CPED STAFF REPORT

Prepared for the Heritage Preservation Commission
HPC Agenda Item #2
July 28, 2015
BZH-28724

HERITAGE PRESERVATION APPLICATION SUMMARY

Property Location: 315 South 4th Street and 401 3rd Avenue South
Project Name: Municipal Building Clock Restoration
Prepared By: Hilary Dvorak, Principal Planner, (612) 673-2639
Applicant: Municipal Building Commission
Project Contact: Royce Wiens
Ward: 3
Neighborhood: Downtown West
Request: To restore the clock on the Municipal Building.
Required Applications:

Certificate of Appropriateness	To restore the clock on the Municipal Building.

HISTORIC PROPERTY INFORMATION

Current Name	Minneapolis City Hall
Historic Name	The Municipal Building
Historic Address	315 4th Street South
Original Construction Date	1889-1905
Original Architect	Long and Keys
Original Builder	Unknown
Original Engineer	Unknown
Historic Use	Public – City Hall and Courthouse
Current Use	Public - Government
Proposed Use	Public - Government

Date Application Deemed Complete	June 26, 2015	**Date Extension Letter Sent**	Not applicable
End of 60-Day Decision Period	August 25, 2015	**End of 120-Day Decision Period**	Not applicable

CLASSIFICATION

Local Landmark Name	The Municipal Building
Period of Significance	1889-
Criteria of Significance	Architecture, Politics
Date of Local Designation	1977
Date of National Register Listing	1974
Applicable Design Guidelines	*Secretary of the Interior's Standards for the Treatment of Historic Properties*

SUMMARY

BACKGROUND. Minneapolis City Hall was constructed between 1889 and 1905. The building was designed by the Minneapolis architectural firm of Long and Keys. The impressive rusticated pink Ortonville granite structure occupies the entire city block between 3rd and 4th Avenues and 4th and 5th Streets. The massive 5-story building is 100 feet tall with a clock tower that soars 365 feet above ground. When the clock was added in 1916, it was heralded as the largest public timepiece in the world. The exterior, with arched entryways, turrets, and steep roof pavilions, exhibits Romanesque design features. The 4th Street entrance leads into a five-story atrium. The stained glass window skylight illuminates the marble walls and ceremonial staircase. At the center of the atrium sits a massive statue of the "Father of the Waters," donated to Minneapolis in 1906.

The clock tower houses four clock faces, one for each building façade. The clock faces are approximately 24 feet in diameter and were originally constructed with plate glass supported by a cast iron frame. The original clock faces were internally illuminated. Originally, the minute and hour markers were made of a darker color metal and the hour markers, located at 12, 3, 6, and 9, were triangles while the rest were circles. In 1949 the glass clock faces with replaced with porcelain coated steel panels and the copper hands were replaced with stainless steel ones highlighted by neon tubing. The neon was necessary at the time because the porcelain coated steel panels were opaque and did not allow light to shine through them as the original glass did. In 1954 the clock mechanisms were replaced.

APPLICANT'S PROPOSAL. The applicant is proposing to restore the existing clock faces. The applicant is proposing to replace the historic cast-iron frame with an aluminum frame (either entirely cast aluminum or a combination of cast exterior components with extruded aluminum structural framing), replace the non-historic porcelain coated steel panels with laminated, heat-treated glass and remove the non-historic neon tubing on the hands and install an LED lighting system on scaffolding behind each clock face.

Structural Frame: The applicant has indicated that the existing cast iron frame has suffered extensive damage caused by freeze/thaw cycles as water does not shed water away from the frame itself. A non-destructive survey of the clock, done by Wiss, Janney, Elstner Associates, Inc. (WJE) in preparation of the restoration project, revealed that 75 percent of the frame elements need to be replaced. Given how much of the frame needs to be replaced, and the different issues that could arise when replacing deteriorated structural framework members in-kind, WJE recommends replacing the entire frame.

As proposed, the new frame would match the original in organization and profile. Replacing the frame will provide an opportunity to return the geometric five-minute markers to the clock faces, the rounded profile to the tee shapes within the inner ring, as well as make subtle changes to the profiles of the

frame members to allow for water to run off the surface of the clock faces, away from the infill panels. The new frame would be coated in a high-performance, spray applied, Kynar system to match the color of the historic structural elements.

The applicant has submitted early photographs of the clock which reveal a polychrome coloration of the clock face members. Through a paint analysis which would be completed after the clocks have been removed, the original colors could possibly be found. Due to limited funds for the project, the base bid is to coat the frame in a single color as it has been for most of its lifetime. However, the alternate bid is to coat the frame in three colors which would be selected by the architect through paint analysis during construction.

Infill Glass Panels: The applicant has indicated that the existing non-historic porcelain coated steel panels with laminated, heat-treated glass that would mimic the original, historic glass. Several pieces of historic glass have been located in the clock tower. These pieces of glass are a light green color and are ground on both sides which gives the glass a frosty translucent appearance.

Illumination: The applicant has indicated that the existing non-historic neon tubing on the hands of the clock faces will be removed and replaced with an LED lighting system on scaffolding behind each clock face. The lighting system will be directed towards the back of the clock faces and provide illumination of the clocks at night.

In addition to being a local landmark, the Municipal Building is listed on the National Register of Historic Places. The proposed restoration project is currently under review with the State Historic Preservation Office (SHPO). The applicant has received a grant from the Minnesota Historical Society for the restoration project.

RELATED APPROVALS. Since the building was designated, several changes have occurred to the building. Many of the changes have been minor in scope and were reviewed administratively by staff through a Certificate of No Change application. However, some of the changes were major in scope and required a Certificate of Appropriateness application. These changes included: the construction of a tunnel between Minneapolis City Hall and the Federal Courthouse in 1995; replacement of the glass block windows in the 1949 addition with single-hung metal windows in 2003; a small brick addition in the interior courtyard in 2004; stormwater management and energy efficiency improvements including a green roof in the interior courtyard in 2006; restoration of the clock in 2006 and the engraving of signs above the 4th Street entrance doors in 2008.

PUBLIC COMMENTS. No comments have been received as of the writing of this report. Any correspondence received prior to the public meeting will be forwarded on to the Heritage Preservation Commission for consideration.

ANALYSIS

CERTIFICATE OF APPROPRIATENESS

The Department of Community Planning and Economic Development has analyzed the application to allow a restoration of the clock on the Municipal Building based on the following findings:

1. *The alteration is compatible with and continues to support the criteria of significance and period of significance for which the landmark or historic district was designated.*

The Municipal Building was designated for its significance in the areas of architecture and politics. The period of significance for the landmark is 1889. The proposed alterations are compatible with and continue to support the criteria of significance and period of significance for which the landmark was designated. The clock faces have been repaired and altered significantly over time. The proposed restoration of the clock faces will bring them closer to their original appearance.

2. *The alteration is compatible with and supports the interior and/or exterior designation in which the property was designated.*

   The exterior and portions of the interior (Rotunda and Council Chambers) of the Municipal Building are designated. The proposed alterations are compatible with and support the exterior designation in which the property was designated. Replacing the cast iron frame with an aluminum frame that maintains the same organization and profile as the historic frame will support the original designation of the property. By constructing a new frame, the geometric five-minute markers on the clock faces can be restored and subtle changes to the profile of the frame to allow for water to run off the surface of the clock faces can be achieved. These actions will make the appearance of the clock face more similar to how it looked when it was first constructed and will help maintain the clock faces for years to come. In addition, replacing the non-historic porcelain coated steel panels with laminated, heat-treated glass and removing the non-historic neon tubing on the hands and installing an LED lighting system on scaffolding behind each clock face will make the appearance of the clock more similar to how it looked when it was first constructed.

   Although portions of the interior of the Municipal Building are designated, the inside of the clock tower is not. However, the applicant has indicated that the original clock works remain in the clock tower and will be protected during the duration of the project. It should be noted that these pieces of the clock are not currently being used. The proposed LED lighting system will be assembled on a scaffolding system that will not be visible from the exterior. If needed, the scaffolding system could be easily removed.

3. *The alteration is compatible with and will ensure continued integrity of the landmark or historic district for which the district was designated.*

   Integrity is the ability of a property to convey its significance. Both the National Register and the City of Minneapolis preservation regulations evaluate integrity based on the following seven aspects:

   Location: The proposed restoration of the clock faces will not impact location.

   Design: The proposed alterations will not negatively impact the integrity of design. The proposed alterations that will make the appearance of the clock more similar to how it looked when it was first constructed will improve this aspect.

   Setting: Setting is the physical environment of a historic property. The Municipal Building clock restoration project will not impact the setting of the property.

   Materials: The applicant is proposing to restore the existing clock faces. The applicant is proposing to replace the historic cast-iron frame with an aluminum frame, replace the non-historic porcelain coated steel panels with laminated, heat-treated glass and remove the non-historic neon tubing on the hands and install an LED lighting system on scaffolding behind each clock face.

   The existing cast iron frame has suffered extensive damage caused by freeze/thaw cycles as water does not shed water away from the frame itself. A non-destructive survey of the clock revealed that 75 percent of the frame elements need to be replaced. Given how much of the frame needs to be replaced, and the different issues that could arise when replacing deteriorated structural framework members in-kind, CPED concurs that the frame should be replaced.

Workmanship: The alterations proposed would not obscure the workmanship evident in the original building.

Feeling: Feeling is a property's expression of the aesthetic or historic sense of a particular period of time. The alterations proposed will continue to convey the property's historic character and will not negatively impact its integrity of feeling. The proposed alterations that will make the appearance of the clock more similar to how it looked when it was first constructed will improve this aspect.

Association: The alterations proposed will continue to convey the property's historic character and will not negatively impact its integrity of association.

4. *The alteration will not materially impair the significance and integrity of the landmark, historic district or nominated property under interim protection as evidenced by the consistency of alterations with the applicable design guidelines adopted by the commission.*

   There are no applicable design guidelines that have been adopted for this landmark.

5. *The alteration will not materially impair the significance and integrity of the landmark, historic district or nominated property under interim protection as evidenced by the consistency of alterations with the recommendations contained in The Secretary of the Interior's Standards for the Treatment of Historic Properties.*

   The following restoration standards apply to this project:

   1. A property will be used as it was historically or be given a new use which reflects the property's restoration period.

      The use of the property will not change.

   2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.

      The existing cast iron frame has suffered extensive damage caused by freeze/thaw cycles as water does not shed water away from the frame itself. A non-destructive survey of the clock revealed that 75 percent of the frame elements need to be replaced. Given how much of the frame needs to be replaced, and the different issues that could arise when replacing deteriorated structural framework members in-kind, CPED concurs that the frame should be replaced.

   3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

      The applicant has indicated that before the restoration project commences that each of the clock faces will be laser scanned. The images will be used to create the new aluminum frames.

   4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.

      As noted above, before the restoration project commences each of the clock faces will be laser scanned. The applicant has also indicated that they are open to the idea of restoring one complete clock face or a portion of one clock face to be on display for public viewing as a non-structural artifact in a location other than the clock tower. CPED is recommending that this idea be evaluated further.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.

   The applicant is proposing to cast the replacement frames.

6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials.

   The existing cast iron frame has suffered extensive damage caused by freeze/thaw cycles as water does not shed water away from the frame itself. A non-destructive survey of the clock revealed that 75 percent of the frame elements need to be replaced. Given how much of the frame needs to be replaced, and the different issues that could arise when replacing deteriorated structural framework members in-kind, CPED concurs that the frame should be replaced.

7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.

   Three missing features will be replaced as part of this project: the geometric five-minute markers on the clock faces, the rounded profile to the tee shapes within the inner ring and the laminated, heat-treated glass infill panels. These all existed originally but were removed by 1949.

   The applicant has submitted early photographs of the clock which reveal a polychrome coloration of the clock face members. Through a paint analysis which would be completed after the clocks have been removed, the original colors could possibly be found. Due to limited funds for the project, the base bid is to coat the frame in a single color as it has been for most of its lifetime. However, the alternate bid is to coat the frame in three colors which would be selected by the architect through paint analysis during construction. CPED is recommending that the polychrome coating option be explored.

8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

   The applicant has indicated that the masonry restoration related to the clock restoration project requires such treatment. The applicant has indicated that the gentlest means possible will be used to restore the masonry.

9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

   The historic clock works will remain in place and will be protected during the duration of the project.

10. Designs that were never executed historically will not be constructed.

    The applicant has indicated that there are historic designs of dragons carved in the stone surrounding the clock faces. These designs will not be implemented as part of this restoration project.

6. *The certificate of appropriateness conforms to all applicable regulations of this preservation ordinance and is consistent with the applicable policies of the comprehensive plan and applicable preservation policies in small area plans adopted by the city council.*

   The certificate of appropriateness will comply with all applicable regulations of the preservation ordinance and is consistent with the following applicable policies of the comprehensive plan:

Heritage Preservation Policy 8.1: Preserve, maintain, and designate districts, landmarks, and historic resources which serve as reminders of the city's architecture, history, and culture.

8.1.1 Protect historic resources from modifications that are not sensitive to their historic significance.

7. *Destruction of any property. Before approving a certificate of appropriateness that involves the destruction, in whole or in part, of any landmark, property in an historic district or nominated property under interim protection, the commission shall make findings that the destruction is necessary to correct an unsafe or dangerous condition on the property, or that there are no reasonable alternatives to the destruction. In determining whether reasonable alternatives exist, the commission shall consider, but not be limited to, the significance of the property, the integrity of the property and the economic value or usefulness of the existing structure, including its current use, costs of renovation and feasible alternative uses. The commission may delay a final decision for a reasonable period of time to allow parties interested in preserving the property a reasonable opportunity to act to protect it.*

   The Municipal Building clock restoration project does not constitute destruction of the property.

Before approving a Certificate of Appropriateness, and based upon the evidence presented in each application submitted, the Commission shall make findings that alterations are proposed in a manner that demonstrates that the Applicant has made adequate consideration of the following documents and regulations:

8. *The description and statement of significance in the original nomination upon which designation of the landmark or historic district was based.*

   Evidence presented in the application submitted and the alterations proposed demonstrate that the applicant has made adequate consideration of the description and statement of significance of the Municipal Building.

9. *Where applicable, adequate consideration of Title 20 of the Minneapolis Code of Ordinances, Zoning Code, Chapter 530, Site Plan Review.*

   The Municipal Building clock restoration project will not require Site Plan Review.

10. *The typology of treatments delineated in the Secretary of the Interior's Standards for the Treatment of Historic Properties and the associated guidelines for preserving, rehabilitating, reconstructing, and restoring historic buildings.*

    The application submitted presents evidence that the applicant has adequately considered the applicable guidelines for rehabilitating historic buildings.

RECOMMENDATIONS

The Department of Community Planning and Economic Development recommends that the Heritage Preservation Commission adopt staff findings for the application by the Municipal Building Commission for the properties located at 315 South 4th Street and 401 3rd Avenue South:

A. Certificate of Appropriateness.

Recommended motion: **Approve** the certificate of appropriateness to restore the clock on the Municipal Building, subject to the following conditions:

1. The applicant shall continue to explore the idea of restoring one complete clock face or a portion of one clock face to be on display for public viewing as a non-structural artifact in a location other than the clock tower.
2. The applicant shall explore the use of a polychrome coating for the clock face members.
3. By ordinance, approvals are valid for a period of two years from the date of the decision unless required permits are obtained and the action approved is substantially begun and proceeds in a continuous basis toward completion. Upon written request and for good cause, the planning director may grant up to a one year extension if the request is made in writing no later than July 28, 2017.
4. By ordinance, all approvals granted in this certificate of appropriateness shall remain in effect as long as all of the conditions and guarantees of such approvals are observed. Failure to comply with such conditions and guarantees shall constitute a violation of this Certificate of Appropriateness and may result in termination of the approval.

ATTACHMENTS

1. BZH map
2. Project description and responses to the findings
3. Correspondence with the Council Member and the neighborhood organization
4. Site plan, floor plans, photos and elevations
5. MJB Evaluation of Structural Clock Elements

Municipal Building Commission **3rd**

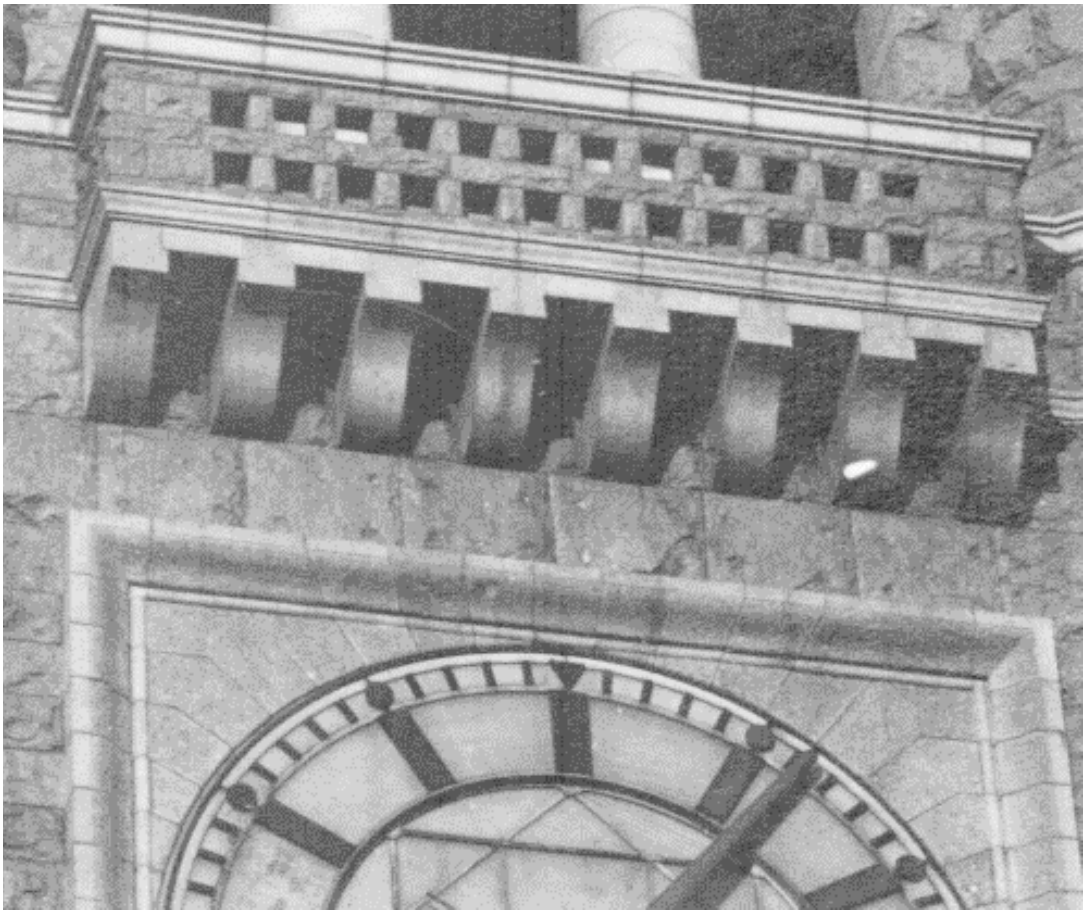
NAME OF APPLICANT WARD

PROPERTY ADDRESS

315 4th Street South and 401 3rd Avenue South

FILE NUMBER

BZH-28724



MUNICIPAL BUILDING
CLOCK RESTORATION

Minneapolis Heritage Preservation Commission
Certificate of Appropriateness Application

Prepared by MacDonald & Mack Architects
on behalf of the Municipal Building Commission

9 June 2015

CONTENTS:

HISTORICAL CONTEXT

The Minneapolis Municipal Building occupies the block bounded by Third and Fourth Avenues South and Fourth and Fifth Streets. The design by Frederick Kees and Franklin Long, inspired by the Allegheny County Courthouse in Pittsburgh, won the commission through a design competition and was finalized in 1888. Constructed from 1888 to 1906 using pink Ortonville granite, the building is eight stories high with a central courtyard. A primary feature of the structure is the clock tower over the 4th Street entrance to the building which rises 400 feet from the sidewalk to the top of the flagstaff. The Municipal Building is both significant in its architectural prominence and its political role, leading to its inclusion in the National Register of Historic Places in 1974 and its designation as a Minneapolis Landmark in 1977.

Image 1: 1898 view of clock tower provided by HCLIB

The clock tower houses four clock faces, one for each building façade, with what was once a public observatory above. The clock faces are approximately 24 feet in diameter and were originally constructed with four tons of half-inch plate glass supported on a cast iron frame. As discussed in the Minneapolis Journal in 1906, Philadelphia City Hall commissioned a similar clock by I.T. Verdin leading to the installation of Minneapolis' clock as the trial for the company. Early images of the clock faces reveal that minute and hour markers were prominent (in a darker color than the framework that links the minute markers together). Additionally, the minute markers that align with each hour are triangles at 12, 3, 6, and 9 while the rest are circles (see images 1 & 2). Image 3 shows that these geometric markers are visible through the glass from the inside, although not repeated on the interior face of the clock structure.

Image 2: 1900 close up view of top of clock face provided by HCLIB

By 1906 photographs show that rusting has begun to stain the surrounding stone and color the interior section of structure (See image 4). In 1915 there is mention in the Minneapolis Journal that the clock faces require repairs and in 1933 there are complaints by residents recorded in the newspaper that the clock faces have become so discolored they are no longer legible. In response the city decided to clean the clock faces in December of 1933. Likely during this time repairs were also completed on the clock faces, as images 5 and 6 reveal that the geometric minute markers are removed by 1934.

Image 3: 1900 interior view of clock face provided by MNHS

In 1947 non-invasive evaluation was completed looking at the stability of the clock faces by the Waulters brothers. It was determined the plate glass had suffered severe levels of cracking and was a hazard to the public, at this time loose pieces of glass were removed by the team. In 1948 the Municipal Building Commission began the search for a substitute material to replace the plate glass. The Forman, Ford & Company was hired to remove the glass (see images 7 & 8). 1949 saw the replacement of the glass clock faces with porcelain coated steel panels and the once copper hands were traded for stainless steel ones highlighted by neon tubing. In 1954 the clock mechanisms were replaced by the Verdin Company, completing repairs to the Minneapolis Municipal Building clock tower. An image taken in 1958 reveals the original condition of the porcelain coated panel system (see image 9).

CURRENT CONDITION

Image 4: 1906 view of clock tower provided by HCLIB

The Municipal Building Commission, stewards of the Municipal Building, began planning for the restoration of the clock faces several years ago. After a thoughtful process which included consulting with historic preservation architects, structural engineers, and lighting designers they have recently become fully ready to pursue this restoration.

In preparation for the restoration of the clock faces the Municipal Building Commission hired Wiss, Janney, Elstner Associates, Inc. (WJE) to complete a non-destructive evaluation of the structural framework of the clock faces. The report by WJE that summarizes the non-destructive evaluation of the clock face structural framework is included in this submittal. In short, the survey revealed that the structural framework has suffered extensive deterioration caused by freeze/thaw cycles. The historic structure does not shed water off of the framework and away from the infill panels. The survey further indicates that 75% of the frame elements will need to be replaced.

TREATMENT OPTIONS

In evaluating the many different ways in which the clock faces could be restored, there are several important criteria which must be met:

- The restoration of the clock must meet the Secretary of the Interior's Standards.
- The restoration of the clock must be long-lasting, durable, safe, and reasonably maintainable. Due to the size and location of the clock faces, even small, routine repairs become costly. The cost estimate for access to the exterior faces of the clocks is approximately $500,000.
- The restoration of the clock must be within the means of the Municipal Building Commission's budget.

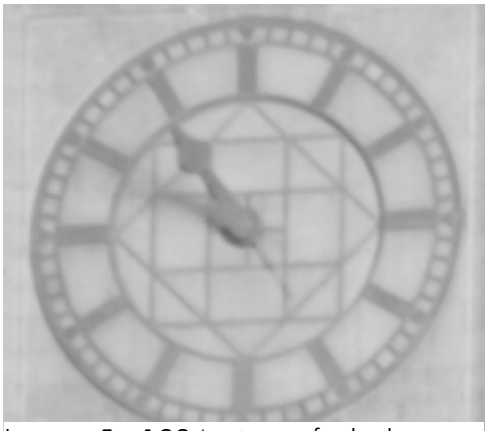


Image 5: 1924 view of clock tower provided by HCLIB

While there is much more to the treatment of the Municipal Building Clock faces than the structural framework, we would like to focus on the issues surrounding the framework briefly as they are currently in critical condition.

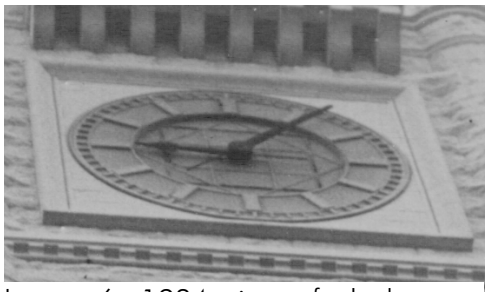


Image 6: 1934 view of clock tower provided by HCLIB

Among the options considered was replacement of deteriorated structural framework members in-kind. While this option is preferable in theory, in practice it is wrought with obstacles.

One of the obstacles is the behavior of the cast iron as a structural material. It is extremely brittle, more brittle than is allowed for structural members in current code. It is undeniable that it has withstood a great deal of time and exposure to severe elements, however the system is not one that should be replicated without additional structure and support. According to the evaluation by WJE, there are cast iron members in the frameworks that are in pure tension. Pure tension is not a condition in which cast iron behaves well or is designed for.

The brittle nature of the cast iron also lends itself to damage during restoration work. Despite the best efforts of a contractor, it is likely that some of the sound cast iron members will crack during removal, repair, or reinstallation. For a complete understanding of the composition of the particular alloy used in the structural framework, please refer to the WJE report.

Image 7: 1948 glass removal provided by HCLIB

Image 8: 1948 clock face without glass provided by MBC

Another obstacle is the condition of the structural framework members. While WJE was able to readily identify many members as deteriorated upon visual inspection, there is also indication of cracks within members which do not appear upon visual inspection. A section of one such member was collected from a clock face by WJE. This sample was cut for testing and the crack within the member was then made visible. This gave WJE reason to believe that more structural framework members are damaged than just those witnessed during visual inspection. In order to re-use existing structural framework members, each piece would need to be evaluated by magnetic particle texting or some other means in order to determine their integrity.

After close visual inspection of the exterior faces of the clocks, WJE described the damage to be the formation of rust and cracks at the connections between cast elements (see report also included in this submittal). Because of the type and location of this deterioration, it was likely caused by water infiltration and freeze/thaw of that water and is on-going. The clock face framework was not designed to shed water effectively. Snow, ice, and water sit on and seep between the relatively horizontal members of the clock faces. Re-using existing historic framework members and replacing deteriorated members in-kind would not provide the opportunity for the slight modifications to the profiles of the members that would allow water to shed from the clock faces. Without these slight modifications, we can expect that the same process of deterioration will repeat.

Another obstacle involved with re-using existing members and replacing members in-kind is rust and coatings. Cast iron must be protected from water and moisture to avoid rust. Rust is not only unsightly, it is also a visual sign of deterioration of the structural members. The best case scenario for coating a historic metal that has been exposed to the elements as these members have is a reasonable coating that should be inspected on a regular basis to ensure that there has been proper adhesion between the metal and the coating. Given the location of the clock faces, regular inspection of the paint is neither simple nor inexpensive. When the structural framework requires re-painting, it will be a significant effort

and expense to gain adequate, OSHA-approved access to the exterior facades of the clocks as well as removing the infill panels.

After evaluating the obstacles and the end result of replacing the structural framework of the clock faces in-kind (or actually a ferrous metal similar to that used historically as we would not be able to use the exact alloy of the existing framework) we felt that it was necessary to explore other options.

PROPOSED TREATMENT

The option that we would like to pursue is the replacement of the structural framework with aluminum. While this is a significant and large piece of the project, there are other aspects to consider as well. The following is a summary of the scope of work involved with the restoration of the Municipal Building Clock:

1. STRUCTURAL FRAMEWORK

   Replace the historic, cast iron structural framework with aluminum members (either entirely cast aluminum or a combination of cast exterior components with extruded aluminum structural framing). The new framework would match the historic exterior in organization and profiles.

   Due to the extents of damage and the potential safety hazard of the existing material, cast aluminum replacement pieces designed to mimic the form of the frame has been deemed the most viable option. The replacement provides an opportunity to return the geometric five-minute markers, the rounded profile to the tee shapes within the inner ring, as well as subtle changes to the profiles of the members to allow for water to run off the surface of the clock faces, away from the infill panels. Water infiltration and ice lead to the significant damage of the historic clock face members causing them to crack and break at connection points.

Image 10: 2015 view of clock tower by MMA

The new casting molds would be made from either laser scans or direct impressions of the historic members. The new members would be coated in a high-performance, spray applied, Kynar system to match the color of the historic structural elements.

Early photographs appear to show a polychrome coloration of the clock face members. It is possible that the original colors could be found through paint analysis of the members after deconstruction. The base bid is to coat the frame in a single color – black, as it has been for most of its lifetime. The alternate bid is to coat the frame in three colors, with the colors selected by the architect through paint analysis during construction (the framing members will not be accessible until a contractor is on-site and mobilized). Because there are limited funds for the restoration project and the polychrome coating is a significant additional expense, we wish for the project to be approved for either single or polychrome coating.

2. INFILL PANELS

Replace the porcelain enamel-coated, steel infill panels with laminated, heat-treated glass that would mimic the original, historic glass while providing a watertight, long-lasting assembly.

Upon the suggestion of a retired member of the facility's maintenance staff, several pieces of historic glass were discovered recently in a turret of the clock room. These pieces of glass are a light green color like "old soda bottle glass" and are ground on both sides to give the glass a frosty translucent appearance.

Installing translucent infill panels will allow the clock faces to function, once again, as they did historically. The panel replacement works in combination with the illumination described below.

3. ILLUMINATION

Install an LED lighting system on scaffolding behind each clock face.

The scaffolding will allow for a means to access, maintain, and inspect both the light fixtures and the interior of the clock faces. The lighting system will be directed at the back of the clock faces and provide illumination of the clocks at night.

Remove the neon illumination system on the hands and clock faces.

The existing neon retrofit system was installed with the opaque infill panels and will no longer be appropriate or necessary when the clock faces are returned to their historic configuration.

We feel that the restoration described above will improve the function, longevity, and durability of the Municipal Building Clock while returning it to its original beauty. The restoration will also follow the criteria and considerations that are critical to the success of the project: meeting the Secretary of the Interior's Standards for Restoration, being safely and reasonably maintainable, and attainable for within the funds available for the project.

We would be open to the idea of restoring one complete clock face or a portion of one clock face to be on display for public viewing as a non-structural artifact in a location other than the clock tower. Due to the scale of the clock, there are limited spaces within the Municipal Building itself that could accommodate such a display that are not already historically designated. The Municipal Building has asked the State Historic Preservation Office if the Minnesota Historical Society would be interested in having such a display. That discussion is currently on-going. Due to current budget constraints, any effort to create a display of this nature would need to be phased after the restoration of the clock faces is complete.

As a recipient of a grant from the Minnesota Historical Society, this project is also under review by the State Historic Preservation Office.

Thank you for your attention and consideration of this proposed project.

SOURCES

Clifford Larson, Paul. *Municipal Monument: A Centennial History of the Municipal Building Serving Minneapolis and Hennepin County, Minnesota.* Minneapolis: Municipal Building Commission, 1991. Print.

Gray, James. "A Public Building Erected Without Graft." The Minneapolis Journal 9 December 1906: Editorial Section. Chronicling America: Historic American Newspapers. Lib. of Congress. <http://chroniclingamerica.loc.gov/lccn/sn83045366/1906-12-09/ed-1/seq-11/>

"Wants Courthouse Clock Face Washed." 26 October 1933. Hennepin County Library: Minneapolis History Collection, City Hall file.

"Courthouse Clock Washed for Holiday." 24 December 1933. Hennepin County Library: Minneapolis History Collection, City Hall file.

"City Hall Entertains Public in 'New Look'." Minneapolis Tribune 19 December 1949. Hennepin County Library: Minneapolis History Collection, City Hall file.

"Clock on Prowl For New Faces." 23 March 1948. Hennepin County Library: Minneapolis History Collection, City Hall file.

"Like Sword of Damocles Town Clock Threatens Unwary." Minneapolis Times 28 March 1947. Hennepin County Library: Minneapolis History Collection, City Hall file.

"Courthouse Clock to Lose Its Four-Ton Glass Faces." 23 January 1948. Hennepin County Library: Minneapolis History Collection, City Hall file.

Hart, Joseph. "The Time Machine." City Pages 15 October 1997: 16. Hennepin County Library: Minneapolis History Collection, City Hall file.

Smith, Russel Scott. "Time." Minnesota Monthly November 1997: 19-20. Hennepin County Library: Minneapolis History Collection, City Hall file.

"City Chimes and Clock May Be Repaired Soon." Minneapolis Journal 1915. Hennepin County Library: Minneapolis History Collection, City Hall file.

STATEMENTS OF APPROPRIATENESS

1. *The alteration is compatible with and continues to support the criteria of significance and period of significance for which the landmark or historic district was designated.*

   The Municipal Building was designated for its significance in the areas of architecture and politics. The period of significance listed in the National Register Nomination is the late nineteenth century. The proposed restoration of the Municipal Building Clock is compatible with, and continues to support, that significance. The clock faces have been repaired and altered significantly in the last one-hundred years. The modifications made historically have not always been the most sympathetic. The restoration of the clock faces will make them much like they were when they were constructed.

2. *The alteration is compatible with and supports the interior and/or exterior designation in which the property was designated.*

   The Municipal Building is designated for the exterior and select areas of the interior (Rotunda and Council Chambers). The restoration of the clock faces works to maintain the historic appearance of the clocks and support that designation. By replacing the cast iron framing with cast aluminum pieces that have matching profiles and create the same pattern on the face of the clocks, the texture of the exterior will be preserved. Moreover, by returning the infill to glass, with a similar color and frosted appearance of the original material, and replacing the missing decorative elements at the five minute markers the exterior appearance will more closely match the design intent than the current conditions.

   Although designated for the interior as well, the inside of the clock tower is a tertiary space that is not viewable by the public. The original clock works, though not currently in use, remain in the center of the tower and will be protected during the project. A new scaffolding system supporting the lights, used to back-light the clock faces, will be installed but it will not be visible from the exterior and will be easily removable if necessary. Additional structure on the interior of the clock faces will be necessary to safely restore the clock faces but these pieces will align with existing exterior profiles to minimize the creation of shadows and leave the interior of the faces as close to the original design as possible. The alterations proposed are compatible with the Municipal Building designation and support the importance of the exterior view of the clock faces, both during the day and night.

3. *The alteration is compatible with and will ensure continued integrity of the landmark or historic district for which the district was designated.*

   The proposed restoration of the Municipal Building Clock maintains the integrity of this historic landmark. The location of the building remains intact and the setting of downtown Minneapolis is not altered by the proposed alterations. The clock faces have been repaired and altered significantly in the last one-hundred years. The changes made historically have not always been sympathetic with the design intent of Long and Kees. The restoration of the clock faces will return them to a condition more similar to that of their original construction. The cast iron frame elements, which represent the remnants of the 1890s design, will be replicated in aluminum so the exterior profiles will remain consistent. These structural members are significantly deteriorated and non-invasive investigation has shown that 75% of

the elements require replacement to maintain structural stability. The material change from cast iron to cast aluminum will keep the same material aesthetic while ensuring a longer lifespan for the clock faces with less potential damage to the surrounding masonry, which is a current issue with the rusting of the support elements.

The replicated frame elements will be finished with a high-performance coating that will improve the longevity of the new frame members and match the original pieces. The frame will be coated in either a single color (black, to match how the frame was for most of its lifetime) or polychrome (final colors chosen by MacDonald & Mack Architects based on historic photographs and paint analysis of deconstructed members). The single color coating is the base bid, while the polychrome system is an alternate due to the significant increase in cost between the two options and the limited availability of funds.

The missing decorative elements at the hour markers will be recreated using photographic evidence and the metal panel infill will be returned to glass, matching the sample saved from the historic clock faces. The neon tubing will be removed from the current clock hands, as the glass panels will be backlit for night time viewing. The proposed restoration will maintain the landmark's integrity by returning the clocks to a condition similar to that at the time of the building's completion in the 1890s.

4. *The alteration will not materially impair the significance and integrity of the landmark as evidenced by the consistency of alterations with the applicable design guidelines adopted by the commission.*

   In lieu of guidelines for this property, we will evaluate the restoration of the Municipal Building Clock under the Secretary of the Interior's Standards for Restoration (Statement 5).

5. *The alteration will not materially impair the significance or integrity of the landmark as evidenced by the consistency of alterations with the recommendations contained in the Secretary of the Interior's Standards for the Treatment of Historic Properties.*

   The restoration of the Municipal Building clock faces is consistent with the Secretary of the Interior's Standards for the Restoration:

   <u>Standards for Restoration</u>

   1) *A property will be used as it was historically or be given a new use which reflects the property's restoration period.*

      The property will be used as it was historically. The function of the clock has not, and will not, change. After more than 50 years of being a face-lit clock, we propose to back-light the clock faces and restore the clock with translucent panels more consistent with the original construction.

   2) *Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.*

Due to the significant deterioration of the clock face framing members and the amount of frame members and infill panels that have already been replaced, retaining historic material is not a viable option. The materials will be replaced as closely as possible to the historic materials with slight adjustments for public safety and availability.

Historic plate glass would shatter and fall when broken, causing a major safety hazard. The proposed restoration replaces the infill panels with laminated, heat-treated glass which will remain safely in-place if broken.

Historic cast iron of the content found in the clock frame members would not be available today as it was historically because of the particular mineral content of the iron. Cast iron is also highly susceptible to rust and deterioration, especially when exposed to the elements at roughly 250'-0" above street level. Approximately 75% of the existing framing members are severely deteriorated and repair of this material is not a viable option.

Because of the difficulty of accessing the extreme location of the exterior of the clock faces, we propose to use a non-ferrous alternative to cast iron to replace the framing members. We will replicate the form and profiles of the clock frame members precisely in cast aluminum (with slight modifications to improve drainage and mitigate the freeze/thaw issues that have historically plagued the clock). The cast aluminum members will be coated with a high-performance coating which will mimic the historic appearance of the clock frame.

The location, size, and profiles of the members will remain largely unchanged. The restoration will return the historic profile to the grid members inside the inner ring (which were replaced at some point) as well as the circles and triangles at the five-minute markers.

3) *Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.*

   The clock faces will be laser scanned prior to the commencement of restoration. This digital model will be used both for historical documentation as well as the basis for profiles, shapes, and dimensions of the replacement framing members.

4) *Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.*

   See Standard 3.

5) *Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.*

The casting process lends itself to distinctly different forms than extrusion, rolling, or other means of working and fabricating metal. Because of this, the replacement framing members will be cast.

6) *Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials.*

The WJE condition assessment of the clock face framing members covers this point in detail.

7) *Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.*

There are three missing features that will be replaced with this restoration:

- Profile of inner grid members – Based on historic photographs, these members appear to mimic stained glass came with a rounded exterior profile. This profile will be replicated based on the known relationship of parts and the appearance of light and shadow in various historic photographs of the members.
- Five-minute markers – The circles and triangles that appear in historic photographs at the five-minute marks will be recreated.
- Glass infill panels – The glass infill panels appear in several historic photographs, but in great resolution. The 1950's photograph of the demolition of the glass show a wide variety of glass, presumably several iterations of replacement materials. Several shards of glass were found among debris in the clock room. The replacement glass was selected to be a sympathetic replacement based on this evidence.

There is one feature that may be replaced with this restoration:

- Early photographs appear to show a polychrome coloration of the clock face members. It is possible that the original colors could be found through paint analysis of the members after deconstruction. The base bid is to coat the frame in a single color – black, as it has been for most of its lifetime. The alternate bid is to coat the frame in three colors, with the colors selected by the architect through paint analysis during construction (the framing members will not be accessible until a contractor is on-site and mobilized). Because there are limited funds for the restoration project and the polychrome coating is a significant additional expense, we wish for the project to be approved for either single or polychrome coating.

8) *Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*

The masonry restoration related to the clock restoration work specifies such treatment.

9) *Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.*

The historic resources in the clock room will not be disturbed. The historic clock works will remain in place and be protected during construction.

10) *Designs that were never executed historically will not be constructed.*

While there are historic designs of dragons carved in the stone surrounding the clock faces, those are not part of the restoration project.

6. *The certificate of appropriateness conforms to all applicable regulations of this preservation ordinance and is consistent with the applicable policies of the comprehensive plan and applicable preservation policies in small area plans adopted by City Council.*

   The proposed restoration of the Municipal Building Clock conforms to all applicable regulations of the preservation ordinance. The applicant is unaware of any inconsistencies with applicable policies of the comprehensive plan or small area plans adopted by City Council.

7. Not applicable

STATEMENT OF CONSIDERATION FOR THE FOLLOWING DOCUMENTS AND REGULATIONS

8. *The description and statement of significance in the original nomination upon which designation of the landmark or historic district was based.*
9. *Not applicable*
10. *The typology of treatments delineated in the Secretary of the Interior's Standards for the Treatment of Historic Properties and the associated guidelines for preserving, rehabilitating, reconstructing, and restoring historic buildings.*

    The nomination of the Municipal Building is based on the architectural and political significance of the property. Designed by a prominent local architectural firm in the Richardsonian Romanesque style, known for its association with nineteenth century government buildings, the building shows the desire to prominently display the civic foundation of the city. The nomination highlights the massing of the building and rusticated stone work of the Richardsonian design. The clock faces are considered an important element of the design, especially noteworthy because of their size. The interior spaces are considered noteworthy because of the elastic plan that would allow for easy alterations to the space on the main levels of the building. The primary space of note is the light court, while the interior of the clock tower is considered a tertiary space not seen by the public. The restoration of the clock faces is necessary to preserve the clocks as a key design element. The material alterations will return the clocks to an appearance like that of the original Long and Kees design while supporting the continued use of the Municipal Building in its intended civic function. For an extensive analysis of considerations given to the Secretary of the Interior's Standards for Restoration see Statement 5.

PROGRESS OF APPROVAL FOR REQUIRED STATE & FEDERAL REVIEWS

The Municipal Building is on the National Register of Historic Places and has received a grant from the Minnesota Historical Society for the restoration of the clock. This restoration is currently under review by the State Historic Preservation Office. The outcome of that review will be shared with the Heritage Preservation Commission when the SHPO review has been completed.

Municipal Building Commission

Room 105 • 350 South Fifth Street • Minneapolis, MN 55415-1319
Phone (612) 596-9512 • Fax (612) 596-9561
www.municipalbuildingcommission.org

June 4, 2015

RE: Municipal Building Clock Restoration

Jacob Frey:

I am writing to inform you about the upcoming restoration of the Municipal Building clock faces. The clock faces are approximately 24 feet in diameter and were originally constructed with glass panels supported on a cast iron frame. In 1949 the glass panels were replaced with porcelain coated steel panels when the glass was deemed a hazard to the public and the once copper hands were traded for stainless steel hands highlighted by neon tubing.

The proposed restoration will return the clock faces to an aesthetic more in keeping with the historic design. In preparation for the restoration a non-destructive evaluation of the structural framework of the clock faces was completed. In short, the survey revealed that the structural framework has suffered extensive deterioration caused by freeze/thaw cycles. The survey further indicates that 75% of the frame elements need to be replaced. Based on these findings, the restoration of the clock faces includes the replication of the historic cast iron framework with cast aluminum members coated to mimic the historic appearance of the frame. Additionally, the porcelain enamel-coated, steel infill panels will be replaced with a laminated heat-treated glass that will match the color and frosted appearance of the original glass panels. An LED lighting system will be installed behind each clock face and the current neon illumination system will be removed, allowing for the clocks to be backlit at night.

We feel that the restoration described above will improve the function, longevity, and durability of the Municipal Building Clock while returning it to its original beauty. The restoration will also follow the criteria and considerations that are critical to the success of the project: meeting the Secretary of the Interior's Standards for Restoration, being safely and reasonably maintainable, and attainable within the funds available for the project. Due to the historic status of this building, the restoration of the clock faces will require review by the Minneapolis Historic Preservation Commission and the Minnesota State Historic Preservation Office.

If you have any questions about this project please contact Royce Wiens at royce.wiens@municipalbuilding.org.

Thank you for your time and support,

Royce Wiens

Royce Wiens, AIA
Municipal Building Commission

Municipal Building Commission

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Phone (612) 596-9512 • Fax (612) 596-9561
www.municipalbuildingcommission.org

June 4, 2015

RE: Municipal Building Clock Restoration

Nicholas Cichowicz:

I am writing to inform you about the upcoming restoration of the Municipal Building clock faces. The clock faces are approximately 24 feet in diameter and were originally constructed with glass panels supported on a cast iron frame. In 1949 the glass panels were replaced with porcelain coated steel panels when the glass was deemed a hazard to the public and the once copper hands were traded for stainless steel hands highlighted by neon tubing.

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If you have any questions about this project please contact Royce Wiens at royce.wiens@municipalbuilding.org.

Thank you for your time and support,

Royce Wiens

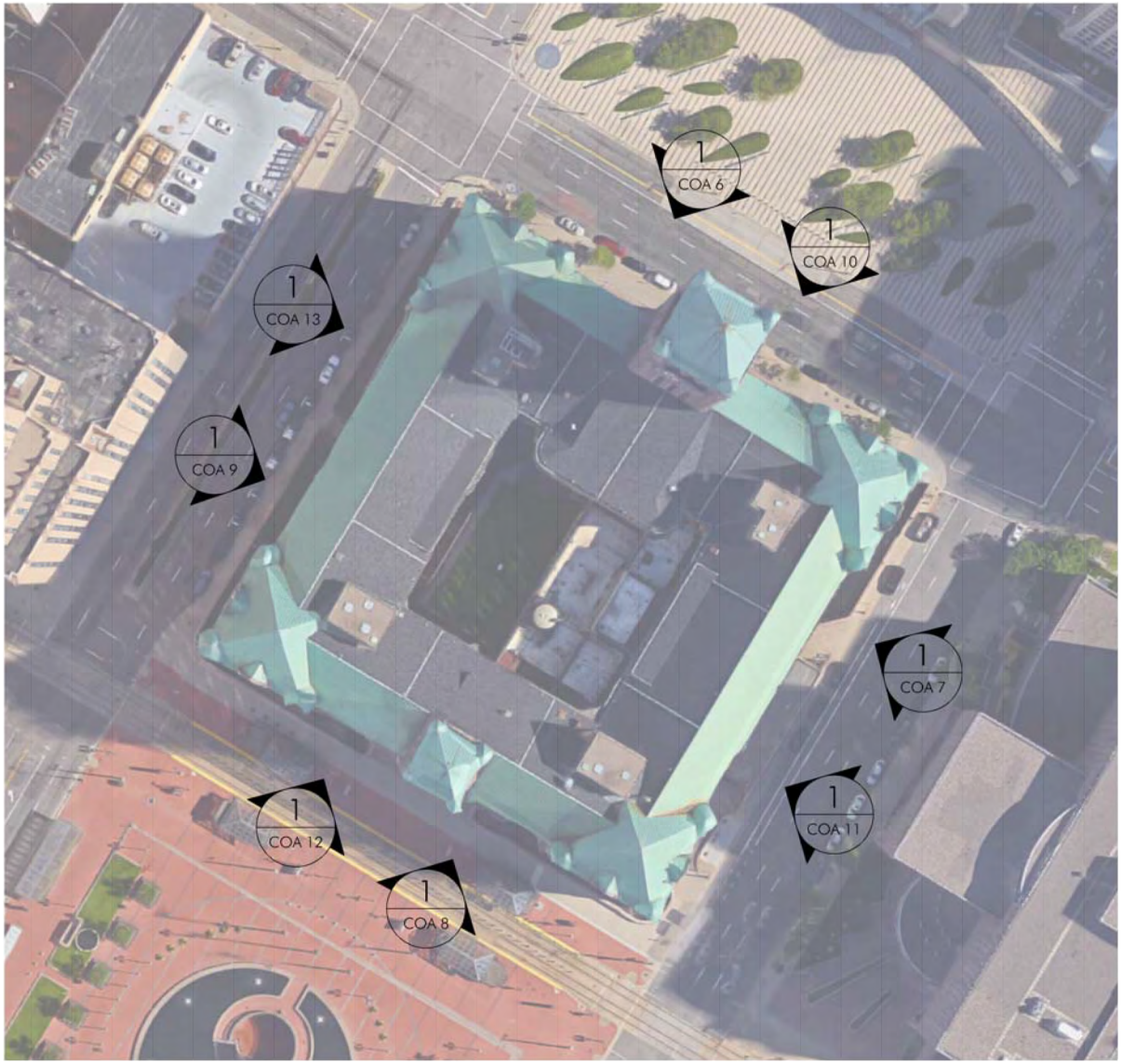
Royce Wiens, AIA
Municipal Building Commission

MUNICIPAL BUILDING
CLOCK RESTORATION

Minneapolis Heritage Preservation Commission
Certificate of Appropriateness Application

APPENDIX A:

Site Plan; Floor Plan; Photographs of Property; Dimensioned Elevations; Colored Elevations



1 Site Plan

1 1/100"=1'-0"

MACDONALD & MACK
ARCHITECTS
400 SOUTH FOURTH STREET STE 712 MINNEAPOLIS MINNESOTA 55415
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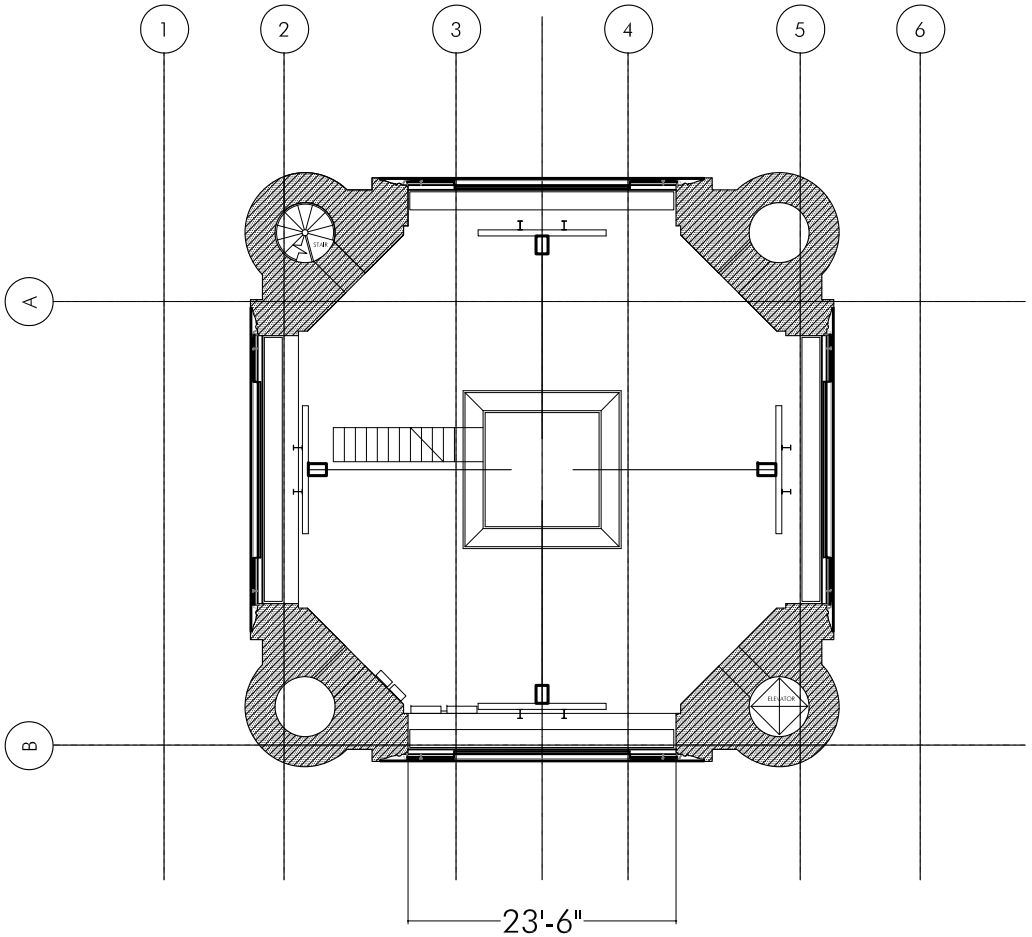
Clock Restoration
250 South 4th Street, Minneapolis, MN, 55415

DATE 06.02.2015 DRAWN MS

Site Plan

COA 1



1 | 12th Floor - Clock Tower Floor Plan

2 | 1/16"=1'-0"

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DATE 06.02.2015

DRAWN MS

Floor Plan

COA 2

1 | North Elevation

3 | not to scale

2 | South Elevation

3 | not to scale

3 | East Elevation

3 | not to scale

1 | West Elevation

3 | not to scale

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Elevation Photos

COA 3

1 | Clock Face Exterior Overall

4 | not to scale

2 | Clock Face Interior

4 | not to scale

3 | Clock Face Exterior

4 | not to scale

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Feature Photos

COA 4

1 | Deterioration of Center Framework

5 | not to scale

2 | Deterioration of Hour Marker

5 | not to scale

3 | Deterioration of Ring Member

5 | not to scale

1 | Deterioration of Minute Marker

5 | not to scale

MacDonald & Mack
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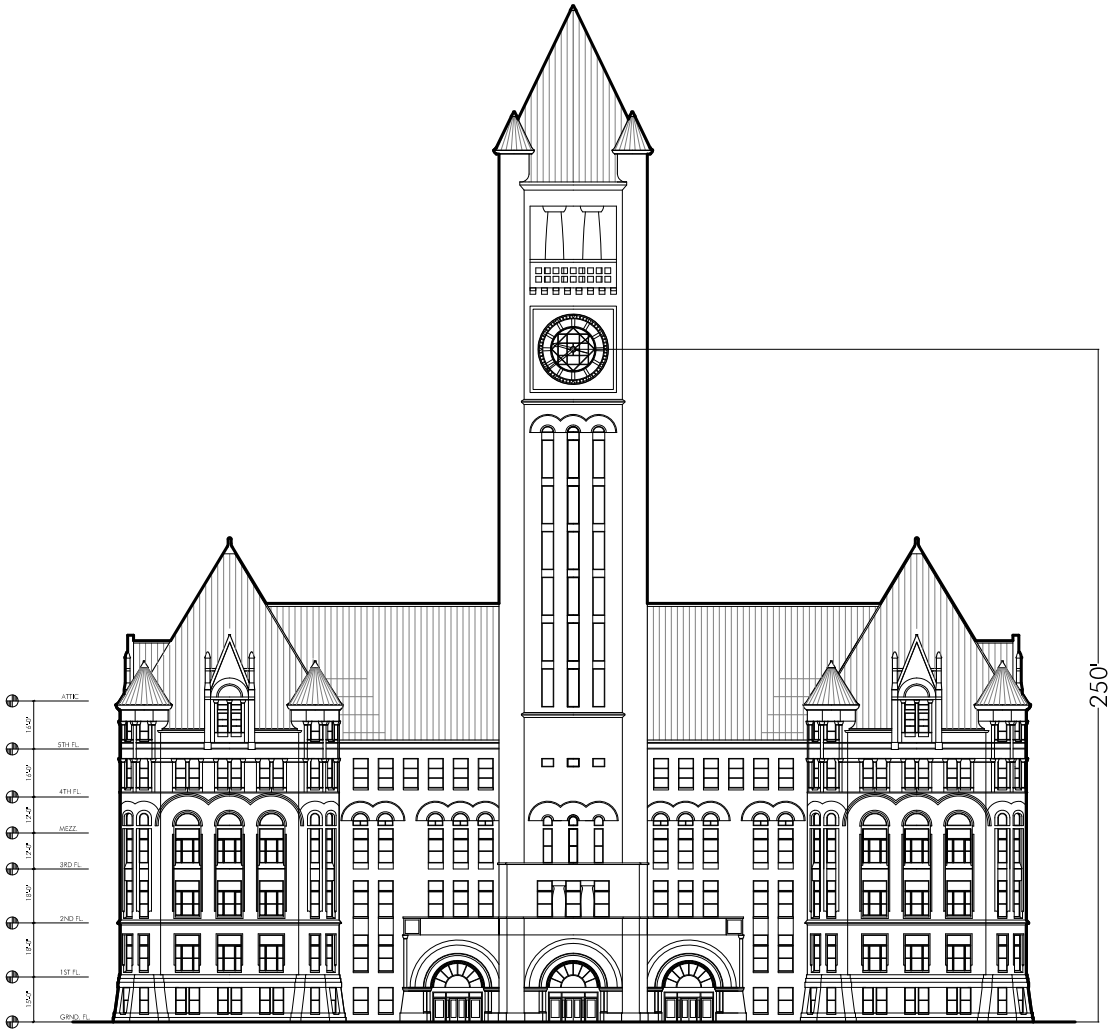
Deterioration Photos

COA 5



1 | North Elevation

6 | 1/64"=1'-0"

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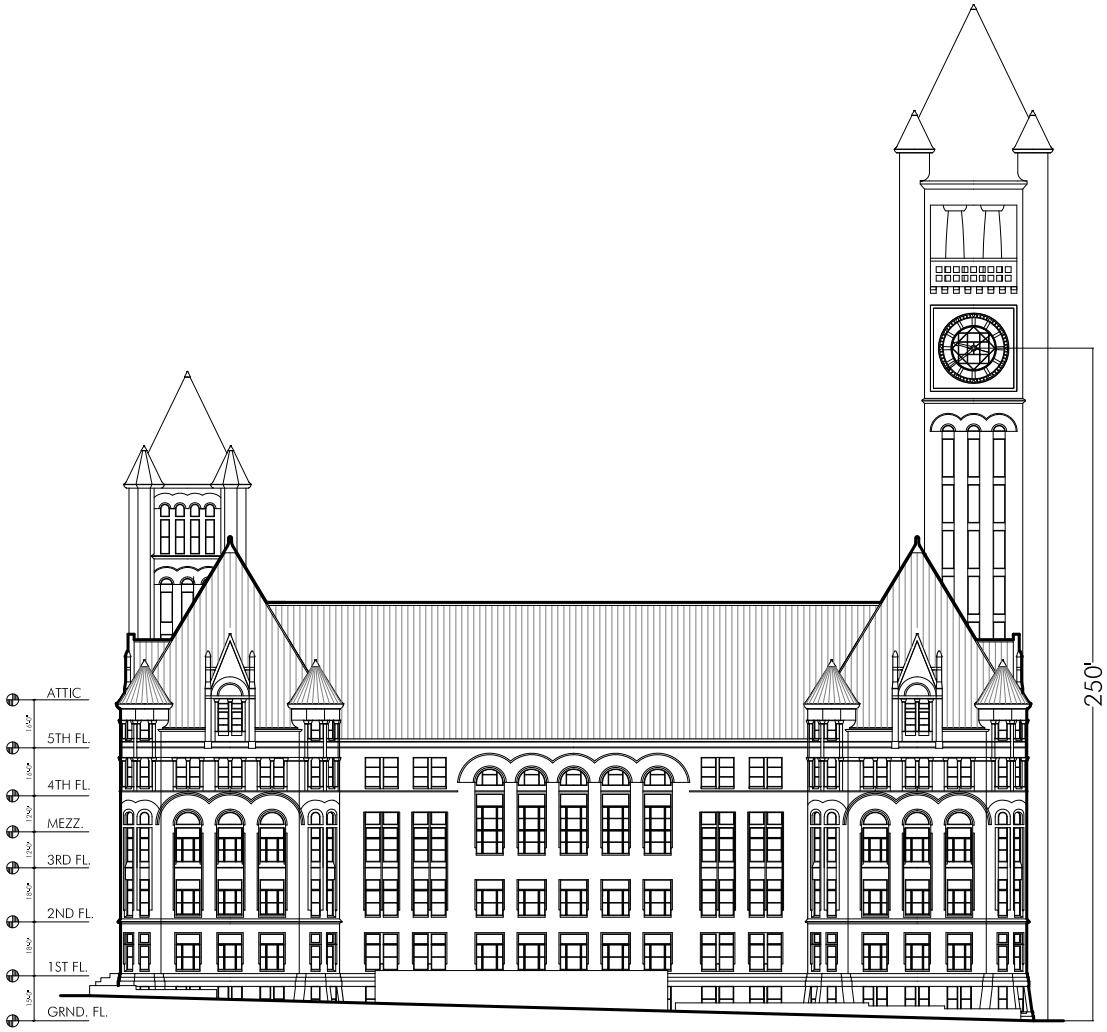
Dimensioned Elevations

COA 6



1 | East Elevation

7 | 1/64"=1'-0"

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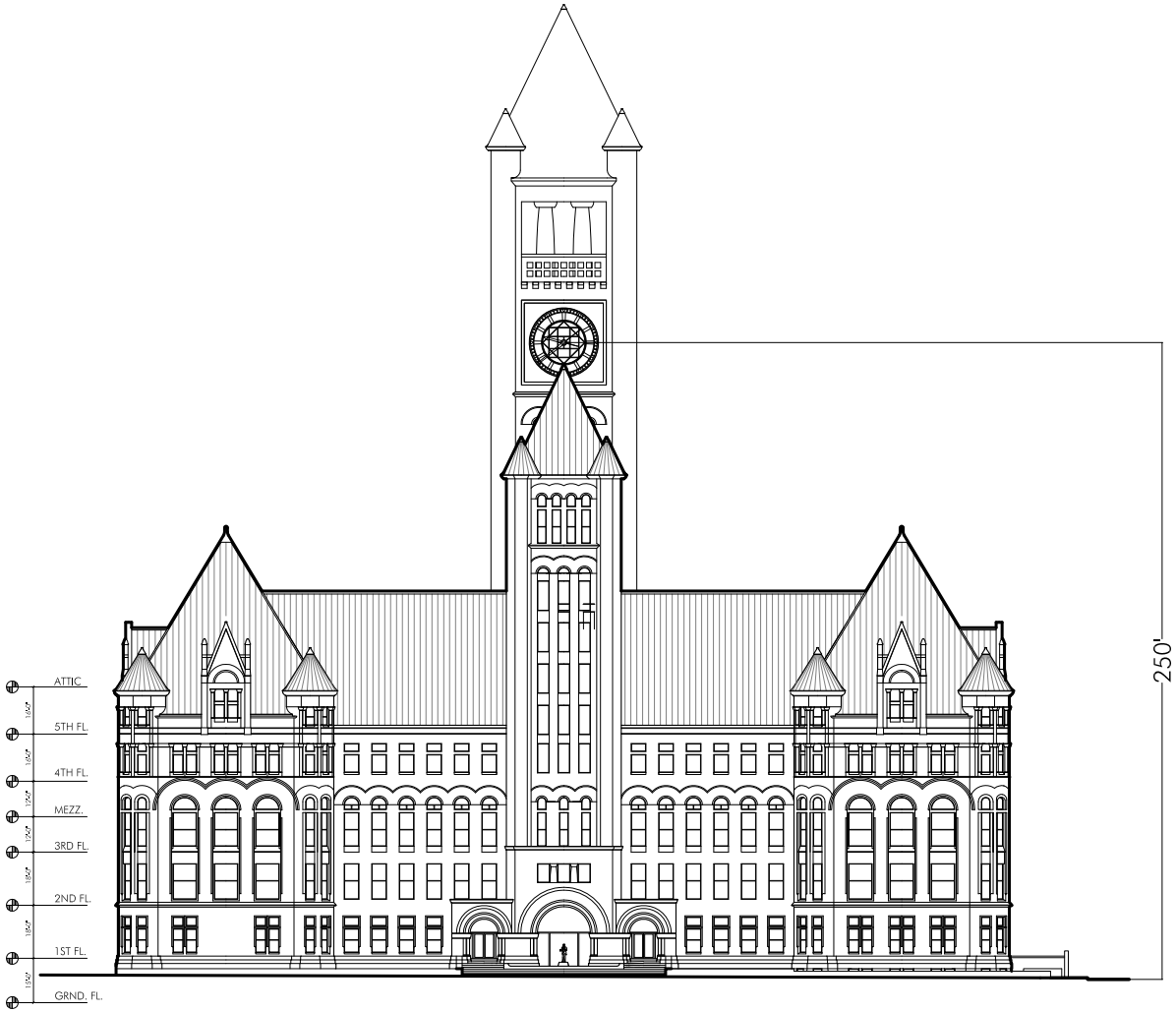
Dimensioned Elevations

COA 7



3 | South Elevation

8 | 1/64"=1'-0"

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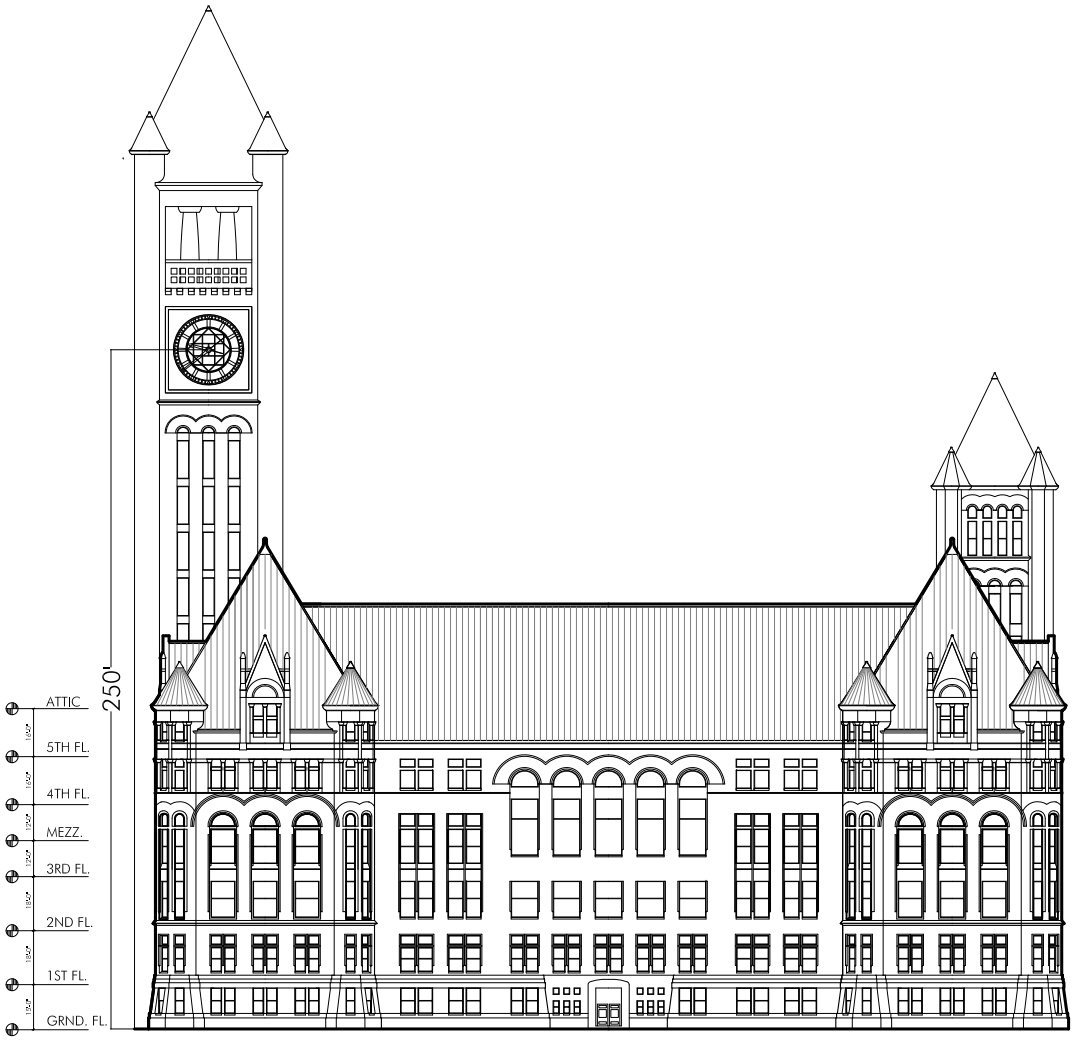
Dimensioned Elevations

COA 8



1 | West Elevation

9 | 1/64"=1'-0"

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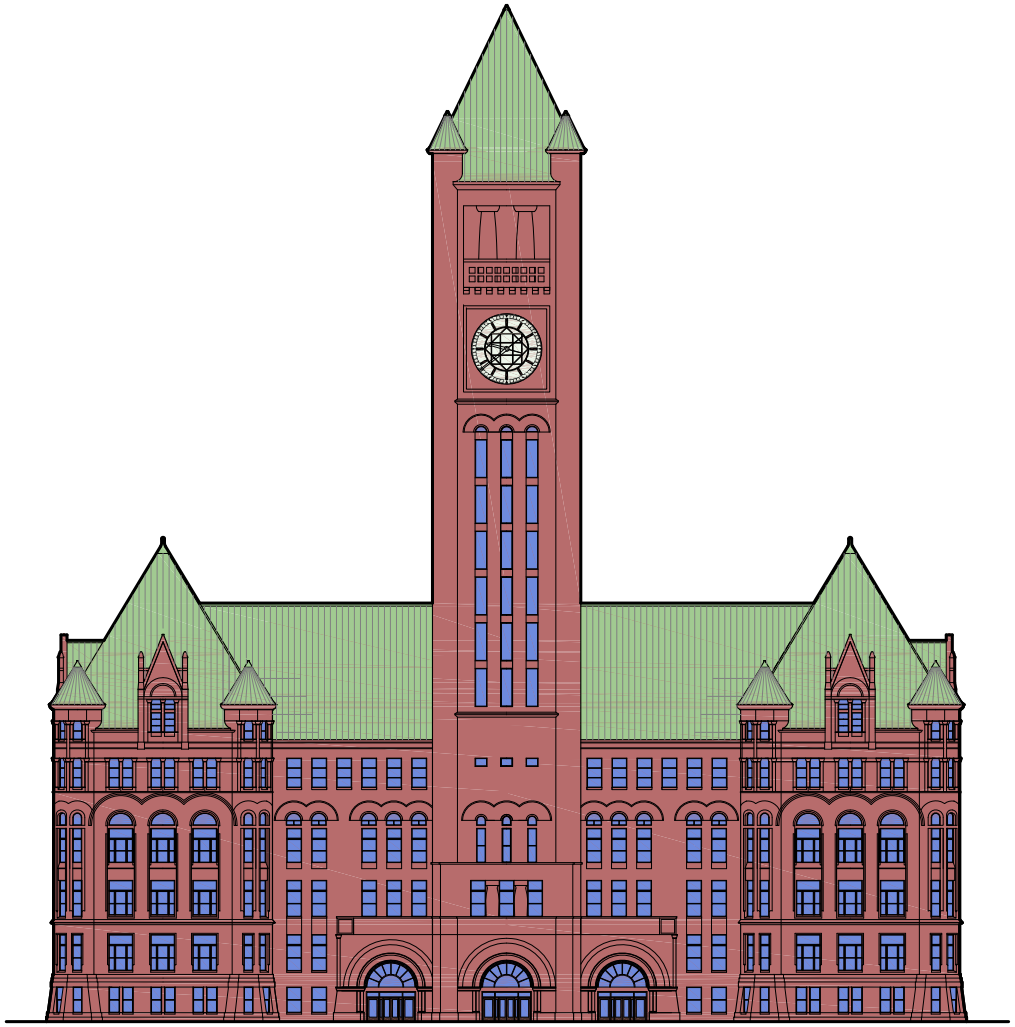
Dimensioned Elevations

COA 9



1 | North Elevation

10 | 1/64"=1'-0"

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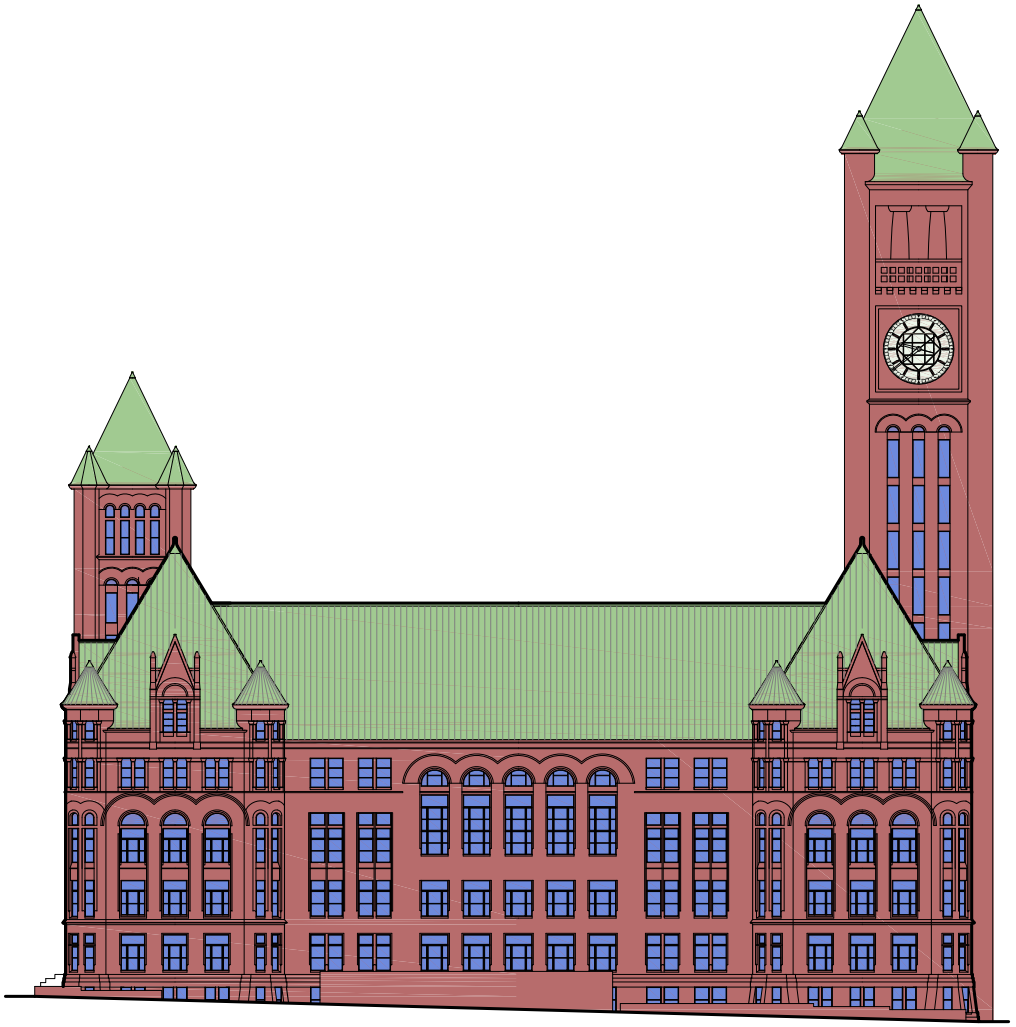
Colored Elevations

COA 10



1	East Elevation
11	1/64"=1'-0"

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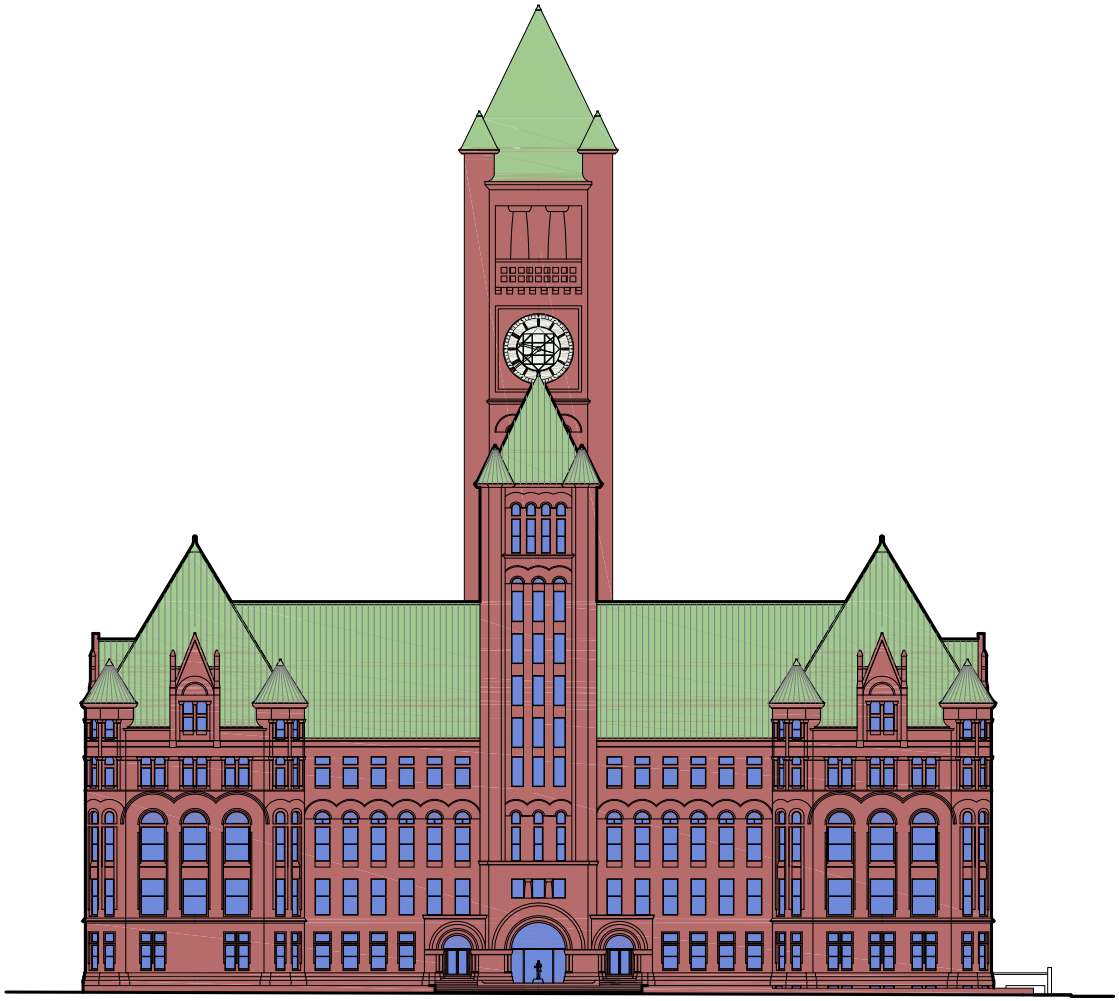
Colored Elevations

COA 11



1	South Elevation
12	1/64"=1'-0"

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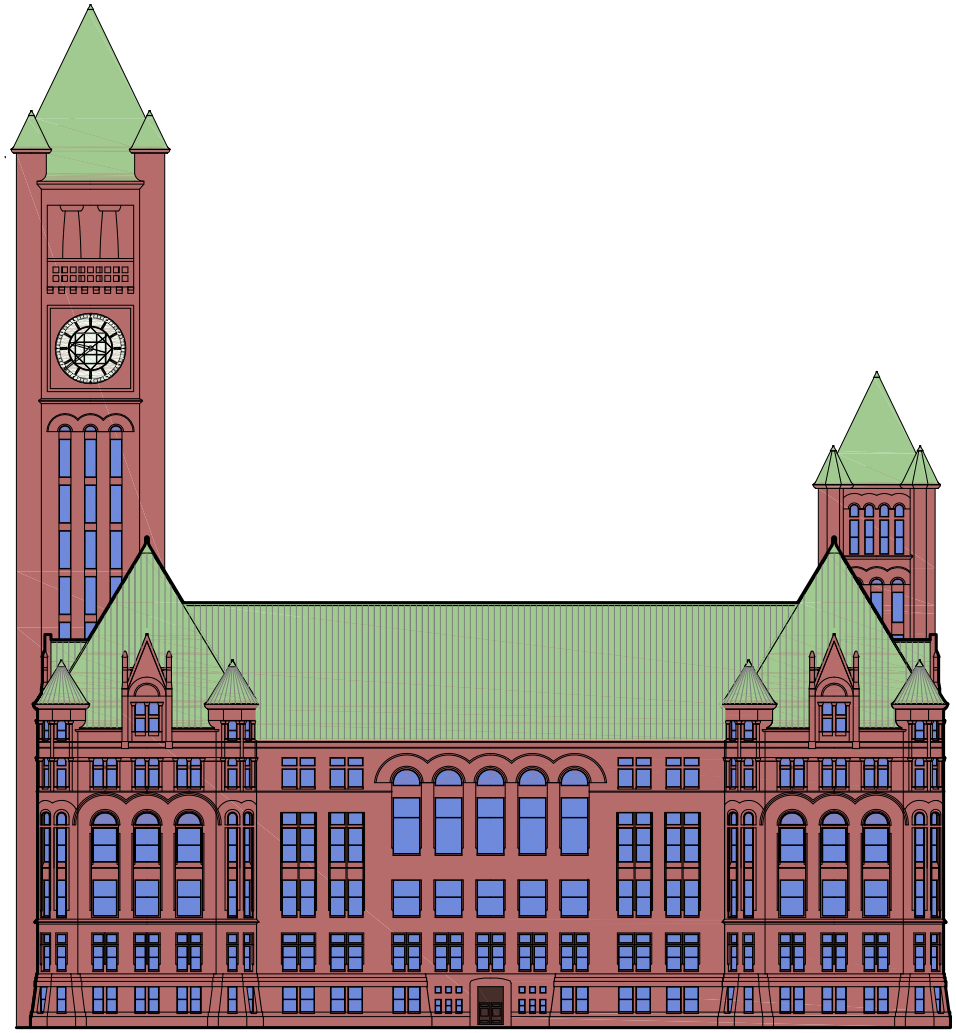
Clock Restoration
250 South 4th Street, Minneapolis, MN, 55415

DATE 06.02.2015 DRAWN MS

Colored Elevations

COA 12



1	West Elevation
13	1/64"=1'-0"

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Clock Restoration
250 South 4th Street, Minneapolis, MN, 55415

DATE 06.02.2015 DRAWN MS

Colored Elevations

COA 13

MUNICIPAL BUILDING
CLOCK RESTORATION

Minneapolis Heritage Preservation Commission
Certificate of Appropriateness Application

APPENDIX B:

"Municipal Building Evaluation of Structural Clock Elements", WJE

MUNICIPAL BUILDING
Evaluation of Structural Clock Elements

350 South 5th Street
Minneapolis, Minnesota 55415

Final Report
March 5, 2015
WJE No. 2014.5637

Prepared for:
Municipal Building Commission
350 South 5th Street, Room 105
Minneapolis, Minnesota 55415

Prepared by:
Wiss, Janney, Elstner Associates, Inc.
605 North Highway 169, Suite 1000
Minneapolis, Minnesota 55441
763.544.1170 tel | 763.544.1180 fax

MUNICIPAL BUILDING
Evaluation of Structural Clock Elements

350 South 5th Street
Minneapolis, Minnesota 55415

Lucas A. Malm, P.E.
Project Engineer
MN Reg #49031

Paul G. Whitenack, AIA, LEED ap
Project Manager and Project Architect

Final Report
March 3, 2015
WJE No. 2014.5637

Prepared for:
Municipal Building Commission
350 South 5th Street, Room 105
Minneapolis, Minnesota 55415

Prepared by:
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Minneapolis, Minnesota 55441
763.544.1170 tel | 763.544.1180 fax

TABLE OF CONTENTS

MUNICIPAL BUILDING
Evaluation of Structural Clock Elements

350 South 5th Street
Minneapolis, Minnesota 55415

EXECUTIVE SUMMARY

An evaluation of the structural clock face elements has been conducted by Wiss, Janney, Elstner Associates, Inc. in coordination with the Municipal Building Commission and MacDonald & Mack Architects to identify the extents and likely causes of deterioration, and to recommend available courses of action to address the deterioration in conjunction with the overall restoration of the clock. It was determined through visual observation, non-destructive evaluation, and material testing that as much as three-quarters of the cast metal elements comprising the clock face armatures (i.e. exposed to the exterior) have sustained critical weather-induced deterioration due to the brittleness of the material and difficulties in providing repairs to elements. The damage was primarily due to long term exposure to water leading to the development of rust and ice at critical locations throughout the clock armatures. WJE has proposed a number of plausible options for repair including (1) removing and replacing or repairing the existing cast elements or (2) replacement of the exposed elements with identically cast elements. The following report identifies our procedures, analysis, and recommendations:

INTRODUCTION

Wiss, Janney, Elstner Associates, Inc. (WJE) was retained by the Municipal Building Commission (MBC) to perform a structural and material evaluation of the historic ferrous metal (i.e. iron containing cast iron or cast steel) elements and adjacent masonry of the north, south, east, and west facing clock faces atop the Minneapolis City Hall tower, located at 350 South 5th Street in Minneapolis, Minnesota. We understand that MBC is planning on undertaking a renovation of the clock dials, with MacDonald & Mack Architects (MMA) serving as the architect of record. The scope of the renovation being considered by the MBC includes removing the opaque enameled steel infill panels and neon light attachments and more closely replicating the historic backlighting of the clock face. The purpose of WJE's evaluation was to analyze the condition and structural capacity of the metal clock face elements. Recommendations regarding options for repair and remediation are presented.

Our evaluation included: review of documents provided by MBC and MMA; visual and non-destructive evaluation of all accessible interior and exterior surfaces of all ferrous metal components; materials testing for chemical and physical properties; and structural analysis based on the drawings provided by MMA, our observations, and the results of the material testing performed.

BACKGROUND

Use and History of the Municipal Building

Designed by Minneapolis-based architecture firm Long & Kees in the Richardsonian Romanesque architectural style, the Municipal Building (MB) was the tallest building in Minneapolis, with the clock tower reaching 345 feet tall, until construction of the Foshay Tower in 1929. Construction began in 1888 as a replacement for the previous courthouse and city hall. The base of the building is approximately 300 feet square and six stories tall with a large courtyard on the interior completely surrounded by the building.

The exterior walls of the building and clock tower are load-bearing masonry walls consisting of granite and a multi-wythe brick backup.

History of the Clock

The clock tower possesses four clock faces, one on each of the north, south, west and east sides of the structure. For the purpose of this report, WJE documentation refers to the main façade of Minneapolis City Hall, along South 4th Street, as north-facing. The clock faces are identified herein accordingly. Each face of the clock is 23 foot 4 inches in diameter. The back of the clock faces are accessed from the twelfth story of the clock tower. The bells and balconies above the clock faces are accessed from the thirteenth story of the tower. The original clock was constructed with cast ferrous metal framing and components, with translucent glass infill panels. The glass infill panels allowed for backlighting of the clock faces to illuminate the clock hands. The original translucent glass infill panels were supported by a framework of cast ferrous metal members which radiate from the center to the circular perimeter masonry opening at each face. The framework is supported by beams only visible from inside the clock room, and metal struts that connect the face elements to the beams behind.

In 1949, the clocks underwent a significant renovation that included installation of neon lights on each hour marker and on the hour and minute hand. At this time, the glass panels were replaced with opaque porcelain enameled metal panels.

Additional repairs and modifications have taken place during the lifetime of the clock faces. These repairs included replacing the time keeping mechanisms, repointing of the mortar joints on the clock tower, adding of supplemental members to the clock face, welding of the steel and iron clock face framing and adding scaffolding to the interior of the clock tower.

WJE EVALUATION

WJE's evaluation work including the following investigation and analysis tasks:

1. Review of available documents and discussion of history of the building with MBC and Hennepin County to identify the age, origin, nature and maintenance history of the clock faces and their various elements.
2. Preparation of field sheets for use during the exterior and interior inspections.
3. Creation of electronic data sheets from elevation drawings prepared by MMA. The electronic data sheets were stored on WJE's proprietary Plannotate servers for field annotation by WJE personnel using tablet computers.
4. Conducting multi-day close-up visual inspections of the four clock faces, and masonry immediately surrounding the clock faces, using industrial rope access systems and climbing techniques (rappelling) as well as the permanent scaffolding on the interior of the structure. Field surveys were conducted during the week of January 19 by Messrs. Lucas Malm and Tyler Krahn. Mr. Malm is a licensed engineer[1] and Mr. Krahn is a licensed engineer[2], American Society for Nondestructive Testing (ASNT) Level II magnetic particle and ultrasonic testing technician, and American Welding Society (AWS) certified welding inspector.
    a. WJE documented conditions of visible distress, and also recorded critical section measurements to define the shape of the elements for the purpose of documentation and structural analysis. These conditions were photographed to record representative conditions.

[1] Lucas Malm is a licensed professional engineer in MN and WI.
[2] Tyler Krahn is a licensed professional engineer in IL, IN, MS, and SD.

b. Visual and tactile observations were made to identify and differentiate conditions that could be deemed unsafe and imminently hazardous fragments of loose metal that were encountered by WJE were removed.
c. Corrosion and debris removal was performed, on a trial basis, to investigate if underlying distress conditions were present in the base metal.
d. Non-destructive testing techniques (NDT) of the welds, including magnetic particle and ultrasonic testing methods were evaluated on site for efficacy. WJE used ultrasonic measuring devices at representative locations to determine the thickness of sections not measurable through normal means (e.g. tape measure, ruler, or calipers).

5. Testing of loose pieces of metal that were removed by WJE to identify chemical and physical properties. The pieces of metal were catalogued and selected for testing to determine chemical composition as well as tensile strength.
6. Development and analysis of a three-dimensional computer-generated structural model of the metal clock armatures based on the information contained in the MMA drawings, and that collected during our investigation. The objective of the analysis was to determine the forces and resultant stresses on the elements when subjected to wind and gravity loads in accordance with Minnesota State Building Code.

Field Observation and Testing

Observations were recorded using standard electronic field sheets created using base drawings from MMA. The field sheets were uploaded to WJE's Plannotate Document Center. Location and member specific notations were edited on tablet computers with observations, measurements, and photographs. In addition to visual observations, NDT techniques were evaluated and employed where appropriate to further quantify dimensional information not otherwise obtainable and validate visual observation.

Visual Inspection

Interior and exterior observations were made and recorded by licensed engineers experienced in the evaluation of steel structures exposed to exterior conditions. Components of the clock that were visually examined by WJE included the ferrous metal armature members and time markers, structural connections, and the brick and stone masonry supporting the steel and metal armature components. The members are categorized into: non-historic elements which will not be included in the rehabilitation; clock face members which are exposed to the exterior; struts which support the face members, and beams which support the interior struts and the clock hands. Photographs showing exterior and interior overall and close-up views of the clock faces and all types of elements are included as Appendix A.

Non-Historic Elements

There are several non-historic elements typical to the structure of each clock face. These elements include the steel angle struts between the interior masonry and each hour marker member on the east face of the clock, the angles bolted to the edges of the hour markers on the exterior of the clock, and the supporting structure of the permanent scaffolding on the inside of each clock face. These were identified as non-historic elements by MBC through historic photograph review and evaluation, and were somewhat readily apparent based on the materials and fastening techniques used in their construction. Because the stated objective of the project is to reconstruct the clock faces in their original configuration, including the removal of non-historic elements, these elements were not observed or documented by WJE in detail.

Clock Face Members

Four types of members comprise the face of the clock: (1) outer ring members; (2) hour marker members; (3) inner ring members, and (4) grid members. The dimensions of each type of element throughout each

clock face were found to be generally consistent within and between the four clock faces during our field observations. Each element is uniquely shaped and has been described below.

1. The outer ring members each consist of a single metal casting comprised of two concentric circumferential elements with an arc of 15 degrees (5 minutes or 1 hour), connected by perpendicular integrally cast minute markers. The dimensions of the outer ring elements were found to be generally consistent between separate elements during field observations. The flange of the inner ring was cast with a locally reduced flange width to accommodate the connection to the hour markers, and was dimensionally consistent whether it was connected to a wider major hour marker (located at 12, 3, 6, and 9 o'clock) or a narrower minor hour marker (located at 1, 2, 4, 5, 7, 8, 10, and 11 o'clock). The outer ring was connected to the granite masonry surround at the midpoint of the arc, and connected to the hour markers with one 5/8-inch diameter bolt at each end of the outer ring member.

Figure 1. Typical outer ring member.

2. The hour marker members were each a cast metal element that spanned between the outer ring and the inner ring. Each hour marker had five longitudinal stems perpendicular to the face (flange) of the hour marker. The flange width of the hour markers tapered radially from 13 inches wide to 11 inches wide at major hour markers (defined above), or 12 inches wide to 10 inches wide at minor hour markers. Each end of the hour marker had an integrally cast flange transverse to the axis of the hour marker which facilitated connection to the adjacent elements. Each hour marker was connected to each outer ring and each inner ring element with 1 bolt each and is supported with a strut to the surrounding masonry.

Figure 2. Typical hour marker.

3. The inner ring was a cast metal element with circumferential orientation and an arc of 15 degrees which connected the hour markers at each end, or the ring element to the inner grid. It had one bolt at each end which connected it to the hour markers, and had integrally cast flange extensions to accommodate connection to the grid elements. The position of the grid intersection dictated whether the flange extension was cast at the beginning, middle, or end of the member. The connection to each grid element consisted of three bolts.

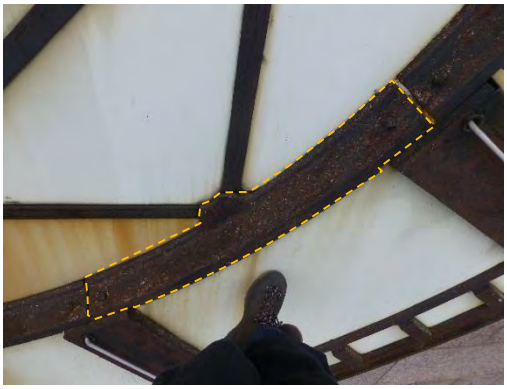


Figure 3. Typical inner ring. Also shown are typical grid elements.

4. The grid elements on the clock supporting the existing infill panels did not appear to be the same vintage as the remaining historic cast metal because they had thinner features than the other cast member types, appeared more ductile than the cast metal used, and relied on welds to transfer loads between grid elements. The flange and webs of the T were one-quarter inch thick, or half the thickness of any other member that comprised the clock face. The ductility of the metal was evident on the interior where some of the stems were bent to facilitate welding to the adjoining grid element. Finally, the established year of the clock construction was 1896 which predates metal arc welding.[3] In the absence of another means to connect the grid elements, and in combination with the observed dimensional and material differences, the grid elements were almost certainly installed at a date more recent than 1896.

Figure 4. Typical grid element intersection with welds.

Observed Distress

Typical distress observed in the metal clock face elements by WJE included through-cracks at or near connections and fractures along the edges of hour markers. Modifications to the elements, presumably as part of a previous repair program, were also noted. There was remarkable similarity between the types of distress experienced at each clock face, although the extent of distress was notably higher on the east clock face, when compared to the other three faces.

Cracking distress was typically present at the connections between metal elements of the clock faces. At many connections, water has collected and led to the development of pack rust which expanded and cracked the cast ferrous elements. One loose bolt removed by WJE had lost more than half its cross section, and many other locations had multiple cracks through the cast metal.

Figure 5. An example of missing and loose pieces of metal at hour marker to inner ring connection from pack rust development at connection.

Away from the connections, distress was typically present along the top edge of the hour marker members. The distress included fractures, section loss, and missing pieces. Evidence of associated prior repairs was often observed. Distress along the edge of the hour marker was likely due to the geometry of the piece being prone to collecting water, with subsequent freezing and thus expanding of the water potentially cracking the cast metal element.

Away from the connections and hour markers, there was essentially no significant section loss due to corrosion observed along the length of the other steel elements on any of the four clock faces. Although light pitting corrosion was present in many areas, the general extent of section loss was less than 5 percent.

[3] The first patent for metal arc welding procedure was issued in 1907.

A graphic accounting of all damaged members can be found in Appendix B and a summary of the observed distress is given in the table below:

Table 1. Distressed Clock Face Elements

Member Type / Clock Face	North	East	South	West	Total
Outer Ring	42%	92%	17%	42%	48%
Hour Marker	58%	100%	92%	67%	79%
Inner Ring	42%	50%	58%	17%	42%
Total	48%	81%	56%	41%	56%

Table 1 identifies 56-percent of the cast elements comprising the outer and inner ring as well as the hour markers as being distressed based on our visual survey of the interior and exterior. Distress in this case is defined as either 100-percent section loss, a visually observed crack, or a missing fragment of metal. Directionally, the east face had the highest concentration of distress. The most distressed elements across all faces were the hour markers. This represents a baseline of what elements we know to be distressed though further distress may be concealed by corrosion byproducts.

Struts

There were three types of historic metal struts: (1) masonry-to-hour marker struts, (2) beam-to-grid struts, and (3) beam-to-clock-works struts. All struts except those supporting the clock hands were 1-1/8 inch diameter solid rods. The beam-to-clock-works struts were cast steel cruciform shaped elements with integrally cast connections that were bolted to the vertical beam, and the structural housing of the clock hands, with 5/8-inch diameter bolts. The masonry-to-hour marker struts were terminated at each end with a threaded clevis and either bolted to an anchorage plate attached to the masonry surround, or bolted to the middle stem of the hour marker with 5/8-inch diameter bolts. The beam-to-grid struts were attached to a threaded cast ferrous metal end plate which was bolted to the beam at one end and bolted to the stem of the grid members on the other end with 3/8-inch diameter bolts.

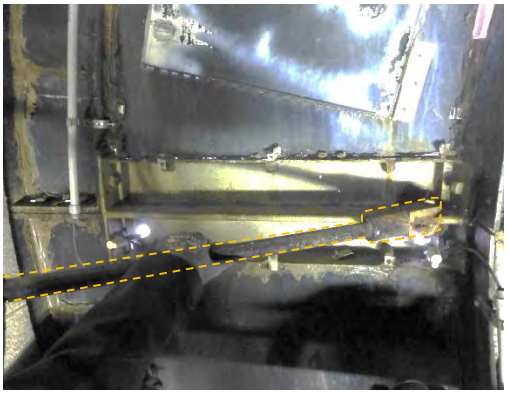


Figure 6. Typical masonry to hour marker strut at 3 o'clock position. Viewed from the inside of the clock room.

Observed Distress

The distress observed on the strut members was limited to rust and cracking of the clevis at the hour marker at 3 and 9 o'clock. Cracking only occurred at two of the connections but all of the connections, eight in total, had rust accumulation. The preferential corrosion of these elements was likely due to the horizontal orientation of the main stem of the hour marker member. The horizontal orientation was unable to shed any water that infiltrated the clock face, thus allowing it to remain within the faying (contact) surface between the clevis and the stem, resulting in corrosion.

Figure 7. Typical horizontal and vertical beams.

Beams

Vertical and horizontal structural beams were present within the interior of the structure. The vertical beams were 9-inch deep wide flange sections, were the primary members, and had a scroll "Carnegie" logo embossed on the web. The vertical beams were riveted to a large anchorage bracket that was anchored into the inboard face of the masonry surround above and below the clock. The horizontal beam was a 4-inch deep wide flange section and was bolted to the vertical beam with 5/8-inch diameter bolts. There was no distress noted to these beams.

Figure 8. Small anchorage bracket connecting the struts to the masonry.

Masonry and Attachment Brackets

The clock faces were anchored to the masonry surround with three types of connections: (1) the connection of the outer ring to a bent bar anchored to the masonry, in addition to the outer ring bearing on the masonry; (2) the connection of the hour marker strut to the masonry through a small anchorage bracket; and (3) the connection of the vertical beam to the masonry through a large anchorage bracket. All anchorages into the brick surround were visible from the clock room and had no visible deterioration to the brackets themselves.

No significant distress was noted in the granite cladding immediately adjacent to the clock faces. Rust staining was present on the exterior, notably below the clock face and to a much lesser extent immediately adjacent to the perimeter of the clock. MB maintenance personnel stated that the mortar in the joints between the granite units had been repointed approximately 10 years ago. On all four sides below the granite balcony brackets, mortar patches were noted in what appear to be four 1-inch diameter core holes in each of the granite units. There was one location where granite had spalled, but that location appears to be more than 10 years old based on the presence of a tooled mortar joint within the spall.

Figure 9. Mortar patches in course below the balcony bracket.

No significant interior masonry distress was noted at the clock surround, aside from the portions located below the clock faces. A waterproofing membrane installed between 4:30 and 7:30 o'clock at all four faces partially obscured observations of the masonry. However, where visible, the mortar joints had eroded and there were locations of cracked brick between 5 and 7 o'clock on the vertical face of the brick. Efflorescence was also noted on the brick along the return face between. As noted, a water management system was installed in this area at an unknown time. The water management system included the waterproofing layer over the brick, as well as a scupper used to collect the water and redirect it away from the wall, and an evaporation pan on the floor of the clock room. WJE did not observe the performance of the water management system during a rain period so it is unknown whether the eroded mortar joints and cracked brick were left unrepaired when the water management system was installed, or whether deterioration is on-going.

Figure 10. Interior masonry staining, cracking, and mortar erosion.

Each of the small anchorage brackets had two anchor bolts and each of the large anchorage brackets had four anchor bolts connecting the brackets to the masonry. The depth and type of the anchor bolts installed into the masonry was not known. It appeared that there were three types of anchor bolts: anchor bolts around the perimeter of the clock, and two types of anchor bolts installed at the top and bottom of the vertical beam. One of the typical perimeter anchor bolts was visible on the east face where mortar had eroded. The anchor bolt had 5 inches of embedment with an expansion type fitting on the end to prevent pullout. Using NDT, WJE attempted to measure the depth of embedment of the 1-inch diameter anchor bolts at the bottom of the vertical beam but was unsuccessful.

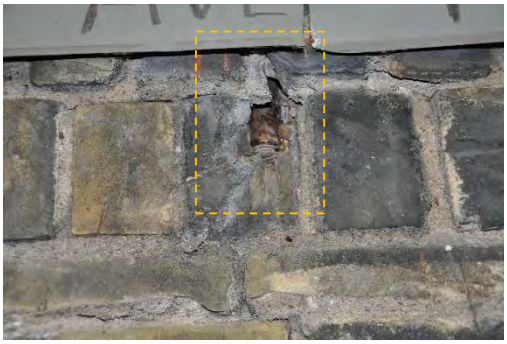


Figure 11. Anchor used for a small anchorage bracket.

Non-Destructive Testing

Non-destructive testing can expose conditions which are present but not visible to the naked eye without permanently damaging the structure. The methods WJE evaluated were corrosion removal, ultrasonic testing (UT), and magnetic particle testing (MT). WJE determined through on site evaluation the effectiveness and applicability of each technique and attempted to collect information based the most effective technique at a particular location.

Corrosion Removal

A loose fragment of metal was removed by WJE from the east face inner ring near 8 o'clock and used for NDT trials. The piece was found to have a crack which was not visible by means of visual observation alone, due to the surface roughness and corrosion byproducts caused by the rust. While preparing the sample for UT, a small crack was noted emanating from the bolt hole. The crack was approximately 0.010 inches

wide at the bolt hole, and tapered to hairline (zero width) in about 1-1/2 inches. Although the corrosion pitting on the fragment surface was fairly typical relative to the remainder of the structure, and section loss was minimal (approximately 2%), there was enough surface roughness and corrosion products to conceal this crack and prevent detection by visual inspection alone.

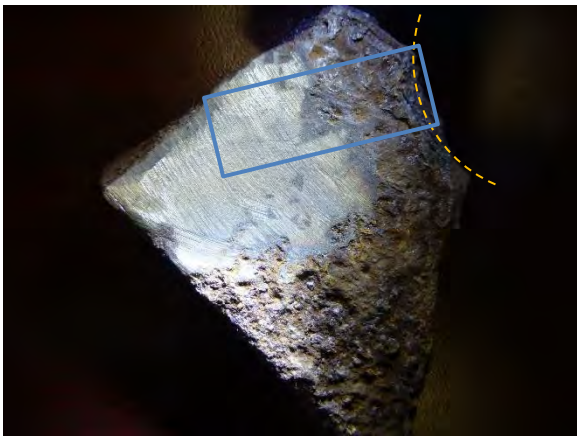


Figure 12. Sample during corrosion removal. Bolt hole noted by the dashed circle. Crack (not visible) noted by the blue box.

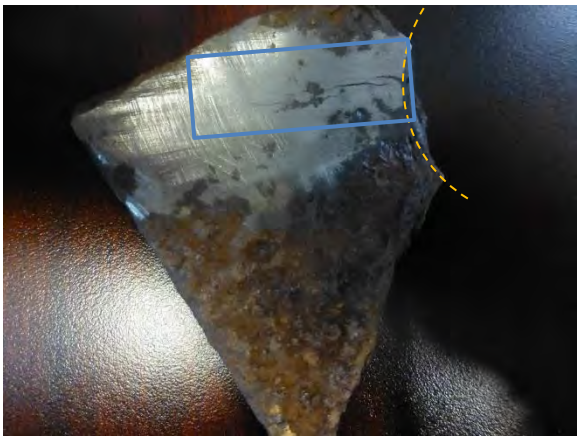


Figure 13. Sample after corrosion removal. Bolt hole noted by the dashed circle. Crack (visible) noted by the blue box.

Ultrasonic and Magnetic Particle Testing

Ultrasonic testing (UT) and Magnetic Particle testing (MT) are commonly used NDT methods for steel and other metals. UT uses ultrasonic sound waves introduced into the material with a hand-held piezoelectric element, or transducer. The sound waves travel through the material and reflect back from any discontinuities, such as cracks, inclusions, or geometric features including the opposite face of the part. The returned signals are processed and displayed on a digital display with a scale. A skilled operator interprets the display and reports any findings and possible causes of displayed signals. Basic UT can be used for thickness gaging where only one face of an element is accessible. To maximize the effectiveness of UT, the surface to be tested should be polished to remove any corrosion product and pitting. A liquid couplant is applied to aid in transmission of sound waves between the transducer and material. It is also necessary to calibrate the UT instrument for the material in question, as the speed of sound varies in different materials. This necessitates the use of a fabricated standard made from the same material as the test piece, or access to an area of the part where the thickness can be measured mechanically with a ruler or caliper. The strengths of UT include its ability to evaluate the full volume of a part rather than only the surface and the ability to measure dimensions when only one side is accessible. Weaknesses include the complexity of equipment and relatively high level of skill needed by the operator, need for surface preparation, and difficulty working with highly attenuative or coarse-grained materials.

MT is used on ferromagnetic metals by introducing a magnetic field or "flux" in the region to be tested. A hand-held electromagnetic yoke effectively creates a north and south magnetic pole in contact with the part. Specially colored iron filings are sprinkled over the test area. The filings are attracted to discontinuities that disturb the magnetic flux, such as cracks, inclusions, and sharp edges. The colored filings produce a visually apparent outline of the discontinuity that can be observed and photographed if needed. The strengths of MT include its relative ease of use, low cost, and the ability to test a large number of areas quickly. Weaknesses include that it can only be used on ferromagnetic materials, its limited usefulness for subsurface defects

(defects that do not break the surface of the part), and reduced sensitivity when a surface coating or residue is present.

Both NDT methods evaluated on the metal clock elements require training and experience in order to properly and effectively utilize them. Mr. Tyler Krahn performed all NDT evaluations and, as previously noted, is certified as a Level II technician in both UT and MT per the rules of the American Society of Nondestructive Testing (ASNT).

Testing Results

Small broken pieces of the cast metal elements were removed from the clock faces during the inspection to prevent them from falling. Some of these pieces were polished and used to test the effectiveness of the UT method and to calibrate the UT instrument. It was found that thicknesses in the 1/2 inch range could be discerned, but precision was poor. Because of the extra effort required to polish each location of UT evaluation, and the relatively poor precision obtained, mechanical measurement (rulers, calipers) was deemed by WJE to be a better method for determining element dimensions, where feasible. Mechanical measurements were taken where accessible. However, two specific dimensions were not accessible for mechanical measurement - the thickness of the hour marker flange and the thickness of the outer ring element against the granite masonry. Multiple locations of each of these two elements were polished and measured using UT. The thicknesses were found to be in the same range as other, accessible areas of the same element, as expected.

UT was also used in an attempt to measure the length of the anchor rods attaching the bottom of a vertical beam element to the supporting masonry, inside the clock room. Past experience has shown that UT can be used for evaluating anchor rods over 4 feet in length, however the effectiveness depends on the anchor rod material, and the condition of the hidden end. No results were obtained for the length of the anchor rod of the clock face beams.

Trials of MT indicated that it did not provide any additional benefits beyond visual examination for cracks.

The UT response from the historic metal pieces was characteristic of a highly attenuative or coarse-grain structure. This is frequently encountered in historic structures and is related to the processes used to make and process the metal. High attenuation means that the ultrasonic signal is quickly lost and has poor clarity, making measurements difficult and reducing precision. The inability to determine the length of the anchor rod could be due to excessive attenuation, or a rough or curved surface on the hidden end of the anchor rod. Bent hooks or ends that are not cut square sometimes reduce the effectiveness of anchor rod evaluation using UT. The lightly pitted surface of the clock face elements, and build-up of corrosion product, required surface preparation before UT could be utilized. This limits its usefulness to isolated spots and increases the time and effort required for testing. Excessive testing could also result in an unattractive finish, with various areas of original patina intermixed with the UT prepared areas that now exhibit a high polish.

MT did not prove beneficial in the limited trials; visual examination yielded similar results with less effort. As discussed above, and shown in Figure 12 and Figure 13, additional cracking may be present under the build-up of corrosion product. MT would be very effective in detecting these fine cracks, but it would be best employed in a shop setting after surface cleaning of the parts to remove any coatings and corrosion product.

Mechanical Tests for Physical Properties and Chemical Tests

WJE reviewed historical data regarding steel production at the time of construction, collected samples for testing, and reviewed past reports of physical and chemical tests characterizing the ferrous metals found in the clock face and throughout MB. The previous tests were from projects performed in 1985 by Hammel Green and Abrahamsom, Inc. (HGA) and in 2006 by American Engineering Testing (AET).

Based on the established date of construction of the clock, 1896, the metal was manufactured prior to the standardization of steel properties. In other words, there were no standards for the chemical or physical properties of steel produced in 1896. The possibility existed that the metal clock elements consist of cast iron, cast steel, wrought iron, or rolled steel.

In 1985, HGA completed a load rating of the floors in MB. Their sampling was limited to the floor structure, including what they identified as cast iron columns and both rolled and built up beams. Based on the review of the report, the floor beams and columns in HGA's scope appeared to be distinctly different than the elements found in the clock faces because there were no built up or rolled elements in the clock. Additionally, no chemical testing was done by HGA on the cast elements to inform any current opinion as to whether they are the same material as the structural elements in the clock.

In 2006, AET prepared a report with the results of mechanical and chemical tests of samples taken from the clock assembly. This report can be found in Appendix C. Two samples were removed; one sample was removed from the middle ring of the east face near 5 o'clock (E-RM05) and another from the vertical beam on the 3 o'clock side of the east face (E-BV03). Mechanical and chemical tests from these samples are summarized along-side the results from testing commissioned by WJE, discussed below.

WJE removed samples at 3 locations: the 3 o'clock hour marker on the east face (E-HI03), the 8 o'clock inner ring on the east face (E-RI08), and the 4 o'clock outer ring on the east face (E-RO04). The samples were submitted to SGS of Des Plaines, Illinois for mechanical and chemical testing. These results can be found in Appendix C and are summarized and interpreted in the sections below.

Mechanical Testing

Mechanical testing is performed to quantify the strength as well as the ductility of a material. The strength of a material is identified by looking at two stress levels - the yield stress and the ultimate stress. Before the yield stress is reached, the material acts elastically such that any deformation will be recovered once the load is removed and the material will return to its original pre-loaded geometry. The yield stress is the stress at which the material starts to deform inelastically such that further deformation will not be recovered once the load is removed. The ultimate stress is the stress at which the material breaks. The elongation of the material (as a percentage) that occurs between the yield stress and the ultimate stress defines the ductility.

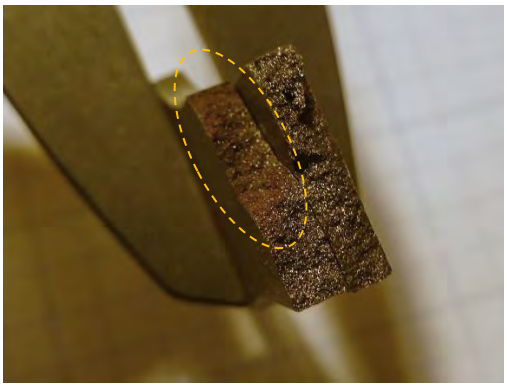


Figure 14. Fracture surfaces of 2015-3.

Metal samples obtained from the face elements were tested to quantify their tensile strength by SGS of Des Plaines, Illinois. Tensile test specimens were machined from the samples collected and submitted by WJE and tested in a universal testing machine to determine the properties of the metal according to ASTM E8

Standard Test Methods for Tension Testing of Metallic Materials. The plate was tested to determine the yield stress, ultimate stress, elongation at failure, and percent reduction in area.

Table 2. Steel Plate Strength Test Results

Element	Yield Stress (psi)	Ultimate tensile stress (psi)	Percent Elongation	Percent Reduction in Area
2006-1 - E-BV03 (AET)	62,300	62,300	0.63	31.5
2006-2 - E-RM05 * (AET)				
2015-1 - E-HI03 (WJE)	**	22,300	**	**
2015-2 - E-RI08 (WJE)	18,100	19,300	***	0.5
2015-3 - E-RO04 (WJE)	**	4,700	**	**

Notes: * - Mechanical testing not performed
** - Results not available due to sample breaking before yield could be obtained, no elongation observed.
*** - No elongation observed.

In reviewing the AET report from 2006, there was very little explanation relative to the conflict between the extremely high tensile strength, the ductile behavior indicated by the percent reduction in area, the non-ductile area indicated by the percent elongation, and the identical yield and ultimate tensile stress.

The samples tested by both WJE and AET produced yield and ultimate tensile strengths consistent with cast steel or cast iron with very poor ductility. However, the samples submitted by WJE for testing produced markedly lower yield and ultimate stress values. After testing, the samples were returned to WJE for observation. Upon close inspection of the fracture surface of 2015-3, WJE observed a reddish brown surface over approximately two-thirds of the fracture surface as seen in Figure 14. This discoloration is corrosion and is likely evidence of a pre-existing crack in the sample piece that was tested, (i.e., rust had formed on the fracture surface). The crack would have effectively reduced the section area of the sample, and caused an eccentric load to develop during SGS testing. This condition effectively invalidates the result. The remaining tests, 2015-1 and 2015-2, indicated an ultimate strength of the metal of approximately 20,000 psi. This value is generally consistent with modern values for ASTM A48 Grade 20 grey cast iron.

Chemical Testing

Modern steel is an alloy primarily comprised of iron, which typically constitutes at least 98 percent of the steel, and smaller percentages of carbon and manganese. Higher carbon and manganese content typically results in higher strength, but lower ductility. They can also help to make molten metal more flowable when increased to amounts consistent with cast iron.

Other elements found in carbon steel include but are not limited to copper, silicon, phosphorus, and sulfur. Copper is included in modern steels when specified and provides a measure of corrosion resistance when supplied in percentages not less than 0.20 percent. Silicon is a required component used to prevent formation of gaseous inclusions during production of thick castings and is present in percentages between 0.15 and 0.30 percent. Both phosphorus and sulfur are generally detrimental to steel both in its ductility and its weldability. Modern structural steel limits the percentages of these elements to 0.04 and 0.05 percent, respectively, though it could be added to certain other steels to modify its machinability. There still are further elements that may be added to supplement the fracture toughness of steel, or increase strength at higher temperatures, but were not found in the clock steel sampled by WJE. Below are the results of the 2006 sample tested by AET, as well as the sampling completed by WJE as part of our evaluation.

Steel samples obtained from the face elements were tested using optical emission spectroscopy (OES) by SGS of Des Plaines, Illinois. Chemical tests were performed according to ASTM E10419 *Standard Test Methods for Determination of Carbon, Sulfur, Nitrogen, and Oxygen in Steel, Iron, Nickel, and Cobalt Alloys by Various Combustion and Fusion Techniques* as well as ASTM E415 *Standard Test Method for Analysis of Carbon and Low-Alloy Steel by Spark Atomic Emission Spectrometry.*

Table 3. Chemical Analysis by %

Element	2006-1	2006-2	2015-1	2015-2	2015-3
Carbon	0.12	0.12	2.91	3.20	2.92
Manganese	0.49	0.42	0.28	0.34	0.28
Phosphorus	0.077	0.087	0.84	0.78	0.82
Sulfur	0.086	0.110	0.10	0.08	0.009
Silicon	0.04	0.03	4.04	3.63	4.26
Nickel	<0.01	<0.01	0.01	0.01	0.01
Chromium	<0.01	<0.01	0.02	0.02	0.02
Molybdenum	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	0.08	0.11	0.05	0.03	0.05
Aluminum	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	NR	NR	0.09	0.11	0.09
Tin	NR	NR	0.05	<0.01	0.03
Magnesium	NR	NR	<0.01	<0.01	<0.01

Notes: NR - Not reported

The different materials appear to be two fundamentally different types of ferrous metals:

- The samples tested in 2006 identify the material as a low carbon steel with high phosphorus and sulfur content. The phosphorus and sulfur contents identify all elements, including the beams, as cast elements rather than rolled elements. The high phosphorus and sulfur contents also portend higher strength but a tendency toward brittleness.
- The samples tested in 2015 identify the material as cast iron with high silicon contents.

Both cast materials require special welding procedures and special attention to reduce the potential of cracking. Specialized welding procedures include proper base metal preparation, electrode selection, the current selection (i.e. the heat input or the amperage used during welding), the length of welds, the temperature of preheating, amongst other items. Welding of cast iron is usually performed by welders whose experience is in an industrial setting, as opposed to a construction setting.

The brittle nature of cast iron creates additional complexities with respect to the possible repair of the existing clock faces. It is possible, if not likely, that tiny cracks will appear next to welds even if careful procedures are followed. This sensitivity emphasizes the importance of a controlled repair setting, proper coating selection and application, and maintenance once the repairs are complete.

Structural Analysis

A structural analysis was performed to identify whether the as-designed structure would be able to withstand modern building code wind loads and to inform whether distress observed would be attributable to structural loads that could have been experienced by the structure. The clock structure was modeled with

a three-dimensional frame model, with restraints at the connections to the masonry. The loads applied were in accordance with the 2006 Minnesota State Building Code.

As stated, the wind load applied to the structural model is based on the current Minnesota State Building Code. The use of current updated codes is only required when a significant renovation is pursued, or only applicable to new elements that are being added. Without a significant renovation, upgrading to current codes would not be necessary. Owners also have the option to upgrade their facility to modern building codes.

Two structural models were created in SAP 2000, a commercially available structural analysis program. One model included only the struts identified as the historic struts, and a second model was created with the addition of four supplemental struts between the vertical beam and the grid members as shown in MMA design drawings. Additional non-historic elements such as the steel angle diagonal struts on the east face were not included in the model as they are not expected to be included in the renovated clock face structures. Each model was constructed using three-dimensional frame elements. End releases were based on engineering judgment and observations made in the field. Joint reactions were placed at masonry anchorage points. It was determined that these two models would accurately depict the structural behavior of all four clock faces.

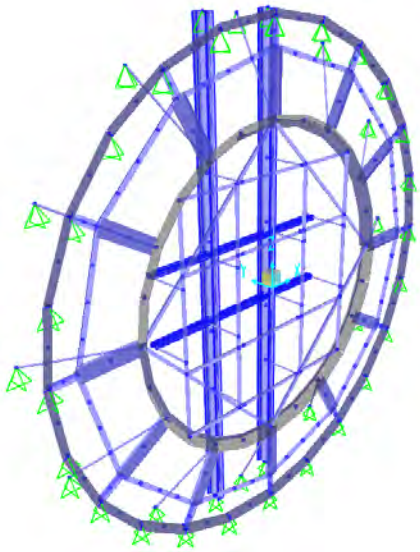


Figure 15. 3-D rendering of structural model.

The model consists of three-dimensional frame elements. The dimensions of each frame element were conservatively generalized into unique sections based on measurements taken in the field. Discrete sections were created for the outer, middle and inner rings; the outer and inner hour markers including differences between the 3, 6, 9, and 12 hours versus the other hours; the grid elements; the struts; and both vertical and horizontal beams. Those generalized shapes were input into the model using SAP 2000's on-board section designer which allows for custom shapes to be generated.

The loads that the clock faces are subject to include the self-weight of the members, the weight of the infill panels, the weight of the clock arms, and the wind pressures. The weight of the infill panels was based on 3/8-inch thick polycarbonate. The weight of the clock arms was estimated at 200 pounds. The wind pressures were based on ASCE7-05, *Minimum Design Loads for Buildings and Other Structures* which is consistent with the 2006 Minnesota State Building Code. All loads were analytically identical for each of the four sides.

Analysis Results

Structural analysis indicates that nearly all the elements have relatively small stresses. The only elements with significant stresses are the grid elements. However, it was found through analysis that when the additional struts were added per MMA analysis, the stresses on the elements were also effectively very low. The remaining elements all had a maximum stress of 3,100 psi or less. The following table further summarizes the stresses seen in the models.

Table 4. Structural Analysis Summary (Maximum Stresses)

Clock Element	Base Historical Model	With Additional Struts
Outer Ring	0.4 ksi	0.4 ksi
Middle Ring	2.2 ksi	2.2 ksi
Inner Ring	1.1 ksi	1.0 ksi
Outer Hour Marker	2.4 ksi	2.4 ksi
Inner Hour Marker	0.9 ksi	0.9 ksi
Diagonal Grid	9.6 ksi	7.2 ksi
Square Grid	29.7 ksi	6.4 ksi
Diagonal Struts	1.6 ksi	1.6 ksi
Grid Struts	0.4 ksi	0.3 ksi
Horizontal Beam	4.0 ksi	2.3 ksi
Vertical Beam	2.7 ksi	3.1 ksi

In addition to the stresses in the members, the connection forces are effectively small for a structure of this type. The following table summarizes key forces that need to be transmitted between different elements for the model which was developed with the additional struts.

Table 5. Connection Forces (additional strut model)

Column Headings.	Axial	Shear
Grid struts to beam/face	0.3 kips	0.0 kips
Radial struts to masonry/face	0.7 kips	0.0 kips
Inner hour marker to middle ring/outer hour marker	0.5 kips	0.1 kips
Inner ring to hour marker	0.1 kips	0.1 kips
Horizontal beam to vertical beam	0.0 kips	0.4 kips

Table 6. Masonry Anchorage Forces (additional strut model)

Anchorage Type	Horizontal Force	Vertical Force
Vertical Beam to Masonry	0.3 kips	0.7 kips
Radial Strut to Masonry	0.5 kips	0.3 kips

The stresses in the clock elements are small and the forces transmitted between elements as well as into the masonry are also small. The results of the analysis clearly indicate that the stresses that could have been experienced by the clock faces as a result of wind and gravity effects are not the major source of distress.

FINDINGS

Many of the elements of the clock faces are in good condition with only superficial rust; however, the connections between those elements have been exposed for the entirety of the clock tower's life with no attention to water entry issues and associated corrosion. The numerous instances of prior repairs, as well as the frequency of missing pieces observed at the clock faces, indicate that deterioration of the steel armature components has been an ongoing issue and continues to occur.

The primary forms of distress observed by WJE were the result of rust formation and subsequent steel expansion and delamination, and ice formation and expansion. Rust formation and expansion has resulted in damage at a number of specific locations including: connections between the outer and middle ring

elements; between the inner hour markers and the middle rings; between the inner hour markers and the inner rings; between the inner ring and the grid elements, and at the strut clevis attachments to the inside of the inner hour markers. Based on limited corrosion removal/cleaning sample, and the nature of the material, it is likely that there are locations that have cracked which were not visible to the naked eye even with up-close inspection, and thus were not identified during our site visit. Ice formation and expansion has also occurred at the inner hour markers. Proper detailing to prevent water from collecting along the faying surfaces, and/or allowing it to escape before damage can occur, will be critical in the final design.

REPAIR SCHEMES AND COST ESTIMATES

Based on the historic significance of MB and the clock faces, and the stated desire of the MBC to achieve a long term and durable approach for the clock matching the existing aesthetics, the three options presented below could be considered. Options 1 and 2 would include the additional struts as indicated in MMA drawings. Aside from the struts, the options presented would result in the clock faces being effectively identical to the originally constructed version. In our opinion, the two options presented below, with regular maintenance, should have a service life of 100 years. Each option is in consistent with the Secretary of Interior Standards for Historic Preservation.

Costs are estimated using WJE's knowledge of construction costs given our project history, as well as the cost estimates provided by Loeffler Construction and Consulting (Loeffler).

Option 1: Remove and Repair

Retain as much of the original material as possible while restoring the clock to be exposed to the elements. Based on the level of deterioration observed, the nature of the material, and considering the probability of concealed conditions, WJE suggests that a 75-percent piece replacement rate is anticipated. The required steps for this option would include: (1) disassembly and removal of all clock face elements; (2) sandblast to a bright steel finish, inspect visually and using NDT for cracks and flaws, and assign repairs or replacement of all elements not previously noted for removal; (3) structurally repair the elements by welding, brazing, or another approved method as directed; (4) clean and inspect the repairs for cracks and flaws; (5) install the repaired or replacement elements; (7) inspect the final in-situ structure; and (8) install the translucent glazing and accessories. Because of the brittleness of the metal, there remains the potential for damage after the clock faces are in place. Protective coatings could be damaged, or over-tightening the system may result in fracture of an element requiring repair. A contingency should be established to address concealed cracks and the possibility of damage upon reassembly.

This option is generally consistent with the 75% replacement option listed by Loeffler.

Estimate: $2.7M over 27 weeks.

Option 2: Rebuild Identical with Cast Metal

Complete replacement of the exposed elements with new identically cast elements fabricated of aluminum. Interior elements including struts and beams would remain in place but would need to be electrically isolated from the cast aluminum elements to prevent galvanic corrosion at contact points. The original clock components should be retained and stored. This project method represents the most direct means to restore the clock to its original appearance and function, with the least financial risk, most predictable schedule, and best possible life expectancy.

This option is consistent with the updated design development estimate provided by Loeffler Construction & Consulting dated February 27, 2015.

Estimate: $2.2M over 25 weeks

Alternate Considerations

Project Deferment

The options presented above could be deferred to a later date provided a remedial stabilization is implemented to mitigate falling hazards. As discussed in the report, there is a risk of falling objects based on the presence of multiple cracks throughout the exposed structure, pieces that are missing and likely fell off the clock, and a demonstrated history of elements with very little attachment that can be removed by hand. Therefore, a stabilization system could be installed to mitigate falling hazards, including netting and/or sidewalk protection. If netting is installed, care should be taken in the design of the system to not interfere with the clock function. Annual inspection should be performed to monitor the condition of the temporary stabilization and potentially modify or supplement the system as necessary. This option would likely not be aesthetically pleasing.

Maintenance Considerations

In making the selection for rehabilitation of the clock, the long term maintenance of the clock and the cost of accessing the clock face is a major consideration. Two items which may affect the cost of accessing the face of the clock is whether the glass panels are wet glazed with sealant or dry glazed with gaskets. Being able to remove the panels, expose the clean coated metal, perform maintenance, and reinsert the panels to a weather-tight condition would significantly reduce the cost for access to the exterior of the clock. This maintenance could be small such as removing selected panels for cleaning or part of a large recoating of the metal armature decades in the future.

Along those lines is the performance of and the consequences of different coating systems on different metals. WJE typically specifies a three-part coating system to be shop applied to cast iron elements. This coating system consists of a zinc rich urethane, an epoxy primer, and an acrylic top coat. With proper application, this should last 20 years before it would need to be recoated. If the coating is allowed to deteriorate or becomes damaged exposing the ferrous metal, the metal will corrode at the same rate as the existing clock and will show the corrosion in forms of streaks on the glass panels. WJE has specified Kynar to be shop applied to cast aluminum elements on past projects. The cast aluminum elements cannot be anodized because of the type of alloying required. The two processes are not compatible. Kynar is a product line of polyvinyl flourides which should last 50 years before recoating would be considered. The coating would not be expected to chip or peel but rather fade which would not be an easily noticeable or necessarily damaging mode of failure. If the coating is allowed to deteriorate or becomes damaged exposing the aluminum, the metal will oxidize but negligible section loss or staining would take place.

Scaffolding and Access

The estimated costs of the above options were based in part on the estimates received by Loeffler Construction & Consulting. WJE understands the cost of accessing the tower approximated $750,000 which is based on a complete scaffolding of the tower and constructing the clock face piece by piece (stick built) but also includes a skip hoist, demolition, and existing conditions. An alternate would be to construct the metal face at grade, utilizing a falsework steel lifting frame to insert the entire, or a large portion of the

clock face into the granite clock face housing. The clock face elements if constructed with steel would weigh approximately 4,000 pounds. If the clock face were constructed out of cast aluminum it would weigh approximately 1,500 pounds. There would likely be significant time, materials, and labor savings involved in utilizing this method but would come with its own costs of engineering of the lifting procedures, fabrication of the lifting frame, and swing stages may still be required if the granite surround is to be cleaned.

Reconstruction of a Single Face

Historic preservationists prefer to maintain as much original material as technically possible while remaining somewhat within the confines of what is economically feasible. Option 1 listed above suggests that existing materials be salvaged and repaired as much as feasible. Option 2 listed above suggests that existing materials be salvaged and stored with new cast assemblies put in their place. Option 1 still has much uncertainty which will come in the form of a long schedule and volatile repair costs. Option 2 is less historically sensitive in that it requires storing the existing material away from public view. A middle ground between those options might be reconstruct one clock face with existing materials either on one of the faces of the clock tower, or within the government center or plaza as a historic exhibit to city hall.

Rehabilitation Options Comparison

A comprehensive analysis of potential methods of rehabilitating the clock was considered including a remove and repair method, rebuilding the clock with identical new cast members, and encapsulation. A comparison chart with weighted scores is presented in Table 7.

Table 7. Rehabilitation Option Comparison

Comparison Item	**Comparison Weight (1-3), importance**	**Repair Options Rating (1-3)**	
		Option 1 - Remove and Repair	**Option 2 - Rebuild Identical**
Upfront Cost	3	1	2
Maintenance Cost	3	1	3
Aesthetic	1	3	3
Schedule	1	1	3
Financial Risk in Project Overages	3	1	2
Historic Sensitivity	2	3	1
Possible Modular Installation	1	1	3
Possible Clock Exhibit	1	2	3
Total Score (Weight x Rating)		22	35

APPENDIX A: Interior and Exterior Overall Photos and Structural Element Key

Overall view of the north (main) facade of the Municipal Building.

Exterior view of the north face.

Exterior view of the east face.

Exterior view of the south face.

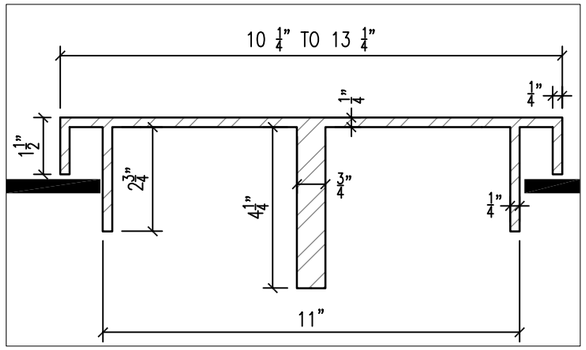
Exterior view of the west face.

Interior view of the north face.

Interior view of the east face.

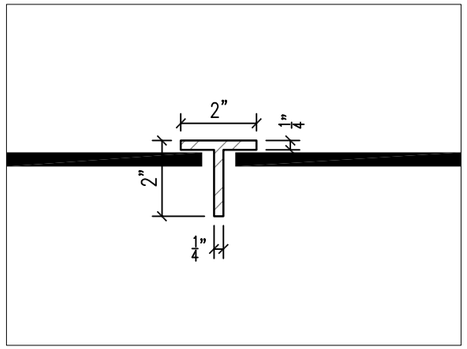
Interior view of the south face.

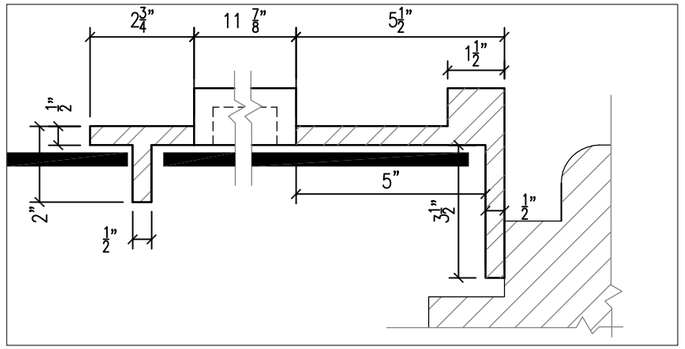
Interior view of the west face.



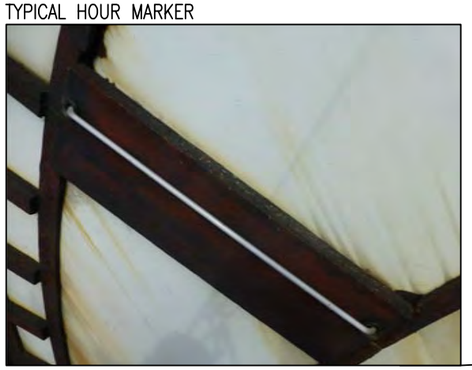
TYPICAL HOUR MARKER

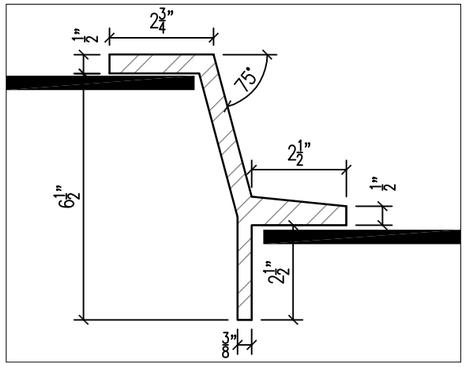
TYPICAL GRID



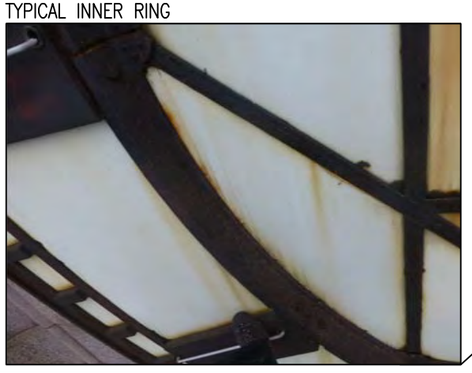


TYPICAL OUTER RING





TYPICAL INNER RING



NOTE: EXCEPT FOR GRID ELEMENTS DIMENSIONS ARE NOMINAL AND SUBJECT TO DRAFT THINNING REQUIREMENTS

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EXTERIOR

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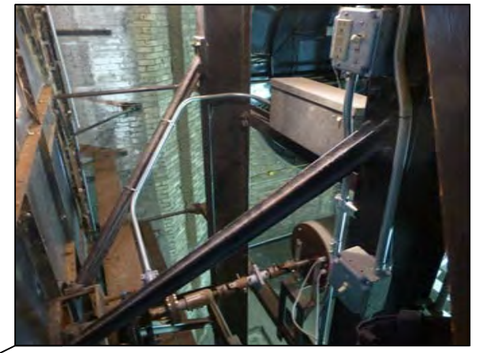
TYPICAL GRID STRUT TO HORIZONTAL BEAM CONNECTION

TYPICAL BENT PLATE ANCHORAGE FOR OUTER RING

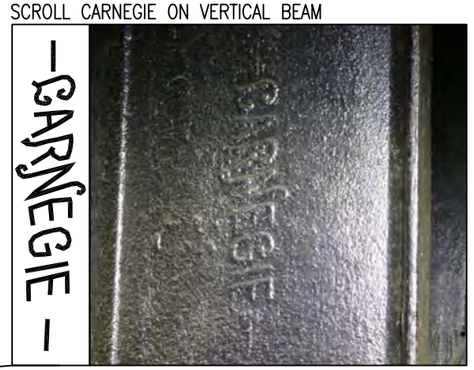
TYPICAL STRUT TO MASONRY SMALL ANCHORAGE PLATE

TYPICAL BEAM TO MASONRY LARGE ANCHORAGE BRACKET

CAST BEAM-TO-CLOCK-WORKS STRUT



SCROLL CARNEGIE ON VERTICAL BEAM



NON HISTORIC BEAM-TO-GRID STRUT

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TYPICAL SCAFFOLD SUPPORT

TYPICAL SCAFFOLD SUPPORT AT MASONRY

TYPICAL ADDITIONAL FACE-TO-MASONRY STRUT (EAST ONLY)

TYPICAL SCAFFOLD SUPPORT

TYPICAL SCAFFOLD SUPPORT

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NON-HISTORIC INTERIOR

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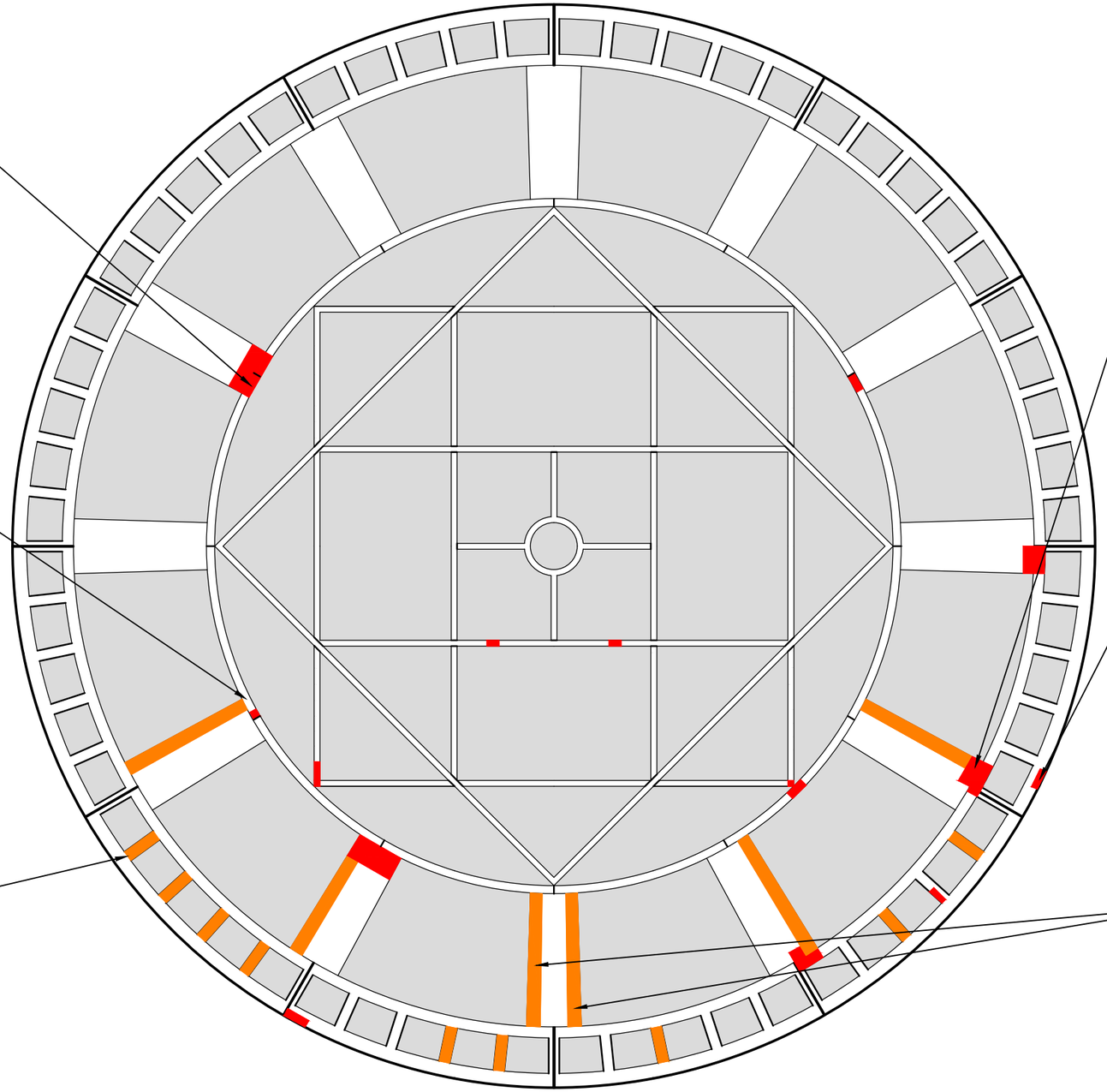
APPENDIX B: Distress Survey Summary

SIGNIFICANT SECTION LOSS AT EXTERIOR BOLTED CONNECTION BETWEEN HOUR MARK AND INNER RING

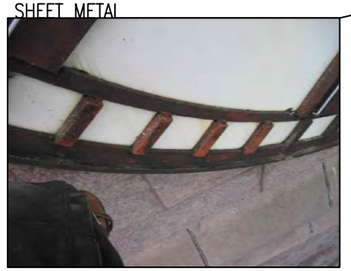
CRACK THROUGH INTERIOR BOLTED CONNECTION BETWEEN HOUR MARK AND OUTER RING

CRACK NEAR BOLTED CONNECTION BETWEEN HOUR MARK AND INNER RING

SECTION LOSS ALONG OUTER EDGE OF OUTER RING



MINUTE MARKS COVERED WITH SHEET METAL



ANGLES INSTALLED ON BOTH EDGES OF HOUR MARK OVER AREAS OF SECTION LOSS

CONDITION KEY:

- Non-original metal installed
- Previous weld repair
- Existing crack, section loss, or other distress

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NORTH

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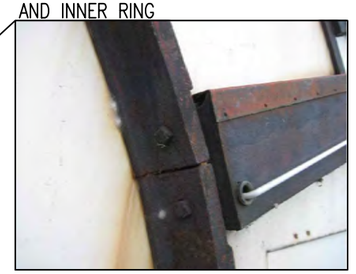
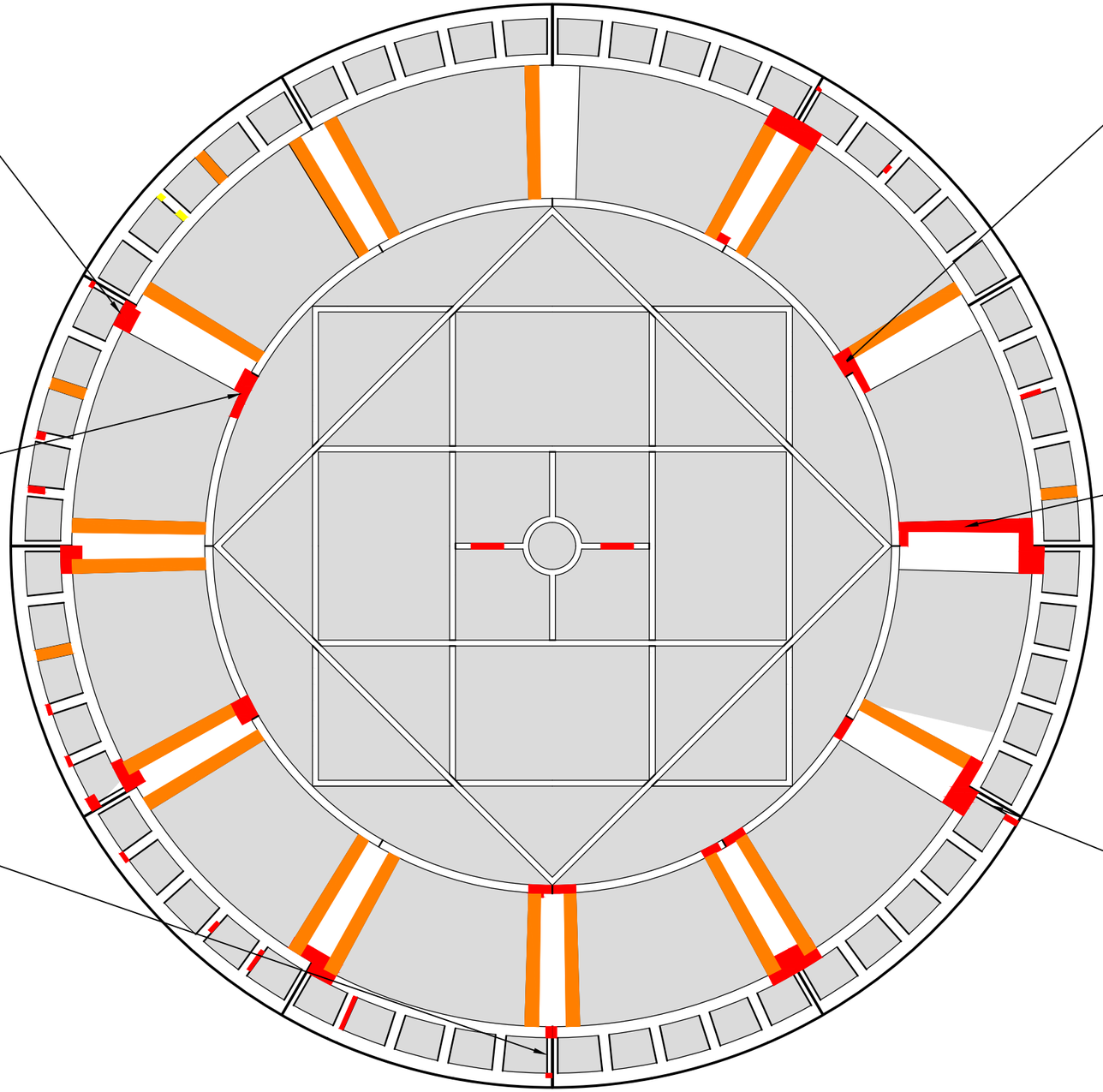
CRACK THROUGH OUTER RING SECTION

CRACK THROUGH EXTERIOR BOLTED CONNECTION BETWEEN HOUR MARK AND INNER RING





SIGNIFICANT SECTION LOSS AT EXTERIOR BOLTED CONNECTION BETWEEN HOUR MARK AND INNER RING

TOP EDGE OF HOUR MARK BROKEN AND MISSING

CRACK AT TOP AND BOTTOM OF OUTER RING SECTION

CRACK AT TOP AND BOTTOM OF OUTER RING SECTION AND SECTION LOSS ALONG CRACK

CONDITION KEY:

- Non-original metal installed
- Previous weld repair
- Existing crack, section loss, or other distress

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EAST

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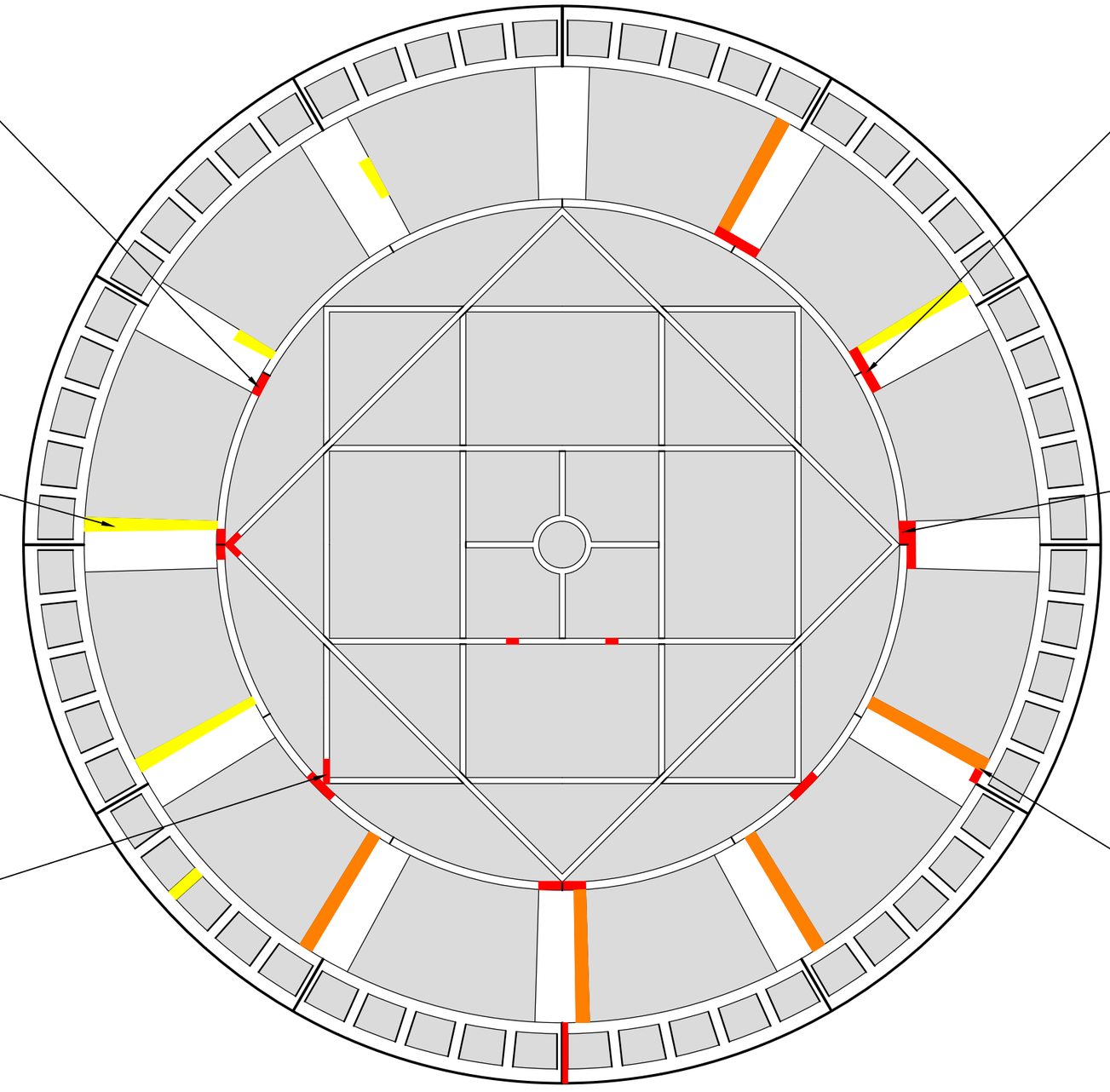
CRACK THROUGH EXTERIOR BOLTED CONNECTION BETWEEN HOUR MARK AND INNER RING MEMBER



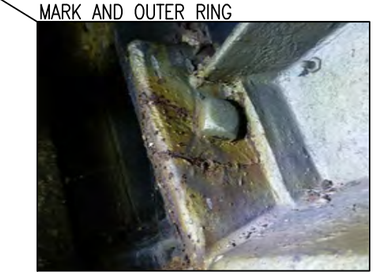
CRACK THROUGH EXTERIOR BOLTED CONNECTION BETWEEN HOUR MARK AND INNER RING MEMBER

CRACKED AND DISPLACED ALONG TOP SURFACE WITH METAL PLATE INSERTED INTO CAVITY

MISSING BOLD HEAD AT EXTERIOR CONNECTION BETWEEN HOUR MARK AND INNER RING MEMBER

SECTION LOSS OF INTERIOR FLANGE OF MEMBER

CRACK NEAR INTERIOR BOLTED CONNECTION BETWEEN HOUR MARK AND OUTER RING



CONDITION KEY:

- Non-original metal installed
- Previous weld repair
- Existing crack, section loss, or other distress

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SOUTH

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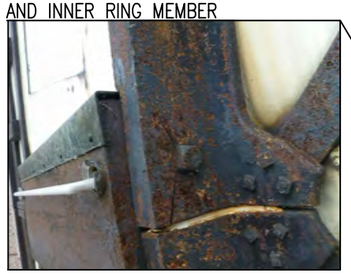
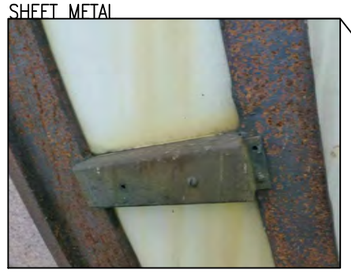
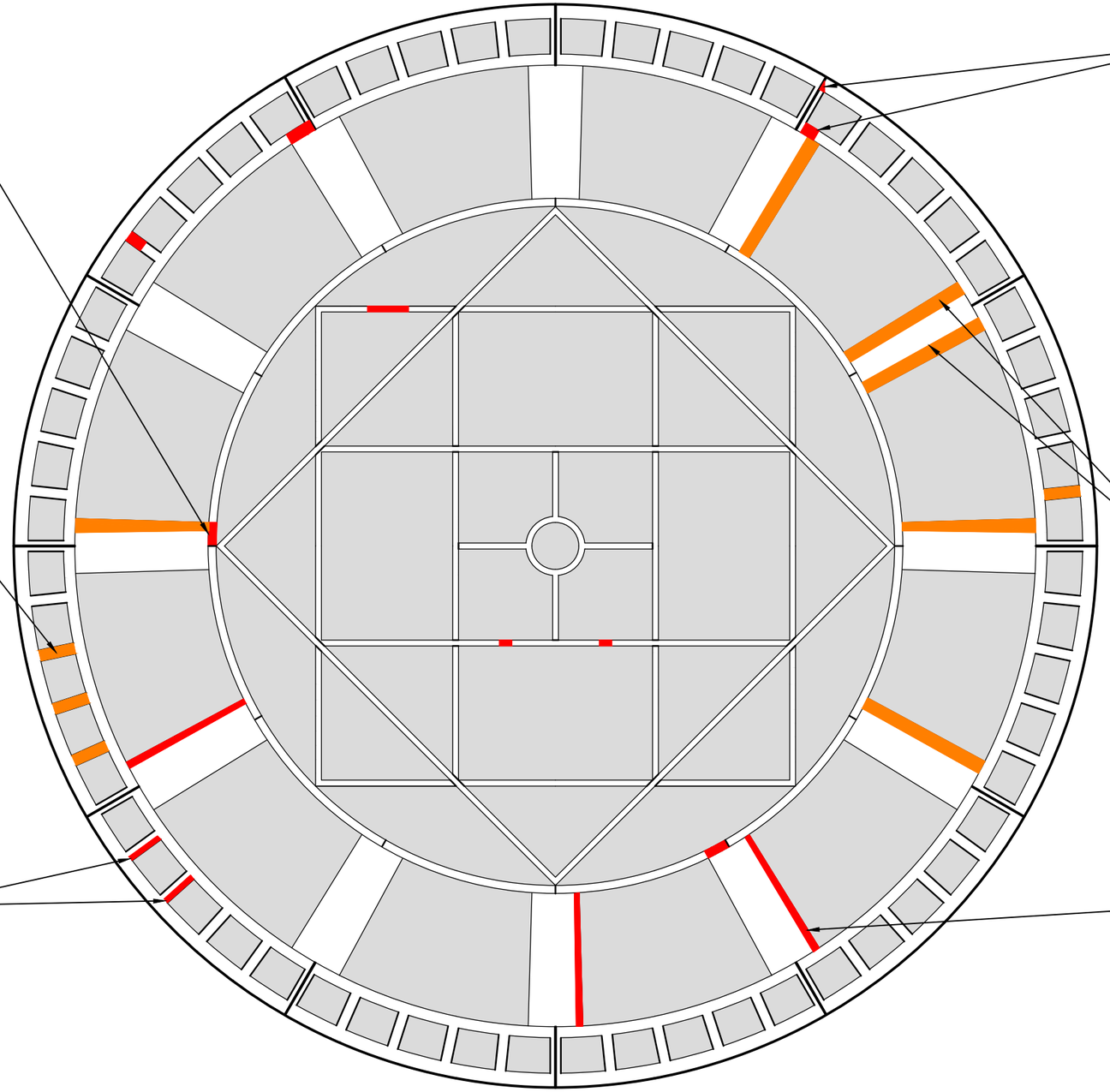
CRACK THROUGH EXTERIOR BOLTED CONNECTION BETWEEN HOUR MARK AND INNER RING MEMBER



MINUTE MARKS COVERED WITH SHEET METAL





CRACKS AT TOP AND BOTTOM OF OUTER RING SECTION

ANGLES INSTALLED ON TOP AND BOTTOM OF HOUR MARK OVER AREAS OF SECTION LOSS

CRACKS THROUGH MINUTE MARKS

CRACK ALONG SIDE OF HOUR MARK

CONDITION KEY:

- Non-original metal installed
- Previous weld repair
- Existing crack, section loss, or other distress

Proj. No.	2014.5607.0
Date	2/6/2015
Drawn	CFK
Checked	LAM
Scale	3/8"= 1'-0"

Sheet No. **WEST**

Plotted: 2/13/2015 9:26 AM by Malm, Luke File Name: P:\2014\2014.5xxx\2014.5637.0 - MINNEAPOLIS CITY HALL (PGW)\DRAWINGS\Figures.dwg

APPENDIX C: Material Test Results

AMERICAN ENGINEERING TESTING, INC.

CONSULTANTS
• GEOTECHNICAL
• MATERIALS
• ENVIRONMENTAL

REPORT OF METAL TESTING

PROJECT:

MINNEAPOLIS CITY HALL
CLOCK TOWER RENOVATION
MINNEAPOLIS, MINNESOTA

DATE: MAY 8, 2006

AET JOB NO: 05-02621

REPORTED TO:

MUNICIPAL BUILDING COMMISSION
350 SOUTH FIFTH STREET, ROOM 106
MINNEAPOLIS MN 55415-1319

ATTN: JOHN HELGESON

CC: BKBM ENGINEERS
ATTN: KEVIN HERRBOLDT

INTRODUCTION

This report presents the results of metal testing performed on samples removed from the clock tower structure at the Minneapolis City Hall in Minneapolis, Minnesota. The scope of our work was limited to:

1. Removing two (2) metal samples from the support structure of the east clock face
2. Performing chemical and mechanical testing on the samples
3. Preparing a report with the test results.

Our work was requested and authorized by Mr. John Helgeson of the Municipal Building Commission on April 7, 2006.

BACKGROUND INFORMATION

We understand the four clock faces at the top of the tower are being reviewed and a restoration plan is being considered. Part of the review includes documenting the properties of the metal structure supporting the clock faces.

The Minneapolis City Hall was built in the late 1800's. The structure consists of load bearing stone masonry walls and a steel frame. The clock faces are supported by circular metal rings that are tied back to vertical H-columns and the stone exterior walls.

PROCEDURES

The samples were removed from the steel members using an electric grinder with a cutting wheel. The sampling locations were selected by BKBM Engineers personnel with input from AET. Once the samples were removed, they were marked and returned to our laboratory. The sampling locations were not repaired.

The samples were submitted to St. Louis Testing Laboratories for testing. Chemical testing was performed in accordance with ASTM:E415-99a(2005). Mechanical testing was performed in accordance with ASTM:A370-03a.

RESULTS

The sampling was performed on April 13, 2006. Both samples were removed from the support structure of the east clock face. One sample was removed from the intermediate metal ring at the five o'clock position. A small triangular piece was removed from the corner of the end of the t-section. The second sample, approximately 1½" x 10" in size, was removed from the bottom of the right metal column flange.

Mechanical and chemical testing was performed on the rectangular section taken from the column flange. Chemical testing was performed on the triangular section taken from the ring. Refer to the attached reports from St. Louis Testing Laboratories (SLT) for the results of the testing.

DISCUSSION

As stated in the SLT report, the alloy of the metal samples could not be determined because of relatively high concentrations of sulfur and phosphorous. These constituents are considered contaminants and in such high relative concentrations result in a "dirty steel". The alloy most closely resembles a 10-10 or 10-08 steel. The steel is likely weldable based on its carbon equivalent. However, due to the contaminants, the likelihood of inclusions in the welds or heat affected zone is greater when compared to modern steels.

The mechanical test results from the rectangular sample show a relatively ductile steel (31.5% elongation) with a tensile strength of 62,600 psi. However, the reported yield strength of 62,300 psi does not correlate well with the elongation and tensile results. SLT personnel were consulted about this anomaly. The stress/strain graph from the test was reviewed and the elongation was re-measured. They did not find any conflicts with the data, but admitted the yield result did appear suspect. Unfortunately, there was not enough remaining sample to re-run the test.

In previous testing of the steel structure at Minneapolis City Hall, the average yield strength of over 150 samples removed from the building was approximately 39,000 psi. Based on the tensile and elongation results of the sample removed from the east clock face, we believe a yield strength for this material of 36,000 psi would be reasonable. We recommend another sample be removed and tested to confirm this conclusion.

LIMITATIONS

Our authorized work scope did not include a review of the overall construction or code compliance of clock tower structure. We limited our services to removing and testing metal samples from the support structure of the east clock face. As such, our results pertain only to those samples and should not be construed as a complete assessment of the clock tower structure.

Should conditions differing from those documented by AET at the time of our work be found in the future, AET reserves the right to review our results and provide additional clarification, if necessary.

REMARKS

Please contact us if you have any questions regarding this report or if we can be of further assistance to you.

Report Prepared By:
American Engineering Testing, Inc.

Daniel J. Larson, P.E.
Principal
MN Lic. No. 19649
Phone: (651) 659-1337
Fax: (651) 647-2744
dlarson@amengtest.com

Report Reviewed By:

Joe Johnson
Engineering Technician

Founded 1929 St. Louis Testing Laboratories INCORPORATED

2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085

Chemical, Metallurgical, Mechanical, Nondestructive, Environmental Testing, Analyses and Field Service.

MAY 10 2006

April 18, 2006
Lab No. 06P-1384
P.O. No. 05-1898

(Revised Report 5/3/06)

AMERICAN ENGINEERING TESTING, INC.
550 Cleveland Avenue North
St. Paul, MN 55114

Attention: Dan Lawson

REPORT OF CHEMICAL ANALYSIS

SAMPLE ID: SAMPLES SUBMITTED 4/18/06 – TRIANGLE & BAR

RESULTS: %

ANALYTE	TRIANGLE SAMPLE	BAR SAMPLE
Total Carbon	.12	.12
Silicon	.04	.03
Sulfur	.086	.110
Manganese	.49	.42
Phosphorus	.077	.087
Nickel	ND	ND
Chromium	ND	ND
Molybdenum	ND	ND
Copper	.08	.11
Tin	ND	ND
Aluminum	ND	ND

ND: Not Detected / Method Detection Limit is .01 for nickel, chromium, molybdenum, tin, and aluminum.

Could not identify alloy (high sulfur and phosphorus).

Tested in accordance with ASTM E 415-99a(2005)

Robin E. Sinn
Laboratory Director

RES/slw

Founded 1929 St. Louis Testing Laboratories INCORPORATED

2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085

Chemical, Metallurgical, Mechanical, Nondestructive, Environmental Testing, Analyses and Field Service.

MAY 0 4 2006

AMERICAN ENGINEERING TESTING, INC.
550 Cleveland Avenue North
St. Paul, MN 55114

April 19, 2006
Lab. No.06P-1384
P.O. No. 05-1898

Attention: JOSEPH JOHNSON

REPORT OF MECHANICAL TESTS

SAMPLE ID: 1 EA., SAMPLE SUBMITTED 4/18/06, GL CODE 10-5-4105

Sample ID	Width Inches	Thickness Inches	Area Sq. Inches	Yield Strength PSI	Tensile Strength PSI	Elongation (2.0" Gage Length) In.	%
SAMPLE	0.4930	0.4180	0.2061	62300	62600	0.63	31.5

Rectangular, reduced section tensiles

Yield taken at .2% offset

Tested in accordance with ASTM A 370-03a

Identification of tested specimens provided by the client

Karl Schmitz, Director
Materials Testing

KS/tlv

SGS MSi

TEST REPORT

Wiss, Janney, Elstner Associates, Inc.
605 North Highway 169, Suite 1000
Minneapolis, MN 55441

Attn: Mr. Lucas Malm

Report No.: 229895-1
Date: 2-9-15
Order No.: 2014-5637

SAMPLE IDENTIFICATION

Part No.	Part Name	Material
See Below	N/A	N/A

TEST RESULTS *

CHEMICAL TESTING

Element	Sample 1	Sample 3
Carbon	2.91 %	2.92 %
Manganese	.28	.28
Phosphorus	.84	.82
Sulfur	.10	.009
Silicon	4.04	4.26
Nickel	.01	.01
Chromium	.02	.02
Molybdenum	<.01	<.01
Copper	.05	.05
Aluminum	<.01	<.01
Titanium	.09	.09
Tin	.05	.03
Magnesium	<.01	<.01

TENSILE TESTING

Tensile Strength, psi	22,300	4,700
Yield Strength, psi (.2% Offset)	**	**
% Elongation in 2" (4W)	**	**

ACCREDITED TESTING CERTS 510.01 & 510.02

* Testing performed in accordance with ASTM A370, E8, E415 and E1019.
** Results not available due to sample breaking before yield could be obtained, no elongation observed.

Approved By: Thomas V. Santini, Associate Metallurgical Engineer

SGS MSi

TEST REPORT

Wiss, Janney, Elstner Associates, Inc.
605 North Highway 169, Suite 1000
Minneapolis, MN 55441

Attn: Mr. Lucas Malm

Report No.: 229895-2
Date: 2-9-15
Order No.: 2014-5637
Page: 1 of 1

SAMPLE IDENTIFICATION

Part No.	Part Name	Material
Sample 2	N/A	N/A

TEST RESULTS *

CHEMICAL TESTING

Carbon	3.20 %
Manganese	.34
Phosphorus	.78
Sulfur	.08
Silicon	3.63
Nickel	.01
Chromium	.02
Molybdenum	<.01
Copper	.03
Aluminum	<.01
Titanium	.11
Tin	<.01
Magnesium	<.01

TENSILE TESTING

Tensile Strength, psi	19,300
Yield Strength, psi (.2% Offset)	18,100
% Elongation in 1" (4D)	**
% Reduction of Area	0.5

ACCREDITED TESTING CERTS 510.01 & 510.02

* Testing performed in accordance with ASTM A370, E8, E415 and E1019.
** No elongation observed.

Approved By: Thomas V. Santini, Associate Metallurgical Engineer

Certificate of Appropriateness Application

Appendix C

PART 2
MANUAL OF TECHNICAL SPECIFICATIONS AND
PROJECT DRAWINGS FOR THE CONSTRUCTION OF

MINNEAPOLIS MUNICIPAL BUILDING CLOCK RESTORATION

COUNTY PROJECT
NUMBER: MBC-06

VOLUME 1: DIVISIONS 0 – 14

ISSUED ON, JUNE 9, 2015

PREPARED BY

ARCHITECT:
MACDONALD & MACK ARCHITECTS, LTD.
400 SOUTH FOURTH STREET, SUITE 712
MINNEAPOLIS, MINNESOTA 55415
PH: 612-341-4051
FAX: 612-337-5843

GLAZING CONSULTAN:
LARSON ENGINEERING, INC.
3524 LABORE ROAD
WHITE BEAR LAKE, MN 55110-5126
T: 651.481.9120
F: 651.481.9201605

STRUCTURAL ENGINEER:
WISS, JANNEY, ELSTNER ASSOCIATES, INC.
605 NORTH HIGHWAY 169
SUITE 100
MINNEAPOLIS, MN 55441
TEL 763.544.1170

LIGHTING DESIGNER/ELECTRICAL ENGINEER:
MICHAUD COOLEY ERICKSON
333 SOUTH SEVENTH STREET
SUITE 1200
MINNEAPOLIS, MN 55402
TEL: 612.339.4941
FAX: 612.339.8354

SECTION 00 01 05

PROFESSIONAL CERTIFICATIONS

ARCHITECTURAL

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the State of Minnesota.

Angela Wolf Scott License No. 49347

GLAZING

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the state of Minnesota.

Thomas Renick Reg. #25310

ELECTRICAL

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the state of Minnesota.

Sean A. Tewalt, PE, LEED-AP Reg. #40871

STRUCTURAL

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota."

Lucas Malm Reg. #49031

SECTION 00 01 10

TABLE OF CONTENTS

TABLE OF CONTENTS

END OF SECTION 00 01 10

DOCUMENT 00 01 15

LIST OF DRAWING SHEETS

1.1 LIST OF DRAWINGS

Drawings: Drawings consist of the Contract Drawings and other drawings listed on the Table of Contents page of the separately bound drawing set titled "Municipal Building Clock Restoration" dated June 9, 2015, as modified by subsequent Addenda and Contract modifications.

A. List of Drawings: Drawings consist of the following Contract Drawings and other drawings of type indicated:

1. Architecture

A000	Cover
A100	Clock Room Plan and Elevation
A101	Enlarged Clock Room Section
A102	Lighting Structure

2. Structural

S1	Clock Room Plans and Elevations
S2	Clock Room Plans and Elevations
S3	Clock Room Plans and Elevations

3. Glazing

G1	Clock Room Elevation
G2	Details - Outer Ring
G3	Details - Inner Ring
G4	Details - Tee
G5	Details - Minute Marker
G6	Details - Hour Marker
G7	Details - Framing Connection
G8	Details - Framing Connection
G9	Details - Framing Connection
G10	Details - Framing Connection

4. Electrical

E000	Electrical Title Sheet
E001	Electrical Specifications
ED112	12th Floor Lighting Demolition Plan
E112	12th Floor Lighting Plan

END OF SECTION 00 01 15

SECTION 00 21 15

PROJECT CONDITIONS

PART 1 – GENERAL

1.1 SITE LOCATION

A. 400 South 4th Street, Minneapolis, MN 55415

1. Owner's Representative: Royce Wiens, AIA; Municipal Building Commission, Suite 201; Minneapolis City Hall / Hennepin County Courthouse, 350 S 5th Street, Minneapolis, MN 55415; Phone: 612-596-9522; Cell: 612-328-5806; Royce.Wiens@municipalbuilding.org.

1.2 EXECUTION OF THE WORK

A. The building will be open from 6 a.m. to 6 p.m. Work may be performed during this time period or outside of this time period. If work is to be done before 6 a.m. or after 6 p.m., this must be approved by the MBC project manager in advance. The names of those working after hours must also be provided to the MBC project manager in advance for coordination with security.

B. The building will be closed on Holidays including New Years Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, the day after Thanksgiving Day, and Christmas Day.

1.3 PARKING RESTRICTIONS

A. No parking will be available around the immediate building except for deliveries. The Contractor will be responsible for parking related expenses.

PART 2 – PRODUCTS - Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION 00 21 15

SECTION 00 43 25

SUBSTITUTION REQUEST FORM

To: MacDonald & Mack Architects, Ltd, 400 South Fourth Street, Suite 712, Minneapolis, MN 55415; angelaws@mmarchltd.com

Attn: Angela Wolf Scott

Section #:
Specified Product:
Proposed Substitution:
Reason for Substitution:

ATTACH COMPLETE TECHNICAL DATA, LITERATURE AND SAMPLE IF APPLICABLE

1. Does proposed substitution fail to satisfy, in any respect, characteristics specified in the original project? Yes ( ) No ( )
2. Does the substitution affect dimensions shown in the drawings? Yes ( ) No ( )
3. Does the substitution affect other trades? Yes ( ) No ( )
4. Does the warranty differ from that specified? Yes ( ) No ( )
5. Does the substitution affect cost to Owner? Yes ( ) No ( )

   If so, how much? Add $_____ Deduct $ _____

6. If you indicated "Yes" to any of the items above, address the following issues in a response on your company letterhead:
   a. Explain the differences between proposed substitution and specified product.
   b. Summarize experience with product and manufacturer from past projects.

The undersigned states that the function, appearance and quality of the Proposed Substitution are equivalent or superior to the Specified item. The undersigned agrees that, if necessary, in the sole opinion of the Architect / Engineer, to make this products perform as intended all additional costs shall be paid by the contractor.

Contactor Information
Submitted by:
Company:
Address:
Date:

Architect's Response
Accepted:
Accepted as noted:
Not Accepted:
Received past deadline:
Date:
Signature:

END OF SECTION 00 43 25

SECTION 00 62 00

CERTIFICATES AND FORMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.2 PERFORMANCE AND PAYMENT BOND

A. Bonds shall be submitted on AIA Document A312 Title page.

1.3 CERTIFICATE OF INSURANCE

A. AIA Document G705 is to be submitted prior to start of work.

1.4 CERTIFICATE OF SUBSTANTIAL COMPLETION

A. AIA Document G704, one page: to be executed by all parties to establish the start of the warranty period.

1.5 DOCUMENT AVAILABILITY

A. Contractors unfamiliar with the above AIA documents may purchase them at the Office of AIA Minnesota, 275 Market Street, Suite 54, Minneapolis, MN 55405, Phone: 612-338-6763.

PART 2 – PRODUCTS - Not Used

PART 3 – EXECUTION - Not Used

END OF SECTION 00 62 00

SECTION 00 70 00

GENERAL CONDITIONS OF THE CONTRACT, STIPULATED SUM, SINGLE PRIME

Owner modified General Conditions of the Contract for Construction, AIA Document A201, 2007 Editon, are incorporated into this Project Manual by reference and attachment. This document has been electronically modified by the Owner, to include Supplemental Conditions to the General Conditions of the Contract. An original copy of this Owner modified AIA A201, 2007 is also available for viewing by Proposers in the office of Hennepin County Property Services, A1730 Government Center, 300 Sixth Street, Minneapolis, Minnesota 55487 and the office of the Architect, MacDonald & Mack Architects, Ltd., 400 South Fourth Street, Suite 712, Minneapolis, MN 55415

END OF SECTION 00 70 00

AIA® Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

THE OWNER:
(Name and address)

THE ARCHITECT:
(Name and address)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

TABLE OF ARTICLES

Init.

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INDEX
(Numbers and Topics in Bold are Section Headings)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between the Owner and Contractor (hereinafter the Agreement), Project Manual, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, Bidding Requirements (Advertisement or Invitation to Bid), Instructions to Bidders and Supplementary Instructions to Bidders, the Contractor's Bid, and portions of Addenda relating to the Bidding Requirements, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. The Project Manual is a volume assembled for the Work which may include the Bidding Requirements, sample forms, Conditions of the Contract, Specifications, and other Contract Documents.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2.

§ 1.1.9 FURNISH OR INSTALL OR PROVIDE

Unless specifically limited in context, the words "furnish" or "install" or any combination thereof, shall mean to furnish and incorporate in the Work, including all necessary labor, materials, equipment and other items required to perform the Work indicated.

The term "provide" means to furnish and install all labor, materials, equipment, transportation services, anchorage or suspension, fastening or other connection devices, connections to utilities or services, controls, trim, supports,

standard accessories, finishes, tests, adjustments for proper operation and other items needed for complete and properly functioning portions of the Work.

§ 1.1.10 ADDENDA

Addenda shall be written and/or graphic instruments issued by the Architect prior to execution of the Contract that modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections. Addenda shall become part of the Contract Documents when the Contract is executed.

§ 1.1.11 WRITING

A writing shall include any communications reduced to a written form, including letters, facsimiles, emails, memorandums, meeting minutes, Project website postings, or other written forms generally accepted for communication purposes on the Project and transmitted electronically or delivered hardcopy.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated and intended results.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.2.4 Where a reference in the Contract Documents to a federal specification, American National Standards Institute standard, American Society of Testing Materials standard or other standard does not include the edition or date of the standard, the edition and amendments current as of the date of the Project Manual shall apply.

§ 1.2.5 Detailed Specifications take priority over general Specifications. More detailed Drawings take precedence over less detailed Drawings. In case of disagreement between Drawings and Specifications, or within either document itself, the Contractor shall immediately bring the discrepancy to the Architect's attention for clarification. At the Architect's request, the Contractor shall provide a written estimate for completing the Work as provided both in the Specification and in the Drawing, and in any case, shall comply with the Architect's instruction on how to proceed.

§ 1.2.6 In the case of an inconsistency between Drawings and Specifications or within any Contract Document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation without change in the Contract Sum.

§ 1.2.7 In the case of discrepancy, figured dimensions shall govern over scaled dimensions.

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 Except to the extent the Architect and the Architect's consultants retain rights to reuse component information from their respective Instruments of Service as provided in the Agreement between the Owner and the Architect, the Owner shall be deemed the author and owner of the Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The

Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Owner's reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner may designate in writing a representative who shall have express authority to bind the Owner with respect to matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

(Paragraph deleted)

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.2 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.3 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control, which are reasonably requested by the Contractor and relevant to the Contractor's performance of the Work, with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.4 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

(Paragraph deleted)

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

§ 2.5 USE OF PREMISES BY OWNER

§ 2.5.1 The Owner reserves the right to occupy the whole or any portion of the Project at any time prior to completion of the Work. It is understood and agreed that the right to use the Project is part of the Contract and the Contractor shall proceed with the Work in such a manner as may be directed and shall cooperate with the Owner to endeavor to limit the interruptions to the Owners' normal operations and routine as much as possible.

§ 2.6 OWNER'S RIGHT TO AUDIT BOOKS AND RECORDS

§ 2.6.1 The Contractor agrees that the Owner, the State Auditor, the Legislative Auditor and/or any of their duly authorized representatives shall at any time during normal business hours, and as often as they may reasonably deem necessary, have access to and the right to examine, excerpt, and transcribe any books, documents, papers, records, etc., which involve transactions relating to this Agreement. Such material must be retained by the Contractor for the longer of (1) six years after Final Payment; or (2) such additional period as may be necessary to comply with specific Contract Conditions (including without limitation any period covered by a written warranty). The Contractor's accounting practices and procedures relevant to this Contract shall also be subject to examination by any of aforesaid persons as often as and during such times as aforesaid.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents and shall comply with all applicable laws, codes, ordinances, rules, regulations and industry standards.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

(Paragraphs deleted)

§3.2.2 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner, and shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. The Contractor shall at once report to the Architect and Owner any errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Owner or Architect for damage resulting from errors, inconsistencies or omissions in the Contract Documents unless the Contractor or its Subcontractors, recognized, or should have recognized such error, inconsistency, or omission and failed to report it to the Architect. If the Contractor performs any construction activity involving such error, inconsistency or omission in the Contract Documents without notice to the Architect and Owner, the Contractor shall assume responsibility for

such performance and shall be liable for the amount of the attributable costs for correction and any other resulting damages.

§ 3.2.3 The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for the Architect to evaluate and respond to the Contractor's requests for information when such information was available to the Contractor by reviewing and comparing the Contract Documents, field conditions, other Owner provided information, Contractor prepared coordination drawings, or prior Project communications or documentation.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.3.4 The Contractor shall perform the Work in accordance with the Contract Documents, submittals approved pursuant to Section 3.12, and general design intent reasonably inferable from the Contract Documents. The Contractor shall review specified construction and installation procedures (including those recommended by manufacturers) prior to implementation, and shall advise the Architect in writing if the Contractor has knowledge that the specified products deviate from good construction practice, or that following the specified procedures will affect warranties, or if the Contractor has any objections to the procedures.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. Should the Contract Documents require work to be performed after regular working hours or should the Contractor elect to perform work after regular working hours, the additional cost of such work shall be borne by the Contractor.

(Paragraph deleted)

§3.4.2 The Contractor shall be responsible for the costs of additional work and changes required to incorporate substitute materials, products or equipment approved during the bidding period into the Project.

After award of the Contract, a request for substitution of a material, product or piece of equipment at no change in the Contract Sum will not be approved by the Owner or the Architect, unless the specified item is no longer manufactured, the specified item is unavailable as a result of an act of government (such as declaration of a national emergency), or delivery of the specified items is substantially delayed as a result of labor disputes affecting the manufacturer, unusual delay in transportation, or any other cause beyond control of the Contractor or a Subcontractor or material supplier which the Architect determines justifies the delay. Requests will not be approved where the delay in delivery results from failure to promptly place subcontracts and material orders. Requests for substitution shall be submitted in writing to the Architect and shall clearly describe the proposed substitution, state the reason for the unavailability of the specified item and be accompanied by such additional data and information as may be necessary to establish the acceptability of the proposed substitution.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 WARRANTY

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Manufacturers' product warranties shall not relieve the Contractor of general warranty obligations.

§ 3.5.2 To ensure, wherever practical and appropriate, that materials with recycled content are given reasonable consideration for incorporation in construction of Hennepin County facilities:

§ 3.5.2.1 Performance standards and specifications for products used in construction or remodeling of County facilities or public works shall not prohibit the use of products with recycled content, except as set forth in Section 3.5.2.2.

§ 3.5.2.2 Specifications shall allow use of materials and products with recycled content wherever practical and appropriate except when the Architect determines that either the performance requirements for the product will be compromised by the use of recycled materials, or when a product with recycled content is impractical or will otherwise negatively affect health, safety, or operational efficiency.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, codes, rules, regulations, decrees and orders of public authorities, bodies and/or tribunals bearing on performance or nonperformance of the Work. The aforesaid requirements shall apply fully to the requirements referenced in Section 10.2.2 hereof. Contractor shall defend , indemnify and hold the County, its officers, elected officials, employees and agents harmless from any and all claims, liability, costs, penalties, damages, and/or attorneys' fees or any other costs or expense whatsoever arising from or based on violations committed by the Contractor, any Subcontractor and their employees or agents.

§ 3.7.3 If the Contractor performs Work and the Contractor knows, or should know it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and for damages incurred as a result and shall bear the costs attributable to correction.

§ 3.7.4 **Concealed or Unknown Conditions.** If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no

event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- **.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 PROJECT MANAGER AND SUPERINTENDENT

(Paragraph deleted)

§3.9.1 The Contractor shall employ a competent Project Manager who shall administer the Agreement between the Owner and Contractor and who shall represent the Contractor. Communications given to the Project Manager shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

§ 3.9.2 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. . Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

§ 3.9.3 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§3.9.4 The Project Manager and the Superintendent shall be assigned to the Project throughout the term of the Contract except or unless the designated individual's service to the Contractor is terminated or the Owner finds reasonable objection to the individual in which case another individual shall be assigned to the same responsibility for the remaining term of the Contract.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The Contractor is required to provide a Critical Path Method Construction Schedule.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect without action.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.12.11 The Architect's review of the Contractor's submittals will be limited to examination of an initial submittal and two re-submittals. The Architect's review of additional submittals will be made only with the consent of the Owner after notification by the Architect. The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for review of such additional submittals.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall defend, indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to personal or bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), and is caused by the acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder, except claims, damages, losses or expenses resulting from risks as are required to be insured by the Owner.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner and Architect.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect whose status under the Contract Documents shall be that of the Architect.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and the Agreement between the Owner and Architect, and will be an Owner's representative during construction until the date the Architect issues the final Certificate For Payment. The Architect will have authority to act on behalf of the Owner

only to the extent provided in the Contract Documents and the Agreement between the Owner and Architect, unless otherwise modified in writing in accordance with other provisions of the Contract.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become familiar with the progress and quality of the portion of the Work completed, to guard the Owner against defects and deficiencies in the Work, and to determine if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, as provided in Section 3.3.1. The Contractor may not rely upon the Architect's site observations or related reports to the Owner as confirmation that the Work is being performed in accordance with the Contract Documents or for any other purpose.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner. To the extent that they occur, any direct communications between the Owner and the Contractor regarding performance or administration of the obligations under this Contract shall be made or confirmed in writing by the Contractor, with copies to the Architect.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.1.1 Verification of Compliance with Minn. Stat. § 16C.285, Subd. 3, Responsible Contractor Requirement: Signed verification was required in the solicitation response for all of the Contractor's first-tier subcontractors that the Contractor intended to retain for work on the project. If the prime contractor or any subcontractor retains additional subcontractors on the project, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification list naming the added subcontractors which verifies the subcontractors have certified they are in compliance within 14 days of retaining the additional subcontractors. Upon request from the Owner, the prime contractor shall submit copies of the signed certifications of compliance from all subcontractors of any tier.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the

Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14 day period shall constitute notice of no reasonable objection, but shall not constitute waiver of any of the requirements of the Contract Documents.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection, unless specifically required by the Contract Documents.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required. No increase in the Contract Sum or Contract Time shall be allowed for a change based on ineligibility under Minn. Stat. § 16C.285.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.2.5 The Contractor agrees to the Owner's right to audit books and records pursuant to Section 2.6.1, in reference to the Contractor's selection, award of contract, and payments to Subcontractors.

§ 5.3 SUBCONTRACTUAL RELATIONS

By written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights and limitations on liability of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors. If requested by the Owner, the Contractor shall promptly supply copies of each subcontract agreement to the Owner.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract, except as otherwise may be provided in writing at the time the Owner accepts the assignment.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days due to unreasonable delays attributable to the Owners, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity.

§ 5.5 PROMPT PAYMENT TO SUBCONTRACTORS

§ 5.5.1 Minnesota Statutes, Section 471.425, subd. 4a, requires prompt payment to Subcontractors. The law requires the prime Contractor to pay any Subcontractor within ten days of the prime Contractor's receipt of payment from the Owner for undisputed services provided by the Subcontractor. The law also requires the prime Contractor to pay interest of 1-1/2 percent per month on any undisputed amount not paid on time to the Subcontractor.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner, separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.2.6 Should the Contractor wrongfully cause damage to the work or property of any separate contractor, the Contractor shall, upon due notice, promptly attempt to settle with such other contractor by agreement, or otherwise to resolve the dispute. If such separate contractor sues the Owner on account of any damage alleged to have been caused

by the Contractor, the Owner shall notify the Contractor who shall defend such proceedings at the Contractor's expense, and if any judgment or award against the Owner arises therefrom, the Contractor shall pay or satisfy it and shall reimburse the Owner for all attorney's fees and court costs which the Owner has incurred, if any.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive, order for a minor change in the Work, or Authorization to Proceed with a Construction Change, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order or Authorization to Proceed with a Construction Change shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone. In the event the Contractor ignores the Architect's directions to correct defective or non-complying work, or if previously undetected defective work causes the Owner expense, the Architect and Owner, if in agreement and notwithstanding the Contractor's disagreement, may execute a Change Order to credit the Owner for the cost of such corrective work or repair.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work or Authorization to Proceed with a Construction Change.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 Methods used in determining adjustments to the Contract Sum shall adhere to the requirements listed in Sections 7.3.3 and 7.3.7.

§ 7.2.3 Change Orders shall be prepared using AIA Document G701. Computer generated forms may not be substituted, unless AIA software is used to produce a facsimile.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Change Order or Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 By mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation. A lump sum for an increase in the Contract Sum may contain a reasonable allowance for the Contractor's overhead and profit. No allowance for overhead and profit will be allowed if the change results in a net decrease in cost. When both additions and credits covering related

Work or substitutions are involved in any one change, the allowance for overhead and profit shall be figured on the basis of net increase, if any;

.2 By unit prices stated in the Contract Documents or subsequently agreed upon. Unit prices shall cover all of the Contractor's costs for labor, materials, equipment and related services including such costs for subcontracted work and the Contractor's overhead and profit;

.3 By cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee;

.4 By the method provided in Section 7.3.7;

.5 The cost of a change determined under the methods in Sections 7.3.3.1, 7.3.3.3 and 7.3.3.4 shall include all costs directly related to the change, and the Contractor shall itemize these costs and provide appropriate supporting data as may be necessary to establish their correctness. All indirect costs whether incurred on or off site shall be included in the Contractor's overhead. Indirect costs shall include such items as local telephone use, coordination of trades and/or utilities, site inspection, photography, clerical support, estimating, postage, handling, general cartage and/or cleanup and field coordination.

.6 In the case of Work authorized under Sections 7.3.3.1, 7.3.3.3 and 7.3.3.4, a reasonable allowance for overhead and profit shall be not more than ten (10%) percent of the net cost of Work accomplished by the Contractor's own forces, five (5%) percent of the net cost of Work accomplished by Subcontractors and five (5%) percent of the net cost of materials and equipment. Subcontractors, sub-subcontractors and subsequent tiers of contractors may add an allowance of not more than ten (10%) percent of the net cost of the work accomplished by their own forces to cover their overhead and profit, five (5%) percent of the net cost of the Work accomplished by their Subcontractors and five (5%) percent of the net cost of materials and equipment. Further, as a condition for the Owner's authorization of a five (5%) percent allowance for work of any lower tier contractor, as aforesaid, the Owner may request the Contractor and/or any pertinent lower tier contractor to provide to the Owner detailed, written information to establish to the Owner's satisfaction the actual relationship between the contractor and any lower tier contractor. Such information shall be provided promptly to the Owner following the request therefor.

.7 Cost of additional insurance and performance bond coverage related to the change shall not be included by the Contractor as part of the cost of each change, but shall be compensated for on the basis of actual cost by means of a single Change Order prior to Project Close-Out.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in Section 7.3.3.6. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

.1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance, all as directly attributable to the change;

.2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed, all as directly attributable to the change;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others, all as directly attributable to the change;

.4 Costs of permit fees, and sales, use or similar taxes related to the Work, all as directly attributable to the change; and

.5 Additional costs of supervision and field office personnel directly attributable to the change only when due to approved extension of Contract Time.

.6 Cost of additional insurance and performance bond coverage related to the change shall not be included as part of the cost of each change, but shall be compensated for on the basis of actual cost by means of a single Change Order prior to Project Close-Out.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive. Adjustments to the Contract Time shall reflect only the additional time directly attributable to the Change in the Work.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Notice to Proceed given by the Owner. The Contractor shall not commence the Work nor allow any Subcontractor to commence work until:

.1 The Contract has been fully executed and the Owner has issued a Notice to Proceed.

.2 The Owner has approved the Contractor's performance and payment bonds and the bonds have been filed with the Treasurer of Hennepin County.

.3 The Owner has approved evidence of the Contractor's Liability Insurance and any other insurance required to be purchased by the Contractor.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act, omission or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation, arbitration or litigation; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine. Such extension of time shall be the Contractor's sole and exclusive remedy in the event of any delay hereunder. Under no circumstances shall the Contractor be entitled to recover any indirect damages, consequential damages, loss, expenses or charges incurred due to any delay or disruption in the performance of the Contractor's Work. The Contractor expressly agrees that it shall not be entitled to bring a claim under Article 15 for damages for delay or disruption, regardless of the cause or reason for the delay or disruption, including without limitation whether such delay or disruption was contemplated by the parties at the time the Contract was executed or was occasioned by the fault of someone other than the Contractor, except when the delay or disruption is caused solely by the Owner or solely by persons acting on behalf of the Owner for which the Owner is legally responsible. The Owner will look first to the Critical Path Method Construction Schedule, per Section 3.10.1, for justification of extensions of Contract Time.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party when expressly allowed under other provisions of these General Conditions.

§ 8.4 LIQUIDATED DAMAGES

§ 8.4.1 Time being an essential element of the Contract, and based on the Project Schedule of Substantial Completion within ____ calendar days from the date of Notice to Proceed, it is hereby agreed that if the Owner determines that an extension is not justified, the Owner will be entitled to damages for failure on the part of the Contractor to complete its obligations. In view of the impracticality and extreme difficulty of fixing and ascertaining the actual damages the Owner would sustain in such event, the Owner shall be entitled to _____ dollars ($_____) per calendar day for each and every day beyond the date of Substantial Completion. The aforesaid specified amount shall not be construed as a penalty, but as liquidated damages for any such failure on the part of the Contractor. The act of the Owner in canceling the Contract for any such failure and/or any unexpected delay shall not forfeit its right to recover liquidated damages from the Contractor and/or its surety. In any suit involving assessment or recovery of liquidated damages, the reasonableness of the daily charges shall be presumed, and the amount assessed, as well as the aforesaid cancellation right or any other cancellation rights stated in the Contract Documents, will be in addition to every other right or remedy now or hereinafter enforceable at law, in equity, by statute, regulation and/or under the Contract.

The Contractor will not be charged with liquidated damages when any delay or failure is due to: any act, omission or neglect of the Owner; written and mutually agreed to changes in the Contract; labor disputes; fire, flood or other natural disasters; unusual delay in transportation; adverse weather conditions not reasonably anticipated; unavoidable casualties; or any other causes beyond the Contractor's reasonable control and without fault or negligence of the Contractor. Contract Time or performance dates or times may be extended for such reasonable time as the Owner's Project Manager may determine. A claim for extension will not be allowed unless the Contractor, not later than the end of the Owner's first business day following the day on which the claim arises, shall have telephoned and informed the Hennepin County Project Manager, _____ at 612-____-_____,

about the full details of the cause necessitating such a claim. Within seven (7) calendar days of any such telephone call the Contractor shall also send to each of the Owner's addresses referenced above a communication specifying in detail the cause(s) of the delay. The herein provisions will not preclude the Owner from canceling or terminating the Contract regardless of any act or event beyond the Contractor's reasonable control, as aforesaid, provided that the Owner shall have given the Contractor thirty (30) days prior written notice of the Owner's intention to so cancel or terminate, and that during said period, the Contractor shall have failed to cure such delay or failure in performance.

If liquidated damages are charged, they will be charged daily, first against monies then due to the Contractor, then against monies coming due, and then against funds held for eventual release to the Contractor. If these three sources are not sufficient to cover the liquidated damages, the Owner will bill the Contractor for the necessary balance and the Contractor shall promptly pay the invoiced amount(s).

The Owner may waive in writing all or any portion of any liquidated damage assessment after the date services or obligations are completed and accepted by the Owner.

Permitting the Contractor to continue and complete the services or obligations or any part of them after stipulated times will not in any way operate as a waiver on the part of the Owner or its rights hereunder. No act by the Owner in pursuing or effecting its rights hereunder will constitute a forfeiture of the Owner's right to recover liquidated damages from the Contractor and/or its surety.

See section 0800 of the Project Manual for the completion time, liquidated damages daily amount and Project Manager contact information.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

The Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. The Schedule of Values shall list each item of value in the order of the Project Manual's Table of Contents by section number. Each value component of work within each section shall be itemized to identify labor and material value separately and to include a directly proportional amount of the Contractor's profit and overhead. The Schedule of Values shall include a separate line item for insurance premium, performance and payment bond, each Allowance, and for the Project Contract Close-out Submittals, establishing a composite value for as-built record drawings, maintenance and equipment manuals, test reports and warranties. Round off all sums to whole dollars. The sum of all values shall equal the Contract Sum. The Schedule of Values shall be confirmed on Continuation Sheet, AIA Document G703, utilizing the original form or AIA software for any computerized version.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values for completed portions of the Work. Such application shall be notarized and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 Use AIA Document G702, notarized, with the continuation on AIA Document G703. Computer generated forms may not be substituted unless AIA software is utilized to produce a facsimile.

§ 9.3.1.4 Submit 3 copies on the first day of the month.

§ 9.3.1.5 Beginning with the second Application for Payment, the Contractor shall complete the Owner-supplied Summary of Payments form. The Summary of Payments form represents prompt payments made to contractors, subcontractors and suppliers as required by contract, and is submitted in lieu of lien waivers, which are not required except at the time of the Final Application for Payment.

§ 9.3.1.6 With each current Application for Payment, the Contractor shall submit a written summary of payments disbursed from the previous Owner-approved Application for Payment. The Summary of Payments form shall list each contractor, subcontractor or supplier by name, section of the Work and amount of payment, in the exact order of the approved Schedule of Values so that the individual payments in aggregate shall be identical to the total of the previous Owner-approved Application for Payment. The Contractor shall certify that the information therein is true and correct and shall affix his signature to the Summary of Payments.

§ 9.3.1.7 Failure to submit any completed Summary of Payments forms shall be cause for the Architect to withhold Certification of the Application for Payment.

§ 9.3.1.8 Final Application for Payment requires Contractor's submission of all lien waivers under Section 9.10, accounting for all parties to the Work.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that all legal title, ownership rights and insurable interest to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

9.3.4 Out-of state Contractors, Subcontractors and employees performing construction work in Minnesota shall be subject to the withholding requirements set forth in Minnesota Statutes, Section 290.9705.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to

check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or a separate contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- **.7** repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect. To insure proper performance of the Contract, the Owner will retain five (5%) percent of the amount of each Certificate for Payment issued by the Architect prior to Final Completion of the Project. Such retainage will be held by the Owner until Final Payment.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than ten days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, excluding interest, as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. Substantial Completion shall be that point of completion and progress of the Work when:

§ 9.8.1.1 The completed Work represents a value of not less than ninety-eight percent (98%)of the current Contract Sum, as represented in the most current Certificate of Payment; and

§ 9.8.1.2 The completed Work represents a value of not less than ninety percent (90%) of the current Contract Sum as distributed for each line item in the Schedule of Values representation in the most current Certificate of Payment; and

§ 9.8.1.3 All primary building systems, to include but not be limited to exterior envelope, structural, exiting, elevator, electrical power, heating, ventilation, air conditioning, plumbing, fire protection, controls and automation, lighting, communications, partitions, floors, ceilings, finish hardware, signage, security, millwork and casework, painting, furnishings, equipment, and furniture are essentially complete; and

§ 9.8.1.4 HVAC balancing is complete and the HVAC Balancing Report has been accepted by the Owner; and

§ 9.8.1.5 Specified operational manuals for equipment and systems as well as operational instructions for all systems and equipment have been delivered to and accepted by the Owner; and

§ 9.8.1.6 Specified warranties for equipment and systems have been delivered to and accepted by the Owner.

§ 9.8.2 When the Contractor considers that the Work, or a designated portion thereof which is acceptable to the Owner, is substantially complete, it shall submit to the Architect a statement that the Work meets all the requirements for Substantial Completion as defined in Section 9.8.1, and that such completed Work represents a value of not less than ninety-eight percent (98%) of the current Contract Sum. The Contractor shall also submit a list of any items of the Work remaining to be completed or corrected for final completion. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all of the Work in accordance with the Contract Documents. Based on the Contractor's statement of uncompleted Work and observations at the site, if the Architect agrees the Work appears to be substantially complete, the Architect will schedule and make an inspection of the Work and confirm to the Contractor the list of all items to be completed, replaced or corrected. If the Work is not substantially complete in the Architect's opinion, the Contractor will be advised and a subsequent date set for the inspection. The day on which the Architect inspects the last unit, phase or part of the Work, and determines the Work

is substantially complete, shall be the Date of Substantial Completion. The Architect shall be required to conduct one Substantial Completion Inspection and one Final Completion Inspection. If additional inspections are required to establish Substantial Completion, the Architect shall be compensated for the Architect's inspection, review and processing requirements in full by the Contractor and such compensation shall be borne by the Contractor and accomplished by a Change Order to the Contract. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of the responsibilities assigned to them by such Certificate.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect. The Owner shall have the right to install furnishings and equipment for the Project prior to Completion of the Work. Such installation shall not constitute occupancy or use by the Owner.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work. The Owner shall have the right to use or occupy the Project, or a portion thereof, prior to Completion of the Work under the following conditions:

§ 9.9.2.1 The Owner shall give the Contractor at least ten days prior written notice of intention to use or occupy the Project, or a portion thereof. Prior to use or occupancy, the Architect accompanied by the Owner and the Contractor will conduct an inspection of the area to be used or occupied; based on this inspection, the Architect will prepare a list of work to be completed or corrected. Prior to use or occupancy, the Owner and the Contractor shall agree in writing on their individual responsibilities for security, maintenance, heat, utilities, damage to the Work and insurance for the area to be used or occupied.

§ 9.9.2.2 The insurance company or companies providing the property insurance required by Section 11.4 shall consent to the use or occupancy by endorsement prior to such use or occupancy.

§ 9.9.2.3 After occupancy, the Owner will allow the Contractor reasonable access to the occupied area to complete and correct the Work.

§ 9.9.2.4 Any claims for an adjustment in the Contract Sum or an extension of the Contract Time because of the Owner's use or occupancy shall be made in writing to the Architect prior to such use or occupancy.

§ 9.9.2.5 The Contractor shall not be held responsible for any damage to the occupied part of the Project resulting from the Owner's use or occupancy.

§ 9.9.2.6 Use or occupancy by the Owner shall not be deemed to constitute a waiver of existing claims in behalf of the Owner or Contractor against each other.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. . In requesting final inspection and accompanying the Contractor's Final Application for Payment, the Contractor shall prepare and submit the following:

§ 9.10.1.1 Contractor's Affidavit of Payment of Debts and Claims, AIA Documents G706, April 1970 Edition.

§ 9.10.1.2 Contractor's Affidavit of Release of Liens, AIA Documents G706A, April 1970 Edition.

§ 9.10.1.3 Contractor's lien waiver for the full amount of the Contract Sum.

§ 9.10.1.4 Contractor's Sum of Payments.

§ 9.10.1.5 Consent of Surety to final payment on Consent of Surety Company to Final Payment, AIA Document G707, April 1970 Edition.

§ 9.10.1.6 State of Minnesota - Department of Revenue Form IC-134 rev. 9/89, "Withholding Affidavit for Contractors" prepared by the Contractor and all Subcontractors and certified by the Commissioner of Revenue.

§ 9.10.1.7 Current list of Subcontractors and major material suppliers indicating type of work or product, brand name and/or manufacturer's name and model number in the sectional order of the Project Manual, firm name, address, telephone and contact person.

§ 9.10.1.8 Contractor's record copy of all Drawings, Specifications, Change Orders and other modifications, in good order, and marked to record all changes made during construction, and approved Shop Drawings, Product Data and Samples.

§ 9.10.1.9 All payroll reports, certifications and related documents necessary to fulfill the Labor Standards Provisions requirements of the Contract that have not been previously submitted.

§ 9.10.1.10 All written warranties required by the Contract Documents, which were not submitted at the time of

Substantial Completion.

§ 9.10.1.11 All operational manuals, instructions, test reports and other data required by the Contract Documents and not submitted at the time of Substantial Completion.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall not constitute a waiver of Claims by the Owner
(Paragraphs deleted)

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

§ 10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.1.2 In the event the Contractor encounters material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) on the site which has not been rendered harmless and which has not been previously identified within the Contract Documents as related to the Work, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Architect in writing. If in fact the material is asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Owner shall cause such material to be removed or rendered harmless under separate contract. Upon written notification by the Owner to the Contractor that such material has been removed or rendered harmless in the area affected the Work shall be resumed.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss. The Contractor shall be responsible for payment of all fines levied against the Owner which relate to the Contractor's performance of the Work.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. Contractor shall give the Owner and other appropriate parties reasonable notice prior to use or storage of explosives or other hazardous materials or equipment or use of unusual methods.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall appoint a responsible member of its organization to act as Safety Director (fire and accident) whose duty shall be to prevent accidents, minimize fire hazards and to enforce safety precautions. The Safety Director shall develop procedures and regulations to guide the Contractor, Subcontractors and all workmen. With particular respect to existing buildings, facilities, and the Owner's staff, the Safety Director shall consult with and be guided by supplemental information, when given, by the Owner. This obligation to consult with the Owner is not intended to relieve the Contractor of its safety obligations herein.

§ 10.2.6.1 The Safety Director shall provide a written Safety Program at the outset of the Project and shall transmit copies to all Subcontractors engaged in the Work.

§ 10.2.6.2 The Contractor and Subcontractors shall conform to and abide by all requirements of the Safety Director.

§ 10.2.6.3 The Safety Director shall periodically inspect all spaces of work under this Contract and operations of the Contractor and list hazards to be removed or corrected. These shall be reported to the Owner, the Contractor and the responsible Subcontractors. The Safety Director shall ensure that the responsible parties shall promptly remove or correct the hazards.

§ 10.2.6.4 The Safety Director shall conduct regularly scheduled meetings including all Subcontractors. Minutes of these meetings, including a list of both attendees and non-participants, shall be forwarded to the County Project Manager in a timely matter.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

(Paragraphs deleted)

§ 10.2.8. The Contractor shall complete the Hennepin County Project Safety & Environment Checklist (Checklist) and shall submit the completed Checklist to the Hennepin County Project Manager, A-2208 Government Center, 300 South Sixth Street, Minneapolis, MN 55487-0228.

§ 10.2.8.1. The Checklist shall be submitted at or prior to the Project's pre-construction meeting, but not less than 14 calendar days prior to the start of contracted site work. In the event site work begins less than 14 calendar days from the date of execution of the Contract, the Checklist shall be submitted at least 24 hours prior to the start of site work. Should the Contractor expect to and/or fail to submit the Checklist any later than commencement of site work, the Contractor will notify the County's Project Manager in writing within 24 hours of the start of work.

§ 10.2.8.2. Contractor's failure to submit the completed Checklist shall be cause for the Architect to withhold Certification of the Application for Payment and immediately advise the Owner to consider suspension of the Work under provisions of Section 2.3. If applied, Work suspension caused by the Contractor will have no adjustments of Contract Sum or Contract Time extended to the Contractor for restart of the Work and time schedule.

§ 10.2.8.3. Submittal of the Checklist shall not relieve the Contractor of any obligation under a governing rule, standard, state or federal statute or regulation, municipal ordinance, County policy, or of any provision in the Project Contract Documents.

§ 10.2.9 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.4 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

(Paragraphs deleted)

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;

.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 Claims for damages insured by usual personal injury liability coverage;

.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;

.7 Claims for bodily injury or property damage arising out of completed operations; and

.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.4 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents. The insurance required by Section 11.1.4 are minimum requirements. It is the sole responsibility of the Contractor to determine the need for and to procure additional insurance which may be needed in connection with this Contract. Copies of insurance policies shall be submitted to the Owner upon written request.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

The Contractor shall not commence the Work until it has obtained required insurance and filed with the Architect for the review and approval of the Owner a properly executed Certificate of Insurance with two (2) duplicate copies which clearly evidences required insurance coverage, and such insurance has been approved by the Owner in writing. The certificate shall name Hennepin County as certificate holder and as an additional insured for all liability coverages except Workers' Compensation and Employer's Liability. The certificate should also show that Hennepin County will receive thirty (30) days' prior written notice in the event of cancellation, non-renewal or material change in any described policies.

The Contractor shall furnish the Owner updated certificates during the term of the Contract as insurance policies

expire. If the Contractor fails to furnish proof of insurance coverage, the County may withhold payments and/or pursue any other right or remedy allowed under the Contract, law, equity and/or statute.

§ 11.1.4 The Contractor shall have and keep in force the following insurance coverage:

1. Commercial General Liability on an occurrence basis with Contractual Liability and Explosion,

Collapse, and Underground Property Damage (XCU) coverage:	**Limits**
General Aggregate	4,000,000
Products-Completed Operations Aggregate	4,000,000
Personal and Advertising Injury	2,000,000
Each Occurrence - Combined Bodily injury and Property Damage	2,000,000
Fire Damage - Any One Fire	50,000
Medical Expense - Per Person	5,000

2. Automobile Liability - Combined single limit each occurrence coverage for bodily injury and property damage covering owned, non-owned and hired automobiles 2,000,000

3. Workers' Compensation and Employer's Liability:

a. Workers' Compensation. -Statutory
If the contractor is based outside the state of Minnesota, coverage must apply to Minnesota laws.

b. Employer's Liability. Bodily injury by:

Accident - Each Accident	500,000
Disease - Policy Limit	500,000
Disease - Each Employee	500,000

An umbrella or excess policy over primary liability insurance coverage is an acceptable method to provide the required insurance limits.

The Contractor shall be responsible for all deductibles, which may apply to any of the insurance coverages

§ 11.1.5 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's Consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an

additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.2
(Paragraphs deleted)
PROPERTY INSURANCE

§ 11.2.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.2 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project. The Owner and Contractor waive all rights against each other for damages caused by fire or other perils to the extent covered by insurance provided pursuant to this Section 11.2 or any other property insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance held by the Owner as trustee. The Contractor shall require, by appropriate agreement, written where legally required for validity, similar waivers in favor of the Owner and the Contractor by subcontractors and sub- subcontractors. With respect to the waivers of rights of recovery, the term Owner shall be deemed to include, to the extent covered by property insurance applicable thereto, the Owner's consultants, employees and agents and the Architect and the Architect's consultants, employees and agents. The Contractor waives as against any separate Contractor described in Article 6 all rights for damages caused against the Owner. The Owner shall require, by appropriate agreement, written where legally required for validity, similar waivers in favor of the Contractor by any separate Contractors and their Subcontractors.

The Contractor shall notify the Owner of any impending claim within five (5) days of such loss.

§ 11.2.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.2.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.2.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles, except that the Contractor shall first pay any costs up to Ten Thousand ($10,000) dollars of the Owner's builder's risk policy deductible.

§ 11.2.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.2.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.2.2 BOILER AND MACHINERY INSURANCE
The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.2.3 LOSS OF USE INSURANCE
The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.2.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.2.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.2.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.2.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a Certificate of Insurance that includes insurance coverages required by this Section 11.2. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.2.7 WAIVERS OF SUBROGATION
The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.2 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.2.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.2.9. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.2.9 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.3 PERFORMANCE BOND AND PAYMENT BOND; OUT-OF-STATE CONTRACTORS

§ 11.3.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract. The Contractor shall refer to Article 7 of the Instructions to Bidders for requirements to furnish the performance bond and payment bond.

(Paragraphs deleted)

§ 11.3.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

(Paragraphs deleted)

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. If the Contractor fails to correct nonconforming Work within a reasonable time after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

(Paragraph deleted)

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for

correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor. Testing agencies or consultants employed by the Contractor shall be subject to the prior approval of the Architect and Owner.

§ 13.5.2 If after the commencement of the Work the Architect determines that any of the Work requires special inspection, testing or approval which Section 13.5.1 does not include, the Architect may, upon written authorization from the Owner, in lieu of the procedure specified in Section 13.5.1, secure the services of an independent testing agency to perform such tests, inspections and approvals. The Contractor, at the Contractor's expense, shall make all arrangements, furnish all samples and materials to be tested, and deliver the samples and materials to the testing

agency. Reports of such tests, inspections and approvals shall be submitted to the Architect and the Contractor. The Contractor or the Owner shall bear the costs of such tests as provided in Section 13.5.3.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

(Paragraphs deleted)

§ 13.7 TIME LIMITS ON CLAIMS

§ 13.7.1 As between the Owner and the Contractor and its insurer or surety, no action in contract, tort, or otherwise to recover damages shall be brought against any party more than three (3) years after the alleged cause of action has accrued. The cause of action shall accrue on the date of issuance of the Final Project Certificate for Payment, or on the date of the act or failure to act, or on the date of the discovery by the other party of the act or failure to act, or on the date that the other party suffers damages, whichever is last. If this Contract is terminated prior to completion of the Project and there is no date of issuance of the Final Project Certificate for Payment, the cause of action shall be deemed to have accrued on the date of termination of the Contract, or on the date of the act or failure to act, or on the date of discovery by the other party of the act or failure to act, or on the date that the other party suffers damages, whichever is last. This section shall supersede all other limitations periods provided by law.

§ 13.8 HENNEPIN COUNTY AFFIRMATIVE ACTION POLICY

§ 13.8.1 During the performance of this Contract, the Contractor agrees as follows:

In accordance with Hennepin County's policies against discrimination, Contractor agrees that it shall not exclude any person from full employment rights or participation in or the benefits of any program, service, or activity on the grounds of race, color, creed, religion, age, sex, disability, marital status, sexual orientation, public assistance status, or national origin; and no person who is protected by applicable Federal or State laws against discrimination shall be otherwise subjected to discrimination.

If this Agreement is for a sum over $100,000 or is one of several contracts with said CONTRACTOR within a 12-month period totaling more than $100,000, or is amended to exceed $100,000, and a written exemption was not granted or was withdrawn by the County's Purchasing & Contract Services (PCS) Manager, Contractor agrees to complete and submit for approval an Affirmative Action Plan (AA Plan) which contains the following goals:

Construction Employment

Minority (skilled and unskilled combined)	32%
Women (skilled and unskilled combined)	6%

The AA Plan shall be reviewed by Hennepin County Purchasing & Contract Services (PCS) for approval. Approved AA Plans shall be monitored for compliance by PCS. Contractor shall submit an Employment Utilization Report on a monthly basis. PCS may, at any intervals deemed necessary, make on-site reviews to ascertain compliance with these requirements.

If the construction AA employment goals are not met, the County will require the Contractor to demonstrate that good faith efforts have been made to meet the goals. To determine whether a Contractor has demonstrated good faith efforts, PCS will require the Contractor to provide documentation that the company has actively and aggressively attempted to meet its AA goals. If the County determines that the Contractor has failed to demonstrate the same, and/or if the Contractor has failed to submit employment reports and/or information required by the PCS Manager,

and/or the Contractor has engaged in discriminatory practices, the County may, in its sole discretion, withhold up to fifteen percent (15%) of the contract price until such time as the Contractor is determined to have submitted the required reports and/or information and/or Contractor has demonstrated good faith efforts, as determined by the County.

§ 13.8.2 The Contractor shall insert in all of its subcontracts over $100,000, which have not been granted an exemption or which have had any such exemption withdrawn, clauses requiring the Subcontractor's compliance with the following:

.1 Furnish the Contractor with an AA Plan containing the goals established in 13.8.1,

.2 Submit to the County's PCS Manager all information and reports requested by Hennepin County; and

.3 Comply with the Hennepin County Board's policies with regard to non-discrimination and affirmative action (AA). It shall be the responsibility of the Contractor to monitor and enforce Subcontractor's compliance with this Section 13.8.2. It is understood, however, that the County may take such steps as it deems appropriate to ascertain Subcontractor's compliance with this Section 13.8.2 and further, if the County determines that Subcontractor is not in compliance, the County may require the Contractor to take appropriate measures to bring Subcontractor into compliance.

§ 13.8.3 The County exempts certain contracts from the AA requirements. Exemptions for construction contracts over $100,000 are granted when any of the following conditions apply:

.1 Contract or subcontract is for purchase of supplies or services unrelated to Hennepin County construction projects;

.2 Contracts where the County is the recipient of funds;

.3 Contracts for emergency or life-safety (threatening) related purchases. Such contracts must contain the County's non-discrimination clause;

.4 Contracts with firms, who as members of associations with signed County agreements respecting alternative affirmative action procedures, submit a letter indicating their active membership status in that association.

§ 13.8.4 No Contractor, material supplier, or vendor, shall, in any manner, discriminate against, or intimidate, or prevent the employment of any person or persons identified in Section 13.8.1, or on being hired, prevent, or conspire to prevent, the person or persons from the performance of work under any contract on account of race, creed, or color.

§ 13.8.5 By law, a violation of Section 13.8.4 is a misdemeanor; and

§ 13.8.6 This Contract may be canceled or terminated by the Owner, and all money due, or to become due under the contract, may be forfeited for a second or any subsequent violation of the terms and conditions of this Section 13.8.

§ 13.8.7 Indemnification. To the fullest extent permitted by law, the Contractor shall indemnify, hold harmless and defend the Owner, and Architect, and their respective officials, officers, and employees and consultants from and against claims, damages, losses and expenses, including but not limited to attorney's fees incurred by the Owner, the Architect, or by their officials, officers, agents, employees, and consultants, arising out of or relating to a claim against Contractor or its employees of discrimination or harassment.

§ 13.9 HENNEPIN COUNTY SMALL BUSINES ENTERPRISE (SBE) PROGRAM

§ 13.9.1 SBE PROGRAM REQUIREMENTS Hennepin County is committed to providing equal opportunity in contracting and to a goal of increased participation of SBE firms in contracting and subcontracting. An SBE goal of up to a maximum of 25% may be set on this project, based on the project's scope of work afforded by the opportunity and upon the availability of SBE firms. Hennepin County's SBE participation goal for this contract is listed in Article 13 of Section 00100- Instructions to Bidders. The following conditions apply in determining compliance with this goal:

.1 The total payments made under a contract or subcontract to certified SBEs will be counted toward the applicable goal.

.2 In the case of a joint venture, that portion of the payments attributable to the participation and control of the SBE partner in the joint venture will be counted toward the applicable goal.

.3 Only payments to SBEs that perform a commercially useful function in the work of a contract or subcontract may be counted toward the small business utilization goals. SBEs are considered to perform a commercially useful function when they are responsible for execution of work directly applicable to the project and carry out their responsibilities by actually supplying labor or material to, or managing or supervising the work involved.

.4 Total payments for materials and supplies may be counted toward SBE participation goals if the SBEs assume the actual and contractual responsibility for providing the materials and supplies.

.5 The Contractor must receive written approval from the Hennepin County Project Manager **and** Hennepin County's PCS Manager before making any changes to the previously approved Subcontractor Participation Form.

.6 The Contractor's commitment to a specified participation level is to meet the required participation levels, and is not intended and shall not be used to discriminate against any qualified company or group of companies.

.7 Only SBEs that are recognized as certified by the Hennepin County SBE Program will be counted towards the Contractor's SBE goals.

.8 With written notification that a Contractor is the Apparent Low Bidder(s), they will be required to submit a Hennepin County Purchasing & Contract Services Subcontractor Participation Form listing all Subcontractors that they will have on the job and indicating the contract amount for each. In addition, Contractor must require all tiered Subcontractors to complete the Subcontractor Participation Form. These Subcontractor Participation Forms must also be submitted along with Contractor's Subcontractor Participation Forms to PCS. If any Apparent Low Bidder is unable to meet the SBE required participation goal, it shall submit a detailed statement of its good-faith efforts. The good-faith effort statement shall identify all efforts made to achieve the SBE participation goal. Failure to either meet the SBE participation goal or demonstrate sufficient good-faith efforts may be cause to reject the contract award to the Apparent Low Bidder.

§ 13.9.2 SOLICITATION AND PARTICIPATION Contractor agrees to make good faith efforts to solicit the participation of SBE's to meet the participation goal established in Article 13 of Section 00120–Supplementary Instructions to Bidders.

§ 13.9.2.1 The Apparent Low Bidder understands that the SBE participation goal must be maintained throughout the life of its Contract. Further, credit toward the required SBE participation level will not be counted unless the SBEs utilized are recognized as certified by Hennepin County.

§ 13.9.2.2 Contractor and all tier subcontractors and suppliers shall establish and maintain records and submit regular reports, as required.

§ 13.9.2.3 Hennepin County Purchasing and Contract Services (PCS) maintains a current listing of certified SBEs. This list can be obtained from PCS by calling (612) 348-2528 or by accessing the following website at http://www.govcontracts.org. Bidders are encouraged to inspect these lists to assist in locating SBEs for the work.

§ 13.9.3 SBE REPORTING REQUIREMENTS Contractors, as required in Article 13 of Section 00100 - Instructions to Bidders, shall submit payment reports using the G702 and G703 Contractor Payment Disbursement form accompanied with the Summary Sheet to confirm payments to all Subcontractors/Suppliers.

§ 13.9.4 EXEMPTIONS FROM SBE REQUIREMENTS A request for an exemption to the SBE goal requirement must be made to the Project Manager or PCS Manager. The PCS Manager must approve all exemptions. The Contractor may request an exemption based upon any one of the following situations:

.1 Contracts with Government Jurisdictions – This exemption applies when another government jurisdiction or quasi-governmental agency is contracting with the county.

.2 Emergency-Related Purchases – This exemption applies for emergency or life-safety (threatening), related purchases authorized by the County Administrator, Deputy Administrator, or the Purchasing Manager.

.3 Sole-Source or Unique Goods, Commodities, or Services – This exemption applies to requests for bids/proposals in which the scope is necessarily written such that there is only one source, regardless of the marketplace that possesses the capability to perform the contract.

.4 Self-Performance – This exemption applies to prime contractors who self-perform more work than the stated goal allows. For example, at 100%, the goal is waived, at less than 100%, the goal could be reduced to reflect the actual opportunity for subcontracting.

.5 Other Special Circumstances – These would be evaluated on a case-by-case basis, after Contractor's submittal of a detailed written petition.

§ 13.9.5 GOOD FAITH EFFORTS DURING BID EVALUATION PROCESS

§ 13.9.5.1 The Apparent Low Bidder will be required to submit all detailed documentation of its good-faith efforts . The good-faith effort documentation shall identify all efforts made to achieve the SBE participation goal and shall accompany the SBE Subcontractor/Supplier Participation Form. Failure to either meet the SBE participation goal or submit requested documentation may be cause to reject the contract award to the Apparent Low Bidder. The good-faith effort documentation will verify the following:

.1 Verification that the Apparent Low Bidder rejected SBEs because they did not submit the lowest bid or they were not qualified. Such verification shall include a verified statement of the amounts of all bids received from potential subcontractors on the project and that the Apparent Low Bidder rejected SBEs because they did not submit the lowest bid from among such bids or they were not qualified. For each SBE found to be not qualified, the verification shall include a statement giving the Apparent Low Bidder's reason for its conclusion.

.2 Verification of efforts to provide timely written or telephone notice to all appropriate SBEs within identified subcontracting categories listed in the most current, approved certification directory. If the Apparent Low Bidder has purchased project plans seven (7) calendar days or fewer before bids are due, documented phone calls in lieu of written notice may be permitted.

.3 Verification of efforts to subcontract, consistent with industry practice, with the SBEs whom the Apparent Low Bidder has contacted, or who have contacted the Apparent Low Bidder. Include the names, addresses, and telephone numbers of all SBEs contacted; a description of efforts made to subcontract; and a description of the information provided to the SBE regarding the plans and specifications for the portion of the work to be performed by subcontractors. If attempts to subcontract actually occurred, provide the dates and places of such process and a description of the outcome.

.4 Verification that the Apparent Low Bidder attempted to recruit SBEs from at least the same geographic area from which it attempted to recruit other subcontractors.

.5 Verification that, consistent with industry practice, the Apparent Low Bidder gave SBEs necessary access to and adequate time to review all necessary project plans, drawings, specifications and other documents, as well as adequate time to prepare subcontract bids.

.6 Verification that, consistent with industry practice and the Apparent Low Bidder's past practices on similar projects, the Apparent Low Bidder selected portions of the work to be performed by SBEs in order to

achieve the project participation goal. This includes consideration of structuring the contract into economically feasible units to facilitate meaningful SBE utilization as subcontractors or suppliers.

.7 Statement giving the reasons why the Apparent Low Bidder and each SBE contacted or each SBE that contacted the Apparent Low Bidder did not succeed in reaching a subcontracting agreement.

.8 Statement that the Apparent Low Bidder attended pre-bid meetings or otherwise obtained the information on subcontracting opportunities that is provided at such meetings.

§ 13.9.5.2 If PCS determines that the Apparent Low Bidder failed to meet the SBE participation goal **and** failed to successfully demonstrate good-faith efforts to meet the goal **during the bid/proposal/contract evaluation process**, the Apparent Low Bidder will be notified in writing of the County's decision within five (5) business days of such determination. Apparent Low Bidder may appeal PCS' decision that the Apparent Low Bidder failed to meet the SBE participation goal and successfully demonstrate good-faith efforts to meet the goal.

To appeal, the Apparent Low Bidder must, within five (5) business days after receipt of the above-referenced written notice, appeal the decision to the County Administrator or designee. An appeal must be made in writing and shall be accompanied by any supporting documentation. If Apparent Low Bidder fails to submit an appeal within five (5) business days, PCS' determination shall remain in effect. The County may, at its option, enter into a contract with the next lowest bidder, or other vendor meeting contract specifications or pursue such other measures as the County deems to be in its interest.

§ 13.9.6 GOOD FAITH EFFORTS DURING CONTRACTOR PERFORMANCE

§ 13.9.6.1 If Contractor fails to maintain the SBE participation goal during the performance of the contract and cannot demonstrate good-faith efforts in accordance with the following guidelines, the Contractor may, at the County's sole option, be deemed in breach of contract and subject to sanctions. The following are good faith effort guidelines.

.1 Verification that the Contractor entered into a contract with the SBE firm(s) identified on the Subcontractor/Supplier Participation Form to perform work on the project.

.2 Verification that, consistent with industry standards, the Contractor maintained communication with the SBE to insure that the SBE understood when to begin work and was available to fulfil its contractual agreement.

.3 Statement giving the reason(s) why the subcontractor/supplier contracted with to meet the SBE utilization goal did not fulfill its contractual agreement.

.4 Verification of efforts to replace a non-performing SBE by written or telephone notice to all appropriate SBEs within required subcontracting categories listed in the most current, approved certification directory.

§ 13.9.6.2 In all of its contracts over $100,000, Contractor shall insert clauses requiring the Subcontractor to: (1) adopt the contract-specific designated goal; (2) submit all information and reports required by Hennepin County; and (3) comply with all Hennepin County Board policies with regard to SBE utilization. It shall be the responsibility of the Contractor to monitor and enforce Subcontractor's Compliance with this Section 13.9.6.2.

The County may take such steps as it deems necessary and appropriate to ascertain compliance with the County's SBE requirements, and further, if the County determines that subcontractor is not in compliance, the County may require the Contractor to take appropriate measures to bring subcontractor into compliance.

§ 13.9.7 SANCTIONS

If the SBE participation goal is not met **after contract award/approval**, the County will require Contractor to successfully demonstrate that good-faith efforts have been made to meet their goal. If the County determines that the Contractor has failed to demonstrate good-faith efforts, and/or if the Contractor has failed to submit information required by PCS, and/or the Contractor has engaged in discriminatory practices, the County may, in its sole discretion, suspend, cancel, or terminate, in whole or in part, the aforesaid contract. Additionally, the County may, in its sole discretion, withhold up to fifteen (15) percent of the contract price until such time as the Contractor is determined to

have submitted the required reports and/or information, and/or the Contractor has demonstrated good-faith efforts, as determined by the County.

§ 13.10 LABOR STANDARDS PROVISIONS

§ 13.10.1 MINIMUM WAGE RATES

Contractor agrees that all laborers, workers, and mechanics employed or working upon the site of work will be paid unconditionally and not less often than once a week, and without subsequent rebate, kickback, refund or deduction on any account (except such payroll deductions as are permitted by regulations), the required prevailing wage rate. For purposes thereof, the term prevailing wage rate is defined as that amount required to be paid for a classification of work which is equal to the sum of the basic hourly rate plus applicable fringe benefits as noted in the Wage Rate Determination of the Minnesota Department of Labor and Industry (MN DOLI) for Commercial Construction Within Hennepin County (hereinafter referred to as the Wage Determination). Said Wage Determination, current as of the release date of bidding documents and attached both hereto and by means of website reference, is made a part hereof, and the work classifications therein shall govern irrespective of the terms of any contractual and/or employee/employer relationship which may be alleged to exist between the contractor and such laborers, workers, and mechanics. All laborers, workers, and mechanics shall be paid the appropriate prevailing wage for the classification of work actually performed, without regard to skill, except as provided in Section 13.10.5., APPRENTICES. In determining the appropriate work classification, Hennepin County will look at area practice (construction customs and usage common within Hennepin County).

During the period from the time an hourly employee is required to report for duty at the site of work until such time that he/she is released or permitted to leave the site of work, no deduction shall be made from his/her time for any delays of less than thirty consecutive minutes.

A contractor or subcontractor may discharge his/her prevailing wage rate obligation as defined above by (1) making cash payments to the employee plus payments to an employee's fringe benefit program (funded or unfunded), the sum of which is equal to the total prevailing wage rate; or (2) making payments in cash to the employee in the amount equal to the total prevailing wage rate. If the contractor pays employee benefits into plans or programs the contributions must be irrevocable, and the contractor shall maintain records which show: that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and the costs anticipated or the actual cost incurred in providing such benefits.

No credit for fringe benefits may be taken for any benefit required by federal, state or local law (e.g., workers compensation, unemployment compensation, social security contributions, etc.).

While the rates shown in the Wage Determination are the prevailing wage rates required for the life of this contract, this is not a representation that labor can be obtained at these rates. It is the responsibility of bidders to inform themselves as to local labor conditions and prospective changes or adjustments of wage rates. No increase in the contract price shall be allowed or authorized on account of payment of rates in excess of those listed herein.

The Wage Determination, current per the aforementioned release date, shall be posted by the Contractor at the site of work in at least one conspicuous place for the information of laborers, workers and mechanics working on the project.

§ 13.10.2 WITHHOLDING OF FUNDS/LIQUIDATED DAMAGES/DEBARMENT/SUSPENSION

The County of Hennepin, in its sole discretion (and without any liability whatsoever), may withhold or cause to be withheld from the contractor so much of the contract payments or advances as may be considered necessary to pay laborers, workers, and mechanics employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event Hennepin County determines that the successful bidder or any of its subcontractors have (1) failed to pay the prevailing wages to, and/or on behalf of, any laborer, worker, or mechanic (including apprentices) employed or working on the site of work; (2) demanded a rebate, kickback or refund from any of its employees; (3) made a deduction not expressly allowed by law or regulation; (4) failed to submit or make the records available as required and/or requested herein; and/or (5) failed to permit employee interviews; Hennepin County may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the

respective employees to whom they are due and/or to the applicable fringe benefit plan for such employees; allow the contractor or subcontractor to disburse the appropriate amounts to the respective employees to whom they are due, and/or the appropriate fringe benefit plan; withhold such amounts as deemed reasonable by the County from contract payments or advances until such violations have ceased; require the successful bidder to pay to Hennepin County--and the successful bidder shall so promptly pay--(or Hennepin County may withhold and keep moneys due the successful bidder) as liquidated damages an amount equal to five percent (5%) of the contract amount; and/or debar or suspend the contractor or subcontractor from the County's responsible bidders list. The duration of debarment or suspension will be determined by the circumstances relating to the violation.

The above remedies shall be in addition to any other remedies available to the County under these contract documents, law, statute, ordinance, rule, regulation, and/or equity.

§ 13.10.3 PREVAILING HOURS OF LABOR

The Wage Determination sets forth the prevailing hours of labor as eight (8) hours per day and forty (40) hours per week if State funds are involved. Employees may not be permitted or required to work longer than the prevailing hour of labor unless the employee is paid for all hours in excess of the prevailing hours at a rate of at least one and one-half (1-1/2) times his/her hourly basic rate of pay; nor shall he/she be paid a lesser rate of wages than the prevailing wage rate in the same or most similar trade or occupation in the area. However, if there is no State funding, overtime need only be paid for hours in excess of forty (40) per week.

§ 13.10.4 PAYROLLS AND BASIC RECORDS

The contractor and all subcontractors (including lower-tier) are required to pay prevailing wages. The contractor is required to maintain and preserve payrolls and canceled payroll checks, time cards and payroll registers all relating thereto (such canceled payroll checks, time cards and payroll registers hereinafter referred to as "basic records"). Such payrolls and basic records shall contain the name, address, and social security number of each worker, his or her correct classification (the work classification must come from the Wage Determination issued for the project), hourly rates of wages paid, daily and weekly number of hours worked, deductions made and actual wages paid. In addition, the contractor shall maintain daily time records showing the hours worked by all hourly employees. Such time cards shall be signed by the employee and the employer.

The contractor shall submit within fourteen (14) calendar days after the end of each weekly pay period in which any contract work is performed all payrolls for said pay period to the following address:

Prevailing Wage Compliance Specialist
Hennepin County Attorney's Office - Civil Division
A-2000 Government Center
Minneapolis, Minnesota 55487

Upon request by the Prevailing Wage Compliance Specialist, the contractor shall promptly furnish to said person the basic records to substantiate the payroll documents submitted.

A Contractor/Subcontractor Certification will be provided to the successful contractor. The successful contractor is required to submit the Contractor/ Subcontractor Certification to the Prevailing Wage Compliance Specialist prior to employees starting work on the project site. In addition, the contractor shall submit a Weekly Report of Subcontractors on Job Site to be completed by the site superintendent and submitted with the weekly certified payroll reports.

The successful contractor shall require all subcontractors to submit a Contractor/Subcontractor Certification to the contractor before beginning work on the project site, and the contractor shall in turn submit the form to the Prevailing Wage Compliance Specialist prior to said work.

The contractor shall require all subcontractors to maintain and preserve payrolls and basic records. Such payrolls and records shall contain the pertinent information required to be contained in contractor's payrolls and basic records. The contractor shall require all subcontractors to submit to the contractor their pertinent payrolls so as to allow the contractor to submit to the Prevailing Wage Compliance Specialist, within the fourteen calendar day time frame, said

payrolls and contractor's payrolls pertaining to the same weekly pay period. The contractor shall also require its subcontractors to promptly submit their basic records to the contractor upon its request.

Each payroll submitted shall be accompanied by a statement (i.e., Statement of Compliance) signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

§ 13.10.4.1 That the payroll period contains all required information and that such information is correct and complete;

§ 13.10.4.2 That each laborer, worker, or mechanic (including apprentices) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, kickback, or refund either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned (other than permissible deductions); and

§ 13.10.4.3 That each laborer, worker, or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable Wage Determination incorporated into the contract.

The falsification of any of the above certifications may subject the contractor or subcontractor to any remedies available to the County whether under these specifications, law, statute, ordinance, rule, regulation and/or equity, including — without limitation whatsoever — liquidated damages in the amount set forth herein.

Supplementary to, and not in limitation of, any other record provision contained in the contract documents, the contractor and/or any subcontractor shall promptly make the records required under the labor standards clauses of the contract available for inspection, copying, or transcription by representatives of Hennepin County, and/or MN DOLI, and shall permit such representatives to interview employees during working hours on the job. The contractor shall be as fully responsible for the acts and omissions of its subcontractors and of persons either directly or indirectly employed by them, as for the acts or omissions of persons directly employed by the contractor.

The contractor shall maintain and preserve, and shall require its subcontractors to maintain and preserve, payrolls and basic records for a period of three years after completion of the project.

§ 13.10.5 APPRENTICES

Contractors employing apprentices under approved programs shall maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

The following conditions apply to the use of apprentices on the project:

§ 13.10.5.1 Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program under the Division of Voluntary Apprenticeship of MN DOLI.

§ 13.10.5.2 Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journey worker hourly rate specified in the applicable Wage Determination.

§ 13.10.5.3 Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the Wage Determination for the applicable classification.

§ 13.10.5.4 The allowable ratio of apprentices to journey workers on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be

paid not less than the applicable journey worker wage rate as indicated on the Wage Determination for the work actually performed.

§ 13.10.5.5 In the event MN DOLI withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

§ 13.10.6 REQUIRED CONTRACT PROVISIONS

These Labor Standards Provisions shall apply to all work whatsoever performed on the contract.

The contractor shall insert in each of his/her/its subcontracts all terms, conditions and stipulations contained in these Labor Standards Provisions and also a clause requiring his/her/its subcontractors to include these Labor Standards Provisions in any lower tier subcontracts which they may enter into, together with a clause requiring the inclusion of these provisions in any further subcontracts that may in turn be made. The Labor Standards Provisions shall in no instance be incorporated by reference.

A breach of any of the terms, conditions and stipulations contained in these Labor Standards Provisions (or any other provisions of these specifications and/or the contract) may be grounds for termination of the contract, recovery of liquidated damages (where specifically authorized herein), debarment, and/or suspension of the contractor and/or subcontractor, as well as any other right or remedy available under law, statute, ordinance, rule, regulation and/or equity.

The County's failure to insist upon strict performance of any term, condition or stipulation of these specifications and/or contract or to exercise any right herein contained shall not be a waiver or relinquishment of such term, condition, stipulation or right, unless the County consents thereto in writing. Any such written consent shall not constitute a waiver or relinquishment of the future of such condition, stipulation or right.

The rights and remedies available hereunder shall be construed as cumulative, and the exercise of one shall not preclude the exercise of others in combination or singularly. Any or all such rights or remedies may be exercised as often as deemed appropriate by the County.

(Refer to the attached pages for the Wage Determination)

§ 13.11 OFFICE PAPER AND NEWSPRINT RECYCLING PROGRAM

The Owner encourages the Contractor to develop and implement an office paper and newsprint recycling program.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

(Paragraph deleted)

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor:

- **.1** repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- **.3** repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- **.4** otherwise is guilty of substantial breach of a provision of the Contract Documents; or
- **.5** fails to make satisfactory progress in performing the Work for a period of thirty (30) days; or
- **.6** becomes insolvent, makes a general assignment for the benefit of its creditors, or is unable to pay its debts as they generally come due; or
- **.7** suspends its business operations or otherwise fails to operate its business in the ordinary course.

§ 14.2.2 When any of the above reasons exist, the Owner may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- **.1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- **.2** Accept assignment of subcontracts pursuant to Section 5.4; and
- **.3** Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- **.1** that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- **.2** that an equitable adjustment is made or denied under another provision of the Contract; or
- **.3** that performance is, was or would have been so suspended, delayed or interrupted due to an epidemic, pandemic, declaration of emergency by the governor, declaration of local emergency, or other order issued by federal, state, or local unit of government.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract in whole or in part for the Owner's convenience and without cause. In the event the Owner elects to terminate this Contract pursuant to this provision, the Owner shall notify Contractor by certified or registered mail, return receipt requested, fifteen (15) days prior to the effective date of the basis and extent of termination. Termination shall be effective at the close of business on the date specified in the notice.

§ 14.4.2 Upon

(Paragraphs deleted)

delivery by certified or registered mail to Contractor of a notice of termination specifying the nature of the termination and the date upon which such termination becomes effective, Contractor shall:

§ 14.4.2.1 Stop Work under this Contract on the date and to the extent specified in the notice of termination.

§ 14.4.2.2 Place no further orders and enter into no further subcontracts.

§ 14.4.2.3 Terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the Notice of Termination.

§ 14.4.2.4 With the advance approval of the Owner, settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, the cost of which would be reimbursable in whole or in part in accordance with the provisions of the Contract.

§ 14.4.2.5 Within ten (10) work days from the effective date of termination, transfer title to Owner (to the extent that title has not already been transferred) and deliver, in the manner, at the times, and to the extent directed by the Owner, all files, processing systems (excluding equipment and operating systems), data manuals, and other documentation in any form that relate to the work terminated by the Notice of Termination.

§ 14.4.2.6 Complete the performance of such part of the work as has not been terminated by the Notice of Termination; and

§ 14.4.2.7 Take such action as may be necessary, or as the Owner may direct, for the protection and preservation of the property related to this Contract, which is in the possession of Contractor and in which Owner has or may acquire an interest.

§ 14.4.3 Contractor shall proceed immediately with the performance of the above obligations notwithstanding any delay in determining or adjusting the amount of any item or reimbursable price under this clause.

§ 14.4.4 Upon termination of this Contract in full, Contractor shall return to Owner any property made available for its use during the term of this Contract.

§ 14.4.5 In the event that any work is terminated under the provisions hereof, all completed items or unit of work will be paid for at contract bid prices. Payment for partially completed items or units of work will be made as provided below and as otherwise mutually agreed to, the intent being that an equitable settlement will be made to the Contractor. Loss of anticipated profits will not be considered in this settlement. In addition to Contractor's other obligations, Contractor shall allow the Owner prompt and free access to the Contractor's cost records and other data relating to the Contract, as may be needed to determine the amount of payment due the Contractor.

§ 14.4.6 Termination of the Contract or any portion thereof shall not relieve the Contractor of responsibility for the completed work, nor shall it relieve the Contractor's sureties of their obligation for and concerning any just claims arising out of the work performed.

§ 14.4.7 Compensation will be made on the following basis:

§ 14.4.7.1 The accepted quantities of work completed in accordance with the Contract will be paid for at the Contract

prices.

§ 14.4.7.2 For materials that have been ordered but not incorporated in the work, reimbursement will be made as provided below.

§ 14.4.7.3 For partially completed items, the accepted work will be paid for on the basis of a percentage of the contract bid price equal to the percentage of actual accomplishment.

§ 14.4.7.4 The Contractor will also be reimbursed for such actual expenditures for equipment, mobilization and overhead as the Owner considers directly attributable to the eliminated work and that are not recovered as part of the direct payment for the work.

§ 14.4.8 Payment for completed work at the Contract prices and for partially completed work and materials in accordance with the above provisions shall constitute final and full compensation for the Owner's contract cancellation for conventions.

§ 14.4.9 Payment for materials that have been ordered for the work, but that are not to be used because of cancellation of the contract for convenience, will be made in accordance with the following provisions, unless the contractor or supplier elects to take possession of the surplus material without expense to the Owner:

§ 14.4.9.1 Payment for surplus materials that have been purchased and shipped or delivered to the Project will be made at the Contract bid price when the pay item covers the furnishing and delivering of the material only.

§ 14.4.9.2 When the Contract bid price covers the furnishing and placing of the material, the Owner will take possession of the surplus materials that have been purchased and shipped or delivered to the Project, or will order the material returned to the supplier for credit, and will pay the Contractor the actual purchase price of the material plus transportation costs, to which will be added ten (10%) percent of the total thereof, and from which will be deducted any credits received by the Contractor for materials returned.

§ 14.4.9.3 Materials that have been ordered but have not been consigned for shipment will be paid for upon delivery the same as materials in transit or delivered only when the supplier is unwilling to cancel or modify the order such as in the case of materials requiring special manufacture, fabrication or processing so as to be unsuitable for general use.

§ 14.4.10 In no case will payment for surplus materials exceed the Contract bid price for the materials complete in place. The Contractor shall furnish receipted invoices or an affidavit showing the purchase price and transportation charges on materials to be taken over by the Owner.

§ 14.4.11 Surplus materials that are taken over by the Owner shall be delivered to the storage sites designated by the Owner.

§ 14.4.12 Except as above provided, no payment will be made to the Contractor for any materials that are not incorporated in the work. Materials are to be ordered in the quantities needed unless a specific quantity is to be furnished by direct order of the Owner.

§ 14.4.13 No payment will be made for surplus materials that have not been inspected, tested and accepted for use, nor will any payment be made for accepted materials that have not been properly preserved, stored and maintained to the date on which they are delivered to the Owner.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Architect. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of Section 8.4.

§ 15.2 INITIAL DECISION

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, and 11.2.8, shall be referred to the Architect for initial decision. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation, arbitration or litigation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Architect with no decision having been rendered. Unless the Architect and all affected parties agree, the Architect will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Architect will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Architect is unable to resolve the Claim if the Architect lacks sufficient information to evaluate the merits of the Claim or if the Architect concludes that, in the Archtiect's sole discretion, it would be inappropriate for the Architect to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Architect may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Architect in rendering a decision. The Architect may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Architect requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Architect when the response or supporting data will be furnished or (3) advise the Architect that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Architect will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Architect will render an initial decision approving or rejecting the Claim, or indicating that the Architect is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation, arbitration, or litigation, at the sole discretion of the Owner.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

(Paragraph deleted)

§ 15.3 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.5 and 15.1.6 may be submitted to mediation by agreement of the parties.

§ 15.3.2 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

(Paragraph deleted)

§ 15.4 ARBITRATION

§ 15.4.1 If the Owner elects to arbitrate a Claim, any Claim related to or arising out of the Contract shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 If agreed to by the parties, the award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration

permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.

MBC GENERAL & SUPPLEMENTARY CONDITIONS

FOR CONSTRUCTION IN THE

MINNEAPOLIS CITY HALL / COURTHOUSE

1.1 PURPOSE

This document specifies requirements and proposed contract documents for construction in the Minneapolis City Hall / Courthouse. The drawings, the technical specifications, and supplementary conditions attached hereto apply to the work and will be incorporated into the resulting contract documents.

1.2 DESCRIPTION OF WORK

A. The project is the "Municipal Building Clock Restoration" as described in the attached drawings and specifications.

B. The project consists of the renovation of the clock face and new back-lighting as identified on the plans and specifications. In no case will extras be approved due to a Contractor or Supplier not reviewing all documents.

1.3 THE OWNER

The Owner of the project is the Municipal Building Commission (MBC).

1.4 THE CONSULTANT

The Architect for the project is MacDonald & Mack Architect, Ltd., as listed in the specifications.

1.6 THE CONTRACTOR

The work will be completed under a contract with a single prime contractor.

1.7 GENERAL CONDITIONS OF THE CONTRACT

The general conditions of the contract shall be as specified in "General Conditions of the Contract for Construction", AlA Document A201, 2007 Edition which is hereby incorporated by reference.

1.8 SUPPLEMENTARY CONDITIONS

The following conditions may change, delete from or add to the "General Conditions of the Contract for Construction", AlA Document A201, 2007 Edition, and shall take precedence over the General Conditions. Where any article of the General Conditions is modified or any paragraph, subparagraph or clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that article, paragraph, subparagraph or clause shall remain in effect.

1.8.1 THE CONTRACT DOCUMENTS

Change the first sentence of Subparagraph 1.1.1 of AlA Document A201, 2007 Edition by adding the following as part of the contract documents.: “bidding requirements (advertisement or invitation to bid), Instructions to Bidders

and Supplementary Instructions to Bidders, the Contractor's Bid, and portions of Addenda relating to the bidding requirements." Delete the third sentence.

1.8.2 STANDARD SPECIFICATIONS & OWNER'S RIGHT TO AUDIT

Add the following to Article 2 of AlA Document A201, 2007 Edition:

2.5 OWNER'S RIGHT TO AUDIT BOOKS AND RECORDS.

2.5.1 The Contractor agrees that the City, the State Auditor and/or any of their duly authorized representatives shall at any time during normal business hours, and as often as they may reasonably deem necessary, have access to and the right of examine, excerpt, and transcribe any books, documents, papers, records, etc., which are pertinent and involve transactions relating to this Agreement. Such material must be retained, by the Contractor, for two years or longer as deemed necessary by specific Contract conditions such as warranties. The Contractor's accounting practices and procedures relevant to this Contract shall also be subject to examination by any or all of the aforesaid persons as often as and during such times as aforesaid

1.8.3 DISRUPTIONS & OVERTIME WORK

Add the following to Subparagraph 3.4.1 of AlA Document A201, 2007 Edition

3.4.1 Any work creating noise, odors or other disruptions to the building shall be performed after normal working hours. This should be coordinated with the MBC project manager as there are several 24/7 operations in the building. The demolition and removal work shall occur between the hours of 11:00 PM and 7:00 AM. The additional cost of this work shall be incorporated into the bid and borne by the Contractor.

1.8.4 PERMITS, FEES AND NOTICES

Add the following Subparagraph 3.7.5 of AlA Document A201, 2007 Edition:

3.7.5 If the Contractor is not resident within the State of Minnesota and if the Construction Contract Sum is greater than $100,000, the Contractor shall provide a bond equal to eight percent (8%) of the Construction Contract Sum for the period of the Contract or certification by the Minnesota Department of Revenue that the Contractor is exempt from the surety requirements of Minnesota Statute 290.9705.

Substitute paragraph 3.9.3 with the following:

3.9 PROJECT MANAGER AND SUPERINTENDENT

3.9.3 The Project Manager and the Superintendent shall be assigned to the Project throughout the term of the Contract except or unless the designated individual's service to the Contractor is terminated or the Owner finds reasonable objection to the individual in which case another individual shall be assigned to the same responsibility for the remaining term of the Contract.

1.8.6 AUDITING

3.19 AUDIT OF BOOKS AND RECORDS

3.19.1 The Contractor agrees to the Owner's right to audit books and records as stipulated in Paragraph 2.5.1 of the Supplementary Conditions.

1.8.7 CONTRACT ADMINISTRATION

4.0 ADMINISTRATION OF THE CONTRACT

Add Subparagraph 4.1.4 as follows:

4.1.4 Disputes arising under Subparagraphs 4.1.2 and 4.1.3 shall be subject to action at law or arbitration as provided in Paragraph 4.5.

5.2 AWARD OF SUBCONTRACTS

Add the following to Paragraph 5.2:

5.2.5 The Contractor agrees to the Owner's right to audit books and records in reference to selection, award of Contract and payments to sub-contractors.

1.8.8 MUTUAL RESPONSIBILITY

Change Subparagraph 6.2.5 to read as follows:

6.2.5 Should the Contractor wrongfully cause damage to the work or property of any separate contractor, the Contractor shall upon due notice promptly attempt to settle with such other contractor by agreement, or otherwise to resolve the dispute. If such separate contractor sues the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor who shall defend such proceedings at the Owner's expense, and if any judgment or award against the Owner arises there from the Contractor shall pay or satisfy it and shall reimburse the Owner for all attorney's fees and court costs which the Owner has incurred.

1.8.9 CHANGES IN THE WORK

Add Subparagraph 7.1.4 as follows:

7.1.4. The contractor shall proceed with the agreed up change upon receiving the MBC Approval to Proceed with a Construction Change. A Change Order will follow.

Change Subparagraph 7.2.2 to read as follows:

7.2.2 Methods used in determining adjustments to the Contract Sum shall adhere to the requirements listed in Subparagraphs 7.3.3 and 7.3.6.

Change Subparagraph 7.3.3 to read as follows:

7.3.3 If the Change Order or the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

1.By mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation. A lump sum for an increase in the Contract Sum may contain a reasonable allowance for the Contractor's overhead and profit. No allowance for overhead and profit will be allowed if the change results in a net decrease in cost. When both additions and credits covering related Work or substitutions are involved in anyone change, the allowance for overhead and profit shall be figured on the basis of net increase, if any.

2. By unit prices stated in the Contract Documents or subsequently agreed upon. Unit prices shall cover all of the Contractor's costs for labor, materials, equipment and related services including such costs for subcontracted work and the Contractor's overhead and profit.

3. By cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee.

4. By the method provided in Subparagraph 7.3.6.

5. The cost of a change determined under the methods in Clauses 7.3.3.1, 7.3.3.3 and 7.3.3.4 shall include all costs directly related to the change, and the Contractor shall itemize these costs and provide appropriate supporting data as may be necessary to establish their correctness. All indirect costs whether incurred on or off site shall be included in the Contractor's overhead. Cost of additional insurance and performance bond coverage related to the change shall be pro rata to the insurance and bond line values stated in the Schedule of Values.

6. In the case of Work authorized under Clauses 7.3.3.1, 7.3.3.3 and 7.3..3.4, a reasonable allowance for overhead and profit shall be not more than ten (10%) percent of the net cost of Work accomplished by the Contractor's own forces, five (5%) percent of the net cost of Work accomplished by Subcontractors and five (5%) percent of the net cost of materials and equipment. Subcontractors may add an allowance of not more than ten (10%) of the net cost of the Work accomplished by their own forces to cover their overhead and profit, five (5%) percent of the net cost of the Work accomplished by sub-subcontractors and five (5%) percent of the net cost of materials and equipment. Sub-subcontractors and subsequent tiers of contractors may add an allowance of not more than ten (10%) percent of the net cost of the work accomplished by their own forces to cover their overhead and profit, five (5%) percent of the net cost of the Work accomplished by their Subcontractors and five (5%) percent of the net cost of materials and equipment. Further, as a condition for the Owner's authorization of a five (5%) percent allowance for work of any lower tier contractor, as aforesaid, the Owner may request the Contractor and/or ~ any pertinent lower tier contractor to provide to the Owner detailed, written information to establish to the Owner's satisfaction the actual relationship between the contractor and any lower tier contractor. Such information shall be provided promptly to the Owner following the request therefor.

Delete the first sentence of Subparagraph 7.3.6 and substitute the following:

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Architect or Engineer on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an allowance for overhead and profit as stated in Clause 7.3.3.6.

Change Clauses 7.3.6.1, 7.3.6.2, 7.3.6.3 and 7.3.6.4 to read as follows:

7.3.6.1 Costs of labor and supervision including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers compensation insurance, all as directly attributable to the change;

7.3.6.2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated -or consumed, all as directly attributable to the change;

7.3.6.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others, all as directly attributable to the change; and

7.3.6.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work, all as directly attributable to the change.

Add the following to Subparagraph 7.3.8:

Adjustments to the Contract Time shall reflect only the additional time directly attributable to the Change in the Work.

1.8.10 START OF WORK

8.1 COMMENCEMENT OF THE WORK

Delete the first sentence of Subparagraph 8.1.2 and substitute the following:

8.1.2 The date of commencement of the Work is the date established in the Notice to Proceed given by the Owner.

Add the following to supplement Subparagraph 8.1.2:

The Contractor shall not commence the Work nor allow any Subcontractor to commence work until:

1. The Contract has been fully executed and the Owner has issued a Notice to Proceed.

2. The Owner has approved the Contractor's performance and payment bonds and the bonds have been filed with the City of Minneapolis.

3. The Owner has approved evidence of the Contractor's Liability Insurance, Owner's Protective Liability Insurance and any other insurance required to be purchased by the Contractor.

8.4 LIQUIDATED DAMAGES

Change the first two sentences of Subparagraph 8.4.1 to read as follows:

8.4.1 Time being an essential element of the Contract, and based on the Project Schedule of Substantial Completion within 365 calendar days from the date of Notice to Proceed, it is hereby agreed that if the Owner determines that an extension is not justified, the Owner will be entitled to damages for failure on the part of the Contractor to complete its obligations. In view of the impracticality and extreme difficulty of fixing and ascertaining the actual damages the Owner would sustain in such event, the Owner shall be entitled to two

hundred dollars ($200.00) per calendar day for each and every day beyond the date of Substantial Completion in these specifications.

Add to the second paragraph of Subparagraph 8.4.1 the following Hennepin County Project Manager and contact information, to read as follows:

8.4.1 A claim for extension will not be allowed unless the Contractor, not later than the end of the Owner's first business day following the day on which the claim arises, shall have telephoned and informed the Hennepin County Project Manager, Royce Wiens at 612-596-9522 about the full details of the cause necessitating such a claim.

9.8 SUBSTANTIAL COMPLETION

Add the paragraph 9.8.6 regarding Acceptance Testing:

9.8.6 Notwithstanding anything in this Contract to the contrary, before a Certificate of Substantial Completion can be prepared by the Architect for the Owner and Contractor, the Contractor shall be required to complete and correct any testing, documentation (test results), and receive Architect approval (Acceptance Testing) that the Work conforms to the performance standards in the Contract Documents. The Acceptance Testing shall be completed over a period of time as defined in the Contract Documents and corrections shall be made as required. Corrections made during the Acceptance Testing period may reset the testing period to ensure conformance to the performance standards to the satisfaction of the Architect. The direct cost or any associated cost for the testing and retesting shall be the responsibility of the Contractor and shall not cause any adjustment to the Contract Sum.

1.8.19 TESTS AND INSPECTIONS

13.11 OCCUPANCY REQUIREMENTS

13.11.1 The Building will be continuously occupied during the entire construction period. Contractor shall cooperate with the Owner during the construction operations to minimize conflicts and facilitate building usage.

13.11.2 Demolition, drilling and cutting activities shall be coordinated and approved by the Owner and Architect or Engineer well in advance. Disturbances and disruptions caused by these activities may need to take place after hours (6 am to 6 pm) if it is found to effect building tenants.

13.11.3 Welding and cutting activities shall be coordinated and approved by the Owner and Architect or Engineer well in advance. These activities shall take place only after receiving a Hot Work Permit from owner. The hot works permit will require at least a two days notice prior to undertaking these activities. The MBC will require the contractor to use a fire blanket behind the soldering or welding to avoid scorching or burning any materials behind.

13.11.4 Appropriate local ventilation as approved by the Owner and the Architect or Engineer shall be provided by the Contractor for activities producing dust or negatively impacting air quality. The demolition construction area shall be isolated from adjacent spaces by a negative air pressure system utilizing poly enclosures and HEPA filtration.

13.11.5 Noise producing functions shall be coordinated with the Owner's Representative. Contractors shall cease noise producing activities which disturb adjacent areas when directed to do so. Radios and players intended for entertainment shall not be allowed unless written approval is furnished by the Owner.

13.11.6 The contractor shall be assessed a penalty of Five Hundred Dollars ($500) for each false fire alarm event resulting from the Contractor's failure to locally deactivate or otherwise protect the fire alarm system from the Contractor's construction activities.

13.11.7 Prior to commencing work, the contractor will be responsible for arranging (with the MBC) to get the required keys and access cards needed to access their area of work. For keys and access cards available through the ground floor security desk, an I.D. will need to be submitted. All other key/access card requests will require a completed key/access card form before acquiring the key/access card. Allow 2-3 days for keys cards to be created and 7 days for access cards.

13.11.8 All work in the jail will require a background check for individuals who will be working there. This form can be obtained through the MBC.

13.11.9 **All work must be completed and in operation (if applicable) by 2:00 on Friday afternoon.**

13.12.10 The Contractor will be responsible for providing all necessary equipment for the work including ladders and carts.

13.12 COORDINATION REQUIREMENTS

13.12.1 The Contractor shall coordinate the Work of all Subcontractors and suppliers to ensure adherence by all to the schedule, procedures for building security, maintenance, accessibility, temperature control and system operation, and to prevent damage to or loss of the Owner's existing properties. Construction doors shall be kept closed when not in use. Replace or repair damaged portions of the site and existing building, and restore areas to conditions, which existed prior to starting the work. Damage to the existing building cause by the Work shall be the responsibility of the Contractor, and shall repair or replace or cause to be replaced or repaired, all damage, injury and/or loss of such property.

13.12.2 The Contractor, sub-contractors and suppliers shall familiarize themselves with the project, including all documents, and the existing conditions of the project. In no case will extra charges be considered because of failure to acquaint themselves with all documents and existing conditions.

END OF SECTION 00 73 00

SECTION 00 80 00
HENNEPIN COUNTY FORMS

PART 1 – GENERAL

1.1 SUPPLEMENTARY OWNER FORMS SUPPORTING THE CONTRACT

Supplementary Owner Forms are hereby attached as may support the Work. The Contractor shall use these informational, affidavit, and reporting forms to execute requirements of the General Conditions of the Contract for Construction.

See the following pages for typical Project Forms.

A. Subcontractor Participation Form
B. Monthly Employment Utilization Report
C. PS Contractor's Summary of Payment
D. Project Safety & Environment Checklist
E. Hot Work Permit
F. Confined Space Entry Permit
G. Employee Security Background Checks
H. Responsible Contractor Verification of Compliance Forms A, A-1, and A-2
I. Prevailing Wage Rates

Hennepin County Purchasing & Contract Services (PCS)

Subcontractor Participation Form

Prime Contractor/Supplier ☐ Subcontractor/Supplier ☐
(Check One)

Project Number: _____ Contract Number: _____
Project Name: _____Email: _____
Company Name: _____Contact Person:_____
Federal Tax ID No. _____ Phone Number: _____
Fax Number:_____ ☐ Certified SBE ☐ Non SBE
Contract SBE Goal: _____% Total SBE Participation: _____%
Total Dollar Amount (Initial NTE) of Contract: _____
Total Dollar Amount of Work Self-Performed: _____

(If the entire contract sum will be performed by the contractor or subcontractor listed above, you may stop here after signing and dating this form on page 3.)

JOINT VENTURE PARTNER, (IF ANY): _____☐ Certified SBE ☐ Non-SBE
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Federal Tax ID No. _____
Services or Supplies Provided: _____
Dollar Amount of their Contract: _____ % of Joint Venture's Based Bid: _____

LIST <u>ALL SUBCONTRACTORS/SUPPLIERS</u> AND THE DOLLAR VALUE OF THEIR CONTRACTS

Contact Person: _____ ☐ Certified SBE ☐ Non-SBE
Firm Name: _____ Email: _____
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Services or Supplies Provided: _____
Federal Tax ID No._____ Dollar Amount of their Contract: _____

Contact Person: _____ ☐ Certified SBE ☐ Non-SBE
Firm Name: _____Email: _____
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Services or Supplies Provided: _____
Federal Tax ID No._____ Dollar Amount of their Contract: _____

Contact Person: _____ ☐ Certified SBE ☐ Non-SBE
Firm Name: _____Email: _____
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Services or Supplies Provided: _____
Federal Tax ID No._____ Dollar Amount of their Contract: _____

Contact Person: _____ ☐ Certified SBE ☐ Non-SBE
Firm Name: _____Email: _____
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Services or Supplies Provided: _____
Federal Tax ID No._____ Dollar Amount of their Contract: _____

Contact Person: _____ ☐ Certified SBE ☐ Non-SBE
Firm Name: _____ Email: _____
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Services or Supplies Provided: _____
Federal Tax ID No._____ Dollar Amount of their Contract: _____

Contact Person: _____ ☐ Certified SBE ☐ Non-SBE
Firm Name: _____ Email: _____
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Services or Supplies Provided: _____
Federal Tax ID No._____ Dollar Amount of their Contract: _____

Contact Person: _____ ☐ Certified SBE ☐ Non-SBE
Firm Name: _____ Email: _____
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Services or Supplies Provided: _____
Federal Tax ID No._____ Dollar Amount of their Contract: _____

Contact Person: _____ ☐ Certified SBE ☐ Non-SBE
Firm Name: _____ Email: _____
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Services or Supplies Provided: _____
Federal Tax ID No._____ Dollar Amount of their Contract: _____

Contact Person: _____ ☐ Certified SBE ☐ Non-SBE
Firm Name: _____ Email: _____
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Services or Supplies Provided: _____
Federal Tax ID No._____ Dollar Amount of their Contract: _____

Contact Person: _____ ☐ Certified SBE ☐ Non-SBE
Firm Name: _____ Email: _____
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Services or Supplies Provided: _____
Federal Tax ID No._____ Dollar Amount of their Contract: _____

Contact Person: _____ ☐ Certified SBE ☐ Non-SBE
Firm Name: _____ Email: _____
Address: _____ City, State, Zip: _____
Phone Number: _____ Fax Number: _____
Services or Supplies Provided: _____
Federal Tax ID No._____ Dollar Amount of their Contract: _____

CONTRACTOR OWNERSHIP
AFFIRMATIVE ACTION (AA) CLASSIFICATION

I. BUSINESS STRUCTURE	*II. ETHNICITY & GENDER*	*III. CERTIFIED SMALL BUSINESS*
If you check one of the options below, Columns II and III are not applicable, so you may stop here. **If none of the options below applies to your business, please go to Column II.** ☐ ***Publicly-Held Company*** *(M11)** ☐ ***Non-Profit Entity*** *(M13)* ☐ ***Government Entity*** *(GOV)* *Stock is traded on the open market.	Base your response below on the (majority) owner's gender & ethnicity**. (See details below.)**[1] **If you are a Certified Small Business, please skip this column and complete Column III.** ***Black/African American*** ☐ **Male** *(M23)* ☐ **Female** *(M33)* ***Hispanic*** ☐ **Male** *(M24)* ☐ **Female** *(M34)* ***Asian or Pacific Islander*** ☐ **Male** *(M25)* ☐ **Female** *(M35)* ***American Indian or Alaskan Native*** ☐ **Male** *(M26)* ☐ **Female** *(M36)* ***White/Caucasian*** ☐ **Male** *(M22)* ☐ **Female** *(M17)*	Hennepin County, in collaboration with other jurisdictions, certifies eligible small businesses. **(See details below.)**[2] ***Black/African American*** ☐ **Male** *(S23)* ☐ **Female** *(S33)* ***Hispanic*** ☐ **Male** *(S24)* ☐ **Female** *(S34)* ***Asian or Pacific Islander*** ☐ **Male** *(S25)* ☐ **Female** *(S35)* ***American Indian or Alaskan Native*** ☐ **Male** *(S26)* ☐ **Female** *(S36)* ***White/Caucasian*** ☐ **Male** *(S22)* ☐ **Female** *(S17)*

[1] **Black/African American**: All persons having origins in any of the Black racial groups of Africa.

Hispanic: All persons of Mexican, Puerto Rican, Cuban, Central or South American descent or other Spanish culture or origin, regardless of race.

Asian or Pacific Islander: All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Sub-continent or the Pacific Islands, including, for example, China, Japan, Korea, Hawaii, Guam, the Philippine Islands and Samoa.

American Indian or Alaskan Native: All persons having origins in any of the original peoples of North America, and who maintain tribal affiliation or community attachment.

White/Caucasian: All persons with origins in any of the original peoples of Europe, North Africa or the Middle East.

[2] While certification is not necessary to do business with Hennepin County, only certified businesses can be counted toward the goal for Small Business Enterprise (SBE) participation in county contracting. Certification also boosts market exposure and qualifies businesses to access SBE Program Services. For further information about certification, please call (**651) 266-8900** or visit the Central Certification Program's web site at: ***www.govcontracts.org.***

Total Dollar Amount of Work Subcontracted to SBE Subcontractors/Suppliers $_____

Total Dollar Amount of Work Subcontracted to Non-SBE Subcontractors/Suppliers $_____

Total Dollar Amount of Work Self-Performed $_____

Total Bid/Contract $_____

Signature(s): _____ Date: _____

Print Name: _____ Title: _____
(President/Authorized Representative)

If you have questions or need assistance, please call Angie Kirkpatrick at (612) 348-2528.
This report must be completed, signed by an authorized representative of the company, and submitted to: Hennepin County Purchasing/Contract Services, Small Business Enterprise Program, A-1730 Government Center, 300 South Sixth Street, Minneapolis, MN 55487-0175.

HENNEPIN COUNTY PURCHASING & CONTRACT SERVICES (PCS)
MONTHLY EMPLOYMENT UTILIZATION REPORT

(A) Company Name _____
Status: ☐ Contractor ☐ Subcontractor (Select ☒ one)

(B) Address _____
_____
Phone ( ) _____ Fax ( ) _____

(C) County Contract No.: _____ **(E)** Project No.: _____

(D) Your Prime Contractor's Name: _____
Status: ☐ Contractor ☐ Subcontractor (Select ☒ one)

[F] REPORT PERIOD *FROM:* _____ *TO:* _____	*[H] TOTAL HOURS WORKED ON THE PROJECT* ☐ *Check here if there were no hours worked during this report period.* *HOURS REMAINING ON THIS PROJECT:* _____												*[I] TOTAL NUMBER OF EMPLOYEES WORKING ON THIS PROJECT*			
	[H1] TOTAL EMPLOYEE HOURS		*[H2] BLACK, NOT OF HISPANIC ORIGIN*		*[H3] HISPANIC*		*[H4] ASIAN/ PACIFIC ISLANDER*		*[H5] AMERICAN INDIAN OR ALASKAN NATIVE*		*[H6] PERCENT OF TOTAL HOURS*		*[I1] TOTAL EMPLOYEES ON THIS PROJECT*		*[I2] TOTAL MINORITIES ON THIS PROJECT*	
(G) CLASSIFICATION BY TRADE	*M*	*F*	*M*	*F*	*M*	*F*	*M*	*F*	*M*	*F*	*(a) MIN*	*(b) F*	*(a) M*	*(b) F*	*(a) M*	*(b) F*
TRADE																
TRADE																
TRADE																
TRADE																
TRADE																
[J] TOTAL SKILLED																
[K] TOTAL UNSKILLED																
[L] GRAND TOTALS																

☐ **NO HIRING OPPORTUNITIES AT THIS TIME (Please check if true statement)**
(PLEASE CHECK THIS BOX IF THIS IS A LEGAL STATEMENT DURING THIS REPORTING PERIOD)

The information on this form is true and accurate to the best of my knowledge.

[M] Print or type name of company's authorized EEO representative _____ Signature _____ Date _____

CC Specialist: _____ Received On: _____ Reviewed On: _____

HENNEPIN COUNTY CONSTRUCTION

Instructions for Filing Monthly Employment Utilization Report

The Monthly Employment Utilization Report includes the total work hours for each employee classification in each trade on the construction site(s). The report is to be completed by each contractor (both the prime and its subcontractors); and signed by a responsible official of the company. **The prime contractor must submit all of the reports to Hennepin County Purchasing/Contract Services, Targeted Contract Services Program, A-1730 Government Center, 300 South Sixth Street, Minneapolis, MN 55487-0175 by no later than the 10th calendar day of each month**.

If you have any questions or need assistance, please call Angie Kirkpatrick at (612) 348-2528

DEFINITIONS:	(1)	WOMEN	Includes both minority and non-minority females.
	(2)	MINORITY	Includes Blacks, Hispanics, American Indians/Alaskan Natives and Asian/Pacific Islanders, and both males and females.

A. Company Name & Status	Enter the name of your company in this section. Place a √ mark in the appropriate box to indicate the contracting status of your company.
B. Address	Enter your company address and include the telephone and fax number.
C. County Contract Number	Enter the County contract number as stated in your County contract documents. [If you are a subcontractor on a County contract, contact your prime contractor to obtain this information.]
D. Prime Contractor Name & Status	Enter the name of your prime contractor. Place a √ mark in the appropriate box to indicate the contracting status of your prime contractor (if applicable).
E. County Project Number	Enter the County project number as stated in your County contract documents. [If you are a subcontractor on a County contract, contact your prime contractor to obtain this information.]
F. Report Period	Enter the dates covered by the report (e.g., the **month** of 2/1/99 – 2/28/99)
G. Classification By Trade	Enter only the skilled and unskilled construction trade worker classifications that you employ on the project. [Clerical and other offsite personnel are not considered construction workers and must not be included in the monthly utilization report.]
H. (1-5) Total hours worked on the project site(s). **H. (6)** Minority & Female Percentages	In Column (H1), enter the total number of hours worked by all employees in each trade classification, including minority and non-minority employees. Indicate males and female hours separately. In Column (H2-H5), enter the total hours worked by minorities in each trade classification. Indicate males and female hours separately. In Column (H6) (a) "MIN", enter the percentage of the total hours worked by minorities (both male & female) in each trade classification. In Column (H6) (b) "F", enter the percentage of total hours worked by women (both minority & non-minority) in each trade classification.
I. (1) Total Number of Employees Working on This Project **I. (2)** Total Number of Minorities	In Column (I1) (a) and (b), enter the total number of employees **working on this project** in each trade classification in your workforce during the reporting period. Include minority and non-minority male and female employees. In Column (I2) (a) and (b), enter the total number of minority **employees working on this project** in each trade classification in your workforce during the reporting period. Indicate males and females separately.
J. Total Skilled	On this line, under each column enter the total number of Skilled hours, percentages and total number of employees **working on this project** in each trade classification in your workforce during reporting period.
K. Total Unskilled	On this line, under each column enter the total number of Unskilled hours, percentages and total number of employees **working on this project** in each trade classification in your workforce during reporting period.
L. Grand Totals	On this line, under each column enter the total number of Skilled and Unskilled hours, percentages and total number of employees **working on this project** in each trade classification in your workforce during reporting period.
M. Official Signature	The company official or authorized representative must print, sign, and date this report.

THIS REPORT MUST BE SIGNED BY A COMPANY OFFICIAL OR DESIGNEE.

- **Summary of Payment Form** -

Contractor Pay Disbursement

PROJECT NAME: _____ **CONTRACTOR:** _____

County Project Number:_____ County Contract No.#:_____ Address: _____

This form is being sent along with current Pay Applic. #: _____; however, this _____

form applies to **previous** Pay Applic. #_____, work period to: (match prev. G702)_____/_____/_____ v:_____f:_____

Work Section a.	**Description of Work** b.	**Subcontractor Name** c.	**Subcontractor Portion** d.	**Contractor Portion** e.	**Line Item Subtotal** f.
00100					
			Period's Distribution Total = g.		

- *Expand schedule as needed, using MS.Word"Table"insert commands* -

Helpful column use comments;

a. Numeric order of Work, by CSI division. List is to match that order used in AIA form G703.
b. Ordered Description of Work, by CSI division. Match order of G703 & corresponding column 'a'.
c-e. No explanation req'd.
f. Sum of (d.+ e.) monies, per each line item entry, as distributed by Contractor, from Owner's approved payment on the last Application.
g. Add vertical column of subtotals 'f.'. Must equal Owner's approved dollar total **from the previous period's** Payment Application, as numbered above at top.

The undersigned Contractor affirms & certifies that to the best of his/her knowledge, information on this page is true and correct, and acknowledges that the Architect and the Owner will rely on said information when authorizing payment. This is a legal statement, and has legal consequences.

_____ /____/____

Name, & Title Date

Hennepin County Property Services Project Safety & Environment Checklist

The Contractor shall use this Checklist to identify and address health, safety and environmental issues that may be encountered or created during this Project, prior to start of Work. Submit the completed Checklist to the Hennepin County Project Manager and the respective Hennepin County Building Manager (Building Manager) assigned to this Project and in accordance with Article 10 of the General Conditions of the Contract. Signed electronic document submittals are acceptable.

I. Project Information

Project Name: _____

County Project No.: _____ County Contract No. : _____

General Contractor: _____

Contractor Site Mgr.: _____ and Cell Phone: _____

Contractor Safety Mgr: _____ and Cell Phone: _____

Start Date: _____ Est. Completion Date: _____

II. Work in Occupied Facilities

Work in occupied facilities must be coordinated with the Building Manager and Project Manager. Dust and odors shall be contained in the work zone unless exempted in writing by the County Project Manager. Activities that may affect fire alarms must be coordinated with the Building Manager and Project Manager.

Issue that may be disruptive to building occupants.	Is the issue likely to occur? Answer only Yes or No	Have means & methods been developed to eliminate or control the issue?	Are your means & methods appropriate, effective and available?
Odors (adhesives, solvents, caulks, paint, welding, cutting, engine exhaust, etc.)			
Dust (sanding, cutting, demolition work, etc.)			
Noise (pneumatic tools, core drilling, etc.)			
Fire / Life Safety (egress, alarms)			
Hazardous materials (asbestos, lead, mold, etc.)			
Site control (signs, barriers, etc.)			
Other (list)			

III. Environmental Protection

On-site containment and off-site disposal of hazardous materials must be coordinated with the Building Manager and County Project Manager. Where previously unidentified hazardous materials or suspect hazardous materials are encountered during the project, stop work and promptly contact the Building Manager and Project Manager.

Regulated Materials	Is the material likely to be encountered? Answer only Yes or No	Have means & methods been developed to manage and/or dispose of materials?	Are regulated material disposal methods in compliance with existing laws?
Asbestos			
Chlorofluorocarbons			
Contaminated soils			
Eroded soils			
Lead			
Mercury			
Oils			
PCBs			
Solvents			
Other			

IV. Facility Work Authorizations: Permits

All Hot Work and Work in Confined Spaces requires prior coordination with the Building Manager and Project Manager. Submit Hennepin County Hot Work and/or Confined Space Entry forms, as appropriate, to Building Manager before Start of the Work.

Check the following permit boxes that apply to the Work.

☐ Hot Work Permit (welding, torch cutting, grinding, roofing, etc.)

☐ Confined Space Entry Permit (restricted access, electrical current exposure, areas with collected fumes, etc.)

When these permits apply to the Work, Contractor's failure to comply with this permit process may result in a Suspension of the Work by the Owner.

V. Job Site Safety

The jobsite and workplace safety is the responsibility of the Contractor. Prior to start of Work, the Contractor shall provide the Project Manager with a written description of significant risks and risk mitigation strategies associated with the Work as are related to safety, health, the environment and/or business continuity of occupied spaces. Hennepin County Property Services staff may request additional supportive safety documentation regarding this project.

Potential hazards at the job site.	Is the hazard likely to occur? Answer only Yes or No	Have means & methods been developed to eliminate or control the hazard?	Are employees trained and/or certified to perform job tasks as required by law?	Are tools, equipment and personal protective equipment adequate to control the hazard, available and in good condition?
Exposures (asbestos, lead, solvents, carbon monoxide, etc.)				
Compressed gases				
Confined spaces				
Cranes and hoists				
Dust				
Electrical / Ground faults				
Energy isolation (lockout-tagout)				
Falls, work at height				
Flammable liquids, gases				
Hot Work				
Infectious agents				
M.S.D.S.s				
Noise				
Plants, insects, animals, mold, etc.				
Powder actuated tools				
Power lines, overhead				
Scaffolding / Ladders				
Site control / Security				
Trenching / Excavation				
Underground utilities				
Vehicles / Mobile equip.				
Vibration				
Walking, working surfaces				
Weather (wind, rain, snow, ice, heat, lightning)				
Other				

VI. Signature of Authorized Contractor Representative

Completed by (print name): _____

Signature: _____

Job Title: _____

Prime Contractor Company: _____

Date: _____

Contractors and MBC Staff shall abide by Municipal Building Commission Rules for work affecting the Fire Alarm System.

MBC Hot Works Rules

A Hot Works Permit is required for any temporary operation producing dust, smoke, a flame, sparks or heat. This includes grinding, drilling, brazing, cutting, soldering, pipe thawing, and welding.

1. If there is a practical and safe way to do the job without hot work, we require that method be used.

2. No hot work is permitted without authorization from the MBC Project Manager in the form of a signed Permit. This permit will be valid for the time approved.

3. Specific fire fighting equipment and protection material will be required at the work site before any work can be started. The contractor will provide all of these materials. This should be discussed with the Project Manager when requesting the permit.

4. No hot work is permitted without a designated fire watch present. The contractor or MBC staff will be required to provide a fire watch designee. This designee will have total control over the hot work area for fire prevention. However, should MBC staff observe unsafe conditions, the hot work operation will be stopped until the hazard is neutralized or eliminated.

5. The contractor or MBC staff will verify that all hot work equipment is in proper working order and in a fire-safe condition. The Contractor or MBC staff is responsible for the safe and operable equipment. Any unsafe equipment observed by The MBC staff will be required to be removed from the property.

Any contractor-owned equipment or material to be stored in the facility overnight must be properly secured in an area designated by the Project Manager.

Please submit at least 24 hrs in advance of starting work

MBC Hot Works Permit

This permit is required for any temporary operation producing dust, smoke, a flame, sparks or heat. The MBC does not assume liability for hot work. See reverse for rules.

Requestor's Name: _____
Company Name: _____
Address: _____
_____
Phone Number(s): _____
Email Address: _____
Permit Date(s): _____

Type of work requiring permit. Check all that apply.

- ☐ core drilling
- ☐ welding
- ☐ cutting
- ☐ soldering
- ☐ grinding
- ☐ brazing
- ☐ pipe thawing
- ☐ torch-applied roofing
- ☐ other (please list)_____

Description of work:_____
_____
_____

All locations that hot work will occur - Highlight on attached drawings

Date that hot work will occur: _____
Time and duration of hot work: _____

List fire fighting equipment and protection material by contractor at hot work site:_____
_____
_____
_____

Name of designated fire watch:_____

MBC Project Manager Approval

Approval Signature_____Date_____

MBC Use Only

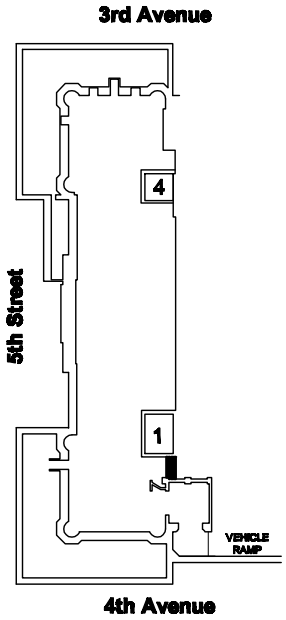
- ☐ Identify affected areas on attached key plans
- ☐ E-mail scanned copy of Hot Works Permit with drawings to:MBC Electrical Forman, MBC Security and MECC On-Duty Supervisor,
- ☐ If work is occurring on 3rd – 5th floors, also e-mail a scanned copy to Jim Sellwood (ADC), Mike Wresh (ADC) and Vern McIntyre (ADC)

FIRE ALARM KEY PLANS

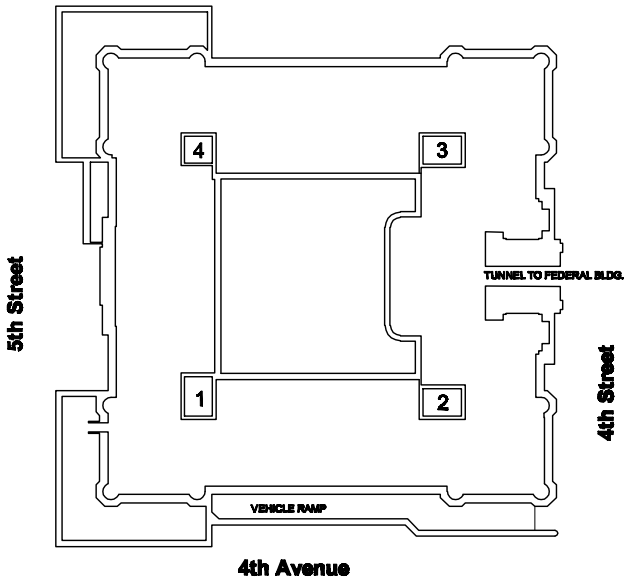
LEGEND

AREA IN BY-PASS

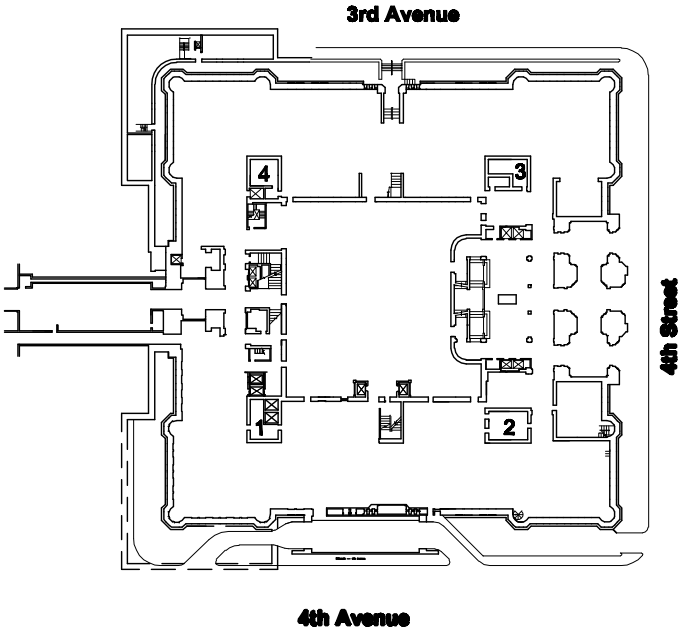
HORNS AND STROBES ONLY TURNED OFF



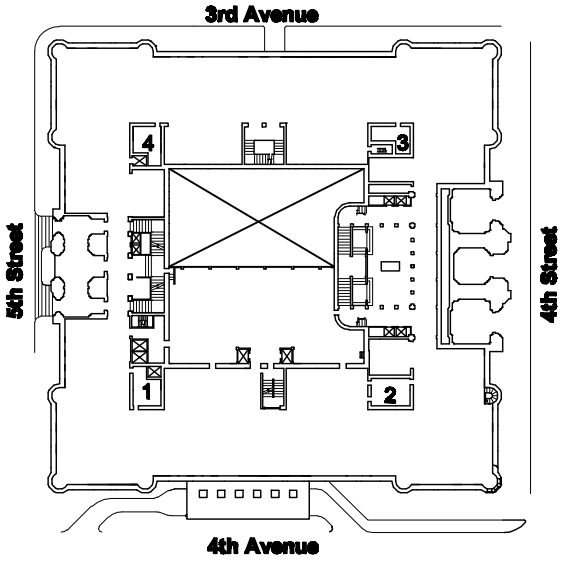
SUB-BASEMENT PLAN



BASEMENT PLAN



GROUND FLOOR PLAN



FIRST FLOOR PLAN

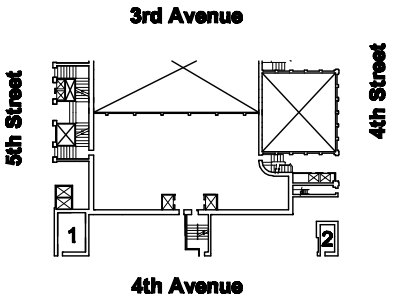
FIRE ALARM KEY PLANS

LEGEND

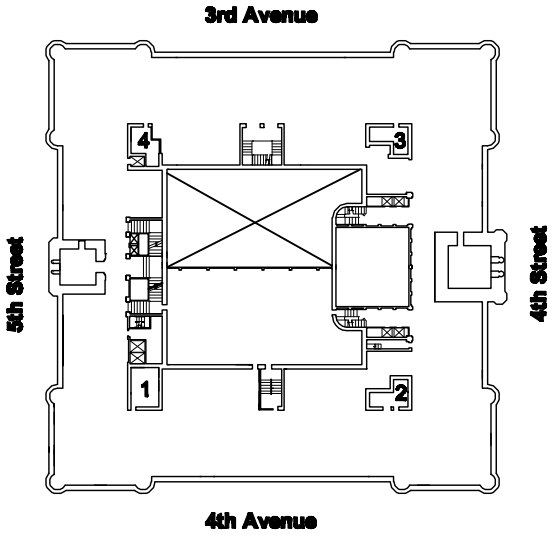
AREA IN BY-PASS

HORNS AND STROBES ONLY TURNED OFF

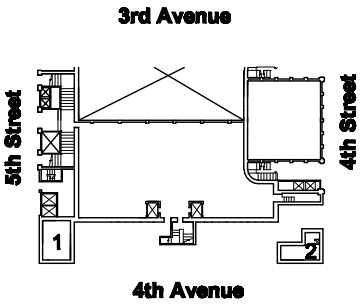
NORTH



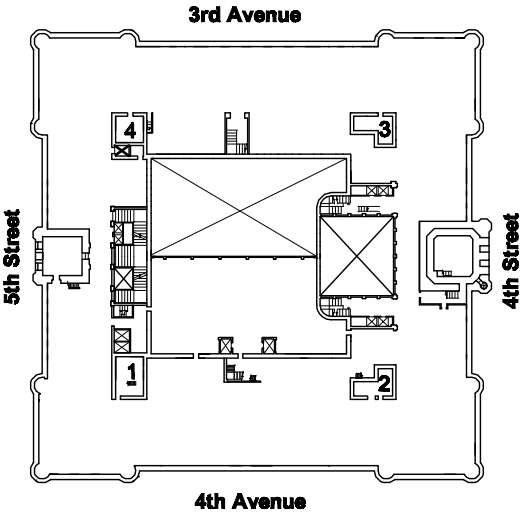
210 1/2 PLAN



SECOND FLOOR PLAN



310 1/2 PLAN



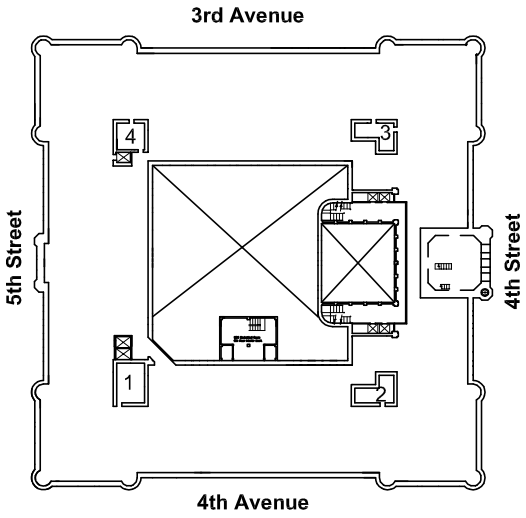
THIRD FLOOR PLAN

FIRE ALARM KEY PLANS

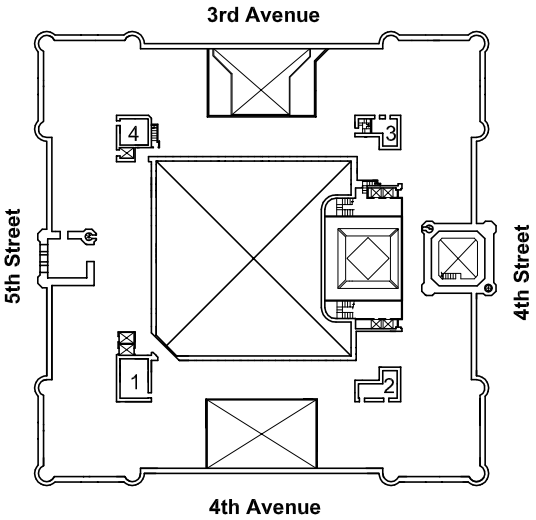
LEGEND

AREA IN BY-PASS

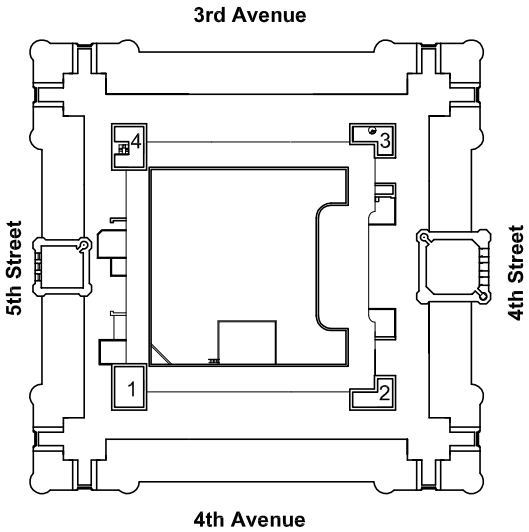
HORNS AND STROBES ONLY TURNED OFF



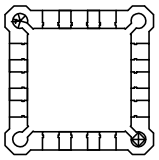
FOURTH FLOOR PLAN



FIFTH FLOOR PLAN



ATTIC PLAN



TYPICAL TOWER PLAN

CIRCLE AFFECTED FLOORS:

7 8 9 10 11 12 13 14

Hennepin County Property Services

Entry Permit

Permit date: / / **Work shift:** 1st ☐ 2nd ☐ 3rd ☐ **Expires:** / /

Time started: _____

Permit space to be entered (name and location of space): _____

Purpose of entry: _____

Names of trained, authorized individuals

- Entry supervisor: _____
- Entry attendant: _____
- Authorized entrants: _____
- Authorized entrants: _____

Emergency contact information

Emergency responder: _____ Phone number: _____

Contact person: _____ Time: _____

Pre-entry requirements

Requirements	Yes	No	N/A	Requirements	Yes	No	N/A
Lockout - tagout/de-energize	☐	☐	☐	Hot work permit	☐	☐	☐
Pipes(s) broken or capped or blanked	☐	☐	☐	Fall arrest harness/lifeline/tripod	☐	☐	☐
Purge or flush or drain	☐	☐	☐	Personal protective equipment	☐	☐	☐
Ventilation (natural or mechanical)	☐	☐	☐	*Hardhat*	☐	☐	☐
Secure area	☐	☐	☐	*Gloves*	☐	☐	☐
Safe lighting	☐	☐	☐	*Safety glasses*	☐	☐	☐
Non-sparking tools	☐	☐	☐	*Respirator, type*	☐	☐	☐
Communication method	☐	☐	☐	*Other PPE:*	☐	☐	☐
Contractor employees involved	☐	☐	☐	*Other PPE:*	☐	☐	☐

Space-monitoring results		Test 1	Test 2	Test 3	Test 4
Monitor at least every four hours	**Permissible entry levels**	Time: Initial:	Time: Initial:	Time: Initial:	Time: Initial:
Percent oxygen	19.5% to 23.5%				
Combustible gas	Less than 10% LEL				
Other toxic gas					
Other toxic gas					
Other toxic gas					

Return this completed permit to Workplace Safety and Health, MC-228, then file for one year.

Possible atmospheric hazards	Yes	No	N/A
Lack of oxygen	☐	☐	☐
Combustible gases	☐	☐	☐
Combustible vapors	☐	☐	☐
Combustible dusts	☐	☐	☐
Toxic gases/vapors	☐	☐	☐
Possible non-atmospheric hazards			
Noise	☐	☐	☐
Chemical contact	☐	☐	☐
Electrical hazard	☐	☐	☐
Mechanical exposure	☐	☐	☐
Temperature extreme	☐	☐	☐
Engulfment	☐	☐	☐
Entrapment	☐	☐	☐
Other non-atmospheric hazard	☐	☐	☐

Pre-entry checklist

Do not enter this permit space until the following "needs action" conditions are corrected.

OK	Needs action	
☐	☐	Before entering the permit space, the entry supervisor or designee must notify the rescue team. IDLH conditions require at least one rescue team member located outside the space.
☐	☐	A minimum of two employees must be assigned to work involving permit space entry. One employee must remain outside the permit space at all times.
☐	☐	The surrounding area must be surveyed to show that it is free of hazards such as drifting vapors from tanks, piping, sewers, or vehicle exhaust.
☐	☐	Those responsible for operation of the gas monitor have been trained.
☐	☐	Gas monitor calibration tests and functional test (fresh air calibration) have been performed this shift on the gas monitor. If so, by whom? _____
☐	☐	The atmosphere will be continuously monitored while the space is occupied, if required by entry procedure.

This permit has been terminated for the following reason:

☐ Work completed ☐ Canceled Time: Note:

Entry Supervisor's signature Time: Date: / /

Return this completed permit to Workplace Safety and Health, MC-228, then file for one year.

CONTRACTOR EMPLOYEE SECURITY BACKGROUND CHECKS

– –

Hennepin County PROPERTY SERVICES SECURITY DIVISION (PSSD) Jurisdictions

PART 1: GENERAL

1.01 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

B. Refer to other Project Documentation for additional security measures required for the Work, not limited to agreements arising from the Best Value procurement process and instructions given from the Owner regarding access to, and work and behavior within occupied Hennepin County land and facilities.

1.02 SUMMARY

A. Before allowing any direct or indirect employees to perform Work of the Contract, the Contractor shall procure criminal background security checks on all employees. Contractor personnel and all subcontractor personnel entering County property must submit to criminal background checks. Contractor is to allow a minimum of 7 calendar days for the researching agency to process and respond to the Contractor's requests. Contractor shall receive the information reported from the researching agency, arrange for said information to be shared with the Owner, and receive additional information as may be provided by the Owner regarding suitability for the Work.

B. The Contractor will direct work assignments and/or make changes to assignments, or restrict an employee from Owner's land or occupied spaces based on the nature of the above report information. The costs of Contractor's employee reassignment(s) or Work denial(s) based on results of criminal background check information shall be borne exclusively by the Contractor.

C. The Owner does not control the count of Contractor employees necessary to complete the Work. The Contractor shall provide a minimum allowance of sixty ($60.00) dollars per each employee undergoing a background check. The Owner is not familiar with the demeanor and history of each of the Contractor employees and where the researching agency must charge additional time and/or dollars for employees requiring expanded research, such additions are a business risk controlled by the Contractor and will be borne solely by the Contractor in accordance with Article 10.2 of the General Conditions of the Contract for Construction.

D. Employees and personnel that do not have a County PSSD approved security background check will not be allowed onto the Project site.

1.03 SUBMITTALS

A. Prior to start of any Work upon the Project, the Contractor shall furnish the Owner with a complete list of employees indicating the date on which the Owner found each employee's criminal background acceptable.

B. The Contractor will update this personnel list, within five (5) business days of any change in personnel for the duration of this agreement. The Contractor shall maintain, update and resubmit the complete list monthly or more often as added labor needs may demand. Interim investigative report sharing will be required, independent of this maintained complete list. All processing and information sharing requirements of this section are to be accomplished on a time of the essence basis.

C. The complete list shall include the date of each employee's information submittal to the researching agency, the date of the agency's reply, and the receipt date of the Owner's comments.

PART 2: PRODUCTS – Not Applicable.

PART 3: EXECUTION

A. Contractor shall reproduce and distribute to all employees to the Work the Property Services Security Division (PSSD) criminal background investigation form(s) and legal release(s) necessary to perform identity and criminal background checks, as are attached at the end of this section. Review the attached Instructions for Use page prior to form distribution.

B. Delivery truck and car drivers who do not park within 50 feet of the building and do not physically enter the building will not need a background check.

C. The Contractor shall have each employee provide the requested information required for a criminal background check and release of personal data. Prior to completing each investigation form, the Contractor shall positively identify the employee's name, previous names, or aliases, and date of birth through an official record such as a driver's license, state identification card or certified birth certificate.

D. Payments to research agency(ies) must be per individual applicant and can not be grouped with other applications.

E. Except where forms indicate "Office Use Only", forms must be fully complete and bear the employee's signature and date of application. Incomplete forms and forms received with a signed date older than 5 calendar days will be rejected by the research agency.

F. It is the responsibility of the Contractor to establish a single, privately controlled e-mail address for communications with, and receipt of investigative reports from, the research agency.

G. It is the responsibility of the Contractor to separately establish a single, privately controlled e-mail address for receipt of Owner reports from the PSSD.

H. The Contractor will be notified by the research agency, through their online address, of the results of employee criminal background checks. Contractor shall review the detailed results of the background checks as required by the Contract, and make a determination regarding suitability of the employee's work assignments upon the Owner's property prior to an employee's start of Work. The Contractor shall share the investigative results with the Owner, which shall include the Contractor's written determination of the applicant's Work suitability.

I. Contractor shall consider making personnel work assignment changes where Owner's reply information requests further review or re-consideration of suitability factors.

J. A two page instruction sheet and a personal identification and release form for background checks follows this page. The Owner reserves the right to revise the attached forms in order to respond to changing processes by the researching agency(ies).

K. All forms shall be fully completed and forwarded in a timely manner. Work delay caused by the Contractor's or its employees' failure to deliver the forms in a timely manner will not entitle the Contractor to an increase in the Contract Sum or an extension of the Contract Time.

END OF SECTION

Hennepin County
Property Services Department

Security Division
Government Center (MC 002A)
300 South 6th Street
Minneapolis, MN 55487

612-348-7650, Phone
612-348-5694, Fax

www.hennepin.us

Contractor Background Investigations

In accordance with the contract, you may be required to submit employees who will be assigned to our facilities to a criminal background.

It is your responsibility to establish an account with one of the following approved employment screening agencies:

The McDowell Agency – www.mcdowellagency.com – 651-644-3880

Each employee who will be assigned to the contract with Hennepin County will be required to complete a screening through the company of your choice. In addition, you should submit a "Property Services – Contractor Background Request Form" for each employee.

The forms can be submitted in the following manner:

- **Delivered to the Security Office**
  A-Level of the Hennepin County Government Center
- **Mailed to the Security Division**
  Security
  Hennepin County Government Center
  300 South 6th Street
  Minneapolis, MN 55487
  Mail Code 002A
- **Faxed to the Security Office**
  612-348-5694

These forms must be processed by the Security Division prior to the first day the employee is assigned to the contract. Please allow a minimum of 5 business days to process background requests.

If photo identification cards and/or access cards are required, they will be issued only after the contract requirements regarding background checks have been fulfilled. For those contracts requiring a Hennepin County Contractor Photo ID card, the vendor's representative should contact our Photo ID Office at 612-348-7580 to schedule an appointment (walk-ins will not be processed). In order to receive an access card, a Card Access Request Form must be approved and submitted by the Property Services Card Access Contact.

You will only receive notification if an employee is found to be unsuitable for assignment to the contract. In the event a contractor's employee is found to be unsuitable for assignment to a Hennepin County contract, it is the responsibility of the vendor or their representative to

communicate this with their employee. Unless otherwise arranged, at no time should the vendor's employee be directed to contact the Security Division directly. Due to data privacy, the Security Division will not provide detail of their findings without written consent from the vendor's employee.

Please return to:
Name
Fax # or Mail Code

PROPERTY SERVICES – CONTRACTOR BACKGROUND REQUEST

PLEASE PRINT (Illegible information will be returned – please provide full legal name as it appears on state issued ID)

Printed FULL Name: _____
First **Middle** **Last**

Other Names Used: _____

Address: _____

Date of Birth: _____

Position: _____

I authorize Hennepin County Property Services Department – Security Division to review necessary information for the purpose of contracted employment in the county facilities and/or on county property. Failure to provide this authorization will prevent the Security Division from completing the required checks and will result in your inability to work in county facilities.

_____ _____
Signature **Date**

Vendor Representative

Company Name: _____

Representative Name: _____ Phone: _____

Email Address: _____

- A background check was conducted on this candidate using the following: (refer to contract for requirements)
  - ☐ Orange Tree Employment Screening
  - ☐ The McDowell Agency, Inc.
  - ☐ Verifications Inc.
  - ☐ MN Bureau of Criminal Apprehension

  In order to complete this request, Hennepin County Property Services Security must be furnished with copies of the above information or access to view the results online.
- This form must be received by the Hennepin County Property Services Department Security Division prior to the employee being assigned to the contract and/or request for identification card, access card, or facility keys.

Security Division

Source	Completed by	Date	Clear	Comments
Source Listed above			☐ Yes ☐ No	
MNCIS			☐ Yes ☐ No	
Driver & Vehicle Services			☐ Yes ☐ No	

Based on the information received and reviewed, this person ☐ IS / ☐ IS NOT an acceptable candidate for contract employment with Hennepin County.

_____ _____
Property Services Representative **Date**

☐ Contractor ID Card Issued
☐ Access Card Issued
☐ Keys Issued
☐ Other _____

ATTACHMENT A

RESPONSIBLE CONTRACTOR VERIFICATION AND CERTIFICATION OF COMPLIANCE

PROJECT TITLE: _____

Minn. Stat. § 16C.285, Subd. 7. **IMPLEMENTATION.** ... any prime contractor or subcontractor that does not meet the minimum criteria in subdivision 3 or fails to verify that it meets those criteria is not a responsible contractor and is not eligible to be awarded a construction contract for the project or to perform work on the project...	
Minn. Stat. § 16C.285, Subd. 3. **RESPONSIBLE CONTRACTOR, MINNIMUM CRITERIA**. "Responsible contractor" means a contractor that conforms to the responsibility requirements in the solicitation document for its portion of the work on the project and verifies that it meets the following minimum criteria:	
(1)	The Contractor: (i) is in compliance with workers' compensation and unemployment insurance requirements; (ii) is currently registered with the Department of Revenue and the Department of Employment and Economic Development if it has employees; (iii) has a valid federal tax identification number or a valid Social Security number if an individual; and (iv) has filed a certificate of authority to transact business in Minnesota with the Secretary of State if a foreign corporation or cooperative.
(2)	The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 177.24, 177.25, 177.41 to 177.44, 181.13, 181.14, or 181.722, and has not violated United States Code, title 29, sections 201 to 219, or United States Code, title 40, sections 3141 to 3148. For purposes of this clause, a violation occurs when a contractor or related entity: (i) repeatedly fails to pay statutorily required wages or penalties on one or more separate projects for a total underpayment of $25,000 or more within the three-year period; (ii) has been issued an order to comply by the commissioner of Labor and Industry that has become final; (iii) has been issued at least two determination letters within the three-year period by the Department of Transportation finding an underpayment by the contractor or related entity to its own employees; (iv) has been found by the commissioner of Labor and Industry to have repeatedly or willfully violated any of the sections referenced in this clause pursuant to section 177.27; (v) has been issued a ruling or findings of underpayment by the administrator of the Wage and Hour Division of the United States Department of Labor that have become final or have been upheld by an administrative law judge or the Administrative Review Board; or (vi) has been found liable for underpayment of wages or penalties or misrepresenting a construction worker as an independent contractor in an action brought in a court having jurisdiction. Provided that, if the contractor or related entity contests a determination of underpayment by the Department of Transportation in a contested case proceeding, a violation does not occur until the contested case proceeding has concluded with a determination that the contractor or related entity underpaid wages or penalties;*

(3)	The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 181.723 or chapter 326B. For purposes of this clause, a violation occurs when a contractor or related entity has been issued a final administrative or licensing order;*
(4)	The contractor or related entity has not, more than twice during the three-year period before submitting the verification, had a certificate of compliance under section 363A.36 revoked or suspended based on the provisions of section 363A.36, with the revocation or suspension becoming final because it was upheld by the Office of Administrative Hearings or was not appealed to the office;*
(5)	The contractor or related entity has not received a final determination assessing a monetary sanction from the Department of Administration or Transportation for failure to meet targeted group business, disadvantaged business enterprise, or veteran-owned business goals, due to a lack of good faith effort, more than once during the three-year period before submitting the verification;*
	* Any violations, suspensions, revocations, or sanctions, as defined in clauses (2) to (5), occurring prior to July 1, 2014, shall not be considered in determining whether a contractor or related entity meets the minimum criteria.
(6)	The contractor or related entity is not currently suspended or debarred by the federal government or the state of Minnesota or any of its departments, commissions, agencies, or political subdivisions; and
(7)	All subcontractors that the contractor intends to use to perform project work have verified to the contractor through a signed statement under oath by an owner or officer that they meet the minimum criteria listed in clauses (1) to (6).

Minn. Stat. § 16C.285, Subd. 5. **SUBCONTRACTOR VERIFICATION**.

A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project.

If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with subdivision 3, clause (7), within 14 days of retaining the additional subcontractors.

A prime contractor shall submit to the contracting authority upon request copies of the signed verifications of compliance from all subcontractors of any tier pursuant to subdivision 3, clause (7). A prime contractor and subcontractors shall not be responsible for the false statements of any subcontractor with which they do not have a direct contractual relationship. A prime contractor and subcontractors shall be responsible for false statements by their first-tier subcontractors with which they have a direct contractual relationship only if they accept the verification of compliance with actual knowledge that it contains a false statement.

Minn. Stat. § 16C.285, Subd. 4. **VERIFICATION OF COMPLIANCE.**
A contractor responding to a solicitation document of a contracting authority shall submit to the contracting authority a signed statement under oath by an owner or officer verifying compliance with each of the minimum criteria in subdivision 3 at the time that it responds to the solicitation document. A contracting authority may accept a sworn statement as sufficient to demonstrate that a contractor is a responsible contractor and shall not be held liable for awarding a contract in reasonable reliance on that statement. Failure to verify compliance with any one of the minimum criteria or a false statement under oath in a verification of compliance shall render the prime contractor or subcontractor that makes the false statement ineligible to be awarded a construction contract on the project for which the verification was submitted. A false statement under oath verifying compliance with any of the minimum criteria may result in termination of a construction contract that has already been awarded to a prime contractor or subcontractor that submits a false statement. A contracting authority shall not be liable for declining to award a contract or terminating a contract based on a reasonable determination that the contractor failed to verify compliance with the minimum criteria or falsely stated that it meets the minimum criteria.

CERTIFICATION	
By signing this document I certify that I am an owner or officer of the company, and I swear under oath that: **1) My company meets each of the Minimum Criteria to be a responsible contractor as defined herein and is in compliance with Minn. Stat. § 16C.285,** **2) I have included Attachment A-1 with my company's solicitation response, and** **3) if my company is awarded a contract, I will also submit Attachment A-2 as required.**	
Authorized Signature of Owner or Officer:	**Printed Name:**
Title:	**Date:**
Company Name:	

NOTE: Minn. Stat. § 16C.285, Subd. 2, (c) If only one prime contractor responds to a solicitation document, a contracting authority may award a construction contract to the responding prime contractor even if the minimum criteria in subdivision 3 are not met.

ATTACHMENT A-1

FIRST-TIER SUBCONTRACTORS LIST

SUBMIT WITH PRIME CONTRACTOR RESPONSE

PROJECT TITLE: _____

Minn. Stat. § 16C.285, Subd. 5. A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project. ...

FIRST TIER SUBCONTRACTOR NAMES (Legal name of company as registered with the Secretary of State)	**Name of city where company home office is located**

ATTACHMENT A-2

ADDITIONAL SUBCONTRACTORS LIST

PRIME CONTRACTOR TO SUBMIT AS SUBCONTRACTORS ARE ADDED TO THE PROJECT

PROJECT TITLE: _____

This form must be submitted to the Project Manager or individual as identified in the solicitation document.

Minn. Stat. § 16C.285, Subd. 5. ... If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with subdivision 3, clause (7), within 14 days of retaining the additional subcontractors. ...

ADDITIONAL SUBCONTRACTOR NAMES (Legal name of company as registered with the Secretary of State)	**Name of city where company home office is located**

ADDITIONAL SUBCONTRACTOR NAMES (Legal name of company as registered with the Secretary of State)	Name of city where company home office is located

SUPPLEMENTAL CERTIFICATION FOR ATTACHMENT A-2	
By signing this document I certify that I am an owner or officer of the company, and I swear under oath that: All additional subcontractors listed on Attachment A-2 have verified through a signed statement under oath by an owner or officer that they meet the minimum criteria to be a responsible contractor as defined in **Minn. Stat. § 16C.285.**	
Authorized Signature of Owner or Officer:	**Printed Name:**
Title:	**Date:**
Company Name:	

MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY PREVAILING WAGES FOR STATE FUNDED CONSTRUCTION PROJECTS

THIS NOTICE MUST BE POSTED ON THE JOBSITE IN A CONSPICUOUS PLACE

Construction Type: Commercial

County Number: 27

County Name: HENNEPIN

Effective: 2014-12-08 Revised: 2015-04-20

This project is covered by Minnesota prevailing wage statutes. Wage rates listed below are the minimum hourly rates to be paid on this project.

All hours worked in excess of eight (8) hours per day or forty (40) hours per week shall be paid at a rate of one and one half (1 1/2) times the basic hourly rate.

Violations should be reported to:

Department of Labor and Industry
Prevailing Wage Section
443 Lafayette Road N
St Paul, MN 55155
(651) 284-5091
DLI.PrevWage@state.mn.us

* Indicates that adjacent county rates were used for the labor class listed.

County: HENNEPIN (27)

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
LABORERS (101 - 112) (SPECIAL CRAFTS 701 - 730)					
101	LABORER, COMMON (GENERAL LABOR WORK)	2014-12-08	29.90	16.62	46.52
		2015-05-01	30.96	16.99	47.95
102	LABORER, SKILLED (ASSISTING SKILLED CRAFT JOURNEYMAN)	2014-12-08	29.90	16.62	46.52

		2015-05-01	30.96	16.99	47.95
103	LABORER, LANDSCAPING (GARDENER, SOD LAYER AND NURSERY OPERATOR)	2014-12-08	18.75	13.24	31.99
		2015-05-01	19.96	13.59	33.55
104	FLAG PERSON	2014-12-08	29.90	16.62	46.52
		2015-05-01	30.96	16.99	47.95
105	WATCH PERSON	2014-12-08	26.27	16.27	42.54
		2015-05-01	27.33	16.64	43.97
106*	BLASTER	2014-12-08	30.90	16.62	47.52
		2015-05-01	31.96	16.99	48.95
107	PIPELAYER (WATER, SEWER AND GAS)	2014-12-08	30.27	16.52	46.79
		2015-05-01	31.44	16.89	48.33
108*	TUNNEL MINER	2014-12-08	28.47	16.52	44.99
		2015-05-01	29.64	16.89	46.53
109	UNDERGROUND AND OPEN DITCH LABORER (EIGHT FEET BELOW STARTING GRADE LEVEL)	2014-12-08	28.47	16.52	44.99
		2015-05-01	29.64	16.89	46.53
110	SURVEY FIELD TECHNICIAN (OPERATE TOTAL STATION, GPS RECEIVER, LEVEL, ROD OR RANGE POLES, STEEL TAPE MEASUREMENT; MARK AND DRIVE STAKES; HAND OR POWER DIGGING FOR AND IDENTIFICATION OF MARKERS OR MONUMENTS; PERFORM AND CHECK CALCULATIONS; REVIEW AND UNDERSTAND CONSTRUCTION PLANS AND LAND SURVEY MATERIALS). THIS CLASSIFICATION DOES NOT APPLY TO THE WORK PERFORMED ON A PREVAILING WAGE PROJECT BY A LAND SURVEYOR WHO IS LICENSED PURSUANT TO MINNESOTA STATUTES, SECTIONS 326.02 TO 326.15.	2014-12-08	29.90	16.62	46.52
		2015-05-01	30.96	16.99	47.95
111	TRAFFIC CONTROL PERSON (TEMPORARY SIGNAGE)	2014-12-08	29.90	16.62	46.52

		2015-05-01	30.96	16.99	47.95

SPECIAL EQUIPMENT (201 - 204)

201	ARTICULATED HAULER	2014-12-08	34.68	16.45	51.13
		2015-05-01	35.48	17.15	52.63
202*	BOOM TRUCK	2014-12-08	19.00	0.00	19.00
203	LANDSCAPING EQUIPMENT, INCLUDES HYDRO SEEDER OR MULCHER, SOD ROLLER, FARM TRACTOR WITH ATTACHMENT SPECIFICALLY SEEDING, SODDING, OR PLANT, AND TWO-FRAMED FORKLIFT (EXCLUDING FRONT, POSIT-TRACK, AND SKID STEER LOADERS), NO EARTHWORK OR GRADING FOR ELEVATIONS	2014-12-08	18.75	13.24	31.99
		2015-05-01	19.96	13.59	33.55
204*	OFF-ROAD TRUCK	2014-12-08	34.68	16.45	51.13
		2015-05-01	35.48	17.15	52.63
205	PAVEMENT MARKING OR MARKING REMOVAL EQUIPMENT (ONE OR TWO PERSON OPERATORS); SELF-PROPELLED TRUCK OR TRAILER MOUNTED UNITS.	2014-12-08	30.45	17.64	48.09

HIGHWAY/HEAVY POWER EQUIPMENT OPERATOR

GROUP 2		2014-12-08	32.92	17.20	50.12
		2015-05-01	33.78	17.90	51.68
306	GRADER OR MOTOR PATROL				
308	TUGBOAT 100 H.P. AND OVER WHEN LICENSE REQUIRED (HIGHWAY AND HEAVY ONLY)				
GROUP 3 *		2014-12-08	24.64	5.40	30.04
309	ASPHALT BITUMINOUS STABILIZER PLANT				
310	CABLEWAY				
312					

DERRICK (GUY OR STIFFLEG)(POWER)(SKIDS OR STATIONARY) (HIGHWAY AND HEAVY ONLY)

314 DREDGE OR ENGINEERS, DREDGE (POWER) AND ENGINEER

316 LOCOMOTIVE CRANE OPERATOR

320 TANDEM SCRAPER

322 TUGBOAT 100 H.P AND OVER (HIGHWAY AND HEAVY ONLY)

GROUP 4	2014-12-08	32.07	17.20	49.27
	2015-05-01	32.93	17.90	50.83

323 AIR TRACK ROCK DRILL

324 AUTOMATIC ROAD MACHINE (CMI OR SIMILAR) (HIGHWAY AND HEAVY ONLY)

325 BACKFILLER OPERATOR

327 BITUMINOUS ROLLERS, RUBBER TIRED OR STEEL DRUMMED (EIGHT TONS AND OVER)

328 BITUMINOUS SPREADER AND FINISHING MACHINES (POWER), INCLUDING PAVERS, MACRO SURFACING AND MICRO SURFACING, OR SIMILAR TYPES (OPERATOR AND SCREED PERSON)

329 BROKK OR R.T.C. REMOTE CONTROL OR SIMILAR TYPE WITH ALL ATTACHMENTS

330 CAT CHALLENGER TRACTORS OR SIMILAR TYPES PULLING ROCK WAGONS, BULLDOZERS AND SCRAPERS

331 CHIP HARVESTER AND TREE CUTTER

332 CONCRETE DISTRIBUTOR AND SPREADER FINISHING MACHINE, LONGITUDINAL FLOAT, JOINT MACHINE, AND SPRAY MACHINE

334 CONCRETE MOBIL (HIGHWAY AND HEAVY ONLY)

335 CRUSHING PLANT (GRAVEL AND STONE) OR GRAVEL WASHING, CRUSHING AND SCREENING PLANT

336 CURB MACHINE

337 DIRECTIONAL BORING MACHINE

338 DOPE MACHINE (PIPELINE)

340 DUAL TRACTOR

341 ELEVATING GRADER

345 GPS REMOTE OPERATING OF EQUIPMENT

347 HYDRAULIC TREE PLANTER

348 LAUNCHER PERSON (TANKER PERSON OR PILOT LICENSE)

349 LOCOMOTIVE (HIGHWAY AND HEAVY ONLY)

350 MILLING, GRINDING, PLANNING, FINE GRADE, OR TRIMMER MACHINE

352 PAVEMENT BREAKER OR TAMPING MACHINE (POWER DRIVEN) MIGHTY MITE OR SIMILAR TYPE

354 PIPELINE WRAPPING, CLEANING OR BENDING MACHINE

356 POWER ACTUATED HORIZONTAL BORING MACHINE, OVER SIX INCHES

357 PUGMILL

359 RUBBER-TIRED FARM TRACTOR WITH BACKHOE INCLUDING ATTACHMENTS (HIGHWAY AND HEAVY ONLY)

360 SCRAPER

361 SELF-PROPELLED SOIL STABILIZER

362 SLIP FORM (POWER DRIVEN) (PAVING)

363 TIE TAMPER AND BALLAST MACHINE

365 TRACTOR, WHEEL TYPE, OVER 50 H.P. WITH PTO UNRELATED TO LANDSCAPING (HIGHWAY AND HEAVY ONLY)

367 TUB GRINDER, MORBARK, OR SIMILAR TYPE

GROUP 5	2014-12-08	25.15	6.23	31.38

370 BITUMINOUS ROLLER (UNDER EIGHT TONS)

371 CONCRETE SAW (MULTIPLE BLADE) (POWER OPERATED)

372 FORM TRENCH DIGGER (POWER)

375 HYDRAULIC LOG SPLITTER

376 LOADER (BARBER GREENE OR SIMILAR TYPE)

377 POST HOLE DRIVING MACHINE/POST HOLE AUGER

379 POWER ACTUATED JACK

381 SELF-PROPELLED CHIP SPREADER (FLAHERTY OR SIMILAR)

382 SHEEP FOOT COMPACTOR WITH BLADE . 200 H.P. AND OVER

383 SHOULDERING MACHINE (POWER) APSCO OR SIMILAR TYPE INCLUDING SELF-PROPELLED SAND AND CHIP SPREADER

384 STUMP CHIPPER AND TREE CHIPPER

385 TREE FARMER (MACHINE)

GROUP 6 *	2014-12-08	27.82	17.20	45.02
	2015-05-01	28.68	17.90	46.58

387 CAT, CHALLENGER, OR SIMILAR TYPE OF TRACTORS, WHEN PULLING DISK OR ROLLER

389 DREDGE DECK HAND

391 GRAVEL SCREENING PLANT (PORTABLE NOT CRUSHING OR WASHING)

393 LEVER PERSON

395 POWER SWEEPER

396 SHEEP FOOT ROLLER AND ROLLERS ON GRAVEL COMPACTION, INCLUDING VIBRATING ROLLERS

397 TRACTOR, WHEEL TYPE, OVER 50 H.P., UNRELATED TO LANDSCAPING

COMMERCIAL POWER EQUIPMENT OPERATOR

GROUP 1	2014-12-08	36.94	16.45	53.39
	2015-05-01	37.74	17.15	54.89

501 HELICOPTER PILOT (COMMERCIAL CONSTRUCTION ONLY)

502 TOWER CRANE 250 FEET AND OVER (COMMERCIAL CONSTRUCTION ONLY)

503 TRUCK CRAWLER CRANE WITH 200 FEET OF BOOM AND OVER, INCLUDING JIB (COMMERCIAL CONSTRUCTION ONLY)

GROUP 2	2014-12-08	36.60	16.45	53.05
	2015-05-01	37.40	17.15	54.55

504 CONCRETE PUMP WITH 50 METERS/164 FEET OF BOOM AND OVER (COMMERCIAL CONSTRUCTION ONLY)

505 PILE DRIVING WHEN THREE DRUMS IN USE (COMMERCIAL CONSTRUCTION ONLY)

506 TOWER CRANE 200 FEET AND OVER (COMMERCIAL CONSTRUCTION ONLY)

507 TRUCK OR CRAWLER CRANE WITH 150 FEET OF BOOM UP TO AND NOT INCLUDING 200 FEET, INCLUDING JIB (COMMERCIAL CONSTRUCTION ONLY)

GROUP 3	2014-12-08	35.19	16.45	51.64
	2015-05-01	35.99	17.15	53.14

508 ALL-TERRAIN VEHICLE CRANES (COMMERCIAL CONSTRUCTION ONLY)

509 CONCRETE PUMP 32-49 METERS/102-164 FEET (COMMERCIAL CONSTRUCTION ONLY)

510 DERRICK (GUY & STIFFLEG) (COMMERCIAL CONSTRUCTION ONLY)

511 STATIONARY TOWER CRANE UP TO 200 FEET

512 SELF-ERECTING TOWER CRANE 100 FEET AND OVER MEASURED FROM BOOM FOOT PIN (COMMERCIAL CONSTRUCTION ONLY)

513 TRAVELING TOWER CRANE (COMMERCIAL CONSTRUCTION ONLY)

514 TRUCK OR CRAWLER CRANE UP TO AND NOT INCLUDING 150 FEET OF BOOM, INCLUDING JIB (COMMERCIAL CONSTRUCTION ONLY)

GROUP 4	2014-12-08	34.85	16.45	51.30
	2015-05-01	35.65	17.15	52.80

515 CRAWLER BACKHOE INCLUDING ATTACHMENTS (COMMERCIAL CONSTRUCTION ONLY)

516 FIREPERSON, CHIEF BOILER LICENSE (COMMERCIAL CONSTRUCTION ONLY)

517 HOIST ENGINEER (THREE DRUMS OR MORE) (COMMERCIAL CONSTRUCTION ONLY)

518 LOCOMOTIVE (COMMERCIAL CONSTRUCTION ONLY)

519 OVERHEAD CRANE (INSIDE BUILDING PERIMETER) (COMMERCIAL CONSTRUCTION ONLY)

520 TRACTOR . BOOM TYPE (COMMERCIAL CONSTRUCTION ONLY)

GROUP 5	2014-12-08	34.68	16.45	51.13
	2015-05-01	35.48	17.15	52.63

521 AIR COMPRESSOR 450 CFM OR OVER (TWO OR MORE MACHINES) (COMMERCIAL CONSTRUCTION ONLY)

522 CONCRETE MIXER (COMMERCIAL CONSTRUCTION ONLY)

523 CONCRETE PUMP UP TO 31 METERS/101 FEET OF BOOM

524 DRILL RIGS, HEAVY ROTARY OR CHURN OR CABLE DRILL WHEN USED FOR CAISSON FOR ELEVATOR OR BUILDING CONSTRUCTION (COMMERCIAL CONSTRUCTION ONLY)

525 FORKLIFT (COMMERCIAL CONSTRUCTION ONLY)

526 FRONT END, SKID STEER 1 C YD AND OVER

527 HOIST ENGINEER (ONE OR TWO DRUMS) (COMMERCIAL CONSTRUCTION ONLY)

528 MECHANIC-WELDER (ON POWER EQUIPMENT) (COMMERCIAL CONSTRUCTION ONLY)

529 POWER PLANT (100 KW AND OVER OR MULTIPLES EQUAL TO 100KW AND OVER) (COMMERCIAL CONSTRUCTION ONLY)

530 PUMP OPERATOR AND/OR CONVEYOR (TWO OR MORE MACHINES) (COMMERCIAL CONSTRUCTION ONLY)

531 SELF-ERECTING TOWER CRANE UNDER 100 FEET MEASURED FROM BOOM FOOT PIN (COMMERCIAL CONSTRUCTION ONLY)

532 STRADDLE CARRIER (COMMERCIAL CONSTRUCTION ONLY)

533 TRACTOR OVER D2 (COMMERCIAL CONSTRUCTION ONLY)

534 WELL POINT PUMP (COMMERCIAL CONSTRUCTION ONLY)

GROUP 6	2014-12-08	33.17	16.45	49.62
	2015-05-01	33.97	17.15	51.12

535 CONCRETE BATCH PLANT (COMMERCIAL CONSTRUCTION ONLY)

536 FIREPERSON, FIRST CLASS BOILER LICENSE (COMMERCIAL CONSTRUCTION ONLY)

537 FRONT END, SKID STEER UP TO 1 C YD

538 GUNITE MACHINE (COMMERCIAL CONSTRUCTION ONLY)

539 TRACTOR OPERATOR D2 OR SIMILAR SIZE (COMMERCIAL CONSTRUCTION ONLY)

540 TRENCHING MACHINE (SEWER, WATER, GAS) EXCLUDES WALK BEHIND TRENCHER

GROUP 7	2014-12-08	32.05	16.45	48.50
	2015-05-01	32.85	17.15	50.00

541 AIR COMPRESSOR 600 CFM OR OVER (COMMERCIAL CONSTRUCTION ONLY)

542 BRAKEPERSON (COMMERCIAL CONSTRUCTION ONLY)

543 CONCRETE PUMP/PUMPCRETE OR COMPLACO TYPE (COMMERCIAL CONSTRUCTION ONLY)

544 FIREPERSON, TEMPORARY HEAT SECOND CLASS BOILER LICENSE (COMMERCIAL CONSTRUCTION ONLY)

545 OILER (POWER SHOVEL, CRANE, TRUCK CRANE, DRAGLINE, CRUSHERS AND MILLING MACHINES, OR OTHER SIMILAR POWER EQUIPMENT) (COMMERCIAL CONSTRUCTION ONLY)

546 PICK UP SWEEPER (ONE CUBIC YARD HOPPER CAPACITY) (COMMERCIAL CONSTRUCTION ONLY)

547 PUMP AND/OR CONVEYOR (COMMERCIAL CONSTRUCTION ONLY)

GROUP 8	2014-12-08	30.04	16.45	46.49
	2015-05-01	30.84	17.15	47.99

548 ELEVATOR OPERATOR (COMMERCIAL CONSTRUCTION ONLY)

549 GREASER (COMMERCIAL CONSTRUCTION ONLY)

550 MECHANICAL SPACE HEATER (TEMPORARY HEAT NO BOILER LICENSE REQUIRED) (COMMERCIAL CONSTRUCTION ONLY)

TRUCK DRIVERS

GROUP 1 *	2014-12-08	28.10	14.80	42.90
	2015-05-01	29.50	14.80	44.30

601 MECHANIC . WELDER

602 TRACTOR TRAILER DRIVER

603 TRUCK DRIVER (HAULING MACHINERY INCLUDING OPERATION OF HAND AND POWER OPERATED WINCHES)

GROUP 2	2014-12-08	17.00	6.23	23.23

604 FOUR OR MORE AXLE UNIT, STRAIGHT BODY TRUCK

GROUP 3	2014-12-08	23.75	6.23	29.98

605 BITUMINOUS DISTRIBUTOR DRIVER

606 BITUMINOUS DISTRIBUTOR (ONE PERSON OPERATION)

607 THREE AXLE UNITS

GROUP 4	2014-12-08	35.82	8.18	44.00

608 BITUMINOUS DISTRIBUTOR SPRAY OPERATOR (REAR AND OILER)

609 DUMP PERSON

610 GREASER

611 PILOT CAR DRIVER

612 RUBBER-TIRED, SELF-PROPELLED PACKER UNDER 8 TONS

613 TWO AXLE UNIT

614 SLURRY OPERATOR

615 TANK TRUCK HELPER (GAS, OIL, ROAD OIL, AND WATER)

616 TRACTOR OPERATOR, UNDER 50 H.P.

SPECIAL CRAFTS

701	HEATING AND FROST INSULATORS	2014-12-08	41.31	19.84	61.15
702*	BOILERMAKERS	2014-12-08	32.70	26.42	59.12
		2015-01-01	34.10	26.42	60.52
703	BRICKLAYERS	2014-12-08	32.80	19.73	52.53
704	CARPENTERS	2014-12-08	34.11	17.27	51.38
		2015-05-01	35.56	17.27	52.83
705	CARPET LAYERS (LINOLEUM)	2014-12-08	35.72	14.06	49.78
		2015-05-01	37.17	14.06	51.23
706	CEMENT MASONS	2014-12-08	34.13	16.85	50.98
		2015-05-01	35.43	16.85	52.28
707	ELECTRICIANS	2014-12-08	36.53	26.08	62.61
708	ELEVATOR CONSTRUCTORS	2014-12-08	44.21	31.69	75.90
		2015-01-01	44.93	33.66	78.59
709	GLAZIERS	2014-12-08	36.71	15.67	52.38
		2015-06-01	38.26	15.67	53.93
710	LATHERS	2014-12-08	35.36	16.04	51.40
		2015-05-01	36.81	16.04	52.85

712	IRONWORKERS	2014-12-08	34.55	22.85	57.40
		2015-05-01	36.05	22.85	58.90
714	MILLWRIGHT	2014-12-08	32.95	19.83	52.78
		2015-05-01	34.35	19.83	54.18
715	PAINTERS (INCLUDING HAND BRUSHED, HAND SPRAYED, AND THE TAPING OF PAVEMENT MARKINGS)	2014-12-08	32.88	18.56	51.44
		2015-05-01	34.13	18.56	52.69
716	PILEDRIVER (INCLUDING VIBRATORY DRIVER OR EXTRACTOR FOR PILING AND SHEETING OPERATIONS)	2014-12-08	34.79	17.28	52.07
		2015-05-01	36.35	17.28	53.63
717	PIPEFITTERS . STEAMFITTERS	2014-12-08	41.25	24.04	65.29
		2015-05-01	42.70	25.27	67.97
718	PLASTERERS	2014-12-08	35.34	15.87	51.21
		2015-06-01	36.74	15.87	52.61
719	PLUMBERS	2014-12-08	41.71	20.24	61.95
720	ROOFER	2014-12-08	35.06	14.96	50.02
		2015-05-01	36.06	14.96	51.02
721	SHEET METAL WORKERS	2014-12-08	40.00	22.48	62.48
		2015-05-01	41.70	22.48	64.18
722	SPRINKLER FITTERS	2014-12-08	40.18	22.05	62.23
		2015-01-01	40.03	22.20	62.23
723	TERRAZZO WORKERS	2014-12-08	30.44	18.77	49.21
724	TILE SETTERS	2014-12-08	28.28	20.61	48.89

725	TILE FINISHERS	2014-12-08	23.85	16.30	40.15
726	DRYWALL TAPER	2014-12-08	30.46	19.83	50.29
		2015-05-01	31.31	19.83	51.14
727	WIRING SYSTEM TECHNICIAN	2014-12-08	35.24	14.03	49.27
728	WIRING SYSTEMS INSTALLER	2014-12-08	24.67	11.78	36.45
729	ASBESTOS ABATEMENT WORKER	2014-12-08	28.12	15.59	43.71
		2015-01-01	29.13	15.96	45.09
730	SIGN ERECTOR	2014-12-08	26.34	11.28	37.62
		2015-05-01	27.44	11.28	38.72

SECTION 01 10 00

SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Contractor’s supervision of the project.
4. Subcontractors.
5. Access to site.
6. Coordination with occupants.
7. Maintaining services and functions.
8. Work restrictions.
9. Specification and drawing conventions.

B. Related Requirements:

1. Section 01 50 00 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: Municipal Building Clock Restoration.

1. Project Location: 350 S 5th Street, Minneapolis, Minnesota.

B. Owner: Municipal Building Commission.

1. Owner's Representative: Royce Wiens, AIA; Municipal Building Commission, Suite 201; Minneapolis City Hall / Hennepin County Courthouse, 350 S 5th Street, Minneapolis, MN 55415; Phone: 612-596-9522; Cell: 612-328-5806; Royce.Wiens@municipalbuilding.org.

C. Architect: MacDonald & Mack Architects, Ltd., 400 South Fourth Street, Suite 712, Minneapolis, MN 55415

1. Contact: Angela Wolf Scot: 612-341-4051; angelaws@mmarchltd.com.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents.

1. Restoration of the Municipal Building Clock includes, but is not limited to, the following:
   a. Replacement of clock face material.
   b. Replacement of face framing members.
   c. Lighting and related supports.

B. Sensitivity to Historic Structures (See Section 01 35 91 for additional requirements):
1. The Minneapolis Municipal Building is listed on the National Register of Historic Places. Many areas of the building are historically sensitive, including those affected by the work of this project. Visible surfaces in those areas are to be treated with the utmost care. Sensitive areas include, but are not limited to:
   a. Main Building Lobby (Ground Floor)
   b. Main Building Stair
   c. Clock Room and adjacent stairs
2. Prior to beginning work Contractor shall:
   a. Survey the building with the Owner's Representative to review sensitive areas and discuss treatment of related finish materials.
   b. Provide a written description of procedures to be followed to ensure sensitive finishes are not damaged unnecessarily during the course of the work.
3. Following is a list of suggested procedures for working in sensitive areas. List is not intended to be all-inclusive and is for reference only.
   a. Drill test holes in out-of–the-way areas to determine substrates and ascertain ability to penetrate sensitive areas without undue damage.
   b. Limit size of penetrations to minimal required. Do not oversize penetrations for convenience.
   c. Protect adjacent materials from damage of demolition or construction activities for duration of project. Include path of travel of workmen and materials.
4. Historic items, relics, and similar objects including, but not limited to, neon lighting/signage and other items of interest or value to Owner that may be encountered during removal and dismantling work remain Owner's property. Carefully dismantle and salvage each item or object so as not to cause damage.
   a. Coordinate with Owner's Representative for storage location for salvaged items.

C. Scope Of Work

1. Work to be performed under this Contract shall be shown on the Drawings, defined in the Technical Sections of the Project Manual, and governed by the requirements stipulated in Division 0 and Division 1 as listed in the Table of Contents, and any addenda subsequently issued prior to the time of opening of the bids. It is the bidder's sole responsibility to verify that they have received all sheets of Drawings and Specifications. No claim of additional compensation will be allowed due to lack of complete information at time of bid.
2. Bid proposals are to be received under a single Base Bid and any Alternate Proposals which may be identified on the official Bid Forms issued by the Owner's Purchasing Agents. The Owner has the right to award Base Bid and any or all Alternates to the Base Bid proposals in any order deemed acceptable by the Owner, to the bona-fide low bidder of the aggregate award.

1.5 CONTRACTOR'S SUPERVISION OF THE PROJECT

A. Provide Project supervision per Paragraph 3.9 of Section 00 72 13 - General Conditions.

1.6 SUBCONTRACTORS

A. The Contractor shall not award any work to any Subcontractor without prior approval of the Owner and Architect. Approval will not be given until the Contractor submits the List of Subcontractors containing such information as the Owner and Architect may require concerning the proposed Subcontractor and the scope of the subcontract. (Refer to Section 01 33 00- Submittal Procedures.)

1.7 ACCESS TO SITE

A. General: Contractor shall coordinate access to and use of Project site (12th floor and portions of the building exterior as required for access to the various clock faces) for construction operations during construction period with Owner's Representative. Contractor's use of Project site may be limited by Owner's use of adjacent or affected portions of the building.

B. Use of Site: Contractor’s operations and storage of materials and equipment shall be organized and secured to minimize establishment of an attractive nuisance and to prevent vandalism. Contractor will assume responsibility for protection of the work and stored or stockpiled equipment and material.

C. Designate and maintain, in coordination with the Owner, areas where material is to be stored and equipment set up. Insure that infringement on adjacent spaces is avoided during progress of the work and that damage occurring to adjacent spaces shall be corrected immediately at no additional cost to the Owner. Contractor shall confine the operations within the Municipal Building property. Damage to adjacent property, public or private, shall be corrected to the satisfaction of the injured party at no additional cost to the Owner. It will be the responsibility of the Contractor to restore this area to the original condition after the construction work is complete.

1.8 COORDINATION WITH OCCUPANTS

A. Owner Occupancy: Owner will occupy existing adjacent building areas during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.9 MAINTAINING SERVICES AND FUNCTIONS

A. It is essential that full Owner's services and functions are maintained throughout the construction period, with the minimum disturbance and disruption to the Owner's operations. The Contractor and Subcontractors shall be aware of these requirements and objectives. The Contractor shall conduct the work and develop his detailed schedule to meet these requirements and objectives.

B. After Owner's occupancy (full or partial) of the Project or any unit, stage, phase or area, any work remaining to be accomplished in the occupied spaces shall be done in cooperation with, and approval by, the Owner and scheduled in advance with the Owner. In general, work in occupied spaces shall be done when the space is not in use, such as after hours in administrative areas or public spaces when public use hours are over for the day, unless specifically approved by the Owner. Where necessary, overtime shall be used if the work cannot reasonably be accomplished during normal work periods, at no extra cost to the Owner. Work in occupied areas shall be performed in a manner and at such time as will not significantly interfere with, hamper or inconvenience Owner's program or functions.

1.10 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 6:00 a.m. to 6:00 p.m., Monday through Friday, unless otherwise indicated.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than two days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor-air intakes.

F. Controlled Substances: Use of tobacco products and other controlled substances within the existing building is not permitted.

1.11 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: One-Quarter Clock Face Mock Up

1. Base Bid: No One-Quarter Clock Face Mock Up

2. Alternate: Contractor to provide and assemble a clock face mock up with extents as described on Sheet G1. The Contractor will erect the clock face mock up at a testing facility of the Owner's choosing that is within 30 miles of the project site. At the contractor's option, the mockup may be erected at the contractor's facility within 30 miles of the project site and transported to and from the laboratory. In either case, the Owner and its designated representatives shall have access to observe the erection, assembly and testing of the mock up. The reusable components of the mock up may be reused as attic stock. The mockup testing and approvals include:
   a. Air and water infiltration and structural testing as specified in 08 44 00 "Glazed Assemblies"
   b. Workmanship mockup as specified in 05 72 50 "Cast Aluminum"
   c. This mock may also be used for the Lighting Mock up as specified on Sheet E001

B. Alternate No. 2: Polychrome Clock Face Frame (Cast Aluminum Members)

1. Base Bid: Contractor to paint the clock face frames (cast aluminum members) in a single color as shown in 7/A101 and specified in 099600 "High Performance Coatings".

2. Alternate: Contractor to paint the clock face frames (cast aluminum members) in three colors as shown in 8/A101 and specified in 099600 "High Performance Coatings".

END OF SECTION 012300

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Requests for Information (RFIs).
2. Project meetings.

B. Related Requirements:

1. Section 01 32 00 “Construction Progress Documentation” for Project Schedule requirements.
2. Section 01 73 00 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Section 01 73 00 "Execution" for procedures for project cleaning.
4. Section 01 74 19 “Construction Waste Management” for conservation and salvage requirements.

1.3 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.5 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Architect.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.

13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

C. RFI Forms: AIA Document G716 or Contractor's standard form as pre-approved by Architect.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for coordination information already indicated in the Contract Documents.
d. Requests for adjustments in the Contract Time or the Contract Sum.
e. Requests for interpretation of Architect's actions on submittals.
f. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly.

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were dropped and not submitted.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.6 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Tentative construction schedule.
    b. Phasing.
    c. Critical work sequencing and long-lead items.
    d. Designation of key personnel and their duties.
    e. Procedures for processing field decisions and Change Orders.
    f. Procedures for RFIs.
    g. Procedures for testing and inspecting.
    h. Procedures for processing Applications for Payment.
    i. Distribution of the Contract Documents.
    j. Submittal procedures.
    k. Preparation of record documents.
    l. Use of the premises and existing building.
    m. Work restrictions.
    n. Working hours.
    o. Owner's occupancy requirements.
    p. Responsibility for temporary facilities and controls.
    q. Procedures for disruptions and shutdowns.
    r. Construction waste management and recycling.
    s. Parking availability.
    t. Office, work, and storage areas.
    u. Equipment deliveries and priorities.
    v. First aid.
    w. Security.
    x. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

    a. Contract Documents.
    b. Options.
    c. Related RFIs.
    d. Related Change Orders.
    e. Purchases.
    f. Deliveries.
    g. Submittals.
    h. Review of mockups where required.
    i. Possible conflicts.
    j. Compatibility problems.
    k. Time schedules.
    l. Manufacturer's written instructions.
    m. Warranty requirements.
    n. Compatibility of materials.
    o. Acceptability of substrates.
    p. Temporary facilities and controls.
    q. Space and access limitations.
    r. Regulations of authorities having jurisdiction.
    s. Testing and inspecting requirements.
    t. Installation procedures.
    u. Coordination with other work.
    v. Required performance results.
    w. Protection of adjacent work.
    x. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at weekly intervals.

1. Contractor shall prepare and distribute the agenda for the meeting, shall record the "minutes" of the meeting, shall distribute the "minutes" as appropriate and shall include such minutes within the Project records.
2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

   a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

      1) Review schedule for next period.

   b. Review present and future needs of each entity present, including the following:

      1) Interface requirements.
      2) Sequence of operations.
      3) Deliveries.
      4) Off-site fabrication.
      5) Access.
      6) Site utilization.
      7) Temporary facilities and controls.
      8) Progress cleaning.
      9) Quality and work standards.
      10) Status of correction of deficient items.
      11) Field observations.
      12) Status of RFIs.
      13) Status of proposal requests.
      14) Pending changes.
      15) Status of Change Orders.
      16) Pending claims and disputes.
      17) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

   a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 General Installation Provisions

A. Installer’s Inspection of Conditions: Require Installer of each major unit of work to inspect substrate to review work, and conditions under which work will be performed, and to report (in writing to Contractor) unsatisfactory conditions. Do not proceed with work until unsatisfactory

conditions have been corrected in a manner acceptable to Installer. Beginning of the installation of a product or system indicated acceptance of the substrate and indicates acceptance of the responsibility for the performance of the product or system installed.

B. Manufacturer's Instructions: Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation, to the extent that these are more explicit or more stringent than the requirements indicated in the Contract Documents.

C. Inspect each item of materials or equipment immediately prior to installation, and reject damaged or defective items.

D. Provide attachment and connection devices and methods for securing work properly as it is installed; true to line and level, and within industry tolerance if not otherwise indicated. Allow for expansions and building movements.

E. Recheck measurements and dimensions of the work as an integral step of starting each installation.

F. Install work during conditions of temperature, humidity, exposure, forecaster weather, and status of project completion which will ensure the best possible results for each unit of work, in coordination with entire work. Isolate each unit of work from non-compatible work, as required to prevent deterioration.

G. Mounting Heights: Where mounting heights are not indicated, clarify with Architect. Comply with American with Disabilities Act requirements where applicable.

END OF SECTION 01 31 00

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's construction schedule.
2. Construction schedule updating reports.
3. Site condition reports.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.
2. PDF electronic file.

B. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

D. Construction Schedule Updating Reports: Submit with Applications for Payment.

E. Daily Construction Reports: Submit at weekly intervals.

F. Site Condition Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

A. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

    a. Cast aluminum clock frame members

    b. Glazing

3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
   1. Work Restrictions: Show the effect of the following items on the schedule:
      a. Coordination with existing construction.
      b. Limitations of continued occupancies.
      c. Uninterruptible services.
      d. Use of premises restrictions.
      e. Seasonal variations.
      f. Environmental control.
   2. Work Stages: Indicate important stages of construction for each major portion of the Work.

D. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
   1. Unresolved issues.
   2. Unanswered Requests for Information.
   3. Rejected or unreturned submittals.
   4. Notations on returned submittals.
   5. Pending modifications affecting the Work and Contract Time.

E. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule.

F. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
   1. Use Microsoft Project for current Windows operating system.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
   1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.3 REPORTS

A. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect**,** Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Preconstruction laser scan.
3. Periodic construction photographs.

B. Related Requirements:

1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.

1.2 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph or video recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

B. Digital Photographs: Submit unaltered, original, full-size image files within five days of taking photographs.

1. Digital Camera: Minimum sensor resolution of 8 megapixels.
2. Identification: Provide the following information with each image description in file metadata tag:

a. Name of Project.
b. Name and contact information for photographer.
c. Date photograph was taken.
d. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

C. Laser Scan: Submit a pre-construction laser scan as a single point cloud file compatible with Autodesk Recap, that contains color, and is accurate to a 2mm spacing between points, minimum.

1.3 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.1 DIGITAL MEDIA

A. Digital Images: Provide images in JPG format, with minimum size of 8 megapixels.

B. Laser scan: Provide laser scan as a single, compiled point cloud file compatible with Autodesk Recap. The scan must contain color and be accurate to a 2mm spacing between points, minimum.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS AND SCAN

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in file name for each image.
2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.

C. Preconstruction Photographs: Before commencement of construction activities, take photographs of Project site and surrounding area, including existing items to remain during construction, from different vantage points, as directed by Architect.
1. Take at least 20 photographs to show existing conditions adjacent to work area before starting the Work to accurately record physical conditions at start of construction

D. Preconstruction Laser Scan: Before commencement of construction activities, laser scan the interior and exterior of all four clock faces and the interior of the clock room. Provide laser scan as a single, compiled point cloud file compatible with Autodesk Recap. The scan must contain color and be accurate to a 2mm spacing between points, minimum.
1. Laser scan must be completed and compiled by a technician(s) having successfully completed three scans of equivalent complexity in the last two years.

E. Periodic Construction Photographs: Take at least 20 photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

F. Final Completion Construction Photographs: Take at least 20 photographs after date of Substantial Completion for submission as Project Record Documents.

G. Additional Photographs: Architect may request photographs in addition to periodic photographs specified.

1. Three days' notice will be given, where feasible.
2. In emergency situations, take additional photographs within 24 hours of request.
3. Circumstances that could require additional photographs include, but are not limited to, the following:
    a. Immediate follow-up when on-site events result in construction damage or losses.
    b. Photographs to be taken at fabrication locations away from Project site.
    c. Substantial Completion of a major phase or component of the Work.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
2. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
3. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic copies of digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.

a. Architect makes no representations as to the accuracy or completeness of digital data drawing files. All dimensions, conditions, and relationships shown in the drawings must be verified by the contractor.
b. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.

D. Paper Submittals: Paper Submittals preferred for all submittal documents larger than 11” x 17”. Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information for processing and recording action taken:

a. Project name.
b. Date.
c. Name of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Name of subcontractor.
g. Name of supplier.
h. Name of manufacturer.
i. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals

shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

j. Number and title of appropriate Specification Section.
k. Drawing number and detail references, as appropriate.
l. Location(s) where product is to be installed, as appropriate.
m. Other necessary identification.

4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return without review or discard submittals received from sources other than Contractor.
   a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:

      1) Project name.
      2) Date.
      3) Destination (To:).
      4) Source (From:).
      5) Name and address of Architect.
      6) Name of Contractor.
      7) Name of firm or entity that prepared submittal.
      8) Names of subcontractor, manufacturer, and supplier.
      9) Category and type of submittal.
      10) Submittal purpose and description.
      11) Specification Section number and title.
      12) Specification paragraph number or drawing designation and generic name for each of multiple items.
      13) Drawing number and detail references, as appropriate.
      14) Indication of full or partial submittal.
      15) Transmittal number.
      16) Submittal and transmittal distribution record.
      17) Remarks.
      18) Signature of transmitter.

E. Electronic Submittals: Electronic submittals preferred for all submittal documents 11” x 17” and smaller. Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.

a. File name shall use a rational system that includes project identifier and Specification Section.

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
4. Transmittal Form for Electronic Submittals: Use electronic form containing the following information:

a. Project name.
b. Date.
c. Name and address of Architect.
d. Name of Contractor.
e. Name of firm or entity that prepared submittal.
f. Names of subcontractor, manufacturer, and supplier.
g. Category and type of submittal.
h. Submittal purpose and description.
i. Specification Section number and title.
j. Specification paragraph number or drawing designation and generic name for each of multiple items.
k. Drawing number and detail references, as appropriate.
l. Location(s) where product is to be installed, as appropriate.
m. Related physical samples submitted directly.
n. Indication of full or partial submittal.
o. Transmittal number.
p. Submittal and transmittal distribution record.
q. Other necessary identification.
r. Remarks.

F. Options: Identify options requiring selection by Architect.

G. Deviations: Identify deviations from the Contract Documents on submittals.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:

1. Post electronic submittals as PDF electronic files directly to Architect's FTP site specifically established for Project.

    a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Action Submittals: Submit three paper copies (when paper copies are required) of each submittal unless otherwise indicated. Architect will return two copies.
3. Informational Submittals: Submit two paper copies (when paper copies are required) of each submittal unless otherwise indicated. Architect will not return copies.
4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

    a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
    b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.

d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:

a. PDF electronic file.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Identification of products.
b. Schedules.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
3. Submit Shop Drawings in the following format:

a. PDF electronic file for sheets 11” x 17” and smaller.
b. Three opaque (bond) copies of each submittal for sheets larger than 11” x 17”. Architect will retain two copies.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of applicable Specification Section.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned.

1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Submit product schedule in the following format:

a. PDF electronic file.

F. Coordination Drawings Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."

G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 007300 “Supplementary Conditions”.

I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."

J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."

K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

R. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

T. Schedule of Tests and Inspections: Comply with requirements specified in Section 014000 "Quality Requirements."

U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

W. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

X. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action**.**

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 01 35 00

HEALTH AND SAFETY REQUIREMENTS

PART 1: GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.2 GENERAL REQUIREMENTS

A. The Contractor must have a Competent Person, as defined by OSHA standards, associated with this work site. That person must be able to identify work place hazards and have the authority to correct those hazards.

B. General housekeeping is required of the Contractor. The work site must be kept free of trip and fall hazards. Loose debris must be collected as it is generated. Floors must be kept as free as practical of debris.

C. Inspection of PPE is the responsibility of the Contractor. Inspection records should be provided to the MBC as part of the project closeout.

D. Electrical cords must be kept off the floor, or must be secured to the floor to prevent trip hazards and cuts. Damaged electrical cords must be replaced and removed from the site when they are identified.

E. Occupational exposure sampling or assessment, if required, must be provided by the Contractor as part of their base price for the work described.

F. While the Competent Person must evaluate any potential employee hazard under OSHA, potential program areas likely to be encountered during this project include:

1. Respiratory Protection
2. Silica Exposure
3. Total and Respirable Nuisance Dust
4. Noise
5. Electrical Cords
6. Ladders/Scaffold
7. Fall Protection
8. Confined Space
9. Health issues related to extreme climate exposure (Heat exhaustion, Frost bite, etc)

G. Disposal of waste materials generated at the site is the responsibility of the Contractor. Waste characterization testing, if required, must be performed by the Contractor. If wastes are determined to be hazardous, communication and documentation must occur with the MBC

Project Manager. Every effort should be made to minimize all waste material, but particularly attention should be paid to minimizing hazardous waste.

H. Proper storage and labeling of chemicals and waste must be provided by the Contractor.

I. The Contractor must develop a Site Specific Safety Plan. This plan must be provided to MBC for review and comment prior to the start of work. Any delay in starting work resulting from deficiencies in the Plan or delay in getting the plan to the MBC will not result in additional work days at the site.

1. In general, the plan must address the following:

a. **Personnel Affected:** Describe personnel and Contractors that must access the affected project areas in the Clock Tower at the Minneapolis City Hall-Courthouse Building.

b. **Hazard Communication:** Provide a list of products/chemicals that will be used at the site and MSDS/SDS for each of those products.

c. **Waste Documentation:** Provide methods of documentation of waste disposal for each waste stream developed at the work site.

d. **Communication Plan:** Provide affected personnel with a method of communication with building security personnel during their time in the Clock Tower area using a non-traditional pathway to access the space, and to identify basic safety protocols and emergency procedures for all personnel.

e. **Regulatory Compliance:** Contractors and Subcontractors must follow all Local, State, and Federal Regulations.

f. **Access:** Describe the methods of building access, including material delivery from the exterior of the building. Describe emergency evacuation methods**.**

g. **Changes in personnel:** Contractor changes in personnel that will be accessing the attic must be communicated to MBC Building Security Personnel.

h. **Emergency Procedures:** Describe the procedures to be followed in the event of an emergency. At a minimum, the Contractor must contact MBC Building Security. Details of the emergency should be communicated so that the appropriate response can be mobilized. Note that MBC Building Security is not a First Responder Unit. The Contractor must describe how emergency services will be provided to the work site.

i. **OSHA Program Implementation:** The Contractor must provide detailed program descriptions for each OSHA program that the Competent Person determines is applicable to the work site. Documentation of training and certification, if required, must be provided to the MBC Project Manager prior to the start of project work.

1.3 HAZARD COMMUNICATION

A. The Contractor shall inform the MBC of all chemicals that are used as part of their work. Safety Data Sheets or Material Safety Data Sheets shall be at the work site for all chemicals or products used in the execution of the work.

B. A copy of the Safety Data Sheets or Material Safety Data Sheets must be provided to the MBC prior to the start of work.

C. The MBC will notify the Contractor of any known or suspected chemicals or hazard conditions that exist in the work space.

D. The Contractor and their subcontractors acknowledge that their work includes inherent risks and that it is not the responsibility of the MBC to remove or abate known or unforeseen site conditions encountered.

1.4 MBC HOT WORK RULES

A. The Contractor and all their subcontractors shall abide by Municipal Building Commission (MBC) Rules for work affecting the Fire Alarm System. Costs associated with false alarm response by the Minneapolis Fire Department due to Contractor activities may be charged to the Contractor by the MBC.

B. A Hot Works Permit is required for any temporary operation producing dust, smoke, a flame, sparks or heat. This includes grinding, drilling, brazing, cutting, soldering, pipe thawing, and welding.

1. If there is a practical and safe way to do the job without hot work, the Contractor shall use that method.

2. No hot work is permitted without authorization from the MBC Project Manager in the form of a signed Permit. This permit will be valid for the time approved. Permits must be obtained from the MBC Project Manager on a daily basis.

3. Specific firefighting equipment and protection material will be required at the work site before any work can be started. The contractor will provide all of these materials. This should be discussed with the MBC Project Manager when requesting the permit.

4. No hot work is permitted without a designated fire watch present. The Contractor will be required to provide a fire watch designee. This designee will have total control over the hot work area for fire prevention. However, should MBC staff observe unsafe conditions, the hot work operation will be stopped until the hazard is neutralized or eliminated.

5. Fire watch must occur for at least one (1) hour beyond the end of hot work or spark producing activities.

6. The Contractor will verify that all hot work equipment is in proper working order and in a fire-safe condition. The Contractor is responsible for the safe and operable equipment. Any unsafe equipment observed by MBC staff will be required to be removed from the property.

7. Any contractor-owned equipment or material to be stored in the facility overnight must be properly secured in an area designated by the MBC Project Manager.

1.5 FALL PROTECTION

A. The Contractor's Competent Person shall evaluate the need for, and as necessary, implement procedures for Fall Protection as outlined in 29 CFR 1926, Subpart L, Scaffolding; 29 CFR 1926, Subpart M, Fall Protection, and; 29 CFR 1926, Subpart X, Ladders.

B. If the Competent Person determines that applicability exists within the designated construction zone, including access to the zone or bring materials into the zone from the exterior of the building, the Contractor shall prepare a written plan that outlines procedures, personnel training, personnel protective equipment (PPE), and emergency response procedures for their work-related activities.

C. The Contractor shall ensure that this plan is understood by all personnel under their employ and those of their subcontractor/s. Documentation of current Fall Protection Training (within the last 12 months) must be provided to the MBC as an attachment to the written plan.

D. The MBC must be provided with a copy of the written plan and will perform periodic review of the work site to determine compliance with the written plan. Any deviations from the plan observed will result in an immediate halt to work activities until the deficiency has been corrected.

E. The Contractor shall provide all necessary PPE, included Full Body Harnesses, for all work performed six feet above the ground. Personnel shall be outfitted with the full body harnesses with fall arrest equipment. Harnesses must be worn at all times and by all personnel that work six feet above the ground. Handrails, guardrails, and other physical barriers may be used to prevent falls at the perimeter areas.

F. If existing structural elements of the Minneapolis City Hall-Courthouse are to be used for the connection of Fall Protection equipment, the Contractor must provide a written acknowledgement from a Minnesota Registered Professional Engineer (Structural) that the proposed tie-off points are suitable for the proposed use. This acknowledgement must be provided to the MBC prior to the use of any structural elements in the building.

G. Installation of handrails, toe boards, and other safety equipment related to the use of ladders, scaffold, and fall protection must be installed and maintained by the Contractor for the duration of the work.

1.6 CONFINED SPACE ENTRY AND RESCUE

A. The Contractor's competent person shall evaluate the need for, and as necessary, implement procedures related to Confined Space Entry and Rescue found at 29 CFR 1910.146.

B. In the Contractor's Competent Person determines that a space is not a confined space, written documentation must be developed by the Contractor for delivery to the MBC prior to the start of work.

C. If the Competent Person determines that applicability exists within the designated construction zone, including access to the zone or bring materials into the zone from the exterior of the building, the Contractor shall prepare a written plan that outlines procedures, personnel training, personnel protective equipment (PPE), and emergency response procedures for their work-related activities.

D. The Contractor shall ensure that this plan is understood by all personnel under their employ and those of their subcontractor/s. Documentation of current Confined Space Training (within the last 12 months) must be provided to the MBC as an attachment to the written plan.

E. The MBC must be provided with a copy of the written plan and will perform periodic review of the work site to determine compliance with the written plan. Any deviations from the plan observed will result in an immediate halt to work activities until the deficiency has been corrected.

F. Depending on the determination of the Contractor's Competent Person, the Contractor shall provide all necessary PPE, include Gas Detection monitors, Alarm and Communication Tools, full body harness, rescue equipment, fans, Confined Space Permits, and trained personnel to meet the responsibilities outlined in the OSHA Standard.

PART 2 – PRODUCTS - Not Used

PART 3 – EXECUTION - Not Used

END OF SECTION 01 35 00

SECTION 01 35 91

HISTORIC TREATMENT PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.02 SUMMARY

A. Section includes general protection and treatment procedures for designated historic spaces, areas, rooms, and surfaces in the Project and the following specific work:

1. Selective removals.
2. Historic finishes and elements including masonry, wood trim, stone, and clock faces, mechanisms, and related.
3. Historic treatment procedures.

B. Related Sections include the following:

1. Division 01 Section "Photographic Documentation" for preconstruction photographs taken before historic treatment.
2. Division 01 Section “Cutting and Patching”.

1.03 DEFINITIONS

A. "Preservation": To apply measures necessary to sustain the existing form, integrity, and materials of a historic property. Work may include preliminary measures to protect and stabilize the property.

B. "Rehabilitation": To make possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.

C. "Restoration": To accurately depict the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and the reconstruction of missing features from the restoration period.

D. "Stabilize": To apply measures designed to reestablish a weather-resistant enclosure and the structural reinforcement of an item or portion of the building while maintaining the essential form as it exists at present.

E. "Protect and Maintain": To remove deteriorating corrosion, reapply protective coatings, and install protective measures such as temporary guards; to provide the least degree of intervention.

F. "Repair": To stabilize, consolidate, or conserve; to retain existing materials and features while employing as little new material as possible. Repair includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials. Within restoration, repair also includes limited replacement in kind, rehabilitation, and reconstruction, with compatible substitute materials for deteriorated or missing parts of features when there are surviving prototypes.

G. "Remove": To detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

H. "Remove and Salvage": To detach items from existing construction and deliver them to Owner.

I. "Remove and Reinstall": To detach items from existing construction, repair and clean them for reuse, and reinstall them where indicated.

J. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by the Architect.

K. "Material in Kind": Material that matches existing materials, as much as possible, in species, cut, color, grain, and finish.

L. Historic: Spaces, areas, rooms, surfaces, materials, finishes, and overall appearance which are important to the successful rehabilitation as determined by the Architect. Designated historic areas and surfaces are generally described as follows:

1. Level 1 – Preservation Zone: Areas of greatest architectural importance, integrity, and visibility; to be maintained and preserved as the highest priority. Utilize care when installing new elements that must be incorporated into these spaces.
2. Level 2 – Preservation Zone: Areas of significant architectural importance, integrity, and visibility; to be maintained and preserved consistent with the remaining historic fabric.
3. Level 3 – Rehabilitation Zone: Areas which are less ornate void of highly significant features, materials or conditions, but which may retain spatial or material integrity that might be maintained.
4. Level 4 – Free Zone: Areas that do not include significant materials or features or where previous alterations have completely removed any significant elements.

M. Historic Buildings: As categorized in this document are buildings that are currently listed on the National Register of Historic Places, those listed on State or local historic building registers or those buildings identified as contributing structures in national, state and local historic districts. Any projects taking place in said locations must be approved by a historic review board.

N. "Existing to Remain" or "Retain": Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled.

O. Dismantle: To disassemble and detach items by hand from existing construction to the limits indicated, using small hand tools and small one-hand power tools, so as to protect nearby

historic surfaces; and legally dispose of dismantled items off-site, unless indicated to be salvaged or reinstalled.

1.04 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects of interest or value to Owner that may be encountered during removal and dismantling work remain Owner's property. Carefully dismantle and salvage each item or object.

B. Coordinate with Owner’s Representative, who will establish special procedures for dismantling and salvage.

1.05 SUBMITTALS

A. Historic Treatment Program: Submit a written plan for each phase or process including protection of surrounding materials during operations. Describe in detail materials, methods, and equipment to be used for each phase of work. Submit before work begins.

B. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by historic treatment operations.

C. Fire-Prevention Plan: Submit before work begins.

D. Alternative Methods and Materials: If alternative methods and materials to those indicated are proposed for any phase of work, provide a written description including evidence of successful use on other, comparable projects, and program of testing to demonstrate effectiveness for use on this Project.

E. Qualification Data: For historic treatment specialists and supervisory personnel. Include list of three similar completed projects with the scope of work and budget for each.

F. Record Documents: Include modifications to manufacturer's written instructions and procedures, as documented in the historic treatment preconstruction conference and as the Work progresses.

1.06 QUALITY ASSURANCE

A. It is the intent of this project to preserve historic materials to the greatest extent possible. The gentlest means possible shall be sued to perform the work and the greatest of care shall be taken to ensure that the plaster ceilings, cornices and other historic materials are not damaged in the process of the work.

B. Historic Removal and Dismantling Qualifications: General selective demolition experience is not sufficient experience for historic removal and dismantling work.

C. Historic Treatment Program: Prepare a written plan for historic treatment for the whole Project, including each phase or process and protection of surrounding materials during operations. Describe in detail materials, methods, and equipment to be used for each phase of work. Show compliance with indicated methods and procedures specified in this and other sections.

1. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.
2. Debris Hauling: Include plans clearly marked to show debris hauling routes, turning radii, and locations and details of temporary protective barriers.
3. Where current codes cannot be complied with, and/or construction limitations (including deterioration of existing substrates) are such that the intended work cannot be achieved, notify Architect for clarification and or decision prior to proceeding with work.

D. Mockups: Where mockups are required by other sections in this manual, prepare so as to demonstrate aesthetic and structural effects and set quality standards for materials and execution. Mock-ups to be approved by Architect and Owner's Representative prior to project commencement.

1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

E. Regulatory Requirements: Comply with governing EPA notification regulations before beginning removal and dismantling work. Comply with hauling and disposal regulations of authorities having jurisdiction.

F. Historic Treatment Preconstruction Conference: Conduct conference at Project site in conjunction with General Preconstruction Conference.

1. General: Review methods and procedures related to historic treatment including, but not limited to, the following:

a. Review and finalize historic treatment plan; verify availability of materials, equipment, and facilities needed to make progress and avoid delays.
b. Review qualifications of personnel assigned to the work and assign duties.
c. Review material application, work sequencing, tolerances, and required clearances.
d. Review areas where existing construction is to remain and requires protection.

2. Removal and Dismantling:

a. Inspect and discuss condition of construction to be removed.
b. Review requirements of other work that relies on substrates exposed by removal and dismantling work.

1.07 QUALIFICATION

A. Because of the historic significance of this building, all work must be overseen by a General Contractor familiar with the performance and characteristics of working in and around historic

buildings. The General Contractor working on or managing the work of this contract must have the following qualifications:

1. Successfully completed not less than three (3) projects of similar size and scope involving projects dealing with historic buildings within the last ten (10) years.

    a. Submit list of historic project including name, location, cost, Owner/Architect/Engineer's name and phone number.

2. Project superintendent shall have a minimum of five (5) years of experience, including work on projects involving historic buildings.

    a. Submit list of historic project including name, location, cost, Owner/Architect/Engineer's name and phone number.

3. Only skilled project Subcontractors who are familiar and experienced with the materials and methods specified and with the design requirements shall be used for this project. Subcontractors including, electrical, sprinkler, core drilling and masonry/plaster repair specialist shall have a minimum of eight (8) years experience and shall have worked on a minimum of three (3) projects of similar size and scope involving historic buildings.

    a. Submit list of historic projects worked on by the subcontractor including name, location, cost, Owner/Architect/Engineer's name and phone number.

B. Qualifications for Workmen: Use adequate numbers of skilled workmen thoroughly trained and experienced in the necessary crafts.

1.08 STORAGE AND PROTECTION OF HISTORIC MATERIALS

A. Removed and Salvaged Historic Materials:

1. Clean salvaged historic items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area on-site.
5. Protect items from damage during transport and storage.
6. Do not dispose of items removed from existing construction without prior written consent of Owner.

B. Removed and Reinstalled Historic Materials:

1. Clean and repair historic items to functional condition adequate for intended reuse.
2. Label each item as to its original location.
3. Pack or crate items after cleaning and repairing. Identify contents of containers.
4. Protect items from damage during transport and storage.
5. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Historic Materials to Remain: Protect construction indicated to remain against damage and soiling during historic treatment. When permitted by Architect, items may be removed to a

suitable, protected storage location during historic treatment and cleaned and reinstalled in their original locations after historic treatment operations are complete.

D. Storage and Protection: When removed from their existing location, store historic materials within a weathertight enclosure where they are protected from wetting by rain, snow, or ground water, and temperature variations. Secure stored materials to protect from theft.

1. Identify removed items with an inconspicuous mark indicating their original location.

1.09 PROJECT CONDITIONS

A. General Size Limitation in Historic Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection.

B. Storage or sale of removed or dismantled items on-site is not permitted unless otherwise indicated.

1.010 COORDINATION

A. Coordinate historic treatment procedures in this section with public circulation patterns at Project site. Some work is near public circulation patterns. Public circulation patterns cannot be closed off entirely, and in places can be only temporarily redirected around small areas of work. Plan and execute the Work accordingly.

PART 2 - PRODUCTS NOT USED

PART 3 - EXECUTION

3.01 HISTORIC REMOVAL AND DISMANTLING EQUIPMENT

A. Demolition equipment used on the exterior of the building must be secured to prevent it from dropping.

B. Removal Equipment: Use only hand-held tools unless otherwise approved by the Architect on a case-by-case basis:

C. Cutting and Dismantling Equipment: Use manual, hand-held tools, except as follows or otherwise approved by the Architect on a case-by-case basis:

1. Hand-held power tools and cutting torches are permitted only as submitted in the historic treatment program. They must be adjustable so as to penetrate or cut only the thickness of material being removed.
2. Pry bars over 18 inches long and hammers weighing over 2 lb are not permitted for dismantling work.

3.02 PROTECTION, GENERAL

A. Comply with manufacturer's written instructions for precautions and effects of products and procedures on adjacent building materials, components, and vegetation.

B. Ensure that supervisory personnel are present when work begins and during its progress.

C. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from historic treatment procedures.

1. Use only proven protection methods, appropriate to each area and surface being protected.
2. Provide barricades, barriers, and temporary directional signage to exclude public from areas where historic treatment work is being performed.
3. Erect temporary protective covers over walkways and at points of pedestrian entrance and exit that must remain in service during course of historic treatment work.
4. Contain dust and debris generated by cutting and removal work and prevent it from reaching the public or adjacent surfaces.
5. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
6. Protect floors and other surfaces along haul routes from damage, wear, and staining.
7. Provide supplemental sound-control treatment to isolate removal and dismantling work from other areas of the building if required by Owner’s Representative.

D. Temporary Protection of Historic Materials during Construction:

1. Protect existing materials during installation of temporary protections and construction. Do not deface or remove existing materials.
2. Attachments of temporary protection to existing construction shall be approved by Architect and Owner preservation staff prior to installation.
3. Refer to Section 01 56 00 – “Special Project Procedures” for additional temporary protection requirements for Historic Preservation Zones 1 and 2.

3.03 HISTORIC REMOVAL

A. General: Have removal work performed by a qualified historic removal and dismantling specialist. Ensure that historic removal and dismantling specialist's field supervisors are present when removal and dismantling work begins and during its progress.

B. Perform work in accordance with the historic treatment program and approved mockup**.**

1. Perform cutting by hand or with small power tools wherever possible. Cut holes and slots neatly to size required, with minimum disturbance of adjacent work.
2. Do not operate air compressors inside building, unless approved by Architect in each case.
3. Do not drill or cut columns, beams, joints, girders, structural slabs, or other structural supporting elements, without having Contractor's professional engineer's written approval for each location before such work is begun.
4. Do not use explosives.

C. Water-Mist Sprinkling: Use water-mist sprinkling and other wet methods to control dust are not allowable anywhere within the existing building.

D. Unacceptable Equipment: Keep equipment that is not permitted for use on historic building away from the vicinity where such work is being performed.

3.04 PROTECTION DURING USE OF HEAT-GENERATING EQUIPMENT

A. Comply with the requirements of Section 008016, “Hot Works.”

3.05 GENERAL HISTORIC TREATMENT

A. The principal aim of preservation work is to halt the process of deterioration and stabilize the item's condition, unless otherwise indicated. Repair is required where specifically indicated. The following procedures shall be followed:

1. Retain as much existing material as possible; repair and consolidate rather than replace.
2. Use additional material or structure to reinforce, strengthen, prop, tie, and support existing material or structure.
3. Use reversible processes wherever possible.
4. Use traditional replacement materials and techniques. New work shall be distinguishable to the trained eye, on close inspection, from old work.
5. Record the work before the procedure with preconstruction photos and during the work with periodic construction photos.

B. Prohibit smoking by personnel performing work on or near historic structures.

C. Obtain Architect's and Owner preservation staff’s review and written approval in the form of a Constructive Change Directive or Supplemental Instruction before making changes or additions to construction or removing historic materials.

D. Notify Architect of visible changes in the integrity of material or components whether due to environmental causes including biological attack, UV degradation, freezing, or thawing; or due to structural defects including cracks, movement, or distortion.

1. Do not proceed with the work in question until directed by Architect.

E. Where missing features are indicated to be repaired or replaced, provide features whose designs are based on accurate duplications rather than on conjectural designs, subject to the approval of Architect and Preservation Specialist.

F. Where Work requires existing features to be removed, cleaned, and reused, perform these operations without damage to the material itself, to adjacent materials, or to the substrate.

G. Identify new or replacement materials and features with inconspicuous, permanent marks to distinguish them from original materials. Record the legend of identification marks and the locations of these marks on Record Drawings.

H. When cleaning, match samples of existing materials that have been cleaned and identified for acceptable cleaning levels. Avoid overcleaning to prevent damage to existing materials during cleaning.

END OF SECTION – 01 35 91

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

B. Section 01 35 91 “Historic Treatment Procedures” for required qualifications of General Contractors, Subcontractors, and Workmen.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
2. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
3. Specific test and inspection requirements are not specified in this Section.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 INFORMATIONAL SUBMITTALS

A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:

B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.6 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Field Reports: Prepare written information documenting tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
5. Other required items indicated in individual Specification Sections.

C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.7 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

1. Monitor quality control over suppliers, manufacturer’s, products, services, site conditions, and workmanship to produce Work of specified quality.
2. Comply with manufacturer’s instructions, including each step in sequence.
3. Should manufacturer’s instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
4. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
5. Perform work by persons qualified to produce workmanship of specified quality.

6. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
7. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Manufacturer's Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.

2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
    a. Allow seven days for initial review and each re-review of each mockup.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed unless otherwise indicated.

1.8 TOLERANCES

A. Monitor tolerance control of installed products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturer’s tolerances. Should manufacturer’s tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.9 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
    1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
    2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
    1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
        a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
    2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
    3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
    4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
    5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a manufacturer's representative to observe and inspect the Work. Manufacturer's representative's services include examination of substrates and conditions, verification of materials, inspection of completed portions of the Work, and submittal of written reports.

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.10 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 42 19

REFERENCE STANDARDS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.2 DESCRIPTION OF INTENT

A. Throughout the Contract Documents, reference is made to codes and standards which establish quantities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics of materials.

B. Where materials or workmanship are required by these Contract Documents to meet or exceed the specifically named code or standard, it is the Contractor's responsibility to propose materials and workmanship which meet or exceed the specifically named code or standard.

C. It is also the Contractor's responsibility, when so required by the Contract Documents or by written request from the Architect or Project Manager, to deliver to the Architect all required proof that the proposed material or workmanship meet or exceed the specifically named code or standard. Such proof shall be in the form requested in writing by the Architect and generally will be required to be copies of certified reports or tests conducted by a testing agency approved for that purpose by the Architect.

1.3 RELATED SECTIONS

A. General Conditions: Reference Standards

1.4 QUALITY ASSURANCE

A. For Products or workmanship specified in association, trade, or other consensus standards, comply with requirements of the Standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents.

C. Obtain copies of standards when required by Contract Documents.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until substantial completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from the Architect/Engineer before proceeding.

F. The contractual relationship, duties and responsibilities of the parties in Contract nor those of the Architect/Engineer shall not be altered from the Contract Documents by mention or inference otherwise in any reference document

END OF SECTION 01 42 19

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 01 10 00 "Summary" for work restrictions and limitations on utility interruptions.

C. Contractor will be allowed space for field office and site storage at the sub-basement and attic levels. Because of the nature of the space available, it cannot be secured; Contractor must plan accordingly. Final locations to be coordinated with the MBC prior to start of Work.

D. Construction Hoisting: Provide a means of hoisting during demolition and construction as is necessary to complete the Work.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.

B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Ventilate the renovated space as necessary to eliminate excessive humidity, condensation, fumes or odors from the building. Power ventilation using temporary equipment shall be used as necessary.

3.2 TEMPORARY UTILITY INSTALLATION

A. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

B. Sanitary Facilities: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner.

C. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

D. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

A. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.

1. Do not load elevators beyond their rated weight capacity.
2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

B. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

C. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

D. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.

1. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.
2. Protect air-handling equipment.
3. Provide walk-off mats at each entrance through temporary partition.

E. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire prevention program.

1. Prohibit smoking in construction areas.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 56 00

SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.01 WORK OF THIS SECTION

A. In addition to the requirements in Section 01 50 00 – Temporary Facilities and Controls, this Section provides guidelines for additional temporary protection of historic interior surfaces in areas classified as Level 1 and Level 2 Preservation Zones.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 01 35 91 – "Historic Treatment Procedures" for description of Preservation Zones and additional requirements.
2. Section 01 50 00 – Temporary Facilities and Controls for temporary utilities, temporary construction and support facilities, and security and protection services for the Project.
3. Section 01 73 10 – Cutting and Patching.
4. Section 01 77 00 – Closeout Procedures for final cleaning.

1.02 SUBMITTALS

A. Preservation Zone Temporary Protection Report: Submit a written report to the Owner's Representative or designated official for review and written approval. Describe means and methods of protective measures for historic surfaces specific to field conditions, including, but not limited to the following:

1. Identify each space and describe proposed protective measures.
2. Use room numbers used on the project Drawings to identify each space in the report.
3. Identify construction access doors in Level 1 and Level 2 Preservation Zones.
4. Include sufficiently detailed digital images showing existing conditions of historic areas, including finish surfaces that might be construed as damage caused by temporary protection and construction operations.

B. Product Data: Submit product data for materials and products incorporated into temporary protection of preservation zones.

C. Shop Drawings: Submit shop drawings showing details and extent of specified field conditions for temporary protection. Show location of each item, dimension plans and elevations, large-scale details, attachment devices, and other components.

1.03 QUALITY ASSURANCE

A. Reference Standards: Comply with the following:

1. The Secretary of the Interior's Standards for the Treatment of Historic Properties, Guidelines for Rehabilitating Historic Buildings.
1. Preservation Tech Notes, Temporary Protection No. 2, prepared by the National Park Service, http://www.nps.gov/tps/how-to-preserve/tech-notes/Tech-Notes-Protection02.pdf.
2. NFPA 241 "Standard for Safeguarding Construction, Alteration, and Demolition Operations".
3. NFPA 914-2007 "Fire Protection of Historic Structures", Chapter 13 "Fire Precautions During Construction, Repair and Alterations".

B. Pre-Install Conference: Conduct a conference at the Project site to comply with requirements in Section 01 31 00 – Project Management and Coordination. Review methods and procedures related to temporary protection of preservation zones including, but not limited to, the following:

1. Inspect and discuss conditions of historic interiors to be protected for the duration of the Project.
2. Identify areas for restricted access by construction personnel.
3. Review Drawings for work to be performed in the Level 1 and Level 2 Preservation Zones.
4. Review approved Preservation Zone Temporary Protection Report.
5. Review fire protection and safe practices.

1.04 PROJECT CONDITIONS

C. Restricted Access: Restrict access by construction personnel to spaces with significant features and finishes, except for performance and completion of their work relating directly to the rehabilitation of such spaces.

D. Temporary protection to remain in place for the duration of all construction phases. Remove barriers only for performance and completion of work to the historic surface covered. Replace barriers to provide protection until project is complete and ready for final cleaning.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide new materials. Undamaged, previously used material sin serviceable condition may be used if approved by Architect or designated official. Provide materials suitable for intended use.

B. Polyethylene Sheeting: ASTM D 4397, 6 mils thick.

C. Fiberboard: Equal to Homasote 440 SoundBarrier, ½ inch thick; 26-28 pcf density, Class III flame spread.

D. Canvas Tarps: Fire-resistive labeled with flame-spread rating of 15 or less.

E. Tape: Equal to Scotch Long-Mask masking Tape 2090, 2 inches wide.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine Preservation Zone substrates, areas, and conditions, with Installer present, for compliance with the approved Preservation Zone Temporary Protection Report. Report to the Architect or designated official any discrepancies between the Contact Documents and actual conditions at the building.

B. Do not proceed with installation until discrepancies are resolved and Owner's Representative or designated official's approval of the Preservation Zone Temporary Protection Report.

3.02 TEMPORARY PROTECTION ASSEMBLIES

A. General

1. Mechanical fasteners are note permitted into historical substrates. Where mechanical fasteners are permitted, use screw fasteners in order to eliminate hammering during assemble and ripping damage during disassembly.
2. Where backside of protective assembly abuts historic materials, pad wood framing, furring, or panels with strips of neoprene or strips of fiberboard glued to protective assembly member.
3. Ensure that moisture from spilled liquids does not remain trapped between temporary protection assembly and historic surface.
4. Temporary protection specified for historic substrates are minimum required.

B. Finished Flooring: Provide ½ inch plywood over ½ inch fiberboard on polyethylene sheeting. All joints to have continuous taped seams. Stagger all joints of overlapping materials. Extend polyethylene 3 inches above base or if vase is removed, 3 inches above floor finish. Provide continuous taped seam along wall and at all joints in sheeting.

C. Stair Treads, Risers, and Landings; Marble or Similar Material: Provide 5/8 inch minimum over 12 fiberboard, continuous wall to wall on treads and landings. Provide nominal 2 inch plank continuous wall to wall at risers. Mechanical fasteners are permitted into protection material and wood stops only.

D. Marble and Other Wall Surfaces: Attach minimum ½ inch plywood to wood framing. The assembly is to be self-supporting and self-bracing, secured at its base to the floor protection assembly. Provide struts and walers as required to brace assembly without installing fasteners into the historic wall finish.

1. Extend protection assembly in the horizontal direction to include bronze work including rails, casing, glass sidelights, and doors not removed for construction access.
2. Extend protection to 7 feet above finish floor unless noted otherwise in schedule.

E. Wall Surfaces Not Requiring Hard Protection: Provide polyethylene sheeting over entire vertical surface with continuous taped seams at adjoining surfaces and at all joints in sheeting.

F. Millwork: Provide canvas tarp over all vertical and horizontal surfaces with overlapped seams continuously taped. Provide polyethylene sheeting to completely cover canvas tarp with continuous taped seams at adjoining surfaces and at all joints in sheeting.

3.03 MAINTENANCE AND REMOVAL

A. Contractor to maintain temporary protection during the course of construction. Replace damaged protection assemblies when the protection of interior historic surfaces is at risk as determined by the Owner's Representative or designated official and the Region 5 Historic Preservation Officer.

B. If the temporary assembly is subjected to water or water vapor resulting form elevation humidity levels, remove the protection assembly for observation by the Owner's Representative or designated official and the Region 5 Historic Preservation Officer.

C. Remove temporary protection assemblies in preservation zones only when construction activity in all phases of the work has been completed, including finishing and painting.

END OF SECTION - 01 56 00

SECTION 01 56 16

TEMPORARY DUST CONTROL BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.2 SECTION INCLUDES

A. Special procedures required to limit migration of air borne dust and debris from construction work areas.

B. The work areas requiring dust control barriers shall include the area in front of the elevator, the storage rooms, and the exit stair on Level 12.

1.3 QUALITY ASSURANCE

A. The installer of the barriers shall be knowledgeable in constructing and maintaining barriers for dust control.

B. The installer shall maintain the barriers until all construction work has been completed.

C. Comply with federal, state and local regulations

1.4 SITE CONDITIONS

A. When transporting waste through non-affected parts of the building, use closed or covered containers. Clean outside of containers before leaving construction areas.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Sheeting: 4-mil polyethylene, minimum

B. Taping: Duct tape or equivalent fastening method

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate with MBC to assure that ductwork connected to this area has been closed or sealed.

3.2 BARRIER CONSTRUCTION

A. Construct an airtight barrier between the construction work area and the remaining non-affected parts of the building using 4-mil polyethylene. Do not use ducts, pipes, ceiling panels, grid or other non-structural items for support.

B. If electrical cords or other equipment must penetrate the barrier, seal the penetrations after equipment is installed.

C. Enclose construction work area with sheeting. Overlap a minimum of six inches (6") at seams and seal both sides with tape.

D. Construct passage ways with overlapping polyethylene flaps on each side of the wall. The flaps should be constructed so that they close without assistance when not used for passage.

3.3 VENTILATION

A. Place a sufficient number of fan units in the construction work area to maintain a minimum of four (4) air changes per hour until work is complete.

B. Fan units should be exhausted outdoors.

C. Fan units shall remain operable throughout the work shift, but may be shut down at the end of each work shift.

D. The contractor is responsible for security at all exhaust locations.

E. Fan units are not required if there is natural ventilation providing an equal number of air changes in the work area.

3.4 CLEANING AND TERMINATION

A. During construction, damp mop hard floors at passage ways to minimize the tracking of dirt and debris outside of the work area.

B. Remove barriers only after all construction work is complete. Clean the area affected by the barrier, repair any damages to existing construction.

3.5 FIELD QUALITY CONTROL

A. The MBC will perform periodic inspections to ensure barriers are being maintained properly and are preventing dust and debris from migrating outside of the construction area.

B. Immediate correct defects in the barriers and exhaust system.

END OF SECTION 01 56 16

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
    a. Form of Approval: As specified in Section 01 33 00 "Submittal Procedures."
    b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 33 00 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:
1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. Refer to other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 01 77 00 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.

Comparable products or substitutions for Contractor's convenience will not be considered.

3. Products:

   a. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:

   a. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 25 00 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Substitutions

1. The materials, products and equipment described in the bid documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.
2. No substitution will be considered prior to receipt of bids unless written request for approval has been received by the issuing office at least ten (10) days prior to date for receipt of bids. Each such request shall include the information listed on the Substitution Request Form – see Section 00 43 25 and any other information required or necessary for an evaluation. A statement setting forth any changes in other materials, products or equipment, or any other work that incorporation of the substitute would require shall be

included. The burden or proof of the merit of the proposed substitute is upon the proposer.

3. If the Architect approves any proposed substitution prior to receipt of bids, such approval will be set forth in an addendum to the specifications. Bidders shall not rely upon approvals made in any other manner.
4. No substitutions will be considered after the contract award unless specifically provided for in the contract documents.

B. Addenda To Specifications

1. Addenda will be mailed or delivered to all who are known by the Plan Distributer to have received a complete set of bid documents.
2. Copies of addenda will be made available for inspection wherever bid documents are on file for that purpose.
3. No addenda will be issued later than five (5) days prior to date of receipt of bids except an addendum withdrawing the request for bids or one which includes postponement of the date for receipt of bids.
4. Bidders shall ascertain prior to submitting a bid that they have received all addenda issued, and shall acknowledge their receipt in the bid.

C. Post Bid Substitution Limitations

1. Requests for the use of alternate products after bids have been received will not be considered, nor changes allowed in the accepted list of products, except when the specified or accepted product subsequently is determined to not meet requirements of the Contract Documents or the product becomes unavailable, and then only under the following conditions:
   a. The Contractor (or subcontractor) has placed the orders for the specified materials and equipment (products) within ten (10) days after the acceptance of the list. No excuse or proposed substitution will be considered for products due to unavailability unless proof is submitted that firm orders where placed immediately.
   b. The reason for unavailability is beyond the control of the Contractor. Unavailability will be construed as being due to bankruptcy of manufacturer, discontinuance of manufacture of product, prolonged strikes or lockouts which will seriously delay the entire Project to an extent the Owner finds unacceptable, or Acts of God.
   c. The request for the use of an alternate products is submitted in writing within ten (10) days after the date the Contractor has ascertained that the product does not comply with the specification, or has become unavailable, accompanied by supporting evidence.
   d. The Contractor proposes to use an alternate product that was specified or listed in an addendum, along with complete data on the product.
   e. There is no extra cost to the Owner.
   f. The alternate product is acceptable to the Owner and the Architect.

PART 3 - EXECUTION - Not Used

END OF SECTION 01 60 00

SECTION 01 73 00

EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Installation of the Work.
3. Progress cleaning.
4. Starting and adjusting.
5. Protection of installed construction.

B. Related Requirements:

1. Section 01 10 00 "Summary" for limits on use of Project site.
2. Section 01 73 10 “Cutting and Patching”.
3. Section 01 77 00 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 QUALITY ASSURANCE

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: Do not cut structural elements.
2. Operational Elements: Do not cut and patch operating elements and related components.
3. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

B. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 01 31 00 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings. If discrepancies are discovered, notify Architect promptly.

3.4 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produces harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 01 40 00 "Quality Requirements"

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 01 73 00

SECTION 01 73 10

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.02 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Related Sections include the following:

1. Division 2 Section "Selective Demolition" for demolition of selected portions of the building.
2. Divisions 2 through 28 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.03 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
2. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
3. Contracting Officer’s Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.04 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:

1. Primary operational systems and equipment.
2. Control systems.
3. Conveying systems.
4. Electrical wiring systems.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Miscellaneous elements include the following:

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Equipment supports.
4. Piping, ductwork, vessels, and equipment.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.05 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.01 GENERAL

A. Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.02 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.03 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

3.04 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
5. Temporarily cover openings when not in use.
6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

D. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

E. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

F. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 73 10

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. The Owner desires that as many materials as possible from this project, whether new construction, remodeling or demolition be salvaged, reused or recycled.

B. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

C. Related Requirements:

1. Section 01 35 91 “Historic Treatment Procedures” for work related to the salvage of historic items removed.

2. Section 02 41 19 "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements and the salvage of historic items.

D. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

E. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

F. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

G. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

1. The Contractor will be required to recycle at least 50% (by weight) of the waste material. Documentation from the recycling company will be required.

H. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

1. Reuse materials only as approved by the Architect. Proceeds, less cost of operations, of sold items shall be credited to the Owner

I. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.3 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Owner's Use:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

A. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, panel products, and treated wood materials.

B. Metals: Separate metals by type.

1. Remove and dispose of bolts, nuts, washers, and other rough hardware.

C. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

D. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 01 74 19

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

1.3 ACTION SUBMITTALS

A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

B. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION

A. Prepare for Substantial Completion of the project per Paragraphs 8.1.3 , and 9.8 of the General Conditions.

1.7 FINAL COMPLETION PROCEDURES

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:

1. Refer to Section 01 33 00 for list of submittals.
2. Submit final releases and supporting documentation not previously submitted and accepted with Application for Payment. Include certificates of insurance for products and completed operations where required.
3. Submit copy of Architect's/Engineer's final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance.
4. Submit final liquidated damages settlement statement, acceptable to Owner.
5. Revise and submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A or Contractor's standard form as pre-approved by Architect.

1. Organize list of spaces in sequential order, proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

1.9 PROJECT RECORD DOCUMENTS

A. Provide Improved Project Record Documents for the Architect's use, per Paragraphs 3.11 of the General Conditions and Section 01 33 00 -Submittals.

1.10 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance, and extra materials in quantities specified in individual specification sections.

B. Deliver to project site and place in location directed by Owner; obtain receipt prior to final payment.

1.11 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

   a. Remove tools, construction equipment, machinery, and surplus material from Project site.
   b. Clean exposed interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances.
   c. Remove debris and surface dust from limited access spaces, including plenums, shafts, equipment vaults, and similar spaces.

d. Sweep concrete floors broom clean in unoccupied spaces.
e. Clean transparent/translucent materials. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken transparent/translucent materials.
f. Remove labels that are not permanent.
g. Wipe surfaces of mechanical and electrical equipment and similar equipment.
h. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
i. Leave Project clean and ready for occupancy.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

    a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

3.3 FINAL PAYMENT

A. In requesting final inspection and accompanying the Contractor's Final Payment, prepare and submit all items and documents listed under Subparagraph 9.10.1 of Section 00 71 00 - General Conditions.

END OF SECTION 01 77 00

SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to the Work of this Section.

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building.
2. Salvage of existing items to be reused or recycled.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

1.4 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Storage or sale of removed items or materials on-site is not permitted.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PEFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

1. Comply with requirements for existing services/systems interruptions specified in Section 01 10 00 "Summary."

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Section 01 50 00 "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
5. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 74 19 "Construction Waste Management and Disposal."

B. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Section 01 74 19 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.7 SELECTIVE DEMOLITION SCHEDULE

A. The Owner reserves the right of first refusal for all items noted in the drawings as Remove and Salvage. The following is an itemized list of such items including the type of quantity the Owner will instruct the Contractor to Salvage.

1. Clock face framing members: The Owner would like to salvage the most intact framing members, with the type and quantity to allow for the assembly of one complete clock face frame.
2. Clock face infill panels: The Owner would like to salvage one panel (to be chosen by Owner).
3. Neon outline of clock hands: The Owner would like to salvage one set of neon at hands.

END OF SECTION 02 41 19

SECTION 040120 - MAINTENANCE OF MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes maintenance of unit masonry consisting of brick clay masonry restoration and cleaning as follows:

1. Repairing unit masonry, including replacing units.
2. Repointing joints.
3. Preliminary cleaning.
4. Cleaning exposed unit masonry surfaces.

1.2 DEFINITIONS

A. Low-Pressure Spray: 100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).

B. Medium-Pressure Spray: 400 to 800 psi (2750 to 5510 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For each exposed product and for each color and texture specified.

1.4 QUALITY ASSURANCE

A. Restoration Specialist Qualifications: Engage an experienced**,** preapproved masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience installing standard unit masonry is not sufficient experience for masonry restoration work.

1. At Contractor's option, work may be divided between two specialist firms: one for cleaning work and one for repair work.
2. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that clay masonry restoration and cleaning work is in progress.
3. Restoration Worker Qualifications: Persons who are experienced in restoration work of types they will be performing.

B. Mockups: Prepare mockups of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.

1. Masonry Rebuilding: Salvage existing bricks in deteriorated area (as designated on the drawings) and rebuild that area indicated on the drawings at one clock face for the mockup. Erect sample areas in existing walls unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

2. Repointing: Rake out joints in 2 separate areas**,** each approximately 36 inches (900 mm) high by 48 inches (1200 mm) wide for each type of repointing required and repoint one of the areas.

3. Cleaning: Clean an area approximately 4 sq. ft. for each type of masonry and surface condition.

C. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 MASONRY MATERIALS

A. Common Brick: Provide face brick, required to complete masonry restoration work. Assume that the rebuilding designated in the drawings will require the use of 90% salvaged brick and 10% replacement brick.

1. Provide units with physical properties, colors, color variation within units, surface texture, size, and shape to match existing brickwork.

a. Physical Properties per ASTM C 67:

2.2 MORTAR MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type II, white or gray or both where required for color matching of exposed mortar.

1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.

B. Hydrated Lime: ASTM C 207, Type S.

C. Mortar Sand: ASTM C 144 unless otherwise indicated.

1. Color: Provide natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.
2. For pointing mortar, provide sand with rounded edges.
3. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.

D. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars.

E. Water: Potable.

2.3 CLEANING MATERIALS

A. Water: Potable.

B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).

C. Job-Mixed Detergent Solution: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 1/2 cup (125 mL) of laundry detergent, and 20 quarts (20 L) of hot water for every 5 gal. (20 L) of solution required.

D. Ferrous Stain Remover: Manufacturer's standard gel formulation, designed for removal of iron and other stains.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Dumond Chemicals, Inc.; Safe n' Easy Rust Remover.
b. Price Research, Ltd.; Price Iron and Manganese Stain Remover.
c. PROSOCO, Inc.; Sure Klean Ferrous Stain Remover.

2.4 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.

B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.

1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-to-cement ratio of 1:10 by weight.

C. Do not use admixtures in mortar unless otherwise indicated.

D. Mortar Proportions: Mix mortar materials in the following proportions:
1. Pointing Mortar by Type: ASTM C 270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to masonry cement. Add mortar pigments to produce mortar colors required.

a. Add mortar pigments to produce mortar colors required.

2. Rebuilding (Setting) Mortar: Same as pointing mortar.

2.5 CHEMICAL CLEANING SOLUTIONS

A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended by chemical-cleaner manufacturer.

B. Nonacidic Gel Chemical Cleaning:

1. Apply cleaner in accordance with Manufacturer’s written recommendations
2. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
3. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.

B. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. When no longer needed, promptly remove masking to prevent adhesive staining.
2. Keep wall wet below area being cleaned to prevent streaking from runoff.

3.2 BRICK REMOVAL AND REPLACEMENT

A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated or are to be reused. Carefully demolish or remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

B. Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.

C. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.

D. Remove in an undamaged condition as many whole bricks as possible.

1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.

E. Clean bricks surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.

F. Replace removed damaged brick with other removed brick in good quality, where possible, or with new brick matching existing brick, including size. Do not use broken units unless they can be cut to usable size.

G. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.

1. Maintain joint width for replacement units to match existing joints.

H. Lay replacement brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C 67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min. (30 g/194 sq. cm per min.). Use wetting methods that ensure that units are nearly saturated but surface is dry when laid.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.

2. Rake out mortar used for laying brick before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing masonry, and at same time as repointing of surrounding area.
3. When mortar is sufficiently hard to support units, remove shims and other devices interfering with pointing of joints.

3.3 CLEANING MASONRY, GENERAL

A. Proceed with cleaning in an orderly manner. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.

B. Use only those cleaning methods indicated for each masonry material and location.

1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist chemical cleaner being used.
2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.

    a. Equip units with pressure gages.

3. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
4. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
5. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F (60 and 71 deg C) at flow rates indicated.

C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.

D. Water-Spray Application Method: Unless otherwise indicated, hold spray nozzle at least 6 inches (150 mm) from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.

E. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions; use brush or spray application. Do not spray apply at pressures exceeding 50 psi (345 kPa). Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.

F. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.

3.4 PRELIMINARY CLEANING

A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing to dry as long

as possible before removal. Remove loose soil and debris from open masonry joints to whatever depth they occur.

B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, and tar.

1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
2. Remove paint and calking with alkaline paint remover.

    a. Comply with requirements in "Paint Removal" Article.
    b. Repeat application up to two times if needed.

3. Remove asphalt and tar with solvent-type paint remover.

    a. Comply with requirements in "Paint Removal" Article.
    b. Apply paint remover only to asphalt and tar by brush without prewetting.
    c. Allow paint remover to remain on surface for 10 to 30 minutes.
    d. Repeat application if needed.

3.5 PAINT REMOVAL

A. Paint Removal with Covered or Skin-Forming Alkaline Paint Remover:

1. Remove loose and peeling paint using low pressure spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
2. Apply paint remover to dry, painted masonry with trowel, spatula, or as recommended by manufacturer.
3. Apply cover, if required by manufacturer, per manufacturer's written instructions.
4. Allow paint remover to remain on surface for period recommended by manufacturer or as determined in test panels.
5. Scrape off paint and remover and collect for disposal.
6. Rinse with hot water applied by low pressure spray to remove chemicals and paint residue.
7. Apply acidic cleaner or manufacturer's recommended afterwash to masonry, while surface is still wet, using low-pressure spray equipment or soft-fiber brush. Let cleaner or afterwash remain on surface as a neutralizing agent for period recommended by chemical-cleaner or afterwash manufacturer.
8. Rinse with cold water applied by low pressure spray to remove chemicals and soil.

B. Paint Removal with Solvent-Type Paint Remover:

1. Remove loose and peeling paint using low pressure spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
2. Apply thick coating of paint remover to painted masonry with natural-fiber cleaning brush, deep-nap roller, or large paint brush.
3. Rinse with hot water applied by low pressure spray to remove chemicals and paint residue.

3.6 CLEANING MASONRY

A. Detergent Cleaning:

1. Wet masonry with cold water applied by low-pressure spray.

2. Scrub masonry with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that masonry surface remains wet.
3. Rinse with cold water applied by low pressure spray to remove detergent solution and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

B. Nonacidic Gel Chemical Cleaning:

1. Apply cleaner in accordance with Manufacturer's written recommendations
2. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
3. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.

3.7 REPOINTING MASONRY

A. Rake out and repoint joints to the following extent:

1. All joints in areas indicated.

B. Do not rake out and repoint joints where not required.

C. Rake out joints as follows, according to procedures demonstrated in approved mockup:

1. Remove mortar from joints to depth of 2 times joint width, but not less than 1/2 inch (13 mm) or not less than that required to expose sound, unweathered mortar.
2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Architect.

    a. Cut out mortar by hand with chisel and resilient mallet. Do not use power-operated grinders.
    b. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and resilient mallet.

D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch (9 mm) until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch (9 mm). Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces.

Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.

4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.

    a. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.

6. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

F. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.8 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, spray applied at low pressure.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

END OF SECTION 040120

SECTION 05 12 00

STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Work includes:
   1. Miscellaneous attachment assemblies
   2. Anchors

1.3 SUBMITTALS

A. Product Data: For the following:
   1. Chemical anchors
   2. Weld electrode
   3. Clevis (or yoke) and pin assembly
   4. Electronic isolation materials

B. Shop Drawings: Detail fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

C. Mill Certificates: Signed by manufacturers of stainless-steel sheet, bar, and fasteners certifying that products furnished comply with requirements.

D. Welding Certificates: Copies of Weld Procedure Specification (WPS) for all welding procedures to be used and AWS Welder Certification Test Record for the personnel to be performing the work signed by an AWS Certified Welding Inspector.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing metal fabrications similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

B. Welding: Qualify procedures and personnel according to the following:
   1. AWS D1.1, "Structural Welding Code--Steel."
   2. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

1.5 PROJECT CONDITIONS

A. Field Measurements: Where metal fabrications are indicated to fit walls and other construction, verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 METALS

A. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 316.

B. Stainless-Steel sheet, strip, plate, and flat bars to be welded: ASTM A 666, Type 316L.

C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 316.

D. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.2 FASTENERS

A. General: Provide Type 316 stainless-steel fasteners for use throughout the project. Select fasteners for type, grade, and class required.

B. Bolts, Nuts, and Threaded Rod: ASTM F593, Type 316. Nuts shall be nylon lock nuts unless noted otherwise. Where a lock nut is not used, use a Type 316 lock washer.

C. Clevis (or yoke) and Pin: Provide Type 316 stainless-steel clevis and pin assembly with a minimum thread diameter of 1-inch with a minimum rated capacity of 1200 pounds and a 1/2-inch assembly with a minimum rated capacity of 400 pounds as shown on the drawings.

D. Machine Screws: Phillips flat head ASME B18.6.3 (ASME B18.6.7M) and compatible acorn nut or flanged nut.

E. Isolation materials: Nylite fastener collars and sleeves and compatible nylon washer

F. Adhesive anchor: Hilti HIT-HY 70 adhesive anchoring system with accompanying HIT-SC screen

2.3 FABRICATION, GENERAL

A. Metal Surfaces: For metal fabrications exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

B. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

C. Shear and punch metals cleanly and accurately. Remove burrs.

D. Ease exposed edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Weld corners continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.4 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide framing and supports indicated and as necessary to complete the Work.

B. Fabricate units from structural-steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

2.5 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors. Follow all manufacturer’s written instructions for installation.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels. Electrically isolate coated and uncoated aluminum from contact with masonry and steel. Fasten all nuts and bolts to a snug tight condition.

C. Fit exposed connections accurately together to form hairline joints. Field Welding is not permitted.

END OF SECTION 05 12 00

SECTION 05 72 50

CAST ALUMINUM

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Work under this section is subject to the requirements of the Contract Documents.

B. The work shall include the following:
1. Field measurement by laser scanning of existing cast iron framework in-situ and of representative elements after removal.
2. Field measurement of existing masonry opening to verify true roundness of opening.
3. Creation and submittal of shop drawings in accordance with Contract Documents for new cast aluminum elements.
4. Installation of new cast aluminum elements.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 051200 - Structural Steel Framing

B. 079000 - Sealants

C. 099113 - Painting

1.3 QUALITY ASSURANCE

A. Reference standards as established by ASTM International and the Aluminum Association (AA) including but not limited to:
1. AA ADM-10 *Aluminum Design Manual*
2. ASTM B26-09 *Standard Specification for Aluminum-Alloy Sand Castings*

B. Fabricator Qualifications:
1. Patterns and Molds: The fabricating contractor performing this work shall have at least seven (7) years of experience working with the materials and procedures outlined herein. Contractor shall provide name, location, and dates for three projects of similar scope where contractor prepared patterns and molds.
2. Castings: The fabricating contractor performing this work shall have at least seven (7) years of experience working with the materials and producers outlined herein. Contractor shall provide name, location, and date for three projects of similar scope where the contractor fabricated the metal castings.
3. Installation of Castings: The contractor performing the installation work shall have at least seven (7) years of experience working with the materials and procedures outlined herein. Contractor shall provide name, location, and date for three projects of similar scope where the contractor installed metal castings.

1.4 SUBMITTALS

1. Shop Drawings: Include plans, elevations, and sections showing locations and details of each new metal item and component and its location on the structure in annotated plans and elevations. Submit complete shop drawings prior to the fabrication of all cast aluminum elements. Identify on the drawings the locations on the elements where machining will take place to reach the designated dimensions.
2. Castings: Provide the opportunity for the Architect/Engineer to review finished sample castings for each member type listed below and depicted on drawing S1 and A101. Approved castings will constitute the standard for appearance for the fabrication of the remaining elements.
    a. Grid element
    b. Inner ring element
    c. Hour marker element
    d. Outer ring element
3. Mechanical testing results: Tensile ultimate and tensile yield strengths of specimens cut from castings shall be provided to the Architect/Engineer prior to lot acceptance. The strengths shall be at least 75% of the values specified in ASTM B26.
4. Radiographic inspection results: Provide all results from radiographic inspection in accordance with ASTM B26. Eight (8) castings from each lot shall be tested and the results provided depicting and dimensioning all gas holes greater than or equal to 1/16-inch. The acceptance of the lot is dependent on no gas holes being identified on any casting from that lot which are greater than 1/8-inch.
5. Handling and shipping: Contractor shall submit written description of proposed method for handling, protecting, and shipping of the painted cast aluminum elements.
6. Installation Procedures: Contractor shall submit for a review a detailed written description of the proposed sequence for the installation of the cast aluminum elements.

1.5 INSTALLATION, GENERAL

A. Check and verify all dimensions and conditions at the job site. Inform the Architect/Engineer of any variances found prior to commencing work.

B. Contractor shall assume all responsibility measuring the existing structure and for taking the steps necessary to insure proper fit of the new castings to the existing frame and masonry.

C. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

D. Field Welding: no welding of aluminum is permitted on this project.

E. Fastening to Masonry: Provide a continuous electronic barrier (i.e. neoprene or nylon gasket) around the perimeter of the aluminum elements to prevent any contact between the masonry and the aluminum.

F. Fastening to and with stainless steel: Provide a continuous electronic barrier (i.e. neoprene or nylon gasket) between cast aluminum elements and stainless steel elements in addition to any separation which may be provided by the coating. Connections shall be snug tight and be secured using nylon lock nuts where possible.

PART 2 - MATERIALS

2.1 FABRICATION OF CAST ALUMINUM FOR RESTORED CLOCK

A. Size and fabricate cast aluminum items as shown in the approved Shop Drawings.

2.2 ALUMINUM

A. Aluminum alloy shall be 356.0 or A356.0 as designated by the Aluminum Association.

2.3 CASTING MATERIALS

A. Natural Bonded Molding Sands shall meet the following requirements:
   1. AFS Grain Fineness Number 300
   2. FS Clay Content: 12 to 18 percent
   3. Recommended Moisture Content: 5 to 7 percent
   4. Green permeability: 10 to 25
   5. Green compressive strength: 5 to 10 psi

B. Synthetic Sands shall meet the following requirements:
   1. AFS Grain Fineness Number 300
   2. AFS Clay Content: 10 to 12 percent
   3. Recommended Moisture Content: 3 to 5 percent
   4. Green permability 30 to 60
   5. Green compressive strength: 6 to 9 psi

PART 3 - EXECUTION

3.1 CASTING

A. All castings shall be sound, free of defects, true to patterns and within acceptable tolerances.

B. Finishing
   1. Cast aluminum surfaces shall have an as-cast surface smoothness of 300 RMS as defined by the AA and AFS to match historic cast surface.
   2. Post cleaning operations shall meet the published standards of the AFS.
   3. The removal of refactories shall be completed by wire brushing, air blast cleaning, mechanical blast cleaning, or water blast cleaning.
   4. The removal of gates and risers shall be completed by shearing, band sawing, hacksawing, or grinding.
   5. The finish cleaning shall be completed by air blasting cleaning, mechanical blast cleaning, water blast cleaning, grinding, hand filing, rotary filing, polishing, brushing, or buffing and shall meet all surface prep requirements of the paint manufacturer prior to application.

C. Handling and Shipping

1. The painted castings shall be protected and shipped to minimize damage and in accordance with written, submitted, and approved procedures.
2. Cracked, scratched, chipped or otherwise damaged elements will be rejected and must be repainted or recast.

3.2 Installation

A. Install new cast aluminum elements as shown on Drawings and in accordance with applicable portions of Section 051200.

B. Installation shall follow approved procedures for installation of the castings as submitted by the Contractor.

END OF SECTION 05 72 50

SECTION 07 92 13
ELASTOMERIC JOINT SEALANTS

PART 1.0 GENERAL

1.1 SUMMARY

A. Work includes but is not limited to the following items:

1. Installation of elastomeric joint sealants in joints between masonry walls and the clock face

1.2 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions, and the General Requirements apply to the Work of this Section

B. Related Sections

1. Section 05 12 00 Structural Steel Framing
2. Section 05 56 00 Metal Castings
3. Section 08 44 00 Glazed Assemblies
4. Section 08 88 00 Glass and Glazing
5. Section 09 93 00 High-Performance Coatings

1.3 ACTION SUBMITTALS

A. Product Data:

1. Prepare and submit for approval product data showing compliance with specified requirements.
2. Product data shall include:
   a. Sealant manufacturer's Technical Data Guides and application procedures.
   b. Submit laboratory tests or data validating product compliance with performance criteria specified.
   c. Backer rod material specifications.
   d. Material safety data sheets for all materials.

B. Samples:

1. Submit samples illustrating colors selected.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data for sealant to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Reference Standards:

1. ASTM C1193, Method A, Field-Applied Sealant Joint Hand-Pull Tab.
2. ASTM C1248 Standard Test Method for Staining of Porous Substrate by Joint Sealants

B. Installation shall be by Contractor with no less than 5 years successful experience in application of sealants and caulking of types similar to those of this project. Contractor shall be acceptable to manufacturer of sealant.

C. Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required. Alternate materials must meet Architect's approval.

D. Field Test of Sealant Adhesion

1. Perform adhesion tests in accordance with manufacturer's instructions and with ASTM C1193, Method A, Field-Applied Sealant Joint Hand-Pull Tab.

2. For sealant applied between dissimilar materials, test both sides of joint.

3. After receiving Architect's approval, sealants failing adhesion test shall be removed, substrates cleaned, sealants re-installed, and re-testing performed.

4. Maintain test log and submit report to Architect indicating tests, locations, dates, results, and remedial actions.

5. Test adhesion at beginning of work, at regular intervals during the work and at Architect's direction. Perform at least 1 test per floor per building elevation.

6. The Architect shall have the final determination of what constitutes acceptable adhesion.

E. Performance Requirements

1. Refer to requirements in Section 08 44 00 Glazed Assemblies

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver products in original factory packaging bearing identification of product, manufacturer, and batch number.

B. Store products in a location protected from freezing, damage, construction activity, precipitation, and direct sunlight in strict accordance with manufacturer's recommendations.

C. Handle all products with appropriate precautions and care as stated on Material Safety Data Sheet.

1.7 WARRANTY

A. Provide in writing to owner:

1. Installer's one-year from date of substantial completion warranty on materials and labor.

2. Pass through to owner 20-year manufacturer's product warranty on silicone sealant. Perform any tests and inspections required by manufacturer as a condition of the 20-year warranty.

3. Pass-through to owner of any product manufacturer's warranties that extend beyond 1 year.

PART 2. PRODUCTS

2.1 SEALANT:

A. Sealant shall be one or two part silicone sealant. Brand and type of sealant is subject to Architect's approval.

B. Color shall be as selected from the manufacturer's standard colors by the Architect.

C. Staining on white marble when tested in accordance ASTM C1248: None.

D. Acceptable sealant manufacturers and brands are:

1. Tremco, Inc.: Spectrem 3 silicone sealant

2. Dow Corning: 756 SMS Building Sealant

E. General Electric: SCS9000 SilPruf* NB

F. Other brands by the above manufacturers and products by other manufacturers may be acceptable subject to approval by the Architect.

G. Primers shall be as recommended by the sealant manufacturer

H. Cleaning agents shall be as recommended by the sealant manufacturer

2.2 BACKER ROD

A. Backer rod shall be closed cell, non-gassing foam rod.

B. Acceptable product:

1. Sof-Rod as manufactured by Nomaco, Inc., Zebulon, NC 27597

C. Products by other manufacturers may be acceptable subject to approval by the Architect.

PART 3. EXECUTION

3.1 EXAMINATION:

A. Examine areas and conditions under which work is to be performed. Notify the Architect of conditions detrimental to proper and timely completion of the work. Work shall not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Examine all areas involved in work to establish extent of work, access, and need for protection of surrounding construction.

3.2 PREPARATION

A. Protect elements surrounding the work from damage or disfiguration.

B. Close off, seal, mask, or board up windows and doorway areas and surfaces not receiving work as necessary to protect them from damage. Apply masking agent to comply with manufacturer's recommendations.

3.3 SEALANT REMOVAL AND INSTALLATION

A. Remove existing sealant, loose materials and foreign matter which impair adhesion of joint sealant.

B. Clean joints in accordance with the sealant manufacturer’s directions and recommendations.

C. Where the possibility of joint filler staining adjacent areas or materials exists, or where needed to keep sealant off face of substrates, mask joints prior to application.

1. Do not remove masking tape before joints have been tooled and initial cure of joint filler has taken place.

2. Work stained due to failure of proper masking precautions will not be accepted.

D. Install appropriate size backer rod according to backer rod and sealant manufacturers' recommendations.

E. Joint Primers

1. Prime joint substrates when one or more of the following apply:

a. Recommended by caulking manufacturer

b. Based on preconstruction joint sealer-substrate tests

c. Prior experience.

2. Apply primer to comply with caulking manufacturer's recommendations. Confine primers to areas of joint sealer bond; do not allow spillage or migration onto adjoining surfaces.

F. Sealant

1. Prepare sealants that require mixing; follow manufacturer's recommended procedures, mixing thoroughly.

2. Apply materials in accordance with manufacturer's recommendations; take care to produce beads of proper width and depth, tool as recommended by manufacturer, and immediately remove surplus sealant.

3. Install sealants only when ambient and substrate temperature conditions are within the limits permitted by sealant manufacturers.

4. Do not install sealants when substrates are wet due to rain, frost, condensation or other causes.

3.4 FINAL CLEANING:

A. Clean off excess sealant or smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturer and Architect.

B. The Contractor shall remove and dispose of all debris generated as a result of his work on a daily basis.

C. Debris shall be disposed of in a manner complying with municipal, state and any other applicable regulatory requirements.

3.5 PROTECTION:

A. Sealant shall be adequately protected against damage. Any damage to Work of other trades shall be satisfactorily corrected at Contractor’s expense.

END OF SECTION 07 92 13

SECTION 08 44 00
GLAZED ASSEMBLIES

PART 1.0 GENERAL

1.1 SUMMARY

A. Work includes but is not limited to the following items:

1. Provision and installation of new aluminum framing system with glazing set and removable from the interior
2. Construction and testing of a full-scale mockup of one-quarter of a clock face as shown on the drawings at a laboratory selected and retained by the Owner
3. Flashings

1.2 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions, and the General Requirements apply to the Work of this Section

B. Related Sections

1. Section 05 12 00 Structural Steel Framing
2. Section 05 56 00 Metal Castings
3. Section 07 92 13 Elastomeric Joint Sealants
4. Section 08 88 00 Glass and Glazing
5. Section 09 93 00 High-Performance Coatings

1.3 ACTION SUBMITTALS

A. Shop Drawings:

1. Prepare and submit shop drawings for approval. Shop drawings shall include all window elevations, details of all window components, including but not limited, to aluminum window frame and trim members, flashings, glass and glazing techniques, methods of installation and maintenance recommendations of finished surfaces.

B. Calculations

1. Submit structural calculations signed and sealed by a Minnesota registered engineer for the glazing details.
2. Refer to the structural drawings, Section 05 12 00 Structural Steel Framing and Section 05 56 00 Metal Castings for the requirements for the window framing and anchorage to the building structure.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data for framing and components to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Reference Standards:

1. AAMA 501.2-09 Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems

2. ASTM A240 Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
3. ASTM E283 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
4. ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
5. ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
6. The current edition of the "Glazing Manual" as published by the Glass Association of North America (GANA) shall govern where applicable, unless otherwise specified.

B. Design Criteria:

1. Air Infiltration:
   a. Air infiltration shall not exceed 0.06 cubic feet per square foot of window area under a static pressure drop of 6.24 pounds per square foot when tested in accordance with ASTM E283.
2. Water Resistance:
   a. No uncontrolled water leakage shall occur at 6.24 pounds per square foot pressure differential with water rate 5 gallons per hour per square foot when tested in accordance with ASTM E331.
3. Minimum design wind load for glazing and glazing details: The greatest of 35 psf in positive and negative directions, or the minimum wind pressures required by the Structural Drawings, Section 05 12 00 Structural Steel Framing or Section 05 56 00 Metal Castings.
4. The deflection of glazed assembly members in a direction normal to the plane of the wall when subjected to design wind loads shall be limited to the following:
   a. Limit net deflection of framing member supporting glass edge to the lesser of 1/175 of the length of the glass edge or ¾ inch.
   b. Spans up to 13’-6”: limit deflection to L/175.
   c. Spans greater than 13’-6”: limit deflection to L/240 + 1/4”.
   d. Cantilevered members: limit deflection to the lesser of 2L/175 or 3/4”.
   e. No permanent deformation in excess of 0.2% of framing member span.
   f. The deflection of any member shall not impair the function of or damage any joint seals as warranted by the installer.
   g. Wind load used to calculate deflections limited by items b., c. or d. may be reduced per Footnote f. of Table 1604.3 in the 2006 IBC if applicable
   h. If more restrictive limits are required by the code or other specification sections, comply with the most stringent requirements.
5. The deflection of glazed assembly members in a direction parallel to the plane of the wall shall not exceed an amount which will reduce the glass bite below 75% of the design dimension, and the member shall have a minimum 1/8” clearance between itself and the edge of the fixed panel, glass or fixed part immediately below.

6. Thermal Movement

    a. Allow for expansion and contraction due to thermal movements based on metal temperatures ranging from -40 degrees F to 150 degrees F.

C. Inspection By Owner:

1. Make the work available for inspection by the Owner, Architect or their representatives.

D. Field Testing

1. Field tests shall be performed by the contractor or by a qualified independent testing agency engaged by the contractor.

2. Testing to Include:

    a. Water Spray Test: After the installation of the majority of the framing and glazing, but while exterior is still accessible, test according to AAMA 501.2. Water penetration shall not occur.

    b. If water penetration does occur, make repairs and retest until satisfactory performance is achieved.

    c. Conduct water test on all four clock faces.

3. Repair or remove Work where test results and inspections indicate that it does not comply with specified requirements. Additional testing and inspection, at Contractor's expense, will be performed to determine compliance of replaced or additional Work with specified requirements.

1.6 TEST MOCKUP ALTERNATE

A. If alternate is chosen by owner, furnish labor and materials to build and test mock-ups as shown on drawings. Mock-ups shall accurately represent job conditions including joints, sealants, glass, glazing and anchors. Construct mockups in accordance with approved shop drawings. Any deviations from or modifications to approved details must be approved by the Architect or other designated Owner's representative.

B. Materials used on the mockup shall be the same as those intended to be used on the building at the same condition, and shall be consistent throughout the mockup.

C. Provide at least one extra light of glass for each type and size on the mockup. If glass breaks during testing, replace glass and continue testing. Repeated glass breakage shall be considered a test failure.

D. Testing of mockup specified below shall be conducted by a testing laboratory selected by the Owner. The Owner shall pay for one complete set of tests. If failures require repeated testing, the re-tests and additional costs to the Owner due to the re-testing, including architect's and consultant's fees, shall be the responsibility of the Contractor.

E. If failure occurs, make necessary modifications to mockup and re-test. Modifications must be practicable under job conditions, meet performance and quality standards, and are subject to approval.

F. Testing laboratory shall issue a test report on all testing conducted, whether official or not. The report shall state whether the test specimen met the specified criteria and note any deviations from the specified criteria.

G. Mockup Test Procedure

1. Conduct visual mockup of backlighting
2. Remove and re-glaze one opening
3. Preload mockup to 50 percent of the inward design pressure
4. Air infiltration per ASTM E283 at 6.24 psf pressure differential
5. Water infiltration under 6.24 psf static pressure per ASTM E331
6. Structural test at 50 percent and 100 percent of inward design pressure (all structural testing in accordance with ASTM E330 except as modified herein)
7. Structural test at 50 percent and 100 percent of outward design pressure
8. Structural overload test at 150 percent of outward design pressure
9. Structural preload at 75 percent of inward design pressure
10. Structural overload test at 150 percent inward design pressure

1.7 DELIVERY, STORAGE AND HANDLING

A. All glazing assemblies, including framing, glass and all accessories, shall be protected and kept under cover both at the mill and in transit to Worksite.
   1. Store framing materials, glass and hardware in accordance with manufacturer's directions
   2. Provide wrapping to protect prefinished aluminum surfaces.

1.8 WARRANTY

A. Contractor shall furnish Owner with manufacturer's written warranty on all units of glass, guaranteeing laminated glass against delamination and other deterioration for a period of 10 years from the date of shipment from the factory. Warranty shall further guarantee the glass units for 2 years against glass breakage due to improper or inadequate installation methods or materials.

B. Pass through to owner 20-year manufacturer's product warranty on silicone sealant used for framing and perimeter seal. Perform any tests and inspections required by manufacturer as a condition of the 20-year warranty.

PART 2. PRODUCTS

2.1 ALUMINUM FRAMING

A. This section applies only to extruded or formed aluminum framing. Refer to Section 05 56 00 Metal Castings for requirements applicable to cast aluminum elements.

B. Extruded aluminum members shall consist of 6063 alloy with a temper hardness of T5 or T6. Other alloys and tempers may be acceptable subject to approval by the Architect.

C. Formed aluminum elements shall be 3003-H14 aluminum or other alloy approved by the Architect

D. Principal framing member wall thickness shall be not less than 0.090 inch.

E. Silicone sealant used for framing seals shall be a low or medium modulus silicone sealant. Acceptable sealant manufacturers and brands are:
   1. Dow Corning 790 and 795
   2. Tremco, Inc., Spectrem 1 and Spectrem 2

3. General Electric, Silpruf and SCS 2000
4. Other brands and products of other manufacturers may be acceptable subject to approval by the Architect.

2.2 STAINLESS STEEL FLASHING

A. Fabricate from Type 304 or 316 stainless steel meeting the requirements of ASTM A240/A 240M.

B. Stainless steel shall be 24 gage minimum

PART 3. EXECUTION

3.1 FABRICATION AND MANUFACTURE:

A. Aluminum framing and elements shall be fabricated in accordance with manufacturer's standard practice and approved shop drawings. Methods of fabrication, assembly and erection; however, unless otherwise specifically stated, shall be at the discretion of the framing supplier whose responsibility it shall be to guarantee satisfactory performance.

B. Insofar as practical, fitting and assembly shall be done in the shop. Work that cannot be permanently shop assembled shall be completely assembled, marked and disassembled before shipment, to insure proper assembly in the field.

C. All exposed Work shall be carefully watched to produce continuity of line and design. All extruded aluminum frame members shall be accurately fitted and rigidly secured with all joints mitered, welded and properly sealed to prevent penetration of moisture.

3.2 INSTALLATION:

A. Installation of glazed assemblies shall be performed under experienced supervision and in strict accordance with approved shop drawings. Framing shall be set plumb and true. Framing shall be properly braced, centered and securely anchored in an approved manner.

B. Comply with manufacturer’s written instructions.

C. Do not install damaged components.

D. Fit joints to produce joints free of burrs and distortion.

E. Aluminum surfaces in direct contact with lime mortar, concrete or plaster shall be painted with bituminous paint or clear methacrylate lacquer.

F. Proper precaution shall be taken so that anchored items will not be distorted or overstressed due to expansion or contraction of the metal.

3.3 FINAL CLEANING:

A. After inspection and approval, all labels, protective material, excess caulking or sealants shall be removed and all metal and glass surfaces shall be thoroughly cleaned and left in perfect condition.

3.4 PROTECTION:

A. Glazed assemblies shall be adequately protected against damage or breakage. All cracked or damaged glass or panels shall be replaced at Contractor’s expense before acceptance of the work. Any damage to Work of other trades shall be satisfactorily corrected at Contractor’s expense.

END OF SECTION 08 44 00

SECTION 08 80 00
GLASS AND GLAZING

PART 1.0 GENERAL

1.1 SUMMARY

A. Work includes but is not limited to the following items:

1. Provision and installation of heat-strengthened laminated glass

1.2 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions, and the General Requirements apply to the Work of this Section

B. Related Sections

1. Section 05 12 00 Structural Steel Framing
2. Section 05 56 00 Metal Castings
3. Section 07 92 13 Elastomeric Joint Sealants
4. Section 08 44 00 Glazed Assemblies
5. Section 09 93 00 High-Performance Coatings

1.3 ACTION SUBMITTALS

A. Product Data:

1. Prepare and submit for approval product data showing compliance with specified requirements.
2. Product data shall include:
   a. Manufacturer's recommended installation instructions.
   b. Submit for record glass manufacturer’s analyses for wind loading and thermal stress within the glass.

B. Samples:

1. Submit 2 samples of proposed materials for approval. Glass samples shall be minimum 6 inches square.
2. Glazing Accessory Samples: For each product proposed for use.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data for glass to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Reference Standards:

1. The current edition of the "Glazing Manual" as published by the Glass Association of North America (GANA) shall govern where applicable, unless otherwise specified.
2. The current Federal Specification DD-G-451D entitled "Glass, Float or Plate, Sheet, Figured (Flat for Glazing, Mirrors and Other Uses)" shall govern where applicable, unless otherwise specified.

3. ASTM 1172 Standard Specification for Laminated Architectural Flat Glass

B. Performance Requirements

1. Refer to requirements in Section 08 44 00 Glazed Assemblies

1.6 DELIVERY, STORAGE AND HANDLING

A. Glass and all accessories shall be protected and kept under cover both at the plant and in transit to Worksite.

B. Store glass and accessories in accordance with manufacturer's directions

1.7 WARRANTY

A. Contractor shall furnish Owner with manufacturer's written warranty on all units of glass, guaranteeing laminated glass against delamination and other deterioration for a period of 10 years from the date of shipment from the factory. Warranty shall further guarantee the glass units for 2 years against glass breakage due to improper or inadequate installation methods or materials.

B. Pass through to owner 20-year manufacturer's product warranty on silicone sealant used for glazing seal. Perform any tests and inspections required by manufacturer as a condition of the 20-year warranty.

PART 2. PRODUCTS

2.1 LAMINATED GLASS:

A. Viracon Laminated (Clear) glass unit of 9/16" nominal thickness.

B. Construction:

1. 1/4 inch thick clear heat-strengthened outer light with "Velour" frosted finish on #1 surface.

2. 0.060" PVB interlayer consisting of:

a. 0.015" (A) Cool White 80% PVB 21800

b. 0.015 (9) Arctic Snow PVB 216500

c. 0.015" (A) Cool White 80% PVB 21800

d. 0.015" (A) Cool White 80% PVB 21800

3. 1/4 inch thick clear heat-strengthened inner light

C. Provide glass meeting as closely as possible the following target performance requirements:

1. Visible transmittance: 41 percent

D. Comparable products of other manufacturers may be acceptable subject to approval of the Architect.

2.2 GLAZING ACCESSORIES

A. Setting blocks shall be neoprene, EPDM or silicone rubber with a Shore A durometer hardness of 80 to 90. Setting blocks shall be a minimum of 4" long and of a width at least equal to the thickness of the supported glass or panel. Two blocks per light of glass or panel shall be used. Blocks shall be equally spaced and located between the 1/8 and ¼ points of the edge of the glazing infill.

B. Side blocks shall be neoprene, EPDM or silicone rubber with a Shore A durometer hardness of 50 to 70. Side blocks shall be a minimum of 4" long. Thickness of side blocks shall allow 1/8"

clearance between the side block and the edge of the glass. Side blocks shall be placed at both ¼ points of all edges of the glazing infill except for the edge bearing on the setting blocks.

C. Exterior glazing gaskets shall be solid extruded silicone sponge rubber with a Shore A hardness of 40+/-5. Exterior gaskets shall have a continuous spline engaging a matching groove in the framing.

D. Interior spacer gaskets shall be extruded silicone or neoprene rubber compatible with the silicone wet seal. Shore A hardness shall be 75+/-5 for hollow profiles and 60+/-5 for solid profiles.

E. Silicone sealant used for interior wet seal shall be a medium modulus silicone sealant. Acceptable sealant manufacturers and brands are:

1. Dow Corning 795
2. Tremco, Inc., Spectrem 2
3. General Electric, Silpruf
4. Other brands and products of other manufacturers may be acceptable subject to approval by the Architect.

F. Design gaskets and glazing system so that sponge gaskets are compressed 20 to 35 percent in the completed installation.

PART 3. EXECUTION

3.1 FABRICATION AND MANUFACTURE:

A. All glass herein specified shall be fabricated or manufactured to conform to the requirements of the previously cited Federal Specifications and industry standards. All glass shall be factory labeled on each pane and labels shall remain on glass until final cleaning. All glass shall be paper packed and shall not be unpacked at Worksite until it is to be used. Sizes of glass shown on Drawings are approximate and are indicated as a guide for estimating purposes only.

B. Tempered or heat strengthened glass shall be fitted with clean cut edges, with edges free of spalls, impact damage, chips or deep shark teeth. No nipping will be permitted. Tong marks shall be buried within the glazing channel.

3.2 GLAZING PROCEDURES:

A. Glazing procedures for setting of glass shall be as recommended by the glass manufacturer and with all work done by experienced glaziers and in strict accordance with procedures recommended in the previously cited GANA manual, unless specifically excepted hereinafter. All Work shall be performed in a neat and workmanlike manner, with sight lines plumb and true, all connections well-fitted, and with joints weather and water tight.

B. Glass shall be centered in the glazing pocket. Glass shall be set on setting blocks as specified elsewhere in this section.

C. Edge blocks shall be installed to prevent the glazing infill from becoming disengaged from the frame and from contacting the frame. Edge blocks shall be as specified elsewhere in this section.

D. Glazing gaskets shall be installed as recommended by the window manufacturer, and in accordance with procedures recommended in the previously cited GANA manual.

3.3 FINAL CLEANING:

A. After inspection and approval, all labels, smears, excess sealants and other extraneous materials shall be removed and the glass cleaned to a degree acceptable to the Owner. Methods used to remove materials and clean the glass shall not scratch or otherwise damage the glass.

3.4 PROTECTION:

A. Glass shall be adequately protected against damage or breakage. All cracked or damaged glass or panels shall be replaced at Contractor's expense before acceptance of the work. Any damage to Work of other trades shall be satisfactorily corrected at Contractor's expense.

END OF SECTION 08 88 00

SECTION 099600 - HIGH-PERFORMANCE COATINGS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this section.

1.2 SUMMARY

A. This section includes surface preparation and field application of high-performance fluoropolymer coating system to various items and surfaces listed under "Section 3.1 High Performance Coating Systems – Coating Schedule" below and include:

1. Exposed exterior and interior items and surfaces.
2. Surface preparation, priming, and finish coats specified.

1.3 PERFORMANCE REQUIREMENTS

A. Provide coating system suitable for application to previously coated steel and aluminum surfaces.

1.4 SUBMITTALS

A. Product Data: For each paint system specified. Include primers.

1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and coating material proposed for use.

2. Manufacturer's Information: Provide manufacturer's technical information, including instructions for handling, storing and applying each coating material proposed for use.

3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOC's).

B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.

1. After color selection, the Architect will furnish color chips for surfaces to be coated.

2. Custom color may be required for Alternate 2 work (tri-color clock frame coating).

C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed high-performance coating system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

B. Source Limitations: Obtain block fillers, primers and undercoat materials for each coating system from the same manufacturer as the finish coats.

C. Mock-ups: Provide a full-coat benchmark finish sample of each type of coating system and substrate required. Comply with procedures specified in PDCA P5. Duplicate finish of approved sample submittals.

1. Architect will select area or surface to represent surfaces and conditions for application of each type of coating system.
    a. One interior structural steel member
    b. Two cast aluminum clock frame members
2. After coating systems are accepted, Architect will use benchmark to evaluate coating systems applied on the project.
3. Final approval of colors and application will be from benchmark sample.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 degrees F (7 degrees C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing and application.

1.7 PROJECT CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 degrees F (10 and 32 degrees C).

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 95 degrees F (10 and 35 degrees C).

C. Do not apply paint in snow, rain, fog, or mist, or when the relative humidity exceeds 85 percent, or at temperatures less than 5 degrees F (3 degrees C) above the dew point, or to damp or wet surfaces.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: The requirements for High-Performance Coatings are based on Coraflon ADS, manufactured by PPG Industries, Inc.

B. Manufacturers Names: The following manufacturer is referred to in the paint schedule by use if shortened versions of the name, which is shown below.

1. PPG Industries, Inc.

2.2 COATING MATERIALS, GENERAL

A. Material Compatibility: Provide primers and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
1. Basis of Design Coating System:
   a. Coraflon Epoxy Primer/Intermediate, ADS 573 Series
   b. Coraflon ADS
   c. Coraflon ADS metallic coatings require a Coraflon ADS clear-coat

B. Material Quality: Provide manufacturer's highest grade of the various high-performance coatings specified. Materials not displaying manufacturer's product identification are not acceptable.

C. VOC Classification: Provide high-performance coating materials, including primers and finish-coat materials, that have a VOC classification of 450 g/L or less.

PART 3 – HIGH-PERFORMANCE COATING SYSTEMS

3.1 Coating Schedule

A. Exterior – Cast Aluminum
   1. Surface Preparation: Surface is to be prepared via SSPC SP-2 / SP-3 "Hand-Tool Cleaning" / "Power-Tool Cleaning" minimum. The abraded surface shall be cleaned, but the textured, cast surface shall remain.
   2. Basis of Design System - Primer:
      i. Apply one coat primer, 2.0 – 4.0 mils DFT.
      ii. Primer must be applied defect free. No holidays, runs or sags, mist coat, dry spray, etc.
      iii. Allow primer to cure a minimum of 6 hours before topcoating.
   3. Basis of Design System - Finish Coat:
      i. Apply one finish coat, 1.5-2.0 mils DFT.
      ii. Finish Coat must be applied defect free. No holidays, runs or sags, mist coat, dry spray, etc.
   4. Basis of Design System - Clear Coat:
      i. Apply one clear coat, 1.5-2.0 mils DFT.
      ii. Finish Coat must be applied defect free. No holidays, runs or sags, mist coat, dry spray, etc.

B. Interior – Historic Structural Steel
   1. Surface Preparation: Surface is to be prepared via SSPC SP-2 / SP-3 "Hand-Tool Cleaning" / "Power-Tool Cleaning" minimum.
   2. Existing caulk, sealant, and residue/contamination to be completely removed from substrate to be coated by means deemed appropriate by contractor and approved by Architect.
   3. Basis of Design System - Primer:
      i. Apply one coat primer, 2.0 – 4.0 mils DFT.
      ii. Primer must be applied defect free. No holidays, runs or sags, mist coat, dry spray, etc.
      iii. Allow primer to cure a minimum of 6 hours before topcoating.
   4. Basis of Design System - Finish Coat:
      i. Apply one finish coat, 1.5-2.0 mils DFT.
      ii. Finish Coat must be applied defect free. No holidays, runs or sags, mist coat, dry spray, etc.
   5. Basis of Design System - Clear Coat:
      i. Apply one clear coat, 1.5-2.0 mils DFT.
      ii. Finish Coat must be applied defect free. No holidays, runs or sags, mist coat, dry spray, etc.

3.2 Quality Assurance

- Contractor is required to strictly adhere to the coating manufacturer's recommended practices with regard to:

  Storage
  Mixing / Thinning
  Application
  Environmental Conditions / Concerns

- Contractor is required to strictly adhere to the caulking / sealant manufacturer's practices with regard to application.

- Contractor accepts all responsibility and liability for:

  Public safety / worker safety
  Hazardous & non-hazardous waste disposal
  Airborne paint and overspray concerns & claims
  All masking and protection of glass and non-coated substrate
  Any and all damage to glass and substrates

- Owner / Architect reserves the right to engage in independent 3rd party inspection for all work in progress. Inspection of the following areas should be considered appropriate:

  Surface preparation: determine that the degree of surface preparation specified is achieved. Surface profile to be measured using coarse Testex Tape/micrometer. No visible contamination has occurred since the surface prep operation, or since application of previous coat. There are no visible defects in previous coat.

  Coating storage: Determine that all coatings are stored within the manufacturer's recommended storage temperatures. Establish that the coatings to be applied have not been damaged by age, improper storage, handling, etc. Establish that the coatings to be applied are the coatings specified.

  Mixing and thinning: Document all product codes and batch numbers. Determine that the proper mixing ratios, components, induction times, and thinner amounts & product codes are correct.

  Application: Document application equipment including tip sizes, pressures, and relevant information. Measure coating DFT thickness per SSPC PA-2, monitor and record applicator's WFT measurements if possible. Observe and document all pinholes, runs, sags, holidays, dry-spray, and visible defects in applied coating.

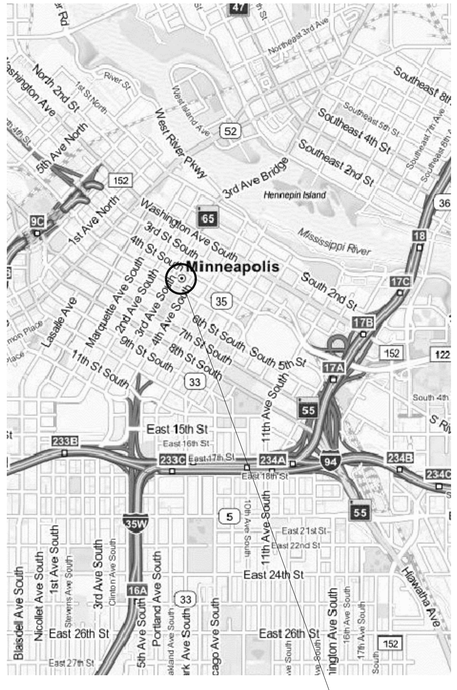
Environmental: Document ambient temperatures, relative humidity, surface temperature, and dew point prior to application. Establish that each reading is within the manufacturer's specified range prior to application.

Documentation: Record keeping is not limited to the areas listed above.

END OF SECTION – 09 96 00

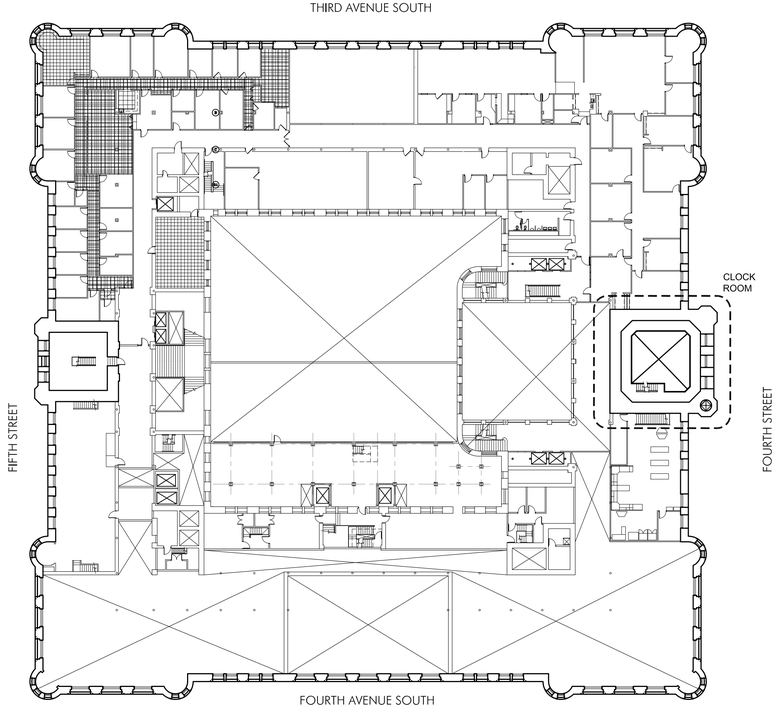
Municipal Building - Clock Restoration

250 South Fourth Street, Minneapolis Minnesota 55415



1 | Project Location | N

A000 | not to scale



2 | Building Reference Plan | N

A000 | 1/32" = 1'-0"

DRAWING INDEX

GENERAL NOTES

As a designated historic site, the building is to be fully protected from damage during the course of construction. All damaged areas and finishes resulting from this work are to be restored by the contractor to match original construction.

The contractor shall verify all existing conditions and dimensions in the field before beginning work.

The contractor shall immediately report any discrepancies between drawings and existing conditions and dimensions to the architect for resolution.

Do not scale drawings.

All construction is new unless specifically noted as existing.

Where "match" is indicated on the drawings, the item is to be duplicated in all respects including, but not necessarily limited to, dimension, construction method, material, profile, and finish.

Where "repair" or "in-fill" is indicated on the drawings, the repair or in-fill item is to match and blend with adjacent surfaces and features in all respects.

PROJECT DIRECTORY

Owner

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WJE Engineers Architects Materials Scientists
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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Architect under the laws of the State of Minnesota.

Signature

Angela Wolf Scott
Name

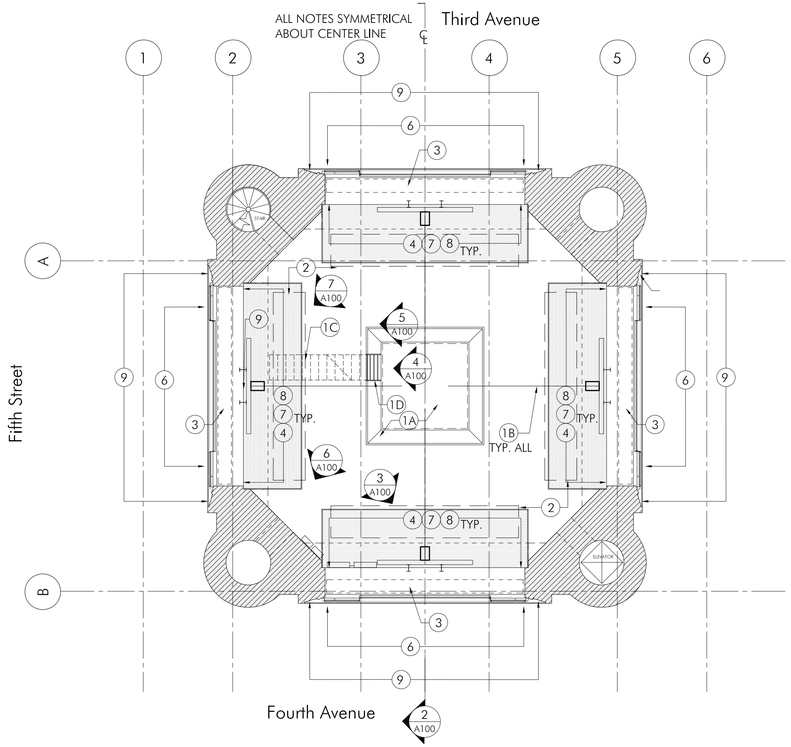
49347 6.30.2016
License # Date

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DRAWN AWS, MS DATE 9 JUNE 2015 REVISION

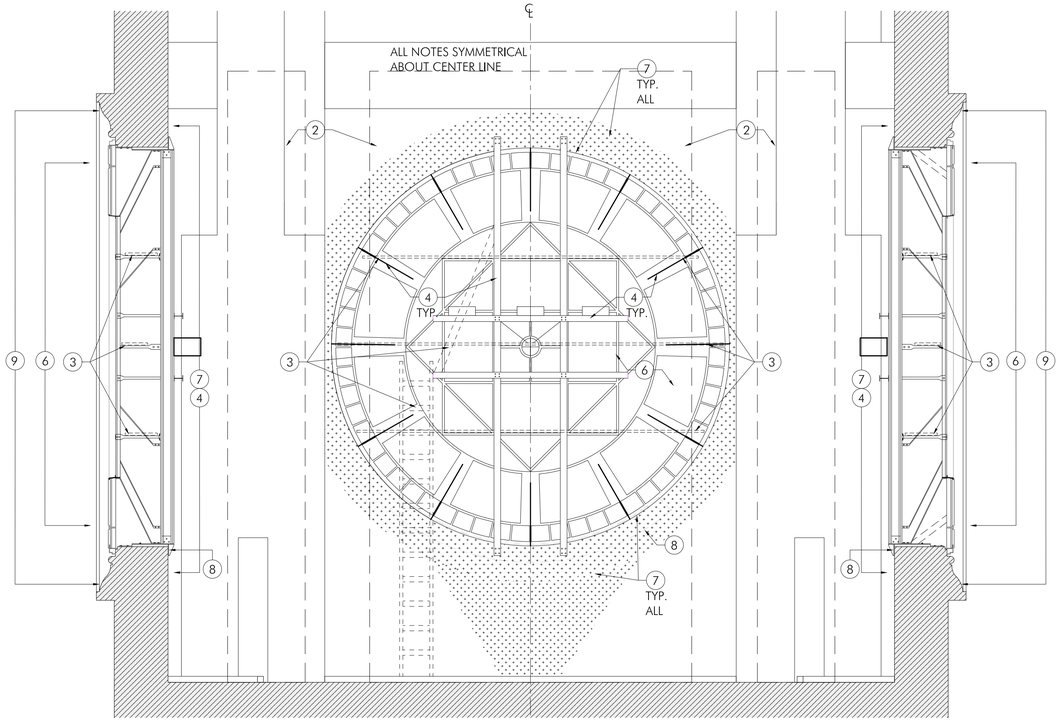
Cover

A000



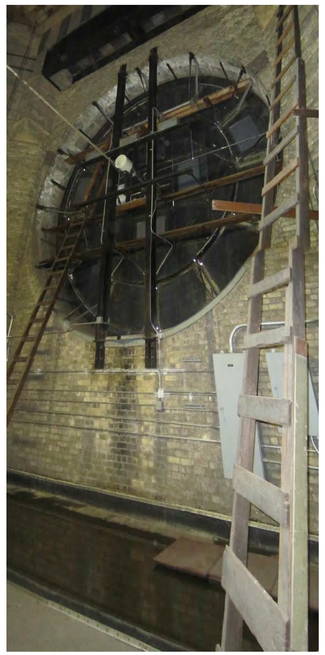
1 | Plan (Cut at Clock Center)

A100 | 1/8" = 1'-0"



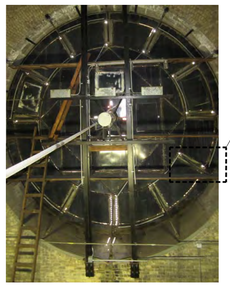
2 | Section Through Clock Room

A100 | 1/4" = 1'-0"



3 | Typical Interior Clock Face

A100 | not to scale



4 | Typical Clock Face Detail

A100 | not to scale

5 | Typical Clock Face Framing

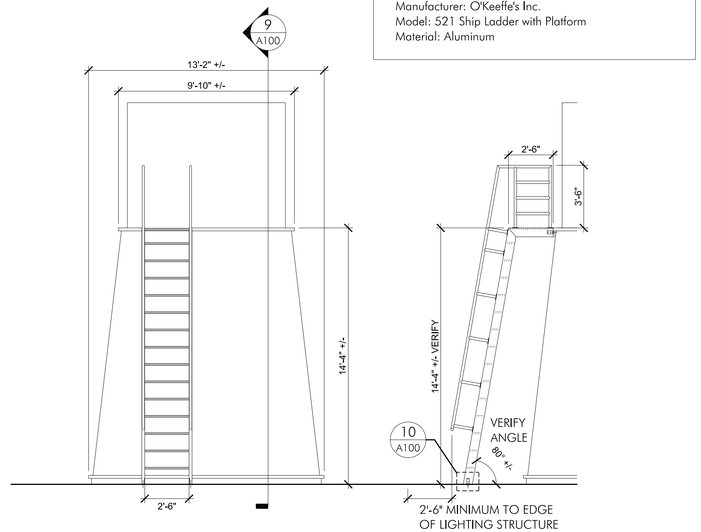
A100 | not to scale

6 | Electrical Panels

A100 | not to scale

7 | Typical Evaporation Pan

A100 | not to scale

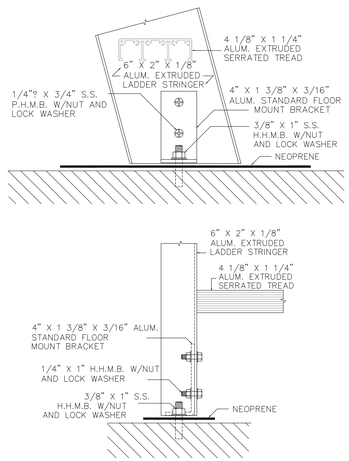


8 | Center Platform with Permanent Ladder

A100 | 1/4" = 1'-0"

9 | Center Platform Section

A100 | 1/4" = 1'-0"



10 | Ladder Attachement

A100 | 3" = 1'-0"

SHEET NOTES

1. HISTORIC CLOCK WORKS
   - A) Existing platform tower and historic clock works to remain.
   - B) Existing original clock works rods to be removed and reinstalled as required for construction activities.
   - C) Remove existing ladder to clock works platform.
   - D) Provide and install permanent ladder. See 8/A100.
2. Lighting support structure. Typical at all four faces. See Sheet A102.
3. Remove access planking and ladders at back of clock face. Typical at all four faces. See 3/A100.
4. Existing clock face support structure and bracing to remain. See "S" Series sheets. Clean, recondition and repaint members. Typical at all four faces.
6. See Sheet A101 for work at clock face.
7. Repoint and clean brick at clock face opening (area inside opening), 2'-0" of wall surface outside the masonry opening, and below opening as indicated. Typical all four openings.
8. Rebuild deteriorated brick masonry within area indicated. Remove and reinstall adjacent existing flashing. Provide separation for dissimilar metals between the existing and new flashing. Typical all sides.
9. Repoint exterior stone masonry at perimeter of clock face. Remove rust stain from exterior wall below clock face. Typical all four facades.

LEGEND

- EVAPORATION PAN - EXISTING TO REMAIN
- WALLS - EXISTING TO REMAIN
- REPOINT MASONRY

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Architect under the laws of the State of Minnesota.

Signature

Angela Wolf Scott
Name

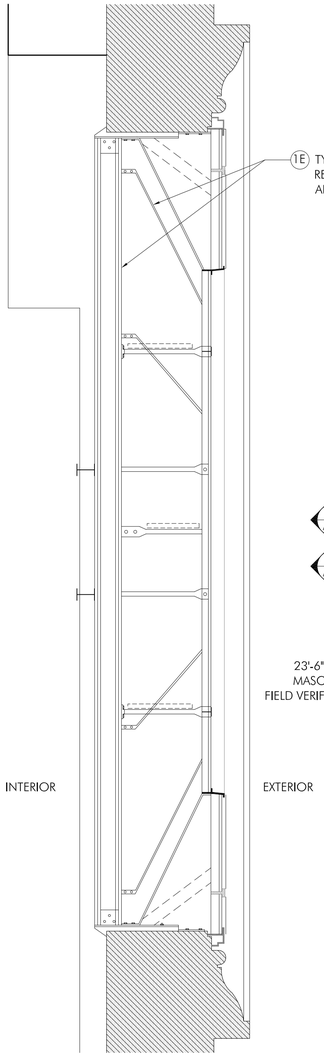
49347 | 6.30.2016
License # | Date

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

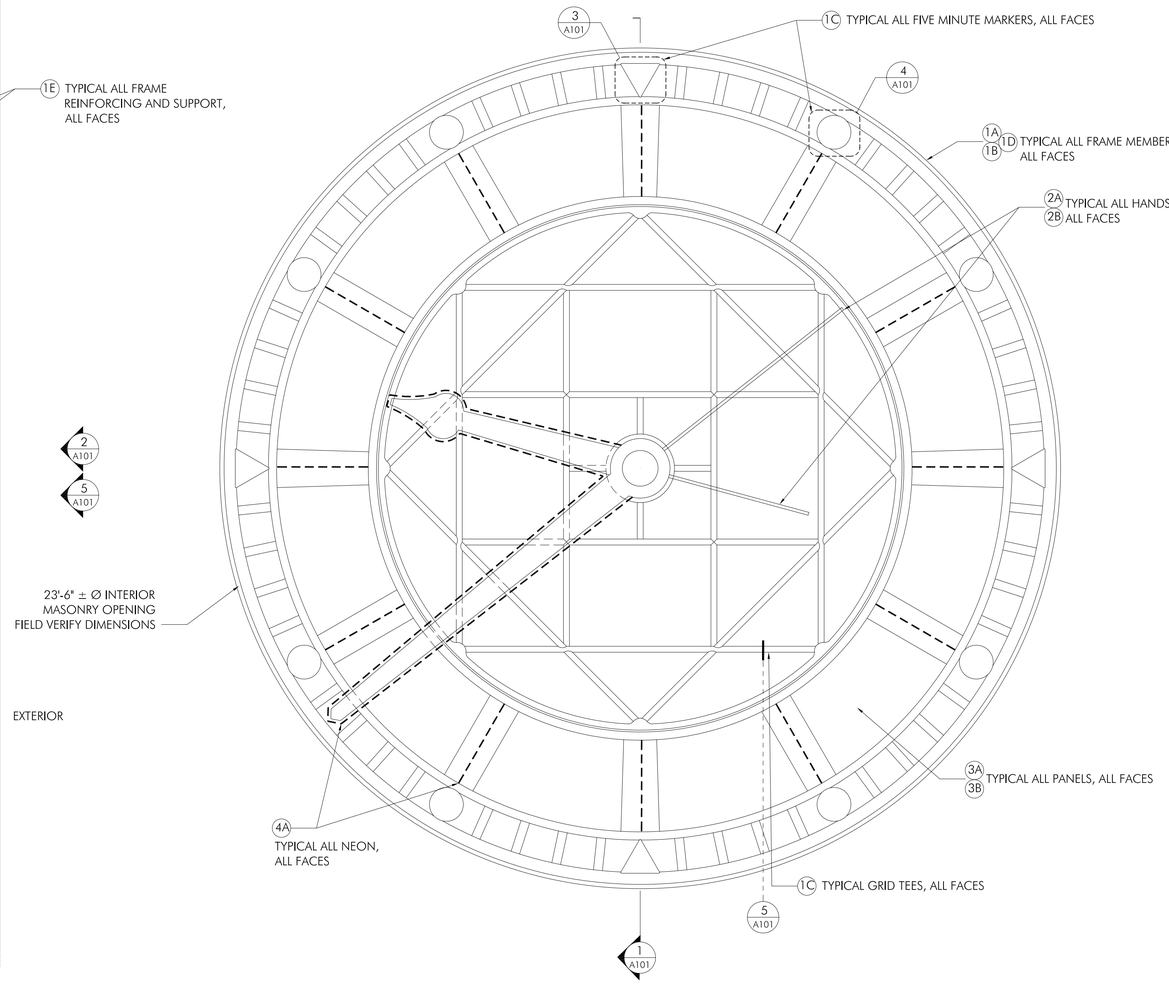
DRAWN AWS, MS | DATE 9 JUNE 2015 | REVISION

Clock Room
Plan and Section

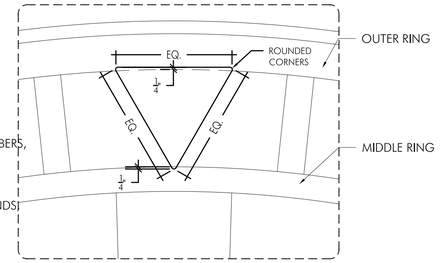
A100



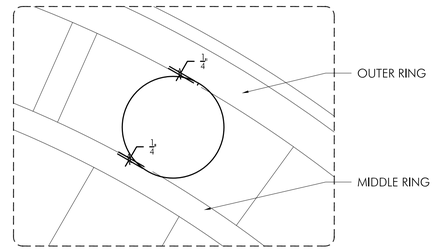
1 | Typical Section Through Clock Face
A101 | 1/2" = 1'-0"



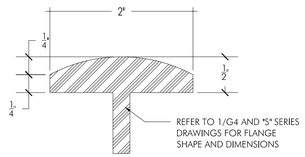
2 | Typical Elevation of Clock Face
A101 | 1/2" = 1'-0"



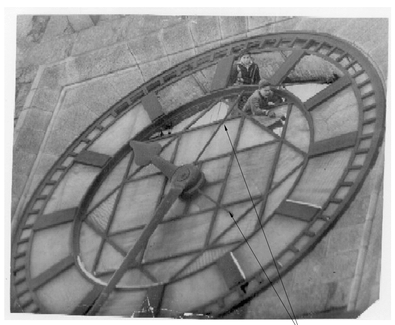
3 | Five-Minute Marker
A101 | 1 1/2"=1'-0" AT QUARTER HOUR MARKS



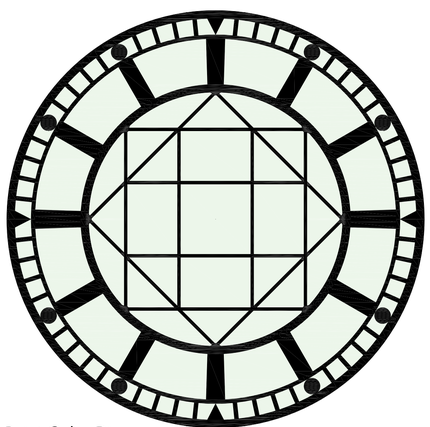
4 | Five-Minute Marker
A101 | 1 1/2"=1'-0" AT INTERMEDIATE MARKS



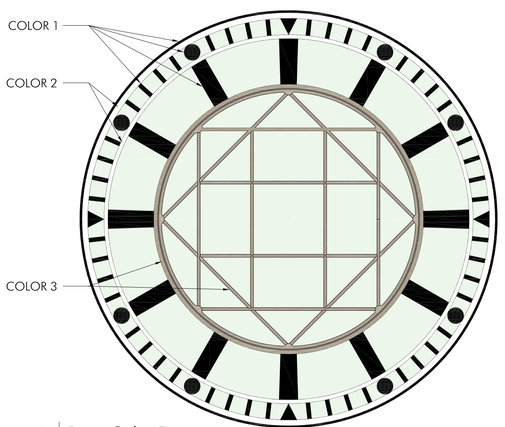
5 | Historic Grid Tee Profile
A101 | 1'-0"=1'-0"



6 | Historic Photograph of Clock Face
A101 | not to scale



7 | Paint Color Diagram
A101 | NOT TO SCALE BASE BID - MONOCHROME



8 | Paint Color Diagram
A101 | NOT TO SCALE ALTERNATE 2 - POLYCHROME (3 COLORS)

SHEET NOTES

1 CLOCK FRAME
Typical at all framing members, all four faces:
A) Remove existing, cast iron, frame members. Salvage one complete face's worth of historic frame members, selection based on best condition.
B) Provide and install cast aluminum frame members to replicate the exterior profiles of the existing members modified for drainage, glazing, and connections as detailed in "S" Series and "G" Series sheets.
C) See details 3/A101, 4/A101, and 5/A101 for historic shapes and profiles for frame members that no longer exist. See S1 for diagram profiles of frame members that do exist. Contractor to verify existing frame member dimensions.
D) Paint all cast aluminum frame members. See diagram 7/A101 for Base Bid Color Diagram and 8/A101 for Alternate 2 Color Diagram.
E) See "S" Series sheets for work related to existing clock face reinforcing and support structure to remain. Prepare and paint interior support structure.

2 CLOCK HANDS & MODERN CLOCK WORKS
Typical at all hands, all four faces:
A) Remove and reinstall existing clock hands.
B) Patch holes in hands from neon flush, finishing to match. Paint hands Color 1. Re-balance the hands with tails in a similar style to historic photograph (see 6/A101). Re-balance, recalabrate, and restore drive shaft and time keeping mechanism.

3 CLOCK FACE PANELS
Typical at all panels, all four faces:
A) Remove existing, fixed, porcelain-enameled metal panels, perimeter channel and accessories. Salvage one panel, to be chosen by Owner.
B) Provide and install heat-treated, laminated glass panels. See "G" Series sheets for glazing details.

4 NEON
Typical at all neon, all four faces:
A) Remove all existing neon tubing, mounting devices, associated ballasts, conduits, and wiring at hour and minute hands. See "E" Series sheets. Salvage neon outlines for one set of hands.

SEE S1 FOR DIAGRAM PROFILES OF ALL EXISTING CAST FRAME MEMBERS TO BE REPLACED.

MACDONALD & MACK ARCHITECTS
400 SOUTH FOURTH STREET STE 712 MINNEAPOLIS MINNESOTA 55415
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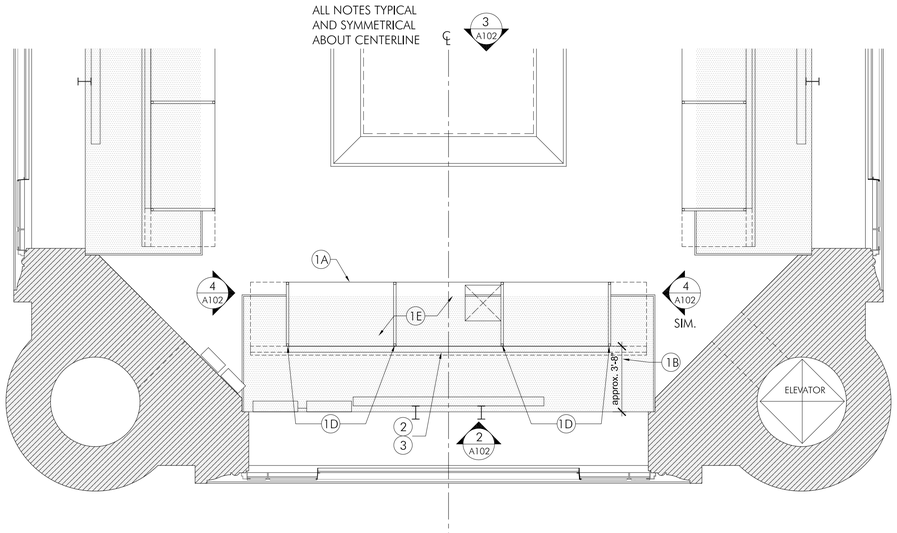
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Architect under the laws of the State of Minnesota.
Signature
Angela Wolf Scott
Name
49347 6.30.2016
License # Date

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DRAWN AWS, MS DATE 9 JUNE 2015 REVISION

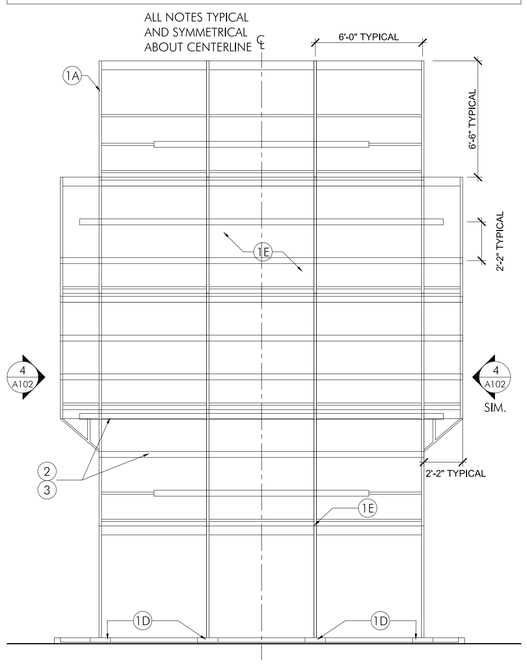
Enlarged
Clock Face

A101

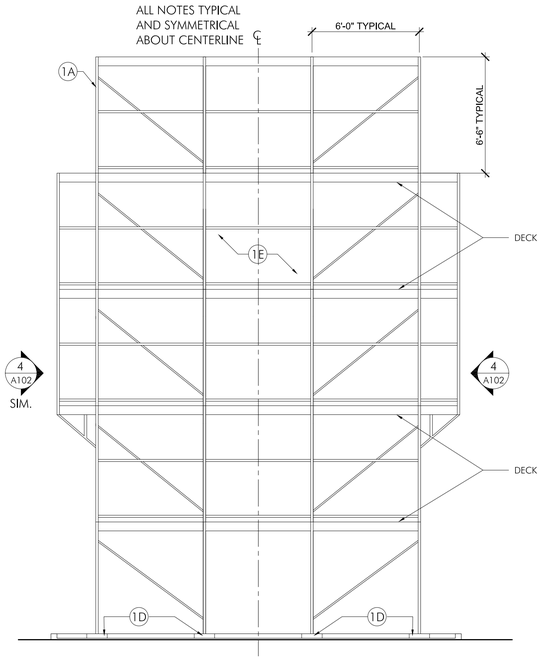


1 | Typical Lighting Structure
A102 | 1/4" = 1'-0"

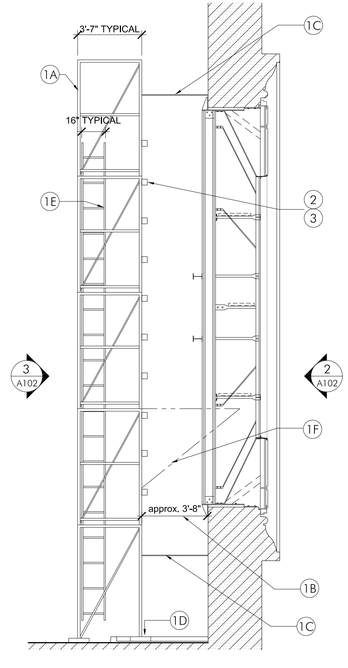
BASIS OF DESIGN
Manufacturer: Etobicoke Ironworks Limited (EIW)
Model: Total Scaffold System (TSS)
Description: galvanized steel framing, aluminum plank deck with $\frac{1}{4}$" plywood overlay, anchored with stainless steel self-tapping screws



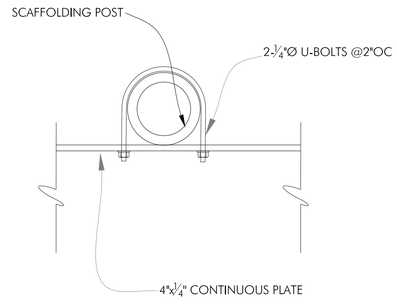
2 | Typical Lighting Structure Elevation
A102 | 1/4" = 1'-0"



3 | Typical Lighting Structure Elevation
A102 | 1/4" = 1'-0"



4 | Typical Lighting Structure Elevation
A102 | 1/4" = 1'-0"



5 | Lighting Mounting Assembly Section Detail
A102 | 1.5" = 1'-0"

SHEET NOTES

1. SCAFFOLDING/LIGHTING STRUCTURE
   Typical at interior of all four faces:
   A) Provide and install scaffolding/lighting structure at each clock face constructed of standard scaffolding components as drawn. Diagonal bracing at room-side of structure. No diagonal bracing at clock face-side of structure.
   B) Maintain a minimum of 3'-0" clearance from electrical panels (approx. 3'-8" to wall). Match all four structures the same distance from face of wall based on that clearance.
   C) Anchor each structure to masonry wall above and below clock face opening.
   D) Provide and install $\frac{1}{4}$" condensed foam and concrete pavers at clock-side scaffolding legs to protect evaporation pan membrane and raise scaffolding legs above highest possible water level.
   E) Provide and install all OSHA required guardrails, toe guards, and gates where feasible. Contact architect when required safety feature is not feasible.
   F) Provide Owner with additional scaffolding components sufficient for cantilevering a platform 5'-0" to back-side of clock face (to access interior side of clock face as necessary in the future).

2. LIGHT MOUNTING ASSEMBLY
   Provide and install additional custom members and panels to mount light fixtures and associated electrical. See detail 5/A102 for typical assembly.

3. LIGHTING
   Mount light fixtures and junction boxes to mounting assembly. See "E" Series sheets.

LEGEND

EVAPORATION PAN - EXISTING TO REMAIN

WALLS - EXISTING TO REMAIN

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ARCHITECTS
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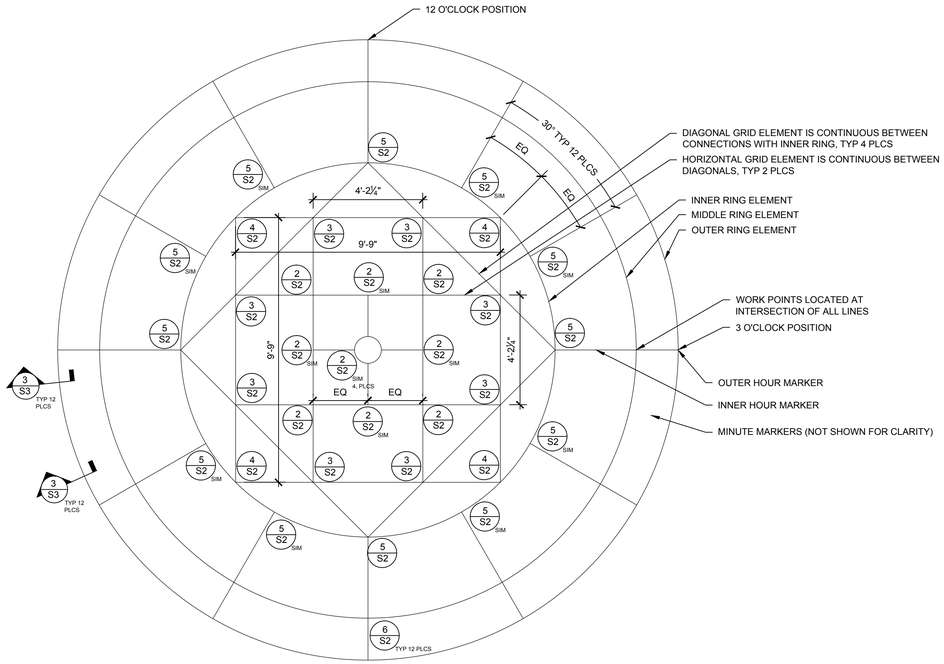
DRAWN AWS, MS DATE 9 JUNE 2015 REVISION

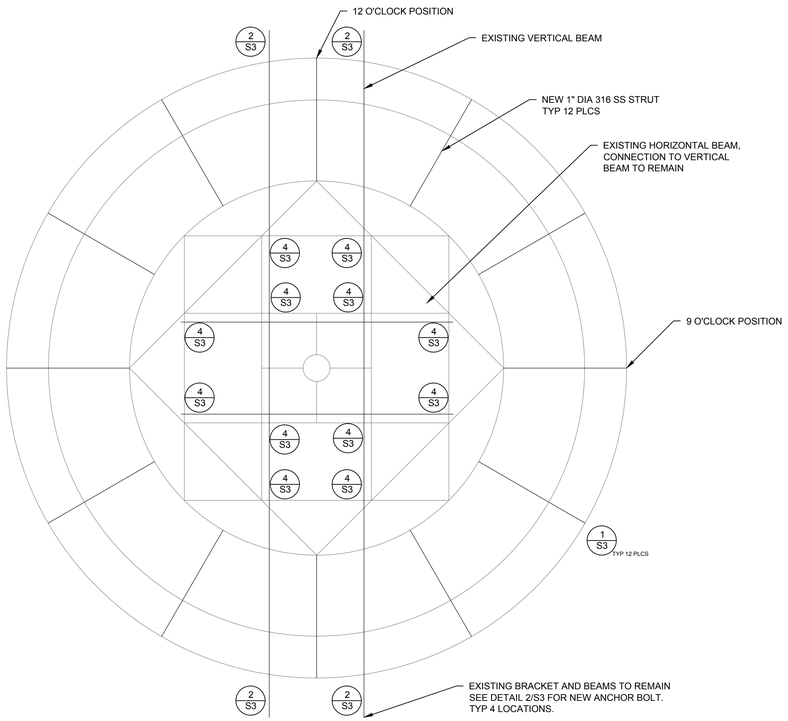
Lighting Structure

A102



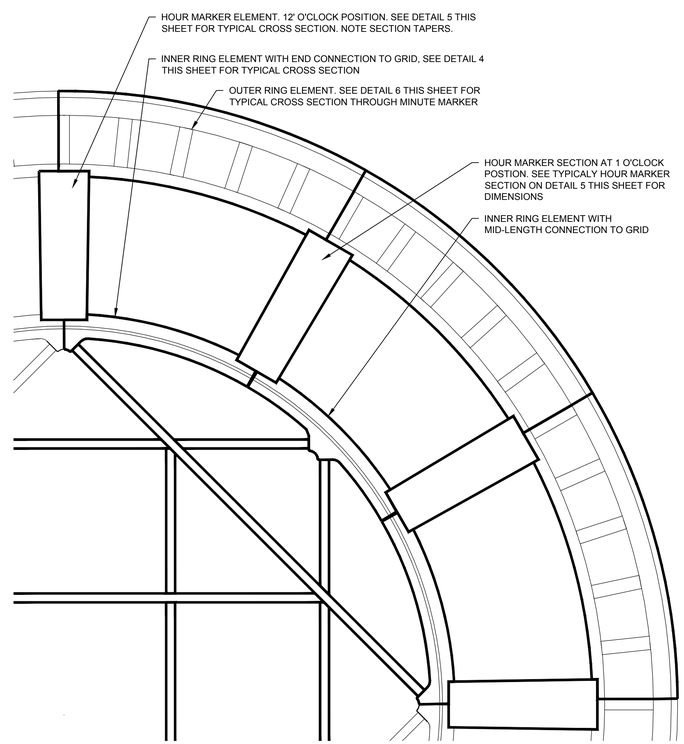
1 WORK POINT (WP) AND DETAIL CALL OUT - EXTERIOR ELEVATION

3/8" = 1'-0"



2 DETAIL CALL OUT - INTERIOR ELEVATION

3/8" = 1'-0"



3 CASTING SECTION CALL OUT - EXTERIOR ELEVATION

3/4" = 1'-0"

GENERAL STRUCTURAL NOTES

GENERAL
THE SCOPE OF THE STRUCTURAL PORTION OF THESE DRAWINGS IS LIMITED TO THE ALUMINUM CLOCK FACE ELEMENTS, THE STAINLESS STEEL FASTENERS, THE STAINLESS STEEL CONNECTING ASSEMBLAGES, AND THE ANCHORAGE INTO THE BRICK MASONRY SURROUND WITHIN THE INTERIOR. THE VERTICAL AND HORIZONTAL BEAMS SUPPORTING THE CLOCK FACE ARE ADEQUATE TO RESIST CURRENT CODE MANDATED WIND AND DEAD LOADS AND DO NOT REQUIRE FURTHER MODIFICATION.

CONSTRUCTION SHALL COMPLY WITH ALL REQUIREMENTS SET FORTH WITHIN THE PROJECT MANUAL.

CODES
1. 2014 MINNESOTA STATE BUILDING CODE
2. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES - ASCE 7-10
3. ALUMINUM DESIGN GUIDE 2010
4. AISC DESIGN SPECIFICATION 360-12
5. BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES - ACI 530-12

LOADS
1. WIND - 24 PSF WINDWARD 26 PSF LEEWARD
2. DEAD LOAD - SELF WEIGHT AND 6.5 PSF FOR 1/2" GLASS

METALS
1. CAST ALUMINUM ELEMENTS AS SHOWN SHALL BE 356.0 OR A356.0 AS DESIGNATED BY THE ALUMINUM ASSOCIATION
2. STAINLESS STEEL FASTENERS AND CONNECTING PLATES SHALL BE 316 OR 316L AS SHOWN ON THE DRAWINGS

MASONRY
1. REBUILT MASONRY AS SHOWN SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

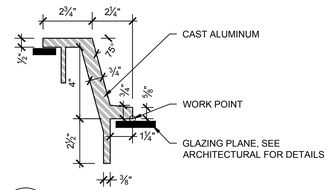
SHEET NOTES

TYPICAL WORK INDICATED HERE SHALL BE APPLIED TO ALL FOUR (4) CLOCK FACES UNO
1. STRUCTURAL DETAILS CALLED OUT SHOULD BE ROTATED AS APPROPRIATED BASED ON GEOMETRY SHOWN ON THIS SHEET.
2. AT DETAIL 2/S2 SIMILAR, CONNECTION IS TO BE ONLY ON ONE SIDE OF THE CONTINUOUS T-SHAPED GRID ELEMENT.
3. AT DETAIL 5/S2 SIMILAR, THERE ARE NO GRID ELEMENTS FRAMING INTO THE JOINT.
4. DETAIL 3/S3 SHALL BE APPLIED AT THE SHOWN POSITION, ONE MINUTE PAST AND PRIOR TO EACH HOUR MARKER, WITHIN EACH HOUR SUCH THAT THERE WILL BE 24 TOTAL INSTALLATIONS OF 3/S3 FOR EACH CLOCK FACE.
5. DETAIL 4/S3 SHALL BE APPLIED AS SHOWN BETWEEN THE VERTICAL BEAM AND HORIZONTAL GRID ELEMENT AT 8 LOCATIONS PER CLOCK FACE AND BETWEEN THE HORIZONTAL BEAM AND VERTICAL GRID ELEMENT AT 4 LOCATIONS PER CLOCK FACE.
6. MIDDLE RING, OUTER HOUR MARKER, MINUTE MARKERS, AND OUTER RING ARE CAST MONOLITHICALLY OUT OF 356.0 OR A356.0 ALUMINUM ALLOY FOR EACH HOUR.
7. ALL DIMENSIONS SHOWN ON ELEVATIONS AND SECTIONS ARE APPROXIMATE AND SUBJECT TO CHANGE TO BETTER MATCH THE EXISTING STRUCTURAL SHAPES, TO ACCOMMODATE GLAZING DETAILS AS SHOWN ON THE ARCHITECTURAL DRAWINGS, OR TO ACCOMODATE CASTING AND/OR MACHINING PROCESS. CONTRACTOR IS RESPONSIBLE FOR MEASURING EXISTING ELEMENTS TO NEAREST 1/16-INCH PER PROJECT MANUAL.

LEGEND AND ABBREVIATIONS

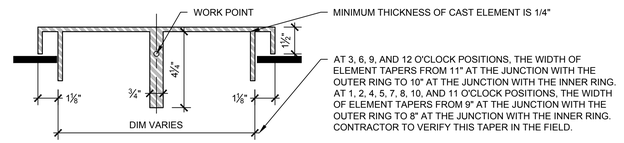
(#/##) DETAIL CALLOUT DETAIL # SHEET ##

TYP - TYPICAL
SIM - SIMILAR SEE NOTES
PLCS - PLACES
SS - STAINLESS STEEL



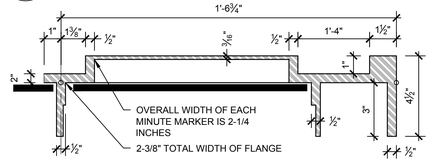
4 TYPICAL INNER RING SECTION

3" = 1'-0"



5 TYPICAL HOUR MARKER SECTION

3" = 1'-0"



6 TYPICAL MIDDLE/OUTER RING SECTION THROUGH MINUTE

1/2" = 1'-0"

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605 North Highway 169, Suite 1000
Minneapolis, Minnesota 55441
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www.wje.com

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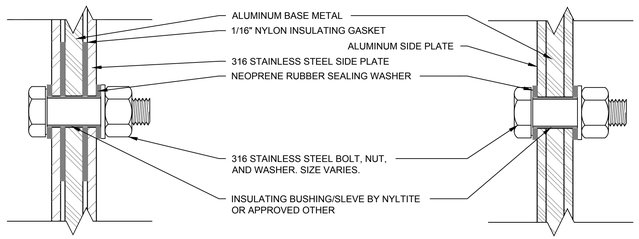
Lucas Malm
Name
Signature
6/9/15
Date
49031
License #

REVISION
DATE 9 JUNE 2015
DRAWN AWS, MS

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

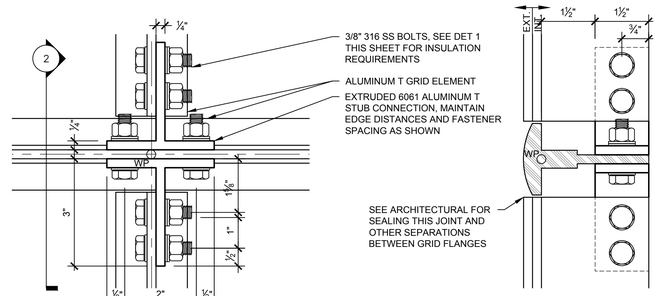
Clock Room Elevations and Sections

S1



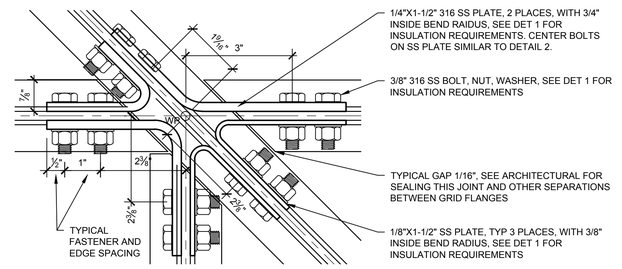
1 TYPICAL DETAIL FOR CONNECTING DISSIMILAR MATERIALS

1'-0" = 1'-0"



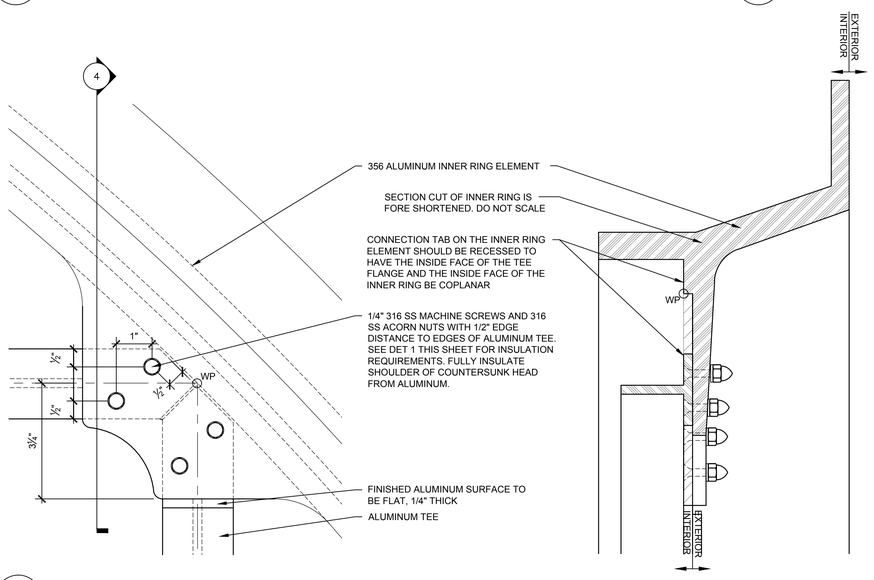
2 ORTHOGONAL GRID CONNECTION - INTERIOR VIEW

6" = 1'-0"



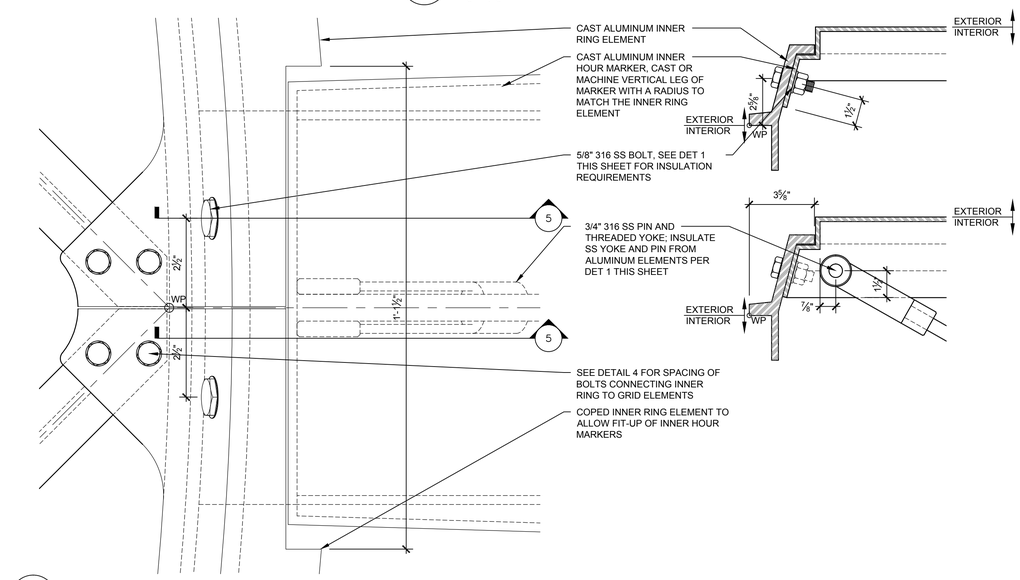
3 SKEWED GRID CONNECTION - INTERIOR VIEW

6" = 1'-0"



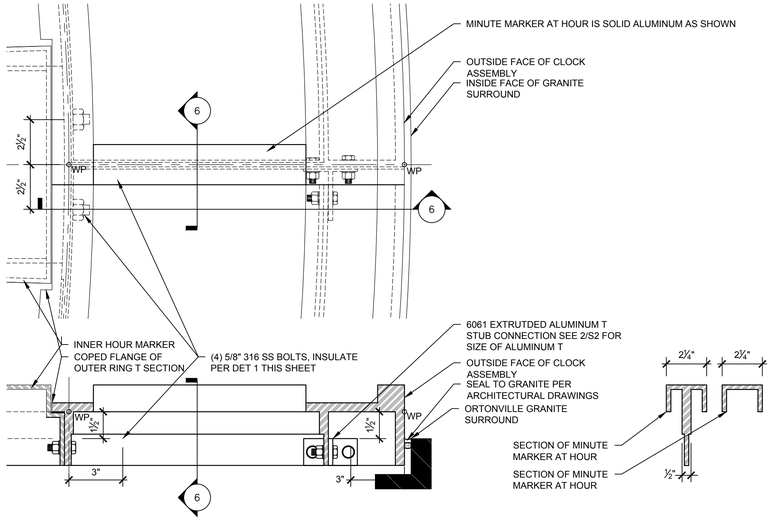
4 GRID TO INNER RING CONNECTION - MIDDLE OF INNER RING ELEMENT - EXTERIOR VIEW

6" = 1'-0"



5 INNER RING TO HOUR MARKER CONNECTION -END OF INNER RING ELEMENT - EXTERIOR VIEW

6" = 1'-0" / 3" = 1'-0"



6 INNER HOUR MARKER AND OUTER RING CONNECTIONS

6" = 1'-0" / 3" = 1'-0"

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Lucas Malm
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6/9/15 — Date

49031 — License #

REVISION

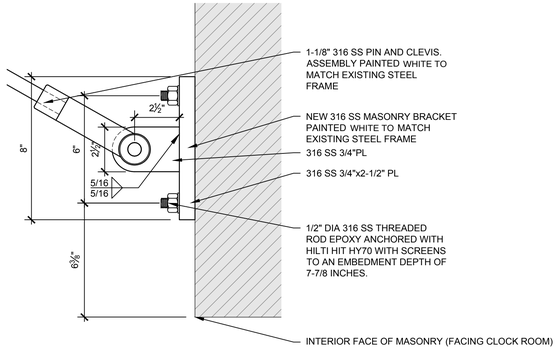
DATE 9 JUNE 2015

DRAWN AWS, MS

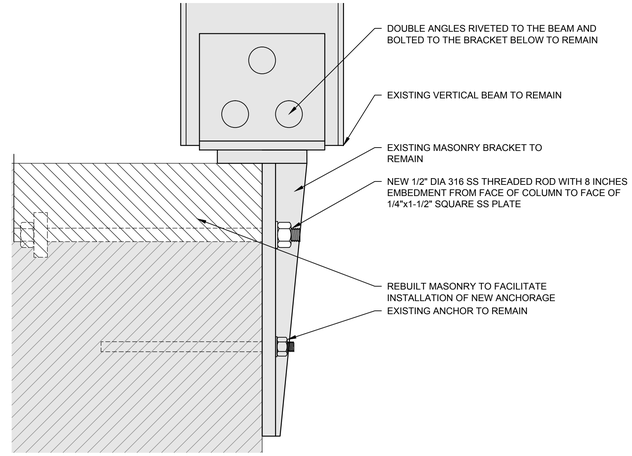
Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

Connection Details

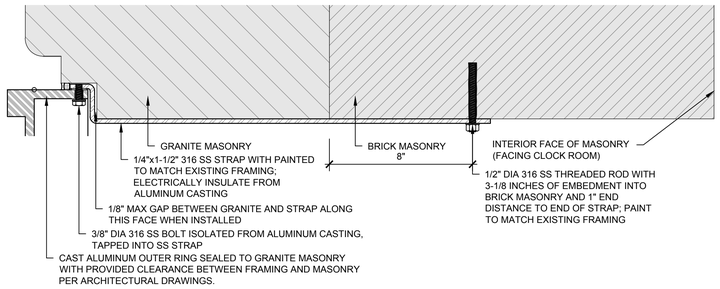
S2



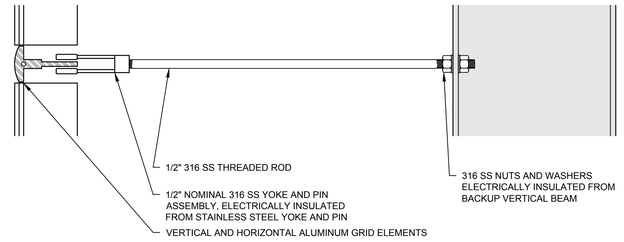
1 TYPICAL RING STRUT TO MASONRY CONNECTION DETAIL
3" = 1'-0"



2 TYPICAL VERTICAL BEAM TO MASONRY CONNECTION
3" = 1'-0"



3 TYPICAL OUTER RING TO MASONRY CONNECTION STRAP
3" = 1'-0"



4 TYPICAL GRID TO BEAM STRUT CONNECTION
3" = 1'-0"

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Name
Signature
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49031
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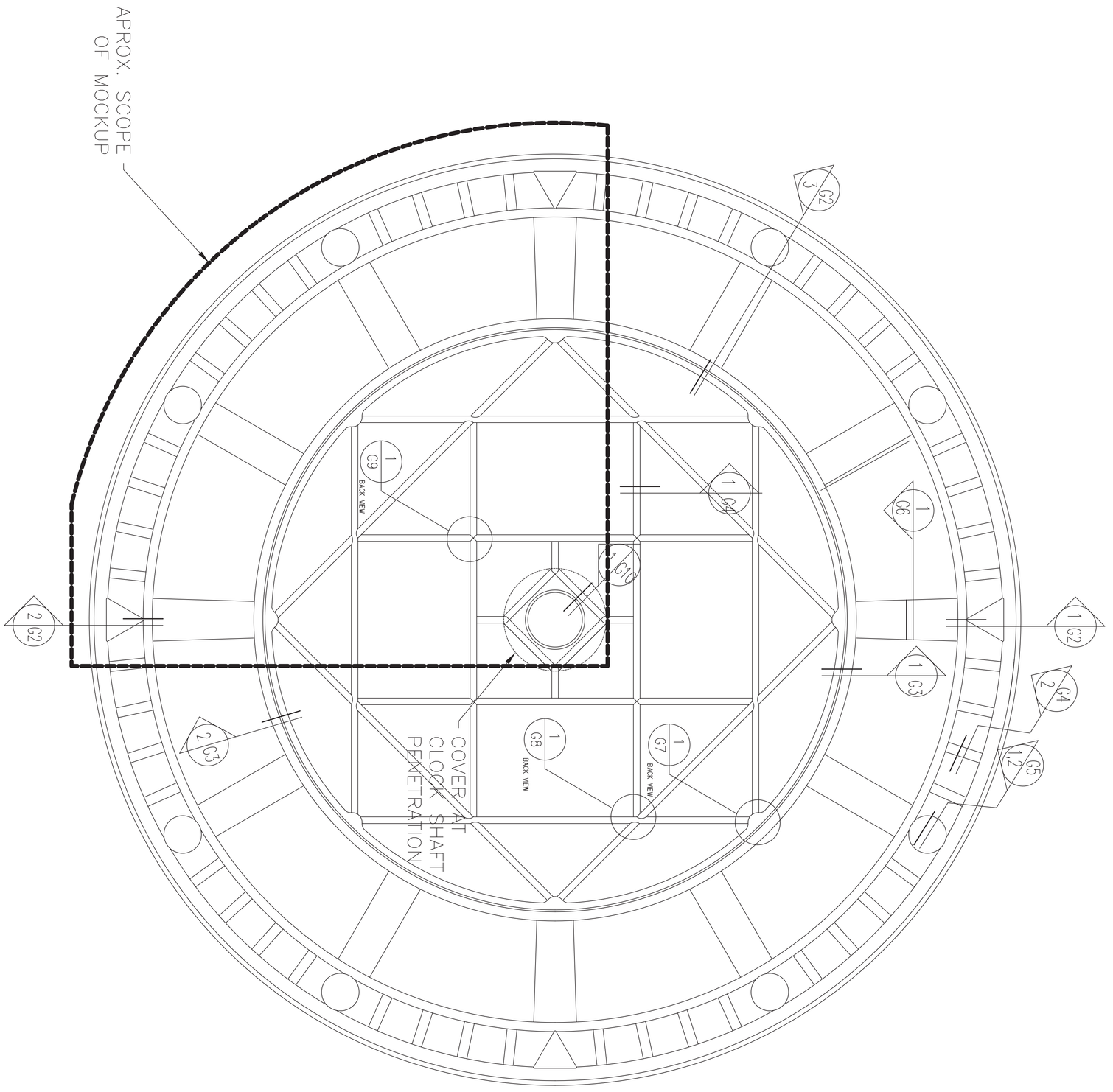
REVISION

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DATE 9 JUNE 2015
DRAWN AWS, MS

Connection Details

S3



G1

Clock Room Elevation

Municipal Building

Clock Restoration

250 South 4th Street

Minneapolis, Minnesota, 55415

DRAWN AWS, MS, TR, BP DATE 9 JUNE 2015 REVISION

Thomas J. Rauch

Signature

25320 License #

09-Jun-15 Date

Larson Engineering, Inc.

3524 Labore Road
White Bear Lake, MN 55110-5100
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www.larsonengr.com

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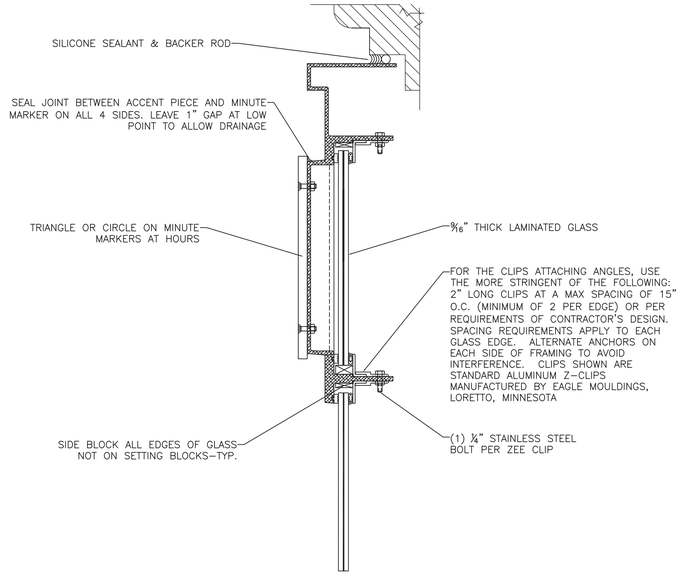
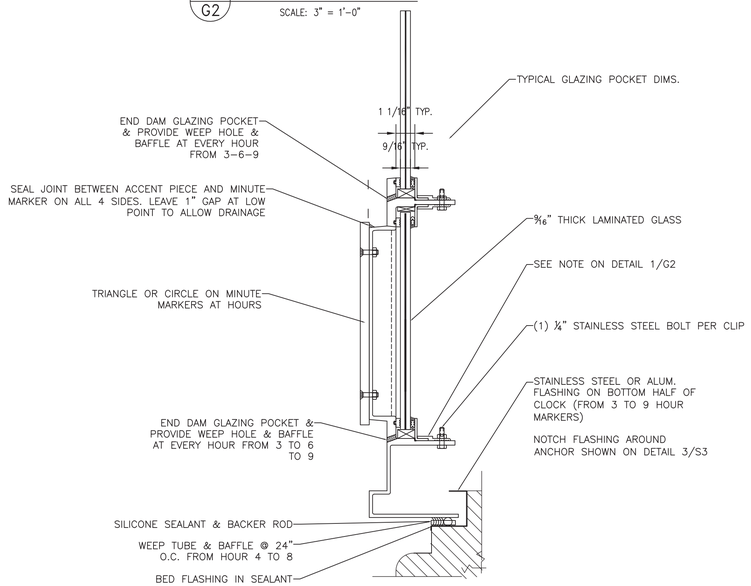


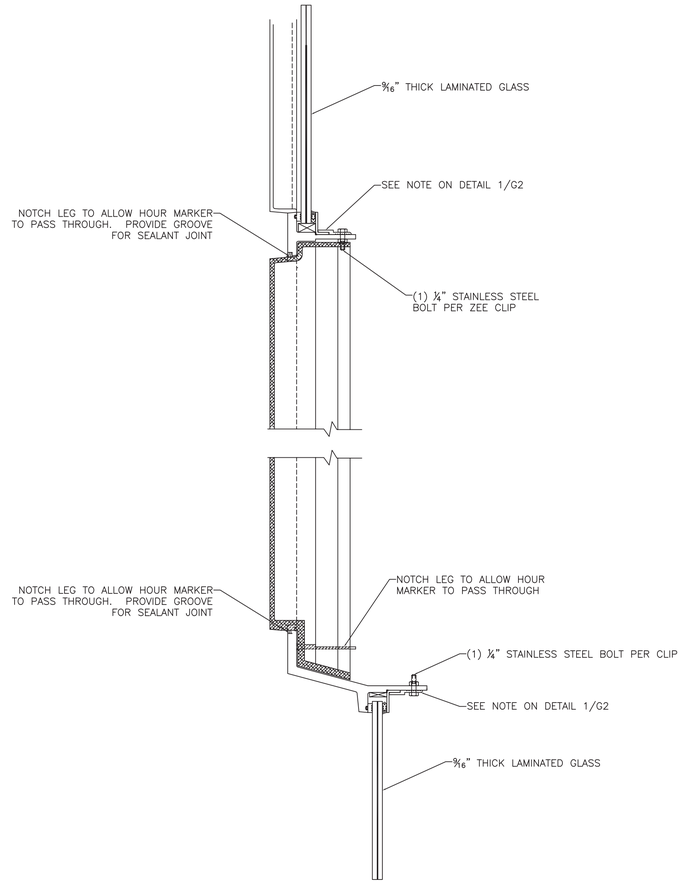
1/G2 OUTER RING 9-12-3

SCALE: 3" = 1'–0"



2/G2 OUTER RING 3-6-9

SCALE: 3" = 1'–0"



3/G2 HOUR MARKER SECTION

SCALE: 3" = 1'–0"

THE DETAILS ON THIS SHEET ARE INTENDED TO SHOW GLAZING AND SEALANT DETAILS. SEE STRUCTURAL DRAWINGS FOR CONNECTIONS BETWEEN FRAMING MEMBERS.

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Signature

Thomas J. Renick
Name

25310 License #

09 Jun 15 Date

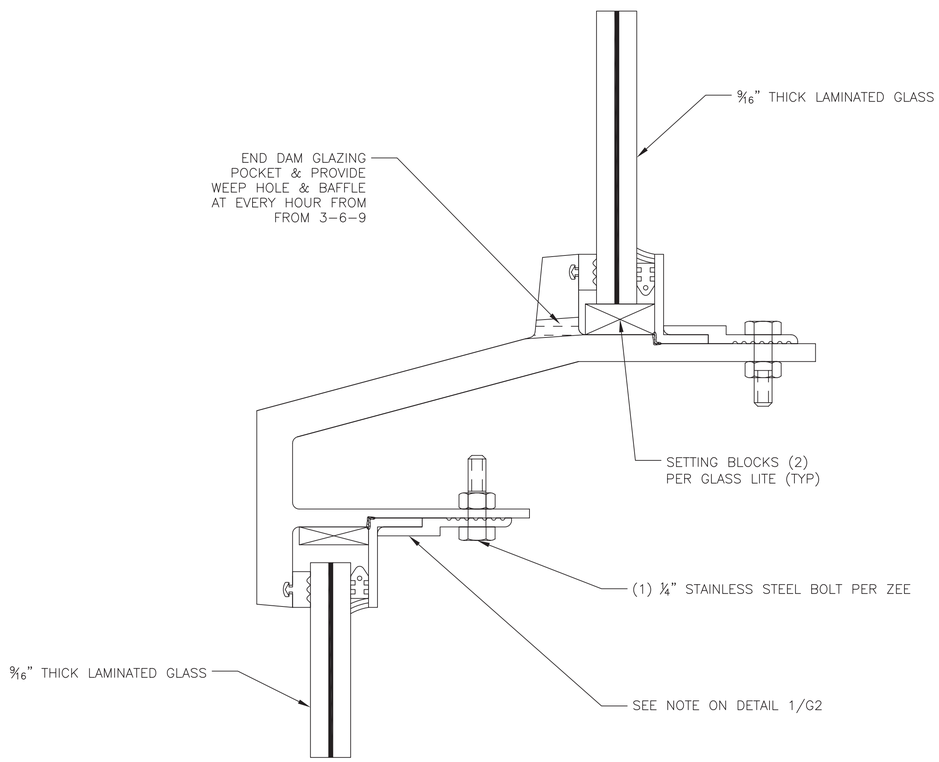
REVISION

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DRAWN AWS, MS, TR, BP DATE 9 JUNE 2015

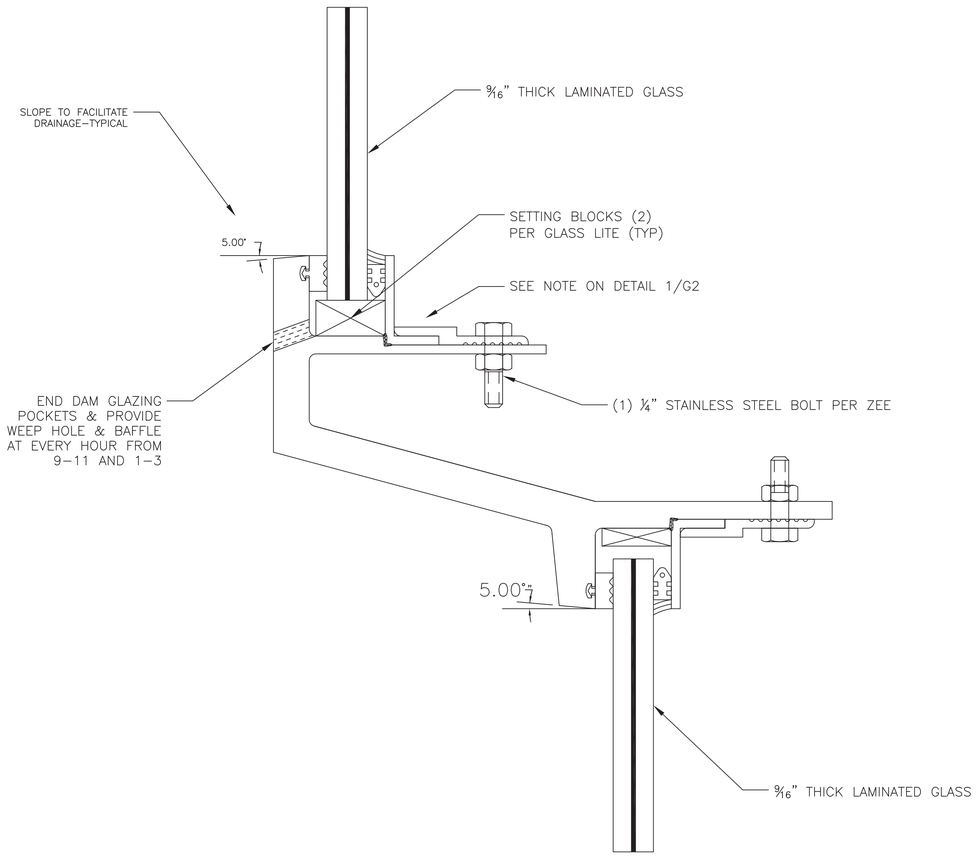
Details
Outer Ring

G2



1/G3 INNER RING 3-6-9

SCALE: 1" = 1"



2/G3 INNER RING 9-12-3

SCALE: 1" = 1"

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Thomas J Renick
Signature

Thomas J. Renick
Name

25310 — 09 June15
License # — Date

REVISION

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DATE 9 JUNE 2015

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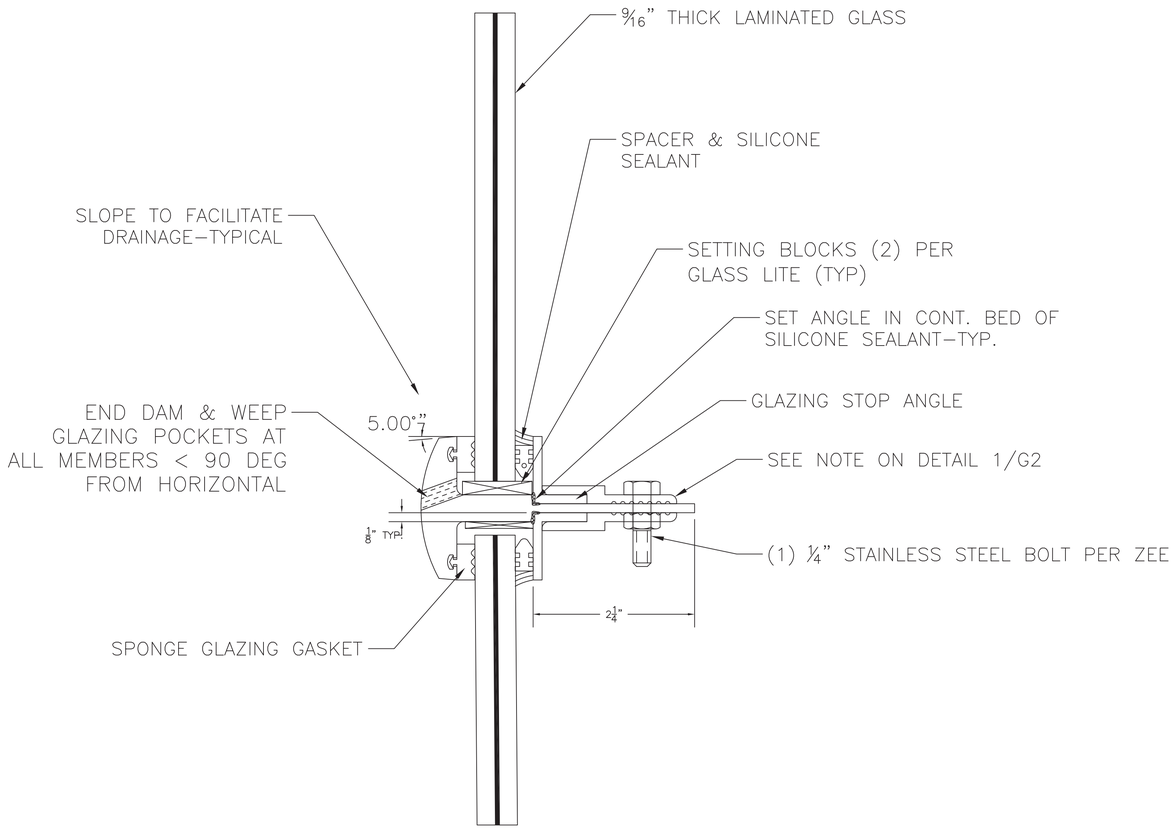
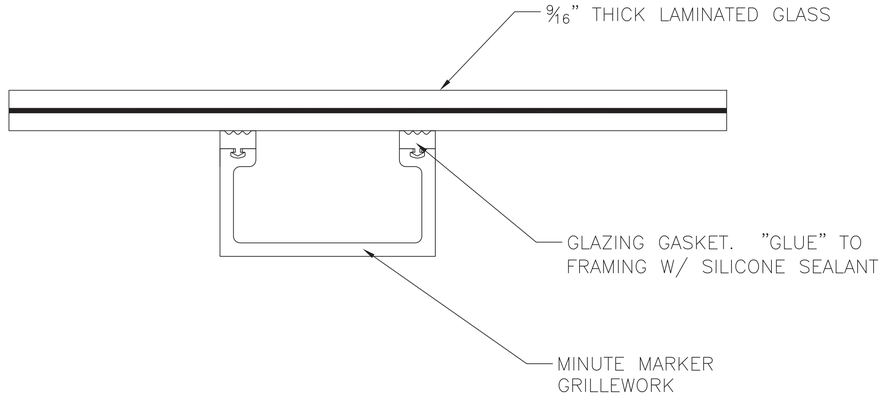
Details
Inner Ring

G3



1 G4 **TEE SECTION**
SCALE: 1" = 1"



2 G4 **MINUTE MARKER**
SCALE: 1" = 1"

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Signature

Thomas J. Renick
Name

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REVISION

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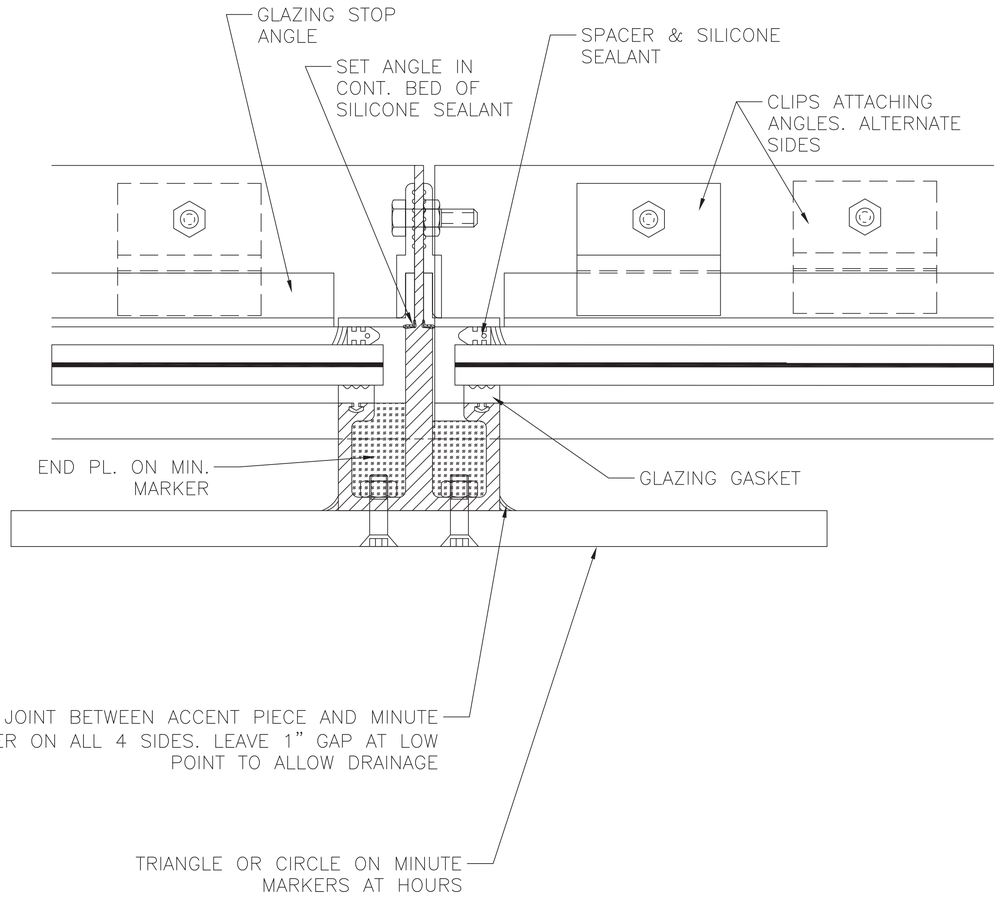
DRAWN AWS, MS, TR, BP
DATE 9 JUNE 2015

Details
Tee

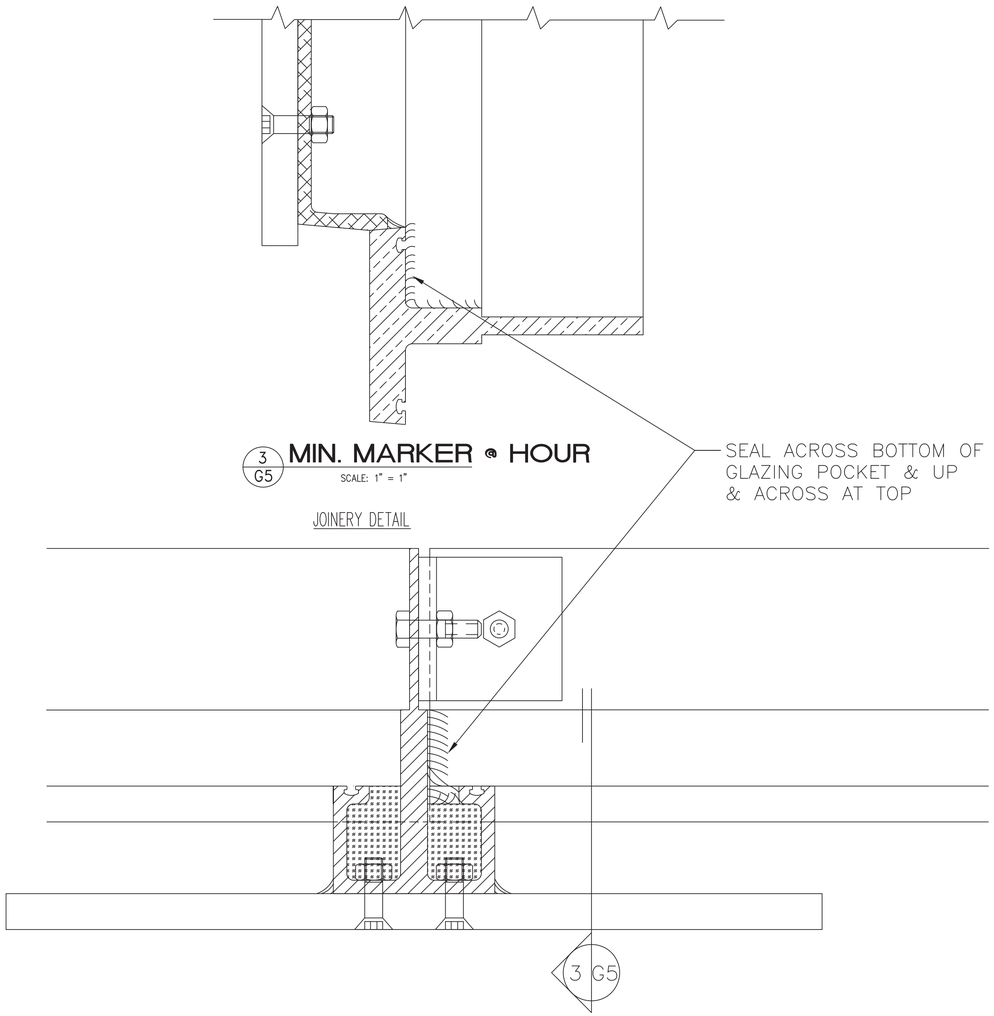
G4



1 G5 **MIN. MARKER @ HOUR**

SCALE: 1" = 1"

GLAZING DETAIL



3 G5 **MIN. MARKER @ HOUR**

SCALE: 1" = 1"

JOINERY DETAIL

2 G5 **MIN. MARKER @ HOUR**

SCALE: 1" = 1"

JOINERY DETAIL

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Signature

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Name

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09 June 15 Date

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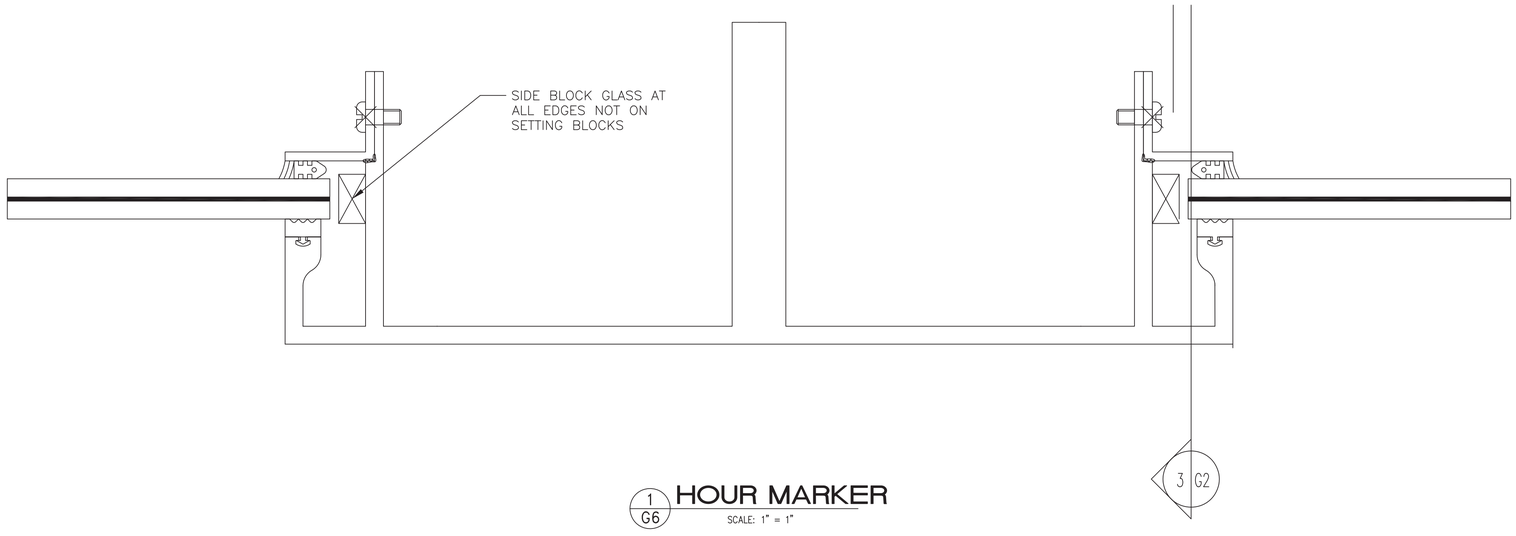
Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DRAWN AWS, MS, TR, BP DATE 9 JUNE 2015

Details
Minute Marker

G5



1 G6 HOUR MARKER

SCALE: 1" = 1"

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Thomas J Renick
Signature

Thomas J. Renick
Name

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09 June 15 — Date

REVISION

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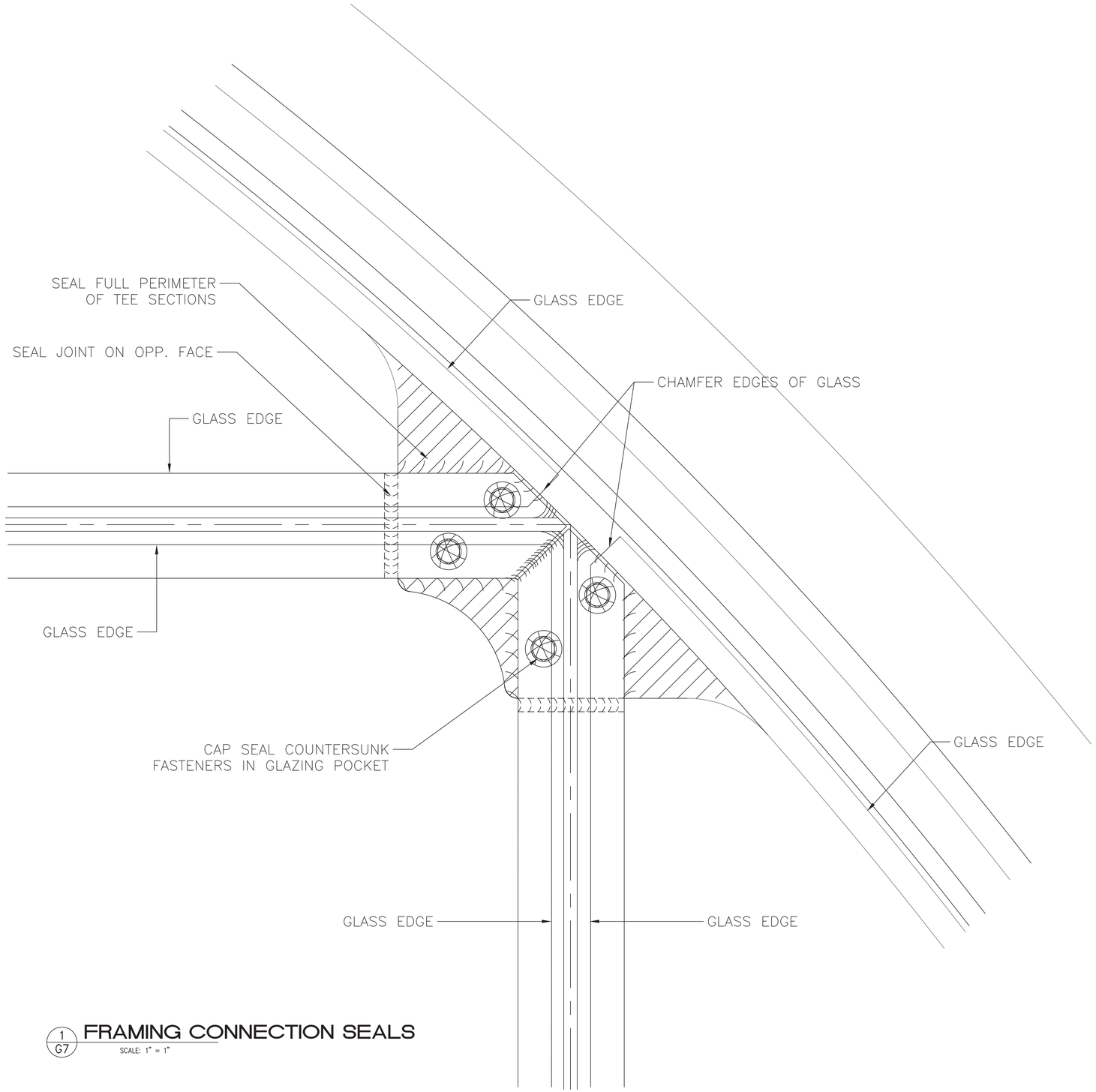
DRAWN AWS, MS, TR, BP
DATE 9 JUNE 2015

Details
Hour Marker

G6



1 / G7 FRAMING CONNECTION SEALS

SCALE: 1" = 1"

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Signature

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Name

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REVISION

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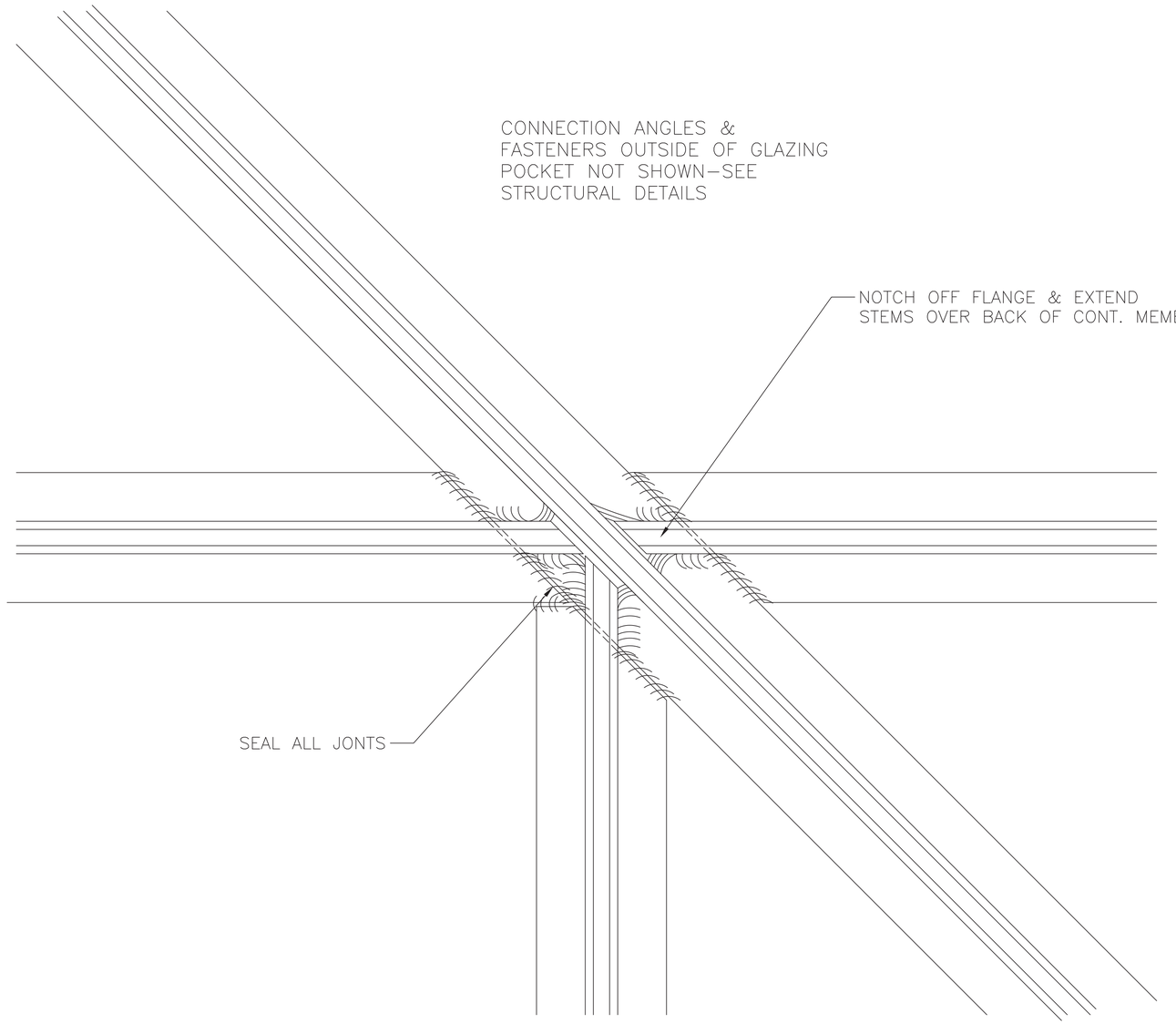
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DATE 9 JUNE 2015

DRAWN AWS, MS, TR, BP

Details
Framing Connection

G7



1 G8 FRAMING CONNECTION SEALS

SCALE: 1" = 1"

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Thomas J Rerick
Signature

Thomas J. Rerick
Name

25310 — License #
09 June15 — Date

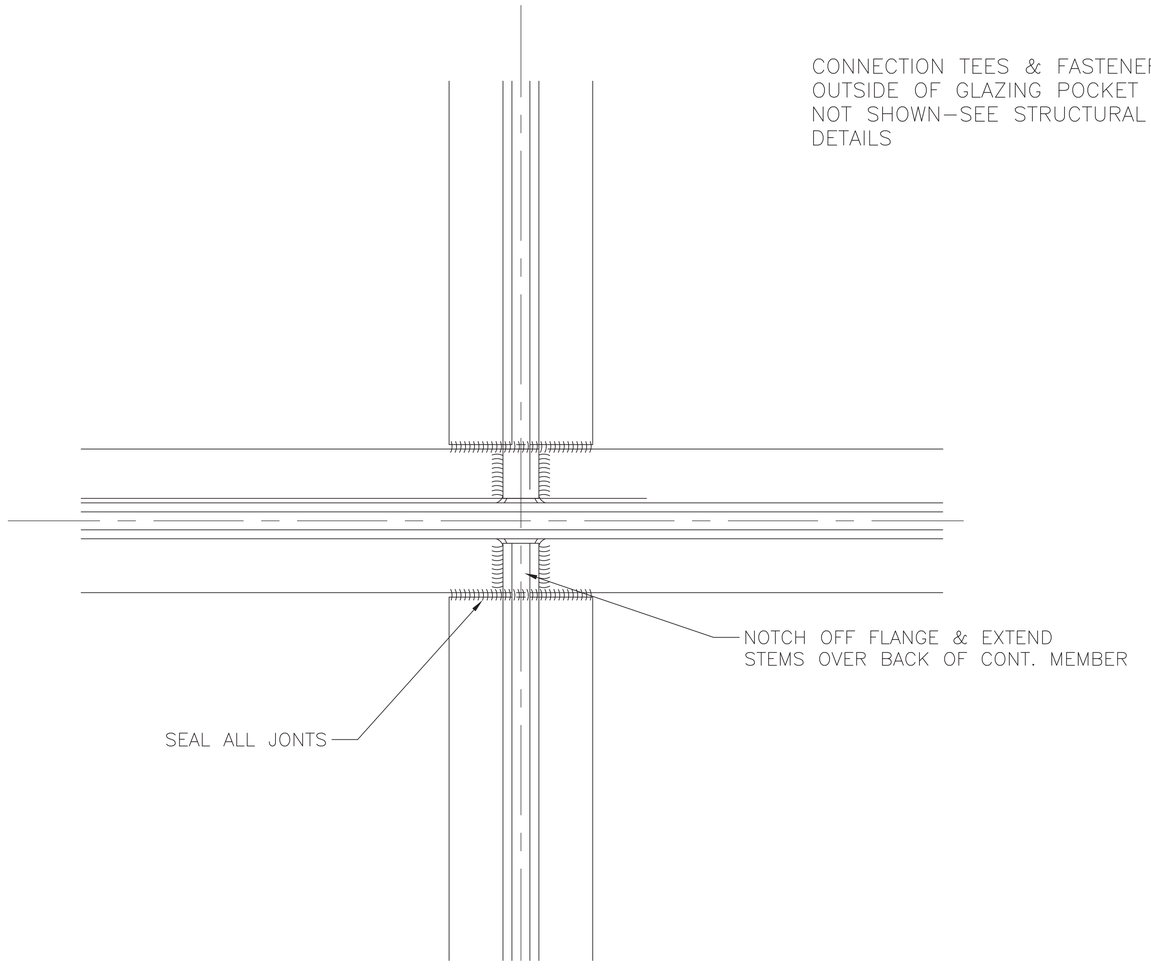
REVISION

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DRAWN AWS, MS, TR, BP
DATE 9 JUNE 2015

Details
Framing Connection

G8



1 G9 FRAMING CONNECTION SEALS

SCALE: 1" = 1"

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Signature

Thomas J. Renick
Name

25310 — License #

09 June 15 — Date

REVISION

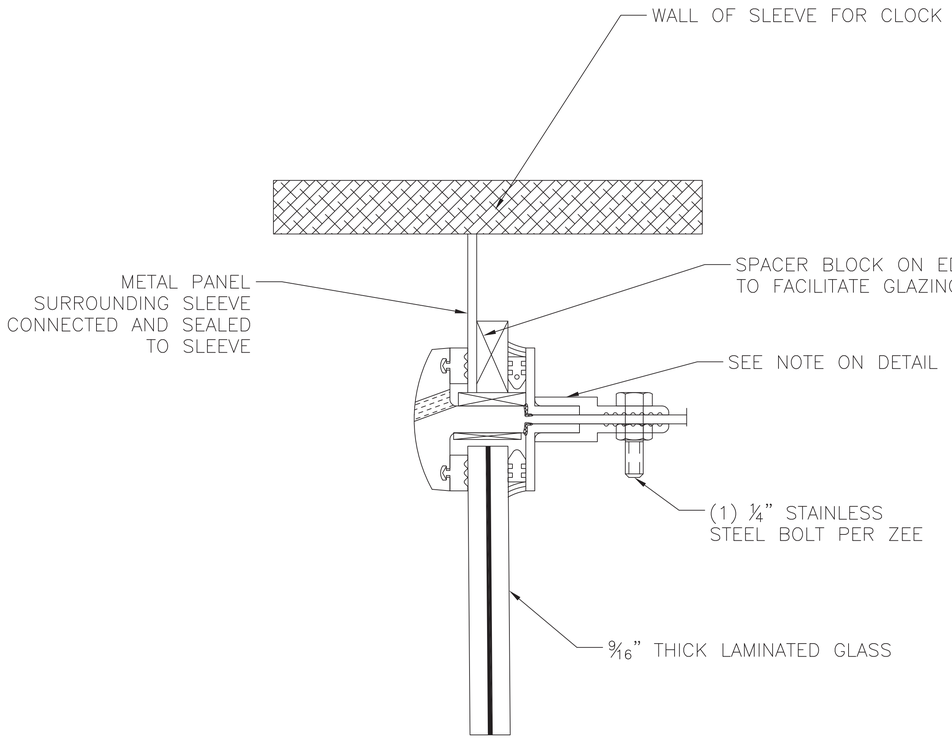
Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DATE 9 JUNE 2015

DRAWN AWS, MS, TR, BP

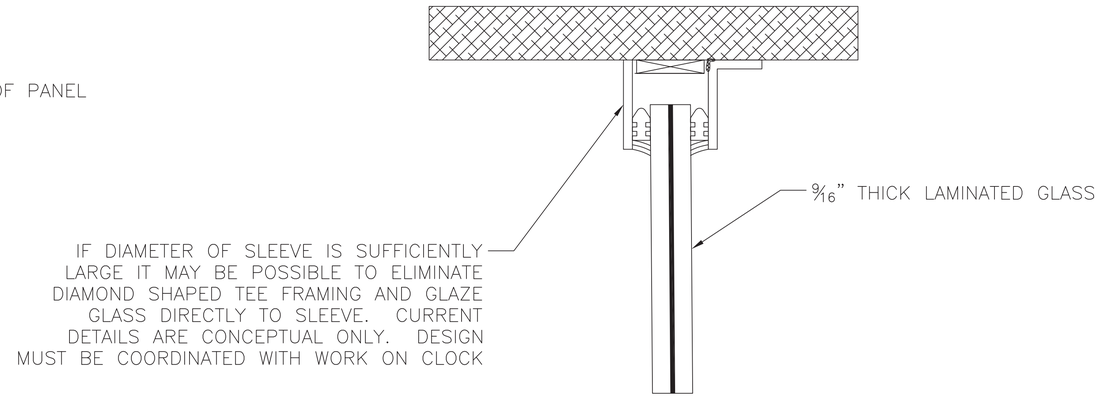
Details
Framing Connection

G9



1 G10 SECTION AT CLOCK SHAFT

SCALE: 1" = 1"



1A G10 SECTION AT CLOCK SHAFT

SCALE: 1" = 1"

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Signature

Thomas J. Renick
Name

25310 — License #

21 May 15 — Date

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DRAWN AWS, MS, TR, BP
DATE 9 JUNE 2015
REVISION

Details

Framing Connection

G10

ELECTRICAL GRAPHIC SYMBOLS

SYMBOL/DESCRIPTION	SYMBOL	DESCRIPTION	MTG HT (IN)	SYMBOL	DESCRIPTION	MTG HT (IN)
DRAWING LINE REPRESENTATIONS DARK, DASHED LINE ON DEMOLITION DRAWINGS INDICATES ITEM TO BE REMOVED. LIGHT LINE INDICATES EXISTING ITEM TO REMAIN. DARK LINE INDICATES NEW OR RELOCATED ITEM.	CF-FX	COMBINATION MOTOR STARTER/ FUSED DISCONNECT			JUNCTION BOX	18
	EP-1	EQUIPMENT TAG (REFER TO EQUIPMENT SCHEDULE[s])			DUPLEX RECEPTACLE ON NORMAL POWER	18
	T	TRANSFORMER			DUPLEX RECEPTACLE ON UPS POWER	18
		480/277 VOLT PANELBOARD		10-30R	SPECIAL PURPOSE RECEPTACLE WITH NEMA CONFIGURATION INDICATED	18
		208/120 VOLT PANELBOARD			DOUBLE DUPLEX RECEPTACLE	18
LIGHT FIXTURES		ANNUNCIATOR			**MISCELLANEOUS**	
NORMAL POWER, SURFACE MOUNTED / NORMAL POWER, RECESSED MOUNTED / EMERGENCY POWER, SURFACE MOUNTED / EMERGENCY POWER, RECESSED MOUNTED		MISC. ENCLOSURE			GANGED DEVICES UNDER ONE COVERPLATE	
DOWNLIGHT		TERMINAL CABINET		H, F, S,...	RECESSED WALL MOUNTED DEVICES	
WALL PACK		UNDERFLOOR DUCT COMMUNICATION AND POWER		H, F, S,...	RECESSED CEILING MOUNTED DEVICES	
WALL WASHER		ELECTRIC HEATER				
FLUORESCENT (SIZE VARIES)	PS-A	PLUGSTRIP (SEE SPECS FOR TYPE)		1"C, 3#4	1" CONDUIT WITH 3#4 AWG WIRES	
STRIP (LENGTH VARIES)		CONCEALED CONDUIT ROUTED ABOVE FLOOR OR GRADE		1	KEY NOTE (REFER TO LIST OF KEY NOTES ON PLAN)	
		CONCEALED CONDUIT ROUTED BELOW FLOOR OR UNDERGROUND		1	NOTES DRAWING REVISION NUMBER	(IN)
		EXPOSED CONDUIT				
		CONDUIT UP				
		CONDUIT DOWN				
		CONDUIT STUBBED AND BUSHED				
		WIRING DEVICES/CONTROLS				
	S	SINGLE POLE SWITCH	46			
	S_2	TWO POLE SWITCH	46			
	S_3	THREE WAY SWITCH	46			
	S_4	FOUR WAY SWITCH	46			
	S_K	KEYED SWITCH	46			
	S_P	SWITCH WITH PILOT	46			
	S_{LV}	LOW VOLTAGE SWITCH	46			
	S_{MC}	MOMENTARY CONTACT SWITCH WITH RTC	46			
	L M	MASTER LIGHTING CONTROL UNIT				
	L R	REMOTE KEYPAD	46			
		PUSHBUTTON	46			
	EPO	EPO PUSHBUTTON WITH GUARD	46			
	C	CONTACTOR				
	R	RELAY				

ABBREVIATIONS

A/E	ARCHITECT/ENGINEER
A/V	AUDIO VISUAL
AC	ALTERNATING CURRENT
ACT	ACOUSTIC TILE
ACOUS	ACOUSTICAL
AFF	ABOVE FINISHED FLOOR
AL	ALUMINUM
A, AMP	AMPERE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AP	ACCESS PANEL
APPROX	APPROXIMATE
ARCH	ARCHITECT
AUTO	AUTOMATIC
AUX	AUXILIARY
AIC	AMPS INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BRD	BOARD
BRKR	BREAKER
BLDG	BUILDING
BSMT	BASEMENT
C	CONDUIT
C to C	CENTER TO CENTER
CAB	CABINET
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CCT(S)	CIRCUIT(S)
CLG	CEILING
CONN	CONNECTION, CONNECT
CONTR	CONTRACTOR
CTR	CENTER
CU	COPPER
DC	DIRECT CURRENT
DET	DETECTOR
DISC	DISCONNECT
DN	DOWN
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DTL	DETAIL
DWG	DRAWING
EA	EACH
EL	ELEVATION
ELEC	ELECTRIC/ELECTRICAL
ELEV	ELEVATOR
EMERG	EMERGENCY
EMT	ELECTRICAL METAL TUBING
EP	EXPLOSION PROOF
EPO	EMERGENCY POWER OFF
EQ	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
F	FUSE
FBO	FURNISHED BY OTHERS
FL	FLOOR
FLUOR	FLUORESCENT
FT	FOOT/FEET
FUT	FUTURE
GEN	GENERAL OR GENERATOR
GR	GRADE
GYP	GYPSUM
GYP BD	GYPSUM BOARD
GFI	GROUND FAULT INTERRUPTING
HDCP	HANDICAPPED
HOA	HAND–OFF–AUTO
HORIZ	HORIZONTAL
HP	HORSEPOWER
HT	HEIGHT
HTR	HEATER
Hz	HERTZ (FREQUENCY)
IN	INCH/INCHES
IMC	INTERMEDIATE METALLIC CONDUIT
JAN	JANITOR
JB	JUNCTION BOX
KO	KNOCKOUT
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVOLT AMPERES REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
LED	LIGHT EMITTING DIODE
LT	LIGHT
LTG	LIGHTING
LV	LOW VOLTAGE
MA	MILLIAMPERE
MATV	TELEVISION SIGNAL DISTRIBUTION
MCC	MOTOR CONTROL CENTER
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MTD	MOUNTED
MTG	MOUNTING
MT	EMPTY
MLO	MAIN LUGS ONLY
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NL	NIGHT LIGHT
NTS	NOT TO SCALE
OC	ON CENTER
PA	PUBLIC ADDRESS
PB	PUSHBUTTON
PF	POWER FACTOR
PH, Ø	PHASE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTY	QUANTITY
RCPT	RECEPTACLE
RCVR	RECEIVER
REC	RECESSED
RM	ROOM
RMC	RIGID METAL CONDUIT
SCHED	SCHEDULE
SHT	SHEET
SPDT	SINGLE POLE, DOUBLE THROW
SPEC	SPECIFICATION
SPKR	SPEAKER
SPST	SINGLE POLE, SINGLE THROW
SQ	SQUARE
SQ FT	SQUARE FOOT/FEET
SW	SWITCH
SWBD	SWITCHBOARD
SYS	SYSTEM
TEL	TELEPHONE
TFMR	TRANSFORMER
TSTAT	THERMOSTAT
TV	TELEVISION
TYP	TYPICAL
UF	UNDERFLOOR
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTIL	UTILITY
V	VOLT
VA	VOLT AMPERE
W	WATT
W/	WITH
W/O	WITHOUT
WP	WEATHERPROOF

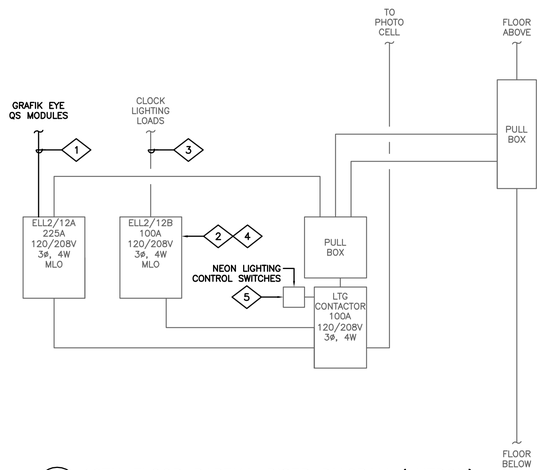
ELECTRICAL DRAWING INDEX

PANEL SCHEDULE — EXISTING PANELBOARD — PANEL DESIGNATION ELL2/12B

SERVICE VOLTAGE: 120/208V — BUS RATING: 125A — O.C. DEVICE TYPE: MLO (100A) — LOCATION: 12TH FLOOR
MOUNTING: SURFACE — BUS CONNECTION: 3P / 4W — ENCLOSURE: NEMA 4 — MIN AIC: .

DESCRIPTION	KVA A	KVA B	KVA C	BREAKER POLE	BREAKER AMP	CKT No	CKT No	BREAKER AMP	BREAKER POLE	KVA A	KVA B	KVA C	DESCRIPTION
NORTH CLOCK FACE (EXISTING)				1	15	1	2	15	1				EAST CLOCK FACE (EXISTING)
NORTH CLOCK FACE (EXISTING)				1	15	3	4	15	1				EAST CLOCK FACE (EXISTING)
NORTH CLOCK FACE (EXISTING)				1	15	5	6	15	1				EAST CLOCK FACE (EXISTING)
SOUTH CLOCK FACE (EXISTING)				1	15	7	8	15	1				WEST CLOCK FACE (EXISTING)
SOUTH CLOCK FACE (EXISTING)				1	15	9	10	15	1				WEST CLOCK FACE (EXISTING)
SOUTH CLOCK FACE (EXISTING)				1	15	11	12	15	1				WEST CLOCK FACE (EXISTING)
BLANK						13	14						BLANK
BLANK						15	16						BLANK
BLANK						17	18						BLANK
BLANK						19	20						BLANK
BLANK						21	22						BLANK
BLANK						23	24						BLANK

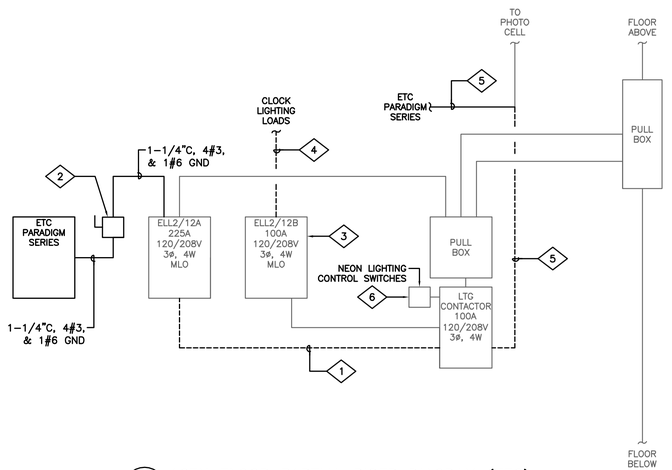
NOTES:
1. GE A SERIES PANELBOARD.
2. FED FROM THE 100A LIGHTING CONTACTOR.
3. REFER TO PANELBOARD AND CIRCUIT BREAKERS FOR EXISTING AIC RATINGS.



1 12TH FLOOR PARTIAL RISER DIAGRAM (LUTRON)
NO SCALE

KEY NOTES FOR LUTRON DIMMING SYSTEM

1. ELECTRICAL CONTRACTOR TO UTILIZE EXISTING 20A, 120V SPARE CIRCUIT BREAKER IN ELL2/12A AND PROVIDE ASSOCIATED WIRING, CONDUIT, ETC. FOR UN–SWITCHED CONTROL POWER TO NEW GRAFIK EYE QS MODULES.
2. ELECTRICAL CONTRACTOR TO REMOVE EXISTING 15A, 120V CIRCUIT BREAKERS AND REPLACE WITH 20A, 120V CIRCUIT BREAKERS FOR NEW LIGHTING. AIC RATINGS AND TYPE TO MATCH EXISTING. PROVIDE NEW CIRCUITS AS REQUIRED.
3. ELECTRICAL CONTRACTOR TO REPLACE EXISTING BRANCH CIRCUITING AS REQUIRED TO CONVERT FROM 15A, 120V TO 20A, 120V FOR NEW LIGHTING CIRCUITS.
4. ANY EXISTING LOADS FROM PANEL ELL2/12B NOT ASSOCIATED WITH THE CLOCK FACE LIGHTING ARE TO REMAIN.
5. EXISTING LIGHTING CONTROLS ARE TO REMAIN, RENAME 2–GANG SWITCH BOX TO INDICATE LED PHOTOCELL CONTROL.



2 12TH FLOOR PARTIAL RISER DIAGRAM (ETC)
NO SCALE

KEY NOTES FOR ETC DIMMING SYSTEM

1. ELECTRICAL CONTRACTOR TO REMOVE FEEDER CONDUCTORS BETWEEN ELL2/12A AND THE 100A LIGHTING CONTACTOR. CONDUIT TO REMAIN.
2. ELECTRICAL CONTRACTOR TO PROVIDE NEW 100A NON–FUSED DISCONNECT.
3. ANY EXISTING LOADS FROM PANEL ELL2/12B NOT ASSOCIATED WITH THE CLOCK FACE LIGHTING ARE TO BE RELOCATED TO ELL2/12A. PROVIDE ALL NECESSARY COMPONENTS REQUIRED FOR COMPLETE OPERATION.
4. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE ALL CLOCK FACE NEON LIGHTING CIRCUITS AND ASSOCIATED CONDUIT BACK TO ELL2/112B.
5. ELECTRICAL CONTRACTOR TO DISCONNECT EXISTING PHOTOCELL CONTROL FROM THE LIGHTING CONTACTOR AND RECONNECT TO ETC PARADIGM SERIES DIMMER. PROVIDE RELAY IF REQUIRED.
6. ELECTRICAL CONTRACTOR TO MODIFY THE EXISTING WIRING FOR THE NEON LIGHTING CONTROL SWITCHES AS NEEDED FOR THE NEW CONFIGURATION. RELOCATE SWITCH BOX IF REQUIRED. RENAME BOX AS: LED PHOTOCELL CONTROL.

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Engineer under the laws of the State of Minnesota.

Signature
SEAN A. TEWALT
Name
40871 — License #
AUGUST 13, 2014 — Date

REVISION
DATE JUNE 9, 2015
DRAWN SOW / BNZ

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

TITLE SHEET, DRAWING INDEX, ABBREVIATIONS, PARTIAL RISER DIAG. & PANEL SCHEDULE

E000

SECTION 26 05 01 – GENERAL PROVISIONS – ELECTRICAL

A. The work included under Division 16 shall consist of furnishing labor and materials necessary for the complete installation of lighting, power, and fire alarm systems shown on the drawings. All work shall be complete and left in operating condition at completion of Contract.

B. Include minor items that are obviously and reasonably necessary to complete the installation and usually included in similar work. Such items include bolts, nuts, anchors, brackets, sleeves, and minor offsets in conduit, cable tray, etc. because of unforeseen obstructions.

C. All temporary and permanent permits and licenses required in connection with this Division's work shall be the responsibility of the Contractor bidding that work.

D. Installation shall meet or exceed current applicable codes, ordinances and regulations in effect at the building site. If a Contractor or Subcontractor observes that the Contract Documents are at variance with governing codes and regulations, he shall promptly notify the Engineer in writing, who will respond to such variances in writing. If the Contractor performs work knowing it is not compliant with applicable codes, and does not notify the Engineer, the Contractor shall assume full responsibility and bear all costs attributable to correcting the non–complying work.

E. The reference to Codes and Standards shall not permit a lower grade of construction where Contract Documents call for workmanship and/or materials in excess of those references.

F. Where the terms "provide" or "shall be" are used in this Division or on the drawings, they shall be taken to mean "The Contractor shall furnish and install".

G. If equipment or materials other than those specified in the design of this project are proposed to be used on this project, the Contractor and supplier shall check it for dimensional differences, electrical requirements and any other potential variances. This comparison shall be made for manufacturers specified as well as those proposed prior to requesting approval. The Contractor shall be responsible for any extra costs incurred as a result of Substitutions, including those of other contractors, such as might be due to (but not limited to) different electrical, mechanical and architectural requirements.

H. Shop Drawings:

1. Carefully examine all shop drawings noting capacity, arrangement and physical dimensions and mark the drawings as being reviewed and approved prior to submitting to the Engineer. Where catalog data is submitted which includes items which do not apply to this project, those items shall be clearly marked out or relevant items clearly noted. Any deviations from the documents shall be so noted by the Contractor or equipment supplier. The intent and requirements of the drawings and specifications shall be adhered to at all times and are not waived or superseded in any way by the shop drawing submittal or review.
2. Submit a minimum (6) copies of shop drawings. Unless noted otherwise, the Engineer will retain one (1) copy the Architect and Construction Coordinator will each retain one (1) and return the remaining copies to the General Contractor. Contractor shall retain two (2) copies, which shall be incorporated in Operation and Maintenance Manuals.
3. If returned shop drawings are marked "NO EXCEPTIONS TAKEN", no additional submittal is required. If the shop drawing is marked "MAKE CORRECTIONS NOTED", the changes noted on the shop drawings are to be incorporated, with no further resubmittal required. If marked "REVISE AND RESUBMIT", changes noted on the shop drawings are to be made and the drawings resubmitted for review. If marked "REJECTED", the equipment submitted is unacceptable and different equipment or materials need to be submitted. Only one rejected shop drawing will be returned to the Contractor.

I. No asbestos or PCB containing materials of any type shall be used on this Project except in cases where acceptable substitutions have not been found for asbestos materials as in high temperature applications.

J. The Contractor shall closely coordinate his work so that his work does not disrupt the existing fire alarm system or cause any false alarms. No fire alarm systems are to remain inactivated at the end of the work day. It is the Contractor's responsibility to insure that any fire alarm systems deactivated for his work are reactivated before completing his work day.

K. Consult the Contract Drawings and Specifications of all other Divisions and other trades for correlating information and layout work so that it will not interfere with other trades. Verify all dimensions and conditions; i.e., finished ceiling heights, wall elevations, sections, beam depths, ductwork and piping, etc., with architectural, mechanical and structural drawings. If conflicts occur such that resolution is not possible by the affected trades on the job, the Engineer or Architect shall be notified and a resolution will be worked out.

L. It is the intent of these Drawings and Specifications that conduit will be concealed. Where it is exposed, it shall be run as close to ceilings and/or walls as possible and installed parallel with adjacent structural or architectural elements.

M. Schedule work in such manner as to not disrupt any services to any portion of the existing buildings unless such disruption is first cleared with the Landlord's appointed representative. Electrical system modifications requiring shutdown of portions of the building electrical system shall be scheduled with the Landlord a minimum of two (2) weeks prior to the shutdown. It shall be assumed that any required shutdown shall occur outside of normal working hours unless the Landlord agrees to a shutdown during normal working hours or unless specifically noted elsewhere in the construction documents. Normal working hours shall be considered to be Monday through Friday 5:00 a.m. to 8:00 p.m. After service has been restored following an interruption, this Contractor shall inspect all areas affected by the interruption and be responsible for returning all automatically controlled equipment to the same operating condition which existed prior to the interruption.

N. Install material and equipment in accordance with Manufacturers' recommendations, instructions, AT&T Grounding and Bonding Requirements for Network Facilities ATT–TP–76416, AT&T Installation Requirements ATT–TP–76300, and current N.E.C.A. standards.

O. Install equipment and materials to provide required access for servicing and maintenance. Coordinate final equipment location with required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.

P. Record Drawings: As work progresses, in a neat and legible manner, record all changes or deviations from the contract drawings. Submit Record Drawings to Engineer for review at completion of Work. The Record Drawings will become part of the Operation and Maintenance Manual package submitted to the Landlord after the completion of the project.

Q. The Contractor shall guarantee all work and materials for the minimum period of one (1) year, except where a longer period of time is specified elsewhere, after completion of the Work as evidenced by issuance of Certificate of Substantial Completion.

R. A final inspection of the electrical systems will be required before the Contract can be closed out. When the Contractor feels that all systems are fully completed and operational, he shall request that a final inspection be performed by the Engineer. The Engineer will then schedule an inspection and generate a list of items which need to be corrected or completed before Contract Closeout.

S. Before Certificate of Substantial Completion is issued, assemble and deliver to the Engineer for his review two (2) hard copy sets of the Operation and Maintenance Manuals which includes all equipment and materials provided under Division 16.

SECTION 26 05 00 – DEMOLITION

A. Grounding/bonding conductors, devices, etc., shown on the drawings as existing have been based on existing plans and may not be installed as originally shown. A field survey was conducted to discover some of these differences. However, no attempt has been made to find changes made in hidden areas such as above ceilings and in walls. It shall be the Contractor's responsibility to verify the accuracy of the "Existing Conditions" as shown on the drawings. The Contractor shall perform all modifications and additions as necessary to correct for hidden conditions and allow for the completion of the new work.

B. Remove or relocate existing conduits, wires, equipment, devices, or other equipment as indicated on the drawings or required to adapt existing electrical systems to the new electrical systems. Where the reuse of existing conduits, wires, devices, etc., is permissible, make certain that wiring for same is continuous from outlet to outlet, and that such circuit or systems shall pass through no outlet or junction boxes which may be rendered inaccessible by the structural or finishing changes to be made to the building. Make sure no device is cut off from its power source, unless specifically noted to do so. Existing conduits, wires, devices, lights, etc., which are intended as being removed and are not indicated for reuse or to be turned over to the Landlord, shall be disposed of by the Contractor.

SECTION 26 05 21 – BASIC MATERIALS AND METHODS

A. All materials shall be new, as specified or approved, and in original packaging. Catalog numbers specified shall be verified with vendors prior to ordering material.

B. All materials shall be UL labeled unless special fabrication of material is required. Special fabricated material shall be fabricated using UL labeled components and procedures.

C. Material provided shall be in accordance with local union requirements.

D. Where the word "provide" is used, it shall require the contractor to furnish and install material complete to a workable system.

E. All work shall be tested in accordance with industry accepted standards. Before testing, a thorough visual inspection shall be made to detect connection problems, damaged components, poor workmanship, inappropriate overcurrent protection, debris, etc. Testing apparatus shall be certified or demonstrated to be accurate within reasonable limits. Competent personnel familiar with the test equipment shall perform all tests. If testing procedures employed are not satisfactory to the Engineer, outside testing will be done at the Contractor's expense.

F. Contractor to provide tools, material, manpower and equipment to keep progress with the project.

G. Contractor is responsible for all openings, cutting, patching and drilling. Sleeve openings shall be with rigid pipe and set 1" minimum above finish floor. Penetrations through existing structural floors and walls shall be made with core drill. Exact locations of penetrations shall be verified with structural engineer such that structural integrity is maintained. X–Ray or packometer tests shall be required on structural floors prior to drilling.

H. Cutting and patching in finished spaces shall be such that the surface is restored to original condition.

I. At penetrations through fire–rated wall, ceiling, floor, roof or other fire–rated/smoke barrier construction, completely seal void with a UL listed HILTI firestop system. Verify fire–stopping products meet the requirements of the City of Minneapolis prior to submitting for review.

J. Provide all hangers and supports such that they are suitable in strength and anchorage to load imposed. Expanding type masonry anchors are acceptable when cast–in–place cannot be used. Other anchor methods must be approved by Engineer. In all areas where supports and hangers are subjected to vibration, spring type lock washers shall be used. Individual conduit runs shall be supported by steel fasteners, such as caddy clips, suspended ring hangers or from dedicated support wires as application dictates. Do not support conduit from the suspended ceiling grid or the associated wire support system. Twisted bailing wire will not be acceptable. Use support wires rated for at least 150% of the load they will support.

K. Conduits and other electrical equipment shall not be supported from ductwork.

L. Contractor to identify all electrical bus bars with engraved black letters no smaller than 1/2" on white Norplex–Micarta plates. Inscriptions shall indicate the name of the bus bar and any other information specified.

M. Provide and install separate UL listed HILTI fire stop systems for each penetration type and rating to be sealed. Where large openings (e.g. cable tray penetration, floor slot, etc.) are required to be fire stopped, provide pre–printed signage adjacent to opening to read as follows: "Warning – Through–Penetration Firestop System – Do Not Disturb". Where conduit for future use, floor slots, cable trays, etc. are required to be fire stopped, provide a fire stop system that can be removed and replaced without difficulty such as non–hardening putty or pillows. Provide waterproof mechanical compression type floor penetration fire stop systems for floor penetrations in areas where the floor would be subject to cleaning with water or in areas likely to become wet.

SECTION 26 05 33 – RACEWAYS

A. Construction shall be as per Underwriter's Laboratories Standard UL 870 for wireways, auxiliary gutters and associated fittings.

B. Where required, provide cable strain relief, grounding connectors, expansion fittings.

C. Liquidtight Flexible Non–Metallic Conduit may be used where not restricted by this section.

D. Electrical Metallic Tubing (EMT) may be used where not restricted by this section – minimum size: 3/4".

E. Vertical conduit runs shall be supported every floor for conduit less than 2 1/2" and every other floor for runs 2 1/2" and greater. Provide cable supports per National Electric Code.

F. All conduit in finished areas shall be concealed in building construction.

G. Maintain adequate clearance from heat generating pipes or equipment when installing conduit.

H. Conduit shall not be mounted on mechanical or other equipment which vibrates except at connection points.

SECTION 26 05 19 – BUILDING WIRING AND CABLE

A. Building Wire:

1. Description: Single conductor insulated wire.
2. Conductor: 98% Commercially pure copper conductors. Aluminum conductors shall not be used.
3. Insulation Voltage Rating: 600 volts.
4. Insulation: ANSI/NFPA 70, 90° C Type THHN, THWN, XHHW–2
5. In areas where cables are subject to ambient temperature over 90° F or heat process equipment in lighting fixture etc, provide insulation suited for the purpose.
6. Conductors #8 and larger shall be stranded. Conductors smaller than #8 shall be solid. Control wiring #14 or smaller shall be stranded. (Unless noted otherwise in other section of the specification.)

B. Approved flexible metal cable assembly shall be used only where approved as the connection to ceiling mounted devices (i.e. recessed light fixtures, fire alarm devices, occupancy sensors, speakers, etc.).

C. Pull all conductors into raceway at same time.

D. Use suitable wire pulling lubricant for building wire 4 AWG and larger.

E. Neatly trim and lace wiring inside boxes, equipment, and panelboards.

F. Clean conductor surfaces before installing lugs and connectors.

G. Compression connectors for copper conductor splices and taps for 6 AWG or larger shall be used.

H. Insulated spring wire connector with plastic caps for copper conductor splices and taps for 8 AWG or smaller shall be used.

I. Make splices, taps and terminations to carry full ampacity of conductors with no perceptible temperature rise.

J. Parallel 3–phase feeder runs in conduit shall have all three phase conductors (including neutral and ground where required) installed in each conduit. Grouping a single phase (or two phases) in a single conduit is not permitted.

K. Identification

1. 120/208 Volt color code:
   - Phase A – Black
   - Phase B – Red
   - Phase C – Blue
   - Neutral – White
   - Ground – Green
2. Spare conductors shall be identified as such.

L. Provide wire identifcation as follows:

1. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identify with branch circuit or feeder number. Color code all secondary branch circuit and feeder conductors as follows:
   Four wire, three phase, grounded wye: For 120/208 volt systems use one black, one red, one blue and one white (neutral).

SECTION 26 05 33 – BOXES

A. Pull and junction boxes shall be code gauge galvanized steel in concealed and unfinished spaces and prime painted steel in finished spaces. Covers shall be secured with screws.

B. Sectional boxes shall not be used.

C. Boxes employed in exposed runs shall be of types adapted to surface work and for which suitable plates and covers are available.

D. Covers or plates for boxes shall conform substantially to the outlet of the boxes with no projecting edges or corners.

E. Conduit fittings ("LB", "C", "T") or types approved for the location may be employed as required to facilitate pulling in conductors.

F. Provide pull and junction boxes to facilitate pulling or splicing of conductors.

G. Mount boxes to allow for maximum flexibility.

H. Contractor shall provide labels at all splice/junction boxes indicating circuit(s) and source (electrical panel).

SECTION 26 27 26 – WIRING DEVICES

A. Special Devices

1. Special devices to be as specified on drawings.
   a. Cooper Wiring Devices
   b. Leviton
   c. P & S
   d. Wiremold/Walker
   e. Steel City
   f. Hubbell Premise Wiring

SECTION 26 05 26 – GROUNDING

A. Provide complete grounding systems as described herein and as shown on the drawings.

B. All metallic conduits, supports, cabinets, non–current carrying parts of equipment shall be solidly grounded to form a continuous permanent and effective grounded system.

C. All wireways, metal enclosures, cable trays and similar parts of the electrical installation described herein shall be grounded.

D. Grounding/bonding connections to bus bars shall be exothermic type or irreversible crimp type.

E. The special attention of the Contractor is called to metallic building components and mechanical piping which must be grounded in an approved manner according to the NEC.

F. Grounding/Bonding Connections shall be made by:

1. Exothermic weld
2. Compression crimp type parallel connectors
3. Two–hole crimp type connector
4. B bond clips

G. Bus bars shall be copper and may be tinned or un–tinned. Un–tinned bus bars shall be burnished to a bright finish before anti–oxidant is applied and terminations completed. Bus bars shall be sized to accommodate the initial conductors plus a 50 percent growth factor, and in no case shall it be smaller than the minimum size for a CO GRD bus bar: 3/8" X 6" X 16".

H. Wire:

1. Description: Single conductor insulated wire.
2. Conductor: 98% Commercially pure copper tinned conductors. Aluminum conductors shall not be used.
3. Insulation Voltage Rating: 600 volts.
4. Insulation: ANSI/NFPA 70, 90° C Type THHN, THWN, XHHW–2,
5. Conductors #8 and larger shall be stranded. Conductors smaller than #8 shall be solid.

I. Clean conductor surfaces before installing lugs and connectors.

J. Identification

1. Grounding/Bonding Conductor: Green.

SECTION 26 28 13 – OVERCURRENT PROTECTION

A. Manufacturers shall be:

B. GE

C. Circuit breakers 600 amp and less, shall be molded case, quick make, quick break thermal_magnetic, trip indicating, and have common trip on all multiple pole breakers. Each circuit breaker to have the following:

D. Adjustable magnetic trip

E. Shall be bolt_on type.

F. Interrupting ratings of circuit breakers provided shall meet or exceed that of the panelboard, switchboard, etc. of where it is installed.

G. Series rated systems will not be accepted.

SECTION 26 51 13 – INTERIOR LIGHTING FIXTURES

A. Manufacturers shall be:

1. See fixture schedule on drawings.

B. LED fixtures

1. References
   a. The publications listed below form a part of this specification to the extent referenced. Publications are referenced within the text by their basic designation only.
      1) LM–79–08, IESNA Approved Method for the Electrical and Photometric Measurements of Solid–Sate Lighting Products. Report must be furnished upon request.
      2) LM–80–08, IESNA Approved Method for Measuring Lumen Maintenance of LED Light Sources. Report must be furnished upon request.
2. Quality assurance
   a. Specifier may request standard production model luminaire samples identical (including LED package) to product proposed to be installed for inspection. Specifier may request independent testing of sample luminaires to verify luminaire performance and compliance with the specifications. Conduct testing per the applicable IESNA and ANSI approved methods for products using Solid–State Lighting (SSL) sources.
   b. Mockups: Contractor shall provide a mockup of the intended lighting effect. Mockup shall be complete utilizing specified lighting equipment and architectural finishes. The Contractor shall coordinate the size of the mockup with the Architect and Lighting Consultant, but the minimum shall be of a size adequate for the Client to render an informed decision as to the acceptability of the proposed lighting effect. The cost of the mockup including all materials and labor shall be included in the Contractor's base bid and shall not be considered an additional cost to the owner. Install fixtures for mockups with power and control connections.
      1) Obtain the Lighting Consultant's approval of fixtures for mockups before starting installations.
      2) Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
      3) Remove mockups when directed. Fixtures may be reinstalled in the Work with approval of the Architect / Lighting Consultant.
3. Light loss factors
   a. Assume Lamp Lumen Depreciation (LLD): 0.90. (LLD of 0.70 is what LEDs produce near the end of their recommended life. A higher LLD may be used if LEDs will be replaced at about 50,000 hours.)
   b. Assume Luminaire Dirt Depreciation (LDD): 0.90 for all luminaires.
4. Warranty
   a. Standard Warranty is five (5) years. Extended warranties of seven (7) to ten (10) years may be possible. Warranties may also specify expected hours of life of LED.
   b. Provide a written five year on–site replacement material, fixture finish, and workmanship. On–site replacement includes transportation, removal, and installation of new products. Finish warranty must include warranty against failure or substantial deterioration such as blistering, cracking, peeling, chalking, or fading.
   c. Provide a written five year replacement material warranty for defective or non–starting LED source assemblies.
   d. Provide a written five–year replacement material warranty on all power supply units (PSUs).
   e. Provide a written five year replacement warranty for luminaires producing inadequately–maintained illuminance levels at end of warranty period, as prorated from levels expected at end of useful life. For example, a luminaire expected to produce 70% of initial lumens at 100,000 hours would be expected to last over 11 years (continuous operation), so levels would be expected to be at 87% of initial at end of five–year warranty period. Warranty must cover all light sources (LED package, LED array, or LED module) including, but not limited to the LED die, encapsulate, and phosphor. If the expected useful life of the luminaire system is not maintained, then the manufacturer must replace the light source(s) or luminaire as needed.
   f. Owner may request an optional ten year replacement warranty for inadequately–maintained illuminance levels, finish of luminaire, power–supply unit (PSU), or defective LED source assemblies. The terms of the extended warranty will be negotiated by the Owner and the luminaire manufacturer for an additional cost.
   g. Warranty period must begin on date of possession. The supplier will provide the site Owner with appropriate signed warranty certificates. The Owner must receive certificates prior to final payment.
5. General
   a. Fixtures must be the type indicated on Drawings and as specified. Fixtures of the same type must be provided by one manufacturer.
   b. Luminaires must be of the types and manufacturers described in the Light Fixture Schedule with light source, wattage and voltage as indicated on Drawings. Specific manufacturer and model number references are indicated as a standard of performance and quality. Other manufacturers' models may be submitted to specifier for approval, provided the product meets or exceeds the specifications. The alternate fixtures must achieve the same photometric levels and uniformity ratios.
   c. Fixture manufacturer must allow for field replacement of LED circuit board and drivers.
   d. Except for acrylic–based housings, all housing finishes must be baked–on enamel, anodized, or powder–coated, unless otherwise specified in subsections below.
6. Light source requirements
   a. LED sources must meet the following requirements:
      1) Luminaires must be rated for –40°C to +50°C operation
      2) Correlated Color Temperature (CCT) shall be specified on light fixture schedule. Color temperatures may be selected from options such as 2700K, 3000K, 3500K, 4100K, and 5000K.
      3) Color Rendering Index (CRI): ≥ 80.
      4) Luminaire manufacturer must submit reliability reports indicating that the manufacturer of the LED (chip, diode, or package) has performed JEDEC (Joint Electron Devices Engineering Council) reliability tests on the LEDs: such as High, Room, and Low Temperature Operating Life tests; Thermal and Mechanical Shock tests, and Vibration and Solder Heat Resistance tests.
7. Driver requirements
   a. Power Supply Units (PSUs) including drivers must meet the following requirements:
      1) Must have a minimum efficiency of 85%
      2) Must be rated to operate between –40°C to +50°C
      3) Input Voltage: capable of 120 to 480 (±10%) volt, single phase as required by the site
      4) Power supplies can be UL Class I or II output
      5) Operating frequency must be 50/60 Hz
      6) Drivers must have a Power Factor (PF) of: ≥ 0.90
      7) Drivers must have a Total Harmonic Distortion (THD) of: ≤ 20%. Upon specification, THD will be available ≤ 10%.
      8) Drivers must comply with FCC 47 CFR part 15 non–consumer RFI/EMI standards
      9) Drivers must be Reduction of Hazardous Substances (RoHS) compliant. (see http://www.rohs.eu/english/index.html)
8. Expected Useful Life (Light Output) and Depreciation
   a. Useful Life Requirement: The useful life of the luminaire in terms of lumen output must be as specified by the L70 threshold (70% of initial light output at rated life): A minimum of 50,000 operating hours before reaching the L70 lumen output degradation point with no catastrophic failures.
9. Acceptable manufacturers of Light Emitting Diodes (the chips themselves). Light fixture manufacturers assemble fixtures with leds, drivers, heat sinks, and optics.
   a. Cree
   b. Nichia
   c. Philips
   d. Osram Sylvania
   e. Lumileds
   f. Xicato.

C. FIXTURE INSTALLATION

1. All lighting equipment shall be installed complete, including canopies, suspensions of proper lengths, hickeys, casings, sockets, holders, reflectors, ballasts, diffusing material, louvers, plaster frames, lamps recessing boxes, etc., all wired and assembled and ready for operation. Provide supporting brackets and channels as required.
2. Proper supports shall be provided for hanging all lighting fixtures which will transmit the load to suitable building members adequate for fixture weight. The Contractor shall acquaint the Architect with all details of fixture hanging methods he proposes to use sufficiently in advance of installation to permit a determination as to their adequacy. All details of fixture hangers and supports shall be designed to resist vibration and shock where such factors are encountered.
3. Fixture mounting shall be correlated with factory representative before fixtures are shipped.
4. Any fixture with weight of 10 lbs. Or more shall not be mounted on or suspended from the outlet box cover nor fastened to the box with two screws.
5. Where floodlighting has been indicated, the Contractor shall provide for adjusting units during evening hours.
6. After the installation of lighting fixtures, and all Architectural finishes are complete, directional fixtures (both interior and exterior) shall be adjusted after dark under the supervision of the Engineer, Architect and/or Owner. This means that the Electrical Contractor will supply personnel, ladders or lifts, lamps, and any other equipment necessary to expeditiously adjust and focus all lighting. All work to be done in accordance with union rules and local codes.

D. FINAL INSPECTION

1. Upon completion of the installation, lighting equipment must be in first class operating order and free from defects in condition and finish.
2. Fixtures shall be completely clean and free from finger marks, dust, plaster or paint spots.
3. Any reflectors, lenses, diffusers, side panels or other parts damaged prior to the final inspection shall be replaced at no expense to the Owner.
4. At the completion of the work the Electrical Contractor shall provide the Owner with adequate written and drawn information for a complete understanding of the functioning, maintenance, and replacement of the lighting.

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Engineer under the laws of the State of Minnesota.

Signature

SEAN A. TEVALT
Name

40871 AUGUST 13, 2014
License # Date

REVISION

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DATE JUNE 9, 2015
DRAWN SOW/BNZ

ELECTRICAL SPECIFICATIONS

E001

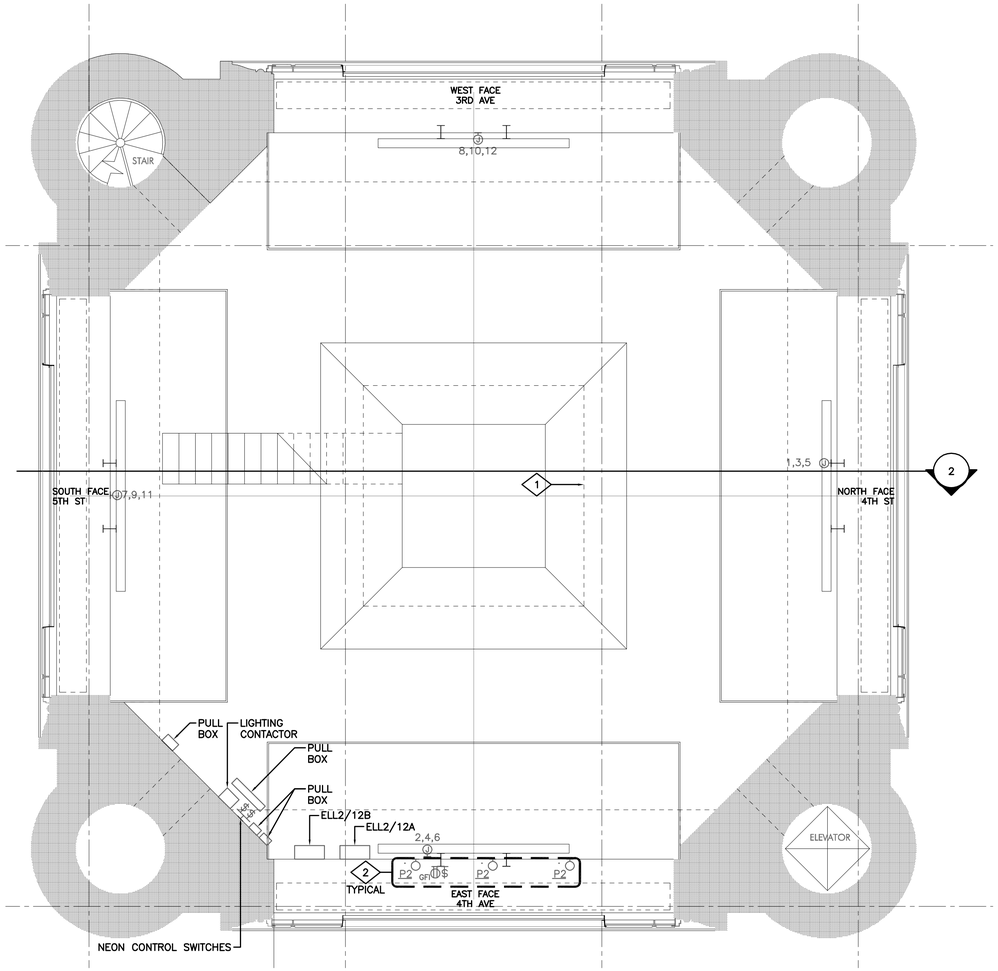
GENERAL NOTES

A. EXISTING NEON AND RELATED COMPONENTS TO BE REMOVED AT ALL FOUR FACES AND RETURNED TO OWNER IN WORKING CONDITION. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL, UPON WHICH THE CONTRACTOR IS RESPONSIBILE FOR PROPER DISPOSAL.

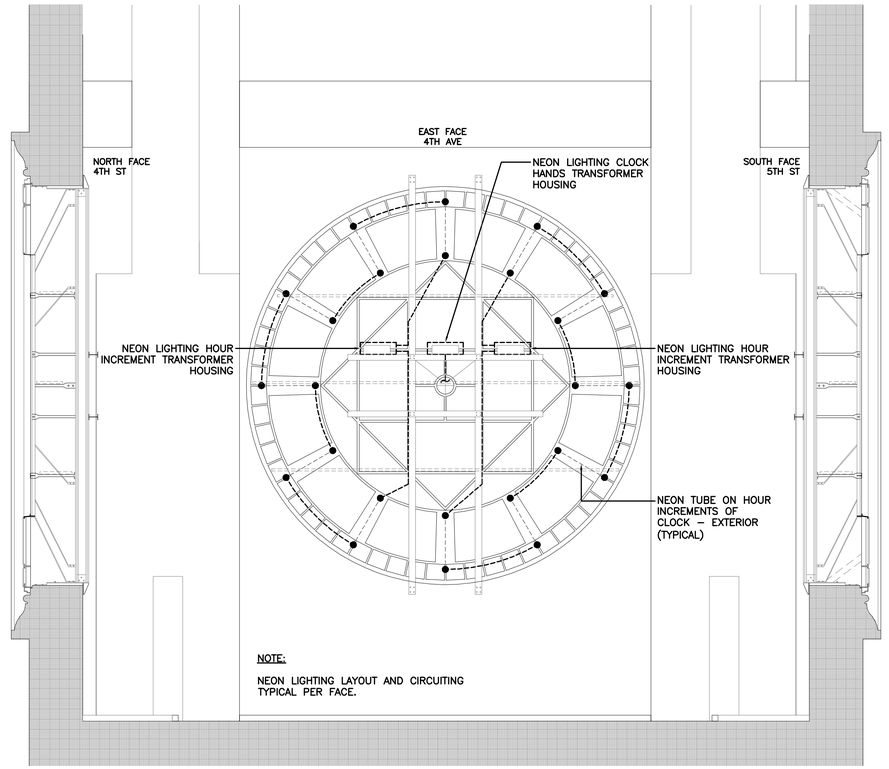
KEY NOTES

1. GENERAL CONTRACTOR TO REMOVE SPARE NEON TUBING AND RACKING ALONG NORTH WALL OF NEON TUBE STORAGE ROOM. REFER TO GENERAL NOTE A ABOVE FOR ADDITIONAL INFORMATION.

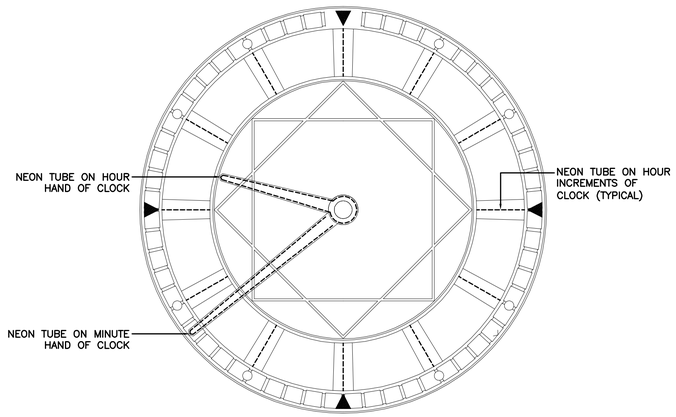
2. DISCONNECT AND REMOVE EXISTING MAINTENANCE LIGHTING, FUSE BOX, SWITCHES, AND GFI RECEPTACLE AS NEEDED FOR REMOVAL OF CLOCK FACE. SAVE COMPONENTS FOR REINSTALLATION AFTER NEW FACE IS INSTALLED.



1 12TH FLOOR LIGHTING DEMOLITION PLAN
1/4"=1'-0"



2 INTERIOR FACE OF CLOCK - EAST ELEVATION - DEMOLITION (TYPICAL)
1/4"=1'-0"



3 EXTERIOR FACE OF CLOCK - DEMOLITION
1/4"=1'-0"

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I hereby certify that this plan, specifications, or report was prepared by me or under my direct supervision and that I am a duly Registered Engineer under the laws of the State of Minnesota.

Signature

SEAN A. TEWALT
Name

40871 License #

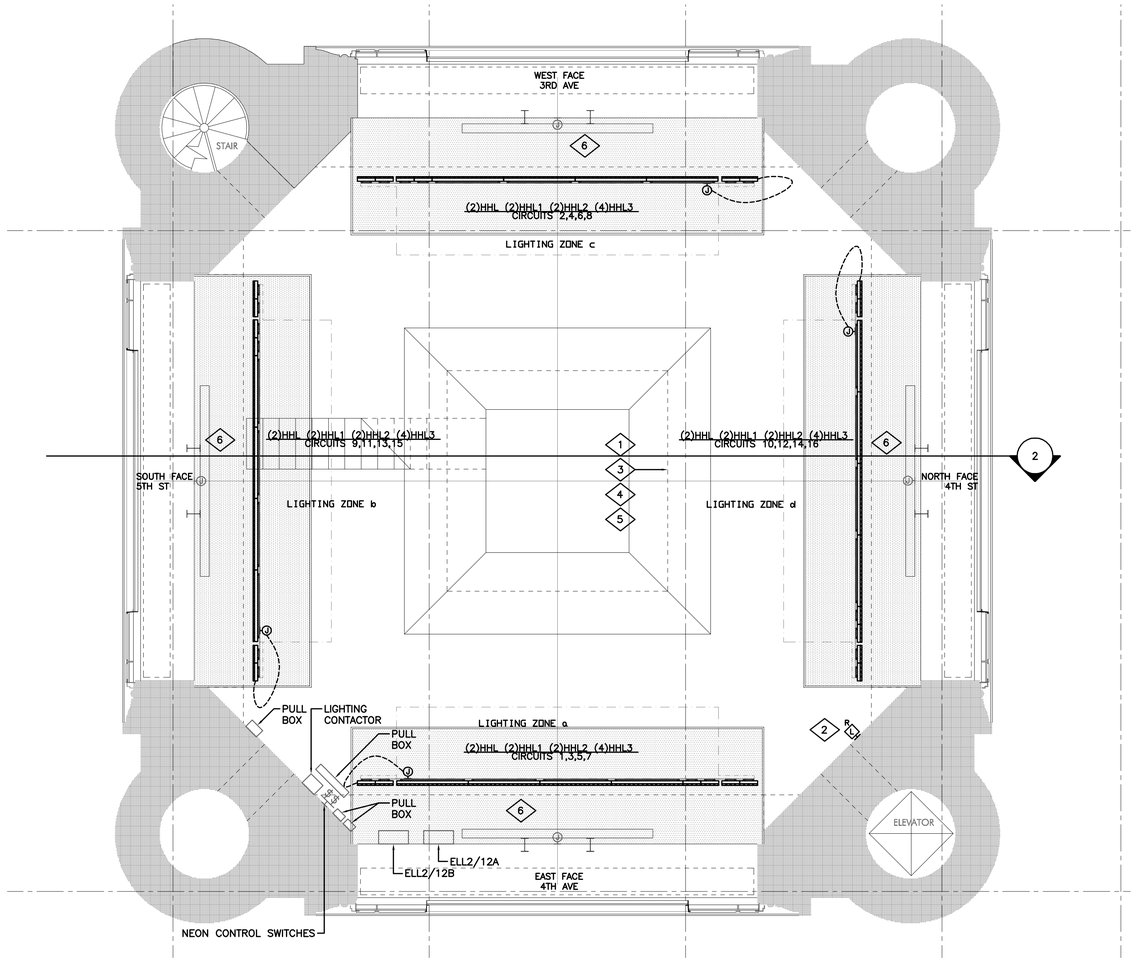
AUGUST 13, 2014 Date

Municipal Building
Clock Restoration
250 South 4th Street
Minneapolis, Minnesota, 55415

DRAWN SOW / BNZ
DATE JUNE 9, 2015
REVISION

12TH FLOOR LIGHTING DEMO PLAN

ED112



1 12TH FLOOR LIGHTING PLAN
1/4"=1'-0"

NORTH

CIRCUITING DIAGRAM

FACE	CIRCUITS – ELL2/12B				
EAST	1	3	5	7	CIRCUIT NUMBERS SHOWN ON DETAIL 2 ELEVATION
SOUTH	9	11	13	15	CORRESPONDING CIRCUIT NUMBERS FOR OTHER FACES
WEST	2	4	6	8	
NORTH	10	12	14	16	
DEDICATED CIRCUIT FROM PANEL ELL2/12A SHALL BE PROVIDED FOR LUTRON GRAFIK EYE QS UNITS OR ETC PARADIGM SERIES.					

LIGHT FIXTURE SCHEDULE

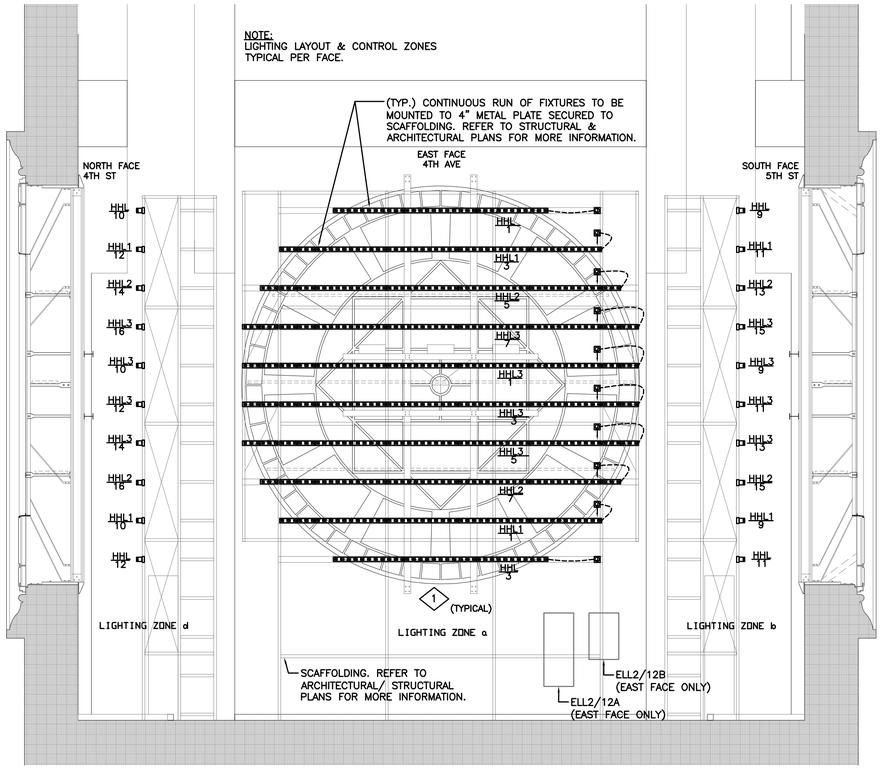
LTR TYPE	FIXTURE TYPE	SOURCE	MOUNTING	LAMPS	FEATURES	VOLTAGE & BALLAST	MANUFACTURER & CATALOG SERIES	NOTES
HHL	12' CONTINUOUS ADJUSTABLE LINEAR LED	LED	SURFACE -SCAFFOLDING	15-20W/FT/ 3500K/ 800-1000 LUMENS/FT	100-180 DEGREE BEAM SPREAD, 45 DEGREE (MIN) ADJUSTABLE MOUNTING BRACKETS, WET LOCATION, INTEGRAL DIMMABLE DRIVER REQUIRED, 5 YEAR WARRANTY, LINK CABLES AS REQUIRED, POLYCARBONATE LENS	120V INTEGRAL DIMM.	ACCLAIM DYNACOVE HO EXT.	1,2
HHL1	18' CONTINUOUS ADJUSTABLE LINEAR LED	LED	SURFACE -SCAFFOLDING	15-20W/FT/ 3500K/ 800-1000 LUMENS/FT	100-180 DEGREE BEAM SPREAD, 45 DEGREE (MIN) ADJUSTABLE MOUNTING BRACKETS, WET LOCATION, INTEGRAL DIMMABLE DRIVER REQUIRED, 5 YEAR WARRANTY, LINK CABLES AS REQUIRED, POLYCARBONATE LENS	120V INTEGRAL DIMM.	ACCLAIM DYNACOVE HO EXT.	1,2
HHL2	20' CONTINUOUS ADJUSTABLE LINEAR LED	LED	SURFACE -SCAFFOLDING	15-20W/FT/ 3500K/ 800-1000 LUMENS/FT	100-180 DEGREE BEAM SPREAD, 45 DEGREE (MIN) ADJUSTABLE MOUNTING BRACKETS, WET LOCATION, INTEGRAL DIMMABLE DRIVER REQUIRED, 5 YEAR WARRANTY, LINK CABLES AS REQUIRED, POLYCARBONATE LENS	120V INTEGRAL DIMM.	ACCLAIM DYNACOVE HO EXT.	1,2
HHL3	22' CONTINUOUS ADJUSTABLE LINEAR LED	LED	SURFACE -SCAFFOLDING	15-20W/FT/ 3500K/ 800-1000 LUMENS/FT	100-180 DEGREE BEAM SPREAD, 45 DEGREE (MIN) ADJUSTABLE MOUNTING BRACKETS, WET LOCATION, INTEGRAL DIMMABLE DRIVER REQUIRED, 5 YEAR WARRANTY, LINK CABLES AS REQUIRED, POLYCARBONATE LENS	120V INTEGRAL DIMM.	ACCLAIM DYNACOVE HO EXT.	1,2

NOTES:

1. CONTRACTOR TO ORDER CONTINUOUS RUN FIXTURES IN SHORTER SEGMENTS (4-FOOT MAXIMUM) TO FIT BETWEEN VERTICAL SCAFFOLDING MEMBERS. FIXTURES MUST BE EASILY DETACHED FROM SCAFFOLDING STRUCTURE FOR MAINTENANCE/REPLACEMENT.

2. CONTRACTOR TO ORDER ATTIC STOCK OF AT LEAST 10 LINEAR FEET OF LIGHT FIXTURES PER CLOCK FACE TO BE STORED IN NEON TUBE STORAGE ROOM.

NOTE:
LIGHTING LAYOUT & CONTROL ZONES
TYPICAL PER FACE.



2 INTERIOR FACE OF CLOCK – EAST ELEVATION/SECTION DETAIL (TYPICAL)
1/4"=1'-0"

LIGHTING GENERAL NOTES

A. SOME CONDUIT AND WIRING MAY NOT BE SHOWN GRAPHICALLY ON THE PLANS. IT IS THE INTENT OF THESE PLANS THAT THE SYSTEMS BE PROVIDED COMPLETE BASED ON IDENTIFICATION OF CIRCUIT NUMBERS, RELAY NUMBERS, SWITCHING IDENTIFICATION, PANEL BOUNDARIES, SPECIFIED MINIMUM CONDUIT SIZE, SPECIFIED MINIMUM CONDUCTOR SIZES, AND/OR SPECIFIED MINIMUM GROUNDING.

B. VERIFY ACTUAL CONDUIT ROUTES PRIOR TO INSTALLING CONDUIT. PROVIDE OFFSETS AS REQUIRED TO ROUTE AROUND STRUCTURE AND OTHER OBSTRUCTIONS AND INSTALL PULLBOXES AS REQUIRED BY NEC.

C. ALL CONDUIT AND JUNCTION BOXES SHALL BE LABELED; SEE SPECIFICATION SECTION 26 05 00 FOR EACH SYSTEM COLOR CODING AND LABEL REQUIREMENTS.

D. SUPPORTS FOR CONDUIT SHALL BE UL LISTED FOR THE PURPOSE AND SHALL BE INSTALLED AS REQUIRED BY THE NEC.

E. ALL INSTALLATION MATERIALS AND METHODS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL APPLICABLE LOCAL, STATE, AND NATIONAL CODES.

F. COORDINATE FIXTURE LOCATIONS WITH STRUCTURAL TRADES PRIOR TO INSTALLATION. REFER TO SPECIFICATIONS SECTION 26 05 01.

G. ALL DIMMING CIRCUITS SHALL HAVE A DEDICATED NEUTRAL CONDUCTOR.

H. FIXTURE LOCATIONS AND MOUNTING CONDITIONS SHOWN ARE APPROXIMATE BASED ON DRAWINGS PROVIDED. FIELD VERIFY WITH EXISTING CONDITIONS.

I. ALL FIXTURES TO BE CONTROLLED VIA EXISTING PHOTOCELL.

(#) KEY NOTES

1. PROVIDE LUTRON GRAFIK EYE SERIES OR ETC PARADIGM SERIES (PLUS ASSOCIATED EQUIPMENT) FOR CONTROL OF ALL FOUR CLOCK FACE LIGHTS SIMULTANEOUSLY. LOCATION OF CONTROL MODULES & ACCESSORIES TO BE WITHIN NEON TUBE STORAGE ROOM. PROVIDE LABEL AT EACH CLOCK FACE WITH CORRESPONDING CARDINAL DIRECTION, AND LABEL EACH CONTROL MODULE ACCORDINGLY. REFER TO KEY NOTE NO. 3 FOR LUTRON AND ETC DEVICE INSTALLATION REQUIREMENTS.

   FOR PRICING/BOM QUESTIONS PLEASE CONTACT THE FOLLOWING:
   LUTRON: CHRIS LEE @ MRL COMPANY (612)803-4774
   ETC: JOHN HARTLEY @ JTH LIGHTING (612)816-2776

2. PROVIDE (1) LUTRON OR ETC 5-BUTTON KEYPAD WITH RAISE/LOWER AT ELEVATOR ENTRY.

3. PROVIDE FIRE-TREATED PLYWOOD SHEETING AND ATTACH TO THE STEEL STRUCTURE ON THE NORTH WALL OF THE NEON TUBE STORAGE ROOM FOR MOUNTING OF LUTRON DEVICES OR PROVIDE STEEL UNI-STRUT SUPPORT STRUCTURE MOUNTED TO THE FLOOR ALONG THE NORTH WALL OF THE NEON TUBE STORAGE ROOM FOR MOUNTING OF ETC PARADIGM SERIES AND ASSOCIATED EQUIPMENT.

4. ROUTE CONDUIT FROM THE LIGHTING CONTROL SYSTEM ON THE NORTH WALL OF THE NEON TUBE STORAGE ROOM TO EACH CLOCK FACE SCAFFOLD. CONDUIT SHALL BE A MINIMUM OF 11'-0" A.F.F. PROVIDE STRUCTURAL SUPPORT AS REQUIRED.

5. PROVIDE ALL NECESSARY COMPONENTS, CABLING, CONDUIT, ETC. FOR CONNECTION OF NEW LIGHTING CONTROL SYSTEM TO THE EXISTING ALERTON DDC SYSTEM FOR OVERRIDE CONTROL. COORDINATE CONNECTION LOCATION AND TYPE WITH BUILDING MAINTENANCE.

6. REINSTALL EXISTING MAINTENANCE LIGHTING, FUSE BOX, SWITCHES, AND GFI RECEPTACLE AT EACH CLOCK FACE. REFER TO KEY NOTE NO. 2 ON SHEET ED112 FOR ADDITIONAL INFORMATION.

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12TH FLOOR LIGHTING PLAN

E112