ROOF INSPECTION REPORT

KING SOLOMON BAPTIST CHURCH

NOVEMBER 19, 2021

PREPARED FOR:
MICHIGAN STRATEGIC FUND
KING SOLOMON BAPTIST CHURCH

QUINN EVANS

TEMPLE BAPTIST CHURCH 1916

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INTRODUCTION

INTRODUCTION

SNAPSHOT OF KING SOLOMON BAPTIST CHURCH FRONT ENTRY BELL TOWER AND SIGNAGE LOCATED ON THE STRUCTURE ACROSS THE STREET

HISTORY AND SIGNIFICANCE

King Solomon Baptist Church consists of two histroic buildings located at the intersection of Fourteenth Street and Marquette Avenue. The original sanctuary, Educational and Recreation Building (6125 Fourteenth Street) on the intersection's northwest corner, and its Main Auditorium (6102 Fourteenth Street) on the northeast corner. The buildings are presently owned and occupied by King Solomon Missionary Baptist Church of Detroit. Both buildings occupy their entire respective parcels, featuring only a minimal setback from the street. The buildings are in a residential neighborhood of detached, single-family, and multi-family homes. Most of these homes date from the 1910s and 1920s, and many have been demolished in recent years.

Constructed in 1917, the original Temple Baptist Church was designed by architect J. Will Wilson, principal of the firm Wilson & Catto. Wilson was noted as one of the leading architects in Detroit during that time and the original church is one of the only structures remaining of Wilson's work in the city. The original Temple building included a sanctuary with large arched stained glass windows and a bell tower. The building was designed in the Gothic Arts and Crafts style with light buff brick with gray sandstone trimming and a green clay roof tiles.

In 1920, to accommodate a blossoming congregation and expansion of the the school's growth, the original church was converted into an a Sunday School building which was later known as the Educational and Recreation Building and would also serve as a community center for the neighborhood. The sanctuary was split into two floors of classrooms, where a new a three story wing was added to the north side of the original building. In 1941, another three-story wing was added to the south side, almost completely covering the curved wall of stained glass windows. Each addition were designed with a similar light buff brick to match the original structure.

In 1937, the Main Auditorium, an Art Deco-styled auditorium was completed and would hosts regular services. In part to its 5,000-seat auditorium, King Solomon Baptist went on to play a prominent role in the Civil Rights Movement in Detroit and nationwide, as speakers could address large audiences. King Solomon Baptist Church has long served as a focal point of Detroit's Northwest Goldberg community. It was an early member of the Progressive National Baptist Convention (an association of African American churches that emphasizes civil rights and social justice) and the site of that body's second annual conference. In that conference and others, it hosted numerous guests including the Rev. Dr. Martin Luther King, Jr., the Rev. Ralph D. Abernathy, and the Rev. Benjamin Mays. The church grew to national prominence under the leadership of its longtime pastor, the Rev. Theodore Sylvester Boone, and is significant as the location of Malcolm X's 1963 "Message to the Grass Roots" address, one of the minister's most influential speeches and a key turning point in his career. Prior to the King Solomon era, the building was the home of Temple Baptist Church which, by contrast, did not allow African Americans to become members or attend services.

Through the research and documentation of the State Historic

Preservation Office (SHPO) “2016 Project”, the King Solomon Baptist Church in Detroit was identified as a significant Civil Right site and listed on the National Register for its contributions as a site of multiple historic events related to the African American Civil Rights Movement and Black Arts Movement.

SCOPE AND PURPOSE

With the decline of the neighborhood and local population, the congregation had shrunk significantly and limited funding has left the sanctuary and addition in disrepair and unoccupied for several years. Due to the site’s importance, the Michigan State Historic Preservation Office (SHPO) received a National Park Service (NPS) African American Civil Rights Grant to 1) survey and inspect, 2) create construction drawings and specifications for replacement of the sanctuary and addition roofs. The scope is limited the replacement of the most deteriorated roofs, which include the steep slope roof of the original church core, the bell tower roof, and the low slope roof of the Southerly addition. This report focuses on those (4) roof zones. The roofs are in poor condition and have collapsed in areas causing intrusions of the elements and increasingly severe deterioration to the interior of the structure.

In 2026, the church will be celebrating its centennial. The congregation's vision is to eventually have the sanctuary and additions fully rehabilitated and operational with the hopes of following the course of the city as it rises again and finds renewed use. As an important center to the surrounding black community, the church and community members have envisioned countless expansion ideas for King Solomon’s programs and services, providing neighborhood support spaces as a place to empower the black community. In order to work toward that vision, it is paramount that this project use these initial grant funds on targeted structural repairs and roofing work that best protects the historic resource until future preservation, restoration, or rehabilitation work can be completed. The primary objective is creating a weather-tight enclosure from above, and protecting the spaces below from further deterioration. This report fulfills the first step of that process in reporting findings from the survey and inspections, providing resulting recommendations toward objective of roof replacement, in conjunction with a conceptual estimate of costs for implementing the recommendations. The information can then be used for value-driven decision-making in determining what scope makes best use of the funds available, for further development into construction documents.

PROJECT TEAM

The project team for the roof inspection and resulting recommendations consisted of the following professionals:

PRIME - QUINN EVANS – PRESERVATION ARCHITECT

Saundra Little FAIA, LEED AP Principal in Charge
Ann K. Dilcher AIA, LEED AP Preservation Architect
Alexis Cecil Project Manager, Senior Architect
Shanita Rutland, Architectural Designer

SUBCONSULTANT - RESURGET ENGINEERING - STRUCTURAL ENGINEER

Marc Steinhobel PE \\ Structural Engineer

SUBCONSULTANT - MIDWESTERN CONSULTING - SURVEYOR

Chris Somers \\ Drone and Laser Scan Survey

SUBCONSULTANT - DCM CONSULTING - COST ESTIMATOR

Chris Toma \\ Cost Estimator

ASSESSMENT METHODOLOGY

Our approach focused on providing a thorough assessment of the existing conditions and structural evaluation of the conditions. Our team then brainstormed, discussed, evaluated, and prepared what we feel are the necessary and most appropriate best options for the replacement work to be considered by the Church and SHPO.

Our survey started by reviewing take-offs of areas and slopes provided by the eagle view report and used the documentation to develop initial survey plans. The onsite survey was combined with a visual survey from the ground and connecting low slope roofs with the survey from a lift of the bell tower roof. A laser scan of the exterior and (where possible) interior of the roof structure, allowed us to best understand the existing structure of the 1917 building. With the information on the existing building gathered, our team met to develop a narrative of recommendations, including several options or alternates. Our estimator has provided concept budget numbers for these recommendations that will help our team, the Church, and SHPO to evaluate the recommended scope.

KING SOLOMON BAPTIST CHURCH

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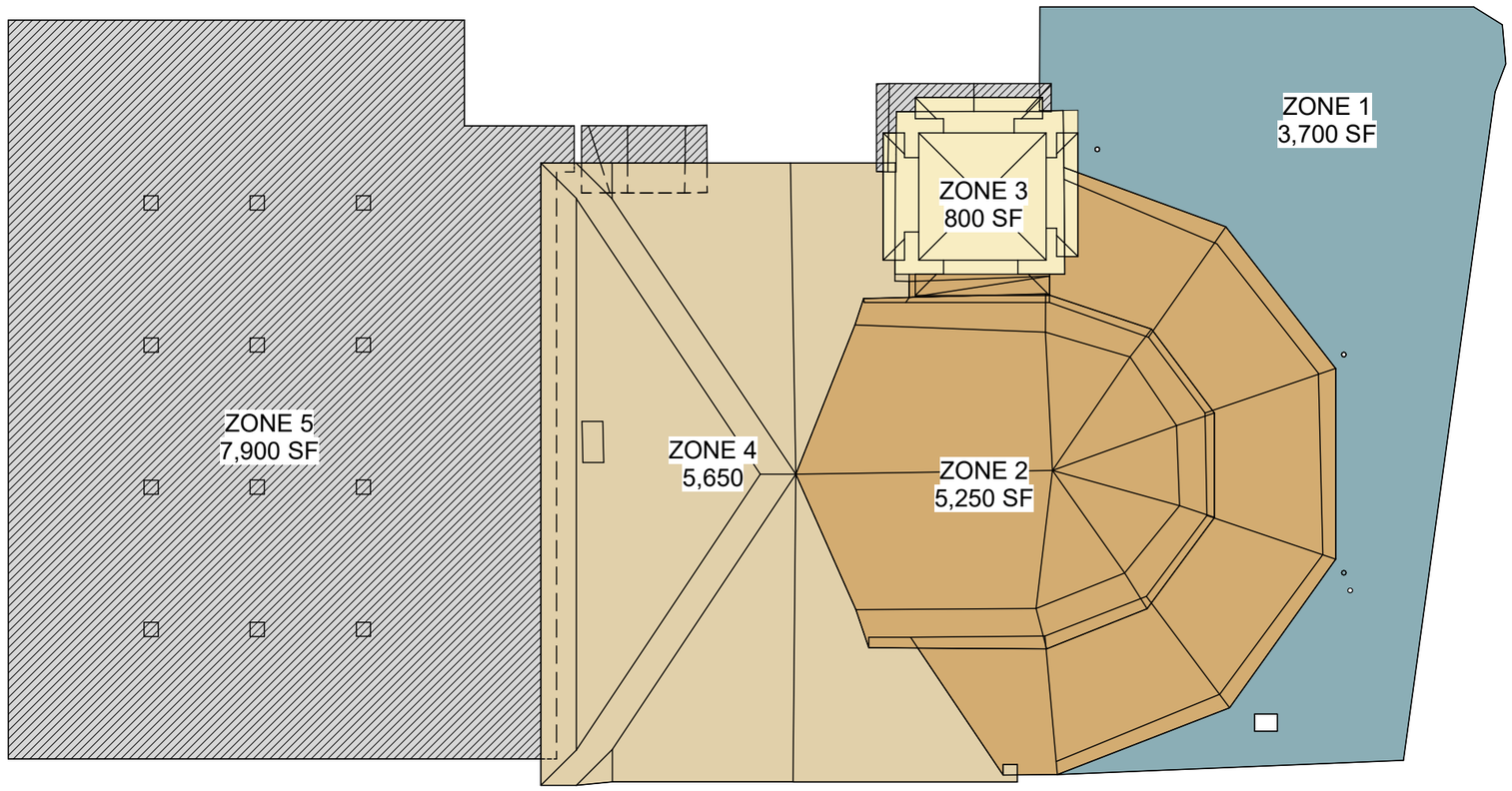
EXISTING CONDITIONS OBSERVATIONS & ASSESSMENTS



PLAN NORTH

40' 20' 10' 0' 20' 40'

1" = 20' - 0" SCALE OF FEET

ROOF ZONE LEGEND

- ZONE 1: Flat Roof South
- ZONE 2: Heptagon Roof (Upper and Lower)
- ZONE 3: Bell Tower Roof
- ZONE 4: Central Gable Roof
- ZONE 5: Flat Roof North (Not In Scope)

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ROOF ZONE PLAN

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EXISTING CONDITIONS OBSERVATIONS & ASSESSMENT

ZONE 1: FLAT ROOF (SOUTH) - ARCHITECTURAL ASSESSMENT

Zone 1 constitutes a 3,700 square feet, single ply membrane roof, over a reinforced concrete structural roof deck, surrounded and supported by brick masonry parapet walls and clay tile caps. This portion of the building is one of the additions to the original Temple constructed in 1941. Listed below are the *architectural observations and findings*:

- Membrane roofing and subsequent patching at the end of its useful life, with seams beginning to fail
- Worn or no indication of tapered roof insulation
- Minimal slope-to-drain at the three existing rooftop drain locations
- Three existing roof drains approx. 2" in diameter. They have no visible signs of surface clogs, but are undersized for the rooftop's square footage; no secondary overflow drainage is present *(see figure A1.6)*
- Present on the roof - three inches or more standing water at various areas along the flat roof *(see figure A1.1, A1.2 and A1.15)*
- Present debris and building materials
- Missing, detached or cracked clay tile parapet caps leaving membrane roofing termination and top of masonry wall exposed along approx. 25% the length; 50% clay tile caps are in fair to good condition *(see figure A1.9 and A1.10)*
- Water Infiltration along the masonry wall between the flat roof and bell tower
- Rusted or missing metal termination flashing at the upturn along the parapet wall and pier columns *(see figure A1.11 and A1.12)*
- Displaced masonry parapet wall with detached masonry units along third floor ceiling/roof junction *(see figure S1.4)*
- Visible step cracking along the masonry brick wall along the parapet and buckling of the top of the piers*(see figure S1.4)*
- Cracked and detached masonry column surround at west elevation
- Detached and metal roof hatch door; weathered wood hatch curb *(see figure A1.5)*

FIGURE A1.1 OVERVIEW LOOKING WEST AT VARIOUS POOLS OF STANDING WATER; FRAYED WARPED ROOFING MEMBRANE SEAMS; NO INDICATION OF ROOF INSULATION OR TAPERING

FIGURE A1.2 OVERVIEW LOOKING NORTH AT THE FLAT ROOF WITH STANDING WATER; FRAYED RUBBER ROOF SEAMS; PARAPET FLASHING

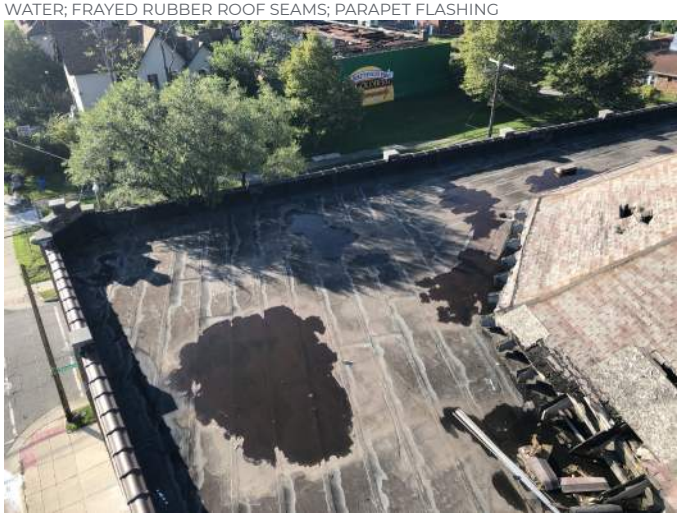


FIGURE A1.3 EAGLE VIEW OF THE SOUTH FLAT ROOF; VARIOUS AREAS OF STANDING WATER

FIGURE A1.5 EXISTING ROOF HATCH WITH DETACHED ROOF HATCH CAP

FIGURE A1.6 EXISTING ROOF DRAIN CAP BODY

FIGURE A1.8 MISSING AND DAMAGED PARAPET CLAY TILES (SOUTHEAST CORNER)

FIGURE A1.9 CRACKED AND DETACHED CLAY TILES AT THE PARAPET

FIGURE A1.10 CRACKED CLAY TILES ALONG EAST ELEVATION

FIGURE A1.11 FLASHING MISSING UNDER COLUMN CAP

FIGURE A1.15 DETERIORATING CORNER COLUMN, UNFLASHSED MASONRY AT PIER COLUMN; 3" OR MORE PONDING WATER AT SOUTHWEST CORNER

FIGURE A1.12 RUSTED FLASHING; WEATHERED SEALANTS, FLASHING MISSING AT THE UNDERSIDE OF THE COLUMN CAP

FIGURE A1.16 "ROLLING" BRICK DISPLACEMENT AT THE EXTERIOR PARAPET PIER COLUMN

FIGURE A1.21 CORRODED AND EXPANDING STEEL LINTEL ABOVE THE WINDOWS ON THE THIRD FLOOR

FIGURE A1.22 "ROLLING" BRICK DISPLACEMENT AT THE EXTERIOR PARAPET; BUCKLING AT PIER COLUMN

FIGURE A1.23 CORRODED AND EXPANDING LINTELS; "ROLLING" BRICK DISPLACEMENT AT THE EXTERIOR PARAPET

ZONE 1: FLAT ROOF (SOUTH) - STRUCTURAL ASSESSMENT

Zone 1's structural roof construction is a thin concrete slab supported by I-shaped precast joists that spans to the exterior steel lintels. The joist are embed in the masonry walls and the interior steel beams are encased in concrete. The exterior steel lintels and interior steel beams are supported by steel columns encased in concrete. Listed below are the structural observations and findings:

- Moderate to severe damage and deterioration of the thin concrete slab, observed in areas near the three roof drain locations. The full extent of the concrete deterioration can only be determined after the existing roofing is removed and the top surface is exposed for inspection.*(see figure S1.1)*
- Moderate to severe damage observed in many of the precast beams. This has resulted in the spalling of the concrete cover below the bottom tension reinforcing steel. There is moderate to severe deterioration of the web concrete and on a few joist the shear reinforcement is exposed. *(see figure S1.2)*
- Observed at two beam locations, spalling concrete and corrosion of the exposed reinforcing bars. It appears the structural frame is steel that is encased in concrete. In these locations the cracked and spalling concrete should be removed to ensure no loose concrete fall in occupied space. Additional repair work will be required if the beam is reinforced concrete or if the embedded steel beam is severely corroded. *(see figure S1.3)*
- Precast joists frame into the exterior masonry wall and are supported by steel lintels that are embedded in the masonry walls. The steel lintels support the masonry above the window openings. The embedded steel lintel beams are severely corroded with a thick rust pack. The thick rust pack, results in an excessive expansion of the corroded steel. This has caused severe movement, damage and deterioration of exterior masonry and rollover of the parapet walls *(see figure S1.4)*
- Damage to the exterior wall does not have a direct impact on the roof. However, it does impact the structural integrity of the roof structure and any resulting movement of the parapet walls and piers could result in damage to the new roofing system or interior leaks through the masonry wall that are not associated with roofing system.

FIGURE S1.0

FIGURE S1.1

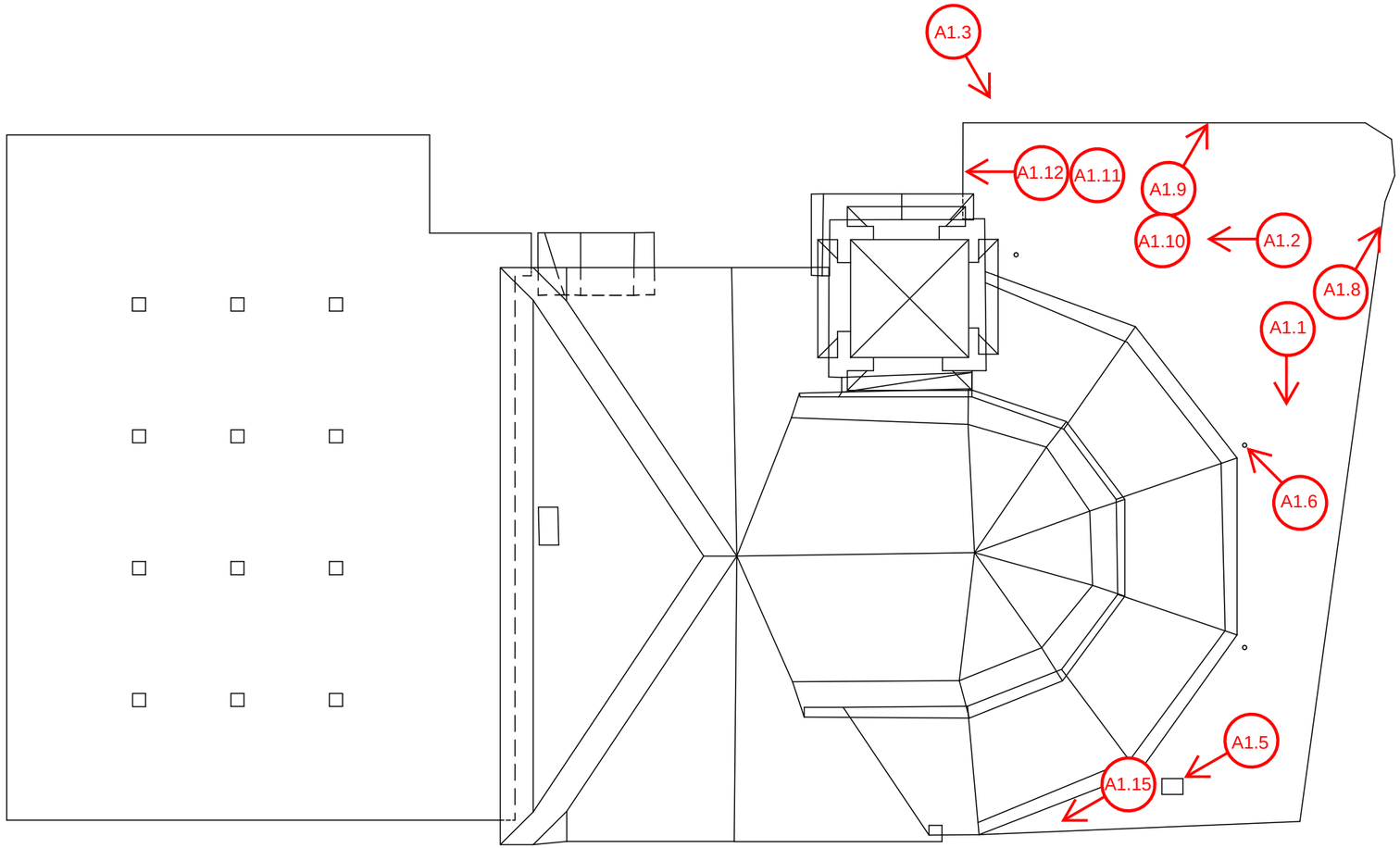
FIGURE S1.2

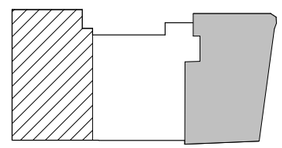
FIGURE S1.3

FIGURE S1.4

FIGURE S1.5 STAIR STEP CRACKING ALONG THE WEST WALL BEHIND THE ROOF HATCH ACCESS

FIGURE S1.6 INTERNAL WATER DAMAGE FROM THE ROOF ABOVE; THE WATER INFILTRATION IS STARTING TO SHOW SIGNS OF FREEZE/THAW DAMAGE INCLUDE SPALLING AND SCALING OF THE CONCRETE SURFACE, SURFACE PARALLEL CRACKING, OR EXPOSED AGGREGATE.





KEY PLAN

03 EXISTING CONDITIONS - ARCHITECTURAL EXTERIOR PHOTO KEY

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ZONE 1 | ROOF INSPECTION REPORT
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ZONE 2: HEPTAGONAL ROOF - ARCHITECTURAL ASSESSMENT

Zone 2 constitutes a 5,250 square feet, wood framed, two tiered, seven-sided polygon asphalt roof that is part of the original Temple construction. Bot tiers have a flared eave, extended over decorative wood brackets and outriggres. The lower tier terminates over the Zone 1 flat roof with minimal clearance. This roof shows significant deterioration at the lower tier, as evidence by systemic failure along the eave and open holes throughout the roof surface. Exposure to the outdoor elements and increased water infiltration has caused the roof structure to rot and weaken further. Listed below are the *architectural observations and findings*:

- Asphalt shingles worn, well beyond the end of their useful life
- Large, visible holes in the roof, exposing deteriorating wood structural framing; deteriorated plywood patching *(see figure A2.1 and A2.7)*
- Pronounced waviness to the roof surface which may indicate damage to the roof decking and structural framing below *(see figure A2.2)*
- Extensive deterioration of the decorative wooden eave brackets, particularly along the lower tier where the decking has mostly deteriorated completely away at the overhang *(see figure A2.8)*
- Flashing failure along the supporting masonry wall under the eaves *(see figure A2.7)*
- Patched valley flashing with improper terminations along bell tower masonry wall and of asphalt roofing. Excessive mastic on masonry wall. *(see figure A2.13)*
- Severely rusting metal head flashing where the lower tier roof terminates at the vertical clerestory wall between roof tiers; moderately rusting metal drip flashing along upper tier roof edge
- Clerestory glazed windows set between metal trim between two roof tiers appear to be in fair to good condition, with metal trim exhibiting surface rust and worn paint *(see figure A2.11)*

FIGURE A2.1 OVERVIEW OF THE TWO TIERED HEPTAGON ROOF; ROOF DECAY AND WATER INFILTRATION, WORN AND MISSING ASPHALT TILES, WEATHERED AND ROTTED DECORATIVE EAVE OUTRIGGERS/RAFTER TAILS.

FIGURE A2.2 SURFACE DEPRESSIONS ALONG THE ROOF; CURLED, DISCOLORED AND FRAYED ASPHALT SHINGLES; RUSTED METAL FLASHING UNDER THE UPPER WINDOWS

FIGURE A2.7 COMPLETE DETERIORATION AND DECAY OF THE DECORATIVE WOOD EAVES AND DECORATIVE RAFTER TAILS; THE LEVEL OF DETERIORATION MAY REQUIRE LOCALIZED REPAIRS TO ADJACENT ELEMENTS SUCH AS THE BRICK WALL BELOW

FIGURE A2.8 SIGNIFICANT DETERIORATION AT THE PERIMETER (TERMINATION OF DECORATIVE EAVES); EXTENSIVE WOOD ROT OF THE DECORATIVE EAVE OUTRIGGERS/RAFTER TAILS; PONDING WATER BELOW

FIGURE A2.10 UPPER TIER OF HEPTAGON ROOF; WORN, MISSING CURLED, DISCOLORED, AND FRAYED ASPHALT SHINGLES

FIGURE A2.12 OVERVIEW OF THE HEPTAGON ROOF ABOVE, SHOWS THE EXTENT OF THE ROOF DETERIORATION WITH VARIOUS HOLES ALONG THE SURFACE

FIGURE A2.13 IMPROPER FLASHING AND PATCHING AT THE VALLEY JUNCTION BETWEEN THE POLYGONAL ROOF AND BELL TOWER; THE ASPHALT SHINGLES ARE NOT PROPERLY TERMINATED; EXCESSIVE USE OF ROOFING MASTIC ALONG THE BELL TOWER WALL; DETERIORATED ROOF VENT NEAR THE LARGE HOLE IN THE ROOF.

FIGURE A2.6 FAILURE OF THE FLASHING AT THE INTERSECTION WHERE THE POLYGONAL ROOF INTERSECTS WITH THE BELL TOWER; STAINING OF THE DECORATIVE STONE BY FLASHING SEALANT

FIGURE A2.11 THE UPPER TIER OF THE POLYGONAL ROOF; VISIBLE RUST ON THE METAL WINDOW FRAMING AND ROOF HIPS; METAL FLASHING IS CORRODING AND DETACHING FROM THE FASCIA BOARD AND HEAD OF LOWER ROOF

FIGURE A2.13 DECORATIVE WOOD EAVE SHOW SIGNS OF DECAY AND ROT; SIGNIFICANT DETERIORATION OF THE ROOF PERIMETER EDGE; WITH POOLS OF WATER GATHERING UNDER THE EAVES

FIGURE A2.14 DETERIORATING INTERIOR PLASTER BELOW THE HEPTAGONAL ROOF STRUCTURE; SUN LIGHT IS VISIBLE THROUGH THE HOLE IN THE ROOF ABOVE

ZONE 2: HEPTAGONAL - STRUCTURAL ASSESSMENT

Zone 2's structural roof is constructed of tongue and groove wood plank sheathing, spanning to sloped rafters or brackets at approximately 4'-0" on center. The sloped rafters span to the exterior beams and is constructed of an elaborate system of trusses, posts and transfer beams. The roof has an intermediate level of windows located at the upper tier. The roof flares out and extends beyond and overhangs the exterior support walls at the low end as well above the intermediate level of windows. Listed below are the *structural observations and findings:*

- The lower overhang extending over the flat roof is in poor condition with missing and deteriorated sheathing. The structural rafters inside the decorative side panels are in very poor condition. The wood is rotten beyond serviceability. Water shedding off the roof flows over exposed wood sides and edges, accelerating the deterioration of the support structure. *(see figure S2.1)*

- The lower roof area up to the intermediate windows conditions varies. There is a large hole with severely deteriorated and damaged sheathing and support framing on the east side and in the valley behind the bell tower. The condition of the roof framing appears to improve towards the south side will only localized signs of damaged, deteriorated sheathing. The condition of the roof further deteriorates toward the northwest corner where the sheathing is visibly sagging between the support rafters. *(see figure S2.2)*

- The condition of the vertical walls, framing and windows at the intermediate window level appear in to be structurally functional. *(see figure S2.3)*

- The roof overhang above the intermediate windows appears intact for all segments except at the northwest corner where the overhang had been removed with only the exposed outrigger brackets remaining. It can be assumed that the exposed wooden brackets are rotten and are beyond serviceable condition. *(see figure S2.4)*

- Upper tier roof area appears in better condition than the lower roof. Localized deterioration of sheathing and rafters can be anticipated above the area with exposed overhang brackets. *(see figure S2.5)*

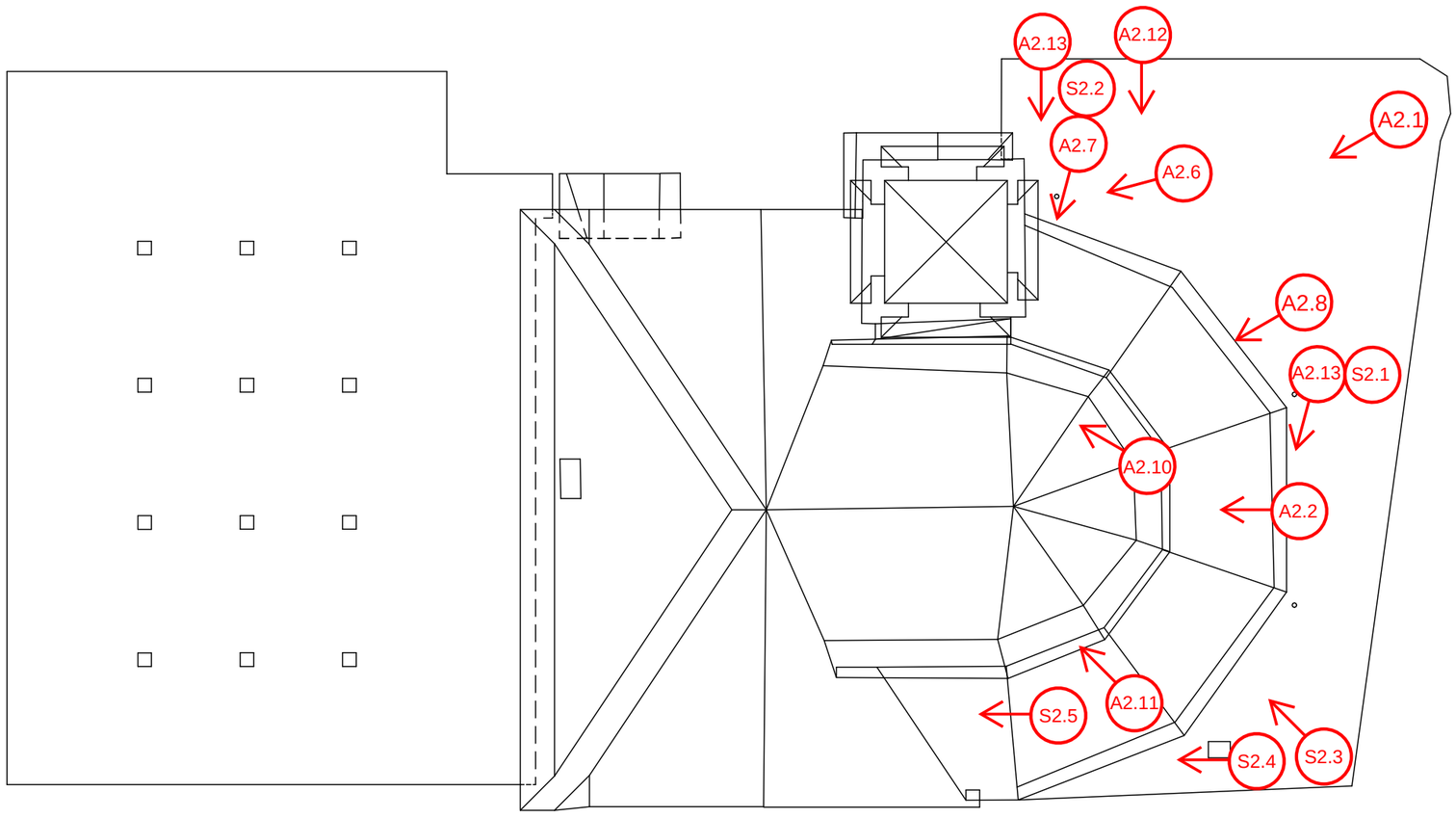
FIGURE S2.1

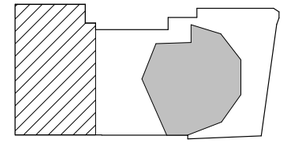
FIGURE S2.2

FIGURE S2.3

FIGURE S2.4

FIGURE S2.5





KEY PLAN

03 EXISTING CONDITIONS - ARCHITECTURAL EXTERIOR PHOTO KEY

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ZONE 2 | ROOF INSPECTION REPORT
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ZONE 3: BELL TOWER - ARCHITECTURAL ASSESSMENT

Zone 3 constitutes a 800 square feet pyramid hip roof on a wood framed structure with asphalt shingles. The decking flares into deep overhangs at each side and returns around four masonry corner piers of the tower. Decorative wood rafter tails support the extended overhang on all four sides. The extended wood eave overhangs and rafter tails, show significant deterioration on all four sides with extensive wood decay and rot. Several sections of the overhangs and select rafter tails have fallen off the building to the roofs or street below . Listed below are the *architectural observations and findings*:

- Asphalt shingles are work, well beyond the end of their useful life, with a significant quantity missing and exposing the sheathing below
- Weathered, rotted, or missing roof decking and painted soffit trim *(see figure A 3.7 and S3.0)*
- Extensive roof damage at extended eave overhangs
- Decorative wood rafter tails are rotted or missing; wood frieze board and trim is detaching from the masonry wall where still existing, weathered with worn paint. *(see figure A3.4 and A3.6)*
- Some displacement or movement is visible in the upper section of the four corner masonry piers *(see figure S3.3)*
- Several piece of stone caps over the masonry bell tower piers and buttress, as well as within the window and louver surrounds are cracked, detached, or already fallen to the roof or site below, exposing openings in the masonry wall assemblies *(see figure S3.2)*
- Missing or detaching, deteriorated copper step flashing at the overhang returns and brick piers; original copper gutters are missing and remnants of some disconnected copper downs[pouts remain *(see figure A3.10)*
- Large arched windows in the bell tower are missing glass and framing, leaving the underside of the roof and bell tower interior exposed to the elements and increased deterioration. Wood louvers above the windows are weathered with worn pain, in poor to fair condition, with some sections missing. *(see figure A3.1 and A3.2)*

FIGURE A3.2 THE EAVE OVERHANG SHOWS EXTENSIVE WOOD DECAY AND DETERIORATION

FIGURE A3.4 DECORATIVE WOOD OVERHANGS COLLAPSING AND OPEN AT ENDS TO INTERIOR; BRICK MASONRY SHOWS SIGNS OF DIFFERENTIAL MOVEMENT; REMAINING STEPPED COPPER FLASHING (EAST ELEVATION)

FIGURE A3.6 DIFFERENTIAL BRICK MOVEMENT UNDER EAVES; REMNANTS OF THE ORIGINAL STEPPED COPPER FLASHING; (NORTH ELEVATION)

FIGURE A3.7 HIP ROOF IS IN VERY POOR CONDITION; WEATHERED AND DECAYED WOOD DECKING, MISSING/FALLEN SHINGLES AND EXPOSED DECKING AND ORIGINAL STEPPED COPPER FLASHING (EAST ELEVATION)

FIGURE A3.8 ROTTED DECORATIVE WOOD RAFTER TAIL AND DETACHING FRIEZE BOARD TRIM

FIGURE A3.9 UNDERSIDE OF THE PAINTED DECORATIVE OVERHANGS; WEATHERED DETERIORATED WOOD DECKING (EAST ELEVATION)

FIGURE A3.10 OVERVIEW OF THE BELL TOWER'S ROOF AND DECKING; THE DECKING ON TOP OF THE DECORATIVE EAVE HAS COMPLETELY DECAYED AND DETACHED FROM THE ROOF ASSEMBLY (NORTH ELEVATION)

FIGURE A3.11 DETACHED COPPER DOWNSPOUT AND MISSING ASSOCIATED COPPER GUTTER

FIGURE A3.12 SOUTH WEST ELEVATION OF BELL TOWER; CRUMBLING STONE AT THE COLUMN CAP; BRICK MOVEMENT DIRECTLY UNDER THE ROOF

ZONE 3: BELL TOWER - STRUCTURAL ASSESSMENT

Zone 3's bell tower has a pyramid roof constructed of sloped rafters above the bell loft. The roof flares out between masonry corner piers that extend above the trusses. The flared roof, originally wrapped partially around the sides of the masonry corner piers. Listed below are the *structural observations and findings*:

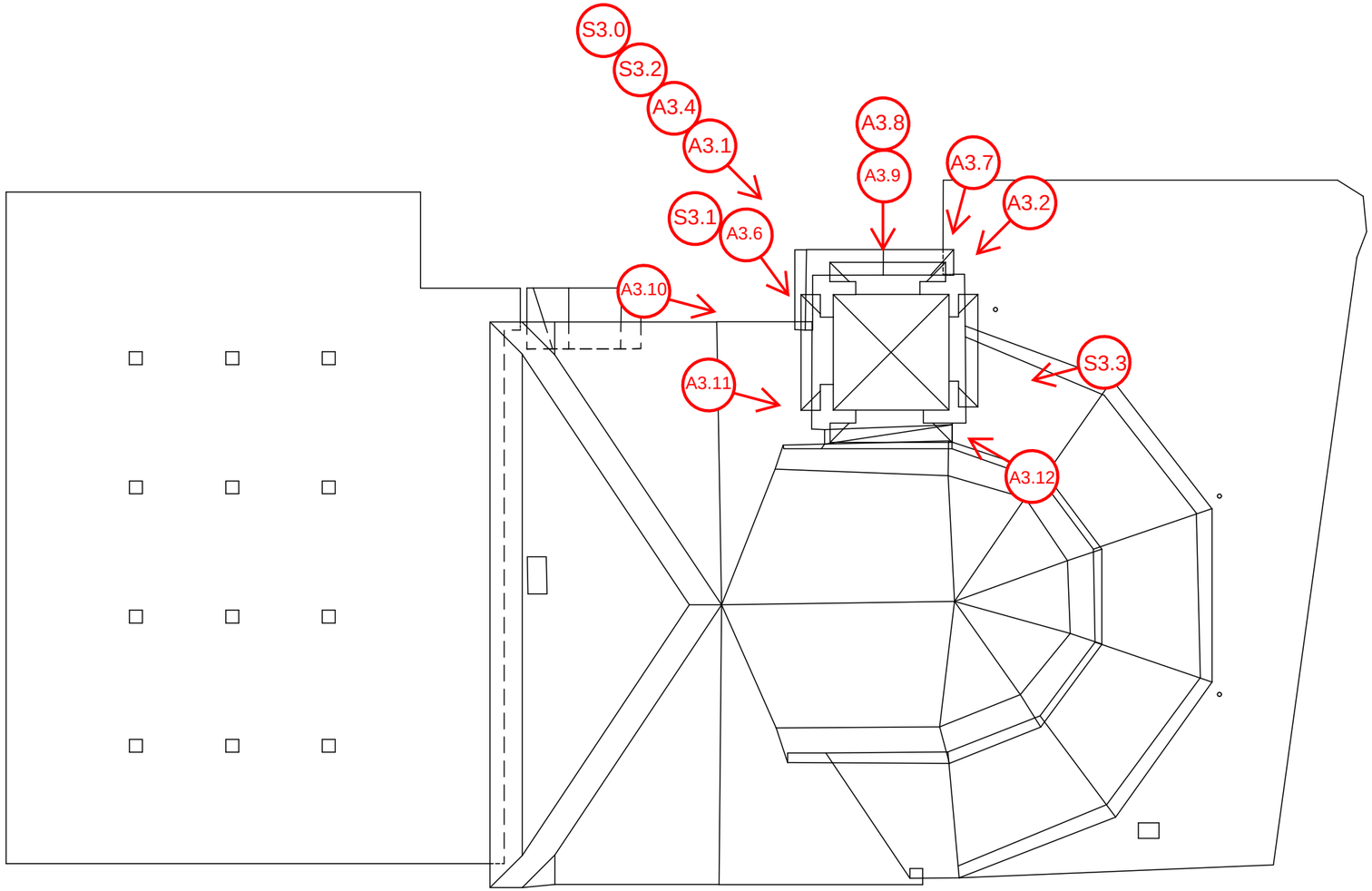
- The entire roof structure is in very poor condition and beyond serviceable condition. Large portions of the roof overhang area and support brackets are missing. The plank sheathing on the pyramid roof is exposed and is in poor condition. The nearby areas are badly deteriorated or missing. *(see figure S3.1)*
- The masonry piers and masonry below the roof support zone has limited cracking, moderate mortar joint deterioration and visible spalling. There is a significant risk of damage to people and property from falling debris due to the condition of the masonry. *(see figure S3.2)*
- There are large openings in the bell tower where the original windows and louvers have been removed or are damaged. These openings should be closed off as part of the roofing solution. *(see figure S3.3)*

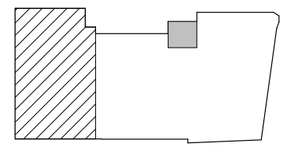
FIGURE S3.1

FIGURE S3.2

FIGURE S3.0

FIGURE S3.3





KEY PLAN

03 SCOPE OF EXISTING CONDITIONS - ARCHITECTURAL EXTERIOR PHOTO KEY

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ZONE 3 | ROOF INSPECTION REPORT
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ZONE 4: CENTRAL GABLE ROOF - ARCHITECTURAL ASSESSMENT

Zone 4 constitutes a 5,650 square feet cross gable wood roof structure with asphalt shingles that is situated over the main sanctuary. This roof shows significant deterioration at various locations along is surface, particularly on its southwest slope. Openings in the roof exposure to the outdoor elements has allowed water to infiltrate into the building and damage the structure and interior space below. Listed below are the *architectural observations and findings*:

- Asphalt shingles are beyond their useful life; numerous shingles have lifted, are cracked, or missing with curled edges
- Open holes through the roofing and sheathing on the southwest slope, each corner of the overhangs, and the in the valley connections adjacent to the bell tower, allowing exposure from the elements to deteriorate the structural framing and interior spaces below
- Some wave or sag between structural support members can be seen in the north slope.
- Decorative wood rafter tails are rotted and failed on the west rake but generally in fair condition along the north overhang. The large decorative support brackets below structural wood outriggers, supporting the deep west and east rake overhangs are in fair to poor condition. End caps surrounding the outriggers are mostly open and the structural wood members rotted away. The decorative brackets below the outriggers are in fair condition with worn paint and weathered wood.
- Extensive deterioration and now measurable missing decking and trim at the deep overhang and fascia along the west rake edge. The full depth of the exterior wall assembly is exposed from above in the southwest corner where the sheathing is missing.
- Tongue-and-groove trim at the underside of the east and west rake overhangs, as well as adjacent fascia trim is in poor to fair condition with worn paint and weathered or missing wood elements. The wood fascia behind the gutters at the north eave has detached from the decorative rafter tails but is otherwise in fair condition, weathered with worn paint.
- At the north eave, the metal gutter and downspouts are significantly rusted, with some section of the downspout missing. Any previous gutter along the southwest eave is not missing, and a single disconnected copper downspout remains extending to grade.
- A block wall stair enclosure for access to the north flat roof (not in project) sits under a portion of the north eave overhang. The block walls are in poor condition with displaced units and broken blocks. The door and frame has completely failed leaving an opening into the stair from the exterior. The membrane roofing on the north flat roof is detached at its base and vegetation is present. Despite the connection, it appears that repairs can be made to the Zone 4 gable roof independent of any removal or repairs to the stair enclosure.

FIGURE A4.00 OVERVIEW OF NORTHERN SIDE OF THE CROSS GABLE ROOF

FIGURE 4.1 DETERIORATED WOOD DECKING, MISSING/FALLEN SHINGLES AT THE EAVE (WEST ELEVATION)

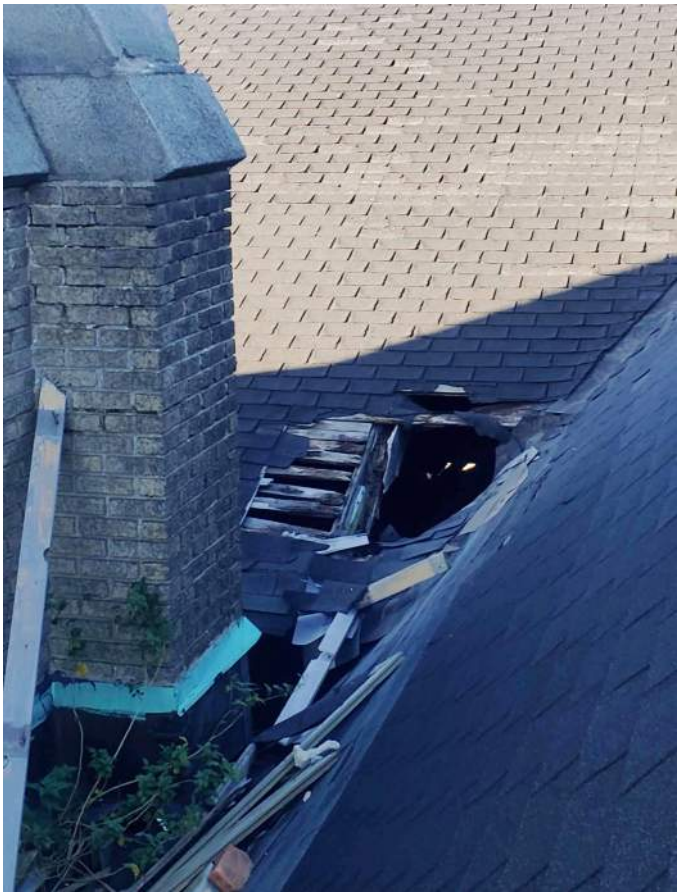


FIGURE A4.17 LARGE HOLE IN THE ROOF; DETERIORATED SHINGLES, WOOD DECKING AT THE ROOF VALLEY ; FALLEN WOOD DECKING FROM THE BELL TOWER ROOF ABOVE

FIGURE A4.23 EXTENSIVE EXTERIOR MASONRY DETERIORATION AT ROOFTOP STAIR ENTRY/EXIT; MISSING AND DETERIORATED MORTAR JOINTS; DETACHED ROOFTOP STAIR ENTRY DOOR; DAMAGED DOOR FRAMING. DETACHED FLASHING AT THE UPTURN OF THE NORTH MEMBRANE ROOFING

FIGURE 4.2 DECORATIVE WOOD EAVE, SIDE ELEVATION APPROX. LENGTH 3'-4"; IN FAIR CONDITION

FIGURE A4.3 DECORATIVE WOOD EAVE IN FAIR CONDITION; (NORTH ELEVATION)

FIGURE A4.4 WEATHERED FASCIA BOARD WITH ATTACHED METAL GUTTER

FIGURE A4.5 RUSTED GUTTER, CURLED AND FRAYED ASPHALT SHINGLES

FIGURE A4.6 OVERVIEW OF NORTHERN ROOF; CURLED, DISCOLORED, AND FRAYED ASPHALT SHINGLES; SHOW SIGNS OF DEPRESSIONS AND UNEVEN SURFACES ALONG THE ROOF

FIGURE A4.9 WEATHERED FASCIA BOARD; DECAYED WOOD DECKING; CURLED, FRAYED AND MISSING ASPHALT SHINGLES ABOVE ROOFTOP STAIR ENTRY.

FIGURE A4.14 MISSING WOOD FASCIA BOARDS AT EAST ELEVATION

FIGURE A4.12 WEATHERED, FADED EAVES; RUSTED GUTTER (EAST ELEVATION)

FIGURE A4.24 WEATHER AND FADED FASCIA BOARDS; DECAYED HOLLOWED WOODEN SUPPORT BRACKET

FIGURE 4.13 DECORATIVE FASCIA BOARDS ARE WEATHERED AND FADED; THEY ARE DETACHING FROM THE SUBSTRUCTURE. WOOD DECKING AT VALLEY TERMINATION IS EXPOSED, DECAYED WITH MISSING SHINGLES

FIGURE A4.15 UNDERSIDE OF THE EAVES; PAINTED WOODEN BRACKET EAVE SUPPORT; (EACH BRACKET SHOULD BE INDIVIDUALLY EVALUATED)

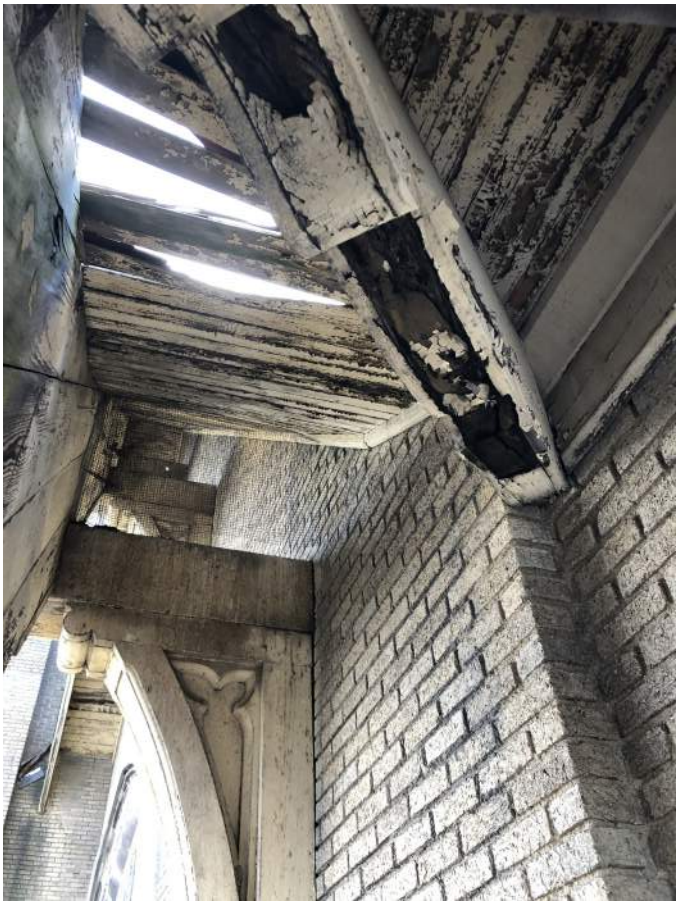


FIGURE A4.16 UNDERSIDE OF EAVES ON THE EAST ELEVATION AT THE MAIN ENTRANCE; WOOD DECKING IS DETERIORATION AT THE EAVE; MISSING WOOD DECKING; WEATHERED AND DECAYING SUPPORT BRACKETS

FIGURE 4.22 WEATHER AND FADED FASCIA BOARDS, FADED WOOD DECKING AT THE UNDERSIDE OF THE EAVES ON THE EAST ELEVATION AT THE MAIN ENTRANCE

ZONE 4: CENTRAL GABLE ROOF - STRUCTURAL ASSESSMENT

Zone 4 is a staggered ridge sloped roof with gabled overhangs on the east and west ends. The roof extends over the gable end walls. Decorative wood brackets support sloping edge beam/ fascia. The edge beam and fascia support the roof sheathing planks.

- The condition of the east overhang varies. The sheathing and a sloping beam that appears to be in moderate condition. The top members and inside structural members within the decorative brackets are in poor condition due to water leaking into the top of the brackets. *(see figure S4.1)*
- The main roof structure beyond the east overhang appears in moderate condition at the north and southeast slopes. The area at valley between the sloped roof and the bell tower is damaged, the structural members below the roofing may show some level of deterioration. *(see figure S4.2)*
- The southwest slope of the main roof area is in poor condition with many holes and areas of deteriorated sheathing and rafters. *(see figure S4.3)*
- The west overhang is in poor condition. The decorative support varies in condition. *(see figure S4.4)*

FIGURE S4.1

FIGURE S4.2

FIGURE S4.1

FIGURE S4.3

ADDITIONAL STRUCTURAL CONDITIONS OBSERVED

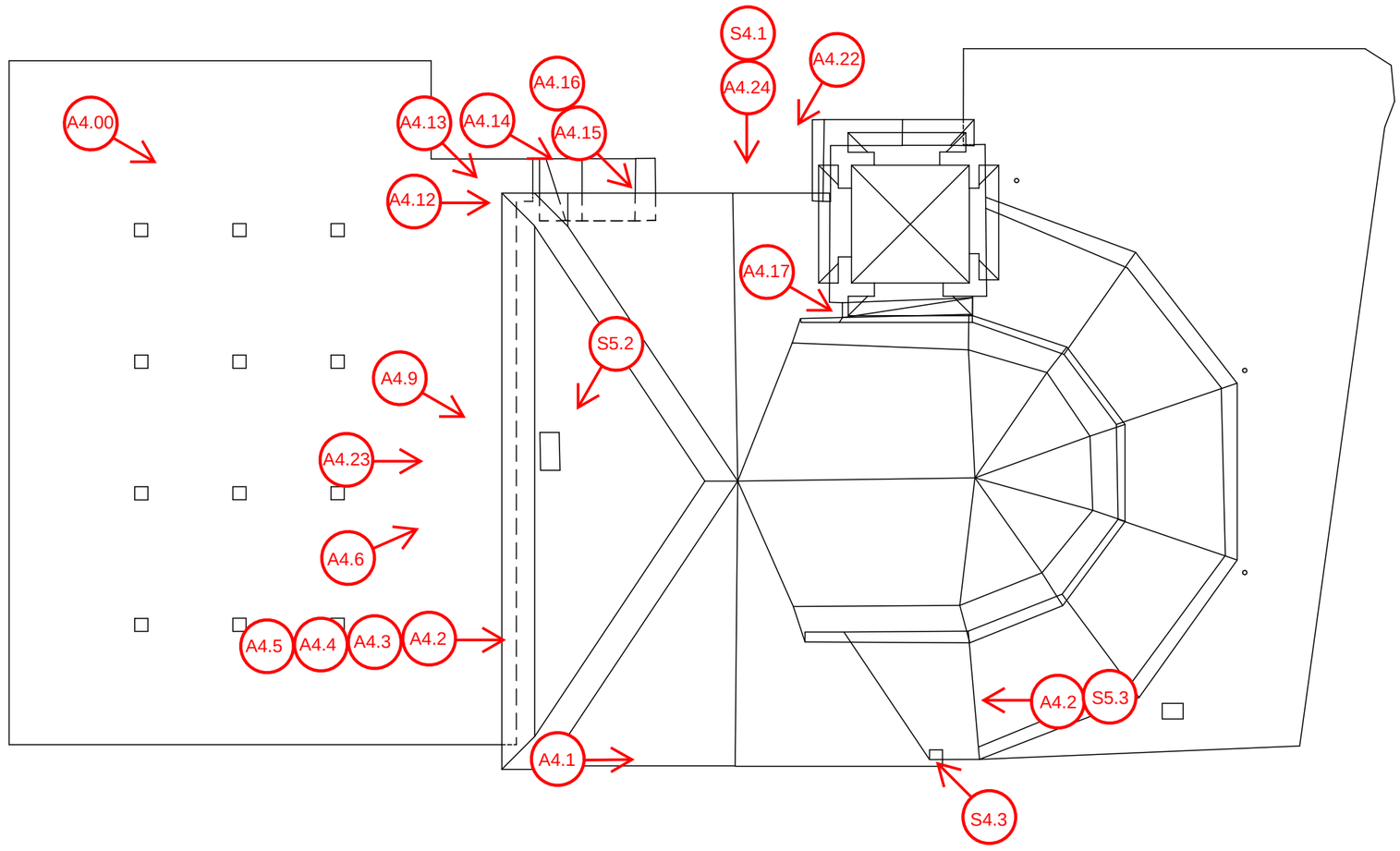
The following are additional items beyond the scope of the project were observed that should be considered and addressed to restore structural integrity.

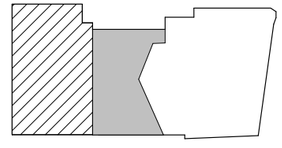
- The lower roof above the southeast entrance has displaced significantly and should be shored, removed or stabilized to prevent it from falling. *(see figure S5.1)*
- Small area of stone embed in chimney is spalling and should be removed to prevent falling debris hazard. *(see figure S5.2)*
- Additional structural stabilization may be required during demolition and removal of roofing and damaged sheathing and support structure. For example, it appears there are severely deteriorated wood rafter embed between brick/masonry wythes at the gable end overhangs. Additional masonry removal or stabilization may be required at these locations. *(see figure S5.3)*
- Extreme caution is required when working on the exiting roof supported by wood roofing. These areas should be considered un-safe areas with no direct access to or working on without adequate personal protective equipment secured to OSHA complaint connection point.

FIGURE S5.1

FIGURE S5.2

FIGURE S5.3





KEY PLAN

03 EXISTING CONDITIONS - ARCHITECTURAL EXTEIOR PHOTO KEY

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ZONE 4 | ROOF INSPECTION REPORT
NOVEMBER 19, 2021

03

SCOPE OF WORK RECOMMENDATIONS

SCOPE OF WORK RECOMMENDATIONS

The (4) roof zones have had extended exposure to the elements resulting in significant aging over time. The holistic replacement of the roof, gutters and associated components should be a priority. Moisture infiltration, corrodes these assemblies as well as the structural members and finishes. The continued structural integrity of any building depends on its roof and drainage system. The current condition of the roof structures are in poor conditions and will further deteriorate without intervention.

In consideration of the existing conditions and what has been visually observed on-site, the design team offers the following recommendations toward the principal objective to replace the roofs in the areas identified to be part of this initial project. The scope of work identified would create weathertight, code-compliant, and warrantable assemblies that would provide overhead protection of the interior spaces of the church below, as well as provide safe and serviceable roof areas.

ZONE 1: FLAT ROOF (SOUTH) RECOMMENDATIONS

Demolition and Removal

- Remove all debris
- Remove and dispose of all cracked, crazed, or broken parapet tiles; salvage all sound tiles for reuse *(see figure A1.8 and A1.10)*
- Remove all existing membrane roofing and flashings, insulation, and underlayment (including metal flashings and mastic at brick piers
- Remove (3) existing roof drain bodies and PVC rain conductors *(see figure A1.6)*
- Remove existing roof hatch and wood curb *(see figure A1.13)*

Roofing, Trim, and Drainage

- Provide 60 mil EDPM (20-year minimum warranty) roofing and flashings over 6-inch-thick average (R-30) polyisocyanurate rigid insulation, over the existing roof deck to remain
  - Insulation to taper and slope to drains
  - Roofing membrane to extend up and over the masonry parapet walls, terminating at the top of wall / under the reset parapet wall caps
- Provide prefinished aluminum termination bar, reglet counterflashing, and sealant at membrane terminations around brick piers *(see figure A1.11)*
- Replace roof hatch in same location as existing on new treated wood curb (36”x30”)
- Provide (3) new roof drains in same location as existing; core larger 3-inch diameter (min.) openings in roof deck to properly accommodate stormwater capacity at drain locations; Provide new, larger 3-inch diameter (min.) PVC rain conductors down through building; Extending across underside of roof slab and vertically 3 stories down and ties into existing storm lines
- Create (2) scuppers openings for secondary overflow drainage through masonry parapet walls, properly flashed
- Clean mortar and mastic from salvaged clay parapet tiles, cap and reset (grouted) over new membrane roofing termination; Provide new tiles to match existing to replace broken pieces.

Structure and Support (refer to structural matrix)

- Due to the poor condition of the parapet wall and the amount of "rolling" and displacement. The recommendation is to rebuild the brick masonry parapet entire length, including removal and resetting of displaced brick masonry belt course along the exterior wall and piers just below the parapet. This work may be beyond the scope of the current project, but is recommended for the durability and warranty of the roofing system is this work is not completed, the serviceable life of any new roofing system will be shortened.

- Rebuild the the deteriorated brick masonry column pier at the northwest corner of the south addition, this includes the entire length from ground to parapet (one location). *(see zone 1 exterior elevations)*

- The damage and deterioration of the parapet walls and piers are a result of deterioration of the steel lintels above 3rd floor windows (inclusive of brick masonry removal, salvage, mortar removal, and resetting to allow lintel replacement). Replacement of the lintels recommended and required to provide a stable structure for any new work or roofing system. The lintels above the 1st and 2nd floor windows are also in poor condition but beyond the scope of this project.

- Repair the damaged and deteriorated roof slab in limited areas, concentrated around the existing roof drains. Inspect roof deck following tear-off of existing roofing. Assume select spall and crack repairs to surface of concrete roof deck (approx. 25% of surface). *(see figure A1.26)*

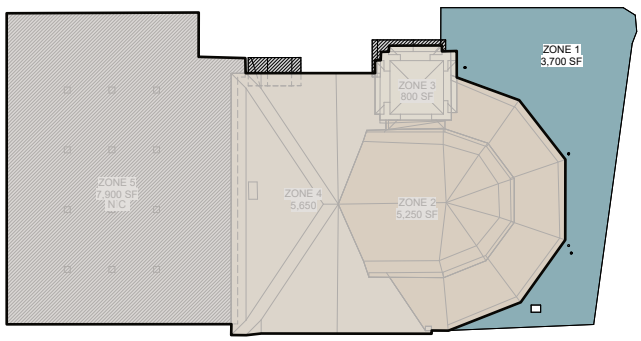
- The roof slab is supported by pre-cast roof joists. Approximately 440lf of repairs are required at the roof slab support joists. *(see figure A1.25)*

    - **ALTERNATE:** Provide temporary shoring down through all floors, that will remain in place until the joist are repaired. Shoring will be required at all areas with deteriorated roof slab or damaged precast joists.

- Two existing joists beams are damaged and deteriorating.

    - **ALTERNATE:** Provide temporary shoring down through all floors, that will remain in place until a the joists are repaired. Shoring will be required along the damaged beam lines (in two locations).

    - **ALTERNATE (All Zones):** Provide copper flashings in lieu of prefinished aluminum



ZONE 1 FLAT ROOF (SOUTH)

SCOPE OF WORK RECOMMENDATIONS - ZONE 1 - EXTERIOR ELEVATION

Figure A1.27 South Elevation

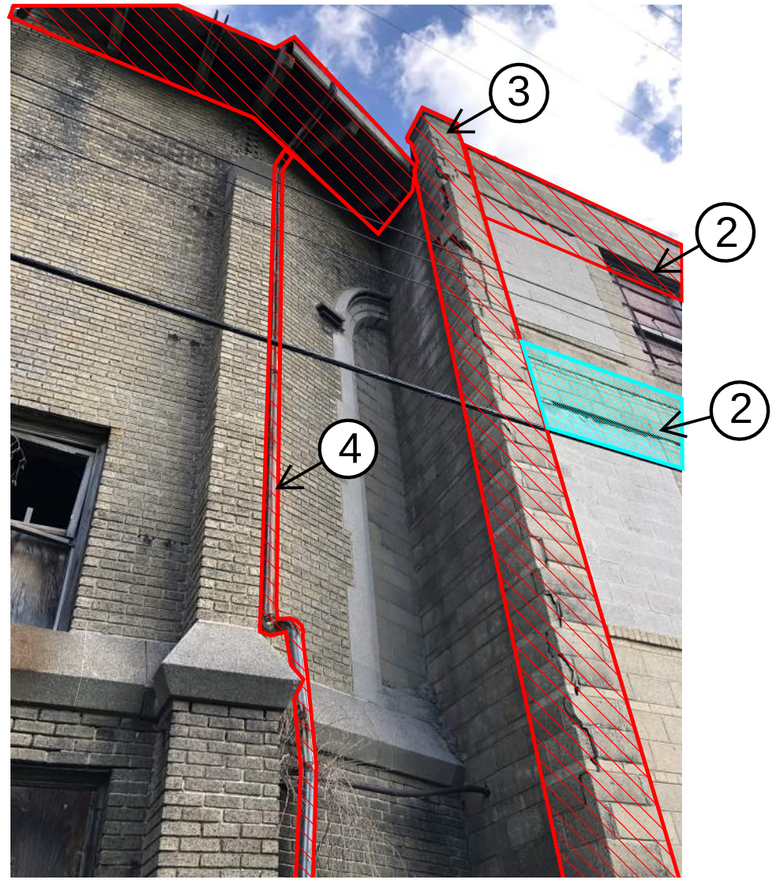
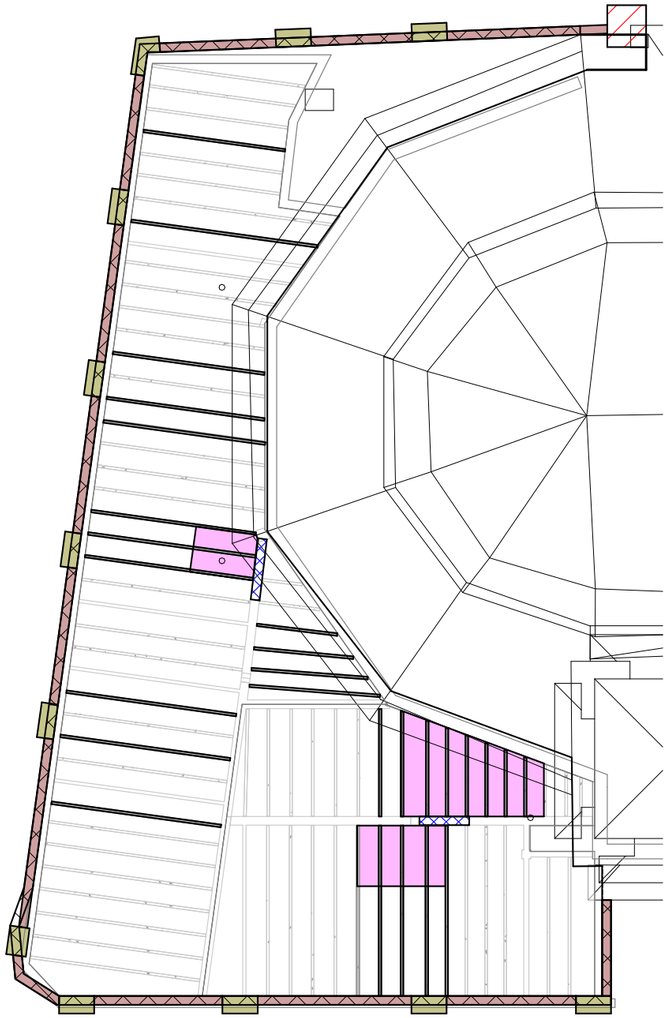


Figure A1.28 West Elevation

1. Rebuild brick masonry parapet, lintels and associated brickwork
2. Rebuild lintels and associated brickwork (typical at the openings on the 1st and 2nd floor)
3. Rebuild brick masonry column pier (west elevation)
4. Rebuild eave and reconnect gutter to divert rainwater off of the flat roof

Requires immediate intervention

To be completed in a future phase



STRUCTURAL ITEMS REQUIRED FOR ROOFING INTEGRITY AND SAFETY

HATCH AREA	DESCRIPTION	UNITS	COMMENT
	DETERIORATED AND DAMAGED 2" TO 3" THICK CONCRETE ROOF SLAB. AFTER REMOVING ROOF, HAMMER SOUND CONCRETE. CHIP AWAY DETERIORATED CONCRETE ADD 6X6W2XW2 WWF. APPLY CEMENTITIOUS BONDING AGENT. OVERLAY WITH CONCRETE PATCH.	280SF	REPAIR REQUIRED TO PROVIDE STRUCTURALLY SOUND SUPPORT FOR ROOFING.
	DAMAGED AND DETERIORATED PRECAST ROOF SUPPORT JOISTS. HAMMER SOUND CONCRETE. CHIP AND REMOVE DAMAGED AND DETERIORATED CONCRETE. CLEAN CORRODED STEEL. ADD (2)#5 HORIZONTAL BARS IF BOTTOM BARS ARE CORRODED MORE THAN 10%. DOWEL SHEAR BARS AS REQUIRED. APPLY TROWEL APPLIED CONCRETE PATCH OR SHOTCRETE TO PROVIDE MIN 1" COVER TO EXISTING AND NEW REBAR.	440LF	STRUCTURAL INTEGRITY OF JOISTS HAVE BEEN COMPROMISED. CURRENT STRUCTURAL LOAD CAPACITY OF JOIST CANNOT BE DETERMINED IN CURRENT CONDITION. REQUIRED TO SAFELY HAVE CONSTRUCTION ACTIVITY ON ROOF.
	DAMAGED AND DETERIORATED CONCRETE BEAM. REMOVE ANY LOOSE CONCRETE AND CONFIRM CONDITION OF ENCASED STEEL BEAM.	440LF	CONFIRM STRUCTURAL STEEL FRAMING. IF STEEL FRAMING IS PRESENT NO ADDITIONAL WORK IS REQUIRED OTHER THAN REMOVING FALL HAZARDS.

STRUCTURAL ITEMS REQUIRED FOR ROOFING DURABILITY

HATCH AREA	DESCRIPTION	UNITS	COMMENT
	EXISTING STEEL LINTELS OVER 3RD FLOOR WINDOW OPENINGS ARE SEVERELY CORRODED AND BEYOND REPAIR, RESULTING IN SEVERE ROLLING AND DAMAGE TO PARAPET WALLS. SHORE EXISTING ROOF STRUCTURE. REMOVE AND REPLACE STEEL LINTELS AND PARAPET WALL. INSTALL NEW GALVANIZED STEEL LINTELS AND RE-CONSTRUCT PARAPET WALLS.	180LF 30 WINDOW OPENINGS	ROOFING WILL NOT BE DURABLE IF PARAPET WALL CONTINUES TO DETERIORATE AND MOVE. HIGH RISK OF FALLING DEBRIS TO PEDESTRIANS AND PROPERTY IN STREET.
	CORRODED STEEL LINTELS HAVE RESULTED IN SEVERE DAMAGE TO MASONRY PIERS COVERING STEEL BUILDING COLUMNS. REMOVE DAMAGED MASONRY, REPAIR EMBEDDED STEEL COLUMNS AND CONNECTION. RE-CONSTRUCT MASONRY PIERS	13	HIGH RISK OF FALLING DEBRIS. AT MINIMUM LOOSE AND UNSTABLE MASONRY TO BE REMOVED FROM PIERS TO REDUCE RISK.
	RECONSTRUCT MASONRY PIER FULL HEIGHT	1	

DAMAGED AND DETERIORATED CONCRETE BEAM

DAMAGED AND DETERIORATED PRECAST JOIST AND CONCRETE SLAB

SPALLING BRICK AND ROLLED PARAPET WALL DUE TO CORRODED STEEL LINTEL.

DAMAGED AND DETERIORATED PARAPET WALL AND MASONRY PIER DUE TO EMBEDDED CORRODING STEEL.

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ROOF PLAN - ZONE 1

ROOF INSPECTION REPORT
NOVEMBER 19, 2021

ZONE 2: HEPTAGON ASPHALT ROOF (UPPER AND LOWER) RECOMMENDATIONS

Demolition and Removal

- Remove all existing asphalt shingles and underlayment (protect upper tier windows and vertical metal paneling to remain) *(see figure A2.11)*
- Remove membrane valley flashings and all mastics from base of Bell Tower masonry *(see figure A2.6)*
- Inspect wood roof deck after tear-off of existing roofing and remove all deteriorated decking, as well as remove all decking extending beyond perimeter building wall, creating overhangs at eave of both tiers
- Remove wood fascia and frieze board trim around eaves of both tiers *(see figure A2.7)*
- Remove wood outriggers and rafter tails around eave overhang of both tiers *(see A2.13)*
- Remove plaster ceilings below this roof area to provide access for structural repairs to framing *(see figure A2.14)*

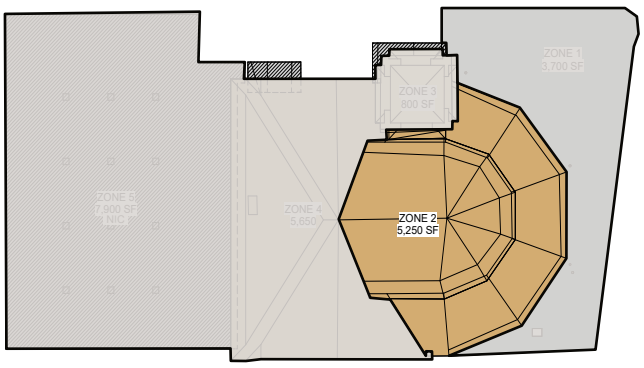
Roofing, Trim, and Drainage

- Infill roof deck where removed, with exterior grade plywood, thickness to match existing sound decking to remain (verify in field)
  - Replace roof decking only to edge of masonry building wall (restoration and reinstallation of eave outriggers and decorative rafter tails to occur in future project)
  - Wood deck replacement
- Provide architectural grade asphalt shingles over underlayment, over repaired wood roof deck and sheathing
- Provide all new wood fascia, soffit, and frieze board and trim, primed and painted along eave of both tiers
- Provide prefinished aluminum valley and wall termination flashings around base of Bell Tower
- Provide prefinished aluminum drip edge along the eaves of both tiers, and head flashings where the upper tier meets the vertical walls supporting the upper tier roof
- Provide gutter and downspout at junction of Zone 1, 2, 4 roofs to outlet onto Zone 1 flat roof

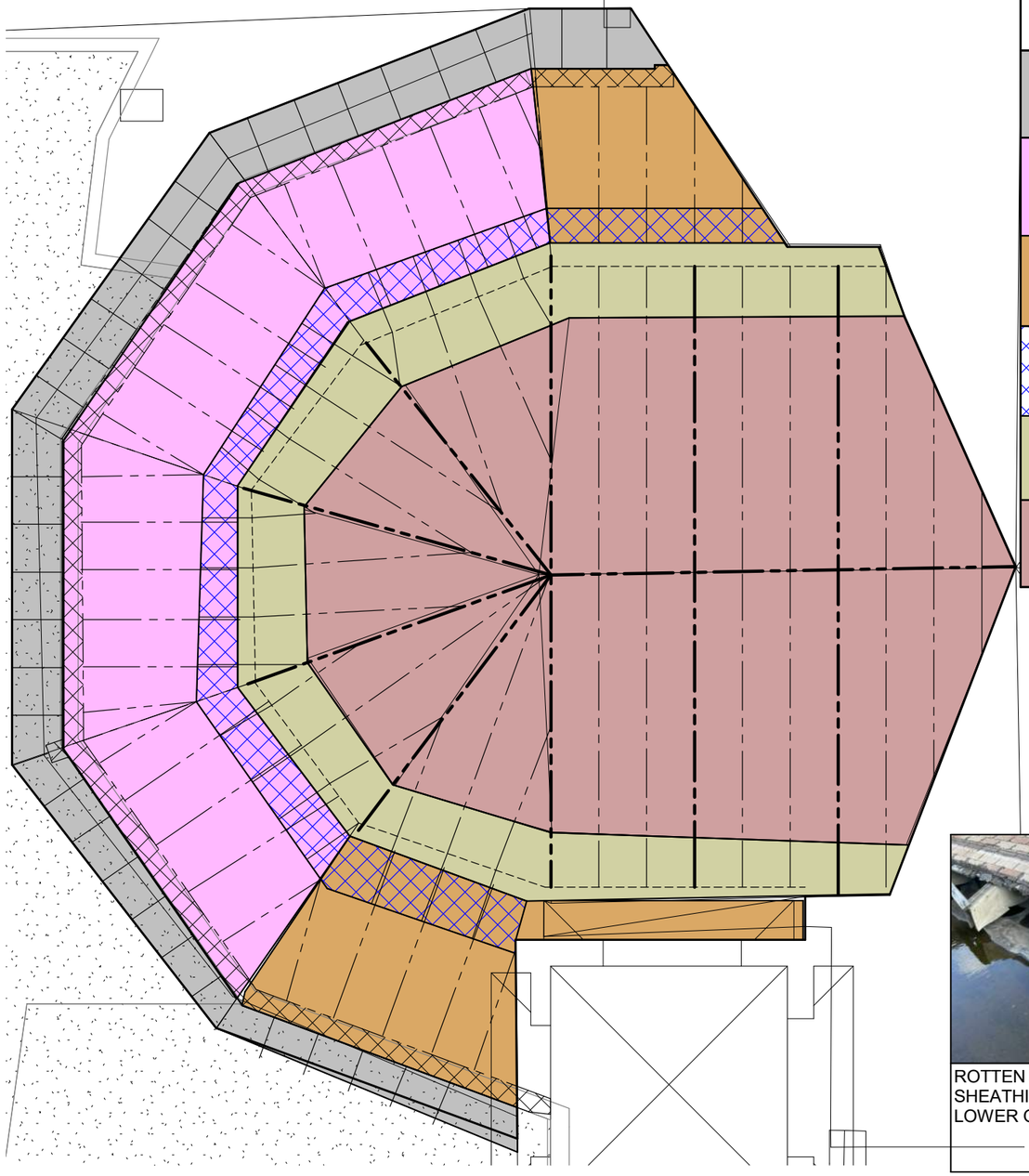
Structure and Support (refer to structural matrix)

- Provide allowance to reset any displaced masonry and repoint open joints within the brick wall directly under the eaves of the lower tier
- Remove lower overhang and brackets *(see figure A2.13)*
- Two area of the lower roof beyond the overhang are damaged beyond repair and will need to be replaced. Refer to structural details for sheathing, purlin and rafter sizes and details. *(see figure A2.4 and A2.7)*
- After the removal of the roofing on the remaining lower roof area, there will be areas of sheathing that need to be replaced as well as the support rafters that have deteriorated or maybe damaged.
- Remove damaged deteriorated brackets and sheathing on the upper flared overhang.
- Replace deteriorated sheathing and repair damaged rafters on the upper roof area

***ALTERNATE (All Zones):** Provide copper flashings in lieu of prefinished aluminum



ZONE 2 HEPTAGONAL ROOF



STRUCTURAL ITEMS REQUIRED FOR ROOFING INTEGRITY AND SAFETY

HATCH AREA	DESCRIPTION	UNITS	COMMENT
	EXISTING ROOF FLARED OVERHANG WITH DECORATIVE WOOD BRACKETS CANTILEVERING OUT FROM BEARING WALL. REMOVE ROOF SHEATHING AND BRACKETS. MEASURE AND PRESERVE BRACKET GEOMETRY AND DETAIL FOR FUTURE REPLICATION.	550SF	OVERHANG NOT REQUIRED FOR ROOF ENCLOSURE.
	SLOPING LOWER ROOF AREA APPEARS IN MODERATE TO POOR CONDITION. ASSUME 30% OF SHEATHING AND 15% OF SUPPORT RAFTERS NEED TO BE REPLACED OR REINFORCED.	SHEATHING: 350SF RAFTERS: 65LF	EXTREME CARE NEEDED DURING CONSTRUCTION. REMOVAL OF ROOFING NEEDS TO BE CARRIED OUT FROM SAFE PLATFORM OR LIFT.
	SLOPING LOWER ROOF AREA IN VERY POOR CONDITION. ASSUME REPLACEMENT OF 100% OF SHEATHING AND 30% REPLACEMENT OR REINFORCING OF SUPPORT RAFTERS.	SHEATHING: 600SF RAFTERS: 50LF	EXTREME CARE NEEDED DURING CONSTRUCTION. REMOVAL OF ROOFING NEEDS TO BE CARRIED OUT FROM SAFE PLATFORM OR LIFT.
	UPPER ROOF FLARED OVERHANG APPEARS IN MODERATE CONDITION. ASSUME REMOVAL OF 15% OF TOTAL AREA ON WEST SIDE.	REMOVE: 50SF	EXTREME CARE NEEDED DURING CONSTRUCTION. REMOVAL OF ROOFING NEEDS TO BE CARRIED OUT FROM SAFE PLATFORM OR LIFT.
	UPPER ROOF FLARED ROOF AREA APPEARS IN MODERATE CONDITION. ASSUME 20% OF SHEATHING AND 10% OF SUPPORT RAFTERS NEED TO BE REPLACED OR REINFORCED.	SHEATHING: 130SF RAFTERS: 30LF	EXTREME CARE NEEDED DURING CONSTRUCTION. REMOVAL OF ROOFING NEEDS TO BE CARRIED OUT FROM SAFE PLATFORM OR LIFT.
	UPPER ROOF AREA APPEARS IN MODERATE CONDITION. ASSUME 15% OF SHEATHING AND 10% OF SUPPORT RAFTERS NEED TO BE REPLACED OR REINFORCED.	SHEATHING: 300SF RAFTERS: 80LF	EXTREME CARE NEEDED DURING CONSTRUCTION. REMOVAL OF ROOFING NEEDS TO BE CARRIED OUT FROM SAFE PLATFORM OR LIFT.

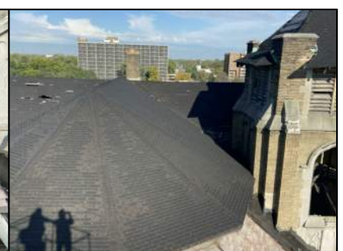
NOTES:

1. REPLACE EXISTING TONGUE AND GROOVE ROOF SHEATHING WITH 3/4" EXTERIOR RATED PLYWOOD SPANNING TO 2X6@16" OC. 2X6 SPANNING TO RAFTERS AT APPROXIMATELY 4'-0" OC.
2. REPLACE BADLY DAMAGED RAFTERS SPANNING UP TO 16 FT WITH (3)2X12.
3. REINFORCED MODERATELY DAMAGED RAFTERS WITH (2)2X12.

ROTTEN AND DAMAGED SHEATHING AT BRACKETS AT LOWER OVERHANG

ROTTEN AND DAMAGED SHEATHING AND BRACKETS AT LOWER AND UPPER OVERHANGS

LOWER SLOPING ROOF AREA IN POOR CONDITION WITH DAMAGED SHEATHING AND SUPPORT RAFTERS



UPPER SLOPING ROOF AND OVERHANG IN MODERATE CONDITION

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ROOF PLAN - ZONE 2

ROOF INSPECTION REPORT
NOVEMBER 19, 2021

ZONE 3: BELL TOWER ROOF

Demolition and Removal

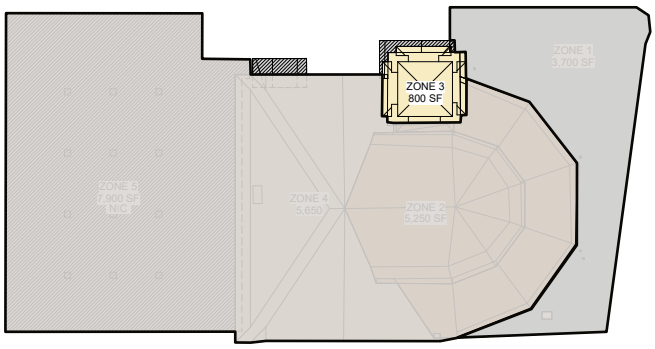
- Remove existing asphalt roofing, metal flashings, wood roof decking, and wood-framed structure *(see figure A3.7)*
- Remove wood outriggers and decorative rafter tails along eave overhangs *(see figure A3.4, A3.6, A3.9)*
- Remove copper downspouts
- Provide allowance to remove all loose or detached brick masonry and stone caps in upper section of tower walls and piers *(see figure A3.11)*

Roofing, Trim, and Drainage

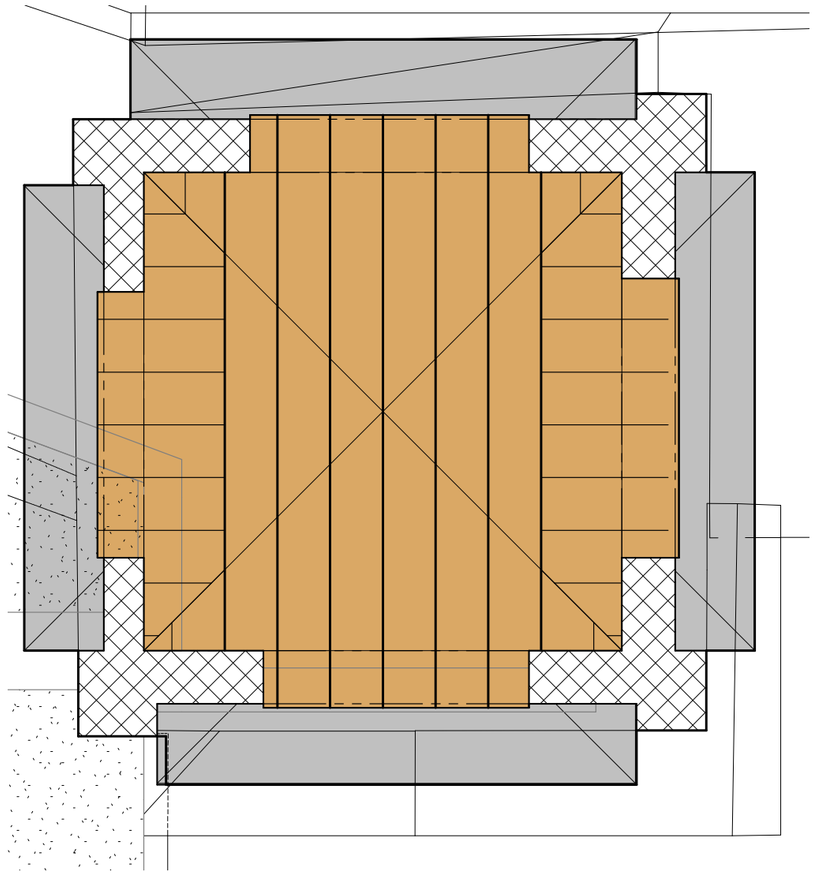
- Provide architectural grade asphalt shingles over underlayment over new exterior grade plywood sheathing roof, over new wood truss framing as noted below.
- Provide roof decking only to edge of masonry building walls (restoration and reinstallation of eave outriggers and decorative rafter tails to occur in future project) – refer to structural for quantity
    - **ALTERNATE:** Extend new roof decking to recreate extended overhang to match existing, provide new outriggers as part of roof trusses and cover with replicated wood decorative rafter tail brackets along eaves
- Provide wood framed and flashed crickets behind four corner piers
- Provide all new wood fascia, soffit, and frieze board and trim, primed and painted along eaves
- Provide prefinished aluminum metal flashing and trim, including drip edge
- Provide new prefinished aluminum gutters and downspouts

Structure and Support (refer to structural matrix)

- Rebuild the pyramid hip roof with new prefabricated trusses supporting plywood sheathing and anchored into the masonry tower walls. All wood bearing on masonry to be preservative treated.
- Provide allowance for resetting displaced brick masonry or stone caps, and repointing open joints in upper section of tower walls and piers
- Provide simple precast stone caps at top of brick masonry piers exposed with removal of loose or deteriorated caps
    - **ALTERNATE (All Zones):** Provide copper flashings in lieu of prefinished aluminum



ZONE 3 BELL TOWER ROOF

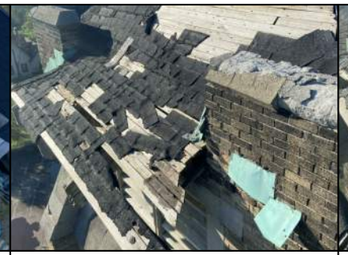


STRUCTURAL ITEMS REQUIRED FOR ROOFING INTEGRITY AND SAFETY

HATCH AREA	DESCRIPTION	UNITS	COMMENT
	FUTURE DECORATIVE BRACKETS AND ROOF OVERHANG. NOT IN CURRENT SCOPE.	240SF	
	REMOVE EXISTING ROOF FRAMING. REPLACE WITH RE-ENGINEERED WOOD TRUSSES AT 2'-0" OC WITH 3/4" SHEATHING. REFER TO ARCHITECTURAL FOR ROOFING DETAILS AND INFORMATION.	500SF	
	MASONRY AND STONE REQUIRES STABILIZATION TO REMOVE POTENTIAL FALLING DEBRIS (4 CORNERS)		ASSUME 3 DAYS OF WORK FOR MASONRY RESTORATION CONTRACTOR TO REMOVE LOOSE MATERIALS

ROTTEN AND DAMAGED SHEATHING, BRACKETS AND RAFTERS

DETERIORATING MASONRY COPING. REMOVE LOOSE AND DAMAGED MATERIAL. FALLING DEBRIS HAZARD.



ROOF STRUCTURE BEYOND REPAIR.

MASONRY JOINTS REQUIRED RE-POINTING AND REPAIRS TO RESTORE FACADE. (FUTURE WORK)

QUINN EVANS

RESURGET ENGINEERING
4219 WOODWARD AVE SUITE 306
DETROIT, MI 48201
www.resurget.engineering

KING SOLOMON BAPTIST CHRUCH

ROOF PLAN - ZONE 3

ROOF INSPECTION REPORT
NOVEMBER 19, 2021

ZONE 4: CENTRAL GABLE ROOF

Demolition and Removal

- Remove all existing asphalt shingles and underlayment *(see figure A4.00)*
- Remove all metal flashings around base of the chimney
- Inspect the wood roof deck after tear-off of the existing roofing and remove all deteriorated decking
- Remove the metal gutter along the eaves, existing wood fascia board, frieze board and trim, and decorative wood rafter tails to remain *(see figure A4.5)*
- Remove existing metal downspouts
- At east rake edge (front façade): Remove and salvage for reinstallation (4) 4' x 8' decorative wood support bracket enclosures around deteriorated wood structural outriggers along rake edge (see structural scope below). Existing wood fascia and soffit boards/trim to remain in place along 4-foot deep rake edge overhang – provide temporary shoring/support during replacement of outriggers. *(see figure A4.22)*
- At west rake edge (back façade): Remove all roof decking extending beyond perimeter building wall, creating existing deep rake edge overhang. Remove, salvage, pack for storage existing structural outriggers and (6) 4' x 8' decorative support brackets for future project reuse.
- Remove membrane valley flashings, prefinished flashings, and all mastics from base of Bell Tower masonry
- Provide allowance for removal of sections of plaster ceilings below this roof area to provide access for structural repairs to framing, identified below

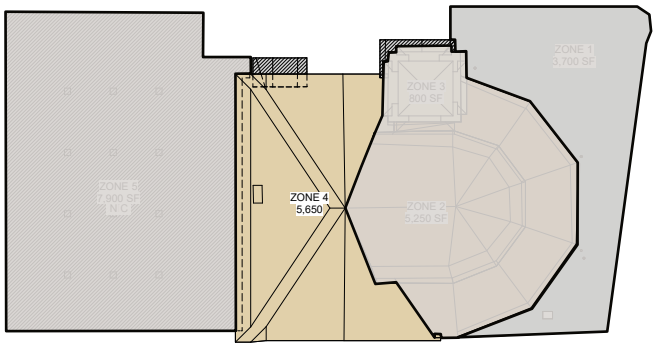
Roofing, Trim, and Drainage

- Provide architectural grade asphalt shingles over underlayment, over wood roof deck and sheathing
- Infill roof deck where removed, with exterior grade plywood, thickness to match existing sound decking to remain (verify in field)
- Resecure wood fascia board along (north and south) eaves; clean, prep, prime and repaint fascia, underside of soffit, frieze boards and trim
- Provide new prefinished aluminum gutters along (north and south) eaves. Provide downspouts to outlet to roof surfaces below
- At east rake edge (front façade): Reinstall (4) 4' x 8' decorative wood support bracket enclosures around new structural outriggers (see structural below); consolidate, prep, prime, and repaint all sides of wood fascia, underside of soffit along rake edges, and brackets; replace select deteriorated or missing pieces to match existing; prep, prime and repaint all wood components
- At west rake edge (back façade): Extend new sheathing to create shorter rake edge with new wood fascia board, primed and painted
    - **ALTERNATE:** In lieu of demo of decorative wood brackets and cutting back deep rake edge overhang, salvage for reuse (6) 4' x 8' decorative support brackets around replaced structural outriggers, and repair, prep and prime existing wood fascia and soffit trim to remain (similar to east façade rake edge)

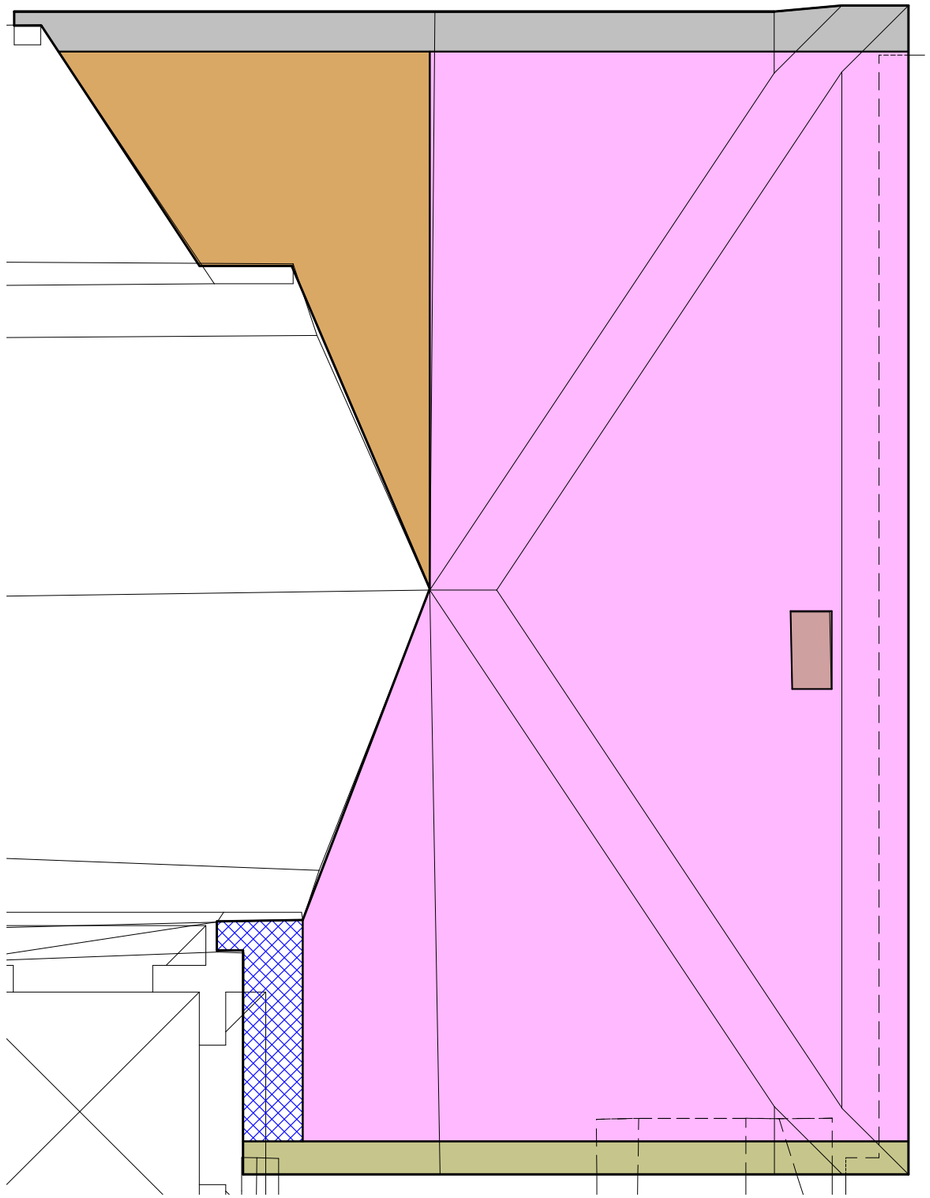
Structure and Support (refer to structural matrix)

- Replace (4) wood outriggers on east façade supporting overhang along rake edge. Replace deteriorated sheathing, bracket framing fascia assembly and trim. Provide temporary shoring as required to continue to support existing rake overhangs to remain. *(see figure A4.22)*
    - **ALTERNATE:** Replace (6) additional outriggers supporting west rake edge
- Large zone of damaged roof sheathing and potentially damaged rafters in southwest roof area. Replace all sheathing and replace or sister damaged rafters
- Remove and replace saddle framing between sloping roof area and bell tower
- After removal or remain roofing, inspect sheathing over entire roof and replace damaged and deteriorated areas
- Removed spalled and damaged masonry from chimney

    - **ALTERNATE (All Zones):** Provide copper flashings in lieu of prefinished aluminum



ZONE 4 CENTRAL GABLE ROOF



STRUCTURAL ITEMS REQUIRED FOR ROOFING INTEGRITY AND SAFETY

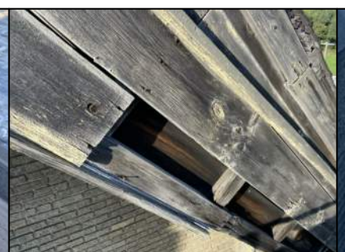
HATCH AREA	DESCRIPTION	UNITS	COMMENT
	EXISTING ROOF OVERHANG WITH DECORATIVE WOOD BRACKETS CANTILEVERING OUT FROM WALL. REMOVE ROOF SHEATHING AND BRACKETS. MEASURE AND PRESERVE BRACKET GEOMETRY AND DETAIL FOR FUTURE REPLICATION.	REMOVE: 280SF	OVERHANG NOT REQUIRED FOR ROOF ENCLOSURE.
	SLOPING LOWER ROOF AREA APPEARS IN MODERATE TO POOR CONDITION. ASSUME 15% OF SHEATHING AND 10% OF SUPPORT RAFTERS NEED TO BE REPLACED OR REINFORCED.	SHEATHING: 600SF RAFTERS: 80LF	EXTREME CARE NEEDED DURING CONSTRUCTION. REMOVAL OF ROOFING NEEDS TO BE CARRIED OUT FROM SAFE PLATFORM OR LIFT.
	SLOPING LOWER ROOF AREA IN VERY POOR CONDITION. ASSUME REPLACEMENT OF 100% OF SHEATHING AND 30% REPLACEMENT OR REINFORCING OF SUPPORT RAFTERS.	SHEATHING: 600SF RAFTERS: 50LF	EXTREME CARE NEEDED DURING CONSTRUCTION. REMOVAL OF ROOFING NEEDS TO BE CARRIED OUT FROM SAFE PLATFORM OR LIFT.
	ROOF SHEATHING IN VALLEY IN VERY POOR CONDITION REPLACE 100% OF SHEATHING AND 50% OF SUPPORT RAFTERS.	SHEATHING: 100SF RAFTERS: 20LF	EXTREME CARE NEEDED DURING CONSTRUCTION. REMOVAL OF ROOFING NEEDS TO BE CARRIED OUT FROM SAFE PLATFORM OR LIFT.
	EXISTING ROOF OVERHANG WITH DECORATIVE WOOD BRACKETS CANTILEVERING OUT FROM WALL. REPAIR IN PLACE. MEASURE AND PRESERVE BRACKET GEOMETRY AND DETAIL FOR FUTURE REPLICATION.	REPAIR : 250SF	EXTREME CARE NEEDED DURING CONSTRUCTION. REMOVAL OF ROOFING NEEDS TO BE CARRIED OUT FROM SAFE PLATFORM OR LIFT.
	REMOVE LOOSE AND SPALLING MASONRY FROM CHIMNEY		ALLOW ONE DAY OF MASONRY CONTRACTOR WORKING FROM LIFT

NOTES:

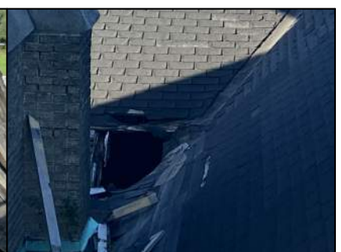
1. REPLACE EXISTING TONGUE AND GROOVE ROOF SHEATHING WITH 3/4" EXTERIOR RATED PLYWOOD SPANNING TO 2X6@16" OC. 2X6 SPANNING TO RAFTERS AT APPROXIMATELY 4'-0" OC.
2. REPLACE BADLY DAMAGED RAFTERS SPANNING UP TO 16 FT WITH (3)2X12.
3. REINFORCED MODERATELY DAMAGED RAFTERS WITH (2)2X12.

ROTTEN AND DAMAGED SHEATHING, BRACKETS AND RAFTERS

NORTH EAST SIDE OF MAIN ROOF APPEARS IN MODERATE CONDITION



ROOF OVERHANG FRAMING IN POOR TO VERY POOR CONDITION. BRACKET SUPPORT MEMBERS ROTTEN



HOLE IN ROOF AT INTERSECTION OF ROOFS

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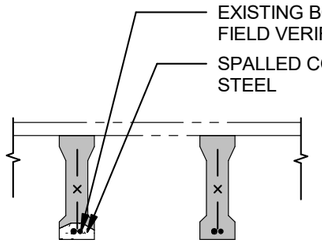
ROOF PLAN - ZONE 4

ROOF INSPECTION REPORT
NOVEMBER 19, 2021

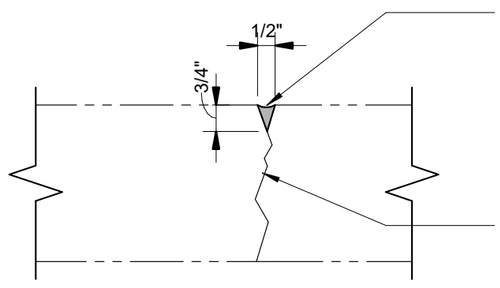


NOTES:

1. REMOVE EXISTING SPALLED/LOOSE OR DETERIORATED CONCRETE IN REPAIR AREA.
2. EXPOSED REINFORCING BARS CLEANED TO NEAR WHITE METAL.
3. INSTALL SHEAR DOWELS AND SUPPLEMENTAL REINFORCING AS DETAILED.
4. APPLY BONDING AGENT, SIKA ARMATEC 110 EPOCEM OR DURALPREP A.C. BEFORE APPLYING PATCH MORTAR.
5. REPAIR MATERIAL SIKATOP 111 PLUS (FORM & POUR) OR SIKATOP 123 PLUS/DURALTOP GEL (HAND APPLIED) OR EQUAL APPROVED.

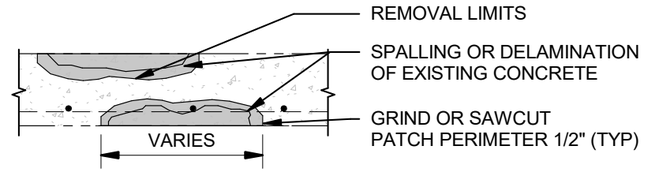
4 CONCRETE JOIST REPAIR DETAIL

SCALE: 3/4" = 1'-0"



3 SLAB CRACK >1/32" REPAIR

SCALE: 3" = 1'-0"

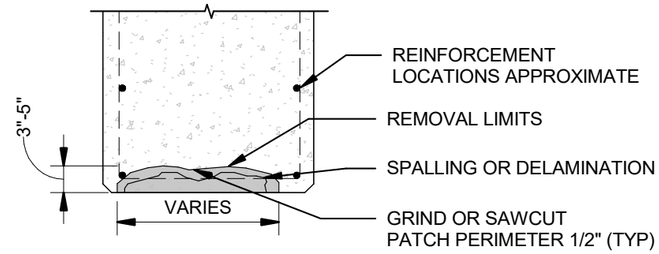


NOTES:

1. Sawcut or grind 1/2" reveal around perimeter of repair area.
2. Chip and remove all damaged, spalling and delaminated concrete.
3. Expose and clean all corroding reinforcing.
4. Apply bonding agent to steel and concrete before placing mortar patch.
5. Bonding Agents. Comply with the following minimum parameters:
   - A. Flexural Strength at 28days: 1,400psi
   - B. Splitting Tensile Strength at 28days: 500psi
   - C. Slant Shear Strength at 28days: 600psi
   - D. Pull-Out Resistance, adhesion to mechanically prepared concrete: 350psi
   - E. Products:
     - SikaArmatec 1C
     - SikaArmatec 110 EpoCem
6. Trowel apply mortar patch to match elevation of original concrete.
7. Trowel Applied Mortar. Comply with the following minimum parameters:
   - A. Compressive Strength (ASTM C109) at 7 days: 4,000psi
   - B. Flexural Strength at 28days >1,400psi
   - C. Tensile Bond Strength at 28days: 290psi
   - D. Slant Shear Strength at 28days: 1,500psi
   - E. Volume change less than -0.15%
   - F. Products:
     - Plantop XS
     - SikaTop 122 Plus
     - SikaDuratop Gel
8. If loss of steel section exceeds 10% add and lap new rebar matching the diameter of damaged bar

2 CONCRETE SLAB REPAIR

SCALE: 3/4" = 1'-0"



NOTES:

1. CLEAN AND APPLY CORROSION INHIBITING PRIMER/BONDING AGENT TO ALL EXPOSED REINFORCEMENT.
2. PROVIDE 3/4" CLEARANCE AROUND ALL EXPOSED REINFORCEMENT.
3. NUMBER AND LOCATION OF REINFORCEMENT SHOWN MAY DIFFER FROM ACTUAL FIELD CONDITIONS.

1 CONCRETE BEAM REPAIR

SCALE: 3/4" = 1'-0"

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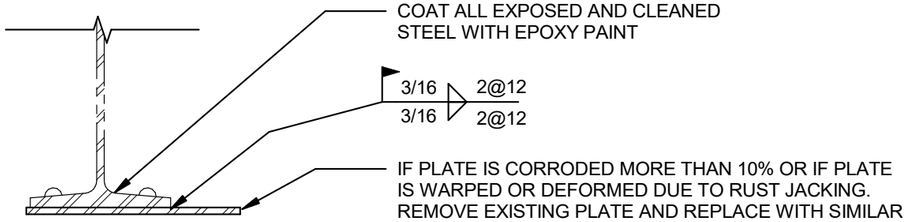
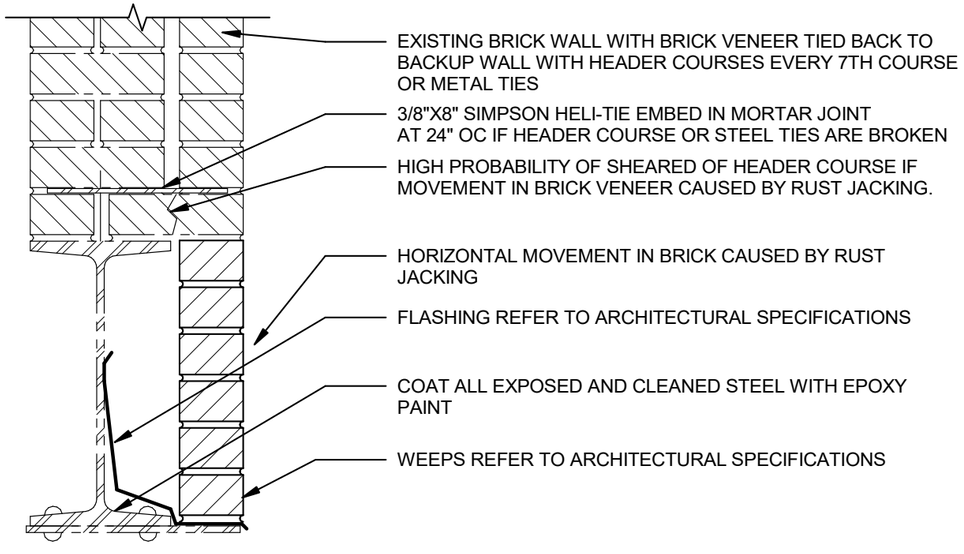
SECTIONS AND DETAILS | ROOF INSPECTION REPORT
NOVEMBER 19, 2021



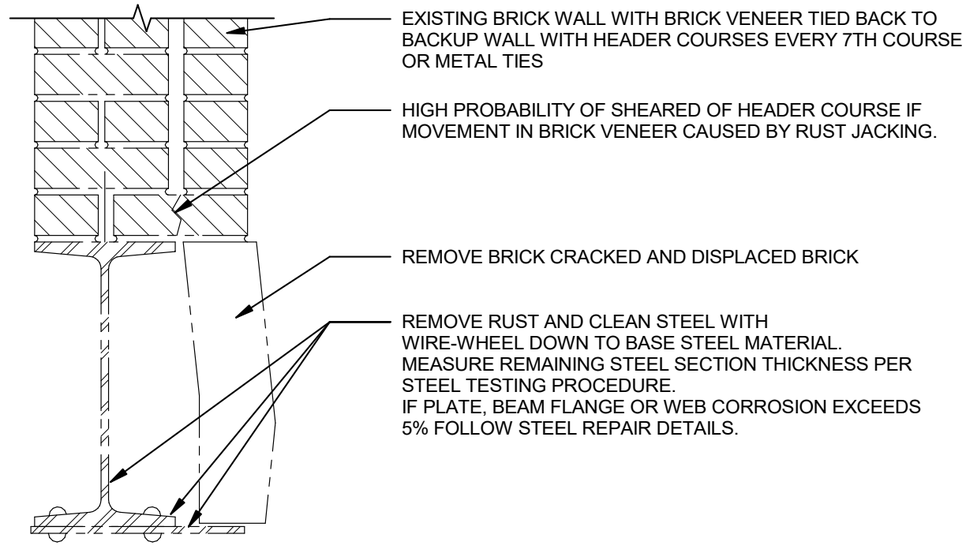
4 STEEL LINTEL PLATE REPLACEMENT

SCALE: 1 1/2" = 1'-0"



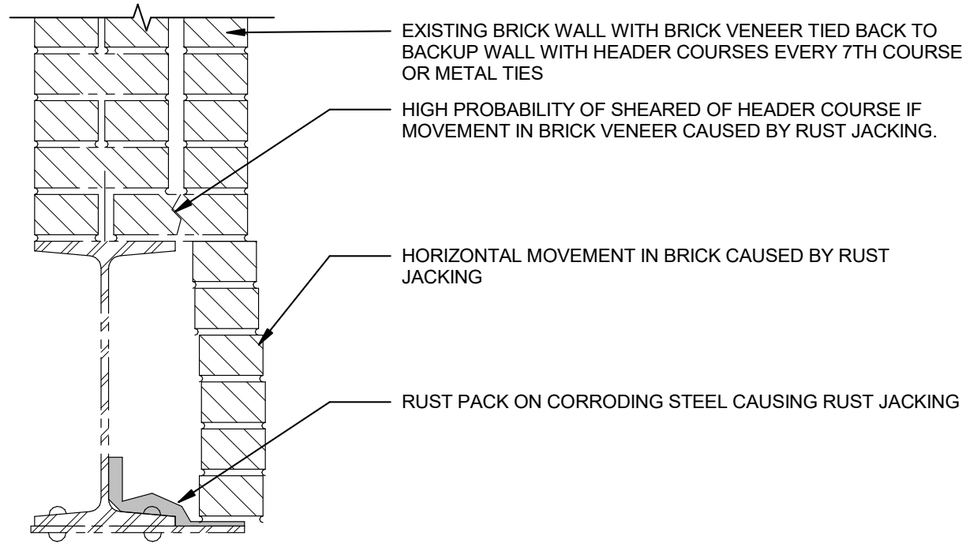
3 STEEL LINTEL REPAIR (STEP 2)

SCALE: 1 1/2" = 1'-0"



2 STEEL LINTEL REPAIR (STEP 1)

SCALE: 1 1/2" = 1'-0"



1 CORROSION AT EXISTING STEEL LINTEL

SCALE: 1 1/2" = 1'-0"

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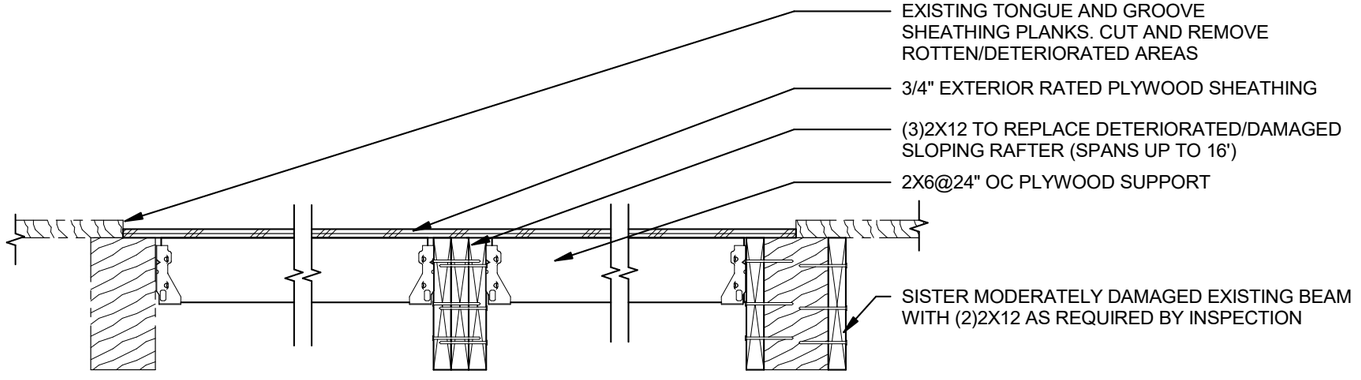

1

WOOD REPAIR DETAIL

SCALE: 1" = 1'-0"

ASSOCIATED WORK RECOMMENDATIONS - ADD ALTERNATIVES

The following scope recommendations are not required to provide a permanent, safe, and compliant roof in the four zones requested be a part of the inspection, but are items that will either impact the the longevity of the new roofs, or would be efficient to address at the same time as the base scope. The following items have been included in the Cost Estimate as add alternates:

- Televise, scope, and clear existing storm drain lines serving Zone 1 Flat Roof ((3) x 3 stories in length)
- Board up open windows to curb weather infiltration and continued deterioration of the interior (approx. 450 SF)
- Provide bird screening behind wood louvers in Bell Tower (approx. 425 SF)
- Remove collapsing gabled roof over main sanctuary entry vestibule at the base of the Bell Tower; provide temporary shed roof over vestibule with wood joists, plywood sheathing, underlayment, asphalt shingles, treated wood edge and prefinished aluminum drip edge flashing. Approx. 25' wide x 12' deep x 25' tall
- Close up open end of valley/cricket flashing at north end of north entry vestibule roof into main sanctuary (east façade) with secured treated wood framing and prefinished metal flashing (assume 4 SF)
- Prep and repaint vertical metal paneling and window trim between upper and lower tiers of Zone 2 Heptagon Roof (150 SF)
- Demo (including vegetative growth) existing masonry block rooftop stair enclosure, and wood frame and door. Rebuild new enclosure out of CMU, including a new hollow metal door and frame - approx. 160 SF of walls. Cut back existing membrane roofing and reflash with new membrane roofing and termination bar/ sealant at base of replaced enclosure.

ASSUMPTIONS AND ADDITIONAL INVESTIGATIONS

The following assumptions regarding the limits of scope and construction informed, and are reflected by, the Cost Estimate provided:

- Construction period of 6-months (August 2022 – January 2023)
- Testing for hazardous materials will occur prior to any work being performed. Any hazardous materials found to be present related and disturbed by the scope of work will be abated prior to commencement of work.
- Debris and FFE will be removed by Owner from interior spaces in any locations where contractors need to access or perform work.
- Due to the deteriorated condition of sloped roof decks, access to perform removal and some new work will require use of lifts and scaffolding from the ground. Access is further limited along the west façade and roof edges due to proximity of power lines.
- Electrical service is on and available for contractor use. Gas service is turned off and no water service is available for contractor use.
- Contractor will provide temporary weathertight enclosures where exterior masonry wall cavities or roofs are opened up during work.
- Insulation will be added to the interior attic space below the sloped roof decks in the future and is not part of this project.
- Additional attic ventilation may be required in the future related to both the Zone 2 Heptagonal Roof and Zone 4 Central Gable Roof once interior ceiling finishes are restored (re-enclosing attic cavities). Ventilation calculations will need to be performed to determine how much additional ventilation will be required beyond the existing gable end louvers for the Zone 4 Central Gable Roof. Construction period of 6-months (August 2022 – January 2023)

04

COST ESTIMATE

COST ESTIMATE SUMMARY

The following conceptual estimate is organized by roof zone, providing a Total Direct Cost of Construction for each zone, in representation of the Scope of Work Recommendations provided within this report.

Contingencies, escalation, indirect and other project costs are applied to the (collective) Total Project Direct Cost of all zones, in result of a Total Project Cost. Such mark-ups, defined as percentages of the Total Direct Cost, will scale down as scope of work is pared down to align with the project budget, defined by this phase of grant funding.

November 19, 2021

Revised

Opinion of Probable Cost Budget Estimate
to
Quinn Evans

Project:

King Solomon Baptist Church
Roof Conditions Assessment

Phone: 248.933.6304
E-Mail: chris.toma@dcmest.com
Website: www.dcmest.com

DCM Consulting
400 S. Old Woodward Ave., Suite 100
Birmingham, MI 48009

King Solomon Baptist Church
Roof Conditions Assessment
Opinion of Probable Cost Budget Estimate

Estimate Clarifications

1 DMC Consulting has evaluated the documents and prepared an estimate based on the reasonable intent of these documents.

2 The estimate is not formatted or intended to predict low bids by category.

3 The Building Gross Square Foot (GSF) Listed in this deliverable is based on the American Institute of Architects (AIA) Document D101.

4 The estimate is based on the project design documents prepared by Quinn Evans dated 11/8/21.

5 Performance and payment bonds are included for all subcontractor work.

6 The estimate excludes the State of Michigan sales tax.

7 This estimate assumes that the final bid documents will name three or more manufacturers whose product are acceptable. Estimate excludes sole sourcing unless noted otherwise.

8 This estimate is based on local labor wage rates.

9 The estimate includes standard material and labor escalation. Escalation in the estimate is included at an annual rate of 5.0% per year from the date of the estimate to the midpoint of the construction schedule.

10 The estimate is based on the following construction milestone dates:
Construction Start Date = 8/01/22
Construction Substantial Completion Date = 2/1/23

11 The estimate is based on all work being performed on standard shift time.

12 Estimate is based on the Owner providing parking for all trade contractors.

13 The estimate excludes hazardous material survey and abatement.

14 The estimate excludes material and soils testing.

15 The estimate excludes furniture, furnishings and equipment (FF&E).

16 The estimate excludes the General Building Permit.

17 The estimate excludes utility consumption charges used for construction purposes.

King Solomon Baptist Church

Estimate Date: 11/19/2021

Roof Conditions Assessment

Detroit, Michigan

Construction Start: 08/01/2022

Opinion of Probable Cost Budget Estimate

Construction Finish: 02/01/2023

	Description	Building Gross Area		Cost / GSF	Total Cost	% Of Total
	PROJECT DIRECT COST					
	Zone 1: Flat Roof (South)	1	LPSM	$487,000	**$487,000**	24.15%
	Zone 2: Heptagon Roof (Upper and Lower)	1	LPSM	$270,000	**$270,000**	13.39%
	Zone 3: Bell Tower Roof	1	LPSM	$103,000	**$103,000**	5.11%
	Zone 4: Central Gable Roof	1	LPSM	$292,500	**$292,500**	14.51%
	TOTAL PROJECT DIRECT COST	1	LPSM	$1,152,500	**$1,152,500**	57.15%
	CONTINGENCIES & ESCALATION					
	Design Contingency	15.00%	OF	$1,152,500	**$173,000**	8.58%
GC	Construction Contingency	0.00%	OF	$1,152,500	**$0**	0.00%
	Material & Labor Escalation	4.75%	OF	$1,152,500	**$55,000**	2.73%
	TOTAL CONTINGENCIES & ESCALATION	1	LPSM	$228,000	**$228,000**	11.31%
	GENERAL CONTRACTOR INDIRECT COST					
GC	General Conditions	6	MONTH	$15,000	**$90,000**	4.46%
GC	Staff Labor Cost	6	MONTH	$22,500	**$135,000**	6.69%
GC	General Liability Insurance	0.65%	OF	$1,715,500	**$11,000**	0.55%
	Builder's Risk Insurance	0.00%	OF	$1,715,500	**$0**	0.00%
GC	Performance & Payment Bond	0.70%	OF	$1,715,500	**$12,000**	0.60%
GC	Construction Phase Services Fee	8.00%	OF	$1,380,500	**$110,000**	5.45%
	TOTAL GENERAL CONTRACTOR INDIRECT COST	1	LPSM	$358,000	**$358,000**	17.75%
	TOTAL CONSTRUCTION COST	1	LPSM	$1,738,500	**$1,738,500**	86.21%
	OWNER PROJECT COST					
	A/E Professional Construction Administration Fees	8.00%	OF	$1,738,500	**$139,000**	6.89%
	FF&E	1	LPSM	$0.00	**$0**	0.00%
	Project / Legal Expenses	1	LPSM	$0.00	**$0**	0.00%
	Land Acquisition	1	LPSM	$0.00	**$0**	0.00%
	IT / Technology Expenses	1	LPSM	$0.00	**$0**	0.00%
	Owner Contingency	8.00%	OF	$1,738,500	**$139,000**	6.89%
	TOTAL OWNER PROJECT COST	1	LPSM	$278,000.00	**$278,000**	13.79%
	TOTAL COST	**1**	**LPSM**	**$2,016,500**	**$2,016,500**	**100.00%**

GENERAL ALTERNATES - INCLUDES CONTINGENCIES AND INDIRECTS COSTS

1.	Board up open windows to curb weather infiltration and continued deterioration of the interior	1	LPSM	$24,000	**$24,000**	ADD
2.	Remove collapsing gabled roof over main sanctuary entry vestibule at the base of the Bell Tower; provide temporary shed roof over vestibule with wood joists, plywood sheathing, underlayment, asphalt shingles, treated wood edge and prefinished aluminum drip edge flashing	1	LPSM	$52,000	**$52,000**	ADD
3	Close up open end of valley/cricket flashing at north end of north entry vestibule roof into main sanctuary (east façade) with secured treated wood framing and prefinished metal flashing	1	LPSM	$11,000	**$11,000**	ADD
4.	Provide Copper Flashings/Trim,Gutters,downspouts in lieu of prefinished aluminum (All Zones)	1	LPSM	$158,000	**$158,000**	ADD

	Description	Quantity	Unit	Unit Price	Total Cost
7	**Zone 1: Flat Roof (South)**				
8	**Demolition and Removal**				
9	Remove all debris	3,700	sqft	0.50	1,850
10	Remove and dispose of all cracked, crazed, or broken parapet tiles	60	lnft	10.00	600
11	Salvage all sound tiles for reuse	170	lnft	25.00	4,250
12	Remove all existing membrane roofing and flashings, insulation, and underlayment (including metal flashings and mastic at brick piers)	3,700	sqft	5.00	18,500
13	Remove (3) existing roof drain bodies and PVC rain conductors	3	each	500.00	1,500
14	Remove existing roof hatch and wood curb	1	each	200.00	200
15	**Roofing, Trim, and Drainage**				
16	Provide 60 mil EDPM (20-year minimum warranty) roofing and flashings over 6-inch-thick average (R-30) polyisocyanurate rigid insulation, over the existing roof deck to remain	3,700	sqft	30.00	111,000
17	Provide prefinished aluminum termination bar, reglet counterflashing, and sealant at membrane terminations around brick piers	40	lnft	35.00	1,400
18	Replace roof hatch in same location as existing on new treated wood curb	1	each	7,500.00	7,500
19	Provide (3) new roof drains in same location as existing; core larger 3-inch diameter (min.) openings in roof deck to properly accommodate stormwater capacity at drain locations; provide new, larger 3-inch diameter (min.) PVC rain conductors down through building	3	each	10,000.00	30,000
20	Create (2) scuppers openings for secondary overflow drainage through masonry parapet walls, properly flashed	2	each	8,000.00	16,000
21	Clean mortar and mastic from salvaged clay tile parapet caps and reset (grouted) over new membrane roofing termination	170	lnft	30.00	5,100
22	Provide new tiles to match existing to replace broken pieces	60	lnft	150.00	9,000
23	**Structure and Support**				
24	Deteriorated And Damaged 2" To 3" Thick Concrete Roof Slab. After Removing Roof, Hammer Sound Concrete. Chip Away Deteriorated Concrete Add 6X6W2Xw2 Wwf. Apply Cementitious Bonding Agent. Overlay With Concrete Patch.	280	sqft	120.00	33,600
25	Assume select spall and crack repairs to surface of concrete roof deck (approx. 25% of surface).	925	sqft	10.00	9,250
26	Damaged And Deteriorated Precast Roof Support Joists. Hammer Sound Concrete. Chip And Remove Damaged And Deteriorated Concrete. Clean Corroded Steel. Add (2)#5 Horizontal Bars If Bottom Bars Are Corroded More Than 10%. Dowel Shear Bars As Required. Apply Trowel Applied Concrete Patch Or Shotcrete To Provide Min 1" Cover To Existing And New Rebar.	440	lnft	120.00	52,800
27	Damaged And Deteriorated Concrete Beam. Remove Any Loose Concrete And Confirm Condition Of Encased Steel Beam.	440	lnft	50.00	22,000
28	Existing Steel Lintels Over Window Openings Are Severely Corroded And Beyond Repair, Resulting In Severe Rolling And Damage To Parapet Walls. Shore Existing Roof Structure. Remove And Replace Steel Lintels And Parapet Wall. Install New Galvanized Steel Lintels And Re- **Construct Parapet Walls.**	180	lnft	200.00	36,000

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	Description	Quantity	Unit	Unit Price	Total Cost	
29	Existing Steel Lintels Over Window Openings Are Severely Corroded And Beyond Repair, Resulting In Severe Rolling And Damage To Parapet Walls. Shore Existing Roof Structure. Remove And Replace Steel Lintels And Parapet Wall. Install New Galvanized Steel Lintels And Re- **Replace Lintels.**	30	each	3,000.00	90,000	
30	Corroded Steel Lintels Have Resulted In Severe Damage To Masonry Piers Covering Steel Building Columns. Remove Damaged Masonry, Repair Embedded Steel Columns And Connection. **Re-Construct One (1) Masonry Piers**	360	sqft	100.00	36,000	
31			**Subtotal Zone 1: Flat Roof (South)**		**$487,000**	
32						
33			**Total Zone 1: Flat Roof (South)**		**$487,000**	
34						
35	**ALTERNATES - INCLUDES CONTINGENCIES AND INDIRECTS COSTS**					
36	Provide temp. shoring down through all floors, that will remain in place until a future project repairs joists in Lieu of	1	lpsm	(33,000.00)	(33,000.00)	DEDUCT
37	Televise, scope, and clear existing storm drain lines serving Zone 1 Flat Roof	1	lpsm	11,000.00	11,000	ADD

	Description	Quantity	Unit	Unit Price	Total Cost	
7	**Zone 2: Heptagon Roof (Upper and Lower)**					
8	**Demolition and Removal**					
9	Remove all existing asphalt shingles and underlayment (protect upper tier windows and vertical metal paneling to remain	5,250	sqft	3.00	15,750	
10	Remove membrane valley flashings and all mastics from base of Bell Tower masonry	50	sqft	20.00	1,000	
11	Remove wood fascia and frieze board trim around eaves of both tiers	350	lnft	15.00	5,250	
12	Remove wood outriggers and rafter tails around eave overhang of both tiers	80	each	100.00	8,000	
13	Remove (and do not replace) plaster ceilings below this roof area to provide access for structural repairs to framing, identified below. Allowance	2,155	sqft	7.00	15,085	
14	**Roofing, Trim, and Drainage**					
15	Provide architectural grade asphalt shingles over underlayment, over repaired wood roof deck and sheathing as Noted in Structural Section below	5,250	sqft	7.50	39,375	
16	Provide all new wood fascia, soffit, and frieze board and trim, primed and painted along eave of both tiers	350	lnft	60.00	21,000	
17	Provide prefinished aluminum valley and wall termination flashings around base of Bell Tower	50	sqft	40.00	2,000	
18	Provide prefinished aluminum drip edge along the eaves of both tiers, and head flashings where the upper tier meets the vertical walls supporting the upper tier roof	475	lnft	20.00	9,500	
19	Provide Gutters and Downspouts	105	lnft	40.00	4,200	
20	**Structure and Support**					
21	Provide allowance to reset any displaced masonry and repoint open joints in brick wall directly under the eaves of the lower tier	63	sqft	125.00	7,813	
22	Existing Roof Flared Overhang With Decorative Wood Brackets Cantilevering Out From Bearing Wall. Remove Roof Sheathing And Brackets. Measure And Preserve Bracket Geometry And Detail For Future Replication.	550	sqft	35.00	19,250	
23	Sloping Lower Roof Area In Moderate To Poor Condition. Assume 30% Of Sheathing And 15% Of Support Rafters Need To Be Replaced Or Reinforced.	415	sqft	75.00	31,125	
24	Sloping Lower Roof Area In Very Poor Condition. Assume Replacement Of 100% Of Sheathing And 30% Replacement Or Reinforcing Of Support Rafters.	650	sqft	75.00	48,750	
25	Upper Roof Flared Overhang Appears In Moderate Condition. Assume Removal Of 15% Of Total Area On West Side.	50	sqft	35.00	1,750	
26	Upper Roof Flared Roof Area Appears In Moderate Condition. Assume 20% Of Sheathing And 10% Of Support Rafters Need To Be Replaced Or Reinforced.	160	sqft	75.00	12,000	
27	Upper Roof Area Appears In Moderate Condition. Assume 15% Of Sheathing And 10% Of Support Rafters Need To Be Replaced Or Reinforced.	380	sqft	75.00	28,500	
28			**Subtotal Zone 2: Heptagon Roof (Upper and Lower)**		**$270,000**	
29						
30			**Total Zone 2: Heptagon Roof (Upper and Lower)**		**$270,000**	
31						
32	**ALTERNATES - INCLUDES CONTINGENCIES AND INDIRECTS COSTS**					
33	Prep and repaint vertical metal paneling and window trim between upper and lower tiers of Zone 2 Heptagon Roof	1	LPSM	6,000.00	6,000	ADD

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	Description	Quantity	Unit	Unit Price	Total Cost	
7	**Zone 3: Bell Tower Roof**					
8	**Demolition and Removal**					
9	Remove existing asphalt roofing, metal flashings, wood roof decking, and wood-framed structure	800	sqft	7.00	5,600	
10	Remove wood outriggers and decorative rafter tails along eave overhangs	15	each	250.00	3,750	
11	Remove copper downspouts	2	each	300.00	600	
12	Provide allowance to remove all loose or detached brick masonry and stone caps in upper section of tower walls and piers	300	sqft	25.00	7,500	
13	**Roofing, Trim, and Drainage**					
14	Provide architectural grade asphalt shingles over underlayment over new sheathing and wood truss framing as noted below (no overhang provided).	500	sqft	10.00	5,000	
15	Provide all new wood fascia, soffit, and frieze board and trim, primed and painted along eaves	80	lnft	60.00	4,800	
16	Provide prefinished aluminum metal flashing and trim, including drip edge	80	lnft	20.00	1,600	
17	Provide new prefinished aluminum gutters and downspouts	160	lnft	40.00	6,400	
18	**Structure and Support**					
19	Provide simple precast stone caps at top of brick masonry piers exposed with removal of loose or deteriorated caps	100	sqft	150.00	15,000	
20	Provide allowance for resetting displaced brick masonry or stone caps, and repointing open joints in upper section of tower walls and piers where required for structural stability, weather-tightness and life safety.	150	sqft	100.00	15,000	
21	Future Decorative Brackets And Roof Overhang. Not In Current Scope.		excluded		0	
22	Remove Existing Roof Framing. Replace With Re- Engineered Wood Trusses At 2'-0" Oc With 3/4" Sheathing. Refer To Architectural For Roofing Details And Information.	500	sqft	75.00	37,500	
23				**Subtotal Zone 3: Bell Tower Roof**	**$103,000**	
24						
25				**Total Zone 3: Bell Tower Roof**	**$103,000**	
26						
27	**ALTERNATES - INCLUDES CONTINGENCIES AND INDIRECTS COSTS**					
28	Extend new roof decking to recreate extended overhang to match existing, provide new outriggers as part of roof trusses and cover with replicated wood decorative rafter tail brackets along eaves (qty. 24 x 84 SF each)	1	LPSM	137,000.00	137,000	ADD
29	Provide bird screening behind wood louvers in Bell Tower	1	LPSM	16,000.00	16,000	ADD

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	Description	Quantity	Unit	Unit Price	Total Cost
7	**Zone 4: Central Gable Roof**				
8	**Demolition and Removal**				
9	Remove all existing asphalt shingles and underlayment	5,650	sqft	7.00	39,550
10	Remove all metal flashings around base of chimney	25	lnft	20.00	500
11	Remove metal gutter along eaves; existing wood fascia board, frieze board and trim, and decorative wood rafter tails to remain	100	lnft	25.00	2,500
12	Remove existing metal downspouts	2	each	100.00	200
13	At east rake edge (front façade): Remove and salvage for reinstallation (4) 4’ x 8’ decorative wood support bracket enclosures around deteriorated wood structural outriggers along rake edge (see structural scope below). Existing wood fascia and soffit boards/trim to remain in place along 4-foot deep rake edge overhang – provide temporary shoring/support during replacement of outriggers.	4	each	5,000.00	20,000
14	At west rake edge (back façade): Remove all roof decking extending beyond perimeter building wall, creating existing deep rake edge overhang. Remove, salvage, pack for storage (6) 4’ x 8’ decorative support brackets for future project reuse.	6	each	2,000.00	12,000
15	Remove membrane valley flashings, prefinished flashings, and all mastics from base of Bell Tower masonry	50	sqft	30.00	1,500
16	Remove (and do not replace) plaster ceilings below this roof area to provide access for structural repairs to framing, identified below. Allowance	1,730	sqft	7.00	12,110
17	**Roofing, Trim, and Drainage**				
18	Provide architectural grade asphalt shingles over underlayment, over wood roof deck and sheathing as noted in structural section below.	5,650	sqft	7.50	42,375
19	Resecure wood fascia board along (north and south) eaves; clean, prep, prime and repaint fascia, underside of soffit, frieze boards and trim	100	lnft	50.00	5,000
20	Provide new prefinished aluminum gutters along (north and south) eaves (90 LF). Provide downspouts (qty.4 x 8 ft. length) to outlet to roof surfaces below (including 18-inch extensions and splash blocks at flat roofs)	212	lnft	40.00	8,480
21	At east rake edge (front façade): Reinstall (4) 4’ x 8’ decorative wood support bracket enclosures around new structural outriggers (see structural below); consolidate, prep, prime, and repaint all sides of wood fascia (26-inch tall x 5-inch thickness x 50-foot length), underside of soffit along rake edges (48-foot deep x 50-foot length), and brackets; replace select deteriorated or missing pieces to match existing; prep, prime and repaint all wood components	4	each	4,000.00	16,000
22	At west rake edge (back façade): Extend new sheathing to create shorter 6-inch tall and 6-inch deep rake edge with new wood fascia board, primed and painted	included below			
23	**Structure and Support**				
24	Sloping Lower Roof Area Appears In Moderate To Poor Condition. Assume 15% Of Sheathing And 10% Of Support Rafters Need To Be Replaced Or Reinforced.	680	sqft	75.00	51,000
25	Sloping Lower Roof Area In Very Poor Condition. Assume Replacement Of 100% Of Sheathing And 30% Replacement Or Reinforcing Of Support Rafters.	650	sqft	75.00	48,750
26	Roof Sheathing In Valley In Very Poor Condition Replace 100% Of Sheathing And 50% Of Support Rafters.	120	sqft	75.00	9,000

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Opinion of Probable Cost Budget Estimate

	Description	Quantity	Unit	Unit Price	Total Cost	
27	Replace 4 wood outriggers on east façade supporting overhang along rake edge	4	each	5,000.00	20,000	
28	Remove Loose And Spalling Masonry From Chimney	1	lsum	3,500.00	3,500	
29			**Subtotal Zone 4: Central Gable Roof**		**$292,500**	
30						
31			**Total Zone 4: Central Gable Roof**		**$292,000**	
32						
33	**ALTERNATES - INCLUDES CONTINGENCIES AND INDIRECTS COSTS**					
34	In lieu of demo of decorative wood brackets and cutting back deep rake edge overhang along west rake edge, salvage for reuse (6) 4' x 8' decorative support brackets around replaced structural outriggers and shore, repair, prep and prime existing wood fascia and soffit trim to remain (similar to east façade rake edge)	1	LPSM	36,000.00	36,000	ADD
35	Demo (including vegetative growth) existing masonry block rooftop stair enclosure, and wood frame and door. Rebuild new enclosure out of CMU, including a new hollow metal door and frame. Cut back existing membrane roofing and reflash with new membrane roofing and termination bar/sealant at base of replaced enclosure.	1	LPSM	60,000.00	60,000	ADD

05

FUTURE RECOMMENDATIONS AND PHASING

FUTURE RECOMMENDATIONS AND PHASING

In recognition that roof replacement is the first step in a longer process that will need to involve additional scope of work implemented on the exterior and interior of the building, toward the long term goal of a full rehabilitation and re-occupancy of the church, we offer the following outline of future efforts for consideration. Following completion of roof replacement efforts, it is strongly recommended that prioritization first remain with items related to creating a complete weather-tight envelope and safe conditions for public walking alongside the building. Once the envelope is deemed safe and weather-tight, efforts can re-focus to the interior rehabilitation, prioritizing structural stability and safety, functionality of systems, and eventually repair and fit-out of a finished, programmable interior. Scope items within each section below are listed in order of recommend priority.

EXTERIOR

- Remove and repair or replace any remaining structures or elements in danger of falling and harming persons below (masonry, glazing, framing, or debris), or creating additional openings in the envelope.
- Ensure all storm drain lines are free-flowing and connections to the municipal system are sound.
- Provide temporary closures at all openings where windows, glazing, doors, or screening is missing.
- Maintain security at all access points to prevent unwanted access and further vandalism.
- Remove dry and unmanaged vegetation surrounding the building that could contribute to fire risk, most notably along the west elevation and alley.
- Perform conditions assessment of exterior envelope beyond initial roof areas.
- Replace the North Flat Roof not included in this project, including structure and support, and proper functioning drainage, as needed to provide for a safe, weather-tight, functional and warrantable system.
- Complete masonry repairs around the entire perimeter of the structure.
- Provide permanent windows, louvers, and door assemblies to replace temporary closures.
- Repair and/or reconstruct building entry enclosures.
- Rebuild and restore site access elements (walks, steps, ramps, railings) inclusive of accessible means and egress lighting.
- Extend roof overhangs and restore original roof edge profiles and detailing, valued-engineered from initial roof work.
- Perform remaining or additional cosmetic work: masonry cleaning, painting, lighting, or other restoration or replacement of materials, elements, or finishes.

INTERIOR

- Extend roof overhangs and restore original roof edge profiles and detailing, valued-engineered from initial
- Complete testing and removal of any hazardous materials (lead, asbestos, mercury).
- Remove all debris and furnishings throughout.
- Perform conditions assessment of interior architecture and structure, executed by design professionals.
- Provide structural repairs and reinforcements as needed for safe work areas and future occupancy
- Restore utility services and install new mechanical, plumbing, and electrical systems, including fire suppression and life safety systems.
- Repair, restore, and provide interior finishes and updated layout for programmed occupancy and use.

FIGURE EAST ELEVATION

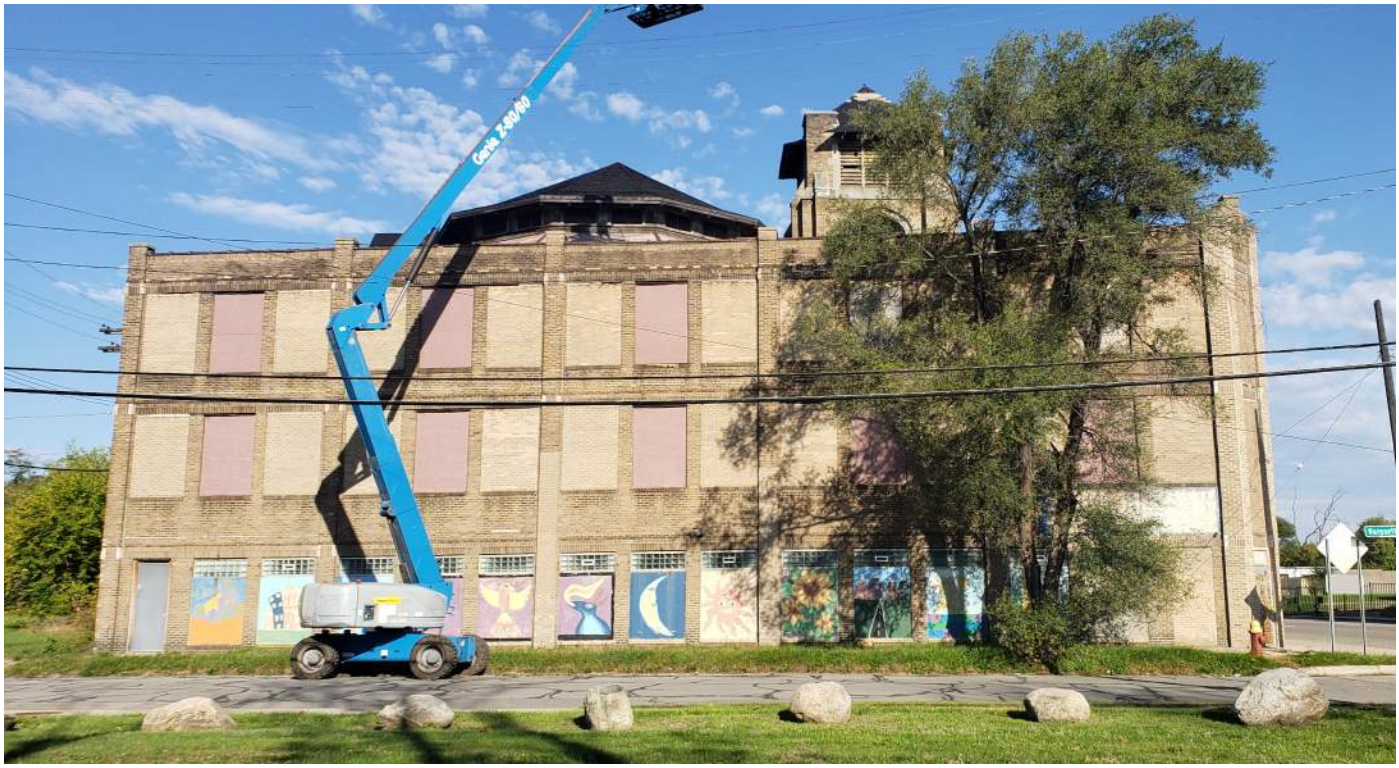


FIGURE SOUTH ELEVATION

FIGURE WEST ELEVATION

FIGURE NORTH ELEVATION

FIGURE INT 1.1 FALLEN OR MISSING WINDOWS; DETERIORATED MASONRY WALLS AND DEBRIS

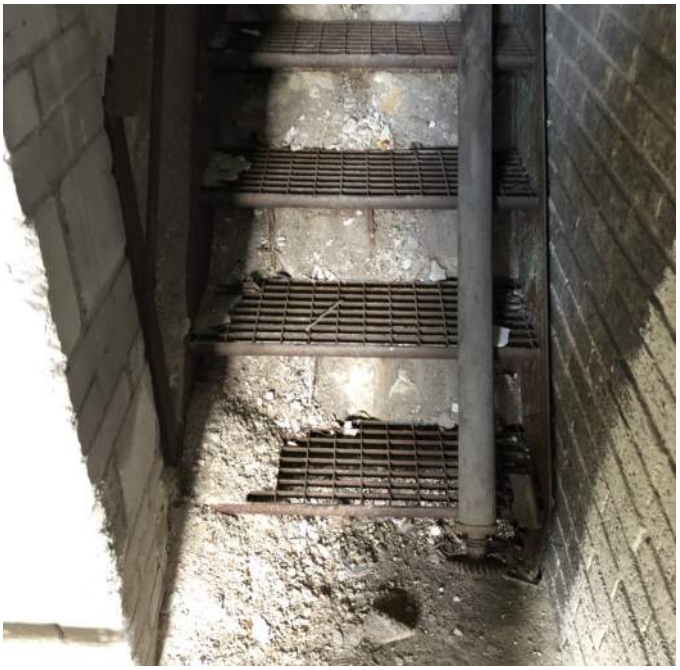


FIGURE INT 1.3 INTERIOR PLASTER HAS CRUMBLED FROM THE WALLS, CEILING AND STRINGER BEHIND THE STAIR (LEADS TO THE ROOTOP EXIT)

FIGURE INT 1.2 WATER STAINED A,D LOOSE WOOD DECKING; OXIDIZED STRUCTURAL BEAM AND COLUMNS; VARIOUS DEBRIS; AT 1917 ADDITION INTERIORS

FIGURE INT 1.4 WATER DAMAGED PAINT AND PLASTER FINISHES AND FURNISHINGS. DAMAGED STAINED GLASS WINDOWS WITH MISSING GLASS AND FAILED JOINTS

FIGURE INT 1.5 MAIN SANCTUARY ALTAR

FIGURE INT 1.6 FAILED FINISHES AND DEBRIS IN CLASSROOMS OVER SANCTUARY; OPENINGS THRU ROOFS TO DAYLIGHT ABOVE

FIGURE INT.7 FAILED FINISHES AND DEBRIS IN LOWER LEVEL SPACES

FIGURE INT 1.8 FAILED FINISHES AND DEBRIS IN ENTRYWAY AND CORRIDORS

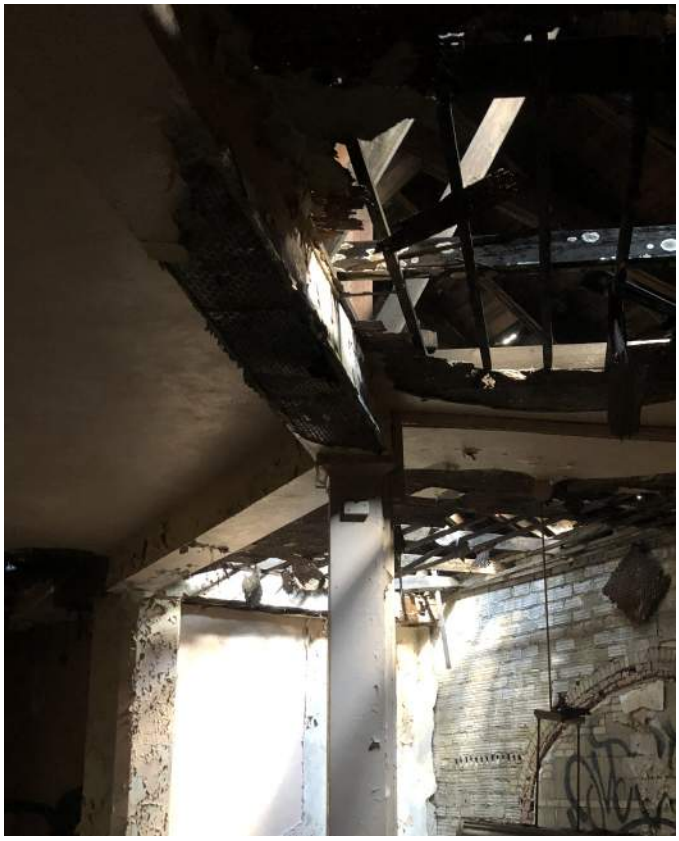


FIGURE INT 1.9 FAILED FINISHES AND DEBRIS IN CLASSROOMS OVER SANCTUARY; OPENINGS THRU ROOFS EXPOSING INTEIROR TO ELEMENTS

FIGURE INT 1. 10 BUCKLING AND CRACKED MASONRY EXTERIOR WALLS

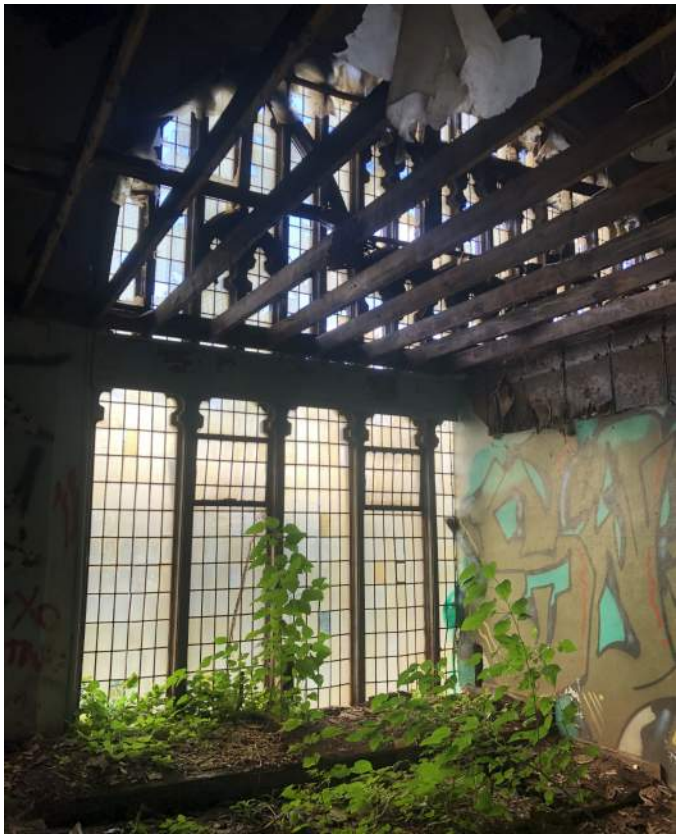


FIGURE INT 1.8 FAILED FINISHES AND VEGETATION IN SANCTUARY MEZZANINE OPEN TO THE ELEMENTS ABOVE

FIGURE INT 1.11 BOARDED UP FORMER WINDOW OPENINGS

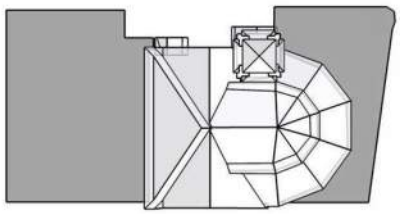
06

APPENDIX

Premium Report

9/19/2021

6125 14th St, Detroit, MI 48208-1307 Report: 42294749



In this 3D model, facets appear as semi-transparent to reveal overhangs.

PREPARED FOR

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Company:	Quinn Evans Architects
Address:	219 1/2 N Main St Ann Arbor, MI 48104
Phone:	734-926-0415

TABLE OF CONTENTS

MEASUREMENTS

Total Roof Area =23,787 sq ft
Total Roof Facets =57
Predominant Pitch =0/12
Number of Stories >1
Total Ridges/Hips =653 ft
Total Valleys =242 ft
Total Rakes =218 ft
Total Eaves =497 ft
Total Penetrations =13
Total Penetrations Perimeter = 200 ft
Total Penetrations Area = 212 sq ft

Measurements provided by www.eagleview.com

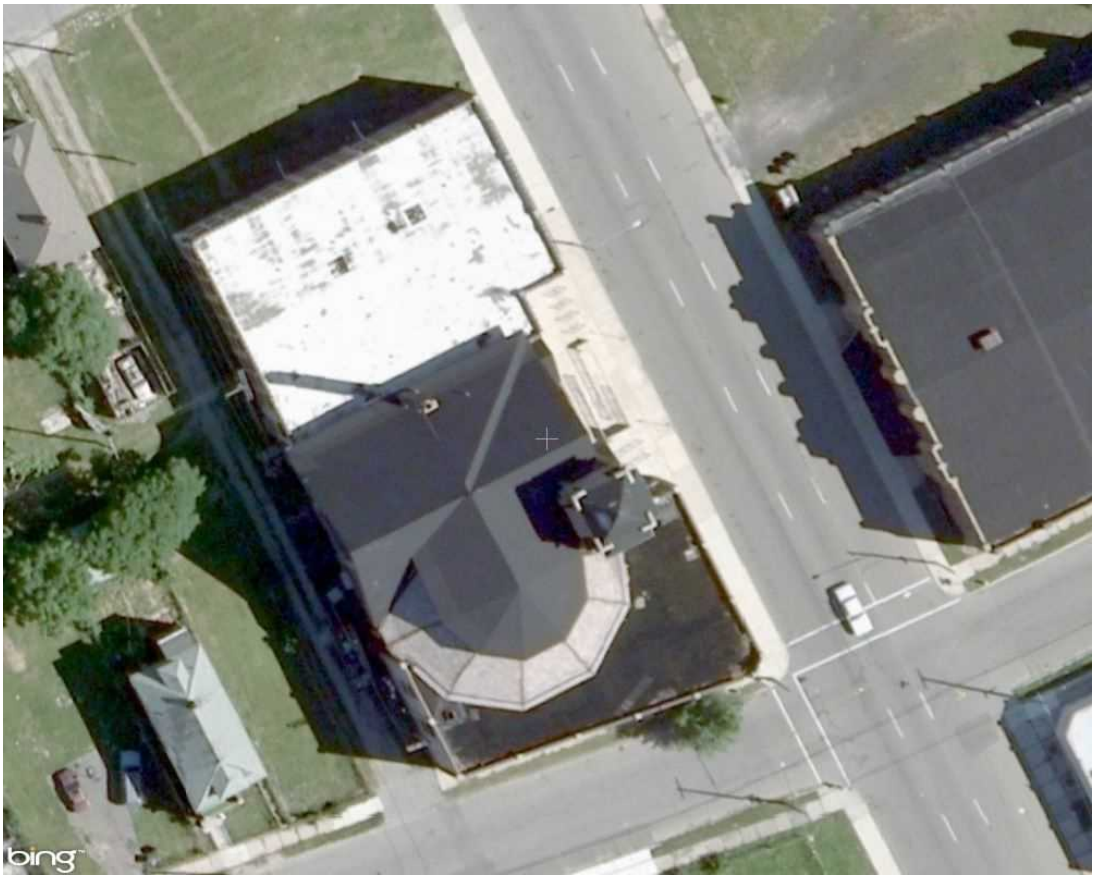
Certified Accurate

www.eagleview.com/Guarantee.aspx

IMAGES

The following aerial images show different angles of this structure for your reference.

Top View



IMAGES

North Side

South Side

IMAGES

East Side

West Side

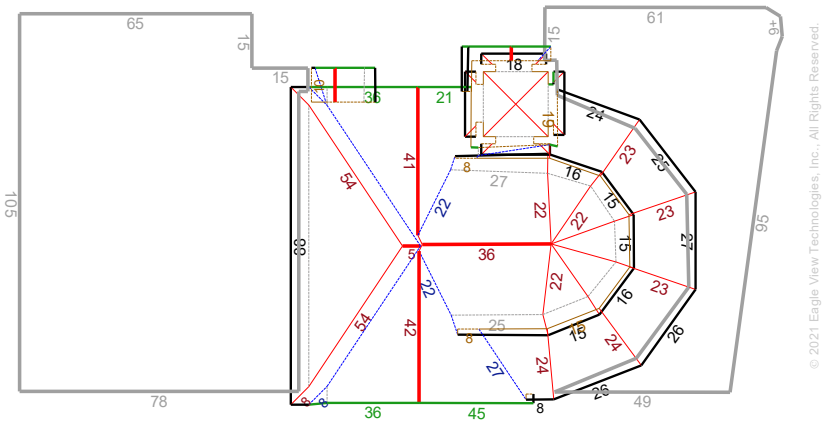
6125 14th St, Detroit, MI 48208-1307 Report: 42294749

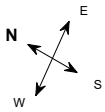
LENGTH DIAGRAM

Total Line Lengths:
Ridges = 138 ft
Hips = 515 ft

Valleys = 242 ft
Rakes = 218 ft
Eaves = 497 ft

Flashing = 187 ft
Step flashing = 161 ft
Parapets = 739 ft



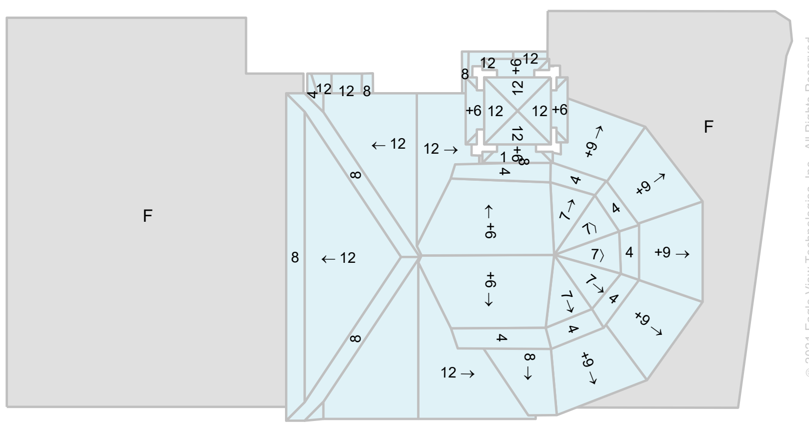


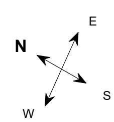
Note: This diagram contains segment lengths (rounded to the nearest whole number) over 5.0 Feet. In some cases, segment labels have been removed for readability. Plus signs preface some numbers to avoid confusion when rotated (e.g. +6 and +9).

![eagleview logo]

PITCH DIAGRAM

Pitch values are shown in inches per foot, and arrows indicate slope direction. The predominant pitch on this roof is 0/12



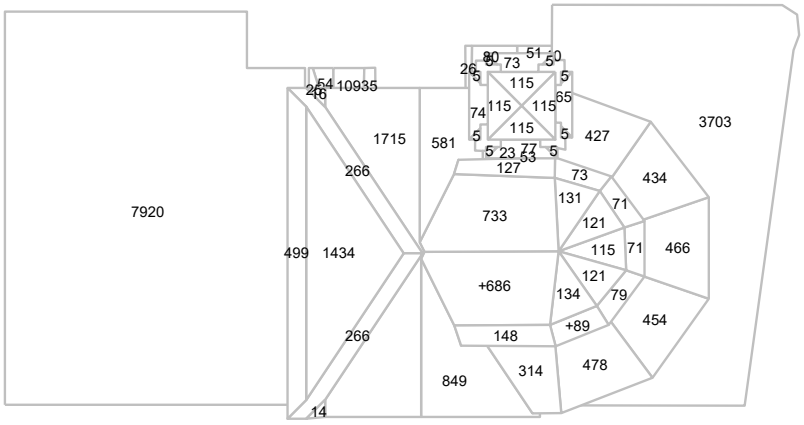


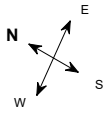
Note: This diagram contains labeled pitches for facet areas larger than 20.0 square feet. In some cases, pitch labels have been removed for readability. Blue shading indicates a pitch of 3/12 and greater. Gray shading indicates flat, 1/12 or 2/12 pitches. If present, a value of "F" indicates a flat facet (no pitch).

6125 14th St, Detroit, MI 48208-1307 Report: 42294749

AREA DIAGRAM

Total Area = 23,787 sq ft, with 57 facets.



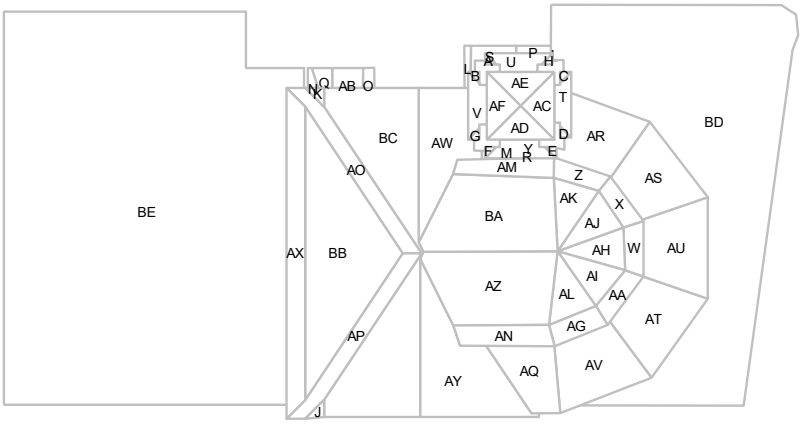


Note: This diagram shows the square feet of each roof facet (rounded to the nearest Foot). The total area in square feet, at the top of this page, is based on the non-rounded values of each roof facet (rounded to the nearest square foot after being totaled).

6125 14th St, Detroit, MI 48208-1307 Report: 42294749

NOTES DIAGRAM

Roof facets are labeled from smallest to largest (A to Z) for easy reference.

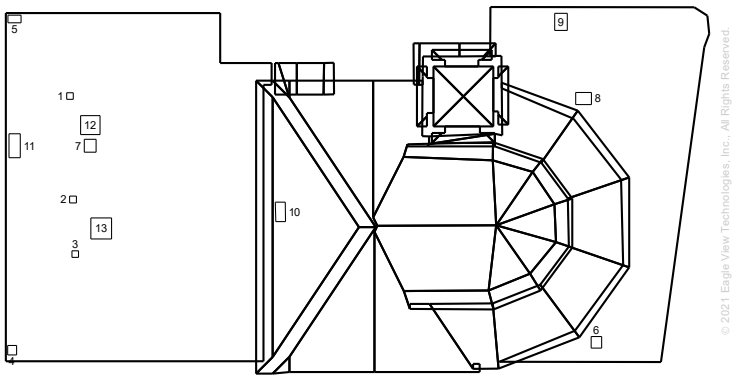


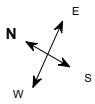
6125 14th St, Detroit, MI 48208-1307 Report: 42294749

PENETRATIONS NOTES DIAGRAM

Penetrations are labeled from smallest to largest for easy reference.

Total Penetrations = 13
Total Penetrations Perimeter = 200 ft
Total Penetrations Area = 212 sq ft
Total Roof Area Less Penetrations = 23,575 sq ft





REPORT SUMMARY

All Structures

Areas per Pitch									
Roof Pitches	0/12	1/12	4/12	6/12	7/12	8/12	9/12	11/12	12/12
Area (sq ft)	11622.7	22.7	682.7	1748.3	621.7	1488.0	2258.4	9.6	5332.0
% of Roof	48.9%	0.1%	2.9%	7.3%	2.6%	6.3%	9.5%	0%	22.4%

The table above lists each pitch on this roof and the total area and percent (both rounded) of the roof with that pitch.

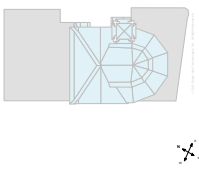
Waste Calculation Table							
Waste %	**0%**	**10%**	**12%**	**15%**	**17%**	**20%**	**22%**
Area (sq ft)	23,787	26,166	26,641	27,355	27,831	28,544	29,020
Squares	237.9	261.7	266.4	273.6	278.3	285.4	290.2

This table shows the total roof area and squares (rounded up to the nearest decimal) based upon different waste percentages. The waste factor is subject to the complexity of the roof, individual roofing techniques and your experience. Please consider this when calculating appropriate waste percentages. Note that only roof area is included in these waste calculations. Additional materials needed for ridge, hip, valley, and starter lengths are not included.

Penetrations	1-3	4	5	6	7	8	9	10	11	12
Area (sq ft)	4	7.7	9.2	11.2	13.5	17.4	19.4	24.2	24	33.5
Perimeter (ft)	8	11.2	12.6	13.4	14.8	16.8	17.8	20	21	23.2
	13									
Area (sq ft)	39									
Perimeter (ft)	24.8									

Any measured penetration smaller than 3.0x3.0 Feet may need field verification. Accuracy is not guaranteed. The total penetration area is not subtracted from the total roof area.

All Structures Totals



Total Roof Facets = 57
Total Penetrations =13

Lengths, Areas and Pitches

Ridges = 138 ft (6 Ridges)
Hips = 515 ft (36 Hips).
Valleys = 242 ft (13 Valleys)
Rakes† = 218 ft (16 Rakes)
Eaves/Starter‡ = 497 ft (34 Eaves)
Drip Edge (Eaves + Rakes) = 715 ft (50 Lengths)
Parapet Walls = 739 (22 Lengths).
Flashing = 187 ft (29 Lengths)
Step flashing = 161 ft (29 Lengths)
Total Penetrations Area = 212 sq ft
Total Roof Area Less Penetrations = 23,575 sq ft
Total Penetrations Perimeter = 200 ft
Predominant Pitch = 0/12
Total Area (All Pitches) = 23,787 sq ft

Property Location

Longitude = -83.0929683
Latitude = 42.3596259

Notes

This was ordered as a commercial property. There were no changes to the structure in the past four years.

† Rakes are defined as roof edges that are sloped (not level).
‡ Eaves are defined as roof edges that are not sloped and level.

Parapet Wall Area Table							
Wall Height (ft)	1	2	3	4	5	6	7
Vertical Wall Area	739	1478	2217	2956	3695	4434	5173

This table provides common parapet wall heights to aid you in calculating the total vertical area of these walls. Note that these values assume a 90 degree angle at the base of the wall. Allow for extra materials to cover cant strips and tapered edges.

Online Maps

Online map of property
http://maps.google.com/maps?f=g&source=s_q&hl=en&geocode=&q=6125+14th+St,Detroit,MI,48208-1307
Directions from Quinn Evans Architects to this property
http://maps.google.com/maps?f=d&source=s_d&saddr=219+1/2+N+Main+St,Ann+Arbor,MI,48104&daddr=6125+14th+St,Detroit,MI,48208-1307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