LIMITED BUILDING ENCLOSURE ASSESSMENT

South Padre Island Convention Centre
South Padre Island, Texas
June 17, 2013
Terracon Project Nº FC138501

Prepared for:
City of South Padre Island
South Padre Island, Texas

Prepared by:
Terracon Consultants, Inc.
San Antonio, Texas

June 17, 2013

Ms. Joni Clarke
City of South Padre Island
4501 Padre Boulevard
South Padre Island, Texas 78597

RE: LIMITED BUILDING ENCLOSURE ASSESSMENT
South Padre Island Convention Centre
7355 Padre Boulevard
South Padre Island, Texas 78597
Terracon Project Nº FC138501

Dear Ms. Clarke:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Report of our Limited Building Enclosure Assessment at the above-referenced facility. This assessment was developed in general accordance with Terracon Proposal Nº P88130134R, dated March 25, 2013 and authorized by Ms. Joni Clarke on April 3, 2013.

This report addresses the procedures, findings, and opinions related to our site visits, review of documents, discussion with others and assessment at the above referenced location. Digital photographs, figures, and elevation/floor plans are included herein and as attachments in the appendices at the end of this report.

We appreciate the opportunity to provide service to you on this project. If you have any questions regarding this document, please do not hesitate to contact us.

Sincerely,

Brandon M. Bendele, RRC, RRO
Senior Associate / Department Manager
Facilities Engineering Division

Richard J. Gish, P.E.
Senior Associate / Regional Manager
Facilities Engineering Division

BMB/RJG/sln –FC138501

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1.0 INTRODUCTION

1.1 Background Information

The South Padre Island Convention Centre was built in 1992 and comprises approximately 76,000 square feet. The facility contains exhibit spaces; meeting spaces; theater; lobby and circulation spaces; kitchen space; restroom spaces; and storage spaces. The Convention Center is located on the northern end of the South Padre Island with vehicular access off of Highway 100.

The building sustained considerable damage in 2008 from Hurricane Dolly. Reportedly, an area of wall along the east elevation was blown out and rebuilt. The roof was completely replaced along with localized replacement of interior water-damaged components.

The City of South Padre Island anticipates future renovations to increase the size of the facility, to repair existing exterior building components, and to perform interior upgrades.

1.2 Project Objective

It is the intent of this limited building enclosure assessment to observe and document the condition of the building enclosure system (primarily the exterior walls) with an emphasis on past areas of reported water intrusion and corrosion of exterior wall framing members.

Limited visual observations were made of the overall site and building conditions, where observable. Selective water spray testing was performed to document the water-tight integrity of exterior building cladding components. Selective sampling/removal of exterior cladding components was also performed to identify general exterior wall construction and to document the presence, condition, and apparent performance of the components.

The opinions and conclusions herein represent Terracon's professional judgment based on the information and data available to us during the course of this assessment, and are rendered in accordance with the standard of care exercised by building enclosure professionals practicing in the vicinity of the project. Factual information regarding operations, conditions and test data provided by the client or their representatives has been assumed to be correct and complete. Terracon's evaluations, analyses, and opinions are not representations regarding the design integrity, structural soundness or actual value of the building enclosure systems and property.

Digital photographs identifying unique and typical features of the existing building enclosure components, selective water spray testing, selective removal of exterior cladding, and elevation plans reflecting the general size, type, and approximate locations of visual observations, testing, and exploratory openings are included in the Appendices at the end of this report.

1.3 Referenced Publications and Historical Documentation

In the performance of our scope of work as defined herein, Terracon was provided the following reports and/or consulted the following publications and reference documents in the development of our professional opinions:

- A report, *Field Condition Photographs of Exterior Metal Studs*, developed by Green, Rubiano & Associates dated March 19, 2013. Terracon understands that corrosion of concealed exterior wall components was identified by observation through selective exploratory openings excised in the interior sheathing. Photographs displayed corrosion on metal framing members (studs) and the metal sill track.
- *SPI Wall Report* provided by David Monreal of Gignac Associates. The report contained photographs of representative wall conditions and a plan identifying locations of interior wall access panels.

2.0 BUILDING ENCLOSURE COMPONENTS

2.1 Wall System

The exterior wall is comprised of a non-drainable Exterior Insulation and Finish System (EIFS) cladding. The EIFS cladding system consists of a reinforced base and finish coat lamina applied to varying thicknesses of expanded polystyrene insulation (EPS), which is adhesively attached to exterior gypsum sheathing. The sheathing is mechanically attached to steel framing members that are supported by the building's concrete foundation. A summary of the wall system components is provided below, and illustrated in ***Figure 1*** on the following page:

- Approximately 1/8" to 3/16" thick reinforced base coat and finish coat lamina applied to EPS insulation
- EPS insulation adhesively attached to exterior gypsum sheathing
- 5/8" thick exterior gypsum sheathing mechanically attached to steel framing members
- Galvanized steel framing members spaced approximately 16" on center with batt insulation installed between each framing member
- Interior finishes consisting of painted drywall.

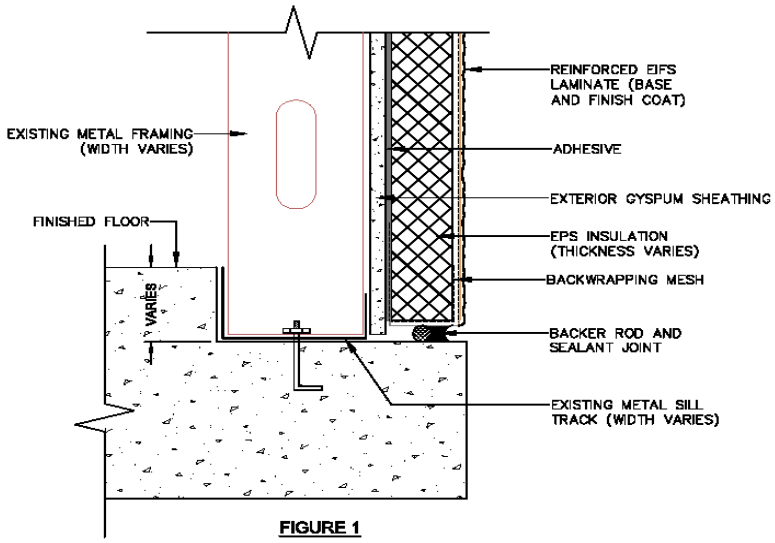


FIGURE 1

2.2 Fenestration Systems

Aluminum-framed "punch" window systems are utilized around most of the building. Along the east elevation front lobby, aluminum-framed storefront windows are utilized. A combination of extruded, out-swing type aluminum-framed doors and painted steel-framed doors are installed at exterior entrances located throughout the building. Sloped glazing (skylights) are installed at the main lobby. Elastomeric sealants are installed at joints around the window and door perimeters, some which are believed to have been replaced after Hurricane Dolly in 2008. The windows, doors, and sloped glazing appear to be original.

2.3 Roof System

The roofs were reportedly replaced after Hurricane Dolly in 2008. The new roof reportedly consists of a multi-ply, low-sloped granular-surfaced modified bitumen membrane system installed on multiple roof section throughout. The modified bitumen membrane system is adhered to rigid board insulation, which is reportedly mechanically attached to the existing steel roof deck. Base flashing plies at roof-to-wall transitions, roof-mounted equipment, and penetrations consist of a multi-ply granular-surfaced modified bitumen membrane system. The roof system is generally terminated along perimeter edges with a stainless steel coping cap. Roof drainage is generally accomplished by sheet flow to internal roof drains with overflow provisions provided by secondary roof drains or through-wall scuppers.

A fully-adhered single-ply thermoplastic membrane is installed over the steep-sloped roofs over the main lobby. Roof drainage is accomplished by sheet drain to lower modified bitumen roofs over the main lobby.

3.0 SITE ACTIVITIES

Terracon made one site visit to the facility over two consecutive days on May 7 - 8, 2013. During this site visit, Terracon made limited visual observations of existing building enclosure conditions, observed wall system components through exterior destructive test openings (DTO's), performed selective water spray testing, and documented the exterior wall's water repellency utilizing MAT absorption testing. Terracon also met with facility personnel to collect background information regarding leak history and performance attributes related to the enclosure system. They reported the following:

- The building sustained significant water damage during Hurricane Dolly in 2008. Some interior sheathing (drywall) was removed, primarily along the west elevation to replace interior finishes and wall insulation. Some areas were left intact.
- Active leaks were reported related to the sloped glazing system in the main lobby. Facility personnel believe the leaks have been on-going since original construction.
- Localized leaks in several rooms believed to be HVAC related.
- Leaks through service doors adjacent to Room 600 (Exhibit Hall).

3.1 Visual Observations

Limited observations of exterior building components were made in accordance with accepted standard of care and industry practice; it is not our intent, nor is it likely that all existing conditions were documented. The general intent of our observations was to identify representative conditions pertinent to our scope of services. Photographs of representative conditions observed are included in Appendix A at the end of this report. Pertinent visual observations are noted below.

3.1.1 Exterior Wall Observations

- EIFS walls appear to be in good condition with no visible defects related to cracking or excessive pinholing.
- Exposed sheathing at base of EIFS wall due to missing sealant joint.
- Localized damage consisting of punctures or holes in the EIFS, exposing reinforcing mesh.
- Deteriorated/failed sealant joints along base of EIFS wall terminations and horizontal and vertical control joints.
- Improper EIFS terminations.
- Some portions of the EIFS extend below grade level.

- Unsealed wall penetrations.
- Rust on service doors.
- Damaged or aged service door thresholds/sweeps.
- Isolated area of spalled concrete along storefront window system front entrance.

3.1.2 Fenestration Systems

- Deteriorated and/or weathered exterior sealant joints around window, door, and sloped glazing perimeters.
- Localized sealant repairs at window framing members and glazing interfaces.
- Excessive gaps between window framing members and glazing gaskets.
- Corrosion on framing members.
- Displaced framing members.

3.1.3 Roof Systems

- Localized blisters or voids in the capsheet membrane and/or underlying membrane plies.
- Evidence of ponding at roof over main lobby.
- Slight corrosion on stainless steel coping cap.

3.2 Exterior Wall Openings

Seven (7) exterior destructive test openings (DTO's) were performed by *SpawGlass*, a subcontractor retained by the Client, at areas designated by Terracon. The DTO's consisted of selective removal of exterior EIFS cladding at or near areas of apparent distress to identify the wall and waterproofing components behind the cladding and to document the presence, condition, and performance of the exposed components. *SpawGlass* repaired the wall openings with EIFS to match the existing construction. Pertinent observations and conditions at the DTO's are noted below (see elevation plan included in Appendix D for locations of test openings).

3.2.1 DTO #1

Location: East Elevation adjacent to Room 311 – Opening measured approximately 15” wide x 11” high extracted at the base of the wall and was directly under the corner of a window.

Observations: Exterior cladding removal revealed an approximate six-inch concrete lug with the finished floor elevated approximately 4”. The EIFS system was constructed with approximately 1/4” thick reinforced base coat and finish coat lamina, 2” thick EPS insulation, 5/8” thick exterior gypsum sheathing, and 6” wide metal framing members spaced 16” on center. The exterior face of the EIFS cladding was terminated flush with the foundation and sealed with an elastomeric sealant joint along the bottom termination. Notable observations in or around the opening include:

- The EIFS coating appeared to be in generally good condition overall with no observable defects.
- Exposed mesh along bottom of EIFS termination due to missing base coat applications.
- Extensive metal sill track corrosion with total member loss.
- Corrosion on vertical galvanized steel framing members (studs), which extended approximately 2” to 4” upwards.
- Evidence of rust stains on vertical framing members and sheathing underneath window.
- Corrosion on horizontal sill track directly beneath window.
- Deteriorated sealant along the base of the EIFS termination.

3.2.2 DTO #2

Location: East Elevation adjacent to Room 600 (Exhibit Hall) – Opening measured approximately 19-1/2" wide x 25-1/2" high and was extracted at the southeast corner.

Observations: Exterior cladding removal revealed an approximate 10-1/2" concrete lug with the finished floor elevated approximately 24". The EIFS system was constructed with approximately 3/16" - 1/4" thick reinforced base coat and finish coat lamina, 6" thick EPS insulation, 5/8" thick exterior gypsum sheathing, and 6" wide metal framing members spaced 16" on center. An approximate 4-1/2" air space existed between the back of the framing members and the raised floor. The exterior face of the EIFS cladding was terminated flush with the foundation and sealed with an elastomeric sealant joint along the bottom termination. Notable observations in or around the opening include:

- The EIFS system extended approximately 12" below grade.
- Exposed mesh along bottom of EIFS termination due to missing base coat applications.
- Extensive metal sill track corrosion with total member loss.
- Corrosion on vertical galvanized steel framing members (studs), which extended approximately 6" upwards.
- Dampness on horizontal framing members and sheathing within cavity at corner.
- Tunnels in the EPS insulation indicative of insect infestation.
- Deteriorated sealant along the base of the EIFS termination.

3.2.3 DTO #3

Location: North Elevation adjacent to Room 602 (Exhibit Hall) – Opening measured approximately 32" wide x 19" high extracted at the base of the wall. Two windows were located over the opening.

Observations: Exterior cladding removal revealed an approximate 9-1/2" concrete lug with the finished floor elevated over 24". The EIFS system was constructed with approximately 3/16" - 1/4" thick reinforced base coat and finish coat lamina, 2" thick EPS insulation, 5/8" thick exterior gypsum sheathing, and 6" wide metal framing members. The exterior face of the EIFS cladding was terminated flush with the foundation and sealed with an elastomeric sealant joint along the bottom termination. Notable observations in or around the opening include:

- The EIFS coating appeared to be in generally good condition overall with no observable defects.
- Exposed mesh along bottom of EIFS termination due to missing base coat applications.
- Extensive metal sill track corrosion with total member loss.
- Corrosion on vertical galvanized steel framing members (studs), which extended approximately 2" to 4" upwards, with the exception of one framing member that exhibited rust extending upwards past the height of the opening.
- Deteriorated sealant along the base of the EIFS termination.

3.2.4 DTO #4

Location: West Elevation adjacent to Room 408 – Opening measured approximately 17” wide x 16” high extracted at the lower corner of a window. Two windows were located over the opening.

Observations: The EIFS system was constructed with approximately 3/16” - 1/4” thick reinforced base coat and finish coat lamina, 2” inches thick EPS insulation, 5/8” thick exterior gypsum sheathing, and 6” wide metal framing members, which appeared to be attached to a concrete masonry unit (CMU) wall. Notable observations in or around the opening include:

- The EIFS coating appeared to be in generally good condition overall with no observable defects.
- Slight corrosion was observed at a fastener penetration along a vertical framing member.
- Corrosion on bottom of horizontal metal sill underneath window.

3.2.5 DTO #5

Location: West Elevation adjacent to Room 408 – Opening measured approximately 18” wide x 16” high extracted at the base of the wall underneath DTO #4.

Observations: The EIFS system was constructed with approximately 3/16” thick reinforced base coat and finish coat lamina, 2” thick EPS insulation, 5/8” thick exterior gypsum sheathing, and 6” wide metal framing members, which appeared to be attached to a concrete masonry unit (CMU) wall and/or interior gypsum sheathing. The exterior face of the EIFS cladding was terminated flush with the foundation and sealed with an elastomeric sealant joint along the bottom termination. Notable observations in or around the opening include:

- The EIFS coating appeared to be in generally good condition overall with no observable defects.
- Exposed mesh along bottom of EIFS termination due to missing base coat applications.
- Tunnels in the EPS insulation indicative of insect infestation.
- Extensive metal sill track corrosion with total member loss.
- Corrosion on vertical galvanized steel framing members (studs), which extended approximately 2” to 4” upwards.
- Deteriorated sealant along the base of the EIFS termination.

3.2.6 DTO #6

Location: West Elevation adjacent to Meeting Room 102 – Opening measured approximately 24” wide x 18” high extracted at the base of the wall underneath the corner of a window.

Observations: The EIFS system was constructed with approximately 3/16” thick reinforced base coat and finish coat lamina, 2” thick EPS insulation, 5/8” thick exterior gypsum sheathing, and 6” wide metal framing members. The exterior face of the EIFS cladding was terminated flush with the foundation and sealed with an elastomeric sealant joint along the bottom termination. Notable observations in or around the opening include:

- The EIFS coating appeared to be in generally good condition overall with no observable defects.
- Exposed mesh along bottom of EIFS termination due to missing base coat applications.
- Extensive metal sill track corrosion with total member loss.
- Corrosion on vertical galvanized steel framing members (studs), which extended approximately 2” upwards.
- Deteriorated sealant along the base of the EIFS termination.

3.2.7 DTO #7

Location: East Elevation on South side adjacent to Room 602 (Green Room) – Opening measured approximately 24" wide x 20" high extracted at the base of the wall underneath the corner of a window.

Observations: This wall was reportedly replaced after being blown out during Hurricane Dolly in 2008. The EIFS system was constructed with approximately 1/8" thick reinforced base coat and finish coat lamina, 2" thick EPS insulation, 5/8" thick exterior gypsum sheathing, and 6" wide metal framing members. The exterior face of the EIFS cladding was terminated flush with the foundation and sealed with an elastomeric sealant joint along the bottom termination. Notable observations in or around the opening include:

- The EIFS coating appeared to be in generally good condition overall with no observable defects.
- Missing sealant and backer rod at base of EIFS termination, exposed mesh along bottom of EIFS termination.
- Repairs consisting of new framing members (studs) sistered to existing studs. The sill track appears to have also been replaced.
- Slight corrosion on the sill track and vertical framing members.

3.3 Interior Wall Openings

In addition to the existing thirteen (13) interior access panels located throughout the facility, *SpawGlass* provided two (2) interior openings in Room 500 (Conference Theatre). The openings were extracted at the interior of the east wall approximately 6' and 12' above interior opening #10. No evidence of water intrusion, corrosion or rust was observed on metal framing members where observable at these locations.

4.0 WATER PENETRATION TESTING

Terracon performed selective water penetration testing in an effort to isolate the sources of water infiltration contributing to the corrosion of the exterior wall metal framing members and to identify failures of the EIFS wall cladding components. The testing was performed utilizing a Type B-25, #6 (.030) brass nozzle with a one-half inch FPT thread manufactured by The RM Group, LLC. The nozzle was connected to a pressurized water source and the applied water pressure was adjusted to produce 20 to 30 psi to the nozzle. The tested areas were evaluated for periods of five to twenty minutes by applying constant water pressure using back and forth motions, while maintain an approximate nozzle distance of 12 inches from the tested areas. Pertinent observations related to the water spray testing are noted below:

4.1 Defective Joints Between EIFS Termination and Concrete Foundation

Selective water spray testing was performed along the base of the EIFS wall system along the exterior "WyLand" walls, adjacent to Room 600 near DTO #3, adjacent to Room 408 near DTO #5, and adjacent to Meeting Room 102 near DTO #6. Water spray testing identified active water leaks through defective sealant joints between the bottom of the EIFS termination and the concrete foundation. The defective joints exhibited significant distress (cracking and weathering) and sealant adhesion failure. Water infiltrating the joints migrated through the bottom of the EIFS and accumulated along the metal wall sill track (or lack thereof where the track was completely degraded). A *Delmhorst Moisture Check* meter was used to qualitatively document the presence of moisture in the wall system components. Moisture probe readings verified the presence of moisture along the bottom of the wall cavity and indicated moisture travelling upwards from the base of the wall into the EIFS EPS insulation and exterior gypsum sheathing.

4.2 Defective Window Sealants/Flashings – DTO #1

Selective water spray testing performed at the window above DTO #1 identified significant water penetration resulting from unsealed openings at window head and sill corners. Water was observed flowing onto horizontal and vertical metal framing members and accumulating along the bottom of the wall assembly. Along with the defective sealant joint along the base of the EIFS wall, these defects appear to have attributed to corrosion of the bottom sill track and metal framing members.

5.0 MAT ABSORPTION TESTING

In order to document the water repellency of the exterior EIFS wall system, Terracon performed a quantitative evaluation utilizing the MAT Absorption Test (Rilem Test Method 11.4) to estimate the rate of water absorption into the existing EIFS lamina. Mat Absorption Testing was performed in general accordance with RILEM Test Method 11.4. RILEM Tubes, graduated from

0 to 5 mL, were sealed to selected areas of the exterior EIFS wall. Each tube was filled with water to the "0 mL" graduation mark. The quantity of water absorbed by the material was recorded in 5 minute intervals. Testing was terminated after approximately 30 minutes.

In summary, no significant volume of water was absorbed into the EIFS wall where tested. Photographs of test locations are included in Appendix C at the end of this document. General locations of each test are indicated on Elevation Plans in Appendix E.

6.0 DISCUSSION

6.1 General Wall Design

The general wall design of the subject facility consists of a non-drainable (barrier) type wall construction with an exterior insulation and finishing system (EIFS). This system relies on the exterior surface lamina and perimeter sealant joints to resist water penetration into the building enclosure and interior finishes. All components of the exterior wall must either be barrier type systems or be properly sealed and flashed to prevent water penetration behind the EIFS and into the underlying wall system components and interior finishes.

6.2 Exterior Wall Condition

The majority of the exterior EIFS wall system appears to be in good condition overall. The EIFS waterproofing lamina did not exhibit any significant visual defects and did not absorb any significant amount of water during MAT absorption testing. Several unsealed holes and penetrations were observed. Selective water spray testing identified these unsealed holes and/or penetration as avenues for water infiltration into the wall system. The EIFS system generally terminates at grade level adjacent to concrete flatwork, with the exception of some areas extending below grade level and some areas elevated 8" above grade level.

The EIFS system is supported laterally by exterior framing members (vertical studs) and sits on top of a concrete foundation or lug. The exterior face of the EIFS is generally flush with the outer edge of the foundation. Backwrapping is exposed along the base of the EIFS because base coat applications could not be achieved. A backer rod and sealant is utilized at the joint between the EIFS base and foundation; however, the sealant is overall aged and weathered and is poorly adhered to the EIFS backwrapping and/or foundation. Selective water spray testing verified water penetration at this interface as illustrated in ***Figure 2*** below:

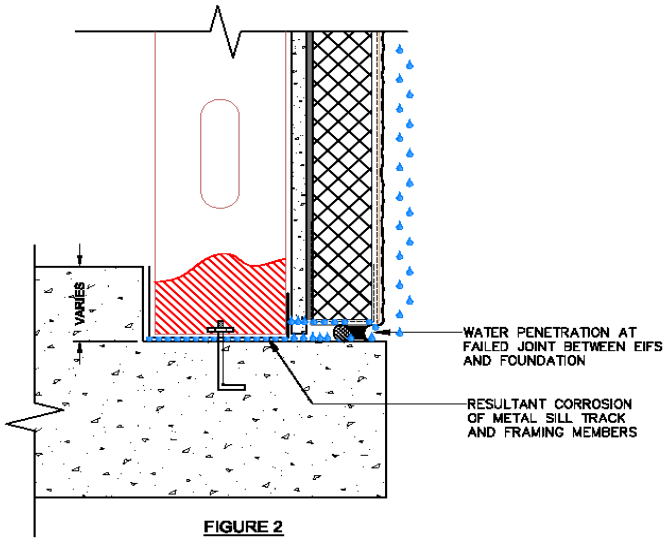


FIGURE 2

The water penetration is believed to have been on-going for a long period of time and appears to have led to significant widespread corrosion of the metal sill track and framing members within the wall assembly. This was consistently observed from interior access panels and exterior DTO's. The corrosion has most likely been accelerated due to the coastal environment.

6.3 Fenestrations Condition

Exterior sealants and window glazing gaskets used around window and door frame perimeters and other openings are significantly deteriorated and weathered, and in poor condition. Typical sealants and gaskets exposed to environmental conditions are expected to perform in a weather-tight condition for approximately 15 to 20 years; however, the coastal environments similar to those at the subject facility significantly reduce the expected service life of the sealants. Over time, sealant and gaskets can become weathered, shrink, and become displaced or debonded from their original installation. When this occurs, discontinuities and openings are created around the joint that can lead to air and moisture ingress. This weathering and deteriorated condition generally occurs throughout the building.

Most windows maintained a sealant joint along the interface between the window perimeters and EIFS system. However, windows along the east elevation above DTO #1 did not contain a sealant joint along the window sill (bottom of window). Where this occurred, a gap was present between the metal sill flashing and EIFS system, which may allow for air/water infiltration.

Displaced window framing members were observed on the storefront window systems. This condition may be conducive to allowing unabated air and moisture infiltration into adjacent interior spaces.

6.4 Roof Condition

The existing roof systems appear to be in good to fair condition overall, with localized defects observed primarily consisting of blisters or voids in the membrane. Blisters are an enclosed pocket of air mixed with water, trapped between layers of inter-plies of a composite membrane. Once the blisters grow in size the resulting strain will exceed the tensile strength of the membrane. Once this point is met, the blisters will begin to split, crack, and expose the membrane plies and insulation to the elements. Most manufacturers do not consider blisters a "warranty" item.

6.4.1 Roof Slope

Existing roof slopes appear to be adequate for positive drainage, with the exception of localized ponding near roof drains on the roof above the lobby. Evidence of ponding conditions was observed on the roof over the lobby, which may lead to premature degradation of the roof system.

7.0 CONCLUSIONS

On the basis of our knowledge of the subject facility, visual observations, exploratory wall openings, selective water spray testing, and MAT absorption testing, Terracon has developed the following professional opinions:

- The EIFS wall termination at the building's foundation is improperly installed for a non-drainable EIFS system. The system relies on the sealant joint between the bottom of the EIFS wall and the foundation. Current EIFS systems are designed with a drainage system and generally terminate along the outer face of the foundation a minimum of 4" above grade. Due to the design of the EIFS wall on the subject facility, proper base coat applications could not be installed to embed and encapsulate the EIFS reinforcement mesh. The sealant joint along this interface is generally deteriorated and weathered and exhibited sealant adhesion and cohesion failure. This failure is believed to have led to long-term air and water infiltration into the bottom of the EIFS wall assembly, which has led to the significant corrosion of the metal sill track and vertical framing members along the bottom of the wall assembly. Where observable by exploratory openings, the metal sill track was significantly corroded and/or exhibited total member loss. The corrosion on vertical framing members appeared to be limited to 2" to 4" above the lug line. Based on our observations and destructive test openings, the structural integrity of the wall assembly appears to have been compromised and should be remediated immediately.
- DTO #7 was taken at the south wall of the "Green Room", which had reportedly been replaced after Hurricane Dolly in 2008. The bottom of the EIFS wall was missing sealant. Repairs to the existing metal framing members were observed along with evidence that the bottom sill track had been replaced. The new sill track and new vertical framing members exhibited minor corrosion. Based on this observation, Terracon does not believe the corrosion of sill tracks and framing members at other

locations is primarily attributed to water infiltration into the building during Hurricane Dolly.

- Water spray testing verified water intrusion along the joint between the bottom of the EIFS wall and foundation. During testing, Terracon used a *Delmhorst MoistureCheck* probe to evaluate the wall assembly components. Readings between 0.1% to 0.5% indicate a sufficiently dry moisture level. Readings between 0.5% and 1% indicate a borderline moisture presence. Readings above 1% indicate the presence of moisture.

  In summary, where testing was performed, moisture probe readings ranged from 0.9% to 5.0%. In some testing areas, as observed from interior access panels, Terracon observed and felt moisture infiltration migrating along the bottom sill track.

- The sealant around EIFS terminations, window perimeters, and roof/wall interfaces is deteriorated and weathered, and is not providing a watertight seal. Consideration should be given to replace all exterior sealant joints.

- Water testing identified water intrusion at window/wall interfaces, which has led to metal framing corrosion adjacent to the tested windows. We believe this condition exists at all windows and has also contributed to the corrosion along the bottom wall sill track.

- Where MAT absorption testing was performed, the EIFS lamina did not allow moisture absorption into the wall.

- Two interior openings, approximately 6’ and 12’ from the finished floor above interior Opening #10, were performed by SpawGlass. No apparent signs of distress or corrosion of metal framing members at these locations were observed.

- Displaced window framing members are susceptible to air/water infiltration into the building. Several areas were observed with this condition. In addition, sealant repairs were observed around a majority of the windows. As part of the anticipated enclosure remediation efforts, the exterior glazing systems should be repaired as appropriate. Perimeter sealants and backer rods should be replaced.

- The sloped glazing system (skylight) above the lobby was reported to leak. The glazing system slopes toward a gutter located above the lobby. Although no testing was performed at this area, the gutter may be undersized or have flashing issues attributing to the leaks. Terracon recommends additional testing be performed to evaluate the gutter’s watertight performance.

- The roof slope over the lobby does not appear to provide positive drainage. Evidence of ponding was observed. We expect the service life of the roof system will be reduced where the ponding occurs.

- This report does not address the structural adequacy or attachment of the EIFS assembly. In the event that the existing EIFS wall is to remain, Terracon recommends *ASTM E 2359*, *Standard Test Method for Field Pull Testing of an In-Place Exterior Insulation and Finish System Clad Wall Assembly* be performed.

8.0 REPORT QUALIFICATIONS

8.1 Limitations

The analysis and opinions presented in this report are based upon the information provided to us by our client and data collected at the project site at the time of our site visit. While additional conditions may exist that could alter our conclusions, we feel that reasonable means have been made to fairly and accurately evaluate the existing conditions on this facility pursuant to our scope of services.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, and bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

8.2 Reliance

The Report may be relied upon by the client as a description of the current physical conditions of the building enclosure system, as of the date of this Report, and with the knowledge that there are certain limitations and exceptions within the Report that are reflective of the scope of services.

This Report was prepared pursuant to the contract Terracon has with the City of South Padre Island. That contractual relationship included an exchange of information about the subject site that was unique and between Terracon and its client and serves as a basis upon which this report was prepared. Because of the importance of the communication between Terracon and its client, reliance or any use of this report by anyone other than the City of South Padre Island, for whom it was prepared, is prohibited and therefore not foreseeable to Terracon. Reliance or use by any such third party without explicit authorization in the Report does not make said third party a third party beneficiary to Terracon's contract with the City of South Padre Island. Any such unauthorized reliance on or use of this Report, including any of its information or conclusions, will be at the third party's sole risk. For the same reasons, no warranties or representations, expressed or implied in this Report, are made to any such third party.

8.3 Advisory Notes

The following advisory notes are provided to discuss potential issues associated with budgeting practices, presence of potential hazardous materials, constructions products that may be defective or have a shorter useful life than anticipated for similar or alternative products used for the same purpose. The list of items addressed is not intended to list all such products, but includes some that could be present at this type of development.

Presence of excessive moisture and visible evidence of suspect mold development - Limited interior areas to which access was provided, and where building elements were readily observable, were visually observed for the presence of excessive moisture if included as part of the authorized scope of work. No observations were conducted within concealed locations (behind wall and ceiling finishes, and building components considered to be hidden conditions). The scope of this work should not be construed as a mold assessment.

Hazardous Materials - This Report does not confirm or deny the presence or absence of items such as mold, asbestos, environmental conditions or hazardous substances on this property.

APPENDIX A

PHOTOGRAPHS

Photo #1 Overview of main entrance along the east elevation.

Photo #2 Overview along east elevation, adjacent to Rooms 312 to 300.

Photo #3 Typical window head flashing detail. Note metal head flashing above window and openings at corner.

Photo #4 Detail view of opening at corner of window, typical condition.

Photo #5 Opening at window corner, typical condition.

Photo #6 Opening at penetration above windows, typical condition.

Photo #7 Storefront window system adjacent to lobby entrance.

Photo #8 Deteriorated sealant joint along bottom of window frame and localized corrosion on framing members.

Photo #9 Displaced window framing member.

Photo #10 Spalled concrete near door.

Photo #11 Detail view of spalled concrete near door referenced in previous photograph.

Photo #12 East elevation facing north. Entrance to Room 600.

Photo #13 Entrance doors to Room 600. Facility personnel reported active water leaks under thresholds.

Photo #14 Detail view of damaged threshold and door sweeps.

Photo #15 East elevation facing southwest.

Photo #16 EIFS wall extends approximately 12" below landscaped area at the southeast corner.

Photo #17 EIFS extends below landscaped area at northeast corner. Note piping covered by landscaping.

Photo #18 Green room (602) where highlighted portion of wall was reportedly blown out during Hurricane Dolly and replaced.

Photo #19 Exposed backwrapping and exterior sheathing at bottom of EIFS wall due to missing sealant and backer rod joint along south wall of Green Room.

Photo #20 East elevation of Green Room facing north.

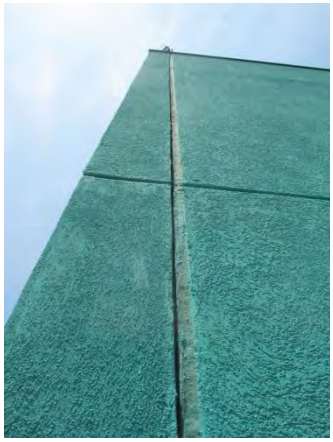


Photo #21 Vertical and horizontal joints in EIFS.

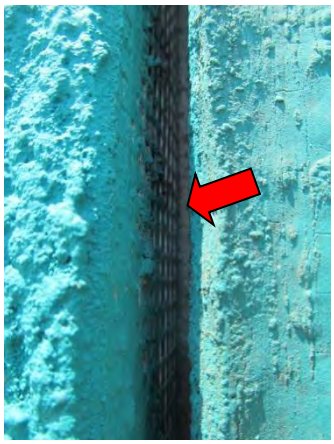


Photo #22 Detail view of exposed backwrapping in EIFS joint.

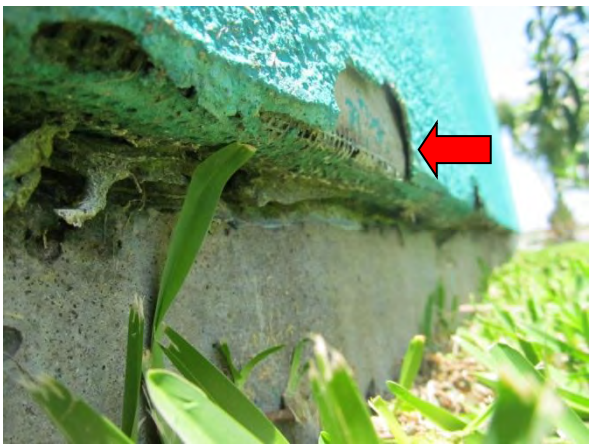


Photo #23 Exposed backwrapping along bottom of EIFS wall. Note spalled EIFS finish coat.

Photo #24 North elevation.

Photo #25 Unsealed pipe penetration on north wall.

Photo #26 Joint between EIFS and foundation.

Photo #27 North elevation. Displaced/damaged wall penetration exposing EIFS reinforcement.

Photo #28 Detail view of damaged referenced in previous photograph.

Photo #29 Damaged EIFS near overhead door.

Photo #30 Detail view of damaged EIFS.

Photo #31 Deteriorated sealant between EIFS termination and foundation, typical condition throughout.

Photo #32 Damaged EIFS at corner of building.

Photo #33 Receiving area along north side of facility.

Photo #34 Damaged EIFS adjacent to Receiving area.

Photo #35 Detail view of damaged EIFS referenced in previous photograph.

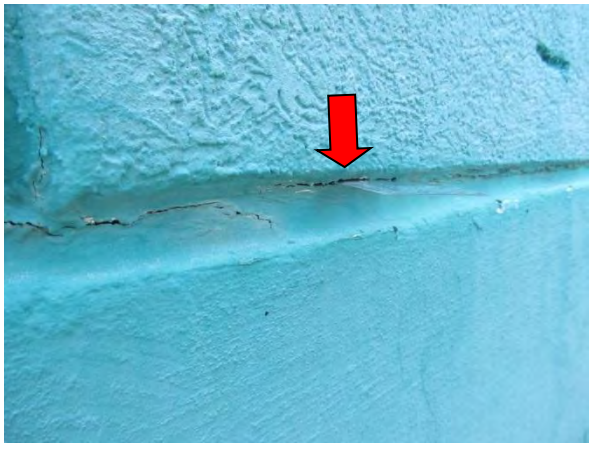


Photo #36 Sealant adhesion failure along EIFS termination, typical condition throughout.

Photo #37 Staining at EIFS joint.

Photo #38 Northwest elevation facing south.

Photo #39 Deteriorated and weathered sealant joint at bottom of EIFS wall, typical condition throughout.

Photo #40 Detail view of typical deterioration and sealant adhesion failure at bottom of EIFS wall.

Photo #41 Typical "punch" window adjacent to Room 408.

Photo #42 Sealant repairs and/or replacement along window perimeter.

Photo #43 Deteriorated vertical control joint sealant at EIFS wall.

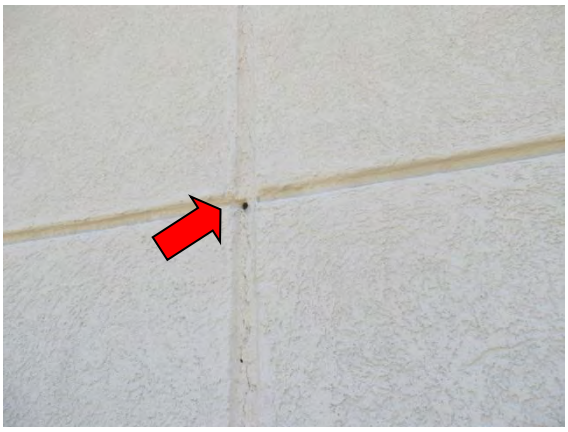


Photo #44 Detail view of hole in sealant and sealant cohesion failure in at EIFS wall.

Photo #45 North elevation, Room 203.

Photo #46 Typical sealant adhesion failure along bottom of EIFS wall termination.

Photo #47 Overview of west elevation facing south.

Photo #48 Typical rust on service doors.

Photo #49 Sealant failure at bottom of EIFS termination, typical condition.

Photo #50 Sealant adhesion failure along bottom of EIFS termination, typical condition throughout.

Photo #51 Openings along window heads are unsealed.

Photo #52 Detail view of unsealed window head.

Photo #53 South elevation facing northeast.

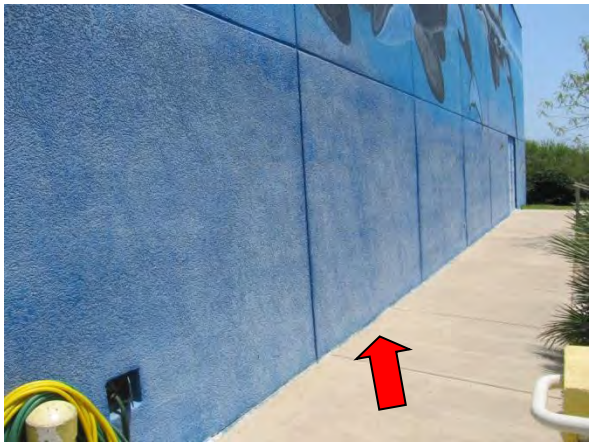


Photo #54 Deteriorated sealant at bottom of EIFS wall.

Photo #55 Sealant adhesion failure at bottom of EIFS wall, typical condition throughout.

Photo #56 Typical deteriorated and weathered sealant at bottom of doors.

Photo #57 Detail view of deteriorated sealant referenced in previous photograph.

Photo #58 Hole in sealant. Also note damaged EIFS at corner.

Photo #59 East “WyLand” wall.

Photo #60 Electrical box along east wall.

Photo #61 Interior view of conduit penetration from electrical box. Water was observed migrating through opening during water spray testing.

Photo #62 Sealant adhesion failure along bottom of EIFS termination, typical condition. Also note staining on sealant.

Photo #63 Overview of east elevation of "WyLand" wall facing southwest.

Photo #64 Sealant deterioration along north "WyLand" wall, typical condition.

Photo #65 Detail view of sealant deterioration along bottom of EIFS wall.

Photo #66 Detail view of typical sealant deterioration along bottom of EIFS wall.

Photo #67 Overview of roof areas facing southwest.

Photo #68 Overview of roof areas facing south. Note staining on lower roof over lobby.

Photo #69 Overview of roof areas facing north.

Photo #70 Staining on capsheet membrane due to ponding conditions from inadequate roof slope.

Photo #71 Staining on lobby roof facing east.

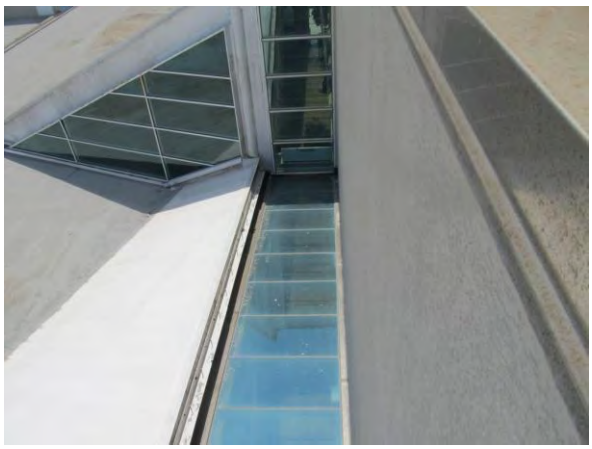


Photo #72 Glazing system that slopes to gutter.

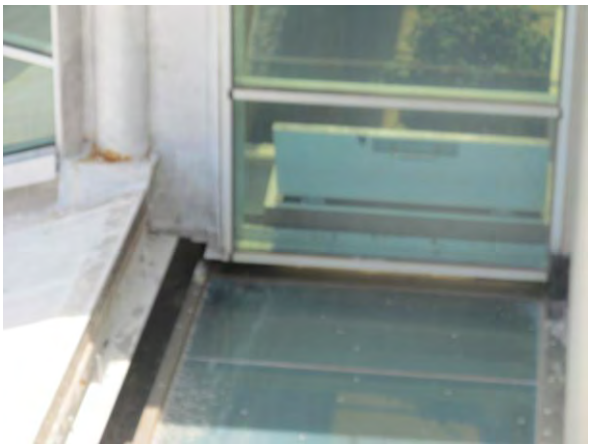


Photo #73 Detail view of gutter system.

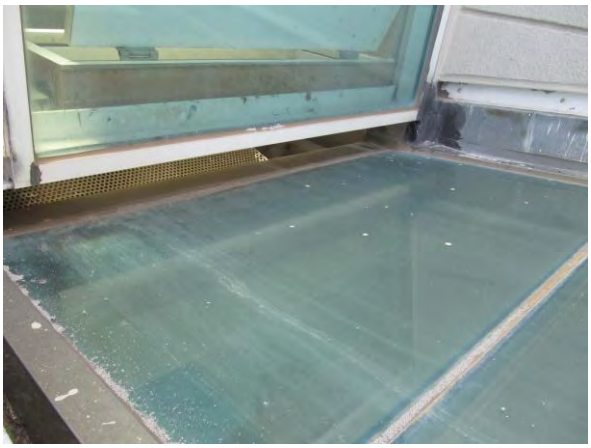


Photo #74 Detail view of gutter system.

Photo #75 Window system on upper level east elevation adjacent to sloped glazing system. Note displaced vertical mullion.

Photo #76 Displaced vertical mullion.

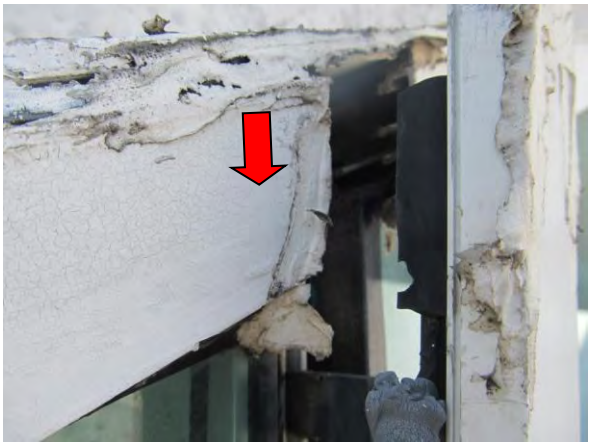


Photo #77 Detail view of displaced mullion. Note sealant in poor condition.

Photo #78 Typical sealant failure at window/metal flashing interface.

APPENDIX B

WALL OPENINGS PHOTOGRAPHS

Photo #1 DTO #1 – Taken along east elevation.

Photo #2 DTO #1 – Corroded sill track with total loss.

Photo #3 DTO #1 – Corrosion scale along sill track.

Photo #4 DTO #1 – Water stains on vertical framing member from window above.

Photo #5 DTO #2 - Taken along east elevation.

Photo #6 DTO #2 – Part of the EIFS extending 12" below grade.

Photo #7 DTO #2 – Evidence of insect infestation in EPS insulation.

Photo #8 DTO #3 – Corrosion along bottom of vertical framing member. Sill track was completed corroded.

Photo #9 DTO #3 – Typical corrosion along bottom sill track and vertical framing members. Note corrosion on vertical framing member believed to be impacted from water infiltration from windows above.

Photo #10 DTO #3 - Total member loss of sill track and bottom of vertical framing members.

Photo #11 DTO #3 - Member loss of bottom sill track and vertical framing member.

Photo #12 DTO #4 – Overview of #4 adjacent to window.

Photo #13 DTO #4 – Minor corrosion at fastener.

Photo #14 DTO #4 – Corrosion on window sill as observed looking up wall.

Photo #15 DTO #5 – Significant corrosion along base of wall.

Photo #16 DTO #5 - Corrosion along bottom sill track and vertical framing members.

Photo #17 DTO #6 – Taken along west elevation.

Photo #18 DTO #6 Corroded sill track and bottom of vertical framing member.

Photo #19 DTO #7 – Taken on south wall of "Green Room" on east elevation.

Photo #20 DTO #7 – Minor corrosion along replaced sill track and vertical framing members.

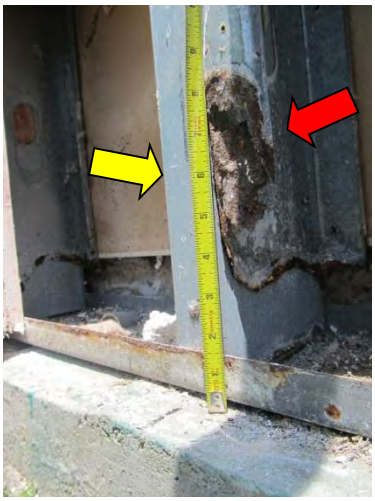


Photo #21 DTO #7 – View of original vertical framing member (red arrow) and new framing member (yellow arrow).

Photo #22 DTO #7 – Minor corrosion of sill track and new vertical framing member.

Photo #23 DTO #7 – Improper EIFS termination at foundation. Note exposed backwrapping and missing sealant joint.

Photo #24 Interior opening approximately 6' above Opening #10. No evidence of distress or moisture impacted materials were observed.

APPENDIX C

SELECTIVE WATER SPRAY TESTING PHOTOGRAPHS

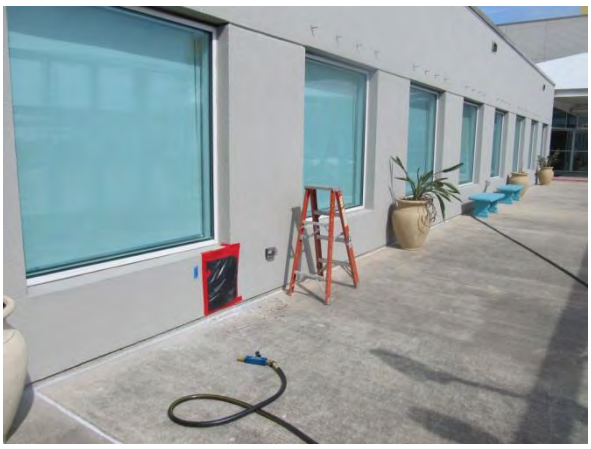


Photo #1 Water spray test near DTO #1.

Photo #2 Water spray testing in progress along window sill.

Photo #3 Water spray testing in progress along window head/jamb.

Photo #4 Water observed migrating into wall assembly.

Photo #5 Bottom of window sill. Water was observed on sill pan and wood blocking.

Photo #6 Bottom of sill. Water stains along interior sheathing.

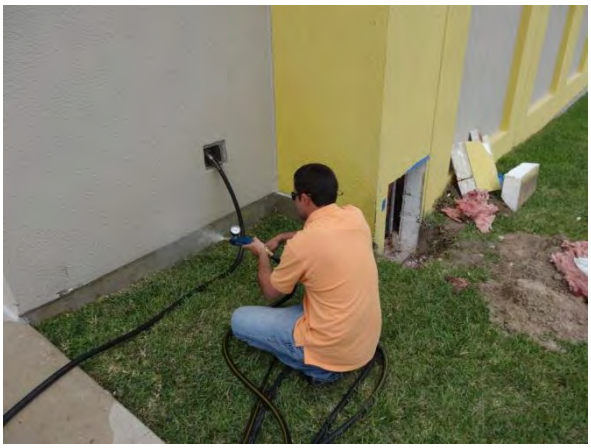


Photo #7 Water spray testing in progress adjacent to DTO #2.

Photo #8 Water observed migrating along EIFS termination and continuing down floor line.

Photo #9 Moisture impacted insulation during spray testing.

Photo #10 Moisture impacted insulation and corrosion on vertical framing members.

Photo #11 Water spray testing in progress on DTO #5.

Photo #12 Qualitative reading (0-100 scale) of EPS insulation during spray testing.

Photo #13 Moisture probe reading of exterior gypsum sheathing during spray testing.

Photo #14 Water spray testing in progress at DTO #6.

Photo #15 Moisture probe reading of exterior gypsum sheathing during spray testing.

Photo #16 Water spray testing near electrical conduit penetration on exterior "WyLand" wall.

Photo #17 Water spray testing in progress to electrical box.

Photo #18 Moisture probe reading of exterior gypsum sheathing (4.9%). Dampness was felt during spray testing referenced in previous photographs.

Photo #19 Water spray testing along bottom of EIFS joint on exterior "WyLand" wall.

Photo #20 Moisture probe reading on exterior gypsum sheathing (0.9%) during spray testing referenced in previous photo. Water was also felt on bottom sill.

APPENDIX D

MAT ABSORPTION TESTING

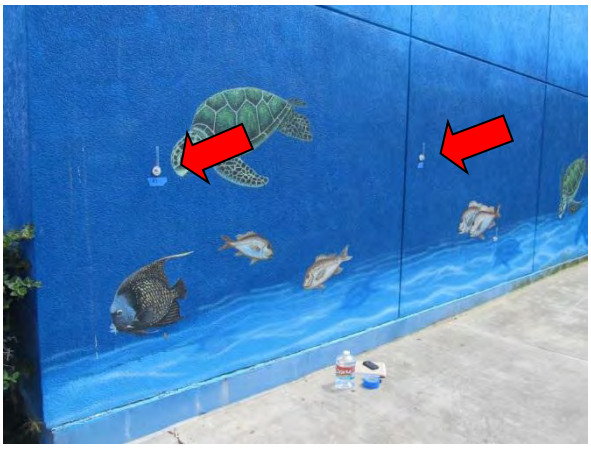


Photo #1 Rilem test tubes affixed to wall in preparation for testing.

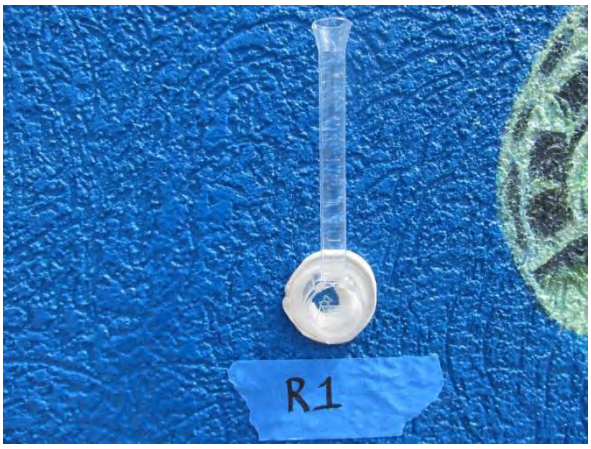


Photo #2 Water filled to 5ml mark. No water was absorbed into tested area.

Photo #3 Overview of R2 affixed to wall.

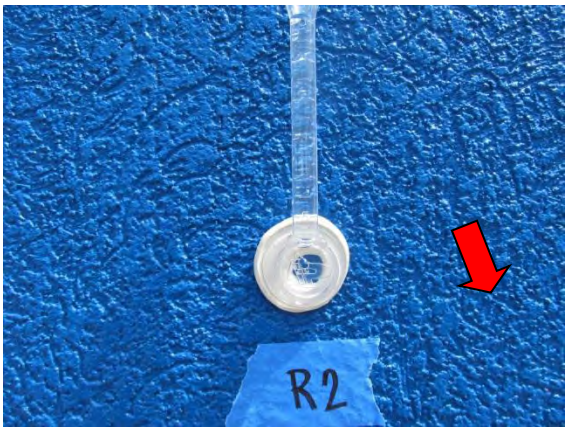


Photo #4 Water filled to 5ml mark. No water was absorbed into tested area.

Photo #5 Overview of R3 affixed to wall.

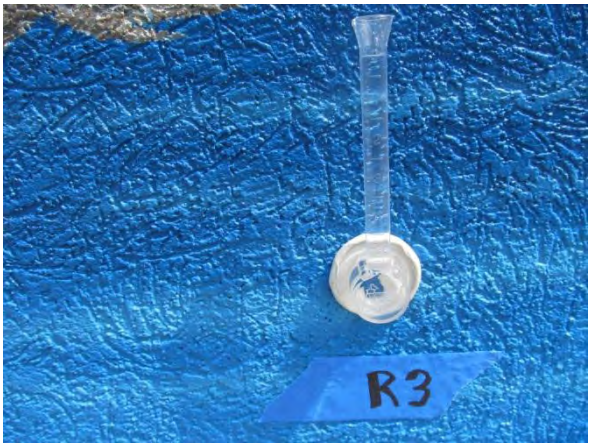


Photo #6 Water filled to 5ml mark. No water was absorbed into tested area.

Photo #7 Overview of R7-R9 affixed to wall on east elevation.

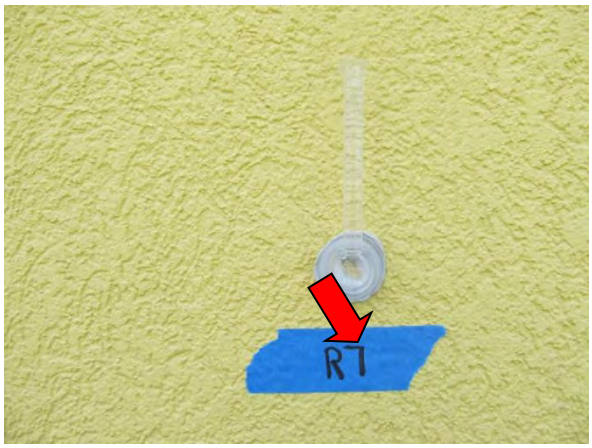


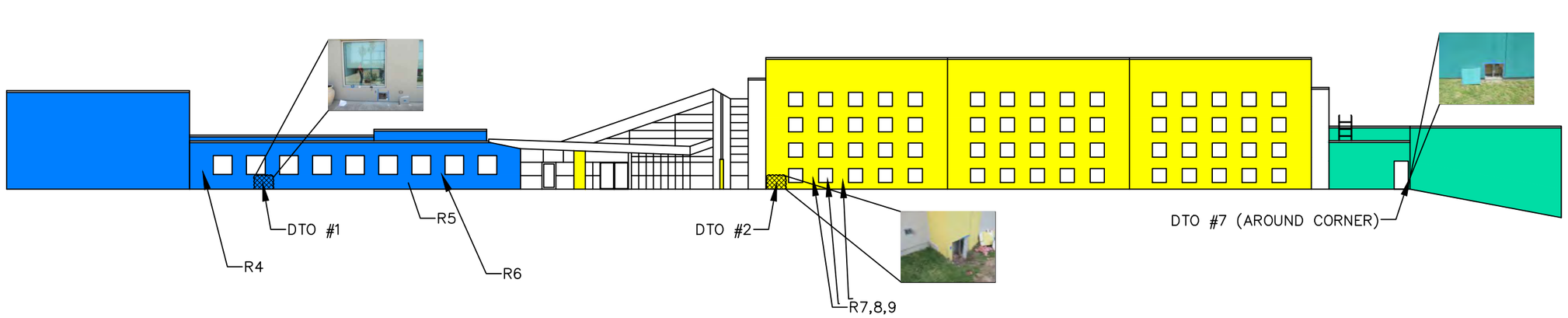
Photo #8 Water filled to 5ml mark. No water was absorbed into tested area.

Photo #9 Water filled to 5ml mark. No water was absorbed into tested area.

Photo #10 Water filled to 5ml mark. No water was absorbed into tested area.

APPENDIX E

ELEVATION / FLOOR PLANS



LEGEND

1 → PHOTOGRAPH

EAST ELEVATION

NOT TO SCALE

LIMITED BUILDING ENCLOSURE ASSESSMENT

SOUTH PADRE ISLAND CONVENTION CENTRE

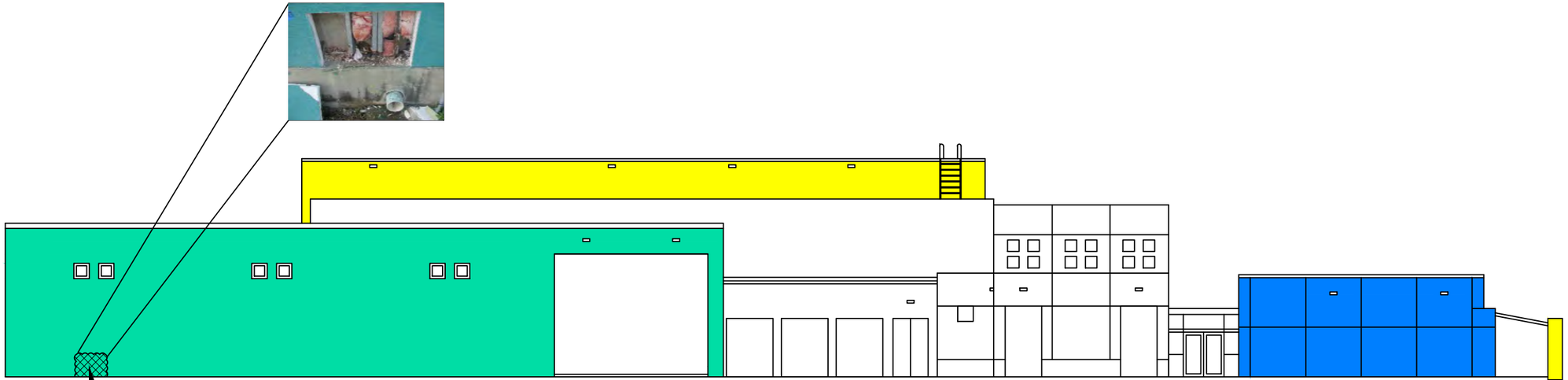
7355 PADRE ISLAND
SOUTH PADRE ISLAND, TX 78597

Terracon
Consulting Engineers and Scientists
San Antonio, Texas 78216
FAX: 210-641-2124
6911 Blanco Road
PH: 210-641-2112

Project No.:	FC138501
Date:	6/14/2013

E1

EAST ELEVATION



LEGEND

1 → PHOTOGRAPH

NORTH ELEVATION

NOT TO SCALE

Project No.:	FC138501
Date:	6/14/2013

LIMITED BUILDING ENCLOSURE ASSESSMENT

SOUTH PADRE ISLAND CONVENTION CENTRE

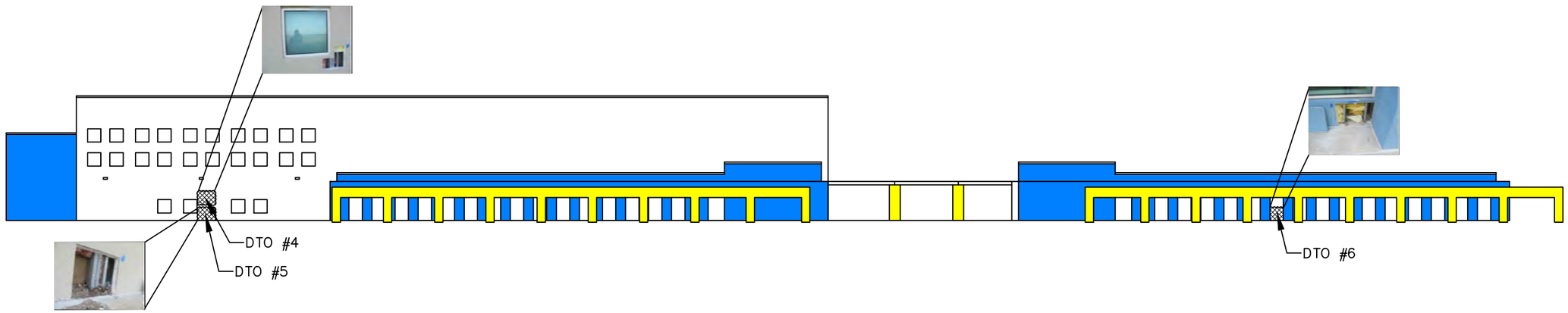
7355 PADRE ISLAND

SOUTH PADRE ISLAND, TX 78597

Terracon
Consulting Engineers and Scientists
San Antonio, Texas 78216
FAX. 210-641-2124
6911 Blanco Road
PH. 210-641-2112

E2

NORTH ELEVATION



LIMITED BUILDING ENCLOSURE ASSESSMENT

SOUTH PADRE ISLAND CONVENTION CENTRE

7355 PADRE ISLAND
SOUTH PADRE ISLAND, TX 78597

LEGEND

1 → PHOTOGRAPH

Terracon
Consulting Engineers and Scientists
6911 Blanco Road
PH. 210-641-2112
San Antonio, Texas 78216
FAX. 210-641-2124

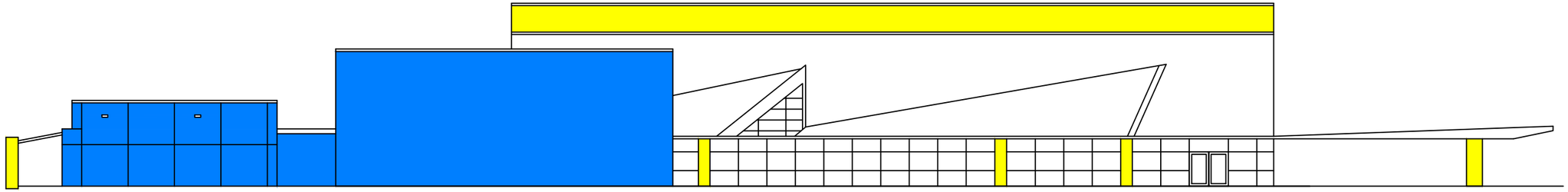
WEST ELEVATION

NOT TO SCALE

Project No.:	FC138501
Date:	6/14/2013

E3

WEST ELEVATION



LEGEND

1 → PHOTOGRAPH

SOUTH ELEVATION

NOT TO SCALE

LIMITED BUILDING ENCLOSURE ASSESSMENT
SOUTH PADRE ISLAND CONVENTION CENTRE
7355 PADRE ISLAND
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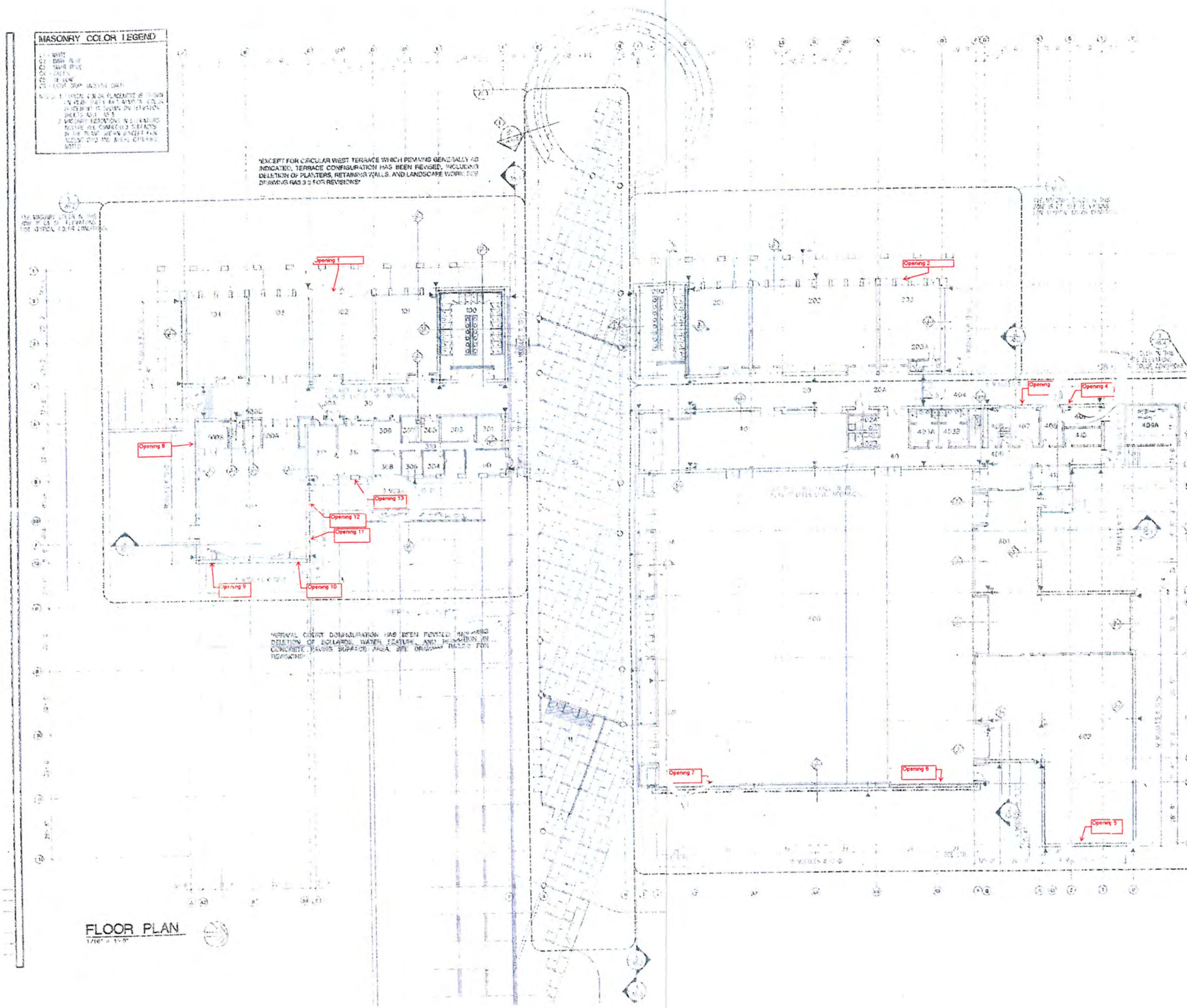
FAX. 210-641-2124
6911 Blanco Road
PH. 210-641-2112

Project No.: FC138501
Date: 6/14/2013

E4
SOUTH ELEVATION


MASONRY COLOR LEGEND
EXCEPT FOR CIRCULAR WEST TERRACE WHICH REMAINS GENERALLY AS INDICATED, TERRACE CONFIGURATION HAS BEEN REVISED, INCLUDING DELETION OF PLANTERS, RETAINING WALLS, AND LANDSCAPE WORK. SEE DRAWING RA3.3 FOR REVISIONS
Opening 1
Opening 2
Opening 3
Opening 4
Opening 5
Opening 6
Opening 7
Opening 8
Opening 9
Opening 10
Opening 11
Opening 12
Opening 13
FLOOR PLAN

LOSCHKY
MARQUARDT
& NESHOLM

ASSOCIATE ARCHITECTS:

REITZER CRUZ
ARCHITECTS, INC.

118 ALGERITA
SAN ANTONIO, TEXAS 78230

Reitzer Cruz Architects

SOUTH PADRE ISLAND
CONVENTION CENTER

no	date	by	description
3			CONSTRUCTION ISSUE
2			C.O. NO. 1
1			ADDENDUM NO. 1

Revisions

sheet title

Floor and Terrace Layout Plan

designed GHL
drawn BCF
checked FWW
date 10/1/90
project no. 86072

sheet no.

A4.1