

BIDDING DOCUMENTS

SPECIFICATIONS

**GATES OF HEAVEN EXTERIOR RESTORATION
CONTRACT# 8916**

**GATES OF HEAVEN
300 E GORHAM STREET
MADISON, WISCONSIN**

June 8, 2020



CONTACTS

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11 **PART 1 – GENERAL**

12
13 **1.1. SUMMARY**

- 14 A. Each project has varying requirements for permits, inspections, and fees based on the scope, size, and location of
15 the project.
16 B. The City of Madison (Owner) is subject to all permits, inspections and associated fees for construction,
17 demolition, utility connection, storm water management, and other similar requirements that may be required
18 to complete the scope of work associated with these contract documents.
19 C. The General Contractor (GC) shall be responsible for obtaining all permits, inspections and paying for all
20 associated fees unless specifically identified within this specification.
21

22 **1.2. REFERENCES**

- 23 A. The following references are not intended to be all inclusive. It shall be the GC’s responsibility to determine all
24 requirements based on the scope of work in the contract documents.
25 B. City of Madison Ordinances: Review all ordinances that may require a permit or fee that may be connected with
26 a required permit. Contact the following City Agencies to determine the exact requirements during bidding
27 1. Building Inspection
28 2. Zoning
29 3. Engineering
30 4. Water Utility
31 5. Traffic Engineering
32 6. Others as may be specified by the contract documents.
33 B. State Statutes
34 C. Other Regulatory Regulations
35 D. Other Agencies or companies that may have related requirements
36 1. Madison Metropolitan Sewerage District
37 2. Local gas and electric utility companies
38 3. Other utility companies
39

40 **1.3. GENERAL CONTRACTORS REQUIREMENTS**

- 41 A. The GC shall be responsible for all of the following:
42 1. Execute application for all required permits as may be required by the scope of work described within the
43 contract documents.
44 2. Paying all fees associated with the application of any required permits.
45 3. Scheduling all required inspections that may be conditions of any required permits.
46 B. The GC shall provide high quality scanned images of all required permits and inspections to the City Project
47 Manager (CPM).
48

49 **PART 2 – PRODUCTS – THIS SECTION NOT USED**

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51 **PART 3 – EXECUTION – THIS SECTION NOT USED**

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55 **END OF SECTION**
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SECTION 01 25 13
PRODUCT SUBSTITUTION PROCEDURES

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PART 1 – GENERAL

1.1. SUMMARY

- 17 A. The City of Madison uses a specific list of preferred products for various specification items to establish
18 standards of quality, utility, and appearance required.
19 B. The City of Madison will not allow substitutions for specified Products except as follows:
20 1. The Product is no longer produced or the product manufacturer is no longer in business.
21 2. The manufacturer has significantly changed performance data, product dimensions, or other such design
22 criteria for the specified Product(s).
23 3. Products specified by naming one or more Products or manufacturer’s and “or approved equal” or
24 “approved equivalent.”
25 C. The City of Madison will not allow substitutions for specified Products as follows:
26 1. For Products specified by naming only one Product and manufacturer, no substitute product will be
27 considered.
28 2. For Products specified by naming several Products or manufacturers select any one of the products or
29 manufacturers named, which complies with the specifications. No substitute product will be considered.
30 D. Request for substitutions from any party other than the General Contractor (GC) will not be accepted.
31

1.2. RELATED SPECIFICATIONS

- 32 A. Section 01 33 23 Submittals
33
34

PART 2 – PRODUCTS

2.1. SUBSTITUTION REQUEST FORM

- 37 A. During bidding all contractors (General and Sub-contractors) and suppliers of materials or products shall provide
38 hard copy of the Substitution Request form and all required attachments directly to the Project Engineer.
39 B. After bidding only the GC shall submit a request and shall use the form provided by CPM.
40
41

PART 3 - EXECUTION

3.1. REQUESTING A SUBSTITUTION DURING BIDDING

- 42 A. In the event that a substitution is requested during the bidding phase the Contractor or Supplier shall meet the
43 substitution request deadline listed in the bidding documents. No substitution request will be considered during
44 the bidding period after the stated substitution request deadline. In general this procedure shall be as follows:
45 1. Submit the Substitution Request Form including all required supporting documentation to the City
46 Project Manager and Project Engineer by the substitution request deadline specified in Section A of the
47 Contract Documents.
48 2. Submit a Substitution Request Form for each product, supported with complete data, drawings and
49 samples as appropriate, including:
50 i. Comparison of qualities of the proposed substitutions with that specified.
51 ii. Changes required in other elements of the Work because of the substitution.
52 iii. Effect on the construction schedule.
53 iv. Cost data comparing the proposed substitution with the Product specified.
54 v. Any required license fees or royalties.
55 vi. Availability of maintenance service and source of replacement materials.
56
57
58

SECTION 01 26 57
CHANGE ORDER REQUESTS (COR)

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18

PART 1 – GENERAL

1.1. SUMMARY

- 22 A. Except in cases of emergency no changes in the Work required by the Contract Documents may be made by
23 the General Contractor (GC) without having prior approval of the City Engineer or his representative.
24 B. The City may at any time, without invalidating the Contract and without Notice to Sureties, order changes in
25 the Work by written Change Order (CO). Such changes may include additions and/or deletions.
26 C. Where the City desires to make changes in the Work through use of written Change Order Request (COR), the
27 following procedures apply:
28 1. If requested by the City, the GC shall prepare and submit a detailed proposal, including all cost and time
29 adjustments to which the GC believes it will be entitled if the change proposed is incorporated into the
30 Contract. The City shall be under no legal obligation to issue a Change Order for such proposal.
31 2. The parties shall attempt in good faith to reach agreement on the adjustments needed to the Contract to
32 properly incorporate the proposed change(s) into the Work. In the event that the parties agree on such
33 adjustments, the City may issue a Change Order and incorporate such changes and agreed to
34 adjustments, if any.
35 3. In some instances, it may be necessary for the City to authorize Work or direct changes in Work for which
36 no final and binding agreement has been reached and for which unit prices are not applicable. In such
37 cases the following shall apply.
38 a. Upon written request by the City, the GC shall perform proposed Work
39 b. The cost of such change may be determined in accordance with this specification.
40 c. In the event agreement cannot be accomplished as contemplated herein, the City may authorize
41 the Work to be performed by City forces or to hire others to complete the Work. Such action on
42 the part of the City shall not be the basis of a claim by the GC for failure to allow it to perform the
43 changed Work.
44 D. Where changes in the Work are made by the City through use of a force account basis, the GC shall as soon as
45 practicable, and in no case later than ten (10) working days from the receipt of such order, unless another time
46 period has been agreed to by both parties, give the City written Notice, stating:
47 1. The date, circumstances and source of the extra work; and,
48 2. The cost of performing extra work described by such Order, if any; and,
49 3. Effect of the order on the required completion date of the Project, if any.
50 E. The giving of each Notice by the GC as prescribed by this specification, shall be a requirement to liability of the
51 City for payment of any additional costs incurred by the GC in implementing changes in the Work. Under this
52 specification, no order or statement of the City shall be treated as a Change Order, or shall entitle the GC to an
53 equitable adjustment of the terms of this Contract or damages for costs incurred by the GC on any activity for
54 which the Notice was not given.
55 F. In the event Work is required due to an emergency as described in this specification the GC must request an
56 equitable adjustment as soon as practicable, and in no case later than ten (10) working days of the
57 commencement of such emergency.

- 1 G. All GC requests for equitable adjustment shall be submitted to the CPM per the specifications below. Such
2 requests shall set forth with specificity the amount of and reason(s) for the proposed adjustment and shall be
3 accompanied by supporting information and documents.
4 H. No adjustment of any kind shall be made to this Contract, if asserted by the GC for the first time, after the date
5 of final payment.
6 I. This specification shall be used by the GC when preparing documentation for any COR to ensure each has been
7 properly and completely filled out as required by the City of Madison.
8

9 **1.2. RELATED SPECIFICATION SECTIONS**

- 10 A. Section 01 26 63 Change Order (CO)
11 B. Parts of this specification will reference articles within "The City of Madison Standard Specifications for Public
12 Works Construction".
13 1. Use the following link to access the Standard Specifications web page:
14 <http://www.cityofmadison.com/business/pw/specs.cfm>
15 a. Click on the "Part" chapter identified in the specification text. For example if the specification
16 says "Refer to City of Madison Standard Specification 210.2" click the link for Part II, the Part II
17 PDF will open.
18 b. Scroll through the index of Part II for specification 210.2 and click the text link which will take you
19 to the referenced text.
20

21 **1.3. DEFINITIONS AND STANDARDS**

- 22 A. LABOR: The amount of time and cost associated with the performance of human effort for a defined scope of
23 Work. Labor is further defined as follows:
24 1. Labor rate is the total hourly rate which includes the base rate of pay, fringe benefits plus each
25 company's cost of required insurance, also referred to as a reimbursable labor rate.
26 2. Unit labor is the labor hours anticipated to install the corresponding unit of material.
27 3. Labor cost is the labor hours multiplied by the hourly labor rates.
28 B. MATERIAL: Actual material cost is the amount paid, or to be paid, by the GC for materials, supplies and
29 equipment entering permanently into the Work, including cost of transportation and applicable taxes. The cost
30 shall not exceed the usual and customary cost for such items available in the geographical area of the project.
31 C. LARGE TOOLS AND MAJOR EQUIPMENT: Large tools and major equipment are those with an initial cost greater
32 than \$1,500, whether from the GC or other sources.
33 1. Tool and equipment use and time allowed is only for extra work associated with change orders.
34 a. Rental Rate is the machine cost associated with operating a piece of equipment for a defined
35 length of time (hour, day, week, or month) and shall not exceed the usual and customary amount
36 for such items available in the geographical area of the project.
37 b. Rental cost is the rental rate multiplied by the anticipated duration the equipment shall be
38 required.
39 2. The GC shall provide a breakdown of all rental rates to indicate what items and costs are associated with
40 the rate. Examples of items to include in the breakdown would be fuel consumption, lubrication,
41 maintenance and other similar expenses but not including profit and overhead.
42 3. When large tools and equipment needed for Change Order work are not already at the job site, the
43 actual cost to get the item there is also reimbursable.
44 D. BOND COST: The cost shall be calculated at 1% of the total proposed change order.
45 E. SUB-CONTRACTOR COSTS: Sub-contractor costs are for those labor, material, and equipment costs required by
46 subcontracted specialties to complete the Change Order work including allowable markups as outlined within
47 this specification.
48 F. OVERHEAD AND PROFIT Markup: The allowable markup percentage to a COR by the GC and Sub-contractors for
49 overhead and profit. All of the following are expenses associated with overhead and profit and shall not be
50 reimbursable as individual items on any COR:
51 1. CHANGE ORDER PREPARATION: All costs associated with the preparing and processing of the change
52 order.
53 2. DESIGN, ESTIMATING, AND SUPERVISION: All such efforts, unless specifically requested by Owner as
54 additional Work to be documented as a COR or portion thereof.
55 3. INSTALLATION LAYOUT: The layout required for the installation of material and equipment, and the
56 installation design, is the responsibility of the GC.

- 1 4. SMALL TOOLS AND SUPPLIES: The cost of small hand tools with an initial cost of \$1,500 or less, along
2 with consumable supplies and expendable items such as drill bits, saw blades, gasoline, lubricating or
3 cutting oil, and similar items.
4 5. GENERAL EXPENSE: The general expense, which is those items that are a specific job cost not associated
5 with direct labor and material such as job trailers, foreman truck, and similar items.
6 6. RECORD DRAWINGS: The preparation of record or as-built drawings.
7 7. OTHER COSTS: Any miscellaneous cost not directly assessable to the execution of the Change Order
8 including but not limited to the following:
9 a. All association dues, assessments, and similar items.
10 b. All education, training, and similar items.
11 c. All drafting and/or engineering, unless specifically requested by Owner as additional Work to be
12 documented as a Change Order proposal or portion thereof.
13 d. All other items including but not limited to review, coordination, estimating and expediting, field
14 and office supervision, administrative work, etc.
15 G. Contract Extension: The necessary amount of time to be added to the contract deadlines for the completion of a
16 change order.
17

18 **1.4. CONTRACT EXTENSION**

- 19 A. The GC shall not assume that every COR will require a Contract Extension. If the GC feels a contract extension is
20 warranted he/she shall provide sufficient scheduling information that shows how the COR being requested
21 impacts the critical path of the project.
22 B. The City of Madison strongly encourages the GC to explore alternative methods and practices prior to submitting
23 a COR with a request for contract extension.
24

25 **1.5. OVERHEAD AND PROFIT MARKUP**

- 26 A. Pursuant to the City of Madison Standard Specifications for Public Works Construction, Section 104.7, Extra
27 Work, the following maximum allowable markups shall be strictly enforced on all change orders associated with
28 the execution of this contract.
29 1. The total maximum overhead and profit shall not exceed fifteen percent (15%) of the total costs.
30 2. The total maximum overhead and profit shall be distributed as follows:
31 a. For work performed and materials provided solely by the General Contractor, fifteen percent
32 (15%) of the total costs.
33 b. For work performed and materials provided solely by Sub-contractors and supervised by the
34 General Contractor:
35 i. Supervision of the GC, five percent (5%) of the total Sub-contractor cost.
36 ii. Sub-contractors work and materials ten percent (10%) of the total Sub-contractor cost.
37

38 **1.6. PERFORMANCE REQUIREMENTS**

- 39 A. The GC shall become thoroughly familiar with this specification as it will identify procedures and expenses that
40 are or are not allowed under the Change Order and Change Order Request process.
41 B. The GC shall be responsible for all of the following:
42 1. Carefully reviewing the CB that is associated with the COR.
43 2. Collecting required supporting documentation from all contractors that quantify the need for a COR.
44 a. Labor hours and wage rates
45 b. Material costs
46 c. Equipment costs
47 C. The following shall apply to establishing prices for labor, materials, and equipment costs:
48 1. Where Work to be completed has previously been established by individual bid items in the contract bid
49 proposal the GC shall use the unit bid prices previously established.
50 2. Where Work to be completed was bid as a Lump Sum without individual bid items the GC shall provide a
51 breakdown of all labor, materials, equipment including unit rates and quantities required.
52 D. The completion date is determined by Owner. The schedule, however, is the responsibility of the GC. Time
53 extensions for extra Work will be considered when a schedule analysis of the critical path shows that the Change
54 Order Request places the Work beyond the completion date stated in the Contract.
55

56 **1.7. QUALITY ASSURANCE**

- 57 A. The GC shall be responsible for ensuring that all COR supporting documentation meets the following
58 requirements prior to completing the COR form:

**SECTION 01 26 63
CHANGE ORDER (CO)**

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10 PART 3 - EXECUTION 1
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12 3.2. EXECUTION OF THE CHANGE ORDER 2
13

PART 1 – GENERAL

1.1. SUMMARY

- 17 A. Except in cases of emergency, no changes in the Work required by the Contract Documents may be made
18 by the General Contractor (GC) without having prior approval of the City Project Manager (CPM).
19 B. The City may at any time, without invalidating the Contract and without Notice to Sureties, order changes in
20 the Work by written Change Order. Such changes may include additions and/or deletions.
21 C. The Change Order (CO) is a Board of Public Works (BPW) form that is reviewed and approved by a specific
22 process.
23 D. The CO form is typically made up of multiple Change Order Requests (CORs) and/or Bid Items as appropriate
24 depending on the type of project and how the contract was bid.
25

1.2. RELATED SPECIFICATION SECTIONS

- 26 A. Section 01 26 63 Change Order Request (COR)
27
28

1.3. BOARD OF PUBLIC WORKS PROCEDURE

- 29 A. The Board of Public Works has a very explicit procedure for the review and approval of all change orders
30 associated with any Public Works Contract as follows:
31 1. The Supervisory Chain of the CPM shall review and approve any CO under \$10,000 provided it does not
32 include either of the following:
33 a. The CO does not request a time extension to the contract.
34 b. The CO does not cause the contract contingency sum to be exceeded.
35 2. The Board of Public Works shall review and approve any CO that requires any of the following:
36 a. Any CO over \$20,000.
37 b. Any CO requesting a time extension to the contract regardless of the monetary value of the CO.
38 c. Any CO that that causes the contract contingency sum to be exceeded.
39 B. The Board of Public Works generally meets every other week and only once in August and December. The GC is
40 cautioned that, under normal scheduling, a CO requiring a BPW review will take a minimum of two (2) weeks to
41 achieve final approval.
42 1. The City shall not be responsible for additional delays to the Work caused by the scheduling constraints
43 of the Board of Public Works.
44 C. SPECIAL NOTE: The GC is cautioned to never proceed unless told to do so by the CPM. Only in rare instances
45 may the CPM give a written notice to proceed on a COR without an approved CO. Proceeding without the
46 written notice of the CPM or an approved CO is at the GC’s own risk.
47
48

PART 2 – PRODUCTS

2.1. CHANGE ORDER FORM

- 50 A. Provided by CPM.
51
52
53

PART 3 - EXECUTION

3.1. PREPARATION OF THE CHANGE ORDER

- 54 A. The CPM shall prepare the required CO as follows:
55 1. Provide information for all contract information.
56
57
58

- 1 2. Provide a general description of the items described within the change order.
- 2 3. Provide detailed information for each Item on the CO form. At the option of the CPM he/she may include
- 3 multiple Change Order Requests each as their own item.
- 4 4. Provide required pricing breakdown and accounting information as needed for the item.
- 5 5. Insert attachments of contractor/architect provided information that clarifies and quantifies the CO.
- 6 Attachments may include but not be limited to material lists, estimated labor breakdown, revised details
- 7 or specifications, and other documents that may be related to the requested change.
- 8 6. Save the final version of the completed CO.
- 9

10 **3.2. EXECUTION OF THE CHANGE ORDER**

- 11 A. The GC shall do the following:
 - 12 1. Review all items on the CO form.
 - 13 2. The GC shall notify the CPM immediately of any errors or discrepancies on the form and shall not sign or
 - 14 save it.
 - 15 a. The CPM shall make any corrections as needed, re-save the form, and notify the GC.
 - 16 3. If/when the GC concurs with the CO form as drafted the GC shall digitally sign the form.
- 17 B. The CPM shall do the following:
 - 18 1. Monitor the review process
 - 19 2. Ensure that proper BPW procedures are executed as needed by the CO approval process.
 - 20 a. Schedule the CO on the next available BPW agenda if required.
 - 21 i. Attend the BPW meeting to speak on the CO to board members and answer questions.
 - 22 ii. The GC and/or PE may be required to attend the BPW meeting to address specific
 - 23 information as it relates to the Work and/or materials associated with the CO.
 - 24 3. Monitor final approval and distribution of the CO.
 - 25 4. Notify the GC that the CO has been completed.
 - 26 5. Ensure that the CO is posted to the next Public Works payment schedule.
 - 27 6. Verify that the GC's next Progress Payment-Schedule of Values show the CO as part of the contract sum.
- 28 C. Upon final approval of the CO the GC may proceed with executing the Work associated with the CO.
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- 33

END OF SECTION

SECTION 01 33 23
SUBMITTALS

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11 3.2. SUBMITTAL REVIEW 2
12 3.3. PROJECT ENGINEERS REVIEW 2
13

PART 1 – GENERAL

1.1. SUMMARY

- 17 A. The General Contractor (GC) shall be responsible for providing submittals for review of all contractors and sub-
18 contractors as designated in the construction documents. Submittals shall include but not be limited to all of the
19 following:
20 1. Equipment specified and pre-approved in the specification; to ensure quality, construction, and
21 performance specifications have not changed since final design.
22 2. Equipment specified by performance in the specification; to ensure that the intended quality,
23 construction, and performance specified is met by the selected material or product.
24 3. Shop, piece, erection, and other such drawings as indicated in the specifications to ensure all structural,
25 dimensional, and assembly requirements are being met.
26 4. Submittals indicating installation sequencing
27 5. Submittals indicating control sequencing
28 6. Contractor licensing, certification, and other such regulatory documentation when required by a
29 specification.
30 7. Other submittals as may be required by individual specifications.
31 B. The submittal process shall not be used to determine alternates to specified products or equipment. All
32 considerations shall be reviewed during the bidding process and acceptable alternates shall be acknowledged by
33 addendum prior to the closing of bidding. See bidding instructions for the information on submitting alternates
34 for consideration.
35 D. In the event that a manufacturer has significantly changed a product (discontinued a model, changed dimension
36 or performance data changed available colors, etc.) since bid opening the GC shall Notify the City Project
37 Manager requesting other approved alternates prior to uploading a digital submittal.
38 E. Contractors and sub-contractors shall be responsible for knowing the submittal requirements of ALL sections
39 within their scope of work under the contract. The Owner reserves the right to request documentation on any
40 materials, equipment, or product being installed where a submittal is not on file. If the material, equipment, or
41 product installed is determined not to meet the intent of the specification the contractor/sub-contractor shall be
42 required to remove and replace the items involved. The GC shall be solely responsible for all costs associated
43 with the removal and replacement.
44

1.2. RELATED REFERENCES

- 45 A. All Technical Specifications, contract documents, construction drawings, and any published addendums during
46 the bidding process.
47 B. All contract documents generated during the execution of the contract.
48
49

1.3. SUBMITTAL REQUIREMENTS

- 50 A. A completed submittal shall meet the following requirements:
51 1. Digital submittal shall be original PDF of manufacturer’s data sheets or high quality color scan of the
52 same.
53 a. Submittals shall not include sales fliers or other similar documents that typically do not provide
54 complete manufacturers data.
55 2. Documents within the PDF submittal shall be printable to a sized sheet no less than 8-1/2 by 11 inches
56 and no larger than 24 by 36 inches.
57

- 1 3. At the beginning of each submittal the contractor shall identify the plan reference (WC-1, EF-3, etc.) in
2 RED block letters that the submittal is for.
- 3 4. Where multiple model numbers appear in a table the contractor shall identify the specific model being
4 submitted by using a RED square, box, or other designation to distinguish the correct model from others
5 on the page.
- 6 B. A complete submittal will include all information associated with the product or equipment as presented in
7 plans, equipment tables, and specifications. Information shall include but not be limited to the following:
8 1. Dimensional data
9 2. Performance data
10 3. Resource requirements, power, water, waste, etc.
11 4. Clearance and maintenance requirements
12 5. Finish information, colors, textures, etc.
13 6. Warranty information
- 14 C. Where a submittal includes material samples (carpet, tile, paint draw downs, etc.) the contractor shall do the
15 following:
16 1. The Contractor shall submit the sample(s) as indicated in the specification.
17 2. The Contractor shall include a quality photograph(s) of the product with the digital submittal.
18 Photographs shall meet the following requirements:
19 a. Formatted to be between 500Kb and 1.0 Mb in file size
20 b. Have no glare or flash reflection on the sample
21 c. Sample fills the frame of the photo and shows detail as needed. Include multiple photos from
22 other angles as needed.
23 d. Scanned copies of products or photos are not acceptable.
- 24 D. Uploaded submittals should be relative and related to a specific written specification.
25 1. Do not upload submittals under a broad category or division (I.E. HVAC 23 00 00). Always upload by the
26 specific specification that identifies a required product or performance to be met.
27 2. Group related items together if the specification is written that way. (I.E. all of the plumbing fixtures and
28 trim relative to one specific specification should be submitted together).
29 3. Submittals shall be grouped and adhere to the divisions in the submittal schedule. Submittals that do not
30 conform to the submittal schedule and/or specification divisions will be rejected for re-submittal.

31
32 **PART 2 – PRODUCTS – THIS SECTION NOT USED**

33
34 **PART 3 - EXECUTION**

35
36 **3.1. GENERAL CONTRACTORS PROCEDURES**

- 37 A. All required submittals will be submitted electronically by the GC.
38 B. Uploading the submittal indicates that the GC has reviewed and approved the submittal against the contract
39 document requirements.
40 C. The GC shall discuss submittal status at all progress meetings and shall monitor submittal review/approval/re-
41 submittal so as to not incur delays in the project schedule.
42 D. The GC and sub-contractors shall provide re-submittals as required.

43
44 **3.2. SUBMITTAL REVIEW**

- 45 A. The submittal shall be reviewed internally by the required Architect/Engineer and Owner Representative in a
46 timely fashion and provide commentary on missing items, incorrect information, or incomplete shop drawings,
47 etc. as needed.
48 B. When the internal review is completed the CPM will notify the Project Engineer the submittal is ready for final
49 review.
50 C. Information will be transmitted electronically.

51
52 **3.3. PROJECT ENGINEERS REVIEW**

- 53 A. Upon completion of the internal review the Project Engineer shall review all internal review comments, confer
54 with the CPM as needed and determine the appropriate disposition status for the submittal (approved or
55 resubmit).
56 B. The Project Engineer shall summarize final internal review comments onto the submittal cover sheet, provide a
57 final disposition of the submittal and update the review status of the submittal to "Complete..." (With or w/o
58 comments) or "Rejected".

- 1 C. A completed Final Review status initiates the CPM to notify the GC and appropriate sub-contractor(s) that the
- 2 review of the submittal has been completed.
- 3 D. Information will be transmitted electronically.
- 4
- 5 **END OF SECTION**
- 6

**SECTION 01 73 29
CUTTING AND PATCHING**

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PART 1 – GENERAL

1.1. SUMMARY

- 21 A. This Section includes general procedural requirements for cutting and patching including, but not limited to the
22 following:
23 1. Typical areas of cutting and patching for this project may include cutting and patching of metal deck and
24 wall for enlarging scuppers.
25 2. Examination
26 2. Preparation
27 3. Performance
28 4. Cleanup and Restoration
29
30

1.2. RELATED SPECIFICATION SECTIONS-THIS SECTION NOT USED

1.3. DEFINITIONS

- 34 A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
35 B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other
36 Work.
37

1.4. QUALITY ASSURANCE

- 39 A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying
40 capacity or load-deflection ratio.
41 B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results
42 in reducing their capacity to perform as intended or that may result in increased maintenance or decreased
43 operational life or safety.
44 C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that
45 could change their load-carrying capacity that results in reducing their capacity to perform as intended, or that
46 may result in increased maintenance or decreased operational life or safety. Some miscellaneous elements
47 include the following:
48 1. Water, moisture, or vapor barriers
49 2. Membranes and flashings
50 3. Exterior curtain-wall construction
51 4. Equipment supports
52 5. Piping, ductwork, vessels, and equipment
53 6. Noise and vibration control elements and systems
54 D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and
55 patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that
56 would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has
57 been cut and patched in a visually unsatisfactory manner.

1 **1.5. WARRANTY**

- 2 A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting
3 and patching operations, by methods and with materials so as not to void existing warranties.
4 B. All cutting and patching work performed under this contract shall be warranted like new work as defined by the
5 Specification governing the work.
6

7 **PART 2 - MATERIALS**

8
9 **2.1. GENERAL**

- 10 A. Comply with requirements specified within other sections of the Specifications.
11 B. In-Place Materials: Use materials identical to existing in-place materials. For exposed surfaces use materials that
12 visually match in-place adjacent surfaces to the fullest extent possible.
13 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the
14 visual and functional performance of in-place materials.
15

16 **PART 3 - EXECUTION**

17
18 **3.1. EXAMINATION**

- 19 A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
20 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including
21 compatibility with in-place finishes or primers.
22 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.
23

24 **3.2. PREPARATION**

- 25 A. Temporary Support: Provide temporary support of Work to be cut.
26 B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection
27 from adverse weather conditions for portions of Project that might be exposed during cutting and patching
28 operations. If the failure to protect, or the lack of protection, of in-place construction and/or existing conditions
29 results in damage, the contractor shall be responsible for repair to previous condition.
30 C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
31 D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be
32 removed, relocated, or abandoned, bypass such services/systems before cutting to eliminate interruption to
33 occupied areas.
34

35 **3.3. PERFORMANCE**

- 36 A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the
37 earliest feasible time, and complete without delay.
38 1. Cut in-place construction to provide for installation of other components or performance of other
39 construction, and subsequently patch as required to restore surfaces to their original condition.
40 B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations,
41 including excavation, using methods least likely to damage elements retained or adjoining construction. If
42 possible, review proposed procedures with original Installer; comply with original Installer's written
43 recommendations.
44 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and
45 chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance
46 of adjacent surfaces. Temporarily cover openings when not in use.
47 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
48 3. Concrete or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
49 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by
50 cutting and patching operations.
51 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap,
52 valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other
53 foreign matter after cutting.
54 6. Proceed with patching after construction operations requiring cutting are complete.
55 C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following
56 performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and
57 comply with installation requirements specified in other Sections.

- 1 D. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of
2 installation.
3

4 **3.4. CLEANUP AND RESTORATION**

- 5 A. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a
6 manner that will eliminate evidence of patching and refinishing.
7 1. Clean piping, conduit, and similar features before applying paint or other finishing materials.
8 2. Restore damaged pipe covering to its original condition.
9 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another,
10 patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish,
11 color, texture, and appearance. Remove in-place floor and wall coverings and replace with new
12 materials, if necessary, to achieve uniform color and appearance.
13 4. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch
14 and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats
15 until patch blends with adjacent surfaces.
16 5. Ceilings: Patch, repair, or re-hang in-place ceilings as necessary to provide an even-plane surface of
17 uniform appearance.
18 6. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight
19 condition.
20 7. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint,
21 mortar, oils, putty, and similar materials.
22 8. Any smoke and fire caulking that has been disturbed must be replaced by the Contractor as required by
23 Code.
24

25 **END OF SECTION**
26
27

**SECTION 01 74 13
PROGRESS CLEANING**

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16

PART 1 – GENERAL

1.1. SUMMARY

- 20 A. Throughout the execution of this contract all contractors shall be responsible for maintaining the project site in a
21 standard of cleanliness as described in this specification.
22 B. All contractors shall also comply with the requirements for cleaning as described in other specifications.
23 C. Work included in this specification shall include but not be limited to:
24 1. Safety Cleaning
25 2. Project Site Cleaning
26 3. Progress Cleaning
27 4. Final Cleaning
28

1.2. RELATED SPECIFICATIONS

- 30 A. Section 01 60 00 Product Requirements
31 B. Section 01 74 19 Construction Waste Management and Disposal
32 C. Section 01 76 00 Protecting Installed Construction
33

1.3. QUALITY ASSURANCE

- 35 A. The General Contractor (GC) shall conduct daily inspections, more often if necessary, of the entire project site to
36 ensure the requirements of cleanliness are being met as described within these specifications.
37 B. All contractors shall comply with other regulatory requirements as they apply to waste recycling, reuse, hauling,
38 and disposal requirements of any governmental authority having jurisdiction.
39 C. The Owner reserves the right to have work done by others in the event any contractor fails to perform cleaning
40 as described within these specifications. The cost of any Owner provided cleaning shall be charged to the
41 contractor through a deduct change order.
42

PART 2 - PRODUCTS

2.1. CLEANING MATERIALS AND EQUIPMENT

- 46 A. The Contractor shall provide all required personnel, equipment, and materials necessary to maintain the
47 required level of cleanliness as described in this specification.
48 B. Use only cleaning materials and equipment that are compatible with the surface being cleaned, as
49 recommended by the manufacturer, or as approved by the A/E.
50 C. Use only cleaning materials, equipment, and methods as recommended in the manufacturers care and use guide
51 of the material, finish or equipment being cleaned.
52

PART 3 - EXECUTION

3.1. SAFETY CLEANING

- 56 A. All Contractors shall be responsible for safety cleaning as required by OSHA and other regulatory requirements
57 as applicable.
58 B. Safety Cleaning shall include but not be limited to the following:

1. All work areas, passageways, ramps, and stairs shall be kept free of debris, scrap materials, pallets, and other large items that would obstruct exiting routes. Small items such as tools, electrical cords, etc are picked up when not in use.
2. Form and scrap lumber shall have nails/screws removed or bent over. Lumber shall be neatly stacked in an area designated by the GC.
3. Spills of oil, grease, and other such liquids shall be cleaned immediately or sprinkled with sand/oil-dry first, then cleaned.
4. Oily, flammable, or hazardous items shall be stored in appropriate covered containers and storage devices unless actively being used.
5. Oily, or flammable rags, and other such waste shall only be disposed of in authorized covered containers.
6. Disposal by burning shall not be allowed at any time.

3.2. PROJECT SITE CLEANING

- A. This section applies to the general cleanliness of the project site as a whole for the duration of the execution of this contract.
- B. Exterior Project Site Areas
 1. The GC and other Contractors as appropriate shall ensure the following levels of cleanliness are applied to the exterior project site areas.
 - a. The overall appearance of the project site is neat and orderly. Defined areas for material storage, material waste, job trailers, and the project area are clean and well maintained.
 - b. The construction fence is maintained, erect with no gaps, and properly posted per all regulatory requirements.
 - c. All erosion control measures are properly maintained, cleaned, and repaired as necessary.
 - d. All loose materials (construction or waste) are properly tied or weighted down to resist blowing.
 - e. All construction materials are properly covered with fully functional tarps or plastic wrap, protected from the weather, coverings are tied, strapped, or weighted down to resist blowing.
 - f. Dust control is applied as necessary or as required by any regulatory requirement.
- C. Interior Project Site Areas
 1. All Contractors shall ensure the following levels of cleanliness are applied to the interior project site areas.
 - a. The overall appearance of the project site is neat and orderly. Defined areas for material storage, material waste, and project area are clean and well maintained.
 - b. Stored materials are kept in original shipping containers whenever possible. Stored materials not in shipping containers are properly stored and protected according to other applicable specifications.
 - c. All scraps and debris shall be properly disposed of as often as necessary to keep work areas, passageways, stairs, and ramps free of debris and clear for emergency exiting.
 - d. Boxes, pallets, and other such shipping containers, are broken down, stored in a consolidated area or, disposed of as often as is necessary.
 - e. Hand tools, supplies, materials, electrical cords not being used are picked up and stored in gang boxes, not left as walking hazards in work areas, passageways, etc.
- D. Job Trailer
 1. The interior of the job trailer shall be kept clean and available as a work space at all times. The GC shall ensure that the following is provided for within the job trailer:
 - a. Meeting space including tables and chairs.
 - b. Sufficient space for all contractors to access the official construction documents, provide updates, etc.

3.3. PROGRESS CLEANING

- A. This sub-section shall apply to all Progress Cleaning prior to the installation of finishes, fixtures, and trim (IE rough-in).
 1. For the purposes of this section "clean" shall be defined as a level of cleanliness free of dust and other material capable of being removed by use of reasonable effort using a good quality janitor broom and shop-vac.
 2. Daily cleanings shall be conducted by all contractors at the end of the work day as follows:
 - a. Debris in excavated areas shall be removed prior to backfill and compaction.
 - b. Debris in wall cavities, chase spaces, etc shall be removed prior to enclosing the spaces.
 - c. Large items shall be properly stored, returned to designated areas, or disposed of as necessary.

- 1 d. Loose materials shall be properly secured.
2 e. Flammable or hazardous materials are properly stored or disposed of.
3 3. Weekly cleaning shall be conducted by all contractors as designated by the GC. Weekly cleanings shall
4 include all the above for a daily cleaning and other necessary cleaning as designated by the GC.
5 B. This sub-section shall apply to Progress Cleaning in preparation for the installation of finishes, fixtures, and trim.
6 a. Surfaces receiving finishes shall be thoroughly cleaned prior to contractors applying finish
7 materials. The GC shall be responsible for inspecting the area and surfaces being cleaned for
8 finish prior to the sub-contractor applying the finish. This shall include but not be limited to the
9 following:
10 i. Wall surfaces shall be wiped clean of dirt and oily residues, vacuumed free of dust, and
11 shall be free of surface imperfections prior to painting or installing wall coverings.
12 ii. Metal surfaces shall be wiped clean of dirt and oily residues, and be free of surface
13 imperfections prior to painting.
14 iii. Flooring shall be broom swept of large and loose items then vacuumed clean of dust and
15 small particles, and damp mopped clean and dried prior to installing any flooring finish.
16 Additional cleaning may be required depending on the preparation requirements
17 recommended by the flooring material manufacturer.
18 C. This sub-section shall apply to Progress Cleaning after the installation of finishes, fixtures, and trim.
19 1. For the purposes of this section "clean" shall be defined as a level of cleanliness free of dust and other
20 material capable of damaging or visually disfiguring finished work, finishes, fixtures, and trim.
21 2. Progress Cleaning at this point in the contract shall be conducted immediately as follows:
22 a. Dust, dirt, etc shall be swept and vacuumed off of finish flooring and trim.
23 b. Liquid spills shall be cleaned up according to the spill type. This shall include drips and spills
24 caused by paint, stain, sealants, and other such items.
25 3. The Contractor(s) at no additional cost to the Owner shall be responsible for replacing any finished work,
26 finishes, fixtures, and trim damaged or disfigured because of inadequate or improper cleaning.
27

28 3.4. FINAL CLEANING

- 29 A. As noted in Specification 01 29 76 Progress Payment Procedures, Progress Payment Milestone Schedule, Final
30 Cleaning shall not be conducted prior to requesting the 90% contract total progress payment and all of the
31 following shall be complete:
32 1. All final regulatory inspections including but not limited to Building Inspection Department and Madison
33 Fire Department inspections have been successfully completed.
34 2. All Quality Management Observation (QMO) reports have been closed out.
35 3. All Demonstration and Training has been completed.
36 4. All Attic Stock has been consolidated and located to its designated area
37 5. All protection for installed construction shall be removed prior to final cleaning by the contractor
38 responsible for providing the protections. This shall include the removal of any adhesive residues left
39 behind from tapes. Contractors shall only use manufacturer authorized cleaning materials for removing
40 adhesives, etc.
41 B. For the purposes of this section "clean" shall be defined as a level of cleanliness generally provided by skilled
42 cleaners using commercial quality building maintenance equipment and materials.
43 C. The GC shall be responsible for ensuring that all requirements under this section are being met.
44 D. General Requirements
45 1. Employ experienced personnel or professional cleaners for final cleaning as necessary for the areas or
46 equipment being cleaned.
47 2. Cleaning equipment used shall be commercial grade equipment commonly used by professional cleaners.
48 3. Cleaning equipment and materials shall be cleaned, rinsed, or replaced to ensure a uniform level of
49 cleanliness is being maintained during the final cleaning. This shall include but not be limited to the
50 following:
51 a. Vacuum cleaner bags and/or filters are changed and/or cleaned as often as necessary.
52 b. Dust & wipe down rags are washed, rinsed, or replaced before starting each room.
53 c. Mopping equipment
54 i. Mop water for washing shall have cleaning solution added to the amount and temperature
55 per manufacturer's recommendations. Mop washing water shall be replaced often to
56 maintain the levels of the cleaning solution and temperature required.
57 ii. Mop water for rinsing shall remain clean, clear, and be replaced as often as necessary.
58 iii. Mop heads shall be rinsed often and replaced as necessary.

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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13

14 **PART 1 – GENERAL**

15
16 **1.1. SUMMARY**

- 17 A. This specification includes administrative and procedural requirements for the recycling, re-use, salvaging, and
18 disposal of non-hazardous construction and demolition waste.
19 B. The General Contractor (GC) shall be fully responsible for complying with all applicable ordinances and other
20 such regulatory requirements during the execution of this contract.
21

22 **1.2. RELATED SPECIFICAITONS**

- 23 A. 01 33 23 Submittals
24 B. Other Divisions and Specifications that may address the proper disposal of construction or demolition waste as it
25 pertains to work being conducted under that particular specification.
26

27 **1.3. CITY ORDINANCES**

- 28 A. There are two (2) Madison General Ordinances (MGO) that the City of Madison has regarding construction and
29 demolition waste.
30 1. MGO 10.185, Recycling and Reuse of Construction and Demolition Debris, describes the requirements
31 associated with this ordinance including definitions, documentation requirements, and penalties.
32 2. MGO 28.185, Approval of Demolition (Razing, Wrecking) and Removal, describes the requirements
33 associated with applying for and receiving a demolition permit.
34 B. All City of Madison, Board of Public Works, contracts being conducted by City Engineering, Facility Management,
35 for construction, remodeling, or demolition shall comply with the above ordinances regardless of project type or
36 size.
37

38
39 **PART 2 – PRODUCTS – THIS SECTION NOT USED**

40
41 **PART 3 - EXECUTION**

42
43
44 **3.1. GENERAL GUIDELINES FOR ALL WASTES**

- 45 A. Recycle all paper and beverage containers used by workers, sub-contractors, suppliers and visitors to the project
46 site.
47 B. All revenues, savings, rebates, tax credits, and other such incentives received from recycling, reusing, or
48 salvaging waste materials shall accrue to the GC unless specified otherwise in the contract documents.
49 C. Separate recyclable, reusable, and salvageable waste from other waste materials, trash, and debris-
50 1. Separate by type in appropriate containers or designated areas according to the approved waste
51 management plan away from the construction area. Do not store within the drip lines of existing trees.
52 2. Inspect containers and bins frequently for contamination and inappropriately sorted materials. Remove
53 contaminated materials and resort as necessary.
54 3. Stockpile bulk materials such as sand, topsoil, stone, etc., on site away from the construction area and
55 without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water, and
56 cover to prevent windblown dust. Do not store within the drip lines of existing trees.
57 4. Whenever possible store items off the ground and/or protect them from the weather.
58

1 **3.2. GUIDELINES FOR RECYCLABLE, RE-USABLE, AND SALVAGEABLE WASTE**

- 2 A. The following guidelines is not a complete or all-inclusive list and shall be adjusted as needed by the methods
3 and procedures identified in the Waste Management Plan.
- 4 B. Asphalt Paving: Break-up into transportable pieces or grind, transport to an authorized recycling facility.
- 5 C. Carpet and Pad: Separate carpet and pad scraps, containerize and transport to an authorized recycling facility.
- 6 D. Ceiling System Components: Suspended ceiling system components shall be sorted by material type as follows:
7 1. Broken, cut, or damaged tiles shall be containerized, transport to an authorized recycling facility.
8 2. Damaged, or cut tracks, trim and other metal grid system components shall be sorted with other metals
9 of similar types, palletize, transport to an authorized recycling facility.
- 10 E. Clean Fill: When allowed by Division 31 Specifications; concrete, masonry, stone, asphalt pavement, sand and
11 other such materials may be used as clean fill on this project site. The GC shall verify with the Project Engineer,
12 Structural Engineer, or Civil Engineer as necessary prior to using any materials as clean fill. Materials shall be
13 processed, placed, and compacted as specified. If not being re-used on site, transport to an authorized recycling
14 facility.
- 15 F. Clean Wood Materials: Including but not limited framing cutoffs, wood sheathing or paneling materials,
16 structural or engineered wood products, and pallets or crates. Clean Wood shall be free of paints, stains, oils,
17 preservatives and other such contaminates.
18 1. Useable pieces shall be sorted by type and dimension, bundled and transported off site by the GC or
19 returned to the supplier.
20 2. Non-useable pieces shall be palletized or containerized, transport to an authorized recycling facility.
21 3. Clean, uncontaminated sawdust and wood shavings shall be bagged, transport to an authorized recycling
22 facility.
- 23 G. Concrete: Break-up into transportable pieces, remove all reinforcing and other metals, transport to an
24 authorized recycling facility.
- 25 H. Glass Products: Shall be sorted by types, do not include light fixture lamps and bulbs. Products broken in
26 shipment shall be returned to the supplier. Broken or cracked items still in frames shall be taped to prevent
27 further breakage and injury to workers. Transport to an authorized recycling facility.
- 28 I. Gypsum Board: Stack large clean pieces on wooden pallets or container, store in a dry location, transport to an
29 authorized recycling facility.
- 30 J. Light Fixture Lamps and Bulbs: Fluorescent tubes shall be containerized, transport to an authorized recycling
31 facility.
- 32 K. Masonry and CMU: Remove all metal reinforcing, anchors, and ties, clean undamaged pieces and neatly stack on
33 pallets, transport damaged pieces to an authorized recycling facility.
- 34 L. Metals: Sort metals by type as follows, this does not include piping:
35 1. Architectural metals including but not limited to siding, soffit, and roofing panels shall be sorted by
36 material, palletize or bundle as needed and transport to an authorized recycling facility.
37 2. Structural steel, sort by size and type; palletize and transport to an authorized recycling facility.
38 3. Miscellaneous metals such as aluminum, brass, bronze, etc. shall be sorted by type, containerized or
39 palletized as necessary, transport to an authorized recycling facility.
- 40 M. Packaging and shipping materials
41 1. Cardboard boxes and containers: Breakdown all cardboard boxes and containers into flat sheets. Bundle
42 and store in a dry location until transported for recycling.
43 2. Pallets:
44 a. Whenever possible require deliveries using pallets to remove them from the project site.
45 b. Neatly stack pallets in preparation for reusing them or providing them to other companies for
46 salvage or re-use.
47 c. Break down pallets into component wood pieces that comply with the requirements for recycling
48 clean wood materials. Neatly stack or palletize pieces in preparation for transportation.
49 3. Crates: Break down crates into component wood pieces that comply with the requirements for recycling
50 clean wood materials. Neatly stack or palletize pieces in preparation for transportation.
51 4. Polystyrene Packaging: Separate and bag materials.
- 52 N. Piping and conduit: Reduce all piping and conduit to straight lengths, sort and store by size, material and type.
53 Remove supports, hangers, valves, boxes, sprinkler heads, and other such components, sort and store by size,
54 material and type. Transport to authorized recycling facilities according to material types.
- 55 O. Roofing: Roofing materials shall be sorted and containerized by type, transport to authorized recycling facilities
56 according to material types.
- 57 P. Site-Clearing Waste: Sort all site waste by type.

SECTION 01 76 00
PROTECTING INSTALLED CONSTRUCTION

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PART 1 – GENERAL

1.1. SUMMARY

- 25 A. The purpose of this specification is to provide clear responsibilities, guide lines, and requirements related to
26 providing protection to already installed construction.
27 B. Already installed construction shall include but not be limited to the following:
28 1. Any existing site feature such as pavement, curbs, drainage features, utilities, landscaping features (trees,
29 shrubbery, plantings, flagpoles, etc) and other such exterior items not associated with the building
30 whether on or adjacent to the project site.
31 2. Any existing structure on or adjacent to the project site.
32 3. Any existing interior work that may be adjacent to the new work including all paths of ingress/egress to
33 areas associated with accessing the Work.
34 4. Any existing feature of any kind within the public right-of-way that may be on the project site property,
35 adjacent to the project site or across the street from the project site.
36 C. All contractors shall be familiar with the specifications of their Division of Work for specific requirements on
37 protection of the Work.
38 D. The requirements noted within this specification do not relieve any contractor of the responsibility for
39 compliance with any code, statute, ordinance, or other such regulatory requirement having jurisdictional
40 authority over these contract documents.

1.2. QUALITY ASSURANCE

- 43 A. It shall be the responsibility of every contractor and worker assigned to the project to be diligent in protecting all
44 existing work, and newly installed construction.
45 B. It shall be the General Contractors' (GC) responsibility under the contract to provide all reasonable protection
46 methods, materials, or precautionary measures required to protect new or existing construction as described in
47 within this specification to the project as a whole.
48 1. The GC shall be responsible to ensure any damaged new or existing construction is repaired or replaced
49 at no additional cost to the Contract.
50 2. The GC at his/her discretion may direct other contractors to provide and maintain protection of
51 completed work associated with their Division of Work. I.E.: The carpet installer may be required by the
52 GC to provide carpet protection along traveled paths, ingress/egress, etc after installation.
53 C. It shall be the responsibility of the GC to ensure that all materials being used to protect installed construction are
54 compatible with, and/or adjacent to, the materials being protected. This shall include but not be limited to the
55 material used as covering, tapes used to fasten protective materials, etc.

1
2 **1.3. RELATED SPECIFICATIONS**

- 3 A. Parts of this specification will reference articles within "The City of Madison Standard Specifications for Public
4 Works Construction".
5 1. Use the following link to access the Standard Specifications web page:
6 <http://www.cityofmadison.com/business/pw/specs.cfm>
7 a. Click on the "Part" chapter identified in the specification text. For example if the specification
8 says "Refer to City of Madison Standard Specification 210.2" click the link for Part II, the Part II
9 PDF will open.
10 b. Scroll through the index of Part II for specification 210.2 and click the text link which will take you
11 to the referenced text.
12 c. City Standard Detail Drawings (SDD) may be located from the index in Part VIII.
13 B. Section 01 60 00 Product Requirements
14 C. Section 01 74 13 Progress Cleaning
15

16 **PART 2 - PRODUCTS**

17
18 **2.1. FENCING MATERIALS AND BARRICADES**

- 19 A. Except where noted in other areas of the construction documents the responsible contractor may provide any of
20 the following that sufficiently provide a sturdy physical barrier and/or visual barrier as necessary for the
21 intended application.
22 1. Standard orange construction barrels each with a standard rubber base ring and reflective tape
23 a. Provide flashing amber lights as needed to increase night time visibility
24 2. Steel "T" style fence posts
25 3. 4'0" high standard orange construction fence
26 4. Traffic barricades
27 5. Jersey barriers
28 6. Other types of fencing or barricades typically used in the construction industry
29 B. The contractor responsible for providing the fencing materials and barricades shall also be responsible for
30 maintaining them. This shall include but not limited to fixing damaged fencing, standing up barrels that have
31 been knocked over, realigning barrels, and ensuring flashing lights are fully operational at all times.
32 C. The following fencing and barricade designations, and their use descriptions shall be used throughout this
33 specification to provide uniformity in describing protection requirements.
34 1. Type A, Jersey Barriers, to be used as permanent blocking devices to deny access to alternate project site
35 entrances or exits.
36 2. Type B, Traffic Barricades, to be used as temporary blocking devices to deny access to alternate project
37 site entrances or exits.
38 3. Type C, Construction Barrels without construction fencing shall be used for lane closures, temporary
39 blocking devices to deny access and the protection of single locations (I.E. identify the location of an
40 access structure) that do not require fencing.
41 4. Type D, Construction Barrels with construction fencing where it becomes necessary to surround an object
42 with a complete visual barricade and it is impractical or unacceptable to install fence posts. The surround
43 shall be constructed in such a manner as to provide a buffer zone around and access to the item being
44 protected.
45 5. Type E, Steel "T" Fence Posts with construction fencing to surround an object with a complete visual
46 barricade and it is practical to install fence posts. The surround shall be constructed in such a manner as
47 to provide a buffer zone around and access to the item being protected.
48 6. Type X, Other fencing or barricade types that may be designated and detailed within the construction
49 documents shall use additional alpha numeric designations.
50

51 **2.2. EROSION CONTROL PROTECTION**

- 52 A. Refer to City of Madison Standard Specification 210.2 for authorized materials associated with erosion control
53 materials.
54

55 **2.3. INTERIOR FINISH PROTECTION MATERIALS**

- 56 A. Except where noted in other areas of the construction documents or this specification the responsible
57 contractor:
58 1. Shall not provide the cheapest or least effective method as an effort to meet any protection requirement.

- 1 2. Shall provide materials of sufficient quality, and durability to provide adequate protection based on the
- 2 seasonal conditions and the anticipated duration at the time the protection will be needed.
- 3 3. Shall provide sufficient quantity of protection material to protect the construction as needed.
- 4 B. Prior to installing protective measures the responsible contractor shall propose to the GC, Project Engineer (PE)
- 5 and City Project Manager (CPM) the proposed plan for protection, materials to be used and samples as
- 6 necessary.
- 7 1. The PE and CPM reserve the right to disapprove any proposed method and/or material and/or make
- 8 alternate proposals.
- 9

10 **PART 3 - EXECUTION**

11

12 **3.1. GENERAL EXECUTION REQUIREMENTS**

- 13 A. The GC shall be responsible for ensuring all of the following procedures and requirements are implemented as
- 14 needed for the duration of the Work performed under this contract.
- 15 B. The GC shall also be responsible for the following:
- 16 1. Reporting any incident of damage to existing property, right-of-way, or utility to the CPM immediately
- 17 upon rendering the incident safe, and notifying emergency response teams, and emergency utility crews
- 18 as needed.
- 19 2. Conduct a site walk through prior to leaving at the end of each day to assess:
- 20 a. Protection measures are properly in place, provide correction actions as necessary.
- 21 b. Note damage to existing completed work and schedule repair/replacement as needed.
- 22 3. Ensure all contractors and workers are being diligent in protecting existing work, and newly installed
- 23 construction.
- 24

25 **3.2. PROTECT ADJACENT PROPERTIES**

- 26 A. Whenever possible through the design process the City of Madison shall have previously provided notice to
- 27 adjacent property owners that work will be occurring on or near their property. The City of Madison shall also
- 28 have obtained any permanent or temporary easements that may be necessary to complete any Work on
- 29 adjacent properties.
- 30 B. It shall be the responsibility of the GC to do the following for all Work under this contract being performed on or
- 31 adjacent to the property line:
- 32 1. Contact the adjacent property owner and provide him/her with information on the work to be done,
- 33 equipment to be used, and estimated duration of the work. Information to be updated and
- 34 communicated to property owner(s) as construction progresses and site conditions change.
- 35 a. If any adjacent property is a rented or leased space the GC shall also make contact and provide
- 36 the same information to the tenants.
- 37 b. Determine from the owner and/or tenants if there are any concerns for children, pets, special
- 38 plantings, or other concerns.
- 39 2. Discuss the following with all contractors performing work on or near the property line.
- 40 a. Work to be completed and timeline.
- 41 b. Concerns of adjacent property owners/tenants from item 1 above.
- 42 c. Which protective measures will be necessary to protect adjacent properties and address the
- 43 concerns of adjacent property owners/tenants.
- 44 3. Ensure all protective measures are placed and maintained during the execution of Work on or adjacent to
- 45 the property line. Interact with the adjacent property owners/tenants as needed.
- 46 C. Any contractor doing work on or adjacent to the property line shall install and maintain any protective measure
- 47 identified in the contract documents, this specification, or as directed by the GC.
- 48 D. The GC shall be responsible for restoring any damage to structure and property located on or adjacent to the
- 49 property line.
- 50 1. Restoration shall include but not be limited to repair or replacement using like materials and finishes to
- 51 its original condition or better.
- 52 2. Restoration of landscaping materials shall include watering of any seed, sod, or other planting of any kind
- 53 for a reasonable period of time to encourage germination and root development.
- 54 E. The GC shall keep the CPM informed directly to any issues pertaining to adjacent property owners and tenants.
- 55

56 **3.3. PROTECT LANDSCAPING FEATURES**

- 57 A. Except where specifically stated in other areas of the construction documents the following minimal protection
- 58 requirements shall apply under this section.

- 1 1. Whenever possible do not install new landscape features until exterior building construction has been
- 2 completed, equipment such as scaffolding and lifts are no longer needed and have been removed, and
- 3 heavy equipment operation is no longer required.
- 4 2. Whenever possible remove and temporarily store all existing landscape features such as benches, waste
- 5 receptacles, signage, and other such features that will be within the area of Work that can be removed.
- 6 3. Landscape features that cannot be removed such as flag poles, light poles, light bollards, etc. shall be
- 7 protected with Type D fencing for areas on pavement or Type E fencing for areas on soil.
- 8 4. Planting beds shall be protected using Type E fencing around the exposed perimeter of the planting bed
- 9 as needed.
- 10 5. The City of Madison Standard Specification 107.13 shall apply to all tree protection in and around the
- 11 project site at all times.
- 12

13 3.4. PROTECT UTILITIES

- 14 A. The contractor shall be responsible for notifying all utilities to determine emergency response procedures and
- 15 protection requirements prior to installing any construction protection.
- 16 1. This includes requesting utility marking through Diggers Hotline.
- 17 a. Call 811 or 1-800-242-8511 to request a public utility locate
- 18 b. For emergency locate call (262) 432-7910 or (877) 500-9592
- 19 2. Contact the Owner and CPM for any available private utility information on the property that may be
- 20 available prior to calling a private utility locating company.
- 21 B. Except where specifically stated in other areas of the construction documents the following minimal protection
- 22 requirements shall apply under this section.
- 23 1. Hydrants, lamp posts, electrical transformers, and other utility pedestals shall be protected with Type D
- 24 fencing for areas on pavement or Type E fencing for areas on soil. Fence posts shall be located so as to
- 25 not be directly over the utility main.
- 26 2. Storm sewer structures in pavement shall have proper inlet protection according to City of Madison
- 27 Standard Specification 210.1(g) and Type C Construction Barrels when necessary.
- 28 3. Storm sewer structures in turf and other landscaped areas shall have proper inlet protection according to
- 29 City of Madison Standard Specification 210.1(g) and Type E fencing for areas on soil.
- 30 4. Stormwater management features such as greenways, retention/detention ponds, bio-filtration ponds
- 31 and other such features shall be properly protected according to the appropriate erosion control
- 32 measure specified on the Erosion Control Plan. See multiple sections of City of Madison Standard
- 33 Specification 210.1
- 34 a. For the protection of hard to see items such as structures, castings, inlets, etc. in grassy areas
- 35 provide Type E fencing for areas on soil.
- 36 c. For the protection of storm water management features having special soils and plants such as
- 37 bio-filtration ponds provide Type E fencing for areas on soil.
- 38 5. Other structures and covers including but not limited to cleanouts, wiring hand holes, valve boxes, access
- 39 structures, grease trap structures, etc shall be protected as follows:
- 40 a. Provide Type E fencing for areas on soil.
- 41 b. When paving operations are complete provide a construction barrel or cone near structures as
- 42 necessary depending on required heavy construction traffic.
- 43

44 3.5. PROTECT PUBLIC RIGHT OF WAY

- 45 A. Except where specifically stated in other areas of the construction documents the following minimal protection
- 46 requirements shall apply under this section.
- 47 1. All public right-of-way (area from behind the sidewalk to the centerline of the street) shall remain open
- 48 and accessible except during periods of active work. At such times the public right of way shall be
- 49 properly closed and signed as referenced in City of Madison Standard Specification 107.9.
- 50 2. Bus stops and bus stop structures shall remain accessible at all times.
- 51 3. Traffic signage and traffic signals, traffic control boxes shall be protected with Type D fencing for areas on
- 52 pavement or Type E fencing for areas on soil.
- 53 a. Protection at traffic signage/signals shall not obstruct the viewing of the sign/signal for its
- 54 intended purpose at any time.
- 55 B. When additional protection for traffic control is required, the use of barricades, guardrails, lane closures and
- 56 other such procedures will be detailed within the construction documents.
- 57 C. When additional protection for overhead sidewalk cover is required the contract documents shall indicate the
- 58 specific location and structural requirements of the protective structure.

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3.6. PROTECT STORED MATERIALS

- A. All contractors shall refer to Specification 01 60 00 Product Requirements for all storage and protection requirements of building materials and products delivered to the site.

3.7. PROTECT WORK - EXTERIOR

- A. Provide all temporary services that may be required to protect the installed material from heat, cold, humidity, etc, while materials such as concrete, mortar, sealants, paints, etc, are drying and/or curing.
- B. Open trenches, pits, and other such excavations shall be properly covered, lined, or shored as needed during periods of inclement weather to prevent the caving of soils onto existing work in progress. Refer to the appropriate specifications and/or regulatory requirements governing this type of work as necessary.
- C. Provide adequate protection at all openings with heavy duty tarps, plastic sheathing, or wood framing and sheathing as needed to protect interior work in progress from inclement weather as needed.
- D. Protect exterior finishes of all kinds with heavy duty tarps or plastic sheathing as needed while landscaping is being installed through full germination of seeded areas or installation of filter fabric and mulches to keep dust, dirt, and mud off of finished exterior surfaces.
- E. Designate specific curb mounting points and provide wood blocking where small vehicles, skid loaders and other such equipment may need access to areas being landscaped.
- F. Provide plywood turning pads for skid loaders to turn on to prevent tire marking on new pavement.
- G. Do not permit the parking of vehicles with any kind of fluid leaks to park on new pavement.
- H. The contractor shall be responsible for cleaning, repairing, or replacing any completed work or work in progress under this specification as deemed necessary by the CPM without additional cost to the contract.

3.8. PROTECT WORK - INTERIOR

- A. The GC shall do all of the following:
 - 1. Provide all temporary services that may be required to protect the installed material from heat, cold, humidity, etc, while materials such as concrete, mortar, sealants, paints, etc, are drying and/or curing.
 - 2. Provide adequate visual and/or physical protection as needed to protect newly completed interior work such as paint, flooring material, sealants, grouts, etc that may be drying and/or curing.
 - 3. Provide adequate space and materials for cleaning boots, tool boxes, supplies, and other items coming into the project site once finish work has begun.
 - 4. Clean dirtied areas and repair/replace damaged areas immediately.
- B. The contractors responsible for interior work shall be responsible for protecting their work and finishes from dirt, mud, snow, spills, splatters, and physical damage after installation as follows:
 - 1. Protect vinyl composite, rubber composite, painted/stained concrete, and tiled flooring as follows:
 - a. Define foot traffic areas and protect with Ramboard Temporary Floor Protection products as a minimum basis of design or other protection product(s) compatible with installed flooring product if Ramboard is not compatible. Products to be used shall be new.
 - i. Tape all edges, seams, etc with a good quality tape that does not leave sticky residue. Do not allow any debris or other material between the installed flooring and the protection material.
 - ii. Repair tears immediately, replace worn areas with like material as necessary.
 - 2. Protect carpeted areas as follows:
 - a. Define foot traffic areas and protect with a minimum of 6mil, clear, polyethylene sheeting 3 feet wide. Products to be used shall be new.
 - i. Tape all edges, seams, etc with a good quality tape that does not leave sticky residue. Do not allow any debris or other material between the installed flooring and the protection material.
 - ii. Repair tears immediately, replace worn areas with like materials as necessary.
 - 3. Protect all finished walls in high traffic areas with Ramboard Temporary Wall protection products or approved equal.
 - i. Tape all edges, seams, etc with a good quality tape that does not leave sticky residue. Do not allow any debris or other material between the installed flooring and the protection material.
 - ii. Repair tears immediately, replace worn areas with like materials as necessary.
 - 3. Protect counter tops, cabinets, and other finished surfaces with large sheets of thick cardboard or Ramboard products. Do not allow toolboxes, finish materials, parts and other such items to be placed on finished materials.

- 1 C. All protection shall stay in place until the CPM, PE, and GC mutually deem the project is ready for Final Cleaning.
2 The contractors responsible for protecting the work shall be responsible for removing the protection and
3 removing any adhesive residue at that time. Contractors shall only use manufacturer authorized cleaning
4 materials for removing adhesives, etc.
- 5 D. Contractors doing work in un-protected areas of finished work shall be required to provide drop cloths and other
6 protection as noted within this specification for the duration of their work.
- 7 1. Finished areas shall be sufficiently covered to accommodate all equipment, and materials being used to
8 complete the work being done.
- 9 2. Finished areas shall be sufficiently covered to prevent splatters, over spray, etc when doing touch-up
10 work.
- 11 3. Contractors who do not provide sufficient protection under this sub-section shall be responsible for any
12 costs associated with cleaning, repairing or replacing already finished construction at no additional cost
13 to the contract.
- 14
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END OF SECTION

**SECTION 01 77 00
CLOSEOUT PROCEDURES**

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16 3.5. CONTRACT CLOSEOUT PROCEDURE 4
17

PART 1 – GENERAL

1.1. SUMMARY

- 21 A. The purpose of this specification is to clearly define and quantify the requirements associated with closing a City
22 of Madison Public Works Contract for facility related work.
23 B. All contracts have two distinct but related paths. Each path needs to be properly closed independently in order
24 to close the contract as a whole.
25 1. Construction closeout is related to closing out all of the Work associated with the construction
26 documents.
27 a. It shall be the responsibility of all contractors to be fully aware of the required Work and closeout
28 requirements involved in their individual trades.
29 2. Contract closeout is related to closing out all of the administrative aspects of the contract in general.
30 a. It shall be the responsibility of all contractors to be fully aware of the administrative requirements
31 required by the contract and to provide the supporting documentation required.
32 3. Construction Closeout must be completed before Contract Closeout can begin.
33 C. This specification will provide general knowledge associated with the following areas:
34 1. Construction Closeout Requirements
35 2. Construction Closeout Procedure
36 3. Contract Closeout Requirements
37 4. Contract Closeout Procedure
38 5. Final Payment and Certificate of Completion
39

1.2. RELATED SPECIFICATIONS

- 41 A. Contractors shall review all references to other specifications including specifications relating to the execution of
42 the Work associated with their Division or Trade.
43 B. Section 01 29 76 Progress Payment Procedures
44 C. Section 01 32 16 Construction Progress Schedules
45 D. Section 01 74 13 Progress Cleaning
46 E. Section 01 45 16 Construction Waste Management and Disposal
47 F. Section 01 76 00 Protecting Installed Construction
48 G. Section 01 78 23 Operation and Maintenance Data
49 H. Section 01 78 36 Warranties
50 I. Section 01 78 39 As-Built Drawings
51 J. Section 01 79 00 Demonstration and Training
52 K. Other requirements as noted in the contract documents signed by the General Contractor
53

1.3. DEFINITIONS

- 55 A. **Substantial Compliance:** A letter provided to the City of Madison Building Inspection and signed by the Project
56 Engineer indicating that all Work has been completed to a level that would allow Owner Occupancy and that all
57 construction is in compliance with the construction documents. A copy of this letter is also provided to the

- 1 State of Wisconsin Department of Health and Safety as necessary to clear plan review requirements. This letter
2 does not represent construction closeout.
- 3 B. **Certificate of Occupancy:** The Regulatory letter from the City of Madison Building Inspection Department
4 indicating that all regulatory requirements and inspections have been completed and the building may now be
5 occupied for its intended use. This letter does not represent construction closeout.
- 6 C. **Certificate of Substantial Completion:** A letter provided by the Department of Public Works, signed by the City
7 Engineer indicating that Construction activities are substantially complete. This letter does represent
8 construction closeout and the date of this letter begins the date of the Warranty Period.
- 9 D. **Construction Closeout:** The point in the contract where all contractual requirements associated the execution of
10 the Work as described in the plans, specifications, and other documents have been successfully met and the
11 items described in 1.3.A, .B, and .C above have been completed.
- 12 E. **Final Progress Payment:** The progress payment associated with achieving Construction closeout as described in
13 1.3.D above. At this point the contractor may request all monies associated with the contract be paid with the
14 exception of held retainage.
- 15 F. **Contract Closeout:** The point in the contract where all contractual requirements associated with the City of
16 Madison, Board of Public Works contract has been successfully met.
- 17 G. **Final Payment:** The final contract payment submittal that may be approved by the City of Madison after all
18 contractual requirements of the Public Works Contract have been met and any remaining monies (retainage)
19 due to the contractor may be released for the Final Payment.
20

21 **1.4. QUALITY ASSURANCE – CONSTRUCTION CLOSEOUT**

- 22 A. All contractors shall be responsible for properly executing the construction closeout requirements associated
23 with their Work as described in the specifications governing their Work.
- 24 B. The GC shall be responsible for all of the following:
- 25 1. Ensuring that all contractors have met the construction closeout requirements associated with their
26 Work.
- 27 2. Coordinate the collection of all construction closeout deliverables from all contractors, provide the
28 deliverables to the Project Engineer and City Project Manager for review as necessary, and ensure all
29 contractors correct deficiencies of deliverables and resubmit as needed for final acceptance.
- 30 3. Ensure all closeout requirements identified in the Construction Closeout Checklist below have been
31 completed as intended by the construction documents.
32

33 **1.5. QUALITY ASSURANCE – CONTRACT CLOSEOUT**

- 34 A. The City of Madison, Department of Civil Rights (DCR) monitors contract compliance for construction and
35 procurement contracts to ensure that local, state and federal regulations are followed by contractors working on
36 City of Madison Public Works (PW) projects. DCR will monitor all PW projects from contract award through the
37 final payment at the close of the project. Contractors will be required to submit reporting paperwork
38 throughout the PW project process.
- 39 1. Contractors are encouraged to visit the web site identified below for additional information, checklists,
40 forms, and other information provided by DCR as it relates to Contract Compliance.
41 <http://www.cityofmadison.com/Business/PW/contractCompliance.cfm>
- 42 2. Questions regarding the process should be directed to parties and offices as identified on the various
43 forms, documents, and instructions or contact:
- 44 City of Madison, Department of Civil Rights
45 210 Martin Luther King Jr. Blvd., Room 523
46 Madison, WI 53703
47 (608) 266-4910
- 48 B. All Sub-Contractors have submitted the applicable required documents described in item 1.5.D below to the
49 General Contractor (GC) for Contract Closeout.
- 50 C. The GC has submitted the required applicable documents described in item 1.5.D below for all contractors to the
51 appropriate City of Madison Agency per instructions associated with each submittal.
- 52 D. The documents required for submittal to the City of Madison for Contract Closeout may include any/all of the
53 items listed below depending on contract type. It is the sole responsibility of all contractors to know and submit
54 the required and complete documentation in a timely fashion.
- 55 1. Weekly Payroll Reports
56 2. Employee Utilization Reports
57 3. Agent or Subcontractor Affidavit of Compliance with Prevailing Wage Rate Determination
58 4. Prime Contractor Affidavit of Compliance with Prevailing Wage Rate Determination

5. Documentation required for Small Business Enterprise (SBE) goals
6. Other documents as maybe required or requested through the Finalization Review Process

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. CONSTRUCTION CLOSEOUT CHECKLIST

- A. All contractors shall be responsible for reviewing the drawings and specifications within their Divisions of Work to provide a complete and comprehensive list of all Construction Closeout Requirements to the GC.
 1. The checklist shall include all items identified within the construction documents that require any of the following (and examples) prior to moving into Contract Closeout Procedures:
 - a. Documents indicating a specified level of performance has been achieved, such as:
 - i. Test reports of all types
 - ii. Startup reports
 - b. Required documentation, such as:
 - i. As-builts and record drawings
 - ii. Operation and maintenance data
 - c. Physical items to be turned over to the owner, such as:
 - i. Attic stock
 - ii. Keys
 - d. Required maintenance completed, such as:
 - i. Ducts cleaned
 - ii. Filters replaced
 - e. Owner and Maintenance Training
 - B. Each list shall indicate the title of the closeout requirement, the associated specification of the requirement, the required result or deliverable, the responsible contractor(s), and a column to verify the item has been turned in and completed.
 - C. The GC shall be responsible for all of the following:
 1. Consolidating all the closeout lists into one master Construction Closeout Checklist.
 - a. The checklist shall be in a tabular data format similar to the sample below
 2. Resubmit the checklist as needed after initial reviews have been completed.
 - D. The GC shall work with all contractors to amend the Construction Closeout Checklist throughout the execution of the project based on changes and modifications as necessary.

<u>Title</u>	<u>Specification</u>	<u>Description</u>	<u>Responsibility</u>	<u>Completed</u>
Quality Management Observation Reports	01 45 16	All QMO reports have been properly responded to, reviewed and closed by the CPM.	All, GC	
As-Built Drawings	01 78 39	As-Built drawings have been reviewed and accepted per the specification	All, GC	
Testing and Balancing	23 09 23	Provide final TAB reports indicating design performance has been achieved	HVAC	

3.2. CONSTRUCTION CLOSEOUT REQUIREMENTS

- A. The timely submittal or completion of closeout requirements shall go hand in hand with the Progress Payment Milestone Schedule that can be found in Specification 01 29 76 Progress Payments. No payments shall be made until all requirements for that payment have been met.
 1. The GC and all major Subcontractors, PE, and CPM, shall review all requirements for Construction/Contract Closeout during two (2) special meetings.
 - a. The first meeting shall be held at the 50% Contract Total Payment milestone. This meeting shall discuss the requirements associated with various construction/contract closeout documentation and events when they are due with respect to progress payments.
 - b. The second meeting shall be held at the 70% Contract Total Payment milestone. This meeting shall review the contractors progress regarding the closeout checklist, begin making plans for upcoming deadlines such as scheduling training, where to put attic stock, and when they are due with respect to progress payments.

SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

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PART 1 – GENERAL

1.1. SUMMARY

- 19
20 A. The purpose of this specification is to provide clear responsibilities and guide lines related to providing well
21 documented and complete Operation and Maintenance (O&M) Data related to general facility use, equipment,
22 systems, finishes, and materials to City of Madison Staff (Owner, Owner Representatives, Maintenance, and
23 Custodial Personnel) as needed.
24 B. For primary roofing projects Operation and Maintenance Data shall consist to both of the following categories:
25 1. Operation and Maintenance Data: Generally shall mean the owner manual that provides information on
26 start-up, shut-down, operation, troubleshooting, maintenance, parts, and other such documentation as it
27 pertains to all equipment and systems installed under the Work.
28 2. Use and Care instructions: Where applicable use and care instructions shall also be considered O&M for
29 such things as flooring, tile, partitions, and other such finishes and trim related items, installed under the
30 Work.
31

1.2. RELATED SPECIFICATIONS- THIS SECTION NOT USED

1.3. QUALITY ASSURANCE

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35 A. All O&M Data shall meet the requirements identified in Section 1.4 below.
36 B. All contractors shall provide O&M Data for each piece of equipment, system, or finish installed during the
37 installation of the Work. O&M Data shall be provided to the General Contractor (GC) for verification and
38 submittal.
39 C. The GC shall be responsible for receiving all required O&M Data files from all contractors for verifying that all
40 files submitted meet the requirements in Section 1.4 below.
41

1.4. O&M DATA REQUIREMENTS

- 42
43 A. O&M Data shall be provided in digital PDF format as follows:
44 1. PDF files shall be complete first generation consumer useable editions of PDF documents as provided by
45 any of the following:
46 a. Product manufacturer
47 b. Supplier of product
48 c. Product manufacturer internet site
49 2. Acceptable PDF files shall have the following functionality:
50 a. Word searchable
51 b. Key areas are bookmarked
52 c. Table of Contents and/or Index linked to content is preferred whenever possible.
53 3. Scanned printed material, with word searchable capabilities, saved as a PDF, is not acceptable and will be
54 rejected without further review.
55 B. O&M Data shall include but not be limited to the following manufacturers' published information as appropriate
56 for the equipment, system, material, or finish:
57 1. Product Data Sheets for all materials used in the roofing system installation, including drains, roof
58 hatches and other specialty products as applicable.

SECTION 01 78 36
WARRANTIES

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16

PART 1 – GENERAL

1.1. SUMMARY

- 19
20 A. The purpose of this specification is to provide clear responsibilities and guide lines related to providing all
21 Warranties and Guarantees related to the Work, workmanship, materials, equipment, and other such items
22 required by the Construction Documents.
23 B. Manufacturers’ disclaimers and limitations on product warranties do not relieve any contractor of the warranty
24 on the Work that includes the product.
25 C. Manufacturers’ disclaimers and limitations on product warranties do not relieve suppliers, manufacturers and
26 any contractor required to provide special warranties under the contract documents.
27

1.2. RELATED SPECIFICATIONS

- 28
29 A. Section 01 78 23 Operation and Maintenance Data
30 B. Other Divisions and Specifications that may address more specifically the requirements for Warranties related to
31 the installation of all items and equipment installed under the execution of the Work.
32

1.3. DEFINITIONS

- 33
34 A. Emergency Repair: The Owner or Owner Representative reserves the right to make emergency repairs as
35 required to keep equipment or materials in operation or to prevent damage to property and injury to persons
36 without voiding the contractors warranty or bond or relieving the contractor of his/her responsibilities during
37 the warranty period.
38 B. Installer: The company or contractor hired to install a finished product that was manufactured and supplied
39 specifically for the Work within this contract. The Installer may or may not be the same company that supplied
40 the product. See the definition for supplier.
41 C. Supplier: Any company that makes a specific finished product for the Work from information within the Contract
42 Documents. Examples of suppliers would include custom cabinets, steel stairs and railings, etc. A supplier would
43 not be a company that distributes items manufactured by others such as an electrical or plumbing supplier.
44 D. Warranty: A written guarantee from the manufacturer to the owner on the integrity of a product and its
45 installation, and the manufacturers’ responsibility to repair or replace the defective product or components
46 within a specified time from the date of ownership. Warranty may also be used interchangeably with
47 Guarantee. The following warranty types may be part of any specification within the Work associated with the
48 Construction Documents:
49 1. Expressed Warranty: A warranty that provides specific repair or replacement for covered components of
50 a product over a specified length of time.
51 2. Implied Warranty: A warranty that is not stated explicitly by a seller or manufacturer that the product is
52 merchantable and fit for the intended purpose.
53 3. Standard Product Warranty: Preprinted written warranties published by individual manufacturers for
54 particular products and are specifically endorsed by the manufacturer to the Owner. Standard warranties
55 may be for any amount of time but shall not be for anything less than one (1) year from the warranty
56 date.
57 4. Special Warranty: A written warranty required by the Contract Documents either to extend the time
58 limit provided under a standard warranty or to provide greater rights to the Owner.

- 1 F. Warranty Date: The effective date that begins all warranty periods required for products, installations, and
2 workmanship associated with the execution of the Work for this contract. The Warranty Date shall be set by the
3 CPM.
- 4 G. Related Damages and Losses: When correcting failed or damaged Warranted Work, remove and reinstall (or
5 replace if necessary) the construction that has been damaged as a result of the failure or the construction that
6 must be removed and replaced to obtain access for the correction of Warranted Work.
- 7 H. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected reinstate the
8 warranty by a new written endorsement. The reinstated warranty shall be equal to the original warranty with an
9 equitable adjustment for depreciation unless specifically noted otherwise in a specification.
- 10 I. Replacement Cost: All costs that may be associated with Work being replaced under warranty including but not
11 limited to the following:
12 1. Related damages and losses
13 2. Labor, material and equipment
14 3. Permits and inspection fees
15 4. This shall be regardless of any benefit the Owner may have had from the Work through any portion of its
16 anticipated useful service life.
- 17 J. Replacement Work: All materials, products, required labor, and equipment necessary to replace failed or
18 damaged warranted to an acceptable condition that complies with the requirements of the original Construction
19 Documents.
- 20 K. Owners Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not
21 limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods
22 shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations,
23 rights, and remedies.
24 1. Rejection of Warranties: The Owner reserves the right to reject any warranty and to limit the selection of
25 products with warranties not in conflict with the requirements of the contract documents.
26 2. Where the Contract Documents require a Special Warranty or similar commitment on the Work or
27 product, the Owner reserves the right to refuse acceptance of the Work until the Contractor presents
28 evidence the entities required to countersign such required commitments have done so.

29
30 **1.4. GENERAL CONTRACTORS RESPONSIBILITIES**

- 31 A. The General Contractor (GC) shall be responsible to remedy, at his/her expense, any defect in the Work and any
32 damage to City owned or controlled real or personal property when the damage is a result of:
33 1. The GC's failure to conform to Contract Document requirements.
34 a. Any substitutions not properly approved and authorized may be considered defective.
35 2. Any defect in workmanship, materials, equipment, or design furnished by the GC or Sub-contractors.
- 36 B. All warranties as described in this specification and these Contract Documents shall take effect on the date
37 established by the CPM, as noted in Section 1.3F above.
38 1. All warranties shall remain in effect for one (1) year thereafter unless specifically stated otherwise in the
39 Contract Documents or where standard manufacturer warranties are greater.
- 40 C. The GC's warranty with respect to Work repaired or replaced, including restored or replaced Work due to
41 damage, will run for one (1) year from the date of Owner Acceptance of said repair or replacement.
42 1. This shall be regardless of any benefit the Owner may have had from the Work through any portion of its
43 anticipated useful service life.
- 44 D. Warranty Response
45 1. See Section 3.5 of this specification.

46 **PART 2 – PRODUCTS - THIS SECTION NOT USED**

47
48 **PART 3 - EXECUTION**

49
50 **3.1. WARRANTY CHECKLIST**

- 51 A. All contractors shall be responsible for reviewing the drawings and specifications within their Divisions of Work
52 to provide a complete and comprehensive list of all Warranty Requirements to the GC.
- 53 B. Each list shall indicate the title (and plan identifier when applicable) of the warranted item, the associated
54 specification of the warranted item, the terms of the warranty (years), and a column to verify the item has been
55 turned in and completed.
- 56 C. The GC shall be responsible for all of the following:
57 1. Consolidating all the warranty lists into one master Warranty Checklist and submitting electronically.
58 a. The checklist shall be in a tabular data format similar to the sample below.

- 1 a. If a PDF version is used all additional information shall be completed using simple PDF editing
2 tools such as text boxes, highlight, etc.
3 b. If a PDF version is not available and an original document is furnished the additional information
4 shall be neatly hand written and highlighted on the document in such a fashion so that it does not
5 obscure any part of the written warranty.
- 6 2. Provide the following additional information on each warranty document:
7 a. Contract warranty date.
8 b. Provide the manufacturer name and model number of the product if not specified within the
9 warranty.
10 i. Where the manufacturer name and model number is specified within the warranty it shall
11 be highlighted for visibility.
12 c. Provide the plan identifier (LAV-1, WC-2, etc.) when applicable.
- 13 D. Each completed warranty shall be saved as a digital PDF. The file shall be named using the specification number
14 and item description. I.E. 22 42 00 Toilet (WC-1).pdf
15 a. Where an original certificate was furnished provide a high quality colored scan of the completed
16 document with the additional information. Save the scanned image in PDF format and use the
17 same naming convention as indicated above.
- 18 E. Provide all PDF files and any original documents to the GC for final consolidation to be provided to the Owner.
19

20 **3.4. FINAL WARRANTY SUBMITTAL**

- 21 A. The GC shall receive all required warranties (digital PDF and any original documents) from all contractors,
22 suppliers, installers and manufacturers.
23 B. The GC shall inventory all received warranties with the Warranty Submittal List to ensure all required warranties
24 have been received and all warranty periods are correct according to the specifications.
25 C. Provide with each Operation and Maintenance Manual a complete copy of any associated warranty.
26 D. Scan all warranties into a single organized electronic PDF file as follows:
27 1. Organize the PDF file into an orderly sequence based on the table of contents of the Specifications.
28 2. Provide a typed Table of Contents for the entire file at the front of the document.
29 3. Provide bookmarks and links to each individual PDF to enable quick navigation through the PDF
30 document.
31 E. Submit electronically, the warranty submittal for review by the PE and CPM.
32 F. Correct any deficiencies or omissions and resubmit as necessary.
33

34 **3.5. WARRANTY NOTIFICATION, RESPONSE, EXECUTION AND FOLLOW-UP**

- 35 A. Not Applicable.
36
37
38
39
40

END OF SECTION

1 PART 1: GENERAL

2
3 1.1. RELATED DOCUMENTS

- 4
5 a. Drawings and general provisions of the Contract, including General and Supplementary
6 Conditions and other Division 01 Specification Sections, apply to this Section.

7
8 1.2. SUMMARY

- 9
10 a. This section includes the following:
11 i. Deconstruction and removal of selected portions of building or structure.
12 ii. Removal of existing items that shall be reinstalled as part of the Work
13 iii. Removal of existing items that will be returned to the Owner for their disposition
14 b. Related Sections include the following:
15 i. Drawings and general provisions of the Contract including General and Supplementary
16 Conditions and Division 01 Specification Sections, apply to this Section.

17
18 1.3. DEFINITIONS

- 19
20 a. Remove: Detach items from existing construction and legally dispose of them off-site, unless
21 indicated to be removed and salvaged or removed and reinstalled
22 b. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and
23 reinstall them where indicated.
24 c. Existing to Remain: Existing items of construction that are not to be removed and that are not
25 otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

26
27 1.4. SUBMITTALS

- 28
29 a. Inventory: After selective deconstruction is complete, submit a list of items that have been
30 removed and salvaged.
31 b. All salvage shall be given to the Owner. The Owner may decline to take possession of any or all of
32 the materials removed. At that point, the Contractor shall be responsible for its disposal or
33 recycling.

34
35 1.5. QUALITY ASSURANCE

- 36
37 a. Regulatory Requirements: Comply with governing EPA notification regulations before beginning
38 selective deconstruction. Comply with hauling and disposal regulations of authorities having
39 jurisdiction.
40 b. Standards: Comply with ANSI A10.6 and NFPA 241.

41
42 1.6. PROJECT CONDITIONS

- 43
44 a. Owner will occupy portions of building and/or site immediately adjacent to selective deconstruction
45 area. Conduct selective deconstruction so Owner's operations will not be disrupted.
46 i. Comply with requirements specified in Division 01 Section.
47 b. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as
48 practical.
49 c. **Notify Architect and Owner of discrepancies between existing conditions and Drawings**
50 **before proceeding with selective deconstruction.**
51 d. Hazardous Materials: It is expected that hazardous materials will be encountered in the Work.
52 i. Testing has been performed and it has been confirmed that there is lead paint at the
53 windows.
54 ii. If any other materials suspected of containing hazardous materials are encountered, do
55 not disturb; immediately notify Architect and Owner.
56 e. Storage or sale of removed items or materials on-site is not permitted.
57 f. Utility Service: Maintain existing utilities indicated to remain in service and protect them against
58 damage during selective deconstruction operations.
59 i. Maintain fire-protection facilities in service during selective deconstruction operations.

60
61 1.7. PROTECTION

- 62
63 a. When Work involves removal of masonry materials; the following minimum requirements shall be

- 64 enforced:
- 65 i. The Contractor shall exercise extreme caution and take all necessary precautions to limit
- 66 exposing workers or bystanders to any dangerous conditions.
- 67 ii. Protect all existing utilities against damage. Maintain existing utilities during
- 68 deconstruction operations.
- 69 iii. Protect passageways and maintain all exit ways to facilitate the safe passage of persons
- 70 around the area of deconstruction. Do not modify the facility's code compliant status in
- 71 any way that is not specifically addressed in this Project Manual.
- 72 iv. Provide interior and exterior shoring, bracing, or support as required to prevent movement,
- 73 settlement, or collapse of adjacent construction scheduled to remain.
- 74 v. Protect all remaining portions of the building, landscaping and other property not
- 75 scheduled for deconstruction. These areas shall be completely protected during
- 76 deconstruction and removal of debris. **Any resulting damage shall be repaired or**
- 77 **replaced to historically appropriate or like-new condition by the Contractor**
- 78 **responsible under the direction and approval of the Owner and Architect.**
- 79 vi. Protect any areas designated by the Owner and the Architect with necessary framing,
- 80 plastic sheet, or similar materials to prevent visible dust and debris from entering the
- 81 building or damaging landscaping. Remove dust and debris protection materials upon job
- 82 completion.
- 83

84 1.8. OCCUPANCY

85

- 86 a. The Owner will occupy the building for scheduled private events during deconstruction and
- 87 construction. The access to the facility shall remain for the Project's duration. The Owner will limit
- 88 its operation in the facility but reserves the right of use during the Project.
- 89 b. Coordinate all Work in advance with the Owner and the Architect.
- 90 c. It is possible that the exterior restoration work will be happening concurrently with an interior floor
- 91 replacement project. Both doors should be maintained as functional points of egress for the
- 92 Project's duration.
- 93

94 1.9. DUST CONTROL

95

- 96 a. The following **minimum** requirements will be enforced:
- 97 i. It is imperative that construction related dust be kept to a minimum during removal of the
- 98 sandstone, and brick masonry.
- 99

100 1.10. WARRANTY

101

- 102 a. Existing Warranties (Roof covering, flashings and related materials): Remove, replace, patch, and
- 103 repair to historically appropriate condition those materials and surfaces cut or damaged during
- 104 selective deconstruction, by methods and with materials so as not to void existing warranties.
- 105

106 PART 2: PRODUCTS

107

108 2.1. NOT USED

109

110 PART 3: EXECUTION

111

112 3.1. EXAMINATION

113

- 114 a. Verify that utilities have been disconnected and capped if needed during the deconstruction
- 115 process.
- 116 b. Survey existing conditions and correlate with requirements indicated to determine extent of
- 117 selective deconstruction required.
- 118 c. Conduct an on-site meeting with the Owner and Architect, prior to the removal of any material, to
- 119 discuss the materials scheduled for removal, the method of removal and disposition, and the final
- 120 possession/use of all materials removed from the facility.
- 121 d. Inventory and record the condition of items to be removed and reinstalled and items to be removed
- 122 and salvaged.
- 123 e. When unanticipated mechanical, electrical, or structural elements that conflict with intended
- 124 function or design are encountered, investigate and measure the nature and extent of conflict.
- 125 Promptly submit a written report to Architect.
- 126 f. Engage a professional engineer to survey condition of building to determine whether removing any

- 127 element might result in structural deficiency or unplanned collapse of any portion of structure or
128 adjacent structures during selective deconstruction operations.
129 g. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs,
130 provide on new flash drive to the Owner prior to commencement of the Work.
131 h. Perform surveys as the Work progresses to detect hazards resulting from selective deconstruction
132 activities.

133
134 3.2. UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS
135

- 136 a. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against
137 damage during selective deconstruction operations.
138 b. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility
139 services and mechanical/electrical systems serving areas to be selectively demolished.
140 i. If services/systems are required to be removed, relocated, or abandoned, before
141 proceeding with selective deconstruction provide temporary services/systems that bypass
142 area of selective deconstruction and that maintain continuity of services/systems to other
143 parts of building.
144

145 3.3. PREPARATION
146

- 147 a. Site Access and Temporary Controls: Conduct selective deconstruction and debris-removal
148 operations to ensure minimum interference with roads, streets, walks, walkways, and other
149 adjacent occupied and used facilities.
150 i. Comply with requirements for access and protection specified in Division 01 Section.
151 b. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury
152 to people and damage to adjacent buildings and facilities to remain.
153 i. Provide protection to ensure safe passage of people around selective deconstruction area
154 and to and from occupied portions of building.
155 ii. Provide temporary weather protection, during interval between selective deconstruction of
156 existing construction on exterior surfaces and new construction, to prevent water leakage
157 and damage to structure and interior areas.
158 iii. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are
159 exposed during selective deconstruction operations.
160 iv. Cover and protect furniture, furnishings, and equipment that have not been removed.
161 v. Comply with requirements for protection specified in Division 01.
162 c. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to
163 preserve stability and prevent movement, settlement, or collapse of construction and finishes to
164 remain, and to prevent unexpected or uncontrolled movement or collapse of construction being
165 demolished.
166 i. Strengthen or add new supports when required during progress of selective
167 deconstruction.
168

169 3.4. SELECTIVE DECONSTRUCTION, GENERAL
170

- 171 a. General: Deconstruct and remove existing construction/materials/systems only to the extent
172 required by new construction and as indicated. Use methods required to complete the Work within
173 limitations of governing regulations and as follows:
174 i. Proceed with selective deconstruction systematically, from higher to lower level.
175 Complete selective deconstruction operations above each floor or tier before disturbing
176 supporting members on the next lower level.
177 ii. Neatly cut openings and holes plumb, square, and true to dimensions required. Use
178 cutting methods as specified in Section 04., Hammering and chopping are not permitted in
179 order to minimize disturbance of adjacent surfaces. Temporarily cover openings to
180 remain.
181 iii. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring
182 existing finished surfaces.
183 iv. Do not use cutting torches until work area is cleared of flammable materials. At concealed
184 spaces, such as duct and pipe interiors, verify condition and contents of hidden space
185 before starting flame-cutting operations. Maintain portable fire-suppression devices during
186 flame-cutting operations.
187 v. Maintain adequate ventilation when using cutting torches.
188 vi. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and
189 promptly dispose of off-site.

1 PART 1: GENERAL

2
3 1.1. SCOPE

- 4
5 a. The work under this section shall consist of providing all materials, labor, equipment, tools,
6 protection and supervision necessary to complete the work.
7

8 1.2. RELATED WORK

- 9
10 a. Applicable provisions of Division 1 shall govern work under this Section.
11

12 1.3. DESCRIPTION

- 13
14 a. In addition to all other requirements, all work of this Section shall be performed under the
15 guidelines of the Secretary of the Interior's Standards for the Treatment of Historic Properties and
16 must comply with the Secretary of the Interior's Standards for Rehabilitation.
17
18 b. The intent of this Section is:
19 i. If the work is expected to extend into conditions where the average low temperature is
20 less than 45 degrees Fahrenheit (for the city of Madison, Wisconsin: November 15 - May
21 1), scaffolding shall be fully tented utilizing a reinforced and grommated scaffold enclosure
22 system capable of withstanding all weather conditions including high winds such as
23 Monarflex, Eagle or approved equal.
24 1. This is to provide a consistent environment for the work, which shall be executed
25 continuously until completion.
26 2. Heat may be required depending on weather, enclosure shall be able to be
27 heated without modification.
28 3. The cost to erect and to heat will be the responsibility of the Contractor should it
29 be shown that the Work Schedule has not been met due to Contractor related
30 causes
31 ii. Training for the methods described below is part of the Contract and shall be included in
32 the Bid and shall be administered by the Architect. The Historic Masonry
33 Consultant/Certified Trainer (CT), while being paid via the Contract will act only in the
34 Owner's behalf in conjunction with the Architect.
35 iii. Repoint the historic masonry walls to arrest water infiltration.
36 1. Provide adequate backing for the repointing mortar to perform, long-term in the
37 conditions specific to this site.
38 2. ~~Create a dam at least 4" to 6" in the mortar joints (where possible) using closed~~
39 ~~cell foam backer rods or other pre-approved methods.~~
40 3. ~~Utilize a low-pressure grout system to backfill the mortar joints. Thickness of the~~
41 ~~grout will vary depending on pump configuration and weather conditions. The~~
42 ~~grout will be modified with acrylic to provide additional bond, flexibility and to~~
43 ~~retard the infiltration of water into the wall.~~
44 4. ~~Waiting period between grouting and final point shall be from 3 to 7 days~~
45 ~~depending on atmospheric and curing conditions.~~
46 5. Final point the wall (2.5X the width of the mortar joint) in two lifts using NHL 3.5
47 as specified herein.
48 iv. To carefully deconstruct limited areas of the existing wall as required by the conditions.
49 v. To save as much of the historic material as possible.
50 vi. To repair all deteriorated stone that is deemed to be suitable for reuse.
51 vii. That all repair and replacement materials will match historic construction in all physical
52 and visual aspects, including material, form, color, texture, and workmanship.
53 viii. That all work will be done using the gentlest methods available.
54 ix. That sound historical materials will not be put at risk due to the work of this Section.
55 c. Work includes, but is not limited to, the following:
56 i. Repointing of all stone masonry as shown on the drawings.
57 ii. Removal of previous cement-based coatings as shown on the drawings.
58 iii. Final cleaning of all masonry surfaces upon completion of the repair work. 100% cleaning
59 of the stone is a requirement of this bid. Final cleaning method will be confirmed onsite at
60 the time of commencement. For the purposes of this bid assume a very low-pressure
61 steam wash of all exposed surfaces.
62 iv. Installation of a penetrating, breathable, non-film-forming and non-darkening stone
63 consolidant and water repellent.

1.4. QUALITY ASSURANCE

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- a. **Pre-Construction Conference:** Prior to beginning the work of this Section Masonry Contractor shall convene a meeting with the Architect and Owner's Representative(s) to review the requirements of the Quality Assurance Plan, Project Training Program, installation procedures, location of required test areas, and all job conditions and processes.
 - b. **Quality Assurance Plan:** **Prior to beginning Work, submit a written Quality Assurance Plan to Architect and Owner for review and approval. Allow 2 weeks for review and approval process. Do not proceed without written approval of plan.** The Owner's Quality Control Representative and the Architect shall review work on a regular basis for conformance with the approved Quality Assurance Plan. Quality Assurance Plan shall, at a minimum, include the following items:
 - i. **Description of Training Program**
 - 1. Include certificate issuer name and qualifications with the specific requisites established to meet the Historic Material Restoration Requirements (HMRR) identified in the project documents.
 - 2. Identify the classroom curriculum and/or outline for the Architect's review and approval.
 - 3. Provide a sample classroom examination
 - 4. Identify the field work verification process and confirm location and scope of all mock-ups for Architect's review and approval.
 - 5. Provide a list of all sub-contractor and/or other employees that will submit to the training and certification process.
 - ii. **Required Training:** Work methods that require training by the Certified Trainer (CT) in coordination with the Architect are as follows:
 - 1. Mortar Removal
 - 2. Repointing Mortar Preparation
 - 3. Repointing Mortar Installation
 - 4. Substitute Stone Patch
 - 5. Dutchman
 - 6. Cleaning (as required for Consolidant and Water Repellant Installation)
 - 7. Water Repellant Installation
 - iii. **Access:** Describe all methods of mobilization and access to work areas.
 - iv. **Dust Collection:** Describe methods of dust containment during the work of this section.
 - v. **Protection:** Describe the methods of protecting surrounding stone and landscape. Submit drawings of protection when requested by Architect.
 - vi. **Means and Methods:** Describe the Work procedures, materials, and tools the contractor proposes to use for each historic material restoration requirement specified.
 - vii. **Sequence:** Describe the sequence of historic material restoration requirements.
 - viii. **Adjustments for Weather:** Describe how the sequence of historic material restoration requirements and the construction schedule changes as it relates to climate fluctuations and protection of completed work.
 - ix. **Survey/Layout:** Describe the methods for surveying original layout and collecting datum points and plumb lines for rebuilding stone masonry.
 - x. **Shoring:** Describe the methods for shoring and providing a safe working environment.
 - xi. **Deconstruction:** Describe the methods for deconstruction and tools for cleaning stone for reuse.
 - 1. Describe the methods for deconstruction of individual stone and tools for cleaning the stone for reuse.
 - 2. Describe the method and approach to cleaning cement-based coating materials from the stone face.
 - 3. Describe the complete stone removal procedures; include equipment, approach and where (on-site or in shop) the stone will be redressed.
 - c. **Certified Trainer – CT:**
 - i. The Contractor shall secure and pay for the services of an independent CT to provide the on-site project training certificate program.
 - 1. The independent CT shall have 10 years of experience in historic masonry work and be well-versed in the requirements of the Secretary of the Interior's Standards for Rehabilitation as they relate to the work of this Section.
 - 2. The CT will be responsible for issuing certificates and shall provide evidence of training experience on 5 other projects of similar scope and scale.
 - 3. Product manufacturers, vendors, distributors, or suppliers of materials specified in this Section shall not be permitted to offer on-site project training

- 127 certificates.
- 128
- 129 d. Project Training Program Definition and Use:
- 130 i. All workers must obtain training certificate(s) in order to work on the project. Training
- 131 certificates are earned by individual workers and are issued with the understanding that
- 132 they are for limited time use for a specific historic masonry repair requirement.
- 133 1. The certificates cannot be earned by a company.
- 134 2. The certificates are non-transferable and only valid for the specific
- 135 rehabilitation treatment specified. For example: this project has defined
- 136 several rehabilitation treatments in the scope that will require separate on-
- 137 site training sessions for issuance of the required project training certificates.
- 138 3. The contractor has the flexibility to assign workers that are most proficient in
- 139 the skills required for the specified rehabilitation treatment. It is not
- 140 necessary, nor a requirement of this specification, that all workers obtain all
- 141 project training certificates offered. A laborer, for example, may need to
- 142 become proficient at historic material removal, documentation, and inventory
- 143 control, as well as mortar mixing, but not need to be qualified to set stone or
- 144 prepare stone surfaces for repair.
- 145 4. The contractor must assign workers to tasks that the workers are certified in
- 146 only. Non-certified tasks may be undertaken by any personnel.
- 147 5. The contractor in consultation with the Historic Masonry Consultant shall
- 148 develop a method for identifying workers and their certifications to aid in the
- 149 review of workers and their work.
- 150 ii. Owner reserves the right to remove any workers from the project site who does not meet
- 151 the standards and performance criteria as described in this section.
- 152 e. Stone Rehabilitation Firm Qualifications:
- 153 i. The masonry rehabilitation firm shall perform all work in this section. The firm shall have
- 154 completed work similar in material, design, and extent to that indicated for this Project and
- 155 shall demonstrate a record of successful in-service performance. Proven implementation
- 156 of the Secretary of the Interior's Standards for Rehabilitation: Preservation Briefs #1 and
- 157 #2 and compliance with TMS 402-08/ACI 530-08/ASCE 5-08 are required.
- 158 f. Field Supervision:
- 159 i. Masonry rehabilitation firms shall maintain an experienced full-time supervisor on the
- 160 Project site at all times when stone masonry rehabilitation is in progress. A single
- 161 individual shall be responsible for supervising the stone masonry rehabilitation work
- 162 throughout the duration of the Project.
- 163 g. Stone Rehabilitation Worker Qualifications:
- 164 i. Rehabilitation specialist firms must employ craftspersons who are experienced with and
- 165 specialize in rehabilitation work of the types they will be performing.
- 166 ii. All rehabilitation treatments must be performed by a project - certified craftsperson who is
- 167 familiar with historic stone construction. The Contractor shall provide proof of such
- 168 knowledge to the Architect by submitting a project training certificate for each worker for
- 169 each rehabilitation treatment to be assigned.
- 170 iii. Only skilled journeyman masons who are familiar with and experienced with the materials
- 171 and methods specified, and who have successfully obtained a Project Training Certificate
- 172 as defined herein and are familiar with the design requirements shall be used for the
- 173 scope of this Section.
- 174 h. Source Limitations:
- 175 i. Each type of material for stone rehabilitation shall be obtained from a single source with
- 176 resources sufficient to provide materials of consistent quality in color, texture, detailing,
- 177 appearance and physical properties.
- 178 i. Mock-ups:
- 179 i. All submittals as noted herein shall be submitted and approved prior to the creation of
- 180 mock-ups.
- 181 ii. Consult the Architect for placement, size, and location of mock-ups. Mock-ups shall
- 182 demonstrate to the Architect and Owner the methods and quality of workmanship to be
- 183 performed in all stone treatments.
- 184 iii. The Architect and the CT shall be onsite and will guide/direct the mock-up process.
- 185 iv. The mock-ups shall be installed and approved as part of the certification process required
- 186 under this contract; and shall be required only for those treatments that are included in this
- 187 scope of work.
- 188 v. Prepare mock-ups directly on the existing historic wall under the same weather conditions
- 189 expected during the remainder of the work.
- vi. Throughout rehabilitation, retain approved mock-up panels in undisturbed condition,

- 190 suitably marked, as a standard for judging completed work.
191 1. There shall be one approved mock-up for every worker and every treatment
192 for which they are certified.
193 vii. Mock-ups shall include separate treatments, as called out on the drawings and related
194 specification Sections, see Part 3 – Execution herein. These are as follows:
195 1. Repointing Mortar Preparation and Installation - Repoint mortar joints, 8 feet
196 in length and two (2) courses high. (Training and Certification for this task is
197 required)
198 2. Dutchman (As-needed basis only, by change-order if required)- Undertake
199 Dutchman repairs in two (2) locations, including one that is only cut and
200 prepared for application. (Training and Certification for this task is required)
201 3. Cleaning – Cleaning will be required as part of the consolidant and water
202 repellent installation process (follow the materials' manufacturers'
203 requirements at all times)
204 4. Stone consolidant installation – Provide mock-up of installed stone
205 consolidant limited to a 4' X 4" area of properly restored and cleaned stone
206 wall, near grade including both stone types.
207 5. Mortar removal
208 6. Patch material removal
209 7. Redress
210

211 1.5. SUBMITTALS

- 212
213 a. Submit the following items in time to prevent delay of the work and to allow adequate time for
214 review. Do not order materials or start work before receiving written approval.
215 i. All testing shall be coordinated by: John Lambert, 681 South 4050 West, Salt Lake City,
216 UT 84104; (801) 509-5099 email: john@masonry-restoration.com
217 ii. Preferred Laboratory Vendor (on an as-needed basis only): AMT Laboratories • 3741
218 Greenway Circle • Lawrence, Kansas 66046 • (888) 376-3600
219 b. Quality Assurance Plan
220 i. Submit written plan as outlined in the Quality Assurance Section for the work of this
221 Section.
222 c. Historic Masonry Consultant – Training Program Instructor
223 i. Preferred Vendor: John Lambert, Historic Masonry Trainer/Abstract Masonry Restoration,
224 Inc., 681 South 4050 West, Salt Lake City, UT 84104; (801) 509-5099 email:
225 john@masonry-restoration.com
226 ii. Other vendors may be considered but must be vetted and approved by the Architect
227 PRIOR to submitting bid. No substitutions will be allowed after the Bid due date.
228 1. Project Training Program Plan
229 a. Submit written documentation of a training certificate program which
230 complies with ASTM E2659-09 Standard Practice for Certificate Programs
231 specific to the rehabilitation treatment requirements of this project. At a
232 minimum the training program shall include all stone treatment requirements
233 listed on the drawings and the removal of both cement-based mortars and
234 lime mortar and installation of lime mortar. The documentation shall include:
235 the number of learning events; a defined scope of training; a list of learning
236 objectives, outcomes, assessment, and evaluation; samples of written tests;
237 description of skills testing methodology; and requisites to obtain a
238 certificate.
239 2. Project Training Certificates
240 a. Submit written project training certificates from an independent Historic
241 Masonry Consultant – Training Program Instructor verifying that all workers,
242 installers, supervisors, project managers, and foremen have successfully
243 completed the requisites from the on-site training program specific to the
244 rehabilitation treatments assigned to them individually and as specified for
245 this project.
246 d. Stone Samples for Verification
247 i. Before erecting mockup, submit samples of the following:
248 1. Stone Replacement – Full New Stones – Full new stones shall meet
249 specification requirements for color texture, density, technical performance,
250 and stone type.
251 2. Stone Replacement – Cut Stones – Create each profile for review and
252 approval.

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- ii. Substitute Stone Repair Material – Provide at least two samples for patching material that will match the existing stone. Patching shall match existing stone; therefore, multiple submittals are expected. Substitute stone repair material will not be permitted to be applied in missing areas of more than 2 inches deep.
 - iii. Qualification Data for Stone Rehabilitation Firm – The firm must submit written documentation of at least five (5) individual projects completed in the last 15 years with at least two (2) projects over \$1 million dollars for which they have been the primary masonry specialist. Work must be performed by a contractor with 15 years of documented successful experience in comparable historic stone masonry rehabilitation projects in size, age and material and who employs personnel skilled in the rehabilitation treatments and rehabilitation process and operations indicated.
 - 1. The written submission must include the following:
 - a. Name and address of project
 - b. Name, address and phone numbers of Client
 - c. Date of project completion
 - d. Age of structure and whether it was listed on the National Register of Historic Places or is designated as a Historic Landmark
 - e. How the work scope was specifically delivered to comply with the Secretary of the Interior’s Standards for Rehabilitation.
 - f. Size of the project, in terms of square feet of stone masonry restored
 - g. List of materials (including names and manufacturers) used on project
 - iv. Qualification Data for Stone Rehabilitation Field Supervisor –The firm must submit written documentation of at least 5 projects that the Field Supervisor has supervised. The projects may include those that were completed under the employment of a different firm. The list must include projects that are similar in size, age and material to the current project. All stone treatments must be performed and supervised by craftsmen whom are familiar with historic stone masonry construction.
 - a. The written submission must include the following:
 - b. Name and address of project
 - c. Name, address and phone numbers of Client
 - d. Date of project completion
 - e. Size of the project, in terms of square feet of stone masonry required
 - f. List of materials (including names and manufacturers) used on project
 - g. Name(s) of firm(s) the work was performed under, if different from submitting firm
 - h. Proof of expertise in historic stone masonry, as indicated by a rehabilitation treatment certificate from the training program defined in this specification
 - v. Qualification Data for Stone Rehabilitation Workers – The firm must submit the name of each craftsman who will be assigned to this project. Only skilled journeyman masons, trained and certified by the historic masonry consultant, shall be used for masonry rehabilitation. All stone treatments must be performed and supervised by craftsmen who are familiar with historic stone masonry construction.
 - a. Include the following:
 - b. Name of craftsman
 - c. Position craftsman will hold on this project
 - d. Number of years working as a masonry rehabilitation specialist
 - e. Proof of expertise in historic stone masonry, as indicated by a project certificate from the training program defined in this specification
 - f. Submit digital photographic documentation proposed procedures

304 1.6. SUBSTITUTIONS

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- a. If alternatives to the methods and materials indicated are proposed for any phase of rehabilitation work, the Contractor shall provide written descriptions and programs of testing and install all test panel samples and mock-ups to demonstrate the effectiveness of the alternatives for use on this project.
 - b. The Contractor must provide documentation showing compliance with the requirements for substitutions and the following information:
 - i. Coordination information, including a list of changes to other work that will be necessary to accommodate the substitution
 - ii. A comparison of the substituted products and materials with the specified products and methods, including performance, weight, size, durability, and visual effect.

- 316 iii. Certification that the substitution conforms to the contract documents and is appropriate
317 for the applications indicated. Material substitution requests must be accompanied by
318 independent laboratory test reports from a lab designated by the Architect to establish
319 equivalent performance levels and specification compliance. The Architect shall designate
320 the testing lab, and the party requesting the substitution shall pay for testing.
321

322 1.7. PRODUCT DELIVERY, STORAGE AND HANDLING
323

- 324 a. Deliver and store materials in manufacturer's original unopened containers bearing labels indicating
325 the grade, batch, production data, type, and names of products and manufacturers.
326 b. During storage and construction, protect rehabilitation materials from wetting by rain, snow or
327 ground water, and from staining or intermixture with earth or other types of materials.
328 c. Protect stone and other materials from deterioration by moisture and temperature. Store stone in a
329 dry location or in waterproof containers. Keep stone on pallets. Do not shrink wrap stone on pallets.
330 d. Comply with product manufacturer's recommendations for minimum and maximum temperature
331 requirements for storage.
332 e. Comply with the manufacturer's written specifications and recommendations for application and
333 installation.
334 f. Store all materials in a location that will not impede the progress of the work.
335

336 1.8. PROJECT CONDITIONS
337

- 338 a. Do not perform any masonry work unless air temperatures **within the required scaffold**
339 **enclosure** are between 40 degrees Fahrenheit (10 degrees Celsius) and 95 degrees Fahrenheit
340 (32 degrees Celsius) and will remain so for at least 120 hours after completion of the work. To
341 prevent premature evaporation of the mortar, phase masonry work during hot weather by
342 completing the process on the shady side of the wall or by scheduling installation of materials
343 during cooler evening hours.
344 b. Do not use frozen materials or materials mixed or coated with ice or frost. Do not lower the freezing
345 point of mortar by the use of admixtures or anti-freeze agents, and do not use chlorides in the
346 mortar.
347 c. Prevent mortar from staining the face of the masonry or other surfaces to be left exposed.
348 Immediately remove all mortar that comes in contact with any surface.
349 d. Cover partially completed work when work is not in progress.
350 e. Protect projections from droppings.
351 f. Damage occurring to the structure as a result of the Contractor's failure to protect against such
352 damage shall be the Contractor's responsibility. The contractor shall restore damaged areas to the
353 complete satisfaction of the Architect at no expense to the Owner.
354 g. Cold-Weather Requirement for masonry repair and mortar:
355 i. Follow ACSI 530 and manufacturers written installation requirements.
356 h. Hot-Weather Requirements:
357 i. Protect masonry repair and mortar-joint pointing when temperature and humidity
358 conditions produce excessive evaporation of water. Provide artificial shade and wind
359 breaks and use cooled materials as required. Do not apply mortar to substrates with
360 temperatures of 90 degrees Fahrenheit and above.
361

362 **PART 2: PRODUCTS**
363

364 2.1. MANUFACTURERS
365

- 366 a. In other Part 2 articles where titles below introduce lists, the following requirements apply for
367 product selection:
368 ii. Products: Subject to compliance with requirements, provide one of the products specified.
369 iii. Manufacturers: Subject to compliance with requirements, provide products by the
370 manufacturers specified.
371

372 2.2. SUBSTITUTE STONE REPAIR COMPOUND
373

- 374 a. Substitute Stone Patch (SSP) Material: Must use only mineral-based, single component products
375 that contain natural binders; no synthetic polymers or additives are permitted. Substitute stone
376 material must be pre-mixed in a quality-controlled factory, with only the addition of water required at
377 the site prior to installation.
378 b. Acceptable materials:

- 379 i. Jahn M70 Repair Mortar, Cathedral Stone Products, Jessup, Maryland
- 380 ii. Custom System 45, Edison Coatings, Plainville, Connecticut
- 381 c. Substitute Stone Patch Material shall be custom colored to match the existing stone and produced
- 382 in a quality-controlled factory environment. The contractor will be expected to keep a stock of a
- 383 range of six (6) custom colors.
- 384 d. No field mixing of color pigments into the repair materials without preapproval is permitted on-site.
- 385 e. No color staining of existing stone or newly applied repair materials is permitted.
- 386 f. Apply substitute stone materials to areas no more than 2 inches in depth and 3 inches wide or as
- 387 specifically allowed by the manufacturer.
- 388

2.3. STONE REPLACEMENT MATERIAL

- 389
- 390
- 391 a. All replacement stone shall be Madison Sandstone; no substitutes will be allowed. The Contractor
- 392 shall use replacement stone that is compatible to the existing stone in appearance, color and
- 393 texture from the following manufacturers/distributed may be contacted for samples:
- 394 i. Quarra Stone Company, LLC, Madison, Wisconsin, Contact: Steve Ensor, (608) 246-8803
- 395 ii. Approved equal
- 396 b. Mortar for laying replacement stone: Mortar shall be the same as the pointing mortar, as defined in
- 397 this Section.
- 398

2.4. ALL MORTAR MATERIALS – For Bedding Mortar and Repointing Mortar

- 399
- 400
- 401 a. The basis of the mortar for this project shall be:
- 402 i. St. Astier Natural Hydraulic Lime NHL 3.5, distributed by TransMineral USA.
- 403 ii. Pigment – None.
- 404 iii. Sand – Sand shall be clean and uncontaminated by clay/silt and shall be as follows:
- 405 1. Clean, sharp, free from loam, silt, vegetable matter, salts, and other injurious
- 406 substances, conforming to ASTM C144 standard. Such as by Mandt Sandfill,
- 407 2079 County Hwy MM, Fitchburg, Wisconsin 53575. Match existing in size,
- 408 shape and color
- 409 iv. Mortar mix: 1.0 part NHL 3.5, 1.75 parts sand. Wetted with water only to the proper
- 410 consistency under the direction of the historic masonry consultant.
- 411 v. Final mortar mix shall be confirmed in the field under the direction of the Architect.
- 412 b. All mortar shall be prepared and placed in accordance with the Department of the Interior National
- 413 Park Service Cultural Resources Preservation Briefs 2, "Repointing Mortar Joints in Historic
- 414 Masonry Buildings" (Revised Edition October 1998), and in compliance with the guidelines set forth
- 415 by the Secretary of the Interior's Standards.
- 416 c. The mortar shall match the original in color, grain size and texture. The compressive strength of the
- 417 repointing mortar shall be equal or less than the compressive strength of the original mortar and
- 418 surrounding masonry. The replacement mortar shall contain approximately the same ingredient
- 419 proportions of the original mortar and shall have a water vapor transmission rate greater than all
- 420 adjacent masonry.
- 421 d. All replacement mortar ingredients and mortar formulations have been established from test data
- 422 gathered from the original materials sampled from site, and from performance data observed in the
- 423 field.
- 424 e. Mixing of individual mortar ingredients at the construction site will be permitted.
- 425 f. Repointing mortars may be pre-blended (not including water) in single containers in a factory-
- 426 controlled environment, however the architect shall have FULL authority to reject any process that
- 427 in his/her sole discretion will not meet the intent of this specification.
- 428 g. All ingredients will be converted from volume measurements to weight measurements to ensure
- 429 quality production of the mortar. This must be accomplished prior to any mix manufacture with the
- 430 Natural Hydraulic Lime manufacturer.
- 431 h. All mortar materials delivered to the site shall be tested to confirm specification compliance before
- 432 mortar is installed in the wall.
- 433

2.5. STONE CONSERVATION TREATMENT (CONSOLIDANT)

- 434
- 435
- 436 i. Consolidant: Conservare H100 Consolidation Treatment by Prosoco
- 437 a. This product has been tested and has been confirmed to be effective as a conservation
- 438 treatment for Madison Sandstone
- 439 b. As part of this project, and immediately after Execution of the Contract for Construction,
- 440 the Contractor shall at the Architect's direction, extract three (3) 2 inch pieces of stone
- 441 from the Gates of Heaven for final confirmation of the stone conservation treatment's

442 effectiveness for this specific application
443 c. Testing will be completed as specified herein and the results will be provided to the Owner
444 and Architect
445

446 2.6. OTHER MATERIALS
447

- 448 a. Expansion Anchor: HY 150 Max with stainless steel bolt washer and nut, manufactured by Hilti,
449 Inc., 1132 Miller Park Way, Milwaukee, Wisconsin, 53214, us-sales@hilti.com.
- 450 b. Shims: 2 inch by 4 inch by 1/16 inch, 1/8 inch, and 1/4 inch, plastic shims as manufactured by
451 Racknow Polymers and distributed by Lance Construction Supplies, Inc., Chicago, Illinois, or
452 approved equal.
- 453 c. Strap Anchors: "No. 141 U-Type Stone Anchor," 8 inches long by 1-1/4 inch wide with a 7/8 inch
454 bend (Interior dimension). 16 gauge or 0.625 inch (1/16 inch) thickness, stainless steel conforming
455 to ASTM A 167, AISI Type 304, as manufactured by Heckmann Building Products, Inc., Melrose
456 Park, Illinois.
- 457 d. Dowels (Pins): 3/8 inch diameter by 4 inch long, smooth finish, stainless steel, conforming to ASTM
458 e. 267, AISI Type 304 or 316.
- 459 f. Water: Potable (this means that you should be able to drink it), fresh, clean, clear and free from
460 injurious amounts of sewage, oil, acid, alkali, salts, organic matter or other detrimental substances.
- 461 g. Structural Angle Steel Lintels: hot dipped galvanized ASTM A36 steel – galvanized post
462 modification.
- 463 h. Helical Anchors (As needed only): Such as Spira-Lok helical wall tie system by Blok-Lok. Confirm
464 size and confirm with Architect prior to use.
- 465 i. Masonry Adhesive: Such as Ultimate Modified Polyurethane Hybrid (MPH), color: Buff, by
466 Bonstone Materials Corp.
- 467 j. Crack Injection Material: Depending upon condition in field (characteristics of crack) the following
468 materials may be used:
 - 469 i. Dispersed Hydrated Lime Injection Mortar such as DHL-IM by US Heritage Group or
470 approved equal.
 - 471 ii. Last Patch Gel by Bonstone Materials Corp.
 - 472 iii. Crack Repair 31, Low Viscosity Crack Injection Resin by Bonstone Materials Corp.
- 473 k. Cleaner for Asphalt Tar and Non-Silicone Sealant: Thixotropic stripping compound such as Sure
474 Klean Fast Acting Stripper by Prosoco or approved equal.
- 475 l. Cleaner for Silicone Sealants: Such as Sure Klean Dicone NC9 by Prosoco or approved equal.
- 476 m. Other Items: All other materials not specifically described but required for a complete and proper
477 installation of the Work in this Section, shall be selected by the Contractor subject to approval by
478 the Architect.
479

480 PART 3: EXECUTION
481

482 3.1. EXAMINATION
483

- 484 a. The Contractor shall have the sole responsibility for the accuracy of all measurements and for the
485 estimate of material quantities required and necessary to satisfy the requirements of these
486 Specifications. It is the intent of this project to salvage, preserve and reuse existing stone to the
487 greatest extent possible.
- 488 b. Whenever possible, where full stone replacement is deemed necessary, use approved original
489 material.
- 490 c. Should replacement stone be required due to irreparable damage; match all physical properties
491 including color, texture and size of existing stone.
- 492 d. Verify that installation conditions are satisfactory to receive work of this Section.
- 493 e. Do not proceed until unsatisfactory conditions have been corrected.
- 494 f. Beginning work constitutes the Contractor's acceptance of conditions as satisfactory.
- 495 g. During deconstruction, as well as rehabilitation operations, restore all areas to a weathertight
496 condition each day and/or before inclement weather commences.
497

498 3.2. SUBSTITUTE STONE PATCH (SSP)
499

- 500 a. Substitute stone repairs require a moldable, plastic filled material applied directly to the loss area
501 and set into place by its own adhesion to the stone substrate. Such stone repair mortars and
502 putties are typically offered by manufacturing companies that do not sell stone.
- 503 b. Substitute stone material may not be installed in thicknesses exceeding 2 inches. Stone repairs in
504 excess of 2 inches thick will require reconfiguring the stone in lieu of performing other repairs.

- 505 c. Remove all loose mortar and masonry prior to installation of the substitute stone material. "Sound"
506 the masonry with a hammer to verify its integrity. If necessary, cut away an additional 1/2" of the
507 stone substrate to ensure the surface to be repaired is solid and stable. Remove any sealant
508 residue.
- 509 d. Cut out all cramp anchors, threaded rod anchors and/or dowels within the damaged masonry area.
510 Any anchors that are free of rust, solidly embedded, and do not project beyond the solid masonry
511 surface may remain. All others should be removed.
- 512 e. Using clean water and a scrub brush, clean all dust from surface and pores of the substrate.
- 513 f. For very dry or porous surfaces, pre-wet the substrate ahead of time to prevent the substrate from
514 drawing moisture out of the repair too quickly. Re-wet the surface immediately before applying the
515 repair material.
- 516 g. Use methods established in project training program to deliver the substitute stone repair work as
517 demonstrated and approved by the Architect and Owner.
- 518 h. Curing methods vary in different parts of the country and at different times of the year, calling for
519 different amounts of water to be used in the first 36 hours after application. Adjustments also have
520 to take into account how much time is remaining before freezing weather occurs.
- 521 i. Follow all manufacturers' instructions pertaining to the placement of materials. If the manufacturer
522 requires that installers of a specified product be trained, provide this documentation to the Architect
523 and supporting documentation. Training certificates previously issued by product companies for the
524 application of specified products may not be substituted for the Project Training "Substitute Stone
525 Certificate" on this project. Applicators previously trained by product companies are encouraged to
526 work on this specific scope, but it is not a mandatory requirement of this specification, only that of
527 the product company to ensure the proper placement of the materials.
- 528 j. Only rehabilitation technicians that hold a Project Training "Substitute Stone Repair Certificate" will
529 be permitted to work on the scope of this stone repair treatment as defined.
530

531 3.3. FERROUS ANCHOR/BOLT REMOVAL

- 532
- 533 a. Remove masonry anchors, brackets, wood nailers, and other extraneous items no longer in use
534 unless identified as historically significant or indicated to remain. Remove landmark plaque without
535 damage to plaque and surrounding stone and provide to Owner for storage.
- 536 b. Remove items carefully to avoid spalling or cracking masonry.
- 537 c. If item cannot be removed without damaging surrounding masonry, cut off item flush with surface
538 and core drill surrounding masonry and item as close around item as practical.
- 539 d. Only rehabilitation technicians that hold a Project Training "Ferrous Anchor/Bolt Removal
540 Certificate" will be permitted to work on the scope of this stone repair treatment as defined.
541

542 3.4. STONE PLUG REPAIR

- 543
- 544 a. At locations where ferrous anchor bolts and the like are removed prepare a replacement plug by
545 core-drilling replacement stone. Use a drill sized to produce a core that will fit into hole drilled in
546 damaged stone with tolerances of no more than +/- 1/16 inch.
- 547 b. Adhere the repair piece with substitute stone patch material and clamp so the seam may cure. Prior
548 to adhering with stone patch compound, the new piece of stone shall be carved and refined to
549 match the surface of the adjacent original stone in both profile and finish. This step is necessary to
550 allow a virtually invisible replacement repair.
- 551 c. Use methods established in project training program to deliver acceptable repair work as
552 demonstrated and approved by the Architect and Owner.
- 553 d. Prior to installing the new piece, the stone shall be carved and refined to match the surface of the
554 adjacent original stone in both profile and finish. This step is necessary to allow a virtually invisible
555 replacement repair. Adhere the repair piece with an appropriate adhesive and clamp so the seam
556 may cure. Provide adhesive options to the CT and Architect for review and approval.
- 557 e. Only rehabilitation technicians that hold a Project Training "Stone Plug Repair Certificate" will be
558 permitted to work on the scope of this stone repair treatment as defined.
559

560 3.5. STONE REMOVAL AND REPLACEMENT

- 561
- 562 a. When directed, remove stone that has deteriorated or is damaged beyond repair. Carefully
563 demolish or remove entire units from joint to joint, without damaging surrounding stone, in a
564 manner that permits replacement with full size units.
- 565 b. Sort stone by size and zone for future use.
- 566 c. Support and protect remaining stonework that surrounds removal area and adjoining construction
567 in an undamaged condition.

- 568 d. Remove in an undamaged condition as many whole stone units as possible.
- 569 e. Remove mortar, loose particles, and soil from stone by cleaning with hand chisels, needle scalers,
- 570 brushes, and water.
- 571 f. Remove sealants, asphalt and other asphaltic materials by cutting close to stone with utility knife
- 572 and cleaning with solvents.
- 573 g. Reuse salvaged stone to the fullest extent possible. Integrate new replacement stone in concealed
- 574 areas or shielded from public view.
- 575 h. Deliver cleaned stone not required for reuse to Owner.
- 576 i. Clean stone surrounding removal areas by removing mortar, dust, and loose particles in
- 577 preparation for replacement.
- 578 j. Only rehabilitation technicians that hold a Project Training "Stone Removal and Replacement
- 579 Certificate" will be permitted to work on the scope of this stone repair treatment as defined.
- 580 k. Replace removed stone with other removed stone, where possible, or with new stone matching
- 581 existing stone, including size. Butter vertical joints for full width before setting and set units in full
- 582 bed of mortar, unless otherwise indicated.
- 583 l. Rake out mortar used for laying stone before mortar sets and point new mortar joints in repaired
- 584 area to comply with requirements for repointing existing stone, and at same time as repointing of
- 585 surrounding area.
- 586 m. Only rehabilitation technicians that hold a Project Training "Stone Removal and Replacement
- 587 Certificate" will be permitted to work on the scope of this stone repair treatment as defined.
- 588

3.6. DUTCHMAN (AS REQUIRED ONLY, BY CHANGE ORDER)

- 589
- 590
- 591 a. Remove damaged stone to a specified depth and insert a new piece of stone to fit in the opening to
- 592 create the appearance of a seamless patch.
- 593 b. Carefully remove the deteriorated stone material in a larger stone. The Dutchman repair will be
- 594 required on stones with surface face loss which exceeds 2 inches minimum in depth.
- 595 c. At locations indicated, remove regular geometric portions of stone units. Carefully remove stone by
- 596 making vertical and horizontal saw cuts at face of stone and demolishing corner portion of stone
- 597 unit to depth required for fitting partial replacement. Make edges of stone at cuts smooth and
- 598 square to each other and to finished surface.
- 599 d. Remove loose mortar particles and other debris from surfaces to be bonded and surfaces of
- 600 adjacent stone units that will receive mortar by cleaning with stiff-fiber brush.
- 601 e. The new piece must precisely fit into place with tolerances of no more than +/-1/16-inch. Supporting
- 602 rods of stainless steel may be necessary for some Dutchman repairs, depending on the extent of
- 603 the repair and the location.
- 604 f. Prior to installing the new piece, the stone shall be carved and refined to match the surface of the
- 605 adjacent original stone in both profile and finish. This step is necessary to allow a virtually invisible
- 606 replacement repair. Adhere the dutchman with an appropriate adhesive and clamp so the seam
- 607 may cure. Provide adhesive options to the CT and Architect for review and approval.
- 608

3.7. POINTING OF MORTAR JOINTS IN STONE

- 609
- 610
- 611 a. Center Cut Method: Existing horizontal mortar joints (bed joints) may be raked out using hand tools
- 612 and reciprocating cutters that is narrower than the joint width but not more than 50%. Center cut
- 613 only with mechanical means. Rotary saws and grinders are not permitted.
- 614 b. The vertical mortar joints (head joints) may be treated as horizontal mortar joints for this project due
- 615 to the size of the stone and mortar joints. DO NOT OVERCUT. Overcutting may require the hand
- 616 removal of all vertical mortar joints. This process will be subject to review and rejection by the
- 617 Owner and/or the Architect depending on Contractor performance.
- 618 c. All joints (unless otherwise noted) shall be raked back to sound, solid, back up material. All raking
- 619 out should leave a clean, square face at the back of the joint to provide for maximum contact of
- 620 pointing mortar with the masonry back up mortar.
- 621 d. Shallow or feather edging shall not be permitted.
- 622 e. If, after mortar is raked back voids are encountered in the historic mortar, then prepare the joint to
- 623 provide a proper substrate for pointing mortar installation (tamp pointing).
- 624 f. Existing mortar joints shall be raked out a minimum depth of 4" to 6"
- 625 g. Contractor shall not widen the existing masonry joints.
- 626 h. The surrounding masonry edges shall not be spalled or chipped in the process of mortar removal.
- 627 i. Damage to surrounding stone resulting from rotary blade over running shall not be permitted.
- 628 Contractor shall replace all stone damaged during mortar removal with replacement units that
- 629 match the original exactly. This work shall be done at the Contractor's sole expense.
- 630 j. Remove all friable material. Brush, vacuum, blow out or flush joints with water to remove dirt and

- 631 loose debris, working from top to bottom of wall.
632 k. Adjust the mix of the grout to promote optimal flowability, this work shall be conducted under the
633 review of the historic masonry consultant and the Architect
634 l. Install grout to allow for a full repoint of the joint with new mortar (2.5 x the width of the joint)
635 m. Allow for up to 7 days for grout curing, depending on conditions on site
636 n. Note: Some wall areas have stone to stone bearing conditions near the finished face of wall
637 **For pointing**, exposed surface of stone adjacent to joint shall be thoroughly saturated prior to re-
638 pointing. Maintain a water sprayer on site at all times during the re-pointing process.
639 o. The mortar material shall resemble the consistency of brown sugar during installation. This drier
640 consistency enables the material to be tightly packed into the joint and allows for cleaner work and
641 helps to prevent shrinkage cracks as the mortar cures.
642 p. Walls should be presoaked with water 10 minutes prior to pointing or as weather conditions dictate.
643 Walls should be misted with water at the end of the day after initial installation.
644 **q. Keep newly pointed wall moist for a minimum of 3-days after installation, including**
645 **weekends and holidays. 3 times per day minimum – morning, noon and night. Actual timing**
646 **should be adjusted due to onsite weather conditions. Confirm all wetting requirements with**
647 **the Architect and NHL mortar manufacturer.**
648 r. Rinse stone joint with water to remove dust and mortar particles. Time the rinsing application so
649 that at the time of pointing excess water has evaporated or run off. Joint surfaces should be damp
650 but free from standing water.
651 s. Mortar may be pre-mixed by approved manufacturer.
652 t. Point all mortar joints to a weather struck/stipple finish profile.
653 u. When mortar is thumbprint hard the joints shall be finished to match the original historic joint profile.
654 **v. Keep mortar from drying out too quickly. Protection from direct sun and high winds for the**
655 **first 72 hours after installation. Follow the NHL manufacturer's requirements and**
656 **recommendations at all times. Be aware that over-wetting is also possible which can lead to**
657 **NHL mortar becoming frost feeble. Consult the manufacturer for all questions regarding the**
658 **nature and handling of NHL based mortar.**
659 w. Install permanent protection from direct sun and high winds. If a scaffold is used, 100% sun screen
660 mesh should be utilized.
661 x. Allow mortar to harden at least 5 days before beginning cleaning work. All cleaning work must be
662 completed no later than the 7th day.
663

664 3.8. STONE CONSERVATION TREATMENT APPLICATION - CONSOLIDATION

- 665
666 a. No work is to commence on any stone without first receiving approval for the final scope from the
667 Architect
668 **b. Final testing of the consolidation on the existing stone must be completed prior to the**
669 **commencement of this work (see above).**
670 c. Install consolidation material as specified in strict accordance with the manufacturer's
671 requirements.
672 d. All exterior stone is to receive this treatment.
673 e. Apply by low-pressure spray using low-pressure tanks as defined by the manufacturer.
674 f. Apply treatment in small areas only, this is a controlled application process
675 g. Apply consolidant in repeated applications referred to as "cycles". A cycle consists of three
676 successive saturating applications at 5-15 minute intervals.
677 h. Allow 20 to 60 minutes between cycles
678 i. Apply until excess material remains visible on the surface for 60 minutes following the last
679 application
680 j. Immediately flush excess surface materials using industrial grade MEK (methyl ethyl ketone).
681

682 3.9. FINISHING TECHNIQUES

- 683
684 a. Acceptable finishing techniques for redressing, substitute stone and crack repair will be defined
685 during the demonstration and test panel work which is part of the training program as approved by
686 the Architect and Owner.
687 b. Do not create vibrations in the wall to dislodge or separate bond from previously completed work.
688

689 3.10. CLEANING

- 690
691 a. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are
692 resistant to cleaning methods being used. Extraneous substances include paint, caulking, sealant,
693 asphalt, and tar.

- 694 i. Remove paint and caulking with a non-damaging/staining paint remover.
695 ii. Repeat application up to two times if needed.
696 iii. Remove asphalt and tar with solvent-type paint remover.
697 iv. Apply only to asphalt and tar by brush without pre-wetting.
698 v. Allow paint remover to remain on surface for 10 to 30 minutes.
699 vi. Rinse off with water following manufacturer's instructions.
700 vii. Repeat application if needed.
701 viii. Chemical Cleaner Application Methods: **NO CHEMICAL CLEANERS WILL BE**
702 **PERMITTED FOR USE ON THIS PROJECT EXCEPT THOSE SPECIFICALLY**
703 **SPECIFIED AND APPROVED ON SITE BY THE CT AND THE ARCHITECT.** Prior to
704 commencement of any cleaning the contractor shall test the areas as recommended by
705 the manufacturer pending the Architect's review and approval. Final cleaning process
706 must be approved by the Owner and Architect.
707 ix. Removing Plant Growth: Completely remove plant, moss, and shrub growth from
708 masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots
709 and allowing to dry as long as possible before removal. Remove loose soil and debris
710 from open masonry joints to whatever depth they occur.
711 x. Proceed with cleaning in an orderly manner with material selected from mock up testing;
712 work from top to bottom of each scaffold width and from one end of each elevation to the
713 other.
714 xi. Perform each cleaning method indicated in a manner that results in uniform coverage of
715 all surfaces, including corners, moldings, and interstices, and that produces an even effect
716 without streaking or damaging masonry surfaces. Keep area of wall below area of wall
717 being cleaned wet at all times by rinsing with clean water.
718 xii. Use only those cleaning methods approved for each foreign material to be removed.
719 xiii. Do not use wire brushes or brushes that are not resistant to the cleaner being used.
720 xiv. Do not use plastic-bristle brushes unless natural-fiber brushes will not resist cleaner being
721 used.
722 xv. Use spray equipment that provides controlled application at volume and pressure
723 indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning
724 methods do not damage masonry.
725 xvi. Equip units with pressure gauges.
726 xvii. For water spray application, use fan-shaped spray tip that disperses water at an angle of
727 25 to 50 degrees. Do not exceed 100 PSI
728 xviii. No high pressure cleaning will be allowed
729 xix. For heated water spray application, use equipment capable of maintaining temperature
730 between 140 and 160 deg F, 185 to 190 deg F in warm weather, at flow rates indicated
731 b. Use care when installing mortar, use appropriate methods and workers who are capable
732 of executing work without excessive mess.
733 c. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar
734 and foreign matter; use wood scrapers, stiff-nylon or fiber brushes, and clean water, spray
735 applied at low pressure.
736 i. Do not use metal scrapers or brushes.
737 ii. Do not use acidic or alkaline cleaners without prior authorization by the CT and Architect.
738 d. Wash adjacent non-masonry surfaces, if applicable. Use detergent and soft brushes or cloths.
739 e. Sweep and rake adjacent pavement and grounds to remove masonry debris. Where
740 necessary, pressure wash surfaces to remove mortar, dust, dirt, and stains.
741
742
743

END OF SECTION 04 01 41

1 **PART 1: GENERAL**

2
3 1.1. WORK INCLUDED

- 4
5 a. The work shall include, but not be limited to, the furnishing of all labor, materials, equipment,
6 supervision, technical personnel, machinery, tools, transportation, and all other services necessary
7 to restore all wood window sash, wood doors and wood exterior trim, and install all related
8 hardware.

9
10 1.2. RELATED DOCUMENTS

- 11
12 a. 08 52 70 - Wood Windows//Doors Restoration

13
14 1.3. QUALITY ASSURANCE

- 15
16 a. Lumber shall be grade by an agency certified by the Board of Review of the American Lumber
17 Standards Committee. A grade stamp indicating the grading association, mill, species, and grade
18 shall be affixed to each full piece.
19 b. Lumber shall be manufactured in accordance with Product Standard 20-70 as published by the
20 U.S. Department of Commerce.
21 c. Plywood shall be graded under the rules of the American Plywood Association.
22 d. Carpenters employed for finish work such as installing hardware, millwork, and trim shall be skilled
23 craftsmen with at least 5 years successful experience in similar types of work.

24
25 1.4. SUBMITTALS

- 26
27 a. Furnish certificate from wood treatment applicator stating name of preservative and quantity
28 retained per cubic foot.

29
30 1.5. DELIVERY, STORAGE, AND HANDLING

- 31
32 a. Stack framing lumber and plywood to insure proper ventilation and drainage. Protect from the
33 elements.
34 b. Protect millwork against dampness during and after delivery. Do not store or install millwork in any
35 part of the building until concrete and masonry work is dry.
36 c. Salvage and inventory all finish hardware, and store in a secure area. Tag all keys showing
37 location and key number. Maintain a record of all keys and store in a secure location until delivery
38 to the site at the time of substantial completion.

39
40 **PART 2: PRODUCTS**

41
42 2.1. MATERIALS

- 43
44 a. All replacement lumber 2" and less shall be seasoned to a moisture content of 19% or less.
45 Surfaced framing lumber over 2" in thickness may be unseasoned.
46 i. 2 x 2 through 4 x 4 lumber shall be Quarter Sawn – Vertical Grain Douglas Fir (VGF) and
47 shall exceed the following values:
48 1. Fb: 400 (Single)
49 2. Fb: 475 (Repetitive)
50 3. E: 1,200,000
51 ii. 2 x 6 and larger lumber shall be Quarter Sawn – Vertical Grain Douglas Fir (VGF) and
52 shall exceed the following values:
53 1. Fb: 575 (Single)
54 2. Fb: 675 (Repetitive)
55 3. E: 1,100,000
56 b. Treated lumber will not be allowed.
57 c. Provide all rough hardware such as bolts, expansion bolts, nails, staples, rough screws, bronze
58 finished screws, screen wire, metal lath clips, and wire door jamb anchors, catches, hooks, etc.
59 Unless otherwise noted, bolts shall be 1/2" at 3'-0" o.c. minimum.
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61 **PART 3: EXECUTION**

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3.1. ROUGH CARPENTRY

- a. Install all wood framing, blocking, plates, grounds, etc. as shown on the drawings or required. Nailing shall be well done in accordance with code requirements and industry standards in order to develop the full strength of the members. All joints shall be closely fitted and accurately set to required lines and levels.
- b. Provide all temporary shoring, bracing, and blocking required for the installation of the work.
- c. The following items are included in rough carpentry work. The work shall not be limited to these items.
 - i. Wood furring.
 - ii. Wood nailers and blocking.
- d. Apply brush coat of preservative to all cuts in treated lumber.

3.2. RE-INSTALLATION OF FINISH HARDWARE

- a. Refer to 08 52 70 - Wood Windows/Doors Restoration and the drawings for all hardware reinstallation requirements

3.3. HANGING DOORS

- a. Re-hang wood doors after work of other trades, which could damage doors, is finished.
- b. Use packing bags to protect doors after installation. Tape plastic to door and leave in place until other trades are finished in area.

3.4. MISCELLANEOUS FINISH CARPENTRY

- a. Furnish and install all wood trim and millwork items as shown on the drawing and not specified elsewhere. All cutting and fitting shall be neatly done to close tolerances. Nail with appropriate size finishing nails, countersunk. Leave work in finished condition ready for painting or staining.

END OF SECTION 06 20 00

1 **PART 1: GENERAL**

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1.1. SUMMARY OF WORK

- a. This Section includes all labor, materials and equipment necessary to perform the following Work:
 - i. Removal of all existing caulking/sealant to be replaced.
 - ii. Preparation of all surfaces to receive new sealant work.
 - iii. Application of the joint waterproofing sealant.
 - iv. Clean up.

1.2. QUALITY CONTROL

- a. The Manufacturer of the sealant system shall have a minimum of five (5) years experience in the manufacture of waterproof coatings and sealants.

1.3. SUBMITTALS

- a. Manufacturer's Literature: Submit complete set of Manufacturer's literature and technical data for the sealant system.
- b. Contractor's Certificate: Submit copies of "Licensed Applicator's Certificate" issued by the Manufacturer.

1.4. MATERIAL HANDLING

- a. Delivery and Storage of Materials
 - i. Deliver all materials in their original unopened containers with all markings intact.
 - ii. All materials must be stored in a dry place or otherwise protected from water or extreme humidity.
 - iii. Stack material on pallets at least 4" above the ground and cover with a breathable covering, such as canvas.
 - iv. Store sealants in the manner and temperature range recommended by the Manufacturer.
- b. Handling Materials
 - i. Do not store or transport materials on the roof in a manner that may exceed the live load capacity of the deck system or the structure. The Architect, during routine inspections, may make recommendations as to loading.
 - ii. Do not transport materials over or store materials on a finished section without prior approval of Architect.

1.5. WARRANTIES

- a. The sealant Manufacturer and the Contractor shall warrant the performance of the sealant system for a period of five (5) years starting from the date of acceptance by the Architect. Such warranty shall include material as well as labor for application. Damage and/or failure due to acts of God and vandalism, may be excluded from such warranty.

PART 2: PRODUCTS

The Contractor shall provide the following materials, as required.

2.1. MANUFACTURERS

- a. Provide materials from the following Manufacturers:
 - i. SIKA Corp.
 - ii. BASF Corp.
 - iii. Tremco, Inc.
 - iv. Soudal
- b. Materials shall meet all specified standards.
- c. All materials shall be new unless noted otherwise.
- d. New materials shall not contain asbestos.

2.2. MATERIALS

- a. Sealant: A hybrid multi-component chemically curing polyurethane joint sealant meeting the

- 64 requirements of ASTM C920 Type M or S, Grade NS. Sealant material shall be polyurethane
65 elastomer based, meeting or exceeding minimum physical properties as listed in Section 2.3, and
66 capable of producing a seamless waterproof joint seal. Color shall be chosen to most closely
67 match that of the adjacent limestone/masonry, or, non-staining and no-tack, soft type with high
68 elongation properties and shall be so designated on the label by the Manufacturer such as "Sikaflex
69 1a" by SIKA Corp., "Sikaflex - 2c NS" (Class 25) by SIKA Corp., "MasterSeal NP1" (Class 35) by
70 BASF Corp., "DynaTrol II" (Class 50) by Pecora Corp., "Dymonic" (Class 25) by Tremco, Inc. or
71 "SoudaSeal AP" (Class 35) by Soudal. Follow all Manufacturers' previously submitted
72 recommendations for type required at joints. Use non-sag at all joints. All sealants must take latex
73 and oil base paint.
- 74 b. Self-leveling (Pourable) Sealant: A hybrid multi-component chemically curing polyurethane joint
75 sealant meeting the requirements of ASTM C920 Type M, Grade P, Class 25 Standards for pitch
76 pan applications. Sealant material shall be polyurethane elastomer based, meeting or exceeding
77 minimum physical properties as listed in Section 2.3, and capable of producing a seamless
78 waterproof joint seal. Color shall be chosen to most closely match that of the adjacent
79 limestone/masonry, or, non-staining and no-tack, soft type with high elongation properties and shall
80 be so designated on the label by the Manufacturer such as "Sikaflex - 2c SL" by SIKA Corp., or
81 approved equal.
 - 82 c. Joint Cleaning Compound: As recommended by the sealant Manufacturer for the joint surfaces to
83 be cleaned.
 - 84 d. Joint Primer/Sealer: As recommended by the sealant Manufacturer for the joint surface to be
85 primed or sealed. All surfaces to which sealant is intended to bond shall be primed.
 - 86 e. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by the sealant
87 Manufacturer to be applied to sealant-contact surfaces where bond to the substrate or joint filler
88 must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.
 - 89 f. Sealant Backer Rod: Compressible rod stock polyethylene foam, polyethylene jacketed and
90 polyurethane foam or other flexible, permanent, durable non-absorptive material as recommended
91 for the compatibility with sealant by the sealant Manufacturer; which will control the joint depth for
92 sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead
93 on back side, and provide a highly compressible backer to minimize the possibility of sealant
94 extrusion when the joint is compressed. Backer rod shall be at least larger than the width of the
95 joint. Refer to manufacturer recommendations for backer rod size. Coordinate with Architect.
 - 96 g. Expandable Acrylic Foam Sealant: such as BACKERSEAL, as manufactured by EMSEAL Joint
97 Systems Ltd, and as indicated on drawings for waterproof wall assembly locations.
 - 98 i. Preformed sealant shall be pre-formed, pre-compressed, self-expanding, sealant system.
99 Expanding foam to be cellular foam impregnated with a water-based, non-drying, polymer-
100 modified 100% acrylic dispersion.
 - 101 ii. Material shall be capable of movement of +25%, -25% (50% total) of nominal material
102 size.
 - 103 iii. Expandable Acrylic Foam Sealant to be installed recessed from the substrate faces as
104 shown on the drawings to receive a primary field-applied coating of low-modulus liquid
105 sealant.
 - 106 iv. Expandable Acrylic Foam Sealant to be installed at depth sufficient to allow installation of
107 properly sized backer rod and liquid sealant, with appropriate air space, in front of
108 material.
 - 109 v. Consult the architect to determine the sealant system model appropriate to the movement
110 and design requirements at each joint location.
 - 111 vi. Fabrication: Expandable Acrylic Foam Sealant must be supplied pre-compressed to less
112 than the joint size, packaged in reels or shrink-wrapped lengths (sticks) with a mounting
113 adhesive on one face.

114
115 2.3. TYPICAL PERFORMANCE CHARACTERISTICS
116

A. T-S-00227E and 19-GP-24 test method:	
Adhesion-In-Peel	Mortar 6.3 kg (14 lbs) Anodized aluminum 8.2 kg (18 lbs) Granite 7.3 kg (16 lbs) Minimum requirement 2.26 kg (5 lbs)
Durability (Bond and Cohesion)	Passed (on mortar, granite and anodized aluminum at ± 25% movement)
Sagging	None up to 50°C (122°F)
Hardness	25 (Shore A) after 7 days at 24°C (75°F), plus 21 days at 70°C (158°F)

Percent Solids	96% after 7 days at 24°C (75°F), plus 21 days at 70°C (158°F)
Pot Life	Up to 7 hours at 24°C (75°F)
Tack-Free Time	Less than 72 hours at 24°C (75°F)
Low Temperature Flexibility	-54°C (-65°F)
Staining	None

B. Other Test Methods:

Hardness ASTM D2240	Average 35 (Shore A) after 5 years
Extension and Compression and Cycle TRC-ST/450	1/2" X 1/2" (12 mm X 12 mm) at 24°C (75°F) will withstand 100 cycles of 40% extension and 25% compression
Ultra-Violet Resistance TRC-ST/448	No adverse effects after 5 weeks' exposure to 14-25 E-Viton of UV energy at 70°C (158°F)
Accelerated Aging ASTM E42, Method E	No adhesive or cohesive failure, nor significant changes at 8,000 hours

117

118 **PART 3: EXECUTION**

119

120 **3.1. EXAMINATION**

121

- 122 a. The Contractor shall have the sole responsibility for the accuracy of all measurements and for the
123 estimate of material quantities required and necessary to satisfy the requirements of these
124 Specifications.

125

126 **3.2. SEQUENCING/SCHEDULING**

127

- 128 a. Remove only as much sealant work as can be restored to a weathertight condition each day and
129 before showers commence.
- 130 b. All sealant work shall be completed each day on the section being worked on.
- 131 c. The Contractor shall not proceed with the sealant work until all unsatisfactory conditions
132 detrimental to the proper and timely completion of the sealant work have been corrected.

133

134 **3.3. SUBSTRATE PREPARATION**

135

- 136 a. Remove all debris from working surfaces. Remove all loose materials.
- 137 b. Thoroughly clean all surface areas involved to remove dirt, oils, grease, heavy laitance, for release
138 agent, curing compound, and other contaminants, which would interfere with the application and
139 performance of the sealant, in accordance with the Manufacturer's recommendations.
- 140 c. Remove all foreign projections in the joint by grinding or other suitable methods.
- 141 d. Prime all surfaces, per the manufacturer's requirements, requiring adhesion of sealant.
- 142 e. Install the sealant material under conditions where rain is not anticipated within eight hours of
143 application and substrate surface temperatures are above 40°F and below 110°F.

144

145 **3.4. SEALANT APPLICATION**

146

- 147 a. All material shall be applied in strict accordance with the Manufacturer's recommendations.
- 148 b. All surfaces to receive the sealant system shall be air-dried a minimum of 24 hours immediately
149 prior to performing Work.
- 150 c. Where Manufacturer's specifications are more stringent or require more material than specified
151 herein, follow the Manufacturer's specifications.
- 152 d. Primer
- 153 i. Apply the concrete primer at the rate of 225 square feet per gallon. Evenly apply two
154 consecutive coats to the joint interface to produce a continuous film.
- 155 ii. Allow the primer to dry for 45 minutes or until tack-free.
- 156 iii. Do not apply more primer than can be coated over within 8 hours.
- 157 iv. Do not apply primer to adjacent surfaces not scheduled for sealant to prevent staining.
- 158 e. Joint Backing
- 159 i. Joint backing shall be used to control the depth of joint to the recommended dimension.
- 160 ii. Select a size, to allow for 25% minimum compression of the backing when inserted into
161 the joint.

- 162 iii. Where depth of joint will not permit use of joint backing, a bond-breaker tape must be
- 163 installed to prevent three-sided adhesion.
- 164 f. Sealant
- 165 i. Mix according to Manufacturer's detailed instructions.
- 166 ii. Minimum mixing time: 6 minutes.
- 167 iii. Apply with conventional sealant equipment, filling joint completely.
- 168 g. Tooling
- 169 i. Immediately after application, tooling shall be employed to insure firm, full contact with the
- 170 inner faces of the joint.
- 171 ii. Dry tooling is preferred. Tooling agents can be used.
- 172 h. Cleaning
- 173 i. Remove immediately all excess sealant adjacent to the joint with "Xylo" or "Toluol" as
- 174 work progresses.
- 175 ii. Avoid staining of adjacent areas.
- 176 iii. At the conclusion of the sealant Work, remove all tools, scaffolding, equipment,
- 177 construction materials and construction debris from the site.
- 178
- 179

END OF SECTION 07 90 00

1 PART 1: GENERAL

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1.1. GENERAL REQUIREMENTS

- a. Work of this section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2. DESCRIPTION OF WORK

- a. General: Provide all labor, materials, equipment, and services required to complete wood window and door restoration as specified herein and required by existing conditions and authorities having jurisdiction.
- b. Wood window and door restoration may include, but is not limited to, the following:
 - i. Restore damaged and inoperable wood window and door components, such as sashes, while maintaining current profiles.
 - ii. Restore existing window and door hardware and provide new in-kind hardware where existing hardware is missing or is too damaged or deteriorated to be restored.
 - iii. Restore all window and door trim disturbed for work of this Section to sound condition and existing appearance.
 - iv. Replace cracked, broken or missing glass. Replace with salvage glass where possible.
 - v. Remove all deteriorated putty and replace with new.
 - vi. Consolidate and repair deteriorated wood sills, framing members and sash rails and stiles.
 - vii. Replace all broken or deteriorated parting strips.
 - viii. Reinstall repaired window sash.
 - ix. Clean all glass.
 - x. Install new low profile, vented exterior storm window
- c. Intent: It is the specific intent of this Section that repairs will maximize the retention of historic fabric while making the windows and doors weather resistant for long-term use and serviceable for cyclical maintenance.

1.3. QUALITY ASSURANCE

- a. Craftspeople: Wood window and door restoration shall be carried out by a steady crew of skilled craftspeople who are thoroughly experienced with materials and methods specified.
- b. Laws, Codes, and Regulations: All work of this Section shall comply with all applicable federal, state, and local laws, codes, and regulations.
- c. Knowledge of Site: Bidders shall visit site prior to bid and carefully examine Project scope and conditions that may affect proper execution of work of this Section and determine or verify dimensions and quantities. Contractor's submission of bid shall be acknowledgment that s/he is thoroughly familiar with Project scope and site conditions.
- d. Access for Inspection, Documentation and Approvals: Provide Preservation Manager access on a regular basis to all locations on which mockups are being carried out, on which work is ongoing, and where work has been completed to allow for inspections, documentation and approvals. Provide means of access and safety precautions required to facilitate inspections and approvals.

1.4. SUBMITTALS

- a. General: Submit the following in compliance with the requirements of the Conditions of the Contract. Revise and resubmit each item as required to obtain Architect and Owner approval.
- b. Product Literature: Manufacturer's published technical data for each product to be used in work of this Section including recommendations for application and use, test reports and certificates verifying that product complies with specified requirements, and Material Safety Data Sheets (MSDS).
- c. Documentation: Documentation in the form of high-resolution (1 megabyte minimum) JPEG images on or flashdrive showing the existing condition of all elements of windows and doors to be removed for work of this Section, all elements adjacent to elements that are to be removed, and all other window and door elements that will be in any way affected by work of this Section.
- d. Wood Treatment Data: Chemical treatment manufacturer's instructions for handling, storage, installation, and finishing treated materials if applicable.

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1.5. CONTRACTOR RESPONSIBILITY

- a. Bidders shall visit the site beforehand to make themselves familiar with specific conditions relating to this Section.
- b. Comply with relevant ASTM standards for all materials.
- c. All Subcontractors are bound by the same requirements as the Contractor. Subcontractors shall not begin work unless approved by the Owner and Architect

1.6. DELIVERY, STORAGE, AND HANDLING

- a. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation and intrusion of foreign material.
- b. Discard and remove from site deteriorated or contaminated materials and products that have exceeded their expiration dates. Replace with fresh materials.

1.7. PROJECT CONDITIONS

- a. Protection of Persons: Take all necessary precautions to protect all persons, whether engaged in work of this Section or not, from all hazards of any kind associated with the work of this Section.
- b. Protection of Window and Door Opening: After removal of the sash/door, all window and door openings shall be closed with plywood or acrylic panels fitted to each individual window and door secured by non-destructive anchoring system. The panel shall be adequately weathertight and not permit any moisture to enter the building.
- c. Protection of Building: Protect building elements and finishes from damage or deterioration caused by work of this Section. Repair any damage to materials or finishes to Owner's and Architect's satisfaction at no additional cost.
 - i. Take all necessary precautions to prevent fire and spread of fire.
 - ii. Take all necessary precautions to protect building elements and finishes from damage by precipitation during work of this Section. Protect openings at all times. Repair or replace to Architect's satisfaction all building elements and materials damaged by weather resulting from window openings that did not sufficiently exclude weather at no additional cost.
- d. Coordination: Coordinate work of this Section with work specified in other sections to ensure proper completion of the Work. Every effort shall be made to accommodate the rental schedule of the space in relation to scheduling.

1.8. ENVIRONMENTAL CONDITIONS

- a. General: Perform work only when temperature of products being used, temperatures of existing and new materials, and air temperature and humidity comply with product manufacturer's requirements and requirements of this Section. In case of conflict, the most stringent requirements shall govern.
- b. Use of Epoxy Resins: Mix and apply epoxy resins only when temperatures are between 50 deg F and 80 deg F.

1.9. LEAD-CONTAINING PAINT (LCP)

- a. General: Perform all work that disturbs lead-containing paint (LCP), handle all material that involves lead-containing paint, and transport and dispose of all lead-containing paint and residue in compliance with all applicable federal, state, and local laws and regulations for identification, removal, labeling, handling, containerization, transportation, and disposal of lead-containing material including, but not limited to, those referenced herein.
- b. U.S. Department of Labor OSHA Regulations: Including but not limited to: Title 29, Code of Federal Regulations (CFR) Section 1926.62: "Lead Exposure in Construction" and Title 29, CFR Section 1910.1200: "Hazard Communication Standard."
- c. U.S. Environmental Protection Agency (USEPA) Regulations: Including but not limited to: Title 40 CFR Part 262: "Standards Applicable to Generators of Hazardous Waste" and Part 263: "Standards Applicable to Transporters of Hazardous Waste."
- d. U.S. Department of Transportation (USDOT) Regulations: Including but not limited to: 49 CFR Parts 172, 173, 174, 175, 177, 178, 179, and 180.

123 **PART 2: PRODUCTS**

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125

2.1. MATERIALS, GENERAL

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127

a. Grade and Quality: Materials shall conform to requirements of this Section and shall be new, free from defects, and of recent manufacture unless noted otherwise.

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129

b. Manufacturer's Instructions: Comply with material manufacturers' instructions for use of products (including surface preparation, mixing, applying, drying, etc.). In case of conflict with requirements of this Section, the more stringent requirements shall govern.

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2.2. WOOD

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135

a. Lumber shall be of sound stock, solid wood without finger joints or other joints within members, thoroughly seasoned, and kiln-dried to a moisture content not exceeding 8 percent.

136

137

b. Wood shall be free from defects or blemishes on surfaces exposed to view that will show after paints and finishes have been applied. Materials that do not comply with specifications for quality and grade, are in any way defective, or are otherwise not in proper condition will be rejected.

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140

c. Wood for New Sashes and Doors as necessary, Other New Elements, and Repairs of Existing Elements shall match profile and grade of existing windows and doors in terms of quality, cut, and grain pattern. All wood shall be quarter-sawn, vertical grain, Douglas Fir and shall be finished to match existing. Provide sample for Architect's approval prior to commencing with any work.

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2.3. ADHESIVES

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147

a. Adhesive for Dutchman Repairs, Member Replacement, and Fabrication of New Sash: Epoxy resin glue designed for use with wood. Provide West System as manufactured by Gougeon Brothers, Inc., 706 Martin Street, Bay City, Michigan 48706 or approved equivalent. Provide the following materials: 105 Resin and 206 Slow Hardener or approved equivalent.

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b.

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153

2.4. FASTENERS FOR CONSTRUCTION OF WOOD DOORS (NIC) AND WINDOW SASHES

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155

a. General: All fasteners for construction of new doors and sashes shall be stainless steel or nonferrous metal of appropriate size and configuration for use intended and approved by Architect

156

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158

2.5. WINDOW AND DOOR HARDWARE AND ACCESSORIES

159

160

a. General: Provide each restored window and door with full complement of hardware and fasteners matching that on original windows. Use salvaged, restored existing hardware insofar as possible and new or repurposed historic hardware to match existing hardware where hardware is missing or existing hardware is damaged or deteriorated so as to be unrestorable.

161

162

163

i. Restored Existing Hardware: Restore all existing hardware to be reused following requirements of Article 3.11 "Restoration of Existing Historic Hardware," below.

164

165

ii. New Hardware: Provide new hardware and fasteners to match existing hardware and fasteners in all respects.

166

167

b. Sash Lifts: Restore any existing sash lifts insofar as possible and new or repurposed sash lifts to match existing sash lifts in material, configuration, size, and finish where existing sash lifts are missing or damaged so as to be non-restorable.

168

169

170

c. Sash Locks: Restore any existing sash locks insofar as possible and new or repurposed sash locks to match existing sash locks in material, configuration, size, and finish where existing sash locks are missing or damaged so as to be non-restorable.

171

172

173

d. Screws for Attaching Restored Existing Hardware: Clean, salvage existing screws insofar as possible. Where screws are missing or damaged so as to be unsalvageable, provide new screws to match existing screws in material, size, and configuration.

174

175

176

e. Screws for Attaching Replacement Hardware: New screws matching screws in existing hardware.

177

178

179

2.6. PAINTING AND FINISHING MATERIALS

180

181

a. General: Paint shall be of premium quality and match existing color exactly unless otherwise specified and shall comply with requirements of contract document. Primer shall be either oil-based or 100% acrylic and finish paint shall be 100% acrylic.

182

183

- 184 b. Glazing Putty: Putty is to be best quality pure linseed or soybean oil from manufacturer approved
185 by Architect
186

187 2.7. HARDWARE RESTORATION MATERIALS
188

- 189 a. Non-metallic Cleaning Pads: Scotch-Brite pads, extra fine, manufactured by 3M Co., or approved
190 equal.
191 b. Wadding Cloth: "Never-Dull Magic Wadding Polish," manufactured by The George Basch Co., Inc.,
192 19 Hanse Avenue, P.O. Box 188, Freeport, NY 11520, or approved equal.
193 c. Paste Wax for Cold Application: White or clear paste wax, mixtures of microcrystalline wax,
194 carnuba wax, and mild solvent, in paste form, such as Trewax clear, or Butcher's Bowling Alley
195 Paste Wax available from White Diamond Co., Marlboro, MA. Do not use emulsion-type waxes or
196 amber-tinted waxes.
197 d. Thinner: Mineral spirits or turpentine.
198 e. Lacquer: Clear, non-yellowing, acrylic emulsion, water-based coating, formulated with corrosion
199 inhibitor benzotriazole, such as #11650 Eco-Borne clear lacquer as manufactured by G.J. Nikolas
200 & Co., Inc., 2800 Washington Blvd., Bellwood, IL 60104 (708) 544-0320, or approved equal.
201

202 2.8. PROTECTIVE COVERING (EXTERIOR VENTED STORM)
203

- 204 a. Install new exterior protective covering system on all windows with vented low-profile frame, glazed
205 with 1/4" Acrylic: Klear-Flo Protection System manufactured and installed by Associated
206 Crafts/Willet Hauser, 1685 Wilke Drive, Winona, MN 55987; Mark Davidson, (800) 533-3960
207 extension 710.
208

209 **PART 3: EXECUTION**
210

211 3.1. SAFETY
212

- 213 a. Protection: Protect people, adjoining building surfaces, collections and landscape elements, et al
214 from injury resulting from window and door restoration work. Use drop cloths or other coverings as
215 necessary to protect interior finishes, floor and collections and exterior landscape material from
216 dust and debris, etc.
217 b. Erect temporary protection over pedestrian walkways and at those points of entry and exit that
218 must remain operational during restoration.
219

220 3.2. INSPECTION AND DOCUMENTATION
221

- 222 a. Examine the areas and conditions where window restoration is to be executed. Take all
223 necessary field measurements. Notify the Architect of conditions detrimental to the proper and
224 timely completion of Work. Do not proceed until unsatisfactory conditions are corrected.
225 b. General: Document all elements of windows to be restored for work of this Section, all elements
226 adjacent to elements that are to be removed, and all other window and door elements that will be in
227 any way affected by work of this Section. Key all notes to photographs to, clearly identifying
228 portions of existing elements included in each photograph.
229 c. Form of Documentation: Document existing construction with high resolution (1 megabyte
230 minimum) JPEG images on or flash drive.
231

232 3.3. REMOVALS
233

- 234 a. General: Remove all window and door components for restoration.
235 i. To minimize breakage, paint lines at the edges of window stops, hinges and other related
236 materials and parting strips must be cut/scribed first with a sharp knife before moldings
237 are removed.
238 ii. All nails will be removed by pulling them through the back of the moldings only.
239 iii. Identify and label each component that is to be removed and repaired for reinstallation
240 with window and door opening designator and location in jamb. Record numbers and
241 locations of components.
242 iv. Use all care necessary to prevent damage or deterioration of elements removed and
243 elements remaining in place. Restore or replace all elements damaged during work of this

- 244 Section to Architect's satisfaction at no additional cost.
- 245 v. Store removed elements in a secure location safe from theft, damage, and deterioration.
- 246 vi. Protect window and door openings to prevent water entry or human intrusion. Temporary
- 247 doors shall remain fully operable
- 248 b. Glass Removal: All glass will be removed to accommodate sash restoration.
- 249 i. Label each pane of glass with location and orientation within the sash so that the historic
- 250 glass can be returned to its original location and orientation. Use painters tape to label
- 251 glass and consistently label on either interior or exterior to avoid confusion at
- 252 reinstallation.
- 253 ii. Remove all face glazing compound from each window sash using steam, infrared heat or
- 254 other approved method.
- 255 iii. Cracked glass is only to be replaced with prior approval of Owner. Any replacement of
- 256 glass is to be done in kind (use salvage glass) and all replaced glass is to be dated in
- 257 corner under glazing for future identification.
- 258 c. Paint Removal: All paint will be removed from sashes, doors and exterior trim as needed in order to
- 259 insure successful adhesion of new paint.
- 260 i. All paint removal shall be executed in compliance with all applicable federal, state, and
- 261 local regulations.
- 262 ii. Steam or heat will be used to carefully remove the paint while limiting the damage to the
- 263 wood substrate.
- 264 d. Hardware Removal: All hardware will be removed as needed in order to restore wood door and
- 265 window sash.
- 266 i. Scribe paint around hardware so that removal of hardware does not splinter adjacent
- 267 wood.
- 268 ii. Remove paint from hardware so that any screws may be loosened.
- 269 iii. Tag and retain all hardware and screws.
- 270

271 3.4. DUTCHMAN REPAIRS

- 272
- 273 a. General: Provide dutchman repairs where wood is structurally compromised. Wood repairs will not
- 274 be made for aesthetic purposes. Dutchman repairs shall provide continuous smooth surfaces
- 275 matching planes and profiles of wood members being repaired. Dutchman shall match wood being
- 276 repaired in species and profile. Preparation: Neatly cut out existing opening as required to provide
- 277 a prismatic void. Wherever possible create voids that will provide mechanical attachments as in
- 278 dovetails. The amount of wood removed should be minimized but the amount should include all
- 279 damaged wood and extend just past damaged wood to prevent spread of any fungus contained
- 280 therein. Cut away area will provide ample glue surface.
- 281 b. Dutchman: Cut dutchman to exactly fit void, with exposed portion matching original profile of
- 282 woodwork and just slightly proud of original surface. Orient grain of dutchman parallel to grain of
- 283 element being patched. Where deterioration or loss at end of component requires dutchman
- 284 repair, use a diagonal scarf joint for end-to-end joint between dutchman and remaining portion of
- 285 component.
- 286 c. Installation: Clean glue surfaces with acetone or denatured alcohol. Insert dutchman using
- 287 specified adhesive and clamp in place until glue is set. Where clamping is not feasible, use small
- 288 brads; remove brads and fill holes after adhesive has set.
- 289 d. Surfacing: Plane or scrape dutchman to provide smooth continuous surface coplanar with adjacent
- 290 wood. Do not damage or alter profile or finish of adjacent wood.

291 3.5. COMPONENT REPLACEMENT

- 292
- 293 a. General: Fabricate new components for any components which are deteriorated in entirety and
- 294 cannot be repaired with Dutchmen and epoxy.
- 295 b. In kind replacement: Except as specifically indicated otherwise, provide replacement elements of
- 296 same species with configurations, profiles, dimensions and joinery et al exactly matching those of
- 297 existing elements.
- 298 i. Profiles: Remove coatings from profiles of existing elements before recording profiles to
- 299 produce molding cutters to match existing profiles
- 300 ii. Molding Cutters: Cut custom blades as required to match original profiles.
- 301 c. Machining and Surfacing: Machine and surface all new and replacement wood elements to provide
- 302 smooth even surfaces without saw marks or plane marks. Wood with surface irregularities,
- 303 including but not limited to scratches, saw marks, and plane knife marks, visible after finish has
- 304

305 been applied will be rejected and shall be replaced with properly finished wood elements at no
306 additional cost.

307
308 3.6. DOOR AND WINDOW SASH INSTALLATION

- 309
310 a. General: Install new and restored doors and sashes as per contract. At completion of installation,
311 doors and windows shall be complete with all components and with unblemished paint and finish
312 coats.
313 b. All operating sashes shall operate smoothly over entire height, and weatherstripping, if specified,
314 shall provide weatherproof seal.
315 c. Sash Hardware: Install any hardware, including sash lifts and sash locks, on restored sash in the
316 same locations as originally. Adjust sash locks for smooth easy operation and firm, secure locking.
317 d. Wax: Treat unpainted sides of stiles and frame with wax for ease of window operation and wood
318 protection.

319
320 3.7. ADJUSTING

- 321
322 a. General: Adjust operating sash and door and hardware to provide a tight fit at contact points and
323 weatherstripping, if specified, and to provide smooth operation and a weathertight closure.
324 Lubricate hardware and moving parts.

325
326 3.8. GLAZING

- 327
328 a. General: Re-glaze all window lites using approved pure linseed oil or soybean oil glazing putty.
329 Glazing points shall be used to set glass.
330 b. Clean glass prior to glazing with non-ammoniated formula before reinstallation.
331 c. Panes with multiple fractures will be replaced in kind and the date will be etched date in corner
332 beneath where new glazing will cover. Fractured glass will be repaired as possible by gluing with
333 HXTAL NY-1.

334
335 3.9. CLEANING

- 336
337 a. Clean interior and exterior surfaces promptly after installation. Take care to avoid damage to
338 historic and protective coatings and finishes.
339 b. Use only cleaners which do not contain ammonia. Windex, 409 and like products are not
340 acceptable as they accelerate paint film deterioration.
341 c. Panes with multiple fractures will be replaced in kind and the date will be etched date in corner
342 beneath where new glazing will cover. Fractured glass will be repaired as possible by gluing with
343 HXTAL NY-1.

344
345 3.10. PAINTING

- 346
347 a. General: Paint and finish new and restored elements of frames and trim to match original finishes.
348 Provide sample/mockup for Architect's review prior to commencement of full scope of Work.
349 b. Prime and paint sash and door in controlled environment according to manufacturer's instructions.
350 c. Prepare substrates for repairs by hand sanding with 100 grit paper. The sides of the stiles
351 (unpainted edges) of double hung windows do not need to be sanded unless special conditions
352 require it.
353 d. After substrate is sanded, vacuum all surfaces and remove remaining dust with barely damp dust-
354 free cloth. Allow surfaces to dry completely before priming.
355 e. Apply water repellent wood preservative to all surfaces of the sash and door.
356 f. Apply one coat of alkyd or 100% acrylic primer to all surfaces of the sash including putty beds
357 (shellac based paint cannot be applied over glazing). On all window sash and door, extend primer
358 and paint 1/16" onto glass to seal glazing. If sash is operable, it is important to paint bottom edge
359 to prevent water intrusion.
360 g. Lightly sand surfaces after the primer has dried and clean of all dust.
361 h. Apply two topcoats of premium quality 100% acrylic paint to all surfaces. Color to match existing
362 exactly unless otherwise specified.
363 i. Install after proper drying/curing time for paint as recommended by the paint manufacturer.
364 j. Immediately after installation touch-up any disturbed areas of paint.

365 k. Confirm operability of all sashes.

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3.11. RESTORATION OF EXISTING HARDWARE

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3.12. PROTECTION

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- a. General: Remove historic sash and door hardware from existing sash and door to be replaced and remove sash pulleys from jambs. Store hardware in plastic bags or containers identified with sash and door number to ensure that each unit of hardware is reinstalled in its original location.
- b. Remove lacquer coatings with acetone or lacquer thinner.
- c. Strip paint coatings by dipping in chemical paint stripper.
- d. After removal of paint and other coatings, thoroughly rinse in appropriate solvent and wipe dry with soft cloths.
- e. Replacement Parts: Provide replacement parts, including operating parts and fasteners, matching original parts in metal and alloy, configuration, size, and finish for all missing and damaged parts.
- f. Remove scratches and buff surfaces using like metal cleaning and polishing pads and polishing compound as necessary. Do not scratch finish with abrasive pads or wire brushes.
- g. Provide lacquer finish on all copper alloy elements.
 - i. Preparation
 1. Clean and degrease metal using solvent and burnishing with handheld bronze wool to provide surface free of dirt, dust, grease, oil, and other contaminants. Do not damage metal finish. If a surface is handled or contaminated, repeat cleaning and degreasing process.
 2. Drying: Ensure that metal surface is completely dry.
 3. Environment: Ensure that environment is dust-free before applying lacquer.
 4. Waxing: Protect baked lacquer coatings by hand application of two coats of hard paste wax.
 - h. Lubricate operating parts.
 - i. Store units in protective packaging.
 - j. Provide all missing fasteners for hardware. Fasteners must match all visual aspects of existing fasteners.

END OF SECTION 08 52 70

1 PART 1: GENERAL

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1.1. RELATED DOCUMENTS

- a. Applicable provisions of Division 1 shall govern work under this Section.

1.2. DESCRIPTION OF WORK

- a. Surface preparation, painting, removal of lead paint, and finishing of existing exposed exterior items and surfaces, unless otherwise noted or specified.
- b. Surface preparation, priming, removal of lead paint, and finish coats specified in this section are in addition to shop-priming and surface treatment specified under other sections.

1.3. RELATED WORK

- a. Factory finished items will not require painting or finishing unless otherwise specified. Refer to technical sections for items to be furnished with a factory finish.
- b. Nonferrous metal items will not require painting or finishing unless otherwise specified.

1.4. QUALITY ASSURANCE

- a. Materials shall be of manufacture, brand and quality as specified. Products of other manufacturers will not be accepted. Provide block fillers, primers and undercoat materials produced by the same manufacturer as the finish coats. All system components shall be compatible with one another and with substrates, as demonstrated by manufacturer based on testing and field experience.
- b. Quality workmanship is required. Employ skilled craftspeople experienced in the use of the product involved with a record of successful service performance.

1.5. MOCK-UP

- a. Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of painting on the project.
 - i. Finish surfaces for verification of products, colors, & sheens.
 - ii. Finish area designated by Architect.
 - iii. Provide samples that designate prime & finish coats.
 - iv. Do not proceed with remaining work until the Architect approves the mock-up samples.

1.6. SUBMITTALS

- a. Product Data: Provide manufacturer's technical information, including label analysis and instructions for handling, storing and applying each coating material proposed for use. Include data for all components of each system specified, including fillers, primers, etc. Cross-reference each proposed material to finish system specified.
- b. Certification: Provide certification by manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
- c. Submit two sample panels of each type finish system for color and texture approval. Label each sample as to finish system.
- d. Manufacturer Material Safety Data Sheets for all materials which are not water based shall be readily accessible at the construction site at all times that materials are present at the site.

1.7. DELIVERY, STORAGE & HANDLING

- a. Deliver paint ready-mixed to job site in manufacturer's original sealed containers with labels intact.
- b. Store materials not in use in tightly covered containers in an approved well-ventilated area at a minimum ambient temperature of 45 degrees F. Maintain containers used in storage in a clean condition, free of foreign materials and residue. Provide adequate floor protection.
- c. Remove oily or soiled rags and waste daily or store in sealed metal containers.

1.8. JOB CONDITIONS

- a. Paint only in areas which are clean and free of dust.

- 63 b. Do not apply materials until moisture content of surface is less than 12 percent as determined by
64 moisture testing meter.
65 c. Do not apply materials on exterior surfaces during rainy or frosty weather or when temperature is
66 below 50 degrees F.
67 d. Do not apply materials on surfaces while they are exposed to the sun.
68

69 **PART 2: PRODUCTS**

70

71 **2.1. COLORS AND FINISHES**

72

- 73 a. A schedule of selected colors will be supplied to the Contractor at the Time of Construction. It is the
74 Owner's intent to match existing colors.
75 i. Acceptable Manufacturers:
76 The Sherwin-Williams Company or approved equal.
77 101 Prospect Avenue NW
78 Cleveland, OH 44115
79 Tel: (800) 321-8194
80 www.sherwin-williams.com
81 ii. Substitutions: Requests for substitutions will be considered in accordance with procedures
82 in Section 01 25 13.
83 1. When submitting request for substitution, provide complete product data
84 specified above under Submittals, for each substitute product.
85 b. Wood
86 i. Latex Systems
87 1. Primer: PrimeR_x[™] Interior/Exterior Acrylic Peel bonding Primer B51T00600.
88 Manufacturer: Sherwin Williams, www.sherwin-williams.com
89 2. Finish Coat: Resilience[®] Exterior Latex Satin K43 Series. Color White.
90 Manufacturer: Sherwin Williams, www.sherwin-williams.com
91

92 **PART 3: EXECUTION**

93

94 **3.1. INSPECTION**

95

- 96 a. Examine substrates, areas and conditions under which painting will be performed for:
97 i. Defects which cannot be corrected by the procedures specified under 3.2 Surface
98 Preparation.
99 ii. Compliance with paint application requirements.
100 b. Notify Contractor of surfaces requiring corrective work prior to painting.
101 c. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces
102 receiving paint are thoroughly dry.
103 d. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within
104 a particular area.
105 e. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility
106 of the total system for various substrates. On request, furnish information on characteristics of
107 finish materials to ensure use of compatible primers.
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113 **3.2. SURFACE PREPARATION**

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- 115 a. Remove hardware and hardware accessories, plates, machined surfaces, and similar items already
116 installed that are not to be painted. If removal is impractical or impossible because of the size or
117 weight of the item, provide surface-applied protection before surface preparation and painting.
118 b. Protect, with suitable protective material, all finished surfaces and items, and existing surfaces and
119 items not scheduled to be painted, that occur in close proximity of the area being painted.
120 c. After completing painting operations in each space or area, reinstall items removed using workers
121 skilled in the trades involved.
122 d. Before applying paint or other surface treatments, clean the substrates of substances that could
123 impair the bond of the various coatings. Remove oil and grease before cleaning. Schedule
cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet,
newly painted surfaces.

- 124 e. Clean and prepare each particular substrate by appropriate methods to proper condition to receive
125 paint according to manufacturer's written construction. Provide barrier coats over incompatible
126 primers or remove and re-prime.
- 127 f. Fill all holes, scratches, cracks or other irregularities with patching material.
- 128 g. Touch up abraded factory applied shop prime coat before applying finish coats. Wire-brush, clean
129 with solvents recommended by paint manufacturer, and touch up with the same primer as the shop
130 coat.
- 131 h. Prime metal corner and casing beads with an alkyd enamel underbody where water-thinned finish
132 coats are specified.
- 133 i. Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease,
134 dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods
135 that comply with the Steel Structures Painting Council's (SSPC) recommendations.
- 136 j. Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface
137 contaminants. Remove "white rust" by wire brushing. Remove pretreatment from galvanized sheet
138 metal fabricated from coil stock by mechanical methods.
- 139 k. Clean aluminum surfaces with mineral spirits.
- 140 l. Prime or seal wood to receive paint or transparent finish immediately on delivery. Prime edges,
141 ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
- 142 m. Seal tops, bottoms and cutouts of unprimed wood doors with a heavy coat of varnish or sealer
143 immediately on delivery.

144 3.3. MATERIALS PREPARATION

- 145
- 146
- 147 a. Mix and prepare paint materials according to manufacturer's written instruction.
- 148 b. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials
149 and residue.
- 150 c. Stir material before application to produce a mixture of uniform density. Stir as required during
151 application. Do not stir surface film into material. If necessary, remove surface film and strain
152 material before using.
- 153 d. Use only thinners approved by paint manufacturer and only within recommended limits.
- 154 e. Tinting: Tint prime and each undercoat a lighter shade to simplify identification of each coat when
155 multiple coats are applied. Tint prime and undercoats to match the color of the finish coat, but
156 provide sufficient differences in shade to distinguish each separate coat.

157 3.4. APPLICATION

- 158
- 159
- 160 a. Apply materials by brush or roller in accordance with manufacturer's written instructions. Spray
161 application will not be accepted unless specified otherwise herein. **Spray application will not be**
162 **accepted unless approved by A/E prior to commencing. If spray application is allowed,**
163 **each application shall be backrolled.** The number of coats and film thickness required are the
164 same regardless of the application method.
- 165 b. Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the
166 total dry film thickness of the entire system as recommended by the manufacturer.
- 167 c. Apply first coat to surfaces that have been cleaned, pretreated or otherwise prepared for painting
168 as soon as practicable after preparation and before subsequent surface deterioration.
- 169 e. Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer,
170 to material that is required to be painted or finished and that has not been prime coated by others.
171 Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat
172 appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.
- 173 f. Allow all coats to thoroughly dry before applying succeeding coats.
- 174 g. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth,
175 opaque surface of uniform finish, color, sheen, appearance and coverage. Cloudiness, spotting,
176 holidays, lap, brush marks, runs, sags, ropiness, wrinkles, streaks, shiners, roller stipple, air
177 bubbles, or other surface imperfections will not be acceptable.
- 178 h. Finish exterior doors on tops, bottoms and side edges the same as exterior faces.
- 179 i. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convactor
180 covers, covers for finned-tube radiation, grilles, louvers and similar components are in place.
181 Extend coatings in these areas, as required, to maintain the system integrity and provide desired
182 protection.

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186 3.5. EXTERIOR PAINTING

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3.6. CLEANING

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- a. Paint all surfaces including, but not limited, to the following:
 - i. Exterior surfaces of all windows, doors, and all exposed exterior wood surfaces.
 - ii. Color and finish of all exterior paint shall match existing.
 - iii. Provide draw-downs for confirmation by Owner and Architect prior to commencing Work.
- a. At the end of each workday, remove from the premises all rubbish and accumulated material and leave work in clean condition.
- b. Remove paint that has been misplaced on other surfaces.
- c. Clean, repair and restore all damaged surfaces to their original finish.

END OF SECTION 09 91 00

END OF PROJECT MANUAL
GATES OF HEAVEN EXTERIOR RESTORATION
CONTRACT # 8916