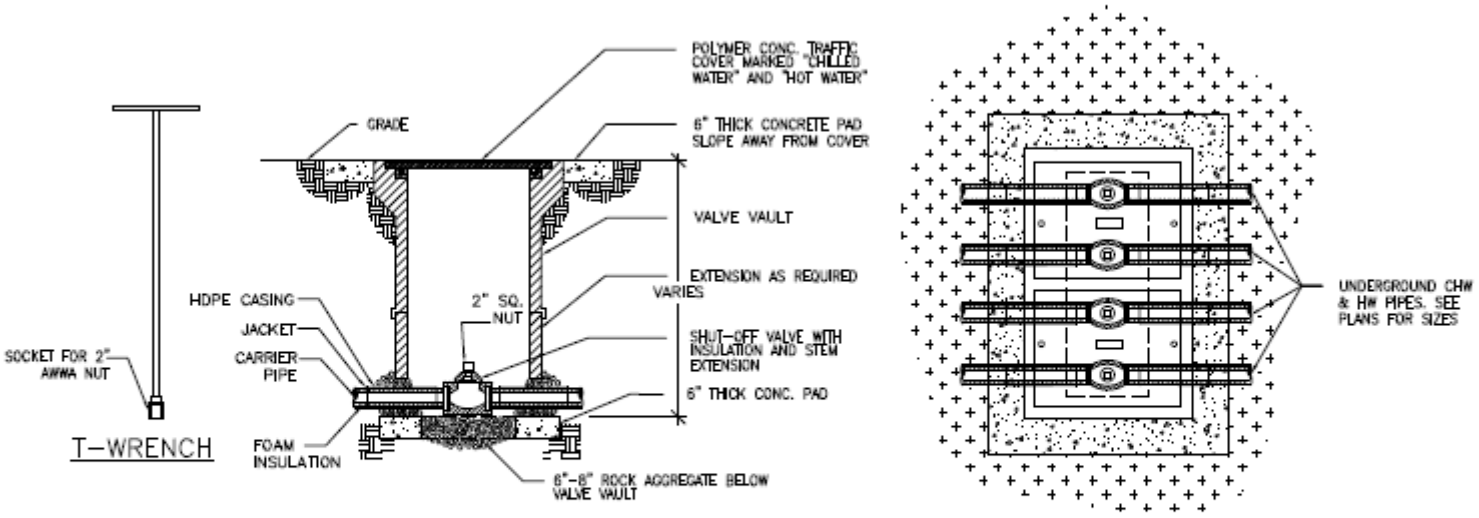
SACLE: NONE



NOTE: SUPPORT SPACING 10' O.C. MAX.; UNISTRUT MODEL NUMBERS SHOWN, B–LINE SUPERSTRUT, OR APPROVED EQUAL

DETAIL A- PIPE SUPPORT ON ROOF

SCALE: NONE



B CHW & HW SHUT OFF VALVES VAULT DETAIL

SCALE: N.T.S.

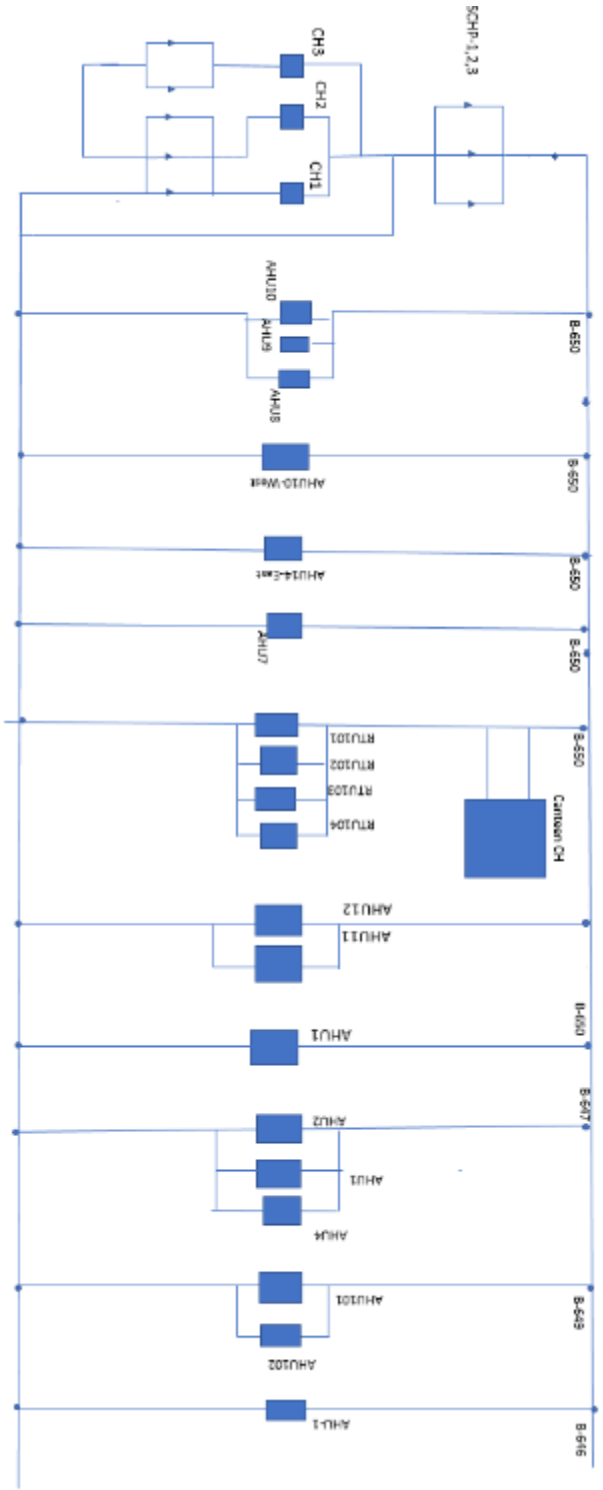


Fig.2- Existing Chilled Water Piping System Diagram B-650 Rooftop