ELKS CHILDREN'S EYE CLINIC

TYPE III LAND USE REVIEW NARRATIVE

Land Use#: LU 18-116134 DZ

May 3, 2018

1 Overview

Project Data

Applicant: Carl Tully, NBBJ

Other contacts: Ron Lai, OHSU

Request: Design Review Type III

Site Location: 3375 SW Terwilliger Blvd, Portland, OR 97239

Cross Street: SW Terwilliger Blvd. and SW Campus Drive

Site Area: 41,250 SF / .95 Acres

Site TAX account numbers: R 99109-0550, R327744, R327745, R327746

Adjacent Property: OHSU Campus

Zoning: Marquam Hill Plan District, Sub District – B, Terwilliger Parkway Design Guidelines

Neighborhood: Marquam Hill

Design Advice: November 16, 2017

Project Overview

OHSU Casey Eye Institute is embracing a bold new goal: finding cures for preventable blindness with the intention to eliminate blindness in Oregon and beyond. Speeding the pace of innovation, Casey will expand its laboratory bench-to-bedside research of blinding eye disease - from rare, inherited childhood disorders to conditions that commonly afflict older adults such as macular degeneration and glaucoma.

Project Description

Building on decades of innovation and collaboration, OHSU Casey Eye Institute (CEI) is embracing a bold new goal – to eliminate preventable blindness in Oregon and beyond. To help fulfill this vision the institute is planning to construct a new facility, the Elks Children's Eye Clinic (ECEC). The ECEC building will be located directly West of the existing CEI parking structure in the area made available by the demolition of the vacated School of Dentistry building. The program will be organized over five levels and have one direct connection, on level four, to the existing CEI building. Key programs that are part of the project include: Pediatrics - Elks Children's Eye Clinic, Retina - Macular Degeneration Clinic,

Genetics Research, Translational Clinical Trials Clinic, and Low Vision clinics. In addition to the clinical programs there will be a café for patients, staff and visitors, meeting rooms, and space provided to support the Elks philanthropic functions.

The new space provides the opportunity to improve the patient and family experience through shorter wait times, better flows, and an interior environment designed to be sensitive to the unique needs of the CEI patient population. The clinics are designed to optimize and improve the flow of clinical services, address state-of-the-art emerging technology, and increase the number of services provided under one roof. This expanded capability will allow CEI to be at the forefront of research and discovery, to cure preventable blindness and meet the demand of increasing volumes of patients in need of world class eye care.

The project is a Group B Occupancy Ambulatory Care Facility and will be constructed as a 1A non-combustible construction. The gross area of the project is 64,599 SF.

2 Design Guidelines

Marquam Hill Design Guidelines - Responses

1. ENHANCE VIEWS OF MARQUAM HILL

   Guideline: Enhance views of Marquam Hill in visually prominent new development by emphasizing verticality, de-emphasizing a building's overall mass, and/or articulating building facades.

   RESPONSE:
   The Elks Children's Eye Clinic is set in a canyon of Marquam Hill and is not visually prominent from SW Terwilliger Blvd. due to its location behind existing buildings and trees. The facades of the proposed building are developed utilizing a strong vertical orientation in keeping with the Marquam Hill guideline to utilize "vertical components." Further, the language of the façade reflects the verticality of the tall coniferous trees on the surrounding wooded hillsides. The landscape plan creates a robust Pacific Northwest planting scheme which mindfully connects to the Terwilliger Parkway context. Deciduous and coniferous trees incorporated into the site design provide prominent and complementary vertical site features that visually break down and "de-emphasize" the building mass to accentuate the tectonics of the architecture.

2. DEVELOP INTEGRATED BUILDING ROOFTOPS

   Guideline: Size and place rooftop penthouses, mechanical equipment and related screening elements to mitigate their impacts on views of the buildings. Consider the incorporation of rooftop gardens and/or roof-level storm water management systems to enhance views of and views onto the rooftops of buildings and parking structures.

   This guideline may be accomplished by:

   a. Designing multifunctional rooftop mechanical penthouses.
   b. Developing rooftop terraces or gardens.
   c. Integrating eco-roofs, or similar permeable building roofing systems.
   d. Integrating rooftop screening with the building's overall design.
   e. Developing rooftop screening elements that are considered early in the design process.

RESPONSE:

Roof top screening and an enclosed mechanical penthouse have been integrated into the building design. The highly energy efficient rooftop mechanical systems (dedicated outdoor air system (DOAS) and condensing units) are required to be open to the environment to function. Care has been taken to develop a screen wall which is integrated with the architecture and utilizes the same metal cladding system as the balance of the building. In addition, to address the view of the penthouse and mechanical systems from above, a horizontal lattice screen caps and screens the open air equipment to complete the roof top form and integrate with the simplicity of the language of the architecture.

Although rooftop terraces were reviewed, the increase in usable area at rooftop level would likely change the building classification to be considered a high-rise. It will also require two exit stairs, in turn greatly impacting the purity of the building form, by increasing the overall size and shape of the roof top structures and create a prominently visible tower at the front entry façade of the building.

3. MAINTAIN & ENHANCE VIEWS FROM MARQUAM HILL

Guideline: Maintain and enhance views from existing designated viewpoints. This guideline may be accomplished by:

- Maintaining good public access to the viewpoint.
- Relocating existing viewpoints to maintain the view.

RESPONSE:

The project does not impact views from Marquam Hill.

4. DEVELOP SUCCESSFUL FORMAL OPEN AREAS

Guideline: Orient formal open areas to take advantage of available sunlight, existing and potential visual connections, pedestrian movement, building entries, and adjacent active uses. Ensure that formal open areas provide visual, spatial, and tactile relief from the density of Marquam Hill's institutional development. Depending on their desired functions, consider the incorporation of public amenities in formal open areas.

This guideline may be accomplished by:

a. Enhancing visual connections from one open area to another.
b. Organizing formal open areas around significant landscape features.
c. Developing flexible, integrated seating arrangements within formal open areas.

d. Orienting building entries to adjacent formal open areas.
e. Siting formal open areas to have good connections to the pedestrian network.

RESPONSE:
A multi-sensory garden composed of designated seating areas, pathways, connecting sloped walkways and stairs, and a café courtyard adjacent to the building create a series of open spaces that are public and always accessible to visitors, patients and employees. The sensory garden, directly outside the main entry, is largely focused on scent, texture and bold forms of vegetation as well as natural and tactile materials of stone paving and board-formed concrete. A distinctive site wall with colored glass significantly enhances the sense of wonder and enjoyment of people with limited eyesight. The open space is designed to meet the requirements of Chapter 33.555 Marquam Hill Plan District section 33.555.260.

5. STRENGTHEN THE PEDESTRIAN NETWORK

Guideline: Strengthen and enhance the pedestrian network and trail system by developing new segments that are safe, well-connected (both physically and visually), and rich in their amenities and material qualities.

This guideline may be accomplished by:
a. Aligning primary internal pedestrian systems to link to the external pedestrian network.
b. Enhance the external pedestrian network.
c. Developing light fixtures tailored to different site conditions.
d. Implementing a consistent set of pedestrian-oriented infrastructure.

RESPONSE:
The pedestrian site circulation is clearly connected to SW Campus Drive that leads to SW Terwilliger Boulevard. Terwilliger Boulevard, in turn, connects to paved pathways and trails that link to the City's pedestrian network and the Southwest Trails system.

The pedestrian site circulation enhances the external pedestrian circulation by mindfully incorporating an accessible switchback sloped walk through the sensory garden. This access anticipates a future uphill extension along SW Campus Drive toward the Doernbecher Children's Hospital.

The site lighting offers functional illumination for those people with low vision and other users of the Elks Children's Eye Clinic. A variety of lighting strategies including pathway

lights, recessed soffit lights, pole lights, and overhead string lights accomplish this goal and enhance the exterior environment. The lighting scheme will mitigate light trespass and sky glow by meeting LEED backlight, up-light, and glare (BUG) design criteria.

The exterior pedestrian system is designed to be simple in both layout and use of materials. There is a consistent use of scored concrete paving and tactile warning pavers to differentiate pedestrian and vehicular zones. Low curbs are utilized on the sloping walks of the sensory garden to define a clear edge for cane detection and differentiation of the path of travel from adjacent planting areas.

Near the main entry, a board-form concrete and glass retaining wall creates a distinctive and welcoming multi-sensory feature for the sensory garden and site entry. The wall finish will consist of deeply incised board-formed cast concrete that provides deep vertical shadow lines that relate to the building facade and tactile interest. Smooth colored glass provides a visual and tactile experience that correlates to the rainbow of light in the visual electromagnetic spectrum. The use of the colored glass in the site wall and in the level 4 pedestrian connector creates a strong architectural identity for the project that supports its mission. The board-form and glass wall creates continuity for the pedestrian between outdoor and building exterior; extending the boundary between environments while providing a framework and vertical layer for the sensory garden's sloped layout.

Site retaining walls extend from the building, perpendicular to the geometry of the entry vestibule and wrap toward the site entry. These create a "frame" that supports a strong spatial sense of arrival from SW Campus Drive.

6. SUPPORT THE PEDESTRIAN NETWORK WITH NEW DEVELOPMENT

Guideline: Support the pedestrian network by developing building facades that create strong physical and visual connections to the system. Incorporate building equipment and/or service areas in a manner that does not detract from the pedestrian environment, including trails.

This guideline may be accomplished by:

a. Incorporating seating in adjacent parts of the building.
b. Developing landscaping in areas surrounding the pedestrian path.
c. Developing adjacent building uses that connect physically and visually to the pedestrian network.
d. Incorporating public art within the pedestrian environment.

RESPONSE:

A generous main entry walk is aligned with the front door axis to create a clear and intuitive pedestrian approach to the Elks Children's Eye Clinic.

Layers of trees, shrubs and groundcover in the sensory garden enhance the pedestrian experience by providing a landscape edge and level of visual separation from the vehicular drop-off area. Planting areas in front of the building help soften the vehicular drop-off-area from the waiting area of the lobby, while allowing for visibility and enframement of the main entry. Benches are located both under cover and adjacent to the edges of the sensory garden for people waiting for a ride. A vertical wood screen feature combined with a planting area screen the lobby waiting area and café courtyard from the garage traffic and service area located to the East of the project.

A large cast bronze statue of an elk is located near the entry within the sensory garden. This existing work of art, donated by the Elks organization, will be re-sited and featured as part of this project.

Service areas are incorporated into the adjacent Casey Eye Institute building. HVAC and electrical equipment is located on the roof behind a screen wall or within and enclosed penthouse.

7. ENHANCE RELATIONSHIPS WITH ADJACENT FORESTED AREAS AND TERWILLIGER PARKWAY

Guideline: Strengthen the relationships between new institutional development and adjacent forested areas of Terwilliger Parkway by working to reduce site impacts and enhance the integration of the built and natural environments. Incorporate building equipment and/or service areas to strengthen the natural qualities of adjacent forested areas of Terwilliger Parkway.

This guideline may be accomplished by:

a. Incorporating darker, textured materials at lower building elevations.
b. Creating an organic diversity of less-refined materials.

RESPONSE:

The planting design frames the main building entry while screening SW Campus Drive to the South. It is intended to create a seamless visual connection between the Elks Children's Eye Clinic and the forested hillsides, "borrowing" species of trees from the adjacent vegetation. The planting design consists of native and adapted species consistent with the vegetative

structure and species found in the adjacent forest such as western red cedar, pine, vine maples and ferns. The non-native species will expand the seasonal plant palette to provide color and interest at all times of the year.

8. ENHANCE RELATIONSHIPS WITH ADJACENT FORESTED AREAS AND TERWILLIGER PARKWAY

Guideline: Create an active, urban interface with the Village Center by incorporating pedestrian-level spaces that can accommodate a variety of active uses.

This guideline may be accomplished by:

a. Providing opportunities for the development of active, urban building edges.
b. Articulating building facades.

RESPONSE:

The site is remote from direct relationship to the Village Center however, it is providing articulated building façade treatments to create interest and a pedestrian-oriented environment.

9. FURTHER THE IMPLEMENTATION OF THE SITE DEVELOPMENT CONCEPTS

Guideline: Further the implementation of the functional areas, pedestrian, and vehicular circulation site development concepts.

This guideline may be accomplished by:

a. Arranging the campus's activities to support each other and the adjacent context.
b. Developing pedestrian connections from the campus's internal network to external systems.
c. Developing an efficient vehicular access system that responds to the different activities on the hill.

RESPONSE:

The site is at the lower section of the OHSU campus near SW Terwilliger Blvd. The site provides connectivity to the upper campus and the aerial tram via existing elevators inside the parking garage. This project will help to enhance the pedestrian experience to lower campus as well as bring clarity to the vehicular flow on site. The stairs and ADA sloped walkways through the sensory garden will provide future connections up SW Campus Drive.

Terwilliger Design Guidelines - Responses

A. HEIGHT AND SETBACK

1. Buildings should be setback sufficiently from the Parkway to allow for development of the landscape treatment prescribed in the Terwilliger Plan including adequate setbacks to protect the root system of trees within the Parkway.
2. Downhill from Terwilliger, new buildings should be limited in height and have sufficient setback to preserve unobstructed Major Views and Panoramas as identified in the Terwilliger Plan.
3. In commercial zones, buildings should be setback from the Parkway not less than ten feet.
4. In areas adjacent to Parkway lands obtained by Deeds of gift from the Fulton Park Land Company, Terwilliger Land Company and the Oregon/Washington Railroad and Navigation Company, no buildings within twenty-five feet of the uphill property line of the Parkway should be allowed.

RESPONSE:

1. The Elks Children Eye Clinic is set back approximately 150 ft. from the Terwilliger Parkway, far outside the root zones of existing trees. In addition to this distance, the existing service area and Casey Eye Institute prevent parkway trees from growing onto this project site.
2. Not applicable. The building is west of SW Terwilliger Blvd.
3. Not applicable. The building is not in commercial zone.
4. The building is set back further than twenty-five feet from the Terwilliger Parkway.

B. LANDSCAPING

A landscaping plan should be incorporated into the proposed development which provides for the following:

a. Landscaping should be consistent with the Terwilliger Landscape Concept Plan
b. Preservation of as many trees over 6 inches in caliper as practical.
c. Preservation of the existing topography to the extent practical by reducing necessary grading and limiting cuts and fills to slopes of less than 2 to 1.
d. Protection of Root Systems: trees designated for preservation should have no grading within the drip line diameter of the limbs of the tree.

RESPONSE:

a. This project does not impact the existing forest vegetation in the Terwilliger Parkway. The landscape plan uses native and adapted trees, shrubs and groundcover that are visually compatible with the Terwilliger Parkway, although the site cannot be readily seen from SW Terwilliger Blvd.
b. The project limit of work is approximately 150 feet from the existing trees in the Terwilliger Parkway. The project does not impact the existing forest vegetation of the Terwilliger Parkway.
c. The project limit of work is approximately 150 feet from the Terwilliger Parkway. The project does not impact the topography in the Terwilliger Parkway.
d. The project limit of work is approximately 150 feet from the existing trees in the Terwilliger Parkway. The project will not impact the root systems of any parkway trees.

C. STYLE, SCALE, SITING, MATERIALS AND COLOR

1. Architectural scale, style, siting, lighting, building material, color and finishes should complement the landscape and be in keeping with the "Character of Terwilliger" statement.
2. Care should be taken with all aspects of the project seen from the Boulevard and trail, including roofs, foundations, drives and parking with the "Character of Terwilliger" statement.

RESPONSE:

1. The overall scale and materiality of the project is similar in scale and color of the existing Casey Eye Institute since it cannot be seen from the parkway other than a small triangle of the roof penthouse screen. The project facades create a strong vertical orientation reflecting

the surrounding natural context, made up principally of coniferous trees which are inherently vertical by nature.

2. Although the site is not largely visible from SW Terwilliger Boulevard, the pedestrian, site and vehicular drop-off areas incorporate generously landscaped areas consistent with the visual qualities and character of the Terwilliger Parkway.

D. VIEWS AND SPECIAL NATURAL FEATURES

1. Preserve or improve views and special natural features identified in the Terwilliger Concept Plan.

   RESPONSE:
   The project is located west of SW Terwilliger Boulevard and does not impact views east from SW Terwilliger Boulevard. The project limit of work is 150 west of Terwilliger Parkway and does not disturb any Special Features.

E. SIGNS

- Permanent private signs should not be visible from Terwilliger Boulevard or Trail, except in commercial areas.
- In commercial areas abutting the Parkway, all signs should be in keeping with the "Character of Terwilliger" statement.

  RESPONSE:
  The project is replacing an existing standard OHSU building identity sign located on SW Campus Drive. The sign is approximately 330 feet west from SW Terwilliger Blvd and 190 feet west of Terwilliger Parkway. The small sign is scarcely visible from SW Terwilliger Blvd. as viewed in the distance beyond the existing Casey Eye Institute building.

F. VEHICLE ACCESS

1. In areas adjacent to Parkway lands granted by the Fulton Land Company, Terwilliger Land Co. or the Oregon/Washington Railroad and Navigation Co., access points are limited first to existing access, then to natural future access points identified on the Access Plan: 1, then to other points where the City can establish roadways on easy grades. In all other areas, vehicle access is limited to existing access points, and new access is proposed only when no other reasonable alternatives are available.
2. New access to Terwilliger should be accommodated by consolidating with access points planned for other new developments.

3. Traffic volumes generated by a proposed development should be reduced to the greatest extent practical. Measures considered to mitigate traffic impacts on Terwilliger should include, but are not limited to; carpooling, pedestrian and bicycle access, and parking limitations. New development shall not require the installation of turn lanes, special channelization or traffic signals at the point of the development's access to Terwilliger.
4. Vehicle access to Terwilliger Boulevard should have a vertical and horizontal sight distance adequate for Terwilliger speeds of 35 mph, approximately 300 feet.
5. The access has a 1 to 5 percent grade within 20 ft of the Boulevard or Trail, and less than 20 percent grade beyond the first 20 feet.
6. Cuts and fills in access areas should be avoided. Where they are unavoidable, the resulting slopes should be limited to 2 to 1 slopes.
7. Where crossing the Terwilliger Trail is proposed, adequate sight distance to ensure safe crossing must be provided.
8. Avoid access routes to Terwilliger which link other parts of the street system to Terwilliger consequently allowing the shift of additional through traffic onto the Boulevard. Access plans will be reviewed by the City Traffic Engineer, the Bureau of Parks and the City forester whose comments will be considered by the Design Commission and where appropriate the Hearings Officer or the City council on appeal

RESPONSE:

1. This guideline is not applicable. The project does not propose any new vehicular access points.
2. This guideline is not applicable. The project does not propose any new vehicular access points.
3. Measures to mitigate traffic impacts are part of an ongoing campus-wide effort. This project does not provide additional vehicular parking. Additional bike parking will be provided. The project does not propose roadway improvements or traffic control devices.
4. This guideline is not applicable. The project does not propose any new vehicular access points.
5. This guideline is not applicable. The project does not propose any new vehicular access points.
6. This guideline is not applicable. The project does not propose any new vehicular access points.
7. This guideline is not applicable. The project does not propose any crossings of Terwilliger Trail.

8. This guideline is not applicable. The project does not propose any new vehicular access points from SW Terwilliger Blvd, NW Campus Drive or elsewhere.

G. PEDESTRIAN ACCESS

1. Pedestrian access through new development should be provided at the time of development, and at locations consistent with the Terwilliger Access Plan.
2. All projects must provide for convenient and well-graded pedestrian access to transit service and the Terwilliger Trail.

RESPONSE:

1. This guideline is not applicable. The project does not propose any new pedestrian access points from Terwilliger Parkway, SW Terwilliger Blvd or Terwilliger Trail.
2. This guideline is not applicable. The project does not propose any new pedestrian access points from Terwilliger Parkway, SW Terwilliger Blvd, or Terwilliger Trail.

H. PROJECT IMPROVEMENTS WITHIN THE PARKWAY

Project improvements within the Parkway shall be limited to access and other uses specified by the Terwilliger Access and Landscape Concept Plans.

RESPONSE:

This guideline is not applicable. The project does not propose any improvements in the Parkway.

DAR - Briefing Notes - Responses

1. GENERAL

- Strong support for the overall project, with a desire for better resolution of pedestrian vs. vehicle areas and roof top mechanical.

RESPONSE:

The pedestrian and vehicular circulation layout is designed to accommodate a simple and clear separation of all flows, particularly keeping visually impaired patient's safety and convenience in mind. Parking, drop-off, ambulance parking, service access, turning movements and through-traffic to the existing parking garage are all considered. Flush curbs at parking areas near the main entry of the building to reduce potential trip hazards for patients accessing the new clinic. Textured, truncated dome pavers for tactile and cane detection are incorporated between the pedestrian and vehicular zones. New marked crosswalks will improve safety at the two connections to the existing Casey Eye Institute Building.

All roof top mechanical equipment is behind a screen wall which is integrated with the overall design of the building and blends into the overall façade texture and pattern.

2. BUILDING MASSING AND VISIBILITY

- The simplicity of the massing was supported; however the current rooftop mechanical and its proposed screening are unresolved and diminish the overall strength of the massing concept.
- A green roof was recommended as an additional means of mitigating the views from above.
- Due to the campus being a disparate collection of buildings and building styles, a strong reference to other campus buildings is not necessary.
- Some commissioners felt that the proposed sky bridge is a sufficient connection to context. Other felt the sky bridge contextual response was tenuous and thought that the building should at least better relate to the existing Casey Eye Institute.
-The comment was made that the proposed building and the Casey Eye Institute could play off each other better as a means of achieving improved context and would also help the "wonder and playfulness" that was mentioned by the applicant as a project goal.

RESPONSE:

To mitigate the overall massing of the roof top mechanical and screen wall, the penthouse was set back from the façades facing south and east to create a clean form and pure shape of the south façade (see at grade level renderings). This also minimizes the amount of building view exposure from the east at SW Terwilliger Blvd.

An extensive green roof system, which could function as an eco-roof, was studied in depth. The study revealed that the area of the green roof was substantially diminished and could not provide the area required to function as an eco-roof. This was due primarily roof system warranty and performance requirements to resist wind uplift. This resulted in adding a 4'-0" band of pavers along the entirety of the roof perimeter where green roof was intended. This resulted in a fragmented patchwork appearance which was not cohesive with the simplicity of the design concept. Because of this, the project has integrated new design features to create a predominant simple roof top form, avoiding an in-cohesive, patchwork of green roof areas. A simplified penthouse envelope was achieved by incorporating a horizontal screen above the open air roof top mechanical equipment. This resulting design supports the overall purity of rooftop form. (see study material in the 11x17 design package)

The material proposed for the sky bridge is a dichroic glass. One could perceive the "sense of wonder" by the dynamic nature of this glass. The unique characteristics of this glass type allows one to experience a shift from one color to another depending on the angle and time of day one is viewing the glass, thus bringing a sense of wonder to the project to the unique and changing appearance of the glass feature.

3. SITE ORGANIZATION AND COMPOSITION

- The entry/drop off area has a negative impact on the open spaces and pedestrian circulation - both need greater resolution.
- The entry sequence needs to be designed with a clear hierarchy to avoid being just a large roundabout for vehicles.
- Pedestrian and garden areas should be useable and accessible without having to cross vehicle areas.
- Outdoor rooms, that are remnants of building program, must be clear and desirable destinations. These areas need better integration throughout.

RESPONSE:

The pedestrian and vehicular circulation and crosswalk layouts are designed to provide a simple and clear integration of all flows, particularly keeping visually impaired patients' safety and convenience in mind. Crossings of vehicular and pedestrian routes have been simplified and carefully considered. Parking, drop-off, ambulance parking, service access, turning movements and through-traffic to the existing parking garage are all considered.

Special outdoor rooms, namely the sensory garden and the pocket plaza outside the café, are visible and easily accessible as destinations. The sensory garden offers seating opportunities at several levels. The café space is flexible and contained; it is located in a shady space between buildings at the advice of the medical doctors whose patients are receiving treatment. Its design is geared toward the requirements of the special users of the eye clinic, people whose eyes may be dilated or who may be most comfortable in a low light environment.

4. GROUND LEVEL PROGRAM

- Lobby location could be improved if located closer to open space plaza area to the south.
- The café and pocket park should be located to the front (elevation) as opposed to the current location at the west elevation which is constrained and dark.
- Integrate inside and outside spaces to create fusion between the two.
- Entry sequence would be improved if architecture could provide clarity regarding entrance and orientation.
- The sense of arrival is underdeveloped. This applies to both site and building design.
- Strengthen the sense of arrival to the place once turning off of SW Campus Drive.

RESPONSE:

The lobby location and main entry are directly and well-coordinated in their adjacency to vehicular drop off and medical transport parking. As previously stated, the specific needs of eye clinic patients, as specialized users of this building, are the main criterion behind the location of the café and its courtyard. The courtyard is intentionally sited in the most shaded portion of the site; and new trees will further provide an overhead canopy in the future, as well as providing a protected area for pediatric patients and families. The café courtyard is intended to be an intimate space within a richly planted, small sloping garden. It is distinguished as a scale-shift from the busier parts of the larger OHSU campus and Campus Drive and the adjacent forested hillsides of Marquam Hill.

The lobby glass and visible outdoor spaces have been carefully integrated and related. The distinctive feature site wall is an extension of the building into the landscape. The wall organically expresses to the precise vertical fins in the building facade. The site wall helps to terrace the site in accordance with the indoor spaces. Window openings and doorways have been carefully considered in the composition and circulation flow.

The sense of arrival has been improved through the design of the entry court. Through-traffic heading to the garage will be apparent upon arrival through signage. The sightlines to the new building are open and the landscape elements frame rather than block the main views to the building and its entry.

5. MATERIALS

- Greater continuity of glazing around the building is suggested, such as increased amount of colored glazing wrapping building.
- As mentioned previously, the building's materiality need only relate to be to the Casey Eye Institute rather than other campus buildings.
- While the materials (metal and glazing) are supported, the building skin and use of color on the bridge needs to be better resolved.
- Front elevation is strong, however detailing and quality of materials is critical.

RESPONSE:

Glazing is located with clear intent to address programmatic functions of the interior spaces. Eye clinics by nature need to limit the amount of direct daylight and bright exposure for clinical purposes. Patient care areas require dimmable controlled lighting to calibrate the interior environment for medical procedures and improve comfort for patients with light sensitivities. This allows daylight to be prioritized for staff along the south façade. Controlled daylight is provided to clinical waiting areas along the east wall where patients may have dilated eyes waiting for the next step in their appointment. Areas along the north wall are primarily reserved for staff zones.

The zone of the floor plate has been reserved for building services which stack vertically up the building. The purpose of this is to organize fixed program elements and permanent building infrastructure outside of the clinical planning area of the floor plan. This organization allows for flexible clinical planning as well as preserves flexibility for future renovation within the clinic zone. The OHSU master plan calls for a future medical tower directly to the west of the Elks Children's Eye Clinic. In addition to the clinical planning logic, the western façade is developed without windows to provide a buffer from future construction as well as mitigate western solar heat gain and maximize thermal and energy performance goals which will help the project attain a LEED gold certification.

The materials of the new Elks Children's Eye Clinic complement those of the existing Casey Eye Institute by using similar materials and color palettes. Metal and glass are the primary materials of the new addition with a unique colored glass connector identifying the entry to the two buildings from the parking garage.

The glass proposed for the south face of the bridge connector is a dichroic glass. One would perceive the "sense of wonder" by the dynamic nature of dichroic glass. The unique characteristics of this glass type allows one to experience a shift from one color to another depending on the angle and time of day one views the glass, thus bringing a sense of wonder and curiosity to the project. As the bridge connector is a big gestural move, the colored glazing treatment is intentionally reserved to accentuate it against the purity of white color, and clarity of form, of the clinic building.

The attention to detailing at the south (front facing) façade has two visible types of curtain wall systems. The primary curtain wall of the south façade is a two way butt glazed system that integrates a continuous vertical white fin into the mullion cap. This works together with the vertical language of the metal panel cladding of the east, west, and north façades. In addition to generating visual continuity between the curtain wall and the rest of the building the vertical fin provides solar shading of low angle western light to the all glass south façade. The curtain wall at the sky bridge purposefully stands apart iconically from the existing and new buildings by utilizing a 4 sided SSG system which minimizes the appearance of joints between each pane of glass, creating the presence of a colored glass tube. Punched window openings within the metal panel cladding on the east and north façades are detailed with a fin to create a frame and shadow which articulates the façade.

Post Application Comments

1. Rooftop Mechanical

COMMENT:

"Per your explanation of the constraints, pulling the walls to the east and/or north seem unnecessary. Providing a multi-tiered green roof is an improvement and addresses some of the concerns that the Commissioners voiced in the DAR. However, the mechanical penthouse is inconsistent with the clean building form and so Commission may want to know if it can be further refined."

RESPONSE:

To mitigate the overall massing of the roof top mechanical and screen wall, the penthouse was set back from the façades facing south and east to create a clean form and pure shape of the south façade (see at grade level renderings). This also minimizes the amount of building view exposure from the east at SW Terwilliger Blvd.

An extensive green roof system, which could function as an eco-roof, was studied in depth. The study revealed that the area of the green roof was substantially diminished and could not provide the area required to function as an eco-roof. This was due primarily roof system warranty and performance requirements to resist wind uplift. This resulted in adding a 4'-0" band of pavers along the entirety of the roof perimeter where green roof was intended. This resulted in a fragmented patchwork appearance which was not cohesive with the simplicity of the design concept. Because of this, the project has integrated new design features to create a predominant simple roof top form, avoiding an in-cohesive, patchwork of green roof areas. A simplified penthouse envelope was achieved by incorporating a horizontal screen above the open air roof top mechanical equipment. This resulting design supports the overall purity of rooftop form.

2. Skybridge

COMMENT:

The dichroic glass shown on the sky bridge is less vivid than what the Commission saw in the DAR. Can the color saturation of the glass be increased? Also, as mentioned previously, having images or a short video illustrating the dynamic aspects of the glass will go a long way to gain support – especially if the color saturation cannot be amplified. Images/video will also go a long way to address the "sense of wonder" theme.

RESPONSE:

The material proposed for the sky bridge is a dichroic glass. One could perceive the "sense of wonder" by the dynamic nature of the glass. The unique characteristics of dichroic glass allows one to experience a shift from one color to another depending on the angle and time of day one is viewing the glass, thus bringing a sense of wonder to the project due to the unique and changing appearance of the glass feature.

The color saturation will vary dependent upon the conditions of the day at any given time. The glass which has been selected has an increased level of vividness compared to illustrative renderings submitted in the initial application package. Short video clips which show how the glass can be expected to perform will be provided.

3. Café / Courtyard Location

COMMENT:

"Commission had concerns with the location and subsequent success of the café and adjacent courtyard. Please thoroughly address why this is the best location for both."

RESPONSE:

The primary purpose of the café, and its associated courtyard, is to function for the patients and staff while visiting the Elks Children's Eye Clinic (ECEC). The patient population of the ECEC is considered as low-vision and predominantly have physiological conditions, or are receiving treatments which create sensitivity to light. The café and courtyard were specifically located in an area which is predominantly sheltered from bright and direct light. Correspondingly, the waiting areas of the clinics are also located on the east façade of the building to provide access to the exterior with naturally mitigated light intensity.

The clinic serves patients of all ages with the predominant populations being children and the elderly. In addition to managing exposure to light, the courtyard provides a sheltered controlled outdoor area for patients and families to utilize and feel protected while at the ECEC. Having this space adjacent to the café is particularly functional, especially for families with multiple young children brought along for the appointment. As this area of the site is level, it allows outdoor café seating as well as ease of access for those who may have a combination of mobility challenges and low vision.

The café is a large program area occupying approximately 20% of the net usable ground floor area. Situating the café in the northeast quadrant allows the space to be located appropriately, while not displacing the main entry lobby and optical shop.

Situating the building away from the existing site retaining wall, located to the north and the existing parking garage located to the east of the ECEC, simplifies construction logistics,

while allowing uninterrupted vehicular access to the garage during construction. If the building were located in close proximity to the parking garage, the site area required to construct the building would encroach upon the garage vehicular drive and would prohibit access to the garage and loading areas. In addition, as the ECEC foundations and excavation are lower than the foundations of the existing garage and site retaining wall, the new work would undermine the existing foundations, requiring extensive structural underpinning of the existing foundations, adding considerable cost to the project.

By locating the building away from close proximity to the existing garage, the ability to provide both a stair which exits to grade and a bridge connection to the existing CEI from the ECEC is enabled. Fire department requested access around all sides of the ECEC is also enabled on all sides of the building. Furthermore, due to the site grade change, increased proximity of the building would result in the ground level spaces being underground on three of the four sides of the building.

4. Entry Hierarchy and Sensory Garden

COMMENT:

"This has improved from what the Commission saw at the DAR. Showing the studies and articulating the constraints will go a long way to gain support the proposed design. Also, regarding the Sensory Garden – my memory from our last meeting is that Carol mentioned that the proposed design was going to be continued to the west with the future development. Mentioning this to the Commission in regard to some greater design continuity from development to development may be helpful, as this is something that is lacking up on the OHSU hill."

RESPONSE:

This project will help to enhance the pedestrian experience to lower campus as well as bring clarity to the vehicular flow on site. The stairs and ADA sloped walkways through the sensory garden will provide future connections up SW Campus Drive. The pedestrian site circulation enhances the external pedestrian circulation by mindfully incorporating an accessible switchback sloped walk through the sensory garden. This access anticipates a future uphill extension along SW Campus Drive toward the Doernbecher Children's Hospital.

5. Sense of Wonder

COMMENT:

This was a sticking point for some Commissioners. Please think of how to better respond to this.

RESPONSE:

Invoking a "Sense of Wonder" can be a deeply personal and subjective assessment. The project has approached this experiential aspiration from a few different angles while trying to maintain simplicity as a core value of the design theory.

1) Create a single big design move which is different and unique compared to what one may experience during the routine of daily life. This is achieved through the expression of the bridge and the vibrant colorations produced by the dichroic glass feature which responds dynamically to the environment. As one arrives to the site from the east the bridge is concealed from view by the existing CEI building and hillside and as one arrives the big move of the bridge is revealed and is strongly contrasted against the white of the new and existing buildings. The iconic nature of the bridge will invoke a desire to experience it from the interior. The interior of the space will glow with the dynamic colorations of the glass creating excitement, curiosity, surprise, mystery; a sensation of wonder.
2) As one arrives from the west one will have a similar experience of the building and bridge being revealed as one rounds the turn passing under the Doernbecher Children's Hospital. The color of the bridge will stand out vibrantly in contrast to the primary western building façade and the south façade which when viewed obliquely will have the appearance of a solid white form. The texture of the metal panel on western façade will also have a dynamic response to the conditions of light and angle of view. The southern façade appearance will change from solid transparent as the oblique view transitions to direct view. This dynamic will also contribute to the "Sense of Wonder".
3) The landscape design invokes a sense of wonder at a smaller pedestrian scale through multi-sensory design features. Site wall finishes will consist of deeply incised board-formed cast concrete that provides deep vertical shadow lines that relate to the building facade and tactile interest. Smooth colored glass provides a visual and tactile experience that correlates to the rainbow of light in the visual electromagnetic spectrum. The variety of plants will provide audible cues as the wind or rain interacts with the foliage. In addition the subtle aromas and scents of the plants will be present and varied throughout the seasons.

3 Sustainability Goals

The project is targeting a minimum of a USGBC LEED Gold certification. Designing a building that uses significantly less energy will require focusing on many elements; envelope, lighting, mechanical and electrical equipment, and equipment used by the occupants. The project will also be structured to reduce water consumption and heat island effect. In addition materials will be selected which will support sustainable materials and indoor air quality standards.

LEED Gold certification requires achieving a minimum of 60 points in the LEED v4 New Construction rating system across a variety of categories including site, water, energy, materials, and indoor environmental quality. While all LEED credits are optional, many will need to be pursued to a significant extent in order to achieve 60 required points.

The performance of the building envelope will be critical both to the energy efficiency of the building and to the comfort level of the occupants. The proposed mechanical systems and preliminary equipment sizing are based on the following:

Exterior Wall: Overall U-Factor = 0.045,
Roof: Overall U-Factor = 0.029, R-33
Windows: ≤30% Glazing, Assembly U-Value = 0.29 (fixed) Solar Heat Gain Coefficient (SHGC) = 0.31 Visible Transmittance = 60%
Infiltration: ~0.02 cfm/sq.ft. of the external wall

HVAC System: Variable refrigerant flow (VRF) system with DOAS

Heating Cooling and Ventilation: Each thermal zone will be served by a ducted fan coil unit. Refrigerant piping will be routed from the fan coil unit to branch circuit controller and from there up to outdoor air cooled outdoor VRF unit. 30,000 CFM, heat recovery DOAS unit will provide ventilation air for the building. The unit will consist of supply and exhaust fan walls, sensible heat recovery wheel and filter section. The unit will be located on the roof. Room air will be return through a common duct to the DOAS unit where the energy will be recovered from the return air before relieving it to the outside.
Plumbing: The project will be utilizing low flow plumbing fixtures.

Domestic hot water system: The VRF mechanical system will utilize waste heat from the building air conditioning system and be extracted by two electric heat recovery heat pumps to produce domestic hot water. Hot water from the heat pumps will be circulated through two heat exchangers and stored at 140 degrees F. in two 200-gallon hot water storage tanks.

Lighting: Lighting will be a full LED solution targeting a result which is significantly below code.

4 Previous Conditions of Approval

The project address the following Conditions of Approval from LU 17-184014 DZ:

• Prior to the final inspection of the demolition permit for the School of Dentistry Building, a land use review must be submitted for the expansion of the Casey Eye Clinic, (as identified on exhibit C.2), or a zoning permit for the landscape mitigation plan, (identified on exhibit C.4). Landscaping must be installed prior to the final of the demo permit.

Response: The Casey Eye Clinic (AKA Elks Children's Eye Clinic) is fulfilling this requirement by filling of this land use application.

• If prior to the Certificate of Occupancy for the Casey Eye Clinic expansion, a land use review has not been submitted for the new 'High Tech Hospital,' (as identified on exhibit C.3), a zoning permit for the landscape mitigation plan, (identified on exhibit C.4) will be required for the remaining site area. Landscaping must be installed prior to the final of the Certificate of Occupancy.

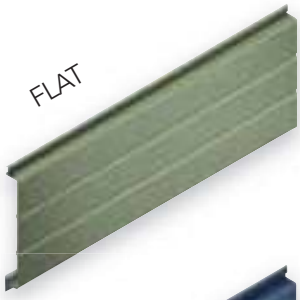
Response: OHSU will comply with the requirements to ensure the entitlement to attain the Certificate of Occupancy for the Casey Eye Clinic (AKA Elks Children's Eye Clinic)

5 Appendix

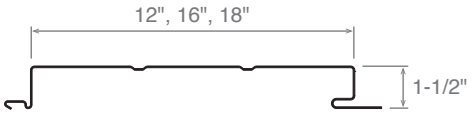
Manufacturers Cut Sheets

Site Photos

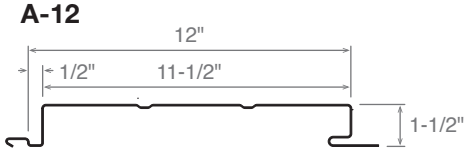
MORIN CONCEALED FASTENER SERIES

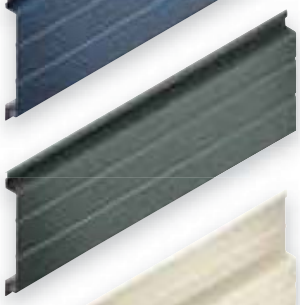


F-12
F-16
F-18



A-12





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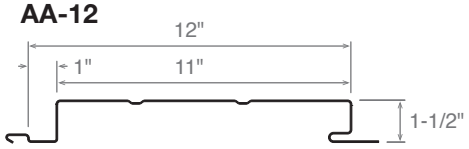
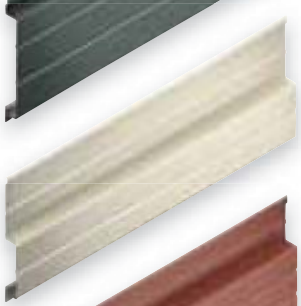
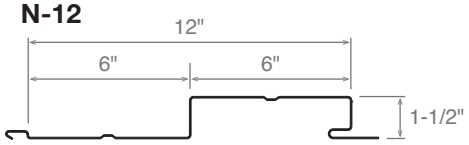
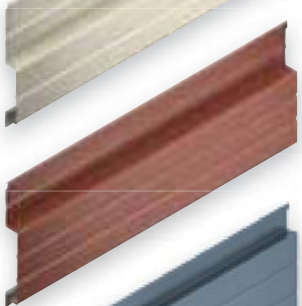


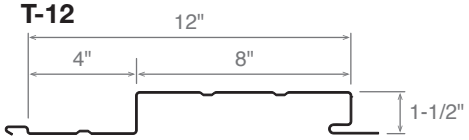


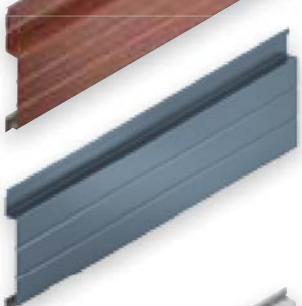
N-12





T-12





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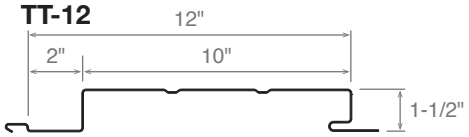
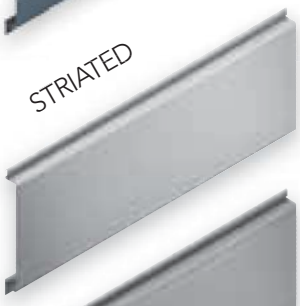
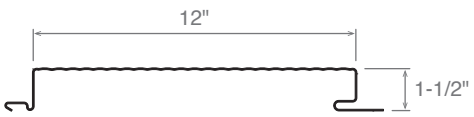
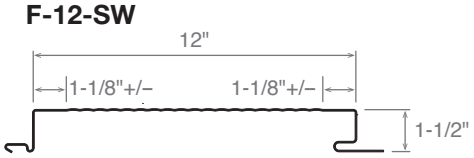




F-12-S



F-12-SW



W-12

Concealed fastener panels are available in either flat, reveal, striated or chevron profiles. With a common side joint the designer can mix and match panel profiles throughout the facade creating the exact desired effect. Panels maybe installed vertically, horizontally, or in combination.

Eleven unique profiles

Concealed fastener design

Common joint design allowing multiple panel integration

Weather tight or rainscreen rear ventilated application

Smooth surface standard, stucco embossed texture optional

All PVDF painted finishes available

Optional factory caulking available

Panel Depth
1-1/2" (38mm)

Cover Width
12" (305mm) Standard
16" (406mm) and 18" (457mm) optional on F profile only

Lengths
5' (1.52m) to 30' (9.14m) Standard
Shorter and longer lengths available

Galvalume/Zincalume Painted Steel Options
18 GA (1.19mm) / 20 GA (.91mm) / 22 GA (.76mm) / 24 GA (.60mm)

Aluminum Options
.050 GA (1.27mm) / .040 GA (1mm)

Stainless Steel Options
20 GA (.91mm) / 22GA (.76mm) / 24 GA (.60mm)

Zinc Options
18 GA (1.5mm) / 20 GA (1.0mm) / 22 GA (.91mm)

Natural Copper Options
20 oz. / 16 oz.

Application
Horizontal or vertical

Morin Over KarrierPanel™

Universal Barrier Wall Solution

Metal Rainscreen Panel
Any available Morin panel profile

KarrierPanel Technical Data

Cover Widths
24″ 30″ 36″ 42″ (Standard)

Thickness
2″ 2-1/2″ 3″ 4″ 5″ 6″

R-Value
7.5 per inch

Lengths
6′ to 52′

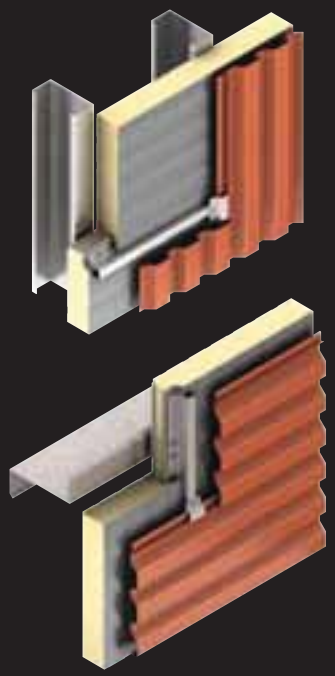
Panel Joint
Double tongue and groove interlocking rainscreen joint

Reveal Choice
3/8″

Exterior and Interior Face
26, 24, or 22 Ga.
Shadowline profile embossed Galvalume pre-painted steel

Application
Vertical and horizontal

Rail
Custom Kingspan KarrierRail



DESIGN OPTIONS

MITERED CORNERS
Miterseam corners utilize structurally bonded construction and are fabricated from the same materials as the adjacent panels, which will assure a color match for Mica or Metallic colors.

CURVING
Crimp and stretch curving can be supplied at various radii dependent on the panel's profile.

PANEL COORDINATED LOUVERS
Profiled louvers match adjacent panels in material and finish, thereby concealling the louver location.

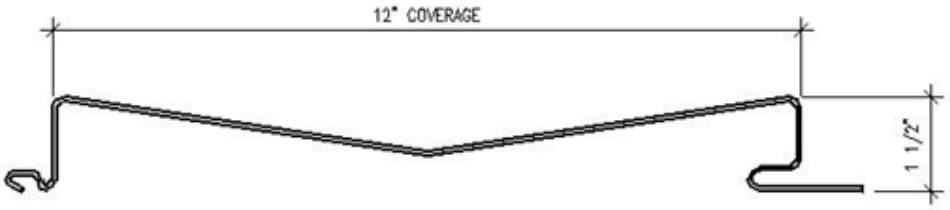
EXTRUSIONS
Extruded aluminum trim can be furnished for panel systems up to 3"deep. Please contact your local representative for additional information.

COLOR MATCHED FASTENERS
At Morin we sweat the small stuff. We can provide the necessary fasteners with custom color matching to assure your panel installation is punch list free.

Morin
A Kingspan Group Company

www.morincorp.com
800.640.9501

Technical Specification Sheet



PRODUCT SUMMARY: W-12, with its chevron profile, is in high demand from the most discerning of designers. Produced with a common side joint allowing for the option of a mix and match concept with other Morin profiles, W-12 may also be installed vertically, horizontally or in combination. This profile is available in Galvalume/Zincalume , aluminum, stainless steel, zinc and copper.

PRODUCTION REFERENCES:

- Lengths 5' (1.52m) to 30' (9.14m) standard
- Shorter and longer lengths available

STORAGE AND INSTALLATION NOTES:

- Deliver panel materials and components in the original, unopened, undamaged packaging with identification labels intact.
- Store wall panel materials on dry, firm, and clean surface.
- Elevate one end of bundle to allow moisture run-off, cover and ventilate to allow air to circulate and moisture to escape.
- Remove protective film immediately as per standard directions.
- Install panels plumb, level, and true-to-line to dimensions and layout indicated on approved shop drawings.
- Cutting and fitting of panels shall be neat, square and true. Torch or abrasive cutting is prohibited.

PRODUCT OFFERINGS:

Panel Type - Concealed fastener wall panel
Application - Weather-resistant or rainscreen
Panel Depth - 1-1/2" (38mm)
Cover Width - 12"(305mm)

Material Options
Galvalume/Zincalume: 18 thru 24 GA
Painted Aluminum: 0.050 GA and 0.040 GA
Stainless Steel: 20 GA, 22 GA and 24 GA
Zinc: 0.8, 1.0 and 1.2mm
Natural Copper: 16 and 20 oz.

Color and Finish Options for Aluminum and Steel
Standard (Fluropon®PVDF-Kynar500®)
Premium Colors MICA (Fluropon Classic®II PVDF)
Premium Colors METALLIC (Fluropon Classic®PVDF)
Morin Custom Color Matching Services
Other Finishes Available

Surfaces Options -Smooth surface standard, stucco embossed texture *optional*
Sealant- Optional factory caulking available
Clip– Negative pressure clip required. Reference Load Span Charts for further explanation.
Substrate- Open framing or "built up" similar
Perforations- Refer to TSS on Morin Perforated Panels
Application - Horizontal or vertical

- **MANUFACTURING FACILITIES:**
  Bristol, CT • Fontana, CA

***Rendering on reverse**

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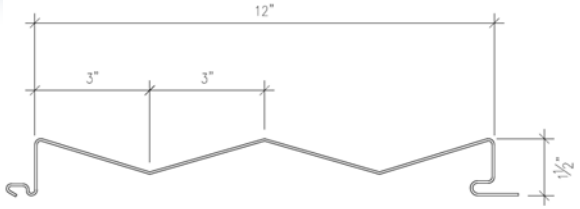
Technical Specification Sheet



Z-12*

PRODUCT SUMMARY: Z-12, with its double chevron profile, is in high demand from the most discerning of designers. Produced with a common side joint allowing for the option of a mix and match concept with other Morin profiles, Z-12 may also be installed vertically, horizontally or in combination.

PRODUCTION REFERENCES:

- Lengths 5’ (1.52m) to 30’ (9.14m) standard Shorter and longer lengths available
- Optional factory caulking available

STORAGE AND INSTALLATION NOTES:

- Deliver panel materials and components in the original, unopened, undamaged packaging with identification labels intact.
- Store wall panel materials on dry, firm, and clean surface.
- Elevate one end of bundle to allow moisture run-off, cover and ventilate to allow air to circulate and moisture to escape.
- Install panels plumb, level, and true-to-line to dimensions and layout indicated on approved shop drawings.
- Remove protective film immediately as per Morin’s standard directions.
- Cutting and fitting of panels shall be neat, square and true. Torch or abrasive cutting is prohibited.

MANUFACTURING FACILITIES:

Fontana, CA

PRODUCT OFFERINGS:

Panel Type - Concealed fastener wall panel
Application - Weather-resistant or rainscreen rear ventilated application
Panel Depth - 1-1/2” (38mm)
Panel Coverage - 12”(305mm)

Material Options

Galvalume/Zincalume: 18 thru 24 GA
Painted Aluminum: 0.050 GA and 0.040 GA
Stainless Steel: 20 GA, 22 GA and 24 GA
Zinc: 1.2mm, 1.0mm, 0.8mm
Natural Copper: 20 oz. and 16 oz.

Color and Finish Options for Aluminum and Steel

Standard (Fluropon®PVDF-Kynar500®)
Premium Colors MICA (Fluropon Classic®II PVDF)
Premium Colors METALLIC (Fluropon Classic®PVDF)
Morin Custom Color Matching Services
Other Finishes Available

Surfaces Options -Smooth surface standard, stucco embossed texture *optional*
Sealant- Optional factory caulking available
Clip– Negative pressure clip required. Reference Load Span Charts for further explanation.
Substrate-Open framing **or** other various backup wall assemblies (i.e. ext. sheathing, air/water barrier, exterior insulation)
Perforations- Refer to TSS on Morin Patterns Patterns
Application - Horizontal or vertical

***All dimensions are nominal**

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800.640.9501

Technical Specification Sheet

TESTING

Air Infiltration: ASTM E283
Water Penetration: ASTM E331
Structural Performance: ASTM E330 and E1592
Dynamic Water Penetration: AAMA 501
Impact Testing-Florida Product Approvals:
ASTM E1996/ E1886; TAS204

LOAD SPANS

DOWNLOAD AT WWW.MORINCORP.COM OR CONTACT YOUR MORIN REGIONAL SALES MANAGER OR INDEPENDENT AGENT

1600 Wall System™1 Curtain Wall

Features

- 1600 Wall System™1 is an outside glazed captured curtain wall
- 1600 Wall System™1 has a 2-1/2" (63.5) sight line
- Standard 6" (152.4) or 7-1/2" (190.5) depth systems
- Standard infill options 1/4" (6.4) and 1" (25.4), other infills available
- Thermally Broken by means of a continuous 1/4" (6.4) low conductance spacer
- Concealed fastener joinery creates smooth, monolithic appearance
- Open-back horizontals and perimeters are available for cost savings
- Shear block fabrication method
- Corners and splayed mullions available
- Offers integrated entrance framing systems
- Silicone compatible glazing materials for long-lasting seals
- 1600 Wall System™1 has been small and large missile impact and cycle tested
- Two color option
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

Optional Features

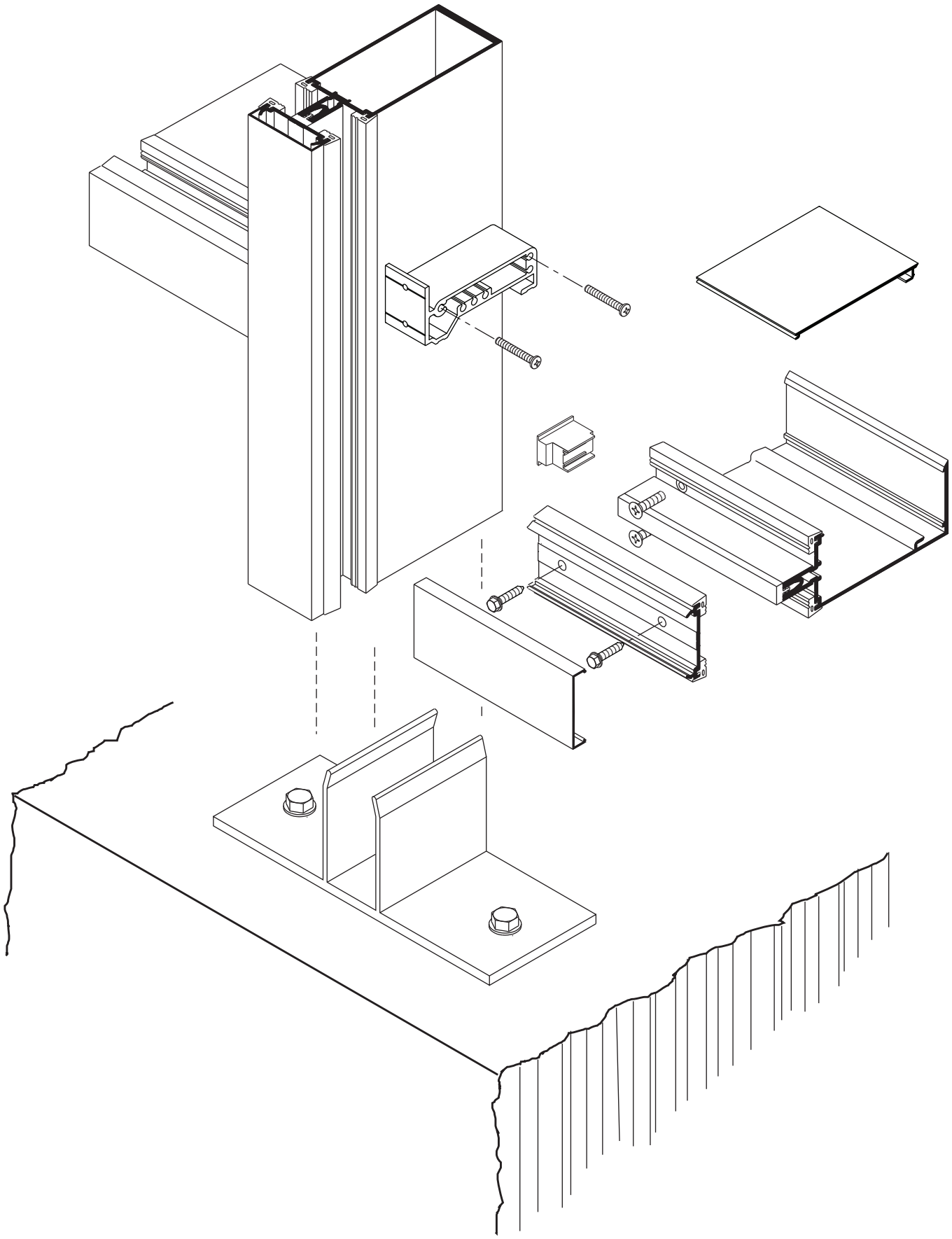
- Steel reinforcing available
- Rain screen and backpans
- Optional deep profile and bull nose covers available
- Deep and heavy-weight mullions available
- Fiberglass pressure plates available
- Veneer system available
- Integrates with standard Kawneer windows and GLASSvent™ windows for curtain wall
- Integrates with Versoleil™ Sunshade Outrigger System and Horizontal or Vertical Single Blade System
- Integrates with 1600 PowerShade™
- Profit$Maker™ plus die sets available
- Hurricane impact resistant framing options: 7-1/16" (179.4), 7-13/16" (198.4), 10-1/16" (255.6) & 10-13/16" (274.6)

Product Applications

- Ideal for low to mid-rise applications where high performance is desired
- It also is the right choice for high span applications

For specific product applications,
Consult your Kawneer representative.

1600 Wall System™1 Curtain Wall



Trifab™ 601/601T/601UT Framing System

Larger, more versatile span
delivers more thermal options
and more design choices

Designed to add increased thermal performance and value, Kawneer's new addition to the company's trusted Trifab™ platform gives you more. More flexibility. More thermal options. More design choices. Flexible enough for a wide range of building projects, Trifab™ 601/601T/601UT Framing System has a 6" depth, which accommodates higher spans than conventional 4-1/2" storefront framing systems. The new 3-in-1 series includes the non-thermal Trifab™ 601, the single thermal break Trifab™ 601T and the dual thermal break Trifab™ 601UT. The greater system depth combined with three thermal performance options make this one of the most versatile framing systems available.

Performance

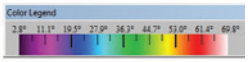
Trifab™ 601/601T/601UT Framing System leverages Kawneer's exclusive dual IsoLock™ lanced pour and debridge technology to provide three levels of thermal performance – non-thermal, single thermal break and dual thermal break. By combining the greater 6" depth with superior thermal performance and versatility, Kawneer is able to bridge the gap between traditional framing systems and low-rise curtain walls.

KAWNEER
AN ARCONIC COMPANY

Trifab™ 601/601T/601UT Framing System is perfect for projects where an economical alternative to a low-rise curtain wall is desired. These systems meet the same high standards that are traditionally found in Kawneer products for air and water infiltration and thermal performance. Trifab™ 601/601T/601UT Framing System also has an HP (High Performance) sill design. The sill attaches to the sill flashing by way of a raceway and eliminates the troublesome blind seal method used on many flashing systems. The HP sill also includes a screw-applied end dam, which ensures positive and tight joints between the sill flashing and end dam.

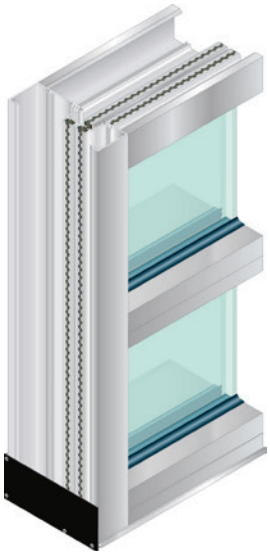
Trifab™ 601 | Trifab™ 601T | Trifab™ 601UT

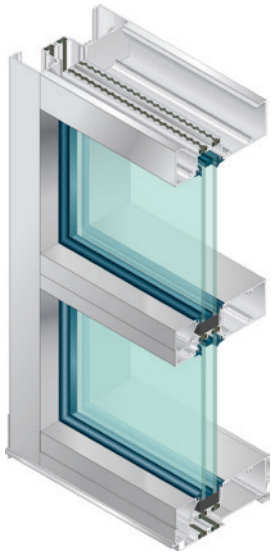
Thermal simulations showing temperature variations from exterior/ cold side to interior/warm side.



Performance Test Standards

Air Performance	ASTM E 283
Water Performance	ASTM E 331
Uniform Static Structural	ASTM E 330
Sound Transmission Class (STC)	AAMA 1801 and in accordance with ASTM E 1425
Condensation Resistance (CRF)	AAMA 1503 and CAN/CSA-A440
Thermal Transmittance (U-Value)	AAMA 1503.1
U-Value Simulations for Other Glazing Options	AAMA 507, NFRC 100, NFRS 200, NFRC 500 and CAN/CSA-A440.2





Fabrication and Installation

Trifab™ 601/601T/601UT Framing System employs screw spline joinery construction for efficient fabrication and installation. This construction method provides quality joinery and allows for shop-controlled fabrication and assembly, which leads to smaller field crews and less installation time. The framing can be specified for glazing from either the inside or outside. Inside glazing can help reduce field labor costs by eliminating the need for exterior scaffolding or swing stages for installation on floors above the ground level. In addition, the frames have a two-piece receptor option that easily accommodates attachment of air-barrier systems.

Aesthetics and Versatility

Trifab™ 601/601T/601UT Framing System is designed with cost and flexibility in mind. With a 2" x 6" frame profile, the sightline is consistent with current framing systems and the glass pockets are aligned to the 4-1/2"-deep center set Trifab™ framing systems. This allows for a shallow horizontal member that not only lowers overall metal costs, but also provides flexibility to accommodate interior finishes, such as blinds, that can span the full uninterrupted elevation height. The flexibility of the 3-in-1 series provides a pre-designed solution for non-thermal as well as thermal entrances. Framing options include non-thermal and thermally broken door framing members to accommodate 1-3/4"-deep and 2-1/4"-deep entrance doors, an expansion mullion and a two-piece head and jamb receptor. The 6" depth accommodates higher spans than conventional 4-1/2" storefront framing systems, and an optional 2-1/4" wide vertical mullion allows for internal steel reinforcement for projects with greater structural performance requirements.

For the Finishing Touch

Architectural Class I anodized aluminum finishes are available in clear and Permanodic™ color choices.

Painted finishes, including fluoropolymer, that meet AAMA 2605 are offered in many standard choices and an unlimited number of specially designed colors.

Solvent-free powder coatings add the green element with high performance, durability and scratch resistance that meet the standards of AAMA 2604.

Kawneer Company, Inc.
Technology Park / Atlanta
555 Guthridge Court
Norcross, GA 30092

kawneer.com
770 . 449 . 5555

KAWNEER
AN ARCONIC COMPANY

Job Name/Location: **Tag #:**

Date: For: ☐ File ☐ Resubmit ☐ Approval ☐ Other

PO No.:

Architect: GC:

Engr: Mech:

Rep:
(Company) (Project Manager)

ARUM384DTE5
Multi V™ 5 Dual Frame 460V
32.0 Ton Outdoor Unit for Heat Pump and Heat Recovery

(a) ARUM168DTE5
(b) ARUM216DTE5

LG Life's Good

Performance:

Cooling Mode:

Nominal Capacity (Btu/h)	384,000
Power Input[1] (kW)	27.60

Heating Mode:

Nominal Capacity (Btu/h)	432,000
Power Input[1] (kW)	31.73

Nominal Capacity is outside the scope of AHRI Standard 1230 and based on the following conditions:
Indoor: 80°F DB / 67°F WB Indoor: 70°F DB
Outdoor 95°F DB Outdoor 47°F DB / 43°F WB

Electrical:

	(a) ARUM168DTE5	(b) ARUM216DTE5
Power Supply (V/Hz/Ø)	460/60/3	460/60/3
MOP (A)	35	50
MCA (A)	28.5	38.3
Rated Amps (A)	25.6	34.4
Compressor A (A)	11.4	15.5
Compressor B (A)	9.2	13.9
Fan (A)	5.0	5.0

Piping:

	(a) ARUM168DTE5	(b) ARUM216DTE5
Refrigerant Charge (lbs)	26.5	37.5
Liquid Line[2] (in, OD)	5/8 Braze	5/8 Braze
Vapor Line High[2] (in, OD) Heat Recovery Only	7/8 Braze	1-1/8 Braze
Vapor Line Low[2] (in, OD)	1-1/8 Braze	1-1/8 Braze

Standard Features:

- Advanced Smart Load Control
- Intelligent Heating
- HiPOR (high pressure oil return)
- Smart Oil Control
- Night Quiet Operation
- Fault Detection and Diagnosis
- Active Refrigerant Control
- Variable Path Heat Exchanger
- Subcooling and Vapor Injection Control
- Liquid Cooled Inverter Controller

Required Accessories:

☐ ARCNB21 (frame connector Y-branch)

Optional Accessories:

☐ Air Guide - ZAGDKA52A (2 required)
☐ Hail Guard Kit - ZHGDKA52A (2 Required)
☐ Low Ambient Baffle Kit - ZLABKA52A (2), Control Kit - PRVC2 (1 per system)

****(-9.9°F achieved only when all IDU's are operating in cooling mode. Does not impact synchronous operating range.)**

Operating Range:

Cooling (˚F DB)**	5-122
Heating (˚F WB)	-13 - 61
Synchronous	
Cooling Based (˚F DB)	14 – 81
Heating Based (˚F WB)	14 – 61

Unit Data:

Refrigerant Type	R410A
Refrigerant Control	EEV
Max Number of Indoor Units[3]	61
Sound Pressure[4] dB(A)	66.0
Net Unit Weight (a) + (b) (lbs)	639+666
Shipping Weight (a) + (b) (lbs)	666+694
Communication Cable[5] (No x AWG)	2 x 18
Heat Exchanger Coating	Black Coated Fin™

Compressor:

Type	HSS DC Scroll
Quantity	4
Oil/Type	PVE/FVC68D

Fan:

Type	Propeller
Quantity	4
Motor/Drive	Brushless Digitally Controlled/Direct
Air Flow Rate (CFM)	22,600

Notes:

1. For AHRI ratings, refer to the AHRI website http://www.ahridirectory.org.
2. For main pipe segment size, refer to the LATS Multi V tree diagram.
3. The combination ratio must be between 50-130%.
4. Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745 for the combination of outdoor units.
5. Communication cable between ODU and IDU(s) must be 2-conductor, 18 AWG, twisted, stranded, and shielded. Ensure the communication cable shield is properly grounded to the Master ODU chassis only. Do not ground the communication cable at any other point. Wiring must comply with all applicable local and national codes.
6. Nominal data is rated 0 ft above sea level, with 25 ft of refrigerant line per indoor unit and a 0 ft level difference between outdoor and indoor units. All capacities are net with a combination ratio between 95-105%.
7. Power wiring cable size must comply with the applicable local and national code. Cables terminate at each frame.
8. The voltage tolerance is 414-528V.
9. The order of each of these units on the submittal (i.e., A+B) do not represent the installation order. Highest capacity unit is used as the Master, followed by the next smaller size as Slave 1 and so on.

Inverter

Intertek

AHRI CERTIFIED™ www.ahridirectory.org
Variable Refrigerant Flow (VRF) Multi-Split AC and HP
AHRI Standard 1230

Job Name/Location:

ARUM384DTE5

Multi V™ 5 Dual Frame 460V

32.0 Ton Outdoor Unit for Heat Pump and Heat Recovery

(a) ARUM168DTE5

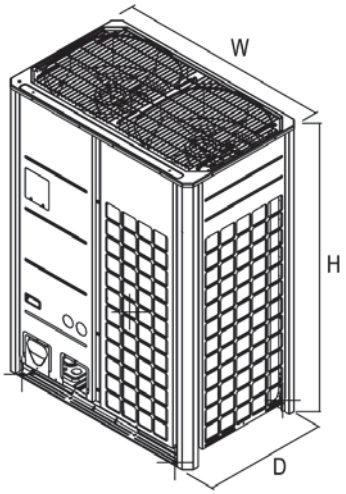
(b) ARUM216DTE5

LG Life's Good

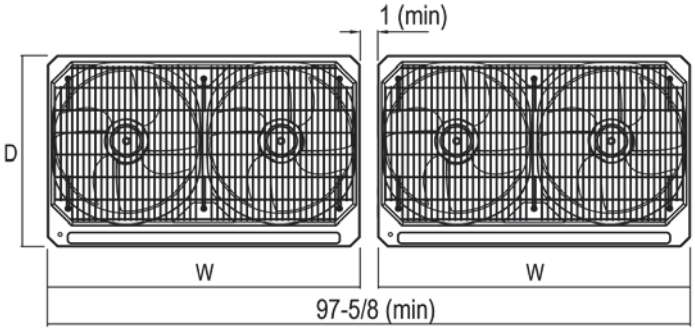
Tag #:

Date:

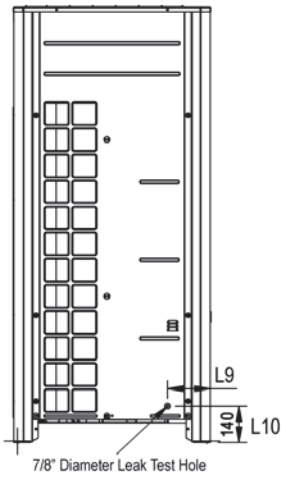
PO No.:



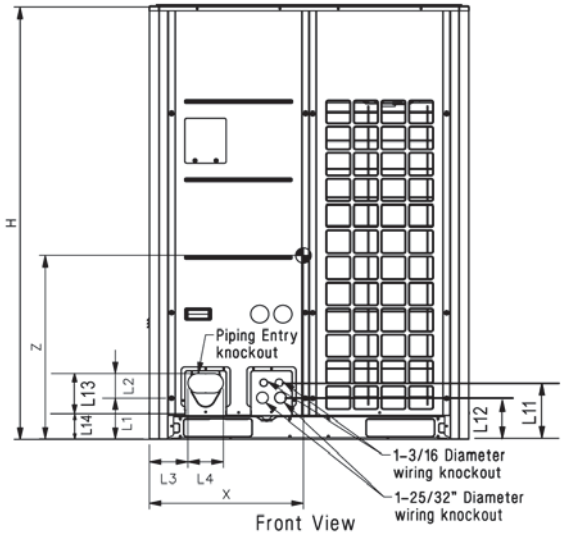
Typical Dual Frame Configuration



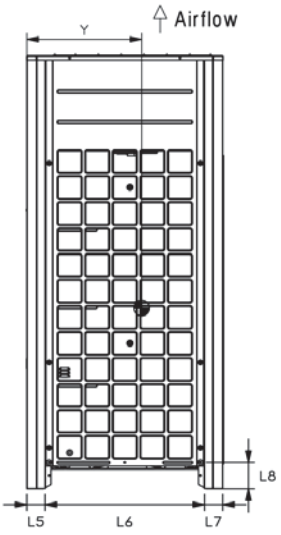
Note: Please refer to multi-frame placement information and piping rules in the Multi V 5 Engineering Manual and the Multi V 5 Installation Manual. Minimum spacing between frames is 1 inch.



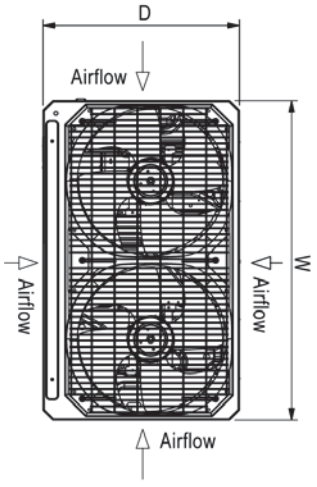
Left Side View



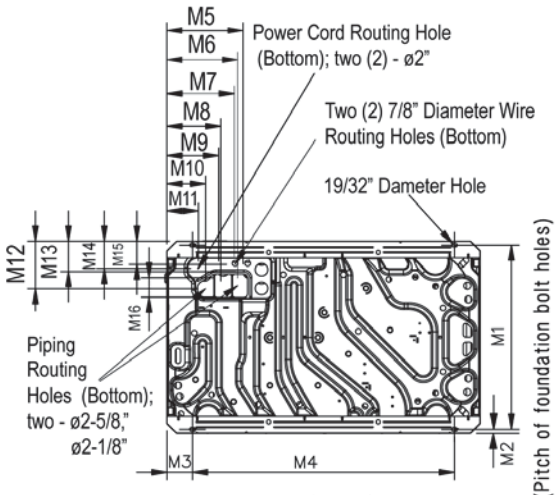
Front View



Right Side View



Top View



Bottom Mounting Holes

M1	28–25/32"
M2	5/8"
M3	3–15/16"
M4	40–15/16"
M5	11 – 15/16"
M6	11 – 1/16"
M7	10 – 1/2"
M8	8 – 7/16"
M9	8 – 1/8"
M10	6 – 1/16"
M11	4 – 15/16"
M12	7 – 1/2"
M13	4 – 13/16"
M14	4 – 5/16"
M15	3 – 5/8"
M16	3"

W	48–13/16"
H	66–17/32"
D	29–29/32"
L1	6–5/16"
L2	3–3/4"
L3	5–29/32"
L4	5–13/32"
L5	2–25/32"
L6	24–9/32"
L7	2–25/32"
L8	4–1/32"
L9	6 – 1/2"
L10	5 – 9/16"
L11	8 – 5/8"
L12	6 – 7/16"
L13	9 – 15/16"
L14	3 – 5/8"

Center of Gravity

X	23–7/32"
Y	15–5/8"
Z	25–9/16"

All dimensions have a tolerance of ±0.25 in.

[Unit: inch]

= Center of Gravity

Job Name/Location **Tag #:**

Date:

PO No.:

For: ☐ File ☐ Resubmit ☐ Approval ☐ Other _____

Architect: GC:

Engr: Mech:

Rep:
(Company) (Project Manager)

ARUN024GSS4

Multi V™ S Heat Pump

2.0 Ton Outdoor Unit

LG Life's Good

Performance:

Cooling Mode:

Rated Capacity (Btu/h)	24,000
Power Input[1] (kW)	1.52

Heating Mode:

Rated Capacity (Btu/h)	27,000
Power Input[1] (kW)	2.02

Rated Capacity is based on the following conditions:

Cooling
Indoor: 80°F DB / 67°F WB
Outdoor: 95°F DB

Heating:
Indoor: 70°F DB
Outdoor: 47°F DB / 43°F WB

Electrical:

Power Supply (V/Hz/Ø)	208-230V / 60 / 1
MOP (A)	30
MCA (A)	19.6
Rated Amps (A)	
Compressor (A)	15.3
Fan (A) x Qty.	0.5 x 1

Piping:

Refrigerant Charge (lbs)	4
Liquid Line (in, OD)	Ø3/8
Vapor Line (in, OD)	Ø5/8

Standard Features:

- Night Quiet Operation
- Fault Detection and Diagnosis

Optional Accessories:

☐ Low Ambient Baffle Kit - ZLABGP04A (1 required)

☐ Drain Pan Heater - PQSH1200

***Installation of an optional Low Ambient Wind Baffle Kit will allow operation down to -9.9°F in cooling mode.**

Operating Range:

Cooling (°F DB)*	23 - 122
Heating (°F WB)	-4 to +61

Unit Data:

Refrigerant Type	R410A
Refrigerant Control	EEV
Max Number of Indoor Units[2]	4
Sound Pressure[3] dB(A)	50
Net Unit Weight (lbs)	159
Shipping Weight (lbs)	176
Communication Cable[4] (No x AWG)	2 x 18
Heat Exchanger Coating	GoldFin™

Compressor:

Type	DC Inverter Starting
Quantity	1
Oil / Type	PVE/FVC68D

Fan:

Type	Axial Flow Fan
Quantity	1
Motor / Drive	Brushless Digitally Controlled/Direct
Air Flow Rate (CFM)	2,119

Notes:

1. For AHRI rating, refer to the AHRI website http://www.ahridirectory.org.
2. The combination ratio must be between 50 – 130%.
3. Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.
4. Communication cable between ODU, IDU(s), and Central Controller must be a minimum of 2-conductor, 18 AWG, twisted, stranded, and shielded. Ensure the communication cable shield is properly grounded to the ODU chassis only. Do not ground the communication cable at any other point. Wiring must comply with all applicable local and national codes.
5. Nominal data is rated 0 ft above sea level, with 25 ft of refrigerant line per indoor unit and a 0 ft level difference between outdoor and indoor units. All capacities are net with a combination ratio between 95-105%.
6. Power wiring cable size must comply with the applicable local and national codes.
7. The voltage tolerance is ± 10%.

Inverter

ETL Intertek

AHRI CERTIFIED www.ahridirectory.org
Variable Refrigerant Flow (VRF) Multi-Split AC and HP
AHRI Standard 1230

Job Name/Location: _____

ARUN024GSS4

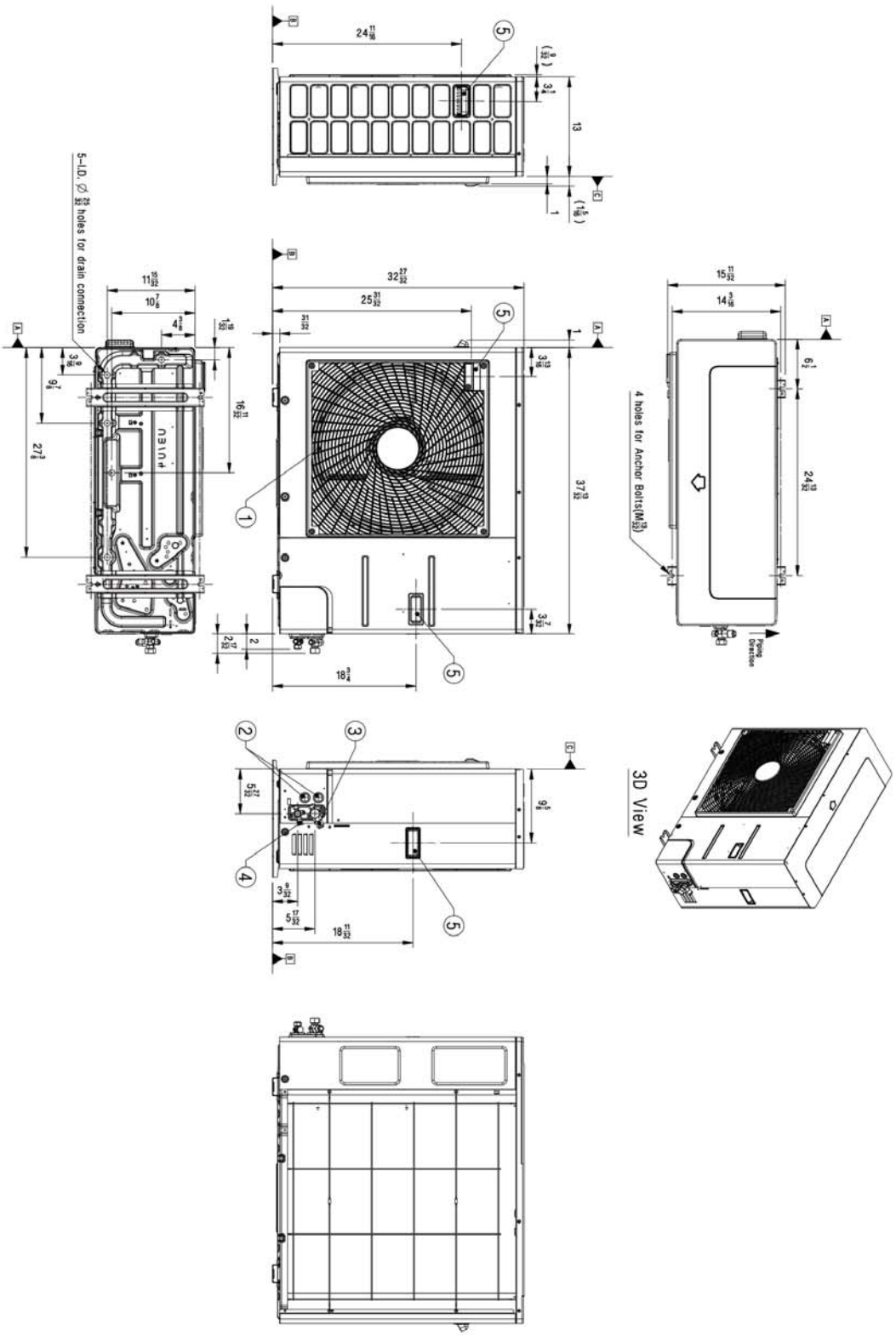
Multi V™ S Heat Pump

2.0 Ton Outdoor Unit

Tag No.: _____

Date: _____

PO No.: _____



Symbols

Piping Direction

Datum line

Note

1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit should be grounded in accordance with the localregulations or applicable national codes.
3. All electrical components and materials to be supplied from the site must comply with the local regulations or international codes.
4. Electric characteristics chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.

No.	Part Name	Description
1	Air Outlet	–
2	Power and communication cable Hole	–
3	Gas Pipe Connection	Flare joint
4	Liquid Pipe Connection	Flare joint
5	Handle	–

[Unit: inch]

Job Name/Location **Tag #:**

Date:

PO No.:

For: ☐ File ☐ Resubmit ☐ Approval ☐ Other

Architect: GC:

Engr: Mech:

Rep:
(Company) (Project Manager)

ARUN048GSS4

Multi V™ S Heat Pump

4.0 Ton Outdoor Unit

LG Life's Good

Performance:

Cooling Mode:

Rated Capacity (Btu/h)	48,000
Power Input[1] (kW)	4.3

Heating Mode:

Rated Capacity (Btu/h)	54,000
Power Input[1] (kW)	4.2

Rated Capacity is based on the following conditions:

Cooling
Indoor: 80°F DB / 67°F WB
Outdoor: 95°F DB

Heating:
Indoor: 70°F DB
Outdoor: 47°F DB / 43°F WB

Electrical:

Power Supply (V/Hz/Ø)	208-230V / 60 / 1
MOP (A)	50
MCA (A)	30
Rated Amps (A)	
Compressor (A)	23.1
Fan (A) x Qty.	0.5 x 2

Piping:

Refrigerant Charge (lbs)	6.6
Liquid Line (in, OD)	Ø3/8
Vapor Line (in, OD)	Ø5/8

Standard Features:

- Night Quiet Operation
- Fault Detection and Diagnosis

Optional Accessories:

☐ Low Ambient Baffle Kit - ZLABGP04A (2 required)

☐

***Installation of an optional Low Ambient Wind Baffle Kit will allow operation down to -9.9°F in cooling mode.**

Operating Range:

Cooling (°F DB)*	23 - 122
Heating (°F WB)	-4 to +61

Unit Data:

Refrigerant Type	R410A
Refrigerant Control	EEV
Max Number of Indoor Units[2]	8
Sound Pressure[3] dB(A)	51
Net Unit Weight (lbs)	207
Shipping Weight (lbs)	218
Communication Cable[4] (No x AWG)	2 x 18
Heat Exchanger Coating	GoldFin™

Compressor:

Type	DC Inverter Starting
Quantity	1
Oil / Type	PVE/FVC68D

Fan:

Type	Axial Flow Fan
Quantity	2
Motor / Drive	Brushless Digitally Controlled/Direct
Air Flow Rate (CFM)	3,885

Notes:

1. For AHRI rating, refer to the AHRI website http://www.ahridirectory.org.
2. The combination ratio must be between 50 – 130%.
3. Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.
4. Communication cable between ODU, IDU(s), and Central Controller must be a minimum of 2-conductor, 18 AWG, twisted, stranded, and shielded. Ensure the communication cable shield is properly grounded to the ODU chassis only. Do not ground the communication cable at any other point. Wiring must comply with all applicable local and national codes.
5. Nominal data is rated 0 ft above sea level, with 25 ft of refrigerant line per indoor unit and a 0 ft level difference between outdoor and indoor units. All capacities are net with a combination ratio between 95-105%.
6. Power wiring cable size must comply with the applicable local and national codes.
7. The voltage tolerance is ± 10%.

Inverter

AHRI CERTIFIED™ www.ahridirectory.org Variable Refrigerant Flow (VRF) Multi-Split AC and HP AHRI Standard 1230

c ETL us Intertek

Job Name/Location: _____

ARUN048GSS4

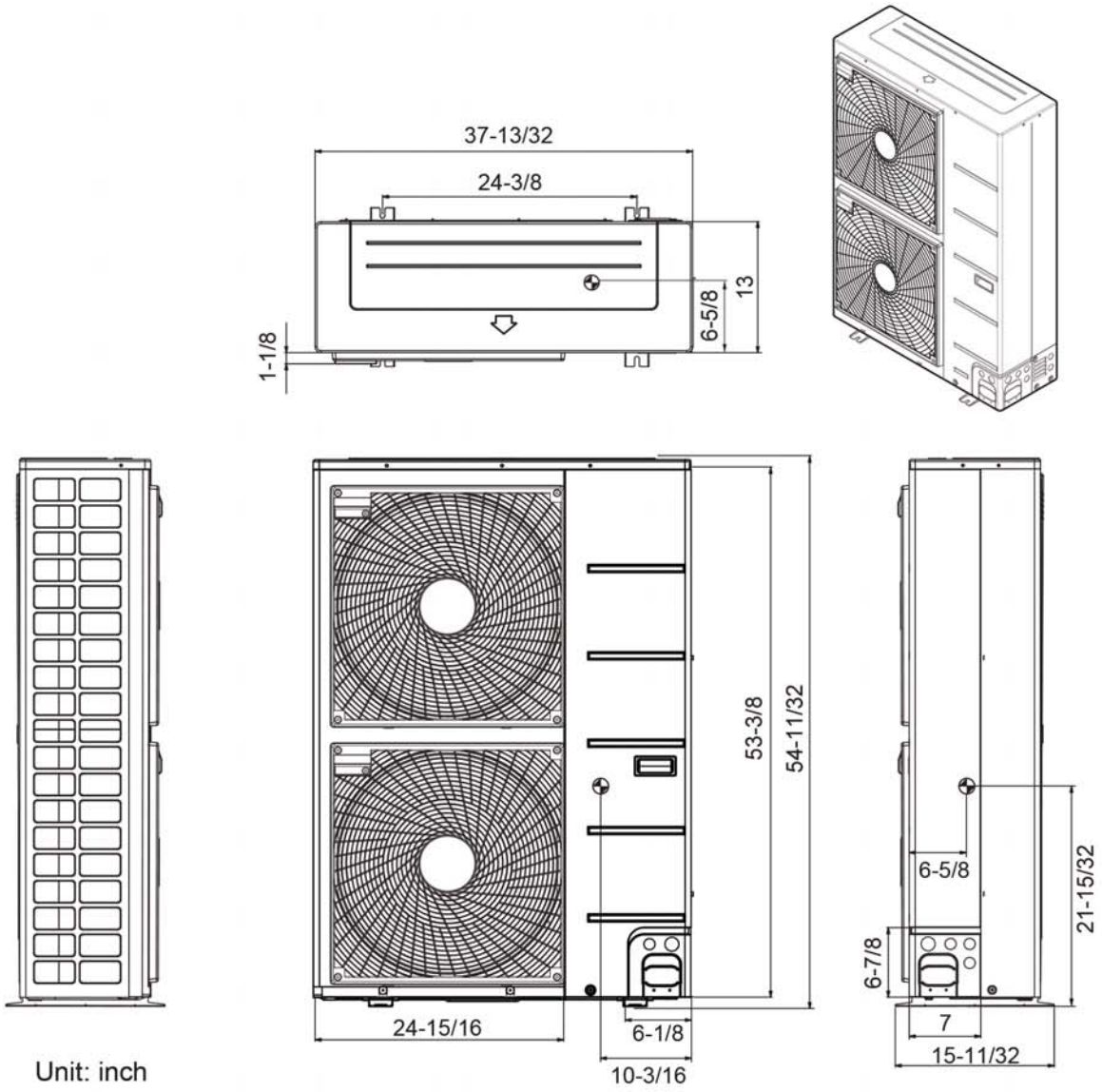
Multi V™ S Heat Pump

4.0 Ton Outdoor Unit

Tag No.: _____

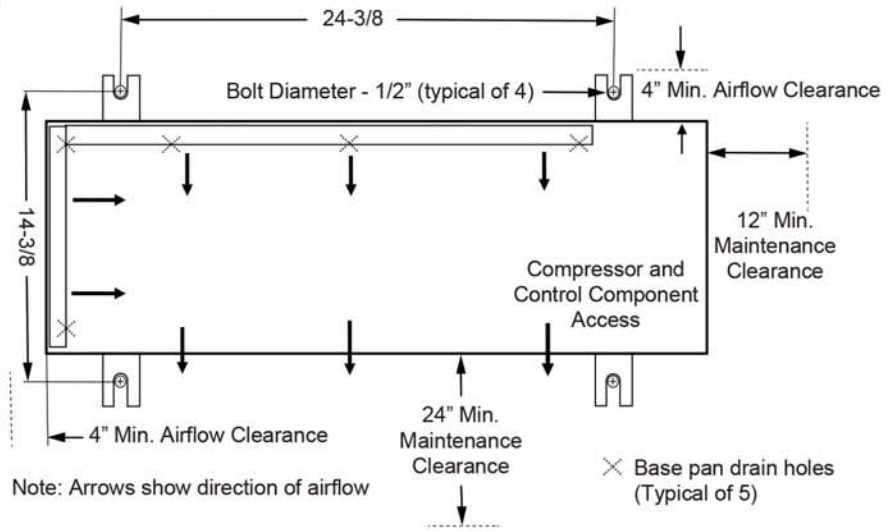
Date: _____

PO No.: _____



Unit: inch

Center of Gravity



Model: SFD-9-A

Direct Drive Centrifugal Blower

Standard Construction Features:

HOUSING: Heavy gauge galvanized steel housing with Lock-seam construction - Corrosion resistant fasteners

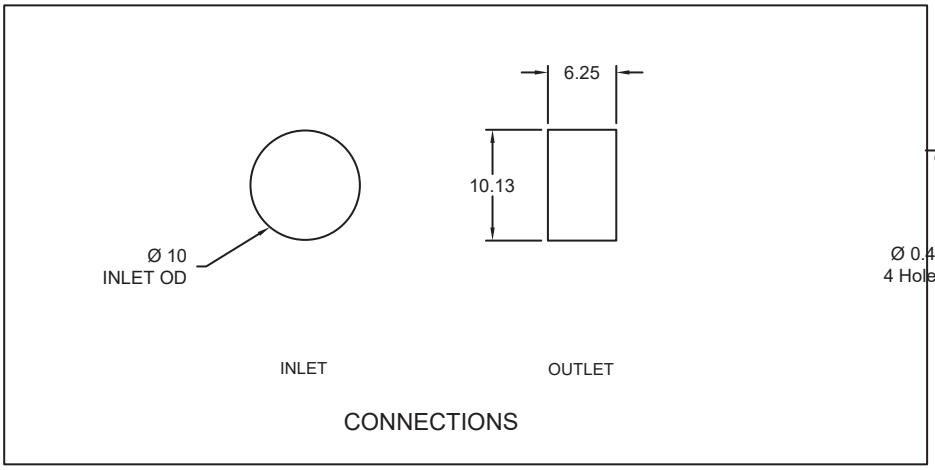
WHEEL: Forward curved aluminum wheel
(Fans with EXP. motors include: aluminum rub ring, and shaft seal)

Selected Options & Accessories:

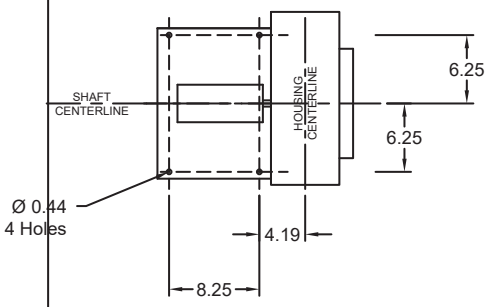
Switch, NEMA-1, Toggle, Shipped Separate
Unit Warranty: 1 Yr (Standard)

SFD-9-A

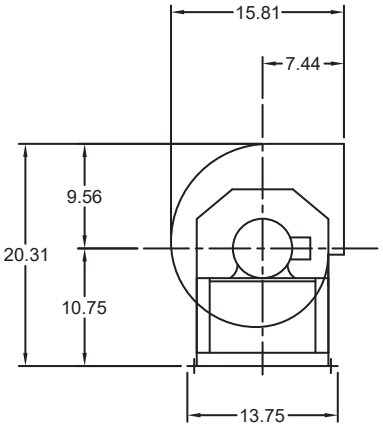
Direct Drive Centrifugal Blower



CONNECTIONS

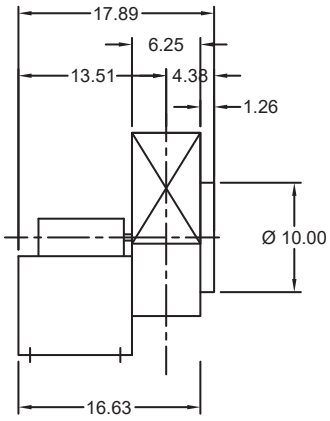


FAN FOOTPRINT



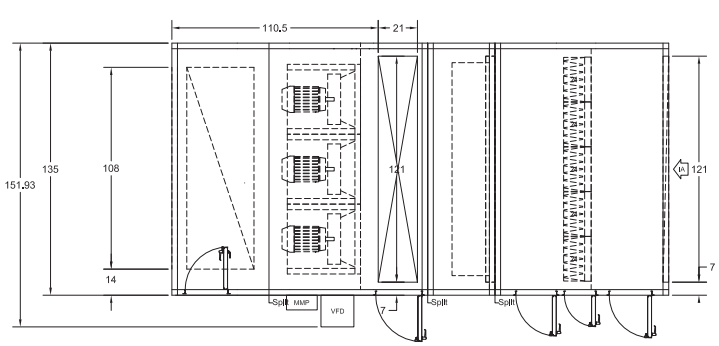
SIDE VIEW

*SIDE VIEW IS VIEWED FROM DRIVE SIDE

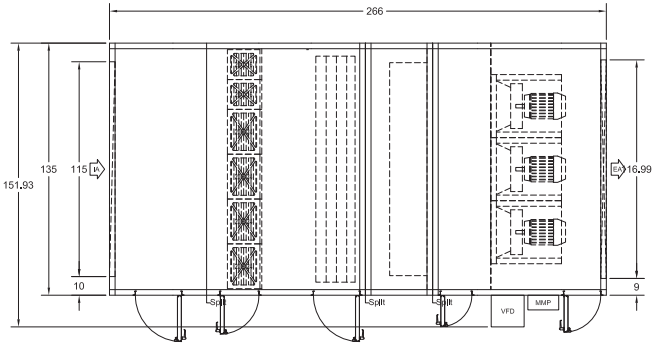


END VIEW

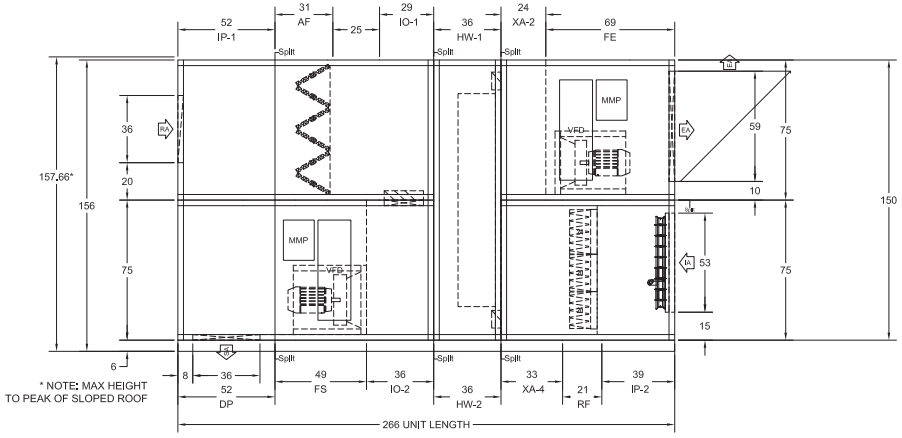
Notes: All dimensions shown are in units of in.



PLAN VIEW
TIER 1



PLAN VIEW
TIER 2



ELEVATION VIEW

UNIT CONSTRUCTION

Model: Solution-XTO-75x135 Construction: Outdoor

Motor Location:

Unit Weight: 20,984 lbs. (+/- 10%)

PLAN VIEW — Right; Rear (Supply); Front (Return); Left; AIRFLOW

NOTES

Units with a baserail and a bottom opening: Duct connection flush with the bottom of unit, not flush with bottom of baserail.

Refer to performance report for shipping split details.

Allow sufficient space around the unit for removing the access panels and various parts of the unit. A minimum clearance equal to the width of the unit must be provided on one side of the unit for removing the coil or fan assembly.

Contractor responsible for penetrations and connections of all electrical boxes and internal coil connections.

Overall dimensions account for: outdoor roof peak and overhang, motor control and/or factory package control boxes, coil connections, rain hoods, pipe chases, AMS-60 damper/EAML louver (If applicable,) base rail - In order to convey the true space requirements for the unit.

Certain items may extend beyond cabinet dimensions including: door handles, light switches, electrical boxes, lifting lugs, gas fuel system, etc.

The overall unit length includes an additional 1/4" per shipping split due to additional gasketing and split connection hardware.

Dimension tolerances: Unit (+/- 1/2"); Piping (+/- 2")

Ⓢ - Designates Shipped Loose Item(s)

PIPING CONNECTIONS
(In order of Airflow)

Segment	Type	Hand	Quantity	Supply	Return
CC	MPT	Left	1 Sup 1 Ret	2 1/2"	2 1/2"
CC	MPT	Left	1 Sup 1 Ret	2 1/2"	2 1/2"
CC	MPT	Left	1 Sup 1 Ret	3"	3"
CC	MPT	Left	1 Sup 1 Ret	3"	3"

Drain pan connection size 1 1/4" MPT SCH 40 (Connections on Left Side of unit)

SECTION LIST

SECT	DESCRIPTION
IP-1	Inlet Plenum
XA-1	Variable Length Access
AF	Angle Filter
IO-1	Inlet/Outlet
HW-1	Heat Wheel
XA-2	Variable Length Access
FE	Exhaust Fan - 200 - SF
XA-3	Variable Length Access
IP-2	Inlet Plenum
RF	High Efficiency Filter
XA-4	Variable Length Access
HW-2	Heat Wheel
IO-2	Inlet/Outlet
CC	Cooling Coil
FS	Supply Fan - 222 - SF
DP	Discharge Plenum

PRODUCT DRAWING

SOLUTION XT AIR HANDLING UNIT DETAIL
MODEL: Solution-XTO-75x135
NOT FOR CONSTRUCTION

Project Name: Rudy	Sold To:	Date: 1/16/2018 16:37:27	Serial Number:
Location:	Cust Purch Order#:	Version:	SQ Database Number:
Engineer:	Contract#:	Form No.:	YORKworks Release:
Contractor:	UNIT TAG: AHU-1	Dwg. Lev.: 5/03	Dwg. Name:
For:		Dwg. Scale: NTS	Dwg. Location:

Johnson Controls

Site Context Photos

Existing Site Photos

Key Plan