



# EXTERIOR CHRONOLOGY

- IRON AND COPPER CROWN AND GILDED WEATHERVANE
- VERTICAL WOOD BOARD CLADDING AT SPIRE
- OCTAGONAL PINNACLES WITH SCROLL-CUT RIDGE BOARDS
- CRENELATED BALUSTRADE (RAISED ABOVE ROOF DRIP EDGE)
- LOW-SLOPE ROOF EAVE DRIP WITH MOLDING PROFILE (UNDERSIDE OF ROOF IS VISIBLE OVERHEAD IN BELFRY)
- OCTAGONAL CORNER PYLONS (BUILT OUT FROM STRUCTURAL TIMBER FRAME)
- VERTICAL FLUSH-BOARD SIDING WITH INTERMITTENT WATER-TABLE AT CORNER PYLONS
- HORIZONTAL FLUSH-BOARD SIDING AT TOWER MAIN BODY
- BELFRY OPENINGS WITH OPEN DIAMOND LATTICE FACED WITH VERTICAL WOODEN GOTHIC-ARCHED TRACERY
- QUATREFOIL PANELS AT BASE OF BELFRY TRACERY
- HALF-ROUND DOUBLE WATER TABLE
- TRIMMED CLOCK FACE WITH BLACK SURFACING (PRESUMABLY SCHMALTZ) AND GILDED CLOCK NUMERALS AND HANDS
- TALL LANCET WINDOW WITH DIAMOND PATTERN GLAZING
- SQUARE PINNACLES WITH SCROLL-CUT RIDGE BOARDS RISING FROM ROOF EAVE AS VERTICAL EXTENSIONS OF CORNER BUTTRESSES CRENELATED BALUSTRADE BETWEEN
- RAKE BALUSTRADE WITH OPEN SCROLL-CUT TRACERY BETWEEN TOP AND BOTTOM RAILS
- PAIRED STEPPED BUTTRESSES AT EAVE OF FOUR CORNERS OF CHURCH, TERMINATING AT MOLDING PROFILE AT ROOF EAVE
- SQUARE CROSS-GABLED ONE-STORY PYLONS SUPPORTING OCTAGONAL CORNER PYLONS

**1833-1954**

ISAIAH ROGERS, ARCHITECT

COLOR:  
PAINTED WOOD (IN APPARENT EARTHTONE COLOR) AT ALL SURFACES, INCLUDING SPIRE



**1956-2019**

ARTHUR H. BROOKS, ARCHITECT

- IRON AND COPPER CROWN AND GILDED WEATHERVANE REMAINS
  - FLAT FOLDED SEAMED LEAD-COATED COPPER CLADDING AT SPIRE 1949
  - TOWER PINNACLES REMOVED C. 1955
  - CRENELATED BALUSTRADE REMOVED C.1949 (?)
  - OVER-FRAMED STEEP-SLOPED FLAT SEAM COPPER ROOF C.1955
  - PROJECTING OCTAGONAL CORNER PYLONS REMOVED C.1955
  - VERTICAL SIDING ACROSS FULL FACE OF TOWER, WITH FLAT WOOD TRIM DETAILING C. 1955
  - BELFRY OPENING TRACERY AND LATTICE BACKED UP WITH HORIZONTAL METAL LOUVERED PANELS
  - QUATREFOIL PANELS REPLACED WITH FLAT PLYWOOD PANELS (EXCEPT REMAINING AT REAR WEST FACE)
  - FLAT WOOD TRIM AT FORMER DOUBLE WATER TABLE BAND C. 1955
  - TRIMMED CLOCK FACE WITH BLACK-RED SURFACING AND GILDED CLOCK NUMERALS AND HANDS
  - TALL LANCET WINDOW WITH DIAMOND PATTERN GLAZING
  - SQUARE PINNACLES AND BALUSTRADE REMOVED AT WEST EAVES C. 1939 (?), THEN AT EAST EAVES, ROOF SLATED OVER C.1952 (?)
  - RAKE BALUSTRADE REMOVED C. 1939 (?)
  - PAIRED STEPPED BUTTRESSES AT EAVE OF FOUR CORNERS OF CHURCH REMAIN, TERMINATING AT ROOF EAVE GUTTER
  - SQUARE CROSS-GABLED ONE-STORY PYLONS REMAIN WITH METAL GABLE ROOFS PLACE OF REMOVED OCTAGONAL PYLONS
- COLOR:  
SPIRE AND STEEP-SLOPED ROOF IN DARK WEATHERED LEAD-COATED COPPER, WOOD IN LIMESTONE COLORED PAINT



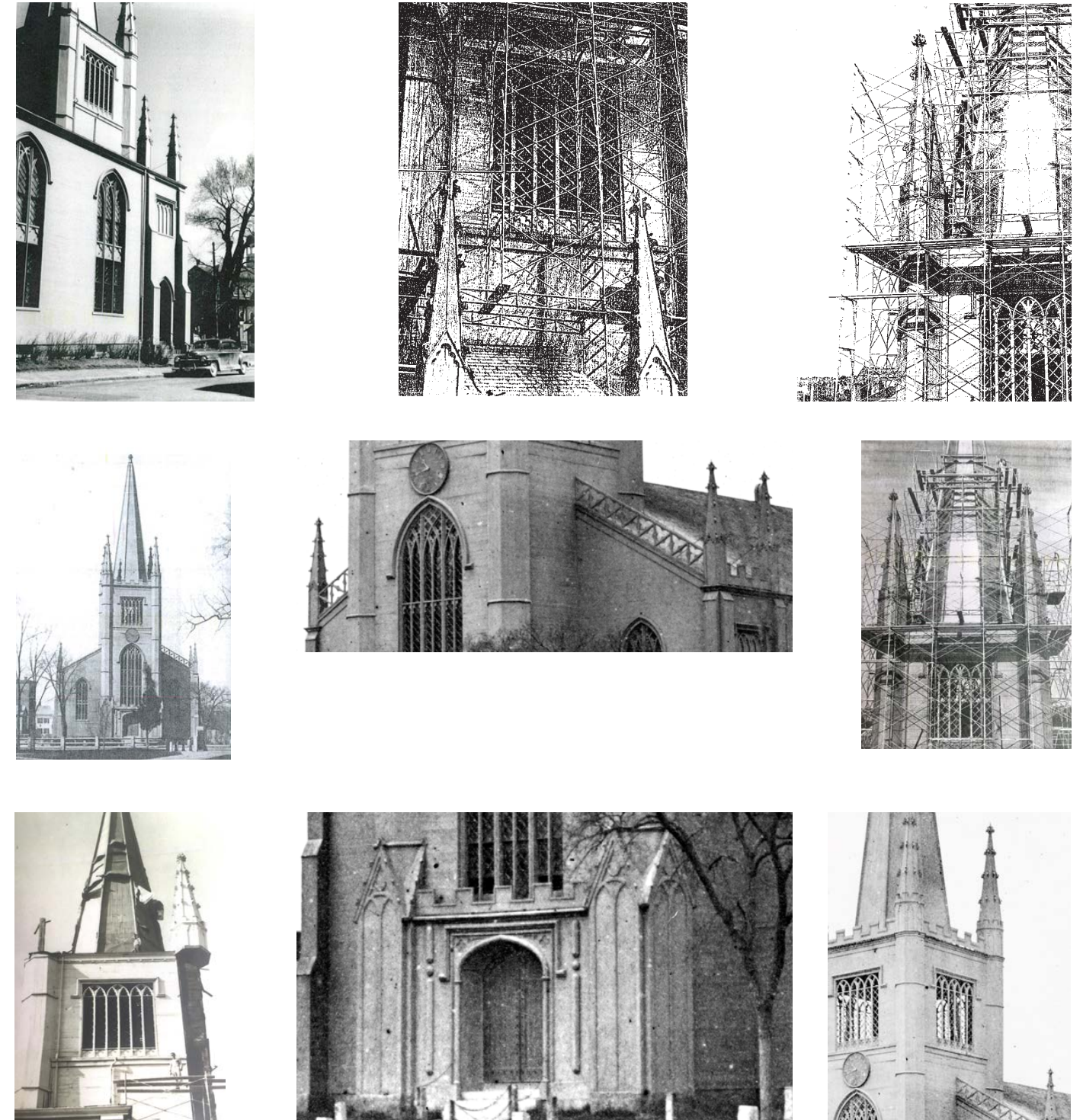
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MASSACHUSETTS AVENUE  
WALL AND TOWER PROJECT



CRITICAL PROJECT PRIORITIES



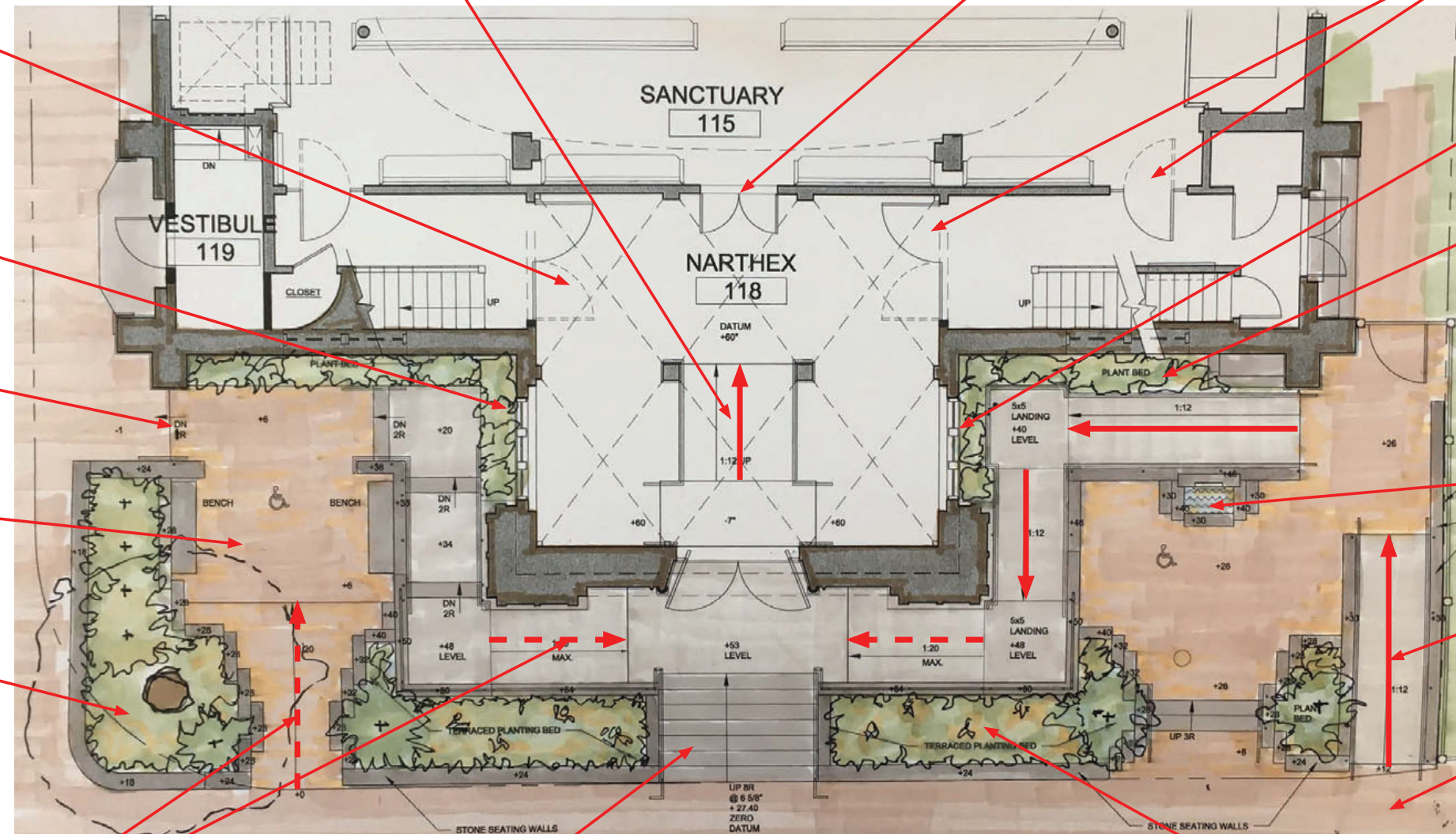
ARCHIVAL RECORD OF LOST ARCHITECTURAL DETAILS



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# PLAN VIEW



OPEN NARTHEX AIRLOCK LOBBY WITH INDIRECT LIGHTING OF CEILING VAULTS AND VIEWS THROUGH GLASS DOORS AND ENLARGED WINDOWS TO SURROUNDING ENVIRONMENT

CHURCH STREET

WIDENED NARTHEX WINDOWS WITH VIEWS TO SOUTH TERRACE AND HARVARD SQUARE

STEPPED ROUTE TO ENTRY DOOR LANDING FROM CHURCH STREET SIDEWALK

BENCHES AT ACCESSIBLE SOUTH ACTIVITY TERRACE FACING HARVARD SQUARE

"RIEPANDENS YEW", IVY AND BULBS AT EXPANDED PLANTING BED AT TREE WELL

DASHED ARROWS INDICATE 1-IN-20 GRADUALLY SLOPED WALKWAYS MEETING ADA AND MAAB REGULATIONS FOR ACCESSIBLE ROUTES

RAMPED ACCESSIBLE ROUTE TO SANCTUARY

AUTO-OPERATOR AT EXISTING DOORS

ACCESSIBLE GLASS DOORS AND SIDELIGHTS

WIDENED NARTHEX WINDOWS WITH VIEWS TO NORTH TERRACE AND BURIAL GROUND

PLANTING BEDS BETWEEN PAVED ROUTES AND CHURCH

CITY OF CAMBRIDGE BURIAL GROUND

CHALICE FOUNTAIN AND MEDITATION CIRCLE AT RAISED ACCESSIBLE NORTH TERRACE FACING BURIAL GROUND

SOLID ARROWS INDICATE 1-IN-12 SLOPED CONCRETE RAMPS MEETING ADA AND MAAB REGULATIONS FOR ACCESSIBLE ROUTES

ACCESSIBLE ROUTE TO ENTRY DOOR LANDING FROM MASS AVE SIDEWALK

GRANITE STEPS AND IRONWORK HANDRAILS

MASSACHUSETTS AVENUE SIDEWALK

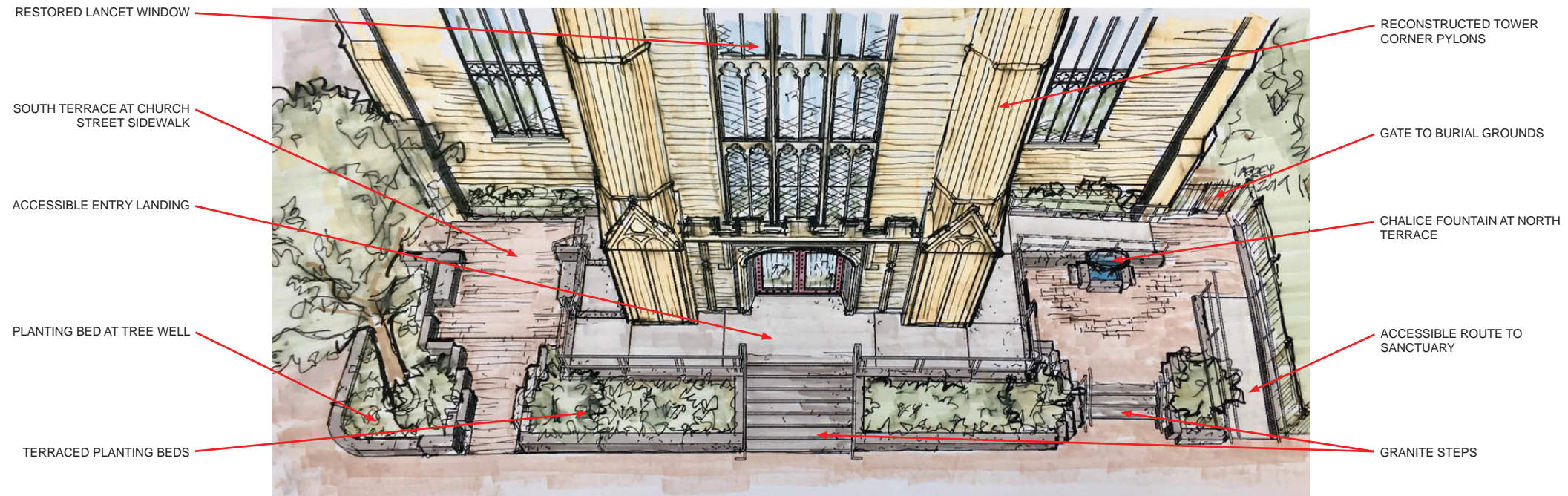
"RIEPANDENS YEW", IVY AND BULBS AT TERRACED "GREEN PEDESTAL" PLANTING BEDS



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# BIRD'S EYE VIEW AT ACCESSIBLE ENTRY



RESTORED LANCET WINDOW

SOUTH TERRACE AT CHURCH STREET SIDEWALK

ACCESSIBLE ENTRY LANDING

PLANTING BED AT TREE WELL

TERRACED PLANTING BEDS

RECONSTRUCTED TOWER CORNER PYLONS

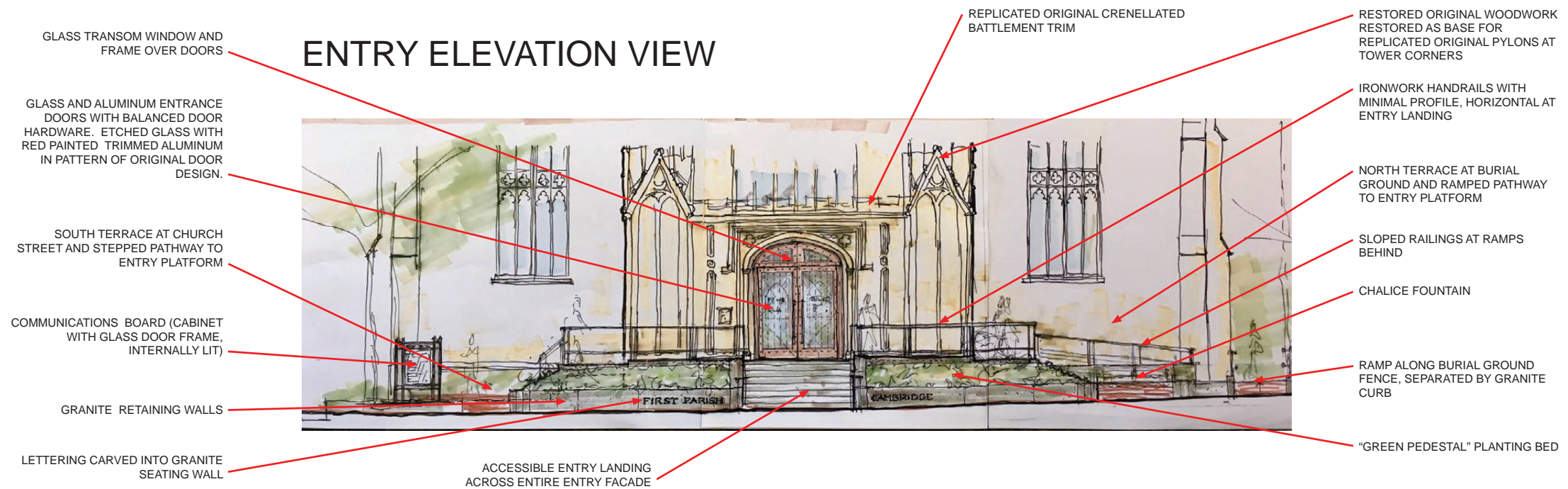
GATE TO BURIAL GROUNDS

CHALICE FOUNTAIN AT NORTH TERRACE

ACCESSIBLE ROUTE TO SANCTUARY

GRANITE STEPS

# ENTRY ELEVATION VIEW



GLASS TRANSOM WINDOW AND FRAME OVER DOORS

GLASS AND ALUMINUM ENTRANCE DOORS WITH BALANCED DOOR HARDWARE. ETCHED GLASS WITH RED PAINTED TRIMMED ALUMINUM IN PATTERN OF ORIGINAL DOOR DESIGN.

SOUTH TERRACE AT CHURCH STREET AND STEPPED PATHWAY TO ENTRY PLATFORM

COMMUNICATIONS BOARD (CABINET WITH GLASS DOOR FRAME, INTERNALLY LIT)

GRANITE RETAINING WALLS

LETTERING CARVED INTO GRANITE SEATING WALL

REPLICATED ORIGINAL CRENELLATED BATTLEMENT TRIM

RESTORED ORIGINAL WOODWORK RESTORED AS BASE FOR REPLICATED ORIGINAL PYLONS AT TOWER CORNERS

IRONWORK HANDRAILS WITH MINIMAL PROFILE, HORIZONTAL AT ENTRY LANDING

NORTH TERRACE AT BURIAL GROUND AND RAMPED PATHWAY TO ENTRY PLATFORM

SLOPED RAILINGS AT RAMPS BEHIND

CHALICE FOUNTAIN

RAMP ALONG BURIAL GROUND FENCE, SEPARATED BY GRANITE CURB

"GREEN PEDESTAL" PLANTING BED

ACCESSIBLE ENTRY LANDING ACROSS ENTIRE ENTRY FACADE



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# ENTRY VIEW FROM SOUTHEAST

(HIDDEN IN THIS VIEW) WIDENED NARTHEX WINDOWS WITH VIEWS TO SOUTH TERRACE AND HARVARD SQUARE

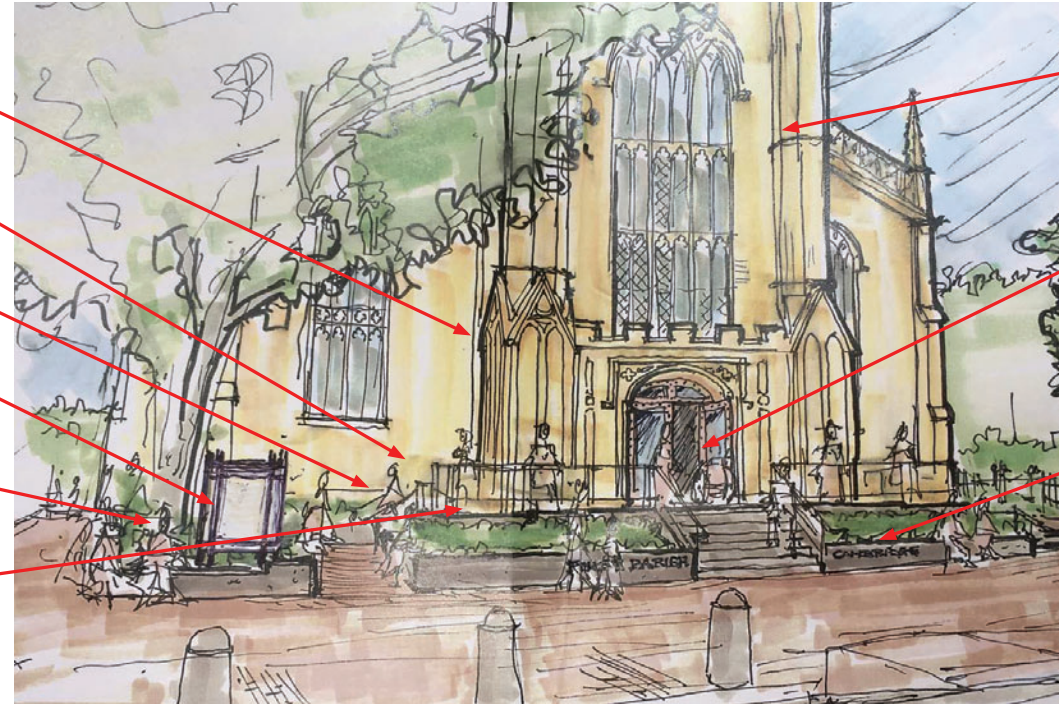
STEPPED ROUTE TO ENTRY DOOR LANDING FROM CHURCH STREET SIDEWALK

BENCHES AT ACCESSIBLE SOUTH ACTIVITY TERRACE FACING HARVARD SQUARE

COMMUNICATIONS BOARD (CABINET WITH GLASS DOOR FRAME, INTERNALLY LIT)

GRANITE RETAINING WALLS AT PLANTING BEDS PROVIDE SEATING FOR PEDESTRIANS

ACCESSIBLE ENTRY LANDING ACROSS ENTIRE ENTRY FACADE



RECONSTRUCTED ORIGINAL DESIGN FEATURES: CRENELLATED BALUSTRADE, FINIALS, EAVE BALUSTRADE, TOWER PYLONS

GLASS AND ALUMINUM DOORS FACING MASSACHUSETTS AVENUE SIDEWALK AND HARVARD UNIVERSITY GATE

"GREEN PEDESTAL" GRANITE RETAINING WALLS AND TERRACED PLANTING BEDS

# ENTRY VIEW FROM NORTHEAST

ACCESSIBLE ENTRY LANDING ACROSS ENTIRE ENTRY FACADE

"GREEN PEDESTAL" PLANTING BED

GRANITE STEPS WITH IRONWORK HANDRAILS



RESTORED LANCET WINDOW WITH INTERNAL LIGHTING

RESTORED ORIGINAL PYLON BASES, RECONSTRUCTED CRENELLATED BALUSTRADE AND OCTAGONAL CORNER PYLONS AT TOWER

ACCESS RAMPS ALONG WALL OF CHURCH AND TOWER

CHALICE FOUNTAIN AND MEDITATION CIRCLE AT RAISED NORTH TERRACE

RAMPED SIDEWALK ALONG BURIAL GROUND FENCE LINE AT NORTH EDGE OF CHURCH PROPERTY

GRANITE STEPS RAISED TO NORTH TERRACE



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ENTRY DOOR



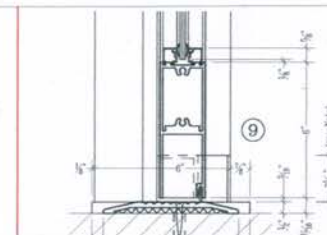
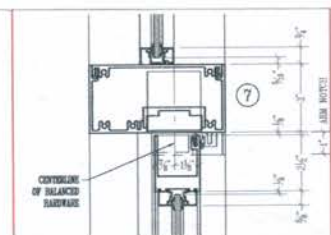
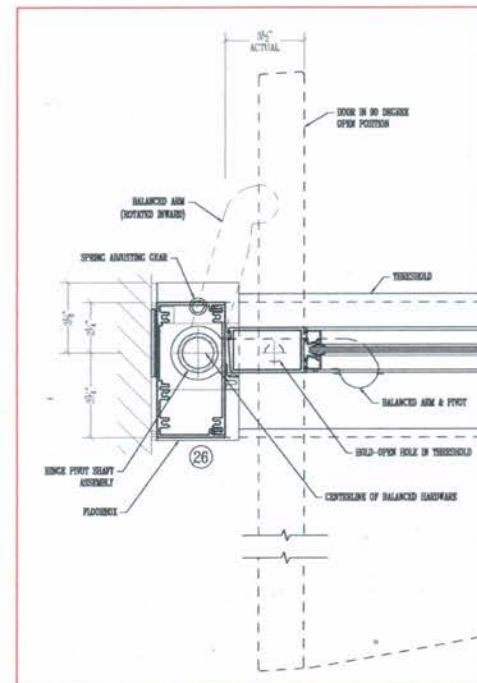
TOWER ENTRY AND NARTHEX LOBBY



**Ellison** Extruded Aluminum Stile & Rail Balanced Doors Section C

**GENERAL DRAWING NOTES:**

- Material:**
  - Extruded aluminum alloy 6063-T6 with a minimum wall thickness of 1/8".
- Finishes:**
  - Available in anodized, **kynar painted**, and powder coat paint finishes.
- Doors:**
  - Standard door thickness is **2"**.
  - Available stile widths: 2-1/2", 3-1/2" and **4-1/2"**.
  - Available top rail heights: 2-1/2", 3-1/2" and **5"**.
  - Available bottom rail heights: 6" and **10"** or greater using dress plates (10" recommended to comply with 2004 ADA guidelines).
  - Center rail minimum is 1-1/2" (per detail 8 on page 6).
  - Interior side glass stops snap on to accommodate most glass thickness (special glass sizes can be accommodated, see page 12 or consult factory).



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GLASS FIBER REINFORCED POLYESTER IN ARCHITECTURAL RESTORATION

FIRST UNITARIAN UNIVERSALIST SOCIETY OF NEWTON



THE BERKELEY BUILDING OF BOSTON



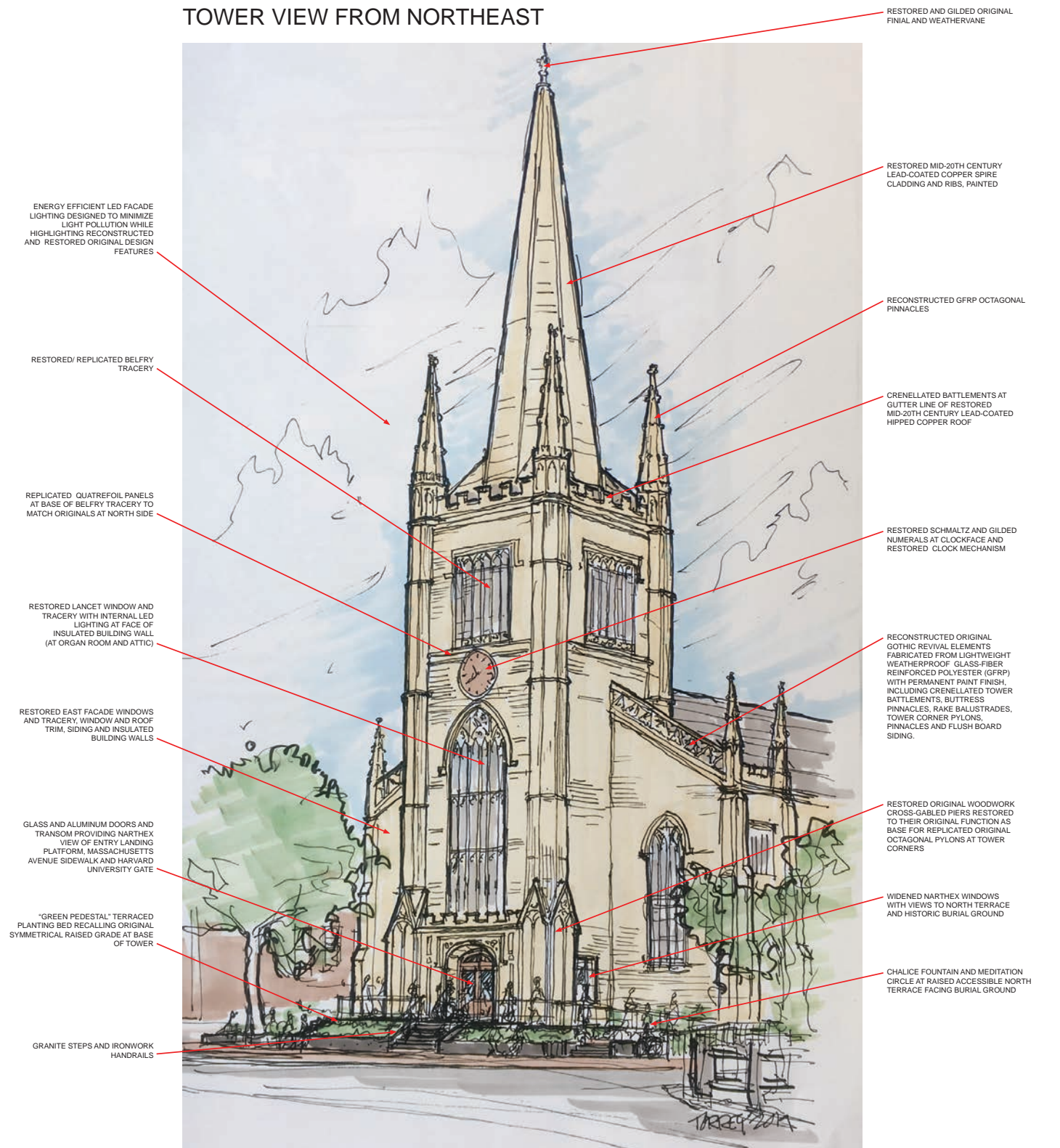
UNION STATION OF WORCESTER



FIRST PARISH UNITARIAN UNIVERSALIST OF CANTON



TOWER VIEW FROM NORTHEAST



ENERGY EFFICIENT LED FACADE LIGHTING DESIGNED TO MINIMIZE LIGHT POLLUTION WHILE HIGHLIGHTING RECONSTRUCTED AND RESTORED ORIGINAL DESIGN FEATURES

RESTORED/ REPLICATED BELFRY TRACERY

REPLICATED QUATREFOIL PANELS AT BASE OF BELFRY TRACERY TO MATCH ORIGINALS AT NORTH SIDE

RESTORED LANCET WINDOW AND TRACERY WITH INTERNAL LED LIGHTING AT FACE OF INSULATED BUILDING WALL (AT ORGAN ROOM AND ATTIC)

RESTORED EAST FACADE WINDOWS AND TRACERY, WINDOW AND ROOF TRIM, SIDING AND INSULATED BUILDING WALLS

GLASS AND ALUMINUM DOORS AND TRANSOM PROVIDING NARTHEX VIEW OF ENTRY LANDING PLATFORM, MASSACHUSETTS AVENUE SIDEWALK AND HARVARD UNIVERSITY GATE

"GREEN PEDESTAL" TERRACED PLANTING BED RECALLING ORIGINAL SYMMETRICAL RAISED GRADE AT BASE OF TOWER

GRANITE STEPS AND IRONWORK HANDRAILS

RESTORED AND GILDED ORIGINAL FINIAL AND WEATHERVANE

RESTORED MID-20TH CENTURY LEAD-COATED COPPER SPIRE CLADDING AND RIBS, PAINTED

RECONSTRUCTED GFRP OCTAGONAL PINNACLES

CRENELLATED BATTLEMENTS AT GUTTER LINE OF RESTORED MID-20TH CENTURY LEAD-COATED HIPPED COPPER ROOF

RESTORED SCHMALTZ AND GILDED NUMERALS AT CLOCKFACE AND RESTORED CLOCK MECHANISM

RECONSTRUCTED ORIGINAL GOTHIC REVIVAL ELEMENTS FABRICATED FROM LIGHTWEIGHT WEATHERPROOF GLASS-FIBER REINFORCED POLYESTER (GFRP) WITH PERMANENT PAINT FINISH, INCLUDING CRENELLATED TOWER BATTLEMENTS, BUTTRESS PINNACLES, RAKE BALUSTRADES, TOWER CORNER PYLONS, PINNACLES AND FLUSH BOARD SIDING.

RESTORED ORIGINAL WOODWORK CROSS-GABLED PIERS RESTORED TO THEIR ORIGINAL FUNCTION AS BASE FOR REPLICATED ORIGINAL OCTAGONAL PYLONS AT TOWER CORNERS

WIDENED NARTHEX WINDOWS WITH VIEWS TO NORTH TERRACE AND HISTORIC BURIAL GROUND

CHALICE FOUNTAIN AND MEDITATION CIRCLE AT RAISED ACCESSIBLE NORTH TERRACE FACING BURIAL GROUND

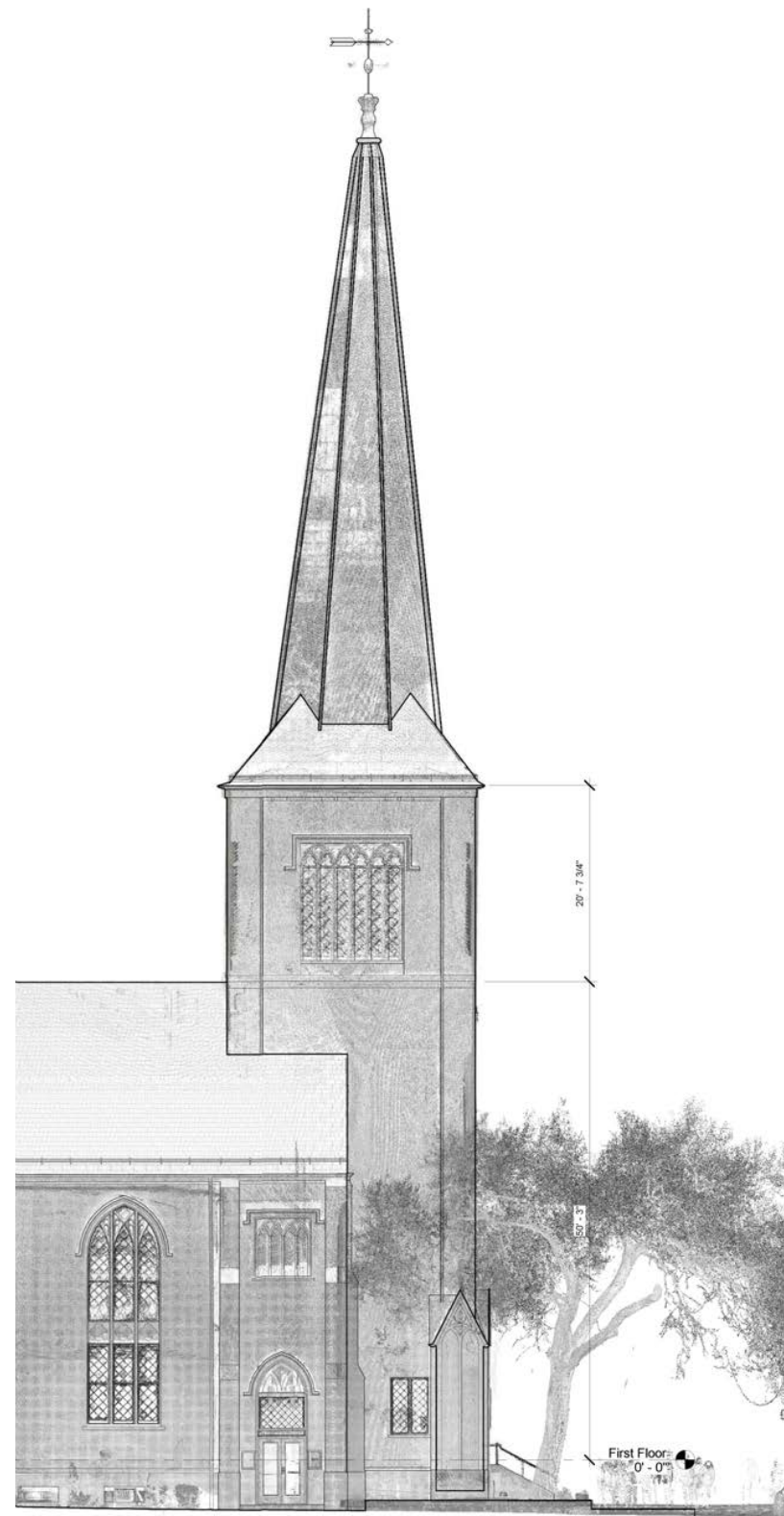


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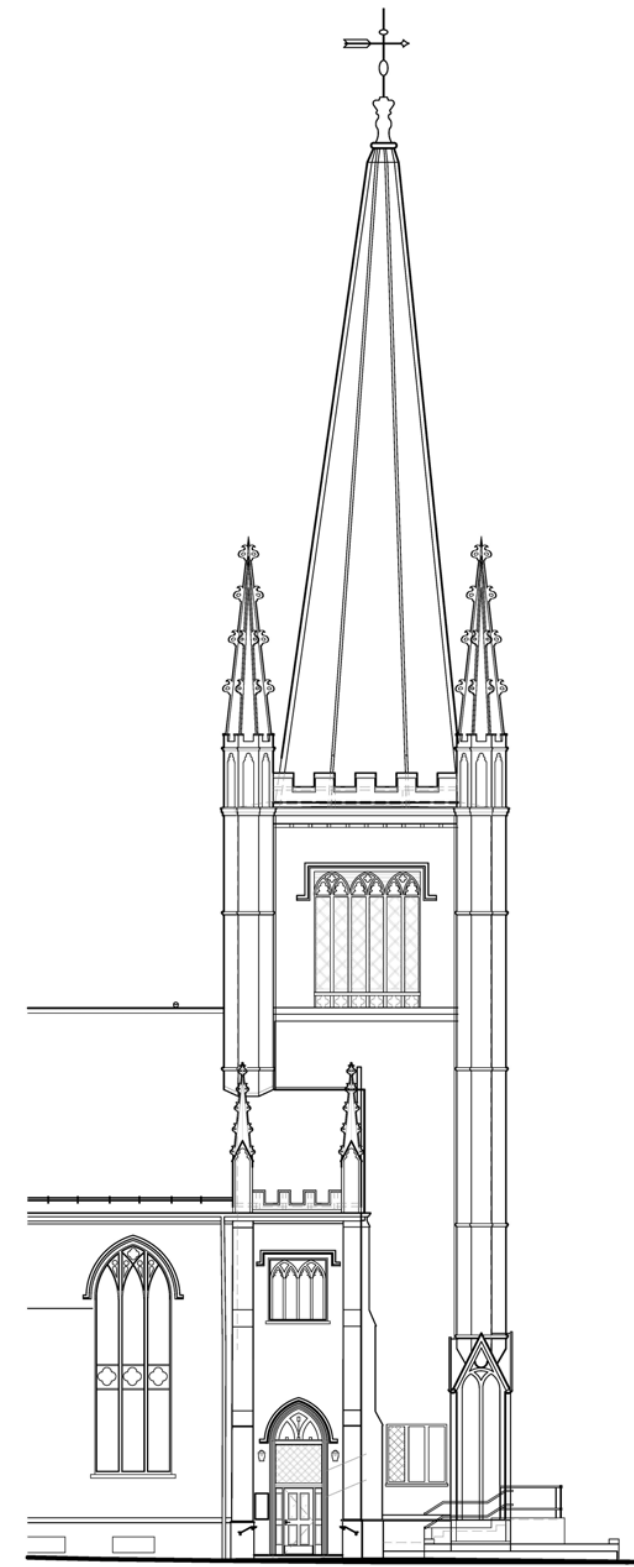




EXISTING SOUTH ELEVATION



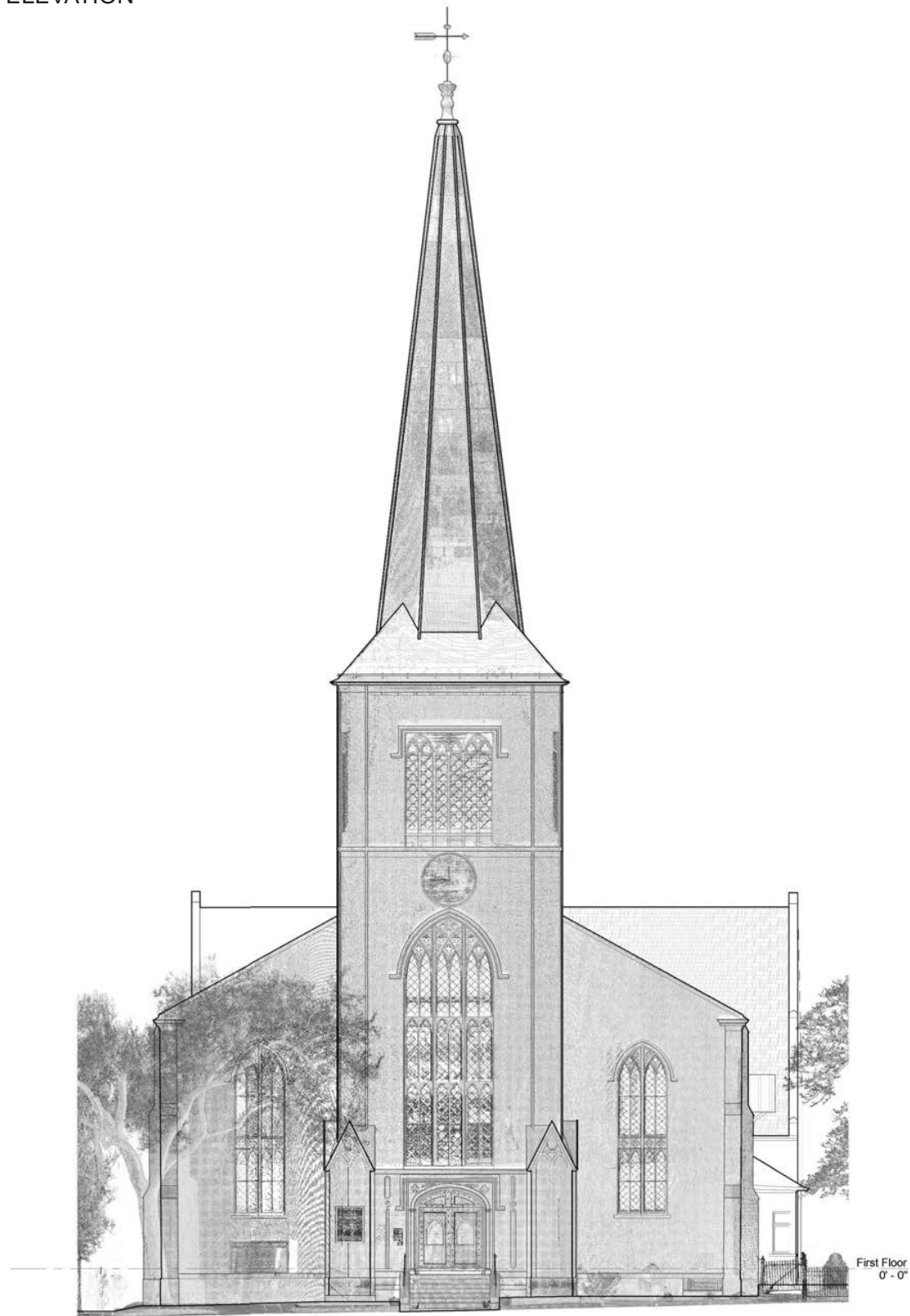
PROPOSED SOUTH ELEVATION



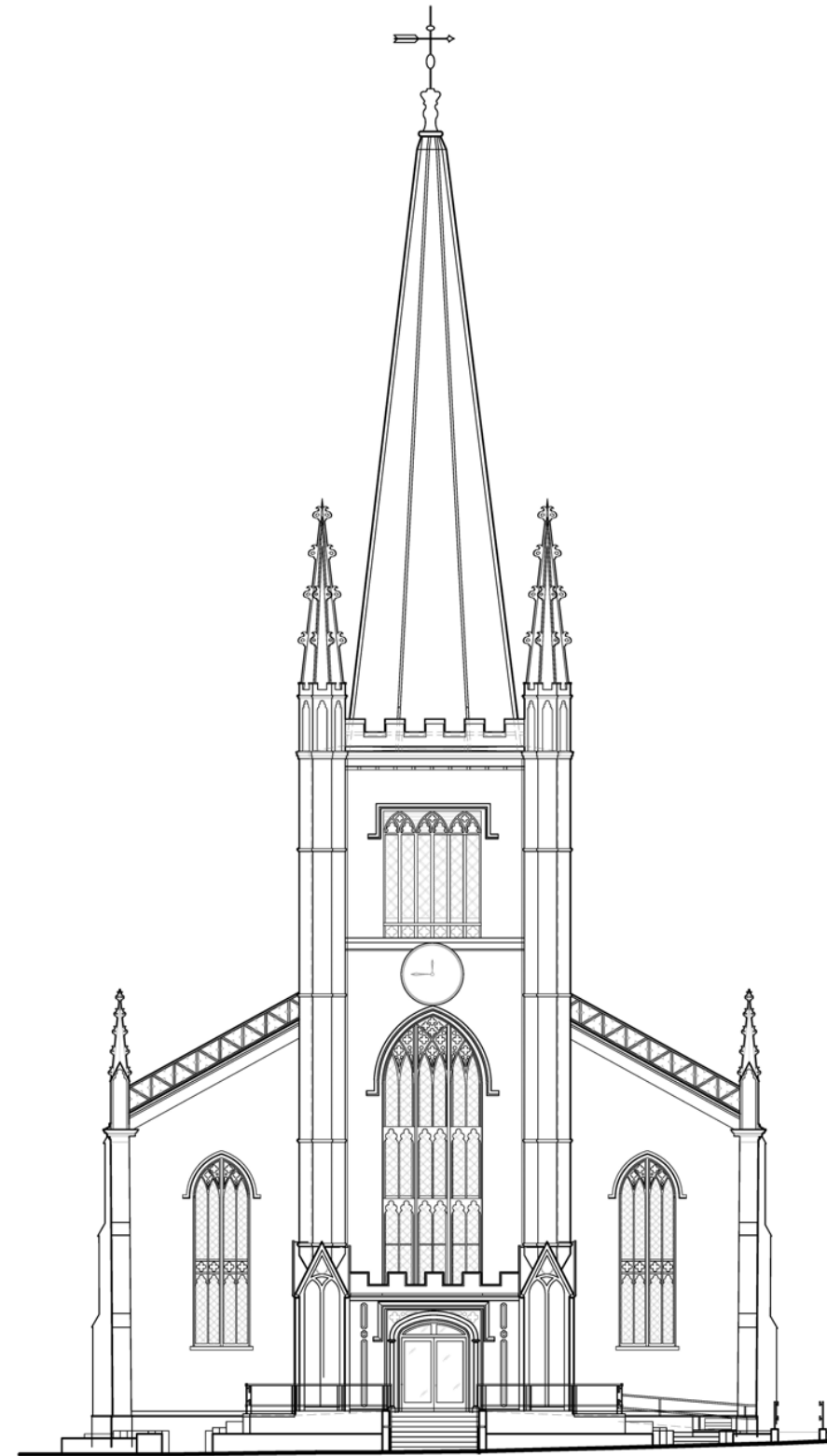
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EXISTING EAST ELEVATION



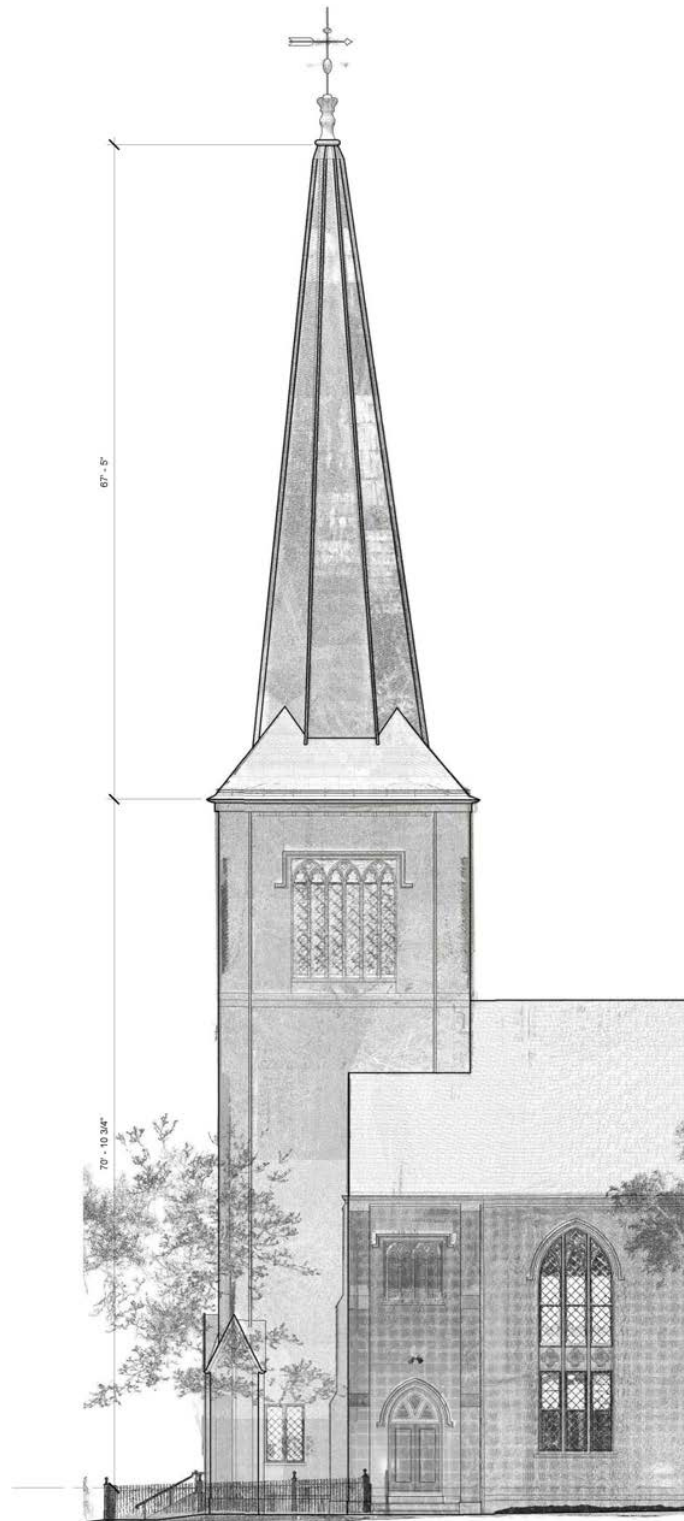
PROPOSED EAST ELEVATION



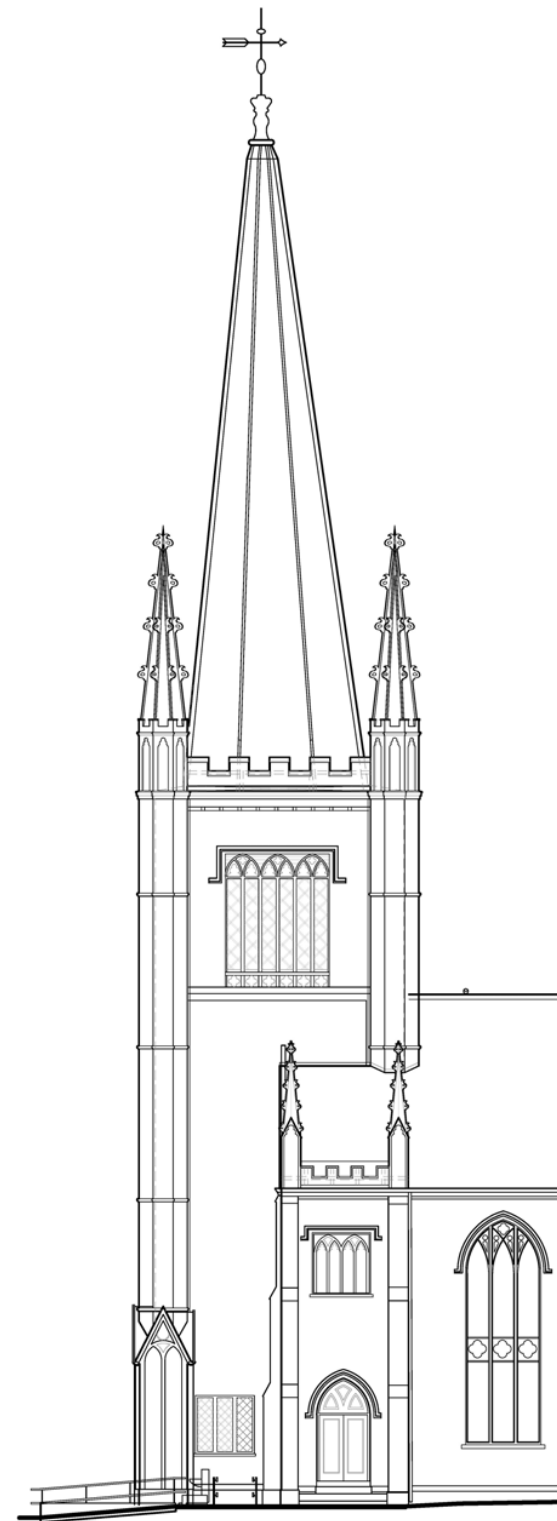
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EXISTING NORTH ELEVATION



PROPOSED NORTH ELEVATION



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75 Kneeland Street  
Boston, MA 02111  
617-227-1477

06-08-20

**KEYNOTES to ESTIMATE DRAWINGS**

Project:

**Mass Ave Wall and Tower Project**

First Parish Church Unitarian Universalist  
3 Church Street, Cambridge, MA 02138

**WORK CATEGORIES SUMMARY**

Cost Estimate by Clive Tysoe of Ellana Inc. Construction Consultants, with cost input as noted:

- SL SITE IMPROVEMENTS AND LANDSCAPING**  
Plantings cost input by Weinmayr Jay Landscape Architecture
- FW FOUNDATIONS AND WALLS**
- RF ROOFING AND FLASHING**  
Cost input by American Steeple and Tower, Inc. ,Yankee Steeplejack Company, Inc.
- SF STRUCTURAL AND FRAMING**  
Cost input by American Steeple and Tower, Inc.
- TS TRIM AND SIDING (WOOD)** Cost input by American Steeple and Tower, Inc.
- GF GLASS FIBER REINFORCED POLYMER (GFRP) RESTORATION ASSEMBLIES**  
Fabrication cost input by DuroFiber Inc., Architectural Fiberglass Inc.  
Installation cost input by American Steeple and Tower, Inc., Yankee Steeplejack Company, Inc.
- DW DOORS AND WINDOWS**  
**PART A:** wood windows; Cost input by American Steeple and Tower, Inc.,Yankee Steeplejack Company, Inc.  
**PART B:** aluminum doors and transoms; Cost input by Ellison Bronze, Inc.
- IF INTERIORS AND FINISHES**
- EM ELECTRICAL AND MECHANICAL**  
Lighting cost input by Jeffrey Berg of WSP
- GS GENERAL CONDITIONS/SITE PROTECTION**  
Selected cost input by American Steeple and Tower, Inc., Yankee Steeplejack Company, Inc.
  
- SL SITE IMPROVEMENTS AND LANDSCAPING**
- SL-1** Site Demo; remove (c.1901) existing stone steps, landing stone and sidewalls. Remove granite curbs and cobblestones. Remove and salvage brick paving within Work Area.
- SL-2** Granite Steps at entrance. Concrete foundations to 4 ft below grade.
- SL-3** Granite retaining walls and curbing. Retaining walls on concrete foundations to 4 ft below grade.

- SL-4** Granite slab pavers at entry landing. Flames finish 24” x 36” x 2” paving stones set on concrete slab on backfilled grade.
- SL-5** Granite Steps at south terrace walkways. Set on retaining walls and concrete slab on backfilled grade.
- SL-6** Granite Benches, Fountain
- SL-7** Ironwork walkway guardrails, step handrails and double handrails at 1:12 ramps. Painted galvanized malleable steel solid posts grouted into paving and granite base walls, mid-rails, brackets and handrails using Julius Blum profile #4429.
- SL-8** Brick terrace paving within Work Area. Set on concrete substrate on compacted subgrade.
- SL-9** Concrete ramps and landings. Broom finish tinted concrete slab on compacted subgrade.
- SL-10** Plantings at plant beds. See drawing L-1 attached. **Plantings cost input by Weinmayr Jay Landscape Architecture**
- SL-11** Notice board. Custom fabricated exterior glass-faced bulletin board cabinet on galvanized painted steel frame, internally lit.
- SL-12** Gate to burial ground. Ironwork replacement painted galvanized gate.
- SL-13** Restore City of Cambridge burial ground cast iron fence segment along north property line. Protect against damage during construction.
- SL-14** Site drainage. On-site drywell to collect surface drainage from two cast iron trench drains and from FW-6 foundation drain piping.
- SL-15** Irrigation System. Concealed automatic drip line system within plant beds to maintain SL-10.
- SL-16** Tree pruning of south terrace elm, coordinate with City of Cambridge arborist

**FW FOUNDATIONS AND WALLS**

- FW-1** Foundation waterproofing within site Work Area. At existing concrete (c.1955) cast-in-place concrete foundation walls, apply membrane to excavation extents for site work (4 ft below grade, min).
- FW-2** Foundation insulation. At FW-1 locations, apply 2” extruded polystyrene rigid insulation.
- FW-3** Stucco at exposed foundations. Wire lath and concrete stucco to 6” min. below finished grade over existing exposed concrete foundations at buttresses/over FW-2 rigid insulation at foundation walls.
- FW-4** Insulate existing walls at Work Area exterior walls from foundation to top of attic floor level (top of eave gutter). Install blown-in dense cellulose insulation within wall cavities via round 2” dia holes cut in exterior siding. For filling of siding holes by others see TS-3.
- FW-5** Granite facing stone at tower pylon bases. Honed granite 2” thick on new cementitious board substrate.
- FW-6** Foundation drainage pipe set in crushed stone bed at bottom of waterproofing membrane. Run drain pipe to on-site drain manhole drywell. See Site Work SL-14.

**RF ROOFING AND FLASHING**

- Cost input by American Steeple and Tower, Inc. ,Yankee Steeplejack Company, Inc.**
- RF-1** Strip and salvage existing lead-coated copper roofing at (re-clad c.1940’s) spire and (c.1954 over-framed) hipped tower roof
- RF-2** Remove roof guard at c.1954 hipped roof
- RF-3** Remove gutters and downspouts from c.1954 hipped tower roof
- RF-4** Remove section of roof guard at new eave pinnacles
- RF-5** Restore Weathervane. Scope RM4 in Torrey Architecture Existing Conditions Assessment 2018
- RF-6** Re-roof Spire. Following RF-1 at original spire roof, replace deteriorated sheathing boards (provide allowance for an assumed % replacement and unit cost), install asphalt roofing paper and install 20oz red copper flat seam roof at slopes and over ribs. Paint red copper roof surfaces in color to match GFRP. **See GF-12 (ALT to RF-6)**
- RF-7** Tower Roof. Following SF-1 removal of c.1954 overlay roof, install new plywood roof sheathing at low-slope (original) roof pitch, self-adhering bituthene waterproofing underlayment from edge of tower, around new GF-1 pinnacles and to base of RF-6 spire roof. Install snow guards at 12” O.C. Install 20oz red copper flat seam roof. Coordinate drip edge overlap of GF-3 Tower Roof Edge Frieze Board Trim.
- RF-8** Flashing at existing slate roof to tower walls. Replace broken slates to match, install self-adhering bituthene waterproofing underlayment from edge of tower, install 24oz red copper.
- RF-9** not used



- RF-10** Ice Belt at eave pinnacles. Remove slates between new eave pinnacles, install self-adhering bituthene waterproofing underlayment, install standing seam red copper ice belt. Install snow guards at 12” O.C
- RF-11** Repair Belfry Louvers. (4 locations: tower N,E,S,W). Repair or replace red copper (c.1940s) belfry louvers. Coordinate sequence of removal and reinstallation with GF-10/GF-11 belfry opening work. **See GF-13 (ALT to at RF-11)**
- RF-12** Roof hatch at tower. Frame and install prefabricated (Bilco or custom) roof access hatch at spire roof. Tie-in flashing to RF-6 Spire re-roofing.
- RF-13** Belfry bell deck re-roof. Replace low slope flat seam copper bell deck roof at floor of belfry interior. Strip existing red copper, repair deteriorated sheathing, install new sloped overlay plywood, bituthene, 20 oz flat-seamed copper roofing including curbing and drainage scuppers to north and south.
- RF-14** Pilaster base gable roof replacement. Strip existing (c.1954) red copper, repair deteriorated sheathing, install new sloped overlay plywood, bituthene, 20 oz flat-seamed copper roofing. Roof coverage to existing tower corner walls, providing weep drainage from GF-4 octagonal tower corner pilasters
- RF-15** not used
- RF-16** Re-roof entry. Strip existing red copper, repair deteriorated sheathing, install new sloped overlay plywood, bituthene, 20 oz flat-seamed copper roofing including gutter and drainage scuppers to north and south of doorway.
- RF-17** Sanctuary Slate Roof at tower work area. Replace missing and broken slates to match existing. Coordinate slate work with new flashing at RF-8, RF-9, and RF-10.

## SF STRUCTURAL AND FRAMING

### Cost input by American Steeple and Tower, Inc., Yankee Steeplejack Company, Inc.

- SF-1** Remove Tower Roof. Demolish (c.1954) over-framed 2x8 @ 16” hip roof rafters and 5/8” plywood sheathing. Sister and extend original over-framed rafters as required for RF-7.
- SF-2** Frame Entry Ramp. Reframe wood floor for depressed landing and ramp at front door. Framing consists of P/T 2x10 @16” suspended from existing supporting framing with galvanized hangers, allow for sistering and repair of up to four supporting beams as part of the work.
- SF-3** Frame New Windows. Wider window openings at Narthex (2 locations). Provide 3 1/2” x 14” PSL headers landing on new 4x6 min jack studs running to sill, with double 2x4 or 2x6 king studs each side of opening. Increase framing thicknesses to match existing studding if wider.
- SF-4** Lancet Window Backup Partition. Frame and insulate new partition behind lancet window full height in plane of existing structural reinforcement cross-beams. Provide 2x4 or 2x6 studding @ 16” with 5/8” plywood sheathing on exterior face, 1/2” GWB in interior face.
- SF-5** Eave Pinnacles Armature. Galvanized steel armature to support GF-5 eave pinnacles (4), consisting of vertical HSS 8x3x3/8 tubes lag screwed into posts and wall framing below through wall sheathing. Projecting portions to have welded brackets and bolted P/T blocking and nailers to serve as internal structure for GF-5 pinnacle. Extend down along building wall at least 8 feet.
- SF-6** Tower Pinnacles Armature. Galvanized steel armature to support GF-1 pinnacles (4), consisting of vertical L8x8x1 angles nested and lag screwed into corner posts through wall sheathing. Projecting portions to have P/T blocking and nailers bolted to angle to serve as internal structure for GF pinnacle. Extend down along building wall at least 12 feet.
- SF-7** Tower Pilasters Armature. Galvanized steel armature to support GF-4 octagonal tower pilasters, consisting of octagon-shaped horizontal frames of galvanized L3x3x3/8 welded and lag-screwed to corner posts and wall studding through sheathing. Space at 8-feet (vertically) and provide bolted blocking and diagonally braced vertical 4x6 studding between them for attachment of GF-4 covers.
- SF-8** Rake Balustrades Armature. Galvanized steel armature to support GF-7 rake balustrade, consisting of L-shaped bent plate braces nested into roof sheathing projecting up from roof behind rake screen, provide at every second vertical strut (every other vertical).
- SF-9** Roof Parapets Armature. Galvanized steel armature to support GF-2, GF-6, GF-9 parapets (crenelated battlements), consisting of L-shaped bent plate braces nested into roof sheathing projecting vertically from roof behind GF- parapets. Provide behind each crenel (at every solid upright panel). Bolt to horizontal TS4x6x3/8 cross-rail spanning between pinnacles.

## TS TRIM AND SIDING (WOOD)

### Cost input by American Steeple and Tower, Inc., Yankee Steeplejack Company, Inc.

Typical: Paint surfaces in color to match GFRP.

- TS-1** Remove Vertical Tower Trim. At tower corners, remove (c.1954) vertical trim boards as required for new GFRP armature and cladding.
- TS-2** Prep Tower Corners. At (c.1954) vertical flush wood siding at tower corners to be concealed by new GFRP assemblies, scrape loose paint, replace deteriorated wood, install ice and water shield membrane to accept SF-6 and SF-7 Tower Pilasters and Pinnacles Armatures.
- TS-3** Restore Siding. At (c.1954) vertical flush wood siding to remain exposed: scrape loose paint, replace deteriorated wood, plug siding holes from wall insulation by others under FW-4 with wood plugs and epoxy resin filler for painting, prime and paint. **See GF-14 (ALT to TS-3)**
- TS-4** Restore Buttresses. At existing wood buttresses (4 locations within Work Area), scrape loose paint, replace deteriorated wood, prime and paint. Match north side 2014 restoration work. **See GF-15 (ALT to TS-4)**
- TS-5** Water table. Mahogany water table trim with copper cap at bottom of wood siding, to cover FW-2/FW-3 insulation/stucco. **See GF-16 (ALT to TS-5)**
- TS-6** Restore Tower Lancet Window Tracery. At (original 1833) decorative screen and surface woodwork: scrape loose paint, replace deteriorated wood using mahogany dutchmen and epoxy resin filler, prime and paint. Repair lead flashing at top surfaces of rounded head casing trim, prime and paint. **See GF-17 (ALT to TS-6)**
- TS-7** Restore Clock Face. ~~Remove clock hands and remove face assembly off site for restoration or replacement. Scrape loose paint, replace deteriorated wood, prime and apply black smalt coating to clock face. Repair and re-gild numerals, minute marks and clock hands. Reinstall.~~ (5-22-20 note: regilding completed c.2004)
- TS-8** Restore Entry Trim and Siding. At original (1833) flush board siding and decorative trimwork at pilaster base walls and gables, scrape loose paint, apply “Peel-away” paint remover at areas of excessive paint build-up, scrape to sound original wood surface, replace deteriorated wood using mahogany dutchmen and epoxy resin filler, prime and paint.
- TS-9** Restore Belfry Opening Tracery. (4 locations: tower N,E,S,W). At (original 1833) decorative screen and surface woodwork: scrape loose paint, replace deteriorated and missing wood using mahogany dutchmen and epoxy resin filler, prime and paint. Using existing as model, build exact mahogany replica of missing center arch at east façade Using existing west elevation as model, restore six covered-over quatrefoil medallions below openings for remaining three elevations. Repair lead flashing (if any, or install new) at weather-exposed upper surfaces of tracery cut-outs and at rounded head casing trim, prime and paint. **See GF-18 (ALT to TS-9)**
- TS-10** Restore East Elevation Lancet Windows Tracery. (Two locations: north and south stairs) At (original 1833) decorative screen and surface woodwork: scrape loose paint, replace deteriorated wood using mahogany dutchmen and epoxy resin filler, prime and paint. Repair lead flashing (if any, or install new) at weather-exposed upper surfaces of tracery cut-outs and at rounded head casing trim, prime and paint. Coordinate with DW-4 and DW-5 window restoration. **See GF-19 (ALT to TS-10)**

## GF GLASS FIBER REINFORCED POLYMER (GFRP) RESTORATION ASSEMBLIES

### Fabrication cost input by DuroFiber Inc, Architectural Fiberglass Inc. Installation cost input by American Steeple and Tower, Inc., Yankee Steeplejack Company, Inc.

Provide GFRP molded profile panels and semi-prefabricated assemblies for field attachment to galvanized steel armatures by others under SF- category. GFRP assemblies to be fabricated from architect’s drawings and fabricator’s field measurements. Paint with Sherwin Williams DTM primer and two finish coats. Provide for each keynote line item: Fabrication cost \$\_\_\_ ; Shipping and Installation cost \$\_\_\_.

- GF-1** Tower Pinnacles (4 locations). Mount to SF-7 armature on top of GF-4 pilasters.
- GF-2** Tower Roof Parapets (crenelated battlement, 4 locations). Mount to RF-15 and GF-4.
- GF-3** Tower Roof Edge Frieze Board Trim. (4 locations) Coordinate with RF-7 tower roof.
- GF-4** Tower Corner Octagonal Pilasters. (4 locations) Segments to wrap corners of tower over SF-7 armature and terminate at vertical wall attachment strips. Each vertical segment to flash with overlapped joints at horizontal rounded banding profiles.
- GF-5** Eave Pinnacles. (4 locations) Mount to SF-5 and RF-9 snow rail.
- GF-6** Eave Parapets (crenelated battlement, 2 locations) Mount to RF-9 snow rail and SF-5 armature.
- GF-7** Rake Balustrade. (2 locations) Mount to SF-8 armature

**GF-8** Rake Roof Edge Frieze Board. (2 locations). Coordinate with GF-7 rake balustrade base and sanctuary slate roof RF-7 repairs at work area.

**GF-9** Entry Roof Parapet (crenelated battlement). Mount to SF-9 armature, coordinate with RF-16 roof.

**GF-10 (ALT to TS-9) See GF-18**

**GF-11** Belfry Opening Lattice (4 locations) Using existing as model, replace existing painted wood with exact GFRP replica. Coordinate with TS-9/GF10 and RF-11 louvers for sequence of removal and reinstallation.

**5-22-20 Additional ALTERNATES IN GFRP in lieu of restoration of existing original and 1950's woodwork:**

**GF-12 (ALT to RF-6)**

In lieu of RF-6, clad Spire in GFRP in original vertical plank surface texture. Following RF-1 at original spire roof, install stainless steel screws to secure projecting and loose existing lead-coated copper, install ice-and-watershield membrane. Fabricate and install GFRP in original patterning of vertical sheathing boards and ribs. Paint GFRP with Sherwin Williams DTM primer and two finish coats.

**GF-13 (ALT to at RF-11)**

In lieu of RF-11, replace Belfry Louvers in GFRP (4 locations: tower N,E,S,W). Replace deteriorated red copper (c.1940s) belfry louvers. Coordinate sequence of removal and reinstallation with GF-10/GF-11 belfry opening work.

**GF-14 (ALT to TS-3)**

In lieu of TS-3, clad c.1954 vertical flush wood siding in GFRP in original horizontal flush board siding surface texture. Install vertical spaced strapping and ventilate top and bottom. Paint GFRP with Sherwin Williams DTM primer and two finish coats

**GF-15 (ALT to TS-4)**

In lieu of TS-4, clad existing wood buttresses (4 locations within Work Area) in GFRP in original vertical flush board siding surface texture. Install vertical spaced strapping and ventilate top and bottom. Paint GFRP with Sherwin Williams DTM primer and two finish coats

**GF-16 (ALT to TS-5)**

In lieu of TS-5, fabricate and install GFRP water table trim at bottom of TS-3 cladding. Paint GFRP with Sherwin Williams DTM primer and two finish coats

**GF-17 (ALT to at TS-6)**

In lieu of TS-6, replace Tower Lancet Window Tracery in GFRP. At (original 1833) Tower Lancet Window Tracery decorative screen and surface woodwork, using existing as model, replace existing painted wood with exact GFRP replica. Overlay top surface of rounded head casing trim with GFRP in matching profile. Paint GFRP with Sherwin Williams DTM primer and two finish coats

**GF-18 (ALT to TS-9)**

In lieu of TS-9, replace Belfry Opening Tracery in GFRP. (4 locations: tower N,E,S,W). At (original 1833) decorative screen and surface woodwork, using existing as model, replace existing painted wood with exact GFRP replica. Using existing west elevation as model, build exact mahogany replica of six quatrefoil medallions below openings for remaining three elevations. Overlay top surface of rounded head casing trim with GFRP in matching profile. Paint GFRP with Sherwin Williams DTM primer and two finish coats.

**GF-19 (ALT to TS-10)**

In lieu of TS-10, replace East Elevation Lancet Windows Tracery in GFRP. At (original 1833) Lancet Window Tracery decorative screen and surface woodwork, using existing as model, replace existing painted wood with exact GFRP replica. Overlay top surface of rounded head casing trim with GFRP in matching profile. Paint GFRP with Sherwin Williams DTM primer and two finish coats.

**DW DOORS AND WINDOWS**

**PART A: wood windows; Cost input by American Steeple and Tower, Inc., Yankee Steeplejack Company, Inc.**

**DW-1** Salvage Existing Tower Entry Doors. Remove and salvage existing doors and transom for re-use as fixed wall display in narthex

**DW-2** New wood casement windows. (2 locations) Match existing diamond-pane narthex windows, ganged. Provide exterior storm windows to match at existing east elevation windows.

**DW-3** Tower Lancet Window. Remove existing wood tracery as required to remove sash off-site for restoration. Scrape to sound original wood surface, replace deteriorated wood using mahogany dutchmen and epoxy resin filler, re-glaze as required, prime and paint.

**DW-4** South Stair Window. Remove storm windows, repair on-site and re-glaze as required, prep, paint, reinstall storm windows.

**DW-5** North Stair Window. Remove storm windows, repair on-site and re-glaze as required, prep, paint, reinstall storm windows.

**PART B: aluminum doors and transoms; Cost input by Ellison Bronze, Inc.**

**DW-6** Entry Door and Transom (D-117): Ellison extruded aluminum, concealed shaft, double stile and rail balanced doors, Kynar paint finish, insulated glass. Custom insulated glass transom window.

**DW-7** Sanctuary Door Pair (D-115B): Provide at existing door pair head: Dorma ED-100 double door auto operator system with wall push-plates both sides. Replace door sill with custom oak ADA sill.

**DW-8** Narthex Door and Transom to South Stair (D-118): Ellison extruded aluminum, concealed shaft, narrow stile tempered glass balanced doors, Kynar paint finish. Custom glass transom window frame painted to match.

**DW-9** Narthex Door and Transom to North Stair (D-116): Ellison extruded aluminum, concealed shaft, narrow stile tempered glass balanced doors, Kynar paint finish. Custom glass transom window frame painted to match.

**DW-10** South Stair Door to Sanctuary (D-115A) Ellison extruded aluminum, concealed shaft, narrow stile tempered glass balanced door and sidelight, Kynar paint finish.

**DW-11** North Stair Door to Sanctuary (D-115C) Ellison extruded aluminum, concealed shaft, narrow stile tempered glass balanced door and sidelight, Kynar paint finish.

**IF INTERIORS AND FINISHES**

**IF-1** Remove Narthex Airlock Vestibule and Doors.

**IF-2** Widen interior window and door arched plaster openings at DW-2 and DW-8/DW-9.

**IF-3** Restore South Stair. Remove (c.1954) landing, relocate lower flight to original location, repair railings, remove and infill stair to Zero Church Street entry door, new shaped door into small closet.

**IF-4** Mezzanine Gallery Ceiling. Remove existing suspended drywall ceiling and domed light coffers. Install new raised ACT ceiling.

**IF-5** Mezzanine Gallery Walls. Remove existing drywall and wood furring walls against foundation walls. Install galvanized steel furring offset from concrete Insulate with Icynene Medium-density spray foam insulation.

**IF-6** Bell Rope Extension System. Install bell rope system to allow ringing of tower bell from narthex. Provide new bell rope and pulleys, through-floor conduits and floor/ceiling escutcheons, terminating at ceiling of Narthex and tie-off on wall. Coordinate with American Steeple and Tower, Inc.

**IF-7** Narthex and Stair Finishes. New carpet and entry carpet, refinish wood floors. Repair wood trim and plaster walls and ceilings, paint.

**IF-8** Narthex step and ramp handrails. Painted malleable steel solid posts, wall brackets and handrails using Julius Blum profile #4429.

**IF-9** Remove and replace north and south stair plaster ceilings with new GWB, painted.

**EM ELECTRICAL AND MECHANICAL**

**Lighting cost input by Jeffrey Berg of WSP – see “Lighting Products” schedule for details.**

**EM-1** Light Poles at site (2 locations) Set on concrete bases, coordinate with Site Work. Post-top lanterns with two fixture heads and two EM-2 floodlights pole-mounted at each. Estimated fixture cost \$9500 x 2 =\$19,000 plus installation.

**EM-2** Roof-mounted floodlights at 11 locations. See drawings for locations. Estimated fixture cost \$1400 x 11 =\$15,400 plus installation.

**EM-3** Belfry interior light. See drawings for location. Estimated fixture cost \$1400 plus installation.

**EM-4** Linear cove LED lights at interior of Tower Lancet window. Six vertical cove lights at 26 ft each. See drawings for locations. Estimated fixture cost \$25/lf x 160 lf =\$5000 plus installation.

**EM-5** Narthex ceiling luminous bowl pendants. See drawings for locations. Estimated fixture cost \$1250 x 6=\$7500 plus installation.

**EM-6** Exterior downlights at 3 locations. See drawings for locations. Estimated fixture cost \$50 x 3 =\$150 plus installation.

**EM-7** Narthex and Stair exit lighting and signage. Fixtures and installation.

**EM-8** Narthex and Stair heating and cooling system. Wall cassette heat pump system.

**GS GENERAL CONDITIONS/SITE PROTECTION**

**GS-1** Tower and Spire Staging **Cost input by American Steeple and Tower, Inc. , Yankee Steeplejack Company, Inc.**

**GS-2** Burial Ground Fence Protection

**GS-3** Site Fence/Sidewalk Protection

**end**