APPENDIX F

NOISE AND VIBRATION ASSESSMENT

12 March 2024

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Subject: **UC College of the Law, San Francisco, 201 Golden Gate Avenue**
Noise and Vibration Assessment
Salter Project 23-0160

Dear Terri:

This report summarizes our assessment of noise and vibration impacts related to the proposed 201 Golden Gate Avenue project, which is proposed by the University of California (UC) College of the Law, San Francisco (the College or UC Law SF). The project is the demolition of existing buildings and the new construction of a 13-story tall mixed-use residential and academic building. The building only includes 20 on-site parking spaces for Unite Here Local 2 Union employees. The project is considering two variations: Academic Light (Variant 1) and Academic Heavy (Variant 2), which are both evaluated in this report.

1.0 EXECUTIVE SUMMARY

- We understand that the College, being a State educational institution governed independently by the UC Law SF Board of Directors, is not subject to regulations of local governments. Because the College does not have adopted noise thresholds, this report applies the noise standards from the San Francisco Noise Ordinance.
- Noise generated by the project's mechanical equipment and construction equipment will be consistent with these thresholds with the mitigation measures proposed in this report and as refined during the design.
- Vibration generated by the project's construction equipment will comply with the California Department of Transportation (Caltrans) criteria with the mitigation measures proposed in this report and as refined during the design.

2.0 ACOUSTICAL CRITERIA

For operational noise and construction noise and vibration, the following criteria have been applied to evaluate the proposed project.

2.1 Stationary Noise

San Francisco Police Code Section 2909 Noise Limits

(a) Residential Property Noise Limits: No person shall produce or allow to be produced by any machine, or device, music or entertainment or any combination of same, on residential property over which the person has ownership or control a noise level more than five dBA above the local ambient at any point outside of the property plane.

(b) Commercial and Industrial Property Noise Limits: No person shall produce or allow to be produced by any machine, or device, music or entertainment or any combination of same, on commercial or industrial property over which the person has ownership or control, a noise level more than eight dBA above the local ambient at any point outside of the property plane.

(d) Fixed Residential Interior Noise Limits: In order to prevent sleep disturbance, protect public health and prevent the acoustical environment from progressive deterioration due to the increasing use and influence of mechanical equipment, no fixed noise source may cause the noise level measured inside any sleeping or living room in any dwelling unit located on residential property to exceed 45 dBA between the hours of 10:00 p.m. to 7:00 a.m. or 55 dBA between the hours of 7:00 a.m. to 10:00p.m. with windows open except where building ventilation is achieved through mechanical systems that allow windows to remain closed.

San Francisco Police Code Section 2901, Definitions

(a) "Ambient" means the lowest sound level repeating itself during a minimum ten-minute period as measured with a Type 1, precision sound level meter, using slow response and "A" weighting. The minimum sound level shall be determined with the noise source at issue silent, and in the same location as the measurement of the noise level of the source or sources at issue. However, for purposes of this chapter, in no case shall the ambient be considered or determined to be less than: (1) Thirty-five dBA for interior residential noise, and (2) Forty-five dBA in all other locations.

(e) "Fixed source" means a machine or device capable of creating a noise level at the property upon which it is regularly located, including but not limited to: industrial and commercial process machinery and equipment, pumps, fans, air-conditioning apparatus or refrigeration machines.

(g) "Noise level" means the maximum continuous sound level or repetitive peak sound level, produced by a source or group of sources as measured with a sound level meter.

2.2 Construction Noise

San Francisco Police Code Section 2907 Construction Equipment

(a) Except as provided for in Subsections (b), (c), and (d) hereof, it shall be unlawful for any person to operate any powered construction equipment if the operation of such equipment emits noise at a level in excess of 80 dBA when measured at a distance of 100 feet from such equipment, or an equivalent sound level at some other convenient distance.

(b) The provisions of Subsections (a) of this Section shall not be applicable to impact tools and equipment, provided that such impact tools and equipment shall have intake and exhaust mufflers recommended by the manufacturers thereof and approved by the Director of Public Works or the Director of Building Inspection as best accomplishing maximum noise attenuation, and that pavement breakers and jackhammers shall also be equipped with acoustically attenuating shields or shrouds recommended by the manufacturers thereof and approved by the Director of Public Works or the Director of Building Inspection as best accomplishing maximum noise attenuation.

2.3 Construction Vibration

Some construction activities could potentially generate significant levels of ground-borne vibration, which could expose existing structures located within 100 feet of the project site to vibration levels that exceed the criteria.

While the College has not adopted any thresholds for construction ground-borne vibration impacts, we understand that it is required. This report uses the vibration criteria established in Caltrans' Transportation and Construction Vibration Guidance Manual document to evaluate the impact of construction vibration on buildings.

Table 1 shows the Caltrans guidelines for assessing vibration damage potential to various types of buildings.

Table 1: Caltrans Vibration Guidelines for Potential Damage to Structures[1]

Measurement Location	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

3.0 NOISE ENVIRONMENT

3.1 Existing Noise Environment

To quantify the ambient noise environment around the project site, we conducted four continuous long-term (LT) noise measurements between 13 to 18 April 2023. These meters were located 12 feet above grade. Measurement locations are as shown in **Figure 1**. The measured ambient noise levels are summarized in **Table 2**. Ambient noise levels are the quietest 10-minute L_{90}[2] we measured at each location. Daytime levels are between 7 am to 10 pm, and nighttime levels are between 10 pm to 7 am.

Table 2: Minimum Measured Ambient Noise Levels (10-minute L_{90})

Measurement Location	Daytime Ambient Noise Level	Nighttime Ambient Noise Level
LT-1 (Larkin Street)	53 dBA	48 dBA
LT-2 (Golden Gate Avenue)	51 dBA	49 dBA
LT-3 (Hyde Street)	55 dBA	53 dBA
LT-4 (McAllister Street)	58 dBA	57 dBA

[1] Caltrans, *Transportation and Construction Vibration Guidance Manual* (April 2020), Table 19.
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

[2] L_{90} – The sound level exceeded 90 percent of a specified measurement period as described in ASTM E1686. This metric is referred to in Planning Department direction and the City's "Article 29: Regulation of Noise Guidelines for Noise Control Ordinance Monitoring and Enforcement" as a conservative representation of the ambient. See https://www.sfdph.org/dph/files/ehsdocs/ehsnoise/guidelinesnoiseenforcement.pdf

3.2 Future Traffic Noise Increases

Based on the existing traffic volume[3] and future vehicle trip[4] data received for both "Academic Light" and "Academic Heavy" variants, we calculated the noise increase along Golden Gate Avenue near the project site to be less than 1 dB. This noise increase is not generally noticeable. The noise increase on other surrounding streets caused by project-generated traffic is expected to be similar or less.

3.3 Property Plane Noise Limits

We understand that the project site is zoned "commercial", and therefore, noise from project stationary equipment was determined to be 8 dBA above ambient noise levels. The project site is surrounded by streets (or alleys) on all four sides. The project building's south and west side are shielded from the local roads, and ambient noise levels are expected to be quieter. Therefore, we have lowest ambient of 45 dBA at the project's south and west property planes. **Table 3** below shows the criteria at the different property planes (i.e., the ambient noise level plus 8 dBA), based on our measurements.

Table 3: Calculated Noise Ordinance Limits

Property Plane	Daytime Criterion (Ambient + 8 dB)	Nighttime Criterion (Ambient + 8 dB)
North, Golden Gate Avenue	59 dBA	57 dBA
East, Leavenworth Street	59 dBA	57 dBA
South, McAllister Tower	53 dBA	53 dBA
West, Continuum Alley	53 dBA	53 dBA

3.4 Nearby Noise-Sensitive Receivers

Some land uses are more sensitive to noise levels than others due to the type of activities typically associated with the used. Residences, hotels, schools, senior care facilities, and hospitals are generally more sensitive to noise than commercial and industrial land uses.

We surveyed the surrounding sites to identify the closest noise-sensitive uses (such as residences and schools). We also understand that the Turk and Hyde Mini Park is a concern. The five nearby noise-sensitive receivers are shown in **Table 4**.

[3] *LRCP Final Environmental Impact Report* (dated 14 July 2016), Figure 4.8-2

[4] *Draft Transportation Section 4.8, LRCP Update and 201 Golden Gate Avenue Mixed-Used Project EIR* (received 3 October 2023), Table 4.8-2

Table 4: Nearby Noise-Sensitive Receivers

Location	Building Type	Direction from Project Site	Distance from Project Site (feet)
220 Golden Gate Avenue, Kelly Culled Community Apartments	Residential	North	70
201 Hyde Street and 414 Turk Street, Turk and Hyde Mini Park	Park	North	510
175 Golden Gate Avenue, De Marillac Academy	School, Religious Institution	East	160
100 McAllister Street, McAllister Tower	Mixed-Use Academic with Residential	South	15
277 Golden Gate Avenue, The Lofts at Seven	Residential	West	90

4.0 OPERATIONAL NOISE ANALYSIS

The following discussion describes the proposed project's ability to meet acceptable noise limits, such as those described in San Francisco Police Code Sections 2909(b) and (d).

The proposed project is evaluating two options for the mechanical system:

- Academic & Office Option 1: Heat recovery chiller for chilled water (CHW) and heating hot water (HHW) with variable air volume (VAV) air-handling unit (AHU)
- Academic & Office Option 2: Air-cooled variable refrigerant flow (VRF) with direct expansion outside air (DX OSA) Unit

Both HVAC system options apply to both the "Academic Light" and "Academic Heavy" variants. Plans for these options are shown attached in **Appendix A**. Additional information about the equipment noise levels is included in **Appendix B**. For the purposes of this preliminary study, we assumed that all equipment would be operating simultaneously at the quietest time of day during both daytime and nighttime hours. The mechanical equipment includes:

- Option 1:
  - Two air-source heat recovery chillers outdoors on the roof (each 4-module bank has a sound power level[5] of 91 dBA)
  - Four domestic hot water (DHW) air-source heat pumps / water heaters outdoors on the roof (each heat pump has a sound pressure level[6] of 56 dBA at a 3.3-foot distance).
  - Three indoor air-handling units serving office spaces and academic floors (each unit has a return air opening sound power level of 86 dBA). The location of the outside air intake serving the units is not yet determined.
- Option 2:
  - Four DHW air source heat pumps / water heaters outdoors on the roof (each heat pump has a sound pressure level of 56 dBA at a 3.3-foot distance)
  - 18 VRF condensing units (each unit has a sound pressure level of 70 dBA at a 3.3-foot distance and sound power level of 89 dBA)
  - Three indoor air-handling units serving office spaces and academic floors (each unit has a RA opening sound power level of 86 dBA). The location of the outside air intake serving the unit is not yet determined.

4.1 Preliminary Property Plane Noise Analysis

Given the provided equipment sound data and the distances to the nearest property lines, we calculated the resulting sound levels from all equipment for the different options. Resulting noise levels were calculated assuming the mechanical equipment runs simultaneously at 100% load during the daytime and nighttime, for a worst-case scenario. We have taken the maximum allowable heights per each parcel's zoning[7] into account as the "top of the property plane" or the height of the respective building, whichever is taller.

The mechanical design is preliminary at this stage and certain factors are not yet known (e.g., actual loads required for each space type, ductwork routing, equipment operating parameters). It could likely be expected that office and academic uses would result in minimal operations at night. This study will need to be updated as the design progresses and more information becomes available.

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5 PWL (Sound Power Level) – A metric defined in ANSI S1.1, expressed in decibels (dB), used to quantify the acoustic energy output of a device. Sound power is analogous to the total light output from a lamp in lumens.

6 SPL (Sound Pressure Level) – A metric defined in ANSI S1.1, expressed in decibels (dB), that quantifies the sound level produced by a device, measured at a specific location some distance from the device. Sound pressure is analogous to the light output a specific distance from a lamp in foot-candles.

7 *San Francisco Height and Bulk Map* (August 2023) (https://sfplanning.org/resource/zoning-height-and-bulk-districts)

Table 5 summarizes the calculated combined rooftop equipment noise levels for both HVAC system options at the various property planes with respect to the project criteria.

Both **Tables 5 and 6** identify the noise levels without and with the noise reduction measures described below. Those noise levels shown in **bold** exceed at least one of the criteria.

Table 5: Rooftop Mechanical Equipment Noise Levels at Property Planes Compared to Project Criteria

Location	Option 1: Noise Level		Option 2: Noise Level		Daytime Criterion	Nighttime Criterion
	Without Measures	With Measures	Without Measures	With Measures		
North, Golden Gate Avenue	**64 dBA**	57 dBA	**78 dBA**	57 dBA	59 dBA	57 dBA
East, Leavenworth Street	**61 dBA**	55 dBA	**76 dBA**	57 dBA	59 dBA	57 dBA
South, McAllister Tower	**64 dBA**	53 dBA	**65 dBA**	53 dBA	53 dBA	53 dBA
West, Continuum Alley	**62 dBA**	53 dBA	**76 dBA**	53 dBA	53 dBA	53 dBA

For the air-handling units, we have assumed ducted outside air intake to a louver at the facade. **Table 6** summarizes the calculated noise levels for each potential facade as a worst-case analysis for the layout plans received. The south facade is about 15 feet from the property plane. The west, north, and east facades are along the lot lines, Therefore, we have calculated noise to a 5-foot distance (i.e., proximity of a passerby).

Table 6: Preliminary Air-Handing Unit Noise Levels at Property Planes Compared to Project Criteria

Location	Option 1: Noise Level		Option 2: Noise Level		Daytime Criterion	Nighttime Criterion
	Without Measures	With Measures	Without Measures	With Measures		
North, Golden Gate Avenue	**75 dBA**	57 dBA	**74 dBA**	56 dBA	59 dBA	57 dBA
East, Leavenworth Street	**75 dBA**	57 dBA	**74 dBA**	56 dBA	59 dBA	57 dBA
South, McAllister Tower	**68 dBA**	53 dBA	**67 dBA**	52 dBA	53 dBA	53 dBA
West, Continuum Alley	**75 dBA**	52 dBA	**74 dBA**	51 dBA	53 dBA	53 dBA

All calculated noise levels from rooftop equipment and ducted air-handling units exceed the property plane noise criteria. To meet the criteria, the noise-reduction measures detailed below will need to be implemented.

Noise-Reduction Measures: To meet the project criterion (i.e., an 8 dBA increase above the ambient noise level at the property plane), the following is a preliminary list of noise-attenuating features that will be needed. This will be refined as part of the project design.

- Provide sound-rated roof screens around the equipment as follows. This needs to be coordinated with the project shadow study.
    - Option 1:
        - North edge of the building: at least 3-feet taller than the top of the tallest equipment
        - East edge of the building: at least 1-foot taller than the top of the tallest equipment
        - South edge of the building: at least 6-feet taller than the top of the tallest equipment
        - West edge of the building: at least 5-feet taller than the top of the tallest equipment
    - Option 2:
        - North and east edges of the building: 10-feet taller than the top of the condensing units (CUs) equipment additionally, CUs should be located at least 25 feet from the property plane
        - South edge of the building: 8-feet taller than the top of the CUs
        - West edge of the building: 10-feet taller than the top of the CUs; additionally, CU units should be located at least 50 feet from the property plane

    Note that the equipment height needs to account for the height of vibration isolation and structural support.

    Other noise-reduction measures could include selection of quieter equipment, having the equipment run at a reduced capacity at quieter times of the day, and adding silencers and/or acoustical louvers (in various combinations with equipment setbacks and equipment screens).
- For the air-handling units (both Options 1 and 2), the following measures are needed:
    - North and East Facades: Allow for at least 12 feet of 1-inch thick internally lined duct and two lined 90-degree turns to be incorporated at the outside air intake.
    - West Facade: Allow for at least 30 feet of 1-inch thick internally lined duct and two lined 90-degree turns to be incorporated at the outside air intake.
    - South Facade: Allow for at least 20 feet of 1-inch thick internally lined duct and one lined 90-degree turn to be incorporated at the outside air intake.

    Acoustical louvers and/or quieter equipment can also be considered. The air intakes could also be strategically located closer to the property planes and with the opening as far away as possible from the property planes.

4.2 Sensitive Receiver Noise Analysis

Noise levels were also calculated at the nearest indoor noise-sensitive receivers. Accounting for the noise-reduction features described above, **Tables 7 and 8** show the calculated noise levels in the nearest residences assuming open windows (i.e., including 15 dB of noise reduction) both with and without noise reduction measures. Those noise levels shown in **bold** exceed at least one of the criteria.

Table 7: Calculated Mechanical Equipment Noise Levels at Closest Noise-Sensitive Receptors Compared to Project Criteria

Location	Option 1: Interior Noise Level		Option 2: Interior Noise Level		Interior Daytime Criterion	Interior Nighttime Criterion
	Without Measures	With Measures	Without Measures	With Measures		
220 Golden Gate Avenue, Kelly Culled Apartments	37 dBA	28 dBA	45 dBA	32 dBA	55 dBA	45 dBA
175 Golden Gate Avenue, De Marillac Academy	21 dBA	20 dBA	39 dBA	27 dBA		
100 McAllister Street, McAllister Tower	**47 dBA**	35 dBA	**47** dBA	43 dBA		
277 Golden Gate Avenue, The Lofts at Seven	34 dBA	24 dBA	42 dBA	27 dBA		

To the project south, a sound-rated screen will be needed, as described above, to meet the nighttime indoor criterion at the closest residences (at 100 McAllister Street), or quieter equipment. All other rooftop equipment noise levels would meet the noise ordinance goals at closest sensitive receivers.

Table 8: Preliminary Calculated Air-Handing Unit Noise Levels at Property Planes Compared to Project Criteria

Location	Option 1: Interior Noise Level		Option 2: Interior Noise Level		Interior Daytime Criterion	Interior Nighttime Criterion
	Without Measures	With Measures	Without Measures	With Measures		
220 Golden Gate Avenue, Kelly Culled Apartments	39 dBA	21 dBA	38 dBA	20 dBA	55 dBA	45 dBA
175 Golden Gate Avenue, De Marillac Academy	31 dBA	13 dBA	30 dBA	12 dBA		
100 McAllister Street, McAllister Tower	**52** dBA	37 dBA	**51** dBA	36 dBA		
277 Golden Gate Avenue, The Lofts at Seven	36 dBA	13 dBA	35 dBA	12 dBA		

To the project south, noise-reduction measures will be needed, as described above, to meet the project nighttime indoor criterion at the closest residences (at 100 McAllister Street), or quieter equipment. To the north, east, and west, noise from the air-handling unit outside air intake would meet the project criteria at closest sensitive receivers without (or with) measures for noise reduction.

5.0 CONSTRUCTION NOISE ANALYSIS

5.1 Phases of Construction

Construction will be completed in several phases with multiple activities in each phase (see **Table 9**). The construction phases and equipment are the same for both the Academic "Light" and "Heavy" variant, with the exception of a slightly longer timeline for Building Construction, Architectural Coating, and Finish/Landscaping phases for the "Heavy" variant. The total expected duration of construction is 26 months for "Academic Heavy" and 24 months for "Academic Light".

A general description of the activities, phases, and potential tools and activities that might happen on site during construction is listed on the following pages. The construction equipment list (as provided by the contractor) is provided in **Appendix C.**

This does not constitute a comprehensive list of all activities and tools but should represent typical conditions. Actual tools used, activities completed, locations, and durations described might vary depending on site conditions, subcontractor techniques, and general sequencing of the project's schedule.

Table 9: Construction Phases and Equipment

Phase	Duration (workdays)		Equipment
	Academic Light	Academic Heavy	
(1) Building Demolition (and Debris Haul)	42	42	Bulldozer Excavator Loaded Trucks
(2) Site Preparation (and Soil Haul)	21	21	Excavator Crawler Tractor/Loader Loaded Trucks: two onsite at a time
(3) Rough Grading (and Soil Haul)	42	42	Excavator Crawler Tractor/Loader Loaded Trucks: two onsite at a time
(4) Fine Grading (and Soil Haul)	21	21	Excavator Crawler Tractor/Loader Loaded Trucks
(5) Utility Trenching	42	42	Concrete Saw Excavator Loaded Trucks

Phase	Duration (workdays)		Equipment
	Academic Light	Academic Heavy	
(6) Building Construction	189	210	Cement Mixer Concrete Pump Tower Crane Rough Terrain Forklift Generator Set
(7) Paving	N/A	N/A	Paving Equipment
(8) Architectural Coating	42	84	Aerial Lift
(9) Finishing/Landscaping	84	126	Mobile Crane

5.2 Construction Equipment Noise Levels

This analysis is based on the understanding that any powered construction equipment (non-impact), regardless of age or date of acquisition, is prohibited to emit noise at a level in excess of 80 dBA when measured at a distance of 100 feet. Per the proposed construction equipment list and schedule received, **Table 10** summarizes the expected equipment noise levels.

Table 10: Project Construction Equipment Typical Maximum Noise Levels[8]

Equipment	Noise Level at 50 Feet (dBA, L_{max})	Noise Level at 100 Feet (dBA, L_{max})
Aerial Lifts	75	69
Bulldozer	82	76
Cement Mixer	79	73
Concrete Pump	81	75
Concrete Saw	90	84
Crawler Tractor/Loader	84	78
Generator Set	81	75
Loaded Trucks	75	69
Mobile Crane	81	75
Paving Equipment	77	71
Rough Terrain Forklift (Gas/Electric)	84/78	78/72
Tower Crane	81	75
Project Criteria (for non-impact tools)	**86**	**80**

[8] Sources: US EPA *Noise From Construction Equipment and Operations, Building Equipment, and Home Appliances* (1971), US DOT FHWA *Construction Noise Handbook* (2006), and US DOT FTA *Transit Noise and Vibration Impact Assessment* (2006)

As shown in Table 10, all non-impact tools are calculated to be below 80 dBA at 100 feet except for the concrete saws. Impact tools, such as the concrete saw, must include practices to achieve maximum attenuation as best as possible, such as those identified in the City's Noise Ordinance (Section 2907 (b)).

Although the estimated noise levels for the concrete saw activities exceed the construction noise criterion, the levels will vary depending on location on the site and where there is line-of-sight to neighboring buildings. Noise is further reduced as the construction moves to the interior of the building.

Noise levels will be monitored during the noisiest phases of construction to refine these estimates and corresponding noise-reduction measures, as necessary. All feasible noise reduction techniques prescribed in the following section shall be implemented to reduce the noise impacts.

5.3 Noise-Reduction Measures

The following is a list of potential noise-reduction measures to be implemented, as feasible.

1. Submit a plan documenting noise-reduction measures, including noise monitoring and complaint procedures.
2. Conduct noise monitoring prior to and at the beginning of major construction phases for two weeks (e.g., demolition, excavation) to determine the need and the effectiveness of noise-attenuation measures.
3. Post signs on-site pertaining to permitted construction days and hours, complaint procedures, and who to notify in the event of a problem (with telephone numbers listed).
4. Construction Methods and Equipment:
    a. Use construction equipment that is in good working order and inspect mufflers for proper functionality.
    b. Select "quiet" construction methods and equipment (e.g., improved mufflers, use of intake silencers, engine enclosures).
    c. Use construction equipment with lower noise emission ratings whenever possible, particularly for air compressors.
    d. Prohibit the idling of inactive construction equipment for more than five minutes.
    e. Where feasible, provide exhaust mufflers, including for pneumatic tools. All equipment should be properly maintained.

5. Stationary Equipment:
    a. Locate stationary noise sources (such as compressors) as far from nearby noise-sensitive receptors as possible, muffle such noise sources, and construct barriers around such sources and/or the construction site.
    b. Avoid placing stationary noise-generating equipment (e.g., generators, compressors) within noise-sensitive buffer areas immediately adjacent to neighbors.
    c. Enclose or shield stationary noise sources, such as air compressors and generators, from neighboring noise-sensitive properties with localized noise barriers to the extent feasible. Barriers should break line-of-sight to neighboring properties. To further reduce noise, locate stationary equipment in pit areas or excavated areas, if feasible.
6. Temporary Barriers: Install temporary barriers, barrier-backed sound curtains, and/or acoustical panels around working powered impact equipment and, if necessary, around the project site perimeter. When temporary barrier units are joined together, the mating surfaces shall be flush with each other. Gaps between barrier units, and between the bottom edge of the barrier panels and the ground, shall be closed with material that completely closes the gaps, and is dense enough to attenuate noise.
7. Site Perimeter Barrier: An 8-foot tall barrier should be constructed along the perimeter of the site to reduce noise by 5 to 10 dB for at-grade construction activities. Barriers may be plywood. Gaps between plywood layers should be covered.
8. Truck Traffic: Minimize truck idling and require trucks to load and unload materials in the construction areas, as opposed to idling on local streets. If truck staging is required, locate the staging area along major roadways with higher traffic noise levels and away from the noise-sensitive receivers.
9. Methods: Consider means to reduce the use of heavy impact tools and locate these activities away from the property line as feasible. Other methods could be employed if noise levels are found to be excessive. Minimize drop height when loading excavated materials onto trucks and when unloading or moving materials on-site. Use hydraulic or electric-powered impact tools wherever possible to avoid noise associated with compressed air exhaust from pneumatically-powered tools.
10. Schedule: Normal construction hours are between 7am and 8pm (only on weekdays).
11. Notification and Confirmation: Notify neighbors of extreme noise-generating activities including the estimated duration of the activity, construction hours, and contact information.

6.0 CONSTRUCTION VIBRATION ANALYSIS

6.1 Construction Equipment Vibration

Ground-borne vibration levels resulting from construction activities at the project site were calculated using data published by the Caltrans[9]. Potential vibration levels resulting from construction of the proposed project are identified for off-site locations based on their distance from construction activities.

The proposed construction would not involve activities that could generate excessive ground-borne vibration, such as pile-driving or blasting. However, equipment used for grading and excavation activities, such as large bulldozers, could generate higher-than-typical degrees of ground-borne vibration, as shown in **Table 13**.

We calculated vibration levels in peak particle velocity (PPV, in/sec) at distances using the following equation, per the Caltrans Manual (Equation 12)[10].

$$PPV_{equipment} = PPV_{ref} (25/D)^{n}$$

Table 12 is a summary of potential "n" values for different soil material categories[11]. The area could have a range of the identified Soil Classes and will be confirmed pending the project Geotechnical Study[12]. Therefore, based on the suggested value for vibration assessment from the Caltrans Manual, we used an "n" value of 1.4, assuming worst-case.

Table 12: Measured and Suggested "n" Values Based on Soil Class

Soil Class	Description of Soil Material	Value of "n" measured by Woods and Jedele	Suggested Value of "n"
I	Weak or soft soils: loose soils, dry or partially saturated peat and muck, mud, loose beach sand, and dune sand, recently plowed ground, soft spongy forest or jungle floor, organic soils, top soil (shovel penetrates easily)	Data not available	1.4
II	Competent soils: most sands, sandy clays, silty clays, gravel, silts, weathered rock (can dig with shovel)	1.5	1.3

9 Caltrans, *Transportation and Construction Vibration Guidance Manual* (April 2020), Table 18

10 PPV_{ref} = reference PPV at 25 feet; D = distance from equipment to receiver in feet

11 Caltrans, *Transportation and Construction Vibration Guidance Manual* (April 2020), Table 17

12 For reference, surrounding project sites have been identified as part of the *UC Hastings College of Law LRCP Final EIR* (dated 14 July 2016), Section 4.4 Geology and Soils Report, as a mix of generally loose to medium dense sand at the upper 5 to 15 feet; medium dense to very dense below 15 feet; stiff silt and clay layers at various locations in the upper 5 to 15 feet.

Soil Class	Description of Soil Material	Value of "n" measured by Woods and Jedele	Suggested Value of "n"
III	Hard soils: dense compacted sand, dry consolidated clay, consolidated glacial till, some exposed rock (cannot dig with shovel, need pick to break up)	1.1	1.1
IV	Hard, competent rock: bedrock, freshly exposed hard rock (difficult to break with hammer)	Data not available	1.0

6.2 Receiver Vibration Analysis

The project site is surrounded by streets, including alleys, so the extra distance to receivers results in lower transmission of ground vibration. The south project property line abuts on 100 to 154 Mc Allister Avenue, but the project building is set back about 15 feet. Construction will occur primarily within the building footprint.

The vibration levels for the proposed construction equipment and the vibration levels at the closest structures are identified in **Table 13**. These apply equally to both the "Academic Heavy" and "Academic Light" variants.

Under the Caltrans building classification criteria presented in **Table 1**, the closest adjacent buildings are classified as "historic and some older buildings", except for the building at 277 Golden Gate Avenue, which is classified as "modern industrial/commercial buildings". The table also identifies the Caltrans vibration criteria for each building. Construction activities are assumed to be frequent intermittent sources.

Table 13: Vibration Levels from Construction Equipment at Closest Sensitive Receptors

Equipment	Approximate PPV (in/sec)					
	Caltrans Reference	100 to 154 McAllister (1929 and 1910, respectively)		255 Golden Gate (1916)	220 Golden Gate (1909)	117 Golden Gate (1916)
	25 feet	1 foot (south)	12 feet (south)	20 feet (west)	70 feet (north)	70 feet (east)
Large Bulldozer	0.089	8.06	0.25	0.12	0.02	0.02
Small Bulldozer	0.003	0.27	0.01	0.00	0.00	0.00
Loaded Trucks	0.076	6.89	0.21	0.10	0.02	0.02
PPV Criterion	–	0.25		0.25	0.25	0.25

Table 13 shows that the construction vibration levels meet the Caltrans criteria, provided that large bulldozers and loaded trucks are set back at least 12 feet from 100 to 154 McAllister.

All other historic structures in the immediate vicinity are greater than 20 feet from the project's construction areas. As indicated in Table 13, ground borne vibration levels would result in estimated PPV levels between 0.00 to 0.12 in/sec, well below the 0.25 in/sec PPV criterion for causing damage to historic structures.

6.3 Vibration Control Measures

The construction team understands due to the project location within a historical district, that techniques will be used to minimize vibration from construction equipment to the greatest extent possible (such as for grading and excavating), particularly when near adjacent historic buildings.

A Vibration Management and Monitoring Plan should be undertaken to avoid or reduce project-related construction vibration damage to adjacent buildings and to ensure any such damage is documented and repaired. The Vibration Management and Monitoring Plan should include the following components:

a. Maximum Vibration Level: State the maximum construction vibration levels are not to exceed for construction activities:
    - 0.25 in/sec PPV near 100 to 154 McAllister Street and 117, 220, and 255 Golden Gate Avenue.
    - 0.50 in/sec PPV near 277 Golden Gate Avenue

b. Vibration-Generating Equipment: Identify all vibration-generating equipment to be used during construction, including site preparation, clearing, demolition, excavation, shoring, foundation installation, and building construction.

c. Alternative Construction Equipment and Techniques: Identify potential alternative equipment and techniques that could be implemented if construction vibration levels are in excess of the established standard. For example, use of small bulldozers near adjacent buildings, instead of large bulldozers.

d. Buffer Distances: Identify buffer distances that shall be confirmed during on-site monitoring. The buffer distances shall be maintained based on vibration levels and site constraints between the operation of vibration-generating construction equipment and the potentially affected building and/or structure to avoid damage to the extent possible.

e. Vibration Monitoring: Identify the method and equipment for vibration monitoring to ensure that construction vibration levels do not exceed the established standards identified in the plan. In the event that construction vibration levels exceed the maximum vibration levels stated above, construction should be halted, and alternative construction techniques identified in the plan should be put into practice, to the extent feasible.

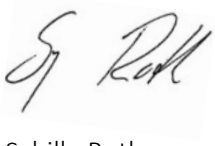
f. Periodic Inspections: Identify the intervals for periodic inspections.

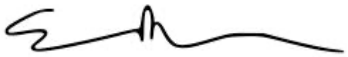
* * *

This concludes our noise and vibration assessment for the UC College of the Law, 201 Golden Gate Avenue project. Please contact us with any questions or comments.

Best,

SALTER





Sybille Roth
Associate

Eric Mori, PE
Executive Vice President

Enclosures as noted

Salter

San Francisco

San Jose

Los Angeles

Honolulu

Seattle

www.salter-inc.com

UC COLLEGE OF LAW, 201 GOLDEN GATE AVENUE NOISE MEASUREMENT LOCATIONS

FIGURE 1

Salter #	SMR/EBM
23–0160	05.05.23

APPENDIX A

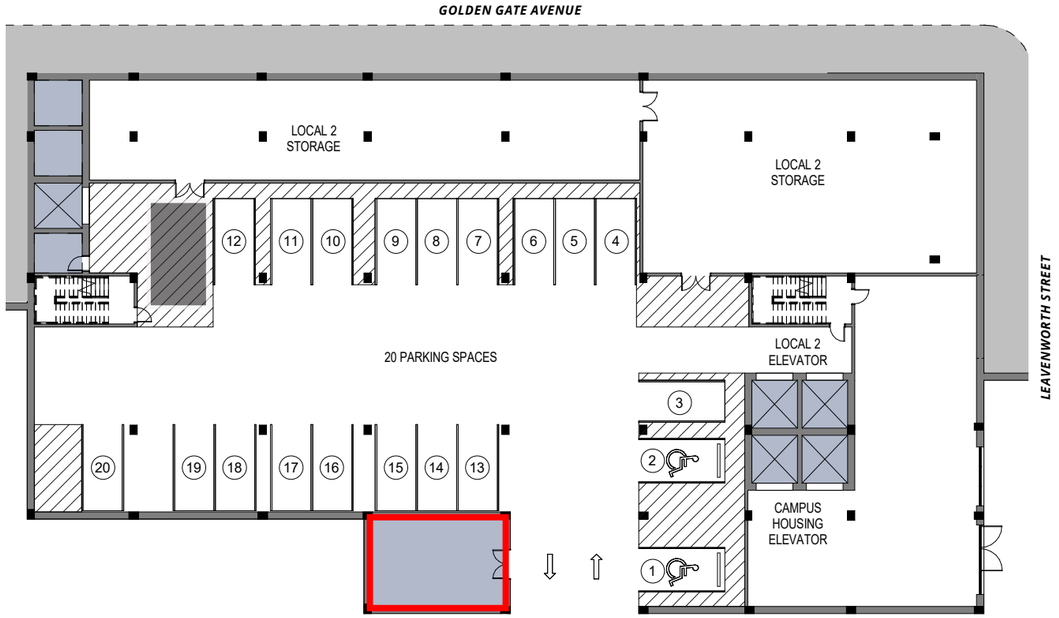
UC COLLEGE OF LAW, 201 GOLDEN GATE AVENUE

NOISE ENVIRONMENTAL IMPACT REVIEW

Plans

Floor Plan - Basement

The entry to the campus housing floors above is at the basement level which is at grade along Levenworth street. The elevators serve the housing floor exclusively to protect the privacy of building residents. A total of 20 parking spaces and two passenger elevators serve Local 2 employees. Additionally, Local 2 has access to storage areas at this level that can be temperature controlled with controlled access per the union's requirements. Two stairwells that connect all floors of the building also discharge at this level. A service elevator and loading zone are shared by all building uses.



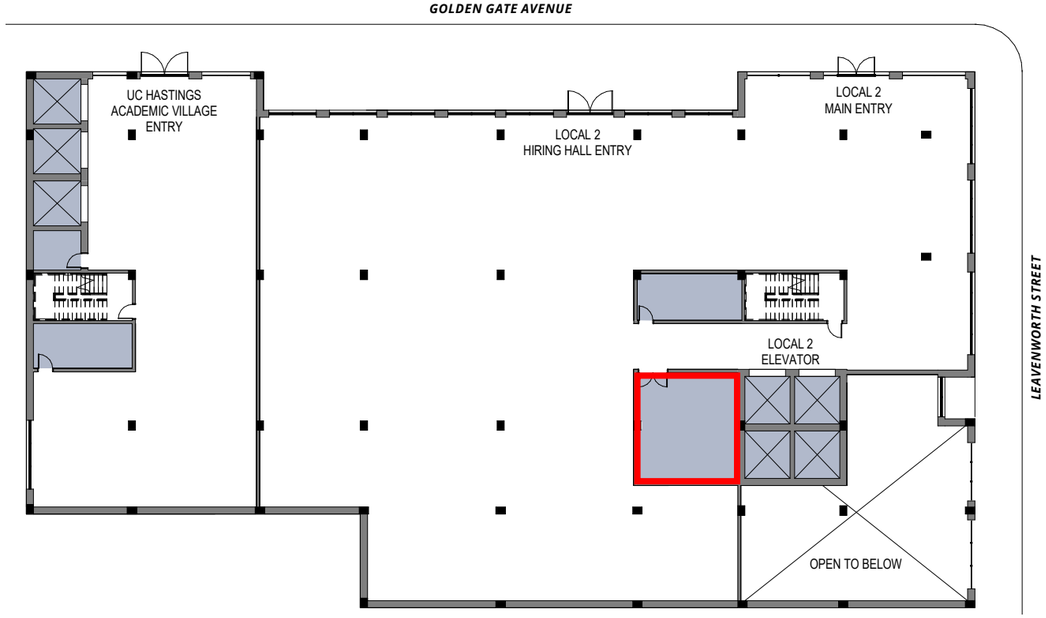
Building Service

Scale: 1/32" = 1'-0"

Basement Level

Floor Plan - Level 01

Main entries to the UC Law SF Academic Village and Local 2 are at this level with the option to have an additional entry for the Local 2 Hiring Hall program mid-block. This rhythm of entries and transparency at the street level is in keeping with the campus entries along Golden Gate Ave and lends a sense of safety along the street, especially after hours. Although used primarily for Local 2's needs, the Academic Village has a presence at this level through programs like multifunction spaces, meeting rooms, and reception areas.



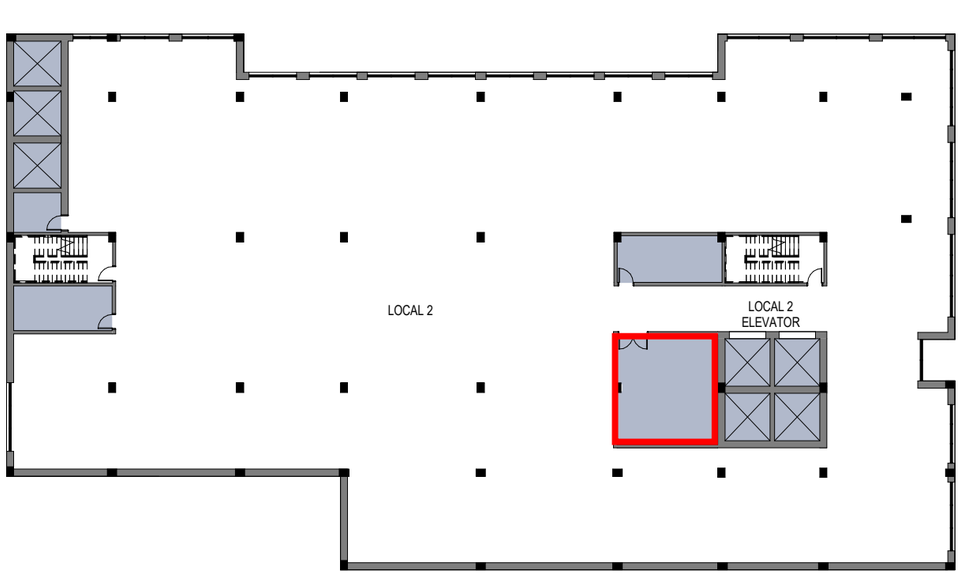
Building Service

Scale: 1/32" = 1'-0"

Level 01

Floor Plan - Local 2

Level 02 is solely for Local 2's use and program needs such as assembly spaces, offices, break rooms, etc. A set of elevators from the Basement and Level 01 are exclusively for Local 2's users and can be access controlled per the union's needs.



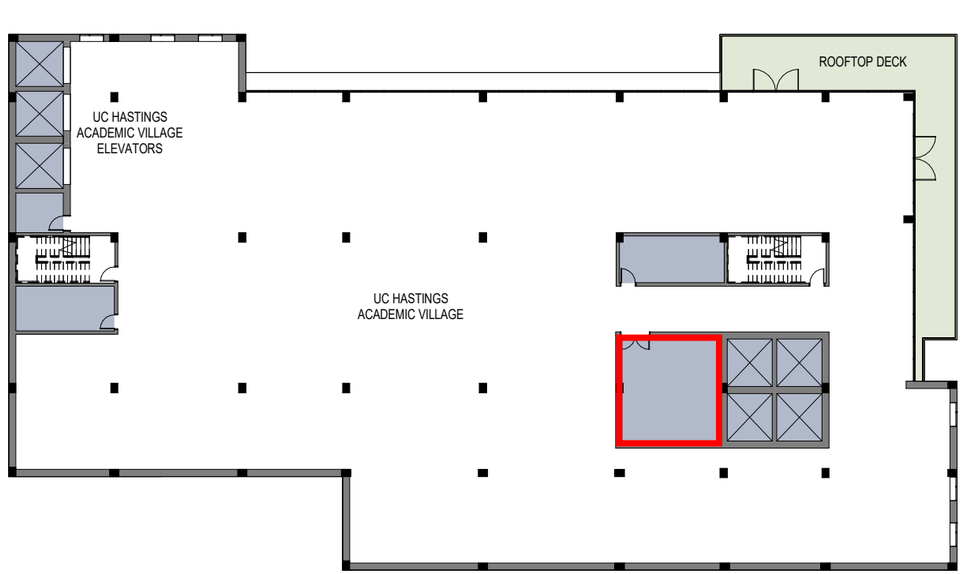
Building Service

Scale: 1/32" = 1'-0"

Level 02 - Unite Here! Local 2

Floor Plan - Academic Village

The typical Academic Village floor is configured to allow for maximum flexibility in planning based on UC Law SF's identified partners. The higher floor-to-floor heights permit uses such as specialized labs, classrooms, meeting rooms or office spaces. A rooftop deck at this level can serve as learning/ study spaces as well as rentable space for public or private events.



Outdoor Amenity

Building Service

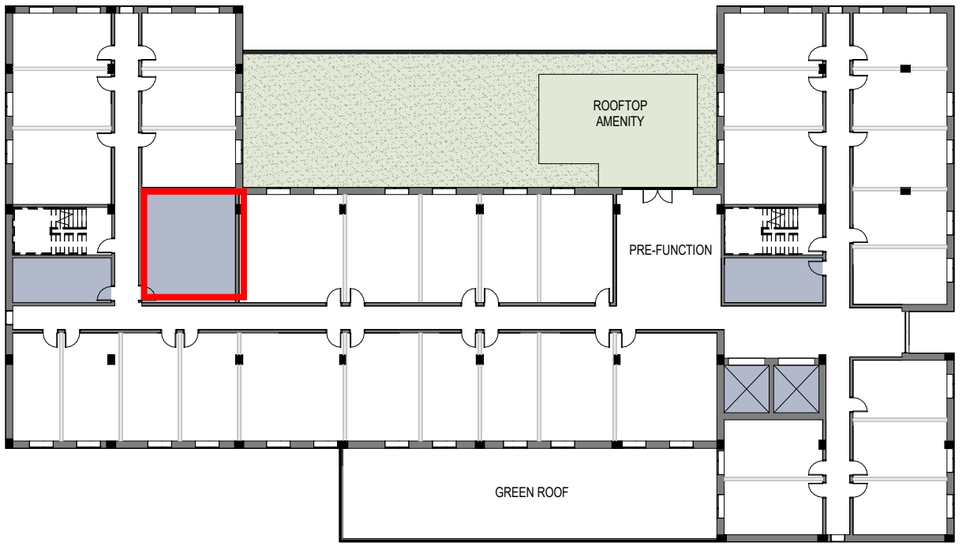
Scale: 1/32" = 1'-0"

Academic Village Outdoor Amenity Level

Floor Plan - Campus Housing

The campus housing levels offer a built-in modularity that can flex to accommodate different unit types per specifically identified project needs through further market analysis.

Where the building massing steps back, changing in function from Academic Village to campus housing as one ascends, there is an opportunity for a dramatic exterior terrace that can be dedicated for residents' use.



Outdoor Amenity
Building Service

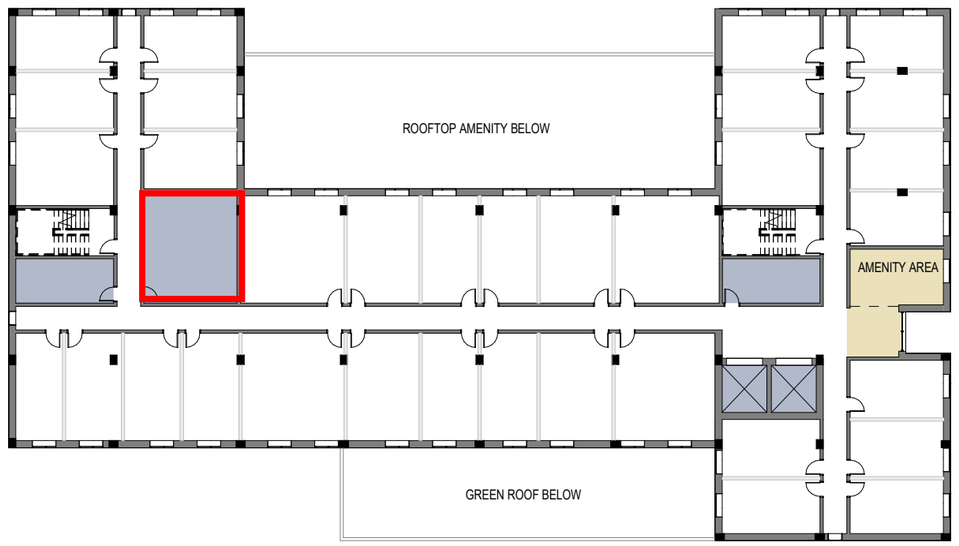
Scale: 1/32" = 1'-0"

Campus Housing Outdoor Amenity Level

Floor Plan - Campus Housing

Two elevators serve all the housing floors in addition to an amenity area at every other floor that could house programs such as laundry, lounge, storage room, etc.

The double loaded corridor condition allows for maximizing site efficiency while affording daylight and natural ventilation access for all habitable units.



Housing Amenity
Building Service

Scale: 1/32" = 1'-0"

Typical Campus Housing Level

Academic/Office Option 1: Heat recovery chiller for CHW & HHW with VAV AHU

Option 1: Academic & Office

Heating and Cooling: Heat recovery air source chiller for chilled water and hot water. VAV hot water reheat boxes in each zone.

Ventilation: Indoor variable air volume air handling unit with chilled water and hot water coils.

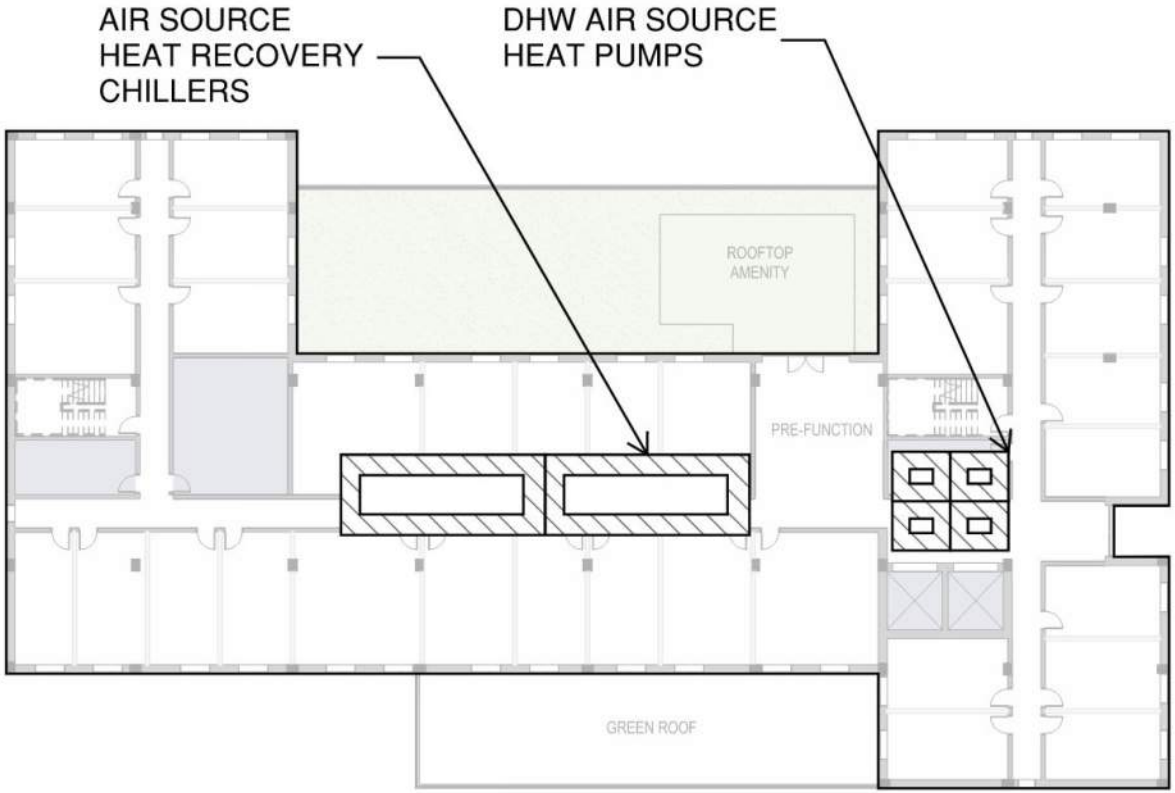
Heat recovery chiller

Air Handling Unit

VAV reheat box

POINTENERGY INNOVATIONS

Option 1: Heat recovery chiller for CHW & HHW with VAV AHU



Academic/Office Option 2:
Option 2: Air Cooled VRF with DX OSA Unit

Option 2: Academic and Office

Heating and Cooling: Variable refrigerant flow rooftop condensing units for heating and cooling. Ducted concealed indoor VRF fan coil units in each zone.

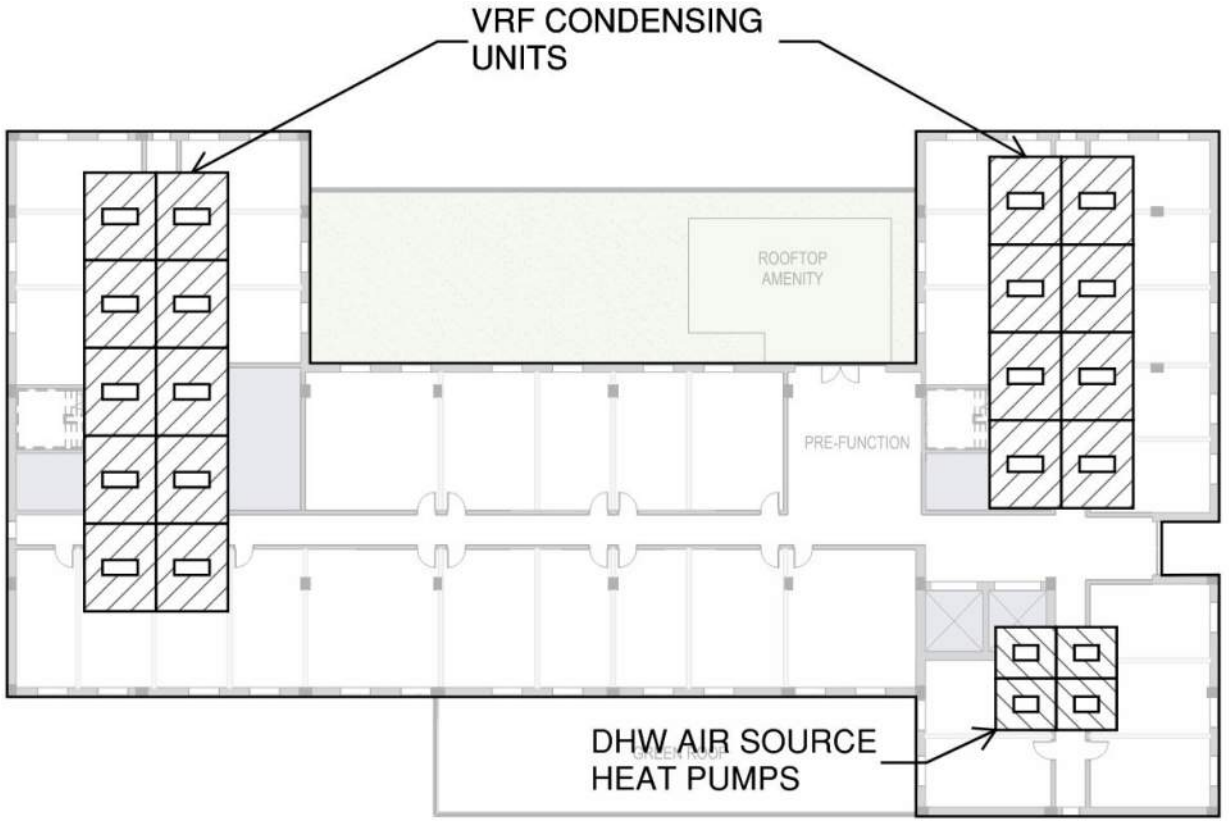
Ventilation: Variable air volume dedicated outdoor air units for ventilation only. Outdoor condenser units integrated for heating and cooling ventilation air.

AHUs at Mechanical Rooms within the building.

Outdoor condensers units

Ducted concealed fan coil units

Option 2: Air Cooled VRF with DX OSA Unit



APPENDIX B

UC COLLEGE OF LAW, 201 GOLDEN GATE AVENUE

NOISE ENVIRONMENTAL IMPACT REVIEW

Mechanical Equipment Information

POINTENERGY
INNOVATIONS

UC Law: 201 Golden Gate Avenue

Mechanical & Plumbing System Cutsheets

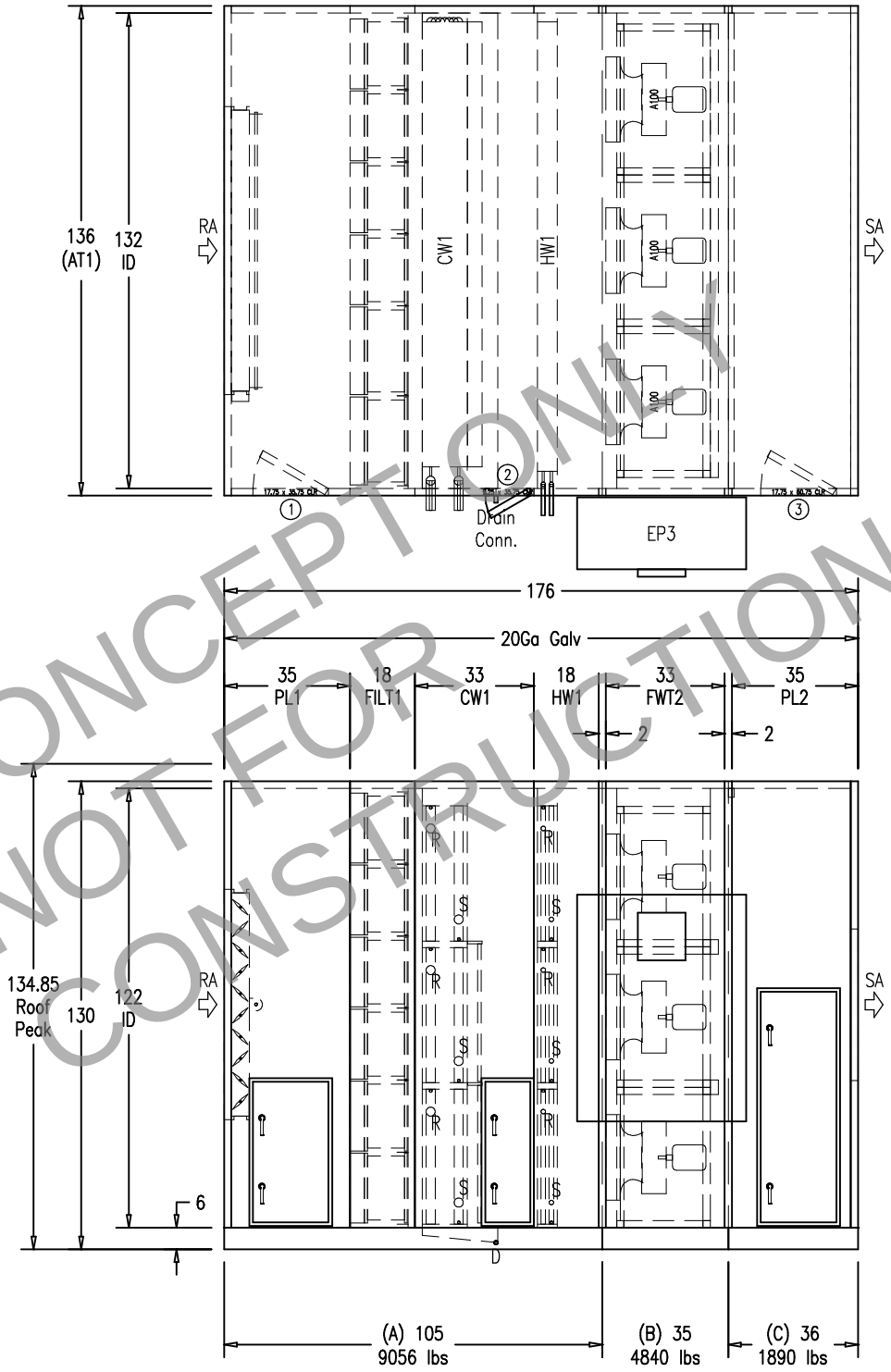
Concept Design
July 17, 2023

Air Handling Units

POINTENERGY
INNOVATIONS

Base Option: VAV AHUs

Preliminary



Printed (yyyy-MM-dd): 2023-07-06

All dimensions shown in inches, Operating weights shown in pounds. Overall unit dimensions do not include lifting lugs, electrical panels, pipe connections, door handles, etc.
Panelized Construction 33,000 ACFM

NORTEK™
AIR SOLUTIONS
HUNTAIR
19855 SW 124th Ave.
Tualatin, OR 97062
(503) 639-0113
www.nortekair.com

201 Golden Gate

Unit Tag: AHU-1			Unit Type: Outdoor	Dsg Qty: 1
Rep Firm: Norman S. Wright Mech. Equip.: Brisbane	Brisbane, CA, USA		Weight: 15,786	Box Qty: 3
Rep Contact: Mohammad Homaifard, (415) 715-7255		Model No: CSU-33K HW/CHW		
QUOTE #		NASDA Ver: 8.4.5	Factory SAE	Date m/d/y: 7/6/2023 Rev

Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

106 Static Pressure Summary

106.1 Condition 1

106.1.1 Supply

Tunnel	*Description*	*APD (in.H20)*
AirTunnel 1	RA Opening - Damper (Return Air)	0.02
AirTunnel 1	Filter 1, Pre / Final (Average Pressure Drop)	0.79
AirTunnel 1	Chilled Water Coil 1	0.41
AirTunnel 1	Hot Water Coil 1	0.04
AirTunnel 1	SA Opening (Supply Air)	0.06
AirTunnel 1	FANWALL 2 (Supply) 33,000 ACFM @ 2.82 in.H20	0.00
	Endwall 1 - Return Air - RA Opening ESP:	0.50
	Endwall 2 - Supply Air - SA Opening (1"ESP)	1.00
	Total Static Pressure:	2.82

Legend: ESP - External Static Pressure, OSA - Outside Air, EXH - Exhaust Air, RA - Return Air, SA - Supply Air

106.2 Notes/Legend

1. Summary report does not include static pressure of components supplied by others in the field unless otherwise noted.

Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

200 FANWALL 2 (Supply) : FWT2 : Box B — 20-85 - 145T - 39 x 42 x 26 - C3

200.1 Configuration / Quantity

1. Function	Supply Fan	Cell Size	7.Height	8.Width	9.Depth	10.Overall Depth
2. Quantity	9		39	42	26	31.25
3. Array	3 Rows x 3 Cols	11.Elev. / Temp.	39 ft / 70.0 °F			
4. Construction	Gen III (with Isolators)	12.Motor & Wheel Weight	154 lb	14.Redundant	0	
5. Inlet Cone Location	Upstream Removable	13.Fan Cell Weight	315 lb	15.Empty	0	
6. Stand Height	N/A	16.Ship Loose Fan (Wheel, Motor and Mounting Base)			0	

200.2 Options

1. Coplanar Insulation	Standard Melamine	8. Cell Finish	None
2. Extended Coplanar	No	9. Insulation Retainer	No
3. Back Draft Dampers	HBD0214	10.Inlet Attenuation	None
4. Inlet Cone Type	A100 Curved Cone	11.Blankoff Material	16Ga Galv
5. Solid Perimeter Material	N/A	12.Blankoff Finish	None
6. Discharge Safety Guard	No	13.Removal Rail	Yes
7. Cell Material	Aluminum / Steel	14.Anti-Vibration Structure	N/A

200.3 Fan Wheel

1. Wheel Type	HPF-A100	4. Width	85
2. Diameter	20	5. Max RPM	3521
3. Balancing Planes	1	6. Wheel Finish	None

200.4 Motor

1. Manufacturer	Toshiba	7. Model	4OA002L1ZVS210
2. HP Each / Total	2.5 / 22.5	8. Efficiency	84
3. Poles / RPM	4-Pole / 1,730	9. Service Factor	1.15
4. Frame / Casing	145T / TEAO	10.Shaft Isolation	Ceramic Bearings
5. Volts / Phase / Hz	460/3/60	11.FLA Each / Total	3.5 / 31.5 Amps
6. Winding	N/A	12.Motor HP Safety Factor	3.0 %

200.5 Variable Frequency Drive

1. Furnished by	Factory	7. Input / Output Amps	34 / 34 Amps
2. Quantity	1 Active, 1 Redundant	8. Maximum Hertz	59.01
3. Manufacturer	ABB ACH580	9. Input Line Reactor	No
4. Model No	ACH580-01-034A-4	10.VFD Communication	None
5. Horsepower	25	11.Switching Frequency	Default
6. Voltage	460/3/60	12.Drive Position	N/A

200.6 Control System

1. Redundant VFD	Yes	6. Flow Monitoring	None
2. Bypass Circuit	None	7. Fans to Monitor	None
3. Drive	Standard	8. Display	N/A
4. Optimization Control	No	9. Communication	N/A
5. Control Method	By Others		

200.7 Notes / Features

1. To view patents and other pending U.S. or Canadian applications visit www.nortekair.com/patents.
2. Cone constant = 2524, cone flow differential pressure = 2.11 in.H2O at 3667 CFM per fan.
3. The estimated VFD input watts are based on the motor and VFD efficiency at the selected load and RPM.
4. Fans balanced to a maximum allowable level of 0.022 inches per second peak.

Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-85 - 145T - 39 x 42 x 26 - C3

AMCA Licensed for Sound and Air Performance Without Appurtenances (Accessories).
Performance certified is for installation type A: Free Inlet/Free Outlet
Power [bhp] excludes drives

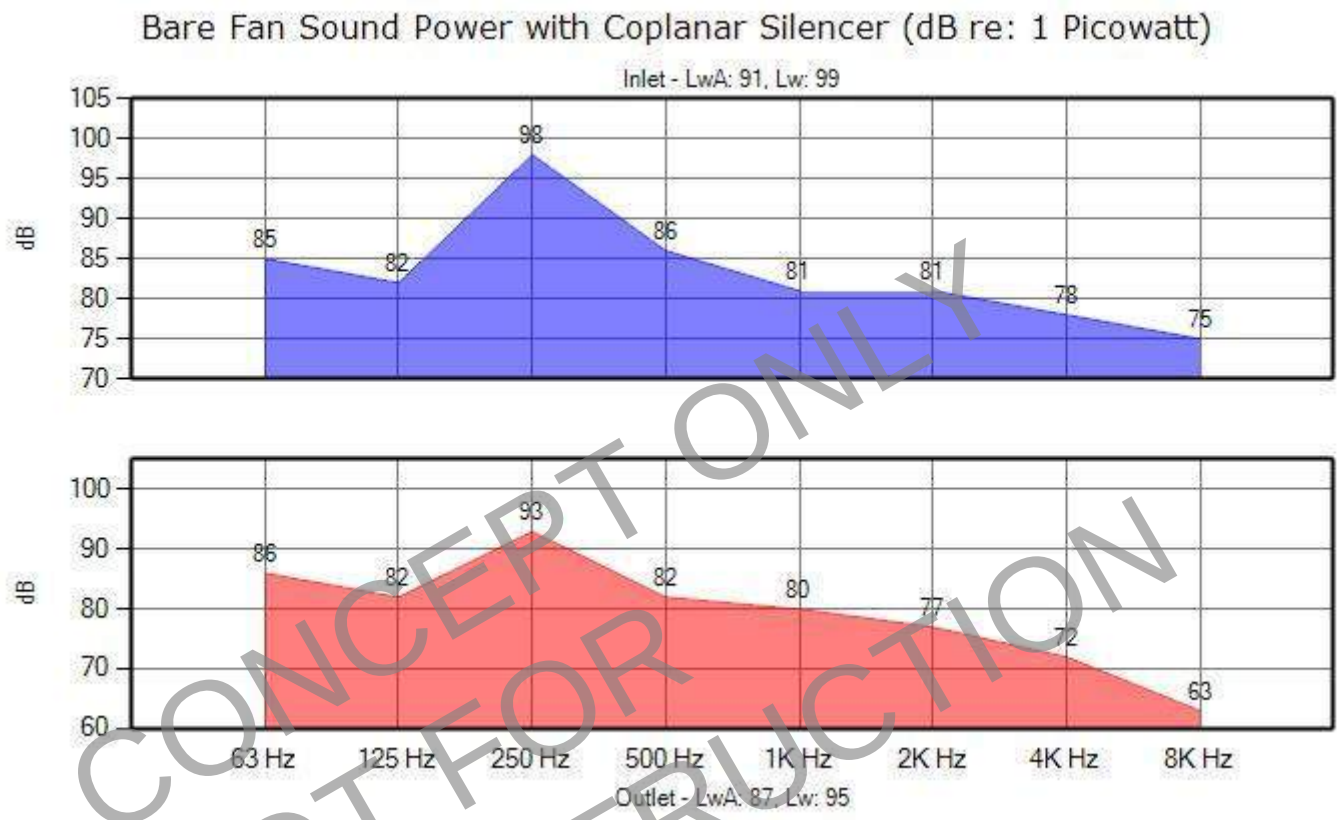
200.8 Operating Conditions

Operating Condition	Usage (%)	CFM	SP (in.H20)		Cell Qty			RPM	Hz	Fanwheel BHP		Vel. (ft/min)	Watts	FEG % Off Peak
			Input	Adj.	On	Off	Fail			Each	Total			
Condition 1	100	33,000	2.82	2.93	9	0	0	1,659	57.5	2.27	20.46	397	18,610	FEG85 1%

Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-85 - 145T - 39 x 42 x 26 - C3



200.9 Bare Fan Sound Power with Coplanar Silencer (dB re: 1 Picowatt)

Operating Condition		63	125	250	500	1k	2k	4k	8k	LwA	Lw
Condition 1	Inlet	85	82	98	86	81	81	78	75	91	99
	Outlet	86	82	93	82	80	77	72	63	87	95

Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-85 - 145T - 39 x 42 x 26 - C3

200.10 AMCA Statement

Nortek Air Solutions LLC certifies that the HPF-A100 fan wheel shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

The AMCA licensed air and/or sound performance data has been modified for installation,appurtenances or accessories, etc. not included in the certified data. The modified performance is not AMCA licensed but is provided to aid in selection and applications of the product. Performance certified is for installation type A: Free Inlet/Free Outlet Power [bhp] excludes drives

FWTRating DLL: Ver-1.6 / May 2022

Project Name: 201 Golden Gate
Unit Tag: AHU-1

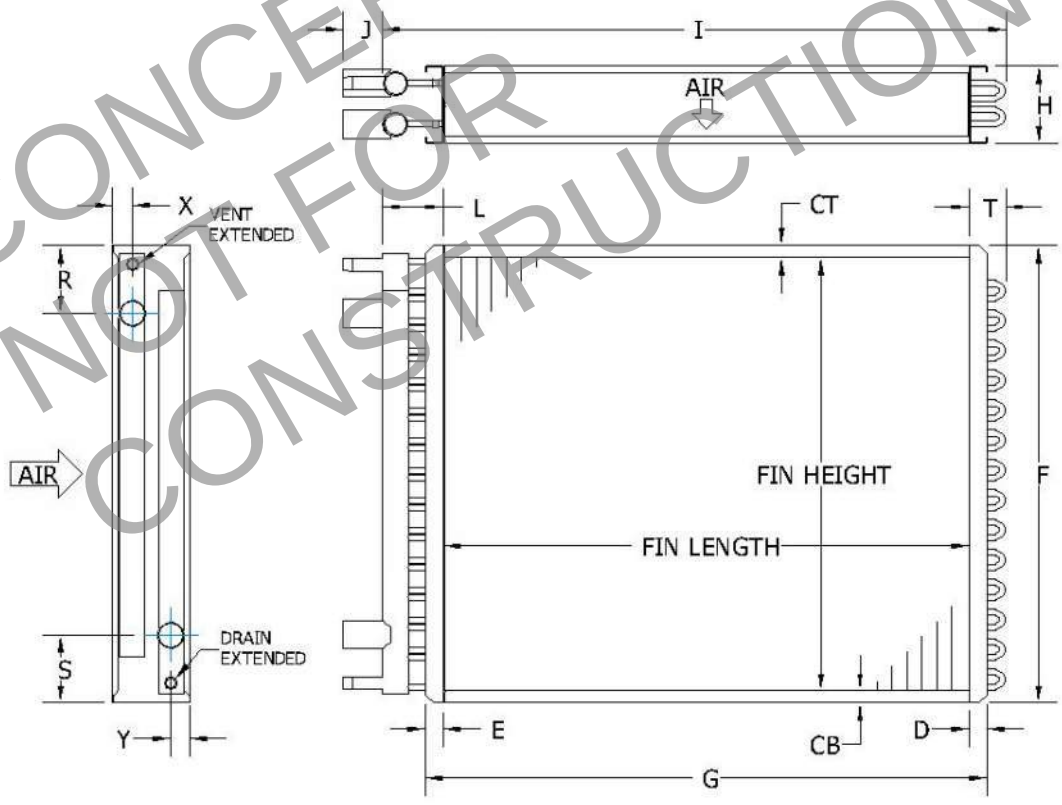
Sales Order #: -001

300 Chilled Water Coil 1 : CW1 : Box A — 5WC - 6 - 37.5 x 123.5 x 8 - 8 AL

300.1 Coil Layout			
1. Coil Hand	Right	6. Rack Style	Stacking Flange - 16Ga Galv
2. Configuration	Single	7. Rack Finish	None
3. Connection Orientation	Straight	8. Blankoff Material	16Ga Galv
4. Connection Material	Red Brass	9. Blankoff Finish	None
5. Connection Type	MPT		

300.2 Construction					
1. Quantity	3	8. Stand Height	N/A	14.Casing	16Ga Galv
2. Serpentine	1.333333	*Tube Detail - Primary Surface*		15.Coating	None
3. Fin Height	37.500 in	9. Material	Copper	*Fin Detail - Secondary Surface*	
4. Fin Length	123.500 in	10.O.D. x Wall	0.625 x 0.020 in	16.Material	Aluminum
5. Rows	8	11.Spacing	1.500 x 1.299 in	17.Thickness	0.008 in
6. Fins per Inch	8	12.Internal	Smooth	18.Configuration	Corrugated, Waffle with Straight Edge
7. Face Area	96.48 ft²	13.Return Bends	0.028 in		

Single Bank, Right Hand, 3 per unit — **5WC - 6 - 37.5 x 123.5 x 8 - 8 AL**



300.3 Dimensional Data (in)														
CT	CB	D	E	F	G	H	I	J	L	X	Y	R	S	T
0.75	1.0	1.5	1.5	39.25	126.5	12.5	131.1	7.0	5.1	2.4	2.4	7.0	7.0	2.5

Supply / Return Connections				*Vent and Drain*		
Quantity	Type	Pipe Size	Material	Type	Vent Location	Drain Location
2	MPT	2.5 in	Red Brass	0.750 in MPT Extended	Return Header	Supply Header

Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

300 Chilled Water Coil 1 : CW1 : Box A (Continued) 5WC - 6 - 37.5 x 123.5 x 8 - 8 AL

300.4 Condition 1

Entering		*Leaving*	
1. Actual Airflow	33,000 ACFM	10.Total Capacity	911.4 MBH
2. Standard Airflow	32,584 SCFM	11.Sensible Capacity	825.9 MBH
3. Elevation	39 ft	12.Actual Face Velocity	342.02 ft/min
4. Entering Air DB	76.0 °F	13.Leaving Air DB	53.0 °F
5. Entering Air WB	62.5 °F	14.Leaving Air WB	52.7 °F
6. Fluid Type	Water	15.APD	0.41 in.H20
7. Entering Fluid Temp	48.0 °F	16.Leaving Fluid Temp	60.0 °F
8. Fluid Flow Rate	151.4 GPM	17.Fluid Velocity	1.70 ft/s
9. Fluid Fouling Internal	0.0000	18.Fluid Pressure Drop	4.40 ft.H20

Notes:
1. Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org.
2. Chilled water velocity is below recommended minimum of 2.5 fps

300.5 Notes / Features

1. Manufacturer: Nortek Air Solutions, 5510 SW 29th Street, Oklahoma City, OK 73179
2. Caulk type is 3M 540
3. SCFM is corrected for Elevation and EDB.
4. Coils to be pressure tested at 315 PSI
5. Total operating weight is 3,387 lb.
6. Total fluid volume is 102.5 Gal.

Project Name: 201 Golden Gate
Unit Tag: AHU-1

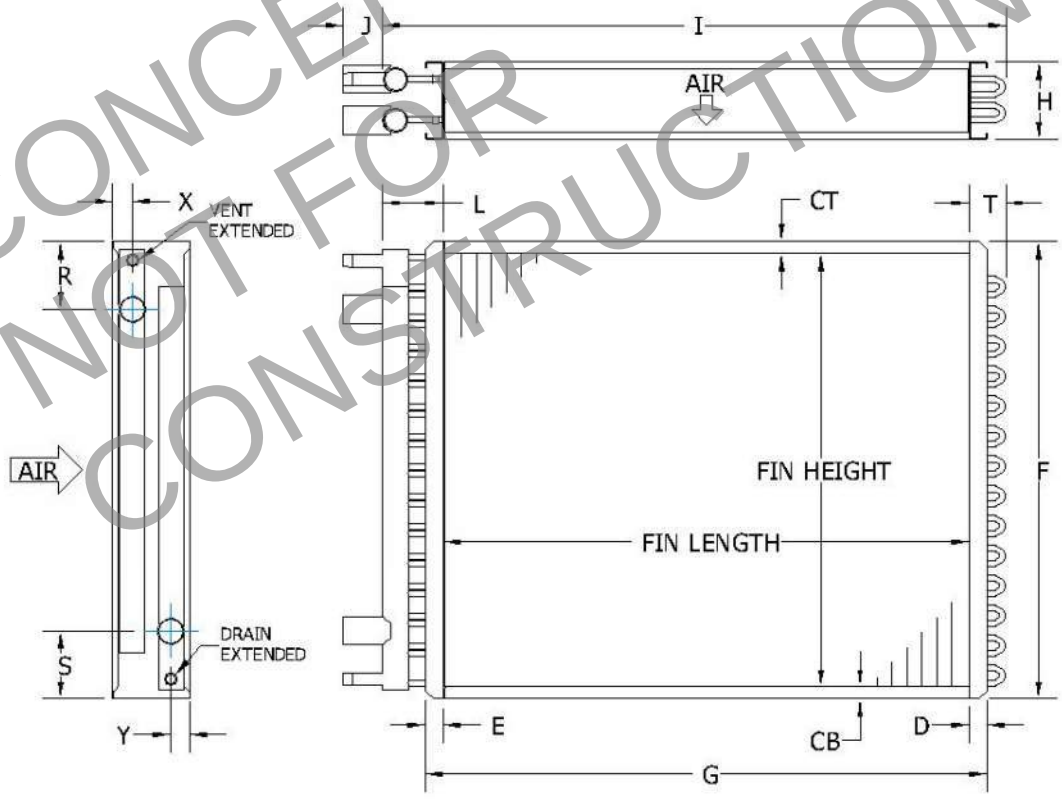
Sales Order #: -001

301 Hot Water Coil 1 : HW1 : Box A — 5WC - 4 - 37.5 x 124.75 x 1 - 8 AL

301.1 Coil Layout			
1. Coil Hand	Right	6. Rack Style	Stacking Flange - 16Ga Galv
2. Configuration	Single	7. Rack Finish	None
3. Connection Orientation	Straight	8. Blankoff Material	16Ga Galv
4. Connection Material	Red Brass	9. Blankoff Finish	None
5. Connection Type	MPT		

301.2 Construction					
1. Quantity	3	8. Stand Height	N/A	14.Casing	16Ga Galv
2. Serpentine	0.25	*Tube Detail - Primary Surface*		15.Coating	None
3. Fin Height	37.500 in	9. Material	Copper	*Fin Detail - Secondary Surface*	
4. Fin Length	124.750 in	10.O.D. x Wall	0.625 x 0.020 in	16.Material	Aluminum
5. Rows	1	11.Spacing	1.500 x 1.299 in	17.Thickness	0.008 in
6. Fins per Inch	8	12.Internal	Smooth	18.Configuration	Corrugated, Waffle with Straight Edge
7. Face Area	97.46 ft²	13.Return Bends	0.028 in		

Single Bank, Right Hand, 3 per unit — **5WC - 4 - 37.5 x 124.75 x 1 - 8 AL**



301.3 Dimensional Data (in)														
CT	CB	D	E	F	G	H	I	J	L	X	Y	R	S	T
0.75	1.0	1.5	1.5	39.25	127.75	5.5	131.0	8.0	4.25	1.6	1.6	7.0	7.0	2.0

Supply / Return Connections				*Vent and Drain*		
Quantity	Type	Pipe Size	Material	Type	Vent Location	Drain Location
2	MPT	1.25 in	Red Brass	0.750 in MPT Extended	Return Header	Supply Header

Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

301 Hot Water Coil 1 : HW1 : Box A (Continued) 5WC - 4 - 37.5 x 124.75 x 1 - 8 AL

301.4 Condition 1

Entering		*Leaving*	
1. Actual Airflow	33,000 ACFM		
2. Standard Airflow	33,331 SCFM	9. Sensible Capacity	451.3 MBH
3. Elevation	39 ft	10.Actual Face Velocity	338.60 ft/min
4. Entering Air DB	64.0 °F	11.Leaving Air DB	76.5 °F
5. Fluid Type	Water	12.APD	0.04 in.H20
6. Entering Fluid Temp	120.0 °F	13.Leaving Fluid Temp	100.0 °F
7. Fluid Flow Rate	45.5 GPM	14.Fluid Velocity	2.80 ft/s
8. Fluid Fouling Internal	0.0000	15.Fluid Pressure Drop	4.59 ft.H20

Notes:
1. Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

301.5 Notes / Features

1. Manufacturer: Nortek Air Solutions, 5510 SW 29th Street, Oklahoma City, OK 73179
2. Caulk type is 3M 540
3. SCFM is corrected for Elevation and EDB.
4. Coils to be pressure tested at 315 PSI
5. Total operating weight is 615 lb.
6. Total fluid volume is 13.6 Gal.

Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

500 Filter 1 : FILT1 : Box A

500.1 Pre / Final Size & Quantity			
1. Loading	Upstream Face Load	7. Bank Size	130.625 in W x 120.000 in H
2. Frame Material	Galvanized	8. Blankoff Location	N/A
3. Frame Finish	None	9. Qty / set & Frame Size 1	(24) 20 in x 20 in
4. Filter Clips	(144) C-80, (144) C-103-2	10.Qty / set & Frame Size 2	(12) 20 in x 25 in
5. Blankoff / Rack Material	16Ga Galv	11.Qty / set & Frame Size 3	
6. Blankoff / Rack Finish	None	12.Qty / set & Frame Size 4	

500.2 Pre Filter			
1. Filter Depth	4.000 in	4. Number of Sets	1
2. Efficiency	MERV 8	5. Max Face Velocity	304.62 ft/min at 33,000 ACFM
3. Manufacturer	AAF	6. Model	PerfectPleat Ultra

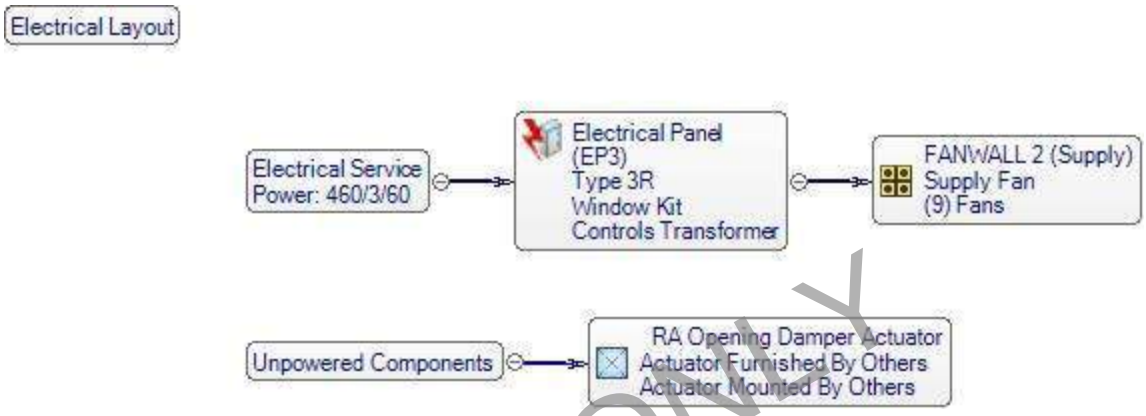
500.3 Final Filter			
1. Filter Depth	12.000 in	4. Number of Sets	1
2. Efficiency	MERV 13	5. Max Face Velocity	304.62 ft/min at 33,000 ACFM
3. Manufacturer	AAF	6. Model	VariCel DH

500.4 Notes / Features
1. All sets of Filters and clips to ship loose inside unit, installed by others.

Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

700 Electrical Layout Diagram

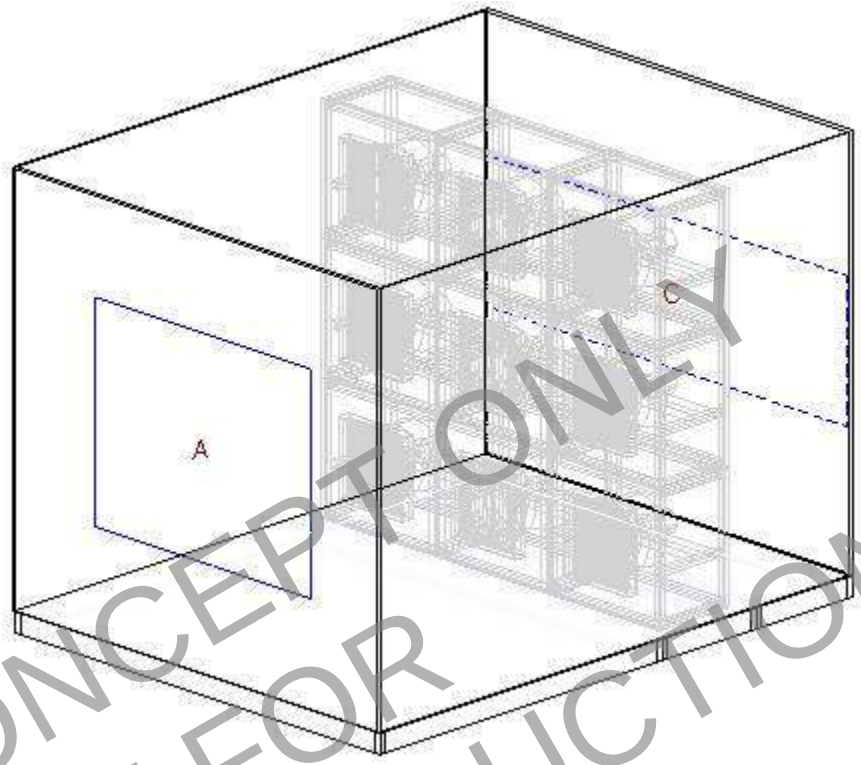


Note: The FLA and MCA values shown are estimated, see the electrical schematics for the actual values.

Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

900 Air Handler Sound Power Projection



900.1 Sound Power Data

Openings - Condition 1				Octave Band Freq. Sound Power (db re: 1 Picowatt)									
Tag	Title	Cabinet Liner	Area	63	125	250	500	1k	2k	4k	8k	LwA	Lw
A	RA Opening	Solid	35.6 ft²	81	77	92	81	75	70	65	60	86	93
C	SA Opening	Solid	38.6 ft²	86	82	93	82	80	77	72	63	88	95
Casing Radiated				75	68	76	59	55	53	48	45	69	79
Floor Radiated				67	64	69	42	36	35	35	35	61	72

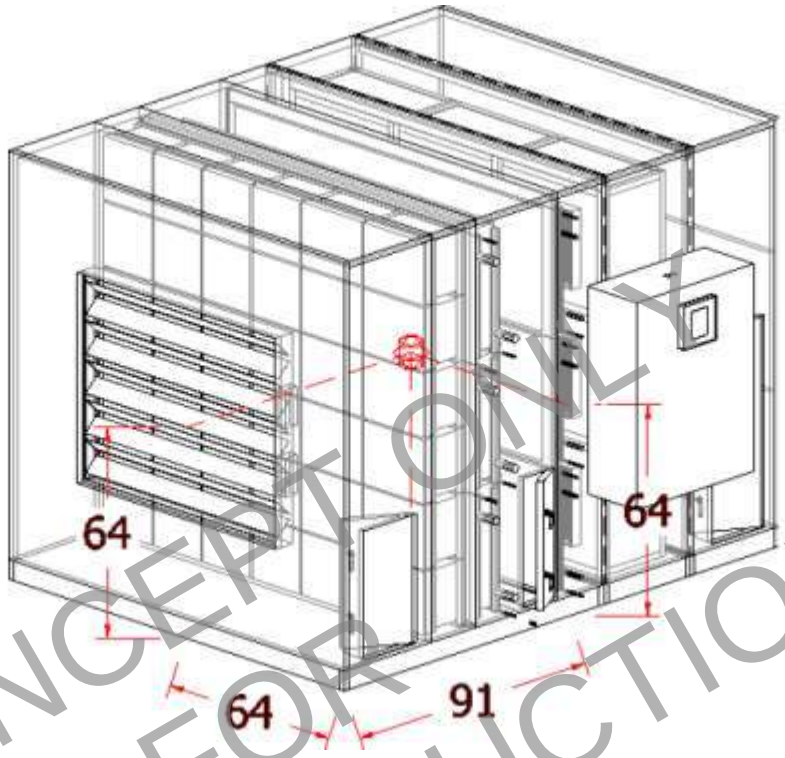
900.2 Notes

1. Fan data accuracy as per AMCA 311 (63Hz +6 dB, remaining bands +3 dB with an additional 3 dB available in any one band). Model predictive accuracy is ±6 dB. Fan and modeling accuracy is based on ideal flow patterns and design conditions. Projected fan and system sound levels are provided for comparison purposes only — actual levels may vary.
2. Sound power projections are not valid for opening velocities over 1,500 ft/min.
3. Sound power projects are not valid with VFD motor control carrier frequencies of less than 8KHz.

Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

901 Center of Gravity



Size (Inches)			Operating Weight (Pounds)	Center of Gravity (Inches)		
X	Y	Z		X	Y	Z
176.00	136.00	130.00	15,786	89.00	64.00	64.00

901.1 Notes

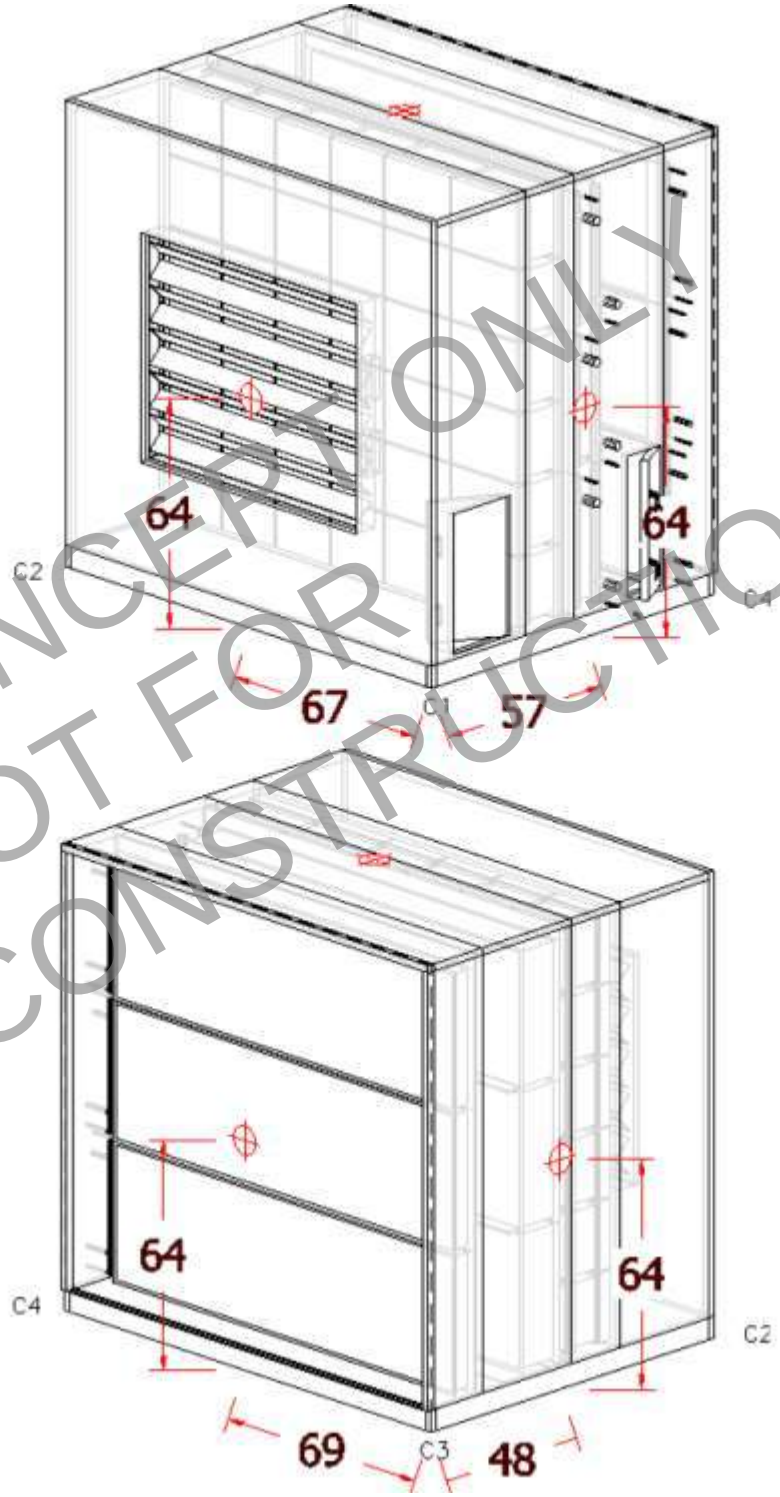
1. Center of gravity and weights are estimates and subject to change.
2. The center of gravity and weights shown above are based on operating weights and do not include packaging materials.
3. A 5% safety factor has been applied to the operating weights.
4. Corner weights apply to rectangular boxes only.
5. Corner weights are to assist in handling of the unit. Some units are not intended to be supported only at the corners. Contact your Sales Representative for support information.

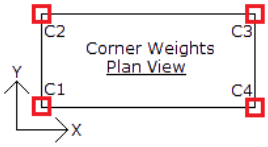
Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

901 Center of Gravity (Continued)

901.2 Box A





Size (Inches)			Shipping Weight (Pounds)	Corner Weights (Pounds)			
X	Y	Z		C1	C2	C3	C4
105.00	136.00	130.00	8,135	1,926	1,870	2,137	2,201

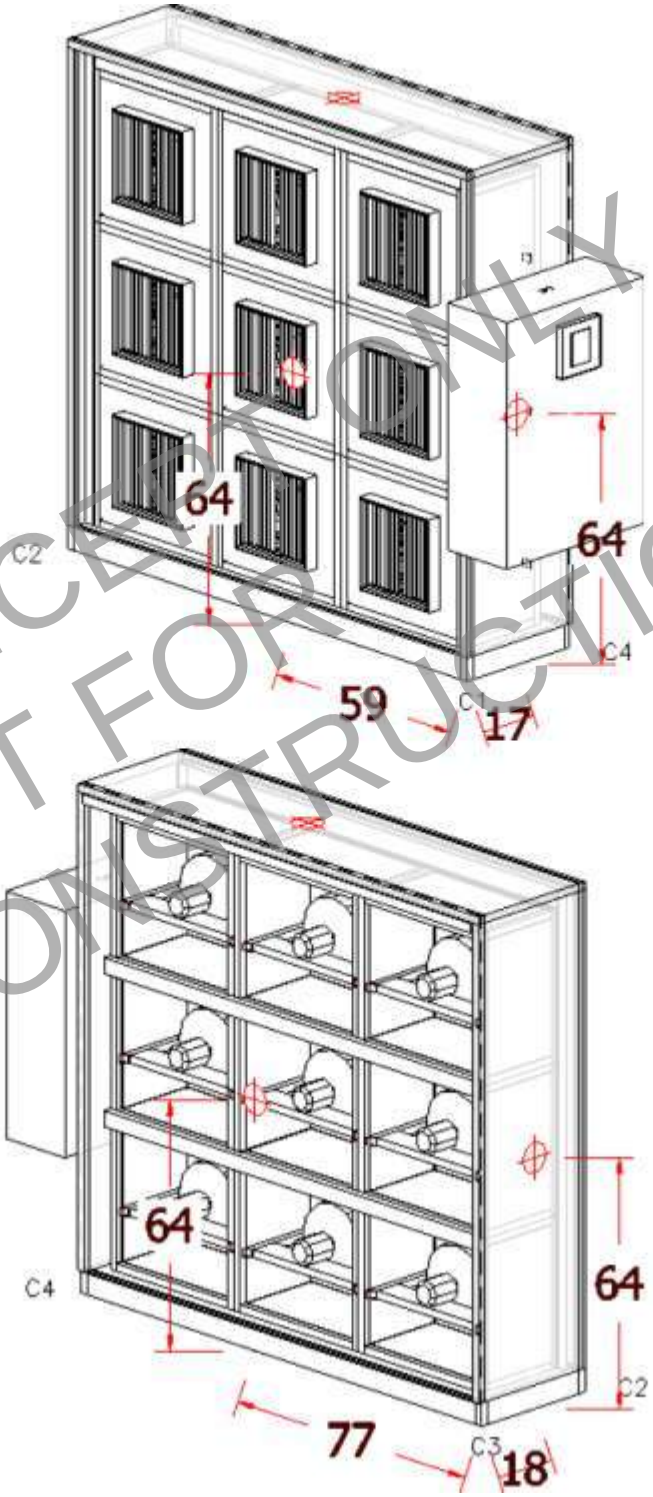
◇ Center of gravity, weight, and corner weights shown are based on shipping weight. Values are estimates and subject to change.

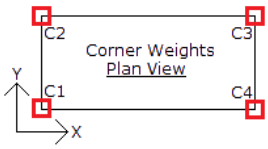
Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

901 Center of Gravity (Continued)

901.3 Box B





Size (Inches)			Shipping Weight (Pounds)	Corner Weights (Pounds)			
X	Y	Z		C1	C2	C3	C4
35.00	136.00	130.00	4,886	1,423	1,090	1,030	1,344

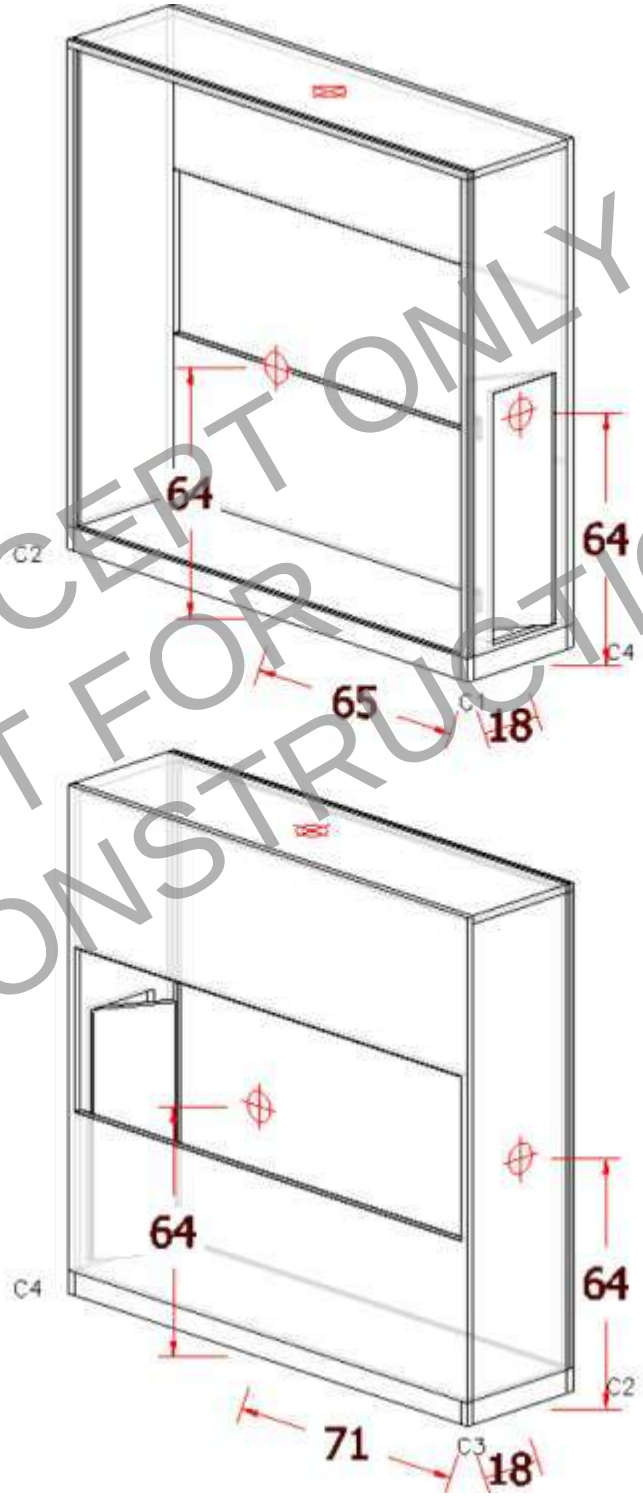
◇ Center of gravity, weight, and corner weights shown are based on shipping weight. Values are estimates and subject to change.

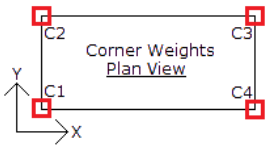
Project Name: 201 Golden Gate
Unit Tag: AHU-1

Sales Order #: -001

901 Center of Gravity (Continued)

901.4 Box C



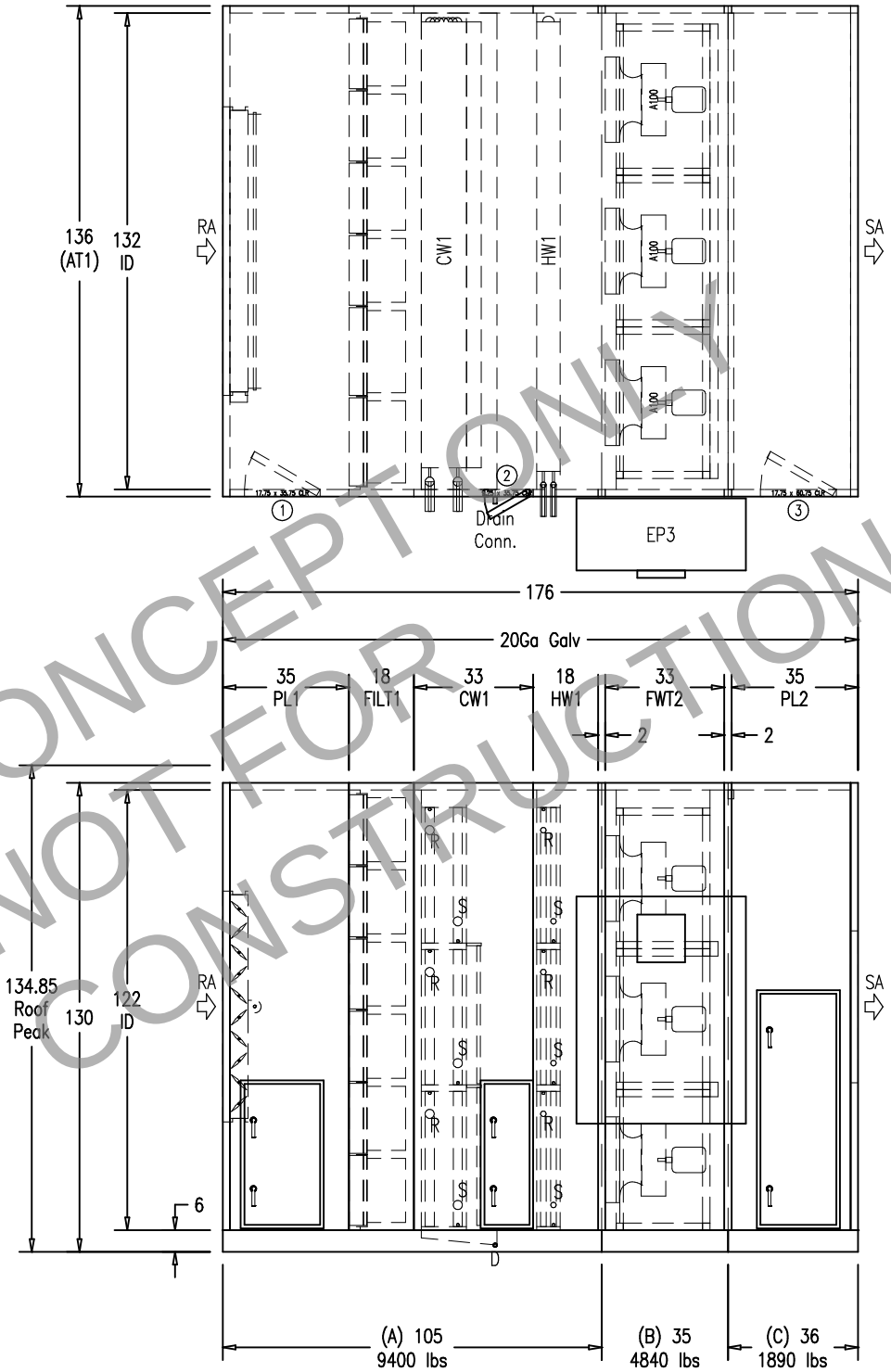


Size (Inches)			Shipping Weight (Pounds)	Corner Weights (Pounds)			
X	Y	Z		C1	C2	C3	C4
36.00	136.00	130.00	1,937	506	463	463	506

◇ Center of gravity, weight, and corner weights shown are based on shipping weight. Values are estimates and subject to change.

Base Option: VAV AHUs

Preliminary



Printed (yyyy-MM-dd): 2023-07-06

All dimensions shown in inches, Operating weights shown in pounds. Overall unit dimensions do not include lifting lugs, electrical panels, pipe connections, door handles, etc.
Panelized Construction 33,000 ACFM

NORTEK™
AIR SOLUTIONS
HUNTAIR
19855 SW 124th Ave.
Tualatin, OR 97062
(503) 639-0113
www.nortekair.com

201 Golden Gate

Unit Tag: AHU-2 and -3				Unit Type: Outdoor	Dsg Qty: 1
Rep Firm: Norman S. Wright Mech. Equip.: Brisbane	Brisbane, CA, USA			Weight: 16,131	Box Qty: 3
Rep Contact: Mohammad Homaifard, (415) 715-7255		Model No: CSU-33K HW/CHW			
QUOTE #		NASDA Ver: 8.4.5	Factory SAE	Date m/d/y: 7/6/2023	Rev

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

106 Static Pressure Summary

106.1 Condition 1

106.1.1 Supply

Tunnel	*Description*	*APD (in.H20)*
AirTunnel 1	RA Opening - Damper (Return Air)	0.02
AirTunnel 1	Filter 1, Pre / Final (Average Pressure Drop)	0.79
AirTunnel 1	Chilled Water Coil 1	0.41
AirTunnel 1	Hot Water Coil 1	0.06
AirTunnel 1	SA Opening (Supply Air)	0.06
AirTunnel 1	FANWALL 2 (Supply) 33,000 ACFM @ 2.84 in.H20	0.00
	Endwall 1 - Return Air - RA Opening ESP:	0.50
	Endwall 2 - Supply Air - SA Opening (1"ESP)	1.00
	Total Static Pressure:	2.84

Legend: ESP - External Static Pressure, OSA - Outside Air, EXH - Exhaust Air, RA - Return Air, SA - Supply Air

106.2 Notes/Legend

1. Summary report does not include static pressure of components supplied by others in the field unless otherwise noted.

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

200 FANWALL 2 (Supply) : FWT2 : Box B — 20-85 - 145T - 39 x 42 x 26 - C3

200.1 Configuration / Quantity

1. Function	Supply Fan	Cell Size	7.Height	8.Width	9.Depth	10.Overall Depth
2. Quantity	9		39	42	26	31.25
3. Array	3 Rows x 3 Cols	11.Elev. / Temp.	39 ft / 70.0 °F			
4. Construction	Gen III (with Isolators)	12.Motor & Wheel Weight	154 lb	14.Redundant	0	
5. Inlet Cone Location	Upstream Removable	13.Fan Cell Weight	315 lb	15.Empty	0	
6. Stand Height	N/A	16.Ship Loose Fan (Wheel, Motor and Mounting Base)			0	

200.2 Options

1. Coplanar Insulation	Standard Melamine	8. Cell Finish	None
2. Extended Coplanar	No	9. Insulation Retainer	No
3. Back Draft Dampers	HBD0214	10.Inlet Attenuation	None
4. Inlet Cone Type	A100 Curved Cone	11.Blankoff Material	16Ga Galv
5. Solid Perimeter Material	N/A	12.Blankoff Finish	None
6. Discharge Safety Guard	No	13.Removal Rail	Yes
7. Cell Material	Aluminum / Steel	14.Anti-Vibration Structure	N/A

200.3 Fan Wheel

1. Wheel Type	HPF-A100	4. Width	85
2. Diameter	20	5. Max RPM	3521
3. Balancing Planes	1	6. Wheel Finish	None

200.4 Motor

1. Manufacturer	Toshiba	7. Model	4OA002L1ZVS210
2. HP Each / Total	2.5 / 22.5	8. Efficiency	84
3. Poles / RPM	4-Pole / 1,730	9. Service Factor	1.15
4. Frame / Casing	145T / TEAO	10.Shaft Isolation	Ceramic Bearings
5. Volts / Phase / Hz	460/3/60	11.FLA Each / Total	3.5 / 31.5 Amps
6. Winding	N/A	12.Motor HP Safety Factor	3.0 %

200.5 Variable Frequency Drive

1. Furnished by	Factory	7. Input / Output Amps	34 / 34 Amps
2. Quantity	1 Active, 1 Redundant	8. Maximum Hertz	59.01
3. Manufacturer	ABB ACH580	9. Input Line Reactor	No
4. Model No	ACH580-01-034A-4	10.VFD Communication	None
5. Horsepower	25	11.Switching Frequency	Default
6. Voltage	460/3/60	12.Drive Position	N/A

200.6 Control System

1. Redundant VFD	Yes	6. Flow Monitoring	None
2. Bypass Circuit	None	7. Fans to Monitor	None
3. Drive	Standard	8. Display	N/A
4. Optimization Control	No	9. Communication	N/A
5. Control Method	By Others		

200.7 Notes / Features

1. To view patents and other pending U.S. or Canadian applications visit www.nortekair.com/patents.
2. Cone constant = 2524, cone flow differential pressure = 2.11 in.H2O at 3667 CFM per fan.
3. The estimated VFD input watts are based on the motor and VFD efficiency at the selected load and RPM.
4. Fans balanced to a maximum allowable level of 0.022 inches per second peak.

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-85 - 145T - 39 x 42 x 26 - C3

AMCA Licensed for Sound and Air Performance Without Appurtenances (Accessories).
Performance certified is for installation type A: Free Inlet/Free Outlet
Power [bhp] excludes drives

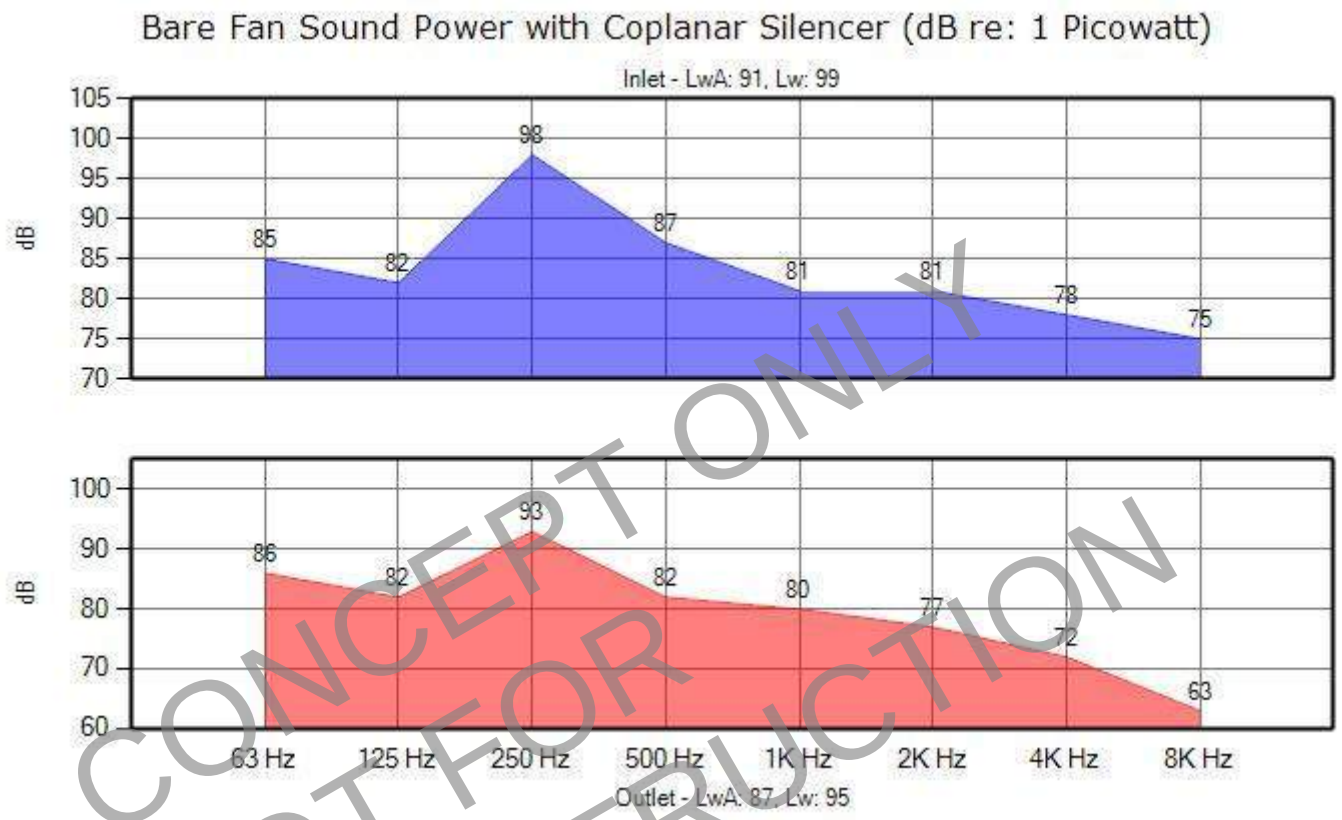
200.8 Operating Conditions

Operating Condition	Usage (%)	CFM	SP (in.H20)		Cell Qty			RPM	Hz	Fanwheel BHP		Vel. (ft/min)	Watts	FEG % Off Peak
			Input	Adj.	On	Off	Fail			Each	Total			
Condition 1	100	33,000	2.84	2.95	9	0	0	1,663	57.7	2.29	20.61	397	18,747	FEG85 1%

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-85 - 145T - 39 x 42 x 26 - C3



200.9 Bare Fan Sound Power with Coplanar Silencer (dB re: 1 Picowatt)

Operating Condition		63	125	250	500	1k	2k	4k	8k	LwA	Lw
Condition 1	Inlet	85	82	98	87	81	81	78	75	91	99
	Outlet	86	82	93	82	80	77	72	63	87	95

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-85 - 145T - 39 x 42 x 26 - C3

200.10 AMCA Statement

Nortek Air Solutions LLC certifies that the HPF-A100 fan wheel shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

The AMCA licensed air and/or sound performance data has been modified for installation,appurtenances or accessories, etc. not included in the certified data. The modified performance is not AMCA licensed but is provided to aid in selection and applications of the product. Performance certified is for installation type A: Free Inlet/Free Outlet Power [bhp] excludes drives

FWTRating DLL: Ver-1.6 / May 2022

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

300 Chilled Water Coil 1 : CW1 : Box A — 5WC - 4 - 37.5 x 123.5 x 8 - 8 AL

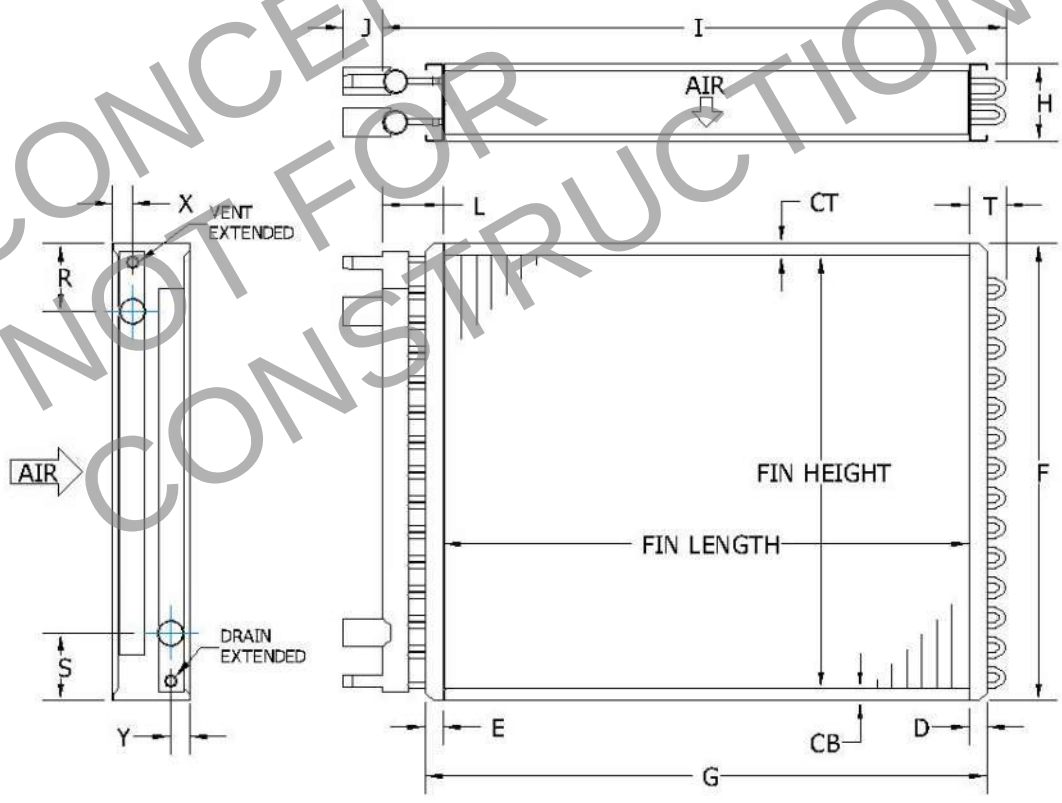
300.1 Coil Layout

1. Coil Hand	Right	6. Rack Style	Stacking Flange - 16Ga Galv
2. Configuration	Single	7. Rack Finish	None
3. Connection Orientation	Straight	8. Blankoff Material	16Ga Galv
4. Connection Material	Red Brass	9. Blankoff Finish	None
5. Connection Type	MPT		

300.2 Construction

1. Quantity	3	8. Stand Height	N/A	14.Casing	16Ga Galv
2. Serpentine	2	*Tube Detail - Primary Surface*		15.Coating	None
3. Fin Height	37.500 in	9. Material	Copper	*Fin Detail - Secondary Surface*	
4. Fin Length	123.500 in	10.O.D. x Wall	0.625 x 0.020 in	16.Material	Aluminum
5. Rows	8	11.Spacing	1.500 x 1.299 in	17.Thickness	0.008 in
6. Fins per Inch	8	12.Internal	Smooth	18.Configuration	Corrugated, Waffle with Straight Edge
7. Face Area	96.48 ft²	13.Return Bends	0.028 in		

Single Bank, Right Hand, 3 per unit — **5WC - 4 - 37.5 x 123.5 x 8 - 8 AL**



300.3 Dimensional Data (in)

CT	CB	D	E	F	G	H	I	J	L	X	Y	R	S	T
0.75	1.0	1.5	1.5	39.25	126.5	12.5	131.1	7.0	5.1	2.4	2.4	7.0	7.0	2.5

Supply / Return Connections				*Vent and Drain*		
Quantity	Type	Pipe Size	Material	Type	Vent Location	Drain Location
2	MPT	2.5 in	Red Brass	0.750 in MPT Extended	Return Header	Supply Header

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

300 Chilled Water Coil 1 : CW1 : Box A (Continued) 5WC - 4 - 37.5 x 123.5 x 8 - 8 AL

300.4 Condition 1

Entering		*Leaving*	
1. Actual Airflow	33,000 ACFM	10.Total Capacity	1,099.8 MBH
2. Standard Airflow	32,223 SCFM	11.Sensible Capacity	985.0 MBH
3. Elevation	39 ft	12.Actual Face Velocity	342.02 ft/min
4. Entering Air DB	82.0 °F	13.Leaving Air DB	54.2 °F
5. Entering Air WB	65.4 °F	14.Leaving Air WB	53.9 °F
6. Fluid Type	Water	15.APD	0.41 in.H20
7. Entering Fluid Temp	48.0 °F	16.Leaving Fluid Temp	60.0 °F
8. Fluid Flow Rate	182.9 GPM	17.Fluid Velocity	1.35 ft/s
9. Fluid Fouling Internal	0.0000	18.Fluid Pressure Drop	4.14 ft.H20

Notes:
1. Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org.
2. Chilled water velocity is below recommended minimum of 2.5 fps

300.5 Notes / Features

1. Manufacturer: Nortek Air Solutions, 5510 SW 29th Street, Oklahoma City, OK 73179
2. Caulk type is 3M 540
3. SCFM is corrected for Elevation and EDB.
4. Coils to be pressure tested at 315 PSI
5. Total operating weight is 3,391 lb.
6. Total fluid volume is 102.5 Gal.

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

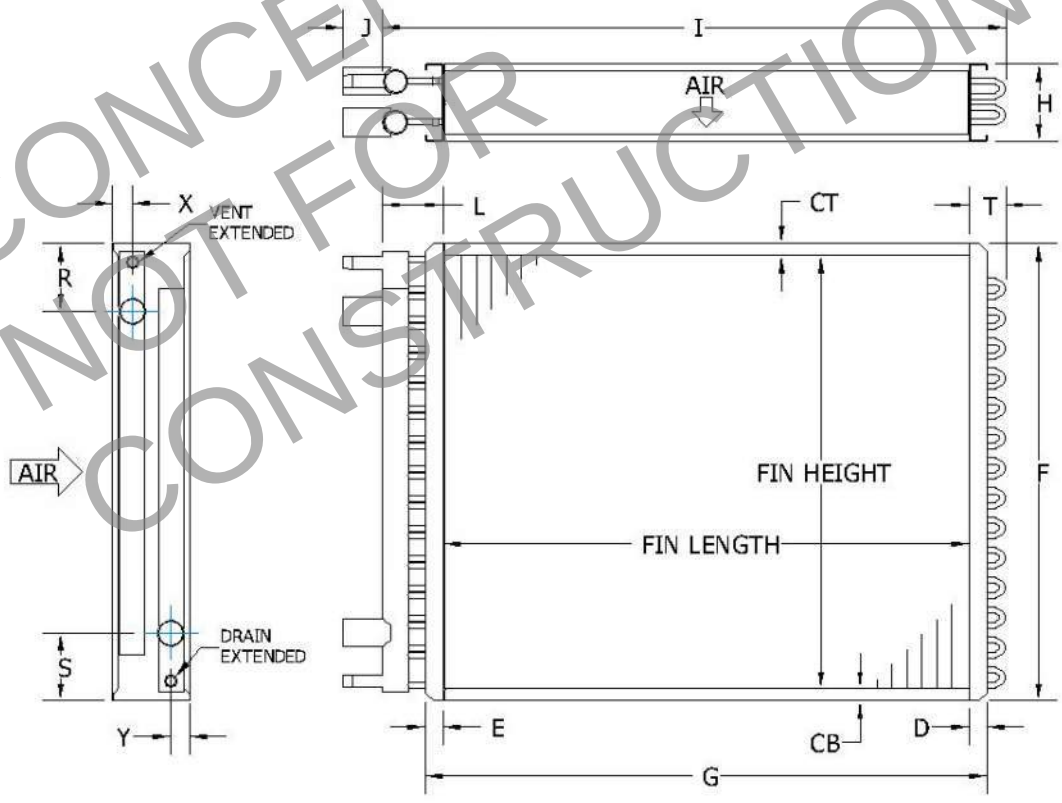
Sales Order #: -002

301 Hot Water Coil 1 : HW1 : Box A — 5WC - 4 - 37.5 x 124.5 x 2 - 6 AL

301.1 Coil Layout			
1. Coil Hand	Right	6. Rack Style	Stacking Flange - 16Ga Galv
2. Configuration	Single	7. Rack Finish	None
3. Connection Orientation	Straight	8. Blankoff Material	16Ga Galv
4. Connection Material	Red Brass	9. Blankoff Finish	None
5. Connection Type	MPT		

301.2 Construction					
1. Quantity	3	8. Stand Height	N/A	14.Casing	16Ga Galv
2. Serpentine	0.5	*Tube Detail - Primary Surface*		15.Coating	None
3. Fin Height	37.500 in	9. Material	Copper	*Fin Detail - Secondary Surface*	
4. Fin Length	124.500 in	10.O.D. x Wall	0.625 x 0.020 in	16.Material	Aluminum
5. Rows	2	11.Spacing	1.500 x 1.299 in	17.Thickness	0.008 in
6. Fins per Inch	6	12.Internal	Smooth	18.Configuration	Corrugated, Waffle with Straight Edge
7. Face Area	97.27 ft²	13.Return Bends	0.028 in		

Single Bank, Right Hand, 3 per unit — **5WC - 4 - 37.5 x 124.5 x 2 - 6 AL**



301.3 Dimensional Data (in)														
CT	CB	D	E	F	G	H	I	J	L	X	Y	R	S	T
0.75	1.0	1.5	1.5	39.25	127.5	6.5	131.0	8.0	4.5	1.9	1.9	7.0	7.0	2.0

Supply / Return Connections				*Vent and Drain*		
Quantity	Type	Pipe Size	Material	Type	Vent Location	Drain Location
2	MPT	1.5 in	Red Brass	0.750 in MPT Extended	Return Header	Supply Header

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

301 Hot Water Coil 1 : HW1 : Box A (Continued) 5WC - 4 - 37.5 x 124.5 x 2 - 6 AL

301.4 Condition 1

Entering		*Leaving*	
1. Actual Airflow	33,000 ACFM		
2. Standard Airflow	34,213 SCFM	9. Sensible Capacity	937.0 MBH
3. Elevation	39 ft	10.Actual Face Velocity	339.28 ft/min
4. Entering Air DB	50.5 °F	11.Leaving Air DB	75.8 °F
5. Fluid Type	Water	12.APD	0.06 in.H20
6. Entering Fluid Temp	120.0 °F	13.Leaving Fluid Temp	100.0 °F
7. Fluid Flow Rate	94.5 GPM	14.Fluid Velocity	2.91 ft/s
8. Fluid Fouling Internal	0.0000	15.Fluid Pressure Drop	6.39 ft.H20

Notes:
1. Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

301.5 Notes / Features

1. Manufacturer: Nortek Air Solutions, 5510 SW 29th Street, Oklahoma City, OK 73179
2. Caulk type is 3M 540
3. SCFM is corrected for Elevation and EDB.
4. Coils to be pressure tested at 315 PSI
5. Total operating weight is 949 lb.
6. Total fluid volume is 26.4 Gal.

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

500 Filter 1 : FILT1 : Box A

500.1 Pre / Final Size & Quantity			
1. Loading	Upstream Face Load	7. Bank Size	130.625 in W x 120.000 in H
2. Frame Material	Galvanized	8. Blankoff Location	N/A
3. Frame Finish	None	9. Qty / set & Frame Size 1	(24) 20 in x 20 in
4. Filter Clips	(144) C-70, (144) C-89	10.Qty / set & Frame Size 2	(12) 20 in x 25 in
5. Blankoff / Rack Material	16Ga Galv	11.Qty / set & Frame Size 3	
6. Blankoff / Rack Finish	None	12.Qty / set & Frame Size 4	

500.2 Pre Filter			
1. Filter Depth	4.000 in	4. Number of Sets	1
2. Efficiency	MERV 8	5. Max Face Velocity	304.62 ft/min at 33,000 ACFM
3. Manufacturer	AAF	6. Model	PerfectPleat Ultra

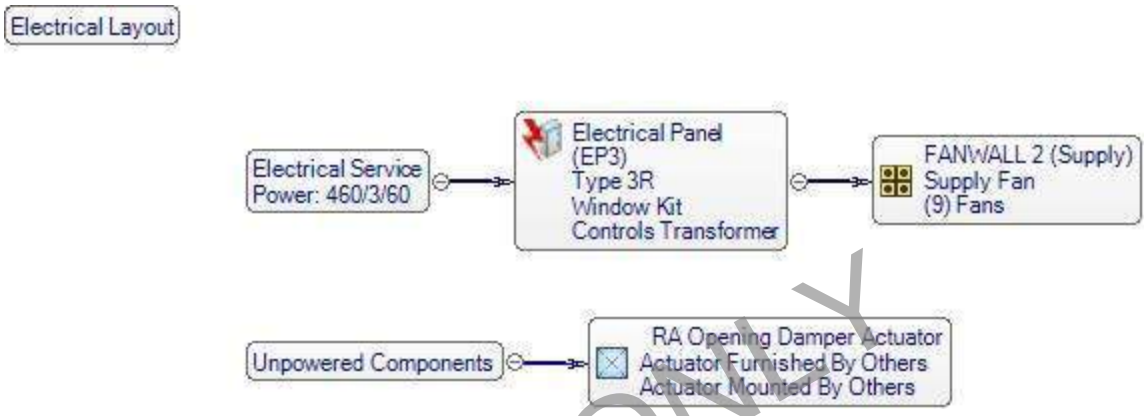
500.3 Final Filter			
1. Filter Depth	12.000 in	4. Number of Sets	1
2. Efficiency	MERV 13	5. Max Face Velocity	304.62 ft/min at 33,000 ACFM
3. Manufacturer	AAF	6. Model	VariCel SH

500.4 Notes / Features
1. All sets of Filters and clips to ship loose inside unit, installed by others.

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

700 Electrical Layout Diagram

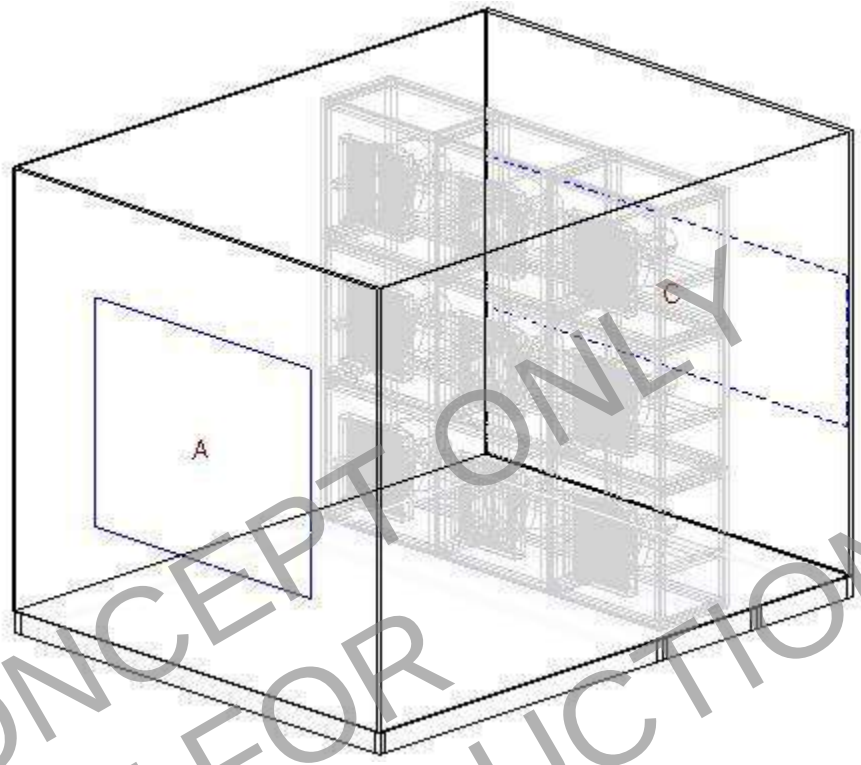


Note: The FLA and MCA values shown are estimated, see the electrical schematics for the actual values.

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

900 Air Handler Sound Power Projection



900.1 Sound Power Data

Openings - Condition 1				Octave Band Freq. Sound Power (db re: 1 Picowatt)									
Tag	Title	Cabinet Liner	Area	63	125	250	500	1k	2k	4k	8k	LwA	Lw
A	RA Opening	Solid	35.6 ft²	81	77	92	82	75	70	65	60	86	93
C	SA Opening	Solid	38.6 ft²	86	82	93	82	80	77	72	63	88	95
Casing Radiated				75	68	76	60	55	53	48	45	69	79
Floor Radiated				67	64	69	43	36	35	35	35	61	72

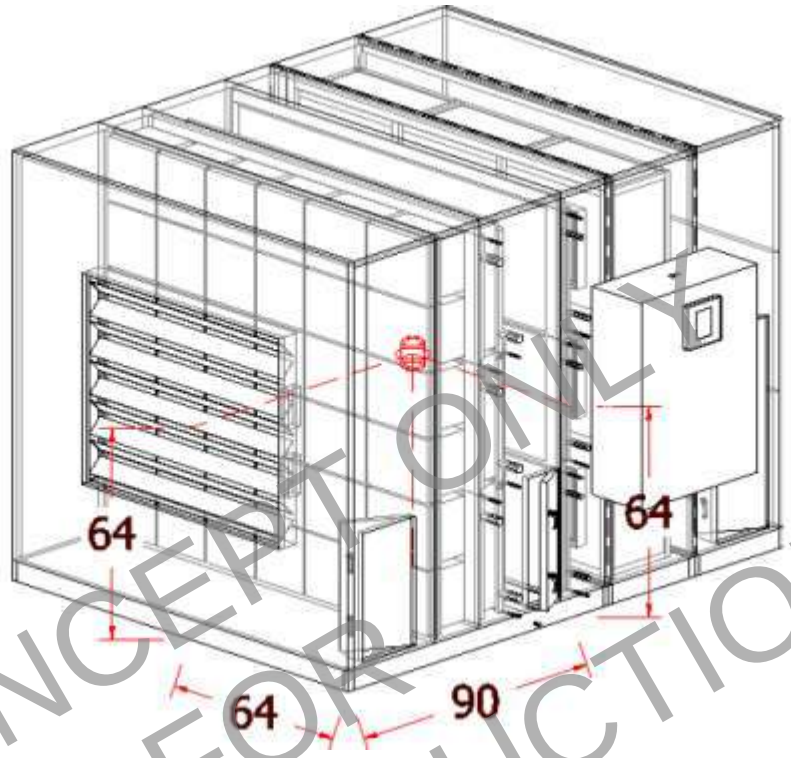
900.2 Notes

1. Fan data accuracy as per AMCA 311 (63Hz +6 dB, remaining bands +3 dB with an additional 3 dB available in any one band). Model predictive accuracy is ±6 dB. Fan and modeling accuracy is based on ideal flow patterns and design conditions. Projected fan and system sound levels are provided for comparison purposes only — actual levels may vary.
2. Sound power projections are not valid for opening velocities over 1,500 ft/min.
3. Sound power projects are not valid with VFD motor control carrier frequencies of less than 8KHz.

Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

901 Center of Gravity



Size (Inches)			Operating Weight (Pounds)	Center of Gravity (Inches)		
X	Y	Z		X	Y	Z
176.00	136.00	130.00	16,130	89.00	64.00	64.00

901.1 Notes

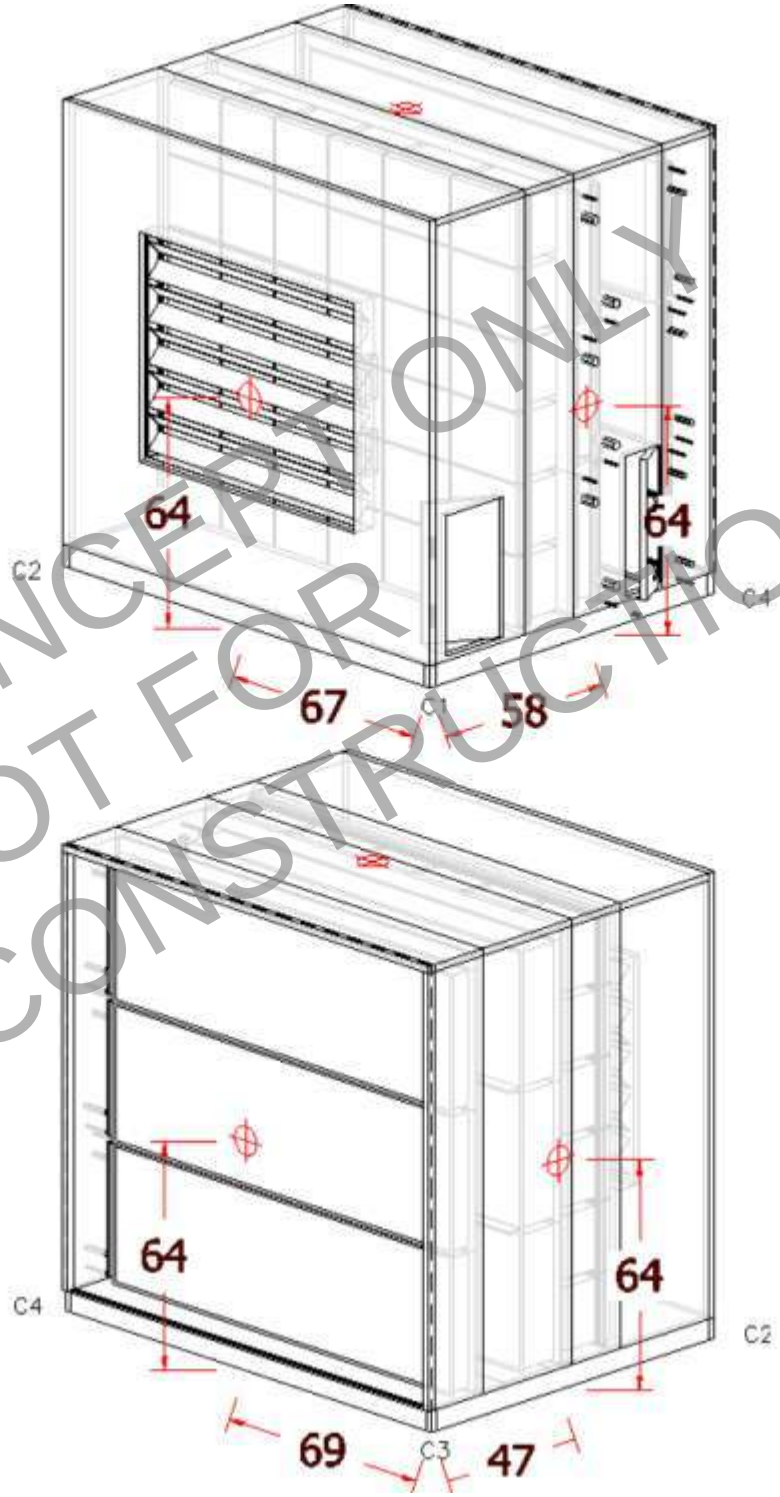
1. Center of gravity and weights are estimates and subject to change.
2. The center of gravity and weights shown above are based on operating weights and do not include packaging materials.
3. A 5% safety factor has been applied to the operating weights.
4. Corner weights apply to rectangular boxes only.
5. Corner weights are to assist in handling of the unit. Some units are not intended to be supported only at the corners. Contact your Sales Representative for support information.

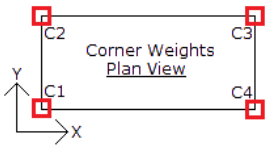
Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

901 Center of Gravity (Continued)

901.2 Box A





Size (Inches)			Shipping Weight (Pounds)	Corner Weights (Pounds)			
X	Y	Z		C1	C2	C3	C4
105.00	136.00	130.00	8,367	1,981	1,924	2,198	2,264

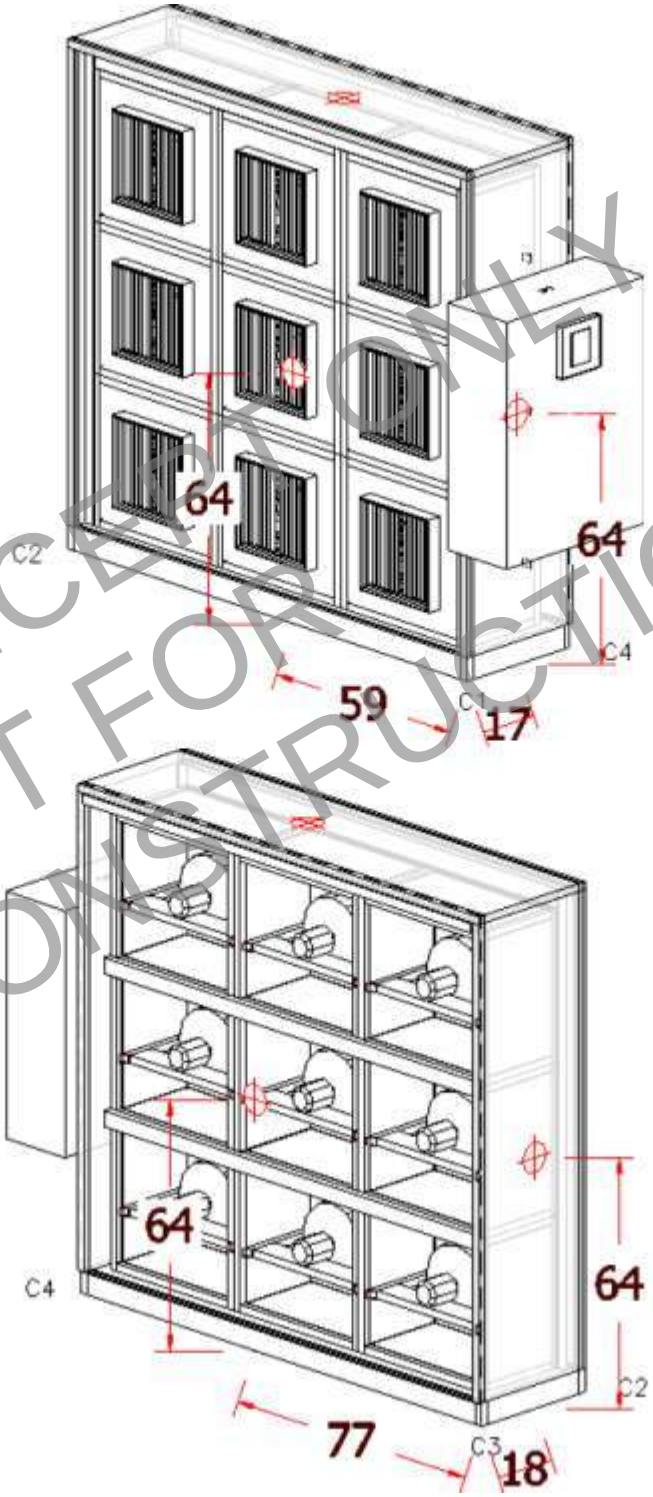
◇ Center of gravity, weight, and corner weights shown are based on shipping weight. Values are estimates and subject to change.

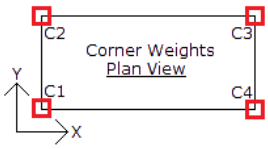
Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

901 Center of Gravity (Continued)

901.3 Box B



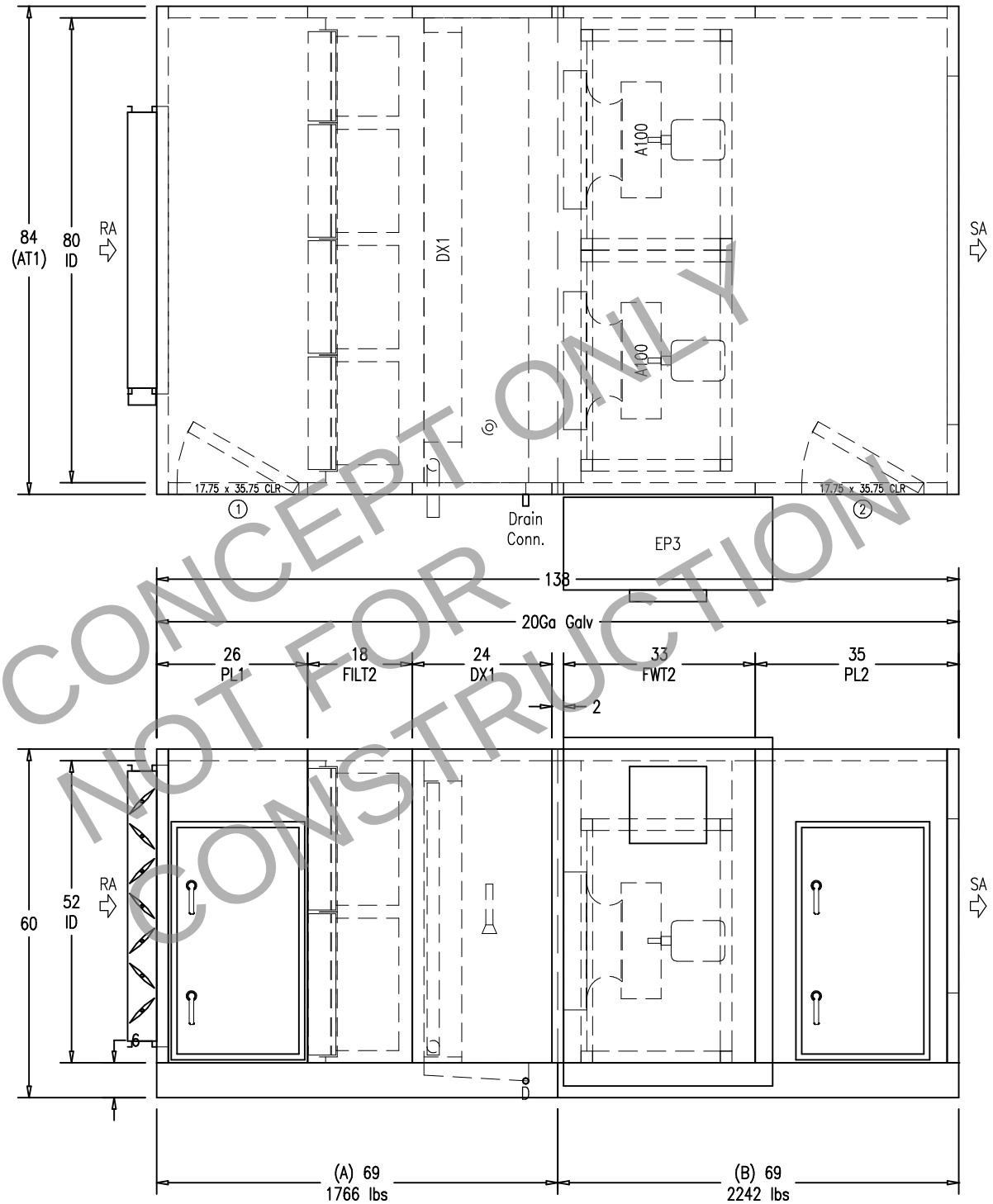


Size (Inches)			Shipping Weight (Pounds)	Corner Weights (Pounds)			
X	Y	Z		C1	C2	C3	C4
35.00	136.00	130.00	4,886	1,423	1,090	1,030	1,344

◇ Center of gravity, weight, and corner weights shown are based on shipping weight. Values are estimates and subject to change.

Alternate Option: DOAS units w/remote condensers

Preliminary



Printed (yyyy-MM-dd): 2023-07-14

All dimensions shown in inches, Operating weights shown in pounds. Overall unit dimensions do not include lifting lugs, electrical panels, pipe connections, door handles, etc.
Panelized Construction 8,000 ACFM

NORTEK™
AIR SOLUTIONS
HUNTAIR
19855 SW 124th Ave.
Tualatin, OR 97062
(503) 639-0113
www.nortekair.com

201 Golden Gate

Unit Tag: DOAS AHU-1 with DX Coil				Unit Type: Indoor	Dsg Qty: 1
Rep Firm: Norman S. Wright Mech. Equip.: Brisbane	Brisbane, CA, USA			Weight: 4,008	Box Qty: 2
Rep Contact: Mohammad Homaifard, (415) 715-7255			Model No: CSU-8K DX		
QUOTE #		NASDA Ver: 8.4.5	Factory SAE	Date m/d/y: 7/14/2023	Rev

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil

Sales Order #: -005

106 Static Pressure Summary

106.1 Condition 1

106.1.1 Supply

Tunnel	*Description*	*APD (in.H20)*
AirTunnel 1	RA Opening - Damper (Return Air)	0.00
AirTunnel 1	SA Opening (Supply Air)	0.04
AirTunnel 1	DX Coil - Heating & Cooling (To Be Confirmed after DX coil)	0.19
AirTunnel 1	Filter 2, Pre / Final (Average Pressure Drop)	0.78
AirTunnel 1	FANWALL 2 (Supply) 8,000 ACFM @ 2.51 in.H20	0.00
	Endwall 1 - Return Air - RA Opening ESP:	0.50
	Endwall 2 - Supply Air - SA Opening (1"ESP)	1.00
	Total Static Pressure:	2.51

Legend: ESP - External Static Pressure, OSA - Outside Air, EXH - Exhaust Air, RA - Return Air, SA - Supply Air

106.2 Notes/Legend

1. Summary report does not include static pressure of components supplied by others in the field unless otherwise noted.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil
Sales Order #: -005

200 FANWALL 2 (Supply) : FWT2 : Box B — 20-85 - 145T - 42 x 38 x 26 - A2

200.1 Configuration / Quantity

1. Function	Supply Fan	Cell Size	7.Height	8.Width	9.Depth	10.Overall Depth
2. Quantity	2		42	38	26	31.25
3. Array	1 Rows x 2 Cols	11.Elev. / Temp.	39 ft / 70.0 °F			
4. Construction	Gen III (with Isolators)	12.Motor & Wheel Weight	149 lb	14.Redundant	0	
5. Inlet Cone Location	Upstream Removable	13.Fan Cell Weight	307 lb	15.Empty	0	
6. Stand Height	N/A	16.Ship Loose Fan (Wheel, Motor and Mounting Base)			0	

200.2 Options

1. Coplanar Insulation	Standard Melamine	8. Cell Finish	None
2. Extended Coplanar	No	9. Insulation Retainer	No
3. Back Draft Dampers	HBD0214	10.Inlet Attenuation	None
4. Inlet Cone Type	A100 Curved Cone	11.Blankoff Material	16Ga Galv
5. Solid Perimeter Material	N/A	12.Blankoff Finish	None
6. Discharge Safety Guard	No	13.Removal Rail	No
7. Cell Material	Aluminum / Steel	14.Anti-Vibration Structure	N/A

200.3 Fan Wheel

1. Wheel Type	HPF-A100	4. Width	85
2. Diameter	20	5. Max RPM	3521
3. Balancing Planes	1	6. Wheel Finish	None

200.4 Motor

1. Manufacturer	Toshiba	7. Model	4OA002L1ZVS210
2. HP Each / Total	2.5 / 5	8. Efficiency	84
3. Poles / RPM	4-Pole / 1,730	9. Service Factor	1.15
4. Frame / Casing	145T / TEAO	10.Shaft Isolation	Ceramic Bearings
5. Volts / Phase / Hz	460/3/60	11.FLA Each / Total	3.5 / 7.0 Amps
6. Winding	N/A	12.Motor HP Safety Factor	3.0 %

200.5 Variable Frequency Drive

1. Furnished by	Factory	7. Input / Output Amps	7.6 / 7.6 Amps
2. Quantity	1 Active, 1 Redundant	8. Maximum Hertz	59.27
3. Manufacturer	ABB ACH580	9. Input Line Reactor	No
4. Model No	ACH580-01-07A6-4	10.VFD Communication	None
5. Horsepower	5	11.Switching Frequency	Default
6. Voltage	460/3/60	12.Drive Position	N/A

200.6 Control System

1. Redundant VFD	Yes	6. Flow Monitoring	None
2. Bypass Circuit	None	7. Fans to Monitor	None
3. Drive	Standard	8. Display	N/A
4. Optimization Control	No	9. Communication	N/A
5. Control Method	By Others		

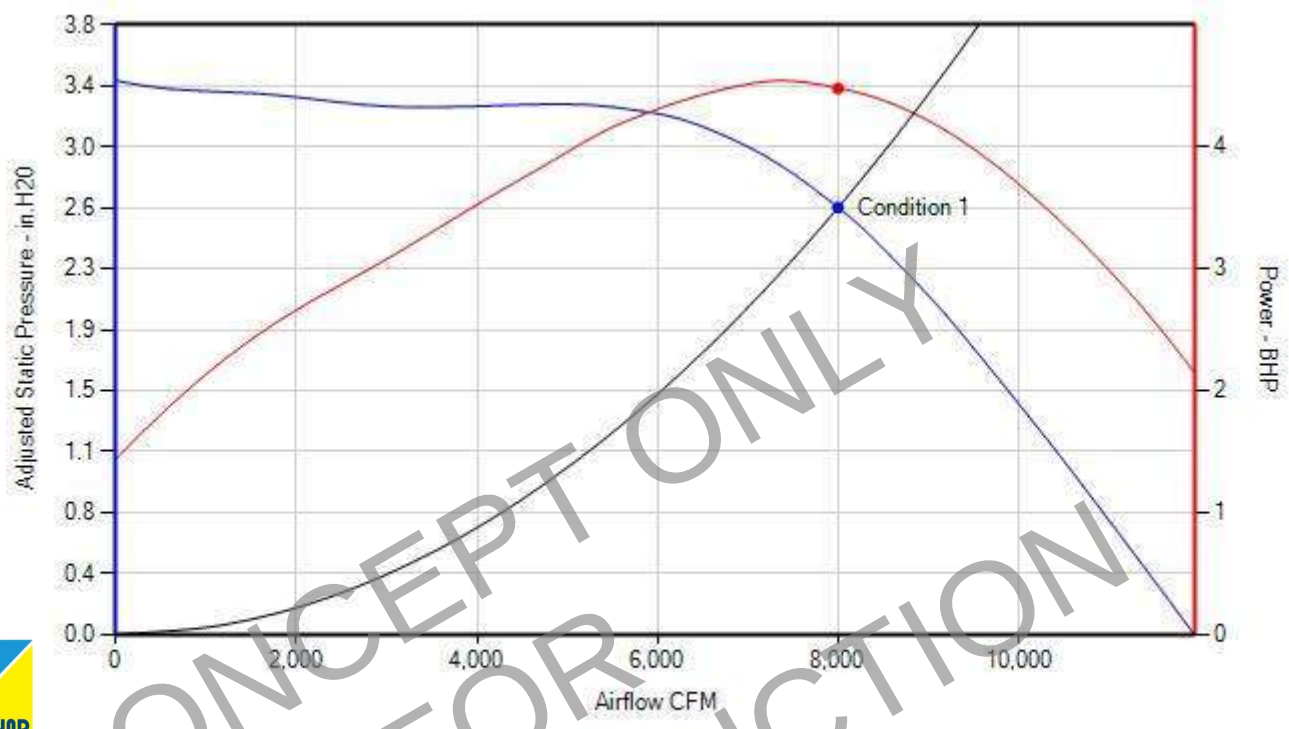
200.7 Notes / Features

1. To view patents and other pending U.S. or Canadian applications visit www.nortekair.com/patents.
2. Cone constant = 2524, cone flow differential pressure = 2.51 in.H2O at 4000 CFM per fan.
3. The estimated VFD input watts are based on the motor and VFD efficiency at the selected load and RPM.
4. Fans balanced to a maximum allowable level of 0.022 inches per second peak.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil

Sales Order #: -005

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-85 - 145T - 42 x 38 x 26 - A2



AMCA Licensed for Sound and Air Performance Without Appurtenances (Accessories).
Performance certified is for installation type A: Free Inlet/Free Outlet
Power [bhp] excludes drives

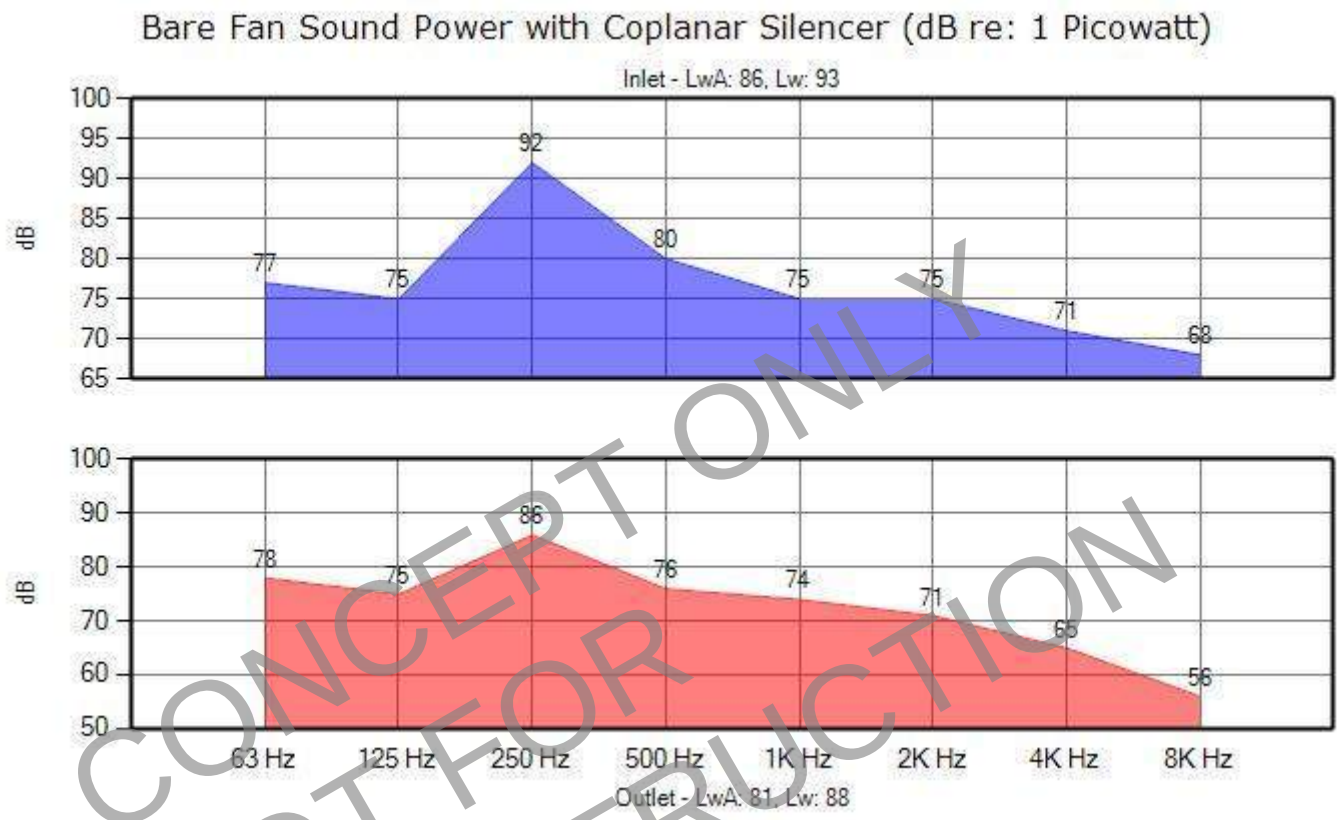
200.8 Operating Conditions

Operating Condition	Usage (%)	CFM	SP (in.H20)		Cell Qty			RPM	Hz	Fanwheel BHP		Vel. (ft/min)	Watts	FEG % Off Peak
			Input	Adj.	On	Off	Fail			Each	Total			
Condition 1	100	8,000	2.51	2.65	2	0	0	1,658	57.5	2.24	4.48	446	4,069	FEG85 0%

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil

Sales Order #: -005

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-85 - 145T - 42 x 38 x 26 - A2



200.9 Bare Fan Sound Power with Coplanar Silencer (dB re: 1 Picowatt)

Operating Condition		63	125	250	500	1k	2k	4k	8k	LwA	Lw
Condition 1	Inlet	77	75	92	80	75	75	71	68	86	93
	Outlet	78	75	86	76	74	71	65	56	81	88

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil
Sales Order #: -005

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-85 - 145T - 42 x 38 x 26 - A2

200.10 AMCA Statement

Nortek Air Solutions LLC certifies that the HPF-A100 fan wheel shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

The AMCA licensed air and/or sound performance data has been modified for installation,appurtenances or accessories, etc. not included in the certified data. The modified performance is not AMCA licensed but is provided to aid in selection and applications of the product. Performance certified is for installation type A: Free Inlet/Free Outlet Power [bhp] excludes drives

FWTRating DLL: Ver-1.6 / May 2022

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil

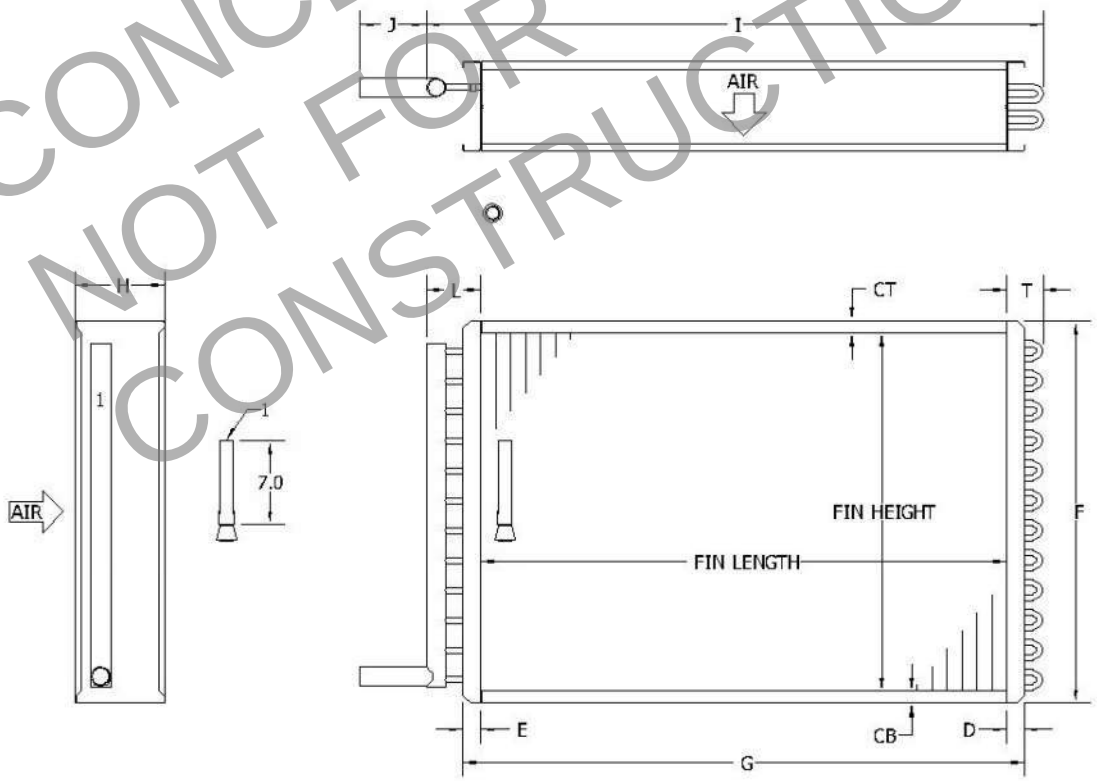
Sales Order #: -005

300 DX Coil - Heating & Cooling : DX1 : Box A — 4DX - 6 - 47.5 x 70.5 x 3 - 10 AL

300.1 Coil Layout			
1. Coil Hand	Right	6. Distributor Location	Vertical Side Mount
2. Configuration	Single	7. Rack Style	None
3. Connection Orientation	Straight	8. Rack Finish	None
4. Connection Material	Copper	9. Blankoff Material	16Ga 304 SS
5. Connection Type	Sweat	10.Blankoff Finish	None

300.2 Construction					
1. Quantity	1	8. Stand Height	N/A	14.Casing	16Ga 304 SS
2. Serpentine	0.5	*Tube Detail - Primary Surface*		15.Coating	None
3. Fin Height	47.500 in	9. Material	Copper	*Fin Detail - Secondary Surface*	
4. Fin Length	70.500 in	10.O.D. x Wall	0.500 x 0.017 in	16.Material	Aluminum
5. Rows	3	11.Spacing	1.250 x 1.083 in	17.Thickness	0.006 in
6. Fins per Inch	10	12.Internal	Smooth	18.Configuration	Sine Wave with Rippled Edge
7. Face Area	23.26 ft²	13.Hairpin	Yes		
Circuit	*%*	*Feeds*	*Suction O.D. (in)*	*HGB*	Split Method
1	100.00	19	2.125 in	NONE	No Circuit Splits

Single Bank, Right Hand, 1 per unit — **4DX - 6 - 47.5 x 70.5 x 3 - 10 AL**



300.3 Dimensional Data (in)										
CT	CB	D	E	F	G	H	I	J	L	T
1.0	1.0	1.5	1.5	49.5	73.5	6.5	77.5	8.0	5.0	2.0

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil
Sales Order #: -005

300 DX Coil - Heating & Cooling : DX1 : Box A (Continued) 4DX - 6 - 47.5 x 70.5 x 3 - 10 AL

300.4 Condition 1

Entering		Leaving	
1. Actual Airflow	8,000 ACFM	10.Total Capacity	336.6 MBH
2. Standard Airflow	7,603 SCFM	11.Sensible Capacity	260.7 MBH
3. Elevation	39 ft	12.Actual Face Velocity	344.01 ft/min
4. Entering Air DB	88.0 °F	13.Leaving Air DB	56.8 °F
5. Entering Air WB	68.0 °F	14.Leaving Air WB	53.6 °F
6. Refrigerant	R-410A	15.APD	0.19 in.H20
7. Suction Temp	40.0 °F		
8. Superheat	8.0 °F		
9. Liquid Temp	110.0 °F	16.Refrig. Pressure Drop	3.2 psig

Circuit	Tons / Circuit (each coil)	Circuit	Tons / Circuit (each coil)
1	28.05 Tons	2	0.00 Tons

300.5 Notes / Features

1. Manufacturer: Nortek Air Solutions, 5510 SW 29th Street, Oklahoma City, OK 73179
2. RPD does not included distributor and distributor lines.
3. SCFM is corrected for Elevation and EDB.
4. Total operating weight is 235 lb.
5. Total fluid volume is 8.4 Gal.
6. Coil is NOT certified by AHRI
7. Coil is outside the scope of AHRI Standard 410. The calculations used to predict coil performance are the same as those used for coils within the scope of AHRI Standard 410.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil

Sales Order #: -005

500 Filter 2 : FILT2 : Box A

500.1 Pre / Final Size & Quantity			
1. Loading	Upstream Face Load	7. Bank Size	76.125 in W x 50.000 in H
2. Frame Material	Galvanized	8. Blankoff Location	N/A
3. Frame Finish	None	9. Qty / set & Frame Size 1	(2) 16 in x 25 in
4. Filter Clips	(32) C-70, (32) C-89	10.Qty / set & Frame Size 2	(6) 20 in x 25 in
5. Blankoff / Rack Material	16Ga Galv	11.Qty / set & Frame Size 3	
6. Blankoff / Rack Finish	None	12.Qty / set & Frame Size 4	

500.2 Pre Filter			
1. Filter Depth	4.000 in	4. Number of Sets	1
2. Efficiency	MERV 8	5. Max Face Velocity	303.16 ft/min at 8,000 ACFM
3. Manufacturer	AAF	6. Model	PerfectPleat Ultra

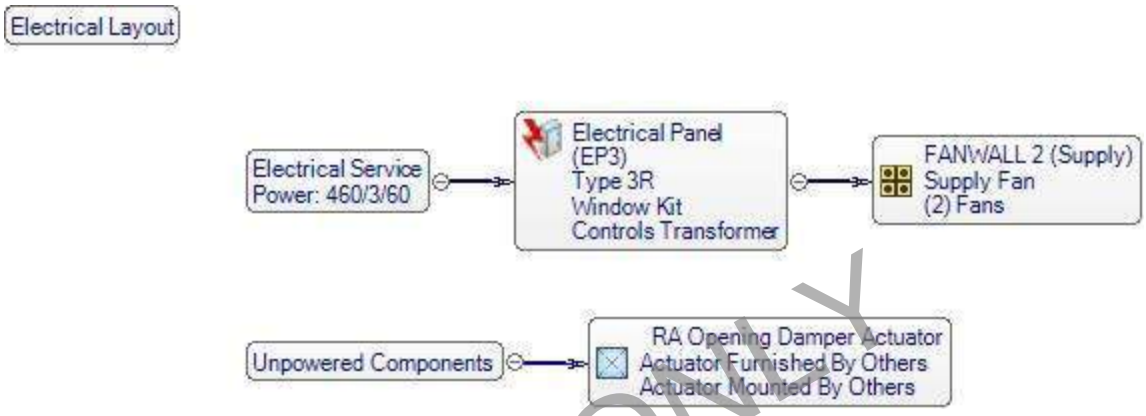
500.3 Final Filter			
1. Filter Depth	12.000 in	4. Number of Sets	1
2. Efficiency	MERV 13	5. Max Face Velocity	303.16 ft/min at 8,000 ACFM
3. Manufacturer	AAF	6. Model	VariCel SH

500.4 Notes / Features
1. All sets of Filters and clips to ship loose inside unit, installed by others.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil

Sales Order #: -005

700 Electrical Layout Diagram

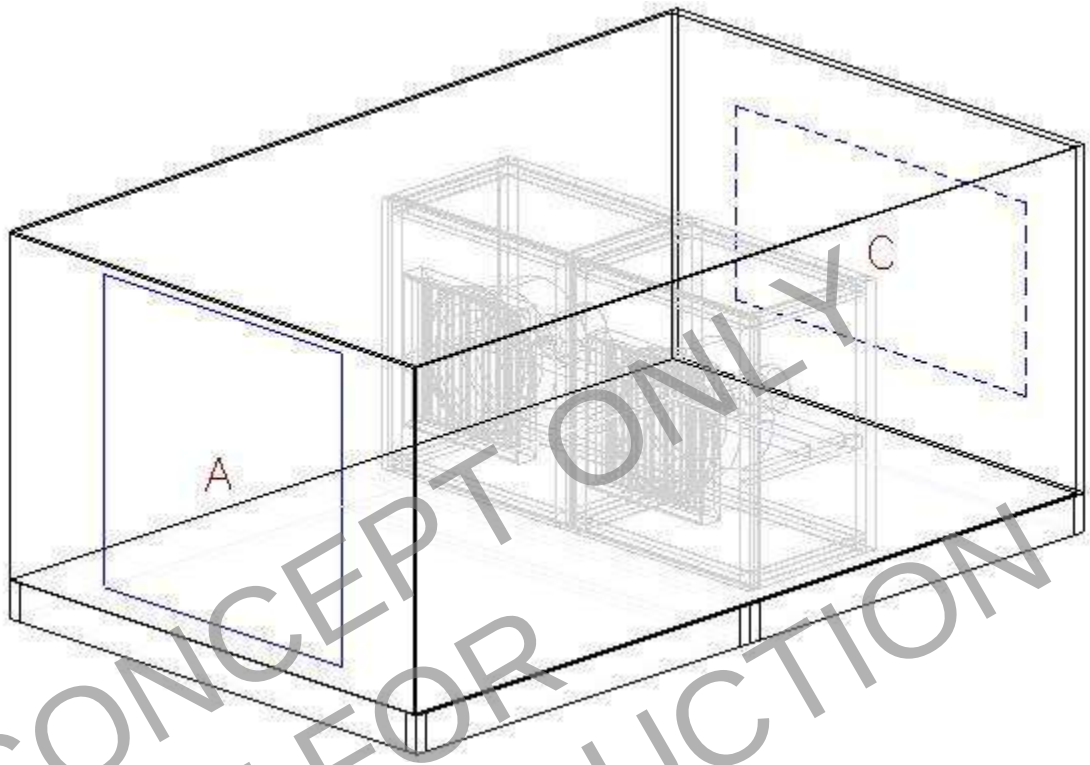


Note: The FLA and MCA values shown are estimated, see the electrical schematics for the actual values.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil

Sales Order #: -005

900 Air Handler Sound Power Projection



900.1 Sound Power Data

Openings - Condition 1				Octave Band Freq. Sound Power (db re: 1 Picowatt)									
Tag	Title	Cabinet Liner	Area	63	125	250	500	1k	2k	4k	8k	LwA	Lw
A	RA Opening	Solid	16.7 ft²	77	73	89	78	71	66	60	55	82	90
C	SA Opening	Solid	12.5 ft²	78	75	86	76	74	71	65	56	81	88
Casing Radiated				68	62	70	54	49	47	45	45	63	73
Floor Radiated				62	59	65	38	35	35	35	35	57	67

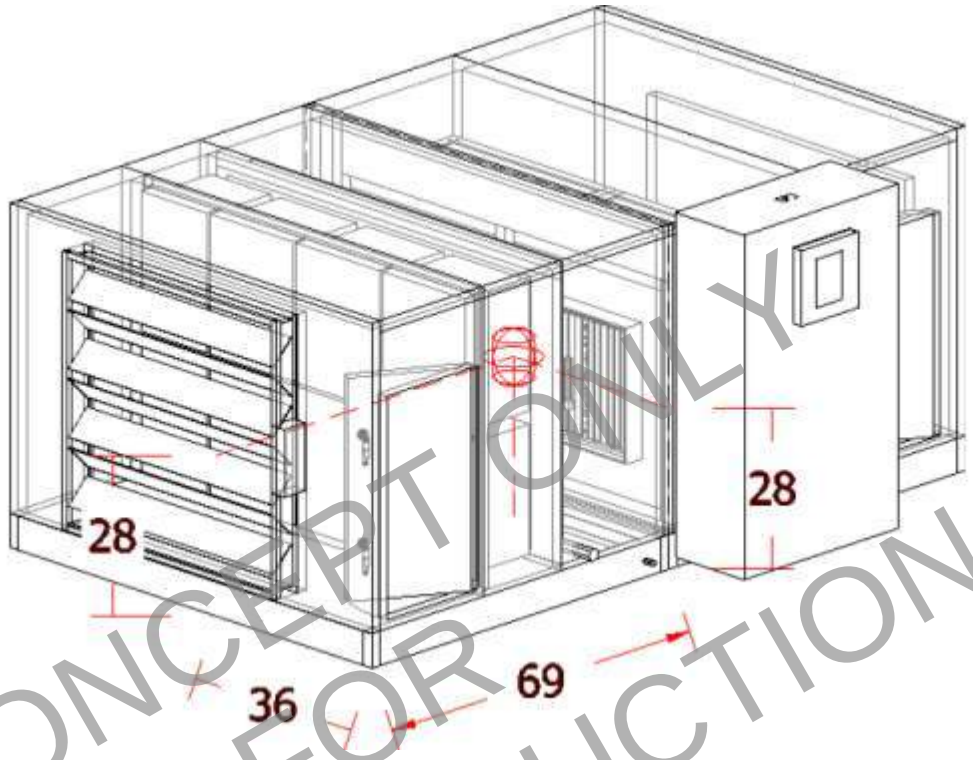
900.2 Notes

1. Fan data accuracy as per AMCA 311 (63Hz +6 dB, remaining bands +3 dB with an additional 3 dB available in any one band). Model predictive accuracy is ±6 dB. Fan and modeling accuracy is based on ideal flow patterns and design conditions. Projected fan and system sound levels are provided for comparison purposes only — actual levels may vary.
2. Sound power projections are not valid for opening velocities over 1,500 ft/min.
3. Sound power projects are not valid with VFD motor control carrier frequencies of less than 8KHz.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil

Sales Order #: -005

901 Center of Gravity



Size (Inches)			Operating Weight (Pounds)	Center of Gravity (Inches)		
X	Y	Z		X	Y	Z
138.00	84.00	60.00	4,008	69.00	36.00	28.00

901.1 Notes

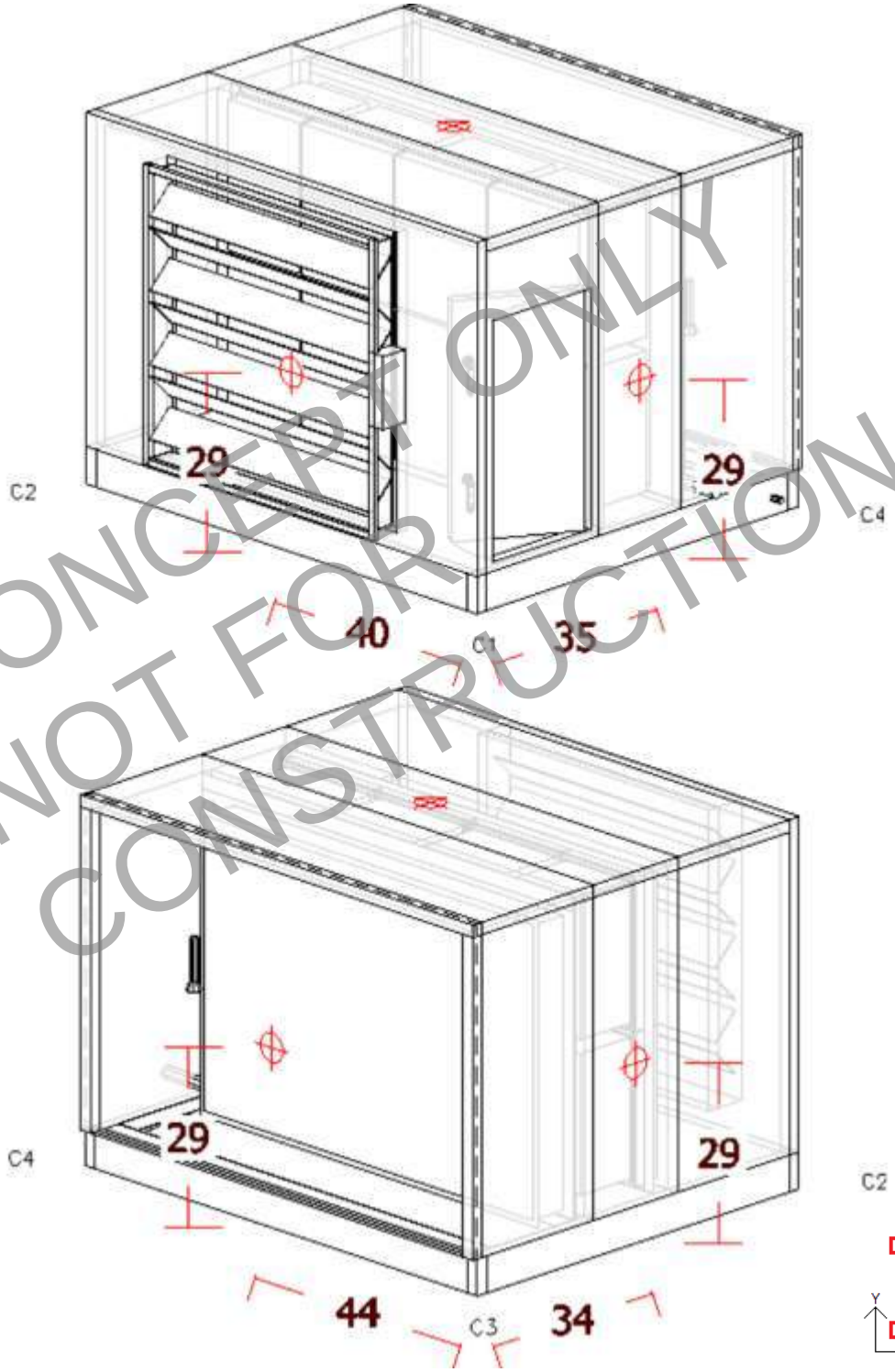
1. Center of gravity and weights are estimates and subject to change.
2. The center of gravity and weights shown above are based on operating weights and do not include packaging materials.
3. A 5% safety factor has been applied to the operating weights.
4. Corner weights apply to rectangular boxes only.
5. Corner weights are to assist in handling of the unit. Some units are not intended to be supported only at the corners. Contact your Sales Representative for support information.

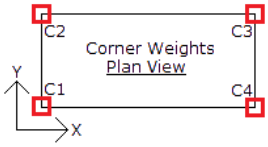
Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil

Sales Order #: -005

901 Center of Gravity (Continued)

901.2 Box A





Size (Inches)			Shipping Weight (Pounds)	Corner Weights (Pounds)			
X	Y	Z		C1	C2	C3	C4
69.00	84.00	60.00	1,765	456	414	426	469

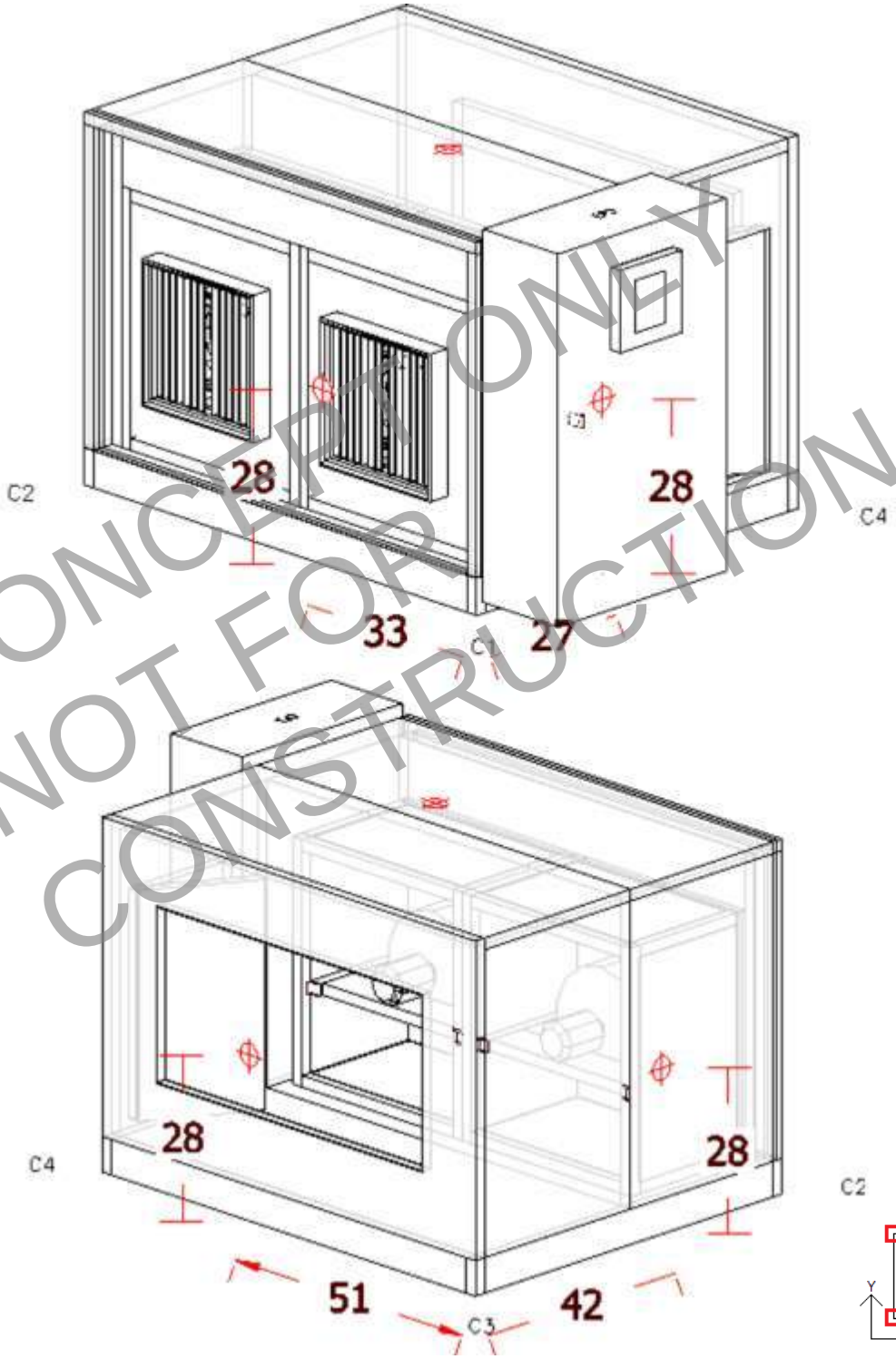
◇ Center of gravity, weight, and corner weights shown are based on shipping weight. Values are estimates and subject to change.

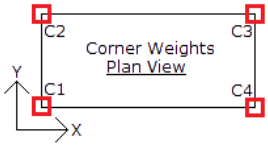
Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-1 with DX Coil

Sales Order #: -005

901 Center of Gravity (Continued)

901.3 Box B



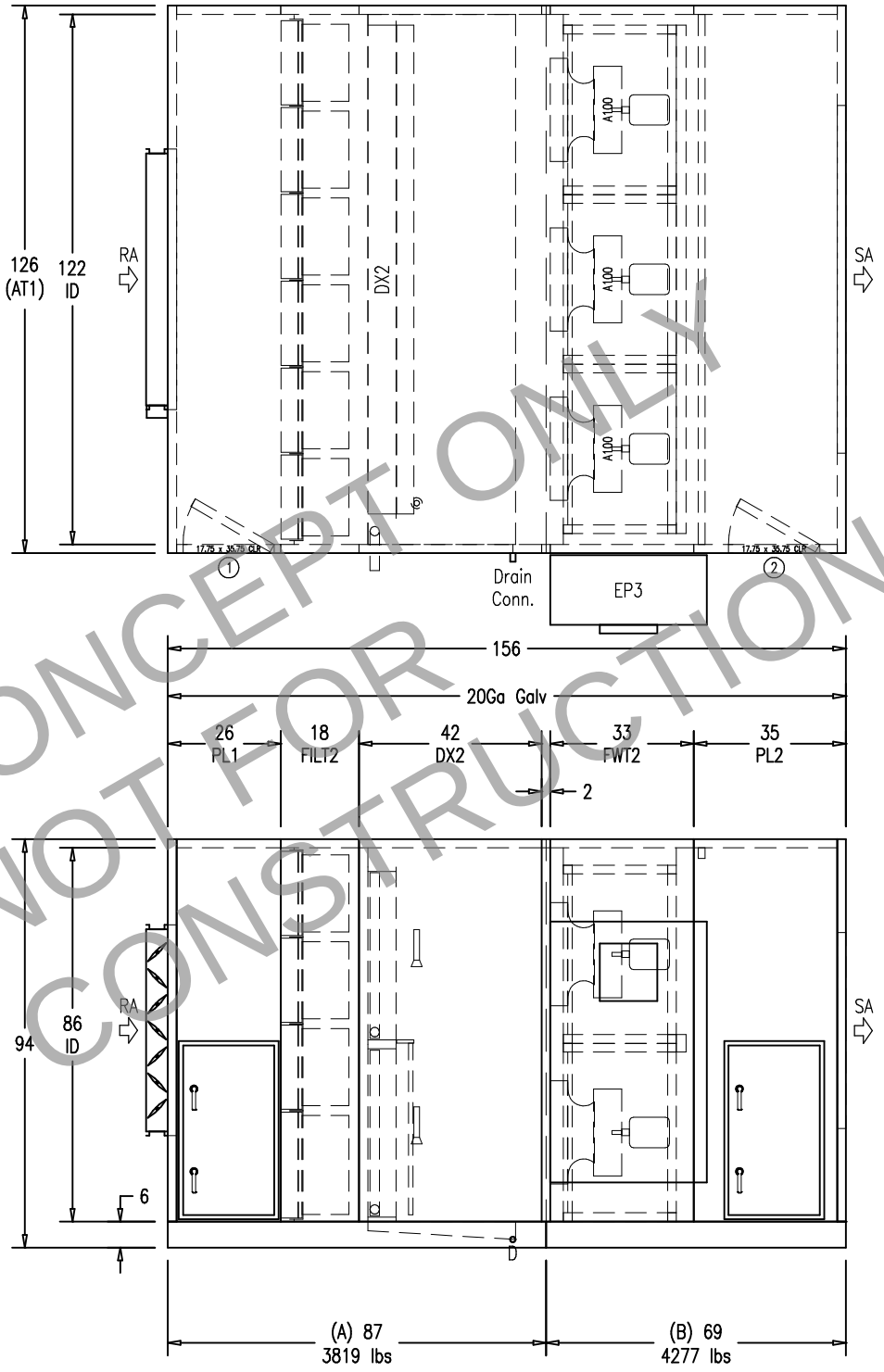


Size (Inches)			Shipping Weight (Pounds)	Corner Weights (Pounds)			
X	Y	Z		C1	C2	C3	C4
69.00	84.00	60.00	2,267	838	542	349	539

◇ Center of gravity, weight, and corner weights shown are based on shipping weight. Values are estimates and subject to change.

Alternate Option: DOAS units w/remote condensers

Preliminary



Printed (yyyy-MM-dd): 2023-07-14

All dimensions shown in inches, Operating weights shown in pounds. Overall unit dimensions do not include lifting lugs, electrical panels, pipe connections, door handles, etc.
Panelized Construction 21,000 ACFM

NORTEK™
AIR SOLUTIONS
HUNTAIR
19855 SW 124th Ave.
Tualatin, OR 97062
(503) 639-0113
www.nortekair.com

201 Golden Gate

Unit Tag: DOAS AHU-2 with DX Coil		Unit Type: Indoor	Dsg Qty: 1
Rep Firm: Norman S. Wright Mech. Equip.: Brisbane	Brisbane, CA, USA	Weight: 8,095	Box Qty: 2
Rep Contact: Mohammad Homaifard, (415) 715-7255		Model No: CSU-21K DX	
QUOTE #	NASDA Ver: 8.4.5	Factory SAE	Date m/d/y: 7/14/2023 — Rev

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil
Sales Order #: -006

106 Static Pressure Summary

106.1 Condition 1

106.1.1 Supply

Tunnel	*Description*	*APD (in.H20)*
AirTunnel 1	RA Opening - Damper (Return Air)	0.02
AirTunnel 1	Filter 2, Pre / Final (Average Pressure Drop)	0.76
AirTunnel 1	SA Opening (Supply Air)	0.06
AirTunnel 1	DX Coil - Heating & Cooling	0.21
AirTunnel 1	FANWALL 2 (Supply) 21,000 ACFM @ 2.55 in.H20	0.00
	Endwall 1 - Return Air - RA Opening ESP:	0.50
	Endwall 2 - Supply Air - SA Opening (1"ESP)	1.00
	Total Static Pressure:	2.55

Legend: ESP - External Static Pressure, OSA - Outside Air, EXH - Exhaust Air, RA - Return Air, SA - Supply Air

106.2 Notes/Legend

1. Summary report does not include static pressure of components supplied by others in the field unless otherwise noted.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil
Sales Order #: -006

200 FANWALL 2 (Supply) : FWT2 : Box B — 20-80 - 145T - 41 x 39 x 26 - B3

200.1 Configuration / Quantity

1. Function	Supply Fan	Cell Size	7.Height	8.Width	9.Depth	10.Overall Depth
2. Quantity	6		41	39	26	31.25
3. Array	2 Rows x 3 Cols	11.Elev. / Temp.	39 ft / 70.0 °F			
4. Construction	Gen III (with Isolators)	12.Motor & Wheel Weight	150 lb	14.Redundant	0	
5. Inlet Cone Location	Upstream Removable	13.Fan Cell Weight	308 lb	15.Empty	0	
6. Stand Height	N/A	16.Ship Loose Fan (Wheel, Motor and Mounting Base)			0	

200.2 Options

1. Coplanar Insulation	Standard Melamine	8. Cell Finish	None
2. Extended Coplanar	No	9. Insulation Retainer	No
3. Back Draft Dampers	HBD0214	10.Inlet Attenuation	None
4. Inlet Cone Type	A100 Curved Cone	11.Blankoff Material	16Ga Galv
5. Solid Perimeter Material	N/A	12.Blankoff Finish	None
6. Discharge Safety Guard	No	13.Removal Rail	Yes
7. Cell Material	Aluminum / Steel	14.Anti-Vibration Structure	N/A

200.3 Fan Wheel

1. Wheel Type	HPF-A100	4. Width	80
2. Diameter	20	5. Max RPM	3521
3. Balancing Planes	1	6. Wheel Finish	None

200.4 Motor

1. Manufacturer	Toshiba	7. Model	4OA002L1ZVS210
2. HP Each / Total	2.5 / 15	8. Efficiency	84
3. Poles / RPM	4-Pole / 1,730	9. Service Factor	1.15
4. Frame / Casing	145T / TEAO	10.Shaft Isolation	Ceramic Bearings
5. Volts / Phase / Hz	460/3/60	11.FLA Each / Total	3.5 / 21.0 Amps
6. Winding	N/A	12.Motor HP Safety Factor	3.0 %

200.5 Variable Frequency Drive

1. Furnished by	Factory	7. Input / Output Amps	23 / 23 Amps
2. Quantity	1 Active, 1 Redundant	8. Maximum Hertz	60.54
3. Manufacturer	ABB ACH580	9. Input Line Reactor	No
4. Model No	ACH580-01-023A-4	10.VFD Communication	None
5. Horsepower	15	11.Switching Frequency	Default
6. Voltage	460/3/60	12.Drive Position	N/A

200.6 Control System

1. Redundant VFD	Yes	6. Flow Monitoring	None
2. Bypass Circuit	None	7. Fans to Monitor	None
3. Drive	Standard	8. Display	N/A
4. Optimization Control	No	9. Communication	N/A
5. Control Method	By Others		

200.7 Notes / Features

1. To view patents and other pending U.S. or Canadian applications visit www.nortekair.com/patents.
2. Cone constant = 2524, cone flow differential pressure = 1.92 in.H2O at 3500 CFM per fan.
3. The estimated VFD input watts are based on the motor and VFD efficiency at the selected load and RPM.
4. Fans balanced to a maximum allowable level of 0.022 inches per second peak.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil

Sales Order #: -006

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-80 - 145T - 41 x 39 x 26 - B3

AMCA Licensed for Sound and Air Performance Without Appurtenances (Accessories).
Performance certified is for installation type A: Free Inlet/Free Outlet
Power [bhp] excludes drives

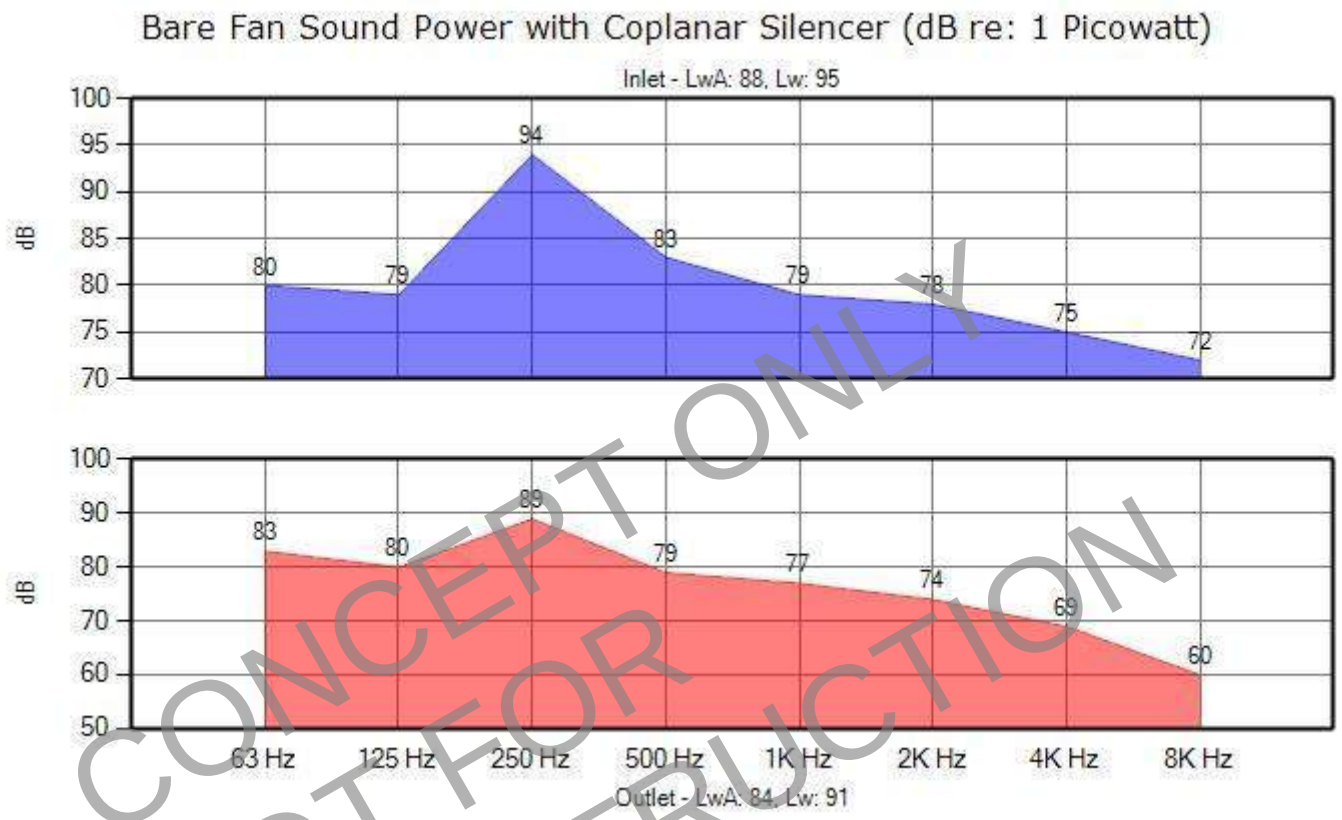
200.8 Operating Conditions

Operating Condition	Usage (%)	CFM	SP (in.H20)		Cell Qty			RPM	Hz	Fanwheel BHP		Vel. (ft/min)	Watts	FEG % Off Peak
			Input	Adj.	On	Off	Fail			Each	Total			
Condition 1	100	21,000	2.55	2.65	6	0	0	1,615	56	1.97	11.84	389	10,735	FEG85 1%

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil

Sales Order #: -006

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-80 - 145T - 41 x 39 x 26 - B3



200.9 Bare Fan Sound Power with Coplanar Silencer (dB re: 1 Picowatt)

Operating Condition		63	125	250	500	1k	2k	4k	8k	LwA	Lw
Condition 1	Inlet	80	79	94	83	79	78	75	72	88	95
	Outlet	83	80	89	79	77	74	69	60	84	91

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil
Sales Order #: -006

200 FANWALL 2 (Supply) : FWT2 : Box B (Continued) 20-80 - 145T - 41 x 39 x 26 - B3

200.10 AMCA Statement

Nortek Air Solutions LLC certifies that the HPF-A100 fan wheel shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

The AMCA licensed air and/or sound performance data has been modified for installation,appurtenances or accessories, etc. not included in the certified data. The modified performance is not AMCA licensed but is provided to aid in selection and applications of the product. Performance certified is for installation type A: Free Inlet/Free Outlet Power [bhp] excludes drives

FWTRating DLL: Ver-1.6 / May 2022

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil

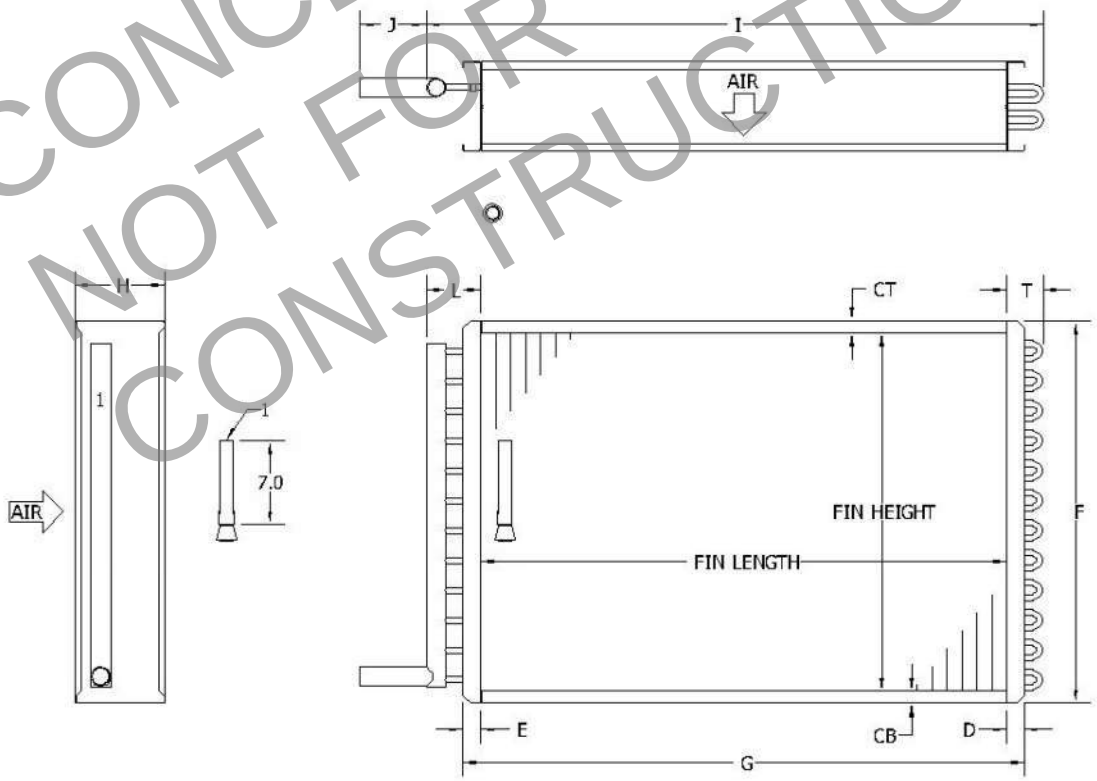
Sales Order #: -006

300 DX Coil - Heating & Cooling : DX2 : Box A — 4DX - 4 - 38.75 x 112.5 x 4 - 8 AL

300.1 Coil Layout			
1. Coil Hand	Right	6. Distributor Location	Vertical Side Mount
2. Configuration	Single	7. Rack Style	Stacking Flange - 16Ga 304 SS
3. Connection Orientation	Straight	8. Rack Finish	None
4. Connection Material	Copper	9. Blankoff Material	16Ga 304 SS
5. Connection Type	Sweat	10.Blankoff Finish	None

300.2 Construction					
1. Quantity	2	8. Stand Height	N/A	14.Casing	16Ga 304 SS
2. Serpentine	1	*Tube Detail - Primary Surface*		15.Coating	None
3. Fin Height	38.750 in	9. Material	Copper	*Fin Detail - Secondary Surface*	
4. Fin Length	112.500 in	10.O.D. x Wall	0.500 x 0.017 in	16.Material	Aluminum
5. Rows	4	11.Spacing	1.250 x 1.083 in	17.Thickness	0.006 in
6. Fins per Inch	8	12.Internal	Smooth	18.Configuration	Sine Wave with Rippled Edge
7. Face Area	60.55 ft²	13.Hairpin	Yes		
Circuit	*%*	*Feeds*	*Suction O.D. (in)*	*HGB*	Split Method
1	100.00	31	2.125 in	NONE	No Circuit Splits

Single Bank, Right Hand, 2 per unit — **4DX - 4 - 38.75 x 112.5 x 4 - 8 AL**



300.3 Dimensional Data (in)										
CT	CB	D	E	F	G	H	I	J	L	T
1.0	1.0	1.5	1.5	40.75	115.5	6.5	119.5	8.0	5.0	2.0

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil
Sales Order #: -006

300 DX Coil - Heating & Cooling : DX2 : Box A (Continued) 4DX - 4 - 38.75 x 112.5 x 4 - 8 AL

300.4 Condition 1

Entering		Leaving	
1. Actual Airflow	21,000 ACFM	10.Total Capacity	936.4 MBH
2. Standard Airflow	19,957 SCFM	11.Sensible Capacity	712.8 MBH
3. Elevation	39 ft	12.Actual Face Velocity	346.84 ft/min
4. Entering Air DB	88.0 °F	13.Leaving Air DB	55.5 °F
5. Entering Air WB	68.0 °F	14.Leaving Air WB	52.6 °F
6. Refrigerant	R-410A	15.APD	0.21 in.H20
7. Suction Temp	40.0 °F		
8. Superheat	8.0 °F		
9. Liquid Temp	110.0 °F	16.Refrig. Pressure Drop	2.4 psig

Circuit	Tons / Circuit (each coil)	Circuit	Tons / Circuit (each coil)
1	39.02 Tons	2	0.00 Tons

300.5 Notes / Features

1. Manufacturer: Nortek Air Solutions, 5510 SW 29th Street, Oklahoma City, OK 73179
2. RPD does not included distributor and distributor lines.
3. SCFM is corrected for Elevation and EDB.
4. Total operating weight is 763 lb.
5. Total fluid volume is 26.0 Gal.
6. Coil is NOT certified by AHRI
7. Coil is outside the scope of AHRI Standard 410. The calculations used to predict coil performance are the same as those used for coils within the scope of AHRI Standard 410.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil

Sales Order #: -006

500 Filter 2 : FILT2 : Box A

500.1 Pre / Final Size & Quantity			
1. Loading	Upstream Face Load	7. Bank Size	120.250 in W x 85.000 in H
2. Frame Material	Galvanized	8. Blankoff Location	N/A
3. Frame Finish	None	9. Qty / set & Frame Size 1	(6) 20 in x 25 in
4. Filter Clips	(96) C-70, (96) C-89	10.Qty / set & Frame Size 2	(18) 20 in x 20 in
5. Blankoff / Rack Material	16Ga Galv	11.Qty / set & Frame Size 3	
6. Blankoff / Rack Finish	None	12.Qty / set & Frame Size 4	

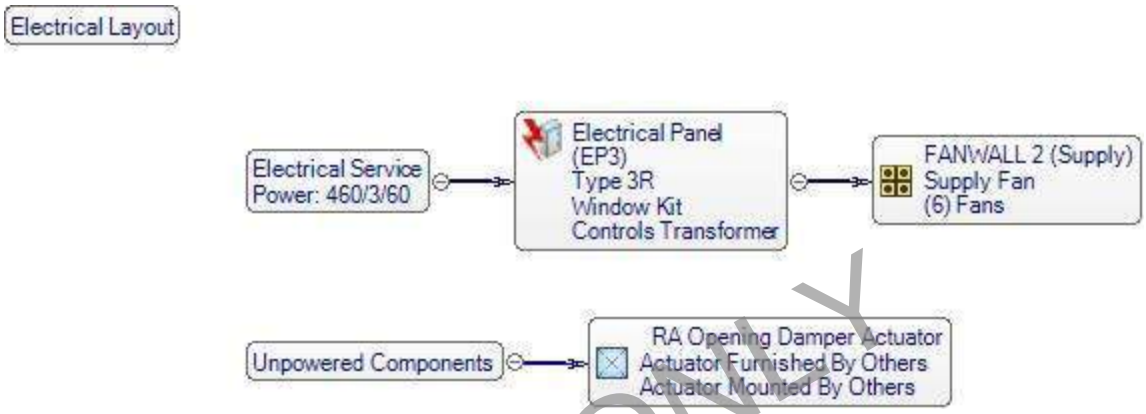
500.2 Pre Filter			
1. Filter Depth	4.000 in	4. Number of Sets	1
2. Efficiency	MERV 8	5. Max Face Velocity	296.47 ft/min at 21,000 ACFM
3. Manufacturer	AAF	6. Model	PerfectPleat Ultra

500.3 Final Filter			
1. Filter Depth	12.000 in	4. Number of Sets	1
2. Efficiency	MERV 13	5. Max Face Velocity	296.47 ft/min at 21,000 ACFM
3. Manufacturer	AAF	6. Model	VariCel SH

500.4 Notes / Features
1. All sets of Filters and clips to ship loose inside unit, installed by others.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil
Sales Order #: -006

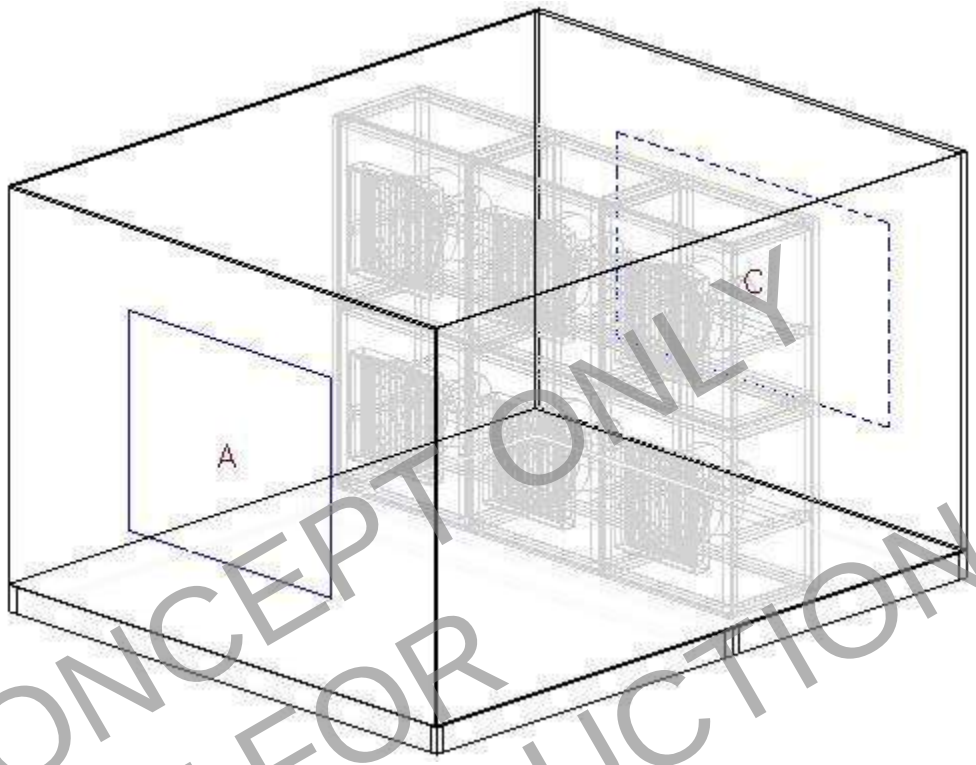
700 Electrical Layout Diagram



Note: The FLA and MCA values shown are estimated, see the electrical schematics for the actual values.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil
Sales Order #: -006

900 Air Handler Sound Power Projection



900.1 Sound Power Data

Openings - Condition 1				Octave Band Freq. Sound Power (db re: 1 Picowatt)									
Tag	Title	Cabinet Liner	Area	63	125	250	500	1k	2k	4k	8k	LwA	Lw
A	RA Opening	Solid	20.2 ft²	80	77	91	81	75	69	64	59	85	92
C	SA Opening	Solid	25.1 ft²	83	80	89	79	77	74	69	60	84	91
Casing Radiated				74	67	73	58	53	51	46	45	66	77
Floor Radiated				67	63	67	41	35	35	35	35	60	71

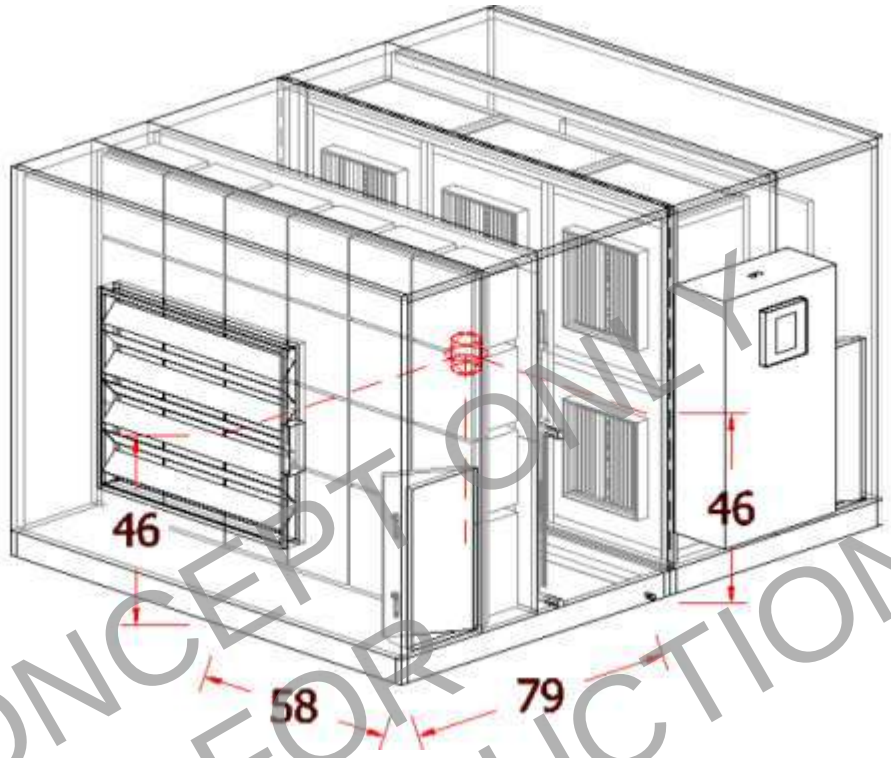
900.2 Notes

1. Fan data accuracy as per AMCA 311 (63Hz +6 dB, remaining bands +3 dB with an additional 3 dB available in any one band). Model predictive accuracy is ±6 dB. Fan and modeling accuracy is based on ideal flow patterns and design conditions. Projected fan and system sound levels are provided for comparison purposes only — actual levels may vary.
2. Sound power projections are not valid for opening velocities over 1,500 ft/min.
3. Sound power projects are not valid with VFD motor control carrier frequencies of less than 8KHz.

Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil

Sales Order #: -006

901 Center of Gravity



Size (Inches)			Operating Weight (Pounds)	Center of Gravity (Inches)		
X	Y	Z		X	Y	Z
156.00	126.00	94.00	8,095	79.00	58.00	46.00

901.1 Notes

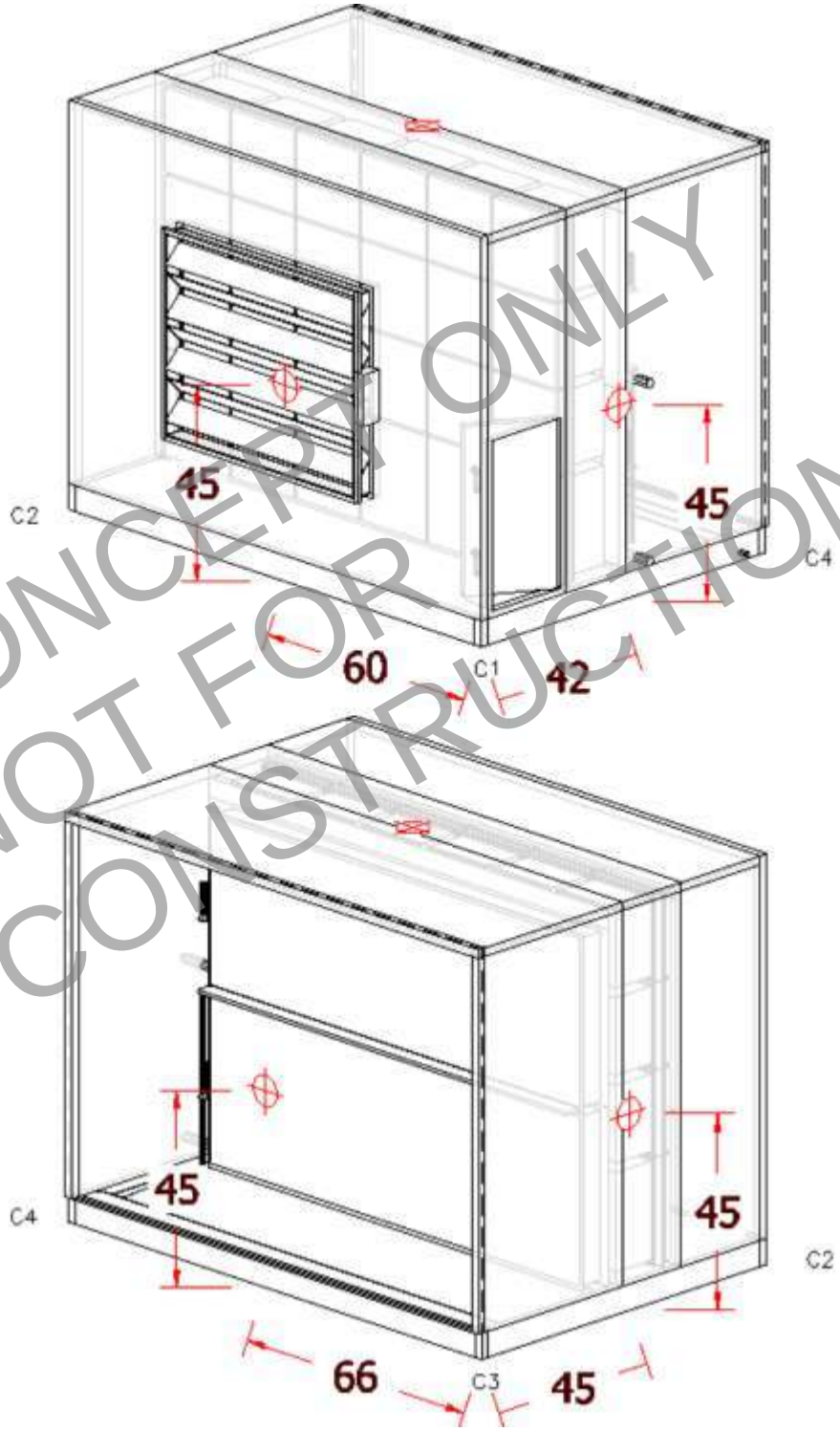
1. Center of gravity and weights are estimates and subject to change.
2. The center of gravity and weights shown above are based on operating weights and do not include packaging materials.
3. A 5% safety factor has been applied to the operating weights.
4. Corner weights apply to rectangular boxes only.
5. Corner weights are to assist in handling of the unit. Some units are not intended to be supported only at the corners. Contact your Sales Representative for support information.

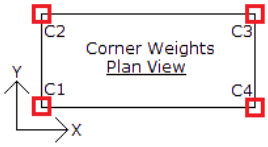
Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil

Sales Order #: -006

901 Center of Gravity (Continued)

901.2 Box A





Size (Inches)			Shipping Weight (Pounds)	Corner Weights (Pounds)			
X	Y	Z		C1	C2	C3	C4
87.00	126.00	94.00	3,793	1,028	934	872	959

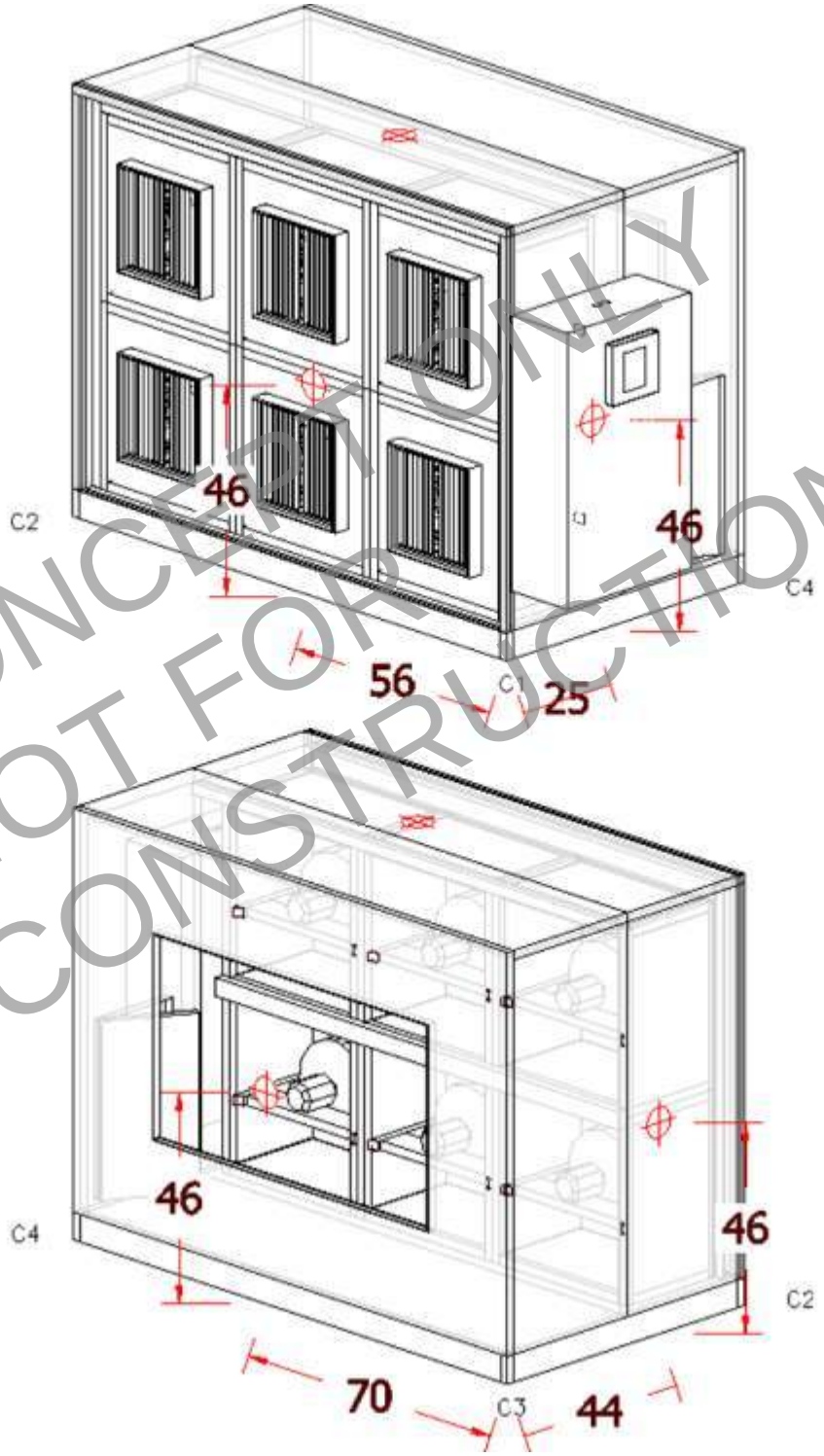
◇ Center of gravity, weight, and corner weights shown are based on shipping weight. Values are estimates and subject to change.

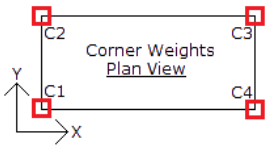
Project Name: 201 Golden Gate
Unit Tag: DOAS AHU-2 with DX Coil

Sales Order #: -006

901 Center of Gravity (Continued)

901.3 Box B





Size (Inches)			Shipping Weight (Pounds)	Corner Weights (Pounds)			
X	Y	Z		C1	C2	C3	C4
69.00	126.00	94.00	4,323	1,532	1,225	696	870

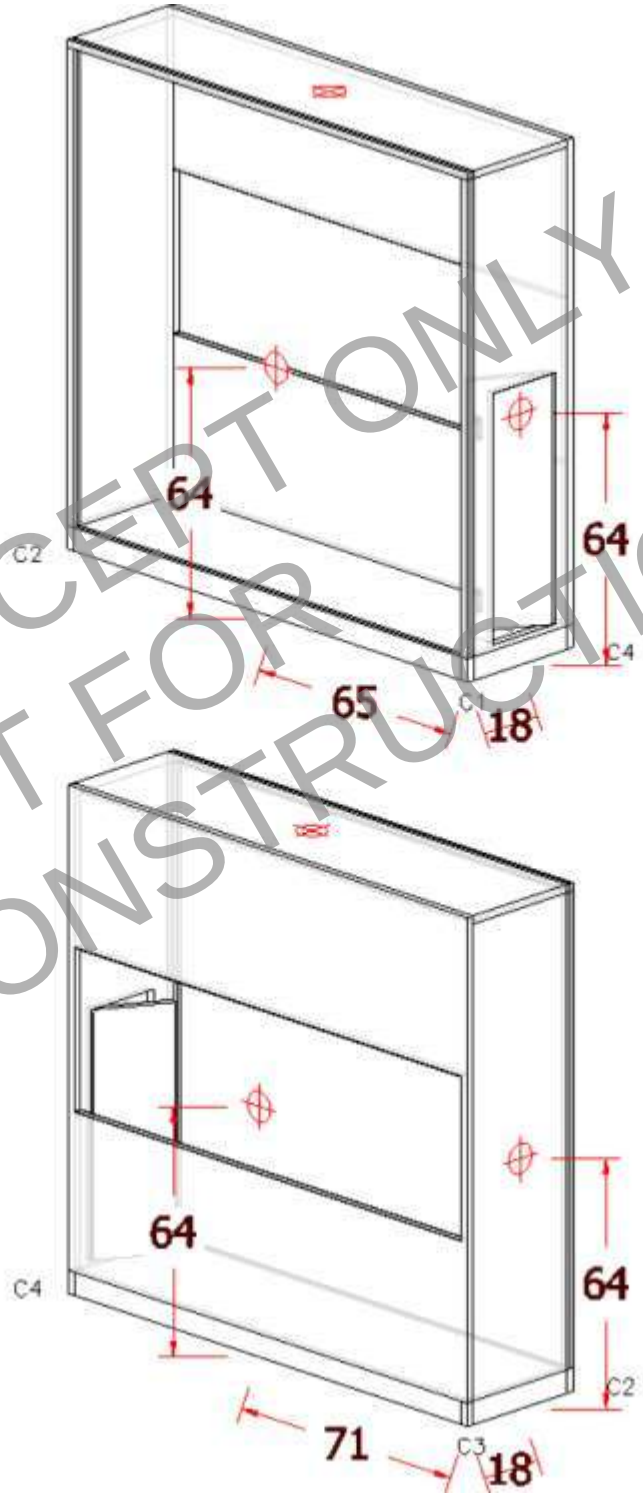
◇ Center of gravity, weight, and corner weights shown are based on shipping weight. Values are estimates and subject to change.

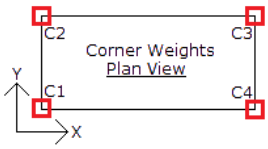
Project Name: 201 Golden Gate
Unit Tag: AHU-2 and -3

Sales Order #: -002

901 Center of Gravity (Continued)

901.4 Box C





Size (Inches)			Shipping Weight (Pounds)	Corner Weights (Pounds)			
X	Y	Z		C1	C2	C3	C4
36.00	136.00	130.00	1,937	506	463	463	506

◇ Center of gravity, weight, and corner weights shown are based on shipping weight. Values are estimates and subject to change.

Heat Recovery Chillers

POINTENERGY
INNOVATIONS

CLIMACOOL

www.climacoolcorp.com

Project Name:	SF Project - PEI 06 2026	Reference No:	
Project Location:	SF, CA	Bank Tag:	150T 4-pipe SHC
Customer:	PEI	Engineer:	PEI
Submitted By:	CP	Date:	6/30/2023

CHILLER BANK PERFORMANCE DATA

UCA - SIMULTANEOUS H/C HEAT PUMP

	Cooling Mode				Heating Mode
Capacity	188.0 Ton				1,824 MBH
kW Input	193.4 kW				208.0 kW
Full Load EER/COP	11.66 Btu/W-h				2.570 kW/kW
Cooling Part Load EER (NPLV)	15.14 Btu/W-h				
Part Load %	100%	75%	50%	25%	
Efficiency	11.66	13.82	16.03	16.71	
Entering Fluid Temp	60.00	57.00	54.00	51.00	
Leaving Fluid Temp	48.00	48.00	48.00	48.00	
Entering Condenser Air Temp	88.0	75.6	63.3	55.0	
Cooling Loop / Heating Loop					
Fluid Type	Water				Water
Inlet/Outlet Temp	60.00 / 48.00 °F				105.00 / 120.00 °F
Flow Rate	374.0 gpm				256.3 gpm
Fouling Factor	0.000100 h·ft²·°F/Btu				0.000100 h·ft²·°F/Btu
Fluid Pressure Drop	9.89 ft H2O				4.29 ft H2O
Strainer Selection	4Y 200 60				4Y 200 60
Delta P (Clean)	4.2 ft H2O				2.0 ft H2O
Delta P (70% Clogged)	13.2 ft H2O				6.2 ft H2O
Design Ambient Condition					
Ambient Temperature	88.0 °F				38.0 °F
Elevation	0.00 ft				0.00 ft

CHILLER BANK ELECTRICAL DATA

Power Supply	460/3/60
Control Voltage	24 VAC
RLA	367
MCA	378
MOP	400

CHILLER BANK PHYSICAL DATA

Overall Dimension	338.0 in L x 80.5 in D x 99.1 in H		
Water Header Connection Size	6 in		
Shipping Weight	17,120 lb	Refrigerant Type	R-410A
Operating Weight	18,920 lb	Total Refrigerant Charge	440 lb

CHILLER BANK MODULE DETAILS

(4) UCA050BFASAUE0S

(4) 50-ton modules to make one "bank"

NOTES

1. The unit must be fitted with an 60 mesh strainer upstream of the heat exchangers.
2. Galvanized steel pipes & fittings should not be used for pipework connecting to the chiller.
3. The min. recommended cooling loop system fluid (water or glycol) volume must be > 6 gallons per total chiller tons at full load.
4. The maximum operating outdoor ambient temperature is 115 °F (cooling) & 100 °F (heating).
5. The minimum operating outdoor ambient temperature is 20 °F (cooling) & 17 °F (heating).
6. Below 40 °F ambient freeze protection is required; glycol is recommended for freeze protection.

CLIMACOOL

www.climacoolcorp.com

Project Name:	SF Project - PEI 06 2026	Reference No:	
Project Location:	SF, CA	Bank Tag:	150T 4-pipe SHC
Customer:	PEI	Engineer:	PEI
Submitted By:	CP	Date:	6/30/2023

INDIVIDUAL CHILLER MODULE PERFORMANCE PER BANK - COOLING MODE

Qty	Model No	Cap (Ton)	Power (kW)	EER 100%/NPLV	Evap Fluid	Evap Flow (gpm)	In/Out Temp (F)	Delta P HX/Hdr (ft.wg.)	Cond Air Temp (F)
4	UCA050BFASAUE0S	47.0	48.4	11.66 / 15.14	Water	93.5	60.0/48.0	4.5/9.9	88.0
	Per Bank	188.0	193.4	11.66 / 15.14	Water	374.0	60.0/48.0	4.5/9.9	88.0

INDIVIDUAL CHILLER MODULE PERFORMANCE PER BANK - HEATING MODE

Qty	Model No	Cap (MBH)	Power (kW)	COP @100%	HW Fluid	HW Flow (gpm)	In/Out Temp (F)	Delta P HX/Hdr (ft.wg.)	Outside Air Temp (F)
4	UCA050BFASAUE0S	456	52.0	2.570	Water	64.1	105.0/120.0	2.4/4.3	38.0
	Per Bank	1,824	208.0	2.570	Water	256.3	105.0/120.0	2.4/4.3	38.0

INDIVIDUAL CHILLER MODULE ELECTRICAL DATA

Qty	Model No	Main Power	Control Voltage	Unit RLA	Unit MCA	Unit MOP	Capacity Steps	# CKT	# Comp	Condenser Fan Qty	Condenser Fan HP Each
4	UCA050BFASAUE0S	460/3/60	24 VAC	91.7	102.6	150.0	2	2	2	4	2.0 HP
	Per Bank			366.8	377.7	400.0	8	8	8	16	

INDIVIDUAL CHILLER MODULE PHYSICAL DATA

Qty	Model	Unit Dimension Length (Inch)	Depth (Inch)	Height (Inch)	Unit Weight Shipping (lb)	Operating (lb)	Refrig Charge (lb)	Water Connection Size Cooling (Inch)	Heating (Inch)	Source (Inch)	Sound Power (dBA)
4	UCA050BFASAUE0S	83.8	80.5	99.1	4,280	4,730	110	6	6	-	85
	Per Bank	338.0	80.5	99.1	17,120	18,920	440	6	6	-	91

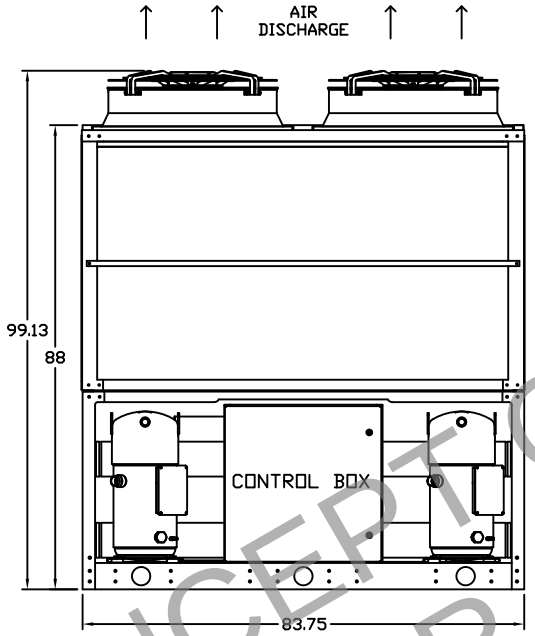
STRAINER DATA

	Cooling Loop	Heating Loop
Part No.	4Y 200 60	4Y 200 60
Type	Y Flanged	Y Flanged
Mesh Size	60 Mesh	60 Mesh
Delta-P (clean)	4.2 ft.wg.	2.0 ft.wg.
Delta-P (70% clogged)	13.2 ft.wg.	6.2 ft.wg.
Nominal Pipe Size (in)	4.0 in.	4.0 in.

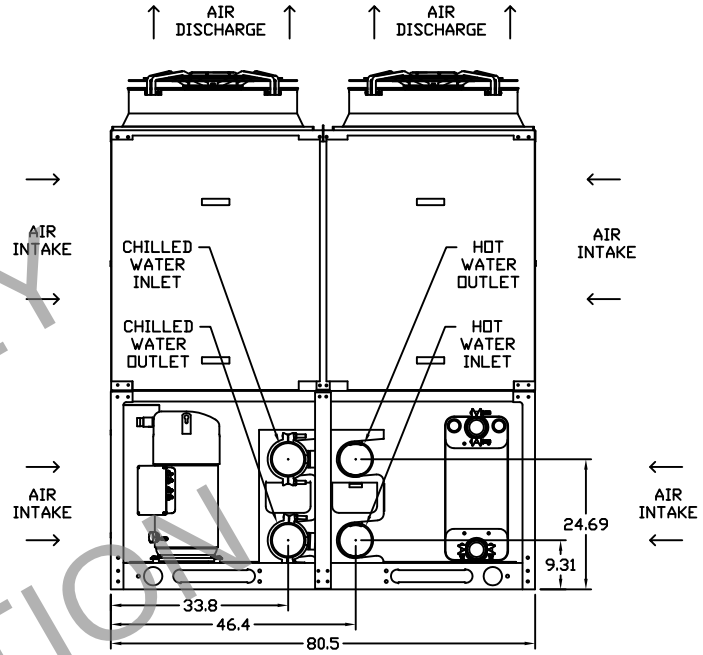
OPTIONS AND ACCESSORIES

Controls and Electricals	CoolLogic Bank Controller with BACnet Interface
Refrigerant Type	R-410A
Application	Simultaneous H/C Heat Pump
Water Isolation Valves	Evap - Motorized
Compressor Option	Scroll
Model Configuration	

UNIT MODEL	SHIPPING WEIGHT (LB)	OPERATING WEIGHT (LB)
UCA050	4,280	4,730
UCA070	4,405	4,880



FRONT ELEVATION



SIDE ELEVATION

NOTES: 1) ALL DIMENSIONS ARE IN INCHES.
2) WATER INLET AND OUTLET CONNECTIONS ARE 6" AND GROOVED FOR THE USE OF 300 PSI RATED GROOVED COUPLINGS

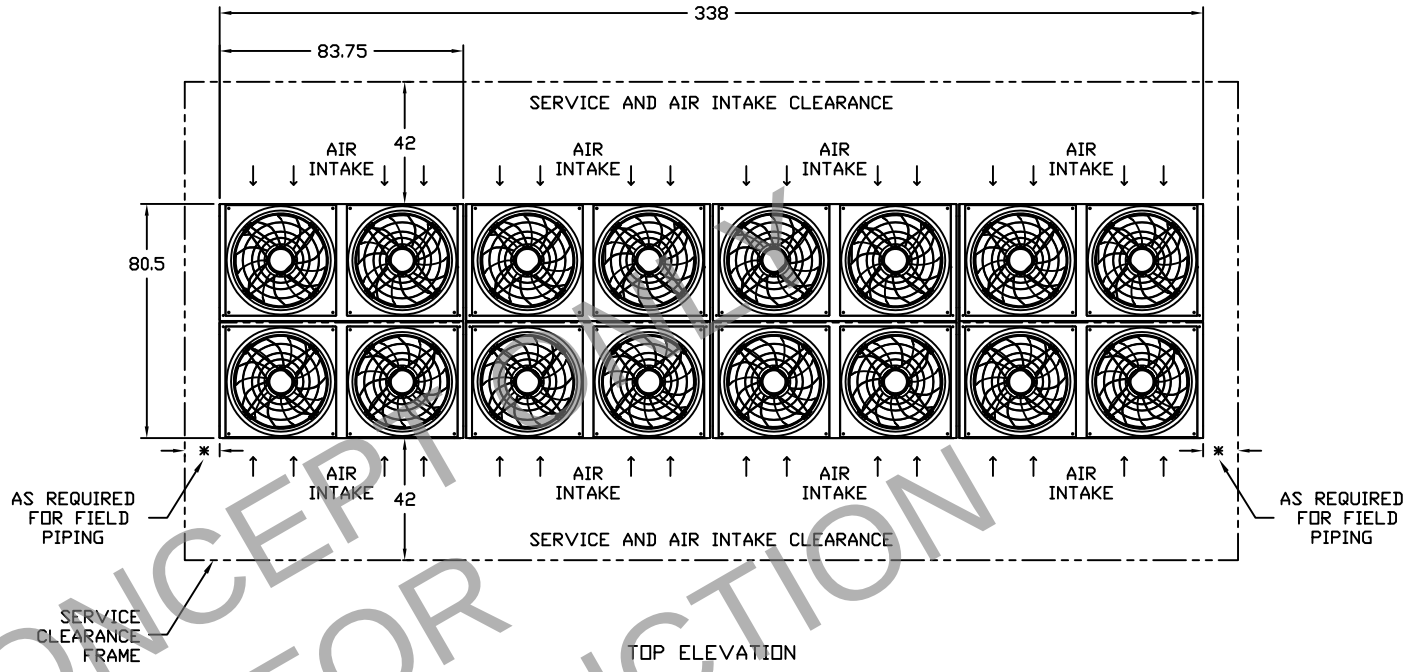
CLIMACOOL
THE ULTIMATE CHILLER SOLUTION

CHILLER LAYOUT: UCA050, UCA070
CC P/N's: UCA050B, UCA070 SHC
PROJECT:

SIZE	FSCM NO.	DWG NO.
		CCE-UCA050, UCA070, SHC UNIT DIM DWG

SCALE	DATE	SHEET	REV.
	10/22/2013		orig.

BANK DIMENSION AND REQUIRED SERVICE CLEARANCE



NOTES: 1) ALL DIMENSIONS ARE IN INCHES.
2) LOCAL BUILDING AND/OR ELECTRICAL CODES MAY REQUIRE ADDITIONAL CLEARANCE. CONSULT APPLICABLE CODES.

CLIMACOOL®
THE ULTIMATE CHILLER SOLUTION

CHILLER LAYOUT: 4 UCA050, UCA070, UCF070			
CC P/N's: UCA050B, UCA070 , UCF070B			
PROJECT:			
SIZE	FSCM NO.	DWG NO. CCE-(4)-UCA050, UCA070, UCF070 BANK DIM DWG	
SCALE	DATE 10/22/2013	SHEET	REV orig.

Air Cooled VRF

POINTENERGY
INNOVATIONS

CITYMULTI®

28-TON PURY-EP336YSNU-A(-BS)

MITSUBISHI ELECTRIC
HEATING & AIR CONDITIONING

Job Name:

System Reference: Date:

460V OUTDOOR VRF HEAT RECOVERY SYSTEM

UNIT OPTION

- ☐ Standard Model PURY-EP336YSNU-A
- ☐ Seacoast (BS) Model PURY-EP336YSNU-A-BS

ACCESSORIES

- ☑ Twinning Kit (Required) CMY-R300NCBK
- ☑ BC Controller (Required) ..... for details see BC Controller Submittals
- ☐ Joint Kit ..... for details see Pipe Accessories Submittal
- ☐ Panel Heater Kit ..... for details see Panel Heater Kit Submittal
- ☐ Snow/Hail Guards Kit ..... for details see Snow/Hail Guards Kit Submittal

Specifications			System
Unit Type			PURY-EP336YSNU-A(-BS)
Cooling Capacity (Nominal)		BTU/H	336,000
Heating Capacity (Nominal)		BTU/H	378,000
Net Weight		Lbs. [kg]	1,614 [732]
Refrigerant Piping Diameter	Liquid (High Pressure)	In. [mm]	1-1/8 [28.58] Brazed
	Gas (Low Pressure)	In. [mm]	1-5/8 [41.28] Brazed
Max. Total Refrigerant Line Length		Ft.	3,116
Max. Refrigerant Line Length (Between ODU & IDU)		Ft.	541
Max. Control Wiring Length		Ft.	1,640
Indoor Unit Connectable	Total Capacity		50.0~150.0% of outdoor unit capacity
	Model/Quantity		P04~P96/2.0~50.0
Sound Pressure Levels		dB(A)	65.5/69.5
Sound Power Levels		dB(A)	84.0/88.5
Compressor Operating Range			7.5% to 100.0%
AHRI Ratings (Ducted/Non-ducted)	EER		10.5/10.3
	IEER		22.5/20.0
	COP		3.22/3.29
	SCHE		20.4/23.4

Specifications			Module 1	Module 2
Unit Type			PURY-EP168YNU-A(-BS)	PURY-EP168YNU-A(-BS)
Cooling Capacity (Nominal)		BTU/H	168,000	168,000
Heating Capacity (Nominal)		BTU/H	188,000	188,000
Guaranteed Operating Range[1]	Cooling[2]	°F [°C]	23~126 [-5.0~52.0]	23~126 [-5.0~52.0]
Guaranteed Operating Range	Heating	°F [°C]	-13~60 [-25.0~15.5]	-13~60 [-25.0~15.5]
Extended Operating Range	Heating	°F [°C]	-27.4~60 [-33.0~15.5]	-27.4~60 [-33.0~15.5]
External Dimensions (H x W x D)		In. [mm]	71-5/8 x 68-15/16 x 29-3/16 [1,818 x 1,750 x 740]	71-5/8 x 68-15/16 x 29-3/16 [1,818 x 1,750 x 740]
Net Weight		Lbs. [kg]	807 [366]	807 [366]
External Finish			Pre-coated galvanized steel sheet (+powder coating for -BS type) [MUNSELL 5Y 8/1]	Pre-coated galvanized steel sheet (+powder coating for -BS type) [MUNSELL 5Y 8/1]
Electrical Power Requirements	Voltage, Phase, Hertz, Power Tolerance		460V, 3-phase, 60 Hz, ±10%	460V, 3-phase, 60 Hz, ±10%
Minimum Circuit Ampacity		A	26.0	26.0
Maximum Overcurrent Protection		A	40	40
Recommended Fuse Size		A	40	40
Recommended Minimum Wire Size		AWG [mm]	8 [8.4]	8 [8.4]
SCCR		kA	5	5
FAN[4]	Type x Quantity		Propeller fan x 2	Propeller fan x 2
	Airflow Rate	CFM	14,850	14,850
	External Static Pressure	In. WG	Selectable; 0.00, 0.12, 0.24, 0.32, In. WG; factory set to 0 In. WG	Selectable; 0.00, 0.12, 0.24, 0.32, In. WG; factory set to 0 In. WG
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1
Refrigerant	Type x Original Charge		R410A x 23 lbs + 12.0 oz [10.8 kg]	R410A x 23 lbs + 12.0 oz [10.8 kg]
Protection Devices	High Pressure Protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter Circuit (Comp./Fan)		Over-current protection	Over-current protection

NOTES:
Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80°FD.B./67°FW.B. (26.7°CD.B./19.4°CW.B.), Outdoor: 95°FD.B. (35°CD.B.)
Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70°FD.B. (21.1°CD.B.), Outdoor: 47°FD.B./43°FW.B. (8.3°CD.B./6.1°CW.B.)

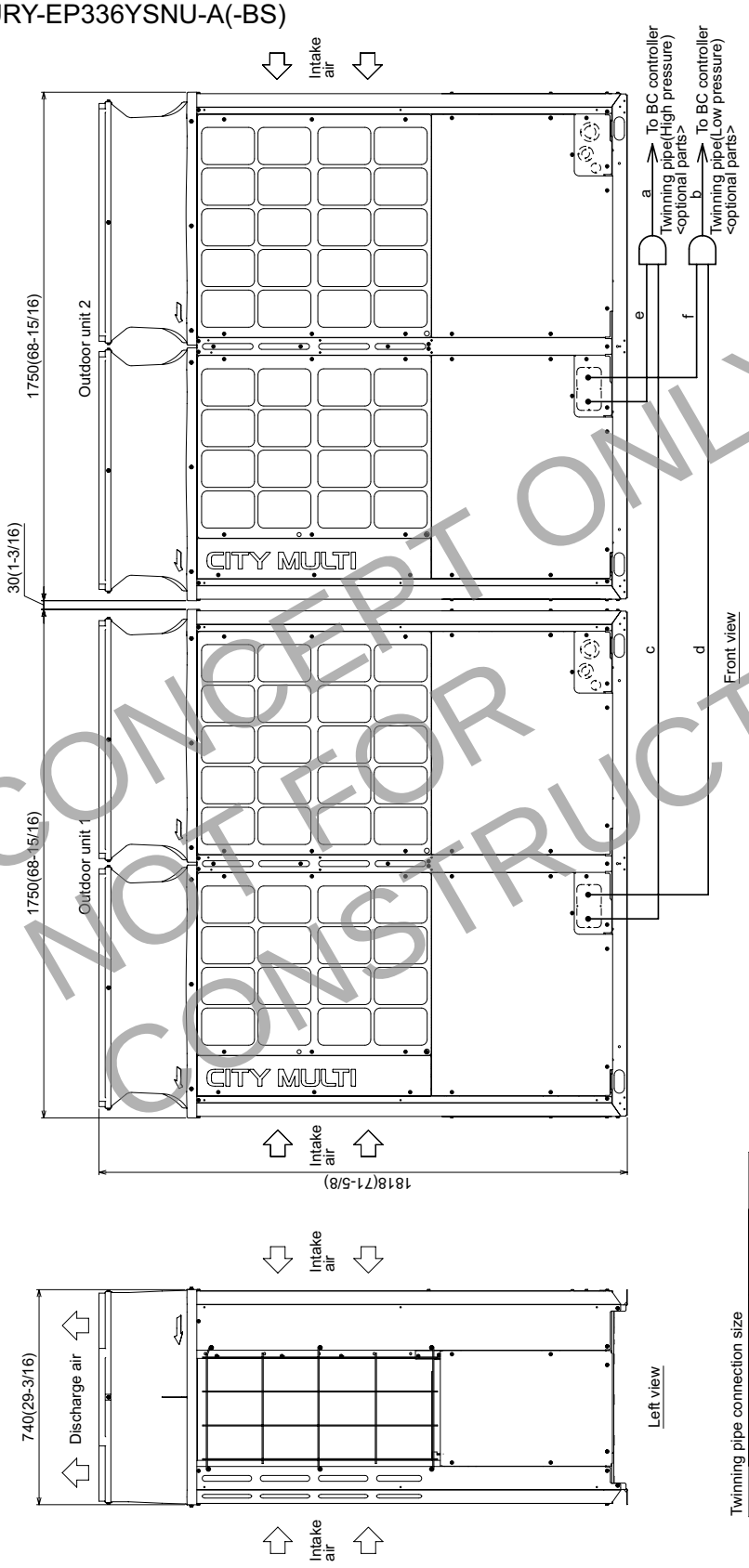
[1]Harsh weather environments may demand performance enhancing equipment. Ask your Mitsubishi Electric representative for more details about your region
[2]For details on extended cooling operation range down to -10° F DB, see Low Ambient Kit Submittal
[3]When applying product below -4°F, consult your design engineer for cold climate application best practices, including the use of a backup source for heating
[4]Unit will continue to operate in extended operating range, but capacity is not guaranteed

Each individual module requires a separate electrical connection. Refer to electrical data for each individual module.

OUTDOOR UNIT: PURY-EP336YSNU-A(-BS) – DIMENSIONS

PURY-EP336YSNU-A(-BS)

Unit: mm(in)



Unit model	High pressure c or e	Low pressure d or f
EP168	ø22.2(7/8)	ø28.58(1-1/8)

Twinning pipe~Outdoor unit

Twinning pipe connection size

Package unit name		PURY-EP336YSNU-A(-BS)
Component unit name	Outdoor unit 1	PURY-EP168YNU-A(-BS)
	Outdoor unit 2	PURY-EP168YNU-A(-BS)
Outdoor Twinning Kit(optional parts)		CMY-R300NCBK
BC controller ~Twinning pipe	High pressure a	ø28.58(1-1/8)
	Low pressure b	ø41.28(1-5/8)

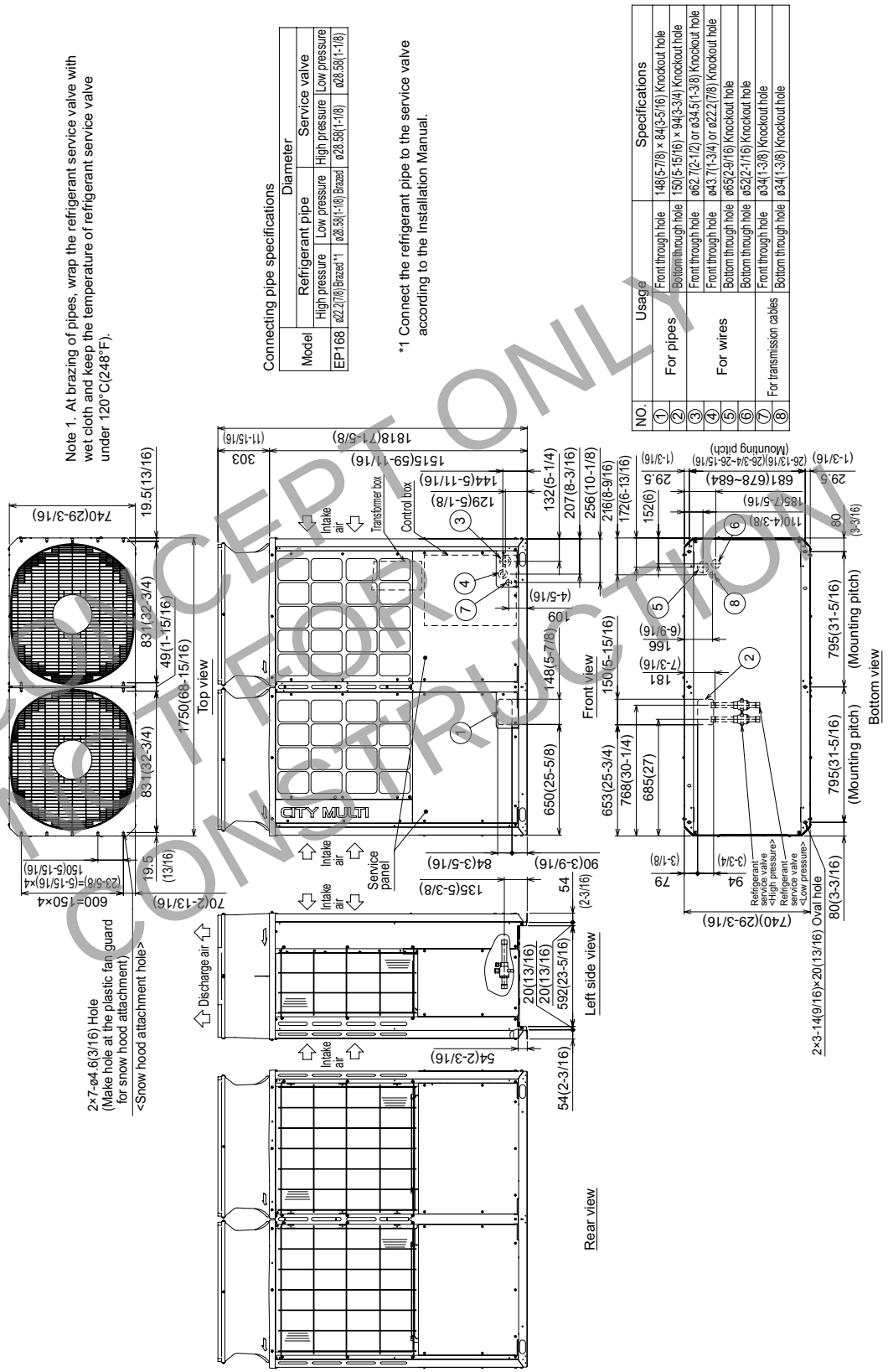
Note 1. Connect the pipes as shown in the figure above. Refer to the table above for the pipe size.
2. Twinning pipes should not be tilted more than 15 degrees from the horizontal plane.
Be sure to see the Installation Manual for details of Twinning pipe installation.
3. The pipe section before the Twinning pipe (section "a"and "b"in the figure) must have at least 500mm(19-11/16) of straight section (*including the straight pipe that is supplied with the Twinning pipe).
4. Only use the Twinning pipe by Mitsubishi (optional parts).

NOTES:
SEACOAST PROTECTION
Anti-corrosion Protection: A coating treatment is applied to condenser coil for protection from air contaminants.
Standard: Salt Spray Test Method - no unusual rust development to 480 hours.
Sea Coast (BS): Salt Spray Test Method (JRA 9002) - no unusual rust development to 960 hours.

MODULE 1: PURY-EP168YNU-A(-BS) – DIMENSIONS

PURY-EP168YNU-A(-BS)

Unit: mm(in)



Connecting pipe specifications

Model	Refrigerant pipe		Service valve	
	High pressure	Low pressure	High pressure	Low pressure
EP168	ø22.2(7/8) Brazed *1	ø28.58(1-1/8) Brazed	ø28.58(1-1/8)	ø28.58(1-1/8)

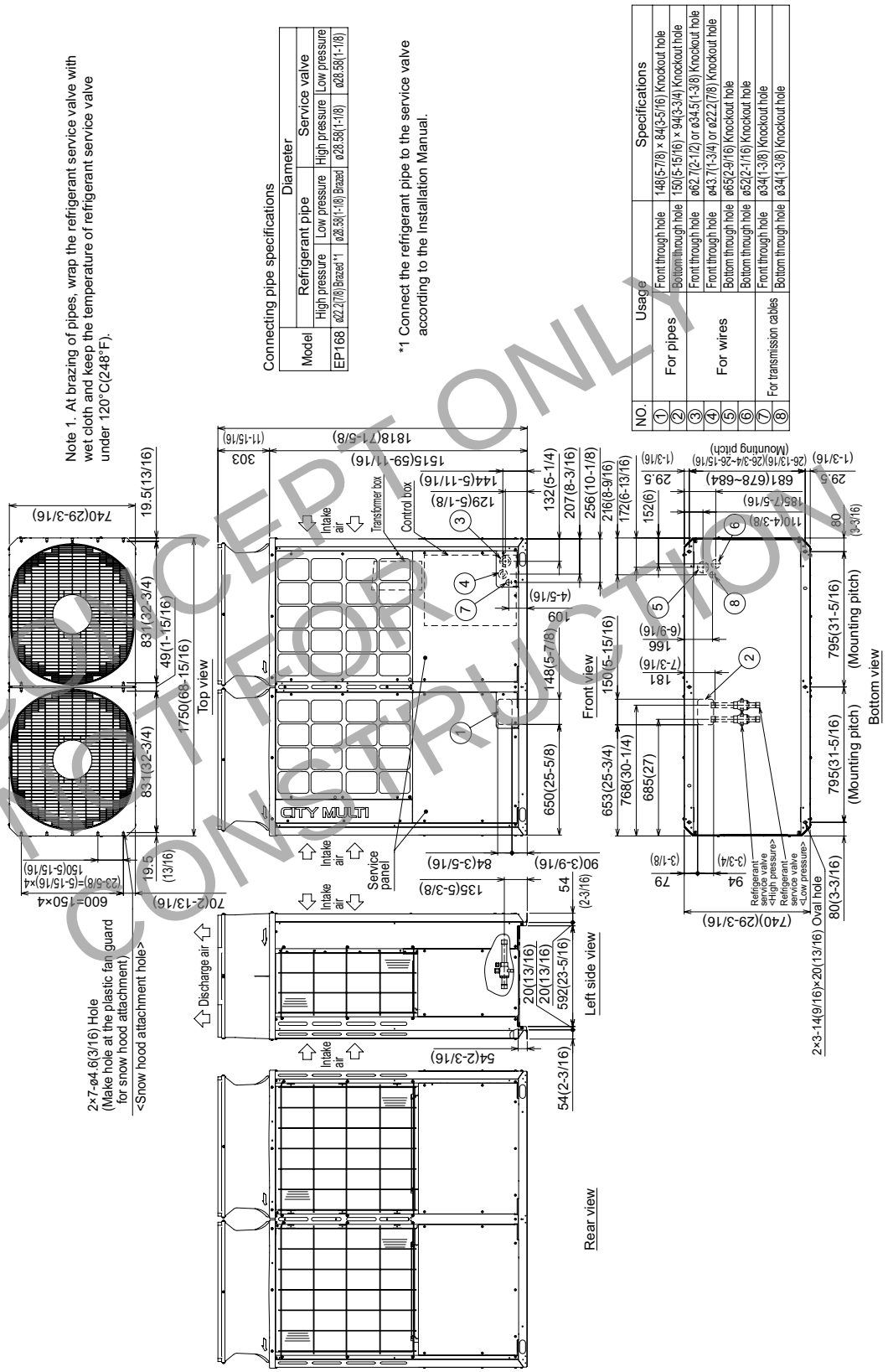
NO.	Usage	Specifications
①	For pipes	Front through hole: 148(5-7/8) × 84(3-5/16) Knockout hole
②		Bottom through hole: 150(5-15/16) × 94(3-3/4) Knockout hole
③	For wires	Front through hole: ø62.7(2-1/2) or ø34.5(1-3/8) Knockout hole
④		Front through hole: ø43.7(1-3/4) or ø22.2(7/8) Knockout hole
⑤		Bottom through hole: ø65(2-9/16) Knockout hole
⑥		Bottom through hole: ø52(2-1/16) Knockout hole
⑦	For transmission cables	Front through hole: ø34(1-3/8) Knockout hole
⑧		Bottom through hole: ø34(1-3/8) Knockout hole

NOTES:
SEACOAST PROTECTION
Anti-corrosion Protection: A coating treatment is applied to condenser coil for protection from air contaminants.
Standard: Salt Spray Test Method - no unusual rust development to 480 hours.
Sea Coast (BS): Salt Spray Test Method (JRA 9002) - no unusual rust development to 960 hours.

MODULE 2: PURY-EP168YNU-A(-BS) – DIMENSIONS

PURY-EP168YNU-A(-BS)

Unit: mm(in)



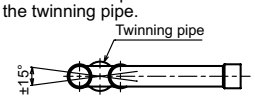
NOTES:
SEACOAST PROTECTION
Anti-corrosion Protection: A coating treatment is applied to condenser coil for protection from air contaminants.
Standard: Salt Spray Test Method - no unusual rust development to 480 hours.
Sea Coast (BS): Salt Spray Test Method (JRA 9002) - no unusual rust development to 960 hours.

TWINNING KIT: CMY-R300NCBK – DIMENSIONS

CMY-R300NCBK

Unit: mm (in.)

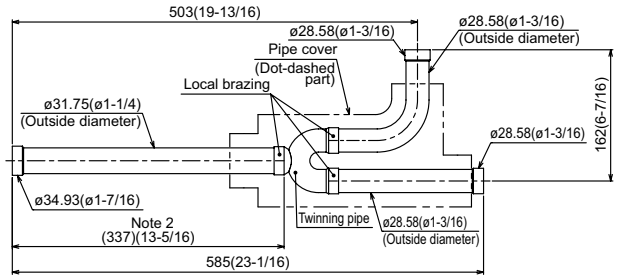
Note:
1. Refer to the figure below for the installation position of the twinning pipe.



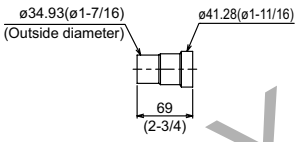
Slope of the twinning pipes are at an angle within ±15° to the horizontal plane.

2. Use the attached pipe to braze the port-opening of the twinning pipe.
3. Pipe diameter is indicated by inside diameter.

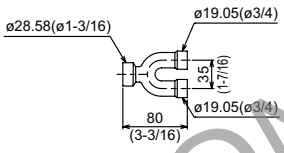
Low-pressure twinning pipe



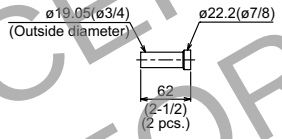
<Deformed pipe(Accessory)>



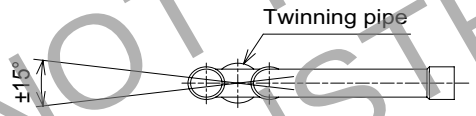
High-pressure twinning pipe



<Deformed pipe(Accessory)>



Note 1. Reference the attitude angle of the twinning pipe below the fig.



The angle of the twinning pipe is within ±15° against the horizontal plane.

2. Use the attached pipe to braze the port-opening of the twinning pipe.
3. Pipe diameter is indicated by inside diameter.
4. Only use the Twinning pipe by Mitsubishi (optional parts) .

1340 Satellite Boulevard Suwanee, GA 30024
Toll Free: 800-433-4822 www.mehvac.com

FORM# PURY-EP336YSNU-A - 202204

DHW Water Heaters

POINTENERGY INNOVATIONS

NST
NILES
STEEL
TANK
SINCE 1898

Commercial Vertical Round Electric Power Water Heater

The Electric Power Water Heater Models Feature:

- 150 psi ASME Code Glass-Lined Tank
- ASME Temperature and Pressure Relief Valve
- Internal Fusing (above 120 amps)
- Incoloy Heating Elements
- Painted Steel Jacket
- Magnesium Anode Rods
- Immersion Thermostats
- Magnetic Contactors
- Digital Temperature Display
- Manual Reset High Limit
- Hinged Door with Keyed Lock
- Channel Iron Skid Base
- Approved for 180° F Operation
- Lifting Lug access

150 to 2500 Gallon Storage
12 to 360kW
Round Vertical Models
Outstanding Safety Features
For custom manufacturing options, please consult factory.

Optional Equipment Features:

- BMS Contacts
- Low Water Cut-off
- Pilot Lights and Manual Limiting Switches
- Electric Step Controller (36kW & higher)
- Alarm Bell
- Shunt Trip Disconnect *
- Low Pressure Switch
- High Pressure Switch
- Time Clock (7 Day)
- Time Clock (24 Hour)
- Safety door interlock
- T&P gauge
- 12" x 16" Manhole (250 Gallons and Larger)

* Separate mounting

ASME HLW

Intertek

LOW LEAD CONTENT

Ultonium Glass Lining = 3 Year Limited Tank Warranty
Double Ultonium Glass Lining = 6 Year Limited Tank Warranty
For products installed in USA, Canada and Puerto Rico. Some states do not allow limitations on warranties.
See complete copy of the warranty included with the heater.

rev.07.2017.11

NILES STEEL TANK • 1701-A TERMINAL ROAD • PO BOX 728 • NILES • MI • 49120
PHONE • 269-683-1910 FAX • 269-683-1953 WWW.nilesst.com

A SUBSIDIARY OF BRADFORD WHITE CORPORATION

Commercial Vertical Round Electric Power Water Heater

Standard Equipment Features:

Energy-Saving Performance - High-density closed cell foam insulation is used to meet the demanding ASHRAE 90.1b current standard for minimizing heat loss. This requirement, allowing a maximum 4 watts per square foot of tank surface energy loss, offers big savings and operating efficiency.

Magnetic Contactors with Immersion Thermostats - 120 volt control circuit with built in transformer. Elements are thermostatically controlled in 54kW (max) increments.

Low Watt Density Incoloy Elements - Incoloy elements are used by Niles Steel Tank because of their many superior characteristics to copper-sheathed elements in rigorous water heating applications. This tough alloy successfully resists the effects of prolonged high operating temperatures, hard water, acids, corrosion and thermal shock. Their nominally higher initial cost is more than off-set by much longer life expectancies and reduced service and replacement costs. Incoloy elements are designed to "burn in air" to prevent failures caused by water void.

Internal Fusing - All elements and circuits are fused in 48 amp increments, providing complete electrical protection. Cartridge type fuses are rated at 200,000 ampere interrupting capacity.

Glass-Lined Tank - Ultonium glass is applied to the inside surface of the steel tank and fired to 1600˚F. (All models are constructed in accordance with the ASME code and approved for 150 psi working pressure).

Digital Temperature Display - Easy to read digital temperaure display located on front cabinet.

Magnesium Anode Protection - Provides anodic protection against corrosion of the tank due to electrolysis.

Painted Jacket - Polyester painted steel jacket is coated on both sides and beautifully finished in durable finish. This combines attractive appearance with maximum protection.

Hinged Door with Key Lock - Quality requires full length hinged doors for ease of inspection and maintenance. Keyed door lock provides additional safety and security at no charge.

Temperature and Pressure Relief Valve - Factory provided ASME rated relief valve protects against excessive temperature and/ or pressure buildup within the tank.

Terminal Block Connections - Easy and safe wiring connections are made possible by factory installed terminal blocks.

180˚F Temperature Operation - Every Electric Power Water Heater is approved for 180˚F operation for sanitizing and other high-temperature requirements.

Inspection Opening - Provides easy access to the heater interior for inspection and cleaning.

Three-Year Limited Warranty - Provides warranty protection against tank failure resulting from defects in material and workmanship.

Lifting Lugs Access - Removable access panels to lifting lugs.

Channel Iron Skid Base

Optional Equipment Features:

A - BMS Contacts - Building Management System Interface

B - Low Water Cut-off - Prevents energizing of the heater when not filled with water or upon low water condition.

C - Pilot Lights and Manual Limiting Switches - With indicating lights - permits manual limitation of heating input by switching off current to each contactor.

D - Electric Step Controller (36kW & higher) - Electronic sequencing of thermostats.

E - Alarm Bell - Warns of various failures.

F - Shunt Trip Disconnect * - Provides maximum protection by interrupting all power to the system in the event of a control sensed malfunction or over current.

G - Low Pressure Switch - Turns off control circuit when water pressure drops below a set minimum.

H - High Pressure Switch - Turns off control circuit when water pressure exceeds a set maximum.

J - 7 Day Clock - To control off/on cycles of the heater as programmed by the owner or electric utility requirement.

K - 24 Hour Clock - to control on/off cycles in 24 hr. cycles.

L - Safety Door Interlock - Prevents opening of access door while heater is energized.

M - Temperature and Pressure Gauges - Jacket mounted for convenient viewing.

N - Manway - Provides means to easily remove sediment from heater, available on 250 gallon and larger.

6DG - Double Ultonium Glass Lining - Offers a 6 year limited warranty

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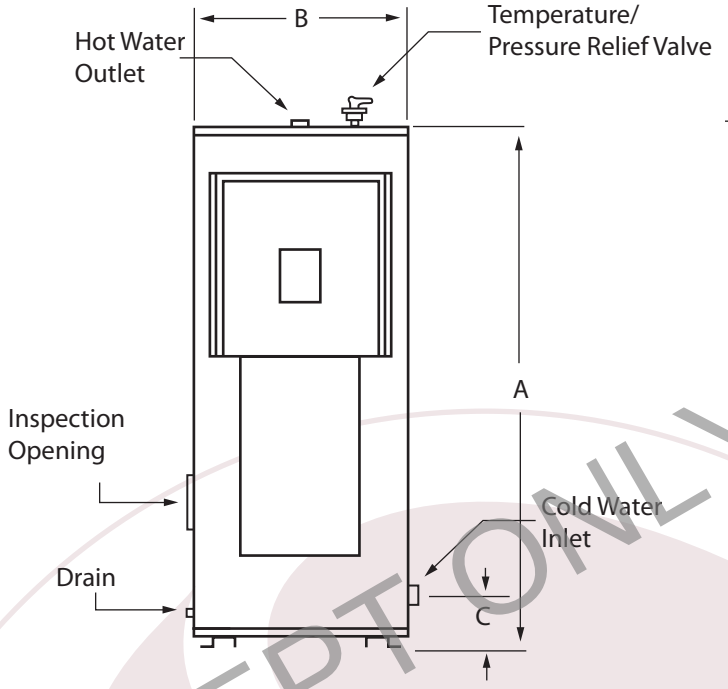
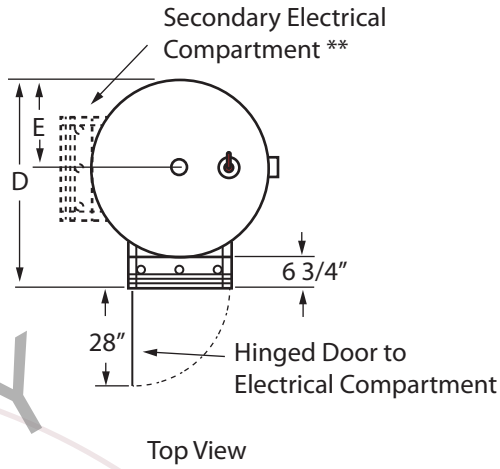
Commercial Vertical Round Electric Power Water Heater





* = Voltage kW = Kilowatt

Model Number	Gallon Capacity	Maximum kW	A Floor to Top of Heater	B Jacket Dia.	C Floor to Cold Water Inlet	D Depth	E Back of Heater to Hot Water Outlet	Water Connection	Approx. Ship Weight
JEV150 - *(kW)	150	90	67 1/2″	32	12.75″	38 3/4″	16″	1 1/2″	650
JEV200 - *(kW)	200	162	80″	32	12.75″	38 3/4″	17″	1 1/2″	750
JEV250 - *(kW)	250	162	92″	34	16.88″	40 3/4″	17″	1 1/2″	1165
JEV300 - *(kW)	300	162	80″	40	19.25″	40 3/4″	20″	2″	1350
JEV400 - *(kW)	400	216	80″	46	19.75″	52 3/4″	23″	2″	1590
JEV500 - *(kW)	500	216	92″	46	19.75″	52 3/4″	23″	2″	1700
JEV600 - *(kW)	600	216	92″	52	21.75″	58 3/4″	26″	2 1/2″	2010
JEV800 - *(kW)	800	270	104″	52	21.75″	58 3/4″	26″	2 1/2″	2450
JEV1000 - *(kW)	1000	360	128″	52	21.75″	58 3/4″	26″	2 1/2″	3160
JEV1250 - *(kW)	1250	360	133″	58	25.75″	64 3/4″	29″	3″	3792
JEV1500 - *(kW)	1500	360	129″	64	27.25″	70 3/4″	32″	3″	4550
JEV2000 - *(kW)	2000	360	140″	70	28.50″	76 3/4″	35″	3″	5460
JEV2500 - *(kW)	2500	360	144″	76	30.25″	82 3/4″	38″	3″	6553

** Note: Vertical round models above 90kW at 208V, 240V or 380V, and 162kW at 400V or 480V, exceed the capacity of a single control panel and may require multiple control panels. Consult the factory for specific details and optional construction.

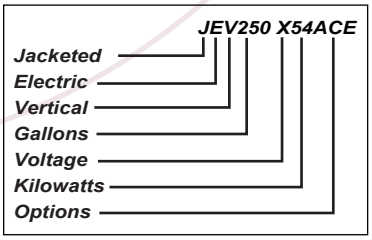
Intertek LOW LEAD CONTENT HLW

rev.07.2017.11

Available Voltages

A - 240V, 1ph	B - 240V, 3ph
J - 208V, 1ph	K - 208V, 3ph
Q - 400V, 3ph	W - 277V, 1ph
X - 480V, 3ph	Y - 380V, 3ph
Z - 415V, 3ph	N - 600V, 3ph

Part Number Example:



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PHONE • 269-683-1910 FAX • 269-683-1953 WWW.nilesst.com

Commercial Electric Power Water Heater

For kW inputs not shown, consult factory.

*380V has 4
**380V has 6
***380V has 8
****380V has 9

Standard kW Input and Amperage

kW	GPH Recovery 100 F Rise	BTU/hr. Equivalent	Number of Control Steps	Maximum Number of Elements	kW Size of Element	Contactor Option		Amperage Draw								
						No. of Contactors (208,240)/ (380,400,415,480)	Suggested Control Steps (208, 240)/ (380,400,415,480)	Single Phase		Three Phase						
								208V	240V	208V	240V	380V	400V	415V	480V	600V
12	49	40,944	1	1	12	1/1	--	58	50	33	29	19	17	17	14	12
15	62	51,180	1	1	15	1/1	--	72	63	42	36	23	22	21	18	14
18	74	61,416	1	1	18	2/1	--	87	75	50	44	28	26	25	22	17
30	123	102,360	1	2	15	2/1	--	144	125	83	72	46	44	42	36	29
36	148	122,832	1	2	18	4/2	4/2	174	150	100	87	55	51	50	43	35
45	185	153,540	1	3	15	3/2	3/2	216	188	125	108	69	66	63	54	43
54	221	184,248	1	3	18	6/2	3/2	260	225	150	130	83	78	75	65	52
60	246	204,720	2	4	15	12/6	4/3	289	250	167	144	92	88	83	72	58
72	295	245,664	2	4	18	8/4	4/4	--	--	200	174	110	104	100	87	69
90	369	307,080	2	6	15	6/3*	3/3	--	--	250	217	137	132	125	108	87
108	443	368,496	2	6	18	12/4**	4/4	--	--	300	260	165	156	150	130	104
120	492	409,440	3	8	15	8/4***	4/4	--	--	333	289	183	176	167	144	115
135	554	460,620	3	9	15	9/6	4/4	--	--	375	325	206	198	188	162	130
144	590	491,328	3	8	18	16/8	4/4	--	--	400	347	219	208	200	173	139
162	664	552,744	3	9	18	18/6****	8/6	--	--	450	389	247	234	225	195	156
180	738	614,160	4	10	18	20/10	8/8	--	--	500	434	273	260	250	217	173
216	886	736,992	4	12	18	24/8	8/8	--	--	600	519	328	312	301	260	208
234	959	798,408	5	13	18	26/13	8/8	--	--	650	563	355	338	326	282	225
252	1033	859,824	5	14	18	28/14	12/10	--	--	700	607	383	364	351	304	242
270	1107	921,240	5	15	18	30/10	12/12	--	--	750	649	410	390	376	325	260
288	1181	982,656	6	16	18	32/16	12/12	--	--	800	692	438	416	401	347	277
306	1256	1,044,072	6	17	18	34/17	12/12	--	--	850	736	465	442	426	368	294
324	1328	1,105,488	6	18	18	36/12	12/12	--	--	900	780	492	468	451	390	312
342	1402	1,166,904	7	19	18	38/19	12/12	--	--	950	822	520	494	476	412	329
360	1476	1,228,320	7	20	18	40/20	12/12	--	--	1,000	865	547	520	501	435	346

Typical Specifications

Water Heaters shall be **Niles Steel Tank Electric Power Water Heater Series** model number _____ , with _____ gallons of storage capacity, rated at _____ Kilowatts, _____ Volts, _____ Phase.
Heater to be completely insulated and jacketed for vertical installation.

The jacket shall be round painted steel with durable finish. Control panel shall have a full length hinged access door with keyed lock. Tank insulation shall be closed cell high density foam sufficient to meet ASHRAE 90.1b. Keyed Locked Door provides additional safety and security.

Tank construction shall be 150 psi maximum allowable working pressure and be ASME stamped and National Board listed. All tanks are to be lined with Ultonium superior glass lining, fired at 1600˚F (871˚C) by a process which provides a molecular interchange of glass and steel. Electric Power Water Heater Series shall include the following standard features: magnetic contactors with immersion thermostats,digital Temperature display, internal fusing for control and load circuits, low-watt density Incoloy sheath elements, magnesium anode rods, ASME rated temperature and pressure relief valve, terminal block wiring, 180˚F (82˚C) water temperature approval, 3-year limited warranty.

Custom Manufacturing

Hybrid Hot Water Generator/
Power Electric Water Heater

NILES STEEL TANK • 1701-A TERMINAL ROAD • PO BOX 728 • NILES • MI • 49120
PHONE • 269-683-1910 FAX • 269-683-1953 WWW.nilesst.com

HEAT PUMP STORAGE TANK

Thermal-Stor ™

ASME SECTION IV CONSTRUCTION

FOUR SIZES FROM 250 - 850 GALLONS

R30 INSULATION

PROPRIETARY STRATIFICATION DESIGN

95% DRAW DOWN

TEN-YEAR LIMITED WARRANTY

DESIGNED ★ ENGINEERED ★ ASSEMBLED
USA

Lochinvar®

HEAT PUMP STORAGE TANK DIMENSIONS AND SPECIFICATIONS

The Lochinvar Thermal-Stor heat pump storage tank is optimized for heat pump DHW applications requiring long duration recovery periods. Heat pump and other energy efficient DHW production often relies on minimal input and full utilization of off-peak periods to heat the stored water. These tanks are designed to take full advantage of these systems by reducing turbulence and providing unprecedented stratification. Lochinvar's proprietary stratification system employs a unique baffle that arrests water velocity into and out of the tank to prevent disruption of the stratified layers. An impressive R30 insulation value helps hold on to the efficiently produced heat until it is demanded by the system. Furthermore, a 95% drawdown sets these tanks apart from the rest delivering more hot water from a given capacity.

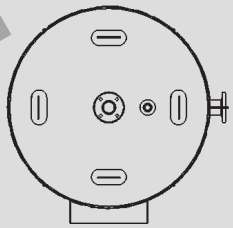
Patent pending baffle design.

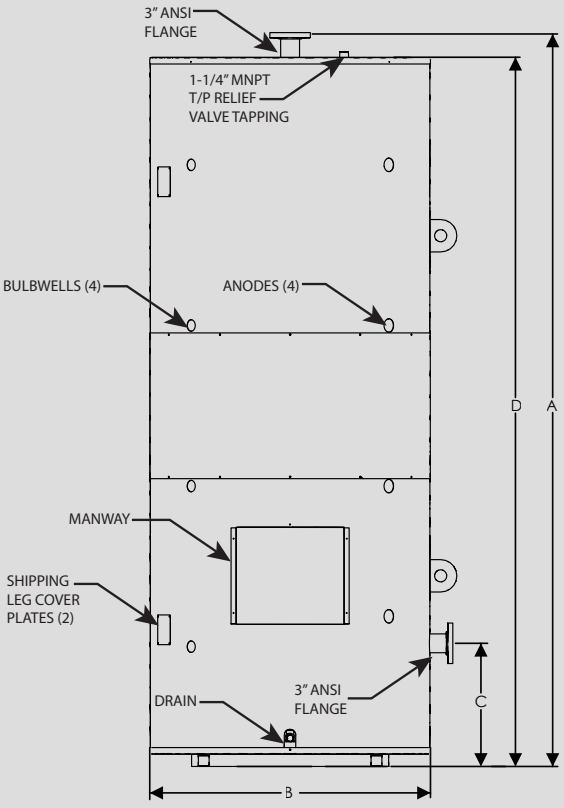
Model Number	Rated Capacity (Gal)	A	B	C	D	Shipping Weight
HP250G	250	99-1/2″	40″	19-1/2″	95″	1,180
HP500G	450	100″	52″	23″	95-1/2″	1,726
HP750G	650	136″	52″	23″	131-1/2″	2,911
HP1000G	850	137″	58″	25″	132-1/2″	3,458

**Note: Standard Construction Only - Options not available.*

STANDARD FEATURES

Ten-Year Limited Warranty *(See warranty for details)*
125 PSI Working Pressure
Painted Steel Jacket
R30 Insulation
Unique Dual Baffle Design
Proprietary Stratification Design
Glass Lining
3" Flanged Connections
Lifting Lugs
12"x16" Manway





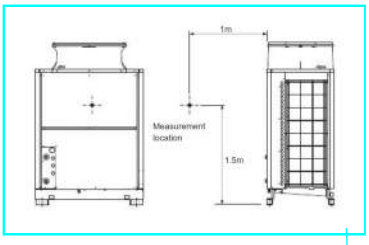
Lochinvar®
Lochinvar, LLC
300 Maddox Simpson Parkway
Lebanon, Tennessee 37090
P: 615.889.8900 / F: 615.547.1000
Lochinvar.com

ASME HLW

QAHV-N136TAU-HPB(-BS)
HEAT2O™ HEAT PUMP WATER HEATER

Job Name:

System Reference: Date:



Outdoor Unit

☐ Standard Model..... QAHV-N136TAU-HPB

☐ Seacoast Model..... QAHV-N136TAU-HPB-BS

FEATURES

- Utilizes natural refrigerant (CO_2, R744)
- High efficiency - COP up to 4.11
- Provides up to 176ºF water temperature
- Guaranteed operation down to -13ºF
- 100% capacity down to 26ºFDB ambient (40kW / 136,480 BTU/H)
- 50% capacity at -13ºF (20kW / 68,242 BTU/H)
- 3 capacity settings available *Capacity settings are only available under certain operating conditions, unit shall be sized based on 40KW
  - 40kW/136,480 BTU/H
  - 50kW/170,607 BTU/H
  - 60kW/204,728 BTU/H
- Up to 16 QAHV units can operate together in a domestic hot water (DHW) system
- Demand response capability with the QAHV-Controls-1 panel

Specifications			System
Unit Type			QAHV-N136TAU-HPB(-BS)
Nominal Heating Capacity (208/230V)		BTU/H [kW]	136,480 [40.0]
Nominal Capacity 100% Heating Range		°F [°C]	36 to 109.4 [2.2 to 43]
Alternate Heating Capacity (208/230V)		BTU/H [kW]	170,607 [50.0]
Alternate Capacity Heating Range		°F [°C]	46 to 109.4 [7.7 to 43]
Maximum Heating Capacity (208/230V)		BTU/H [kW]	204,728 [60.0]
Maximum Capacity Heating Range		°F [°C]	60 to 109.4 [15.5 to 43.0]
Guaranteed Operating Range[1]		°F [°C]	-13 to 109.4 [-25 to 43.0]
Outlet Water Temperature Range		Primary Circuit only, °F [°C]	104 to 176 [48.9 to 80]
		With secondary HEX, °F [°C]	104 to 165 [48.9 to 74]
Inlet Water Temperature Range		°F [°C]	41 to 145 [5 to 62.7]
External Dimensions [H x W x D]		In. [mm]	70 x 48-1/6 x 29-15/16 [1,837 x 1,220 x 760]
Net Weight [Dry]		Lbs. [kg]	868 [394]
Operating Weight		Lbs. [kg]	895 [406]
External Finish			Acrylic painted steel plate
Electrical Power Requirements		Voltage, Phase, Hertz	208/230V, 3-phase, 60 Hz
Minimum Circuit Ampacity (MCA)		A	67.0
Maximum Overcurrent Protection (MOP)		A	110
Recommended Fuse Size		A	70
Short-circuit Current Rating (SCCR)		kA	5
Connection Sizes (Threaded) (In.) 3/4” BSP to NPT adapter shipped loose	Connection Sizes (Threaded) (In.) 3/4” BSP to NPT adapter included	Cold Water Inlet (in)	3/4
Connection Sizes (Threaded) (In.) 3/4” BSP to NPT adapter included		Hot Water Outlet (in)	3/4
Max. Total Line Length		Ft. [m]	196 [60]
Vertical Separation - Max Inlet Water Pressure		Unit above secondary HX, PSIG [Mpa]	Greater than 0 [0]
		Unit below secondary HX, PSIG [Mpa]	Less than 72.5 [0.5]
Water Flow Rate Range		GPM	0.79 to 7.9
		L/min	3 to 30
Sound Pressure Levels		dB(A)	56.0
Fan	Type x Quantity		Propeller fan x 1
	Airflow Rate	CFM	7,768
Compressor Operating Range			15.0% to 100.0%
Compressor Type x Quantity			Inverter scroll hermetic compressor x 1
Refrigerant			CO2 (R744) 14.0, 5.0 [6.5]
Protection Devices	High Pressure		High pres.Sensor & High pres.Switch at 2,030 PSI (14MPa)
Protection Devices		Inverter Circuit (Comp./Fan)	Overheat and overcurrent protection
		Fan Motor	Overheat protection
AHRI Ratings		EER	14.01
		COP	4.11

NOTES: Unit converter
[1]Under Normal heating conditions at the outdoor temp, 16°C DB/ 12°C WB (60.8°F DB/ 53.6°F WB), the outlet water temperature 65°C (149°F), and the inlet water temperature 17°C (62.6°F)
*Due to continuing improvements, specifications may be subject to change without notice
*Do not use steel pipes as water pipes.
*Keep the water circulated at all times. Blow the water out of the pipes if the unit will not be used for an extended period time.
*Do not use ground water or well water
*Do not install the unit in an environment where the wet bulb temperature exceeds 89.6°F (32°C)
*The water circuit must use the closed circuit
*There is a possibility that the unit may abnormally stop when it operates outside its operating range. Provide backup (ex.boiler start with error display output signal (blue CN511 1-3)) for abnormal stop.

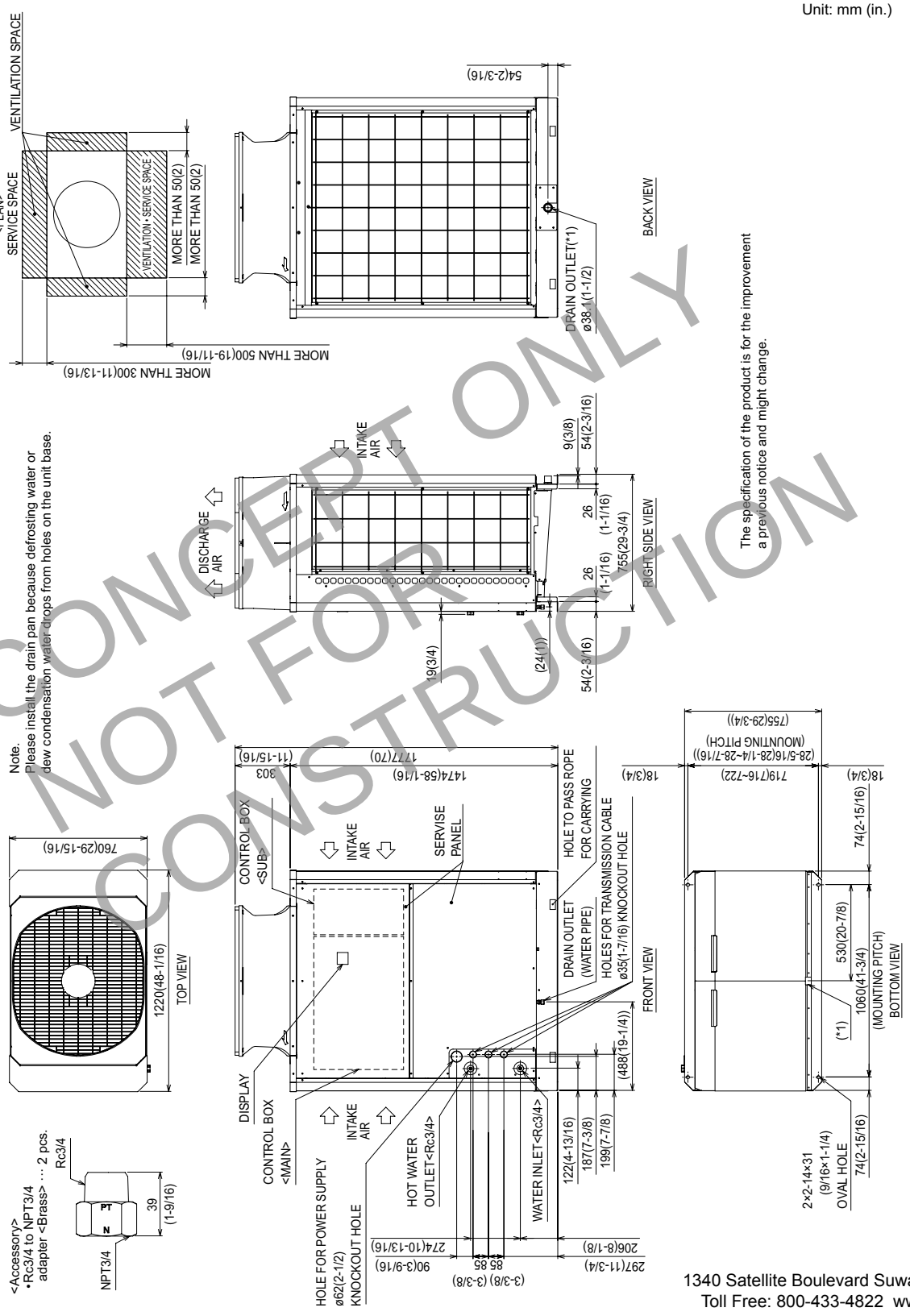
Specifications are subject to change without notice.

ACCESSORIES: QAHV-N136TAU-HPB(-BS)

Storage Tank Thermistor	Thermal Conductive Paste	☐ TCC12-Thermal
Pump Accessories	IFM 4-Pin M12 Wiring Harness For SM-8601 Flow Meter	☐ EVC006
Storage Tank Thermistor	6.25” Thermistor Thermowell	☐ A6-Thermowell
Pump Accessories	IFM Magnetic Inductive Flow Meter	☐ SM-8601
Stand	Base Stand — 24” High	☐ QSSB48M-24
	Base Stand — 18” High	☐ QSSB48M-18
	Base Stand — 12” High	☐ QSSB48M-12
Storage Tank Thermistor	Storage Tank Thermistor (Used with 3-Sensor or 6-Sensor Control)	☐ TW-TH16-E
Secondary Heat Exchanger	Single Wall Stainless Steel NSF Rated Secondary Heat Exchanger	☐ B85H-49-2P-HEX
Control Interface	Remote Controller	☐ PAR-W31MAA-J
	Advanced IO Module, 8 devices, User Programmable	☐ AIM-EC8IO-1
	Integrated Controls Panel with BACnet®, Modbus and CTA-2045	☐ QAHV-Controls-1
Pump Accessories	External Temperature Sensor for Magna3 Pump w/ 1/2” NPT connection	☐ 98477669-GF
	MODBUS CIM200 Module	☐ 96824796-GF
	MAGNA3 32-120 GF N 165, 115-230V Secondary Circulator Pump w/ Stainless Steel Pump housing, flanged connections, and Built in Smart Pump controls	☐ 99833308-GF
	Flange Set Bronze 1”	☐ 519652-GF
Storage Tank	500 Gallon Storage Tank	☐ NST500
	285 Gallon Storage Tank	☐ NST285
	175 Gallon Storage Tank	☐ NST175
Control Interface	BACnet® and Modbus® Interface	☐ PAC-UKPRC001-CN-1
Swing Tank	200 Gallon Swing Tank 208/230V 1 Phase	☐ JEV200J54ADE
	200 Gallon Swing Tank 208/230V 3 Phase	☐ JEV200K54ADE
	150 Gallon Swing Tank 208/230V 1 Phase	☐ JEV150J45ADE
	150 Gallon Swing Tank 208/230V 3 Phase	☐ JEV150K45ADE

DIMENSIONS: QAHV-N136TAU-HPB(-BS)

Unit: mm (in.)



1340 Satellite Boulevard Suwanee, GA 30024
Toll Free: 800-433-4822 www.mehvac.com

FORM# QAHV-N136TAU-HPB(-BS) - 202206

APPENDIX C

UC COLLEGE OF LAW, 201 GOLDEN GATE AVENUE

NOISE ENVIRONMENTAL IMPACT REVIEW

Construction Schedule and Equipment Information

Construction Activities and Schedule Assumptions: [Project Name]					
	Please list the start/end dates and duration for each activity.				
Construction Activities	**Construction Schedule**				
Below are general construction activities. Please add more or delete as necessary specific to the project.	**Start Date**	**End Date**	**Duration (Workday)**	**Worker Trips/Day**	**Vendor Trips/Day**
Asphalt Demolition	-	-			
Asphalt Demolition Debris Haul	-	-			
Asphalt Demolition Debris Onsite Reprocessing	-	-			
Building Demolition	**Jan-26**	**Feb-26**	**42**	**15**	
Building Demolition Debris Haul	**Jan-26**	**Feb-26**	**42**	**15**	
Building Demolition Debris Onsite Reprocessing	-	-			
Site Preparation	**Feb-26**	**Feb-26**	**21**	**20**	
Site Preparation Soil Haul	**Feb-26**	**Feb-26**	**21**	**20**	
Rough Grading	**Mar-26**	**Apr-26**	**42**	**20**	
Rough Grading Soil Haul	**Mar-26**	**Apr-26**	**42**	**20**	
Fine Grading	**Apr-26**	**Apr-26**	**21**	**20**	
Fine Grading Soil Haul	**Apr-26**	**Apr-26**	**21**	**20**	
Utility Trenching	**May-26**	**Jun-26**	**42**	**10**	
Building Construction	**May-26**	**Feb-27**	**210**	**50**	
Paving	-	-			
Architectural Coating	**Sep-26**	**Dec-27**	84	**100**	
Finishing/Landscaping	**Sep-27**	**Feb-28**	126	**60**	

Construction Equipment List: [Project Name]

Please provide construction equipment mix. Leave cell blank for requested items that are unknown.
Please note that CalEEMod defaults will be used where preliminary information is not available.
Please add row(s) for additional pieces of equipment as necessary

	Construction Equipment Details					
Equipment	**# of Equipment**	**Model**	**HP**	**Load Factor**	**Hrs/Day**	**Total Days**
Asphalt Demolition						
Asphalt Demolition Debris Haul - A default construction equipment list is not available in CalEEMod						
Building Demolition						
Bulldozer	1				10	15
Excavator	2				10	15
Building Demolition Debris Haul - A default construction equipment list is not available in CalEEMod						
Loaded Trucks	361				10	15
Site Preparation						
excavator	1				10	10
Crawler Tractor / Loader	1				10	10
Site Preparation Soil Haul						
Loaded Trucks - 2 onsite at a time	25				10	10
Rough Grading						
excavator	1				10	15
Crawler Tractor / Loader	1				10	15
Rough Grading Soil Haul						

Loaded Trucks - 2 onsite at a time	400				10	10
Fine Grading						
same as Rough					10	10

Fine Grading Soil Haul						
Loaded Trucks	40				10	10
Utilities Trenching - A default construction equipment list is not available in CalEEMod for Utility Trenching						
Concrete Saw	1				8	40
Excavator	1				8	40
Loaded Trucks	40				8	40
Building Construction						
Cement Mixer	1		10	0.56	8	180
Concrete Pump	1		11	0.74	8	180
Tower Crane	1		367	0.29	8	270
Rough Terrain Forklift	1		82	0.2	8	270
Generator Set	2		14	0.74	8	270
Paving						
Paving Equipment	1				8	10
Architectural Coating						
Aerial Lift	14		46	0.31	8	295
Finishing/Landscaping - A default construction equipment list is not available in CalEEMod for Finishing/Landscaping						
Mobile Crane	1				8	5
Additional Construction Subphase If Necessary						
Additional Construction Subphase If Necessary						

Construction Activities and Schedule Assumptions: [Project Name]					
	Please list the start/end dates and duration for each activity.				
Construction Activities	**Construction Schedule**				
Below are general construction activities. Please add more or delete as necessary specific to the project.	**Start Date**	**End Date**	**Duration (Workday)**	**Worker Trips/Day**	**Vendor Trips/Day**
Asphalt Demolition	-	-			
Asphalt Demolition Debris Haul	-	-			
Asphalt Demolition Debris Onsite Reprocessing	-	-			
Building Demolition	**Jan-26**	**Feb-26**	**42**	**15**	
Building Demolition Debris Haul	**Jan-26**	**Feb-26**	**42**	**15**	
Building Demolition Debris Onsite Reprocessing	-	-			
Site Preparation	**Feb-26**	**Feb-26**	**21**	**20**	
Site Preparation Soil Haul	**Feb-26**	**Feb-26**	**21**	**20**	
Rough Grading	**Mar-26**	**Apr-26**	**42**	**20**	
Rough Grading Soil Haul	**Mar-26**	**Apr-26**	**42**	**20**	
Fine Grading	**Apr-26**	**Apr-26**	**21**	**20**	
Fine Grading Soil Haul	**Apr-26**	**Apr-26**	**21**	**20**	
Utility Trenching	**May-26**	**Jun-26**	**42**	**10**	
Building Construction	**May-26**	**Jan-27**	**189**	**50**	
Paving	-	-			
Architectural Coating	**Sep-26**	**Oct-27**	42	**100**	
Finishing/Landscaping	**Sep-27**	**Dec-27**	84	**60**	

Construction Equipment List: [Project Name]

Please provide construction equipment mix. Leave cell blank for requested items that are unknown.
Please note that CalEEMod defaults will be used where preliminary information is not available.
Please add row(s) for additional pieces of equipment as necessary

	Construction Equipment Details					
Equipment	**# of Equipment**	**Model**	**HP**	**Load Factor**	**Hrs/Day**	**Total Days**
Asphalt Demolition						
Asphalt Demolition Debris Haul - A default construction equipment list is not available in CalEEMod						
Building Demolition						
Bulldozer	1		350	0.47	10	15
Excavator	2				10	15
Building Demolition Debris Haul - A default construction equipment list is not available in CalEEMod						
Loaded Trucks	361				10	15
Site Preparation						
excavator	1				10	10
Crawler Tractor / Loader	1				10	10
Site Preparation Soil Haul						
Loaded Trucks - 2 onsite at a time	25				10	10
Rough Grading						
excavator	1				10	15
Crawler Tractor / Loader	1				10	15
Rough Grading Soil Haul						

Loaded Trucks - 2 onsite at a time	400				10	10
Fine Grading						
same as Rough					10	10

Fine Grading Soil Haul						
Loaded Trucks	40				10	10
Utilities Trenching - A default construction equipment list is not available in CalEEMod for Utility Trenching						
Concrete Saw	1				8	40
Excavator	1				8	40
Loaded Trucks	40				8	40
Building Construction						
Cement Mixer	1		10	0.56	8	170
Concrete Pump	1		11	0.74	8	170
Tower Crane	1		367	0.29	8	250
Rough Terrain Forklift	1		82	0.2	8	250
Generator Set	2		14	0.74	8	250
Paving						
Paving Equipment	1				8	10
Architectural Coating						
Aerial Lift	13		46	0.31	8	275
Finishing/Landscaping - A default construction equipment list is not available in CalEEMod for Finishing/Landscaping						
Mobile Crane	1				8	5
Additional Construction Subphase If Necessary						
Additional Construction Subphase If Necessary						