



Kluber

Architects + Engineers



- LaGrange Park Public Library
- Water Infiltration Investigative Study
- April 28, 2015
- Kluber Project No. 15-357-960

Batavia: 10 South Shumway Avenue | Batavia, Illinois 60510 | 630.406.1213
Gurnee: 4212 Old Grand Avenue | Suite 101 | Gurnee, Illinois 60031 | 847.336.3428

www.kluberinc.com

1 Executive Summary, Observations and Recommendations

2 Non-Invasive Inspection Photos

3 Invasive Inspection Photos

4 Design Appearance Options

5 Cost Estimate



April 28, 2015

Ms. Lynn Elam
Acting Library Director
La Grange Park Public Library
555 North La Grange Road
La Grange Park, IL 60526

Re: Water Infiltration Investigative Study
Kluber, Inc. Project No. 15-357-960

Dear Ms. Elam,

This executive summary and attached supporting documentation comprise Kluber Architects + Engineers' assessment and recommendations of the water infiltration issues at the Exterior Insulation Finish Systems (herein referred to as EIFS) and at the aluminum operable and fixed windows systems at the east and west walls of the La Grange Park Public Library facility located at 555 North La Grange Road in La Grange Park, Illinois.

LOCATION / DESCRIPTION

The existing library facility is approximately 24,000 SF in floor area on three levels. Each floor level is approximately 8,000 SF in floor area. The main building entrance is located on the west façade of the building immediately adjacent to the main public parking lot.

The west elevation consists of combinations of brick masonry, EIFS and aluminum framed glass curtainwall window systems. The existing brick masonry totals approximately 2,400 SF of wall surface area. The curtainwall framing is approximately 1,125 SF in area.

The north and south elevations consist of brick masonry, EIFS at the upper clerestory windows, fixed aluminum window systems, and combinations of metal standing seam and shingle roofing products. The existing brick masonry totals approximately 3,950 SF of wall surface area at each north and south elevation for a total of approximately 7,900 SF of wall surface area. EIFS surfaces total approximately 1,650 SF in area. The fixed windows total approximately 170 SF in area.

The east elevation of the building is principally clad in EIFS stucco materials with combinations of fixed and operable aluminum window systems. At the center of this elevation, is a four-story aluminum framed, glazed curtain wall window system that totals approximately 1,325 SF. The north and south curtainwall framing at the 10 foot projection total approximately 400 SF. The fixed and operable window systems total approximately 1,250 SF in area. EIFS surfaces total approximately 1,450 SF in wall area. This figure does not include the east 10 foot projection, north or south EIFS areas. Those EIFS areas are included with the north and south elevation quantities.

Prior to conducting on-site visual observations of the subject property, Kluber Inc. representatives reviewed the re-bid construction documents prepared by Frye, Gillan, Molinaro Architects, Ltd. Dated September 19, 1988 in conjunction with very limited construction shop drawing information that was on file at the owner's place of business. Shop drawings were limited to elevation and detail drawings for the aluminum window systems. Product data for the EIFS wall systems and the products used in the construction of the exterior wall systems could not be located by the owner. For this reason, our recommendations contained in this report will be based upon best practices for similar installations that would have been installed in 1988 for the exterior wall products.

OBSERVATIONS

Non-Invasive Inspection:

An initial non-invasive field inspection of the subject property was performed on Friday, March 13, 2015. The non-invasive investigation utilized long range camera lenses and field glasses to review areas of water infiltration concern raised by the client. The review locations included the east and west exterior facades of the building however limited upper clerestory window and EIFS review was also performed. The extent of the upper clerestory review was limited to what could be seen from the mechanical roof platforms on the north and south roof sections. Non-invasive inspection photographs can be found in section 2 of this report along with notations indicating areas of concern.

The non-invasive inspection indicated that exterior wall and window surfaces at the east and west façades are experiencing combinations of water moisture buildup (condensation), high dew point conditions inside the wall cavity (water vapor that is condensing) and water infiltration (from exterior rain water). This is particularly evident at interior drywall window heads, jambs and sills at the east elevation of the building. A significant amount of moisture damage was visible at these locations.

The operable and non-operable exterior window systems are also contributing to the water / moisture conditions in the building. These systems consist of fixed and operable window units as well as structural curtainwall systems. Generally, the smaller window openings are "windows" at the north, south and east elevations and the large windows at the east and west ends of the vaulted ceiling are structural "curtainwall" systems. Both systems are a non-thermally broken type and will conduct cold from outside to inside. This will cause water to condense on the interior glass and window framing surfaces of the windows in the colder months of the year. This moisture buildup is believed to have migrated into the exterior drywall wall systems.

Our initial site visit also included an above ceiling inspection at several locations where suspended ceilings are installed. These locations included the ground floor Children's Department ceiling cavity at the east wall face and the first floor ceiling cavity at the eastern glass reading room. Above ceiling observation noted a visual presence of water staining likely caused by a combination of condensation and water infiltration. Moisture stains can be seen in Section 2 of this report in the various inspection photographs. Moisture concerns are clearly labeled in this section.

The exterior window systems were designed to be barrier type installations. The goal of these systems is to prevent rainwater from entering the window system so all perimeter joints in the system would be closed with rubber gaskets or sealant. Unfortunately these systems were not designed to "weep moisture" out if the first sealant / gasket barrier was compromised. This type of window system was common when the building was originally constructed in the late 1980's. Barrier window systems rely heavily on proper installation and ongoing preventative maintenance plans to ensure the sealant joints and rubber gaskets at the perimeter of the windows are maintained. A close review of the window sealant systems indicates that some preventative maintenance has been performed to the sealant joints



however the vast majority of the window sealant systems are now in need of replacement. Many sealant joints were cracked and no longer performing to keep water out of the wall assembly.

The curtainwall window framing systems at the east and west ends of the building are also barrier type. This system relies heavily on the rubber glazing gaskets at the perimeter of each glass panel and perimeter sealant joints to keep moisture out of the building. Careful visual inspection noted several open joints in the exterior snap caps for the curtainwall system. These open joints will allow driven rainwater to enter the window systems. In a barrier window system, moisture entering the framing members cannot easily escape and drain to the exterior. This means that any water passing by the rubber glazing gaskets or past the perimeter sealant joints, will likely migrate into the exterior building cavity wall.

In modern day glass curtain wall framing systems, water is designed to collect in the aluminum channels formed by the glazing snap caps and drain out the bottom of the window assembly. In other words, if the water gets past the first line of defense (the barrier systems) it will find its way out of the assembly and drain to the exterior (through the second line of defense – drainage plane).

We observed that the bottom of the existing curtainwall window systems did not have any metal counterflashing installed to weep water away from the building at the sill locations. In fact, the west curtainwall has an open joint at the base of the window system (sill) that is open from the exterior to the interior of the building. This is why visible salt and calcium deposits are evidenced at the terrazzo floor tile at the main entrance vestibule. It is our opinion that the de-icing salts, when exposed to water, migrate into the building through the open sill joints. The salty water solution then wicks into the building forming a salty / calcium layer on the edge of the terrazzo floor tile in the lobby.

Our visual inspection included a review of the exposed to view round, "blue" steel columns at the northeast and southeast corners of the building that are adjacent to the curtainwall window framing system. We also reviewed the same round columns at the northwest and southwest corners of the building adjacent to the main building entranceway.

The steel columns are hollow and are exposed to the exterior and interior sides of the building. The metal columns will conduct cold air from the exterior to the interior of the building because a thermal break (insulation) is not present to retard the conduction from occurring. During cold weather months, moisture will build up on the face of the column on the interior side of the assembly and may enter into the exterior wall system or into the path of least resistance. This appears to be another source of water infiltration into the exterior wall assembly.

Invasive Inspection:

At the conclusion of non-invasive inspection services being performed there was sufficient water infiltration evidence to suggest to the owner that additional invasive (destructive) testing should be conducted at select sections of the exterior the wall assembly. The purpose of the invasive investigation was to review the original installation methods and techniques to determine if the wall assembly design components were properly installed.

The east wall of the building, just north of the Children's Department exterior exit doorway was selected for further investigative analysis. Kluber Inc. recommended that approximately 200 square feet of exterior wall EIFS and sheathing materials be removed from this corner of the building. The invasive (destructive) testing was performed on Friday, April 10, 2015. Representatives from Kluber Inc. (Chris Hansen) and from Independent Construction Services (Mr. Dan and Norm Eallonardo) were present to review the as-installed conditions. Photographs of the invasive testing can be found in section 3 of this report for your reference.



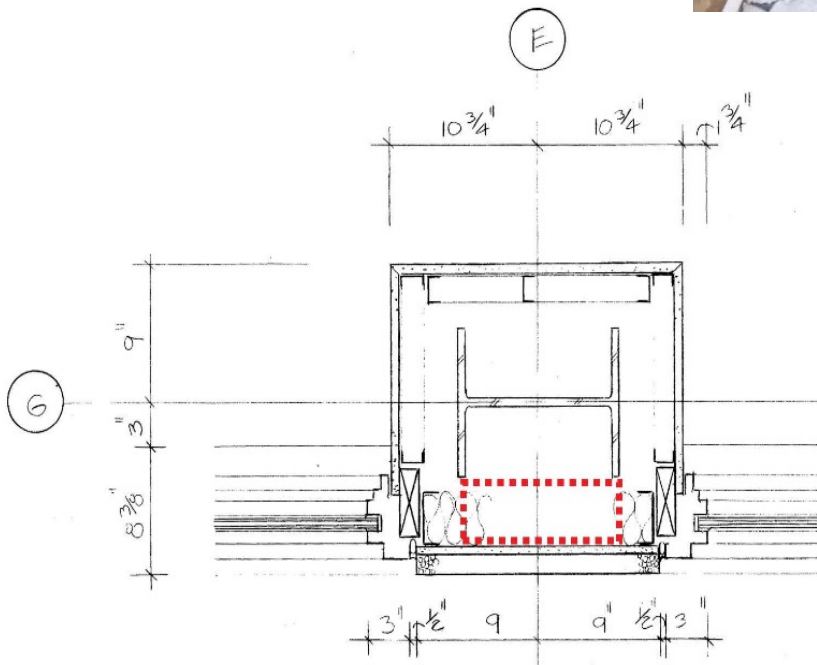
The main areas of concern as a result of invasive inspection are as follows:

- The exterior wall vapor barrier on the interior side of the wall assembly is not occlusive. (Not continuous). These "gaps" allow conditioned air into the exterior wall system.
- A lack of proper insulation thickness in the wall assembly at column and beam locations was evident.
- There was no wall stud cavity (plane of wall) insulation installed at any column or beam locations creating a high opportunity for the dew point to fall inside the wall and condense into water droplets.
- The window sill flashings (where installed at window units) do not incorporate "end dams" that prohibit water from entering the building. This means the water would not be directed to the exterior but would be released to the "jamb" locations of the window sills on the interior side of the building.
- The exterior gypsum sheathing was saturated with moisture on the exterior AND interior faces of the sheathing. This suggests a moisture control issue with the entire wall assembly in addition to exterior rainwater penetration into the wall assembly.
- There was no secondary counterflashing at the curtainwall window heads or sill installations to divert water to the exterior.
- Both window installations do not incorporate thermal breaks which are found in modern day aluminum window system in this area of the country. This causes the window system to conduct cold temperatures into the interior face of the window system and condense into water droplets, affecting the interior surfaces it comes in contact with.

The following are copies of the original construction document details for your review alongside invasive inspection photos. We have noted our areas of concern that will likely require corrective action to occur. Failure to repair these conditions will result in continued deterioration of the exterior wall assembly.



The detail below is for a typical exterior column at the east wall assembly. One column was exposed during invasive inspection. Refer to Photo A3203 in section 3 of this report and as shown at the right. We found no insulation installed at the exterior face of the column in the location shown in red. Only a 5/8" thickness of exterior wall sheathing and 1" thickness of EIFS products covered this location. This means a significant amount of water vapor will be in the wall assembly because the dew point of the existing wall assembly will fall inside the wall cavity.

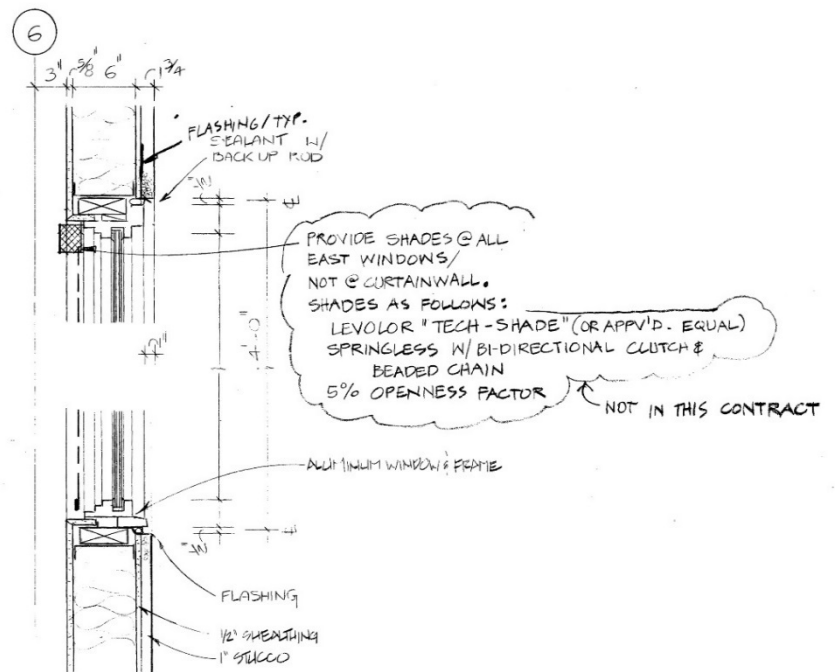


Jamb Detail At Col

1/2" = 1'-0"

The photos below are representative of a typical head and sill flashing detail for the fixed and operable window systems at the east façade of the building. Two items to note: The top photo has no rubber butyl tape installed over the top edge of the metal window head flashing and the bottom photo shows no evidence of end dams being installed at the window sills. Both conditions do not allow water to exit the wall assembly above these flashings as commonly seen today.

To compound the matter, all sill and head flashing were continuously caulked. So if any water did get into the wall system, it could not flow back to the outside of the building; defeating the primary purpose of a sill flashing. Rainwater likely found the path of least resistance through a failed sealant joint and made its way to the head and sill "ends" and got into the exterior wall assembly causing water damage on the inside of the building. You will note that the original construction detail to the right of these photos do not clearly indicate the full design intent to shed water away from this assembly.



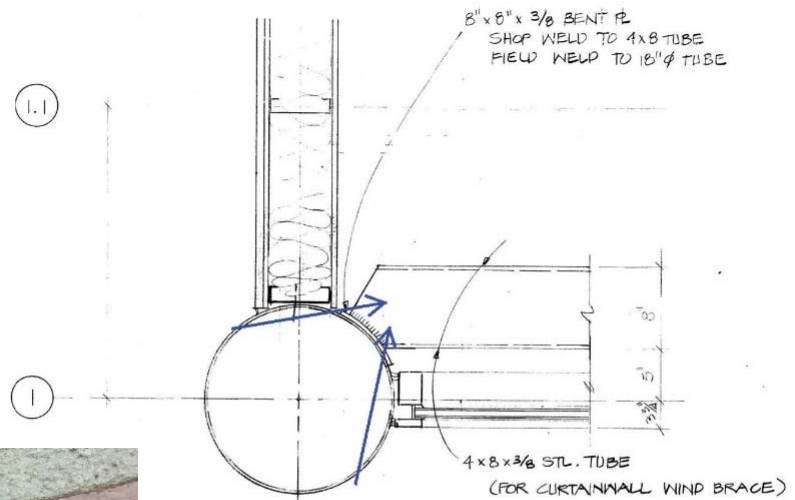
7 Head And Sill Details

1/2" = 1'-0"

The photo below and the associated design detail are the transition point between the round steel column and the EIFS products at the point of transition. You will note the EIFS insulation board has been tapered at the point of joining to the steel column. Because dis-similar materials are present, and very little surface area was provided for a proper sealant joint, failure of the sealant joint is likely.

Significant water infiltration has been noted along these exposed steel columns. This is due to failed sealant joints but also because the steel columns will conduct cold air and condense water vapor on the interior of the building.

There is only one way to stop this condition and that is to wrap the steel columns fully on interior and exterior sides with a cladding product and fully insulate the resultant cavity with insulation materials. Failure to do so will result in continued deterioration of the interior drywall surfaces due to condensation damage.



4 Detail Typ At Corner

$1/2" = 1'-0"$

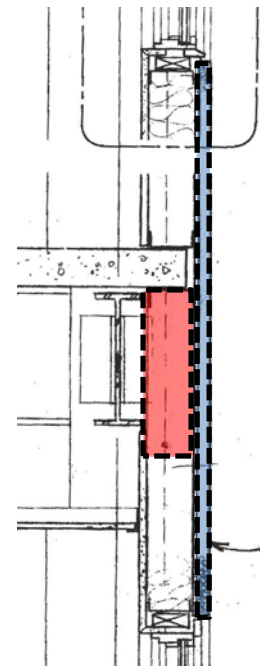
The photo below was taken at the first floor framing installation at the east façade projection near the northeast steel column at the curtainwall windows. The architect of record's original design detail at also shown below right.

You will note that the exterior metal studs that form the wall assembly sit on top of the concrete floor slab and run just in front of the steel floor beams. This detail is very difficult to coordinate wall insulation and vapor retarder placement during construction. At issue is the sequencing of product installation to provide a properly performing wall system.

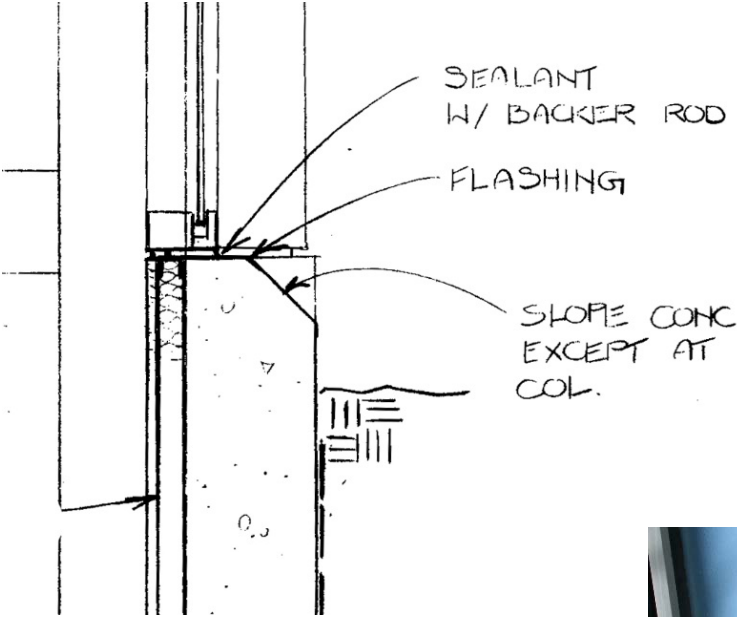
We suspect that the exterior metal studs were placed and then the wall sheathing was installed quickly thereafter to begin to "weather tight" the building during construction. Unfortunately, this means that the wall insulation could not have been placed as designed at the steel beam locations due to limited access points to do so.

No insulation was found to have been placed at steel beam or column locations as shown in red below and in the below photo. For this reason, it is believed that all exterior wall insulation was installed after the exterior envelope was completed and reasonably water tight. With no access to these areas from the interior side, insulation is assumed to have been omitted at all steel column and beam locations of the exterior wall assembly.

At these locations, the building envelope is then limited to the thermal performance of the 1 inch thick EIFS products in conjunction with the 5/8" thick exterior wall sheathing shown in blue below. Limited thermal insulation at these points will cause the wall system to fail because the dew point will fall inside the wall assembly. We suspect this is the major reason why the majority of the exterior wall systems are showing signs of water damage.



The photo and detail below shows the curtainwall sill detail at the east façade of the building. You will note the original detail calls for a sloped concrete foundation wall at the window sill location in combination with under window sill "flashing". Neither of these details were installed. See below photo of the as-installed condition.

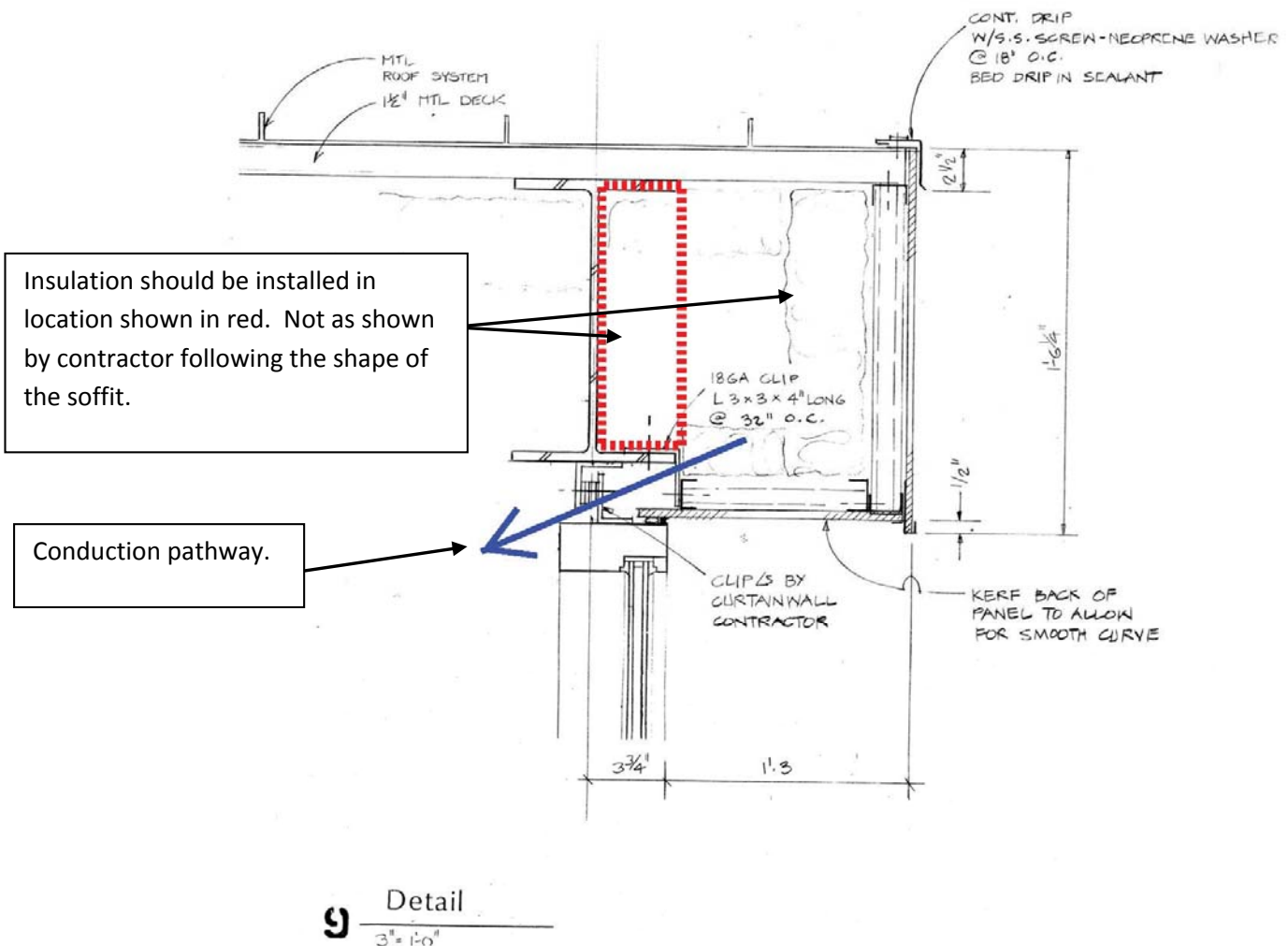


No sloping concrete sill has been installed as shown in detail above.



The design detail below depicts the soffit condition at the barrel vault roof at the east and west facades of the building at the aluminum curtainwall framing system. The placement of the insulation in the soffit location is suspect as drawn in by the general contractor on his as-built drawings. The contractor mark-ups indicate insulation placed following the "shape" of the soffit framing.

In a properly installed system, the insulation would be placed at the face of the beam (as shown in red); in the same plane as the window framing system. We also believe that thermal conduction is occurring at the joint between the window head and the steel framing as shown in the blue arrow. This means some level of condensation may occur on the face of the window framing system that could damage the interior drywall surfaces.



DISCUSSION, OPINIONS AND RECOMMENDATIONS

Our contracted review services are limited to the water damaged exterior wall components that compose the east and west facades of the building. The original assumption of the client was that exterior rainwater was getting past the exterior wall components and into the wall system; damaging the interior drywall and finishes.

A review of the original construction drawings utilized to construct the building indicate a lack of sufficient detail to fully determine the original design intent of the various exterior wall assemblies. Our site observations noted above and our professional experience reinforce our opinion that the exterior wall assembly, as currently installed, will not retard water vapor nor reduce water infiltration unless the entire wall system is replaced with new components.

This means that the exterior EIFS and associated sheathing, all wall insulation (where installed), existing window systems and associated flashings and interior drywall needs to be removed and replaced. As an option to full interior drywall removal and replacement, we have considered partial removal of existing interior drywall only where damaged and filling the metal stud cavity fully with closed cell spray foam insulation. This will reduce the cost and time to repair the exterior wall assembly. Cost savings can be found identified as Alternate 2 on the Project Cost Summary sheet of the cost estimate in section 5 of this report.

To reduce conduction and moisture build-up at the exposed exterior steel columns, it is our recommendation that the columns be wrapped with metal studs, insulated and then clad with EIFS or other acceptable exterior cladding product. This will require the foundation systems below the columns to be extended to accommodate the new column enclosure sizes. The existing concrete foundation wall systems are too narrow to accommodate the encasement of the existing steel columns.

New product recommendations:

Exterior Cladding Products: We are recommending the installation of a new two inch thick EIFS cladding product that is breathable and drainable for the wall surfaces of the building that are currently clad in EIFS barrier systems. The proposed system is shown at the right. EIFS replacement will allow the original architectural design intent of the building to be maintained. This is a system that is not new to the industry and has an excellent track record for performance.

This product has also been selected because it is a cost effective solution to meet the requirements of the International Energy Conservation Code (IECC) for continuous exterior insulation. IECC requires continuous exterior insulation totaling a minimum of R7.0. Two inches of expanded poly styrene insulation in the proposed EIFS solution at the right totals R7.5 and will meet this requirement.

Please note the component layers indicated at the right. Item 2 includes a waterproof air and moisture barrier and component 3 are vertical adhesive ribbons that create a "drainage plane" to allow any water that infiltrates the exterior barrier system a way for moisture to "weep" out of the building. This system requires little maintenance except for sealant joint replacement every 8-10 years.

StoTherm NExT Exterior Insulation and Finish System (EIFS) with Drainage



1)	Structural wall assembly
2)	StoGuard waterproof air barrier
3)	Vertical adhesive ribbons
4)	Sto EPS insulation board
5)	Sto reinforcing mesh
6)	Sto basecoat embedded in mesh
7)	Sto primer (optional)
8)	Sto decorative and protective finish



Wall Sheathing: We recommend that the exterior wall sheathing be replaced with 5/8" thick fiberglass reinforced gypsum board sheathing manufactured by Georgia-Pacific; product Dens Glass Sheathing. The photo at the right shows this product.

This product is a glass fiber reinforced gypsum sheathing material that has superior moisture and mold resistance. This is the recommended product to be installed behind EIFS systems that require a rigid substrate.

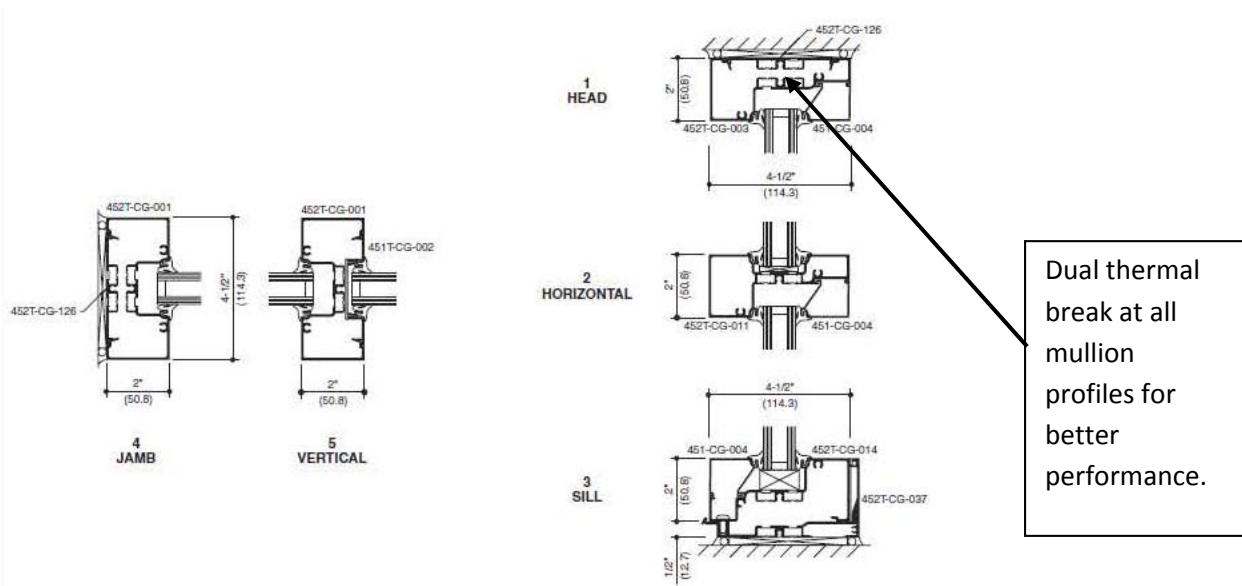
This product can be exposed to weather for a period of 12 months without delamination. This is very beneficial when considering the full duration of installation of the EIFS systems.

You will note that the joints between the panels are to be sealed per manufacturers installation instructions prior to the installation of the new EIFS cladding products.



Curtainwall and Fixed Window Systems: The existing window systems are not thermally broken and do not weep moisture to the exterior of the building as stated above. For this reason, we recommend a high performance window replacement with 1 inch thick insulated and tempered safety glazing.

There are several manufacturers that meet this requirement. For the purposes of this report and cost estimate, the Kawneer 451UT series products have been selected to replace the smaller, "fixed" and "operable" window systems. These windows are primarily located in the east elevation of the building, at the clerestory window locations and at the north and south masonry openings. Due to the limited nature of this report, only the windows in the east elevation have been calculated for replacement at this time.



Although the current windows are a combination of fixed and operable units, we highly recommend that the replacement units be entirely composed of fixed, non-operable sashes to reduce the likelihood of water infiltration at the operable window locations. Since the building is fully heated and cooled, non-operable units should be acceptable. Non-operable units also reduce the cost of replacement.

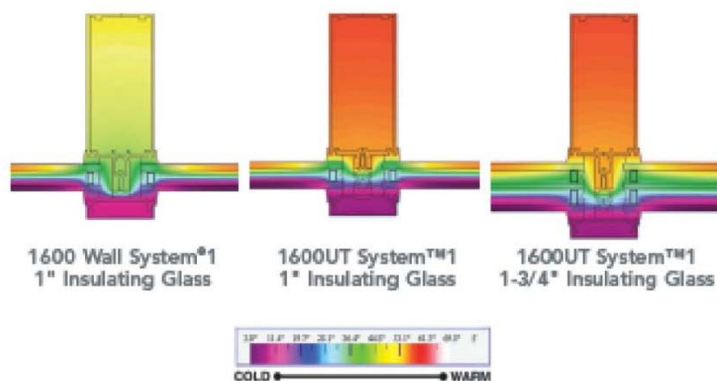
For the replacement curtainwall system we propose a Kawneer 1600UT product as the basis for the cost estimate. This is a high performance curtainwall system that composes a thermal break. This system is being proposed to be installed at the east and west facades at the large radial barrel vault locations and at other adjacent curtain wall windows abutting to the blue colored, round steel columns.

Both window systems would sit on raised and drainable sill flashings that weep water to the exterior of the building. The sill will be specified to have proper end dams installed to prevent water from wicking into the exterior wall assembly. The sills will be extended over the top of the existing flat foundation walls to stop the likelihood of water standing next to the window sills.

The diagram at the right show various thermal simulations for the proposed 1600UT curtainwall product. The proposed system is in the center of the diagram utilizing 1" total thickness insulating glass. The interior side of the mullion is represented in yellow or orange. The goal is to have the interior side of the mullion as warm as possible to reduce conduction through the window system. As you can see the two high performance products on the right perform much better at controlling thermal variance than the standard 1600 wall system on the left.



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



Insulation Products: We are recommending that the existing metal stud wall cavity space utilize spray foam technologies in lieu of batt insulation (as originally designed) in an effort to seal all nooks and crannies with the complexity of the exterior wall system and to provide the best thermal performance of the wall assembly. The existing exterior wall studs are 6 inches deep.

The base cost estimate includes spraying the backside of the new exterior wall sheathing (Dens Glass noted above) with 2.0 inches of closed cell spray foam insulation. This option assumes full interior drywall removal to allow for installation from the interior side of the building. The closed cell spray foam insulation incorporates a vapor barrier seal when properly installed which eliminates the need for an interior visqueen (plastic) vapor barrier similar to what was installed with the original installation behind the interior drywall surface. 2.0 inches of closed cell spray foam insulation provides an R-value of 12.0.

The International Energy Conservation Code (IECC) requires an exterior wall insulation system with a minimum R-value of 13 when installed in a metal stud framed assembly similar to the library project. Using a minimum of 2.0 inches of closed cell spray foam on the backside of the exterior sheathing will ensure that the dew point in the wall assembly will fall in the center of the closed cell spray foam and will not have the ability to condense in the wall system.

We then recommend spraying 2.0 inches of open cell spray foam insulation over the top of the closed cell spray foam to increase the exterior wall performance rating and to exceed the minimum R-value required by the IECC. 2.0 inches of open cell spray foam insulation totals an R-value of 7.4. So the total combined closed cell and open cell spray foam R-value is $12.0 + 7.4 = 19.4R$.

The primary reason to choose both open cell and closed cell spray foams in combination with each other are driven by moisture control as well as cost. Closed cell spray foam provides a water vapor barrier which is better able to deflect and reject bulk water and has a higher R-value per inch of material as indicated at the table to the right. Closed cell spray foam installation is more costly than open cell insulation due to its chemical additives. Typical cost for closed cell spray foam totals \$1.15/SF per inch of thickness.

	Open-Cell Spray Foam	Closed-Cell Spray Foam
Spray In Insulation and Air Barrier Material	✓	✓
Vapor Barrier		✓
Vapor Permeability	✓	✓
Structural Reinforcement		✓
Able to deflect water and reject bulk water		✓
Able to accommodate seasonal shifting	✓	✓
Cannot sustain mold	✓	✓
Typical R-Value	3.7 per inch	6 per inch
Blowing Agent	Water	Chemical, Water
Suitability	Interior	Interior, Exterior
Sound Dampening	✓	
Cost	\$	\$\$\$



Open cell spray foam is much less expensive than closed cell spray foam however it has a lower R-value per inch than closed cell. Typical cost for open cell spray foam totals \$0.55/SF per inch of thickness. Using a combination of closed cell and open cell makes performance and financial sense as we have outlined.

As an alternative to a combination of closed cell and open cell spray foam installation, we are proposing to fill the entire 6 inch stud cavity with closed cell spray foam insulation and install it from the exterior side of the building. This will allow for a significant portion of the interior drywall to remain, cause less disruption to the building operation and limit interior repair work. Utilizing this method of construction will require creative sequencing of new material installation. The installation of the spray foam will need to be carefully coordinated with the removal of portions of the interior drywall that needs to be replaced as the existing interior drywall will act as a "form" to allow the spray foam insulation to be installed from the exterior. Please review Alternate 2 cost savings noted on the Project Cost Summary sheet in Section 5 of this report for cost credit information.

Interior Gypsum Board: We are recommending that the interior gypsum board drywall surfaces at the exterior wall cavities be replaced with mold-resistant paper-faced products. These products are now in mainstream use and their cost is competitive, although slightly more expensive than traditional paper faced drywall products.

Typical products manufactured by Georgia-Pacific include ToughRock Mold Guard (as shown at right) and from National Gypsum Company; Gold Bond XP Gypsum Board. Either of these products are recommended to perform well in the proposed exterior wall system.



COST INFORMATION

The overall cost to correct the water infiltration and condensation conditions at the east and west facades for the building can be found in Section 5 of this report for your review along with cost reduction options for your consideration.

The costs presented are for the EIFS wall assembly design parameters noted above with a cost reduction option to clad the east elevation with fiber cement siding products and a cost reduction for a full cavity closed cell spray foam option with minimal interior drywall removal.

Kluber reserves the right to make modifications to the preliminary estimate during the implementation phase of the work if the means and methods of construction change from what is presented herein.

DISCLAIMERS AND QUALIFICATIONS

This report does not express or imply any warranty of the building but only addresses the conditions for the portion that was accessible and observed at the time of our site survey. The information contained in this report represents our professional opinion based on the observed conditions. The opinions of this report are limited to the observed conditions only as viewed from the ground or as viewed during invasive testing.

No physical testing or survey work was conducted beyond the east or west wall surfaces as contracted. It should be noted that Kluber Inc. believes that other building envelope areas need to have invasive testing performed to determine the ability of the building envelope to shed water away from the building.



Casual observation of other areas of the building do indicate the presence of water in exterior wall surfaces. This is predominately at the exterior wall assemblies at the high roof areas near the clerestory windows of the vaulted ceiling. The La Grange Public Library Board may wish to have those areas inspected prior to implementing the east and west façade repairs.

Please feel free to call me if you have any questions regarding the above information.

Sincerely,



Christopher Hansen, AIA, NCARB
Vice President
Kluber Architects + Engineers

Encl.





INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A5540

Description:

Interior ceiling cavity at the First floor stacks; East end. Note what appears to be some condensation marks on the upper flange of the steel floor beam. This could be because of the dew point falling inside the wall cavity.

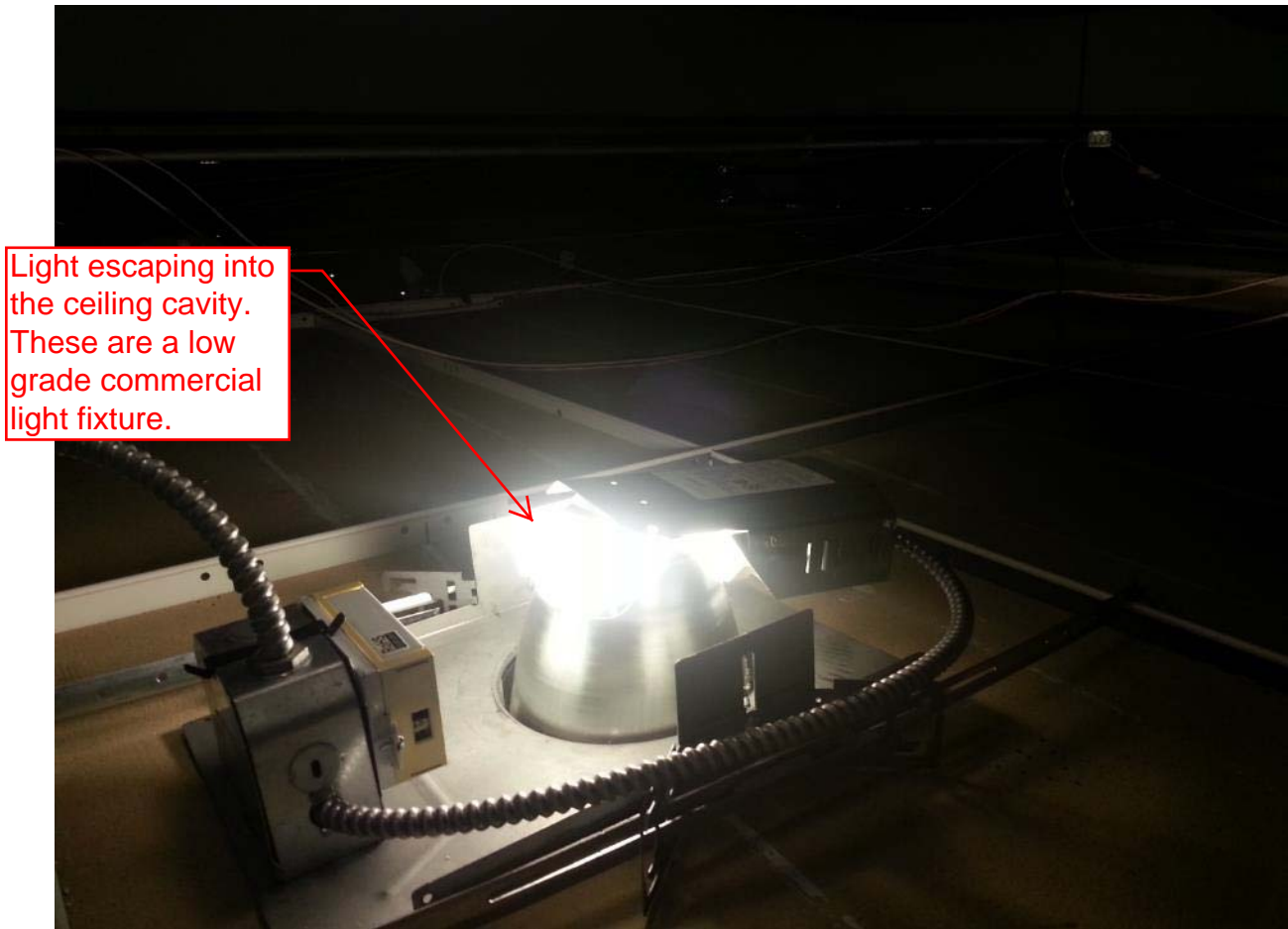


INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A5730

Description:
First floor at the NE round column. Above ceiling investigation being performed.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A0732

Description:

Existing can light fixtures above the accessible ceiling cavity. Note the open design of the can light trim “illuminates” the ceiling cavity and adds additional heat to the ceiling cavity. In the future, the Owner may wish to replace these inefficient can lights with LED type. Note that additional heat in the ceiling cavity could be contributing to the water damage at the exterior walls.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A1757

Description:

Front lobby entrance curtainwall sill at the West Façade. Note the calcium deposits at the floor tile line likely from the placement of de-icing salt at the exterior driveways. An inspection of the exterior windows at this location indicated that there is no sub-sill window flashing installed or any exterior caulk to prohibit water infiltration.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A1821

Description:

This is a photo of the west façade curtainwall window framing system at the sill line. Three conditions are evident. There is no sub-sill flashing installed. There is no caulk joint installed and the concrete ledge that the window sits on is nearly level. This means water from a driving rain can find its way into the building. Previous photo A1757 seems to indicate the presence of water infiltration. Note the rock salt on the top of the curb. As this salt dissolves, it finds its way into the building at the open joint in the window system.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A1843

Description:

Open joint is west façade curtainwall framing member. Note the debris that has gotten into the joint from the exterior and the lack of a caulk joint. Water is entering the building here.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A5701

Description:

This is the sub-sill flashing installation immediately to the east of the Children's Department, lower level exist doorway to the NE building exterior. Note that the sealant joint is not continuous and an open joint is visible where the aluminum window framing horizontal meets the vertical member allowing water infiltration into the building. We also note that the concrete ledge to the exterior side of the window does not slope away from the window but is nearly level, allowing for water to sit at the caulk joint.



False louver.
Water evidenced at
louvers on inside of
the building.

Active louver.

Sealant needs to
be replaced.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9636

Description:

Southwest upper roof location near the louvers. Note that the furthest louver to the west is a "false" louver. On the inside of the building, we noted some water infiltration at this false louver location which may suggest that the installation may not be fully weather tight.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9638

Description:

We noted that the clerestory window heads have vented louvers in them. The venting of the underside of the roof decking is common however this condition relies heavily on the proper placement of the inboard insulation materials and a fully occlusive vapor barrier to be installed. A review of the drywall vault from the inside of the building suggests that moisture is present in the roof cavity and may require further investigative testing to determine the installation conditions. This is beyond the scope of this report.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9641

Description:

Under window vents at the upper clerestory windows have all been caulked over. We believe the original intent was for this vent to be active venting for the lower shingle roof area however the Owner's existing as-built drawings (detail 1/A5-6) seems to indicate that there is no clear pathway for air flow due to insulation placement. This condition should be further investigated by removing a portion of the interior drywall to determine the air flow pathway. This is beyond the scope of work for this project.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9644

Description:

View looking from the SW mechanical roof platform to the SW corner of the building.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9645

Description:

View from the SW mechanical roof area looking to the east. We noted a slight undulation in the roof decking near the east end of the building.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9654

Description:

Some cracked open joints are noted at the upper clerestory window, inside corner EIFS locations. Window sealant joints were also observed to have been cracked at several upper window locations.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9655

Description:

South wall upper clerestory window counterflashing below a window at the sealed in roof vent. Note that some of the EIFS in this location has come loose and did not appear to have been properly back-wrapped with reinforcing mesh.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9663

Description:

NW mechanical roof platform looking towards the NW louvers. Note the western most wall louver is a false louver that is inactive. Interior moisture near this locations suggests that the wall louver may have been improperly installed.

Failing sealant
joints



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9665

Description:

Downspout from upper gutter over main entrance doorway appears in good condition for a building of this age.



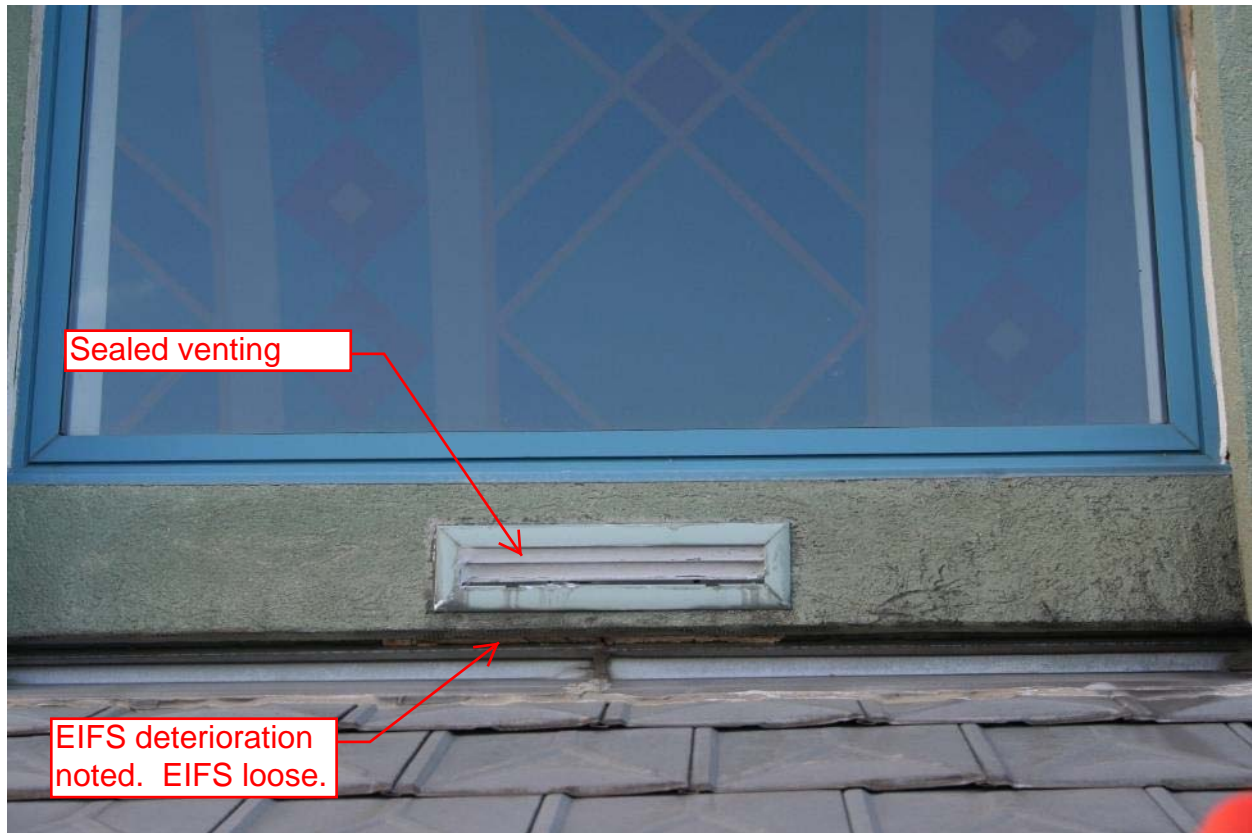
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9670

Description:

Perimeter sealant joints at the louvers appears dried and cracked and should be replaced. An open joint at the sill of one of the louvers was visible.



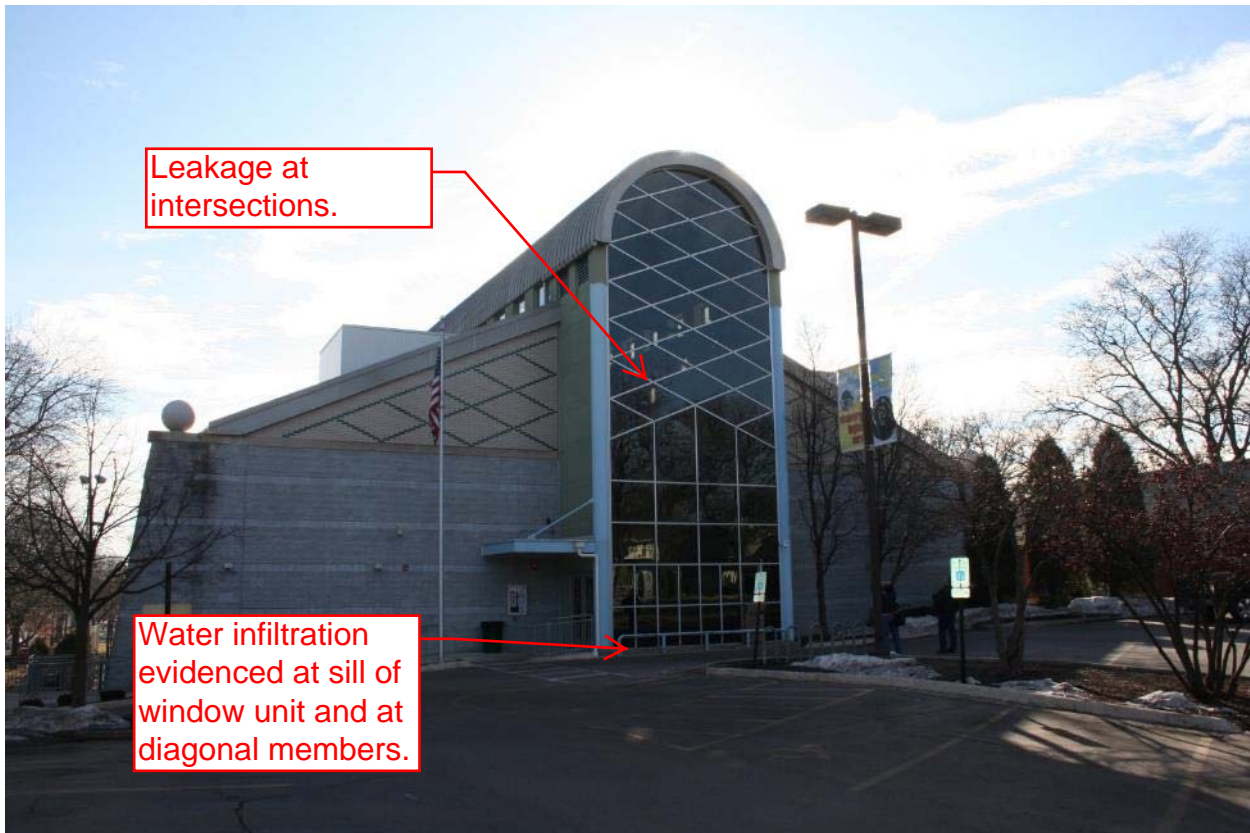
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9672

Description:

North clerestory window wall venting louver is caulked in similar to all south side louvers. Note the EIFS under the louver appears to have deteriorated as evidenced by the white insulation board that is visible.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9676

Description:

Overall west elevation of the building. The glass curtain wall system is not believed to be thermally broken nor drainable. Water infiltration was evidenced at the sill of the curtain wall system on the inside of the lobby.



Moisture infiltration
at second floor on
interior side here.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9681

Description:

View of main entrance to the building at the NW corner. Water infiltration was evidenced on the inside of the building at the second floor areas and in the main entrance lobby near the floor tile.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9684

Description:

Damage to the exterior eastern door jamb EIFS adjacent to the main entrance doorway at the NW corner of the building.



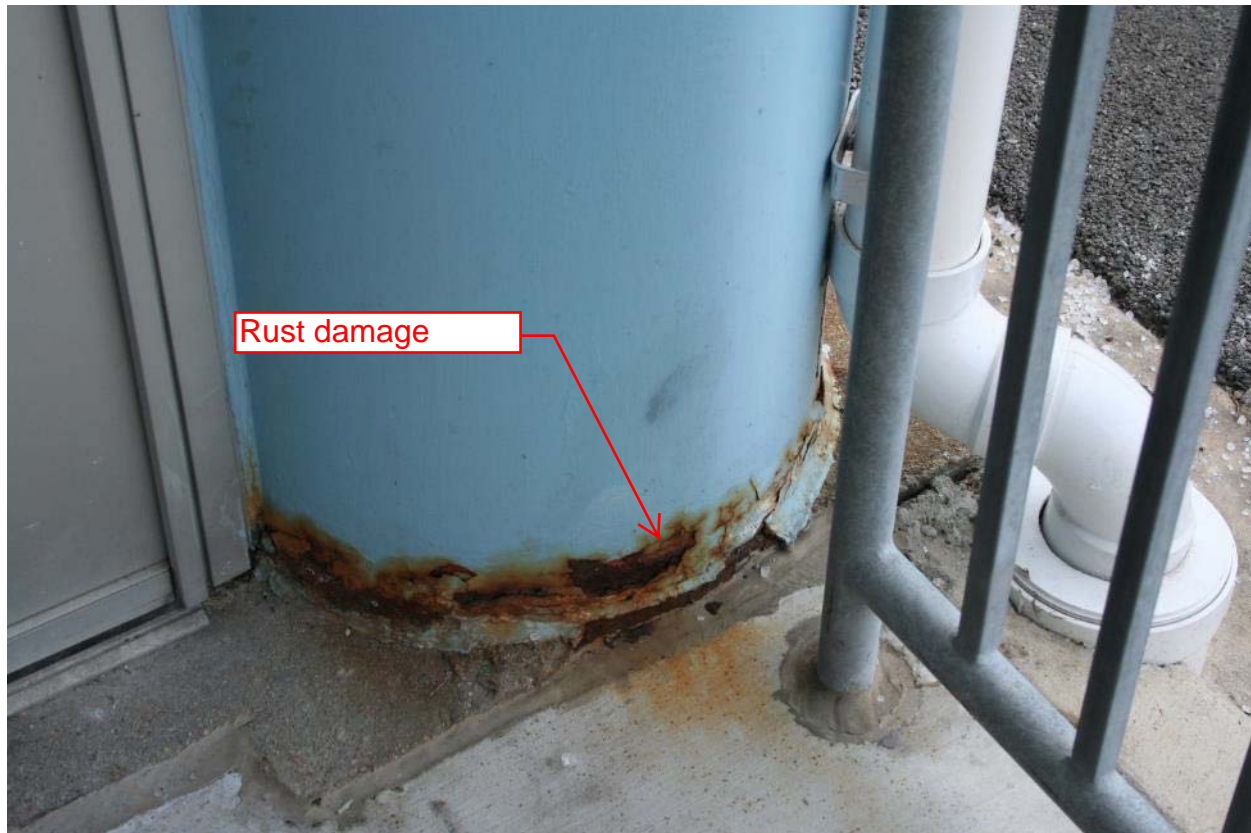
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9685

Description:

EIFS damage has penetrated the outboard fiberglass mesh. The exterior mesh and synthetic stucco coating must be removed back 2 inches from the damaged locations and patched according to the EIFS manufacturer's recommendations.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9688

Description:

The base of the exposed steel column near the main entrance doorway. The deterioration of the column baseplate can be contributed to the de-icing salts being used in the winter. Further deterioration is most likely due to the columns conducting from outside to inside; creating a "sweating" effect in the winter months.



INSPECTION PHOTO

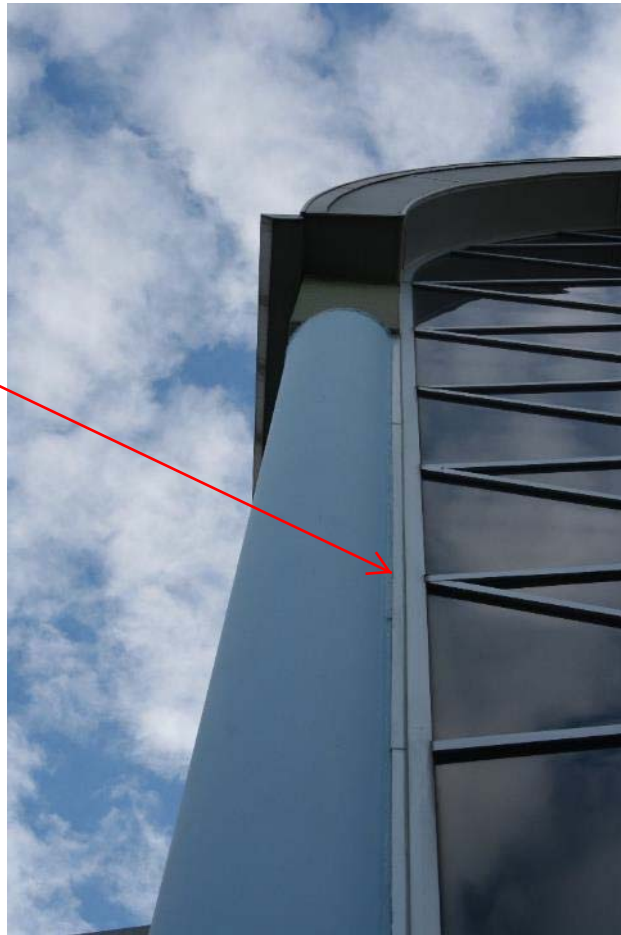
Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9689

Description:

Another view of the column baseplate deterioration. This column should have all rust removed, a rust inhibiting coating applied and then properly sealed with a high performance coating.

Aluminum closure
plate here. Not on
original
construction
documents.



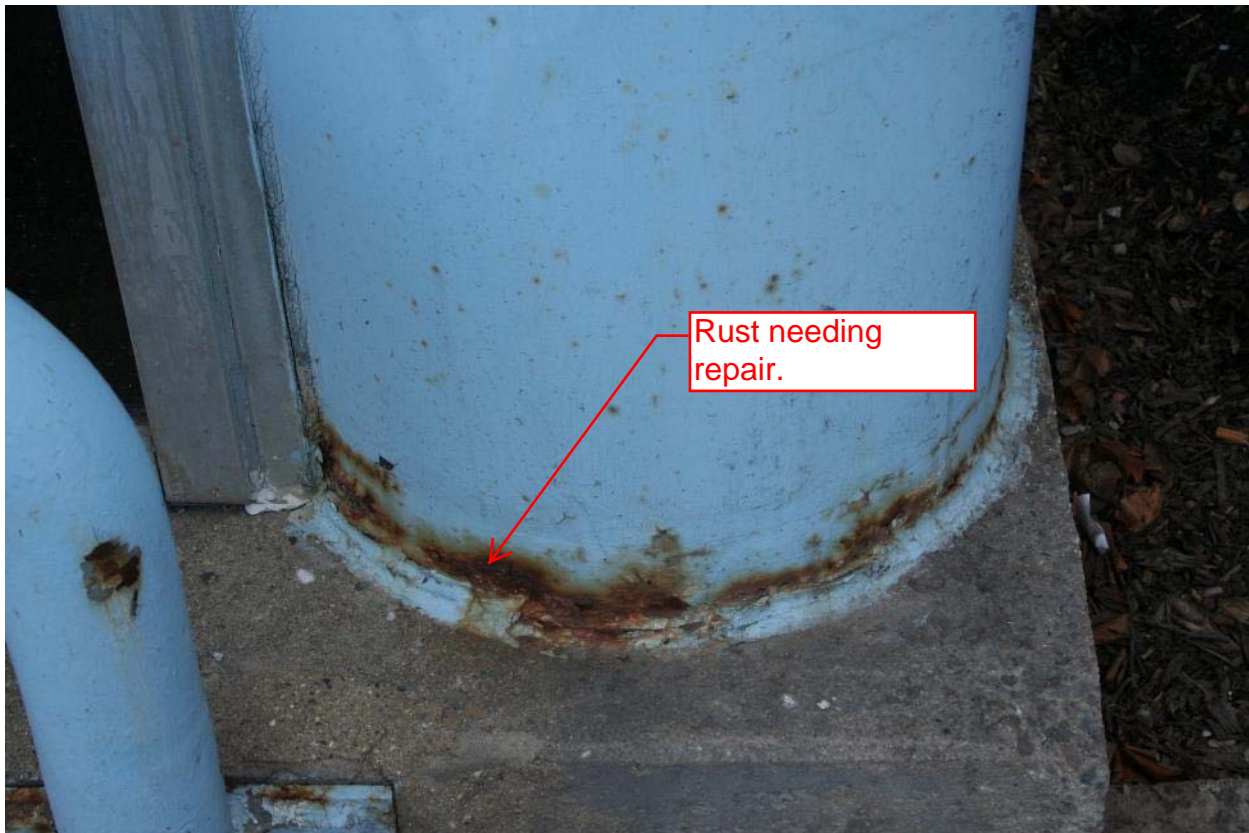
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9690

Description:

Exposed round steel column at the NW corner of the building. Note the metal plate between the column and the aluminum curtainwall system. This plate is not indicated on the original construction documents.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9692

Description:

This is the SW entrance column at the base. The same concerns exist at this location as they do at the NW column location.



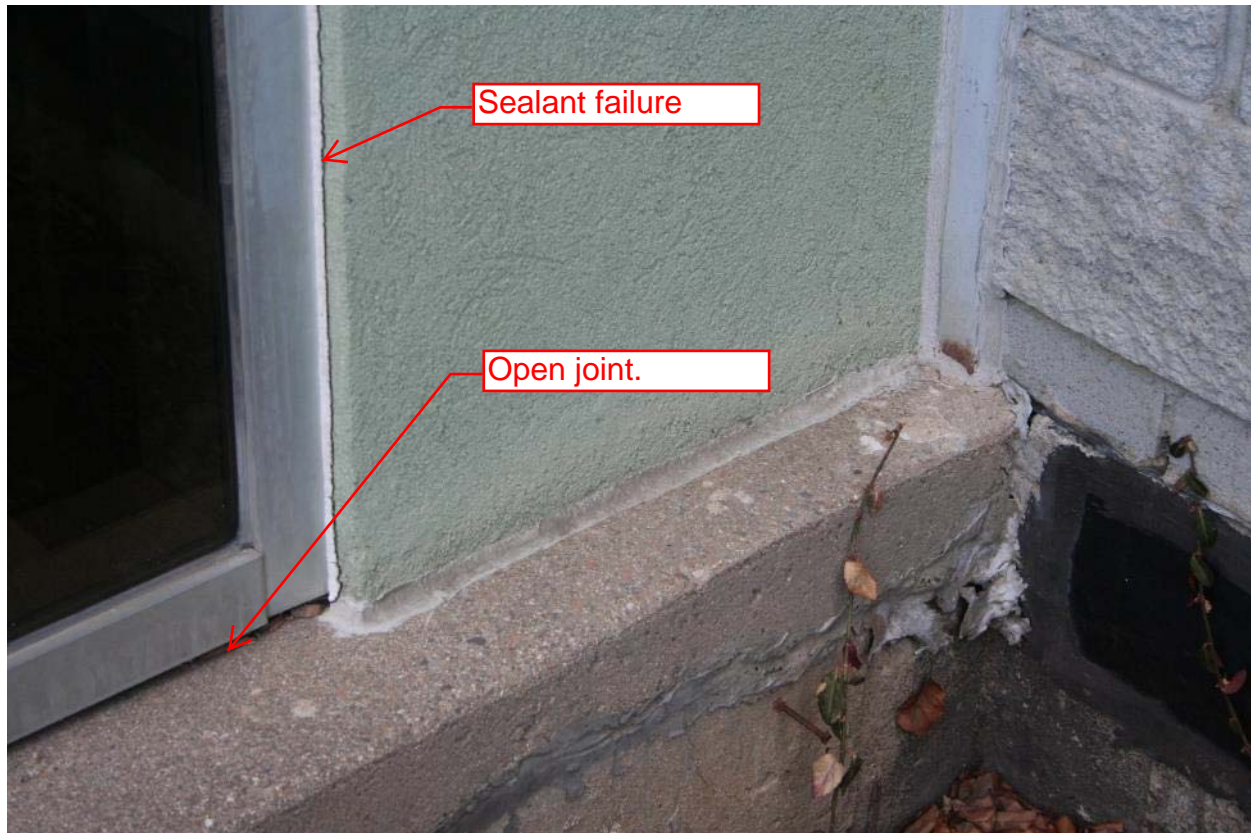
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9693

Description:

This is the south face of the SW column. Note deterioration is significantly reduced away from the asphalt parking lot and away from de-icing salts. Also note the sealant failure at the steel column to the clerestory window jamb.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9694

Description:

EIFS to curtain wall window framing at the SW corner of the building; just south of the main entrance lobby. Note the sealant failure at the curtain wall window framing system and the open joint at the window base.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9695

Description:

SW entrance curtain wall framing at the window head. Note the failing sealant that is beginning to crack at the joint between dis-similar materials at the EIFS to Blue Steel column location.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9697

Description:

SW entrance column looking up toward the vaulted roof. The left most louver is a "false" louver. All louvers were found to have failed sealant joints at the perimeter and some moisture penetration was noted on the interior surface of the drywall.



INSPECTION PHOTO

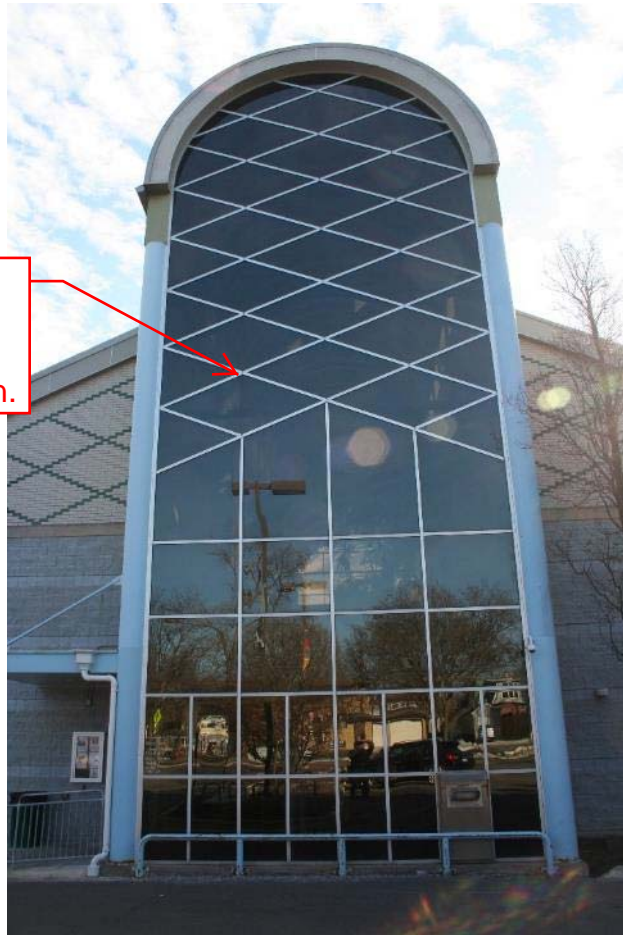
Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9700

Description:

NW round steel column (in blue) meeting to green EIFS. This butt joint sealant is beginning to fail along the height of the steel column.

Open joints in window system. This is a weak point in the design.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9701

Description:

A view of the west façade with custom detailed curtain wall windows. The diagonal window profile creates drainage pathways to field cut window frame joints. Since it is believed that this window system was not designed to be drainable as modern day systems are, rainwater will run down the window snap caps and gather at intersecting mullions. We suspect that the rubber snap cap weather-stripping is not placed tight to the intersecting joints and may be a source of water infiltration through the window system.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9702

Description:

Security camera system mount near the building entranceway. This device will require temporary removal and replacement when the window systems are replaced or if the exterior columns are wrapped with an insulated product.



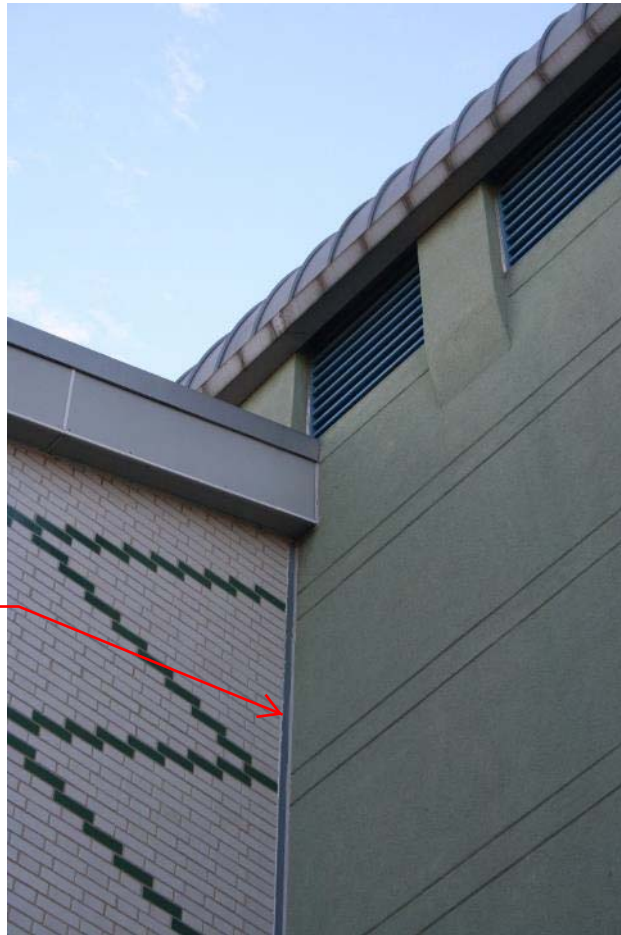
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9704

Description:
Column to beam joint at the NE entrance column fully welded.

Sealant joint in
reasonable
condition



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9708

Description:

NW inside corner of the building above the entrance canopy. The sealant joint between the EIFS and the brick masonry appears to be in good condition.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9712

Description:

East façade looking towards the NE corner of the building. Excessive moisture was found in the western wall system. Invasive testing to determine the source of the moisture was requested by Kluber to be performed.

Conventional window framing system with horizontal and vertical mullions.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9714

Description:
East Façade curtain wall glazing system with conventional framing design.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9716

Description:

East façade looking towards the SE corner of the building at the EIFS cladding and window systems.



Moisture collection point. Water appears to drain towards jamb ends. It appears no end dams were installed for the window sills which may cause water to infiltrate the exterior wall system.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9722

Description:

A view of the east façade operable window system with the operable window pane open. This photo shows moisture collecting in the window sill track. It appears the water passing into the operable window system will run to the “edges” of the window jambs. Once at the jambs, it appears to enter the building because no window sill “end dams” were installed that would redirect this water to the exterior of the building.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9723

Description:

NE Exit doorway from the Children's Department to the exterior showing signs of mold and mildew stains. Note that the doorway sill appears to have been shimmed up a significant amount (Approx 1.5 inches) at the doorway and filled with a concrete patching compound. The concrete joint under this doorway is beginning to crack and fail. For an exit doorway, this high sill also poses a tripping hazard that should be corrected.



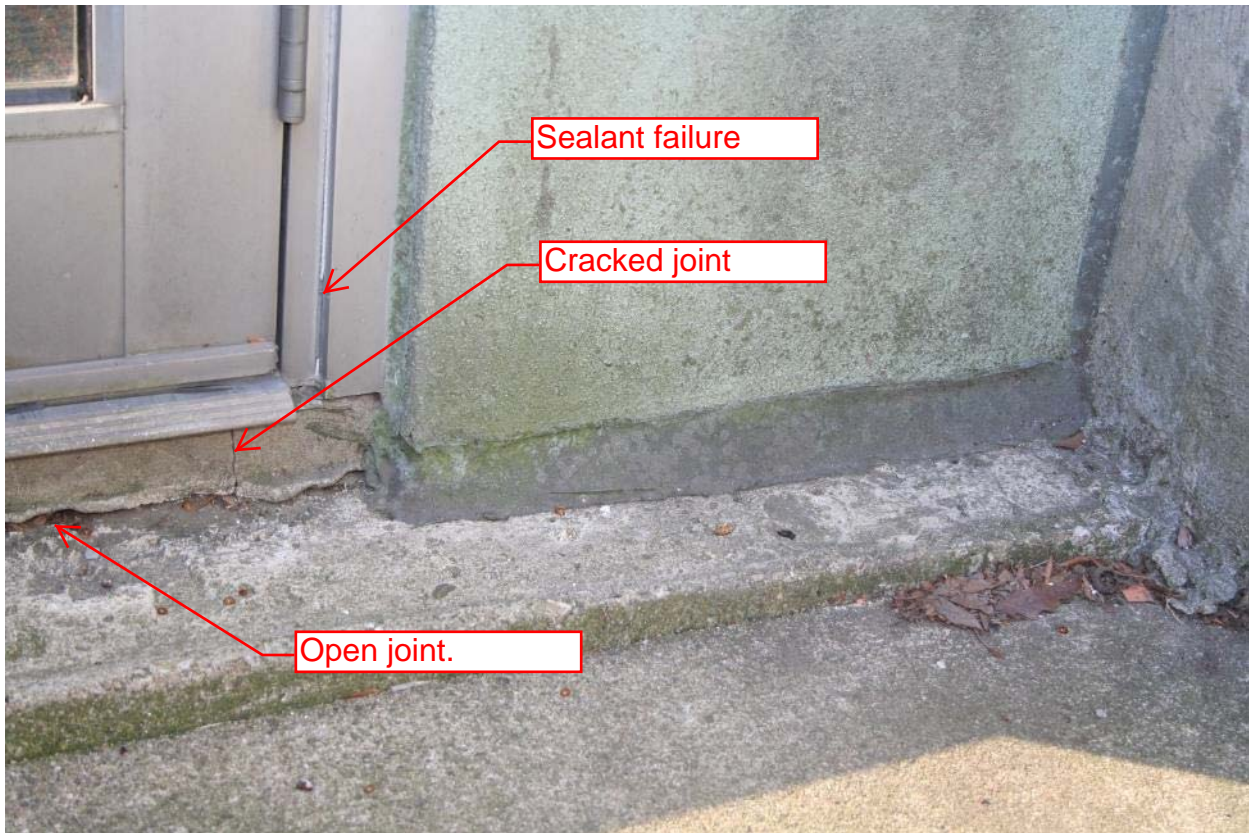
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9724

Description:

A closer view of the east jamb of the Children's Department exterior exit doorway. Note the open sealant joints and excessively high sill height.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9725

Description:
A view of the west jamb of the Children's Department exit doorway.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9728

Description:

East wall operable window sill from the underside that sits on top of the east foundation wall. Note the movement of the exterior EIFS above the foundation wall at the location of the crack. Very little rain drip has been installed at the bottom of the EIFS panel. For this reason, water sheeting down the wall face can enter into the building wall system at this open joint and get into the lower level.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9729

Description:

Another view of the window sitting on top of the east foundation wall and the failed sealant joint below the EIFS. No rain drip was installed at this point of the EIFS system.



Sealant joint in good condition here.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9730

Description:

East wall operable window system at the NE corner of the building near the masonry to window jamb location. The sealant joint in this location appears to be in acceptable condition.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9731

Description:

Masonry to operable window jamb detail. Sealant joint this location appears to be in good condition.



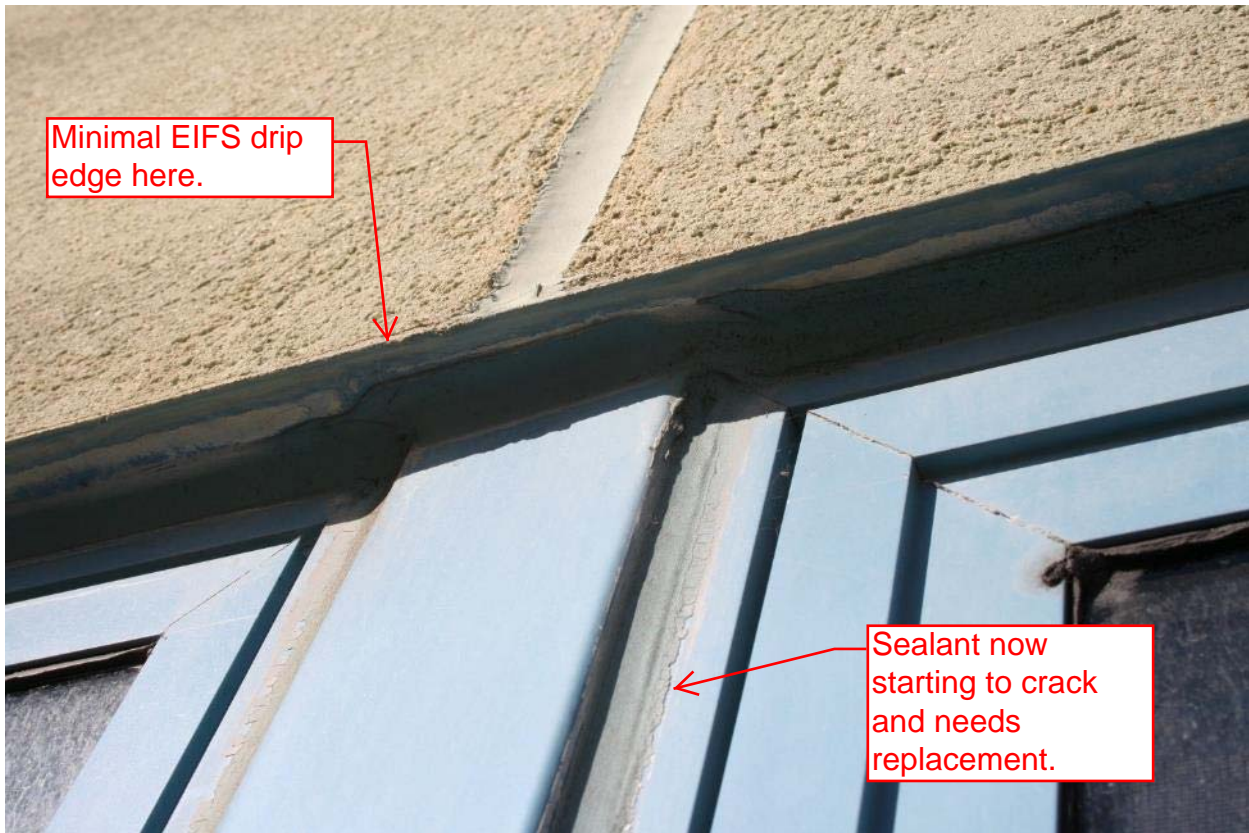
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9732

Description:

Masonry to operable window at head of NE corner of the building. Sealant joint this location appears to be in good condition.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9733

Description:

Operable window head detail at field mulled units. Drip edge appears to have been installed and top of aluminum window frame appears to have been recently re-sealed. Note vertical window frame sealant is now showing signs of cracking and should be replaced within the next two years.



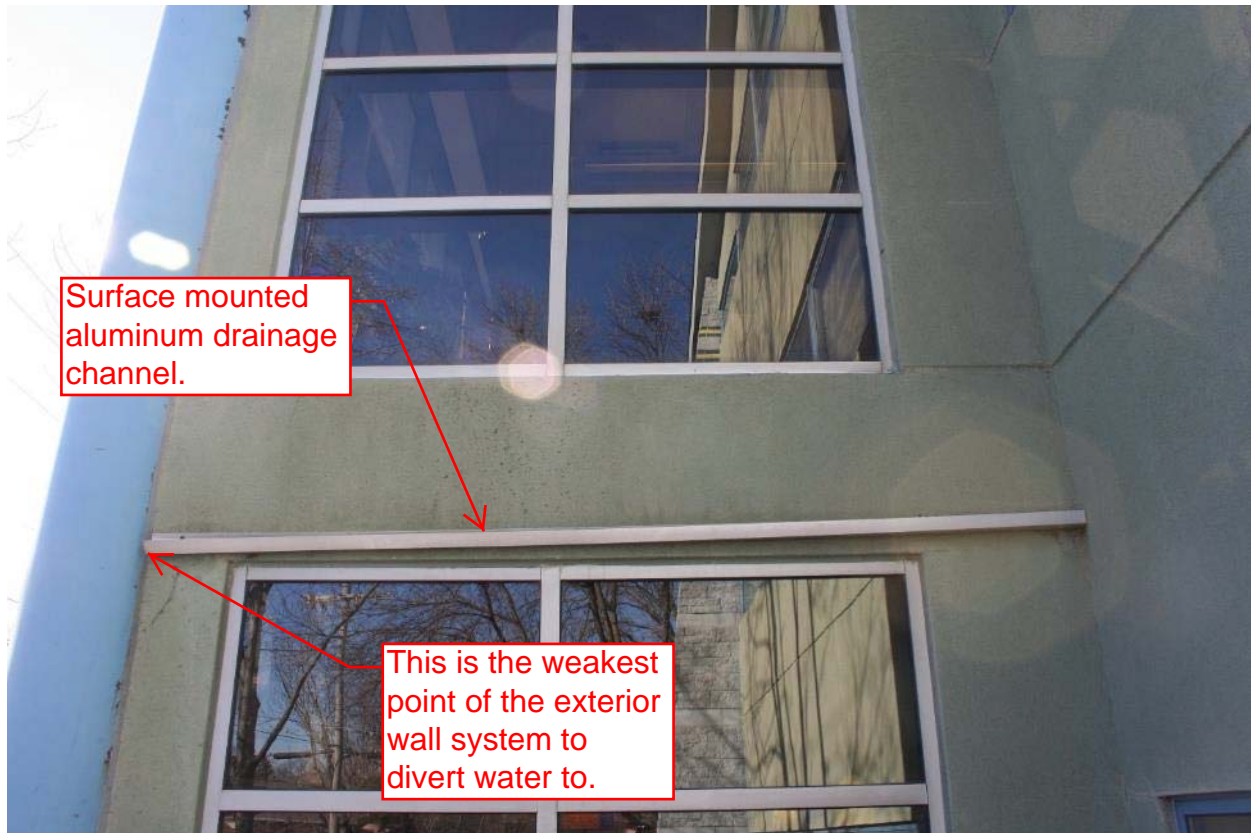
NE corner sealant joint appears to be in good condition.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9736

Description:
NE corner of building EIFS / Windows to masonry condition for reference.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9740

Description:

NE exit doorway head of curtainwall system. Note the surface applied drainage channel (in silver that is sloping towards the blue steel column). This channel is believed to have been installed post construction to divert water sheeting down wall surface from above, away from the building. This channel actually promotes water runoff towards the weakest point the exterior façade. That is the joint between the round steel column (in blue) and the EIFS panel system.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9741

Description:
Drainage track view from below.

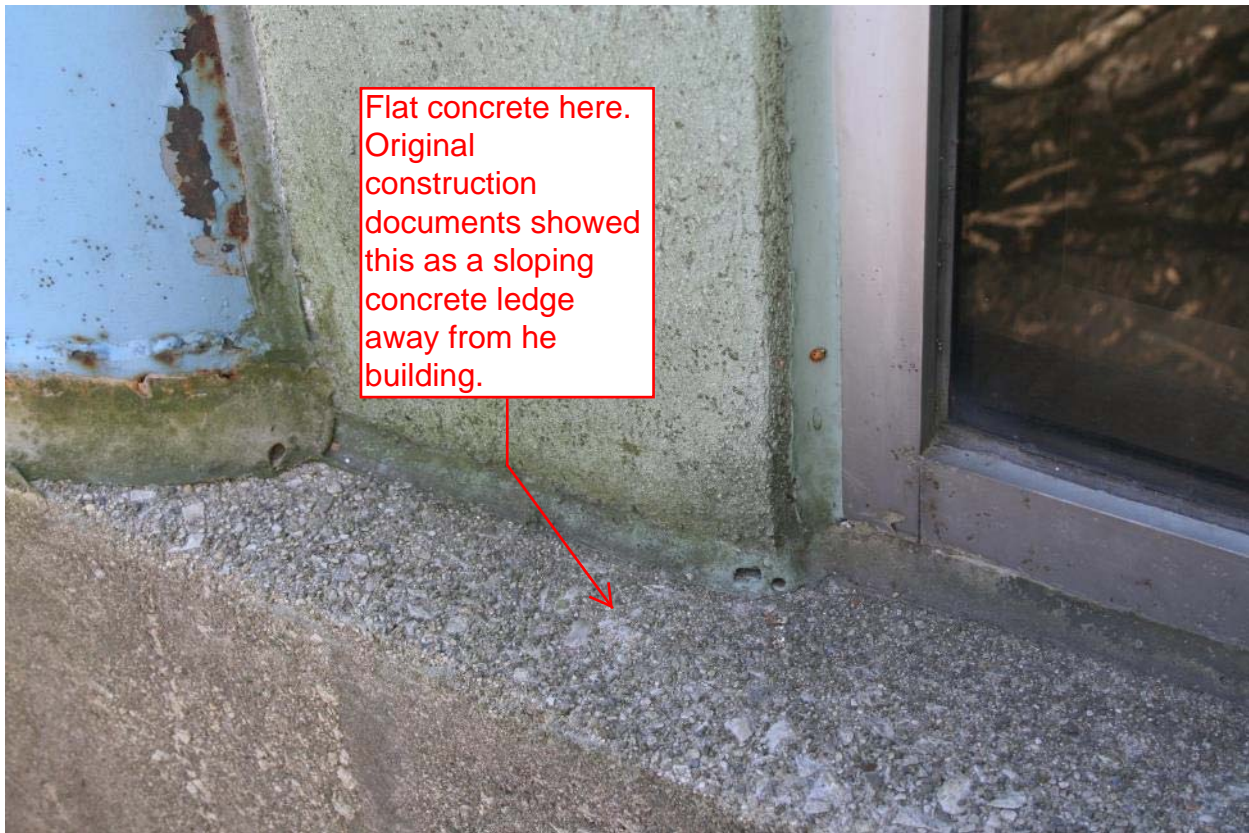


INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9742

Description:
EIFS is beginning to crack at the field joint location.



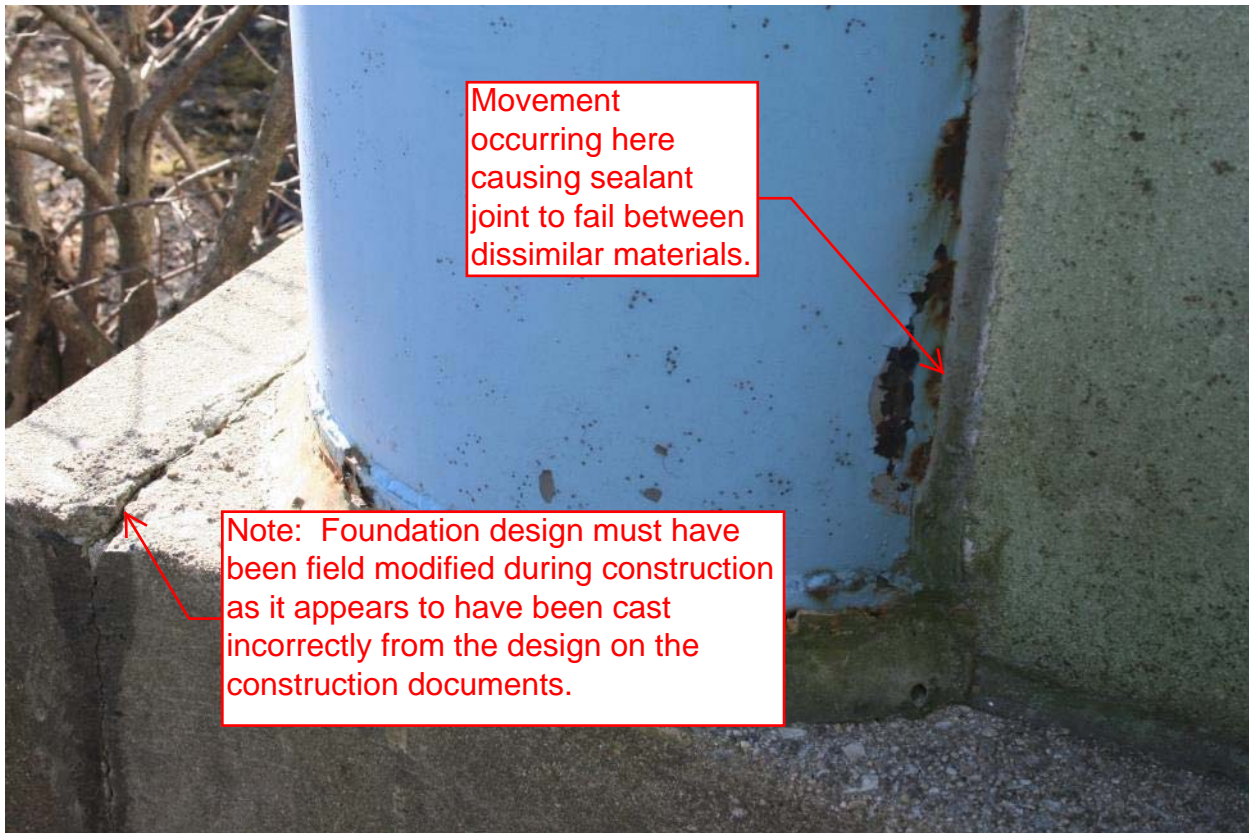
INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9743

Description:

East façade EIFS to the top of the foundation wall. The top of the foundation wall is nearly flat causing water to sit on the concrete ledge adjacent to the sealant joints.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9744

Description:

NE Steel column base plate detail. Some rust is now beginning to develop but is not nearly as significant as the deterioration of the steel base plates at the main entrance columns.



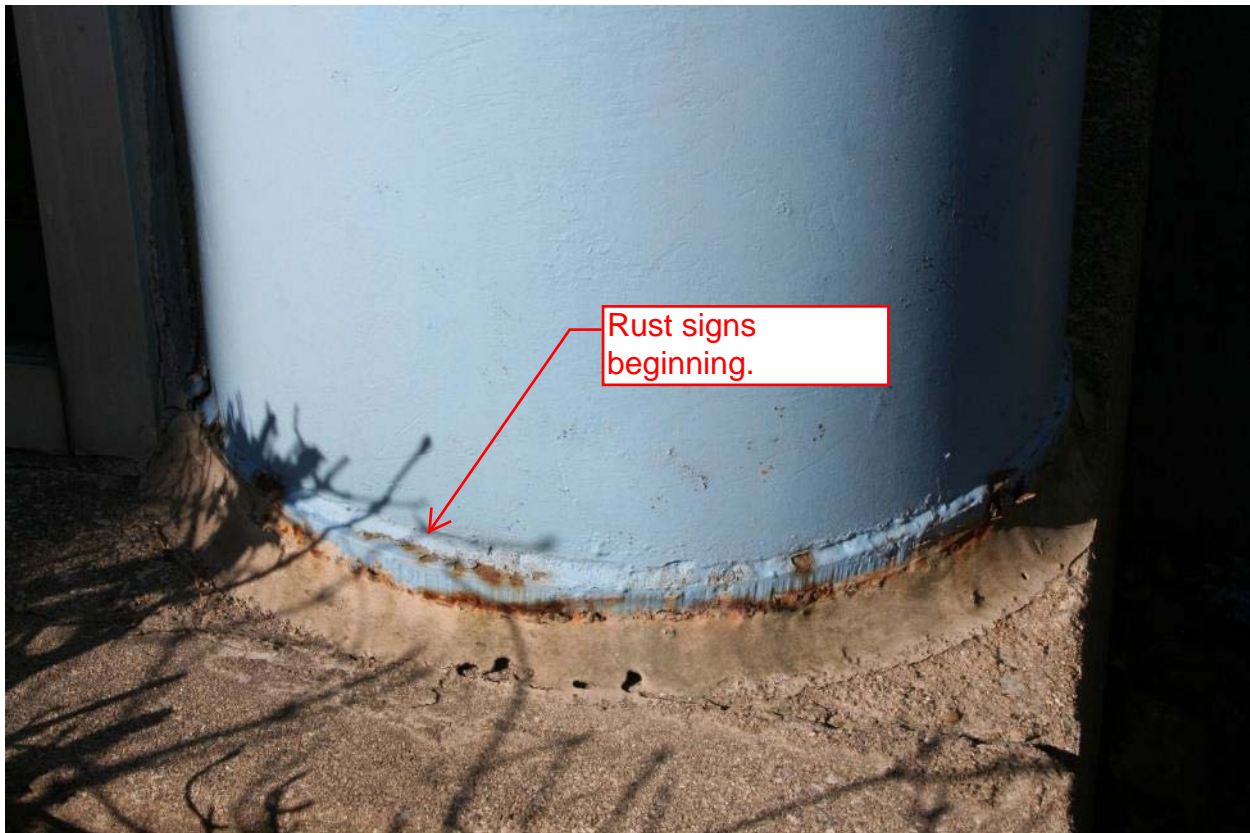
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9745

Description:

NE Steel column. Note the paint peeling adjacent to the sealant joint that appears to have been recently re-done. This joint has experienced significant movement over time and water infiltration at this corner. Additional invasive inspection is recommended to determine water infiltration pathways.

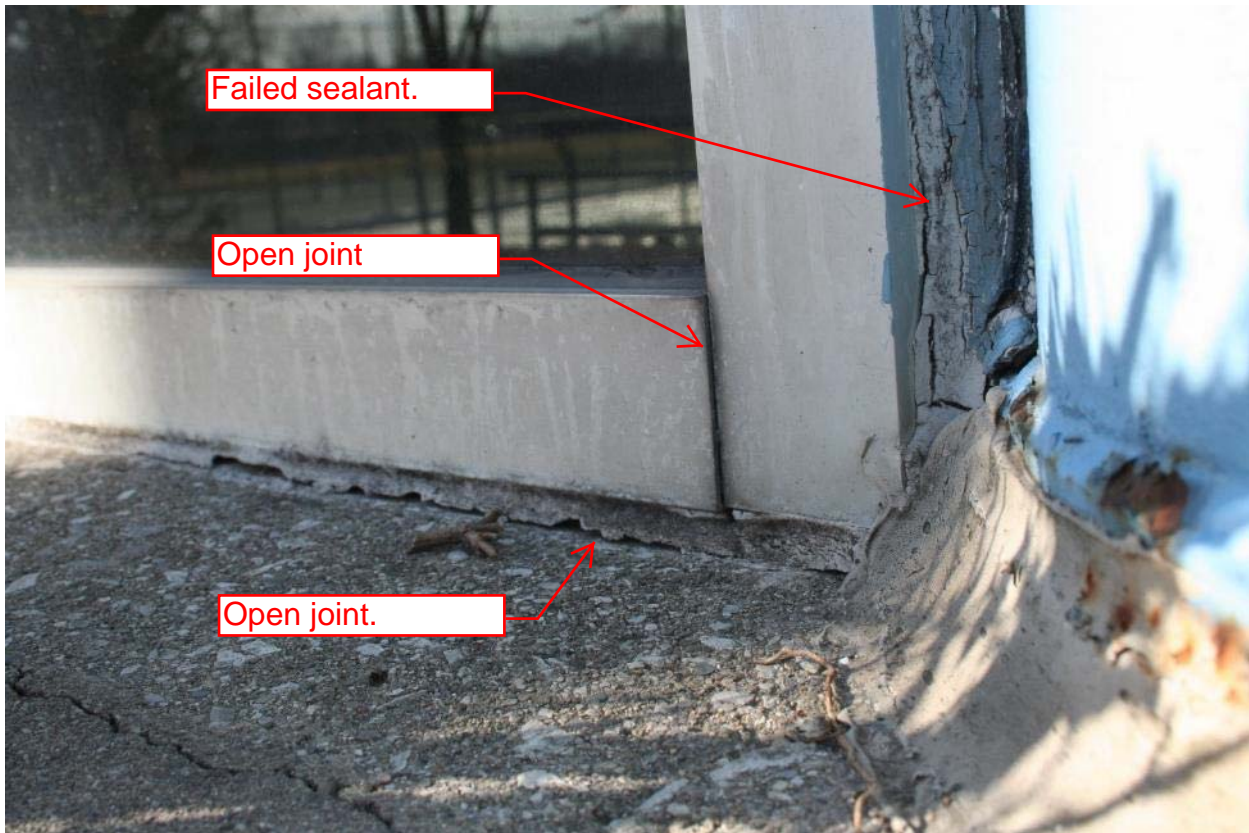


INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9746

Description:
Base detail of NE round steel column is showing some signs of rust and deterioration.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9747

Description:

East wall at base of curtain wall window framing system. Note base has been caulked and the sealant joint has failed. Window to steel column sealant joint has also failed and needs to be repaired.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9748

Description:
East elevation looking to the top of the NE round steel column.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9749

Description:
East elevation looking to the top of the SE round steel column



Stressed sealant joint here between dissimilar materials.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9757

Description:

SE Steel column at the first floor line. The First floor window is at the top of the photo and the lower level Children's Department is behind the window at the bottom of the picture.



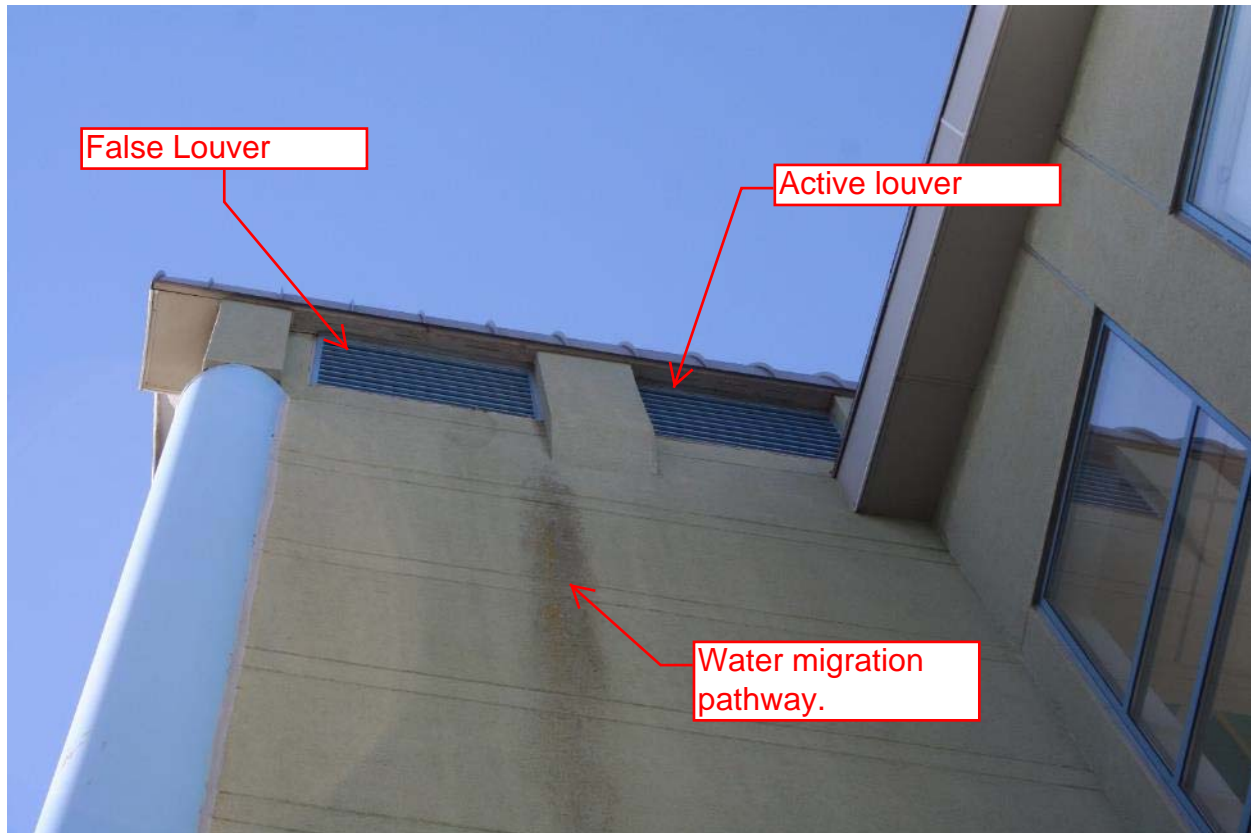
Hairline cracking
between EIFS
panels noted at this
location.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9760

Description:
SE inside building corner south of main east staircase looking towards the roof area.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9762

Description:

This photo is looking up towards the roof at the NE corner of the building near the wall louvers. Note the stained EIFS and the patch of travel from the west jamb of the upper louver. The expansive EIFS in this location does not appear to have any horizontal expansion joints installed. These are normally placed at floor lines in modern day EIFS installations to isolate movement between sections of EIFS products.



Flat foundation wall does not drain moisture away from the building.

Added concrete section.

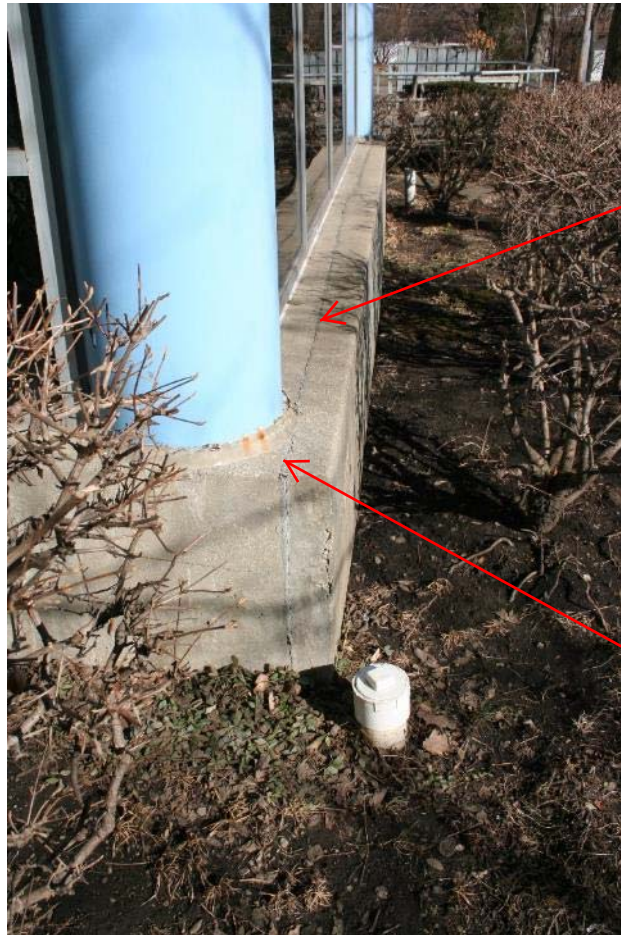
INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9771

Description:

This photo is taken at the SE corner of the glass curtain wall window system at the top of the foundation wall. Note that approximately 8" of additional concrete foundation was poured to the east of the original casting. The top of the foundation wall is poured flat in lieu of sloped as shown on the contract documents. This flat surface can collect water that may make its way into the building.



Note flat concrete sill ledge. Original drawings had this sill designed to be sloped. The round column corners were designed to be flat at the base of the round columns.

Designed to be flat here.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9772

Description:

A further view of the east foundation wall extension. Note the flat portion of the foundation wall at sill level. This does not shed water.

Sealant in good
condition here.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9773

Description:

SW corner of the building between the operable window system and the brick masonry wing walls appears to be in good condition.

Sealant in good
condition here.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9774

Description:

SW building corner at operable windows. Note sealant near windows appears to be in good condition. Sealant above window head at EIFS appears to be cracking.



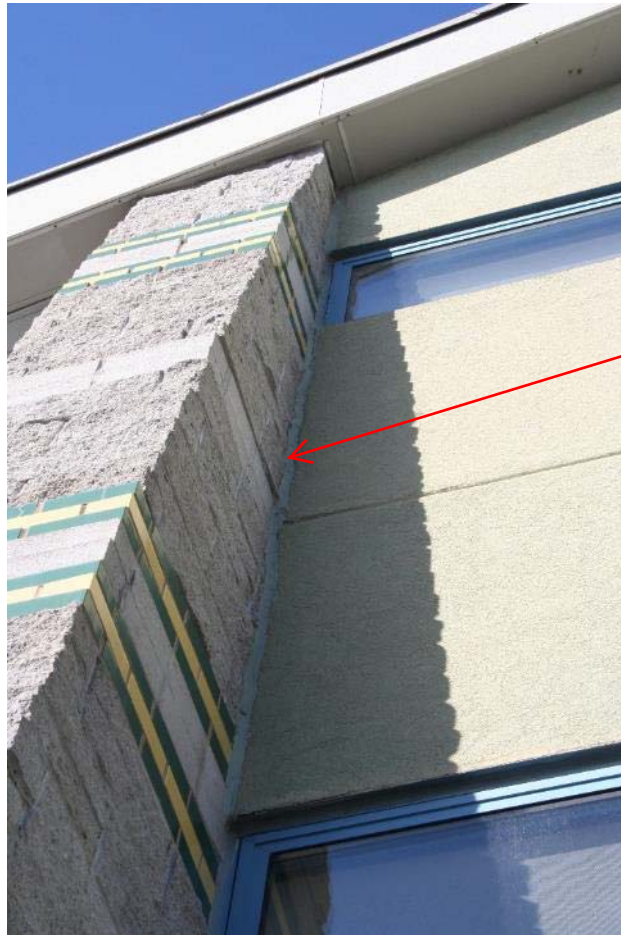
Operable window section.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9775

Description:
SW corner at first floor operable windows.



Sealant joint here
in good condition.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9776

Description:
SW corner of building looking up at second floor windows.



Storm damage
noted.

EIFS reveal was
recently caulked
over. We assume
this was because a
small hairline crack
was visible in the
EIFS reveal.
Normally this would
not be a sealant
joint unless it was
an actual control
joint between EIFS
panels.

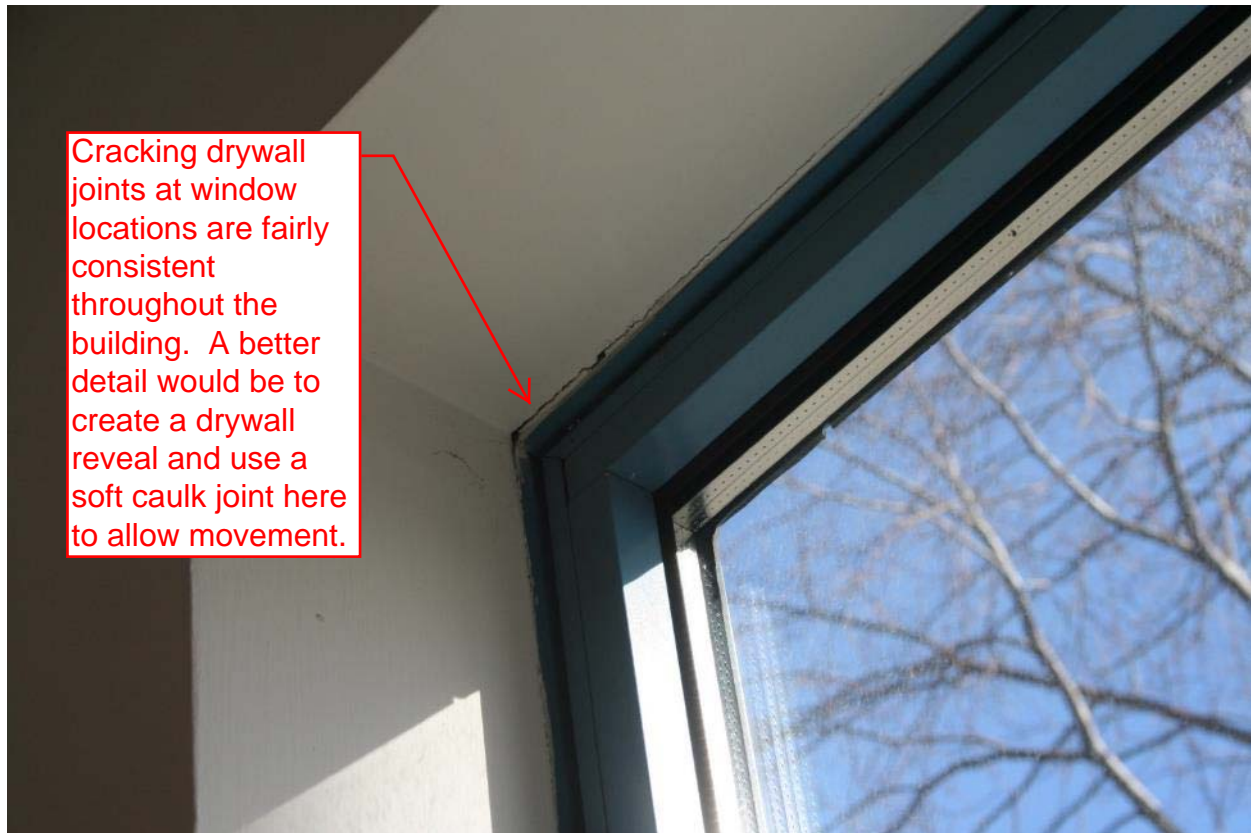
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9779

Description:

EIFS damage at a reveal joint in the east façade. Note that the sealant joint is actually supposed to be an EIFS reveal but has been caulked over in an apparent effort to reduce water infiltration.



Cracking drywall joints at window locations are fairly consistent throughout the building. A better detail would be to create a drywall reveal and use a soft caulk joint here to allow movement.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9780

Description:

Typical interior operable window head detail. Note the movement in the wall assembly and the drywall cracking that is now occurring.



Conditioned air can get in here. Should be caulked.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9782

Description:

East wall, operable window sill location. Note the gap near the window is allowing conditioned air to enter the exterior wall cavity.

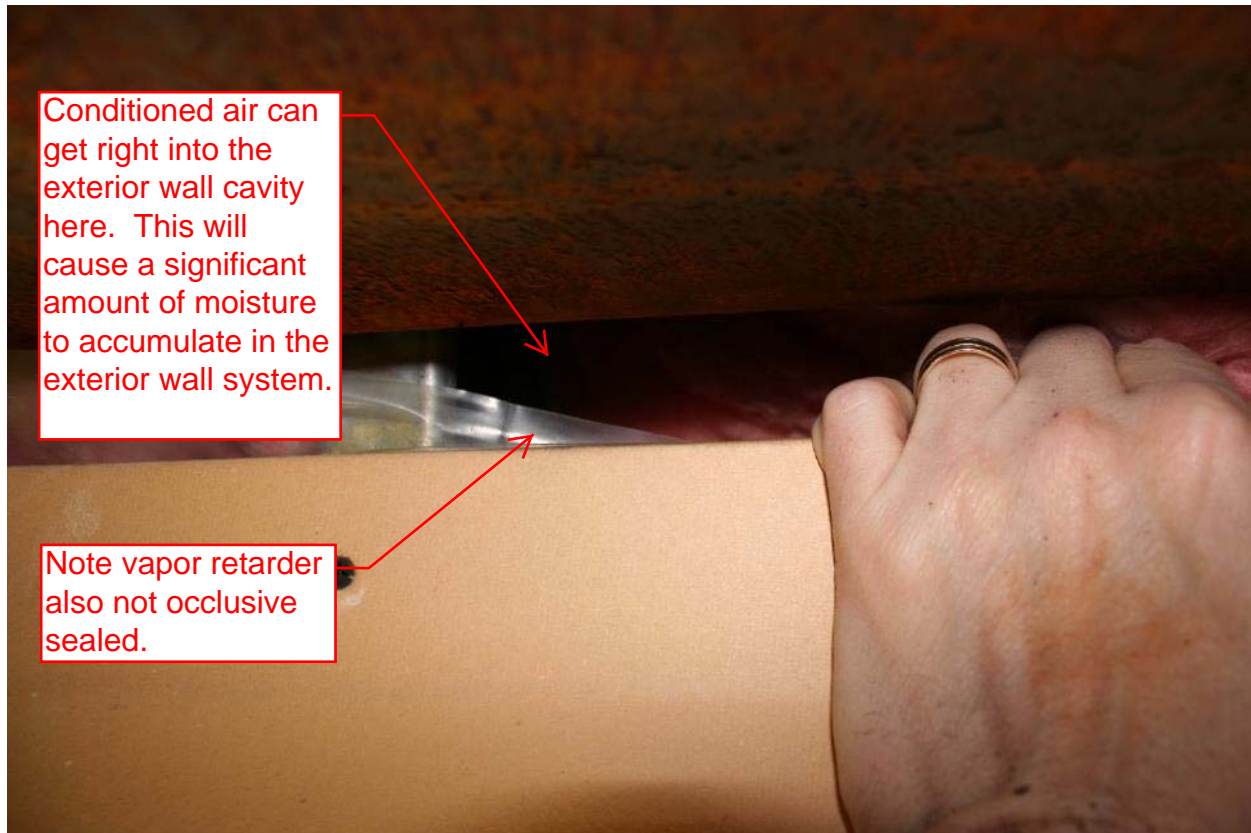


INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9784

Description:
Typical window jamb gypsum board cracking and some moisture damage noted.



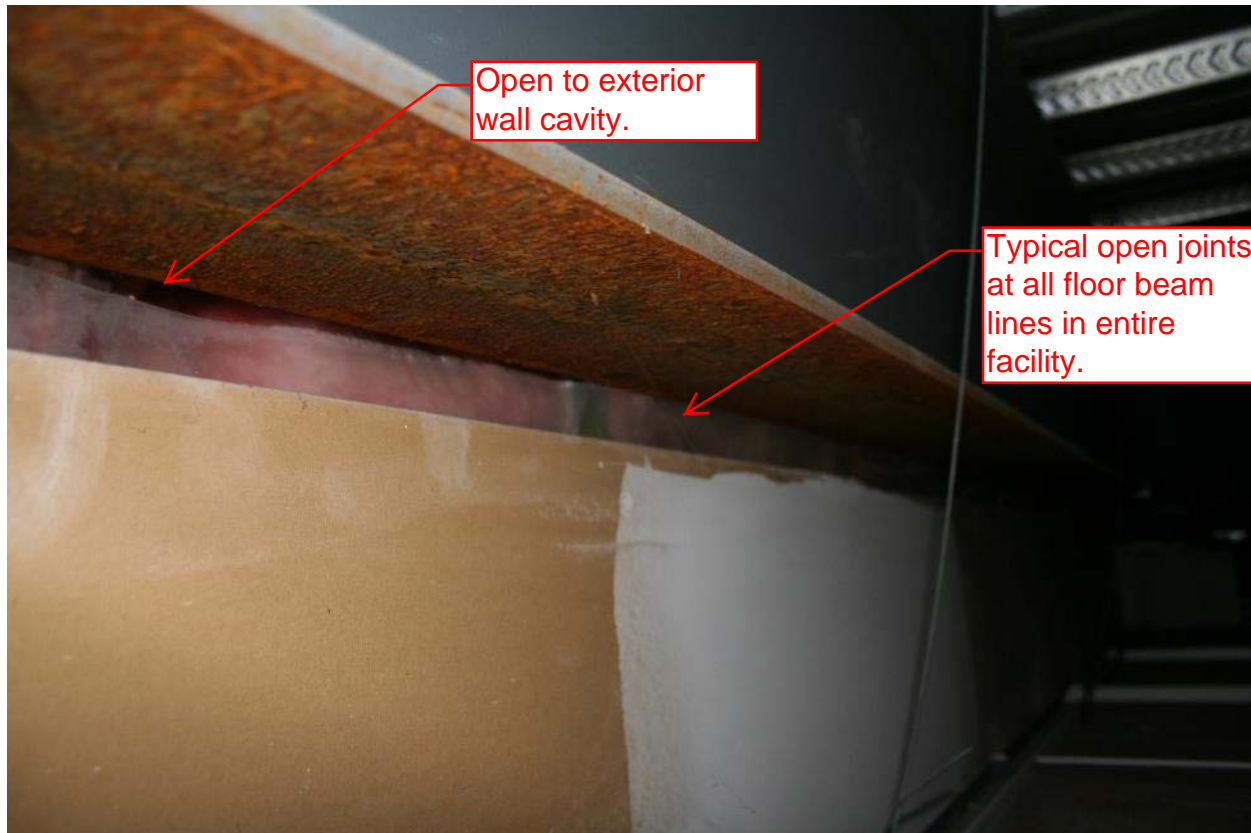
INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9786

Description:

This photo is taken from the first floor NE stacks area near the east, exterior wall above the acoustical ceiling cavity. Note that the drywall does not extend all the way up to the underside of the steel floor beam and the vapor barrier (clear visqueen) does not either. This allows conditioned air to infiltrate into the exterior wall cavity. This gap occurs at all exterior wall conditions at the east and west walls of the building. This need to be corrected immediately.



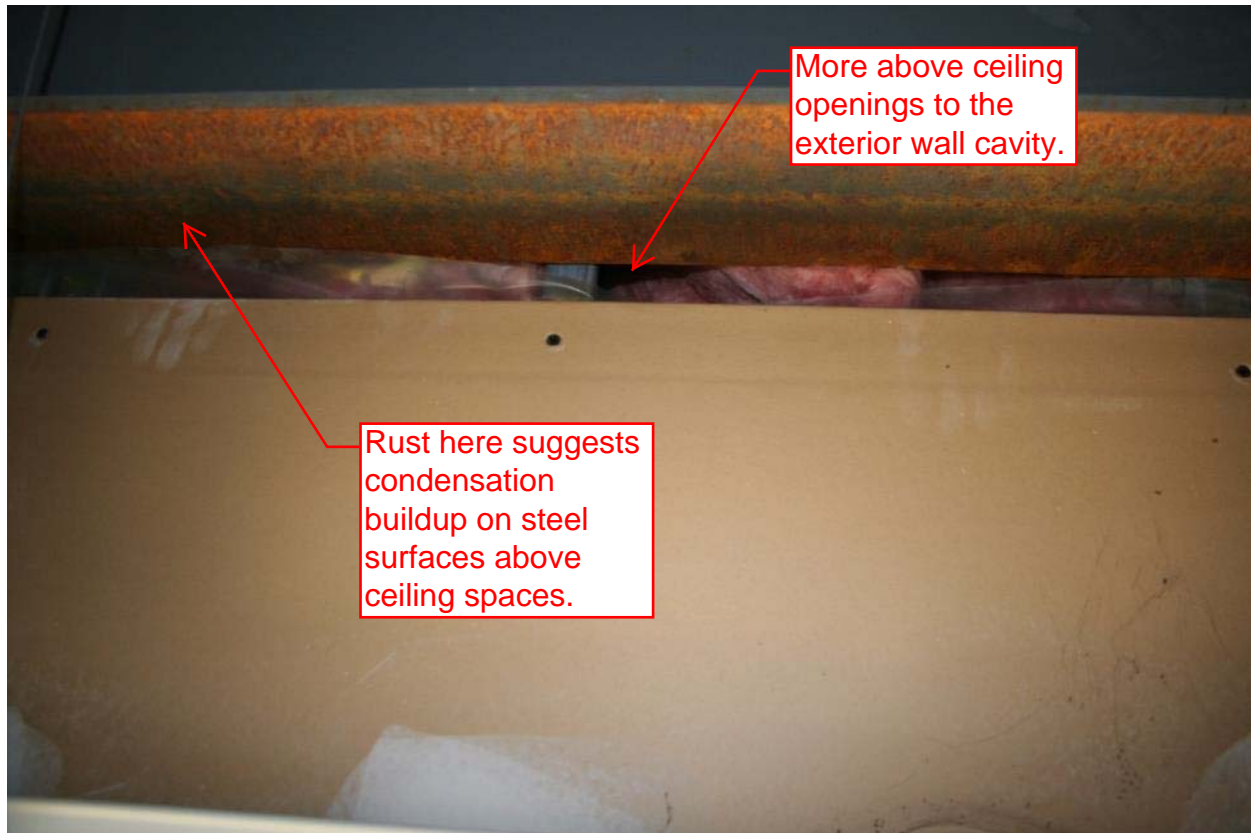
INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9787

Description:

Another picture of the drywall and visqueen vapor barrier not installed correctly.



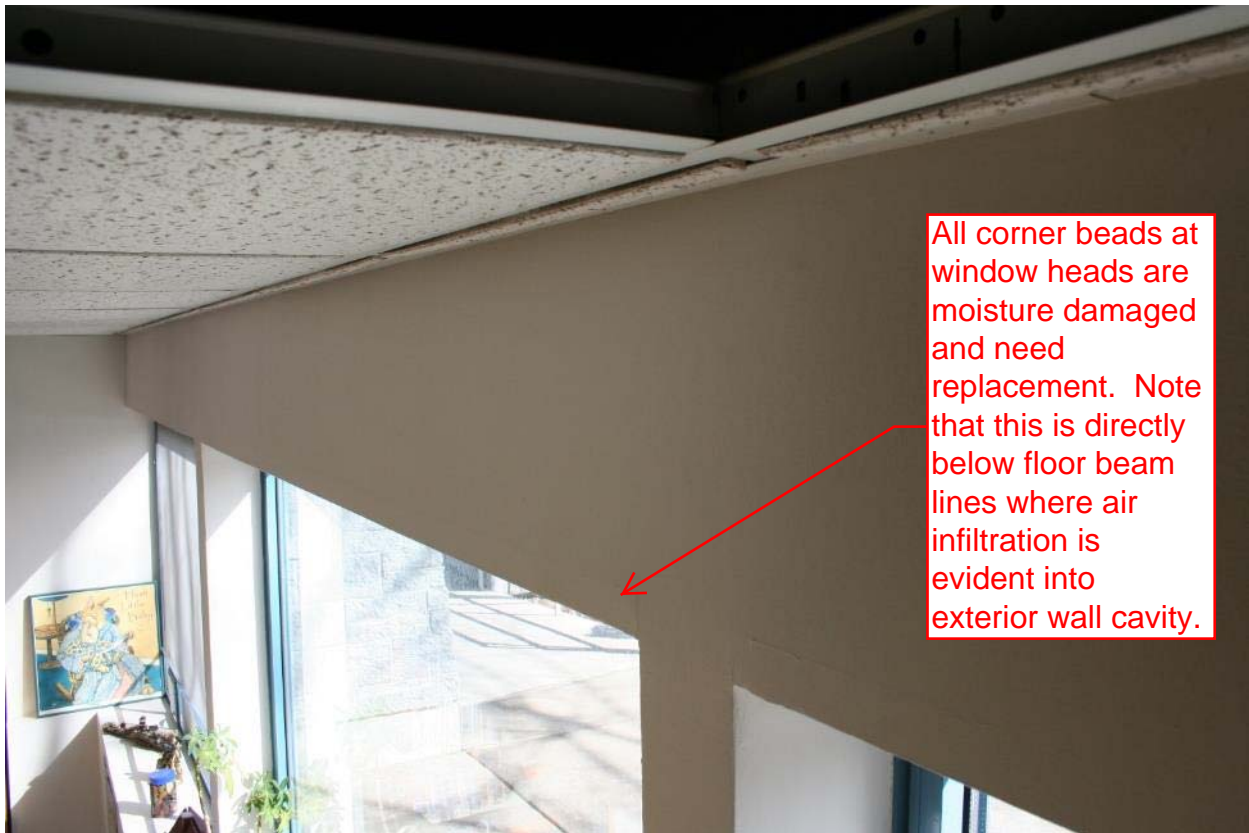
INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9788

Description:

Another location of improper gypsum board and visqueen installation at the east elevation above the acoustical ceiling cavity.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9790

Description:

The outside corner bead at the lower level window heads is beginning to crack from moisture build-up. This is right below the ceiling plenum cavity that is under pressure.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9792

Description:

This photo is taken at the east wall above the acoustical ceiling. What you can see sitting on the backside of the acoustical ceiling tile is rust flaked off the steel floor beam above likely due to excessive moisture.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9793

Description:

This is the steel beam to column connection at the NE corner of the building with the curtain wall windows on the right. Note that the drywall at the top of the picture is beginning to deteriorate from moisture build-up coming from the cavity and likely the result of conduction through the steel column (in blue).

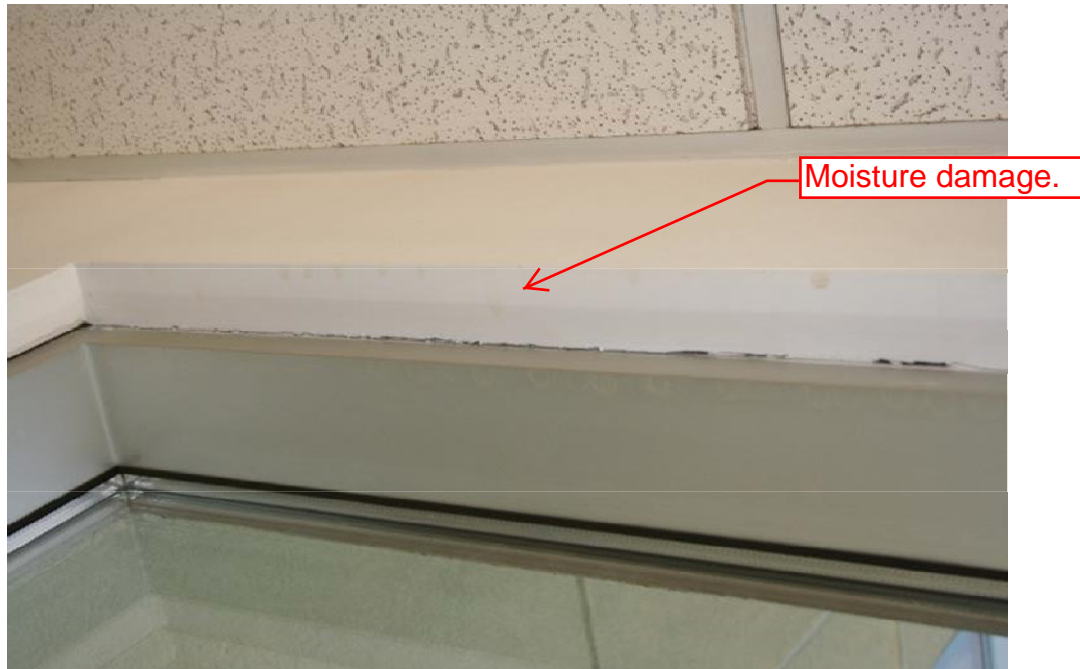


INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9794

Description:
NE, round steel column at the lower level near floor line.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9797

Description:

Drywall header at the NE exit stairway door from the Children's Department. Note the moisture stains at the edge of the drywall.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9798

Description:

SE round steel column at the first floor beam connection. Note the significant drywall deterioration likely occurring because the dew point is falling inside the wall cavity. The exterior detailing to the EIFS to the steel column is also suspected to be contributing to this water infiltration condition.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9799

Description:

East curtain wall windows looking up from lower level to the first floor. Drywall moisture damage has been noted.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9806

Description:

Lower level at the east façade near the SE corner of the Children's Department. Note window head drywall is showing sign of moisture damage.



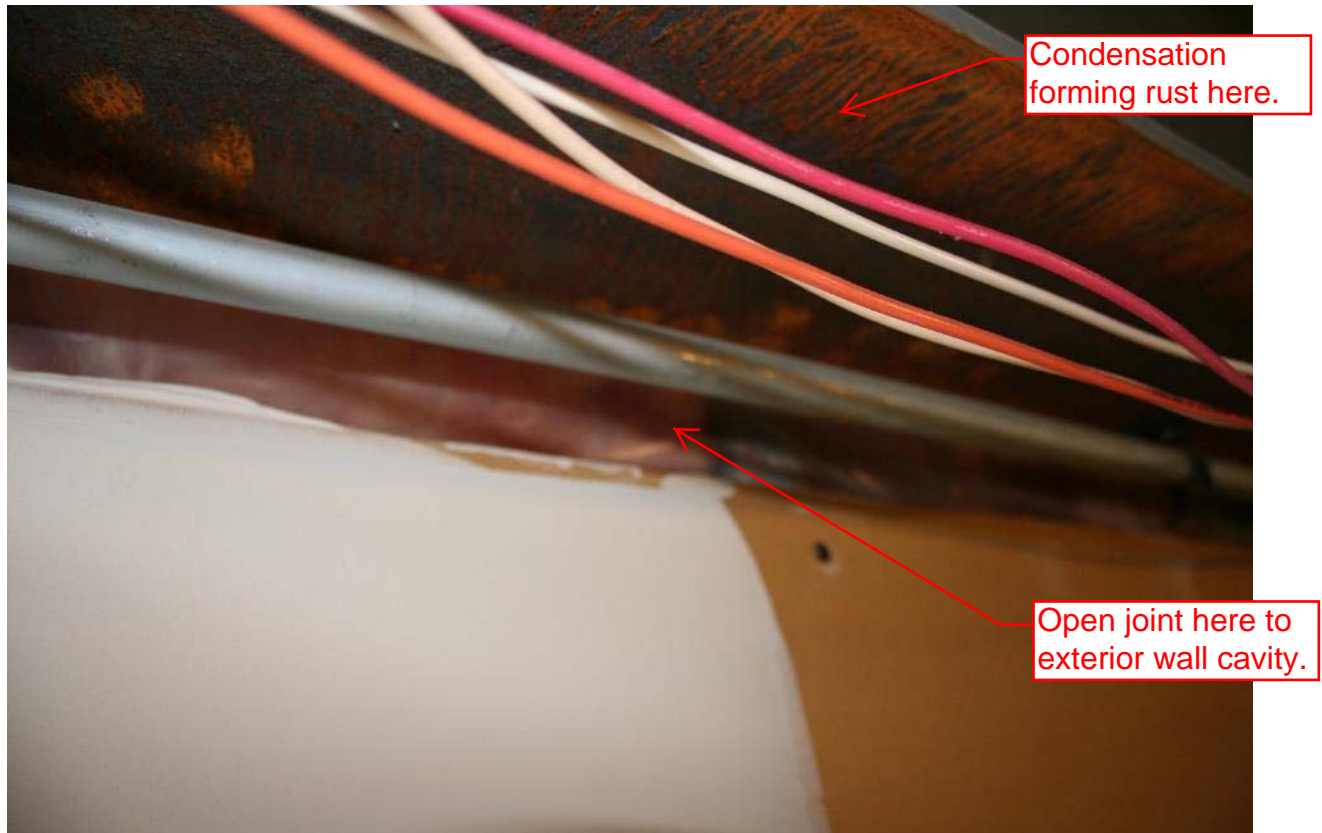
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9807

Description:

A closer look at the east exterior window at the lower level. This condition is similar at most of the exterior windows at the east elevation.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9810

Description:

Another gap between the east wall drywall and the bottom of the steel beam. This open joint allows conditioned air to enter into the exterior wall system.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9817

Description:

SW corner of the entrance lobby at the west end of the building. Note calcium / salt deposits at the floor line between the tile and window system suggesting water infiltration from the exterior.



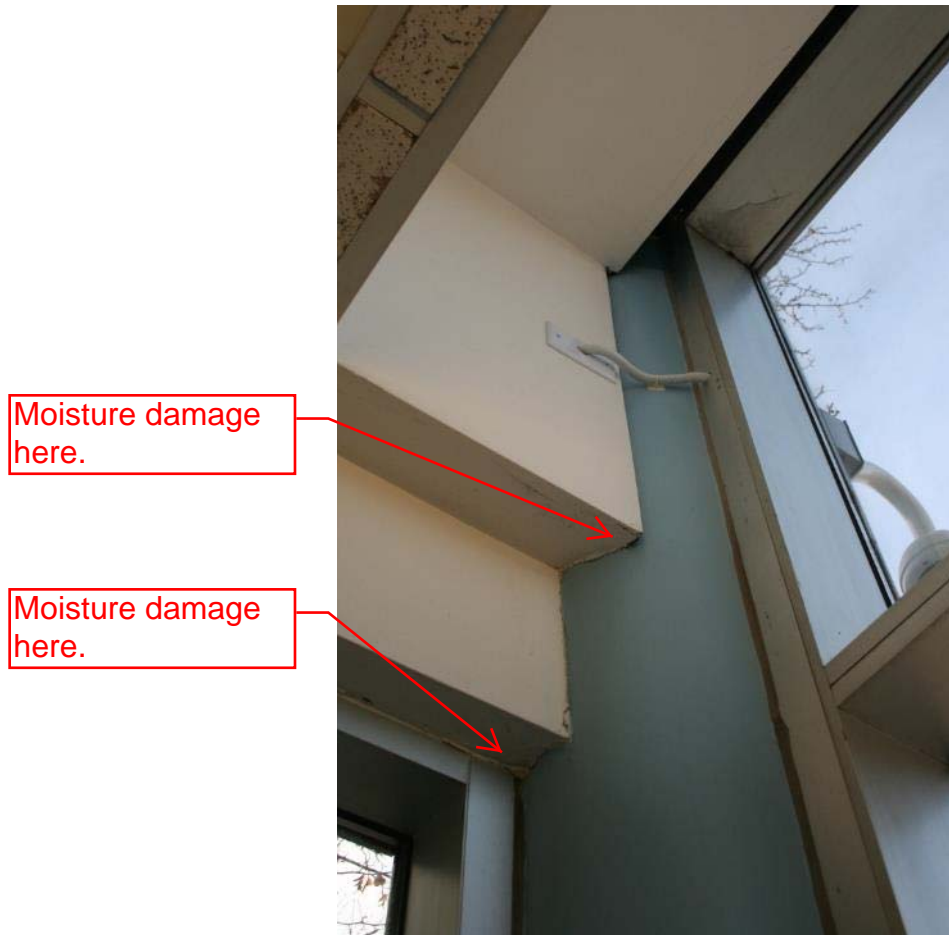
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9818

Description:

Interior face of SW entrance column at the base. Note: rust stains are now visible at the base of the column.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9819

Description:

NW steel column at the main entrance near the security camera. Some moisture damage is noted at the steel column to beam connection location.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9821

Description:

A closer look at the drywall beginning to crack at the window head of the curtain wall framing.

Calcium/salt
staining here.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9823

Description:
Interior main entrance curtain wall at west elevation at floor line.



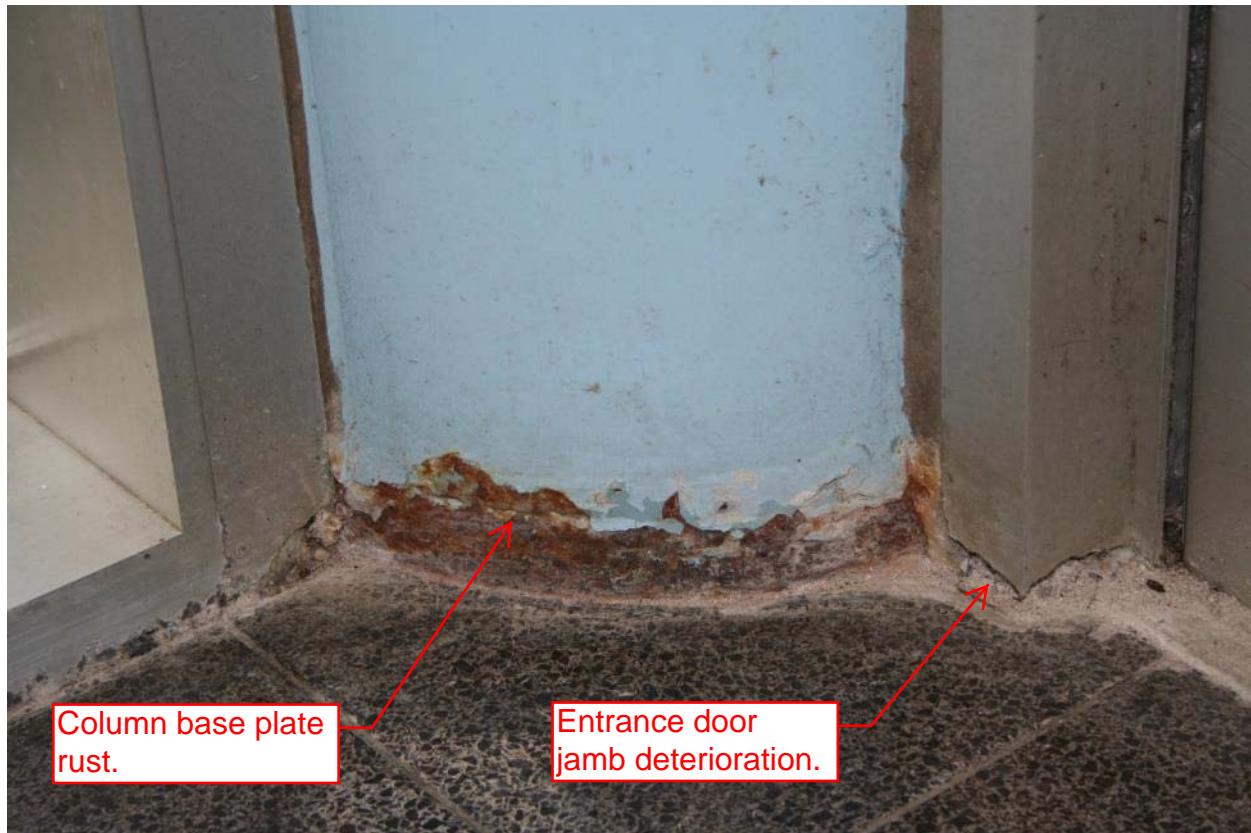
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9824

Description:

Drywall wall deterioration at the main entrance doorway that needs to be repaired. Reviewer suspects that the detail at this location does not allow for moisture drainage to the exterior.



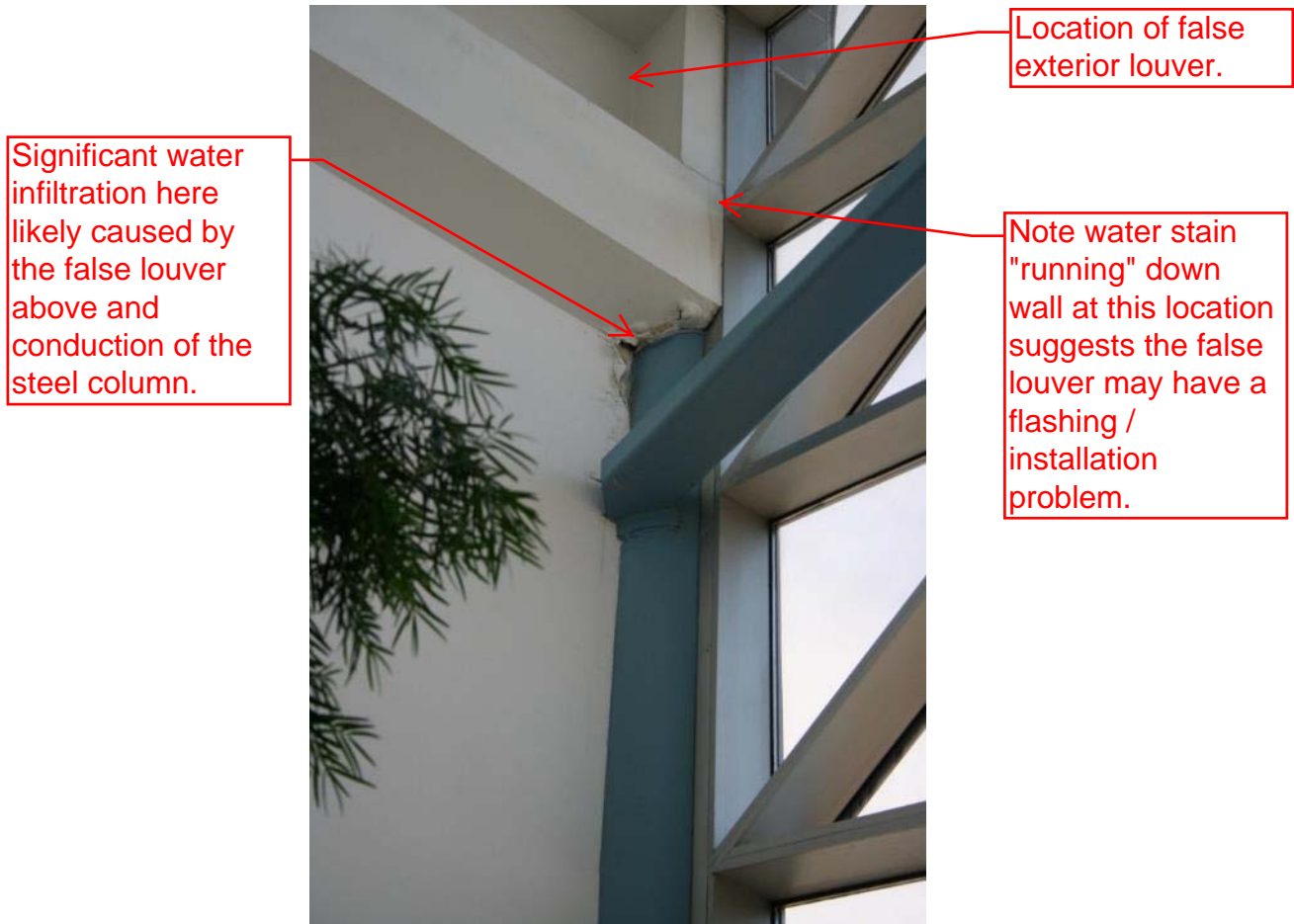
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9825

Description:

Interior column base at the west main entrance column. Note that water has infiltrated the building and eroded the aluminum door jamb.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9829

Description:

SW steel column to beam connection at the second floor line near the glass curtain wall framing system. Note the significant amount of water infiltration and damage to the drywall in this location. We suspect a combination of conduction and water infiltration from the false louver At the SW roof area is causing this damage.

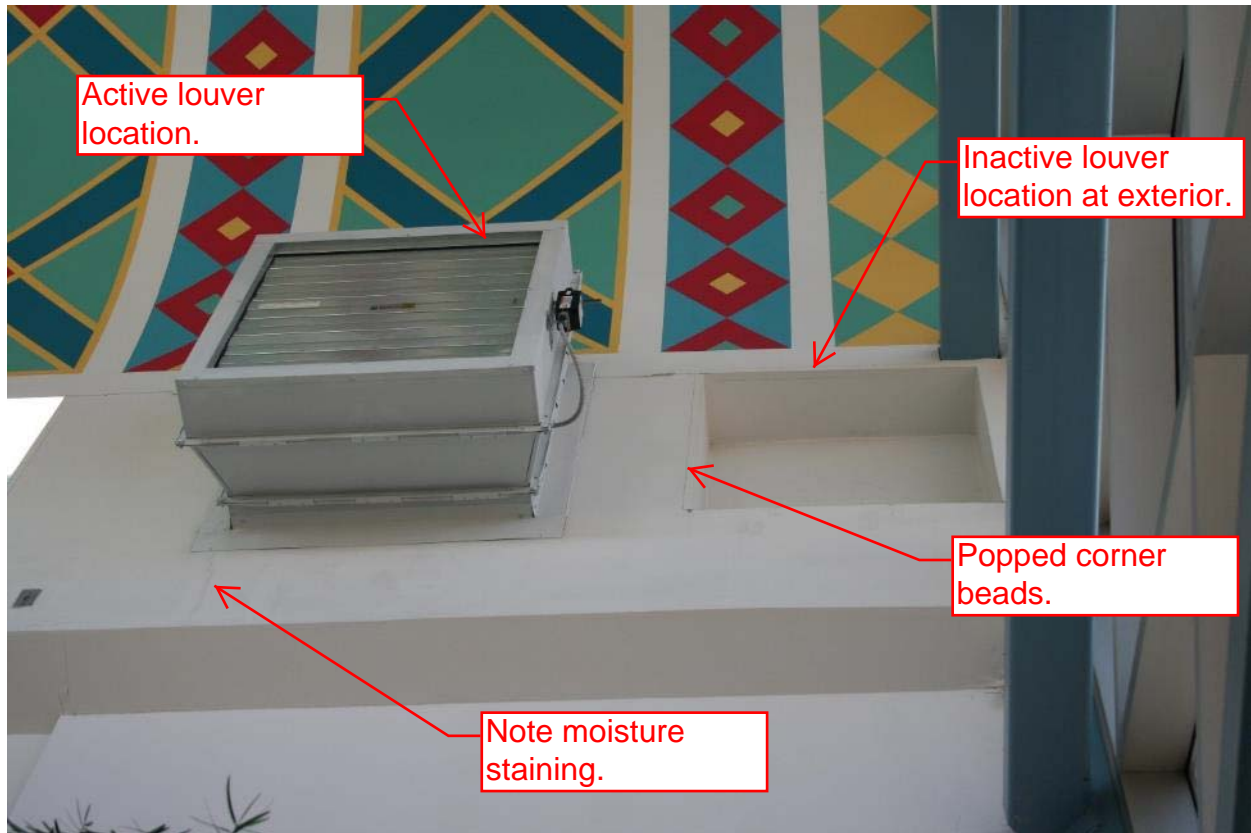


INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9831

Description:
Looking up at the barrel vault of the western curtain wall window framing condition.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9832

Description:

SW barrel vault condition near the louver location. The "false" louver is on the outside of the building at the location of the recessed drywall box-out. Note the water infiltration occurring at this location and drywall cracking occurring at various locations.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9833

Description:

Interior view of east curtain wall window framing – looking east from second floor line.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9836

Description:

Second floor east wall drywall damage at window sill locations. This damage is similar at other sill locations at the second floor.



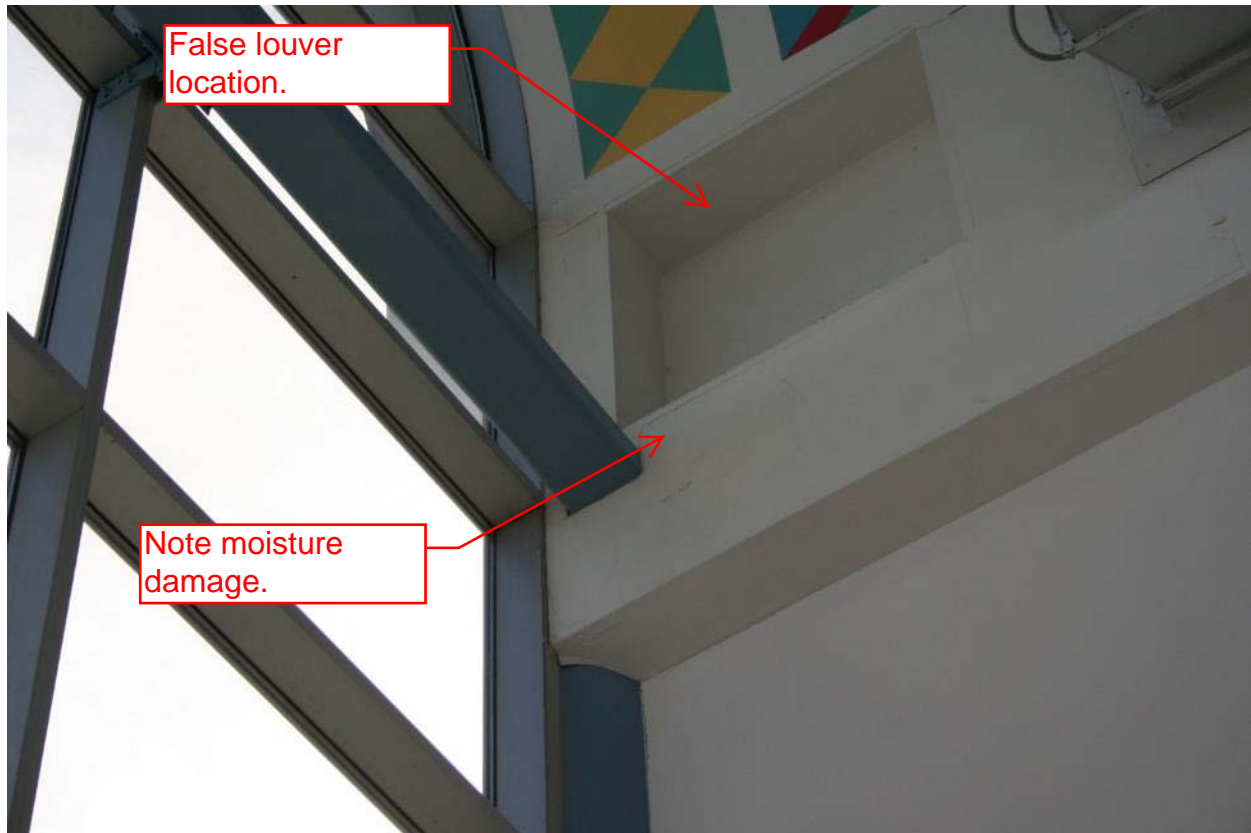
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9842

Description:

A view looking up from the second floor towards the SW round steel column. Note the cracked corner bead at the recess leading to the false louver at the exterior and some moisture damage to the drywall near the column to beam location.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9843

Description:

A view looking up towards the SE steel column from the second floor line. Note similar drywall cracking at the corner bead locations of the louver and false louver box-outs.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9844

Description:

A view looking up towards the East barrel vault glass curtainwall window framing system. Note that the radius of the barrel vault drywall does not match the radius of the aluminum glass curtain wall circumference.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9859

Description:
Exterior glazing in 1 inch, insulated and tempered glazing. Insulated glass seals appear to be in good condition.



Significant moisture damage at window head location immediately below floor beam line above ceiling.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9860

Description:

A severely deteriorated window head at the location of an operable window system at the east wall of the second floor. This suggests a significant amount of moisture is present in the exterior wall assembly.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9863

Description:

Second floor operable window at the SE corner of the building. Note drywall damage at the window jamb.



Significant
moisture damage.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9865

Description:

Typical window head moisture damage is visible at several exterior windows at the east wall. This photo was taken at the basement area.



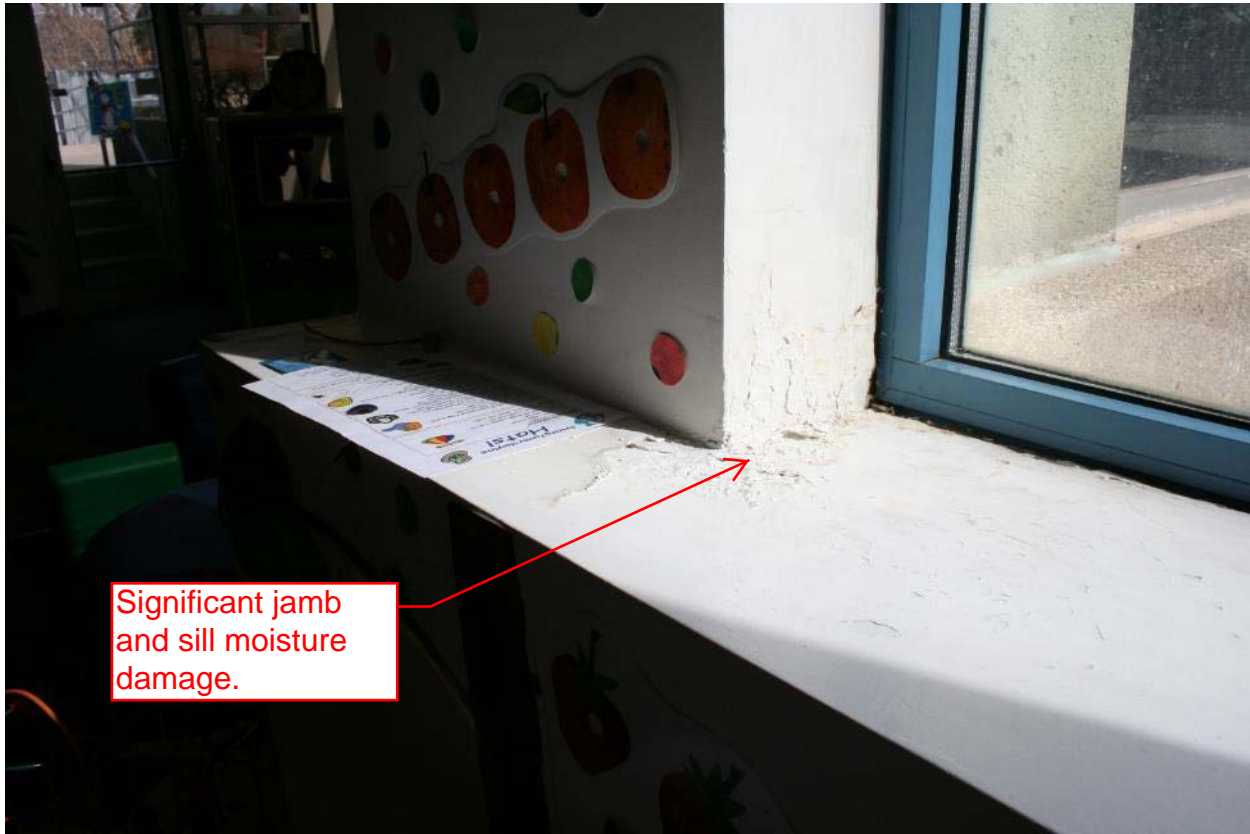
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A9871

Description:

Basement area steel column at the SE corner showing significant signs of water infiltration. Note moisture stains running down the right side of the column.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A9878

Description:

Lower level Children's Department window sill locations at south window location. Note significant moisture damage to the drywall at the end of the sill run.



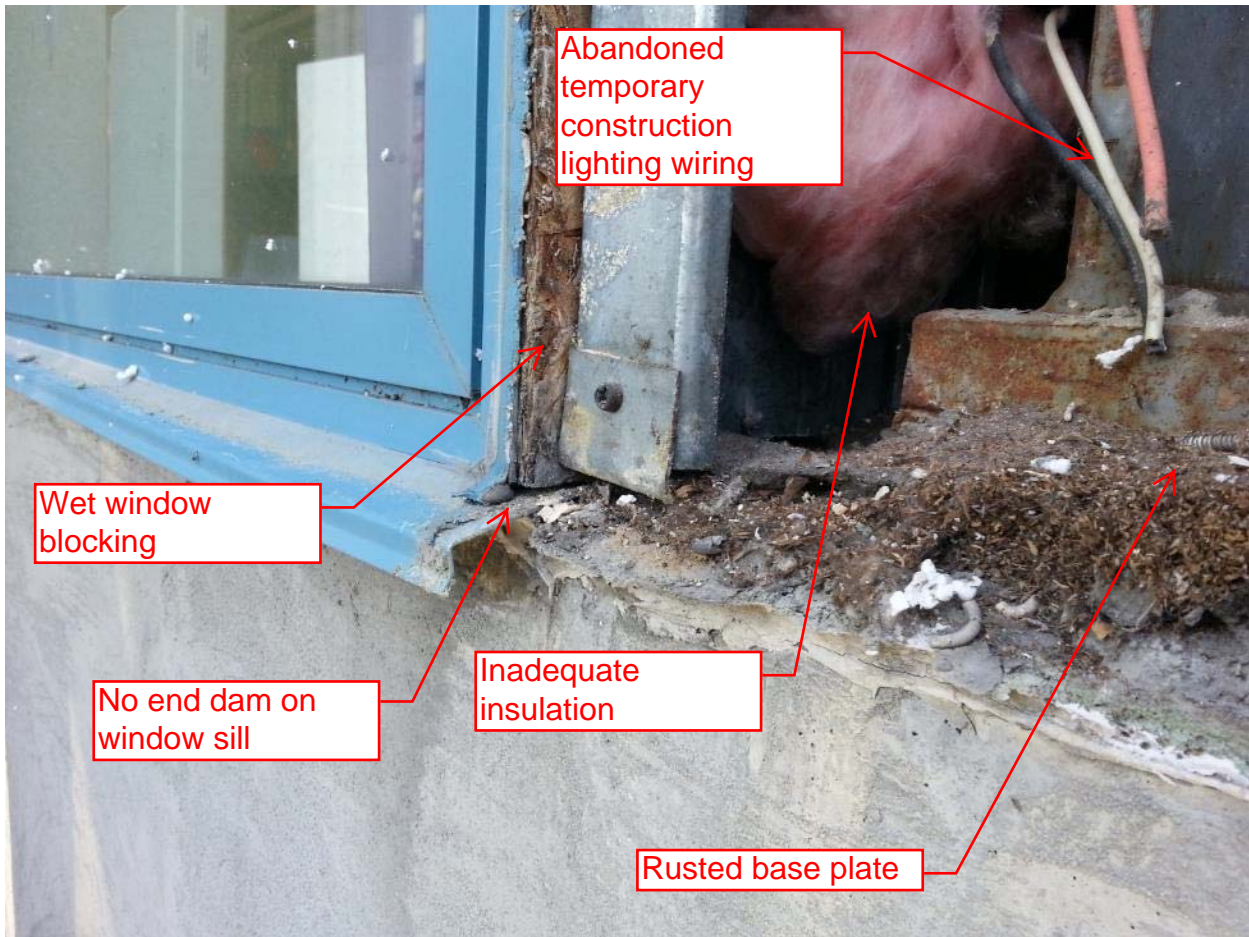
INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A3203

Description:

Photo shows no insulation at column location and lack of end damming at window sills. Significant rust noted at base plate location. Wood window jamb liner board is water saturated.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A3216

Description:

No window sill end damming is installed. Water infiltration has occurred into the wall cavity and rusted the steel column base plate.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A3243

Description:

Metal window head counterflashing has been installed however it was not properly counterflashed with butyl rubber tape joints. Assumed to be typical at all window locations.



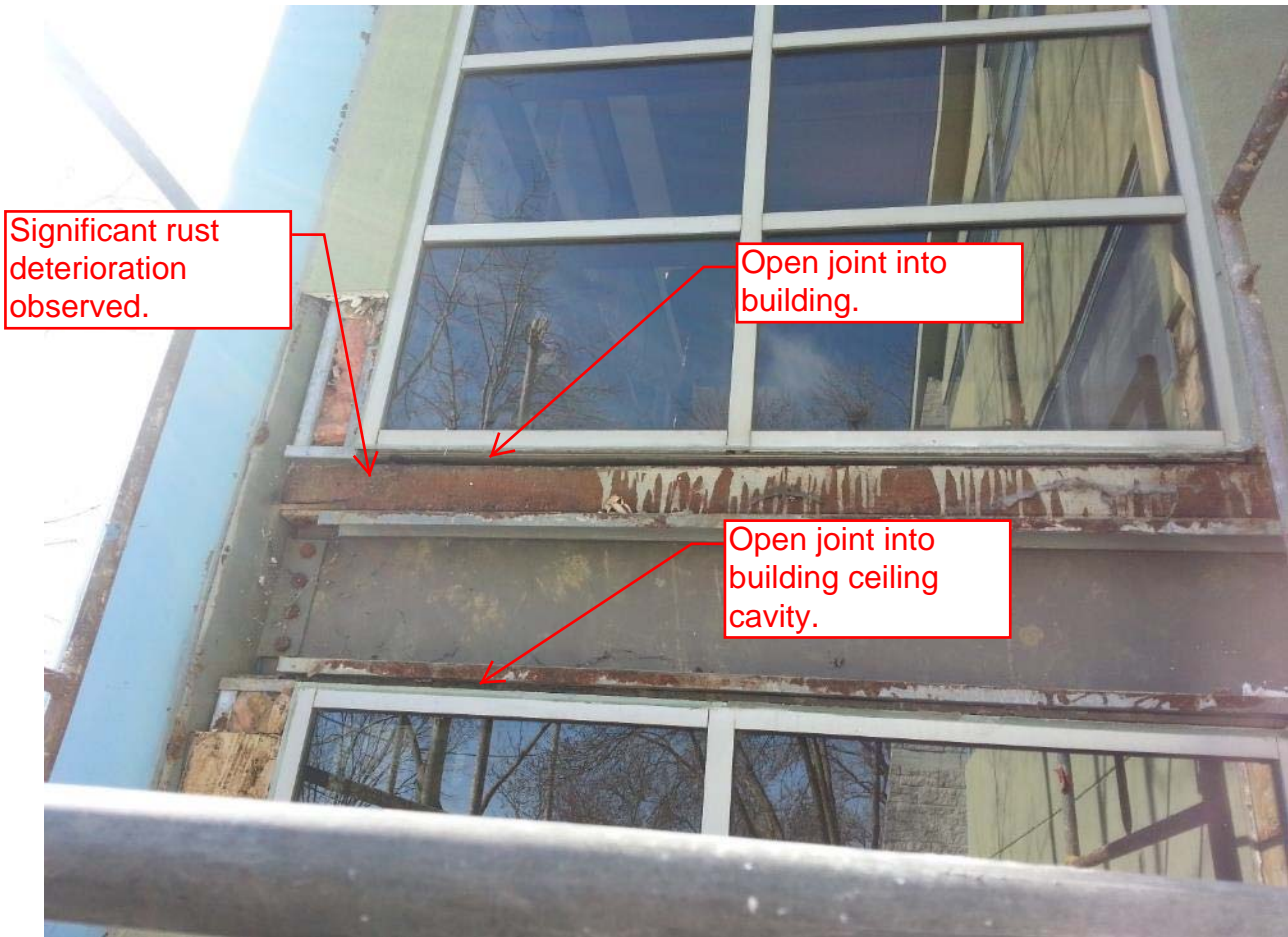
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A3308

Description:

North wall projection over Children's Department exist doorway at lower level. There was no insulation or vapor barrier installed at the steel beam location. Evidence of condensation was present on the steel beam and floor pour stop.



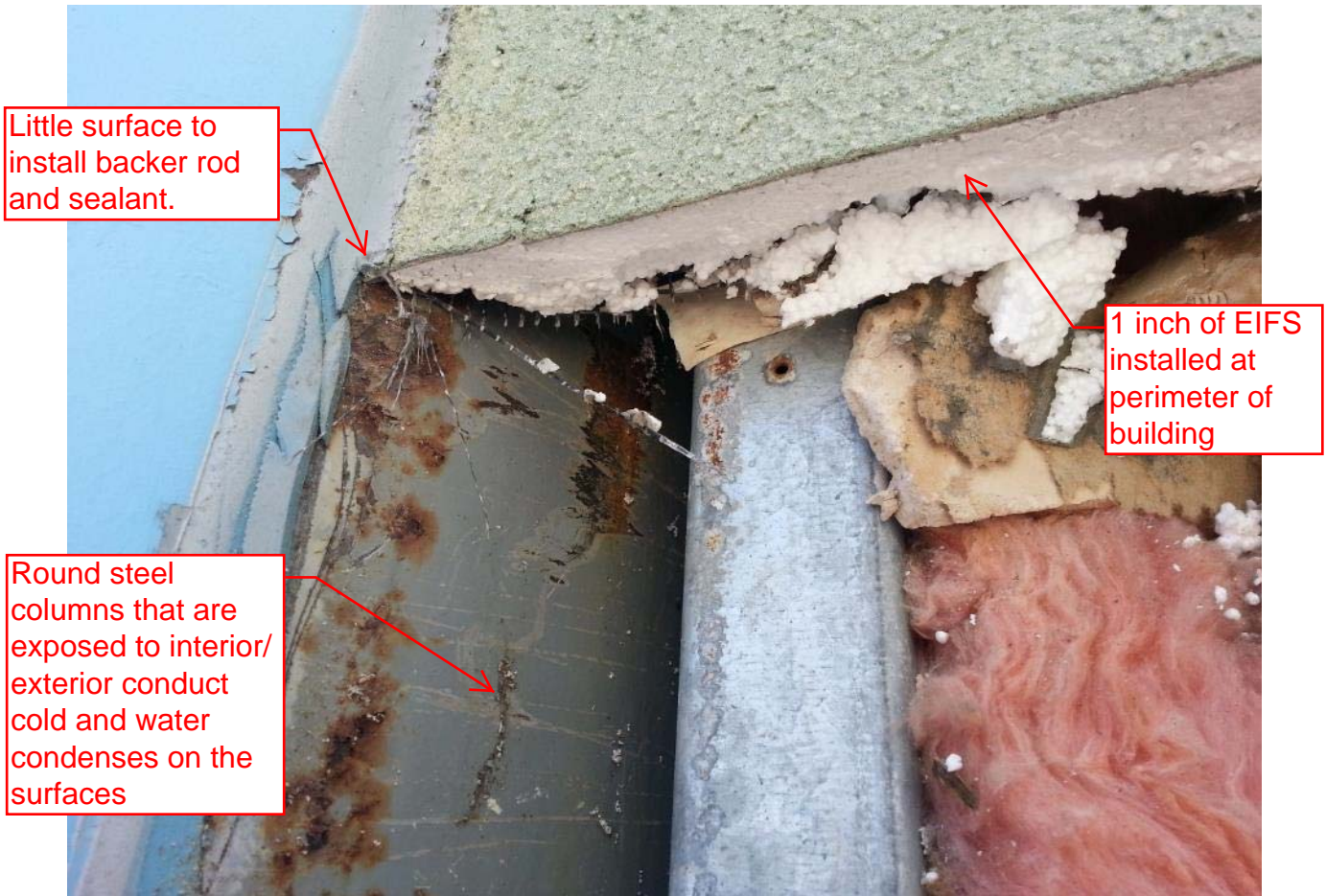
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A3338

Description:

Another view of the steel column to beam connection at the northeast side of the building. Note the significant rust of the floor pour stop and of the galvanized metal track above the lower window head.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A3435

Description:

The round steel column is at the left in the photo (blue steel). Note the tapered joint of the EIFS insulation board at the corner of the building. A small amount of EIFS insulation board thickness was present at the round steel column and provided little to no insulation value the entire length of the column.



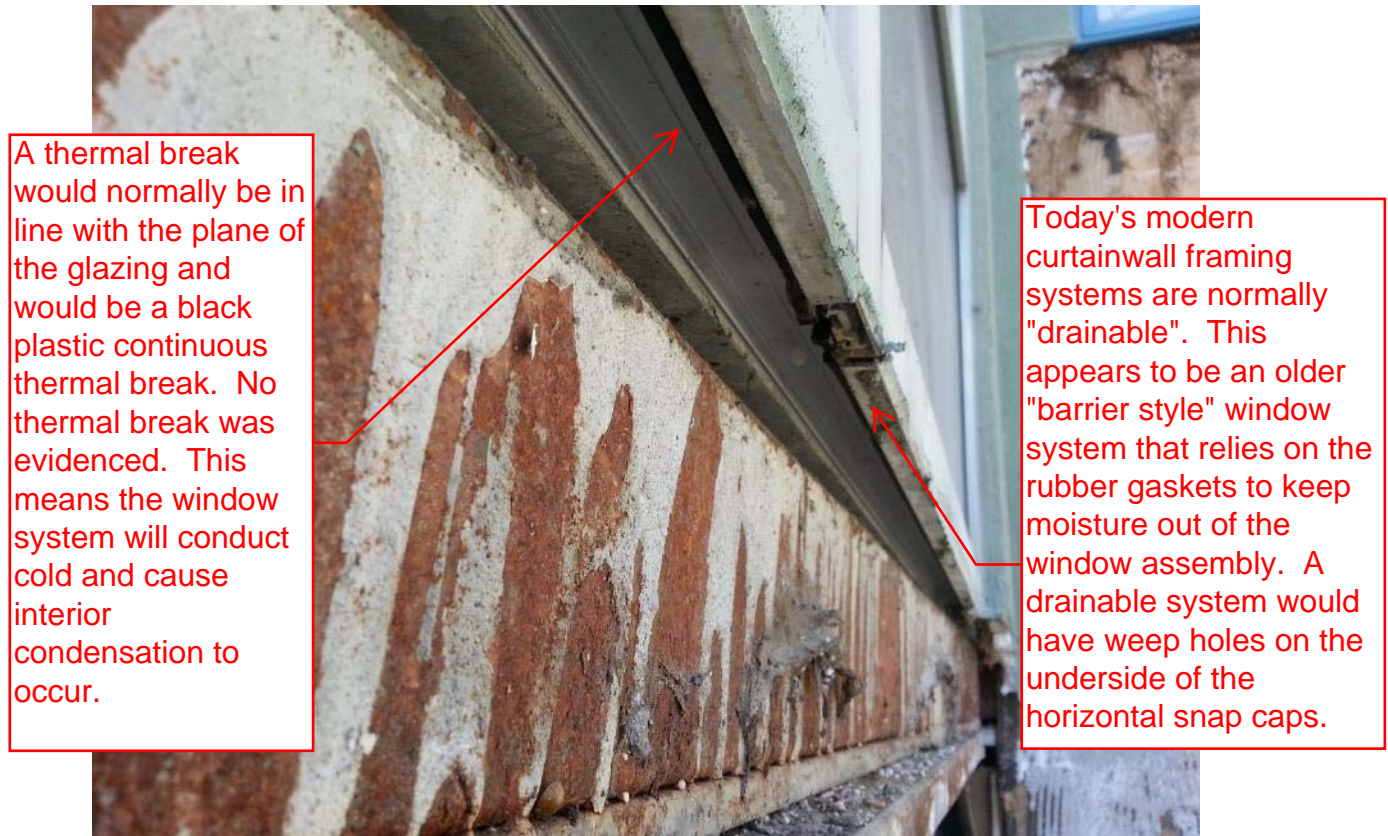
INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A3452

Description:

Note metal pour stop has deteriorated significantly at the northeast corner of the curtainwall windows. If you look closely, you will note that the pour stop has actually rusted through and cracked. Also note the open joint at the top right below the “shimmed up” curtainwall window system. The reviewer could see all the way into the building through this joint. This means this area of the exterior wall was under positive and conditioned airflow against the minimal 1” thick EIFS insulation board. This will cause a significant amount of condensation in the wall cavity.



A thermal break would normally be in line with the plane of the glazing and would be a black plastic continuous thermal break. No thermal break was evidenced. This means the window system will conduct cold and cause interior condensation to occur.

Today's modern curtainwall framing systems are normally "drainable". This appears to be an older "barrier style" window system that relies on the rubber gaskets to keep moisture out of the window assembly. A drainable system would have weep holes on the underside of the horizontal snap caps.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A3507

Description:

The curtainwall window systems are not thermally broken like they would be with today's newer technology. If they were a black thermal break would be visible on the underside of the horizontal window sill at the location noted. Non-Thermally broken windows in this climate tend to conduct cold and "sweat" in the winter months causing damage to interior drywall surfaces. These windows are also not designed to be drainable if water gets into the system. Today's newer technology allows for the window to wick water to the exterior of the building. These windows rely on maintaining a sealant joint to keep water out.



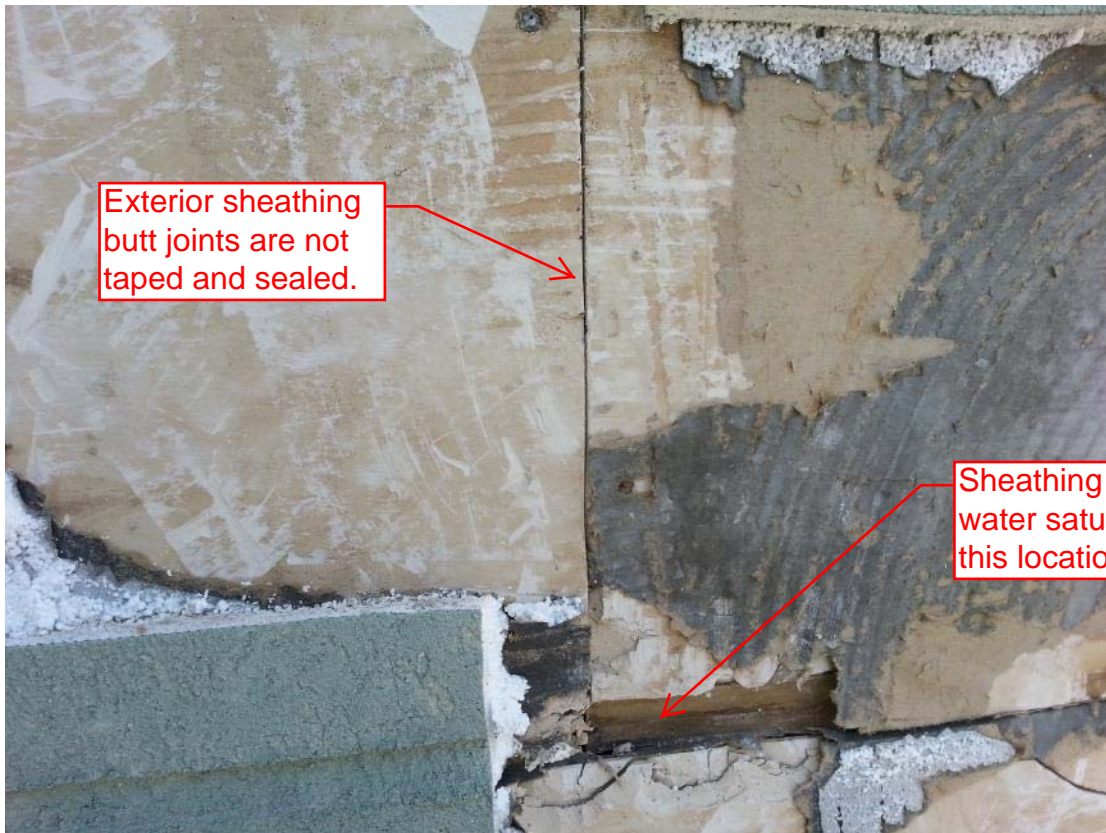
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A3558

Description:

Here is a closer look at the vertical mullion cap at the curtainwall window systems. The black material is a rubber gasket that is meant to keep water out of the window system. It was noted that some of the rubber gaskets did not fully extend to the horizontal to vertical "joints" in the metal window framing. This means that water could possibly enter into the window framing system and get into the building. Also note that no sub-window sill flashing was installed as a second line of defense to water infiltration at this location.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A4237

Description:

This photo shows the "butt joints" between exterior sheathing panels. Note that none of the butt joints are sealed as required with today's modern EIFS systems. Evidence of water infiltration at the butt joints was evidenced.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A4414

Description:

This is a photo of the NE corner of the building at the first floor curtainwall window head. The EIFS at the steel column to window head has a visible open joint. This is likely due to the steel floor stop deterioration noted in photo A3452.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A4429

Description:

There was no insulation found in the wall cavity at the locations of the steel floor beams or columns. There were also visible open joints above and below the steel members where the reviewer could see inside the building. This means that conditioned air is escaping the building envelope and getting into the wall cavity. This will cause the dew point of the wall to fall inside the cavity of the wall system and condense.



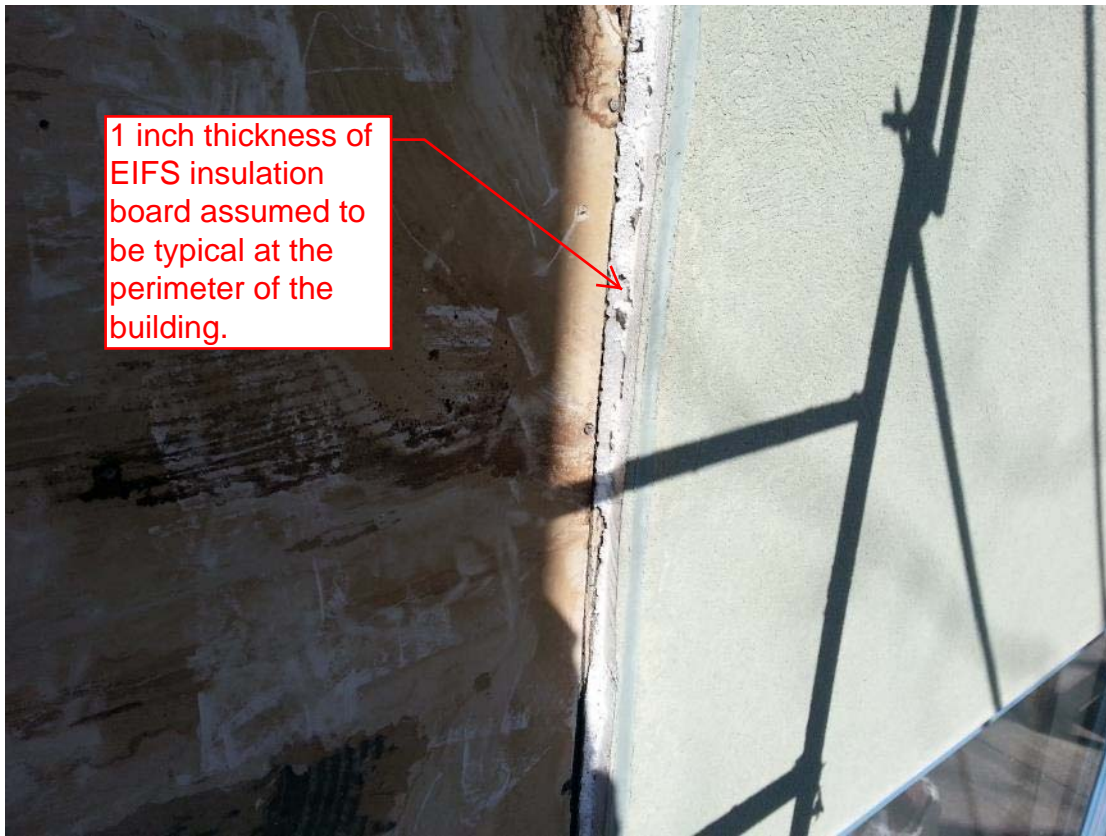
INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A4521

Description:

West wall column looking down towards the NE exit stairway from the Children's Department. There was no insulation found in the exterior wall at the steel column locations.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A4523

Description:

The overall thickness of the existing EIFS expanded poly-styrene insulation is 1 inch. This insulation was the only thermal barrier at the steel column and beam locations. The average R-Value of this insulation is 3.85. This is far below today's requirements. And will need to be thicker to meet the new energy code if a significant façade replacement is performed.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A5105

Description:

Round column to beam location at the first floor, NE corner of the building. In this photo you will note the "gap" between the beam to the round column. At the top center of the photo, you can see into the building cavity. This means conditioned air from inside the building can flow into the exterior wall cavity and create a dew point inside the cavity. A dew point inside the cavity means water vapor will condense and form water which will deteriorate surfaces.



Difficult joint to install sealant and backer rod. Differential movement between materials will put stress on the sealant joints.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A5109

Description:

Another view of the column to beam at the NE round column – looking down. Where the sheathing meets the round column is problematic. There is not enough “backing” for a sealant joint to be placed at this location. When you add movement between the dis-similar materials at this joint, you are asking for water to infiltrate at this corner.



Missing butyl tape. Counterflashing could not weep water out. The top of the counterflashing above windows was sealed tight.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A5336

Description:

Typical window head flashings. Note that there is no butyl rubber tape joints at the head flashing that was installed over the windows. EIFS Insulation board was applied directly over this counterflashing and caulked solid thus eliminating the functionality of the head flashing to allow water to exit the wall assembly.



EIFS mesh back wrapping noted which is correctly installed.

INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

Photo Number: A1012

Description:

This is a photo of the 1 inch thick EIFS insulation board attached to the wall sheathing. Note the sheathing is very wet along the edge. Also note that the insulation board was back-wrapped with the EIFS mesh as required by the manufacturer for the original installation.

Back wrapped
mesh.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A1015

Description:
Another view of the back-wrapped, EIFS mesh.

No insulation found here and no vapor barrier.



INSPECTION PHOTO

Project: LaGrange Park Public Library Water
Infiltration Investigative Study

Photo Number: A1113

Description:

This photo indicates the location of the invasive testing that was performed at the NE corner of the building. The reviewer noted that the wall sheathing was fairly well saturated across the majority of the wall cavity.



Wall sheathing was moisture damaged and the felt facing released from the gypsum core when the EIFS was removed.

Exterior gypsum sheathing facing (black material) material still attached to gypsum core.

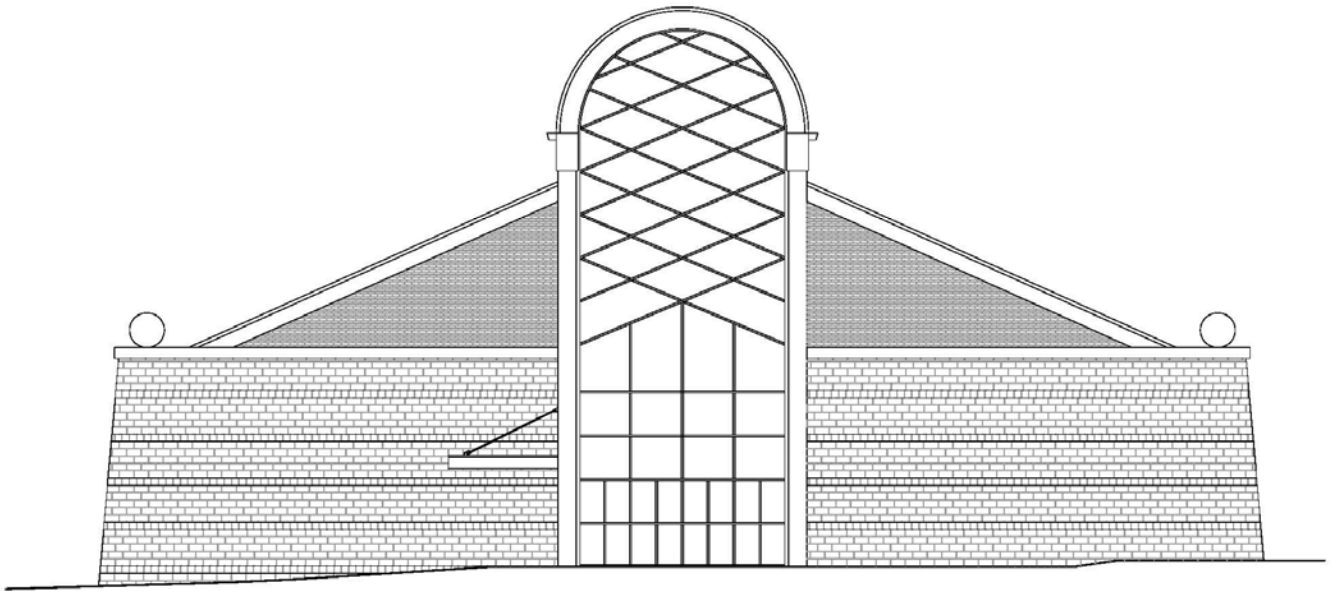
INSPECTION PHOTO

Project: LaGrange Park Public Library Water Infiltration Investigative Study

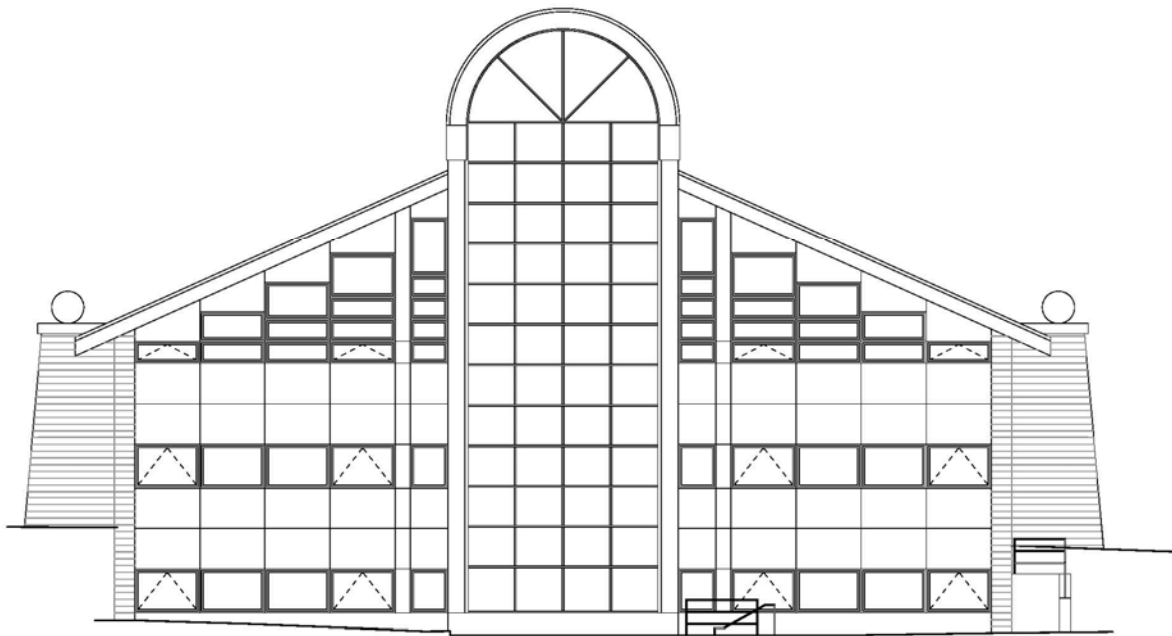
Photo Number: A1120

Description:

This is the west wall location just north of the Children's Department exit stairway at the first floor beam line. Note the open joint at the right center of the photo and the black "felt-like" sheathing paper that released from the gypsum board core when existing EIFS was removed. Because the wall sheathing was wet, the felt-like paper facings pull off easily from the gypsum board core. This means the full height and width of the wall sheathing will likely need to be replaced at the entire east façade of the building.

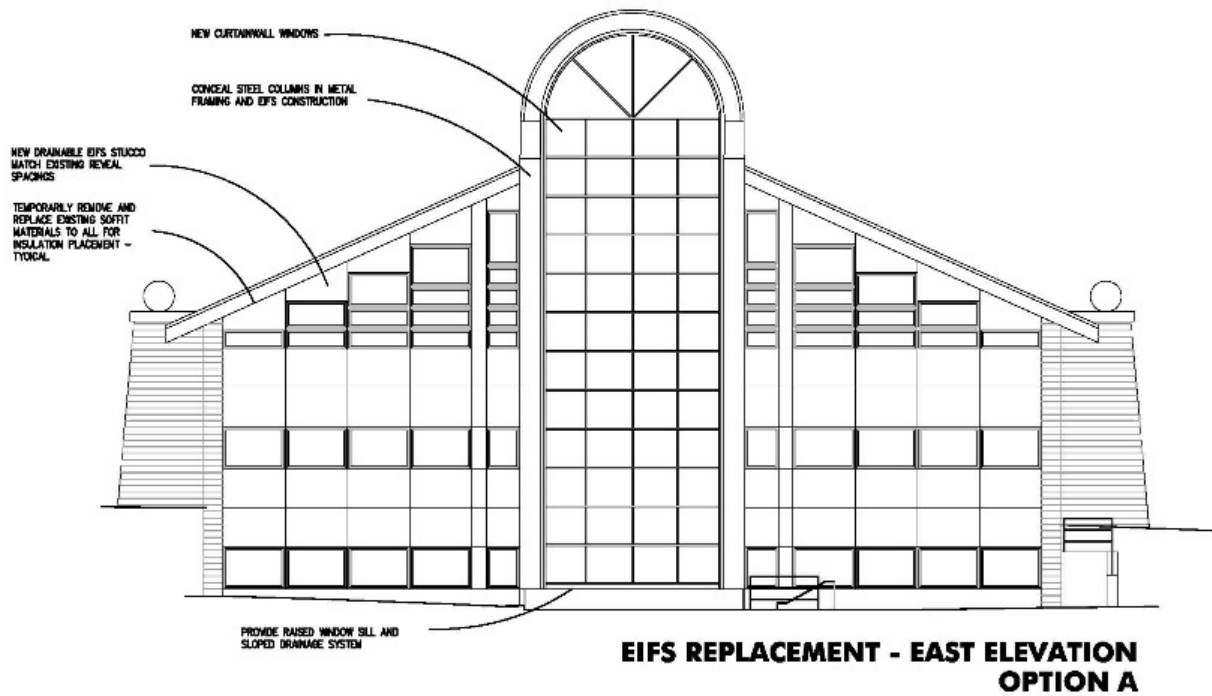
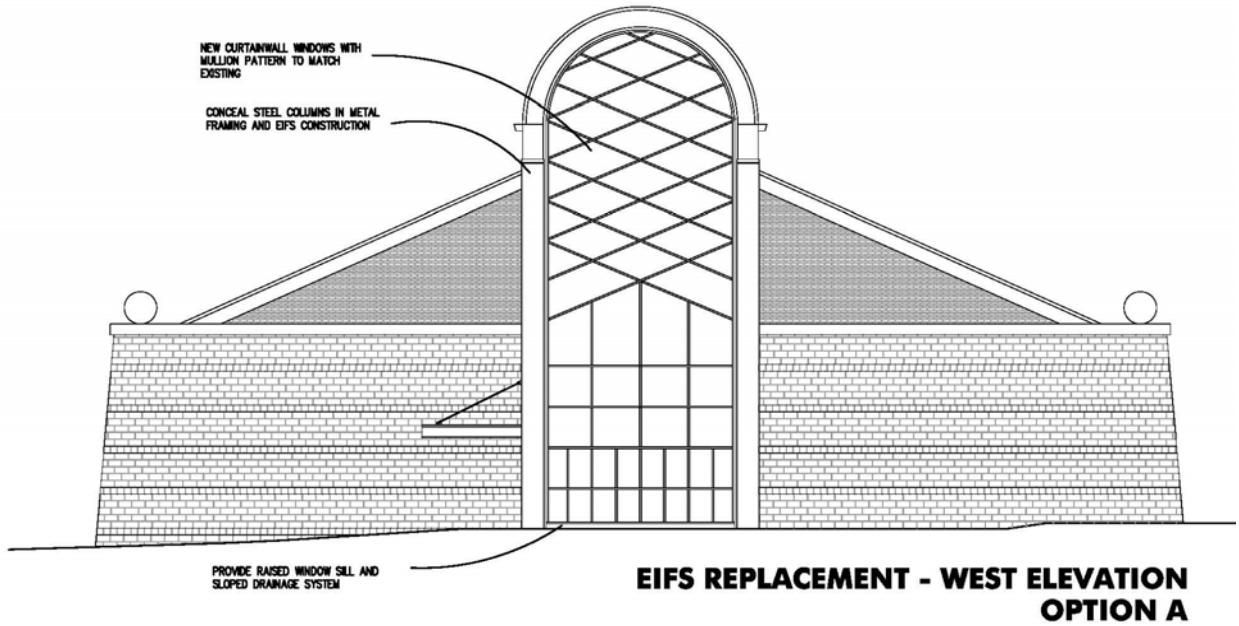


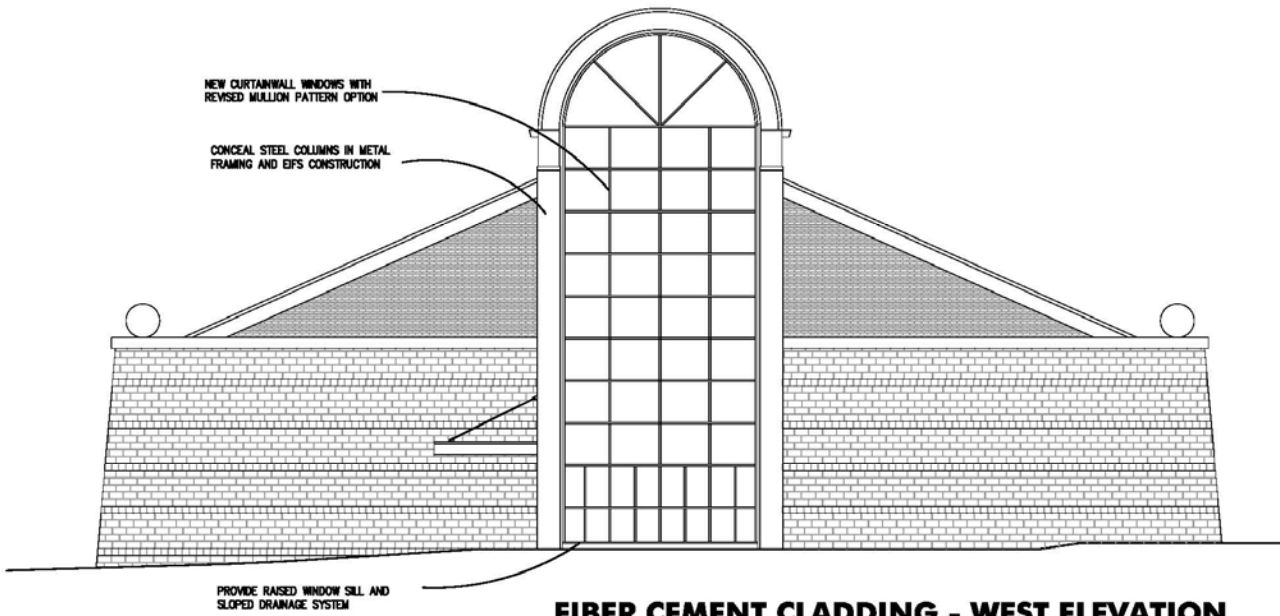
EXISTING WEST ELEVATION



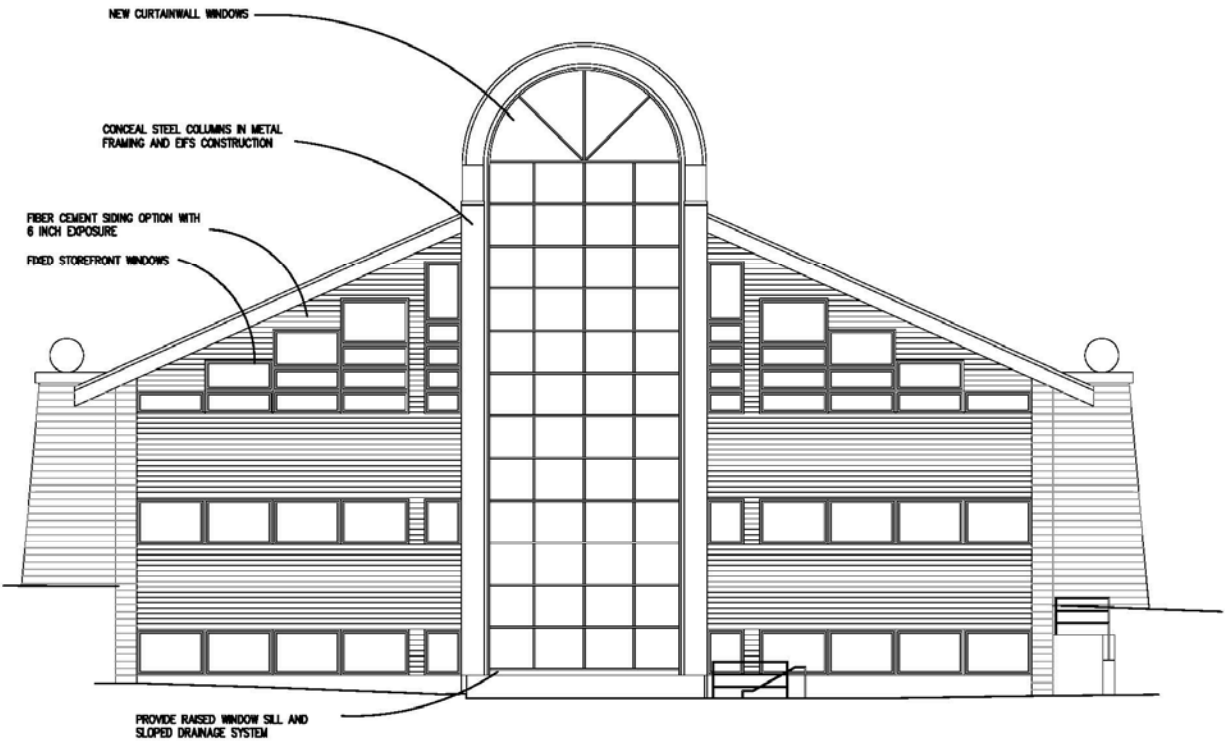
EXISTING EAST ELEVATION







**FIBER CEMENT CLADDING - WEST ELEVATION
OPTION B**



**FIBER CEMENT CLADDING - EAST ELEVATION
OPTION B**



Preliminary Opinion of Probable Costs

Project Cost Summary



Project: La Grange Park Public Library Water Infiltration
 Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
 Date: 4/28/2015
 Proj. No: 15-357-960
 Proj. Status: 100% Study Completion
 Est. By: CJH

Project Size:
 New Construction Floor Area: 0 SF
 Remodeled Floor Area: 2,906 SF
 Total Project Floor Area: 2,906 SF

LINE	COST ITEM	COST	COST / SF
01	Building New Construction Cost	\$0	\$0.00
02	Building Remodel Construction Cost	\$992,181	\$341.42
03	Building Design Contingency (10.00%)	\$99,218	\$34.14
04	SUBTOTAL BUILDING CONSTRUCTION COST	\$1,091,399	\$375.57
05	General Contractor OH & P (15.00%)	\$163,710	\$56.34
06	General Contractor Bond & Insurance (2.00%)	\$25,102	\$8.64
07	TOTAL BUILDING CONSTRUCTION COSTS	\$1,280,211	\$440.54
08	Site Work Construction Cost	\$10,253	\$3.53
09	Site Design Contingency (2.00%)	\$205	\$0.07
10	SUBTOTAL SITE CONSTRUCTION COST	\$10,458	\$3.60
11	General Contractor OH & P (15.00%)	\$1,569	\$0.54
12	General Contractor Bond & Insurance (2.00%)	\$241	\$0.08
13	TOTAL SITE CONSTRUCTION COSTS	\$12,268	\$4.22
14	Building Construction Contingency (15.00%)	\$192,032	\$66.08
15	Site Construction Contingency (2.00%)	\$245	\$0.08
16	Estimated Permit Fees		\$0.00
17	Fixtures Furniture and Equipment (0.00%)	\$0	\$0.00
18	A/E Fees (9.75%)	\$126,017	\$43.36
19	TOTAL SOFT COSTS	\$318,294	\$109.53
20	TOTAL PROJECT COST	\$1,610,773	\$554.29
21	Alternates:		
	Alternate No. 1 - Option B Fiber Cement Siding at East Elevation In Lieu of EIFS (Savings)	(\$21,500)	
	Alternate No. 2 - Minimize interior demolition. Leave as much exterior wall drywall in tact and only replace drywall damaged by water and around window openings. Reduce construction timeline to 7 months in lieu of 10 months. Utilize 6" closed cell spray foam in entire wall stud cavity in lieu of a combination of closed cell and open cell as originally planned. Closed cell spray foam to be applied entirely from exterior side of exterior wall. Reduce exterior wall gypsum board and acoustical ceiling replacement quantities.	(\$102,000)	

Notes: Cost projections assume FY 2015 implementation. If work is performed in any other year, adjustments will be necessary to account for inflation and changes in material and labor costs.

Preliminary Opinion of Probable Costs

Construction Cost Summary



Project: La Grange Park Public Library Water Infiltration
 Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
 Date: 4/28/2015
 Proj. No: 15-357-960
 Proj. Status: 100% Study Completion
 Est. By: CJH

Project Size
 New Construction Area: 0 SF
 Remodeled Area: 2,906 SF
 Total Project Area: 2,906 SF

DIVISION	DESCRIPTION - OPTION A	REMODELED COST	REMODELED COST / SF
Facility Construction		\$963,781	\$331.65
DIV 01	GENERAL CONDITIONS	\$252,375	\$86.85
DIV 02	EXISTING CONDITIONS	\$145,303	\$50.00
DIV 03	CONCRETE	\$8,030	\$2.76
DIV 04	MASONRY	\$2,500	\$0.86
DIV 05	METALS	\$17,250	\$5.94
DIV 06	WOODS, PLASTICS AND COMPOSITES	\$12,940	\$4.45
DIV 07	THERMAL AND MOISTURE PROTECTION	\$111,653	\$38.42
DIV 08	OPENINGS	\$336,479	\$115.79
DIV 09	FINISHES	\$72,251	\$24.86
DIV 10	SPECIALTIES	\$0	\$0.00
DIV 11	EQUIPMENT	\$0	\$0.00
DIV 12	FURNISHINGS	\$5,000	\$1.72
DIV 13	SPECIAL CONSTRUCTION	\$0	\$0.00
DIV 14	CONVEYING EQUIPMENT	\$0	\$0.00
Facility Services		\$28,400	\$9.77
DIV 21	FIRE SUPPRESSION	\$5,000	\$1.72
DIV 22	PLUMBING	\$0	\$0.00
DIV 23	HEATING, VENTILATING AND AIR CONDITIONING (HVAC)	\$10,900	\$3.75
DIV 25	INTEGRATED AUTOMATION	\$0	\$0.00
DIV 26	ELECTRICAL	\$10,000	\$3.44
DIV 27	COMMUNICATIONS	\$2,500	\$0.86
DIV 28	ELECTRONIC SAFETY AND SECURITY	\$0	\$0.00
Site and Infrastructure		\$10,253	\$3.53
DIV 31	EARTHWORK	\$3,588	\$1.23
DIV 32	EXTERIOR IMPROVEMENTS	\$6,665	\$2.29
DIV 33	UTILITIES	\$0	\$0.00
DIV 34	TRANSPORTATION	\$0	\$0.00
TOTAL CONSTRUCTION COST		\$1,002,434	\$344.95

Notes:

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
 Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park, IL

Date: 4/28/2015
 Proj. No: 15-357-960
 Status: 100% Study Completion
 Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 01 - General Requirements					\$252,375		
Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
01 30 00	ADMINISTRATIVE REQUIREMENTS					\$133,250	
	Superintendent (Full Time)	10	mo	9,450.00	\$94,500		\$113,400/yr salary
	Project Management (Part Time)	10	mo	3,875.00	\$38,750		
01 40 00	QUALITY REQUIREMENTS					\$10,000	
	Construction Testing	1	ls	10,000.00	\$10,000		Allowance for water infiltration testing
01 50 00	TEMPORARY FACILITIES AND CONTROLS					\$104,625	
	Temporary Utilities	1	ls	5,000.00	\$5,000		
	Field Office	1	ls	10,000.00	\$10,000		
	Temporary Toilets	1	ls	2,500.00	\$2,500		
	Temporary Barriers	1	ls	35,000.00	\$35,000		
	Construction Fence	1	ls	8,500.00	\$8,500		
	Temporary Enclosures	1	ls	12,000.00	\$12,000		
	Special Security Measures	1	ls	4,500.00	\$4,500		
	Dumpsters	1	ls	5,625.00	\$5,625		Qty 15 estimated
	Temporary Erosion Control	1	ls	1,500.00	\$1,500		Foundation excavation at columns
	Project Façade Scaffolding & Tenting Allowance	1	allow	20,000.00	\$20,000		
01 70 00	EXECUTION AND CLOSEOUT REQUIREMENTS					\$4,500	
	Final Cleaning	1	ls	4,500.00	\$4,500		

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
 Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park, IL

Date: 4/28/2015
 Proj. No: 15-357-960
 Status: 100% Study Completion
 Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 02 - Existing Conditions **\$145,303**

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
02 40 00	DEMOLITION AND STRUCTURE MOVING					\$145,303	
	Remove existing curb & gutter	16	lf	10.00	\$160		West Façade
	Remove existing concrete sidewalk	92	sf	3.00	\$276		
	Remove existing guardrail	1	ea	1,000.00	\$1,000		West Façade for new fdn's.
	Selective Demolition: Interior Drywall Walls	8,995	sf	4.65	\$41,827		
	Selective Demolition: Interior Acoustical Ceilings	2,175	sf	2.50	\$5,438		
	Selective Demolition: Exterior EIFS Materials	2,995	sf	4.55	\$13,627		
	Selective Demolition: Exterior Window Systems	1,250	sf	11.25	\$14,063		
	Selective Demolition: Glass Curtainwall Systems	2,450	sf	14.75	\$36,138		
	Selective Demolition: Remove and reinstall existing exterior soffits.	105	lf	16.25	\$1,706		
	Selective Demolition: Exterior Wall Sheathing and Batt Insulation	2,995	sf	3.00	\$8,985		
	Vinyl Base demolition	430	lf	0.25	\$108		
	False and Active louver demolition	8	ea	225.00	\$1,800		
	Remove and re-install owner furniture and shelving systems including allowance to temporarily store and re-shelve books.	1	allow	20,000.00	\$20,000		
	Remove terrazzo tile at main entrance vestibule	175	sf	1.00	\$175		

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park, IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 03 - Concrete							\$8,030
Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
03 30 00	CAST-IN-PLACE CONCRETE						\$5,530
	Footings and Piers						
	Wall & Piers	8	cy	430.00	\$3,440		Round column foundation allowance
	Strip Footings	4	cy	419.00	\$1,676		Round column foundation allowance
	Concrete Slabs						
	Slab on Grade (4")	92	sf	4.50	\$414		Entrance sidewalk replacement after foundation installation
03 80 00	CONCRETE CUTTING AND BORING						\$2,500
	Contingency Allowance	1	allow	2500.00	\$2,500		

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 04 - Masonry							\$2,500	
Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes	
					Subtotals	Totals		
04 20 00	UNIT MASONRY					\$2,500		
	Exterior Wall Construction							
	Brick Veneer Repair Allowance at East Wing Walls	1	allow	2500.00		\$2,500		

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 05 - Metals						\$17,250	
Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
05 10 00	STRUCTURAL METAL FRAMING					\$5,000	
	Steel repair allowance at rusted column and beam locations	1	allow	5000.00	\$5,000		Rust removal, re-welding, rust inhibiting coating application.
05 40 00	COLD-FORMED METAL FRAMING					\$6,250	
	Exterior Wall Stud Replacement Allowance	1	allow	6250.00	\$6,250		For rusted components determined to need replacement.
05 50 00	METAL FABRICATIONS					\$6,000	
	Lintels Repair / Replacement allowance where needed	1	allow	2500.00	\$2,500		
	Misc. New Crash Barricade at Parking Lot	1	allow	3500	\$3,500		Reconfigured after new foundation work is completed at west façade.

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 06 - Woods, Plastics and Composites					\$12,940		
Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
06 10 00	ROUGH CARPENTRY					\$6,500	
	Wood Blocking - Treated Lumber at window jambs, sills and heads	1	allow	6500.00	\$6,500		
06 40 00	ARCHITECTURAL WOOD WORK					\$6,440	
	Solid Surface Window Sills: 16 Inches deep X Length	224	lf	28.75	\$6,440		Install at exterior windows in lieu of drywall sills.

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
 Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park, IL

Date: 4/28/2015
 Proj. No: 15-357-960
 Status: 100% Study Completion
 Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 07 - Thermal & Moisture Protection						\$111,653	
Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
07 10 00	DAMPPROOFING AND WATERPROOFING					\$718	
	Foundation Waterproofing - East & West Elevations at locations of new foundation castings	234	sf	3.07	\$718		
07 21 00	THERMAL INSULATION					\$18,804	
	Exterior Wall - Closed Cell Spray Foam: 2" Thick = R-12	4,795	sf	2.30	\$11,029		
	Exterior Wall - Open Cell Spray Foam: 2" Thick = R7.4	4,795	sf	1.10	\$5,275		
	Closed Cell spray foam at window jamb shim spaces - allowance	1	allow	2500	\$2,500		
07 24 00	EXTERIOR INSULATION AND FINISH SYSTEMS					\$72,631	
	2" EPS foam insulation over 5/8" Dens Glass sheathing. Drainable & Breathable system	4,285	sf	16.95	\$72,631		Includes new column wraps in EIFS
07 60 00	FLASHING AND SHEET METAL					\$7,500	
	Misc Flashing & Counterflashing Work	1	allow	7,500	\$7,500		
07 80 00	FIRE AND SMOKE PROTECTION					\$3,500	
	Firestopping	1	allow	3500.00	\$3,500		
07 90 00	JOINT PROTECTION					\$8,500	
	Backer Rod and Sealant Joints in Exterior Wall Construction - Allowance	1	allow	8500.00	\$8,500		

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
 Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park, IL

Date: 4/28/2015
 Proj. No: 15-357-960
 Status: 100% Study Completion
 Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 08 - Openings					\$336,479		
Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
08 40 00	ENTRANCES, STOREFRONTS AND CURTAIN WALLS					\$326,078	
	Automatic Entrances	0	units	3600.00	\$0		Re-Use Existing Main entrance and at Childrens Department Exit.
	Storefront Doors; 3'x7' single	5	ea	854.00	\$4,270		
	Storefront Window System w/ 1" insulated glazing tinted, tempered, kynar finish	1,583	sf	61.85	\$97,909		Military blue paint to match existing frame color Includes structural connections to floor and beam lines.
	Curtainwall Framing: 2.5 x 10 Kynar Finish w/ insulated, tinted, low-e glass	2,645	sf	84.65	\$223,899		
08 70 00	HARDWARE					\$6,521	
	Panic Door Hardware w/closer-hinges	5	ea	1150.00	\$5,750		
	Removable Mullions	2	ea	385.45	\$771		
08 90 00	LOUVERS AND VENTS					\$3,880	
	Wall louvers - Rain Resistant - Drainable.	8	ea	485.00	\$3,880		4 operable louvers and 4 false louvers

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park, IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 09 - Finishes						\$72,251	
Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
09 20 00	PLASTER AND GYPSUM BOARD					\$33,675	
	5/8" Thick, Type X, Mold Resistant - Level 4 Finish. Interior application. (2) layers of 1/4" Drywall at radius - vaulted ceiling to frame down to follow new window archway size x 2 feet wide including metal framing	9,625	sf	2.20	\$21,175		Exterior wall surfaces affected by work. Includes some remedial wall work at intersecting wall surfaces.
		1	allow	12500.00	\$12,500		
09 30 00	TILING					\$2,188	
	Terrazzo Tile Replacement in Entrance Vestibule.	175	sf	12.50	\$2,188		
09 50 00	CEILINGS					\$10,766	
	Acoustical Ceilings	2,175	sf	4.95	\$10,766		Affected areas of work only.
09 60 00	FLOORING					\$8,222	
	Carpet - Replacement	2,175	sf	3.78	\$8,222		Affected areas of work only.
09 90 00	PAINTING AND COATING					\$17,400	
	Painting - Walls & Ceilings	12,000	sf	1.45	\$17,400		Estimated for affected areas of work only. May require more painting.

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 10 - Specialties						\$0
-----------------------------	--	--	--	--	--	------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
10 10 00	NOT USED					\$0	

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 11 - Equipment	\$0
---------------------------	------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
11 10 00	NOT USED					\$0	

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 12 - Furnishings						\$5,000
-----------------------------	--	--	--	--	--	----------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
12 20 00	WINDOW TREATMENTS					\$5,000	
	Remove and re-install shades	1	allow	5000.00	\$5,000		Assumes window opening will match existing. East Elevation.

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 13 - Special Construction	\$0
--------------------------------------	------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
13 10 00	NOT USED					\$0	

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 14 - Conveying Equipment						\$0
-------------------------------------	--	--	--	--	--	------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
14 20 00	NOT USED					\$0	

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 21 - Fire Suppression						\$5,000
----------------------------------	--	--	--	--	--	----------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
21 10 00	WATER-BASED FIRE-SUPPRESSION SYSTEMS					\$5,000	

	Minor head reconfiguratiojns along outside walls for new soffit framing areas.	1	allow	5000	\$5,000	
--	--	---	-------	------	---------	--

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 22 - Plumbing						\$0
--------------------------	--	--	--	--	--	------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
22 07 19	NOT USED					\$0	

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
 Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL

Date: 4/28/2015
 Proj. No: 15-357-960
 Status: 100% Study Completion
 Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 23 - Heating, Ventilating and Air Conditioning (HVAC) \$10,900

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
23 30 00	HVAC AIR DISTRIBUTION					\$5,900	
	Remove and reinstall existing smoke removal fans	4	ea	850.00	\$3,400		
	Temporarily relocate diffusers and re-install after exterior wall work is completed.	1	allow	2500.00	\$2,500		
23 80 00	DECENTRALIZED HVAC EQUIPMENT					\$5,000	
	Temporarily remove lower level cabinet heaters and re-install after new exterior wall work is completed.	1	allow	5000.00	\$5,000		

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 25 - Integrated Automation						\$0
---------------------------------------	--	--	--	--	--	------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
25 00 00	NOT USED					\$0	

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park, IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 26 - Electrical							\$10,000
Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
26 50 00	LIGHTING					\$5,000	
	Temporarily relocate and re-install lighting	1	allow	5000	\$5,000		allowance, subject to revision
	POWER					\$5,000	
	Reconfigure exterior wall receptacles and power devices in areas of affected work.	1	allow	5000	\$5,000		allowance, subject to revision

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 27 -	Communications	\$2,500
-----------------	-----------------------	----------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
	TECHNOLOGY					\$2,500	
	Data, Phone & Video jack relocation/retermination at exterior wall locations	1	allow	2500	\$2,500		allowance, subject to revision

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 28 - Electronic Safety and Security						\$0
--	--	--	--	--	--	------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
28 31 00	NOT USED					\$0	

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 21 - Earthwork							\$3,588	
Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes	
					Subtotals	Totals		
	Earthwork / Erosion Control						\$3,588	
	Earth Excavation	72	cy	5.00	\$360			
	Earth Haul-Off w/testing	72	cy	18.00	\$1,296			
	Topsoil Strip, stockpile & respread	4	cy	5.00	\$20			
	Inlet Protection	2	ea	150.00	\$300			
	Concrete Washout Area	1	ea	250.00	\$250			
	Sub-Grade Prep under slab & pavement	42	cy	5.00	\$210			
	Foundation Backfill	72	cy	16.00	\$1,152			

Preliminary Opinion of Probable Costs
Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL

Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 32 - Exterior Improvements					\$6,665		
Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
	Pavement					\$1,665	
	Asphalt Surface Course, 1 1/2"	16	sy	7.00	\$112		
	Asphalt Binder Course, 2 1/2"	16	sy	9.00	\$144		
	Aggregate Base Course, 8"	16	sy	7.00	\$112		
	Concrete Curb	34	lf	16.50	\$561		
	Concrete Sidewalk	92	sf	8.00	\$736		
02900	LANDSCAPING					\$5,000	
	Restoration allowance	1	allow	5000.00	\$5,000		

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 33 - Utilities	\$0
---------------------------	------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
	NOT USED					\$0	

Preliminary Opinion of Probable Costs

Construction Cost Detail



Project: La Grange Park Public Library Water Infiltration
Owner: La Grange Park Public Library
 555 North La Grange Road, La Grange Park , IL
Date: 4/28/2015
Proj. No: 15-357-960
Status: 100% Study Completion
Est. By: CJH

Project Size:
 New Const.: 0 SF
 Remodeled: 2,906 SF

DIV 34 - Transportation						\$0
--------------------------------	--	--	--	--	--	------------

Item	Description	Rem.	Unit	Unit Price	Remodeling Costs		Notes
					Subtotals	Totals	
34 00 00	NOT USED					\$0	