URBANO

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URBANO
ARCHITECTS

IMPERIAL SUGAR COMPANY CHAR FILTER HOUSE CONDITIONS ASSESSMENT

FINAL SUBMISSION TO

CITY OF SUGAR LAND ECONOMIC DEVELOPMENT

30 SEPTEMBER, 2020

TABLE OF CONTENT

I. SCOPE OF WORK: MOTHBALLING

SCOPE OF WORK: MOTHBALLING

In June, 2020, the City of Sugar Land hired Urbano Architects, LLC to conduct a Conditions Assessment for the Imperial Sugar Company Char Filter House focused on mothballing. The term mothballing is used to describe measures taken on an unoccupied building in order to stabilize it until it can be brought to a usable and productive condition once again. Mothballing can be especially useful for a historic property that has been left to deteriorate over an extended period of time and full repair or restoration is not financially feasible until a team of investors and developers have been brought on board. As it can be difficult to form this team of financial backers, mothballing can be used in the interim to prevent the building from further degradation.

Per the General Services Administration (GSA), the following nine steps are recommended to properly mothball a building:

1. Document the architectural and historical significance of the building
2. Prepare a condition assessment of the building
3. Structurally stabilize the building, based on a professional conditions assessment
4. Exterminate or control pests, including termites and rodents
5. Protect the exterior from moisture penetration
6. Secure the building and its component features to reduce vandalism or break-ins
7. Provide adequate ventilation to the interior
8. Secure or modify utilities and mechanical systems
9. Develop and implement a cleaning, maintenance, and monitoring plan for protection

DOCUMENTATION

This entails both producing existing conditions drawings as well as noting the historical significance of the building and its specific features. It also includes a detailed conditions assessment usually based on investigative site visits. Because the mothballing scope may be undertaken in phases or over an extended period of time, it is important to keep a thorough record of prior and current documentation for future reference.

STRUCTURAL STABILIZATION

This entails necessary repairs to the building's foundation, floor, wall and roof assemblies whether they be concrete, wood, steel or masonry. It is standard for this scope to be based on reports conducted by experienced structural engineers. Stabilization also includes the elimination of pests that may contribute to damage as well as pose potential health hazards.

WEATHERPROOFING

This entails protecting from both wind and moisture damage as well as snow loads depending on the climate. This scope may entail repairs to the roof and parapets, openings such as windows and doors, as well as existing plumbing equipment including roof drains, leaders and storm and sewer lines. It may also include the introduction of lightning protection and site improvements such as drainage and water run-off control.

SECURITY

Securing the building from vandalism and intruders is important to prevent continued destruction of the building but it is also an important safety measure to ensure the public cannot enter into a building that may be unsafe for a variety of reasons. Measures taken to secure a building can include perimeter fencing, protective glazing or plywood at lower level windows and openings, adequate exit and precautionary signage, as well as appropriate flood and motion activated lighting. The installation of these security measures should be undertaken in a way to reduce damage to the existing building elements.

VENTILATION

Providing adequate ventilation to the building ensures that any moisture can be more easily mitigated and humidity levels will be maintained to a point to prevent continued damage to the structure. Ventilation scope may include new fans and louvers as well as upgraded electrical to accommodate the new equipment.

ENGINEERING SYSTEMS

In addition to ventilation, other mechanical systems may also need to be repaired or upgraded to meet code or achieve other scope such as safety lighting and fire alarm and security devices. This could include electrical panel or distribution repairs or replacement.

MAINTENANCE PLAN

Once the baseline mothballing scope is prepared, it is imperative to create and implement a thorough maintenance and monitoring plan to ensure all the repairs and improvements are functioning as planned. Maintenance measures typically include dedicated staff to regularly check-in on the building, ensuring the security improvements such as lighting and hardware are functioning and engaged and that the ventilation system is operating properly.

CONCLUSION

In summary, the mothballing process is an effective and important means of protecting historic buildings from further deterioration while planning for their future rehabilitation. The following report aims to address the various steps mentioned above in order to properly mothball the Imperial Sugar Company Char Filter House. Furthermore, bringing the building to a state in which it is safe for potential investors to access the building may certainly assist in potential investment for its future rehabilitation.

II. HISTORICAL BACKGROUND

HISTORICAL BACKGROUND

PHOTO FROM THE BRUCE KELLY COLLECTION, COURTESY OF CITY OF SUGAR LAND

PHOTO FROM THE BRUCE KELLY COLLECTION, COURTESY OF CITY OF SUGAR LAND

The Imperial Sugar Company Char Filter House, also referred as "The Char House", is a building situated on a 0.819-acre site located within the larger 4.8 acre site of the Imperial Sugar Company Refinery complex. The site was part of a larger land block acquired by Samuel May Williams (1795-1858) a businessman, politician, and close associate of Stephen F. Austin, one of the original "Old Three Hundred" grantees of the Austin Colony. Williams served as recording secretary of the Austin Colony and other duties, for which in 1824 he received a headright of two leagues (league = 4428.4 acres of grazing land) and three labors (labor = 640 acres of cropland) including what would become the Imperial Sugar Company land. The S.M Williams House of 1840 survives at 3601 Ave. P in Galveston.

Sugar Land is, after Houston, Pasadena, Beaumont, and Baytown, the fifth largest city on the upper Texas Gulf coast. Sugar Land is a patchwork quilt of settlements that evolved from a slave plantation subsequently worked by convict labor, to a rural industrial corporate complex ensconced at the center of its own company town, to a quintessential late twentieth-century edge city anchored by a planned community for transient energy-industry personnel and financed by global investment capital. Sugar Land's name identifies its location in the Sugar Bowl of Texas, as the lower Brazos River counties of Fort Bend and Brazoria were known in the nineteenth century. By the end of the twentieth century, the Sugar Land-based Imperial Sugar Company was the largest processor and marketer of refined sugar in the United States. Adjacent to the Imperial Sugar Company's refinery, which backs up to Oyster Creek and faces the tracks of the Buffalo Bayou, Brazos and Colorado Railway and U.S. 90 A, is the early twentieth-century company town. South of U.S. 90 A, an extension of Houston's Main Street, are the upper-middle-income subdivisions that Imperial began to develop in the late 1950s, when its former cane fields became more valuable as suburban real estate than for agricultural use. [Stephen Fox]

The sugar refinery was begun in the 1870s by San Antonio-based sugar planter and refiner E.H. Cunningham, who acquired what was originally Oakland Plantation on Oyster Creek where sugar had been grown since 1838. Cunningham and other large Fort Bend County growers, such as L. A. Ellis of Austin, surpassed Brazoria County in cane production in the later nineteenth century. Between 1877 and 1883, Cunningham and Ellis leased and managed the entire population of the Texas prison system to ensure a dependable supply of field labor. In 1893 Cunningham modernized by building one of the largest sugar refineries in the U.S., part of a comprehensive, highly capitalized expansion of operations that also included development of a company-owned settlement around the refinery. Poor management caused Cunningham to sink into debt and in 1908 Galveston businessman I. H. Kempner bought the 20,000-acre plantations, refinery, and railroad, which were incorporated as the Imperial Sugar Company. Imperial sold some of Cunningham's growing land to the state as a prison farm and after the State of Texas terminated convict leasing in 1910. Managing partner W. T. Eldridge rehabilitated the Sugar Land town site, constructing housing and other services to attract workers and their families, especially German and Moravian Texans.

The Imperial Sugar Company Char Filter House was built during the expansionary decade of the 1920s to process Cuban and Hawaiian sugar after cane ceased to be grown in the Texas Sugar Bowl. In the post-World War II period, Imperial divested itself of its Sugar Land real estate, selling company housing to employees and encouraging Sugar Land's incorporation as a city, which occurred in 1959. Until 1988, the corporation was privately held and managed by the Kempner family. An aggressive expansion campaign during the 1990s ended in 2001 when Imperial filed for bankruptcy. At the end of 2002, the corporation closed the Sugar Land refinery. In 2005, Cherokee Investment Partners of Raleigh North Carolina, specializing in the remediation and redevelopment of brownfield sites, bought the 160-acre refinery tract. In 2007, Cherokee Sugar Land, a limited partnership between the General Land Office of the State of Texas and Cherokee Investment Partners, entered into a development agreement with the City of Sugar Land to redevelop 721 acres, including the refinery area, into a high-quality mixed-use master planned community. As of 2020, the Char Filter House is part of a 25 acre district which is zoned for a mixed-use development to be known as "Imperial Market." The 0.8 acre parcel where the Char House sits is owned by SLP-90A, Ltd. The site was listed as a National Register of Historic Places Historic District on 5 May 2017. Refer to the National Register Nomination in Appendix D.

The Imperial Sugar Company Char Filter House, completed in 1926 (1925 cornerstone) to the designs of Dwight P. Robinson & Company, is an eight-story composite structure, with steel columns, steel and concrete beams, steel and aluminum windows, and brick infill walls and interior column covers. The building consists of a 6x6 rectangular bay and the eight stories are irregular in height.

THE SUGAR REFINING PROCESS

"The Imperial Sugar Company Char Filter House was used for processing raw sugar cane into the types of sugar sold by the Imperial Sugar Company. All the steps for refinement took place in this building, including affination, carbonatation, decolorization, boiling and crystallization, and recovery." [NPS] Most raw sugar comes from largely tropical areas of the world and areas where it is more profitable to grow sugar. Once the sugar arrives at the refinery facilities, it entails a lengthy process in order to clean and purify it before it is ready for consumption. The process is described as follows:

Step 1: Affination. Affination softens raw sugar to separate the sugar crystals from the syrup and other impurities. The crystals are then dissolved to form liquor which needs additional processing to remove other impurities and non-sugar particles that remain.

Step 2: Carbonatation. The first step of processing the liquor made from the dissolved crystals is carbonatation. This chemical process is used to remove cloudy solids in the liquor by growing small clumps of chalk that attract non-sugar particles which are then filtered out along with the chalk. This process takes place in large "carbonatation tanks".

Step 3: Decolorization. Decolorization is achieved by absorption techniques that pump the liquor through columns of other medium. In the past the activated carbon was created by incinerating animal bones into a material called "bone char" which was the process used at this factory and where the name "Sugar Char House" is derived. Modern technology has largely replaced the bone char decolorization method.

Step 4: Boiling and Crystallization. The decolorized liquid is now placed in a pan where conditions are optimal to regrow the crystals. Once the crystals have grown they must again be sent through a centrifuge to separate the crystals from the mother liquor. The crystals are then dried before being packed for distribution.

Step 5: Recovery. The remaining mother liquor is separated from the crystals and becomes "refiner's molasses". This can be used to feed livestock or in the production of alcohol.

PHOTO FROM THE BRUCE KELLY COLLECTION, COURTESY OF CITY OF SUGAR LAND

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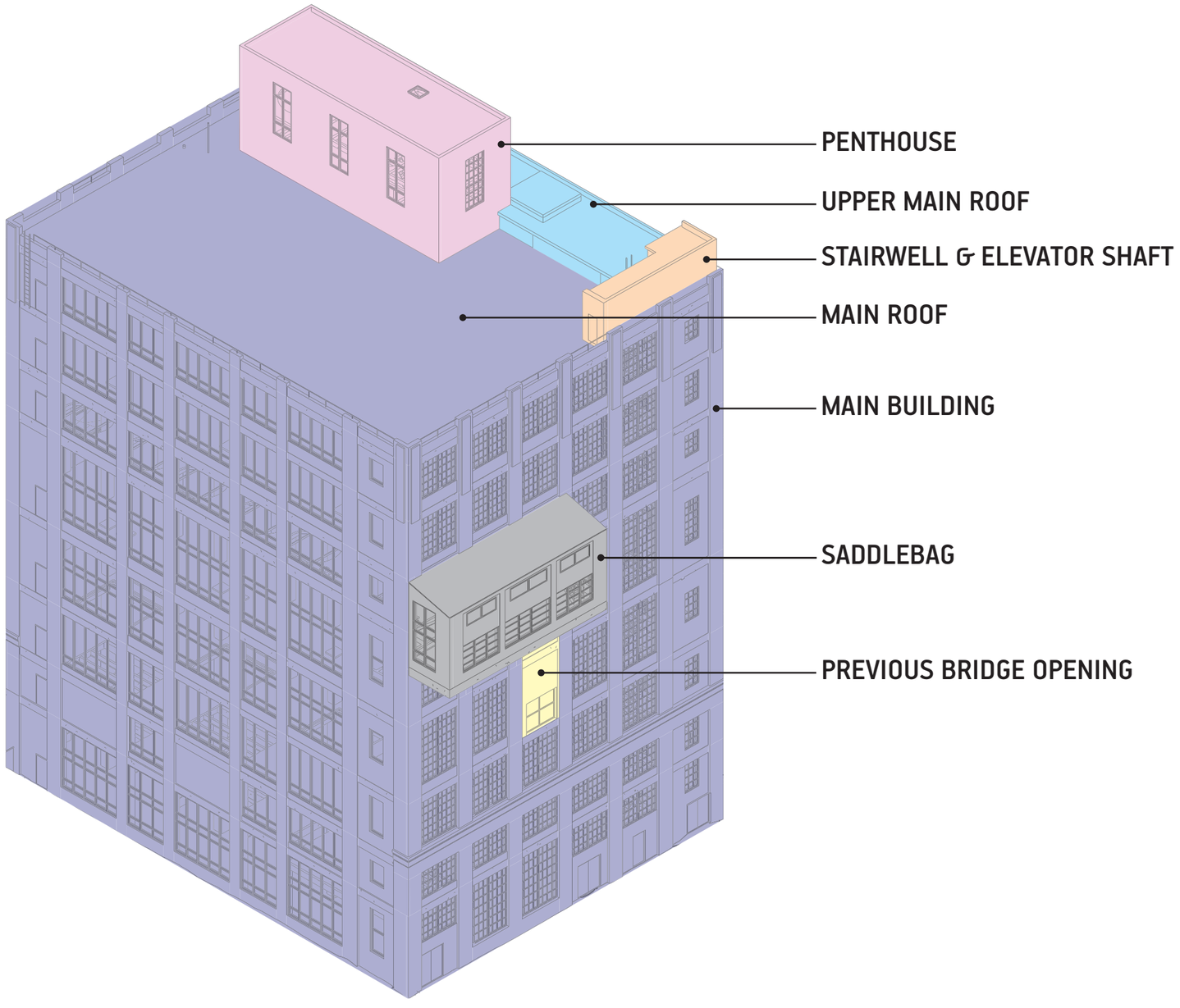
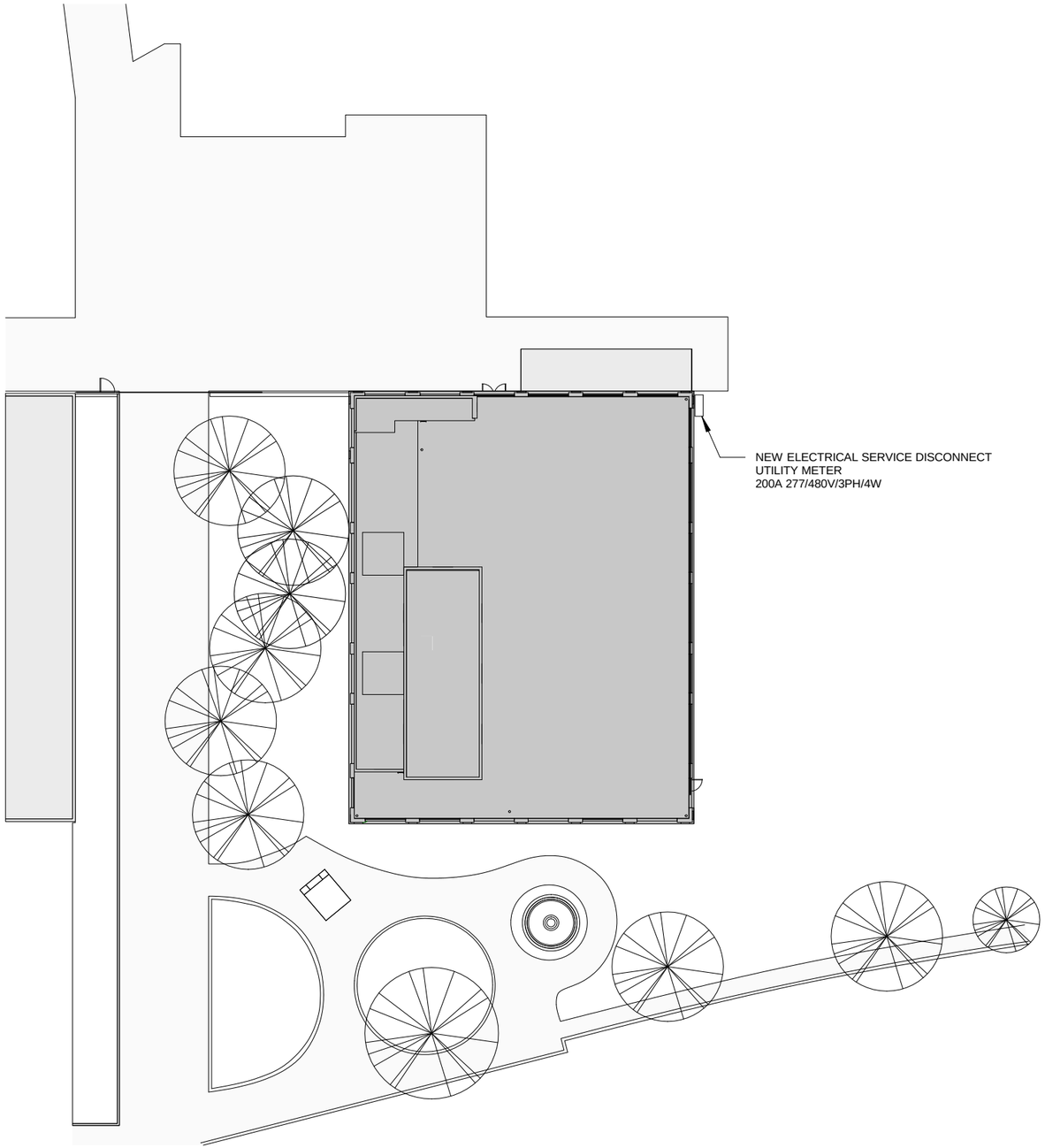
III. THE DRAWINGS

BUILDING PARTS DIAGRAM

For reference purposes in this report, the various building areas have been classified per the axonometric diagram on the right.





ABBREVIATIONS

MECHANICAL:
IL-# - Intake Louver
EL-# - Exhaust Louver
DEF-# - Exhaust Fan
[AM] (AM in a box) - Motorized Damper
(T) (T in a circle) - Thermostat
(HO) (HO in a circle) - Humidistat

ELECTRICAL:
HO# - High Panel
LX# - Transformer
AL# - Low Panel
AL#-XXX - Circuit number
$ - Motor Rated Switch/Disconnect
(DJ) (DJ in a circle) - Junction Box
[AM] (AM in a box) - Motorized Damper

PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES.
SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name:
Imperial Sugar Char House Conditions Assessment

Project Address:
198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title:
SITE PLAN

Scale:
1/32" = 1'-0"

Drawing Number:
A-100

Issue Date:
09/25/2020

DISCLAIMER
THESE DRAWINGS ARE INTENDED TO PROVIDE A GENERAL INDICATION OF THE EXTENT OF THE MOTHBALLING SCOPE OF WORK REQUIRED. IT IS NOT THE INTENT OF THESE DRAWINGS TO INDICATE EACH AND EVERY ITEM OF WORK REQUIRED AND THEY ARE NOT INTENDED FOR CONSTRUCTION.

LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION

ABBREVIATIONS

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PLUMBING:
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#

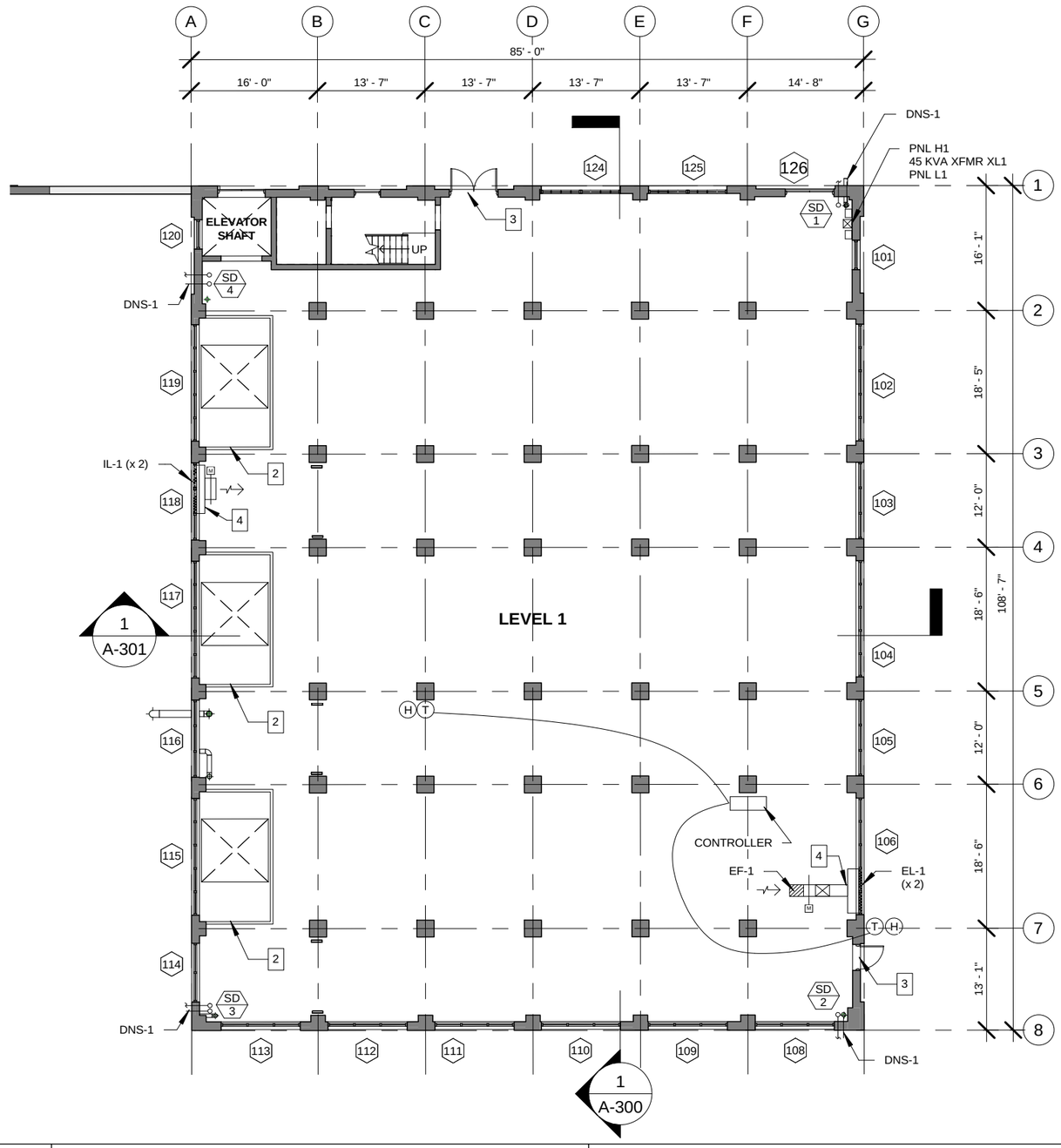
MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- (3) THREE APPROX. 8'-0 X 8'-0" SQUARE OPENINGS AT SLAB ALONG EAST FACADE FILLED WITH WATER (APPROX. 5'-0" DEEP)GRAFFITI AT MASONRY THROUGHOUT
- STAINING AND SOILING AT MASONRY THROUGHOUT
- VARIOUS CRACKS AT MASONRY COLUMNS (STRUCTURAL REPORT NOTES THESE ARE NOT OF STRUCTURAL CONCERN/ AESTHETICS ONLY)
- EVIDENCE OF DISPLACEMENT AT MASONRY WALLS
- VARIOUS AREAS OF CHIPPED MASONRY
- VARIOUS PENETRATIONS FROM PREVIOUS PLUMBING SYSTEMS
- SIGNS OF FORCED ENTRY
- EVIDENCE OF CORROSION AT STORM RISER PIPING AND VISIBLE LEAKS
- ALUMINUM WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD
- STEEL WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD

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119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **FIRST FLOOR PLAN**

Scale: 1/16" = 1'-0"

Drawing Number: **A-101**

Issue Date: 09/25/2020

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LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION

ABBREVIATIONS

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PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

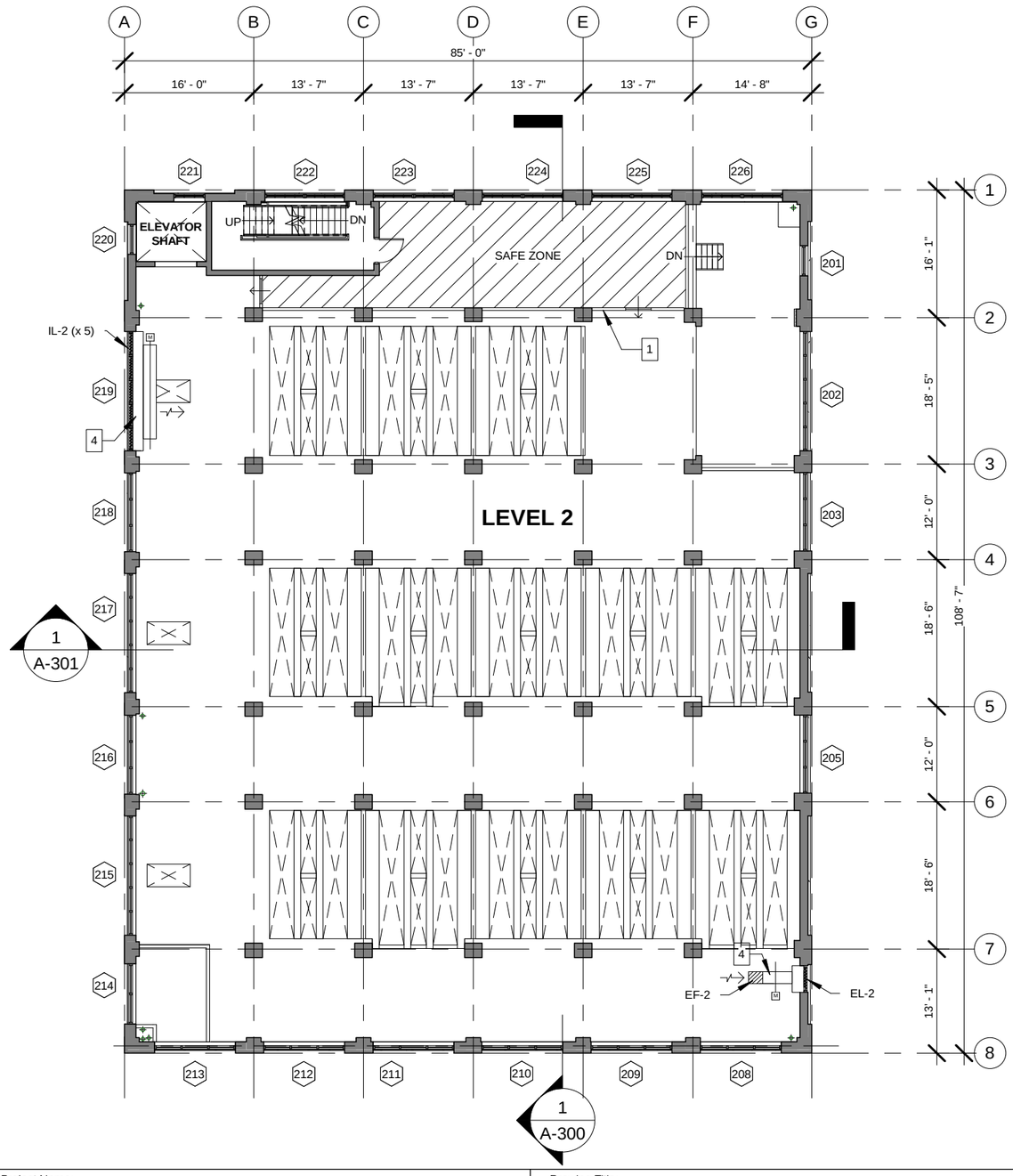
MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- VARIOUS LARGE OPENINGS AT CONCRETE SLAB
- CRACKS AND SOILING AT CONCRETE SLAB
- MISSING MASONRY AT VARIOUS COLUMNS FACING SLAB OPENINGS (APPROX. 22 SF EACH)
- STAINING AND SOILING AT MASONRY THROUGHOUT
- GRAFFITI AT MASONRY
- SPALLING, CRACKING AND SOILING AT UNDERSIDE OF CONCRETE SLAB ABOVE, WITH VISIBLE SIGNS OF CORROSION FROM EXPOSED REBAR EVIDENCE OF CORROSION AT STEEL BEAMS
- EVIDENCE OF CORROSION STAINS AT CONCRETE BEAMS FROM EXPOSED STEEL
- EVIDENCE OF CORROSION AT EXPOSED STEEL COLUMNS
- EVIDENCE OF CORROSION AT STORM RISER PIPING AND VISIBLE LEAKS
- ALUMINUM WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD
- STEEL WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **SECOND FLOOR PLAN**

Scale: 1/16" = 1'-0"

Drawing Number: **A-102**

Issue Date: 09/25/2020

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LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION

ABBREVIATIONS

MECHANICAL:
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DEF-# - Exhaust Fan
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ELECTRICAL:
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PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

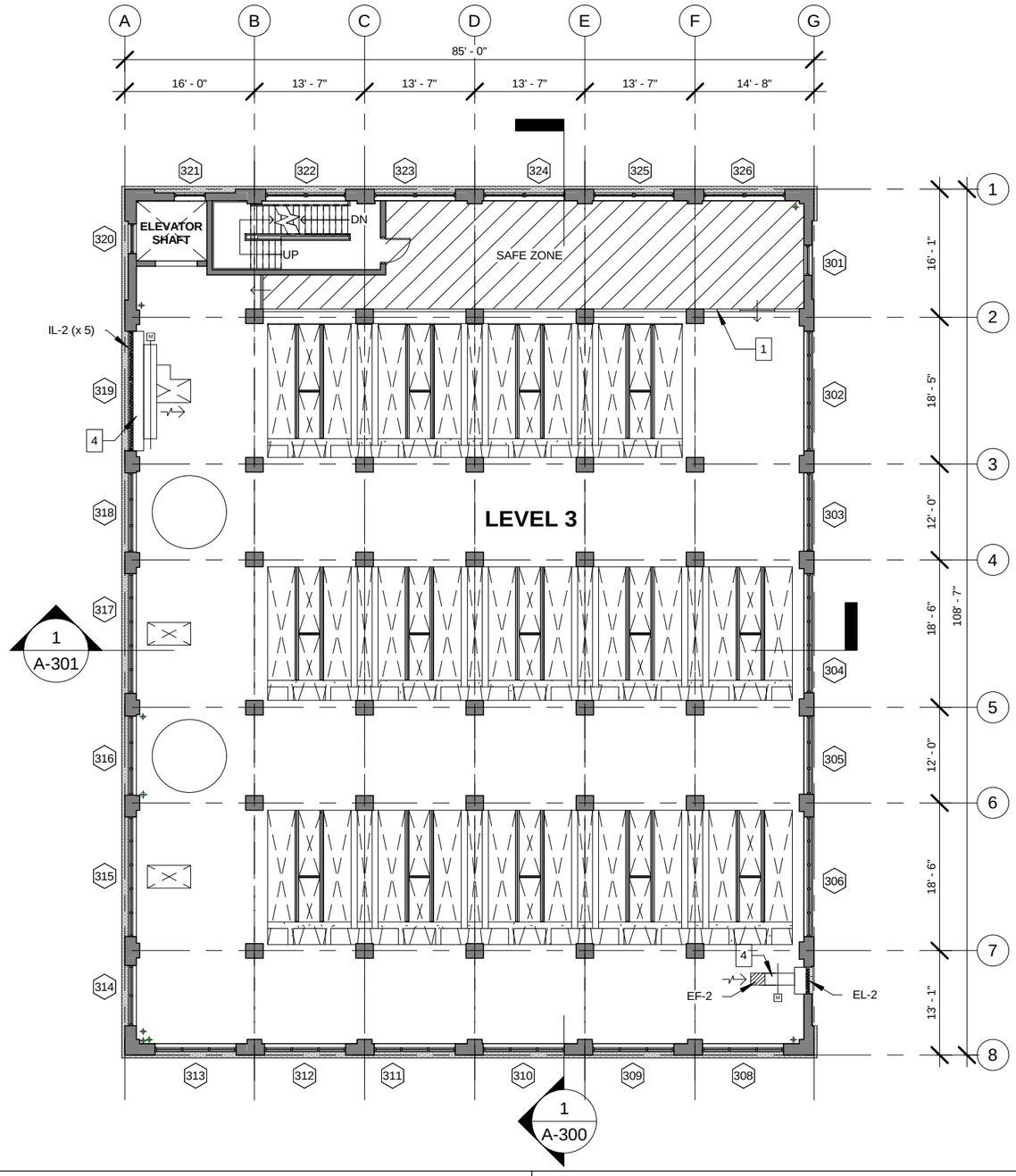
MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- VARIOUS LARGE OPENINGS AT CONCRETE SLAB
- VISIBLE SIGNS OF PONDING AND STAINING AT CONCRETE SLAB
- VARIOUS TERRACOTTA MASONRY INFILL AT COLUMNS THROUGHOUT
- STAINING AND SOILING AT MASONRY THROUGHOUT
- EVIDENCE OF CORROSION AT STORM RISER PIPING AND VISIBLE LEAKS
- SPRINKLER SYSTEM IN PLACE IS NON-FUNCTIONING, WITH EVIDENCE OF CORROSION
- ALUMINUM WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD
- STEEL WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **THIRD FLOOR PLAN**

Scale: 1/16" = 1'-0"

Drawing Number: **A-103**

Issue Date: 09/25/2020

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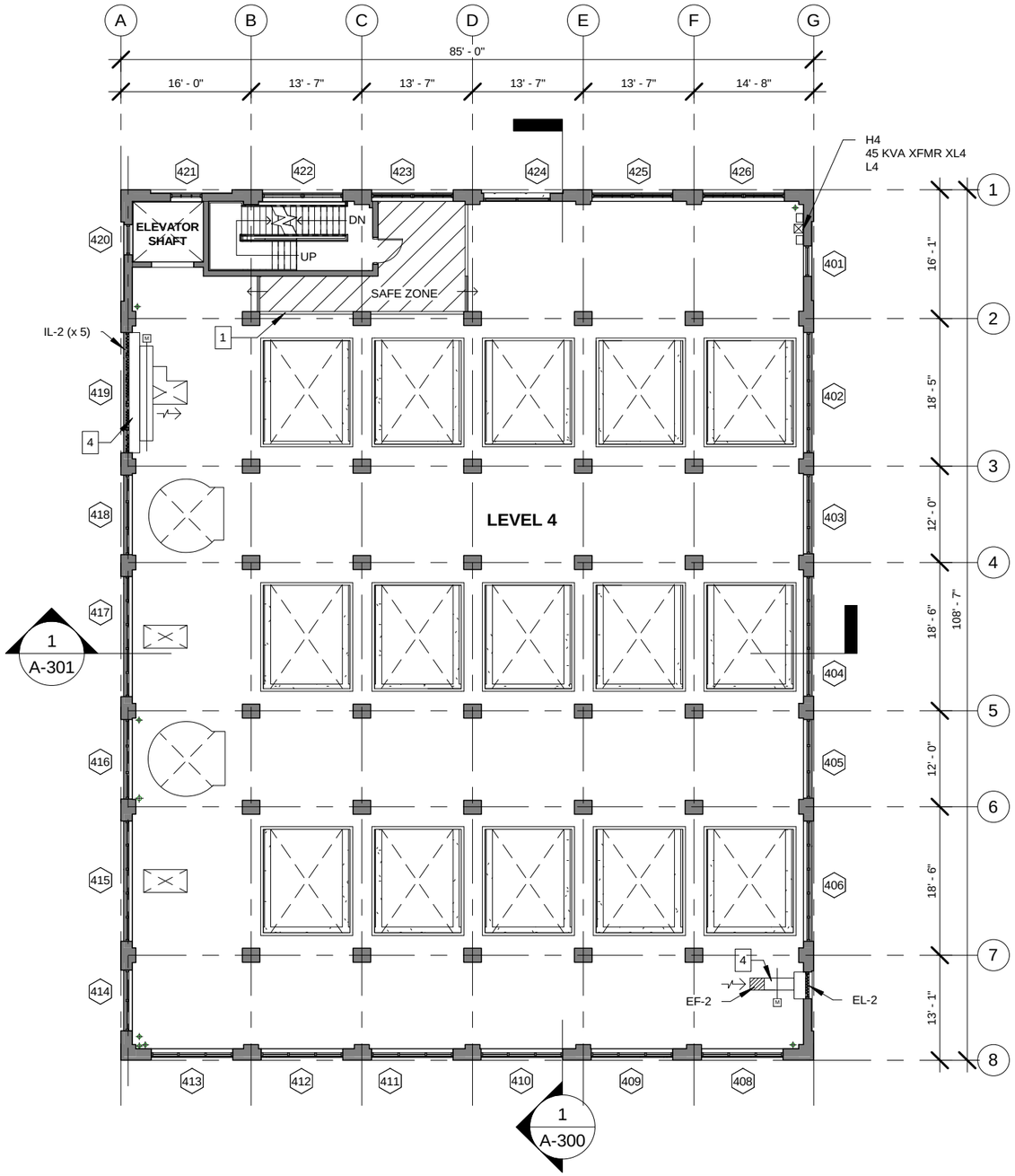
LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- VARIOUS LARGE OPENINGS AT CONCRETE SLAB
- VISIBLE SIGNS OF CRACKS, PONDING AND STAINING AT CONCRETE SLAB
- EXPOSED AGGREGATE AND REBAR AT CONCRETE SLAB THROUGHOUT
- SPALLING, CRACKING AND SOILING AT UNDERSIDE OF CONCRETE SLAB ABOVE, WITH VISIBLE SIGNS OF CORROSION FROM EXPOSED REBAR
- STAINING AND SOILING AT MASONRY THROUGHOUT
- ADDITIONAL REINFORCEMENT AT LOWER AREA OF MASONRY COLUMNS APPEARS TO HAVE BEEN INSTALLED
- EVIDENCE OF CORROSION AT STORM RISER PIPING AND VISIBLE LEAKS
- ALUMINUM WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD
- STEEL WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD

ABBREVIATIONS

MECHANICAL:
IL-# - Intake Louver
EL-# - Exhaust Louver
DEF-# - Exhaust Fan
[AM] (AM in a box) - Motorized Damper
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(HO) (HO in a circle) - Humidistat

ELECTRICAL:
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AL#-XXX - Circuit number
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[AM] (AM in a box) - Motorized Damper

PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **FOURTH FLOOR PLAN**

Scale: 1/16" = 1'-0"

Drawing Number: **A-104**

Issue Date: 09/25/2020

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LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION

ABBREVIATIONS

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AL# - Low Panel
AL#-XXX - Circuit number
$ - Motor Rated Switch/Disconnect
(DJ) (DJ in a circle) - Junction Box
[AM] (AM in a box) - Motorized Damper

PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

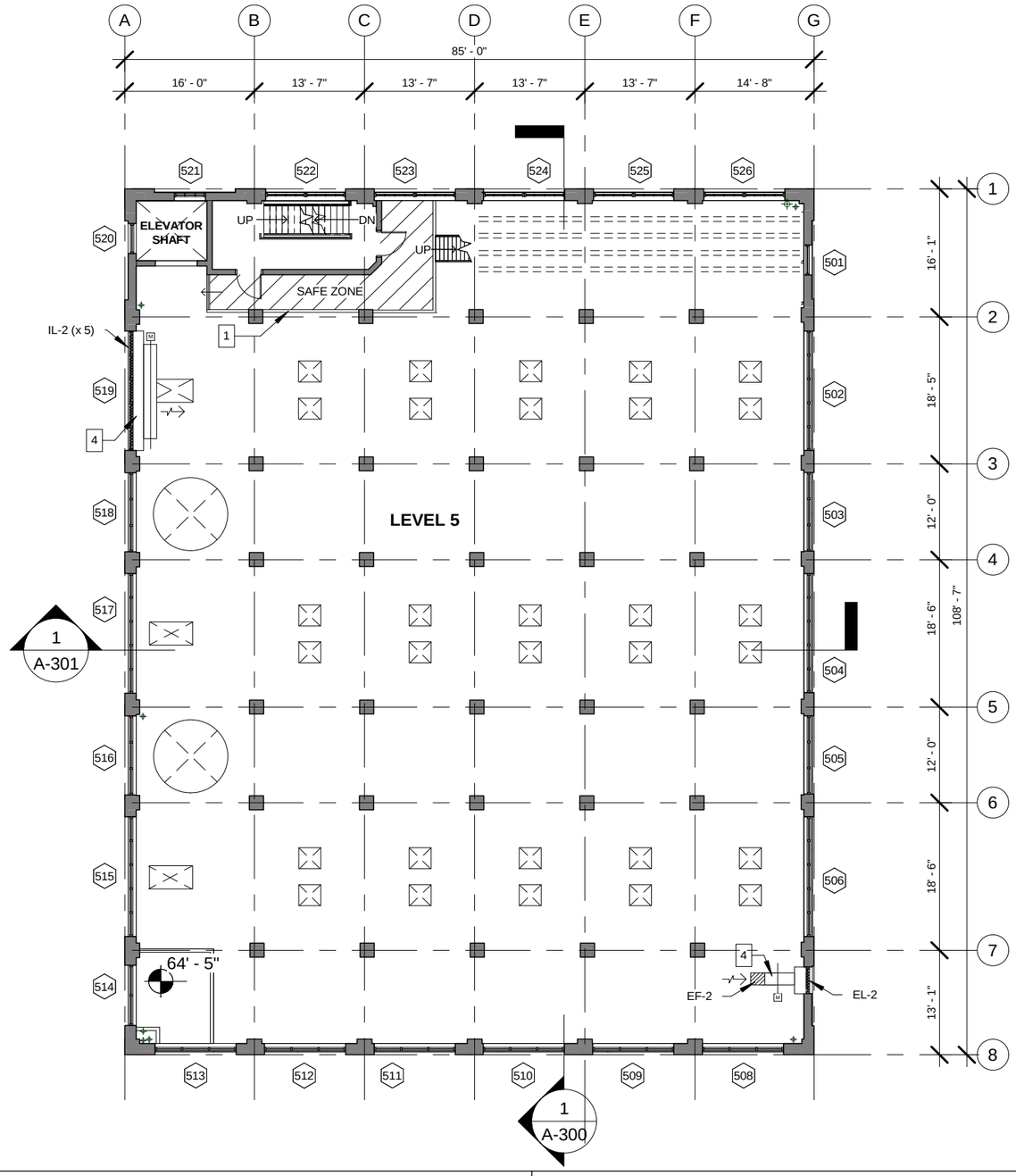
MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- VARIOUS LARGE OPENINGS AT CONCRETE SLAB COVERED WITH PLYWOOD
- EXPOSED AGGREGATE AND REBAR AT CONCRETE SLAB THROUGHOUT
- VISIBLE SIGNS OF PONDING AND STAINING AT CONCRETE SLAB
- STAINING AND SOILING AT MASONRY THROUGHOUT
- SPALLING, CRACKING AND SOILING AT UNDERSIDE OF CONCRETE SLAB ABOVE, WITH VISIBLE SIGNS OF CORROSION FROM EXPOSED REBAR
- GRAFFITI AT MASONRY
- EVIDENCE OF CORROSION AT STORM RISER PIPING AND VISIBLE LEAKS
- ALUMINUM WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD
- STEEL WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **FIFTH FLOOR PLAN**

Scale: 1/16" = 1'-0"

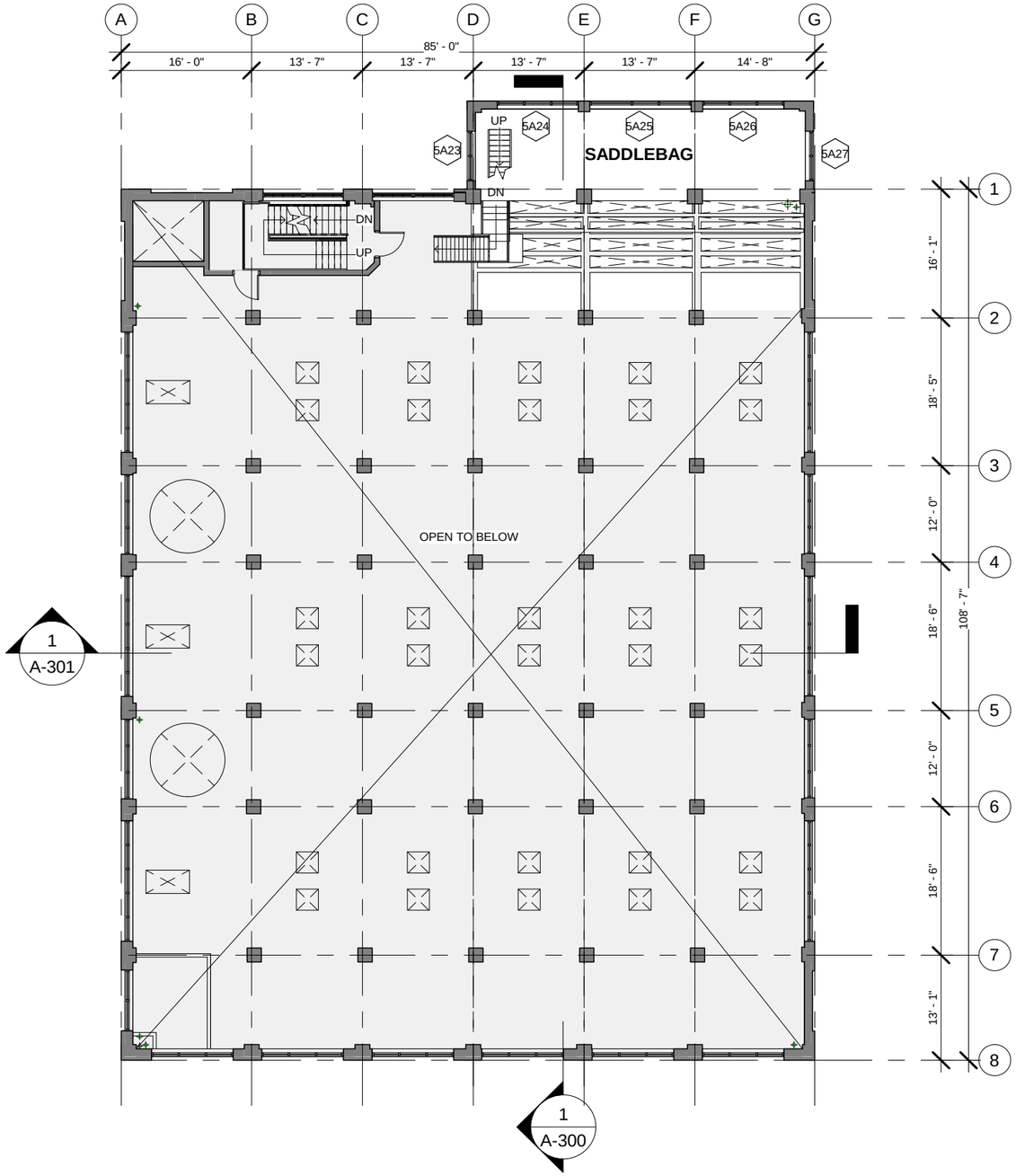
Drawing Number: **A-105**

Issue Date: 09/25/2020

DISCLAIMER
THESE DRAWINGS ARE INTENDED TO PROVIDE A GENERAL INDICATION OF THE EXTENT OF THE MOTHBALLING SCOPE OF WORK REQUIRED. IT IS NOT THE INTENT OF THESE DRAWINGS TO INDICATE EACH AND EVERY ITEM OF WORK REQUIRED AND THEY ARE NOT INTENDED FOR CONSTRUCTION.

LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- THIS AREA WAS NOT ACCESSIBLE DUE TO SAFETY CONCERNS
- ROOF AT SADDLEBAG SHOWS SIGNS OF SAFETY CONCERNS WITH WATER DAMAGE THROUGHOUT
- SOME WINDOWS HAVE BEEN MODIFIED TO INCLUDE METAL PANELS
- ALUMINUM WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD
- STEEL WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD

ABBREVIATIONS

MECHANICAL:
IL-# - Intake Louver
EL-# - Exhaust Louver
DEF-# - Exhaust Fan
[AM] (AM in a box) - Motorized Damper
(T) (T in a circle) - Thermostat
(HO) (HO in a circle) - Humidistat

ELECTRICAL:
HO# - High Panel
LX# - Transformer
AL# - Low Panel
AL#-XXX - Circuit number
$ - Motor Rated Switch/Disconnect
(DJ) (DJ in a circle) - Junction Box
[AM] (AM in a box) - Motorized Damper

PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **SADDLEBAG BETWEEN LEVELS 5 + 6**

Scale: 1/16" = 1'-0"

Drawing Number: **A-105A**

Issue Date: 09/25/2020

DISCLAIMER
THESE DRAWINGS ARE INTENDED TO PROVIDE A GENERAL INDICATION OF THE EXTENT OF THE MOTHBALLING SCOPE OF WORK REQUIRED. IT IS NOT THE INTENT OF THESE DRAWINGS TO INDICATE EACH AND EVERY ITEM OF WORK REQUIRED AND THEY ARE NOT INTENDED FOR CONSTRUCTION.

LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION

ABBREVIATIONS

MECHANICAL:
IL-# - Intake Louver
EL-# - Exhaust Louver
DEF-# - Exhaust Fan
[AM] (AM in a box) - Motorized Damper
(T) (T in a circle) - Thermostat
(HO) (HO in a circle) - Humidistat

ELECTRICAL:
HO# - High Panel
LX# - Transformer
AL# - Low Panel
AL#-XXX - Circuit number
$ - Motor Rated Switch/Disconnect
(DJ) (DJ in a circle) - Junction Box
[AM] (AM in a box) - Motorized Damper

PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

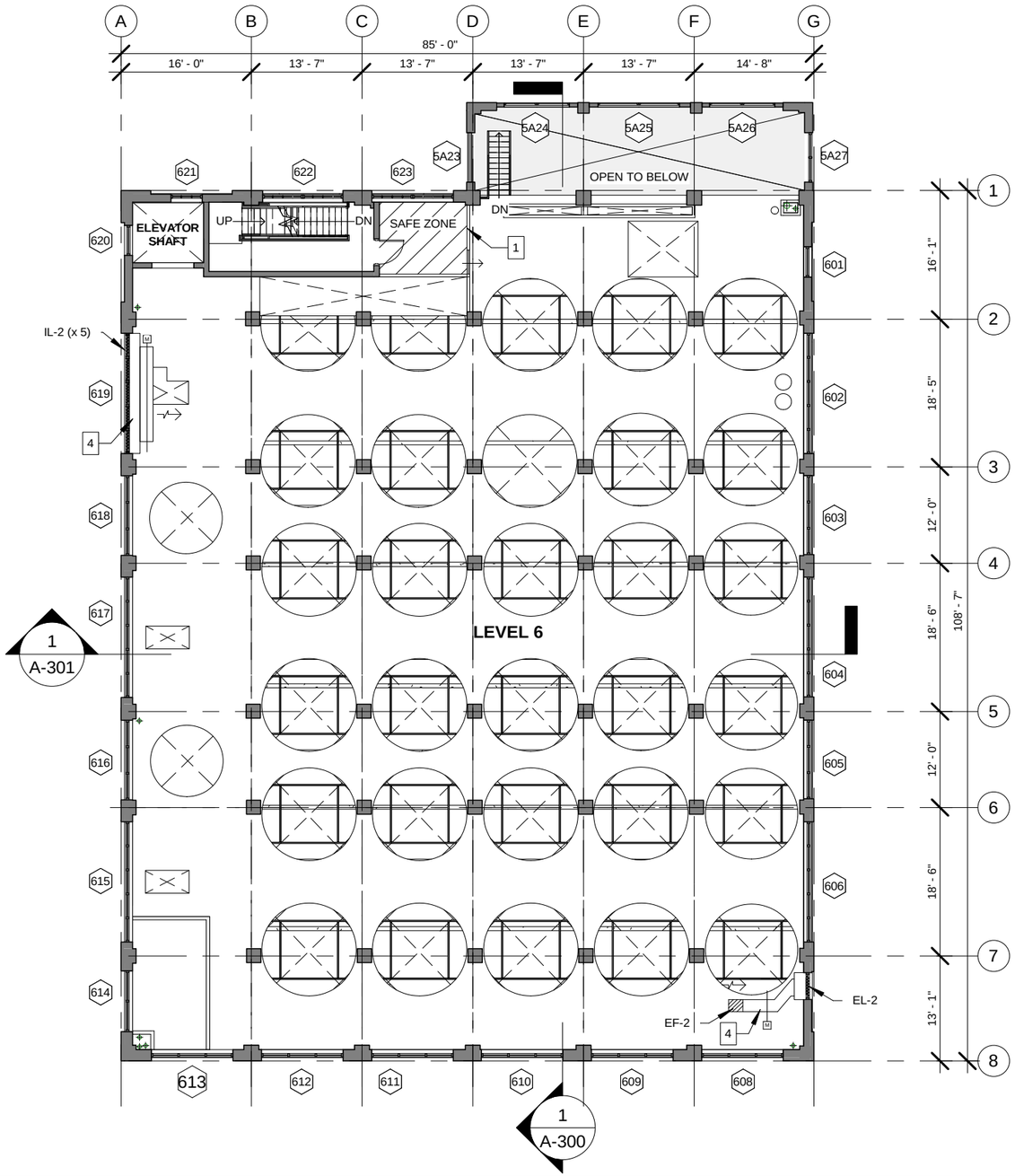
MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- VARIOUS LARGE OPENINGS AT CONCRETE SLAB
- EXPOSED AGGREGATE AND REBAR AT CONCRETE SLAB THROUGHOUT
- SILVER COATING AT MASONRY THROUGHOUT
- SPALLING, CRACKING AND SOILING AT UNDERSIDE OF CONCRETE SLAB ABOVE, WITH VISIBLE SIGNS OF CORROSION FROM EXPOSED REBAR
- EVIDENCE OF CORROSION AT STORM RISER PIPING AND VISIBLE LEAKS
- ALUMINUM WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD. SIGNS OF SILVER COATING THROUGHOUT
- STEEL WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **SIXTH FLOOR PLAN**

Scale: 1/16" = 1'-0"

Drawing Number: **A-106**

Issue Date: 09/25/2020

DISCLAIMER
THESE DRAWINGS ARE INTENDED TO PROVIDE A GENERAL INDICATION OF THE EXTENT OF THE MOTHBALLING SCOPE OF WORK REQUIRED. IT IS NOT THE INTENT OF THESE DRAWINGS TO INDICATE EACH AND EVERY ITEM OF WORK REQUIRED AND THEY ARE NOT INTENDED FOR CONSTRUCTION.

LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION

ABBREVIATIONS

MECHANICAL:
IL-# - Intake Louver
EL-# - Exhaust Louver
DEF-# - Exhaust Fan
[AM] (AM in a box) - Motorized Damper
(T) (T in a circle) - Thermostat
(HO) (HO in a circle) - Humidistat

ELECTRICAL:
HO# - High Panel
LX# - Transformer
AL# - Low Panel
AL#-XXX - Circuit number
$ - Motor Rated Switch/Disconnect
(DJ) (DJ in a circle) - Junction Box
[AM] (AM in a box) - Motorized Damper

PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

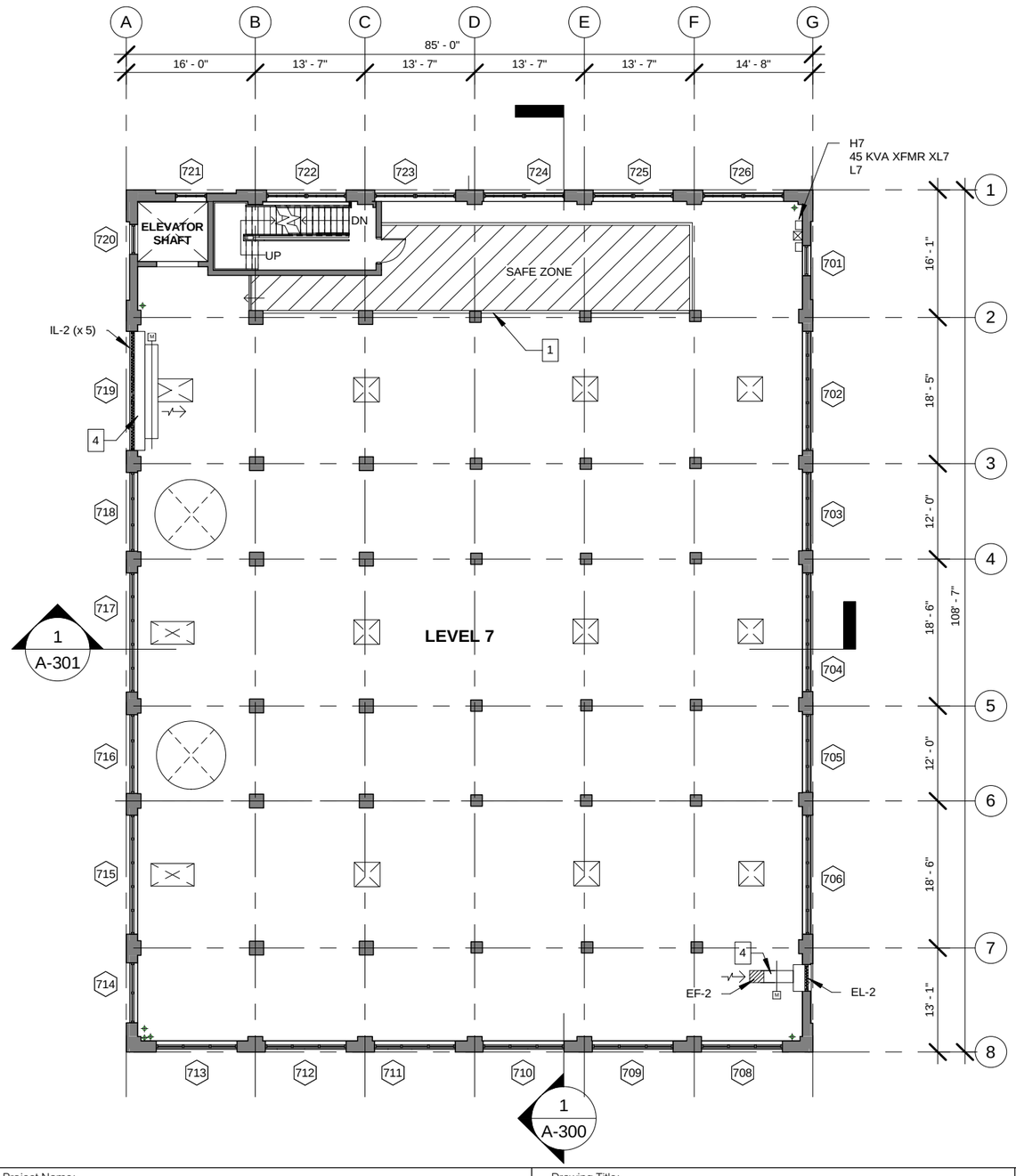
MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- VISIBLE SIGNS OF STAINING, PONDING, EXPOSED AGGREGATE AND CRACKS AT CONCRETE SLAB
- SPALLING, CRACKING AND SOILING AT UNDERSIDE OF CONCRETE SLAB ABOVE, WITH VISIBLE SIGNS OF CORROSION FROM EXPOSED REBAR
- STAINING AND SOILING AT MASONRY THROUGHOUT
- ADDITIONAL REINFORCEMENT AT LOWER AREA OF MASONRY COLUMNS APPEARS TO HAVE BEEN INSTALLED
- SOME MISSING MASONRY UNITS AT COLUMNS, EXPOSING STEEL BEAMS
- EVIDENCE OF CORROSION AT STORM RISER PIPING AND VISIBLE LEAKS
- ALUMINUM WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD
- STEEL WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **SEVENTH FLOOR PLAN**

Scale: 1/16" = 1'-0"

Drawing Number: **A-107**

Issue Date: 09/25/2020

DISCLAIMER
THESE DRAWINGS ARE INTENDED TO PROVIDE A GENERAL INDICATION OF THE EXTENT OF THE MOTHBALLING SCOPE OF WORK REQUIRED. IT IS NOT THE INTENT OF THESE DRAWINGS TO INDICATE EACH AND EVERY ITEM OF WORK REQUIRED AND THEY ARE NOT INTENDED FOR CONSTRUCTION.

LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION

ABBREVIATIONS

MECHANICAL:
IL-# - Intake Louver
EL-# - Exhaust Louver
DEF-# - Exhaust Fan
[AM] (AM in a box) - Motorized Damper
(T) (T in a circle) - Thermostat
(HO) (HO in a circle) - Humidistat

ELECTRICAL:
HO# - High Panel
LX# - Transformer
AL# - Low Panel
AL#-XXX - Circuit number
$ - Motor Rated Switch/Disconnect
(DJ) (DJ in a circle) - Junction Box
[AM] (AM in a box) - Motorized Damper

PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

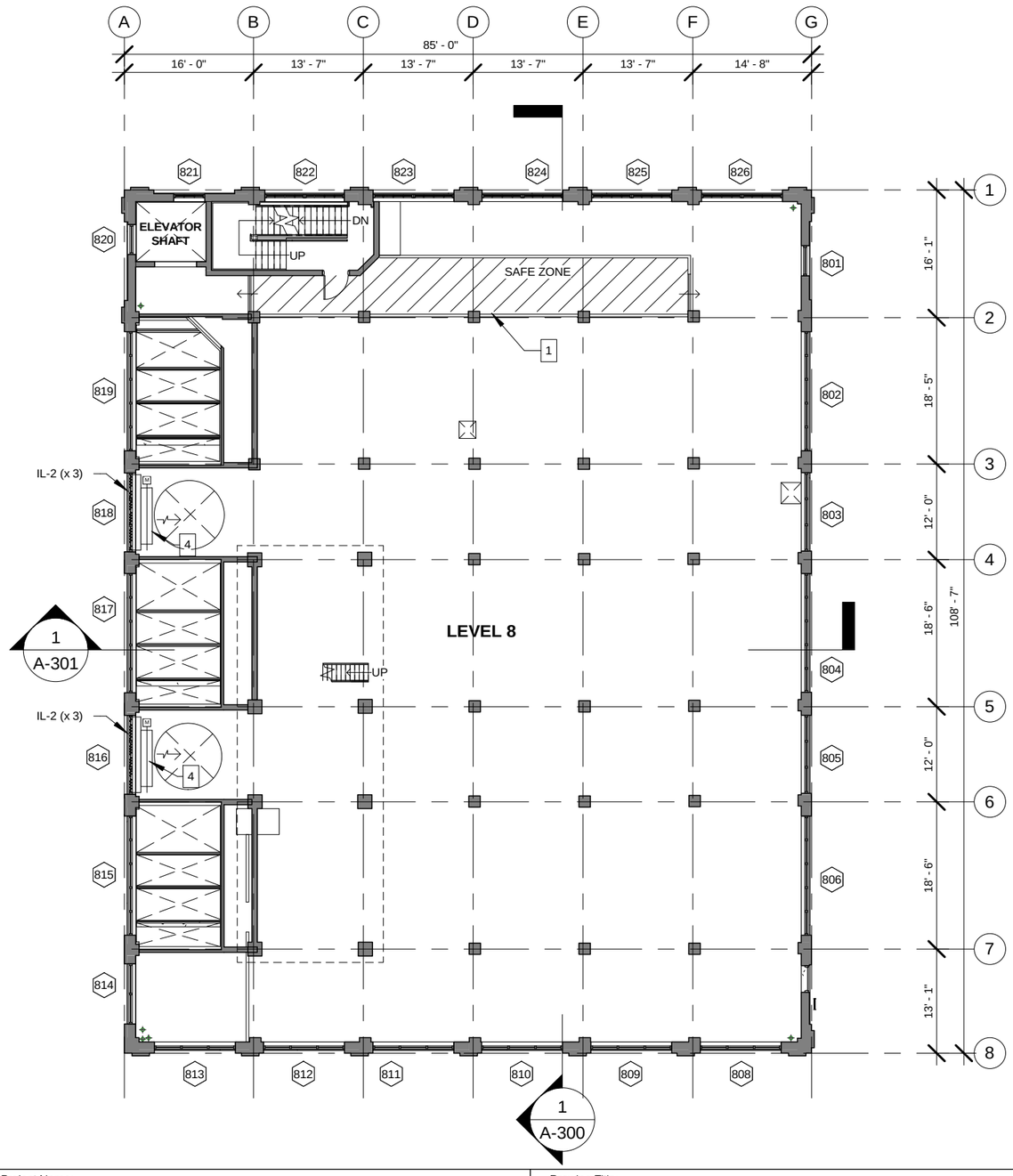
MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- EXPOSED AGGREGATE AT CONCRETE SLAB THROUGHOUT
- VISIBLE SIGNS OF PONDING AND STAINING AT CONCRETE SLAB
- MISCELLANEOUS CRACKS AND SPALLING AT CONCRETE ROOF DECK THROUGHOUT
- EVIDENCE OF WATER INFILTRATION AT CONCRETE THROUGHOUT
- EVIDENCE OF CORROSION AT STEEL BEAMS
- GRAFFITI AT MASONRY AND CONCRETE THROUGHOUT
- STAINING AND SOILING AT MASONRY THROUGHOUT
- EVIDENCE OF CORROSION AT STORM RISER PIPING AND VISIBLE LEAKS
- ALUMINUM WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD
- STEEL WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT. VARIOUS OPENINGS BLOCKED WITH PLYWOOD

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **EIGHTH FLOOR PLAN**

Scale: 1/16" = 1'-0"

Drawing Number: **A-108**

Issue Date: 09/25/2020

DISCLAIMER
THESE DRAWINGS ARE INTENDED TO PROVIDE A GENERAL INDICATION OF THE EXTENT OF THE MOTHBALLING SCOPE OF WORK REQUIRED. IT IS NOT THE INTENT OF THESE DRAWINGS TO INDICATE EACH AND EVERY ITEM OF WORK REQUIRED AND THEY ARE NOT INTENDED FOR CONSTRUCTION.

LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION

ABBREVIATIONS

MECHANICAL:
IL-# - Intake Louver
EL-# - Exhaust Louver
DEF-# - Exhaust Fan
[AM] (AM in a box) - Motorized Damper
(T) (T in a circle) - Thermostat
(HO) (HO in a circle) - Humidistat

ELECTRICAL:
HO# - High Panel
LX# - Transformer
AL# - Low Panel
AL#-XXX - Circuit number
$ - Motor Rated Switch/Disconnect
(DJ) (DJ in a circle) - Junction Box
[AM] (AM in a box) - Motorized Damper

PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

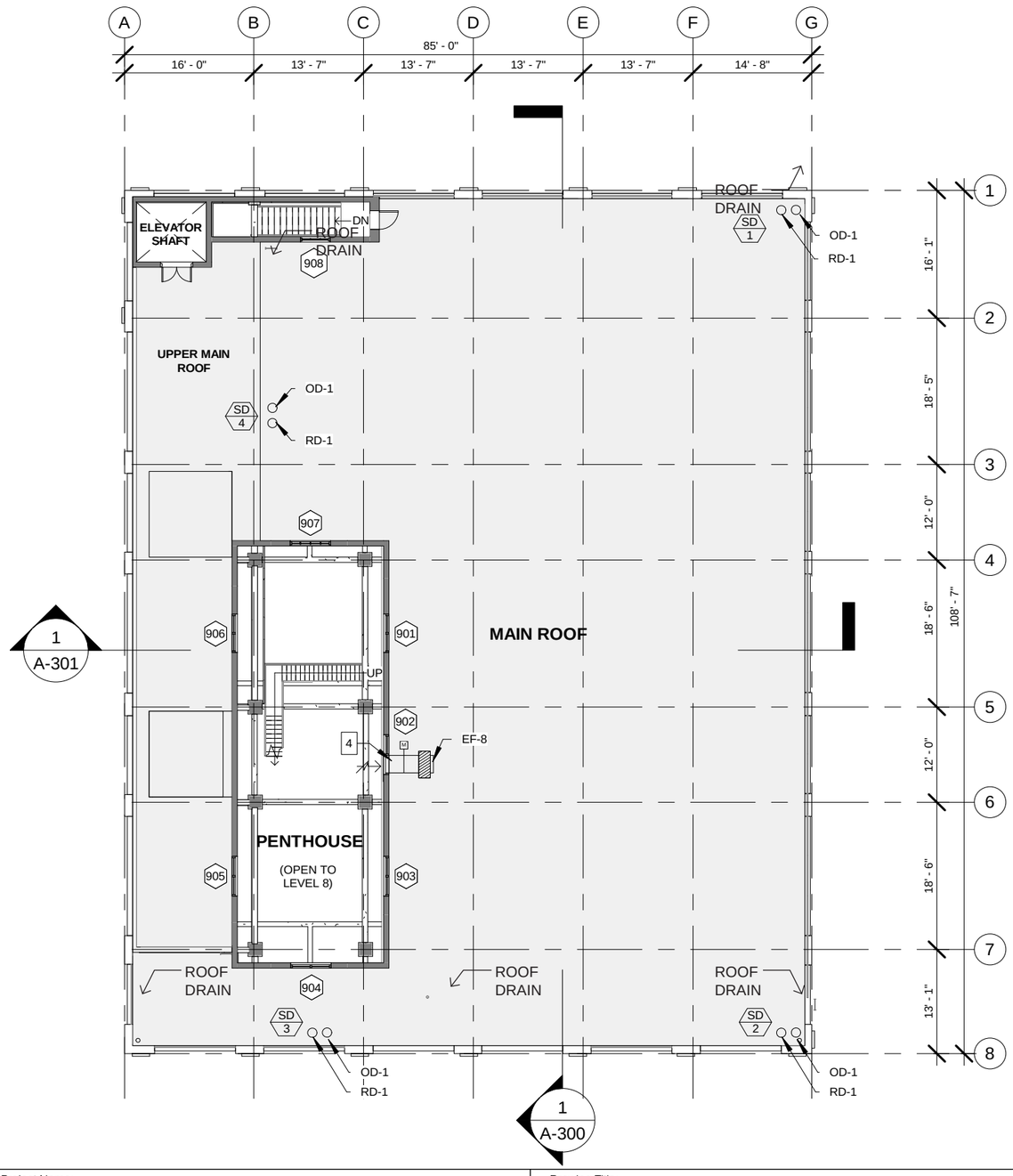
MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- MISCELLANEOUS CRACKS AND SPALLING AT CONCRETE ROOF DECK THROUGHOUT AT PENTHOUSE
- EVIDENCE OF CORROSION AT STEEL BEAMS AT PENTHOUSE
- STAINING AND SOILING AT MASONRY THROUGHOUT
- MISCELLANEOUS CRACKS AT MASONRY NEAR LINTELS AT PENTHOUSE
- INAPPROPRIATE MORTAR INFILL AT MASONRY CRACKS AT PENTHOUSE
- EVIDENCE OF CORROSION AT METAL RAILING THROUGHOUT
- ROOF OPENINGS TO THE OUTSIDE, WITH VISIBLE LEAKS
- EVIDENCE OF CORROSION AND CLOGGING AT ROOF DRAINS AND VISIBLE LEAKS
- NO SECONDARY DRAINAGE FOUND
- NUMEROUS PATCH REPAIRS AT ROOF
- FLASHING IN POOR CONDITION OR MISSING
- ROOF METAL COPING AND SCUPPERS IN POOR CONDITION
- ALUMINUM WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT.
- STEEL WINDOWS: CRACKS AT GLAZING, MISSING WINDOW PARTS, MISSING SEALANT, INOPERABLE HARDWARE, CORROSION AND SOILING THROUGHOUT.

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **PENTHOUSE LEVEL 1 & MAIN ROOF PLAN**

Scale: 1/16" = 1'-0"

Drawing Number: **A-109**

Issue Date: 09/25/2020

DISCLAIMER
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LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION

ABBREVIATIONS

MECHANICAL:
IL-# - Intake Louver
EL-# - Exhaust Louver
DEF-# - Exhaust Fan
[AM] (AM in a box) - Motorized Damper
(T) (T in a circle) - Thermostat
(HO) (HO in a circle) - Humidistat

ELECTRICAL:
HO# - High Panel
LX# - Transformer
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AL#-XXX - Circuit number
$ - Motor Rated Switch/Disconnect
(DJ) (DJ in a circle) - Junction Box
[AM] (AM in a box) - Motorized Damper

PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

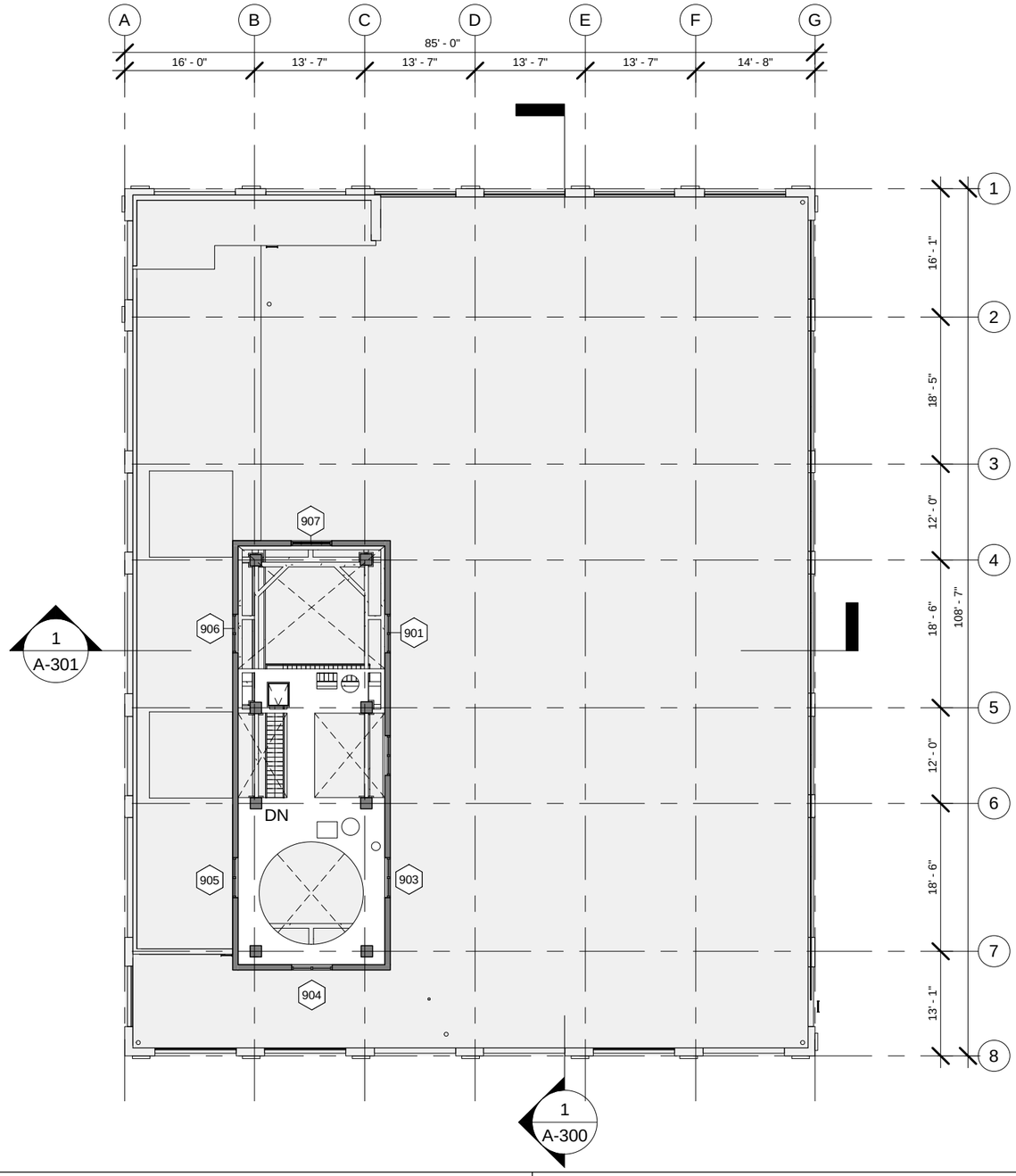
MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES.
SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- THIS AREA WAS NOT ACCESSIBLE DUE TO SAFETY CONCERNS
- REFER TO GENERAL NOTES ON A-109

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **PENTHOUSE LEVEL 2 PLAN**

Scale: 1/16" = 1'-0"

Drawing Number: **A-110**

Issue Date: 09/25/2020

DISCLAIMER
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LEGEND:

1. TEMPORARY BARRICADES WITH MOVABLE SECTIONS TO PROVIDE MAINTENANCE ACCESS TO THE REST OF THE FLOOR. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
2. TEMPORARY BARRICADES. DO NOT PENETRATE BARRICADE FASTENERS INTO MASONRY
3. NEW ENTRY DOOR
4. PROPOSED MECHANICAL SYSTEM FOR VENTILATION

ABBREVIATIONS

MECHANICAL:
IL-# - Intake Louver
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DEF-# - Exhaust Fan
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(T) (T in a circle) - Thermostat
(HO) (HO in a circle) - Humidistat

ELECTRICAL:
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AL#-XXX - Circuit number
$ - Motor Rated Switch/Disconnect
(DJ) (DJ in a circle) - Junction Box
[AM] (AM in a box) - Motorized Damper

PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

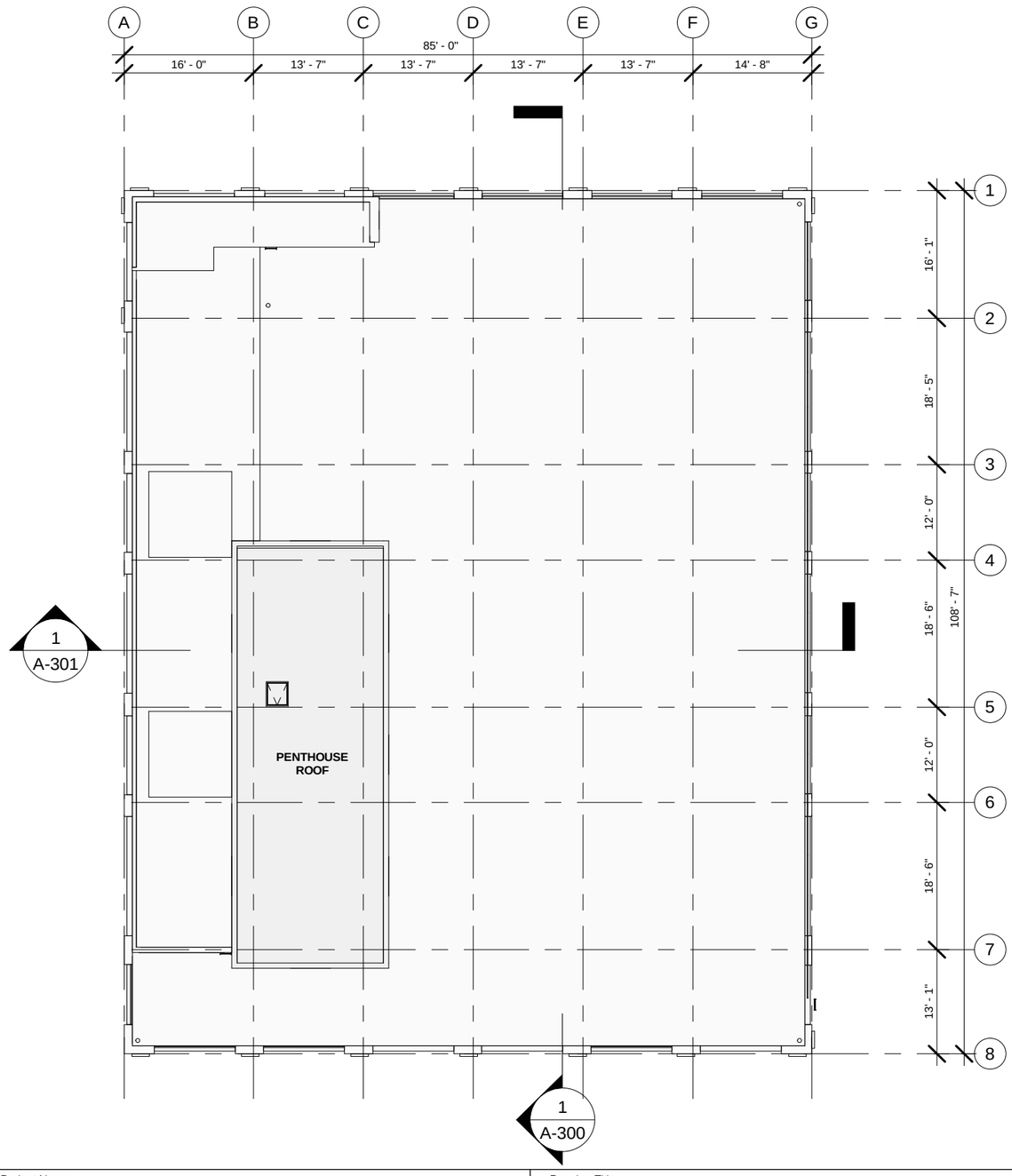
MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES.
SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.



EXISTING CONDITIONS - GENERAL OBSERVATIONS:

- THIS AREA WAS NOT ACCESSIBLE DUE TO SAFETY CONCERNS
- MISSING ROOF HATCH AND VARIOUS ROOF OPENINGS TO THE OUTSIDE, WITH VISIBLE LEAKS
- REFER TO GENERAL NOTES ON A-109

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

NORTH

Drawing Title: **PENTHOUSE ROOF PLAN**

Scale: 1/16" = 1'-0"

Drawing Number: **A-111**

Issue Date: 09/25/2020

DISCLAIMER
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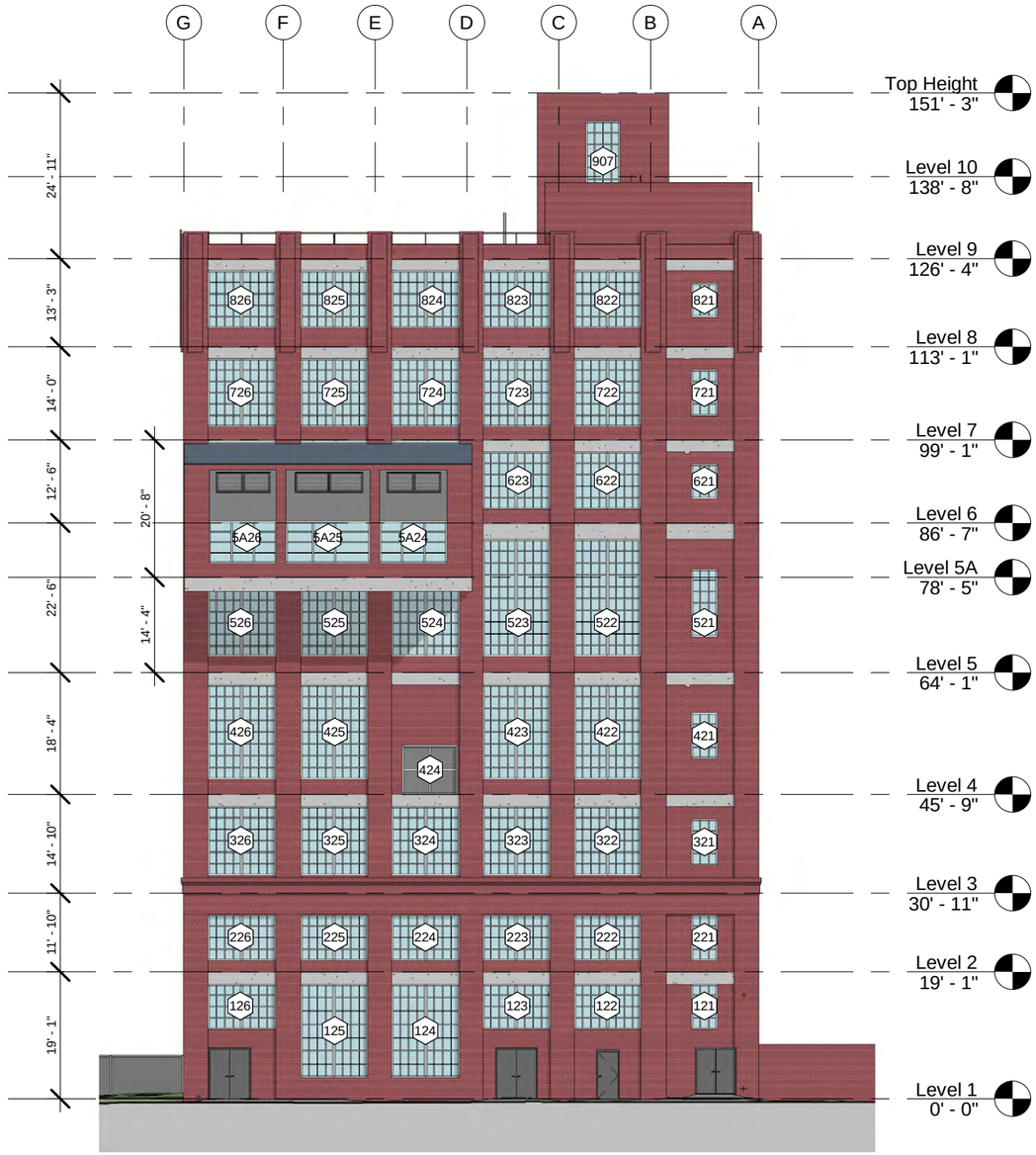

ABBREVIATIONS

MECHANICAL:
IL-# - Intake Louver
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ELECTRICAL:
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PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES.
SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client:
TEXAS SUGAR LAND

Project Name:
Imperial Sugar Char House Conditions Assessment

Project Address:
198 Kempner Street, Sugar Land 77498

Drawing Title:
NORTH ELEVATION

Scale:
3/64" = 1'-0"

Drawing Number:
A-200

Issue Date:
09/25/2020

DISCLAIMER
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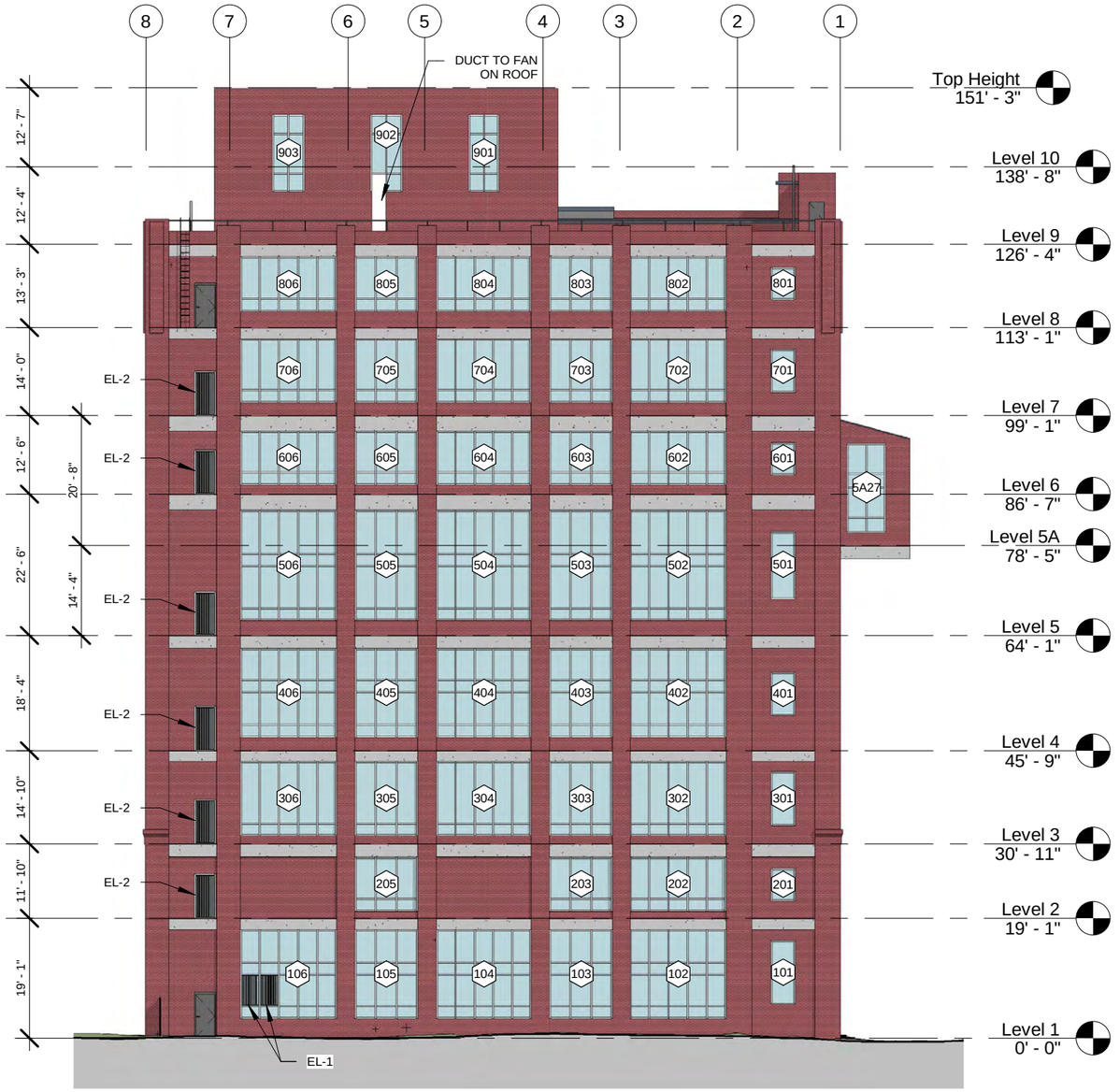

ABBREVIATIONS

MECHANICAL:
IL-# - Intake Louver
EL-# - Exhaust Louver
DEF-# - Exhaust Fan
[AM] (AM in a box) - Motorized Damper
(T) (T in a circle) - Thermostat
(HO) (HO in a circle) - Humidistat

ELECTRICAL:
HO# - High Panel
LX# - Transformer
AL# - Low Panel
AL#-XXX - Circuit number
$ - Motor Rated Switch/Disconnect
(DJ) (DJ in a circle) - Junction Box
[AM] (AM in a box) - Motorized Damper

PLUMBING:
DNS-1 – Down Spout
RD-1 – Roof Drain
OD-1 - Overflow Drain
SD – Storm Riser
#

MATERIAL LEGEND (ELEVATIONS)

MASONRY
CONCRETE
GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

Drawing Title: **EAST ELEVATION**

Scale: 3/64" = 1'-0"

Drawing Number: **A-201**

Issue Date: 09/25/2020

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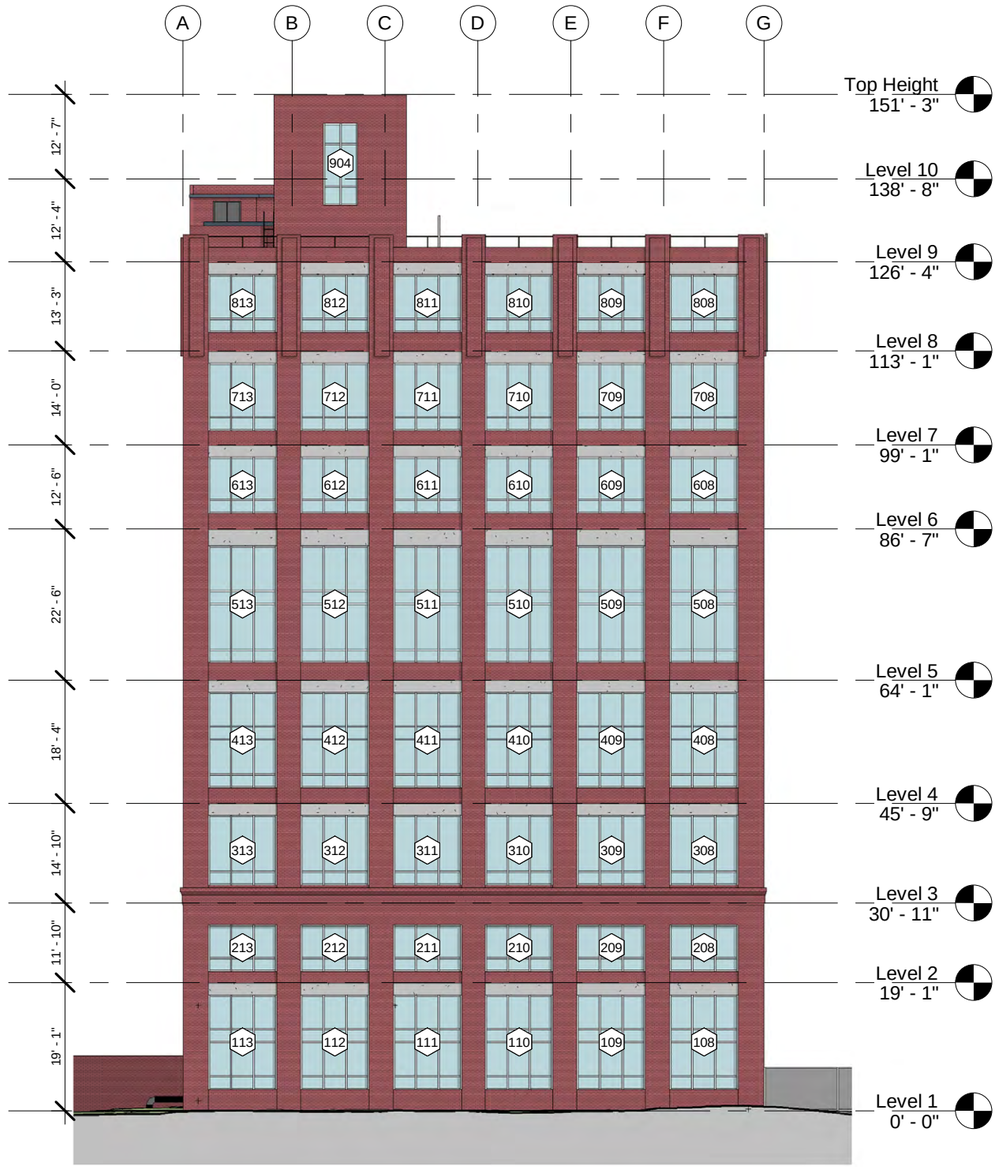

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MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
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URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client:
TEXAS SUGAR LAND

Project Name:
Imperial Sugar Char House Conditions Assessment

Project Address:
198 Kempner Street, Sugar Land 77498

Drawing Title:
SOUTH ELEVATION

Scale:
3/64" = 1'-0"

Drawing Number:
A-202

Issue Date:
09/25/2020

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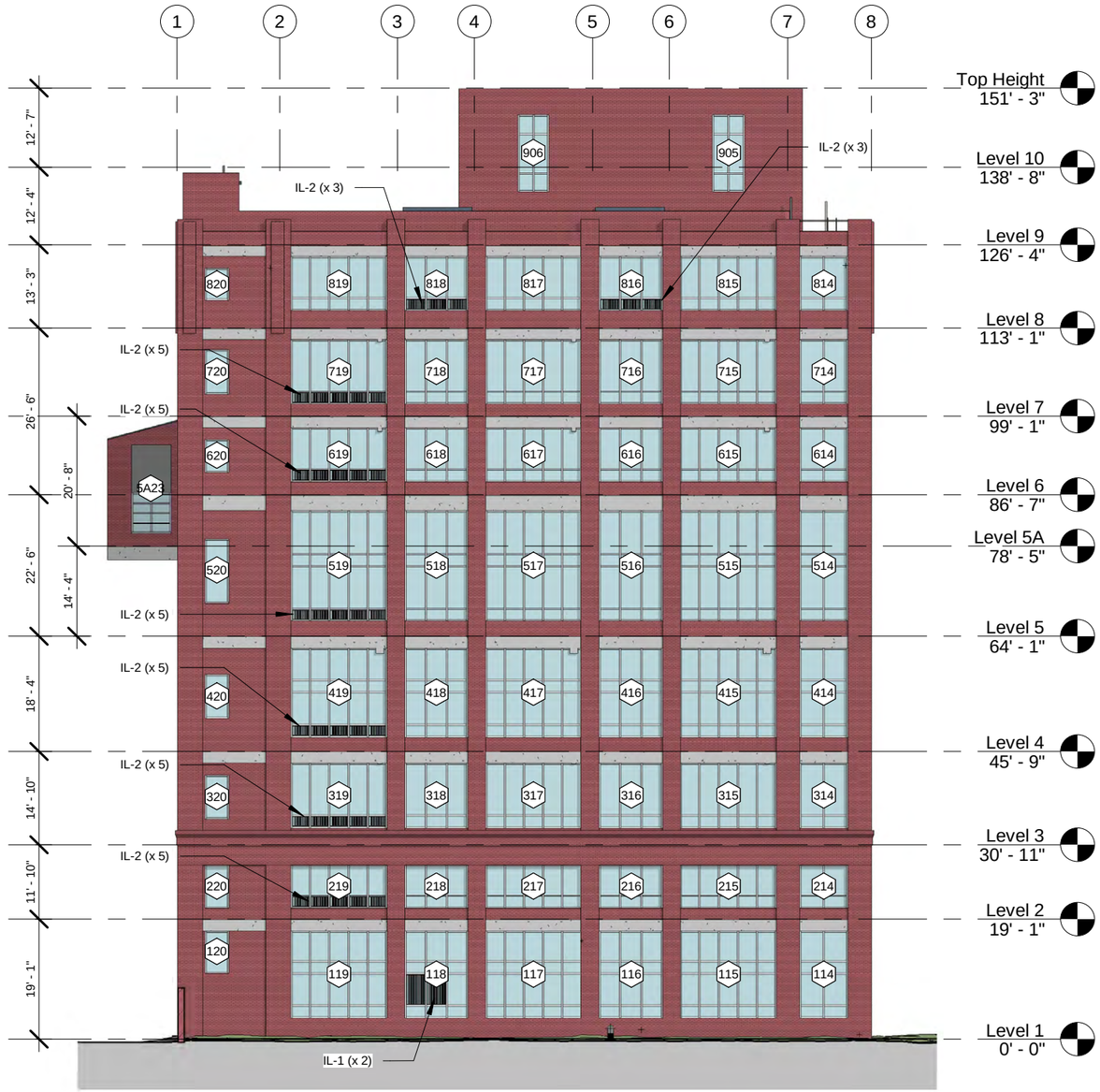

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MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
NOTE: SLABS HAVE MULTIPLE VOIDS OF DIFFERENT SIZES. SMALLER VOIDS NOT REPRESENTED ON THE DRAWINGS.

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client:
TEXAS SUGAR LAND

Project Name:
Imperial Sugar Char House Conditions Assessment

Project Address:
198 Kempner Street, Sugar Land 77498

Drawing Title:
WEST ELEVATION

Scale:
3/64" = 1'-0"

Drawing Number:
A-203

Issue Date:
09/25/2020

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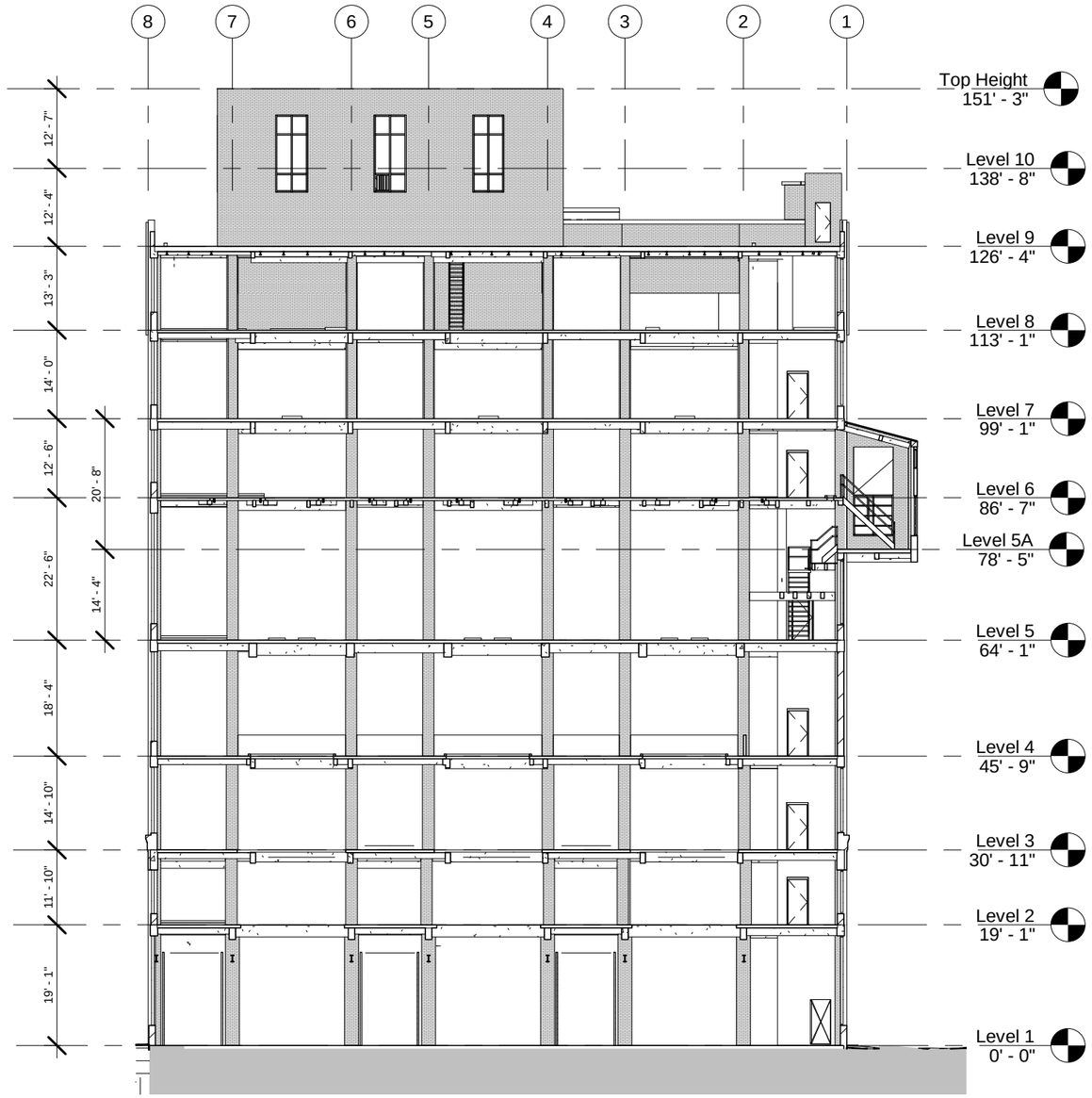

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MATERIAL LEGEND (ELEVATIONS)

MASONRY

CONCRETE

GLAZING

VOID IN CONCRETE SLAB (FLOOR PLANS)
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119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name:
Imperial Sugar Char House Conditions Assessment

Project Address:
198 Kempner Street, Sugar Land 77498

Drawing Title:
NORTH-SOUTH BUILDING SECTION

Scale:
3/64" = 1'-0"

Drawing Number:
A-300

Issue Date:
09/25/2020

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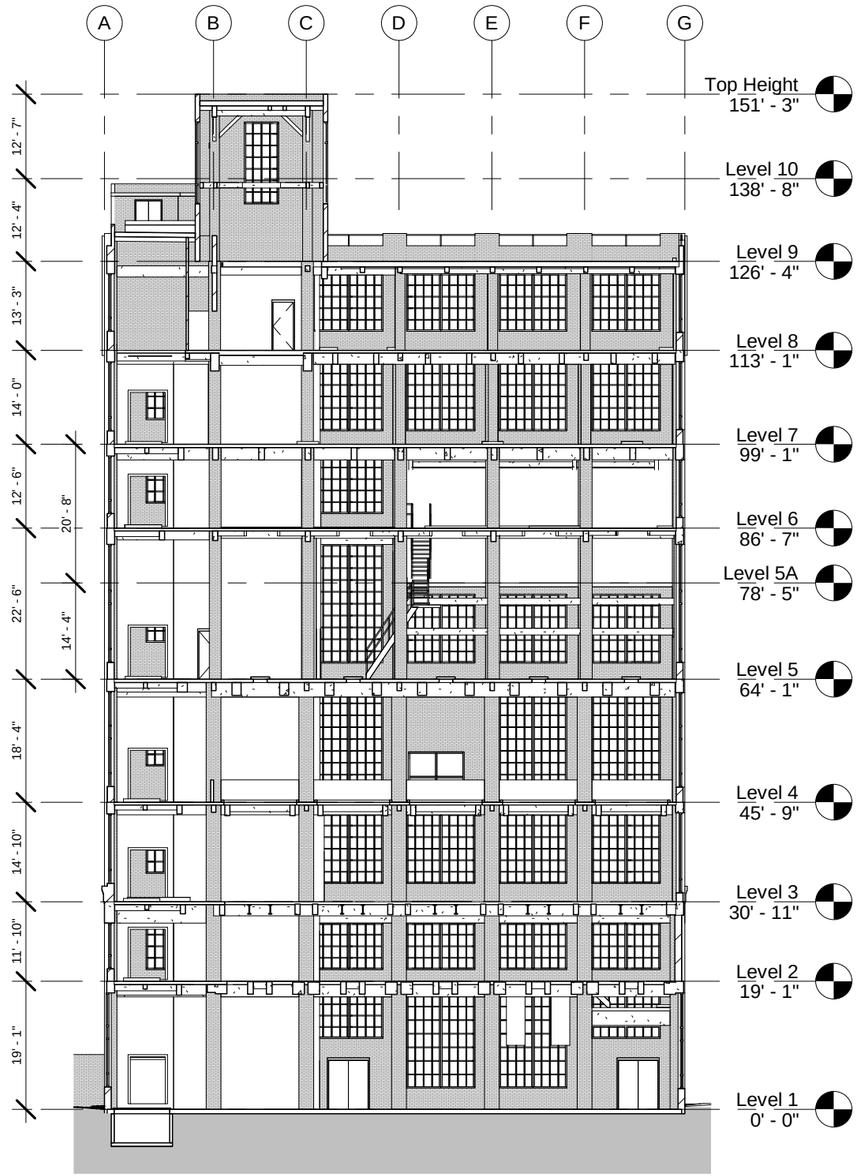

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MATERIAL LEGEND (ELEVATIONS)

MASONRY

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VOID IN CONCRETE SLAB (FLOOR PLANS)
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URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client:
TEXAS SUGAR LAND

Project Name:
Imperial Sugar Char House Conditions Assessment

Project Address:
198 Kempner Street, Sugar Land 77498

Drawing Title:
EAST-WEST BUILDING SECTION

Scale:
3/64" = 1'-0"

Drawing Number:
A-301

Issue Date:
09/25/2020

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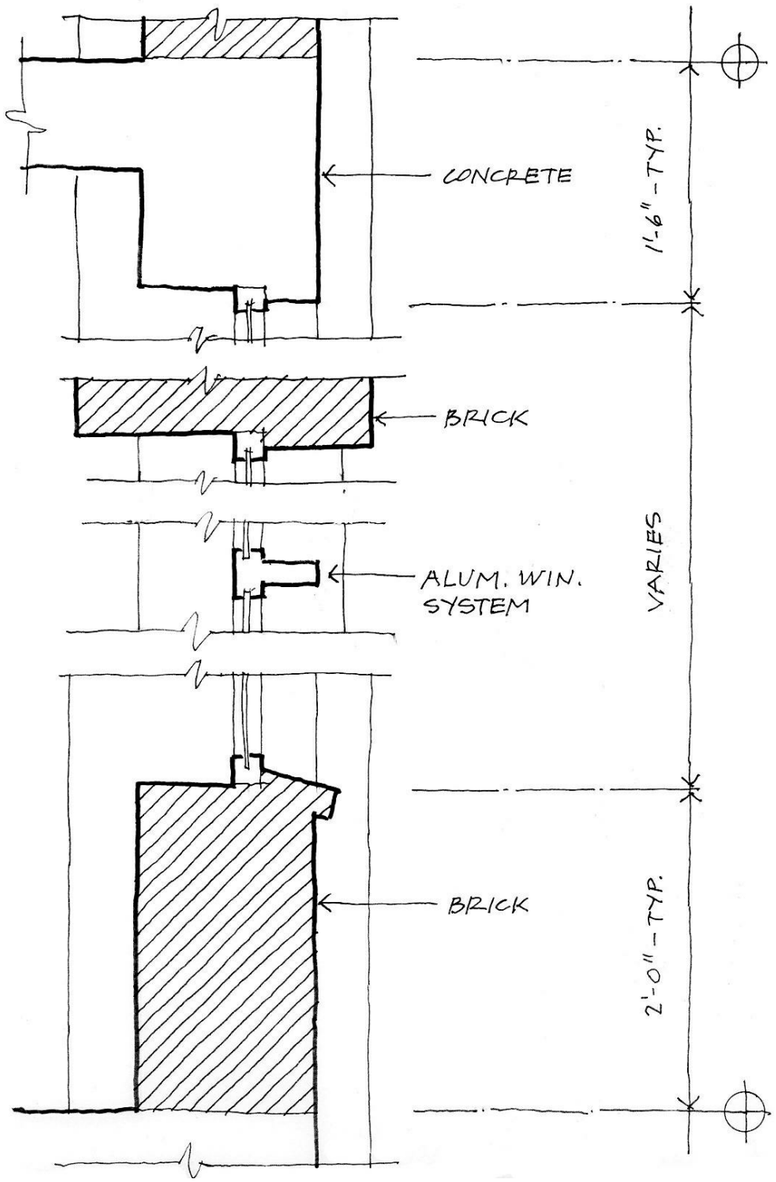
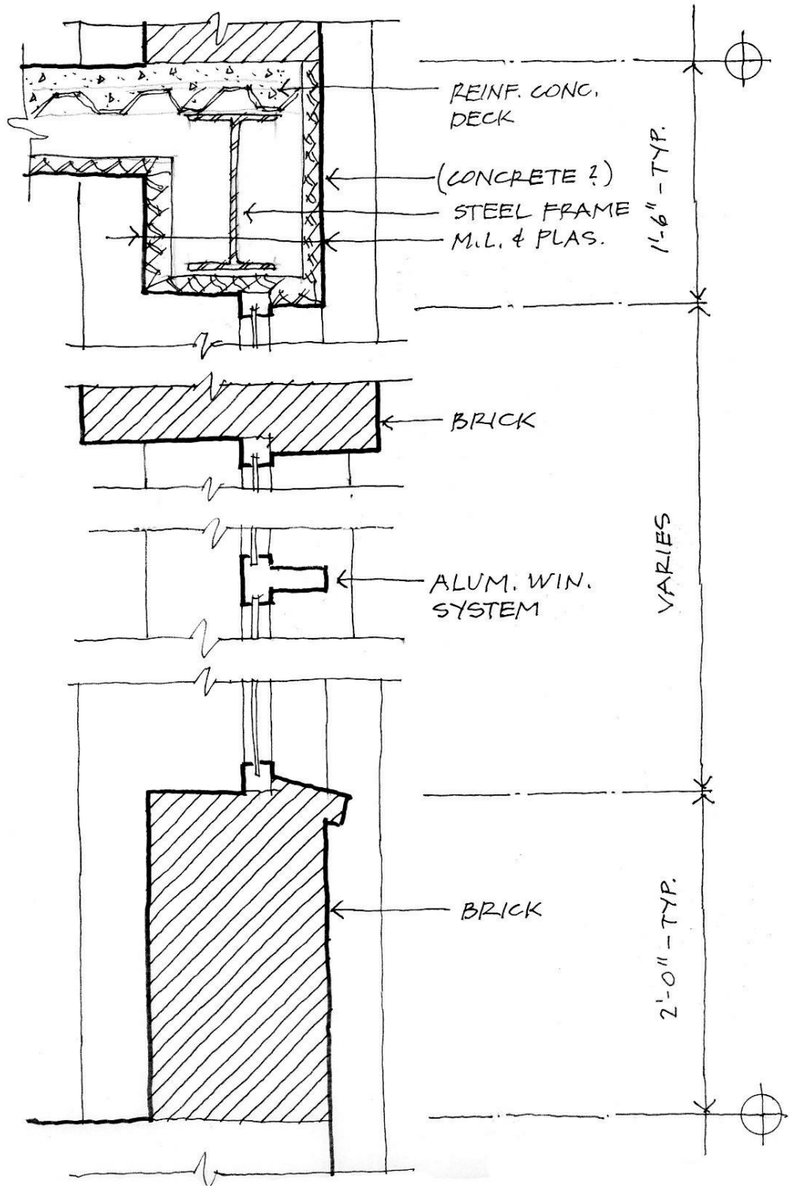
TYPICAL WALL SECTION



NOTE: BELOW ALTERNATE SKETCH ASSUMES THAT THE FRAME IS ENTIRELY OF STEEL WITH CONCRETE CLADDING



URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client:
TEXAS SUGAR LAND

Project Name:
Imperial Sugar Char House Conditions Assessment

Project Address:
198 Kempner Street, Sugar Land 77498

Drawing Title:
TYPICAL WALL SECTION SKETCH

Scale:
N.T.S.

Drawing Number:
A-302

Issue Date:
09/25/20

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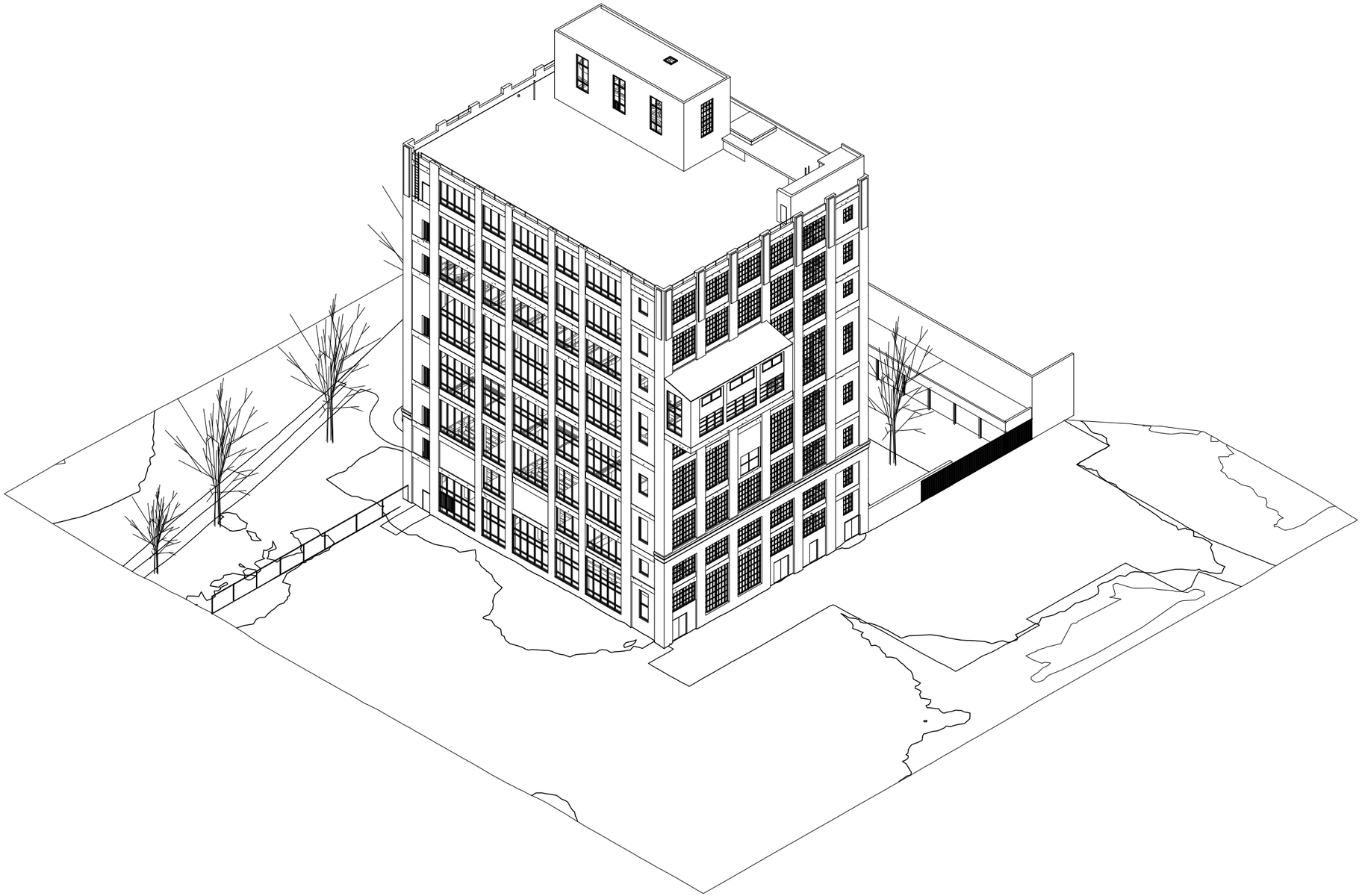

URBANO ARCHITECTS

119 East 20th Street, Suite #200
Houston, TX, 77008

Client:

TEXAS SUGAR LAND

Project Name:

Imperial Sugar Char House Conditions Assessment

Project Address:

198 Kempner Street, Sugar Land 77498

Drawing Title:

NORTH-EAST BIRD'S EYE VIEW

Scale:

N.T.S.

Drawing Number:

A-350

Issue Date:

09/25/2020

DISCLAIMER

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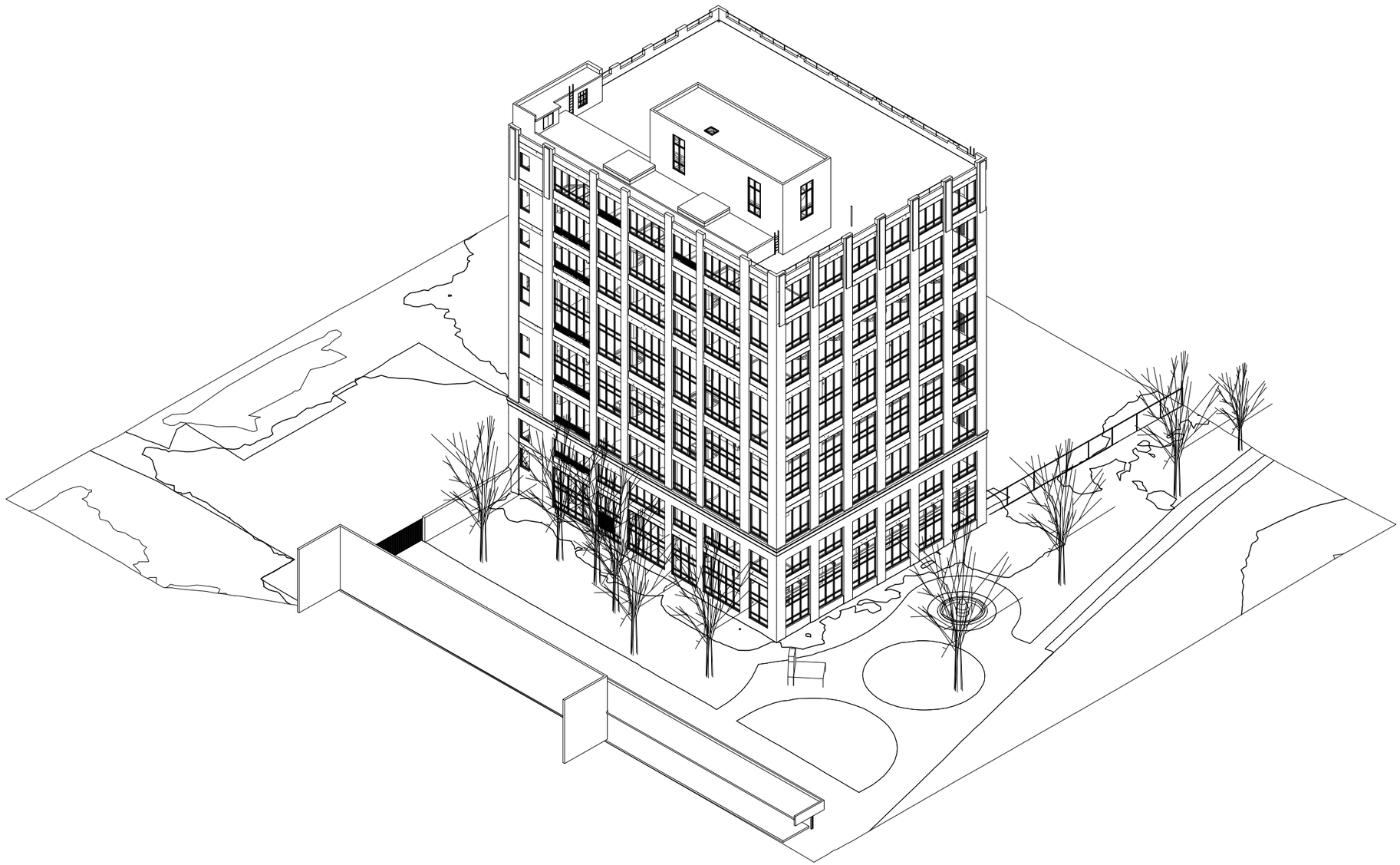

URBANO
ARCHITECTS

119 East 20th Street, Suite #200
Houston, TX, 77008

Client:

TEXAS SUGAR LAND

Project Name:

Imperial Sugar Char House Conditions Assessment

Project Address:

198 Kempner Street, Sugar Land 77498

Drawing Title:

SOUTH-WEST BIRD'S EYE VIEW

Scale:

N.T.S.

Drawing Number:

A-351

Issue Date:

09/25/2020

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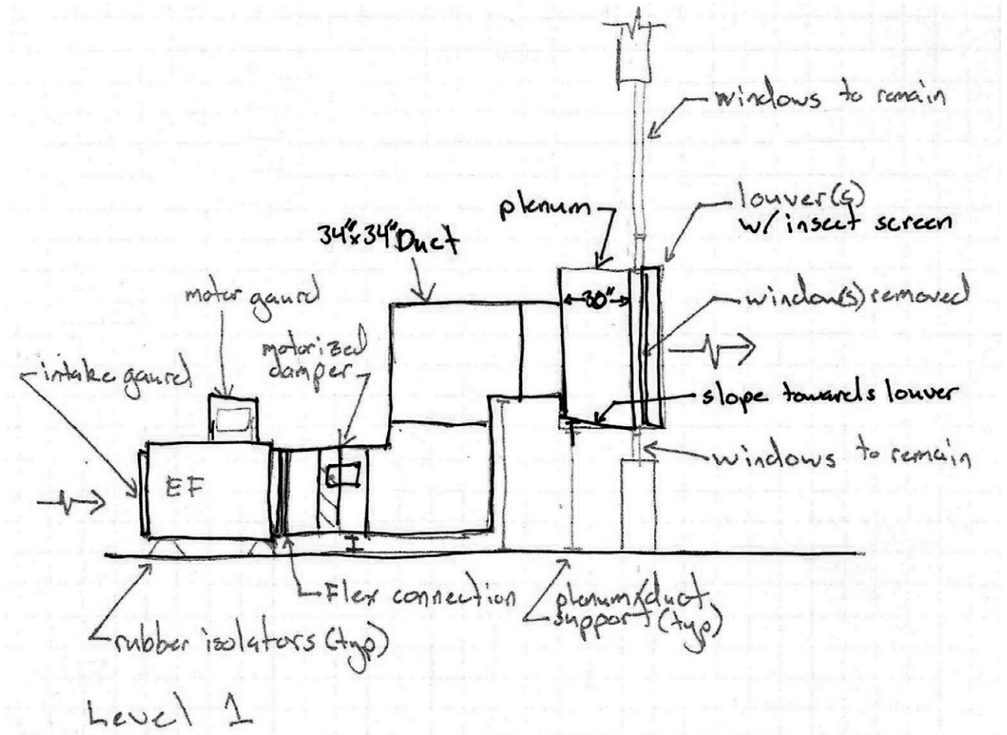
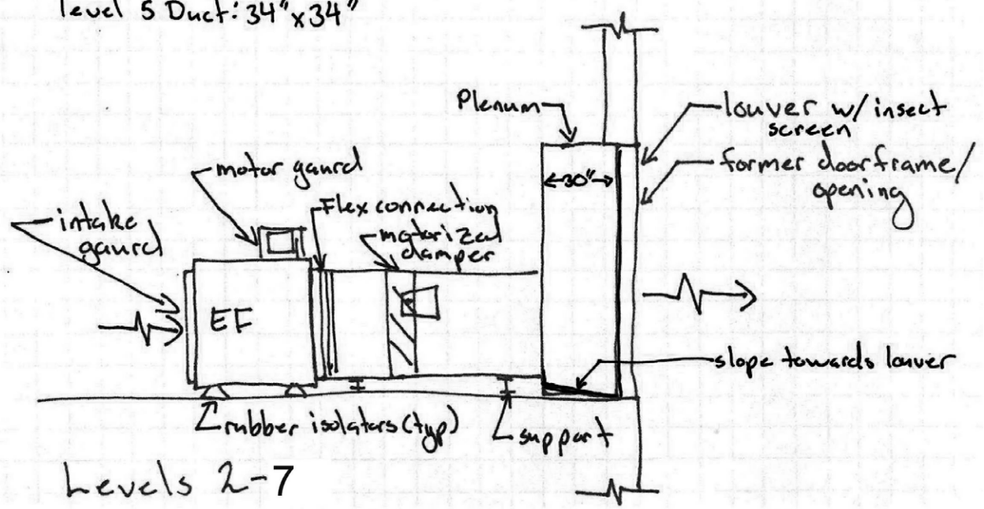
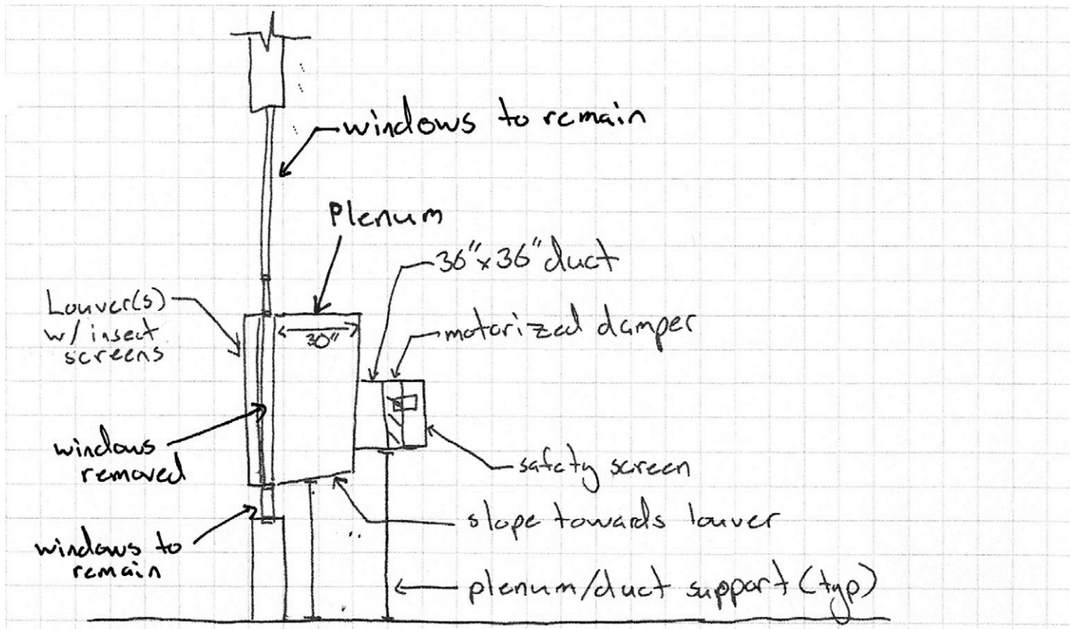


Level 1

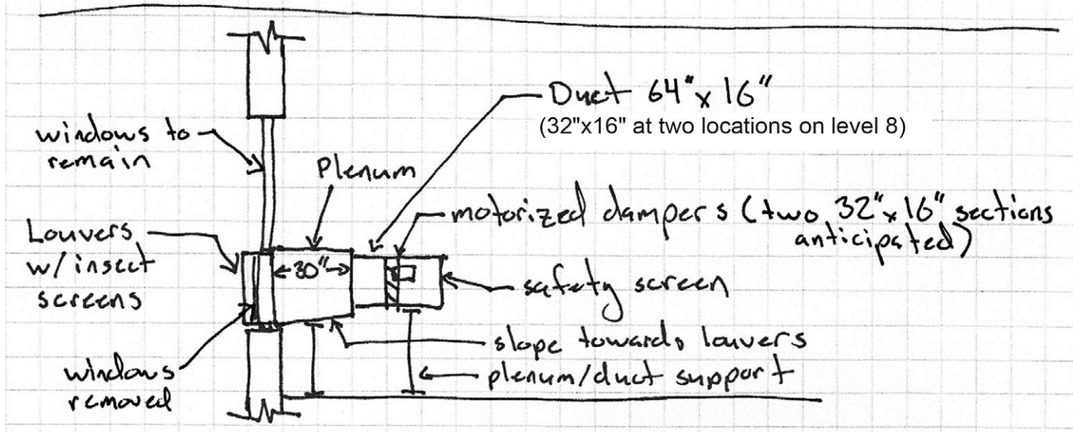
levels 2,3,4,6,7,8 Duct: 28"x28"
level 5 Duct: 34"x34"



Levels 2-7



Level 1



Levels 2-8

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

Drawing Title: **MEP SKETCHES**

Scale: N.T.S.

Drawing Number: **A-400**

Issue Date: 09/25/2020

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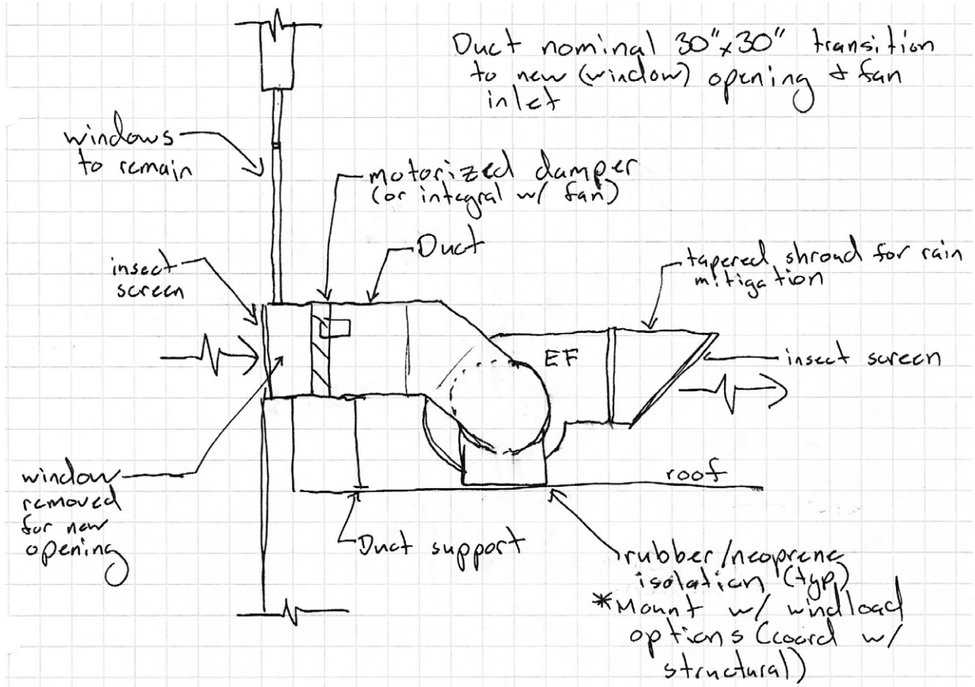
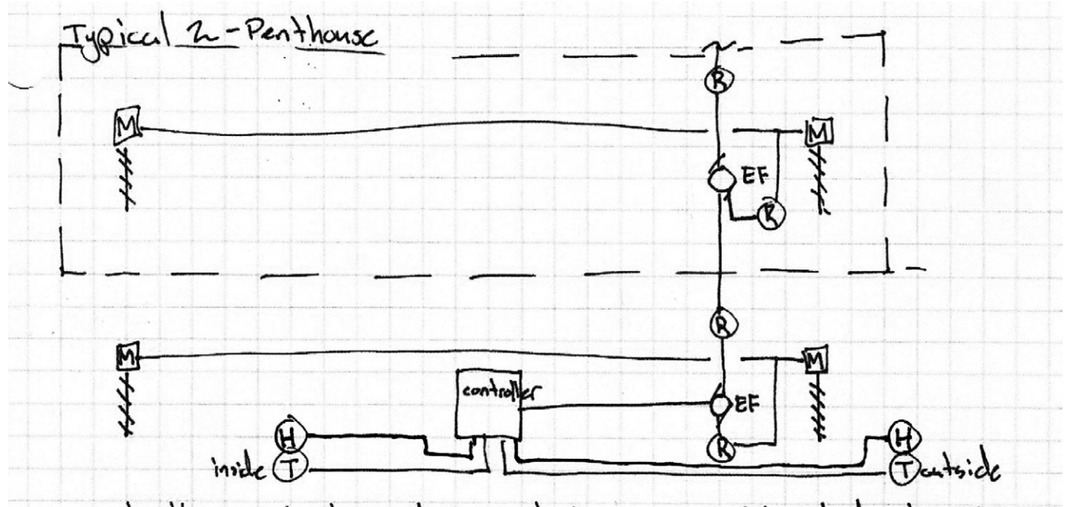
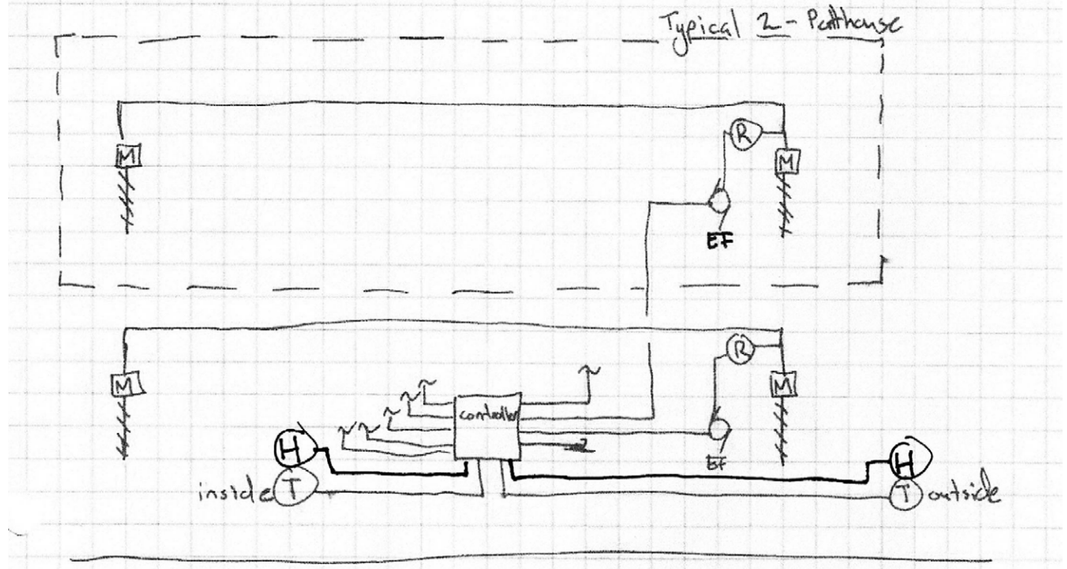


Roof (serving Penthouse and Level 8)



controller w/ relay daisy-chain - possible deduct option



controller w/ connection at each fan - Preferred option

URBANO ARCHITECTS
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Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

Drawing Title: **MEP SKETCHES**

Scale: N.T.S.

Drawing Number: **A-401**

Issue Date: 09/25/2020

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FAN SCHEDULE

TAG	EF-1 & 5	EF-2, 3, 4, 6 & 7	EF-8
SERVICE	VENTILATION	VENTILATION	VENTILATION
AREA SERVED	LVL 1 & 5	LVL 2, 3, 4, 5, 6 & 7	LVL 8 & PENTHOUSE
FAN TYPE	SQUARE INLINE	SQUARE INLINE	VENTSET
AIRFLOW	12,000	7,500	9,100
EXTERNAL STATIC PRESSURE, "WG	0.125	0.125	0.125
DRIVE	BELT	BELT	NELT
FAN RPM	1434	780	968
MOTOR SIZE, HP (WATTS)	5	1.5	3
ELECTRICAL, V/PH/HZ	208/1/60	208/1/60	208/1/60
		120/1/60	120/1/60
MANUFACTURER (OR EQUAL)	COOK	COOK	COOK
MODEL	245SQN-B	245SQN-B	245-CPV
ACCESSORIES/CONTROLS	1,2,3,4,5,6,7,A,B & C	1,2,3,4,5,6,7,A,B & C	1,2,6,7,8,9,A,B & C

ACCESSORIES:

1. FACTORY DISCONNECT
2. MOTOR COVER
3. OSHA BELT GUARD (UNLESS INCLUDED WITH MOTOR COVER)
4. INLET GUARD
5. GRAVITY BACKDRAFT DAMPER
6. PROVIDE W/ BLANCING SHEAVES AS REQUIRED FOR NEW FANS.
7. FLOOR OR ROOF MOUNTED RUBBER ISOLATORS
8. OUTDOOR WIND RATED OPTIONS
9. MOTORIZED DAMPER OPTION

CONTROLS:

A. STAND ALONE CONTROLLER TO CONTROL ALL FAN ON WHEN INDOOR TEMPERATURE EXCEEDS OUTSIDE TEMPERATURE OR WHEN INDOOR HUMIDITY EXCEEDS OUTDOOR HUMIDITY.

B. FAN TO BE OFF WHEN INDOOR TEMPERATURE IS BELOW 40F.

C. PROVIDE RELAYST TO INTERLOCK MOTORIZED DAMPERS (AT FAN AND LOUVERS) TO OPEN/CLOSE WITH ASSCOAITED FAN ON/OFF.

LOUVER SCHEDULE

TAG	EL-1	EL-2	IL-1	IL-2
SERVICE	EXHAUST LOUVER	EXHAUST LOUVER	INTAKE LOUVER	INTAKE LOUVER
FREE AREA, %	49	53	49	39
AIRFLOW, CFM	6,000	7,500 TO 12,000	6,000	1,700
INTAKE VELOCITY, FPM	NA	NA	946	1010
MAX INTAKE VELOCITY, FPM	NA	NA	2138	2138
MIN LOUVER DIMENSIONS	32"x59"	45"x82"	32"x59"	32"x20"
MOTORIZED	NO	NO	NO	NO
ADJUSTABLE	NO	NO	NO	NO
WIND LOAD RISK CATEGORY	1	1	1	1
WIND DRIVEN RAIN RESTANCE	AMCA 550	AMCA 550	AMCA 550	AMCA 550
IMPACT RESISTANCE	MANUFACTURE STANDARD	MANUFACTURE STANDARD	MANUFACTURE STANDARD	MANUFACTURE STANDARD
MANUFACTURER	GREENHECK	GREENHECK	GREENHECK	GREENHECK
MODEL	EVH-302-32X59	EVH-302-45X82	EVH-302-32X59	EVH-302-32X20

PROVIDE WITH INSECT SCREEN BEHIND LOUVER.
COORDINATE APPROVAL OF FINAL FINISH SELECTION AND DIMENSIONS WITH ARCHITECT AND BUILDING OWNER PRIOR TO CONSTRUCTION.
FINAL LOUVER SELECTION, DIMENSIONS AND FREE AREAS MUST MEET AIRFLOW REQUIREMENTS WITH INTAKE VELOCITY BELOW BEGINNING POINT OF WATER ENTRAINMENT.

T D Engineers, LLC — Electrical Panel Schedule — 8/31/2020

LIGHTING FIXTURE SCHEDULE

SYMBOL	MANUFACTURER AND MODEL NUMBER	VOLTAGE & PHASE	LAMP QUANTITY	LAMP TYPE	DESCRIPTION AND REMARKS	ACTUAL WATTAGE	MAXIMUM WATTAGE
A	LITHONIA LIGHTING #MSL-8000LM-SBL-MVOLT-GZ10-40K-80CRI-HC36	277/1	WITH FIXTURE	LED LAMPS WITH FIXTURE 8733 LUMENS 4000 CCT	LED LOW BAY FIXTURE.	75W	75W
AE	LITHONIA LIGHTING #MSL-8000LM-SBL-MVOLT-GZ10-40K-80CRI-E10WLCP-HC36	277/1	WITH FIXTURE	LED LAMPS WITH FIXTURE 8733 LUMENS 4000 CCT	LED LOW BAY FIXTURE. PROVIDE WITH INTEGRAL EMERGENCY BATTERY PACK AND TEST BUTTON AS INDICATED ON PLAN.	75W	75W
X	CHLORIDE #VE-R/[illegible]-WEM	277/1	WITH FIXTURE	LED LAMPS WITH FIXTURE	LED EXIT SIGN WITH RED/[illegible] LETTERS AND WHITE THERMOPLASTIC HOUSING. PROVIDE NICKEL-CADMIUM BATTERY FOR 90 MINUTE OPERATION AFTER LOSS OF POWER. REFER TO PLAN FOR NUMBER OF FACES AND DIRECTIONAL CHEVRONS.	N/A	N/A

PLUMBING SCHEDULE

TAG	FIXTURE/EQUIPMENT TYPE	MANUFACTURER/MODEL #	ACCESSORIES	CONNECTION SIZES	ELECTRICAL/GAS	NOTES
RD-1	ROOF DRAIN, LOW PROFILE DOME	JR SMITH - 1010Y		CONTRACTOR TO COORDINATE DRAIN SIZE WITH STORM DRAIN RISER		
OD-1	ROOF DRAIN, LOW PROFILE DOME WITH 2" EXTENSION RING	JR SMITH - 1010Y		CONTRACTOR TO COORDINATE DRAIN SIZE WITH STORM DRAIN RISER		OVERFLOW DRAIN TO BE LOCATED 2" ABOVE ROOF DRAIN
DSN-1	DOWNSPOUT NOZZLE	JR SMITH - 1770T		CONTRACTOR TO COORDINATE DRAIN SIZE WITH STORM DRAIN RISER		COORDINATE EXACT LOCATION AND EXTERIOR ELEVATION

URBANO ARCHITECTS
119 East 20th Street, Suite #200
Houston, TX, 77008

Client: TEXAS SUGAR LAND

Project Name: Imperial Sugar Char House Conditions Assessment

Project Address: 198 Kempner Street, Sugar Land 77498

Drawing Title: **MEP SCHEDULES**

Scale: N.T.S.

Drawing Number: **A-402**

Issue Date: 09/25/2020

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IV. INVENTORY OF REFERENCE DOCUMENTATION

INVENTORY OF REFERENCE DOCUMENTATION

KNOWN MODIFICATIONS TO ORIGINAL BUILDING

1. **Aluminum Window Replacement, Date Unknown. (Original steel windows manufactured by Fenestra of Detroit - Refer to Appendix H)**
2. **Exterior Brick Pointing, Date Unknown**
3. **Removal of external stair at southeast corner, Date Unknown**
4. **Removal of external silo on north, Date Unknown**
5. **Removal on interior equipment, Date Unknown**
6. **Installation of current roof, Date Unknown**

PREVIOUS DOCUMENTATION

1. **Original Drawings (Unknown):**
   Not Available
2. **Aluminum Window Replacement Sketches (1973)**
   By: Greacen II & Houston & Rogers
   Located at the Houston Metropolitan Research Center
3. **National Register of Historic Places Nomination Form (2017):**
   By: National Park Service / National Register of Historic Places
   Located at the Texas Historical Commission office in Austin, Texas
   Refer to Appendix D for an excerpt regarding the building
4. **Initial Structural Review of Select Buildings and Structures (2008):**
   By: Mike Hathaway, PE (Haynes Whaley)
   Refer to Appendix E
5. **Imperial Sugar Refinery Visual Condition Assessment of Charhouse (2018):**
   By: Cardno Structural Engineering
   Refer to Appendix F of this Report
6. **Buildings of Texas (2013):**
   By: Gerald Moorhead, FAIA
7. **Gerald Moorhead Investigative Photography (2006):**
   By: Gerald Moorhead, FAIA
   Refer to Appendix G of this Report

NEW DOCUMENTATION

1. **Measured Drawings (Summer 2020)**
   By: Urbano Architects and Reality IMT Inc
   Refer to "The Drawings" section of this Report
2. **3D Laser Scan Revit Model (Summer 2020)**
   By: Reality IMT Inc
3. **Fly-Through Virtual Documentation (Summer 2020)**
   By: Reality IMT Inc
   https://projects.realityimt.com/imperialsugar/index.html
4. **Drone Footage (Summer 2020)**
   By: City of Sugar Land
   Located at the following link:
   https://cityofsugarland.smugmug.com/Engineering-Projects/Char-House/

PRESERVATION RESOURCES

1. **The Secretary of the Interior's Standards for Rehabilitation**
   By: The National Park Service
   Refer to Appendix I of this Report
2. **Technical Preservation Briefs**
   By: The National Park Service
   https://www.nps.gov/tps/how-to-preserve/briefs.htm
3. **Houston Architectural Guide, 2012**
   By Stephen Fox

V. EVALUATION OF EXISTING CONDITIONS & MOTHBALLING RECOMMENDATIONS

ORGANIZATION OVERVIEW

The Evaluation of Existing Conditions, Mothballing Recommendations and Rough Order of Magnitude Estimate for the Imperial Sugar Company Char Filter House has been organized per the structure set forth by the CSI Specification Division.

Each division begins with a summary of existing conditions, followed by recommendations and any relevant diagrams (if applicable). Photographs, taken during walk-throughs in summer 2020, are followed, in order to illustrate the various conditions of the building elements.

Alternate scope has been determined based on items that would be recommended but not necessarily required for mothballing purposes. Some of these are based on aesthetic considerations or construction sequencing that could lead to cost-saving purposes prior to future rehabilitation. In some cases, these are in addition to the base scope but in other cases they are instead of specific scope items.

At the end of this section, there is a summary of previous structural reports performed by others in 2008 and 2018. Our team used these previous reports to inform the Rough Order of Magnitude Estimate since a structural engineer was not brought on board as part of the 2020 Conditions Assessment effort conducted by Urbano Architects. Prior to construction of future mothballing and rehabilitation, it is recommended that a licensed structural engineer conduct an assessment of the structural integrity throughout the building.


URBANO ARCHITECTS

DIVISION 03 - CONCRETE

EXISTING CONDITIONS

The building's main floor construction is composed of exposed concrete slabs. Overall, slab conditions very throughout the building perhaps due to lack of maintenance. In some areas, approximately 20% of the slabs are deteriorated to the point of creating a safety concern throughout the floors. In select cases, there is exposed aggregate and rebar from the concrete wearing away over time and extended use. In the most extreme cases, the thickness of the slab has been visibly reduced to less than an inch. This condition may be a result of chemical reactions during the sugar char refining process.

Due to the building's previous life as a sugar char refinery, there are many existing penetrations in the concrete slabs from the industrial equipment that has since been removed. These penetrations are of all sizes and shapes throughout the building and pose safety concerns for current visitors. There is also black soiling present at multiple locations throughout the slabs possibly due to the sugar char refining process.

At various locations throughout the building, the concrete beams have cracked and the concrete has begun to peel away from the rebar. There is also visible spalling and the concrete beams at the floor level show signs of corrosion from the steel within.

The concrete roof decks at the Saddlebag and Penthouse are deteriorated beyond repair (as also noted in the structural report summary at the end of this section). The Main Roof concrete deck is also deteriorated. The concrete fireproofing that once surrounded the steel framing of the roof has peeled away partially or entirely, depending on the location.

The concrete and steel internal stair case is in overall good condition but there are select areas where the concrete treads and landings have deterioration and will need minor repairs.

There are large graffiti murals on the concrete walls at the 8th floor.

REHABILITATION RECOMMENDATIONS

As mentioned in the existing conditions summary, the condition of the concrete varies significantly. Recommended concrete work includes basic cleaning, minor repairs and sealing of all existing concrete slabs to prevent further deterioration.

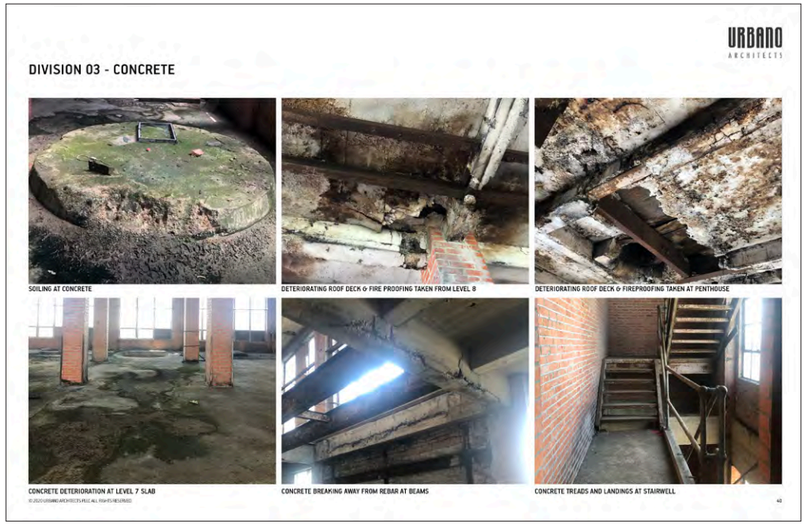
Necessary concrete work also includes reconstruction of the Penthouse and Saddlebag concrete roof decks.

ALTERNATE SCOPE:

Alternate concrete scope recommended is repair of select deteriorated slabs back to a useable condition. This would allow further access to the floors which in the base scope is limited to certain areas where the slabs are currently in a stable condition.

Alternate scope also includes reconstruction of the Main Roof concrete deck.

SAMPLE: SUMMARY SHEET


URBANO ARCHITECTS

DIVISION 03 - CONCRETE

SOILING AT CONCRETE

DETERIORATING ROOF DECK & FIRE PROOFING TAKEN FROM LEVEL 8

DETERIORATING ROOF DECK & FIREPROOFING TAKEN AT PENTHOUSE

CONCRETE DETERIORATION AT LEVEL 7 SLAB

CONCRETE BREAKING AWAY FROM REBAR AT BEAMS

CONCRETE TREADS AND LANDINGS AT STAIRWELL

SAMPLE: PHOTOGRAPHS SHEET 1

DIVISION 02 - EXISTING CONDITIONS (SITE)

EXISTING CONDITIONS

The major vehicular thoroughfare to the site is Highway 90, which also has great visibility towards the site. From Highway 90, the train tracks intersect and from there, Kempner Street serves as the local access to the site.

Today, the main entry to the site is from a driveway to the east that brings you to the north side of the site. The main building entrance is on the north facade with a secondary entrance on the east facade. There is only a security fence at the east and north sides of the site. The west and south sides are unprotected, putting the building at risk for unwanted entry.

The site is located approximately 360' from the Oyster Creek which is a potential flood hazard. There are no records available of flooding taking place at the building from Hurricane Harvey. However, according to the 500' floor map, there would be approximately 4-12" of water ponding against the northeast corner of the building. It is important to note that there is minimal positive drainage around the site, further putting the building at risk for water infiltration. There is also a large flat concrete pad to the north of the building which can cause water ponding along the base of the building.

Existing vegetation around the site is minimal and well maintained. There is grass surrounding the site as well as trees on the west and south sides. On the west side, the trees are currently reaching the building and there are also low plantings and hedges.

MOTHBALLING RECOMMENDATIONS

Recommended demolition work includes the removal of the concrete roof decks at the Penthouse and Saddlebag and removal of all plywood at the previous bridge opening and first floor windows. Shoring and bracing should be installed prior to the work as required.

Site clearing recommendations include pruning of existing trees directly adjacent to the building as well as methods to protect the trees from root, trunk and branch damage that could be caused by construction activities such as the installation of scaffolding and vehicular traffic and/or parking which could take place over the roots.

It is recommended that a termite and pest investigation is conducted since a recent report cannot be found. Pests can cause damage to wood and other building materials as well as cause potential health hazards. If evidence of any pests are found within or around the site, it is important that measures are taken to eliminate them from the site and seal off any access points. Mortar analysis testing is also recommended, including either wet chemical or instrumental methods, to identify original ingredients (identification of sand by gradation and color) and be able to make appropriate recommendations on future color and texture of the mortar.

The site is predominantly flat and there is no positive drainage. Storm water run-off and drainage improvements should be undertaken as part of the Mothballing effort, including installation of new storm sewer piping, area drains, a catch basin and backflow preventer. The proposed replacement of the roof (discussed in Division 7) will also aid in the overall storm drainage effort.

Security fencing should be installed in order to protect the building from future break-ins and additional graffiti. Exterior and interior scaffolding will be required to perform the mothballing scope of work proposed in the various divisions.

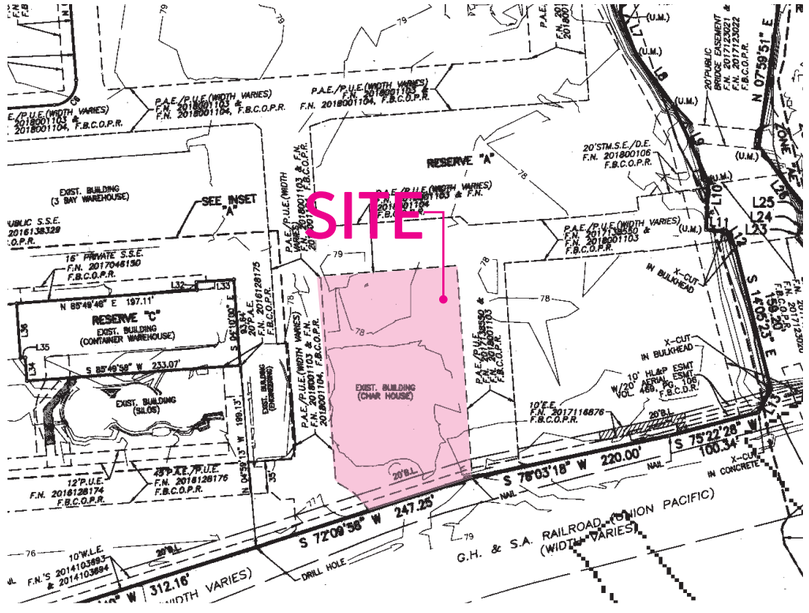
<u>ALTERNATE SCOPE:</u>
Alternate demolition scope includes removal of the concrete deck and concrete fireproofing at the steel beams of the main roof.

Graffiti removal and cleaning is also recommended.

DIVISION 02 - EXISTING CONDITIONS (SITE)

AERIAL VIEW OF SITE - CONTEXT

500-YEAR FLOOD MAP



EXISTING PLAT

DIVISION 02 - EXISTING CONDITIONS (SITE)

SITE SURROUNDINGS, MINIMAL POSITIVE DRAINAGE

AERIAL VIEW OF SITE FROM THE NORTH

SITE SURROUNDINGS & GROUND COVERING AT NORTH AND EAST

SITE VEGETATION AT SOUTH AND WEST

DIVISION 03 - CONCRETE

EXISTING CONDITIONS

The building's main floor construction is composed of exposed concrete slabs. Overall, slab conditions vary throughout the building and deterioration appears to have been impacted by chemical reactions during the sugar char refining process. This includes exposed aggregate and rebar and in some cases, the thickness of the slab has been visibly reduced to less than an inch.

Due to the building's previous life as a sugar char refinery, there are many existing penetrations in the concrete slabs from the industrial equipment that has since been removed. These penetrations are of all sizes and shapes throughout the building and pose safety concerns for current visitors. There is also soiling present at various locations throughout the slabs, possibly due to the sugar char refining process.

At various locations throughout the building, the concrete beams have cracks and the concrete has begun to peel away from the rebar. There is also visible spalling and the concrete beams at the floor level show signs of corrosion from the steel within.

The concrete roof deck at the Saddlebag and Penthouse are deteriorated beyond repair, with spalling and various cracks and openings throughout. The concrete fireproofing that once surrounded the steel framing of the roof has peeled away partially or entirely, depending on the location. The concrete roof deck at the main roof is also deteriorated with similar conditions, though less severe.

The concrete and steel internal stair case appears in overall good condition but there are select areas where the concrete treads and landings have deterioration and will need minor repairs.

There are large graffiti murals on the concrete walls at the 8th floor.

MOTHBALLING RECOMMENDATIONS

As mentioned in the existing conditions summary, the condition of the concrete varies significantly. Recommended concrete work includes basic cleaning, minor repairs and sealing of all existing concrete slabs to prevent further deterioration. Proposed barricades should limit access by visitors at further deteriorated areas, such as areas of exposed aggregate and rebar.

Necessary concrete work entails the reconstruction of the concrete roof deck at the Penthouse and Saddlebag, in its entirety.

ALTERNATE SCOPE:

Alternate concrete scope of work recommended includes replacement of select deteriorated slabs with a topping slab. This would allow increased access to the floors. The base scope includes barricades to limit access due to current safety concerns.

Alternate scope also includes reconstruction of the Main Roof concrete deck. The Main Roof concrete deck is in need of repair but until a tenant or developer is brought on board it does not make sense to pursue major improvements which may conflict with future equipment locations based on program needs.

DIVISION 03 - CONCRETE

SOILING AT CONCRETE

DETERIORATING ROOF DECK & FIRE PROOFING TAKEN FROM LEVEL 8

DETERIORATING ROOF DECK & FIREPROOFING TAKEN AT PENTHOUSE

CONCRETE DETERIORATION AT LEVEL 7 SLAB

CONCRETE BREAKING AWAY FROM REBAR AT BEAMS

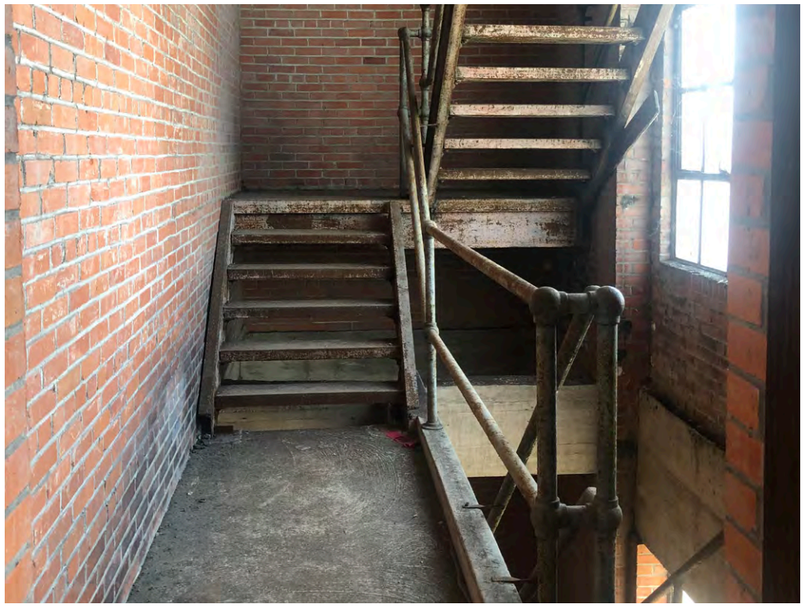
DIVISION 03 - CONCRETE

CONCRETE SLAB STAINING AT LEVEL 8

DETERIORATING ROOF DECK AT SADDLEBAG

DETERIORATED SLABS EXPOSING REBAR AT LEVEL 8

DETERIORATED SLABS EXPOSING AGGREGATE AT LEVEL 5



CONCRETE TREADS AND LANDINGS AT STAIRWELL

DIVISION 04 - MASONRY

EXISTING CONDITIONS

The building's facade is composed primarily of brick masonry. The exterior brick and mortar appear in overall good condition. Thus, exterior masonry cleaning and repointing was not included as part of the Mothballing base scope of work. There are select areas with cracks at the masonry, primarily at the corners of the building. The east facade, where a previous exterior stair has since been removed, will need repairs at old anchoring locations (see photograph on next page). At locations surrounding the Saddlebag, there appears to be increased stress on the building resulting in large cracks. (Refer to Structural Analysis by Others in this Report for photos and assessment by structural engineers.) There are additional cracks above window openings at the Penthouse, some as wide as approximately one inch.

Existing lintels throughout the building will require some repairs. It was difficult to assess the exact amount of scope without adequate scaffolding. There is moderate to significant staining, soiling, paint stripes and graffiti throughout interior masonry walls at all floors. In addition, there are some specific locations where the brick has been damaged, removed, displaced or chipped away.

MOTHBALLING RECOMMENDATIONS

Base masonry recommendations are focused on maintaining the structural stability of the exterior and interior brick units. Injecting cracks at the masonry and mortar joints is an important step in repairing and strengthening masonry. Injecting the cracks will protect the building from moisture penetration and further masonry separation.

Work at all damaged or deteriorated lintels should be addressed in order to prevent continued deterioration and water infiltration at the window openings.

In select locations, new temporary masonry infill walls are recommended at all existing openings currently blocked with plywood at the first floor, with the exclusion of noted entries on the drawings. (Refer to The Drawings Section of this Report). This work will ensure protection of the building from moisture penetration and further vandalism currently taking place.

It is important to note that all masonry work performed should follow The Secretary of the Interior's Standards for Rehabilitation (see Appendix I). A masonry analysis and testing should also be performed prior to undertaking any repairs and replacements as this will aid in determining the original materials and inform the most accurate methods for appropriate mortar and brick matches.

<u>ALTERNATE SCOPE:</u>

Alternate exterior masonry scope includes cleaning of the facade brick and concrete. Select repointing of the brick is also included as alternate scope and the method and materials should be based on a professional masonry test which should be performed prior to beginning any work.

Alternate interior masonry scope includes brick cleaning as well as selective replacement of brick units at areas where it has been removed or replaced. Damage appears to have resulted from manufacturing activities. Interior brickwork, in particular at columns, functions as protection and fireproofing of steel structural columns and should therefore be repaired and/or replaced.

DIVISION 04 - MASONRY

GRAFFITI AT STAIRWELL

PREVIOUS STEEL SUPPORTS AT E FACADE DETERIORATING THE BRICK

GRAFFITI AT SEVERAL LOCATIONS ON INTERIOR BRICK

TYPICAL INTERIOR BRICK SIZES

INTERIOR BRICK CONDITION

CRACK AT PENTHOUSE WINDOW OPENING

DIVISION 04 - MASONRY

INTERIOR BRICK CONDITION AT LEVEL 7 IN NEED OF CLEANING

INTERIOR BRICK CONDITION AT LEVEL 7 IN NEED OF REPAIR

EXISTING BRICK CRACK ON SOUTH CORNER

LARGE CRACK AT BRICK AT NE CORNER OF SADDLEBAG & N CORNER OF MAIN BUILDING

DIVISION 05 - METALS

EXISTING CONDITIONS

The structural steel beams at the main roof and penthouse roof decks appear to be in sound condition and this is also noted in past structural assessment reports. (Refer to Structural Analysis by Others in this Report.) They are partially covered up by deteriorating concrete fireproofing that make it difficult to fully assess the condition at the joints. Once fireproofing and roof decks are removed, these will need to be investigated further. There are also diagonal steel beams anchoring the Saddlebag extension back to the main building floor structure. These beams are corroded and should be further evaluated during a future rehabilitation project. At some floors, there are also exposed steel beams that show signs of corrosion due to exposure to the elements. (Refer to The Drawings Section of this Report).

At some floors, there are columns where the masonry surrounding the structural steel columns is not present. The steel at these locations has evidence of corrosion.

The penthouse and Saddlebag portions of the building have steel stair cases and landings. These are in poor and unsafe condition.

At the roof level, the metal railings have signs of corrosion and appear structurally unsound due to anchoring conditions.

MOTHBALLING RECOMMENDATIONS

Mothballing recommendations for metals within the building include repair of structural steel beams at the Penthouse and Saddlebag. At the Penthouse the beams supporting the roof deck require repairs and at the Saddlebag the diagonal beams tying the extension back to the main structure are corroded and need repaired.

All exposed steel structural elements throughout the interior of the building should be cleaned prior to providing a protective coating to prevent further deterioration.

ALTERNATE SCOPE:

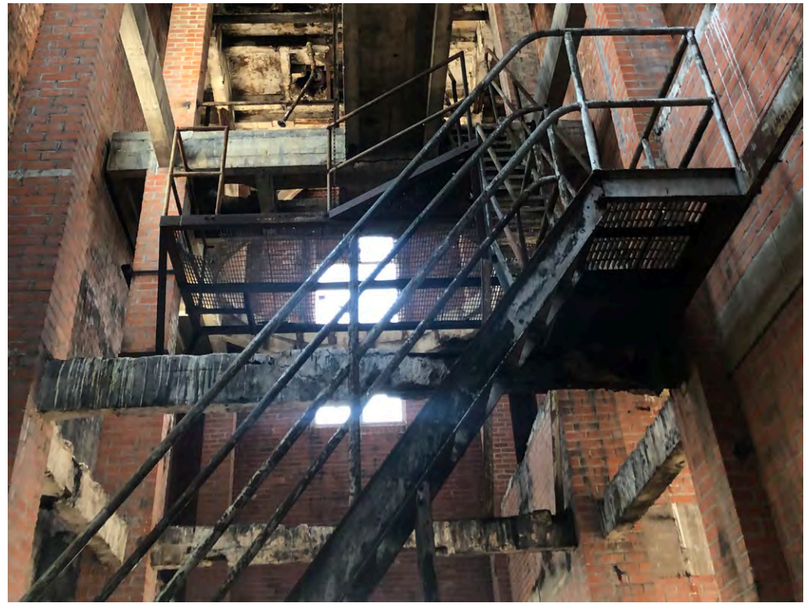
Alternate scope in the metals division includes selective repair of the structural steel beams at the main roof deck. This is alternate scope due to the fact that the future owner may wish to change the roof construction or install equipment that would change the position or type of roof supports and we would not recommend doing any work that may need to be reversed at a future date.

Alternate scope also includes selective repairs or replacement at the steel stairs and landings at the Penthouse and Saddlebags which are currently unsound.

DIVISION 05 - METALS

STEEL BEAMS AT ROOF DECK

STEEL BEAMS AT SADDLEBAG



STEEL STAIRCASE AT PENTHOUSE

DIVISION 07 - THERMAL & MOISTURE PROTECTION

EXISTING CONDITIONS

The existing roofing consists of a Modified bitumen roofing system. The same type of roofing membrane appears to have been used at all parapets, copings and roof-to-wall transitions. All roofing membranes throughout the building are deteriorated and causing extensive water damage to the interior of the building and structure. Through visual observation, it was evident that there have been numerous patch repairs throughout the roof and existing penetrations throughout are not properly sealed, allowing for additional water infiltration into the building. The roof drains have evidence of corrosion and clogging throughout with visible signs of leak. In addition, no secondary drainage system was found.

The roof lacks sufficient slope for adequate drainage. The parapets are of a good height for adequate roofing build-up but the existing flashing is corroded and deteriorated throughout.

The existing roof catwalk platform at the main roof is missing slats and partially missing components. In general, adequate access and maintenance ladders and walkways are not present.

MOTHBALLING RECOMMENDATIONS

The existing roofing should be replaced in its entirety, including all flashing, parapet roofs, coping, penetrations, etc. down to original structural deck. Given unknown future use of the building, a new 45 mil PVC single-ply roof with plywood roof deck is being proposed as part of the base scope of work for temporary use only. New sheet metal flashing and joint sealers should be installed at various select locations. All existing roof penetrations should be carefully sealed throughout.

The existing roofing at the Penthouse and Saddlebag should be replaced in its entirety, including all flashing, parapet roofs, penetrations, etc. down to original structural deck. (Refer to Division 3 Concrete of this Report for scope of work regarding the structural deck.) A new waterproof membrane should be installed over the deck. We recommend 60 mil Sarnafil or equal. New R-25 insulation should be provided. A new mechanically-adhered membrane roofing such as TPO, PVC, or equal should be provided at entire roof, penetrations, parapets and over coping. A prefabricated roof hatch that is Bilco Type S-20 or equal as well as disappearing stairways (Super Simplex, Precision Stair Corp. or equal) are recommended. Careful integration of new overflow roof drains should be provided as required by building code. (Refer to Division 22 Plumbing of this Report.) New joint sealants should be provided around all window frames, doors and miscellaneous M.E.P. openings throughout entire building.

<u>ALTERNATE SCOPE:</u>

As part of the alternate scope, the Main Roof should be replaced in its entirety, including all flashing, parapet roofs, coping, penetrations, etc. down to original structural deck. (Refer to Division 3 Concrete of this Report for scope of work regarding the structural deck.) A new waterproof membrane should be installed over the deck. We recommend 60 mil Sarnafil or equal. New R-25 insulation should be provided. A new mechanically-adhered membrane roofing such as TPO, PVC, or equal should be provided at entire roof, penetrations, parapets and over coping. A prefabricated roof hatch that is Bilco Type S-20 or equal as well as disappearing stairways (Super Simplex, Precision Stair Corp. or equal) are recommended. Careful integration of new overflow roof drains should be provided as required by building code. (Refer to Division 22 Plumbing of this Report.)

DIVISION 07 - THERMAL & MOISTURE PROTECTION

SADDLEBAG ROOF DETERIORATED

MISSING SEALANTS AT OPENING

EXPOSED ROOF CONDITION AT UPPER MAIN ROOF

ROOF EDGE CONDITION AT UPPER MAIN ROOF

DIVISION 07 - THERMAL & MOISTURE PROTECTION

PENTHOUSE ROOF HATCH

EXISTING CATWALK AT MAIN ROOF

EXISTING ROOF PARAPET CONDITION

EXISTING MAIN ROOF WITH MINIMUM SLOPE AND SHOWING SIGNS OF DETERIORATION

DIVISION 08 - OPENINGS

EXISTING CONDITIONS

The original steel windows were manufactured by Fenestra of Detroit (Refer to Appendix H for details) and are still present at the north building facade and south side of the Penthouse only. Several of these windows have steel frames that are broken or corroded, with broken glass, soiled or missing glass panels. Some of the windows are also missing portions of the steel frames. Glazing at steel windows is single pane with patterned wire glass. Some window sashes are loose throughout and inoperable hardware is observed throughout.

The east, south and west facade windows have all been replaced with aluminum windows. Several of these are damaged with corroded frames and broken glass panels. The windows at the north and west sides of the Saddlebag have been modified to integrate metal louvers. Some window sashes are loose throughout and inoperable hardware is observed throughout. There are Aluminum Window Replacement sketches dated 1973 by Greacen II & Houston & Rogers located at the Houston Metropolitan Research Center.

Plywood boarding has been installed over broken windows throughout the building. In addition, a previous connection to a bridge at the Fourth floor has also been boarded with plywood.

There are four door openings at the ground level on the north elevation. One opening has temporary double door panels and the other three are boarded shut with plywood. No original frames remain. The metal frame and door at the East facade is in poor condition. At the upper levels on the east facade, there are existing doors that previously led to an exterior egress stair. These openings are a safety concern as they open directly to a large vertical drop. At the roof level, there is one access door from the main staircase that is also in poor condition.

Refer to Appendix C for a Window Schedule of all building windows, noting existing conditions.

MOTHBALLING RECOMMENDATIONS

Considering the age of the building, the Imperial Sugar Company Char Filter House has a large area of glazing-to-masonry ratio. Since windows make up a large portion of the facades, it is important that they are adequately sealed to protect the interior of the building for mothballing purposes. Thus, it is recommended that all steel windows at the north facade of the building are replaced to match original detailing, in order to ensure adequate weatherproofing protection from both wind and moisture damage.

The aluminum windows throughout the building are newer and the majority of them are in fair condition with an estimated 20% requiring selective repairs or replacement to ensure they are protected from both wind and moisture damage. A new aluminum window is recommended to be installed at the previous bridge opening. It is also recommended that air and water leak testing be performed at all steel and aluminum windows.

Installation of a new set of double doors at the North façade is recommended to serve as the main entry to the building. A new single door is recommended at the East façade to serve as secondary means of egress. A new interior hollow metal single door is recommended to be installed at the stairwell entry at the First Floor. All exterior proposed doors should be reviewed by the Texas Historical Commission.

In order to provide air intake for the proposed ventilation system in the mothballing scope of work, it is recommended that fixed aluminum louvers be installed at portions of the aluminum windows. (Refer to Division 22 Mechanical for more information).

<u>ALTERNATE SCOPE:</u>

Protective clear plastic sheets are recommended at all windows located in the First and Second Floors in order to protect the building from future vandalism. This work should take place following all window replacement and repairs.

DIVISION 08 - OPENINGS

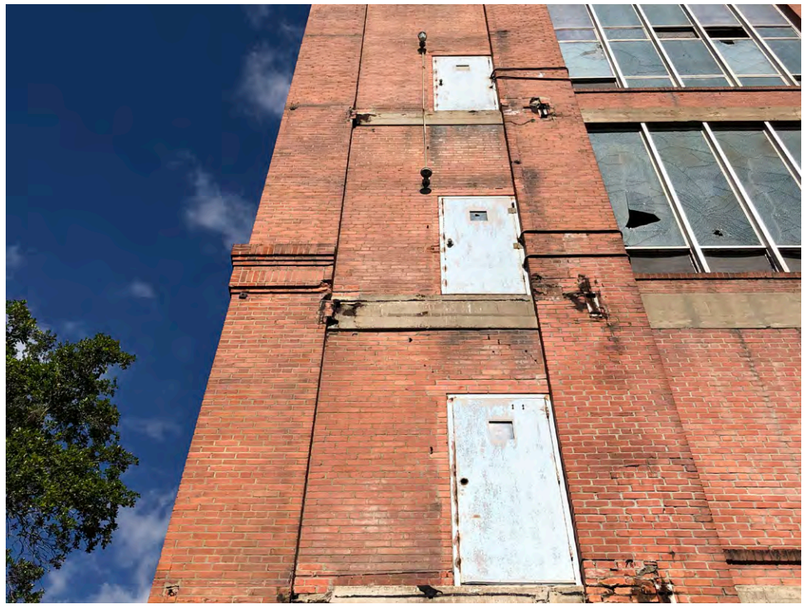
STAIRWELL STEEL WINDOW AND ACCESS DOORS TO ELEVATOR SHAFT

PENTHOUSE ALUMINUM WINDOWS AT EAST/WEST/SOUTH. STEEL WINDOWS AT NORTH

BOARDED OPENING WHERE PREVIOUS BRIDGE EXISTED

STEEL WINDOW WITH LOUVER MODIFICATION ON LEVEL 7

METAL PANELS AND LOUVERS AT SADDLEBAG WINDOWS



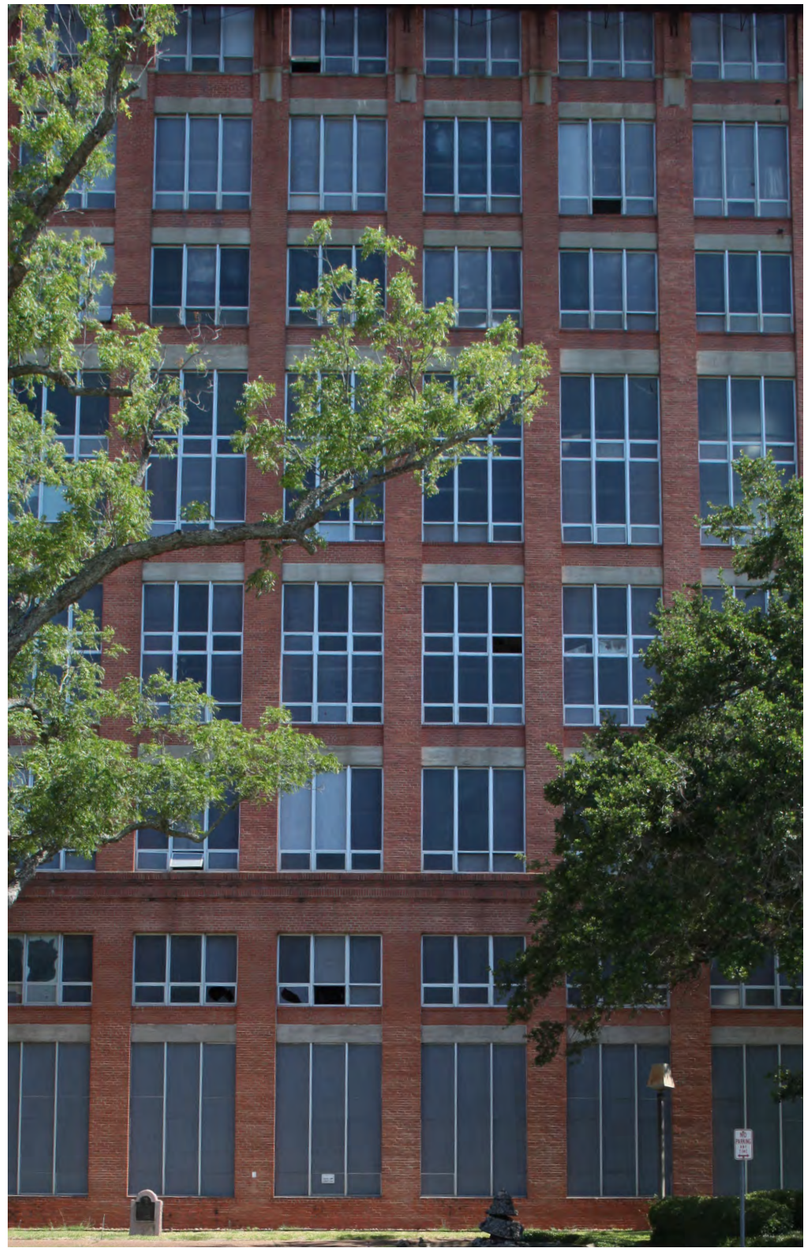
FIRE ESCAPE DOOR ON EAST FACADE, TYP ON ALL FLOORS

DIVISION 08 - OPENINGS

NORTH FACADE WINDOWS ARE ORIGINAL HISTORIC STEEL AND GLASS

BOARDED-UP WINDOW AND DOOR OPENINGS AT GROUND LEVEL

EXISTING ROOF ACCESS DOOR FROM STAIRWELL



EAST, SOUTH & WEST FACADES WINDOWS ARE ALUMINUM FRAMES

DIVISION 09 - FINISHES

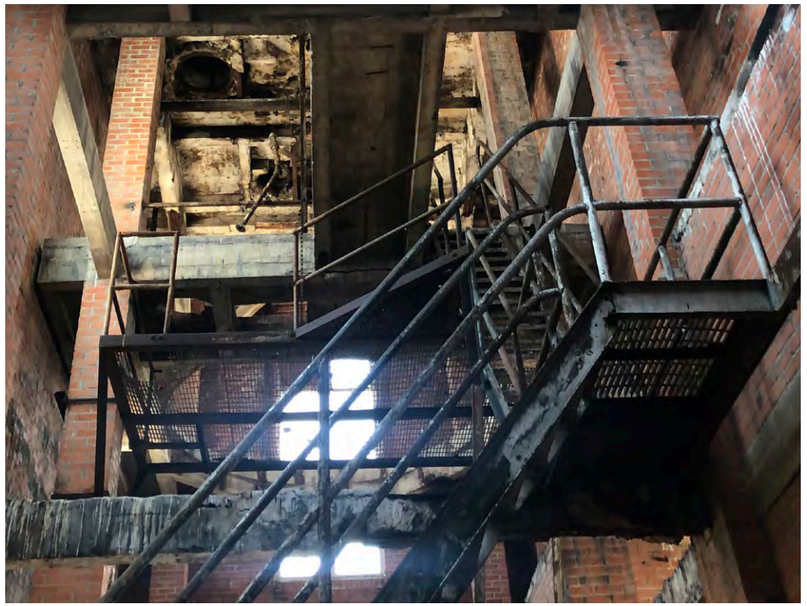
EXISTING CONDITIONS

Existing finishes are minimal throughout as it is an industrial building with predominately exposed structure. The exposed steel beams and lintels currently do not have any coatings for erosion control or fireproofing. The steel railings at the main roof parapet are corroded and protection should be addressed.

MOTHBALLING RECOMMENDATIONS

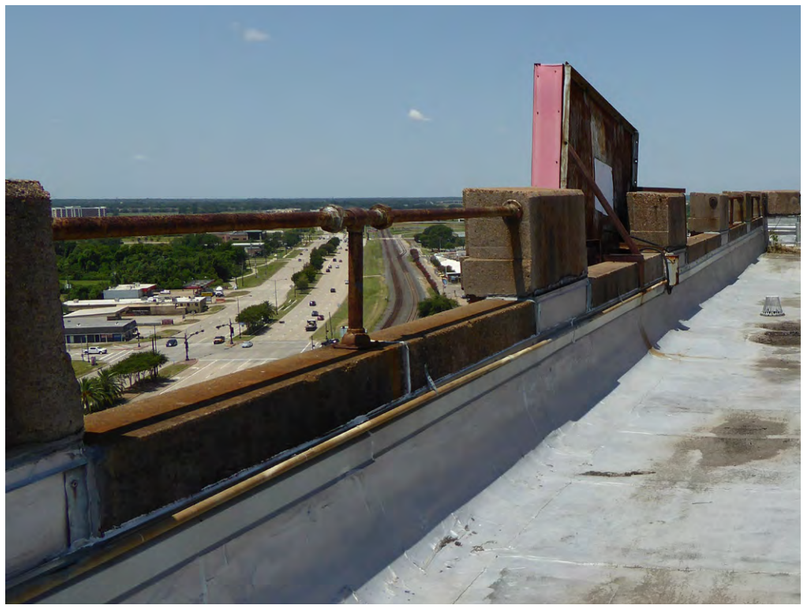
Mothballing recommendations for the building finishes include coatings and paintings at all exposed steel locations throughout the building. High-performance coatings should be used.

Mothballing scope of work also include painting of steel lintels at selective locations throughout.



EXISTING ROOF ACCESS DOOR

COATING PEELING AT LINTEL, TYPICAL CONDITION



STEEL RAILING AT ROOF

STEEL BEAMS AT SADDLEBAG

DIVISIONS 10 & 13 - SPECIALTIES & SPECIAL CONSTRUCTION

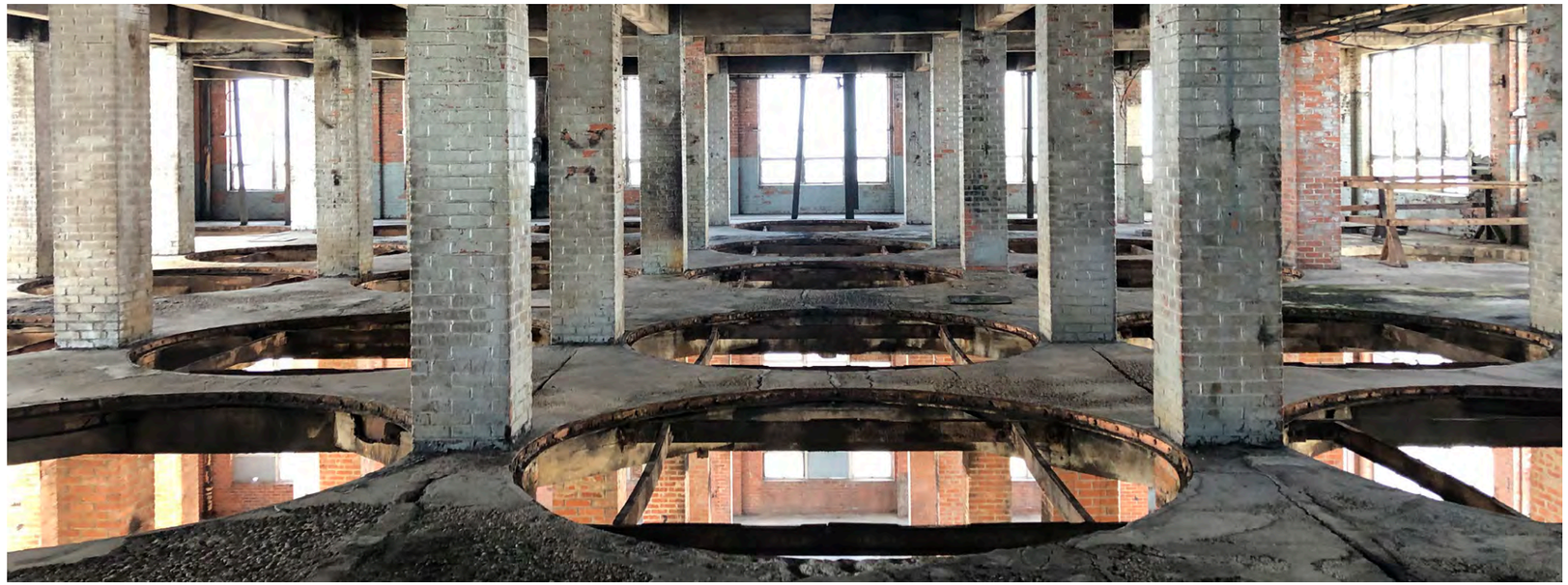
EXISTING CONDITIONS

Exit signs and fire protection devices are missing throughout. There is no lightning protection present at the building. Various areas are missing protective barricades and currently present falling hazards.

MOTHBALLING RECOMMENDATIONS

Recommendations include installing life safety equipment, including exit signs, fire extinguishers, cabinets and accessories, and protective barricades to minimize access throughout the floors due to various slab openings throughout the building.

Lightning protection and hazardous material remediation is also recommended.



FLOOR OPENINGS AT LEVEL 6

FLOOR OPENINGS AT LEVEL 4

FLOOR OPENINGS AT LEVEL 2

DIVISION 22 - PLUMBING

EXISTING CONDITIONS

Existing plumbing systems have been removed or abandoned such that they are no longer in a functional state. The storm drains observed appeared to be blocked and are creating standing water on the roof, while at the same time, the piping in the building has deteriorated to the point of being visibly cracked and broken. In addition to concerns with existing condition, the existing roof drains appear to be undersized based on current code requirements and there was no method for overflow protection (secondary drains, scuppers, or similar). No active domestic water lines were observed and floor drains in the Saddlebag area appeared to be blocked (or missing). Any domestic water piping and waste and vent piping that has not already been removed is not expected to be in good enough condition to reuse. The fire sprinkler lines also had visible breaks and appear to be shut off outside the building. Existing valve and control hardware does not appear to be functional or repairable without complete replacement.

MOTHBALLING RECOMMENDATIONS

It is recommended to replace the existing roof drainage system with new drains and risers sized to current code requirements. This should also include secondary/overflow drainage per current code requirements. Most existing storm risers in the building are in very poor shape (effectively non-functional). Replacing with something that meets current code is recommended in strongest possible terms over just replacing like-for-like with what was installed originally.

The existing sprinkler system appears to be non-functional. For "Mothball" purposes and assuming the building will be a "cold, dark, shell" that is not occupied it should be feasible to remain unprotected (as long as the building is not used for events or similar while "mothballed"). However, local authority having jurisdiction has final say.

EXISTING DRAINS AT MAIN ROOF

INTERIOR ROOF DRAINS, TYPICAL CONDITION THROUGHOUT

DIVISION 23 - HEATING, VENTILATION & AIR CONDITIONING (HVAC)

EXISTING CONDITIONS

Existing mechanical systems have been removed. The few remaining accessories observed such as louvers and vent openings are not expected to meet current wind load requirements (for rain and debris per current IBC). Existing mechanical openings are doing more damage than good as a source of water penetration.

The existing building is primarily concrete and masonry with metal encased on concrete and brick. This is a very high thermal mass system that will tend to heat up and cool down relatively slowly. The vast majority of the time this is a good thing because it dampens temperature fluctuations and spreads out heating/cooling load.

MOTHBALLING RECOMMENDATIONS

Park Service guidance for mothballing the building recommends a mechanical ventilation system which provides 4 air changes per hour (ACH). Fans and louvers alone should be sufficient to achieve this baseline for the assumed space and ambient conditions parameters. The interior masonry and concrete surfaces are expected to tolerate the relatively uncommon scenarios where condensation can still be expected to occur. It is recommended to implement basic relay-based temperature controls to control fans based on ambient and indoor temperature to prevent them from running when outside temperatures are higher than indoor temperatures (for example cool mornings). A winter change-over can be included to run in winter only when outdoor conditions are warmer than indoors. However, active freeze protection is not expected to be required. Intermittent monitoring is recommended for this system so that temperature set points can be adjusted if needed.

Because it is not a large additional cost, the base scope for fan controls incorporates enthalpy/humidity controls so that the fans can operate based on specific locations within the building, preventing interior conditions where condensation may occur. This is more extensive than just relay based controls with thermostats and may require something like stand-alone DDC controls. For example, operation based on measured wet-bulb temperature and concrete surface temperature with calculations integrated to avoid conditions where dew-point would be achieved. This is still a “fan and louver” based solution, but with more sophisticated controls. The basic humidity controls may also save energy in the long run compared to running fans nearly 24/7.

ALTERNATE SCOPE:

For the most protection and the only way to be sure condensation on interior surfaces will be avoided in all possible scenarios, some form of actual dehumidification is required. For an occupied building this is normally achieved passively as a side effect of a properly designed space conditioning HVAC system. For mothball purposes active dehumidifiers can be installed that are not attempting to make the space comfortable for occupancy, but instead just removing moisture. This would still involve louvers but the fans would be built into dehumidifiers. Drainage for condensate would need to be included. Some ductwork in the building would also likely be recommended. This is the “best” option if preventing any condensation at all is critical, but also significantly more expensive than any other option. It is worth noting the building was not originally designed to include active (or passive) dehumidification and recent water damage from leaks and similar are far worse than anything we would expect from occasional condensation. This option is likely to be overkill for mothballing purposes.

EXISTING LOUVERS AT SADDLEBAG

DIVISION 26: ELECTRICAL

EXISTING CONDITIONS

Existing electrical systems have been mostly removed or abandoned in place, such that they are no longer in a functional state. What remains of the main service gear is rusted and overgrown. An existing panel, several disconnects and a transformer, located on the 6th floor, are labeled as 'hot', but do not actually appear to be active. As best we could tell, power has been disconnected either elsewhere on the campus or at the utility connection. At one time, the building sign and some of the interior lighting appear to have been fed from the panel/disconnects on level 6, but most circuits are turned off, and as noted above, it is not clear that these panels are even active any longer. We understand the sign has been lit in recent memory, but could not see what looked like an active circuit serving it or any of the other lighting while on site. Minimal interior lighting fixtures were visible on site, but they did not appear to be operational, even if power were available. The existing elevator/lift does not appear to be in a functional state, even if power were available. Several existing fire alarm devices were noted on site, but like all other equipment and devices observed, they do not appear to be functional and are not expected to meet the current code requirements, even if they could be restored to a functional state.

MOTHBALLING RECOMMENDATIONS

Repair or reuse of existing panels, disconnects, remaining feeders and conduits is not advised.

The majority of the mothballing electrical scope is directly related to the ventilation requirements for power to the fans and louvers. A new electrical service to provide power to the new ventilation equipment is necessary.

The new service should also allow power for the Imperial Sugar sign and any interior or exterior security lighting. The security lighting would be primarily around the building exterior with some wall pack fixtures and similar.

Heating is not required in the mothballing recommendations. If a sprinkler system is installed heat and/or heat trace will be required for freeze protection.

For mothballing purposes ambient lighting is not required. If ambient lighting is included in the interior of the space it would likely trigger the need for egress lighting.

If there is any chance the building will be anything other than a "cold, dark, shell" while mothballed it could also trigger fire alarm and fire protection requirements. Additional signage may be required to emphasize the unoccupied and unoccupiable nature of this building so that it doesn't get used for events or similar "as-is".

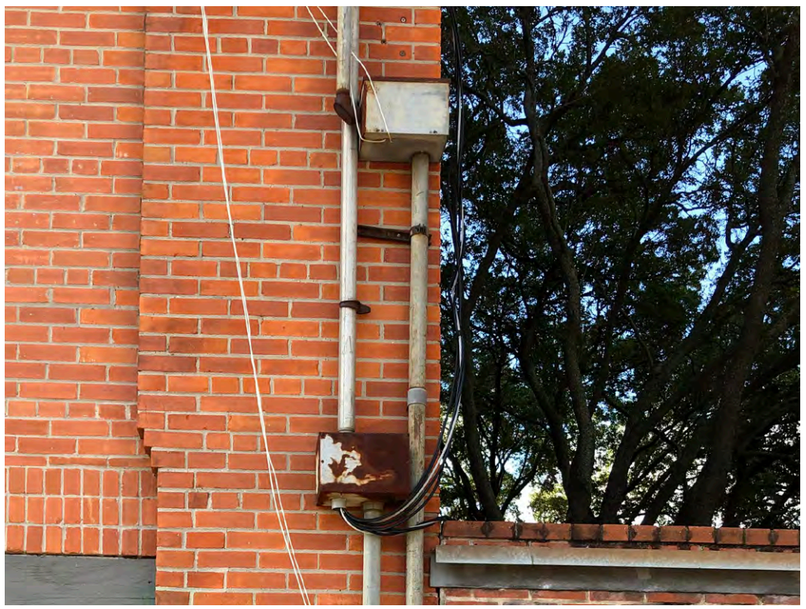
<u>ALTERNATE SCOPE:</u>

If the alternate mechanical scope is pursued (see Division 23) the power for the dehumidification unit would be in place of the exhaust fans for the base design. The power for the motorized dampers would remain, just at alternate locations best serving the dehumidification system.

DIVISION 26: ELECTRICAL

EXISTING ELECTRICAL PANELS AT WEST FACADE

EXTERIOR SIGNAGE AT ROOF LEVEL



EXISTING ELECTRICAL PIPING AT NORTH EAST CORNER

STRUCTURAL ANALYSIS BY OTHERS

SUMMARY OF REPORT BY DONNIE N. WALTON, PE (2008):

The 2008 Structural Assessment Report by Donnie N. Walton, PE appears to be in sound condition, with various recommended repairs, including at the concrete roof deck and concrete slabs. Below are notable priority items directly taken from the report:

- The roof deck appears to be constructed of a reinforced light weight cementitious material that is badly deteriorated and is failing in several locations.
- Concrete encasing the structural steel beams is generally sound, but several areas of cracked and fractured concrete were observed.
- Brick surrounding the steel columns is cracked and fractured in several locations. Some of these conditions appear to be the result of impact damage.
- Various areas of slab deterioration, some severe, were observed throughout the building. Most of these conditions appear to be the result of attack from sugar in various forms or other chemicals. A few areas of apparent impact damage were also observed in various slabs.
- Various cracks and spalling areas with exposed reinforcement steel were observed in the underside of floor slabs in various locations. Similar conditions were also observed in the underside of the exterior cantilever segment on the north side of the building.
- Numerous brick cracks were observed in various locations, both in interior and exterior locations. Several of the cracks have significant amounts of separation. Some of the more severe cracks are located at the corners of the building and on the corner of the cantilever segment on the north side. Some of the brick around penthouse level windows is protruding out from the plane of the wall. These various brick cracks may be the result of minor foundation shifting, equipment vibration, wind loading conditions, thermal expansion and contraction or other causes.
- Advancing corrosion was observed on the structural supports for the signage and related catwalks on the west and south sides of the building.
- Advancing corrosion was observed on most of the structural steel elements throughout the building, but none that appears to be extensively severe at this time.

For additional items, refer to the original structural report.

PHOTO FROM 2006 - CRACK AT BUILDING CORNER NEAR SADDLEBAG

PHOTO FROM 2006 - ROOF WITH WATER PONDING

SUMMARY OF BY DOUG ANTWILER, PE SE (2018):

The 2018 Structural Assessment Report by Doug Antwiler, PE indicates that the building is in fair condition and that the most immediate concern entails addressing moisture intrusion into the building to prevent further structural deterioration. Below are notable priority items directly taken from the report:

<u>High Priority Items</u>

- The penthouse roof has severe deterioration (Photos 2.01-2.02). We recommend restricting access to this roof until repairs/reconstruction of this roof can be performed.
- The main roof of the building is showing signs of spalling in some areas due to corrosion of the embedded reinforcement (Photo 3.01).
- The fire exit doors near the front of the building open out to open air because the exit landings have been removed (Photos 4.01 -4.02).
- There is a cantilevered area on the back of the building. The roof of this area has failed and is allowing moisture into the building (Photo 5.01).

<u>Medium Priority Items</u>

- The masonry at the top of the windows in the penthouse is cracking. We believe this cracking may be due to corrosion of the steel lintel member over the window.
- Many of the steel beams supporting the roof are uncoated and showing signs of minor corrosion.
- In several areas of the floor, the concrete appears to have been eroded by a caustic substance possibly from the manufacturing processes that used to take place within the building. This has reduced the overall thickness of the slab.
- Reinforcement is visible on the underside of the existing slab in a few areas due to low cover
- Cracking was observed in the brick wall in the stair between level 1 and 2
- The ladder accessing the front signage and associated platform are showing signs of corrosion

For additional items, refer to the original structural report.

PHOTO 2.01 SEVERE DETERIORATION OF PENTHOUSE ROOF

PHOTO 3.01 SPALLING AT UNDERSIDE OF CONCRETE ROOF DECK

PHOTO 4.01 UNSAFE FIRE EXIT

PHOTO 5.01 DAMAGED ROOF OF CANTILEVER STRUCTURE

COMPARISON & CONCLUSION:

Both 2008 and 2018 Structural Assessment Report do not appear to have major concerns regarding the overall structural integrity of the building. Both reports share similar concerns for the following most notable areas:

- The structural integrity of the roof throughout the building
- The structural integrity of the concrete roof deck and corroded steel beams
- The concrete slab deterioration throughout
- Advanced corrosion at exposed steel
- Notable cracks located at the corner of the building near the Saddlebag

From the images presented in both reports, it appears that the worst of the cracks, located at the Saddlebag North-east corner, have maintained their severity in the past 14 years. At this point, we can conclude from the most recent structural report, that there is no present structural concern regarding the Saddlebag that justifies its removal. However, it is recommended that the area be monitored and that further structural analysis be performed prior to the commencement of any future rehabilitation work and building occupancy.

PHOTO FROM 2006 - CRACK AT BUILDING CORNER NEAR SADDLEBAG

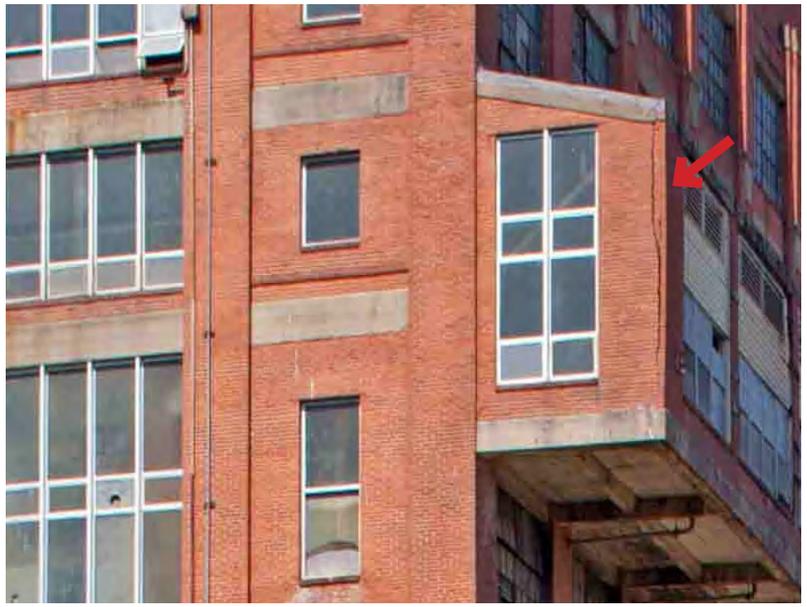


PHOTO FROM 2020 - CRACK AT BUILDING CORNER ON CANTILEVER

VI. ROUGH ORDER OF MAGNITUDE ESTIMATE

CSI DIVISION NUMBER	CSI DIVISION NAME	SCOPE OF WORK	BASE ESTIMATE					ALTERNATE
			x	Quantity Estimate	Unit	Unit Cost	Total Cost	
01	**GENERAL REQUIREMENTS**	**General Conditions**						
		Project Manager	x	6	Months	$3,000.00	**$18,000.00**	
		Superintendent	x	6	Months	$4,500.00	**$27,000.00**	
		Superintendent Truck	x	6	Months	$500.00	**$3,000.00**	
		Superintendent Expenses	x	6	Months	$750.00	**$4,500.00**	
		Daily Laborers (2)	x	6	Months	$4,000.00	**$24,000.00**	
		Testing Laboratory						
		Hazardous Materials: Asbestos, Lead-based Paint	x	1	Allowance	$2,500.00	**$2,500.00**	
		Construction Temporary Facilities						
		Jobsite Expenses (Trailer, Utilities, Small Tools, etc.)	x	6	Months	$2,500.00	**$15,000.00**	
		Security Fencing	x	600	LF	$5.00	**$3,000.00**	
		Special Equipment Rental	x	6	Months	$1,500.00	**$9,000.00**	
		Dumpster Rental	x	6	Months	$500.00	**$3,000.00**	
		Dumpster Dump Fees	x	24	Each	$450.00	**$10,800.00**	
		Initial and Weekly Cleaning	x	24	Weekly	$1,200.00	**$28,800.00**	
		Final Cleaning	x	1	Allowance	$20,000.00	**$20,000.00**	
02	**EXISTING CONDITIONS**	**Building Demolition (Excludes Abatement)**						
		Remove Roof Concrete Deck Penthouse & Saddlebag	x	1570	SF	$4.00	**$6,280.00**	
		Shoring and Bracing	x	27795	SF	$2.00	**$55,590.00**	
		Remove Bridge Plywood at Previous Opening	x	65	SF	$10.00	**$650.00**	
		Remove all Plywood at Windows, First Floor	x	3382	SF	$2.00	**$6,764.00**	
		Demo Existing Roof Penthouse & Saddlebag	x	1570	SF	$2.00	**$3,140.00**	
		Building Demolition - Alternative						
		Remove Roof Concrete Deck at Main Roof		7622	SF	$4.00		**$30,488.00**
		Remove Concrete Fireproofing at Steel Beams at Main Roof		7371	SF	$2.00		**$14,742.40**
		Demo Existing Roof at Main Roof		7622	SF	$2.00		**$15,244.00**
		Site Clearing						
		Site and Tree Protection	x	1	Allowance	$5,000.00	**$5,000.00**	
		Pump Water at First Floor Sump Pits	x	1	Allowance	$1,000.00	**$1,000.00**	
		Termite Control						
		Termite Investigation & Extermination	x	1	Allowance	$5,000.00	**$5,000.00**	

CSI DIVISION NUMBER	CSI DIVISION NAME	SCOPE OF WORK	BASE ESTIMATE					ALTERNATE
			x	Quantity Estimate	Unit	Unit Cost	Total Cost	
		Storm Drainage						
		Erosion Control	x	1	Allowance	$5,000.00	**$5,000.00**	
		Catch Basin	x	3	Each	$1,800.00	**$5,400.00**	
		Backflow Preventer	x	2	Each	$15,000.00	**$30,000.00**	
		Storm Sewer Piping	x	1	Allowance	$40,000.00	**$40,000.00**	
		Area Drains	x	8	Each	$500.00	**$4,000.00**	
		Site Restoration and Rehabilitation						
		Prune Trees	x	6	Each	$150.00	**$900.00**	
		Exterior Scaffolding (One Side at a Time)	x	52445	SF	$5.00	**$262,225.00**	
		Interior Scaffolding	x	2000	SF	$5.00	**$10,000.00**	
		Security Fencing, Two Rows	x	800	LF	$34.00	**$27,200.00**	
		Site Restoration and Rehabilitation - Alternative						
		Interior - Graffiti Removal and Cleaning at Masonry and Concrete		1348	SF	$8.00		**$10,784.00**
03	**CONCRETE**	**Concrete Work**						
		Cleaning, Minor Repair & Sealing	x	57276	SF	$5.00	**$286,380.00**	
		Reconstruct Concrete Roof Deck - Penthouse & Saddlebag	x	1570	SF	$65.00	**$102,050.00**	
		Selective Repairs at Concrete Stair Treads	x	250	SF	$15.00	**$3,750.00**	
		Concrete Work - Alternate						
		Selective Repair to Deteriorated Slabs		11455	SF	$15.00		**$171,828.00**
		Reconstruct Concrete Roof Deck - Main Roof		7622	SF	$65.00		**$495,430.00**

CSI DIVISION NUMBER	CSI DIVISION NAME	SCOPE OF WORK	BASE ESTIMATE					ALTERNATE
			x	Quantity Estimate	Unit	Unit Cost	Total Cost	
04	**MASONRY**	**Masonry Restoration**						
		Exterior - Inject Cracks	**x**	120	LF	$125.00	**$15,000.00**	
		Exterior - Selective Replacement of Lintels	**x**	343	LF	$200.00	**$68,600.00**	
		Exterior - Selective Replacement of Brick Units	**x**	1200	SF	$92.00	**$110,400.00**	
		Interior - Inject Cracks	**x**	96	LF	$125.00	**$12,000.00**	
		Masonry Restoration - Alternative						
		Exterior - Brick & Concrete Cleaning		30723	SF	$5.00		**$153,615.00**
		Exterior - Select Pointing		1	Allowance	$20,000.00		**$20,000.00**
		Interior - Brick Cleaning		62853	SF	$5.00		**$314,265.00**
		Interior - Selective Replacement of Brick Units		800	SF	$92.00		**$73,600.00**
		New Masonry						
		Infill Exterior Openings - Colored Concrete Block	**x**	115	SF	$5.00	**$575.00**	
05	**METALS**	**Metals**						
		Repair Structural Steel Beams at Penthouse	**x**	1	Allowance	$5,000.00	**$5,000.00**	
		Repair Structural Steel Beams at Saddlebag	**x**	1	Allowance	$5,000.00	**$5,000.00**	
		Repair Steel at Exterior Signage (2 Sides)	**x**	2	Allowance	$15,000.00	**$30,000.00**	
		Replace Metal Louver With Metal Panel at Saddlebag	**x**	80	SF	$8.00	**$640.00**	
		Metals - Alternative						
		Repair Structural Steel Beams At Main Roof Deck		1	Allowance	$15,000.00		**$15,000.00**
		Selective Repairs at Steel Stairs at Penthouse		1	Allowance	$5,000.00		**$5,000.00**
		Selective Repairs at Steel Stairs at Saddlebag		1	Allowance	$5,000.00		**$5,000.00**
06	**WOOD & PLASTICS**	(No Work)						

CSI DIVISION NUMBER	CSI DIVISION NAME	SCOPE OF WORK	BASE ESTIMATE					ALTERNATE
			x	Quantity Estimate	Unit	Unit Cost	Total Cost	
07	**THERMAL & MOISTURE PROTECTION**	**New Roof**						
		Penthouse & Saddlebag - Sarnafil 60 mil w/ R-25 Rigid Insulation	x	1570	SF	$30.00	**$47,100.00**	
		Main Roof (Temporary) - 45 mil PVC Single Ply Roof With Plywood Roof Deck	x	7622	SF	$5.00	**$38,110.00**	
		Roof Hatch and Access Ladder at Penthouse	x	1	Each	$2,500.00	**$2,500.00**	
		New Roof - Alternative						
		Main Roof (new) - Sarnafil 60 mil w/ R-25 Rigid Insulation		7622	SF	$30.00		**$228,660.00**
		Exclude Main Roof (Temporary)						**-$38,110.00**
		Parapets: Sarnafil 60 mil		1250	SF	$30.00		**$37,500.00**
		Sheet Metal Flashing and Trim						
		Sheet Metal Flashing	x	1	Allowance	$10,000.00	**$10,000.00**	
		Joint Protection						
		Joint Sealers (Exterior Windows, Doors & MEP)	x	8756	LF	$10.00	**$87,560.00**	
08	**OPENINGS**	**Doors**						
		New Exterior Hollow Metal Double Doors, Frames & Hardware	x	1	Each	$2,000.00	**$2,000.00**	
		New Exterior Single Door, Frame & Hardware	x	3	Each	$1,000.00	**$3,000.00**	
		New Interior Hollow Metal Single Door, Frame & Hardware	x	1	Each	$500.00	**$500.00**	
		Window Restoration and Replacement						
		Restore Steel Windows (North Facade & South Penthouse)	x	3954	SF	$100.00	**$395,400.00**	
		Repairs Aluminum Window Frames to Weather-tight	x	2543	LF	$37.00	**$94,091.00**	
		Repairs Aluminum Window Frames to Weather-tight at Saddlebag	x	50	LF	$37.00	**$1,850.00**	
		New Aluminum Window at Bridge Opening	x	65	SF	$55.00	**$3,575.00**	
		Glazing						
		Replace Broken Glazing (1/4" thick)	x	9841	SF	$15.00	**$147,615.00**	
		Plastic Glazing - Alternate						
		Protective Glazing at Level 1 & 2		4980	SF	$15.00		**$74,700.00**

CSI DIVISION NUMBER	CSI DIVISION NAME	SCOPE OF WORK	BASE ESTIMATE					ALTERNATE
			x	Quantity Estimate	Unit	Unit Cost	Total Cost	
09	**FINISHES**	**Coatings & Painting**						
		High Performance Coatings for Exposed Steel	x	7852	SF	$5.00	**$39,258.78**	
		High Performance Coatings for Parapet Railing	x	150	SF	$5.00	**$750.00**	
		Painting of Selective Steel Lintels	x	343	LF	$8.00	**$2,744.00**	
10	**SPECIALTIES**	**Signage**						
		Exit Signs	x	1	Allowance	$11,000.00	**$11,000.00**	
		Fire Protection Specialties						
		Fire Extinguishers, Cabinets and Accessories	x	32	Each	$200.00	**$6,400.00**	
11	**EQUIPMENT**	(No work)						
12	**FURNISHINGS**	(No work)						
13	**SPECIAL CONSTRUCTION**	**Lightning Protection**						
		Lightning Protection	x	1	Allowance	$50,000.00	**$50,000.00**	
		Hazardous Material Remediation						
		Project Coordination and Oversight (90 Days Assumed)	x	1	Allowance	$45,000.00	**$45,000.00**	
		Remediation (Roof Only)	x	9809	SF	$5.00	**$49,045.00**	
		Protective Barricades						
		Protective Barricades	x	1232	SF	$6.03	**$7,428.96**	
		Safety Signage (4'x8', 2 per Floor)	x	16	Each	$200.00	**$3,200.00**	
14	**CONVEYING SYSTEMS**	(No Work)						

CSI DIVISION NUMBER	CSI DIVISION NAME	SCOPE OF WORK	BASE ESTIMATE					ALTERNATE
			x	Quantity Estimate	Unit	Unit Cost	Total Cost	
22	**PLUMBING**	**Plumbing**						
		Roof & Secondary Drains	**x**	8	Each	$1,825.00	**$14,600.00**	
		Piping	**x**	1016	LF	$93.50	**$94,996.00**	
		Disconnect Fire Water Service	**x**	1	Allowance	$500.00	**$500.00**	
23	**HEATING, VENTILATING AND AIR CONDITIONING**	**HVAC Air Distribution - Base**						
		Fans (2 large, 5 medium, 1 ventset)	**x**	1	Each	$40,000.00	**$40,000.00**	
		Louvers (32"x59")	**x**	4	Each	$1,300.00	**$5,200.00**	
		Louvers (45"x82")	**x**	6	Each	$2,100.00	**$12,600.00**	
		Louvers (32"x20")	**x**	36	Each	$680.00	**$24,480.00**	
		Motorized Dampers (Single & Multi-Section)	**x**	25	Each	$1,600.00	**$40,000.00**	
		Damper Actuators (Electronic)	**x**	18	Each	$1,000.00	**$18,000.00**	
		Misc. Ductwork, Plenums & Related	**x**	1	Each	$26,000.00	**$26,000.00**	
		Controls (Controller, 2xT-stats & Programing)	**x**	1	Each	$2,000.00	**$2,000.00**	
		Controls (2xH-stat and Additional Programing)		1	Each	$6,000.00	**$6,000.00**	
		Controls (Relays and Misc.)	**x**	9	Each	$1,000.00	**$9,000.00**	
		Mechanical System - Alternate						
		Exclude Mechanical System Base Plan		-1		$183,280.00		**-$183,280.00**
		Self Contained DX Dehumidification Units		9		$13,000.00		**$117,000.00**
		Louvers (25"x30")		2		$660.00		**$1,320.00**
		Louvers (32"x20")		16		$680.00		**$10,880.00**
		Motorized Dampers		18		$1,600.00		**$28,800.00**
		Damper Actuators (Electronic)		18		$1,000.00		**$18,000.00**
		Misc. Ductwork, Plenums and Related		1		$31,000.00		**$31,000.00**
		Diffusers/Grilles		18		$200.00		**$3,600.00**
		Condensate Piping (Copper)		1		$1,250.00		**$1,250.00**
		Controls (Wire Factory Controls & Startup)		9		$1,000.00		**$9,000.00**
		Controls (Relays and Misc.)		9		$1,000.00		**$9,000.00**

CSI DIVISION NUMBER	CSI DIVISION NAME	SCOPE OF WORK	BASE ESTIMATE					ALTERNATE
			x	Quantity Estimate	Unit	Unit Cost	Total Cost	
26	**ELECTRICAL**	**Electrical System**						
		New Electrical Service	x	1	Each	$5,275.00	**$5,275.00**	
		Service Conduit & Feeders	x	100	LF	$48.00	**$4,800.00**	
		Electrical Panels	x	6	Each	$3,375.00	**$20,250.00**	
		Distribution Conduit & Feeders	x	150	LF	$25.80	**$3,870.00**	
		Transformer	x	3	Each	$3,150.00	**$9,450.00**	
		Distribution Conduit & Feeders	x	15	LF	$25.80	**$387.00**	
		Power for Ventilation Fans	x	8	Each	$428.90	**$3,431.20**	
		Power for Controls	x	1	Each	$317.50	**$317.50**	
		Power for Controls (Humidistat/Enthalpy)	x	7	Each	$317.50	**$2,222.50**	
		Branch Conduit & feeders	x	400	LF	$10.49	**$4,196.00**	
		General/Convenience Power (Including Conduit/Feeders)	x	54	Each	$295.50	**$15,957.00**	
		General Lighting (as Required)	x	75708	SF	$2.51	**$190,027.08**	
		Emergency Lighting (as Required)	x	80	Allowance	$171.00	**$13,680.00**	
		Exit Signs	x	10		$560.00	**$5,600.00**	
		Interior Lighting Controls	x	75708	SF	$0.88	**$66,623.04**	
		Electrical System - Alternate (If Mechanical Alternate is Implemented)						
		Power for Self Contained DX Dehumidification Units		8		$352.90		**$2,823.20**
		Exclude Power for Controls from base		-1		$317.50		**-$317.50**
		Exclude Power for Controls (Humidistat/Enthalpy) From Base		-1		$2,222.50		**-$2,222.50**
		Exclude Power for Ventilation Fans From Base		-1		$3,431.20		**-$3,431.20**
		Fire Alarm and Detection System						
		Temporary		1	Allowance	$61,900.00		**$61,900.00**
		Flood Lighting						
		Flood Lighting (Security)	x	16	Each	$520.00	**$8,320.00**	
		Branch Conduit & Feeders	x	450	LF	$10.49	**$4,720.50**	
		Time Clock	x	1	Allowance	$925.00	**$925.00**	
		Photocell	x	1	Allowance	$110.00	**$110.00**	
		Contactor	x	1	Allowance	$1,350.00	**$1,350.00**	
		Access Controls						
		Electronic Safety and Security System	x	1	Allowance	$39,100.00	**$39,100.00**	

BASE TOTALS

Estimated Base Construction Total		$3,018,259.56
Estimated Base Contingency	20.00%	$603,651.91
Estimated Base Contractor Fees	12.50%	$377,282.45
Estimated Base Architecture & Engineering Fees	12.00%	$362,191.15
Estimated Base Total Project		**$4,361,385.06**

ALTERNATE TOTALS

Estimated Alternate Construction Subtotal		$1,733,068.40
Estimated Contingency	20.00%	$346,613.68
Estimated Contractor Fees	12.50%	$216,633.55
Estimated Architecture & Engineering Fees	12.00%	$207,968.21
General Conditions	3%	$51,992.05
Estimated Total Alternates		**$2,556,275.89**

VII. MONITORING & MAINTENANCE PLAN

MONITORING & MAINTENANCE PLAN RECOMMENDATIONS

CONTENTS

MONITORING & MAINTENANCE PLAN RECOMMENDATIONS

A. MONITORING AND MAINTENANCE PLAN

The goals of the Plan include: maintaining the protective systems developed in the Mothballing project; maintaining site and building security; and observing the interior climate conditions established by the ventilation system.

All work shall comply with the Secretary of the Interior's Standards for Rehabilitation.

A comprehensive maintenance program includes activities for building preventative maintenance, janitorial and general cleaning, scheduled and unscheduled repairs, and landscaping maintenance. Preventative maintenance is a systematic process of inspections and repairs that will help identify potential problems and failures before they occur and at a time when repairs are less costly. Preventative maintenance also enhances the safety of the facility.

Records of inspections and repairs must be kept for ongoing reference together with manufacturers' manuals on all materials and equipment. Manufacturers' recommendations for maintenance must be followed, first to maintain warranties and then to ensure the anticipated life span.

All repair and maintenance work shall comply with the preservation specifications for materials and finishes. If repair work is required beyond the normal maintenance and cleaning, consult with the Texas Historical Commission for appropriate measures to be taken. Material included in this document relating to repairs is for general information only and not for use as construction specifications.

Refer to detailed cleaning and maintenance information for each system/ material in the sections following this summary.

1. ANNUAL MAINTENANCE

a. Prune trees and shrubs, fertilize.
b. Interior and exterior paint maintenance: Inspect conditions of wear and damage; repair and touch-up.
c. Exterior brick and concrete cleaning: Light cleaning with hose and brush to remove dirt and mildew. Do not sand blast or power wash.
d. Inspect for brick and mortar cracks.
e. Inspect electrical service wiring, panels, light fixtures, and wiring devices.
f. Inspect foundation for cracks and movement.
g. Inspect building perimeter for termites.
h. Replace light fixture lamps at 75% of rated service life. Replace all lamps of one type at same time for cost efficiency.
i. Windows: Inspect sealants, cracked glass, metal finishes. Repair as required.
j. Inspect site for proper drainage.
k. Inspect fire protection and alarm systems by qualified service technicians.

2. SEMI-ANNUAL MAINTENANCE

a. Wash window glass, interior and exterior.
b. Service HVAC systems before start-up for cooling and heating seasons.
c. Inspect flashings and exterior sealants for movement and cracks.
d. Inspect roofing membranes and joints.
e. Site Work: Cut grass, dress bed plantings, leaf removal, clean sidewalks.

3. MONTHLY MAINTENANCE

a. Replace HVAC filters if dehumidification unit alternate is installed.
b. Inspect roof drains and downspouts for clean drainage.

4. WEEKLY MAINTENANCE

a. Inspect interior lighting and security/alarm systems.
b. Inspect exterior security fencing.

MONITORING & MAINTENANCE PLAN RECOMMENDATIONS

B. MATERIALS MAINTENANCE - EXTERIOR

1. MASONRY

a. Masonry cleaning: Light cleaning with hose and soft brush to remove dirt and mildew. Use clean water only. Do not sand blast or power wash. Consult with THC for cleaning problems that are not removed with low pressure water.
b. Inspect for cracks in brick, stone, and mortar joints. Consult with THC if cracking suggests building movement.
c. Inspect expansion joints.
d. Inspect foundation for cracks and movement.
e. All repair work on masonry shall be done by qualified contractor with consultation by THC.

2. ALUMINUM AND STEEL WINDOWS & DOORS

a. Inspect for condition of paint and metal.
b. Inspect for condition of glass and glazing strips.
c. Painting repairs shall be made with same color and materials used for
d. restoration.

3. SEALANTS

a. Inspect exterior sealants for movement and cracks.
b. Sealant repairs shall be made with same color and type of material as used for restoration. See Project Manual.

4. HISTORIC MATERIALS REFERENCES

a. Removing Biological Growth from Exterior Masonry & Concrete
b. The Repair of Historic Steel Windows
c. Cleaning Historic Glass

C. MATERIALS MAINTENANCE - ROOFING

1. INSPECT ROOFING MEMBRANES, FLASHING, PARAPETS, COPINGS, DRAINS, AND JOINTS.

2. BUILT-UP ROOF AREAS:

a. Remove accumulated debris from roof areas and scuppers: leaves, branches, etc.

3. METAL COPING

a. Inspect painted metal surfaces for condition of paint membrane and signs of rust.
b. Inspect anchor bolts and bolts at cresting sections for tightness.

4. GUTTERS, DOWNSPOUTS, AND DRAINS

a. Inspect gutter areas for condition of membrane: tears, open joints, etc.
b. Remove debris (leaves, branches, etc.) from gutters but do not wash debris down the downspouts.
c. Open relief lid on downspouts and inspect up and down the downspout interior for blockages. Use hose to clear build-up of debris. Be sure that drainage is clear into area drains.

5. ALL ROOF REPAIRS SHALL BE DONE BY QUALIFIED CONTRACTORS.

D. MATERIAL MAINTENANCE - PAVING & GROUNDS

a. Concrete Sidewalks
b. Asphalt Paving
c. Lawn Care
d. Tree Care
e. Drainage

1. ANNUAL MAINTENANCE

a. Prune trees. Consult with qualified arborist.
b. Inspect building perimeter for termites.
c. Inspect site for proper drainage. Check all area drains. Flush out as needed for clear drainage to street.

2. SEMI-ANNUAL MAINTENANCE

a. Concrete Sidewalks: Inspect for cracks and settlement. Replace deteriorated expansion joints as necessary.
b. Asphalt: Inspect for cracks and potholes. Repair immediately to protect base material from damage by moisture.

3. WEEKLY MAINTENANCE

a. Site Work: Cut grass, dress bed plantings, leaf removal, clean sidewalks.
b. Cut and edge grass weekly during growing season. Cut and edge grass bi-weekly or monthly during winter months.
c. Inspect sprinkler system for proper operation and signs of leaks.
d. Remove all trash.

MONITORING & MAINTENANCE PLAN RECOMMENDATIONS

E. MATERIALS MAINTENANCE – INTERIOR

1. INSPECTION & SURVEILLANCE FOR ANY SIGNS OF MOISTURE PENETRATION

2. FLOORING

Concrete:

a. Sweep weekly to prevent dirt from tracking inside and buildup.
b. DO NOT use acidic or alkaline cleaners. Use only mild, neutral pH cleaners if needed.

3. WALLS

Brick and Masonry:

a. Annual cleaning: Dry dusting as described in GSA 0180004P, "Routine and Periodic Cleaning of Walls and Ceilings."

4. CEILINGS

Concrete and Exposed Steel:

a. Annual cleaning: Dry dusting as described in GSA 0180004P, "Routine and Periodic Cleaning of Walls and Ceilings."
b. Painting touch-up shall use same materials and colors as used for restoration.
c. Painting repairs and re-painting shall be done by qualified contractor
d. Concrete repairs shall be done by a qualified contractor

5. HVAC SYSTEMS

a. To be per manufacture requirements and applicable ASHRAE Standard 180 recommendations

6. ELECTRICAL AND LIGHTING SYSTEMS

a. Replace light bulbs on a regular schedule. Replace all bulbs of one type at the same time rather than individually at failure.

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U. S. General Services Administration Historic Preservation Technical Procedures: Maintenance
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GSA 0180004P Routine and Periodic Cleaning of Walls and Ceilings.
GSA 0850002R Cleaning and Painting Steel Windows
GSA 0180001S Checklist for the Routine Inspection of Buildings
GSA 0180003S General GSA Maintenance Guidelines
GSA 0110013S Mothballing Historic Buildings
GSA 0420002R Removing Biological Growth from Exterior Masonry and Stucco

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Bruce Kelly Collection Photographs

IX. APPENDIX A:
MEP PRODUCT SHEETS

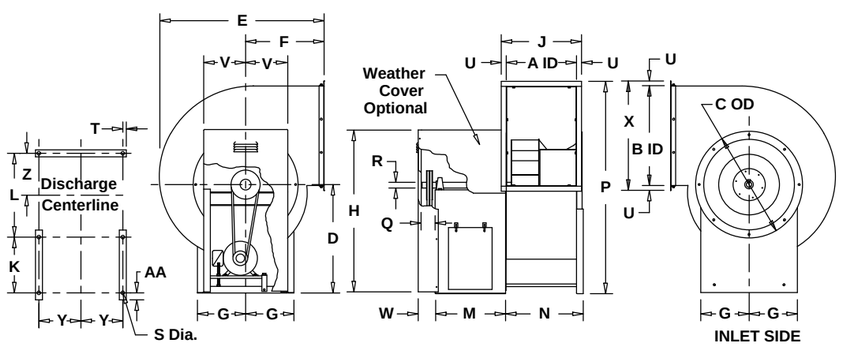
APPENDIX A: MECHANICAL PRODUCT SHEETS

EF8

COOK

CPV

245 CPV
Centrifugal Blower
Clockwise Top Horizontal
Arrangement 10



Dimensions are in inches.

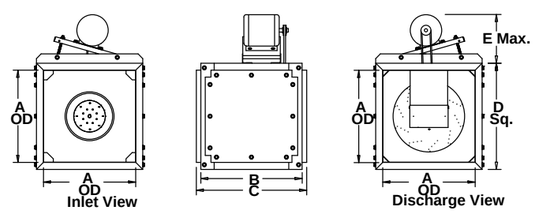
A	18-3/4	P	58-5/16
B	26-13/16	Q	4
C	29-7/16	R	1
D	29-5/8	S	11/16
E	45-1/8	T	1
F	21-3/4	U	2-1/8
G	13-3/8	V	11-1/2
H	44-5/8	W	5
J	23	X	31
K	15	Y	12-3/8
L	21-11/16	Z	10-1/2
M	18-1/8	AA	1-1/2
N	21-1/16		

EF1 thru 7

COOK

SQN-B

245SQN-B
Centrifugal Square Inline
Belt Drive



Dimensions are in inches.

A	33
B	34
C	38
D	36
E	17-1/4

MULTISECTION MOTORIZED DAMPER

RUSKIN®

3900 Dr. Greaves Rd. • Kansas City, MO 64030 • (816) 761-7476 • FAX (816) 765-8955

CD35 STANDARD CONTROL DAMPER

GALVANIZED STEEL

STANDARD CONSTRUCTION

FRAME
5" x 1" x 16 gage (127 x 25 x 1.6) galvanized steel hat channel reinforced with corner braces for structural strength equal to 13 gage (2.28) channel frames. Low profile 3 1/2" x 3/8" x 16 gage (89 x 10 x 1.6) galvanized steel channel top and bottom frame on dampers under 13" (330) high.

BLADES
6" (152) wide, 16 (1.6) gage galvanized steel blades approximately 6" (152) on center. Parallel or opposed action.

BEARINGS
Synthetic.

LINKAGE
Concealed in frame. Exposed linkage optional.

AXLES
1/2" (13) plated steel hex.

CONTROL SHAFT
6" (152) x 1/2" (13) diameter. Outboard support bearing supplied with all single section dampers for field mounted actuators. Factory-installed jackshaft supplied with all multiple section dampers.

FINISH
Mill.

MAXIMUM SIZE
Single section – 48"w x 72"h (1219 x 1829).
Multiple section assembly – Unlimited size.

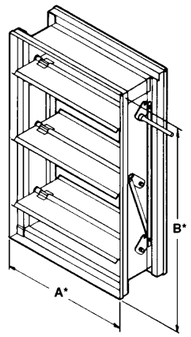
MINIMUM SIZE
Single blade – 5"w x 5"h (127 x 127).
Two blades, parallel or opposed action, exposed linkage – 8"w x 9 5/8"h (203 x 245). (Standard)
Two blades, parallel or opposed action, concealed linkage – 5"w x 8"h (127 x 203). (Optional)

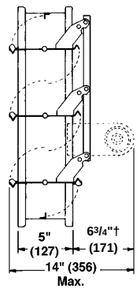
TEMPERATURE LIMITS
-40°F (-40°C) minimum and +240°F (+116°C) maximum.

Maximum section width varies with static pressure. Consult Ruskin if application involves pressures in excess of 2.5 inches w.g. or air velocities in excess of 2000 fpm.

NOTE: Dimensions shown in parenthesis ( ) indicate millimeters.

*Units furnished approximately 1/4" (6) smaller than given opening dimensions.





PARALLEL BLADE DEPICTED
Optional Exposed Linkage.

†JACKSHAFT USED ONLY ON MULTIPLE SECTION DAMPERS.

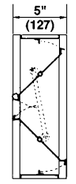
FEATURES

The CD35 offers sturdy, steel construction with interlocking frame design. Damper locks together without bolts, screws, or rivets that could shake loose. Frame corners are internally braced to reduce racking.

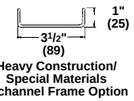
Axles positively lock to blades without screws or welds. Non-stick, noncorrosive bearings assure long life and ease of operation. Axles and bearings combine with a shake proof linkage for low maintenance operation.

VARIATIONS

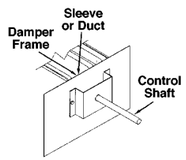
Variations to standard CD35 construction available at additional cost are:
- Polyurethane foam blade seals.
- Flexible, metal compression type jamb seals.
- Enamel and epoxy finishes.
- Heavier construction.
- Stainless steel construction.
- Factory-installed, pneumatic and electric actuators (specific information required with order).
- Ruskin frame mounted actuator bracket to simplify field installation of most actuators (specify actuator and action, i.e., N.O. or N.C., with order).
- SP100 Switch Package to remotely indicate damper blade position.
- Front, or rear flange frame with or without bolt holes.
- Face and Bypass mixing damper configuration.



OPPOSED BLADE
Low profile frame illustrated is typical for units under 13" (330) high.



Heavy Construction/ Special Materials U-channel Frame Option



Outboard Support Bracket

QTY.	OPENING DIM.		BLADE ACTION		FRAME STYLE				VARIATIONS
	A*	B*	PB	OB	STD.	Front Flange FF	Rear Flange RF	Double Flange DF	

JOB **LOCATION**

CONTRACTOR

Spec CD35-501/Replaces CD35-399

CD35 SUGGESTED SPECIFICATION

Furnish and install, at locations shown on plans, or in accordance with schedules, control dampers that meet the following minimum construction standards. Frame shall be 16 gage (1.6) galvanized steel structural hat channel with tabbed corners for reinforcement. The blades shall be single skin, 16 gage (1.6) galvanized steel with three logitudinal grooves for reinforcement. Bearings shall be corrosion resistant, molded synthetic sleeve type turning in an extruded hole in the damper frame. Axles shall be square or hexagonal positively locked into the damper blade. Linkage shall be concealed out of airstream, within the damper frame to reduce pressure drop and noise. Submittal must include leakage, pressure drop, maximum velocity and maximum pressure data based on AMCA Publication 500. Dampers shall be in all respects equivalent to Ruskin Model CD35.

Specifier Select Option

Dampers shall be equipped with factory installed damper position indication switch package. The switch package shall include two position indicator switches linked directly to the damper blade to provide full open and full closed damper blade position. The switch package shall provide the capability to interface with the HVAC control system and provide remote damper blade position status. Switch packages shall be equivalent to Ruskin Model SP-100.

CD35 PERFORMANCE DATA

Damper Width	Maximum System Pressure	Maximum System Velocity	Leakage with Seals*		Leakage without Seals*	
			% of max. flow	CFM/ sq. ft.	% of max. flow	CFM/ sq. ft.
48"	2.5" w.g.	1500 fpm	0.67	10	2.67	40
36"	3.0" w.g.	1500 fpm	0.67	10	2.67	40
24"	4.0" w.g.	1500 fpm	0.80	12	3.33	50
12"	5.0" w.g.	1500 fpm	1.13	17	4.33	65

*Leakage information based on pressure differential of 1" w.g. tested per AMCA Publication 500.

The CD35 is structurally designed for velocities to 2000 fpm and above. Turbulence may produce objectionable noise in some conditions with velocities above 1500 fpm.

Dampers may tolerate higher pressures and velocities than those listed here. Conservative ratings are presented intentionally in an effort to avoid misapplication. Consult Ruskin or your Ruskin representative when a damper is to be applied in conditions exceeding recommended maximums.

INSTALLATION

CD35 IS NOT RECOMMENDED FOR INSTALLATION WITH BLADES RUNNING VERTICALLY. For proper installation, damper must be installed square and free from racking. Actuator must be installed on linkage side. Opposed blade dampers must be operated from a power blade or shaft. See "Induct Mount Control Dampers Installation Instructions" for details.

BRACING OF MULTIPLE SECTION DAMPER ASSEMBLIES

The CD35 is intended to be self supporting only in its largest single section size. Multiple section damper assemblies may require bracing to support the weight of the assembly and to hold against system pressure. Ruskin recommends appropriate bracing to support the damper horizontally at least once for every 8' of damper width. Vertical assemblies and higher system pressures may require more bracing. Reference Ruskin Induct Mount Installation Instructions Specification Sheet #II-IDCD-22000.

CONTROLLER FOR 9x FANS AND 2x TEMP SENSORS

Johnson Controls

Code No. LIT-1901089
Issued November 2018

M4 - CGM/IOM Equipment Controller Standard Control Panel Assembly Catalog Page

Description

The General Purpose Application MS/TP Controller (CGM) and Input/Output Module (IOM) control panel is a pre-wired, preassembled standard control panel that contains a CGM controller. Some models also include an IOM Input/Output Module. This predesigned solution saves time and money by avoiding expensive and time-consuming field installations and inspections. In addition, the assembly may be tailored to a variety of common applications for additional savings.

The control panel is shipped complete, mounted in either a NEMA 1 or NEMA 3R steel enclosure. In addition to the controllers, every assembly contains a power supply incorporating a 5 A circuit breaker, a 96 VA 120/24 VAC transformer, and two 120 VAC outlets. An optional second 96 VA 120/24 VAC transformer is also provided with some models. A five- or ten-point 24 VAC distribution terminal block that allows for termination of additional field mounted devices is also included. All models include the CGM09090 controller which communicates using BACnet MS/TP or wireless Zigbee networks and integrates with Johnson Controls and third-party systems. Designated models also include an IOM Input/Output Module, an MS-DIS1710-0 remote mount display, or terminal blocks. Some models offer additional space in the panel along with a section of DIN rail to mount relays or transducers or other approved ancillary devices, if desired.

Sub-panel assemblies are the complete internal portion of the panel without the enclosure. It contains all of the same components as a comparable standard panel but it is just the perforated sub-panel with all components already mounted. This is a popular option if it is critical to reserve the panel mounting location in the designated installation area using an empty enclosure and then add the sub-panel at a later date.

CGM/IOM Standard Control Panel Assembly

Features

- consistent layout for all standard control panel solutions simplifies installation and commissioning
- power supply with resettable circuit breaker and transformer provides high- and low-voltage protection
- space and DIN rail reserved for future component additions allows for easy field upgrades to the panel
- prebuilt, pre-wired, and pretested in an ISO-9002 manufacturing facility provides products of consistently high quality
- UL 508A rated control panel and UL 50, Canadian Standards Association (CSA) approved enclosure meets local and national code requirements for the United States and Canada (cULus listed)
- California Office of Statewide Health Planning and Development (OSHPD) Special Seismic Certification Preapproved control panel assembly meets standards for rigid and flexible mounting conditions to account for unit-mounted and remote-mounted application
- controller with color-coded and clearly labeled screw terminals provides easily identifiable input/output points at the controller

Repair Information

If the CGM/IOM control panel assembly fails to operate within its specifications, replace the unit. For a replacement assembly, contact the nearest Johnson Controls® representative.

Components Included with the CGM/IOM Standard Control Panel Assembly

Quantity	Description
1	Metal Enclosure, NEMA 1 or NEMA 3R
1	M4-CGM09090-0 Programmable Controller
1	MS-IOM1711-0, MS-IOM2711-0, MS-IOM2721-0, MS-IOM3721-0, MS-IOM3731-0 or MS-IOM4711-0 (if applicable)
1	MS-DIS1710-0 remote mount display (if applicable)
1	96 VA 120/24 VAC power supply with 5 A primary circuit protection and two 120 VAC outlets (standard on all panels)
1	96 VA 120/24 VAC transformer with secondary protection (if applicable)
1	Five- or ten-point 24 VAC distribution terminal block[1]

1. All panels with a single power supply ship with a five-point terminal block. Panels with an additional transformer ship with a ten-point terminal block.

Selection Charts

Panels — 16 x 20 Enclosure - NEMA 1

Product Code Number	Description
P2AAN-BA001N00	M4-CGM09090-0 controller panel mounted in a 16 in. W x 20 in. H x 6-5/8 in. D enclosure
P2AAY-BA001N00	M4-CGM09090-0 controller panel mounted in a 16 in. W x 20 in. H x 6-5/8 in. D enclosure with remote display

Johnson Controls

M4 - CGM/IOM Equipment Controller Standard Control Panel Assembly Catalog Page (Continued)

Panels — 20 x 24 Enclosure - NEMA 1

Product Code Number	Description
P2BAN-BA001N00	M4-CGM09090-0 controller panel mounted in a 20 in. W x 24 in. H x 6-5/8 in. D enclosure
P2BAN-BA002N00	M4-CGM09090-0 controller panel mounted in a 20 in. W x 24 in. H x 6-5/8 in. D enclosure with additional 96 VA transformer
P2BAY-BA001N00	M4-CGM09090-0 controller panel mounted in a 20 in. W x 24 in. H x 6-5/8 in. D enclosure with remote mount display
P2BAN-BACA1N00	M4-CGM09090-0 controller & MS-IOM1711-0 module panel mounted in a 20 in. W x 24 in. H x 6-5/8 in. D enclosure
P2BAN-BACB2N00	M4-CGM09090-0 controller & MS-IOM2711-0 module panel mounted in a 20 in. W x 24 in. H x 6-5/8 in. D enclosure with additional 96 VA transformer
P2BAN-BACF2N00	M4-CGM09090-0 controller & MS-IOM2721-0 module panel mounted in a 20 in. W x 24 in. H x 6-5/8 in. D enclosure with additional 96 VA transformer
P2BAN-BACG2N00	M4-CGM09090-0 controller & MS-IOM3721-0 module panel mounted in a 20 in. W x 24 in. H x 6-5/8 in. D enclosure with additional 96 VA transformer
P2BAN-BACD2N00	M4-CGM09090-0 controller & MS-IOM4711-0 module panel mounted in a 20 in. W x 24 in. H x 6-5/8 in. D enclosure with additional 96 VA transformer

Johnson Controls

M4 - CGM/IOM Equipment Controller Standard Control Panel Assembly Catalog Page (Continued)

Subpanels — 24 x 24 Enclosure

Product Code Number	Description
S2C0N-BA001Y00	Subpanel assembly with M4-CGM09090-0 controller for use in a 24 in. W x 24 in. H x 6-5/8 in. D enclosure with terminal blocks

Subpanels — 24 x 36 Enclosure

Product Code Number	Description
S2D0N-BA001N00	Subpanel assembly with M4-CGM09090-0 controller for use in a 24 in. W x 36 in. H x 6-5/8 in. D enclosure with terminal blocks
S2D0N-BACD2N00	Subpanel assembly with M4-CGM09090-0 controller & MS-IOM4711-0 module for use in a 24 in. W x 36 in. H x 6-5/8 in. D enclosure with additional 96 VA transformer
S2D0N-BACD2Y00	Subpanel assembly with M4-CGM09090-0 controller & MS-IOM4711-0 module for use in a 24 in. W x 36 in. H x 6-5/8 in. D enclosure with additional 96 VA transformer and terminal blocks

Technical Specifications

CGM/IOM Standard Control Panel Assembly	
Terminals	Controller mounted removable screw termination
Wire size	Ground wire: 14 AWG; Transformer wires: 16 AWG
Enclosure rating	NEMA 1 or NEMA 3R
Enclosure finish	ANSI 61 gray polyester powder coating (perforated panel and enclosure)
Ambient operating condition	32 to 122°F (0– to 50°C) 10 to 90% RH
Dimensions (width x height x depth)	16 in. W x 20 in. H x 6-5/8 in. D (406 mm W x 508 mm H x 168 mm D) 20 in. W x 24 in. H x 6-5/8 in. D (508 mm W x 610 mm H x 168 mm D) 24 in. W x 24 in. H x 6-5/8 in. D (508 mm W x 610 mm H x 168 mm D) 24 in. W x 36 in. H x 6-5/8 in. D (610 mm W x 914 mm H x 168 mm D))
Ambient storage condition	-40 to176°F (-40 to 80°C) 5 to 95% RH
Agency compliance	Control Panel: UL 508A Rated (cULus listed); Enclosure UL 50 Rated, CSA Approved OSHPD Special Seismic Certification Preapproval: OSP-0140-10 California Building Code (CBC) - 2013, International Building Code (IBC) - 2012 Seismic Performance Characteristics: $S_{DS}(g)$ = 2.26, z/h = 1.0, I_p = 1.5

APPENDIX A: MECHANICAL PRODUCT SHEETS

COOK MBD FOR SQNB

COOK

Backdraft Damper

DATE: _____

PROJECT: _____

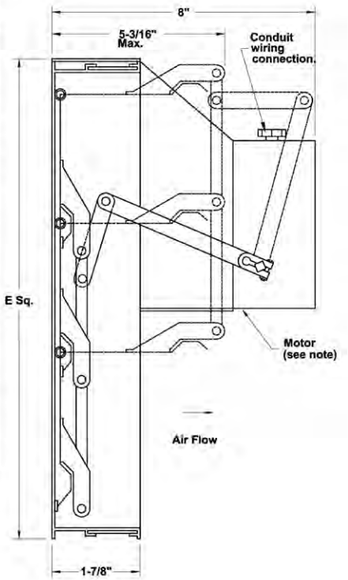
LOCATION: _____

Motorized
DB, SDB, DBX, TDB
SQIB, SQID, SQNB, SQND, SQN-HP

DIMENSION DATA

Size	E					
	DB, SDB, DBX, TDB (W X H)	SQIB Sq.	SQID Sq.	SQNB Sq.	SQND Sq.	SQN-HP Sq.
8	N/A	-	-	-	-	-
9	11-7/8 X 10-5/16	-	-	-	-	-
10	13-1/8 X 11-3/8	-	-	-	-	-
13	15-5/8 X 13-7/16	-	-	-	-	-
15	18-5/8 X 15-7/8	-	-	-	-	-
18	21-7/8 X 18-7/8	-	-	-	-	-
60	-	-	-	11-3/4	-	-
70	-	-	9-7/8	11-3/4	9-3/4	-
80	-	-	12-3/4	11-3/4	-	-
90	-	14-3/16	14-3/16	-	11-3/4	-
100	13-1/8 X 11-3/8	-	-	11-3/4	11-3/4	-
120	-	17-1/8	17-1/8	15-3/4	15-3/4	-
135	15-5/8 X 13-7/16	19-3/8	19-3/8	17-3/4	17-3/4	17-3/4
150	18-5/8 X 15-7/8	21-3/8	21-3/8	19-3/4	19-3/4	19-3/4
165	-	23-9/16	23-9/16	21-3/4	21-3/4	21-3/4
180	21-7/8 X 18-7/8	25-3/4	-	23-3/4	-	23-3/4
195	-	27-15/16	-	25-3/4	-	25-3/4
210	24-3/4 X 24-3/4	30-1/8	-	27-3/4	-	27-3/4
225	-	32-1/4	-	29-3/4	-	29-3/4
245	27-1/4 X 27-1/4	35-1/8	-	32-3/4	-	32-3/4
270	-	38-3/4	-	36-3/16	-	36-3/16
300	-	43-1/8	-	39-3/4	-	39-3/4
330	-	47-3/8	-	43-3/4	-	43-3/4
365	-	52-1/2	-	45-3/4	-	45-3/4
402	-	58-1/4	-	50-1/2	-	50-1/2

ALL DIMENSIONS IN INCHES.



Notes:

1. All dimensions are O.D.
2. TDB - 2 required per unit.
3. Motors are non-overloading type. Available in 115, 230 or 460 voltage.

X0208R05

EVH-302-25x30

GREENHECK
Building Value in Air.

Job Name: EVH-302-25x30 Cut Sheet
Tag: MK-1
Quantity: 1
Printed Date: August 28, 2020

Model: EVH-302-25x30

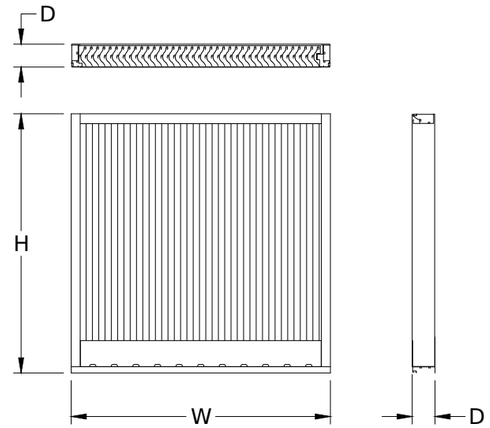
3 in. Vertical Rain Resistant Louver

Certifications/special requirements: AMCA-500-L (Air), AMCA-500-L (Water), AMCA-500-L (Wind Driven)

Construction	
Material	Aluminum
Blade Type	Wind Driven Rain
Blade Orientation	All
Weight (lbs)	25
Mullion Type	Visible

Dimensional	
Nominal Width (in)	25
Nominal Height (in)	30
Actual Width (in)	24.75
Actual Height (in)	29.75
Blade Depth (in)	3
Sections Wide	1
Sections High	1

Performance	
Application	Intake
Volume (CFM)	1,600
Pressure Drop (in. wg)	0.09
Free Area Velocity (ft/min)	720
Free Area (ft^2)	2.2
Air Density (lbs/ft^3)	0.075



*Louvers are tested to figure 5.5-6.5
*Sections wide x high are as configured with a base mill finish channel frame product and may vary depending on options selected.

amca WORLDWIDE CERTIFIED RATINGS — WATER PENETRATION, AIR PERFORMANCE, WIND DRIVEN RAIN — AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC. — www.amca.org

Greenheck Fan Corporation certifies that the louvers shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance, water penetration, and wind-driven rain ratings.

amca LISTED — HIGH VELOCITY RAIN RESISTANT AND IMPACT RESISTANT LOUVER — Basic Protection — See www.AMCA.org for all certified to listed products

Greenheck Fan Corporation certifies that the product shown herein is approved to bear the AMCA Listing Label. The ratings shown are based on tests and procedures performed in accordance with AMCA Publications and comply with the requirements of the AMCA Listing Label Program. The AMCA Listing Label applies to Wind Borne Debris Impact Resistant and High Velocity Wind Driven Rain Resistant Louvers.

APPENDIX A: MECHANICAL PRODUCT SHEETS

EVH-302-32x20

GREENHECK
Building Value in Air.

Job Name: EVH-302-32x20 Cut Sheet
Tag: MK-1
Quantity: 1
Printed Date: August 28, 2020

Model: EVH-302-32x20

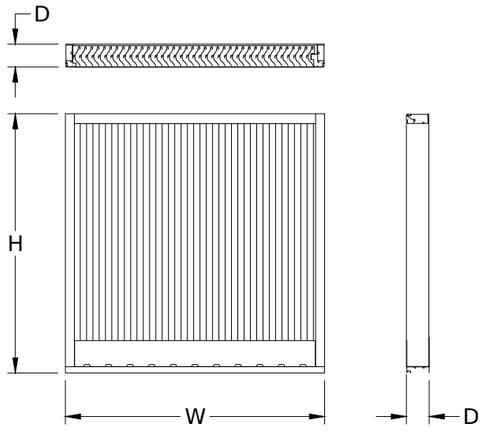
3 in. Vertical Rain Resistant Louver

Certifications/special requirements: AMCA-500-L (Air), AMCA-500-L (Water), AMCA-500-L (Wind Driven)

Construction	
Material	Aluminum
Blade Type	Wind Driven Rain
Blade Orientation	All
Weight (lbs)	22
Mullion Type	Visible

Dimensional	
Nominal Width (in)	32
Nominal Height (in)	20
Actual Width (in)	31.75
Actual Height (in)	19.75
Blade Depth (in)	3
Sections Wide	1
Sections High	1

Performance	
Application	Intake
Volume (CFM)	1,700
Pressure Drop (in. wg)	0.18
Free Area Velocity (ft/min)	1010
Free Area (ft^2)	1.7
Air Density (lbs/ft^3)	0.075



*Louvers are tested to figure 5.5-6.5
*Sections wide x high are as configured with a base mill finish channel frame product and may vary depending on options selected.

Greenheck Fan Corporation certifies that the louvers shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance, water penetration, and wind-driven rain ratings.

HIGH VELOCITY RAIN RESISTANT AND IMPACT RESISTANT LOUVER
Basic Protection

Greenheck Fan Corporation certifies that the product shown herein is approved to bear the AMCA Listing Label. The ratings shown are based on tests and procedures performed in accordance with AMCA Publications and comply with the requirements of the AMCA Listing Label Program. The AMCA Listing Label applies to Wind Borne Debris Impact Resistant and High Velocity Wind Driven Rain Resistant Louvers.

EVH-302-32x59

GREENHECK
Building Value in Air.

Job Name: EVH-302-32x59 Cut Sheet
Tag: MK-1
Quantity: 1
Printed Date: August 27, 2020

Model: EVH-302-32x59

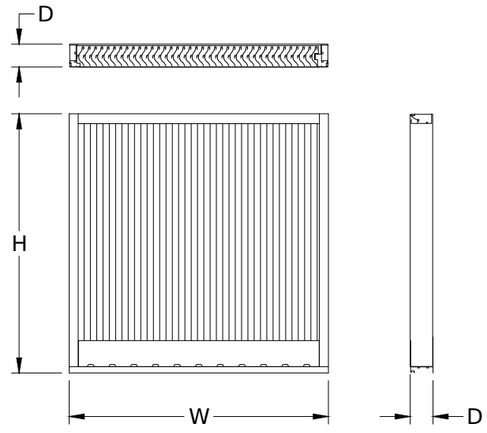
3 in. Vertical Rain Resistant Louver

Certifications/special requirements: AMCA-500-L (Air), AMCA-500-L (Water), AMCA-500-L (Wind Driven)

Construction	
Material	Aluminum
Blade Type	Wind Driven Rain
Blade Orientation	All
Weight (lbs)	64
Mullion Type	Visible

Dimensional	
Nominal Width (in)	32
Nominal Height (in)	59
Actual Width (in)	31.75
Actual Height (in)	58.75
Blade Depth (in)	3
Sections Wide	1
Sections High	1

Performance	
Application	Exhaust
Volume (CFM)	6,000
Pressure Drop (in. wg)	0.12
Free Area Velocity (ft/min)	946
Free Area (ft^2)	6.3
Air Density (lbs/ft^3)	0.075



*Louvers are tested to figure 5.5-6.5
*Sections wide x high are as configured with a base mill finish channel frame product and may vary depending on options selected.

Greenheck Fan Corporation certifies that the louvers shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance, water penetration, and wind-driven rain ratings.

HIGH VELOCITY RAIN RESISTANT AND IMPACT RESISTANT LOUVER
Basic Protection

Greenheck Fan Corporation certifies that the product shown herein is approved to bear the AMCA Listing Label. The ratings shown are based on tests and procedures performed in accordance with AMCA Publications and comply with the requirements of the AMCA Listing Label Program. The AMCA Listing Label applies to Wind Borne Debris Impact Resistant and High Velocity Wind Driven Rain Resistant Louvers.

APPENDIX A: MECHANICAL PRODUCT SHEETS

EVH-302-45x82

GREENHECK
Building Value in Air.

Job Name: EVH-302-45x82 Cut Sheet
Tag: MK-1
Quantity: 1
Printed Date: August 27, 2020

Model: EVH-302-45x82

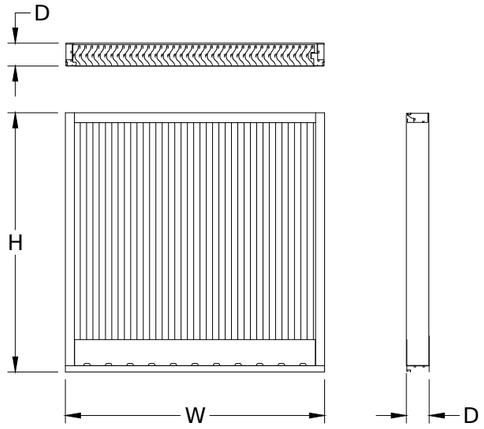
3 in. Vertical Rain Resistant Louver

Certifications/special requirements: AMCA-500-L (Air), AMCA-500-L (Water), AMCA-500-L (Wind Driven)

Construction	
Material	Aluminum
Blade Type	Wind Driven Rain
Blade Orientation	All
Weight (lbs)	126
Mullion Type	Visible

Dimensional	
Nominal Width (in)	45
Nominal Height (in)	82
Actual Width (in)	44.75
Actual Height (in)	81.75
Blade Depth (in)	3
Sections Wide	1
Sections High	1

Performance	
Application	Exhaust
Volume (CFM)	12,000
Pressure Drop (in. wg)	0.11
Free Area Velocity (ft/min)	890
Free Area (ft^2)	13.5
Air Density (lbs/ft^3)	0.075



*Louvers are tested to figure 5.5-6.5
*Sections wide x high are as configured with a base mill finish channel frame product and may vary depending on options selected.

amca WORLDWIDE CERTIFIED RATINGS — WATER PENETRATION, AIR PERFORMANCE, WIND DRIVEN RAIN — AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC. — www.amca.org

Greenheck Fan Corporation certifies that the louvers shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance, water penetration, and wind-driven rain ratings.

amca INTERNATIONAL LISTED — HIGH VELOCITY RAIN RESISTANT AND IMPACT RESISTANT LOUVER — Basic Protection — See www.AMCA.org for all certified or listed products

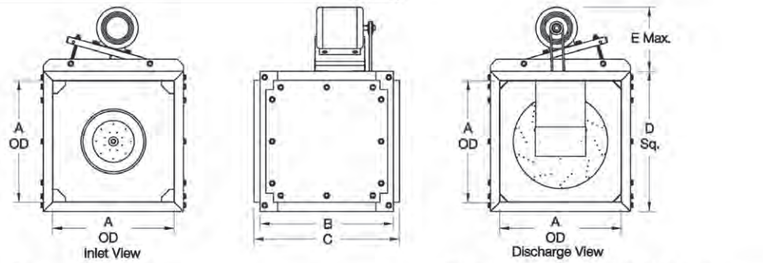
Greenheck Fan Corporation certifies that the product shown herein is approved to bear the AMCA Listing Label. The ratings shown are based on tests and procedures performed in accordance with AMCA Publications and comply with the requirements of the AMCA Listing Label Program. The AMCA Listing Label applies to Wind Borne Debris Impact Resistant and High Velocity Wind Driven Rain Resistant Louvers.

SQN-B SUBMITTAL AND ACCESSORIES

COOK — SQN-B

DATE: _____
PROJECT: _____
LOCATION: _____

Centrifugal Square Inline
Belt Drive



DIMENSION DATA

Size	A	B	C	D Sq.	E	Housing Gauge	Max Mtr Frame	Ship Wt.
60	12	20	22	14	12–1/2	18	143T	80
70	12	20	22	14	12–1/2	18	143T	80
80	12	20	22	14	12–1/2	18	143T	80
100	12	20	22	14	12–1/2	18	143T	80
x1 (EF-PH) 0.5HP 120	16	20	22	18–7/16	12–1/2	18	145T	100
135	18	20–1/4	22–1/4	20–3/4	12–1/2	18	145T	125
150	20	21–7/8	23–7/8	23	12–3/4	18	145T	150
165	22	25	27	25–5/16	14–3/4	18	182T	175
180	24	28	30	27–5/8	14–3/4	16	182T	200
195	26	30–1/4	32–1/4	29–15/16	15	16	182T	225
210	28	32	35	31–1/4	15	16	182T	250
225	30	34–1/4	37–1/4	33–1/2	15–1/4	16	184T	300
x2 (EF-1&5) 5.0HP x6 (EF-2,3,4,6,7,8) 1.5HP 245	33	34	38	36	17–1/4	16	213T	350
270	36–7/16	37–1/2	41–1/2	39–11/16	17–1/4	16	213T	400
300	40	38	42	44	17–1/4	16	213T	450
330	44	41–3/4	45–3/4	48–7/16	17–1/4	16	215T	500
365	46	42	46	50	17–1/4	16	215T	550
402	50–3/4	46–1/4	50–1/4	55–1/8	17–1/4	14	215T	650

ALL DIMENSIONS IN INCHES. WEIGHTS IN LBS. LESS MOTOR AND DRIVES.

STANDARD CONSTRUCTION FEATURES:
All aluminum wheel — Galvanized steel housing — Three removable access doors — Closed cell neoprene gasketing — Inlet and discharge duct collars — Universal mounting feet — Regreasable bearings in a cast housing rated at 200,000 hours average life — Permanently lubricated ball bearing motor — Adjustable pitch drives through 5 HP — All fans factory adjusted to specified fan RPM — Transit tested packaging.

ACCESSORIES
1. SIDE DISCHARGE PACKAGE
2. DUAL SIDE DISCHARGE PACKAGE
3. DISCONNECT SWITCH
4. BELT GUARD
5. OSHA BELT GUARD
6. MOTOR COVER (INDOOR USE ONLY)
7. INSULATED HOUSING
8. INLET/OUTLET FLEX DUCT CONNECTOR
9. INLET GUARD
10. OUTLET GUARD
11. FLANGED INLET/FLANGED OUTLET
12. INLET/OUTLET COMPANION FLANGE
13. GRAVITY BACKDRAFT DAMPER
14. MOTORIZED BACKDRAFT DAMPER
15. ALUMINUM EXTERNAL INLET VANE DAMPER
16. STEEL EXTERNAL INLET VANE DAMPER
17. CEILING MOUNTED RUBBER IN SHEAR ISOLATORS
18. FLOOR MOUNTED RUBBER IN SHEAR ISOLATORS
19. CEILING MOUNTED SPRING ISOLATORS
20. FLOOR MOUNTED SPRING ISOLATORS
21. LORENIZED COATING

QTY	MARK	CATALOG NUMBER	FAN INFORMATION			MOTOR INFORMATION					ACCESSORIES
			CFM	SP	RPM	HP	VOLTS	HZ	PH	TYPE	

ALL CATALOG ODP SINGLE SPEED MOTORS SHIP MOUNTED.
ALL OTHER MOTORS CONSULT FACTORY.

SQ004R02

SQN-B SUBMITTAL AND ACCESSORIES

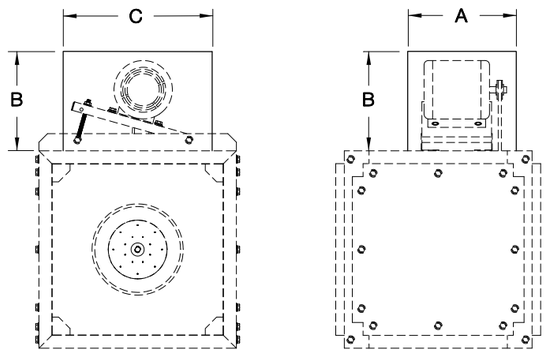
COOK MOTOR COVER

DATE: _____

PROJECT: _____

LOCATION: _____

Accessory Data Sheet
SQN-B, SQN-HP



STANDARD CONSTRUCTION FEATURES:

18 ga. Galvanized steel – Meets OSHA requirements.

OPTIONS

Lorenized coating.

DIMENSION DATA

Size	A	B	C	Ship Wt.
60	16–1/4	14	13–1/2	14
70	16–1/4	14	13–1/2	14
80	16–1/4	14	13–1/2	14
100	16–1/4	14	13–1/2	14
120	20	16	15–1/2	20
135	20	16	15–1/2	20
150	20	16	15–1/2	20
165	25	18	20	29
180	25	18	20	29
195	25	18	20	29
210	25	18	20	29
225	32	24	30	53
245	32	24	30	53
270	32	24	30	53
300	32	24	30	53
330	32	24	30	53
365	32	24	30	53
402	32	24	30	53

ALL DIMENSIONS IN INCHES. WEIGHTS IN LBS.

SQN-B SUBMITTAL AND ACCESSORIES

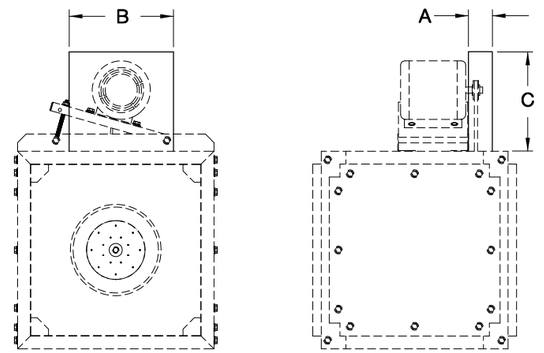
COOK BELT GUARD

DATE: _____

PROJECT: _____

LOCATION: _____

Accessory Data Sheet
SQN-B, SQN-HP



STANDARD CONSTRUCTION FEATURES:

18 ga. Galvanized steel.

OPTIONS

Lorenized coating.

DIMENSION DATA

Size	A	B	C
60	3–3/8	7–3/8	12–3/8
70	3–3/8	7–3/8	12–3/8
80	3–3/8	7–3/8	12–3/8
100	3–3/8	7–3/8	12–3/8
120	3–3/8	7–3/8	12–3/8
135	3–3/8	7–3/8	12–3/8
150	4–3/16	8	12–3/8
165	5	9–5/8	14–7/8
180	5	9–5/8	14–7/8
195	5–1/2	10–1/4	14–7/8
210	4–1/2	11–1/2	17–1/8
225	4–1/2	11–1/2	17–1/8
245	4–1/2	16–1/4	17–1/8
270	4–1/2	17–1/2	17–1/8
300	4–1/2	16–1/4	17–1/8
330	4–1/2	17–1/2	17–1/8
365	4–1/2	16–1/4	17–1/8
402	4–1/2	17–1/2	17–1/8

ALL DIMENSIONS IN INCHES.

SQN-B SUBMITTAL AND ACCESSORIES

COOK

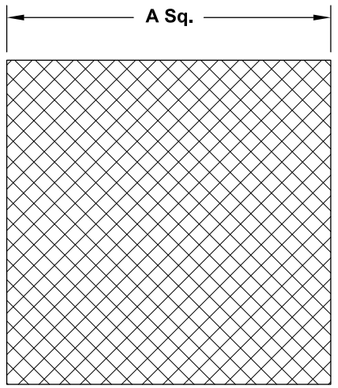
Inlet Guard

DATE: _____

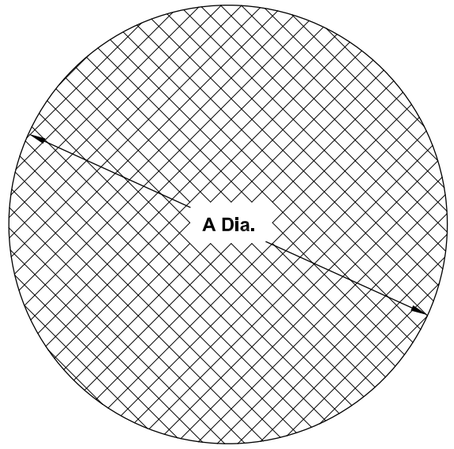
PROJECT: _____

LOCATION: _____

Accessory Data Sheet
SQN



Sizes 60-120



Sizes 135-402

DIMENSION DATA

Size	A		
	SQN-B	SQN-D	SQN-HP
60	12-7/16	-	-
70	12-7/16	12-7/16	-
80	12-7/16	-	-
90	-	12-3/4	-
100	12-7/16	12-7/16	-
120	16-5/8	16-5/8	-
135	17-1/2	17-1/2	17-1/2
150	19	19	19
165	21	21	21
180	22-1/2	-	22-1/2
195	24	-	24
210	25-3/4	-	25-3/4
225	27-1/4	-	27-1/4
245	29-1/4	-	29-1/4
270	31-3/4	-	31-3/4
300	34-3/4	-	34-3/4
330	37-3/4	-	37-3/4
365	41-1/4	-	41-1/4
402	45	-	45

ALL DIMENSIONS IN INCHES.

NOTES:
1/2" X 1/2" BIRDSCREEN WIRE

SQN-B SUBMITTAL AND ACCESSORIES

COOK

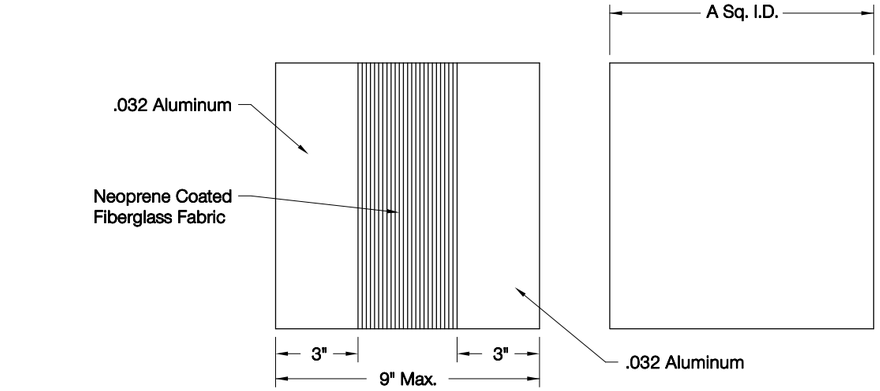
Flexible Outlet Connector

DATE: _____

PROJECT: _____

LOCATION: _____

Accessory Data Sheet
SQN



DIMENSION DATA

Size	A Sq.		
	SQN-B	SQN-D	SQN-HP
60	12–1/4	–	–
70	12–1/4	10–1/4	–
80	12–1/4	–	–
90	–	12–1/4	–
100	12–1/4	12–1/4	–
120	16–1/4	16–1/4	–
135	18–1/4	18–1/4	18–1/4
150	20–1/4	20–1/4	20–1/4
165	22–1/4	22–1/4	22–1/4
180	24–1/4	–	24–1/4
195	26–1/4	–	26–1/4
210	28–1/4	–	28–1/4
225	30–1/4	–	30–1/4
245	33–1/4	–	33–1/4
270	36–11/16	–	36–11/16
300	40–1/4	–	40–1/4
330	44–1/4	–	44–1/4
365	46–1/4	–	46–1/4
402	51	–	51

ALL DIMENSIONS IN INCHES.

SQN-B SUBMITTAL AND ACCESSORIES

COOK

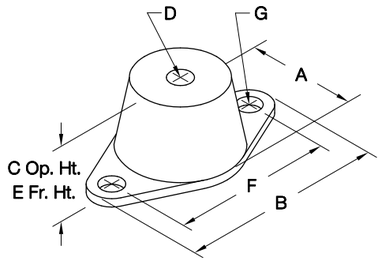
RIS FLOOR

DATE: _____

PROJECT: _____

LOCATION: _____

Rubber-In-Shear Isolator Floor Mounted



DIMENSION DATA

Model	Manuf	Manuf Model	Rated Load	Rated Deflect	A	B	C	D	E	F	G	Ship Wt.
RF–55	KNC	RDA–55	55	.40	1–13/16	3–3/16	1–7/64	5/16 UNC	1–1/2	2–3/8	11/32	1
RF–120	KNC	RDB–120	120	.50	2–3/8	3–7/8	1–1/4	3/8 UNC	1–3/4	3	11/32	1
RF–220	KNC	RDB–220	220	.50	2–3/8	3–7/8	1–1/4	3/8 UNC	1–3/4	3	11/32	1
RF–375	KNC	RDB–375	375	.50	2–3/8	3–7/8	1–1/4	3/8 UNC	1–3/4	3	11/32	1
RF–600	KNC	RDC–600	600	.50	3–1/4	5–1/2	2	1/2 UNC	2–1/2	4–1/8	9/16	2
RF–1100	KNC	RDC–1100	1100	.50	3–1/4	5–1/2	2	1/2 UNC	2–1/2	4–1/8	9/16	2
RF–2250	KNC	RDD–2250	2250	.50	4–1/4	6–1/2	2–3/8	1/2 UNC	2–7/8	5	9/16	4

ALL DIMENSIONS IN INCHES. ALL WEIGHTS IN LBS.

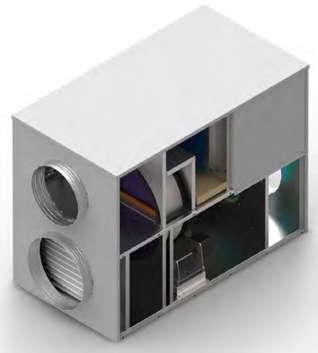
ALTERNATE - 300 DESDX

NovelAire Technologies
Creating the Great Indoors

300 DES/DX

advanced humidity control

desiccant dehumidifier

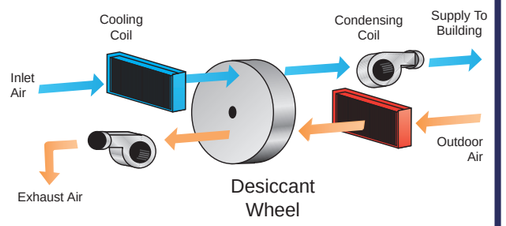


The 300 DES/DX desiccant-based dehumidifier is designed specifically for light commercial applications. The unit combines the benefits of both desiccant dehumidification and DX cooling to achieve the most energy efficient dehumidification. Waste heat is captured from the condensing coil and used to regenerate the desiccant rotor in order to provide further dehumidification.

- Dehumidify without raising the supply air temperature

HOW IT WORKS

The core of the **DES/DX** dehumidifier is a DX refrigeration loop coupled with a desiccant dehumidification wheel. In dehumidification mode, return air passes first through the evaporator coil where it is cooled and typically experiences some dehumidification and then through the desiccant wheel where the air is dried to a low dewpoint. In the isolated regeneration section of the unit, outdoor air is used to capture rejected condenser heat and regenerate (dry) the desiccant wheel. The wet air exiting the regeneration half of the desiccant wheel is exhausted.



BENEFITS

- The most energy efficient humidity control
- Saves energy by maintaining comfort at higher set point temperatures
- Prevents mold, mildew, and dust mite growth by maintaining 50% RH
- Independent humidity control without raising supply air temperature
- Improves comfort
- Works independent of the HVAC system
- ETL listed

300 DES/DX - R20181114

ALTERNATE - 300_DESDX

300 DES/DX

SPECIFICATIONS

Dimensions:	(H) 30in x (L) 40in x (W) 22in
Weight:	220 lbs
Process Flow:	300 cfm
Power:	208/203v/60hz/1ph FLA 9.3
ESP:	.5 in wc
Control:	24 vac
Refrigerant:	R-410A
Cooling Capacity:	9,000 Btu/hr
Dehumidification Capacity:	211 pints/day (78F, 60% RH)

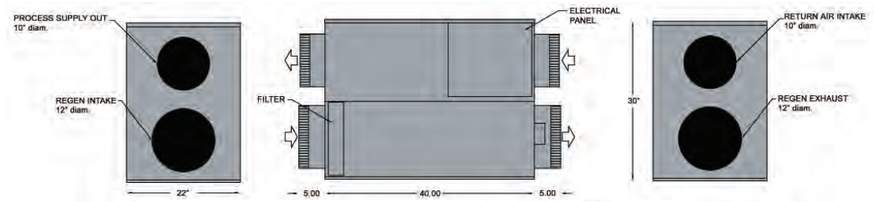
Indoor installation only

*Based on 85/76 DB/WB outdoor air conditions

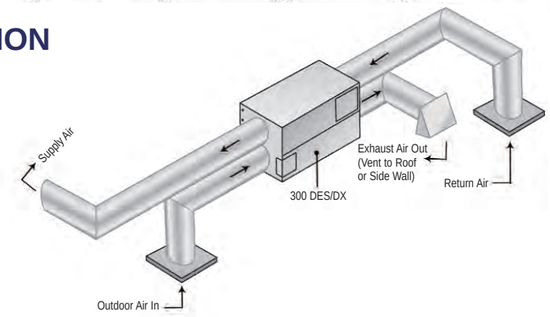
PERFORMANCE

Process In		Supply Out*		lb/HR H_20 Removed
T DB F	%RH	T DB F	%RH	
80	60	81	28	9.4
80	55	80	27	8.4
76	60	76	29	8.2
76	55	76	27	7.3
72	60	73	28	7.2
72	55	73	26	6.3
70	60	71	28	6.6
70	55	70	28	5.8
65	60	65	30	5.4
65	55	64	30	4.7

DIMENSIONS



INSTALLATION



The 300 DES/DX is typically installed as shown with its own return air and supply ducts. The supply air ducts is branched to two or three supply air ducts servicing main rooms of the building. The 300 DES/DX is controlled by a separate humidistat and will cycle on and off to control humidity independently of the main A/C system.

NovelAire Technologies
Creating the Great Indoors

10132 Mammoth Drive, Baton Rouge, LA 70814-4420
tel. 800-762-1320/225-924-0427 fax.225-930-0340
www.novelaire.com

APPENDIX A: ELECTRICAL PRODUCT SHEETS

A/AE

LITHONIA LIGHTING®

Catalog Number	MSL-8000LM-SBL-MVOLT-GZ10-40K-80CRI
Notes	w/ E10WLCP (for EM), & HC36 hanger chain
Type	A/AE

FEATURES & SPECIFICATIONS

INTENDED USE — The MS Series LED is a linear solution ideal for open-ceiling or suspended applications with mounting heights from 14 to 20 feet. Available as a complete luminaire, based on the time-tested MS housing, the traditional fixture design offers time-saving installation options making it a favorite for contractors. It can be mounted in a continuous row or as a stand-alone unit. Its full-body construction and multiple mounting options adapt to a wide variety of suspended and open-ceiling applications.

Certain chemicals that may exist in end-user locations release airborne contaminants that can impact the integrity and safety of key fixture components. Please refer to the environmental compatibility chart located in the Product Selection Guide and/or the company website to ensure that these chemical interactions are considered when selecting fixtures. For additional information please consult an authorized factory representative. **Certain airborne contaminants can diminish the integrity of acrylic and/or polycarbonate.** Click here for Acrylic-Polycarbonate Compatibility table for suitable uses.

CONSTRUCTION — The full-body housing and optical assembly is precision-formed using 20-gauge steel. The optical assembly ships factory-installed into the housing and utilizes aircraft cable tethers to support the optical assembly during wiring. The lensing integrates seamlessly into the optical housing to provide a sealed chamber to mitigate dust and insect collection. A convenient access plate is located on the back of the channel for access to the wiring compartment.

Finish: High-gloss, baked white enamel finish. Five-stage iron phosphate pretreatment ensures superior paint adhesion and rust resistance.

OPTICS — Optical design distributes the light in the 0-60 deg. zone, which provides better utilization of light on task. Each linear bar is outfitted with premium, anodized MIRO 5® aluminum to ensure the highest lumens per watt can be achieved. A diffuse acrylic lens eliminates the pixels to minimize glare and improve uniformity.

ELECTRICAL — The MSL luminaire has 94% lumen maintenance at 60,000 hours with an expected life of greater than 100,000 hours. The MSL ships standard with a thermally protected dimming driver that dims down to 5% using 0-10V controls. Optional EldoLED driver allows for flicker-free dimming down to 1%. LEDs are driven to provide optimal lumens per watt and less heat to extend component life. The driver and optical housing are connected with mating plug for easy removal or future upgrade. Optional PLR through-wire harnesses is available for continuous-row installations.

INSTALLATION — A variety of mounting arrangements are available including tong hangers, aircraft cables and stems. Suitable for mounting in continuous-row or individual mounting. End caps include knockouts for through wiring and fixture attachment in row-mounting applications.

LISTINGS — UL and cUL listed to US and Canadian standards. For use in damp and dry locations with ambient temperatures ranging from -20°C (-4°F) to 30°C (86°F)

LED Low Bay

MSL

COMPLETE LUMINAIRE
4' or 8' Lengths

c UL us LISTED

DIMMABLE LED

SPECIFICATIONS All dimensions are shown in inches (centimeters) unless otherwise noted.				
Series	**Length**	**Width**	**Depth**	**Weight (excludes battery)**
TMSL	96 (243.8)	10 (25.4)	3 3/4 (9.52)	26 lbs. (11.8 kg)
MSL	48 (121.9)	10 (25.4)	3 3/4 (9.52)	13 lbs. (5.9 kg)

WARRANTY — 5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/support/customer-support/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

ORDERING INFORMATION

Lead times will vary depending on options selected. Consult with your sales representative.

Example: MSL 4000LM L/LV MVOLT GZ10 40K 80CRI WH

Series	Lumens		Louver		Voltage		Driver		Color temperature		Color rendering index	
MSL	4000LM	4000 lumens	SBL	Straight blade louver	MVOLT	120-277V	GZ10	0-10V dimming	30K	3000 K	80CRI	80 CRI
	8000LM	8000 lumens [1]	L/LV	Less louver	120	120V	EZ1	EldoLED 1-100% dimming	35K	3500 K	90CRI	90 CRI
	10000LM	10000 lumens [1]			277	277V			40K	4000 K		
TMSL	8000LM	8000 lumens			347	347V [2]			50K	5000 K		
	16000LM	16000 lumens [1]			480	480V [2]						
	20000LM	20000 lumens [1]										

Options				Finish	
E7W	Emergency battery pack, 7W (not available for California) [3]	Cord sets:		Motion sensors:		WH	White
E10WLCP	EM Self-Diagnostic battery pack, 10W Constant Power, Certified in CA Title 20 MAEDBS	CS1W	6' white cord-set, straight blade NEMA 5-15P, 120V [3]	LCOZU	Aisle motion sensor, pre-wired [5]	MB	Matte black
PLR1G	Single-circuit, plug-in wiring [4]	CS11W	6' white cord-set, twist-lock NEMA L7-15P, 277V [5]	LCHOSZU	Aisle motion sensor, pre-wired; programmable dimming [5]		
PLR2ZG	Two-circuit alternating plug-in wiring [4]	CS93W	600V SEOOW white cord, no plug	LCPZU	Aisle motion sensor with photocell; pre wired [5]		
PLR1LVG	Single-circuit plug-in wiring with low voltage leads [4]			LAOZU	360° motion sensor, pre-wired [5]		
GLR	Internal fast-blow fuse [5]			LAHOSZU	360° motion sensor, pre-wired; programmable dimming [5]		
CRE	Continuous row end; one hole for wiring to row, one flattened knockout to terminate the row [6]			LAPZU	360° motion sensor with photocell, pre-wired [5]		
CRM	Continuous row middle; both end plates have holes for row wiring [6]						

See footnotes on page 2.

MSL LED Low Bay

Accessories: *Order as separate catalog number.*

ZAC120	One adjustable aircraft cable with canopy, 120" [7]
ZACFP120	One adjustable aircraft cable with feed (3 conductor) and canopy, 120" [7]
ZACFPD120	One adjustable aircraft cable with feed (5 conductor) and canopy, 120" [7]
ZAC240	One adjustable aircraft cable with canopy, 240" [7]
ZACFP240	One adjustable aircraft cable with feed (3 conductor) and canopy, 240" [7]
ZACFPD240	One adjustable aircraft cable with feed (5 conductor) and canopy, 120" [7]
ZACVH	Aircraft 10' V hanger (one pair)
MSHBAC_	Adjustable aircraft cable system (specify 36, 72 or 120 inches) [7]
MSHBACF_	Adjustable aircraft cable system with power feed (specify length as 36, 72 or 120 inches) (three-wire cable) [7]
MSHBAC2F_	Adjustable aircraft cable system with power feed (specify length as 36, 72 or 120 inches) (four-wire cable) [7]
SQ_	Swivel-stem hanger (specify lengths in 2" increments)
THMSHB	Tong hangers
WGMS8Z	4' wire guard, zinc coated (offers light-duty protection)
HC36	Hanger chain, 36"

Notes
1 Not available with EZ1 driver.
2 347 and 480V utilize a step-down transformer.
3 Must specify voltage, not available with 347V. Not available with CS1W, CS11W or any cord/plug set.
4 Requires CRE or CRM option.
5 Must specify voltage.
6 Not available with sensor options.
7 One cable per package.

OPERATIONAL DATA

Lumen package	Ambient rating (120V - 277V)	Driver compatibility	Delivered lumens						Watts		Comparable light source
			3500 K CCT, 80 CRI	4000 K CCT, 80 CRI	5000 K CCT, 80 CRI	3500 K CCT, 90 CRI	4000 K CCT, 90 CRI	5000 K CCT, 90 CRI	80 CRI	90 CRI	
MSL 4000	-4°F to 86°F (-20°C to -30°C)	EZ1 and GZ10	3,625	3,636	3,724	2,929	2,939	3,010	29	29	1-lamp 54T5HO, 2-lamp 32T8, 70-100W HID
MSL 8000	-4°F to 86°F (-20°C to -30°C)	GZ10	8,706	8,733	8,945	7,035	7,057	7,228	75	75	2-lamp 54T5HO, 4-lamp 32T8, 150-175 HID
MSL 10000	-4°F to 86°F (-20°C to -30°C)	GZ10	9,768	9,798	10,036	7,893	7,918	8,110	86	86	3-lamp 54T5HO, 4-lamp 32T8, 150-175 HID
TMSL 8000	-4°F to 86°F (-20°C to -30°C)	EZ1 and GZ10	7,250	7,273	7,450	5,859	5,877	6,020	58	58	2-lamp 54T5HO, 4-lamp 32T8, 150-175 HID
TMSL 16000	-4°F to 86°F (-20°C to -30°C)	GZ10	17,412	17,467	17,890	14,070	14,115	14,457	149	149	4-lamp 54T5HO, 8-lamp 32T8, 250 HID
TMSL 20000	-4°F to 86°F (-20°C to -30°C)	GZ10	19,535	19,597	20,072	15,786	15,836	16,220	181	181	6-lamp 54T5HO, 8-lamp 32T8, 250-315 HID

PROJECTED LUMEN MAINTENANCE

Operating hours	0	10,000	20,000	30,000	40,000	50,000	60,000	100,000
Lumen maintenance factor	1	0.99	0.98	0.97	0.96	0.95	0.94	0.91

APPENDIX A: ELECTRICAL PRODUCT SHEETS

A/AE

MSL LED Low Bay

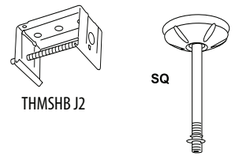
MOUNTING DATA

For unit or row installation, surface or stem mounting.

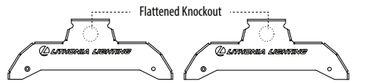
Unit installation — Minimum of two hangers required.

Row installation — One hanger per channel plus one per row required.

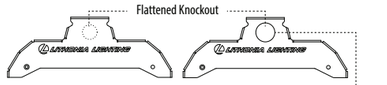
Hanging devices illustrated below.



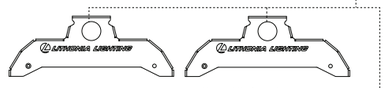
THMSHB J2



Blank - Standard option



CRE - Continous Row End (for beginning of row)

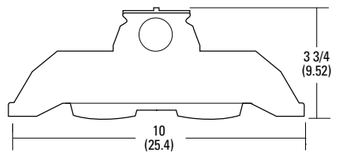


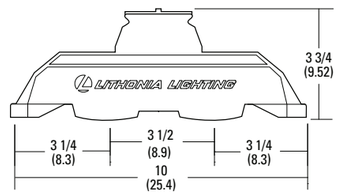
CRM - Continous Row Mount (for middle fixture)

1-1/8" Hole

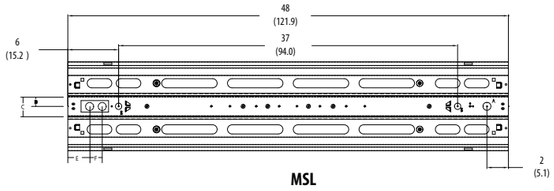
DIMENSIONS

All dimensions are in inches (centimeters) unless otherwise indicated.

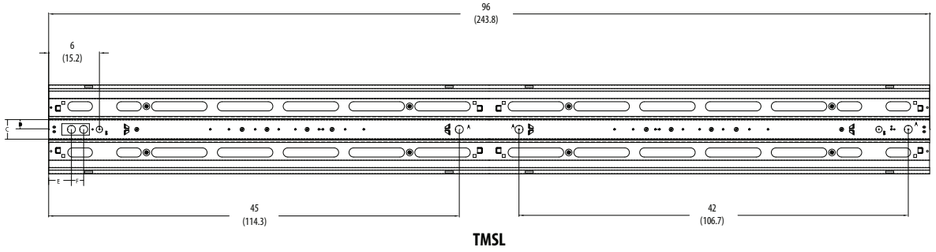




A = 7/8 (2.2) KO
B = 3/4 (1.9) KO
C = 2-3/8 (6.0)
D = 1-1/4 (3.2)
E = 2-3/8 (6.0)
F = 1-3/8 (3.5)



MSL



TMSL

PHOTOMETRICS

See www.lithonia.com.

MSL LED Low Bay

LSXR - Fixture Mount Sensor (see www.sensorswitch.com for additional information)

- Four interchangeable lenses.
- Integrated mounting bracket drops lens down 3" from chase nipple.
- Single or dual relay versions — designed with robust protection from the harsh switching requirements of T5 and LED loads.
- Photocell and 0-10VDC dimming options.
- No PIR field calibration or sensitivity adjustments required.

LSXR configuration	Comparable CMRB sensor	Old style sensor nomenclature
For shortest lead times use one of the following LSXR configurations		
LCOZU	CMRB 50	MSI
LCH0SZU	CMRB 50 D	MSID
LCPZU	CMRB 50 P	MSIPED
LAOZU	CMRB 6	MSI360
LAH0SZU	CMRB 6 D	MSI360D
LAPZU	CMRB 6 P	MSI360PED

SELECTIONS BELOW WILL EXTEND ORDER LEAD TIME. CONSULT YOUR SALES REPRESENTATIVE FOR DETAILS.

SINGLE RELAY

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative. **Example**: LAH0SZU

Series	Lens option	Dimming/Photocell	Max. dim Level	Min. dim level	Temp/Humidity	Default time delay
L LSXR passive infrared indoor occupancy sensor	A High mount, 360° B Low mount, 360° C High mount aisleway	0 None[1] H High/low occupancy operation P Switching photocell (on/off) M Dimming and switching photocell G Dimming and switching photocell with high/low occupancy operation	0 10 VDC 9 9 VDC 8 8 VDC 7 7 VDC	S Minimum dimming level of ballast 1 1 VDC 2 2 VDC 3 3 VDC 4 4 VDC 5 5 VDC 6 6 VDC	Z None T Low temperature	I 30 seconds D 2.5 minutes X 5 minutes R 7.5 minutes U 10 minutes (with minimum 15 minutes on time) V 15 minutes W 20 minutes Y 30 minutes

Notes

1 Dimming level fields not required when this option is chosen.

DUAL RELAY (Available with 120, 277, and 347V only)

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative. **Example**: LA2KZU

Series	Lens option	Poles	Operating mode	Temp/Humidity	Default time delay
L LSXR passive infrared indoor occupancy sensor	A High mount, 360° B Low mount, 360° C High mount aisleway	2 Dual relay	J None K Alternating off relays (promotes even lamp wear) O Alternating off relays w/photocell P Switching photocell (on/off) E Photocell on/off (pole 1 only) F Photocell on/off - both poles (dual set-point)	Z None T Low temperature	I 30 seconds D 2.5 minutes X 5 minutes R 7.5 minutes U 10 minutes (with minimum 15 minutes on time) V 15 minutes W 20 minutes Y 30 minutes

Example: LENS 50 J100

Replacement lenses: *Order as separate catalog number.*		
Series	Lens type	Package quantity
Lens	6 High mount 360° 10 Low mount 360° 50 High mount aisleway	U Unit J10 10-pack J100 100-pack

APPENDIX A: ELECTRICAL PRODUCT SHEETS

X

CHLORIDE
by signify

Exit/Emergency

Value+ LED

Exit sign VE

Project:

Location:

Cat.No:

Type:

Lamps: Qty:

Notes:

Chloride Value+ LED exit sign (VE) is an economically oriented exit that offers a low profile design, giving it stylish appeal suitable for any general purpose application. Utilizing long life high-performing LEDs, the VE is a reliable exit at a reasonable price.

LED exit sign – ordering guide

Model number	Letter color	Housing color	Operation
VERW	Red	White	AC only
VEGW	Green	White	AC only
VERWEM	Red	White	Emergency (Nicad battery)
VEGWEM	Green	White	Emergency (Nicad battery)

Note: All exit signs are universal (single face with an extra stencil face plate) Canopy provided on all exits.

Accessories (order separately)

- **WG4 –** Wire guard
- **VEPMC –** Pendant mount canopy, white, (requires stem assembly).
- **PVS2 –** Polycarbonate shield
- **CXPA12W –** Pendant assembly, Rigid canopy, 12" white stem (requires VEPMC).
- **CXPAS12W –** Pendant assembly, Swivel white canopy, 12" white stem (requires VEPMC).

Stem lengths available: 18" 24", 30", 36", 48", and 60"

Note:

All exit signs are universal (single face with an extra stencil face plate)
Canopy provided on all exits.

VE Value+ LED exit sign

Economy grade

Specifications

Codes and standards

- UL listed to Standard 924
- NFPA 70 (National Electric Code)
- NFPA 101 (Life Safety Code)
- California Energy Commission
- Suitable for damp locations

Lamps

- Bright red or green energy efficient LED lamps. Uniform 6" letter illumination (3/4" stroke).

Construction

- Thermoplastic (off-white) ABS housing
- UL 94 V-0.5VA Flame rated
- White housing only
- Low profile, snap-together quick mount design
- Universal wall/ceiling/end mounting
- Canopy not required for flat wall mount (electronics contained inside housing)
- Pop-out chevron directional indicators are easily removed when required
- Exit sign mounts to a standard 4" square outlet box (canopy provided)
- All exits are provided with an extra stencil face plate for double face sign applications

Battery

- VE Exits contain 6V maintenance free nickel cadmium battery with a service life of 8 to 10 years and a operating temperature range of 20˚F (-7˚C) to 104˚F (40˚C)
- Provides 90 minutes of emergency illumination

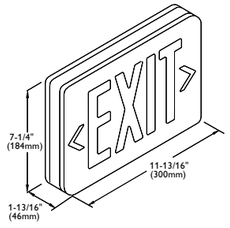
Electronics

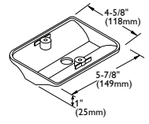
- 120/277 VAC selectable input
- VE Units: AC Only
  Input Power: 0.026A (120VAC)
  Input Power: 0.012A (277VAC)
- VE Units: Emergency
  Input Power: 0.033A (120VAC)
  Input Power: 0.017A (277VAC)
- Low voltage disconnect, AC, and constant current charger

Warranty

- Three year limited warranty on electronics, LEDs, and battery

Dimensions





Canopy

signify

Signify North America Corporation
200 Franklin Square Drive,
Somerset, NJ 08873
Telephone 855-486-2216

Signify Canada Ltd.
281 Hillmount Road,
Markham, ON, Canada L6C 2S3
Telephone 800-668-9008

APPENDIX A: PLUMBING PRODUCT SHEETS

RD-1/OD-1

SMITH® JAY R. SMITH MFG. CO.®
MEMBER OF MORRIS GROUP INTERNATIONAL
POST OFFICE BOX 3237
MONTGOMERY, ALABAMA 36109-0237 (USA)
TEL: 334-277-8520 FAX: 334-272-7396 www.jrsmith.com
CUSTOMER DRIVEN SINCE 1926
MEMBER OF:

LOCATION

V | DRAWING NUMBER S1010 | SIZE A | SCALE: NONE | DATE: 5-24-85 | APPROVED BY: TD | CHECKED BY: TD | DRAWN BY: CR | 1010, 1020 | FIGURE NUMBER

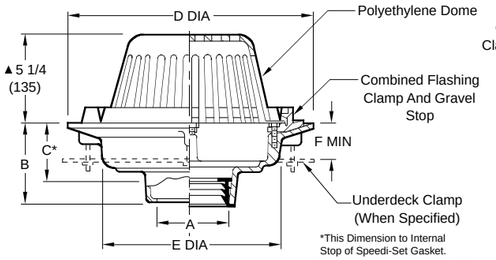
WE CAN ASSUME NO RESPONSIBILITY FOR USE OF SUPERSEDED OR VOID DATA

DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCE AND CHANGE WITHOUT NOTICE

LARGE GENERAL PURPOSE ROOF DRAINS

LOW PROFILE DOME

FUNCTION: Used in flat roof of any construction. Large low profile dome provides sufficient free area for quick drainage of rain water and protects the drain sump and connected piping from the intrusion of debris. Wide clamping surface holds flashing and roofing materials without puncturing.

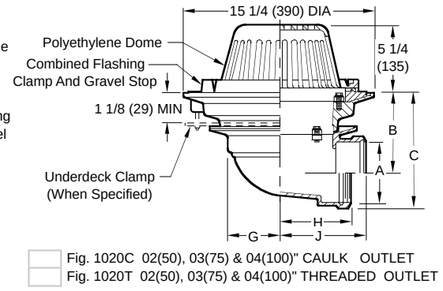


*This Dimension to Internal Stop of Speedi-Set Gasket.
****NOTE:** 08(200) & 10(250) outlet sizes are regularly furnished with 20(510) dia. flange, see back sheet. If 16(405) dia. flange is required -16 **MUST** be specified. Ex: 1010Y08-16 or 1010Y10-16

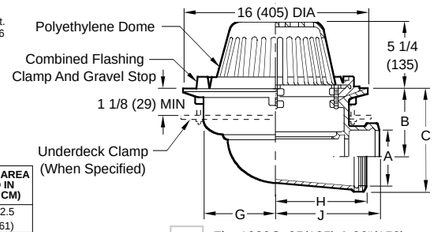
☐ Fig. 1010C . . . .CAULK OUTLET
☐ Fig. 1010Y . . . .NO-HUB OUTLET

recommended deck opening

outlet size	with suffix-R	less suffix-R
02(50),03(75),04(100) 05(125),06(150)	17(430) DIA	14(355) DIA
**08(200)-16, **10(250)-16	17(430) DIA	14 3/4 (375) DIA



☐ Fig. 1020C 02(50), 03(75) & 04(100)" CAULK OUTLET
☐ Fig. 1020T 02(50), 03(75) & 04(100)" THREADED OUTLET



☐ Fig. 1020C 05(125) & 06"(150) CAULK OUTLET
☐ Fig. 1020T 05(125) & 06"(150) THREADED OUTLET

A SIZE	B (BOTTOM OUTLET) CAULK, NO-HUB, & SPEEDI-SET	THREADED	C	D DIA	E DIA	F MIN	SIDE OUTLET G	H	J	FREE AREA SQ IN (SQ CM)
02(50),03(75), 04(100)	5 (125)	3 3/4 (95)	3 3/4 (95)	15 1/4 (390)	11 (280)	1 1/8 (29)	4 3/4 (120)	6 (150)	7 3/4 (195)	102.5 (661)
05(125), 06(150)	5 (125)	3 3/4 (95)	--	15 1/4 (390)	11 (280)	1 1/8 (29)	6 1/4 (160)	6 7/8 (175)	7 3/4 (195)	102.5 (661)
**08(200)-16,	6 (150)	5 (125)	--	16 (405)	12 1/2 (320)	1 1/8 (29)	--	--	--	102.5(661)
**10(250)-16										▲122.5(790)

REGULARLY FURNISHED:
Duco Cast Iron Body with Combined Flashing Clamp and Gravel Stop with Polyethylene Dome.

▲**NOTE:** The dome height is 8 1/4" (210) for the 122.5 SQ IN free area dome and is regularly furnished in Cast Iron and is not available in polyethylene.

NOTE: Dimensions shown in parentheses are in millimeters.

VARIATIONS:
☐ Expansion Joint (Specify Fig. 1710) (Fig. 1010 only)
☐ Extension (Specify Height) -E
☐ "L" Shaped Underdeck Clamp -CL
☐ L Speedi-Set Service Weight 02(50), 03(75) and 04(100)" sizes only (Fig. 1010 0nly)
☐ LXH Speedi-Set Extra Heavy 02(50), 03(75) and 04(100)" sizes only (Fig. 1010 only)
☐ NO-HUB Adaptor (Specify Fig. 2646Y) (Fig. 1020 only)
☐ Secondary Flashing Clamp -C2
☐ Sump Receiver -R
☐ Underdeck Clamp -C
☐ Vandal Proof Dome -U
☐ T Threaded Outlet

A SIZE	02 (50)	03 (75)	04 (100)	05 (125)	06 (150)
B	6 7/8 (175)	6 3/8 (162)	5 7/8 (149)	5 (125)	4 1/2 (115)
C	8 5/8 (219)	8 3/4 (220)	8 3/4 (220)	8 1/2 (215)	8 1/2 (215)

(SIDE OUTLET)

OPTIONAL MATERIALS:
☐ All Aluminum -AA (Fig. 1010 only)
☐ ▲▲ Aluminum Dome -AD
☐ ▲▲ Cast Iron Dome -CID
☐ ▲▲ Galvanized Cast Iron Dome -CIDG
☐ Galvanized Cast Iron Body & Collar -G
☐ ▲▲ Rough Bronze Dome -RBD
☐ Stainless Steel (Specify Fig. 9780)

▲▲ Optional Domes' free area are as follows:

Dome Mat'l	02-06 & 08-16 Outlets
Aluminum	98 (632)
Cast Iron	80 (516)
Bronze	95 (613)

REV.	DATE	DESCRIPTION	BY	CKD. BY
V	7-30-19	Removed NOTE	MW	CL
U	8-3-15	Added Flow Rate Note	TBW	BW
T	3-12-13	Rev. Tables, Notes	TBW	CL
S	06/01/09	Added Optional Dome free areas	JJ	CL

WEIGHT POUNDS | VOLUME CUBIC FEET | FIGURE NUMBER 1010, 1020

⚠ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

DSN-1

SMITH® JAY R. SMITH MFG. CO.®
MEMBER OF MORRIS GROUP INTERNATIONAL
POST OFFICE BOX 3237
MONTGOMERY, ALABAMA 36109-0237 (USA)
TEL: 334-277-8520 FAX: 334-272-7396 www.jrsmith.com
CUSTOMER DRIVEN SINCE 1926
MEMBER OF:

LOCATION

K | DRAWING NUMBER S1770 | SIZE A | SCALE: NONE | DATE: 2-25-85 | APPROVED BY: JD | CHECKED BY: JD | DRAWN BY: CR | 1770 | FIGURE NUMBER

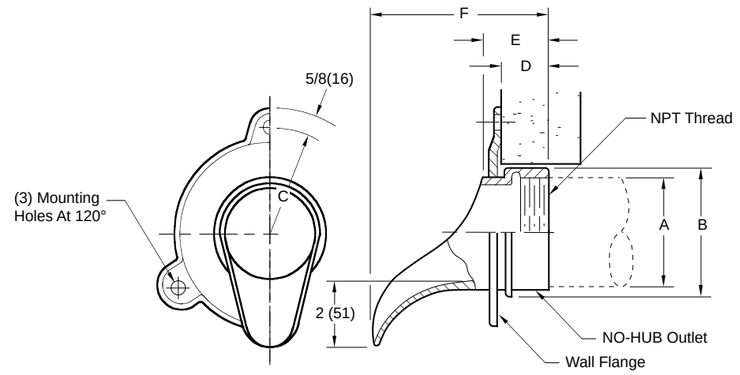
WE CAN ASSUME NO RESPONSIBILITY FOR USE OF SUPERSEDED OR VOID DATA

DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCE AND CHANGE WITHOUT NOTICE

ROOF ACCESSORY

DOWNSPOUT NOZZLE

FUNCTION: Used as a parapet overflow or at the base of a wall where a concealed leader discharges rainwater to ground. Nozzle design diverts water away from building, eliminating wall stains. Wall flange covers rough opening and serves as anchor.



NOTE: For ADA Compliant See Fig. 1770-ADA

☐ Fig. 1770T.....Threaded Outlet
☐ Fig. 1770Y.....NO-HUB Outlet 02(50), 03(75), 04(100) and 06(150)
** When -NB is specified with NO-HUB outlet, ALL SIZES will be supplied with a 2646Y NO-HUB adaptor.

A=PIPE	02(50)	03(75)	04(100)	* 05(125)	06T(150)	06Y(150)	* 08(200)	* 10(255)	* 12(305)
B=DIA	2 3/4 (70)	4 (100)	5 (125)	6 (150)	7 1/4 (185)	7 1/4 (185)	9 1/4 (235)	11 1/8 (283)	13 1/4 (335)
C=RAD	2 3/4 (70)	3 1/2 (89)	3 7/8 (98)	4 3/8 (111)	5 (125)	5 (125)	5 7/8 (149)	7 1/4 (185)	8 (205)
D	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 13/16 (46)	1 5/8 (41)	1 3/4 (44)	2 (51)
E	2 1/16 (52)	2 1/16 (52)	2 1/16 (52)	2 1/16 (52)	2 1/16 (52)	2 1/2 (64)	2 3/8 (60)	2 3/4 (70)	2 15/16 (75)
F	5 5/8 (143)	5 5/8 (143)	5 5/8 (143)	5 5/8 (143)	5 5/8 (143)	6 1/4 (160)	5 15/16 (149)	5 3/8 (138)	7 9/16 (192)

REGULARLY FURNISHED:
Cast Bronze Nozzle and Flange.

VARIATIONS:
* ☐ Bird Screen -BS
☐ NO-HUB Adaptor (specify Fig. 2646Y) [5"(125), 8"(200), 10"(255) and 12"(305) only]

OPTIONAL MATERIALS:
** ☐ Nickel Bronze -NB
☐ Polished Bronze -PB
☐ Chrome Plated -CP

NOTE: Dimensions shown in parentheses are in millimeters.

REV.	DATE	DESCRIPTION	BY	CKD. BY
K	8-30-19	Rev. Opt. Mat./Added Note **	MW	CL
J	10-18-18	Added Note ADA Compliant	TBW	CL
H	5-26-16	Rev. Optional Materials	TBW	TK
G	01/14/11	Added NO-HUB Outlet	JJ	TK

WEIGHT POUNDS | VOLUME CUBIC FEET | FIGURE NUMBER 1770

⚠ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

X. APPENDIX B:
MEP MAINTENANCE STANDARDS

APPENDIX B: MEP MAINTENANCE STANDARDS

300 DESDX

3.2.1 Routine Maintenance:

⚠ **SAFETY CONSIDERATION** ⚠

Always disconnect power before performing service or maintenance on unit.

1. Filters on outdoor inlet and retrun inlet should be inspected monthly and changed as needed. See Section 4, Technical Data for filter sizes.
2. During peak operations ensure the filters are replaced, filters need to be replaced at least every 3 months.
3. Condenser and evaporator coils should be inspected annually and cleaned with water as needed. ***(Heavy Detergents, Alkaline or Acidic based cleaners should not be used in standard cleaning.)***
4. Inspect drain line annually for algae and debris, you may pour one cup of standard bleach to one gallon of water to clear drain line.
5. Seals on the desiccant wheel and the drive belt and drive system should be inspected annually.
6. Motors and bearings are sealed and do not require lubrication.

ASHRAE Outdoor Air Heat Exchanging Systems

TABLE 5-19 Outdoor Air Heat Exchanging Systems

	Inspection/Maintenance Task	Frequency*
a	Check air filter and housing integrity. Correct as needed.	Monthly
b	Check for particulate accumulation on filters. Clean or replace as necessary to ensure proper operation.	Monthly
c	Check control system devices for evidence of improper operation. Repair, adjust, or replace components to ensure proper operation.	Semiannually
d	Check P-trap drain. Clean if necessary.	Semiannually
e	Check fan belt tension. Check for belt wear and replace if necessary to ensure proper operation. Check sheaves for evidence of improper alignment or evidence of wear and correct as needed.	Semiannually
f	Check for proper operation of heat exchanger. Clean, restore, repair, adjust, or replace components to ensure proper operation.	Semiannually
g	Check for proper operation of enthalpy device. Clean, restore, repair, adjust, or replace components to ensure proper operation.	Semiannually
h	Check control box for dirt, debris, and/or loose terminations. Clean and tighten as needed.	Semiannually
i	Check for proper fluid flow and for fluid leaks. Clean, restore, or replace as required.	Semiannually
j	Check drain pan, drain line, and heat exchanger for biological growth. Clean as needed.	Semiannually
k	Check dampers for proper operation, condition, setting, and operation. Repair, adjust, lubricate, or replace components to ensure proper operation.	Semiannually
l	Check condition, setting, and operation of damper motors. Repair, adjust, lubricate, or replace components to ensure proper operation.	Semiannually
m	Check sealing integrity of all panels on equipment. Replace fasteners and gasketing as needed.	Semiannually
n	Visually inspect areas of moisture accumulation for biological growth. If present, clean or disinfect as needed.	Semiannually
o	Assess field serviceable bearings. Lubricate if necessary.	Annually
p	Visually inspect exposed ductwork for insulation and vapor barrier integrity. Correct as needed.	Annually

ASHRAE Fan

TABLE 5-14 Fans (e.g., Exhaust, Supply, Transfer, Return)

	Inspection/Maintenance Task	Frequency*
a	Check fan belt tension. Check for belt wear and replace if necessary to ensure proper operation. Check sheaves for evidence of improper alignment or evidence of wear and correct as needed.	Semiannually
b	Check fan drive for problems due to poor alignment or poor bearing seating. Repair or replace as needed.	Annually
c	Check fan blades and fan housing. Clean, repair, or replace as needed to ensure proper operation.	Annually
d	Assess field-serviceable bearings. Lubricate if necessary.	Annually
e	Check variable-frequency drive for proper operation. Correct as needed.	Annually
f	Check control box for dirt, debris, and/or loose terminations. Clean and tighten as needed.	Annually
g	Check motor contactor for pitting or other signs of damage. Repair or replace as needed.	Annually
h	Check integrity of all panels on equipment. Replace fasteners as needed to ensure proper integrity and fit/finish of equipment.	Annually
i	Visually inspect exposed ductwork and external piping for insulation and vapor barrier integrity. Correct as needed.	Annually
j	Check for proper damper operation. Clean, lubricate, repair, replace, or adjust as needed to ensure proper operation.	Annually
k	Check control system and devices for evidence of improper operation. Clean, lubricate, repair, replace, or adjust as needed to ensure proper operation.	Annually
l	Check integrity of flexible connections. Correct as needed.	Annually

*Refer to Section 4.2.2.d for procedure to modify frequency.

ASHRAE Control Systems

TABLE 5-9 Control Systems

	Inspection/Maintenance Task	Frequency*
a	Check compressed-air system (e.g., compressor, dryer, receiver, blowdown valve) for proper operation. Check for evidence of oil carryover and condition of oil filter. Repair or replace as needed to ensure proper operation.	Monthly
b	Check for proper air pressure. Repair or replace pneumatic system components as needed.	Monthly
c	Measure relative humidity and repair, clean, or adjust system as necessary to ensure intended operation.	Quarterly
d	Check control system devices for evidence of improper operation. Clean, lubricate, repair, adjust, or replace components as needed to ensure proper operation.	Semiannually
e	Check time-of-day schedule to confirm consistency with facility operation. Adjust schedule as needed.	Semiannually
f	Check control box for dirt, debris, and/or loose terminations. Clean and tighten as needed.	Annually
g	Check motor contactor for pitting or other signs of damage. Repair or replace as needed.	Annually
h	Check pneumatic lines for blockages. Clean as needed.	Annually
i	Check to see that backup of digital control program is current.	Annually
j	Check battery backup and verify proper operation.	Annually

*Refer to Section 4.2.2.d for procedure to modify frequency.

Damper Control

RUSKIN®

3900 Dr. Greaves Rd. • Kansas City, MO 64030 • (816) 761-7476 • FAX (816) 765-8955

COMMERCIAL CONTROL AND BACKDRAFT DAMPER OPERATION & MAINTENANCE

MODELS: COMMERCIAL CONTROL AND BACKDRAFT DAMPERS

Regular maintenance is essential to ensure that a building's air control system will perform as intended under normal conditions. Regular maintenance should include periodic testing of all equipment associated with the air control system such as initiating devices, fans, dampers, controls, etc. Ruskin recommends each damper be cycled and tested every 6 months and in accordance with local codes and actuator manufacture recommendations (if damper has actuator). If dampers are installed in potentially dirty airstreams, the blades and other internal parts may need annual cleaning to avoid dirt build up.

MAINTENANCE

- Remove any foreign material.
- Verify that hardware used to install damper does not contact moving parts of the damper.
- Lubricate linkage, bearings and other moveable parts with a silicone lubricant. **Do not use petroleum-base products as they could cause excessive dust collection.**
- Operate (open and close) the damper via the actuator or extended shaft.
- Check the blade linkage to make sure the blade shafts and blades rotate 90° from full open to full closed.
- Consult Ruskin if problems are encountered.

OPERATION

• Operate damper through full cycle, verify that all blades open and close completely. Check for loose linkage from actuator (if used) through jackshafting (if multi-section) and damper side linkage. Tighten linkage as required.

XI. APPENDIX C:
WINDOW SCHEDULE

APPENDIX C: WINDOW SCHEDULE

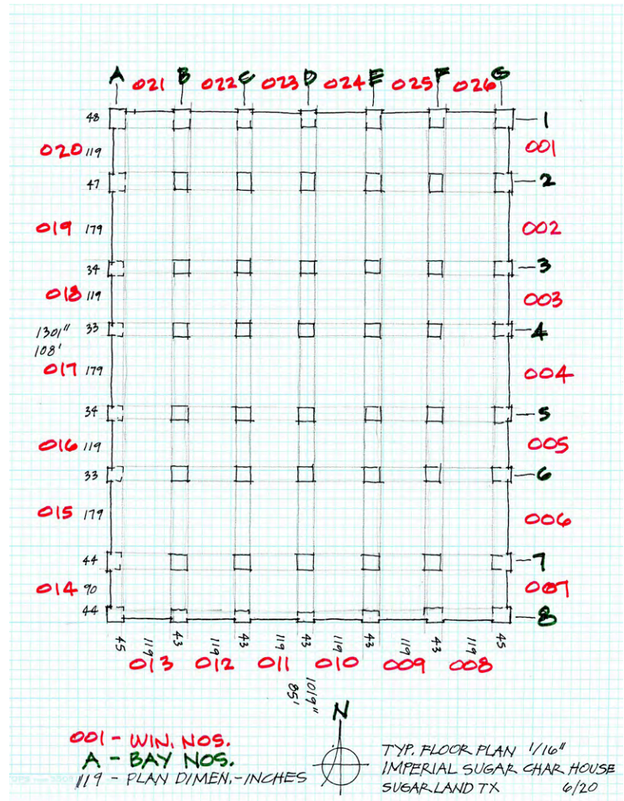
No.	Side	Location Floor / Col	Material *Aluminum Steel*	Condition *G - Good F - Fair P - Poor*
121	North	1 / A-B	S	F
122		1 / B-C	S	P
123		1 / C-D	S	F
124		1 / D-E	S	F
125		1 / E-F	S	F
126		1 / F-G	S	F
221	North	2 / A-B	S	F
222		2 / B-C	S	F
223		2 / C-D	S	F
224		2 / D-E	S	P
225		2 / E-F	S	F
226		2 / F-G	S	F
321	North	3 / A-B	S	F
322		3 / B-C	S	F
323		3 / C-D	S	F
324		3 / D-E	S	F
325		3 / E-F	S	F
326		3 / F-G	S	F
421	North	4 / A-B	S	F
422		4 / B-C	S	F
423		4 / C-D	S	F
424		4 / D-E	S	F
425		4 / E-F	S	F
426		4 / F-G	S	F
521	North	5 / A-B	S	F
522		5 / B-C	S	F
523		5 / C-D	S	F
524		5 / D-E	S	F
525		5 / E-F	S	F
526		5 / F-G	S	F
5A24	North	5 / D-E	A	F
5A25		5 / E-F	A	F
5A26		5 / F-G	A	F
621	North	6 / A-B	S	F
622		6 / B-C	S	F
623		6 / C-D	S	P
721	North	7 / A-B	S	F
722		7 / B-C	S	F
723		7 / C-D	S	P
724		7 / D-E	S	P
725		7 / E-F	S	P
726		7 / F-G	S	P
821	North	8 / A-B	S	F
822		8 / B-C	S	F
823		8 / C-D	S	F
824		8 / D-E	S	F
825		8 / E-F	S	F
826		8 / F-G	S	F
907	North	9 / B-C	S	F

No.	Side	Location Floor / Col	Material *Aluminum Steel*	Condition *G - Good F - Fair P - Poor*
101	East	1 / 1-2	A	F
102		1 / 2-3	A	F
103		1 / 3-4	A	F
104		1 / 4-5	A	F
105		1 / 5-6	A	F
106		1 / 6-7	A	F
Dr		1 / 7-8		F
201	East	2 / 1-2	A	F
202		2 / 2-3	A	F
203		2 / 3-4	A	F
205		2 / 5-6	A	F
Dr		2 / 7-8		F
301	East	3 / 1-2	A	F
302		3 / 2-3	A	F
303		3 / 3-4	A	F
304		3 / 4-5	A	F
305		3 / 5-6	A	F
306		3 / 6-7	A	F
Dr		3 / 7-8		F
401	East	4 / 1-2	A	F
402		4 / 2-3	A	F
403		4 / 3-4	A	F
404		4 / 4-5	A	F
405		4 / 5-6	A	F
406		4 / 6-7	A	F
Dr		4 / 7-8		F
501	East	5 / 1-2	A	F
502		5 / 2-3	A	F
503		5 / 3-4	A	F
504		5 / 4-5	A	F
505		5 / 5-6	A	F
506		5 / 6-7	A	F
Dr		5 / 7-8		F
5A27	East	Saddlebag	A	F
601	East	6/ 1-2	A	F
602		6 / 2-3	A	F
603		6 / 3-4	A	F
604		6 / 4-5	A	F
605		6 / 5-6	A	F
606		6 / 6-7	A	F
Dr		6 / 7-8		F
701	East	7 / 1-2	A	F
702		7 / 2-3	A	F
703		7 / 3-4	A	F
704		7 / 4-5	A	F
705		7 / 5-6	A	F
706		7 / 6-7	A	F
Dr		7 / 7-8		F
801	East	8 / 1-2	A	F
802		8 / 2-3	A	F
803		8 / 3-4	A	F
804		8 / 4-5	A	F
805		8 / 5-6	A	F
806		8 / 6-7	A	F
Dr		8 / 7-8		F
901	East	9 / 4-5	A	F
902		9 / 5-6	A	F
903		9 / 6-7	A	F

No.	Side	Location Floor / Col	Material *Aluminum Steel*	Condition *G - Good F - Fair P - Poor*
108	South	1 / G-F	A	F
109		1 / F-E	A	F
110		1 / E-D	A	F
111		1 / D-C	A	F
112		1 / C-B	A	F
113		1 / B-A	A	F
208	South	2 / G-F	A	F
209		2 / F-E	A	F
210		2 / E-D	A	F
211		2 / D-C	A	F
212		2 / C-B	A	F
213		2 / B-A	A	F
308	South	3 / G-F	A	F
309		3 / F-E	A	F
310		3 / E-D	A	F
311		3 / D-C	A	F
312		3 / C-B	A	F
313		3 / B-A	A	F
408	South	4 / G-F	A	F
409		4 / F-E	A	F
410		4 / E-D	A	F
411		4 / D-C	A	F
412		4 / C-B	A	F
413		4 / B-A	A	F
508	South	5 / G-F	A	F
509		5 / F-E	A	F
510		5 / E-D	A	F
511		5 / D-C	A	F
512		5 / C-B	A	F
513		5 / B-A	A	F
608	South	6 / G-F	A	F
609		6 / F-E	A	F
610		6 / E-D	A	F
611		6 / D-C	A	F
612		6 / C-B	A	F
613		6 / B-A	A	F
708	South	7 / G-F	A	F
709		7 / F-E	A	F
710		7 / E-D	A	F
711		7 / D-C	A	F
712		7 / C-B	A	F
713		7 / B-A	A	F
808	South	8 / G-F	A	F
809		8 / F-E	A	F
810		8 / E-D	A	F
811		8 / D-C	A	F
812		8 / C-B	A	F
813		8 / B-A	A	F
904	South	9 / B-C	A	F
908	South	9 / B-C	S	F

No.	Side	Location Floor / Col	Material *Aluminum Steel*	Condition *G - Good F - Fair P - Poor*
114	West	1 / 8-7	A	F
115		1 / 7-6	A	F
116		1 / 6-5	A	F
117		1 / 5-4	A	F
118		1 / 4-3	A	F
119		1 / 3-2	A	F
120		1 / 2-1	A	F
214	West	2 / 8-7	A	F
215		2 / 7-6	A	F
216		2 / 6-5	A	F
217		2 / 5-4	A	F
218		2 / 4-3	A	F
219		2 / 3-2	A	F
220		2 / 2-1	A	F
314	West	3 / 8-7	A	F
315		3 / 7-6	A	F
316		3 / 6-5	A	F
317		3 / 5-4	A	F
318		3 / 4-3	A	F
319		3 / 3-2	A	F
320		3 / 2-1	A	F
414	West	4 / 8-7	A	F
415		4 / 7-6	A	F
416		4 / 6-5	A	F
417		4 / 5-4	A	F
418		4 / 4-3	A	F
419		4 / 3-2	A	F
420		4 / 2-1	A	P
514	West	5 / 8-7	A	F
515		5 / 7-6	A	F
516		5 / 6-5	A	F
517		5 / 5-4	A	F
518		5 / 4-3	A	F
519		5 / 3-2	A	F
520		5 / 2-1	A	F
5A23	West	Saddlebag	A	F
614	West	6 / 8-7	A	F
615		6 / 7-6	A	F
616		6 / 6-5	A	F
617		6 / 5-4	A	F
618		6 / 4-3	A	F
619		6 / 3-2	A	F
620		6 / 2-1	A	F
714	West	7 / 8-7	A	F
715		7 / 7-6	A	F
716		7 / 6-5	A	F
717		7 / 5-4	A	F
718		7 / 4-3	A	F
719		7 / 3-2	A	F
720		7 / 2-1	A	F
814	West	8 / 8-7	A	F
815		8 / 7-6	A	F
816		8 / 6-5	A	F
817		8 / 5-4	A	F
818		8 / 4-3	A	F
819		8 / 3-2	A	F
820		8 / 2-1	A	F
905	West	9 / 6-7	A	F
906		9 / 5-4	A	F

LOCATION KEY PLAN



XII. APPENDIX D:
NATIONAL REGISTER OF HISTORIC PLACES FORM (2017)

APPENDIX D: NATIONAL REGISTER OF HISTORIC PLACES FORM (2017)

PAGES 7-9 REFERENCE THE IMPERIAL SUGAR COMPANY CHAR FILTER HOUSE

Narrative Description

The Imperial Sugar Company Refinery Historic District includes five contributing historic resources and two non-contributing resources of the former industrial sugar refining complex in Sugar Land, Fort Bend County, Texas. The functionally related industrial complex is the remaining 4.8-acre portion of a facility that encompassed 25.4 acres, where sugar was refined, finished, bagged and shipped. The nominated district includes four contributing buildings and one structure (a section of railroad track), and two noncontributing strictures (covered walkways and silos, constructed outside of the period of significance). The buildings include industrial warehouses and an office, all of which relate to aspects of the sugar refining process. One building in particular, the Char House (resource ID 1) is a well-known and beloved landmark for local residents, and its height at eight stories sets it towering over every other building on the site. The Char House served as the hub for the refinery during its lifespan as the key building for the refining process. The four buildings and three structures are those remaining of the larger industrial complex and located is a contiguous 4.8 acre historic district and are representative of the company's growth and adaptation to new technologies and collectively serve as a reminder of the importance of the sugar refinery to the development of Sugar Land.

The Imperial Sugar Company Refinery Historic District occupies a 4.8-acre site from the original 25.4-acre complex in Sugar Land, Fort Bend County, Texas, a suburban city approximately 20 miles southwest of Houston. The district is on a single property located on the north (westbound) side of Highway 90-Alt and between Ulrich and Brooks Streets. Oyster Creek and Main Street are located to the east of the property. An operational railroad line runs along the southern boundary between the complex and Highway 90-Alt. As of January 2016, a large number of the complex's industrial resources have been demolished leaving large open areas where grass has covered any remnants of these buildings and structures.

As late as 2008, the complex had over 40 remaining buildings, objects and structures, many of which were contributing resources. These included warehouses, sheds, the power plant, pump houses, cisterns, sheds, bridges, rail road tracks, and smoke stacks. All of these resources were concentrated in the southern portion of the complex southwest of Cleveland Canal, an eastern off shoot of Oyster Creek. The portion of the original complex to the northwest of Cleveland Canal was developed after 1970 and included numerous non-historic, pre-fabricated warehouse buildings that were demolished c.2007 when the site was slated for redevelopment prior to the 2008–2010 recession. When the recession began, the plan for the redevelopment of the complex that was to incorporate the historic resources into a mixed use facility, was abruptly halted. The site was then sold several times in the ensuing years and with each sale and proposed development, more of the historic resources were demolished to accommodate new development plans that never materialized or due to the dangerous condition of the building. The current owners purchased the property from the City of Sugar Land in 2016 with the remaining four buildings and three structures clustered around the Char House (Resource ID 1). Other remaining historic resources remaining outside the proposed district include the water tower, located on the east side of Oyster Creek, the masonry smoke stacks, located to the north of the proposed district, and the pedestrian, rail and roadway bridges over Oyster Creek and Cleveland Canal. These three resources are not included in the historic district since they are separated by empty land and are located too far away from the core of the historic district.

In total, there are seven resources within the proposed historic district: four buildings and three structures. All of the five contributing resources are associated with the Imperial Sugar Refinery's period of significance, dating 1923-1967.

United States Department of the Interior
National Park Service / National Register of Historic Places Continuation Sheet
NPS Form 10-900 OMB No. 1024-0018

Imperial Sugar Company Refinery Historic District, Sugar Land, Fort Bend County, Texas

IMPERIAL SUGAR COMPANY REFINERY HISTORIC DISTRICT INVENTORY

ID	Name	Contributing (C) or Non-Contributing (NC)	Date built	Property Type
1	Char House	C	1925	Building: char house
2	Engineering Building	C	before 1953	Building: office
3	Sugar Silos	NC	c.1997	Structure: silo
4	3-Bay Refined Sugar Warehouse	C	c.1923	Building: warehouse
5	Container Warehouse	C	before 1950	Building: warehouse
6	Railroad Tracks (fragment)	C	c.1908	Structure: Railroad Tracks
7	Covered Walkways	NC	c.1980	Structure: Covered walkways (two)

Resource ID 1: Char House (1925) – contributing building

The Char House is a 6x6 bay, rectangular plan reinforced concrete frame eight-story building with a brick veneer. The building's original multi-light, steel industrial type windows are extant on the north elevation; the windows on the other three elevations have been replaced with fixed aluminum windows that fill the original openings. The window lintels are exposed concrete and introduce a horizontal break in the strong verticality of the building. The eight stories are irregular in height with the first, fourth, and fifth extending to double-height spaces. The pilasters on the eighth floor are embellished with brick and cast stone detailing that projects from the building plane and defines the top floor of the building as the cornice. The pilasters project above the parapet and each has a cast stone cap. A simple brick entablature separates the first two stories from the upper six levels. An Imperial Sugar sign is located along the cornice line of the west and south elevations.

The south elevation is composed of six symmetrical bays defined by the brick pilasters that run the full height of the building. The windows are the fixed, aluminum frame with three strong vertical mullions in each opening. The divisions are simple, concrete details run the full height of the building and separate each bay with similar combinations of the same fixed, six-light aluminum windows per floor. The first story contains two, vertically joined units of the base, six-light aluminum window. The second story contains a single, shortened version of the base window unit. The third level holds a single, heightened version of the base aluminum window and the fourth and fifth levels each have a doubled version of differing heights. Finally, the sixth, seventh, and eighth floors all have single, aluminum window units.

The east elevation is composed of six bays with a similar window arrangement to the south elevation; however, the first and six bays differ from the south elevation. The first bay has a single, metal door on each floor. These doors provided access to an adjacent building that has since been demolished. The sixth bay has fixed, single-light aluminum windows on each level except the first and fifth where the window units have been doubled into 1/1 fixed-light windows.

APPENDIX D: NATIONAL REGISTER OF HISTORIC PLACES FORM (2017)

The north elevation retains its original multi-light, metal casement windows and is organized in a six-bay pattern similar to the south and east elevations. The north elevation differs in its sixth bay with a series of smaller, rectangular window openings similar to the sixth bay of the east elevation. The north elevation also has a two-story, shed-roofed pop-out cantilevered between the fifth and sixth stories. Due to its location immediately above the contributing railroad tracks, it is likely that this cantilevered shed was used to load or unload train cars below.

The west elevation has the same six-bay pattern and replacement, fixed, six-light aluminum windows as the south and east elevations. The first bay, similar to the sixth bay on the east elevation, has replacement, single-light aluminum windows.

The Char House was used for processing raw sugar cane into the types of sugar sold by the Imperial Sugar Company. All the steps for refinement took place in this building, including affination, carbonation, decolorization, boiling and crystallization, and recovery.

All of the equipment used for refining raw, milled sugar on the property was housed inside the char house. A previous owner removed the vast majority of the industrial equipment at an unknown date as part of the abatement process. A select few pieces of this industrial process remain inside the building. The elevator shaft in the northwest corner remains, though the elevator equipment has been removed. The staircase next to it has been blocked off and is inaccessible. Flooring between floors has been removed where it existed, so there is currently no access to upper floors for safety reasons.

Resource ID 2: Engineering Building (Before 1953) – contributing building

The Engineering Building is a two-story modern brick office building with a flat roof, elongated eaves, and windows arranged to emphasize its horizontality. The building has an elongated brick veneer and belt courses on both stories. The building retains its original 2/2 aluminum sash windows and double, metal primary entrance doors with divided lights. A simple flat roofed metal, pedestrian covered walkway was added c.1980 (Resource ID 7) and extends southward from the south elevation and makes a 90-degree turn to the west towards the parking lot and the Sugar Silos (Resource ID 3).

Historically, this building housed offices, research and development, and the payroll department where employees picked up paychecks.[1] This building currently houses the Sugar Land Heritage Foundation, a non-profit preservation group who uses the space for archival storage, offices, and exhibitions.

Resource ID 3: Sugar Silos (c. 1997) – noncontributing structure

The Liquid Sugar Silos are three interconnected, cylindrical concrete silos. The Imperial Sugar Company logo is painted on the south elevation of the central silo. The silos were constructed using a continuous slip form method of concrete construction. A "slip form" is constructed on hydraulic lifts, which pushes the form higher every 3-4 minutes while concrete is poured into the form. A floor inside the silo moves with the formwork and holds the workers who add steel reinforcement, monitor the concrete pour, and smooth the final pour in place. This method allows for seamless construction, creating fewer opportunities for moisture penetration in the concrete.[2]

[1] Little, Bill, Leon Anhaiser and Bettye Anhaiser, Interview, July 17, 2015.
[2] Staff, "New look for Sugar Land's historic landmark," *Imperial Holly Employee Bulletin*, Dec. 1997 <http://4.bp.blogspot.com/-YSbBnG9VAdU/VCBDOoOmguI/AAAAAAAAOXI/40fPo2N2gjw/s1600/silos.jpg>

XIII. APPENDIX E:

INITIAL STRUCTURAL REVIEW OF SELECT BUILDINGS AND STRUCTURES (2008)

APPENDIX E: INITIAL STRUCTURAL REVIEW OF SELECT BUILDINGS AND STRUCTURES (2008)

PAGES 1-4 REFERENCE THE IMPERIAL SUGAR CHAR HOUSE

April 23, 2008

Mr. Mike Hathaway
Southern Land Company, LLC
501 Corporate Centre Drive
Suite 600
Franklin, Tennessee 37067

Re: Initial Structural Review of Select Buildings and Structures
Imperial Sugar Company Refinery and Mill
Sugar Land, Texas

Dear Mr. Hathaway:

As requested, we have performed an initial structural review of select buildings and structures of the vacant Imperial Sugar Company refinery and mill in Sugar Land, Texas. The intended purpose of this initial review is to provide a limited overall assessment of the buildings to determine if they are structurally suitable for inclusion in an extensive renovation and redevelopment program for the site. Original construction drawings were not made available to us as part of this review.

EXECUTIVE SUMMARY

Buildings and structures selected for inclusion in this initial structural review are indicated on the attached site legend and as follows:

- Char House
- Administrative/Engineering Building
- Laboratory Building
- Silos
- Large Refined Sugar Warehouse
- Refined Sugar Warehouses A, B & C
- Sugar Packing House
- Sugar Packing House Extension
- Bin Buildings 1 & 2
- Pan House Buildings 1, 1A, 2, 3 & 4
- Raw Sugar Warehouse
- Melt House
- Filter House
- Power Plant Boiler Sheds & Generator House
- Old Machine Shop
- Old Power Plant
- John Deere Building

Most of the reviewed buildings and other structures are generally in relatively sound structural condition, with varying amounts of remedial work recommended. These buildings are typically structurally suitable for inclusion in a renovation and redevelopment program for the site. The primary exception is the Old Power Plant. This building is in such poor condition that necessary remedial work to allow the building to be safely

used again could exceed the complete replacement cost of the building. The Old Machine Shop is also in marginal structural condition. This building may be salvageable for future use, but the cost of anticipated remedial work may be close to the value of the building.

Several areas of concern are generally widespread within many of the various buildings and other structures. Minor amounts of advancing corrosion were observed on structural elements and metal siding and roof panels in many locations. Conditions of severe corrosion of structural elements, however, are generally less common that originally anticipated and are typically in rather isolated locations. Floors in numerous locations are covered with a thick sugar-syrup substance that prevented direct observations of the slabs. Areas of slab deterioration that appear to be the result of attack from sugar in various forms or other chemicals were observed in several of the buildings and particularly within the Char House. There is the potential for sugar contamination of existing concrete to cause bond and setting complications of new concrete and cementitious patching materials when installed against existing concrete. This possible concern should be investigated further. Most of the items noted, if properly addressed should generally not have a significant adverse impact on the structural integrity of the various buildings and other structures. The focus of this study was limited to assessing structural conditions and does not include opinions relative to the practicality of converting these structures for a different use.

GENERAL OBSERVATIONS AND CONSIDERATIONS

This initial review included buildings and other structures that were originally designed and constructed for a variety of uses. The Laboratory Building and Administrative/Engineering Building are both constructed to accommodate typical office type functions. Most of the other buildings and structures, however, are warehouse facilities or industrial processing type structures. These various structures were constructed using a variety of construction techniques including but not limited to cast-in-place concrete, precast concrete, exposed structural steel, concrete encased structural steel, both load bearing and non-load bearing masonry and heavy timber.

We understand that there are no available original construction drawings for the various structures. This will greatly complicate much of the structural work that will be required during the progress of the project. Some desired modifications, for example removing a tank that may weigh several tons when full and infilling the remaining floor opening for a minimal live load capacity will be rather straightforward. Other desired modifications may be more structurally complex and require detailed and specific information about existing structural elements. The performance of a structural analysis for considered modifications or to determine the capacity of an existing structure will require information normally included in the construction drawings that can be difficult to determine in the field. This may in many cases require producing dimensioned as-built framing plans. Also required will be member sizes for both steel and concrete sections and material strength data. Due to the age of the structures, it is probable that some historical research will be required to determine the sectional properties of structural sections after the dimensions of the sections are obtained. The nature of the foundation elements cannot be easily determined by visual observations and may require excavations if further knowledge about the foundations becomes necessary. Foundation information obtained in this fashion will be very general at best.

The grade of structural steel used will also need to be determined since several different types of steel have been utilized over the last century. The date of construction for each of the structures, if known, will help

APPENDIX E: INITIAL STRUCTURAL REVIEW OF SELECT BUILDINGS AND STRUCTURES (2008)

with this determination, but some lab testing of steel coupons may also be required in a few cases. An analysis of concrete sections such as floor slabs will require determining the size and placement of the reinforcement steel. Some needed information may be obtained using various non-destructive methods (ground penetrating radar, X-rays, pachometer, Hilti Ferro-Scan, etc.), but it is probable that some destructive testing to expose the reinforcement steel will also be required for various conditions. Lab testing to determine the grade of reinforcement steel within the concrete and the strength of the concrete itself may also be required. Although it may be possible to perform the required structural work based solely on field obtained data and the results of lab tests, this will prove to be time consuming and expensive. It is recommended that every avenue for obtaining copies of the original construction documents be explored.

The floor slabs and various other concrete elements are heavily contaminated with sugar in many of the structures. Extensive slab deterioration (particularly in the Char House) was also observed that is probably the result of attack from sugar in various forms or other chemicals. Sugar is known to act as a retarder in fresh concrete and with a relatively low percentage (maybe 1 to 2 percent by weight of cement) can prevent concrete from setting. Along with various modifications requiring new concrete to be cast against existing concrete, many areas of slab deterioration will require patching. There is the potential for bond and setting complications of new concrete and cementitious patching materials when installed against sugar contaminated existing concrete. It any case, it is probable that extensive water blasting or other cleaning methods will be required that may have an adverse impact on the cost of construction. It is recommended that this possible concern be investigated further by a knowledgeable materials consultant or other appropriate parties.

CHAR HOUSE

The Char House is a rectangular structure containing eight levels plus a penthouse that extends above the roof. A small cantilever segment extends beyond the building line on the north side between Levels 5 and 6. A sign on the south side indicates that this building was constructed in 1925. The building is typically constructed with a structural steel frame primarily encased in concrete. The steel building columns are encased with brick masonry. Riveted connections are utilized in most locations. Structural concrete floor slabs at each of the elevated levels are interspersed with numerous openings to accommodate tanks, conveyors and various other types of equipment. Walk surfaces within the penthouse area are generally limited to open steel stairs and catwalks. The floor of the lower level appears to be a soil-supported concrete slab. The exterior walls of the building are constructed of brick masonry. A freight elevator and stair tower are located in the northwest corner of the building. Two large concrete chimney stacks extend through and above the building on the west side. A Level 4 mechanical bridge extends between the Char Building and Pan House 1A on the north side. Initial site observations and general comments for the Char Building are as follows:

1. The roof deck appears to be constructed of a reinforced light weight cementitious material that is badly deteriorated and is failing in several locations; particularly along the south side. Extensive water ponding on the roof may have contributed to this deterioration. (The roof drains appear to be clogged.) Extensive repairs to the roof deck will be required and may warrant complete replacement.

2. Concrete encasing the structural steel beams is generally sound, but several areas of cracked and fractured concrete were observed.

3. Brick surrounding the steel columns is cracked and fractured in several locations. Some of these conditions appear to be the result of impact damage. Brick damage around several columns along the south side of Level 1 may be due to extensive vibrations from the adjacent equipment. Several of these columns have been strengthened with steel angles to address the issue.

4. Various areas of slab deterioration, some severe, were observed throughout the building. Most of these conditions appear to be the result of attack from sugar in various forms or other chemicals. A few areas of apparent impact damage were also observed in various slabs. It is anticipated that extensive slab repairs will be required.

5. Various cracks and spalling areas with exposed reinforcement steel were observed in the underside of floor slabs in various locations. Similar conditions were also observed in the underside of the exterior cantilever segment on the north side of the building. Repairs are recommended for all of these conditions.

6. Numerous brick cracks were observed in various locations, both in interior and exterior locations. Several of the cracks have significant amounts of separation. Some of the more severe cracks are located at the corners of the building and on the corner of the cantilever segment on the north side. Some of the brick around penthouse level windows is protruding out from the plane of the wall. These various brick cracks may be the result of minor foundation shifting, equipment vibration, wind loading conditions, thermal expansion and contraction or other causes. They generally do not appear to be indicative of serious structural concerns and can probably be adequately repaired to restore the overall structural integrity of the masonry walls.

7. Numerous cracks, some fairly severe, have developed in the concrete chimney stacks in both interior and exterior locations. All of these cracks should be addressed to restore the overall structural integrity of the chimney stacks. Repairs by epoxy injection may be an appropriate repair method.

8. Advancing corrosion was observed on the structural supports for the signage and related catwalks on the west and south sides of the building. These elements will require further review.

9. Advancing corrosion was observed on most of the structural steel elements throughout the building, but none that appears to be extensively severe at this time.

The Char House generally appears to be in relatively sound structural condition, with several areas of repair work suggested. The most extensive areas of concern may be the deteriorated roof deck (item 1) and the various areas of slab deterioration (item 4). Nothing was observed to foster serious concerns about the overall structural integrity of the building.

ADMINISTRATIVE/ENGINEERING BUILDING

The Administrative/Engineering Building is a small rectangular structure with a flat roof. Steel beams and joists support a concrete slab at the second floor. The structural system for the roof is similar. The first floor appears to be a soil-supported concrete slab. Some utility trenches are present in the floor slab. The exterior masonry walls are constructed with structural clay tile and brick. A single interior stairway is located in the

XIV. APPENDIX F:

IMPERIAL SUGAR REFINERY VISUAL CONDITION ASSESSMENT OF CHARHOUSE (2018)

APPENDIX F: IMPERIAL SUGAR REFINERY VISUAL CONDITION ASSESSMENT OF CHARHOUSE (2018)

Cardno

Cardno
Structural Engineering

3700 West Sam Houston
Parkway South
Suite 100
Houston, TX 77042
USA

Phone: +1 713 868 1591
Fax: +1 713 868 0046

www.cardno.com

June 5, 2018

Jim Murnane
Developer/Principal
Imperial Market
198 Kempner
Sugarland, Texas 77498

Subject: Imperial Sugar Refinery visual condition assessment of Charhouse
198 Kempner Sugarland, Texas

Dear Mr. Murnane:

On Monday June 5, 2018 Mr. Doug Antwiler PE, a representative of Cardno, visited the property located at 198 Kempner in Sugarland, Texas. The purpose of this visit was to perform a visual and tactile structural condition assessment of the charhouse.

The charhouse is an eight story steel structure built in 1925 (Photos 0.01-0.08). The structure has reinforced concrete floors with brick masonry perimeter walls. The existing steel columns are encased in brick for fire protection and a majority of the steel beams for the floors are encased in concrete for fire protection. Information on the existing foundation is not available. The structure has numerous large openings in the floors that originally accommodated the processing equipment. Temporary cable barriers have been installed around most of these openings for personnel protection. A majority of the existing equipment has been removed from the building. Original drawings of the structure were not available at the time of this visit. It is our understanding that the client intends to remodel this structure and convert it into a hotel in the near future.

PRIORITIES OF OBSERVED CONDITIONS

In order to assist in planning and scheduling the ongoing maintenance and required remedial work for the structure, the conditions discussed in this report are prioritized into three categories according to the perceived immediacy of performing repairs. During the course of the onsite condition survey a few conditions were observed that are not technically structural in nature but may have an impact on the ongoing performance and condition of the building. Descriptions of these items will be identified as Non-Structural with no priority designation. The category designation for each condition is indicated in parentheses at the end of the discussion for that item. Descriptions of these different categories are as follows:

High Priority - This includes items of a present severity that foster immediate structural or life safety concerns or if left unaddressed may develop into serious structural conditions or promote significant damage or deterioration to other structural elements. Repairs in these areas should be performed in the immediate or very near future.

Medium Priority - This includes items that should be repaired to prevent future damage and ongoing deterioration of structural and/or architectural elements but do not appear to have an immediate adverse

Cardno
Shaping the Future

impact on the structural integrity of the building. Minor safety issues related to the structural aspects might also be included in this category. Repairs in these areas can probably be deferred for a reasonable period of time without significant detriment but should be included in a scheduled maintenance program to maintain the long-term structural integrity of the building.

Low Priority - This includes items that may have been previously repaired, with only periodic monitoring suggested to verify the continuing success of the repairs, items described for information only and minor conditions that do not appear to be structurally significant. Repairs, when recommended, are primarily for cosmetic considerations or to enhance the serviceability of the building and may be performed as funds permit or not at all.

Non-Structural - This includes items that are not technically structural in nature but may have an impact on the ongoing performance and condition of the building. Minor safety issues unrelated to the structural aspects might also be included in this category. Descriptions of these items are included in this report for information only and may require the involvement of architects, contractors or consultants in other areas of expertise to determine the actual significance and appropriate remedial actions necessary, if any.

CONDITION SURVEY

Several of the described conditions were observed in numerous locations and, unless stated otherwise, can be considered as occurring throughout the building. Any additional areas of extensive damage uncovered during repairs shall be immediately brought to the attention of the Structural Engineer for review. The Contractor shall install temporary shoring to adequately support damaged structural members and other elements of the building as required prior to performing any remedial work. Determining the need, designing and installing temporary shoring or bracing shall be the complete responsibility of the Contractor. Site observations, general comments and repair recommendations are as follows:

1. Staining was observed on the existing roof indicating that standing water may be present after weather events away from the existing roof drains (Photos 1.01-1.02). In addition, some areas of the roof showed signs of deterioration (Photo 1.03) and the temporary covers over some of the roof openings have become compromised (Photo 1.04). Although this is not an immediate structural concern, water infiltration into the structure can lead to corrosion of steel structural members or embedded steel reinforcement in the concrete. This in turn can affect the structural integrity of the building. We recommend that the client engage the services of a roofing consultant to survey the existing roof and provide recommendations for repair or replacement of the existing roofing materials. (Medium Priority)

2. The penthouse roof has severe deterioration (Photos 2.01-2.02). We recommend restricting access to this roof until repairs/reconstruction of this roof can be performed. (High Priority)

3. The main roof of the building is showing signs of spalling in some areas due to corrosion of the embedded reinforcement (Photo 3.01). Based on the thickness of the existing roof slab, we recommend removing and replacing portions of the roof slab that have significant spalling. In areas with minor spalling we recommend removing the delaminated concrete, cleaning the exposed reinforcement, and then repairing the roof slab with a polymer modified Portland cement repair mortar. (High Priority)

4. The fire exit doors near the front of the building open out to open air because the exit landings have been removed (Photos 4.01-4.02). This is a safety concern. We recommend that these doors be blocked off and marked. (High Priority)

APPENDIX F: IMPERIAL SUGAR REFINERY VISUAL CONDITION ASSESSMENT OF CHARHOUSE (2018)

5. There is a cantilevered area on the back of the building. The roof of this area has failed and is allowing moisture into the building (Photo 5.01). We recommend replacing this area of the roof to prevent further moisture infiltration into the building and cleaning/coating the exposed steel in this area with a good quality rust inhibitive paint. (High Priority)
6. One of the stair accesses to the cantilevered area at the back of the building is unsafe (Photo 6.01). We recommend repairing or replacing this access. (Medium Priority)
7. Many of the steel beams supporting the roof are uncoated and showing signs of minor corrosion (Photo 7.01). We recommend cleaning and painting these members with a good quality rust inhibitive paint. (Medium Priority)
8. The masonry at the top of the windows in the penthouse is cracking (Photos 8.01-8.02). We believe this cracking may be due to corrosion of the steel lintel member over the window. We recommend removing the brick over the window in sections, cleaning and recoating the existing steel lintel member and then reinstalling the brick. If the steel lintel has lost significant section it may need to be replaced with a new lintel matching the original size. Once the lintel is repaired, the cracks in the wall shall be repointed. (Medium Priority)
9. In several areas of the floor, the concrete appears to have been eroded by a caustic substance possibly from the manufacturing processes that used to take place within the building (Photos9.01-9.03). This has reduced the overall thickness of the slab. Based on field measurements, the slab was originally approximately 4" thick. For areas where the concrete loss is minor (1/4" or less) no structural repairs are required, but the client may want to repair or replace the slab for aesthetic reasons. For areas where the concrete loss is more substantial, the slab should either be evaluated for strength or replaced with a new slab based on the final intended use. (Medium Priority)
10. The existing columns are encased in brick and many of the existing floor beams are encased in concrete for fire protection. This protection has been damaged in several areas of the building (Photo 10.01). Depending on the exact occupancy of the final use of the building, it is likely that this fire protection will need to be restored. (Medium Priority)
11. The existing steel ladder from the roof to the top of the elevator penthouse roof has significant corrosion (Photo 11.01). We recommend replacing components of this ladder that have significant section loss and then cleaning and recoating the remainder of the ladder with a good quality rust inhibitive paint. (Medium Priority)
12. The ladder accessing the front signage and associated platform are showing signs of corrosion (Photo 12.01). We recommend the ladder and associated access be thoroughly inspected by a contractor with appropriate fall protection replacing any components that have significant section loss due to corrosion. The platform and ladder shall then be cleaned and painted with a good quality rust inhibitive paint. (Medium Priority)
13. The stair access from level 8 up to the top of the penthouse has several members that are severely corroded (Photo 13.01). If this stair is going to continue to be used, we recommend replacing members that have significant section loss, cleaning the remaining steel members, and then coating with a good quality rust inhibitive paint. (Medium Priority)
14. There is a vertical ladder near the front of the building that originally went from the roof down to a landing at level 8 (Photo 14.01). The landing at level 8 has since been removed. We recommend removing this ladder. (Medium Priority)
15. Reinforcement is visible on the underside of the existing slab in a few areas due to low cover (Photo 15.01). We recommend cleaning and coating the exposed reinforcement with a good quality rust inhibitive paint to prevent corrosion. (Medium Priority)

16. The second floor slab near the front of the building has diagonal cracking and some areas of the slab appear to have been damaged by the demolition work performed in the building (Photos 16.01-16.02). We recommend additional investigation and possible repairs in this area when the building is renovated. (Medium Priority)
17. Cracking was observed in the brick wall in the stair between level 1 and 2 (Photo 17.01). We recommend repairing and repointing the brick in this area. (Medium Priority)
18. Cracking was observed in the masonry fire protection around the first floor columns (Photo 18.01). Steel banding has been added in some areas to contain the brick and prevent it from falling. Although this is not a structural concern, the client may want to repair this masonry for aesthetic purposes. (Non-structural)
19. Based on discussions with onsite personnel, water collects in two below grade pits (Photo 19.01). Although this is not a structural concern, we recommend that these pits be drained and either install a sump pump or infill the pits to prevent standing water which can be a health concern. (Non-structural)
20. The handrails on the main stair for the building are showing signs of corrosion (Photo 20.01). We recommend cleaning and recoating the handrails. (Low Priority)
21. Vertical cracking was observed near some of the corners in the existing masonry (Photos 21.01-21.02). This cracking is likely due to thermal movement of the walls on either side of the corner. No action is required although the client may want to repair and repoint this area for aesthetic purposes. (Low Priority)
22. Corrosion was observed on the door frames to the main stair (Photo 22.01). (Non-structural)
23. Graffiti was observed in some areas of the building (Photo 23.01). (Non-structural)
24. Deterioration was observed in the grout along the window sill at the front of the building and cracking was observed in the caulking around the windows (Photo 24.01). (Non-structural)
25. Several of the exterior windows in the building are broken (Photo 25.01). (Non-structural)
26. One of the plates surrounding the decorative cauldron in the front of the building has fallen (Photo 26.01). In addition, some of the masonry around the cauldron is loose (Photo 26.02). If this is an element that is going to be retained after the renovation, we recommend that the masonry be repointed (as required) and the plate be reinstalled and coated with a good quality rust inhibitive paint. (Non-structural)

SUMMARY AND CONCLUSIONS

Overall the Char House is in fair condition. The most immediate concerns for the building are limiting moisture intrusion into the building to prevent further deterioration of the structure and correcting safety issues with the structure.

Limitations:

This review is cursory in nature and is not intended to be comprehensive in scope. Conditions may exist that were not observed, reviewed or reported. Although no evidence was observed to indicate that other defects, deterioration, or areas of distress were present, it must be noted that this report is based primarily on visual observations made on the exteriors and interiors of the building where the structure is not concealed by finishes. Repair methods referred to in this report are of a general nature only. Specific repair procedures and materials should be determined and specified for each individual condition prior to implementing repairs. The responsibility of our firm is limited to reporting field observed conditions and providing general recommendations and opinions. No responsibility by our firm for verifying that indicated repairs or additional investigations have been performed shall be assumed or considered implied. The investigation performed was focused only on the structural adequacy of the

APPENDIX F: IMPERIAL SUGAR REFINERY VISUAL CONDITION ASSESSMENT OF CHARHOUSE (2018)

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building. No effort was made to investigate mechanical, plumbing or electrical systems of these structures and no environmental testing was performed.

We trust that these comments and recommendations will be beneficial. Please contact us if you have any questions and anytime we may be of further assistance.

Sincerely,

STATE OF TEXAS
DOUGLAS ANTWILER
113391
LICENSED PROFESSIONAL ENGINEER
6/8/18
exp 3/31/19

Doug Antwiler, PE SE
Manager of Forensics and Diagnostics Structural Engineering for Cardno
Direct Line +1 713 458 7686
Email: doug.antwiler@cardno.com

Texas Engineering Firm #F-15236

Photo 0.01 Front of building

Photo 0.03 Side of building

Photo 0.05 Back of building

Photo 0.07 Side of building

Photo 0.06 Back of building

Photo 0.08 Side of building

APPENDIX F: IMPERIAL SUGAR REFINERY VISUAL CONDITION ASSESSMENT OF CHARHOUSE (2018)

Photo 1.01 Staining on roof deck possible area of standing water

Photo 1.03 Deteriorated roofing material

Photo 4.02 Exterior view of unsafe fire exits

Photo 6.01 Damaged access to cantilever portion of building

Photo 9.03 Eroded concrete surface

Photo 11.01 Corroded steel ladder access at elevator penthouse

Photo 2.01 Severe deterioration of penthouse roof

Photo 3.01 Spalling on underside of concrete roof

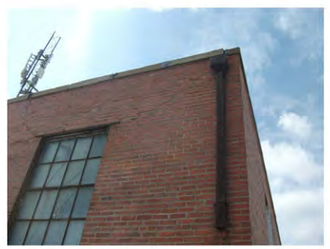


Photo 8.01 Cracking above penthouse window

Photo 9.01 Eroded concrete surface and corroded stair base

Photo 13.01 Corroded support member for penthouse access

Photo 15.01 Steel reinforcement with low concrete cover

Photo 2.02 Severe deterioration of penthouse roof

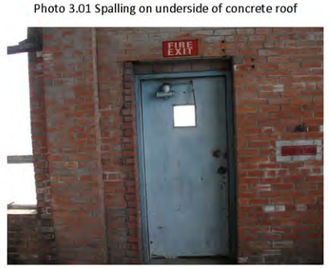


Photo 4.01 Unsafe fire exit

Photo 8.02 Cracking above penthouse window

Photo 9.02 Eroded concrete surface

Photo 14.01 Ladder from roof without landing platform

Photo 16.01 Cracking and damage at second floor slab

APPENDIX F: IMPERIAL SUGAR REFINERY VISUAL CONDITION ASSESSMENT OF CHARHOUSE (2018)

Photo 16.02 Cracking and damage at second floor slab

Photo 18.01 Cracking in fire protection around first floor colum

Photo 23.01 Graffiti on level 8

Photo 25.01 Broken window

Photo 20.01 Corrosion on handrails in main stair

Photo 21.02 Vertical cracking at corner of masonry

Photo 26.02 Loose masonry around cauldron

Photo 21.01 Vertical cracking at corner of masonry

Photo 22.01 Corrosion on door frame at main stair

XV. APPENDIX G:
GERALD MOORHEAD INVESTIGATIVE PHOTOGRAPHY (2006)

APPENDIX G: GERALD MOORHEAD INVESTIGATIVE PHOTOGRAPHY (2006)

2006 PHOTO - SITE VIEW LOOKING WEST

2006 PHOTO - VIEW OF NORTH ELEVATION

2006 PHOTO - SUGAR REFINING EQUIPMENT

2006 PHOTO - SUGAR REFINING EQUIPMENT

2006 PHOTO - SUGAR REFINING EQUIPMENT

2006 PHOTO - VIEW OF MAIN ROOF

XVI. APPENDIX H:

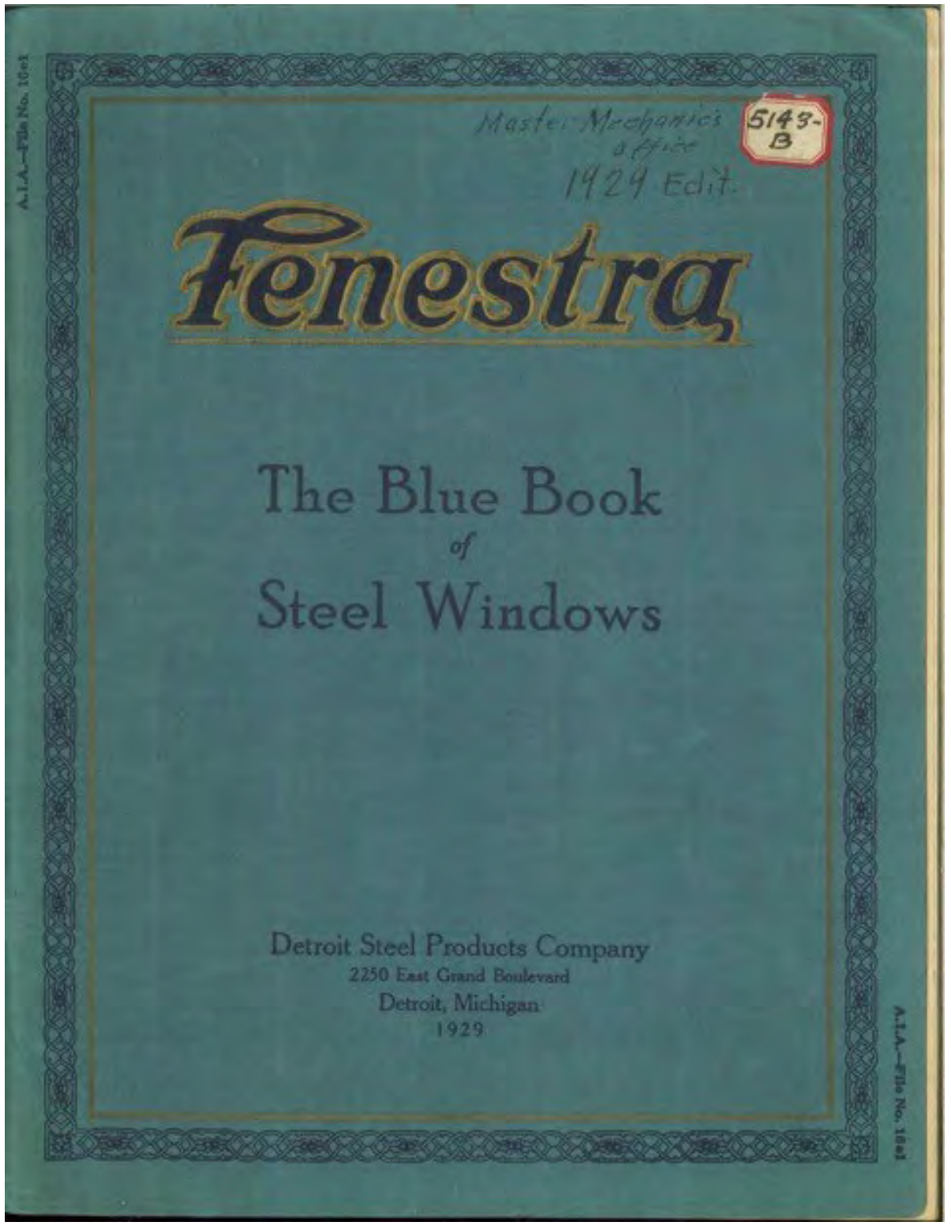
ORIGINAL STEEL WINDOW DETAILS BY FENESTRA OF DETROIT

APPENDIX H: ORIGINAL STEEL WINDOW DETAILS BY FENESTRA OF DETROIT

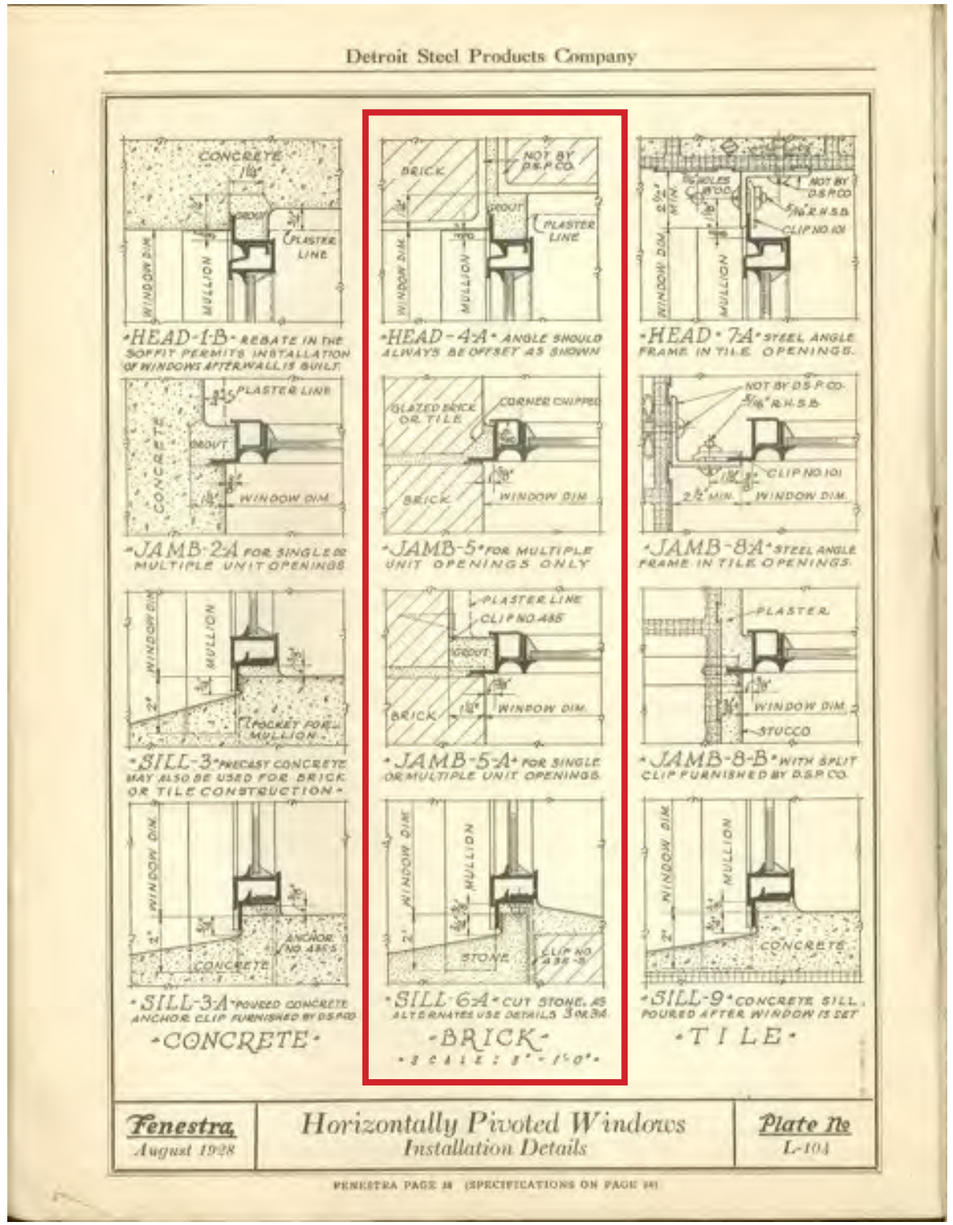
TYPICAL LABEL FOUND ON THE STEEL WINDOWS AT THE IMPERIAL SUGAR COMPANY CHAR FILTER HOUSE

INTERIOR VIEW OF TYPICAL STEEL WINDOW

EXTERIOR VIEW OF TYPICAL STEEL WINDOW



COVER OF THE BLUE BOOK OF STEEL WINDOWS (1929) BY DETROIT STEEL PRODUCTS COMPANY



PAGE FROM THE BLUE BOOK OF STEEL WINDOWS (1929) BY DETROIT STEEL PRODUCTS COMPANY. THE "BRICK" DETAILS NOTED IN RED MATCH WINDOW MEASUREMENTS ON THE FIELD

XVII. APPENDIX I:

THE SECRETARY OF THE INTERIOR'S STANDARDS FOR REHABILITATION

APPENDIX I: THE SECRETARY OF THE INTERIOR'S STANDARDS FOR REHABILITATION

DOCUMENT 01120 - THE SECRETARY OF THE INTERIOR'S STANDARDS FOR REHABILITATION

The Standards (Department of Interior regulations, 36 CFR 67) pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and the interior, related landscape features and the building's site and environment as well as attached, adjacent, or related new construction. The Standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

END OF SECTION