# 18/20 AND 30 TRINITY STREET
# Pre-Design Study
# Project: BI-2B-445

**18/20 and 30 Trinity Street**
**Hartford, CT 06106**

**Final Report**
May 3, 2019
WJE No. 2018.2542

*Prepared for:*
**State of Connecticut**
Department of Administrative Services
450 Columbus Boulevard, Suite 1201
Hartford, CT 06103

*Prepared by:*
**Wiss, Janney, Elstner Associates, Inc.**
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Associate Principal

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WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS

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## EXECUTIVE SUMMARY

At the request of the State of Connecticut Department of Administrative Services, Wiss, Janney, Elstner Associates, Inc. performed a pre-design study for the buildings located at 18/20 and 30 Trinity Street in Hartford, CT. The general purpose of the study is to assess the conditions at the buildings in anticipation of future renovations and use by various state agencies.

The investigation included the following:

- Facilities Condition Assessment:
  - Exterior Envelope
  - Site
  - Superstructure
  - Fire Protection Systems
  - Mechanical, Electrical and Plumbing Systems
  - Interior Architecture and Finishes
  - ADA Accessibility
- Quantifying existing conditions:
  - Historic Assets Survey
  - Code Research
- Building and Site Programing
  - Analyze Proposed Program Space
  - Traffic and Parking Study - Including ADA Accessibility
- Cost Estimate to establish design and construction cost for project bonding.

The investigation does not include testing for the presence of hazardous materials.

The investigation determined the buildings currently need to be restored to address the long term effects of weather at the buildings' exteriors and to upgrade the exterior and interior spaces to provide a more functional and pleasant work environment as well as a more inviting atmosphere to the public using the services provided by the agencies at the buildings.

These restoration should preserve the historic components of the buildings to the greatest extent possible including the exterior masonry, the original windows as well as the lobby and monumental stair at 30 Trinity Street. Consideration should be given to reconstruction of several of the building elements to replicate the original architectural features. These would include the copper dome and atrium at 20 Trinity Street; the west entrances at 20 and 30 Trinity Street; the west lobby and monumental stair at 20 Trinity Street; and the ornamental ceilings at both 20 and 30 Trinity Street.

Prioritized proposed restoration work with an Opinion of Probable Construction Costs are indicated below. Probable costs include overhead and profit as well as general conditions. Probable costs do not include professional fees or Owner administration costs. Escalation costs are assumed to be 4.5% per year.

Prioritization is based on conditions observed during the fall of 2018. They are subject to change based upon changing conditions affecting the buildings and the building systems.

### Critical Items: Repairs recommended prior to 2022

These items could potentially present a life safety issue and should be completed in the very near future.

| **20 Trinity Street** | | | |
|---|---|---|---|
| **Category** | **Description** | **2019 Cost** | **2022 Cost** |
| Life Safety | 20 Trinity: Upgrade the fire protection alarm system to replace dated systems and comply with the 2018 Connecticut State Building Code | 217,000 | 235,000 |
| Life Safety | Replace all emergency lighting and exit signage | 32,000 | 34,500 |
| Life Safety | Replace call-for-aid stations in toilet rooms | 10,000 | 11,000 |
| **18 Trinity Street** | | | |
| **Category** | **Description** | **2019 Cost** | **2022 Cost** |
| Life Safety | 18 Trinity: Upgrade the fire protection alarm system to replace dated systems and comply with the 2018 Connecticut State Building Code | 377,000 | 408,000 |
| Life Safety | Replace all emergency lighting and exit signage | 40,000 | 43,000 |
| Life Safety | Replace call-for-aid stations in toilet rooms | 20,000 | 21,500 |
| **30 Trinity Street** | | | |
| **Category** | **Description** | **2019 Cost** | **2022 Cost** |
| Exterior Envelope | Conduct detailed inspection of each marble unit at the cornice below the roof parapet. Repair marble based on the findings of this inspection. | 408,000 | 442,000 |
| Exterior Envelope | 30 Trinity: Infill light well at the south side of 30 Trinity Street. Below grade masonry openings should be filled and all below grade surfaces are to be waterproofed. | 158,000 | 180,000 |
| Infrastructure | 30 Trinity: Replacement of deteriorated sections of the roof deck at the vault below the parking lot at the northeast corner of the building. | 40,000 | 41,500 |
| Life Safety | 30 Trinity: Upgrade the fire protection alarm system to replace dated systems and comply with the 2018 Connecticut State Building Code | 382,000 | 436,000 |
| Life Safety | Replace all emergency lighting and exit signage | 40,000 | 41,500 |
| Life Safety | Replace call-for-aid stations in toilet rooms | 18,000 | 19,500 |
| **TOTAL CRITICAL ITEMS** | | **$1,742,000** | **$1,913,500** |

## Serious Items: Repairs Recommended prior to 2024

These items if not addressed will result in accelerated deterioration of the building.

| **20 Trinity Street** | | | |
|---|---|---|---|
| **Category** | **Description** | **2019 Cost** | **2024 Cost** |
| Exterior Envelope | Repair/reconstruction of site walls | 199,000 | 248,000 |
| Exterior Envelope | Masonry repairs including repointing at stone and brick mortar joints | 249,000 | 310,000 |
| Exterior Envelope | Replacement and thermal upgrade of the low slope roofing system | 300,000 | 374,000 |
| Exterior Envelope | Restoration of the original wood and galvanized steel windows at the north and south elevations including adding storm windows | 773,000 | 963,000 |
| Exterior Envelope | Masonry façade cleaning in coordination with exterior repairs | 55,000 | 69,000 |
| **18 Trinity Street** | | | |
| **Category** | **Description** | **2019 Cost** | **2024 Cost** |
| Exterior Envelope | Repair/reconstruction of site walls and loading dock | 168,000 | 209,000 |
| Exterior Envelope | Masonry façade cleaning | 91,000 | 113,000 |
| Exterior Envelope | Masonry repairs including repointing at stone and brick mortar joints | 818,000 | 1,019,000 |
| Exterior Envelope | Replacement of deteriorated cast stone units including all coping stones at the roof parapet | 25,000 | 31,000 |
| Exterior Envelope | Replacement and thermal upgrade of the low slope roofing systems | 316,000 | 394,000 |
| Exterior Envelope | Restoration of the original galvanized steel windows including adding storm windows | 884,000 | 1,101,000 |
| **TOTAL SERIOUS ITEMS** | | **$3,878,000** | **$4,831,000** |

### Tenant Fit Out: Repair Timing at the Discretion of the State of Connecticut

These items would upgrade the exterior and interior spaces to provide a more functional and pleasant work environment as well as a more inviting atmosphere to the public using the services provided by the agencies housed in the buildings.

| **20 Trinity Street** | | | |
|---|---|---|---|
| **Category** | **Description** | **2019 Cost** | **2029 Cost** |
| Tenant Fit Out | Revise interior layout to meet the programing requirements of the building occupants | 3,538,000 | 5,484,000 |
| Accessibility | Upgrade the toilet rooms, including meeting current accessibility requirements | 120,000 | 186,000 |
| Mechanical/Electrical/ Plumbing | Upgrade the existing mechanical, electrical and plumbing systems | 5,456,000 | 8,473,000 |
| Life Safety | Add automatic sprinkler system | 1,303,000 | 2,024,000 |
| **18 Trinity Street** | | | |
| **Category** | **Description** | **2019 Cost** | **2029 Cost** |
| Tenant Fit Out | Revise interior layout to meet the programing requirements of the building occupants | 5,879,000 | 9,112,000 |
| Accessibility | Upgrade the toilet rooms, including meeting current accessibility requirements | 113,000 | 176,000 |
| Mechanical/Electrical/ Plumbing | Upgrade the existing mechanical, electrical and plumbing systems | 9,302,000 | 14,446,000 |
| Life Safety | Add automatic sprinkler system | 2,265,000 | 3,518,000 |
| **30 Trinity Street** | | | |
| **Category** | **Description** | **2019 Cost** | **2029 Cost** |
| Tenant Fit Out | Revise interior layout to meet the programing requirements of the building occupants | 6,972,000 | 10,828,000 |
| Accessibility | Upgrade the toilet rooms, including meeting current accessibility requirements | 216,000 | 335,000 |
| Mechanical/Electrical/ Plumbing | Upgrade the existing mechanical, electrical and plumbing systems | 10,105,000 | 15,693,000 |
| Life Safety | Add automatic sprinkler system | 2,454,000 | 3,811,000 |
| **TOTAL TENANT FIT OUT** | | **$47,723,000** | **$74,086,000** |

## EXTERIOR REPAIRS in Coordination with Tennent Fit Out at 30 Trinity Street

| **30 Trinity Street** | | | |
|---|---|---|---|
| **Category** | **Description** | **2019 Cost** | **2029 Cost** |
| Exterior Envelope | Repair/reconstruction of site walls and loading dock | 316,000 | 491,000 |
| Exterior Envelope | Masonry façade cleaning | 47,000 | 73,000 |
| Exterior Envelope | Masonry repairs including repointing at stone mortar joints | 251,000 | 390,000 |
| Exterior Envelope | Repairs at deteriorated marble below parapet cornice | 65,000 | 101,000 |
| Exterior Envelope | Restoration of entrance stairs, ramp and replication of entrance doors at the west elevation to match original construction to the greatest possible while maintaining accessibility | 35,000 | 54,000 |
| Exterior Envelope | Restoration of the galvanized steel windows including adding storm windows | 840,000 | 1,305,000 |
| **TOTAL EXTERIOR REPAIRS AT 30 TRINITY STREET** | | **$1,554,000** | **$2,414,000** |

## Parking Lot Redesign: Redesign to be Coordinated with Tenant Fit Out

| **Category** | **Description** | **2019 Cost** | **2029 Cost** |
|---|---|---|---|
| Site Improvement | Regrade parking lot; replace the existing retaining walls with new retaining walls; replace the bituminous asphalt surface, improve access to and circulation in the lot, improve lighting, add planting islands and restore the original iron fencing at the north side of the lot (Elm Street). These upgrades most likely will result in a decrease in the number of parking spaces. | 301,000 | 467,000 |
| Accessibility | Accessible routes are present to each building. However the route from the parking lot to the interior of 18/20 Trinity Street is relatively long. It is recommended a new access ramp be provided at the north entrance to 18 Trinity Street. | 95,000 | 148,000 |
| Mechanical, Electrical, Plumbing | Replace main water line and fire service line to 18/20 Trinity Street from Street. This work would take place in coordination with the parking lot upgrade. | 95,000 | 148,000 |
| **TOTAL PARKING LOT REDESIGN** | | **$491,000** | **$763,000** |

### Historic Restoration Interior: Restoration to be Coordinated with Tenant Fit Out

These items would replicate original details inside the buildings. Coordination with tenant fit out will:

- Prevent duplication of access and mobilization costs
- Prevent modifications to systems and finishes provided during the tenant fit out
- Prevent disruption to building occupants

| **20 Trinity Street** | | | |
|---|---|---|---|
| **Category** | **Description** | **2019 Cost** | **2029 Cost** |
| Historic Restoration | Restoration of the west entrance lobby and monumental stair to replicate the original conditions | 293,000 | 455,000 |
| Historic Restoration | Recapture original ceiling heights and ornamentation at perimeter spaces at each floor level | 73,000 | 113,000 |
| **30 Trinity Street** | | | |
| **Category** | **Description** | **2019 Cost** | **2029 Cost** |
| Historic Restoration | Recapture original ceiling heights and ornamentation at perimeter spaces at each floor level | 73,000 | 113,000 |
| **TOTAL INTERIOR HISTORIC RESTORATION** | | **$732,000** | **$1,136,000** |

### Historic Restoration Exterior: Repair Timing at the Discretion of the State of Connecticut

These items would replicate original details at the buildings' exteriors. These items are not critical to building occupancy.

| **20 Trinity Street** | | | |
|---|---|---|---|
| **Category** | **Description** | **2019 Cost** | **2029 Cost** |
| Historic Restoration | Restoration of entrance stairs, replication of exterior light fixtures and replication of entrance doors at the west elevation to match original construction. | 212,000 | 329,000 |
| Historic Restoration | Restoration of windows and iron railings at limestone section of 20 Trinity to replicate the original construction | 439,000 | 682,000 |
| Historic Restoration | Replication of the original copper dome at 20 Trinity Street. | 4,487,000 | 6,968,000 |
| **TOTAL EXTERIOR HISTORIC RESTORATION** | | **$5,138,000** | **$7,979,000** |

### Optional Considerations: Repair Timing at the Discretion of the State of Connecticut

| Category | Description | 2019 Cost | 2022 Cost |
|---|---|---|---|
| New Construction | Demolish 18 Trinity Street and construct a glass curtain wall structure of equivalent size connected to 20 Trinity Street. | 40,600,000 | 63,051,800 |
| New Construction | Demolish 18 Trinity Street and the brick façade section of 20 Trinity Street and construct a brick veneer building connected to the remaining stone façade section of 20 Trinity Street that replicates the existing buildings. | 54,000,000 | 83,862,000 |

## INTRODUCTION

As part of the Wiss, Janney, Elstner Associates, Inc. (WJE) On-Call Roofing Consultant Contract with the State of Connecticut Department of Administrative Services (DAS), WJE has conducted a pre-design study for the renovation of the buildings located at 18/20 Trinity Street and 30 Trinity Street in Hartford, CT.

The study was conducted from August to November 2018 by the following team of consultants:

- Wiss, Janney Elstner Associates, Inc. - Site, Exterior Envelope, Superstructure, Fire Protection and Code Assessment
- CPG Architects - Interior Architecture and Finishes
- HP Engineering - Mechanical, Electrical and Plumbing Assessment
- Slocum Construction Consulting, Inc. - Cost Estimating
- GL Capasso, Inc. - Contractor Assistance

The investigation for the condition assessment included:

- A review of the original construction drawings and subsequent alterations provided by DAS to WJE.
- An overall inspection of the exterior façade and interior spaces.
- A close up inspection of the east facades and portions of the north facade at 18 Trinity Street and the south facade at 30 Trinity Street.
- Inspection of concealed as-built conditions at the roofs of 18 and 20 Trinity Street as well as at crack locations in the brick walls at the corners of the walls at 18 Trinity Street.

## BUILDING DISCRIPTIONS

The building at 20 Trinity Street was originally constructed in 1905 as offices for The Orient Insurance Company. It was designed by the firm of Davis & Brooks in the grand Beaux-Arts style and originally featured a large, copper clad dome, which is no longer present. It is four stories and 45 feet high with a footprint of approximately 80 feet north to south and 100 feet east to west. The existing drawings indicate the structure of the building is a combination of masonry bearing wall construction and steel beams and interior columns supporting a terra cotta flat arch floor system. The steel is encased in concrete or masonry for fireproofing. A gravel surfaced, built up roof is adhered to a flat arch terra cotta roof deck. The west facade as well as approximately 24 feet of the north and south elevations are clad in limestone with a granite

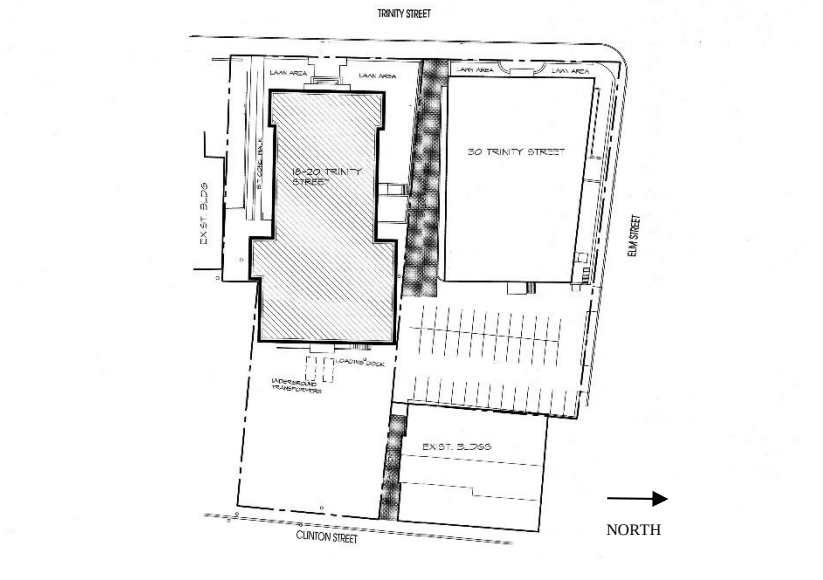
base. The remainder of the north and south elevations are faced with bricks sitting above a granite base. The east elevation of the 20 Trinity Street connects to 18 Trinity Street.

The building at 18 Trinity Street is an addition to 20 Trinity Street constructed in 1922 and provides a background to the original building. This addition was designed by W.F. Brooks and connects to the east side of 20 Trinity Street. It is 6 stories and 80 feet high with a footprint of approximately 100 feet north to south and 75 feet east to west. The existing drawings indicate the structure of the building is of steel framed construction with 5 inch thick concrete poured onto structural clay tile floor planks. The steel is encased in concrete or masonry for fireproofing. The exterior walls are comprised of three wythes of solid brick with 4 inch thick terra cotta blocks at their interior sides.

The building at 30 Trinity Street designed in the Georgian Revival Style by Morris & O'Conner Architects is located to the north of 18/20 Trinity Street. This structure originally was the office for Phoenix Insurance Company and was constructed in 1917. It is four stories and 60 feet high. The building footprint is approximately 105 feet north to south and 147 feet east to west. The existing drawings indicate the structure of the building is of steel framed construction supporting floor decks which are proprietary concrete pan systems. The steel is encased in concrete for fireproofing. The exterior walls are constructed of marble panels in front of 12 Inch thick solid brick backup at the ground floor. Above the ground floor level the walls are 12 inch thick solid brick construction with marble window surrounds, band stones, cornice and parapet.

*20 Trinity Street with 18 Trinity Street behind.*

*30 Trinity Street*




*Existing Site Plan*

## Historical Significance

The insurance industry played a leading role in the development of Hartford, Connecticut in the late 19th and 20th Centuries and these buildings are contributing factors in that development. They are part of the Elm Street Historic District on the National Register of Historic Places with several noteworthy architectural features. With the exception of the original dome at 20 Trinity and windows at the limestone

portion of the facade at 20 Trinity Street most of the exterior architectural features remain. The interiors of the buildings have been thoroughly renovated and with the exception of the west lobby and monumental stair at 30 Trinity Street much of the interior detailing has been lost.

## EXTERIOR ENVELOPE OBSERVATIONS

### Masonry & Concrete Observations at 20 Trinity Street

The west façade and portions of the north and south facades are clad in limestone above a granite base. Polished marble, which based on historic photographs are not original to the building, surrounds the west entrance door and is present at spandrel panels in the multi-floor window units *(Figure 1)*. Face brick above a granite base covers the façade at the remainder of the north and south elevations. Limestone bands, lintels, window sills, coping stones and keystones are set into or on the bricks *(Figure 2)*. Observations at the façade include:

- Environmental and organic soiling on the masonry *(Figures 3 and 6)*.
- A limited number of small spalls at the limestone units *(Figures 3 and 4)*.
- One larger spall at a window head at the north elevation *(Figure 4)*.
- Limestone erosion at the column capitals at the north side of the west entrance *(Figure 5)*.
- A crack in the limestone at the frieze at the northwest corner *(Figure 6)*.
- A crack emanating from a door stop at the granite sill at the west entrance. *(Figure 7)*.
- Displacement of the granite and deterioration of mortar in stone joints at the stair leading to the west entrance *(Figure 8)*.
- Cracks and surface loss in the concrete landing at the stair leading to the west entrance *(Figure 9)*.
- Handrails are missing at the west entrance stair *(Figure 9)*.
- Ferrous anchors remain where signage was removed at the column bases flanking the front entrance *(Figure 8)*.
- Ferrous anchors remain, presumed to be from removed light fixtures at pedestals located at each side of the west entrance stair *(Figure 10)*.
- Mortar separation at its interface with stone units and missing mortar at stone joints *(Figure 11)*.
- Spalls in the granite and mortar deterioration at the retaining wall adjacent to the sidewalk *(Figure 12)*.
- Outward leaning of the concrete retaining wall adjacent to the brick drive at the north side of the building *(Figure 13)*.
- Concrete deterioration at the stair and retaining wall at the north side of the building *(Figure 14)*.
- Lack of handrails at the exterior stair at the north elevation *(Figure 14)*.
- Peeling paint and surface corrosion at steel lintels above the upper level windows set in the limestone openings *(Figure 15)*.
- Spalls at limestone lintels where iron security grilles are set into the stone at the south elevation *(Figure 16)*.
- Peeling paint and corrosion on the surfaces of the steel at window security grilles. *(Figure 17)*.
- Mortar deterioration at approximately 30% of the brick joints *(Figure 18)*.
- Mortar deterioration at all joints between coping stones *(Figure 19)*.
- Spalls at the top of concrete foundation at grade level *(Figure 20)*.

### Window and Door Observations at 20 Trinity Street

Steel framed windows are set into the limestone openings at the first, second and third floor levels of the façade. These windows are outswing casement, inswing pivot or fixed type units. Marble spandrel panels are set into the window frames at the tall windows that span between floor levels *(Figure 21)*. At the ground floor level wood, pivot windows are set into openings in the granite base. These windows are clad with ornamental cast iron. At the brick walls wood, double hung units are set in the openings at the ground, first and second floor levels *(Figure 22)*. At the third floor windows there are a combination of fixed, casement and pivot units which are fabricated of galvanized steel *(Figure 23)*. Wood doors are present at the front entrance and the entrance at the north elevation. Observations at the windows and doors include:

- Corrosion on the surfaces of the iron mullion cladding *(Figure 24).*
- Peeling paint finish from the wood surfaces at the windows *(Figure 22).*
- Damage or decay at the stops in the double hung, wood window units.
- Wood decay at approximately 15% of the lower sashes in the double hung windows *(Figure 22).*
- Peeling paint finish from the surfaces of the steel windows *(Figure 23)*.
- Cracks in a small percentage of the glass window panes *(Figure 25)*.
- The wood at the doors generally appear to be solid and decay free *(Figures 26 and 27).*
- Faded or peeling paint finish at the wood doors *(Figures 26 and 27).*
- Rust on the door hinges *(Figures 26 and 27).*
- Brittle, cracked and/or poorly adhered sealant to substrates in joints between window/door frames and masonry.

### Roof Observations at 20 Trinity Street

The roof at 20 Trinity Street is comprised of four plies of felts adhered with coal tar pitch and surfaced with gravel. The felts are adhered to a 1/2 inch thick perlite cover board that is adhered to a flat arch terra cotta roof deck. *(Figure 28).*WJE does not know the age of the roof. An elevator penthouse rises above the northwest corner of the roof, a stair bulkhead is near the southwest corner and a mechanical penthouse rises above the center of the roof *(Figure 29)*. The property management company reports leaking at the mechanical penthouse roof. Observations at the roof include:

- Roofing mastic repairs at the base flashing *(Figure 30)*.
- Copper panels at the inside faces of the roof parapet have an aluminized coating. This coating is peeling from the copper surfaces *(Figure 31)*.
- Sealant failure at coping joints *(Figure 31)*.
- Loose termination bars where the base flashing terminates on the tops of coping stones *(Figure 32)*.
- Organic growth on the roof surface *(Figure 33)*.
- Broken glass and corrosion of the steel frames at the mechanical penthouse windows *(Figure 34)*.
- Cracked solder joints at copper window sills at the mechanical penthouse *(Figure 34)*.
- Peeling paint at doors to the stair bulkhead and elevator penthouse *(Figure 35)*.
- Apparent water damage inside the stair bulkhead leading to the roof *(Figure 36)*.

### Masonry and Concrete Observations at 18 Trinity

The facade at 18 Trinity Street is clad with face brick that matches the brick at 20 Trinity Street. The exterior walls vary between 16 inches and 20 inches in width which includes 4 inch wide terra cotta blocks that make up the inner wythe of the wall assembly. The brick walls sit on a concrete base *(Figure 37)*. Cast stone bands, window sills, coping stones and ornamentation are set into or on the brick. Limestone surrounds the entrances at the northwest and southwest corners of the building *(Figure 38)*. Observations at the façade include:

- Environmental and organic soiling as well as rust staining on the masonry *(Figures 38 and 41).*
- Long vertical cracks at the building's corners *(Figure 40).*
- Steel straps at approximately 12inches on center at the corner crack locations. Rust is present on the straps and on the fasteners that secure the straps to the masonry *(Figures 39, 40 and 41).* As built documents from a 2004 construction project indicate helical wall anchors were to have been installed at the corners. WJE did not find any evidence the helical anchors were installed.
- Strap repairs at the east roof parapet *(Figure 41).*
- Pack rust on the steel column flange at the southeast corner of the building at a probe location. Here masonry mortar is packed tightly against the steel *(Figure 42).*
- Steel spandrel beams set behind the face brick at the exterior walls. Concrete encases the steel spandrel beams in the brick walls. An exploratory opening made at the north elevation removed the concrete to show the web and bottom of the beam flange are covered with a bituminous coating. The top and edges of the flanges are painted. Mild surface rust is present at the painted steel *(Figure 43).*
- Cracks in the walls filled with elastomeric sealant. The sealant has failed either cohesively or adhesively at several of these crack repairs *(Figure 44).*
- Additional cracks in the bricks and mortar adjacent to and below the sealant repairs at several locations *(Figure 45).*
- Spalls, cracks and surface erosion at cast stone bands, window sills, and coping stones at the roof parapet (*Figures 46, 47, 48 and 49).*
- Spalls at face brick *(Figure 50).*
- Corrosion and deflection at steel lintels at window openings *(Figure 51).*
- Several steel lintels at window openings replaced with galvanized steel lintels *(Figure 52).* Existing documents indicate this occurred in 2004.
- Spalls at bricks where the corroded steel lintels bear on brick masonry *(Figure 53).*
- Mortar deterioration at approximately 30% of the brick joints, *(Figure 54).*
- Concrete deterioration and efflorescence at the stair and retaining wall at the northwest corner of the building *(Figure 55).*
- Concrete deterioration at the heads of basement windows at the north elevation *(Figure 56).*
- Concrete spalls and cracks at the loading dock *(Figure 57).*

## Window and Door Observations at 18 Trinity Street

Windows at 18 Trinity are primarily galvanized steel double hung units. A small number of galvanized steel casement and pivot units are also present. Observations at the windows and doors include:

- Peeling paint from the exterior window surfaces *(Figures 53 and 58).*
- Peeling paint from the interior window surfaces *(Figure 59).*
- Corroded sills at approximately three windows *(Figure 60).*
- Corrosion at steel louvers *(Figure 61).*
- An aluminum and glass door with a sidelight set into an aluminum frame at the north entrance *(Figure 38).* A similar door and sidelight is present at the south entrance.
- A sliding, aluminum and glass door set in an aluminum framed at the loading dock to the existing Print Room *(Figure 62).*
- Brittle, cracked and poorly adhered sealant to substrates in joints between window/door frames and masonry.

## Roof Observations at 18 Trinity Street

The roof at 18 Trinity Street is a single ply, EPDM membrane adhered to 3 inches of polyisocyanurate board insulation. This insulation is adhered to a concrete roof deck *(Figure 63)*. WJE does not know the age of the roof. A mechanical penthouse, elevator penthouses, stair bulkhead and a chimney rise above the surface of the roof. Observations at the roof include:

- A large quantity of patches on the roof membrane *(Figures 64 and 65)*.
- Blisters under several of the patches *(Figure 65)*.
- Insulation fasteners pushed up through the EPDM roof membrane *(Figure 66)*.
- EPDM membrane extending over the cast stone copings. The cast stone is delaminated under the membrane *(Figure 67)*.
- A cooling tower supported on steel dunnage. Corrosion is present on the surfaces of the steel dunnage *(Figure 68)*. It is reported by building management that this cooling tower is abandoned.
- Poorly adhered sealant in the vertical joint between the chimney and elevator penthouse as well as at the joints above counter flashings *(Figures 69 and 70)*.
- Surface rust on the steel stairs and hollow metal doors at the penthouses *(Figure 69)*.
- Surface rust on the steel lintels at the openings for doors to the penthouses and stair bulkhead *(Figure 70)*.
- Wood nailers exposed below the roof edge flashing at the penthouses and stair bulkhead *(Figures 64 and 70)*.
- An exploratory opening made at the field of the roof found materials below the membrane to be dry *(Figure (71)*.
- Another opening was made at the base flashing against the rising wall of a mechanical room. Here moisture was present under the membrane. A vapor barrier was also present below the polyisocyanurate insulation *(Figure 72)*.

## Basement Observations at 18 Trinity Street

One leak in the building was reported to and observed by WJE. This occurs into a vault that was originally used for coal storage at the southeast corner of the basement *(Figure 73)*. A parking lot is above the vault. The lot is surfaced with bituminous asphalt over brick pavers *(Figure 74)*. The original drawings indicate waterproofing is between the brick pavers and concrete roof of the vault. WJE does not know the condition of this waterproofing.

What appears to be a pump is located below an access panel in the driveway above the vault *(Figure 75)*.

An exterior stair leads down from the driveway to the vault. A copper clad door is at the bottom of this stair. The copper and steel lintel above the door are corroded *(Figure 76).*

## Masonry and Concrete Observations at 30 Trinity

The first floor level of the façade at 30 Trinity Street is clad with marble units backed with solid brick masonry. This wall assembly sit on a granite base. The façade at the second, third and fourth floor levels is clad with red face brick that is backed with two additional wythes of brick. Marble units are present at window surrounds, sills and heads; band stones; the roof parapet and the cornice at the roof parapet *(Figure 77)*. A granite retaining wall with and iron fence is located in front of the west elevation of the building. A limestone retaining wall with a limestone balustrade is located at the north side of the building lot. Existing drawings indicate these walls were repaired in 1963. Observations at the façade and retaining walls include:

- Environmental and organic soiling as well as rust stains on the masonry *(Figure 78).*

- Large spalls and cracks in the marble at the window openings where steel security bars are set into the stone joints *(Figure 79)*.
- Peeling paint finish and rust on the steel surfaces at the security grilles and at the ornamental railings *(Figure 80)*.
- Spalls and cracks at the cornice above the first floor level *(Figure 81)*.
- The surface of a marble unit at the west elevation is eroded *(Figure 82)*.
- Spalls and cracks at the vertical surfaces of the roof parapet and the cornice below the parapet. *(Figures 83 and 84)*.
- Long cracks along the upward facing surface at the cornice below the parapet *(Figures 85 and 86)*.
- Redefinition of the marble edges at cornice (*Figure 87*).
- Apparently sound mortar in brick joints *(Figure 88)*.
- Cracked or loose mortar at joints between marble units at the cornices and band stones as well as at some joints between the marble panels at the first floor level. *(Figures 89 and 90)*.
- Poorly adhered sealant to the marble at joints between stones at the roof parapet *(Figure 91)*.
- Stone displacement, spalls, mortar deterioration, rust staining, joint sealant deterioration as well as environmental and organic soiling on retaining walls *(Figures 92, 93 and 94)*.
- Peeling paint finishes and surface rust on the on the iron railings at the retaining walls *(Figure 95)*.

### Window and Doors Observations at 30 Trinity

The windows at 30 Trinity are double hung units fabricated of galvanized steel *(Figures 96 and 97)*. This is consistent with the original construction drawings. The original doors at the east and west entrances have been replaced with aluminum framed, aluminum and glass doors *(Figures 98 and 99)*. Observations at the windows and doors include:

- Faded and or peeling paint finishes at the interior and exterior sides of the windows *(Figures 96 and 97)*.
- Cracks in glass at a small percentage of the window panes *(Figure 96)*.
- Brittle, cracked and poorly adhered sealant to substrates in joints between window/door frames and masonry.

### Roof Observations at 30 Trinity

Existing drawings of a 2011 roofing replacement project at 30 Trinity Street indicate the low slope roofing system consists of a gravel surfaced, two ply modified bitumen, built up membrane over a gypsum cover board and 3.3 inches of polyisocyanurate board insulation. Drawings indicate an alternate bid was requested to increase the thickness of the polyisocyanurate to 5 inches. WJE does not have information indicating if the alternate was accepted. The insulation is shown adhered to a vapor barrier which is adhered to the concrete roof deck. The steep sloped roofs above a mechanical penthouse and top of a vent shaft are covered with asphalt shingles. Drawings indicate these are 50 year, Class A architectural shingles. The drawings show shingles are nailed through an ice and water barrier membrane into a 2-1/2 inch thick wood plank deck *(Figure 100)*.

Building management requested that no exploratory openings be made at this roof. This is because the roofing systems have been in place only seven years and there are no apparent leaks into the building.

The following observations were made at the 30 Trinity Street Roof:

- The inside face of the roof parapet as well as the walls of the mechanical penthouse and top of the vent shaft are covered with aluminum wall panels. Drawings indicate the panels are fastened to

galvanized steel furring channels that are fastened to the masonry or wood substrates *(Figures 101 and 103)*.

- Roof drains are present at each of the four corners of the roof. Drawings indicate the roof deck slopes towards these corners *(Figure 103)*.
- Emergency overflow drains are located adjacent to the primary drains. These are piped to scuppers through the walls of the building *(Figure 103)*.
- Mastic applied to the seams of the membrane base flashing is dry and cracked *(Figure 102)*.
- An elevator machine room with walls constructed of brick with concrete masonry unit (CMU) backup above the roof *(Figure 104)*.
- A steel stair and a hollow metal door provide access to the machine room. The paint finish on the metals is faded and small amounts of surface rust are visible *(Figure 104)*.

### Basement Observations at 30Trinity Street

There were no leaks reported into the basement at 30 Trinity Street. There is a vault under the parking lot at the northeast corner of the building. Here it appears a composite deck has replaced the original roof of the vault. A section of the steel is corroded at the newer deck *(Figure 105)*.

## EXTERIOR ENVELOPE DISCUSSION AND RECOMMENDATIONS

The effects of water on the masonry and concrete at the building's exteriors since their construction in the early 20th Century is the primary cause of the deterioration observed. Freeze/thaw cycles are one of the moisture related mechanisms for deterioration. For freeze/thaw deterioration to occur moisture must be present either through absorption into the body of the masonry or entering through previously formed cracks or spalls; and the temperature must drop below and then rise above water's freezing point. As water changes to ice its volume increases by approximately 9 percent. Therefore when water within the pores and cracks of stone, mortar and concrete freezes and expands, it exerts pressure on these materials, which can crack or spall the masonry.

Water absorbed or infiltrating into the masonry or concrete can also contribute to the corrosion of steel embedded in these materials. The volume of corrosion is greater than that of steel. The more corrosion occurring the greater this volume increase. Similar to freeze/thaw deterioration this increase in volume exerts pressure on the materials. When the masonry or concrete can no longer resist the stress from this pressure they can crack or spall.

The third water related mechanism of deterioration is acid rain. This particularly effects the limestone and marble. These stones contain calcium carbonate that dissolves as it reacts with the sulfurous, sulfuric and nitric acids in the rain or in polluted air. This dissolution or alteration can be seen as roughened surfaces, flaking material and loss of carved details.

### Concrete

The concrete at the retaining walls and stairs adjacent to the north side of 18 and 20 Trinity Street is severely deteriorated from over 100 years exposure to the weather and resulting freeze thaw cycles. This condition is worsened by exposure to deicing salts used at the walking and driving surfaces. Certain salts can cause scaling deterioration of the concrete and accelerate the corrosion of steel reinforcing within the concrete.

Corrosion of the steel channels at the tops of the basement window openings at 18 Trinity Street is the principle cause of the concrete deterioration present. Freeze/thaw cycling is a contributing factor of the

concrete deterioration observed above grade level at 20 Trinity Street. The deterioration of the concrete could also be caused by problems with the original concrete mix. This could be confirmed by chemical and petrographic analysis of the concrete which is beyond the scope of this report.

The cracks in the concrete at the loading dock at 18 Trinity Street are located at points where rail posts are set into the concrete. These rail posts are corroded which as described above contributes to the cracking.

The concrete spalls at the loading docks at 30 Trinity Street begin at the cold joints between the horizontal walking surfaces and the vertical concrete walls. Water entering into the concrete through these joints contributes to the corrosion of the steel reinforcing in the concrete. This water is also is susceptible to freeze/thaw cycling causing spalls in the concrete.

Recommended restoration work at the concrete elements at 18/20 Trinity Street should include:

- Replace the concrete retaining walls and stairs adjacent to the north side of the lot at 18 and 20 Trinity Street.
- Replace the cracked and deteriorated sections of the concrete walk at the west entrance to 20 Trinity Street.
- Remove the deteriorated concrete at the basement windows at 18 Trinity Street. Completely expose the steel channels at the tops of the window openings. Clean the steel and reinforce the steel if necessary. Prepare and paint the steel with a multi-layer, rust inhibitive coating. Form and pour a new section of concrete tied into the remaining sound concrete at the basement wall.
- Temporarily remove the guardrails and hand rails at the 18 Trinity Street loading dock. Remove all remnants of corroded steel from the concrete. If necessary replace the bottom sections of the rail posts. Clean and paint the railings and reset into the concrete. If less costly, the existing railings could be replaced with new railings.
- Inject the cracks in the concrete with a chemical grout repair product.
- Apply a traffic coating to the concrete to slow future water infiltration and corrosion as well as provide at uniform appearance following the other repair work.

Recommended restoration work at the concrete elements at 30 Trinity Street should include:

- At the 30 Trinity Street loading dock all spalls should be repaired with a trowel applied concrete repair material. The cold joints should be routed out and filled with an elastomeric sealant and backer rod.
- Apply a traffic coating to the concrete to slow future water infiltration and corrosion as well as provide at uniform appearance following the other repair work.

### Brick

In general the bricks at 20 and 30 Trinity Street appear to be in sound condition. At 18 Trinity Street the cracking and spalling of the bricks observed can be attributed to the corrosion of the steel lintels at window heads and the steel columns at the corners of the building. Other spalling at brick faces, such as at the roof parapet, can be attributed to freeze/thaw cycling from water within the body of the brick.

Recommended restoration of the brick masonry at 18 Trinity Street should include:

- Replace the remaining mild steel lintels at the masonry openings with new galvanized steel lintels. Install membrane flashing with end dams and stainless steel drip edges above the new lintels. Provide weep vents in the reconstructed brick work above the lintels.

- Remove the brick masonry at the building's corners to completely expose the steel columns. Clean all corrosion from the columns. Reinforce the columns with steel plates if necessary at areas with severe steel section loss. Clean and paint the steel with a multi-layer, rust inhibitive coating. Wrap the columns with waterproofing membrane to provide additional corrosion protection. Reconstruct the corners with the new brick tied to the steel columns.
- Replace bricks where spalling is greater than 1/3 the surface area of the face.

No restoration work of the bricks at 20 and 30 Trinity Street is required at this time.

### Limestone

Limestone is a sedimentary rock formed in layers called bedding planes. It is readily available, easy to cut, is typically durable and has been used for centuries as a building material.

The limestone at 20 Trinity Street is generally free of deterioration. Some small spalls are present adjacent to deteriorated mortar joints where exposure to moisture is greater. This moisture can find its way into the joints between the stone's bedding planes where it is susceptible to freeze/thaw stresses that can spall the stone. Moisture is also contributing to the deterioration of the stone at the column capitals at the west entrance to the building. Acid from bird droppings or acid rain on the tops of the capitals can also be contributing to the deterioration observed. The larger spalls at the lintels above the openings at the basement level occur where steel security grilles set into the stone are corroded. The crack in the limestone at the frieze at the northwest corner of 20 Trinity Street could be caused by stress from corrosion of the anchors tying the stone to the back-up masonry. This location was not accessible for close up inspection during the survey to confirm the anchors are corroded.

Recommended restoration work at the limestone units should include:

- The deterioration at the column capitals at the west entrance to the building should be repaired with cementitious patching mortar secured in place with stainless steel dowels.
- At the cracked window head stone at the north elevation the damaged section of stone should be carefully removed to expose the section of the steel window mullion set into the stone. This steel should be cleaned and painted and the stone then repaired with a dutchmen piece secured with stainless steel dowels into sound stone. If it is decided that the window will be replaced to match the original construction, then the stones repairs can be made following in coordination with the window replacement.
- At the cracked stone at the southwest corner the building the cracked portion of the stone should be carefully removed and the backup materials and anchors inspected. If the steel anchors behind the stone are corroded, they should be removed and replaced with stainless steel anchors. The removed portion of the stone should be replaced with a dutchmen piece secured with stainless steel dowels or anchors to sound masonry.
- The small spalls at the vertical wall surfaces should remain as is.
- After all other work is complete a clear penetrating water repellant should be applied to all limestone. This will reduce the adherence of dirt on the stone and reduce the moisture absorption into the stone.

### Granite

The displacement of the granite panels at the site retaining walls is caused by freeze thaw stress from water entering through failed mortar in the upward facing coping joints. Spalls in the granite are possibly from impact damage.

Recommended restoration work at the granite should include:

- Resetting of all displaced panels.
- Temporarily remove the coping stones and install through wall flashing at the tops of the walls and reset the coping stones. The butt joints in the coping stone should be filled with sealant and backer rods. The bed joints at the coping stones should be set in mortar with surfaces tooled to shed water.
- It is not necessary to repair the spalls to maintain the granite units as long as they do not contribute to water infiltration into the wall assembly.

### Marble

Marble is formed by the metamorphism of limestone. As such it is a carbonate material that is susceptible to weathering from acid rain. At 30 Trinity rain water runs off the upward facing surface of the roof parapet cornice and over the face of the cornice. This runoff contributes to the partial dissolving of the surface and redefinition and erosion of the edges of the cornice.

The cracks and spalls present in the marble at band stones and cornices occur when water is absorbed into the stone where it is susceptible to freeze/thaw stresses that can crack and spall the stone. The large spalls at the window openings occur when steel security grilles set into the stone are corroded.

Recommended restoration work at the marble units should include:

- Spalls at window openings where security grilles are embedded in the masonry should be repaired with dutchmen. The anchoring at the security grilles should be modified to secure the steel with new steel angles welded to the grilles and anchored to the stone with stainless steel threaded rods set in adhesive.
- Spalls at band stones should be repaired with dutchmen.
- Cracks at the upward facing surface of the cornice below the parapet where the cornice sits on masonry should be routed out and repaired with patching mortar.
- Cracks nearer the outside edge of the cornice where it is cantilevered should be repaired with dutchmen.
- Following the repairs indicated above, the upward facing surface of the cornice should be covered with a stainless steel or lead coated copper sheet metal cap. The cap should extend down the face of the cornice and have a drip edge.
- The cracked stones at the face of the cornice should be repaired with dutchmen.
- The redefined surface of the marble may remain as is.
- Following all other repair work a clear, penetrating water repellant should be applied to the marble surfaces to minimize water intrusion through the outer surface of the marble and slow the soiling on the surface.

### Cast Stone

Cast stone masonry is a form of pre-cast concrete that attempts to replicate the texture, appearance and workability of natural stone. It is typically used as a cost-effective alternative to natural stone. The problems observed at the cast stone at 18 Trinity Street are not uncommon for this material after almost 100 years of service.

The most serious deterioration observed is the erosion of the coping stones at the roof parapet. Cast stone units fabricated using poor quality or improperly stored cement, impure water, or set accelerators can cause cement matrix to break down over time. Improper mixing and compaction can also result in a porous

concrete that is susceptible to frost damage and scaling. Additionally, the EPDM roofing membrane that covers the copings can trap or hold moisture at the cast stone. This increases deterioration from freeze-thaw cycles. Because all the coping units were likely fabricated at the same time with the same cement mix, those coping units that now appear sound have a high chance of deteriorating in the future.

Cracking at the cast stone is another problem at the building. The type of cracking present is typically caused when the cast stone is rigidly tied to the backup masonry structure with no allowance for volume change caused by shrinkage or thermal movement.

The following work is recommended to restore the cast stone:

- Due to the extensive damage present and potential future damage it is recommended that all coping stones at the parapet be replaced with new cast stone units. The copings should be set on sheet metal flashing over through wall membrane flashing.
- Cracks in the cast stone sills should be routed out and repaired with joint sealant to accommodate future movement.
- Spalls in cast stone units should be repaired with patching mortar.
- All joints between the cast stone units be grinded back and sealant and backer rods installed to better resist water infiltration than the current mortar in the joints.
- After other repairs are completed, a clear, penetrating water repellant should be applied to minimize water intrusion through the outer surface of the cast stone and slow the soiling on the surface.

### Mortar

Mortar is the bonding agent that integrates stone and brick into a masonry assembly. Mortar must be strong, flexible, durable, and capable of keeping the masonry intact. It must also help to create a water-resistant barrier.

The mortar at the Trinity Street buildings is part of a masonry system that relies on a solid multi-wythe wall to create a barrier to prevent moisture, either absorbed through the mortar or entering through cracks in the masonry, from reaching the interior during a rain event. This moisture will slowly evaporate from the wall assembly during drier weather. If the moisture remains in the wall before it has the chance to evaporate it is susceptible to damage from freeze/thaw cycles. Once the deterioration begins it will accelerate as greater amounts of water enter the wall assembly.

The deterioration of mortar in the stone joints at 20 Trinity Street is the result of 113 years of freeze thaw cycles. This deterioration is greatest at joints at and adjacent to upward facing joints at horizontal surfaces where larger volumes of water pass through the joints.

The mortar in the brick joints at both 18 and 20 Trinity Street has varying levels of deterioration. This is primarily the result of water in the joints undergoing freeze/thaw cycles. In addition some of the mortar cracks at 18 Trinity can be the result of stresses caused by the corrosion of structural steel elements. The total mortar deterioration appears to be at approximately 30% of the wall surfaces at each of the buildings.

The mortar in the stone joints at the cornices and band stones at 30 Trinity Street has varying levels of deterioration. This deterioration is the result of water in the joints undergoing freeze/thaw cycles. The mortar in the brick joints at this building appear to be sound with little or no deterioration observed.

The following work is recommended at the mortar joints at 18/20 Trinity Street:

- At 20 Trinity Street all mortar joints at vertical stone surfaces (limestone and granite) should be repointed. Mortar at upward facing joints between the stones should be cut back and filled with elastomeric sealant and backer rods.
- At 18 and 20 Trinity Street all deteriorated mortar at brick joints should be repointed. At this time it appears approximately 30 percent of the wall areas require repointing. This percentage can be reevaluated following the façade cleaning work recommended in the following paragraphs.
- All joints between bricks and cast stone units at 18 Trinity Street should be cut back and filled with elastomeric sealant and backer rods.

The following work is recommended at the masonry joints at 18/20 Trinity Street:

- At 30 Trinity Street all mortar in joints at the marble cornices, band stones and parapets should be repointed.

### Soiling at the Facades

The soiling at the buildings' facades detracts from the appearance of the building. Additionally the organic materials hold moisture that slows the drying of the masonry which can contribute to masonry deterioration. Soiling can also hide deterioration that needs to be repaired before it leads to greater damage.

It is recommended all the facades be cleaned prior to repair work using the gentlest, least aggressive method that achieves the desired level of cleaning while limiting the risk of damage to the masonry, adjacent materials and the environment. Exact cleaning methods should be selected after trials to determine the best method. These can include water soaking, mild detergents and/or biocides for general cleaning. Stronger chemicals such as oxalic acid mixed with water can be used with care at localized areas to remove rust stains from brick surfaces. Acids should not be allowed to come in contact with limestone and marble as it will damage these materials.

### Wood Windows

In general the wood windows at 20 Trinity Street appear to be in basically sound condition and with maintenance work, some epoxy repairs and a limited amount of wood replacement will remain serviceable for many years.

Recommended work at the wood windows includes:

- Removing the windows in the elevator shaft at 20 Trinity Street and filling the openings with 12 inch thick solid brick masonry.
- Removal of wood sashes to an offsite restoration site where:
    - Paint at exterior and interior surfaces would be completely removed
    - Broken glass panes replaced
    - All glazing compound replaced
    - Sash locks cleaned
    - Moderately deteriorated wood sections treated with an epoxy consolidant and epoxy paste
    - Severely deteriorated wood sections replaced with new wood sections
    - Primer and two coats of high quality paint applied
- Replacement of all wood stops at the windows
- Complete removal of paint from frames, sills and casings
- Treating moderately deteriorated sections of frames, sills and casings with an epoxy consolidant and epoxy paste

- Replacement of severely deteriorated sills
- Repairing sash weights and chains/chords
- Application of primer and two coats of high quality acrylic paint
- Replacement of the joint sealant between the window frames and masonry

### Steel Windows

The steel windows at the buildings also appear to be in basically sound condition and with maintenance work will remain serviceable for many years.

Recommended work at the steel windows includes:

- Removal of sashes to an offsite restoration site where:
  - Paint and surface rust at exterior and interior surfaces would be completely removed
  - Broken glass pane replaced
  - All glazing compound replaced
  - Sash locks cleaned
  - Rust inhibiting primer compatible with galvanized steel would be applied followed by two coats of high quality epoxy coating or fluoropolymer coating
- Complete removal of paint from frames and sills
- Replacement of approximately three sill sections where corrosion is severe
- Application of rust inhibiting primer compatible with galvanized steel applied followed by two coats of high quality epoxy coating or fluoropolymer coating to the frames, sills and trim
- Cleaning and lubricating window hardware
- Replacement of the joint sealant between the window frames and masonry
- At 20 Trinity Street mechanical penthouse apply silicone strip sealant at failed joints at copper window sill. This would be completed as a short term solution until revisions or replacement of the penthouse are made as part of the tenant fit out.
- Replacement of the steel windows in the limestone openings to replicate the original windows should also be considered.

### Storm Windows

Currently there are no storm windows at the buildings. The addition of storm windows will improve the energy efficiency of the windows. These units could be installed at either the exterior or interior of the double hung windows. If the outswing casement and pivot windows are to remain operable the storm windows must be installed at the interior. If interior storm windows are used moisture can become trapped between the interior storm unit and prime unit. This can condense on the colder, outer prime window, potentially leading to deterioration. Providing vents in the prime windows will reduce the possibility of condensation.

### Doors

Most of the buildings' doors have been replaced at some time and remain functional. If desired these doors could be replaced with new doors that replicate the appearance of the original doors. This would be particularly appropriate at the street facing doors at 20 and 30 Trinity Street.

### Roofs

The roofs at both 18 and 20 Trinity Streets have exceeded their useful service lives and should be replaced. WJE recommends either a SBS modified bitumen membrane consisting of a base ply and granule surfaced cap sheet or a single ply, 90 mil EPDM membrane be used. Both of these membranes have been

documented to provide up to 30 years of effective service. PVC membranes also provide excellent water resistance but can be slippery when wet or frozen and therefore are not recommended for these particular roofs. The new membranes should be adhered to a cover board installed over 5 inches of roof insulation to achieve a minimum R value of 30.

During the roofing replacement the abandoned cooling tower and dunnage as well as any other inactive roof top equipment should be removed.

## PARKING LOT OBSERVATIONS

The employee parking lot is located directly east of 18/20 and 30 Trinity Street *(Figure 106)*. The lot currently has 69 total parking spaces with 3 of these spaces indicated as accessible. The lot is currently accessed from three points, at Elm Street which is north of the site and from two points at Clinton Street which is east of the site. It is WJE's understanding that one of the Clinton Street access points is located on private property serving residences that front Elm Street. A brick surfaced driveway connects to Trinity Street at the west side of the site to the parking lot *(Figure 107)*. DAS has stated that following structural repairs below the driveway they intend to use this driveway to access the parking lot. The following observations were made at the parking lot:

- The lot is surfaced with bituminous asphalt.
- Cracks and potholes in the asphalt are present *(Figure 108)*.
- The lot slopes behind 30 Trinity Street slopes downward from south to north. The lot behind 18 Trinity Street slopes downward from west to east *(Figures 106 and 108)*.
- A storm drain is located at the Elm Street access point near the northeast corner of the lot *(Figure 106)*.
- Concrete is deteriorated at retaining walls at the south border of the lot *(Figure 109)*.
- Concrete is deteriorated at the knee wall below an iron fence at the Elm Street (north) side of the lot. The paint finish is peeling and surface rust has formed on the iron. Impact damage is also visible at this fence *(Figure 110)*.

## PARKING LOT DISCUSSION AND RECOMENDATIONS

The parking lot behind the buildings is currently in need of upgrades to repair the existing cracks and pot holes, restore the concrete retaining walls and iron fencing and generally improve the appearance of the lot. Drainage at the parking lot appears to be adequate at this time.

The roofs of the vaults are currently concealed by the bituminous asphalt surface at the lot. It is probable that the waterproofing at these roofs have failed to some degree resulting in the leaks and corrosion of the steel decking observed.

The following work is recommended at the parking lot:

- Remove existing bituminous concrete surfacing
- Remove the existing brick paving below the asphalt
- Remove and replace the section of the vault roof at 30 Trinity Street where the metal deck is severely corroded.
- Replace the waterproofing at the roofs of all vaults. This waterproofing should extend down onto the walls for a minimum of three feet.

- Install a 3 to 4 inch base course. At this time the waterproofing at the below grade vaults should also be inspected.
- Apply a minimum 1.5 inch thick bituminous concrete surfacing layer
- Replace all concrete retaining and knee walls.
- Restore or replace the fencing at the knee walls.
- Provide planting islands with new light poles at the resurfaced lot.
- The addition of the planting islands will affect the drainage at the lot. The new pavement should be pitched to drain away from the islands. New catch basins may be required at access points to Clinton Street.

## STRUCTURAL OBSERVATIONS

### 18/20 Trinity General Description

The original structure at 20 Trinity Street was constructed in 1905 and consists of a ground floor, first floor, second floor, third floor and roof level. The ground floor structure is constructed with cast-in-place concrete walls and interior brick bearing walls which support the first floor framing in combination with interior steel columns which are built-up from steel angles. The floor framing typically consists of 8 inch to 10 inch steel beams and girders which support a 9 to 10 inch terra cotta flat arch floor system with 3/4 inch tie rods. The steel beams typically span in the east/west direction and the girders and floor span in the north/south direction. The second floor and third floor framing utilizes a similar structural system however due to the center of the structure being open for an original rooftop dome, the beams frame in the north/south direction and the girders and floor span in the east/west direction in the back half of the building. The original roof of the building had a large steel framed dome that has since been removed. Two lattice girders that are 5 feet deep span the length of the building in the north-south direction to create the opening. East-west lattice girders span 44 feet between them to box out the opening for the dome. The remainder of the roof framing consists of steel beams and girders that support a flat arch terra cotta roof deck. WJE has not been provided with the drawings that indicate the new roof framing that was installed when the existing dome was removed and the elevated flat roof was installed. It should be noted that the original drawings provide no information on the live and dead load capacity of the existing floor systems.

In 1920, 18 Trinity Street was constructed. This building connects to the east end of the building at 20 Trinity Street. The building consists of a sub-basement, basement, floors 1-5 and a roof. The building has cast-in-place concrete foundation that supports a structural steel frame with east-west framing girders and north-south spanning beams. The floor deck is a delegated pan system which is specified to be a combination of 8 inch or 6 inch concrete pans with a 2 inch concrete topping. Design loads are provided on the plans, the design live and dead loads, exclusive of the weight of the concrete construction range from 130-200 psf for floors 1-5 and 70 psf for the roof.

### Observations at 18/20 Trinity

- In general, the structure of the building is concealed by finishes, WJE did not observe any excessive deflections, or cracking of finishes that would be indicative of a structural issue.
- At the basement level, concrete encasement at various steel elements was observed to be spalled or delaminated.

### 30 Trinity General Description

The building at 30 Trinity was constructed 1916. It is four stories and 60 feet high. The building footprint is approximately 100 ft. north-south by 50 ft. east-west. The existing drawings indicate the structure of the

building consists of a steel frame composed of beams, girders and columns. The beams typically range from 10 in. to 12 in. deep and the girders range from 15 in to 24 in. deep. The documents indicate that the floors consist of a concrete slab in which the top flange of the steel beam is within the floor slab which would likely make the floor system a draped mesh slab. No details of the floor slab are provided in the documents. The columns are typically built up from a web plate ranging from 8 in. to 10 in. with four perimeter 4 inch x 4 inch angles. A center atrium was originally present at the 2nd and 3rd floor levels. The drawings seem to provide some guidance as to the live load of the floors however, the reproductions make the drawings un-readable.

In 1962 a renovation of the building was undertaken. As part of this renovation, the 2nd and 3rd floor atrium spaces were infilled. The infill design allowed for a live load of 50 psf in the office areas and 100 psf at the corridor areas. The infill consisted of new 12 inch deep beams spanning in the east-west direction and new 24 inch deep girder spanning in the north-south direction. All framing tied into existing columns and beams and a 4 inch slab on metal deck with welded wire reinforcing was provided as the floor infill.

In 1997, a renovation was conducted in which the loading dock at the east end of the building was re-worked. As part of this renovation, a portion of the southeast corner of the mechanical space at the cellar level was re-framed with new 8 inch deep beams and a 4.5 inch slab on metal decking. Additionally, existing framing and floor slabs were removed for the installation of a new elevator. WJE does not have any information on how the new framing for the elevator ties into the original draped mesh slab.

### Observations at 30 Trinity

- In general, the structure of the building is concealed by finishes, WJE did not observe any excessive deflections, or cracking of finishes that would be indicative of a structural issue.
- At the basement level, concrete encasement at various steel elements was observed to be spalled or delaminated.
- At the southeast corner of the cellar level, the existing steel beam and metal deck were observed to be corroding as a result of water infiltration at the mechanical space vault that was renovated in 1997.

## STRUCTURAL DISCUSSION AND RECOMMENDATIONS

The structure at the buildings appears to be adequate for the buildings' existing business occupancy use and should remain so for the proposed renovations which are to remain as a business occupancy. Additional analysis will be required if floor openings for a new dome at 20 Trinity Street or atrium at 30 Trinity Street are included in the final design for the buildings' restoration. Additional investigation should also be conducted where the steel framing for the east elevator at 30 Trinity Street ties into the original floor decks.

The corrosion of the existing steel lintels, columns and roof vault decks has been addressed in previous paragraphs related to the building envelopes.

## FIRE PROTECTION OBSERVATIONS

### Observations at 18/20 Trinity

- The building does not have an automatic sprinkler system.

- The building has an existing standpipe system *(Figure 111)*, which consists of a 2-1/2 inch riser with 1-1/2 inch hose connections at both elevator lobbies.
- The building has a Simplex 4100 Fire Alarm Control Panel (FACP) located on the building's first floor *(Figure 112)*. Signals from the FACP are relayed to a central station provider via two separate telephone lines by a digital alarm communicator transmitter. The Simplex 4100 panel is currently obsolete, and no longer in production. Replacement parts from the manufacturer for this model panel are in very limited supply. The panel monitors valve supervisory switches for the building standpipe system, manual pull stations, area smoke detectors, and duct mounted smoke detectors *(Figure 113)*. The panel also initiates required elevator emergency functions, specifically primary and secondary floor elevator recall, and firemen's hat notification. Notification appliances consist of audible speakers, visible strobes, and combination speaker strobes. Fire fighter phone jacks in building elevator lobbies permit two-way communication with the FACP.

### Observations at 30 Trinity Street

- The building does not have an automatic sprinkler system.
- The building has an existing standpipe system, which consists of a 2 inch riser with 1-1/2 inch hose connections at main floor landings in each of the buildings two exit stairs.
- The building is currently equipped with a fire alarm and detection system. The Silent Knight SK-2, two zone conventional fire alarm control panel (FACP) is located in the building's basement *(Figure 114)*. The panel, purportedly installed in approximately 2016, monitors manual pull stations and smoke detectors for the purpose of elevator recall. Notification appliances consist of audible horn appliances with visible strobes. Visible strobes are provided in select restrooms.
- A FM-200 special suppression system is installed in the Records Storage area on the Third Floor. The suppression system is controlled by a Potter Roemer releasing panel, which is purportedly monitored by the building fire alarm control panel as a zone. The suppression system is initiated by cross-zoned ceiling-mounted smoke detectors. Manual initiation via manual pull stations is also available.

## FIRE PROTECTION DISCUSSION AND RECOMMENDATIONS

### 18/20 and 30 Trinity

For existing buildings undergoing an alteration, per Section 403.1 of the International Existing Building Code (IEBC), the alteration must comply with the requirements of the IBC for new buildings.

The IEBC is intended to provide alternative approaches for the repair, alteration and addition to existing buildings. The code recognizes that many existing structures do not comply with the requirements for new buildings, and that it is cost prohibitive to bring these buildings into compliance with new building requirements as these existing buildings undergo various levels of repair or renovation.

IEBC provides three general options for achieving compliance with work renovations of existing buildings. Option 1 is the Prescriptive Compliance method included in Chapter 4, and based on the former Chapter 34 of the IBC included in the 2015 and earlier editions of IBC; Option 2 is the Work Area Compliance method, which is included in Chapters 5 through 13; and Option 3 includes a Performance Compliance Method, included in Chapter 14. This method makes use of a numerical scoring method to demonstrate that the renovation work taking place, while not achieving compliance with current code, will improve the current existing level of fire protection and life safety in the building.

Each method is intended to achieve an equivalent level of life safety in the building. For the purposes of this building, Option 1, the Prescriptive Compliance Method, was selected.

Below is a brief summary of fire protection system modifications affected by the building alteration.

### Automatic Sprinkler Systems

Neither 18/20 nor 30 Trinity Street have automatic sprinkler systems. Although sprinkler systems are not required per code the addition of sprinkler systems would enhance the level of fire protection in the buildings. DAS has indicated the addition of automatic sprinkler systems is desired during the interior renovations at the buildings.

The type of construction at 30 Trinity Street is at a minimum comparable to Type IIA as defined by the 2018 Connecticut State Building Code. It is a five story business occupancy, with a floor area of approximately 13,660 square feet. Based on the type of construction, the height and area of the building, an automatic sprinkler system is not required as part of this alteration, since the existing height and area of the building is such that automatic sprinkler protection is not required. The existing building floor area is less than 37,500 square feet as indicated in Table 506.2, and the building height is five stories or less, per Table 504.4.

The type of construction at 18/20 Trinity Street is at a minimum comparable to Type IB as defined by the 2018 Connecticut State Building Code. It is a six story business occupancy, with its largest floor area at approximately 14,800 square feet. Based on the height and area of the building, an automatic sprinkler system is not required as part of this alteration, since the floor area for Construction Type IB is unlimited as indicated in Table 506.2 and the maximum allowable height is 11 stories without an automatic sprinkler system as indicated in Table 504.4.

### Standpipe Systems

Standpipe systems are not required to be installed for existing buildings undergoing alterations using the Prescriptive Compliance Method. No work is anticipated to modify the existing standpipe systems for the buildings as part of this project.

### Fire Alarm and Detection Systems

Both 18/20 and 30 Trinity Streets will be undergoing alterations throughout all occupied areas of the building, and the existing fire alarm and detection systems will be demolished as part of the renovation. As a result of this alteration, IEBC Section 403.1 requires that the building achieve the requirements of IBC for new buildings.

IBC 2015 Section 907.2.2 requires that a manual fire alarm system be provided in business occupancies where the combined occupant load of the building exceeds 500 or when the occupant load is more than 100 people above or below the level of exit discharge. The new FACP's will also have to provide control of fire fighters' emergency operation functions, specifically Phase I and Phase II emergency in-car operation per ASME A17.1/CSA B44.

Building mechanical systems that are modified as part of the building renovation will require smoke detection system controls as required by Section 606 of the IMC. This will require in duct smoke detectors for return air systems and common supply and return air systems with design capacities greater than 2,000 cfm, and at every story for return air risers that serve two or more stories having a design capacity of greater than 15,000 cfm. Installation of these devices must comply with the requirements of the National Fire Alarm

Code, NFPA 72. Upon activation, these smoke detectors must shut down operation of the affected fans. Duct smoke detectors must activate an audible and visible supervisory signal at an approved location, per IMC 606.4.1, Exception 2.

## 2018 CONNECTICUT STATE BUILDING CODE REVIEW

The newly adopted 2018 Connecticut State Building Code (CT 2018) and its applicable referenced standards with Connecticut Amendments applies to projects with building permit applications filed after October 1, 2018. Applicable referenced standards that impact this project include, but are not limited to:

- 2015 International Building Code (IBC)
- 2015 International Existing Building Code (IEBC)
- 2015 International Mechanical Code (IMC)
- 2009 ICC A117.1 Accessible and Usable Buildings and Facilities (ANSI A117.1)
- 2010 Americans with Disabilities Act (ADA)

### Application of IEBC 2015

The IEBC is intended to provide alternative approaches for the repair, alteration and addition to existing buildings. The code recognizes that many existing structures do not comply with the requirements for new buildings, and that it is cost prohibitive to bring these buildings into compliance with new building requirements as these existing buildings undergo various levels of repair or renovation.

IEBC provides three general options for achieving compliance with work renovations of existing buildings. Option 1 is the Prescriptive Compliance method included in Chapter 4, and based on the former Chapter 34 of the IBC included in the 2012 and earlier editions of IBC; Option 2 is the Work Area Compliance method, which is included in Chapters 5 through 13; and Option 3 includes a Performance Compliance Method, included in Chapter 14. This method makes use of a numerical scoring method to demonstrate that the renovation work taking place, while not achieving compliance with current code, will improve the current existing level of fire protection and life safety in the building.

Each method is intended to achieve an equivalent level of life safety in the building. For the purposes of this building, Option 1, the Prescriptive Compliance Method, was selected.

### Historic Building Provisions

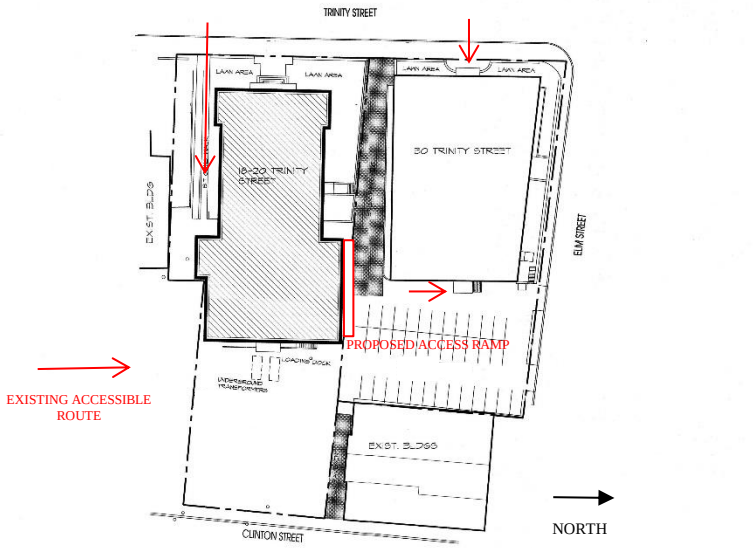
The 18/20 and 30 Trinity Street buildings are included in the Elm Street Historic District on the National Register of Historic Places. International Existing Building Code (IEBC) will apply to all aspects of the proposed project. Hazards judged to constitute a distinct life safety hazard by the building official are required to comply with provisions of this code.

### Structural

There are no alterations to the existing structural system being considered at this time. Per the 2015 IEBC existing structural materials already in use in a building in compliance with requirements and approvals in effect at the time of their erection or installation shall be permitted to remain unless determined by the code official to render the building or structure unsafe or dangerous. If repairs are required to the structure they are to meet the requirements of the current building code.

### Alterations - Interior

Because no additions are planned as part of this project, and since the occupancy classification of the building is not changing, neither Additions nor Change of Occupancy provisions of Chapter 4 apply to this project. Therefore, Section 403, Alterations, of IEBC Chapter 4 will drive interior renovation building code requirements applicable to this project. The accessibility requirements of Section 410 of Chapter 4 will likewise apply.




*Accessible Routes at Buildings*

## 18/20 Trinity Street Code Review

The building at 18/20 Trinity Street is an existing structure. There is no addition planned for the building and therefore it will not exceed the threshold building limits.

### Occupancy Classification

- Current Business Group B / Proposed Business Group B

### General Building Heights and Areas

- Building Height:
  - 20 Trinity Street - four stories, 45 feet high
  - 18 Trinity Street - six stories, 80 feet high.
- Floor Area:
  - 20 Trinity Street - 7,630 square feet per floor
  - 18 Trinity Street - 7,170 square feet per floor
  - Combined floor level 18/20 Trinity Street - 14,800 square feet.

Type of Construction: Based on a review of the existing drawings and conditions it appears the building construction is most consistent with the requirements of Type IB Construction per the 2018 Connecticut

State Building Code. This can be confirmed by measuring the thickness of the concrete and clay masonry covering the structural steel.

For Type IB Construction / Group B Occupancy, the 2018 CT allows:

- Maximum Height: 160 feet, 11 stories
- Maximum Area per Floor: Unlimited

### Fire Protection and Smoke Features

- The building does not have an automatic sprinkler system.
- The building does not contain areas of refuge.
- The building has an existing standpipe system, which consists of a 2-1/2 inch riser with 1-1/2 inch hose connections at both elevator lobbies.
- The building has a Simplex 4100 FACP located on the building's first floor. Signals from the FACP are relayed to a central station provider via two separate telephone lines by a digital alarm communicator transmitter. The panel monitors valve supervisory switches for the building standpipe system, manual pull stations, area smoke detectors, and duct mounted smoke detectors. The panel also initiates required elevator emergency functions, specifically primary and secondary floor elevator recall, and firemen's hat notification. Notification appliances consist of audible speakers, visible strobes, and combination speaker strobes. Fire fighter phone jacks in building elevator lobbies permit two-way communication with the FACP.
- Fire separation from adjacent buildings is greater than 30 feet. Therefore there is no limit on the percentage of exterior wall openings.
- Stair enclosure and shaft ratings:
    - 2 hours required/2 hours existing
    - Labels on doors to stair enclosures have been painted over
- Exit access corridor ratings:
    - 1 hour required if building remains unsprinklered.
    - If an automatic sprinkler system is added as part of the renovation a rating is not required at the corridor walls.

### Interior Finishes

For Business Occupancy without an automatic sprinkler system:

- Interior exit stairs, ramps and exist passageways: Class A; flame spread index 0-25; smoke developed index 0-450.
- Corridors and enclosures for exit access stairways and exit ramp access: Class B; flame spread index 26-75; smoke developed index 0 - 450.
- Rooms and enclosed spaces: Class C; flame spread index 76-200; smoke developed index 0-450.

For Business Occupancy with an automatic sprinkler system:

- Interior exit stairs, ramps and exist passageways: Class B; flame spread index 26-75; smoke developed index 0-450.
- Corridors and enclosures for exit access stairways and exit ramp access: Class C; flame spread index 76-200; smoke developed index 0 -450.
- Rooms and enclosed spaces: Class C; flame spread index 76-200; smoke developed index 0-450.

### Means of Egress

- Means of egress ceilings are greater than 7'-6" high per 2018 Connecticut State Building Code.

- Occupant Load: Group B is 100 SF per occupant per 2018 Connecticut State Building Code.
- Floor Area:
    - Sub-basement: 2,400 SF (excluding mechanical room) / 24 occupants per floor
    - Ground through the third floor 14,800 SF per floor / 148 occupants per floor
    - Fourth and fifth floors - 7,170 SF / 72 occupants per floor
- Stairs: A minimum of two exit stairs are required on each floor.
    - Two exit stairs are present at the basement level.
    - Three exit stairs are present at the ground floor through the third floor.
    - Two exit stairs are present at the fourth and fifth floors.
- Stair width requirement: Each stair is to be 44 inches wide minimum with a combined minimum total width of 0.3 inches per occupant.
    - The basement level has 24 occupants: 24 x 0.3 inches = 7.2 inches minimum total width required at all stairs combined. Each stair is 43 inches wide. The 43 inches stair width is less than the required minimum. This notwithstanding, historic building provisions of IEBC may permit the existing stairs to remain in place without modification, if approved by the local authority having jurisdiction.
    - The ground floor level has 148 occupants: 148 x 0.3 inches = 44.4 inches minimum total width required at all stairs combined. Three stairs are present. The west stair is 51 inches wide. The north stair is 43 inches wide. The south stair is 43 inches wide. Total width of stairs is 137 inches. The 43 inches stair width is less than the required minimum. This notwithstanding, historic building provisions of IEBC may permit the existing stair to remain in place without modification, if approved by the local authority having jurisdiction.
    - The first through the third have 148 occupants per floor: 148 x 0.3 inches = 44.4 inches minimum total width required at all stairs combined. Three stairs are present. The west stair is 60 inches wide. The north stair is 43 inches wide. The south stair is 43 inches wide. Total width of stairs is 146 inches. The 43 inches stair width is less than the required minimum. This notwithstanding, historic building provisions of IEBC may permit the existing stair to remain in place without modification, if approved by the local authority having jurisdiction.
    - Third and fourth floors have 72 occupants per floor: 72 x 0.3 inches = 21.6 inches minimum total width required at all stairs. Two stairs are present. The north stair is 43 inches wide. The south stair is 43 inches wide. Total width of stairs is 86 inches. The 43 inches stair width is less than the required minimum. This notwithstanding, historic building provisions of IEBC may permit the existing stair to remain in place without modification, if approved by the local authority having jurisdiction.
- Doors: A minimum of two exit doors are required per floor. A minimum of two exit doors are provided at each floor.
- Door width requirement: Each door is to be 32 inches clear minimum with a combined total width of 0.2 inches per occupant.
    - Sub-basement Required Total Door Width: 24 x 0.2 inches = 4.8 inches
    - Sub-basement Existing Total Door Width: Two existing doors 36 inches + 36 inches = 72 inches
    - Ground Floor Required Total Door Width: 148 x 0.2 inches = 29.6 inches
    - Ground Floor Existing Total Door Width: Four existing doors (32 inches + 36 inches + 36 inches + 36 inches) = 140 inches
    - First through Third Floor Required Total Door Width: 148 x 0.2 inches = 29.6 inches
    - First through Third Floors Existing Total Door Width: Three existing doors (72 inches wide + 36 inches wide + 36 inches wide) = 144 inches

  - Fourth and Fifth Floor Required Total Door Width: 72 x 0.2 inches = 14.4 inch
  - Fourth and Fifth Floor Existing Total Door Width: Two existing doors (36 inches wide +36 inches wide) = 72 inches
- Stair Treads and Risers: Per CT 2018 - minimum tread width 11 inches; maximum riser height 7 inches; maximum nosing 1-1/4 inch
  - West Stair: Tread width 11 inches, riser height 7 inches, nosing 3/4 inch.
  - North and South Stairs: Tread width 11-1/4 inches, riser height 6-3/4 inches, nosing 3/4 inch.
- Handrails: Per CT 2018 height above tread nosing not less than 34 inches or greater than 38 inches
  - West Stair - 36 inches at wall side and 32 inches at the open side.
  - North and South Stair - height 35 inches
- Handrail Graspability:
  - West Stair - Handrails are rectangular in shape at the open side of the stair *(Figure 115)*. These handrails have a perimeter dimension of 8 inches, a cross-sectional dimension of 2-1/2 inches. The edges of the rails do not have a radius. Therefore, these railings do not comply with Section 1014.3.1 of the 2018 State of Connecticut Building Code. On the wall side of the stair the handrail has a perimeter of 6 inches and has a radius at the edges. The cross-sectional dimension of the railings is 2-1/2 inches which is greater than the 2-1/4 inch maximum permitted by the code.
  - North and South Stairs- Handrail at open side perimeter is greater than 6-1/4 inches with a graspable finger recess on both sides of the profile. This complies with a Type II handrail per Section 1014.3.2 of the Code. Handrail continuity is interrupted by newel posts which is not permitted per the current code *(Figure 116)*. The handrail on the wall side is 1-1/2 inch in diameter.
  - Extensions are not provided at any of the handrails. At the wall sides of the stairs the handrails can be replaced to meet the current code requirements without hardship.
  - At the open sides of the stair, historic building provisions of IEBC may permit the existing handrails to remain in place without modification, if approved by the local authority having jurisdiction.
- Guards:
  - West Stair: The upper landing of the west stair has a guard that is 42 inches in height. The openings at this guard do not comply with Section 1015.4 of the 2018 Connecticut State Building Code. At the stair run the handrail serves as the guard. This handrail is 34 inches high and does not comply with the 42 inch height required by the current code.
  - North and South Stairs: Handrails serve as guards at the open sides of the stairs. These handrails are 35 inches high at the stair runs and 42 inches high at the stair landings. The 35 inch height is less than the 42 inch height required by the CT 2018.
  - Historic building provisions of IEBC may permit the existing guards to remain in place without modification, if approved by the local authority having jurisdiction.
- Exit Travel Distance: The maximum exit travel distance per the current plan layout on each floor is less than the 200 feet maximum permitted in Group B buildings without an automatic sprinkler system. If an automatic sprinkler system is added in the restoration this travel distance may increase to 300 feet.

### Accessibility

Accessibility requirements were reviewed for compliance with the CT 2018, ANSI ICCA117.1 (2009) and the 2010 ADA Standards for Accessible Design.

The building has one accessible entrance accessed from the street side (west) from a walkway along the south side of the building *(Figure 117)*. This walkway leads to the entrance at the southwest corner of 18 Trinity Street. The door at this entrance is 36 inches wide with a 1/2 inch high, beveled threshold in conformance with ANSI 117.1 Section 404.2.4

Three elevators are located in the building. These elevators are in compliance with 2018 CT.

- The first of these is located near the northwest corner of 20 Trinity Street. The door to the elevator opens at the center of the cab and is 42 inches clear. The cab is 78 inches wide x 51 inches deep. The call button at the exterior of the elevator is 42 inches above the floor. The buttons at the inside of the elevator are between 33 inches and 40 inches above the floor.
- The second elevator is located near the northwest corner of 18 Trinity Street *(Figure 118)*. The door to the elevator is towards the side of the cab and is 42 inches clear. The cab is 73 inches wide x 60 inches deep. Controls for the elevator are located between 33 inches and 42 inches above the floor surface. The controls have both tactile and braille identification.
- The third elevator is located adjacent to the accessible entrance near the southwest corner of 18 Trinity Street. The door to the elevator is towards the side of the cab and is 42 inches clear. The cab is 75 inches wide x 54 inches deep. Controls for the elevator are located between 36 inches and 42 inches above the floor surface. The controls have both tactile and braille identification.

An existing ramp is located at the third floor of the building. This ramp accommodates the changes in floor level between 18 Trinity Street and 20 Trinity Street *(Figure 119)*. The ramp is 4 feet wide and its bottom landing is the third floor level. It slopes up at 1:12 for 21 feet to a mid-landing that is 4 feet by 4 feet. The ramp continues at a slope of 1:12 for another 13 feet where it terminates at a 5 foot 10 inch landing. Handrails are 1-1/2 inch diameter, 34 inches above the surface of the ramp and have 12 inch extensions at all landings.

## Toilet Facilities

Per Table 403.1 of the 2015 International Plumbing Code the minimum number of required plumbing fixtures for a Type B Business Occupancy are as follows[1]:

| Water Closets[2] | | Lavatories | Bathtubs/Showers | Drinking Fountain | Other |
|---|---|---|---|---|---|
| Male | Female | | | | |
| 1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50 | | 1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80 | None | 1 per 100 | 1 service sink |

1. To determine the occupant load for each sex, the total occupant load shall be divided in half. To determine the number of required fixtures the fixture ratio or ratios for each fixture shall be applied to the occupant load of each sex in accordance with Table 403.1. Fractional numbers from applying the fixture ratios from Table 403.1 shall be rounded up to the next whole number.
2. Urinals may be substituted for 50% of the required water closets.

Required Facilities at 18/20 Trinity Street per Table 403.1 of the 2015 International Plumbing Code

| Floor | Water Closets | | Lavatories | | Drinking Fountain | Other |
|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | | |
| Sub-basement | 1 | 1 | 1 | 1 | 1 | 1 Service Sink |
| Ground | 3 | 3 | 2 | 2 | 2 | 1 Service Sink |
| 1-3 | 3 | 3 | 2 | 2 | 2 | 1 Service Sink |
| 4-5 | 2 | 2 | 1 | 1 | 1 | 1 Service Sink |

Actual Functioning Facilities at 18/20 Trinity Street *(Figures 120 and 121)*

| Floor | Water Closets | | Lavatories | | Drinking Fountain | Other |
|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | | Service Sink |
| Sub-basement | 0 | 0 | 0 | 0 | 0 | 0 |
| Ground | 1 WC<br>1 Urinals | 2 WC | 1 | 2 | 0 | 1 |
| 1[1] | 4 WC<br>4 Urinals | 6 WC | 3 | 4 | 0 | 1 |
| 2 | 3 WC[2]<br>2 Urinals | 3 WC[2] | 2 | 2 | 0 | 1 |
| 3 | 3 WC[2]<br>2 Urinals | 3 WC[2] | 2 | 2 | 0 | 1 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5[3,4,5] | 3 WC[2]<br>2 Urinals | 3 WC[2] | | | | |

1. A unisex, single person, toilet room is also located on the first floor.
2. One of the listed water closets is ambulatory accessible.
3. Facilities are located in a single room. A wheel chair accessible toilet compartment is provided in each room. A wheel chair accessible urinal is provided in all toilet rooms with more than one urinal. Lavatories, mirrors, towel dispenser, etc. are wheel chair accessible.
4. A unisex, single person, wheelchair accessible toilet room is also located on the fifth floor.

## 30 Trinity Street

The building at 30 Trinity Street is an existing structure. There is no addition planned for the building and therefore it will not exceed the threshold building limits.

### Occupancy Classification

- Current Business Group B / Proposed Business Group B

### General Building Heights and Areas

- Building Height:
  - Four Stories, 60 feet high plus 9 feet high mechanical penthouse

- Floor Area:
  - 13,660 SF per floor

Type of Construction: Based on a review of the existing drawings and conditions it appears the building construction is most consistent with the requirements of Type 1B Construction per the 2018 Connecticut

State Building Code. This can be confirmed by measuring the thickness of the concrete and clay masonry covering the structural steel.

Type IB Construction / Group B Occupancy
- Maximum Height: 160 feet, 11 stories
- Maximum Area per Floor: Unlimited

The above notwithstanding, the building construction does achieve the minimum requirements of Type 2A Construction per the 2018 Connecticut State Building Code.

Type IIA Construction / Group B Occupancy
- Maximum Height: 65 feet, 5 stories
- Maximum Area per Floor: 37,500 S.F.

### Fire Protection and Smoke Features
- The building does not have an automatic sprinkler system.
- The building does not contains areas of refuge.
- The building has an existing standpipe system, which consists of a 2 inch riser with 1-1/2 inch hose connections at main floor landings in each of the building's two exit stairs.
- The building is currently equipped with a fire alarm and detection system. A two zone conventional fire alarm control panel (FACP) is located in the building's basement. The panel, monitors manual pull stations and smoke detectors for the purpose of elevator recall.
- Notification appliances consist of audible horn appliances with visible strobes. Visible strobes are provided in select restrooms.
- Fire separation from adjacent buildings is greater than 30 feet. Therefore there is no limit on the percentage of exterior wall openings.
- Stair enclosure and shaft ratings: 2 hours required / the existing stairs walls are consistent with 2 hour construction. Most doors to the stairs have a UL listed 1-1/2 hour label. The label is missing at the door from the office space to the first floor lobby.
- Exit access corridor ratings: 1 hour required if building remains unsprinklered. If an automatic sprinkler system is added as part of the renovation a rating is not required at the corridor walls.

### Interior Finishes
For Business Occupancy without an automatic sprinkler system:
- Interior exit stairs, ramps and exist passageways: Class A; flame spread index 0-25; smoke developed index 0-450
- Corridors and enclosures for exit access stairways and exit ramp access: Class B; flame spread index 26-75; smoke developed index 0-450.
- Rooms and enclosed spaces: Class C; flame spread index 76-200; smoke developed index 0-450.

For Business Occupancy with an automatic sprinkler system:
- Interior exit stairs, ramps and exist passageways: Class B; flame spread index 26-75; smoke developed index 0-450.
- Corridors and enclosures for exit access stairways and exit ramp access: Class C; flame spread index 76-200; smoke developed index 0-450.
- Rooms and enclosed spaces: Class C; flame spread index 76-200; smoke developed index 0-450.

## Means of Egress

- Means of egress ceilings are greater than 7'-6" high.
- Occupant Load: Group B 100 SF per occupant
- Floor Area: 13,660 SF per floor / 137 occupants per floor
- Stairs: A minimum of two exit stairs are required on each floor. Two exit stairs are present.
- Stair width requirement: Each stair is to be 44 inches wide minimum with a combined minimum total width of 0.3 inches per occupant. Each floor has 137 occupants x 0.3 inches = 41.1 inches minimum total width required at all stairs. Two stairs are present. The west stair is 60 inches wide. The east stair is 48 inches wide. Total width of stairs is 108 inches.
- Doors: A minimum of two exit doors are required per floor. Two exit doors are provided at each floor.
- Door width requirement: Each door is to be 32 inches clear minimum with a combined total width of 0.2 inches per occupant (137 x 0.2 inches = 27.4 inches minimum per floor).
    - Basement: Two existing doors (36 inches wide + 36 inches wide) = 72 inches
    - First floor: Two existing doors (48 inches wide + 36 inches wide) = 84 inches
    - Second Floor: Two existing doors (72 inches wide + 36 inches wide) = 108 inches
    - Third Floor: Two existing doors (48 inches wide + 36 inches wide) = 84 inches
    - Fourth Floor: Two existing doors (36 inches wide = 36 inches wide) = 72 inches
- Stair Treads and Risers: Per CT 2018 - minimum tread width 11 inches; maximum riser height 7 inches; maximum nosing 1-1/4 inch
    - West Stair - Tread width 11-1/2 inches, riser height 7-1/2 inches, nosing 3/4 inch (treads are worn adjacent to the handrail).
    - East Stair - Tread width 12 inches, riser height 7 inches, nosing 11/16 inch (with existing rubber tread cover)
- Handrails: Per CT 2018 - height above tread nosing not less than 34 inches or greater than 38 inches
    - West Stair - height +/- 31-1/2 inches
    - East Stair - height +/- 30-1/2 inches
- Handrail Graspability:
    - West Stair - Handrail at open side perimeter is greater than 6-1/4 inches with a graspable finger recess on both sides of the profile. This complies with Section 1014.3.2 of the Code. There is no handrail on wall side *(Figure 122)*.
    - East Stair - Handrail at open side perimeter is greater than 6-1/4 inches with a graspable finger recess on both sides of the profile. Handrail continuity is interrupted by newel posts. The handrail on the wall side is 1-1/2 inches in diameter *(Figure 123)*.
    - Extensions are not provided at any of the handrails. At the wall sides of the stairs the handrails can be replaced to meet the current code requirements with hardship.
    - At the open sides of the stair, historic building provisions of IEBC may permit the existing handrails to remain in place without modification, if approved by the local authority having jurisdiction.
- Guards: Handrails serve as guards at the open sides of the stairs. These handrails are between 30 inches and 32 inches high. This is less than the 42 inches height required by the CT 2018. This notwithstanding, historic building provisions of IEBC may permit the existing guards to remain in place without modification, if approved by the local authority having jurisdiction.
- Exit Travel Distance: The maximum exit travel distance per the current plan layout on each floor is less than the 200 feet maximum permitted in Group B buildings without an automatic sprinkler system. If an automatic sprinkler system is added in the restoration this travel distance may increase to 300 feet.

## Accessibility

Accessibility requirements were reviewed for compliance with the CT 2018, ANSI ICCA117.1 (2009) and the 2010 ADA Standards for Accessible Design. There are two accessible access points to the building.

The building is accessible from the street (west side) via a ramp with a rise of approximately 6 inches and a length of approximately 7 feet. This results in a slope of 1:14. At the top of the ramp the surface slopes up to the entrance doors at approximately 1:48. The landing at the top of the ramp is 10 feet wide and 5 feet clear beyond the fully opened entry doors. The landing at the bottom of the ramp is the city sidewalk. A 34 inch high handrail is present at the ramp. There is no extension at the bottom of the handrail *(Figure 124)*. A pair of 36 inch wide doors swing outward at the entrance. The threshold at the doors is beveled and equal to or less than 1/2 inch high in conformance with ANSI 117.1 Section 404.2.4.

An elevator is located in the lobby adjacent to the west entrance *(Figure 125)*. The door to the elevator is towards the side of the cab and is 36 inches clear. The cab is 78 inches wide x 60 inches deep. The elevator is operated by the security guard stationed in the building's lobby. This elevator is reported to be one of the oldest functioning elevators in Connecticut and is a historical asset.

The building is also accessible from the parking lot (east side) via a ramp with a rise of approximately 2 feet - 7 inches with a length of approximately 27 feet - 3 inches. This results in a slope of 1:12. A 34 inch high handrail is present at the ramp along with a 42 inch high guardrail *(Figure 126)*. A pair of 36 inch wide doors swing outward at the entrance. The threshold at the doors is beveled and equal to or less than 1/2 inch high in conformance with ANSI 117.1 Section 404.2.4.

An elevator is located in an exit access corridor approximately 15'-0" from the entrance lobby. The door to the elevator is centered on the cab and is 42 inches clear. The cab is 81 inches wide x 66 inches deep. Controls for the elevator are located between 39 and 48 inches above the floor surface. The controls have both tactile and braille identification *(Figure 127)*. This elevator is in compliance with 2018 CT.

## Toilet Facilities

Per Table 403.1 of the 2015 International Plumbing Code the minimum number of required plumbing fixtures for a Type B Business Occupancy are as follows[1]:

| Water Closets[2] | | Lavatories | Bathtubs/Showers | Drinking Fountain | Other |
|---|---|---|---|---|---|
| Male | Female | | | | |
| 1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50 | | 1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80 | None | 1 per 100 | 1 service sink |

1. To determine the occupant load for each sex, the total occupant load shall be divided in half. To determine the number of required fixtures the fixture ratio or ratios for each fixture shall be applied to the occupant load of each sex in accordance with Table 403.1. Fractional numbers from applying the fixture ratios from Table 403.1 shall be rounded up to the next whole number.
2. Urinals may be substituted for 50% of the required water closets.

Each floor of 30 Trinity Street has an occupant load of 137 therefore facilities for 69 males and 69 females are required for each floor *(Figures 128 and 129)*. A comparison of the required facilities to the existing facilities present in the building is as follows:

Required Facilities per floor per Table 403.1 of the 2015 International Plumbing Code

| Water Closets | | Lavatories | | Drinking Fountain | Other |
|---|---|---|---|---|---|
| Male | Female | Male | Female | | |
| 3 | 3 | 2 | 2 | 2 | 1 service sink |

Actual Functioning Facilities at 30 Trinity Street *(Figures 128 and 129)*

| Floor | Water Closets | | Lavatories | | Drinking Fountain | Other |
|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | | Service Sink |
| B | 3 | 0 | 2 | 0 | 0 | 1 |
| 1[2,3] | 2 WC<br>2 Urinals | 4 WC | 2 | 3 | 1 | 0 |
| 2[2,3] | 2 | 3 WC | 2 | 3 | 1 | 1 |
| 3[1,2,3] | 2 WC<br>1 Urinal | 3 WC | 2 | 2 | 0 | 1 |
| 4[2,3] | 2 WC<br>1 Urinal | 3 WC | 2 | 2 | 0 | 1 |

1. A unisex, single person, toilet room is also located on the third floor. This room is ambulatory accessible.
2. Facilities for each sex are located in a single room. A wheel chair accessible toilet compartment id provided in each room. A wheel chair accessible urinal is provided in all toilet room with more than one urinal. Lavatories, mirrors, towel dispenser, etc. are wheel chair accessible.
3. Side clearances at doors to toilet rooms do not meet accessibility requirements.

### Parking 18/20 and 30 Trinity Street

An employee parking lot is located adjacent to the east side of the building. This lot serves both 30 Trinity and 18/20 Trinity Street. The lot currently has 69 total spaces 3 of these spaces are indicated as accessible. This is consistent with the requirements of the current building code. The lot has fewer than 6 accessible spaces and therefore van spaces are not required by the code. The accessible spaces are each 9 feet wide. One of the spaces has a 4 foot wide aisle and the other two spaces share an 8 foot wide aisle. Current code requires that accessible spaces be 15 feet wide which includes a 5 foot aisle. The spaces as currently located outside of 30 Trinity Street are on the shortest access route of travel to the accessible ramp. The access route to 18/20 Trinity requires someone to travel from the parking lot; across the brick driveway between 18/20 and 30 Trinity; along the sidewalk at the west side of 20 Trinity and down the path to the entrance at the southwest corner of 18 Trinity Street. This is a route much greater in distance than one used by a person capable of climbing stairs. It is recommended that a new access ramp be added to the north entrance to 18 Trinity Street.

Drawings included in this report to upgrade the parking lot show a proposed location for a new access ramp near the northeast corner of 18 Trinity Street.

## HISTORICAL ASSETS

The buildings located at 18/20 Trinity Street and 30 Trinity Street are historically significant as originally they functioned as offices for the insurance industry which was vital in the development and growth of the

City of Hartford and State of Connecticut. The buildings at 20 Trinity Street and 30 Trinity Street also have architectural elements and features which are worthy of preservation. These elements include:

- Masonry facades
- Masonry retaining and site walls including iron railings
- Ornamental railings and window grilles
- Windows
- The west lobby and monumental stair at 30 Trinity Street
- The original elevator and mail chute at the west lobbies at 30 Trinity Street

The building at 18 Trinity Street provides background for 20 Trinity Street. The limestone door surrounds at 18 Trinity Street as well as the cast stone ornamentation are significant features of the building.

Other significant architectural elements have been modified or replaced since the original construction of the buildings and consideration should be given to replicating these elements in the proposed renovations. These include:

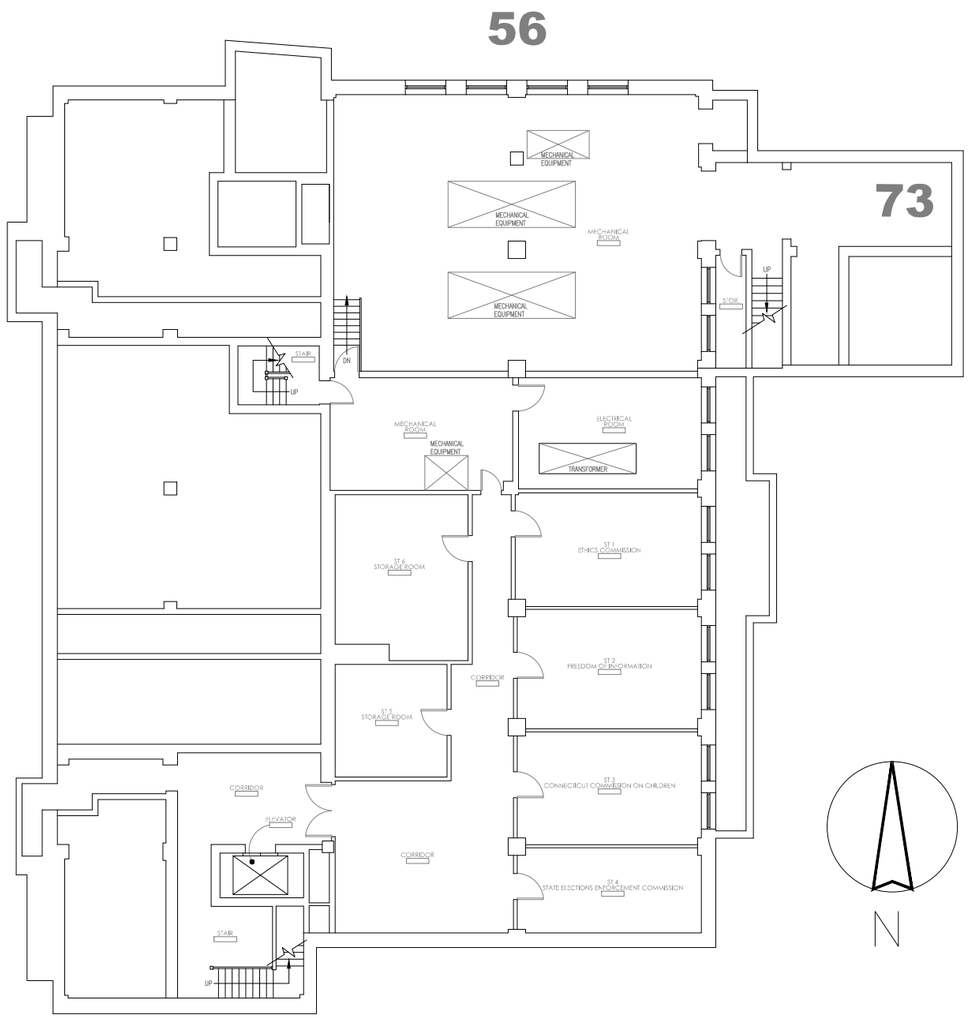
- Windows in the limestone masonry openings at 20 Trinity Street *(Figure 130)*.
- West entrance doors at 20 and 30 Trinity Street
- Development of the accessible ramp and handrail at the west entrance to 30 Trinity Street to conform to the original design intent of the building.
- Replication of the original entrance lobby and monumental stair at 20 Trinity Street *(Figure 131)*.
- Restore the exterior stair at the west entrance to 20 Trinity Street to replicate its original condition including handrails and light fixtures *(Figure 132)*.
- Reconstruction of the dome at 20 Trinity Street *(Figures 130, 133 and 134)*.
- Design new HVAC systems to permit the return of the original ceiling heights to the greatest extent possible at 20 and 30 Trinity Street.

## OTHER OPTIONS FOR CONSIDERATION

DAS is also considering other options for the Trinity Street Buildings. These are:

- Demolish 18 Trinity Street and construct a glass curtain wall structure of equivalent size connected to 20 Trinity Street *(Figure 135)*.
- Demolish 18 Trinity Street and the brick façade section of 20 Trinity Street and construct a brick veneer building connected to the remaining stone façade section of 20 Trinity Street. The new structure would replicate the existing buildings including the replication of the original dome at 20 Trinity Street *(Figure 136)*.
- Replace main water line and fire service line to 18/20 Trinity Street from Clinton Avenue. This work would take place in coordination with the parking lot upgrade *(Figure 137)*.
- Infill light well at the south side of 30 Trinity Street. Below grade masonry openings are to be filled with CMU and all below grade surfaces are to be waterproofed *(Figure 138)*.

# Appendix I Plan Drawings with Figure Locations




N

Figure Locations
Basement Floor Plan
18–20 Trinity St.

drawing title
18-20 TRINITY STREET - BASEMENT FLOOR PLAN

REVISIONS

| mark | date | description |
|---|---|---|
| | | |

STATE OF CONNECTICUT
DEPARTMENT OF ADMINISTRATIVE SERVICES

drawing prepared by
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SHELTON, CONNECTICUT 06484

date: 5/3/2019
scale: As Noted
drawn by: PCL
approved by: TMA
drawing no.: **A1-1**

project
18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

CAD no.
project no. 2018.2542

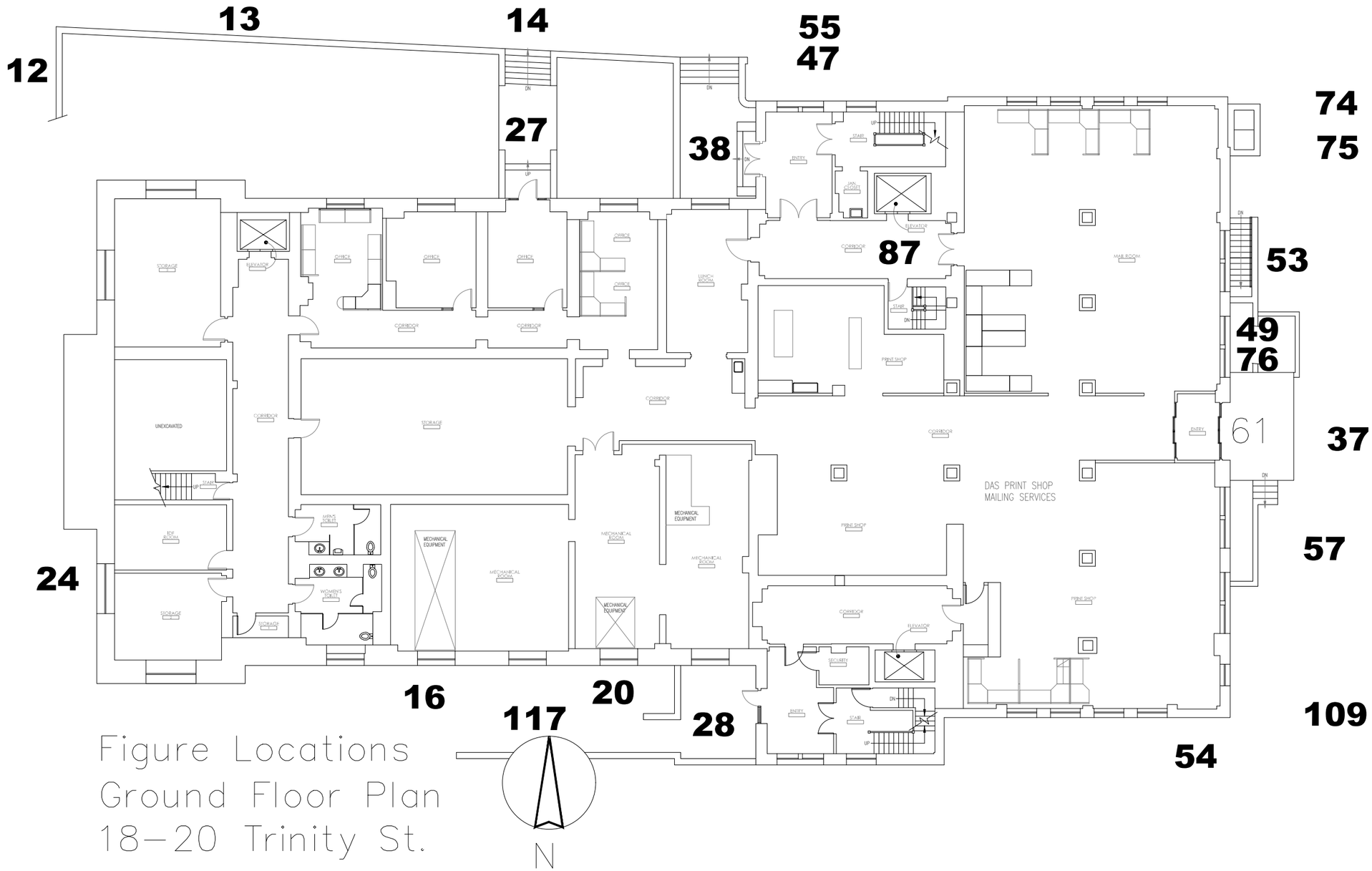


Figure Locations
Ground Floor Plan
18–20 Trinity St.

N

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|---|---|---|
| drawing title: 18-20 TRINITY STREET - GROUND FLOOR PLAN | STATE OF CONNECTICUT<br>DEPARTMENT OF ADMINISTRATIVE SERVICES | |
| REVISIONS | | |
| mark / date / description | drawing prepared by: WISS, JANNEY, ELSTNER ASSOCIATES, INC.<br>2 TRAP FALLS ROAD, SUITE 502,<br>SHELTON, CONNECTICUT 06484 | date: 5/3/2019<br>scale: As Noted |
| | project: 18-20 AND 30 TRINITY STREET<br>PREDESIGN SURVEY<br>HARTFORD, CONNECTICUT | drawn by: PCL<br>approved by: TMA |
| | CAD no. / project no. 2018.2542 | drawing no. A1-2 |

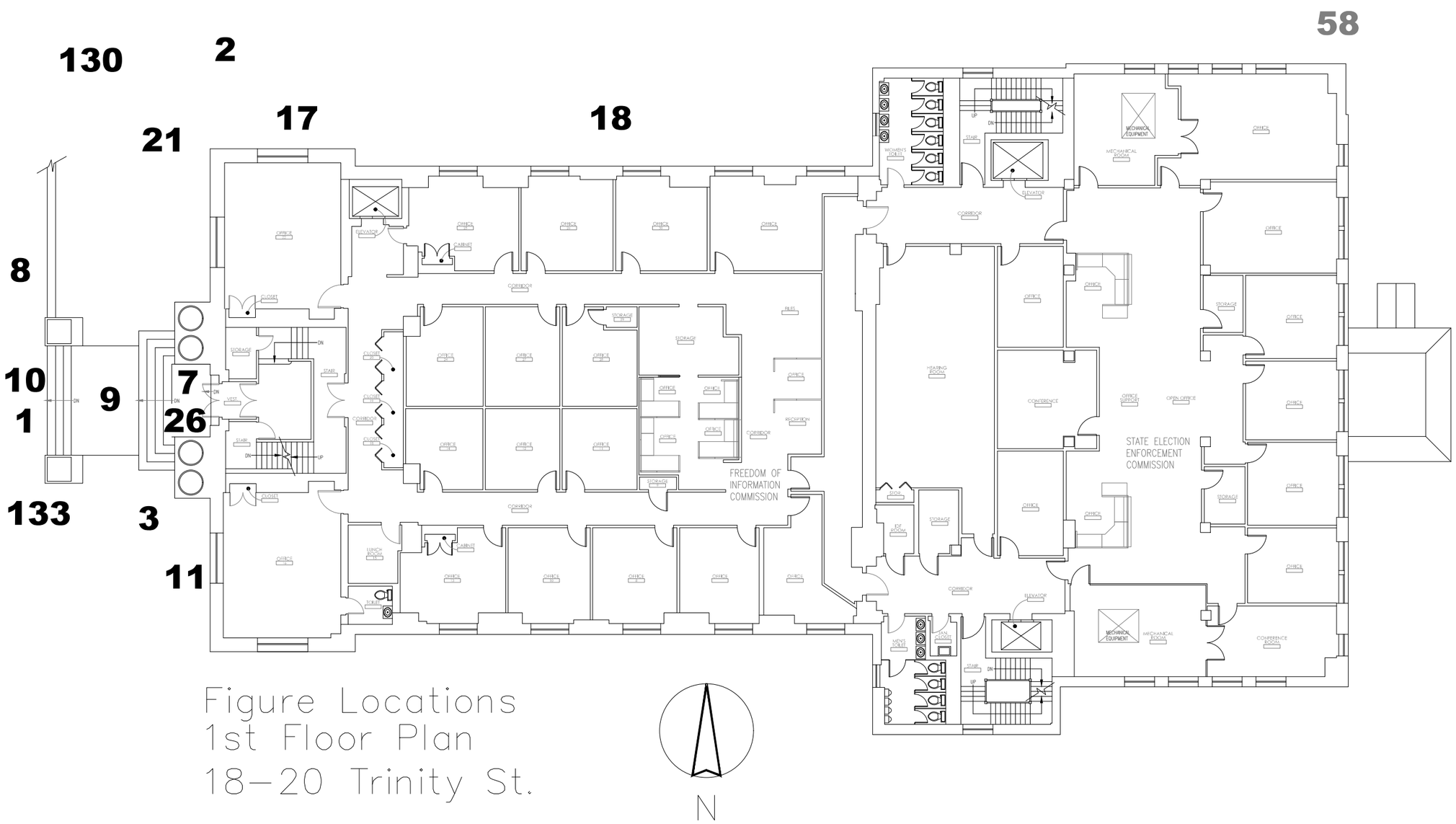


Figure Locations
1st Floor Plan
18–20 Trinity St.

N

drawing title
18-20 TRINITY STREET
- FIRST FLOOR PLAN

REVISIONS

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project
18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

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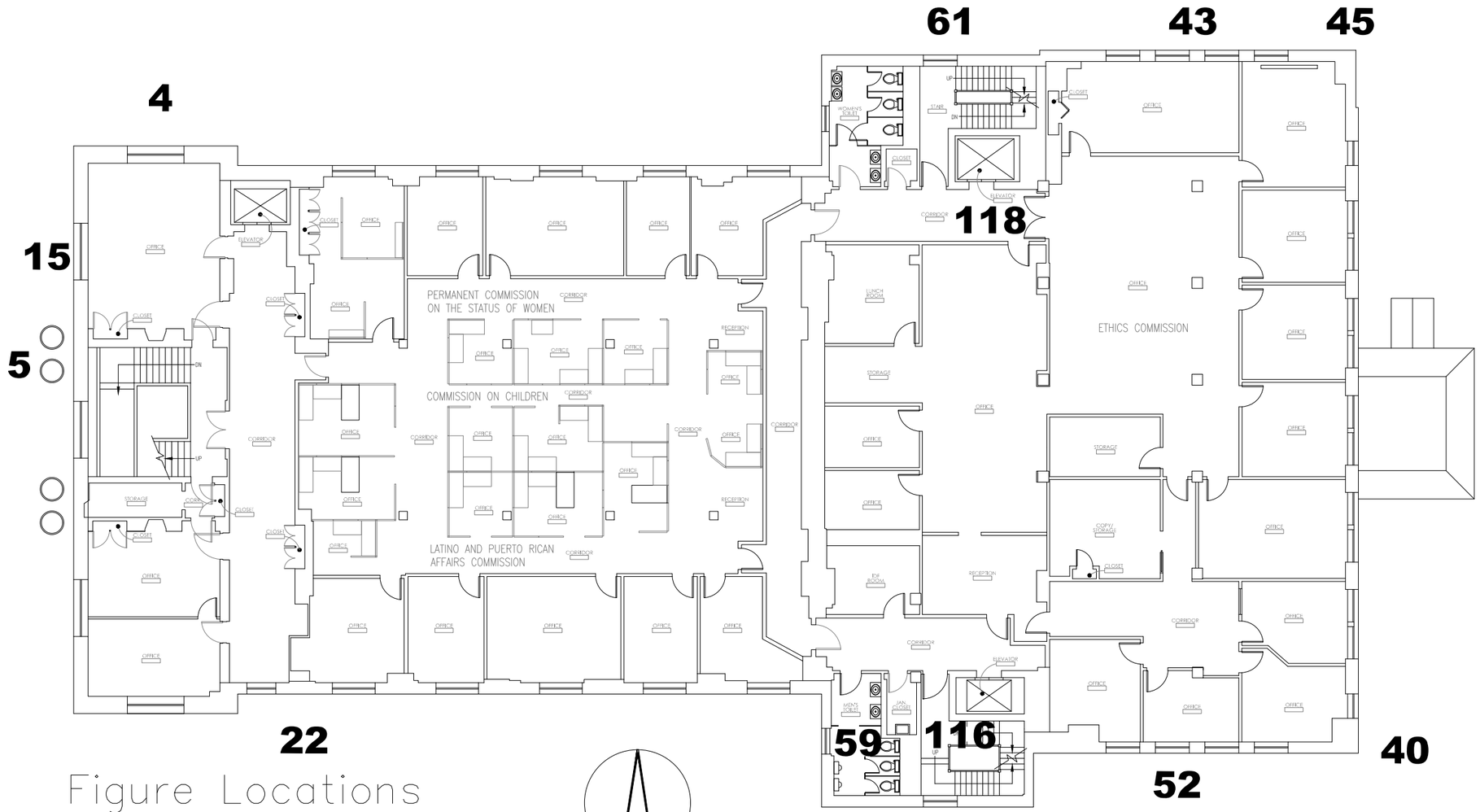


Figure Locations
2nd Floor Plan
18–20 Trinity St.

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|---|---|---|
| drawing title: 18-20 TRINITY STREET - SECOND FLOOR PLAN | STATE OF CONNECTICUT<br>DEPARTMENT OF ADMINISTRATIVE SERVICES | |
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| | project: 18-20 AND 30 TRINITY STREET<br>PREDESIGN SURVEY<br>HARTFORD, CONNECTICUT | drawn by: PCL<br>approved by: TMA<br>drawing no.: A1-4 |
| | CAD no. / project no.: 2018.2542 | |

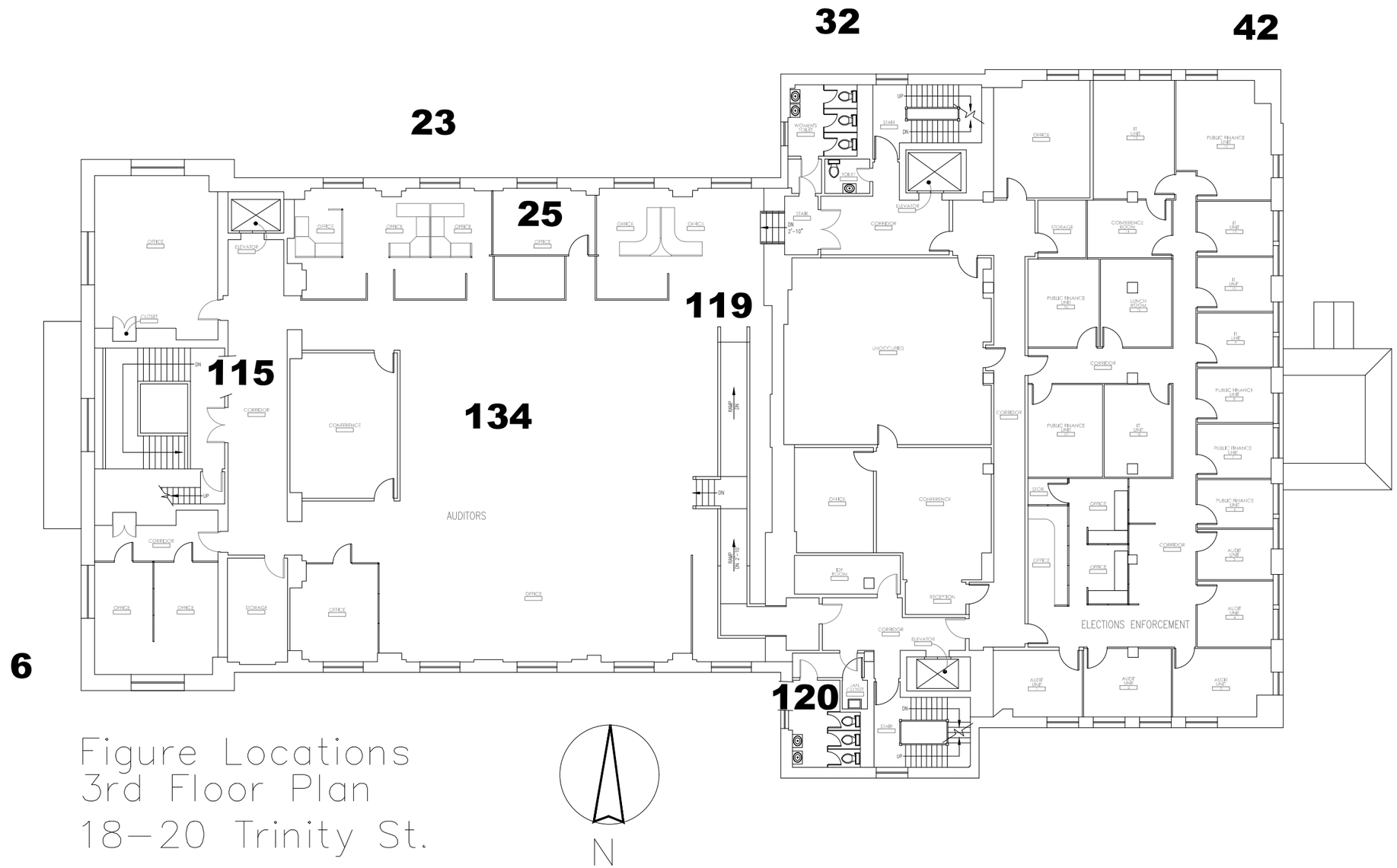


Figure Locations
3rd Floor Plan
18–20 Trinity St.

N

| | | |
|---|---|---|
| drawing title: 18-20 TRINITY STREET - THIRD FLOOR PLAN | STATE OF CONNECTICUT<br>DEPARTMENT OF ADMINISTRATIVE SERVICES | |
| REVISIONS<br>mark / date / description | drawing prepared by: WISS, JANNEY, ELSTNER ASSOCIATES, INC.<br>2 TRAP FALLS ROAD, SUITE 502,<br>SHELTON, CONNECTICUT 06484 | date: 5/3/2019<br>scale: As Noted |
| | project: 18-20 AND 30 TRINITY STREET<br>PREDESIGN SURVEY<br>HARTFORD, CONNECTICUT | drawn by: PCL<br>approved by: TMA<br>drawing no.: A1-5 |
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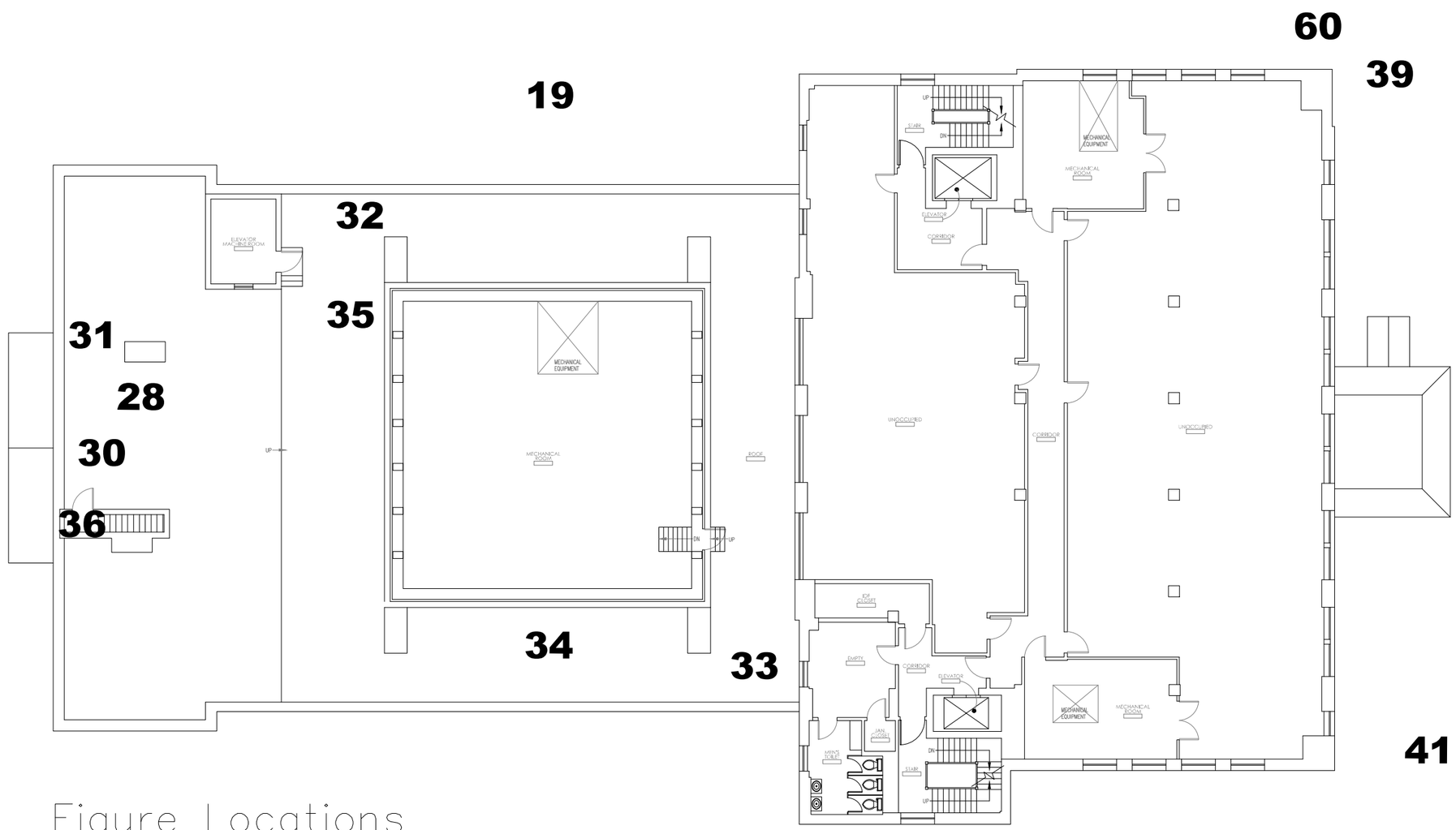


Figure Locations
Penthouse/4th Floor Plan
18–20 Trinity St.

N

drawing title
18-20 TRINITY STREET
- FOURTH FLOOR PLAN

REVISIONS

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project
18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

CAD no.
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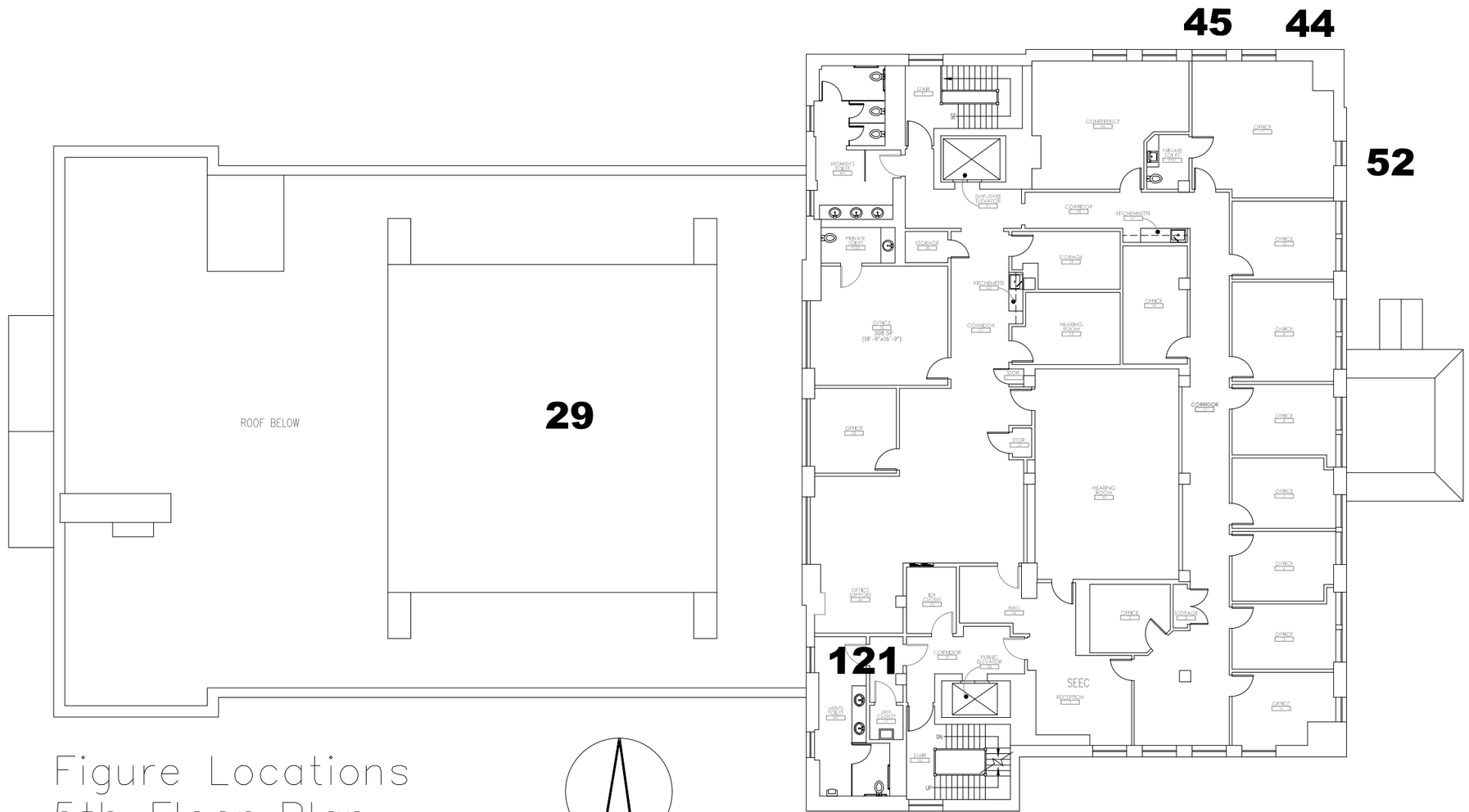


Figure Locations
5th Floor Plan
18–20 Trinity St.

drawing title
18-20 TRINITY STREET
- FIFTH FLOOR PLAN

REVISIONS

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PREDESIGN SURVEY
HARTFORD, CONNECTICUT

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project no. 2018.2542

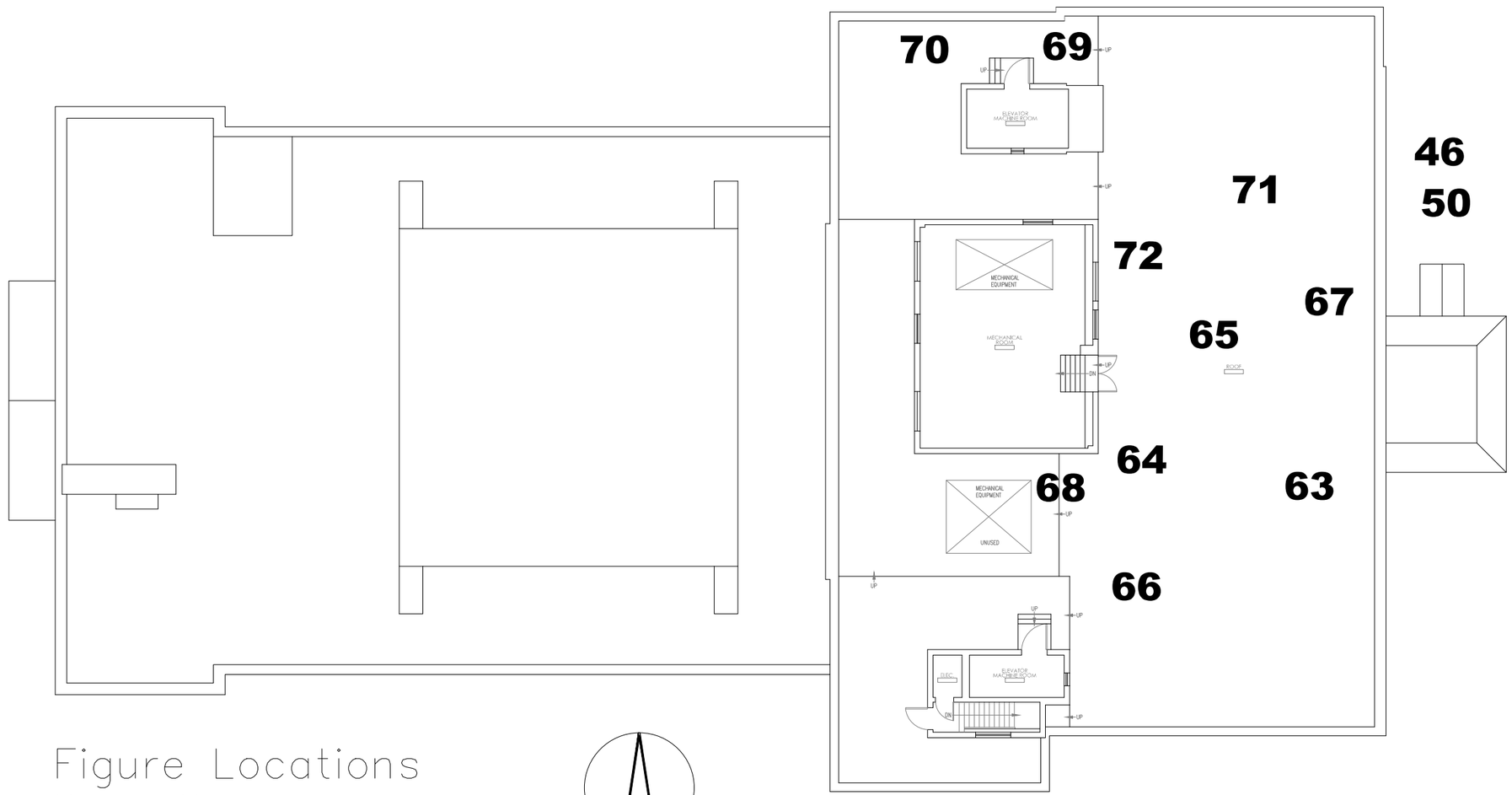


Figure Locations
Roof Plan
18/20 Trinity St.

N

drawing title
18-20 TRINITY STREET
- ROOF PLAN

REVISIONS

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project
18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

CAD no.
project no. 2018.2542

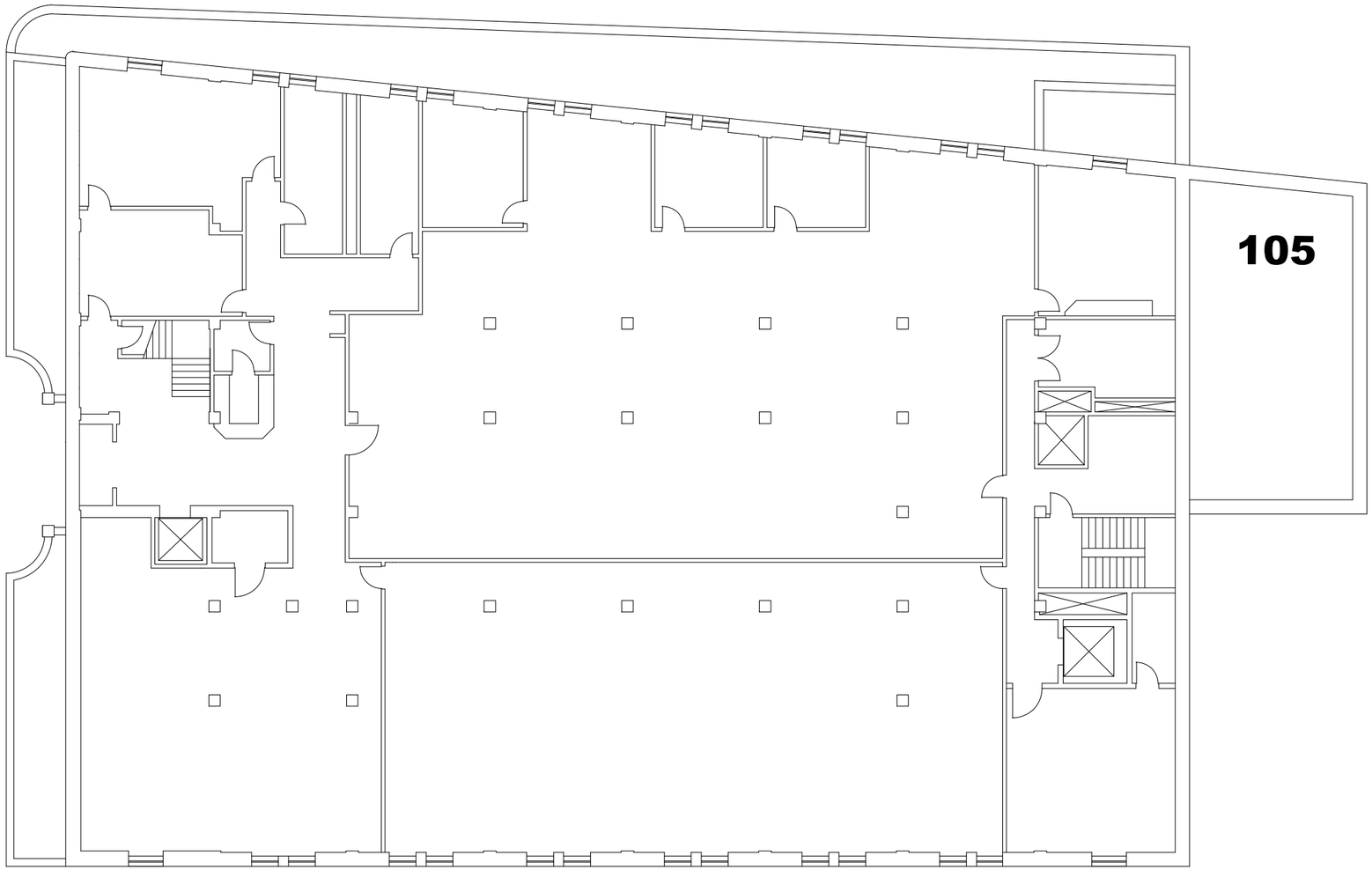


Figure Locations
Basement Plan
30 Trinity St.

N

drawing title
30 TRINITY STREET - BASEMENT FLOOR PLAN

REVISIONS

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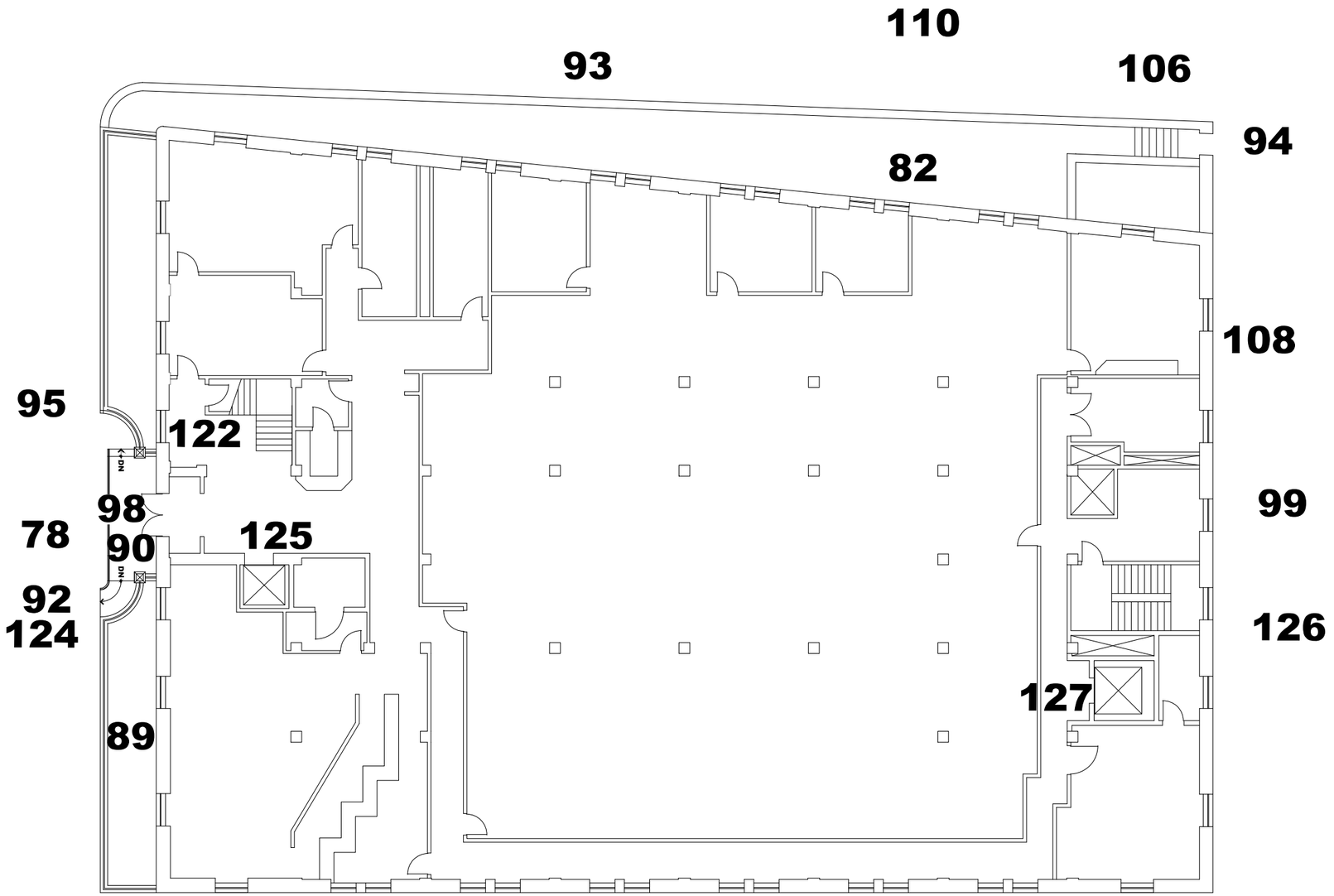


Figure Locations
1st Floor Plan
30 Trinity St.

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|---|---|---|---|---|
| drawing title: 30 TRINITY STREET - FIRST FLOOR PLAN | | | STATE OF CONNECTICUT<br>DEPARTMENT OF ADMINISTRATIVE SERVICES | |
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| mark | date | description | drawing prepared by: WISS, JANNEY, ELSTNER ASSOCIATES, INC.<br>2 TRAP FALLS ROAD, SUITE 502,<br>SHELTON, CONNECTICUT 06484 | date: 5/3/2019<br>scale: As Noted |
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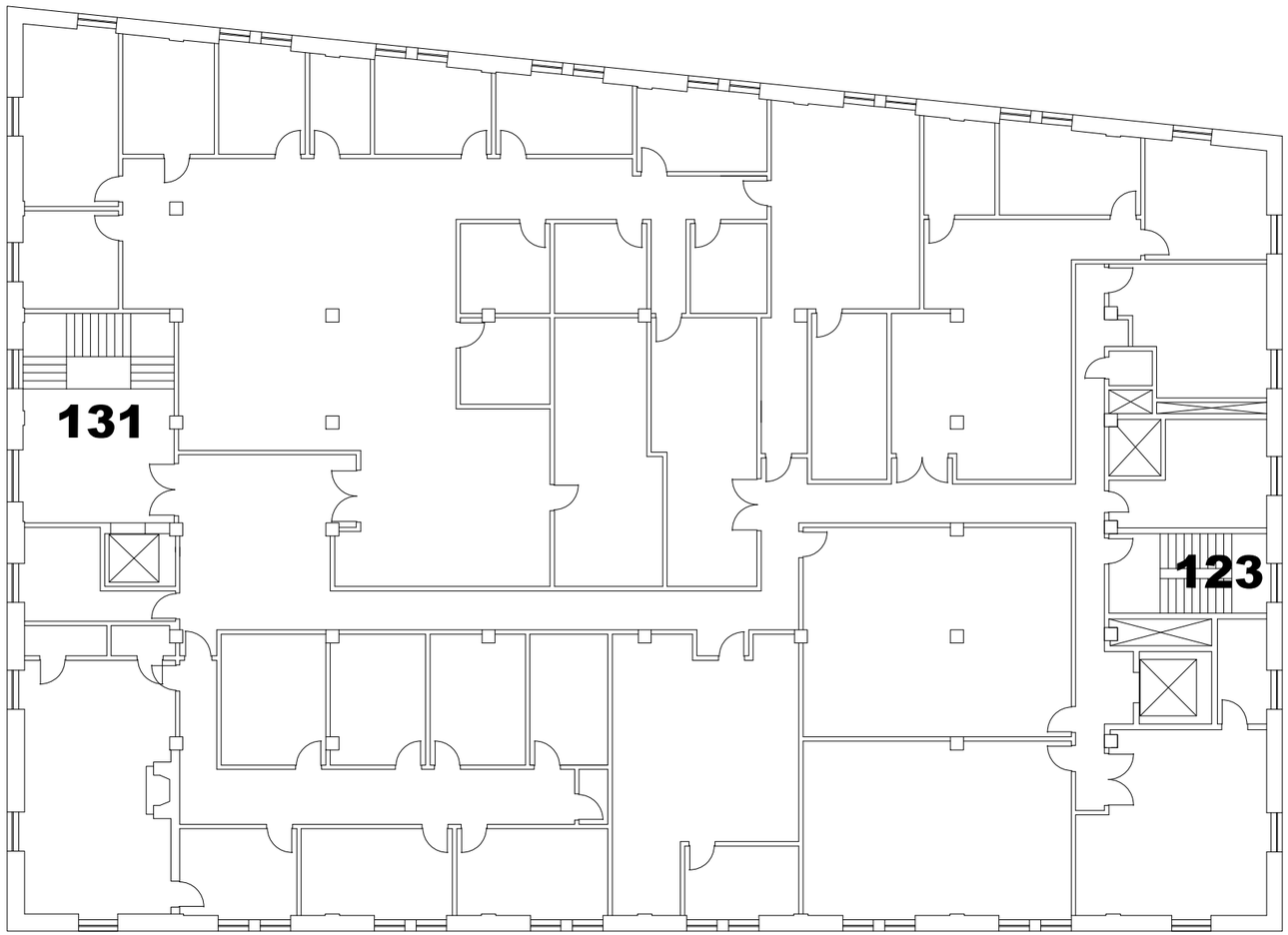


Figure Locations
2nd Floor Plan
30 Trinity St.

N

drawing title
30 TRINITY STREET - SECOND FLOOR PLAN

REVISIONS

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18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

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Figure Locations
3rd Floor Plan
30 Trinity St.

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drawing title
30 TRINITY STREET - THIRD FLOOR PLAN

REVISIONS

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project
18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

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project no.: 2018.2542


No Figures at 4th Floor

Figure Locations
4th Floor Plan
30 Trinity St.

N

drawing title
30 TRINITY STREET -
FOURTH FLOOR PLAN

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drawing no.: **A1-13**

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18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

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project no. 2018.2542

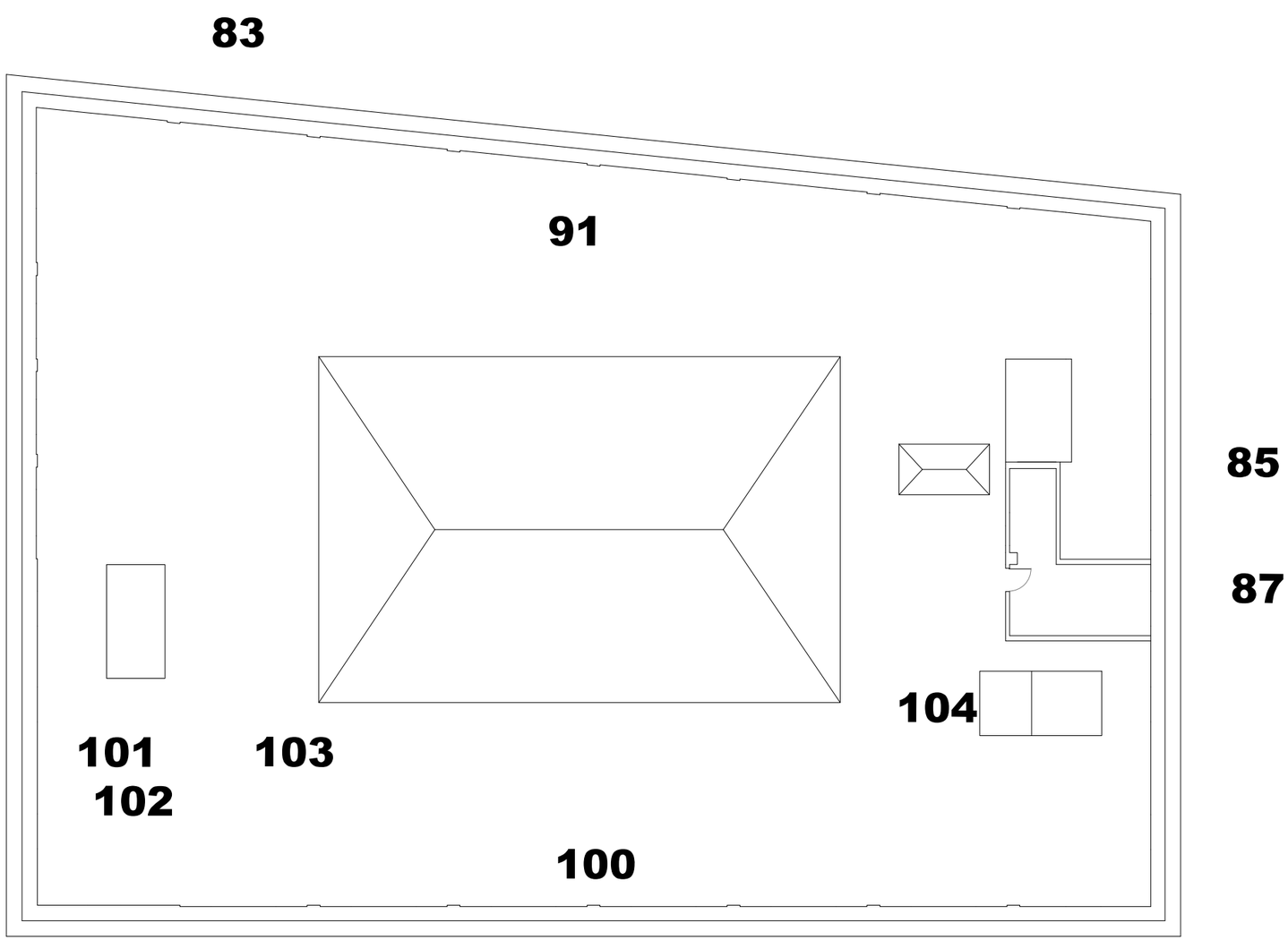


Figure Locations
Roof Plan
30 Trinity St.

N

drawing title
30 TRINITY STREET-
ROOF PLAN

REVISIONS

| mark | date | description |
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2018.2542

date
5/4/2019

scale
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PCL

approved by
TMA

drawing no.
A1-14

# Appendix II Figures

*Figure 1. West façade at 20 Trinity Street. Historic photographs of this elevation indicate the doors and windows present were not part of the original construction.*

*Figure 2. North façade at 20 Trinity Street.*

*Figure 3. Soiling and small spall on limestone.*

*Figure 4. Spalled stone at intersection with window mullion at north elevation of 20 Trinity Street. Also note small spall at keystone.*

*Figure 5. Erosion of limestone at column capitals.*

*Figure 6. Crack in limestone at southwest corner of 20 Trinity Street. Also note soiling at cornice, balustrade and pediment.*

*Figure 7. Crack at granite door sill.*

*Figure 8. Granite displacement at west entrance stair and anchors in stone left after signage removal.*

*Figure 9. Crack and surface loss in concrete landing at stair to west entrance. Also note sleeve for missing handrail post.*

*Figure 10. Anchors for missing light fixture. Staining on granite at stair and retaining wall.*

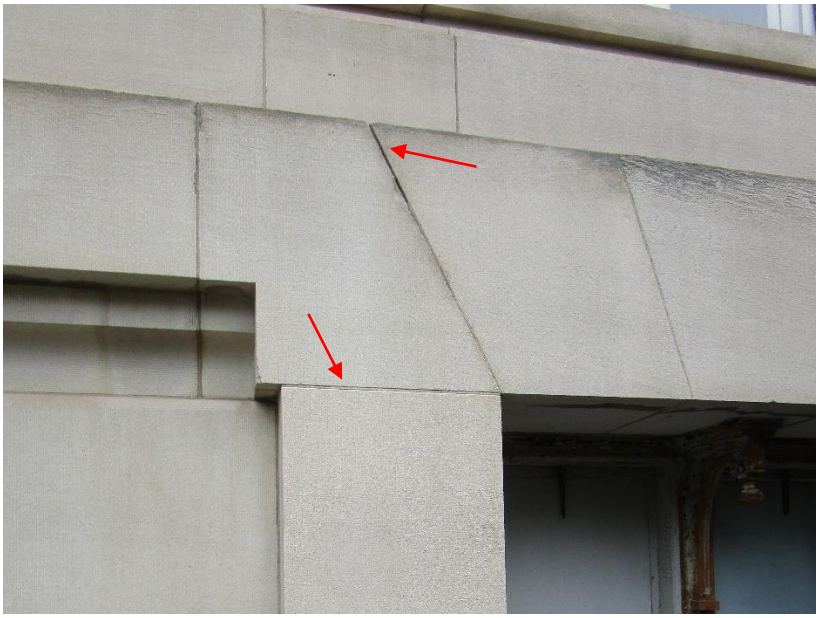


*Figure 11. Loose and missing mortar and separation at stone to mortar interface at the north elevation of 20 Trinity Street.*

*Figure 12. Spalls and mortar deterioration at granite retaining wall.*

*Figure 13. Concrete deterioration at retaining wall at the north side of 20 Trinity Street.*

*Figure 14. Concrete deterioration at stair and retaining wall at 20 Trinity Street.*

*Figure 15. Peeling paint and surface rust at steel lintel.*

*Figure 16. Spalls at stone lintel.*


*Figure 17. Paint failure and surface rust at window security grille.*

*Figure 18. Mortar in brick joints at north elevation.*

*Figure 19. Mortar deterioration at coping joint.*

*Figure 20. Spalls at concrete foundation.*

.

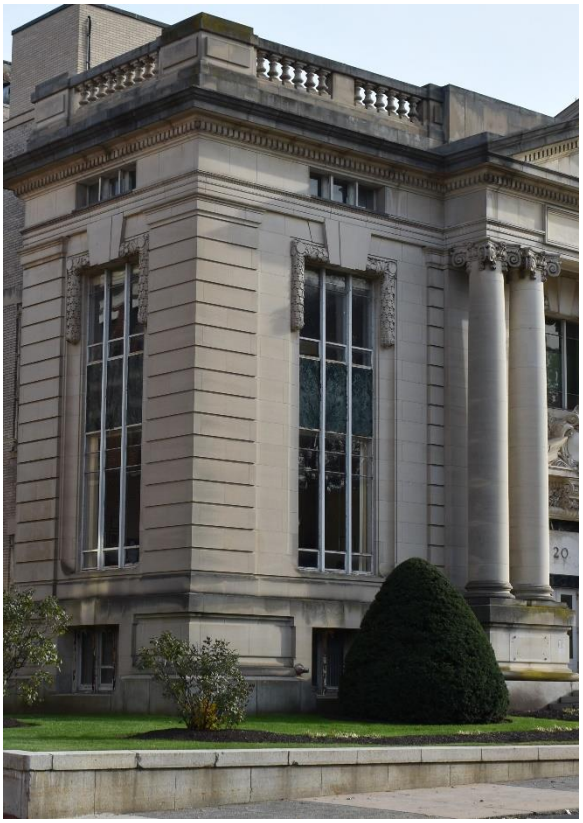


*Figure 21. Windows at the northwest corner of 20 Trinity Street.*

*Figure 22. Double hung wood window at south elevation of 20 Trinity Street. Arrows point to damage and decay at wood sash and muntin.*

*Figure 23. Steel casement window at third floor of 20 Trinity Street.*

*Figure 24. Peeling paint at wood and iron surfaces as well as surface rust on iron at ground level window.*

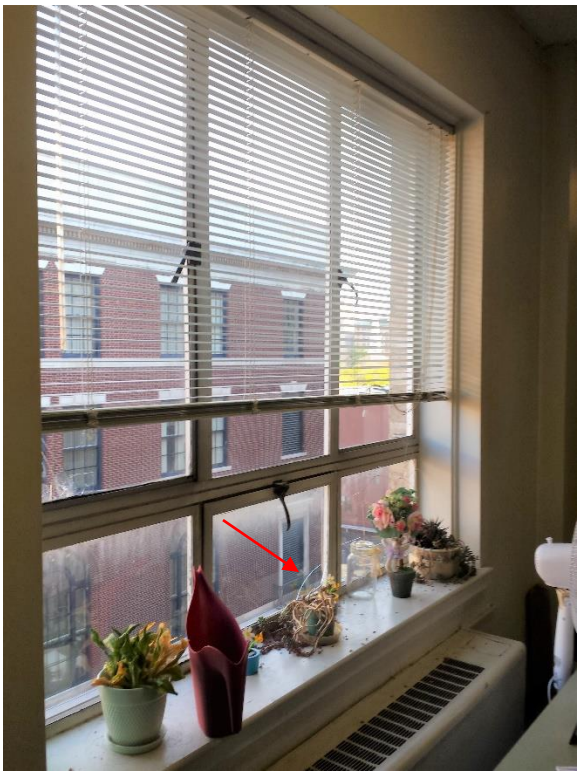


*Figure 25. Cracked glass at window.*


*Figure 26. Door at west entrance.*

*Figure 27. Door to ground floor level at south elevation.*

*Figure 28. Roof opening at 20 Trinity Street.*

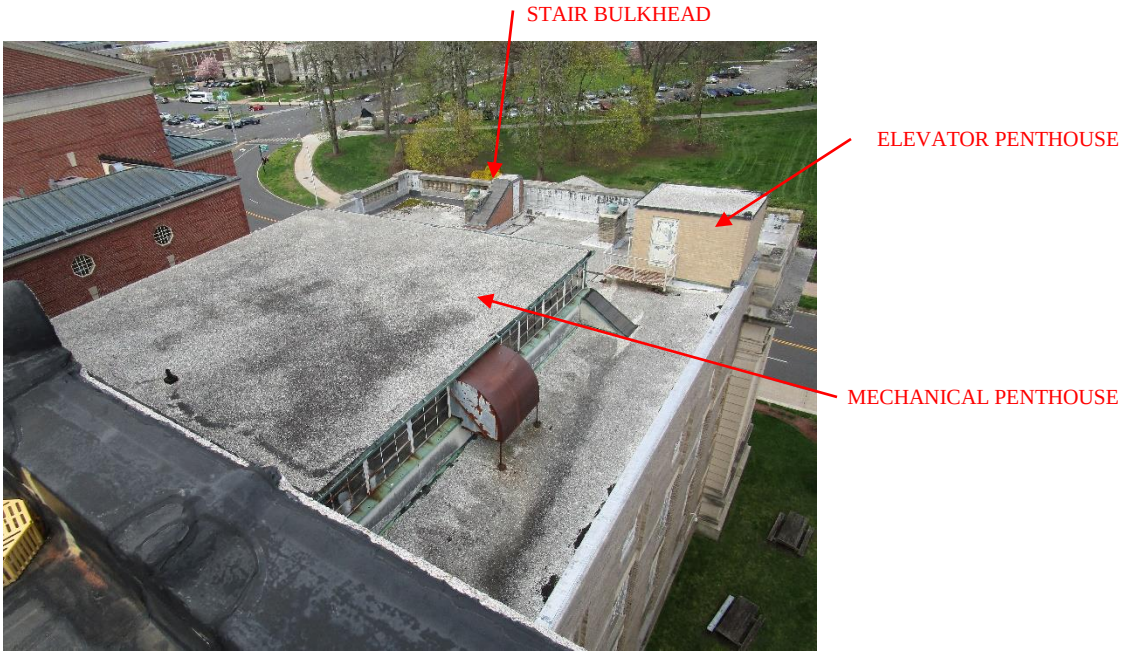



*Figure 29. Roof at 20 Trinity Street.*

*Figure 30. Roofing mastic applied to repair the base flashing.*

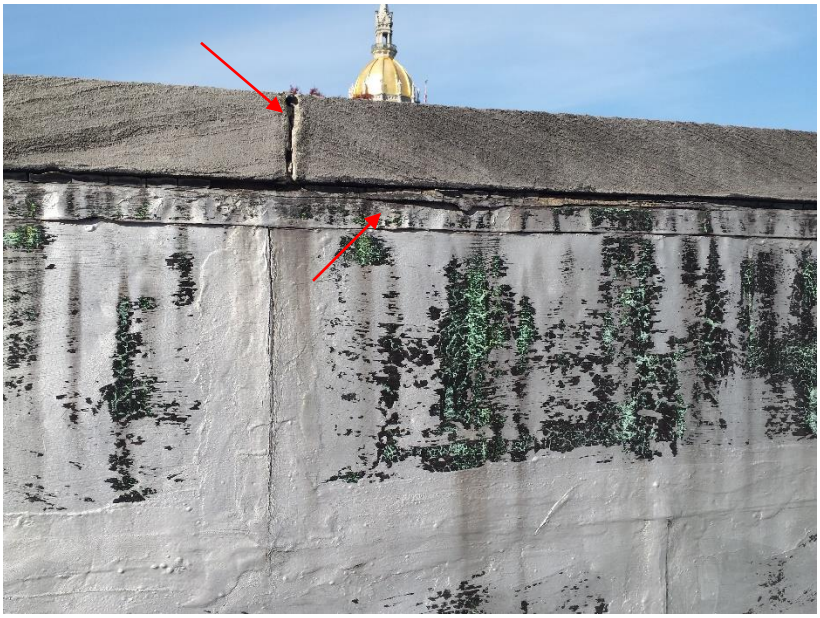


*Figure 31. Aluminized coating failure at copper panels at roof parapet as well as mortar and sealant failure at coping stones.*

*Figure 32. Loose termination bar at coping stone flashing.*

*Figure 33. Organic growth on roof surface.*

*Figure 34. Corrosion at steel windows and repairs at copper sill joints at 20 Trinity Street mechanical penthouse.*

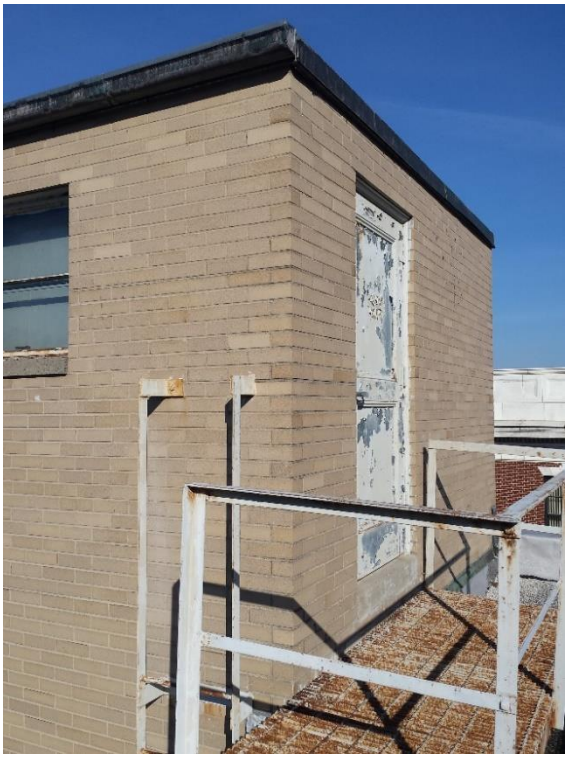


*Figure 35. Elevator penthouse at 20 Trinity Street.*

*Figure 36. Interior of stair bulkhead at 20 Trinity Street.*

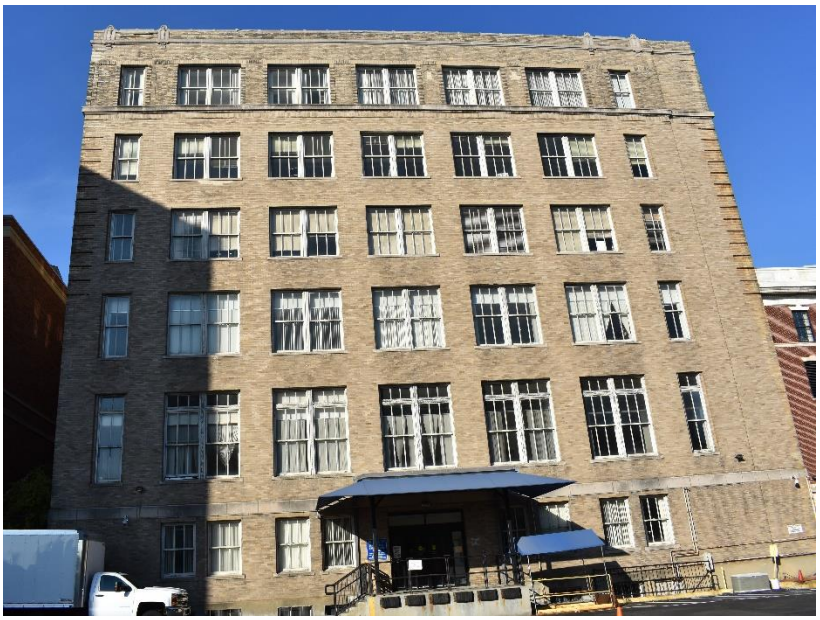


*Figure 37. East elevation of 18 Trinity Street.*


*Figure 38. Door and sidelight at northwest entrance to 18 Trinity Street.*

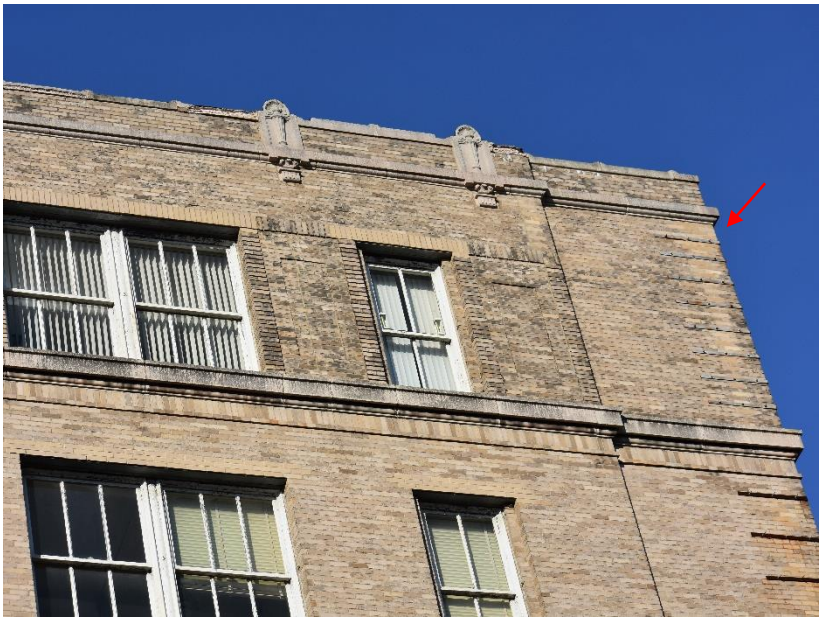


*Figure 39. Steel straps at northeast corner of 18 Trinity Street.*

*Figure 40. Corrosion at steel reinforcement straps and fasteners. Also note crack filled with elastomeric sealant.*

*Figure 41. Strap repairs at east roof parapet at 18 Trinity Street. Also note soiling and staining on the brick and cast stone surfaces.*

*Figure 42. Steel column at the southeast corner of 18 Trinity Street.*

*Figure 43. Steel spandrel beam at north elevation.*

*Figure 44. Cohesive sealant failure at crack repair.*

*Figure 45. Cracks adjacent to and below sealant crack repairs.*

*Figure 46. Delamination of cast stone coping. Also note cracks at face bricks.*


*Figure 47. Spall at band stone and cracked bricks at the southwest corner of 18 Trinity Street.*

*Figure 48. Spall at cast stone window sill at 18 Trinity Street.*

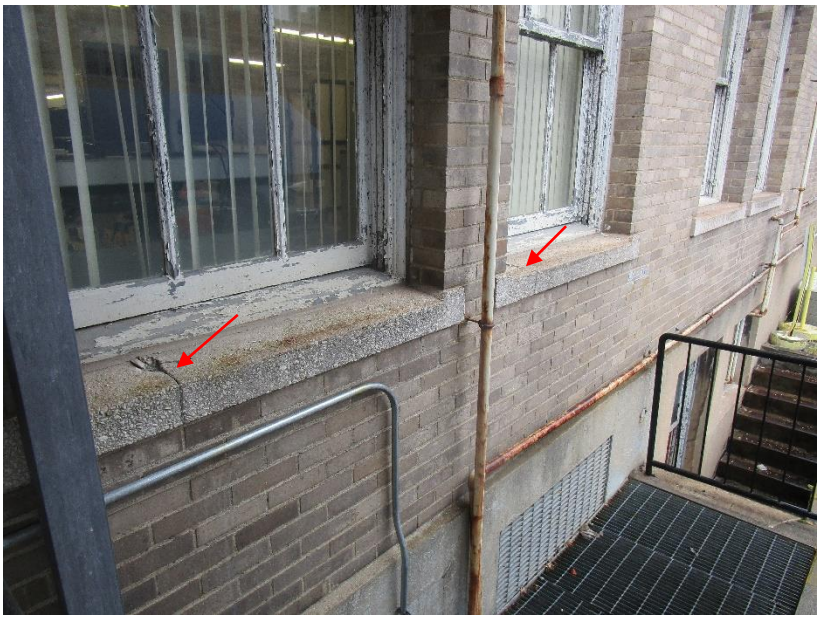


*Figure 49. Cracks at cast stone window sills. Also note peeling paint at windows. This paint failure is typical at all windows.*

*Figure 50. Spalled face brick at roof parapet.*

*Figure 51. Corrosion and deflection at steel lintel.*

*Figure 52. Galvanized steel replacement lintels.*

*Figure 53. Surface rust on steel lintels at window openings. Also note spalled brick where the lintel bears on the masonry.*

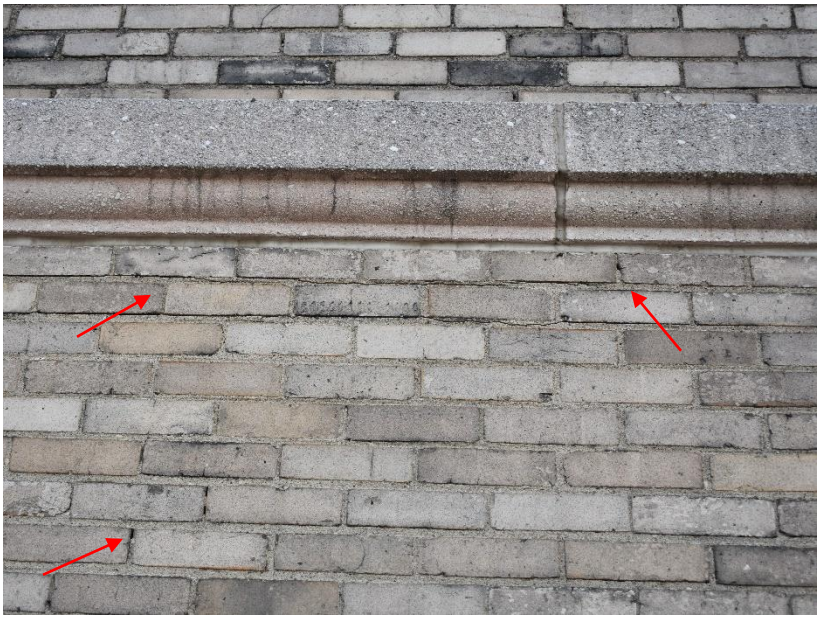


*Figure 54. Mortar cracks in brick joints at 18 Trinity Street.*

*Figure 55. Concrete deterioration at stair and retaining wall at the northwest corner of 18 Trinity Street.*

*Figure 56. Concrete deterioration at ground floor of north elevation. Note the volume of the corrosion at the steel frame at the left hand side of the figure.*

*Figure 57. Concrete spalls at treads and cracks in concrete at loading dock.*

*Figure 58. Windows at north elevation of 18 Trinity Street.*

*Figure 59. Peeling paint at interior window.*

*Figure 60. Corrosion through a steel window sill.*

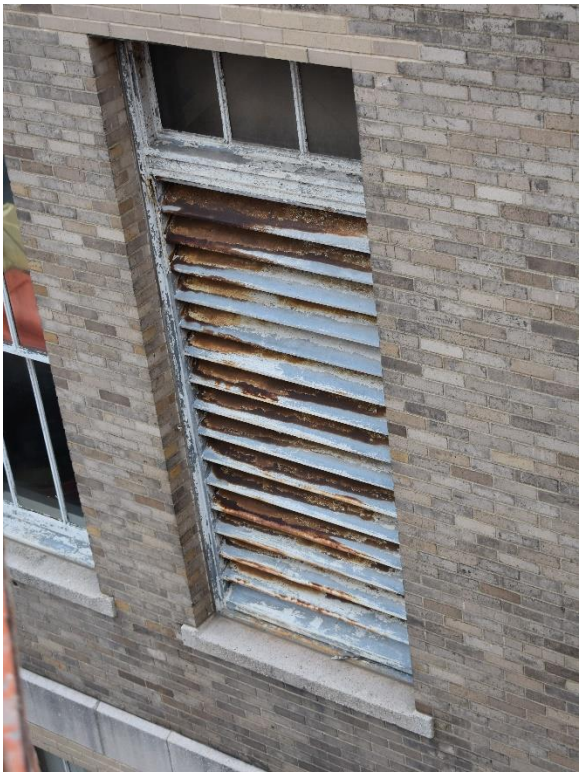


*Figure 61. Corrosion at steel louver.*


*Figure 62. Sliding aluminum/glass doors at loading dock.*

*Figure 63. Roof at 18 Trinity Street.*

*Figure 64. Patches at roof membrane. Also note deteriorated sealant in the joint above the counter flashing and exposed wood nailer below the roof edge.*

*Figure 65. Blisters under roof patches at 18 Trinity Street.*

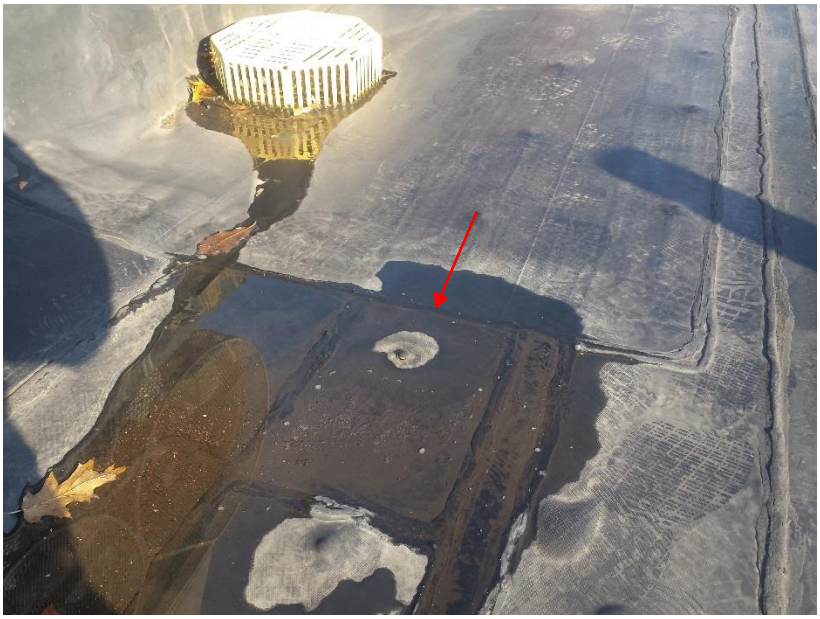


*Figure 66. Insulation fastener pushed up through the roof membrane.*

*Figure 67. Membrane adhered to cast stone copings. Delaminated cast stone below membrane.*

*Figure 68. Cooling tower reported to be abandoned at 18 Trinity Street.*

*Figure 69. Adhesive sealant failure at vertical joint between chimney and penthouse. Also note faded paint and surface rust on stair and door to penthouse.*

*Figure 70. Corrosion at steel lintel at top of door opening and exposed wood nailer below roof edge.*

*Figure 71. Roof probe at field of roof at 18 Trinity Street.*

*Figure 72. Roof probe at rising wall at 18 Trinity Street.*

*Figure 73. Leak into basement vault at 18 Trinity Street.*

*Figure 74. Driveway above vault at 18 Trinity Street.*

*Figure 75. Apparent pump above vault at 18 Trinity Street.*

*Figure 76. Head at door to vault at 18 Trinity Street.*

*Figure 77. North and west elevations of 30 Trinity Street.*

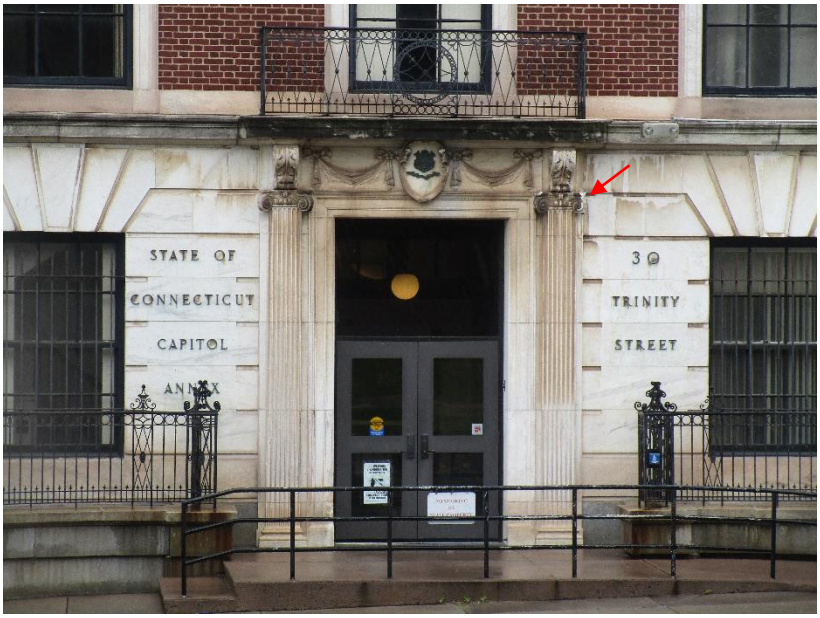



*Figure 78. Soiling on marble at east elevation. Also note spall at column capital.*

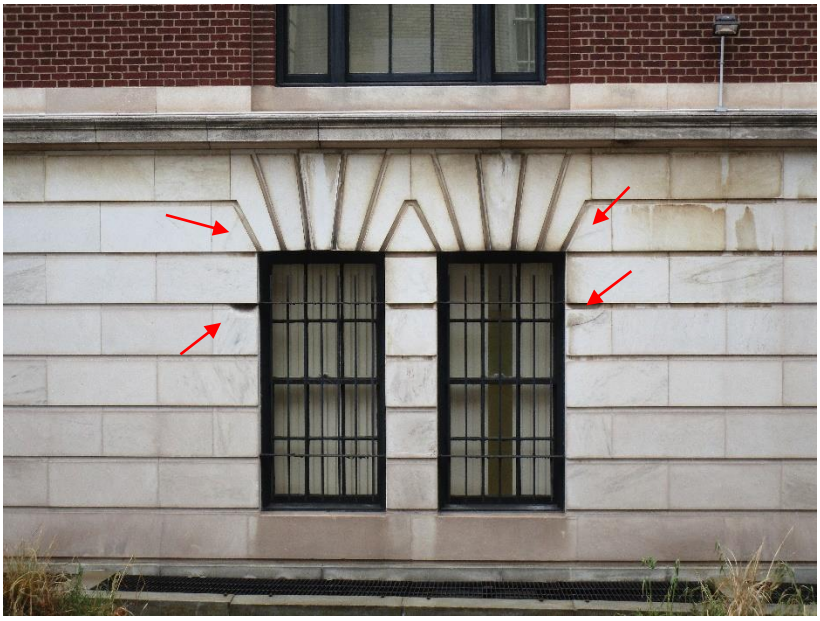


*Figure 79. Spalls and cracks at marble where steel security grilles are set into the stone.*

*Figure 80. Peeling paint and surface rust at window security grille.*

*Figure 81. Spall at first floor cornice and cracked stone below cornice at the southeast corner of 30 Trinity Street.*

*Figure 82. Surface erosion at marble unit.*

*Figure 83. 30 Trinity - Spall and crack at north elevation roof parapet.*

*Figure 84. Spall at cornice.*

*Figure 85. Cracks at upward facing surface of the parapet cornice.*

*Figure 86. Cracks at upward facing surface of the parapet cornice.*

*Figure 87. Stone crumbling at edge of cornice.*

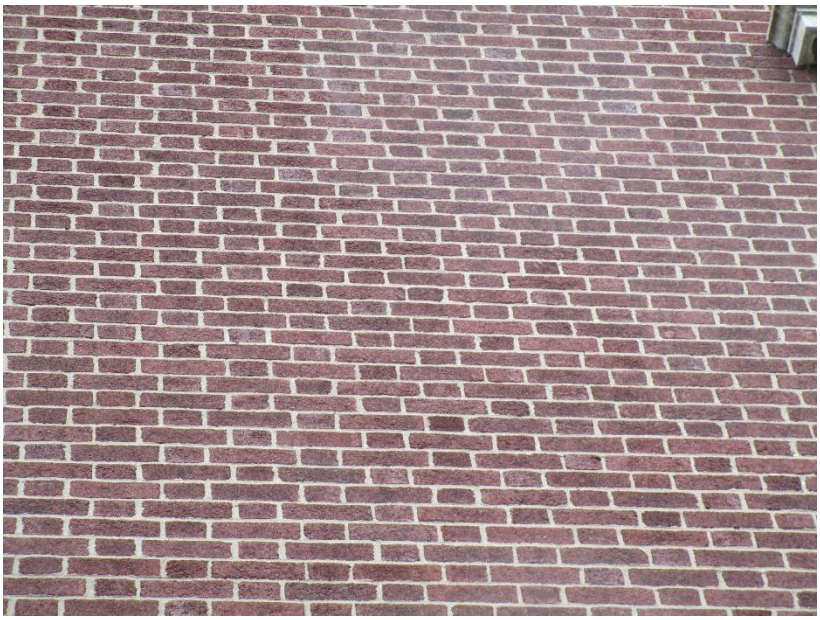


*Figure 88. Mortar in brick joints at 30 Trinity Street.*

*Figure 89. Loose mortar in marble cornice joint.*

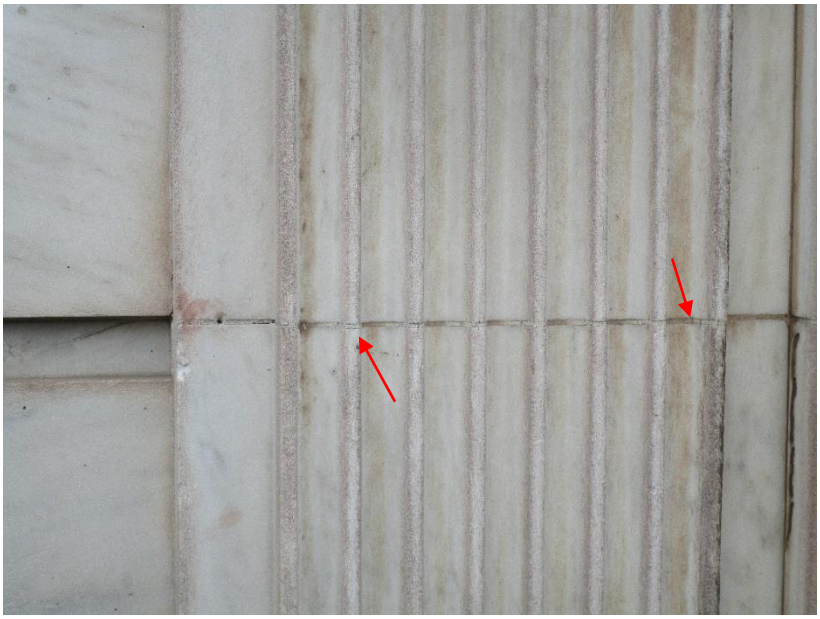


*Figure 90. Cracked mortar and separation of the mortar at its interface with the marble.*

*Figure 91. Adhesive sealant failure at joints between coping stones at the roof parapet.*

*Figure 92. Stone displacement, spalls, mortar deterioration, rust staining, and joint sealant deterioration at retaining wall.*

*Figure 93. Organic soiling and mortar deterioration at north retaining wall.*

*Figure 94. Mortar deterioration and rust stains at east retaining wall.*

*Figure 95. Peeling paint and surface rust on iron railing and light fixture causing rust stains on the stone retaining wall.*

*Figure 96. Faded paint finish at steel window and cracked glass at window panes.*

*Figure 97. Peeling paint at interior surface of window.*


*Figure 98. West entrance doors at 30 Trinity Street.*


*Figure 99. Doors at east entrance to 30 Trinity Street.*

*Figure 100. Roof at 30 Trinity Street.*

*Figure 101. Wall panels at roof parapet and roof drains.*

*Figure 102. Mastic applied to seams of base flashing.*

*Figure 103. Asphalt shingle roofing and aluminum wall panels at mechanical penthouse.*

*Figure 104. Elevator penthouse at 30 Trinity Street.*

*Figure 105. Corrosion at roof deck at vault at 30 Trinity Street.*

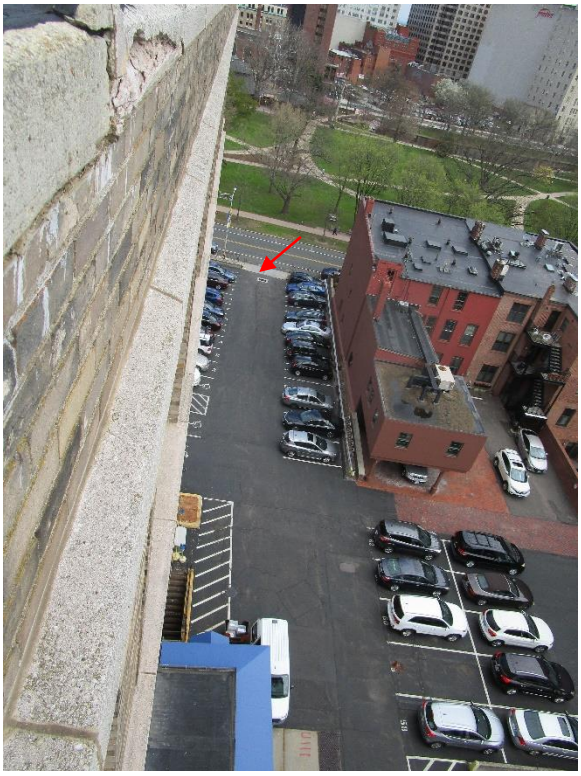


*Figure 106. Parking lot. Note storm drain.*

*Figure 107. Driveway from Trinity Street to the parking lot.*


*Figure 108. Bituminous asphalt surface at parking lot behind 18 Trinity Street.*

*Figure 109. Concrete deterioration at parking lot retaining wall.*

*Figure 110. Concrete knee wall and iron fence facing Elm Street.*

*Figure 111. Standpipe Incoming Water Supply.*

*Figure 112. Simplex 4100 FACP.*


*Figure 113. In-duct smoke detector with remote test station.*

*Figure 114. Silent Knight SK-2 FACP.*

*Figure 115. Guard and handrails at west stair of 20 Trinity Street.*

*Figure 116. Typical handrails at 18 Trinity Street stairs.*

*Figure 117. Accessible path to south entrance at 18 Trinity Street.*

*Figure 118. North elevator at 18 Trinity Street.*

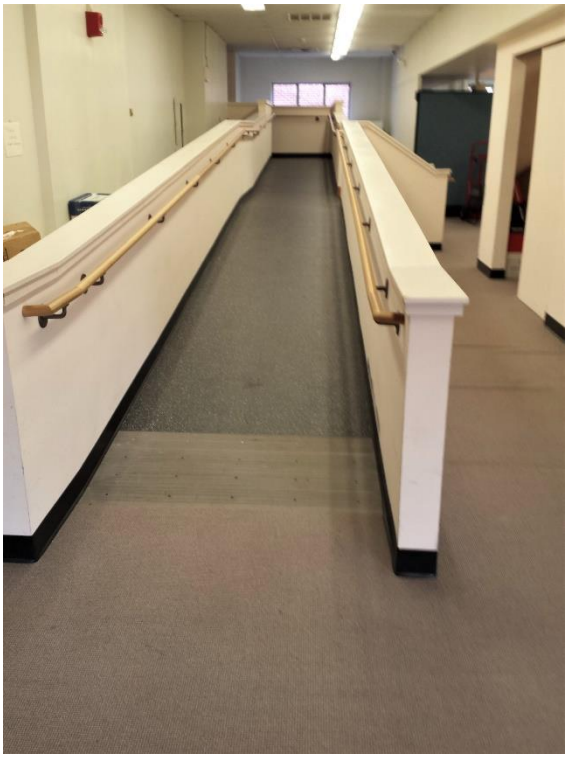


*Figure 119. Interior ramp connecting 18 and 20 Trinity Street.*

*Figure 120. Non-accessible toilet room at third floor of 18 Trinity Street.*

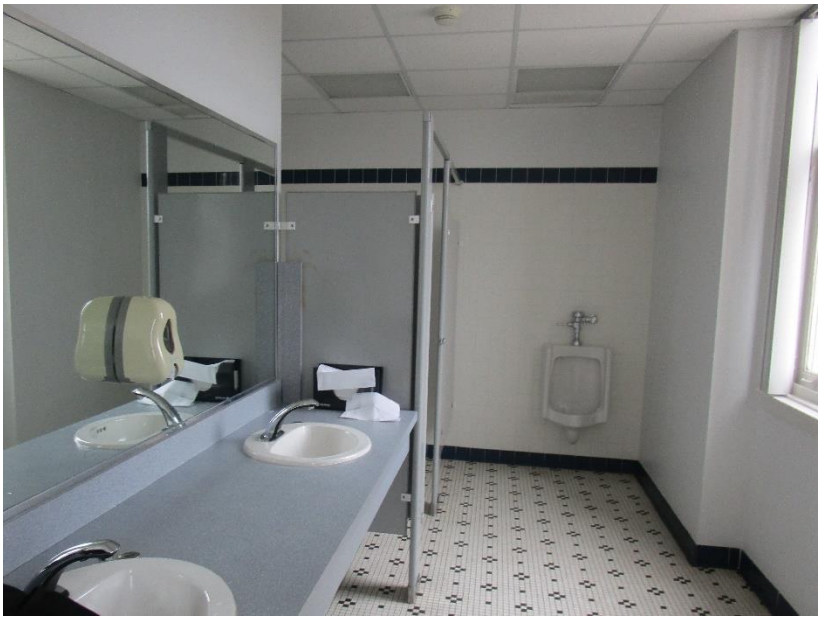


*Figure 121. Accessible toilet room at 5th Floor of 18 Trinity Street.*


*Figure 122. West stair at 30 Trinity Street.*

*Figure 123. East stair at 30 Trinity Street.*


*Figure 124. Ramp to west entrance at 30 Trinity Street.*

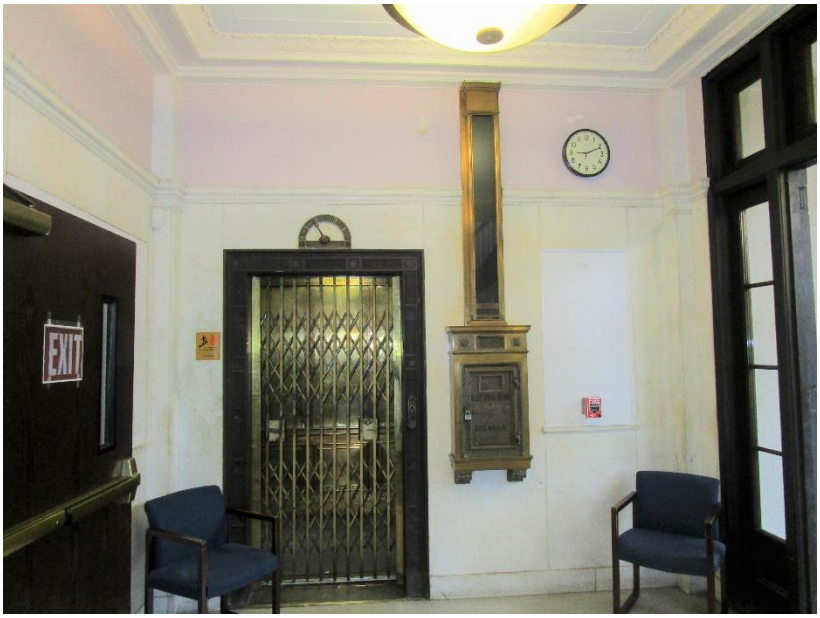



*Figure 125. Elevator at the west side of 30 Trinity Street.*


*Figure 126. Ramp to east entrance to 30 Trinity Street.*


*Figure 127. Controls at east elevator at 30 Trinity Street.*

*Figure 128. Accessible lavatories at 30 Trinity Street.*

*Figure 129. Accessible drinking fountain at 30 Trinity Street.*

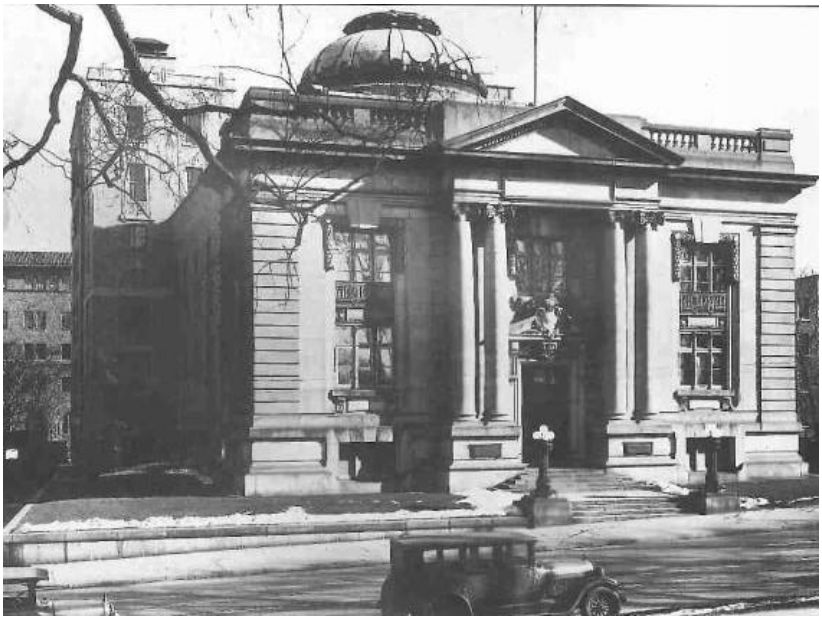


*Figure 130. Historic photo of original construction at 20 Trinity Street*

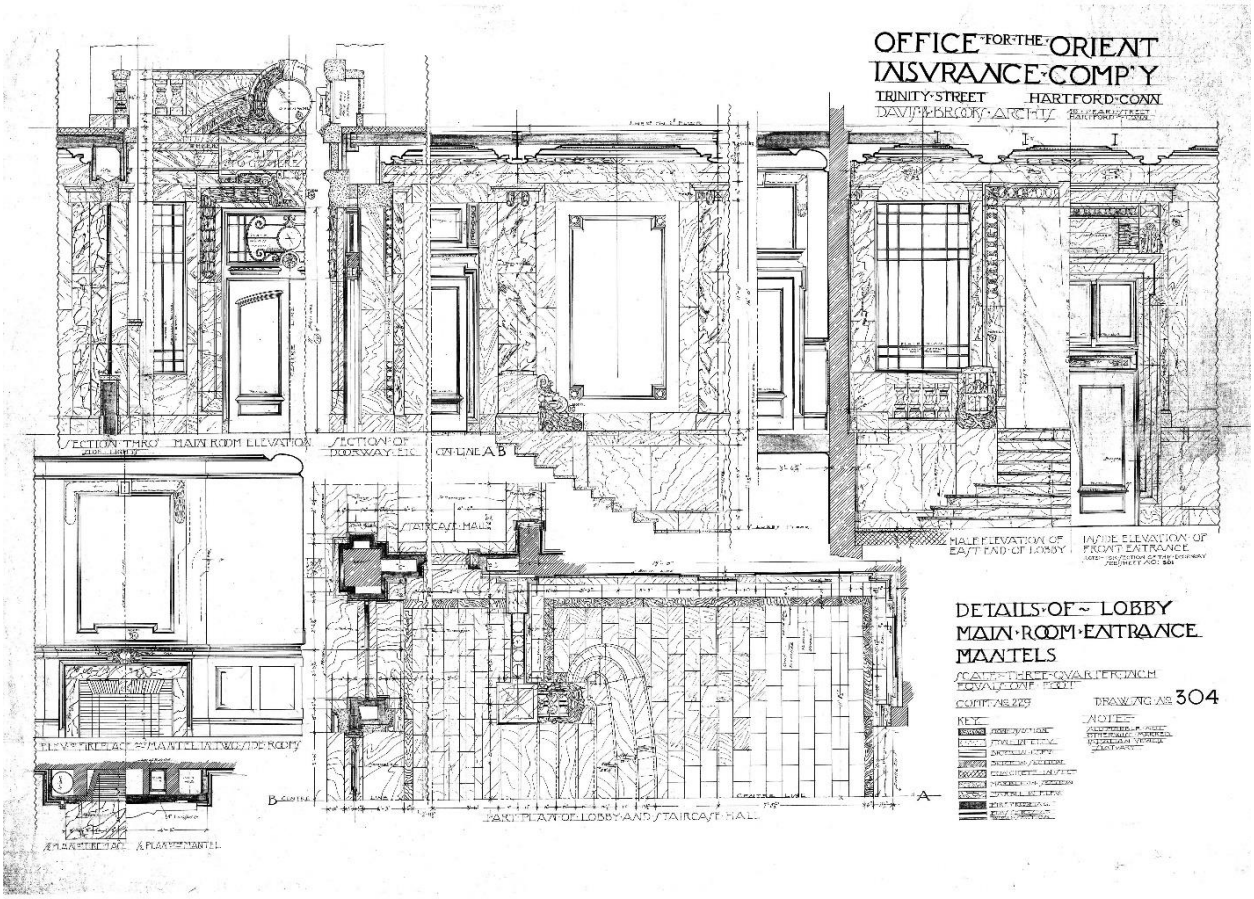



*Figure 131. Detail drawing of Original Lobby at 20 Trinity Street.*

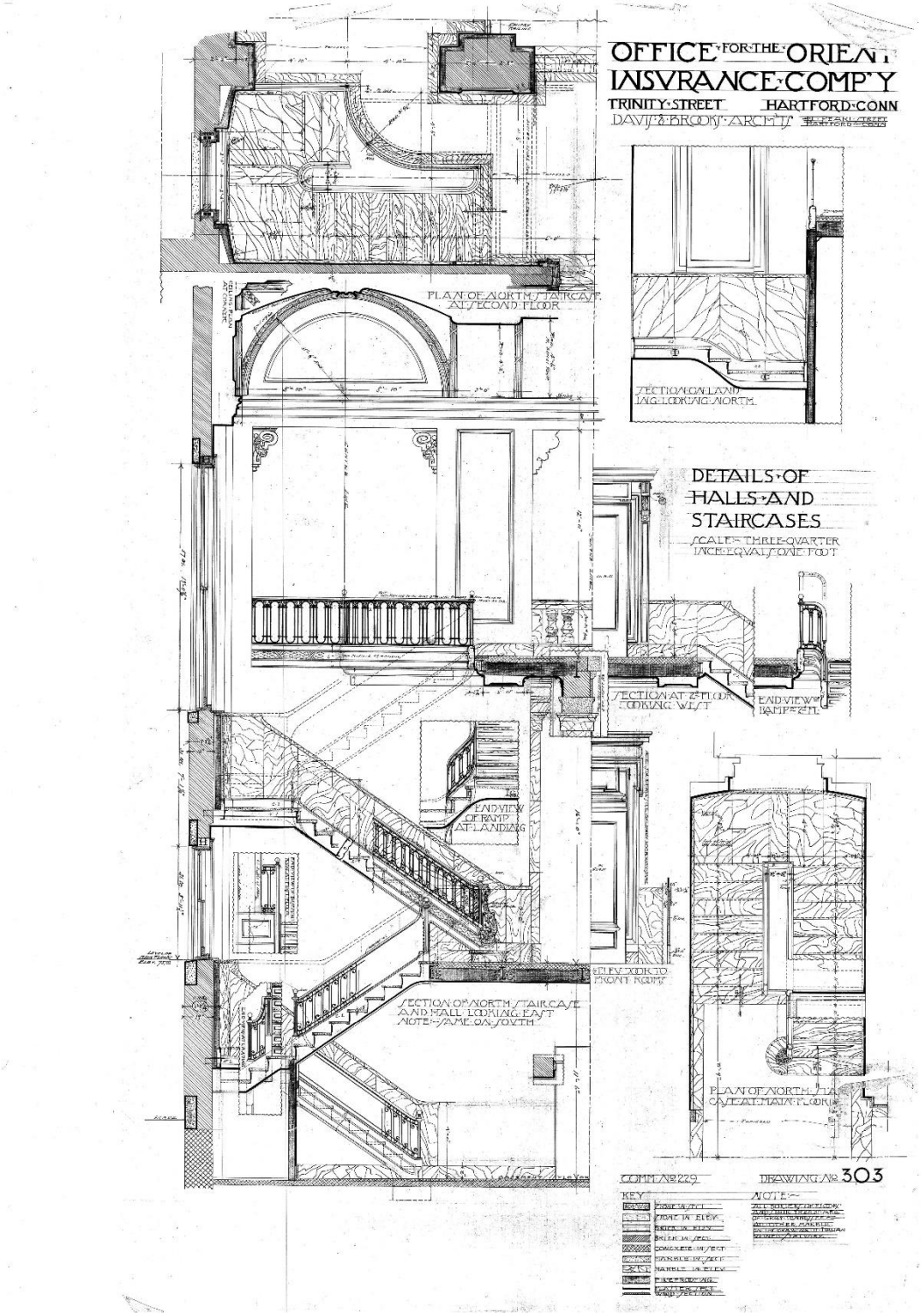



*Figure 132. Section through original stair at west entrance of 20 Trinity Street.*


*Figure 133. Original dome at west elevation at 30 Trinity Street.*

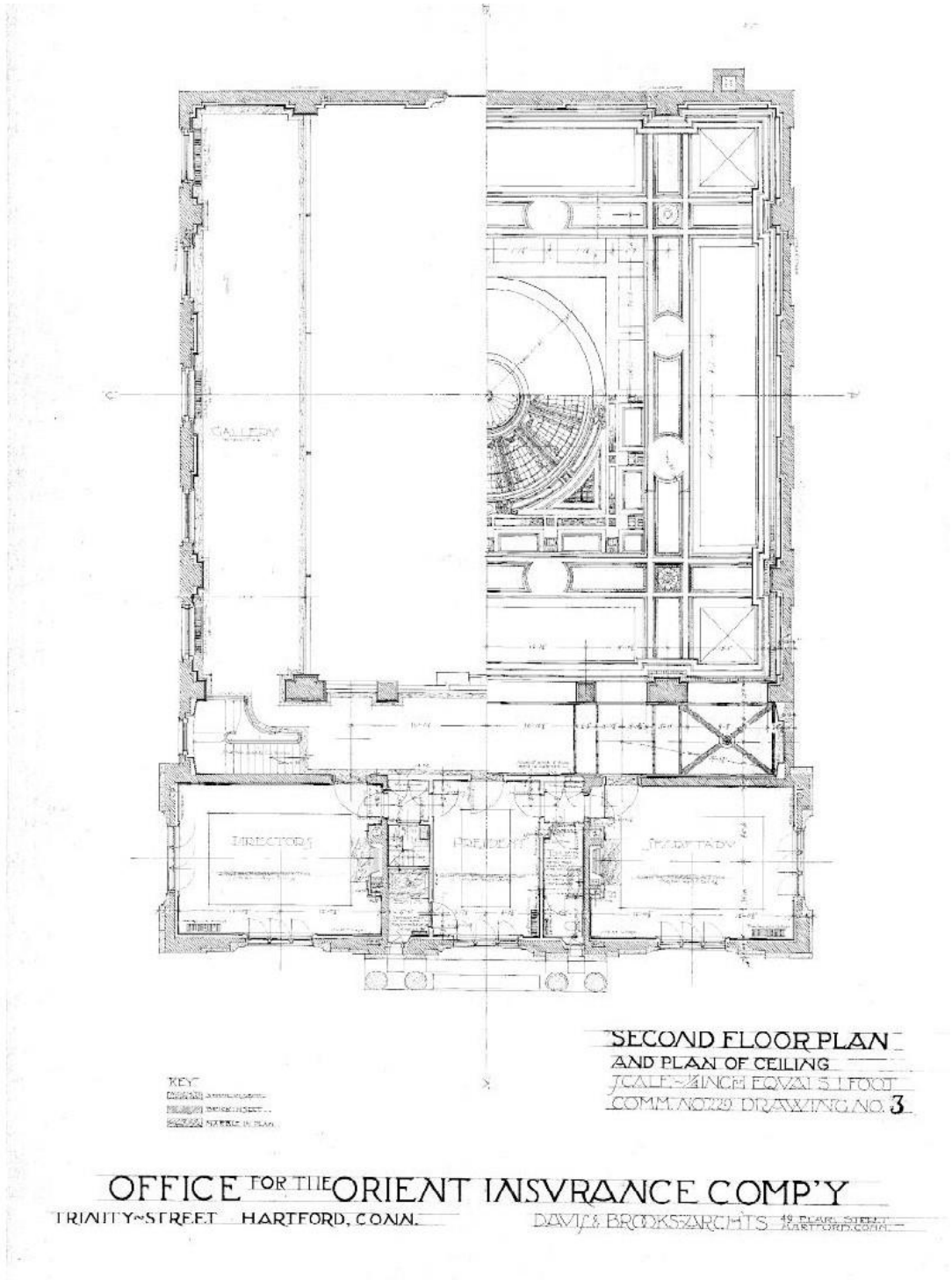



*Figure 134. Ceiling at dome at 30 Trinity Street.*


*Figure 135. Plan of option to replace 18 Trinity Street.*

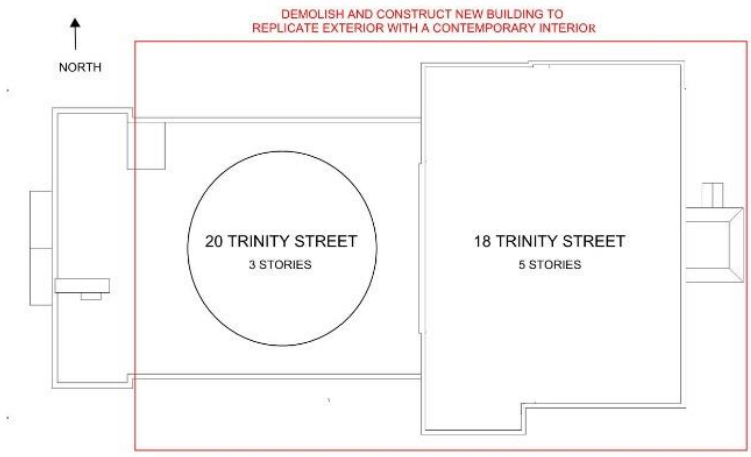



*Figure 136. Plan of option to replace 18 Trinity Street and partially replace 20 Trinity Street.*

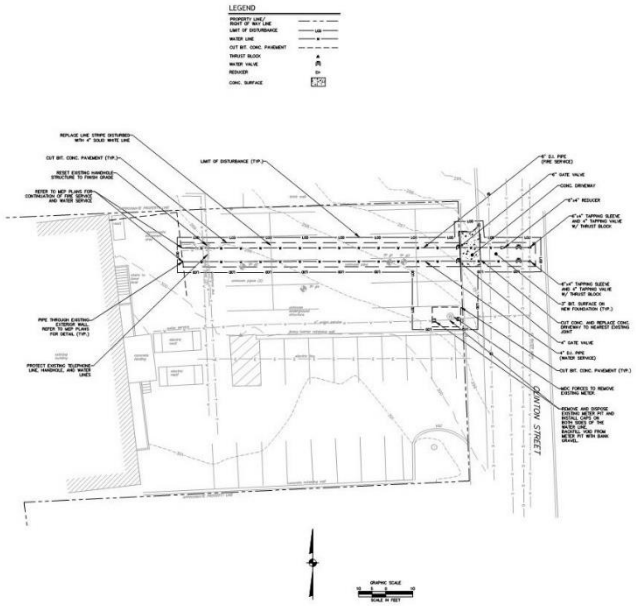



*Figure 137. Replace main water line and fire service line to 18/20 Trinity Street from Clinton Avenue. Design by Freeman Companies LLC.*

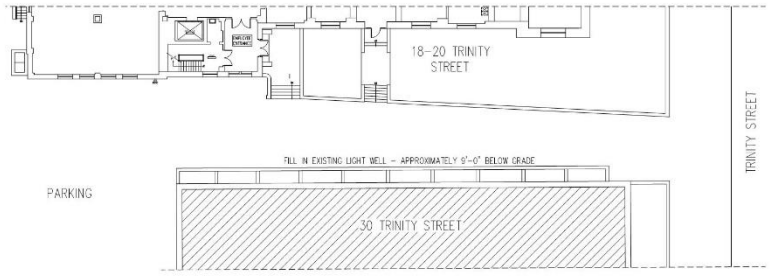



*Figure 138. 30 Trinity Street light well infill.*

## Appendix III Proposed Exterior Repair Locations

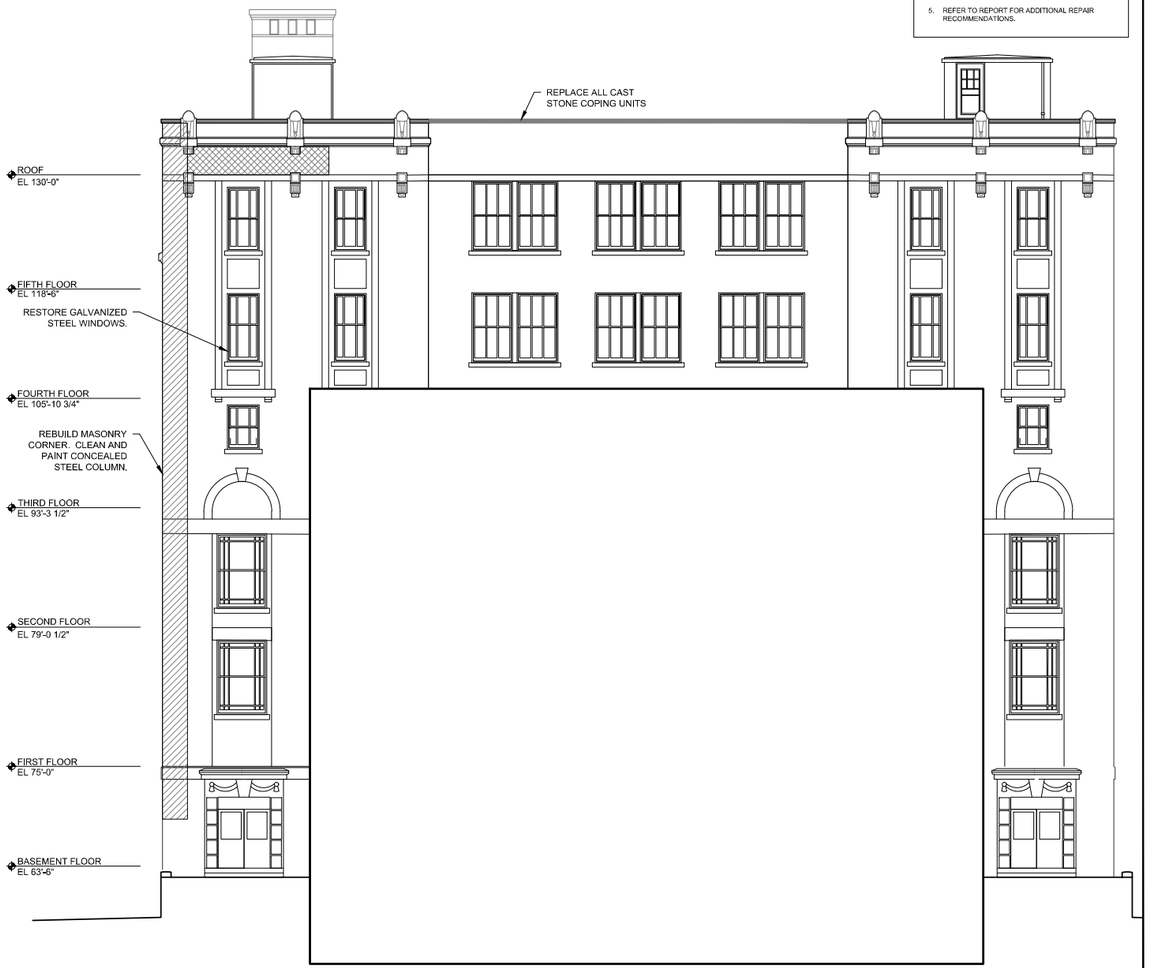
LEGEND:

- CRACK REPAIR.
- CR — REBUILD MASONRY. CLEAN AND COAT ALL CONCEALED STEEL SURFACES.
- REPOINT JOINTS.
- D — DUTCHMAN REPAIR.
- REPLACE SPALLED BRICK.
- A — LINTEL REPLACEMENT
- BSP — REPAIR CRACKS AT STONE WINDOW SILLS.
- CS — REPAIR CONCRETE SPALL
- G — REPLACE BROKEN GLASS
- RS — RESTORE WOOD SASH OFFSITE

GENERAL NOTES:

1. GENERAL SCOPE OF WORK AT WINDOWS INCLUDES SCRAPING AND PAINTING EXISTING FRAMES, REPLACEMENT OF GLAZING PUTTY AND SEALANTS.
2. REPLACE ALL STOPES AT WOOD WINDOWS.
3. ALL REPAIR CALLOUTS ARE TYPICAL
4. CLEAN ALL MASONRY.
5. REFER TO REPORT FOR ADDITIONAL REPAIR RECOMMENDATIONS.


1 18 TRINITY STREET - EAST ELEVATION
SCALE: 1/8" = 1'-0"




2 18 TRINITY STREET - WEST ELEVATION
SCALE: 1/8" = 1'-0"

drawing title: 18-20 TRINITY ELEVATIONS

REVISIONS

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STATE OF CONNECTICUT
DEPARTMENT OF ADMINISTRATIVE SERVICES

drawing prepared by: WISS, JANNEY, ELSTNER ASSOCIATES, INC
2 TRAP FALLS ROAD, SUITE 502,
SHELTON, CONNECTICUT 06484

date: 5/3/2019
scale: As Noted
drawn by:
approved by: DAF

project: 18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

CAD no.
project no. 2018.2542

drawing no. **A3-1**

LEGEND:

- CRACK REPAIR.
- CR — REBUILD MASONRY. CLEAN AND COAT ALL CONCEALED STEEL SURFACES.
- REPOINT JOINTS.
- D — DUTCHMAN REPAIR.
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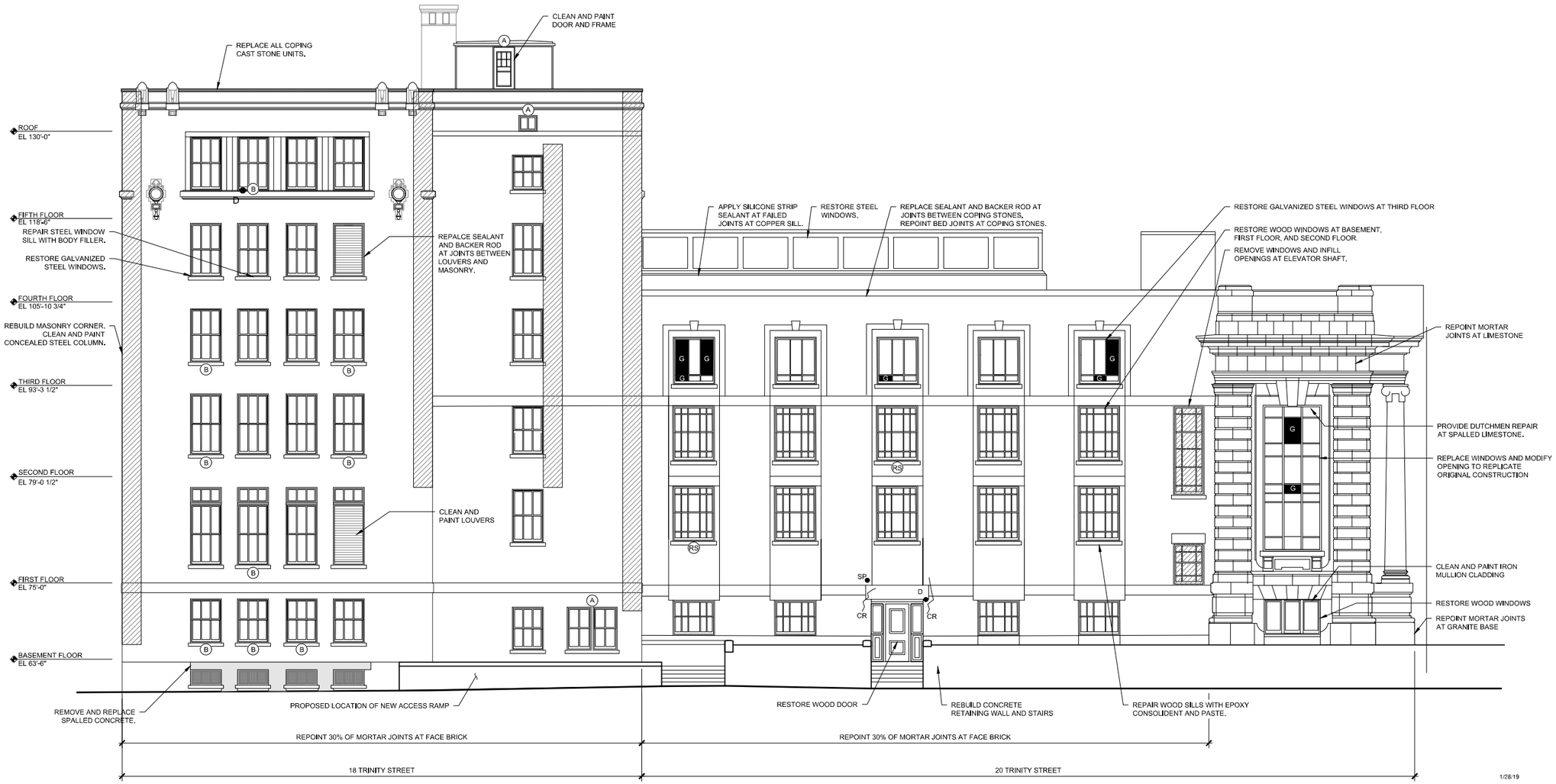


1 18-20 TRINITY - NORTH ELEVATION
SCALE: 1/8" = 1'-0"

1/28/19

drawing title: 18-20 TRINITY - ELEVATIONS

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project
18-20 AND 30 TRINITY STREET
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CAD no.
project no. 2018.2542

drawing no. **A3-2**

LEGEND:

- CR — CRACK REPAIR.
- CR — REBUILD MASONRY. CLEAN AND COAT ALL CONCEALED STEEL SURFACES.
- REPOINT JOINTS.
- D — DUTCHMAN REPAIR.
- REPLACE SPALLED BRICK.
- (A) — LINTEL REPLACEMENT
- (B) P — REPAIR CRACKS AT STONE WINDOW SILLS.
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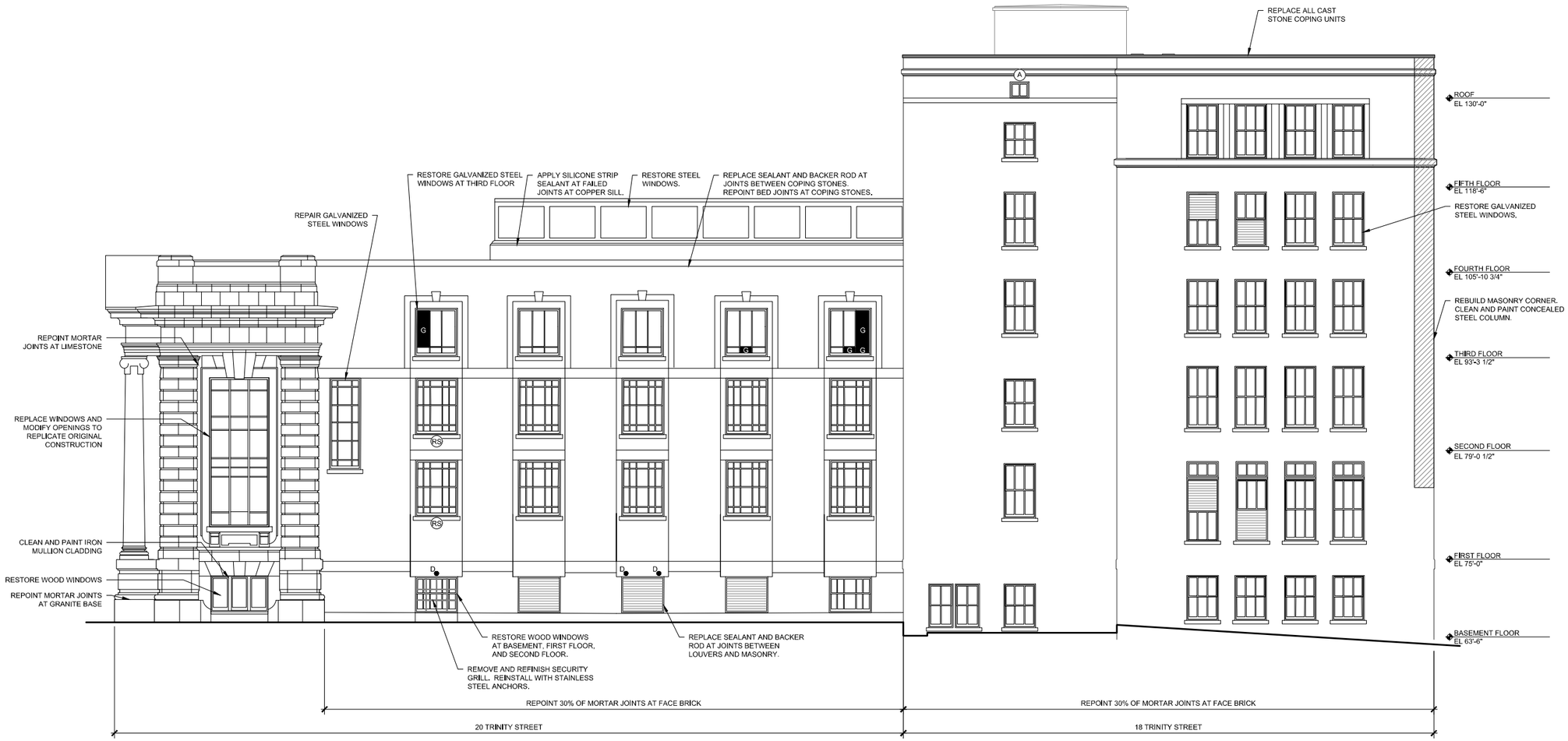


1 18-20 TRINITY - SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

drawing title: 18-20 TRINITY - ELEVATIONS

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18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

CAD no.
project no. 2018.2542

drawing no. A3-3

LEGEND:

- CRACK REPAIR.
- CR — REBUILD MASONRY. CLEAN AND COAT ALL CONCEALED STEEL SURFACES.
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1 20 TRINITY STREET - WEST ELEVATION
SCALE: 1/8" = 1'-0"

drawing title: 20 TRINITY STREET ELEVATION

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project
18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

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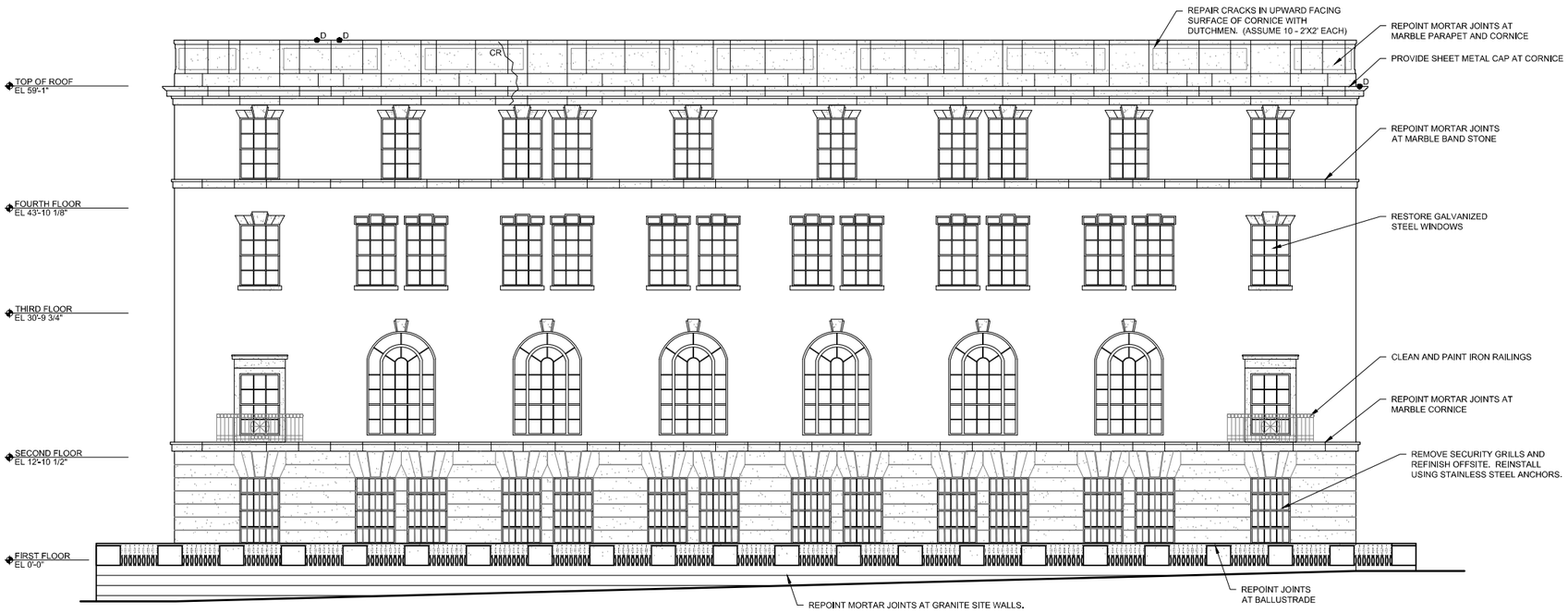
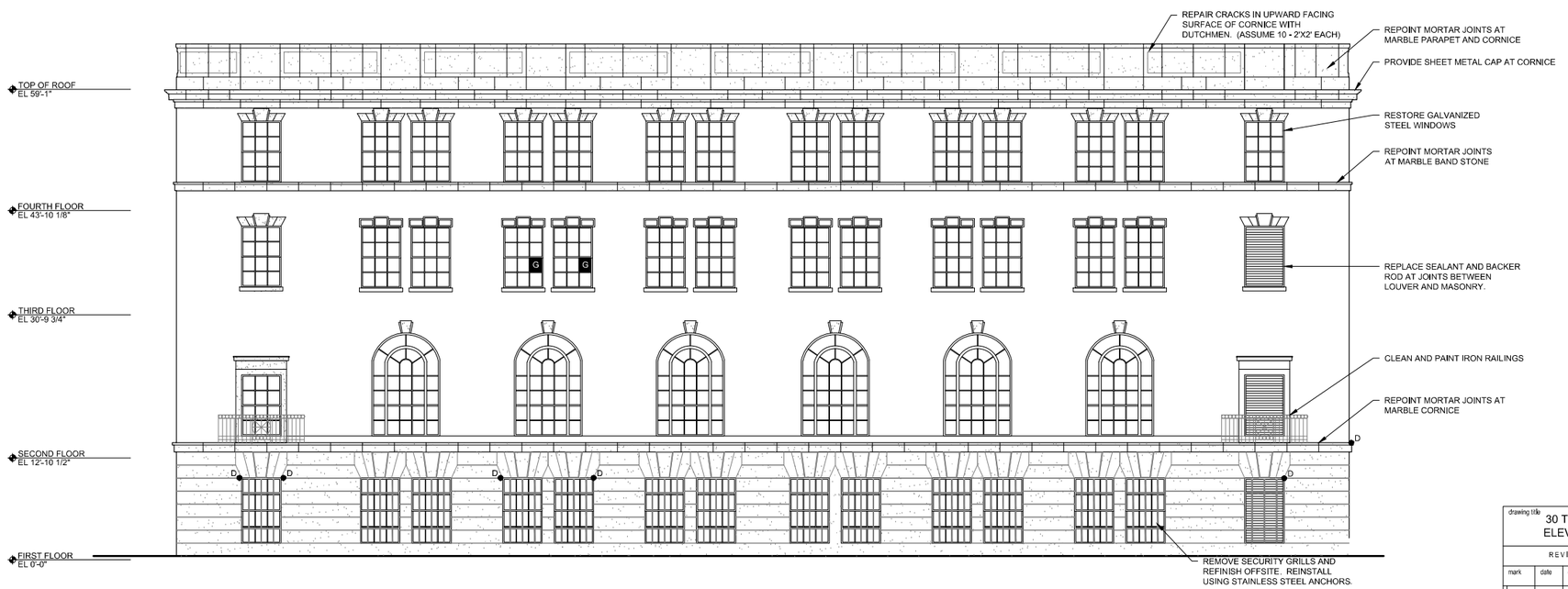



1 30 TRINITY STREET - NORTH ELEVATION
SCALE: 1/8" = 1'-0"




2 30 TRINITY STREET - SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

LEGEND:

- CRACK REPAIR.
- CR — REBUILD MASONRY. CLEAN AND COAT ALL CONCEALED STEEL SURFACES.
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drawing title: 30 TRINITY - ELEVATIONS

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18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

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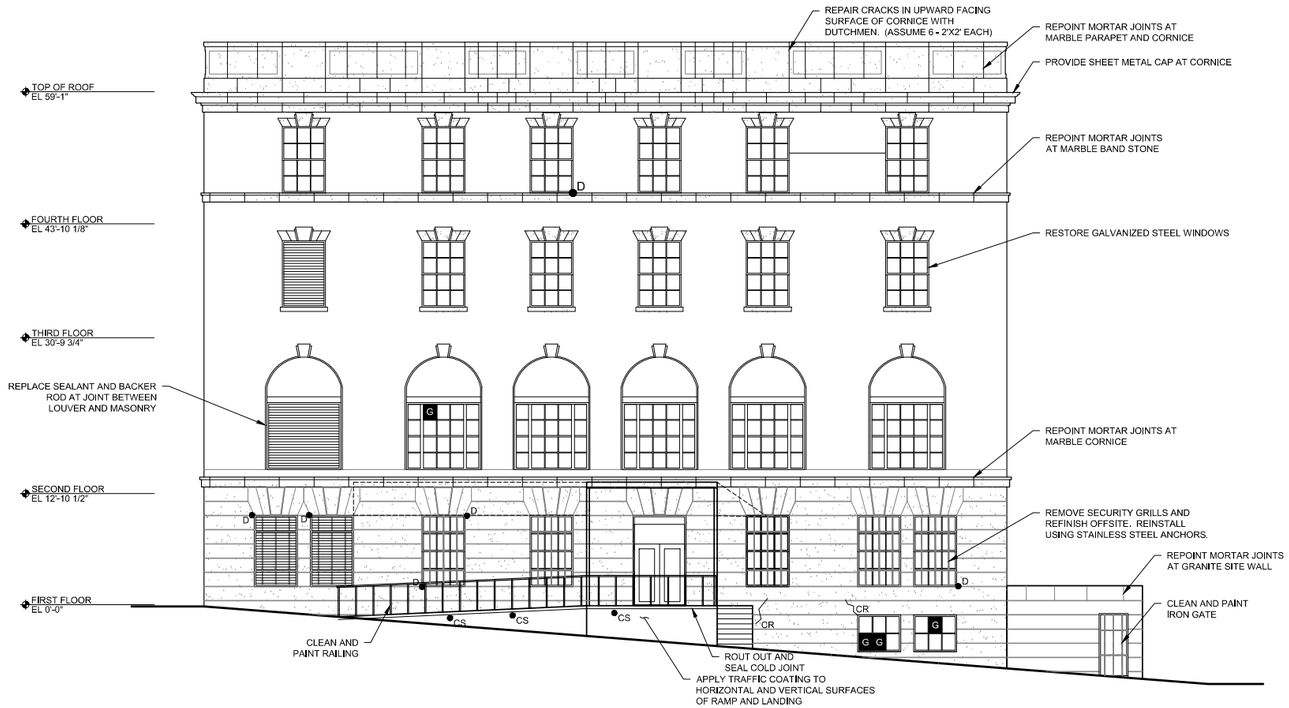
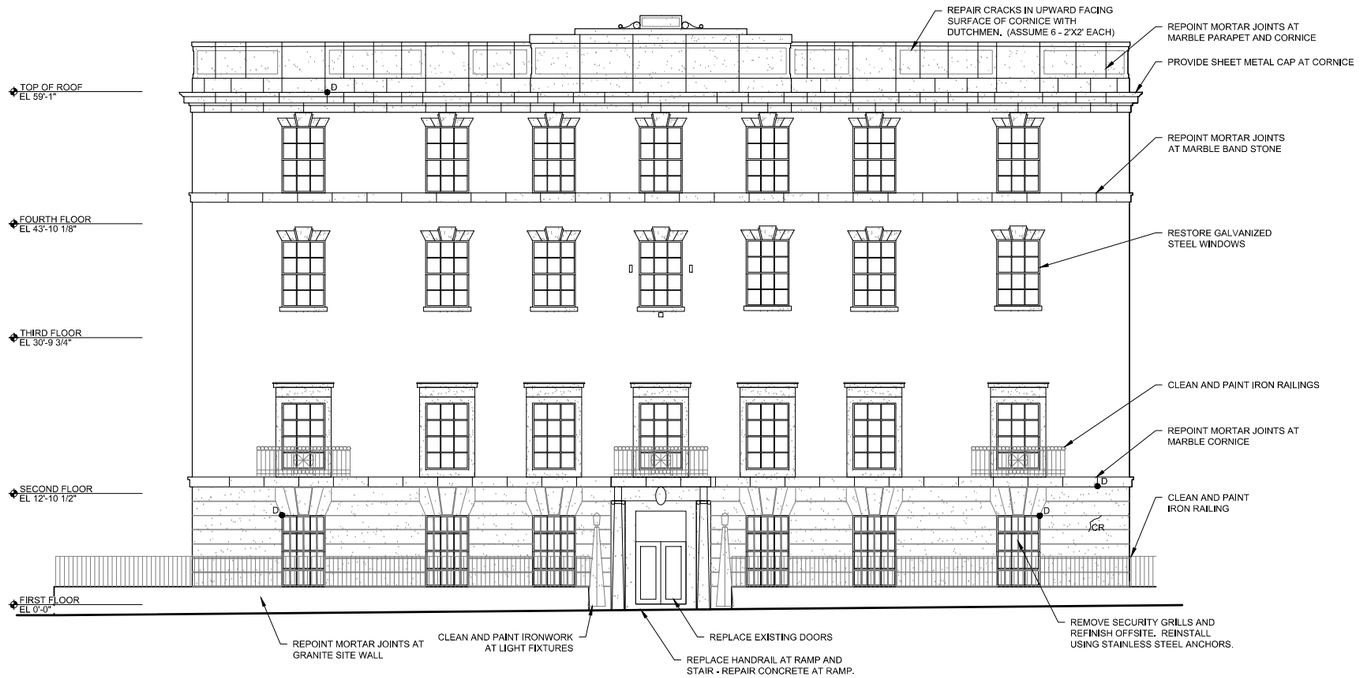
| date | 5/3/2019 |
| scale | As Noted |
| drawn by | PCL |
| approved by | DAF |
| drawing no. | A3-5 |
| CAD no. | |
| project no. | 2018.2542 |




1 30 TRINITY STREET - EAST ELEVATION
SCALE: 1/8" = 1'-0"




2 30 TRINITY STREET - WEST ELEVATION
SCALE: 1/8" = 1'-0"

LEGEND:

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drawing title: 30 TRINITY - ELEVATIONS

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18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
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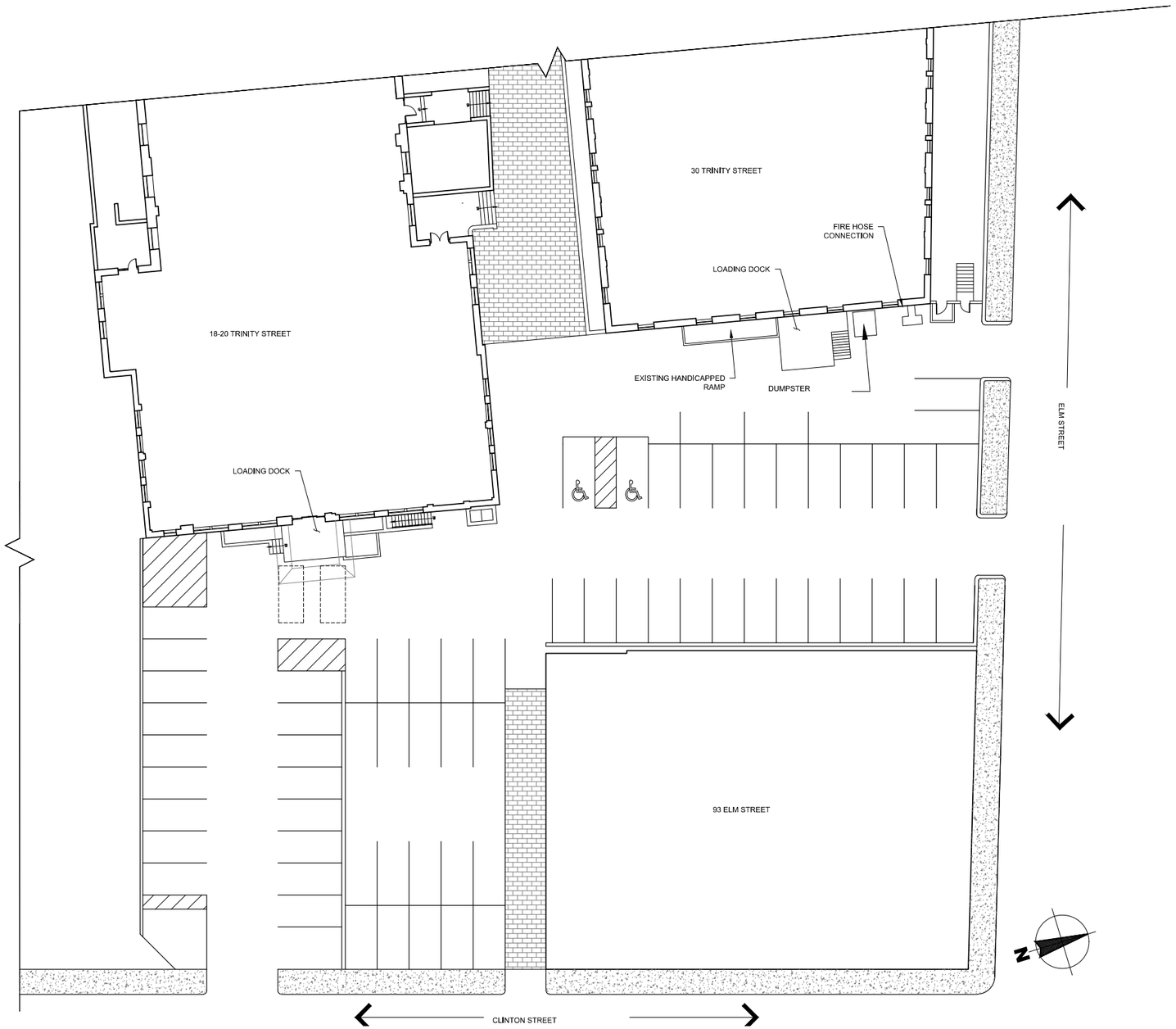
# Appendix IV Existing and Proposed Parking Lot Plans




1 EXISTING PARKING LAYOUT
SCALE: 1/16" = 1'-0"

drawing title
EXISTING PARKING PLAN

REVISIONS

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STATE OF CONNECTICUT
DEPARTMENT OF ADMINISTRATIVE SERVICES

drawing prepared by
WISS, JANNEY, ELSTNER ASSOCIATES, INC
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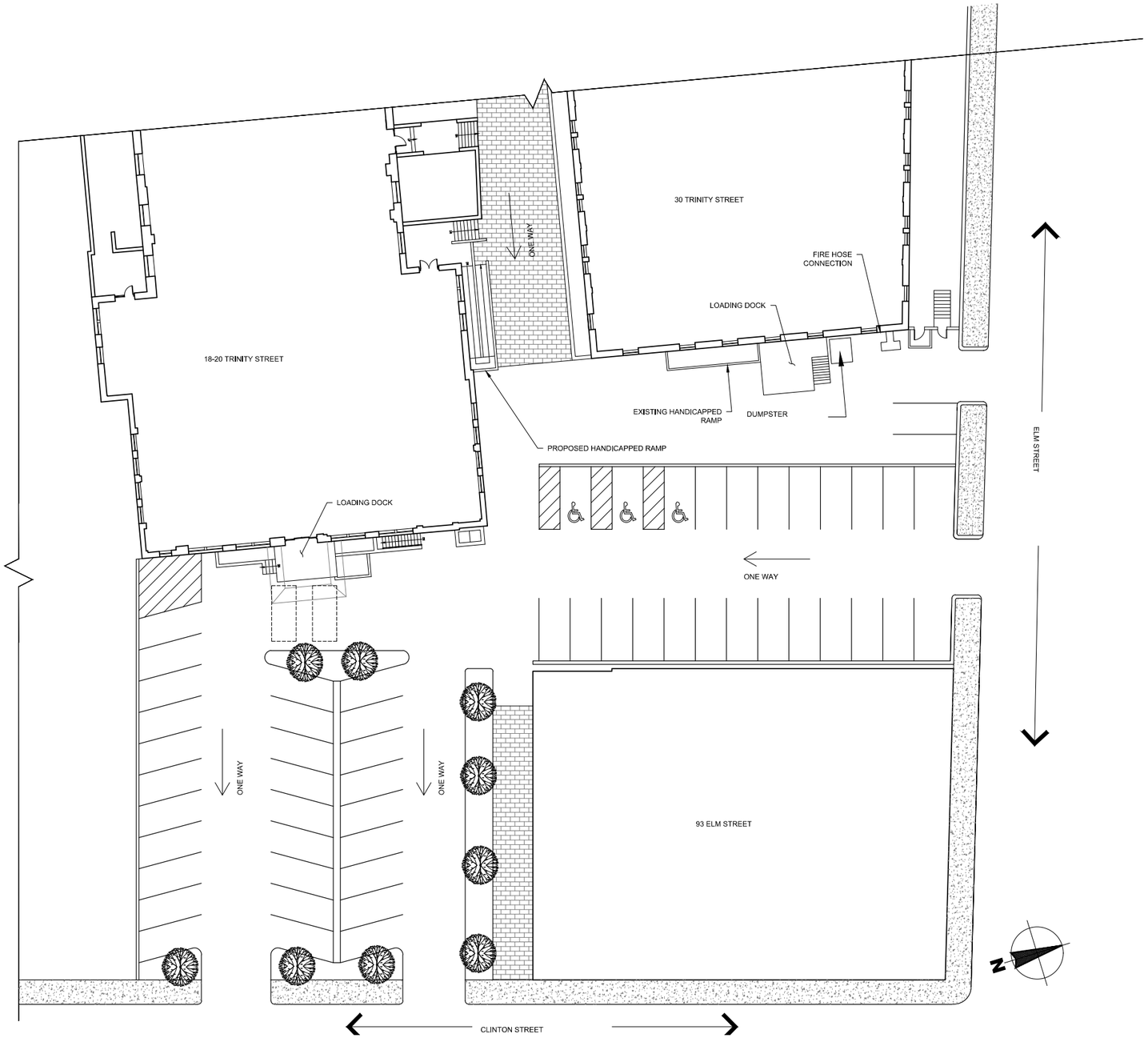
date: 5/3/2019
scale: As Noted
drawn by: PCL
approved by: DAF
drawing no.: A4-1

project
18-20 AND 30 TRINITY STREET
PREDESIGN SURVEY
HARTFORD, CONNECTICUT

CAD no.
project no. 2018.2542




1 PROPOSED PARKING LAYOUT NO. 1
SCALE: 1/16" = 1'-0"

drawing title
PROPOSED PARKING PLAN NO.1

REVISIONS

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project
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HARTFORD, CONNECTICUT

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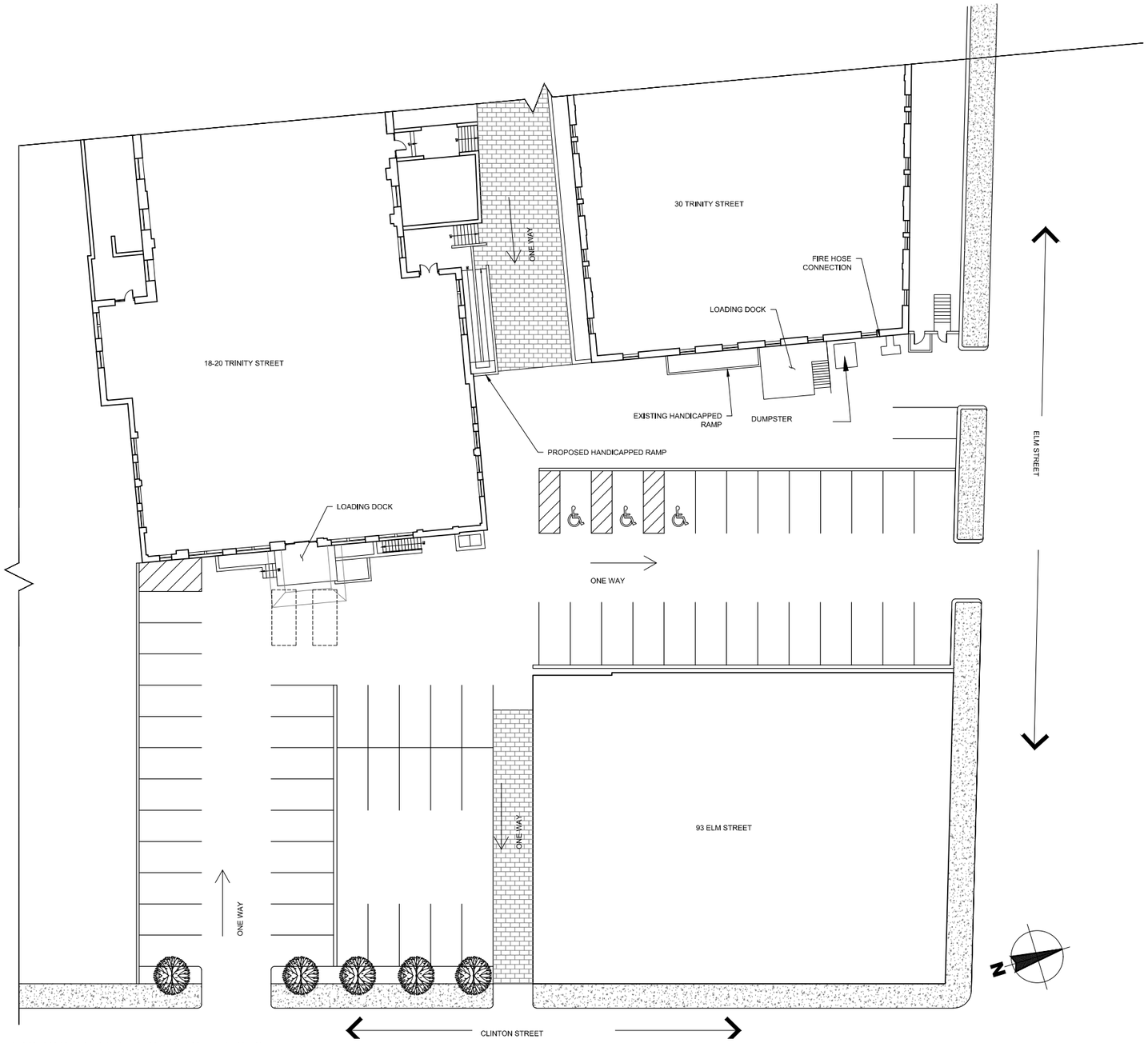


1 PROPOSED PARKING LAYOUT NO. 2
SCALE: 1/16" = 1'-0"

drawing title
PROPOSED PARKING PLAN NO.2

REVISIONS

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|---|---|---|
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**A4-3**

# Appendix V MEP Summary Report

# 18/20 TRINITY STREET
# Pre-Design Study BI-2B-445

## MECHANICAL SYSTEMS

### PLUMBING SYSTEM

**Existing System Description:**

1. The existing underground domestic water piping service into the building is a 4" combination fire service/domestic water service that enters the building in the building sub-basement and splits into a 4" fire service and a 2" domestic water service. Existing domestic water piping exposed to view (not concealed in walls or above ceilings) is hard drawn copper tubing. A majority of the referenced piping is insulated with fiberglass pipe insulation. The referenced piping appears to be in fair to poor condition.

2. The original waste and vent piping is a mixture of cast iron piping and galvanized steel piping. An abundance of the original piping has been replaced with PVC piping. A majority of the original cast iron & galvanized steel piping appears to be in poor condition.

3. Domestic hot water to serve the building's plumbing fixture needs emanates from a single vertical domestic hot water heater/storage tank with a heating coil served by the building's hot water heating system. The domestic hot water piping system utilizes a recirculating piping loop with a recirculation pump. The referenced domestic hot water heater/storage tank and associated valving, recirculating pump, etc. are relatively new (5± years old) and appear to be in very good condition (**See Exhibit M1).**

4. Existing plumbing fixtures are vitreous china, floor-set water closets, and wall-hung urinals & lavatories. Water closets and urinals utilize manual flush valves. A majority of the existing plumbing fixtures and associated trim appear to be original to the building and appear to be in fair to poor condition. Plumbing fixtures are not water-saver type (**See Exhibit M2**).

5. Storm water is conveyed from the roof via a series of hard-piped roof drains. Storm water piping is insulated cast iron. The existing roof drains and associated storm water piping appear to be original to the building and appear to be in fair to poor condition. The building presently has no overflow drains nor are they required for existing buildings by present code.

6. Ground water below the building's sub-basement is handled by two vertical shaft sump pumps and associated valving, discharge piping, etc. located in the sub-basement mechanical room. The referenced sump pumps and associated valving, piping, etc. appear to be in good condition. (5± years old).

**System Recommendations:**

1. Replace all existing cast iron and galvanized steel waste and vent piping throughout the building with new sch. 40 PVC piping, ASTM F1488, with drainage pattern fittings and solvent-weld socket type joints.

2. Replace all existing plumbing fixtures and associated trim with new vitreous china fixtures and associated trim. All new water closets and urinals shall be water-saver type with infrared sensing (battery-operated) automatic flush valves (1.0 GPF water closets and .125 GPF urinals). All new lavatory faucets shall be infrared sensing with .50 GPM flow restrictors.

3. Replace all existing roof drains and all associated storm water piping throughout the building. New storm water piping shall be SCH. 40 PVC, ASTM F1488, with drainage pattern fittings and solvent-weld socket type joints. All new horizontal storm water piping shall be insulated with 1" thick pre-formed fiberglass pipe insulation with integral all service (ASJ) vapor barrier jacket and preformed PVC fitting jackets.

4. Install new storm water overflow drains and associated overflow drain piping. New overflow drain piping shall be sch. 40 PVC, ASTM F1488, with drainage pattern fittings and solvent-weld socket type joints. All new horizontal overflow drain piping shall be insulated with 1' thick pre-formed fiberglass pipe insulation with integral all service (ASJ) vapor barrier jacket and preformed PVC fitting jackets.

5. Replace all existing domestic water piping throughout the building with type "L" hard drawn copper tubing, ASTM B88, with full-port ball type shutoff valves. In addition, the existing domestic hot water heater/storage tank and associated piping to/from, valving, etc. is relatively new (3± years old) and in good condition and not in need of replacement.

## HVAC SYSTEM

**Existing system description:**

1. The building utilizes a third party for the purchase of centralized utility heating hot water and air conditioning chilled water which is piped into the building via underground piping which enters the building sub-basement from the adjacent street.

2. Heating hot water utilizes a plate & frame heat exchanger and (2) base-mounted circulating pumps to circulate the heating hot water throughout the building. The circulating pumps and associated expansion tanks, air control fittings, etc. are located in the sub-basement mechanical room. Air conditioning system chilled water also utilizes (2) base-mounted circulating pumps to circulate cooling chilled water throughout the building. The circulating pumps and associated compression tanks, air control fittings, etc. are also located in the sub-basement mechanical room. All circulating pumps have variable frequency drive units for modulation of pump speeds to reduce energy usage (**See Exhibits M3 & M4**).

3. The original heating system for the building utilized steam. The (2) original natural gas-fired steam boilers and associated piping to/from the boilers, associated ancillary boiler equipment, etc. has been abandoned in the sub-basement mechanical room.

4. Heating hot water and cooling chilled water (2-pipe) distribution piping throughout the building is predominately black steel pipe with a portion of the newer piping hard drawn copper tubing. All of the referenced piping is insulated with pre-formed fiberglass pipe insulation with integral ASJ all service vapor barrier jacketing. The referenced piping is in fair-poor condition.

5. The HVAC system serving the building is a combination of heating & cooling systems utilizing

heating hot water for a means of heating and chilled water for a means of cooling. The systems serving the various floors of the building include the following:

a. Ground Floor: A majority of the floor is air conditioned and heated via (2) air handling units. The air handling units are ducted to overhead ceiling- mounted grillage and utilize variable air volume (VAV) boxes to attain HVAC zone temperature control. A portion of the ground floor is utilized for storage. The multiple storage rooms have no air conditioning ventilation and minimal heating.
b. First Floor: Two mechanical rooms house air handling units that serve both the first floor and second floor. The air handling units contain heating & cooling coils to produce heating & air conditioning. The floor is split into two HVAC zones (North and South). Air handling systems associated with the two air handling units per floor are constant volume type ducted to a network of ceiling mounted grillage. The air handling units have wall-mounted louvers supplying minimum outside air to the occupied spaces but the air handling units have no code-required economizer control. Perimeter rooms and spaces have 2-pipe fan coil units to supply supplemental heating and cooling to the floor.
c. Second Floor: Same system as the first floor with the two handling units serving the second floor located in the two first floor mechanical rooms ducted up to the second floor.
d. Third Floor: The third floor HVAC system is similar to the HVAC systems serving the first and second floors. The two air handling units serving the third floor are located in the two mechanical rooms on the fourth floor and ducted down to the third floor. The two air handling systems served by the two air handling units are also constant volume type. Perimeter rooms and spaces also have 2-pipe fan coil units to supply supplemental heating and cooling to the floor.
e. Fourth floor: The fourth floor HVAC system is similar to the HVAC systems serving the first, second, and third floors with the two air handling units serving the fourth floor located in two mechanical rooms on the fourth floor. Perimeter rooms and spaces have hot water heating fintube radiation to supply supplemental heating to the floor.
f. Fifth floor: The fifth floor is served by two air handling units located in a Penthouse Mechanical Room. The referenced air handling units have associated return air fans with economizer control and serve a variable air volume (VAV) air handling system with ducted ceiling-mounted grillage. Perimeter rooms and spaces are served by heating hot water fintube radiation.
g. Multiple IT rooms throughout the building are served by dedicated air conditioning units. The referenced A/C units differ in capacity and condition and should be replaced.

With the exception of the air handling equipment serving the fifth floor, which is relatively new (6± years old)and appears to be in very good condition, a majority of the HVAC equipment serving the building including air handling units, fan coil units, perimeter fintube radiation, ductwork & grillage, piping etc. is in fair to poor condition and in need of replacement.

6. Automatic temperature controls serving the building's HVAC system originally was pneumatic type. The original pneumatics are still utilized for means of operating control valves and control dampers. A Direct Digital (DDC) Energy Management System (EMS) has been interfaced with the original pneumatic control system to provide a means of reducing energy consumption related to the HVAC system. The EMS system is an Automated Logic system with remote monitoring capabilities.

7. All existing toilet rooms are presently ventilated via ceiling-mounted exhaust air grillage ducted to multiple exhaust fans. Existing ventilation rates in a majority of the toilet rooms appear to be

grossly inadequate by today's standards.

8. In addition to the original building boilers and their associated piping to/from, ancillary boiler equipment, etc., which has been abandoned in the sub-basement mechanical room as previously identified in para. 3 above, a large cooling tower and its associated steel dunnage has been abandoned on the roof of the building. All associated piping to/from the cooling tower has been removed.

## System Recommendations:

1. The existing underground centralized utility heating hot water and chilled water piping from the third party utility provider and associated plate and frame heat exchanger, main base-mounted circulation pumps, main valving, etc. appears to be in very good condition and is a cost-effective means of heating and cooling a building of this size and usage. Therefore, it is recommended that this main infrastructure be retained and utilized long term. The referenced pumps are 6± years old and the heat exchanger was rebuilt 8± years ago.

2. The air handling equipment (two air handling units, associated return air fans, economizer ducting, motor-operated dampers, etc.) housed in the mechanical room which serves the fifth floor space is relatively new and in very good condition. Since this equipment has an additional 25+ years life expectancy, it is recommended that this equipment be retained and utilized long term. However, the balance of air handling equipment serving the ground floor through the fourth floor of the building has exceeded its useful life and is badly in need of replacement. Additionally, all perimeter fan coil units, all perimeter fintube radiation, all ductwork and associated grillage, all heating hot water piping and chilled water piping, and all toilet room exhaust systems presently serving the building have exceeded their useful life and are in need of replacement. Design of new ductwork shall be such to accommodate new (higher) ceiling heights.

3. Install two new air handling units per floor for the ground floor through fourth floor of building. New air handling units shall be dual-wall type, horizontal draw-thru type with hot water heating coil, chilled water cooling coil, supply air fan with adjustable shieves and variable frequency drive unit, and 4" pleated throw-away air filters. New air handling units shall be housed in mechanical room on each floor with outside air intake louvers, associated return air fans with exhaust air louver, and economizer mode ductwork & associated motor operated dampers.

4. Install new air handling system ductwork including externally-insulated supply air and return air ductwork with associated new ceiling-mounted supply air and return air grillage. All new ductwork shall be galvanized sheetmetal with 2" thick blanket-type fiberglass duct insulation with integral foil faced vapor barrier jacket. HVAC system zoning shall be attained via multiple variable air volume (VAV) boxes. VAV boxes shall be fan-powered type with integral hot water reheat coils

5. Perimeter HVAC zones shall have supplemental heat in the form of hot water heating fintube radiation. The reference new fintube radiation shall be controlled via varying the temperature of the heating hot water to the fintube radiation based on outdoor air temperature (outdoor reset schedule) by building exposure.

6. Install a new chilled water piping distribution system as required to serve all air handling units.

Also install a new heating hot water piping distribution system including a constant temperature piping system as required to serve all air handling units and VAV box reheat coils and a separate variable temperature piping system as required to serve all new perimeter fintube radiation. All new chilled water and heating hot water piping shall be sch. 40 black steel, ASTM A120, insulated with 1" thick preformed fiberglass pipe insulation with integral all service (ASJ) vapor barrier jacket.

7. Install new toilet room exhaust systems including new ducted centrifugal exhaust fans serving new ceiling-mounted exhaust air grillage. All new exhaust air ductwork shall be galvanized sheetmetal and all new grillage shall be of aluminum construction.

8. Install new dedicated air conditioning units in each IT room throughout the building.

9. Install a new Direct Digital (DDC) Automatic Temperature Control (ATC) system interfaced with a new computer-based Energy Management System (EMS) complete with remote monitoring of the building system via telephone line. The new ATC/EMS system shall utilize electric actuation of all motorized control valves and motorized control dampers. The new EMS system shall have color graphics of all major HVAC system components utilized to assist the system operator in monitoring the system, changing system set-points, etc., The EMS system shall be utilized to perform the following HVAC system functions:
    a. Occupied/unoccupied mode.
    b. Economizer operation of all air handling units.
    c. Varying of outside air quantity based on space occupancy via monitoring CO2 levels.
    d. Vary temperature of heating hot water to perimeter fintube radiation based on outside air temperature
    e. Ability to change the temperature setpoint of any/all HVAC zones remotely
    f. Vary supply fan speed and associated return air fan speed based on static pressure in main supply air duct from each air handling unit for VAV system control.

# 30 TRINITY STREET
# Pre-Design Study BI-2B-445

## MECHANICAL SYSTEMS

### PLUMBING SYSTEM

**Existing System Description:**

1. The existing underground domestic water piping service into the building is a 4" combination fire service/domestic water service that enters the building in the building sub-basement and splits into a 4" fire service and a 2" domestic water service. Existing domestic water piping exposed to view (not concealed in walls or above ceilings) is hard drawn copper tubing. A majority of the referenced piping is insulated with fiberglass pipe insulation. The referenced piping appears to be in fair condition.

2. The original waste and vent piping is a mixture of cast iron piping and galvanized steel piping. An abundance of the original piping has been replaced with PVC piping. A majority of the original cast iron & galvanized steel piping appears to be in poor condition.

3. Domestic hot water to serve the building's plumbing fixture needs emanates from a single vertical domestic hot water heater/storage tank with a heating coil served by the building's hot water heating system. The domestic hot water piping system utilizes a recirculating piping loop with a recirculation pump. The referenced domestic hot water heater/storage tank and associated valving, recirculating pump, etc. are relatively new (4± years old) and appear to be in very good condition. (**See Exhibit M1**)

4. Existing plumbing fixtures are vitreous china, floor-set water closets, and wall-hung urinals & a combination of wall-hung lavatories and Bradley wash fountains. Water closets and urinals utilize manual flush valves. A majority of the existing plumbing fixtures and associated trim were replaced in 1997 (22 years old). The existing fixtures are not water-saver type and appear to be in fair to poor condition. (**See Exhibit M2**).

5. Storm water is conveyed from the roof via a series of hard-piped roof drains and overflow drains. Storm water piping and overflow drain piping is insulated cast iron pipe. The existing roof drains & overflow drains were replaced in 2011 and appear to be in very good condition. However, the existing storm water piping and overflow drain piping appears to be original to the building and appears to be in fair to poor condition.

6. Ground water below the building's sub-basement is handled by two vertical shaft sump pumps and associated valving, discharge piping, etc. located in the sub-basement mechanical room. The referenced sump pumps and associated valving, piping, etc. appear to be in good condition and are 2± years old.

**System Recommendations:**

1. Replace all existing cast iron and galvanized steel waste and vent piping throughout the building with new sch. 40 PVC piping, ASTM F1488, with drainage pattern fittings and solvent-weld socket type joints.

2. Replace all existing plumbing fixtures and associated trim with new vitreous china fixtures and associated trim. All new water closets and urinals shall be water-saver type with infrared sensing (battery-operated) automatic flush valves (1.0 GPF water closets and .125 GPF urinals). All new lavatory faucets shall be infrared sensing with .50 GPM flow restrictors.

3. Replace all existing storm water piping throughout the building. New storm water piping shall be SCH. 40 PVC, ASTM F1488, with drainage pattern fittings and solvent-weld socket type joints. All new horizontal storm water piping shall be insulated with 1" thick pre-formed fiberglass pipe insulation with integral all service (ASJ) vapor barrier jacket and preformed PVC fitting jackets.

4. Replace all existing storm water overflow drain piping. New overflow drain piping shall be sch. 40 PVC, ASTM F1488, with drainage pattern fittings and solvent-weld socket type joints. All new horizontal overflow drain piping shall be insulated with 1' thick pre-formed fiberglass pipe insulation with integral all service (ASJ) vapor barrier jacket and preformed PVC fitting jackets.

5. The existing domestic hot & cold water piping distribution system appears to be in fair condition and should be replaced. New domestic water piping shall be the "L" hard drawn copper tubing, ASTM B88, with pro-press mechanical fittings and all new shut-off valves shall be full-port ball type.

6. The existing domestic hot water heater/storage tank and associated piping to/from, valving, etc. is relatively new and in very good condition and not in need of replacement.

## HVAC SYSTEM

**Existing system description:**

1. The building utilizes a third party for the purchase of centralized utility heating hot water and air conditioning chilled water which is piped into the building via underground piping which enters the building basement from the adjacent street.

2. Heating hot water utilizes a plate & frame heat exchanger and (2) base-mounted circulating pumps to circulate the heating hot water throughout the building. The circulating pumps and associated expansion tanks, air control fittings, etc. are located in the basement mechanical room. Air conditioning system chilled water also utilizes (2) base-mounted circulating pumps to circulate cooling chilled water throughout the building. The circulating pumps and associated compression tanks, air control fittings, etc. are also located in the basement mechanical room. All circulating pumps have variable frequency drive units for modulation of pump speeds to reduce energy usage. All existing pumps are 6+ years old and associated variable frequency drives are also 6± years old and appear to be in good condition. The referenced heat exchanger was re-built 8± years ago and appears to be in good condition (**See Exhibits M3 & M4).**

3. The original heating system for the building utilized steam. The (2) original natural gas-fired steam boilers and associated piping to/from the boilers, associated ancillary boiler equipment, etc. has been abandoned in the basement mechanical room. A large original horizontal domestic hot water storage tank and a 6" natural gas piping main has also been abandoned in the referenced mechanical room.

4. Heating hot water and cooling chilled water distribution 4-pipe system piping throughout the building is predominately black steel pipe with a portion of the newer piping hard drawn copper tubing. All of the referenced piping is insulated with pre-formed fiberglass pipe insulation with integral ASJ all service vapor barrier jacketing.

   The referenced piping is in fair-poor condition and appears to be original to the building.

5. The HVAC system serving the building utilizes heating hot water for a means of heating and chilled water for a means of cooling. The systems serving the various floors of the building include the following:

   a. Basement Floor: (utilized for storage with multiple storage rooms) The storage rooms have no air conditioning or ventilation and minimal heat derived from heating hot water unit heaters.
   b. First Floor: Two mechanical rooms house the two air handling units that serve the first floor space. The two air handling units contain hot water heating coils and chilled water cooling coils and have variable frequency drive units to vary supply air quantity for VAV system control. Air handling systems associated with the two air handling units are ducted to a network of ceiling-mounted grillage and variable air volume (VAV) boxes are utilized to attain HVAC zone temperature control. The air handling units have wall-mounted louvers supplying minimum outside air to the occupied spaces but the air handling units have no code-required economizer control. Perimeter rooms and spaces have heating hot water fintube radiation to provide supplemental heat to perimeter spaces.
   c. Second Floor: (Same type of HVAC system as first floor).
   d. Third Floor: (Same type of HVAC system as first floor).
   e. Fourth Floor: Same type of HVAC system as the first floor except the air handling units are located in a penthouse mechanical room located on the roof above. The penthouse mechanical room also houses associated return air fans and economizer control ductwork, motorized dampers, etc.
   f. First Floor IT room: The first IT room is served by a dedicated (Liebert) air conditioning unit that is 2+ years old and appears to be in good condition.

   With the exception of the air handling equipment serving the fourth floor, which is relatively new and appears to be in very good condition, a majority of the HVAC equipment serving the building including air handling units, perimeter fintube radiation, ductwork & grillage, piping etc. is in fair to poor condition, appears to be original to the building, and in need of replacement.

6. Automatic temperature controls serving the building's HVAC system originally was pneumatic type. The original pneumatics are still utilized for means of operating control valves and control dampers. A Direct Digital (DDC) Energy Management System (EMS) has been interfaced with the original pneumatic control system to provide a means of reducing energy consumption related to the HVAC system. The EMS system is a Barber-Colman system with remote monitoring capabilities.

7. All existing toilet rooms are presently ventilated via ceiling-mounted exhaust air grillage ducted to multiple exhaust fans. Existing ventilation rates in a majority of the toilet rooms appear to be grossly inadequate by today's standards.

**System Recommendations:**

1. The existing underground centralized utility heating hot water and chilled water piping from the third party utility provider and associated plate and frame heat exchanger, main base-mounted circulation pumps, main valving, etc. appears to be in good condition and is a cost-effective means of heating and cooling a building of this size and usage.

   Therefore, it is recommended that this main infrastructure be retained and utilized long term.

2. The air handling equipment (two air handling units, associated return air fans, economizer ducting, motor-operated dampers, etc.) housed in the penthouse mechanical room which serves the fourth floor space is relatively new and appears to be in very good condition. Since this equipment has an additional 25+ years life expectancy, it is recommended that this equipment be retained and utilized long term. However, the balance of air handling equipment serving the basement floor through the third floor of the building has exceeded its useful life and is badly in need of replacement. Additionally, all VAV boxes, all perimeter fintube radiation, all ductwork and associated grillage, all heating hot water piping, & chilled water piping and all toilet room exhaust systems presently serving the building have exceeded their useful life and are in need of replacement.

3. The basement floor storage rooms should be evaluated to see if any or all storage rooms require air conditioning based on commodities stored. If air conditioning is a requirement for the space or a portion of the space, an air handling unit or units should be designated to serve the space in question. If air conditioning is not required, a system of heating hot water unit heaters for heating in conjunction with a ducted ventilation (exhaust) system is required to serve the basement floor space.

4. Install two new air handling units per floor for the first floor through third floor of building. New air handling units shall be dual-wall type, horizontal draw-thru type with hot water heating coil, chilled water cooling coil, supply air fan with adjustable shieves and variable frequency drive unit, and 4" pleated throw-away air filters. New air handling units shall be housed in mechanical rooms on each floor with outside air intake louvers, associated return air fans with exhaust air louver, and economizer mode ductwork & associated motor-operated dampers.

5. Install new air handling system ductwork including externally-insulated supply air and return air ductwork with associated new ceiling-mounted supply air and return air grillage. All new ductwork shall be galvanized sheetmetal with 2" thick blanket-type fiberglass duct insulation with integral foil-faced vapor barrier jacket. HVAC system zoning shall be attained via multiple variable air volume (VAV) boxes. VAV boxes shall be fan-powered type with integral hot water reheat coils. The installation of new ductwork shall be designed as to accommodate new (higher) ceiling heights.

6. Perimeter HVAC zones shall have supplemental heat in the form of hot water heating fintube radiation. The referenced new fintube radiation. shall be controlled via varying the temperature of the heating hot water to the fintube radiation based on outdoor air temperature (outdoor reset schedule) by building exposure.

7. Install a new chilled water piping distribution system as required to serve all air handling units. Also install a new heating hot water piping distribution system including constant temperature piping system as required to serve all air handling units and VAV box reheat coils and a separate variable temperature piping system as required to serve all new perimeter fintube radiation. All new chilled water and heating hot water piping shall be sch. 40 black steel, ASTM A120, insulated with 1" thick preformed fiberglass pipe insulation with integral all service (ASJ) vapor barrier jacket.

8. Install new toilet room exhaust systems including new ducted centrifugal exhaust fans serving new ceiling-mounted exhaust air grillage. All new exhaust air ductwork shall be galvanized sheetmetal and all new grillage shall be of aluminum construction.

9. The existing dedicated (Liebert) air conditioning unit serving the first floor IT room shall remain assuming the IT room remains in its' present location

10. Install a new Direct Digital (DDC) Automatic Temperature Control (ATC) system interfaced with a new computer-based Energy Management System (EMS) complete with remote monitoring of the building system via telephone line. The new ATC/EMS system shall utilize electric actuation of all motorized control valves and motorized control dampers. The new EMS system shall have color graphics of all major HVAC system components utilized to assist the system operator in monitoring the system, changing system set-points, etc., The EMS system shall be utilized to perform the following HVAC system functions:

    a. Occupied/unoccupied mode.
    a. Economizer operation of all air handling units.
    b. Varying of outside air quantity based on space occupancy via monitoring CO2 levels.
    c. Vary temperature of heating hot water to perimeter fintube radiation based on outside air temperature.
    d. Ability to change the temperature setpoint of any/all HVAC zones remotely
    e. Vary supply fan speed and associated return air fan speed based on static pressure in main supply air duct from each air handling unit for VAV system control.
    f. On/off control of all fixed overhead lighting.

# 18/20 TRINITY STREET
# Pre-Design Study BI-2B-445

## ELECTRICAL SYSTEMS

**Existing Electrical Systems:**

1. Electrical Service and Distribution: The electrical service originates from an existing 3000 amp frame General Electric Air Circuit Breaker located in the building basement level and feeds an existing 120/208 volt General Electric motor control center style switchgear equipped with molded case circuit breakers serving the branch panels and equipment loads **(See Exhibit E1)**.
   The existing main switch and distribution switchgear appear to have been properly maintained. Continued maintenance will be difficult to achieve due to the overall age of the switchgear and the inherent degradation of the molded case circuit breakers and difficulty of acquiring acceptable replacement parts **(See Exhibit E2)**.
   Several branch panelboards serving other areas of the building have been replaced and upgraded.

2. Lighting System:
   The existing Lighting Systems consist of inefficient fluorescent tube fixtures of appropriate style and design to serve the areas. Lamp colors are between 3000-3500 kelvin and are adequate to serve an office environment. The existing fluorescent fixtures require high maintenance involving ballast and lamp replacement and could pose an environmental hazard due to ballast disposal and PCB content.

   The Basement and Sub-basement lighting is achieved utilizing T12 and T8 fluorescent industrial and wrap-around fixtures. Lighting control is performed utilizing local area switching and lacks motion sensors or occupancy sensor control **(See Exhibit E3)**.
   The lighting serving the upper floors is mainly achieved utilizing T8 fluorescent surface mounted and pendant mounted fixtures. There are several recessed compact fluorescent fixture serving task areas. Lighting control is performed utilizing local area switching and lacks motion sensors or occupancy sensor control.

   The existing emergency egress lighting is performed utilizing wall mounted dual-head emergency fixtures with battery back-up **(See Exhibit E4)**.
   The existing Exit signage lighting consist mostly of LED exit signs in thermoplastic housings and integral battery back-up.

3. Special Systems:
   The existing toilet rooms lack “call for aid” emergency notification.

4. Mechanical Equipment Control:
   The existing HVAC air handlers have been retrofitted to utilize variable frequency drives and enhanced energy efficient controls.

**Electrical System Recommendations:**

1. Electrical Service and Distribution: The existing 3000 amp frame General Electric air circuit breaker and main distribution switchgear located in the building basement level should be replaced with new switchgear of matching capacities.
2. Lighting System:

   The existing inefficient fluorescent tube fixtures serving the building office areas should be removed and replaced with new energy efficient LED luminaires of size and style to best serve the areas. Lamp colors should be standardized at the desired kelvin rating and shall be appropriate to serve the office environment. The new LED lighting fixtures will require less maintenance and should offer significant energy savings. The Basement and Sub-basement lighting should be replaced with new energy efficient LED industrial and wrap-around fixtures. Lighting control is performed utilizing local area switching and lacks motion sensors or occupancy sensor control. The lighting serving the upper floors is mainly achieved utilizing T8 fluorescent recessed troffer and parabolic style fixtures. There are several recessed compact fluorescent fixture serving task areas.

   The existing emergency egress lighting should be replaced utilizing wall mounted dual-head emergency fixtures with battery back-up or emergency battery back-up installed in the new LED area lighting.

   The existing Exit signage lighting should be replaced with new LED exit signs with thermoplastic housings and integral battery back-up.

   The lighting controls serving the building lighting should be enhanced to include wall and ceiling occupancy sensors. Daylight harvesting can be utilized at southern facing exposures to offer additional energy efficiency.

3. Special Systems:
   Emergency notification “call for aid” systems should be provided where required by code or as deemed necessary for proper occupant safety.

4. Mechanical Equipment Control:
   The existing HVAC air handlers have been retrofitted to utilize variable frequency drives and enhanced energy efficient controls.

# 30 TRINITY STREET
# Pre-Design Study BI-2B-445

## ELECTRICAL SYSTEMS

**Existing Electrical Systems:**

1. .Electrical Service and Distribution: The electrical service originates from an existing 1600 amp General Electric Power Break Main Switch located in the building basement level and feeds an existing 1200 amp, 120/208 volt General Electric AV-Line switchgear equipped with molded case circuit breakers serving the branch panels and equipment loads.
   The electrical feeder serving the 1200 amp distribution switchgear runs overhead via four 4" conduits and appears to provide the full 1600 amps service capacity to the distribution panel. The existing Main Switch and Electrical Distribution do not appear to provide adequate or coordinated over-current protection to the panels and could pose a hazardous condition **(See Exhibits E5 & E6)**.
   The existing main switch and distribution switchgear were installed in 1980 and appear to have been properly maintained. Continued maintenance will be difficult to achieve due to the overall age of the switchgear and the inherent degradation of the molded case circuit breakers and difficulty of acquiring acceptable replacement parts.

2. Lighting System:
   The existing Lighting Systems consist of inefficient fluorescent tube fixtures of appropriate style and design to serve the areas. Lamp colors are between 3000-3500 kelvin and are adequate to serve an office environment. The existing fluorescent fixtures require high maintenance involving ballast and lamp replacement and could pose an environmental hazard due to ballast disposal and PCB content.
   The Basement lighting is achieved utilizing T12 and T8 fluorescent industrial and wrap-around fixtures. Lighting control is performed utilizing local area switching and lacks motion sensors or occupancy sensor control **(See Exhibit E7)**.
   The lighting serving the upper floors is mainly achieved utilizing T8 fluorescent recessed troffer and parabolic style fixtures. There are several recessed compact fluorescent fixture serving task areas. Lighting control is performed utilizing local area switching and lacks motion sensors or occupancy sensor control.
   The existing emergency egress lighting is performed utilizing wall mounted dual-head emergency fixtures with battery back-up.
   The existing Exit signage lighting consist mostly of LED exit signs in thermoplastic housings and integral battery back-up.

3. Special Systems:
   The existing toilet rooms lack "call for aid" emergency notification.

4. Mechanical Equipment Control:
   The existing HVAC air handlers have been retrofitted to utilize variable frequency drives and enhanced energy efficient controls **(See Exhibit E8).**

**Electrical System Recommendations:**

1. Electrical Service and Distribution: The existing 1600 amp General Electric Power Break Main Switch and 1200 amp main distribution switchgear located in the building basement level should be replaced with new switchgear of matching capacities.
   The electrical feeder serving the existing 1200 amp distribution switchgear shall be modified to accommodate the new distribution switchgear.

   The new Main Switch and Electrical Distribution shall be designed to provide the proper and safe coordination and over-current protection to serve the existing building loads.
   The existing 1200 amp distribution switchgear shall be replaced with a new 1600 amp rated capacity and shall provide the appropriate feeder and branch circuit to serve the existing building loads.

2. Lighting System:
   The existing inefficient fluorescent tube fixtures serving the building office areas should be removed and replaced with new energy efficient LED luminaires of size and style to best serve the areas. Lamp colors should be standardized at the desired kelvin rating and shall be appropriate to serve the office environment. The new LED lighting fixtures will require less maintenance and should offer significant energy savings. The Basement lighting should be replaced with new energy efficient LED industrial and wrap-around fixtures. Lighting control is performed utilizing local area switching and lacks motion sensors or occupancy sensor control.
   The lighting serving the upper floors is mainly achieved utilizing T8 fluorescent recessed troffer and parabolic style fixtures. There are several recessed compact fluorescent fixture serving task areas.

   The existing emergency egress lighting should be replaced utilizing wall mounted dual-head emergency fixtures with battery back-up or emergency battery back-up installed in the new LED area lighting.

   The existing Exit signage lighting should be replaced with new LED exit signs with thermoplastic housings and integral battery back-up.
   The lighting controls serving the building lighting should be enhanced to include wall and ceiling occupancy sensors. Daylight harvesting can be utilized at southern facing exposures to offer additional energy efficiency.

3. Special Systems:
   Emergency notification “call for aid” systems should be provided where required by code or as deemed necessary for proper occupant safety.

4. Mechanical Equipment Control:
   The existing HVAC air handlers have been retrofitted to utilize variable frequency drives and enhanced energy efficient controls.

# MEP EXHIBITS


**Exhibit "M1"**
**Recently Replaced Water Heater**

**Exhibit "M2"**
**Toilet Plumbing Fixtures**


**Exhibit "M3"**
**Rebuilt Heat Exchanger**


**Exhibit "M4"**
**Mechanical Equipment VFD's**

**Exhibit "E1"**
**18-20 Trinity Street Main Switch**


**Exhibit "E2"**
**18-20 Trinity Street Electrical Distribution**

**Exhibit "E3"**
**Office Area Lighting**

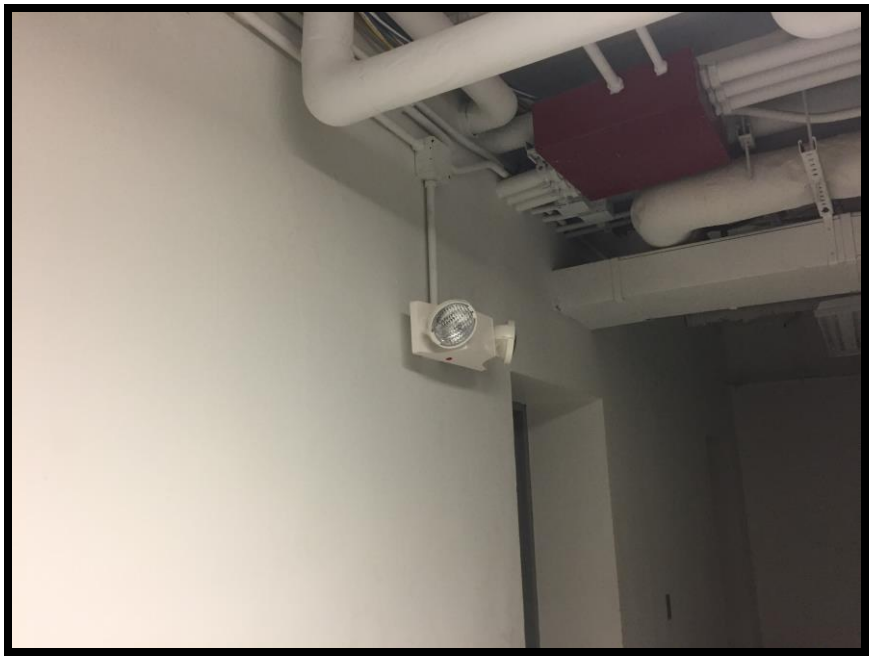


**Exhibit "E4"**
**Emergency Egress Lighting**

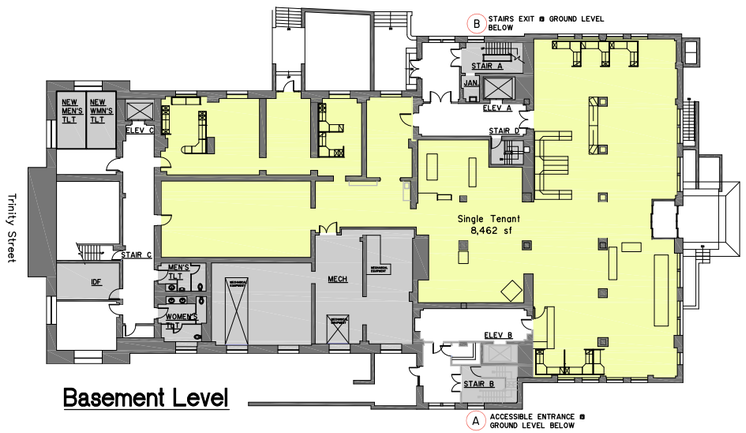
**Exhibit "E5"**
**30 Trinity Street Main Switch**

**Exhibit "E6"**
**30 Trinity Street Electrical Distribution**

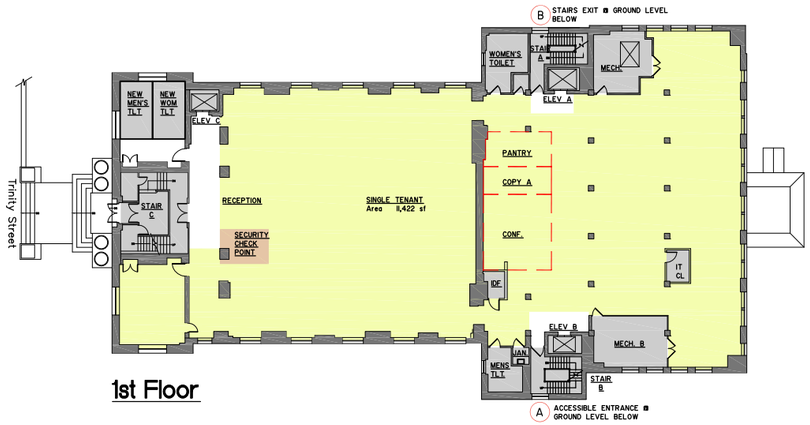
**Exhibit "E7"**
**Basement Corridor Lighting**


**Exhibit "E8"**
**Mechanical Equipment VFD's**

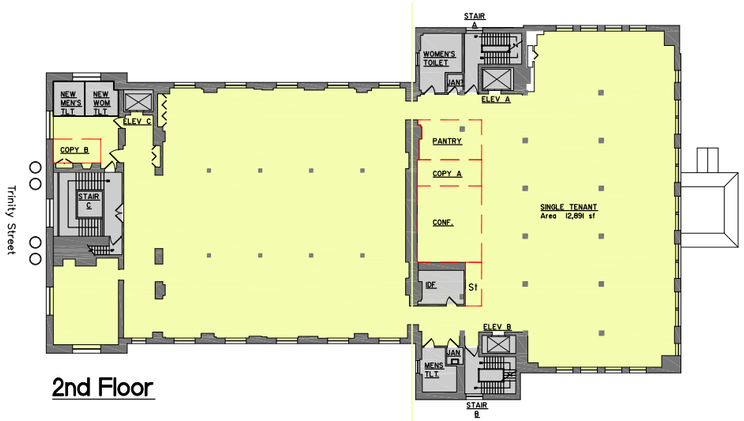
## Appendix VI Proposed Space Planning Drawings



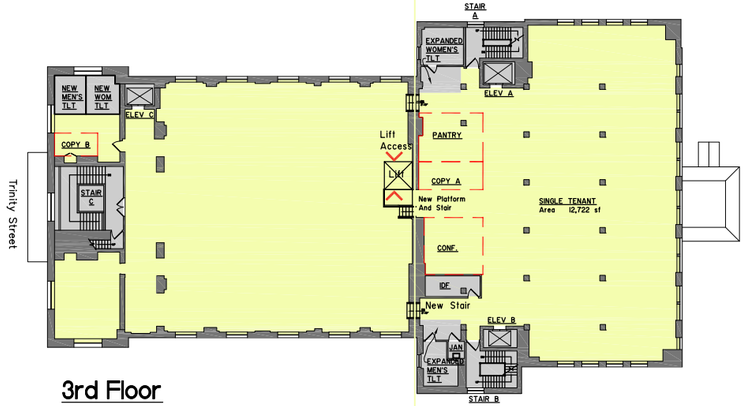

## Basement Level



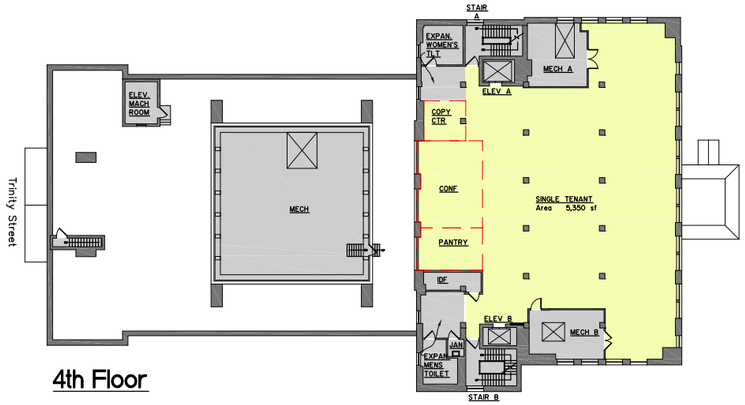

## 1st Floor



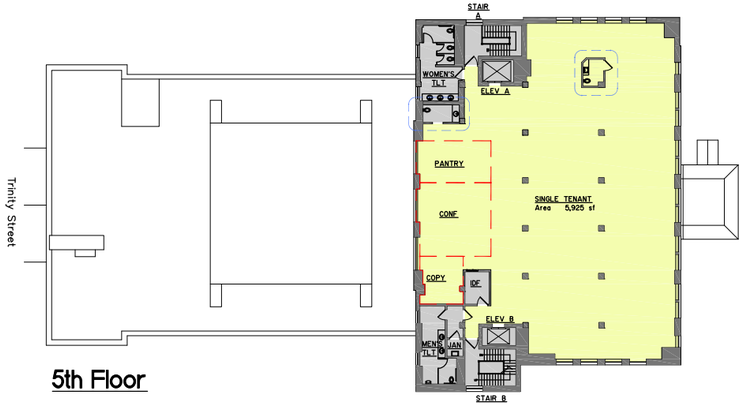

## 2nd Floor




## 3rd Floor




## 4th Floor




## 5th Floor

**LEGEND:**

SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE | TOILET NOT REQUIRED BY CODE

USABLE AREA - TOTAL

18 TRINITY STREET - 21,861 SF
20 TRINITY STREET - 34,911 SF

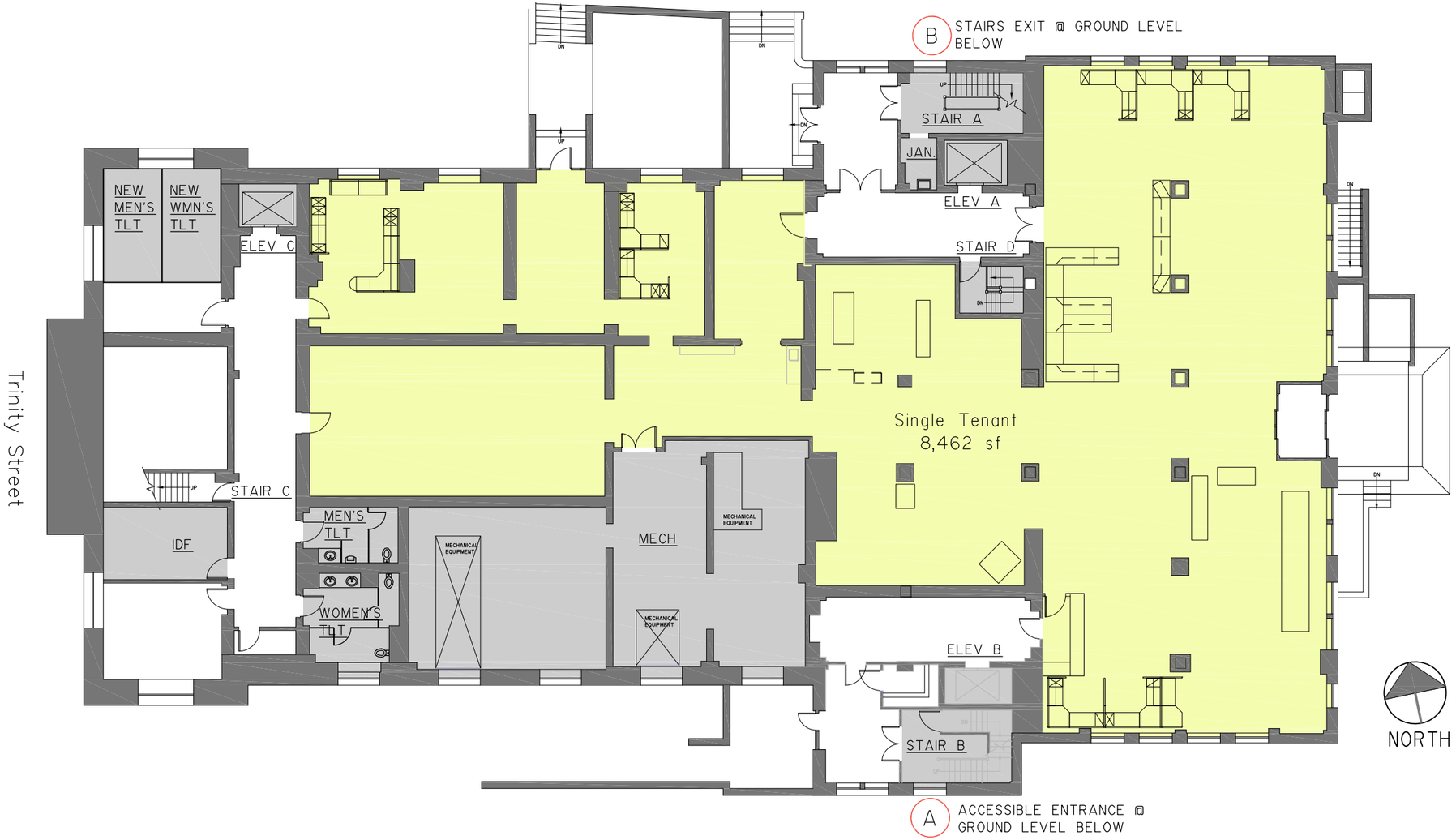
NORTH

# Test Layout 1 Single Tenant

18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
RFV. 11/19/18




**LEGEND:**

SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE | TOILET NOT REQUIRED BY CODE

USABLE AREA THIS FLOOR

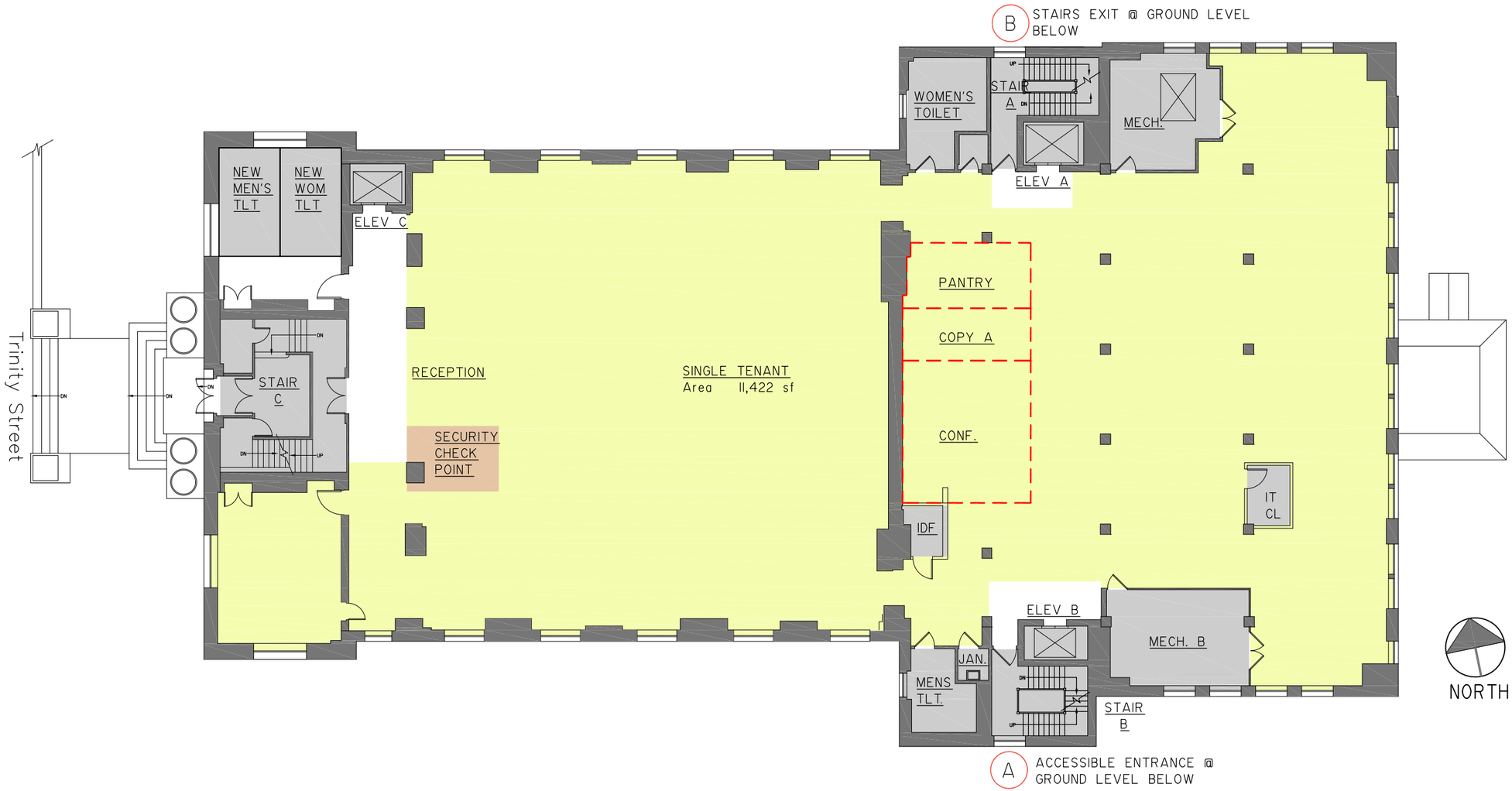
18 TRINITY STREET - 3,094 SF
20 TRINITY STREET - 5,368 SF

# Test Layout 1 Single Tenant
## Ground Floor

18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
RFV. 11/19/18




**LEGEND:**

SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE | TOILET NOT REQUIRED BY CODE

USABLE AREA THIS FLOOR

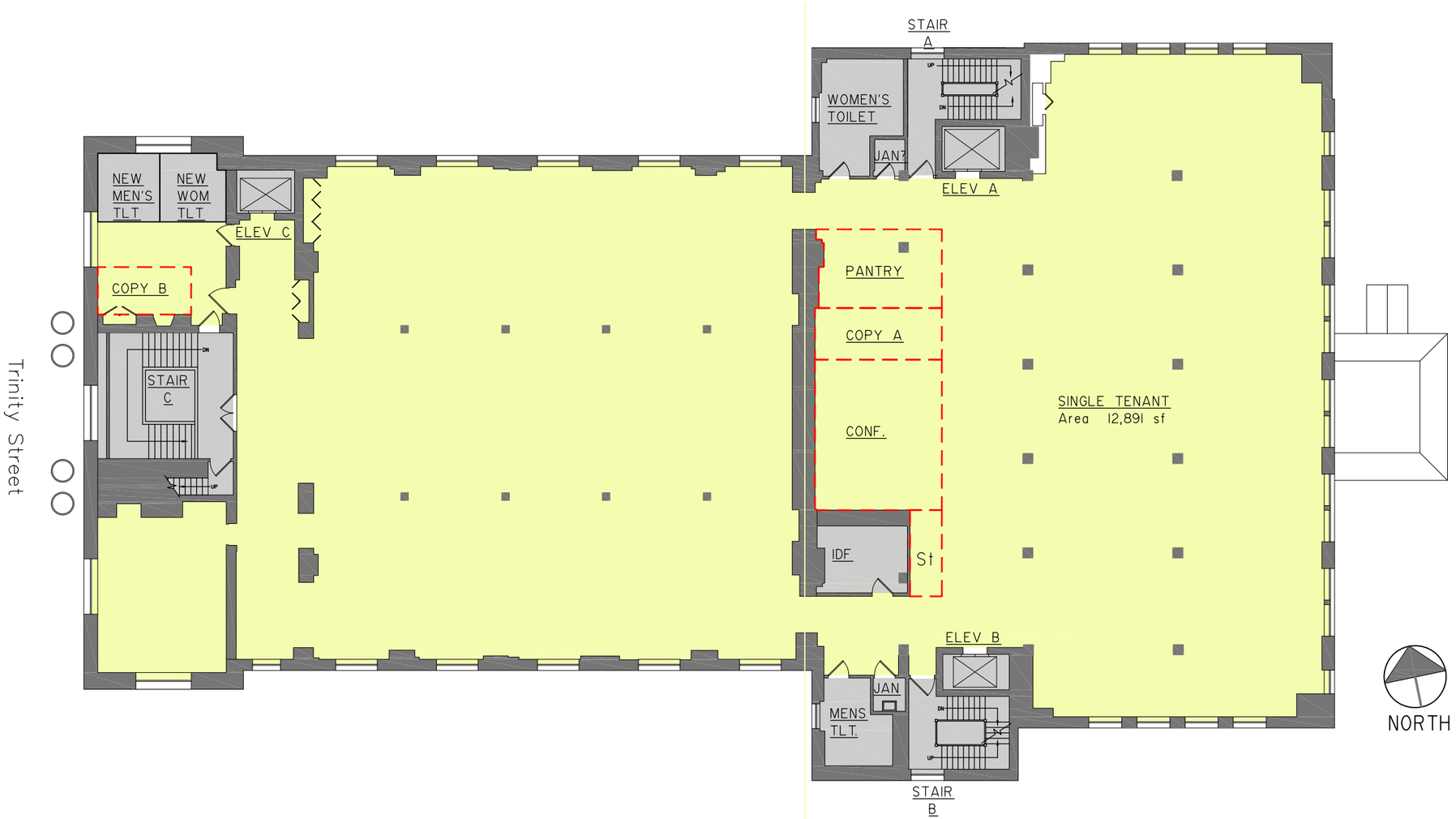
18 TRINITY STREET - 5,797 SF
20 TRINITY STREET - 5,625 SF

# Test Layout 1 Single Tenant
## 1st Floor

18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
RFV. 11/19/18




**LEGEND:**

SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE | TOILET NOT REQUIRED BY CODE

USABLE AREA THIS FLOOR

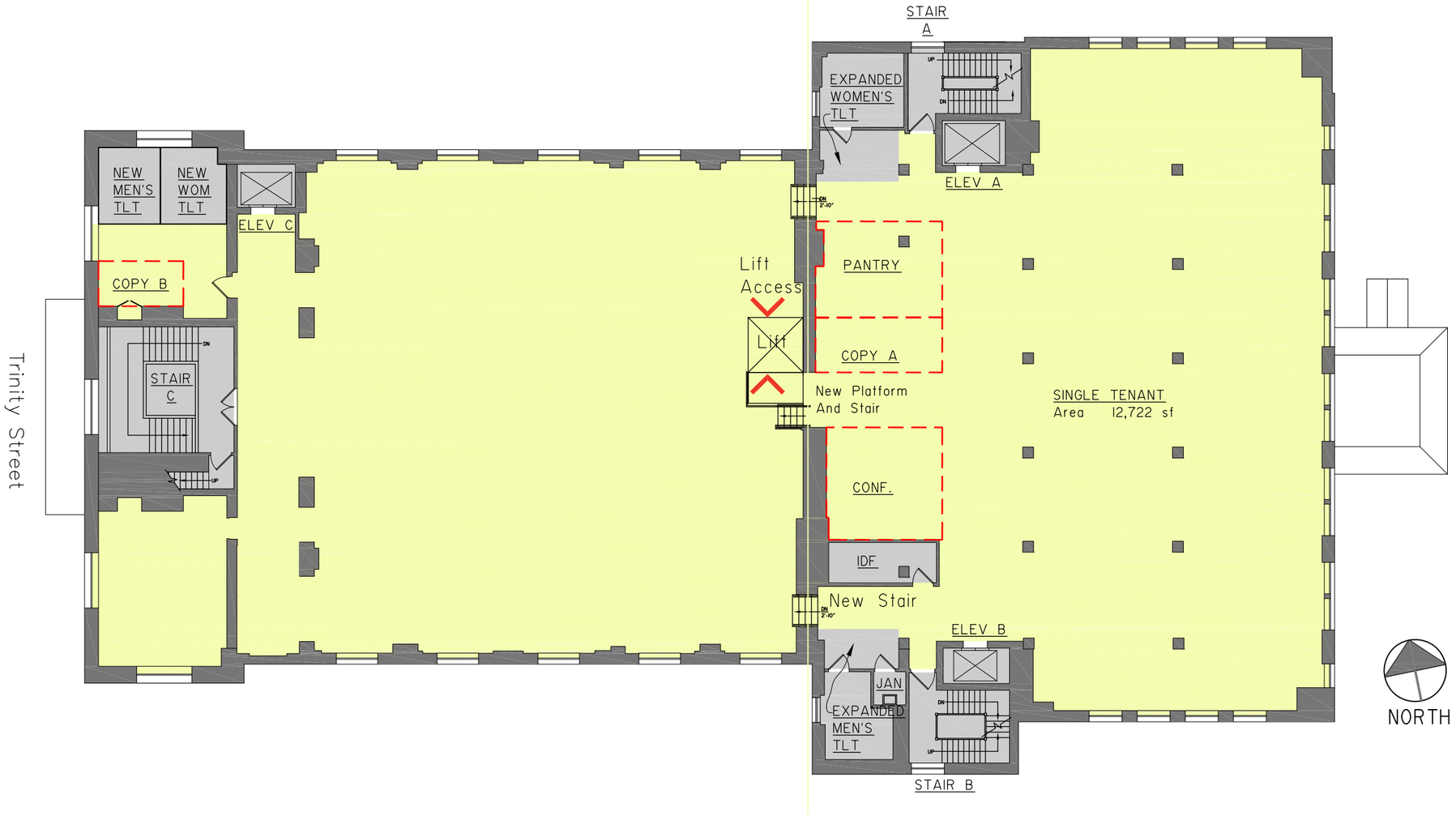
18 TRINITY STREET - 6,591 SF
20 TRINITY STREET - 6,300 SF

# Test Layout 1 Single Tenant
## 2nd Floor

18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV. 11/19/18




**LEGEND:**

SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE | TOILET NOT REQUIRED BY CODE

USABLE AREA THIS FLOOR

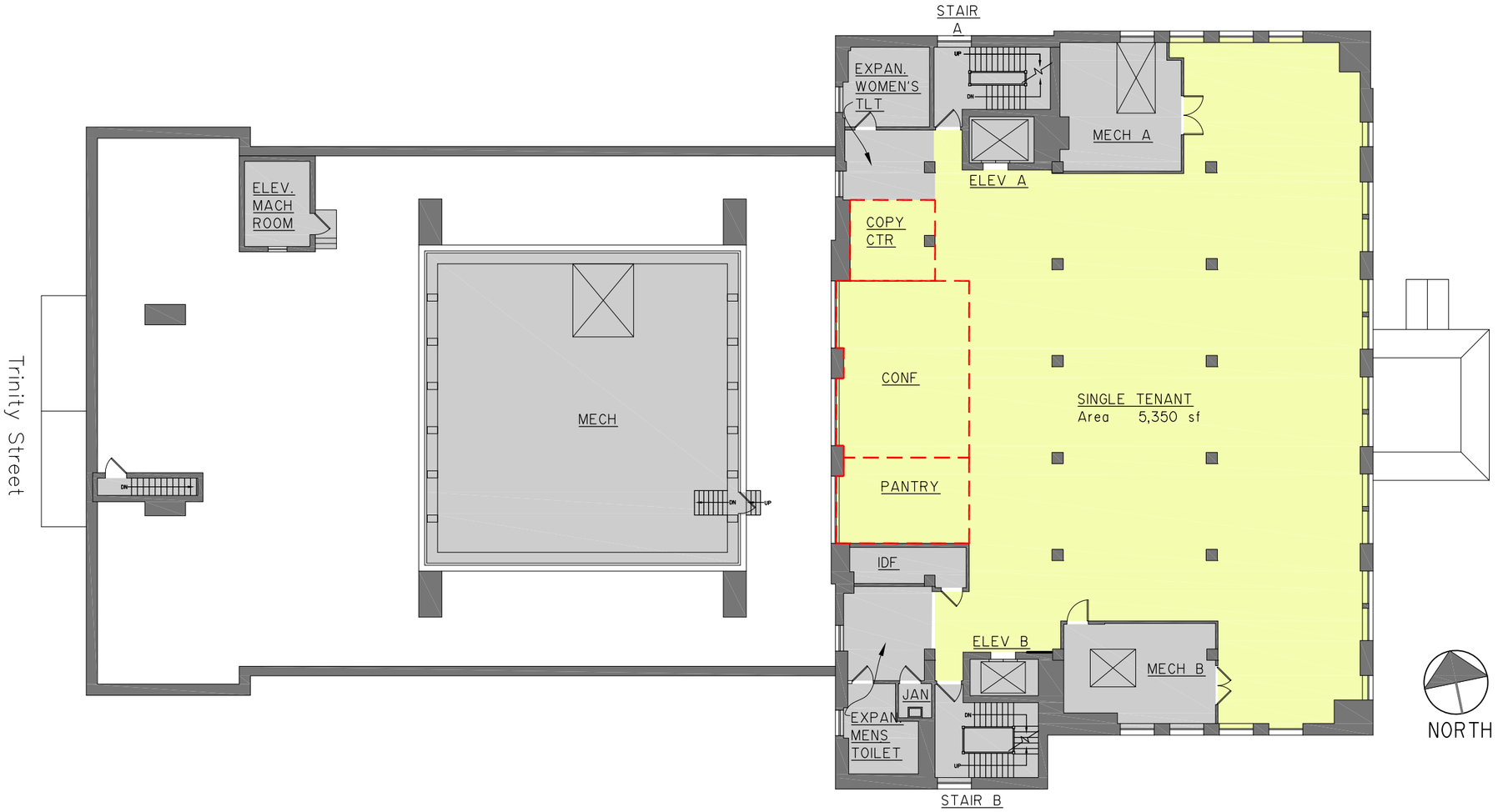
18 TRINITY STREET - 6,379 SF
20 TRINITY STREET - 6,343 SF

# Test Layout 1 Single Tenant
## 3rd Floor

18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
RFV. 11/19/18




**LEGEND:**

SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE | TOILET NOT REQUIRED BY CODE

USABLE AREA THIS FLOOR

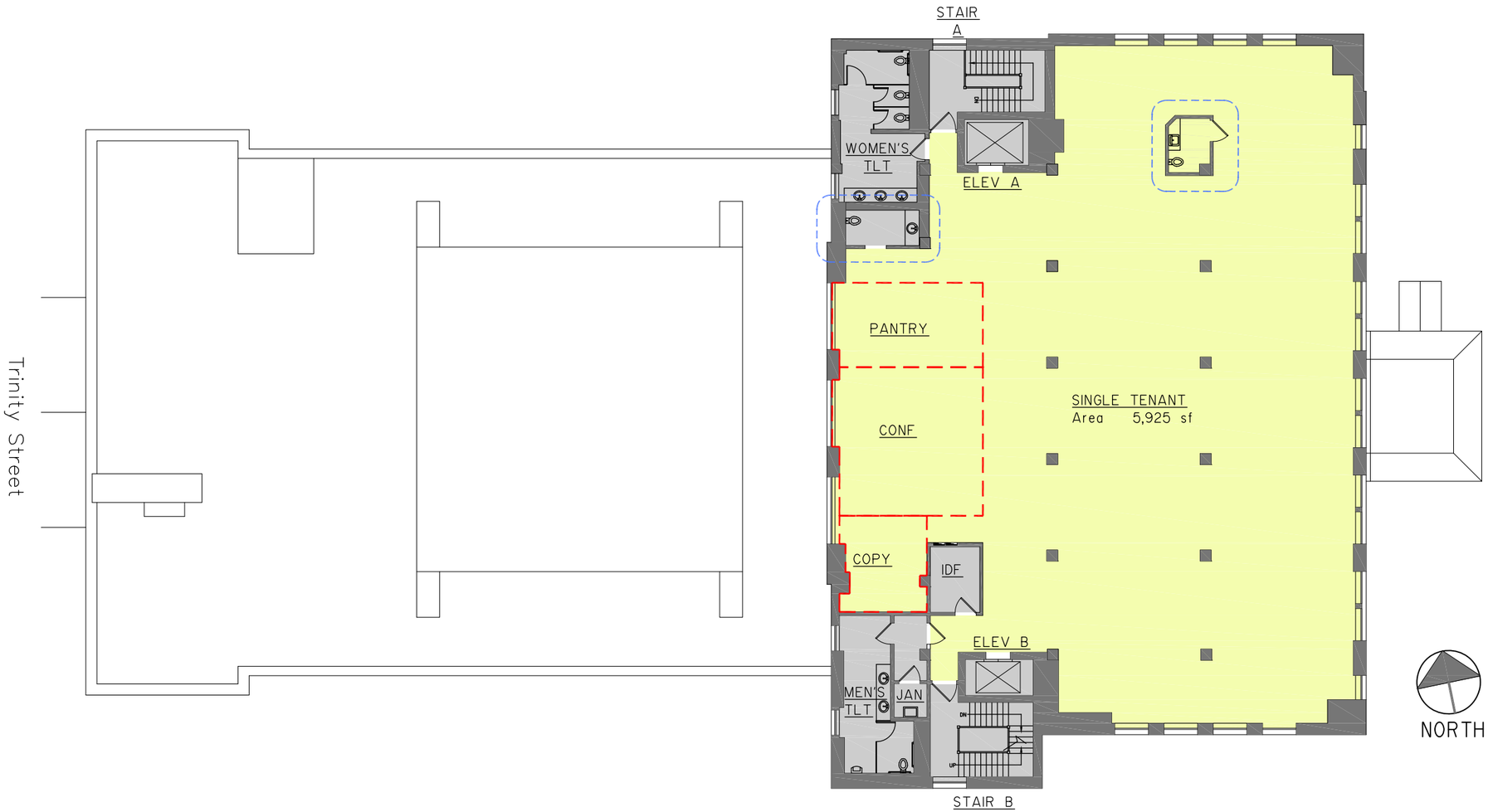
18 TRINITY STREET - N/A
20 TRINITY STREET - 5,350 SF

# Test Layout 1 Single Tenant
## 4th Floor

18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV. 11/19/18




**LEGEND:**

SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE | TOILET NOT REQUIRED BY CODE

USABLE AREA THIS FLOOR

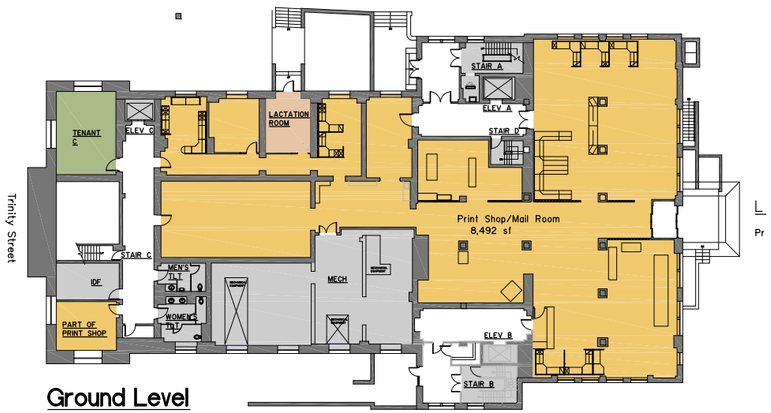
18 TRINITY STREET - N/A
20 TRINITY STREET - 5,925 SF

# Test Layout 1 Single Tenant
## 5th Floor

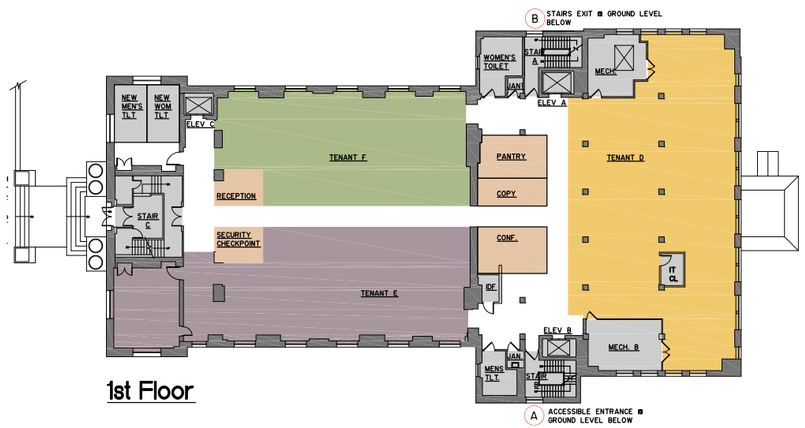
18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV. 11/19/18




## Ground Level

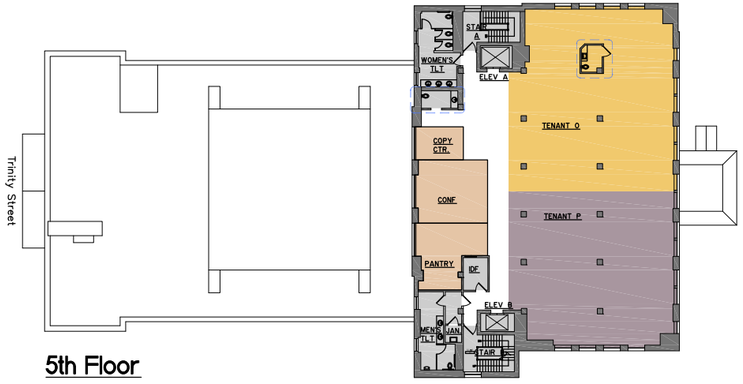



## 1st Floor


## 2nd Floor


## 3rd Floor


## 4th Floor




## 5th Floor

**LEGEND:**

- TENANT
- TENANT
- TENANT
- BUILDING CORE
- SHARED DEPT. SERVICE
- TOILET NOT REQUIRED BY CODE

NORTH

# Test Layout 2 Multi-Tenant

18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18


| LEGEND: | ACTUAL S.F. | LOCATION | | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|
| TENANT A | 8492 | G | SHARED SERVICE | | |
| (TENANT B) NOT USED | - | G | TOILET NOT REQUIRED BY CODE | | |
| TENANT C | 407 | G | | | |

# Test Layout 2 Multi-Tenant
## Ground Floor

18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18


| LEGEND: | ACTUAL S.F. | LOCATION | | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|
| TENANT D | 3853 | 1 | SHARED SERVICE | | |
| TENANT E | 2935 | 1 | TOILET NOT REQUIRED BY CODE | | |
| TENANT F | 2210 | 1 | | | |

# Test Layout 2 Multi-Tenant
## 1st Floor

18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18

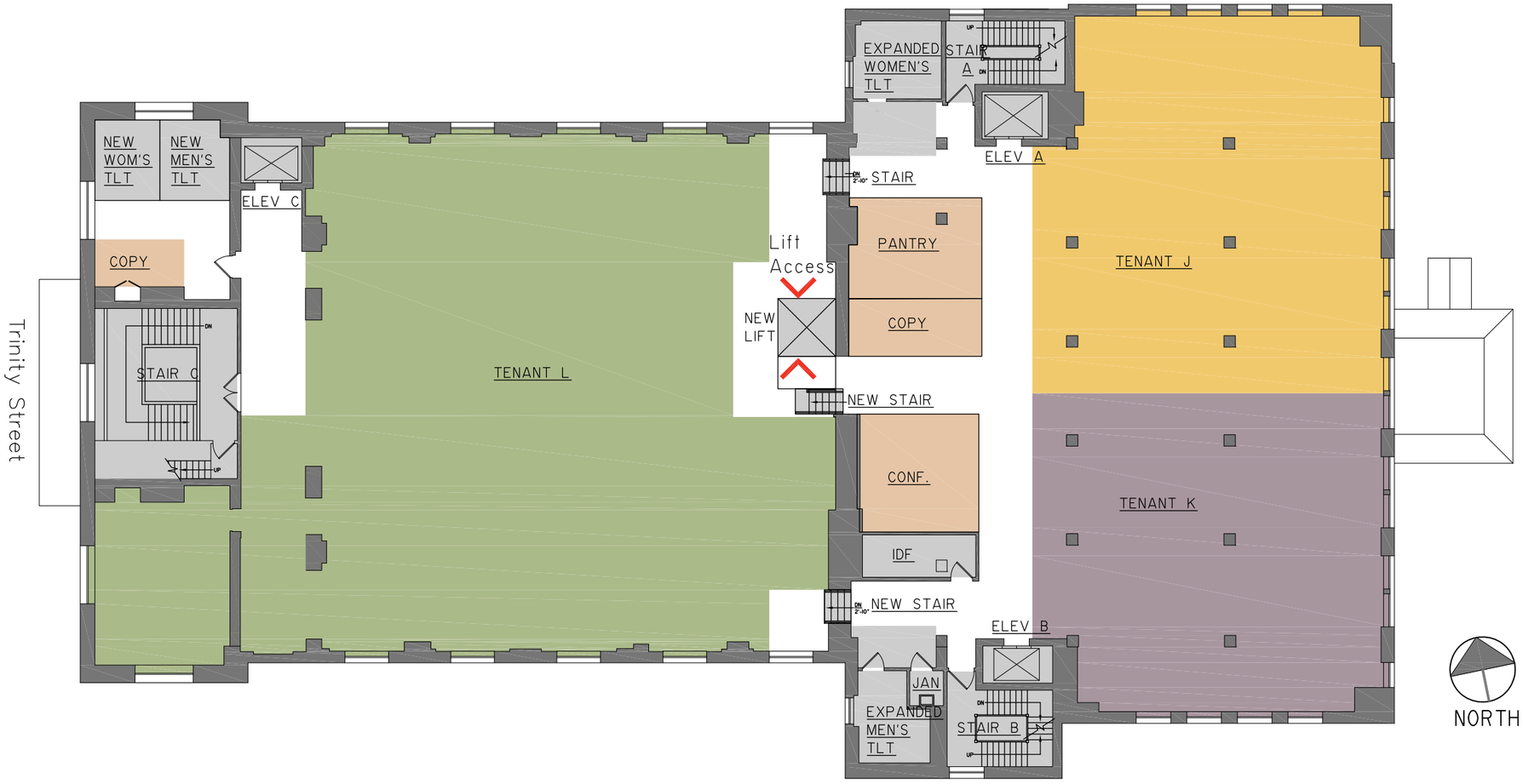

| LEGEND: | ACTUAL S.F. | LOCATION | | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|
| TENANT G | 2413 | 2 | SHARED SERVICE | | |
| TENANT H | 2093 | 2 | TOILET NOT REQUIRED BY CODE | | |
| TENANT I | 5803 | 2 | | | |

# Test Layout 2 Multi-Tenant
## 2nd Floor

18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18




| LEGEND: | ACTUAL S.F. | LOCATION | | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|
| TENANT J | 2440 | 3 | SHARED SERVICE | | |
| TENANT K | 2092 | 3 | TOILET NOT REQUIRED BY CODE | | |
| TENANT L | 5477 | 3 | | | |

# Test Layout 2 Multi-Tenant
## 3rd Floor

18-20 Trinity Street Hartford, CT

ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
RFV 11/19/18

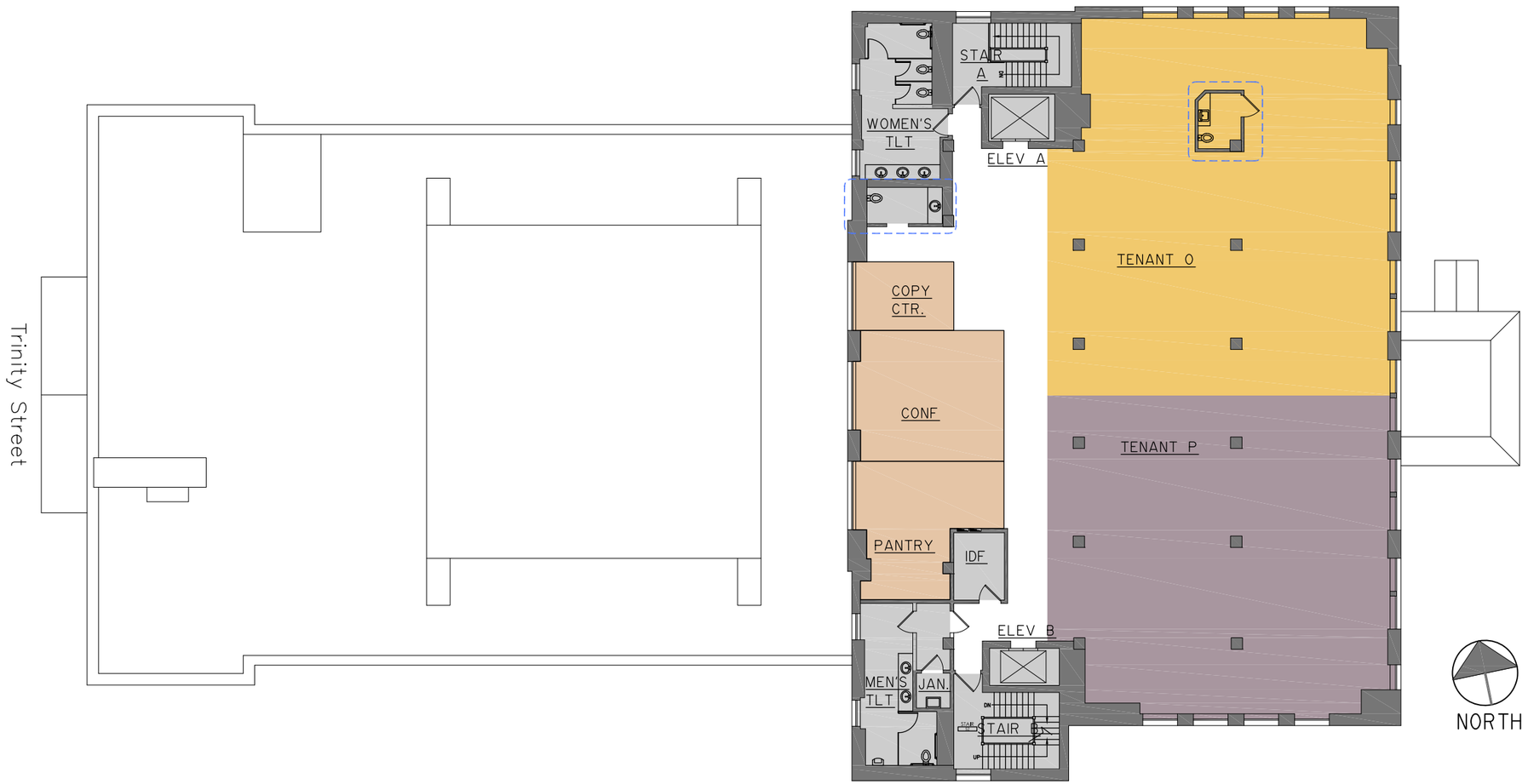

| LEGEND: | ACTUAL S.F. | LOCATION | | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|
| TENANT M | 2107 | 4 | SHARED SERVICE | | |
| TENANT N | 1754 | 4 | TOILET NOT REQUIRED BY CODE | | |
| TENANT | 0 | | | | |

# Test Layout 2 Multi-Tenant
## 4th Floor

18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18



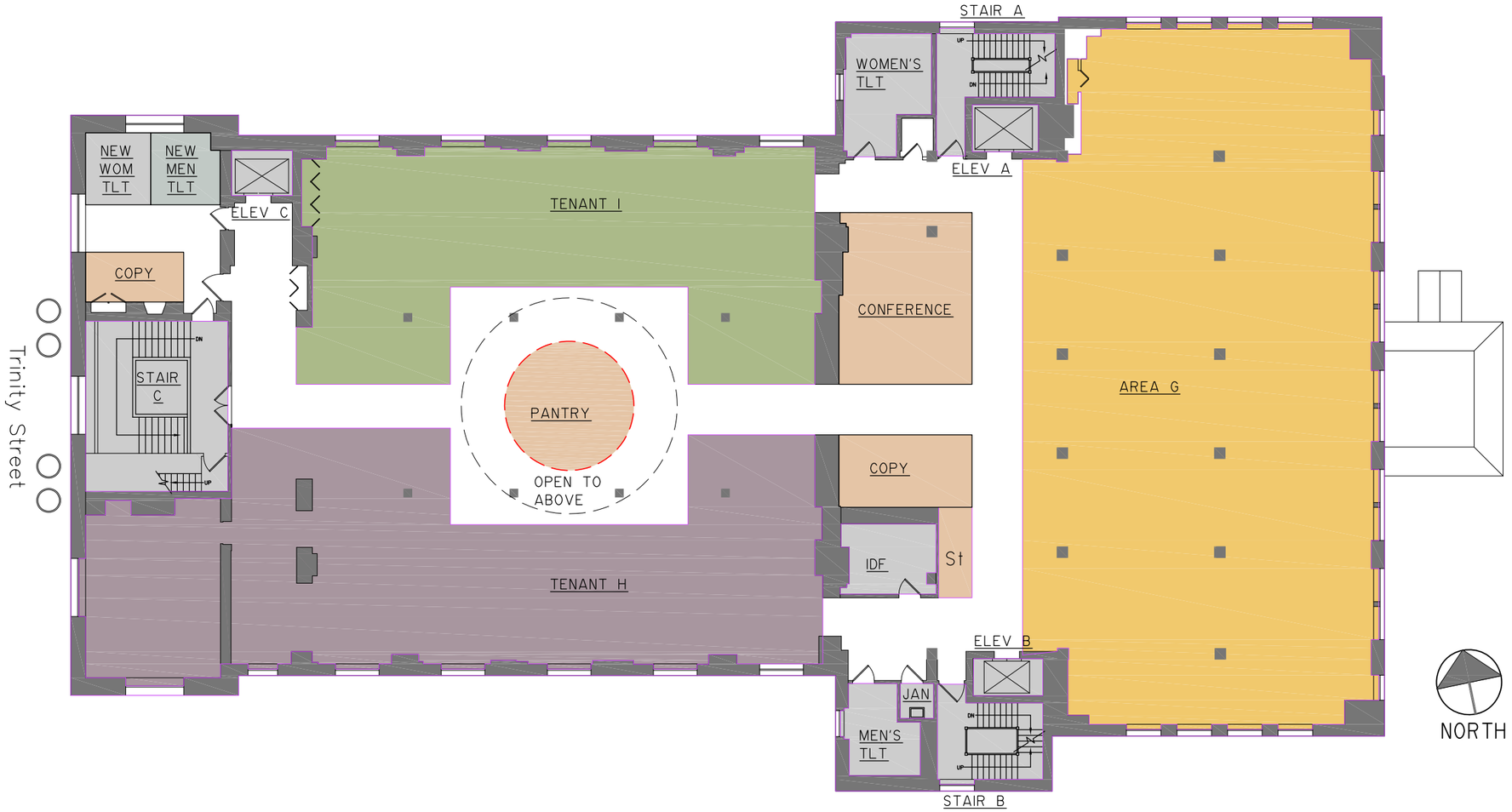

| LEGEND: | ACTUAL S.F. | LOCATION | | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|
| TENANT O | 2400 | 5 | SHARED SERVICE | | |
| TENANT P | 2044 | 5 | TOILET NOT REQUIRED BY CODE | | |
| TENANT | 0 | | | | |

# Test Layout 2 Multi-Tenant
## 5th Floor

18-20 Trinity Street Hartford, CT

ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
RFV 11/19/18




| LEGEND: | ACTUAL S.F. | LOCATION | | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|
| TENANT G | 4506 | 2 | SHARED SERVICE | | |
| TENANT H | 2694 | 2 | TOILET NOT REQUIRED BY CODE | | |
| TENANT I | 1881 | 2 | | | |

# Test Layout 3 Multi-Tenant (Dome)

## 2nd Floor

18-20 Trinity Street Hartford, CT

ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018


| LEGEND: | ACTUAL S.F. | LOCATION | | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|
| TENANT J | 2640 | 3 | SHARED SERVICE | | |
| TENANT K | 2291 | 3 | TOILET NOT REQUIRED BY CODE | | |
| TENANT L | 3484 | 3 | | | |

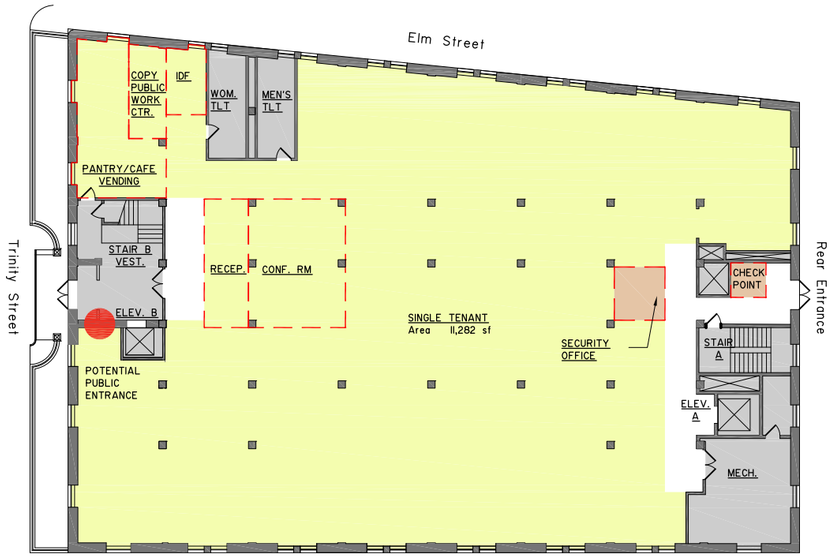
# Test Layout 3 Multi-Tenant (Dome)

## 3rd Floor

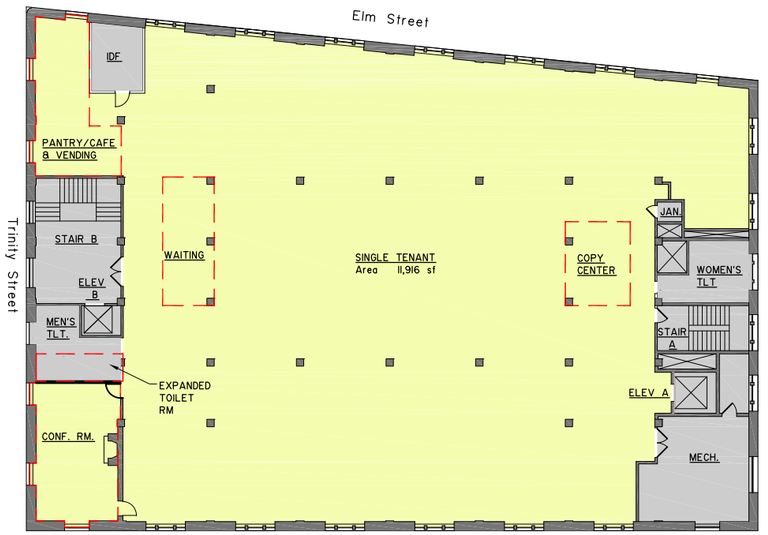
18-20 Trinity Street Hartford, CT

CPG ARCHITECTS

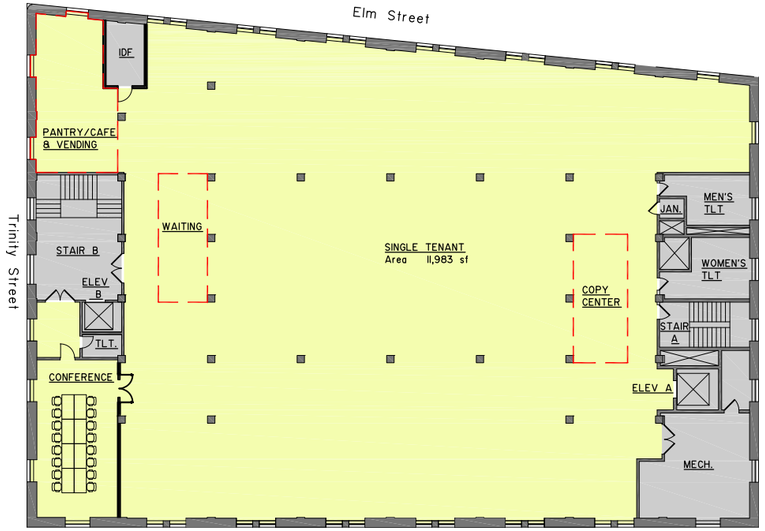
Job No. 18098
Scale: NTS
October 3, 2018



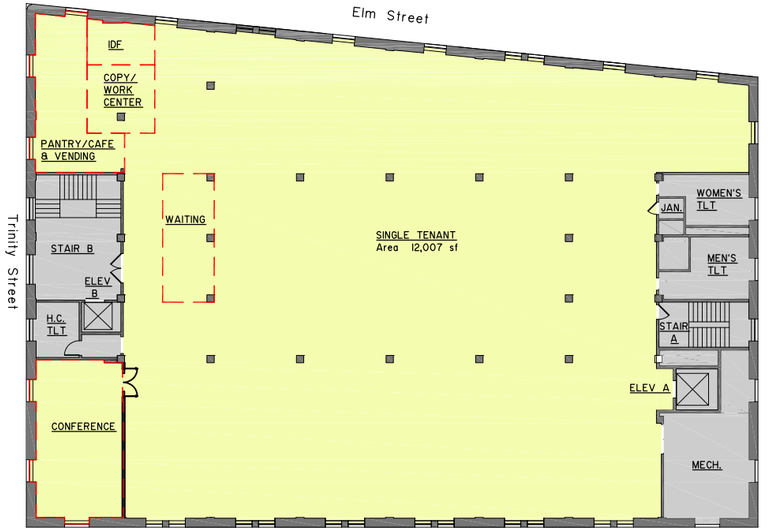

1st Floor




2nd Floor




3rd Floor




4th Floor


SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE

USABLE AREA

30 TRINITY STREET - 47,188 SF

NOTE: SINGLE TENANT PLANS ASSUME THAT ELEVATORS WILL BE CARD KEYED FOR SECURITY PURPOSES OR SECURITY AT ENTRY LEVELS PREVENT UNAUTHORIZED USE

# Test Layout 1 Single Tenant

30 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18


LEGEND:

SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE

USABLE AREA THIS FLOOR

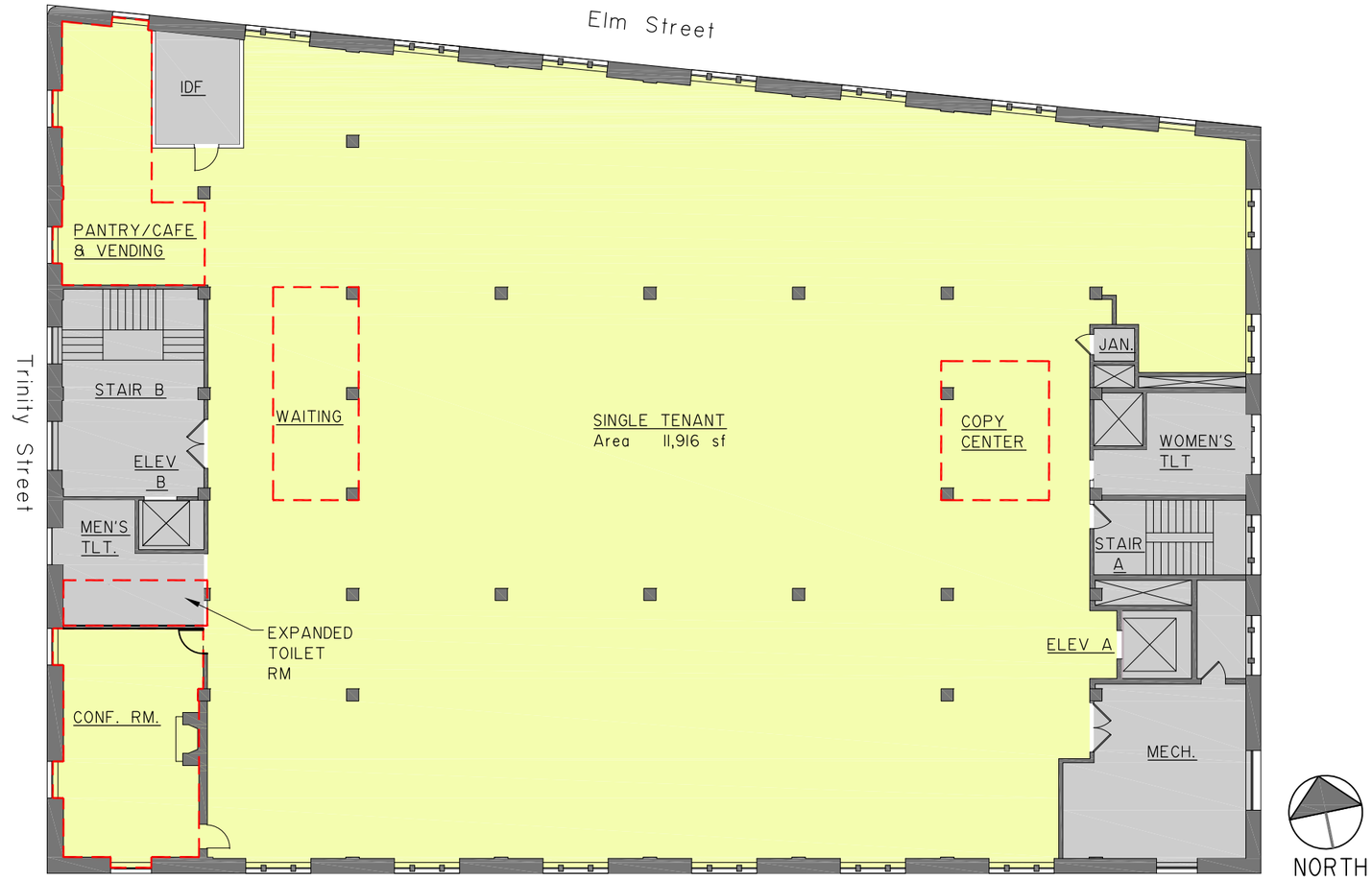
30 TRINITY STREET - 11,282 SF

# Test Layout 1 Single Tenant
## 1st Floor

30 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18




**LEGEND:**

SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE

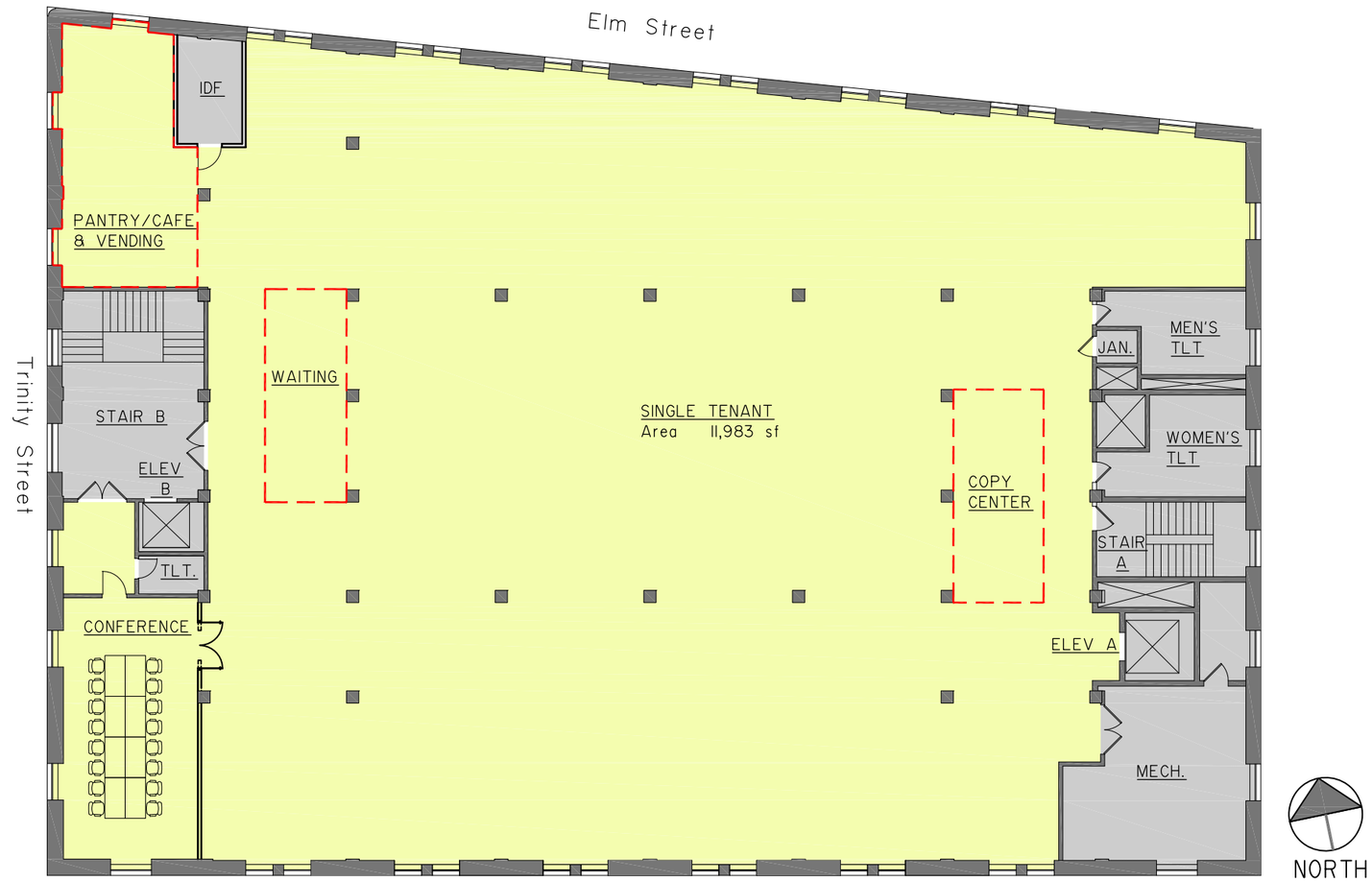
| USABLE AREA THIS FLOOR |
| --- |
| 30 TRINITY STREET - 11,916 SF |

# Test Layout 1 Single Tenant
## 2nd Floor

30 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18




**LEGEND:**

SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE

USABLE AREA THIS FLOOR

30 TRINITY STREET - 11,983 SF

# Test Layout 1 Single Tenant
## 3rd Floor

30 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18


**LEGEND:**

SINGLE TENANT | BUILDING CORE | SHARED BUILDING SERVICE | COMMON SHARED DEPT SPACE

USABLE AREA THIS FLOOR

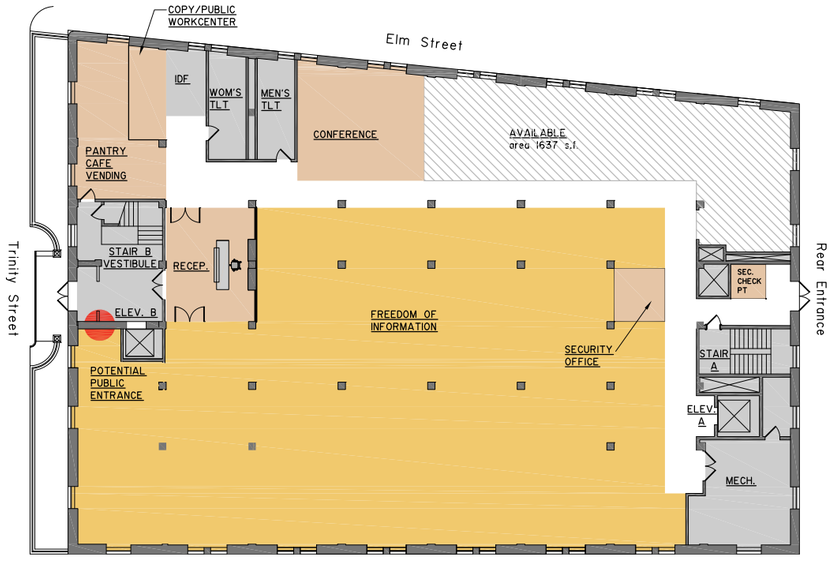
30 TRINITY STREET - 12,007 SF

# Test Layout 1 Single Tenant
## 4TH Floor

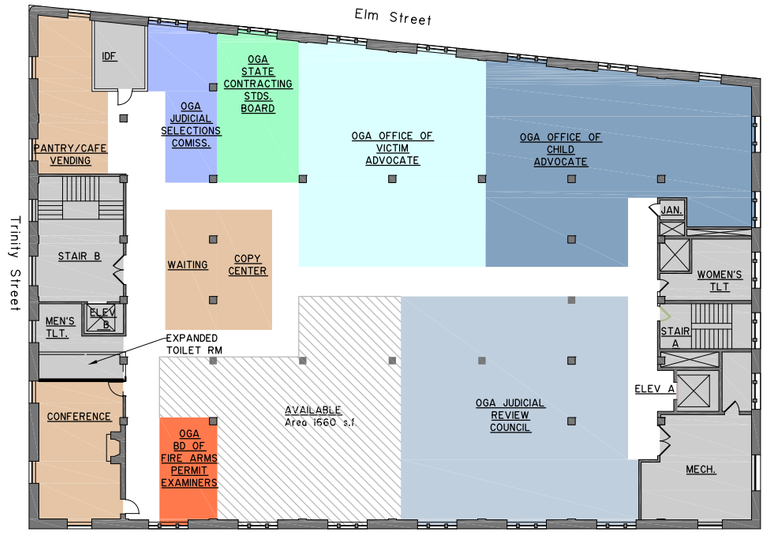
30 Trinity Street Hartford, CT

CPG ARCHITECTS

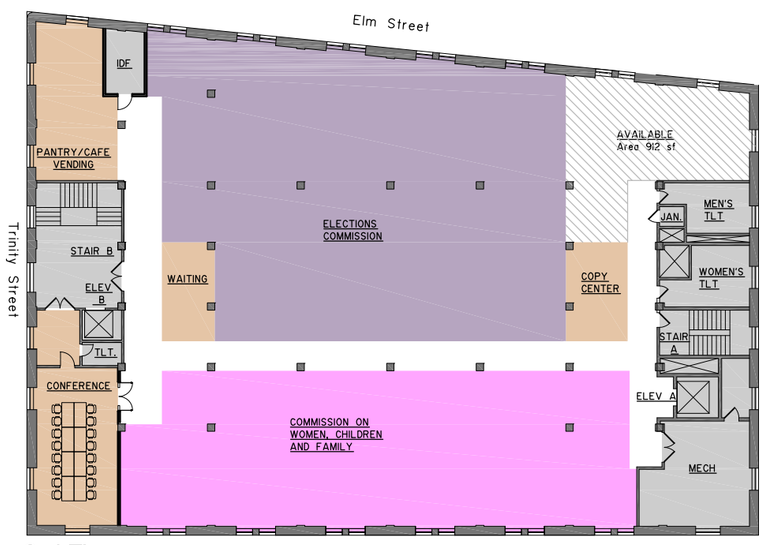
Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18



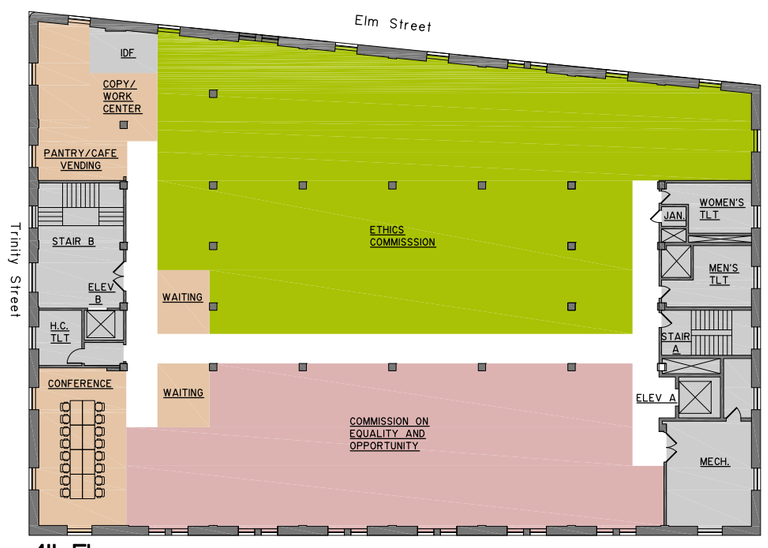

1st Floor




2nd Floor




3rd Floor




4th Floor

| LEGEND: | PROGRAM S.F. | ACTUAL S.F. | LOCATION |
|---|---|---|---|
| FREEDOM OF INFORM. COMMISS. | 7200 | 7294 | 1 |
| ELECTIONS ENFORCEMENT COMMISS. | 4500 | 4672 | 3 |
| OFFICE OF STATE ETHICS COMMISS. | 5773 | 5818 | 4 |
| COMMISS. ON EQUITY & OPPORTUN. | 3250 | 3332 | 4 |
| COMMISS. ON WOMEN CHILD & FAMILY | 3250 | 3268 | 3 |
| OGA BD. OF F.A. & PERMIT EXAMINERS | 240 | 251 | 2 |
| OGA JUDICICAL SELECTION COMMISS. | 324 | 385 | 2 |
| OGA STATE CONTRACTING STDS BOARD | 504 | 500 | 2 |
| OGA OFFICE OF VICTIM ADVOCATE | 1659 | 1695 | 2 |
| OGA JUDICIAL REVIEW COUNCIL | 2123 | 2158 | 2 |
| OGA OFFICE OF CHILD ADVOCATE | 1874 | 1880 | 2 |
| BUILDING CORE | | | |
| SHARED SERVICES | | | |
| AVAILABLE | | 4209 | 1, 2, 3 |

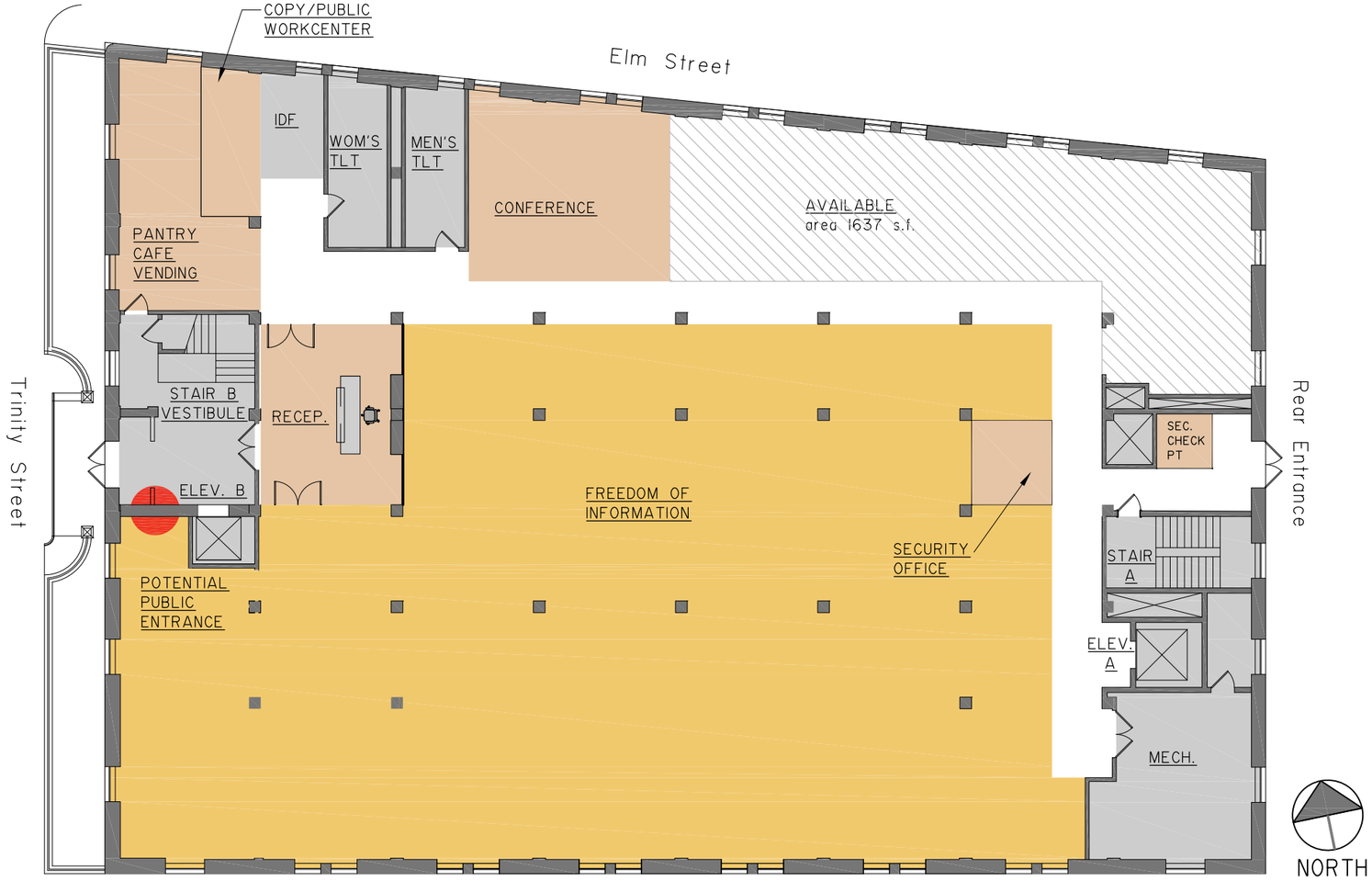
NORTH

# Test Layout 2 Multi-Tenant

30 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018



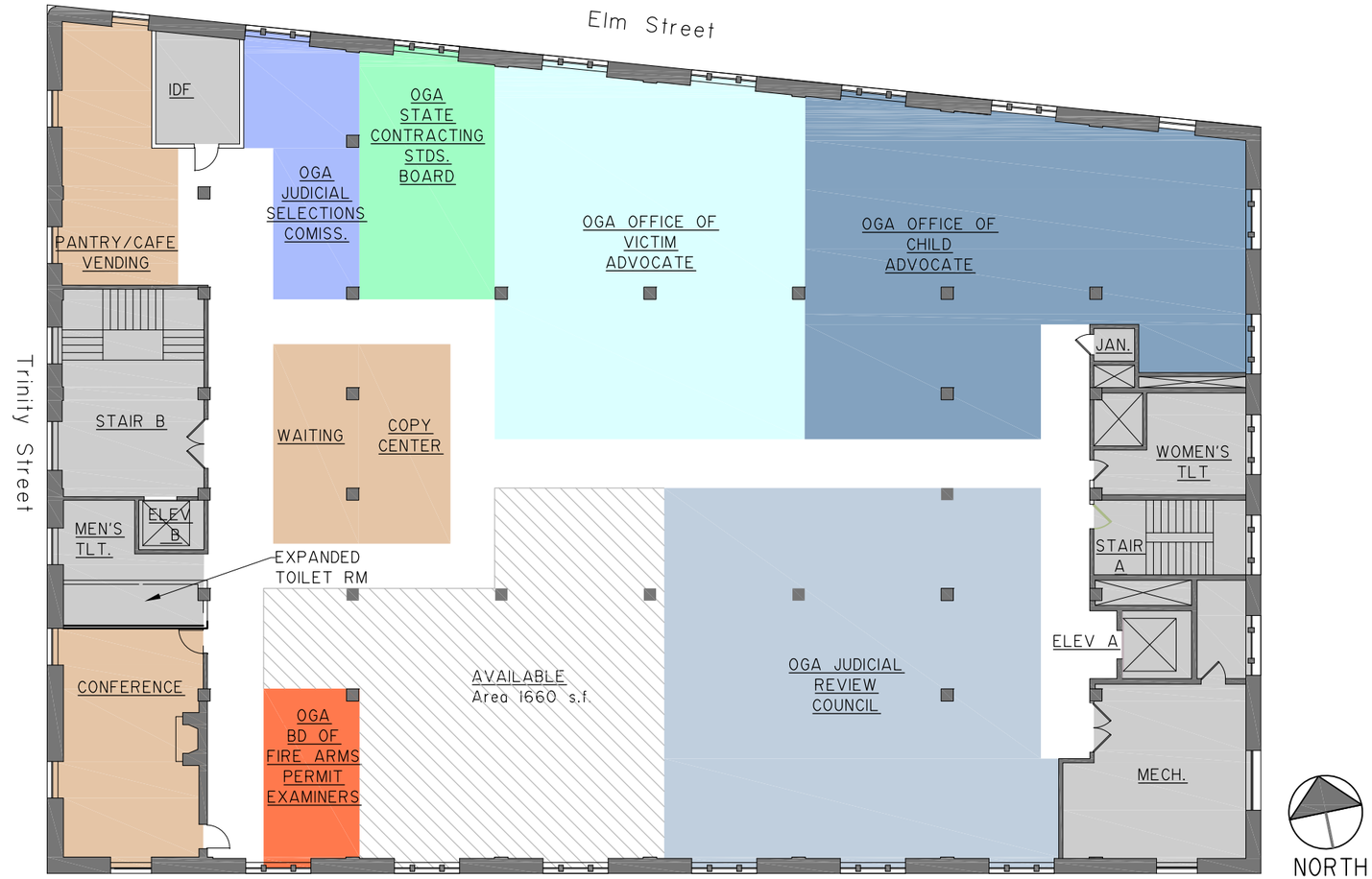

| LEGEND: | PROGRAM S.F. | ACTUAL S.F. | LOCATION | | PROGRAM S.F. | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|---|---|
| FREEDOM OF INFORM. COMMISS. | 7200 | 7294 | 1 | OGA STATE CONTRACTING STDS BOARD | 504 | 500 | 1 |
| ELECTIONS ENFORCEMENT COMMISS. | 4500 | 4672 | 1 | OGA OFFICE OF VICTIM ADVOCATE | 1659 | 1695 | 1 |
| OFFICE OF STATE ETHICS COMMISS. | 5773 | 5818 | 1 | OGA JUDICIAL REVIEW COUNCIL | 2123 | 2158 | 1 |
| COMMISS. ON EQUITY & OPPORTUN. | 3250 | 3332 | 1 | OGA OFFICE OF CHILD ADVOCATE | 1874 | 1880 | 1 |
| COMMISS. ON WOMEN CHILD & FAMILY | 3250 | 3268 | 1 | BUILDING CORE | | | |
| OGA BD. OF F.A. & PERMIT EXAMINERS | 240 | 251 | 1 | SHARED SERVICES | | | |
| OGA JUDICICAL SELECTION COMMISS. | 324 | 385 | 1 | AVAILABLE (ALL FLOORS) | | 4209 | 1, 2, 3 |

# Test Layout 2 Multi-Tenant
## 1st Floor

30 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18



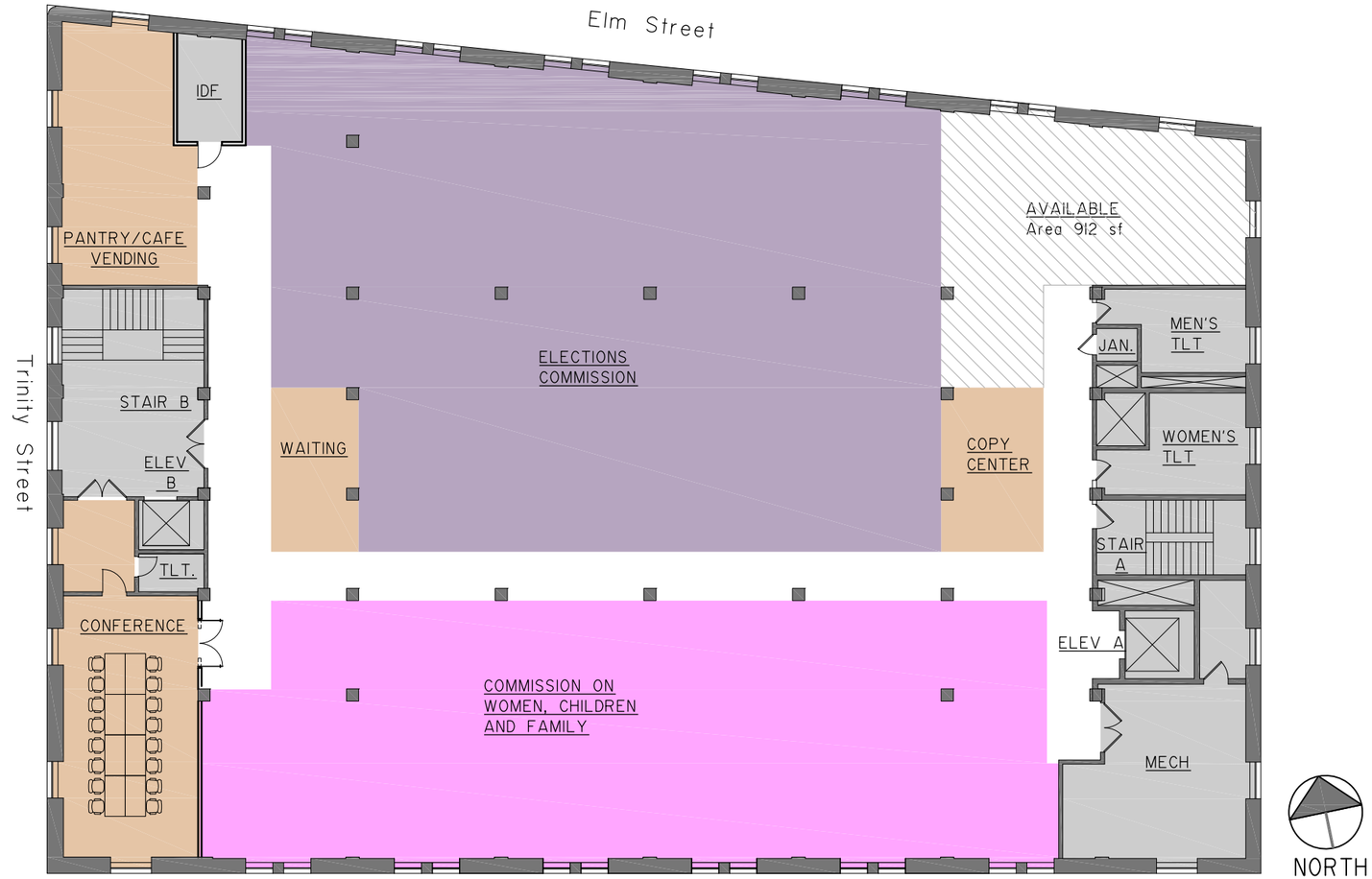

| LEGEND: | PROGRAM S.F. | ACTUAL S.F. | LOCATION | | PROGRAM S.F. | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|---|---|
| FREEDOM OF INFORM. COMMISS. | 7200 | 7294 | 1 | OGA STATE CONTRACTING STDS BOARD | 504 | 500 | 1 |
| ELECTIONS ENFORCEMENT COMMISS. | 4500 | 4672 | 1 | OGA OFFICE OF VICTIM ADVOCATE | 1659 | 1695 | 1 |
| OFFICE OF STATE ETHICS COMMISS. | 5773 | 5818 | 1 | OGA JUDICIAL REVIEW COUNCIL | 2123 | 2158 | 1 |
| COMMISS. ON EQUITY & OPPORTUN. | 3250 | 3332 | 1 | OGA OFFICE OF CHILD ADVOCATE | 1874 | 1880 | 1 |
| COMMISS. ON WOMEN CHILD & FAMILY | 3250 | 3268 | 1 | BUILDING CORE | | | |
| OGA BD. OF F.A. & PERMIT EXAMINERS | 240 | 251 | 1 | SHARED SERVICES | | | |
| OGA JUDICAL SELECTION COMMISS. | 324 | 385 | 1 | AVAILABLE (ALL FLOORS) | | 4209 | 1, 2, 3 |

# Test Layout 2 Multi-Tenant
## 2nd Floor

30 Trinity Street Hartford, CT

ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
RFV 11/19/18



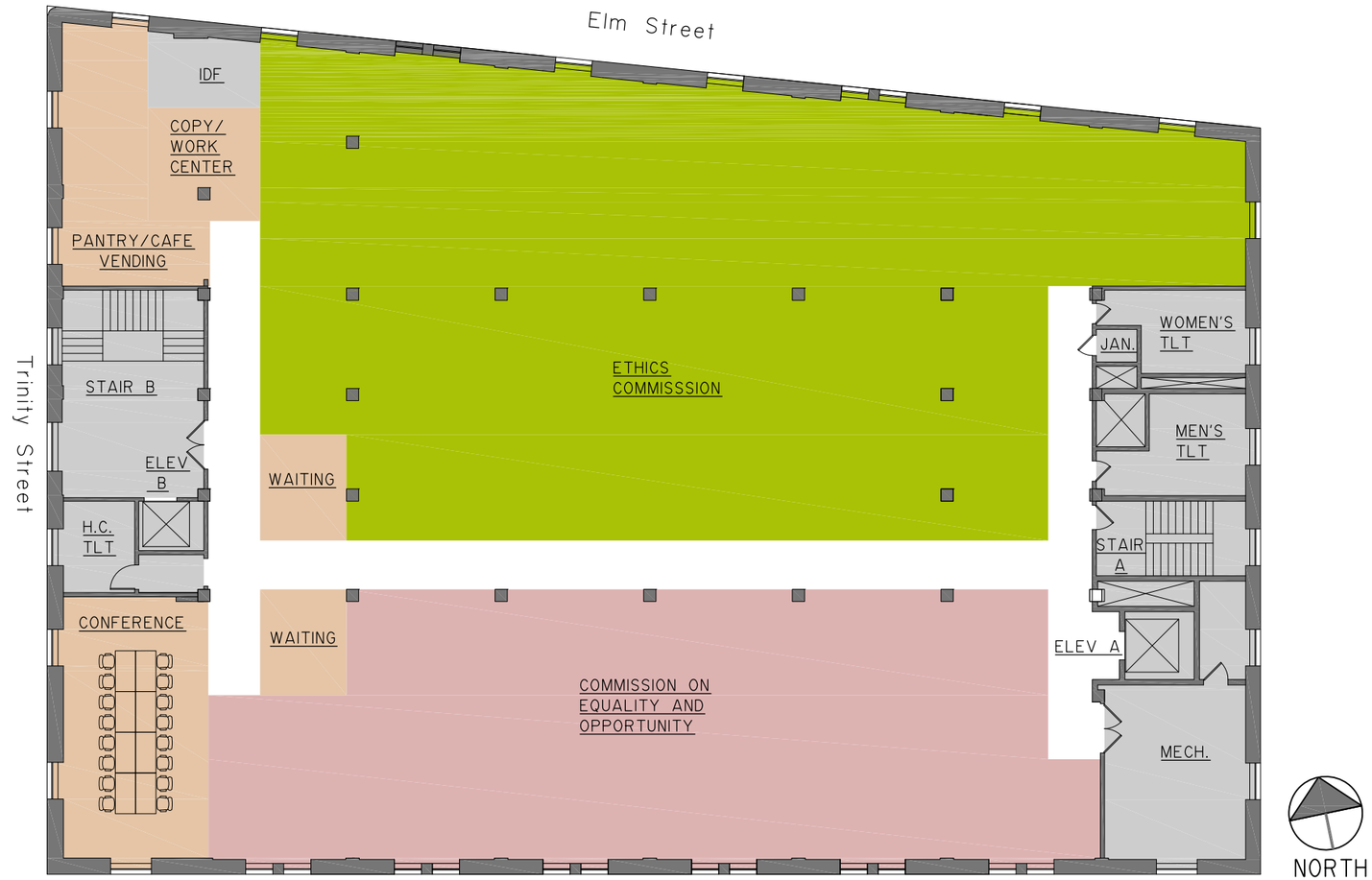

| LEGEND: | PROGRAM S.F. | ACTUAL S.F. | LOCATION | | PROGRAM S.F. | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|---|---|
| FREEDOM OF INFORM. COMMISS. | 7200 | 7294 | 1 | OGA STATE CONTRACTING STDS BOARD | 504 | 500 | 1 |
| ELECTIONS ENFORCEMENT COMMISS. | 4500 | 4672 | 1 | OGA OFFICE OF VICTIM ADVOCATE | 1659 | 1695 | 1 |
| OFFICE OF STATE ETHICS COMMISS. | 5773 | 5818 | 1 | OGA JUDICIAL REVIEW COUNCIL | 2123 | 2158 | 1 |
| COMMISS. ON EQUITY & OPPORTUN. | 3250 | 3332 | 1 | OGA OFFICE OF CHILD ADVOCATE | 1874 | 1880 | 1 |
| COMMISS. ON WOMEN CHILD & FAMILY | 3250 | 3268 | 1 | BUILDING CORE | | | |
| OGA BD. OF F.A. & PERMIT EXAMINERS | 240 | 251 | 1 | SHARED SERVICES | | | |
| OGA JUDICICAL SELECTION COMMISS. | 324 | 385 | 1 | AVAILABLE (ALL FLOORS) | | 4209 | 1, 2, 3 |

# Test Layout 2 Multi-Tenant
## 3rd Floor

30 Trinity Street Hartford, CT

CPG ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18




| LEGEND: | PROGRAM S.F. | ACTUAL S.F. | LOCATION | | PROGRAM S.F. | ACTUAL S.F. | LOCATION |
|---|---|---|---|---|---|---|---|
| FREEDOM OF INFORM. COMMISS. | 7200 | 7294 | 1 | OGA STATE CONTRACTING STDS BOARD | 504 | 500 | 1 |
| ELECTIONS ENFORCEMENT COMMISS. | 4500 | 4672 | 1 | OGA OFFICE OF VICTIM ADVOCATE | 1659 | 1695 | 1 |
| OFFICE OF STATE ETHICS COMMISS. | 5773 | 5818 | 1 | OGA JUDICIAL REVIEW COUNCIL | 2123 | 2158 | 1 |
| COMMISS. ON EQUITY & OPPORTUN. | 3250 | 3332 | 1 | OGA OFFICE OF CHILD ADVOCATE | 1874 | 1880 | 1 |
| COMMISS. ON WOMEN CHILD & FAMILY | 3250 | 3268 | 1 | BUILDING CORE | | | |
| OGA BD. OF F.A. & PERMIT EXAMINERS | 240 | 251 | 1 | SHARED SERVICES | | | |
| OGA JUDICICAL SELECTION COMMISS. | 324 | 385 | 1 | AVAILABLE (ALL FLOORS) | | 4209 | 1, 2, 3 |

# Test Layout 2 Multi-Tenant
## 4th Floor

30 Trinity Street Hartford, CT

ARCHITECTS

Job No. 18098
Scale: NTS
October 3, 2018
REV 11/19/18

# Appendix VII Construction Cost Estimate

A summary of proposed restoration work with an Opinion of Probable Construction Costs are indicated below and reflect 2019 probable construction costs and 2022 probable construction costs. This summary is followed by a detailed breakdown of the probable construction costs.

These costs do not include professional fees for consultants concerning repair procedures, preparation of construction documents, assistance with bidding, construction administration or on site observation of construction. The costs do not include expenses to be incurred by the Owner such as project management and testing services.

The costs indicated are based on preliminary data and have not been derived from accurate quantities, drawings, details or specifications.

| **Recommended Work with Preliminary Opinion of Probable Construction Costs at 20 Trinity Street** | | |
|---|---|---|
| **Recommendation** | **2019 Costs** | **2022 Costs** |
| Repairs/reconstruction of site walls | 184,000 | 199,000 |
| Masonry façade cleaning | 52,000 | 56,000 |
| Masonry repairs including repointing at stone and brick mortar joints | 231,000 | 250,000 |
| Restoration of entrance stairs, replication of exterior light fixtures and replication of entrance doors at the west elevation to match original construction. | 212,000 | 230,000 |
| Replacement and thermal upgrade of the low slope roofing system | 278,000 | 301,000 |
| Restoration of the original wood and galvanized steel windows at the north and south elevations including adding storm windows | 715,000 | 774,000 |
| Restoration of the west entrance lobby and monumental stair to replicate the original conditions | 293,000 | 317,000 |
| Revise interior layout to meet the programing requirements of the building occupants | 3,276,000 | 3,543,000 |
| Recapture original ceiling heights and ornamentation at perimeter spaces at each floor level | 73,000 | 79,000 |
| Upgrade the toilet rooms, including meeting current accessibility requirements | 112,000 | 121,000 |
| Add automatic sprinkler system | 1,274,000 | 1,378,000 |
| Upgrade the fire protection system to replace dated systems and comply with the 2018 Connecticut State Building Code | 212,000 | 230,000 |
| Upgrade the existing plumbing systems | 966,000 | 1,045,000 |
| Upgrade the existing mechanical systems | 2,597,000 | 2,808,000 |
| Upgrade the existing electrical systems | 1,770,000 | 1,915,000 |
| General Requirements | 285,000 | 307,000 |
| **TOTAL** | **$12,530,000** | **$13,553,000** |

| Recommended Work with Preliminary Opinion of Probable Construction Costs at 18 Trinity Street | | |
|---|---|---|
| **Recommendation** | **2019 Costs** | **2022 Costs** |
| Repairs/reconstruction of site walls/loading dock | 156,000 | 169,000 |
| Masonry façade cleaning | 84,000 | 91,000 |
| Masonry repairs including repointing at stone and brick mortar joints | 757,000 | 819,000 |
| Replacement of deteriorated cast stone units including all coping stones at the roof parapet | 24,000 | 26,000 |
| Replacement and thermal upgrade of the low slope roofing systems | 293,000 | 317,000 |
| Restoration of the original galvanized steel windows including adding storm windows | 818,000 | 885,000 |
| Revise interior layout to meet the programing requirements of the building occupants | 5,444,000 | 5,888,000 |
| Upgrade the toilet rooms, including meeting current accessibility requirements | 105,000 | 114,000 |
| Add an automatic sprinkler system | 2,214,000 | 2,394,000 |
| Upgrade the fire protection system to replace dated systems and comply with the 2018 Connecticut State Building Code | 369,000 | 399,000 |
| Upgrade the existing plumbing systems | 1,679,000 | 1,816,000 |
| Upgrade the existing mechanical systems | 4,337,000 | 4,691,000 |
| Upgrade the existing electrical systems | 3,077,000 | 3,328,000 |
| General Requirements | 617,000 | 668,000 |
| **TOTAL** | **$19,974,000** | **$21,605,000** |

| Recommended Work with Preliminary Opinion of Probable Construction Costs at 30 Trinity Street | | |
|---|---|---|
| **Recommendation** | **2019 Costs** | **2022 Costs** |
| Repairs/reconstruction of site walls and loading dock | 315,000 | 341,000 |
| Replacement of deteriorated sections of the roof deck at the vault below the parking lot at the northeast corner of the building (if concurrent with parking lot work) | 5,000 | 6,000 |
| Masonry façade cleaning | 47,000 | 51,000 |
| Masonry repairs including repointing at stone mortar joints | 251,000 | 272,000 |
| Repairs at deteriorated marble | 118,000 | 127,000 |
| Restoration of entrance stairs, ramp and replication of entrance doors at the west elevation to match original construction to the greatest extent possible while maintaining accessibility | 35,000 | 38,000 |
| Restoration of the galvanized steel windows including adding storm windows | 840,000 | 909,000 |
| Revise interior layout to meet the programing requirements of the building occupants | 6,455,000 | 6,982,000 |
| Recapture original ceiling heights and ornamentation at perimeter spaces at each floor level | 73,000 | 79,000 |
| Upgrade the toilet rooms, including meeting current accessibility requirements | 200,000 | 216,000 |
| Add automatic sprinkler system | 2,399,000 | 2,595,000 |
| Upgrade the fire protection system to replace dated systems and comply with the 2018 Connecticut State Building Code | 399,000 | 432,000 |
| Upgrade the existing plumbing systems | 1,820,000 | 1,968,000 |
| Upgrade the existing mechanical systems | 4,715,000 | 5,100,000 |
| Upgrade the existing electrical systems | 3,343,000 | 3,616,000 |
| General Requirements | 696,000 | 753,000 |
| **TOTAL** | **$21,711,000** | **$23,485,000** |

| Recommended Work with Preliminary Opinion of Probable Construction Costs at Parking Lot | | |
|---|---|---|
| **Recommendation** | **2019 Costs** | **2022 Costs** |
| Regrading, replacing the existing retaining walls with new retaining walls, replacing the bituminous asphalt surface, improving access to and circulation in the lot, improving lighting, adding planting islands and restoration of original iron fencing at the north side of the lot (Elm Street). These upgrades most likely will result in a decrease in the number of parking spaces. | 301,000 | 326,000 |
| Accessible routes are present to each building. However the route from the parking lot to the interior of 18/20 Trinity Street is relatively long. It is recommended a new access ramp be provided at the north entrance to 18 Trinity Street. | 95,000 | 103,000 |

| **TOTAL** | **$396,000** | **$429,000** |
|---|---|---|
| **Opinion of probable Construction Costs for other Options Considered** | | |
| **Recommendation** | **2019 Costs** | **2022 Costs** |
| Restoration of windows and iron railings at limestone section of 20 Trinity to replicate the original construction | 439,000 | 475,000 |
| Replication of the original copper dome at 20 Trinity Street. | 4,487,000 | 4,853,000 |
| Demolish 18 Trinity Street and construct a glass curtain wall structure of equivalent size connected to 20 Trinity Street. | 40,585,000 | 43,897,000 |
| Demolish 18 Trinity Street and the brick façade section of 20 Trinity Street and construct a brick veneer building connected to the remaining stone façade section of 20 Trinity Street that replicates the existing buildings. | 53,955,000 | 58,358,000 |
| Replace main water line and fire service line to 18/20 Trinity Street from Street. This work would take place in coordination with the parking lot upgrade. | 95,000 | 103,000 |
| Infill light well at the south side of 30 Trinity Street. Below grade masonry openings are to be filled with CMU and all below grade surfaces are to be waterproofed. | 146,000 | 158,000 |

| Description | Quantity | | Total Unit Cost | Total Amount |
|---|---|---|---|---|
| ***1 Building Rehabilitation*** | | | | |
| 1 20 Trinity Street | 29,000.00 | sf | 289.40 /sf | 8,392,529.00 |
| 2 18 Trinity | 50,400.00 | sf | 270.80 /sf | 13,648,502.00 |
| 3 30 Trinity | 54,640.00 | sf | 272.06 /sf | 14,865,672.00 |
| ***1 Building Rehabilitation*** | 136,040.00 | sf | 271.29 /sf | **36,906,708.00** |
| ***134,640.00 sf*** | | | | |
| 144,871.892 Labor hours | | | | |
| 1,221.584 Equipment hours | | | | |
| ***2 Site Rehabilitation*** | | | | |
| 4 Parking | 25,705.00 | sf | 8.00 /sf | 205,650 |
| 5 New H/C Ramp | 1.00 | ls | 65,001.88 /ls | 65,002 |
| ***2 Site Rehabilitation*** | | | ***10.53 /sf*** | ***270,652*** |
| ***25,705.00 sf*** | | | | |
| 1,430.26 Labor hours | | | | |
| 239.61 Equipment hours | | | | |

## Partial Totals

| Description | Amount | Totals | Rate | | Cost |
|---|---|---|---|---|---|
| Labor | 24,158,848 | | | | |
| Material | 12,974,898 | | | | |
| Subcontract | 44,614 | | | | |
| Equipment | | | | | |
| Other | | | | | |
| | 37,177,360 | 37,177,360 | | | |
| General Conditions | 3,717,736 | | 10.000 | % | T |
| | 40,895,096 | 40,895,096 | | | |
| Overhead & Profit | 4,089,510 | | 10.000 | % | T |
| | 44,984,605 | 44,984,605 | | | |
| Design Contingency | 4,498,460 | | 10.000 | % | T |
| | 49,483,065 | 49,483,065 | | | |
| Escalation 2 yr x 4% | 4,037,818 | | 8.160 | % | T |
| | 53,520,883 | 53,520,883 | | | |
| Construction Contingency | 5,352,088 | | 10.000 | % | T |
| | 58,872,916 | 58,872,916 | | | |
| Partial Total | | **58,872,916** | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | **1 Building Rehabilitation** | | | | |
| | | **1 20 Trinity Street** | | | | |
| *01-00-00.00* | | *GENERAL REQUIREMENTS* | | | | |
| *01-00-00.01* | | *General Requirements* | | | | |
| ---- | | Protection | | sf | 1.00 /sf | 29,000 |
| | | *General Requirements* | | | *0.954/sf* | 29,000 |
| | | *32,000.00 sf* | | | | |
| | | *GENERAL REQUIREMENTS* | | | *0.954/sf* | 29,000 |
| | | *32,000.00 sf* | | | | |
| *01-01-00.00* | | *ITEMIZED GENRL CONDITIONS* | | | | |
| *01-01-00.02* | | *Project Labor* | | | | |
| | 0119 | Laborer (mo) | 12.00 | mo | 18,977.20 /mo | 227,726 |
| | | *Project Labor* | | | *7.12 /sf* | *227,726* |
| | | *32,000.00 sf* | | | | |
| | | 2,112.000 Labor hours | | | | |
| *01-54-23.70* | | *Scaffolding* | | | | |
| | 0010 | Scaffold & Plank | 17,100 | sf | 7.00 /sf | 119,700 |
| | | *Scaffolding* | | | *6.68 /sf* | |
| | | *32,000.00 sf* | | | | |
| | | 1,526.00 Labor hours | | | | |
| | | *ITEMIZED GENRL CONDITIONS* | | | *13.793/sf* | 347,426 |
| | | *32,000.00 sf* | | | | |
| | | 3,638.000 Labor hours | | | | |
| *02-00-00.00* | | *EXISTING CONDITIONS* | | | | |
| *02-00-00.01* | | *Existing Conditions* | | | | |
| ---- | | Site Demolition | 29,000 | sf | 1.00 /sf | 29,000 |
| ---- | | Interior Demolition | 29,000 | sf | 18.00 /sf | 522,000 |
| | | *Existing Conditions* | | | *18.121/sf* | 551,000 |
| | | *32,000.00 sf* | | | | |
| | | *EXISTING CONDITIONS* | | | *18.121/sf* | |
| | | *32,000.00 sf* | | | | |
| *03-00-00.00* | | *CONCRETE* | | | | |
| *03-00-00.01* | | *Concrete* | | | | |
| | | Loading dock costs moved to 18 Trinity | | | | |
| *03-30-53.40* | | *Concrete In Place* | | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Amount |
|---|---|---|---|---|---|---|
| *03-30-53.40* | | *Concrete In Place* | | | | |
| n | 4535 | Reconstruct Retaining Wall | 100.00 | lf | 946.44 /lf | 94,644 |
| | | *Concrete In Place* | | | | *94,644* |
| | | 656.64 Labor hours | | | | |
| | | 109.44 Equipment hours | | | | |
| | | *CONCRETE* | | | | 96,644 |
| | | *32,000.00 sf* | | | | |
| | | 656.64 Labor hours | | | | |
| | | 109.44 Equipment hours | | | | |
| *04-00-00.00* | | *MASONRY* | | | | |
| *04-01-20.20* | | *Pointing Masonry* | | | | |
| | 0300 | Pointing masonry, tuck, cut and re-point, hard mortar, running bond | 2,934.00 | sf | 15.56 /sf | 45,654 |
| | 0700 | Pointing masonry, stonework, hard mortar | 7,649.00 | sf | 15.75 /sf | 120,475 |
| | | *Pointing Masonry* | | | | *166,129* |
| | | 1,682.17 Labor hours | | | | |
| *04-11-20.20* | | *Replacement* | | | | |
| | 2025 | Stitch Brick Repair | 50.00 | sf | 47.80 /sf | 2,390 |
| | | *Replacement* | | | | *2,390* |
| | | 20.00 Labor hours | | | | |
| | | 1.143 Equipment hours | | | | |
| *04-11-20.26* | | *Patch Repair* | | | | |
| | 2025 | Remove Ferrous Anchor & Apply Mortar Patch | 9.00 | ea | 49.944 /ea | 450 |
| | 2025 | Patch Column Cap | 1.00 | ea | 5,000.40 /ea | 5,000 |
| | 2025 | Patch Sill | 18.00 | loc | 250.393 /loc | 4,507 |
| | | *Patch Repair* | | | | *9,957* |
| | | 88.96 Labor hours | | | | |
| | | 0.640 Equipment hours | | | | |
| *04-11-20.28* | | *Crack Repair* | | | | |
| | 2025 | Crack Repair | 2.00 | lf | 94.51 /lf | 189 |
| | | *Crack Repair* | | | | *189* |
| | | 1.20 Labor hours | | | | |
| | | 0.05 Equipment hours | | | | |
| *04-11-20.30* | | *Dutchmen* | | | | |
| | 0100 | Dutchman, Single Face | 6.00 | ea | 1,368.45 /ea | 8,211 |
| | | *Dutchmen* | | | | *8,211* |
| | | 60.885 Labor hours | | | | |
| | | 60.885 Equipment hours | | | | |
| *04-11-20.32* | | *Resetting* | | | | |
| | 9050 | Reset Entry Stairs | 1.00 | ls | 19,999.97 /ls | 20,000 |
| | 9050 | Reset Coping | 99.00 | lf | 40.001 /lf | 3,960 |
| | | *Resetting* | | | | *23,960* |
| | | 253.89 Labor hours | | | | |
| *04-11-20.36* | | *Infills* | | | | |
| | 0035 | Remove Window & Infill Opening | 82.00 | sf | 107.964 /sf | 8,853 |
| | | *Infills* | | | | *8,853* |
| | | 72.09 Labor hours | | | | |
| *04-11-20.38* | | *Lintel Maintenance* | | | | |
| | 6035 | Lintel angle, structural, unpainted, 6"x3-1/2"x5/16", 9.8lb/lf | 2.00 | ea | 1,158.50 /ea | 2,317 |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | *Lintel Maintenance* | | | | *2,317* |
| | | 23.312 Labor hours | | | | |
| *04-20-29.10* | | *Spall Repair* | | | | |
| | 0010 | Prep Spall & Patch w/ Jahn Mortar | 3.00 | loc | 140.003 /loc | 420 |
| | | *Spall Repair* | | | | *420* |
| | | 2.861 Labor hours | | | | |
| | | *MASONRY* | | | *6.951/sf* | *222,426* |
| | | *32,000.00 sf* | | | | |
| | | 2,205.36 Labor hours | | | | |
| | | 62.714 Equipment hours | | | | |
| *05-00-00.00* | | *METALS* | | | | |
| *05-58-27.90* | | *Window Guards* | | | | |
| | 0010 | Remove, Restore & Reinstall Security Grill Anchors | 1.00 | ea | 3,500.37 /ea | 3,500 |
| | | *Window Guards* | | | | *3,500* |
| | | 23.683 Labor hours | | | | |
| | | 0.023 Equipment hours | | | | |
| | | *METALS* | | | *0.11 /sf* | *3,500* |
| | | *32,000.00 sf* | | | | |
| | | 23.683 Labor hours | | | | |
| | | 0.023 Equipment hours | | | | |
| *06-00-00.00* | | *WOOD & PLASTICS* | | | | |
| *06-00-00.01* | | *Wood, Plastics, and Composites* | | | | |
| ---- | | Rough Carpentry | 29,000 | sf | 4.00 /sf | 116,000 |
| ---- | | Finish Carpentry | 29,000 | sf | 1.25 /sf | 36,250 |
| ---- | | Millwork | 29,000 | sf | 5.50 /sf | 159,500 |
| | | *Wood, Plastics, and Composites* | | | *10.253/sf* | 311,750 |
| | | *32,000.00 sf* | | | | |
| | | *WOOD & PLASTICS* | | | *10.253/sf* | |
| | | *32,000.00 sf* | | | | |
| *07-00-00.00* | | *THRML & MOIST PROT'N* | | | | |
| *07-00-00.01* | | *Thermal and Moisture Protection* | | | | |
| ---- | | Thermal & Moisture Protection | | | | |
| ---- | | Roof Replacement | 7,600 | sf | 25.00 /sf | 190,000 |
| | | *Thermal and Moisture Protection* | | | *9.37 /sf* | 190,000 |
| | | *32,000.00 sf* | | | | |
| *07-01-90.81* | | *Joint Sealant Replacement* | | | | |
| n | 0112 | Remove & Replace Backer Rod & Sealant | 68.00 | lf | 7.531 /lf | 512 |
| n | 0112 | Joint Sealant @ Coping Stones | 310.00 | lf | 15.032 /lf | 4,660 |
| | | *Joint Sealant Replacement* | | | | *5,172* |
| | | 48.48 Labor hours | | | | |
| | | 0.631 Equipment hours | | | | |
| | | *THRML & MOIST PROT'N* | | | *9.53 /sf* | 195,172 |
| | | *32,000.00 sf* | | | | |
| | | 48.48 Labor hours | | | | |
| | | 0.631 Equipment hours | | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| *08-00-00.00* | | *OPENINGS* | | | | |
| *08-00-00.02* | | *Doors, With Frames & Hardware* | | | | |
| | 0005 | Doors w/ Frame & hardware | 30,520.00 | sf | 7.88 /sf | 240,502 |
| | | *Doors, With Frames & Hardware* | | | *7.52 /sf* | *240,502* |
| | | *32,000.00 sf* | | | | |
| | | 488.32 Labor hours | | | | |
| *08-00-00.03* | | *Windows* | | | | |
| | 0020 | Restore Windows | 64.00 | ea | 2,500.00 /ea | 160,000 |
| | 0020 | Install Storm Windows | 64.00 | ea | 1,250.001 /ea | 80,000 |
| | | *Windows* | | | *7.50 /sf* | *240,000* |
| | | *32,000.00 sf* | | | | |
| | | 1,033.110 Labor hours | | | | |
| *08-81-20.10* | | *Full Vision* | | | | |
| | 0020 | Replace Glazing | 13.00 | loc | 625.00 /loc | 8,125 |
| | | *Full Vision* | | | | *8,125* |
| | | 80.48 Labor hours | | | | |
| | | *OPENINGS* | | | *15.27 /sf* | *488,628* |
| | | *32,000.00 sf* | | | | |
| | | 1,601.91 Labor hours | | | | |
| *09-00-00.00* | | *FINISHES* | | | | |
| *09-00-00.01* | | *Finishes* | | | | |
| | 0001 | Floor Prep | 29,000 | sf | 3.50 /sf | 101,500 |
| | 0015 | Floor Finishes | 29,000 | sf | 6.00 /sf | 174,000 |
| | 0015 | Restore Monumental Stair | 1 | ls | 200,000.05 /ls | 200,000 |
| | 0020 | Base Finish | 29,000 | sf | 0.75 /sf | 21,750 |
| | 0025 | Partitions | 29,000 | sf | 12.001 /sf | 348,000 |
| | 0030 | Ceiling Finishes | 29,000 | sf | 12.00 /sf | 348,000 |
| | 0030 | Preserve Monumental Ceilings ALLOW | 1 | ls | 50,000.05 /ls | 50,000 |
| | 0035 | Acoustical Treatment | 29,000 | sf | 1.25 /sf | 36,250 |
| | 0040 | Painting | 29,000 | sf | 4.00 /sf | 116,000 |
| | | *Finishes* | | | *45.49 /sf* | 1,395,500 |
| | | *32,000.00 sf* | | | | |
| | | 8,252.85 Labor hours | | | | |
| *09-91-13.30* | | *Fences* | | | | |
| | 0110 | Clean & Paint Iron Railing | 0.00 | lf | | |
| | 0110 | Clean & Paint Torchiere | 0.00 | ea | | |
| | | *FINISHES* | | | *45.49 /sf* | 1,395,500 |
| | | *32,000.00 sf* | | | | |
| | | 8,252.85 Labor hours | | | | |
| *10-00-00.00* | | *SPECIALTIES* | | | | |
| *10-00-00.01* | | *Specialties* | | | | |
| | 0010 | Bathroom Specialties | 30,520.00 | sf | 1.25 /sf | 38,162 |
| | 0013 | Specialties | 30,520.00 | sf | 1.25 /sf | 38,131 |
| | | *Specialties* | | | *2.384/sf* | *76,293* |
| | | *32,000.00 sf* | | | | |
| | | 328.40 Labor hours | | | | |

| Item | Description | Takeoff Qty | | Total Unit Cost | | Total Amount |
|---|---|---|---|---|---|---|
| | *SPECIALTIES* | | | *2.384/sf* | | *76,293* |
| | *32,000.00 sf* | | | | | |
| | 328.40 Labor hours | | | | | |
| *11-00-00.00* | *EQUIPMENT* | | | | | |
| *11-00-00.01* | *Equipment* | | | | | |
| ---- | Equipment | 30,520.00 | sf | | | |
| | *EQUIPMENT* | | | | | *0* |
| | *32,000.00 sf* | | | | | |
| *12-00-00.00* | *FURNISHINGS* | | | | | |
| *12-00-00.01* | *Furnishings* | | | | | |
| ---- | Furnishings, Shades, Etc | 50.00 | ea | 350.00 | /ea | 17,500 |
| | *Furnishings* | | | | | 17,500 |
| | *32,000.00 sf* | | | | | |
| | *FURNISHINGS* | | | | | |
| | *32,000.00 sf* | | | | | |
| *13-00-00.00* | *SPECIAL CONSTRUCTION* | | | | | |
| *13-00-00.01* | *Special Construction* | | | | | |
| ---- | Special Construction | 30,520.00 | sf | | | |
| | *SPECIAL CONSTRUCTION* | | | | | *0* |
| | *32,000.00 sf* | | | | | |
| *14-00-00.00* | *CONVEYING EQUIPMENT* | | | | | |
| *14-00-00.01* | *Conveying Equipment* | | | | | |
| ---- | Elevators & Lifts | 30,520.00 | sf | | | |
| | *CONVEYING EQUIPMENT* | | | | | *0* |
| | *32,000.00 sf* | | | | | |
| *21-00-00.00* | *FIRE SUPPRESSION* | | | | | |
| *21-00-00.01* | *Fire Suppression* | | | | | |
| ---- | Fire Pump | 29,000 | sf | 10.00 | /sf | 290,000 |
| ---- | Standpipe System | 29,000 | sf | 10.00 | /sf | 290,000 |
| ---- | Sprinkler System | 29,000 | sf | 10.00 | /sf | 290,000 |
| | *Fire Suppression* | | | *28.613/sf* | | 870,000 |
| | *32,000.00 sf* | | | | | |
| | *FIRE SUPPRESSION* | | | *28.613/sf* | | |
| | *32,000.00 sf* | | | | | |
| *22-00-00.00* | *PLUMBING* | | | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| *22-00-00.01* | | *Plumbing* | | | | |
| | 0000 | Plumbing Demolition | 29,000 | sf | 1.00 /sf | 29,000 |
| | 0001 | Water Piping & Insulation | 29,000 | sf | 1.25 /sf | 36,250 |
| | 0002 | Sanitary Piping | 29,000 | sf | 4.00 /sf | 116,000 |
| | 0003 | Storm Piping | 29,000 | sf | 4.00 /sf | 116,000 |
| | 0004 | Natural Gas Piping | 29,000 | sf | 4.00 /sf | 116,000 |
| | 0005 | Plumbing Fixtures | 29,000 | sf | 4.00 /sf | 116,000 |
| | 0006 | Drains | 29,000 | sf | 1.50 /sf | 43,500 |
| | 0008 | Plumbing Rough-in | 29,000 | sf | 2.00 /sf | 58,000 |
| | 0009 | Plumbing Cutting & Patching | 29,000 | sf | 1.00 /sf | 29,000 |
| | | *Plumbing* | | | *18.75 /sf* | 659,750 |
| | | *32,000.00 sf* | | | | |
| | | 6,793.92 Labor hours | | | | |
| | | *PLUMBING* | | | *18.75 /sf* | 659,750 |
| | | *32,000.00 sf* | | | | |
| | | 6,793.92 Labor hours | | | | |
| *23-00-00.00* | | *HVAC* | | | | |
| *23-00-00.01* | | *Heating, Ventilating, and Air Conditioning* | | | | |
| | 0001 | HVAC Heating Equipment | 29,000 | sf | 3.00 | 87,000 |
| | 0002 | HVAC Cooling Equipment | 29,000 | sf | 3.00 | 87,000 |
| | 0003 | HVAC Piping & Insulation | 29,000 | sf | 9.52 /sf | 276,080 |
| | 0004 | HVAC Duct & Insulation, 1#/sf | 29,000 | sf | 14.54 /sf | 421,660 |
| | 0005 | HVAC Air Handling Units | 29,000 | sf | 5.20 /sf | 150,800 |
| | 0009 | HVAC Terminal Units | 29,000 | sf | 2.20 /sf | 63,800 |
| | 0010 | HVAC Ventilation Equipment & Fans | 29,000 | sf | 0.30 /sf | 8,700 |
| | 0016 | HVAC Registers, Diffusers & Grills | 29,000 | sf | 1.10 /sf | 31,900 |
| | 0017 | HVAC Controls | 29,000 | sf | 10.00 /sf | 290,000 |
| | 0018 | HVAC Rigging & Hoisting | 29,000 | sf | 9.50 /sf | 275,500 |
| | 0019 | HVAC Dunnage, Platforms & Stairs | 29,000 | sf | 1.50 /sf | 43,500 |
| | 0020 | HVAC Screens & Enclosures | 29,000 | sf | 0.30 /sf | 8,700 |
| | 0021 | HVAC Cutting & Patching | 29,000 | sf | 1.00 /sf | 29,000 |
| | | *Heating, Ventilating, and Air Conditioning* | | | *55.15 /sf* | 1,773,640 |
| | | *32,000.00 sf* | | | | |
| | | 10,005.120 Labor hours | | | | |
| | | *HVAC* | | | *55.15 /sf* | 1,773,640 |
| | | *32,000.00 sf* | | | | |
| | | 10,005.120 Labor hours | | | | |
| *26-00-00.00* | | *ELECTRICAL* | | | | |
| *26-00-00.01* | | *Electrical* | | | | |
| | 0001 | Branch Conduit & Wire, Power | 29,000 | sf | 1.492 /sf | 43,500 |
| | 0002 | Branch Conduit & Wire, Lighting | 29,000 | sf | 1.193 /sf | 34,800 |
| | 0003 | Branch Conduit & Wire, HVAC Equip | 29,000 | sf | 0.993 /sf | 29,000 |
| | 0004 | Branch Conduit & Wire, Controls | 29,000 | sf | 0.993 /sf | 29,000 |
| | 0005 | Devices | 29,000 | sf | 5.27 /sf | 152,830 |
| | 0006 | Service & Distribution | 29,000 | sf | 5.471 /sf | 158,630 |
| | 0007 | Emergency Service & Distribution | 29,000 | sf | 5.96 /sf | 172,840 |
| | 0008 | Interior Lighting | 29,000 | sf | 15.00 /sf | 435,000 |
| | 0009 | Exterior Lighting | 29,000 | sf | 1.20 /sf | 34,800 |
| | 0010 | Fire Alarm System | 29,000 | sf | 5.00 /sf | 145,000 |
| | 0011 | Low Voltage Systems | 29,000 | sf | 1.50 /sf | 43,500 |
| | 0012 | Electrical Cutting & Patching | 29,000 | sf | 1.25 /sf | 36,250 |
| | 0017 | P/A System | 29,000 | sf | 0.35 /sf | 10,150 |
| | 0019 | Security Backbone | 29,000 | sf | 1.00 /sf | 29,000 |

| Item | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|
| | *Electrical* | | | *46.67 /sf* | 1,354,300 |
| | *32,000.00 sf* | | | | |
| | 8,813.44 Labor hours | | | | |
| | *ELECTRICAL* | | | *46.67 /sf* | |
| | *32,000.00 sf* | | | | |
| | 8,813.44 Labor hours | | | | |
| | **1 20 Trinity Street** | | | **276.851/sf** | 8,818,741 |
| | **32,000.00 sf** | | | | |
| | 42,367.785 Labor hours | | | | |
| | 172.81 Equipment hours | | | | |
| | **2 18 Trinity** | | | | |
| *01-00-00.00* | *GENERAL REQUIREMENTS* | | | | |
| *01-00-00.01* | *General Requirements* | | | | |
| ---- | Protection | 50,400 | sf | 1.00 /sf | 50,400 |
| | *General Requirements* | | | *0.60 /sf* | 50,400 |
| | *48,000.00 sf* | | | | |
| | *GENERAL REQUIREMENTS* | | | *0.60 /sf* | 50,400 |
| | *48,000.00 sf* | | | | |
| *01-01-00.00* | *ITEMIZED GENRL CONDITIONS* | | | | |
| *01-01-00.02* | *Project Labor* | | | | |
| 0119 | Laborer (mo) | 12.00 | mo | 18,977.20 /mo | 227,726 |
| | *Project Labor* | | | *4.744/sf* | *227,726* |
| | *48,000.00 sf* | | | | |
| | 2,112.000 Labor hours | | | | |
| *01-54-23.70* | *Scaffolding* | | | | |
| 0010 | Scaffold & Plank | 28,680.00 | sf | 7.00 /sf | 200,760 |
| | *Scaffolding* | | | *4.183/sf* | *200,760* |
| | *48,000.00 sf* | | | | |
| | 1,434.00 Labor hours | | | | |
| | *ITEMIZED GENRL CONDITIONS* | | | *8.93 /sf* | *428,486* |
| | *48,000.00 sf* | | | | |
| | 3,546.000 Labor hours | | | | |
| *02-00-00.00* | *EXISTING CONDITIONS* | | | | |
| *02-00-00.01* | *Existing Conditions* | | | | |
| ---- | Site Demolition | 50,400 | sf | 1.00 /sf | 50,400 |
| ---- | Interior Demolition | 50,400 | sf | 18.00 /sf | 907,200 |
| | *Existing Conditions* | | | *11.353/sf* | 957,600 |
| | *48,000.00 sf* | | | | |
| | *EXISTING CONDITIONS* | | | *11.353/sf* | 957,600 |
| | *48,000.00 sf* | | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | *EXISTING CONDITIONS* | | | *11.353/sf* | *544,920* |
| | | *48,000.00 sf* | | | | |
| *03-00-00.00* | | *CONCRETE* | | | | |
| *03-00-00.01* | | Reconstruct Loading Dock<br>*Concrete* | 1 | ls | 35,000.00 /ls | 35,000 |
| ---- | | Concrete Repairs | 28,680.00 | sf | 0.25 /sf | 7,170 |
| | | *Concrete* | | | *0.15 /sf* | *7,170* |
| | | *48,000.00 sf* | | | | |
| *03-30-53.40* | | *Concrete In Place* | | | | |
| n | 4535 | Repair Concrete @ Stairwell | 13.00 | lf | 946.44 /lf | 12,304 |
| n | 4535 | Spall repair | 68.00 | sf | 28.864 /sf | 1,963 |
| | | *Concrete In Place* | | | | *14,266* |
| | | 100.31 Labor hours | | | | |
| | | 88.65 Equipment hours | | | | |
| | | *CONCRETE* | | | | 56,436 |
| | | *48,000.00 sf* | | | | |
| | | 100.31 Labor hours | | | | |
| | | 88.65 Equipment hours | | | | |
| *04-00-00.00* | | *MASONRY* | | | | |
| *04-01-20.20* | | *Pointing Masonry* | | | | |
| | 0300 | Pointing masonry, tuck, cut and re-point, hard mortar, running bond | 3,115.00 | sf | 15.56 /sf | 48,471 |
| | | *Pointing Masonry* | | | | *48,471* |
| | | 495.13 Labor hours | | | | |
| *04-11-20.20* | | *Replacement* | | | | |
| | 2025 | Stitch Brick Repair | 21.00 | sf | 47.80 /sf | 1,004 |
| | 2025 | Replace Coping Stone | 376.00 | lf | 125.38 /lf | 47,143 |
| | | *Replacement* | | | | *48,147* |
| | | 294.56 Labor hours | | | | |
| | | 9.08 Equipment hours | | | | |
| *04-11-20.26* | | *Patch Repair* | | | | |
| | 2025 | Patch Sill | 34.00 | loc | 250.393 /loc | 8,513 |
| | | *Patch Repair* | | | | *8,513* |
| | | 86.26 Labor hours | | | | |
| | | 0.78 Equipment hours | | | | |
| *04-11-20.28* | | *Crack Repair* | | | | |
| | 2025 | Crack Repair | 3.00 | lf | 94.51 /lf | 284 |
| | | *Crack Repair* | | | | *284* |
| | | 1.80 Labor hours | | | | |
| | | 0.07 Equipment hours | | | | |
| *04-11-20.37* | | *Wall Reconstruction* | | | | |
| | 0035 | Corner Reconstruction/Steel Treatment | 641.00 | sf | 550.00 /sf | 352,550 |
| | | *Wall Reconstruction* | | | | *352,550* |
| | | 3,056.52 Labor hours | | | | |
| *04-11-20.38* | | *Lintel Maintenance* | | | | |
| | 6035 | Lintel angle, structural, unpainted, 6"x3-1/2"x5/16", 9.8lb/lf | 5.00 | ea | 1,158.50 /ea | 5,793 |
| | 6035 | Lintel angle, structural, unpainted, 6"x3-1/2"x5/16", 9.8lb/lf | 15.00 | ea | 1,720.002 /ea | 25,800 |

| Item | | Description | Takeoff Qty | | Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | *Lintel Maintenance* | | | | *31,593* |
| | | 312.593 Labor hours | | | | |
| *04-20-29.10* | | *Spall Repair* | | | | |
| | 0010 | Prep Spall & Patch w/ Jahn Mortar | 1.00 | loc | 140.00 /loc | 140 |
| | | *Spall Repair* | | | | *140* |
| | | 0.954 Labor hours | | | | |
| | | *MASONRY* | | | *10.202/sf* | *489,696* |
| | | *48,000.00 sf* | | | | |
| | | 4,247.811 Labor hours | | | | |
| | | 9.921 Equipment hours | | | | |
| *05-00-00.00* | | *METALS* | | | | |
| *05-00-00.01* | | *Metals* | | | | |
| ---- | | Structure | 28,680.00 | sf | 0.50 /sf | 14,340 |
| | | *Metals* | | | *0.30 /sf* | *14,340* |
| | | *48,000.00 sf* | | | | |
| | | *METALS* | | | *0.30 /sf* | *14,340* |
| | | *48,000.00 sf* | | | | |
| *06-00-00.00* | | *WOOD & PLASTICS* | | | | |
| *06-00-00.01* | | *Wood, Plastics, and Composites* | | | | |
| ---- | | Rough Carpentry | 50,400 | sf | 4.00 /sf | 201,600 |
| ---- | | Finish Carpentry | 50,400 | sf | 1.25 /sf | 63,000 |
| ---- | | Millwork | 50,400 | sf | 5.50 /sf | 277,200 |
| | | *Wood, Plastics, and Composites* | | | *6.423/sf* | 541,800 |
| | | *48,000.00 sf* | | | | |
| | | *WOOD & PLASTICS* | | | *6.423/sf* | 541,800 |
| | | *48,000.00 sf* | | | | |
| *07-00-00.00* | | *THRML & MOIST PROT'N* | | | | |
| *07-00-00.01* | | *Thermal and Moisture Protection* | | | | |
| ---- | | Thermal & Moisture Protection | 28,680.00 | sf | 1.00 /sf | 28,680 |
| ---- | | Roof Replacement | 8,000.00 | sf | 25.00 /sf | 200,000 |
| | | *Thermal and Moisture Protection* | | | *4.764/sf* | *228,680* |
| | | *48,000.00 sf* | | | | |
| *07-01-90.81* | | *Joint Sealant Replacement* | | | | |
| n | 0112 | Remove & Replace Backer Rod & Sealant | 21.00 | lf | 7.531 /lf | 158 |
| | | *Joint Sealant Replacement* | | | | *158* |
| | | 1.48 Labor hours | | | | |
| | | 0.04 Equipment hours | | | | |
| | | *THRML & MOIST PROT'N* | | | *4.77 /sf* | *228,838* |
| | | *48,000.00 sf* | | | | |
| | | 1.48 Labor hours | | | | |
| | | 0.04 Equipment hours | | | | |
| *08-00-00.00* | | *OPENINGS* | | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| *08-00-00.02* | | *Doors, With Frames & Hardware* | | | | |
| | 0005 | Doors w/ Frame & hardware | 28,680.00 | sf | 7.88 /sf | 226,003 |
| | | *Doors, With Frames & Hardware* | | | *4.71 /sf* | *226,003* |
| | | *48,000.00 sf* | | | | |
| | | 458.88 Labor hours | | | | |
| *08-00-00.03* | | *Windows* | | | | |
| | 0020 | Restore Windows | 149.00 | ea | 2,500 /ea | 372,500 |
| | 0020 | Install Storm Windows | 149.00 | ea | 1,250.001 /ea | 186,250 |
| | | *Windows* | | | | 558,750 |
| | | *48,000.00 sf* | | | | |
| | | 1,989.01 Labor hours | | | | |
| *08-14-14.10* | | *Restoration of Entries & Openings* | | | | |
| | 3020 | Clean & Paint Louver | 43.00 | sf | 15.001 /sf | 645 |
| | 3020 | Clean & Paint Door & Frame | 1.00 | ea | 6,000.00 /ea | 6,000 |
| | | *Restoration of Entries & Openings* | | | | *6,645* |
| | | 14.602 Labor hours | | | | |
| | | *OPENINGS* | | | | 791,398 |
| | | *48,000.00 sf* | | | | |
| | | 2,462.49 Labor hours | | | | |
| *09-00-00.00* | | *FINISHES* | | | | |
| *09-00-00.01* | | *Finishes* | | | | |
| | 0001 | Floor Prep | 50,400 | sf | 3.50 /sf | 176,400 |
| | 0015 | Floor Finishes | 50,400 | sf | 6.00 /sf | 302,400 |
| | 0020 | Base Finish | 50,400 | sf | 0.75 /sf | 37,800 |
| | 0025 | Partitions | 50,400 | sf | 12.001 /sf | 604,800 |
| | 0030 | Ceiling Finishes | 50,400 | sf | 12.00 /sf | 604,800 |
| | 0035 | Acoustical Treatment | 50,400 | sf | 1.25 /sf | 63,000 |
| | 0040 | Painting | 50,400 | sf | 4.00 /sf | 201,600 |
| | | *Finishes* | | | *23.601/sf* | 1,990,800 |
| | | *48,000.00 sf* | | | | |
| | | 6,069.84 Labor hours | | | | |
| *09-91-13.30* | | *Fences* | | | | |
| | 0110 | Clean & Paint Iron Railing | 0.00 | lf | | |
| | 0110 | Clean & Paint Torchiere | 0.00 | ea | | |
| | | *FINISHES* | | | *23.601/sf* | |
| | | *48,000.00 sf* | | | | |
| | | 6,069.84 Labor hours | | | | |
| *10-00-00.00* | | *SPECIALTIES* | | | | |
| *10-00-00.01* | | *Specialties* | | | | |
| | 0010 | Bathroom Specialties | 28,680.00 | sf | 1.25 /sf | 35,861 |
| | 0013 | Specialties | 28,680.00 | sf | 1.25 /sf | 35,833 |
| | | *Specialties* | | | *1.494/sf* | *71,694* |
| | | *48,000.00 sf* | | | | |
| | | 308.60 Labor hours | | | | |
| | | *SPECIALTIES* | | | *1.494/sf* | *71,694* |
| | | *48,000.00 sf* | | | | |
| | | 308.60 Labor hours | | | | |

| Item | Description | Takeoff Qty | Total Unit Cost | Total Amount |
|---|---|---|---|---|
| | *SPECIALTIES* | | *1.494/sf* | *71,694* |
| | *48,000.00 sf* | | | |
| | 308.60 Labor hours | | | |
| *11-00-00.00* | *EQUIPMENT* | | | |
| *11-00-00.01* | *Equipment* | | | |
| ---- | Equipment | 28,680.00 sf | | |
| | *EQUIPMENT* | | | *0* |
| | *48,000.00 sf* | | | |
| *12-00-00.00* | *FURNISHINGS* | | | |
| *12-00-00.01* | *Furnishings* | | | |
| ---- | Furnishings, Shades, Etc | 149 ea | 350/ea | 52,150 |
| | *Furnishings* | | | 52,150 |
| | *48,000.00 sf* | | | |
| | *FURNISHINGS* | | | 52,150 |
| | *48,000.00 sf* | | | |
| *13-00-00.00* | *SPECIAL CONSTRUCTION* | | | |
| *13-00-00.01* | *Special Construction* | | | |
| ---- | Special Construction | 28,680.00 sf | | |
| | *SPECIAL CONSTRUCTION* | | | *0* |
| | *48,000.00 sf* | | | |
| *14-00-00.00* | *CONVEYING EQUIPMENT* | | | |
| *14-00-00.01* | *Conveying Equipment* | | | |
| ---- | Elevators & Lifts | 28,680.00 sf | | |
| | *CONVEYING EQUIPMENT* | | | *0* |
| | *48,000.00 sf* | | | |
| *21-00-00.00* | *FIRE SUPPRESSION* | | | |
| *21-00-00.01* | *Fire Suppression* | | | |
| ---- | Fire Pump | 50,400 sf | 10.00 /sf | 504,000 |
| ---- | Standpipe System | 50,400 sf | 10.00 /sf | 504,000 |
| ---- | Sprinkler System | 50,400 sf | 10.00 /sf | 504,000 |
| | *Fire Suppression* | | *17.93 /sf* | 1,512,000 |
| | *48,000.00 sf* | | | |
| | *FIRE SUPPRESSION* | | *17.93 /sf* | |
| | *48,000.00 sf* | | | |
| *22-00-00.00* | *PLUMBING* | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| *22-00-00.01* | | *Plumbing* | | | | |
| | 0000 | Plumbing Demolition | 50,400 | sf | 1.00 /sf | 50,400 |
| | 0001 | Water Piping & Insulation | 50,400 | sf | 1.25 /sf | 63,000 |
| | 0002 | Sanitary Piping | 50,400 | sf | 4.00 /sf | 201,600 |
| | 0003 | Storm Piping | 50,400 | sf | 4.00 /sf | 201,600 |
| | 0004 | Natural Gas Piping | 50,400 | sf | 4.00 | 201,600 |
| | 0005 | Plumbing Fixtures | 50,400 | sf | 4.00 /sf | 201,600 |
| | 0006 | Drains | 50,400 | sf | 1.50 /sf | 75,600 |
| | 0008 | Plumbing Rough-in | 50,400 | sf | 2.00 /sf | 100,800 |
| | 0009 | Plumbing Cutting & Patching | 50,400 | sf | 1.00 /sf | 50,400 |
| | | *Plumbing* | | | *18.75 /sf* | 1,146,600 |
| | | *48,000.00 sf* | | | | |
| | | 10,190.880 Labor hours | | | | |
| | | *PLUMBING* | | | *18.75 /sf* | |
| | | *48,000.00 sf* | | | | |
| | | 10,190.880 Labor hours | | | | |
| *23-00-00.00* | | *HVAC* | | | | |
| *23-00-00.01* | | *Heating, Ventilating, and Air Conditioning* | | | | |
| | 0001 | HVAC Heating Equipment | 50,400 | sf | 3.00 | 151,200 |
| | 0002 | HVAC Cooling Equipment | 50,400 | sf | 3.00 | 151,200 |
| | 0003 | HVAC Piping & Insulation | 50,400 | sf | 9.52 /sf | 479,808 |
| | 0004 | HVAC Duct & Insulation, 1#/sf | 50,400 | sf | 14.54 /sf | 723,816 |
| | 0005 | HVAC Air Handling Units | 50,400 | sf | 5.20 /sf | 262,080 |
| | 0009 | HVAC Terminal Units | 50,400 | sf | 2.20 /sf | 15,120 |
| | 0010 | HVAC Ventilation Equipment & Fans | 50,400 | sf | 0.30 /sf | 55,440 |
| | 0016 | HVAC Registers, Diffusers & Grills | 50,400 | sf | 1.10 /sf | 504,000 |
| | 0017 | HVAC Controls | 50,400 | sf | 10.00 /sf | 478,800 |
| | 0018 | HVAC Rigging & Hoisting | 50,400 | sf | 9.50 /sf | 75,600 |
| | 0019 | HVAC Dunnage, Platforms & Stairs | 50,400 | sf | 1.50 /sf | 15,120 |
| | 0020 | HVAC Screens & Enclosures | 50,400 | sf | 0.30 /sf | 50,400 |
| | 0021 | HVAC Cutting & Patching | 50,400 | sf | 1.00 /sf | |
| | | *Heating, Ventilating, and Air Conditioning* | | | *55.15 /sf* | 2,962,584 |
| | | *48,000.00 sf* | | | | |
| | | 15,007.68 Labor hours | | | | |
| | | *HVAC* | | | *55.15 /sf* | 2,962,584 |
| | | *48,000.00 sf* | | | | |
| | | 15,007.68 Labor hours | | | | |
| *26-00-00.00* | | *ELECTRICAL* | | | | |
| *26-00-00.01* | | *Electrical* | | | | |
| | 0001 | Branch Conduit & Wire, Power | 50,400 | sf | 1.492 /sf | 75,600 |
| | 0002 | Branch Conduit & Wire, Lighting | 50,400 | sf | 1.193 /sf | 60,480 |
| | 0003 | Branch Conduit & Wire, HVAC Equip | 50,400 | sf | 0.993 /sf | 50,400 |
| | 0004 | Branch Conduit & Wire, Controls | 50,400 | sf | 0.993 /sf | 50,400 |
| | 0005 | Devices | 50,400 | sf | 5.27 /sf | 265,608 |
| | 0006 | Service & Distribution | 50,400 | sf | 5.471 /sf | 275,688 |
| | 0007 | Emergency Service & Distribution | 50,400 | sf | 5.96 /sf | 300,384 |
| | 0008 | Interior Lighting | 50,400 | sf | 15.00 /sf | 756,000 |
| | 0009 | Exterior Lighting | 50,400 | sf | 1.20 /sf | 60,480 |
| | 0010 | Fire Alarm System | 50,400 | sf | 5.00 /sf | 252,000 |
| | 0011 | Low Voltage Systems | 50,400 | sf | 1.50 /sf | 75,600 |
| | 0012 | Electrical Cutting & Patching | 50,400 | sf | 1.25 /sf | 63,000 |
| | 0017 | P/A System | 50,400 | sf | 0.35 /sf | 17,640 |
| | 0019 | Security Backbone | 50,400 | sf | 1.00 /sf | 50,400 |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | *Electrical* | | | *46.67 /sf* | 2,353,680 |
| | | *48,000.00 sf* | | | | |
| | | 13,220.16 Labor hours | | | | |
| | | *ELECTRICAL* | | | *46.67 /sf* | 2,353,680 |
| | | *48,000.00 sf* | | | | |
| | | 13,220.16 Labor hours | | | | |
| | | **2 18 Trinity** | | | **231.52 /sf** | **11,112,747** |
| | | **48,000.00 sf** | | | | |
| | | 55,155.24 Labor hours | | | | |
| | | 98.602 Equipment hours | | | | |
| | | **3 30 Trinity** | | | | |
| *01-00-00.00* | | *GENERAL REQUIREMENTS* | | | | |
| *01-00-00.01* | | *General Requirements* | | | | |
| ---- | | Protection | 54,640.00 | sf | 1.00 /sf | 54,640 |
| | | *General Requirements* | | | *1.00 /sf* | *54,640* |
| | | *54,640.00 sf* | | | | |
| | | *GENERAL REQUIREMENTS* | | | *1.00 /sf* | *54,640* |
| | | *54,640.00 sf* | | | | |
| *01-01-00.00* | | *ITEMIZED GENRL CONDITIONS* | | | | |
| *01-01-00.02* | | *Project Labor* | | | | |
| | 0119 | Laborer (mo) | 18.00 | mo | 18,977.20 /mo | 341,590 |
| | | *Project Labor* | | | *6.252/sf* | *341,590* |
| | | *54,640.00 sf* | | | | |
| | | 3,168.000 Labor hours | | | | |
| *01-54-23.70* | | *Scaffolding* | | | | |
| | 0010 | Scaffold & Plank | 16,000 | sf | 7.00 /sf | 112,000 |
| | | *Scaffolding* | | | *7.00 /sf* | 112,00 |
| | | *54,640.00 sf* | | | | |
| | | 2,732.00 Labor hours | | | | |
| | | *ITEMIZED GENRL CONDITIONS* | | | *13.252/sf* | 453,590 |
| | | *54,640.00 sf* | | | | |
| | | 5,900.000 Labor hours | | | | |
| *02-00-00.00* | | *EXISTING CONDITIONS* | | | | |
| *02-00-00.01* | | *Existing Conditions* | | | | |
| ---- | | Site Demolition | 54,640.00 | sf | 1.00 /sf | 54,640 |
| ---- | | Interior Demolition | 54,640.00 | sf | 18.00 /sf | 983,520 |
| | | *Existing Conditions* | | | *19.00 /sf* | *1,038,160* |
| | | *54,640.00 sf* | | | | |
| | | *EXISTING CONDITIONS* | | | *19.00 /sf* | *1,038,160* |
| | | *54,640.00 sf* | | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | *EXISTING CONDITIONS* | | | *19.00 /sf* | *1,038,160* |
| | | *54,640.00 sf* | | | | |
| *03-00-00.00* | | *CONCRETE* | | | | |
| *03-00-00.01* | | *Concrete* | | | | |
| ---- | | Concrete Repairs | 54,640.00 | sf | 0.25 /sf | 13,660 |
| ---- | | Repair/Reconstruct Loading Dock | 1.00 | ls | 35,000.00 /ls | 35,000 |
| ---- | | Repair/Reconstruct Retaining Walls | 1.00 | ls | 50,000.00 /ls | 50,000 |
| | | *Concrete* | | | *1.81 /sf* | *98,660* |
| | | *54,640.00 sf* | | | | |
| *03-05-13.20* | | *Concrete Admixtures And Surface Treatments* | | | | |
| | 1801 | Industrial Grade Epoxy Coating | 204.00 | sf | 14.49 /sf | 2,955 |
| | | *Concrete Admixtures And Surface Treatments* | | | | *2,955* |
| | | 16.32 Labor hours | | | | |
| | | 16.32 Equipment hours | | | | |
| *03-30-53.40* | | *Concrete In Place* | | | | |
| n | 4535 | Repair Concrete @ Ramp | 62.00 | lf | 946.44 /lf | 58,679 |
| | | *Concrete In Place* | | | | *58,679* |
| | | 407.114 Labor hours | | | | |
| | | 67.852 Equipment hours | | | | |
| | | *CONCRETE* | | | *2.934/sf* | *160,294* |
| | | *54,640.00 sf* | | | | |
| | | 423.434 Labor hours | | | | |
| | | 84.172 Equipment hours | | | | |
| *04-00-00.00* | | *MASONRY* | | | | |
| *04-01-20.20* | | *Pointing Masonry* | | | | |
| | 0700 | Pointing masonry, stonework, hard mortar | 6,985.00 | sf | 15.75 /sf | 110,017 |
| | | *Pointing Masonry* | | | | *110,017* |
| | | 1,110.27 Labor hours | | | | |
| *04-11-20.20* | | *Replacement* | | | | |
| | 2025 | Stitch Brick Repair | 50.00 | sf | 47.80 /sf | 2,390 |
| | | *Replacement* | | | | *2,390* |
| | | 20.00 Labor hours | | | | |
| | | 1.143 Equipment hours | | | | |
| *04-11-20.28* | | *Crack Repair* | | | | |
| | 2025 | Crack Repair | 3.00 | lf | 94.51 /lf | 284 |
| | | *Crack Repair* | | | | *284* |
| | | 1.80 Labor hours | | | | |
| | | 0.07 Equipment hours | | | | |
| *04-11-20.30* | | *Dutchmen* | | | | |
| | 0100 | Dutchman, Single Face | 13.00 | ea | 1,368.45 /ea | 17,790 |
| | 0100 | Dutchman, Marble | 32.00 | ea | 1,660.56 /ea | 53,138 |
| | | *Dutchmen* | | | | *70,928* |
| | | 537.815 Labor hours | | | | |
| | | 537.815 Equipment hours | | | | |
| *04-20-29.10* | | *Spall Repair* | | | | |
| | 0010 | Prep Spall & Patch w/ Jahn Mortar | 3.00 | loc | 140.003 /loc | 420 |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | *Spall Repair* | | | | *420* |
| | | 2.861 Labor hours | | | | |
| | | *MASONRY* | | | *3.37 /sf* | *184,038* |
| | | *54,640.00 sf* | | | | |
| | | 1,672.741 Labor hours | | | | |
| | | 539.03 Equipment hours | | | | |
| *05-00-00.00* | | *METALS* | | | | |
| *05-35-13.50* | | *Cellular Decking* | | | | |
| | 7100 | Sheet Metal Cap | 505.00 | lf | 90.462 /lf | 45,683 |
| | | *Cellular Decking* | | | | *45,683* |
| | | 325.62 Labor hours | | | | |
| | | 325.62 Equipment hours | | | | |
| *05-52-13.50* | | *Railings, Pipe* | | | | |
| n | 2010 | Remove & Replace Handrail | 12.00 | lf | 295.233 /lf | 3,543 |
| | | *Railings, Pipe* | | | | *3,543* |
| | | 3.200 Labor hours | | | | |
| | | 0.800 Equipment hours | | | | |
| *05-58-27.90* | | *Window Guards* | | | | |
| | 0010 | Remove, Restore & Reinstall Security Grill Anchors | 13.00 | ea | 3,500.37 /ea | 45,505 |
| | | *Window Guards* | | | | *45,505* |
| | | 307.873 Labor hours | | | | |
| | | 0.30 Equipment hours | | | | |
| | | *METALS* | | | *1.734/sf* | *94,731* |
| | | *54,640.00 sf* | | | | |
| | | 636.691 Labor hours | | | | |
| | | 326.72 Equipment hours | | | | |
| *06-00-00.00* | | *WOOD & PLASTICS* | | | | |
| *06-00-00.01* | | *Wood, Plastics, and Composites* | | | | |
| ---- | | Rough Carpentry | 54,640.00 | sf | 4.00 /sf | 218,560 |
| ---- | | Finish Carpentry | 54,640.00 | sf | 1.25 /sf | 68,300 |
| ---- | | Millwork | 54,640.00 | sf | 5.50 /sf | 300,520 |
| | | *Wood, Plastics, and Composites* | | | *10.75 /sf* | *587,380* |
| | | *54,640.00 sf* | | | | |
| | | *WOOD & PLASTICS* | | | *10.75 /sf* | *587,380* |
| | | *54,640.00 sf* | | | | |
| *07-00-00.00* | | *THRML & MOIST PROT'N* | | | | |
| *07-01-90.81* | | *Joint Sealant Replacement* | | | | |
| n | 0112 | Remove & Replace Backer Rod & Sealant | 78.00 | lf | 7.532 /lf | 587 |
| n | 0112 | Route & Seal Cold Joint | 78.00 | lf | 7.532 /lf | 587 |
| | | *Joint Sealant Replacement* | | | | *1,175* |
| | | 10.992 Labor hours | | | | |
| | | 0.261 Equipment hours | | | | |
| | | *THRML & MOIST PROT'N* | | | *0.022/sf* | *1,175* |
| | | *54,640.00 sf* | | | | |
| | | 10.992 Labor hours | | | | |
| | | 0.261 Equipment hours | | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| *08-00-00.00* | | *OPENINGS* | | | | |
| *08-00-00.02* | | *Doors, With Frames & Hardware* | | | | |
| | 0005 | Doors w/ Frame & hardware | 54,640.00 | sf | 7.88 /sf | 430,572 |
| | | *Doors, With Frames & Hardware* | | | *7.88 /sf* | *430,572* |
| | | *54,640.00 sf* | | | | |
| | | 874.24 Labor hours | | | | |
| *08-00-00.03* | | *Windows* | | | | |
| | 0020 | Windows | 141.00 | ea | 2,500.00 /ea | 352,500 |
| | 0020 | Install Storm Windows | 174.00 | ea | 1,250.001 /ea | 217,500 |
| | | *Windows* | | | *10.432/sf* | *570,000* |
| | | *54,640.00 sf* | | | | |
| | | 817.880 Labor hours | | | | |
| *08-14-14.10* | | *Restoration of Entries & Openings* | | | | |
| | 3020 | Replace Entry Doors | 4.00 | ea | 6,000.003 /ea | 24,000 |
| | | *Restoration of Entries & Openings* | | | | *24,000* |
| | | 40.85 Labor hours | | | | |
| *08-81-20.10* | | *Full Vision* | | | | |
| | 0020 | Replace Glazing | 6.00 | loc | 625.00 /loc | 3,750 |
| | | *Full Vision* | | | | *3,750* |
| | | 37.143 Labor hours | | | | |
| | | *OPENINGS* | | | *18.82 /sf* | *1,028,322* |
| | | *54,640.00 sf* | | | | |
| | | 1,770.11 Labor hours | | | | |
| *09-00-00.00* | | *FINISHES* | | | | |
| *09-00-00.01* | | *Finishes* | | | | |
| | 0001 | Floor Prep | 54,640.00 | sf | 3.50 /sf | 191,216 |
| | 0015 | Floor Finishes | 54,640.00 | sf | 6.00 /sf | 327,859 |
| | 0015 | Restore Monumental Stair | 1.00 | ls | 200,000.05 /ls | 200,000 |
| | 0020 | Base Finish | 54,640.00 | sf | 0.75 /sf | 41,001 |
| | 0025 | Partitions | 54,640.00 | sf | 12.001 /sf | 655,718 |
| | 0030 | Ceiling Finishes | 54,640.00 | sf | 12.00 /sf | 655,652 |
| | 0030 | Preserve Monumental Ceilings ALLOW | 1.00 | ls | 50,000.05 /ls | 50,000 |
| | 0035 | Acoustical Treatment | 54,640.00 | sf | 1.25 /sf | 68,267 |
| | 0040 | Painting | 54,640.00 | sf | 4.00 /sf | 218,536 |
| | | *Finishes* | | | *44.08 /sf* | *2,408,250* |
| | | *54,640.00 sf* | | | | |
| | | 13,357.604 Labor hours | | | | |
| *09-91-13.30* | | *Fences* | | | | |
| | 0110 | Clean & Paint Iron Railing | 207.00 | lf | 25.07 /lf | 5,190 |
| | 0110 | Clean & Paint Torchiere | 2.00 | ea | 2,500.09 /ea | 5,000 |
| | | *Fences* | | | | *10,190* |
| | | 128.233 Labor hours | | | | |
| | | *FINISHES* | | | *44.261/sf* | *2,418,439* |
| | | *54,640.00 sf* | | | | |
| | | 13,485.84 Labor hours | | | | |
| *10-00-00.00* | | *SPECIALTIES* | | | | |
| *10-00-00.01* | | *Specialties* | | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| *10-00-00.01* | | *Specialties* | | | | |
| | 0010 | Bathroom Specialties | 54,640.00 | sf | 1.25 /sf | 68,321 |
| | 0013 | Specialties | 54,640.00 | sf | 1.25 /sf | 68,267 |
| | | *Specialties* | | | *2.50 /sf* | *136,588* |
| | | *54,640.00 sf* | | | | |
| | | 587.93 Labor hours | | | | |
| | | *SPECIALTIES* | | | *2.50 /sf* | *136,588* |
| | | *54,640.00 sf* | | | | |
| | | 587.93 Labor hours | | | | |
| *11-00-00.00* | | *EQUIPMENT* | | | | |
| *11-00-00.01* | | *Equipment* | | | | |
| ---- | | Equipment | 54,640.00 | sf | | |
| | | *EQUIPMENT* | | | | *0* |
| | | *54,640.00 sf* | | | | |
| *12-00-00.00* | | *FURNISHINGS* | | | | |
| *12-00-00.01* | | *Furnishings* | | | | |
| ---- | | Furnishings, Shades, Etc | 141.00 | ea | 350.00 /ea | 49,350 |
| | | *Furnishings* | | | *1.29 /sf* | 49,350 |
| | | *54,640.00 sf* | | | | |
| | | *FURNISHINGS* | | | *1.29 /sf* | 49,350 |
| | | *54,640.00 sf* | | | | |
| *13-00-00.00* | | *SPECIAL CONSTRUCTION* | | | | |
| *13-00-00.01* | | *Special Construction* | | | | |
| ---- | | Special Construction | 54,640.00 | sf | | |
| | | *SPECIAL CONSTRUCTION* | | | | *0* |
| | | *54,640.00 sf* | | | | |
| *14-00-00.00* | | *CONVEYING EQUIPMENT* | | | | |
| *14-00-00.01* | | *Conveying Equipment* | | | | |
| ---- | | Elevators & Lifts | 54,640.00 | sf | | |
| | | *CONVEYING EQUIPMENT* | | | | *0* |
| | | *54,640.00 sf* | | | | |
| *21-00-00.00* | | *FIRE SUPPRESSION* | | | | |
| *21-00-00.01* | | *Fire Suppression* | | | | |
| ---- | | Fire Pump | 54,640.00 | sf | 10.00 /sf | 546,400 |
| ---- | | Standpipe System | 54,640.00 | sf | 10.00 /sf | 546,400 |
| ---- | | Sprinkler System | 54,640.00 | sf | 10.00 /sf | 546,400 |
| | | *Fire Suppression* | | | *30.00 /sf* | *1,639,200* |
| | | *54,640.00 sf* | | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | *FIRE SUPPRESSION* | | | *30.00 /sf* | *1,639,200* |
| | | *54,640.00 sf* | | | | |
| *22-00-00.00* | | *PLUMBING* | | | | |
| *22-00-00.01* | | *Plumbing* | | | | |
| | 0000 | Plumbing Demolition | 54,640 | sf | 1.00 /sf | 54,640 |
| | 0001 | Water Piping & Insulation | 54,640 | sf | 1.25 /sf | 68,300 |
| | 0002 | Sanitary Piping | 54,640 | sf | 4.00 /sf | 218,560 |
| | 0003 | Storm Piping | 54,640 | sf | 4.00 /sf | 218,560 |
| | 0004 | Natural Gas Piping | 54,640 | sf | 4.00 | 218,560 |
| | 0005 | Plumbing Fixtures | 54,640 | sf | 4.00 /sf | 218,560 |
| | 0006 | Drains | 54,640 | sf | 1.50 /sf | 81,960 |
| | 0008 | Plumbing Rough-in | 54,640 | sf | 2.00 /sf | 109,280 |
| | 0009 | Plumbing Cutting & Patching | 54,640 | sf | 1.00 /sf | 54,640 |
| | | *Plumbing* | | | *9.84 /sf* | 1,243,060 |
| | | *54,640.00 sf* | | | | |
| | | 6,089.051 Labor hours | | | | |
| | | *PLUMBING* | | | *9.84 /sf* | 1,243,060 |
| | | *54,640.00 sf* | | | | |
| | | 6,089.051 Labor hours | | | | |
| *23-00-00.00* | | *HVAC* | | | | |
| *23-00-00.01* | | *Heating, Ventilating, and Air Conditioning* | | | | |
| | 0001 | HVAC Heating Equipment | 54,640 | sf | 3.00 | 163,920 |
| | 0002 | HVAC Cooling Equipment | 54,640 | sf | 3.00 | 163,920 |
| | 0003 | HVAC Piping & Insulation | 54,640 | sf | 9.52 /sf | 519,080 |
| | 0004 | HVAC Duct & Insulation, 1#/sf | 54,640 | sf | 14.54 /sf | 794,465 |
| | 0005 | HVAC Air Handling Units | 54,640 | sf | 5.20 /sf | 284,128 |
| | 0009 | HVAC Terminal Units | 54,640 | sf | 2.20 /sf | 16,392 |
| | 0010 | HVAC Ventilation Equipment & Fans | 54,640 | sf | 0.30 /sf | 60,104 |
| | 0016 | HVAC Registers, Diffusers & Grills | 54,640 | sf | 1.10 /sf | 546,400 |
| | 0017 | HVAC Controls | 54,640 | sf | 10.00 /sf | 519,080 |
| | 0018 | HVAC Rigging & Hoisting | 54,640 | sf | 9.50 /sf | 81,960 |
| | 0019 | HVAC Dunnage, Platforms & Stairs | 54,640 | sf | 1.50 /sf | 16,392 |
| | 0020 | HVAC Screens & Enclosures | 54,640 | sf | 0.30 /sf | 54,640 |
| | 0021 | HVAC Cutting & Patching | | sf | 1.00 /sf | |
| | | *Heating, Ventilating, and Air Conditioning* | | | *28.42 /sf* | 3,220,481 |
| | | *54,640.00 sf* | | | | |
| | | 8,895.08 Labor hours | | | | |
| | | *HVAC* | | | *28.42 /sf* | 3,220,481 |
| | | *54,640.00 sf* | | | | |
| | | 8,895.08 Labor hours | | | | |
| *26-00-00.00* | | *ELECTRICAL* | | | | |
| *26-00-00.01* | | *Electrical* | | | | |
| | 0001 | Branch Conduit & Wire, Power | 54,640 | sf | 1.492 /sf | 81,960 |
| | 0002 | Branch Conduit & Wire, Lighting | 54,640 | sf | 1.193 /sf | 65,568 |
| | 0003 | Branch Conduit & Wire, HVAC Equip | 54,640 | sf | 0.993 /sf | 54,640 |
| | 0004 | Branch Conduit & Wire, Controls | 54,640 | sf | 0.993 /sf | 54,640 |
| | 0005 | Devices | 54,640 | sf | 5.27 /sf | 289,592 |
| | 0006 | Service & Distribution | 54,640 | sf | 5.471 /sf | 300,520 |
| | 0007 | Emergency Service & Distribution | 54,640 | sf | 5.96 /sf | 327,360 |
| | 0008 | Interior Lighting | 54,640 | sf | 15.00 /sf | 819,600 |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| *26-00-00.01* | | *Electrical* | | | | |
| | 0009 | Exterior Lighting | 54,640 | sf | 1.20 /sf | 65,568 |
| | 0010 | Fire Alarm System | 54,640 | sf | 5.00 /sf | 272,800 |
| | 0011 | Low Voltage Systems | 54,640 | sf | 1.50 /sf | 81,960 |
| | 0012 | Electrical Cutting & Patching | 54,640 | sf | 1.25 /sf | 68,300 |
| | 0017 | P/A System | 54,640 | sf | 0.35 /sf | 19,096 |
| | 0019 | Security Backbone | 54,640 | sf | 1.00 /sf | 54,640 |
| ---- | | | | | | |
| ---- | | | | | | 2,556,244 |
| | | *54,640.00 sf* | | | | |
| | | 7,877.012 Labor hours | | | | |
| | | *ELECTRICAL* | | | *69.43 /sf* | 2,556,244 |
| | | *54,640.00 sf* | | | | |
| | | 7,877.012 Labor hours | | | | |
| | | **3 30 Trinity** | | | **256.62 /sf** | **14,021,419** |
| | | **54,640.00 sf** | | | | |
| | | 47,348.87 Labor hours | | | | |
| | | 950.18 Equipment hours | | | | |
| | | ***1 Building Rehabilitation*** | | | ***252.48 /sf*** | ***33,993,407*** |
| | | ***134,640.00 sf*** | | | | |
| | | 144,871.892 Labor hours | | | | |
| | | 1,221.584 Equipment hours | | | | |
| | | ***2 Site Rehabilitation*** | | | | |
| | | **4 Parking** | | | | |
| *31-00-00.00* | | *EARTHWORK* | | | | |
| *31-05-16.10* | | *Parking Inprovements* | | | | |
| | 0600 | Upgrade Parking | 25,705.00 | sf | 8.00 /sf | 205,650 |
| | | *Parking Inprovements* | | | *8.00 /sf* | *205,650* |
| | | *25,705.00 sf* | | | | |
| | | 1,035.140 Labor hours | | | | |
| | | 239.06 Equipment hours | | | | |
| | | *EARTHWORK* | | | *8.00 /sf* | *205,650* |
| | | *25,705.00 sf* | | | | |
| | | 1,035.140 Labor hours | | | | |
| | | 239.06 Equipment hours | | | | |
| | | **4 Parking** | | | **8.00 /sf** | **205,650** |
| | | **25,705.00 sf** | | | | |
| | | 1,035.140 Labor hours | | | | |
| | | 239.06 Equipment hours | | | | |
| | | **5 New H/C Ramp** | | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| *03-00-00.00* | | *CONCRETE* | | | | |
| *03-30-53.40* | | *Concrete In Place* | | | | |
| n | 4520 | Strt cncrt,place,handcp access ramp (4000 psi),railng both sides,3'wd,inclds frms(4 us),grade 60 rebar,concrt (prtln cement type i),placng and finshng | 1.00 | ls | 65,001.88 /ls | 65,002 |
| | | *Concrete In Place* | | | | *65,002* |
| | | 395.12 Labor hours | | | | |
| | | 0.55 Equipment hours | | | | |
| | | *CONCRETE* | | | | *65,002* |
| | | 395.12 Labor hours | | | | |
| | | 0.55 Equipment hours | | | | |
| | | **5 New H/C Ramp** | | | **65,001.88 /ls** | **65,002** |
| | | **1.00 ls** | | | | |
| | | 395.12 Labor hours | | | | |
| | | 0.55 Equipment hours | | | | |
| | | ***2 Site Rehabilitation*** | | | ***10.53 /sf*** | ***270,652*** |
| | | ***25,705.00 sf*** | | | | |
| | | 1,430.26 Labor hours | | | | |
| | | 239.61 Equipment hours | | | | |

| Item | Description | Takeoff Qty | Total Unit Cost | Total Amount |
|---|---|---|---|---|
| | ***3 Replace 4 Large Windows*** | | | |
| | **1 20 Trinity Street** | | | |
| *08-00-00.00* | *OPENINGS* | | | |
| *08-00-00.03* | *Windows* | | | |
| 0020 | Replace Large Window | 4.00 ea | 75,000.01 /ea | 300,000 |
| | *Windows* | | | *300,000* |
| | 286.98 Labor hours | | | |
| | *OPENINGS* | | | *300,000* |
| | 286.98 Labor hours | | | |
| | **1 20 Trinity Street** | | | **300,000** |
| | 286.98 Labor hours | | | |
| | ***3 Replace 4 Large Windows*** | | ***75,000.01 /ea*** | ***300,000*** |
| | ***4.00 ea*** | | | |
| | 286.98 Labor hours | | | |

## Partial Totals

| Description | Amount | Totals | Rate | | Cost Bas | Cost per Unit | | cent of Total | |
|---|---|---|---|---|---|---|---|---|---|
| Labor | 40,000 | | | | | 0.297 | / | 7.58% | |
| Material | 260,000 | | | | | 1.931 | / | 49.27% | |
| Subcontract | | | | | | | | | |
| Equipment | | | | | | | | | |
| Other | | | | | | | | | |
| | 300,000 | 300,000 | | | | 2.228 | / | 56.85 | 56.85% |
| General Conditions | 30,000 | | 10,000 | % | T | 0.267 | / | 6.82% | |
| | 330,000 | 330,000 | | | | 2.496 | / | 6.82 | 63.67% |
| Overhead & Profit | 33,000 | | 10.000 | % | T | 0.250 | / | 6.37% | |
| | 33,000 | 363,000 | | | | 2.745 | / | 6.37 | 70.04% |
| Design Contingency | 36,300 | | 10.000 | % | T | 0.549 | / | 14.01% | |
| | 36,300 | 399,300 | | | | 3.294 | / | 14.01 | 84.05% |
| Escalation 2 yr x 4% | 32,583 | | 8.160 | % | T | 0.269 | / | 6.86% | |
| | 32,583 | 431,883 | | | | 3.563 | / | 6.86 | 90.91% |
| Construction Contingency | 43,188 | | 10.000 | % | T | 0.356 | / | 9.09% | |
| | 43,188 | 475,071 | | | | 3.919 | / | 9.09 | 100.00% |
| Partial Total | | 475,071 | | | | 3.919 | / | | |

| Item | | Description | Takeoff Qty | | Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | ***4 Reconstruct 18 Trinity, Curtainwall Facade*** | | | | |
| | | **2 18 Trinity** | | | | |
| *02-41-00.00* | | *DEMOLITION* | | | | |
| *02-41-16.13* | | *Building Demolition* | | | | |
| | 0010 | Building demolition, large urban projects, steel, includes 20 mile haul, excludes foundation demolition, dump fees | 700,000.00 | cf | 0.60 /cf | 420,322 |
| | | *Building Demolition* | | | | *420,322* |
| | | 3,507.00 Labor hours | | | | |
| | | 1,043.000 Equipment hours | | | | |
| | | *DEMOLITION* | | | | *420,322* |
| | | 3,507.00 Labor hours | | | | |
| | | 1,043.000 Equipment hours | | | | |
| *52-00-00.00* | | *PROGRAM* | | | | |
| *52-00-00.10* | | *New Construction* | | | | |
| | 0700 | New Construction | 52,000.00 | sf | 525.00 /sf | 27,299,990 |
| | | *New Construction* | | | | *27,299,990* |
| | | 283,551.32 Labor hours | | | | |
| | | *PROGRAM* | | | | *27,299,990* |
| | | 283,551.32 Labor hours | | | | |
| | | **2 18 Trinity** | | | | **27,720,312** |
| | | 287,058.32 Labor hours | | | | |
| | | 1,043.000 Equipment hours | | | | |
| | | ***4 Reconstruct 18 Trinity,*** | | | ***533.083/sf*** | ***27,720,312*** |

| Description | Quantity | Total Unit Cost | Total Amount |
|---|---|---|---|
| ***4 Reconstruct 18 Trinity, Curtainwall Facade*** | | | |
| 2 18 Trinity | | | 27,720,312 |
| ***4 Reconstruct 18 Trinity, Curtainwall Facade*** | | ***533.083/sf*** | ***27,720,312*** |
| ***52,000.00 sf*** | | | |
| 287,058.32 Labor hours | | | |
| 1,043.000 Equipment hours | | | |

## Partial Totals

| Description | Amount | Totals | Rate | | Cost Bas | Cost per Unit | cent of Total |
|---|---|---|---|---|---|---|---|
| Labor | 22,414,708 | | | | | | |
| Material | 5,200,000 | | | | | | |
| Subcontract | | | | | | | |
| Equipment | 105,604 | | | | | | |
| Other | | | | | | | |
| | 27,720,312 | 27,720,312 | | | | | |
| General Conditions | 2,772,031 | | 10.000 | % | T | | |
| | 2,772,031 | 30,492,343 | | | | | |
| Overhead & Profit | 3,049,234 | | 10.000 | % | T | | |
| | 3,049,234 | 33,541,577 | | | | | |
| Design Contingency | 3,354,157 | | 10.000 | % | T | | |
| | 3,354,157 | 36,895,734 | | | | | |
| Escalation 2 yr x 4% | 3,010,691 | | 8.160 | % | T | | |
| | 3,010,691 | 39,906,425 | | | | | |
| Construction Contingency | 3,990,642 | | 10.000 | % | T | | |
| | 3,990,642 | 43,897,067 | | | | | |
| Partial Total | | **43,897,067** | | | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | ***5 Reconstruct Dome*** | | | | |
| | | **1 20 Trinity Street** | | | | |
| *52-00-00.00* | | *PROGRAM* | | | | |
| *52-00-00.10* | | *New Construction* | | | | |
| | 0700 | New Construction | 2,043.00 | sf | 1,500.00 /sf | 3,064,501 |
| | | *New Construction* | | | | *3,064,501* |
| | | 19,659.36 Labor hours | | | | |
| | | *PROGRAM* | | | | *3,064,501* |
| | | 19,659.36 Labor hours | | | | |
| | | **1 20 Trinity Street** | | | | **3,064,501** |
| | | 19,659.36 Labor hours | | | | |
| | | ***5 Reconstruct Dome*** | | | ***1,500.00 /sf*** | ***3,064,501*** |
| | | ***2,043.00 sf*** | | | | |
| | | 19,659.36 Labor hours | | | | |

| Description | Quantity | Total Unit Cost | Total Amount |
|---|---|---|---|
| ***5 Reconstruct Dome*** | | | |
| 1 20 Trinity Street | | | 3,064,501 |
| ***5 Reconstruct Dome*** | | ***1,500.00 /sf*** | ***3,064,501*** |
| ***2,043.00 sf*** | | | |
| 19,659.36 Labor hours | | | |

## Partial Totals

| Description | Amount | Totals | Rate | | |
|---|---|---|---|---|---|
| Labor | 1,532,251 | | | | |
| Material | 1,532,250 | | | | |
| Subcontract | | | | | |
| Equipment | | | | | |
| Other | | | | | |
| | 3,064,501 | 3,064,501 | | | |
| General Conditions | 306,450 | | 10.000 | % | T |
| | 306,450 | 3,370,951 | | | |
| Overhead & Profit | 337,095 | | 10.000 | % | T |
| | 337,095 | 3,708,046 | | | |
| Design Contingency | 370,804 | | 10.000 | % | T |
| | 370,804 | 4,078,850 | | | |
| Escalation 2 yr x 4% | 332,834 | | 8.160 | % | T |
| | 332,834 | 4,411,684 | | | |
| Construction Contingency | 441,168 | | 10.000 | % | T |
| | 441,168 | 4,852,852 | | | |
| Partial Total | | **4,852,852** | | | |

| Item | | Description | Takeoff Qty | | Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | ***6 Reconstruct 18 Trinity, Face Brick Facade*** | | | | |
| | | **2 18 Trinity** | | | | |
| *02-41-00.00* | | *DEMOLITION* | | | | |
| *02-41-16.13* | | *Building Demolition* | | | | |
| | 0010 | Building demolition, large urban projects, steel, includes 20 mile haul, excludes foundation demolition, dump fees | 986,666.66 | cf | 0.60 /cf | 592,000 |
| | | *Building Demolition* | | | | 592,000 |
| | | 3,507.00 Labor hours | | | | |
| | | 1,043.000 Equipment hours | | | | |
| | | *DEMOLITION* | | | | 592,000 |
| | | 3,507.00 Labor hours | | | | |
| | | 1,043.000 Equipment hours | | | | |
| *52-00-00.00* | | *PROGRAM* | | | | |
| *52-00-00.10* | | *New Construction* | | | | |
| | 0700 | New Construction | 74,000 | sf | 490.00 /sf | 36,260,000 |
| | | *New Construction* | | | | 36,260,000 |
| | | 266,871.80 Labor hours | | | | |
| | | *PROGRAM* | | | | 36,260,000 |
| | | 266,871.80 Labor hours | | | | |
| | | **2 18 Trinity** | | | | **36,852,000** |
| | | 270,378.80 Labor hours | | | | |
| | | 1,043.000 Equipment hours | | | | |
| | | ***6 Reconstruct 18 Trinity, Face*** | | | ***498.083/sf*** | **36,852,000** |

| Description | Quantity | Total Unit Cost | Total Amount |
|---|---|---|---|
| ***6 Reconstruct 18 Trinity, Face Brick Facade*** | | | |
| 2 18 Trinity | | | 36,852,000 |
| ***6 Reconstruct 18 Trinity, Face Brick Facade*** | | ***498.083/sf*** | 36,852,000 |
| 74,000 ***sf*** | | | |
| 270,378.80 Labor hours | | | |
| 1,043.000 Equipment hours | | | |

## Partial Totals

| Description | Amount | Totals | Rate | | |
|---|---|---|---|---|---|
| Labor | 24,083,748 | | | | |
| Material | 12,561,752 | | | | |
| Subcontract | | | | | |
| Equipment | 206,500 | | | | |
| Other | | | | | |
| | 36,852,000 | 36,852,000 | | | |
| General Conditions | 3,685,200 | | 10.000 | % | T |
| | 3,685,200 | 40,537,200 | | | |
| Overhead & Profit | 4,053,720 | | 10.000 | % | T |
| | 4,053,720 | 44,590,920 | | | |
| Design Contingency | 4,459,092 | | 10.000 | % | T |
| | 4,459,092 | 49,050,012 | | | |
| Escalation 2 yr x 4% | 4,002,481 | | 8.160 | % | T |
| | 4,002,481 | 53,052,492 | | | |
| Construction Contingency | 5,305,249 | | 10.000 | % | T |
| | 5,305,249 | 58,357,741 | | | |
| Partial Total | | **58,357,741** | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | ***7 Replace DW & Fire Water Services*** | | | | |
| *33-00-00.00* | | *UTILITIES* | | | | |
| *33-00-00.01* | | *Utilities* | | | | |
| | 0110 | Domestic Water Service | 1.00 | ea | 45,000.02 /ea | 45,000 |
| | 0120 | Fire Water Service | 1.00 | ea | 20,000.00 /ea | 20,000 |
| | | *Utilities* | | | | *65,000* |
| | | 543.683 Labor hours | | | | |
| | | *UTILITIES* | | | | *65,000* |
| | | 543.683 Labor hours | | | | |
| | | **5 New H/C Ramp** | | | | **65,000** |
| | | 543.683 Labor hours | | | | |
| | | ***7 Replace DW & Fire Water Services*** | | | ***65,000.02 /ls*** | ***65,000*** |
| | | ***1.00 ls*** | | | | |
| | | 543.683 Labor hours | | | | |

| Description | Quantity | Total Unit Cost | Total Amount |
|---|---|---|---|
| ***7 Replace DW & Fire Water Services*** | | | |
| 5 New H/C Ramp | | | 65,000 |
| ***7 Replace DW & Fire Water Services*** | | ***65,000.02 /ls*** | ***65,000*** |
| ***1.00 ls*** | | | |
| 543.683 Labor hours | | | |

## Partial Totals

| Description | Amount | Totals | Rate | | |
|---|---|---|---|---|---|
| Labor | 65,000 | | | | |
| Material | | | | | |
| Subcontract | | | | | |
| Equipment | | | | | |
| Other | | | | | |
| | 65,000 | 65,000 | | | |
| General Conditions | 6,500 | | 10.000 | % | T |
| | 6,500 | 71,500 | | | |
| Overhead & Profit | 7,150 | | 10.000 | % | T |
| | 7,150 | 78,650 | | | |
| Design Contingency | 7,865 | | 10.000 | % | T |
| | 7,865 | 86,515 | | | |
| Escalation 2 yr x 4% | 7,060 | | 8.160 | % | T |
| | 7,060 | 93,575 | | | |
| Construction Contingency | 9,356 | | 10.000 | % | T |
| | 9,356 | 102,933 | | | |
| Partial Total | | **102,933** | | | |

| Description | Quantity | Total Unit Cost | Total Amount |
|---|---|---|---|
| ***8 Infill Light Well*** | | | |
| 3 30 Trinity | | | 99,971 |
| ***8 Infill Light Well*** | | ***142.82 /sf*** | ***99,971*** |
| ***700.00 sf*** | | | |
| 641.27 Labor hours | | | |
| 87.865 Equipment hours | | | |

## Partial Totals

| Description | Amount | Totals | Rate | | |
|---|---|---|---|---|---|
| Labor | 61,930 | | | | |
| Material | 34,984 | | | | |
| Subcontract | | | | | |
| Equipment | 3,058 | | | | |
| Other | | | | | |
| | 99,972 | 99,972 | | | |
| General Conditions | 9,997 | | 10.000 | % | T |
| | 9,997 | 109,969 | | | |
| Overhead & Profit | 10,997 | | 10.000 | % | T |
| | 10,997 | 120,965 | | | |
| Design Contingency | 12,097 | | 10.000 | % | T |
| | 12,097 | 133,062 | | | |
| Escalation 2 yr x 4% | 10,876 | | 8.160 | % | T |
| | 10,876 | 143,920 | | | |
| Construction Contingency | 14,392 | | 10.000 | % | T |
| | 14,392 | 158,312 | | | |
| Partial Total | | **158,312** | | | |

| Item | | Description | Takeoff Qty | | Total Unit Cost | Total Amount |
|---|---|---|---|---|---|---|
| | | ***8 Infill Light Well*** | | | | |
| | | **3 30 Trinity** | | | | |
| *03-00-00.00* | | *CONCRETE* | | | | |
| *03-82-13.10* | | *Core Drilling* | | | | |
| | 0100 | Concrete core drilling, core, reinforced concrete slab, 1" diameter, Drill for Drainage | 50.00 | ea | 85.881 /ea | 4,294 |
| | | *Core Drilling* | | | | *4,294* |
| | | 47.06 Labor hours | | | | |
| | | 23.53 Equipment hours | | | | |
| | | *CONCRETE* | | | | *4,294* |
| | | 47.06 Labor hours | | | | |
| | | 23.53 Equipment hours | | | | |
| *04-00-00.00* | | *MASONRY* | | | | |
| *04-11-20.36* | | *Infills* | | | | |
| | 0035 | Remove Window & Infill Opening | 210.00 | sf | 107.964 /sf | 22,673 |
| | | *Infills* | | | | *22,673* |
| | | 184.62 Labor hours | | | | |
| *04-43-10.45* | | *Granite* | | | | |
| | 0980 | Granite,Paver,flame faced, 2-1/2",gray/lt gray | 700.00 | sf | 56.53 /sf | 39,568 |
| | | *Granite* | | | | *39,568* |
| | | 172.31 Labor hours | | | | |
| | | 43.08 Equipment hours | | | | |
| | | *MASONRY* | | | | *62,241* |
| | | 356.920 Labor hours | | | | |
| | | 43.08 Equipment hours | | | | |
| *07-00-00.00* | | *THRML & MOIST PROT'N* | | | | |
| *07-12-13.20* | | *Membrane Waterproofing* | | | | |
| | 0015 | Membrane waterproofing, on walls | 1,350.00 | sf | 10.18 /sf | 13,738 |
| | | *Membrane Waterproofing* | | | | *13,738* |
| | | 122.38 Labor hours | | | | |
| | | 10.80 Equipment hours | | | | |
| | | *THRML & MOIST PROT'N* | | | | *13,738* |
| | | 122.38 Labor hours | | | | |
| | | 10.80 Equipment hours | | | | |
| *31-00-00.00* | | *EARTHWORK* | | | | |
| *31-23-23.14* | | *Backfill, Structural* | | | | |
| | 1400 | Backfill, structural, Select Granular, excludes compaction | 236.00 | lcy | 80.43 /lcy | 18,981 |
| | | *Backfill, Structural* | | | | *18,981* |
| | | 106.172 Labor hours | | | | |
| | | 1.72 Equipment hours | | | | |
| *31-23-23.24* | | *Compaction, Structural* | | | | |
| | 0700 | Compaction, structural, select fill, 8" lifts, vibratory plate | 236.00 | ecy | 3.042 /ecy | 718 |

| Item | Description | Takeoff Qty | Total Unit Cost | Total Amount |
|---|---|---|---|---|
| | *Compaction, Structural* | | | *718* |
| | 8.741 Labor hours | | | |
| | 8.741 Equipment hours | | | |
| | *EARTHWORK* | | | *19,699* |
| | 114.913 Labor hours | | | |
| | 10.46 Equipment hours | | | |
| | **3 30 Trinity** | | | **99,971** |
| | 641.27 Labor hours | | | |
| | 87.865 Equipment hours | | | |
| | ***8 Infill Light Well*** | | ***142.82 /sf*** | ***99,971*** |
| | ***700.00 sf*** | | | |
| | 641.27 Labor hours | | | |
| | 87.865 Equipment hours | | | |