Sept 21, 21

BOARD OF COUNTY COMMISSIONERS

Public Works Department
2725 Judge Fran Jamieson Way
Building A, Room 201
Viera, Florida 32940

Inter-Office Memo

TO: Commissioner Kristine Zonka, Chair

THRU: Frank Abbate, County Manager

THRU: John P. Denninghoff, Assistant County Manager

THRU: Marc Bernath, Public Works Director Bernath, Marc Digitally signed by Bernath, Marc DN: cn=Bernath, Marc, email=Marc.Bernath@brevardfl.gov Date: 2022.04.18 10:14:57 -04'00'

FROM: Leo Da Silva, Facilities Building & Operations Manager DaSilva, Leonardo Digitally signed by DaSilva, Leonardo Date: 2022.04.14 18:21:58 -04'00'

RE: Lori Wilson Park Restroom Construction
Contract Between Brevard County and Heard Construction

DATE: April 14, 2022

The Board of County Commissioners approved the demolition and construction of a new restroom at Lori Wilson Park, as part of the TDC Departments Fiscal Year 2021-2022 Capital Improvements Program (attached). Scope of Work includes site work, utilities and demolition of existing restrooms and installation of new CXT restroom building.

The contract with Heard Construction, in the amount of $486,183.73, has been reviewed and approved by the County Attorney's Office and Risk Management per Administrative Order AO-29.

Please find one original contract for execution and forward.

Clerk to the Board: Facilities requests one fully-executed contracts be returned to our office.

Feel free to contact our office if you have any questions.

Encl: AO-29 Contract Review and Approval Forms
TDC approved Capital Improvement Program
Contract with Heard Construction

BREVARD COUNTY
BOARD OF COUNTY COMMISSIONERS

CONTRACT REVIEW AND APPROVAL FORM

SECTION I - GENERAL INFORMATION

1. Contractor: Heard Construction	**2. Amount:** 486,183.73
3. Fund/Account #:	**4. Department Name:** Public Works/Facilities
5. Contract Description: Lori Wilson Park Restrooms	
6. Contract Monitor: Mary Bowers	**8. Contract Type:** CONSTRUCTION
7. Dept/Office Director: Marc Bernath	
9. Type of Procurement: Request for Qualifications (RFQ)	

SECTION II - REVIEW AND APPROVAL TO ADVERTISE

COUNTY OFFICE	APPROVAL YES	APPROVAL NO	SIGNATURE
User Agency	☑	☐	
Purchasing	☐	☐	
Risk Management	☐	☐	
County Attorney	☐	☐	

SECTION III - REVIEW AND APPROVAL TO EXECUTE

COUNTY OFFICE	APPROVAL YES	APPROVAL NO	SIGNATURE
User Agency	☑	☐	Bowers, Mary Digitally signed by Bowers, Mary Date: 2022.03.01 16:26:45 -05'00'
Purchasing	☐	☐	Wall, Katherine Digitally signed by Wall, Katherine Date: 2022.04.13 08:01:22 -04'00'
Risk Management	☐	☐	
County Attorney	☐	☐	

SECTION IV - CONTRACTS MANAGEMENT DATABASE CHECKLIST

CM DATABASE REQUIRED FIELDS	Complete ✓
Department Information	☐
Department	☐
Program	☐
Contact Name	☐
Cost Center, Fund, and G/L Account	☐
Vendor Information (SAP Vendor #)	☐
Contract Status, Title, Type, and Amount	☐
Storage Location (SAP)	☐
Contract Approval Date, Effective Date, and Expiration Date	☐
Contract Absolute End Date (No Additional Renewals/Extensions)	☐
Material Group	☐
Contract Documents Uploaded in CM database (Contract Form with County Attorney/ Risk Management/ Purchasing Approval; Signed/Executed Contract)	☐
"Right To Audit" Clause Included in Contract	☐
Monitored items: Uploaded to database (Insurance, Bonds, etc.)	☐

BREVARD COUNTY
BOARD OF COUNTY COMMISSIONERS

CONTRACT REVIEW AND APPROVAL FORM

SECTION I - GENERAL INFORMATION

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COUNTY OFFICE	APPROVAL YES	APPROVAL NO	SIGNATURE
User Agency	☑	☐	
Purchasing	☐	☐	
Risk Management	☐	☐	
County Attorney	☐	☐	

SECTION III - REVIEW AND APPROVAL TO EXECUTE

COUNTY OFFICE	APPROVAL YES	APPROVAL NO	SIGNATURE
User Agency	☑	☐	Bowers, Mary Digitally signed by Bowers, Mary Date: 2022.03.01 16:26:45 -05'00'
Purchasing	☐	☐	
Risk Management	☑	☐	Wilson, Shannon Digitally signed by Wilson, Shannon Date: 2022.04.01 15:10:28 -04'00'
County Attorney	☐	☐	signed Contract

SECTION IV - CONTRACTS MANAGEMENT DATABASE CHECKLIST

CM DATABASE REQUIRED FIELDS	Complete ✓
Department Information	☐
Department	☐
Program	☐
Contact Name	☐
Cost Center, Fund, and G/L Account	☐
Vendor Information (SAP Vendor #)	☐
Contract Status, Title, Type, and Amount	☐
Storage Location (SAP)	☐
Contract Approval Date, Effective Date, and Expiration Date	☐
Contract Absolute End Date (No Additional Renewals/Extensions)	☐
Material Group	☐
Contract Documents Uploaded in CM database (Contract Form with County Attorney/ Risk Management/ Purchasing Approval; Signed/Executed Contract)	☐
"Right To Audit" Clause Included in Contract	☐
Monitored items: Uploaded to database (Insurance, Bonds, etc.)	☐

Tourism Development Office

Program Name: TOURISM DEVELOPMENT
Project Name: Lori Wilson Park Project
Project Total: $3,260,481
Project Timeline: October 1st, 2017 through September 30th, 2022
Funded Program: 6562209
District(s): 2

Project Description, Milestones and Service Impact

Lori Wilson Park is an approximate 50-acre park in the heart of Cocoa Beach and is owned/operated by Brevard County. The vision is a project that will refurbish the park and bring it up to the current standards of other parks in Brevard County including completely renovating the boardwalk areas and the bathrooms. Lori Wilson Park is right in the heart of the tourism district in Cocoa Beach. 75% of the visitors are from outside the County, so having a public park with great facilities and beach access is highly desirable and will be a driver of repeat visitation. Many people come to Lori Wilson Park just to enjoy nature and the view. Lori Wilson Park is also a great venue for events and many events over the years have been staged from there including the Thunder on the Beach boat races, watching space launches, marathons, the AAU volleyball, etc. These events attract both locals and visitors alike. The Board approved $1.25M in late FY 20 for park repairs which should be used up in FY 21. The Board approved another $1.764M capital facilities grant in early FY 21 for boardwalk and bathroom replacement the balance reflected in FY 22 budget.

Revenue or Expense Category	All Prior Fiscal Years	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024	Fiscal Year 2025	Fiscal Year 2026 & Future	Total Revenue
Assessments Revenue	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Donations Revenue	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Grant Revenue	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Finance Sources Revenue	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Tourist Development Tax Revenue	$ 3,260,481	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,260,481
Total Revenue	**$ 3,260,481**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 3,260,481**
Land Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Planning/Design Expense	$ -	$ 152,490	$ -	$ -	$ -	$ -	$ -	$ 152,490
Construction Expense	$ -	$ 1,343,407	$ 1,764,584	$ -	$ -	$ -	$ -	$ 3,107,991
Other Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Expense	**$ -**	**$ 1,495,897**	**$ 1,764,584**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 3,260,481**

CONSTRUCTION MANAGER AGREEMENT BETWEEN BREVARD COUNTY AND HEARD CONSTRUCTION, INC.

THIS AGREEMENT is made the 16th day of _March_, 2022 between **BREVARD COUNTY, FLORIDA**, a political subdivision of the State of Florida whose address is 2725 Judge Fran Jamieson Way, Viera, Florida 32940 (hereinafter referred to as the "County"), and **HEARD CONSTRUCTION, INC.** (hereinafter referred to as "Construction Manager"), whose address is 95 East Hall Road, Merritt Island, Florida 32954, a company licensed to do business in the State of Florida.

WHEREAS, the Construction Manager and the County entered into Agreement, Contract No. 3040, effective July 18, 2018, for Continuing Construction Manager At Risk Services; and

WHEREAS, the County requests the Construction Manager procure and install restroom replacement at Lori Wilson Park, 1500 N. Atlantic Avenue, Cocoa Beach, FL, in accordance with the Scope of Work (**Attachment "B"**).

NOW, THEREFORE, in consideration of the mutual understanding and covenants set forth herein, the sufficiency of which is hereby acknowledged, the parties agree as follows:

ARTICLE 1

THE CONSTRUCTION TEAM AND EXTENT OF AGREEMENT

The Construction Manager accepts the relationship of trust and confidence established between it and the County by this Agreement. The Construction Manager covenants with the County to furnish the best skill and judgment and to cooperate with the Architect/Engineer in furthering the interests of the County as outlined herein. The Construction Manager agrees to furnish efficient business administration and superintendence and use its best efforts to complete the Project as described in Attachment "B", Scope of Work, in the best and soundest way, and in the most expeditious and economical manner consistent with the interest of the County.

1.1 The Construction Team - The Construction Manager, the County and the Architect/Engineer, called the "Construction Team", shall work jointly during design and through final construction completion and shall be available thereafter should additional services be required. The Architect/Engineer will provide leadership during the Design Phase, with support from the Construction Manager, and the Construction Manager shall provide leadership to the Construction Team on all matters relating to construction.

The specific representatives of the Construction Team are shown in **Attachment "A"** attached.

1.2 Scope of Work – A general description of the Work/Project to be built/constructed/installed under this Agreement (**Attachment "B"**).

1.3 Definitions:

Project - The Project is the total work to be performed under this Agreement. The Project consists of planning, design review, permitting, construction (which includes all labor, equipment, material and supervision) and code inspection necessary to build/construct and complete the Scope of Work identified in **Attachment "B"** (Scope of Work).

County - Brevard County Board of County Commissioners, Public Works Department - Facilities, 2725 Judge Fran Jamieson Way, Building A, 2nd Floor, Viera, Florida 32940, (321) 633-2050; facsimile (321) 633-2101. For purposes of this Agreement, the County may also include the County Manager or the Project Director with regard to the performance of designated functions and duties specified for each under the terms and provisions of this Agreement.

Contract Documents - Consist of this Agreement with attachments, Scope of Work, the drawings, the specifications, the Guaranteed Maximum Price (G.M.P.), any Conditions of the Contract between the County and the Construction Manager (General, Special, Supplementary and other conditions), permit conditions, if any, grant specifications, any addenda to the foregoing listed documents and all change orders, amendments or modifications as provided in Article 10 below, whether or not any of the foregoing listed documents have been attached hereto.

Permitting Authority - All applicable Federal, State, County and local agencies responsible for permitting and code inspections on projects administered by the County.

Construction Manager – Heard Construction, Inc.

Architect/Engineer – B.R.P.H.

Project Director - The person designated by the County to provide direct interface with the Construction Manager with respect to the County's responsibilities. Tim Lawry is the designated Project Director, and Mike McGrew is the designated Construction Coordinator. Such designated individuals may be changed/substituted upon written notice to the other party.

County's Representatives - The Project Director and his/her supervisors and/or designees.

Estimate - The Construction Manager's latest estimate of probable Project construction costs.

Guaranteed Maximum Price (G.M.P.) - The Guaranteed Maximum Price for the construction of the project, which shall be subject to adjustments only as provided herein. GMP includes Cost of the Work and Construction Manager's fee for Construction Phase services. The Guaranteed Maximum Price (G.M.P.) does include the cost for County direct purchases, however, all County direct purchases will be deducted in one deductive change order in accordance with **Attachment "C"** (Direct Purchasing Procedure) at the end of the project.

Substantial Completion - the point in the construction where all essential elements of the Project are sufficiently complete in conformance with this Agreement, that the County has both the occupancy of the Project, as evidenced by a Certificate of Occupancy issued by the governmental authority with jurisdiction and the beneficial use of the Project for its intended purpose where only minor punch list items are required for final completion. Substantial Completion shall not be deemed to have occurred where 1) latent defects are revealed subsequent to use and occupation of the project by the County; or 2) where the scope of substantial defects in workmanship or materials are not readily observable or discoverable when use and occupancy of the project commenced; or 3) the failure to meet grant specifications, if any.

1.4 Extent of Agreement - This Agreement for Construction Management between the County and the Construction Manager supersedes any prior negotiations, representations or agreements. The drawings, specifications and other descriptive documents defining the work to be included under this construction contract are identified in **Attachment "D"**. The Construction Manager shall obtain from the County three (3) sets of signed, sealed and dated drawings, specifications and other documents upon which the G.M.P. is based; shall acknowledge on the face of each document of each set that it is the set upon which he based his G.M.P.; and shall send one (1) set of the documents to the Project Director along with his G.M.P. proposal, while keeping one (1) set for itself and returning one (1) set to the Architect/Engineer.

This Agreement shall not be superseded by any provisions of the documents for construction and may be amended only by written instrument signed by both the County and Construction Manager.

ARTICLE 2

CONSTRUCTION MANAGER'S RESPONSIBILITIES

Construction Manager shall perform all services described in this Article. The services to be provided under Paragraph 2.1 constitute the Pre-Construction Phase services. The services to be provided under Paragraphs 2.2 thru 2.9 constitute the Construction Phase services. The parties acknowledge the Construction Phase shall commence before the Pre-Construction Phase is completed and, whenever feasible, both phases shall proceed concurrently.

2.1 PRE-CONSTRUCTION PHASE

2.1.1 Preliminary Evaluation - Construction Manager shall provide a preliminary evaluation of County's program and Project budget requirements, each in terms of the other.

2.1.2 Consultation - Construction Manager will provide Design Disciplines, Construction Documents, and Plans and Specifications review at all design milestones and a final constructability review. The review at each milestone will identify areas of omission, overlapping and identify documents to be modified in order to clarify the construction details. The review will also include the coordination and interface of the Agreement document's General Conditions, Special Conditions, trade contractor bid packages and site utilization planning during construction. Reviews shall be completed and comments provided within five (5) business days. As part of the design review, Construction Manager will provide Value Engineering and construction alternatives, identifying to the County and Architect/Engineer options for systems and components that are cost-effective, efficient, and easy to maintain.

Construction Manager, with Architect/Engineer, has scheduled and attended, and will continue to jointly schedule and attend, **weekly** progress meetings (*or as determined by the Project Director or Project Manager*) with County and Architect/Engineer. Construction Manager has and will continue to consult with County and Architect/Engineer regarding site use and improvements, and the selection of materials, building systems and equipment. Construction Manager has provided and will continue to provide recommendations on construction feasibility; actions designated to minimize adverse effects of labor or material shortages; time requirements for procurement, installation and construction completion; and factors related to construction cost including estimates of alternative designs or materials, preliminary budgets and possible economies.

The Construction Manager is required to be registered with and utilize the U.S. Department of Homeland Security's E-Verify System, in accordance with the terms governing use of the system, to confirm the employment eligibility of any employee hired during the term of the Agreement. The Construction Manager

shall also expressly require any contractor or subcontractor performing work or providing services pursuant to this Agreement to likewise utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the contractor/subcontractor during the Agreement term.

2.1.3 Preliminary Project Schedule - Construction Manager has prepared a Construction Schedule, a copy of which is attached as **Attachment "E"**. This Construction Schedule shall govern Substantial Completion and Final Completion. Construction Manager shall coordinate and integrate the Preliminary Project Schedule with the services and activities of the County, Architect/Engineer and Construction Manager. The Construction Manager shall provide current scheduling information and provide direction and coordination regarding milestones, beginning and finishing dates, responsibilities for performance and the relationships of the Construction Manager's work to the work of its subcontractors and suppliers to enable them to perform their respective tasks so that the development of construction progresses in a smooth and efficient manner in conformance with the overall Total Project Schedule. The schedule shall include all phases of construction work, material supplies, long lead procurement, approval of shop drawings, change orders in progress, schedules for change orders, and performance of testing requirements. The Construction Manager shall advise the County, its representatives and the Architect/Engineer of their required participation in any meeting or inspection giving each at least one (1) week notice unless such notice is made impossible by conditions beyond the Construction Manager's control. The Construction Manager shall hold jobsite meetings at least once each week with the Construction Team and at least once each week with the subcontractors and the Architect/Engineer field representatives, and County, or more frequently as required by work progress, to review progress, discuss problems and their solutions and coordinate future work with all subcontractors.

2.1.4 Subcontractors and Suppliers - Construction Manager shall continue to develop subcontractor interest in the Project and shall furnish to County and Architect/Engineer, for their information, a list of possible subcontractors, including suppliers who are to furnish materials or equipment fabricated to a special design and within the timeframes established in Attachment "E", from whom proposals will be requested for each principal portion of the Project. County will promptly reply in writing to Construction Manager if County has an objection to any such subcontractor or supplier. The receipt of such list shall not require County to investigate the qualifications of proposed subcontractors or suppliers, nor shall it waive the rights of County to later object to or reject any proposed subcontractor or supplier. The Construction Manager shall be responsible for ensuring the subcontractor(s) meet any and all specifications

outlined in this Contract, or as amended or modified, including, but not limited to the timeframes established in the Construction Schedule.

2.1.5 Long Lead and County Direct Procurement - The Construction Manager shall review the design for the purpose of identifying long lead and County direct procurement items (machinery, equipment, materials and supplies). When each item is identified the Construction Manager shall notify the subcontractors, the Project Director, and the County of the required procurement and schedule. Such information shall be included in the bid documents and made a part of all affected subcontracts. As soon as the Architect/Engineer has completed drawings and technical specifications and the Construction Manager has obtained permitting approval, the Construction Manager shall prepare Invitation for Bids. The Construction Manager shall keep informed of the progress of the respective subcontractors and/or suppliers, manufacturing or fabricating such items and notify the Project Director, County and Architect/Engineer of any problems or prospective delay in delivery. The Construction Manager shall ensure that any subcontractor adheres to the Construction Schedule in Attachment "E".

2.1.6 Extent of Responsibility - The recommendations and advice of Construction Manager concerning design alternatives shall be subject to the review and approval of County and County's professional consultants. The Construction Manager shall be responsible for complying with all applicable laws, statutes, ordinances, building codes, rules and regulations. If Construction Manager recognizes that portions of the Drawings and Specifications are at variance therewith, Construction Manager shall promptly notify County and Architect/Engineer in writing.

2.1.7 Equal Employment Opportunity and Affirmative Action - Construction Manager shall comply with applicable laws, regulations and special requirements of the Contract Documents regarding equal employment opportunity and affirmative action programs.

2.1.8 Separate Contracts Planning - The Construction Manager shall review the design with the Architect/Engineer and make recommendations to the County and to the Architect/Engineer with respect to dividing the work in such manner as will permit the Construction Manager to take bids and award separate construction subcontracts on the current schedule while the design is being completed. The Construction Manager shall take into consideration such factors as natural and practical lines of severability, sequencing, effectiveness, access and availability constraints, total time for completion, construction market conditions, availability of labor and materials, community relations and any other factors pertinent to saving time and cost by overlapping design and construction that are authorized by the County.

2.2 CONSTRUCTION PHASE

2.2.1 Interfacing -

(1) The Construction Manager shall take such measures as are appropriate to provide that all construction requirements will be covered in the separate subcontracts for procurement of long lead items, the separate construction subcontracts and the general conditions items performed without duplication or overlap, sequenced to maintain completion of all work on schedule. Particular attention shall be given to provide that each bid package clearly identifies the work included in that particular separate subcontract, its schedule for start and completion and its relationship to other separate subcontractors.

(2) Subcontractor Interfacing - The Construction Manager shall be the single point of interface with all Subcontractors for the County, and all of its agents and representatives, including the Architect/Engineer. The Construction Manager shall negotiate all change orders, field orders and request for proposals, with all affected Subcontractors and shall review the costs of those proposals and advise the County and Architect/Engineer of their validity and reasonableness, acting in the County's best interest prior to requesting approval of each change order from the County. Before any work is begun on any change order, an executed "Authorization to Initiate Work" form from the County must be issued. However, when health and safety are threatened, the Construction Manager shall act immediately to remove the threat to health and safety. The Construction Manager shall also carefully review all shop drawings and then forward the same to the Architect/Engineer for review and actions. The Architect/Engineer will transmit them back to the Construction Manager who will then issue the shop drawings to the affected Subcontractor for fabrication or revision. The Construction Manager shall maintain a suspense control system to promote expeditious handling. The Construction Manager shall request the Architect/Engineer to make interpretations of the drawings or specifications requested of the Construction Manager by the Subcontractors and shall maintain a suspense control system to promote timely response. The Construction Manager shall advise the Project Director and Architect/Engineer when timely response is not occurring on any of the above.

2.2.2 Solicitation of Bids

(1) Without assuming responsibilities of the Architect/Engineer, the Construction Manager shall prepare Invitations for Bids (or Request For Proposals, when applicable) for all procurements of long lead times, materials and services for Subcontractor contracts and for site utilities.

(2) As part of such preparation, the Construction Manager shall review the specifications and drawings prepared by the Architect/Engineer. Ambiguities, conflicts or lack of clarity of language, use of illegally restrictive requirements, and any other defects in the specifications or in the drawings noted by the Construction Manager shall be brought to the attention of the Project Director and Architect/Engineer in written form.

(3) For each separate subcontractor or construction trade contract used in this project, the Construction Manager shall, unless waived by the County, conduct a pre-bid conference with prospective bidders, the Architect/Engineer and Project Director. In the event questions are raised which require an interpretation of the bidding documents or otherwise indicate a need for clarification or correction of the invitation, the Construction Manager shall transmit these to the Architect/Engineer and, upon receiving clarification or correction in writing, shall prepare an addendum to the bidding document, and issue same to all of the prospective bidders.

(4) In accordance with Article 2.4.2 the Construction Manager shall open and review all bids and enter into contract(s) with those low bidders determined to be most qualified by the Construction Manager. The Construction Manager shall make every effort to follow the County's Pre-Qualification Ordinance 98-37 (**Attachment "F"**) for applicable subcontract trades.

2.2.3 Bonds - For those projects where the cost will exceed $100,000.00, in accordance with the provisions of Section 255.05, Florida Statutes, the Construction Manager shall provide to the County with applicable bonds on forms furnished by the County (**Attachments "G" and "H"**), certified copies of the recorded 100% Construction Bond in an amount not less than the total construction cost (G.M.P.) as defined in Article 9 and inclusive of the construction fee must be provided to the County. *Bonds shall be recorded by the Construction Manager in the official record of the County in which the project is located.* The Construction Manager must provide a copy of the bond(s) to all subcontractors and notify them of deadlines to make claims under the bonds.

2.2.4 Quality Control - The Construction Manager shall develop and maintain a program, acceptable to the County and Architect/Engineer, to assure quality control of the construction (*this may include personnel if approved by the County*). The Construction Manager shall have a qualified and competent Superintendent to supervise the work of all Subcontractors providing instructions to each when their work does not conform to the requirements of the plans and specifications and shall continue to exert influence and control over each

Subcontractor to ensure that corrections are made in a timely manner so as to not affect the efficient progress of the work. Should disagreement occur between the Construction Manager and Architect/Engineer over acceptability of work and conformance with the requirements of the specifications and plans, the County shall be the final judge of performance and acceptability.

2.3 Guaranteed Maximum Price (G.M.P.) and Contract Time

2.3.1 Construction Manager acknowledges and agrees the Drawings and Specifications are sufficiently complete for Construction Manager to propose a Guaranteed Maximum Price (G.M.P.), which is the total not to exceed sum of the Construction Manager's Fee and the Cost of the Project. Accordingly, the Guaranteed Maximum Price (G.M.P.) is hereby established at **$486,183.73**. *The final approved G.M.P. spreadsheet is attached hereto as* **Attachment "I"** *and shall become a part of this Contract.*

2.3.2 The Cost of the Work shall include Construction Manager's contingency, a sum agreed to by all parties, for the Construction Manager's use to cover costs arising from unforeseen conditions in the project. Construction Manager's contingency is hereby established as **Two Thousand Dollars ($2,000.00)** within the Guaranteed Maximum Price (G.M.P.).

2.3.3 Basis of Guaranteed Maximum Price (G.M.P.)

The Guaranteed Maximum Price (G.M.P.), herein established is based upon the following:

(1) The list of the Drawings and Specifications, including all addenda thereto, and the Conditions of the Contract, which are identified in the Attachments to this Agreement.

(2) The list of clarifications and assumptions made by Construction Manager in the preparation of its Guaranteed Maximum Price (G.M.P.) proposal to supplement the information contained in the Drawings and Specifications.

(3) The Construction Schedule (**Attachment "E"**).

2.3.4 Included within the Guaranteed Maximum Price (G.M.P.) is the Construction Manager's fee. The Construction Manager's Fee is hereby established as **$61,187.68 (see breakout in GMP)** for services provided in this Agreement. The sum of the Cost of the Project and the Construction Manager's Fee shall not exceed the Guaranteed Maximum Price (G.M.P.). The Construction Manager's Fee shall constitute Construction Manager's total compensation for profit. All costs in excess of the final approved G.M.P. (as reduced by County direct purchases, if any, in accordance with **Attachment "C"**) are the responsibility of

the Construction Manager. Any savings between the G.M.P. (as reduced by County direct purchases) and the sum of the actual cost of the Project plus the Construction Manager's fee will be returned to the County.

2.3.5 Prior to issuance of the Construction Phase Notice to Proceed, Construction Manager shall not incur any costs to be reimbursed as part of the Cost of the Project, except as County may specifically authorize in writing.

2.3.6 The Guaranteed Maximum Price (G.M.P.) and date of Substantial Completion shall be subject to additions and deductions by a Change Order as provided in the Contract Documents, which must be done in writing by the parties.

2.3.7 The Guaranteed Maximum Price (G.M.P.) shall include in the Cost of the Project only those taxes which are enacted and in effect at the time the G.M.P. was determined. The County shall not be responsible for any taxes for which it is exempt from by law.

2.4 Construction Phase

2.4.1 General

(1) The Construction Phase shall commence on the date identified in the Notice to Proceed to be issued by the County.

(2) The Construction Manager shall cause all Work required by the Contract Documents to be properly completed in accordance with the terms of the Contract Documents and within the Contract Time.

(3) Construction Manager's Staff - The Construction Manager shall maintain sufficient off-site support staff, and competent full-time staff at the Project site authorized to act on behalf of the Construction Manager and to coordinate, inspect and provide general direction of the work and progress of the subcontractors, and the Construction Manager shall provide no less than those personnel during the respective phases of construction. The Construction Manager shall not change any of those designated persons unless mutually agreed to by the County and Construction Manager. In such case, the County shall have the right of approval of the qualifications of replacement personnel. Such approval will not be reasonably withheld.

(4) The Construction Manager shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during the progress of the work. The superintendent shall represent the Construction Manager and all communications given to the superintendent shall be as binding as if given to the Construction Manager.

(5) The superintendent shall be in attendance at the Project site not less than eight (8) hours per day, five (5) days per week, and any time work is being performed at the jobsite, unless the job is closed down due to a general strike or conditions beyond the control of the Construction Manager or until completion or termination of the Contract. It is understood that such superintendent shall be acceptable to the County and the Architect and shall be the one who will be continued in that capacity for the duration of the project, unless the County otherwise agrees. The superintendent shall not be employed on any other project for or by Construction Manager or any other entity during the course of the work.

(6) Lines of Authority - The Construction Manager shall establish and maintain lines of authority for its personnel, and shall provide this description/definition to the County and all other affected parties such as the code inspectors of the permitting authorities, the subcontractors, the Architect/Engineer and the County's representatives, to provide general direction of the work and progress of the various phases and subcontractors. The County and the Architect/Engineer may attend meetings between the Construction Manager and subcontractors, however, such attendance shall not diminish either the authority or responsibility of the Construction Manager to administer the subcontractor.

2.4.2 Administration

(1) Those portions of the Project that Construction Manager does not customarily perform with Construction Manager's own personnel shall be performed under subcontracts or by other appropriate written agreements with Construction Manager. Construction Manager shall obtain bids from subcontractors and from suppliers of materials or equipment fabricated to a special design and within the time periods established in Attachment "E" for the Project from the list previously reviewed and, after analyzing such bids, shall deliver such bids to the County and Architect/Engineer for review and comment. Based upon that review and comment, Construction Manager shall then determine, subject to the reasonable objection of Architect/Engineer or County, which bids will be accepted. Construction Manager shall not be required to contract with anyone to whom Construction Manager has reasonable objection. Notwithstanding anything herein to the contrary, Construction Manager covenants and agrees that it shall competitively bid all subcontracts. Further, with respect to all such subcontracts, Construction Manager covenants and agrees that it shall select and contract with the lowest, responsive and qualified bidder, unless otherwise consented to in writing by County.

(2) Subcontracts and agreements with suppliers furnishing materials or equipment fabricated to a special design shall conform with payment provisions and shall

not be awarded on the basis of cost plus a fee without prior written consent of County.

(3) Construction Manager shall schedule and conduct weekly meetings at which County, Architect/Engineer, Construction Manager and appropriate Subcontractors can discuss the status of the Project. Construction Manager shall prepare and promptly distribute meeting minutes within two (2) business days after any such meeting is held.

(4) Construction Manager shall provide Monthly Written Reports to County on the progress of the entire Work. Construction Manager shall maintain a daily log containing a record of weather, subcontractors working on the site, number of workers, Work accomplished, problems encountered and other similar relevant data as County may require. The log shall be available to County at all times.

2.5 Professional Services - Construction Manager shall not be required to provide professional services which constitute the practice of architecture or engineering, unless such services are specifically required by the Contract Documents for a portion of the Project, or unless Construction Manager has specifically agreed in writing to provide such services. In such event, Construction Manager shall cause such services to be performed by appropriately licensed professionals.

2.6 Unsafe Materials - If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance encountered but not created or brought on the site Construction Manager shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to County and Architect/Engineer in writing. County shall be responsible for obtaining the services of a licensed laboratory to verify the presence or absence of the material or substance reported by Construction Manager and, in the event such material or substance is found to be present, to verify that it has been rendered harmless.

In accordance with Section 255.40, Florida Statutes, the County will require that the Construction Manager certify (at project completion) that to the best of his/her knowledge and ability no asbestos-containing materials and/or supplies have been purchased and/or installed on this Project.

(Florida Statute 255.40 Use of asbestos in new public buildings or buildings newly constructed for lease to governmental agencies; prohibition - The use of asbestos or asbestos-based fiber materials is prohibited in any building, construction of which is commenced after September 30, 1983, which is financed with public funds or is constructed for the express purpose of being leased to any governmental entity.)

2.7 Weather Protection - The Construction Manager will be responsible to ascertain what temporary enclosures, if any, of building areas should be provided for and may be provided as a practical matter, in order to assure orderly progress of the work in periods when extreme weather conditions are likely to be experienced. All costs associated with this shall be the responsibility of the Construction Manager.

2.8 Job Site Requirements

(1) The Construction Manager shall provide for each of the following activities as a part of the Construction Manager's Construction Phase services:

a. Maintain a log of daily activities, including manpower records, weather, delays, major decisions, etc. and require the same of subcontractors
b. Maintain a directory of companies on the Project with names, addresses, telephone numbers, emergency telephone numbers and fax numbers of key personnel.
c. Establish and enforce job rules governing parking, clean-up, use of facilities and worker discipline.
d. Provide labor relations management for a harmonious, productive Project.
e. Provide a safety program for the Project to meet OSHA requirements. Monitor for Subcontractor compliance without relieving them of responsibilities to perform work in accordance with the best acceptable practice.
f. Provide a quality control program.
g. Miscellaneous office supplies that support the construction efforts which are consumed by his own forces.

2.9 Job Site Administration - The Construction Manager shall provide as part of the Construction Manager's Construction Phase services, administrative functions during construction, including but not limited to, the following:

(1) Job Meetings - Hold weekly progress and coordination meetings to provide for an easy flowing Project. Implement procedures and assure timely submittals, expedite processing approvals and return of shop drawings, samples, etc. Coordinate and expedite critical ordering and delivery of materials, work sequences, inspection and testing, labor allocations, etc. Review and coordinate each Subcontractor's work. Review and implement revisions to the Schedule. Monitor and promote safety requirements.

Use the job site meeting as a tool for preplanning of work and enforcing schedules and for establishing procedures, responsibilities, and identification of authority for all to clearly understand.

Identify party or parties responsible for follow-up on any problems, delay items or questions and document and implement the course for solution. Revisit each pending item at each subsequent meeting until resolution is achieved. Require all present to make any problems or delaying event known to those present for appropriate attention and resolution.

(2) Shop Drawing Submittals/Approvals - Check Shop Drawings and implement procedures for submittal and transmittal to the Architect/Engineer of such drawings for action, and closely monitor their submittal and approval process. Provide copy of all correspondence to County. Construction Manager will provide one (1) approved Submittal or Shop Drawing to County.

(3) Material and Equipment Expediting - Closely monitor material and equipment deliveries; implement inspection and follow-up procedures on commitments of all Suppliers and Subcontractors.

(4) Payments to Subcontractor - Develop and implement a procedure for review, processing, and payment of applications by Subcontractors for progress and final payments.

(5) Document Interpretation - Refer all questions for interpretation of the documents prepared by the Architect/Engineer to the Architect/Engineer.

(6) Reports and Project Site Documents - Record the progress of the Project. Submit written progress reports to the County and the Architect/Engineer including information on the Subcontractor's work, and the percentage of completion. Keep a daily log available to the County, the Architect/Engineer and the Permitting Authority inspectors.

(7) Substantial Completion - The Construction Manager shall secure the Certificate of Occupancy and notify the County and Architect/Engineer, in writing, that the Project will be ready for inspection to determine if it is substantially complete and ready for inspection on or after a specific date, which date shall be stated in the notice. The notice shall be given at least seven (7) calendar days in advance of said date. Inspection and testing shall take place at time(s) mutually agreeable to the Construction Manager, Architect/Engineer and County. The inspection will be conducted jointly between the Architect/Engineer, County and

Construction Manager's representative. The inspection shall determine if substantial completion has been accomplished and the Architect/Engineer shall produce a Certificate of Substantial Completion (**Attachment "J"**) and a written list of unfinished Work and defective work, commonly referred to as a "Punch List", which must be finished and corrected to obtain final completion.

At the County's option a specific area or segment of the project may be inspected and/or determined substantially complete.

(8) Final Completion - The Construction Manager shall notify the Architect/Engineer and County, in writing, that the Project will be ready for final inspection on or after a specific date, which date shall be stated in the notice. This notice shall be given at least seven (7) calendar days in advance. That inspection and any necessary testing shall be conducted in the same manner as the inspection for Substantial Completion. When the Project is finally and totally complete, including the elimination of all defects, a Certificate of Final Completion (**Attachment "K"**) will be issued by the Architect/Engineer and the Project shall be submitted to the County for final acceptance.

The County and Architect/Engineer shall conduct the inspections. The County may elect to have other persons of its choosing also participate in the inspections. If one or more re-inspections are required, the Construction Manager shall reimburse the County for all costs of reinspection or, at the County's option, the costs may be deducted from payments due to the Construction Manager. The Total Project Schedule shall include these notices and inspections as activities.

The Construction Manager shall secure and transmit to the Architect/Engineer all required guarantees, affidavits, releases, bonds and waivers, manuals, record drawings, and maintenance books as part of final completion (in triplicate) unless stated otherwise in the Project specifications.

(9) Start-Up - With the County's personnel, direct the checkout of utilities, operations, systems and equipment for readiness and assist in their initial start-up and testing by the subcontractors.

(10) Record Drawings - The Construction Manager shall monitor the progress of Work on marked-up field prints which, at Substantial Completion, shall be submitted to the Architect/Engineer who will prepare the final record drawings.

(11) Administrative Records - The Construction Manager will maintain at the job site on a current basis, files and records such as, but not limited to the following:

Contracts and Purchase Orders
Shop Drawing Submittal/Approval Logs
Equipment Purchase/Delivery Logs
Contract Drawings and Specifications with Addenda Cost
Proposal Requests
Meeting Minutes
Lab Test Reports
Contract Changes
Material Purchase Delivery Logs
"As-Built" Marked Prints
Monthly Progress Reports
Correspondence Files
Transmittal Records
Inspection Reports
Punch Lists

The Project records shall be available at all times to the County and Architect/Engineer for reference or review.

(12) County Occupancy:
The Construction Manager shall provide services during the Construction Phase which will provide a smooth and successful County occupancy of the Project. The Construction Manager shall provide consultation and project management to facilitate County occupancy and provide transitional services to get the work, as completed by the contractors "on line" in such conditions as will satisfy County operational requirements.

The Construction Manager shall conduct the Construction Manager's preliminary punch list inspection and coordinate the completion of all punch list work to be done with County occupancy requirements in mind.

The Construction Manager shall catalog operational and maintenance requirements of equipment to be operated by maintenance personnel and convey these to the County in such a manner as to promote their usability (in triplicate). The Construction Manager shall provide operational training, in equipment use, for building operators to a maximum of eight (8) hours.

The Construction Manager shall secure required guarantees and warranties, assembled and organized (in a binder) and deliver same, in

triplicate, to the County in a manner that will facilitate their maximum enforcement and assure their meaningful implementation.

The Construction Manager shall continuously review "As-Built" Drawings and mark-up progress prints to provide as much accuracy as possible.

(13) Warranty - Where any work is performed by the Construction Manager's own forces or by Subcontractors under contract with the Construction Manager, the Construction Manager shall warrant that all materials and equipment included in such Work will be new except where indicated otherwise in Contract Documents, and that such Work will be of good quality, free from improper workmanship and defective materials and in conformance with the Drawings and Specifications. With respect to the same Work, the Construction Manager further agrees to correct all work found by the County to be defective in material and workmanship or not in conformance with the Drawings and Specifications for a period of one (1) year from the Date of Final Completion or as may be set forth with respect to specific warranties contained in the trade sections of the Specifications. The Construction Manager shall collect and deliver to the County any specific written warranties given by others as required by the Contract Documents. **Also, the Construction Manager shall conduct, jointly with the County and the Architect/Engineer, a warranty inspection nine (9) months after the date of County Occupancy. This warranty inspection will be scheduled by a representative of the County.**

ARTICLE 3

COUNTY'S RESPONSIBILITIES

3.1 County's Information - The County shall provide full information regarding County's requirements for the Project.

3.2 County's Representative/Project Director - The County shall designate a representative who shall be fully acquainted with the Project and shall define the lines of County authority to approve Project Construction Budgets, and changes in Project. The County's representative shall render decisions promptly and furnish information expeditiously.

3.3 Architect and Engineer's Agreement - The County shall retain an Architect/Engineer for design and to prepare construction documents for the Project. The Architect/Engineer's services, duties and responsibilities are described in the Agreement between the County and the Architect/Engineer, a copy of which will be furnished to the Construction Manager upon request.

3.4 Approvals and Easements - The County shall pay for necessary approvals, easements, assessments and charges required for the construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

3.5 Legal Services - The County shall furnish such legal services as may be necessary for providing the items set forth in Article 3 and such auditing services as the County may require.

3.6 Drawings and Specifications - The County will provide to the Construction Manager a reproducible set of all drawings and specifications reasonably necessary and ready for printing.

3.7 Cost of Surveys & Reports - The services, information, surveys and reports required by the above paragraphs shall be furnished with reasonable promptness in accordance with the approved schedule at the County's expense, and the Construction Manager shall be entitled to rely upon the accuracy and completeness thereof.

3.8 Project Fault or Defects - If the County becomes aware of any fault or defect in the Project or non-conformance with the drawings and specifications, the County shall give prompt written notice thereof to the Construction Manager and Architect/Engineer.

3.9 Funding - The County shall furnish, in accordance with the established schedule, reasonable evidence satisfactory to the Construction Manager that sufficient funds will be available and committed for the cost of each part of the Project.

3.10 Lines of Communication - The County and Architect/Engineer shall communicate with the Subcontractors or Suppliers only through the Construction Manager while such method of communication is effective in maintaining Project schedules and quality.

3.11 Lines of Authority - The County shall establish and maintain lines of authority for County's personnel and shall provide this definition to the Construction Manager and all other affected parties.

3.12 Permitting & Code Inspections - The County recognizes and coordinates with the Permitting Authority and expects the Construction Manager to do the same.

ARTICLE 4

PERMITTING AND INSPECTION

4.1 Permits, Fees and Notices - Unless otherwise provided in the Contract Documents, the Construction Manager shall secure and the County shall pay for any Brevard County building permit or other County permits and governmental fees and licenses necessary for proper execution of the Contract and which are legally required. Any other entity/jurisdiction permits shall be included in the Guaranteed Maximum Price (G.M.P.) and secured and paid for by the Construction Manager. County Impact and Solid Waste fees will also be paid by the County. Copies of all permits shall be submitted to the County.

4.2 The Construction Manager shall comply with and give notices required by laws, ordinances, rules and regulations and lawful orders of public authorities bearing on performance of the work required for the Project.

4.3 It is not the Construction Manager's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Construction Manager observes that portions of the Contract Documents are at variance therewith, and such variance was not discoverable during the Construction Manager's review of these documents for the purpose of determining the G.M.P., the Construction Manager shall promptly notify the Architect/Engineer and County, in writing, and necessary changes shall be accomplished by appropriate modification.

4.4 If the Construction Manager performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Architect and County, the Construction Manager shall assume full responsibility for such Work and shall bear the attributable costs.

ARTICLE 5

SUBCONTRACTS

5.1 Definition - A Subcontractor is a person or organization who has a direct contract with the Construction Manager to perform any of the work. Nothing contained in the Contract Document shall create any contractual relation between the County or Architect/Engineer and any Subcontractor.

5.2 Bids/Proposals - The Construction Manager shall request and make every attempt to receive, at a minimum, three (3) bids/proposals from Subcontractors and Suppliers and will award those contracts to the most qualified and responsive low bidder after the Construction Manager and County have reviewed each bid/proposal and agree that the Subcontractor is qualified to perform the work.

5.3 Required Subcontractor and Subcontract Conditions.

5.3.1 Subcontractual Relations - By an appropriate written agreement, the Construction Manager shall require each Subcontractor to the extent of the work to be performed by the Subcontractor, to be bound to the Construction Manager by the terms of this Agreement and associated Contract Documents, and to assume toward the Construction Manager all the obligations and responsibilities which the Construction Manager by this Agreement, assumes toward the County and the Architect/Engineer. Said agreements shall preserve and protect the rights of the County and Architect/Engineer under the Contract Documents with respect to the work to be performed by the Subcontractor so that the subcontracting thereof will not prejudice such rights. Where appropriate, the Construction Manager shall require each Subcontractor to enter into similar agreements with his Subcontractor's Subcontractor. Any subcontractor shall indemnify the County from any and all liability. Special consideration will be acknowledged as received for such a provision.

The Construction Manager shall make available to each proposed Subcontractor, prior to the execution of the Subcontract, copies of the Contract Documents to which the Subcontractor will be bound by this Article 5.3 and identify to the Subcontractor any terms and conditions of the proposed Subcontract which may be at variance with the Contract Documents. Each Subcontractor shall similarly make copies of such Documents available to his Sub-subcontractor.

(1) Subcontractors must submit a complete pre-qualification form demonstrating their work experience, financial condition, and adherence to schedule. The Subcontractors financial condition must demonstrate that adequate fixed and liquid assets and equipment are available to properly perform the subcontract.

(2) Workforce - The Subcontractor must agree to perform no less than fifty (50%) percent of the Project construction work utilizing its own forces.

(3) All subcontracts shall provide:

a. LIMITATION OF REMEDY - NO DAMAGES FOR DELAY
The Subcontractor's exclusive remedy for delays in the performance of the work outlined herein caused by events beyond its control, including delays claimed to be caused by the County or Architect/Engineer or attributable to the County or Architect/Engineer and including claims based on breach of contract or negligence, shall be an extension of its contract time.

In the event of a change in the work the Subcontractor's claim for adjustments in the contract sum are limited exclusively to its actual cost

for such change, plus, no more than five percent (5%) for profit, and five percent (5%) for overhead.

The subcontract shall require the Subcontractor to expressly agree that the foregoing constitutes its sole and exclusive remedies for delays and changes in the work and, thus, eliminates any other remedies for claim for increase in the contract price, damages, loss or additional compensation.

b. Each subcontract shall require that any claims by Subcontractor for delays or additional cost must be submitted to Construction Manager within the time and in the manner in which the Construction Manager must submit such claims to the County, and that failure to comply with the conditions for giving notice and submitting claims shall result in the waiver of such claims.

5.4 Responsibilities for Acts and Omissions - The Construction Manager shall be responsible to the County for the acts and omissions of its employees and agents and its Subcontractors, agents and employees, and all other persons performing any of the work or supplying materials under this contract to the Construction Manager.

ARTICLE 6

SCHEDULE, TIME OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

6.1 At the time a Guaranteed Maximum Price (G.M.P.) is established, as provided for in Article 7, a Project Substantial Completion Date, a Project Final Completion Date and a County Occupancy Date for completion of the Project shall be established in accordance with Attachment E. The Construction Manager agrees to complete the construction in accordance with the agreed upon Substantial Completion Date, Final Completion Date and County Occupancy Date. The Construction Manager acknowledges that failure to complete the Project within the construction time set forth in the approved schedule will result in substantial damages to the County. **TIME IS OF THE ESSENCE WITH RESPECT TO THIS CONTRACT.**

It is specifically agreed by and between the parties that the County may deduct a sum in the amount scheduled below from the amount of compensation to be paid to the Construction Manager, Sundays and Holidays included, that the Project remains uncompleted. This amount as scheduled and agreed upon as a proper measure of liquidated damages, which the County will sustain per day by failure of the Construction Manager to complete the Project by the time stipulated in this Agreement, is not to be construed in any sense as a penalty provision. Both parties agree that the below-listed numbers apply based on an estimate of

damages, per day, that are anticipated to result due to the Construction Manager's failure to complete the Project.

Project Substantial Completion	$500 per day
Project Final Completion	$250 per day

Liquidated Damages will be assessed for each day beyond the contracted project Substantial Completion date, until actual project Substantial Completion is achieved. From the date of Substantial Completion, the Construction Manager shall be granted thirty (30) days for completion of punch list items, associated inspections and approvals, and submission and approval of required closeout documentation, at which time Final Completion shall be obtained. Final Completion liquidated damages will be assessed for each day beyond the thirty (30) days period from actual Substantial Completion.

6.2 The date of County Occupancy shall occur as described in Article 2.9(7) and Article 1.3, hereinabove. Warranties called for by this Agreement or by the Drawings and Specifications shall commence on the Date of Final Completion of the Project unless specified otherwise in the Project Specifications.

ARTICLE 7

GUARANTEED MAXIMUM PRICE FOR CONSTRUCTION

7.1 The Construction Manager will establish and submit in writing a Guaranteed Maximum Price (G.M.P.) to the County for its approval, guaranteeing the maximum price to the County, for the construction cost of the Project or designated part thereof, based on a review of the contract drawings and specifications. Such G.M.P. will be subject to increase or deduction for changes in the Project as provided in Article 10 and for County direct purchases, if any, in accordance with **Attachment "C"**. All costs in excess of the final approved G.M.P., as adjusted up or down in accordance with the terms of this Agreement, are the responsibility of the Construction Manager. Any savings between the G.M.P., as adjusted, and the sum of the actual cost of the Project plus the Construction Manager's fees, will be withheld by/returned to the County. The G.M.P. includes all taxes in the Cost of the Project which were legally enacted and in effect at the time the G.M.P. was established.

7.2 County-Direct Purchases - In the event the County opts to make County Direct Purchases, as outlined in **Attachment "C"**, the Guaranteed Maximum Price shall be reduced by the cost of the materials plus applicable sales tax so that all sales tax savings accrue to the benefit of the County. The Construction Manager shall diligently process all County Direct Purchase invoices for the project in order for the County to benefit from applicable vendor discounts. The Construction Manager will be required to submit all invoices to County in sufficient amount of

time in order for the project to benefit from the vendor discount. All costs associated with missed discounts by the Construction Manager will be deducted from the Construction Manager's contract via deductive change order at project completion. County reserves the right to waive the Construction Manager's responsibility for missing discounts.

7.3 At the time of execution of the contract, the Construction Manager will verify the time schedule for activities and work which is adopted by the Construction Team and used to determine the Construction Manager's cost of work. Surplus funds from bids received below the applicable line items, including line items within the General Conditions, in the G.M.P. will be set aside for contingency. Construction contingency funds will be used for the purpose of defraying the expenses due to unforeseen circumstances relating to construction. The Construction Manager will be required to furnish documentation evidencing expenditures charged to this contingency prior to the release of funds by the County. Documentation for use of the Contingency shall be determined by the Construction Team. The Architect/Engineer and County shall verify and approve the actual costs.

If bids are received above the applicable line item in the G.M.P. the deficiency will be taken from the contingency via an approved Authorization to Initiate Work/G.M.P. Realignment form. However, such events shall not be cause to increase the G.M.P. If bids are not received for a portion of the work at or below the applicable line item amount in the G.M.P., the Construction Manager reserves the right to perform that portion of the work or negotiate for its performance for the specified line item lump sum amount or less.

ARTICLE 8

CONSTRUCTION MANAGER'S FEE

8.1 In consideration of the performance of the contract, the County agrees to pay the Construction Manager as compensation for his services fees as set forth in Subparagraphs below subject to the retainage specified below.

(1) Construction Phase Fee - Prior to commencement of the Construction Phase, the County will direct the Construction Manager in writing to proceed into the Construction Phase. The County retains the right to review the need and effectiveness of any employee or employees assigned by the Construction Manager, should the Project Director question the need for the employee or employees. A percentage of the agreed upon Construction Phase Fee shall be paid monthly based on percentage (%) of work completed, less retainage, in accordance with subsection 12.1 below. The Construction Manager's first monthly Certificate for Payment shall be submitted no earlier than thirty (30) days

following the issuance of the Notice to Proceed, and the final monthly payment shall be paid only when construction of the Project is finally completed, all original, final release of liens are received, closeout documentation has been submitted and occupancy of the Project accepted by the County. If construction is authorized only for a part of the Project, the fee paid shall be proportionate to the amount of work authorized by the County.

(2) Adjustments in Fee - For changes in the Project as provided in Article 10, the Construction Phase fee shall be adjusted as follows:

(a) The Construction Manager shall be paid an additional fee subject to negotiation if the Construction Manager is placed in charge of reconstruction of an insured or uninsured loss excluding any condition that may have been caused from negligent acts by the Construction Manager, subcontractors or others for whose acts the Construction Manager is responsible.

(3) Costs and Expenses Included in Construction Manager's Construction Phase Fee - The following are included in the Construction Manager's fee for services during the Construction Phase and are included in the G.M.P. (See **Attachment "L"** for Allowable Costs, Overhead associated with the Construction Manager's Construction Phase Fee referenced in Article 8):

(a) Corporate costs including expenses and overhead and profit related to this project by the Construction Manager's principal and branch offices.
(b) Costs of all data processing, accounting, purchasing and associated staff which is performed at the home office.
(c) General operating expenses incurred in the management and supervision of the project, except as expressly included in Article 9.
(d) Salaries or other compensation of the Construction Manager's employees at his principal and branch offices.
(e) Those services set forth in Paragraph 2.1, 2.2, 2.3 and 2.4; except as expressly included in Article 9.
(f) Relocation expenses for Construction Manager's personnel.
(g) Costs of all project estimating, safety, scheduling and accounting staff.

8.1.3 The Construction Manager will establish and submit in writing to the County for approval a Guaranteed Maximum Price, guaranteeing the maximum price to the County, for the construction cost of the Project or designated part thereof, based on a review of the contract drawings and specifications. Such Guaranteed Maximum Price will be subject to

modification for changes in the Project as provide in Article 10. However, the actual price paid for the Work by the County shall be (1) the Cost of the Project as defined in Article 9, plus the Construction Manager's fees, or (2) the GMP, whichever is less, when the Work is complete. All costs in excess of the final approved GMP are the responsibility of the Construction Manager.

ARTICLE 9

COST OF THE PROJECT

9.1 Definition - The term "Cost of the Project" shall mean costs reasonably and necessarily incurred in the Project during the Construction Phase for construction services and paid by the Construction Manager which are included in the Construction Phase Fee, less County direct purchases made in accordance with **Attachment "C"** upon completion of the Project. Such costs shall include the items set forth below in this Article, and shall also include, but are not limited to, those set forth in **Attachment "M"** - "Allowable General Conditions".

The County agrees to pay the Construction Manager for the Cost of the Project subject to the limits set forth in Articles 9.2 and 9.3 plus the Construction Manager's fees stipulated in Article 8, provided the total does not to exceed the GMP.

9.2 Direct Cost Items (See **Attachment "M"** - "Allowable General Conditions")

(1) Labor wages paid for the on-site Project Superintendent directly responsible for the operation and supervision of the project, clerical and Quality Control personnel (as opposed to wages paid to management or supervisory personnel who are not part of the on-site project management) in the direct employ of the Construction Manager in the performance of the Construction Manager's work under this Agreement, acceptable salary or wage schedules and such fringe benefits, if any, as may be payable with respect thereto (labor burden not to exceed 40% for payroll and 15% for per diem).

(2) Payments due to Subcontractors from the Construction Manager or made by the Construction Manager to Subcontractors for their work performed pursuant to contract under this Agreement.

(3) Cost of the premiums for insurance above and beyond the minimum required by Brevard County ($1 million) and cost of premiums for bonds which the Construction Manager is required to procure by this Agreement specifically for the construction of this project.

(4) Sales, use, gross receipts or similar taxes related to allowable direct costs of the Project imposed by a governmental authority, and for which the Construction Manager is liable. No costs shall be paid by the County to the Construction Manager for any expenses made necessary to correct defective workmanship or to correct any work not in conformance with the Plans and Specifications or to correct any deficiency or damage caused by negligent acts by the Construction Manager.

(5) If approved by the County, the Construction Manager, when qualified, may self-perform all or a portion of the work for any item listed on the estimate or G.M.P. breakdown where it is deemed advantageous due to schedule or economic benefit for the direct cost of the work.

(6) Legal costs reasonably and properly resulting from prosecution of the Project for the County, including handling claims for changes by subcontractors and vendors, subject to the following limitations:

(a) The County approved incurring such costs in advance, which approval shall not be unreasonably denied; and
(b) The legal costs were not incurred as result of the Construction Manager's own negligence or default.

(7) Costs for such temporary facilities during construction, as approved by the County, including temporary water, heat, power, sanitary facilities, telephones, radios and computers with software.

9.3 Allowances

Within the G.M.P., there may be specific items which the Construction Manager and County have agreed to include as allowances in the estimates until such time as the cost and schedule impact of these items can be more specifically ascertained. At the time that the Costs of the Work of allowance items becomes known (either through a subcontract price or by virtue of either (A) scope of work and cost agreed to by Construction Manager and County or (B) an actual buyout of the item), the G.M.P. and Scheduled Completion Date will be adjusted (either increased or decreased) by the actual Costs of the Work and schedule impact of the item. With respect to increases and decreases to the amount of an allowance item, Construction Manager shall be entitled to the Construction Manager's fee, subject to the limits set forth in Article 8, on the adjusted amount of such allowance, and the G.M.P. shall be adjusted by reason thereof, by Change Order. Allowances must be agreed to by both parties. Allowances included within the G.M.P. constitute approval of said allowances at the time the Guaranteed Maximum Price is approved.

9.4 Public Records Law and Audit Requirements

In the performance of this Contract, the Construction Manager shall keep books, records and accounts of all activities related to the Contract in compliance with generally accepted accounting procedures and in compliance with the Public Records Laws of the State of Florida (Including, but not limited to Chapter 119, Florida Statutes).

All records or documents created by Construction Manager or provided to Construction Manager by the County in connection with the activities or services provided by Construction Manager under the terms of this agreement, are public records and Construction Manager agrees to comply with any request for such public records or documents made in accordance with Section 119.07, Florida Statutes.

Records, documents, books and accounts ordinarily and necessarily required for the performance of this Contract shall be kept, maintained and open to inspection by the County, County's representative, and members of the public during regular business hours.

The Construction Manager shall provide the public with access to public records on the same terms and conditions that the public agency provides the records and at a cost that does not exceed the cost provided for in Chapter 119, Florida Statutes, or as otherwise provided by law (see also County Administrative Order, AO-47).

The Construction Manager shall also ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law.

No reports, data, programs or other materials produced, in whole or in part for the benefit and use of the County, under this Contract shall be subject to copyright by Construction Manager in the United States or any other country.

The Construction Manager shall meet all requirements for retaining public records and shall transfer, at no cost, to the County all public records in possession of the Construction Manager upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the County in a format that is compatible with the information technology systems of the County.

Failure to comply with the provisions of this Section 9.4, shall result in the County taking enforcement action against the Construction Manager including the cost to the County for gaining the Construction Manager's compliance which will include, but are not limited to, the gross hourly rate of the County's

employee(s) contacts to the Construction Manager to obtain compliance with this section, litigation filing fees and attorney's fees.

IF THE CONSTRUCTION MANAGER HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONSTRUCTION MANAGER'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS FOR THE FACILITIES DIVISION, MARY BOWERS AT (321) 633-2050, mary.bowers@brevardfl.gov, 2725 Judge Fran Jamieson Way, Suite A207, Viera, Fl 32940.

ARTICLE 10

CHANGES IN THE PROJECT

10.1 Change Orders - The County, without invalidating this Agreement, may order Changes in the Project within the general scope of this Agreement consisting of additions, deletions or other revisions which may cause an increase or decrease in the G.M.P., and/or the Construction Completion Date. All changes in the Project G.M.P. or Construction Completion Date not covered by an authorized contingency, as described in Article 7.3 must be authorized by a written Change Order or Construction Change Directive, and signed by the County, Architect/Engineer and Construction Manager before the change is implemented. It shall be the County's discretion as to whether each change order requires the Architect/Engineer signature. **Maximum allowable mark-up on any change order is 5% Profit, 5% Overhead, and a 2% Bond.**

10.1.1 A Construction Change Directive is a change directive signed by the Project Director and the County Manager directing an addition, deletion, or revision in the scope of work and/or schedule. The Construction Change Directive is necessary when no Agreement exists among the Architect/Engineer of record, County and the Construction Manager on the dollar amount of a necessary change in the scope of work and/or an extension of time to the construction contract. The Construction Change Directive is used (1) when an unsafe, hazardous or other similar condition exists; (2) when failure to achieve prompt resolution of the change will result in a demobilization of the Construction Manager, its subcontractors and/or agents; or (3) when failure to achieve prompt resolution will result in additional cost, and/or a significant delay in completing the project. A Construction Change Directive does not change the contract price or the contract time, but is evidence that the parties expect that the change will

be incorporated in a subsequently issued Change Order or be covered by an authorized contingency.

10.1.2 A Change Order is a written order to the Construction Manager signed by the County, Architect/Engineer, and Construction Manager, issued after the execution of this Agreement, authorizing a change in the Project and/or an adjustment in the construction authorization, the Construction Manager's fee, or the Construction Completion date. Each adjustment in the G.M.P. resulting from a change order shall be documented clearly to separate the amount attributable to the cost of the change in the Project from the original cost of the Project.

10.1.3 The increase or decrease in the Guaranteed Maximum Price resulting from Change Orders in the Project shall be determined by one of the following ways:

(1) by mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation by the Architect/Engineer and County;
(2) by unit prices stated in the Agreement or subsequently agreed upon;
(3) by cost as defined in Article 9 plus a mutually acceptable fixed or percentage fee; or
(4) by the method provided in Subparagraph 10.1.4.

10.1.4 If none of the methods set forth in Subparagraph 10.1.3 is agreed upon, the Construction Manager, provided he receives a written order signed by the County, shall promptly proceed with the work required by the Construction Change Directive involved. The cost of such work shall then be determined on the basis of the reasonable expenditures and savings of those performing the work attributed to the change. However, in the event a Change Order is issued under these conditions, the Architect/Engineer will establish an estimated cost of the work and the Construction Manager shall not perform any work whose cost exceeds that estimate without prior written approval by the County. In such case, and also under Article 10.1.3 above, the Construction Manager shall keep and present, in such forms as the County may prescribe, an itemized accounting together with appropriate supporting data of the increase in the Cost of the Project as outlined in Article 9. The amount of decrease in the Guaranteed Maximum Price to be allowed by the Construction Manager to the County for any deletion or change which results in a net decrease in cost will be the amount of the actual net decrease in the Cost of the Project and the Construction Manager's fee subject to the limits set forth in Article 7.

10.1.5 If unit prices are stated in the Agreement or subsequently agreed upon and if the quantities originally contemplated are so changed in a proposed Change Order that application of the agreed unit prices to the quantities of Work proposed will cause substantial inequity to the County or the Construction Manager, the applicable unit prices and Guaranteed Maximum Price shall be equitably adjusted.

10.1.6 Should the Construction Manager or his contracted subcontractors encounter:

(1) concealed conditions in the performance of the Work below the surface of the ground; or

(2) concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the Drawings, Specifications, or County furnished information; or

(3) unknown physical conditions below the surface of the ground; or

(4) concealed or unknown conditions in an existing structure of an unusual nature; differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Agreement, then the Guaranteed Maximum Price and the Construction Completion date shall be equitably adjusted by Change Order upon a request for Change Order in accordance with Article 10.2. and Article 11.

Upon discovery of concealed or unknown conditions, the Construction Manager shall notify the County and Architect/Engineer within twenty-four (24) hours of discovery, and not proceed with Work until such notice has been given and a response is issued by the County. The Architect/Engineer will evaluate the alleged unknown or concealed condition and, if warranted, recommend to the County that the G.M.P. and schedule be increased or decreased accordingly. No claim under this Article may be made unless notice, as herein provided, is given prior to Work being performed. No equitable adjustment shall be permitted if this notice provision is not complied with.

Within ten (10) calendar days of submitting its Notice, the Construction Manager shall submit to the County its Request for Change Order, which shall include a written statement of all details of the claim, including a description of the work affected. Within thirty (30) days from Notice, the Construction Manager shall submit detailed schedule impact and detailed cost analysis indicating quantities, unit prices, etc.

10.1.7 The Construction Manager shall review any County directed change and shall respond in writing within seven (7) calendar days after receipt of the proposed change (or such other reasonable time as the County may direct), stating the effect of the proposed change upon the Construction Manager's Work, including any increase or decrease in the contract time or price. The Construction Manager shall furnish to the County an itemized breakdown of the quantities and prices used in computing the change in Contract price.

The County and Architect/Engineer shall review the Construction Manager's proposal and respond to the Construction Manager within seven (7) calendar days of receipt. If a change to the Contract price and time for performance are agreed upon, both parties shall sign the Change Order. Changes to the Contract time and/or price shall be effective when signed by both parties. It shall be the County's discretion as to whether each change order requires the Architect/Engineer signature.

10.2 **Claims for Additional Cost or Time**

All claims for additional cost or time shall be made by request for a change order submitted as provided in Article 16.

(1) If the Construction Manager is delayed at any time in the progress of the work by any act or neglect of the County or the Architect/Engineer, or of any employee of either; or by any separate Construction Manager employed by the County; or by any changes in the work caused by labor disputes, fire, or unusual delay in transportation, unavoidable casualties, or any causes beyond the Construction Manager's control that did not exist at the time this Contract was entered into or for which the Construction Manager should have been aware of at the time this Contract was entered into; or by delay authorized by the County pending resolution of disputes, and such delay extends the completion date, then the Substantial Completion date shall be extended by Change Order for such reasonable time as the Construction Team may determine.

(2) All change orders must indicate that the Contract Time for Completion is not changed or is either increased or decreased by a specific number of days. The previous Time for Completion and, if there is one, the new Time for Completion must be stated. The Construction Manager must provide written justification for an extension of the Time for Completion to the Architect/Engineer and to the County. The written justification must demonstrate an anticipated actual increase in the time required to complete the Work beyond that allowed by the Contract as adjusted by prior

change orders or amendments to the Contract, not just an increase or decrease in the time needed to complete some portion of the total Work. No increase to the Time for Completion shall be allowed unless the additional or changed Work increases the length of the critical path. Approved increases in time required to complete the Work shall be added to the Time for Completion. Decreases in time as a result of the change order shall be demonstrated by a decrease in the critical path of the Work if CPM scheduling is properly used and updated by the Construction Manager. If no CPM is used the County shall determine the appropriate decrease by the best means possible. Approved decreases in the time needed to complete the Work shall be deducted from the Contract completion date. The change to time and Contract price allowed by each change order shall include all time and monetary impacts of the change, whether the change order is considered alone or with all other changes during the course of the project. Failure to include a change to time and Contract price in a change order shall waive any change to the time and Contract price unless the parties mutually agree in writing to postpone a determination of the change to time and price resulting from the change order. Such a determination may be postponed not more than forty-five (45) days to give the Construction Manager an opportunity to demonstrate a change in the time and price needed to complete the Work.

Only delays which are determined to extend the critical path for the schedule for constructing the Project will result in a time extension. Neither the County nor the Construction Manager shall be considered to own the schedule float time.

10.3 Minor Changes in the Project (Realignment of Work)
The County and/or Architect/Engineer will have authority to order minor changes in the Project not involving an adjustment in the Guaranteed Maximum Price or an extension of the Construction Completion Date and not inconsistent with the intent of the Drawings and Specifications. Such changes shall be affected by written order. Documentation of changes shall be determined by the Construction Team, and included in the Project Manual. Changes shall be approved by the Project Director, Architect/Engineer. It shall be the County's discretion as to whether a Realignment of Work requires the Architect/Engineer signature. All changes or realignments of work performed within the Guaranteed Maximum Price will not include overhead, profit or General Condition additional costs, since costs are absorbed within the Guaranteed Maximum Price (G.M.P.).

10.4 In any emergency affecting the safety of persons or property, the Construction Manager shall act at his discretion, to prevent threatened damage, injury or loss.

Any increase in the Guaranteed Maximum Price or extension of time claimed by the Construction Manager on account of emergency work shall be determined as provided in Article 10.

ARTICLE 11

DISCOUNTS

11.1 All discounts for prompt payment shall accrue to the County to the extent the Cost of the Project is paid directly by the County or from a fund made available by the County to the Construction Manager for such payments.

To the extent the Cost of the Project is paid with funds of the Construction Manager, all cash discounts shall accrue to the Construction Manager. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment, shall be credited to the Cost of the Project.

ARTICLE 12

PAYMENTS TO THE CONSTRUCTION MANAGER

12.1 Monthly Statements - The Construction Manager shall submit to the County a sworn statement along with the Certificate for Payment, showing in detail all monies paid out, cost accumulated or costs incurred on account of the Cost of the Project during the previous period and the amount of the Construction Manager's fees due as provided in Article 8. This data shall be attached to the Certificate for Payment Form shown in **Attachment "N"**, and shall include, but not be limited, to the following:

- Daily Reports;
- Updated Project Schedule;
- Daily Red line As-Builts review;
- Provide a billing report with each payment application that shows a breakdown of costs incurred by line item. This report should correspond with the amounts being charged on the Schedule of Values.
- Provide backup copies of all invoices that the County is being billed for, including vendor invoices, payments to subcontractors, cell phone statements, insurance, petty cash receipts, etc. These invoices should be coded by the line item that they correspond to on the billing report and Schedule of Values.
- Provide backup copies and documentation of all costs incurred under General Conditions.

- Provide backup copies of all payroll that details which labor amounts were paid to whom on a weekly basis.
- Provide copies of all subcontractor agreements.
  * The amounts charged on the Payment Application must be accurate and correspond with the total dollar amount of backup provided by the Construction Manager.

Payment by the County to the Construction Manager of the statement amount shall be made in accordance with Florida Statute 218.735.

Ten percent of each payment shall be held by the COUNTY as retainage until 50-percent completion of such Project, which shall be deemed to have occurred when 50% of the GMP, as increased or decreased from time to time, has been expended. At that time, the retainage shall be reduced to 5% and the Construction Manager shall be entitled to request payment or release of up to 50% of the previously withheld retainage amounts, provided the retainage is not the subject of a good faith dispute, the subject of a claim brought pursuant to s. 255.05, Florida Statutes or otherwise the subject of a claim or demand by the COUNTY.

The parties agree that the retainage amount can be kept at ten percent (10%) through 50-percent completion of the Project as the Continuing Construction Manager (at risk) Services Agreement governing this Agreement was entered into in 2018 despite the cap outlined in Section 255.078, Florida Statutes, reducing the retainage to five percent (5%). County may refuse to certify payment and withhold a Certificate for Payment in whole or in part, in accordance with subsection(s) above, to such extent as may be reasonably necessary to protect the County from loss because of:

(1) defective work not remedied;
(2) third party claims filed or reasonable evidence indicating probably filing of such claims;
(3) failure of Construction Manager to make payments properly to subcontractors, consultants, or for labor, materials or equipment;
(4) evidence that the Project cannot be completed for the unpaid balance of the GMP, as adjusted;
(5) evidence that the Work will not be completed by the Scheduled Completion Date, as adjusted, and that the unpaid balance would not be adequate to cover the liquidated damages for the anticipated delay;
(6) failure to carry out the Work of the Project in accordance with the Contract Documents; or

If the County is unwilling to certify payment in the amount of the Application for Payment submitted by the Construction Manager, County will provide

Construction Manager with written reasons for its refusal, within three (3) calendar days. If Construction Manager and County cannot agree on a revised amount, County will, within one (1) day of the aforesaid notification, promptly issue a Certificate for Payment as to the undisputed amount with respect to which County concurs.

12.2 Final Payment - Final payment constituting the unpaid balance of the Cost of the Project and the Construction Manager's fee, shall be due and payable in accordance with Florida Statutes after an *acceptable* Certificate of Final Completion has been issued **and all contractual closeout obligations have been met by the Construction Manager**. Before issuance of final payment, the Construction Manager, subcontractors and agents shall submit original, sworn, notarized statements that all payrolls, material bills, and other debts connected with the Project have been paid or otherwise satisfied, warranty information is complete, Final As-Builts in AutoCad format acceptable to the County, have been submitted and instruction and documentation for the County's operating and maintenance personnel is complete.

12.3 Payments for Materials and Equipment - Payments will be made for material and equipment not incorporated in the work but insured, itemized, delivered and suitably stored at the site or another location subject to prior approval and acceptance by the County on each occasion.

12.4 Withholding Payments to Subcontractors - The Construction Manager shall not withhold payments to Subcontractors if such payments have been made to the Construction Manager. Should this occur for any reason, the Construction Manager shall immediately return such monies to the County, adjusting pay requests and project bookkeeping, as required.

ARTICLE 13

INSURANCE, INDEMNITY WAIVER OF SUBROGATION

13.1 (1) Indemnification - The Construction Manager agrees to indemnify and hold harmless the County and their employees from all claims, losses and expenses, arising out of or resulting from the performance of the products or services to be contracted, provided such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease, death or personal injury, or to property damage, including loss of use resulting therefrom, (but not loss of use for which liquidated damages are assessed under the Agreement) and (2) is caused in whole or in part by any negligent, willful, intentional, knowing, or reckless act or omission of the Construction Manager, any subcontractor, any of their employees and/or

agents in the performance of this contract. The Construction Manager agrees that it will pay the costs of the County's legal defense, including fees of attorneys as may be selected by the County, and shall defend, satisfy, and pay any judgments which may be rendered against the County in connection with the above hold harmless agreement. The Construction Manager acknowledges specific consideration has been received for this hold harmless/indemnification provision. The County's liability obligations hereunder shall be subject to the right of sovereign immunity and limited to the extent of the protections of and limitations on damages as set forth in Section 768.28, Florida Statutes. Nothing in this Agreement is intended to inure to the benefit of any third party for the purpose of allowing any claim which would otherwise be barred under the doctrine of sovereign immunity or by operation of law. Nothing herein shall constitute a waiver of the County's sovereign immunity.

(2) The County shall cause any other Construction Manager who may have a contract with the County to perform construction or installation work in the area where work will be performed under this Agreement, to agree to indemnify the County and the Construction Manager and hold them harmless from all claims for bodily injury and property damage (other than property insured under Paragraph 13.2(3)) that may arise from the Construction Manager's operations.

Loss Deductible Clause - Brevard County Board of County Commissioners shall be exempt from, and in no way liable for, any sums of money which may represent a deductible in any insurance policy. The payment of such deductible shall be the sole responsibility of the Construction Manager and/or Subcontractor providing such insurance.

13.2 Insurance

(1) The Construction Manager shall not commence any construction work in connection with this Agreement until the Construction Manager has obtained all of the following types of insurance and such insurance certificate(s) have been submitted to the County and have been approved by the County, nor shall the Construction Manager allow any Subcontractor to commence work on his subcontract until all insurance required of the Subcontractor has been so obtained and approved. All insurance policies shall be with insurers qualified and doing business in the State of Florida.

a. Workers' Compensation and Employer's Liability Insurance - Workers Compensation insurance providing statutory benefits as required in the State of Florida. The Contractor shall require any subcontractor to provide evidence of

this coverage. Additionally, if the contract requires working on or around a navigable waterway, the Contractor and all subcontractors shall provide evidence of United States Longshoremen's and Harbor Workers (USL&H) coverage and contingent coverage of Jones Act (Marine Employers Liability) in compliance with Federal statutes or proof of exemption. The Contractor shall be responsible for compliance with these requirements by each subcontractor, vendor or supplier.

b. Commercial General Liability - Including but not limited to bodily injury, property damage and personal injury with limits of not less than $1,000,000.00 combined single limit per occurrence, including products and completed operations, to include:

1. "XCU" (Explosion, Collapse, Underground Damage) - The Construction Manager's Liability Policy shall provide "XCU" coverage.

2. Broad Form Property Damage Coverage, Products and Completed Operations Coverage - The Construction Manager's Liability Policy shall include Broad Form Property Damage Coverage, Products and Completed Operations Coverages.

3. Contractual Liability Work Contracts - The Construction Manager's Liability Policy shall include Contractual Liability Coverage designed to protect the Construction Manager for contractual liabilities assumed by the Construction Manager in the performance of this Agreement.

c. Automobile Liability - Including bodily injury, property damage liability for all vehicles owned, hired, leased and non-owned with limits of not less than $1,000,000.00 combined single limit, per accident.

d. Construction Bond - With limits of not less than 100% of the total construction cost of this project. Construction Bond shall be recorded in the official record of the County in which the project is located. These bonds shall remain in effect at least until one (1) year after the date when the final payment is approved. Any bonding company submitting a Bid Bond or Construction Bond to Brevard County must be licensed to transact a fidelity and surety business in the State of Florida, and hold a Certificate of Authority from the Secretary of the Treasury under Act of Congress, approved by July 30, 1947 (U.S.C. 613), and approved by Brevard County. Acceptable surety companies shall be licensed to do

business in Florida and shall have an A.M. Best Rating of "A-" and financial size V or higher.

e. Builder's Risk Coverage - The Construction Manager shall take out and maintain during the life of this Agreement a "Builder's Risk Policy" completed value form as a cost of the Project, issued to provide coverages on an "all risk" basis including theft. This coverage shall not be lapsed or canceled because of partial occupancy by the County prior to final acceptance of the Project.

The Construction Manager shall require each of his Subcontractors to procure and maintain insurance during the life of the respective subcontracts.

(2) Certificate of Insurance - The County shall be furnished proof of coverage of Insurance as follows:

Certificate(s) of Insurance will be furnished to the County within five (5) days of Notice to Proceed. These shall be completed and signed by the authorized Resident Agent, and shall be dated and show:

(1) The name of the insured Construction Manager, the specific job by name and job number, the name of the insurer, the number of the policy, its effective date, and its termination date.

(2) The General Liability and Auto Liability certificates of insurance shall indicate that the policies have been endorsed to cover the County as an additional insured to the extent of liability assumed by the Construction Manager under this Agreement, and that these policies may not be canceled or modified without thirty (30) days prior written notice to the County.

(3) The insurance coverages enumerated above constitute the minimum requirements and shall in no way lessen or limit the liability of the Construction Manager under the terms of the Contract.

*Certificates of Insurance shall be submitted to the County within five (5) days of Notice to Proceed, and no work shall commence on site until all submitted Certificates of Insurance are acceptable to the County.

13.3 Waiver of Subrogation

(1) The County and the Construction Manager waive all rights against each other, for damages caused by perils covered by insurance provided under Article 13.2 to the extent covered by such insurance except such rights as they may have to the proceeds of such insurance held by the County and Construction Manager as trustees. The Construction Manager shall require similar waivers from all Subcontractors and their Sub-subcontractors.

(2) The County and Construction Manager waive all rights against each other for loss or damage to any equipment used in connection with the Project and covered by any property insurance. The Construction Manager shall require similar waivers from all subcontractors and their sub-subcontractors.

(3) The County waives subrogation against the Construction Manager on all property and consequential loss policies carried by the County on adjacent properties and under property and consequential loss policies purchased for the Project after its completion.

(4) If the policies of insurance referred to in this Article require an endorsement to provide for continued coverage where there is a waiver of subrogation, the County of such policies will cause them to be so endorsed. Failure to obtain proper endorsement nullifies the waiver of subrogation.

ARTICLE 14

TERMINATION OF THE AGREEMENT AND COUNTY'S RIGHT TO PERFORM CONSTRUCTION MANAGER'S OBLIGATION

14.1 Termination by the Construction Manager - If the Project is stopped for a period of thirty (30) days through no act or fault of the Construction Manager, a subcontractor, or any of its agents or employees, or any other persons performing any of the work under a contract with the Contractor, and due to: (1) a court order; (2) an order of a governmental authority having jurisdiction; or (3) as a result of an act of government, such as a declaration of a national emergency making materials unavailable, then the Construction Manager may, upon seven (7) days written notice to the County, request undisputed payment for all work executed, the Construction Manager's fee earned to date, and for any proven loss sustained upon any materials, equipment, tools, construction equipment, and machinery, including reasonable profit, damages and terminal expenses incurred by the Construction Manager.

14.2 County's Right to Perform Construction Manager's Obligations and Termination by County for Cause -

(1) If the Construction Manager fails to perform any of its obligations under this Agreement, the County may, after seven (7) days written notice to the Construction Manager and the Surety(ies), during which period the Construction Manager fails to perform such obligations, make good such deficiencies. The G.M.P., or the actual cost of the Project, whichever is less, shall be reduced by the cost to the County to address such deficiencies and the Construction Manager's Construction Phase Fee shall be reduced by an amount required to manage the remedial action to address such deficiencies.

(2) If the Construction Manager is adjudged bankrupt; or if he makes a general assignment for the benefit of his creditors or if a receiver is appointed on account of his insolvency; or if he persistently or repeatedly refuses or fails, except in case for which extension of time is provided, to supply enough properly skilled workmen or proper materials and fails to maintain the established schedule (failure to maintain schedule shall be defined as any activity on the critical path that falls forty-five (45) days or more behind schedule) which has been adopted in Attachment E; or if he fails to make prompt payment to subcontractors for materials or labor; or persistently disregards laws, rules, ordinances, regulations, or orders of any public authority having jurisdiction; or otherwise is guilty of a substantial violation of a provision of the Agreement, then the County may, without prejudice to any right or remedy and after giving the Construction Manager and his surety, if any, seven (7) days written notice, during which period Construction Manager fails to cure the violation, terminate the employment of the Construction Manager and take possession of the site and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Construction Manager, and may finish the Project by whatever method he may deem expedient. In such case, the Construction Manager shall not be entitled to receive any further payment until the Project is finished nor shall he be relieved from his obligations assumed under Article 7. Reasonable termination expenses incurred by the County may be deducted from any payments left owing the Construction Manager (excluding monies owed the Construction Manager for subcontract work).

14.3 Termination by County for Convenience

(1) If the County terminates this Agreement other than pursuant to Article 14, it shall reimburse the Construction Manager only for the costs incurred up to the point the notice of termination was received by the Construction

Manager for any unpaid, uncontested cost of the Project due him under Article 9. The County shall also pay to the Construction Manager fair compensation, either by purchase or rental at the election of the County, for any equipment retained. In case of such termination of Agreement the County shall reimburse the Construction Manager for obligations and commitments made before notice of termination was received by the Construction Manager.

(2) After the establishment of the Guaranteed Maximum Price or at the completion of the Construction Phase, if the final cost estimates or lack of legislative funding make the Project no longer feasible from the standpoint of the County, the County may terminate this Agreement and pay the Construction Manager his proportionate fee due in accordance with Article 8.1, plus any costs incurred pursuant to Articles 9 and 10.

(3) Any termination by County, for cause, which is later determined to be invalid shall be considered a termination by County for convenience.

14.4 Termination for Prohibition Against Contracting with Scrutinized Companies

(1) The Construction Manager certifies that it and its subcontractors are not on the Scrutinized Companies that Boycott Israel List. Pursuant to Section 287.135, F.S., the County may immediately terminate this Agreement at
its sole option if the Construction Manager or its subcontractors are found to have submitted a false certification; or if the Construction Manager, or its subcontractors are placed on the Scrutinized Companies that Boycott Israel List or is engaged in the boycott of Israel during the term of the Agreement.
If this Agreement is for more than one million dollars, the Construction Manager certifies that it and its subcontractors are also not on the Scrutinized Companies with Activities in Sudan, Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria as identified in Section 287.135, F.S. Pursuant to Section 287.135, F.S., the County may immediately terminate this Agreement at its sole option if the Construction Manager, its affiliates, or its subcontractors are found to have submitted a false certification; or if the Construction Manager, its affiliates, or its subcontractors are placed on the Scrutinized Companies that Boycott the Scrutinized Companies with Activities in Sudan List, or Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria during the term of the Agreement.

The Construction Manager agrees to observe the above requirements for applicable subcontracts entered into for the performance of work under this Agreement.

(2) As required by Section 287.135(5), Florida Statutes, prior to entering into an agreement/contract (formal contract or purchase order in excess of $1 million dollars to provide goods or services to County/Brevard County, individual with authority to execute this Agreement for the Construction Manager shall file a sworn statement with the contracting officer or Purchasing Director, as applicable verifying that none of the three conditions above exist. If the Construction Manager is found to have falsified the affidavit attached as **Attachment "O"**, the County/County may terminate the contract.

(3) If subsequent to the submittal of the attached affidavit, the Construction Manager (1) has been placed on the Scrutinized Companies that Boycott Israel List, or is engaged in a boycott of Israel; (2) is on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List; or (3) is engaged in business operations in Cuba or Syria, the County/County may terminate the agreement/contract.

ARTICLE 15

ASSIGNMENT AND GOVERNING LAW

15.1 Neither the County nor the Construction Manager shall assign his interest in this Agreement without the written consent of the other except as to the assignment of proceeds.

15.2 This Agreement shall be governed by the Laws of the State of Florida.

15.3 Venue and Attorney's Fees: Venue for any legal action brought by any party to this Agreement to interpret, construe or enforce this Agreement shall be in a court of competent jurisdiction in and for Brevard County, Florida. In the event of any legal action to enforce the terms of this Agreement, each party shall bear its own attorney's fees and costs and **ANY TRIAL SHALL BE NON-JURY**.

15.4 Severability: If any provision of this Agreement is held by a Court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions shall nevertheless continue in full force without being impaired.

ARTICLE 16

NOTICE OF CLAIM: WAIVER OF REMEDIES; NO DAMAGES FOR DELAY; DISPUTE RESOLUTION

16.1 The County's liability to Construction Manager for any claims arising out of or related to the subject matter of this contract, whether in contract or tort, including, but not limited to, claims for extension of construction time, for payment by the County of the costs, damages or losses because of changed conditions under which the work is to be performed, or for additional work, shall be governed by the following provisions:

(a) All claims must be submitted as a Request for Change Order in the manner as provided herein;

(b) If the Construction Manager claims that any instructions given to him by the Architect/Engineer or by the County, by drawings or otherwise, involve extra Work not covered by the Contract and not discoverable with a review of the plans and specifications, then, except in emergencies endangering life or property, Construction Manager shall give the Architect/Engineer and the County written notice thereof before proceeding to execute the Work. Said notice shall be given promptly enough to avoid delaying the Work and in no instance later than twenty (20) calendar days after the receipt of such instructions.

The Construction Manager must submit a Notice of Claim to the County and to the Architect/Engineer within twenty (20) days of when the Construction Manager was or should have been aware of the occurrence of the event giving rise to the claim; and

(c) Within ten (10) days of submitting its Notice of Claim, the Construction Manager shall submit to the County its Request For Change Order, which shall include a written statement of all details of the claim, including a description of the work affected. Within thirty (30) days from the Notice of Claim the Construction Manager shall submit a detailed schedule impact and detailed cost analysis indicating quantities, unit prices, etc. establishing the basis for the amount of the claim.

The Construction Manager agrees that the County shall not be liable for any claim that the Construction Manager fails to submit as a Request for Change Order as provided in this section.

16.2 After receipt of a Request for Change Order, the County, in consultation with the Architect/Engineer, shall deliver to the Construction Manager its written determination of the claim. As to disputed matters subject to the determination by final County action (not actions for breach of contract or

tort) the County's written decision following compliance with the dispute resolution procedure set forth in sections 16.4 through 16.6 below shall be final County action.

16.3 For work the Construction Manager performs with its own forces, and in addition to the adjustments provided for in Article 8, the Construction Manager's exclusive remedy for delays in performance of the construction caused by events beyond its control, including delays claimed to be caused by or attributable to the County or the Architect/Engineer, including claims based on breach of contract or negligence, shall be a claim submitted in compliance with Article 16.1 above, for an extension of the scheduled construction time. In the event of a change in such work that will modify the G.M.P., the Construction Manager's claim for adjustment in contract sum are limited exclusively to its actual costs for such changes, including costs involved in claim preparation, plus five percent (5%) overhead, five percent (5%) profit and a two percent (2%) bond in the General Conditions. The Construction Manager expressly agrees that the foregoing constitute its sole and exclusive remedies for delays and changes in such work, and eliminate any other remedies for claim for increase in the contract price, delays, changes in the work, damages, losses or additional compensation.

16.4 In the event of any dispute over a proposed change order or any other matter arising out of the implementation or interpretation of this contract the following dispute resolution process shall apply.

(a) Within three (3) days after denial of a contractor's change order or contract modification request in an amount, individually or in total, less than the authorized purchasing level approved for the County Manager by the County Commission (currently at $100,000) the contractor may submit to the County Manager or a designee with experience in the oversight of construction projects for a department or business other than the department responsible for monitoring the disputed request, documentation of the contractor's position in the dispute or disagreement. The County Manager or designee, within five (5) days after the receipt of the contractor's documentation, shall review the request and make a final determination as to whether denial was arbitrary or capricious based upon the sufficiency of the work under the terms of the contract, applicable regulations and relevant construction standards. Based upon the sufficiency and degree of completion, as well as any defects in the work and the amount reasonably required, if any, to correct or repair defective work, the reviewer shall make the final determination as to whether a written change order or contract modification should be approved by the County Manager.

(b) If the denied request or disputed amount exceeds the County Manager's purchasing authority, the County Manager shall present a report, recommendation and the contractor's claim and documentation, to the County Commission for a final determination within thirty (30) days after receiving the contractor's documentation for the claim. The Commission shall make its decision using the standards specified in subparagraph (a) above.

16.5 Within thirty (30) days after denial of a request for a change order or contract modification by the project manager or engineer involving (1) an amount in excess of the County Manager's expenditure authority or (2) for the amount the contractor claims to be due at the time the project is ready for beneficial use or occupation, the County may, at the County's option in lieu of the procedure specified in subparagraph 16.4, submit the dispute to a mediator with knowledge or experience in construction management, as agreed upon by the parties. Upon referral to a mediator, the County and contractor shall each pay half the estimated cost of the mediator, up front. Within fifteen (15) days after the date of submittal, the mediator, applying the standards set forth in subparagraph 16.4, shall investigate the dispute and submit a written recommendation for disposition of the dispute to the County Manager or a designee with the qualifications specified in subparagraph 16.4. Within fifteen (15) days after receiving the mediator's recommendation, the County Manager shall submit the recommendation to the County Commission, along with a staff report analyzing the dispute and mediator's recommendation. Based on the standards set forth in subparagraph 16.4 above, the Commission shall decide whether to grant or deny, in whole or in part, the amounts recommended by the mediator. The Commission's decision will be deemed final action on the disputed claim for the purposes of ripening the decision for judicial review. If the mediator recommends that no change order or contract modification be granted, the contractor shall reimburse the county for any amounts paid by the county to the mediator.

16.6 The deadlines for completing the dispute resolution process described in subparagraphs 16.4 and 16.5 may be extended by mutual agreement of the contractor and the county.

ARTICLE 17

COUNTY'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

17.1 The County reserves the right to perform construction or operations related to the Project with the County's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Construction Manager claims that a delay or additional cost is involved because of such action by the County, the Construction Manager shall make such claim as provided in this Agreement.

17.2 The County shall provide for coordination of the activities of the County's own forces and of each separate contractor with the Work of the Construction Manager, who shall cooperate with them. The Construction Manager shall participate with other separate contractors and the County in reviewing their construction schedules when directed to do so. The Construction Manager shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Construction Manager, separate contractors and the County until subsequently revised.

17.3 Unless otherwise provided in the Contract Documents, when the County performs construction or operations related to the project with the County's own forces, the County shall be deemed to be subject to the same obligations and to have the same rights which apply to the Construction Manager under the Conditions of the Contract.

17.4 The Construction Manager shall afford the County, and separate contractors, reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities and shall connect and coordinate the Contractor's construction and operations with the Construction Manager, as required.

17.5 If part of the Construction Manager's Work depends for proper execution or results upon construction or operations by the County or a separate contractor, the Construction Manager shall, prior to proceeding with that portion of the Work, promptly report to the Architect/Engineer or County apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Construction Manager to report shall constitute an acknowledgment that the County's or separate contractors completed or partially completed construction is fit and proper to receive the Construction Manager's Work, except as to defects not then reasonably discoverable.

17.6 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible thereof.

17.7 The Construction Manager shall promptly remedy damage wrongfully caused by the Construction Manager to completed or partially completed construction or to property of the County or separate contractors.

ARTICLE 18

MISCELLANEOUS

18.1 Interest - Any monies not paid when due to either party under this contract shall not bear interest except as may be required by Section 218.70 et seq., Florida Statutes, ("The Local Goverment Prompt Payment Act").

18.2 Harmony - Construction Manager is advised and hereby agrees to exert every reasonable and diligent effort to assure that all labor employed by Construction Manager and his Subcontractors for work on the Project, including those subcontractors utilized via County direct purchases, shall work in harmony with and be compatible with all other labor being used by building and Construction Managers now or hereafter on the site of the Project.

Construction Manager further agrees that this provision will be included in all subcontracts of the Subcontractors as well as the Construction Manager's own contract; provided, however, that this provision shall not be interpreted or enforced so as to deny or abridge, on account of membership or nonmembership in any labor union or labor organization, the right of any person to work as guaranteed by Article 1, Section 6 of the Florida Constitution.

18.3 Apprentices - If the Construction Manager employs apprentices on the project, the behavior of the Construction Manager and the County shall be governed by the provision of Chapter 446, Florida Statutes, and by applicable standards and policies governing apprentice programs and agreements established by the Division of Labor of the State of Florida Department of Labor and Employment Security. The Construction Manager will include a provision similar to the foregoing sentence in each subcontract.

18.4 Minority Participation - The Construction Manager shall *diligently attempt* to award his material contracts, subcontracts and sub-subcontracts to firms having a letter of certification as a minority business from the "Office of Minority Business Assistance, Department of General Services, or any other Federal, Florida County or City certification.

18.5 Minority Employment Information - The Board of County Commissioners requires construction contracts, who would otherwise be required to file and EEO Form 1 Report under Federal Law (currently Federal law requires filing for employers with more than 15 employees), to submit an EEO Form 1 Report with the

submission of their G.M.P. This requirement extends to any subcontractors who are required to submit the EEO Form 1 Report (over 15 employees) under Federal law. Failure to submit an EEO Form 1 Report with your G.M.P. will be reason to declare your proposal "non-responsive" to the proposal requirements. However, the information will be used for statistical purposes only and will not be used in any way as a basis to award a contract. See **Attachment "P"**.

18.6 Public Entity Crime Affidavit attached as **Attachment "P"**.

18.7 Non-Collusion Affidavit of Prime Bidder attached as **Attachment "Q"**.

18.8 Copyright Clause No reports, data, programs or other materials produced, in whole or in part for the benefit and use of the County, under this agreement shall be subject to copyright by Contractor in the United States or any other Country.

18.9 Employment Eligibility Verification (E-Verify)

(1) The Construction Manager:

(a) shall utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Construction Manager during the term of this Agreement; and

(b) shall expressly require any subcontractors performing work or providing services pursuant to this Agreement to likewise utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the term of this Agreement; and

(c) agrees to maintain records of its participation and compliance with the provisions of the E-Verify program, including participation by its subcontractors as provided above, and to make such records available to the County consistent with the terms of the Construction Manager's enrollment in the program. This includes maintaining a copy of proof of the Construction Manager's and subcontractors' enrollment in the E-Verify Program.

(d) Compliance with the terms of this section is made an express condition of this Contract and the County may treat a failure to comply as a material breach of this Agreement.

(e) A contractor who registers with and participates in the E-Verify program may not be barred or penalized under this section if, as a result

of receiving inaccurate verification information from the E verify program, the contractor hires or employs a person who is not eligible for employment.

(f) Nothing in this section may be construed to allow intentional discrimination of any class protected by law.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK. SIGNATURES TO FOLLOW.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day and year first written above.

ATTEST:

Rachel Sadoff, Clerk

Reviewed for legal form and content:

Alex Esseesse, Asst. County Attorney

BOARD OF COUNTY COMMISSIONERS
OF BREVARD COUNTY, FLORIDA

Kristine Zonka, Chair Date
Brevard County Commission

As Approved By the Board on: 21 Sep 2021

Heard Construction, Inc.

By: 3/24/22
Construction Manager Date

Name: ANDREW DAY

STATE OF FLORIDA
COUNTY OF BREVARD

The foregoing instrument was acknowledged before me by means of ☑ physical presence or ☐ online notarization, this MARCH 21 2022 by ANDREW DAY of NEARD CONST INC, a FLORIDA corporation, on behalf of the corporation, he/she is personally known to me ~~or has produced~~ _____ as identification.

Notary Seal

MELISSA ANN WARREN
NOTARY PUBLIC
MY COMMISSION
EXPIRES 7-10-2026
STATE OF FLORIDA
COMMISSION NUMBER HH 236700

Notary Public Melissa Ann Warren

Notary Signature

My Commission Expires 7/10/2026

ATTACHMENT "A"

CONSTRUCTION TEAM ASSIGNED REPRESENTATIVES

County

Brevard County Facilities Department

Tim Lawry	Project Director
Mike McGrew	Construction Coordinator
Mary Bowers	Support Services Manager/Contracts
Sherry Collett	Special Projects Coordinator II

Architect-Engineer

B.R.P.H.

Construction Manager

Sam Heard	President
Andy Day	Vice President/Principal-In-Charge
LuAnn Woodley	Vice President of Operations
	Project Manager
	Project Administrator
	Project Superintendent
	Estimator/Cost Control
	Schedules

ATTACHMENT "B"
Lori Wilson Park Restroom
Scope of Work

- Complete site work and site utilities per contract drawings (BRPH dated 12/17/21).
- Demolish existing restrooms as shown on contract drawings (BRPH dated 12/17/21).
- Prepare foundation for new Owner provided CXT buildings per specifications.
- Provide and install building plumbing as shown on contract drawings (BRPH dated 12/17/21).
- Provide and install new electrical service as shown on contract drawings (BRPH dated 12/17/21).
- Provide and install new sidewalks with detectable warning mats as shown on contract drawings (BRPH dated 12/17/21).
- Provide and install 18x24 mirrors above sinks, install owner provided soap dispenses, toilet paper dispensers and napkin receptacles.
- Obtain all required construction permits.

ATTACHMENT "C"

DIRECT PURCHASING PROCEDURE
CONSTRUCTION MANAGEMENT AGREEMENT

INTENT: The County intends for these procedures to guide the County's direct purchases of selected materials so that the County may take advantage of its tax-exempt status. All monies which would have been payable as taxes, if not for County direct purchase under these procedures, will inure solely to the benefit of the County. The County's direct purchase of materials will not minimize or conflict with the Construction Manager's responsibility for the purchase, installation, coordination, storage, protection, warranty, etc. of the materials as described herein and in the plans and specifications of the Contract. Specifically, the Construction Manager acknowledges that it retains all rights, obligations, and responsibilities outlined herein for any items the County purchases directly, and the Construction Manager shall be responsible for ensuring the provisions outlined in the Contract are followed and enforced against any supplies and/or subcontractors.

Definitions: For the purpose of these Procedures, the following words have the following definitions.

a) Contract: Construction Manager Agreement by and between Construction Manager and the County for the procurement and installation of restrooms at Lori Wilson Park located in Cocoa Beach, Florida.

b) County Purchased Materials: Materials purchased directly by the County through execution and delivery of a Purchase Order.

c) G.M.P. - Guaranteed Maximum Price established under the Contract.

d) Materials: Tangible Personal Property necessary for completion of the Project.

e) Materials Deduction Summary: Written document signed by County's representative and Construction Manager setting forth the amounts of County Purchased Materials, plus applicable taxes were the purchase not exempt from such taxes, as reflected in the parties' previously executed deductive change order(s) to the Contract showing deduction of such Materials from the G.M.P.

f) County: See Definition in Article I, section 1.3.

g) County's Representative: See Definition in Article I, section 1.3.

h) Project: See Definition in Article I, section 1.3.

i) Purchase Order: The County's request for Materials from a particular vendor or supplier when fully executed and delivered to the Construction Manager, and the County's promise to pay for the Material specified upon delivery and acceptance at the Project Site, and presentation of an invoice by the Construction Manager to the County certifying payment of same.

j) Material Requisition: A request by the Construction Manager to the County that the County directly purchase specific items described in sufficient detail, including quantity, grade, brand, etc., along with the vendor or material supplier and that vendor or material supplier's quoted price for the Materials.

Overview: The County requires the Construction Manager to notify the County's Representative of Materials needed for the Project exceeding $5,000.00 in value, through a Material Requisition form. For the purpose of these Procedures, the Construction Manager will assign to the County any rights the Constriction Manager may have under quotes, contracts or commitments received from the particular vendor or supplier for the Materials described in the Material Requisition. Any Materials purchased by County pursuant to these Procedures shall be referred to as "County Purchased Materials", and the responsibilities of the County and Construction Manager relating to such County Purchased Materials shall be governed by the terms and conditions of these Procedures, which shall take precedence over other conditions and terms of the Contract Documents where inconsistencies or conflicts exist. The invoiced amount of County Purchased Materials and applicable sales tax had the purchases not been tax exempt, once finalized through the County's Purchase Order and after confirmation of completed delivery and acceptance pursuant to this Procedure, will be deducted from the G.M.P., as defined in the Contract, by deductive change order.

County Direct Purchasing Requirements and Procedures: When Materials purchased for the Project are estimated to be $5,000 or greater and time will allow for an County Direct Purchase, Construction Manager will prepare a Material Requisition form, *(to be provided by the County)*, acceptable to County, and which specifically identifies the Materials which County may, in its discretion, elect to purchase directly. The Material Requisition form shall be complete when submitted, subject to modifications by the County that seek to ensure this Contract as adhered to and accomplished within the time frames established in Attachment "E", and all information requested provided. Along with the Material Requisition the Construction Manager should provide:

a) The name, address, telephone and fax number and contact person for the material supplier;
b) Manufacturer or brand, model or specification number of the item;
c) Quantity needed as estimated by Manager;
d) The price quoted by the supplier for the Materials identified therein;
e) Any sales tax associated with such quote if it were not purchased by a tax exempt entity;
f) Shipping and handling cost, including associated insurance;
g) Delivery dates as established by the Manager;
h) Subcontractor's written acknowledgment of these Procedures for County Direct Purchase of Materials.

After receipt of the Material Requisition, the County's Representative will determine whether the County will directly purchase the Materials described in the Material Requisition, and communicate consent or decline to purchase the materials to the Construction Manager as soon as practicable, or within twenty four (24) hours. Brevard County's Purchasing Division shall be the County's approving authority on Purchase Orders of County Purchased Materials, but the Purchasing Division must coordinate with the Facilities Department and County Attorney's Office to ensure proper use of this Procedure. Any necessary documents, including, but not limited to, tri-party agreements for the item(s) purchased under this Procedure will be executed by all parties. If the County consents to purchase the Materials, the County shall issue a Purchase Order or other contractual writing for same. The County shall issue the original Purchase Order/contract, and the Construction Manager shall deliver the Purchase Order/contract to the subcontractor. The Purchase Order/contract shall require (1) that the supplier provide the required shipping, (2) that the supplier provide the required shipping and handling insurance, and (3) delivery of the County Purchased Materials on the delivery dates provided by the Construction Manager in the Material Requisition.

The Construction Manager shall be fully responsible for all matters relating to the receipt of County Purchased Materials under these Procedures, including, but not limited to, preparation of shop drawings and submittals, verifying correct quantities, verifying documents of orders in a timely manner, coordinating purchases, providing and obtaining all warranties and guarantees required by the Contract Documents, inspection and acceptance of the goods at the time of delivery, and loss or damage to equipment and materials due to the negligence of the Construction Manager. The Construction Manager shall coordinate delivery schedules, sequence of delivery, loading orientation, and other arrangements normally required by the Construction Manager for the materials furnished. The Construction Manager shall provide all services required for the unloading, handling and storage of materials through installation. The Construction Manager agrees to indemnify and hold the County harmless from any and all claims of whatever nature resulting from non-payment of goods to suppliers arising from the actions of Construction Manager. **TIME IS OF THE ESSENCE WITH THE WORK OUTLINED IN THE CONTRACT. SUBSTANTIAL HARM WILL BE DONE TO THE COUNTY FOR CONSTRUCTION MANAGER'S FAILURE TO ENSURE THE TIMELINES OUTLINED IN ATTACHMENT "E" ARE MET.**

The Construction Manager shall ensure that County Purchased Materials conform to the Specifications, and determine prior to incorporation into the Work, if such materials are patently defective, and whether such Materials are identical to the Material ordered and match the description on the bill of lading. As County Purchased Materials are delivered to the job site, the Construction Manager shall inspect all shipments from the suppliers, and, if in conformance with the Purchase Order, approve the vendor's invoice for materials delivered. The Construction Manager shall assure that each delivery of County Purchased Material is accompanied by documentation adequate to identify the Purchase Order against which the purchase is made. This documentation may consist of an itemized delivery ticket, packing slip or invoice from the supplier conforming to the Purchase Order against which the purchase is made, together with such additional information as the County may require. The Construction Manager will then forward the documentation to the County.

If the Construction Manager discovers defective or non-conformities in County Purchased Material upon inspection, the Construction Manager shall not use such non-conforming or defective Materials in the Work and instead shall promptly notify the County of the defective or non-conforming conditions and coordinate the repair or replacement of those Materials without any undue delay or interruption to the Project. All repair, maintenance or damage-repair calls shall be forwarded to the Construction Manager for resolution with the appropriate supplier, vendor, or subcontractor. If the Construction Manager fails to perform such inspection, the condition of which the Manager either knew or should have known by performance of an inspection, Construction Manager shall be responsible for all damages to the County resulting from Construction Manager's incorporation of such Materials into the Project, including liquidated or delay damages.

On a bi-weekly basis, Construction Manager shall be required to review invoices submitted by all suppliers of County Purchased Materials delivered to the Project Site during that month and either concur or object to the County's issuance of payment to the suppliers, based on Construction Manager's records of materials delivered to the site. In order to arrange for the prompt payment to the supplier, the Construction Manager shall provide to the County a list indicating the acceptance of the goods or materials within fifteen (15) days of receipt of said invoice for goods or materials. The list shall reference the applicable purchase order and include a copy of the invoices, delivery tickets, written acceptance of the delivered items, and such other documentation as may be reasonably required by the County. Upon receipt of the appropriate documentation in duplicate, the County shall prepare a check drawn to the supplier based upon the receipt of data provided. This check will be delivered directly to the supplier. If any discounts are available from the supplier or vendor, they shall accrue to the benefit of the County, and the amount quoted by the vendor, plus applicable tax, shall be deducted from the G.M.P. The Construction Manager agrees to assist the County to immediately obtain partial or final releases or waivers as appropriate.

Following performance of the Purchase Orders by the suppliers, and submittal of documentation confirming same to County with an invoice for payment by County, the Construction Manager shall execute and deliver to the County at the end of each month along with the Construction Manager's regular pay requests, a Materials Deduction Summary setting forth the full value of all County Purchased Materials, plus all taxes which would have been payable on the purchase of the Materials had they not been County purchased. The Materials Deduction Summary shall show all sums to be deducted by an appropriate deductive change order, and ultimately the G.M.P., to date. The County, or their authorized representative, shall be the approving authority for the County on the Materials Deduction Summary for County Purchased Materials.

The Construction Manager shall maintain records of all County Purchased Materials incorporated into the Work. These records shall be available for inspection by the County upon request.

Notwithstanding the delivery of County Purchased Materials to the Project Site for the Construction Manager's inspection, custody and incorporation into the Work, the County shall retain legal and equitable title to any and all County Purchased Materials. The transfer of possession of County Purchased Materials from the County to the Construction Manager shall constitute a bailment for the mutual benefit of the County and the Construction Manager solely for the purposes set forth herein. The County shall be considered the bailer and the Construction Manager the bailee of the County Purchased Materials. County Purchased Materials shall be

considered returned to the County for purposes of their bailment at such time as they are incorporated into the Project or are returned to the vendor or supplier at the discretion of the Construction Manager prior to payment for the Purchase Order by County.

The County shall purchase and maintain Builder's Risk Insurance sufficient to protect against any loss or damage to County Purchased Materials. Such insurance shall cover the full value of any County Purchased Materials not yet incorporated into the Project from the time the County first takes title to any of such County Purchased Materials and the time when the last of such County Purchased Materials is incorporated into the Project, or are returned to the vendor at the Construction Manager's discretion prior to County's payment for same.

The County shall in no way be liable for any interruption or delay in the Project, for any defects or other problems with the Project, or any extra costs or time resulting from any delay in the delivery of, or defects in, County Purchased Materials. The Construction Manager shall be responsible in any and every way for ensuring the materials and timelines required herein are met.

ATTACHMENT "D"

DRAWINGS AND SPECIFICATIONS

Attached.

LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT

COCOA BEACH, FLORIDA

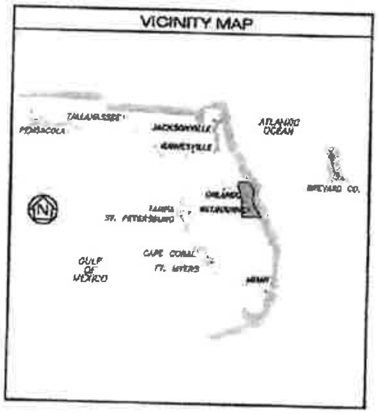
FOR

TOURISM DEVELOPMENT OFFICE

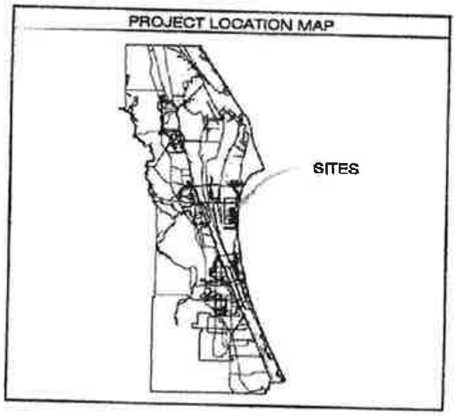
COUNTY COMMISSIONERS

RITA PRITCHETT, CHAIR .... DISTRICT 1
BRYAN LOBER .... DISTRICT 2
JOHN TOBIA .... DISTRICT 3
CURT SMITH .... DISTRICT 4
KRISTINE ZONKA, VICE-CHAIR .... DISTRICT 5

VICINITY MAP



PROJECT LOCATION MAP



SITE DATA:

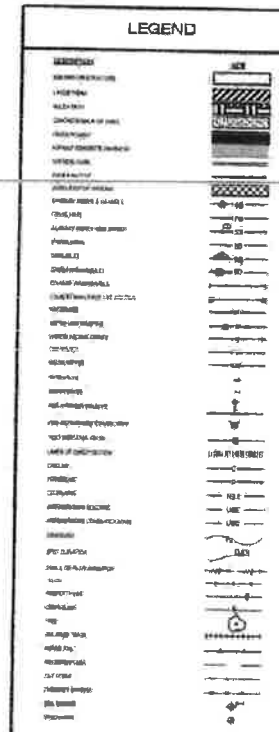
BRPH

LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT
COCOA BEACH, FLORIDA
TOURISM DEVELOPMENT OFFICE

COVER SHEET

G-001

LEGEND



ABBREVIATIONS

DRAWING INDEX

SHEET #	DRAWING TITLE	REV

GENERAL STATEMENT

BRPH

Architects, Engineers, Construction

LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT
COCOA BEACH, FLORIDA
TOURISM DEVELOPMENT OFFICE

LEGEND, INDEX, ABBREVIATIONS, AND GENERAL STATEMENT

C-001

GENERAL NOTES

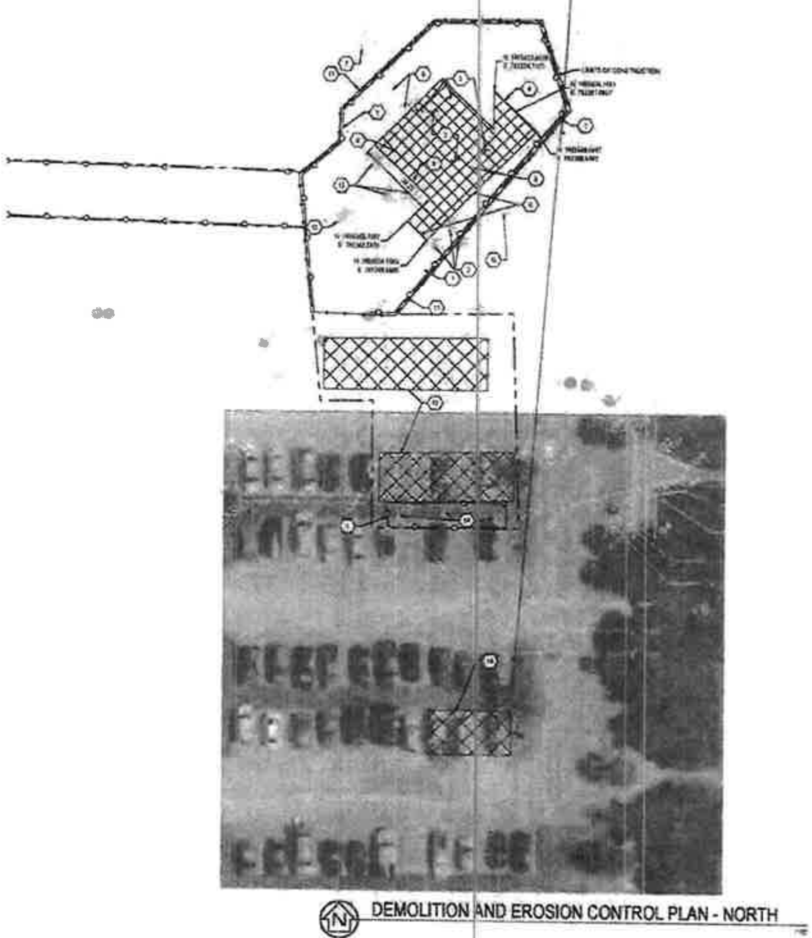
BRPH

ARCHITECTS, Engineers, CONSULTANTS

LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT
COCOA BEACH, FLORIDA
TOURISM DEVELOPMENT OFFICE

GENERAL NOTES

C-002



NOTES:

1. CONTRACTOR SHALL MAINTAIN VEHICLES ACCESS THROUGH THE PARKING LOT DURING CONSTRUCTION.
2. PROVIDE EROSION CONTROL MEASURES PRIOR TO START OF WORK.
3. [illegible]
4. THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED DURING CONSTRUCTION TO A CONDITION EQUAL TO, OR BETTER THAN EXISTING.
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]

KEYNOTES: ⬡

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
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6. [illegible]
7. [illegible]
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10. [illegible]
11. [illegible]
12. [illegible]
13. [illegible]
14. [illegible]

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ISSUE: ISSUED FOR CONSTRUCTION

REVISION △

LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT

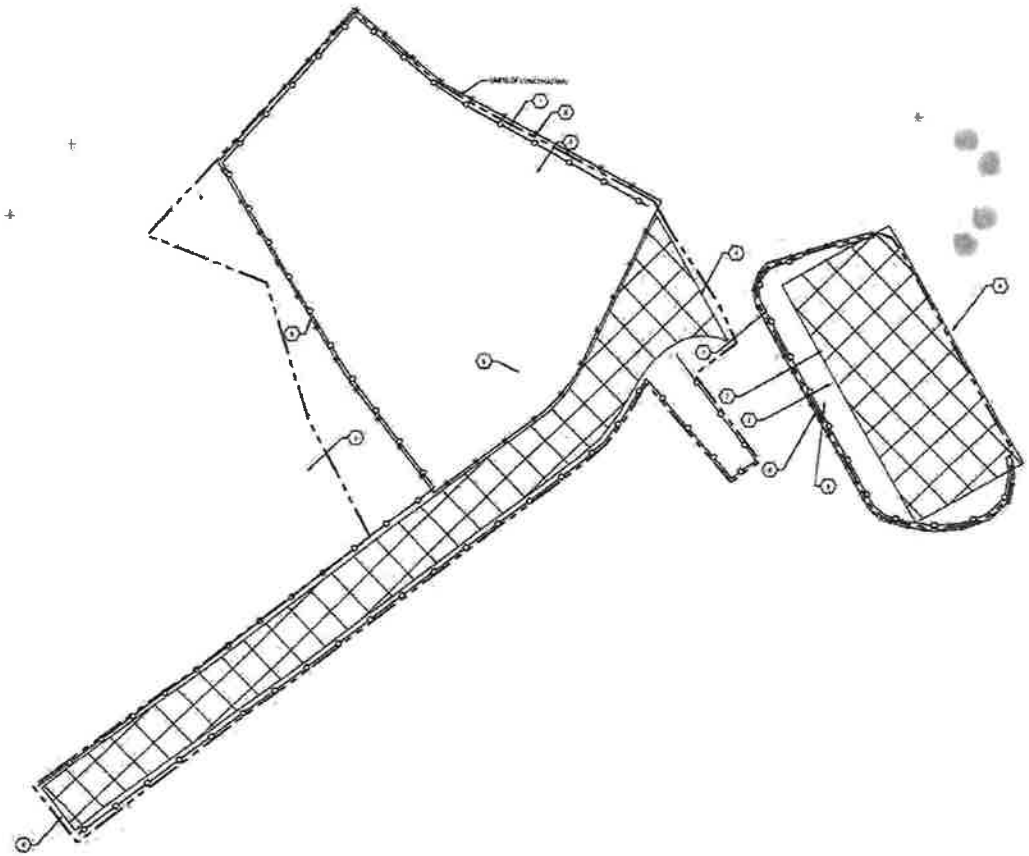
COCOA BEACH, FLORIDA

TOURISM DEVELOPMENT OFFICE

JASON LEE ABBOTT
FL PE 64013
SMITH
SMITH
ABBOTT
C07595.007.00
12-17-2021

DEMOLITION AND EROSION CONTROL PLAN - NORTH

C-101



DEMOLITION AND EROSION CONTROL PLAN - SOUTH

NOTES:

KEYNOTES:

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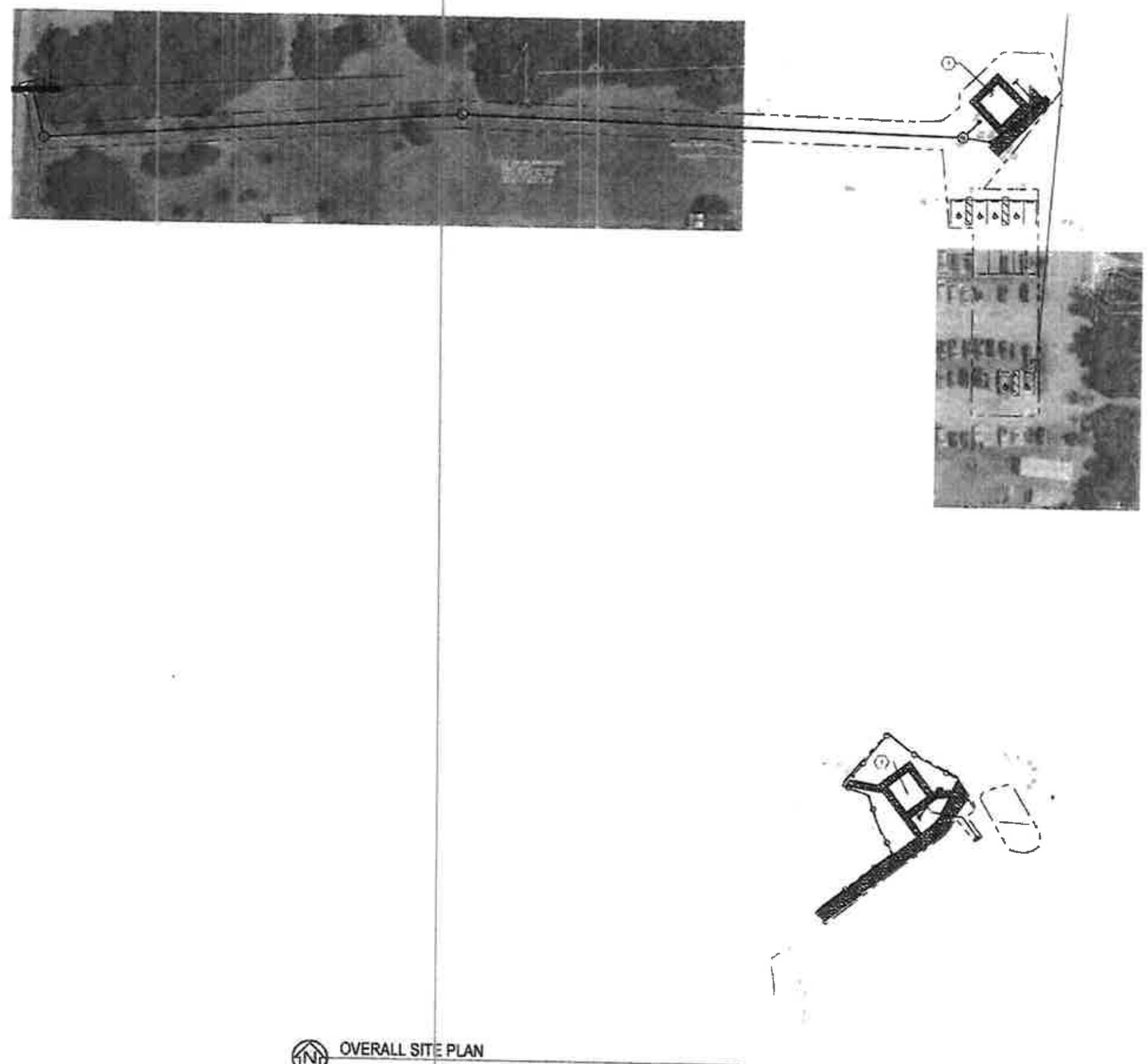
TOURISM DEVELOPMENT OFFICE

DEMOLITION AND EROSION CONTROL PLAN - SOUTH

C-102



OVERALL SITE PLAN

KEYNOTES: ○

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Architects, Engineers, Constructors

Offices in Melbourne, Orlando, Atlanta, Boca Raton, Lynnwood, Charleston, Huntsville, and Pasadena

ISSUED FOR CONSTRUCTION

REVISION - △

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COCOA BEACH, FLORIDA

TOURISM DEVELOPMENT OFFICE

JASON LEE ABBOTT

FL PE 64013

SMITH

SMITH

ABBOTT

C07595.007.00

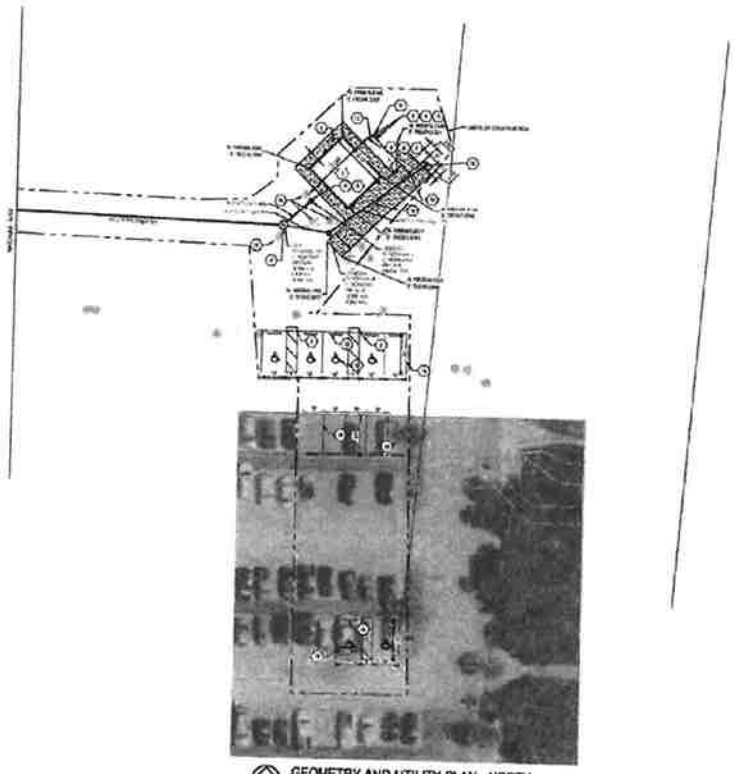
12-17-2021

OVERALL SITE PLAN

C-120

NOTES:

KEYNOTES:



GEOMETRY AND UTILITY PLAN - NORTH

SCALE: 1" = 20'

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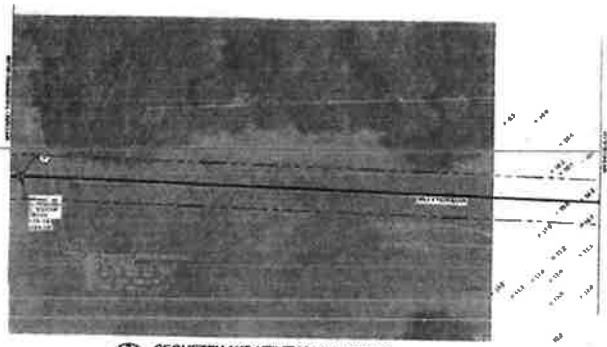
COCOA BEACH, FLORIDA

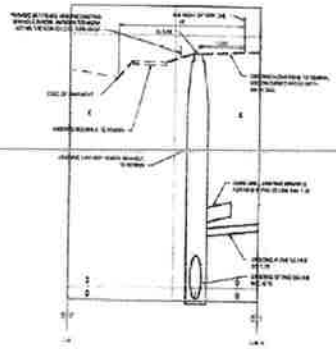
TOURISM DEVELOPMENT OFFICE

GEOMETRY AND UTILITY PLAN - NORTH

C-121



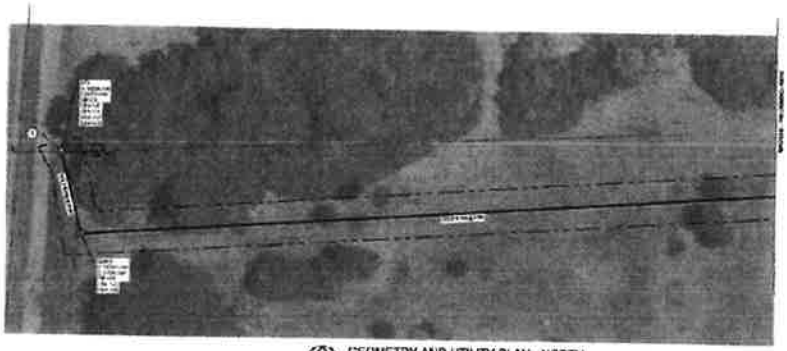
GEOMETRY AND UTILITY PLAN - NORTH



SECTION

NOTES:

KEYNOTES: ○



GEOMETRY AND UTILITY PLAN - NORTH

BRPH

Architects, Engineers, Constructors

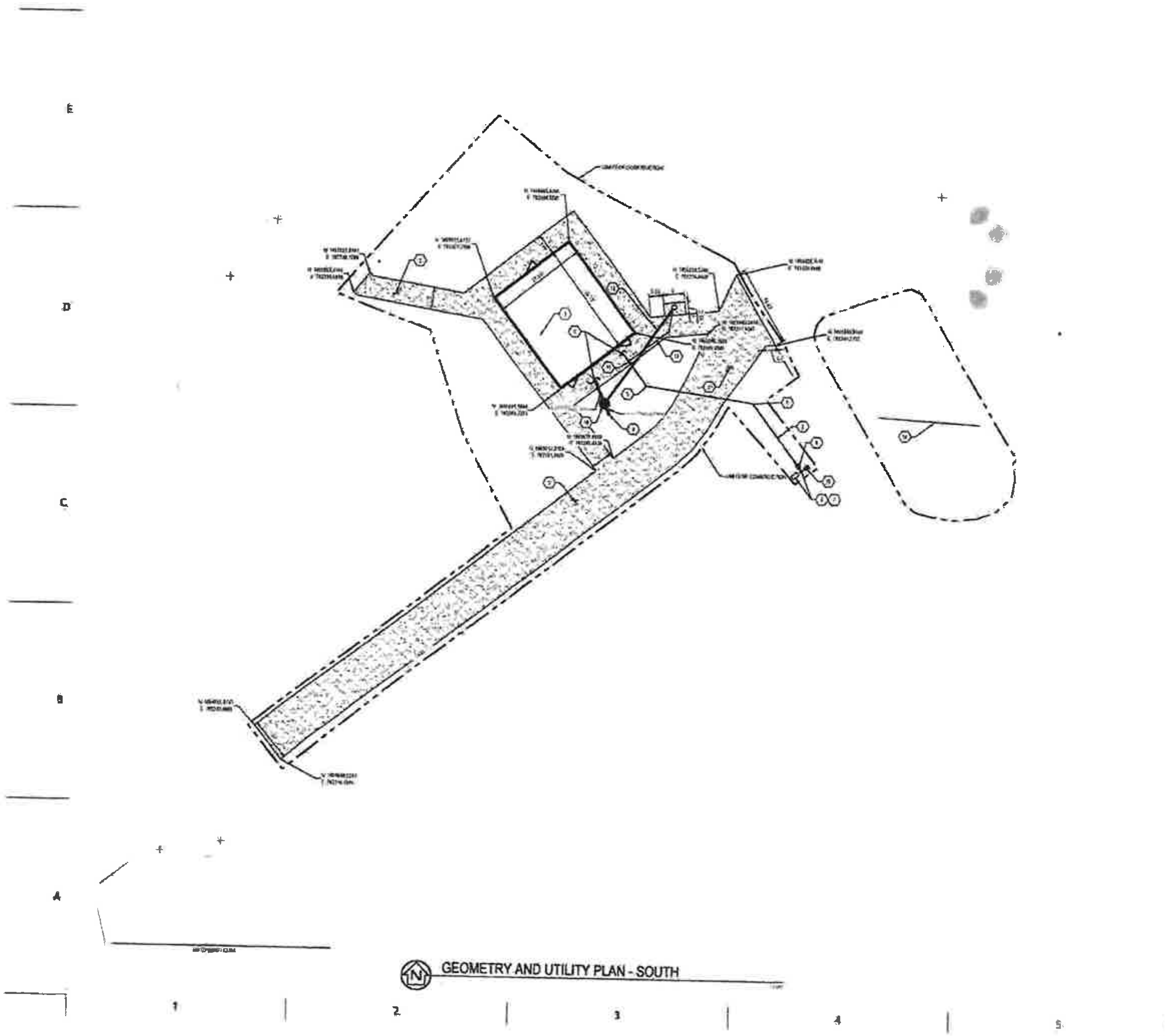
LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT

COCOA BEACH, FLORIDA

TOURISM DEVELOPMENT OFFICE

GEOMETRY AND UTILITY PLAN - NORTH

C-122



GEOMETRY AND UTILITY PLAN - SOUTH

NOTES:

KEYNOTES:

BRPH

Architects, Engineers, Constructors

Offices in Melbourne, Orlando, Atlanta, Baton Rouge, Lynnwood, Charleston, Huntsville, and Pasadena

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LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT

COCOA BEACH, FLORIDA

TOURISM DEVELOPMENT OFFICE

JASON LEE ABBOTT

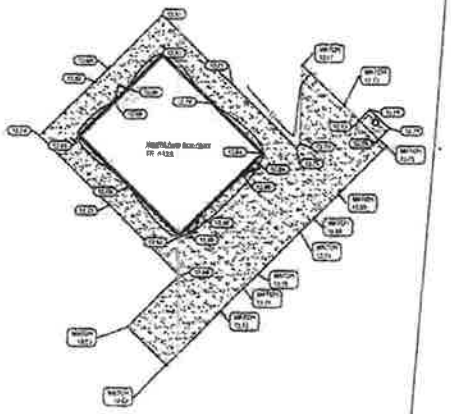
EARTH

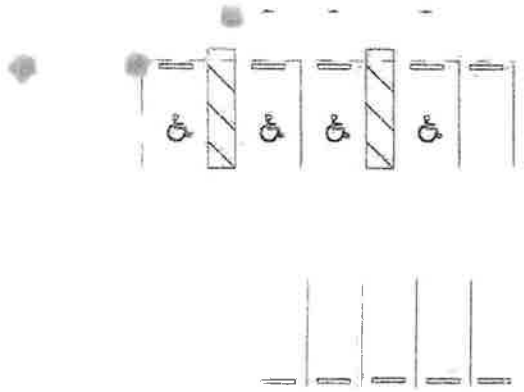
ABBOTT

C07595.007.00

GEOMETRY AND UTILITY PLAN - SOUTH

C-123





GRADING AND DRAINAGE PLAN - NORTH

NOTES:

KEYNOTES:

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Architects, Engineers, Constructors

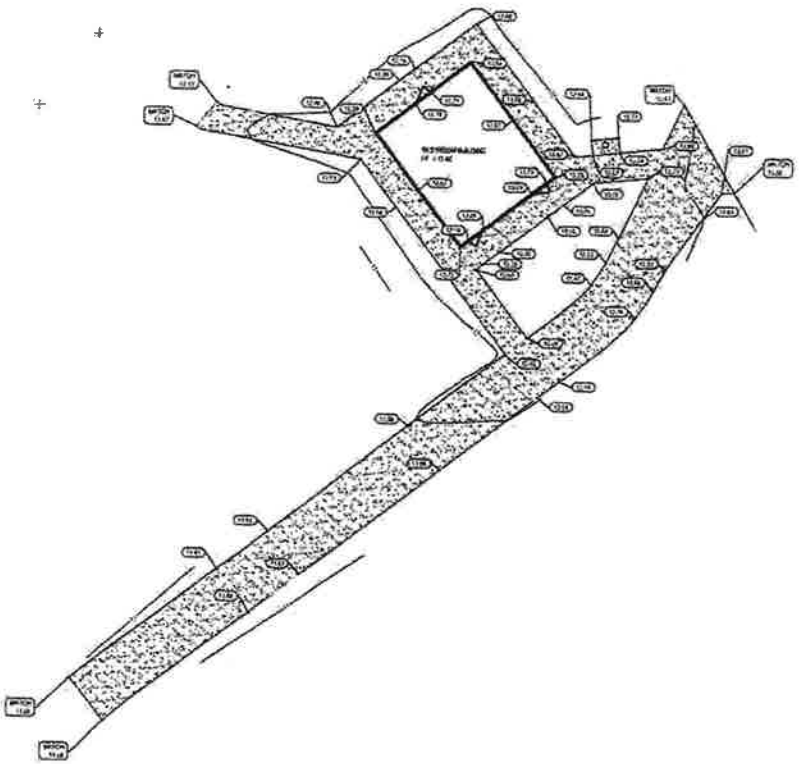
LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT

COCOA BEACH, FLORIDA

TOURISM DEVELOPMENT OFFICE

GRADING AND DRAINAGE PLAN - NORTH

C-141



GRADING AND DRAINAGE PLAN - SOUTH

NOTES:

KEYNOTES:

TREE ROOT PROTECTION:

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Architects, Engineers, Constructors

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COCOA BEACH, FLORIDA

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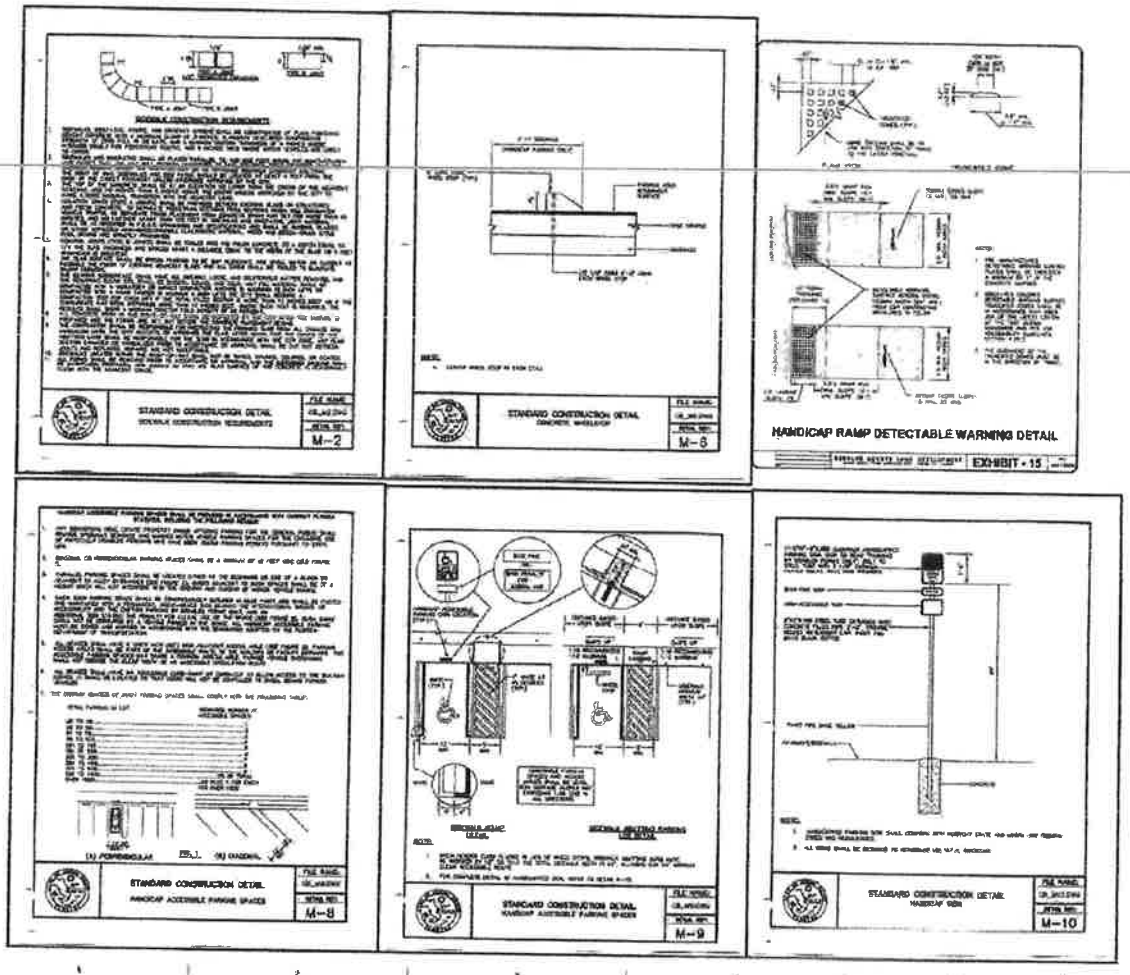
C07506.007.00

GRADING AND DRAINAGE PLAN - SOUTH

C-142



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LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT

COCOA BEACH, FLORIDA

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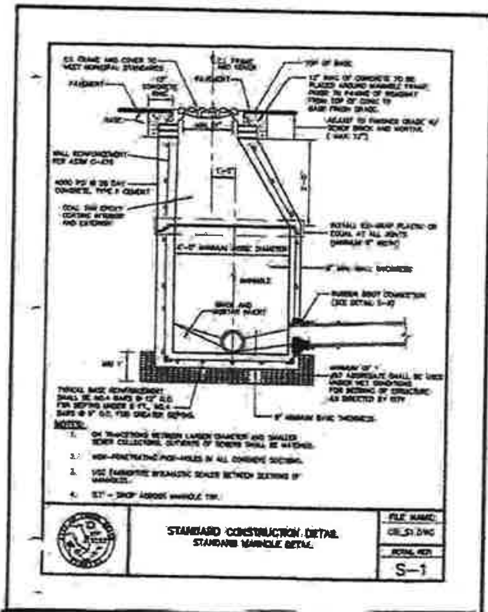
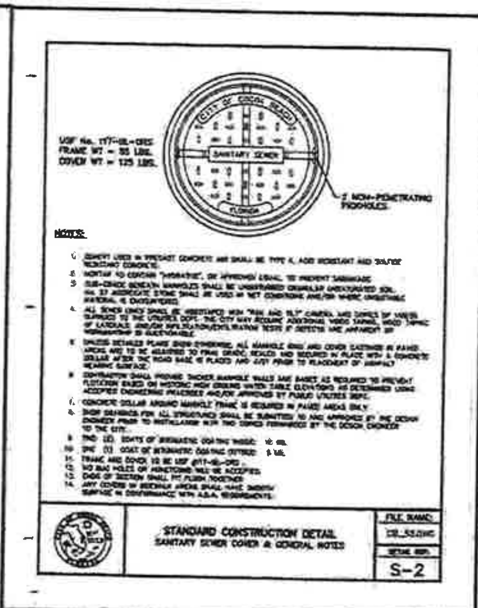
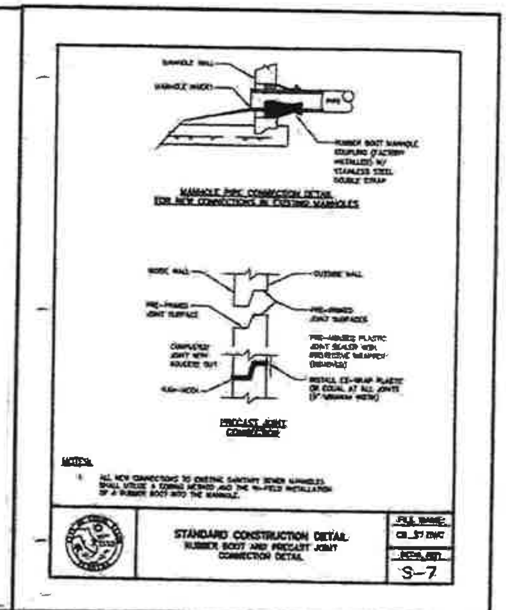
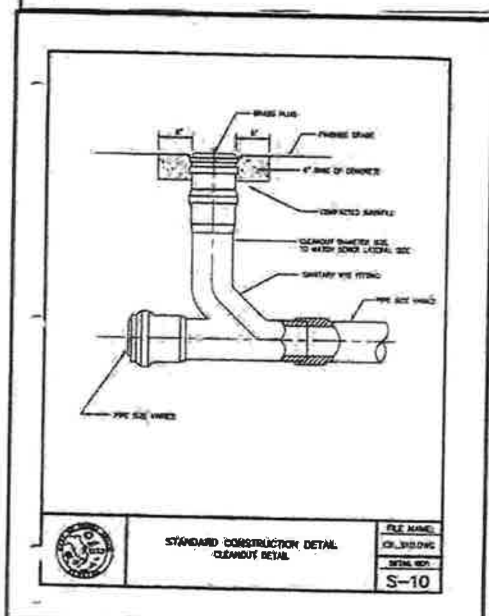
SITE DETAILS

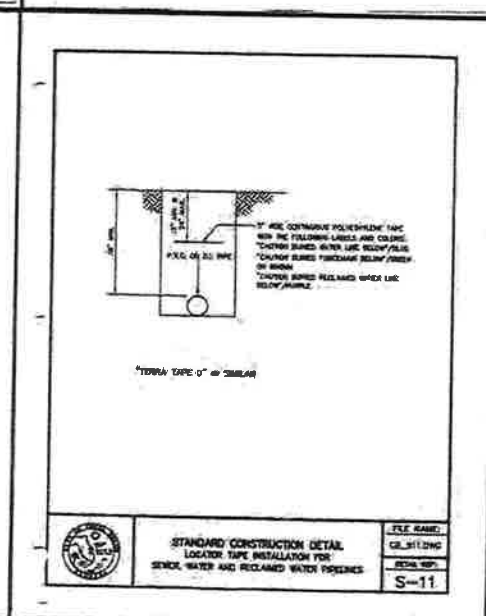
C-501

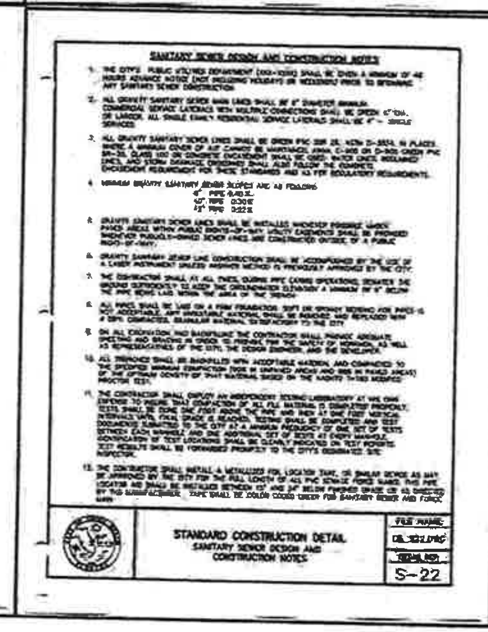












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Architects, Engineers, Constructors

ISSUE: ISSUED FOR CONSTRUCTION

REVISION △

LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT

COCOA BEACH, FLORIDA

TOURISM DEVELOPMENT OFFICE

JASON LEE ABBOTT

C07585.007.00

12-17-2021

UTILITY DETAILS

C-502

SANITARY SEWER DESIGN & CONSTRUCTION NOTES: (CONT'D.)

13. ALL TESTING REQUIRED BY THE CITY SHALL BE PAID FOR BY THE CONTRACTOR / DEVELOPER.
14. ALL LOCAL COLLECTION SANITARY SEWER MAINTENANCE SHALL BE PERFORMED WITH A MINIMUM MINOR DIAMETER OF 8" PIPE.
15. STANDARD MANHOLES SHALL BE LOCATED AT INTERSECTIONS AND EXISTING LINE TEES.
16. ALL SEWER FITTINGS TO BE "A-2000" OR CITY APPROVED EQUAL.
17. MANHOLE RIMS SHALL MATCH FLUSH WITH THE PAVING GRADE ELEVATION IN PAVED AREAS AND A MINIMUM OF 0.2 FEET AND MAXIMUM OF 0.5 FEET ABOVE GRADE GENERALLY IN UNPAVED AREAS.
18. THE CONTRACTOR SHALL DEMONSTRATE SANITARY SEWER MANHOLES BY SHINE / MIRROR TEST. SEWER LINES DO NOT INTERSECT DIRECTLY ABOVE OR BETWEEN BENCHING OF THE MANHOLE.
19. RUBBER BOOTS AND STAINLESS STEEL BANDS SHALL BE UTILIZED IN THE CONNECTION OF THE SEWER MAIN TO THE MANHOLES (SEE STANDARD MANHOLE AND SHEET DETAIL).
20. ANY INDIVIDUAL SANITARY SEWER CONNECTIONS TO NEW CONSTRUCTION SHALL NOT BE CONNECTED DIRECTLY INTO MANHOLES, AND SHALL CONNECTED TO SEWER MAIN STUBS BY USE OF WYE CONNECTIONS, UNLESS OTHERWISE BE APPROVED BY THE CITY.
21. FOR SINGLE FAMILY HOMES, SINGLE FAMILY AND DUPLEX RESIDENCES LATERALS SHALL BE CONSTRUCTED AT EACH LOT OR UNIT AND LOCATED ON THE DOWNSTREAM SIDE OF THE LOT CENTER LINE. THESE SERVICES SHALL BE EXTENDED 2 FEET ABOVE GROUND AT THE PROPERTY LINE WITH A 4" PVC RISER AND PLUG. RISERS SHALL MARKED FROM THE RISER. THE SEWER SERVICE FITTINGS SHALL BE LOCATED FOR 4" LATERALS TWO SEWER JOINTS ARE PERMITTED PER LATERAL.
22. FOR MULTI-FAMILY JOINT COMMERCIAL, SCHOOL USE WORK, MINIMUM SEWER SERVICES (SIZE) CLEANOUTS SHALL BE DETERMINED AS DETERMINED BY ENGINEER.
23. SANITARY SEWER LIFT STATIONS AND FORCE MAINS SIZE, MATERIAL, AND DESIGN SHALL BE APPROVED BY THE CITY. LIFT STATIONS SHALL BE CONSTRUCTED WITH A MINIMUM WET WELL WIDTH DIAMETER OF 5 FEET. FORCE MAINS SHALL BE A MINIMUM 4 INCH DIAMETER.
24. IT SHALL BE THE RESPONSIBILITY OF THE SECTION ENGINEER TO PREPARE AND SUBMIT FLOW DATA CALCULATIONS TO SHOW THE SIZE OF THE WET WELL AND PUMP MANHOLES AS DEEMED NECESSARY BY THE CITY.
25. SANITARY SEWER MANHOLE COVERS SHALL HAVE THE WORDS "SARASOTA SEWER, FLORIDA SANITARY SEWER" CAST INTO THEM.
27. ALL SANITARY SEWER FORCE MAINS, INCLUDING FITTINGS, SHALL BE PVC AWWA C-900 OR C-905 (SEE "SHEET") STRESSED FITTINGS, PRESSURE CLASS 150 OR C-1425 FITTINGS SHALL BE. MINIMUM PVC MANUFACTURE FITTINGS SHALL PURCHASE (OR APPROVED EQUAL.) THE FORCE MAIN MINIMUM DEPTH IS 30" STRIP SHALL BE 30".
28. ALL SANITARY SEWER FORCE MAINS SHALL HAVE A THRUST RESTRAINT JOINT METHOD IN COMPLIANCE WITH THE DUCTILE IRON PIPE RESEARCH ASSOCIATION GUIDELINES MEGAFLEX TO ACCOMMODATE PVC PIPE BY FOLLOWING THE RECOMMENDED PROCEDURE IN RESTRAINT LENGTH CONSIDERATION TO THE INSTALLATION OF POLYETHYLENE WRAP. IN NO INSTANCE SHALL THRUST BLOCKS BE PERMITTED.

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER DESIGN AND CONSTRUCTION NOTES

FILE NAME: CD_S23.DWG
DETAIL NO.: S-23

SANITARY SEWER DESIGN AND CONSTRUCTION NOTES (CONT'D.)

29. SANITARY SEWER MANHOLES SHALL HAVE WATER TIGHT LIDS WITH THE WORDS "SARASOTA SEWER" CAST INTO THEM. ALL MANHOLES SHALL BE PROVIDED WITH CONCRETE BENCH AND SHALL BE CONSTRUCTED SO AS TO PROVIDE A SMOOTH FLOW CHANNEL. BENCHING SHALL BE SLOPED FROM THE WALL OF THE MANHOLE TO THE CHANNEL AT A SLOPE OF NOT LESS THAN 1/2 INCH PER FOOT NOR MORE THAN 1 INCH PER FOOT. THE CHANNEL SHALL BE SMOOTH AND SHALL BE SHAPED TO PROVIDE MAXIMUM HYDRAULIC EFFICIENCY. THE CHANNEL SHALL BE FORMED WHERE STRAIGHT LINES ENTER AND LEAVE THE MANHOLE. WHERE A CHANGE IN DIRECTION OF FLOW IS REQUIRED, THE CHANNEL SHALL BE CURVED IN THE MANHOLE WITH THE RADIUS OF CURVATURE AS LARGE AS THE MANHOLE WILL PERMIT. WHERE A CHANGE IN DIAMETER OF THE SEWER IS REQUIRED, THE CHANNEL SHALL BE SHAPED TO PROVIDE A SMOOTH TRANSITION FROM THE SMALLER TO THE LARGER SEWER. THE CHANNEL SHALL BE SHAPED TO PROVIDE A SMOOTH TRANSITION FROM THE SMALLER TO THE LARGER SEWER. THE CHANNEL SHALL BE SHAPED TO PROVIDE A SMOOTH TRANSITION FROM THE SMALLER TO THE LARGER SEWER. THE CHANNEL SHALL BE SHAPED TO PROVIDE A SMOOTH TRANSITION FROM THE SMALLER TO THE LARGER SEWER.
30. THE CITY OF COCOA BEACH RESERVES THE RIGHT TO REQUIRE THE DEVELOPER TO PERFORM VACUUM TESTING OF ALL SANITARY MANHOLES. ALL TESTS SHALL BE WITNESSED AND RECORDED BY THE CITY. SANITARY SEWER MAIN LINES SHALL BE TESTED PRIOR TO FINAL ACCEPTANCE. LATERALS SHALL BE TELEVISED UPON DRAWING BY THE CITY PRIOR TO FINAL ACCEPTANCE WHEN IT IS SUSPECTED THAT A PROBLEM EXISTS.
31. ALL SEWER MAINS, PRIOR TO ACCEPTANCE BY THE CITY, AND PRIOR TO ANY FINAL PAVING OPERATIONS, SHALL BE TELEVISED USING A "PAN AND TILT" CAMERA BY A CITY APPROVED CONTRACTOR. THE VIDEO SHALL BE NON-EDITED, WITH AUDIO DESCRIBING WHAT IS BEING RECORDED. WRITTEN VIDEO LOGS DESCRIBING THE DRAWING OF THE LINES SHALL ACCOMPANY THE TAPE SUBMISSION. NO CITY WORK TO COMMENCE AND NO INSTALLATION OF ASPHALT OR CONCRETE PAVEMENT RE-LINING MAY BE REQUIRED BY THE CITY / INDIVIDUAL CLEANING OF CONNECTING ATTAINS ARE NECESSARY.
32. ALL MANHOLES CONSTRUCTED IN RIGHT-OF-WAYS, EASEMENTS, AND EASEMENTS OUTSIDE OF THE RIGHT-OF-WAY SHALL BE OUTFITTED WITH WATERTIGHT LIDS. IN COMPLIANCE WITH ASTM-1743 OR SIMILAR TYPES OF LINERS APPROVED BY THE CITY. IN ADDITION, THE CITY MAY REQUIRE LINERS TO BE INSTALLED IN OTHER AREAS WHERE THE PUBLIC INTEREST REQUIREMENT BELIEVES THAT NOTE IS ADOPTED. NOTE AS AMENDED (REFERENCE OF FORCE MAINS CONNECTING TO GRAVITY MAINS).
33. ALL SEWER LINES WHICH ARE CONSTRUCTED OUTSIDE OF PUBLIC RIGHTS-OF-WAY WITHIN SAID EASEMENTS SHALL BE CONSTRUCTED OF D-900 PVC. ABSOLUTELY NO USE OF FLEXIBLE SYSTEMS WITHIN SAID RIGHTS-OF-WAY.
34. SEWER LATERAL LOCATIONS SHALL BE MARKED ALONG THE OUTSIDE OF THE CURB WITH A 2"x4" SKIP "S", OR BY A METAL TAB SET INTO THE PAVEMENT.
35. CONNECT 4"-SWING PVC PIPE SHALL NOT USE ALL GLUED PIPE USE.
36. CI-WRAP PLASTIC, AS MANUFACTURED BY PRIDE SEAL PRODUCT CORPORATION, SHALL BE USED ON THE SURFACE OF ALL MANHOLES AND METHOD JOINTS. ANY USE OF WRAP COVERED OR EACH JOINT IS CITY INSPECTOR SHALL PERSONALLY INSPECT ALL JOINT SEALS PRIOR TO BACKFILLING OPERATIONS.
37. ALL PROPOSED SEWER FORCE MAINS SHALL BE FLUSHED, PRESSURE TESTED AND CLEANED FOR SERVICE IN ACCORDANCE WITH THE LATEST EDITION STANDARDS AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIREMENTS. THE CONTRACTOR SHALL NOTIFY THE CITY'S DESIGNATED SITE INSPECTOR TWO DAYS, COORDINATE WITH CITY PERSONNEL AT THE WATER OF WASTEWATER TREATMENT PLANT DUE APPROXIMATELY AT LEAST 24 HOURS PRIOR TO BEGINNING A FULL-FUNCTION FLUSH OF THE MAINS FROM TO THE COMMENCEMENT OF PRESSURE TESTING (SUBJECT TO AVAILABILITY).
38. THE CONTRACTOR SHALL BE REQUIRED TO PVC ALL FORCE MAINS IN EXCESS OF 6" IN DIAMETER AND PRIVATE TRANSMISSION MAINS LOCATED ON COLLECTOR AND ARTERIAL ROADWAYS, LAUNCHING AND EXTRACTION POINTS SHALL BE DETERMINED BY THE CONTRACTOR.

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER DESIGN AND CONSTRUCTION NOTES

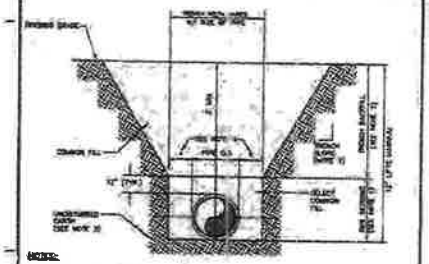
FILE NAME: CD_S24.DWG
DETAIL NO.: S-24

SANITARY SEWER DESIGN AND CONSTRUCTION NOTES (CONT'D.)

39. AS A GENERAL RULE, THE NUMBER OF JOINTS SHALL BE LIMITED WHENEVER POSSIBLE. IN SPECIAL CASES WHERE A SHORT REPAIR OR AN ATTD 12" PVC SEWER MAIN IS REQUIRED, THE ENGINEER MAY MAKE ANOTHER EXCEPTION SUCH AS A 20'-0" DUCTILE IRON PIPE. ANY DEVIATIONS OR AN APPROVED CONFLICT MAY BE ALLOWED BY SPECIAL APPROVAL BY THE CITY.
40. ALL 12-INCH SANITARY SEWER FORCE MAIN VALVES SHALL BE RESILIENT SEAT (Cerro-C-509) VALVES FEATURING A LINED DUCTILE IRON BODY.
41. ALL CAPPING OF MAINS AND SERVICE OF MANHOLES SHALL BE PERFORMED BY THE CITY, AND BILLED IN ACCORDANCE WITH THE LATEST FEE RESOLUTION SCHEDULE OF THOSE CONSTRUCTIONS SHALL REQUIRE A MINIMUM 48 HOUR NOTIFICATION (EXCLUSIVE OF NORMAL WORK DAYS) DIRECTED TO THE CITY'S DESIGNATED SITE INSPECTOR AND SHALL COORDINATE THE WORK DIRECTLY WITH THE PUBLIC UTILITIES DEPARTMENT, SUPERINTENDENT. THE CONNECTION SHALL BE DESIGNED TO COMMENCE BETWEEN 9:00 A.M. AND NOON ON AN APPROPRIATE DAY DETERMINED BY CITY.
42. WITH RESPECT TO WET-TAP CONNECTIONS AND SERVICE OPERATIONS, THE CITY RESERVES THE RIGHT TO DELEGATE SUBSECTIONS TO BE PERFORMED DURING PERIODS OF LOW FLOW (GENERALLY TO 9:00 A.M.) IN ORDER TO MINIMIZE SERVICE DISRUPTION TO EXISTING CUSTOMERS.
43. ALL WORK PERFORMED UPON SANITARY SEWER FACILITIES OWNED OR MAINTAINED BY OR OWNED BY THE CITY SHALL BE CONSTRUCTED BY AN UNDERGROUND UTILITY CONTRACTOR, OR LICENSED GENERAL CONTRACTOR, THAT IS LICENSED IN THE STATE OF FLORIDA AND REGISTERED WITH THE CITY.
44. UPON CONSTRUCTION COMPLETION AND ACCEPTANCE OF THE SYSTEM, IT SHALL BE THE DESIGN ENGINEER'S RESPONSIBILITY TO CERTIFY THAT THE SYSTEM IS PROPERLY CERTIFIED AND ACCEPTED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ALL AS-BUILTS ARE PROVIDED TO THE CITY PRIOR TO FINAL USE OF THE SYSTEM.
45. FOR CONSTRUCTION PURPOSES, THE PLANS SHALL DESIGNATE THE LOCATION, AT ALL FORCE MAINS MEASURED FROM THE BACK OF CURB (OR EDGE OF PAVEMENT, IF NO CURBING EXISTS).
46. ALL SEWER PIPE INSTALLED FOR SERVICE FORCE MAINS SHALL BE 4000 LF UNLESS SPECIFICALLY NOTED OTHERWISE. THE SERVICE PIPE SHALL BE SIZED TO MATCH THE EXTERNAL DIAMETER OF THE PVC BY DIP TO WHICH IT IS ATTACHED.
47. LANDSCAPING PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF FIXTURES RELATIVE TO THE LOCATION OF PUBLIC UTILITIES AND STORMWATER MANUFACTURE IN ORDER TO ENSURE PROPER SERVICE.

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER DESIGN AND CONSTRUCTION NOTES

FILE NAME: CD_S25.DWG
DETAIL NO.: S-25



NOTES:

1. PIPE BEDDING: SELECT COMMON FILL COMPACTED TO 95% OF THE MAXIMUM DENSITY AS PER ASTM D-1557.
2. TRENCH BACKFILL: COMMON FILL COMPACTED TO 95% OF THE MAXIMUM DENSITY AS PER ASTM D-1557. FILL SHALL BE FREE OF ORGANIC MATERIAL, DEBRIS, PAVEMENT AND STRUCTURES.
3. PIPE BEDDING UNDERNEATH SELECT COMMON FILL IS REQUIRED WHERE IN ACCORDANCE WITH TYPE "C" BEDDING AND THICKNESS DETAIL MAY BE REQUIRED AS DIRECTED BY THE CITY.
4. ONE TO MANY PIPE FOR PIPE DIAMETERS LESS THAN 21", MAY 24" MAX. FOR PIPE DIAMETER 24" AND LARGER.
5. WATER SHALL NOT BE PERMITTED AT THE TRENCH / BEDDING CONSTRUCTION.
6. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF FLOW.
7. REFER TO VENA SPECIFICATIONS FOR CLEARING, DEWATERING AND BRACING IN EXCAVATIONS.
8. FINAL RESTORATION AS APPROVED UNLESS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF GOVERNING AGENCIES, DURING RESTORATION WORKS SHALL COMPLY WITH REGULATIONS AS SHOWN OF ANY VIOLATION REGULATIONS AND RENEW CONSTRUCTION SPECIFICATIONS.

STANDARD CONSTRUCTION DETAIL
TYPE "B" BEDDING AND TRENCH DETAIL
(TYPICAL FOR WATER, SEWER, FORCE MAIN, STORM DRAIN AND RECLAIMED WATER MAIN INSTALLATIONS)

FILE NAME: CD_S28.DWG
DETAIL NO.: S-28

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Architects, Engineers, Construction

Offices in Bradenton, Orlando, Aventura, Boca Raton, Tallahassee, Chelmsford, Westchester, and Plantation

Certificate of Authorization Number AA C000648
Board of Professional Engineers Certificate No. 14581

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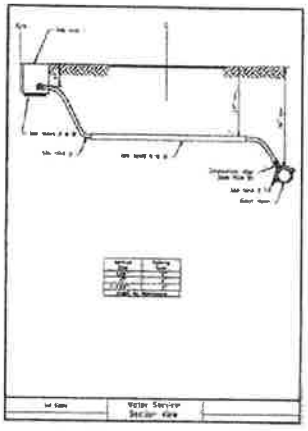
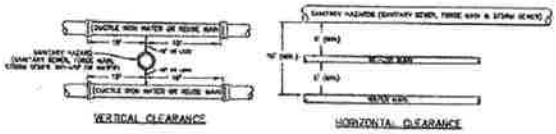
LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT
COCOA BEACH, FLORIDA
TOURISM DEVELOPMENT OFFICE

JASON LEE ABBOTT
FL PE 68211
ENGINEER
ABBOTT
C0T365.007.00
12.17.2021
UTILITY DETAILS

C-503

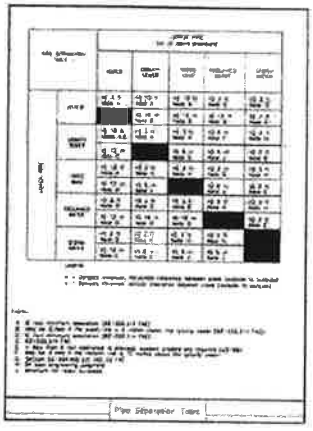


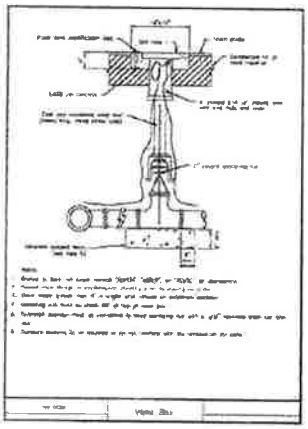


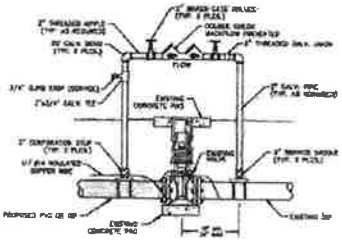
VERTICAL CLEARANCE

HORIZONTAL CLEARANCE

TYPICAL REQUIRED SEPARATION
NTS







2" TEMPORARY JUMPER DETAIL
NTS

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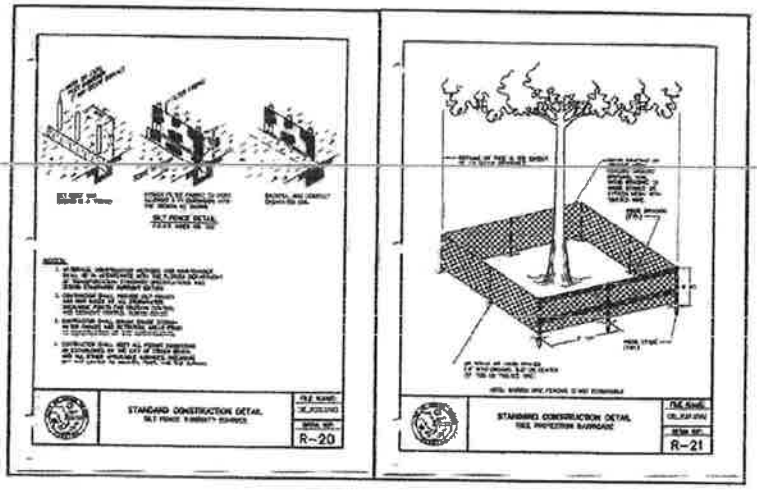
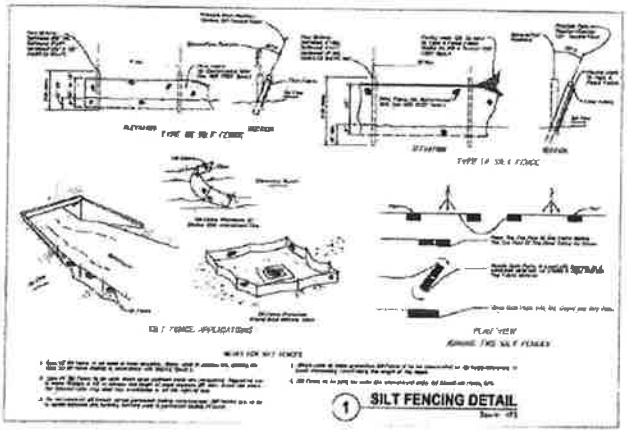
Architects, Engineers, Constructors

LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT
COCOA BEACH, FLORIDA
TOURISM DEVELOPMENT OFFICE

UTILITY DETAILS

C-504





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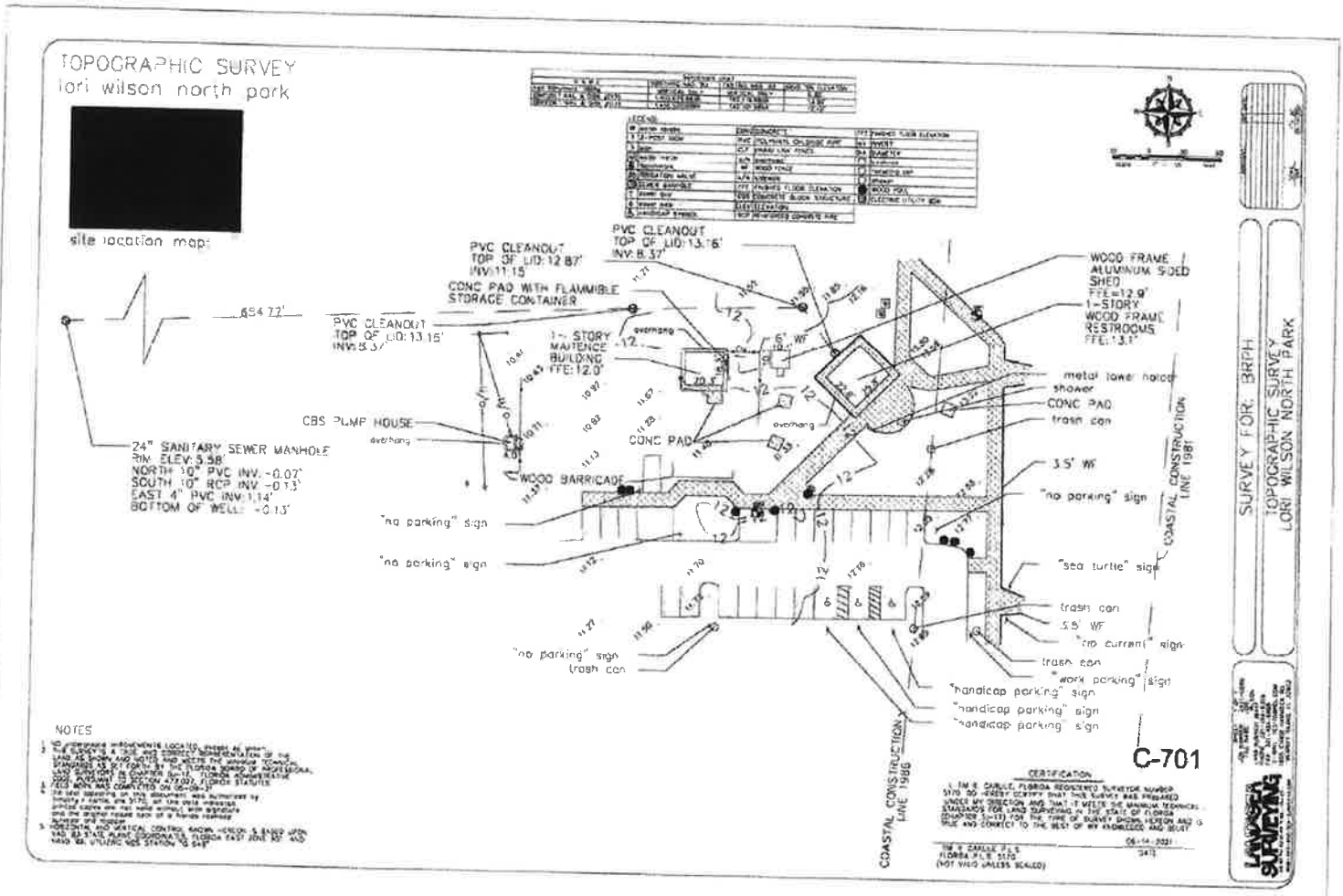
Architects, Engineers, Consultants

LORI WILSON PARK NORTH AND SOUTH RESTROOM REPLACEMENT
COCOA BEACH, FLORIDA
TOURISM DEVELOPMENT OFFICE

EROSION CONTROL DETAILS

C-505


TOPOGRAPHIC SURVEY
lori wilson north park
site location map:
PVC CLEANOUT
TOP OF LID: 12.87'
INV: 11.15'
PVC CLEANOUT
TOP OF LID: 13.16'
INV: 8.37'
CONC PAD WITH FLAMMIBLE STORAGE CONTAINER
PVC CLEANOUT
TOP OF LID: 13.15'
INV: 8.37'
1-STORY MAITENCE BUILDING FFE: 12.0'
CBS PUMP HOUSE
24" SANITARY SEWER MANHOLE
RIM ELEV: 5.58'
NORTH 10" PVC INV: -0.07'
SOUTH 10" RCP INV: -0.13'
EAST 4" PVC INV: 1.14'
BOTTOM OF WELL: -0.13'
WOOD BARRICADE
CONC PAD
WOOD FRAME ALUMINUM SIDED SHED FFE: 12.9'
1-STORY WOOD FRAME RESTROOMS FFE: 13.1'
metal tower holder
shower
CONC PAD
trash can
3.5' WF
"no parking" sign
"sea turtle" sign
trash can
3.5' WF
"no current" sign
trash can
"work parking" sign
"handicap parking" sign
"handicap parking" sign
"handicap parking" sign
"no parking" sign
"no parking" sign
"no parking" sign
trash can
COASTAL CONSTRUCTION LINE 1986
COASTAL CONSTRUCTION LINE 1981
NOTES
CERTIFICATION
SURVEY FOR: BRPH
TOPOGRAPHIC SURVEY
LORI WILSON NORTH PARK
C-701

TOPOGRAPHIC SURVEY
lori wilson south park

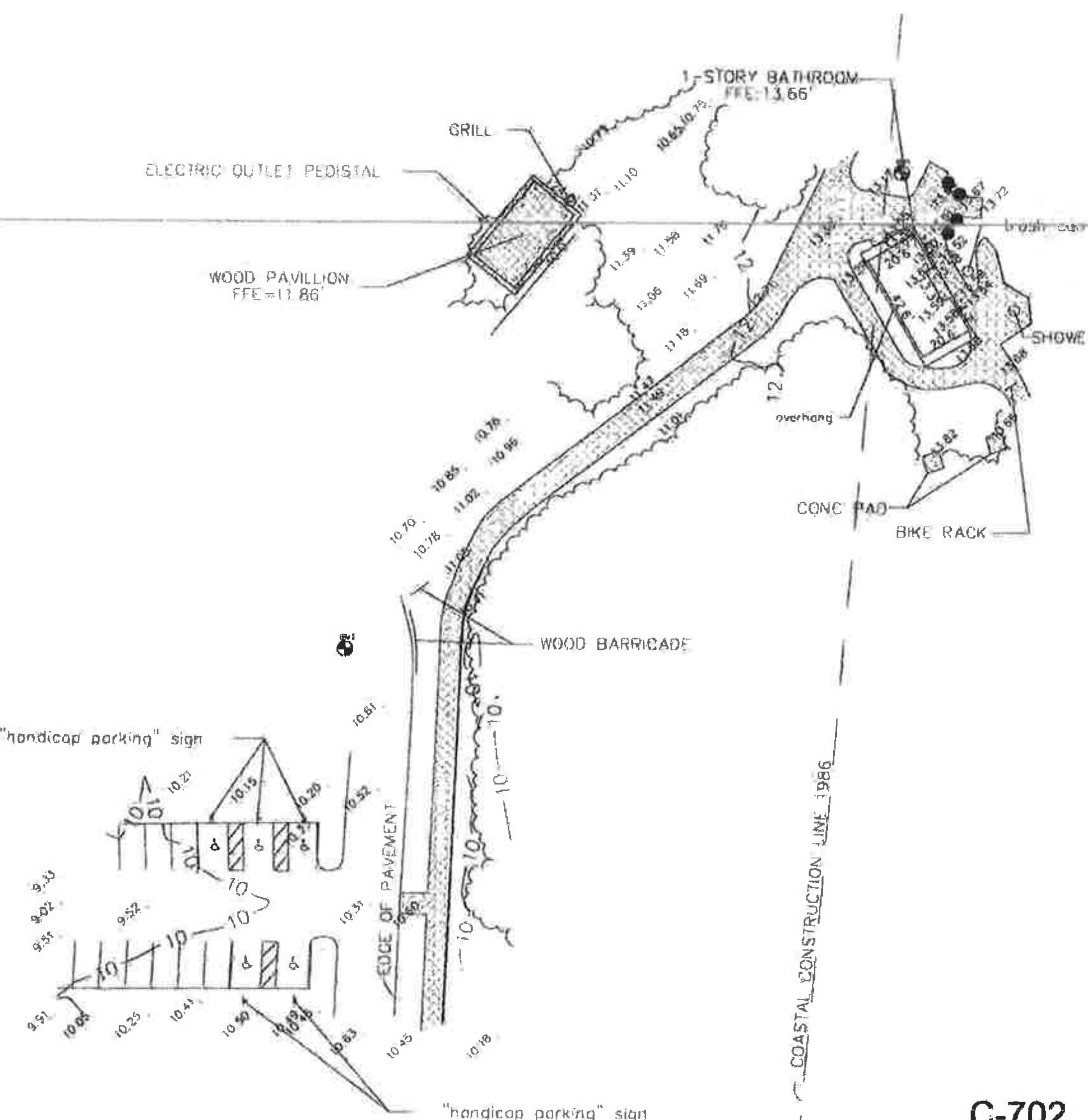
[redacted]

site location map:

[illegible]			
N.A.S.C.	NORTHING NAD '83	EASTING NAD '83	NAVD '88 ELEVATION
NGS Monument "Q648"	VERTICAL ONLY	VERTICAL ONLY	[illegible]
(BM1)SET NAIL & DISK [illegible]	[illegible]	[illegible]	11.82'
(BM2)SET NAIL & DISK [illegible]	[illegible]	[illegible]	10.53'

LEGEND:

	water spigot	CONC	CONCRETE	FFE	FINISHED FLOOR ELEVATION
	2-POST SIGN	PVC	POLYVINYL CHLORIDE PIPE	INV	INVERT
	sign	CLF	CHAIN LINK FENCE	DIA	DIAMETER
	water meter	o/h	overhead		trashcan
	[illegible]	WF	WOOD FENCE		[illegible]
	IRRIGATION VALVE	s/w	sidewalk		[illegible]
	SEWER MANHOLE	FFE	FINISHED FLOOR ELEVATION		WOOD POST
	power guy	CBS	CONCRETE BLOCK STRUCTURE		ELECTRIC UTILITY BOX
	power pole	ELEV	ELEVATION		
	HANDICAP SYMBOL	RCP	REINFORCED CONCRETE PIPE		



C-702

NOTES

1. NO underground improvements LOCATED, except as shown.
2. THIS SURVEY IS A TRUE AND CORRECT REPRESENTATION OF THE LAND AS SHOWN AND NOTED AND MEETS THE MINIMUM TECHNICAL STANDARDS AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 5J-17, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.
3. FIELD WORK WAS COMPLETED ON 06-09-21.
4. the seal appearing on this document was authorized by timothy r carlile, pls 5170, on the date indicated printed copies are not valid without with signature and the original raised seal of a florida licensed surveyor and mapper
5. HORIZONTAL AND VERTICAL CONTROL SHOWN HEREON IS BASED UPON NAD '83 STATE PLANE COORDINATES, FLORIDA EAST ZONE 901 AND NAVD '88, UTILIZING NGS STATION "Q648"

CERTIFICATION

I, TIM R. CARLILE, FLORIDA REGISTERED SURVEYOR NUMBER 5170, DO HEREBY CERTIFY THAT THIS SURVEY WAS PREPARED UNDER MY DIRECTION AND THAT IT MEETS THE MINIMUM TECHNICAL STANDARDS FOR LAND SURVEYING IN THE STATE OF FLORIDA (CHAPTER 5J-17) FOR THE TYPE OF SURVEY SHOWN HEREON AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

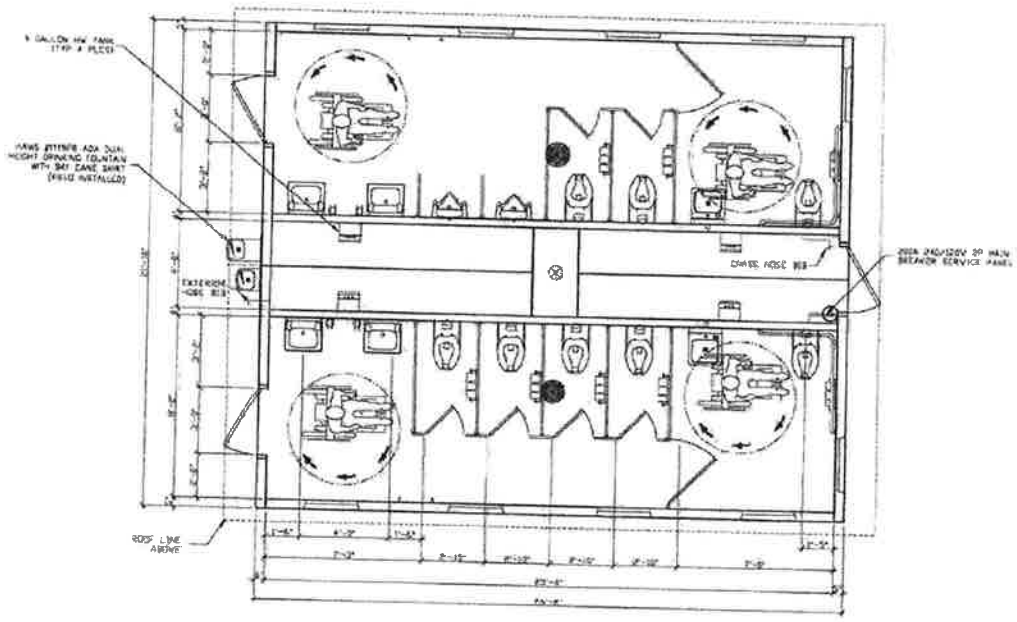
TIM R. CARLILE P.L.S. — 06-14-2021
FLORIDA P.L.S. 5170 — DATE
(NOT VALID UNLESS SEALED)

LAND&SEA SURVEYING

SHEET 1 OF 1
JOB NUMBER 2021-0[illegible]
FILE NAME: [illegible]
LAND BUSINESS [illegible]
PHONE: 321-[illegible]
FAX: 321-[illegible]
E-MAIL: [illegible]
[illegible]

SURVEY FOR: BRPH

TOPOGRAPHIC SURVEY
LORI WILSON SOUTH PARK



CXT
Precast Products

SANTIAGO

FLOOR PLAN

S-03

ELECTRICAL SYMBOLS LEGEND

ONE-LINE SYMBOLS LEGEND

PANEL

SYMBOLS LEGEND

NORTH ARROW

ELECTRICAL GENERAL NOTES

DIVISION 26 SPECIFICATIONS

ABBREVIATIONS

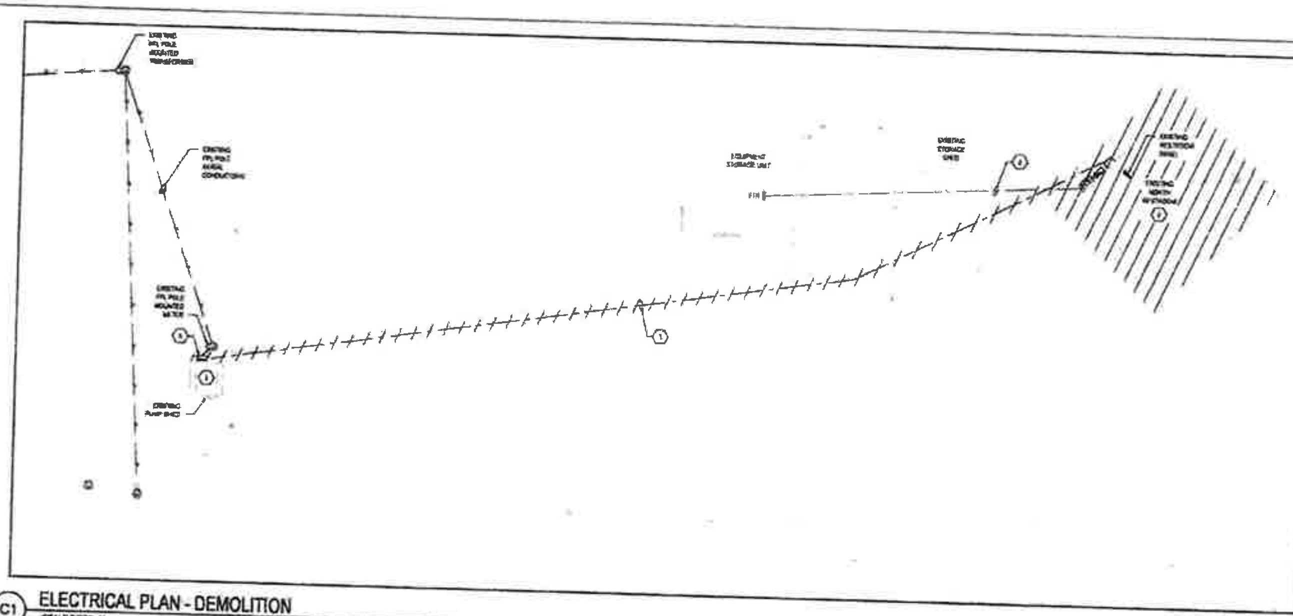
BRPH

ISSUE FOR CONSTRUCTION

LORI WILSON PARK
RESTROOM REPLACEMENT
COCOA BEACH, FLORIDA
BREVARD COUNTY
PARKS & RECREATION

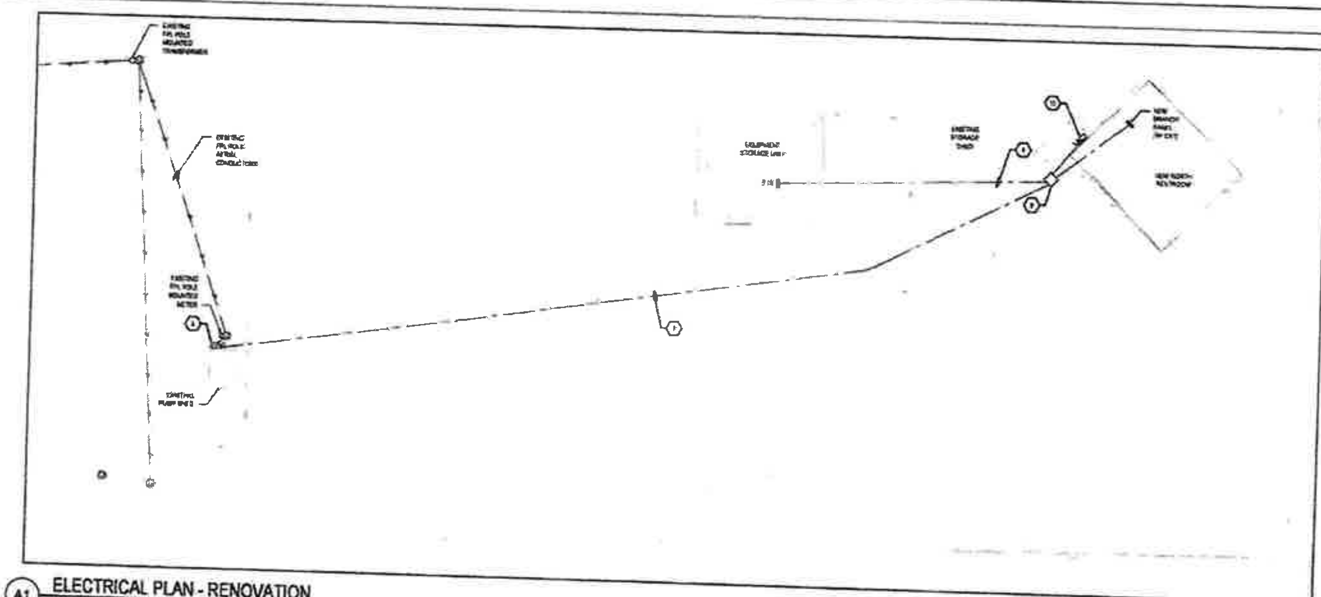
ELECTRICAL LEGEND
& ABBREVIATIONS

E-001



C1 ELECTRICAL PLAN - DEMOLITION

SCALE 3/32"=1'



A1 ELECTRICAL PLAN - RENOVATION

SCALE 3/32"=1'

GENERAL SHEET NOTES

[illegible]

SHEET KEYNOTES

[illegible]

GRAPHIC SCALE

0 4' 8' 12' 16' 24' 32'

3/32"=1'-0"

PLAN NORTH

BRPH

Architects Engineers, Inc.

ISSUE FOR CONSTRUCTION

DOCUMENT HISTORY

REV	DATE	DESCRIPTION

LORI WILSON PARK
RESTROOM REPLACEMENT
COCOA BEACH, FLORIDA
BREVARD COUNTY
PARKS & RECREATION

LUIS A. ROSARIO
FL-65457

LAR

LAR

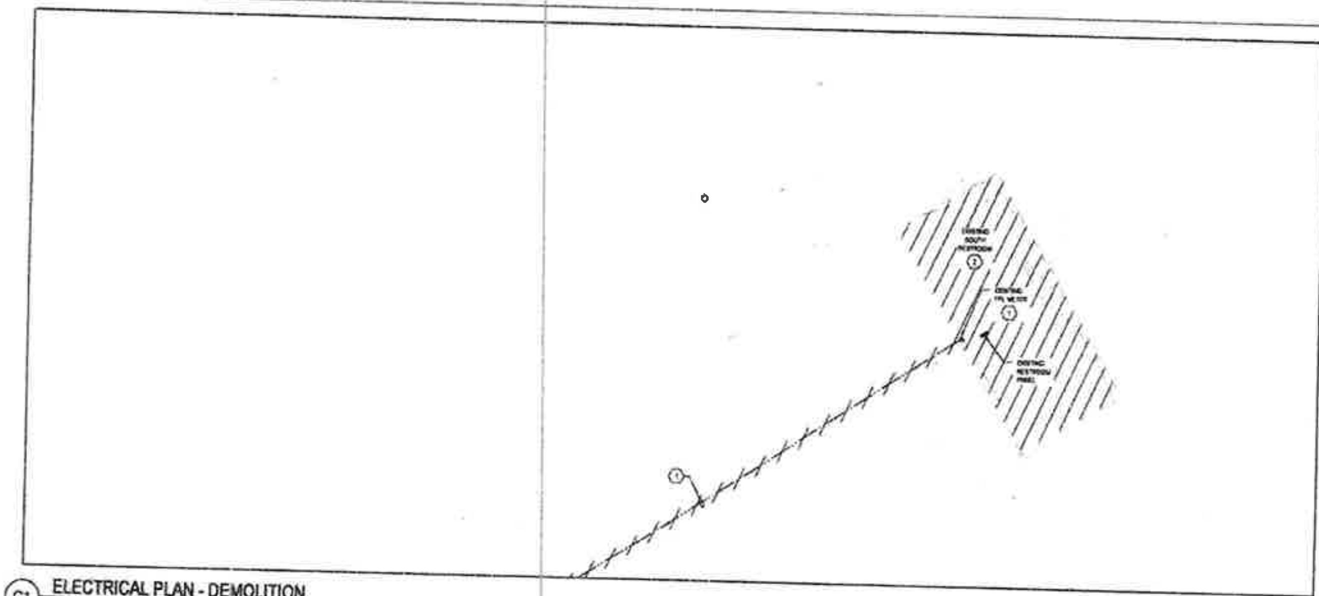
MEH

C07595.007.00

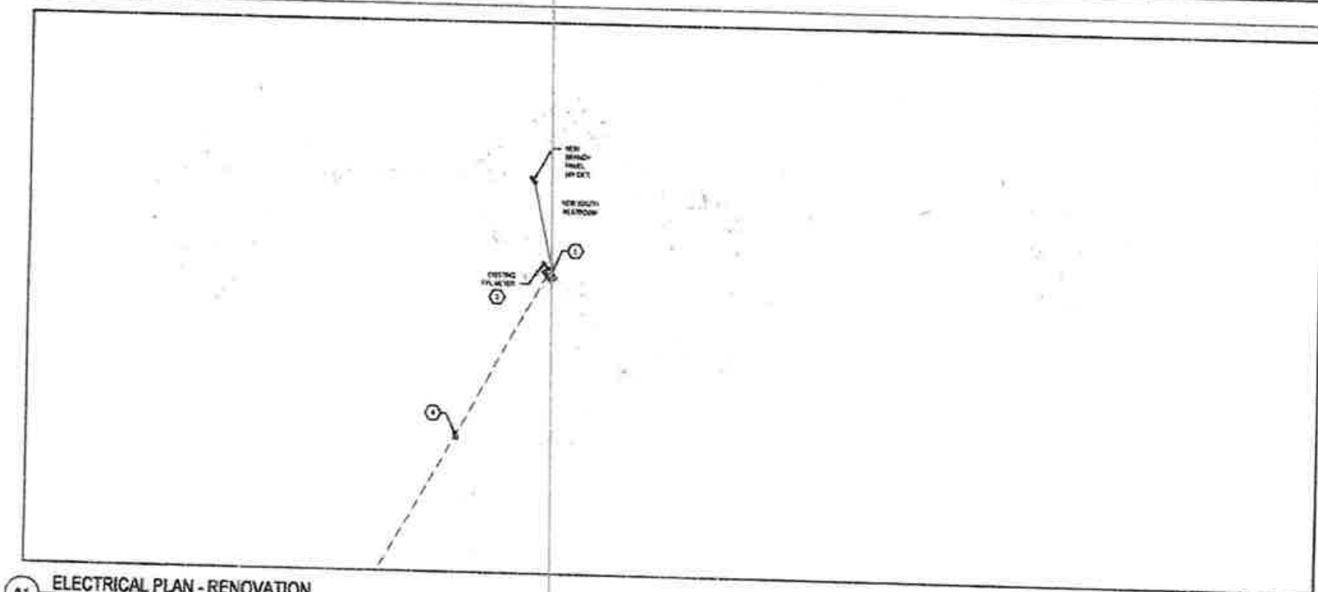
12-17-2021

ELECTRICAL DEMO AND RENO PLAN - NORTH

E-101N



C1 ELECTRICAL PLAN - DEMOLITION



A1 ELECTRICAL PLAN - RENOVATION

GENERAL SHEET NOTES

SHEET KEYNOTES

GRAPHIC SCALE

0 4' 8' 12' 16' 24' 32'

3/32"=1'-0"

PLAN NORTH

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BREVARD COUNTY PARKS & RECREATION

LUIS A. ROSARIO

FL-65457

LAR

LAR

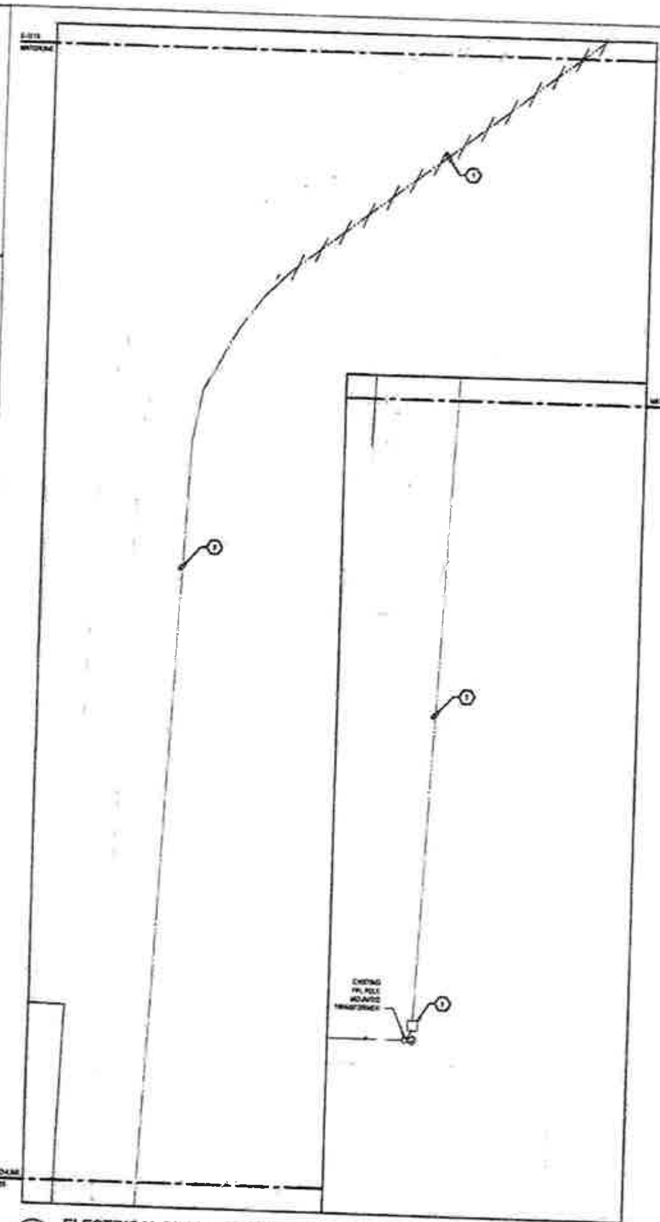
MEH

C07595.007.00

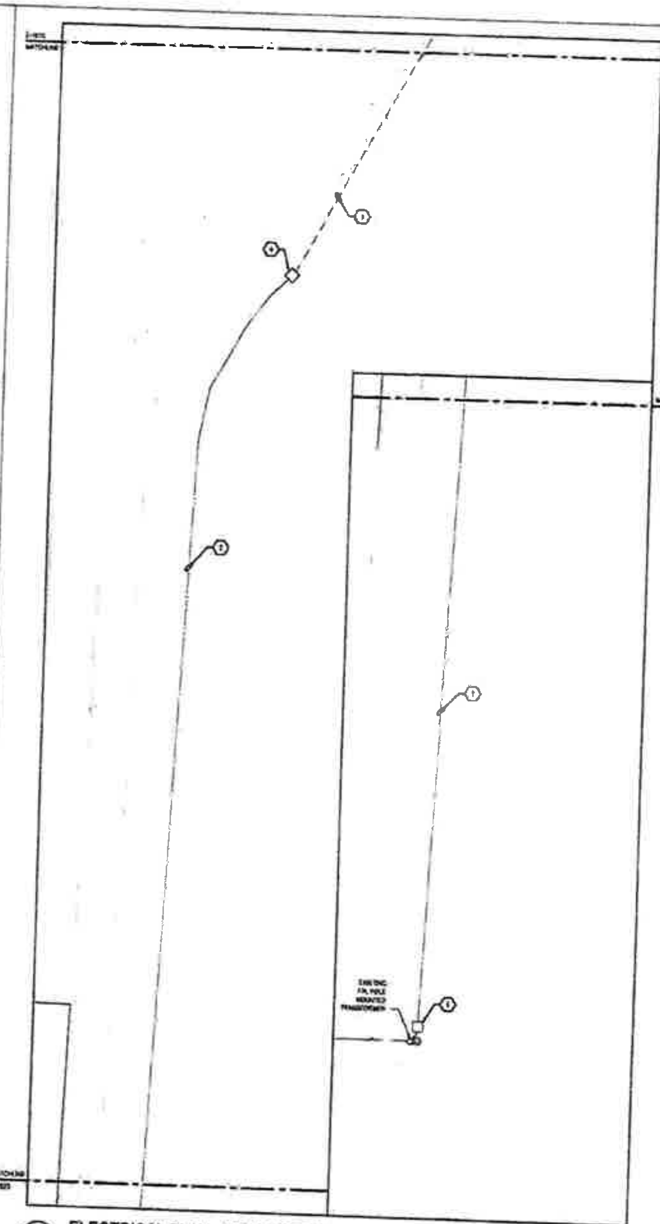
12-17-2021

ELECTRICAL DEMO AND RENO PLAN

E-101S



A1 ELECTRICAL PLAN - DEMOLITION
SCALE 3/32"=1'



A1 ELECTRICAL PLAN - RENOVATION
SCALE 3/32"=1'

GENERAL SHEET NOTES

1. [illegible]
2. [illegible]

SHEET KEYNOTES

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]

GRAPHIC SCALE

0 4' 8' 12' 16' 24' 32'
3/32"=1'-0"

PLAN NORTH

BRPH

Architects Engineers, Inc.

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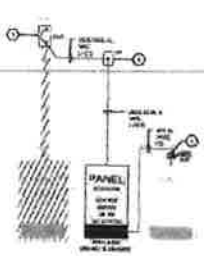
LORI WILSON PARK RESTROOM REPLACEMENT
COCOA BEACH, FLORIDA
BREVARD COUNTY PARKS & RECREATION

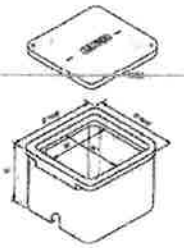
LUIS A. ROSARIO
FL-65457
LAR
LAR
MEH
C07595.007.00
12-17-2021

ELECTRICAL DEMO AND RENO PLAN

E-102S



01 ONE-LINE DIAGRAM - NORTH RESTROOM



03 TYPICAL HAND-HOLE DETAIL

GENERAL SHEET NOTES

SHEET KEYNOTES

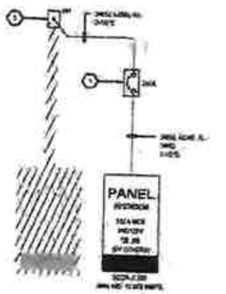
BRPH

ISSUE FOR CONSTRUCTION

LORI WILSON PARK
RESTROOM REPLACEMENT
COCOA BEACH, FLORIDA
BREVARD COUNTY
PARKS & RECREATION

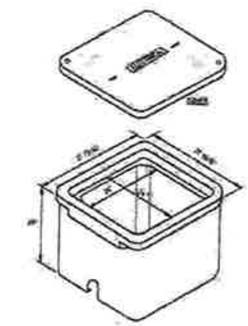
ELECTRICAL
DETAILS & ONE-LINE
DIAGRAMS

E-601N



D1 ONE-LINE DIAGRAM - SOUTH RESTROOM

SCALE: NTS



D3 TYPICAL HAND-HOLE DETAIL

SCALE: NTS

GENERAL SHEET NOTES

SHEET KEYNOTES

BRPH

Architects Engineers, Inc.

ISSUE FOR CONSTRUCTION

DOCUMENT HISTORY

REV	DATE	DESCRIPTION

LORI WILSON PARK
RESTROOM REPLACEMENT
COCOA BEACH, FLORIDA
BREVARD COUNTY
PARKS & RECREATION

LUIS A. ROSARIO

LAR

LAR

MEH

12-17-2021

ELECTRICAL DETAILS & ONE-LINE DIAGRAMS

E-601S

February 15, 2022

Mr. Thomas Campbell
State of Florida
Dept. of Business and Professional Regulations
1940 North Monroe Street, Suite 90A
Tallahassee, FL 32399-0772

RE: CXT, Inc.
Hillsboro, TX
Model: S-356 & S-357 Santiago

Dear Mr. Campbell:

Enclosed please find one set of documents for the above-noted model.

PFS Corporation hereby certifies that it has examined the building plans and other documents submitted by the manufacturer for certification and found them to be in compliance with the following codes and standards:

2020 Florida Building Code Building
2020 Florida Building Code Residential
2020 Florida Building Code Mechanical
2020 Florida Building Code Plumbing
2020 Florida Building Code Fuel Gas
2020 Florida Building Code Energy Conservation
2020 Florida Building Code Accessibility
2017 National Electrical Code
61G20-3 FAC for Product Approval

If you have any questions concerning this submission, please feel free to contact this office at any time.

Approved By:

Mark Severson
Plan Reviewer – SMP0000020
Enclosures: As Stated

cc: Luke Lehman
File

Date Received at PFS: _____
IBC Transmittal No. (by PFS): _____
Project No. (by PFS): _____

ADDITIONAL OR MODIFIED ACCEPTANCE (MODULARS/PANELIZED)

This form is to be used only when the manufacturer is seeking acceptance of an additional model, modified model or model name change which uses a previously accepted building system.

Current PFS Building System Acceptance #: _____
Model Name/ No. Santiago S-356 & S-357
Manufacturer's Name: CXT
Plant(s) at which model will be produced Hillsboro, TX
Check One: ✓ NEW MODEL _____ Revised Model*

TECHNICAL DATA

	Conforms		
Floor Plan Showing:	Yes	No	N/A
Braced Wall Method or Shearwalls	✓		
Building Size (LxW Dimensions)	✓		
Room Sizes, Light & Ventilation Schedule	✓		
Exit Requirements	✓		
Electrical Outlet Spacing & Smoke Detector	✓		
Location of Labels & Data Plates	✓		
Use Group, Type Const., Total Sq.Ft. Area	✓		
Plumbing System Design or Reference No. (_____)	✓		
Heat Loss Calculations or Reference No. (_____)			✓
HVAC/Furnace Size/Model No. (_____)			✓
Thermal Performance Calculations or Reference No. (_____)	✓		
Electrical Load Calculations or Reference No. (_____)	✓		
Service Size and Location (_____)	✓		
Applicable Building Codes _____	✓		

Submit model to the followingstates: Florida

*Description of Modification: _____

Requested by: Luke Lehman (designer) Date: 2/9/2022

For PFS Use

Staff Plan Reviewer Mark Swenson IBC Certification #: _____ Date: 2/15/2022

Structural Calculation(s) Reviewed By: _____ P.E. #: _____ Date: _____
Remarks: _____

**(1) copy sent to IBC within 15 days of approval.

VERBAL APPROVAL GIVEN ☐ By Whom: _____ To Whom _____ Date: _____
MODEL WAS DEVIATED ☐ Revision Number: _____

THIS FORM SHALL BE FILLED OUT COMPLETELY WITH EACH MODEL ACCEPTANCE OR MODIFICATION PRIOR TO SUBMITTAL TO PFS.

cc: _____
\forms\form-m
Rev 05/13/08 mb

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 2/15/22

FLORIDA COMMERCIAL PLANS REVIEW CHECKLIST

Manufacturer: CXT Inc. Model Name/Number: 22-4035 Santiago S-356&S-357 PFS Reference/Project #

Reviewer: Mark Severson Date Reviewed: 2/10/2022 Approval Date: 2/15/2022

REF.	PFS REQUIREMENTS	PLAN SHEET PAGE # AND NOTES	Conforms (by PFS) YES	NO	N/A
(B)	**BUILDING:**				
B-1.	Occupancy classification		X		
B-2.	Special occupancy requirements		X		
B-3.	Minimum type of construction		X		
(FRC)	**FIRE RESISTANT CONSTRUCTION:**				
FRC-1.	Fire resistant separations		X		
FRC-2.	Fire resistant protection for type of construction		X		
FRC-3.	Protection of openings and penetrations of rated walls		X		
FRC-4.	Fire blocking				X
FRC-5.	Draftstopping				X
FRC-6.	Calculated fire resistance				X
(FSS)	**FIRE SUPPRESSION SYSTEMS:**				X
FSS-1.	Early warning				
FSS-2.	Smoke evacuation systems schematic				
FSS-3.	Fire sprinklers				
FSS-4.	Standpipes				
FSS-5.	Pre-engineered systems				
FSS-6.	Riser diagram				
(LS)	**LIFE SAFETY:**				
LS-1.	Occupant load capacities		X		
LS-2.	Egress capacities		X		
LS-3.	Early warning systems				X
LS-4.	Smoke control				X
LS-5.	Stair pressurization				X
LS-6.	Systems schematic				X
(OLER)	**OCCUPANCY LOAD/EGRESS REQUIREMENTS:**				
OLER-1.	Gross occupancy load		X		
OLER-2.	Net occupancy load		X		
OLER-3.	Means of egress		X		
OLER-4.	Exit access		X		
OLER-5.	Exit and exit discharge		X		
OLER-6.	Stairs construction/geometry and protection				X
OLER-7.	Doors		X		

REF.	PFS REQUIREMENTS	PLAN SHEET PAGE # AND NOTES	Conforms (by PFS)		
			YES	NO	N/A
OLER-8.	Emergency lighting		X		
OLER-9.	Exit signs				X
OLER-10	Specific occupancy requirements		X		
OLER-11	Construction requirements		X		
OLER-12	Horizontal exits/exit passageways		X		
(SR)	**STRUCTURAL REQUIREMENTS:**				
SR-1.	Termite protection		X		
SR-2.	Design loads		X		
SR-3.	Wind requirements		X		
SR-4.	Building envelope		X		
SR-5.	Structural calculations (if required)		X		
SR-6.	Wall systems		X		
SR-7.	Floor systems		X		
SR-8.	Roof systems		X		
SR-9.	Threshold inspection plan				X
SR-10.	Stair systems				X
(M)	**MATERIALS:**				
M-1.	Wood				X
M-2.	Steel		X		
M-3.	Aluminum				X
M-4.	Concrete		X		
M-5.	Plastic				X
M-6.	Glass		X		
M-7.	Masonry				X
M-8.	Gypsum board and plaster				X
M-9.	Insulating (mechanical)				X
M-10.	Roofing				X
M-11.	Insulation				X
(AR)	**ACCESSIBILITY REQUIREMENTS:**				
AR-1.	Accessible route		X		
AR-2.	Vertical accessibility				X
AR-3.	Toilet and bathing facilities		X		
AR-4.	Drinking fountains				X
AR-5.	Equipment		X		
AR-6.	Special occupancy requirements		X		
AR-7.	Fair Housing requirements				X
(IR)	**INTERIOR REQUIREMENTS:**				
IR-1.	Interior finishes (flame spread/smoke develop)		X		
IR-2.	Light		X		
IR-3.	Ventilation		X		
IR-4.	Sanitation		X		

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: PFS Mark Peverson
Title: Staff Plan Reviewer
Date: 2/15/22

REF.	PFS REQUIREMENTS	PLAN SHEET PAGE # AND NOTES	Conforms (by PFS)		
			YES	NO	N/A
(SS)	**SPECIAL SYSTEMS:**				
SS-1.	Elevators				X
SS-2.	Escalators				
SS-3.	Lifts				
(E)	**ELECTRICAL:**				
E-1.	Wiring services		X		
E-2.	Feeders and branch circuits		X		
E-3.	Overcurrent protection		X		
E-4.	Grounding		X		
E-5.	Wiring methods and materials		X		
E-6.	GFCI's		X		
E-7.	Equipment		X		
E-8.	Special occupancies				X
E-9.	Emergency systems				X
E-10.	Communication systems				X
E-11.	Low-voltage		X		
E-12.	Load calculations		X		
(P)	**PLUMBING:**				
P-1.	Minimum plumbing facilities		X		
P-2.	Fixture requirements		X		
P-3.	Water supply piping		X		
P-4.	Sanitary drainage		X		
P-5.	Water heaters		X		
P-6.	Vents		X		
P-7.	Roof drainage		X		
P-8.	Back flow prevention		X		
P-9.	Irrigation				X
P-10.	Location water supply line		X		
P-11.	Grease traps				X
P-12.	Environmental requirements		X		
P-13.	Plumbing riser		X		
(M)	**MECHANICAL:**				X
M-1.	Energy calculations				
M-2.	Exhaust systems including clothes dryer exhaust				
M-3.	Kitchen equipment exhaust				
M-4.	Specialty exhaust systems				
M-5.	Equipment (including compliance with wind zone)				
M-6.	Equipment location				
M-7.	Make-up air				
M-8.	Roof mounted equipment				
M-9.	Duct systems				
M-10.	Ventilation				
M-11.	Combustion air				
M-12.	Chimneys				
M-13.	Fireplaces and vents				
M-14.	AC Equipment Complying with Wind Zone				

PFS

PFS CORPORATION

Approval Limited to Factory Built Portion Only

State: Florida

Signature: PFS Mark Peverson

Title: Staff Plan Reviewer

Date: 2/15/22

REF.	PFS REQUIREMENTS	PLAN SHEET PAGE # AND NOTES	Conforms (by PFS) YES	NO	N/A
M-14.	Appliances				
M-15.	Boilers				
M-16.	Refrigeration				
M-17.	Bathroom ventilation				
M-18.	Laboratory				
(G)	GAS:				X
G-1.	Gas piping				
G-2.	Venting				
G-3.	Combustion air				
G-4.	Chimneys and vents				
G-5.	Appliances				
G-6.	Type of gas				
G-7.	Fire places				
G-8.	LP tank location				
G-9.	Riser diagram/shut-offs				
(61G20-)	RULE 61G20-3: STATE PRODUCT APPROVAL		X		
3.001	Scope				
3.002	Definitions				
3.003	Exceptions				
3.004	Optional Statewide Approval Generally				
3.005	Product Evaluation & Quality Assurance for State Approval				
3.006	Product Validation by Approved Validation Entity for State Approval				
3.007	Product Approval by the Commission				
3.008	Approval of Product Evaluation Entities, Product Validation Entities, Testing Laboratories, Certification Agencies, Quality Assurance Agencies and Accreditation Bodies				
3.009	Criteria for Certification of Independence				
3.010	List of Approved Product Evaluation Entities, Validation Entities, Testing Laboratories, Certification Agencies, Quality Assurance Agencies and Accreditation Bodies				
3.011	Forms				
3.012	Revisions to Product Approvals or Entity Approvals				
3.013	Revocation or Modification of Product Approvals and Entity Certifications				
3.014	Investigations				
3.015	Equivalence of Standards				
3.016	Reference Standards				

Form 159
rg. Rev. 3.10.17

PFS

PFS CORPORATION
Approval Limited to Factory Built Portion Only

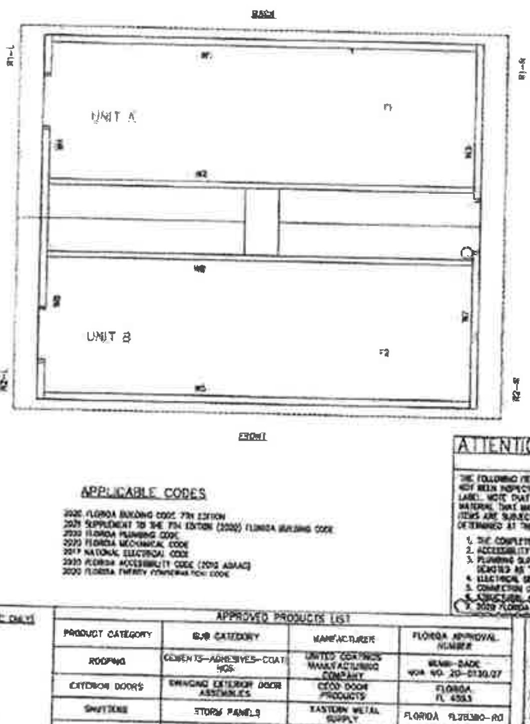
State: Florida
Signature: PFS Mark Peverson
Title: Staff Plan Reviewer
Date: 2/15/22

SANTIAGO

PANEL MARK NO. KEY PLAN

MANUFACTURED BY:
CXT INC.
[illegible]
HILLSBORO, TX 76645

SITE ADDRESS:
1500 N. ATLANTIC AVE.
[illegible]



NOTES

1. BUILDING IS DESIGNED TO COMPLY WITH PERTINENT GUIDELINES OF THE AMERICANS WITH DISABILITIES ACT (ADA).
2. DESIGN COMPLIES WITH THE PROVISIONS OF THE 2020 FLORIDA BUILDING CODE FOR THE FOLLOWING LOADS:
   - GROUND SNOW LOAD = [illegible] PSF
   - FLOOR LIVE LOAD = [illegible] PSF
   - WIND – V = 170 MPH
   - WIND – V_{asd} = [illegible] MPH
   - SEISMIC CATEGORY [illegible]
   - OCCUPANCY = [illegible]
   - RISK CATEGORY = [illegible]
   - CONSTRUCTION TYPE = V-B (UNPROTECTED)
   - EXTERIOR WALLS: [illegible] RATED PER FBC TABLE [illegible]
   - OCCUPANT LOAD = 10

* NOTE: BUILDING IS NOT TO BE PLACED IN A LOCATION WHERE LOADS EXCEED THE VALUES PROVIDED ABOVE.

* NOTE: BUILDING IS NOT TO BE PLACED IN A THE HIGH VELOCITY HURRICANE ZONE.

3. CONCRETE STRENGTH f'c = [illegible] PSI [illegible] f'c = 5000 PSI. AIR ENTRAINMENT [illegible] PLASTIC CONCRETE. REINFORCING STEEL: ASTM A615 [illegible] GRADE 40, [illegible] AND LARGER GRADE 60 [illegible] 16 GA IRON WIRE, REINFORCING TO BE CENTERED IN PANEL UNO. WELDED WIRE FABRIC (W.W.F.): ASTM A1064 [illegible] SMOOTH [illegible]
4. EMBEDDED ITEMS IDENTIFIED ON DRAWINGS (i.e. [illegible]) REFER TO CXT STANDARD EMBEDMENT CATALOG.
5. BACK OF PANELS TO HAVE [illegible] TROWEL FINISH U.N.O. ALL SURFACES TO BE TEXTURED ARE NOTED ON PANEL DWG'S.
6. REFER TO SEPARATE CXT INCORPORATED SPECIFICATIONS COVERING DESIGN, MATERIALS, PRODUCTION, AND INSTALLATION CRITERIA FOR SPECIFIC STYLE OF BUILDING.
7. ALL REBAR BENDS TO HAVE A MINIMUM RADIUS OF [illegible] THE BAR DIAMETER.
8. THIS BUILDING IS NOT DESIGNED FOR PLACEMENT ON THE UPPER HALF OF A HILL OR ESCARPMENT EXCEEDING 15 FEET IN HEIGHT.
9. THESE PLANS COMPLY WITH RULE [illegible] (PRODUCT APPROVAL).
10. THE WET SEAL SET OF PLANS ARE ON FILE IN THE THIRD PARTY AGENCY'S OFFICE AS DIRECTED BY [illegible].
11. THESE PLANS COMPLY WITH THE LATEST FBC, EFFECTIVE DEC 31, 2020.
12. THIS BUILDING IS NOT TO BE LOCATED IN A FLOOD HAZARD AREA.
13. FIRE SEPARATION DISTANCE TO BE 10' MINIMUM FROM ADJACENT STRUCTURES AND PROPERTY LINES. IF FIRE DISTANCE SEPARATION IS LESS THAN 10 FEET, SEE FBC [illegible].
14. INSTALLATION TO MEET APPLICABLE LOCAL, STATE, & FEDERAL CODES, BY OTHERS.
15. ADEQUATE PLUMBING FACILITIES MUST BE PROVIDED IN ACCORDANCE WITH THE 2020 FBC SECTION [illegible] (NOT BY CXT).
16. FLORIDA APPROVED PRODUCTS WILL BE INSTALLED PER THE MANUFACTURER'S FLORIDA PRODUCT APPROVAL REPORT INSTRUCTIONS.

SPECIAL CONDITIONS AND/OR LIMITATIONS

ACCESSIBILITY TO THIS BUILDING, INCLUDING PARKING IS TO BE PROVIDED BY OTHERS AND CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL BUILDING CODES

APPLICABLE CODES

2020 FLORIDA BUILDING CODE, 7TH EDITION
2021 SUPPLEMENT TO THE 7TH EDITION (2020) FLORIDA BUILDING CODE
2020 FLORIDA PLUMBING CODE
2020 FLORIDA MECHANICAL CODE
2017 NATIONAL ELECTRICAL CODE
2020 FLORIDA ACCESSIBILITY CODE (2012 ADAAG)
2020 FLORIDA ENERGY CONSERVATION CODE

INDEX OF DRAWINGS

PFS APPROVED
PFS CORPORATION
Cottage Grove, WI
Approval Date: [illegible]
Signature & License Number

WILLIAM R. HEIDEN III
LICENSE No. 58623
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 13, 2022

ATTENTION LOCAL INSPECTIONS DEPARTMENT SITE INSTALLED ITEMS

THE FOLLOWING ITEMS HAVE NOT BEEN COMPLETED BY THE MANUFACTURER, HAVE NOT BEEN INSPECTED BY PFS AND ARE NOT CERTIFIED BY THE STATE MODULAR LABEL. NOTE THAT THIS LIST DOES NOT NECESSARILY LIMIT THE ITEMS OF WORK AND MATERIAL THAT MAY BE REQUIRED FOR A COMPLETE INSTALLATION. ALL SITE RELATED ITEMS ARE SUBJECT TO LOCAL JURISDICTION APPROVAL. CODE COMPLIANCE MUST BE DETERMINED AT THE LOCAL LEVEL.

1. THE COMPLETE FOUNDATION SUPPORT AND TIE DOWN SYSTEM
2. ACCESSIBILITY TO THE BUILDING
3. PLUMBING SUPPLY, WASTE, AND VENT PIPING BETWEEN UNITS AND [illegible] DENOTED AS "NOT BY CXT"
4. ELECTRICAL SERVICE HOOK-UP (INCLUDING FEEDERS) TO THE BUILDING
5. CONNECTION OF ELECTRICAL CIRCUITS BETWEEN UNITS
6. [illegible]
7. 2020 FLORIDA FIRE PREVENTION CODE PLAN REVIEW & INSPECTION

FLORIDA STATE TAG APPROVAL & PE DRAWINGS REQUIRED (CCC ONLY)

WALL TEXTURE:	STUCCO / NAPA VALLEY
WALL COLOR:	SW 6127 IVOIRE / [illegible]
ROOF TEXTURE:	RIBBED METAL
ROOF COLOR:	SW 6969 BLUE CHIP
TRIM PAINT:	SW 6966 BLUE CHIP

MARINE PACKAGE REQ'D W/ FIBERGLASS DOORS & SS HINGES
[illegible] ANTI-GRAFFITI COATING REQ'D

APPROVED PRODUCTS LIST

PRODUCT CATEGORY	SUB CATEGORY	MANUFACTURER	FLORIDA APPROVAL NUMBER
ROOFING	CEMENTS-ADHESIVES-COATINGS	UNITED COATINGS MANUFACTURING COMPANY	MIAMI-DADE NOA NO. 20-0130.07
EXTERIOR DOORS	SWINGING EXTERIOR DOOR ASSEMBLIES	CECO DOOR PRODUCTS	FLORIDA FL 4593
SHUTTERS	STORM PANELS	EASTERN METAL SUPPLY	FLORIDA FL28380-R0
WINDOWS	GLASS BLOCK	[illegible] GLASS BLOCK, INC.	MIAMI-DADE NOA NO. 20-1110.08

FOUNDATION:

IN ACCORDANCE WITH THE REQUIREMENTS OF THE FLORIDA DEPARTMENT OF BUSINESS & PROFESSIONAL REGULATION, THESE BUILDINGS PLANS DO NOT CONTAIN FOUNDATION SUPPORT AND TIE DOWN SYSTEM DETAILS AND SPECIFICATIONS. THE ARCHITECT/ENGINEER OF BUILDING PLANS SHOULD BE CONTACTED TO OBTAIN APPROPRIATE FOUNDATION PLANS. IF FOUNDATION PLANS ARE DESIGNED BY OTHERS, THE ARCHITECT/ENGINEER OF BUILDING PLANS SHALL NOT BE HELD RESPONSIBLE OR LIABLE FOR THE FOUNDATION DESIGN AND THE CONSEQUENTIAL PERFORMANCE OF THE STRUCTURAL COMPONENTS AND SYSTEMS RELATING THERETO.

CXT Precast Products
SANTIAGO
COVER SHEET
S-01
0

NOTES:

1. THE SANTIAGO STYLE BUILDING CONSISTS OF TWO SEPARATE UNITS TO BE PLACED AND JOINED AT THE PROJECT SITE. PROPER SITE PREPARATION AND HANDLING IS ESSENTIAL FOR THE SAFE AND PROPER INSTALLATION OF THE BUILDING.

2. PROVIDE SHALLOW TRENCH WITH ROLLED EDGES ALONG BUILDING JOINT LINES TO PREVENT TRAPPING MATERIAL BETWEEN UNITS BEING DRAWN TOGETHER.

3. PLACE UNITS AS CLOSE TO ONE ANOTHER AS POSSIBLE. SPACE BETWEEN UNITS SHOULD NOT EXCEED 1" AT INITIATION OF POST-TENSIONING. MAXIMUM ALLOWABLE FINISH JOINT SPACE BETWEEN UNITS SHALL BE 1/2".

4. POST-TENSIONING TO DRAW UNITS INTO CONTACT SHALL BE ACCOMPLISHED WITH EQUIPMENT PROVIDED BY CXT BY PROPERLY TRAINED PERSONNEL. INSTRUCTIONS PROVIDED BY CXT SHALL BE CAREFULLY ADHERED TO. ALL NECESSARY SAFETY PRECAUTIONS SHALL BE TAKEN BY INSTALLATION PERSONNEL. STRESS TENDONS TO DRAW UNITS TOGETHER AND TO RETAIN A MINIMUM EFFECTIVE FORCE IN EACH TENDON OF 2 KIPS AFTER ALL LOSSES.

5. AFTER COMPLETION OF BUILDING PLACEMENT, BLOCKOUTS AT POST-TENSIONING ANCHORAGE POINTS SHALL BE FILLED WITH NON-METALLIC, NON-SHRINK GROUT. PROVIDE SMOOTH, NEAT FINISH COMPATIBLE WITH SURROUNDING CONCRETE SURFACES. MATCH CONCRETE COLOR.

6. PROVIDE UTILITY CONNECTIONS (PLUMBING & ELECTRICAL) AS REQUIRED AND/OR AS CALLED FOR ON THE DRAWINGS.

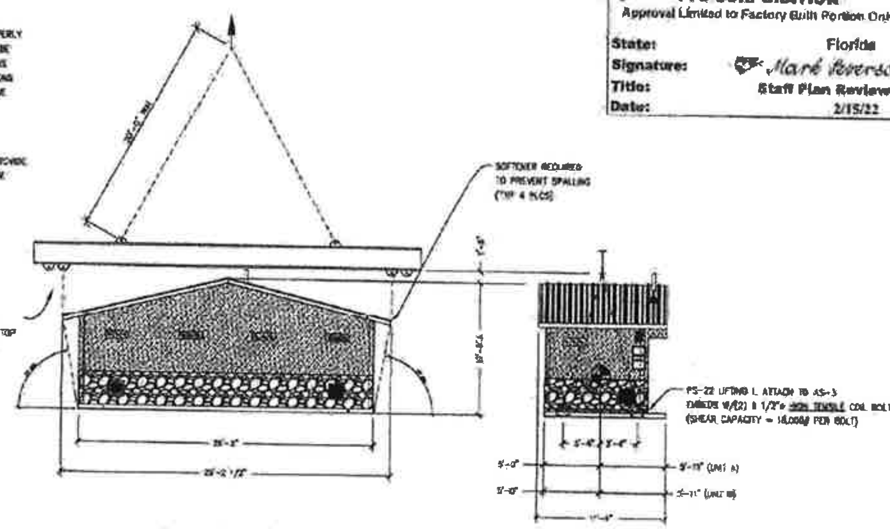
7. FILL FLOOR BLOCKOUTS AFTER COMPLETION OF UTILITY HOOKUPS WITH CONCRETE. SLOPE TO DRAIN.

SANTIAGO

RECOMMENDED HANDLING AND INSTALLATION INSTRUCTIONS

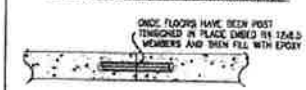
PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	Florida
Signature:	Mark Peterson
Title:	Staff Plan Reviewer
Date:	2/15/22



CRANE LIFTING SCHEMATIC – UNITS A & B

FIELD SECTIONAL CONNECTION DETAIL



ELEVATION VIEW
FINAL VIEW

SHIPPING WEIGHTS AND DIMENSIONS

SECTION	WEIGHT	LENGTH	WIDTH	HEIGHT
A (BACK)	70,500	29'-3"	11'-6"	12'-0"
B (FRONT)	70,500	29'-3"	11'-6"	12'-0"

WILLIAM R. HEIDER III
LICENSE No. 58023
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 13, 2022

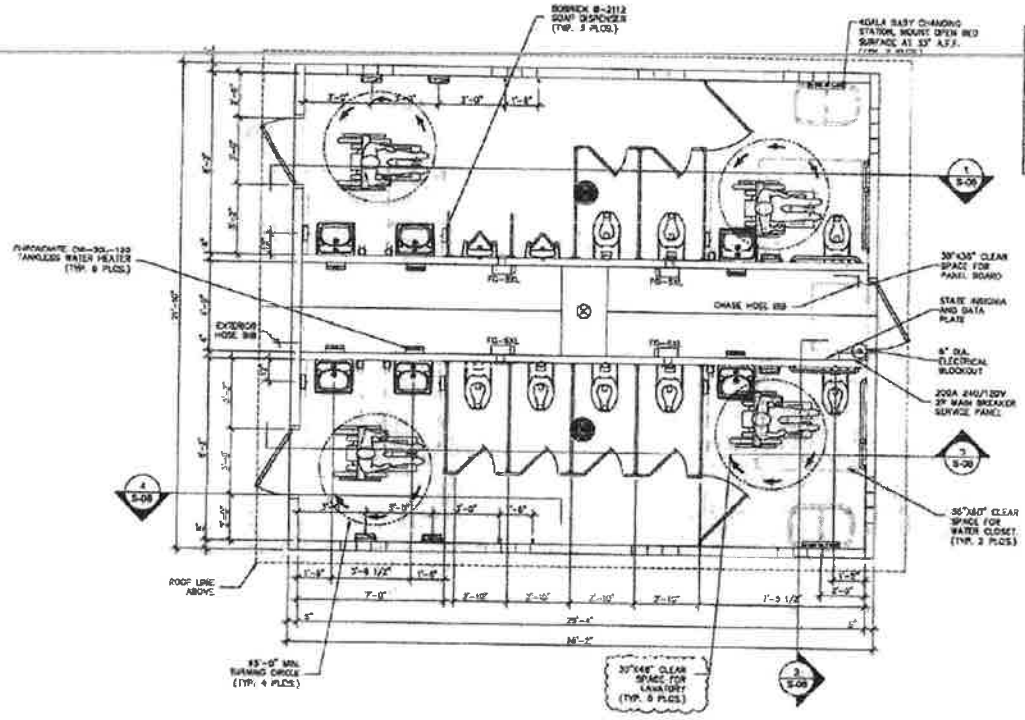
CXT Precast Products

SANTIAGO

HANDLING INSTRUCTIONS

S-02

MARINE PACKAGE



PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Averson
Title: Staff Plan Reviewer
Date: 2/15/22

NOTES:

1. PLUMBING AND ELECTRICAL COMPONENTS ARE SHOWN FOR GENERAL ARRANGEMENT ONLY. SEE SHEETS S-24 THRU S-28 FOR COMPLETE SYSTEM DESCRIPTIONS.

WILLIAM R. HEIDEBRECK
LICENSE
No. 58823
STATE OF FLORIDA
PROFESSIONAL ENGINEER

February 13, 2022

CXT
Precast Products

SANTIAGO
BUILDING NUMBERS S-256 & S-257

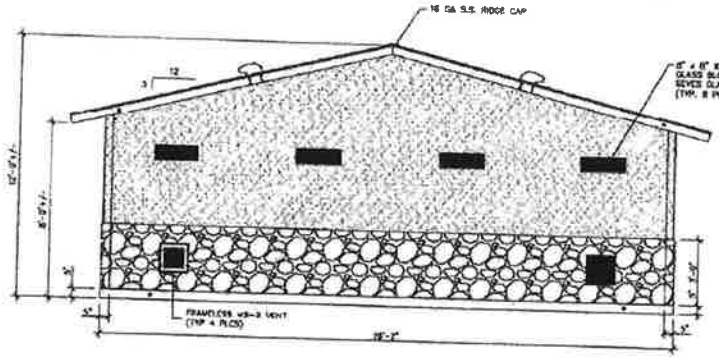
FLOOR PLAN

S-03

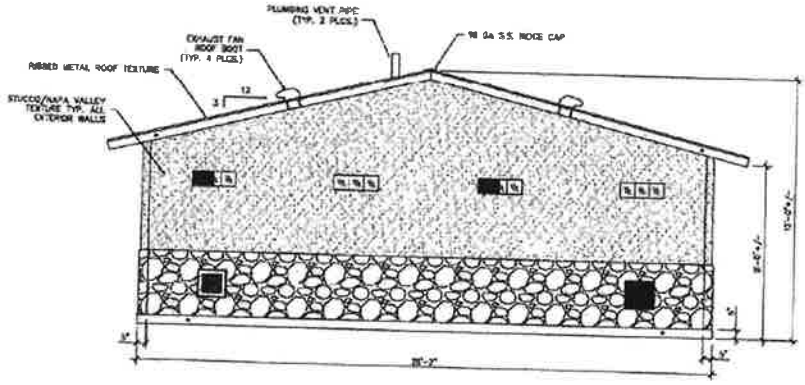
SHEET 3 OF 30

0

MARINE PACKAGE



FRONT ELEVATION



REAR ELEVATION

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	Florida
Signature:	Mark Iverson
Title:	Staff Plan Reviewer
Date:	2/15/22

WILLIAM R. HEDEN III
LICENSE
No. 58523
STATE OF FLORIDA
PROFESSIONAL ENGINEER

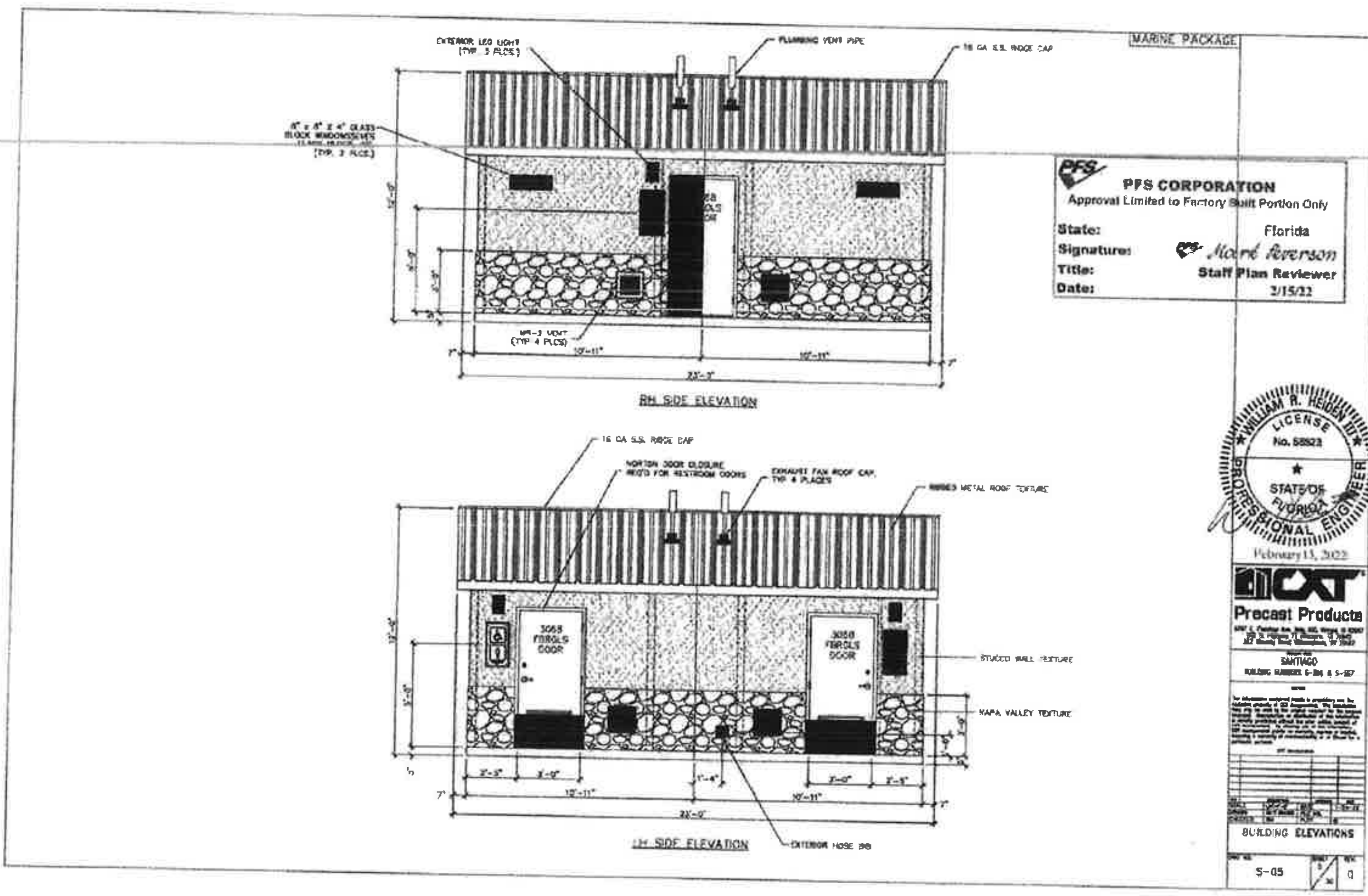
February 15, 2022

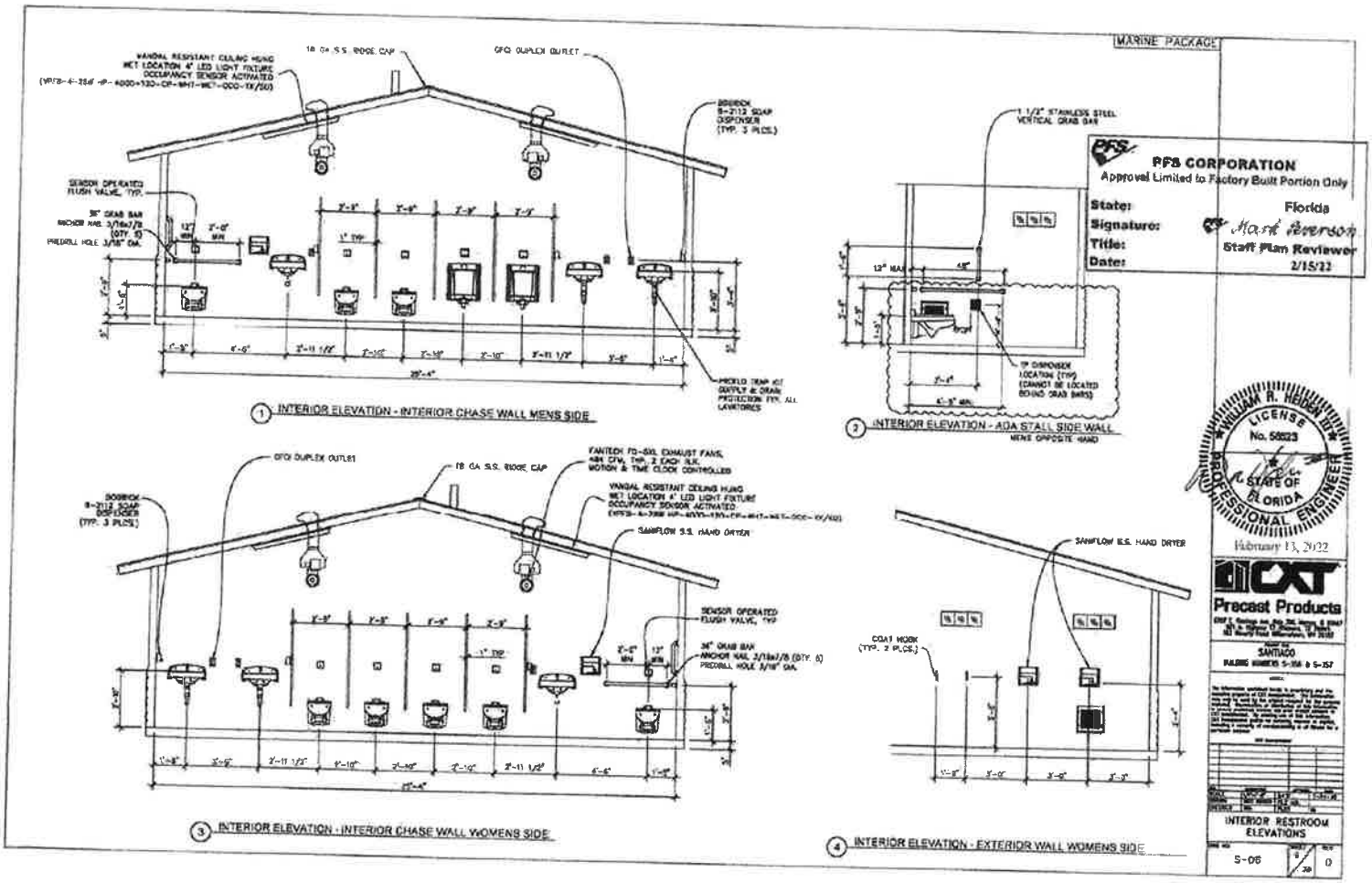
CXT
Precast Products

SANTIAGO

BUILDING ELEVATIONS

S-04 | SHEET 4 / 30 | REV 0


MARINE PACKAGE
EXTERIOR LED LIGHT (TYP. 3 PLCS.)
PLUMBING VENT PIPE
16 GA S.S. RIDGE CAP
MR-3 VENT (TYP 4 PLCS)
10'-11"
23'-0"
RH SIDE ELEVATION
NORTON DOOR CLOSURE REQ'D FOR RESTROOM DOORS
EXHAUST FAN ROOF CAP, TYP. 4 PLACES
RIBBED METAL ROOF TEXTURE
3068 FBRGLS DOOR
STUCCO WALL TEXTURE
NAPA VALLEY TEXTURE
3'-0"
12'-11"
1'-4"
EXTERIOR HOSE BIB
LH SIDE ELEVATION
PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Signature: Mark Iverson
Title: Staff Plan Reviewer
Date: 2/15/22
WILLIAM R. HEIDEN III
LICENSE No. 58523
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 15, 2022
CXT
Precast Products
SANTIAGO
BUILDING ELEVATIONS
S-05
0



PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Signature: Mark Peterson
Title: Staff Plan Reviewer
Date: 2/15/22

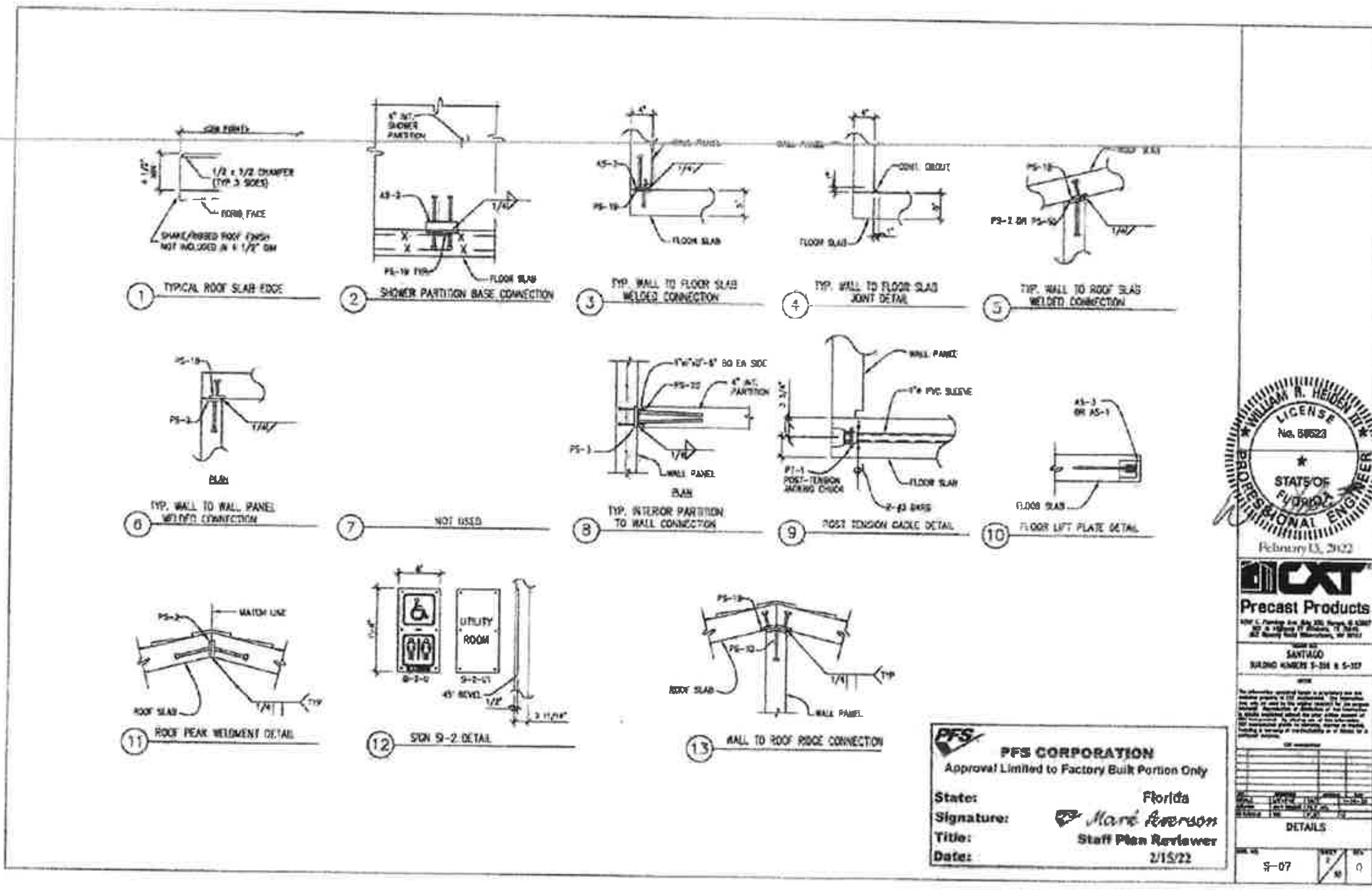
WILLIAM R. HEIDEL III
LICENSE No. 58823
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 13, 2022

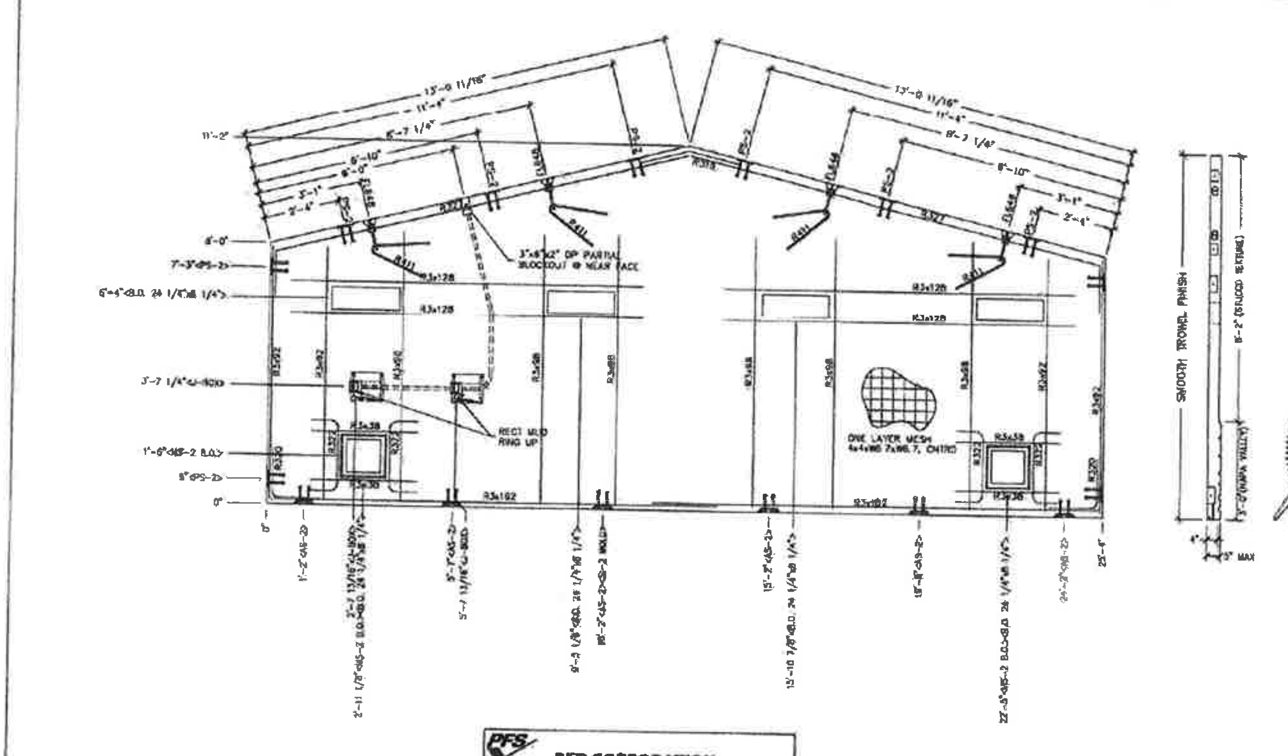
CXT Precast Products

SANTIAGO
BUILDING NUMBERS S-356 & S-357

INTERIOR RESTROOM ELEVATIONS

S-06 | 9 | 20 | 0


TYPICAL ROOF SLAB EDGE
1/2 x 1/2 CHAMFER (TYP 3 SIDES)
FORM FACE
SHAKE/RIBBED ROOF FINISH NOT INCLUDED IN 4 1/2" DIM
SHOWER PARTITION BASE CONNECTION
FLOOR SLAB
TYP. WALL TO FLOOR SLAB WELDED CONNECTION
FLOOR SLAB
TYP. WALL TO FLOOR SLAB JOINT DETAIL
CONT. GROUT
FLOOR SLAB
TYP. WALL TO ROOF SLAB WELDED CONNECTION
TYP. WALL TO WALL PANEL WELDED CONNECTION
PLAN
NOT USED
TYP. INTERIOR PARTITION TO WALL CONNECTION
WALL PANEL
PLAN
POST TENSION CABLE DETAIL
WALL PANEL
FLOOR SLAB
FLOOR LIFT PLATE DETAIL
FLOOR SLAB
ROOF PEAK WELDMENT DETAIL
MATCH LINE
ROOF SLAB
SIGN SI-2 DETAIL
UTILITY ROOM
45° BEVEL
WALL TO ROOF RIDGE CONNECTION
ROOF SLAB
WALL PANEL
PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Signature: Mark Anderson
Title: Staff Plan Reviewer
Date: 2/15/22
WILLIAM R. HEIDEN III
LICENSE
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 13, 2022
CXT
Precast Products
SANTIAGO
DETAILS
S-07
0



AS-2	6
PS-2	10
FL548	4
R411	4
R320	8
B.O. 24 1/4"x8 1/4"	4
R3x192	4
R316	1
R327	2
R3x128	8
R3x92	8
R3x98	12
AS-2 B.O.	2
R5x38	8
R3x227	4
4x4 J-BOX	2
RECT MUD RING	2
PARTIAL BO 3"x8"x2"DP	1

823 (ft) 247

WILLIAM ... III LICENSE No. 58523 STATE OF FLORIDA PROFESSIONAL ENGINEER

February 13, 2022

CXT
Precast Products

SANTIAGO

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	Florida
Signature:	Mark Iverson
Title:	Staff Plan Reviewer
Date:	2/15/22

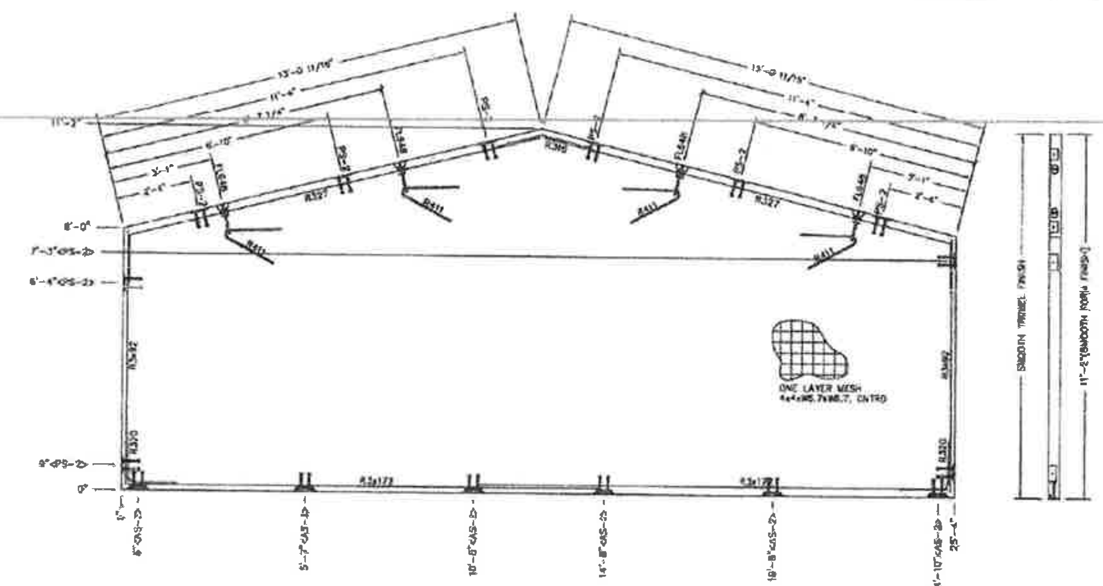
MARINE PACKAGE

NOTES:
1. WALL THICKNESS = 4" + TEXTURE
2. EXCEPT R411, R303, R322, R3x38, R327 & R316, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER ALL OTHER BARS TO BE CENTERED IN PANEL.

WALL PANEL
MARK W1

S-08

0



ITEM	QTY
AS-1	6
PS-2	10
FL-648	4
R411	4
R3x92	4
R3x172	4
R327	2
R320	4
R316	1

MARINE PACKAGE

NOTES:

1. WALL THICKNESS = 4"
2. EXCEPT R411, R327 & R316, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER
3. SEE SHEET S-10 FOR BLOCKOUT LOCATIONS.

PFS

PFS CORPORATION

Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Iverson
Title: Staff Plan Reviewer
Date: 2/15/22

LICENSE No. 58823
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 13, 2022

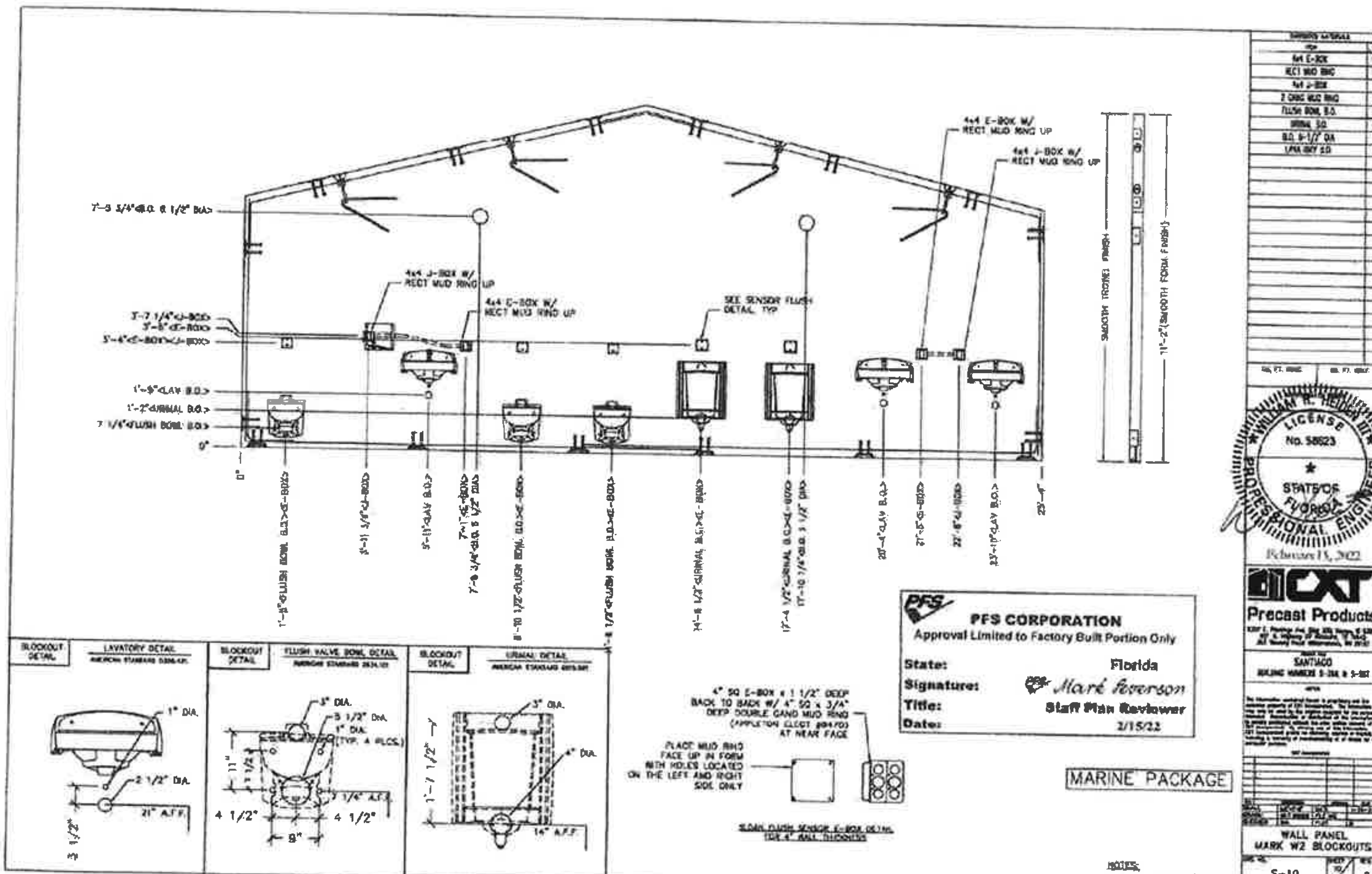
CXT
Precast Products

SANTIAGO
BUILDING NUMBERS S-316 & S-317

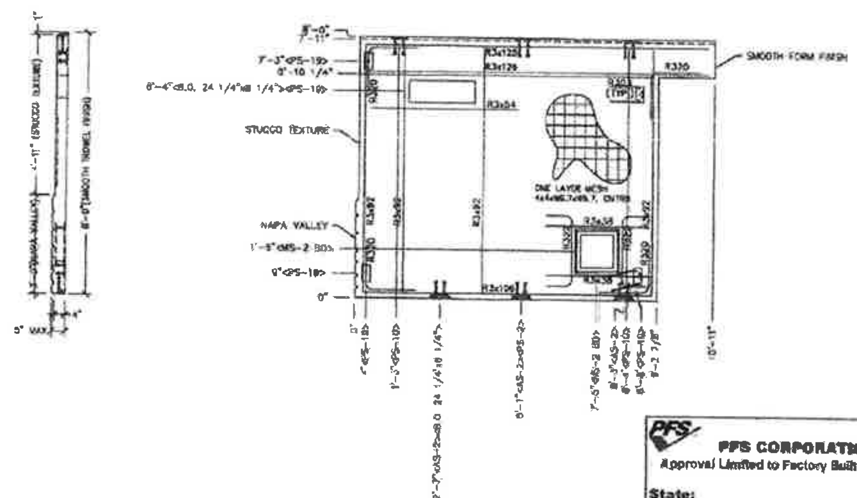
WALL PANEL
MARK W2

S-09

0


4x4 J-BOX W/ RECT MUD RING UP
4x4 E-BOX W/ RECT MUD RING UP
SEE SENSOR FLUSH DETAIL, TYP
BLOCKOUT DETAIL
LAVATORY DETAIL
FLUSH VALVE BOWL DETAIL
URINAL DETAIL
PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Title: Staff Plan Reviewer
Date: 2/15/22
MARINE PACKAGE
LICENSE No. 58623
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 15, 2022
Precast Products
WALL PANEL
MARK W2 BLOCKOUTS
S-10
NOTES:
1. WALL THICKNESS = 4"

AS-2	2
PS-10	2
PS-19	4
R302	2
B.O. 24 1/4"x8 1/4"	1
R3x126	4
R3x90	8
[illegible]	[illegible]
R3x108	2
PS-2	1
R3x54	1
R322	2
R3x38	2
MS-2 B.O.	1
S-2 MOLD	1



MARINE PACKAGE

NOTES:
1. WALL THICKNESS = 4"+ TEXTURE
2. EXCEPT R303, R322 & R3x38, REINFORCING BARS TO BE LACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" IN. COVER
3. ALL OTHER BARS TO BE CENTERED IN PANEL

LICENSE No. 58623
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 15, 2022

CXT Precast Products

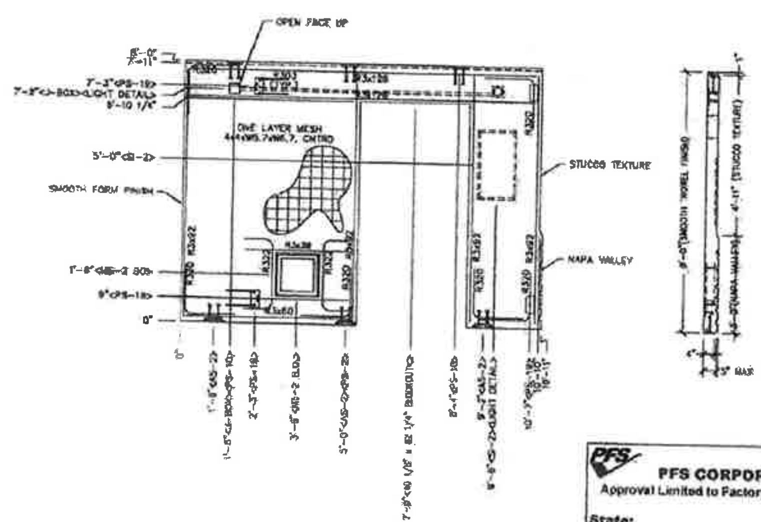
SANTIAGO
BUILDING NUMBERS S-356 & S-357

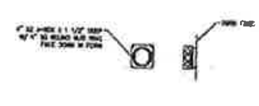
WALL PANEL
MARK W3

S-11

11/30

0





LIGHT DETAIL

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	Florida
Signature:	Mark Peverson
Title:	Staff Plan Reviewer
Date:	2/15/22

MARINE PACKAGE

NOTES:
1. WALL THICKNESS = 4"
2. EXCEPT R303, R322 & R3x58, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER.
3. ALL OTHER BARS TO BE CENTERED IN PANEL.

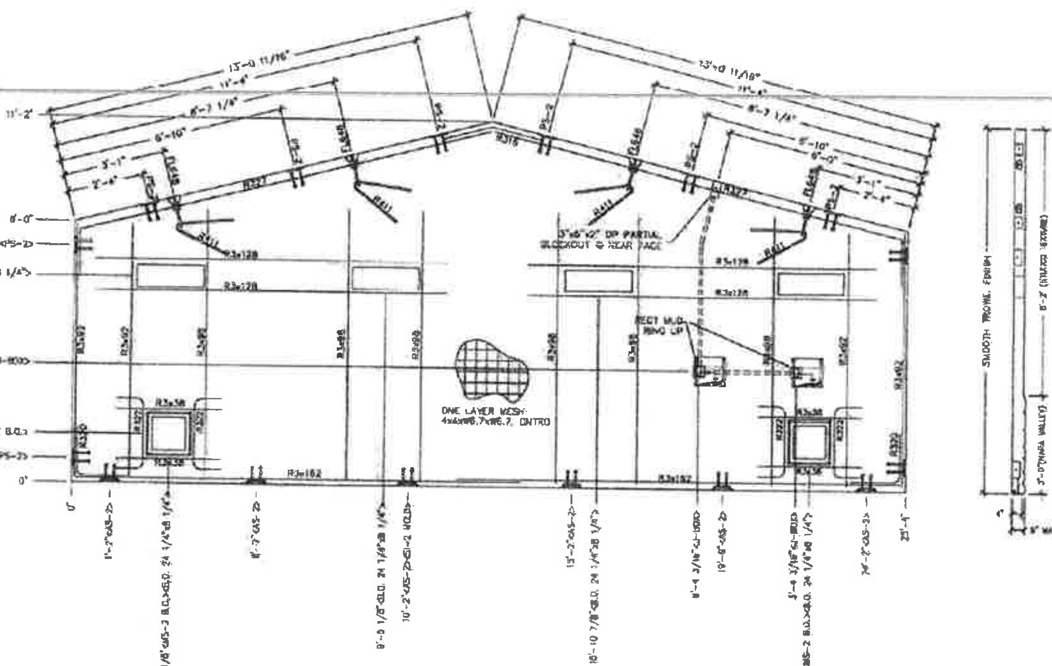
LICENSE No. 53533
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 13, 2022

CXT
Precast Products

SANTIAGO

WALL PANEL
MARK W4

S-12 | 12/30 | 0



PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Peterson
Title: Staff Plan Reviewer
Date: 2/15/22

MARINE PACKAGE

NOTES:
1. WALL THICKNESS = 4" + TEXTURE
2. EXCEPT R411, R303, R322, R3x38, R327 & R318, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER ALL OTHER BARS TO BE CENTERED IN PANEL

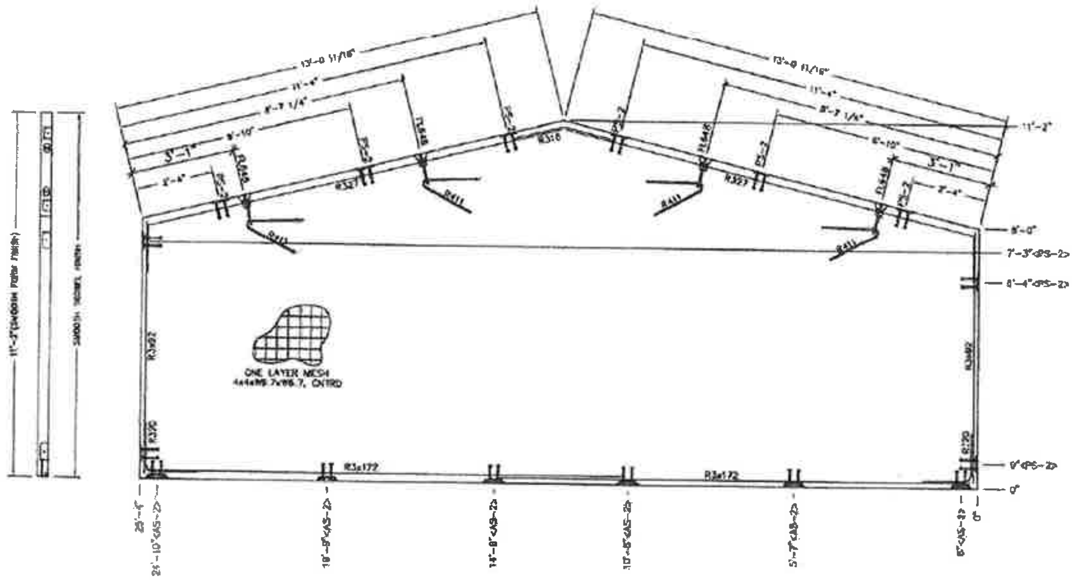
WILLIAM ... LICENSE No. 58623 STATE OF FLORIDA PROFESSIONAL ENGINEER
February 14, 2022

CXT Precast Products

SANTIAGO

WALL PANEL
MARK W5

S-13 | 0



ITEM	QTY
AS-2	6
PS-2	10
PL-648	4
R411	4
R3x92	4
R3x172	4
R327	2
R320	4
R316	1

WILLIAM ... III
LICENSE No. 58623
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 11, 2022

CXT Precast Products

SANTIAGO
BUILDING NUMBERS S-300 & S-301

PFS CORPORATION
Approval Limited to Factory Built Portion Only

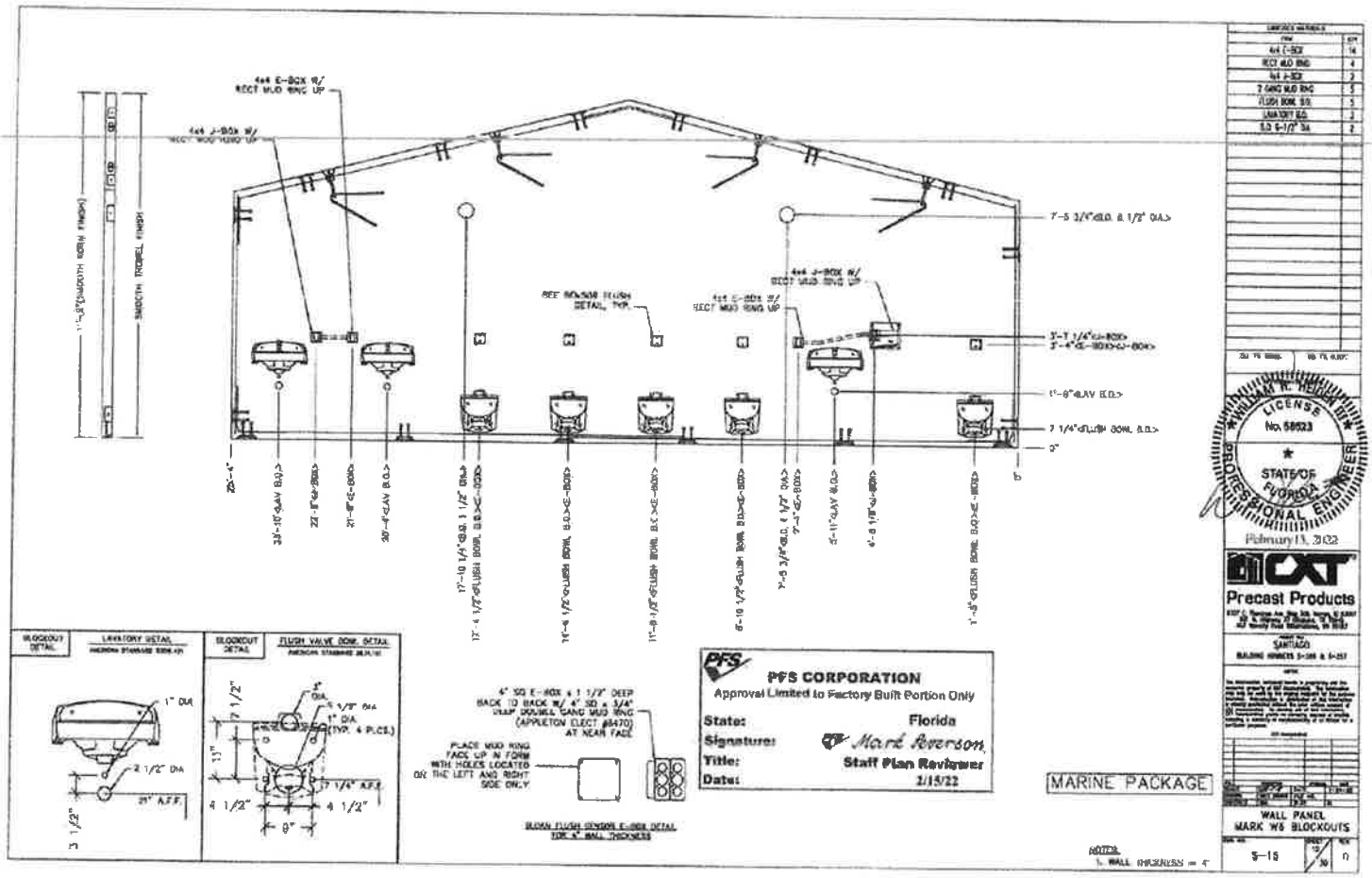
State: Florida
Signature: Mark Peterson
Title: Staff Plan Reviewer
Date: 2/15/22

MARINE PACKAGE

NOTES:
1. WALL THICKNESS = 4"
2. EXCEPT R411, R327 & R316, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER
3. SEE SHEET S-15 FOR BLOCKOUT LOCATIONS

WALL PANEL
MARK W6

S-14 | 14/38 | 0



PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Roverson
Title: Staff Plan Reviewer
Date: 2/15/22

MARINE PACKAGE

NOTES:
1. WALL THICKNESS = 4"

ITEM	QTY
4x4 E-BOX	14
RECT MUD RING	4
4x4 J-BOX	2
2 GANG MUD RING	5
FLUSH BOWL E.O.	5
LAVATORY E.O.	2
E.O. 6-1/2" DIA	2

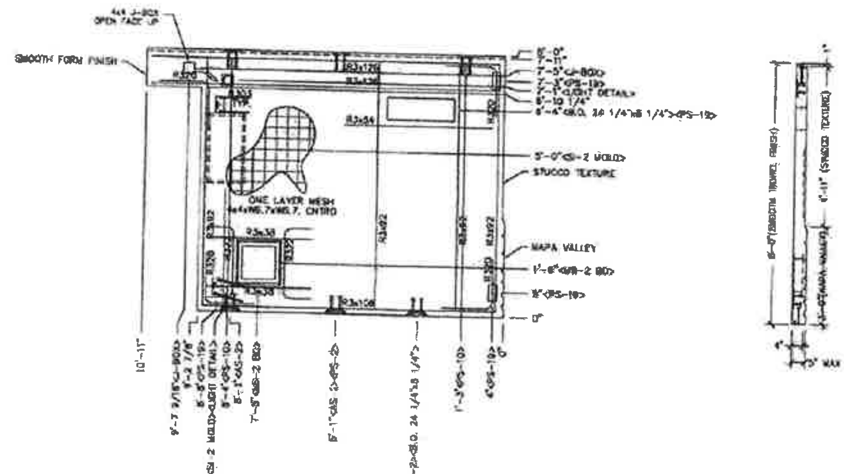
LICENSE No. 58523 STATE OF FLORIDA PROFESSIONAL ENGINEER
WILLIAM R. HEIDER
February 13, 2022

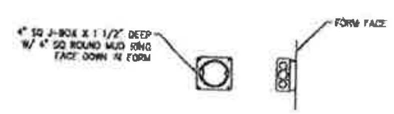
Precast Products

SANTIAGO
BUILDING NUMBERS 5-166 & 5-167

WALL PANEL MARK W5 BLOCKOUTS

5-15





LIGHT DETAIL

[illegible]	[illegible]
AS-2	3
PS-10	2
PS-19	4
R303	2
B.O. 24 1/4"x8 1/4"	1
R3x128	2
R5x32	8
R539	8
R3x106	2
PS-2	1
R3x54	4
R322	2
R3x38	2
WS-2 B.O.	1
SI-2 MOLD	1
4x4 J-BOX	2
ROUND MUD RING	1

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	Florida
Signature:	Mark Pererson
Title:	Staff Plan Reviewer
Date:	2/15/22

WILLIAM ... LICENSE No. 50623 STATE OF FLORIDA PROFESSIONAL ENGINEER
February 15, 2022

CXT Precast Products

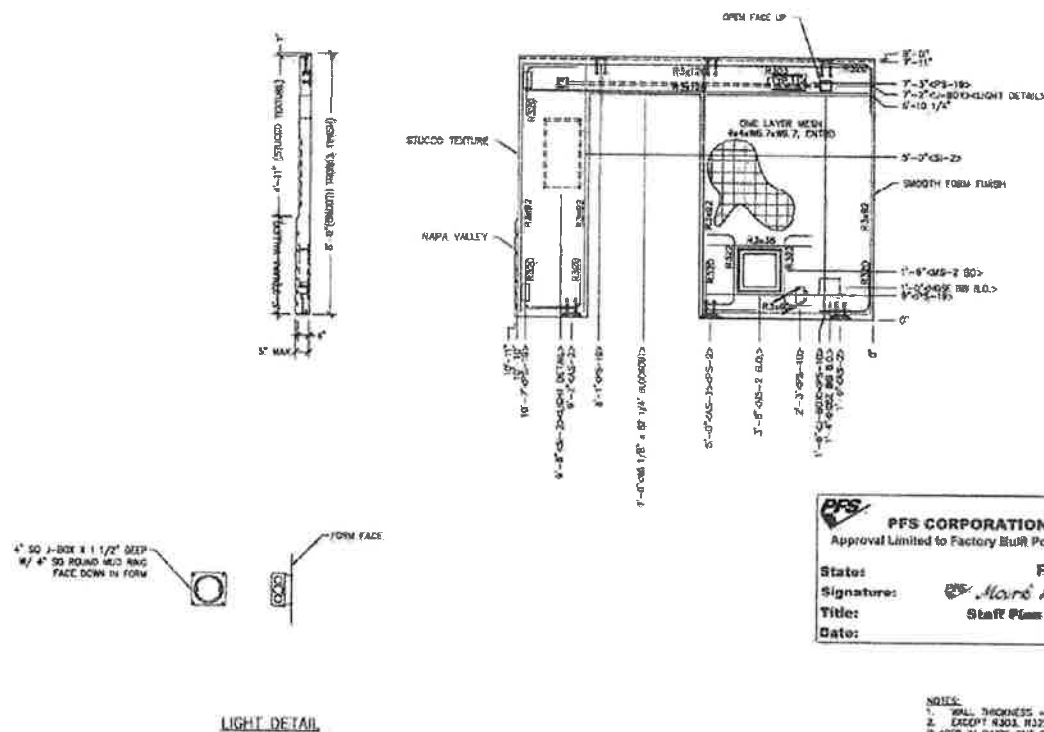
SANTIAGO

MARINE PACKAGE

NOTES:
1. WALL THICKNESS = 4"
2. EXCEPT R303, R322 & R3x38, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN COVER.
3. ALL OTHER BARS TO BE CENTERED IN PANEL.

WALL PANEL
MARK W7

S-15 | 12/30 | D



PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Marc Pearson
Title: Staff Plans Reviewer
Date: 2/15/22

MARINE PACKAGE

NOTES:
1. WALL THICKNESS = 4"
2. EXCEPT R303, R322 & R3x36, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER.
3. ALL OTHER BARS TO BE CENTERED IN PANEL.

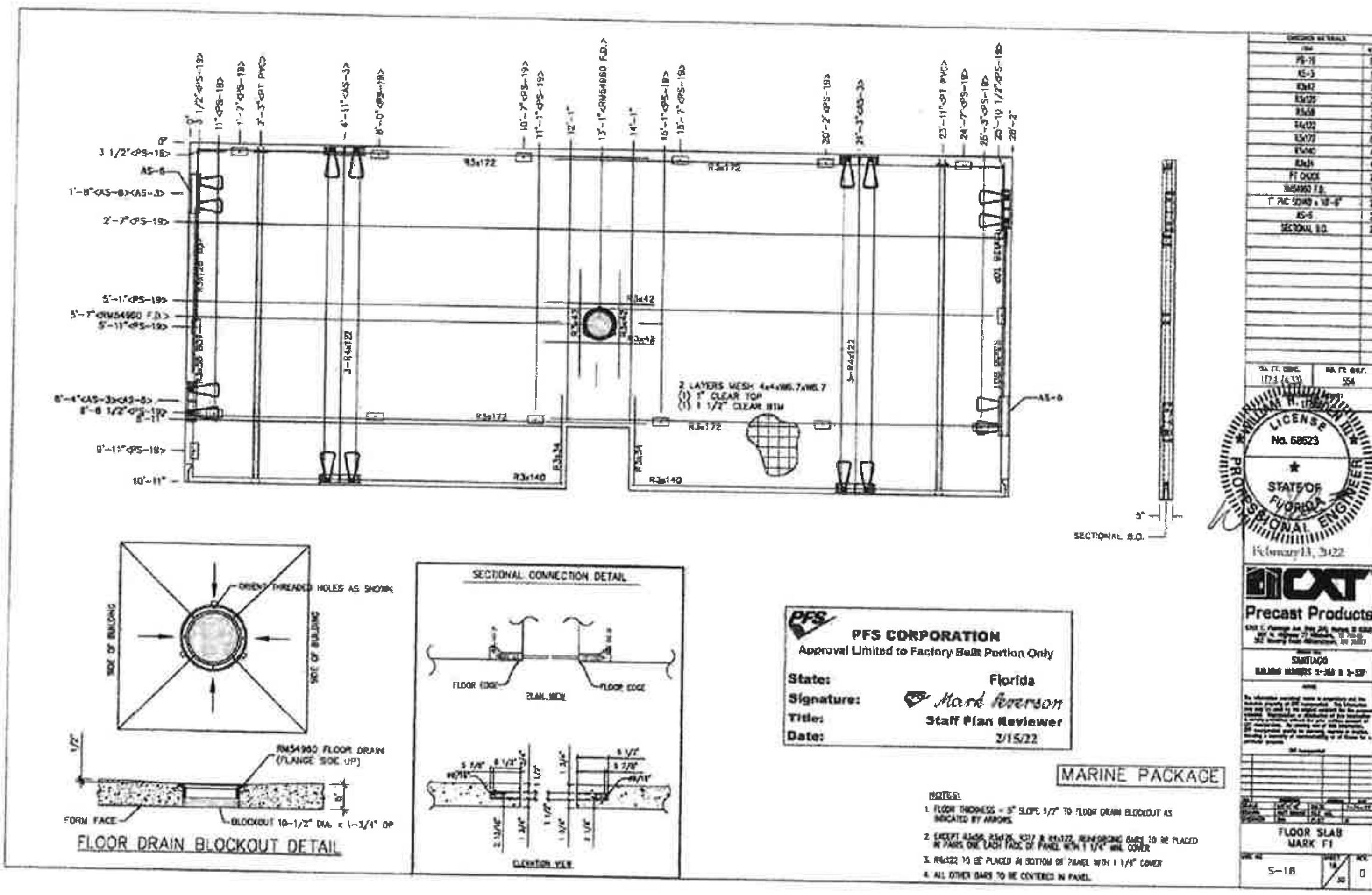
LICENSE No. 58823 STATE OF FLORIDA PROFESSIONAL ENGINEER
February 13, 2022

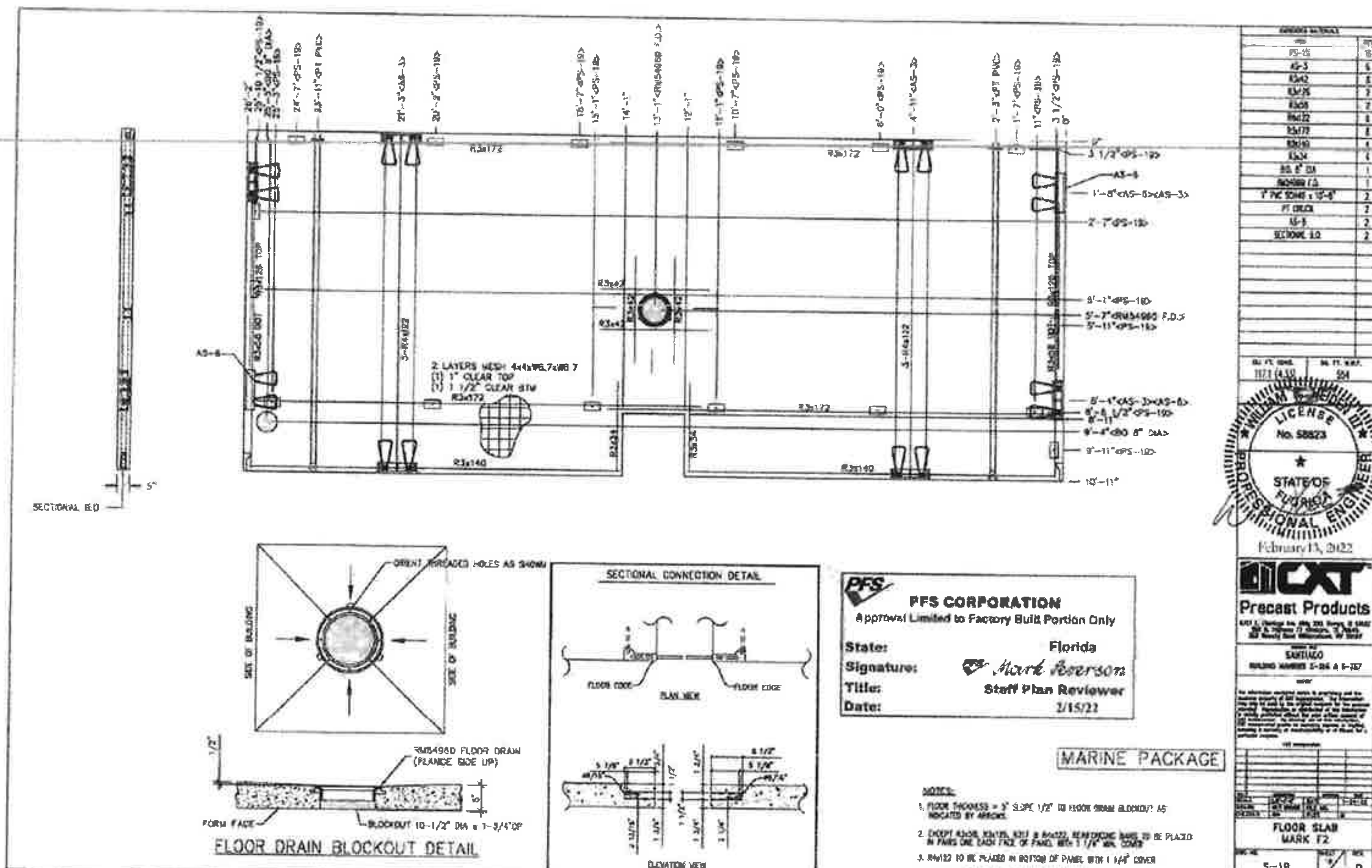
CXT Precast Products

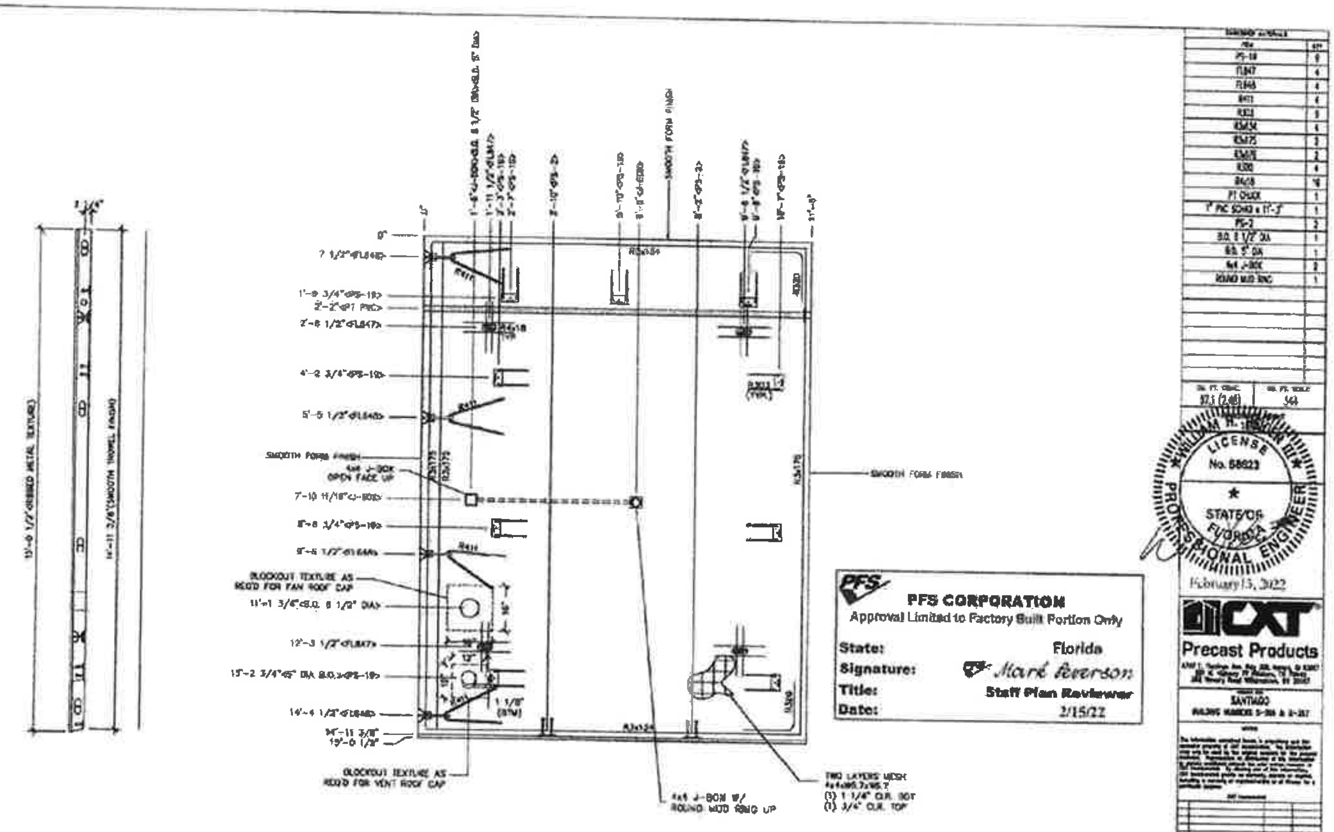
SANTIAGO

WALL PANEL
MARK WB

S-17 | 17/30 | 0


PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Signature: Mark Peterson
Title: Staff Plan Reviewer
Date: 2/15/22
MARINE PACKAGE
NOTES:
1. FLOOR THICKNESS = 5" SLOPE 1/2" TO FLOOR DRAIN BLOCKOUT AS INDICATED BY ARROWS.
2. EXCEPT R3x128, R3x126, R3x7 & R4x122, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL WITH 1 1/4" MIN. COVER
3. R4x122 TO BE PLACED IN BOTTOM OF PANEL WITH 1 1/4" COVER
4. ALL OTHER BARS TO BE CENTERED IN PANEL.
FLOOR DRAIN BLOCKOUT DETAIL
ORIENT THREADED HOLES AS SHOWN
SIDE OF BUILDING
RM54960 FLOOR DRAIN (FLANGE SIDE UP)
FORM FACE
BLOCKOUT 10-1/2" DIA. x 1-3/4" DP
SECTIONAL CONNECTION DETAIL
FLOOR EDGE
PLAN VIEW
ELEVATION VIEW
2 LAYERS MESH 4x4xW0.7xW0.7
(1) 1" CLEAR TOP
(1) 1 1/2" CLEAR BTM
R3x172
R3x140
R3x42
3-R4x122
SECTIONAL B.O.
LICENSE No. 68623
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 13, 2022
CXT Precast Products
SANTIAGO
FLOOR SLAB
MARK F1
S-18
0


SECTIONAL ELD
2 LAYERS MESH 4x4xW6.7xW6.7
(1) 1" CLEAR TOP
(1) 1 1/2" CLEAR BTM
FLOOR DRAIN BLOCKOUT DETAIL
ORIENT THREADED HOLES AS SHOWN
SIDE OF BUILDING
RM5496D FLOOR DRAIN
(FLANGE SIDE UP)
FORM FACE
BLOCKOUT 10-1/2" DIA x 1-3/4" DP
SECTIONAL CONNECTION DETAIL
FLOOR EDGE
PLAN VIEW
ELEVATION VIEW
PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Signature: Mark Roerson
Title: Staff Plan Reviewer
Date: 2/15/22
MARINE PACKAGE
NOTES:
LICENSE
No. 58823
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 15, 2022
CXT
Precast Products
SANTIAGO
FLOOR SLAB
MARK F2
5-19
0



PFS CORPORATION
Approval Limited to Factory Built Portion Only

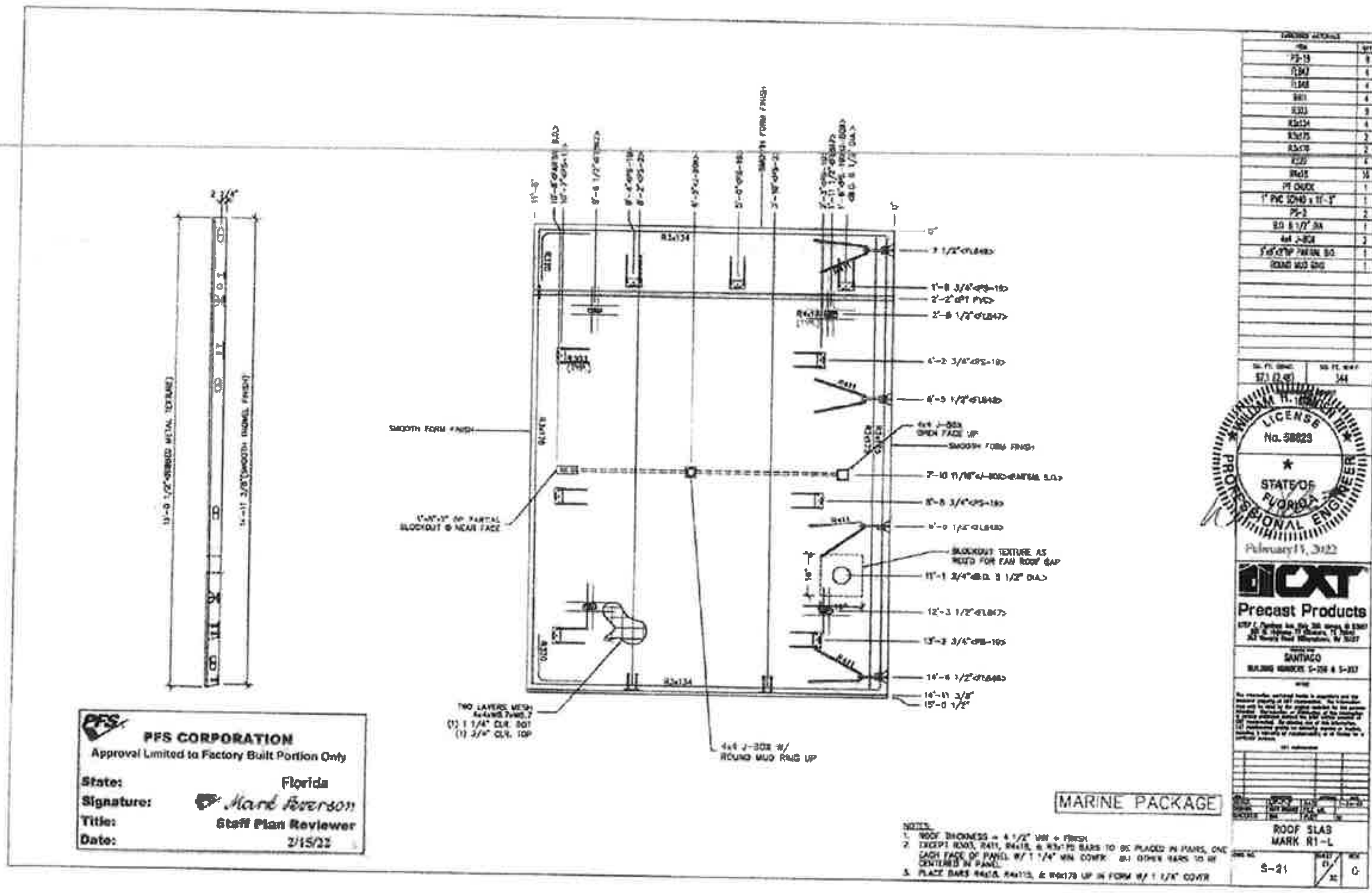
State: Florida
Signature: Mark Peerson
Title: Staff Plan Reviewer
Date: 2/15/22

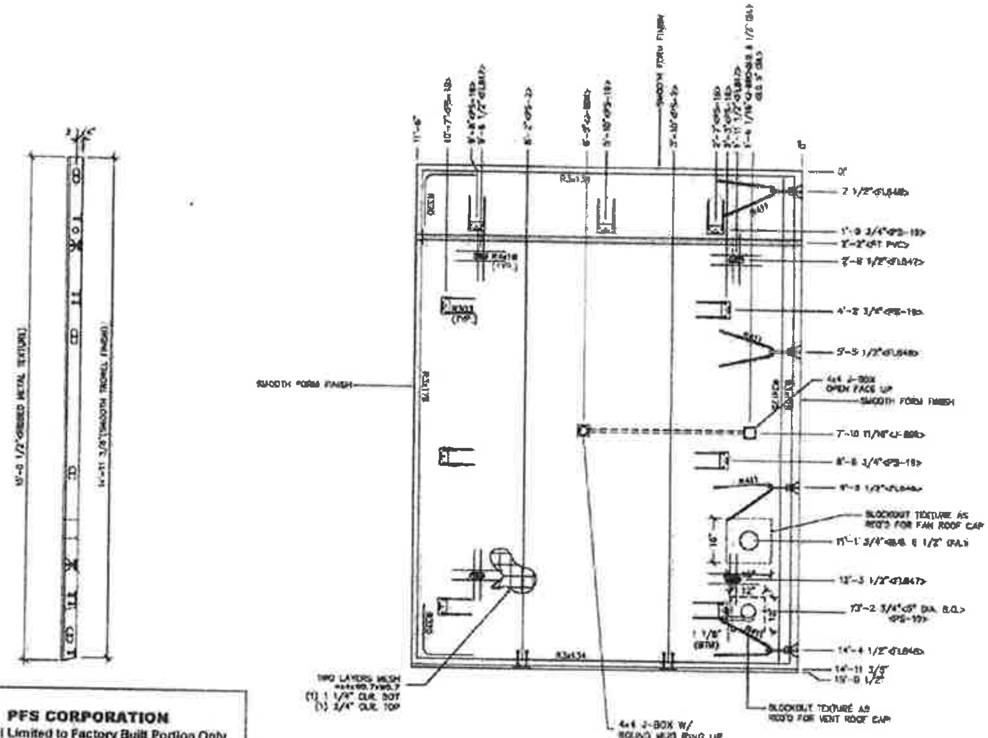
MARINE PACKAGE

NOTES:
1. ROOF THICKNESS = 4 1/2" MIN + FINISH
2. EXCEPT R303, R411, R4x18, & R3x175 BARS TO BE PLACED IN PAIRS, ONE EACH FACE OF PANEL W/ 1 1/4" MIN. COVER. ALL OTHER BARS TO BE CENTERED IN PANEL.
3. PLACE BARS R4x18, R4x115, & R4x176 UP IN FORM W/ 1 1/4" COVER.

ROOF SLAB
MARK R1-R

S-20 | 0


SMOOTH FORM FINISH
2'-2"<PT PVC>
4'-2 3/4"<PS-19>
4x4 J-BOX
OPEN FACE UP
7'-10 11/16"<J-BOX>
BLOCKOUT TEXTURE AS
REQ'D FOR FAN ROOF GAP
12'-3 1/2"<LBK7>
13'-3 3/4"<PS-19>
14'-11 3/8"
15'-0 1/2"
TWO LAYERS MESH
(1) 1 1/4" CLR. BOT
(1) 3/4" CLR. TOP
4x4 J-BOX W/
ROUND MUD RING UP
R3x134
PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Signature: Mark Peterson
Title: Staff Plan Reviewer
Date: 2/15/22
MARINE PACKAGE
NOTES:
1. ROOF THICKNESS = 4 1/2" VAR + FINISH
2. EXCEPT R303, R411, R4x18, & R3x170 BARS TO BE PLACED IN PAIRS, ONE EACH FACE OF PANEL W/ 1 1/4" MIN COVER. ALL OTHER BARS TO BE CENTERED IN PANEL.
3. PLACE BARS R4x18, R4x115, & R4x178 UP IN FORM W/ 1 1/4" COVER
LICENSE
No. 58023
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 15, 2022
CXT
Precast Products
SANTIAGO
ROOF SLAB
MARK R1-L
S-21
0



PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	Florida
Signature:	Mark Peterson
Title:	Staff Plan Reviewer
Date:	2/15/22

MARINE PACKAGE

NOTES:
1. ROOF THICKNESS = 4 1/2" MIN + FINISH
2. EXCEPT R333, R411, R4x18, & R3x175 BARS TO BE PLACED IN PAIRS, ONE EACH FACE OF PANEL W/ 1 1/4" MIN. COVER. ALL OTHER BARS TO BE CENTERED IN PANEL.
3. PLACE BARS R4x18, R4x115, & R4x175 UP IN FORM W/ 1 1/4" COVER

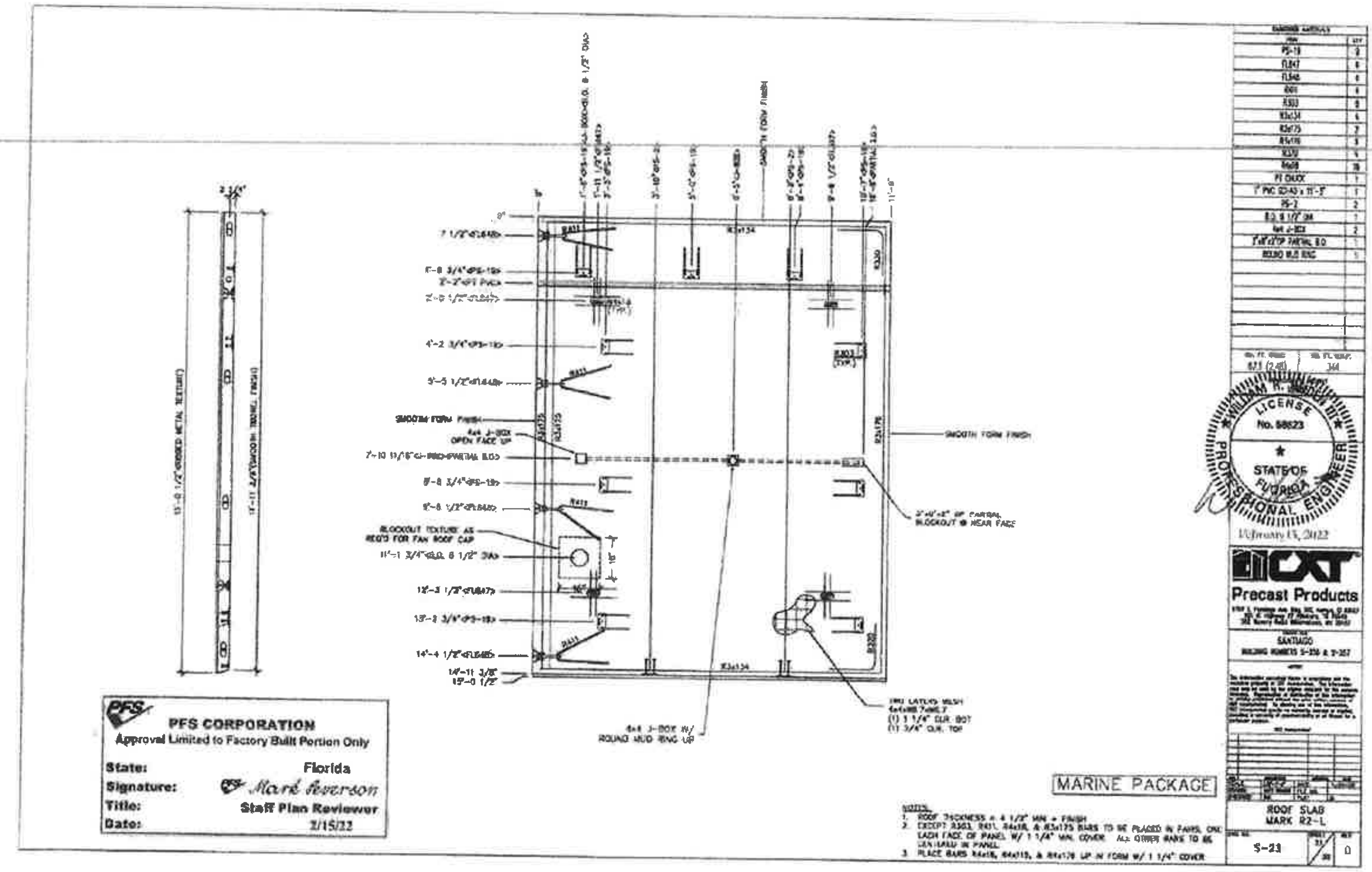
PROFESSIONAL ENGINEER, LICENSE No. 58823, STATE OF FLORIDA
February 13, 2022

CXT Precast Products

SANTIAGO
BUILDING NUMBERS S-356 & S-357

ROOF SLAB
MARK R2-R

S-23 | SHEET 22/30 | REV 0


SMOOTH FORM FINISH
4x4 J-BOX OPEN FACE UP
BLOCKOUT TEXTURE AS REQ'D FOR FAN ROOF CAP
4x4 J-BOX W/ ROUND MUD RING UP
TWO LAYERS MESH
(1) 1 1/4" CLR. BOT
(1) 3/4" CLR. TOP
LICENSE
No. 58823
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 15, 2022
CXT
Precast Products
SANTIAGO
PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 2/15/22
MARINE PACKAGE
NOTES:
1. ROOF THICKNESS = 4 1/2" MIN + FINISH
2. EXCEPT R303, R411, R4x18, & R3x175 BARS TO BE PLACED IN PAIRS, ONE EACH FACE OF PANEL W/ 1 1/4" MIN. COVER. ALL OTHER BARS TO BE CENTERED IN PANEL.
3. PLACE BARS R4x18, R4x115, & R4x170 UP IN FORM W/ 1 1/4" COVER
ROOF SLAB
MARK R2-L
S-23
0

DELETED

February 13, 2022

CXT
Precast Products

SANTIAGO
BUILDING NUMBERS S-306 & S-307

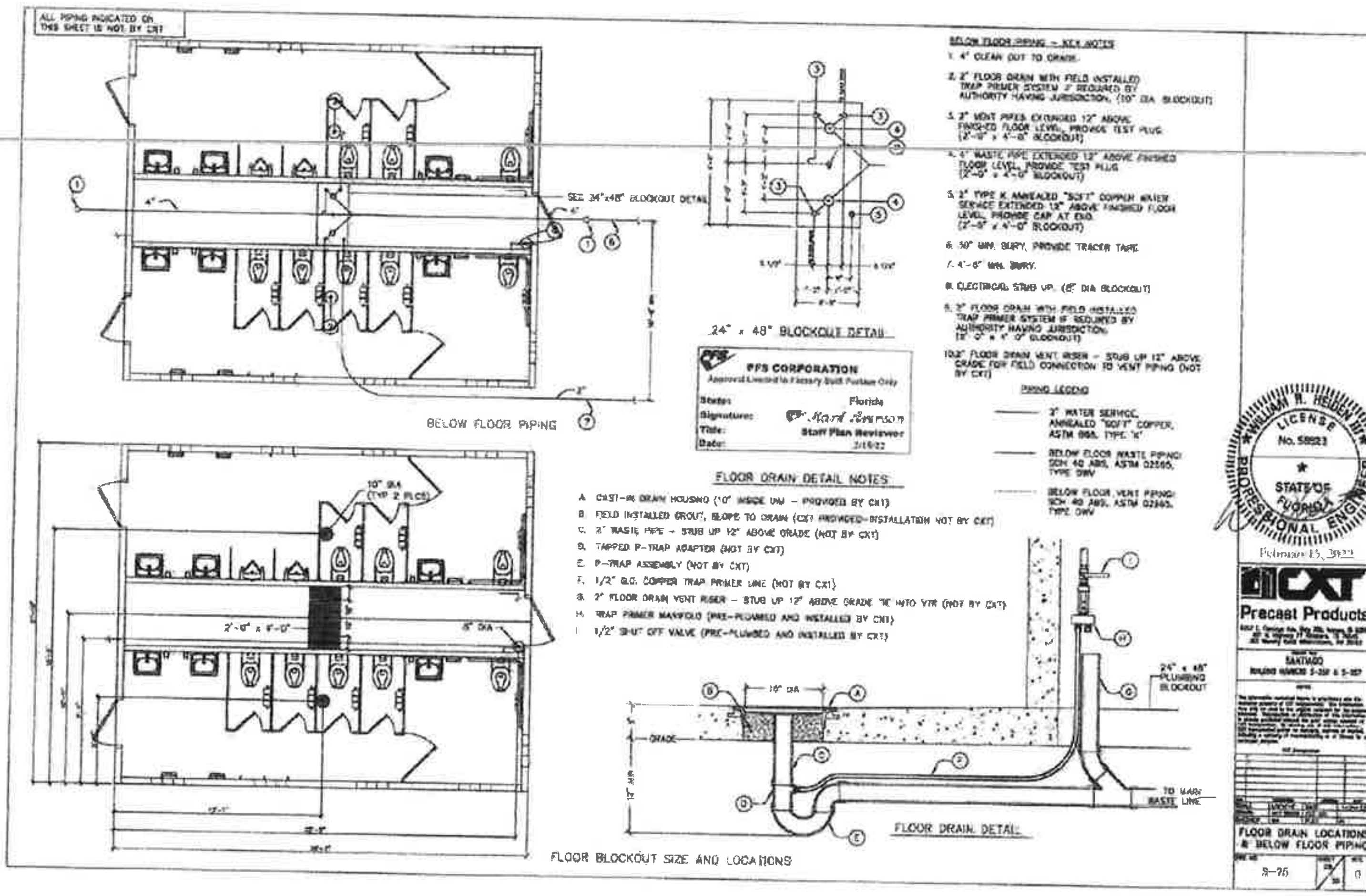
GRAVEL PAD
DETAIL

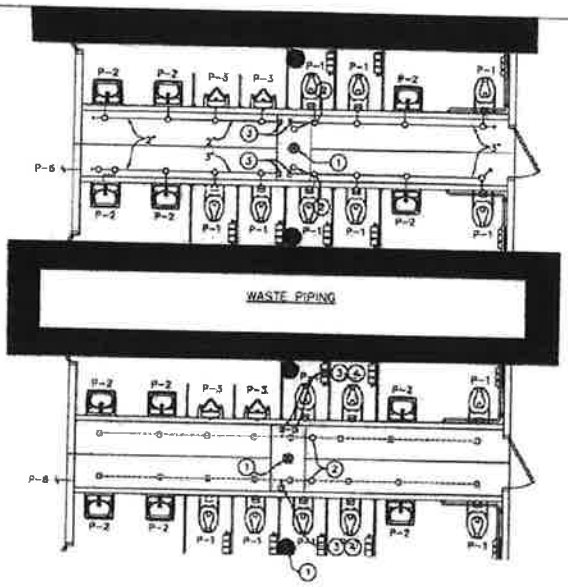
S-24

0

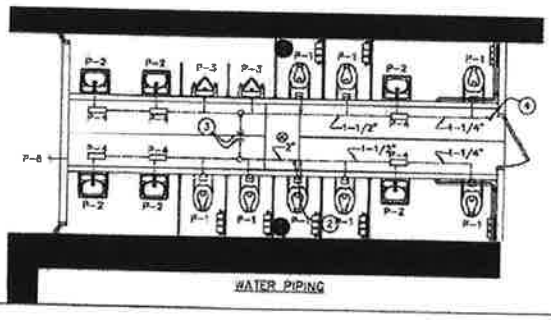
PFS
PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Iverson
Title: Staff Plan Reviewer
Date: 2/15/22


ALL PIPING INDICATED ON THIS SHEET IS NOT BY CXT
SEE 24"x48" BLOCKOUT DETAIL
BELOW FLOOR PIPING
24" x 48" BLOCKOUT DETAIL
PFS CORPORATION
State: Florida
Title: Staff Plan Reviewer
BELOW FLOOR PIPING – KEY NOTES
1. 4" CLEAN OUT TO GRADE.
2. 2" FLOOR DRAIN WITH FIELD INSTALLED TRAP PRIMER SYSTEM IF REQUIRED BY AUTHORITY HAVING JURISDICTION. (10" DIA. BLOCKOUT)
3. 2" VENT PIPES EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE TEST PLUG (2'-0" x 4'-0" BLOCKOUT)
4. 4" WASTE PIPE EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE TEST PLUG (2'-0" x 4'-0" BLOCKOUT)
5. 2" TYPE K ANNEALED "SOFT" COPPER WATER SERVICE EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE CAP AT END. (2'-0" x 4'-0" BLOCKOUT)
6. 30" MIN. BURY, PROVIDE TRACER TAPE
7. 4'-6" MIN. BURY.
8. ELECTRICAL STUB UP. (8" DIA BLOCKOUT)
9. 2" FLOOR DRAIN WITH FIELD INSTALLED TRAP PRIMER SYSTEM IF REQUIRED BY AUTHORITY HAVING JURISDICTION. (2'-0" x 4'-0" BLOCKOUT)
10. 2" FLOOR DRAIN VENT RISER – STUB UP 12" ABOVE GRADE FOR FIELD CONNECTION TO VENT PIPING (NOT BY CXT)
PIPING LEGEND
2" WATER SERVICE, ANNEALED "SOFT" COPPER, ASTM B88, TYPE "K"
BELOW FLOOR WASTE PIPING: SCH 40 ABS, ASTM D2665, TYPE DWV
BELOW FLOOR VENT PIPING: SCH 40 ABS, ASTM D2665, TYPE DWV
FLOOR DRAIN DETAIL NOTES
A. CAST-IN DRAIN HOUSING (10" INSIDE DIA – PROVIDED BY CXT)
B. FIELD INSTALLED GROUT, SLOPE TO DRAIN (CXT PROVIDED–INSTALLATION NOT BY CXT)
C. 2" WASTE PIPE – STUB UP 12" ABOVE GRADE (NOT BY CXT)
D. TAPPED P-TRAP ADAPTER (NOT BY CXT)
E. P-TRAP ASSEMBLY (NOT BY CXT)
F. 1/2" O.D. COPPER TRAP PRIMER LINE (NOT BY CXT)
G. 2" FLOOR DRAIN VENT RISER – STUB UP 12" ABOVE GRADE TIE INTO VTR (NOT BY CXT)
H. TRAP PRIMER MANIFOLD (PRE-PLUMBED AND INSTALLED BY CXT)
I. 1/2" SHUT OFF VALVE (PRE-PLUMBED AND INSTALLED BY CXT)
10" DIA (TYP 2 PLCS)
2'-0" x 4'-0"
8" DIA
10" DIA
GRADE
24" x 48" PLUMBING BLOCKOUT
TO MAIN WASTE LINE
FLOOR DRAIN DETAIL
FLOOR BLOCKOUT SIZE AND LOCATIONS
WILLIAM R. HEIDEN III
LICENSE No. 58923
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 15, 2022
CXT
Precast Products
SANTIAGO
FLOOR DRAIN LOCATIONS & BELOW FLOOR PIPING
S-25
0



VENT PIPING



WATER PIPING

WASTE PIPING - KEY NOTES

1. 2" FLOOR DRAIN, FIELD INSTALLED (NOT BY CXT)
2. 4" WASTE THROUGH FLOOR, FIELD INSTALLED (NOT BY CXT)
3. PROVIDE TEST PLUGS IN END OF WASTE PIPES. CONTINUATION OF PIPING IS FIELD INSTALLED & NOT BY CXT.

VENT PIPING - KEY NOTES

1. 2" FLOOR DRAIN, FIELD INSTALLED (NOT BY CXT)
2. VENT THROUGH ROOF.
3. 2" VENT WITH TEST PLUG.
4. FIELD INSTALLED 2" VENT PIPING FROM FLOOR DRAINS. (NOT BY CXT)

PIPING LEGEND

- COLD WATER, COPPER, ASTM B88, TYPE "K"
- HOT WATER, COPPER, ASTM B88, TYPE "K"
- VENT PIPING, SCH 40 PVC, ASTM D2665, TYPE DWV
- WASTE PIPE, SCH 40 PVC, ASTM D2665, TYPE DWV
- FIELD PIPING, (NOT BY CXT)

WATER PIPING - KEY NOTES

1. 2" FLOOR DRAIN, FIELD INSTALLED (NOT BY CXT)
2. FIELD INSTALLED 2" WATER SUPPLY WITH SHUT-OFF VALVE NEAR FLOOR. (NOT BY CXT)
3. 1 1/2" CAPPED LINE. CONNECTION BETWEEN SIDES IS TO BE FIELD INSTALLED. (NOT BY CXT)
4. 3/4" HOSE BIB WITH VACUUM BREAKER AND WHEEL HANDLE
5. WATER PIPING ALONG WALL, SEE DIAGRAM ON SHEET S-27.
6. INSULATE HOT WATER PIPING FROM HTR TO FIXTURE W/ 1" (R=3.6) PRE-MOLDED FIBERGLASS PIPE

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Roverson
Title: Staff Plan Reviewer
Date: 2/15/11

WILLIAM R. HEIDER
LICENSE
No. 56523
STATE OF FLORIDA
PROFESSIONAL ENGINEER

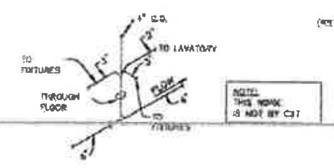
February 15, 2022

CXT
Precast Products

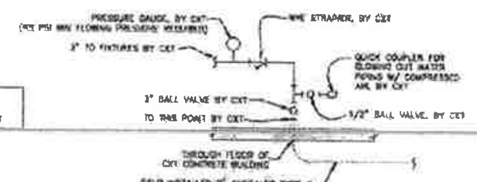
SANTIAGO
BUILDING NUMBERS S-25B & S-25T

PLUMBING PLANS

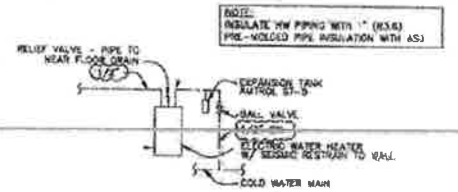
S-25 | 0



DETAIL OF FIELD INSTALLED WASTE CONNECTION
NTS



WATER SERVICE DETAIL
NTS



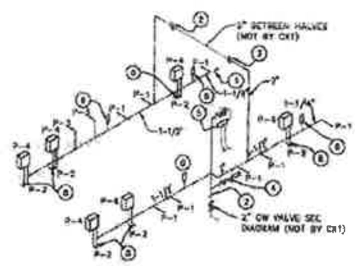
HOT WATER PIPING RISER DIAGRAM
NTS

KEY NOTES

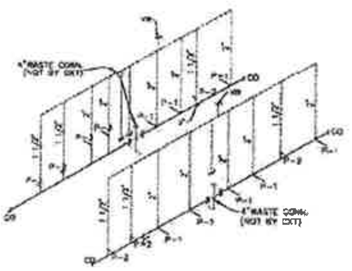
1. 3/4" HOSE BIBB WITH VACUUM BREAKER & WHEEL HANDLE
2. TO THIS POINT BY CXT.
3. PLUGGED CW LINE TO THIS POINT, BY CXT. CW BETWEEN THESE POINTS, NOT BY CXT.
4. 1/2" AIR QUICK CONNECTION W/ BALL VALVE FOR BLOWING OUT WATER PIPING
5. 1/2" BALL VALVE & CAPPED CW LINE FOR FIELD INSTALLED TRAP PRIMER VALVE IF REQUIRED BY JURISDICTION HAVING AUTHORITY
6. ASSE 1010 WATER HAMMER ARRESTOR SIOUX CHIEF HYDRA-RESTOR #6_4-C OR EQUAL
7. PROVIDE SHUT-OFF VALVES ON HOT AND COLD WATER SUPPLY FOR EACH FIXTURE
8. ASSE 1070 WATER TEMPERATURE LIMITING DEVICE

PIPING LEGEND

- COLD WATER: COPPER ASTM B88, TYPE "K"
- HOT WATER: COPPER, ASTM B88, TYPE "K"
- VENT PIPING: SCH 40 PVC ASTM D2665, TYPE DWV
- WASTE PIPE: SCH 40 PVC ASTM D2665, TYPE DWV
- FIELD PIPING (NOT BY CXT)



WATER PIPING RISER DIAGRAM
NTS



WASTE & VENT RISER DIAGRAM
NTS

SYM	DESCRIPTION	MANUFACTURER	CXT PART NUMBER	FLUSH VL/FAUCET	SUPPLIES	QTY	HW	CW	WASTE	VENT	SUPPLIES / NOTES
P-1	WATER CLOSET (SENSOR)	AMERICAN STANDARD	0558.118 (W.C.)	SLOAN "OPTIMA" (FS2-1.6 ES-S	SLOAN EL-154	8	-	1-1/4"	3"	2"	1. SENSOR ACTIVATED FLUSH VALVES 2. MOUNT RIM AT 17" ABOVE FLOOR 3. USE CLOSET GASKET J23534 AND Z1203 FINISH KIT
P-2	LAVATORY (SENSOR)	AMERICAN STANDARD	0356.4__ (LAV)	SLOAN "ETF-610"	SLOAN EL-154	6	1/2"	1/2"	1-1/2"	1-1/2"	1. HAMMER ARRESTOR J_____-1-C, FLOOR DRAIN ______, TRAP PRIMER-MFAR M_____, DISTR UNIT- MFAR 2. 1/2ST3 COMP AND LAV _______ 3. 3 PC COVER SET P_____
P-3	URINAL	AMERICAN STANDARD	6515.000 (URINAL)	SLOAN "ROYAL" (___-1-FR L-3 ___"	SLOAN EL-154	2	-	3/4"	3"	2"	1. SENSOR ACTIVATED FLUSH VALVES 2. MOUNT RIM OF P-3 AT 17" ABOVE FLOOR
P-4	TANKLESS WATER HEATER	CHRONOMITE	CM-30L-120			6	1/2"	1/2"	-	-	
P-5											
P-6	HOSE BIB	WOODFORD	24B			1		3/4"			
P-7											
P-8	FLOOR DRAIN	TRAVIS	5400-CXT			3	-	-	7"	7"	1. TRAP PRIMER- MFAR ______, DISTR UNIT- MFAR ASSE 1018 OR ASSE 1044
		SIOUX CHIEF (CHASE)	840-2A			1					

PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Signature: Marc Iverson
Title: Staff Plan Reviewer
Date: 2/15/22

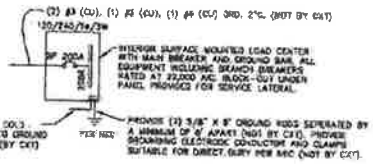
WILLIAM R. HEIDEN III
LICENSE No. 58623
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 15, 2022

CXT Precast Products

SANTIAGO
BUILDING NUMBERS S-388 & S-387

PLUMBING DETAILS, DIAGRAMS & SCHEDULE

S-17
21/30
U



ONE-LINE POWER DIAGRAM

NTS

PANEL SCHEDULES

MWP 208
SURFACE MOUNT

PANEL:
120/240V, 1P, 3W

TOTAL CONNECTED VA LOAD: 23,450
TOTAL CALCULATED VA LOAD: 23,746

CIRCUIT NO.	DESCRIPTION	OCP	TYPE	LOAD VA	LOAD A	PH
1	OTHERS RECEPTACLE	1P/20A	R	180	1.5	A
3	MENS LIGHTS AND FANS	1P/20A	N	356	3.0	B
5	MENS RR HAND DRYER #1	1P/20A	N	1,140	9.5	A
7	MENS RR HAND DRYER #2	1P/20A	N	1,140	9.5	B
9	MENS RR HAND DRYER #3	1P/20A	N	1,140	9.5	A
11	MENS WH #1	1P/30A	N	2,400	20.0	B
13	MENS WH #2	1P/30A	N	2,400	20.0	A
15	MENS WH #3	1P/30A	N	2,400	20.0	B
17	WOMENS WH #1	1P/30A	N	2,400	20.0	A
19	MENS RECEPTACLE	1P/20A	R	180	1.5	A
21	MENS RECEPTACLE	1P/20A	R	360	3.0	A
23						A
25						A
27						A
29						A
31						A

CIRCUIT NO.	DESCRIPTION	OCP	TYPE	LOAD VA	LOAD A	PH
2	LIGHTS - CHASE	1P/20A	N	98	0.8	B
4	WOMENS LIGHTS AND FANS	1P/20A	N	356	3.0	A
6	WOMENS RR HAND DRYER #1	1P/20A	N	1,140	9.5	B
8	WOMENS RR HAND DRYER #2	1P/20A	N	1,140	9.5	A
10	WOMENS RR HAND DRYER #3	1P/20A	N	1,140	9.5	B
12	PLUMBING SEASONS	1P/20A	R	145	1.2	A
14	WOMENS WH #2	1P/30A	N	2,400	20.0	B
16	WOMENS WH #3	1P/30A	N	2,400	20.0	A
18	WOMENS RECEPTACLE	1P/20A	R	180	1.5	B
20	WOMENS RECEPTACLE	1P/20A	R	360	3.0	A
22	EXTERIOR LIGHTS	1P/20A	C	42	0.4	B
24						A
26						B
28						A
30						B
32						A

NOTE: MAXIMUM ALLOWABLE AIC IS 22K AMPS. PANEL MODIFICATIONS WILL BE REQUIRED (NOT BY CXT) IF TRANSFORMER CAPACITY EXCEEDS 175 KVA.

LOAD	CONNECTED	CALCULATED
(C)CONTINUOUS	42 x1.25	53 VA
(R)RE (1ST 10KVA)	1400 x1.00	1400 VA
(N)ON-CONTINUOUS	20,868 x1.00	20,868 VA
(M)OTOR	1,140 x1.25	1425 VA
TOTAL LOAD	23,450 VA	23,746 VA 98.9 AMPS

GENERAL ELECTRICAL NOTES

1. RECESSED JUNCTION BOXES FOR BARRIER DEVICES SHALL HAVE SINGLE GANG MUD RINGS CAST IN CONCRETE WALLS.
2. ALL RECEPTACLES SHALL BE GFCI PROTECTED BY CIRCUIT BREAKERS, OR BY OTHER GFCI RECEPTACLES.
3. ALL CONDUIT SHALL BE SIZED PER NEC. EXPOSED CONDUIT SHALL BE EMT/PVC, RECESSED SHALL BE PVC.
4. ENTIRE ALL WIRING IN CONDUIT OR RELATED ENCLOSURES.
5. ALL ELECTRICAL INSTALLATIONS SHALL MEET THE 2017 NATIONAL ELECTRICAL CODE.
6. MINIMUM WIRE SIZE SHALL BE #12 AWG COPPER, 75ØC INSULATION UNLESS NOTED OTHERWISE.
7. ROUTE ALL CONDUITS IN UTILITY ROOM AT CEILING OR FACE OF WALLS.
8. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE & MAY NOT SHOW EXACT LOCATIONS OF DEVICES. REFER TO WALL PANEL & OTHER DRAWINGS FOR EXACT LOCATIONS OF P-TRAPS, ETC.
9. ALL CONDUCTORS AND CABLES MUST BE PROPERLY TERMINATED IN APPROVED BOXES, BEFORE CONNECTING THE CIRCUIT TO THE BREAKER AND BEFORE RECEIVING FINAL INSPECTION APPROVAL BY THE FACTORY.
10. CIRCUIT BREAKER LOCKOUTS REQUIRED FOR EACH HAND DRYER.
11. PROVIDE 2 POLE 30A DISCONNECT FOR WATER HEATER. WATER HEATER CIRCUIT TO BE #6 AWG.

EXHAUST FAN SCHEDULE

SYM.	MFR.	MODEL #	CFM	SONES	VOLTS	AMPS	NTS.
EF-1	FANTECH	FG-RIQ	694	6.0	120	1.39	1

NOTE:
1. FANS LISTED FOR WET LOCATION, CONTROL VIA OCCUPANCY SENSOR. MOUNT SPEED CONTROL IN CHASE.

FFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Rierson
Title: Staff Plan Reviewer
Date: 3/15/22

LIGHTING FIXTURE SCHEDULE

FIXTURE NUMBER	VOLTAGE	WATTS	DESCRIPTION
A	120	28	LUMINAIRE VPF84 INTERIOR LIGHT FIXTURE, VPF8-4-28W HP-4000K-120-CP-WHT-WET-OCC-TK/SD SURFACE MOUNTED, LED LAMP 4 FT. WRAP AROUND LENS, LOW TEMPERATURE DRIVER, BUILT IN OCCUPANCY SENSOR ACTIVATED W/ ADDITIONAL OCCUPANCY SENSOR FOR FAN CONTROL
B	120	14	SWOOP 810 LED EXTERIOR LIGHT, YWP810-14W HP-3500K-120-CP-BRZ-CAB/PC EXTERIOR, VANDAL RESISTANT, WALL MOUNTED, 14 WATT, CLEAR PRISMATIC LENS. BUILT IN PHOTOELECTRIC CONTROL
C	120	28	LUMINAIRE VPF84 INTERIOR LIGHT FIXTURE, VPF8-4-28W HP-4000K-120-CP-WHT-WET-TK/SD SURFACE MOUNTED, LED LAMP 4 FT. WRAP AROUND LENS, LOW TEMPERATURE DRIVER, WALL SWITCH CONTROL

NOTE: THE SOURCE OF EFFICACY OF EXTERIOR LIGHTING IS TO BE A MINIMUM OF 45 LUMENS PER WATT.

WILLIAM R. HEIDEN JR. LICENSE No. 58623 STATE OF FLORIDA PROFESSIONAL ENGINEER

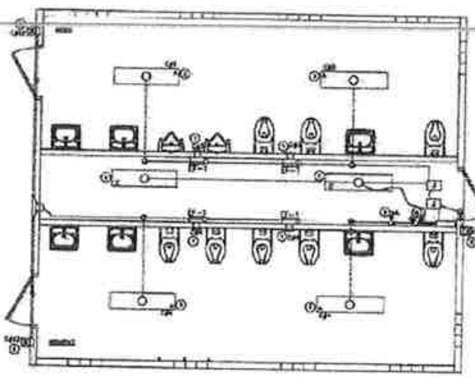
February 15, 2022

CXT
Precast Products

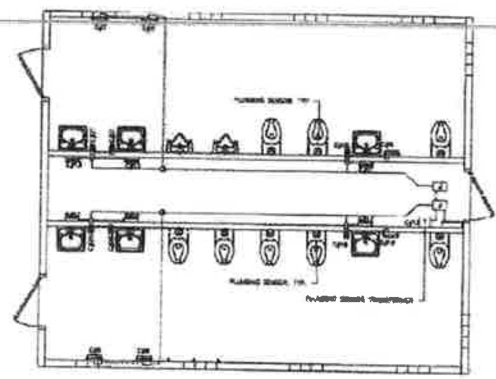
SANTIAGO
BUILDING NUMBERS 3-108 & 5-207

ELECTRICAL NOTES, LEGEND & SCHEDULE

5-28 | SHEET E0 | REV. 0



LIGHTING & EXHAUST FAN PLAN



RECEPTACLE, HOT WATER TANK, PLUMBING SENSOR & HAND DRYER PLAN

KEY NOTES

1. WIRE EF-1 THROUGH SPEED SWITCH AND OCCUPANCY SENSOR W/ TIME CLOCK CONTROL.
2. LIGHT FIXTURE TO BE CONTROLLED BY PHOTOCELL. ROUTE WIRING IN CONCEALED CONDUIT.
3. RESTROOM LIGHTS TO OPERATE BY OCCUPANCY SENSOR.
4. LIGHT FIXTURE TO BE CONTROLLED BY WALL SWITCH.
5. FAN SPEED CONTROLS.
6. COMBO LIGHT SWITCH & CHASE OUTLET

PFS CORPORATION
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State: Florida
Signature: Mark Iverson
Title: Staff Plan Reviewer
Date: 2/15/22

WILLIAM R. HEIDEN III
LICENSE No. 58523
STATE OF FLORIDA
PROFESSIONAL ENGINEER
February 15, 2022

CXT Precast Products

SANTIAGO

ELECTRICAL PLAN & SCHEDULE

S-29 | Rev. 0

MARINE PACKAGE

WALL PANEL W1 — EMBEDDED MATERIALS

ITEM	QTY
AS-2	8
PS-2	10
FL648	4
8411	4
R320	8
B.O. 25 1/4"x8 1/4"	4
R5x152	4
R326	1
R327	2
R3x108	8
R3x92	8
R3x98	12
WS-2 B.O.	2
R3x38	4
R3x222	4
4x4 J-BOX	2
RECT MUD RING	2
PARTIAL BO 3'x6'x3"SP	1

CU. FT. CONC. 82.8 (3.06) — SQ. FT. W.W.F. 242 — APPROXIMATE WEIGHT 12,420

WALL PANEL W2 — EMBEDDED MATERIALS

ITEM	QTY
AS-2	6
PS-2	10
FL-648	4
8411	4
R3x60	4
R3x72	4
R327	2
R320	4
R318	1

CU. FT. CONC. 80.9 (3.0) — SQ. FT. W.W.F. 240 — APPROXIMATE WEIGHT 12,135

WALL PANEL W2 BLOCKOUTS — EMBEDDED MATERIALS

ITEM	QTY
4x4 C-BOX	14
RECT MUD RING	4
4x4 J-BOX	2
2 GANG MUD RING	5
FLUSH BOWL B.O.	5
URINAL B.O.	2
B.O. 6-1/2" DIA	2
LAVATORY B.O.	3

CU. FT. CONC. — SQ. FT. W.W.F. — APPROXIMATE WEIGHT

WALL PANEL W3 — EMBEDDED MATERIALS

ITEM	QTY
AS-2	3
PS-10	2
PC-10	6
R322	2
B.O. 24 1/4"x8 1/4"	1
R3x128	4
R3x60	8
R320	8
R3x106	2
PS-2	1
R3x54	2
R327	2
R3x38	2
WS-2 B.O.	1
SI-2 MOLD	1

CU. FT. CONC. 24.2 (0.90) — SQ. FT. W.W.F. 75 — APPROXIMATE WEIGHT 3,630

WALL PANEL W4 — EMBEDDED MATERIALS

ITEM	QTY
AS-2	3
PS-10	2
PC-10	4
B.O. 24 1/4"x8 1/4"	1
R3x126	4
R3x43	8
R320	8
WS-2 B.O.	1
PS-2	1
R3x60	2
R322	2
R3x38	2
R383	2
4x4 J-BOX	2
42 1/8" x 82 1/4" BLOCKOUT	1
SI-2 MOLD	1
ROUND MUD RING	1

CU. FT. CONC. 22.5 (0.83) — SQ. FT. W.W.F. 86 — APPROXIMATE WEIGHT 3,345

WALL PANEL W5 — EMBEDDED MATERIALS

ITEM	QTY
AS-2	6
PS-2	10
FL648	4
8411	4
R320	8
B.O. 24 1/4"x8 1/4"	4
R3x152	4
R316	1
R327	2
R3x108	8
R3x92	8
R3x98	12
WS-2 B.O.	2
R3x36	4
R3x222	4
4x4 J-BOX	2
RECT MUD RING	2
PARTIAL BO 3'x6'x3"SP	1

CU. FT. CONC. 82.8 (3.06) — SQ. FT. W.W.F. 242 — APPROXIMATE WEIGHT 12,420

WALL PANEL W6 — EMBEDDED MATERIALS

ITEM	QTY
AS-2	6
PS-2	10
FL-640	4
8411	4
R3x60	4
R3x172	4
R327	2
R320	4
R318	1

CU. FT. CONC. 80.9 (3.0) — SQ. FT. W.W.F. 240 — APPROXIMATE WEIGHT 12,135

WALL PANEL W6 BLOCKOUTS — EMBEDDED MATERIALS

ITEM	QTY
4x4 C-BOX	14
RECT MUD RING	1
4x4 J-BOX	2
2 GANG MUD RING	5
FLUSH BOWL B.O.	5
LAVATORY B.O.	3
B.O. 6-1/2" DIA	2

CU. FT. CONC. — SQ. FT. W.W.F. — APPROXIMATE WEIGHT

WALL PANEL W7 — EMBEDDED MATERIALS

ITEM	QTY
AS-2	3
PC-10	2
PS-10	4
R322	2
B.O. 24 1/4"x8 1/4"	1
R3x126	2
R3x62	8
R320	8
R3x106	2
PS-2	1
R3x54	4
R322	2
R3x38	2
WS-2 B.O.	1
SI-2 MOLD	1
4x4 J-BOX	2
ROUND MUD RING	1

CU. FT. CONC. 25.9 (0.96) — SQ. FT. W.W.F. 75 — APPROXIMATE WEIGHT 3,885

WALL PANEL W8 — EMBEDDED MATERIALS

ITEM	QTY
AS-2	3
PC-10	2
PS-10	4
B.O. 24 1/4"x8 1/4"	1
R3x130	4
R3x62	8
R320	8
WS-2 B.O.	1
PS-2	1
R3x60	2
R322	2
R3x38	2
R383	2
4x4 J-BOX	2
42 1/8" x 82 1/4" BLOCKOUT	1
SI-2 MOLD	1
ROUND MUD RING	1
HOSE BIB B.O.	1

CU. FT. CONC. 22.3 (0.83) — SQ. FT. W.W.F. 86 — APPROXIMATE WEIGHT 3,345

FLOOR SLAB F1 — EMBEDDED MATERIALS

ITEM	QTY
PS-18	15
AS-3	5
R3x47	5
R3x128	2
R3x58	2
R4x122	5
R5x172	5
R3x140	4
R3x34	4
PT CHUCK	2
BMS4060 F.D.	1
1" PVC SCH40 x 17'-5"	2
AS-5	2
SECTIONAL B.O.	2

CU. FT. CONC. 117.1 (4.33) — SQ. FT. W.W.F. 564 — APPROXIMATE WEIGHT 17,565

FLOOR SLAB F2 — EMBEDDED MATERIALS

ITEM	QTY
PS-19	18
AS-3	5
R3x43	8
R3x126	2
R3x58	2
R4x122	8
R3x172	8
R3x140	4
R3x34	4
B.O. 5" DIA	1
BMS4060 F.D.	1
1" PVC SCH40 x 18'-6"	2
PT CHUCK	2
AS-5	2
SECTIONAL B.O.	2

CU. FT. CONC. 117.1 (4.33) — SQ. FT. W.W.F. 564 — APPROXIMATE WEIGHT 17,565

ROOF SLAB R1-R — EMBEDDED MATERIALS

ITEM	QTY
PS-18	9
FL647	4
FL648	4
8411	4
R303	8
R3x134	4
R3x175	2
R3x176	2
R320	4
R4x18	16
PT CHUCK	1
1" PVC SCH40 x 11'-3"	1
PS-2	2
B.O. 6 1/2" DIA	1
B.O. 5" DIA	1
4x4 J-BOX	2
ROUND MUD RING	1

CU. FT. CONC. 67.1 (2.48) — SQ. FT. W.W.F. 344 — APPROXIMATE WEIGHT 10,065

ROOF SLAB R1-L — EMBEDDED MATERIALS

ITEM	QTY
PS-18	9
FL647	4
FL648	4
8411	4
R303	8
R3x134	4
R3x175	2
R3x176	2
R322	4
R4x18	16
PT CHUCK	1
1" PVC SCH40 x 11'-3"	1
PS-2	2
B.O. 6 1/2" DIA	1
4x4 J-BOX	2
3'x6'x3"SP PARTIAL B.O.	1
ROUND MUD RING	1

CU. FT. CONC. 67.1 (2.48) — SQ. FT. W.W.F. 344 — APPROXIMATE WEIGHT 10,065

ROOF SLAB R2-R — EMBEDDED MATERIALS

ITEM	QTY
PS-18	9
FL647	4
FL648	4
8411	4
R302	8
R3x158	4
R3x175	2
R3x176	2
R320	4
R4x18	16
PT CHUCK	1
1" PVC SCH40 x 11'-3"	1
PS-2	2
B.O. 6 1/2" DIA	1
B.O. 5" DIA	1
4x4 J-BOX	2
ROUND MUD RING	1

CU. FT. CONC. 67.1 (2.48) — SQ. FT. W.W.F. 344 — APPROXIMATE WEIGHT 10,065

ROOF SLAB R2-L — EMBEDDED MATERIALS

ITEM	QTY
PS-18	9
FL647	4
FL648	4
8411	4
R303	9
R3x134	4
R3x175	2
R3x176	2
R320	4
R4x18	16
PT CHUCK	1
1" PVC SCH40 x 11'-3"	1
PS-2	2
B.O. 6 1/2" DIA	1
4x4 J-BOX	2
3'x6'x3"SP PARTIAL B.O.	1
ROUND MUD RING	1

CU. FT. CONC. 67.1 (2.48) — SQ. FT. W.W.F. 344 — APPROXIMATE WEIGHT 10,065

PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Signature: Mark Anderson
Title: Staff Plan Reviewer
Date: 2/15/22

WILLIAM R. HEIDEN III — LICENSE No. 58823 — STATE OF FLORIDA — PROFESSIONAL ENGINEER
February 13, 2022

CXT Precast Products

SANTIAGO

MATERIAL LIST

S-30 — 30/38 — 0

CXT Inc. (Precast Division)

Calculations
Santiago S-356 & S-357
Structural Analysis

Design Loads
400 psf Live Floor Load
180 psf Ground Snow Load
Wind Speed – 170 mph Exp. C
Seismic Design Category: B

Design Standards
2020 Florida Building Code 7th Edition
ASCE 7-16/ ACI 318-14

UL-752 Bullet Resistance
Classification: Level IV
Report #: 2012-647

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	**Florida**
Signature:	Mark Severson
Title:	**Staff Plan Reviewer**
Date:	**2/15/22**

WILLIAM R. HEIDEN III
LICENSE
No. 58523
STATE OF FLORIDA
PROFESSIONAL ENGINEER

February13, 2022

Table of Contents

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	**Florida**
Signature:	Mark Severson
Title:	**Staff Plan Reviewer**
Date:	2/15/22

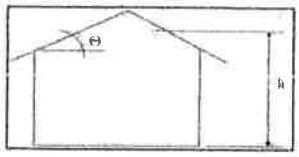
All attached documents are for reference only and designed or approved by others.

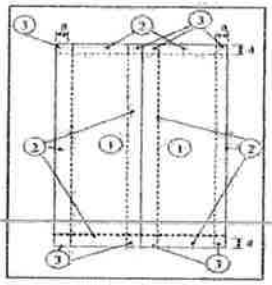
WILLIAM R. HEIDEN III
LICENSE
No. 58523
STATE OF FLORIDA
PROFESSIONAL ENGINEER

February 13, 2022

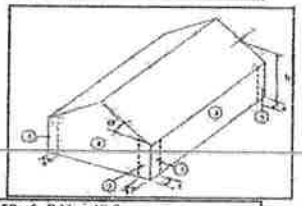
Main Wind Force Resisting System Loads (ASCE 7-16)

Santiago S-356 & S-357		
Category	II	IBC TABLE 1604.5: Risk Category of Buildings and Other Structures.
Exposure	C	Sec § 26.7.3: Exposure Categories, General.
Velocity	170 mph	See Figure 26.5-1A thru 26.5-2D: Basic Wind Speed (3 second Gust)
h wind	8.00 ft	Windward wall height
h lee	8.00 ft	Leeward wall height
W building	26 ft	Width of the building
L building	21.83 ft	Length of the building
H building	11.6 ft	Height of the building (to the ridge). Enter 0 if unknown.
Roof Rise	3	Roof pitch (per foot)
θ	14.04 deg	Roof Angle
Kd	0.85	Wind directionality factor. 0.85 when using load combinations, 1.0 otherwise.
K_1	0.00	
K_2	0.00	
K_3	0.00	See Figure 26.8-1: Multipliers for Obtaining Topographical Factor Kzt.





Kzt	1	Topographic factor
h	9.800 ft	Mean roof height
n_1	7.65	Natural frequency
Flexibility	Rigid	Building flexibility
α	9.5	Terrain factor
z_g	900 ft	Terrain factor



Velocity Pressure Exposure Coefficient	
K(z)	0.849 at windward eave

Velocity Pressure (27.3.3)	
q_h	53.38 psf

Gable	Type of Roof - Gable or Hip?

Partially Enclosed if the building meets both of the following conditions:
1. Total area of openings in one wall exceeds area of openings in the balance of the building by more than 10%.
2. Total area of openings in one wall exceeds 4 sq. ft. or 1% of area of that wall and the total area of openings in the balance of the building does not exceed 20% of the area in the balance of the building.

Zone	Opening Area	Gross Area	Agi	Aoi	Condition 1	Condition 2	Condition 3	Condition 4	Type:
Windward sidewall	0 sq ft	174.6 sq ft	1251.8 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Windward endwall	0 sq ft	254.8 sq ft	1171.7 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Leeward sidewall	0 sq ft	174.6 sq ft	1251.8 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Leeward endwall	0 sq ft	254.8 sq ft	1171.7 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Roof	0 sq ft	567.6 sq ft	858.9 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed

Enclosed

Gust Factor - (26.9)	
G =	0.85

External Pressure Coefficients				
C_{pi}	0.8	Sec 27.3.3 Roof Overhangs		
Cp	0.8	Windward wall (Use with qz) Fig. 27.3-1		
	-0.462	Leeward wall (wind normal to ridge) (Use with qh)	L/B =	1.19
	-0.500	Leeward wall (wind parallel to ridge) (Use with qh)	L/B =	0.84
	-0.7	Sidewalls (Use with qh) Fig. 27.4-1		

Internal Pressures:	
Negative:	-9.61 psf
Positive:	9.61 psf

Roof Pressure Coefficients (Fig.27.3-1) Normal to Ridge when Theta >= 10degrees	Pos. Windward	Neg. Windward	Leeward
	-0.108	-0.640	-0.481

Roof Pressures Wind Perpendicular to Ridge w/ θ >= 10 deg	
w/ Negative Internal	4.69 psf
w/ Positive Internal	-38.65 psf

*WORST CASE LOADING

Roof Pressure Coefficients (Fig.27.3-1) Normal to Ridge when Theta < 10 deg	0 to h/2	h/2 to h	h to 2h	>2h
	-0.90	-0.90	-0.50	-0.30
Roof Pressure Coefficients (Fig.27.3-1) PARALLEL to Ridge	-0.90	-0.90	-0.50	-0.30

Wall Pressures:	w/ Negative	w/ Positive Internal
Windward	45.91 psf	26.69 psf
Leeward (wind normal)	-16.00 psf	-30.56 psf
Leeward (wind parallel)	-16.00 psf	-32.30 psf
Side Wall	-22.15 psf	-41.37 psf

Additional Overhang Pressure:	
	36.30 psf

Roof Pressures: Wind Parallel to ridge for all roof slopes:	
Location	w/ Positive Internal
0 to h/2	-50.45 psf
h/2 to h	-50.45 psf
h to 2h	-32.30 psf
Over 2h	-23.22 psf

Roof Pressures: Wind Perpendicular to ridge for θ < 10 deg:	
Location	w/ Positive Internal
0 to h/2	0.00 psf
h/2 to h	0.00 psf
h to 2h	0.00 psf
Over 2h	0.00 psf

Wind Speed:	170 mph	Roof Slope:	3.00 : 12	COMPONENTS & CLADDING			
Exposure:	C	Mean Roof Height:	9.80 ft				
	Effective Area						
Zone	10.0 sq ft		100.0 sq ft		500.0 sq ft		
1	-38.84 psf	25.89 psf	-43.51 psf	15.21 psf	-43.51 psf	15.21 psf	
2	-91.55 psf	25.89 psf	-64.86 psf	15.21 psf	-64.86 psf	15.21 psf	
2oh	-117.44 psf	-	-117.44 psf	-	-117.44 psf	-	
3	-139.60 psf	25.89 psf	-107.57 psf	15.21 psf	-107.57 psf	15.21 psf	
3oh	-197.52 psf	-	-133.46 psf	-	-133.46 psf	-	
4	-59.52 psf	52.58 psf	-48.84 psf	43.51 psf	-43.51 psf	36.57 psf	
5	-75.54 psf	52.58 psf	-59.52 psf	43.51 psf	-43.51 psf	36.57 psf	
a:	3.00 ft						

Higher pressures at the ridge line only applies to roof pitches > 7 degrees

PFS CORPORATION
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State: Florida
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 2/15/22

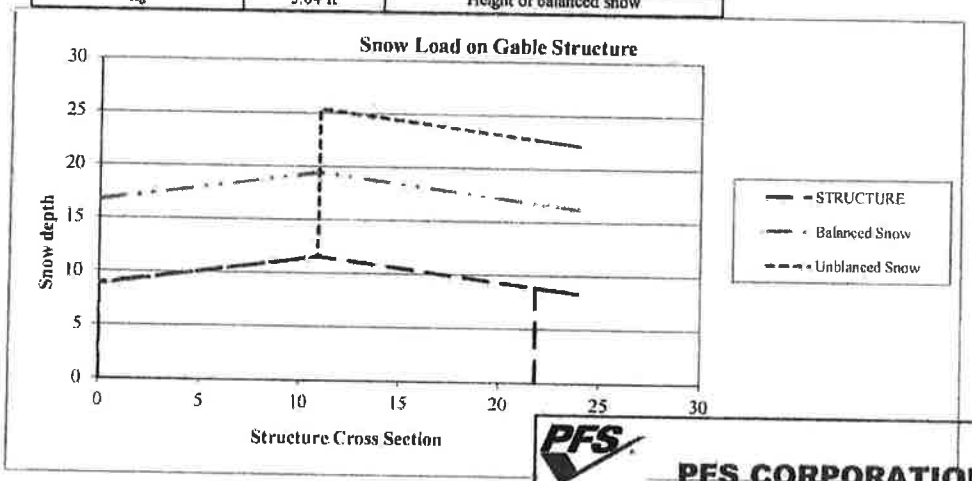
ASCE 7-16 SNOW LOAD CALCULATION

Category	II	IBC TABLE 1604.5: Risk Category of Buildings and Other Structures.
Exposure	C	See § 26.7.3: Exposure Categories, General.
Pg	180 psf	See ASCE Figure 7.2-1: Ground Snow Load
W.building	26 ft	Length of the building
L.building	21.83 ft	Width of the building
H.building	11.6 ft	Height of the building (to the ridge). Enter 0 if unknown.
Roof Rise (per foot)	3	Roof pitch
θ	14.04 deg	Roof Angle

ASCE Table 7.3-2 - Thermal Condition:	C_t
All structures except as indicated below:	1.0
Structures kept just above freezing and others with cold, ventilated roofs in which the thermal resistance (R-value) between the ventilated space and the heated space exceeds 25*h (deg*sq ft/BTU).	1.1
Unheated and open air structures	1.2
Structures intentionally kept below freezing	1.3
Continuously heated greenhouses with a roof having a thermal resistance value (R-value) less than 2.0*h (deg*sq ft/BTU).	0.85

C_t	1.2	(Choose from table above)
Is	1	ASCE Table 1.5-2
Surface	Unobstructed	ASCE § 7.4
Roof type	Gable	
Hor. Eave to Ridge Distance - windward	13 ft	
Roof Exposure	Partially exposed	ASCE Table 7.3-1
C_e	1	ASCE Table 7.3-1
Cs	1	Slope Factor from Figure 7.4-1
Low Sloped?:	Yes	ASCE § 7.3.4
P_f	151.20 psf	Flat Roof Snow Load
P_s	151.20 psf	Sloped Roof Snow Load
Use unbalanced?	Yes	ASCE § 7.6.1
$P_{windward}$	0.00 psf	ASCE § 7.6.1
$P_{leeward\_1}$	180.00 psf	ASCE § 7.6.1
$P_{leeward\_2}$	180.00 psf	ASCE § 7.6.1
Distance from Ridge to Edge of $P_{leeward1}$ loading	13.0 ft	ASCE Figure 7.6-2

γ	30.00 pcf	Snow density	Eq. 7.7-1 of ASCE 7
S	4	Run per rise of 1	ASCE § 7.1
h_d	7.87 ft	Height of drifting snow on leeward side	
h_b	5.04 ft	Height of balanced snow	



PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: 2/15/22

Seismic Loads (ASCE 7-16)

Santiago S-356 & S-357				
Category	II	IBC TABLE 1604.5: Risk Category of Buildings and Other Structures		
S_s	0.14 g	Max. Earthquake Ground Motion of 0.2 sec Spectral Response Acceleration	*ASCE Figure 22-1*	
S_1	0.07 g	Max. Earthquake Ground Motion of 1.0 sec Spectral Response Acceleration	*ASCE Figure 22-2*	
Site Class	D (Default)	Site classification (Use D if unknown unless jurisdiction, or geotechnical data determines Site Class E or F.)	*ASCE 20.1*	
T_L	16.0 sec	Long Period Transition Period	*ASCE Figure 22-14*	
Seismic Force Resisting System	A.5	Intermediate precast shear walls	*ASCE Table 12.2-1*	
R	4.00	Response Modification Factor		
Ω_0	2.5	System Over strength Factor		
C_t	0.02	Approximate period parameter	ASCE Table 12.8-2	
x	0.75	Approximate period parameter	ASCE Table 12.8-2	
hn	10.01 ft	Height in feet from base to highest level of structure		

				Value 1*	Value 2*	*=Used for interpolation
F_a	1.6	Interpolated Value	*ASCE Table 11.4-1*	1.6	1.6	
F_v	2.4	Interpolated Value	*ASCE Table 11.4-2*	2.4	2.4	

$S_{MS} = F_a * S_s$	0.216 g	Adjusted MCE Spectral Response Acceleration at short periods	*ASCE 11.4-1*
$S_{M1} = F_v * S_1$	0.163 g	Adjusted MCE Spectral Response Acceleration at 1 sec period	*ASCE 11.4-2*
		(MCE = Maximum considered earthquake)	

$S_{DS} = 2/3\ S_{MS}$	0.144 g	Design Spectral Acceleration Parameters	*ASCE 11.4-3*
$S_{D1} = 2/3\ S_{M1}$	0.109 g	Design Spectral Acceleration Parameters	*ASCE 11.4-4*

I_E	1	Importance Factor	*ASCE Table 1.5-2*

Seismic Design Category		B
Based on S_{DS}	A	Table 11.6-1
Based on S_{D1}	B	Table 11.6-2

Geotechnical Investigation Report Required?	No.

EQUIVALENT LATERAL FORCE PROCEDURE			
$T_a = C_t * hn^x$	0.11 sec	Approximate fundamental period	*ASCE 12.8-7*
$T_L = S_{D1}/S_{DS}$	0.76 sec		
T	0.11 sec	Fundamental period of the structure (can be taken as Ta per ASCE 12.8.2)	

$C_s = S_{DS}/(R/I)$	0.036	*ASCE 12.8-2*
$C_{s\,min}$	0.010	*ASCE 12.8-5 & 12.8-6*
$C_{s\,max}$	0.242	*ASCE 12.8-3 & 12.8-4*
C_s	0.036	
k	1.000	*ASCE 12.8.3*
W	158.62 kip	
$V = C_s * W$	14.28 kip	*ASCE 12.8-1*
$M_o =$	140.8 k-ft	
$V = C_s * W$	12.46 kip	
$M_o =$	122.4 k-ft	

Shear with snow load
Overturning Moment with snow load
Shear without snow load
Overturning Moment without snow load

WITH SNOW LOAD

Level	Story Height	h_i or h_x	P_f (flat roof snow load)	w_i	$w_i * h_i^k$	*12.8-12* C_{vx}	*12.8-11;11.7* F_x	V_x (Story shear)	M_x	*12.10-1* F_{px} (diaphragm force)
Roof	9.80 ft	10.01 ft	151.2 psf	91.96 kip	920.4 k-ft	0.985	14.06 kip	14.06 kip	0.0 k-ft	5.30 kip
Walls	0.00 ft	0.00 ft								
Floor	0.21 ft	0.21 ft		66.66 kip	13.9 k-ft	0.015	0.21 kip	14.28 kip	137.8 k-ft	3.84 kip
Base	0 ft	0.00 ft	W=	158.62 kip	934.3 k-ft			M_o =	140.8 k-ft	

WITHOUT SNOW LOAD

Level	Story Height	h_i or h_x	P_f (flat roof snow load)	w_i	$w_i * h_i^k$	*12.8-12* C_{vx}	*12.8-11;11.7* F_x	V_x (Story shear)	M_x	*12.10-1* F_{px} (diaphragm force)
Roof	9.80 ft	10.01 ft	0 psf	71.79 kip	718.5 k-ft	0.981	12.22 kip	12.22 kip	0.0 k-ft	4.14 kip
Walls	0.00 ft	0.00 ft								
Floor	0.21 ft	0.21 ft		66.66 kip	13.9 k-ft	0.019	0.24 kip	12.46 kip	119.8 k-ft	3.84 kip
Base	0 ft	0.00 ft	W=	138.45 kip	732.4 k-ft			Mo =	122.4 k-ft	

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Center of Mass & Rigidity

Santiago S-356 & S-357

Wall	Upper Left = 0,0 X Relative Stiffness	Y Relative Stiffness	Lower Right Shear Force lbs	plf	X 348 Dist to CoRx dx (IN)	Y 276 Dist to CoRy dy (IN)
W1	0.00%	24.51%	811	32	43.337	128.000
W2	0.00%	25.49%	844	33	43.334	26.000
W3	32.04%	0.00%	1,061	97	110.668	75.600
W4	18.00%	0.00%	596	59	197.334	56.201
W5	0.00%	24.51%	811	32	43.337	128.000
W6	0.00%	25.49%	844	33	43.334	26.000
W7	32.03%	0.00%	1,060	97	110.668	75.593
W8	17.93%	0.00%	594	54	197.334	56.957

Slab	Thickness	Weight	Left Edge X	Left Edge Y	Top Edge X	Top Edge Y	Right Edge X	Right Edge Y	Bottom Edge Y	Snow/Live (psf)	Center of Gravity X	Center of Gravity Y	Live w/ snow	Live w/o snow
R1-L	4.5	10065	0	0	174	138				151.2	87.0	69.0	15108	10065
R1-R	4.5	10065	174	0	348	138				151.2	261.0	69.0	15108	10065
R2-L	4.5	10065	0	138	174	276				151.2	87.0	207.0	15108	10065
R2-R	4.5	10065	174	138	348	276				151.2	261.0	207.0	15108	10065
F1	5	17565	17	7	331	269				400	174.0	138.0	17565	0
F2	5	17565	17	138	331	269				400	174.0	203.5	17565	0
Totals		83060									174.8	145.3		

Torsional Eccentricity ex	ey
42.78	7.26
Center of Gravity X	Y
174.8	145.3
Center of Rigidity X	Y
217.3	138.0

	Wgt (w snow)	Wgt (w/o snow)
roof	158,620	138,450
floor		
	wgt (w snow)	wgt (w/o snow)
	91,990	71,790
	66,660	

Wall Overturning Checks Using Weight of Adjacent Walls
Forces Transferred by Connections Between Walls

Wall	Anchorage Required to Resist Overturning From Design Moment (kip-ft)	Toward Lower Right Anchor Resistance Moment (kip-ft)	check	Toward Upper Left Anchor Resistance Moment (kip-ft)	check	Overturning status using just connection to adjacent walls
W1	-187.50	77.57		77.57		
W2	-185.15	77.57		77.57		
W3	-13.12	49.56		68.48		
W4	-21.74	49.56		68.48		
W5	-187.50	77.57		77.57		
W6	-185.15	77.57		77.57		
W7	-13.13	49.36		48.65		
W8	-21.78	49.36		48.65		

Overturning resistance considers only the weight of the wall, the weight of the roof supported by the wall, and connection to adjacent walls. Roof weight supported by other walls has not been considered. Connection to adjacent walls is taken as the connection capacity; not to exceed that portion of the adjacent wall weight that can be reasonably attributed to the connection.

Wall Overturning Checks Using Base Anchors Only
Must investigate ONLY if connection to adjacent walls is insufficient

Wall	Design Moment (kip-ft)	Toward Lower Right Anchor Resistance Moment (kip-ft)	check	Toward Upper Left Anchor Resistance Moment (kip-ft)	check	Combined Loading Unity Check	Required Tension Capacity per Base Anchor (lb)
W1	-187.50	201.89		201.89			(3468)
W2	-185.15	196.16		196.16			(3457)
W3	-13.12	44.39		48.32			(2938)
W4	-21.74	50.08		43.70			(4055)
W5	-187.50	201.89		201.89			(3468)
W6	-185.15	196.16		196.16			(3457)
W7	-13.13	46.32		44.39			(2891)
W8	-21.78	41.70		51.41			(2925)

Wall Overturning Checks Using Base Anchors and Connection to Adjacent Walls
Must investigate ONLY if both base anchor alone and adjacent walls alone are insufficient

Wall	Base Anchor Shear Required (% Capacity)	Base Anchor Tension Available (% Capacity)	Available Overturning Resistance (kip-ft) From Base Anchors Lower Right	Upper Left	Overturning Unity Check of Base Anchors Lower Right	Upper Left
W1	3.5%	100.0%	279.46	279.46		
W2	4.3%	100.0%	273.73	273.73		
W3	7.7%	100.0%	93.04	116.79		
W4	4.5%	100.0%	99.64	112.18		
W5	3.5%	100.0%	279.46	279.46		
W6	4.3%	100.0%	273.73	273.73		
W7	7.7%	100.0%	117.59	93.04		
W8	4.5%	100.0%	111.08	100.08		

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Title: Staff Plan Reviewer
Date: 2/15/22

ID:	Santiago S-356 & S-357
	DESIGN OF WALL MARKED W1

Notes	

Material Properties

F'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 psi	
Lightweight?	No	
Concrete density	150 pcf	O.K.
E (Steel)	29000000 psi	
E (Concrete)	4290000 psi	ACI 8.5.1
n (modular ratio)	6.76	

Shear Parameters		
Phi v	0.85	ACI 9.3.2.3
Vc	3.123 kip	ACI 11.3.1.1 & 11.3.1.3
Phi*Vc	2.654 kip	ACI 11.1.1

Minimum Wall Reinforcement Requirements

rho min vert	0.0012	ACI 14.3.2
rho min hor	0.002	ACI 14.3.3
Max Vertical spacing	18 in	ACI 14.3.5
Max Horizontal spacing	18 in	ACI 14.3.5

ACI's Alternate Design of Slender Walls	ACI 14.8
Assumptions from this methodology:	
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum moments and deflections occur at mid-height of the wall.	ACI 14.8.2.1
The cross section is constant over the height of the wall panel.	ACI 14.8.2.2
The wall cross sections shall be tension controlled.	ACI 14.8.2.3
PhiMn >= Mcr	ACI 14.8.2.4
Concentrated gravity loads are distributed over the wall length	ACI 14.8.2.5
The vertical stress Pu/Ag at mid-height shall not exceed 0.06*f'c	ACI 14.8.2.6

Geometric Properties

X Coordinate	22
Y Coordinate	10
Direction of Wall	X
Center of gravity X	173.997
Center of gravity Y	10.000
Wall Weight	12420.000 lbs
Central wall?	Yes
Wall that supports 'Loaf panels'?	Yes
lop (length of opening on wall)	0 ft
H (height of wall)	115 in
Lh (length of wall)	21.333 ft
Analysis will be performed as	One-way slab
b (section width)	12 in
h (section thickness)	4 in
ct (cover top)	2 in
cb (cover bottom)	2 in
rd (assumed reinf. diameter)	0.319 in
dt (effective depth top)	1.84 in
db (effective depth bottom)	1.84 in
Ct (% of CL used for tension)	0.036
Eccentricity - Axial Load	1 in
Is wall Split	No

Wire Mesh		
Wire Size	W6.5	
spacing	4 in	
Mesh Area	0.20 in^2	As

Loading

Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) - Ww (Wall weight)	110.94 psf	Dead Load (DL lat)	0 psf
S (Snow Load)	180 psf	Snow Load (SL lat)	0 psf
L (Live Load)	0 psf	Live Load (LL lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (LLr lat)	0 psf
W (Wind Load)	159.6 psf	Wind Load (WL lat)	75.54 psf
E (Earthquake Load)	2.19 psf	Earthquake Load (EL lat)	1.8 psf

Factored Axially Applied Loads

Factored Loading per ACI	ACI eq. 9-3
Factored Pressure on Roof Wr	472.805

Axial Pressure on Section	
Pu(l)	2.52 kip

Assumption check	
Pu/Ag	52.500 psi
0.06*f'c	300 psi
Check ACI 14.8.2.6	O.K.

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	300.6375 psf

Axial Pressure on Section	
P(l)	1.73 kip

Factored Laterally Applied Loads

Factored Loading per ACI	ACI eq. 9-3
Factored Pressure on Wall Ww	120.86 psf

Lateral Pressure on Section	
Lw = W*(L^4 / H^4 + L^4)	0 klf
Hw = W*(L^4 / H^4 + L^4)	0.12 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	75.54 psf

Lateral Pressure on Section	
Lw = W*(L^4 / H^4 + L^4)	0 klf
Hw = W*(L^4 / H^4 + L^4)	0.08 klf

Shear

Factored Loading per ACI	ACI eq. 9-3
Vu = wu(l)*(Hw-2db) / 2	0
Phi*Vc/2	1.33
Check Shear ACI 11.5.5.1	O.K.

Deflection ACI 14.8.4

Service Loads	
Axial	1.73 kip
Lateral	0 klf
Allowed service deflection	0.77 in
Msa	0.565 kip-in
M	0.874 kip-in
Ds	0.003 in
Check deflection	O.K.

Allowable Capacity

Ig = (b*h^3)/12	64 in^4
Ag = (b*h)	48 in^2
Yt = h/2	2
fr (rupture modulus)	530.330 psi
Mcr	16.971 kip-in
Beta 1	0.8
Trial Ast req'd	0.073 in^2
B	8.836162648
kd	0.342 in
Icr	2.92 in^4
ε_c	0.003
ε_s	0.005
fs	0.33483 psi
a	0.219 in
Asc	0.23 in^2
Icrdeflection	3.61 in^4
Ie	55.68 in^4
delta	150
ρ_t (maximum tensile reinforcement)	0.0166
ρ_{temp} (min. temperature reinforcement)	0.0018
ρ_{min} (minimum tensile reinforcement)	0.0027
ρ_{trial} (trial reinforcement ratio bottom)	0.0033
$\rho_{provided}$ (reinforcement ratio provided)	0.0090

Flexure

Assumption check		
Span	Hw	Lw
net Tensile Strain	0.010	0.010
Check ACI 10.3.2.1	Tension	Tension
Mua	1.485 kip-ft	

ACI eq. (14-6)		
Mu	2.120 kip-ft	0.005 kip-ft

ACI 9.3.2		
ϕ	0.9	0.9
ϕMn trial = ϕAsFy(dt - a/2)	2.020 kip-ft	2.020 kip-ft
DM = Mpos - ϕM	0.100 kip-ft	0.000 kip-ft
As Add'l req'd	0.01 in^2	0.00 in^2
Additional reinf req'd	0.01 in^2	0.00 in^2
Add'l bar size	3	3
qty req'd	1	0
or spacing of	18	0
As add'l =	0.070 kip-ft	0.000 kip-ft
Ast = As + As add'l	0.27 in^2	0.20 in^2
ϕMn = ϕAsFy(db - a/2)	2.543 kip-ft	2.016 kip-ft
Check ϕMn >= Mu	O.K.	O.K.
% allowed	83.37%	0.00%

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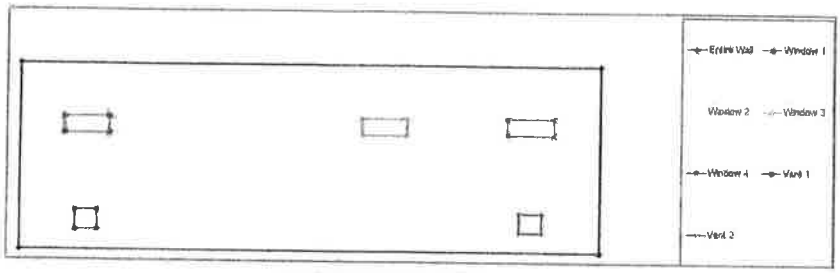

REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.47 klf
Ww (weight of panel per sq ft)	0.05 ksf

Material Properties	
db (effective depth bottom)	1.84 in
a (block of stress)	0.1348 psi
	a: As * fy / (0.85 * f'c * b)

Factorized Moment

Opening	Horizontal Location	Vertical Location	L: length of opening	H height above opening	(-) Weight of Opening (LBS)	Ww total factorized panel load	wu total factorized load	Mu (wu*L^2)/12
Window 1	1.92 ft	5.99 ft	2.62 ft	2.74 ft	86.19	0.14 klf	0.61 klf	0.21 kip-ft
Window 2	8.42 ft	5.99 ft	2.62 ft	2.74 ft	86.19	0.14 klf	0.61 klf	0.21 kip-ft
Window 3	14.9 ft	5.99 ft	2.62 ft	2.74 ft	86.19	0.14 klf	0.61 klf	0.21 kip-ft
Window 4	21.41 ft	5.99 ft	2.62 ft	2.74 ft	86.19	0.14 klf	0.61 klf	0.21 kip-ft
Vent 1	2.48 ft	1 ft	1 ft	7.38 ft	50.17	0.38 klf	0.85 klf	0.07 kip-ft
Vent 2	21.92 ft	1 ft	1 ft	7.38 ft	50.17	0.38 klf	0.85 klf	0.07 kip-ft

Flexure

Opening	ϕb	As req'd	Bar size	qty req'd	ϕMn = ϕAsfy(db - a/2)	Check ϕMn > Mu
Window 1	0.9	0.002 in^2	No. 3	1	15.51 kip-ft	OK
Window 2	0.9	0.002 in^2	No. 3	1	15.51 kip-ft	OK
Window 3	0.9	0.002 in^2	No. 3	1	15.51 kip-ft	OK
Window 4	0.9	0.002 in^2	No. 3	1	15.51 kip-ft	OK
Vent 1	0.9	0 in^2	No. 3	0	0 kip-ft	OK
Vent 2	0.9	0 in^2	No. 3	0	0 kip-ft	OK

CONNECTIONS

Base Anchors			Full Resistance Value Overturning				
			Lateral	Base Anchors		Wall Wall Connection	
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Shear kip	Moment + kip - ft	Moment - kip - ft	Moment + kip - ft	Moment - kip - ft
8	290	290	73.254	201.89	201.89	77.57	77.57

Total Tension 21.846	Base Anchors					
	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	14 in	3.64	12.21	290 in	0.265 kip*ft	87.991 kip*ft
Base Anchor 2	67 in	3.64	12.21	237 in	4.697 kip*ft	58.768 kip*ft
Base Anchor 3	122 in	3.64	12.21	182 in	15.573 kip*ft	34.656 kip*ft
Base Anchor 4	182 in	3.64	12.21	122 in	34.656 kip*ft	15.573 kip*ft
Base Anchor 5	237 in	3.64	12.21	67 in	58.768 kip*ft	4.697 kip*ft
Base Anchor 6	290 in	3.64	12.21	14 in	87.991 kip*ft	0.265 kip*ft

Wall Connections									
	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to resist	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft)
									Up Left / Low Right
Wall Connection 1	2	1,831	5,990	41.98%	W1	0	304.000	3.662	0.000 / 77.571
Wall Connection 2	2	1,831	6,110	41.98%	W1	304	0.000	3.662	77.571 / 0.000

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity			Required Shear Capacity (lb) per Base Connector		
Design Force (lbs)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check		(70667)	Reserve Capacity OK
2587	73254	70667	60	1958	OK	431		

RIGIDITY

CALCULATED VALUES	95%	Final	16.17244914

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / in)	Deflection (in / 1000 kip)
	Entire Wall	304	115	Y	Y	16.821	0.059
Window 1	A'	304	10.24	Y	Y	197.842	0.005
	A	23.04	10.24	Y	Y	14.073	0.071
	B	256.72	10.24	Y	Y	187.047	0.005
Window 2	B'	304	10.24	Y	Y	197.842	0.005
	C	101.04	10.24	Y	Y	65.557	0.015
	D	176.72	10.24	Y	Y	116.227	0.009
Window 3	C'	304	10.24	Y	Y	197.842	0.005
	E	178.8	10.24	Y	Y	116.279	0.009
	F	100.96	10.24	Y	Y	65.505	0.015
Window 4	D'	304	10.24	Y	Y	197.842	0.005
	G	256.92	10.24	Y	Y	167.177	0.006
	H	22.84	10.24	Y	Y	13.936	0.072
Vent 1	E'	304	12.04	Y	Y	168.240	0.006
	I	29.16	12.04	Y	Y	16.278	0.061
	J	262.84	12.04	Y	Y	145.435	0.007
Vent 2	F'	304	12.04	Y	Y	168.240	0.006
	L	263.04	12.04	Y	Y	145.546	0.007
	M	28.96	12.04	Y	Y	15.162	0.066

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	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Window 1	Entire Wall	A'	A'a	-	Deflection	0.054
	A	B	AB	+	Stiffness	181,120
Window 2	A'a	AB	A'b	+	Deflection	0.060
	A'b	B'	B'a	-	Deflection	0.059
	C	D	CD	+	Stiffness	181,764
Window 3	B'a	CD	B'b	+	Deflection	0.080
	B'b	C'	C'a	-	Deflection	0.065
	E	F	EF	+	Stiffness	181,764
Window 4	C'a	EF	C'b	+	Deflection	0.061
	C'b	D'	D'a	-	Deflection	0.056
	G	H	GH	+	Stiffness	181,113
Wall 1	D'a	GH	D'b	+	Deflection	0.061
	D'b	E'	E'a	-	Deflection	0.055
	I	J	IJ	+	Stiffness	100,713
Wall 2	E'a	IJ	E'b	+	Deflection	0.062
	E'b	J'	J'a	-	Deflection	0.056
	L	M	LM	+	Stiffness	100,709
	F'a	LM	Final	+	Deflection	0.062

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Date: 2/15/22

Jlb	Santiago S-356 & S-357
	DESIGN OF WALL MARKED W2

Notes	

Material Properties

f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 psf	
Lightweight?	No	
Concrete density	150 pcf	O.K.
E (Steel)	29000000 psi	
E (Concrete)	4290000 psi	ACI 8.5.1
n (modular ratio)	6.76	

Shear Parameters

Phi v	0.85	ACI 9.3.2.3
Vc	3.123 kip	ACI 11.2.1.1 & 11.2.1.1
Phi*Vc	2.654 kip	ACI 11.1.1

Minimum Wall Reinforcement Requirements

ρ min vert	0.0012	ACI 14.3.2
ρ min hor	0.002	ACI 14.3.3
Max Vertical spacing	18 in	ACI 14.3.5
Max Horizontal spacing	18 in	ACI 14.3.5

Loading

Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) - Ww (Wall weight)	110.94 psf	Dead Load (DL hz)	0 psf
S (Snow Load)	180 psf	Snow Load (SL hz)	0 psf
L (Live Load)	0 psf	Live Load (LL hz)	0 psf
Lr (Live Roof Load)	10 psf	Live Roof Load (LLr hz)	0 psf
W (Wind Load)	139.6 psf	Wind Load (WL hz)	75.54 psf
E (Earthquake Load)	2.19 psf	Earthquake Load (EL hz)	1.8 psf

Factored Axially Applied Loads

Factored Loading per ACI	ACI eq. 9-3
Factored Pressure on Roof Wr	472.805

Axial Pressure on Section	
Pu0	2.51 kip

Assumption check	
Pu/Ag	52.292 psi
0.06*f'c	300 psi
Check ACI 14.8.2.6	O.K.

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	300.6375 psf

Axial Pressure on Section	
Pil	1.72 kip

Shear

Factored Loading per ACI	ACI eq. 9.1
Vu = wu/ll*(Hw-2db) / 2	0
Phi*Vc/2	1.33
Check Shear ACI 11.5.5.1	O.K.

Allowable Capacity

Ig = (b*h^3)/12	64 in^4
Ag = (b*h)	48 in^2
Yt = h/2	2
fr (rupture modulus)	530.330 psi
Mcr	16.971 kip-in
Beta 1	0.8
Trial Ast req'd	0.073 in^2
B	8.836162648
kd	0.542 in
I cr	2.92 in^4
ε_c	0.003
ε_t	0.005
a	0.33483 psi
c	0.419 in
Ase	0.23 in^2
Icrdeflection	3.61 in^4
Ie	55.72 in^4
delta	150
ρ_t (maximum tensile reinforcement)	0.0166
ρ_{temp} (min. temperature reinforcement)	0.0014
ρ_{min} (minimum tensile reinforcement)	0.0027
ρ_{trial} (trial reinforcement ratio bottom)	0.0033
$\rho_{provided}$ (reinforcement ratio provided)	0.0090

ACI's Alternate Design of Slender Walls	ACI 14.8
Assumptions from this methodology:	
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum moments and deflections occur at mid-height of the wall	ACI 14.8.2.1
The cross section is constant over the height of the wall panel	ACI 14.8.2.2
The wall cross sections shall be tension controlled.	ACI 14.8.2.3
Phi*Mn >= Mcr	ACI 14.8.2.4
Concentrated gravity loads are distributed over the wall length	ACI 14.8.2.5
The vertical stress Pu/Ag at mid-height shall not exceed 0.06*f'c	ACI 14.8.2.6

Geometric Properties

X Coordinate	22
Y Coordinate	112
Direction of Wall	X
Center of gravity X	174.000
Center of gravity Y	112.000
Wall Weight	12135.000 lbs.
Control wall?	Yes
Wall that supports 2 roof panels?	Yes
top (length of opening on wall)	0 ft
H (height of wall)	115 in
Lh (length of wall)	25.333 ft
Analysis will be performed as	One-way slab
b (section width)	12 in
h (section thickness)	4 in
ct (cover top)	2 in
cb (cover bottom)	2 in
rd (assumed reinf. diameter)	0.319 in
dt (effective depth top)	1.84 in
db (effective depth bottom)	1.84 in
Cs (% of DL used for Seismic)	0.036
Eccentricity - Axial Load	1 in
Is wall Split	No

Wire Mesh		
Wire Size	W6.7	
spacing	1 ft	
Mesh Area	0.20 in^2	As

Factored Laterally Applied Loads

Factored Loading per ACI	ACI eq. 9-6
Factored Pressure on Wall Ww	120.86 psf

Lateral Pressure on Section	
Lw = W*(L^4/(H^4 + L^4))	0 klf
Hw = W*(L^4/(H^4 + L^4))	0.12 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	75.54 psf

Lateral Pressure on Section	
Lw = W*(L^4/(H^4 + L^4))	0 klf
Hw = W*(L^4/(H^4 + L^4))	0.08 klf

Deflection ACI 14.8.4

Service Loads	
Axial	1.72 kip
Lateral	0 klf
Allowed service deflection	0.77 in
Mua	0.800 kip-in
M	0.869 kip-in
Ds	0.005 in
Check deflection	O.K.

Flexure

Assumption check		
Span	Hw	Lw
net Tensile Strain	0.010	0.019
Check ACI 14.8.2.3	Tension	Tension
Mua	1.483 kip-ft	

ACI eq. (14-6)		
Mu	2.110 kip-ft	0.000 kip-ft

ACI 9.3.2		
fb	0.9	0.9
ΦMn trial = ΦAsFy(dt - a/2)	2.020 kip-ft	2.020 kip-ft
ΔM = Mpos - ΦM	0.090 kip-ft	0.000 kip-ft
As Add'l req'd	0.01 in^2	0.00 in^2
Additional reinf req'd	0.01 in^2	0.00 in^2
Add'l bar size	3	3
qty req'd	1	0
or spacing of	18	0
As add'l	0.070 kip-ft	0.000 kip-ft
Ast = As + As add'l	0.27 in^2	0.20 in^2
ΦMn = ΦAstFy(db - a/2)	2.543 kip-ft	2.016 kip-ft
Check ΦMn > Mu	O.K.	O.K.
% allowed	82.97%	0.00%

PFS CORPORATION
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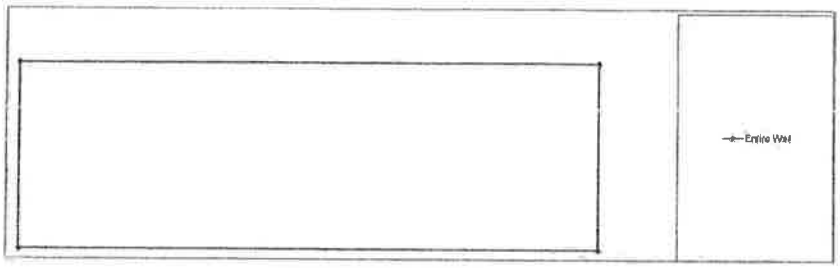
State:	Florida
Signature:	Mark Severson
Title:	Staff Plan Reviewer
Date:	2/15/22



REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.47 k/f
Ww (weight of panel per sq ft)	0.05 k/f

Material Properties	
db (effective depth section)	1.84 in
a (block of strain)	0.33483 in
a = As * fy / (0.85 * f'c * b)	

Factorized Moment

Opening	Horizontal Location	Vertical Location	L length of opening	H height above opening	(-) Weight of Opening (1.2DL)	Pu total factorized panel load	wu total factorized load	Mu (wu*L^2)/12

Rebars

Opening	fb	As req'd	Bar size	qty req'd	ϕMn ϕ*As*fy(db - a/2)	Check ϕMn > Mu

CONNECTIONS

Base Anchors			Full Resistance Value Overturning Lateral Shear	Base Anchors Moment +	Base Anchors Moment -	Wall Wall Connection Moment +	Wall Wall Connection Moment -
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	kip	kip - ft	kip - ft	kip - ft	kip - ft
6	298	298	61.420	199.10	199.10	77.57	77.57

Total Tension 21.302	Dist	Tension (kip)	Base Anchors Shear	L - Dist	Moment +	Moment -
Base Anchor 1	6 in	2.47	6.29	298 in	0.033 kip*ft	86.147 kip*ft
Base Anchor 2	67 in	3.64	12.21	237 in	4.571 kip*ft	57.190 kip*ft
Base Anchor 3	126 in	3.64	12.21	176 in	16.682 kip*ft	31.339 kip*ft
Base Anchor 4	176 in	3.64	12.21	126 in	31.339 kip*ft	16.682 kip*ft
Base Anchor 5	237 in	3.64	12.21	67 in	57.190 kip*ft	4.571 kip*ft
Base Anchor 6	298 in	2.47	6.29	6 in	86.147 kip*ft	0.033 kip*ft

Wall Connections	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft) Up Left	Low Right
Wall Connection 1	2	1.531	0.278	58.02%	W1	0	304.000	3.062	0.000	77.571
Wall Connection 2	2	1.531	0.443	58.02%	W1	304	0.000	3.062	77.571	0.000

Wall Shear Checks

Shear Connections at Base Design Force (lb)	Capacity (lb)	Reserve Capacity	Wall Shear Capacity Design (PLF)	Resistance (PLF)	check	Required Shear Capacity (lb) per Base Connector	
2656	61420	58764	93	20365	OK	443	(58764) Reserve Capacity OK

RIGIDITY

CALCULATED VALUES	100%	Final	(4.92081894)

Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / in)	Deflection (in / 1000 kip)
Entire Wall	304	115	Y	Y	16.921	0.059

Combine Logic First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Entire Wall	0	Final			16.921

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 2/15/22

ID:	Santiago S-356 & S-357
	DESIGN OF WALL MARKED W3

Notes

Material Properties

f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 psf	
Lightweight?	No	
Concrete density	150 psf	O.K.
E (Steel)	29000000 psi	
E (Concrete)	4290000 psi	ACI 8.5.1
n (modular ratio)	6.76	

Shear Parameters		
Phi v	0.85	ACI 9.3.2.3
Vc	3.123 kip	ACI 11.1.1 & 11.2.1.2
Phi*Vc	2.654 kip	ACI 11.1.1

Minimum Wall Reinforcement Requirements

roe min.vert	0.0012	ACI 14.3.2
roe min.hor	0.002	ACI 14.3.3
Max Vertical spacing	18 in	ACI 14.3.5
Max Horizontal spacing	18 in	ACI 14.3.5

ACI's Alternate Design of Slender Walls	ACI 14.8
Assumptions from this methodology:	
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum moments and deflections occur at mid-height of the wall	ACI 14.8.2.1
The cross section is constant over the height of the wall panel.	ACI 14.8.2.2
The wall cross sections shall be tension controlled.	ACI 14.8.2.3
Phi*Mn >= Mcr	ACI 14.8.2.4
Concentrated gravity loads are distributed over the wall length	ACI 14.8.2.5
The vertical stress Pu/Ag at mid-height shall not exceed 0.06*f'c	ACI 14.8.2.6

Geometric Properties

X Coordinate	128
Y Coordinate	1
Direction of Wall	Y
Center of gravity X	128.000
Center of gravity Y	63.400
Wall Weight	3630.000 lbs
Central wall?	Yes
Wall that supports 2 roof panels?	No
Iop (length of opening on wall)	0 ft
H (height of wall)	96 in
Lh (length of wall)	10.917 ft
Analysis will be performed as	Two-way slab
b (section width)	12 in
h (section thickness)	4 in
ct (cover top)	2 in
cb (cover bottom)	2 in
rd (assumed reinf. diameter)	0.319 in
dt (effective depth top)	1.84 in
db (effective depth bottom)	1.84 in
Cs (% of DL used for Seismic)	0.016
Eccentricity - Axial Load	1 in
Is wall Split	No

Wire Mesh	
Wire Size	W4.7
spacing	4 in
Mesh Area	0.20 in^2

Loading

Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) + Ww (Wall weight)	110.91 psf	Dead Load (DL lat)	0 psf
S (Snow Load)	180 psf	Snow Load (SL lat)	0 psf
L (Live Load)	0 psf	Live Load (LL lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (LLr lat)	0 psf
W (Wind Load)	139.6 psf	Wind Load (WL lat)	75.54 psf
E (Earthquake Load)	2.19 psf	Earthquake Load (EL lat)	1.8 psf

Factored Axially Applied Loads

Factored Loading per ACI	ACI eq. 9-3
Factored Pressure on Roof Wr	472.805

Axial Pressure on Section	
Pu	2.41 kip

Assumption check	
Pu/Ag	50.208 psi
0.06*f'c	300 psi
Check ACI 14.8.2.6	O.K.

Factored Laterally Applied Loads

Factored Loading per ACI	ACI eq. 9-4
Factored Pressure on Wall Ww	120.86 psf

Lateral Pressure on Section	
Lw = W*(L^4 / (L^4 + H^4))	0.03 klf
Hw = W*(H^4 / (H^4 + L^4))	0.09 klf

Unfactored Axially Applied Loads

Unfactored Pressure on Roof aWr	300.6375 psf

Axial Pressure on Section	
Pu	1.62 kip

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall aWw	75.54 psf

Lateral Pressure on Section	
Lw = W*(L^4 / (L^4 + H^4))	0.02 klf
Hw = W*(H^4 / (H^4 + L^4))	0.06 klf

Shear

Factored Loading per ACI	ACI eq. 9-3
Vu = wu(l*(Hw-2db)) / 2	0.11
Phi*Vc/2	1.33
Check Shear ACI 11.5.5.1	O.K.

Deflection ACI 14.8.4

Service Loads	
Axial	1.62 kip
Lateral	0.02 klf
Allowed service deflection	0.64 in
Msa	2.730 kip-in
M	2.746 kip-in
Ds	0.010 in
Check deflection	O.K.

Allowable Capacity

Ig = (b*h^3)/12	64 in^4
Ag = (b*h)	48 in^2
Yt = h/2	2
fr (rupture modulus)	530.330 psi
Mcr	16.971 kip-in
Beta 1	0.8
Trial Ast req'd	0.073 in^2
B	8.836162645
Kd	0.532 in
Icr	2.92 in^4
ε_c	0.003
ε_s	0.005
f	0.33482 psi
a	0.419 in
Ase	0.23 in^2
Icrdeflection	3.61 in^4
Ie	64.00 in^4
delta	150
ρ_t (maximum tensile reinforcement)	0.0160
ρ_{temp} (min. temperature reinforcement)	0.0014
ρ_{min} (minimum tensile reinforcement)	0.0027
ρ_{trial} (trial reinforcement ratio bottom)	0.0053
$\rho_{provided}$ (reinforcement ratio provided)	0.0090

Flexure

Assumption check		
Span	Hw	Lw
net Tensile Strain	0.010	0.010
Check ACI 14.8.2.3	Tension	Tension
Mua	0.820 kip-ft	

ACI eq. (14-6)		
Mu	1.020 kip-ft	0.450 kip-ft

ACI 9.3.2		
ϕb	0.9	0.9
ϕMn wal = ϕAsFy(dt - a/2)	2.020 kip-ft	2.020 kip-ft
DM = Mpos - ϕM	0.000 kip-ft	0.000 kip-ft
As Add'l req'd	0.00 in^2	0.00 in^2
Additional reinf req'd	0.00 in^2	0.00 in^2
Add'l bar size	3	3
qty req'd	0	0
or spacing of	0	0
As add'l	0.000 kip-ft	0.000 kip-ft
Ast = As + As add'l	0.20 in^2	0.20 in^2
ϕMn = ϕAsFy(db - a/2)	2.016 kip-ft	2.016 kip-ft
Check ϕMn > Mu	O.K.	O.K.
% allowed	50.50%	22.32%

PFS CORPORATION

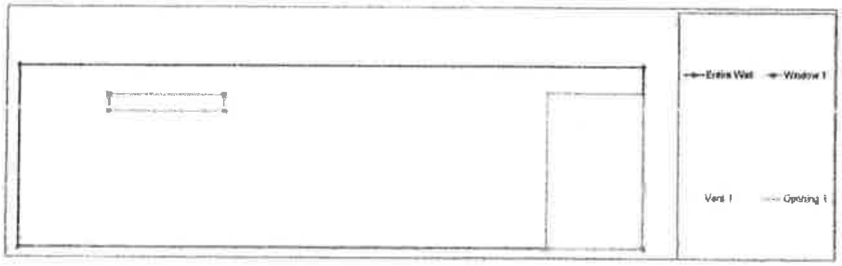
Approval Limited to Factory Built Portion Only

State: Florida

Signature: Mark Severson

Title: Staff Plan Reviewer

Date: 2/15/22



REINFORCEMENT AT OPENINGS

Loading	
Pu (factored load from roof)	0.47 klf
Ww (weight of panel per sq ft)	0.05 ksf

Material Properties	
db (effective depth bottom)	1.84 in
a (block of strain)	0.33483 psi
	a=As * fy / (0.85 * f'c *b)

Factored Moment

Opening	Horizontal Location	Vertical Location	L length of opening	H height above opening	(-) Weight of Opening (1.05)	Fw total factored panel load	wu total factored load	Mu
Window 1	1.57 ft	5.99 ft	2.02 ft	1.32 ft	69.69	0.07 klf	0.54 klf	0.18 kip-ft
Vent 1	6.92 ft	1 ft	1 ft	6 ft	10.00	0.3 klf	0.77 klf	0.06 kip-ft
Opening 1	9.24 ft	0 ft	1.65 ft	1.15 ft	575.40	0.06 klf	0.53 klf	0.12 kip-ft

Flexure

Opening	ϕb	As req'd	Bar size	qty req'd	ϕMn = ϕAsFy(db - a/2)	Check ϕMn > Mu
Window 1	0.9	0.001 in^2	No. 3	1	7.01 kip-ft	O.K.
Vent 1	0.9	0 in^2	No. 3	0	0 kip-ft	O.K.
Opening 1	0.9	0.002 in^2	No. 3	1	6.03 kip-ft	O.K.

CONNECTIONS

Base Anchors			Full Resistance Value – Overturning				
				Base Anchors		Wall/Wall Connection	
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Lateral Shear kip	Moment + kip - ft	Moment - kip - ft	Moment + kip - ft	Moment - kip - ft
3	99	100	38.627	44.39	48.32	49.56	68.48

Total Tension	Base Anchors					
10.921	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	31 in	3.64	12.21	100 in	2.945 kip*ft	30.342 kip*ft
Base Anchor 2	61 in	3.64	12.21	70 in	11.404 kip*ft	14.867 kip*ft
Base Anchor 3	99 in	3.64	12.21	32 in	30.038 kip*ft	3.107 kip*ft

	Wall Connections									
	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft) Up Left	Low Right
Wall Connection 1	2	2.702	17.133	50.00%	W1	3	128.000	5.406	1.352	57.884
Wall Connection 2	2	2.702	18.819	50.00%	W2	107	24.000	5.406	48.204	10.812

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity			Required Shear Capacity (lb) per Base Connector
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check	
2815	36627	33812	243	16643	OK	938

(33812) Reserve Capacity OK

RIGIDITY

CALCULATED VALUES	82%	Final

6.1059228329

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
	Entire Wall	131	96	Y	Y	7.716	0.130
Window 1	A'	131	8.78	Y	Y	105.335	0.009
	A	18.84	8.26	Y	Y	14.257	0.070
	B	87.92	8.26	Y	Y	70.580	0.014
Vent 1	B'	131	12	Y	Y	72.575	0.014
	C	83.04	12	Y	Y	45.814	0.022
	D	35.96	12	Y	Y	19.293	0.052
Opening 1	C'	131	82.2	Y	Y	9.392	0.106
	E	110.88	82.2	Y	Y	7.600	0.132
	F	-0.04	82.2	Y	N	0.000	0.000

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Window 1	Entire Wall	A'	A'a	-	Deflection	0.120
	A	B	AB	+	Stiffness	84.832
	A'a	AB	A'b	+	Deflection	0.132
Vent 1	A'b	B'	B'a	-	Deflection	0.118
	C	D	CD	+	Stiffness	65.077
	B'a	CD	B'b	+	Deflection	0.133
Opening 1	B'b	C'	C'a	-	Deflection	0.027
	E	F	EF	+	Stiffness	7.600
	C'a	EF	Final	+	Deflection	0.159

PFS
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Approval Limited to Factory Built Portion Only
State: Florida
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 2/15/22

ID:	Santiago S-356 & S-357 DESIGN OF WALL MARKED W4

Notes

ACI's Alternate Design of Slender Walls	
Assumptions from this methodology:	
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum moments and deflections occur at mid-height of the wall.	ACI 14.8.2.1
The cross section is constant over the height of the wall panel.	ACI 14.8.2.2
The wall cross sections shall be tension controlled.	ACI 14.8.2.3
Phi*Mn >= Mu	ACI 14.8.3.a
Concentrical gravity loads are distributed over the wall length	ACI 14.8.2.1
The vertical stress Pu/Ag at mid-height shall not exceed 0.06*f'c	ACI 14.8.2.b

Material Properties		
f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 psi	
Lightweight?	No	
Concrete density	150 pcf	O.K.
E (Steel)	29000000 psi	
E (Concrete)	4250000 psi	ACI 8.5.1
n (modular ratio)	6.76	

Shear Parameters		
Phi v	0.85	ACI 9.3.2.3
Vc	2.123 kip	ACI 11.5.1.1 & 11.2.1.2
Phi*Vc	2.554 kip	ACI 11.1.1

Minimum Wall Reinforcement Requirements		
roe min vert	0.0012	ACI 14.3.2
roe min hor	0.002	ACI 14.3.3
Max Vertical spacing	18 in	ACI 14.3.5
Max Horizontal spacing	18 in	ACI 14.3.5

Loading			
Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) - Ww (Wall weight)	110.93 psf	Dead Load (DL lat)	0 psf
S (Snow Load)	180 psf	Snow Load (SL lat)	0 psf
L (Live Load)	0 psf	Live Load (LL lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (LLr lat)	0 psf
W (Wind Load)	1399.6 psf	Wind Load (WL lat)	75.54 psf
E (Earthquake Load)	2.19 psf	Earthquake Load (EL lat)	1.8 psf

Factored Axially Applied Loads	
Factored Loading per ACI	ACI eq. 9-3
Factored Pressure on Roof Wr	472 #/ft

Axial Pressure on Section	
Pu(t)	2.39 kip

Assumption check	
Pu/Ag	39.792 psi
0.06*f'c	300 psi
Check ACI 14.8.2.b	O.K.

Unfactored Axially Applied Loads	
Unfactored Pressure on Roof wWr	300.6375 psf

Axial Pressure on Section	
P(t)	1.6 kip

Shear	
Factored Loading per ACI	ACI eq. 9-3
Vu = wall*(Hw-3ft) / 2	0.11
Phi*Vc/2	1.33
Check Shear ACI 11.5.5.1	O.K.

Allowable Capacity	
Ig = (b*h^3)/12	64 in^4
Ag = (b*h)	48 in^2
Yt = h/2	2
fr (rupture modulus)	530.330 psi
Mcr	16.971 kip-in
Beta 1	0.8
Trial Ast req'd	0.071 in^2
n	8.836162648
kd	0.542 in
I cr	2.92 in^4
ε_s	0.003
ε_c	0.005
a	0.33481 psi
c	0.419 in
Ast	0.27 in^2
fcr/deflection	2.61 in^4
Ie	64.00 in^4
delta	150
ρ_t (maximum tensile reinforcement)	0.0166
ρ_{temp} (min. temperature reinforcement)	0.0014
ρ_{max} (maximum tensile reinforcement)	0.0027
ρ_{bal} (trial reinforcement ratio bottom)	0.0023
$\rho_{provided}$ (reinforcement ratio provided)	0.0090

Geometric Properties	
X Coordinate	20
Y Coordinate	2
Direction of Wall	Y
Center of gravity X	20.000
Center of gravity Y	81.799
Wall Weight	3345.600 lbs.
Central wall?	Yes
Wall that supports Roof panels?	No
Top Height of opening on wall	0 ft
H (height of wall)	96 in
Lh (length of wall)	10.917 ft
Analysis will be performed as	Two-way slab
b (section width)	12 in
h (section thickness)	4 in
ct (cover top)	2 in
cb (cover bottom)	2 in
rd (assumed trial. diameter)	0.319 in
dt (effective depth top)	1.84 in
db (effective depth bottom)	1.84 in
Cs (% of DL used for Seismic)	0.036
Eccentricity - Axial Load	1 in
fs wall Split	No

Wire Mesh	
Wire Size	W2.9
spacing	4 in
Mesh Area	0.30 in^2

Factored Laterally Applied Loads	
Factored Loading per ACI	ACI eq. 9-4
Factored Pressure on Wall Ww	120.86 psf

Lateral Pressure on Section	
Lw = W*(L^4 / L^4 + H^4)	0.03 kip
Hw = W*(H^4 / L^4 + H^4)	0.09 kip

Unfactored Laterally Applied Loads	
Unfactored Pressure on Wall wWw	75.54 psf

Lateral Pressure on Section	
Lw = W*(L^4 / L^4 + H^4)	0.02 kip
Hw = W*(H^4 / L^4 + H^4)	0.06 kip

Deflection		
Service Loads		ACI 14.8.4
Axial	1.60 kip	
Lateral	0.02 kip	
Allowed service deflection	0.64 in.	
Ma	2.738 kip-in	
M	2.733 kip-in	
Da	0.010 in	
Check deflection	O.K.	

Flexure		
Assumption check		
Span	Hw	Lw
ext Tensile Stress	0.010	0.010
Check ACI 14.8.2.3	Tension	Tension
Mua	0.820 kip-ft	

ACI eq. (14-6)		
Mn	1.020 kip-ft	0.450 kip-ft

ACI 9.3.2		
fi	0.9	0.9
Mn trial = As(f)*(dt - a/2)	2.020 kip-ft	2.020 kip-ft
DM = Mnpp - phi	0.000 kip-ft	0.000 kip-ft
As Add'l req'd	0.00 in^2	0.00 in^2
Additional reinf req'd	0.00 in^2	0.00 in^2
Add'l bar size	3	3
qty req'd	0	0
or spacing of	0	0
As add'l	0.000 kip-ft	0.000 kip-ft
Ast = As + As add'l	0.20 in^2	0.20 in^2
Mn = Ast*fy(db - a/2)	2.016 kip-ft	2.016 kip-ft
Check fiMn > Mu	O.K.	O.K.
% allowed	50.69%	22.32%

PFS

PFS CORPORATION

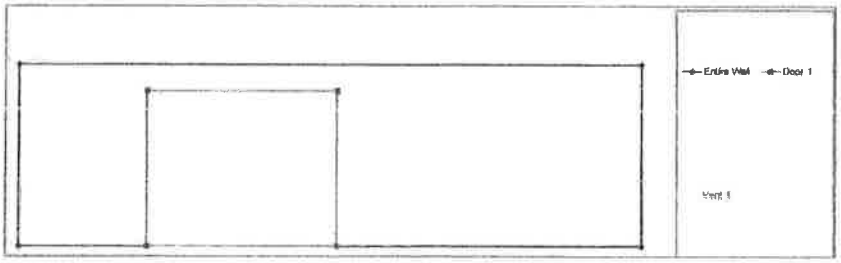
Approval Limited to Factory Built Portion Only

State: Florida

Signature: PFS Mark Severson

Title: Staff Plan Reviewer

Date: 2/15/22



REINFORCEMENT AT OPENINGS

Loading	
Pu (factored load from roof)	0.47 k/f
Ww (weight of panel per sq ft)	0.05 ksf

Material Properties	
db (effective depth bottom)	1.84 in
a (block of stress)	0.33483 psi
	a*As * fy / (0.85 * f'c *b)

Factored Moment

Opening	Horizontal Location	Vertical Location	L - length of opening	H height above opening	(-) Weight of Opening (LBS)	Pw total factored panel load	wu total factored load	Mu (wu*L^2)/13
Door 1	2.24 ft	0 ft	7.34 ft	1.15 ft	1143.93	0.06 k/f	0.33 k/f	0.49 kip-ft
Vent 1	6.92 ft	1 ft	1 ft	6 ft	58.00	0.3 k/f	0.77 k/f	0.06 kip-ft

Rebars

Opening	ab	As req'd	Bar size	qty req'd	ϕMn ϕ(As*fy(db - a/2))	Check ϕMn > Mu
Door 1	0.9	0.009 in^2	No. 3	3	6.013 kip-ft	OK
Vent 1	0.9	0 in^2	No. 3	0	0 kip-ft	OK

CONNECTIONS

Base Anchors			Full Resistance Value Overstrength				
			Lateral	Base Anchors		Wall-Wall Connection	
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Shear kip	Moment + kip - ft	Moment - kip - ft	Moment + kip - ft	Moment - kip - ft
3	119	110	36.627	50.08	43.70	49.56	48.48

Total Tension	Base Anchors					
10.931	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	21 in	3.64	12.21	110 in	11.124 kip*ft	33.176 kip*ft
Base Anchor 2	71 in	3.64	12.21	60 in	12.811 kip*ft	9.918 kip*ft
Base Anchor 3	119 in	3.64	12.21	12 in	36.107 kip*ft	0.797 kip*ft

Wall Connections									
	Quantity of Anchors	Capacity of each Anchor	Counteracting Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft) Up Left / Low Right
Wall Connection 1	2	2,703	17,133	50.00%	W1	3	128.000	5,406	1,352 / 57,664
Wall Connection 2	2	2,703	16,819	50.00%	W2	107	24.000	5,406	46,204 / 10,812

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity			Required Shear Capacity (lb) per Base Connector		
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check		(349)87)	Reserve Capacity OK
1640	36627	34987	136	9349	OK	547		

RIGIDITY

CALCULATED VALUES	40%	Final	3.542271874

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / in)	Deflection (in / 1000 kip)
	Entire Wall	131	96	Y	Y	7.719	0.130
Door 1	A'	131	82.2	Y	Y	9.902	0.101
	A	26.88	82.2	Y	Y	0.529	1.892
	B	84.04	82.2	Y	Y	3.353	0.298
Vent 1	B'	131	12	Y	Y	72.979	0.014
	C	83.04	12	Y	Y	45.814	0.022
	D	39.96	12	Y	Y	19.263	0.052

	Combine Logic					
	Fwd Segment	Second Segment	Rs Name	Combine/Subtract	Method	Combined
Door 1	Entire Wall	A'	A's	-	Deflection	0.023
	A	B	AB	+	Stiffness	3.852
	A's	AB	Ab	+	Deflection	0.281
Vent 1	Ab	B'	B's	-	Deflection	0.267
	C	D	CD	+	Stiffness	65.077
	B's	CD	Final	+	Deflection	0.282

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State: Florida
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 2/15/22

Title	Santiago S-356 & S-357
	DESIGN OF WALL MARKED W5

Notes	

ACI's Alternate Design of Slender Walls
Assumptions from this methodology:
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum moments and deflections occur at mid-height of the wall
The cross section is constant over the height of the wall panel
The wall cross sections shall be tension controlled
Phi*Mn >= Mcr
Concentrated gravity loads are distributed over the wall length
The vertical stress Pu/Ag at mid-height shall not exceed 0.06*f'c

Material Properties

f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 psf	
Lightweight?	No	
Concrete density	150 pcf	O.K.
E (Steel)	29000000 psi	
E (Concrete)	4290000 psi	
n (modular ratio)	6.76	

Shear Parameters	
Phi v	0.85
Vc	3.123 kip
Phi*Vc	2.654 kip

Minimum Wall Reinforcement Requirements

roe min vert	0.0012
roe min hor	0.002
Max Vertical spacing	18 in
Max Horizontal spacing	18 in

Geometric Properties

X Coordinate	22
Y Coordinate	266
Direction of Wall	X
Center of gravity X	173.997
Center of gravity Y	266.000
Wall Weight	12320.000 lbs
Central wall?	Yes
Wall that supports 2 roof panels?	Yes
larger length of opening on wall	0 ft
H (height of wall)	111 in
Lh (length of wall)	35.333 ft
Analysis will be performed as	One-way slab
b (section width)	12 in
h (section thickness)	4 in
ct (cover top)	2 in
cb (cover bottom)	2 in
d (assumed reinf. diameter)	0.319 in
dt (effective depth top)	1.84 in
db (effective depth bottom)	1.84 in
Cs (% of Dl. used for Seismic)	0.036
Eccentricity - Axial Load	1 in
Is wall Split	No

Wire Mesh	
Wire Size	W6.7
spacing	4 in
Mesh Area	0.20 in^2

Loading

Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) - Ww (Wall weight)	110.94 psf	Dead Load (DL lat)	0 psf
S (Snow Load)	180 psf	Snow Load (SL lat)	0 psf
L (Live Load)	0 psf	Live Load (LL lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (LLr lat)	0 psf
W (Wind Load)	139.8 psf	Wind Load (WL lat)	75.54 psf
E (Earthquake Load)	2.19 psf	Earthquake Load (EL lat)	1.8 psf

Factored Axially Applied Loads

Factored Loading per ACI	ACI eq. 9-3
Factored Pressure on Roof Wr	472.805

Axial Pressure on Section	
Pu(l)	2.52 kip

Assumption check	
Pu/Ag	52.500 psi
0.06*f'c	300 psi
Check ACI 14.8.2.6	O.K.

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	300.6375 psf

Axial Pressure on Section	
P(l)	1.73 kip

Shear

Factored Loading per ACI	ACI eq. 9-3
Vu = wu(l)*(lhw-2db) / 2	0
Phi*Vc/2	1.33
Check Shear ACI 11.5.5.1	O.K.

Factored Laterally Applied Loads

Factored Loading per ACI	ACI eq. 9-4
Factored Pressure on Wall Ww	120.86 psf

Lateral Pressure on Section	
Lw = W*(L^4 / (H^4 + L^4))	0 klf
Hw = W*(L^4 / (H^4 + L^4))	0.12 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	75.54 psf

Lateral Pressure on Section	
Lw = W*(L^4 / (H^4 + L^4))	0 klf
Hw = W*(L^4 / (H^4 + L^4))	0.08 klf

Deflection

Service Loads	
Axial	1.73 kip
Lateral	0 klf
Allowed service deflection	0.77 in
Msa	0.865 kip-in
M	0.874 kip-in
Ds	0.005 in
Check deflection	O.K.

Allowable Capacity

Ig = (b*h^3)/12	64 in^4
Ag = (b*h)	48 in^2
Yt = h/2	2
fr (rupture modulus)	530.330 psi
Mcr	16.971 kip-in
Beta 1	0.8
Trial Ast req'd	0.073 in^2
B	8.836167648
kd	0.542 in
Icr	2.92 in^4
ϵ_c	0.003
ϵ_s	0.005
a	0.33483 psi
c	0.419 in
Ase	0.23 in^2
Icrdeflection	3.61 in^4
Ie	55.68 in^4
delta	150
ρ_t (maximum tensile reinforcement)	0.0166
ρ_{temp} (min. temperature reinforcement)	0.0014
ρ_{min} (minimum tensile reinforcement)	0.0027
ρ_{trial} (trial reinforcement ratio bottom)	0.0033
ρ_{actual} (reinforcement ratio provided)	0.0090

Flexure

Assumption check		
Span	Hw	Lw
est. Tensile Strain	0.010	0.010
Check ACI 14.8.2.3	Tension	Tension
Mua	1.485 kip-ft	

ACI eq. (14-6)		
Mu	2.120 kip-ft	0.000 kip-ft

ACI 9.3.2		
Phi	0.9	0.9
ΦMn trial = ΦAsFy(dt - a/2)	2.020 kip-ft	2.020 kip-ft
DM = Mpos - ΦM	0.100 kip-ft	0.000 kip-ft
As Add'l req'd	0.01 in^2	0.00 in^2
Additional reinf req'd	0.01 in^2	0.00 in^2
Add'l bar size	3	3
qty req'd	1	0
or spacing of	18	0
As add'l	0.070 kip-ft	0.000 kip-ft
Ast = As + As add'l	0.27 in^2	0.20 in^2
ΦMn = ΦAstFy(db - a/2)	2.141 kip-ft	2.010 kip-ft
Check ΦMn > Mu	O.K.	O.K.
% allowed	83.37%	0.00%

PFS

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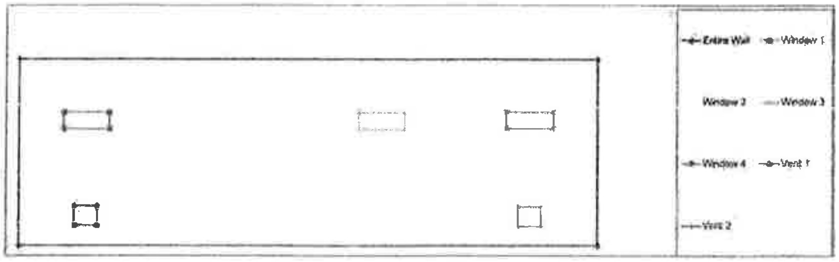
State:	**Florida**
Signature:	PFS *Mark Severson*
Title:	**Staff Plan Reviewer**
Date:	**2/15/22**



REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.47 klf
Ww (weight of panel per sq ft)	0.65 ksf

Material Properties	
db (effective depth bottom)	1.84 in
a (block of strain)	0.33183 psi
	a=As * fy / (0.85 * f'c *b)

Factorized Moment

Opening	Horizontal Location	Vertical Location	L length of opening	H height above opening	(-) Weight of Opening (LBS)	Ww total factorized panel load	wu total factorized load	Mu (wu*L^2)/12
Window 1	1.92 ft	5.99 ft	2.02 ft	2.74 ft	86.19	0.14 klf	0.61 klf	0.21 kip-ft
Window 2	8.42 ft	5.99 ft	2.02 ft	2.74 ft	86.19	0.14 klf	0.61 klf	0.21 kip-ft
Window 3	14.9 ft	5.99 ft	2.02 ft	2.74 ft	86.19	0.14 klf	0.61 klf	0.21 kip-ft
Window 4	21.41 ft	5.99 ft	2.02 ft	2.74 ft	86.19	0.14 klf	0.61 klf	0.21 kip-ft
Vent 1	2.43 ft	1 ft	1 ft	7.58 ft	50.17	0.38 klf	0.85 klf	0.07 kip-ft
Vent 2	21.92 ft	1 ft	1 ft	7.58 ft	50.17	0.38 klf	0.85 klf	0.07 kip-ft

Flexure

Opening	ϕb	As req'd	Bar size	qty req'd:	ϕMn ϕAsfy(db - a/2)	Check ϕMn > Mu
Window 1	0.9	0.002 in^2	No. 3	1	15.51 kip-ft	OK
Window 2	0.9	0.002 in^2	No. 3	1	15.51 kip-ft	OK
Window 3	0.9	0.002 in^2	No. 3	1	15.51 kip-ft	OK
Window 4	0.9	0.002 in^2	No. 3	1	15.51 kip-ft	OK
Vent 1	0.9	0 in^2	No. 1	0	0 kip-ft	OK
Vent 2	0.9	0 in^2	No. 1	0	0 kip-ft	OK

CONNECTIONS

Base Anchors			Full Resistance Value				
				Overturning			
			Lateral	Base Anchors		Wall-Wall Connection	
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Shear kip	Moment + kip - ft	Moment - kip - ft	Moment + kip - ft	Moment - kip - ft
6	290	290	73.254	201.80	201.80	77.57	77.57

Total Tension	Base Anchors					
21.846	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	14 in	3.64	12.21	290 in	0.205 kip*ft	87.991 kip*ft
Base Anchor 2	67 in	3.64	12.21	237 in	4.697 kip*ft	58.768 kip*ft
Base Anchor 3	122 in	3.64	12.21	182 in	15.573 kip*ft	34.636 kip*ft
Base Anchor 4	182 in	3.64	12.21	122 in	34.636 kip*ft	15.573 kip*ft
Base Anchor 5	237 in	3.64	12.21	67 in	58.768 kip*ft	4.697 kip*ft
Base Anchor 6	290 in	3.64	12.21	14 in	87.991 kip*ft	0.205 kip*ft

	Wall Connections									
	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft) Up Left	Overturning Moment Resistance (kip-ft) Low Right
Wall Connection 1	2	1.531	5.801	41.22%	W8	0	304.000	3.062	0.000	77.571
Wall Connection 2	2	1.531	5.999	41.22%	W7	304	0.000	3.062	77.571	0.000

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity			
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check	Required Shear Capacity (lb) per Base Connector
2587	73254	70667	80	19560	OK	431

170667 Reserve Capacity OK

RIGIDITY

CALCULATED VALUES	96%	Final

16.17244014

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Usable? (Y/N)	Stiffness (k) (1000 kip / in)	Deflection (in / 1000 kip)
	Entire Wall	304	115	Y	Y	16.821	0.059
Window 1	A'	304	10.24	Y	Y	197.842	0.005
	A	23.04	10.24	Y	Y	14.073	0.071
	B	256.72	10.24	Y	Y	167.047	0.006
Window 2	B'	304	10.24	Y	Y	197.842	0.005
	C	101.04	10.24	Y	Y	65.567	0.015
	D	178.72	10.24	Y	Y	116.227	0.009
Window 3	C'	304	10.24	Y	Y	197.842	0.005
	E	178.8	10.24	Y	Y	116.279	0.009
	F	100.96	10.24	Y	Y	65.505	0.015
Window 4	D'	304	10.24	Y	Y	197.842	0.005
	G	256.92	10.24	Y	Y	167.177	0.006
	H	22.84	10.24	Y	Y	13.936	0.072
Vent 1	E'	304	12.04	Y	Y	168.240	0.006
	I	22.16	12.04	Y	Y	15.278	0.065
	J	282.84	12.04	Y	Y	145.435	0.007
Vent 2	F'	304	12.04	Y	Y	168.240	0.006
	L	283.04	12.04	Y	Y	145.546	0.007
	M	28.96	12.04	Y	Y	15.162	0.066

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Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 2/15/22

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Window 1	Entire Wall	A'	A'a	-	Deflection	0.054
	A	B	Ab	+	Stiffness	181.120
Window 2	A'a	AB	Aa	+	Deflection	0.060
	A'b	B'	B'a	-	Deflection	0.055
	C	D	CD	+	Stiffness	181.784
Window 3	B'a	CD	Bb	+	Deflection	0.060
	B'b	C'	C'a	-	Deflection	0.055
	E	F	EF	+	Stiffness	181.784
Window 4	C'a	EF	Cb	+	Deflection	0.061
	C'b	D'	D'a	-	Deflection	0.056
	G	H	GH	+	Stiffness	181.113
Vent 1	D'a	GH	Db	+	Deflection	0.057
	D'b	E'	E'a	-	Deflection	0.053
	I	J	IJ	+	Stiffness	160.713
Vent 2	E'a	IJ	E'b	+	Deflection	0.062
	E'b	F'	F'a	-	Deflection	0.056
	K	M	LM	+	Stiffness	160.709
	F'a	LM	Final	+	Deflection	0.062

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: 2/15/22

ID:	Santiago S-356 & S-357
	DESIGN OF WALL MARKED W6

Notes	

Material Properties

f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 psi	
Lightweight?	No	
Concrete density	150 pcf	O K
E (Steel)	29000000 psi	
E (Concrete)	4290000 psi	ACI 8.5.1
n (modular ratio)	6.76	

Shear Parameters

Phi v	0.85	ACI 9.3.2.3
Vc	3.123 kip	ACI 11.3.1.1 & 11.2.1.2
Phi*Vc	2.654 kip	ACI 11.2.1

Minimum Wall Reinforcement Requirements

roe min vert	0.0012	ACI 14.3.2
roe min hor	0.002	ACI 14.3.3
Max Vertical spacing	18 in	ACI 14.3.5
Max Horizontal spacing	18 in	ACI 14.3.5

ACI's Alternate Design of Slender Walls	ACI 14.8
Assumptions from this methodology	
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum moments and deflections occur at mid-height of the wall	ACI 14.8.2.1
The cross section is constant over the height of the wall panel	ACI 14.8.2.2
The wall cross sections shall be tension controlled	ACI 14.8.2.3
Phi*Mn >= Mcr	ACI 14.8.2.4
Concentrated gravity loads are distributed over the wall length	ACI 14.8.2.5
The vertical stress Pu/Ag at mid-height shall not exceed 0.06*f'c	ACI 14.8.2.6

Geometric Properties

X Coordinate	22
Y Coordinate	161
Direction of Wall	X
Center of gravity X	174.000
Center of gravity Y	161.000
Wall Weight	12135.000 lbs
Central wall?	Yes
Wall that supports 2 roof panels?	Yes
top (length of opening on wall)	0 ft
H (height of wall)	115 in
Lh (length of wall)	21.333 ft
Analysis will be performed as	One-way slab
b (section width)	12 in
h (section thickness)	4 in
ct (cover top)	2 in
cb (cover bottom)	2 in
d (assumed reinf. diameter)	0.319 in
dt (effective depth top)	1.84 in
db (effective depth bottom)	1.84 in
[illegible]	0.036
Eccentricity - Axial Load	1 in
Is wall Split	No

Loading

Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) - Ww (Wall weight)	110.94 psf	Dead Load (DL lat)	0 psf
S (Snow Load)	180 psf	Snow Load (SL lat)	0 psf
L (Live Load)	0 psf	Live Load (LL lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (Lr lat)	0 psf
W (Wind Load)	139.6 psf	Wind Load (WL lat)	75.54 psf
E (Earthquake Load)	3.19 psf	Earthquake Load (EL lat)	1.8 psf

Wire Mesh		
Wire Size	W6.2	
spacing	4 in	
Mesh Area	0.20 in^2	As

Factored Axially Applied Loads

Factored Loading per ACI	ACI eq. 9-3
Factored Pressure on Roof Wr	472.805

Axial Pressure on Section	
Pu	2.51 kip

Assumption check	
Pu/Ag	52.292 psi
0.06*f'c	300 psi
Check ACI 14.8.2.6	O K.

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	300.6375 psf

Axial Pressure on Section	
Pu	1.72 kip

Factored Laterally Applied Loads

Factored Loading per ACI	ACI eq. 9-4
Factored Pressure on Wall Ww	120.86 psf

Lateral Pressure on Section	
Lw = W*(L^4/H^4 + L^4)	0 klf
Hw = W*(L^4/H^4 + L^4)	0.12 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	75.54 psf

Lateral Pressure on Section	
Lw = W*(L^4/H^4 + L^4)	0 klf
Hw = W*(L^4/H^4 + L^4)	0.08 klf

Shear

Factored Loading per ACI	ACI eq. 9-3
Vu = wall*(Hw-2db) / 2	0
Phi*Vc/2	1.33
Check Shear ACI 11.5.5.1	O K.

Deflection ACI 14.8.4

Service Loads	
Axial	1.72 kip
Lateral	0 klf
Allowed service deflection	0.77 in
Msa	0.860 kip-in
M	0.859 kip-in
Ds	0.005 in
Check deflection	O K.

Allowable Capacity

Ig = (b*h^3)/12	64 in^4
Ag = (h*b)	48 in^2
Yt = h/2	2
fr (rupture modulus)	530.330 psi
Mcr	16.971 kip-in
Beta 1	0.8
Trial Ast req'd	0.073 in^2
n	6.836162048
kd	0.342 in
Icr	2.92 in^4
ε_c	0.003
ε_s	0.005
a	0.33483 psi
c	0.419 in
Ase	0.23 in^2
Icrdeflection	3.61 in^4
Ie	55.72 in^4
delta	150
r_t (maximum tensile reinforcement)	0.0166
r_{temp} (min. temperature reinforcement)	0.0014
r_{min} (minimum tensile reinforcement)	0.0027
r_{total} (total reinforcement ratio bottom)	0.0033
ρ_{actual} (reinforcement ratio provided)	0.0090

Flexure

Assumption check		
Span	Hw	Lw
est Tensile Strain	0.010	0.010
Check ACI 14.8.2.3	Tension	Tension
Mua	1.485 kip-ft	

ACI eq. (14-6)		
Mu	2.110 kip-ft	0.000 kip-ft

ACI 9.3.2		
fb	0.9	0.9
ΦMn trial = ΦAsFy(dt - a/2)	2.020 kip-ft	2.020 kip-ft
DM = Mgov - ΦM	0.090 kip-ft	0.000 kip-ft
As Add'l req'd	0.01 in^2	0.00 in^2
Additional reinf req'd	0.01 in^2	0.00 in^2
Add'l bar size	3	3
qty req'd	1	0
or spacing of	18	0
As add'l	0.070 kip-ft	0.000 kip-ft
Ast = As + As add'l	0.27 in^2	0.20 in^2
ΦMn = ΦAsFy(db - a/2)	2.543 kip-ft	2.016 kip-ft
Check ΦMn > Mu	O K.	O K.
% allowed	82.97%	0.00%

PFS
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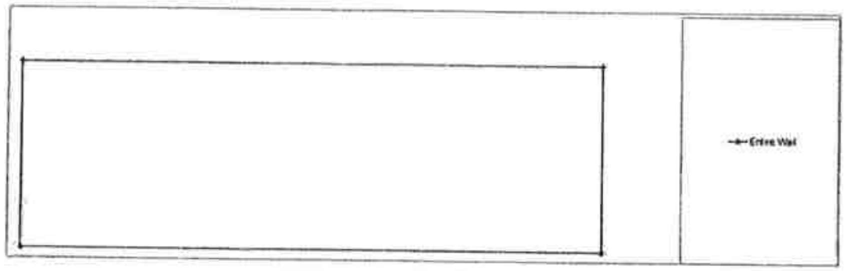
Approval Limited to Factory Built Portion Only

State: Florida
Signature: PFS Mark Severson
Title: Staff Plan Reviewer
Date: 2/15/22



REINFORCEMENT AT OPENINGS

Loading	
Pu (factored load from roof)	0.47 klf
Wu (weight of panel per sq ft)	0.05 ksf

Material Properties	
db (effective depth bottom)	1.84 in
a (block of stress)	0.35483 psi
	a=As * fy / (0.85 * f'c *b)

Factored Moment

Opening	Horizontal Location	Vertical Location	L length of opening	H height above opening	(-) Weight of Opening (LBS)	Pu total factored panel load	wu total factored load	Mu (wu*L^2)/12

Flexure

Opening	db	As req'd	Bar size	qty req'd	ϕMn = ϕAsFy(db - a/2)	Check ϕMn > Mu

CONNECTIONS

Base Anchors			Full Resistance Value				
				Overturning			
			Lateral	Base Anchors		Wall-Wall Connection	
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Shear kip	Moment + kip - ft	Moment - kip - ft	Moment + kip - ft	Moment - kip - ft
6	298	298	61.420	196.16	196.16	77.57	77.57

Total Tension	Base Anchors					
21.302	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	6 in	3.47	8.29	298 in	0.035 kip*ft	86.147 kip*ft
Base Anchor 2	67 in	3.64	12.21	237 in	4.571 kip*ft	57.190 kip*ft
Base Anchor 3	128 in	3.64	12.21	176 in	16.682 kip*ft	31.539 kip*ft
Base Anchor 4	176 in	3.64	12.21	128 in	31.539 kip*ft	16.682 kip*ft
Base Anchor 5	237 in	3.64	12.21	67 in	57.190 kip*ft	4.571 kip*ft
Base Anchor 6	298 in	3.47	8.29	6 in	86.147 kip*ft	0.035 kip*ft

	Wall Connections									
	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft) Up Left	Low Right
Wall Connection 1	2	1.531	8.387	58.78%	W8	0	304.000	3.062	0.000	77.571
Wall Connection 2	2	1.531	8.554	58.78%	W7	304	0.000	3.062	77.571	0.000

Wall Shear Checks

Shear Connections at Base Design Force (lb)	Capacity (lb)	Reserve Capacity	Wall Shear Capacity Design (PLF)	Resistance (PLF)	check	Required Shear Capacity (lb) per Base Connector
2656	61420	58764	83	20365	OK	443

(58764) Reserve Capacity OK

RIGIDITY

CALCULATED VALUES	100%	Final

16.82011894

Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Usable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
Entire Wall	304	115	Y	Y	16.821	0.059

Combine Logic					
First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Entire Wall	0	Final			16.821

PFS CORPORATION
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State: Florida
Signature: Mark Peverson
Title: Staff Plan Reviewer
Date: 2/15/22

Title	Santiago S-356 & S-357 DESIGN OF WALL MARKED W7

Notes	

Material Properties

f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 psf	
Lightweight?	No	
Concrete density	150 pcf	O.K.
E (Steel)	29000000 psi	
E (Concrete)	4290000 psi	[illegible]
n (modular ratio)	6.76	

Shear Parameters		
Phi.v	0.85	[illegible]
Vc	3.123 kip	[illegible]
Phi*Vc	2.654 kip	[illegible]

Minimum Wall Reinforcement Requirements

roe min vert	0.0012	[illegible]
roe min hor	0.002	[illegible]
Max Vertical spacing	18 in	[illegible]
Max Horizontal spacing	18 in	[illegible]

ACI's Alternate Design of Slender Walls	[illegible]
Assumptions from this methodology:	
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum moments and deflections occur at mid-height of the wall	[illegible]
The cross section is constant over the height of the wall panel	[illegible]
The wall cross sections shall be tension controlled	[illegible]
Phi*Mn >= Mcr	[illegible]
Concentrated gravity loads are distributed over the wall length	[illegible]
The vertical stress Pu/Ag at mid-height shall not exceed 0.06*f'c	[illegible]

Geometric Properties

X Coordinate	328
Y Coordinate	138
Direction of Wall	Y
Center of gravity X	328.000
Center of gravity Y	211.991
Wall Weight	3630.000 lbs
Central wall?	Yes
Wall that supports 2 roof panels?	No
lop (length of opening on wall)	0 ft
H (height of wall)	96 in
Lh (length of wall)	10.917 ft
Analysis will be performed as	Two-way slab
b (section width)	12 in
h (section thickness)	4 in
ct (cover top)	2 in
cb (cover bottom)	2 in
d (assumed reinf. diameter)	0.319 in
dt (effective depth top)	1.84 in
db (effective depth bottom)	1.84 in
Cs (% of f'c used for Stress)	0.036
Eccentricity - Axial Load	1 in
Is wall Split	No

Loading

Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) - Ww (Wall weight)	110.94 psf	Dead Load (DL lat)	0 psf
S (Snow Load)	180 psf	Snow Load (SL lat)	0 psf
L (Live Load)	0 psf	Live Load (LL lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (LLr lat)	0 psf
W (Wind Load)	139.6 psf	Wind Load (WL lat)	75.54 psf
E (Earthquake Load)	2.19 psf	Earthquake Load (EL lat)	1.8 psf

Wire Mesh	
Wire Size	W6.7
spacing	4 in
Mesh Area	0.20 in^2

As

Factored Axially Applied Loads

Factored Loading per ACI	ACI eq. 9-3
Factored Pressure on Roof Wr	472.505

Axial Pressure on Section	
Pu(l)	2.41 kip

Assumption check	
Pu/Ag	50.208 psi
0.06*f'c	300 psi
Check ACI 11.8.2.6	O.K.

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	300.6375 psf

Axial Pressure on Section	
P(l)	1.62 kip

Factored Laterally Applied Loads

Factored Loading per ACI	ACI eq. 9-4
Factored Pressure on Wall Ww	120.86 psf

Lateral Pressure on Section	
Lw - W*(L^4/(L^4 + H^4))	0.03 klf
Hw - W*(H^4/(H^4 + L^4))	0.09 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	75.54 psf

Lateral Pressure on Section	
Lw - W*(L^4/(L^4 + H^4))	0.02 klf
Hw - W*(H^4/(H^4 + L^4))	0.06 klf

Shear

Factored Loading per ACI	ACI eq. 9-3
Vu = wuD*(Hw-2db)/2	0.11
Phi*Vc/2	1.33
Check Shear ACI 11.5.5.1	O.K.

Deflection [illegible]

Service Loads	
Axial	1.62 kip
Lateral	0.02 klf
Allowed service deflection	0.64 in
Msa	2.730 kip-in
M	2.746 kip-in
Ds	0.010 in
Check deflection	O.K.

Allowable Capacity

Ig = (b*h^3)/12	64 in^4
Ag = (b*h)	48 in^2
Yt = h/2	2
fr (rupture modulus)	530.330 psi
Mcr	16.971 kip-in
Beta 1	0.8
Trial Ast req'd	0.073 in^2
D	8.836162043
kd	0.542 in
Icr	2.92 in^4
ε_c	0.003
ε_t	0.005
a	0.33483 psi
c	0.419 in
Asc	0.21 in^2
Icrdeflection	3.61 in^4
Ie	64.00 in^4
delta	150
ρ_t (maximum tensile reinforcement)	0.0166
ρ_{temp} (min. temperature reinforcement)	0.0014
ρ_{min} (minimum tensile reinforcement)	0.0027
ρ_{trial} (trial reinforcement ratio bottom)	0.0033
ρ_{actual} (reinforcement ratio provided)	0.0090

Flexure

Assumption check		
Span	Hw	Lw
net Tensile Strain	0.010	0.010
Check ACI 14.8.2.3	Tension	Tension
Mua	0.820 kip-ft	

ACI eq. (14-6)		
Mu	1.020 kip-ft	0.450 kip-ft

ACI 9.3.2		
fb	0.9	0.9
ΦMn trial = ΦAsFy(db - a/2)	2.020 kip-ft	2.020 kip-ft
DM = Mpos - ΦM	0.000 kip-ft	0.000 kip-ft
As Add'l req'd	0.00 in^2	0.00 in^2
Additional reinf req'd	0.00 in^2	0.00 in^2
Add'l bar size	3	3
qty req'd	0	0
or spacing of	0	0
As add'l	0.000 kip-ft	0.000 kip-ft
Ast = As + As add'l	0.20 in^2	0.20 in^2
ΦMn = ΦAsFy(db - a/2)	2.016 kip-ft	2.016 kip-ft
Check ΦMn > Mu	O.K.	O.K.
% allowed	50.60%	22.32%

PFS

PFS CORPORATION

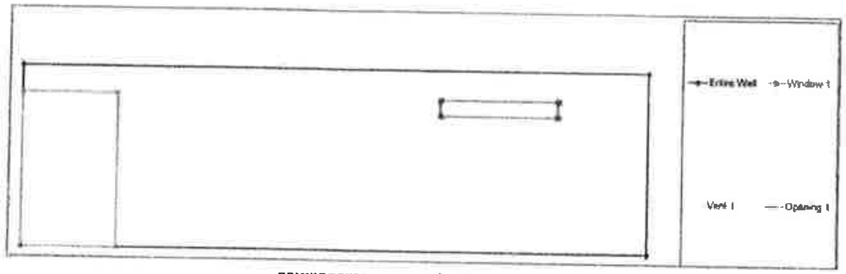
Approval Limited to Factory Built Portion Only

State: Florida

Signature: PFS Mark Severson

Title: Staff Plan Reviewer

Date: 2/15/22



REINFORCEMENT AT OPENINGS

Loading	
Pu (factored load from roof)	0.47 klf
Ww (weight of panel per sq ft)	0.05 ksf

Material Properties	
db (effective depth bottom)	1.84 in
a (block of stress)	0.33481 psi
	a=As * fy / (0.85 * f'c *b)

Factored Moment

Opening	Horizontal Location	Vertical Location	L length of opening	H height above opening	(-) Weight of Opening (LHS)	Pw total factored panel load	wu total factored load	Mu (wu*L^2)/12
Window 1	7.12 ft	5.99 ft	2.02 ft	1.32 ft	69.69	0.07 klf	0.54 klf	0.18 kip-ft
Vent 1	3 ft	1 ft	1 ft	8 ft	30.00	0.3 klf	0.77 klf	0.06 kip-ft
Opening 1	0 ft	0 ft	1.68 ft	1.15 ft	571.40	0.06 klf	0.53 klf	0.12 kip-ft

Flexure

Opening	ϕb	As req'd	Bar size	qty req'd	ϕMn ϕAsFy(db - a/2)	Check ϕMn ≥ Mu
Window 1	0.9	0.001 in^2	No. 3	1	7.01 kip-ft	O.K.
Vent 1	0.9	0 in^2	No. 3	0	0 kip-ft	O.K.
Opening 1	0.9	0.002 in^2	No. 3	1	6.03 kip-ft	O.K.

CONNECTIONS

Base Anchors			Full Resistance Value				
				Overturning			
			Lateral	Base Anchors		Wall-Wall Connection	
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Shear kip	Moment + kip - ft	Moment - kip - ft	Moment + kip - ft	Moment - kip - ft
3	100	93	36.627	48.32	44.30	69.38	48.65

Total Tension	Base Anchors					
10.921	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	12 in	3.64	12.21	99 in	3.107 kip*ft	30.038 kip*ft
Base Anchor 2	70 in	3.64	12.21	61 in	14.867 kip*ft	11.404 kip*ft
Base Anchor 3	100 in	3.64	12.21	31 in	30.342 kip*ft	2.925 kip*ft

	Wall Connections									
	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft) Up Left	Low Right
Wall Connection 1	2	2.703	16.819	50.00%	W6	26	105.000	5.406	11.713	47.303
Wall Connection 2	2	2.703	17.133	50.00%	N3	128	3.000	5.406	57.664	1.352

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity			
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check	Required Shear Capacity (lb) per Base Connector
2814	36627	33813	243	16637	OK	938

(33813) Reserve Capacity OK

RIGIDITY

CALCULATED VALUES	82%	Final

6.30147949

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / in)	Deflection (in / 1000 kip)
	Entire Wall	131	96	Y	Y	7.716	0.130
Window 1	A'	131	8.28	Y	Y	105.335	0.009
	A	87.84	8.28	Y	Y	70.516	0.014
	B	18.92	8.28	Y	Y	14.319	0.070
Vent 1	B'	131	12	Y	Y	72.575	0.014
	C	36	12	Y	Y	19.286	0.052
	D	60	12	Y	Y	45.797	0.022
Opening 1	C'	131	82.2	Y	Y	9.392	0.106
	E	0	82.2	Y	N	0.000	0.000
	F	110.84	82.2	Y	Y	7.597	0.132

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Window 1	Entire Wall	A'	Aa	-	Deflection	0.120
	A	B	AB	+	Stiffness	84.835
	Aa	AB	Ab	+	Deflection	0.132
Vent 1	Ab	B'	Ba	-	Deflection	0.118
	C	D	CD	+	Stiffness	65.078
	Ba	CD	Bb	+	Deflection	0.133
Opening 1	Bb	C'	Ca	-	Deflection	0.027
	E	F	EF	+	Stiffness	7.597
	Ca	EF	Final	+	Deflection	0.159

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 2/15/22

Job	Santiago S-356 & S-357
	DESIGN OF WALL MARKED W9

Notes

ACI's Alternate Design of Slender Walls	
Assumptions from this methodology:	
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum moments and deflections occur at mid-height of the wall	
The cross section is constant over the height of the wall panel	
The wall cross sections shall be tension controlled.	
Phi*Mn >= Mu	
Concentrated gravity loads are distributed over the wall length	
The vertical stress Pu/Ag at mid-height shall not exceed 0.06*f'c	

Material Properties		
f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 psi	
Light-weight?	No	
Concrete density	150 pcf	12 K
E (Steel)	29000000 psi	
E (Concrete)	4250000 psi	
n (modular ratio)	6.79	

Shear Parameters		
Phi v	0.85	
Vc	3.123 kip	
Phi*Vc	2.654 kip	

Minimum Wall Reinforcement Requirements		
roo min vert	0.0012	
roo min hor	0.002	
Max Vertical spacing	18 in	
Max Horizontal spacing	18 in	

Geometric Properties	
X Coordinate	20
Y Coordinate	116
Direction of Wall	Y
Center of gravity X	20.000
Center of gravity Y	194.557
Wall Weight	5145.000 lbs
Coastal wall?	Yes
Wall not supports 2 roof panels?	No
hp (height of opening on wall)	0 ft
H (height of wall)	26 in
Lh (length of wall)	10.917 ft
Analysis will be performed in	Two-way slab
b (section width)	12 in
h (section thickness)	8 in
ct (cov-er top)	2 in
cb (cover bottom)	2 in
rd (assumed rebar diameter)	#3 3/8 in.
dt (effective depth top)	5.84 in
db (effective depth bottom)	5.84 in
% (% of Ec used for Seismic)	0.086
Eccentricity - Axial Load	4 in
In wall Split	No

Loading			
Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) - Ww (Wall weight)	118.94 psf	Dead Load (DL lat)	0 psf
S (Snow Load)	180 psf	Snow Load (SL lat)	0 psf
L (Live Load)	0 psf	Live Load (LL lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (Lr lat)	0 psf
W (Wind Load)	139.6 psf	Wind Load (WL lat)	75.34 psf
E (Earthquake Load)	2.19 psf	Earthquake Load (EL lat)	1.8 psf

Wire Mesh	
Wire Size:	W4.7
spacing	4 in
Mesh Area	0.20 in^2/ft

Factored Axially Applied Loads	
Factored Loading per ACI	ACI eq. 9-3
Factored Pressure on Roof Wr	472.905

Axial Pressure on Section	
Pu(f)	2.59 kip

Assumption check	
Pu/Ag	89.792 psi
0.06*f'c	300 psi
Check ACI 14.8.2.6	O.K.

Unfactored Axially Applied Loads	
Unfactored Pressure on Roof uWr	300.6375 psf

Axial Pressure on Section	
Pu(f)	1.6 kip

Shear	
Factored Loading per ACI	ACI eq. 9-3
Vu = wall*[(hw-Mf) / 3]	0.11
Phi*Vn/2	1.55
Check Shear ACI 11.5.3.1	O.K.

Factored Laterally Applied Loads	
Factored Loading per ACI	ACI eq. 9-6
Factored Pressure on Wall Ww	120.46 psf

Lateral Pressure on Section	
Lw = W*(L'4 / L'4 + H'4)	0.03 kip
Hw = W*(H'4 / H'4 + L'4)	0.09 kip

Unfactored Laterally Applied Loads	
Unfactored Pressure on Wall uWw	71.54 psf

Lateral Pressure on Section	
Lw = W*(L'4 / L'4 + H'4)	0.02 kip
Hw = W*(H'4 / H'4 + L'4)	0.06 kip

Deflection	
Service Loads	
Axial	1.60 kip
Lateral	0.02 kip
Allowed service deflection	0.66 in
Mser	2.720 kip-in
Ml	2.715 kip-in
Dl	0.010 in
Check deflection	O.K.

Allowable Capacity	
Ig = (b*h^3)/12	64 in^4
Ag = (b*h)	48 in^2
Yt = h/2	2
fr (rupture modulus)	530.330 psi
Mcr	16.971 kip-in
Beta 1	0.8
Total Ast req'd	0.073 in^2
D	8.856102648
k2	0.532 in
I cr	2.92 in^4
ρs	0.002
ρs	0.005
n	9.334483 psi
c	0.419 in
Ase	0.21 in^2
Icrdeflection	3.61 in^4
Ie	64.00 in^4
delta	150
ρ (maximum tensile reinforcement)	0.0166
ρmin (min. temperature reinforcement)	0.0014
ρbal (minimum tensile reinforcement)	0.0027
ρbal (final reinforcement ratio bottom)	0.0033
ρprovided (reinforcement ratio provided)	0.0090

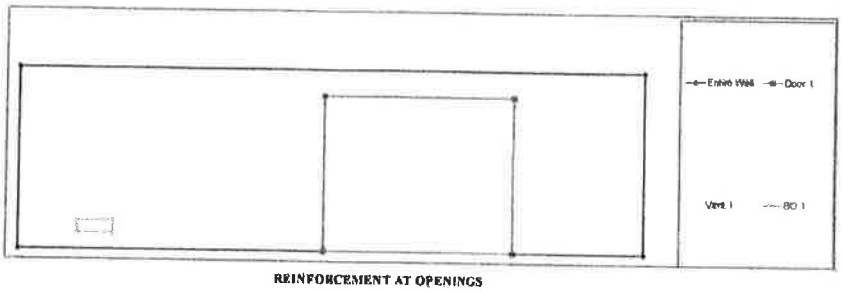
Shears		
Assumption check		
Item	Hw	Lw
ult Tensile Stress	0.080	0.010
Check ACI 14.8.2.3	Tension	Tension
Mua	0.820 kip-ft	

ACI eq. (14-6)		
Mu	1.020 kip-ft	0.450 kip-ft

ACI 9.3.2		
fb	0.9	0.9
Mn trial = bAsFy(d - a/2)	2.020 kip-ft	2.020 kip-ft
OM >Mpos - ϕMr	0.000 kip-ft	0.000 kip-ft
As Add'l req'd	0.00 in^2	0.00 in^2
Additional reinf req'd	0.00 in^2	0.00 in^2
Add'l bar size	3	3
qty req'd	0	0
or spacing of	0	0
As add'l	0.000 kip-ft	0.000 kip-ft
Ast = As + As add'l	0.20 in^2	0.20 in^2
fMn = fAsFy(d - a/2)	2.016 kip-ft	2.016 kip-ft
Check fMn > Mu	O.K.	O.K.
% allowed	50.60%	22.15%

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 2/15/22



REINFORCEMENT AT OPENINGS

Loading	
Pu (Factored load from roof)	0.47 k/f
Wu (weight of panel per sq ft)	0.05 ksf

Material Properties	
db (effective depth section)	7.44 in
e (block of strain)	0.134481 psi
e * Ab * fy / (0.85 * f'c * b)	

Factorized Moment

Opening	Horizontal Location	Vertical Location	L, length of opening	H height above opening	(-) Weight of Opening (LBS)	Pw total factorized panel load	wu total factorized load	Mu (wu*L^2)/12
Door 1	5.32 ft	0 ft	3.34 ft	7.33 ft	1143.99	9.06 k/f	0.53 k/f	0.49 kip-ft
Vent 1	7 ft	1 ft	1 ft	6 ft	30.00	0.3 k/f	0.77 k/f	0.06 kip-ft
BO 1	1.02 ft	0.75 ft	0.83 ft	6.75 ft	17.01	0.34 k/f	0.81 k/f	0.03 kip-ft

Rebars

Opening	ϕb	As req'd	Bar size	qty req'd.	ϕMn = ϕ.85Fy(db - a/2)	Check ϕMn > Mu
Door 1	0.9	0.009 in^2	No. 3	1	6.03 kip-ft	O.K.
Vent 1	0.9	0 in^2	No. 3	0	0 kip-ft	O.K.
BO 1	0.9	0 in^2	No. 3	0	0 kip-ft	O.K.

CONNECTIONS

Base Anchors			Full Resistance Value Overturning Base Anchors			Wall-Wall Connection	
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Lateral Shear	Moment +	Moment -	Moment +	Moment -
3	100	119	lbs	kip - ft	kip - ft	kip - ft	kip - ft
			35.627	41.70	51.41	89.38	48.85

Total Tension 10.923	Base Anchors					
	Dist	Tension (top)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	12 in	3.64	12.21	119 in	0.477 kip*ft	36.197 kip*ft
Base Anchor 2	48 in	3.64	12.21	71 in	10.923 kip*ft	12.433 kip*ft
Base Anchor 3	100 in	3.64	12.21	31 in	10.342 kip*ft	2.450 kip*ft

	Wall Connections								
	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (top-ft)
									Up Left / Low Right
Wall Connection 1	2	2.793	18.819	50.00%	Wall	29	105.000	5.406	11.713 / 47.303
Wall Connection 2	2	2.793	17.133	50.00%	Wall	128	3.000	5.406	57.664 / 1.352

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity					
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check	Required Shear Capacity (lb) per Base Connector		
1635	36627	34992	136	9314	OK	545	(34992)	Reserve Capacity OK

RIGIDITY

	CALCULATED VALUES	46%	Final	3.329136666

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / in)	Deflection (in / 1000 kip)
	Entire Wall	131	96	Y	Y	7.716	0.130
Door 1	A'	131	82.2	Y	Y	9.392	0.106
	A	63.84	82.2	Y	Y	3.335	0.300
	B	27.08	82.2	Y	Y	0.529	1.554
Vent 1	B'	131	12	Y	Y	72.575	0.014
	C	36	12	Y	Y	19.266	0.052
	D	83	12	Y	Y	45.792	0.022
BO 1	C'	6.48	12	Y	Y	134.664	0.007
	E	12.24	6.48	Y	Y	11.517	0.087
	F	111.2	6.48	Y	Y	114.274	0.009

	Combine Logic						
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Door 1	Entire Wall	A'	A'a	-	Deflection	0.023
	A	B	AB	+	Stiffness	3.874
Vent 1	A'a	AB	Ab	+	Deflection	0.261
	Ab	B'	B'a	-	Deflection	0.267
	C	D	CD	+	Stiffness	65.078
BO 1	B'a	CD	Bb	+	Deflection	0.283
	Bb	C'	Ca	-	Deflection	0.273
	E	F	EF	+	Stiffness	123.791
	Ca	EF	Final	+	Deflection	0.283

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PFS CORPORATION

Approval Limited to Factory Built Portion Only

State: Florida

Signature: PFS Mark Severson

Title: Staff Plan Reviewer

Date: 2/15/22

ID: Santiago S-356 & S-357

DESIGN OF FLOOR PANEL F1, F2

Material Properties

f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy	80000 psi	
Lightweight?	No	
C_d (Concrete density)	150 pcf	O.K.
E (Steel)	29000000 psi	
E (Concrete)	4286826 psi	[illegible]
n (modular ratio)	6.76	[illegible]

Geometric Properties

Ls (overall length of slab)	26.17 ft		
Bs (overall width of slab)	10.92 ft		
Design will be performed as	Two-way slab		
tfr (floor finish thickness)	0 in		
b (section width)	12 in		[illegible]
h (section thickness)	5 in		
ct (cover top)	1 in		
cb (cover bottom)	1.25 in		
rd (assumed reinf. diameter)	0.310 in		[illegible]
l (length of slab for deflection)	44.363 in		
dt (effective depth top)	1.160 in		
db (effective depth bottom)	3.481 in		
oh1 (overhang length and qty for Bs)	0 in	0	[illegible]
oh2 (overhang length and qty for Ls)	0 in	0	[illegible]
Cs (% of DL used for Seismic)	0.036		[illegible]
NsL (Num. of supports along Ls)	8		[illegible]
NsB (Num. of supports along Bs)	4		[illegible]

Reinforcement Limits

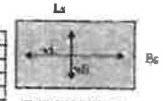
ρ_t (maximum tensile reinforcement)	0.0266	[illegible]
ρ_{temp} (min. temperature reinforcement)	0.0014	[illegible]
ρ_{min} (minimum tensile reinforcement)	0.0027	[illegible]
ρ_{trial} (trial reinforcement ratio bottom)	0.0033	
ρ_{trial} (trial reinforcement ratio top)	0.0033	

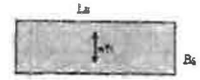
Loading

Design Loads	
Pressure on Slab	w
D (Dead load)	62.5 psf
S (Snow Load)	0 psf
L (Live Load)	0 psf
LF (Live Floor Load)	400 psf
W (Wind Load)	0 psf
E (Earthquake Load)	2.25 psf

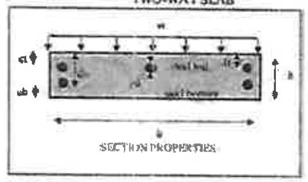
Sustained Loading	
Pressure on slab	W
D (Dead load)	62.5 psf
S (Snow Load)	0 psf
Lf (Live Floor Load)	400 psf

Notes:


TWO-WAY SLAB


ONE-WAY SLAB

fr (rupture modulus)	530.3 psi	[illegible]
Ig (b*h^3)/12	125 in^4	
Ag (b*h)	60 in^2	
Yt h/2	2.5 in	
Mcr	26.51650429	[illegible]
Beta 1	0.8	[illegible]
delta_initial	180	
delta_longterm	480	
B	8.830	
kd	0.412 in	
Icr	1.06 in^4	
[illegible]	0 in	
[illegible]	0.52 in	


SECTION PROPERTIES

$\rho_{provided}$ (reinforcement ratio provided)		0.0053
	in	0.1842
$\rho_{provided}$ (reinforcement ratio provided)		0.0154
	in	0.2989

$\rho_{provided}$ (reinforcement ratio provided)		0.0044
	in	0.0697
$\rho_{provided}$ (reinforcement ratio provided)		0.0118
	in	0.1893

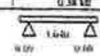
Trial As req'd	Wire Mesh (Top)	
	Wire Size	W6.7
	spacing	4 in
0.13 in^2	Mesh Area	0.20 in^2

= As'

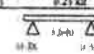
Trial As required	Wire Mesh (Bottom)	
	Wire Size	W6.7
	spacing	4 in
0.126 in^2	Mesh Area	0.20 in^2

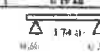
= As

Factored Design Loads		Pressure on Section	Pressure on Section
Factored Loading per ACI equation indicated	Factored Pressure on Slab W	wB W*(L^4 / B^4 + L^4)*bc	wL W*(B^4 / B^4 + L^4)*bc
ACI eq. 9-2	715 psf	0.38 klf	0.32 klf

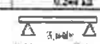


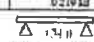
Unfactored Design Loads	Pressure on Section	Pressure on Section
Factored Pressure on Slab W	wB W*(L^4 / B^4 + L^4)*bc	wL W*(B^4 / B^4 + L^4)*bc
400 psf	0.21 klf	0.19 klf





H (Span in the short direction) = (Bs/NsB-1) - 0(oh1)	3.640 ft		
L (Span in the long direction) = (Ls/NsL-1) - 0(oh2)	3.74 ft		
Factored Sustained Loads		Pressure on Section	Pressure on Section
Factored Loading per ACI equation indicated	Factored Pressure on Slab W	wB W*(L^4 / B^4 + L^4)*bc	wL W*(B^4 / B^4 + L^4)*bc
[illegible]	462.5 psf	0.244 klf	0.219 klf





SUMMARY
Use 1 Layer of Wire Mesh on Top W6.7 x W6.7 x 4 x 4
Use 1 Layer of Wire Mesh on Bottom W6.7 x W6.7 x 4 x 4

PFS CORPORATION
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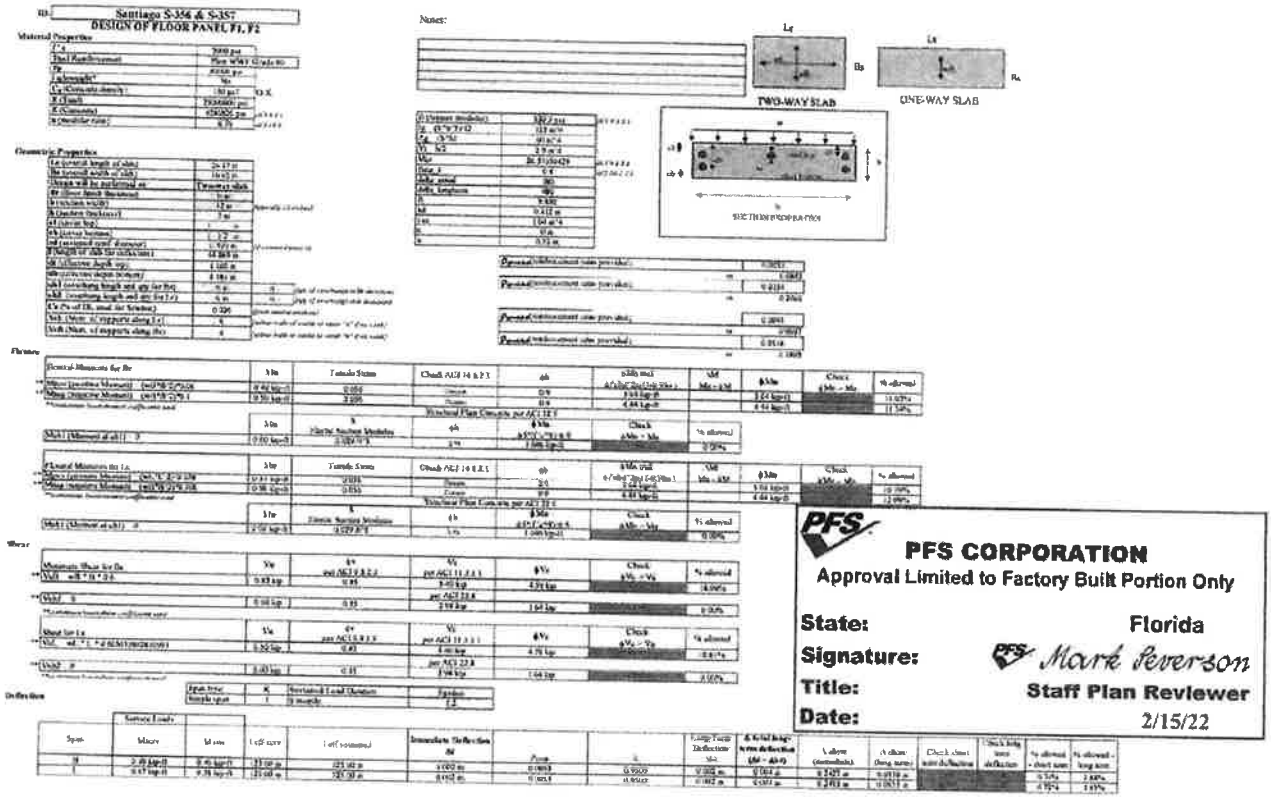

Santiago S-356 & S-357
DESIGN OF FLOOR PANEL F1, F2

Notes:

TWO-WAY SLAB

ONE-WAY SLAB

PFS CORPORATION
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Date: 2/15/22

ID: Santiago S-356 & S-357

Geometric properties	
Bs (width of roof panel)	23.00 ft
Ls (Length of roof panel)	29.00 ft
Ar Area of Roof	667.00 ft^2
H (height of building)	11.6 ft
Lb (length of building)	21.83 ft
Wb (width of building)	26 ft
Ab (Area of building)	567.58 ft^2
Nv (quantity of vaults)	0
Avl (Area of Vault Lips)	0.00 ft^2
Av (Area of Vault)	0.00 ft^2
Vh (Vault height)	0 ft
Cab (Closed Area of building)	547.56 ft^2
Hw (depth of floodwater)	1 ft

Loading	
Wv (weight of vault)**	0 lb
Wtr (roof panel weight)	40260 lb
Ww (total walls panel weight)	63060 lb
Fw (floor panel weight)	35130 lb
We (estimated weight of building)	138450 lb
Wev (estimated weight of building w/ vault)	138450 lb
PSFr (roof snow load)	151.2 psf
PSFf (Floor Live Load)	400 psf
Pmax (Maximum allowable pressure)	1500 psf
Fupmw (MWFRS Uplift Force)	57.25 psf
WLlat (MWFRS lateral wind pressure)	61.91 psf
yw (specific weight of water)	62.4 pcf

**Weight of vault is not considered in sliding resistance

μ (sliding factor)	0.40	FS (factor of safety required)	1.00

CHECK SLIDING RESISTANCE

Shear	.7*Vseismic (from seismic analysis with snow)	3997.2 lb
	.7*Vseismic (from seismic analysis without snow)	3488.9 lb
	Vwind = WLlat * max(Wo,1.0)*ft	18071.9 lb

* Load adjustment per IBC 1605.3 load combinations

Sliding Resistance with Snow	Pslide = u*(.6*Wo+.75*PSFr*Ar)	Pslide =	63483.12 lb			
					Fsreqd	
Factor of Safety	FSwind = Pslide / Vwind	FSwind =	3.4	≥	1.0	O.K.
	FSseismic = Pslide / Vseismic	Fseismic =	15.9	≥	1.0	O.K.
Sliding Resistance with No Snow	Pslide = u*.6*We	Pslide =	33228 lb			
					Fsreqd	
Factor of Safety	FSwind = Pslide / Vwind	Fswind =	1.8	≥	1.0	O.K.
	FSseismic = Pslide / Vseismic	Fseismic =	9.5	≥	1.0	O.K.

CHECK OVERTURNING RESISTANCE

Shear	.7*Otseismic (from seismic analysis with snow)	39.423 kip-ft
	.7*Otseismic (from seismic analysis without snow)	34.270 kip-ft
	Otwind = (WLlat*Lb*H^2 / 2) + (Fupmw*Lb*Wb^2 / 2)	513.386 kip-ft

* Load adjustment per IBC 1605.3 load combinations.

Overturning Resistance with Snow	Otrsnow = (.6*Wo+.75*PSFr*Ar)*(Wb/2)	Otrsnow =	1097.011 kip-ft			
					Fsreqd	
Factor of Safety	FSwind = Otrsnow / Otwind	FSwind =	2.14	≥	1.0	O.K.
	FSseismic = Otrsnow / Vseismic	Fseismic =	27.83	≥	1.0	O.K.
Overturning Resistance with No Snow	Otr = .6*We*Wb/2	Otr	1079.910 kip-ft			
					Fsreqd	
Factor of Safety	FSwind = Otr / Vwind	Fswind =	2.10	≥	1.0	O.K.
	FSseismic = Otr / Vseismic	Fseismic =	31.51	≥	1.0	O.K.

CHECK BEARING PRESSURE CONDITION

Net Pressure	Pnet = (Wev + PSFr*Ar + PSFf*Af) / Ab	821.62 psf

Allowable	Pmax ≥ Pnet	1500 psf ≥ 821.62 psf	O.K.

By observation, if the building is placed on a properly prepared well drained granular sub-base, the design is sufficient for lateral and vertical loads.

CHECK BUOYANCY FORCE CONDITION

Buoyant Force	Fb = γw*Av*Hw+γw*Cab*(Hw-Vh)		Fb =	34167.47 lb	
Factor of Safety	FSb = We / Fb	FSb =	4.05	≥	1.00 O.K.

The weight of the building exceeds the buoyant force due to hydrostatic pressure acting on the horizontal surface of the vault, therefore, the design is sufficient against buoyancy.

Floor Design Information:

1) The referenced building is made of flood damage resistant 5000 psi reinforced concrete.
2) The vault system, if existing, is designed to minimize infiltration into system and can be considered water tight to a height of 17"
3) Flood Ventilation is available at threshold level and flood ventilation exceeding 1" per sq. ft. of floor area is provided no more than 12" A.F.F.

PFS
PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	Florida
Signature:	PFS Mark Severson
Title:	Staff Plan Reviewer
Date:	2/15/22

COMcheck Software Version COMcheckWeb
Interior Lighting Compliance Certificate

Project Information

Energy Code:	2020 Florida Building Code, Energy Conservation
Project Title:	Santiago S-356 & S-357
Project Type:	New Construction

Construction Site: Owner/Agent: Designer/Contractor:

Additional Efficiency Package(s)

Credits: 1.0 Required 1.0 Proposed
Reduced Lighting Power, 1.0 credit

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Restroom (Office)	470	0.71	334
2-Chase (Workshop)	101	0.81	82
		Total Allowed Watts =	416

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
1-Restroom (Office)				
LED: A: Other:	1	4	28	112
2-Chase (Workshop)				
LED: C: Other:	1	2	28	56
			Total Proposed Watts =	168

Interior Lighting PASSES: Design 60% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2020 Florida Building Code, Energy Conservation requirements in *COMcheck* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title Signature Date

WILLIAM R. HEIDEN III LICENSE No. 58523 STATE OF FLORIDA PROFESSIONAL ENGINEER

February13, 2022

PFS

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: PFS Mark Peverson
Title: Staff Plan Reviewer
Date: 2/15/22

COMcheck Software Version COMcheckWeb
Exterior Lighting Compliance Certificate

Project Information

Energy Code:	2020 Florida Building Code, Energy Conservation
Project Title:	Santiago S-356 & S-357
Project Type:	New Construction
Exterior Lighting Zone	3 (Other (LZ3))

Construction Site: Owner/Agent: Designer/Contractor:

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts /	D Tradable Wattage	E Allowed Watts (B X C)
Main Entries (Pedestrian and vehicular entrances and exits)	9 ft of door	21	Yes	189
			Total Tradable Watts (a) =	189
			Total Allowed Watts =	189
			Total Allowed Supplemental Watts (b) =	500

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 500 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Main Entries (Pedestrian and vehicular entrances and exits, 9 ft of door width): Tradable Wattage				
LED: B: Other:	1	3	14	42
			Total Tradable Proposed Watts =	42

Exterior Lighting PASSES: Design 94% better than code

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2020 Florida Building Code, Energy Conservation requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title Signature Date

WILLIAM R. HEIDEN III
LICENSE
No. 58523
STATE OF FLORIDA
PROFESSIONAL ENGINEER

February 13, 2022

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	Florida
Signature:	Mark Severson
Title:	Staff Plan Reviewer
Date:	2/15/22

COM*check* Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2020 Florida Building Code, Energy Conservation

Requirements: 0.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C103.2 [PR8][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

PFS CORPORATION
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State:	**Florida**
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Title:	**Staff Plan Reviewer**
Date:	**2/15/22**

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.2.2 [EL22][1]	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1, C405.2.1.1 [EL18][1]	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, warehouse storage areas, and other spaces <= 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.2 [EL19][1]	Occupancy sensors control function in warehouses: In warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.3 [EL20][1]	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq.ft. within the space, 2) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 3) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone, and 4) are configured such that any daylight responsive control will activate space general lighting or control zone general lighting only when occupancy for the same area is detected.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.2.1, C405.2.2.2 [EL21][2]	Each area not served by occupancy sensors (per C405.2.1) have time-switch controls and functions detailed in sections C405.2.2.1 and C405.2.2.2.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

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Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3, C405.2.3.1, C405.2.3.2 [EL23][2]	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.4 [EL26][1]	Separate lighting control devices for specific uses installed per approved lighting plans. 1. Display and accent lighting, lighting in display cases, supplemental task lighting and lighting equipment for sale shall have occupancy sensor control. 2) Sleeping units shall have auto off controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.5 [EL28][3]	Manual lighting controls are in a location with ready access and where controlled lights are visible.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.6 [EL30][3]	Exterior lighting systems provided with controls complying with C405.2.6.1 through C405.2.6.4 for daylight shutoff and decorative lighting shutoff.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

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1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.5.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.3.2 [FI18][1]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*
C405.4.2 [FI19][1]	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Exterior Lighting fixture schedule for values.*
C408.3 [FI33][1]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

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Date:	**2/15/22**

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

MIAMI-DADE COUNTY
DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION
11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786) 315-2590 F (786) 315-2599
www.miamidade.gov/economy

NOTICE OF ACCEPTANCE (NOA)

GAF
1 Campus Dr.
Parsippany, NJ 07054

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER - Product Control Section to be used in Miami-Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (in Miami-Dade County) and/or the AHJ (in areas other than Miami-Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein and has been designed to comply with the Florida Building Code including the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: GAF Roof Coating Maintenance Systems

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA revises NOA No.19-0325.08 and consists of pages 1 through 18.
The submitted documentation was reviewed by Jorge L. Acebo.

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	Florida
Signature:	Mark Peverson
Title:	Staff Plan Reviewer
Date:	2/15/22

MIAMI-DADE COUNTY APPROVED

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: PFS Mark Peverson
Title: Staff Plan Reviewer
Date: 2/15/22

ROOFING COMPONENT APPROVAL

Category: Roofing
Sub-Category: Cement-Adhesive-Coatings
Material: Elastomeric

SCOPE:

This approves "**United Coatings™ Roof Maintenance Systems**" as a maintenance roof coating system as manufactured by GAF, as described in this Notice of Acceptance, designed to comply with the Florida Building Code and the High Velocity Hurricanes Zone of the Florida Building Code.

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

Product	Container Sizes	Test Specification	Product Description
United Cleaning Concentrate *Manufacturing Location #4*	1 & 5 Gallon	Proprietary	Biodegradable cleaning agent with specific functional ingredients for degreasing and removing soils and biological residues for proper cleaning of roof surfaces.
Acrylex 400 Primer *Manufacturing Location #1 & #2*	1 & 5 Gallon	Proprietary	Acrylic latex primer for use over metal, masonry and wood surfaces.
Acrylex 400 Multisurface Roof Primer *Manufacturing Location #1 & #2*	1 & 5 Gallon	Proprietary	Acrylic latex primer for use over metal, masonry and wood surfaces.
CleanAct Rinsable Primer *Manufacturing Location #7*	2 & 5 Gallon	Proprietary	Water based, rinseable primer used directly on rubber roof (EPDM) applications.
SureBond Primer *Manufacturing Locations #1 & #2*	2 & 5 Gallon	Proprietary	Acrylic primer used for sealing masonry, metal and chalky surfaces.
UniBase Primer *Manufacturing Location #1 & #2*	5 Gallon	Proprietary	Low viscosity, highly penetrating, acrylic polymer primer.
TPO Red Primer *Manufacturing Location #3*	5 Gallon	Proprietary	Solvent-based primer for TPO membranes. May be used interchangeably with Topcoat TPO Red Primer.
XR-2000 Primer *Manufacturing Location #3*	5 Gallon	Proprietary	Water-based Acrylic primer for Kynar coated metal.
Lock-Down Primer *Manufacturing Location #5*	1 & 5 Gallon	Proprietary	Moisture-Cure urethane primer for corrosion protection on metal surfaces.
Epoxy Primer *Manufacturing Location #1 & #2*	1 & 5 Gallon	Proprietary	Single component epoxy primer/sealer designed to penetrate and seal porous surfaces.
United Coatings™ Roof Mate™ Butter Grade Flashing *Manufacturing Location #1*	2 & 5 Gallon	Proprietary	Water based, high solids elastomeric sealant.
United Coatings™ Roof Mate™ Spray Grade Flashing *Manufacturing Location #3*	2 & 5 Gallon	TAS 139	Water based, high solids elastomeric sealant.

MIAMI-DADE COUNTY APPROVED

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

Product	Container Sizes	Test Specification	Product Description
United Coatings™ Roof Mate™ Liquid Fabric *Manufacturing Location #3*	5 & 55 Gallon	TAS 139	Water based, high elasticity flashing compound.
United Coatings™ Roof Mate™ Fabric *Manufacturing Location #6*	4", 6" and 12" wide Rolls	Proprietary	3 oz./yd^2 polyester reinforcing fabric
FlexSeal™ Sealant *Manufacturing Location #3*	1 & 5 Gallon or 1 Quart	TAS 139	Solvent-based elastomeric sealant.
United Coatings™ Diathon® Base Coat *Manufacturing Locations #1 & #2*	5 & 55 Gallon	Proprietary	Acrylic elastomer base coating for use over spray polyurethane foam.
United Coatings™ Diathon® Roof Coating *Manufacturing Locations #1 & #2*	5 & 55 Gallon	ASTM D6083	Acrylic elastomer top coating for use over spray polyurethane foam in conjunction with United Coatings™ Diathon® Base Coat.
United Coatings™ Roof Mate™ Base Coat *Manufacturing Locations #1 & #2*	5 & 55 Gallon	Proprietary	Acrylic elastomer base coating for use over approved substrates.
United Coatings™ Roof Mate™ Top Coat *Manufacturing Locations #1 & #2*	5 & 55 Gallon	ASTM D6083	Acrylic elastomer top coating for use over approved substrates in conjunction with United Coatings™ Roof Mate Base Coat.
United Coatings™ Roof Mate™ MB Plus Coating *Manufacturing Location #3*	5 & 55 Gallon	Proprietary	Water based, low VOC primer used to block asphalt bleed through.
United Coatings™ Roof Mate™ TCM Coating *Manufacturing Location #3*	1, 5 & 55 Gallon	ASTM D6083	A premium acrylic, water based elastomeric membrane system used to protect various types of roofing surfaces.
United Coatings™ SurfaceSeal SB Roof Coating *Manufacturing Location #3*	5 & 55 Gallon	ASTM D6083	Solvent based, sprayable thermoplastic rubber sealant used to protect and restore aged roof surfaces and to increase a roof's reflectivity.
FireOut™ Fire Barrier Coating *Manufacturing Location #3*	5 & 55 Gallon	Proprietary	Low VOC, water based fire barrier coating.
Unisil Primer (A & B) *Manufacturing Location #8*	5 gal.	Proprietary	A two component, 1 to 1 ratio, water-based epoxy primer
United Coatings™ RoofShield® I.S. Coating *Manufacturing Locations #2*	55 Gallon	ASTM D6083	A two-part acrylic polymer dispersion system.

PFS

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	**Florida**
Signature:	PFS Mark Severson
Title:	**Staff Plan Reviewer**
Date:	**2/15/22**

MIAMI-DADE COUNTY APPROVED

MANUFACTURING LOCATIONS:

1. Phoenix, AZ
2. Charleston, SC
3. Walpole, MA
4. Olympia, WA
5. Richmond, MO
6. Spartanburg, SC
7. Fountain Inn, SC
8. Brookfield, WI

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State:	**Florida**
Signature:	PFS Mark Severson
Title:	**Staff Plan Reviewer**
Date:	**2/15/22**

EVIDENCE SUBMITTED:

Test Agency	Test Identifier	Test Name/Report	Date
PRI Construction Materials Technologies LLC	GAF-306-02-01	Proprietary	05/19/11
	GAF-499-02-01	ASTM D6083	05/19/16
	GAF-500-02-01	ASTM C794	05/19/16
	GAF-508-02-01	Proprietary	03/12/14
	GAF-661-02-01	Proprietary	06/03/16
	GAF-498-02-01	ASTM D6083	09/16/16
	GAF-658-02-01	Proprietary	06/07/16
	GAF-659-02-01	Proprietary	06/03/16
	GAF-660-02-01Rev1	Proprietary	06/16/17
	GAF-661-02-01	Proprietary	06/02/16
	GAF-662-02-01	Proprietary	06/07/16
	GAF-663-02-01	Proprietary	06/03/16
	GAF-665-02-01	Proprietary	06/03/16
	GAF-664-02-01	Proprietary	06/03/16
	GAF-666-02-01	Proprietary	05/31/16
	GAF-667-02-01	TAS 139	07/01/16
	GAF-668-02-01	TAS 139	07/01/16
	GAF-669-02-01	Proprietary	07/06/16
	GAF-671-02-01	TAS 139	07/01/16
	GAF-672-02-01	Proprietary	07/06/16
	GAF-673-02-01Rev1	Proprietary	06/16/17
	GAF-689-02-01	ASTM C794	06/22/16
	GAF-690-02-01	ASTM C794	06/22/16
	GAF-691-02-01	ASTM C794	06/22/16
	GAF-692-02-01	ASTM C794	06/22/16
	GAF-694-02-01	ASTM D1876	06/22/16
	GAF-694-02-02	ASTM D1876	06/22/16
	GAF-694-02-03	ASTM D1876	06/22/16
	GAF-754-02-01	Proprietary	06/16/17
	GAF-762-02-01	Proprietary	06/16/17
	GAF-712-02-01	Proprietary	07/21/16
	GAF-778-02-01	ASTM D6083	10/13/17
	GAF-906-02-01	Proprietary	01/25/19
	GAF-907-02-01	Proprietary	01/25/19
	GAF-908-02-01	Proprietary	01/25/19
	UCMC-013-02-01	ASTM D6083	05/19/16
	UCMC-014-02-01	ASTM D6083	05/19/16
NEMO|etc.	4p-GAF-19-SSLAP-01.A-R1	ASTM D6083	08/13/19

MIAMI-DADE COUNTY APPROVED

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: Florida
Signature: PFS Mark Peverson
Title: Staff Plan Reviewer
Date: 2/15/22

APPLICATION INSTALLATION PROCEDURES:

COATING APPLICATIONS:

Substrate: **New or existing galvanized Metal Roof System**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Primer: (Optional)	Acrylex 400 Primer or Acrylex 400 Multisurface Roof Primer applied at 0.5 gal./sq.
Base Coat:	United Coatings™ Roof Mate™ Base Coat is applied at a minimum rate of 1.5 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
OR	
Primer: (Optional)	Acrylex 400 Primer or Acrylex 400 Multisurface Roof Primer applied at 0.5 gal./sq.
Base Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
OR	
Primer: (Optional)	Acrylex 400 Primer or Acrylex 400 Multisurface Roof Primer applied at 0.33 gal/sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal/sq.

Substrate: **New smooth Built-Up Roof (BUR)**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating applied at 0.5 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal/sq.

Substrate: **New or existing smooth Built-Up Roof (BUR)**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.00 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.00 gal./sq.

OR

Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.

OR

Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 1.00 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.

OR

Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.

Substrate: **New granulated Built-Up Roof (BUR)**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Surface Seal SB Roof Coating applied at 1.0 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal/sq.

PFS CORPORATION
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State:	Florida
Signature:	Mark Severson
Title:	Staff Plan Reviewer
Date:	2/15/22

MIAMI-DADE COUNTY APPROVED

Substrate: **New or existing granulated Built-Up Roof (BUR)**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Base Coat:	United Coatings™ Roof Mate™ Base Coat or United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 1.00 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Roof Mate TCM Coating is applied at a minimum rate of 1.00 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.00 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.

Substrate: **Existing granulated Built-Up Roof (BUR)**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Cleaner:	United Cleaning Concentrate is applied in strict accordance with GAF's published installation instructions
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Surface Seal SB Roof Coating applied at 1.0 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal/sq.

MIAMI-DADE COUNTY APPROVED

PFS CORPORATION
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State: Florida
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 2/15/22

Substrate: **New or existing Spray Polyurethane Foam Roof (SPUF)**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Base Coat:	United Coatings™ Diathon® Base Coat is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat(s):	1 - 2 coats of United Coatings™ Diathon® Roof Coating is (are) applied at a minimum rate of 1.0 gal./sq. per coat.
Finish Coat:	United Coatings™ Diathon® Roof Coating is applied at a minimum rate of 1.0 gal./sq.

Substrate: **New smooth SBS**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Base Coat	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Surface Seal SB Roof Coating applied at 0.5 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal./sq.

Substrate: **Existing smooth SBS**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Cleaner:	United Cleaning Concentrate is applied in strict accordance with GAF's published installation instructions.
Base Coat:	United Coatings™ Roof Mate™ Base Coat is applied at a minimum rate of 1.00 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.

OR

Cleaner:	United Cleaning Concentrate is applied in strict accordance with GAF's published installation instructions.
Base Coat	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Surface Seal SB Roof Coating applied at 0.5 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal./sq.

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State:	Florida
Signature:	Mark Peverson
Title:	Staff Plan Reviewer
Date:	2/15/22

MIAMI-DADE COUNTY APPROVED

Substrate:	**New or existing smooth SBS**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 1.00 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Roof Mate TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ SurfaceSeal SB Roof Coating, United Coatings™ Roof Mate™ TCM Coating or United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.

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PFS CORPORATION

Approval Limited to Factory Built Portion Only

State:	**Florida**
Signature:	PFS Mark Peverson
Title:	**Staff Plan Reviewer**
Date:	**2/15/22**

MIAMI-DADE COUNTY APPROVED

Substrate:	**New or existing Granulated SBS**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Base Coat:	United Coatings™ Roof Mate™ Base Coat or United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 1.00 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Roof Mate TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ SurfaceSeal SB Roof Coating, United Coatings™ Roof Mate™ TCM Coating or United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
OR	
Cleaner:	United Cleaning Concentrate is applied in strict accordance with GAF's published installation instructions.
Primer:	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Surface Seal SB Roof Coating applied at 1.0 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal./sq.

MIAMI-DADE COUNTY APPROVED

PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Signature: Mark Peterson
Title: Staff Plan Reviewer
Date: 2/15/22

Substrate: **New Granulated SBS**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Cleaner:	United Cleaning Concentrate is applied in strict accordance with GAF's published installation instructions.
Primer: (optional)	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Surface Seal SB Roof Coating applied at 1.0 gal./sq.
Finish Coat	United Coatings™ RoofShield® I.S. applied at 3.0 gal./sq.

Substrate: **New Granulated APP**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Primer: (optional)	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Surface Seal SB Roof Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal./sq.

Substrate: **Existing Granulated APP**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Cleaner:	United Cleaning Concentrate is applied in strict accordance with GAF's published installation instructions.
Primer:	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Surface Seal SB Roof Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal./sq.

Substrate: **New or existing smooth APP**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Base Coat:	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.00 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.00 gal./sq.
Finish Coat:	United Coatings™ SurfaceSeal SB Roof Coating, United Coatings™ Roof Mate™ TCM Coating or United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.

MIAMI-DADE COUNTY APPROVED

PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: Florida
Signature: Mark Reverson
Title: Staff Plan Reviewer
Date: 2/15/22

Substrate:	**New or existing Granulated APP**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 1.00 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating or United Coatings™ Roof Mate TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ MB Plus Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.00 gal./sq.
OR	
Base Coat:	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.00 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.00 gal./sq.
Finish Coat:	United Coatings™ SurfaceSeal SB Roof Coating, United Coatings™ Roof Mate™ TCM Coating, or United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.00 gal./sq.

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State:	**Florida**
Signature:	PFS Mark Severson
Title:	**Staff Plan Reviewer**
Date:	**2/15/22**

MIAMI-DADE COUNTY APPROVED

Substrate: **Existing smooth APP**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Cleaner:	United Cleaning Concentrate is applied in strict accordance with GAF's published installation instructions.
Primer:	United Coatings™ Roof Mate™ MB Plus Coating is applied at 0.5 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal./sq.

Substrate: **New or existing EPDM**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Cleaner:	CleanAct Rinsable Primer is applied in strict accordance with GAF's published installation instructions.
Base Coat:	United Coatings™ Roof Mate™ Base Coat is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ SurfaceSeal SB Roof Coating, United Coatings™ Roof Mate™ TCM Coating or United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.

Substrate: **New EPDM**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Primer:	CleanAct Rinsable Primer is applied at 0.2 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal./sq.

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Substrate: **New or existing TPO**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Primer:	TPO Red Primer applied at 0.5 gal./sq.
Base Coat:	United Coatings™ Roof Mate™ Base Coat is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
OR	
Primer:	TPO Red Primer applied at 0.5 gal./sq.
Base Coat: (Optional)	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat: (Optional)	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 0.5 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ SurfaceSeal SB Roof Coating, United Coatings™ Roof Mate™ TCM Coating or United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.

Substrate: **New TPO**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Primer:	TPO Red Primer is applied at 0.25 gal./sq. or United Coatings™ SurfaceSeal SB Roof Coating is applied at 0.5 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal./sq.

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Title:	**Staff Plan Reviewer**
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Substrate: **New or existing PVC**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Base Coat:	United Coatings™ Roof Mate™ Base Coat is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.

OR

Base Coat: (Optional)	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.

Substrate: **New PVC**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Primer: (Optional)	Unisil Primer (A & B) is applied at a rate of 0.33 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal./sq.

Substrate: **Existing Hypalon (CSPE)**

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Cleaner:	United Cleaning Concentrate is applied in strict accordance with GAF's published installation instructions.
Base Coat:	United Coatings™ Roof Mate™ Base Coat is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.

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State:	**Florida**
Signature:	Mark Peterson
Title:	**Staff Plan Reviewer**
Date:	**2/15/22**

Substrate: **Structural Concrete**

All General Limitations Apply.
Application on Concrete shall <u>not</u> be as a roof system or a waterproofing system see General Limitation #1.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Primer: (Optional)	Epoxy Primer applied at 0.4 gal./sq.
	OR
	SureBond Primer applied at 0.4 gal./sq.
Base Coat:	United Coatings™ Roof Mate™ Base Coat is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ Roof Mate™ TCM Coating is applied at a minimum rate of 1.0 gal./sq.
OR	
Base Coat:	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.0 gal./sq.
Intermediate Coat: (Optional)	United Coatings™ SurfaceSeal SB Roof Coating is applied at a minimum rate of 1.0 gal./sq.
Finish Coat:	United Coatings™ SurfaceSeal SB Roof Coating, United Coatings™ Roof Mate™ TCM Coating or United Coatings™ Roof Mate™ Top Coat is applied at a minimum rate of 1.0 gal./sq.
OR	
Primer: (optional)	SureBond Primer is applied at 0.4 gal./sq.
Finish Coat:	United Coatings™ RoofShield® I.S. applied at 3.0 gal./sq.

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FIRE BARRIER APPLICATION

Substrate: Wood Deck

System Type: Fire barrier for use under mechanically secured anchor sheets, insulations or roofing membranes.

All General Limitations Apply.

All GAF products shall be installed in accordance with the manufacturer's specifications. The following are installation guidelines. Consult the manufacturer's published installation instructions or Technical Representative for detailed installation requirements.

Fire Barrier: FireOut™ Fire Barrier Coating is designed to provide fire barrier protection over wood decks. Apply at a rate of 1 gal./sq. Allow to dry prior to application of roof cover. Consult a current Approved Roofing Materials Directory for applicable fire ratings.
***See General Limitation #3.**

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BUILDING PERMIT REQUIREMENTS:

1. This Notice of Acceptance.
2. Any other documents required by the Building Official or applicable Building Code in order to properly evaluate the installation of this system.
3. Approved Applicator Certificate (designated by GAF) listing the contractor & approved applicator's name.

GENERAL LIMITATIONS:

1. **GAF products are not approved as and shall not be used as a Roof or Waterproofing System as required by the Florida Building Code Chapter 15 HVHZ.**
2. GAF products shall only be used as a roof or exterior maintenance coating over the substrates specified herein in accordance with Chapter 15 of the Florida Building Code.
3. Fire classification is not part of this acceptance; refer to a current Approved Roofing Materials Directory for fire rating of this product.
4. GAF products shall not be applied in inclement weather conditions.
5. The products listed herein are components of roof assemblies and are approved for use with roof assemblies that list any of the products listed herein as part of their Roof Assembly Notice of Acceptance.
6. All products listed herein shall have an unannounced follow-up quality control program from an approved listing agency. Follow up test results shall be made available to Miami-Dade Product Control upon request.
7. GAF products shall not be applied over prepared roofing; i.e., asphalt shingles, fiber-cement shingles, quarry slate, cement or clay roof tile, metal shingles, wood shingles or shakes.
8. Change in materials, use, or manufacture of any of the products listed herein shall be cause for termination of this Notice of Acceptance.
9. GAF products shall be applied in accordance with manufacturer's published application instructions. Refer to GAF's published installation instructions for detailed installation requirements and recommendations.
10. The use of a reinforcing fabric in a maintenance coating is only to enhance the coating's ability to deliver efficient and long term performance through the protection of the underlying roof system and in this particular use does not become a roof system itself.
11. All products listed herein shall have a quality assurance audit in accordance with the Florida Building Code and Rule 61G20-3 of the Florida Administrative Code.
12. All approved products listed herein shall be labeled in compliance with TAS 121 and shall bear the imprint or identifiable marking of the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved" or the Miami-Dade County Product Control Seal as shown below.

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END OF THIS ACCEPTANCE

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State:	**Florida**
Signature:	PFS Mark Severson
Title:	**Staff Plan Reviewer**
Date:	2/15/22

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