PLAN REVIEW

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Plans Submitted By: John Barranco, Jr., P.E**.,** Black & Veatch - Power Generation Services

Subject: Warehouse Expansion

Executive Summary:

A new warehouse is being proposed at the referenced location. The construction details for the metal building are unknown at this stage of the submittal, and description for what it will be used is also unknown. Thus, there is additional information required to properly review this project.

This submittal is not in accordance with FM Global standards. This submittal is early stages of the design and additional information, and submittal is required for a thorough review. Review Comments No. 1 to 17 should be addressed as design continues.

Revision Note: Review Comment No. 12 has been revised to provide additional design guidance. Commodity classification has been provided by Mr. Charlie Williamson, FM Global Sr. Engineering Specialist.

Scope of Review:

This confirms the receipt and review of:

- JEA BGS Warehouse 70.0100 Technical Specification IFCR 220225
- JEA BGS Warehouse Construction Drawing Package IFCR 220225

A new all metal prefabricated building is being proposed as a warehouse to be installed at the referenced location. The new proposed finish floor elevation is 88.5-ft NAVD88. The overall building dimensions are 100-ft x 125-ft with a peak height of 24-ft. The slope of the building is 4.8-degrees. The building will have a live load design of 20-psf and a wind uplift rating of FM180. The minimum thickness of the uncoated metal that will be used are: 24-gage for exterior wall panels, and 22-gage for roof panels. The proposed wall panels will be insulated.

The following table shows the proposed design parameters for this project.

General Design Data:	
Building Code	2020 Florida Building Code (ASCE 7-16)
Risk Category	III
Site Elevation (Mean Sea Level), ft	88
Wind Design Data:	
Ultimate Design Wind Speed, V_{ult} Nominal 3 second gust wind speed at 33 ft above ground for Exposure C category, mph	130
Exposure Category	C
Topographic Factor, Kzt	1.0

Based on specification information the east and west will be provided with one overhead door. The dimension of each door is proposed as 18-ft x 14-ft (H x W). The overhead doors will have a pressure requirement of 41.1-psf and -54.9-psf. These loads are adequate for this project as it provides a safety factor of 2.0.

Also, storm louvers are being proposed in some of the building sides. The basis of design louver is manufactured by Ruskin Manufacturing model EME6625D.

The electrical feeder will be by means of an existing 480V panel and will be routed to the new warehouse building.

There was no information of the commodity that will be inside the warehouse. Also, no fire protection was included in the submittal.

A dry retention pond will be located north of the proposed warehouse.

Review Comments:

1. The following design parameters should be considered to design this project
    a. 1.15 Wind Importance Factor (for cladding)
    b. Ground Roughness "C"
    c. “Enclosed” Building Classification
    d. 105 mph Wind Speed (ASCE 7-05, 3-second gusts, allowable windspeed)
    e. 4.5 in./hr. Rainfall Intensity

2. Provide detailed drawings and calculations for the proposed all-metal building system to the Atlanta Operations office for review and comment. Please include the manufacturer, type of metal roof, method and spacing of securement, insulation, purlins, and bracing.

3. All materials used in this construction should be, in order of preference, noncombustible, FM Approved or Class 1. FM Approved products are all marked with the FM APPROVAL mark. This includes but is not limited to ducts, pipes, plastic construction materials and insulations. The *Approval Guide*, a publication of FM Approvals, may be referenced at www.approvalguide.com.

4. Building framing and walls not yet tied to building framing should be braced in accordance with Data Sheet 1-28, *Wind Design*. Unless a steel framework under construction is properly braced to a heavy existing structure (such as a building or retaining wall) or permanent bracing has been installed, provide temporary cable “X” bracing in every third bay of all column lines. Brace framework in all four directions. Minimum 3/8

in. steel cables should be used and tightened using a jack or turnbuckle. Ensure walls of hollow masonry units under construction that do not have lateral support to resist wind forces are braced in accordance with Data Sheet 1-0, *Safeguards During Construction, Alteration and Demolition*, Figure 1. Ensure walls of the tilt-up precast concrete type are shared on both sides by lean-to steel pipe braces until their permanent securement is completed. Ensure slenderness ratio (L/r) of braces does not exceed 200.

5. To maintain the proper fire and wind uplift pressure ratings, the proposed roof systems should be FM Approved as well as designed in strict accordance with minimum **FM Global Class 1-105 (Zone 1), 1-135 (Zone 2) and 1-180 (Zone 3)** guidelines as shown in RoofNav and the latest issues of FM Global Property Loss Prevention Data Sheets 1-28, *Wind Design*, and 1-29, *Roof Deck Securement and Above-Deck Roof Components.*

6. Please have the installing contractor complete the attached FM Global Form X-2688, *Checklist for Roofing Syste*m, as well as a Contractor's Package from RoofNav for each roof area and submit them to FM Global for review and acceptance prior to installation. RoofNav can be accessed at www.RoofNav.com.

7. There should be no component substitutions or deviations from the proposed RoofNav assembly. Use of individually FM Approved components, not FM Approved for use together does not constitute an FM Approved or recommended assembly. All FM Approved materials are required to have the FM APPROVAL mark on the packaging or the material itself. Materials without proper labeling are not FM Approved. If alternatives are desired, a different RoofNav assembly should be chosen and submitted for review.

8. Walls should be designed to withstand the following pressures (includes a 2.0 safety factor).

Area	Wall Design Pressures (psf.)	
	Zone 4	Zone 5
Main Building	+60 / -65-psf	+60 / -75-psf

9. The proposed loads for the overhead doors are adequate. Please submit shop drawings when available for review. If changes on door dimensions occurs during the design phase, please submit new required loads.

10. Please submit shop drawings of the proposed glass windows. At the time of this review, we are unable to analyze the proposed glass system due to missing information on the dimensions of the openings. Please submit submittal when available.

11. Please provide concise description of the use of the warehouse and a general layout when available. It is FM Global best advice to refer to FM Global Property Loss Prevention Data Sheet 8-1 *Commodity Classification* to identify commodity of the warehouse.

12. Based on information provided the commodity has been classified as Class IV. Design the sprinkler system in accordance with FM Global Property Loss Prevention Data Sheet 8-9, *Storage of Class 1, 2, 3, 4 and Plastic Commodities,* Table 8. Use an FM Approved, quick -response, ceiling-level Storage sprinklers having a minimum K-factor of 11.2. Design should be based on a maximum ceiling height of 25-ft.

13. A full set of sprinkler drawings, hydraulic calculations, and specifications (material data) should be submitted to the FM Global Atlanta Operations office for review and acceptance prior to beginning work.

14. An inspector's test connection should be installed downstream of each sprinkler system that is equipped with a waterflow alarm device.

15. A full fire alarm system should be provided with all transmissions supervised by an FM Approved central station, proprietary system or constantly attended public fire service. Installation, operation, and maintenance of the alarm system should be in accordance with FM Global Property Loss Prevention Data Sheet 5-40, *Fire Alarm Systems*.

16. FM Global Form FM85A *Contractor's Material and Test Certificate for Automatic Sprinkler Systems*, should be completed and submitted to the FM Global Atlanta Operations office to verify proper testing.

17. A minimum 10% pressure cushion should be maintained between the available water supply and the combined demand of the sprinkler system and hose stream allowance. This is to allow for future deterioration of the water supply due to higher public usage rates or corrosion in piping.

Recommendations to Reduce Hazards during Installation:

18. Thorough supervision by the building owner's qualified representative should be provided during construction/installation to ensure adherence to specifications and quality of workmanship.

19. Combustibles should not be introduced until full sprinkler protection is in service.

This review is for property insurance purposes only in accordance with FM Global standards and guidelines. Nothing should be inferred from this review regarding compliance with any rules, regulations or requirements of government agencies, state or local codes or any other jurisdictional authority. We are retaining the copy of your submitted plans for our files.

Sincerely,

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Loss Prevention Resources:

FM Global Property Loss Prevention Data Sheets

FM Global Loss Prevention Training

Approval Guide

RoofNav

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